BLENHEIM-GILBOA PUMPED STORAGE FERC No. 2685
POWER PROJECT RELICENSING

PRE-APPLICATION DOCUMENT

APRIL 10, 2014

New York Power Authority
Generating more than electricity

Provided by:

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EXECUTIVE SUMMARY

Named for the two towns within which it is located, the Power Authority of the State of New York's (d/b/a "New York Power Authority" and referred to as "NYPA") Blenheim-Gilboa Pumped Storage Project (B-G or 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 the nation's largest state public power organization, which sells electric power to government agencies, community-owned electric systems and rural electric cooperatives, businesses, private utilities, and neighboring states. It operates 16 generating facilities in various parts of New York State and more than 1,400 circuit-miles of transmission lines.

The Project has been in operation since 1973 and is licensed by the Federal Energy Regulatory Commission (FERC or Commission). The current FERC license expires on April 30, 2019. As required by law, the Power Authority will file an application with FERC on or before April 30, 2017 for a new license to continue operating the Project. The Power Authority does not have any plans to construct new facilities or to alter Project operations. Therefore, the application for new license will seek authorization to continue operating the Project in its current configuration and as it is currently licensed to operate.

Filing of the Pre-Application Document (PAD) with FERC and distribution to federal and state resource agencies, local governments, Native American tribes, and interested members of the public, is the first official step in commencing the licensing process. The PAD functions as a tool for providing relevant and reasonably available engineering, operational, economic, and environmental information to help interested parties begin to identify and evaluate potential issues and information needs related to a new license application.

The principal features of the Project include a 399-acre Upper Reservoir, a 413-acre Lower Reservoir and Dam, conduits connecting the two reservoirs, an underground powerhouse, a spillway, and related facilities. The Upper Reservoir is located on the top of Brown Mountain and was created by the construction of a dike to retain reservoir waters. The Lower Reservoir was formed by constructing a 1,800-foot-long dam on Schoharie Creek. In 2010, the Power Authority completed life extension and modernization efforts at the Project. Each of the Project's four turbine-generators was rebuilt with most of their mechanical electrical components being replaced and repairs made to virtually all other parts. With completion of the modernization program, the four units have a generating capacity of 290 megawatts (MW) each.

The Project is considered a "closed cycle"[1] because water is recycled between the reservoirs during Project operation. The Project's Upper Reservoir serves as a large energy storage device. During periods of low electrical demand (generally at night or on the weekends), water is pumped into the Upper Reservoir from the Lower Reservoir via the turbine-generators. The Upper Reservoir stores potential energy and allows the Project to start generating electricity within minutes by releasing Upper Reservoir water back down through the turbine-generators located adjacent to the Lower Reservoir. Generation can occur at any time when electricity is needed but generally occurs during day time when electricity demand is high. When needed, the Project can provide black-start capability to restart other generating facilities in the statewide energy grid.

The New York City Department of Environmental Protection's (NYCDEP's) Gilboa Dam and Schoharie Reservoir are located five miles upstream of the Project's Lower Dam. Generally, releases from the Lower Reservoir to Schoharie Creek equal inflows from Schoharie Creek upstream of the Project. Inflow to the Project includes discharges from NYCDEP's Gilboa Dam, and runoff from the small intervening watershed of about 40 square miles between Gilboa Dam and the Project. Low-flow periods occur when NYCDEP's Schoharie Reservoir is below spillway crest and there is no storm runoff. The Project does not have flood storage capabilities.

The Power Authority has developed or restored several public educational and recreational sites near the Project. The Lansing Manor Complex is a historic 19th century farmstead, which was restored by the Power Authority. The house of the Lansing Manor Complex operates as a house museum in cooperation with the Schoharie County Historical Society. The Lansing Manor Complex's former barn contains the Power Authority's Visitors Center, which is open to the public year-round and offers exhibits, interactive displays, and a number of educational and public programs. The lands surrounding the Manor and Visitors Center also provide numerous recreational opportunities. The Power Authority also developed the nearby Mine Kill State Park in conjunction with the construction of the Project. Mine Kill State Park is operated by the New York State Office of Parks, Recreation, and Historic Preservation (OPRHP).

Over the next several years, the Power Authority, in consultation with interested parties, will evaluate the effects of continuing Project operation on geology and soils, water resources, fish, wildlife, and botanical

[1]The initial license order issued June 6, 1969 characterizes the project as a "closed cycle pumped-storage development" (FPC, 1969)

resources, recreational, aesthetic, land use, cultural resources, socioeconomic, and Native American resources. The Power Authority has collected baseline information on many of these resources. Studies completed in 2012 and 2013 show that water quality at the Project meets state standards, that the resident fish community has remained unchanged over the years, and that there are no anadromous or Rare, Threatened, and Endangered (RTE) fish species that have the potential to occur within the Project boundary. The 2012 and 2013 studies conclude that shoreline erosion within the Project boundary is limited. Most shoreline areas of both the Upper and Lower Reservoirs are either steeply sloping armored banks (bedrock, cobble, rip-rap) or gently sloping areas with well-developed emergent wetlands. As such, the shorelines of the Upper and Lower Reservoirs, within the influence of Project operations, are stable. Turbidity levels remained low even when the Project was operating, suggesting that pumping and generation at the Project does not adversely affect turbidity.

The studies also show that the Bald Eagle, a New York State-Threatened species, nests and feeds within the Project boundary; continued Project operation is not expected to affect Bald Eagle. There are no documented occurrences of other federal or state rare, threatened, or endangered wildlife or plant species within the Project boundary. The Power Authority did not identify any potential significant effects of continued Project operations on wildlife or riparian habitats. The Power Authority is proposing to conduct a literature-based assessment of fish entrainment and turbine passage survival, and additional recreational and cultural resource assessments in order to gain more complete understanding of the Project's potential effects on these resources.

As the Project approaches the expiration of its FERC license in 2019, the Power Authority looks forward to working with State and Federal agencies, local municipalities, and other interested parties during the Project's relicensing to secure this valuable resource for the State of New York for many years to come.

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List of Abbreviations

A	ampere
AC	alternating current
ACAA	Albany County Airport Authority
ADA	Americans with Disabilities Act
APDC	Albany Port District Commission
B-G or Project	Blenheim-Gilboa Pumped Storage Power Project
BGEPA	Bald and Golden Eagle Protection Act
BIA	United States Department of Interior, Bureau of Indian Affairs
BLS	Bureau of Labor Statistics
CEII	Critical Energy Infrastructure Information
CFR	Code of Federal Regulations
cfs	cubic feet per second
CFU	colony forming units
cm	centimeter
cu yds	cubic yards
°C	degrees Celsius
°F	degrees Fahrenheit
DO	dissolved oxygen
FAA	Federal Aviation Administration
fps	feet per second
ft	feet or foot
ft^2	square feet
EA	Environmental Assessment
EAB	Emerald Ash Borer
ECP	Erosion Control Plan
ESA	Endangered Species Act
FERC or Commission	Federal Energy Regulatory Commission
FPA	Federal Power Act
FPC	Federal Power Commission
GCCSD	Gilboa-Conesville Central School District
GIS	Geographic Information System
HAER	Historic American Engineering Record
HEC	USACE Hydrologic Engineering Center
hr	hour
ILP	Integrated Licensing Process
kV	kilovolt

kWH	kilowatt-hour
l	liter
LEM	Life Extension and Modernization
mg	milligram
MGD	million gallons per day
mi^2	square miles
ml	milliliter
MSA	Metropolitan Statistical Area
msl	mean sea level
MVA	megavolt ampere
MW	megawatt
MWH	megawatt-hour
NEPA	National Environmental Policy Act
NGVD	National Geodetic Vertical Datum
NHPA	National Historic Preservation Act
NID	National Inventory of Dams
NMFS	National Marine Fisheries Service
NOI	Notice of Intent
NPDES	National Pollution Discharge Elimination System
NPS	National Park Service
NRHP	National Register of Historic Places
NRCS	Natural Resources Conservation Service
NTU	Nephelometric Turbidity Unit
NWI	National Wetland Inventory
NYC	City of New York
NYCDEP	New York City Department of Environmental Protection
NYISO	New York Independent System Operator
NYNHP	New York Natural Heritage Program
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSDOS	New York State Department of State
NYSDOT	New York State Department of Transportation
NYSEG	New York State Electric & Gas Corporation
NYSM	New York State Museum
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

PMF	Probable Maximum Flood
Power Authority	New York Power Authority
PRF	Public Reference File
QA/QC	quality control/quality assurance
RIBS	Rotating Integrated Basin Studies
RTE	Rare, Threatened, and Endangered
SAV	submerged aquatic vegetation
SCORP	State Comprehensive Outdoor Recreation Plan
SCCA	Schoharie County Conservation Association
SCPT	Schoharie County Public Transit
SCSWCD	Schoharie County Soil and Water Conservation District
SD1	Scoping Document 1
SHPO	State Historic Preservation Office
T & E Species	Threatened and Endangered Species
TDS	total dissolved solids
THPO	Tribal Historic Preservation Office
TMDL	Total Maximum Daily Load
TN	total nitrogen
TNC	The Nature Conservancy
TP	total phosphorus
TSS	total suspended solids
U.S.	United States
USACE	United States Army Corps of Engineers
USDOI	United States Department of Interior
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
µS	microsiemens
WMA	Wildlife Management Area
YOY	Young-of-the-year

1 INTRODUCTION

1.1 Purpose of the Pre-Application Document (PAD)

The Power Authority of the State of New York (d/b/a "New York Power Authority" and referred to as "NYPA") is licensed by the Federal Energy Regulatory Commission (FERC or Commission) to operate the Blenheim-Gilboa Pumped Storage Power Project (B-G or Project) (FERC No. 2685). The Project is located on Schoharie Creek, a tributary of the Mohawk River, in the towns of Blenheim and Gilboa, NY. The original license was issued on June 6, 1969 and expires on April 30, 2019.

The Power Authority is filing with the Commission a Notice of Intent (NOI) to relicense the Project, which consists of the Upper Reservoir on the top of Brown Mountain formed by an embankment, an underground powerhouse containing four turbine-generators, four penstocks leading to the powerhouse, and the Lower Reservoir impounded behind an 1,800-ft-long dam across Schoharie Creek downstream of the powerhouse. As required by law, the Power Authority will be applying for a new license for the Project on or before April 30, 2017.

The Commission's relicensing regulations (18 CFR § 5.6) require that, as an initial step in officially commencing the licensing process, a licensee must prepare and distribute a Pre-Application Document (PAD). In accordance with the Commission's regulations, the PAD is being filed simultaneously with the NOI and will be distributed to federal and state resource agencies, local governments, Native American Nations, and members of the public that may have an interest in the relicensing of the Project. To assist in disseminating information throughout the relicensing process, the Power Authority has developed a website (www.bg.nypa.gov), which will be used to post schedules, agendas, meeting minutes, study plans, study reports, and other documents created during the relicensing process, including the PAD.

The PAD is a tool for providing relevant engineering, operational, economic, and environmental information pertaining to the Project that is reasonably available at the time the NOI is filed. The PAD also serves to help interested parties scope issues and identify study needs for the Commission's National Environmental Policy Act (NEPA) document. The PAD supplies information to help interested parties understand the Project and identify information that may be needed to support the issuance of a new license. This evaluation will be documented in the license application to be prepared by the Power Authority and filed with the Commission at least two years prior to license expiration, or by April 30, 2017.

In compliance with the Commission's regulations governing the content of the PAD, the Power Authority contacted appropriate state and federal resource agencies and parties who may be interested in the relicensing of the Project. The Power Authority requested that parties provide any relevant studies, data, and information on topics such as geology, water quality, fisheries, recreation, wildlife, wetlands, aesthetics, and cultural resources.

The information contained in this document was assembled based on the requirements set forth in 18 CFR § 5.6 (c) and (d) and is organized as follows:

Section 2 – Proposed process plan and schedule for all pre-application activities, 18 CFR § 5.6(d)(1).

Section 3 – General description of the Project location, facilities, and operations, 18 CFR § 5.6(d)(2).

Section 4 – Description of the existing environment and resource impacts, 18 CFR § 5.6(d)(3).

Section 5 – Identification of preliminary resource issues and potential studies or information gathering needs associated with the issues, 18 CFR § 5.6(d)(4).

Section 6 – Literature and information sources cited in the descriptions and summaries of existing resource data, 18 CFR § 5.6(c)(2).

Appendix A – Summary of contacts and correspondence letters made to gather relevant information for preparing the PAD, 18 CFR § 5.6(d)(5).

Appendix B – Pre-Application Document Content Cross Reference Table.

Appendix C – Current License and Amendments, 18 CFR § 5.6(d)(2)(v)(A).

1.2 Overview of the Integrated Licensing Process

The Power Authority will use the Integrated Licensing Process (ILP) as set forth in the Commission's Final Rule and Tribal Policy Statement issued on July 23, 2003 (Final Rule, Order No. 2002). The ILP was developed to integrate the applicant's pre-filing consultation with the Commission's scoping pursuant to NEPA. The primary activities that are undertaken in the ILP include: the filing of the NOI and PAD; FERC's public scoping of issues; the development of study plans to assess the impacts of

continuing Project operation on power and non-power resources; and the conduct of studies and preparation of a license application. These activities will take place over a multi-year period ending with the filing of the application for new license by April 30, 2017. The Commission will then conduct its environmental analysis and processing of the license application.

The Power Authority's filing of the NOI and PAD initiates the ILP set forth in Part 5 of the Commission's regulations. As set forth in 18 CFR § 5.7, within 30 days of this filing Commission staff will meet with each federally recognized Native American Nation that is "likely to be affected by" the Power Authority's relicensing application, if any such Nation agrees to a meeting.

Next, as required in 18 CFR § 5.8, the Commission will issue a notice of commencement of the licensing proceeding and a Scoping Document 1 (SD1) within 60 days of the filing of this NOI/PAD. SD1 will include a preliminary list of issues to be assessed during the licensing proceeding and will solicit stakeholder comments on the scope of analysis of issues. FERC will then hold a public scoping meeting and site visit within 30 days of issuing SD1. The site visit will allow stakeholders an opportunity to observe the Project layout and the area, understand operations, and participate in a question and answer session about the Project. Subsequent to the scoping meeting and site visit, Commission staff may issue a revised scoping document based on public and agency input.

A detailed Process Plan and Schedule, which depicts all major milestones required in the ILP along with a timetable for those milestones, is set forth in Section 2 of the PAD.

1.3 History of the Blenheim-Gilboa Pumped Storage Power Project

On May 21, 1968, Governor Nelson A. Rockefeller signed a bill authorizing the Power Authority of the State of New York to develop pumped storage facilities. On August 15 of that year, after investigations of various sites across the state were completed, the Power Authority applied to the Federal Power Commission (FPC) for a license to construct the Blenheim-Gilboa Pumped Storage Power Project. On June 6, 1969, the FPC issued a license to the Power Authority, and on July 12, construction of the Project began. Four years later, on July 5, 1973, the Project generated power for the first time, and on December 17, it reached full power production. Named for the two Schoharie County towns it straddles, the Project is about 40 miles southwest of Albany, New York, in the northern Catskill Mountains.

Among the nearby facilities developed or restored by the Power Authority as part of construction of the Project are the Lansing Manor Complex, a historic 19th century farmstead and Mine Kill State Park. Mine Kill State Park is operated by the New York State Office of Parks, Recreation, and Historic Preservation

(OPRHP) and offers a variety of recreational amenities and activities to the public for a fee. The U. S. Department of the Interior (USDOI) honored the Power Authority with its highest outdoor recreation award for the varied conservation, recreational, and cultural facilities developed as part of the Project.

A $135-million four-year program to modernize and extend the life of the Project was completed in May 2010. As part of the four-year program, known as LEM (Life Extension and Modernization), one of the Project's four turbine-generator units was taken out of service each fall for approximately eight months. Most of the units' mechanical and electrical components were replaced, with repairs made to virtually all other parts. With completion of the LEM, the four units have a generating capacity of 290 MW each, providing an overall capacity of 1,160 MW.

2 PROPOSED PROCESS PLAN AND SCHEDULE (18 C.F.R. § 5.6 (d)(1))

2.1 Document Distribution and Mailing Lists

2.1.1 Document Distribution

To assist in disseminating information throughout the relicensing process, the Power Authority has developed a website (www.bg.nypa.gov). The website will be used to post schedules, agendas, meeting minutes, study plans, study reports, and other documents created during the relicensing process. Copies of licensing documents such as the PAD will also be available for public inspection during business hours at the Blenheim-Gilboa Visitors Center adjacent to Lansing Manor.

2.1.2 Mailing List

The Power Authority will maintain a mailing list of all stakeholders in the relicensing process. Stakeholders may sign up for the mailing list through the relicensing website at www.bg.nypa.gov.

2.1.3 Source Materials Referenced in PAD

In accordance with 18 CFR § 5.6(c)(2), sources referenced in the PAD will be available to the public. To the extent allowed by copyright, sources referenced in the PAD are available to the public on the relicensing website (www.bg.nypa.gov).

Alternatively, a PAD recipient may file a request with the Power Authority. The Power Authority will provide requested information within 20 days of receipt of request for information. In responding to a request, the Power Authority will provide any requested reference electronically, if possible. If a PAD recipient would like to request sources referenced in the PAD, please send an email to contact@bgrelicensing.info. The Power Authority may charge for out-of-pocket costs for reproduction of reference materials that were not generated by the Power Authority, *e.g.*, books. Such requests will be handled on a case-by-case basis. Copyrighted sources referenced in the PAD will be available for viewing and reproduction through the Blenheim-Gilboa Visitors Center.

2.2 Proposed Schedule

A proposed Process Plan and Schedule with a timetable for the balance of the licensing process is shown in Table 2.2-1. The Process Plan and Schedule may reflect deadlines that fall on weekend days (Saturday or Sunday) or holidays. Deadlines falling on a weekend, holiday, or day when the Commission is closed due to adverse conditions are deemed to fall on the close of business of the next Commission business

day in accordance with FERC regulations. The Process Plan and Schedule were developed in accordance with, and incorporates the timeframes set forth in, 18 CRF Part 5.

Table 2.2-1: Process Plan and Schedule

Activity	Responsibility	Required Time Frame	Citation	Deadline[2]
File Notice of Intent (NOI) and Pre-Application Document (PAD)	NYPA	At least 5 (but no more than 5 1/2) years before existing license expires	18 CFR § 5.5(d)	April 10, 2014
Hold Initial Tribal Consultation Meeting	FERC	Within 30 days of filing of NOI & PAD	18 CFR § 5.7	May 12, 2014
Notice NOI/PAD and Issue Scoping Document 1 (SD1)	FERC	Within 60 days of filing of NOI & PAD	18 CFR § 5.8(a)	June 9, 2014
Hold Scoping Meeting at the Best Western Hotel in Cobleskill, NY and Site Visit	FERC	Within 30 days of issuance of SD1	18 CFR § 5.8(b)(3)	July 9, 2014
Comment on PAD and SD1; Submit Study Requests	Stakeholders	Within 60 days of issuance of SD1	18 CFR § 5.9(a)	August 8, 2014
File Proposed Study Plan (PSP)	NYPA	Within 45 days of deadline for filing comments on PAD and SD1	18 CFR § 5.11	September 22, 2014
Hold Study Plan Meeting	NYPA	Within 30 days of deadline for filing PSP	18 CFR § 5.11(e)	October 22, 2014
Comment on Proposed Study Plan	Stakeholders	Within 90 days of filing PSP	18 CFR § 5.12	Dec 22, 2014
File Revised Study Plan (RSP)	NYPA	Within 30 days of deadline for filing comments on PSP	18 CFR § 5.13(a)	January 21, 2015
Comment on Revised Study Plan	Stakeholders	Within 15 days of filing of RSP	18 CFR § 5.13(b)	February 5, 2015
FERC Issues Study Plan Determination	FERC	Within 30 days of filing of RSP	18 CFR § 5.13(c)	February 20, 2015
Initiate Formal Study Dispute Resolution Process (if necessary)	Agencies with mandatory conditioning authority	Within 20 days of issuance of Study Plan Determination	18 CFR § 5.14(a)	March 12, 2015

[2] Note that although the "Time Frames" are dictated by 18 CFR Part 5, the specific dates or deadlines are dependent on the timing of prior events and thus may differ from the dates presented in this Table. For updated dates, see www.bg.nypa.gov.

Activity	Responsibility	Required Time Frame	Citation	Deadline[2]
File Response to Study Dispute(s) (if necessary)	NYPA	Within 25 days of Notice of Study Dispute	18 CFR § 5.14(i)	April 6, 2015
FERC Dispute Panel Issues Finding (if necessary)	Dispute Panel	Within 50 days of Notice of Study Dispute	18 CFR § 5.14(k)	May 1, 2015
FERC Issues Determination on Study Dispute (if necessary)	FERC	Within 70 days of Notice of Study Dispute	18 CFR § 5.14(l)	May 21, 2015
Conduct Field Studies	NYPA	Pursuant to approved SP	18 CFR § 5.15	2015
File Initial Study Report	NYPA	Pursuant to approved SP or no later than 1 year after approval of SP	18 CFR § 5.15(c)(1)	February 22, 2016
Hold Initial Study Report Meeting	NYPA	Within 15 days of filing of initial study report	18 CFR § 5.15(c)(2)	March 8, 2016
File Initial Study Report Meeting Summary	NYPA	Within 15 days of study results meeting	18 CFR § 5.15(c)(3)	March 23, 2016
File Meeting Summary Disagreements (if necessary)	Stakeholders	Within 30 days of filing of study results meeting summary	10 CFR § 5.15(c)(4)	April 22, 2016
File Responses to Disagreements (if necessary)	NYPA	Within 30 days of filing of meeting summary disagreements	18 CFR § 5.15(c)(5)	May 23, 2016
Resolve Disagreements (if necessary)	FERC	Within 30 days of filing of responses to disagreements	18 CFR § 5.15(c)(6)	June 22, 2016
File Updated Study Report (if applicable)	NYPA	Pursuant to approved SP or no later than 2 years after approval of SP	18 CFR § 5.15(f)	Feb. 21, 2017
File Preliminary Licensing Proposal (PLP) or Draft License Application	NYPA	No later than 150 days before final application is filed	18 CFR § 5.16(a)	November 29, 2016
Comment on PLP, Additional Information Requests (if necessary)	Stakeholders	Within 90 days of filing of PLP or draft license application	18 CFR § 5.16(e)	February 27, 2017
File License Application	NYPA	No later than 24 months before existing license expires	18 CFR § 5.17(a)	April 28, 2017

3 PROJECT LOCATION, FACILITIES, AND OPERATION (18 C.F.R. §5.6 (d)(2))

3.1 Project Location and Lands

The Project is located on Schoharie Creek in the northern Catskill Mountains, approximately 40 miles southwest of Albany in the towns of Blenheim and Gilboa, New York. The drainage area for Schoharie Creek at the Project is approximately 356 square miles. Under normal conditions, there is little or no spill from the NYCDEP's Schoharie Reservoir located approximately 5 miles upstream of the Lower Dam so the flow in this stream segment during these times is only from the 40 mi^2 of intervening drainage between the NYCDEP's Gilboa Dam and the Lower Reservoir. Water from Schoharie Reservoir is diverted to the New York City drinking water supply system.

The FERC Project boundary encompasses 2,893 acres of land including the two reservoirs, which have a total surface area of approximately 812 acres. The downstream Project boundary extends 1.2 miles north of the Lower Dam, along Schoharie Creek to State Route 30 (Figure 3.1-1).

The exact name and business address, and telephone for each person authorized to act as agent for the applicant is as follows:

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3.2 Project Facilities

The Project consists of an Upper Reservoir and Dike, a Lower Reservoir and Dam, conduits connecting the reservoirs and an underground powerhouse, a spillway and related facilities (Figure 3.2-1). The Upper Reservoir is situated on the top of Brown Mountain and was created by the construction of a dike with a crest elevation of 2,008 ft mean sea level (msl) (NGVD29). The Lower Reservoir was formed by damming Schoharie Creek and has a crest elevation of 911 ft.

Upper Reservoir

At full pool elevation of 2,003 ft, the Upper Reservoir has a water surface area of 399 acres and a total drainage area of approximately 0.7 square miles. The total storage capacity of 18,791 acre-ft is comprised of 15,085 acre-ft of usable storage between operating levels of 1,955 ft and 2,003 ft and dead storage of 3,706 acre-ft below elevation 1,955 ft (GSE, 2010a and 2010b). The average depth at the full pool elevation is 48 ft. During the Project's construction, the area of the Upper Reservoir was cleared of vegetation and excavated to provide material used for building the Upper Dike.

Upper Dike

Three sides of the Upper Reservoir are formed by a U-shaped, 2.25-mile-long earth and rock fill embankment called the Upper Dike (National Inventory of Dams (NID) NY00691). The fourth side of the Upper Reservoir is formed by the existing slope of Brown Mountain. The Upper Dike has a maximum height of 110 ft above existing ground and 162 ft above bedrock. The crest is 30 ft wide at elevation 2,008 ft (NYPA, 2012a). The dike is a homogenous, glacial till, and rolled fill structure with toe blanket or toe blanket and chimney drains in it with the exception of the shallowest sections. To minimize seepage, the Upper Dike was constructed with a seepage cut-off system, which extends into bedrock. The upstream slope of the Upper Dike is 3H:1V and the downstream slope is 2.5H:1V. The upstream slope is armored with large stone (riprap) and the downstream slope is vegetated. The lowest 6 ft of the downstream slope is cut and maintained by the Power Authority in order to monitor seepage (NYPA, 2012a).

Emergency Spillway

The Upper Reservoir has an emergency spillway located at the northeastern corner of the Upper Dike to pass flows in the unlikely event of over-pumping. In such an event, flows would be discharged over the emergency spillway and down a slope of natural terrain before entering Schoharie Creek downstream of the Lower Dam. The 655 ft-long spillway has a 25 ft-wide asphaltic concrete crest and it is armored with

riprap on the upstream and downstream slopes. The emergency spillway's crest elevation is 2,005 ft, which is 3 ft lower than the rest of the Upper Reservoir embankment (NYPA, 2012a).

Water Conveyance Structures

The Upper Reservoir is connected to the powerhouse penstocks by a 28-ft-diameter, 1,042-ft-long vertical shaft inside Brown Mountain, where it is joined at a right angle to a horizontal 906-ft-long power tunnel leading to a 460-ft-long manifold. At the head of the vertical shaft is a concrete morning glory intake structure located in the northwestern corner of the reservoir. The intake structure, which is always submerged, has no gates or provisions for stoplogs. The bell-mouth intake is 50 ft in diameter at its top surface and feeds into a 45-ft-high conic section tapering from 38 ft at the end of the bellmouth to 28 ft at the vertical shaft. The anti-vortex intake cover is a hexagonal shaped flat slab 125 ft across points and is supported 17 ft above the surface of the intake by six vertical concrete piers spaced radially about the intake. Fixed steel trashracks are attached to the outside of the piers to provide for self-cleaning of debris. The trash racks have a clear spacing of 5.25 inches (PB Power, 2007). Approach velocities at the upper intake are approximately 3.28 fps during generation mode when all 4 turbines are operating at the reported peak discharge (12,800 cfs).

The manifold divides the flow into four 12-ft-diameter penstocks. The maximum penstock length is 1,960 feet, 1,760 feet which is steel-lined. Each penstock delivers water to a pump-generating unit at the powerhouse.

Powerhouse

The powerhouse is a reinforced concrete-gravity structure founded on bedrock situated at the toe of Brown Mountain. The building is 526 ft long, 172 ft wide, and 132 ft high and contains four Hitachi, reversible, modified, vertical Francis-type pump turbines. The turbines have seven 20-ft-diameter blades that operate at 257 revolutions per minute. The units have a reported maximum discharge of 12,800 cfs during generation and 10,200 cfs during pumping (FERC, 2006). More than three-quarters of the powerhouse is underground.

All four of the 32-year-old original pump turbine generating units and spherical valves were refurbished between 2006 and 2010 as part of the $135-million LEM license amendment. The spherical valve controls the flow of water into the pump turbine generator. Other work involved with the LEM amendment included replacement of main power transformers, circuit breakers, exciters and related equipment.

Water flows through the turbines and enters the Lower Reservoir through draft tubes which have invert elevations of 784 ft and provisions for stoplogs (NYPA, 2012a). The draft tubes are equipped with trash racks to protect the draft tube and Hitachi units when they are in pumping mode. Each draft tube has an upper and lower trash rack. The upper trash rack has a clear spacing of 5.25 inches while the bottom one has a clear spacing of 5 $\frac{5}{8}$ inches (NYPA, 2011). Approach velocities at the draft tube are approximately 1.38 fps when the units are operated in pumping mode.

Lower Reservoir

The Lower Dam impounds the waters of Schoharie Creek creating the Lower Reservoir, which is about 3 miles long and has a surface area of 413 acres. The Lower Reservoir operates at maximum and minimum levels of 900 ft and 860 ft, respectively. The total storage is 16,167 acre-ft of storage, which is composed of 12,422 acre-ft of usable storage between the two operating levels and 3,745 acre-ft of dead storage below elevation 860 ft (GSE, 2010a and 2010b). The average depth of the Lower Reservoir is 40 ft.

Lower Dam

The Lower Reservoir is formed by a 1,800-ft-long, central-core rockfill dam. The foundation of the Lower Dam is sealed by a 1200-ft-long, slurry trench cutoff to bedrock and a 400-ft-long, partial slurry trench seepage cutoff into an impervious layer. In December 2011, construction of an increased crest (to elevation 911.1 ft) was completed in order to provide 1+ ft of freeboard during the predicted Probable Maximum Flood (PMF) of 174,099 cfs. The embankment has a maximum height of 100 ft and an average height of 80 ft; the top width is 30 ft. The embankment has a 2H:1V slope on the upstream and downstream faces except for the portion above elevation 892 ft, which is a 1.5H:1V slope. The embankment is armored with stone on both the upstream and downstream slopes (NYPA, 2012a).

Lower Reservoir Spillway

The 425-ft–long, 134 ft-wide concrete-lined, side-chute spillway has a design crest elevation of 855 ft and is electrically controlled by three, 38-ft-wide, 45.5-ft-tall Taintor gates. Power to operate the three Taintor gates is supplied by National Grid. If electric power from National Grid is interrupted, other sources of power are a diesel-powered emergency generator, and later, in 2014, power directly from the Project once installation of a buried power line from the powerhouse to the spillway is completed.

Stilling Basin

Outflows from the spillway are discharged to a 238-ft-long, 68.5-ft-deep stilling basin at the bottom of the spillway. The stilling basin reduces turbulence and velocity prior to flows returning to Schoharie Creek. The stilling basin is designed to dissipate the energy from the PMF flow of 174,099 cfs (NYPA, 2012a).

Low Level Outlet

In addition to the three Taintor gates, the Lower Reservoir has a low-level outlet with an invert elevation of 813.0 ft. The outlet is located in the east spillway abutment at the Lower Dam and the intake. Protected with a steel trashrack, it draws water from the northwestern portion of the Lower Dam near the spillway (NYPA, 2012a). The outlet has four low-level discharge valves of 4, 6, 8, and 10 inches for releasing 5 to 25 cfs. There are also two hydraulically operated, 36-in diameter, Howell-Bunger valves that can discharge a combined flow of 25 to 700 cfs. The elevation of the centerline of the Howell-Bunger valves is 816.05 ft. Discharge from the low-level discharge valves and Howell-Bunger valves is free-flowing into the air.

Access Roads

Two roads provide access to the Project. The north access road runs south from State Route 30 in North Blenheim on the west side of Schoharie Creek where it crosses the Lower Dam and then transverses on the east side of the Lower Reservoir to the powerhouse. The south access road runs along the east side of the Lower Reservoir from Valenti Road north to the powerhouse.

Switchyard/Transmission Lines

A switchyard on the eastern bank of Schoharie Creek south of the powerhouse connects the generating units to the New York Independent System Operator (NYISO)-controlled transmission network through three 345 kV transmission lines. (NYPA, 2010) (Figure 3.2-2).

Project Recreation Facilities

Recreation facilities associated with the Project are described in Section 4.8 of the PAD.

3.3 Current Project Operations

The Project provides low-cost energy and stores water for power production during peak energy demand periods. The Project's Upper Reservoir serves as a giant energy storage device. Project operations are

based on the energy needs of the region and state. In general, Project operations are determined by the demand for electricity. The NYISO, governed by FERC, coordinates between energy producer bids and utility demands to secure reliable, low-cost energy throughout New York (NYPA, 2003).

When needed, the Project can provide black start capability to restart other Power Authority facilities, and eventually, the statewide energy grid. Within several minutes the Project can generate power when other facilities within the NYISO are shut down. The Project also provides the ancillary services of regulation reserve and voltage support to the power system (NYPA, 2003).

Pumped Storage Operations

During generation, the Project passes water through the pump-turbine units producing electricity. Unlike conventional hydroelectric facilities, the water that flows through the powerhouse is supplied from an upper reservoir (Figure 3.3-1). During periods of low electrical demand and lower electricity prices, water is pumped into the Upper Reservoir from the Lower Reservoir (Figure 3.3-2). The Upper Reservoir stores potential energy and allows the Project to start generating up to 1,160 MW of electricity within minutes. The pump-turbines may be turned on or off several times throughout the day; however, the four units in the powerhouse will generate during the day generally when consumer demand is high and other power resources are more expensive. Pumping usually occurs at night and on weekends when there is excess electricity in the system available for use.

Flow Management

The current FERC license dictates that releases from the Lower Reservoir to Schoharie Creek equal inflows from Schoharie Creek upstream of the Project. Between the low level outlet and Taintor gates, the Project has the ability to release water at the Lower Dam into Schoharie Creek for the whole range of inflows to the Project. Inflow to the Project includes discharges from the New York City Department of Environmental Protection's (NYCDEP's) Gilboa Dam located 5 miles upstream of the Lower Reservoir, and runoff from the small intervening watershed of about 40 square miles between Gilboa Dam and the Project. The Project is considered a closed cycle because water is recycled between the reservoirs during Project operation. No additional water is required on a continual basis, except for small amounts needed to replenish whatever water is depleted from the system by means of evaporation, minor seepage losses, or operating releases. Low-flow periods occur when NYCDEP's Schoharie Reservoir is below spillway crest and there is no storm runoff. During this time, Project outflows can be as low as 5 cfs when evaporation and seepage losses are accounted for (FPC, 1975). The Project does not have flood storage capabilities.

Four USGS gages monitor inflow and outflow to and from the Lower Reservoir (See Figure 3.3-3 for gage locations). Three gages monitor inflow to the Lower Reservoir; they are Schoharie Creek gage downstream of Gilboa Dam (01350101) from the south; Platter Kill gage (01350120) from the east and Mine Kill gage (01350140) from the west. Flows less than 10 cfs are not measured at the gage below Gilboa Dam (01350101). A fourth gage on Schoharie Creek at North Blenheim (01350180), below the Lower Dam, measures outflow from the Project and is used to determine minimum flow releases from the Lower Reservoir.

For flows less than 25 cfs, four low-level discharge valves are used to release downstream flows. During moderate flow periods, when releases greater than 25 cfs need to be made, two Howell-Bunger valves are used to release flows up to 700 cfs. For flows over 700 cfs, the three spillway Taintor gates are used to maintain the maximum normal elevation of 900 ft (NYPA, 2012a).

3.4 Current License Requirements

The FERC license articles govern how the Project was designed and is operated. The articles refer to issues such as power production, public safety, streamflows, recreation, among others. A list of FERC articles that govern the current operation of the Project can be found in Appendix C.

3.5 Summary of Project Generation and Outflow Records

Tables 3.5-1 and 3.5-2 provide the annual gross generated and pumped MWh at the Project for the past eleven years, respectively. The average monthly gross generation and pumping of the plant for the eleven-year period of 2002-2012 are also provided in Tables 3.5-1 and 3.5-2. For the years 2006 to 2010, one of the pump turbine's generating units was out of service as part of a LEM license amendment.

The dependable capacity is defined as the load carrying ability of a powerplant under adverse load and flow conditions. The dependable capacity is 1,160 MW, the contracted capacity for the Project with NYISO, which assumes a full upper reservoir.

See Figures 4.3.1.2-2 through 4.3.1.2-6 for annual and monthly outflow duration curves. In contrast to a conventional hydroelectric project, the flow durations curves were not used to determine the Project's dependable capacity because as a pumped storage project, Project operation is not dependent on streamflow.

3.6 Current Net Investment

As of the end of the year 2012, the current net investment in the Project is $219 million.

3.7 Compliance History

The Power Authority operates the Project consistent with the terms and conditions of the license and has had no instances of non-compliance with the license. Over the term of the license, the Project has been subject to FERC's standard operational and environmental inspections. The Power Authority has promptly implemented and completed all necessary actions to address any comments and recommendations arising from FERC's inspections.

3.8 Proposed New Facilities and/or Changes in Project Operation

The Power Authority is not proposing to construct new facilities or to alter Project operations as part of this relicensing.

Table 3.5-1: Annual and Monthly Gross Generation (MWh) for the Project (2002-2012)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2002	77,169	71,449	72,942	95,154	107,091	95,561	121,780	118,914	94,510	82,575	52,146	70,822	**1,060,113**
2003	97,257	78,185	72,607	71,960	103,537	111,852	70,813	50,510	82,043	102,655	91,604	91,382	**1,024,405**
2004	82,903	34,531	58,573	64,433	82,911	102,491	63,769	74,174	81,554	63,871	64,438	59,039	**832,687**
2005	73,727	29,299	27,128	41,525	45,810	81,740	78,314	97,291	88,333	75,225	94,130	83,151	**815,673**
2006†	75,221	74,566	44,980	51,128	65,974	88,010	102,102	80,666	54,102	0	35,107	75,657	**747,513**
2007†	85,070	41,537	59,897	60,712	91,019	87,752	76,281	104,899	48,186	0	53,403	71,571	**780,327**
2008†	77,072	55,894	42,316	53,757	70,359	56,370	55,459	50,075	35,469	0	34,330	47,789	**578,890**
2009†	40,324	19,892	17,836	19,172	14,396	16,948	18,119	22,823	16,443	0	32,096	23,568	**241,617**
2010†	20,008	14,687	14,105	15,554	23,332	19,340	60,865	48,338	34,741	7,879	17,493	33,822	**310,164**
2011	35,886	17,440	14,919	14,207	11,972	16,599	40,243	18,669	6,320	5,834	3,041	4,419	**189,549**
2012	18,272	2,612	8,762	9,556	18,979	23,993	45,201	30,189	20,999	12,363	30,446	11,822	**233,194**
Average Monthly Sum	**62,083**	**40,008**	**39,460**	**45,196**	**57,762**	**63,696**	**66,631**	**63,323**	**51,155**	**31,855**	**46,203**	**52,095**	**619,467**

†For the years 2006 to 2010, one of the pump turbines generating units was out of service as part of a LEM license amendment.

Table 3.5-2: Annual and Monthly Gross Pumping (MWh) for the Project (2002-2012)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2002	116,832	104,564	122,029	136,379	155,583	155,296	175,813	182,239	140,678	121,170	81,704	112,435	**1,604,722**
2003	141,825	120,424	118,339	101,985	157,021	175,185	102,985	81,586	123,421	150,894	143,855	136,313	**1,553,833**
2004	125,881	55,919	87,971	88,478	137,658	148,677	98,151	109,417	119,902	101,712	98,127	89,109	**1,261,002**
2005	116,294	44,511	41,223	61,338	67,980	118,937	121,789	141,700	128,772	120,888	143,205	125,975	**1,232,612**
2006†	114,565	113,455	65,001	86,131	90,039	136,880	153,182	124,001	62,735	0	64,333	121,493	**1,131,815**
2007†	132,603	59,897	89,241	98,775	134,326	120,050	115,270	143,752	61,272	1,415	88,935	106,793	**1,152,329**
2008†	108,777	81,815	68,658	78,581	102,445	80,050	79,984	70,510	39,615	97	67,212	66,233	**843,977**
2009†	59,426	29,239	29,990	22,718	25,780	24,607	21,264	30,208	6,788	11,224	46,764	31,803	**339,811**
2010†	30,427	26,140	17,476	20,252	39,631	22,076	84,833	64,696	51,682	15,628	19,007	53,158	**445,006**
2011	52,000	23,511	20,876	18,115	20,333	28,459	55,878	26,973	2,932	14,622	6,091	8,148	**277,938**
2012	24,877	4,896	10,463	17,330	22,450	38,651	63,092	39,719	27,512	25,674	32,060	18,894	**325,618**
Average Monthly Sum	**93,046**	**60,397**	**61,024**	**66,371**	**86,659**	**95,352**	**97,476**	**92,255**	**69,574**	**51,211**	**71,936**	**79,123**	**924,424**

†For the years 2006 to 2010, one of the pump turbines generating units was out of service as part of a LEM license amendment.

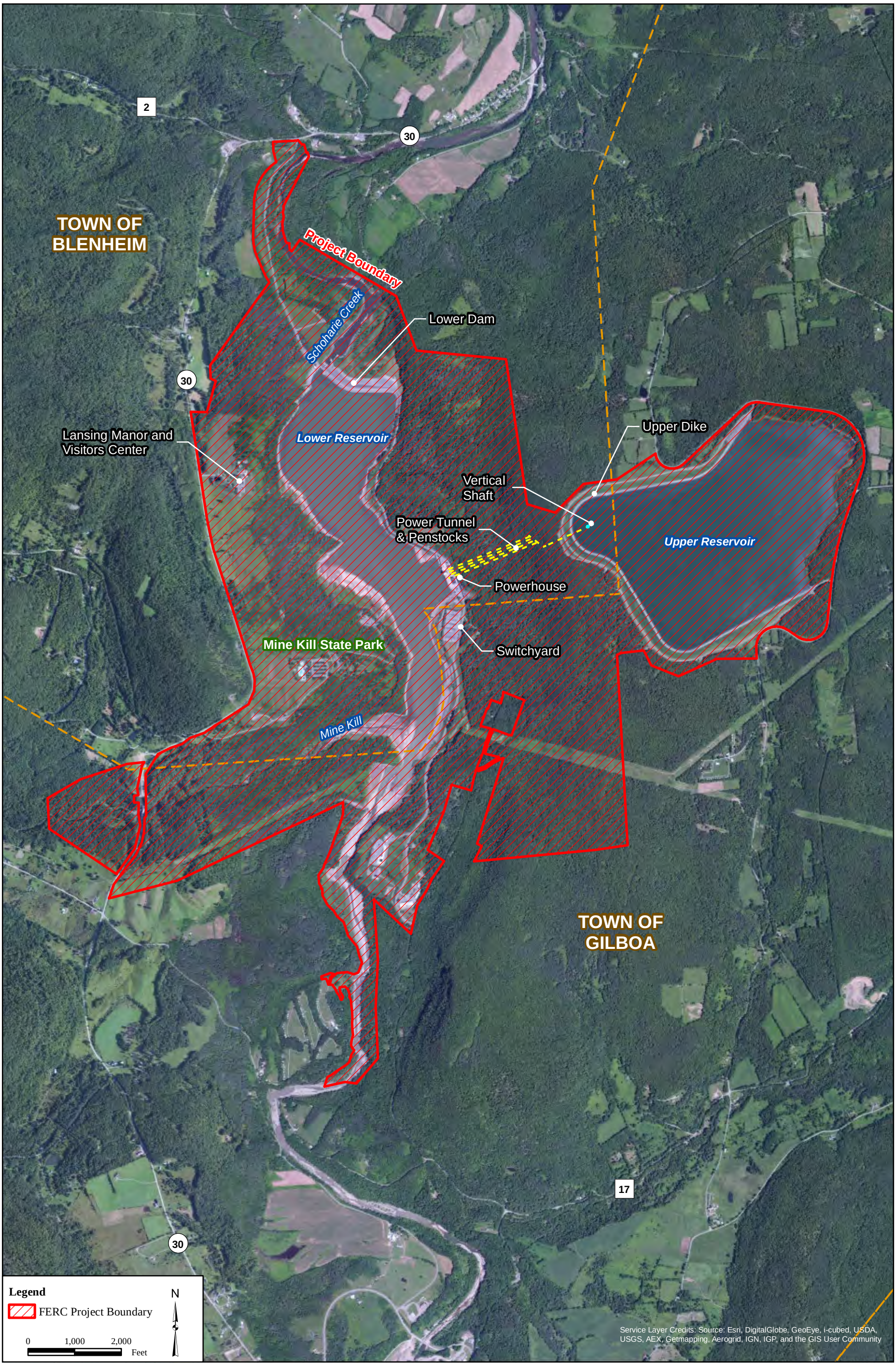

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Figure 3.1-1: Project Boundary

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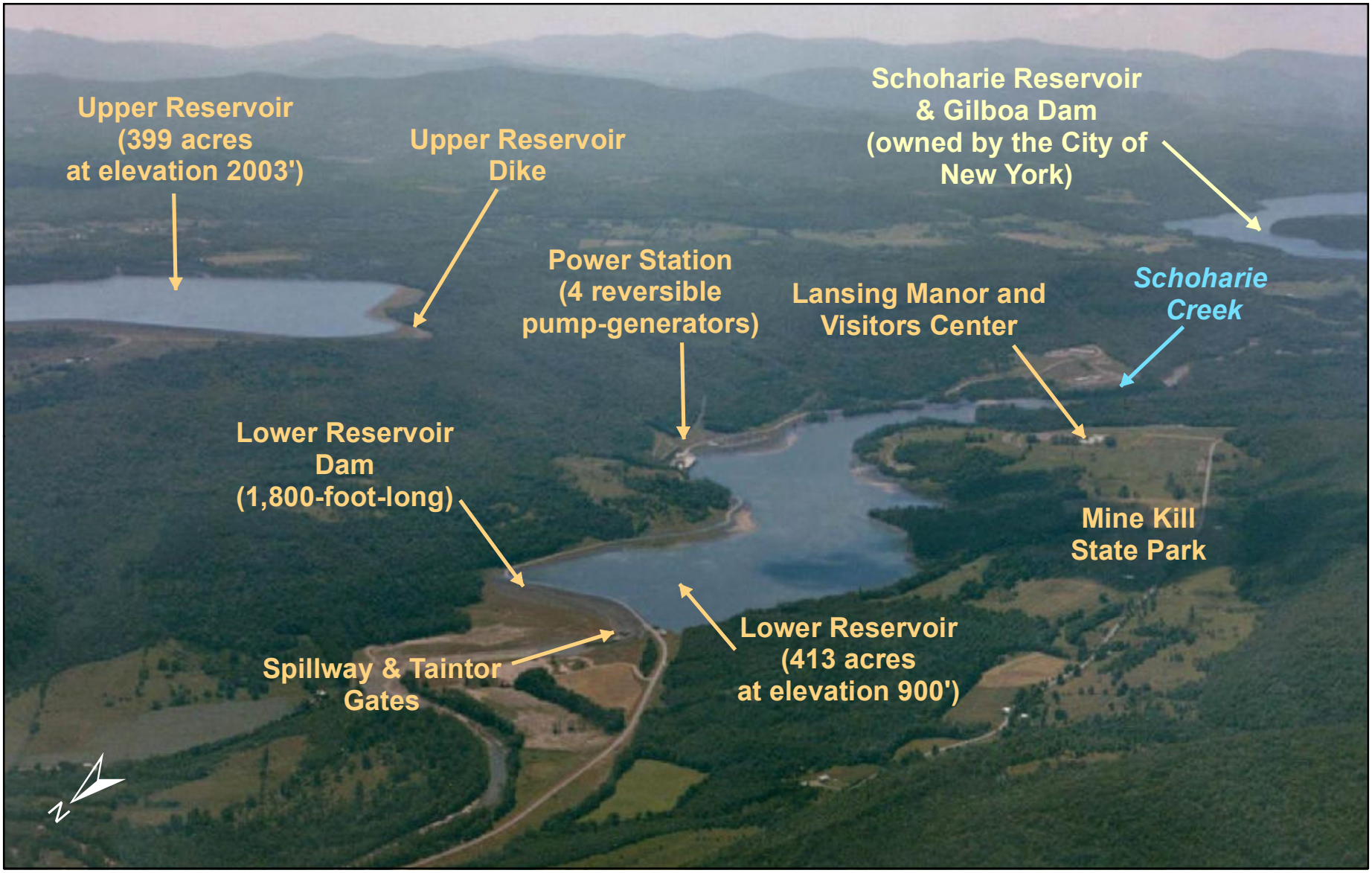

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Figure 3.2-1: Project Features

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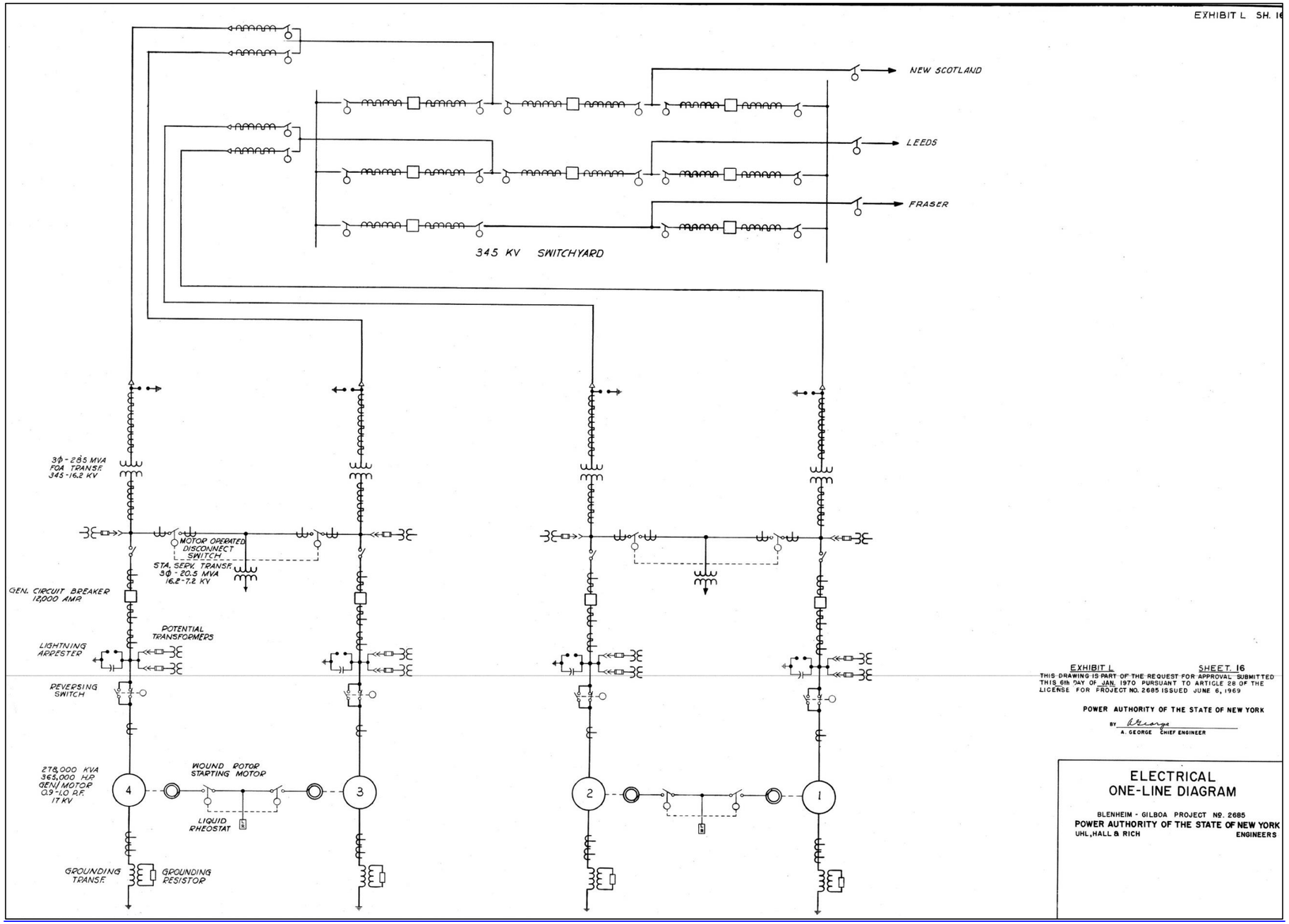
Figure 3.2-2: Electrical Line Diagram



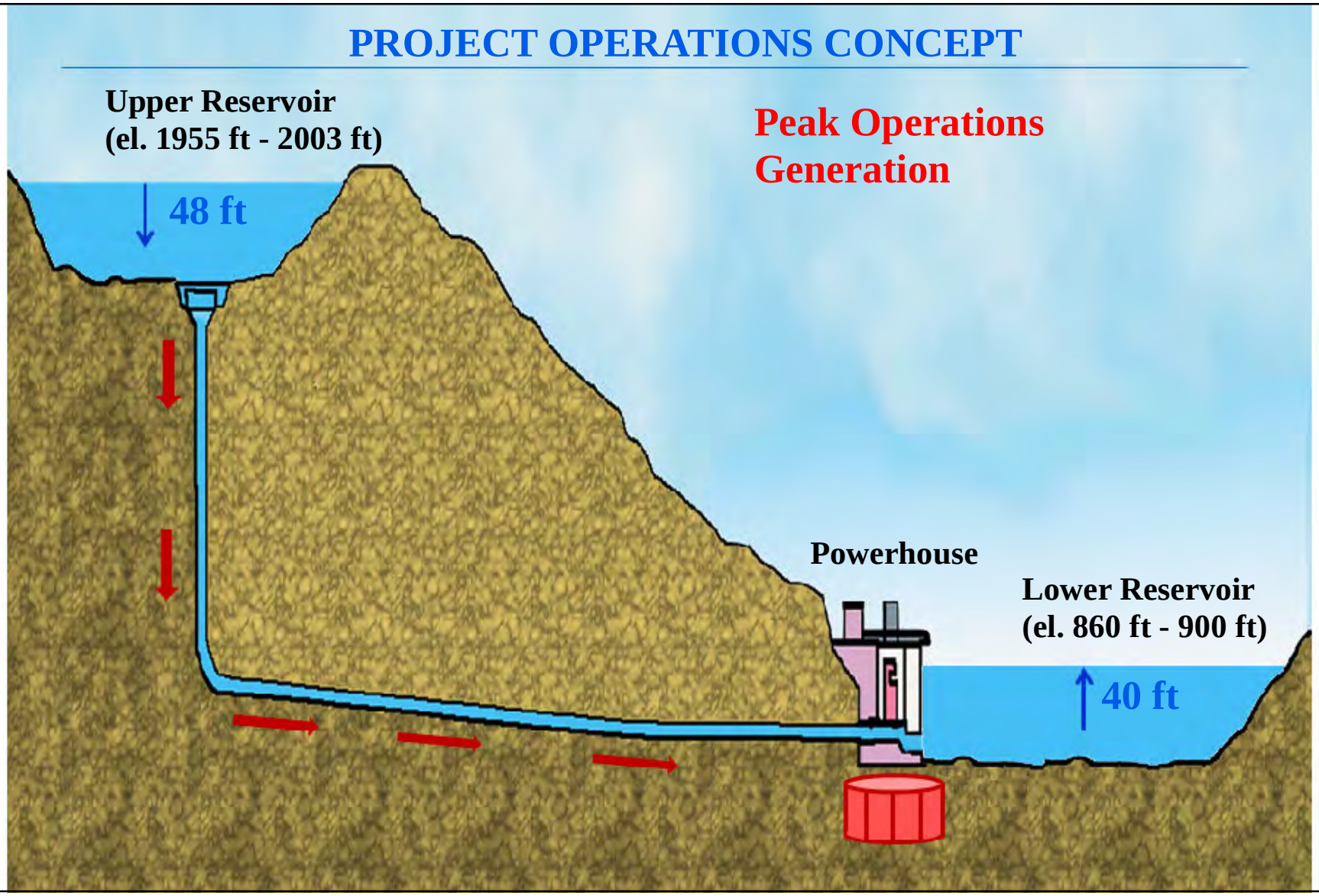


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Figure 3.3-1: Project Operations - Generation

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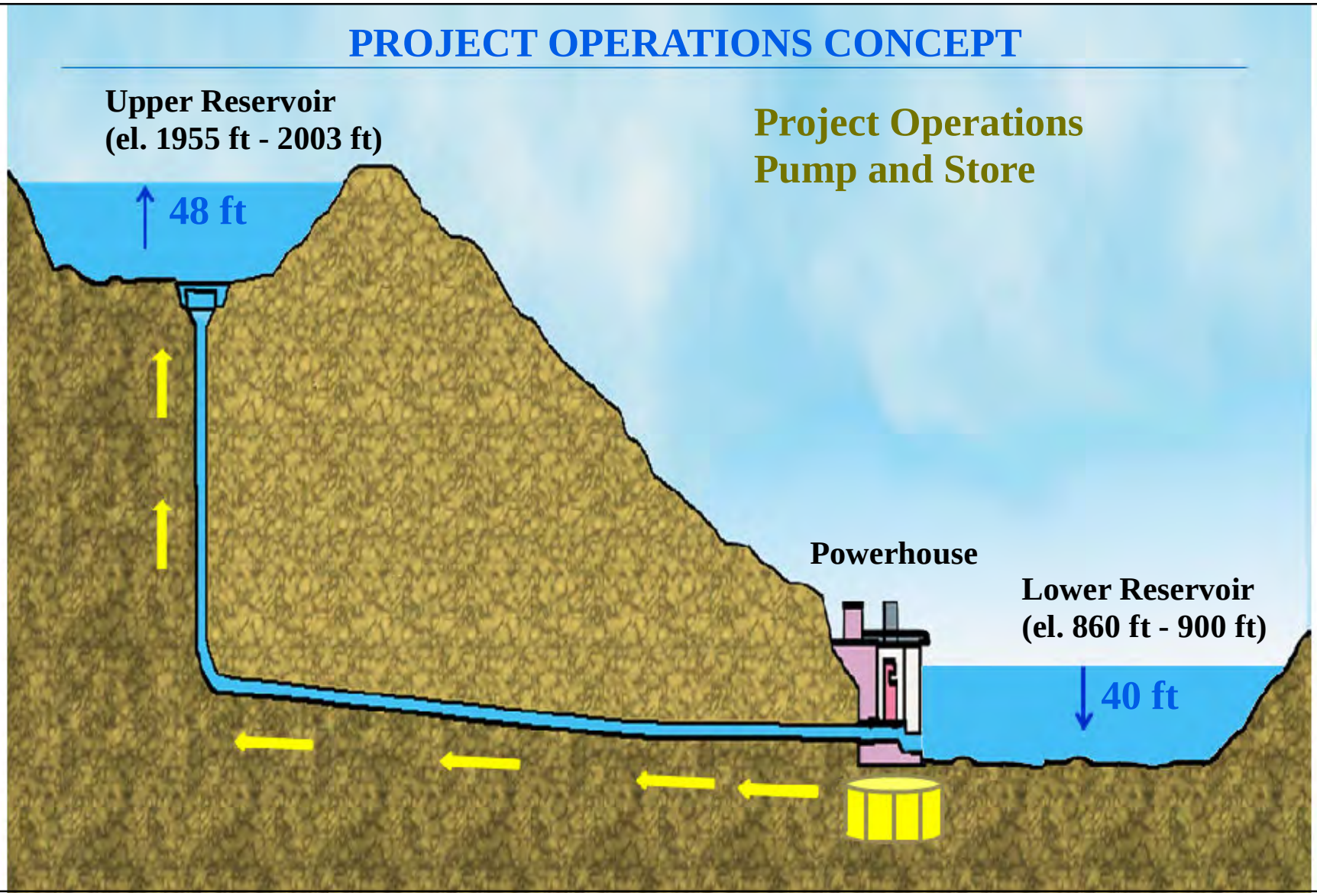

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Figure 3.3-2: Project Operations - Pump & Store

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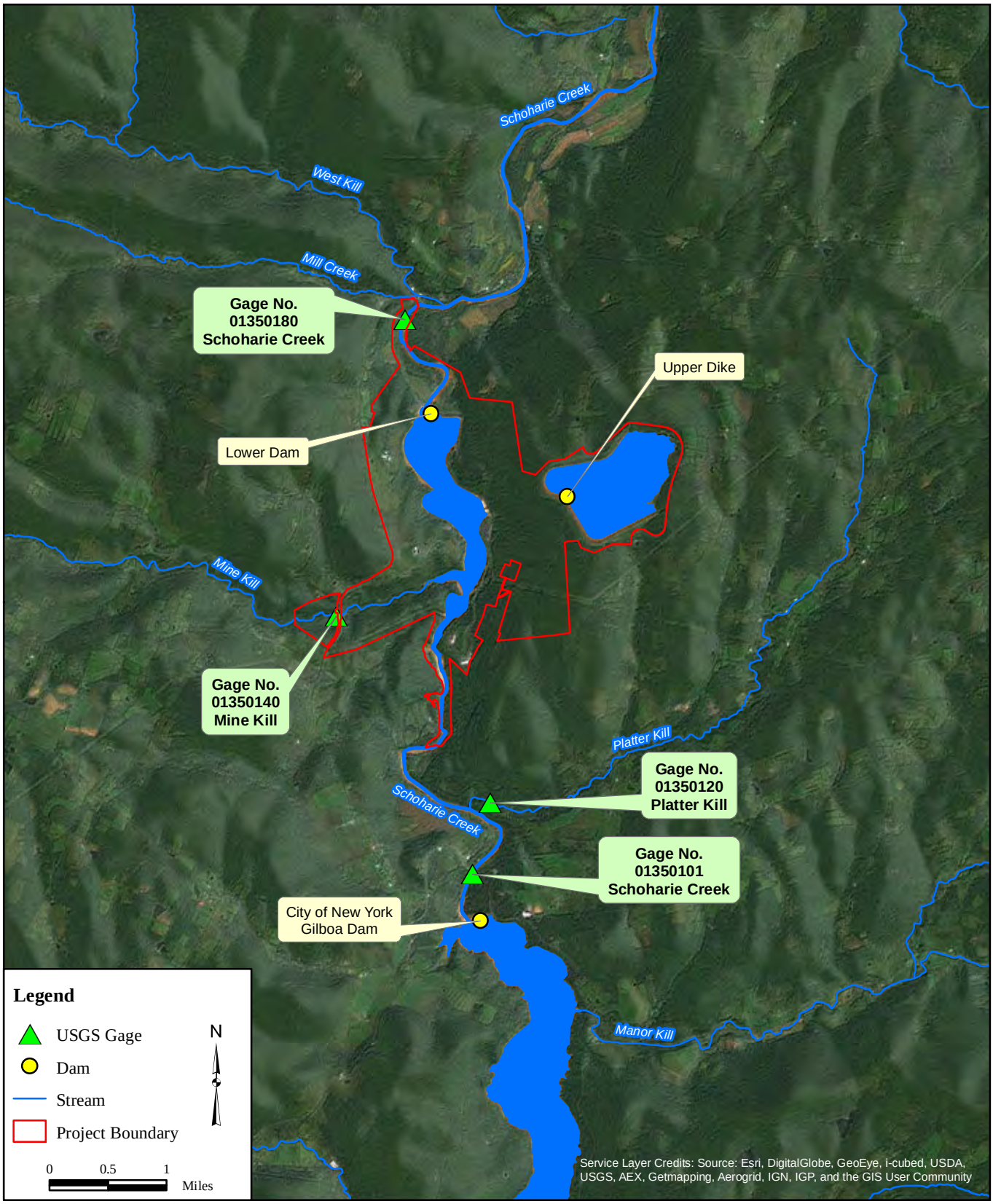

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Figure 3.3-3: USGS Stream Gages in the Vicinity of the Project

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4 DESCRIPTION OF EXISTING ENVIRONMENT AND RESOURCE IMPACTS (18 C.F.R. § 5.6 (d)(3))

4.1 General Description of the River Basin (18 C.F.R. § 5.6 (d)(3)(xiii))

The B-G Project is located on Schoharie Creek, which originates in the northern Catskill Mountains and flows generally north for about 83 miles to join the Mohawk River. The Mohawk River, which is approximately 140 miles long and drains approximately 3,460 mi^2 of land area, is a tributary to the Hudson River. The total drainage area for Schoharie Creek is approximately 923 mi^2.

The Project's Lower Dam is located approximately 53 miles upstream of the confluence of Schoharie Creek with the Mohawk River. The man-made Upper Reservoir is situated on the top of Brown Mountain, to the east of Schoharie Creek and the Lower Reservoir. The watershed area above the Lower Dam is 356 mi^2.

Schoharie Creek originates at approximately 4,100 ft elevation, and its headwaters descend steeply down the slopes of the Catskill Mountains before reaching the gentle rolling lowlands of the Schoharie Valley. Schoharie Creek drops approximately 3,200 ft over the first 25 miles of its descent from its headwaters; most of this descent occurs in the Creek's first 10 miles. Schoharie Creek, about 30 miles downstream from the headwaters, in the area of the Project's Lower Reservoir is generally characterized as a wide stream with steep banks on either side (Town of Blenheim, 2012). Below the Lower Reservoir, the elevation of Schoharie Creek drops approximately 10 ft/mile over the approximately 50-mile span to the Creek's confluence with the Mohawk River.

Several significant tributaries drain into Schoharie Creek. These are described in Section 4.1.4, below. Figure 4.1-1 presents a map of the Schoharie Creek watershed.

4.1.1 Major Land Uses

The upper watershed of Schoharie Creek (upstream of the Gilboa Dam and Schoharie Reservoir) is primarily undeveloped and sparsely populated. This is exemplified within the Schoharie Creek Watershed Management Plan, which reports that based on 2001 data, approximately 86% of the Schoharie Creek upper watershed is covered by coniferous, deciduous, or mixed forest (Greene County, 2007). Land cover statistics of the entire Schoharie Creek watershed are presented in Table 4.1.1-1. Data obtained from the National Land Cover Database (2006) is shown in Figure 4.1.1-1.

A large amount of land within the Project boundary is occupied by the Project reservoirs and Project facilities. Predominant uses of remaining land within the Project boundary, as well as on immediately

adjacent lands, include rural residential development, agriculture, forestry, recreational, and vacant lands. Residential areas (as of 2003) comprise approximately 37% of the Town of Gilboa's total land area; most of this area is comprised of single-family homes, including farms. Vacant lands in the Town of Gilboa constitute approximately 28% of the Town's land area, while agriculture and forestry collectively comprise approximately 26%. Public and recreational lands account for approximately 3% and 1.5% of Gilboa's land area, respectively. Miscellaneous uses, including land owned by the New York Power Authority, cemeteries, and religious use properties, comprise approximately 4%. Finally, industrial and commercial uses represent only approximately 0.3% of the town's area (SCPDD, 2004). As set forth in Section 4.12, there are no known Tribal uses of Project lands.

Table 4.1.1-1: 2006 Land Cover of Schoharie Creek Watershed

Land Use Category	Acres	Percent Cover (%)
Open Water	4,896	0.82
Developed, Open Space	23,118	3.89
Developed, Low Intensity	4,471	0.75
Developed, Medium Intensity	1,071	0.18
Developed, High Intensity	189	0.03
Barren Land (Rock/Sand/Clay)	715	0.12
Deciduous Forest	247,586	41.68
Evergreen Forest	63,239	10.65
Mixed Forest	92,162	15.52
Shrub/Scrub	1,398	0.24
Grassland/Herbaceous	5,031	0.85
Pasture/Hay	89,873	15.13
Cultivated Crops	29,371	4.94
Woody Wetlands	29,388	4.95
Emergent Herbaceous Wetlands	1,478	0.25
Total	593,986	100

Source: Fry et al., 2011

4.1.2 Major Water Uses

Major water uses within the Project boundary are predominantly associated with power production and recreation. Municipal water use of Schoharie Creek appears to be limited; the Town of Gilboa does not have a public water supply or public sewers (SCPDD, 2004). Residents use on-site septic systems for the removal of wastes and they rely on private wells for their water supply.

The NYCDEP's Gilboa Dam and associated Schoharie Reservoir are located approximately 5 miles upstream (and south) of the Project's Lower Dam. The NYCDEP's Schoharie Reservoir is a headwater reservoir derived from precipitation and runoff. Water is diverted from the Schoharie Reservoir (in a southerly direction) through the 18-mile-long Shandaken Tunnel to Upper Esopus Creek, and is eventually delivered into the New York City drinking water supply system. The Shandaken Tunnel is capable of diverting approximately 600 million gallons of water per day (approximately 900 cfs).

Water that spills downstream of NYCDEP's Gilboa Dam flows in a northerly direction to the Project's Lower Reservoir. Flows in Schoharie Creek below NYCDEP's Gilboa Dam are influenced by releases/spill from the Schoharie Reservoir. The inflow to the B-G Project's Lower Reservoir is primarily made up of runoff from the small intervening watershed of about 40 square miles between NYCDEP's Gilboa Dam and the Project. Major sources of inflow in this section include flow from two major tributaries: Mine Kill and Platter Kill (see Section 4.1.4 below).

Discharges from the Lower Reservoir are typically made to equal Schoharie Creek inflow as required by the Project's FERC license. The Project is a closed cycle, pumped-storage system which operates by recycling the same water between reservoirs. Additional use of water is limited to small amounts of water that are needed to replenish that which is depleted from the system by means of evaporation, minor seepage losses, or operating releases.

4.1.3 Basin Dams

Schoharie Creek is impounded in two locations: once by the NYCDEP's Gilboa Dam, and again by the B-G Project's Lower Dam. In addition, there are three flood-control dams located on the Batavia Kill, a major tributary to Schoharie Creek located upstream of the Project (see Section 4.1.4). The locations of these dams are shown in Figure 4.1-1.

The B-G Project is the only power producing facility associated with Schoharie Creek. The NYCDEP's Gilboa Dam and associated Schoharie Reservoir have no power production facilities and are used only for

drinking water supply. The Schoharie Reservoir is approximately 5.8 miles long and has a total storage capacity of approximately 60,000 acre-ft.

4.1.4 Tributary Streams

There are approximately ten major tributary streams to Schoharie Creek (Figure 4.1-1). Roaring Kill, West Kill, East Kill, and Batavia Kill drain into Schoharie Creek upstream of NYCDEP's Schoharie Reservoir. Bear Kill and Manor Kill drain directly into the Schoharie Reservoir. Platter Kill flows into Schoharie Creek between NYCDEP's Schoharie Reservoir and the B-G Project's Lower Reservoir. Mine Kill flows directly into the Project's Lower Reservoir. Downstream of the Lower Reservoir, Schoharie Creek continues to flow north to its confluence with the Mohawk River; Cobleskill Creek and Fox Creek both flow into this lower section of Schoharie Creek.

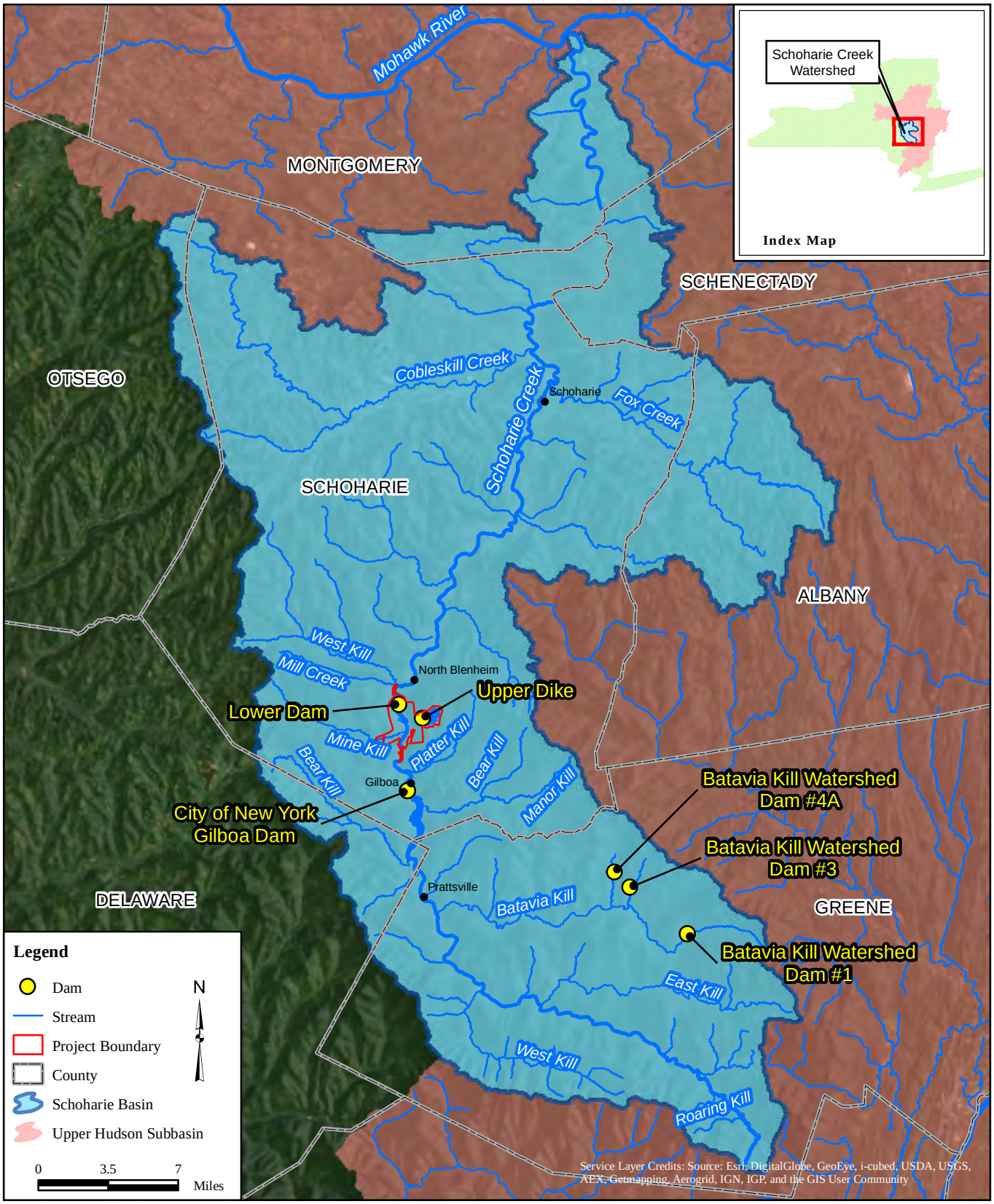

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Figure 4.1-1: Schoharie Creek Watershed Map.

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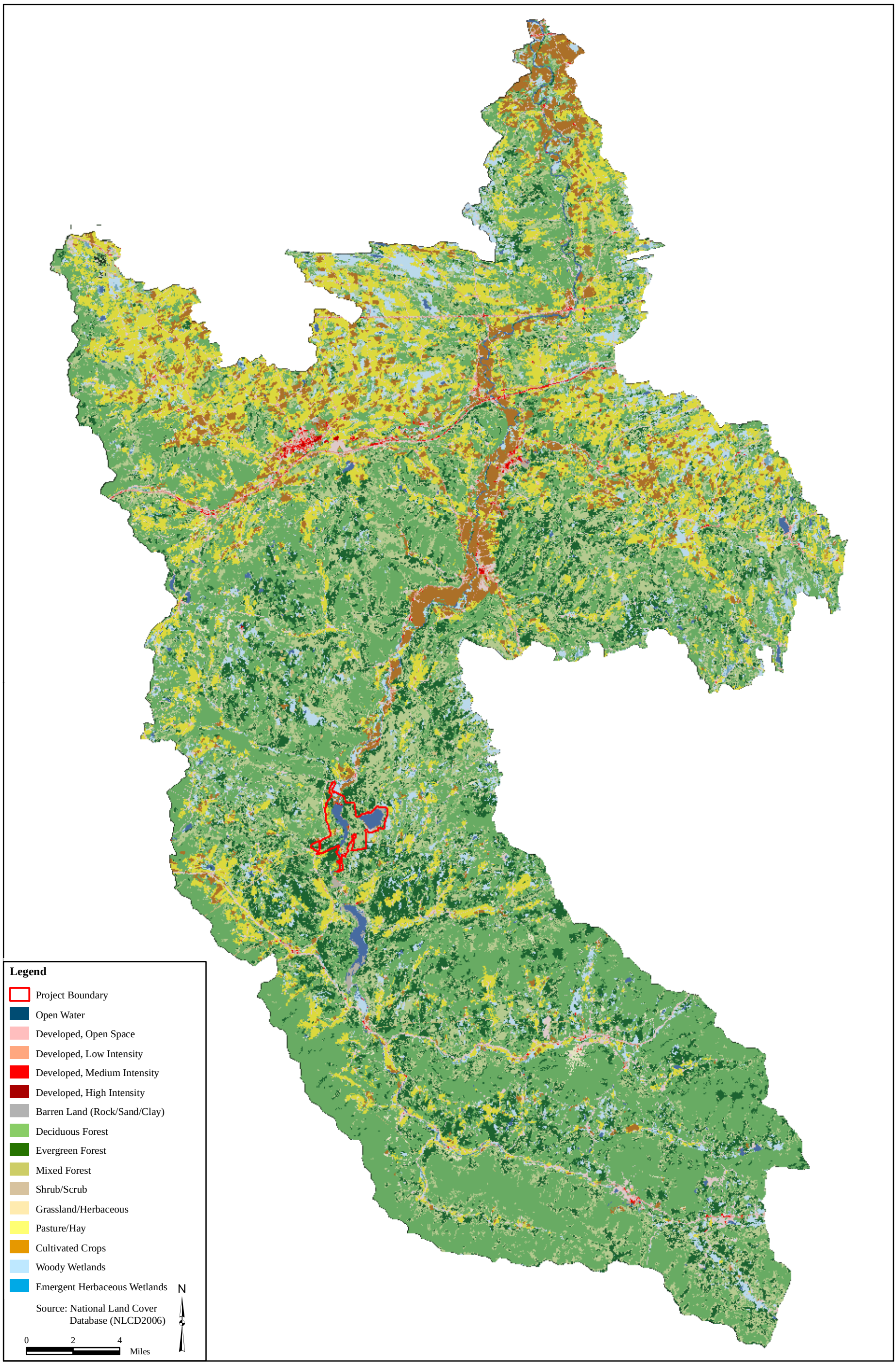

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Figure 4.1.1-1: 2006 Land Coverage of Schoharie Creek Watershed

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4.2 Geology and Soils (18 C.F.R. § 5.6 (d)(3)(ii))

4.2.1 Topography

The general topography of the Schoharie Creek watershed in the vicinity of the Project is shown in Figure 4.2.1-1. The Project is located in the glaciated northern extremities of the Alleghany Plateau, which extends from the Mohawk Valley of New York southwest to central Alabama. The uplands between the Mohawk River Valley in the north and the peaks of the Catskill Mountains in the south maintain a general elevation of 2,000 ft above msl with relief of 1,000 ft or more. The elevation of the Lower Reservoir is approximately 900 ft, while the elevation of the Upper Reservoir is approximately 2,000 ft. The surface of the so called "2,000 ft plateau" is gently undulating and was developed by erosion during long periods of relative geologic stability (Benzinger, 1969). Schoharie Creek and other drainage systems have developed deep, narrow valleys in the plateau, resulting in fairly rugged terrain with flat-topped mountains.

A notable feature of the Schoharie Valley in the vicinity of the Project is the number of tributary streams which plunge over falls or cascades just prior to entering the main stem. The falls of Manor Kill, Mine Kill, Mill Creek, Platter Kill, Keyser Kill, and Panther Creek are examples. These falls have resulted from the inability of the tributaries to keep pace with the erosional progress of Schoharie Creek, both prior to and subsequent to the Pleistocene epoch (Benzinger, 1969).

4.2.2 Geology

The Allegheny Plateau is part of the Appalachian Plateau physiographic region within the Northeastern Highlands ecoregion. The Appalachian Plateau is a large natural region lying west of the Hudson lowlands and south of the Mohawk River valley and the Lake Ontario-Lake Erie plains. The Appalachian Plateau is underlain with nearly horizontal rock strata, all of which were covered by a glacier as recently as 10,000 to 12,000 years ago. Ice and the force of rivers have dissected or cut into the bedrock, giving the region a rugged, hilly aspect. The Appalachian Plateau is highest in the eastern portion of the State where it forms the Catskill Mountains.

The Schoharie Creek region is characterized by successional communities comprised of northern hardwood and spruce-fir forests. All rock in the area is of sedimentary origin and has not been metamorphosed or intruded by igneous bodies. The strata consist of thin to massive bedded sandstone, siltstone, and shale, with a few thin beds of volcanic ash or bentonite at widely scattered intervals. The rocks are fine grained with coarsest lithology of a sandstone or sugary texture. The shales are very fine grained.

4.2.2.1 Bedrock Geology

The bedrock geology in the vicinity of the Project is illustrated in Figure 4.2.2.1-1. Rock outcrops exist all around the Project site. The Lower Reservoir spillway and powerhouse are constructed on bedrock while the Upper and Lower Reservoir embankment dams have seepage cutoff systems which extend to bedrock.

The bedrock underlying the region is of sedimentary origin resulting from the erosion of an ancient high peaks Taconic mountain range that existed to the east approximately 370 million years ago in the Devonian Period (Greene County, 2007). The rock formations in the Project vicinity include various facies of the Genesee and Hamilton Groups, both of the upper to middle Devonian Age. Some sedimentary bedrock associated with these groups, specifically the Hamilton Group, is known to be calcareous in nature thus contributing to the alkaline soils found in this region. The youngest unit exposed is the Oneonta Formation, which includes the Kaaterskill sandstone member. It is composed of interbedded sandstone and red shale, and caps the plateau between Reed Hill (south of the Upper Reservoir) and Brown Mountain (north of the Upper Reservoir), thereby underlying the entire Upper Reservoir area. Some of this rock unit was removed by pre-glacial erosion, and more was removed by the ice. Depending on the present topography, the thickness of the formation varies from 200 to 500 ft.

Underlying the Oneonta Formation is approximately 400 to 500 ft of interbedded shale, siltstone, and sandstone of the Moscow Formation. The vertical shaft that extends from the Upper Reservoir to the horizontal power tunnel penetrates the full thickness of the Moscow Formation. The powerhouse and horizontal portion of the power tunnel are constructed in the rocks of the Panther Mountain Formation. The Panther Mountain Formation is similar to the Moscow formation but separated from it on the basis of fossil content. In addition, the Panther Mountain Formation possesses some beds of more massive and durable character than are found elsewhere in the area (NYPA, 2012a).

An extensive amount of fossils were discovered within these rock formations during the excavation and rock coring that occurred before and during Project construction. Fossil discoveries in the rocks within the Project site provided evidence of conditions during the Devonian period when plants and tiny animals were making the transition from water to land on the shores of the inland Devonian Sea. Important finds included centipedes, spiderlike creatures, and a mite that lived 380 million years ago. These fossils are thought to show that animals had adapted to a strictly land environment much earlier than had been previously believed. In addition, a 375 million year old fossil lycopod plant was discovered at the Project in 1972. This five-spined leaf specimen is believed to be a possible evolutionary link between the leaves of ancient and modern plants. Fossils such as these occur throughout the region.

4.2.2.2 Surficial Geology

The surficial geology at the Project is primarily related to the glacial history of the Catskill Mountains. In this area, mountain glaciers commonly merged with continental ice sheets. Large lakes often formed in front of the glaciers as they retreated. The glacial retreat resulted in deltaic (sands and gravels) and lacustrine (clays and silts) sediments being deposited in the site area. Four major intervals of glaciation reportedly occurred during the Pleistocene Epoch (which occurred from 10,000 to 2,000,000 years ago), often characterized by multiple advances and retreats of ice. The most recent ice sheet advance was the Laurentide, which occurred during the late part of the Wisconsin Stage (Woodfordian Substage) approximately 8,000 to 15,000 years ago.

Both the thickness of soil deposits and the depth of bedrock are highly variable at the Project site. Drilling activities during past investigations at the site indicate thick sequences of glacial till deposits and thinner interbedded lacustrine (clay) layers, which overlie the bedrock (Paul C. Rizzo Associates, 1999). Figure 4.2.2.2-1 depicts the surficial geology of the Project vicinity.

4.2.2.3 Rock Cut Stabilization & Slide Movements

Rock Cut Stabilization

In 2007, a sedimentary bedrock outcrop experienced a rock cut failure in the vicinity of the Lower Reservoir spillway approximately 12 ft southeast of the spillway channel and 150 ft northwest of the crest of the dam adjacent to an access road and parking lot (see Figure 4.2.2.3-1). The bedrock outcrop protrudes out of the earthen embankment of the Lower Dam; the rock cut was formed during dam construction in the early 1970's (Murphy, 2007).

Following the rock cut failure, the Power Authority hired Tectonic Engineering & Surveying Consultants to complete an investigation of the existing rock cuts. Tectonic Engineering found that the investigated rock cuts were highly irregular in profile due to the differential weathering of individual beds of the sedimentary rock. More easily eroded beds resulted in the undermining of overlaying, more resistive beds. Undermined beds had locally failed and blocks ranging from cobble size up to several cubic ft were found on the slopes and at the base of the cuts. In 2009, to stabilize the site, NYPA installed concrete "Jersey" barriers as recommended by Tectonic Engineering (Murphy, 2007).

Slide Movements

In the early 1970's, a series of slide movements developed at the Project. Originally starting along the South Access Road, these slide movements eventually incorporated the entire east shoreline between the

switchyard and transmission tower GF-6 (Figure 4.2.2.3-1). Following exploration testing and evaluation, stabilization measures, including a series of berms and horizontal drains, were implemented.

Since the initial sliding occurred, the Power Authority has monitored the rate of movement. Remedial measures, completed from May 2001 to November 2002, included construction of a large stabilization berm and drainage improvements to reduce pore pressures within the weak soil layer. Instrumentation within the slide area indicates movements have diminished from 1 to 3 inches per year prior to the installation of the remedial measures to about 0.15 to 0.30 inches per year since construction of the rockfill berm and drainage system.

In May 2004, following a significant rain event, a landslide occurred on the western side of the North Access Road (Figure 4.2.2.3-1). The geological settings in the slide area were believed to be similar to those found at the South Access Road slide area. The landslide occurred at a location outside of the main perimeter of the Project (Broderick, 2004a and 2004b). Significant slide movements have not occurred at the Project since 2004.

4.2.3 Soils

Dominant soil types within the Project boundary are shown in Figure 4.2.3-1. Soil erodibility factors, or K factors, and erosion hazard classifications of these soil types can be found in Table 4.2.3-1. K factor values typically range from 0.02 for the least erodible soils to 0.64 for the most erodible. In addition, the K factor is often divided into two sub-categories, Kw and Kf factors. The Kw factor is calculated by taking into consideration the whole soil, while the Kf factor only considers the fine-earth fraction (<2.0 mm diameter). Soil properties affecting the K factor can include texture, organic matter content, structure, infiltration, and permeability. Erosion hazard classifications take into account the characteristics of the soil, slope of the land surface, protective vegetative cover, and precipitation characteristics. Erosion hazard ratings are typically defined as slight, moderate, or severe.

Based on the erosion hazard rating and range of K-factors according to depth of soil found in Table 4.2.3-1, Barbour & Tioga fine sandy loams (Ba), Schoharie & Hudson silt loams (ShB), Schoharie & Hudson silty clay loams (SnB3), and Volusia, Morris, & Eerie very stony soils (VmC) were found to be the least erodible soils in the vicinity of the Project. While Lordstown & Oquaga very stony soils (LoE), Lordstown, Oquaga, & Nassau soils (LrF), Mardin & Culvers very stony soils (MeE), and Schoharie soils (SoE) were found to be the most erodible (NRCS, 2013). The rugged topography (moderate to steep slopes) in this region of the Catskill Mountains contributes to the moderate to severe erosion hazard classifications of many of the dominant soil types.

The soil types shown in Figure 4.2.3-1 were compiled into soil series and ranked by dominance within the Project vicinity (percent of total land within the Project boundary covered). The dominant soil series are listed below, followed by the official soil series description:

- Lordstown & Oquaga Series – 33%
- Schoharie Series – 25%
- Lordstown, Oquaga, & Nassau Series – 8%
- Schoharie & Hudson Series – 6%
- Mardin & Culvers Series – 5%
- Volusia, Morris, & Erie Series – 4%
- Barbour & Tioga Series – 4%

Lordstown: The Lordstown series consists of moderately deep, well drained soils formed in till and cryoturbated material derived from siltstone and sandstone on bedrock controlled landforms of glaciated dissected plateaus. They are nearly level to very steep soils on hillsides and hilltops in glaciated bedrock controlled uplands. Slope ranges from 0 to 90 percent. Thickness of solum and depth to bedrock ranges from 20 to 40 in. Elevation ranges from 800 to 1,800 ft above sea level.

Oquaga: The Oquaga series consists of moderately deep, somewhat excessively drained soils formed in a thin mantle of till over sandstone, siltstone, and shale bedrock on nearly level to very steep uplands. Slope ranges from 0 to 70 percent. Permeability is moderate. Depth to bedrock ranges from 20 to 40 in.

Schoharie: The Schoharie series consists of very deep, moderately well drained soils formed in clayey lacustrine sediments. They are on glacial lake plains and uplands mantled with lake sediments. Saturated hydraulic conductivity is moderately high or high in the mineral surface and subsurface and low through moderately high in the subsoil and substratum. Slope ranges from 0 through 60 percent.

Nassau: The Nassau series consists of shallow, somewhat excessively drained soils formed in till. They are nearly level to very steep soils on bedrock controlled glacially modified landforms. Bedrock is at a depth of 10 to 20 in. Slope ranges from 0 to 70 percent. The elevation ranges from 150 to 900 ft above sea level.

Hudson: The Hudson series consists of very deep, moderately well drained soils formed in clayey and silty lacustrine sediments. They are nearly level to very steep soils on convex lake plains, on rolling to hilly moraines and on dissected lower valley side slopes. Saturated hydraulic conductivity is moderately high or high in the mineral surface and subsurface layers and low to moderately high in the lower part of

the subsoil and substratum. Slope ranges from 0 to 60 percent. More sloping and dissected areas show evidence of slumping or mass slipping. The elevation ranges from 50 to 800 ft above sea level.

Mardin: The Mardin series consists of very deep, moderately well drained soils formed in loamy till. They are in glaciated uplands, mostly on broad hilltops, shoulder slopes and backslopes. The Mardin soils have a dense fragipan that starts at a depth of 14 to 26 in below the soil surface. Slope ranges from 0 to 50 percent. Solum thickness ranges from 38 to 72 in. Depth to bedrock ranges from 60 in to 20 ft or more. Mardin soils are nearly level to very steep. Elevation ranges from 800 to 1,800 ft above sea level.

Culvers: The Culvers series consists of very deep, moderately drained soils that formed in a mantle of loamy eolian or glaciofluvial deposits and in the underlying firm loamy till on moraines and till plains. Slope ranges from 2 to 10 percent.

Volusia: The Volusia series consists of very deep, somewhat poorly drained soils formed in loamy till. These soils are on concave to planer landscape positions in glaciated upland areas. A dense fragipan is at a depth of 10 to 22 in below the soil surface. Slope ranges from 0 to 25 percent. Saturated hydraulic conductivity in the mineral soil above the fragipan is moderately high or high, and in the fragipan and substratum, it is low to moderately high. Solum thickness ranges from 40 to 72 in. Depth to bedrock is greater than 60 in. The Volusia soils developed in firm basal till derived from siltstone, sandstone and brittle shale or slate. These soils mostly occur at elevations between 1,200 and 1,800 ft.

Morris: The Morris series consists of very deep, somewhat poorly drained soils formed in till from red sandstone, siltstone, and shale. They have a dense fragipan layer that restricts root penetration and water movement. Slopes range from 0 to 25 percent. Solum thickness is greater than 40 in. Depth to the fragipan ranges from 10 to 22 in. Depth to bedrock is 60 in or more. Morris soils are in till plains and slightly concave uplands. Elevation ranges from 300 to 1,700 ft above sea level.

Erie: The Erie series consists of very deep, somewhat poorly drained soils formed in loamy till. They have a fragipan layer starting at depths of 10 to 21 in below the soil surface. These soils are of uniform slope, and are on footslopes and broad divides in glaciated uplands. Permeability is moderate above the fragipan, and slow in the fragipan and substratum. Slope ranges from 0 to 25 percent. Solum thickness ranges from 32 to 58 in. Depth to carbonates ranges from 35 to 65 in. Depth to bedrock is greater than 60 in. These soils are at elevations between 1,100 and 1,800 ft.

Barbour: The Barbour series consists of very deep, well-drained soils formed in recent alluvial deposits derived from areas of acid, reddish sandstone, siltstone, and shale. They are nearly level or gently sloping

soils on flood plains. Thickness of the solum ranges from 18 to 40 in. Depth to the 2C horizon ranges from 20 to 40 in. Depth to bedrock is greater than 60 in. Barbour soils are on convex or plane flood plains, alluvial fans, and low terraces. Slope ranges from 0 to 8 percent.

Tioga: The Tioga series consists of very deep, well-drained soils formed in alluvium on higher positions in flood plains. Permeability is moderate or moderately rapid in the solum and moderate to rapid in the underlying material. Slope ranges from 0 to 3 percent. Thickness of the solum ranges from 18 to 40 in. The soil ranges from strongly acid to slightly alkaline in the solum and from moderately acid to moderately alkaline in the substratum.

Table 4.2.3-1: Soil Erodibility

Map Symbol	Map Unit Name	Soil Series	Depth (in)	Erosion Factors		Erosion Hazard
				Kw	Kf	
Ba	Barbour & Tioga fine sandy loam	Barbour	0-65	0.17-0.32	0.24-0.43	Moderate
		Tioga	0-60	0.24-0.28	0.24-0.43	Moderate
LoE	Lordstown and Oquaga very stony soils, 0 to 35 percent slopes	Lordstown	0-31	0.24-0.28	0.32-0.64	Severe
		Oquaga	0-28	0.20-0.24	0.32-0.64	Severe
LrF	Lordstown, Oquaga, and Nassau soils, 35 to 70 percent slopes	Lordstown	0-31	0.24-0.28	0.32-0.64	Severe
		Oquaga	0-28	0.20-0.24	0.32-0.64	Severe
		Nassau	0-24	0.20-0.24	0.32-0.64	Severe
MeE	Mardin and Culvers very stony soils, 0 to 35 percent slopes	Mardin	0-60	0.24	0.32-0.64	Severe
		Culvers	0-72	0.24-0.28	0.32-0.43	Severe
ShB	Schoharie and Hudson silt loams, 2 to 6 percent slopes	Schoharie	0-60	0.28-0.49	0.28-0.49	Moderate
		Hudson	0-60	0.28-0.49	0.28-0.49	Moderate
SnB3	Schoharie and Hudson silty clay loams, 2 to 6 percent slopes, eroded	Schoharie	0-60	0.28-0.49	0.28-0.49	Moderate
		Hudson	0-60	0.28-0.49	0.28-0.49	Moderate
SoE	Schoharie soils, 20 to 40 percent slopes	Schoharie	0-60	0.28-0.49	0.28-0.49	Severe
VmC	Volusia, Morris, and Erie very stony soils, 0 to 15 percent slopes	Volusia	0-60	0.24	0.32-0.64	Moderate
		Morris	0-60	0.24	0.32-0.49	Moderate
		Erie	0-60	0.24	0.32-0.55	Moderate

Source: NRCS, 2013

4.2.4 Reservoir Shoreline

The Lower and Upper Reservoir shoreline characteristics vary throughout the Project. The variation in streambank and shoreline characteristics is directly related to the geologic bedrock control and glacial history of the region.

Upper Reservoir

The shoreline of the Upper Reservoir consists of a manmade dike on the north, west, and south banks, which is lined with rip rap and minimal to no vegetation. The shoreline on the northeast and east bank is composed primarily of lodgement till and is naturally vegetated and undeveloped.

There is no significant erosion along the shorelines of the Upper Reservoir. Steeper shoreline areas (along the Upper Dike) consist of riprap and are well-armored. Gently sloping shoreline areas are vegetated with littoral vegetation (NYPA, 2013). Soils directly adjacent to the Upper Reservoir shoreline can be seen in Figure 4.2.3-1 Extent 2.

Lower Reservoir

The shoreline composition of the Lower Reservoir varies depending on location. The eastern shoreline is dominated by bedrock outcrops, while the western shoreline is largely lacustrine silt/clay. Upstream of the reservoir in the riverine section of Schoharie Creek, the shoreline is composed of floodplain alluvium. Steepness typically ranges from 20 to 40 percent slopes depending on location. Steeper shoreline areas consist of exposed bedrock and riprap and are therefore well-armored (NYPA, 2013a). Gently sloping shoreline areas are well vegetated with littoral vegetation (NYPA, 2013). As detailed in Section 4.2.5, the bed and banks of the Schoharie Creek above and below the Lower Reservoir are dynamic and experience significant erosion during flood events, but the Lower Reservoir itself is more depositional (because it is wider and deeper and therefore, quieter, allowing sediments to settle) and does not tend to erode along the shoreline. Soils directly adjacent to the Lower Reservoir shoreline can be seen in Figure 4.2.3-1.

4.2.5 Erosion and Deposition Features

1955 - 1996 Flood Events

Following a January 1996 flood event, FERC directed the Power Authority to restore and maintain the affected section of Schoharie Creek (right bank of the Creek downstream of the spillway) to its pre-1996 flood condition. To comply with FERC's directive, the Power Authority conducted a site inspection and

geomorphologic assessment of the spillway channel and Schoharie Creek. The Power Authority found that while portions of the reach were relatively stable, portions of the Project reach downstream of the spillway, extending approximately one mile to the Project boundary, demonstrated characteristics of instability (Clear Creeks, 1998).

The assessment also found considerable near-bank stress associated with the tight radius bend of the downstream meander, a reduction in channel capacity caused by downstream aggradation, and overtopping flood waters that resulted in: 1) the erosion of a wide bypass channel in the right bank; 2) the scouring and uprooting of riparian vegetation; and 3) the cutting of multiple channels in the floodplain. Records indicated that Schoharie Creek had historically overtopped at this point during past flood events and that the Soil Conservation Service (predecessor of the Natural Resources Conservation Service) had attempted to block the bypass channel and restore the banks following the 1955 flood (Clear Creeks, 1998). Remedial restoration work was also conducted by the Power Authority in 1980, 1988, and 1996 due to flooding. These stabilization efforts did not last and the banks have been bypassed by flooding in subsequent years (Clear Creeks, 1998).

Tropical Storm Irene

In August 2011, Tropical Storm Irene affected much of the east coast of the United States. Rainfall from Tropical Storm Irene resulted in a 500-year flood event. Peak inflow during the flood event was 129,135 cfs while peak outflow was 118,614 cfs. By comparison, the peak inflow and outflow during the 1996 flood event were 84,000 cfs and 74,677 cfs, respectively (NYPA, 2012a). Flood flows resulted in widespread erosion and deposition of sediment as well as dramatic changes in the elevation of the Lower Reservoir bottom. Bottom elevations in and around the Lower Reservoir had net changes ranging from -25 ft to +16 ft (TVGA, 2012).

The change in bathymetry of the Lower Reservoir was directly related to the erosion, transportation, and deposition of sediment throughout the watershed. During and immediately following the Tropical Storm Irene flood event, 156,733 cu yds of sediment was eroded while 724,535 cu yds was deposited resulting in a net gain of 567,802 cu yds of sediment throughout the Lower Reservoir and surrounding area (TVGA, 2012). This erosion and deposition resulted in significant changes in elevation; specifically in the middle to southern portion of the Lower Reservoir, south of the Power Station. Erosion occurred along the south and southwest shorelines, specifically at the confluence of the Mine Kill. Additional erosion activity occurred along the northwestern shoreline south of the Dam. The area of greatest deposition occurred along the linear center of the reservoir, southwest of the Power Station. While these areas experienced

significant changes in elevation, the majority of the reservoir experienced only minor changes. Figure 4.2.5-1 depicts areas that were significantly impacted by erosion or deposition.

Additionally, as a result of the flows associated with Tropical Storm Irene, the berm built following the 1996 flood event on the right bank downstream of the spillway was washed out. In 2012, the Power Authority completed restoration efforts, which included: restoring the Schoharie Creek berm, adding additional channel slope protection, and repairing other damage caused by Tropical Storm Irene within the Project boundary.

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Figure 4.2.1-1: Topography

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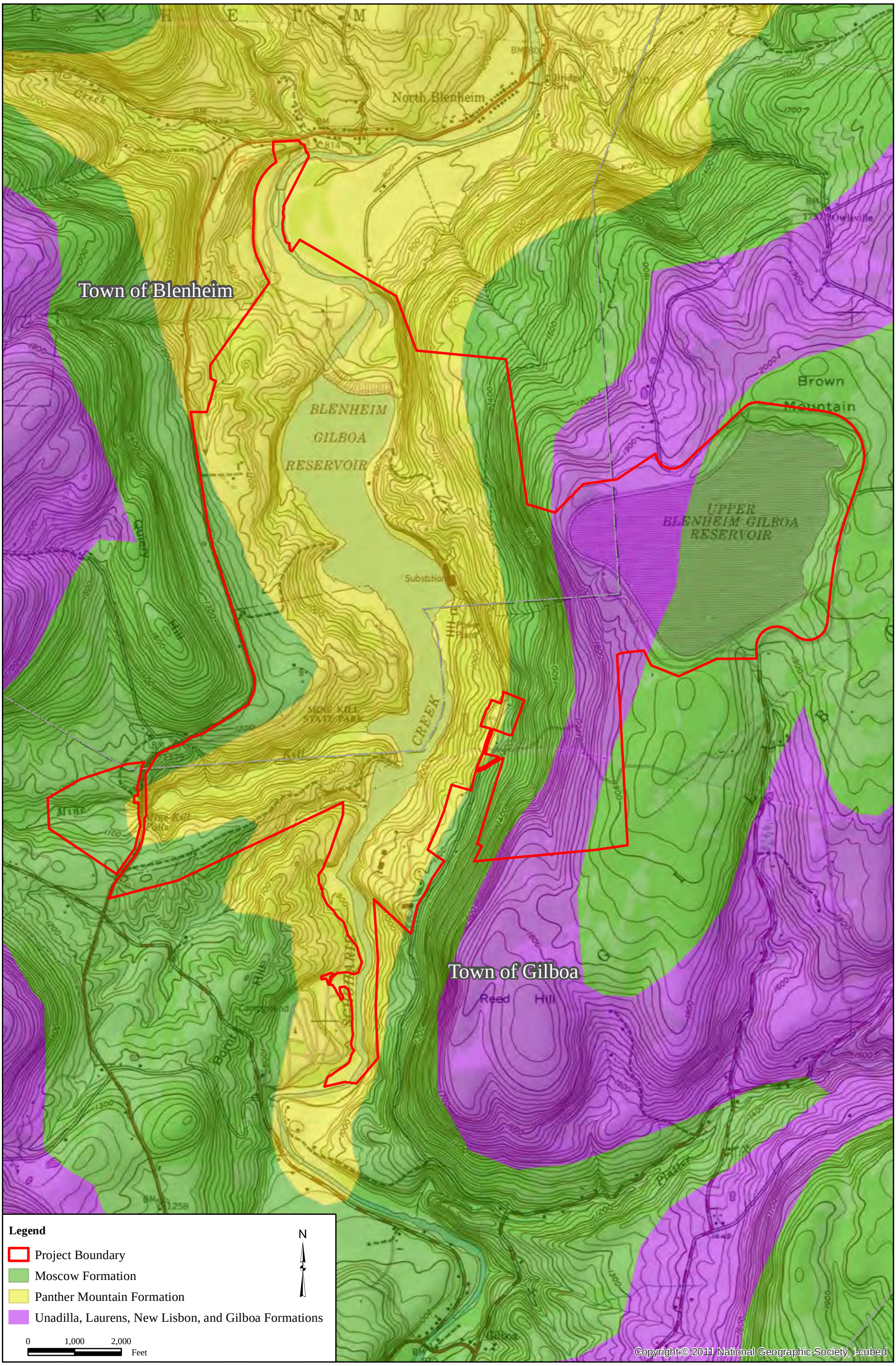

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Figure 4.2.2.1-1: Bedrock Geology

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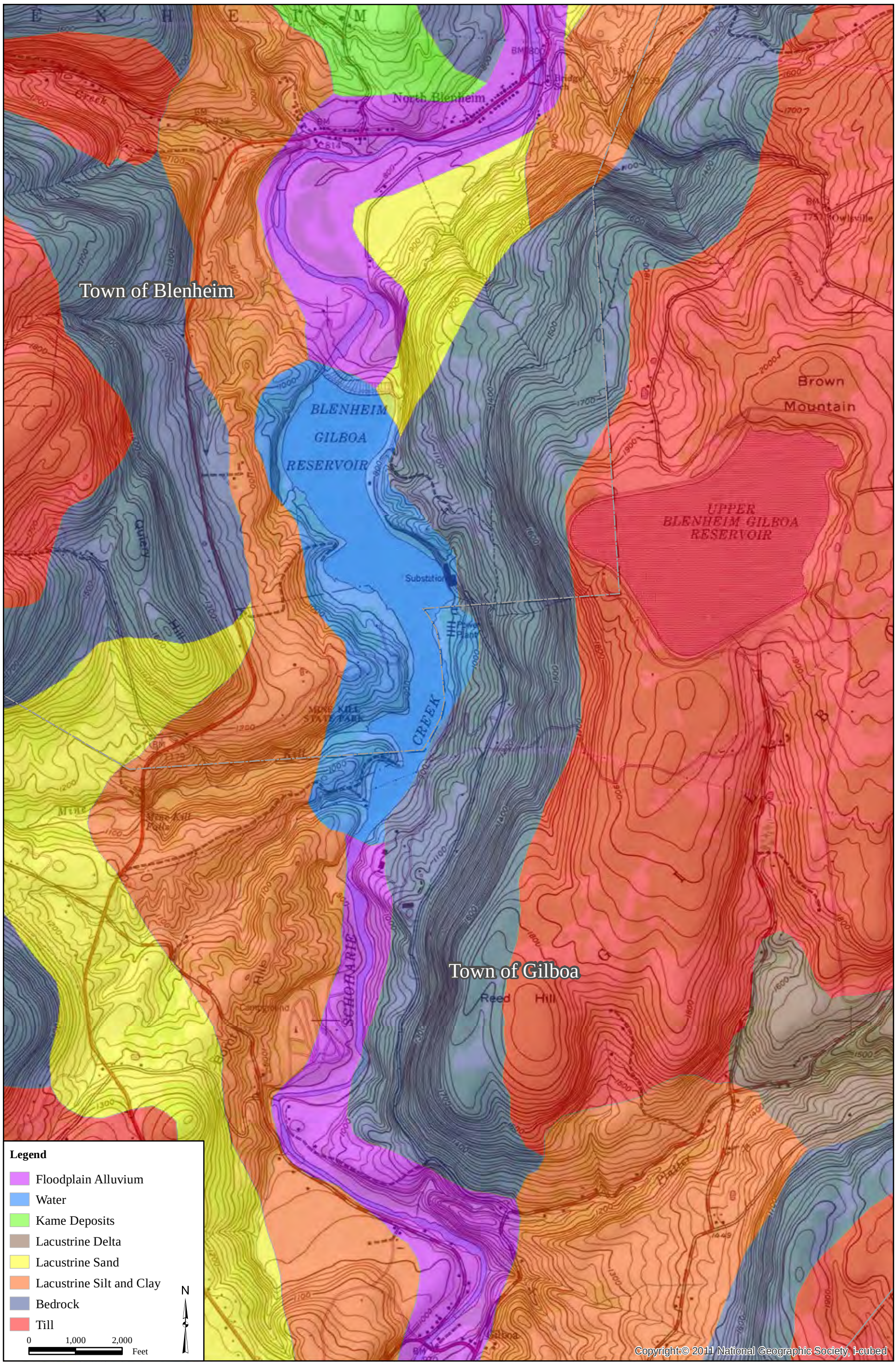

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Figure 4.2.2.2-1: Surficial Geology

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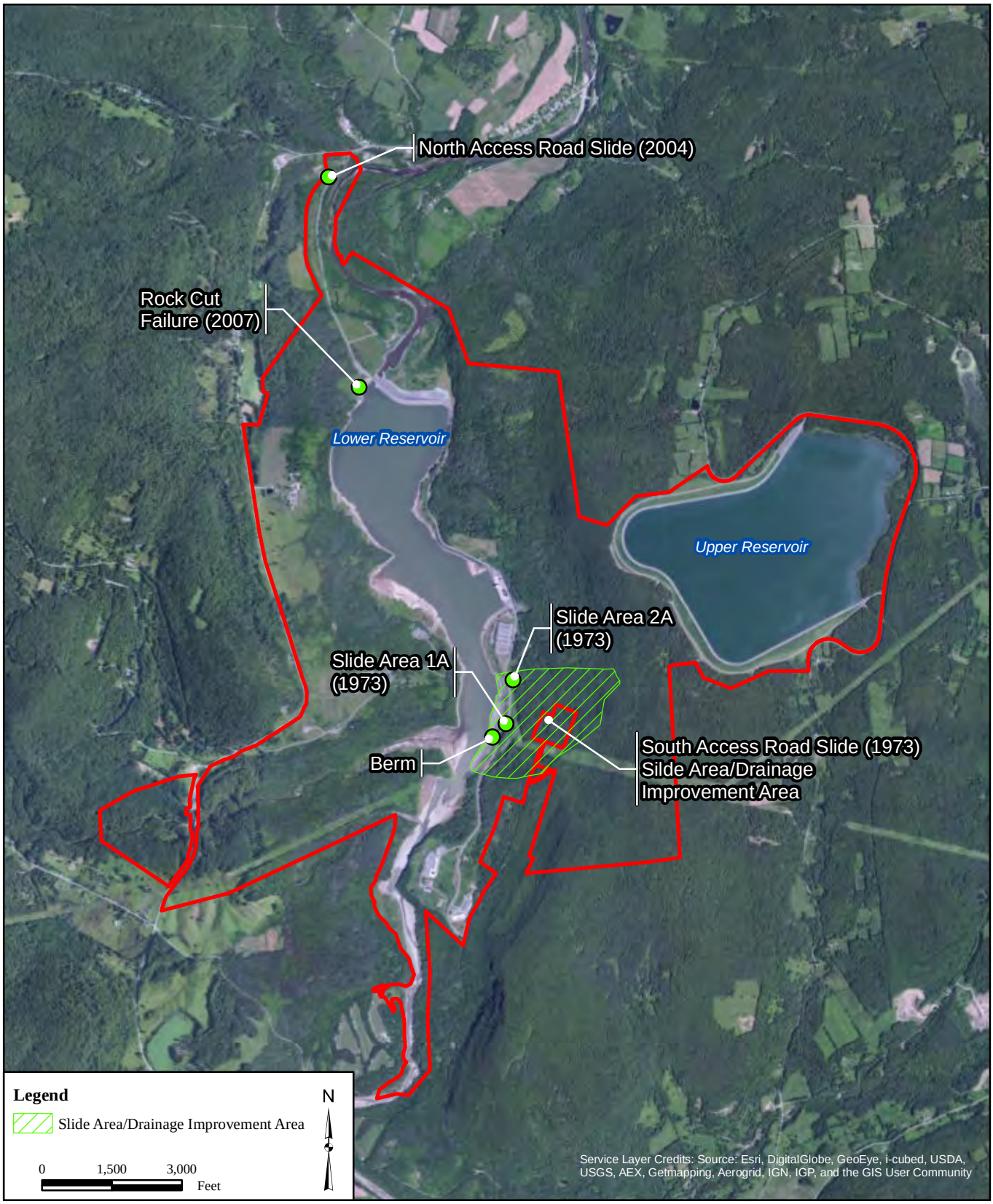

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Figure 4.2.2.3-1: Rock Slides

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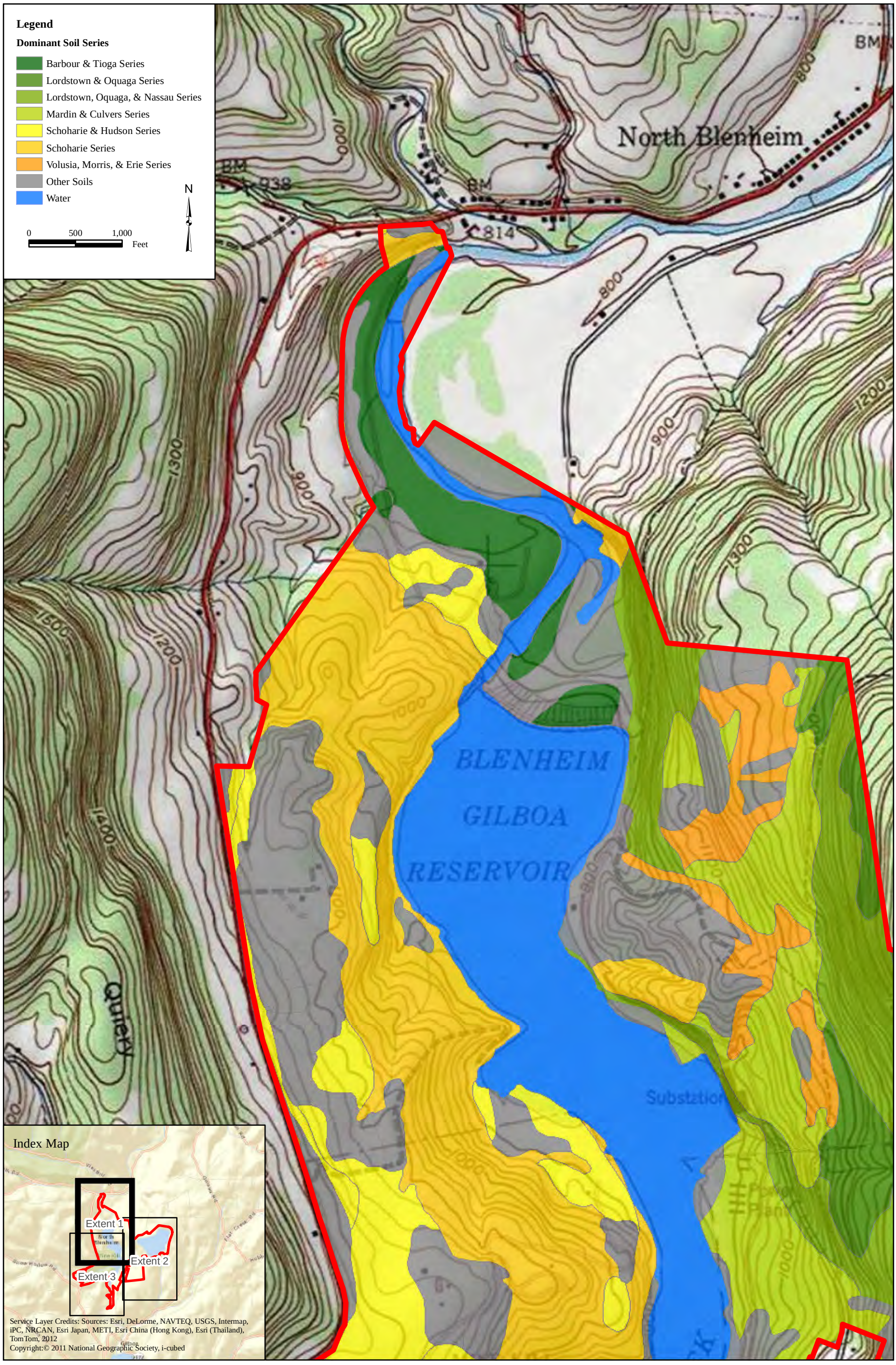

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Figure 4.2.3-1: Soils - Extent 1

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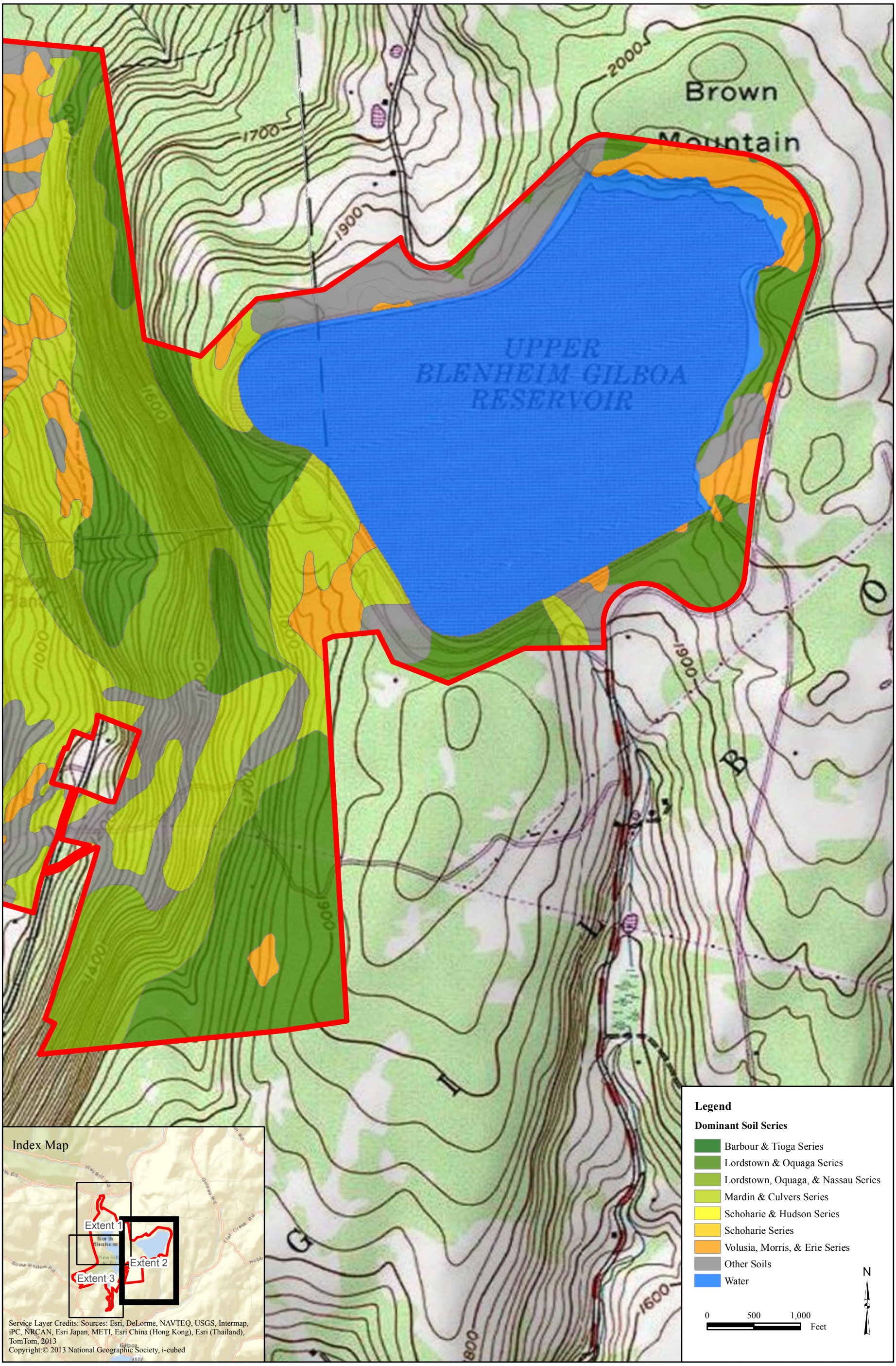

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Figure 4.2.3-1: Soils - Extent 2

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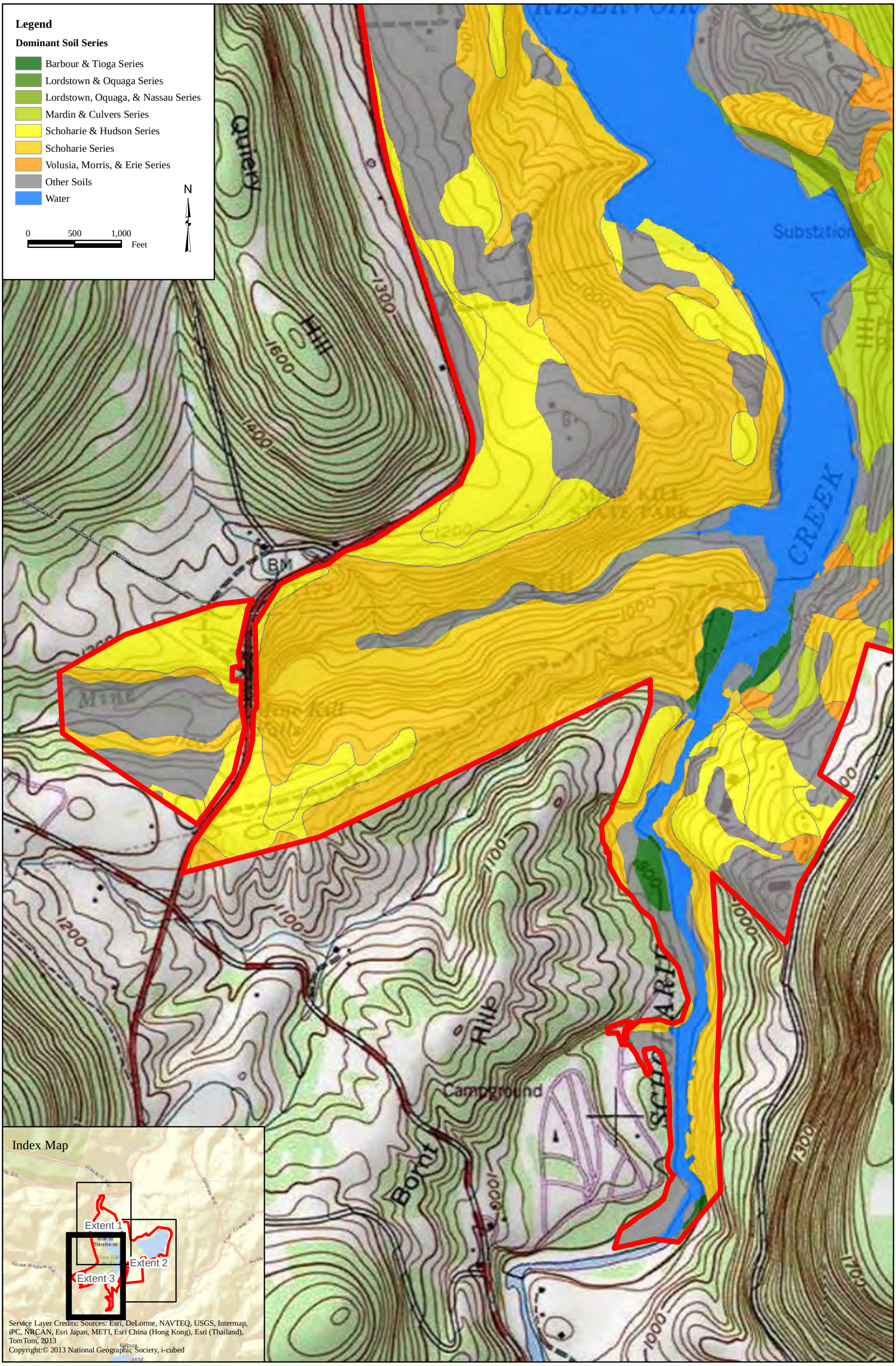

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Figure 4.2.3-1: Soils - Extent 3

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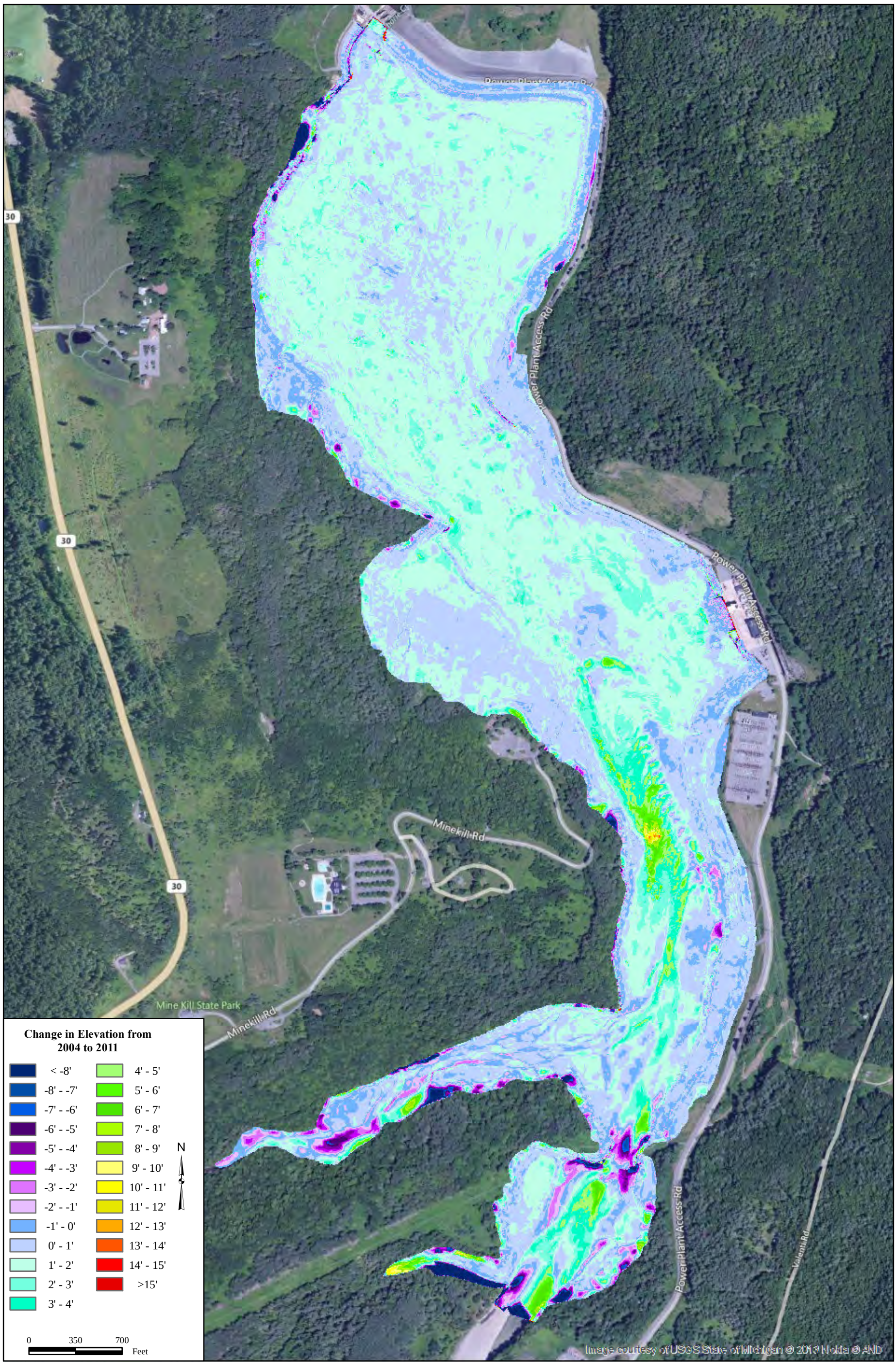

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Figure 4.2.5-1: Lower Reservoir Bathymetry Post Tropical Storm Irene

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4.3 Water Resources (18 C.F.R. § 5.6 (d)(3)(iii))

4.3.1 Water Quantity

4.3.1.1 Overview

Within the Project boundary, water resources of the Project include the Upper and Lower Reservoir, Schoharie Creek upstream and downstream of the Lower Reservoir, and tributaries which feed the Lower Reservoir (Figure 4.3.1.1-1).

The Lower Reservoir has a surface area of 413 acres at full pool and has a total storage capacity of 16,167 acre-ft. The reservoir is operated between a maximum pool elevation of 900 ft and a minimum pool elevation of 860 ft. The drainage area at the Lower Dam is 356 mi^2. The Lower Reservoir is an elongated-shaped reservoir with generally a gently sloping shoreline; the shoreline length is approximately 9.4 miles. The average depth and maximum depth at full pool are approximately 40 ft and 80 ft respectively. Figure 4.3.1.1-2 shows the bathymetry of the Lower Reservoir. The bottom substrates of the Lower Reservoir are composed primarily of silt and clay.

The Upper Reservoir has a surface area of 399 acres at full pool and a limited drainage area of approximately 0.7 mi^2. The Upper Reservoir has a total storage capacity of 18,791 acre-ft. The normal reservoir fluctuation is from elevation 2,003 ft to approximately elevation 1,955 ft. The Upper Reservoir is generally bowl-shaped with steep banks and has approximately 3.5 miles of shoreline. The maximum depth at full pool is near the intake structure at approximately 95 ft. Away from the intake structure, the deepest spot is approximately 80 ft at full pool located in the southwest area of the reservoir. The average depth of the Upper Reservoir is 48 feet. Figure 4.3.1.1-3 shows the bathymetry of the Upper Reservoir.

Figures 4.3.1.1-4 through 4.3.1.1-16 illustrates annual and monthly surface water elevation duration curves for the Upper and Lower Reservoirs for the period of record from 2002 to 2012. Table 4.3.1.1-1 shows the median surface water elevations for the period from 2002 to 2012 for the Upper and Lower Reservoirs.

4.3.1.2 Hydrology and Streamflow

Water is provided to the Lower Reservoir from Mine Kill flowing in from the west, Platter Kill and Schoharie Creek upstream of the Project, and by releases/spilling from NYCDEP's Schoharie Reservoir, which is located approximately 5 miles upstream of the Lower Dam. Under normal conditions, there is little or no spill from NYCDEP's Schoharie Reservoir, so the inflow to the Project during these times is only from the 40 mi^2 of drainage between the NYCDEP's Gilboa Dam and the Lower Reservoir.

Flows are released from the Project's Lower Reservoir in accordance with a 1975 order from the Federal Power Commission. The associated water management plan specifies that flows should be maintained as nearly as practicable to what they would be without the Project. The Lower Dam is equipped with spillway gates and low level valves that permit the release of water downstream. Discharges from the Lower Reservoir are typically made to equal inflow, which is determined by gages upstream and downstream of the Project and by reservoir volume calculations. Between the low level outlet and Taintor gates, the Project has the ability to release at the Lower Dam the whole range of inflows to the Project into Schoharie Creek.

The U.S. Geological Survey (USGS) operates several streamflow gaging stations in the vicinity of the Project. Four USGS gages monitor inflow and outflow to and from the Lower Reservoir (Figure 4.3.1.2-1). Releases from NYCDEP's Gilboa Dam, upstream of the Project, are monitored using USGS Gage No. 01350101. Because there are no required minimum flows from NYCDEP's Gilboa Dam, flows recorded at USGS Gage 01350101 are a function of leakage and spillage.

The two tributaries to the Lower Reservoir that contribute inflow to the Project are also gaged. The Platter Kill gage (No. 01350120) and Mine Kill gage (No. 01350140) monitor inflow into the Project's Lower Reservoir from the east and west, respectively. A fourth gage on Schoharie Creek at North Blenheim (No. 01350180), below the Lower Dam, measures outflow from the Project. The gages listed in Table 4.3.1.2-1 are for both Schoharie Creek upstream and downstream of the Project and the two major tributaries that contribute flow to the Project's Lower Dam.

The monthly flow statistics for the USGS Gage below the Project's Lower Dam (No. 01350180) showing minimum, median, mean, and maximum flows are presented in Table 4.3.1.2-2. At this gage, the highest mean daily flows occur during April (1,348 cfs) and the lowest mean daily flows occur during July (83 cfs). Monthly and annual flow duration curves for the period of record (October 1970 – September 2011) were calculated using mean daily flows from this same gage, and are presented in Figures 4.3.1.2-2 through 4.3.1.2-6

Project waters are used for power production, aquatic habitat, and recreation. There are no proposed actions that would affect these uses of Project waters. Upstream of the Project, the NYCDEP's Gilboa Dam forms the Schoharie Reservoir, which is used for a drinking water supply. There are no proposed actions that would affect these uses of water in the vicinity of the Project. There are no other known water rights that would be affected by continued operation of the Project.

On August 28, 2011, the Schoharie Valley experienced its flood of record as a result of runoff from precipitation caused by Tropical Storm Irene. Reports of the flooding event indicate that the average rainfall within the basin was over 8 in during a 24-hour period; the maximum estimated rainfall occurred on the eastern edge of the basin, near Windham (estimated 15.87 in during a 24-hour period) (NYPA, 2012b). A USGS assessment has classified the event as at least a 500-year flood event. The inflow to the Lower Reservoir was estimated to be 129,135 cfs, and the peak outflow discharged at the Lower Reservoir spillway was estimated to be 118,614 cfs (Hait, 2012). Prior to Tropical Storm Irene, the USGS had estimated the 100-year flood as 97,000 cfs. The previous flood of record was 82,899 cfs in January 1996 (USGS, 1998).

4.3.2 Water Quality

The following sections discuss water quality standards and classifications applicable to waterbodies in the Project vicinity. The results from water quality investigations that pertain to Schoharie Creek and related waterbodies at the Project are also discussed.

4.3.2.1 Water Quality Standards and Classifications

The New York State waterbody classifications and water quality standards apply to all surface water and groundwater throughout the State. All waters in New York State are assigned a letter classification that denotes their best uses. Table 4.3.2.1-1 identifies the waterbody classifications of Schoharie Creek, Mine Kill, Platter Kill, and the Lower and Upper Reservoirs.

The NYSDEC defines the best usages of Class B waters as primary and secondary contact recreation and fishing. Class B waters are suitable for fish, shellfish, and wildlife propagation and survival. The best usage of Class C waters is fishing, however, Class C waters should be able to be used for the same purposes as Class B, but other factors may limit their use for these purposes.

Schoharie Creek from Schoharie Reservoir downstream to the Lower Reservoir is classified as Class B water while the tributaries to the Lower Reservoir (Mine Kill and Platter Kill), the Upper Reservoir, the Lower Reservoir and Schoharie Creek from the Lower Dam downstream to Breakabeen are classified as Class C waters. The lower reach of Platter Kill is designated as Class C (TS) Trout Spawning waters. Trout Spawning waters are designated to support trout spawning and any water quality standard, guidance value, or thermal criterion that specifically refers to trout, trout spawning, trout waters, or trout spawning waters applies (NYSDEC, 2012a).

The NYSDEC establishes water quality standards and other criteria for many specific parameters. These standards can be either narrative or numeric. Table 4.3.2.1-2 outlines the water quality standards and criteria applicable to the surface waters of the Project.

Table 4.3.1.1-1: Median, Monthly, and Annual Reservoir Water Surface Elevations (2002-2012).

Month	Upper Reservoir	Lower Reservoir
January	1992.5	875.9
February	1994.9	873.2
March	1993.1	875.4
April	1992.6	876.2
May	1992.8	876.0
June	1993.7	875.0
July	1994.4	873.6
August	1992.6	875.8
September	1990.1	878.2
October	1993.0	874.8
November	1992.5	875.7
December	1993.3	876.5
Annual	1993.0	875.5

Table 4.3.1.2-1: USGS Gages in the Vicinity of the Project

Gage No.	Gage Name	Drainage Area	Comments
01350101	Schoharie Creek at Gilboa, NY	316 mi^2	0.4 mi downstream from NYCDEP's Gilboa Dam (Schoharie Reservoir). Entire flow, runoff from 316 mi^2, except for periods of spill, diverted from Schoharie Reservoir for water supply of City of New York. Discharge <10 cfs not determined at this station.
01350120	Platter Kill at Gilboa, NY	10.9 mi^2	Located 0.3 mi upstream from mouth
01350140	Mine Kill near N. Blenheim, NY	16.2 mi^2	Located 0.6 mi upstream from mouth
01350180	Schoharie Creek at N. Blenheim, NY	358 mi^2	Regulation of flow by New York Power Authority Blenheim-Gilboa Pumped Storage Power Project immediately upstream from gage.

Table 4.3.1.2-2: Daily Flow (cfs) Statistics by Month for Gage No. 01350180: Schoharie Creek at North Blenheim

Period of Record (October 1970 – September 2011)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
min	3	7	8	9	5	<1	<1	<1	<1	<1	<1	2
max	29900	8200	18000	21600	9700	15700	4490	46600	15500	14800	11700	11500
mean	426	355	992	1348	610	308	83	101	171	236	330	450
median	93	94	467	875	343	19	8	8	7	8	33	69

Table 4.3.2.1-1: Surface Waterbody Classifications of Upper Reservoir, Lower Reservoir, Schoharie Creek and Tributaries to Lower Reservoir

Waterbody	Classification	Best Usages	Notes
Schoharie Creek	B	The best usages of Class B waters are primary and secondary contact recreation and fishing. These waters shall be suitable for fish, shellfish, and wildlife propagation and survival.	NYCDEP's Gilboa Dam to upstream extent of Lower Reservoir (at small tributary south of Mine Kill)
Lower Reservoir	C	The best usage of Class C waters is fishing. These waters shall be suitable for fish, shellfish, and wildlife propagation and survival. The water quality shall be suitable for primary and secondary contact recreation, although other factors (such as flow/depth, access, conflicting use) may limit the use for these purposes.	From small tributary south of Mine Kill to Lower Dam
Schoharie Creek	C		Downstream from Lower Dam to extent of Project Boundary
Mine Kill	C		
Upper Reservoir	C		
Platter Kill	C (TS)		(TS) Trout Spawning Waters

Source: NYSDEC, 2012c and NYSDEC, 2010a.

Table 4.3.2.1-2: Summary of New York State Surface Water Quality Standards for Class B and C Waters

Parameter	Standard
Taste-, color-, and odor producing, toxic and other deleterious substances	None in amounts that will adversely affect the taste, color or odor thereof, or impair the waters for their best usages.
Turbidity	No increase that will cause a substantial visible contrast to natural conditions.
Suspended, colloidal and settleable solids	None from sewage, industrial wastes or other wastes that will cause deposition or impair the waters for their best usages.
Oil and floating substances	No residue attributable to sewage, industrial wastes or other wastes, nor visible oil film nor globules of grease.
Phosphorus and nitrogen	None in amounts that will result in growths of algae, weeds and slimes that will impair the waters for their best usages.
Flow	No alteration that will impair the waters for their best usages.
pH	Shall not be less than 6.5 nor more than 8.5.
Dissolved Oxygen	For trout spawning waters (TS), the DO concentration shall not be less than 7.0 mg/L from other than natural conditions. For trout waters (T), the minimum daily average shall not be less than 6.0 mg/L, and at no time shall the concentration be less than 5.0 mg/L. For nontrout waters, the minimum daily average shall not be less than 5.0 mg/L, and at no time shall the DO concentration be less than 4.0 mg/L.
Dissolved Solids	Shall be kept as low as practicable to maintain the best usage of waters but in no case shall it exceed 500 mg/L.
Total Coliform (per 100mL)	The monthly median value and more than 20 percent of the samples, from a minimum of five examinations, shall not exceed 2,400 and 5,000, respectively.
Fecal Coliforms (per 100mL)	The monthly geometric mean, from a minimum of five examinations, shall not exceed 200

Source: NYSDEC 2012b, 2012c

4.3.2.2 Water Quality Assessments and Impairments

In order to fulfill certain requirements of the Clean Water Act, the NYSDEC provides regular, periodic assessments of the quality of the water resources in the state and their ability to support specific uses. This information is compiled by NYSDEC into an inventory database. The database is used to record current water quality information, characterize known and/or suspected water quality problems and issues, and track progress toward their resolution. This inventory of water quality information is known as the Waterbody Inventory/Priority Waterbodies List (WI/PWL).

The most recent Mohawk River Basin WI/PWL Report was issued in June 2010 and includes an overall evaluation of water quality in the Mohawk River Basin, as well as assessments for specific waterbody segments within the basin. Causes (pollutants) and sources of water quality problems for those waterbodies with known or suspected impacts are also outlined.

Assessed waterbodies are listed as *Impaired Waters (Not Supporting Uses)*, *Waters with Minor Impacts*, *Threatened Waters*, *Waters with Water Quality Impacts Needing Verification*, or *Waterbodies with No Known Impact*. Unassessed waterbodies are also included in the Waterbody Inventory. The assessments reflect the best available water quality information at the time of publication of the list (NYSDEC, 2010a). A description of the assessments of the waterbodies in the Project vicinity from the WI/PWL is summarized in Table 4.3.2.2-1, and described briefly below.

The Mine Kill and Platter Kill are listed in the Inventory as "*Waterbodies with No Known Impact"* (NYSDEC, 2010a). The stream segment downstream of the Lower Reservoir is listed as *Waters with Minor Impacts*; the reach is "stressed" in terms of habitat and hydrology uses due to hydrologic modification (NYSDEC, 2010a). Much of the impact is a result of the operation of the Schoharie Reservoir, which diverts 316 mi^2 of drainage area. As with the reach of Schoharie Creek upstream of the Lower Reservoir, the Waterbody Inventory states that "Stream flow is significantly influenced by operation of the Schoharie Reservoir. Flow from the reservoir is restricted when the dam is not spilling. The lack of flow is a particular problem during the summer when low flow and resulting increase in water temperature affect the fishery" (NYSDEC, 2010a).

The Upper and Lower Reservoirs as well as the Schoharie Creek from Schoharie Reservoir downstream to the Lower Reservoir are listed as *Waters with Water Quality Impacts Needing Verification.* The NYSDEC defines these waterbodies as "segments that are thought to have water quality problems or impacts but for which there is not sufficient or definitive documentation. These segments require additional monitoring to determine whether uses are restricted." The aquatic life and habitat/hydrology

stream uses in Schoharie Creek between Schoharie Reservoir and the Lower Reservoir are stressed by hydrologic modification and silt and sediment loadings (NYSDEC, 2010a). "Stream flow is significantly influenced by operation of the Schoharie Reservoir. Flow from the reservoir is restricted when the dam is not spilling" (NYSDEC, 2010a). Under normal conditions, there is little or no spill from NYCDEP's Schoharie Reservoir, so the flow in this stream segment during these times is only from the 40 mi^2 of drainage between the NYCDEP's Gilboa Dam and the Lower Reservoir. The Waterbody Inventory states that "the lack of flow is a particular problem during the summer when low flow and resulting increase in water temperature affect the fishery" (NYSDEC, 2010a). For the water body segments in the Project vicinity listed by NYSDEC as *Needing Verification*, the water quality data and field observations collected by the Power Authority in 2012 (NYPA, 2014a) provide rigorous and up-to-date water quality information in these areas. The results from this effort are presented in more detail in Section 4.3.2.3 below.

Table 4.3.2.2-1: Waterbody Assessment of the Waters in the Project Vicinity

Waterbody	Segment Description	Assessment Category	Use(s) Impacted	Severity
Schoharie Creek , Lower, Main Stem	From Fultonham to Lower Reservoir	Minor Impacts	Habitat/Hydrology	Stressed
Lower Reservoir	Entire reservoir	Needs Verification	Recreation	Threatened
Schoharie Creek , Middle, Main Stem	From Lower Reservoir to Schoharie Reservoir	Needs Verification	Aquatic Life Habitat/Hydrology	Stressed Stressed
Upper Reservoir	Entire reservoir	Needs Verification	Recreation	Threatened
Mine Kill	Entire stream and tributaries	No Known Impacts	No Use Impairment	n/a
Platter Kill	Entire stream and tributaries	No Known Impacts	No Use Impairment	n/a

Source: NYSDEC, 2010a.

4.3.2.3 Water Quality Studies and Data

Historic Water Quality Data (1974-1978)

Water quality data were collected by the Power Authority from 1974-1978 from the Upper and Lower Reservoirs, Schoharie Reservoir, Schoharie Creek and tributaries. Typical parameters collected from the Upper and Lower Reservoirs included: pH, turbidity, water temperature, Secchi disk transparency, dissolved oxygen (DO), alkalinity, and total hardness. Data were collected on a weekly, semi-monthly, or monthly basis. This section provides an overview of the historic data collected and trends observed.

DO and Temperature Profiles

Dissolved oxygen concentrations and water temperatures in both reservoirs were generally similar with each other and throughout the water column in each reservoir or decreased slightly with depth (Culp, 1979). This is indicative of the pumped storage operations where the water is cycled back and forth between the two reservoirs.

Historically, sampling sites in the Lower Reservoir near the powerhouse were generally well mixed and had very similar surface and bottom water temperature and DO concentrations, although during periods when there was limited pumped storage operation, the reservoirs were shown to stratify, at least temporarily or weakly. Data collected by the Power Authority in 1976 demonstrated that pumped storage operations can prevent thermal and chemical stratification in both the Lower and Upper Reservoirs. During 1976, oxygen levels throughout the Lower Reservoir tended to be at or near saturation, and water temperatures throughout the reservoir were at or near that which would normally occur at the surface (Table 4.3.2.3-1 and Table 4.3.2.3-2). However, during 1975, when use of the Project was less, partial thermal and oxygen stratification occurred for a short time (mid July through early August) in deep areas in both reservoirs, specifically furthest away from the Upper Reservoir intake and the powerhouse (Culp and Lechel, 1977a, 1977b).

In 1978, from June to mid-August, water temperatures in the Upper Reservoir decreased with depth with ephemeral thermoclines. Water temperatures in the Lower Reservoir decreased slightly with depth at the north end of the reservoir near the dam, while the temperature at a sampling station in front of the powerhouse was generally uniform at all depths (Culp, 1979).

Turbidity

Initially, turbidity in the Lower Reservoir increased with the construction of the pumped storage operations in June 1973 when sediments in the vicinity of the powerhouse were redistributed. Once the sediments settled, the maximum levels of turbidity and weekly fluctuations generally declined even with the increased use of the pumped storage facilities (Culp and Lechel, 1977a). Turbidity data from 1974 and 1978 showed the Upper Reservoir was less turbid than the Lower Reservoir. In the spring of 1976, when surface runoff was high and Gilboa Dam was spilling, turbidity was generally higher in the Lower Reservoir than in Schoharie Reservoir. In August and September, after flows over Gilboa Dam ceased (mid-July) and flows into the Lower Reservoir were minimal, turbidity was lower in the Lower Reservoir compared to Schoharie Reservoir (Table 4.3.2.3-3). On average, turbidity in the Lower Reservoir was higher near the powerhouse than other less disturbed locations around the reservoir (Culp and Lechel, 1977a).

pH

The historical water quality measurements indicate that pH in the Upper and Lower Reservoirs ranged from neutral to slightly basic. In 1974, the Upper and Lower Reservoir pH measurements ranged between 7.3 and 7.5. Data collected in 1976 showed pH values that were relatively uniform throughout the reservoir water column (Culp and Lechel, 1977a). In addition, pH measurements of waters within the Project vicinity indicate that levels generally remained between 6.5 and 8.5. pH levels downstream of the Lower Dam, however, increased in the summer of 1976 to a maximum of 8.8.

SUNY Cobleskill (1991, 2005, 2007)

SUNY Cobleskill has collected water quality data in the vicinity of the Project as part of their educational curriculum. Conductivity and pH data were collected in April 1991 from Schoharie Reservoir, Schoharie Creek upstream of the Project, and two locations downstream of the Project (Brooking et al., 1991). The results of this study showed relatively constant pH levels and decreasing conductivity downstream from Schoharie Reservoir. Table 4.3.2.3-4 summarizes the results of the water quality parameters collected.

In August 2005, SUNY Cobleskill collected data on the physical and chemical parameters in the Lower Reservoir including ammonia, alkalinity, hardness, hydrogen sulfide, turbidity, salinity, pH, DO, and conductivity (Nichols, 2006). The results from this effort are summarized in Table 4.3.2.3-5. In April 2007, SUNY Cobleskill collected water quality parameters including temperature, DO, pH, total dissolved solids, conductivity, turbidity, and hardness from two locations on Mine Kill, shown in Table 4.3.2.3-6 (Clark, 2007) and from two locations on Platter Kill, shown in Table 4.3.2.3-7 (Lydon, 2007).

NYSDEC (2001, 2005, 2006, 2010)

The NYSDEC collected water quality data from the Upper and Lower Reservoirs in 2001 and 2010 as part of its Lake Classification and Inventory survey. Vertical profile measurements were collected and various chemical analyses were performed from samples collected from the surface and bottom of each reservoir. The parameters collected as part of the vertical profiles included water temperature, pH, specific conductance, and ORP (oxidation reduction potential). In both 2001 and 2010, the vertical profiles showed that the Lower Reservoir was not stratified, but that the Upper Reservoir DO and temperature measurements decreased slightly with depth, as seen in Tables 4.3.2.3-8 and 4.3.2.3-9 (NYSDEC, 2012d).

Tables 4.3.2.3-10 and 4.3.2.3-11 display the results of the surface and bottom water sampling for both reservoirs from 2001 and 2010, respectively.

In 2005 and 2006, rivers and streams of the Mohawk River drainage basin were sampled by the NYSDEC as part of their Rotating Integrated Basin Studies (RIBS) portion of the Statewide Waters Monitoring Program. To provide more detailed water quality data and information on a smaller number of waterbodies in a selected drainage basin, sampling at the intensive monitoring sites employed more frequent, comprehensive and integrated multi-media sampling (water chemistry, bottom sediment chemistry, toxicity testing, macroinvertebrates, fish, and habitat assessments). Quantitative concentration of chemical and physical constituents in the water column, sediment, and biological tissue were compared to RIBS assessment criteria to determine if the designated uses of a waterbody are supported by its water quality.

During the 2005-2006 sampling cycle (NYSDEC, 2010b), there were two intensive sampling sites on the main stem Schoharie Creek: at Fort Hunter, downstream of the Project near its mouth with the Mohawk River and at Jewett, upstream of the Project in the upper Schoharie River basin. At both sites, macroinvertebrate sampling indicated slightly impacted water quality conditions compared to natural conditions; sediment testing indicated that the levels of contaminants in sediment were unlikely to cause adverse biological effects to sediment-dwelling organisms; and toxicity testing indicated no significant reproductive or mortality effects (NYSDEC, 2010b). Mercury in the water column was listed as a parameter of concern at both sites while iron was listed at Fort Hunter and copper at Jewett (NYSDEC, 2010b).

Sampling at RIBS screening sites provides a narrative assessment of water quality at a large number of sampling sites with minimal resource expense. Biological (macroinvertebrate) sampling provides

assessments of a large number of representative and varied sites within targeted basins. There were three screening sites located in the vicinity of the Project: West Kill and Mill Creek, downstream of the Project in North Blenheim, and Platter Kill in Gilboa upstream of the Project. Macroinvertebrate sampling indicated that the water quality in Mill Creek and Platter Kill was not impacted while the water quality in West Kill was slightly impacted (NYSDEC, 2010b). Toxicity testing at Platter Kill indicated moderate sediment toxicity. There was no toxicity sampling at the Mill Creek and West Kill sites (NYSDEC, 2010b).

NYCDEP

The NYCDEP has been conducting a long-term water quality sampling program of streams and reservoirs in the NYC drinking water supply watersheds. Water quality samples are collected at a fixed frequency from a network of sampling sites throughout the watershed. Grab samples are generally collected once a month (twice a month at selected sites). Storm-event sampling is also performed at selected sites. A water quality station is maintained by the NYCDEP downstream of Gilboa Dam in Schoharie Creek, referred to as Site SS. There, the NYCDEP collects various water quality parameters such as: temperature, dissolved oxygen, pH, turbidity, conductivity and other chemical, microbiological, and organic data. However, NYCDEP limits its sampling at this location to only when water is spilling over the Gilboa Dam (NYCDEP, 2012).

Between 2007 and 2012, the NYCDEP collected water quality data at Site SS four to nine times per year. Additionally, water samples were collected for laboratory analysis. Temperature, dissolved oxygen, pH, turbidity and conductivity measurements obtained by the NYCDEP from 2007 to 2012 at Site SS are presented in Table 4.3.2.3-12, while laboratory analysis of other water quality parameters are presented in Table 4.3.2.3-13.

The Power Authority's 2012 Water Quality Sampling Program

The Power Authority initiated a water quality monitoring study in 2012 to characterize water quality conditions and determine compliance with New York State Surface Water Quality Standards (NYPA, 2014a). The water quality monitoring study was conducted on a biweekly basis from April through October 2012. Eleven sites were selected in the Lower Reservoir, Upper Reservoir, one of the Upper Reservoir constant level ponds, the main stem of Schoharie Creek upstream and downstream of the Project, and two tributaries that empty into Schoharie Creek (Mine Kill and Platter Kill) and the Lower Reservoir (Figure 4.3.2.3-1). The eleven sites consisted of seven discrete sites and four vertical profile sites in the Upper and Lower Reservoirs (Table 4.3.2.3-14). Continuous water temperature data were also

collected at 15-minute intervals at three sites: above and below the Lower Reservoir, and in one of the constant level ponds. A multiparameter datasonde was used to simultaneously measure: water temperature (°C), DO (mg/L, % saturation), specific conductance (µS/cm), pH, and turbidity (NTU). Water clarity was also collected using a Secchi Disk at the four reservoir profile locations.

Temperature and DO

The vertical temperature and DO profiles collected at the four sites in the Upper and Lower Reservoir during the 2012 water quality sampling (Figures 4.3.2.3-2 and 4.3.2.3-3) indicate that both reservoirs can thermally stratify, though at different times and for different durations, and that Project operations can influence stratification in localized areas in the Lower Reservoir near the powerhouse. Thermal stratification in the Upper Reservoir began to occur in May and lasted until October. The two profile sites in the Upper Reservoir showed similar temperature profile trends; however, the Upper Reservoir South location was deeper and further away from the intake, which seemed to preclude any mixing due to Project operations. Within the Lower Reservoir, thermal stratification near the Dam was evident in May and lasted until mid-August, while the Powerhouse site was thermally stratified only in May during a period when the frequency of Project operations was reduced. The DO vertical profiles collected at the four profile sites in the Upper and Lower Reservoir demonstrate that DO concentrations (mg/L) follow a similar profile pattern as temperature. In addition, hypoxic conditions were present in the hypolimnion at all reservoir sites except the Lower Reservoir Powerhouse, which remained well-oxygenated over the duration of the study. Hypoxic conditions in the hypolimnion manifested in July and lasted until the reservoirs became well mixed in the fall. Overall, the temperature and DO profile data suggest that Project operations mix the water column near the Lower Reservoir Powerhouse, and stratification is more apt to occur when the Project is not operating (NYPA, 2014a).

Water temperature at the seven discrete sites followed a similar pattern over the duration of the study period, reflecting typical seasonal patterns of increasing temperatures during the spring and decreasing temperatures during the fall (Figure 4.3.2.3-4). On average, the tributaries were the coolest, while the Lower Reservoir Inflow and Schoharie Creek Downstream site was the warmest (Table 4.3.2.3-15). However, temperature measurements at the Schoharie Creek Tailwater site were cooler than the temperatures at the Lower Reservoir Inflow site from July to early-September, which is the same period of time when the Lower Reservoir exhibits thermal stratification, indicating that flow releases from the cooler bottom water near the Lower Dam influenced downstream water temperatures. Once stratification was disrupted in late-September, temperatures at the Schoharie Creek Tailwater site were similar to the temperatures at the Lower Reservoir Inflow site. In general, average daily water temperatures at the

Lower Reservoir Inflow and Schoharie Creek Downstream locations increased in April, May, and June, were relatively consistent through July and August, and then decreased through September into October (Figure 4.3.2.3-5). The results of the 2012 water quality monitoring study indicate that the Project does not adversely affect water temperatures in the Schoharie Creek watershed in the vicinity of the Project (NYPA, 2014a).

DO concentrations at all the discrete sites were in compliance with the New York State Surface Water Quality Standards (Table 4.3.2.1-2). All surface waters remained well oxygenated even during summer low flow conditions. Average DO concentrations (mg/L) were highest in the tributaries and lowest at the Constant Level Pond site (Table 4.3.2.3-15). Furthermore, DO measurements collected in Schoharie Creek upstream of the Project were obtained under various Gilboa Dam spilling scenarios. When the Gilboa Dam was observed to be spilling during the sampling events on April 26, June 5, and October 23, DO levels were at or near 100% saturation, but when the Gilboa Dam was not spilling, DO levels were variable, the lowest being 62.4% saturation. This suggests reduced flows result in lower DO concentrations. In addition, the hypoxic conditions in the Lower Reservoir near the Lower Dam do not adversely affect the DO concentrations at the Schoharie Creek downstream sites. When hypoxic hypolimnetic water is released through the low level outlet valves at the Lower Dam, the water is aerated sufficiently as it enters Schoharie Creek through atmospheric mixing (passively through the low level outlet valves for releases up to 25 cfs) or by the Howell-Bunger type valves, which are designed to add oxygen to the released water through atmospheric mixing for releases between 25-700 cfs. Oxygenation of the released water is further enhanced by turbulence where outlet flows enter Schoharie Creek below the Lower Dam. Average DO levels at the Schoharie Creek Tailwater and Downstream sites were 8.56 mg/L (94.2%) and 9.94 mg/L (109.6%), respectively (Table 4.3.2.3-15). The results of the 2012 monitoring indicate that the Project does not adversely affect DO levels of waters in the Schoharie Creek watershed within the Project vicinity (NYPA, 2014a).

Turbidity

Maximum, minimum, and average turbidity measurements collected at the seven discrete sampling locations are presented in Table 4.3.2.3-15. Turbidity levels at the discrete sample sites were generally low during the summer, but higher in the spring and after rain events in the fall (Figures 4.3.2.3-6 and 4.3.2.3-7). Turbidity was observed to increase at most sites shortly after or during a precipitation or high flow event, which is a common observation throughout the watershed. Extended periods of increased turbidity in the watershed are associated with exposure of glacial clay deposits to run-off from intense rainfall, which causes the water to turn a reddish brown color. An example of this was documented during

a sampling event in October, when heavy rains in the upper watershed caused high turbidity levels at all sample sites. Like the discrete sample sites, higher turbidity levels and shallow Secchi disk measurements were observed at the surface of the Upper and Lower Reservoirs during the fall, which suggest that watershed inflows from precipitation are a main factor affecting turbidity and clarity in the reservoirs. Furthermore, turbidity levels observed at the Lower Reservoir Inflow site and the two outflow locations (Schoharie Creek Tailwater and Schoharie Creek Downstream) were similar and relatively low, especially during low flow periods during the summer. During this period, turbidity levels remained low even when the Project was operating, suggesting that pumping and generation at the Project does not adversely affect turbidity. Overall, turbidity levels reflect the prevailing environmental conditions, as the turbidity of streams within the Schoharie Creek watershed is primarily driven by the geology and hydrology of the landscape.

pH

The pH measurements at all sites, except at times in the Schoharie Creek Downstream site and at both vertical profile sites in the Upper and Lower Reservoirs, were within the acceptable limits imposed by the New York State Surface Water Quality Standards (Table 4.3.2.1-2) (NYPA, 2014a). The pH at the Schoharie Creek Downstream site exceeded the upper limit of 8.5 on four occasions from July 3 to August 13 (range 8.6 - 9.2) (Table 4.3.2.3-15). The pH levels were also periodically measured above 8.5 in the top layers of both the Upper and Lower Reservoirs in May (range 8.52 - 8.98) and in the Lower Reservoir in August (8.51). Comparison of DO and pH profiles during periods when pH was above the New York State Standard (8.5) near the surface of the reservoirs indicated that pH followed a similar profile pattern as DO, especially through the epilimnion and metalimnion. This suggests photosynthetic processes are influencing pH levels in the upper layers of the reservoirs. In contrast, the elevated pH levels at the Schoharie Creek Downstream site are likely due to groundwater hydrology and an influence of bedrock material.

Conductivity

Conductivity levels throughout the Project vicinity are relatively low and typical for unpolluted freshwater streams (≤1000 µS/cm; Chapman and Kimstach, 1996). Conductivity measurements varied in relation to streamflow conditions, and were greatest at all seven discrete sites during the dry, summer months (NYPA, 2012a). Generally, conductivity levels were higher for water flowing into than out of the Lower Reservoir (Table 4.3.2.3-15). This may be due to the lack of water contributed to Schoharie Creek by the Gilboa Dam upstream of the Project. Surface conductivity at the four vertical profile reservoir

sampling sites showed slight increases over the duration of the study period, until levels decreased in the Lower Reservoir after a high flow event in late-October. There is no New York State Surface Water Quality Standard for conductivity. Nevertheless, the results of the 2012 water quality monitoring study indicate that the Project does not adversely affect conductivity of waters within the vicinity of the Project.

Summary of NYPA 2012 Water Quality Monitoring

Overall, the data from the 2012 water quality monitoring study shows that operation of the Project does not adversely affect water quality. Both the Upper and Lower Reservoirs enter a period of thermal stratification, but Project operations may interrupt stratification of the Lower Reservoir by mixing the water column, especially near the Lower Reservoir Powerhouse. Bottom water releases at the Lower Dam during periods of hypoxia in the hypolimnion did not reduce DO concentrations below the New York State Surface Water Quality Standard downstream of the Project. The elevated pH levels measured downstream of the Project at the Schoharie Creek Downstream site are likely an effect of groundwater seepage and buffering by bedrock material in the watershed. In contrast, the elevated pH levels in the reservoirs are most likely due to photosynthetic activity. Turbidity levels among all sampling sites appear to reflect the natural conditions and variability, and do not appear to be influenced by Project operations. Specifically, high turbidity correlates with precipitation and high flow events while turbidity levels remain low during low inflow periods regardless of Project operation. In conclusion, DO and turbidity levels are within the constraints imposed by the New York State Surface Water Quality Standards, while the pH levels exceeding the standard are explained by natural phenomena.

Table 4.3.2.3-1: Dissolved oxygen and temperature data collected near the dam in the Lower Reservoir, 1976

June 29, 1976		
Depth (meters)	DO (mg/L)	Temp (°C)
0	9.1	22.2
2	9.2	22.0
4	9.2	21.8
6	9.2	21.8
8	8.7	21.0
10	8.4	20.8
11	7.4	20.2

July 7, 1976		
Depth (meters)	DO (mg/L)	Temp (°C)
0	9.8	22.5
2	9.6	22.5
4	9.9	22.5
6	9.4	22.0
8	8.8	21.9
10	8.6	21.8

July 13, 1976		
Depth (meters)	DO (mg/L)	Temp (°C)
0	8.6	22.0
2	8.6	22.2
4	8.6	22.2
6	8.6	22.2
8	8.6	22.2
10	8.5	22.2
11	7.1	22.0

Source: Culp and Lechel, 1977a

Table 4.3.2.3-2: Dissolved oxygen and temperature data collected from Upper Reservoir, 1976

June 29, 1976		
Depth (meters)	DO (mg/L)	Temp (°C)
0	9.0	21.2
2	9.1	21.5
4	8.9	21.5
6	8.8	21.5
8	8.8	21.5
10	8.8	21.0
12	8.7	21.0
14	8.6	20.8
16	8.3	20.5
18	6.4	14.8

July 7, 1976		
Depth (meters)	DO (mg/L)	Temp (°C)
0	8.4	22.5
2	8.4	22.5
4	8.4	22.2
6	8.3	22.0
8	8.2	22.0
10	7.8	21.5
12	7.6	21.5
14	7.6	21.2
16	7.4	20.8
17	5.2	18.8

July 13, 1976		
Depth (meters)	DO (mg/L)	Temp (°C)
0	9.4	21.5
2	9.3	21.5
4	9.3	21.5
6	9.3	21.5
8	9.2	21.8
10	9.2	21.8
12	9.2	21.8
14	9.1	21.5
16	8.9	21.2
18	5.3	19.0

Source: Culp and Lechel, 1977a

Table 4.3.2.3-3: Monthly average turbidity data in 1976

Schoharie Reservoir	
Month	**Monthly Average (NTU)**
April	7.1
May	6.2
June	4.3
July	2.3
August	5.5
September	7.0
October	12.0

Lower Reservoir	
Month	**Monthly Average (NTU)**
April	14.0
May	6.6
June	4.2
July	3.5
August	3.4
September	3.7
October	3.5

Source: Culp and Lechel, 1977a

Table 4.3.2.3-4: Water Quality Parameters Sampled in Schoharie Creek on April 19, 1991.

Location	Conductivity[1]	pH
Schoharie Reservoir near Gilboa Dam	71	7.1
Bridge below Schoharie Reservoir	17	7.3
Below Lower Reservoir	66	7.2
Route 30 Bridge in Middleburgh	26	7.0

[1]Conductivity units erroneously reported as NTU in Brooking et al., 1991. It is unknown what the correct units are for conductivity reported in this study.

Source: Brooking et al., 1991

Table 4.3.2.3-5: Water Quality Parameters Sampled in Lower Reservoir on August 31, 2005

Parameter	Surface	Bottom
pH	7.41	7.53
Conductivity (µS/cm)	127	110
DO (mg/L)	8.2	7.1
Alkalinity (mg/L)	34.2	17.1
Hardness (mg/L)	51.3	68.4
Turbidity (NTU)	3	33
Ammonia (mg/L)	1.3	1.0
Hydrogen sulfide (mg/L)	0	0
Salinity (ppt)	0.06	0.05

Source: Nichols, 2006

Table 4.3.2.3-6: Water Quality Parameters Sampled in Mine Kill on April 6, 2007

Parameter	Upstream	Downstream
Temperature (°C)	0.62	0.21
pH	7.95	6.85
Conductivity (µS/cm)	57	50
DO (mg/L)	9.41	9.66
Hardness (mg/L)	34.2	51.3
Turbidity (NTU)	4.5	6.0
Total Dissolved Solids (g/L)	0.069	0.062

Source: Clark, 2007

Table 4.3.2.3-7: Water Quality Parameters Sampled in Platter Kill on April 12, 2007

Parameter	Upstream	Downstream
Temperature (°C)	2.55	3.20
pH	8.19	8.46
Conductivity (µS/cm)	51	61
DO (mg/L)	7.85	8.60
Hardness (mg/L)	34.2	34.2
Turbidity (NTU)	4.5	7.2
Total Dissolved Solids (g/L)	0.058	0.068

Source: Lydon, 2007

Table 4.3.2.3-8: Water Quality Data Collected on August 22, 2001 by NYSDEC

Lower Reservoir		
Depth (meters)	**DO (mg/L)**	**Temp (°C)**
0	7.6	24.4
1	7.3	24.3
2	7.5	24.2
3	7.4	24.2
4	7.3	24.2
5	7.3	24.2
6	7.3	24.2
7	7.3	24.1
8	7.2	24.1
9	7.3	24.1
10	7.2	24.1
11	7.2	24.1
11.5	6.2	24.1

Upper Reservoir		
Depth (meters)	**DO (mg/L)**	**Temp (°C)**
0	8.2	24.3
1	8.2	24.3
2	8.0	24.2
3	8.0	24.0
4	7.9	24.0
5	7.9	24.0
6	7.8	24.0
7	7.8	24.0
8	7.9	24.0
9	7.9	24.0
10	7.9	24.0
11	7.8	24.0
12	7.7	24.0
13	7.8	24.0
14	7.9	23.9
15	7.9	23.9
16	7.7	23.8
17	1.3	17.3
18	0.1	15.4

Source: NYSDEC, 2012d

Table 4.3.2.3-9: Water Quality Data Collected on August 24, 2010 by NYSDEC

Lower Reservoir				
Depth (meters)	**DO (mg/L)**	**Temp (°C)**	**pH**	**Specific Conductivity (µS/cm)**
0	6.25	22.68	7.82	104
1	6.53	22.69	7.60	104
2	6.62	22.67	7.54	104
3	6.57	22.66	7.49	104
4	6.55	22.65	7.45	104
5	6.42	22.59	7.42	106
6	6.50	22.47	7.41	106
7	6.64	22.44	7.39	106
8	6.65	22.26	7.37	108
9	6.69	22.17	7.36	108
10	6.52	21.97	7.35	111

Upper Reservoir				
Depth (meters)	**DO (mg/L)**	**Temp (°C)**	**pH**	**Specific Conductivity (µS/cm)**
0	7.58	22.39	7.55	101
1	7.54	22.41	7.50	101
2	7.52	22.41	7.49	101
3	7.56	22.42	7.48	101
4	7.54	22.41	7.45	101
5	7.55	22.41	7.42	101
6	7.53	22.41	7.41	101
7	7.53	22.41	7.41	101
8	7.53	22.40	7.38	101
9	7.52	22.40	7.38	101
10	7.53	22.31	7.38	101
11	7.38	22.32	No data	
12	7.38	22.32	No data	
13	7.36	22.32	No data	
14	7.36	22.32	No data	
15	7.34	22.32	No data	
16	7.3	22.31	No data	
17	7.32	22.31	No data	
18	7.07	22.07	No data	
19	7.07	22.03	No data	
20	6.82	21.76	No data	

Source: NYSDEC, 2012d

Table 4.3.2.3-10: Chemical Parameters Analyzed from Samples Collected on August 22, 2001

Parameter	Upper Reservoir Surface	Upper Reservoir Bottom	Lower Reservoir Surface	Lower Reservoir Bottom
Alkalinity (mg/L)	27.0	26.6	24.7	23.7
Calcium (µg/L)	9930	9840	9790	8900
Chloride (mg/L)	10.8	10.8	10.8	10.6
Color (color unit)	15.0	< 15.0	< 15.0	17.5
Magnesium (µg/L)	1610	1650	1510	1440
Total Nitrogen (mg/L)	0.097	0.24	0.20	0.19
Nitrate-Nitrite (mg/L)	0.19	0.19	0.20	0.28
pH	7.35	7.70	7.52	7.16
Total Phosphorus (mg/L)	0.016	< 0.010	< 0.010	< 0.010
Potassium (µg/L)	772	805	738	751
Sodium (µg/L)	4570	4630	4560	4290
Specific Conductance (µS/cm)	82.4	82.3	83.7	76.9
Sulfate (as SO4) (mg/L)	6.5	6.5	6.5	6.0

Source: NYSDEC, 2012d

Table 4.3.2.3-11: Chemical Parameters Analyzed from Samples Collected on August 24, 2010

Parameter	Upper Reservoir Surface	Upper Reservoir Bottom	Lower Reservoir Surface	Lower Reservoir Bottom
Alkalinity (mg/L)	30	31.5	30.9	33.1
Calcium (µg/L)	11100	11800	11700	11800
Chloride (mg/L)	7.3	7.5	7.7	7.8
Chlorophyll a (mg/m^3)	2.7		< 2.0	
Color (color unit)	10	10	10	20
Iron (µg/L)	67.3	218	118	464
Magnesium (µg/L)	1660	1780	1760	1860
Manganese (µg/L)	30	88	68.3	135
Nitrogen (Ammonia) (mg/L)	0.033	0.025	0.031	0.035
Total Nitrogen (mg/L)	0.31	0.32	0.28	0.34
Nitrate-Nitrite (mg/L)	0.0715	0.0824	0.0716	0.609
Dissolved Phosphorus (mg/L)	0.0034	0.0046	0.0039	0.0079
Total Phosphorus (mg/L)	0.0108	0.0138	0.0114	0.0223
Potassium (µg/L)	650	713	688	857
Dissolved Silica (mg/L)	1.22	1.82	1.48	2.14
Sodium (µg/L)	5250	5560	5530	5630
Sulfate (as SO4) (mg/L)	5.1	5.1	5.1	5.2
Total Carbon (mg/L)	2.3	2.7	2.5	3.4

Source: NYSDEC, 2012d

Table 4.3.2.3-12: Water Quality Data Collected by NYCDEP from Downstream of Gilboa Dam Between 2007 and 2012 – Field Parameters

Date	Temperature (°C)	DO (mg/L)	pH	Turbidity (NTU)	Conductivity (µS/cm)
6/11/2012	22.4	9.80	8.24	4	85.0
3/12/2012	3.5	No data	No data	23	82.0
2/13/2012	1.9	14.30	7.6	29	76.0
1/23/2012	1.3	14.60	7.28	25	72.0
12/12/2011	5.2	13.20	7.26	50	85.0
11/21/2011	7.7	11.90	7.89	60	76.0
10/17/2011	14.2	10.60	8.10	180	74.0
9/19/2011	15.9	11.20	7.96	170	68.0
5/9/2011	11.9	No data	7.45	8.6	60.0
4/11/2011	5.1	13.37	7.32	23	63.0
3/14/2011	1.7	14.68	7.12	95	63.0
2/14/2011	1.4	15.02	7.54	13	96.0
1/10/2011	1.0	15.66	6.91	14	69.0
12/13/2010	3.6	13.65	7.33	70	55.0
11/15/2010	No data	No data	No data	17	66.0
10/18/2010	11.9	31.85	7.37	50	65.0
4/12/2010	8.2	12.29	7.59	23	40.0
3/8/2010	1.4	13.39	7.76	9.5	77.0
2/8/2010	0.9	14.57	7.28	31	66.0
1/11/2010	1.2	16.47	7.75	3.7	72.0
12/14/2009	5.2	12.73	7.38	3.5	71.0
11/16/2009	9.1	No data	8.07	1.8	78.0
8/10/2009	21.2	8.83	7.58	4.8	65.0
3/9/2009	No data	No data	No data	8.8	93.0
2/9/2009	1.1	14.76	7.93	2.5	71.5
1/12/2009	0.5	14.66	7.69	2.6	63.5
11/12/2008	8.1	12.89	7.21	5	67.7
5/12/2008	12.7	10.27	7.44	1.8	68.7
4/14/2008	4.9	13.61	7.24	11	63.9
3/10/2008	1.4	13.71	6.76	65	58.4
2/5/2008	2.3	13.83	7.12	6.9	72.6
1/14/2008	2.4	13.13	7.41	8.8	64.2
6/11/2007	21.0	8.85	7.69	5.1	71.0
5/14/2007	15.4	12.23	7.41	6.7	No data
4/9/2007	No data	No data	No data	15	No data
1/8/2007	4.8	13.14	8.79	24	72.9

Source: NYCDEP, 2012

Table 4.3.2.3-13: Water Quality Data Collected by NYCDEP from Downstream of Gilboa Dam Between 2007 and 2012 – Laboratory Parameters

Date	Dissolved Organic Carbon (mg/L)	Chloride (mg/L)	Soluble Reactive Phosphorus (µg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Total Dissolved Nitrogen (mg/L)	Total Nitrogen (mg/L)	Total Dissolved Phosphorus (µg/L)	Total Phosphorus (µg/L)	Total Suspended Solids (mg/L)	NO_3NO_2	Total Organic Carbon (mg/L)	Nitrite (mg/L)	Nitrate (mg/L)	Dissolved Silica (mg/L)
6/11/2012	1.7		15		0.02	0.26		7	14		0.16				
3/12/2012	1.6		3		<0.02	0.35		7	25		0.29				
3/12/2012	1.3					0.34									
2/13/2012	1.7		3		<0.02	0.38		11	24		0.29				
1/23/2012	1.7		4		<0.02	0.37		11	23		0.27				
12/12/2011	2.3		6		<0.02	0.29		8	36		0.17				
11/21/2011	2.2		6		<0.02	0.20		13	40		0.10				
10/17/2011	3.0		9		<0.02	0.25		12	88		0.11				
9/19/2011	3.2		14		<0.02	0.27		17	86		0.11				
5/9/2011	2.2		<2		<0.02	0.20		6	14		0.10				
4/11/2011	1.7		4		<0.02	0.28		7	25		0.19				
3/14/2011	2.2		6		<0.02	0.35		13	52		0.25				
2/14/2011	1.4		2		<0.02	0.33		9	16		0.26				
1/10/2011	1.7		8		<0.02	0.29		11	37		0.23				
12/13/2010	2.7		6		<0.02	0.27		12	45		0.17				
11/15/2010	2.8		4		<0.02	0.27		8	21		0.14				
10/18/2010	3.7		9		<0.02	0.36		17	38		0.16				
4/12/2010	2.1		5		<0.02	0.30		8	23		0.21				
3/8/2010	2.0		4		<0.02	0.50		8	14		0.37				
2/8/2010	2.5		4		<0.02	0.48		11	31		0.36				
1/11/2010	2.3		2		<0.02	0.34		6	11		0.23				
12/14/2009	2.5		2		<0.02	0.30		5	11		0.15				
11/16/2009	2.6		2		<0.02	0.23		<5	10		0.11				
8/10/2009	3.3		4		0.03	0.19		7	18		<0.05				
3/9/2009	1.9	14.3	2		<0.02	0.41		5	15		0.27				
2/9/2009	1.8	10.7	3	5.7	<0.02	0.37		6	8		0.24				
1/12/2009	1.9	8.9	2	5.5	0.02	0.36		6	9	0.6	0.25				
11/12/2008	3.0	7.5	2	5.1	<0.02	0.29		6	17	1.9	0.13				2.7
5/12/2008	1.5	9.6	<2		<0.02	0.24		<5	9				0.001	0.16	
4/14/2008	1.7	10.2	3		<0.02	0.41	0.36	6	14			1.8	<0.001	0.29	3.2
3/10/2008		10.7	5	4.4	0.03			10	31				<0.001	0.32	3.0
2/5/2008	1.7	12.0	2	5.9	<0.02	0.46		5	15				<0.001	0.37	4.3
1/14/2008	2.1	9.3	2	5.3	<0.02	0.42		5	11				<0.001	0.34	4.0
6/11/2007	2.0	8.1	<3	4.9	<0.02	0.34		5	14				0.002	0.23	2.4
5/14/2007	1.6	9.2	<3	4.8	<0.02	0.48		<5	9				<0.002	0.42	
4/9/2007	1.6	8.6	5	4.7	<0.02	0.74		6	16				0.002	0.67	3.9
1/8/2007	1.9	6.2	7	5.7	<0.02	0.46		13	25				<0.002	0.39	7.9

Source: NYCDEP, 2012

Table 4.3.2.3-14: 2012 Water Quality Sampling Locations

Station Number	Description	Sample Type
1	Schoharie Creek Upstream	Surface
2	Platter Kill	Surface
3	Mine Kill	Surface
4	Lower Reservoir Inflow	Surface; continuous water temperature
5	Lower Reservoir Powerhouse	Vertical Profile
6	Lower Reservoir Near Dam	Vertical Profile
7	Schoharie Creek Downstream	Surface; continuous water temperature
8	Upper Reservoir Intake	Vertical Profile
9	Upper Reservoir South	Vertical Profile
10	Upper Reservoir Constant Level Pond	Surface; continuous water temperature
11	Schoharie Creek Tailwater	Surface

Source: NYPA, 2014a

Table 4.3.2.3-15: Maximum, Minimum, and Average of Water Quality Results as Measured at the Seven Discrete Sites by NYPA in 2012

Statistic	Schoharie Creek Upstream	Platter Kill	Lower Reservoir Inflow	Mine Kill	Schoharie Creek Tailwater[1]	Schoharie Creek Downstream	Constant Level Pond
Temperature (°C)							
Max	24.11	17.88	29.36	23.01	24.06	28.86	25.00
Min	9.22	7.28	9.22	6.39	12.50	9.28	9.06
Average	18.32	12.72	20.38	15.71	19.66	19.59	18.25
Dissolved Oxygen (mg/L)							
Max	11.58	12.84	10.98	11.94	11.47	11.82	10.76
Min	6.22	9.26	7.32	8.68	6.92	7.99	5.70
Average	8.56	10.68	9.14	9.97	8.56	9.94	7.76
Dissolved Oxygen (% saturation)							
Max	111.5	111.2	120.1	119.5	109.9	132.6	101.4
Min	62.4	85.4	84.5	89.7	78.7	90.2	59.9
Average	92.4	102.4	103.1	101.7	94.2	109.6	84.0
Turbidity (NTU)[2,3]							
Max	1677.0 (39.0)	788.0 (198.5)	1557.0 (46.6)	73.9 (22.1)	2674.0 (6.6)	1850.5 (42.4)	373.8 (373.8)
Min	3.5 (3.5)	6.0 (6.0)	0.0 (0.0)	0.0 (0.0)	4.0 (4.0)	3.2 (3.2)	0.0 (0.0)
Average	141.0 (13.0)	117.0 (61.1)	130.7 (11.9)	11.2 (6.0)	450.2 (5.4)	152.4 (10.9)	38.2 (36.9)
pH							
Max	8.3	8.2	8.5	8.2	7.9	9.2	7.7
Min	7.4	6.9	7.4	7.4	7.4	7.3	6.7
Average	7.8	7.9	8.1	7.8	7.5	8.1	7.2
Conductivity (µS/cm)							
Max	569.0	193.2	323.6	247.0	130.7	162.2	102.9
Min	72.5	106.4	79.1	88.7	86.6	86.9	68.7
Average	330.5	159.7	207.6	179.6	118.0	121.3	83.1

[1]Schoharie Creek Tailwater site was added part way through the study because of concerns of suppressed DO in hypolimnetic water of the Lower Reservoir near the dam affecting DO concentrations downstream of the Project.
[2]Turbidity summary statistics do not include measurements made on 9/25/2012 because the turbidity sensor malfunctioned.
[3]Values in parentheses omit high turbidity measurements obtained on 10/23/2012 after a rain event.

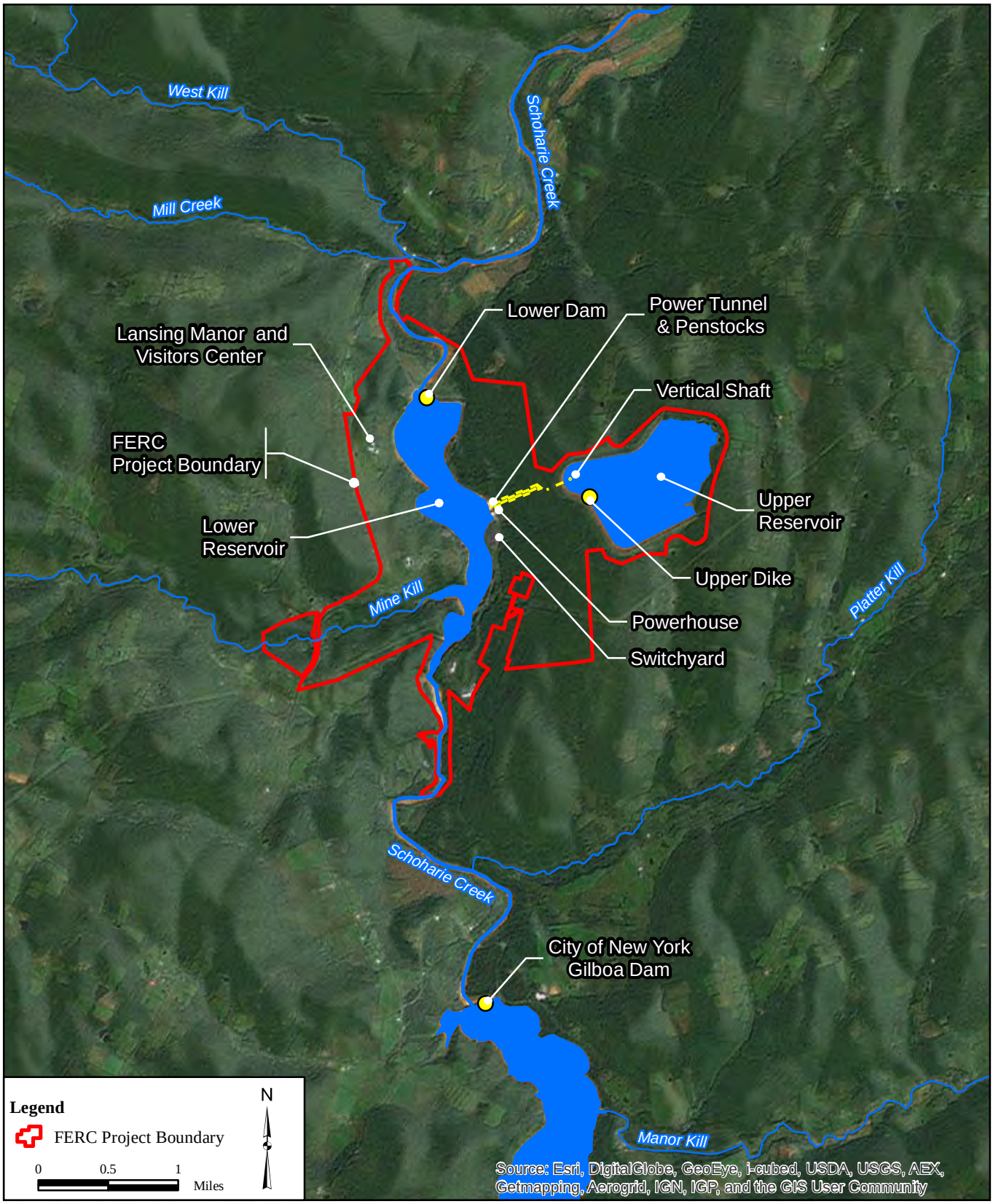

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Figure 4.3.1.1-1: Water Resources of the Project.

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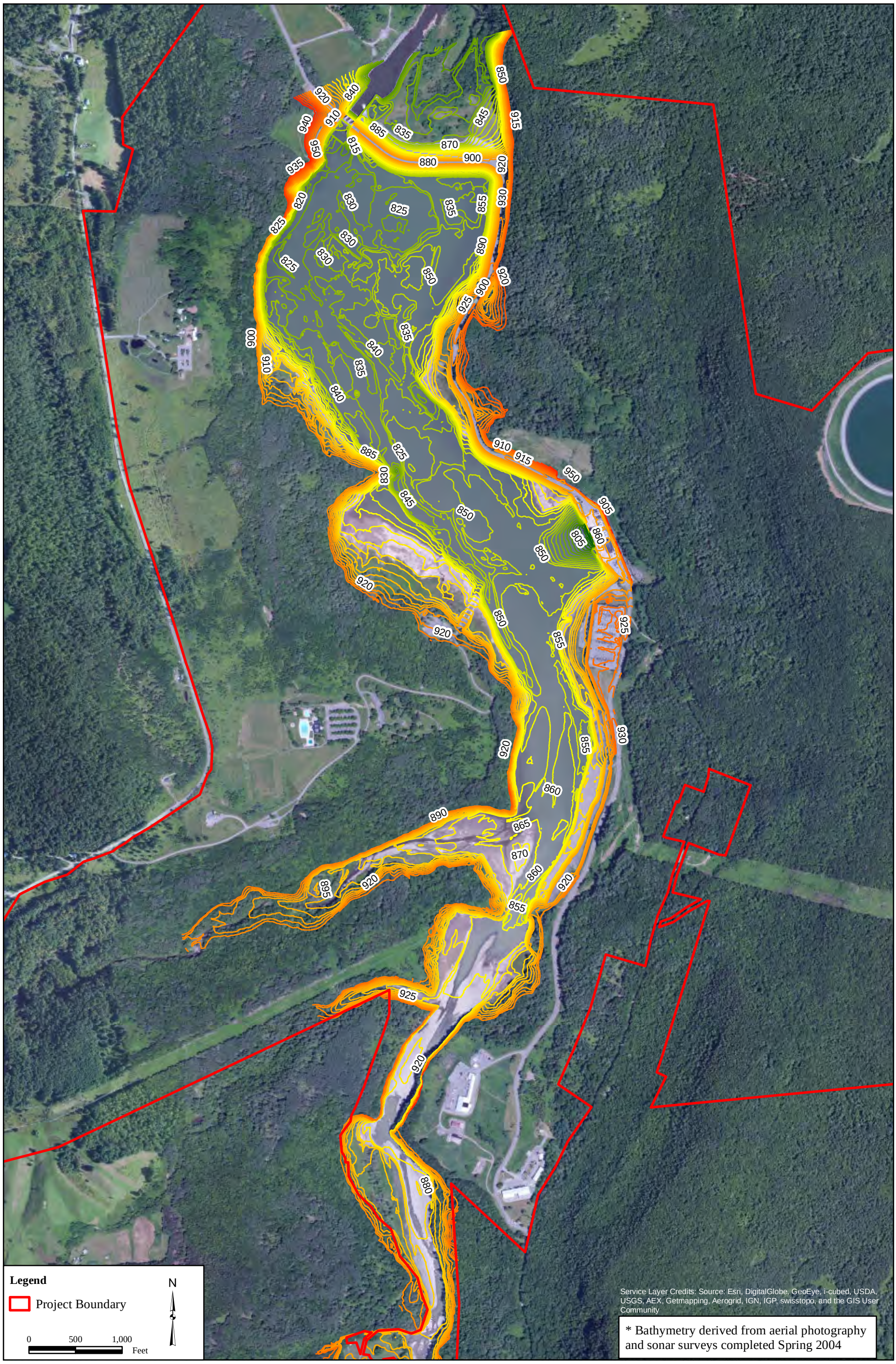

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Figure 4.3.1.1-2: Lower Reservoir Bathymetry

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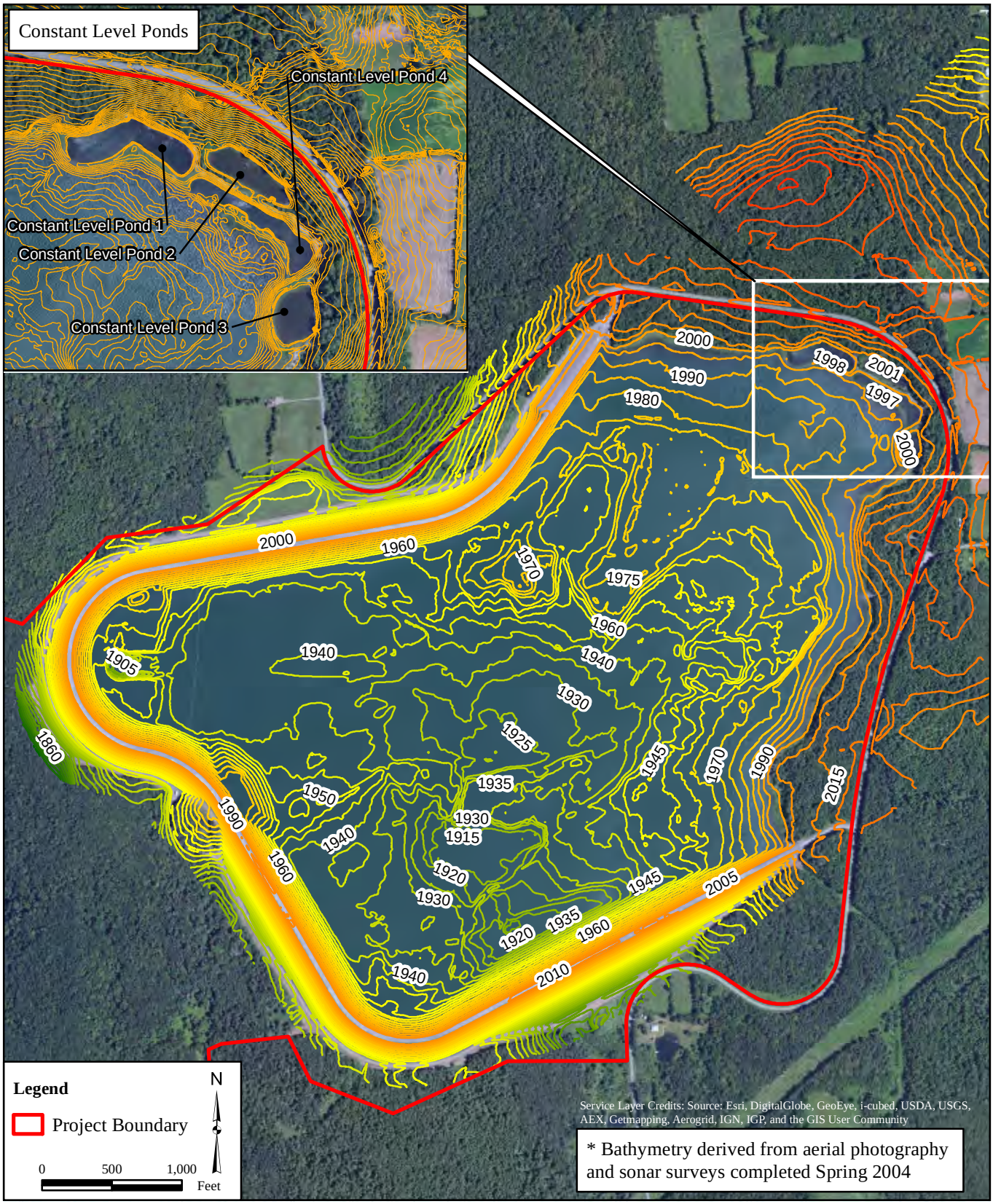

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Figure 4.3.1.1-3: Upper Reservoir Bathymetry

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Figure 4.3.1.1-4: Upper and Lower Reservoir Water Surface Elevation Annual Duration Curve (2002-2012).

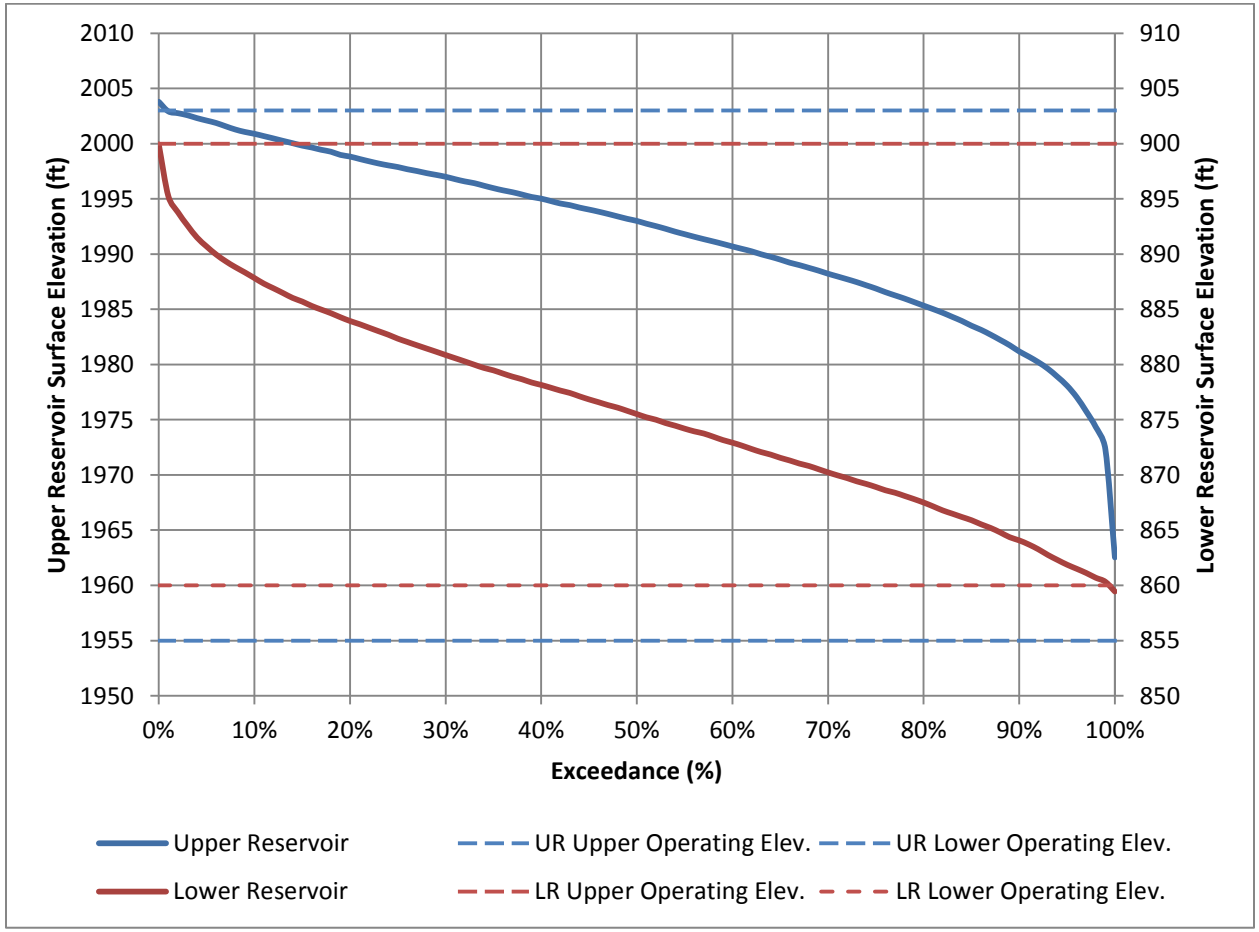


Figure 4.3.1.1-5: Upper and Lower Reservoir Water Surface Elevation Monthly Duration Curve - January (2002-2012).

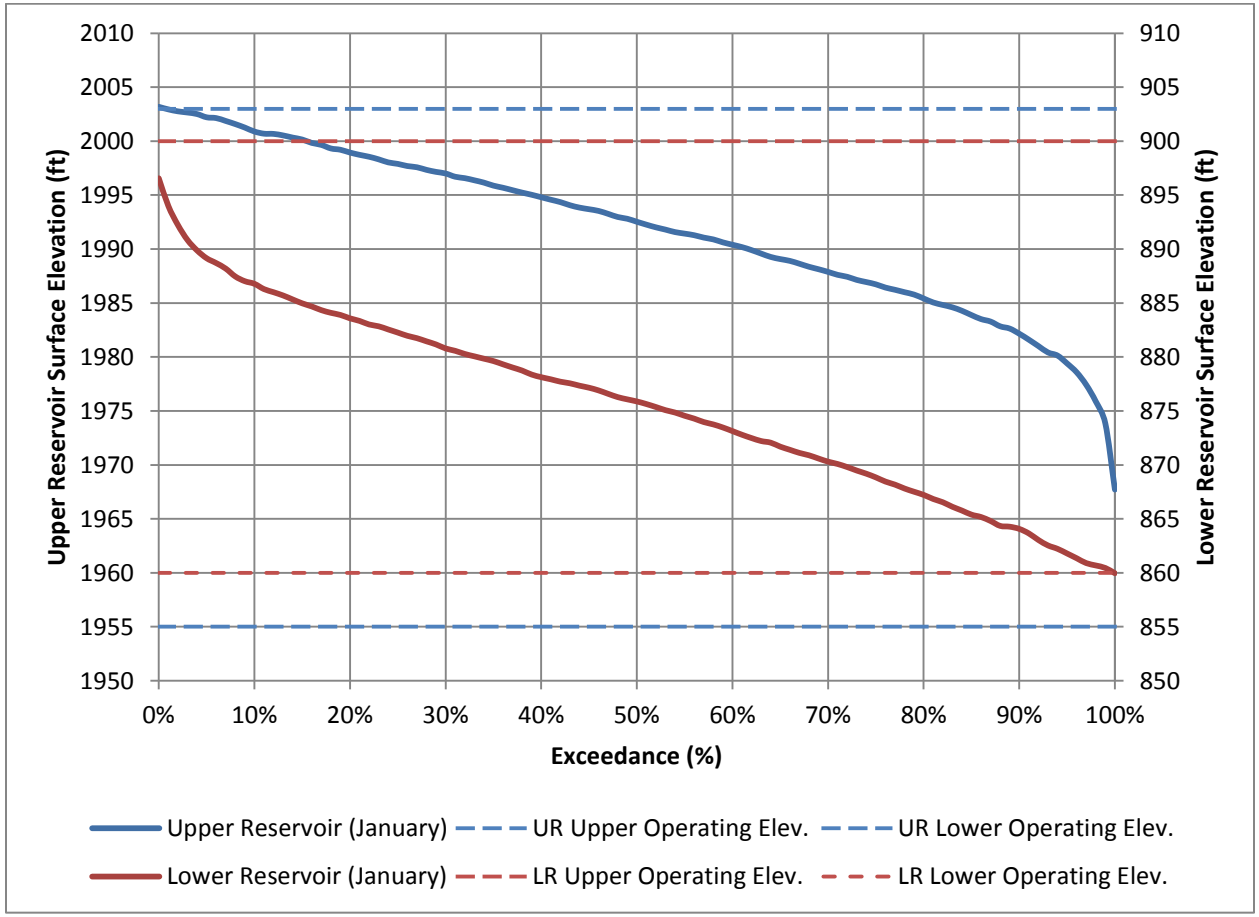


Figure 4.3.1.1-6: Upper and Lower Reservoir Water Surface Elevation Monthly Duration Curve - February (2002-2012).

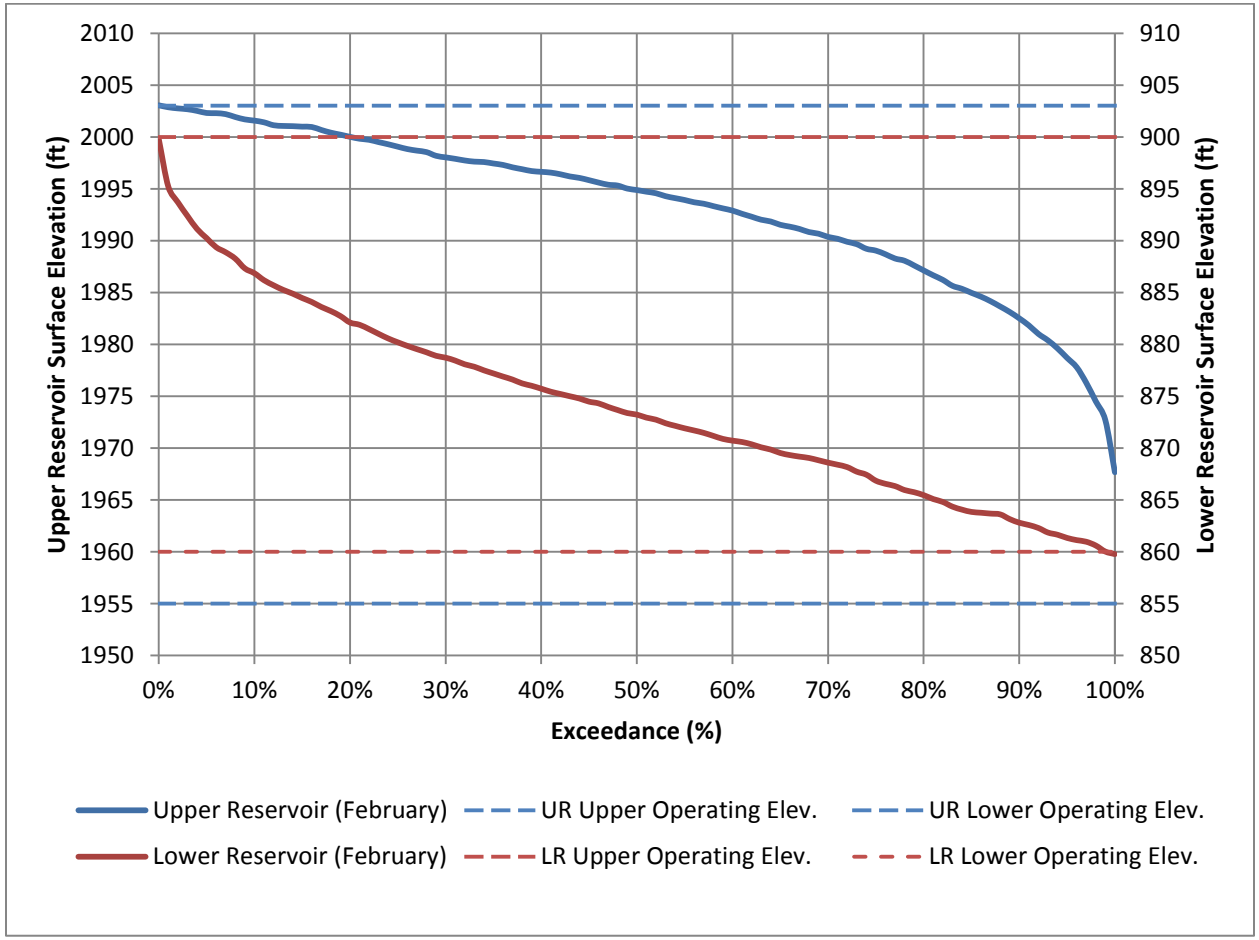


Figure 4.3.1.1-7: Upper and Lower Reservoir Water Surface Elevation Monthly Duration Curve - March (2002-2012).

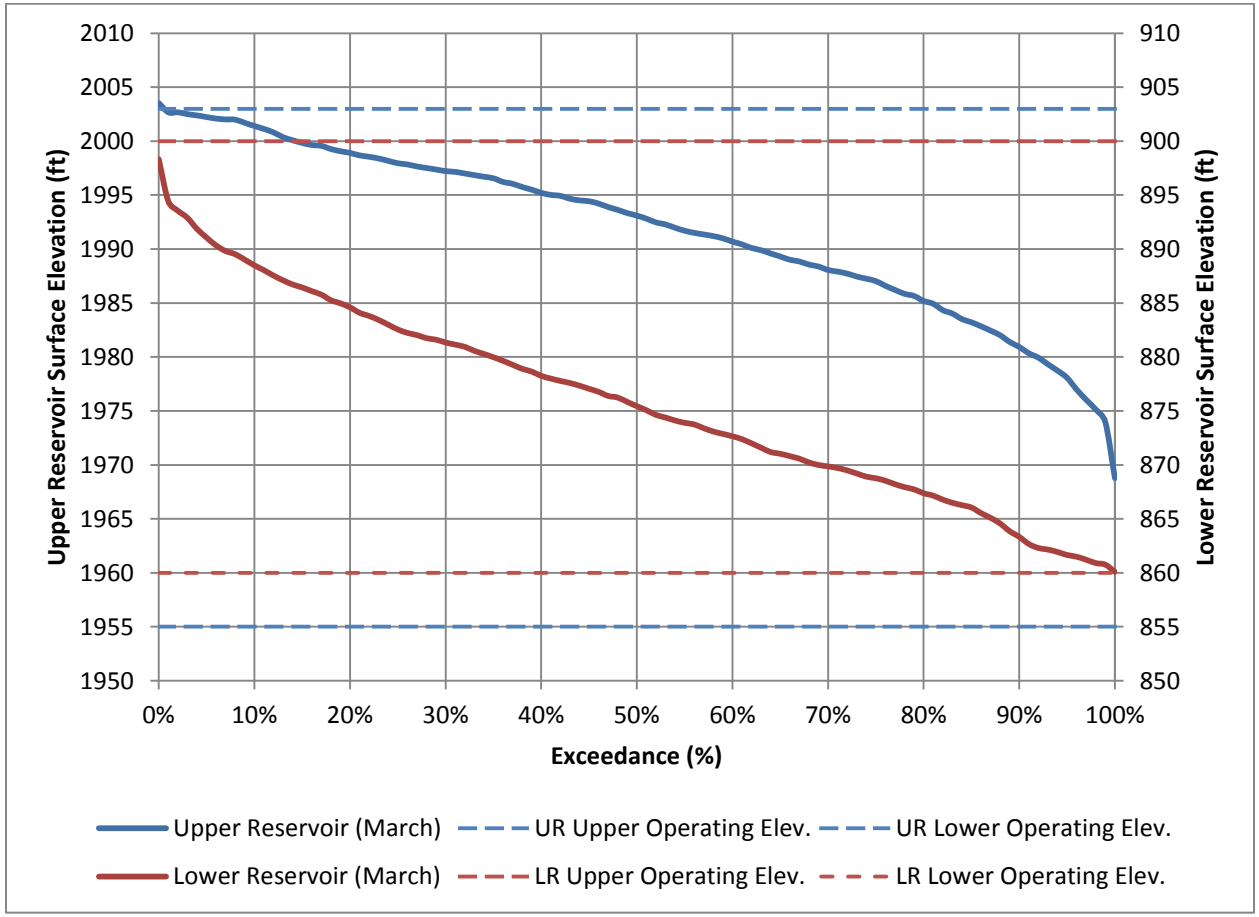


Figure 4.3.1.1-8: Upper and Lower Reservoir Water Surface Elevation Monthly Duration Curve - April (2002-2012).

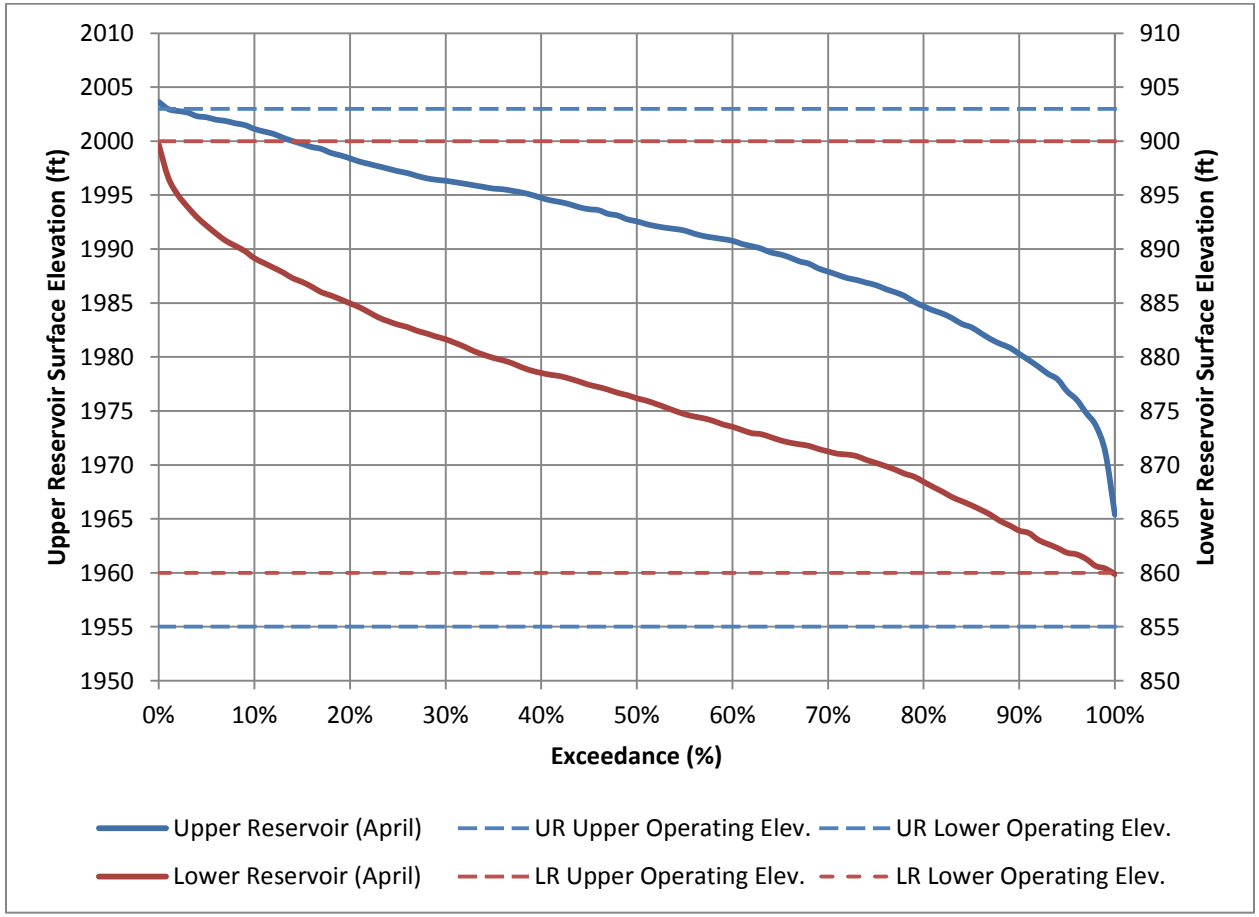


Figure 4.3.1.1-9: Upper and Lower Reservoir Water Surface Elevation Monthly Duration Curve - May (2002-2012).

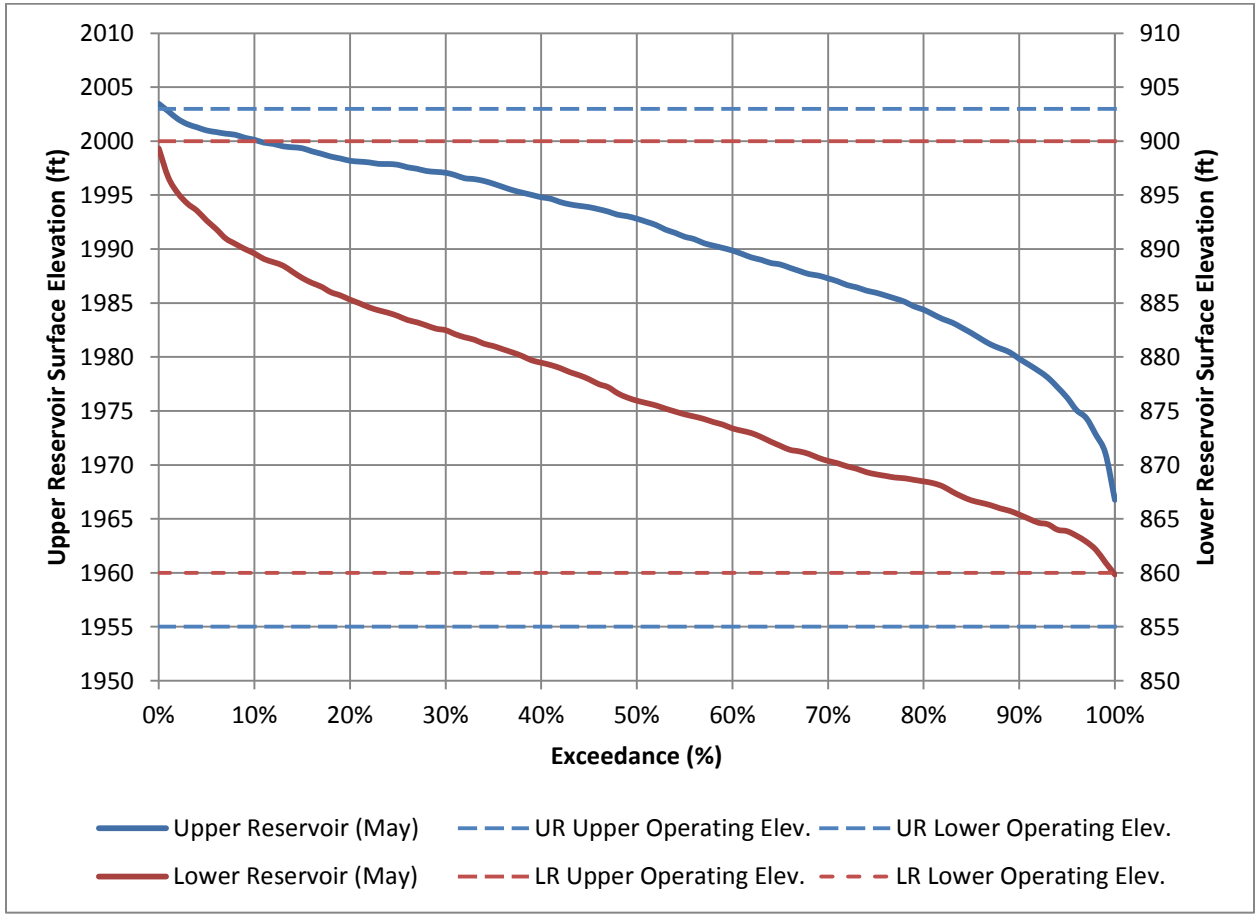


Figure 4.3.1.1-10: Upper and Lower Reservoir Water Surface Elevation Monthly Duration Curve - June (2002-2012).

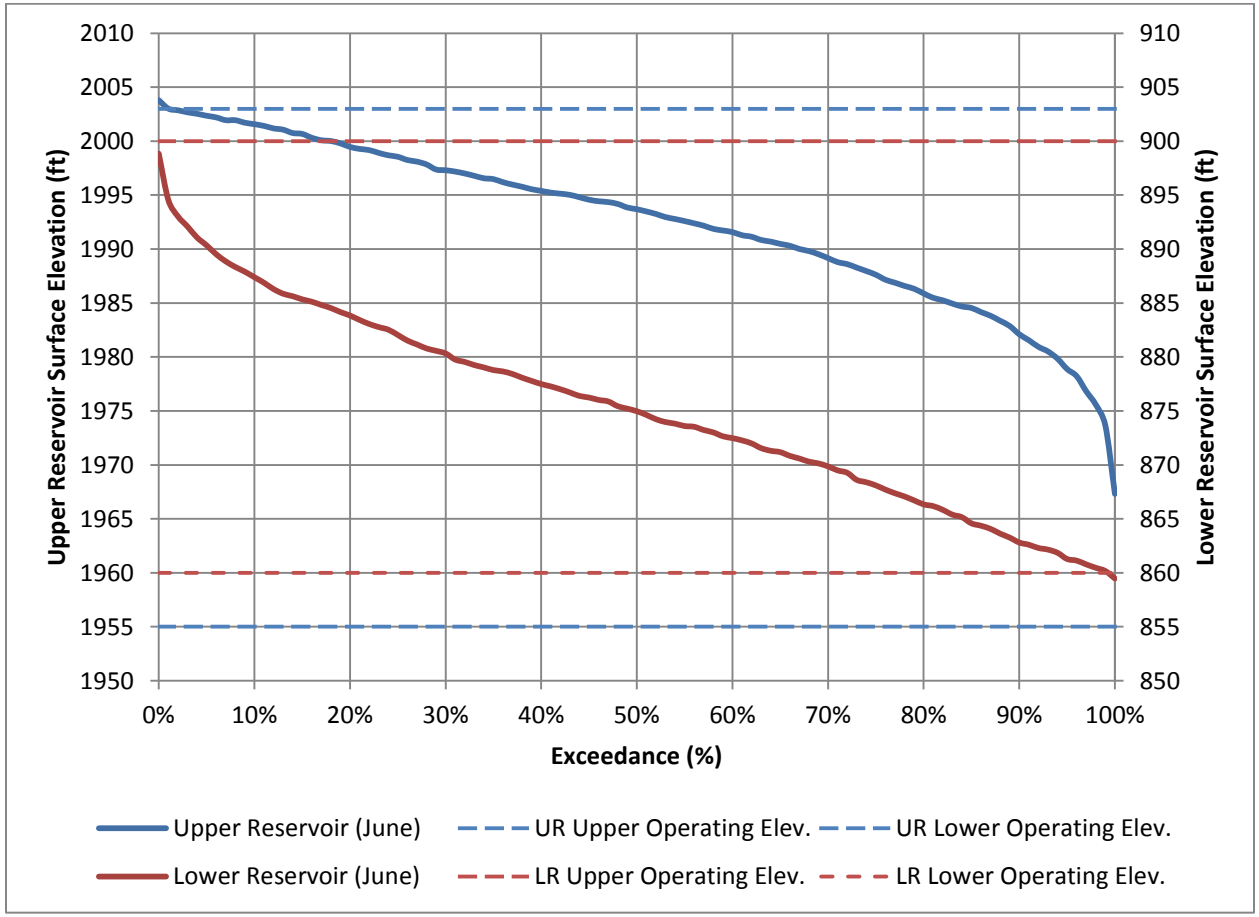


Figure 4.3.1.1-11: Upper and Lower Reservoir Water Surface Elevation Monthly Duration Curve - July (2002-2012).

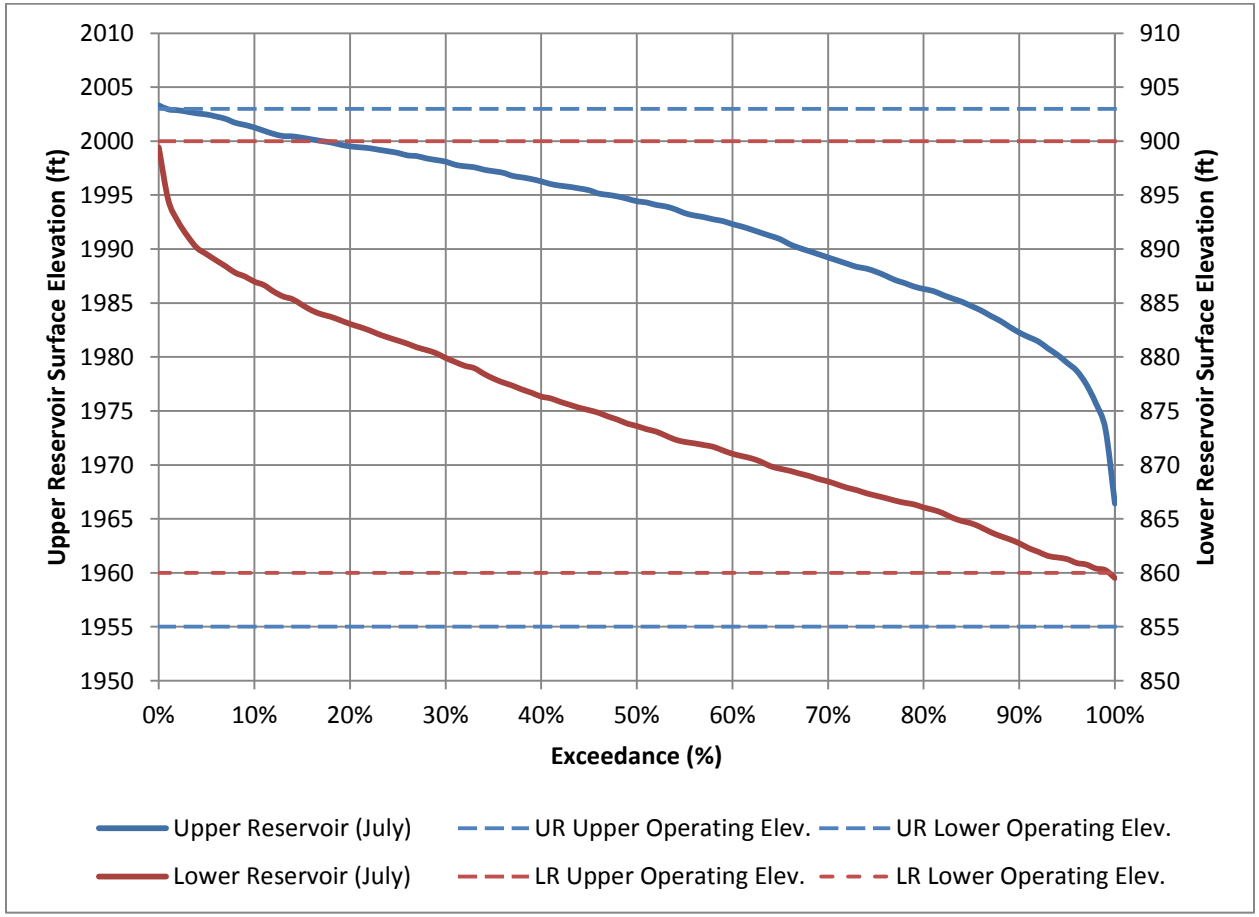


Figure 4.3.1.1-12: Upper and Lower Reservoir Water Surface Elevation Monthly Duration Curve - August (2002-2012).

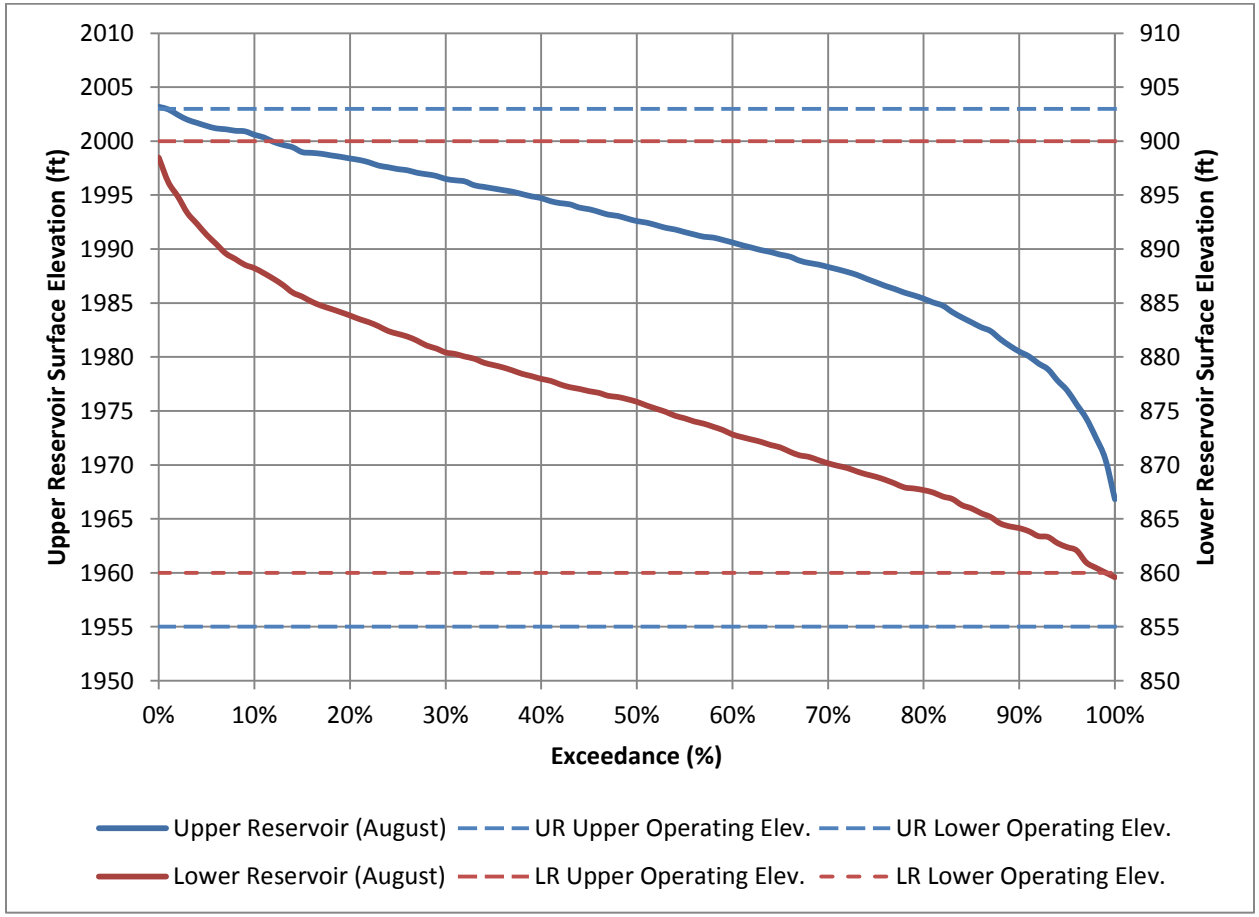


Figure 4.3.1.1-13: Upper and Lower Reservoir Water Surface Elevation Monthly Duration Curve - September (2002-2012).

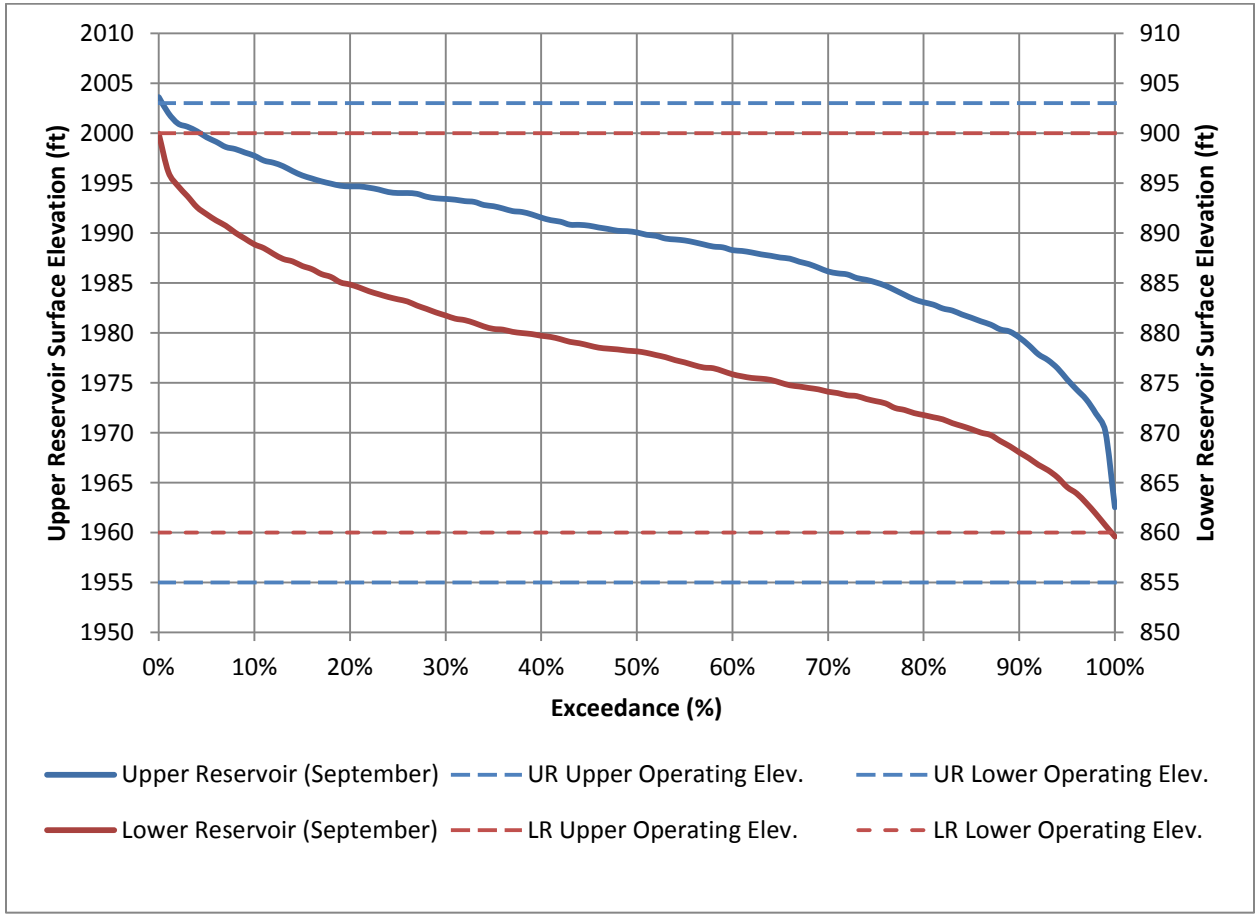


Figure 4.3.1.1-14: Upper and Lower Reservoir Water Surface Elevation Monthly Duration Curve - October (2002-2012).

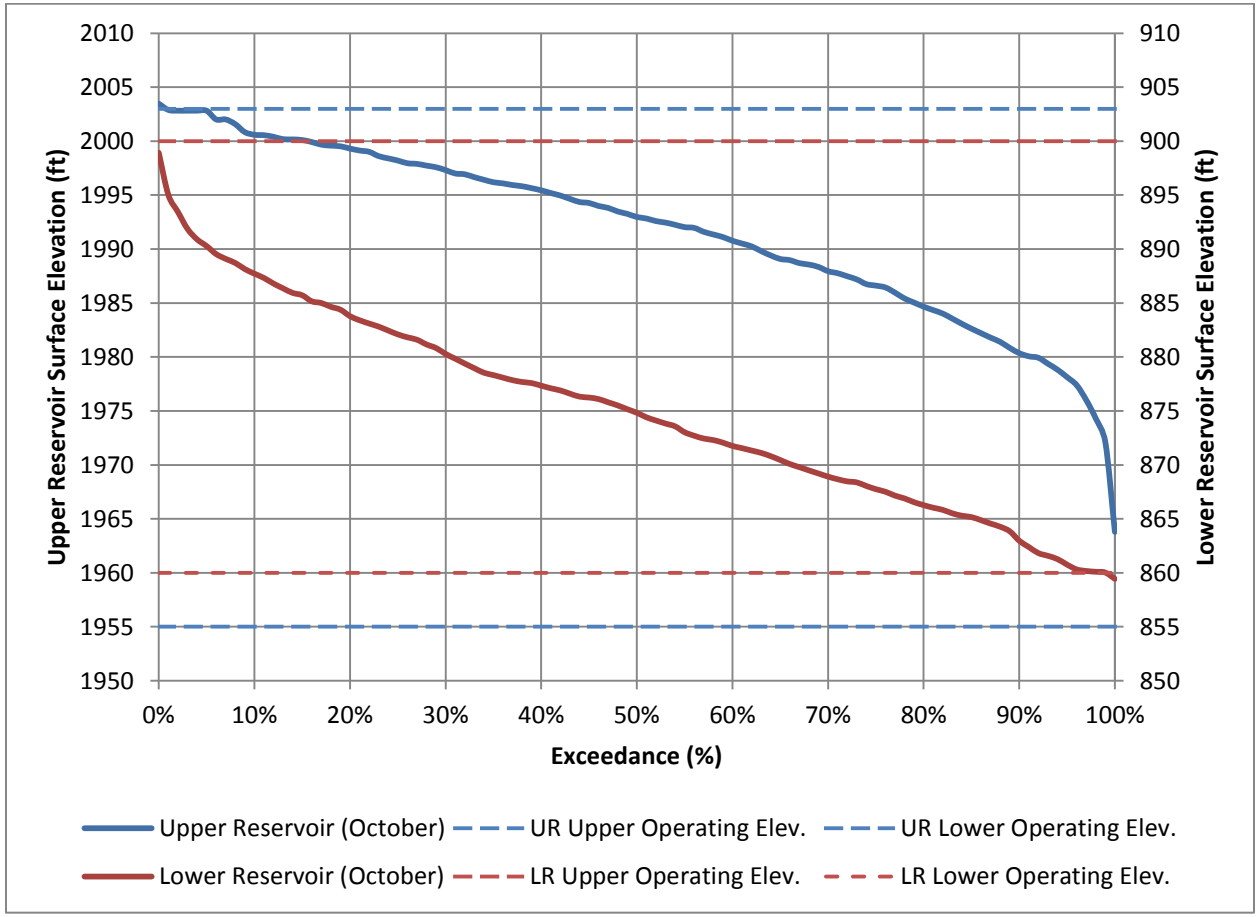


Figure 4.3.1.1-15: Upper and Lower Reservoir Water Surface Elevation Monthly Duration Curve - November (2002-2012).

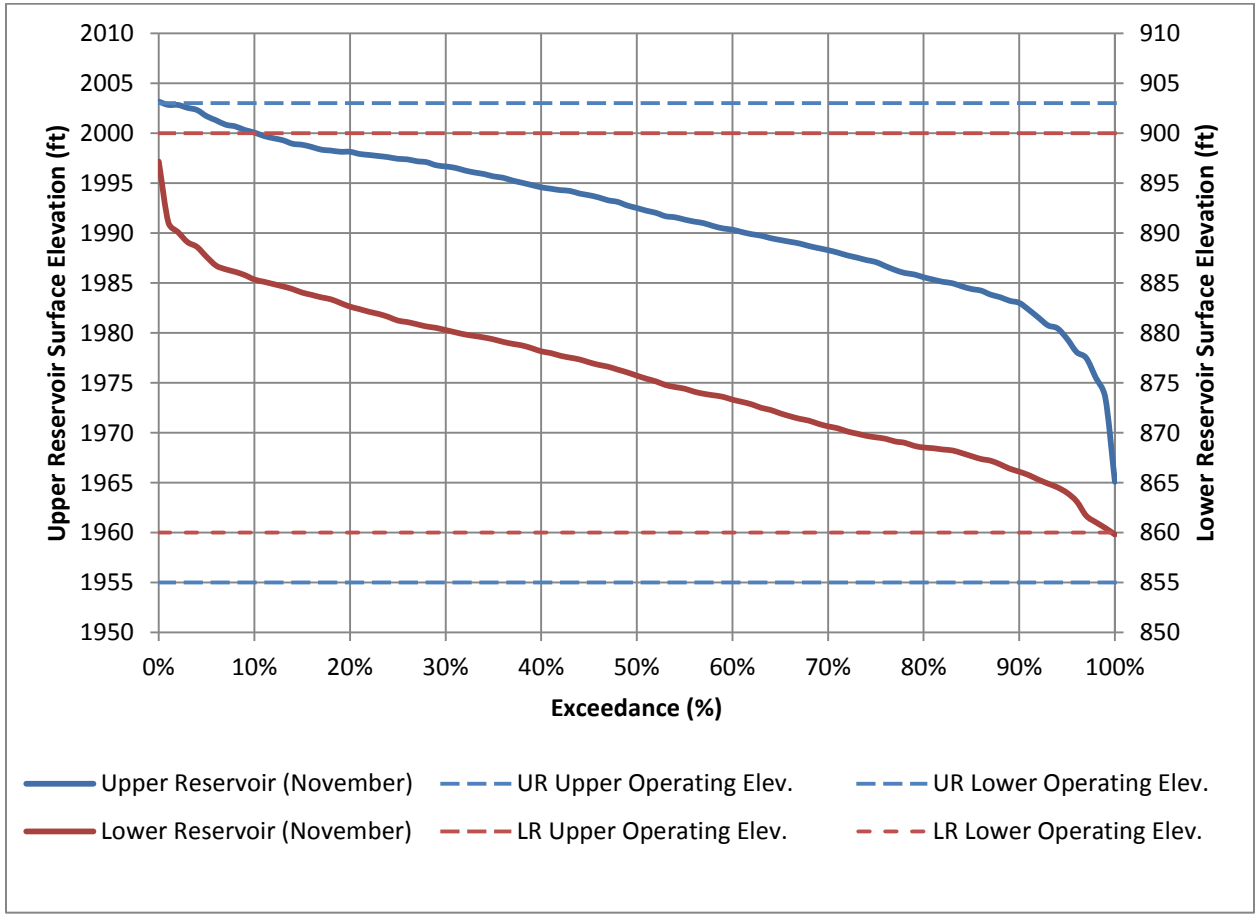
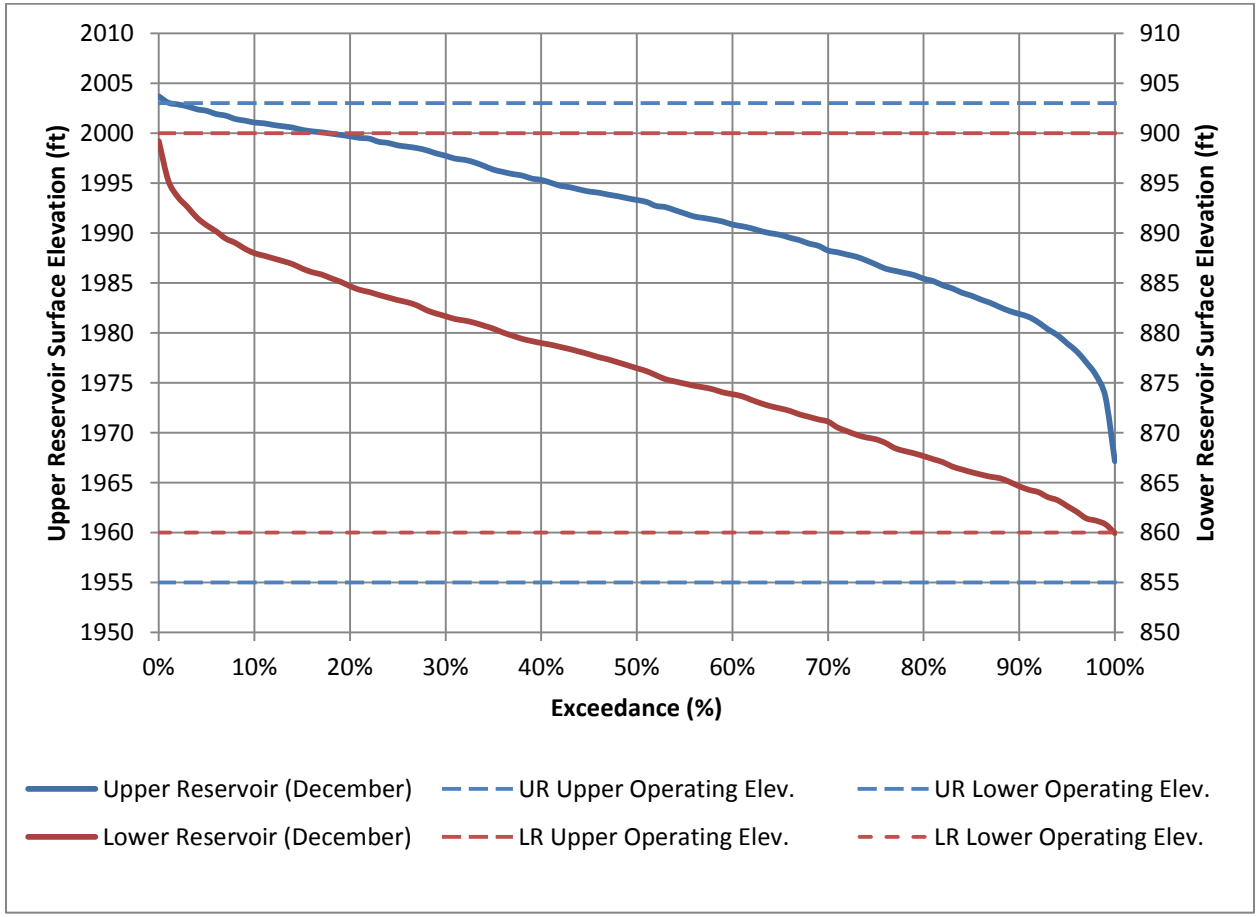


Figure 4.3.1.1-16: Upper and Lower Reservoir Water Surface Elevation Monthly Duration Curve - December (2002-2012).



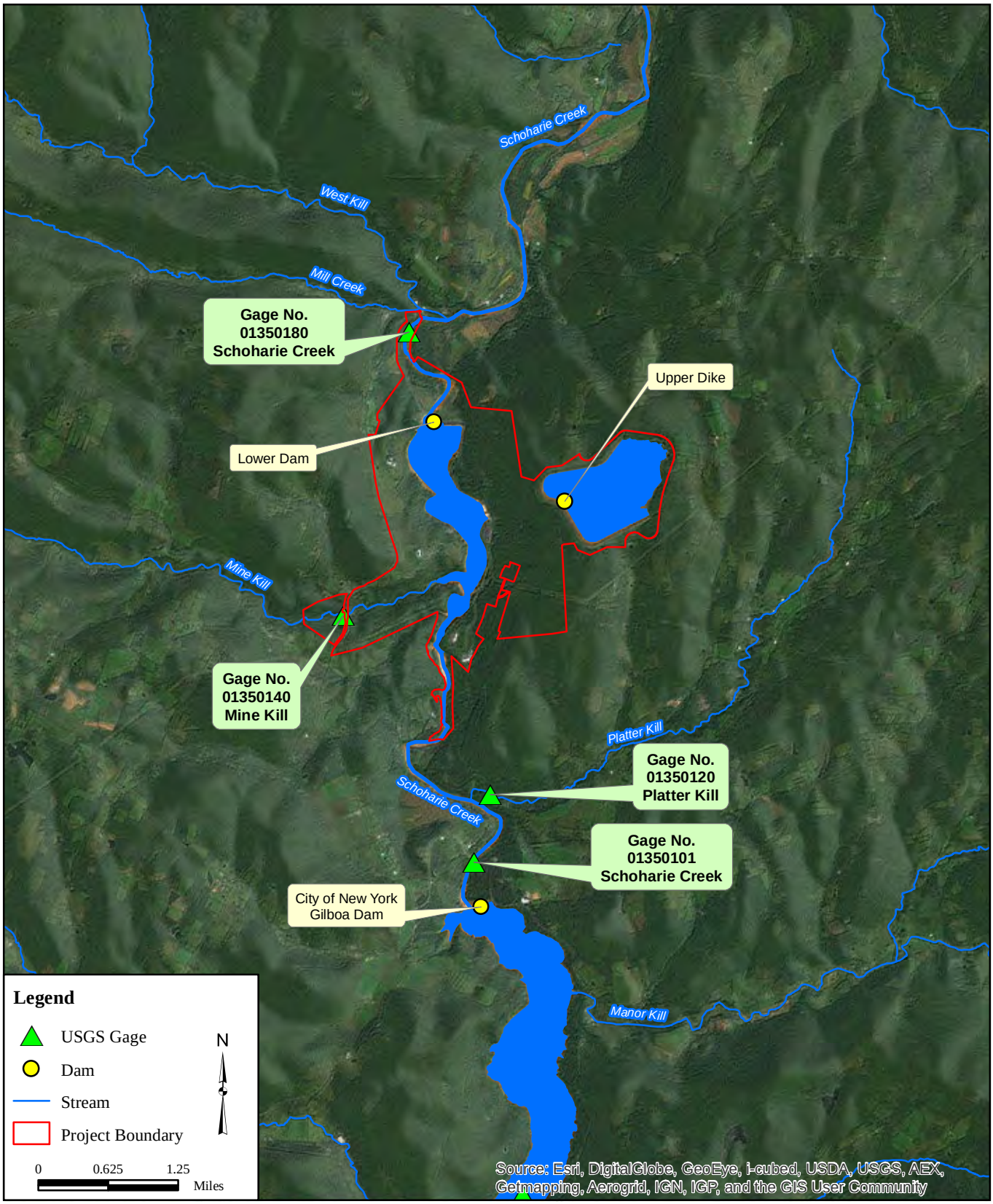


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Figure 4.3.1.2-1: USGS Stream Gages in the Vicinity of the Project

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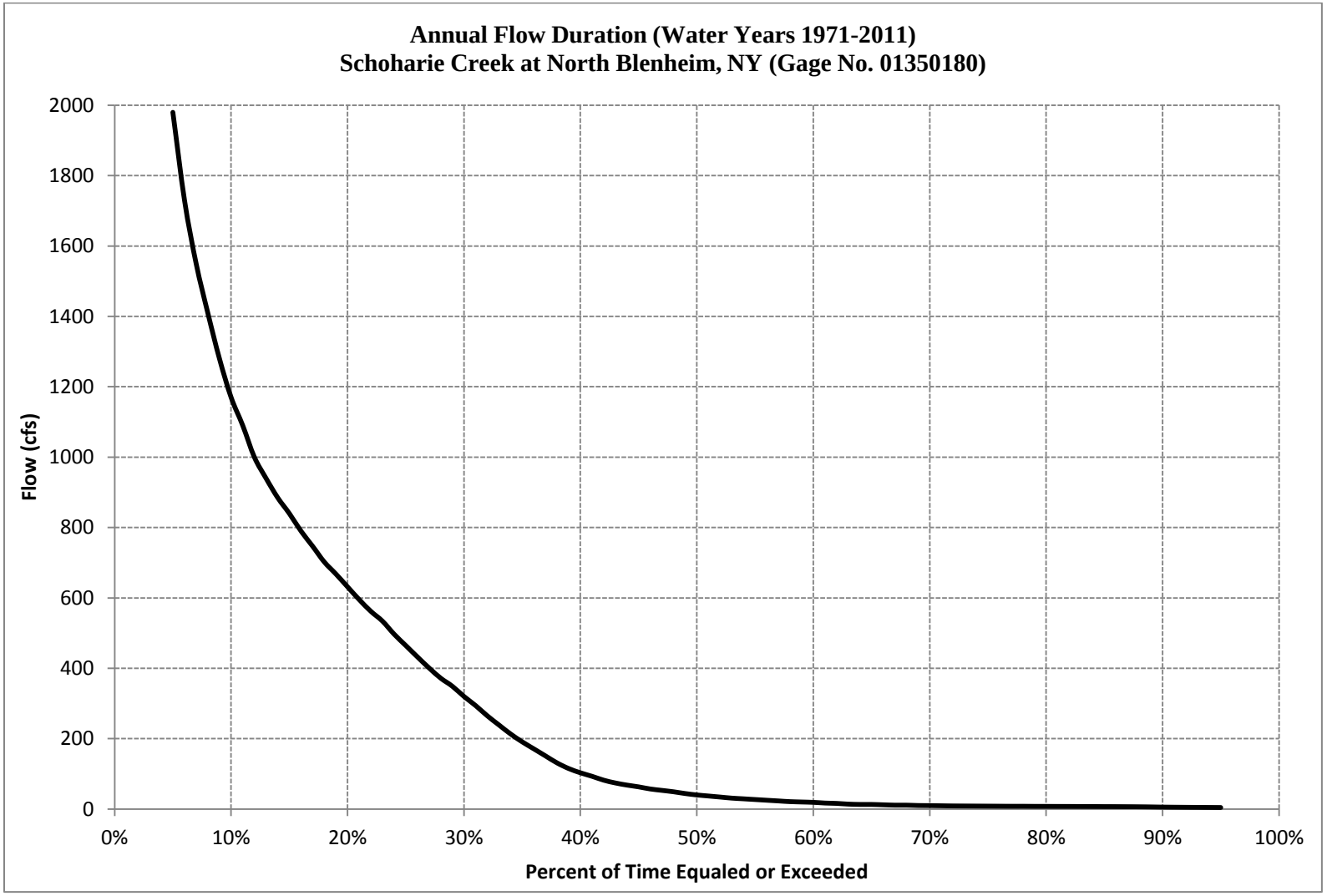
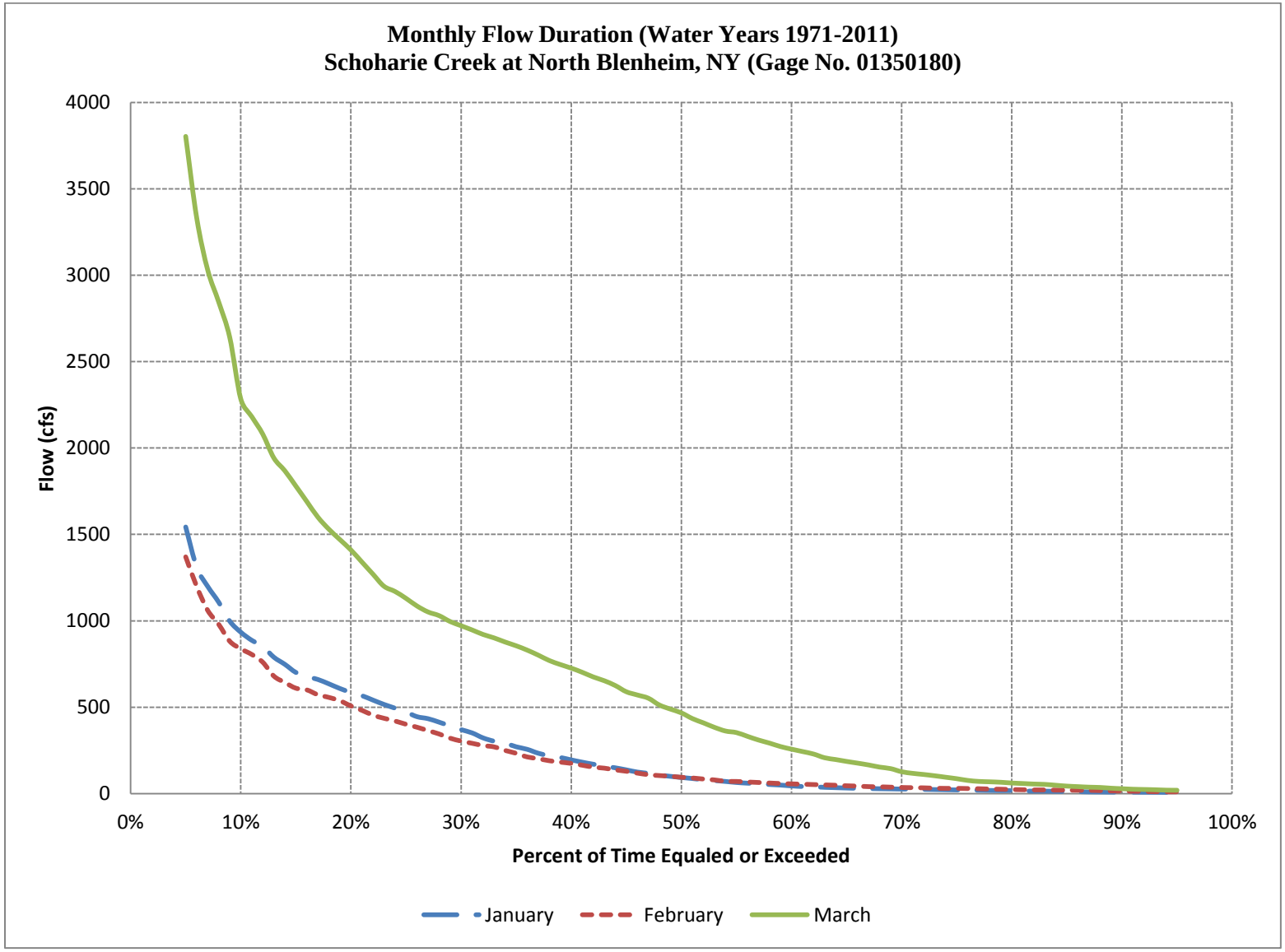
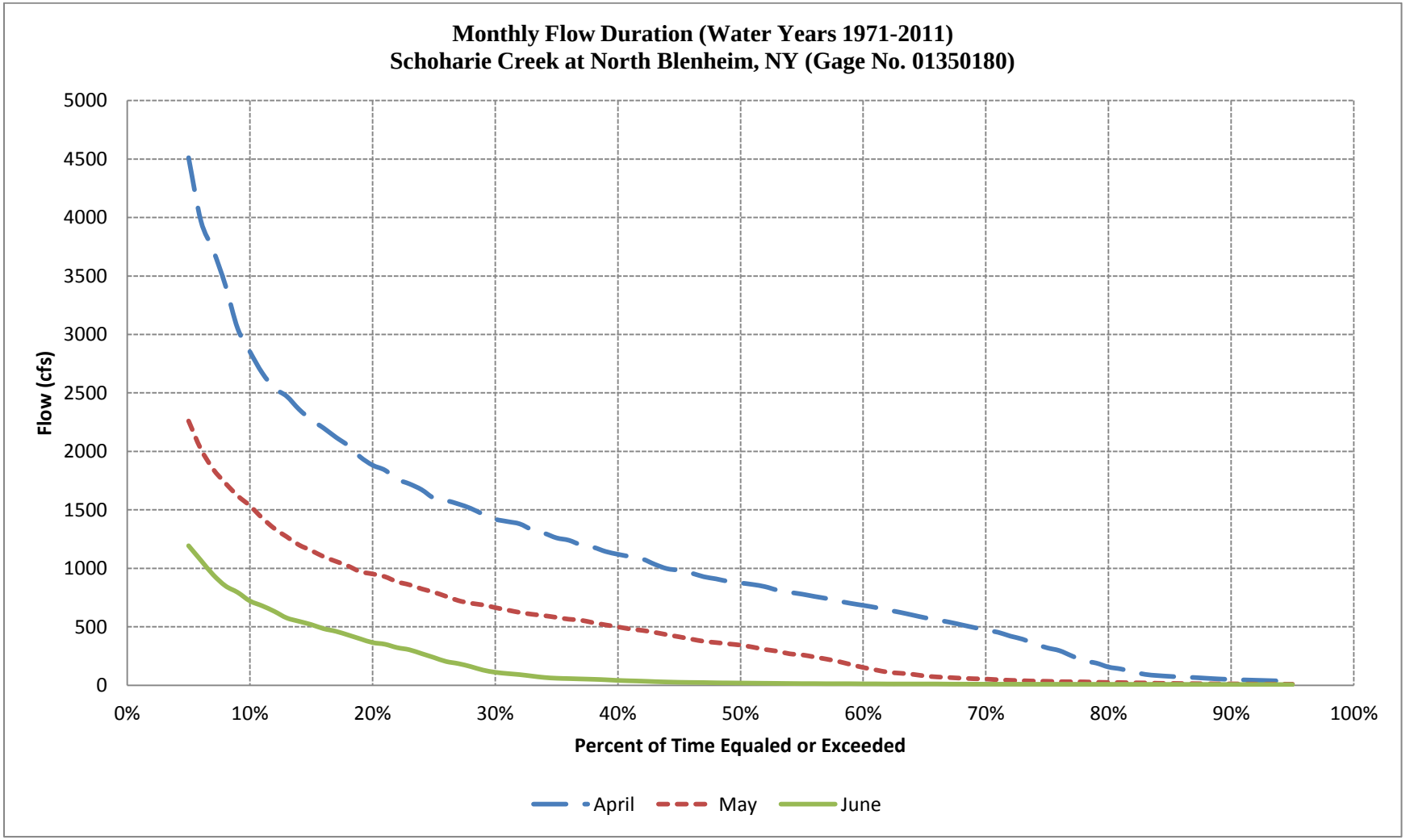
Figures 4.3.1.2-2: Annual Flow Duration Curves



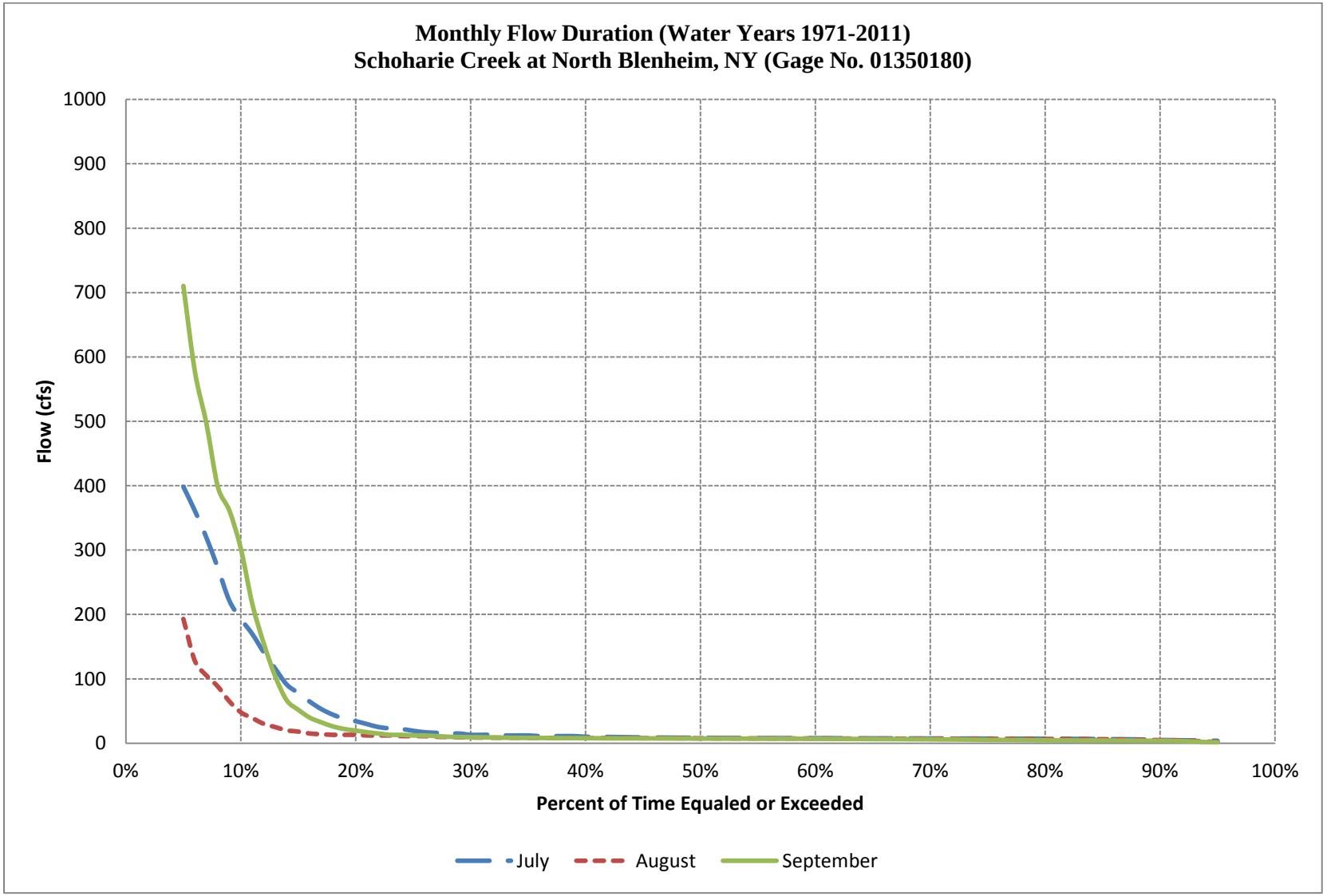
Figures 4.3.1.2-3: Monthly (January, February, March) Flow Duration Curves



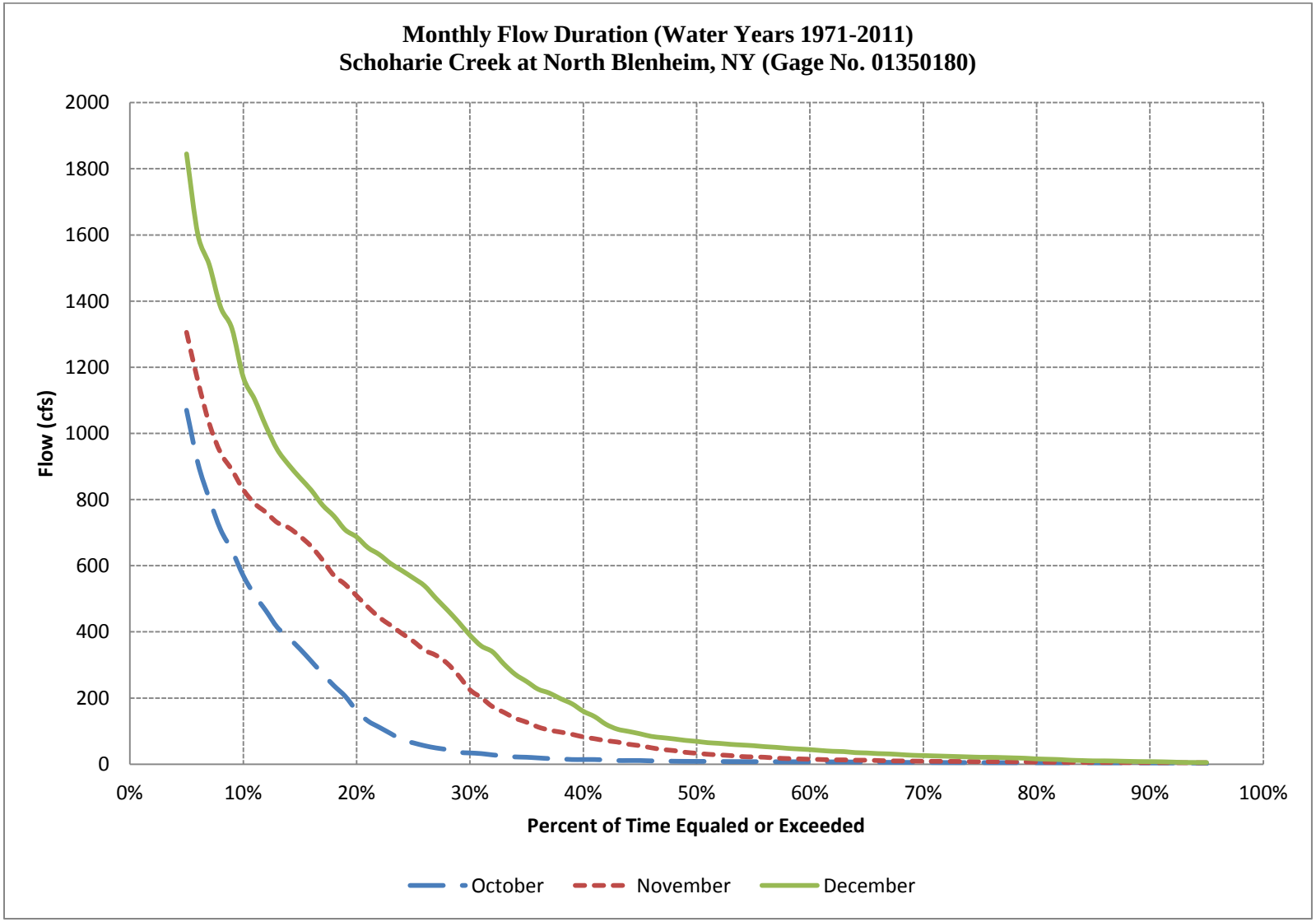
Figures 4.3.1.2-4: Monthly (April, May, June) Flow Duration Curves



Figures 4.3.1.2-5: Monthly (July, August, September) Flow Duration Curves



Figures 4.3.1.2-6: Monthly (October, November, December) Flow Duration Curves



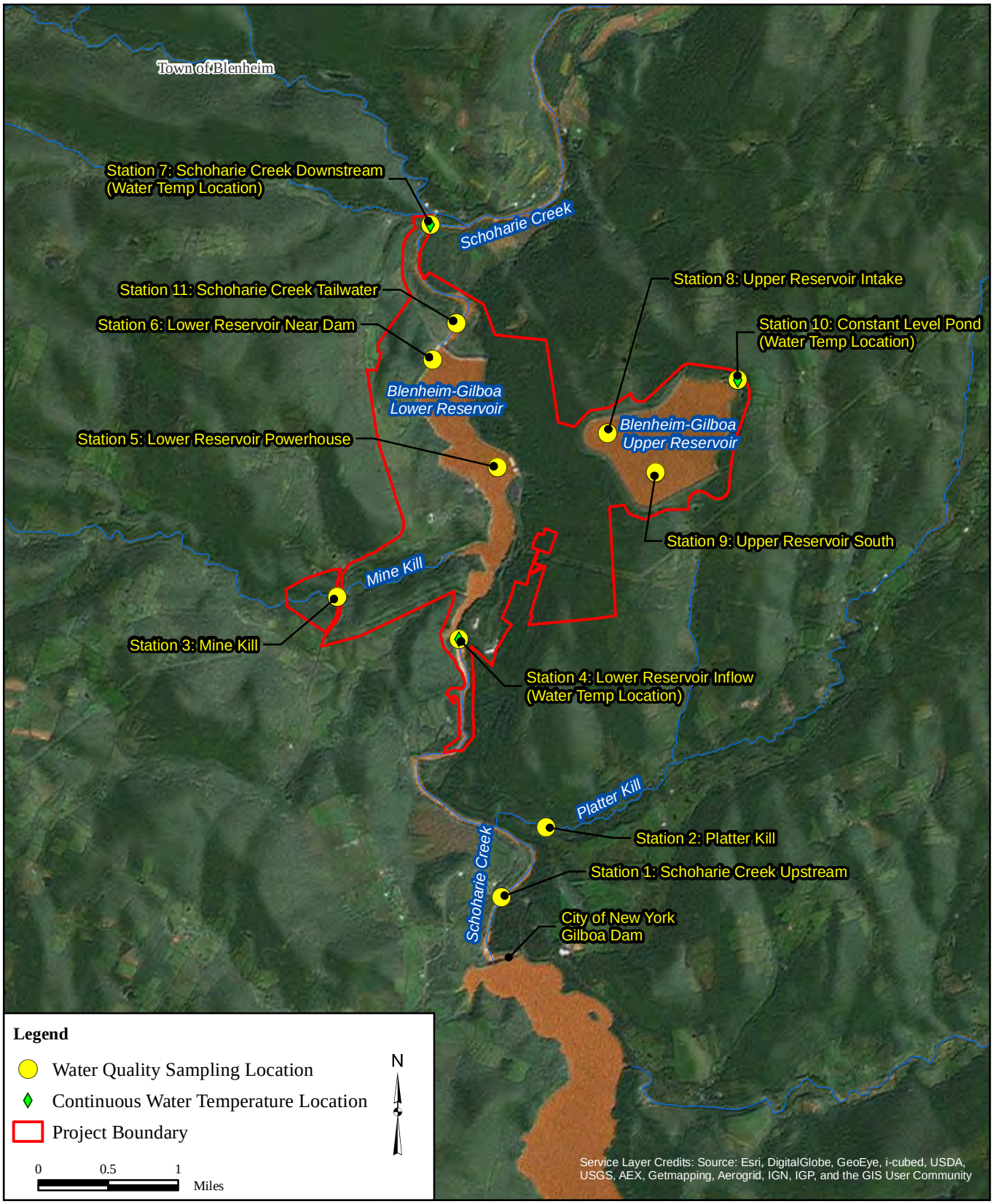


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Figure 4.3.2.3-1:2012 Water Quality Sampling Locations

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Figure 4.3.2.3-2: Upper Reservoir Temperature and Dissolved Oxygen Vertical Profiles.

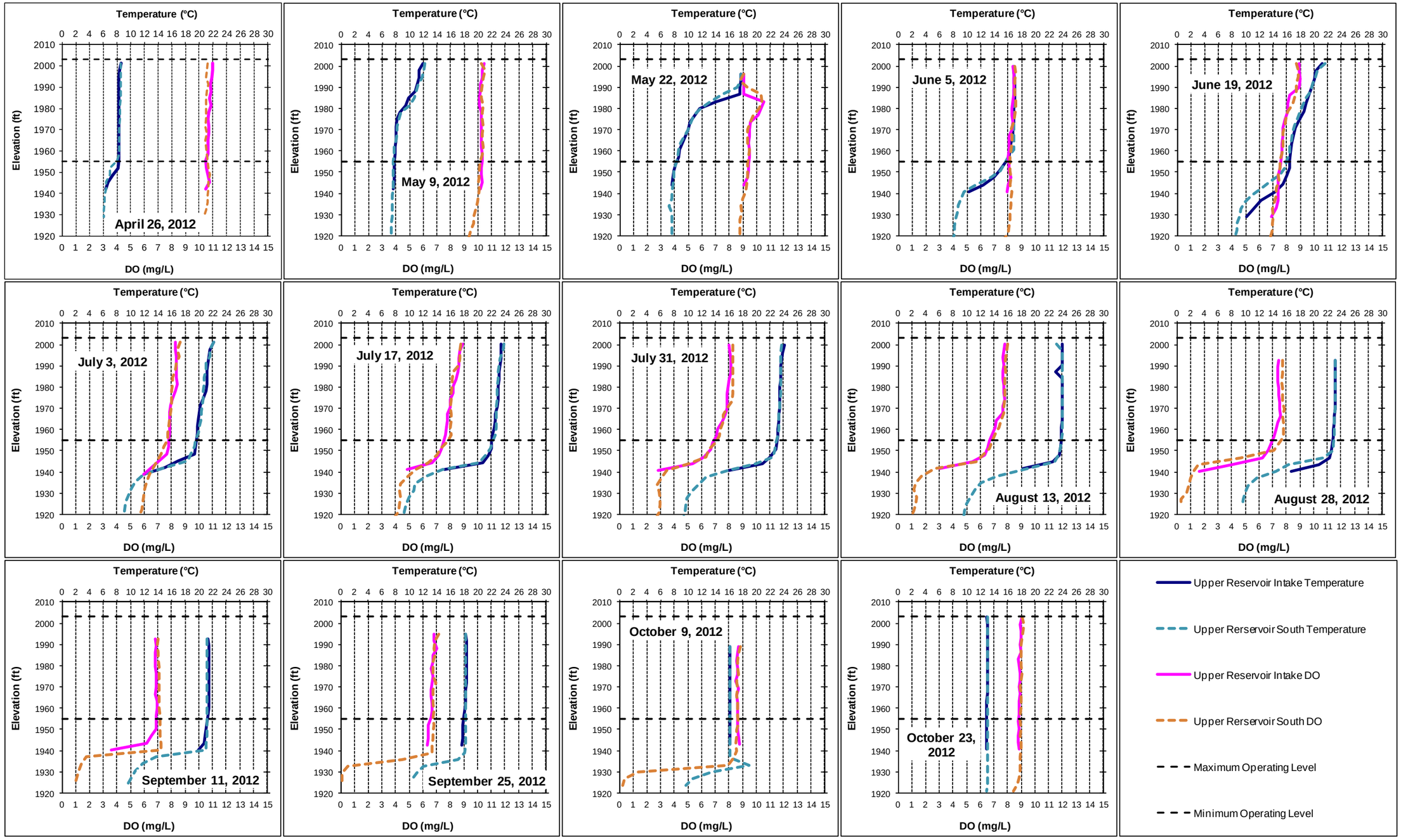


Figure 4.3.2.3-3: Lower Reservoir Temperature and Dissolved Oxygen Vertical Profiles.

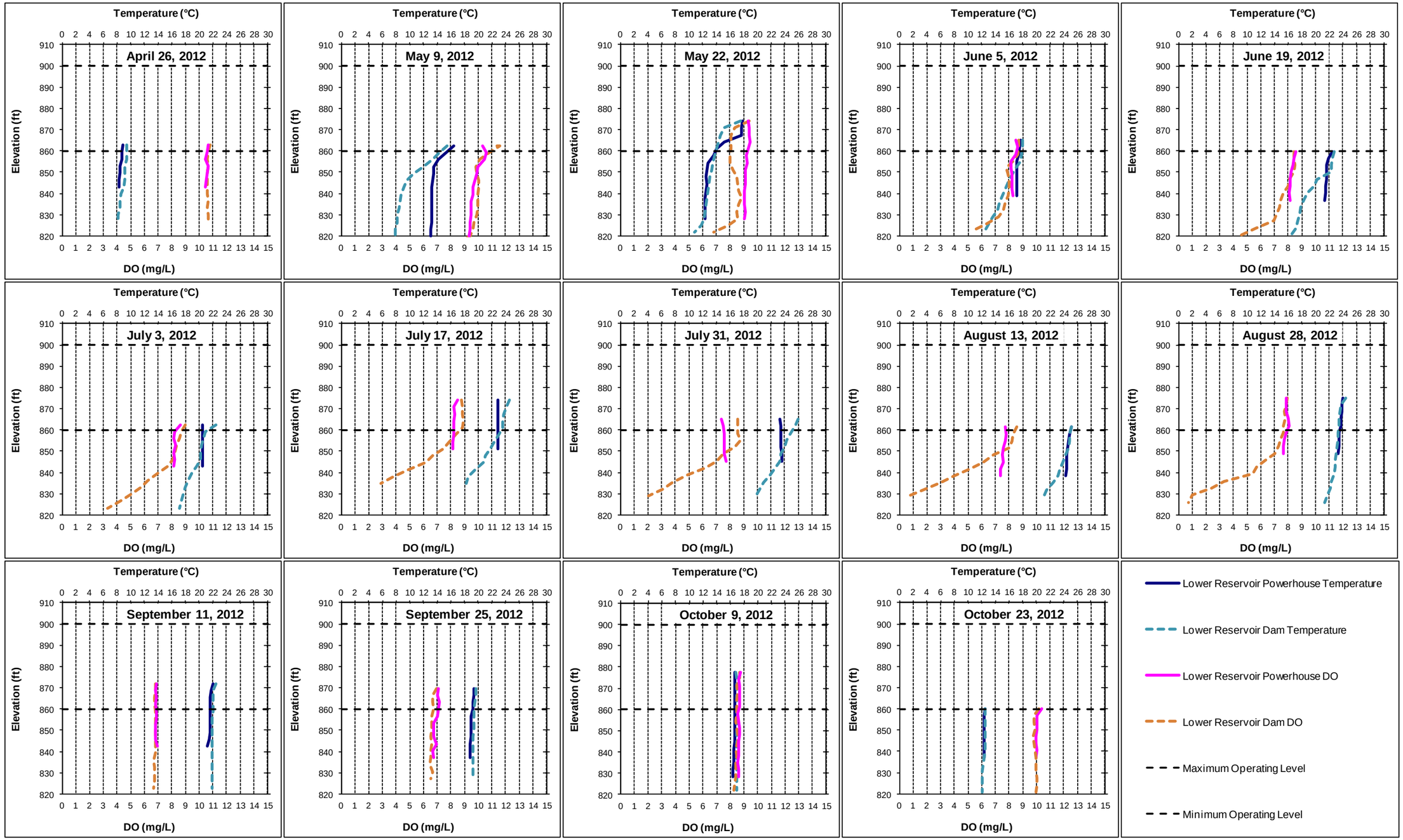


Figure 4.3.2.3-4: Temperature (°C) Results at the Discrete Sampling Locations.

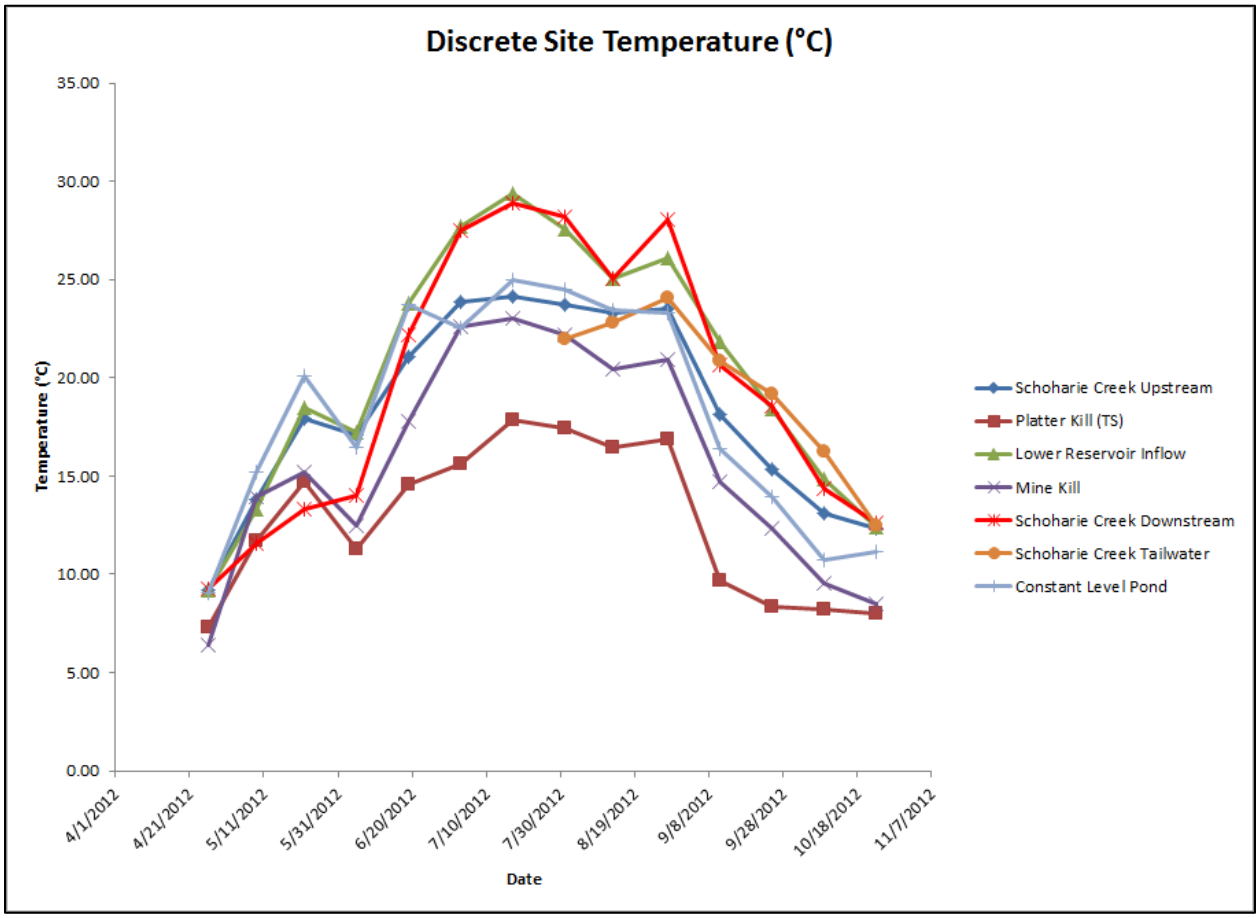


Figure 4.3.2.3-5: Average Daily Water Temperature at the Lower Reservoir Inflow and Schoharie Creek Downstream Locations.

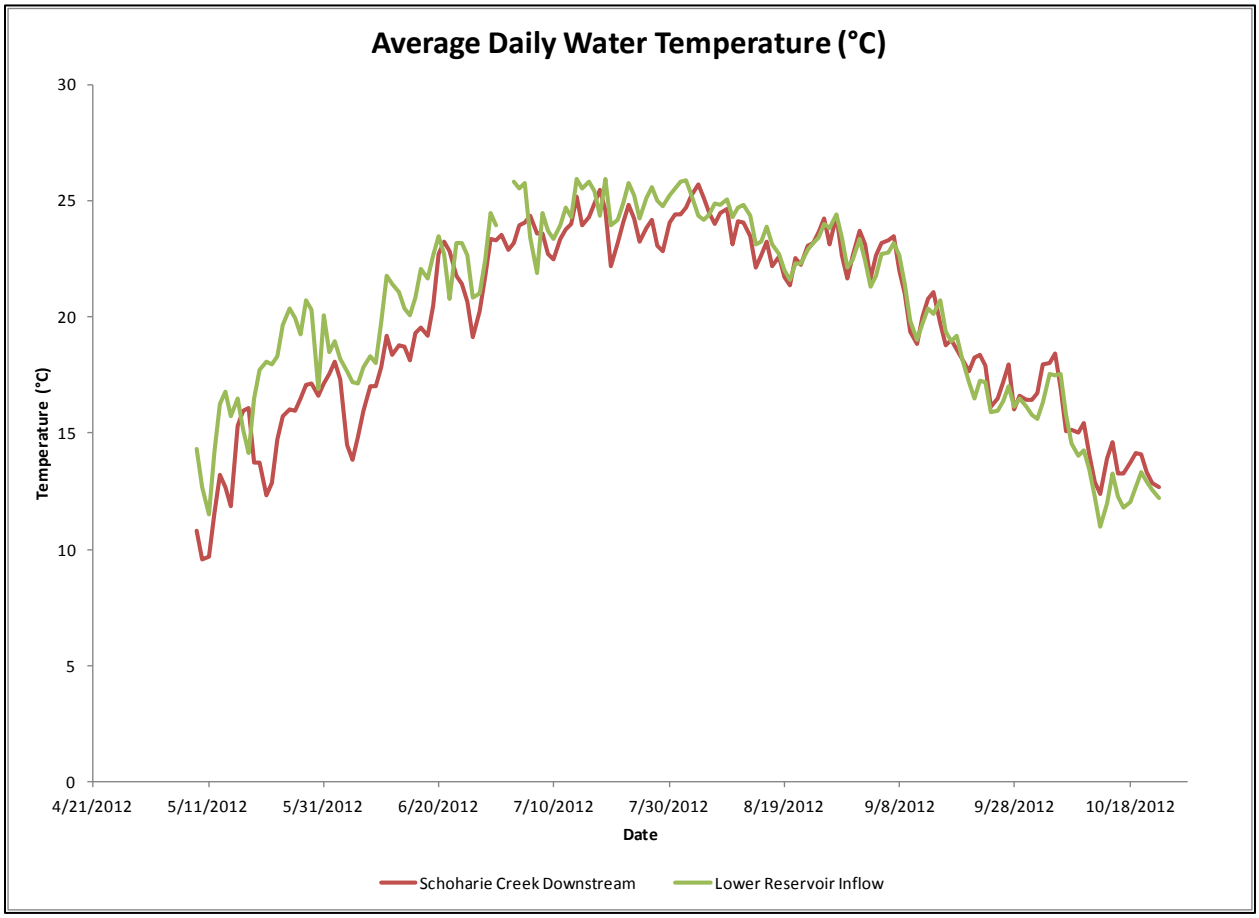


Figure 4.3.2.3-6: Turbidity Results at the Discrete Sampling Locations.

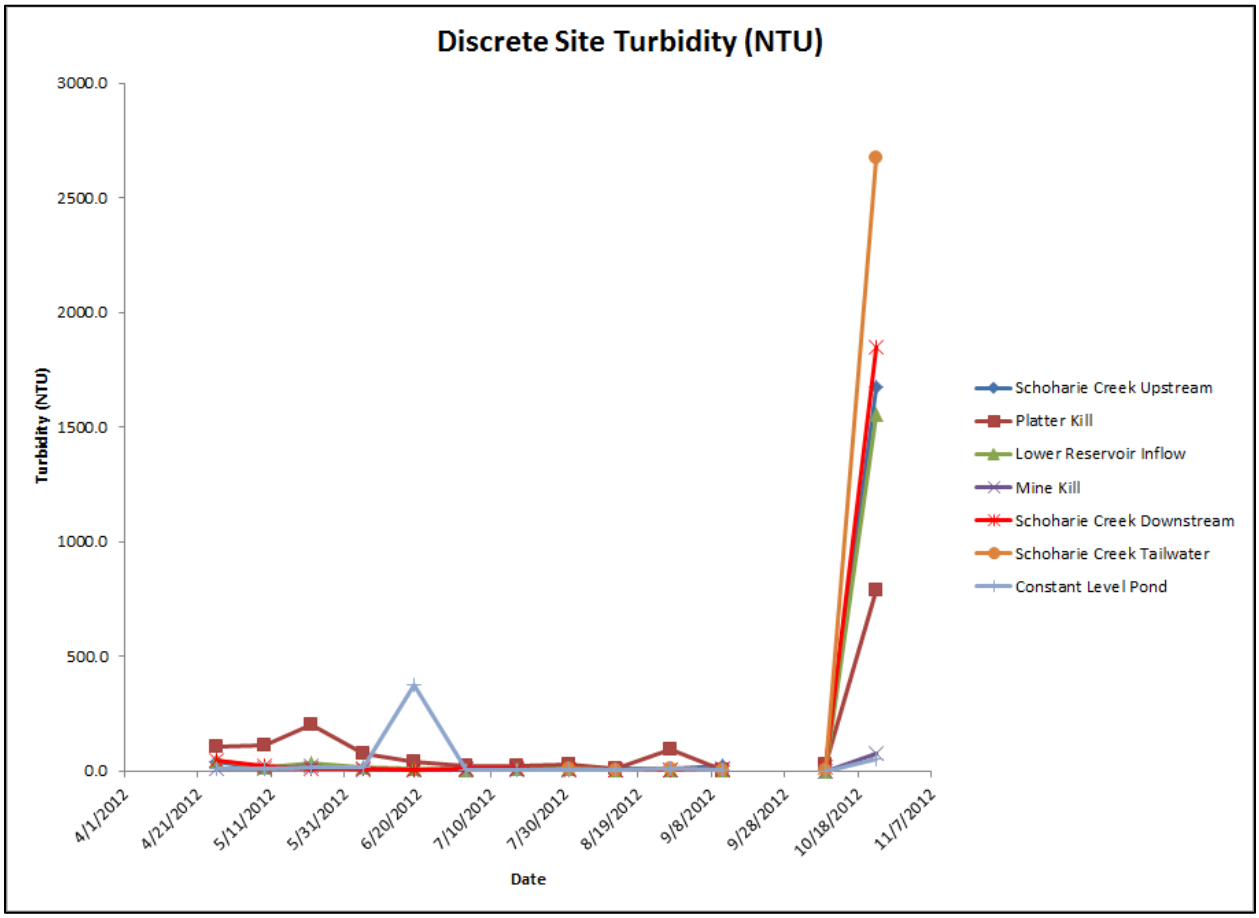
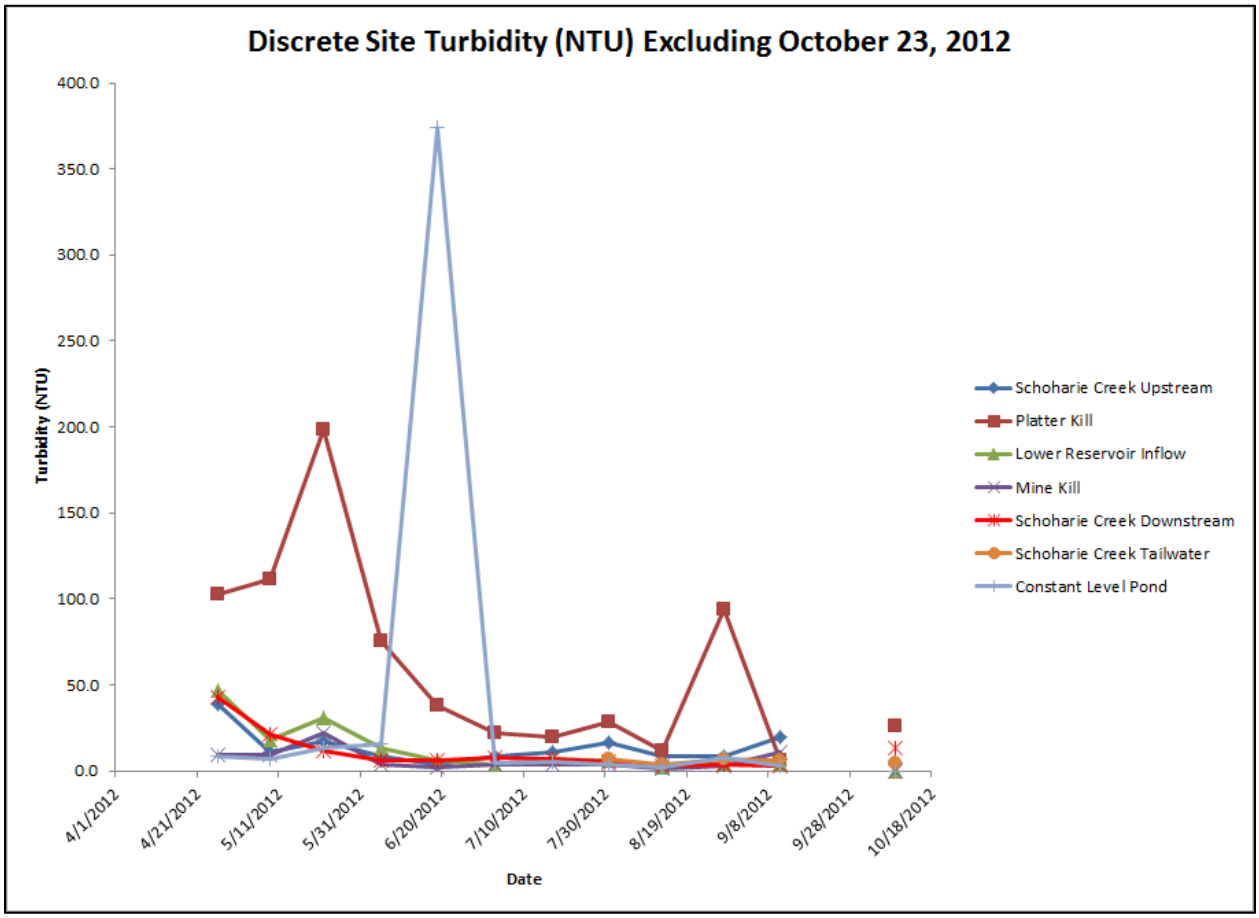


Figure 4.3.2.3-7: Turbidity Results at the Discrete Sampling Locations Excluding October 23, 2012.



Note: Omitted turbidity measurements made on October 23, 2012 to visualize turbidity levels without extremely high values.

4.4 Fish and Aquatic Resources (18 C.F.R. § 5.6 (d)(3)(iv))

4.4.1 Historic Fish Community Information

Fish sampling was conducted each year in the Upper and Lower Reservoirs from 1973 to 1982. Collection methods and sample periods varied; however, the two primary means of collection were gill netting and electrofishing. From 1973 through 1977, seines, trap nets, and block nets were also used.

The sources of the fish populations that ultimately developed in the Upper and Lower Reservoirs were the 5-mile section of Schoharie Creek between Gilboa Dam and the Lower Reservoir, two small tributaries, spill from Schoharie Reservoir, and fish stocking. Schoharie Creek above and below the Lower Reservoir was sampled in 1973 prior to the initiation of Project operation. Fourteen species of fish were collected in Schoharie Creek above the Project and 28 species were collected below the Project (Culp, 1974a). Pumpkinseed and rock bass were the most abundant species captured above the Project, although collections also included game fish such as walleye and smallmouth bass (Table 4.4.1-1). Pumpkinseed, fallfish, and rock bass were the most abundant species captured below the Project. Walleye, smallmouth bass and largemouth bass were also captured.

Thirty-five species were collected during the 10 years of sampling on the Upper and Lower Reservoirs from 1973-1982 (Table 4.4.1-2). Intensive collections by trap net, seine, and boat electrofishing in 1977 indicated the common fishes in the Upper Reservoir were yellow perch (63 percent of the total catch), pumpkinseed sunfish (22 percent), redbreast sunfish (7 percent), log perch (2 percent), and walleye (2 percent). In the Lower Reservoir, white sucker (31 percent), carp (12 percent), brown bullhead (11 percent), pumpkinseed sunfish (10 percent), yellow perch (9 percent), and smallmouth bass (7 percent) predominated. In cooperation with the NYSDEC, early management of the Project reservoirs entailed the removal of certain species of “rough” fish from 1973 through 1979 to enhance game fish populations, primarily by use of block nets in the Lower Reservoir (Thomas et al., 1984).

Table 4.4.1-1: Fish Species Captured in Schoharie Creek Upstream and Downstream of the Project in 1973

Common Name	Scientific Name	Total Number Captured	
		Schoharie Creek Downstream of Project	Schoharie Creek Upstream of Project
Pumpkinseed sunfish	*Lepomis gibbosus*	127	405
Fallfish	*Semotilus corporalis*	104	9
Rock bass	*Ambloplites rupestris*	66	75
Bluntnose minnow	*Pimephales notatus*	49	-
White sucker	*Catostomus commersoni*	35	11
Rosyface shiner	*Notropis rubellus*	25	-
Walleye	*Sander vitreus*	16	8
Fantail darter	*Etheostoma flabellare*	15	-
Cutlips minnow	*Exoglossum maxillingua*	15	11
Satinfin shiner	*Notropis analostanus*	15	-
Brown bullhead	*Ameiurus nebulosus*	13	12
Redbreast sunfish	*Lepomis auritus*	12	2
Common shiner	*Notropis cornutus*	12	-
Greenside darter	*Etheostoma blennioides*	10	-
Largemouth bass	*Micropterus salmoides*	8	-
Northern hog sucker	*Hypentelium nigricans*	7	3
Yellow perch	*Perca flavescens*	7	6
Logperch	*Percina caprodes*	6	2
Johnny darter	*Etheostoma nigrum*	5	2
Northern redhorse	*Moxostoma macrolepidotum*	5	-
Smallmouth bass	*Micropterus dolomelui*	4	6
Common carp	*Cyprinus carpio*	3	-
Golden shiner	*Notemigonus crysoleucas*	2	1
Longnose dace	*Rhinichthys cataractae*	2	-
Chain pickerel	*Esox niger*	2	-
Bluegill sunfish	*Lepomis macrochirus*	2	-
Blacknose dace	*Rhinichthys atratulus*	1	-
Creek chub	*Semotilus atromaculatus*	1	-

Notes: Total; all gear used.

Source: Culp, 1974a.

Table 4.4.1-2: Fish Species Captured in the Upper and Lower Reservoirs from 1973-1982 and 2005-2009

Common Name	Scientific Name	Historic (1973-1982)	Lower Reservoir (2005-2007)	Upper Reservoir (2006-2009)
Alewife (landlocked)	*Alosa pseudoharengus*		X	X
Banded killifish	*Fundulus diaphanus*			X
Blacknose dace	*Rhinichthys atratulus*	X		
Bluegill	*Lepomis macrochirus*	X	X	X
Bluntnose minnow	*Pimephales notatus*	X		
Brown bullhead	*Ameiurus nebulosus*	X	X	X
Brook trout	*Salvelinus fontinalis*		X	X
Brown trout	*Salmo trutta*	X	X	X
Central stoneroller	*Campostoma anomalum*	X		
Chain pickerel	*Esox niger*	X		
Cisco	*Coregonus artedii*	X		
Common carp	*Cyprinus carpio*	X	X	X
Common shiner	*Notropis cornutus*	X		
Creek chub	*Semotilus atromaculatus*	X		
Cutlips minnow	*Exoglossum maxillingua*	X		
Emerald shiner	*Notropis atherinoides*	X	X	X
Fallfish	*Semotilus corporalis*	X	X	
Fantail darter	*Etheostoma flabellare*	X		
Golden shiner	*Notemigonus crysoleucas*	X	X	X
Green sunfish	*Lepomis cyanellus*	X		X
Largemouth bass	*Micropterus salmoides*	X	X	X
Logperch	*Percina caprodes*	X		X
Longnose dace	*Rhinichthys cataractae*	X		
Margined madtom	*Noturus insignis*			X
Northern hog sucker	*Hypentelium nigricans*	X		
Pumpkinseed	*Lepomis gibbosus*	X	X	X
Rainbow trout	*Salmo gairdneri*	X		
Redbreast sunfish	*Lepomis auritus*	X		X
Rock bass	*Ambloplites rupestris*	X	X	X
Rosyface shiner	*Notropis rubellus*	X		X
Satinfin shiner	*Notropis analostanus*	X		
Shorthead redhorse	*Moxostoma macrolepidotum*	X		
Smallmouth bass	*Micropterus dolomelui*	X	X	X
Spottail shiner	*Notropis hudsonius*	X	X	X
Stonecat	*Noturus flavus*	X		X
Tesselated darter	*Etheostoma olmstedi*	X		X
Tiger trout	Hybrid		X	X

Table 4.4.1-2: Fish Species Captured in the Upper and Lower Reservoirs from 1973-1982 and 2005-2009 continued

Common Name	Scientific Name	Historic (1973-1982)	Lower Reservoir (2005-2007)	Upper Reservoir (2006-2009)
Walleye	*Sander vitreus*	X	X	X
White perch	*Morone americana*		X	
White sucker	*Catostomus commersoni*	X	X	X
Yellow bullhead	*Ameiurus natalis*			X
Yellow perch	*Perca flavescens*	X	X	X

Data Sources: Historic: Thomas et al., 1984.

Lower Reservoir: Nichols, 2006; NYSDEC 2007 sampling (N. McBride, NYSDEC, personal communication, February 25, 2011).

Upper Reservoir: Lydon et al., 2009; and NYSDEC 2008-2009 sampling (N. McBride, NYSDEC, personal communication, February 25, 2011).

4.4.2 Lower Reservoir Fisheries

The Lower Reservoir is actively managed by the NYSDEC as a warmwater fishery with a supplemental put-and-take trout fishery. The fish community includes cool and coldwater fish as well. Game fish include brook trout, brown trout, tiger trout (a sterile hybrid resulting from the cross between a female brown trout and a male brook trout), largemouth bass, smallmouth bass, walleye, and several panfish species such as pumpkinseed and bluegill sunfish. There are no diadromous fish species found in the Project reservoirs.

The Power Authority has supported a fish stocking program in both Project reservoirs since 1977. Stocking of the Lower Reservoir began in 1977 with rainbow and brown trout (Table 4.4.2-1). Rainbow trout were the major focus of stocking until 2005 with up to 3,325 fish stocked annually. Tiger trout stocking began in 2004 and continues to be supplemented with brown and brook trout. Walleye were first stocked in the Lower Reservoir in 2009 and stocking continued through 2013; however, in 2013, all walleye were stocked in the Upper Reservoir due to elevated turbidity levels in the Lower Reservoir.

In 2005, SUNY Cobleskill conducted a fisheries assessment of the Lower Reservoir when a total of 90 fish were captured. Pumpkinseed sunfish and rock bass were the two most abundant fish in the samples. Largemouth and smallmouth bass were also captured (Nichols, 2006).

The NYSDEC sampled the Lower Reservoir in 2007 by electrofishing at night and gill netting. The most common fish captured were emerald shiners, a forage fish. The most common game fish species was smallmouth bass and the most common non-game, large-bodied fish captured was white sucker (N. McBride, NYSDEC, personal communication, February 25, 2011). Table 4.4.1-2 provides a comparison of the recent fisheries assessments with the historical data collected by the Power Authority from 1973-1982. The comparison shows that the fish community of the Lower Reservoir has remained largely unchanged.

Table 4.4.2-1: Lower Reservoir Stocking History from 1977 through 2013

Year	Brown Trout	Brook Trout	Rainbow Trout	Tiger Trout	Largemouth Bass	Pumpkinseed	Walleye[1]	Stocking Entity[2]
1977	1100		1100					NYSDEC
1978	1100		1100					NYSDEC
1979	1176		1174		1100	100		IA
1980	701		2134					IA
1981			2482			136		IA
1982			1000					IA
1983			1530					IA
1984			1550					IA
1985			1550					IA
1986			1550					NYPA
1987			1600					NYPA
1988			2050					NYPA
1989			2050					NYPA
1990			2571					NYPA
1991			2550					NYPA
1992			2550					NYPA
1993			3325					NYPA
1994			3325					NYPA
1995			3325					NYPA
1996			3325					NYPA
1997			3325					NYPA
1998			3325					NYPA
1999			3325					NYPA
2000			3325					NYPA
2001			3325					NYPA
2002			3325					NYPA
2003			3325					NYPA
2004	500		1087	500				NYPA
2005			1500	750				NYPA
2006	200			800				NYPA
2007	45	480		1000				NYPA
2008	907	676		50				NYPA
2009	500			500			600	NYPA
2010	525			525			775	NYPA
2011	643			644			900	NYPA
2012	475	475		475			550	NYPA
2013		400		900				NYPA

1: Walleye are stocked as pond fingerlings in cooperation with SUNY-Cobleskill.

2: From 1979-1985, fish stocking was performed by Ichthyological Associates (IA) under contract to NYPA.

4.4.3 Upper Reservoir Fisheries

The Upper Reservoir is actively managed as a warmwater fishery but is stocked with trout as a put-and-take recreational fishery. The fish community is similar to the Lower Reservoir and includes brook trout, brown trout, tiger trout, largemouth bass, smallmouth bass, walleye, and several panfish species including pumpkinseed and bluegill sunfish. A significant forage fish base consisting primarily of emerald shiners is present to provide prey for piscivorous fish. There are no diadromous fish species found in the Project reservoirs. With the exception of the species currently and historically stocked in the Upper Reservoir (*i.e.*, trout and bass), the fish community in the Upper Reservoir has been established through recruitment from the Lower Reservoir.

Stocking also began in the Upper Reservoir in 1977 with both brown and rainbow trout (Table 4.4.3-1). With the exception of 1980, largemouth bass were stocked in the Upper Reservoir from 1979 through 1983. Similar to the Lower Reservoir, rainbow trout were the major focus of stocking until 2005 with up to 5,650 fish stocked annually. Tiger trout stocking began in 2004 and continues to be supplemented with brown trout.

In 2003, the Power Authority, along with SUNY Cobleskill and the SCCA started a cooperative management effort to augment the existing walleye and trout populations in Schoharie County. In accordance with this program, the Power Authority and the SCCA have funded the construction of walleye fingerling ponds on the SUNY Cobleskill campus. As part of this agreement, SUNY Cobleskill has stocked pond fingerling walleye into the Lower and Upper Reservoirs from 2010 to 2013. In 2013, 1,900 walleye that were intended to be stocked in the Lower Reservoir were stocked in the Upper Reservoir due to elevated turbidity levels in the Lower Reservoir.

The fish community of the Upper Reservoir was recently surveyed by SUNY-Cobleskill from 2006 to 2009 (Lydon et al., 2009). During this period, fish were captured and relocated during the LEM program. The SUNY Cobleskill surveys reported that emerald shiner and tessellated darter were the most abundant fish captured. Smallmouth bass, walleye and rock bass were also captured.

The NYSDEC sampled the Upper Reservoir in 2008 by electrofishing at night and in 2009 using gill nets. The electrofishing effort produced a total of 280 fish. Smallmouth bass and walleye were the common game fish species captured in both years (N. McBride, NYSDEC, personal communication, February 25, 2011). Table 4.4.1-2 contains a comparison of the recent fisheries assessments with the historical data collected by the Power Authority from 1973-1982. As with the Lower Reservoir, the comparison shows that the fish community in the Upper Reservoir has remained largely unchanged.

Table 4.4.3-1: Upper Reservoir Stocking History from 1977 through 2013

Year	Brown Trout	Brook Trout	Rainbow Trout	Tiger Trout	Largemouth Bass	Pumpkinseed	Walleye[1]	Stocking Entity[2]
1977	1100		1100					IA
1978	1250		1250					IA
1979	1288		1235		1210	130		IA
1980	750		2255					IA
1981			4088		2581	136		IA
1982			5650		2000			IA
1983			5120		2000			IA
1984			5100					IA
1985			5100					IA
1986			5100					NYPA
1987			5200					NYPA
1988			4600					NYPA
1989			4600					NYPA
1990			4121					NYPA
1991			4100					NYPA
1992			4100					NYPA
1993			3325					NYPA
1994			3325					NYPA
1995			3325					NYPA
1996			3325					NYPA
1997			3325					NYPA
1998			3325					NYPA
1999			3325					NYPA
2000			3325					NYPA
2001			3325					NYPA
2002			3325					NYPA
2003			3325					NYPA
2004	500		2173	500				NYPA
2005			1500	750				NYPA
2006	200			800				NYPA
2007	650	750	300	250				NYPA
2008	965	894		50				NYPA
2009	500			500				NYPA
2010	525			525				NYPA
2011	643			644				NYPA
2012	500			500				NYPA
2013				900			1900	NYPA

1: Walleye are stocked as pond fingerlings in cooperation with SUNY-Cobleskill.

2: From 1977-1985, fish stocking was performed by Ichthyological Associates (IA) under contract to NYPA.

4.4.4 Reservoir Aquatic Habitat

4.4.4.1 Lower Reservoir

The Lower Reservoir has a gently sloping basin and the substrate is predominantly silt and clay. In the upstream portion of the reservoir above the confluence with Mine Kill, there is a predominance of rocky substrate, and the shoreline consists of steep bedrock cliffs with little or no riparian vegetation. The littoral zone of the Lower Reservoir consists primarily of emergent marsh and exposed shoreline (cobble shore/rip-rap/exposed silt and sand). Wetlands along the shoreline are present in areas with gentle slopes only; the vast majority of the shoreline slopes steeply away from the reservoir, which limits the extent of shoreline wetlands. Rocky substrates do not provide good SAV habitat, and as such, the SAV zone is largely absent from both Lower and Upper Reservoirs as well as in Schoharie Creek and the tributaries. Accordingly, fish sampling in the Lower Reservoir indicates that fish species suited to open water (*e.g.*, emerald shiner, yellow perch) and those suited to benthic habitat (*e.g.*, white sucker, brown bullhead) are most successful. Aquatic habitat in the Lower Reservoir is also influenced by its hydrologic inputs. During low flow conditions, the only flows into the Lower Reservoir are provided by the tributaries Mine Kill and Platter Kill, as the NYCDEP's Schoharie Reservoir has no mandated minimum flow.

4.4.4.2 Upper Reservoir

The majority of the shoreline of the Upper Reservoir is a steeply sloped, man-made embankment. Within the Upper Reservoir, riparian habitat and vegetation is limited to the eastern shoreline. Wetlands occur only along the eastern and northeastern shoreline and contain primarily emergent vegetation. The remainder of the shoreline consists of angular rip-rap with little vegetation.

The aquatic habitat in the Upper Reservoir consists primarily of open water pelagic habitat. The greater abundance of pelagic fish species is a reflection of preferences for open water and rocky substrates. This habitat is preferred by those species that are not dependent upon structure or cover and the species can be distributed throughout the entire water column.

As there is limited littoral habitat in the Upper Reservoir, in April and May of 1979, the Power Authority constructed four constant-level ponds to provide permanent spawning and rearing habitat for warmwater, nest-building fish species. The constant-level ponds are located in the northeast portion of the Upper Reservoir. They were designed with an overtoppable dike so that the ponds are periodically inundated when Upper Reservoir levels are high, but were constructed such that they maintain water levels when the reservoir is drawn down. At full pond elevation, there is connectivity between the ponds and the reservoir, so fish can move back and forth and enhance diversity in both the ponds and the reservoir. The constant-

level ponds provide refugia during water level fluctuations and are a source of permanent littoral habitat with spawning habitat that helps maintain fish populations in both the ponds and the reservoir.

Weedy, littoral zone associated fish species occur in each constant-level pond. The ponds contain habitat to support largemouth bass, yellow perch, pumpkinseed and bluegill sunfish. The ponds were surveyed by SUNY Cobleskill in 2006 through 2009 (Lydon et al., 2009). Pumpkinseed and bluegill dominated the large-bodied fish community while emerald shiners dominated the minnow community. The highest relative abundance of largemouth bass collected in the Upper Reservoir during the surveys occurred in the constant-level ponds.

4.4.5 Rare, Threatened, and Endangered Fish Species

Federally Listed Species

No federally listed threatened or endangered fish species have been identified within the Project vicinity. A search of the National Marine Fisheries Service's Essential Fish Habitat Mapper did not identify any waters in the Project vicinity as containing Essential Fish Habitat.

State Listed Species

On November 1, 2011, the Power Authority sent a letter to the New York Natural Heritage Program (NHP) requesting a database search to determine the occurrence of any rare, threatened or endangered fish within the Project boundary. By letter dated November 16, 2011, the NYSDEC stated that no rare, threatened or endangered fish species are known to be in the vicinity of the Project.

4.4.6 Recreational Fishery

Public recreational fishing began in the Lower Reservoir in 1972 and in the Upper Reservoir in 1979. The Reservoirs were allowed to colonize naturally from the fish in Schoharie Creek, but trout stocking soon began in order to develop a supplemental fishery. The NYSDEC Angler Diary Program from 2004 through 2008 indicated that bass fishing in Schoharie Creek was good enough to recommend adoption of statewide bass regulations. It is anticipated that the trout stocking program will continue as the creel surveys indicate it is a desirable program. (See below for discussion of the creel surveys.)

Creel surveys in the Lower Reservoir were conducted in 1973, 1974, 1975, and 1981. The 1973-1975 surveys reported that both largemouth and smallmouth bass and brown bullhead comprised the majority of harvested fish. The 1981 survey showed an increase in trout as they comprised greater than 50% of the

fish harvested and the highest percentage of any survey (Culp, 1974a; Culp, 1975; Culp, Lechel, Gigliotti, 1977; Culp, 1982).

Creel surveys were conducted in the Upper Reservoir in 1979 and 1981. In 1979, rainbow trout comprised the majority of the catch and the surveys also showed that all trout captured had been stocked in the spring of 1979. The 1981 survey showed the most common fish harvested were rainbow trout and brown bullhead. The results indicated that the public was targeting the trout fishery in the Upper Reservoir (Culp et al., 1980; Culp, 1982).

Schoharie Creek creel surveys were conducted from 1973-1975. Panfish (pumpkinseed and rock bass) dominated the catch, with smallmouth bass the most frequently caught gamefish. Walleye was a small component of the harvest even though none were noted in any of the Lower Reservoir surveys. Walleye was a larger component of the 1975 creel survey; however, panfish still dominated the catch. Largemouth and smallmouth bass were equally divided as the most frequently caught gamefish species (Culp, 1974a; Culp, 1975; Culp, Lechel, Gigliotti, 1977).

The NYSDEC conducted an Angler Diary Study of lower Schoharie Creek for the years 2004-2008 (McBride, 2009). The study reaches, presented in Table 4.4.6-1, began at the Lower Dam and ended at the mouth of the Schoharie River. The results of the Angler Diary Study showed that walleye fishing in lower Schoharie Creek was determined to be fair by NYSDEC standards. Smallmouth bass catch rates tended to be very good from either shore or boat, prompting a recommendation to adopt statewide bass regulations (McBride, 2009).

Table 4.4.6-1: Schoharie Creek below the Lower Reservoir, Angler Diary Reach Names

Reach No.	Starting At	Ending At	Reach Name
1	Lower Dam	Route 30	Breakabeen
2	Route 30	Interstate 88	Schoharie
3	Interstate 88	County Route 127A	Esperance
4	County Route 127A	Route 161	Lost Valley
5	Route 161	Mohawk River	Fort Hunter

4.4.7 Benthic Macroinvertebrates

Benthic macroinvertebrates have been surveyed occasionally in the Project vicinity since shortly after Project operation began. The Power Authority performed surveys in 1973-1975 (Culp, 1974a; Culp, 1974b; Culp, 1975; Culp, Lechel, Gigliotti, 1977) and SUNY-Cobleskill has conducted more recent surveys as part of its educational curriculum (Harmon et al., 1991; Nichols, 2006), as summarized below.

In 1973 and 1974 a total of 4,452 specimens were collected with Ephemeroptera and Trichoptera as the most common Orders. In 1975, 12,975 specimens were collected with Ephemeroptera, Diptera and Trichoptera as the most predominant Orders.

In spring of 1991, SUNY Cobleskill (Harmon et al., 1991) sampled the benthic community in the Lower Reservoir. Diptera and Ephemeroptera were the only aquatic insect Orders represented. In August 2005, SUNY Cobleskill sampled the Lower Reservoir again and found that Ephemeroptera dominated the samples and that macroinvertebrate populations peaked in the 2- to 5-meter depth range (Nichols, 2006).

4.4.8 Ichthyoplankton and Zooplankton

Ichthyoplankton and zooplankton have been surveyed occasionally in the Project vicinity since shortly after operations began (Harmon et al., 1991; Nichols, 2006). Plankton surveys revealed the most abundant larval fish captured were sunfish (*Lepomis spp*.) and yellow perch while copepods and cladocerans were the most abundant zooplankton. Surveys also indicated that peak zooplankton density was in early July in the Upper Reservoir and in mid-July in the Lower Reservoir. The greatest zooplankton density was generally found in the Upper Reservoir.

During the spring of 1991, SUNY Cobleskill conducted sampling on the Lower Reservoir (Harmon et al., 1991). One sample was composed entirely of rotifers, while the second sample consisted of copepods, daphnia and cladocerans. The 2005 survey in the Lower Reservoir reported that the zooplankton community was comprised of three groups: copepods, cladocerans, and rotifers (Nichols, 2006).

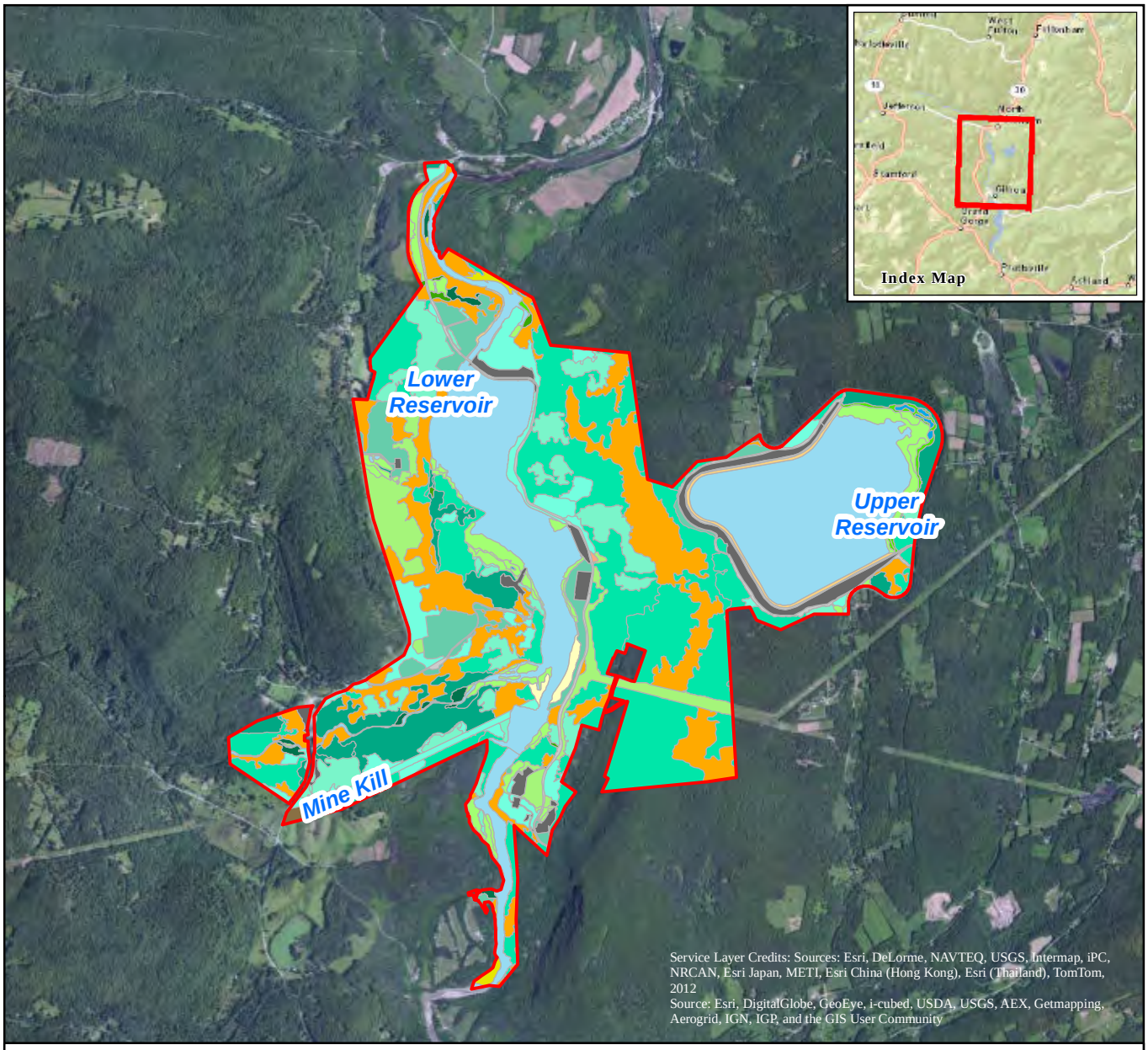
4.5 Wildlife and Botanical Resources (18 C.F.R. § 5.6 (d)(3)(v))

4.5.1 Upland Botanical Resources

The land within the Project boundary is in the Northern Appalachian and Atlantic Maritime Highlands ecoregion, which is characterized primarily by mixed northern hardwoods and occasional spruce and fir in the highest elevations (CEC, 2011). Lands within the Project boundary are predominantly forested. Exceptions are a narrow strip of maintained, open habitat along the Upper Dike that is dominated by mowed meadows and unvegetated rip-rap, and routinely mowed and maintained areas surrounding the

Mine Kill State Park facilities, Lansing Manor, the Visitor's Center, and the Project facilities at and around the Lower Dam. Forested uplands dominate the remaining areas within the Project boundary and include mixed northern hardwoods, pine-dominated forest, and hemlock-dominated forest. Small areas of xeric (dry) woodlands occur along the tops of cliffs and ridges where there is little to no contributing watershed. Shear cliffs of exposed sedimentary bedrock occur along portions of the Lower Reservoir, particularly along the southern (or upstream) shoreline.

A week-long survey effort was conducted in July 2012 within the Project boundary and vicinity to complete cover-type mapping and to assess plant and wildlife habitats (Figure 4.5.1-1). This work was completed in conjunction with a detailed cover-type mapping effort using aerial photo interpretation. Table 4.5.1-1 contains a summary of mapped cover types within the Project boundary (NYPA, 2013). Wildlife use includes habitat at a landscape scale, but since habitat immediately outside of the Project boundary is not appreciably different from that within the Project boundary, the wildlife community is the same (NYPA, 2013).



Legend

- BG FERC Project Boundary
- Artificial Pond or Reservoir
- Stream or River
- Control Level Ponds
- Scoured Shoreline
- Exposed Shoreline (mud/silt)
- Cobble Shore
- Emergent Marsh
- Shrub Swamp
- Forested Wetland
- Floodplain Forest
- Eastern Hemlock
- Evergreen-Northern Hardwood Forest
- Eastern White Pine
- Northern Hardwoods; Northern Hardwoods
- Successional Old Field/Shrubland
- Grass Land
- Rock-outcrop
- Cropland
- Manicured Lawn
- Transportation
- Development

N

0 0.25 0.5 1 Miles

New York Power Authority
Generating more than electricity

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

PRE-APPLICATION DOCUMENT

Figure 4.5.1-1 Cover Types within the Project Boundary

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Table 4.5.1-1. Cover Types and Dominant Vegetation Observed during the 2012 Field Work.

Cover Type	Dominant Species	Acres Within Project Boundary
Artificial Pond or Reservoir	N/A	641.9
Cobble Shore	three-square, beggar's ticks, pimpernel	18.2
Control Level Ponds	Potamogeton sp.	3.3
Cropland	managed crops	12.5
Development	N/A	85.1
Eastern Hemlock	hemlock, white pine, wild sarsaparilla	175.6
Eastern White Pine	white pine, barberry, honeysuckle, bracken fern	186.8
Emergent Marsh	wool grass, soft rush, white boneset, blue vervain, smartweeds	108.4
Northern Hardwood-Coniferous Forest	red maple, basswood, birch, American beech, white pine, hemlock	680.0
Exposed Shoreline (mud/silt)	occasional lesser forget-me-not, Japanese knotweed, beggars ticks, smartweeds	10.6
Floodplain Forest	sycamore, cottonwood, green ash	14.2
Forested Wetland	red maple, green ash, cottonwood, willow	4.4
Grassland	milkweed, grasses, and occasional red cedar, honeysuckle, and hawthorn	108.2
Manicured Lawn	Kentucky bluegrass-actively mowed	121.0
Northern Hardwoods	basswood, sugar maple, red maple, American beech, white birch, red oak, black locust	438.3
Rock-outcrop	N/A	0.6
Scoured Shoreline	occasional saplings (red maple, cottonwood, etc.)	10.0
Shrub Swamp	speckled alder, red osier dogwood, silky dogwood	12.4
Stream or River	N/A	41.2
Successional Old Field/Shrubland	milkweed, grasses, honeysuckle, hawthorn, red maple saplings	173.6
Transportation	N/A	46.9
Total		**2,893**

A diversity of upland plant species occur within the Project boundary and vicinity (Table 4.5.1-2). Higher elevations, including the eastern edge of the Upper Reservoir and the sloping hillside between the two reservoirs, are dominated by mixed northern hardwoods, and pine and hemlock forests. Mixed northern hardwoods in this area are generally dominated by sugar and red maple, red oak, white ash, black cherry,

birches (white and yellow), basswood, white pine and hemlock. Shrub layer vegetation is dominated by beech, maple, hemlock and ash saplings. Herbaceous vegetation within these mixed forests includes bracken fern, bluebead, twisted stalk, false Solomon's seal, and wild sarsaparilla. White pine and hemlock dominated forests have a canopy comprised primarily of white pine and/or hemlock, with a shade-limited shrub layer. Hemlock stands may contain an occasional beech, or other hemlock saplings. Herbaceous-layer vegetation within the coniferous forests is also limited, but may include Christmas fern, wood fern, Virginia creeper, starflower, Canada mayflower, poison ivy and white avens. The routinely mowed outer slope of the Upper Dike is dominated by species such as red fescue, timothy, ragweed, Queen Anne's lace, spotted knapweed, and white sweet clover; the inside slope is largely unvegetated riprap (NYPA, 2013).

Lower elevations within the Project boundary (including the shore of the Lower Reservoir, forested areas along Schoharie Creek, and Mine Kill State Park) are dominated by mixed northern hardwoods. Low ravines (*e.g.*, along the Mine Kill and other tributaries) and portions of the Lower Reservoir shoreline are dominated by hemlock. Stands of white pine are also present, sometimes in nearly pure plantations. Based on the presence of historic rock walls and successional forests observed during the field effort, these areas were likely planted during efforts to reforest historic agricultural lands or pasture. Mixed forests surrounding the Lower Reservoir are characterized by species similar to the Upper Reservoir area, yet also contain a few additional species more typical of lower elevations. These species include white oak, black locust, shagbark hickory, and ironwood in the tree stratum; honeysuckles, multiflora rose and European barberry in the shrub/sapling stratum; and jack-in-the-pulpit, New York fern, and mayapple in the herbaceous stratum (NYPA, 2013).

Rich forests associated with stream banks along the tributaries to the Lower Reservoir are generally dominated by sycamore, cottonwood and green ash with some areas, primarily sloping banks, dominated by hemlock. Shrub layer vegetation in these areas is primarily dominated by saplings (ash, sycamore, or hemlock), honeysuckle, and *Spiraea*, spp (meadowsweet and steeplebush). Herbaceous vegetation is primarily comprised of bloodroot, Jack-in-the-pulpit, twisted stalk, goldthread, starflower, wild sarsaparilla, coltsfoot and virgin's bower. Poison ivy and Virginia creeper are dominant vines in these riparian forests (NYPA, 2013).

Non-forested areas within the Project vicinity include upland meadow and xeric habitat (*i.e.*, rock outcrops and sparsely wooded areas of ridge tops). Within upland meadows, occasional shrubs such as honeysuckle, staghorn sumac and red cedar occur. Herbaceous vegetation includes mullein, milkweed, yarrow, black and red raspberry and white sweet clover. Xeric areas are dominated by occasional red

cedar and white pine, saplings of red oak and bur oak, and honeysuckle in shrub form. Herbaceous vegetation includes wild columbine, panicled hawkweed, bluestem, yarrow, and lowbush blueberry. Areas without herbaceous cover were often dominated by lichen (NYPA, 2013).

The sedimentary bedrock and associated calcareous till (Section 4.2.2) within the Project boundary and vicinity influences the plant community. During the study, several indicator species of rich, basic soils were observed in the mixed northern hardwood and riparian forests. These include herb Robert, blue cohosh, bloodroot, mayapple, and Solomon's seal in the herb stratum, European (or common) barberry in the shrub stratum, and basswood in the tree stratum. The forests with a strong white pine component lacked these indicator species because the accumulated litter layer lowers the pH (NYPA, 2013).

Invasive species pose a risk to both native flora and fauna. In general, invasive species out compete native vegetation and reduce habitat variability within the environment they occupy. In addition, most invasive species offer no benefit to native wildlife (*e.g.*, forage). While upland invasive plant species are occasionally found within the Project vicinity, large stands are not widespread. In most cases, invasive plants occur as small discontinuous patches across the landscape. Invasive shrub honeysuckles (Morrow's and Tartarian) and barberry (primarily European) are the most common invasive species found within the Project vicinity, where they primarily occupy the understory of mixed northern hardwood stands and occasionally white pine dominated forests. Japanese knotweed occurs in several stands, primarily within a large area of recent alluvium at the upstream limit of the area within the Project boundary. Garlic mustard and white sweet clover are dominant herbaceous invasive species within upland forest edges and roadsides. Other species such as hawkweed, spotted knapweed and Japanese stiltgrass are present but not widespread within the Project boundary (NYPA, 2013).

The hemlock woolly adelgid (*Adelges tsugae*), a destructive pest that kills eastern hemlock trees, has been discovered throughout Mine Kill State Park. Occasional dead hemlock trees and infested live branches were observed to the north of the State Park along the northwest shore of the Lower Reservoir. This newly discovered infestation is noteworthy because hemlock is a dominant canopy tree in the Mine Kill State Park and within the Project boundary and vicinity. Field observations also indicated that most of the hemlock within the Project boundary occurs in forests where hemlock is <50% of the canopy cover (these were mapped as other dominant forest types). No woolly adelgid infestations were observed along the Upper Reservoir (NYPA, 2013). The OPRHP is in the process of mapping woolly adelgid infestations in the Mine Kill State Park and surrounding area. The OPRHP has begun a control program, and recently the Catskill Regional Invasive Species Partnership (CRISP) released 500 Laricobius beetles (approved for

adelgid control by the USDA in 2000) to help mitigate potential damage from the adelgid within the Mine Kill State Park (CRISP, 2013).

The emerald ash borer (EAB) (*Agrilus planipennis*), was first discovered in the U.S. in 2002 in southeastern Michigan. The beetle is of Asian origin and infests and kills North American ash (*Fraxinus*) species. Although a specific search was not conducted, EAB was not identified within the Project vicinity during field surveys. There were several EAB traps observed in the Mine Kill State Park in 2012; however, these traps were not set by NYPA and it is unknown whether EABs were identified within the traps (NYPA, 2013). According to maps from the NYSDEC, EABs were identified within Schoharie County by a trap detection. As of March 15, 2013, Schoharie County was added to the list of EAB quarantine counties (NYSDEC, 2013).

Table 4.5.1-2: Representative Upland Plant Species Observed within the Project Boundary and Vicinity in 2012.

Common Name	Scientific Name
sugar maple	*Acer saccharum*
yarrow	*Achillea millefolium*
garlic mustard	*Alliaria petiolata**
ragweed	*Ambrosia spp.*
blue stem	*Andropogon gerardii*
wild columbine	*Aquilegia canadensis*
wild sarsaparilla	*Aralia nudicaulis*
Jack in the pulpit	*Arisaema triphyllum*
milkweed	*Asclepias sp.*
Japanese barberry	*Berberis thunbergii**
European barberry	*Berberis vulgais**
yellow birch	*Betula alleghaniensis*
black birch	*Betula lenta*
paper birch	*Betula papyrifera*
iron wood (American hornbeam)	*Carpinus caroliniana*
shagbark hickory	*Carya ovata*
blue cohosh	*Caulophyllum thalictroides*
spotted knapweed	*Centaurea stoebe**
virgin's bower	*Clematis occidentalis*
bluebead	*Clintonia borealis*
goldthread	*Coptis trifolia*
wood fern	*Dryopteris carthusiana*
Japanese knotweed	*Fallopia japonica**
American beech	*Fagus grandifolia*

Common Name	Scientific Name
red fescue	*Festuca rubra*
white ash	*Fraxinus americana*
green ash	*Fraxinus pennsylvanica*
wintergreen	*Gaultheria procumbens*
herb Robert	*Geranium robertianum*
white avens	*Geum canadense*
common hawkweed	*Hieracium iachenalii*
panicled hawkweed	*Hieracium paniculatum*
eastern redcedar	*Juniperus virginiana*
Japanese honeysuckle	*Lonicera japonica**
tartarian honeysuckle	*Lonicera tatarica**
Canada mayflower	*Maianthemum canadense*
false Solomon's seal	*Smilacina racemosum*
white sweet clover	*Melilotus officinalis**
Japanese stiltgrass	*Microstegium vimineum**
partridge berry	*Mitchella repens*
hop hornbeam	*Ostrya virginiana*
mountain sorrel	*Oxalis Montana*
Virginia creeper	*Parthenocissus quinquefolia*
Timothy	*Phleum pretense*
red pine	*Pinus resinosa*
white pine	*Pinus strobus*
mayapple	*Podophyllum peltatum*
Solomon’s seal	*Polygonatum pubescens*
Christmas fern	*Polystichum acrostichoides*
cottonwood	*Populus deltoids*
black cherry	*Prunus serotina*
bracken fern	*Pteridium aquilinum*
white oak	*Quercus alba*
bur oak	*Quercus macrocarpa*
red oak	*Quercus rubra*
sumac	*Rhus spp.*
red raspberry	*Rubus idaeus*
black raspberry	*Rubus occidentalis*
purple flowering raspberry	*Rubus odoratus*
bloodroot	*Sanguinaria canadensis*
goldenrod	*Solidago spp.*
meadow sweet	*Spiraea alba*
steeplebush	*Spiraea tomentosa*
twisted stalk	*Streptopus lanceolatus*

Common Name	Scientific Name
American basswood	*Tilia Americana*
poison ivy	*Toxicodendron radicans*
starflower	*Trientalis borealis*
hemlock	*Tsuga Canadensis*
coltsfoot	*Tussilago farfara*
lowbush blueberry	*Vaccinium angustifolium*
common mullein	*Verbascum Thapsus*

*Species identified as invasive by the NYSDEC

4.5.2 Terrestrial Wildlife

Habitat within the Project boundary is primarily upland forest with some areas of upland meadow and shrub land. In addition to natural habitats within the Project boundary, the Power Authority has developed several management areas to improve wildlife habitat. In the mid 1980s, the Power Authority established a bluebird trail which included nesting boxes and regular mowing of portions of the area to ensure quality bluebird habitat.

The Power Authority also maintains a management area for white tailed deer. This area contains over 2,000 northern white cedar trees as a winter forage source and is mowed every three years to reduce establishment of unwanted woody vegetation. The area is intended to provide additional forage during the winter and to recreate habitat lost when the Lower Reservoir was constructed (Hamor, 1989). Aside from recreational hunting (primarily deer), NYPA is not aware of any wildlife or botanical species that have significant distribution within the Project boundary that are considered important because of their commercial, recreational or cultural value.

In 1996, the Power Authority established a Wildlife Management Task Force, which includes representatives from the Power Authority, the NYSDEC, New York State Department of Corrections, SUNY Cobleskill, OPRHP, SCSWCD, and the SCCA. The goals of this Task Force are to maintain, enhance and perpetuate wildlife, as well as to increase awareness and interactive opportunities with the environment (NYPA, 2005a, 2005b).

Mammals

Tracking surveys completed during the winter of 1977-78 (Burt et al., 1978) identified mammal species that occurred within the vicinity of the Project. Based on field observations and a review of available data, 50 mammal species have the potential to occur within the vicinity of the Project (Burt et al., 1978;

Degraaf and Yamasaki, 2001; NYPA 2013a). Table 4.5.2-1 includes a list of mammals observed during surveys conducted in 2012.

Northern hardwood-coniferous forest is the dominant habitat within the Project boundary and vicinity (NYPA, 2013). These forests provide important wildlife food sources associated with mast-crop producing species such as oak and beech. In addition, hemlock and white pine stands interspersed with occasional open fields and shrublands make the habitat ideal for several mammal species. Small mammals such as masked shrew, deer mouse, white footed mouse, woodland jumping mouse, meadow jumping mouse, woodchuck, gray squirrel, chipmunk and red squirrel use this habitat mosaic for foraging and shelter. In general, areas of mixed hardwoods within the Project vicinity have good canopy closure and relatively open understory which may provide good habitat for bats including little brown, big brown, eastern red and hoary bats (Degraaf and Yamasaki, 2001).

Larger mammals such as eastern cottontail and snowshoe hare use the habitat mosaic within the Project vicinity, especially areas with denser understory vegetation for improved cover. The tributary streams and intermittent drainages are used by generalist species (*e.g.*, porcupine, weasel, skunk, opossum and raccoon) that feed on a variety of food sources. With an adequate prey base, predators such as coyote, red fox, grey fox, fisher, and bobcat have the potential to occur within these forests. Large mammals including white tail deer and black bear were documented within the Project vicinity in 2012 (NYPA, 2013).

Table 4.5.2-1: Mammal Species Observed within the Project Vicinity in 2012

Common Name	Scientific Name
Coyote	*Canis latrans*
Beaver	*Castor canadensis*
Porcupine	*Erethizon dorsatum*
white tailed deer	*Odocoileus virginianus*
Muskrat	*Ondatra zibethicus*
Raccoon	*Procyon lotor*
grey squirrel	*Sciurus carolinensis*
Chipmunk	*Tamias striatus*
red squirrel	*Tamiasciurus hudsonicus*
black bear	*Ursus americanus*
red fox	*Vulpes vulpes*

Birds

Bird surveys completed within the Project vicinity in 1977 identified a number of bird species (Burt et al., 1978). Field work completed in 2012 identified 37 bird species (by sight or vocalizations), including many of the species found in 1977 (NYPA, 2013).

The land within the Project boundary includes areas of open meadow and shrublands as well as areas of un-fragmented forest. This diversity of habitats supports a variety of species that require open grasslands (*i.e.*, Bobolink) as well as interior forest bird species (*i.e.*, Ovenbirds, Wood Thrush). Table 4.5.2-2 contains a list of 37 bird species observed during field work in 2012 (NYPA, 2013). Based on a review of previous survey work (Burt et al., 1978), range data, and habitat, a total of 128 species have the potential to occur within the Project boundary and vicinity (NYPA, 2013).

Table 4.5.2-2: Birds Observed within the Project Vicinity in 2012

Common Name	Scientific Name
Spotted Sandpiper	*Actitis macularius*
Red-Winged Blackbird	*Agelaius phoeniceus*
Mallard	*Anas platyrhynchos*
American Black Duck	*Anas rubripes*
Ruffed Grouse	*Bonasa umbellus*
Canada Goose	*Branta canadensis*
Red Tailed Hawk	*Buteo jamaicensis*
Canada Warbler	*Cardellina canadensis*
Turkey Vulture	*Cathartes aura*
Veery	*Catharus fuscescens*
American Crow	*Corvus brachyrhynchos*
Blue Jay	*Cyanocitta cristata*
Gray Catbird	*Dumetella carolinensis*
Bald Eagle	*Haliaeetus leucocephalus*
Wood Thrush	*Hylocichla mustelina*
Belted Kingfisher	*Megaceryle alcyon*
Wild Turkey	*Meleagris gallopavo*
Song Sparrow	*Melospiza melodia*
Northern Waterthrush	*Parkesia noveboracens*
Cliff Swallow	*Petrochelidon pyrrhonota*
Hairy Woodpecker	*Picoides villosus*
Scarlet Tanager	*Piranga olivacea*
Black Capped Chickadee	*Poecile atricapillus*
Ovenbird	*Seiurus aurocapilla*
Cerulean Warbler	*Setophaga cerulea*

Common Name	Scientific Name
Chestnut Sided Warbler	*Setophaga pensylvanica*
Black Throated Green Warbler	*Setophaga virens*
Bluebird	*Sialia sialis*
Field Sparrow	*Spizella pusilla*
Tree Swallow	*Tachycineta bicolor*
Winter wren	*Toxostoma rufum*
Brown Thrasher	*Troglodytes roglodytes*
American Robin	*Turdus migratorius*
Eastern Kingbird	*Tyrannus tyrannus*
Red-Eyed Vireo	*Vireo olivaceus*
Mourning Dove	*Zenaida macroura*
White Throated Sparrow	*Zonotrichia albicollis*

4.6 Wetlands, Riparian, and Littoral Habitat (18 C.F.R. § 5.6 (d)(3)(vi))

4.6.1 Wetland Habitat and Vegetation

Field surveys and cover type mapping in 2012 (NYPA, 2013) identified 826 acres of wetland within the Project boundary (Figure 4.6.1-1). Wetland types included emergent, scrub-shrub, or forested wetlands in addition to open water wetlands including the reservoir, streams, and control-level ponds. Outside of the Lower and Upper Reservoirs, the most commonly occurring wetland type is palustrine emergent (108.4 acres). The remaining wetland acreage is made up of forested wetlands, shrub wetlands, and the created control level ponds. Table 4.6.1-1 contains wetland acreage totals identified within the Project boundary. Wetland vegetation observed within the Project vicinity is included in Table 4.6.1-2.

Table 4.6.1-1. Wetland Types within the Project Boundary Based on 2012 Cover-Type Mapping

Cover Type	Cowardin Class	Acres
Control Level Ponds	PUB3/4H	3.3
Forested Wetland	PFO1B/PFO2B	4.4
Shrub Swamp	PSS1B	12.4
Floodplain Forest	PFO1C	14.2
Stream or River	R3UB1/R2UB2/3	41.2
Emergent Marsh	PEM1B/PEM2H	108.4
Artificial Pond or Reservoir	LOWHh	641.9
Total		825.8

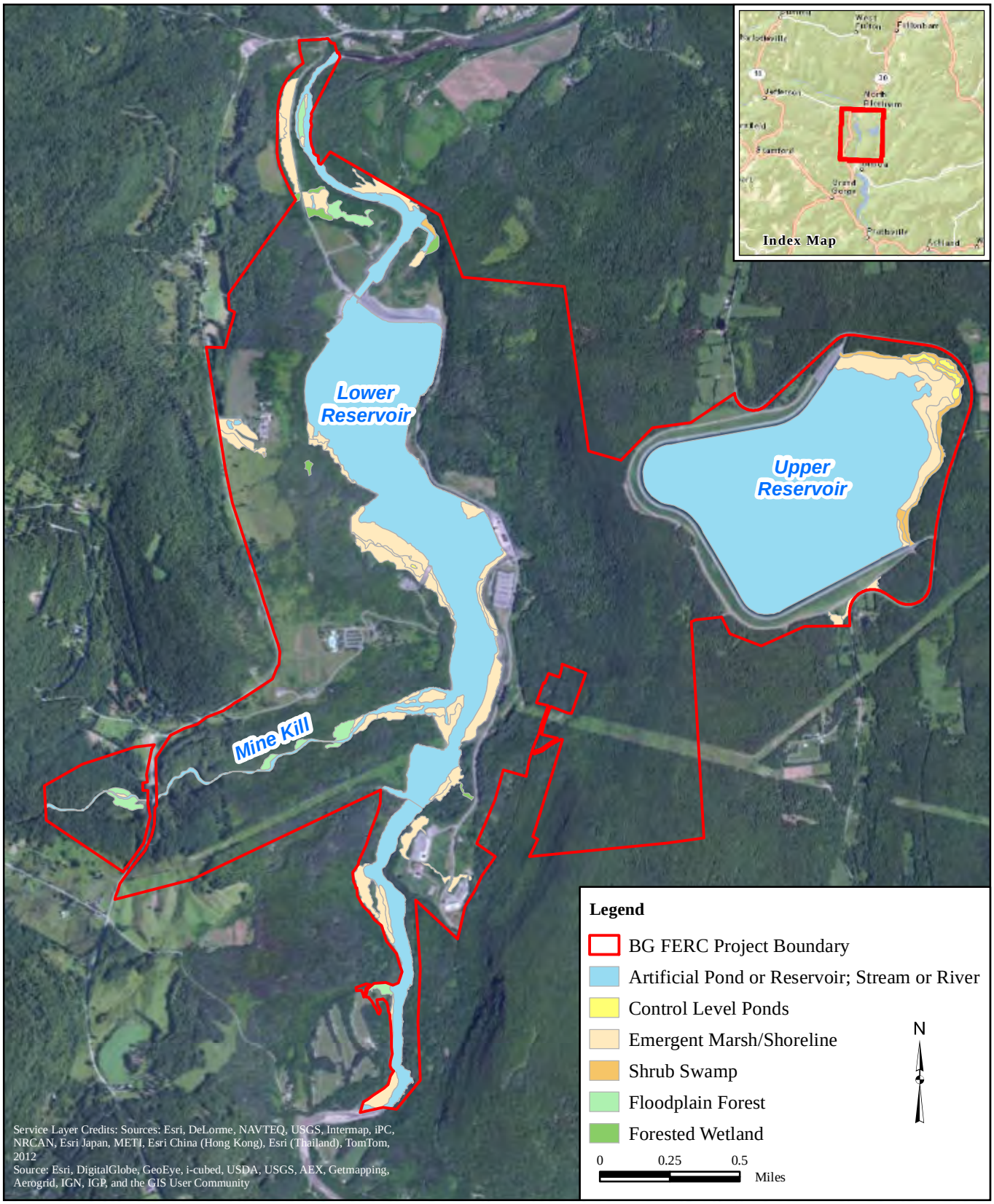

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Figure 4.6.1-1 Wetlands within the Project Boundary

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Lower Reservoir

Wetlands adjacent to the Lower Reservoir and Schoharie Creek are primarily emergent wetlands with occasional forested floodplains. Most of the shoreline upstream from the confluence with the Mine Kill consists of steep bedrock cliffs with little or no riparian vegetation. Emergent areas tend to be associated with silty and sandy terraces (*e.g.*, near the boat launch) or deltas resulting from sediment settling at tributary mouths (most notably at the Mine Kill).

Upper emergent marsh terraces (higher elevation) and lower emergent marsh terraces (lower elevation) were observed along the Lower Reservoir shoreline. Upper emergent areas are found on slightly higher terraces and deltas within the Lower Reservoir, and are, therefore, inundated less frequently. These areas are dominated by marsh purslane, ladies thumb, spotted and marsh St. John's wort, moneywort, wool grass, tear thumb, Joe-pye weed, white boneset, fringed loosestrife, blue and white vervain, false nettle and various goldenrods. In wetter microsites within the upper terraces, spikerushes, three-square and soft stem bulrush become more prevalent (NYPA, 2013). Lower emergent wetlands, which are exposed to regular water level fluctuations during the growing season, occur in a few locations along the Lower Reservoir. The largest examples of these lower emergent wetlands are found on either side of the boat launch on the western shore of the Lower Reservoir, and at the mouth of the Mine Kill. Lower emergent areas are dominated by smartweeds, with occasional inclusions of lesser forget-me-not, spike rush, and Indian hemp. These species are commonly found along rivers and streams and are adapted to rapid changes in water level. Areas dominated by smartweeds are particularly valuable as seasonal forage for waterfowl (USDA, 2001).

Forested floodplains occur in isolated locations, primarily near the mouth of the Mine Kill and adjacent to Schoharie Creek downstream of the Lower Dam. These wetlands are dominated by sycamore, black willow, green ash and cottonwood in the overstory, and deer tongue grass, sensitive fern, whorled loosestrife, tussock sedge, Joe-pye weed, reed canary grass, stinging nettle and Canada bluejoint in the herbaceous stratum. The shrub/sapling stratum is typically very sparse in these forested floodplains. In drier locations within some forested floodplains, small patches of the invasive plants garlic mustard and Japanese knotweed were observed (primarily at the upstream extent of the Lower Reservoir) (NYPA, 2013).

Upper Reservoir

Most of the Upper Reservoir shoreline consists of angular rip-rap with little or no vegetation. Wetlands occur only along the eastern and northeastern shoreline of the Upper Reservoir and contain primarily

emergent vegetation. Vegetation in emergent areas is dominated by three square, white boneset, Joe-pye weed, dark green bulrush, deer-tongue grass, smartweeds and willows. There are also willow-dominated scrub-shrub sections below the tree line. Embedded within the shoreline wetlands of the Upper Reservoir are several constant-level ponds that are connected to the Upper Reservoir only during high water. They are not hydrologically connected during periods of low water. These ponds were constructed by the Power Authority in 1979 as a habitat improvement project, as a way to create pockets of stable water for warm-water fish, and as wetland vegetation and wildlife habitat. Invasive wetland species within the Upper Reservoir are limited to primarily purple loosestrife, occurring as occasional stems rather than dense monocultures (NYPA, 2013).

Mitigation Wetlands

In September 2000, the U.S. Army Corps of Engineers (USACE) issued NYPA a permit for remediation of a landslide that occurred at the Project. Requirements of the permit called for the creation of 6.19 acres of freshwater wetlands to compensate for unavoidable impacts to hillside wetlands in the landslide area (EDR, 2003). In order to fulfill the requirements of the permit conditions, NYPA constructed mitigation wetlands at three sites. These wetlands, which are set back from the Project reservoirs outside the influence of Project operations, are clustered to the south of the Visitors Center and just northwest of the Lower Dam. These wetlands exhibit wetland plant communities, hydric soils and wetland hydrology as determined by field surveys during 2012. They are mostly emergent and scrub-shrub communities dominated by cattail, water parsnip, wool grass, dark green bulrush, white boneset, willow and speckled alder, as well as a variety of other hydrophytic plant species that were either planted during the construction of these features or colonized on their own from nearby wetlands in subsequent years (NYPA, 2013). Invasive wetland plants within the Project boundary are also not widespread. Purple loosestrife occurs along both the Upper and Lower Reservoirs, but not in dense mono-cultures, rather as isolated stems or small patches. Common reed occurs primarily near the maintenance area which is located adjacent to the Lower Reservoir. A second smaller stand of common reed occurs along the fence line of the Upper Reservoir. Similar to purple loosestrife, common reed does not appear to be widespread within the Project boundary and occurs in only a few isolated stands. Reed canary grass occurs as a component of several wetlands within the Project boundary, but is co-dominant with native vegetation. Moneywort is present in small dense patches, primarily near the Mine Kill. The wetland mitigation area near the Visitors Center contains several stems of invasive yellow iris, but this species was not observed anywhere else during the survey (NYPA, 2013).

Table 4.6.1-2: Wetland Vegetation Observed within the Project Vicinity

Common Name	Scientific Name
sweetflag	*Acorus americanus*
northern water plantain	*Alisma triviale*
speckled alder	*Alnus incanna*
pimpernel	*Anagallis arvensis*
Indian hemp	*Apocynum cannabinum*
dogbane	*Apocynum spp.*
swamp milkweed	*Asclepias incarnata*
beggar's tick	*Bidens spp.*
false nettle	*Boehmeria cylindrica*
Canada bluejoint	*Calamagrostis canadensis*
hedge bindweed	*Calystegia sepium*
bladder sedge	*Carex crinita*
yellow sedge	*Carex flava*
greater bladder sedge	*Carex intumescens*
hop sedge	*Carex lupulina*
broom sedge	*Carex scoparia*
tussock sedge	*Carex stricta*
fox sedge	*Carex vulpinoidea*
button bush	*Cephalanthus occidentalis*
water hemlock	*Cicuta maculata*
silky dogwood	*Cornus amomum*
smooth bedstraw	*Cruciata laevipes*
deer tongue grass	*Dichanthelium clandestinum*
American waterwort	*Elatine americana*
spike rush	*Eleocharis spp.*
hairy willow-herb	*Epilobium hirsutum**
water horsetail	*Equisetum fluviatile*
Joe-pye weed	*Eupatoriadelphus maculatus*
white boneset	*Eupatorium album*
white snakeroot	*Eupatorium rugosum*
flat-top goldenrod	*Euthamia graminifolia*
green ash	*Fraxinus pennsylvanica*
bedstraw	*Galium spp.*
white geum	*Geum canadense*
purple geum	*Geum rivale*
winterberry	*Ilex verticillata*
jewelweed	*Impatiens capensis*
yellow flag iris	*Iris pseudacorus**
blue flag iris	*Iris versicolor*
Canada rush	*Juncus canadensis*

Common Name	Scientific Name
soft rush	*Juncus effusus*
water willow	*Justica americana*
marsh purslane	*Ludwigia palustris*
American water horehound	*Lycopus americanus*
fringed loosestrife	*Lysimachia ciliata*
moneywort	*Lysimachia nummularia**
swamp candle	*Lysimachia terrestris*
purple loosestrife	*Lythrum salicaria**
wild mint	*Mentha arvensis*
monkeyflower	*Mimulus ringens*
lesser forget-me-not	*Myosotis laxa*
sweetgale	*Myrica gale*
evening primrose	*Oenothera biennis**
small sundrop	*Oenothera perennis*
sensitive fern	*Onoclea sensibilis*
switchgrass	*Panicum virgatum*
wild parsnip	*Pastinaca sativa**
reed canary grass	*Phalaris arundinacea**
common reed	*Phragmites australis**
bracted plantain	*Plantago aristata*
sycamore	*Platanus occidentalis*
arrow leaved tearthumb	*Polygonum sagittatum*
smartweed spp.	*Polygonum spp.*
pickerelweed	*Pontederia cordata*
heal-all	*Prunella vulgaris*
creeping yellowcress	*Rorippa sylvestris*
swamp rose	*Rosa palustris*
curly dock	*Rumex crispus*
arrowhead	*Sagittaria latifolia*
black willow	*Salix nigra*
willow spp.	*Salix spp.*
common elderberry	*Sambucus canadensis*
three square	*Schoenoplectus pungens*
soft stem bulrush	*Schoenoplectus tabernaemontani*
dark green bulrush	*Scirpus atrovirens*
woolgrass	*Scirpus cyperinus*
barberpole sedge	*Scirpus microcarpus*
water parsnip	*Sium suave*
goldenrod spp.	*Solidago Spp.*
burreed	*Sparganium americanum*

Common Name	Scientific Name
New York aster	*Symphyotrichum novi-belgii*
tall meadow rue	*Thalictrum pubescens*
New York fern	*Thelypteris noveboracensis*
marsh fern	*Thelypteris palustris*
marsh St. John's wort	*Triadenum virginicum*
narrow-leaved cattail	*Typha angustifolia*
broad-leaved cattail	*Typha lattifolia*
hybrid cattail	*Typha x glauca**
blue vervain	*Verbena hastata*
white vervain	*Verbena urticifolia*
vetch spp.	*Vicia spp.*

*Invasive/exotic species

4.6.2 Riparian Zone Habitat and Vegetation

The riparian zone along the Lower Reservoir shoreline is vegetated with mixed or coniferous (white pine and hemlock) forests, and occasionally meadows or shrublands. However, in many locations, upland forest transitions abruptly to the Lower Reservoir shoreline (*e.g.*, where there are steep cliffs and hillsides). In these areas, there is limited riparian vegetation within the influence of the Project waters. The tributaries to the Lower Reservoir pass through riparian forests dominated by hemlock. In most cases, the Lower Reservoir riparian vegetation includes sycamore, green ash, basswood, hemlock and white pine. Understory vegetation includes beech, ash, or hemlock saplings with herbaceous species including coltsfoot, bloodroot, starflower, twisted stalk, goldthread, wild sarsaparilla and virgin's bower. Microhabitat features important to wildlife such as large woody debris, snags and overhanging cliffs are prevalent within the riparian zone (NYPA, 2013).

Surrounding the Upper Reservoir, riparian habitat and vegetation are limited to the eastern shoreline since the remainder of the shoreline consists of angular rip-rap with little vegetation. Land adjacent to the eastern shore is dominated by upland forest with primarily hemlock and mixed hardwoods occurring in the overstory. In areas dominated by hemlock, understory vegetation includes beech and hemlock saplings. Herbaceous species include twisted stalk, starflower, goldthread and sarsaparilla (NYPA, 2013).

4.6.3 Littoral Zone Habitat and Vegetation

The primary habitat within the littoral zone of the Lower Reservoir is emergent marsh and exposed shoreline (cobble shore/exposed shoreline). Rocky substrates do not provide good SAV habitat, and as such, the SAV zone is largely absent from the Lower Reservoir as well as in Schoharie Creek and the tributaries. Limited SAV development was observed in occasional small depressions within the emergent

zone of the Lower Reservoir. These areas were dominated by pondweed species. In areas where there are gentle shoreline slopes, the primary habitat is emergent marsh which includes lesser forget-me-not, Indian hemp, smartweeds, marsh purslane, ladies thumb, spotted St. John's wort, moneywort, wool grass, tear thumb, Joe-pye weed, fringed loosestrife, blue vervain, false nettle and various goldenrods. The remaining shoreline is steeply sloped and dominated by cobble and exposed bedrock; however, vegetation such as pimpernel, Indian hemp, or goldenrod is occasionally present. As described in Section 4.2, erosion along the reservoir shorelines is limited because of well-armored (exposed bedrock and/or rocks) and/or well-vegetated conditions. Along the riverine shorelines (Schoharie Creek, above and below the Lower Reservoir, and tributaries), active/recent erosion was observed as detailed in Section 4.2 (NYPA, 2013). These stream sections are dynamic and exhibit natural processes of erosion and deposition during flood events.

Similar to the Lower Reservoir littoral zone, the primary habitat within the Upper Reservoir is emergent marsh (to the east) and exposed shoreline (cobble shore/rip-rap) and the SAV zone is largely absent from the Upper Reservoir. Limited SAV development was observed in the control level ponds along the Upper Reservoir. These areas were dominated by pondweed (*Potamogeton spp.*) species (NYPA, 2013).

4.6.4 Wetland, Littoral, and Riparian Wildlife

Amphibians and reptiles (herptiles) utilize the habitats within the Project boundary including the wetlands, littoral zone, and forests. Several species utilize both aquatic and terrestrial environments as part of their life history. Table 4.6.4-1 contains several species identified within the Project boundary (NYPA, 2013) as well as several species with the potential to occur based on range and habitat preferences (DeGraaf and Yamasaki, 2001). Based on a review of habitat and range information, a total 31 herptile species have the potential to occur within the Project vicinity. While some of these species are entirely terrestrial (e.g., red back salamander), several require wetlands, littoral, and riparian habitats for all or portions of their life history. Green frogs were commonly observed along the Lower Reservoir shoreline and associated wetlands as well as in the larger tributaries. Green frogs and bullfrogs were observed or heard in each of the control-level ponds along the shoreline of the Upper Reservoir. Several of the small intermittent and permanent tributaries to the Lower Reservoir contained northern dusky and Alleghany mountain dusky salamanders (NYPA, 2013).

Other wildlife that may utilize wetlands or littoral habitat within the reservoirs and tributaries includes Mallard and Black Duck, Canada Goose, beaver, and raccoon. In general, a wide range of terrestrial

wildlife species (Section 4.5.2) may use riparian areas within the Project boundary for foraging and shelter.

Table 4.6.4-1: Herptile Species Observed within the Project Vicinity in 2012.

Common Name	Scientific Name
green frog	*Lithobates clamitans*
red newt	*Notophthalmus viridescens*
redback salamander	*Plethodon cinereus*
northern two-lined salamander	*Eurycea bislineata*
northern dusky salamander	*Desmognathus fuscus*
Allegheny mountain dusky salamander	*Desmoganthus ochrophaeus*
American toad	*Bufo americanus*
gray treefrog	*Hyla versicolor*
common garter snake	*Thamnophis sirtalis*
wood frog	*Lithobates sylvaticus*
pickerel frog	*Lithobates palustris*

4.7 Rare, Threatened, and Endangered Species (18 C.F.R. § 5.6 (d)(3)(vii))

4.7.1 T&E Species (Federal and State Listed Species)

Letters of inquiry were sent to the USFWS and the NYNHP to identify T&E species within the Project boundary and vicinity. The USFWS did not identify any federally protected species within the Project boundary (D. Stilwell, USFWS, personal communication, July 12, 2012). The NYNHP identified two species with the potential to occur within the Project boundary and vicinity: Bald Eagle (*Haliaeetus leucocephalus*) and timber rattlesnake (*Crotalus horridus*) (N. Heaslip, NYSDEC, personal communication, August 15, 2012; J. Pietrusiak, NYSDEC, personal communication, November 16, 2011).

Bald Eagle, a New York State-Threatened species, occurs in and uses the waters in the Project vicinity, including both reservoirs and Schoharie Creek, for feeding (S. Van Arsdale, NYSDEC, personal communication, August 3, 2012). This species has nested within the vicinity of the Lower Reservoir since approximately 1995. Between 1995 and 2009 there was one nest; since that time there have been two nests. Over the years, these nests have produced from 0-3 chicks total per year (S. Van Arsdale, NYSDEC, personal communication, August 3, 2012).

No nests occurred within the Project boundary in 2012; however, two nests occurred very near the Project boundary. One of the two nest locations has moved over the years and is sometimes within and sometimes just outside of the Project boundary. The second nest has remained just outside of the Project boundary (S. Van Arsdale, NYSDEC, personal communication, August 3, 2012). In 2013, one nest

occurred within the Project boundary and one just outside the Project boundary (within ¼ mile); a third nest occurred near a water body within 1-2 miles of the Project boundary (S. Van Arsdale, NYSDEC, personal communication, April, 2013). No data is available for nest productivity in 2013 (*i.e.*, fledged eagles).

Regardless of nest location, Bald Eagles use the Project waters to feed. During the winter, Schoharie Creek, above and below the Lower Reservoir, is an important feeding area for Bald Eagles when there is open water and no ice cover. Transient, non-breeding Bald Eagles (*e.g.*, sub-adults) may use the Project vicinity during nesting season as well. No eagles were directly observed during field work during July 2012, however fresh Bald Eagle flight feathers and plumage, in addition to whitewash, were found beneath snags and tall white pines adjacent to the Lower Reservoir (NYPA, 2013).

Timber rattlesnake, a New York State-Threatened species that occurs in the Catskill region, was noted by the NYNHP as potentially occurring in the vicinity of the Project. No documented occurrences of this species exist within the Project boundary itself; however, there is a documented historic occurrence of this species associated with an area of exposed bedrock in the vicinity of the Project (N. Heaslip, NYSDEC, personal communication, August 15, 2012). In 2012 a timber rattlesnake expert surveyed the most likely areas within the Project boundary for potential rattlesnake habitat. No rattlesnakes or viable den habitat were observed (NYPA, 2013).

Further surveys were conducted during May and June of 2013 during optimal weather and dates for timber rattlesnake emergence and basking on and around a west facing slope with exposed ledge outside of the Project boundary. The purpose of the survey was to determine if timber rattlesnakes are extant within or near the Project boundary. The lack of suitable basking and gestating habitat in the vicinity of the ledges, the failure to locate any timber rattlesnakes or shed skins and the lack of any reported observations in the past 30 years lead to the conclusion that timber rattlesnakes are extirpated from this area (NYPA, 2014b).

The USFWS has identified the Indiana bat as historically occurring within Schoharie County. Based on the general range and habitat requirements of the Indiana bat (*Myotis sodalist*), this species could have historically occurred within the Project vicinity. This species, however, was not identified by the NYNHP as occurring within the Project boundary. Indiana bats historically wintered in adjacent Albany County, and the bats are known to migrate long distances. The USFWS has stated that the bats are likely extirpated or in such small numbers that the bats are not likely extant within Schoharie County (USFWS, 2012a).

4.7.2 Species of Special Concern

The NYNHP did not identify any species of special concern as occurring within the Project vicinity. A week-long survey effort was conducted during July 2012 within the Project area to complete cover type mapping and assess plant and wildlife habitats, including habitat for rare species (NYPA 2013a). Cerulean Warbler and Eastern small-footed Myotis were the only species of special concern observed during the field work in 2012.

Additional species of Special Concern may occur within the Project vicinity. Species listed in Table 4.7.2-1 have the potential to occur based on habitat, range, and historic observation, but were not identified by the NYNHP as occurring within the Project boundary or vicinity. In addition these species (listed below), while not specifically part of the survey objectives, were not identified during the 2012 field effort.

Table 4.7.2-1. Species of Special Concern That May Occur within the Project Vicinity

Common Name	Scientific Name	
Cooper's Hawk	*Accipiter cooperii*	SC [1]
Blue-Spotted Salamander	*Ambystoma laterale*	SC
Jefferson Salamander	*Ambystoma jeffersonianum*	SC
Wood Turtle	*Clemmys insculpta*	SC
Cerulean Warbler	*Dendroica cerulea*	SC
Osprey	*Pandion haliaetus*	SC
Eastern Small-footed Myotis	*Myotis leibii*	SC

[1] SC= State Special Concern.

4.7.3 Significant Habitats

No federally designated critical habitat or other habitat for listed species was identified by the USFWS or the NYNHP as occurring within the Project vicinity (D. Stilwell, USFWS, personal communication, July 12 2012; J. Pietrusiak, NYSDEC, personal communication, November 16, 2011).

4.8 Recreation and Land Use (18 C.F.R. § 5.6 (d)(3)(viii))

4.8.1 Existing Recreational Facilities and Opportunities

Facilities Located within the Project Vicinity

The Project is located within the Saratoga/Capitol District Region, as designated by 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 has 97 RV sites and 21 tent sites. Nickerson Park Campground abuts the Project boundary along the western side of the Lower Reservoir.

Facilities Located within the Project Boundary

In 2012, the Power Authority conducted an inventory of existing recreational facilities and opportunities within the Project boundary (NYPA, 2012c). The Project provides a variety of recreation opportunities, including fishing, boating, hiking, biking, cross-country skiing, snowshoeing, picnicking, and swimming.

The Power Authority has seven recreation facilities which include: Mine Kill State Park, three access points on the Upper Reservoir, the Lansing Manor Complex, which includes a 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 travels 343 miles between Fort Lee Historical Park in New Jersey and Route 146 in Altamont, New York, travels along the western side of the Project through Mine Kill State Park and the Lansing Manor Complex. The Bluebird Trail travels two and a half miles between the Visitors Center at Lansing Manor and Mine Kill State Park. The locations of the recreation facilities can be seen in Figure 4.8.1-1 and are further described below.

Lansing Manor Complex: The Lansing Manor Complex is a National Register of Historic Places listed property and includes the Lansing Manor House, which is open to the public free of charge from May 1st to October 31st. The Manor is owned by the Power Authority, which operates as a house museum in cooperation with the Schoharie County Historical Society. The Manor shares parking and restroom facilities with the Visitors Center, which is located in the complex's former barn. A lift provides ADA access to the first floor of the Manor. At the time of the inventory, there were benches and interpretive displays on the grounds of the complex near the Manor House. The site offers views of the Lower Reservoir. There are numerous picnic tables, and benches on the grounds of the complex, along with a picnic shelter. Interpretive displays are positioned along the wetland interpretive trail, located southwest of the Visitors Center within the Complex. The large parking area provides three ADA parking spaces and 42 vehicle parking spaces. The spaces are delineated and lighting is provided. There is also a small weather station, solar panels and a windmill located at the site.

Visitors Center: The Visitors Center is owned, operated and maintained by the Power Authority in an adaptively reused dairy barn. The admission-free center is open to the public year-round and has exhibits and interactive displays, which describe the Project, how electricity is made, and the local environment. The Visitors Center has restroom facilities and provides ADA access to the exhibits and interpretive displays. The Power Authority also provides a number of public programs at the Visitors Center including but not limited to the annual Wildlife Festival and Energy Exposition; Antique Auto Show; movies; a Revolutionary War re-enactment; American Mountain Men weekends; seasonal hikes; an Earth Day weekend; and educational energy programming to local school districts and community organizations.

Mine Kill State Park: Mine Kill State Park is owned by the Power Authority and is operated by OPRHP. The Park offers a variety of amenities and activities to the public. There is a small user fee for entrance to the main park area, in addition to a small fee for use of the swimming pool. OPRHP also charges a rental fee for use of the picnic shelters that are available around the Park. There is an overlook, just south of the main park area on Route 30, which offers views of Mine Kill Falls from a series of decks and stairs. The main park has an Olympic-sized swimming pool, wading pool, diving pool, basketball court, horseshoe pits, playgrounds, soccer fields, volleyball net, hiking, picnic tables, and mountain biking trails. There are approximately 6.5 miles of trails located within the Park, including an approximately 3.5 mile section of the Long Path. In addition there are six other trails, which offer varying topography for different skill levels and range in length from .14 miles to 1.29 miles. These trails include the Nature Trail, the Old Long Path, the Orange Nature Trail, the Red Nature Trail, the Red/Orange Trail, and the Yellow Trail. The park is also open in the winter for snowshoeing, snowmobiling, cross-country skiing, and ice-skating on a man-made rink.

A hard surface boat launch provides public access to the Lower Reservoir. The Lower Reservoir is open to the public from April to September with a permit from the Power Authority. Permitted activities on the Lower Reservoir include fishing, boating, waterskiing, windsurfing, and tubing. The shoreline is also open to shoreline fishing. The Park provides ADA-accessible parking, picnic tables, showers, changing rooms, and restroom facilities. There are numerous parking lots available within the Park, which provide parking for over 350 regular vehicles, seven ADA spaces, and 49 vehicles with trailers.

Downstream Fishing Access: The Power Authority owns and operates an access area below the Lower Dam for anglers. The site has a gravel parking area that can hold approximately eight vehicles. Individuals can access the downstream shoreline for fishing from the parking area. There are no formal trails. Some individuals, however, drive further downstream to access the shore.

Upper Reservoir Access Areas: The Upper Reservoir is open to recreational craft, including rowboats and canoes, with or without electric-trolling motors, and fishing. Swimming, waterskiing, tubing and windsurfing are not permitted on the Upper Reservoir. The Power Authority owns and operates three access areas on the Upper Reservoir, which are open to the public free of charge, although the Power Authority does require a permit to operate a boat on the Upper Reservoir. Individuals can access the service road that travels around the Upper Reservoir from two of the access areas (the northern and southern areas). There is room for approximately six vehicles at the southern access, three vehicles at the northern access and two vehicles at the eastern access. The eastern access has a gate, which blocks access to a launch. Individuals can arrange with the Power Authority to have the gate opened.

4.8.2 Recreational Use

FERC regulations require that the Power Authority file a FERC Form 80 report for the Project every six years. This form provides data on recreational facilities located within the Project boundary and recreational use of those facilities for the calendar year prior to the filing year. The most recent Form 80 for the Project was filed in 2009. The 2009 FERC Form 80 indicated that the daytime use at the Project was 103,600 recreation days and that peak weekend use averaged 8,130 recreation days (FERC, 2009). FERC defines a recreation day as the number of visits to a recreational facility by a person during a 24-hour period.

The majority of the Project recreation facilities are used at less than 50% of their designed capacity when reported in 2009, with the exception of the Mine Kill State Park swimming pool and Project hunting areas. The 2009 Form 80 indicated that the pool and hunting areas were used at 100% of the designed capacity (FERC, 2009).

4.8.3 New York State Outdoor Recreation Comprehensive Plan

The 2009-2013 New York State Comprehensive Outdoor Recreation Plan (SCORP) was written to provide a statewide policy direction and to fulfill the agency's recreation and preservation mandate. It serves as an overall guidance document for recreation resource preservation, planning and development in New York State through 2013. According to the SCORP, relaxing in a park is the most popular statewide recreation activity, followed by walking, visiting museums/historic sites, swimming and biking. The SCORP listed the top five statewide facility needs listed by the public and the top five statewide needs listed by park professionals. The public listed a statewide need for swimming pools/beaches, trails, facilities for picnicking, playgrounds, and open space, while park professionals saw a statewide need for

trails, picnic facilities, nature study facilities, fields for sports, and fishing access points. The SCORP did not identify any specific needs for the Project vicinity (OPRHP, 2008).

4.8.4 Land Use

Lands Abutting the Project Boundary

The majority of the lands abutting the Project boundary consist of undeveloped forested areas with a few pockets of residential development. There is also a campground located on the southwestern edge of the Project. Land use abutting the Project boundary is regulated by local and state zoning ordinances. Land owners must comply with these ordinances for use and development of their lands.

Lands within the Project Boundary

Approximately 52% of the lands within the Project boundary are undeveloped forested areas with pockets of Project-related development (approximately 3% of Project lands). There is significant development where the power generation facilities and auxiliary structures exist on the eastern shoreline between the Upper and Lower Reservoirs. There is a transmission line corridor that travels south for a short distance from the generating facility prior to branching east and west before leaving the Project boundary. Remaining land uses include recreation facilities and hunting lands.

4.8.5 Project Boundary

The Project boundary, which is predominately based on a metes and bounds survey, encompasses a total of 2,893 acres of which approximately 812 acres consist of reservoir area.

There are no federal lands, national trails, national wild or scenic rivers, or wilderness areas located within the Project boundary (USFWS, 2012b; NPS, 2012a). The National River Inventory (NRI) is a program that lists river segments that are believed to possess one or more “outstandingly remarkable” natural or cultural values. According to the NRI, Schoharie Creek is listed from the Lower Dam north to near Vroman’s Nose. This section of river is listed for an abundance of representative geologic features including Boucks, Towpath Mountain, and Walhalla Rocks (NPS, 2012b).

4.8.6 Management of Project Lands

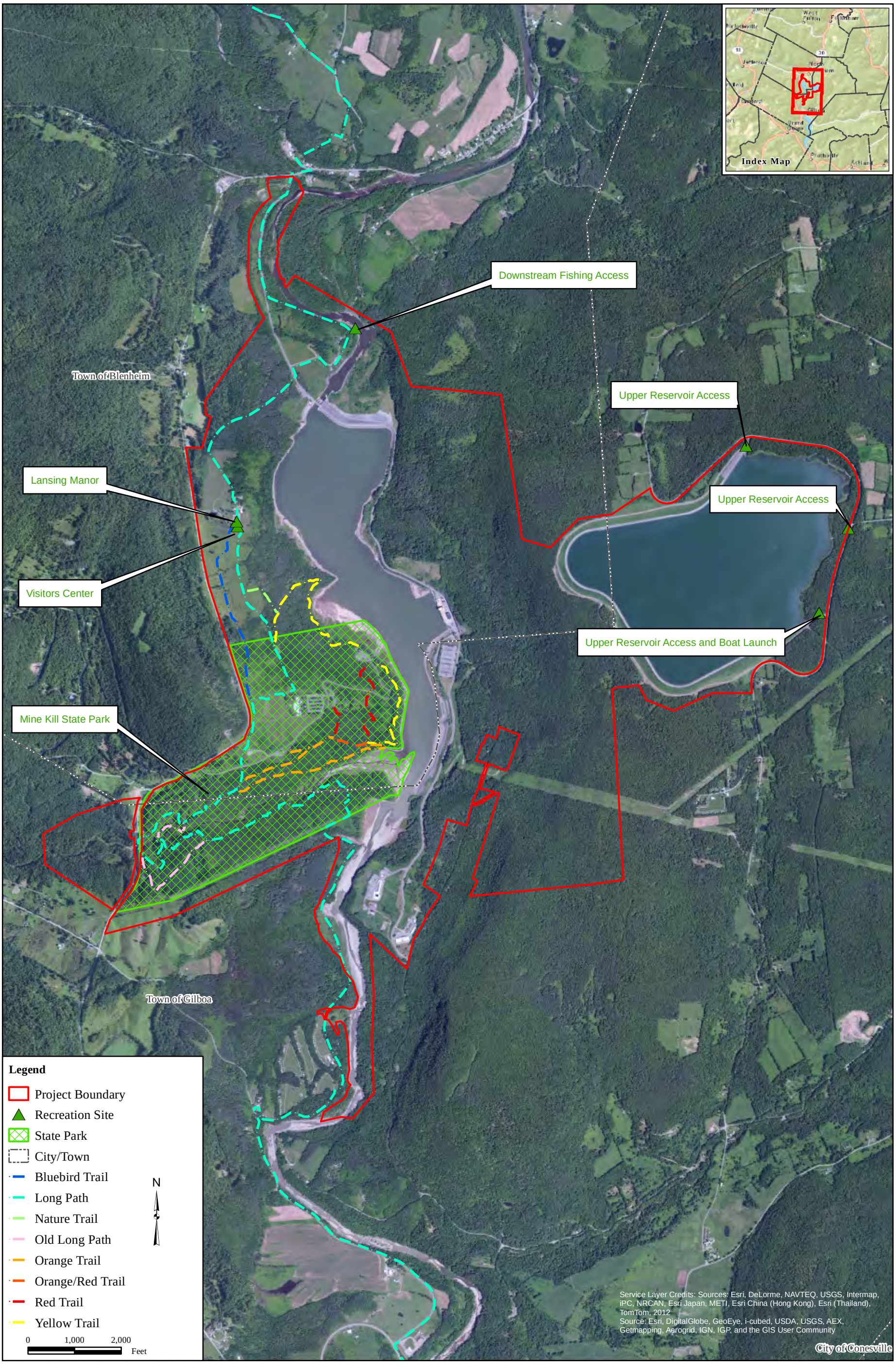
The Power Authority manages its lands within the Project boundary in accordance with federal and state regulations. The FERC license provides the Power Authority with the ability to permit reasonable use of the reservoirs or other Project properties for recreation or as a water supply for irrigation, industrial, municipal or similar use.

In general, Project operations and maintenance, along with recreation are the primary activities that occur on Project lands. Operations and maintenance activities also may include road and parking lot maintenance, building maintenance, and vegetation management.

4.8.7 Management Plans, Programs, and Agreements with OPRHP

The land upon which the Mine Kill State Park is located is owned by the Power Authority, while OPRHP maintains and operates the facility. This is done under an operating agreement between the Power Authority and OPRHP.

The Power Authority has an agreement with the Town of Gilboa to provide assistance with the maintenance of Valenti Road, which is used to access the generating facilities at the Project.



New York Power Authority
Generating more than electricity

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

PRE-APPLICATION DOCUMENT

Figure 4.8.1-1: Recreation Facilities

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4.9 Aesthetic Resources (18 C.F.R. § 5.6 (d)(3)(ix))

4.9.1 Visual Character of Project Lands and Waters

4.9.1.1 Lower Dam and the Lower Reservoir

Development on the Lower Reservoir is limited to the Power Authority's facilities, Mine Kill State Park, and Nickerson Park Campground. The west shoreline is accessible to the public and supported by several facilities. The historic Lansing Manor and Visitors Center are located on the northwest side of the reservoir. Limited views of the Lower Reservoir and its eastern shoreline are available from the overlook and lawn area at Lansing Manor. The Visitors Center is connected by trails to Mine Kill State Park, a 650-acre day-use park, to the south. Views of the reservoir and east shoreline, including the Project powerhouse and adjacent switchyard, are also available from various points in the park, including the "mid-level" picnic area, several trails that access the shoreline, and the boat launch. The boat launch also provides a view of Brown Mountain and a limited view of the Lower Dam, which is approximately one mile north. Recreational boaters on the Lower Reservoir have various views of the Project dam, powerhouse and switchyard depending on their location on the reservoir and proximity to the facilities. The riverine portion of the Lower Reservoir is screened by a narrow tree buffer along the shoreline (NYPA, 2012d).

The majority of Project lands on the west shoreline are forested and provide a dense vegetative buffer along the shoreline to the public facilities located thereon and of views of the reservoir from Route 30 that roughly parallels the west side of the Project (NYPA, 2012d).

The north and east shorelines of the Lower Reservoir are not accessible to the public. The Power Plant Access Road extends from Route 30 along the west side of Schoharie Creek, crossing the creek at the Lower Dam. Public access on this road is restricted just west of the dam crossing. The road continues along the east shoreline providing access to the powerhouse, substation and operations buildings. Much of this development is readily observable from the various public access points in Mine Kill State Park. There are limited views of portions of the Lower Reservoir from public roads, including Route 30 near the Lansing Manor Complex, especially the Visitor's Center, and from Route 43 near the intersection of Burnt Hill Road (NYPA, 2012d).

Project lands downstream of the Lower Dam are undeveloped except for a small gravel parking lot and an access road on the west shore for angler access approximately 700 feet downstream of the dam. The dam and spillway are readily observable from this section of the publicly accessible river bank. The shoreline below the Lower Dam varies in nature with exposed gravel/cobble, old fields, rock outcrop, and forested

buffer areas. There are also areas of emergent marsh, scrub-shrub and forested wetlands along the shorelines. The Lower Dam is observable from various points downstream (NYPA, 2012d).

4.9.1.2 Upper Reservoir

The Upper Reservoir is located on Brown Mountain, east of the Lower Reservoir, in a relatively undeveloped rural setting (NYPA, 1999).

The impoundment is contained on three sides by an earth and rock embankment approximately 2.25 miles long (the Upper Dike). An access/maintenance road is constructed along the top of the embankment. The inside of the embankment (toward reservoir) on the north, west and south sides is a moderate slope of stone rip rap. The east shoreline blends into the natural topography and is a gentle slope with a gravel/cobble shoreline backed by undeveloped forest land. Public access to the reservoir is provided from three points off the Mower Road to the east of the reservoir. Foot access is provided to the maintenance road at two points where the road intersects with the Mower Road (gated vehicle access points). A boat launch access site is also located off Mower Road between the two foot access sites. Views of the entire Upper Reservoir and Upper Dike are available from all three access points (NYPA, 2012d).

The maintenance road around the Upper Reservoir also provides extensive views to the north, west and south of the surrounding area. A portion of the Lower Reservoir can also be seen from the most western portion of the road. Views from the road consist of primarily undeveloped forest lands with some scattered agricultural lands and scattered residential development in the foreground, and moderate elevation (approximately 3,000 foot and less) mountains in the background (NYPA, 2012d).

There is also a view of the Upper Reservoir from an informal campsite located in Leonard Hill State Forest (NYPA, 2012d).

4.9.2 Scenic Attractions

Mine Kill State Park and Max V. Shaul State Park, which is located in Fultonham, provide forest and trail opportunities and offer scenic views of non-Project areas in the Project vicinity. Similarly, several State Forests located near the Project, including but not limited to Burnt Rossman Hills State Forest, Blenheim Hill State Forest, Leonard Hill State Forest, Keyserkill State Forest, and Gates Hill State Forest offer scenic views of the Project vicinity.

Trails for hiking, biking, snowshoeing and cross country skiing are provided at Mine Kill State Park and are linked to the Lansing Manor Complex and Visitors Center trails. The Long Path is a 343-mile trail

beginning in Fort Lee, N.J. and ending in Altamont, N. Y., and extends along the west side of the Project through Mine Kill State Park and Lansing Manor and continues north to Vromans Nose. Vromans Nose is a prominent geological feature in Fulton with a hiking trail to the summit. The Catskill Scenic Trail, approximately five miles southwest of the Project, is a State-designated trail along the former Ulster and Delaware Railroad corridor between Bloomville and Roxbury.

Mine Kill Falls is a cascading 80-foot falls through a narrow gorge in the State Park. Boucks Falls located in Fulton is a 170-foot falls on State land. The falls are accessed by a trail and connect to other trails leading into the Catskill Mountains.

Howe Caverns and Secret Caverns are both located in Howes Cave, NY, approximately 17 miles north of the Project. Public tours are conducted through the limestone caves at both sites.

Landis Arboretum, located approximately 24 miles north of the Project in Esperance, consists of 548 acres, 40 acres of which are devoted to noteworthy collections and gardens. It contains approximately 2,000 labeled specimens, with plantings of trees, shrubs, and herbaceous perennials from around the world. Other areas consist of natural areas, woodlands and open fields, with eight miles of trails. Educational programs relating to trees, other plants and animals are given all year long.

4.10 Cultural Resources (18 C.F.R. § 5.6 (d)(3)(x))

4.10.1 Cultural Resources Introduction and Geographic Overview

This review of information regarding known cultural resources includes the results of preliminary research on known archaeological and historic architectural resources in the Project's vicinity.

4.10.2 Archaeological Resources

The New York State archaeological file database was reviewed with Dr. Nancy Herter of OPRHP on May 23, 2012. Very few archaeological sites are recorded from the Project vicinity. In fact, only one Precontact period site is recorded (A095-08-011) and there is no information about either what was found at the site or what cultural time period to which it belongs. Three Historic period archaeological sites have been reported (other than Lansing Manor). Two of these were previously recorded based on historic map review and cultural resources survey (A09501.000099 and A095-08.0008). The third site (A09508.000011), located within the Project boundary, is reported as "scattered pieces of field stone that appear to be foundation stone." The Lansing Manor Complex is also considered an historic period archaeological site as well as a Historic Structure (see below). Several cultural resources management

investigations have taken place at the site due to on-site projects that necessitated ground disturbances. However, these did not yield significant archaeological materials (e.g., Hartgen, 2005, 2009a, and 2009b).

4.10.3 Historic Structures

Information was also gathered at OPRHP on the Lansing Manor Complex. This historic collection of buildings, which includes the Project's Visitors Center, was built in 1819 and was listed in the NRHP in 1973 as contributing to the economic, social, and technological history of the area and State. (Rennenkampf 1973). In 1972, the Power Authority acquired Lansing Manor (also formerly known as Beechwood Farm). Owned and operated by four 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. The buildings at Lansing Manor represent three cycles in the agricultural economy of Schoharie County: subsistence farming of the postcolonial era during the tenure of Abraham Shoemaker, 1800-1819; the extensive small grain and sheep farming agricultural economy of the Sutherland era, 1819-1861; and the dairy economy of the Spring and Mattice tenure, 1861-1973 (Sherwood, 1991).

Since 1972, the land has been fallow. The site has included the Visitors Center for the Project since 1973 when, with the addition of a large observatory in 1973-74, the former dairy barn was adapted for use as the Visitors Center. The manor house was converted from residential use to an historic house museum in 1973-74, when it was opened to the public (Sherwood, 1991). 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 Creamer/Former Laundry (Post-1819, Pre-1861, Moved 1975), Privy (1819, Moved 1896-1911, Moved 1975), Well Head (1819), and Shop/Possible Servant's Quarters (1819, Rebuilt 1896-1911).

There have been no comprehensive architectural surveys conducted within the towns of Blenheim or Gilboa within the Project boundary, although a survey of North Blenheim, just north of the Project boundary, was conducted in 1972 as part of a potential NRHP Nomination for the North Blenheim Historic District (Manly, 1974). A Phase II Historic Engineering Record Documentation was completed on the Route 30 Bridge over Mine Kill Creek prior to its replacement in 2008 (LoRusso, 2004). As part of the documentation, the Mattice Family cemetery, which lies within the Project boundary, was noted but no NRHP-evaluation has been completed.

Two additional properties, the remnants of the "Lansing Turnpike" and a dwelling commonly referred to as the Park Manager's house, are located within the Project boundary. The ca. 1830 Greek Revival dwelling is noted as the D. Shaffer Property on the *1856 Schoharie Wall Atlas* (Wenia and Lorey, 1856)

but does not appear on the *1866 Topographical Atlas of Schoharie County* (Stone & Stewart, 1866). The turnpike is also noted on these Atlases but further research is required to determine the history of both of these resources.

4.10.4 Existing Discovery Measures

The Power Authority consults with OPRHP whenever it proposes to undertake ground-disturbing activity within the Project boundary that requires a state or federal permit in order to locate, identify, and assess the significance of either known or currently unknown cultural resources. In addition, prior to the granting of permission to others for non-Project uses of Project lands and waters, the Power Authority consults with OPRHP in accordance with the procedures of Article 40 of the FERC license.[3] The purpose of such consultation is to determine where such grants of permission or proposed ground disturbing activity have the potential to adversely affect historic properties.

4.11 Socio-Economic Resources (18 C.F.R. § 5.6 (d)(3)(xi))

4.11.1 Demographics and Housing

4.11.1.1 Current and Historical Population

Recent and historical population estimates for the Towns of Blenheim and Gilboa, Schoharie County, the Albany-Schenectady-Troy Metropolitan Statistical Area (MSA), and the State of New York are presented in Table 4.11.1.1-1. Since 1950, the population of the Town of Blenheim has fluctuated, with the 2010 population of 377 being just one person less than 6 decades earlier. The US Bureau of the Census estimated the 2012 population to be 372 (U.S. Census Bureau, 2013a). The Town of Gilboa, however, has experienced a 39 percent increase in population from 943 in 1950 to 1,307 in 2010. The Census Bureau's 2012 population estimate is 1,303 (U.S. Census Bureau, 2013a). The population of Schoharie County grew by 32 percent between 1950 and 2010, from 24,750 to 32,749. Between the 2010 Census count and the 2012 estimate, the County's population decreased by approximately 2 percent to 32,099 (U.S. Census Bureau, 2013b). New York State as a whole saw an increase in population of 31 percent over the same time period, much slower than that of the U.S., which had roughly a doubling of its population from 151 million to 308 million over the 60 year period.

[3] NYPA accepted FERC's new standard land use article by letter dated February 24, 1981, and designated the new article as Article 40. There was already an existing Article 40, added in 1976. Therefore, there are two Article 40s in the current project license.

Table 4.11.1.1-1: Historical Population (Number of People) and Percent Change in Population, 1950 through 2010

	1950[1]	1960[2]	1970[3]	1980[3]	1990[3]	2000[3]	2010[3]
Blenheim	**378**	**345**	**260**	**292**	**375**	**330**	**377**
Change		-9%	-25%	12%	28%	-12%	14%
Cumulative from 1950		-9%	-31%	-23%	-1%	-13%	0%
Gilboa	**943**	**782**	**854**	**1,078**	**1,270**	**1,215**	**1,307**
Change		-17%	9%	26%	18%	-4%	8%
Cumulative from 1950		-17%	-9%	14%	35%	29%	39%
Schoharie County	**24,750**	**22,616**	**24,750**	**29,710**	**31,840**	**31,582**	**32,749**
Change		-9%	9%	20%	7%	-1%	4%
Cumulative from 1950		-9%	0%	20%	29%	28%	32%
Albany MSA[4]						**825,875**	**870,716**
Change							5%
Cumulative from 1950							N/A
New York (thousands)	**14,830**	**16,782**	**18,237**	**17,558**	**17,990**	**18,976**	**19,378**
Change		13%	9%	-4%	2%	5%	2%
Cumulative from 1950		13%	23%	18%	21%	28%	31%

[1]U.S. Bureau of the Census, 1952.

[2]U.S. Bureau of the Census, 1963.

[3]U.S. Census Bureau, 2012b.

[4]The 2000 Census was the first to include Schoharie County in the Albany-Schenectady-Troy, NY MSA.

Beginning with the 2000 Census, Schoharie County was included in the Albany-Schenectady-Troy, NY MSA. The County represents just 3.8 percent of the MSA's 2010 population of 870,716. The smaller County's inclusion in the MSA indicates that the area is well-integrated, socially and economically, with the urban area, as measured by commuting ties.

4.11.1.2 Housing, Employment, and Income

As of the 2010 U.S. Census, the Town of Blenheim had 361 housing units (median year built: 1974), with 44 percent occupied. Of the total housing units, 49 percent were for seasonal, recreational, or occasional use, the highest rate in the area. The Town of Gilboa had a slightly higher occupancy rate (51 percent) for its 1,071 housing units (median year built: 1969) than neighboring Blenheim. Like Blenheim, much of the housing stock was held for seasonal use (44 percent).

Schoharie County had a labor force of 15,279 in May 2013, roughly 3.5 percent of the Albany-Schenectady-Troy MSA (BLS, 2013). The median household income in the Project vicinity is similar to that of the U.S. as a whole. The Town of Blenheim had a median household income of $50,833 in 2010, just slightly below that of Schoharie County at $50,864. The Town of Gilboa had a median household income of $55,703.

The Blenheim-Gilboa Project positively impacts the area's economy through its payroll and other local expenditures. A total of 151 site personnel and other NYPA employees are stationed at the Project. This figure has remained relatively stable over the past few years. The total wages/salaries, including budgeted overtime, of these employees are anticipated to be approximately $13 million in 2013. An additional $4.1 million is budgeted for 2013 non-labor operation and maintenance expenses, not including FERC fees. Capital projects are not included in this estimate; as such expenditures typically would not directly impact local businesses. Table 4.11.1.2-1 summarizes the Project's 2013 anticipated operation and maintenance expenditures, which have a direct financial impact on the local economy.

Table 4.11.1.2-1: Blenheim-Gilboa Budgeted Wages/Salaries and Operations and Maintenance Expenditures, 2013

Cost	Amount
Base Wages and Salaries (All personnel at site)	*$11,857,000*
Budgeted Overtime Wages	*$ 1,159,150*
Total Budgeted Salaries and Wages	$13,016,150
Total Non-labor O&M Budget[1]	$ 4,106,000
Total Payroll and O&M Expenditures	**$17,122,150**

[1]Excludes FERC fees of $1,050,000

4.11.1.3 Industry and Occupation

The economy of the area in the vicinity of the Project is relatively diverse, with predominant industries for the County, based on employment, consisting of educational, health, and social services (26 percent); retail trade (15 percent); and construction (9 percent). The towns of Blenheim and Gilboa both have higher levels of employment in educational, health and social services (32 and 28 percent, respectively) and construction (13 and 18 percent, respectively) than the County as a whole.

In Schoharie County, 31 percent of those employed identified their occupation as management, professional, and related occupations. Sales and office were the next most frequently mentioned occupations in the County at 24 percent. Management, professional, and related occupations were most often cited (45 percent) in the Town of Blenheim. Natural resources, construction, and maintenance occupations and service occupations were also commonly mentioned, at 20 percent each. In Gilboa, management, professional, and related occupations were most frequently cited at 28 percent. Natural resources, construction, and maintenance (24 percent) and sales and office (21 percent) account for the next largest occupations in the Gilboa (U.S. Census Bureau, 2012a).

4.11.1.4 Development and Projected Changes in Population

Table 4.11.1.4-1 presents information on the place of residence and population and housing densities in the areas near the Project. While almost nine out of ten residents of New York's population lives in urban areas, only 17 percent of Schoharie County residents are in an urban area. The towns of Blenheim and Gilboa are considered to be in rural areas. Areas defined by the Census Bureau as urban include two types: Urbanized Areas (UAs) of 50,000 or more people and Urban Clusters (UCs) of at least 2,500 and less than 50,000 people. Rural areas simply include all population, housing, and territory not included within an urban area.

New York State is the nation's eighth most densely-populated state, with 411.2 persons and 172.1 housing units per square mile. The Albany-Schenectady-Troy MSA is also heavily populated, with 309.7 persons and 139.9 housing units per square mile. In contrast, Schoharie County has 52.7 persons and 27.7 housing units per square mile. The Town of Blenheim is the least densely populated with 11.1 persons per square mile, less than half that of the Town of Gilboa at 22.6 persons per square mile. Housing units are also more widely spaced, with 10.6 per square mile in Blenheim and 18.5 per square mile in Gilboa (U.S. Census Bureau, 2012a).

Cornell University's Program on Applied Demographics has developed county-level population projections for New York in five-year increments through the year 2040. The projections are based on the rates of change from historical data. Population counts from the 2010 Census serve as the starting point for the projections. As shown in Table 4.11.1.4-2 below, Schoharie County's population is expected to decline 9 percent over the 30-year period, from 32,749 to 29,811. Overall, the Albany MSA is projected to increase in population by 3.7 percent over its 2010 population of 870,716 to 902,549 by 2040. New York State as a whole is projected to increase by just 1.3 percent (Vink, 2011).

Table 4.11.1.4-1: Place of Residence and Population Density, 2010

	Blenheim	Gilboa	Schoharie Co.	Albany MSA	New York
Place of Residence: Urban (%)	0	0	17	79	88
Place of Residence: Rural (%)	100	100	83	21	12
Population	377	1,307	32,749	870,716	19,378,102
Persons per square mile (density)	11.1	22.6	52.7	309.7	411.2
Housing Units	361	1,071	17,231	393,297	8,108,103
Housing Units per square mile	10.6	18.5	27.7	139.9	172.1

U.S. Census Bureau, 2012a.

Table 4.11.1.4-2: Population Projections, 2015 through 2040

	2010 est.	2015 proj.	2020 proj.	2025 proj.	2030 proj.	2035 proj.	2040 proj.
Schoharie Co.	**32,749**	**32,821**	**32,717**	**32,368**	**31,720**	**30,833**	**29,811**
Change (%)		0.2	-0.3	-1.1	-2.0	-2.8	-3.3
Cumulative (%)		0.2	-0.1	-1.2	-3.1	-5.9	-9.0
Albany MSA	**870,716**	**882,874**	**894,769**	**903,644**	**907,457**	**906,406**	**902,549**
Change (%)		1.4	1.3	1.0	0.4	-0.1	-0.4
Cumulative (%)		1.4	2.8	3.8	4.2	4.1	3.7
NY State (thousands)	**19,378**	**19,546**	**19,697**	**19,786**	**19,794**	**19,729**	**19,623**
Change (%)		0.9	0.8	0.5	0.0	-0.3	-0.5
Cumulative (%)		0.9	1.6	2.1	2.2	1.8	1.3

Vink, 2011.

4.12 Tribal Resources (18 C.F.R. § 5.6 (d)(3)(xii))

There are no tribal lands within the Project boundary. In accordance with correspondence received from BIA dated November 20, 2012, Nations that may have an interest in the relicensing of the Project include the Delaware Nation, the Delaware Tribe of Indians, the St. Regis Mohawk Tribe, and the Stockbridge-Munsee Community Band of Mohican Indians. In November 2013, NYPA sent letters to the aforementioned federally recognized Nations, requesting any existing, relevant, and reasonably available information with respect to resources of concern within the Project boundary to the Nations. The Tribal Historic Preservation Office (THPO) for the Stockbridge-Munsee Community Band of Mohican Indians indicated that the Project is in Mohican territory but it was not aware of any cultural sites within the Project area. The St. Regis Mohawk Tribe stated that the Project does occur in an area designated as culturally sensitive to the Nation but did not identify any specific properties.

There are no known Native American traditional cultural properties (TCPs) or religious properties within the Project boundary. At this point, it is unknown whether any TCPs or other National Register-eligible properties important to any federally recognized Nation are located within the Project's Area of Potential Effect or whether the Project has any effect on these resources.

5 PRELIMINARY ISSUES AND STUDIES LIST (18 C.F.R. § 5.6 (d)(4))

5.1 Issues Pertaining to the Identified Resources

Based on the information provided in Section 4, NYPA believes that sufficient information already exists regarding the environmental resources at the Project in most areas. The three areas NYPA believes may warrant additional study are: 1) fish entrainment; 2) recreation; and 3) historic properties. These areas are discussed in more detail in Sections 5.1.3, 5.1.7, and 5.1.9.

5.1.1 Geology and Soils

Existing comprehensive data for geology and soils at the Project is available from the 1960s through present day. Due to the extensive amount of old and new information, NYPA believes it has sufficient information to adequately characterize geology and soil resources within the Project boundary. As a result, no further studies for this resource are proposed at this time.

5.1.2 Water Resources

Existing comprehensive data for water resources at the Project is available prior to 2012; however, this information originates from outdated studies conducted in the 1970s (e.g. Culp and Lechel, 1977b). In addition, other data exists from state (NYSDEC) and academic institutions (SUNY Cobleskill), but these data may not adequately characterize the water resources at the Project because they were collected infrequently and at a few locations throughout the Project. As a result, 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 (NYPA, 2014a). This study examined seasonal water quality within both the Upper and Lower Reservoirs, tributaries, and in Schoharie Creek upstream and downstream of the Project. The 2012 study provides updated, robust, and comprehensive information regarding specific water quality parameters in the Project vicinity. The overall conclusion of this study is that continued Project operation is not expected to adversely affect water resources. Therefore, NYPA believes it has sufficient information to adequately characterize water resources within the Project, and additional studies for this resource are not proposed at this time.

5.1.3 Fish and Aquatic Resources

Existing data on the fisheries and aquatic resources at the Project is available prior to 2012. Shortly after the completion of the Project, NYPA conducted fisheries surveys from 1973 to 1982, which indicated that 35 species are present in Project waters. More recent surveys conducted by the NYSDEC and SUNY Cobleskill indicate that 26 species are present in Project waters. Of the 26 species present, 8 are unique to

the Upper Reservoir and 2 are unique to the Lower Reservoir. If a fish species found in the Upper Reservoir was not caught in the Lower Reservoir, it is likely due to different sampling techniques. Both historical and recent fishery survey data indicate there are no diadromous or rare, threatened or endangered fish species present in Project waters. In addition, the fishery surveys and stocking records indicate that Project waters support a recreational fishery of walleye, trout, basses, sunfishes, and bullhead.

Based on the similar species present from the historical and more recent fisheries surveys and stocking of species of recreational value, the continued operation of the Project is not expected to affect this resource. However, NYPA is proposing to conduct a literature-based assessment of fish entrainment and turbine passage survival to gain a more complete understanding of any fish passage occurring through the Project's pump-turbines.

5.1.4 Wildlife and Botanical Resources

Existing data for wildlife resources was available for the Project prior to 2012; however, much of the available information was from the 1970s (e.g., Burt et al., 1978) and was therefore outdated. As a result, NYPA conducted a baseline study in July of 2012 to review and update information pertaining to wildlife resources within the Project boundary and vicinity. The study included a qualitative survey for wildlife (*i.e.*, observations, tracks, sign, etc.), a detailed habitat survey and mapping, and review of documentation for potentially occurring wildlife species based on habitat. NYPA believes it has sufficient information to adequately characterize wildlife resources within the Project. The 2012 study provides updated information on the specific wildlife species and habitats in the Project vicinity. Based on this study, continued Project operation is not expected to affect wildlife resources (NYPA, 2013). Accordingly, no further studies for this resource are proposed at this time.

Existing data for botanical resources was available for the Project prior to 2012; however, much of the available information was from the 1970s (e.g., Burt et al., 1978). As a result, NYPA conducted a baseline study in July of 2012 to update information pertaining to botanical resources, including wetlands and shorelines. The study included a detailed cover type mapping and field verification study, as well as documentation of dominant botanical species and identified habitats within the Project vicinity. NYPA believes it has sufficient information to adequately characterize botanical resources within the Project. The 2012 study provides updated information on the specific botanical species and habitats in the Project vicinity. Based on this study, continued Project operation is not expected to affect these resources (NYPA, 2013). As a result, no further studies for this resource are proposed at this time.

5.1.5 Wetlands, Riparian, and Littoral Habitat

Existing data for wetlands, riparian, and littoral within the Project vicinity was available for the Project prior to 2012; however, much of the available information was from the 1970s (e.g., Burt et al., 1978). As a result, NYPA conducted a baseline study in July of 2012 to update information pertaining to wetlands and shorelines. The study included a detailed cover type mapping and field verification study, as well as documentation of wetland, riparian, and littoral habitats identified within the Project vicinity. NYPA believes it has sufficient information to adequately characterize wetland, riparian, and littoral areas within the Project boundary. The 2012 study provides updated information on the specific botanical species and habitats in the Project vicinity.

5.1.6 Rare, Threatened, and Endangered Species

Existing data related to Rare, Threatened, and Endangered (RTE) species within the Project vicinity was available for the Project prior to 2012. In addition, NYPA submitted routine letters of inquiry to the NYNHP and USFWS to identify potential species that may occur (D. Stilwell, USFWS, personal communication, July 12 2012; N. Heaslip, NYSDEC, personal communication, August 15, 2012; J. Pietrusiak, NYSDEC, personal communication, November 16, 2011). As a result, NYPA conducted a baseline study in July of 2012 and again in May - June of 2013 to update information pertaining to RTE species potentially occurring within the Project vicinity. The 2012 survey was habitat-based and included qualitative habitat surveys for both timber rattlesnake (not known to exist within the Project vicinity, but considered "potential" based on historical data) and bald eagle (known to be extant in Project boundary). The 2013 study (NYPA, 2014b) included a focused habitat and species survey for timber rattlesnake, which was identified by the NYNHP as potentially occurring in or near the Project. The 2012 survey did not identify any instances of the timber rattlesnake occurring within the Project boundary or adjacent lands. The 2012 survey leads to the conclusion that timber rattlesnake is not present within the Project boundary or adjacent lands due to the lack of sufficient habitat. Bald Eagle habitat and extant nesting pairs are present and documented within the Project boundary and vicinity. Based on this study, continued Project operation is not expected to affect these resources (NYPA, 2014b). As a result, no further studies for this resource are proposed at this time.

5.1.7 Recreation and Land Use

NYPA conducted a baseline recreation facilities inventory and land use verification in July 2012. Based on the results of the 2012 baseline recreation facilities inventory and land use verification, continued Project operation is not expected to affect land use resources (NYPA, 2012c). Accordingly, no further studies on land use are proposed at this time. However, NYPA is proposing to conduct a Recreation

Use/User Contact Study and Assessment of the Project on Recreation Use to gain a more complete understanding of the recreation use at the Project. The information collected in 2012 and from the proposed study will be used to evaluate whether continued Project operation affects recreation resources.

5.1.8 Aesthetic Resources

A baseline aesthetic study was conducted in July 2012 to review aesthetic resources at the Project. Based on this study, continued Project operation is not expected to adversely affect aesthetic resources. Accordingly, no further studies for this resource are proposed at this time (NYPA, 2012d).

5.1.9 Cultural Resources

The New York State archaeological file database was reviewed with Dr. Nancy Herter of OPRHP on May 23, 2012. Very few archaeological sites are recorded in the Project vicinity. During the term of the license, several cultural resources management investigations have taken place at the site due to on-site projects that necessitated ground disturbances. However, these did not yield significant archaeological materials. There is one National Register of Historic Places-listed historic resource, the Lansing Manor Complex, within the Project boundary. There have been no comprehensive architectural surveys conducted within Blenheim or Gilboa Townships within the Project boundary. Thus, NYPA is proposing a Phase IA Archaeological Survey and Historic Structures Survey to develop a complete understanding of the existence of historic properties within the Project boundary and whether continued Project operation has the potential to adversely affect historic properties.

5.1.10 Socio-economic Resources

NYPA believes it has sufficient information to adequately characterize socioeconomic resources within the Project. Information from other studies proposed herein can be utilized to assess the effects, if any, of the Project on socioeconomic resources. As a result, no studies regarding socioeconomic resources are proposed.

5.1.11 Tribal Resources

NYPA has not identified any specific issues regarding Native American resources. Outreach to potentially interested Nations did not identify any known impacts on tribal lands or resources. Nonetheless, the proposed Phase IA Archaeological Survey and Historic Structures Survey will involve consultation with affected tribes, and information from this study will determine the effects, if any, of the Project on Native American resources.

5.2 Potential Studies or Information Gathering

The following studies are proposed:

- Literature-Based Assessment of Fish Entrainment and Turbine Passage Survival
- Recreation Use/User Contact Study and Assessment of the Project on Recreation Use
- Phase 1A Archaeological Survey and Historic Structures Survey

5.2.1 Assessment of Fish Entrainment and Turbine Passage Survival

5.2.1.1 Study Objective

The objective of the study is to use existing information specific to the Project and contained in the scientific literature to assess the potential effects of passage through the pump-turbines on fish communities at the Project.

5.2.1.2 Project Nexus

Studies at other hydroelectric projects have shown that there is the potential for fish to become entrained during pumping and generating phases. Such entrainment may cause mortality as fish pass between the Upper and Lower Reservoirs. Information from this study would help identify any adverse effects on fish passage from the Project's pump-turbines.

5.2.1.3 Methodology/Level of Effort

The Power Authority proposes to conduct a desktop study to characterize the likelihood of fish entrainment and turbine passage survival on fish residing in the Upper and Lower Reservoirs at the Project due to pumping and hydroelectric generation. The study will qualitatively estimate the potential for fish entrainment and turbine passage survival at the Project. Study methodology will include:

- Describing the physical and operational characteristics of the pump-turbines and intake structures of the Project;
- Summarizing the fish community present in the Upper and Lower Reservoir based on existing data;
- Qualitatively evaluating which fish species have the potential to be entrained during generation and pumping phases of operation, based on habitat preferences and behavior;
- Conducting a literature review of entrainment studies conducted at other hydroelectric facilities for relevance to potential entrainment and turbine passage survival at the Project; and

- Utilizing existing mathematical models to develop an estimate of turbine passage survival based on fish length at the Project.

5.2.2 Recreation Use/User Contact Study and Assessment of Effect of Project on Recreation Use

5.2.2.1 Study Objective

The objectives of the study are:

- Determine the amount of recreation use at the Project;
- Interview the recreating public to determine user opinions and goals with regard to the recreation sites; and
- Determine if the operation of the Project has an effect on the recreation facilities associated with the Project.

5.2.2.2 Project Nexus

FERC policy requires licensees to provide reasonable public recreation opportunities consistent with the safe and effective operation of a project.

5.2.2.3 Methodology/Level of Effort

The Power Authority proposes to conduct a user count at the Project recreation sites using both pressure tube counters (tube counters are small tubes, which utilize pressurized air to count traffic) and visual counts. Staff would also conduct calibration counts to support the tube counters. The Power Authority proposes to develop and conduct contact surveys to determine the views of the recreating public with regard to the available recreation sites and activities within the Project boundary and to also request zip code information to assist with determining user distribution. The Power Authority proposes to use this information to determine the sufficiency of existing recreation facilities. The Power Authority will also use this information to assess the potential impact of continuing operation and maintenance of the Project on recreation facilities.

5.2.3 Phase 1A Archaeological Survey and Historic Structures Survey

5.2.3.1 Study Objective

The objective of the survey is to identify historic properties listed in or eligible for listing in the NRHP and to identify and assess any potential adverse effects to historic properties from the continuing operation and maintenance of the Project.

5.2.3.2 Project Nexus

Section 106 of the National Historic Preservation Act and its implementing regulations require FERC, prior to issuing a new license, to take into account the effect of its licensing action on historical and cultural resources eligible for listing in the National Register of Historic Places and to establish an appropriate management plan to protect such resources.

5.2.3.3 Methodology/Level of Effort

The Power Authority proposes to examine archaeological and architectural site files, cultural resources reports, and archives located at the New York SHPO, examine other relevant sources that may contain historical, architectural, and archaeological information on the Project vicinity, develop prehistoric and historic contexts and an archaeological sensitivity model; conduct field reconnaissance of the Project vicinity to confirm the sensitivity models and eliminate areas from further study, and conduct a reconnaissance level architectural survey of the area from which the Project may be visible to any historic resources. The Power Authority may propose to conduct a Phase 1B archaeological and an intensive level architectural level survey, depending on the results of the initial survey and after consultation with the SHPO.

5.3 Relevant Qualifying Comprehensive Waterway Plans

Section 10(a)(2)(A) of the Federal Power Act, 16 USC § 803(a)(2)(A), requires FERC to consider the extent to which a project is consistent with Federal or State comprehensive plans for improving, developing, or conserving a waterway affected by the project. FERC Order No. 481-A, issued on April 27, 1988, established that FERC will accord FPA Section 10(a)(2)(A) comprehensive plan status to any Federal or State plan that:

- Is a comprehensive study of one or more of the beneficial uses of a waterway or waterways;
- Specifies the standards, the data, and the methodology used; and
- Is filed with the Secretary of the Commission.

FERC currently lists 39 comprehensive plans for the State of New York, 7 of which pertain to waters in the vicinity of the Project.

- National Park Service. The Nationwide Rivers Inventory. Department of the Interior, Washington, D.C. 1993.

- New York Department of Environmental Conservation. 1979. Hudson River Basin water and related land resources: Level B study report and environmental impact statement. Albany, New York. September 1979.

- New York Department of Environmental Conservation. 1985. New York State Wild, Scenic, and Recreational River System Act. Albany, New York. March 1985.

- New York Department of Environmental Conservation. 1986. Regulation for administration and management of the wild, scenic, and recreational rivers system in New York State excepting the Adirondack Park. Albany, New York. March 26, 1986. 27 pp.

- New York State Office of Parks, Recreation and Historic Preservation. New York Statewide Comprehensive Outdoor Recreation Plan (SCORP): 2003-2007. Albany, New York. January 2003.

- State of New York Hudson River Regulating District. 1923. General plan for the regulation of the flow of the Hudson River and certain of its tributaries. Albany, New York. June 7, 1923. 63 pp.

- U.S. Fish and Wildlife Service. Undated. Fisheries USA: the recreational fisheries policy of the U.S. Fish and Wildlife Service. Washington, D.C.

Source: FERC Revised List of Comprehensive Plans, December 2013.

5.4 Relevant Resource Management Plans

In addition to the qualifying Federal and State comprehensive waterway plans listed in Section 5.3 above, some agencies have developed resource management plans to help guide their actions regarding specific resources of jurisdiction. The resource management plans listed below may be relevant to the Project and may be useful in the relicensing proceeding for characterizing desired conditions.

- Greene County Soil and Water Conservation District (Greene County). 2007. Schoharie Creek Management Plan. New York City Department of Environmental Protection Stream Management Program. April 2007.

- New York State Office of Park, Recreation, and Historic Preservation (OPRHP). 2008. Statewide Comprehensive Outdoor Recreation Plan (SCORP). December 2008.[4]

- Schoharie County Department of Development and Planning (SCPDD). 2004. Town of Gilboa Comprehensive Plan. March 2004. [Online] URL: http://www.schohariecounty-ny.gov/CountyWebSite/towngil/TownofGilboaComprehensivePlan.pdf. Accessed July 20, 2012.

[4] This is most current version of Plan available. FERC Revised List of Comprehensive Plans (December 2013) references the January 2003 version.

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BLENHEIM-GILBOA PUMPED STORAGE FERC No. 2685
POWER PROJECT RELICENSING

PRE-APPLICATION DOCUMENT

APRIL 10, 2014

APPENDICES

New York Power Authority
Generating more than electricity

Provided by:

Kleinschmidt
Gomez and Sullivan Engineers, P.C.
TRC

APPENDIX A - SUMMARY OF CONTACTS AND CORRESPONDENCE LETTERS MADE IN PREPARING THE PAD (18 C.F.R. § 5.6 (D)(5))

Pursuant to 18 CFR 5.6(b)(2), the Authority has exercised its due diligence in determining what information exists relevant to the existing environment and potential impacts by contacting appropriate agencies and Native American Nations that may have relevant information pertinent to the Project.

Summary of Correspondence

Date	Title	Correspondence From	Correspondence To	Description	Link
10/8/2013	Letter from St. Regis Mohawk Tribe	Printup, Arnold (St. Regis Mohawk Tribe)	Slade, Mark (NYPA)	PAD consultation response letter re: cultural and Tribal resources	PDF
10/1/2013	Letter from Stockbridge-Munsee PAD Consultation Response	White, Sherry (Stockbridge Munsee Community of Wisconsin)	Slade, Mark (NYPA)	PAD consultation response letter re: cultural and Tribal resources	PDF
9/20/2013	Letter to Nations re: Request for Information on cultural concerns relating to Project	Slade, Mark (NYPA)	Holton, Kerry (Delaware Nation); Chicks, Robert (Stockbridge-Munsee Community, Band of Mohican Indians); Sunday, Cactus Cook (Mohawk Council of Akwesasne); Environmental Department, (Stockbridge-Munsee Community, Band of Mohican Indians); Francis, Tamara (The Delaware Nation); Jock, Ken (St. Regis Mohawk Tribe); Lickers, Henry (Mohawk Council of Akwesasne); Mohawk Nation Council of Chiefs, (Mohawk Nation Council of Chiefs); Obermeyer, Brice (Delaware Tribe of Indians); Pechonick, Paula (Delaware Tribe of Indians); Pierpont, Ruth (New York State Offices of Parks, Recreation and Hi); Poolaw, Kellie (The Delaware Nation); Printup, Arnold (St. Regis Mohawk Tribe); White, Sherry (Stockbridge Munsee Community of Wisconsin); Thompson, Paul (St. Regis Mohawk Tribal Council); La France, Jr., Ron (St. Regis Mohawk Tribal Council); Cook, Beverly (St. Regis Mohawk Tribal Council)	Letter requesting information regarding cultural and Tribal concerns on the Project.	PDF

Date	Title	Correspondence From	Correspondence To	Description	Link
1/23/2013	Consultation with Tribes for the Blenheim-Gilboa Pumped Storage Power Project	Smith, John (FERC)	Halftown, Clint (Cayuga Nation of New York); Halbritter, Ray (Oneida Indian Nation); Hill, Roger (Tonawanda Band of Seneca Indians of New York); Henry, Leo (Tuscarora Nation of New York); Hart, Randy (St. Regis Mohawk Tribe); Holton, Kerry (Delaware Nation); Pechonick, Paula (Delaware Nation); Mohawk Nation Council of Chiefs, (Mohawk Nation Council of Chiefs); Odawi Porter, Robert (Seneca Nation of Indians); Powless, Jr., Irving (Onondaga Nation of Indians); White, Sherry (Stockbridge Munsee Community of Wisconsin); King, Randy (Shinnecock Indian Nation)	FERC letter to Tribal representatives re: B-G relicensing process and invitation to participate in relicensing process. Response requested from tribes by February 22, 2013.	PDF
11/18/2012	Letter to BIA Regarding Tribal Consultation	Stringer, Christina (Bureau of Indian Affairs)	Slade, Mark (NYPA);	Request of identification of Tribes interested in Project area and to provide any other readily available information re: cultural resources.	PDF
11/20/2012	BIA Letter Re: Tribal Consultation Information	Keel, Franklin (USDOI - Bureau of Indian Affairs)	Slade, Mark (NYPA)	Provision of Tribal consultation information for St. Regis Mohawk Tribe, Delaware Nation, Delaware Tribe of Indians, and Stockbridge Munsee Community of Wisconsin.	PDF
10/15/2012	EPA Reply to Information Request	Musumeci, Grace (US Environmental Protection Agency)	Slade, Mark (NYPA)	Provision of NYPAssist mapping tool for information	PDF

Date	Title	Correspondence From	Correspondence To	Description	Link
				specific to Project area.	
10/17/2012	Comments from DEC Region 4 RE: PAD, NOI Information	Tomasik, Stephen (DEC)	Slade, Mark (NYPA)	Provision of B-G Reservoirs Electrofishing and Gill Netting Summary (2007-2009) and general information on fisheries, fishing, and boating.	PDF
9/24/2012	Information Request to National Park Service	Slade, Mark (NYPA)	Reidenbach, Dennis (National Park Service, Northeast Region)	Information request for water resources, geology and soils, and land use.	PDF
9/24/2012	Information Request to EPA	Slade, Mark (NYPA)	Enck, Judith A. (United States Environmental Protection Agency)	Information request for water resources, geology and soils, and land use.	PDF
9/10/2012	Information Request: Response from NY City Department of Environmenta l Protection	Fiore, Anthony (NY City Department of Environmental Protection)	Slade, Mark (NYPA)	Provision of 5-year sampling data at Schoharie Spill sampling site, sampling site map, methodology, comment log, and data code description.	PDF
8/14/2012	Information Request to NY City Department of Environmenta l Protection	Slade, Mark (NYPA)	Fiore, Anthony (NY City Department of Environmental Protection)	Request for available information, specifically water quality data.	PDF
7/12/2012	Fish & Wildlife Service Response to Request for Information Letter	Stilwell, David (US Fish & Wildlife Service)	Slade, Mark (NYPA)	Provision of information re: T&E Species.	PDF

Date	Title	Correspondence From	Correspondence To	Description	Link
7/11/2012	Email exchange with John Lowe at OPRHP	Lowe, John (OPRHP)	Geller, Jeffrey (NYPA);Gerlach, Jeff (NYPA);Haberstock, Alan (Kleinschmidt Associates);Daly, Rob (NYPA);Knapp, Steve (Kleinschmidt Associates)	Provision of map of Minekill ravine	PDF
6/18/2012	Letter to USFWS - Request for Information	Slade, Mark (NYPA)	Stilwell, David (US Fish & Wildlife Service)	Request for available information on resource areas.	PDF
6/18/2012	Letter to NYSDEC - Request for Information	Slade, Mark (NYPA)	Clarke, William (NY State Department of Environmental Conservation)	Request for available information on resource areas.	PDF
5/1/2012	Email to OPRHP - SHPO re First Meeting	Alkiewicz, Edward (NYPA)	Herter, Nancy (New York State Division for Historic Preservation)	Email re: meeting on May 22, 2012.	PDF
11/16/2011	Natural Heritage Program Report	Pietrusiak, Jean (NYS Department of Environmental Conservation)	Geller, Jeffrey (NYPA)	Report of rare or state-listed animals and plants, communities, and habitats.	PDF
11/1/2011	B-G Rare Species Data Request Letter to DEC	Geller, Jeffrey (NYPA)	Pietrusiak, Jean (NYS Department of Environmental Conservation)	Request for data on federally and state-listed species or critical habitats within Project boundary.	PDF

St. Regis Mohawk Tribe

October 8, 2013

She:kon Mark,

This communication is in regards to NYPA Blenheim-Gilboa Pumped Storage Power Project(FERC NO. 2685). The only information we can provide at the moment is that the project does occur in an area designated as culturally sensitive to the Saint Regis Mohawk Tribe. We thereby request to be involved in the consultation process.

Should you or your office have any further questions in regards to these comments please feel free to contact my office at your earliest convenience.

Nia:wen,

Arnold L Printup III

Arnold L Printup
Saint Regis Mohawk Tribe
Tribal Historic Preservation Office
1(518)358-2272 Ext. 163

412 State Route 37
Akwesasne, New York 13655
Phone: 518-358-2272

Stockbridge-Munsee Tribal Historic Preservation Office

Sherry White - Tribal Historic Preservation Officer
W13447 Camp 14 Road
P.O. Box 70
Bowler, WI 54416

Date 10/1/13
Project Number FERC No. 2685
TCNS Number
Company Name New York Power Authority

We have received your letter for the above listed project. Before we can process the request we need more information. The additional items needed are checked below.

Additional Information Required:

___ Site visit by Tribal Historic Preservation Officer
___ Archeological survey, Phase 1
___ Colored maps
___ Pictures of the site
___Any reports the State Historic Preservation Office may have
___ Review fee of $300.00 must be included with letter
___ Has site been previously disturbed, please explain what the use was and when it was disturbed

After reviewing your letter:

___ We are in the process of gathering more information on this site and will respond to your project request once all information has been gathered.
___ This project has the potential to affect a Mohican cultural site, please contact us
___This project is not within Mohican area of interest
X This project is within Mohican territory, but we are not aware of any cultural site within the project area.

Additional comments

Should this project inadvertently uncover a Native American site, we require you to halt all construction and notify the Stockbridge-Munsee Tribe immediately.

Please do not resubmit projects for changes that are not ground disturbance

Sherry White
Sherry White, Tribal Historic Preservation Officer

(715) 793-3970 *Email: sherry.white@mohican-nsn.gov*

Stockbridge-Munsee
Tribal Historic Preservation Office
W13447 CAMP 14 ROAD • P.O. BOX 70
BOWLER, WISCONSIN 54416

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MAILED FROM ZIP CODE 54416

Mark E. Slade
Director, Licensing
New York Power Authority
123 Main Street
White Plains, NY 10601

10601317099

123 Main Street
White Plains, NY 10601

New York Power Authority
Generating more than electricity

Mark E. Slade
Director, Licensing

914-681-6659 (office)
mark.slade@nypa.gov

September 20, 2013

Honorable Kerry Holton
President
Delaware Nation
P.O. Box 825
Anadarko, OK 73005

Re: Blenheim-Gilboa Pumped Storage Power Project (FERC No. 2685)
Request for Information

Dear Mr. Holton:

The New York Power Authority (NYPA) is initiating the relicensing process for the Blenheim-Gilboa Pumped Storage Power Project (Project). The Project is currently licensed as Federal Energy Regulatory Commission (FERC) Project No. 2685. The existing license for the Project expires on April 30, 2019. Accordingly, NYPA must file its Notice of Intent (NOI) to relicense the Project by April 30, 2014 and its application for a new FERC license no later than April 30, 2017. Included with the NOI will be a required Pre-Application Document (PAD).

NYPA is presently preparing the PAD. The PAD serves to provide FERC, resource agencies, and other interested parties with readily available information pertaining to the Project. The PAD is a document that summarizes existing, relevant and reasonably available information on the Project, to help the interested parties to identify issues and information needs regarding the relicensing of the Project, and to develop study requests where information gaps may exist regarding the effects of Project operations. Information gathered for the PAD will be used throughout the relicensing process to address issues brought up by stakeholders regarding potential Project effects.

The purpose of this letter is to respectfully request any existing, relevant, and reasonably available information related to the Project that your Nation may have concerning cultural and Tribal resources.

For your convenience we have attached Figure 1 which provides a regional map of the Project's location and Figure 2 which depicts the Project's major features.

In addition, please let us know if you are aware at this time of any specific issues or information needs pertaining to resources that may be affected by Project operation.

We would appreciate if you would provide such information to us by November 1, 2013, via email, hardcopy, or digitally on CDs or DVDs. My contact information is:

Mark E. Slade
Director, Licensing
New York Power Authority
123 Main Street
White Plains, NY 10601
914-681-6659 (office)
mark.slade@nypa.gov

We appreciate receiving any information you are able to provide to us, or any questions or comments you may have regarding the relicensing of the Project. Thank you for your cooperation. We look forward to working with you in the future.

Sincerely,

Mark E. Slade
Director, Licensing

123 Main Street
White Plains, NY 10601

New York Power Authority
Generating more than electricity

Mark E. Slade
Director, Licensing

914-681-6659 (office)
mark.slade@nypa.gov

September 20, 2013

Honorable Robert Chicks
President
Stockbridge-Munsee Community, Band of Mohican Indians
N8476 Mo He Con Nuck Road
Bowler, WI 54416

Re: Blenheim-Gilboa Pumped Storage Power Project (FERC No. 2685)
Request for Information

Dear Mr. Chicks:

The New York Power Authority (NYPA) is initiating the relicensing process for the Blenheim-Gilboa Pumped Storage Power Project (Project). The Project is currently licensed as Federal Energy Regulatory Commission (FERC) Project No. 2685. The existing license for the Project expires on April 30, 2019. Accordingly, NYPA must file its Notice of Intent (NOI) to relicense the Project by April 30, 2014 and its application for a new FERC license no later than April 30, 2017. Included with the NOI will be a required Pre-Application Document (PAD).

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We would appreciate if you would provide such information to us by November 1, 2013, via email, hardcopy, or digitally on CDs or DVDs. My contact information is:

Mark E. Slade
Director, Licensing
New York Power Authority
123 Main Street
White Plains, NY 10601
914-681-6659 (office)
mark.slade@nypa.gov

We appreciate receiving any information you are able to provide to us, or any questions or comments you may have regarding the relicensing of the Project. Thank you for your cooperation. We look forward to working with you in the future.

Sincerely,

Mark E. Slade
Director, Licensing

123 Main Street
White Plains, NY 10601

New York Power Authority
Generating more than electricity

Mark E. Slade
Director, Licensing

914-681-6659 (office)
mark.slade@nypa.gov

September 20, 2013

Ms. Cactus Cook Sunday
Mohawk Council of Akwesasne
P.O. Box 579
Cornwall, ON K6H 5T3

Re: Blenheim-Gilboa Pumped Storage Power Project (FERC No. 2685)
Request for Information

Dear Ms. Sunday:

The New York Power Authority (NYPA) is initiating the relicensing process for the Blenheim-Gilboa Pumped Storage Power Project (Project). The Project is currently licensed as Federal Energy Regulatory Commission (FERC) Project No. 2685. The existing license for the Project expires on April 30, 2019. Accordingly, NYPA must file its Notice of Intent (NOI) to relicense the Project by April 30, 2014 and its application for a new FERC license no later than April 30, 2017. Included with the NOI will be a required Pre-Application Document (PAD).

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White Plains, NY 10601

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Director, Licensing

914-681-6659 (office)
mark.slade@nypa.gov

September 20, 2013

Environmental Department
Stockbridge-Munsee Community, Band of Mohican Indians
N7689 Koan Tuk Drive
PO Box 70
Bowler, WI 54416

Re: Blenheim-Gilboa Pumped Storage Power Project (FERC No. 2685)
Request for Information

Dear Sir or Madam:

The New York Power Authority (NYPA) is initiating the relicensing process for the Blenheim-Gilboa Pumped Storage Power Project (Project). The Project is currently licensed as Federal Energy Regulatory Commission (FERC) Project No. 2685. The existing license for the Project expires on April 30, 2019. Accordingly, NYPA must file its Notice of Intent (NOI) to relicense the Project by April 30, 2014 and its application for a new FERC license no later than April 30, 2017. Included with the NOI will be a required Pre-Application Document (PAD).

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Director, Licensing

914-681-6659 (office)
mark.slade@nypa.gov

September 20, 2013

Ms. Tamara Francis
Director NAGPRA/Cultural Preservation
The Delaware Nation
PO Box 825
Anadarko, OK 73005

Re: Blenheim-Gilboa Pumped Storage Power Project (FERC No. 2685)
Request for Information

Dear Ms. Francis:

The New York Power Authority (NYPA) is initiating the relicensing process for the Blenheim-Gilboa Pumped Storage Power Project (Project). The Project is currently licensed as Federal Energy Regulatory Commission (FERC) Project No. 2685. The existing license for the Project expires on April 30, 2019. Accordingly, NYPA must file its Notice of Intent (NOI) to relicense the Project by April 30, 2014 and its application for a new FERC license no later than April 30, 2017. Included with the NOI will be a required Pre-Application Document (PAD).

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White Plains, NY 10601

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Mark E. Slade
Director, Licensing

914-681-6659 (office)
mark.slade@nypa.gov

September 20, 2013

Mr. Ken Jock
Director, Environment Division
St. Regis Mohawk Tribe
412 State Route 37
Akwesasne, NY 13655

Re: Blenheim-Gilboa Pumped Storage Power Project (FERC No. 2685)
Request for Information

Dear Mr. Jock:

The New York Power Authority (NYPA) is initiating the relicensing process for the Blenheim-Gilboa Pumped Storage Power Project (Project). The Project is currently licensed as Federal Energy Regulatory Commission (FERC) Project No. 2685. The existing license for the Project expires on April 30, 2019. Accordingly, NYPA must file its Notice of Intent (NOI) to relicense the Project by April 30, 2014 and its application for a new FERC license no later than April 30, 2017. Included with the NOI will be a required Pre-Application Document (PAD).

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mark.slade@nypa.gov

September 20, 2013

Mr. Henry Lickers
Mohawk Council of Akwesasne
P.O. Box 579
Cornwall, ON K6H 5T3

Re: Blenheim-Gilboa Pumped Storage Power Project (FERC No. 2685)
Request for Information

Dear Mr. Lickers:

The New York Power Authority (NYPA) is initiating the relicensing process for the Blenheim-Gilboa Pumped Storage Power Project (Project). The Project is currently licensed as Federal Energy Regulatory Commission (FERC) Project No. 2685. The existing license for the Project expires on April 30, 2019. Accordingly, NYPA must file its Notice of Intent (NOI) to relicense the Project by April 30, 2014 and its application for a new FERC license no later than April 30, 2017. Included with the NOI will be a required Pre-Application Document (PAD).

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White Plains, NY 10601

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Mark E. Slade
Director, Licensing

914-681-6659 (office)
mark.slade@nypa.gov

September 20, 2013

Mohawk Nation Council of Chiefs
P.O. Box 366
Rooseveltown, NY 13683

Re: Blenheim-Gilboa Pumped Storage Power Project (FERC No. 2685)
Request for Information

Dear Sir or Madam:

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White Plains, NY 10601

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Mark E. Slade
Director, Licensing

914-681-6659 (office)
mark.slade@nypa.gov

September 20, 2013

Mr. Brice Obermeyer
Director, Delaware Tribe Historic Preservation Office
Delaware Tribe of Indians
Roosevelt Hall, Rm. 212
1200 Commercial Street
Emporia, KS 66801

Re: Blenheim-Gilboa Pumped Storage Power Project (FERC No. 2685)
Request for Information

Dear Mr. Obermeyer:

The New York Power Authority (NYPA) is initiating the relicensing process for the Blenheim-Gilboa Pumped Storage Power Project (Project). The Project is currently licensed as Federal Energy Regulatory Commission (FERC) Project No. 2685. The existing license for the Project expires on April 30, 2019. Accordingly, NYPA must file its Notice of Intent (NOI) to relicense the Project by April 30, 2014 and its application for a new FERC license no later than April 30, 2017. Included with the NOI will be a required Pre-Application Document (PAD).

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123 Main Street
White Plains, NY 10601
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White Plains, NY 10601

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Director, Licensing

914-681-6659 (office)
mark.slade@nypa.gov

September 20, 2013

Honorable Paula Pechonick, Chief
Delaware Tribe of Indians
170 N.E. Barbara
Bartlesville, OK 74006

Re: Blenheim-Gilboa Pumped Storage Power Project (FERC No. 2685)
Request for Information

Dear Chief Pechonick:

The New York Power Authority (NYPA) is initiating the relicensing process for the Blenheim-Gilboa Pumped Storage Power Project (Project). The Project is currently licensed as Federal Energy Regulatory Commission (FERC) Project No. 2685. The existing license for the Project expires on April 30, 2019. Accordingly, NYPA must file its Notice of Intent (NOI) to relicense the Project by April 30, 2014 and its application for a new FERC license no later than April 30, 2017. Included with the NOI will be a required Pre-Application Document (PAD).

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Director, Licensing

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September 20, 2013

Ms. Ruth L. Pierpont
Deputy Commissioner/Deputy State Historic Preservation Officer
New York State Offices of Parks, Recreation and Historic Preservation
Division for Historic Preservation
Peebles Island, P.O. Box 189
Waterford, NY 12188-0189

Re: Blenheim-Gilboa Pumped Storage Power Project (FERC No. 2685)
Request for Information

Dear Ms. Pierpont:

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mark.slade@nypa.gov

September 20, 2013

Ms. Kellie Poolaw
GAP coordinator/DNEP Director
The Delaware Nation
Delaware Nation Environmental Programs
PO Box 825
Anadarko, OK 73005

Re: Blenheim-Gilboa Pumped Storage Power Project (FERC No. 2685)
Request for Information

Dear Ms. Poolaw:

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September 20, 2013

Mr. Arnold L. Printup
Tribal Historic Preservation Officer
St. Regis Mohawk Tribe
412 State Route 37
Hogansburg, NY 13655

Re: Blenheim-Gilboa Pumped Storage Power Project (FERC No. 2685)
Request for Information

Dear Mr. Printup:

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mark.slade@nypa.gov

September 20, 2013

Ms. Sherry White
Historic Preservation Officer
Stockbridge-Munsee Community, Band of Mohican Indians
W13447 Camp 14 Road
Bowler, WI 54416

Re: Blenheim-Gilboa Pumped Storage Power Project (FERC No. 2685)
Request for Information

Dear Ms. White:

The New York Power Authority (NYPA) is initiating the relicensing process for the Blenheim-Gilboa Pumped Storage Power Project (Project). The Project is currently licensed as Federal Energy Regulatory Commission (FERC) Project No. 2685. The existing license for the Project expires on April 30, 2019. Accordingly, NYPA must file its Notice of Intent (NOI) to relicense the Project by April 30, 2014 and its application for a new FERC license no later than April 30, 2017. Included with the NOI will be a required Pre-Application Document (PAD).

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The purpose of this letter is to respectfully request any existing, relevant, and reasonably available information related to the Project that your Nation may have concerning cultural and Tribal resources.

For your convenience we have attached Figure 1 which provides a regional map of the Project's location and Figure 2 which depicts the Project's major features.

In addition, please let us know if you are aware at this time of any specific issues or information needs pertaining to resources that may be affected by Project operation.

We would appreciate if you would provide such information to us by November 1, 2013, via email, hardcopy, or digitally on CDs or DVDs. My contact information is:

Mark E. Slade
Director, Licensing
New York Power Authority
123 Main Street
White Plains, NY 10601
914-681-6659 (office)
mark.slade@nypa.gov

We appreciate receiving any information you are able to provide to us, or any questions or comments you may have regarding the relicensing of the Project. Thank you for your cooperation. We look forward to working with you in the future.

Sincerely,

Mark E. Slade
Director, Licensing

123 Main Street
White Plains, NY 10601

New York Power Authority
Generating more than electricity

Mark E. Slade
Director, Licensing

914-681-6659 (office)
mark.slade@nypa.gov

September 20, 2013

Honorable Paul O. Thompson, Chief
St. Regis Mohawk Tribal Council
412 State Route 37
Akwesasne, NY 13655

Re: Blenheim-Gilboa Pumped Storage Power Project (FERC No. 2685)
Request for Information

Dear Chief Thompson:

The New York Power Authority (NYPA) is initiating the relicensing process for the Blenheim-Gilboa Pumped Storage Power Project (Project). The Project is currently licensed as Federal Energy Regulatory Commission (FERC) Project No. 2685. The existing license for the Project expires on April 30, 2019. Accordingly, NYPA must file its Notice of Intent (NOI) to relicense the Project by April 30, 2014 and its application for a new FERC license no later than April 30, 2017. Included with the NOI will be a required Pre-Application Document (PAD).

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Director, Licensing
New York Power Authority
123 Main Street
White Plains, NY 10601
914-681-6659 (office)
mark.slade@nypa.gov

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Director, Licensing

123 Main Street
White Plains, NY 10601

New York Power Authority
Generating more than electricity

Mark E. Slade
Director, Licensing

914-681-6659 (office)
mark.slade@nypa.gov

September 20, 2013

Honorable Ron LaFrance, Jr., Chief
St. Regis Mohawk Tribal Council
412 State Route 37
Akwesasne, NY 13655, NY 13655

Re: Blenheim-Gilboa Pumped Storage Power Project (FERC No. 2685)
Request for Information

Dear Chief LaFrance:

The New York Power Authority (NYPA) is initiating the relicensing process for the Blenheim-Gilboa Pumped Storage Power Project (Project). The Project is currently licensed as Federal Energy Regulatory Commission (FERC) Project No. 2685. The existing license for the Project expires on April 30, 2019. Accordingly, NYPA must file its Notice of Intent (NOI) to relicense the Project by April 30, 2014 and its application for a new FERC license no later than April 30, 2017. Included with the NOI will be a required Pre-Application Document (PAD).

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Director, Licensing
New York Power Authority
123 Main Street
White Plains, NY 10601
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mark.slade@nypa.gov

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Sincerely,

Mark E. Slade
Director, Licensing

123 Main Street
White Plains, NY 10601

New York Power Authority
Generating more than electricity

Mark E. Slade
Director, Licensing

914-681-6659 (office)
mark.slade@nypa.gov

September 20, 2013

Honorable Beverly Cook, Chief
St. Regis Mohawk Tribal Council
412 State Route 37
Akwesasne, NY 13655

Re: Blenheim-Gilboa Pumped Storage Power Project (FERC No. 2685)
Request for Information

Dear Chief Cook:

The New York Power Authority (NYPA) is initiating the relicensing process for the Blenheim-Gilboa Pumped Storage Power Project (Project). The Project is currently licensed as Federal Energy Regulatory Commission (FERC) Project No. 2685. The existing license for the Project expires on April 30, 2019. Accordingly, NYPA must file its Notice of Intent (NOI) to relicense the Project by April 30, 2014 and its application for a new FERC license no later than April 30, 2017. Included with the NOI will be a required Pre-Application Document (PAD).

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Director, Licensing
New York Power Authority
123 Main Street
White Plains, NY 10601
914-681-6659 (office)
mark.slade@nypa.gov

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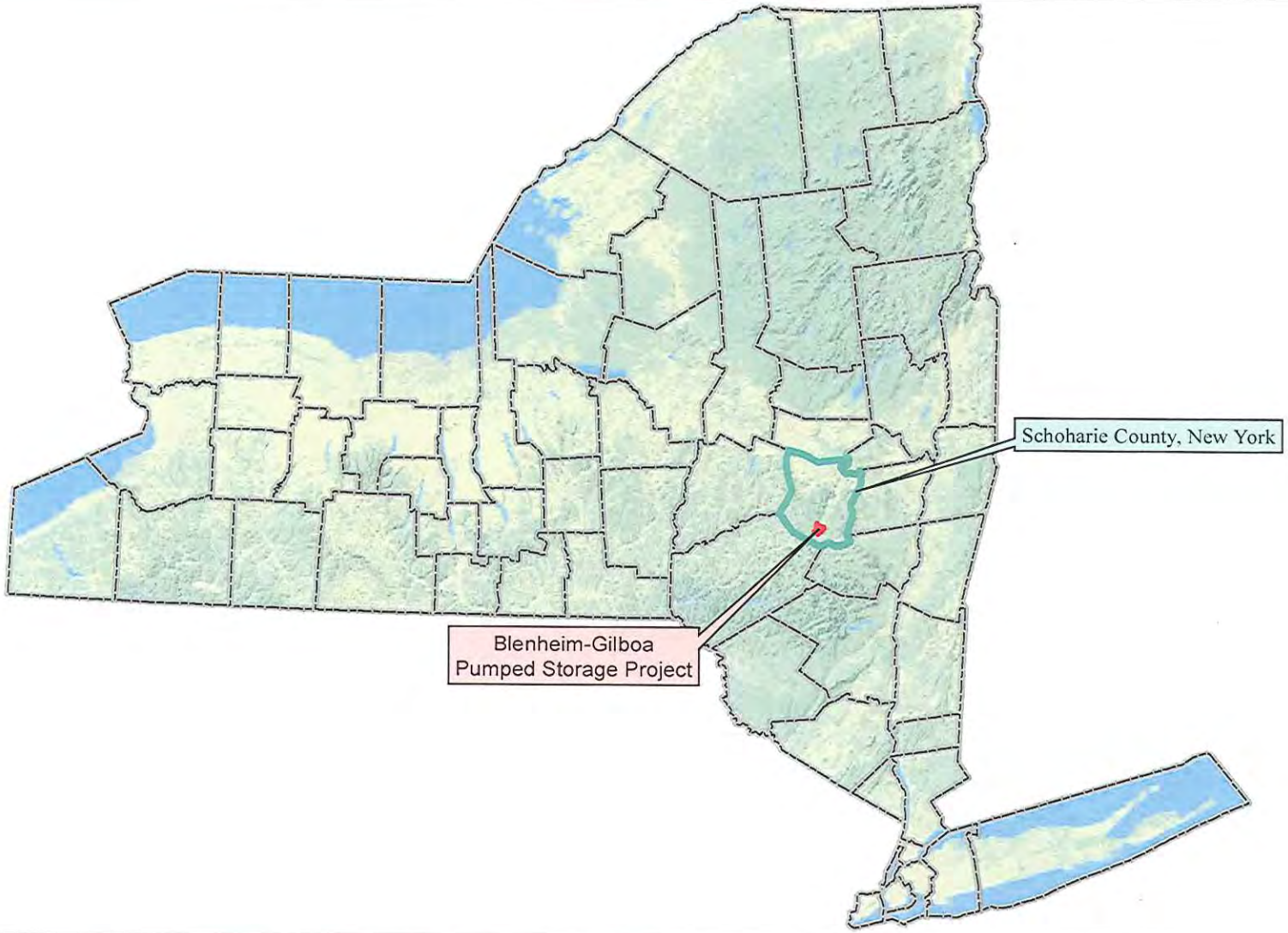
Sincerely,

Mark E. Slade
Director, Licensing



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

New York Power Authority
Generating more than electricity

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Figure 1:
Project Location

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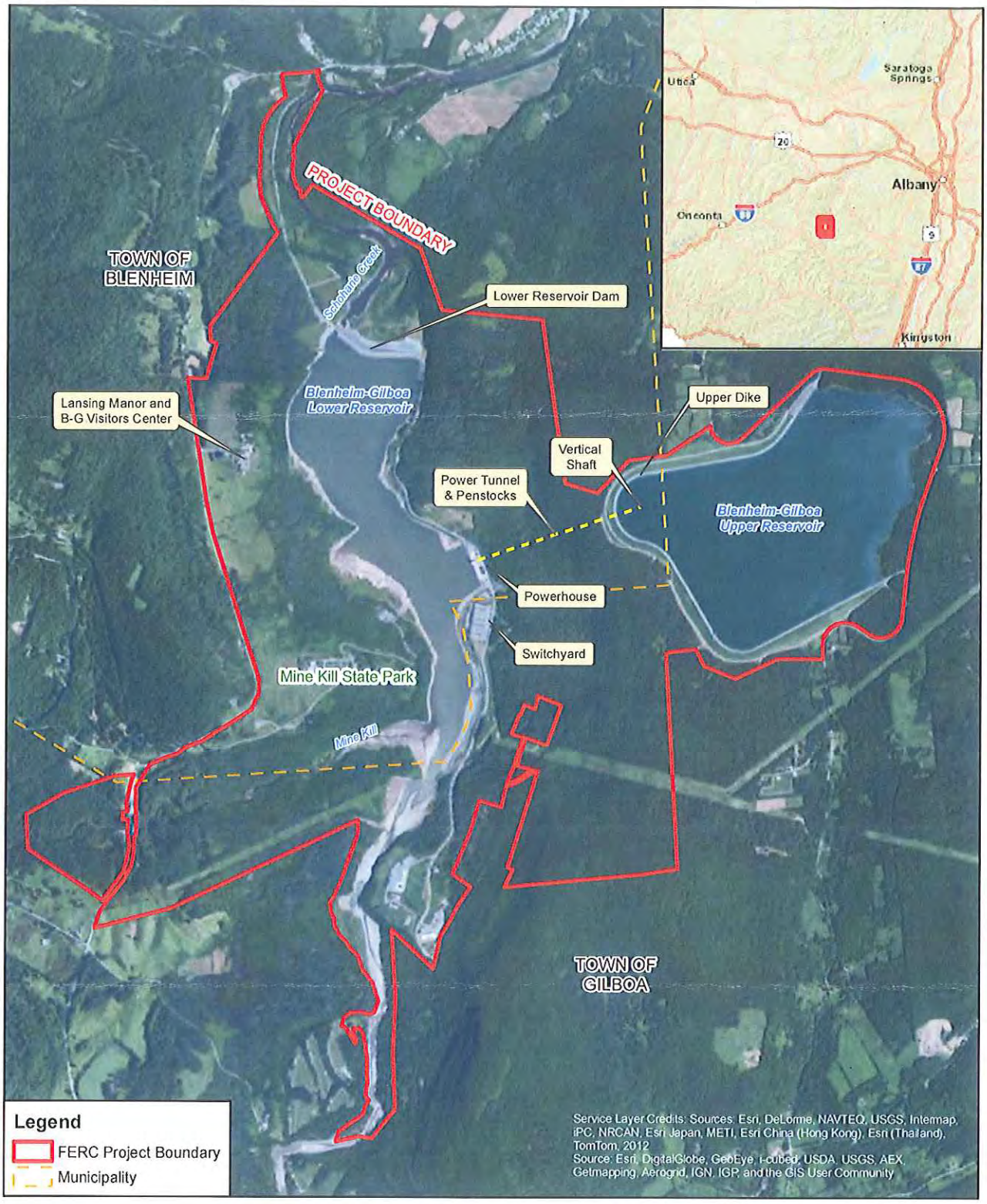

Blenheim-Gilboa Pumped Storage Power Project
(FERC No. 2685)

New York Power Authority
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0 0.25 0.5 1 Miles

Figure 2
Project Features

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FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON D.C. 20426
January 23, 2013

OFFICE OF ENERGY PROJECTS

Project No. 2685-000 – New York
Blenheim-Gilboa Pumped Storage Power Project
Schoharie County, New York

To the Tribes Addressed

Reference: Consultation with Tribes for the Blenheim-Gilboa Pumped Storage Power Project

Dear Tribal Representative:

The Federal Energy Regulatory Commission (Commission) invites your participation in the relicensing process for the Blenheim-Gilboa Pumped Storage Power Project (Blenheim-Gilboa Project or project) located on Schoharie Creek in Schoharie County, New York. The New York Power Authority (NYPA) owns and operates the project under a license issued by the Commission. NYPA's current license for the project will expire on April 30, 2019 and an application for a new license must be filed with the Commission by April 30, 2017. NYPA is required to file a Notice of Intent and a Pre-Application Document no later than April 30, 2014.

The Blenheim-Gilboa Project consists of the following: (1) a 2.25-mile-long earthen embankment dike with a maximum height of 110 feet, constructed at Brown Mountain and forming the 355-acre Upper Reservoir (operating at the maximum and extreme minimum elevations of 2,003 feet and 1,995 feet, respectively); (2) an 1,800-foot-long zoned earthfill embankment dam with a maximum height of 100 feet that impounds Schoharie Creek to form the 430-acre Lower Reservoir (operating at the maximum and minimum elevations of 900 feet and 860 feet, respectively), and containing: (i) a concrete spillway structure with three 38-foot-wide by 46-foot-high Taintor gates at the left end of the dam, and (ii) a 9-foot-diameter concrete-encased steel low-level outlet pipe located about 127 feet to the right of the spillway; (3) an intake system that includes: (i) a 1,042-foot-long, 28-foot-diameter, concrete-lined vertical shaft in the bottom of the Upper Reservoir, (ii) a 906-foot-long horizontal, concrete-lined rock tunnel; and (iii) a 460-foot-long concrete-lined manifold that distributes flow to four 12-foot-diameter steel-lined penstocks with a maximum length of about 1,960 feet to four

pump-turbines located at the powerhouse; (4) a multi-level powerhouse located along the east bank of the Lower Reservoir at the base of Brown Mountain, containing four reversible pump turbines that produce approximately 260,000 kilowatts each in generation mode, and can discharge 3,000 cubic feet per second each in pump mode; (5) three 345-kilovolt transmission lines, leading to the Fraser (a 34-mile-long line with an approximately 400-foot-wide right-of-way [ROW]), New Scotland (a 32-mile-long line with an approximately 400-foot-wide ROW); and Leeds (a 37-mile-long line with an approximately 250-foot-wide ROW) substations; and (6) appurtenant facilities. The authorized generation capacity for the project is 1,160,000 kilowatts.

The Commission staff is interested in meeting with you to discuss the Commission's relicensing process, how the tribe can participate to the fullest extent possible, your interests and concerns in the affected area, and how to establish procedures to ensure appropriate communication between Commission and tribal staffs. The meeting can be limited to Commission and your tribal staff or can be open to other tribes included in this letter, NYPA, or any other relicensing participants you wish.

If at all possible, we would appreciate your response by February 22, 2013. Our regulations require that we hold a meeting with your tribe within thirty days from the filing of NYPA's Notice of Intent if a meeting is desired;[1] however, we are waiving that timeframe to ensure that, if your tribe desires a meeting, we will be able to conduct it at a mutually agreeable time. Please file your response electronically via the Internet. See 18 C.F.R. 385.2001(a)(1)(iii) and the instructions on the Commission's website (http://www.ferc.gov/docs-filing/efiling.asp). For assistance, please contact FERC Online Support at FERCOnlineSupport@ferc.gov; call toll-free at (866) 208-3676; or, for TTY, contact (202) 502-8659. Although the Commission strongly encourages electronic filing, your response may also be paper-filed. To paper-file, mail an original and seven copies to: Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, 888 First Street, NE, Washington, D.C. 20426. Please put the docket number, P-2685-000 on the first page of your response. Also you may also register online at: http://www.ferc.gov/esubscribenow.htm to be notified via email of new filings and issuances related to this or other pending projects. For assistance, please contact FERC Online.

---

[1] 18 C.F.R. § 5.7.

If you have any questions or comments, please contact the Commission's relicensing coordinator for the Blenheim-Gilboa Project: Andy Bernick at (202) 502-8660 or andrew.bernick@ferc.gov.

Sincerely,

John B. Smith, Chief
Mid-Atlantic Branch
Division of Hydropower Licensing

cc: Mailing List
Public Files

Robert J. Knowlton, P.E.
VP—Engineering Operations
New York Power Authority
123 Main Street
White Plains, NY 10601

Cayuga Nation of New York Clint Halftown, Nation Representative 2540 State Route 89 P.O. Box 803 Seneca Falls, NY 13148	**Delaware Nation** Kerry Holton, President P.O. Box 825 Anadarko, OK 73005
Delaware Tribe of Indians Paula Pechonick, Chief 170 N.E. Barbara Bartlesville, OK 74006	**Mohawk Nation Council of Chiefs** Box 336 Rooseveltown, NY 13683

Oneida Indian Nation Ray Halbritter, Nation Representative 5218 Patrick Road Verona, NY 13478	**Onondaga Nation of New York** Irving Powless, Jr., Chief 102 W. Conklin Avenue P.O. Box 319-B Nedrow, NY 13120
Saint Regis Mohawk Tribe Randy Hart, Chief 412 State, Route 37 Hogansburg, NY 13655	**Seneca Nation of Indians** Robert Odawi Porter, President P.O. Box 231 Salamanca, NY 14779
Shinnecock Indian Nation Randy King, Chairman P.O. Box 5006 Southampton, New York 11969	**Stockbridge-Munsee Community Band of Mohican Indians** Sherry White, THPO W13447 Camp 14 Road P.O. Box 70 Bowler, WI 54416
Tonawanda Band of Seneca Indians of New York Roger Hill, Chief 7027 Meadville Road P.O. Box 795 Basom, NY 14013	**Tuscarora Nation of New York** Leo R. Henry, Chief 2006 Mt. Hope Road Lewistown, NY 14092

123 Main Street
White Plains, NY 10601
914.681.6200

NewYorkPower Authority

November 18, 2012

Ms. Christina Stringer, Hydropower Program Manager
Eastern Regional Office
Bureau of Indian Affairs
545 Marriott Drive, Suite 700
Nashville, TN 37214

Re: Blenheim-Gilboa Pumped Storage Power Project (FERC No. 2685)
Request for Information

Dear Ms. Stringer:

The New York Power Authority (NYPA) is initiating the relicensing process for the Blenheim-Gilboa Pumped Storage Power Project (Project). The Project is currently licensed as Federal Energy Regulatory Commission (FERC) Project No. 2685. The existing license for the Project expires on April 30, 2019. Accordingly, NYPA must file its Notice of Intent (NOI) to relicense the Project by April 30, 2014 and its application for a new FERC license no later than April 30, 2017. Included with the NOI will be a required Pre-Application Document (PAD).

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In preparing the PAD, NYPA is required by FERC to identify Indian tribes that may be affected by the relicensing of the Project. Consultations with the New York State Historic Preservation Office have identified the following Native American Nations as potentially having an interest in the project area:

- St. Regis Mohawk Tribe
- The Delaware Nation
- Stockbridge-Munsee Community, Band of Mohican Indians

The purpose of this letter is to respectfully request BIA to identify any other Native American Nations that may have a potential interest in the Project area, and to provide any other readily available information BIA may have on Native American cultural resources in the Project area.

For your convenience we have attached Figure 1 which provides a regional map of the Project's location and Figure 2 which depicts the Project's major features.

We would appreciate if you would provide such information to us by December 20, 2012, via email, hardcopy, or digitally on CDs or DVDs. My contact information is:

Mark E. Slade
Director, Licensing
New York Power Authority
123 Main Street
White Plains, NY 10601
914-681-6659 (office)
mark.slade@nypa.gov

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Mark E. Slade
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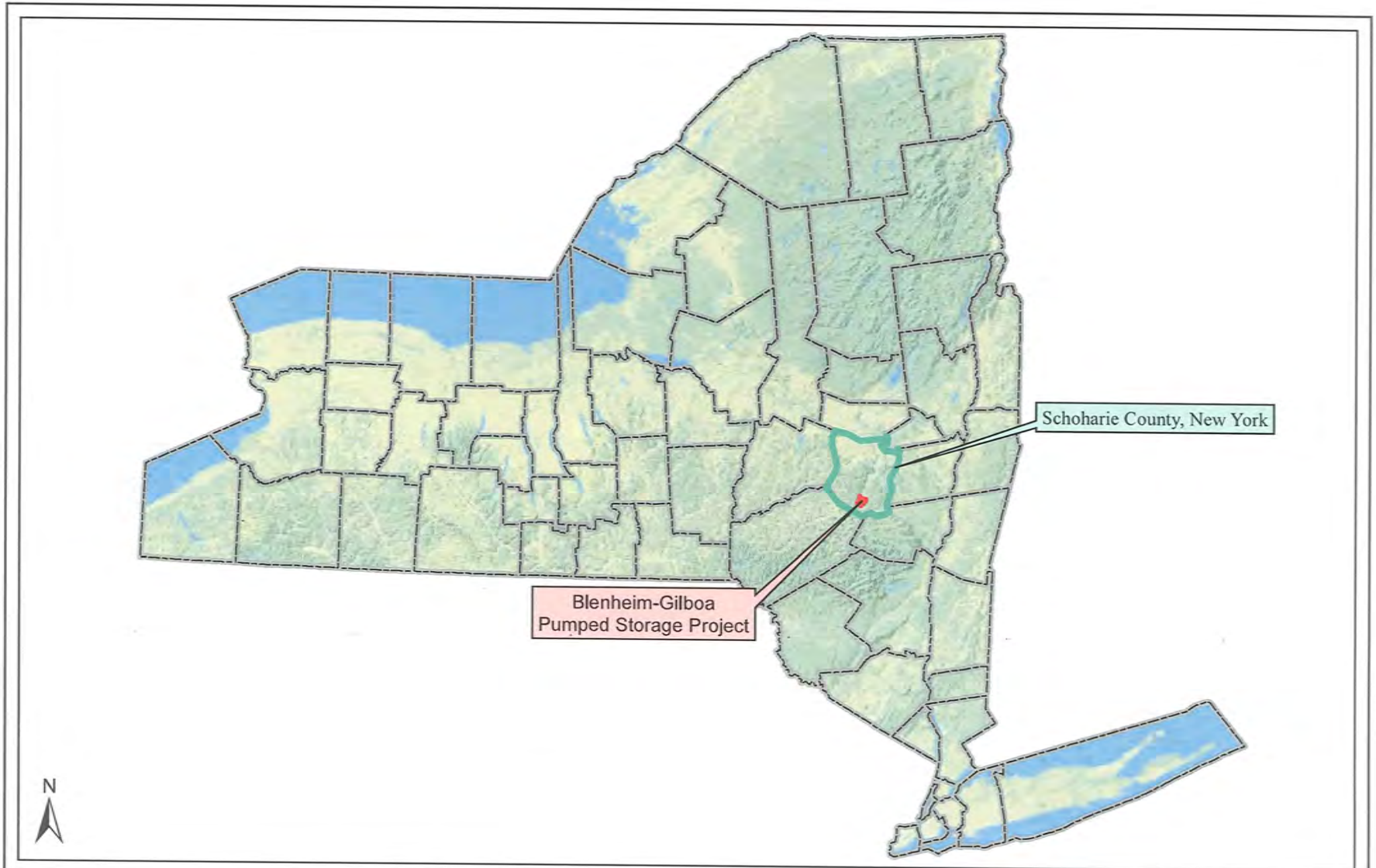

Blenheim-Gilboa Pumped Storage Power Project (FERC No. 2685)

New York Power Authority
Generating more than electricity

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Figure 1:
Project Location

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

New York Power Authority
Generating more than electricity

0 0.25 0.5 1 Miles

Figure 2
Project Features

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United States Department of the Interior

BUREAU OF INDIAN AFFAIRS
Eastern Regional Office
545 Marriott Drive, Suite 700
Nashville, TN 37214

IN REPLY REFER TO:
Trust Services
Environment, Safety, and Cultural Resources Division

NOV 2 0 2012

Mr. Mark Slade
Licensing Director
New York Power Authority
123 Main Street
White Plains, New York 10601

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

Dear Mr. Slade:

Thank you for contacting the Bureau of Indian Affairs (BIA), Eastern Regional Office, about tribal consultation information regarding the Blenheim-Gilboa Pumped Storage Power Project in Schoharie County, New York. Schoharie County is in former Mohawk territory, and it is near the northern extent of former Munsee (Delaware) territory. At the invitation of the Oneida, the Stockbridge Indians of Massachusetts emigrated to New Stockbridge (Stockbridge), Madison County, New York from 1785-1789. The Munsee and other tribes migrated to nearby Brothertown in Oneida County during the same time period. In the 1820s, the two communities emigrated to Wisconsin. Tribal consultation contact information is provided on the following page for the four federally recognized tribes descended from the tribes mentioned above: St. Regis Mohawk Tribe, Delaware Nation, Delaware Tribe of Indians, and the Stockbridge Munsee Community of Wisconsin.

Tribal consultation information is available to you on the internet. An annually updated tribal leaders directory for federally recognized tribes and nations can be found at *http://www.indianaffairs.gov/WhoWeAre/BIA/OIS/TribalGovernmentServices/TribalDirectory/index.htm*. A map titled *Indian Reservations in the Continental United States* is located at *http://www.nps.gov/history/nagpra/documents/resmap*, and a Native American Consultation Database is at *http://home.nps.gov/nagpra/onlinedb*. A current list of Tribal Historic Preservation Officers is at *http://www.nathpo.org*.

If you have questions, please contact David Saunders, Eastern Regional Archaeologist, at (615) 564-6840.

Sincerely,

Franklin Keel

Director, Eastern Region

Enclosure

Tribal Consultation Information for the Blenheim-Gilboa Pumped Storage Power Project

Honorable Mark Garrow, Chief
Honorable Randy Hart, Chief
Honorable Ronald La France, Chief
St. Regis Mohawk Tribe
412 State Route 37
Akwesasne, NY 13655
Telephone: (518) 358-2272
Fax: (518) 358-4519/3203

Arnold Printup
Tribal Historic Preservation Officer
St. Regis Mohawk Tribe
412 State Route 37
Akwesasne, NY 13655
Telephone: (518) 358-2272 extension 164
Fax: (518) 358-3203

Honorable Kerry Holton, President
Delaware Nation
P.O. Box 825
Anadarko, OK 73005
Telephone: (405) 247-2448
Fax: (405) 247-6329

Honorable Paula Pechonick, Chief
Delaware Tribe of Indians
170 N.E. Barbara
Bartlesville, OK 74003
Telephone: (918) 336-5272
Fax: (918) 337-6591

Honorable Kimberly Vele, President
Stockbridge Munsee Community of Wisconsin
N8476 Mo He Con Nuck Rd..
Bowler, WI 54416
Telephone: (715) 793-4111
Fax: (715) 793-1307

Sherry White
Tribal Historic Preservation Officer
Stockbridge Munsee Community of Wisconsin
P.O. Box 70
Bowler, WI 54416
Telephone: (715) 793-3970
Fax: (715) 793-4437

123 Main Street
White Plains, NY 10601
914 681.6200

New York Power Authority

RECEIVED
2012 NOV 20 A 9:17
REGIONAL DIRECTOR

November 18, 2012

Ms. Christina Stringer, Hydropower Program Manager
Eastern Regional Office
Bureau of Indian Affairs
545 Marriott Drive, Suite 700
Nashville, TN 37214

Re: Blenheim-Gilboa Pumped Storage Power Project (FERC No. 2685)
Request for Information

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Mark E. Slade
Director, Licensing
New York Power Authority
123 Main Street
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mark.slade@nypa.gov

We appreciate receiving any information you are able to provide to us, or any questions or comments you may have regarding the relicensing of the Project. Thank you for your cooperation. We look forward to working with you in the future.

Sincerely,

Mark E. Slade
Director, Licensing

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

OCT 15 2012

Mark E. Slade
Licensing Manager
New York Power Authority
123 Main Street
White Plains, NY 10601

Dear Mr. Slade:

Your letter dated September 24, 2012 to Regional Administrator Judith Enck of the U.S. Environmental Protection Agency (EPA) requesting any background environmental information for the Blenheim-Gilboa Pumped Storage Power Project has been forwarded to me for reply. The information requested is to be used in the preparation of a Pre-Application Document for a new Federal Energy Regulatory Commission license for the facility.

While regional EPA staff is unfamiliar with specific information for the area, we recommend that you utilize EPA's newly available mapping tool, NEPAssist, located on the web at http://nepassisttool.epa.gov/nepassist/entry.aspx. NEPAssist facilitates the environmental review process and project planning in relation to environmental considerations. The web-based application draws environmental data dynamically from EPA Geographic Information System databases and web services and provides immediate screening of environmental assessment indicators for a user-defined area of interest. For example, NEPAssist will locate any brownfields, superfund sites, or toxic releases near the power project site.

If you have any other questions, please contact Lingard Knutson of my staff at (212) 637-3747.

Sincerely,

Lingard Knutson

for Grace Musumeci, Chief
Environmental Review Section

-----Original Message-----
From: Stephen Tomasik [mailto:smtomasi@gw.dec.state.ny.us]
Sent: Wednesday, October 17, 2012 4:27 PM
To: Slade, Mark
Cc: Jerome Fraine; Nancy Baker; Peter Innes; William Little
Subject: Blenheim-Gilboa relicensing

Mark:

My apologies for the delay in getting back to you, but I now have some preliminary comments and observations from DEC Region 4, for your consideration in preparing the Pre-Application Document (PAD) for the Notice of Intent (NOI) to re-license the Blenheim-Gilboa project.

- Attached is the Blenheim Gilboa Reservoirs-Electrofishing and Gill Netting Summary for 2007 – 2009. This appears to be a study that you already reference in your June 18, 2012 letter, but I am sending this along anyway in case it is not the same. In regard to these data, it was observed by DEC staff that the reservoir still ranks as the poorest fishery in the region based on EF and netting catch rates.

- DEC Region 4 Fisheries works closely with Cobleskill College on fisheries management. That institution may be an additional resource for your study purposes.

- It appears that the upper reservoir is only open to fishing from April 1 through September 30. DEC Region 4 Fisheries staff believes that fishing can be allowed through October 31.

- It is not clear if the lower reservoir has the same date restrictions.

- The issue of the boating restrictions has been raised. There is a question as to whether the boating restrictions enacted after the
9/11/01 attack are still necessary, or if there is room to ease them to allow for more recreational use. This question should be addressed in the environmental assessment.

- The DEC Region 4 Natural Resources Supervisor reports that local sportsman have been trying to get additional land open for gun hunting.

Let me know if you have any additional questions or issues to discuss at this time.

Stephen Tomasik
Project Manager
Major Projects Management Section
Division of Environmental Permits
NYS Department of Environmental Conservation
625 Broadway - 4th Floor
Albany, New York 12233-1750
PH: (518) 486-9955
FAX: (518) 402-9168
smtomasi@gw.dec.state.ny.us

Blenheim Gilboa Reservoirs-Electrofishing and Gill Netting Summary

ELECTROFISHING

	Lower Blenheim-Gilboa Reservoir 2007			Upper Blenheim-Gilboa Reservoir 2008		
GAME FISH	**Number**	**Fish/h**	**Desirable/ Legal fish/h**	**Number**	**Fish/h**	**Desirable/ Legal fish/h**
Brown trout	3	0.9	0.9			
Brook trout	6	1.8	1.8	1	0.5	0.5
Largemouth bass	2	0.6	0			
Smallmouth bass	169	51.8	1.5	179	86.5	10.0
Walleye	8	2.5	0	36	18.0	6.0
PANFISH						
Bluegill	1	0.6	0	1	1.0	0
Brown bullhead	1	0.6	0.6			
Green sunfish				1	1.0	0
Pumpkinseed	9	5.8	0	4	4.0	1.0
Rock bass	39	25.0	0.6	4	4.0	1.0
Yellow bullhead				3	3.0	3.0
Yellow perch	7	4.5	0.6	6	6.0	1.0
OTHER FISH						
Alewife	1	0.6				
Common carp	1	0.6		31	31.0	
Emerald shiner	302	193.6		9	9.0	
Log perch				1	1.0	
Spottail shiner	37	23.7				
White sucker	112	71.8		4	4.0	

All fish = 1.56 hours
Game fish = 1.70 hours
Combined = 3.26 hours

All fish = 1.0 hours
Game fish = 1.0 hours
Combined = 2.0 hours

GILL NETS

	2007			2009		
GAME FISH	**Number**	**Fish/net**	**Desirable/ Legal Fish/net**	**Number**	**Fish/net**	**Desirable/ Legal Fish/net**
Brown trout				3	0.5	0.5
Tiger Trout	2	0.3	0.3			
Smallmouth bass	8	1.1	0.6	17	2.8	0.3
Walleye	3	0.4	0.0	45	7.5	2.5
PANFISH						
Brown bullhead	1	0.1	0.0	2	0.3	0.3
Rock bass	5	0.7	0.3	4	0.7	0.2
White perch	1	0.1	0.1			
Yellow perch	9	1.3	0.3	1	0.2	0.2
OTHER FISH						
Fallfish	1	0.1				
White sucker	34	4.9		1	0.2	

7 nets set overnight

6 nets set overnight

123 Main Street
White Plains, NY 10601
914 681.6200

New York Power Authority

September 24, 2012

Dennis Reidenbach, Regional Director
National Park Service, Northeast Region
U.S. Custom House
200 Chestnut St. Fifth Floor
Philadelphia, PA 19106
Dennis_Reidenbach@nps.gov

Re: Blenheim-Gilboa Pumped Storage Power Project (FERC No. 2685)
Request for Information

Dear Mr. Reidenbach:

The New York Power Authority (NYPA) is initiating the relicensing process for the Blenheim-Gilboa Pumped Storage Power Project (Project). The current license for the Project expires on April 30, 2019. Accordingly, NYPA must file its Notice of Intent (NOI) to relicense the Project by April 30, 2014 and its application for a new FERC license no later than April 30, 2017. Included with the NOI will be a required Pre-Application Document (PAD).

NYPA is presently preparing the PAD. The PAD serves to provide FERC, resource agencies, and other interested parties with readily available information pertaining to the Project. The PAD is a document that summarizes existing, relevant and reasonably available information on the Project, to help the interested parties to identify issues and information needs regarding the relicensing of the Project, and to develop study requests where information gaps may exist regarding the effects of Project operations. Information gathered for the PAD will be used throughout the relicensing process to address issues brought up by stakeholders regarding potential Project effects.

FERC requires that we document our efforts to obtain information to ensure the PAD is complete. Therefore, this letter serves to request any existing, relevant, and reasonably available information related to the project vicinity that your organization may have. We expect you are likely to have information related to the following resource areas:

- Water Resources;
- Geology and Soils; and
- Land Use.

However, if you are aware of any other resource information that might be helpful, we would appreciate your sharing that, as well.

For your convenience we have attached Figure 1 which provides a regional map of the Project's location and Figure 2 which depicts the Project's major features.

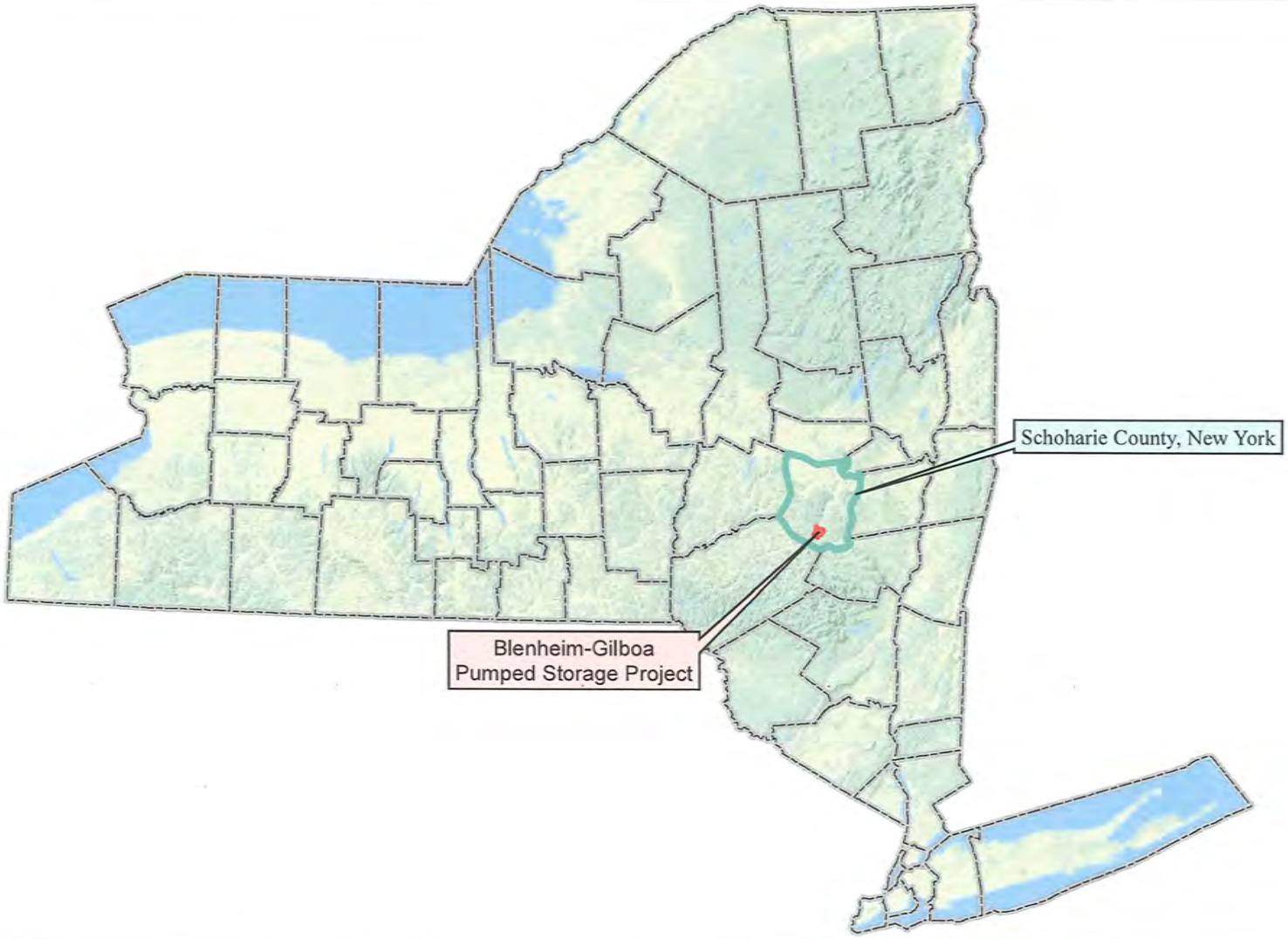
We would appreciate if you would provide such information to us by November 1, 2012, via email, hardcopy, or digitally on CDs or DVDs. My contact information is:

Mark E. Slade
Licensing Manager
New York Power Authority
123 Main Street
White Plains, NY 10601
914-681-6659 (office)
mark.slade@nypa.gov

We appreciate receiving any information you are able to provide to us or any questions or comments you may have regarding the relicensing of the Project. Thank you for your cooperation. We look forward to working with you in the future.

Sincerely,

Mark E. Slade
Director, Licensing



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

New York Power Authority
Generating more than electricity

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Figure 1:
Project Location

Path: Y:\GISMaps\BG\pid\figure_1_project_location.mxd

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

NewYorkPower Authority
Generating more than electricity

0 0.25 0.5 1 Miles

Figure 2
Project Features

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Path: Y:\GISMaps\BG\pid\figure_2_project_features_for_agency.mxd

123 Main Street
White Plains, NY 10601
914.681.6200

New York Power Authority

September 24, 2012

The Honorable Judith A. Enck
Administrator, Region 2
United States Environmental Protection Agency
290 Broadway
New York, NY 10007-1866
Enck.Judith@epa.com

Re: Blenheim-Gilboa Pumped Storage Power Project (FERC No. 2685)
Request for Information

Dear Ms. Enck:

The New York Power Authority (NYPA) is initiating the relicensing process for the Blenheim-Gilboa Pumped Storage Power Project (Project). The current license for the Project expires on April 30, 2019. Accordingly, NYPA must file its Notice of Intent (NOI) to relicense the Project by April 30, 2014 and its application for a new FERC license no later than April 30, 2017. Included with the NOI will be a required Pre-Application Document (PAD).

NYPA is presently preparing the PAD. The PAD serves to provide FERC, resource agencies, and other interested parties with readily available information pertaining to the Project. The PAD is a document that summarizes existing, relevant and reasonably available information on the Project, to help the interested parties to identify issues and information needs regarding the relicensing of the Project, and to develop study requests where information gaps may exist regarding the effects of Project operations. Information gathered for the PAD will be used throughout the relicensing process to address issues brought up by stakeholders regarding potential Project effects.

FERC requires that we document our efforts to obtain information to ensure the PAD is complete. Therefore, this letter serves to request any existing, relevant, and reasonably available information related to the project vicinity that your organization may have. We expect you are likely to have information related to the following resource areas:

- Water Resources;
- Geology and Soils; and
- Land Use.

However, if you are aware of any other resource information that might be helpful, we would appreciate your sharing that, as well.

For your convenience we have attached Figure 1 which provides a regional map of the Project's location and Figure 2 which depicts the Project's major features.

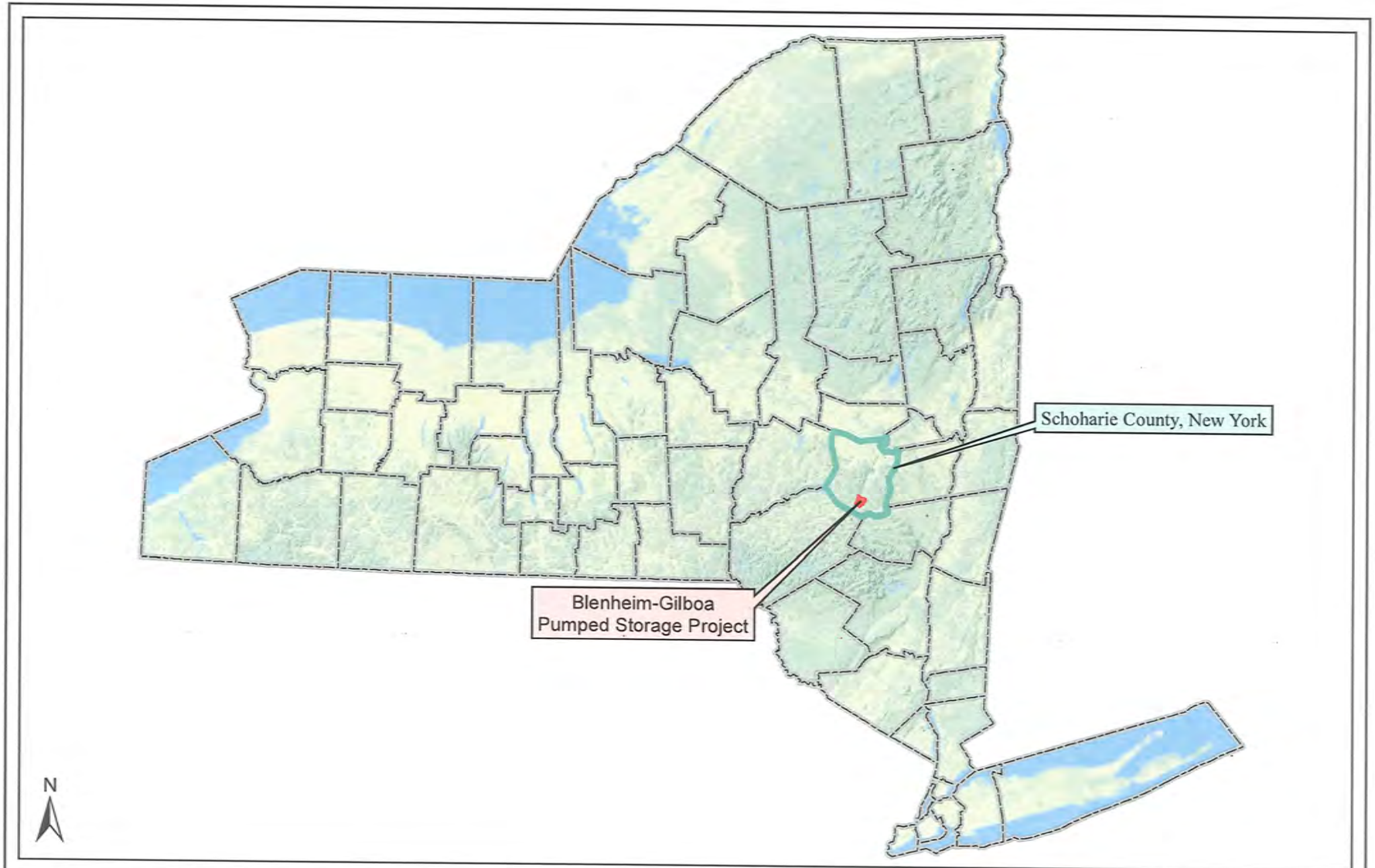
We would appreciate if you would provide such information to us by November 1, 2012, via email, hardcopy, or digitally on CDs or DVDs. My contact information is:

Mark E. Slade
Licensing Manager
New York Power Authority
123 Main Street
White Plains, NY 10601
914-681-6659 (office)
mark.slade@nypa.gov

We appreciate receiving any information you are able to provide to us or any questions or comments you may have regarding the relicensing of the Project. Thank you for your cooperation. We look forward to working with you in the future.

Sincerely,

Mark E. Slade
Director, Licensing



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

New York Power Authority
Generating more than electricity

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Figure 1:
Project Location

Path: Y:\GISMaps\BG\pid\figure_1_project_location.mxd

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

New York Power Authority
Generating more than electricity

0 0.25 0.5 1 Miles

Figure 2
Project Features

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Path: Y:\GISMaps\BG\pid\figure_2_project_features_for_agency.mxd

Environmental Protection

Carter H. Strickland, Jr.
Commissioner

Anthony J. Fiore
Chief of Staff for Operations
afiore@dep.nyc.gov

59-17 Junction Boulevard
Flushing, NY 11373
T: (718) 595-6529
F: (718) 595-3557

September 10, 2012

Mark E. Slade
Licensing Manager
New York Power Authority
123 Main Street
White Plains, NY 10601

RE: Blenheim-Gilboa Pumped Storage Power Project (FERC No. 2685)
Request for Information

Dear Mr. Slade,

This letter is in response to your 14 August 2012 Request for Information in relation to the relicensing of the Blenheim-Gilboa Pumped Storage Power Project (Project). That letter requested water quality data for the Schoharie Reservoir and Schoharie Creek below the Gilboa Dam, such as dissolved oxygen (DO) and temperature profiles, in addition to any chemical, microbiological, and organic data. The Gilboa dam does not have release works, so our sampling of the Schoharie Creek is limited to times when water is flowing over the spillway.

In response to your request please find attached the following items:

- 5-year sampling data at the Schoharie Spill (SS) sampling site including temperature, DO, and other chemical and organic data
- A Map identifying the location of the SS sampling site
- A Methodology description of sampling techniques
- A Comments Log for samples taken during the 5-year period provided
- A Data Code description

If you have any questions, concerns or require further information please do not hesitate to contact me at 917.682.4492 or afiore@dep.nyc.gov.

Sincerely,

Anthony J. Fiore

c: Robie Craig, Esq., Assistant Counsel, DEP

From: "Fiore, Anthony" <FioreA@dep.nyc.gov>
To: "Slade, Mark" <Mark.Slade@nypa.gov>
Cc: "Craig, Robert" <Rcraig@dep.nyc.gov>
Subject: Blenheim-Gilboa Pumped Storage Relicensing RFI

Mark,

Please see attached documents related to your RFI dated August 14,2012. When reviewing the data please note the Data Code sheet. If you have any questions please give me a call.

-Anthony-

Anthony J. Fiore | Chief of Staff - Operations | NYC Environmental Protection
(718) 595-6529 | (917) 682-4492 | afiore@dep.nyc.gov<mailto:kgarcia@dep.nyc.gov>

P Please consider the environment before printing this email or attachments
Confidentiality Notice: This e-mail communication and any attachments may contain confidential and privileged information for the use of the designated recipients named above. If you are not the intended recipient, you are hereby notified that you have received this communication in error and that any review, disclosure, dissemination, distribution or copying of it or its contents is prohibited. If you have received this communication in error, please notify me immediately by replying to this message and deleting it from your computer. Thank you.

9/7/12

Schoharie Spill (SS) Sample Location

Gilboa Dam

Schoharie Spill 5-year Sampling Results

9/7/2012

DATE COLLECTED	SAMPLE NUMBER	SITE ID	GRABTIME	TEMP	DO	PH	TURB	SPCON	DOC	CL	SRP	SO4	NH3	TDN	TN	TDP	TP	SUSPSLDS	NO3NO2	FSPCON	TOC	NO2	NO3	SI
6/11/2012	K00017773006	SS	11:56	22.4	9.8	8.24	4	85	1.7		15		0.02	0.26		7	14		0.16					
3/12/2012	K00017557006	SS	12:39	3.5			23	82	1.6		3		-0.02	0.35		7	25		0.29					
3/12/2012	K00017557006A	SS	12:39						1.3					0.34										
2/13/2012	K00017474006	SS	12:36	1.9	14.3	7.6	29	76	1.7		3		-0.02	0.38		11	24		0.29					
1/23/2012	K00017414006	SS	13:30	1.3	14.6	7.28	25	72	1.7		4		-0.02	0.37		11	23		0.27					
12/12/2011	K00017292006	SS	12:28	5.2	13.2	7.26	50	85	2.3		6		-0.02	0.29		8	36		0.17					
11/21/2011	K00017219006	SS	12:42	7.7	11.9	7.89	60	76	2.2		6		-0.02	0.2		13	40		0.1					
10/17/2011	K00017110006	SS	12:32	14.2	10.6	8.1	180	74	3		9		-0.02	0.25		12	88		0.11					
9/19/2011	K00017024006	SS	12:36	15.9	11.2	7.96	170	68	3.2		14		-0.02	0.27		17	86		0.11					
5/9/2011	112644	SS	12:33	11.86	-110	7.45	8.6	60	2.2		-2		-0.02	0.2		6	14		0.1					
4/11/2011	111991	SS	11:57	5.06	13.37	7.32	23	63	1.7		4		-0.02	0.28		7	25		0.19					
3/14/2011	111382	SS	13:00	1.67	14.68	7.12	95	63	2.2		6		-0.02	0.35		13	52		0.25					
2/14/2011	110760	SS	12:32	1.36	15.02	7.54	13	96	1.4		2		-0.02	0.33		9	16		0.26					
1/10/2011	110201	SS	12:46	1.03	15.66	6.91	14	69	1.7		8		-0.02	0.29		11	37		0.23					
12/13/2010	106917	SS	12:03	3.64	13.65	7.33	70	55	2.7		6		-0.02	0.27		12	45		0.17					
11/15/2010	106285	SS	12:23	-110	-110	-110	17	66	2.8		4		-0.02	0.27		8	21		0.14					
10/18/2010	105601	SS	13:12	11.91	31.85	7.37	50	65	3.7		9		-0.02	0.36		17	38		0.16					
4/12/2010	101948	SS	13:07	8.23	12.29	7.59	23	40	2.1		5		-0.02	0.3		8	23		0.21					
3/8/2010	101148	SS	12:38	1.43	13.39	7.76	9.5	77	2		4		-0.02	0.5		8	14		0.37					
2/8/2010	100691	SS	11:37	0.94	14.57	7.28	31	66	2.5		4		-0.02	0.48		11	31		0.36					
1/11/2010	100154	SS	13:01	1.15	16.47	7.75	3.7	72	2.3		2		-0.02	0.34		6	11		0.23					
12/14/2009	096933	SS	12:45	5.15	12.73	7.38	3.5	71	2.5		2		-0.02	0.3		5	11		0.15					
11/16/2009	096358	SS	13:03	9.13	-110	8.07	1.8	78	2.6		2		-0.02	0.23		-5	10		0.11					
8/10/2009	094302	SS	12:29	21.23	8.83	7.58	4.8	65	3.3		4		0.03	0.19		7	18		-0.05					
3/9/2009	091195	SS	13:15	-110	-110	-110	8.8	93	1.9	14.3	2		-0.02	0.41		5	15		0.27					
2/9/2009	090714	SS	12:01	1.08	14.76	7.93	2.5		1.8	10.7	3	5.7	-0.02	0.37		6	8		0.24	71.5				
1/12/2009	090155	SS	12:26	0.47	14.66	7.69	2.6		1.9	8.9	2	5.5	0.02	0.36		6	9	0.6	0.25	63.5				
11/12/2008	087116	SS	11:30	8.05	12.89	7.21	5		3	7.5	2	5.1	-0.02	0.29		6	17	1.9	0.13	67.7				2.7
5/12/2008	082442	SS	13:16	12.68	10.27	7.44	1.8		1.5	9.6	-2		-0.02	0.24		-5	9			68.7		0.001	0.16	
4/14/2008	081672	SS	12:25	4.89	13.61	7.24	11		1.7	10.2	3		-0.02	0.41	0.36	6	14			63.9	1.8	-0.001	0.29	3.2
3/10/2008	080742	SS	12:50	1.42	13.71	6.76	65			10.7	5	4.4	0.03			10	31			58.4		-0.001	0.32	3
2/5/2008	080345	SS	11:19	2.29	13.83	7.12	6.9		1.7	12	2	5.9	-0.02	0.46		5	15			72.6		-0.001	0.37	4.3
1/14/2008	080161	SS	12:20	2.42	13.13	7.41	8.8		2.1	9.3	2	5.3	-0.02	0.42		5	11			64.2		-0.001	0.34	4
6/11/2007	071811	SS	10:52	21.04	8.85	7.69	5.1		2	8.1	-3	4.9	-0.02	0.34		5	14			71		0.002	0.23	2.4
5/14/2007	071528	SS	12:25	15.39	12.23	7.41	6.7		1.6	9.2	-3	4.8	-0.02	0.48		-5	9			-110		-0.002	0.42	
4/9/2007	070911	SS	10:45	-110	-110	-110	15		1.6	8.6	5	4.7	-0.02	0.74		6	16			-110		0.002	0.67	3.9
1/8/2007	070070	SS	11:14	4.84	13.14	8.79	24		1.9	6.2	7	5.7	-0.02	0.46		13	25			72.9		-0.002	0.39	7.9

BEN NESIN LABORATORY, ELAP ID NO. 10030

Variable	Date	Certification	Samples	Instrument / Procedure Change	Lab Reference / ELAP Certificate Reference	Method
Chloride	05JUL05	Non-Potable Y Potable NP S & H Waste NP	Hydrology	Dionex DX-600 Changed filter type from Polycarbonate to HVLP.	EPA 1993 300.0	Ion Chromatography
D.O.	11MAR96	Non-Potable NA Potable NP S & H Waste NP	Hydrology	Hydrolab Surveyor III	SM18; 4500-O,C	Measured in situ
DOC	05JUL05	Non-Potable NA Potable NP S & H Waste NP	Hydrology	Shimadzu TOC-VCSH Changed filter type from Polycarbonate to HVLP.	SM18; 5310	Furnace Combustion/IR Detection
Specific Cond. (Field)	29SEP04	Non-Potable NA Potable NP S & H Waste NP	Hydrology	Hydrolab Surveyor III or YSI-600XL	SM18; 2510B	
NH3-N	05JUL05	Non-Potable Y Potable NP S & H Waste NP	Hydrology	Alpkem Flow Solution III/IV Changed filter type from Polycarbonate to HVLP.	SM18; 4500-NH3, H	Automated Phenate
NO2-N	05JUL05	Non-Potable Y Potable Y S & H Waste NP	Hydrology	Dionex DX-600 Changed filter type from Polycarbonate to HVLP.	EPA 1993 300.0	Ion Chromatography
NO3-N	05JUL05	Non-Potable Y Potable Y S & H Waste NP	Hydrology	Dionex DX-600 Changed filter type from Polycarbonate to HVLP.	EPA 1993 300.0	Ion Chromatography
NO3NO2-N	13MAY99	Non-Potable Y Potable NP S & H Waste NP	Hydrology	Alpkem Flow Solution III/IV	SM18; 4500-NO3,F	Automated Cd Reduction
pH	11AUG06	Non-Potable N Potable NP S & H Waste NP	Hydrology	Hydrolab Surveyor III or YSI-600XL	SM18-20; 4500-H+,B	Measured in situ
Dissolved Silica	05JUL05	Non-Potable Y Potable NP S & H Waste NP	Hydrology	Alpkem Flow Solution III/IV Changed filter type from Polycarbonate to HVLP.	USGS I-2700-85	
Sulfate	05JUL05	Non-Potable Y Potable NP S & H Waste NP	Hydrology	Dionex DX-600 Changed filter type from Polycarbonate to HVLP.	EPA 1993 300.0	Ion Chromatography
Specific Cond. (Lab)	17JUN05	Non-Potable Y Potable Y S & H Waste NP	Hydrology	YSI Model 3200	SM18-20; 2510B	
SRP	05JUL05	Non-Potable Y Potable NP S & H Waste NP	Hydrology	Dionex DX-600 Changed filter type from Polycarbonate to HVLP.	EPA 1993 300.0	Ion Chromatography
Total Susp. Solids	01NOV05	Non-Potable Y Potable NA S & H Waste NP	Hydrology	Filtration and Analytical Balance Change filter prep from ignition at 550 deg. C to drying at 104 deg. C.	SM18; 2540D	

Certification Codes: Y = Yes, N = No, NA = Not Available, NP = Not Performed

Variable	Date	Certification	Samples	Instrument / Procedure Change	Lab Reference / ELAP Certificate Reference	Method
Total Dissolved N	05JUL05	Non-Potable NA Potable NP S & H Waste NP	Hydrology	Shimadzu TOC-VCSH Changed filter type from Polycarbonate to HVLP.	TOC V-csh/-csn, TOC User Manual, 2001	Furnace Combustion/Chemoluminesence Dect
Total Dissolved P	30MAY06	Non-Potable Y Potable NP S & H Waste NP	Hydrology	Alpkem Flow Solution III/IV Changed flow cell from 0.6cm to 1.0cm.	SM18-20; 4500-P,F	Automated Colorimetry
Total Dissolved P	14MAY07	Non-Potable Y Potable NP S & H Waste NP	Hydrology	Alpkem Flow Solution III/IV Preserved samples are analyzed ASAP, either the day of or the day following oxidation.	SM18-20; 4500-P,F	Automated Colorimetry
Total Dissolved P	10JUL07	Non-Potable Y Potable NP S & H Waste NP	Hydrology	Lachat QuickChem 8500	LACHAT 10-115-01-1-F	Automated Flow Injection Analysis
Total Dissolved P	10JUL07	Non-Potable Y Potable NP S & H Waste NP	Hydrology	Alpkem Flow Solution III/IV EXCEPT limnology SAMPNOs 072088 & 072092.	SM18-20; 4500-P,F	Automated Colorimetry
Total Dissolved P	16JUL07	Non-Potable Y Potable NP S & H Waste NP	Hydrology	Lachat QuickChem 8500	LACHAT 10-115-01-1-F	Automated Flow Injection Analysis
Temperature	29SEP04	Non-Potable NA Potable NA S & H Waste NP	Hydrology	Hydrolab Surveyor III or YSI-600XL	SM18; 2550B	Measured in situ
Total N	28MAY02	Non-Potable NA Potable NP S & H Waste NP	Hydrology	Shimadzu TOC-VCSH	TOC V-csh/-csn, TOC User Manual, 2001	Furnace Combustion/Chemoluminesence Dect
TOC	13MAY02	Non-Potable Y Potable NP S & H Waste NP	Hydrology	Shimadzu TOC-VCSH	SM19; 5310B	Combustion/IR Detection
Total P	30MAY06	Non-Potable Y Potable NP S & H Waste NP	Hydrology	Alpkem Flow Solution III/IV Changed flow cell from 0.6cm to 1.0cm.	SM18-20; 4500-P,F	Automated Colorimetry
Total P	14MAY07	Non-Potable Y Potable NP S & H Waste NP	Hydrology	Alpkem Flow Solution III/IV Preserved samples are analyzed ASAP, either the day of or the day following oxidation.	SM18-20; 4500-P,F	Automated Colorimetry
Total P	10JUL07	Non-Potable Y Potable NP S & H Waste NP	Hydrology	Lachat QuickChem 8500	LACHAT 10-115-01-1-F	Automated Flow Injection Analysis
Total P	16JUL07	Non-Potable Y Potable NP S & H Waste NP	Hydrology	Lachat QuickChem 8500	LACHAT 10-115-01-1-F	Automated Flow Injection Analysis
Turbidity	27AUG01	Non-Potable NA Potable NA S & H Waste NP	Hydrology	Hach 2100 AN Turbidimeter	SM19; 2130B	Nephelometric Method

Certification Codes: Y = Yes, N = No, NA = Not Available, NP = Not Performed

BEN NESIN LABORATORY, ELAP ID NO. 10030

Variable	Date	Certification	Samples	Instrument / Procedure Change	Lab Reference / ELAP Certificate Reference	Method
Turbidity	26SEP07	Non-Potable Y Potable Y S & H Waste NP	Hydrology	Hach 2100 AN Turbidimeter	SM19; 2130B	Nephelometric Method

Certification Codes: Y = Yes, N = No, NA = Not Available, NP = Not Performed

Variable	Date	Certification	Samples	Instrument / Procedure Change	Lab Reference / ELAP Certificate Reference	Method
Chloride	19FEB08	Non-Potable Y Potable NP S & H Waste NP	Hydrology	Dionex DX-600	EPA 1993 300.0 Rev. 2.1	Ion Chromatography
Chloride	30JUN08	Non-Potable Y Potable NP S & H Waste NP	Hydrology	Dionex DX-600 Begin field filtration within 15 minutes of collection.	EPA 1993 300.0 Rev. 2.1	Ion Chromatography
Chloride	18MAY09	Non-Potable Y Potable NP S & H Waste NP	Hydrology	Dionex DX-600 New range of detection: 0.5-25.0mg/l.	EPA 1993 300.0 Rev. 2.1 EPA 300.0 Rev. 2.1	Ion Chromatography
Chloride	01JAN10	Non-Potable Y Potable NP S & H Waste NP	Hydrology	Dionex DX-600 Begin use of approved silicon pump tubing (KFS#) along with tygon pump tubing (KFT#).	EPA 1993 300.0 Rev. 2.1 EPA 300.0 Rev. 2.1	Ion Chromatography
D.O.	19FEB08	Non-Potable NA Potable NP S & H Waste NP	Hydrology	YSI 6920 Data will come from any of several units (YSI, Hydrolab).	SM18-20; 4500-O,G (93)	Measured in situ
D.O.	13JUL09	Non-Potable NA Potable NP S & H Waste NP	Hydrology	YSI 600XL Data will come from any of several units (YSI, Hydrolab).	SM18-20; 4500-O,G (93)	Measured in situ
DOC	19FEB08	Non-Potable NA Potable NP S & H Waste NP	Hydrology	Shimadzu TOC-VCSH	SM18-20; 5310 (96)	Furnace Combustion/IR Detection
DOC	30JUN08	Non-Potable NA Potable NP S & H Waste NP	Hydrology	Shimadzu TOC-VCSH Begin field filtration and preservation within 15 minutes of collection.	SM18-20; 5310 (96)	Furnace Combustion/IR Detection
DOC	15SEP08	Non-Potable NA Potable NP S & H Waste NP	Hydrology	Shimadzu TOC-VCSH Change to preserving samples with 1:1 HCl.	SM18-20; 5310 (96) SM18-21; 5310B (00)	Furnace Combustion/IR Detection
DOC	01JAN10	Non-Potable NA Potable NP S & H Waste NP	Hydrology	Shimadzu TOC-VCSH Begin use of approved silicon pump tubing (KFS#) along with tygon pump tubing (KFT#).	SM18-20; 5310 (96) SM18-21; 5310B (00)	Furnace Combustion/IR Detection
DOC	10JUN10	Non-Potable NA Potable NP S & H Waste NP	Hydrology	Shimadzu TOC-VCSH	SM Online; 5310 (2000) SM18-21; 5310B (00)	Furnace Combustion/IR Detection
Specific Cond. (Field)	19FEB08	Non-Potable NA Potable NP S & H Waste NP	Hydrology	YSI 6920 Data will come from any of several units (YSI, Hydrolab).	SM18-20; 2510B (97)	Measured in situ
NH3-N	19FEB08	Non-Potable Y Potable NP S & H Waste NP	Hydrology	Alpkem Flow Solution III/IV	SM18; 4500-NH3, H	Automated Phenate
NH3-N	30JUN08	Non-Potable Y Potable NP S & H Waste NP	Hydrology	Alpkem Flow Solution III/IV Begin field filtration and preservation within 15 minutes of collection.	SM18; 4500-NH3, H	Automated Phenate

Certification Codes: Y = Yes, N = No, NA = Not Available, NP = Not Performed

Variable	Date	Certification	Samples	Instrument / Procedure Change	Lab Reference / ELAP Certificate Reference	Method
NH3-N	04MAY09	Non-Potable Y	Hydrology	Lachat Quikchem 8500	EPA 350.1 Rev. 2.0	
		Potable NP			EPA 350.1 Rev. 2.0	
		S & H Waste NP				
NH3-N	01JAN10	Non-Potable Y	Hydrology	Lachat Quikchem 8500	EPA 350.1 Rev. 2.0	
		Potable NP			EPA 350.1 Rev. 2.0	
		S & H Waste NP		Begin use of approved silicon pump tubing (KFS#) along with tygon pump tubing (KFT#).		
NH3-N	21SEP10	Non-Potable Y	Hydrology	Lachat Quikchem 8500	LACHAT 10-107-06-1-J	
		Potable NP			LACHAT 10-107-06-1-B	
		S & H Waste NP				
NO2-N	19FEB08	Non-Potable Y	Hydrology	Dionex DX-600	EPA 1993 300.0 Rev. 2.1	Ion Chromatography
		Potable Y				
		S & H Waste NP				
NO2-N	30JUN08	Non-Potable Y	Hydrology	Dionex DX-600	EPA 1993 300.0 Rev. 2.1	Ion Chromatography
		Potable Y				
		S & H Waste NP		Begin field filtration within 15 minutes of collection.		
NO3-N	19FEB08	Non-Potable Y	Hydrology	Dionex DX-600	EPA 1993 300.0 Rev. 2.1	Ion Chromatography
		Potable Y				
		S & H Waste NP				
NO3-N	30JUN08	Non-Potable Y	Hydrology	Dionex DX-600	EPA 1993 300.0 Rev. 2.1	Ion Chromatography
		Potable Y			EPA 300.0 Rev. 2.1	
		S & H Waste NP		Begin field filtration within 15 minutes of collection.		
NO3-N	05JUL10	Non-Potable Y	Hydrology	Dionex DX-600	EPA 1993 300.0 Rev. 2.1	Ion Chromatography
		Potable Y			EPA 300.0 Rev. 2.1	
		S & H Waste NP		Change calibration range to accommodate LOQ of 0.01mg/l.		
NO3NO2-N	11AUG08	Non-Potable Y	Hydrology	Lachat Quikchem 8500	Lachat 10-107-04-1-C	Flow Injection
		Potable NA				
		S & H Waste NP				
NO3NO2-N	05NOV08	Non-Potable Y	Hydrology	Lachat Quikchem 8500	Lachat 10-107-04-1-C	Flow Injection
		Potable NA				
		S & H Waste NP				
NO3NO2-N	20FEB09	Non-Potable Y	Hydrology	Lachat Quikchem 8500	Lachat 10-107-04-1-C	Flow Injection
		Potable N			LACHAT 10-107-04-1-C	
		S & H Waste NP		Added a 0.0mg/L calibrant to curve.		
NO3NO2-N	01JAN10	Non-Potable Y	Hydrology	Lachat Quikchem 8500	Lachat 10-107-04-1-C	Flow Injection
		Potable N			LACHAT 10-107-04-1-C	
		S & H Waste NP		Begin use of approved silicon pump tubing (KFS#) along with tygon pump tubing (KFT#).		
pH	19FEB08	Non-Potable N	Hydrology	YSI 6920	SM18-20; 4500-H+,B (00)	Measured in situ
		Potable NP				
		S & H Waste NP		Data will come from any of several units (YSI, Hydrolab).		
pH	01JAN09	Non-Potable NA	Hydrology	YSI 6920	SM18-20; 4500-H+,B (00)	Measured in situ
		Potable NP				
		S & H Waste NP		Data will come from any of several units (YSI, Hydrolab).		

Variable	Date	Certification	Samples	Instrument / Procedure Change	Lab Reference / ELAP Certificate Reference	Method
pH	13JUL09	Non-Potable NA	Hydrology	YSI 600XL	SM18-20; 4500-H+,B (00)	Measured in situ
		Potable NP				
		S & H Waste NP		Data will come from any of several units (YSI, Hydrolab).		
Dissolved Silica	19FEB08	Non-Potable Y	Hydrology	Alpkem Flow Solution III/IV	USGS I-2700-85	
		Potable NP				
		S & H Waste NP				
Dissolved Silica	30JUN08	Non-Potable Y	Hydrology	Alpkem Flow Solution III/IV	USGS I-2700-85	
		Potable NP				
		S & H Waste NP		Begin field filtration within 15 minutes of collection.		
Dissolved Silica	05FEB09	Non-Potable Y	Hydrology	Alpkem Flow Solution III/IV	USGS I-2700-85	
		Potable NP			USGS I-2700-85	
		S & H Waste NP		Added a 0.0mg/L calibrant to curve.		
Dissolved Silica	01JAN10	Non-Potable Y	Hydrology	Alpkem Flow Solution III/IV	USGS I-2700-85	
		Potable NP			USGS I-2700-85	
		S & H Waste NP		Begin use of approved silicon pump tubing (KFS#) along with tygon pump tubing (KFT#).		
Dissolved Silica	01JUN10	Non-Potable Y	Hydrology	Lachat Quikchem 8500	QuickChem Method 10-114-27-1-A	Flow Injection
		Potable NP			USGS I-2700-85	
		S & H Waste NP				
Dissolved Silica	03JUN10	Non-Potable Y	Hydrology	Lachat Quikchem 8500	QuickChem Method 10-114-27-1-A	Flow Injection
		Potable NP			USGS I-2700-85/LACHAT 10-114-27-1-A	
		S & H Waste NP				
Dissolved Silica	21SEP10	Non-Potable Y	Hydrology	Lachat Quikchem 8500	QuickChem Method 10-114-27-1-A	
		Potable NP			LACHAT 10-114-27-1-A	
		S & H Waste NP		Flow Injection		
Dissolved Silica	01MAR11	Non-Potable Y	Hydrology	Lachat QuickChem 8500	QuickChem Method 10-114-27-1-A	Flow Injection Analysis
		Potable NP			LACHAT 10-114-27-1-A	
		S & H Waste NP		Adding a calibrant 0.0 mg/L to calibration curve.		
Sulfate	19FEB08	Non-Potable Y	Hydrology	Dionex DX-600	EPA 1993 300.0 Rev. 2.1	Ion Chromatography
		Potable NP				
		S & H Waste NP				
Sulfate	30JUN08	Non-Potable Y	Hydrology	Dionex DX-600	EPA 1993 300.0 Rev. 2.1	Ion Chromatography
		Potable NP			EPA 300.0 Rev. 2.1	
		S & H Waste NP		Begin field filtration within 15 minutes of collection.		
Sulfate	01JAN10	Non-Potable Y	Hydrology	Dionex DX-600	EPA 1993 300.0 Rev. 2.1	Ion Chromatography
		Potable NP			EPA 300.0 Rev. 2.1	
		S & H Waste NP		Begin use of approved silicon pump tubing (KFS#) along with tygon pump tubing (KFT#).		
Specific Cond. (Lab)	19FEB08	Non-Potable Y	Hydrology	YSI Model 3200	SM18-20; 2510B (97)	
		Potable Y				
		S & H Waste NP				
Specific Cond. (Lab)	17FEB09	Non-Potable Y	Hydrology	YSI Model 3200	SM18-20; 2510B (97)	
		Potable Y			SM18-21; 2510B (97)	
		S & H Waste NP				

Variable	Date	Certification	Samples	Instrument / Procedure Change	Lab Reference / ELAP Certificate Reference	Method
Specific Cond. (Lab)	17SEP10	Non-Potable Y	Hydrology	YSI Model 3200	SM Online; 2510B (1997)	
		Potable Y			SM18-21; 2510B (97)	
		S & H Waste NP				
SRP	19FEB08	Non-Potable Y	Hydrology	Dionex DX-600	EPA 1993 300.0 Rev. 2.1	Ion Chromatography
		Potable NP				
		S & H Waste NP				
SRP	30JUN08	Non-Potable Y	Hydrology	Dionex DX-600	EPA 1993 300.0 Rev. 2.1	Ion Chromatography
		Potable NP				
		S & H Waste NP		Begin field filtration within 15 minutes of collection.		
SRP	11AUG08	Non-Potable Y	Hydrology	Lachat Quikchem 8500	EPA 365.1 Rev. 2.0	Flow Injection
		Potable NP				
		S & H Waste NP				
SRP	20FEB09	Non-Potable Y	Hydrology	Lachat Quikchem 8500	EPA 365.1 Rev. 2.0	Flow Injection
		Potable NP			EPA 365.1 Rev. 2.0	
		S & H Waste NP		Added a 0.0ug/L calibrant to curve.		
SRP	01JAN10	Non-Potable Y	Hydrology	Lachat Quikchem 8500	EPA 365.1 Rev. 2.0	Flow Injection
		Potable NP			EPA 365.1 Rev. 2.0	
		S & H Waste NP		Begin use of approved silicon pump tubing (KFS#) along with tygon pump tubing (KFT#).		
SRP	21SEP10	Non-Potable Y	Hydrology	Lachat Quikchem 8500	EPA 365.1 Rev. 2.0	Flow Injection
		Potable NP			EPA 365.1 Rev. 2.0/LACHAT 10-115-01-1-A,B	
		S & H Waste NP				
Total Susp. Solids	19FEB08	Non-Potable Y	Hydrology	Filtration and Analytical Balance	SM18-20; 2540D (97)	
		Potable NA			SM18-20; 2540D (97)	
		S & H Waste NP				
Total Susp. Solids	03JUN10	Non-Potable Y	Hydrology	Filtration and Analytical Balance	SM18-20; 2540D (97)	
		Potable NA			SM18-21; 2540D (97)	
		S & H Waste NP				
Total Susp. Solids	14OCT10	Non-Potable Y	Hydrology	Filtration and Analytical Balance	SM Online; 2540D (1997)	
		Potable NA			SM18-21; 2540D (97)	
		S & H Waste NP				
Total Dissolved N	19FEB08	Non-Potable NA	Hydrology	Shimadzu TOC-VCSH	TOC V-csh/-csn, TOC User Manual, 2001	Furnace Combustion/Chemoluminesence Dect
		Potable NP				
		S & H Waste NP				
Total Dissolved N	30JUN08	Non-Potable NA	Hydrology	Shimadzu TOC-VCSH	TOC V-csh/-csn, TOC User Manual, 2001	Furnace Combustion/Chemoluminesence Dect
		Potable NP				
		S & H Waste NP		Begin field filtration and preservation within 15 minutes of collection.		
Total Dissolved N	15SEP08	Non-Potable NA	Hydrology	Shimadzu TOC-VCSH	TOC V-csh/-csn,TOC User Man.,2001(ASTM-D5176)	Furnace Combustion/Chemoluminesence Dect
		Potable NP				
		S & H Waste NP		Change to preserving samples with 1:1 HCl.		
Total Dissolved N	01JAN10	Non-Potable NA	Hydrology	Shimadzu TOC-VCSH	TOC V-csh/-csn,TOC User Man.,2001(ASTM-D5176)	Furnace Combustion/Chemoluminesence Dect
		Potable NP				
		S & H Waste NP		Begin use of approved silicon pump tubing (KFS#) along with tygon pump tubing (KFT#).		

Variable	Date	Certification	Samples	Instrument / Procedure Change	Lab Reference / ELAP Certificate Reference	Method
Total Dissolved P	19FEB08	Non-Potable Y Potable NP S & H Waste NP	Hydrology	Lachat QuickChem 8500	EPA 365.1 Rev. 2.0; LACHAT 10-115-01-1-F	Automated Flow Injection Analysis
Total Dissolved P	30JUN08	Non-Potable Y Potable NP S & H Waste NP	Hydrology	Lachat QuickChem 8500 Begin field filtration and preservation within 15 minutes of collection.	EPA 365.1 Rev. 2.0; LACHAT 10-115-01-1-F	Automated Flow Injection Analysis
Total Dissolved P	20JAN09	Non-Potable Y Potable NP S & H Waste NP	Hydrology	Lachat QuickChem 8500 Added a 0 calibrant; Increased calibration range; Changed from linear to 2nd order curve.	EPA 365.1 Rev. 2.0; LACHAT 10-115-01-1-F EPA 365.1 Rev. 2.0	Automated Flow Injection Analysis
Total Dissolved P	01JAN10	Non-Potable Y Potable NP S & H Waste NP	Hydrology	Lachat QuickChem 8500 Begin use of approved silicon pump tubing (KFS#) along with tygon pump tubing (KFT#).	EPA 365.1 Rev. 2.0; LACHAT 10-115-01-1-F EPA 365.1 Rev. 2.0	Automated Flow Injection Analysis
Temperature	19FEB08	Non-Potable NA Potable NA S & H Waste NP	Hydrology	YSI 6920 Data will come from any of several units (YSI, Hydrolab).	SM18-20; 2550B (00)	Measured in situ
Temperature	13JUL09	Non-Potable NA Potable NA S & H Waste NP	Hydrology	YSI 600XL Data will come from any of several units (YSI, Hydrolab).	SM18-20; 2550B (00)	Measured in situ
Total N	19FEB08	Non-Potable NA Potable NP S & H Waste NP	Hydrology	Shimadzu TOC-VCSH	TOC V-csh/-csn,TOC User Man.,2001(ASTM-D5176)	Furnace Combustion/Chemoluminesence Dect
Total N	30JUN08	Non-Potable NA Potable NP S & H Waste NP	Hydrology	Shimadzu TOC-VCSH Begin field preservation within 15 minutes of collection.	TOC V-csh/-csn,TOC User Man.,2001(ASTM-D5176_	Furnace Combustion/Chemoluminesence Dect
Total N	15SEP08	Non-Potable NA Potable NP S & H Waste NP	Hydrology	Shimadzu TOC-VCSH Change to preserving samples with 1:1 HCl.	TOC V-csh/-csn, TOC User Manual, 2001	Furnace Combustion/Chemoluminesence Dect
TOC	19FEB08	Non-Potable Y Potable NP S & H Waste NP	Hydrology	Shimadzu TOC-VCSH	SM18-20; 5310B (00)	Combustion/IR Detection
TOC	30JUN08	Non-Potable Y Potable NP S & H Waste NP	Hydrology	Shimadzu TOC-VCSH Begin preservation in field within 15 minutes of collection.	SM18-20; 5310B (00)	Combustion/IR Detection
TOC	15SEP08	Non-Potable Y Potable NP S & H Waste NP	Hydrology	Shimadzu TOC-VCSH Change to preserving samples with 1:1 HCl.	SM18-20; 5310B (00) SM18-21; 5310B (00)	Combustion/IR Detection
TOC	10JUN10	Non-Potable Y Potable NP S & H Waste NP	Hydrology	Shimadzu TOC-VCSH	SM Online; 5310B (2000) SM18-21; 5310B (00)	Combustion/IR Detection
Total P	19FEB08	Non-Potable Y Potable NP S & H Waste NP	Hydrology	Lachat QuickChem 8500	EPA 365.1 Rev. 2.0; LACHAT 10-115-01-1-F	Automated Flow Injection Analysis

Variable	Date	Certification	Samples	Instrument / Procedure Change	Lab Reference / ELAP Certificate Reference	Method
Total P	30JUN08	Non-Potable Y Potable NP S & H Waste NP	Hydrology	Lachat QuickChem 8500 Begin preservation in field within 15 minutes of collection.	EPA 365.1 Rev. 2.0; LACHAT 10-115-01-1-F	Automated Flow Injection Analysis
Total P	20JAN09	Non-Potable Y Potable NP S & H Waste NP	Hydrology	Lachat QuickChem 8500 Added a 0 calibrant; Increased calibration range; Changed from linear to 2nd order curve.	EPA 365.1 Rev. 2.0; LACHAT 10-115-01-1-F EPA 365.1 Rev. 2.0	Automated Flow Injection Analysis
Turbidity	19FEB08	Non-Potable Y Potable Y S & H Waste NP	Hydrology	Hach 2100 AN Turbidimeter	SM18-20; 2130B (01)	Nephelometric Method
Turbidity	18JUN08	Non-Potable Y Potable N S & H Waste NP	Hydrology	Hach 2100 AN Turbidimeter	SM18-20; 2130B (01)	Nephelometric Method
Turbidity	28JUL08	Non-Potable Y Potable N S & H Waste NP	Hydrology	Hach 2100 AN Turbidimeter Begin using Formazin instead of Stablcal as primary standard.	SM18-20; 2130B (01)	Nephelometric Method
Turbidity	19AUG08	Non-Potable Y Potable Y S & H Waste NP	Hydrology	Hach 2100 AN Turbidimeter	SM18-20; 2130B (01)	Nephelometric Method
Turbidity	01APR09	Non-Potable N Potable Y S & H Waste NP	Hydrology	Hach 2100 AN Turbidimeter	SM18-20; 2130B (01)	Nephelometric Method
Turbidity	01MAY09	Non-Potable Y Potable Y S & H Waste NP	Hydrology	Hach 2100 AN Turbidimeter	SM18-20; 2130B (01) SM18-21; 2130B (01)	Nephelometric Method
Turbidity	03DEC10	Non-Potable Y Potable Y S & H Waste NP	Hydrology	Hach 2100 AN Turbidimeter	SM Online; 2130B (2001) SM18-21; 2130B (01)	Nephelometric Method

Parameter	Reference
Ammonia	Lachat 10-107-06-1-J
Nitrogen, Total Dissolved	SM 5310B (00)
Organic Carbon, Dissolved	SM 5310B (00)
Dissolved Oxygen	SM18-20; 4500-O,G (93)
pH	SM18-20; 4500-H+,B (00)
Temperature	SM18-20; 2550B (00)
Nitrate/Nitrite	Lachat 10-107-04-1-C
Orthophosphate	Lachat 10-115-01-1-B
Specific Conductance	SM18-20; 2510B (97)
Phosphorus, Total Dissolved	Lachat 10-115-01-1-F
Phosphorus, Total	Lachat 10-115-01-1-F
Turbidity	SM 2130B (01)

for SS

BEN NESIN/KINGSTON LABORATORY, ELAP ID NO. 10030

The CONTENTS Procedure

Data Set Name	WORK.SS	Observations	37
Member Type	DATA	Variables	26
Engine	V9	Indexes	0
Created	Wed, Sep 05, 2012 08:20:44 AM	Observation Length	232
Last Modified	Wed, Sep 05, 2012 08:20:44 AM	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	NO
Label			
Data Representation	WINDOWS_32		
Encoding	wlatin1 Western (Windows)		

Engine/Host Dependent Information

Data Set Page Size	16384
Number of Data Set Pages	1
First Data Page	1
Max Obs per Page	70
Obs in First Data Page	37
Number of Data Set Repairs	0
Filename	C:\Users\SEELBA~1\AppData\Local\Temp\SAS Temporary Files_TD1136_BWSKNGSEELBACHK_\ss.sas7bdat
Release Created	9.0301M1
Host Created	W32_7PRO

Alphabetic List of Variables and Attributes

#	Variable	Type	Len	Format	Informat	Label
12	CL	Num	8			Chloride(mg/l)
1	COLLECT	Num	8	DATE9.	DATE9.	Date Collected
7	DO	Num	8	5.1		D.O.(mg/l)
11	DOC	Num	8			DOC(mg/l)
22	FSPCON	Num	8	5.		In Field SpCond(umhos/cm)
4	GRABTIME	Num	8	TIME6.	TIME6.	Grab Time
15	NH3	Num	8	7.2		NH3-N(mg/l), Total NH3+NH4
24	NO2	Num	8			NO2-N(mg/l)
25	NO3	Num	8			NO3-N(mg/l)
21	NO3NO2	Num	8			NO3NO2-N(mg/L)
8	PH	Num	8	6.2		pH(Units)
2	SAMPNO	Char	15	$15.	$15.	Sample Number
26	SI	Num	8			Dissolved Silica(mg/l)
3	SITE	Char	25	$25.	$25.	Site
14	SO4	Num	8			Sulfate(mg/l)
10	SPCON	Num	8	5.		Lab SpCond(umhos/cm)
13	SRP	Num	8	7.		Soluble Reactive P(ug/l)
20	SUSPSLDS	Num	8	7.1		Total Suspended Solids(mg/l)
16	TDN	Num	8	7.2		Total Dissolved N(mg/l)
18	TDP	Num	8	7.		Total Dissolved P(ug/l)
6	TEMP	Num	8	5.1		Temperature(degrees C)
17	TN	Num	8	7.2		Total N(mg/l)
23	TOC	Num	8			TOC(mg/l)
19	TP	Num	8			Total Phosphorus(ug/l)
9	TURB	Num	8	6.1		Turbidity(NTU)
5	TYPE	Char	5	$5.	$5.	Sample Type

SS...Schoharie Reservoir Spillway

All results that fall within the scope of the NELAP program meet that program's requirements unless stated in the comments and methods tables.

Codes That Apply to ALL Parameters:

- Change minus signs to less than signs. There are exceptions, SEE below.
- Greater than values are coded as -101. SEE Greater Than Values Table.
- Laboratory errors are coded as -105.
- Field errors are coded as -110.
- Missing values are recorded as “.”.

Beginning in 1993, coding for coliforms was changed. Greater than values are no longer coded as -101. A separate coding system was developed by the Analytical Committee for Bacteriology. Another variable has been added to all datasets for coliforms (TCCODE & FCCODE). See attached coliforms coding sheets for complete information.

EXCEPTIONS:

- Coliforms (TCOLI , FCOLI, ECOLI, TCATY, FCATY, NSC, NBC, FSTREP):
  -108 = Confluent Growth
  -99 = Too Numerous to Count (TNTC)
  0 = Absence (Proficiency Test dataset)
  -111 = Presence (Proficiency Test dataset)
- Heterotrophic Plate Count (HPC):
  -108 = Spreader
  - 99 = Too Numerous to Count (TNTC)
- Color (COLOR), Phytoplankton (TPLK, GPLK, SAU1, SAU2):
  -1 = Too Turbid
- Phytoplankton (SAUOTH):
  0 = Absent
- Temperature (TEMP):
  DO NOT change minus signs to less than signs.
- Stage & Flow (STAGE, FLOW):
  -999 = Obstruction on control
- Total Cl2 Residual (TCRCC or TCREFF), for East of Hudson District ONLY:
  % UV is done for many plants. This is noted in the dataset by a minus sign. For example, 85% UV is entered into the computer as -85. For results reported as >100% UV, the code is -101.
- Pathogen Data:
  -111 = Pass / Acceptable
  -222 = Fail / Positive
- Virus Data:
  -999 = None isolated
- Proficiency Test Data (Coliforms)
  0 = Absence
  -111 = Presence

NOTES:

For Limnology data ONLY:

- Photic zone defined as ZSP=0 beginning in 1989.
- Chlorophyll Data
  - 1984-1988 contains data for NCHLA (uncorrected chlorophyll a).
  - 1989-present contains data for CHLA, NCHLA, PHEO (chlorophyll a, uncorrected chlorophyll a, pheophytin).
  - When comparing chlorophyll data for these two time periods, 1984-1988 NCHLA data needs to be matched with 1989-present CHLA data.

Year=2007

Variable	Beginning Date	End Date	Comments
ALL	01JAN2007	31DEC2007	Sample results of less than ten times the limit of detection may be associated with a blank that is more than one tenth the sample level.
DOC	11APR2007	31DEC2007	Samples filtered more than 15 minutes after collection.
Specific Cond (Field)	01JAN2007	31DEC2007	NYS ELAP requires analysis to be performed in a certified laboratory for the results to be certified. These analyses have been performed in the field, so they are not certified by ELAP.
pH	01JAN2007	31DEC2007	NYS ELAP requires analysis to be performed in a certified laboratory for the results to be certified. These analyses have been performed in the field, so they are not certified by ELAP.
pH	09MAR2007	09MAR2007	SAMPNO 070654: This sample is associated with an out of control duplicate QC sample. Dup difference=0.18, UCL=0.17
Dissolved Silica	04JUN2007	11JUN2007	SAMPNOs 071728-071743, 071805-071820: No end-run LOD associated with these samples.
SRP	11APR2007	31DEC2007	Samples filtered more than 15 minutes after collection.
Total P	14MAY2007	14MAY2007	SAMPNOs 071512-071519, 071521-071529: These samples are associated with an out of control duplicateQC sample. Dup difference=153ug/l, UCL=5ug/l.
Turbidity	12MAR2007	31DEC2007	All samples are associated with calibration standards that have been identified by Hach as "potentially degrading outside the published accuracy specification." A worst case error in calibration of 1 5% may have occurred (7/22/08, Thom Voll).

Year=2008

Variable	Beginning Date	End Date	Comments
ALL	01JAN2008	31DEC2008	Sample results of less than ten times the limit of detection may be associated with a blank that is more than one tenth the sample level.
ALL	01JAN2008	18FEB2008	Analyses performed by Ben Nesin Laboratory, Shokan, NY, ELAP ID Number 10030.
Chloride	14APR2008	14APR2008	SAMPNOs 081666-081675, 081678-081681: These samples are associated with an out of control spike QC sample. Recovery=79%, LCL=80%, UCL=120%.0
DOC	01JAN2008	29JUN2008	Samples filtered more than 15 minutes after collection.
Specific Cond (Field)	01JAN2008	31DEC2008	NYS ELAP requires analysis to be performed in a certified laboratory for the results to be certified. These analyses have been performed in the field, so they are not certified by ELAP.
pH	01JAN2008	31DEC2008	NYS ELAP requires analysis to be performed in a certified laboratory for the results to be certified. These analyses have been performed in the field, so they are not certified by ELAP.
SRP	01JAN2008	29JUN2008	Samples filtered more than 15 minutes after collection.
Total Dissolved P	14APR2008	14APR2008	SAMPNOs 081666-081673: No end-run MDL standard associated with these samples.
Turbidity	01JAN2008	27JUL2008	All samples are associated with calibration standards that have been identified by Hach as "potentially degrading outside the published accuracy specification." A worst case error in calibration of 1 5% may have occurred (7/22/08, Thom Voll).

Year=2009

Variable	Beginning Date	End Date	Comments
ALL	01JAN2009	27FEB2009	Sample results of less than ten times the limit of detection may be associated with a blank that is more than one tenth the sample level.
ALL	28FEB2009	31DEC2009	Sample results between 10 and 20 times the limit of quantitation may be associated with a method blank that is greater than one-tenth the sample level.
Specific Cond (Field)	01JAN2009	31DEC2009	NYS ELAP requires analysis to be performed in a certified laboratory for the results to be certified. These analyses have been performed in the field, so they are not certified by ELAP.
pH	01JAN2009	31DEC2009	NYS ELAP requires analysis to be performed in a certified laboratory for the results to be certified. These analyses have been performed in the field, so they are not certified by ELAP.
pH	09FEB2009	09FEB2009	SAMPNOs 090713-090716: The field post-survey check was >0.05 and <0.10 SU from the theoretical value.
Sulfate	10AUG2009	10AUG2009	SAMPNOs 094287-094292, 094297-094303: End Run LOQ Recovery=158%, LCL=50%, UCL=150%
Total Dissolved N	10AUG2009	10AUG2009	SAMPNOs 094297-094303: These samples are associated with an equipment blank that is above twice the LOQ. Blank=0.22mg/l, LOQ=0.09mg/l.

Year=2010

Variable	Beginning Date	End Date	Comments
ALL	01JAN2010	31DEC2010	Sample results between 10 and 20 times the limit of quantitation may be associated with a method blank that is greater than one-tenth the sample level.
DOC	08MAR2010	08MAR2010	SAMPNOs 101136-1141, 101145-1149: Analyses performed by Kensico Laboratory, Valhalla, NY, ELAP ID Number 10771.
NH3-N	12APR2010	12APR2010	SAMPNO 101948: This sample is associated with an out of control spike QC sample. Recovery=114%, LCL=90%, UCL=110%.
NH3-N	15NOV2010	15NOV2010	SAMPNOs 106272-106278, 106280-106286: Samples were over acidified at preservation which could cause a negative bias in the results.
pH	01JAN2010	31DEC2010	NYS ELAP requires analysis to be performed in a certified laboratory for the results to be certified. These analyses have been performed in the field, so they are not certified by ELAP.
Total Dissolved N	08MAR2010	08MAR2010	SAMPNOs 101136, 101140, 101141, 101145-1149: Analyses performed by Kensico Laboratory, Valhalla, NY, ELAP ID Number 10771.
Total Dissolved P	15NOV2010	15NOV2010	SAMPNOs 106272-106278, 106280-106286: Samples were over acidified at preservation which could cause a negative bias in the results.
Total N	08MAR2010	08MAR2010	SAMPNOs 101136-1141, 101145-1147, 101149: Analyses performed by Kensico Laboratory, Valhalla, NY, ELAP ID Number 10771.

Year=2011

Variable	Beginning Date	End Date	Comments
ALL	01JAN2011	31MAY2011	Sample results between 10 and 20 times the limit of quantitation may be associated with a method blank that is greater than one-tenth the sample level.
pH	01JAN2011	31MAY2011	NYS ELAP requires analysis to be performed in a certified laboratory for the results to be certified. These analyses have been performed in the field, so they are not certified by ELAP.
Phosphorus, Total	09/19/11		Sample ID K00017024006 - Updated result manually to include blank channel subtraction.
Phosphorus, Total	10/17/11		Sample ID K00017110006 - Updated result manually to account for blank channel subtraction.
Organic Carbon, Dissolved	03/12/12		Sample ID K00017557006 - IC Spike RPD= 48; IC Spike RPD UCL= 20

123 Main Street
White Plains, NY 10601
914.681.6200

NewYorkPower Authority

August 14, 2012

Anthony J. Fiore, Chief of Staff
Operations
NYC Department of Environmental Protection
59-17 Junction Blvd.
Flushing, NY 11373

Re: Blenheim-Gilboa Pumped Storage Power Project (FERC No. 2685)
Request for Information

Dear Mr. Fiore:

The New York Power Authority is initiating the relicensing process for the Blenheim-Gilboa Pumped Storage Power Project (Project). The current license for the Project expires on April 30, 2019. Accordingly, NYPA must file its Notice of Intent (NOI) to relicense the Project by April 30, 2014 and its application for a new FERC license no later than April 30, 2017. Included with the NOI will be a required Pre-Application Document (PAD).

NYPA is presently preparing the PAD. The PAD serves to provide FERC, resource agencies, and other interested parties with readily available information pertaining to the Project. The PAD is a document that summarizes existing, relevant and reasonably available information on the Project, to help the interested parties to identify issues and information needs regarding the relicensing of the Project and to develop study requests where information gaps may exist regarding the effects of Project operations. Information gathered for the PAD will be used throughout the relicensing process to address issues brought up by stakeholders regarding potential Project effects.

It is important that we document our efforts to obtain information to ensure the PAD is complete. Therefore, this letter serves to request any existing, relevant, and reasonably available information related to the project vicinity that your organization may have. In particular, we are interested in water quality data you have collected for the Schoharie Reservoir and Schoharie Creek below the Gilboa Dam, such as DO and temperature profiles, in addition to any chemical, microbiological, and organic information you may have.

For your convenience we have attached Figure 1 which provides a regional map of the Project's location and Figure 2 which depicts the Project's major features.

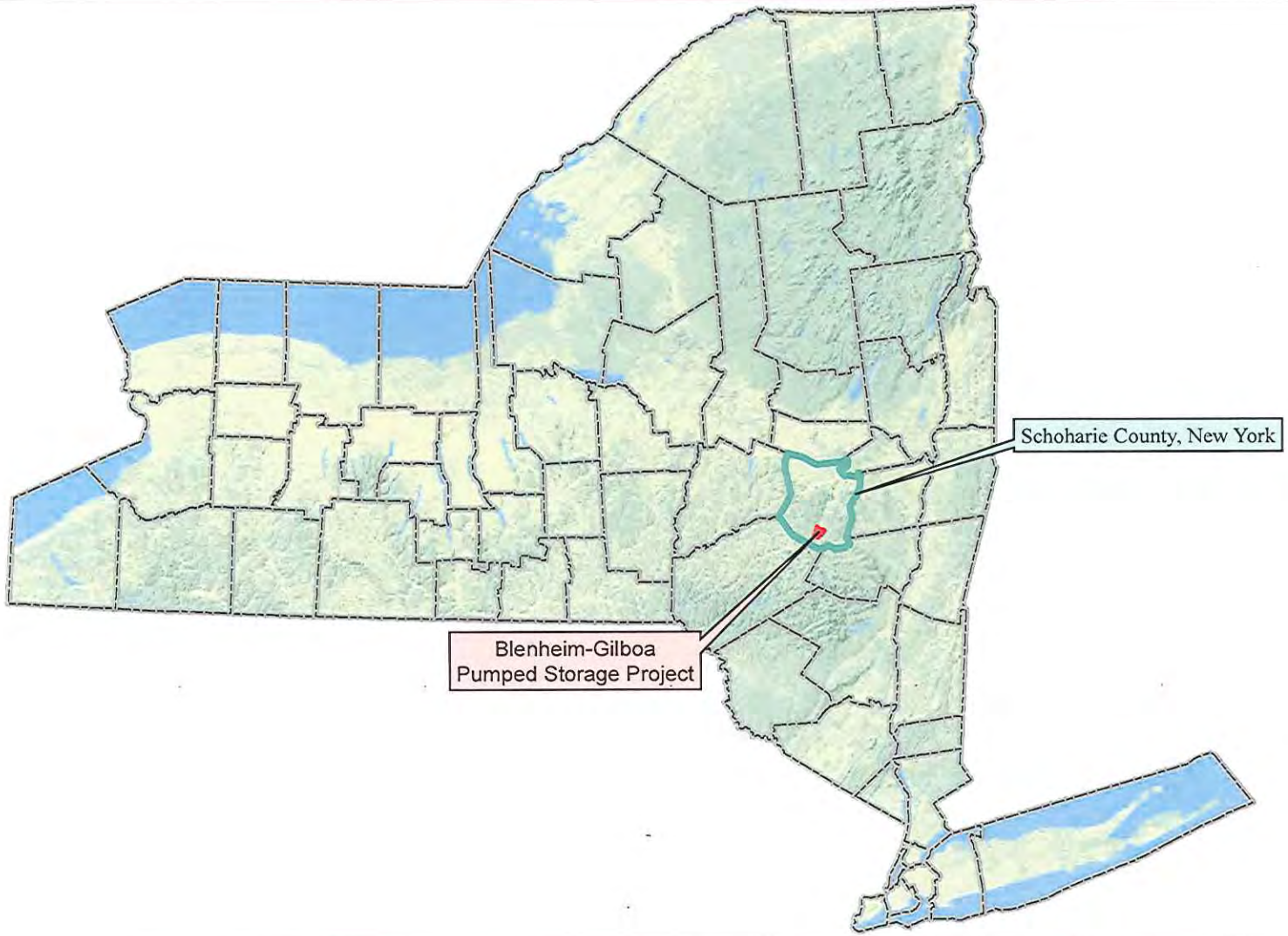
We would appreciate if you would provide such information to us by September 15, 2012, via email, hardcopy, or digitally on CDs or DVDs. My contact information is:

Mark Slade
Licensing Manager
New York Power Authority
123 Main Street
White Plains, NY 10601
914-681-6659 (office)
mark.slade@nypa.gov

We appreciate receiving any information you are able to provide to us. Please feel free to contact me with any questions or comments you may have regarding the relicensing of the BG Project. Thank you for your cooperation.

Sincerely,

Mark E. Slade
Licensing Manager



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

New York Power Authority
Generating more than electricity

Figure 1:
Project Location

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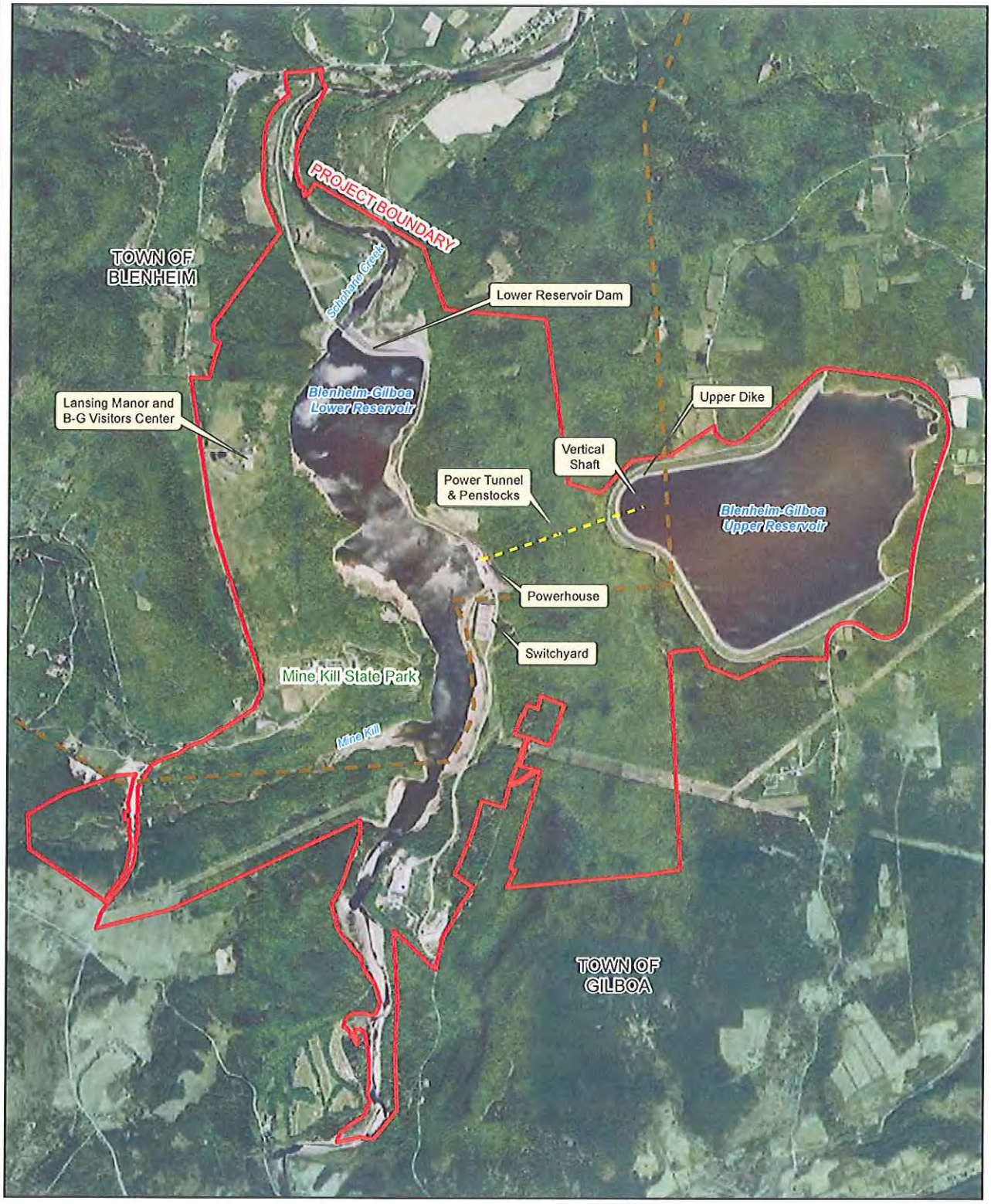

Blenheim-Gilboa Pumped Storage Power Project
(FERC No. 2685)

New York Power Authority
Generating more than electricity

0 0.25 0.5 1 Miles

Figure 2
Project Features

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
3817 Luker Road
Cortland, NY 13045

July 12, 2012

Mark Slade, Licensing Manager
New York Power Authority
123 Main Street
White Plains, NY 10601

RE: Blenheim-Gilboa Pumped Storage Power Project (FERC #2685)
Request for Information

Dear Mr. Slade:

The U.S. Fish and Wildlife Service (Service) has reviewed your correspondence dated June 18, 2012, concerning the upcoming relicensing of the Blenheim-Gilboa Pumped Storage Project located on Schoharie Creek in Schoharie County, New York. We have no specific information regarding fish and wildlife resources within the vicinity of the project. Information regarding endangered and threatened species is identified below.

Threatened and Endangered Species

The following comments are provided as technical assistance pursuant to the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*).

Directions for completing consultation regarding threatened and endangered species can be found on the Service's website[1]. The most recent compilation of federally listed and proposed endangered and threatened species for each county in New York is available for your information on the New York Field Office website. Until the proposed project is complete, we recommend that you check this website every 90 days from the date of this letter to ensure that listed species presence/absence information for the proposed project is current.

The bald eagle (*Haliaeetus leucocephalus*) was removed from the Federal Endangered Species List on August 8, 2007, and is no longer protected under Section 7 of the ESA; however, bald eagles remain on the New York State list as a State listed threatened species. Bald eagles are also protected under the Migratory Bird Treaty Act (16 U.S.C. 703-712; Ch. 128; July 13, 1918; 40 Stat. 755) and the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d). Since bald eagles are present in the project vicinity, the Service recommends that you follow the Bald Eagle Management Guidelines found on the Service's website prior to commencement of work.

For additional information on fish and wildlife resources or State listed species, we suggest you contact the appropriate New York State Department of Environmental Conservation regional office and the New York Natural Heritage Program Information Services.[2]

---

[1] Additional information may be found on the Service's website at: http://nyfo.fws.gov/es/section7.htm
[2] Additional information referred to above may be found on the Service's website in footnote #1.

We look forward to consultation with the New York Power Authority throughout the relicensing process. If you have any questions or desire additional information, please contact Steve Patch at 607-753-9334.

Sincerely,

David A. Stilwell
Field Supervisor

cc: NYSDEC, Albany, NY (M. Woythal)
FWS, Hadley, MA (C. Orvis)

Sarah Woehler Michaud

Subject: FW: Wednesday
Attachments: HWA survey modified map 3-5-12.JPG

-----Original Message-----
From: Lowe, John (SAR) [mailto:John.Lowe@parks.ny.gov]
Sent: Wednesday, July 11, 2012 12:26 PM
To: Alan Haberstock; Geller, Jeffrey
Cc: Steve Knapp; Gerlach, Jeff; Rob Daly
Subject: RE: Wednesday

Hi Guys,
Attached is a map of the Minekill ravine with HWA points identified in red and uninfected trees marked in green. The date on this map is 3/5/12 - it is not complete. We've since found much more HWA in the ravine then what is labeled on this map. The DEC has a permanent HWA survey plot set up near the falls and is looking to put another plot in elsewhere in the park. If you need more information on this, please let me know. We only have another few weeks to survey before the egg sacks will become nearly impossible to find - so we've been told.
Thanks.
John

John Lowe
Park Manager
Minekill and Max V. Shaul State Parks
518-827-8691

-----Original Message-----
From: Alan Haberstock [mailto:Alan.Haberstock@KleinschmidtUSA.com]
Sent: Tuesday, July 10, 2012 5:31 PM
To: Geller, Jeffrey
Cc: Steve Knapp; Gerlach, Jeff; Lowe, John (SAR); Rob Daly
Subject: Re: Wednesday

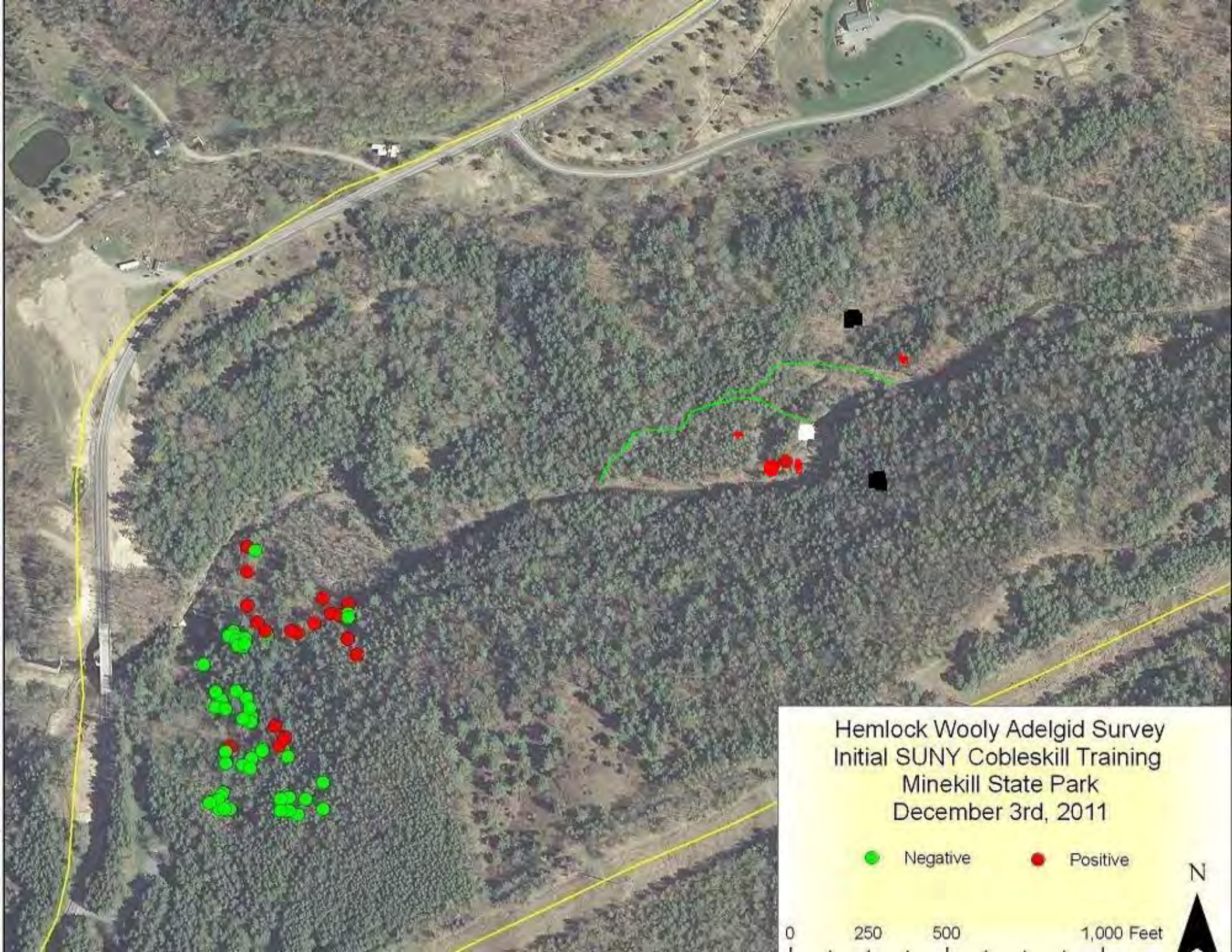
Yes we saw tons of hemlock today. We found infested trees in the park near the boat launch with orange blazes.
At least for now, the hemlock up the Mine Kill tributary (in the ravine) are un-infested.
Rob noticed some interesting tracks and scat south of Mine Kill. It was river otter.
Best,
Alan

Sent from my iPad

On Jul 10, 2012, at 7:52 AM, "Geller, Jeffrey" <Jeffrey.Geller@nypa.gov> wrote:

> Great thanks Alan. John Lowe (Park Manager at Mine Kill) was curious about that side of the project.
>
> Did you notice any wooly adelgid on that stand?
>
> Jeff Geller
> New York Power Authority
> Environment, Health & Safety
> 914-287-3969 office
> 914-522-8598 cell

>
>
> -----Original Message-----
> From: Alan Haberstock [mailto:Alan.Haberstock@KleinschmidtUSA.com]
> Sent: Monday, July 09, 2012 9:57 PM
> To: Geller, Jeffrey; Gerlach, Jeff
> Cc: Steve Knapp
> Subject: Wednesday
>
> Jeff-
> Got your VM. We had a good day and caught up with Rob for dinner.
> He is coming out with us tomorrow.
> Wednesday at Visitor's Center is on. 8 am.
> We mapped a hemlock forest today along the east side of the upper reservoir today.
> Interesting about the wooly adelgid.
> My cell phone does not work around here (us cellular) but Steve's (Verizon) does sometimes.
> Best,
> Alan
>
> Sent from my iPad
>


Hemlock Wooly Adelgid Survey
Initial SUNY Cobleskill Training
Minekill State Park
December 3rd, 2011
Negative
Positive
N
0
250
500
1,000 Feet

123 Main Street
White Plains, NY 10601
914.681.6200

New York Power Authority

June 18, 2012

Mr. David A. Stilwell
U.S. Fish & Wildlife Service
3817 Luker Rd.
Cortland, NY 13045

Re: Blenheim-Gilboa Pumped Storage Power Project (FERC No. 2685)
Request for Information

Dear Mr. Stilwell:

The New York Power Authority (NYPA) appreciated the opportunity to meet with Steve Patch and Carl Schwartz of the U.S. Fish & Wildlife Service on March 1, 2012, to discuss the relicensing of the Blenheim-Gilboa Pumped Storage Power Project (Project). We look forward to working with the U.S. Fish & Wildlife Service during the Federal Energy Regulatory Commission (FERC) relicensing of the Project and appreciate you taking the time to meet with us informally as we prepare for this process.

As we discussed, the current license for the Project expires on April 30, 2019. Accordingly, the application for a FERC license for a new license term must be filed no later than April 30, 2017, and NYPA must file its Notice of Intent (NOI) to relicense the Project by April 30, 2014. Included with the NOI will be a required Pre-Application Document (PAD).

NYPA is presently preparing the PAD. The PAD serves to provide FERC, state and federal resource agencies, and interested parties with readily available information pertaining to the Project. The PAD is a document that summarizes existing, relevant and reasonably available information on the Project, to help the interested parties to identify issues and information needs regarding the relicensing of the Project and to develop study requests where information gaps may exist regarding the effects of Project operations. Information gathered for the PAD will be used throughout the relicensing process to address issues brought up by interested parties regarding potential Project effects.

As we noted in our meeting it is important that we document our efforts to obtain information to ensure the PAD is complete. Therefore this letter serves to request any existing, relevant, and reasonably available information related to the Project that your organization may have concerning the following resource areas:

- Geology and Soils;
- Water; Fish and Aquatics;
- Wildlife and Botanical;
- Wetlands, Riparian and Littoral Habitat;
- Rare, Threatened & Endangered Species;
- Recreation and Land Use;
- Aesthetics;
- Cultural;
- Socio-economic; and
- Tribal resources.

For your convenience, we have attached Figure 1 which provides a regional map of the Project's location and Figure 2 which depicts the Project's major features.

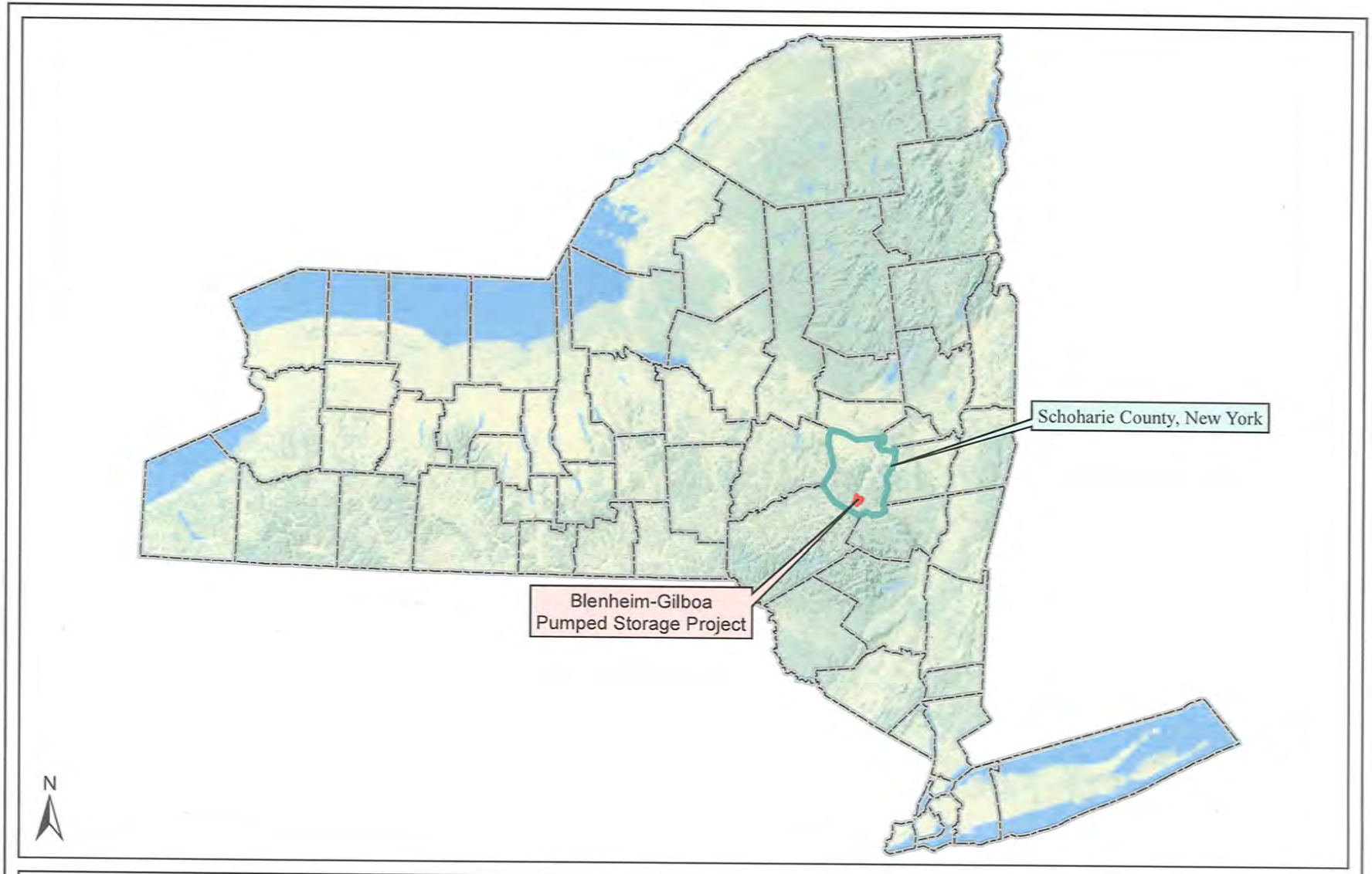
In addition, please let us know of any information needs you are presently aware of pertaining to any identified resource areas, such as water quality, wildlife habitat, endangered species, or cultural resources that may be affected by Project operations. We would appreciate if you would provide such information to us by July 20, 2012, via email, hardcopy, or digitally on CDs or DVDs. My contact information is:

Mark Slade
Licensing Manager
New York Power Authority
123 Main Street
White Plains, NY 10601
914-681-6659 (office)
mark.slade@nypa.gov

We appreciate receiving any information you are able to provide to us or any questions or comments you may have regarding the relicensing of the Project. Thank you for your cooperation and we look forward to working with you on the relicensing.

Sincerely,

Mark E. Slade
Licensing Manager



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

New York Power Authority
Generating more than electricity

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Figure 1:
Project Location

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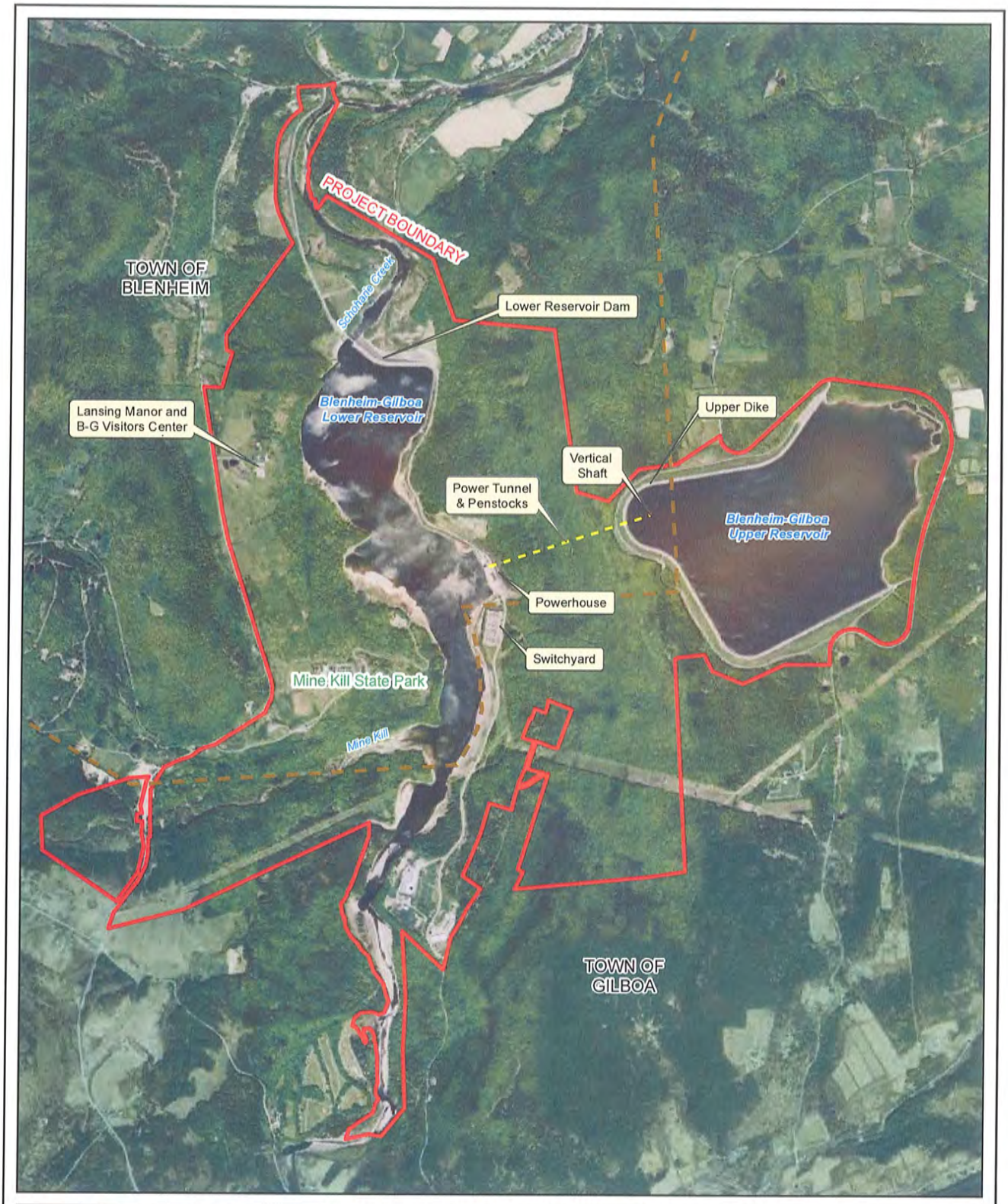

Blenheim-Gilboa Pumped Storage Power Project
(FERC No. 2685)

New York Power Authority
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0 0.25 0.5 1 Miles

Figure 2
Project Features

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123 Main Street
White Plains, NY 10601
914.681.6200

NewYorkPower Authority

June 18, 2012

William Clarke, Regional Permit Administrator
NYS Department of Environmental Conservation, Region 4
1130 North Westcott Road
Schenectady, New York 12306

Re: Blenheim-Gilboa Pumped Storage Power Project (FERC No. 2685)
Request for Information

Dear Mr. Clarke:

Thank you for meeting with the New York Power Authority (NYPA) on March 5, 2012 to discuss the relicensing for the Blenheim-Gilboa Pumped Storage Power Project (Project). We look forward to working with NYSDEC during the Federal Energy Regulatory Commission (FERC) relicensing for the Project and appreciate you and the other NYSDEC team members taking the time to meet with us informally as we prepare for this process.

As we discussed, the current license for the Project expires on April 30, 2019. Accordingly, the application for a FERC license for a new license term must be filed no later than April 30, 2017, and NYPA must file its Notice of Intent (NOI) to relicense the Project by April 30, 2014. Included with the NOI will be a required Pre-Application Document (PAD).

NYPA is presently preparing the PAD. The PAD serves to provide FERC, agencies, and interested parties with readily available information pertaining to the Project. The PAD is a document that summarizes existing, relevant and reasonably available information on the Project, to help the interested parties to identify issues and information needs regarding the relicensing of the Project and to develop study requests where information gaps may exist regarding the effects of Project operations. Information gathered for the PAD will be used throughout the relicensing process to address issues brought up by stakeholders regarding potential Project effects.

As we noted in our meeting it is important that we document our efforts to obtain information to ensure the PAD is complete. Therefore this letter serves to request any existing, relevant, and reasonably available information related to the Project that your organization may have concerning the following resource areas:

- Geology and Soils;
- Water; Fish and Aquatics;
- Wildlife and Botanical;

- Wetlands, Riparian and Littoral Habitat;
- Rare, Threatened & Endangered Species;
- Recreation and Land Use;
- Aesthetics;
- Cultural;
- Socio-economic; and
- Tribal resources.

For your convenience we have attached Figure 1 which provides a regional map of the Project's location and Figure 2 which depicts the Project's major features.

In addition, please let us know of any information needs you are presently aware of pertaining to any identified resource areas, such as water quality, wildlife habitat, endangered species, or cultural resources that may be affected by Project operations. We would appreciate if you would provide such information to us by July 20, 2012, via email, hardcopy, or digitally on CDs or DVDs. My contact information is:

Mark Slade
Licensing Manager
New York Power Authority
123 Main Street
White Plains, NY 10601
914-681-6659 (office)
mark.slade@nypa.gov

Attached is a list of information we currently have that you do not need to provide us. The references are organized by resource area, but some reports may cover more than one area.

We appreciate receiving any information you are able to provide to us or any questions or comments you may have regarding the relicensing of the Project. Thank you for your cooperation and we look forward to working with you on the relicensing.

Sincerely,

Mark E. Slade
Licensing Manager

Current References List – March 29, 2012
Blenheim-Gilboa Pumped Storage Power Project (FERC No. 2685)

New York State Department of Environmental Conservation

Fish and Aquatic Resources

New York State Department of Environmental Conservation (NYSDEC). 1985. Distribution and Relative Abundance of Fish in the Lower Mohawk River. Norman D. McBride, NYSDEC. January 1, 1985.

New York State Department of Environmental Conservation (NYSDEC). 2009. BG Electrofishing and Netting Collections 2007-2009.

New York State Department of Environmental Conservation (NYSDEC). 2009. 2008 Lower Schoharie Creek Angler Diary Study. Norman D. McBride, NYSDEC. April 19, 2009.

Rare, Threatened, and Endangered Resources

New York State Department of Environmental Conservation (NYSDEC). 2011. Natural Heritage Program Report. Jean Pietrusiak, NYSDEC. November 16, 2011.

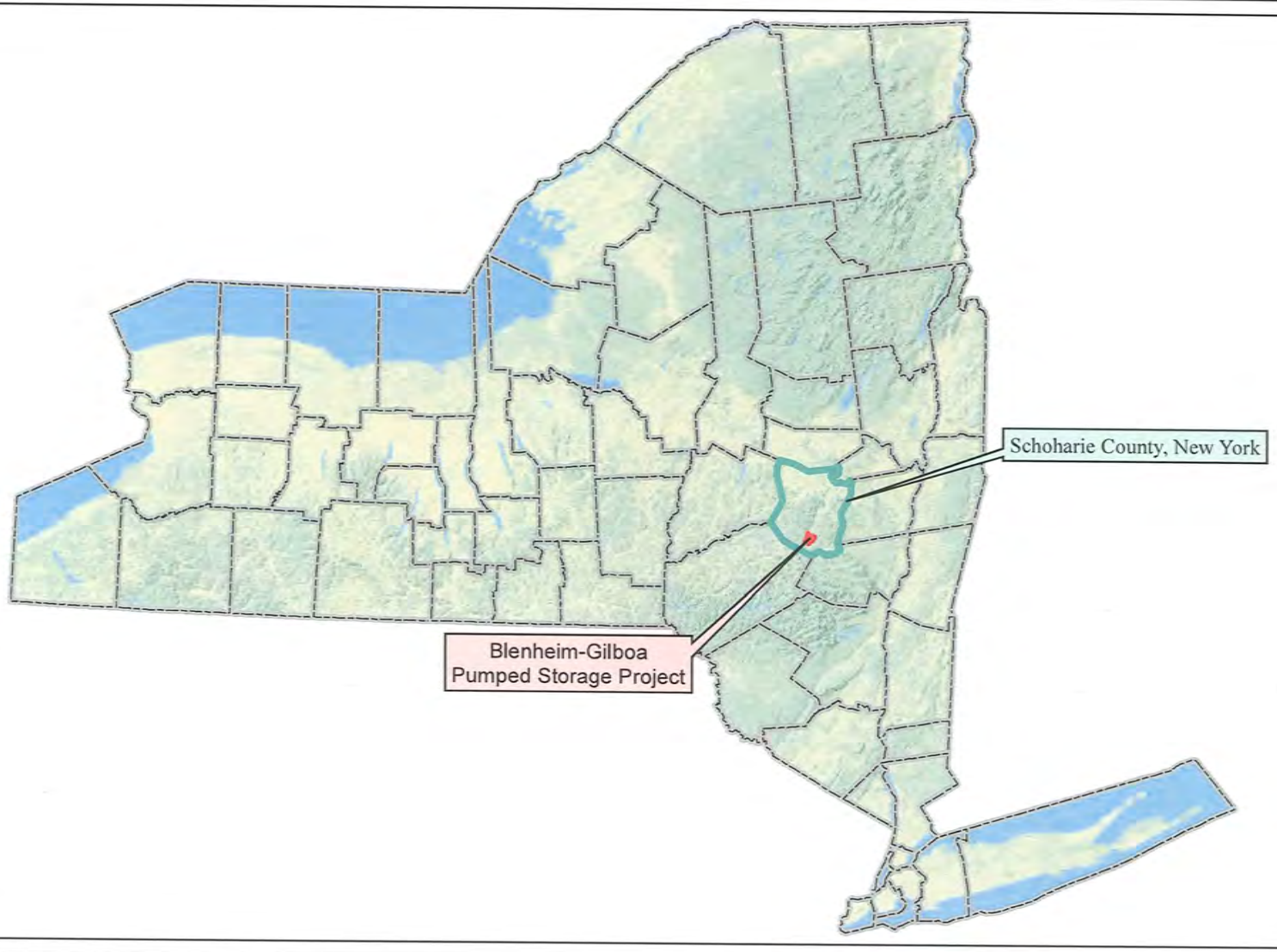
Water Resources

New York State Department of Environmental Conservation (NYSDEC). 2002. Waterbody Inventory for the Schoharie Creek Watershed. August 21, 2002.

New York State Department of Environmental Conservation (NYSDEC). 2010. Rotating Integrated Basin Studies (RIBS), Mohawk River Drainage Basin, Sampling Years 2005-2006. January 1, 2010.

New York State Department of Environmental Conservation (NYSDEC). 2010. Mohawk River Basin Waterbody Inventory and Priority Waterbodies List. New York Bureau of Watershed Assessment and Management. July 1, 2010.

New York State Department of Environmental Conservation (NYSDEC). 2012. Summary of Water Chemistry and DO/Temperature Profiles Collected in 2001 and 2010 in BG Reservoirs. Scott Kishbaugh, NYSDEC. March 19, 2012.



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

New York Power Authority
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Figure 1:
Project Location

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

New York Power Authority
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0 0.25 0.5 1 Miles

Figure 2
Project Features

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From:	Herter, Nancy (PEB)
To:	"Alkiewicz, Edward"
Cc:	Slade, Mark; Panepinto, Robert; RWill@trcsolutions.com; Sarah Woehler Michaud; Chase, Frederick (CliftonPark,NY-US); Markunas, Kenneth (PEB)
Subject:	RE: Blenheim-Gilboa Project Relicensing
Date:	Wednesday, May 09, 2012 11:01:11 AM

Ed,

Sounds good. I will make arrangements for one of our NR reviewers to assist Ellen with our buildings/structures files and I will assist Rick. Nancy

---

From: Alkiewicz, Edward [mailto:Edward.Alkiewicz@nypa.gov]
Sent: Tuesday, May 08, 2012 4:27 PM
To: Herter, Nancy (PEB)
Cc: Slade, Mark; Panepinto, Robert; RWill@trcsolutions.com; Sarah Woehler Michaud (Sarah.Woehler@kleinschmidtusa.com); Chase, Frederick (CliftonPark,NY-US); Markunas, Kenneth (PEB)
Subject: RE: Blenheim-Gilboa Project Relicensing

Nancy,

We have worked out our plans and propose to meet at your offices on Tuesday, May 22nd at 10:00 AM. There will probably be six of us attending and we will be doing a presentation about the project. Rick and Ellen Jenkins will be staying on to review your archive material.

Ed Alkiewicz

From: Herter, Nancy (PEB) [mailto:Nancy.Herter@parks.ny.gov]
Sent: Wednesday, May 02, 2012 9:43 AM
To: Alkiewicz, Edward
Cc: Slade, Mark; Panepinto, Robert; RWill@trcsolutions.com; Sarah Woehler Michaud (Sarah.Woehler@kleinschmidtusa.com); Chase, Frederick (CliftonPark,NY-US); Markunas, Kenneth (PEB)
Subject: RE: Blenheim-Gilboa Project Relicensing

Hi Ed,

Either day works for us. Ken Markunas, our buildings/structures technical reviewer, will be joining us.

I'd be happy to help Rick navigate our archives.

Nancy

From: Alkiewicz, Edward [mailto:Edward.Alkiewicz@nypa.gov]
Sent: Tuesday, May 01, 2012 1:24 PM
To: Herter, Nancy (PEB)
Cc: Slade, Mark; Panepinto, Robert; RWill@trcsolutions.com; Sarah Woehler Michaud (Sarah.Woehler@kleinschmidtusa.com); Chase, Frederick (CliftonPark,NY-US)
Subject: Blenheim-Gilboa Project Relicensing

Hi Nancy,

When we talked at the NPP5 meeting I had mentioned our desire to come in to your

office to do an informal information session on NYPA's plans for relicensing of the Blenheim-Gilboa Pumped Storage Project in the Catskills. We have selected two possible meeting days (Tuesday, May 22nd or Wednesday May 23rd). Do either one of those work for you? Rick Will and Rob Panepinto along with Mark Slade, me and a couple of other consultants will be in attendance. You said you would poll appropriate SHPO staff and invite them to the meeting. We have a general presentation describing the details of the project, licensing schedule and will focus on cultural resources and information we are seeking for the preliminary application phase. Rick may also stay on and possibly research your archives for relevant project information. Looking forward to hearing from you.

Ed Alkiewicz
Director of Relicensing and Implementation
New York Power Authority
123 Main St.
White Plains, NY 10601
Tel: 914-287-3247
Blackberry: 914-582-2922
Fax: 914-681-6613
edward.alkiewicz@nypa.gov

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Fish, Wildlife & Marine Resources
625 Broadway, 5th Floor, Albany, New York 12233-4757
Phone: (518) 402-8935 • **Fax:** (518) 402-8925
Website: www.dec.ny.gov

Joe Martens
Commissioner

November 16, 2011

Jeff Geller
New York Power Authority
123 Main Street
White Plains, NY 10601-3170

Dear Mr. Geller:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to an Environmental Assessment for the proposed Relicensing of the Blenheim-Gilboa Storage Project with FERC - site as indicated on the map you provided, located on the Schoharie Creek, Towns of Blenheim and Gilboa, Schoharie County.

Enclosed is a report of rare or state-listed animals and plants, significant natural communities, and other significant habitats, which our databases indicate occur, or may occur, on your site or in the immediate vicinity of your site. For most sites, comprehensive field surveys have not been conducted; the enclosed report only includes records from our databases. We cannot provide a definitive statement as to the presence or absence of all rare or state-listed species or significant natural communities. This information should not be substituted for on-site surveys that may be required for environmental impact assessment.

The enclosed report may be included in documents that will be available to the public. However, any enclosed maps displaying locations of rare species are considered sensitive information, and are intended only for the internal use of the recipient; they should not be included in any document that will be made available to the public, without permission from the New York Natural Heritage Program.

The presence of the plants and animals identified in the enclosed report may result in this project requiring additional review or permit conditions. For further guidance, and for information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the appropriate NYS DEC Regional Office, Division of Environmental Permits, as listed at www.dec.ny.gov/about/39381.ht ml.

Our databases are continually growing as records are added and updated. If this proposed project is still under development one year from now, we recommend that you contact us again so that we may update this response with the most current information.

Sincerely,

Jean Pietrusiak

Jean Pietrusiak, Information Services
NYS Department Environmental Conservation

Enc.
cc: Region 4

1109

upper portion of proj.

Natural Heritage Report on Rare Species and Ecological Communities

NY Natural Heritage Program, NYS DEC, 625 Broadway, 5th Floor,
Albany, NY 12233-4757
(518) 402-8935

~The information in this report includes only records entered into the NY Natural Heritage databases as of the date of the report. This report is not a definitive statement on the presence or absence of all rare species or significant natural communities at or in the vicinity of this site.
~Refer to the User's Guide for explanations of codes, ranks and fields.
~Location maps for certain species and communities may not be provided 1) if the species is vulnerable to disturbance, 2) if the location and/or extent is not precisely known, 3) if the location and/or extent is too large to display, and/or 4) if the animal is listed as Endangered or Threatened by New York State.

Natural Heritage Report on Rare Species and Ecological Communities

BIRDS

Haliaeetus leucocephalus

					Office Use
Bald Eagle	NY Legal Status:	Threatened	NYS Rank:	S2S3B,S2N - Imperiled	3223
Breeding	Federal Listing:		Global Rank:	G5 - Secure	ESU
	Last Report:	**	EO Rank:	**	
	County:	Schoharie			
	Town:	Blenheim			
	Location:	At, or in the vicinity of, the project site.			
	General Quality and Habitat:	**For information on the population at this location and management considerations, please contact the NYS DEC Regional Wildlife Manager for the Region where the project is located.			

Haliaeetus leucocephalus

					Office Use
Bald Eagle	NY Legal Status:	Threatened	NYS Rank:	S2S3B,S2N - Imperiled	3223
Breeding	Federal Listing:		Global Rank:	G5 - Secure	ESU
	Last Report:	**	EO Rank:	**	
	County:	Schoharie			
	Town:	Blenheim			
	Location:	At, or in the vicinity of, the project site.			
	General Quality and Habitat:	**For information on the population at this location and management considerations, please contact the NYS DEC Regional Wildlife Manager for the Region where the project is located.			

Haliaeetus leucocephalus

					Office Use
Bald Eagle	NY Legal Status:	Threatened	NYS Rank:	S2S3B,S2N - Imperiled	3223
Breeding	Federal Listing:		Global Rank:	G5 - Secure	ESU
	Last Report:	**	EO Rank:	**	
	County:	Schoharie			
	Town:	Blenheim			
	Location:	At, or in the vicinity of, the project site.			
	General Quality and Habitat:	**For information on the population at this location and management considerations, please contact the NYS DEC Regional Wildlife Manager for the Region where the project is located.			

Haliaeetus leucocephalus

upper portion of proj.

Office Use
3223
ESU

Bald Eagle
Breeding

NY Legal Status: Threatened
Federal Listing:
Last Report: **
County: Schoharie
Town: Blenheim
Location: At, or in the vicinity of, the project site.
General Quality and Habitat: **For information on the population at this location and management considerations, please contact the NYS DEC Regional Wildlife Manager for the Region where the project is located.

NYS Rank: S2S3B,S2N - Imperiled
Global Rank: G5 - Secure
EO Rank: **

4 Records Processed

More detailed information about many of the rare and listed animals and plants in New York, including biology, identification, habitat, conservation, and management, are available online in Natural Heritage's Conservation Guides at www.acris.nynhp.org, from NatureServe Explorer at http://www.natureserve.org/explorer, from NYSDEC at http://www.dec.ny.gov/animals/7494.html (for animals), and from USDA's Plants Database at http://plants.usda.gov/index.html (for plants).

More detailed information about many of the natural community types in New York, including identification, dominant and characteristic vegetation, distribution, conservation, and management, is available online in Natural Heritage's Conservation Guides at www.acris.nynhp.org. For descriptions of all community types, go to http://www.dec.ny.gov/animals/29384.html and click on Draft Ecological Communities of New York State.

Lower portion proj.

Natural Heritage Report on Rare Species and Ecological Communities

NY Natural Heritage Program, NYS DEC, 625 Broadway, 5th Floor,
Albany, NY 12233-4757
(518) 402-8935

~The information in this report includes only records entered into the NY Natural Heritage databases as of the date of the report. This report is not a definitive statement on the presence or absence of all rare species or significant natural communities at or in the vicinity of this site.
~Refer to the User's Guide for explanations of codes, ranks and fields.
~Location maps for certain species and communities may not be provided 1) if the species is vulnerable to disturbance, 2) if the location and/or extent is not precisely known, 3) if the location and/or extent is too large to display, and/or 4) if the animal is listed as Endangered or Threatened by New York State.

Natural Heritage Report on Rare Species and Ecological Communities

BIRDS

Hallaeetus leucocephalus

Office Use 3223 ESU

Bald Eagle Breeding

NY Legal Status: Threatened
Federal Listing:
Last Report: **
County: Schoharie
Town: Blenheim
Location: At, or in the vicinity of, the project site.
General Quality and Habitat: **For information on the population at this location and management considerations, please contact the NYS DEC Regional Wildlife Manager for the Region where the project is located.

NYS Rank: S2S3B,S2N - Imperiled
Global Rank: G5 - Secure
EO Rank: **

Haliaeetus leucocephalus

Office Use 13481 ESU

Bald Eagle Breeding

NY Legal Status: Threatened
Federal Listing:
Last Report: **
County: Schoharie
Town: Gilboa
Location: At, or in the vicinity of, the project site.
General Quality and Habitat: **For information on the population at this location and management considerations, please contact the NYS DEC Regional Wildlife Manager for the Region where the project is located.

NYS Rank: S2S3B,S2N - Imperiled
Global Rank: G5 - Secure
EO Rank: **

REPTILES

Crotalus horridus

Office Use 7599 ESU

Timber Rattlesnake

NY Legal Status: Threatened
Federal Listing:
Last Report: **
County: Schoharie
Town: Gilboa
Location: At, or in the vicinity of, the project site.
General Quality and Habitat: **For information on the population at this location and management considerations, please contact the NYS DEC Regional Wildlife Manager for the Region where the project is located.

NYS Rank: S3 - Vulnerable
Global Rank: G4 - Apparently secure
EO Rank: **

3 Records Processed

More detailed information about many of the rare and listed animals and plants in New York, including biology, identification, habitat, conservation, and management, are available online in Natural Heritage's Conservation Guides at www.acris.nynhp.org, from NatureServe Explorer at http://www.natureserve.org/explorer, from NYSDEC at http://www.dec.ny.gov/animals/7494.html (for animals), and from USDA's Plants Database at http://plants.usda.gov/index.html (for plants).

More detailed information about many of the natural community types in New York, including identification, dominant and characteristic vegetation, distribution, conservation, and management, is available online in Natural Heritage's Conservation Guides at www.acris.nynhp.org. For descriptions of all community types, go to http://www.dec.ny.gov/animals/29384.html and click on Draft Ecological Communities of New York State.

Lower portion proj.

Natural Heritage Report on Rare Species

NY Natural Heritage Program, NYS DEC, 625 Broadway, 5th Floor,
Albany, NY 12233-4757
(518) 402-8935

~The information in this report includes only records entered into the NY Natural Heritage databases as of the date of the report. This report is not a definitive statement on the presence or absence of all rare species or significant natural communities at or in the vicinity of this site.
~Refer to the User's Guide for explanations of codes, ranks and fields.
~We do not provide maps for species most vulnerable to disturbance.

Natural Heritage Report on Rare Species and Ecological Communities

REPTILES

				Office Use
Crotalus horridus **Timber Rattlesnake**	**NY Legal Status:** Threatened	**NYS Rank:**	S3 - Vulnerable	7599
	Federal Listing:	**Global Rank:**	G4 - Apparently secure	ESU
	County: Schoharie			
	Town: Gilboa			
	Location: Documented within 1.5 miles of project site. Animals can move 1.5 miles or more from documented locations. For information on the population at this location and management considerations, please contact the NYS DEC Regional Wildlife Manager for the Region where the project is located.			

1 Records Processed

More detailed information about many of the rare and listed animals in New York, including biology, identification, habitat, conservation, and management, are available online in Natural Heritage's Conservation Guides at www.acris.nynhp.org, from NatureServe Explorer at http://www.natureserve.org/explorer, and from NYSDEC at http://www.dec.ny.gov/animals/7494.html.

123 Main Street
White Plains, NY 10601-3170
914.681.6200

New York Power Authority
Generating more than electricity

November 1, 2011

Ms. Jean Pietrusiak
NYSDEC-DFWMR
New York Natural Heritage Program
625 Broadway, 5th Floor
Albany, New York 12233-4757

Re: Blenheim-Gilboa Pumped Storage Project – Rare Species Data Request

Dear Ms. Pietrusiak:

The New York Power Authority is in the early planning stages of relicensing the Blenheim-Gilboa Pumped Storage Project (Project) with the Federal Energy Regulatory Commission (FERC). We are in the process of gathering relevant background data to be used during the licensing process and request a search of your database to determine if there are any State or Federally listed threatened, endangered or special concern species or critical habitats within our FERC Project boundary. The Project boundary is located in the Towns of Blenheim and Gilboa on the Schoharie Creek in Schoharie County, New York (see attached location map and GPS coordinates).

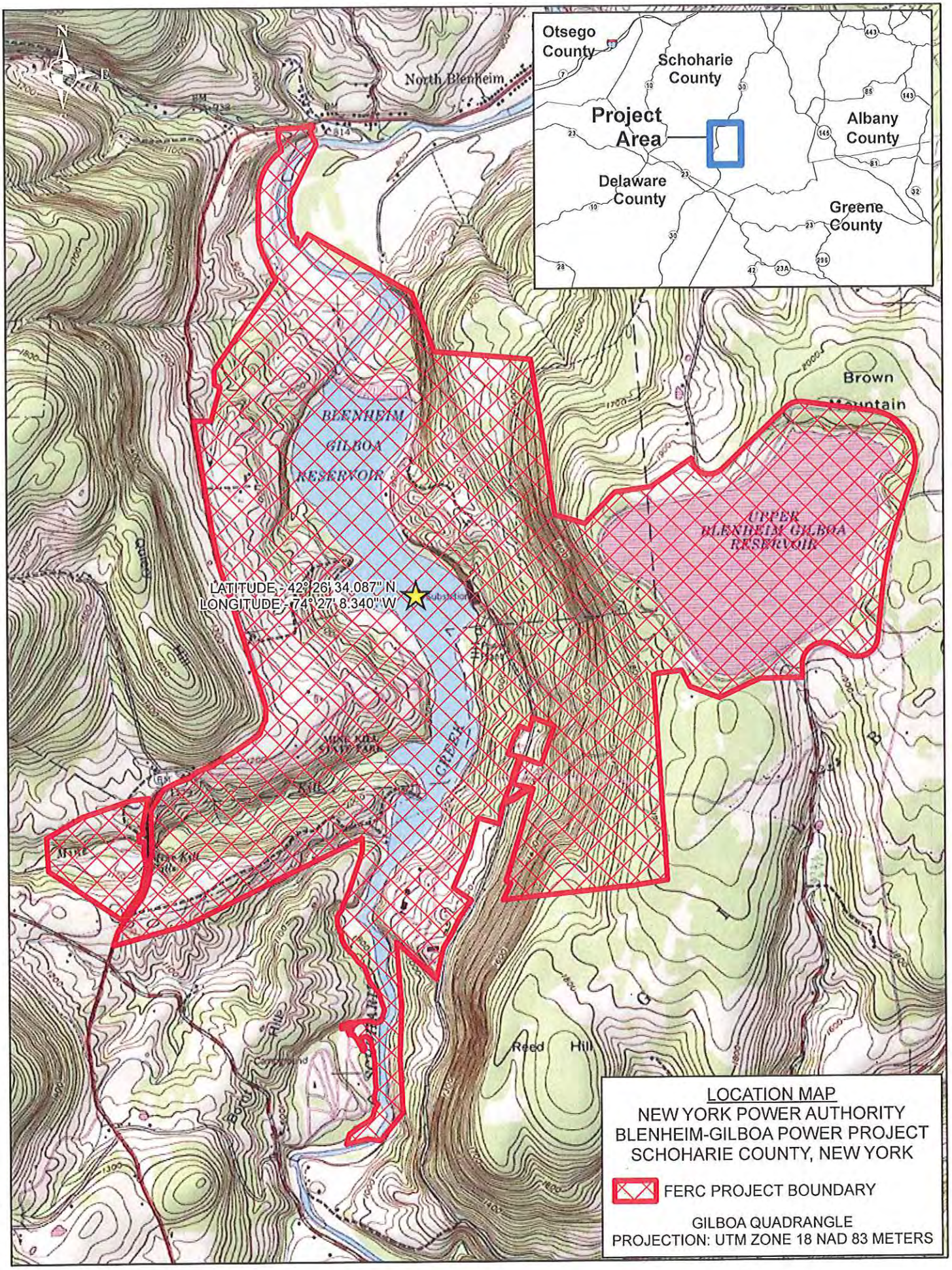
We currently have a sharing agreement with Natural Heritage Program (NHP) for the threatened and endangered species data along our ROWs and would like, if possible, to receive the NHP data in the form of GIS shapefiles. Please send electronic data to the email address provided below.

If you have any questions please feel free to contact me at 914-287-3969 or email at Jeffrey.Geller@nypa.gov.

Sincerely,

Jeff Geller
Environmental Scientist

cc: Mark Slade
Jeff Gerlach


Otsego County
Schoharie County
Project Area
Albany County
Delaware County
Greene County
North Blenheim
BLENHEIM GILBOA RESERVOIR
UPPER BLENHEIM GILBOA RESERVOIR
Brown Mountain
LATITUDE - 42° 26' 34.087" N
LONGITUDE - 74° 27' 8.340" W
Reed Hill
LOCATION MAP
NEW YORK POWER AUTHORITY
BLENHEIM-GILBOA POWER PROJECT
SCHOHARIE COUNTY, NEW YORK
FERC PROJECT BOUNDARY
GILBOA QUADRANGLE
PROJECTION: UTM ZONE 18 NAD 83 METERS

APPENDIX B - PRE-APPLICATION DOCUMENT CONTENT CROSS REFERENCE TABLE

Pre-Application Document Content Cross Reference Table

PAD Content Requirement	18 CFR § 5.6	PAD Section
Process Plan and Schedule	(d)(1)	2
Project Location, Facilities and Operations	(d)(2)	3
Description of Existing Environmental and Resource Impacts	(d)(3)	4
General Requirements	(d)(3)(i)	4
River Basin Description	(d)(3)(xiii)	4.1
Geology and Soils	(d)(3)(ii)	4.2
Water Resources	(d)(3)(iii)	4.3
Fish and Aquatic Resources	(d)(3)(iv)	4.4
Wildlife and Botanical Resources	(d)(3)(v)	4.5
Wetlands, Riparian and Littoral Habitat	(d)(3)(vi)	4.6
Rare, Threatened, and Endangered Species	(d)(3)(vii)	4.7
Recreation and Land Use	(d)(3)(viii)	4.8
Aesthetic Resources	(d)(3)(ix)	4.9
Cultural Resources	(d)(3)(x)	4.10
Socio-Economic Resources	(d)(3)(xi)	4.11
Tribal Resources	(d)(3)(xii)	4.12
Preliminary Issues and Studies	(d)(4)(i) and (ii)	5.1 and 5.2
List of References	(c)(2)	6
Relevant Comprehensive Waterway Management and Resource Management Plans	(d)(4)(iii) and (iv)	5.3 and 5.4
Summary of Contacts	(d)(5)	Appendix A

APPENDIX C - CURRENT LICENSE AND AMENDMENTS

License Articles for NYPA's Blenheim-Gilboa Pumped Storage Project
FERC Project No. 2685
Adopted in June 6, 1969 License Order, as modified in subsequent amendments

Ordering Paragraph (C): This license is subject to the terms and conditions set forth in Form L-11 (Revised November 1, 1968) entitled "Terms and Conditions of License for Unconstructed Major Project Affecting the Interests of Interstate or Foreign Commerce," which terms and conditions designated as Articles 1 through 25 except Articles 6, 7, and 8, thereof, are attached hereto and made a part hereof and subject to the following special conditions set forth herein as additional articles.

FORM L-11
(REVISED NOVEMBER 1, 1968)
TERMS AND CONDITIONS OF LICENSE FOR UNCONSTRUCTED MAJOR PROJECT
AFFECTING THE INTERESTS OF INTERSTATE OR FOREIGN COMMERCE

Article 1. The entire project, as described in the order of the Commission, shall be subject to all the provisions, terms, and conditions of the license.

Article 2. No substantial change shall be made in the maps, plans, specifications, and statements described and designated as exhibits and approved by the Commission in its order as a part of the license until such change shall have been approved by the Commission: *Provided, however*: That if the Licensee or the Commission deems it necessary or desirable that said approved exhibits, or any of them, be changed, there shall be submitted to the Commission for approval amended, supplemental, or additional exhibit or exhibits covering the proposed changes which, upon approval by the Commission, shall become a part of the license and shall supersede, in whole or in part, such exhibit or exhibits theretofore made a part of the license as may be specified by the Commission.

Article 3. Said project works shall be constructed in substantial conformity with the approved exhibits referred to in Article 2 herein or as changed in accordance with the provisions of said article. Except when emergency shall require for the protection of navigation, life, health, or property, no substantial alteration or addition not in conformity with the approved plans shall be made to any dam or other project works under the license without the prior approval of the Commission; and any emergency alteration or addition so made shall thereafter be subject to such modification and change as the Commission may direct. Minor changes in the project works or divergence from such approved exhibits may be made if such changes will not result in decrease in efficiency, in material increase in cost, or in impairment of the general scheme of development; but any of such minor changes made without the prior approval of the Commission, which in its judgment have produced or will produce any of such results, shall be subject to such alteration as the Commission may direct. Upon the completion of the project, or at such other time as the Commission may direct, the Licensee shall submit to the Commission for approval revised maps, plans, specifications, and statements insofar as necessary to show any divergence from or variations in the project area and project boundary as finally located or in the project works as actually constructed when compared with the area and boundary shown and the works described in the license or in the maps, plans, specifications, and statements approved by the Commission, together with a statement in writing setting forth the reasons which in the opinion of the Licensee necessitated or justified variations in or divergence from the approved maps, plans, specifications, and statements. Such revised maps, plans, specifications, and statements shall, if and when approved by the Commission, be made a part of the license under the provisions of Article 2 hereof.

Article 4. The construction, operation, and maintenance of the project and any work incident to additions or alterations shall be subject to the inspection and supervision of the Regional Engineer, Federal Power Commission, in the region wherein the project is located, or of such other officer or agent as the Commission may designate, who shall be the authorized representative of the Commission for such purposes. The Licensee shall cooperate fully with said representative and shall furnish him a detailed program of inspection by the Licensee that will provide for an adequate and qualified inspection force for construction of the project. Construction of the project works or any feature thereof shall not be initiated until the program of inspection for the project works or any such feature thereof has been approved by said representative. The Licensee shall also furnish to said representative such further information as he may require concerning the construction, operation, and maintenance of the project, and of any alteration thereof, and shall notify him of the date upon which work will begin, as far in advance thereof as said representative may reasonably specify, and shall notify him promptly in writing of any suspension of work for a period of more than one week, and of its resumption and completion. The Licensee shall allow him and other officers or employees of the United States, showing proper credentials, free and unrestricted access to, through, and across the project lands and project works in the performance of their official duties. The Licensee shall comply with such rules and regulations of general or special applicability as the Commission may from time to time prescribe for the protection of life, health, or property.

Article 5. The Licensee within two years from date of issuance of the license shall acquire title in fee or the right to use in perpetuity all lands, other than lands of the United States, necessary or appropriate for the construction, maintenance and operation of the project. The Licensee, its successors and assigns shall, during the period of the license, retain the possession of all project property covered by the license as issued or as later amended, including the project area, the project works, and all franchises, easements, water rights, and rights of occupancy and use; and none of such properties shall be voluntarily sold, leased, transferred, abandoned, or otherwise disposed of without the prior written approval of the Commission, except that the Licensee may lease or otherwise dispose of interests in project lands or property without specific written approval of the Commission pursuant to the then current regulations of the Commission. The provisions of this article are not intended to prevent the abandonment or the retirement from service of structures, equipment, or other project works in connection with replacements thereof when they become obsolete, inadequate, or inefficient for further service due to wear and tear; and mortgage or trust deed or judicial sales made thereunder, or tax sales, shall not be deemed voluntary transfers within the meaning of this article.

[License did not incorporate Standard Articles 6, 7, and 8]

Article 9. For the purpose of determining the stage and flow of the stream or streams from which water is diverted for the operation of the project works, the amount of water held in and withdrawn from storage, and the effective head on the turbines, the Licensee shall install and thereafter maintain such gages and stream-gaging stations as the Commission may deem necessary and best adapted to the requirements; and shall provide for the required readings of such gages and for the adequate rating of such stations. The Licensee shall also install and maintain standard meters adequate for the determination of the amount of electric energy generated by said project works. The number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, shall at all times be satisfactory to the Commission and may be altered from time to time if necessary to secure adequate determinations, but such alteration shall not be made except with the approval of the Commission or upon the specific direction of the Commission. The installation of gages, the ratings of said stream or streams, and the determination of the flow thereof, shall be under the supervision of, or in cooperation with, the District Engineer of the United States Geological Survey having charge of stream-gaging operations in the region of said project, and the Licensee shall advance to the United States Geological Survey the amount of funds estimated to be necessary for such supervision or cooperation for such periods as may be mutually

agreed upon. The Licensee shall keep accurate and sufficient record of the foregoing determinations to the satisfaction of the Commission, and shall make return of such records annually at such time and in such form as the Commission may prescribe.

Article 10. The Licensee shall install additional capacity or make other changes in the project as directed by the Commission, to the extent that it is economically sound and in the public interest to do so, after notice and opportunity for hearing.

Article 11. The Licensee shall, after notice and opportunity for hearing, coordinate the operation of the project, electrically and hydraulically, with such other projects or power systems and in such manner as the Commission may direct in the interest of power and other beneficial public uses of water resources, and on such conditions concerning the equitable sharing of benefits by the Licensee as the Commission may order.

Article 12. Whenever the Licensee is directly benefited by the construction work of another licensee, a permittee, or of the United States of a storage reservoir or other headwater improvement, the Licensee shall reimburse the owner of the headwater improvement for such part of the annual charges for interest, maintenance, and depreciation thereon as the Commission shall determine to be equitable, and shall pay to the United States the cost of making such determination as fixed by the Commission. For benefits provided by a storage reservoir or other headwater improvement of the United States the Licensee shall pay to the Commission the amounts for which it is billed from time to time for such headwater benefits and for the costs of making the determinations pursuant to the then current Commission Regulations under the Federal Power Act within 60 days from the date of rendition of a bill therefor and, upon failure to do so, shall thereafter be subject to the payment of the penalties specified in the then current Regulations. The Licensee shall have the right to pay such amounts under protest within the 60-day period and to reconsideration of the determination of the amounts billed or a hearing as provided by the then current Regulations under the Act.

Article 13. The United States specifically retains and safeguards the right to use water in such amount, to be determined by the Secretary of the Army, as may be necessary for the purposes of navigation on the navigable waterway affected; and the operations of the Licensee, so far as they affect the use, storage and discharge from storage of waters affected by the license, shall at all times be controlled by such reasonable rules and regulations as the Secretary of the Army may prescribe in the interest of navigation, and as the Commission may prescribe for the protection of life, health, and property, and in the interest of the fullest practicable conservation and utilization of such waters for power purposes and for other beneficial public uses, including recreational purposes; and the Licensee shall release water from the project reservoir at such rate in cubic feet per second, or such volume in acre-feet per specified period of time, as the Secretary of the Army may prescribe in the interest of navigation, or as the Commission may prescribe for the other purposes hereinbefore mentioned.

Article 14. On the application of any person, association, corporation, Federal agency, State or municipality, the Licensee shall, after notice and opportunity for hearing, permit such reasonable use of its reservoirs or other project properties, including works, lands and water rights, or parts thereof, as may be ordered by the Commission in the interest of comprehensive development of the waterway or waterways involved and the conservation and utilization of water resources of the region, for water supply for the purpose of steam-electric, irrigation, industrial, municipal or similar uses. The Licensee shall receive reasonable compensation, at least full reimbursement for any damages or expenses which the joint use causes him to incur, for use of its reservoirs or other project properties or parts thereof for such purposes, any such compensation to be fixed by the Commission either by approval of an agreement between the Licensee and the party or parties benefiting or after notice and opportunity for hearing. Applications shall contain information in sufficient detail to afford a full understanding of the proposed

use, including satisfactory evidence that the applicant possesses necessary water rights pursuant to applicable State law, or a showing of cause why such evidence cannot be concurrently submitted, and a statement as to the relationship of the proposed use to any State or municipal plans or orders which may have been adopted with respect to the use of such waters.

Article 15. In the construction or maintenance of the project works, the Licensee shall place and maintain suitable structures and devices to reduce to a reasonable degree the liability of contact between its transmission lines and telegraph, telephone and other signal wires or power transmission lines constructed prior to its transmission lines and not owned by the Licensee, and shall also place and maintain suitable structures and devices to reduce to a reasonable degree the liability of any structures or wires falling or obstructing traffic or endangering life. None of the provisions of this article are intended to relieve the Licensee from any responsibility or requirement which may be imposed by other lawful authority for avoiding or eliminating inductive interference.

Article 16. The Licensee shall, for the conservation and development of fish and wildlife resources, construct, maintain, and operate, or arrange for the construction, maintenance and operation of such facilities and comply with such reasonable modifications of the project structures and operation as may be ordered by the Commission upon its own motion or upon the recommendation of the Secretary of the Interior or the fish and wildlife agency or agencies of any State in which the project or a part thereof is located, after notice and opportunity for hearing and upon findings based on substantial evidence that such facilities and modifications are necessary and desirable, reasonably consistent with the primary purpose of the project, and consistent with the provisions of the Act.

Article 17. Whenever the United States shall desire, in connection with the project, to construct fish and wildlife facilities or to improve the existing fish and wildlife facilities at its own expense, the Licensee shall permit the United States or its designated agency to use, free of cost, such of Licensee's lands and interest in lands, reservoirs, waterways and project works as may be reasonably required to complete such facilities or such improvements thereof. In addition, after notice and opportunity for hearing, the Licensee shall modify the project operation as may be prescribed by the Commission, reasonably consistent with the primary purpose of the project, in order to permit the maintenance and operation of the fish and wildlife facilities constructed or improved by the United States under the provisions of this article. This article shall not be interpreted to place any obligation on the United States to construct or improve fish and wildlife facilities or to relieve the Licensee of any obligation under this license.

Article 18. The Licensee shall construct, maintain and operate or shall arrange for the construction, maintenance and operation of such recreational facilities including modifications thereto, such as access roads, wharves, launching ramps, beaches, picnic and camping areas, sanitary facilities and utilities, and shall comply with such reasonable modifications of the project structures and operations as may be prescribed hereafter by the Commission during the term of this license upon its own motion or upon the recommendation of the Secretary of the Interior or other interested Federal and State agencies, after notice and opportunity for hearing and upon findings based upon substantial evidence that such facilities and modifications are necessary and desirable, and reasonably consistent with the primary purpose of the project.

Article 19. So far as is consistent with proper operation of the project, the Licensee shall allow the public free access, to a reasonable extent, to project waters and adjacent project lands owned by the Licensee for the purpose of full public utilization of such lands and waters for navigation and recreational purposes, including fishing and hunting, and shall allow to a reasonable extent for such purposes the construction of access roads, wharves, landings, and other facilities on its lands the occupancy of which may in appropriate circumstances be subject to payment of rent to the Licensee in a reasonable amount: *Provided*, that the Licensee may reserve from public access, such portions of the project waters, adjacent

lands, and project facilities as may be necessary for the protection of life, health, and property and *Provided, further*, that the Licensee's consent to the construction of access roads, wharves, landings, and other facilities shall not, without its express agreement, place upon the Licensee any obligation to construct or maintain such facilities. These facilities are in addition to the facilities that the Licensee may construct and maintain as required by the license.

Article 20. The Licensee shall be responsible for and shall take reasonable measures to prevent soil erosion on lands adjacent to the stream and to prevent stream siltation or pollution resulting from construction, operation or maintenance of the project. The Commission upon request, or upon its own motion, may order the Licensee to construct and maintain such preventive works to accomplish these purposes and to revegetate exposed soil surface as the Commission may find to be necessary after notice and opportunity for hearing.[1]

Article 21. The Licensee shall clear and keep clear to an adequate width lands along open conduits, shall clear lands within the bottom and margin of reservoirs (except as may be otherwise specified in the license), and shall dispose of all temporary structures, unused timber, brush, refuse, or inflammable material resulting from the clearing of lands or from the maintenance or alteration of the project works. In addition, all trees along the margins of reservoirs within the project boundaries which may die during operations of the project shall be removed. The clearing of the lands and the disposal of the material shall be done with due diligence and to the satisfaction of the authorized representative of the Commission.

Article 22. If the Licensee shall cause or suffer essential project property to be removed or destroyed or to become unfit for use, without adequate replacement, or shall abandon or discontinue good faith operation of the project for a period of three years, or refuse or neglect to comply with the terms of the license and the lawful orders of the Commission mailed to the record address of the Licensee or its agent, the Commission will deem it to be the intent of the Licensee to surrender the license, and not less than 90 days after public notice may in its discretion terminate the license.

Article 23. Upon abandonment of the project the Licensee shall remove all structures, equipment and power lines from the stream and restore said stream to a condition satisfactory to the Commission's authorized representative and shall fulfill such other obligations under the license as the Commission may prescribe.

Article 24. The right of the Licensee and of its transferees and successors to use or occupy waters, over which the United States has jurisdiction, under the license, for the purpose of maintaining the project works or otherwise, shall absolutely cease at the end of the license period, unless Licensee has obtained a new license pursuant to the then existing laws and regulations or an annual license under the terms and conditions of this license.

Article 25. The terms and conditions expressly set forth in the license shall not be construed as impairing any terms and conditions of the Federal Power Act which are not expressly set forth herein.

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[1] Under authority of Article 20, in 1997 the Commission ordered NYPA to take steps to prevent erosion and flooding at the bend and along the overflow channel. In response, NYPA submitted a Flood Erosion Control Plan, which was approved in 1998. See N.Y. Power Auth., 84 FERC ¶ 62,040 (1998).

[**End of Standard License Articles**]

Article 26. Licensee shall pay to the United States the following annual charges as determined by the Commission for the purpose of reimbursing the United States for the cost of administration of Part I of the [FPA]. The authorized installed capacity for that purpose is as follows:[2]

Item	**Authorized Capacity MW**	**Effective Date**
After Unit 2 Upgrade	1,040	May 25, 2007
After Unit 1 Upgrade	1,080	May 31, 2008
After Unit 3 Upgrade	1,120	May 30, 2009
After Unit 4 Upgrade	1,160	May 22, 2010

Article 27. Licensee shall commence construction of the project within two years from the effective date of this license and shall thereafter in good faith and with due diligence prosecute such construction and shall complete construction of such project works within five years from the effective date of the license.

Article 28. Licensee shall submit in accordance with the Commission's rules and regulations revised Exhibit L drawings and Exhibit M showing the final design of the project works; and the Licensee shall not begin construction of the project structures until the Commission has approved such exhibits.

Article 29. Licensee shall retain a board of three or more independent qualified consultants to assess and make recommendations for safety and adequacy, the specifications, design, and construction of the project. Among other things, the board shall assess: the geology of the project site and surroundings, including the bedrock and overburden of the upper reservoir site for their water holding capabilities; the proposed design, specifications, and construction of the dike embankments, the associated dike instrumentation, drainage systems, and plans for surveillance during test filling and operation; the proposed design, specification, and the construction of the powerhouse, waterways, electrical and mechanical equipment involved in water control, emergency power supply and other project works; and the construction inspection program. The Licensee shall submit the board's reports to the Commission covering each portion of the project prior to or simultaneously with the submittal of the corresponding revised Exhibit L final design drawings. The Licensee shall also submit the board's final report covering the construction of the entire project, including a schedule for test filling of the upper reservoir, and the Licensee shall receive Commission approval prior to the initial filling of the project's upper reservoir.

Article 30. Licensee shall submit stability analysis of the upper and lower reservoir embankments based on test values of the embankment and foundation materials actually found. These analyses shall be submitted prior to or at the same time as, the submittal of the revised Exhibit L drawings showing the final design of the embankments.

Article 31. Licensee shall submit the results of hydraulic model studies on the intake/discharge structure of the upper reservoir, and the spillway of the lower reservoir, to insure their proper operation.

Article 32. Primary and back-up systems shall be provided to stop the pumping cycle automatically when the upper reservoir water surface reaches elevation 2005 feet or lower. The Licensee shall design the dike

[2] This license article was amended in 2010. See N.Y. Power Auth., 133 FERC ¶ 62,060 (2010).

facilities for passing inadvertent overpumpage and obtain rights on sufficient property between the dikes and the Schoharie Creek necessary to convey the resulting discharge from the upper reservoir into Schoharie Creek or the lower reservoir.[3]

Article 33. Licensee shall operate the project reservoirs in such a manner that releases from the lower reservoir during flood flows shall be no greater than flows which would have occurred in the absence of the project.

Article 34. Licensee, following consultation with appropriate Federal, State, and local agencies, shall file Exhibit F and for Commission approval prior to construction, Exhibits J, K and M for the three 345 kv transmission lines required to transmit power between the project switchyard and the aforesaid Delhi, New Scotland, and Leeds substations prepared in accordance with Sections 4.41 and 4.42 of the Commission's rule and regulations and shall submit plans for preservation and enhancement of the environment as it may be affected by the transmission lines design and location. In preparing this plan Licensee shall give appropriate consideration to recognized guidelines for protecting the environment and to beneficial uses, including wildlife, of the transmission lines rights-of-way.[4]

Article 35. Licensee shall within one year after acquisition of the project land, other than for transmission lines, submit an Exhibit F and for Commission approval Revised Exhibits J and K prepared in accordance with Sections 4.41 and 4.42 of the Commission's rules and regulations.

Article 36. Licensee shall consult with appropriate State and Federal agencies and make, or pay the cost of making, studies to determine: the magnitude of existing fish and wildlife populations and how they will be affected by the construction and operation of the project and any measures needed to protect and develop the fish and wildlife resources of the project area. Based upon findings of the studies, Licensee, shall, following consultation with appropriate State and Federal agencies, prepare a revised Exhibit S which shall include, but not be limited to, consideration of (1) provisions for minimum releases from the lower dam to the 5-mile reach of Schoharie Creek immediately downstream, (2) provisions for developing and managing suitable areas, including the Mine Kill area, as replacement habitat for deer winter range without conflicting with general recreational use at the project, (3) provisions for preventing or alleviating any deer migration blocks created by the project, and (4) a schedule for constructing any facilities and making any changes needed in the operation of the project or for management or development for fish and wildlife enhancement or conservation. The revision of Exhibit S, as well as any amendments to the Exhibit R required by the fish and wildlife management proposals shall be completed and submitted for Commission approval within 1 year from the date of issuance of this license, with the provision that replacement of lost deer winter browse areas shall be completed and ready for use prior to the initial filling of the reservoirs.

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[3] The Licensee obtained a waiver of that portion of Article 32 requiring that rights be obtained for property between the Project's upper reservoir spillway and Schoharie Creek. See Power Auth. of the State of N.Y., 29 FERC ¶ 62,407 (1984).

[4] On June 3, 2010, the Commission granted NYPA's application to remove from the license the project's three transmission lines: the Fraser-Gilboa, Gilboa-Scotland, and Gilboa-Leeds lines. See N.Y. Power Auth., 131 FERC ¶ 62,208 (2010).

Within six months of commencing construction of the Gilboa-Leeds line, Licensee shall file a supplement to Exhibit S to reflect the acquisition of the right-of-way and the construction and maintenance of the line along Route B-1 as specified in the Commission's order of January 29, 1976.[5]

Article 37. Licensee shall, prior to the initial construction consult with the Northeast Regional Director, National Park Service, U.S. Department of the Interior, 143 South Third Street, Philadelphia, Pennsylvania 19106, to determine the extent of any archeological survey and salvage excavations that may be necessary prior to any construction activities and provide an amount not to exceed $1,000 for any needed surveys or salvage excavations to be conducted and completed prior to construction and/or flooding, which ever is applicable.

Article 38. Licensee shall exercise care to insure that project construction activities will not affect adversely the historic, covered Blenheim Bridge and shall minimize any disturbance caused by construction and maintenance of the project works to the scenic values of the area by consulting with the appropriate Federal and State agencies and professional land use planners in developing a plan to blend project works with the natural view, and shall within 9 months of issuance of this license submit for Commission review an architectural rendering showing the plan developed for the major project features including transmission facilities.

Article 39. Insofar as any material is dredged or excavated in the prosecution of any work authorized under the license, or in the maintenance of the project, such material shall be removed and deposited and borrow areas restored to the satisfaction of the Regional Engineer.

Article 40. Licensee, in the detailed design and in the planning, construction, and maintenance of the overhead transmission line from Gilboa to Leeds, shall:

(A) Retain a board of independent environmental consultants including a safety engineer, a forester, a landscape architect and a transmission line construction engineer, one of whom shall be recommended by the State of New York.

(1) To advise the Licensee as to measures including placement of steel pole H-frame towers at crossings of scenic and other roads as may be needed to protect and develop the environmental values and natural resources of the transmission line right-of-way, and its affected contiguous areas, including but not limited to construction specifications, access roads, stream crossings, selective clearing and "feathering" of rights-of-way, excavation, disposal of spoils, use of plant growth retardants, screen and other selective plantings, use of heavy equipment, location and selection of color and design of tower structures and methods of stringing conductors, prevention of soil erosion and slides, construction methods, protection of archaeological and other cultural values, and drainage works such as culverts and bridges. The board shall continue to operate for a period of up to three years following completion of construction of the line, monitoring environmental impacts of the lien and making recommendations for such reasonable measures needed to mitigate those impacts.

[5] The final sentence of Article 36 was added to the license in 1976. See Power Auth. of the State of N.Y., 55 F.P.C. 1980 (1976).

(2) To submit to the Licensee bimonthly reports prior to construction and monthly reports during construction of the transmission line, and annual reports thereafter during the period the board is retained.

(B) Not less than 30 days prior to the initiation of construction furnish to the Commission and make available for public inspection in the project area detailed information on the proposed location and height of each tower, copies of construction contracts, copies of contracts relating to environmental matters, and such additional information as may be required by this Commission concerning the primary transmission line authorized for construction herein; and Licensee shall promptly submit to the Commission such changes and adjustments as may be made upon the recommendation of the environmental consultant board as provided for in Paragraph A of this Article. Additionally, Licensee shall promptly submit to the Commission copies of the reports of the board of consultants referred to above.[6]

(C) Notwithstanding the provisions of Finding and Conclusion number 145 of the Administrative Law Judge's Initial Decision on the Proposed Gilboa-Leeds Transmission Line (Project No. 2685) dated July 1, 1974, the Licensee shall conduct long-term right-of-way management in accordance with accepted integrated vegetation management practices, including the use of herbicides. The Licensee will comply with all applicable New York State Statutes and regulations governing the use of herbicides, and will recognize and abide by existing easement agreements concerning herbicide use.[7]

Article 40. Use and Occupancy.[8] (a) In accordance with the provisions of this article, the licensee shall have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain types of use and occupancy, without prior Commission approval. The licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the licensee shall also have continuing responsibility to supervise and control the use and occupancies, for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed, under this article. If a permitted use and occupancy violates any condition of this article or any other condition imposed by the licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the licensee shall take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, canceling the permission to use and occupy the project lands and waters and requiring the removal of any noncomplying structures and facilities.

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[6] Article 40 (A) and (B) were added to the license in 1976. *See Power Auth. of the State of N.Y.*, 55 F.P.C. 297, order denying reh'g, 55 F.P.C. 1980 (1976).
[7] Paragraph (C) of Article 40 was added to the License in 2001. *See N.Y. Power Auth*., 96 FERC ¶ 62,114 (2001).
[8] NYPA accepted FERC's new standard land use article by letter dated February 24, 1981, and designated the new article as Article 40. There was already an existing Article 40, added in 1976. Therefore, there are two Article 40s in the current project license.

(b) The type of use and occupancy of project lands and waters for which the licensee may grant permission without prior Commission approval are: (1) landscape plantings; (2) non-commercial piers, landings, boat docks, or similar structures and facilities that can accommodate no more than 10 water craft at a time and where said facility is intended to serve single-family type dwellings; (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline; and (4) food plots and other wildlife enhancement. To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the licensee shall require multiple use and occupancy of facilities for access to project lands or waters. The licensee shall also ensure, to the satisfaction of the Commission's authorized representative, that the use and occupancies for which it grants permission are maintained in good repair and comply with applicable state and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the licensee shall: (1) inspect the site of the proposed construction, (2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site, and (3) determine that the proposed construction is needed and would not change the basic contour of the reservoir shoreline. To implement this paragraph (b), the licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the licensee's costs of administering the permit program. The Commission reserves the right to require the licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

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

(d) The licensee may convey fee title to, easements or rights-of-way across, or leases of project lands for: (1) construction of new bridges or roads for which all necessary state and federal approvals have been obtained; (2) sewer or effluent lines that discharge into project waters, for which all necessary federal and state water quality certification or permits have been obtained; (3) other pipelines that cross project lands or waters but do not discharge into project waters; (4) non-project overhead electric transmission lines that require erection of support structures within the project boundary, for which all necessary federal and state approvals have been obtained; (5) private or public marinas that can accommodate no more than 10 water craft at a time and are located at least one-half mile (measured over project waters) from any other private or public marina; (6) recreational development consistent with an approved Exhibit R or approved report on recreational resources of an Exhibit E; and (7) other uses, if: (i) the amount of land conveyed for a particular use is five acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from project waters at normal surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year. At least 60 days before conveying any interest in project lands under this paragraph (d), the licensee must submit a letter to the Director, Office of Energy Projects, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked Exhibit G map may be used), the nature of the proposed use, the identity of any federal or state agency official consulted, and any federal or state approvals required for the proposed use. Unless the Director, within 45 days from

the filing date, requires the licensee to file an application for prior approval, the licensee may convey the intended interest at the end of that period.

(e) The following additional conditions apply to any intended conveyance under paragraph (c) or (d) of this article: (1) Before conveying the interest, the licensee shall consult with federal and state fish and wildlife or recreation agencies, as appropriate, and the State Historic Preservation Officer; (2) Before conveying the interest, the shall determine that the proposed use of the lands to be conveyed is not inconsistent with any approved Exhibit R or approved report on recreational resources of an Exhibit E; or, if the project does not have an approved Exhibit R or approved report on recreational resources, that the lands to be conveyed do not have recreational value; (3) The instrument of conveyance must include the following covenants running with the land: (i) the use of the lands conveyed shall not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; (ii) the grantee shall take all reasonable precautions to ensure that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the project; and (iii) the grantee shall not unduly restrict public access to project waters; (4) The Commission reserves the right to require the licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental values.

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

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

Article 41. The overhead transmission line from Gilboa to Leeds shall be constructed on a right-of-way 250 feet wide, provided that no less than a 25-foot width on either of the outer sides of the right-of-way shall be utilized to a reasonable extent for “feathering” through timbered areas, selective plantings for wildlife habitat, screening cleared areas or roads, improving wildlife uses, and otherwise lessening the scenic impact of the transmission line.

Article 42. Licensee for the purpose of protecting and developing the environmental values and natural resources of the right-of-way and its contiguous lands shall incorporate into contracts for construction of the overhead transmission line from Gilboa to Leeds such specifications that will provide contractors with rules and conditions to be observed in locating spoils, protecting cultural values and any archaeological sites discovered during excavations, and otherwise provide appropriate guidance and lines of communication for the above purposes.

Article 43. Licensee, on those right-of-way lands obtained in fee, shall consult and cooperate with the New York Office of Parks and Recreation in determining the need for incorporating those lands or parts thereof in the Project Exhibit R for public outdoor recreational uses. If appropriate Licensee shall file for Commission approval an amendment of Exhibit R.

Article 44. The Licensee shall file with the Commission and make available for public inspection in the project area a revised Exhibit F and for Commission approval revised or additional Exhibits J, K and M to show the location and description of the transmission line as approved herein. Construction shall not commence prior to the approval of Exhibits J, K, and M.[9]

[9] Articles 41 through 44 were added to the license in 1976. *See Power Auth. of the State of N.Y.*, 55 F.P.C. 297, order denying reh'g, 55 F.P.C. 1980 (1976).

FEDERAL POWER COMMISSION
WASHINGTON, D.C. 20426

DSR # 207168
OF PAGES

June 6, 1969

Project No. 2685
Power Authority of The State of New York

Power Authority of The State of New York
Attention: W. S. Chapin, General Manager
10 Columbus Circle
New York, New York 10019

Gentlemen:

Enclosed are four copies of the order, issuing license (major), in the above-entitled matter.

Please execute the acknowledgement of acceptance attached to the order and return three copies of the order, the acceptance, and resolution of your Board of Directors within the time prescribed by said order.

Very truly yours,

Gordon M. Grant,
Secretary

BEST AVAILABLE COPY

DSR # 207168

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UNITED STATES OF AMERICA
FEDERAL POWER COMMISSION

License (Major) - Unconstructed Project - Fish and Wildlife and Recreation - Preservation and Enhancement of Scenic Environment

Before Commissioners: Lee C. White, Chairman; L. J. O'Connor, Jr., Carl E. Bagge, and John A. Carver, Jr.

Power Authority of the State of New York	))	Project No. 2685

ORDER ISSUING LICENSE (MAJOR)

(Issued June 6, 1969)

Application has been filed on August 15, 1968 and supplemented on September 6 and 12, 1968, and February 4, 1969, by Power Authority of the State of New York (Applicant) of New York, New York, for a license under Section 4(e) of the Federal Power Act (Act) for proposed Project No. 2685, known as the Blenheim-Gilboa Pumped Storage Project, to be located on Schoharie Creek, tributary of the Mohawk River, in the Towns of Gilboa and Blenheim, in Schoharie County, New York. No lands of the United States are affected by the project.

Applicant proposes to construct and operate hydroelectric facilities comprising a closed cycle pumped-storage development having a capacity of 1,000,000 kilowatts to be used for public utility purposes. The project will consist of an upper and lower reservoir, tunnels, powerhouse, substation, switchyard and appurtenant electrical facilities.

The Secretary of the Army and the Chief of Engineers reported that the plans of the project structures affecting navigation are satisfactory insofar as the interests of navigation are concerned, but recommended that any license for the project should include a provision that releases from the lower project during flood periods shall be no greater than flows which would have occurred in the absence of the project - a provision provided for by Article 33 herein.

The Department of the Interior, in reporting on the application, recommended for inclusion in any license for the project the terms and conditions in the interests of fish and wildlife and recreation usually included in licenses for the type of project herein under consideration, and in addition thereto: special conditions in such interests included as (Articles 34 and 36), a special condition to determine the extent of any archeological survey and salvage excavations as may be necessary prior to project construction (Article 37), and a special condition ensuring that project construction activities will not affect adversely the historic Blenheim Bridge over Schoharie Creek downstream from the proposed project and that the overall design program of the project works, including any transmission lines, will be such as to preserve the natural environment of the area (Article 38). Finally, the Department advised that the project is not expected to affect the water quality of the area adversely. Applicant has informed us that it has no objection to any of the Department's recommended license conditions, and has stated that all project facilities have been located, designed or planned to minimize intrusion on the natural beauty of the area and construction will be undertaken in a manner to cause the least possible disturbance. Planting and/or landscaping will be undertaken, where needed, to blend facilities into the natural environs.

Numerous (some 200) written communications have been received from individuals, business firms, recreational associations, municipalities, and political entities, such as the Schoharie County Board of Supervisors, and from the Kiwanis Club of Schoharie County and the area Chambers of Commerce. Some were in favor of the proposed project, such as are the Schoharie Supervisors, the Kiwanis Club and the Chambers of Commerce, among many others, while others expressed their disfavor. We have been informed by Applicant, (letter dated February 3, 1969) that it has acknowledged each letter and has met with top officials of the North American Campers Assn., the National Campers & Hikers Assn., and the National Campground Owners' Assn. who were shown Applicant's plans of the project recreational features, such as campsites, swimming facilities and hiking trails, and at the conclusion of the meetings the representatives of each organization expressed their pleasure and approval since recreational facilities would be increased rather than diminished. One protestor, Mr. Fred Nickerson,

of Gilboa, New York, is the owner of a camping area, a private 220-acre development, part of which, adjacent to the proposed project lower reservoir, would be subject to possible flooding at times. Applicant has advised that of the total of 220 acres of the Nickerson campgrounds, only 14 acres will in any way be affected by the project, and that of the 14, only 4 acres are in the established campground between elevation 900.5 feet and the edge of Schoharie Creek. Of the 4 acres, 2 acres are located in a natural, low area which collects the drainage from a section of the campground. The remaining 2 acres consist mostly of a bank between the edge of the creek and the campsites along the top of the bank. Applicant points out that Schoharie Creek has risen to about 900.5 feet, the maximum elevation of the planned lower reservoir, and, consequently the Nickerson camp property has already experienced the effect of flows as high as those which would occur as a result of Applicant's project. The maximum design elevation of the power reservoir is 900.5 feet and the normal maximum reservoir elevation is 890 feet. Applicant further advises that recently some development work has been undertaken for establishing new campsites within the Nickerson property, located along the bank at the upstream end of the lower reservoir. However, the area, comprising about 10 acres, is also located between elevation 900.5 feet and the edge of the creek. Applicant notes that none of the 10-acre area is presently used for camping.

As a municipal instrumentality, and a political subdivision of the State of New York, Applicant is empowered to acquire by condemnation any property necessary for the project, subject to the payment of just compensation for such taking. In addition, as a licensee under the Federal Power Act, Applicant, under the provisions of Section 21 thereof, may exercise the right of eminent domain to acquire property needed for the project.

According to Exhibit R of the application, being a recreational use plan, initial recreational development is to be constructed by the Authority along with the power facilities and consists of: (1) two overlook areas, one of which has a visitor complex and both of which have hiking trails, parking, picnicking, and sanitary facilities; (2) a fishing access site in the tailwater areas; and (3) a State

Park with camping, swimming, picnicking, sightseeing, boating, fishing, and hiking facilities. Evaluation of the recreational use plan indicates initial development meets current area needs as reflected in the New York State Comprehensive Outdoor Recreation Plan. Future needs will be met by the New York Department of Conservation, on the approximately 1,500 acres of project lands suitable for recreational development under arrangements suitable to both the Department of Conservation and Applicant. Since the initial development meets area needs as reflected in the Statewide Comprehensive Outdoor Recreation Plan, and sufficient lands are available to meet future recreational needs, we are approving the Exhibit R.

While Exhibit S of the application, being a report on the effect, if any, of the project upon fish and wildlife resources in the project area, and proposals for measures necessary to conserve and, if practical, to enhance such resources, suggests fish and wildlife studies and management possibilities, no specific proposals for protecting and developing these resources are included. Therefore, the exhibit does not conform to the Commission's regulations, and we are including in Article 36 a requirement for the filing of a revised Exhibit S.

The most economic alternative to the proposed Blenheim-Gilboa Project as a source of power would be a series of gas-turbine plants installed throughout Applicant's system. The proposed Blenheim-Gilboa Project shows an annual savings of about $1,700,000 over the gas-turbine alternative. Other alternatives considered, such as oil-fired peaking steam and nuclear plants were found to be more costly than the gas turbines. According to the application, Applicant is authorized to issue negotiable bonds or notes for the purpose of financing any project, including the acquisition of any real or personal property or facilities deemed necessary by Applicant.

Applicant is the sole source of wholesale power supply for the five New York rural electric cooperative systems, financed by the Rural Electrification Administration. It also furnishes power to rural electric systems of Pennsylvania and Vermont with a very

substantial part of their wholesale power supply. In addition, Applicant supplies power to municipalities, and public and private utilities within and without the State of New York.

Sheet 7 of Exhibit L (FPC No. 2685-10) of the application for license shows two underground cables extending from Blenheim-Gilboa powerplant to the adjacent 345 kv switchyard, from which three 345 kv lines extend, one to New York State Electric & Gas Corporation's Delhi substation, the second to Niagara Mohawk Power Corporation's New Scotland substation, and the third to the latter's proposed Leeds substation. According to the overall layout shown on Exhibit J, Sheet 2 (FPC No. 2685-2) of the application, the 345 kv lines will be used as primary project lines to connect to the existing interconnected primary transmission systems of the companies named. Consequently, the three lines are being constructed to satisfy the needs of Project No. 2685 and should be included in the license for the project as parts of the project works. Through the connections at the Delhi, New Scotland and Leeds substations, the Blenheim-Gilboa Project will transmit electric energy to the three named companies' systems which in turn transmit electric energy to and from the States of Massachusetts, New Jersey and Pennsylvania, and Canada, depending upon system demands.

Applicant filed Exhibits J, K, L and M as part of the application for license and stated that Exhibits F and K details are to be filed by amendments to any license for the project following its acquisition of land and land rights. Exhibit J shows the general location of the project, but not the location of the three 345 kv transmission lines which we are finding to be parts of the project works. Exhibit K also should show the routing and rights-of-way of the transmission facilities. The Exhibit L drawings of the final design features and Exhibit M reflecting the mechanical and electrical equipment of the project are subject to review by Applicant's Board of Consultants. While we are approving Exhibits J, K, L and M to the extent that they show the general information and layout of the project, we are by Articles 28, 34 and 35 requiring the filing of Exhibit F and revised Exhibits J, K, L and M.

The Commission finds:

(1) Applicant is a corporate instrumentality, a political subdivision of the State of New York, organized under the laws of the State of New York, and is a municipality within the meaning of Section 3(7) of the Act; and it has submitted satisfactory evidence of compliance with the requirements of all applicable State laws insofar as necessary to effectuate the purposes of a license for the proposed project.

(2) The proposed project will affect the interests of interstate or foreign commerce.

(3) Public notice of the filing of the application has been given. No petition to intervene, or notice of intervention has been filed. Except for the protests hereinbefore mentioned, no protests have been filed. No conflicting application is before the Commission.

(4) Applicant has submitted satisfactory evidence of its financial ability to construct and operate the proposed project.

(5) The estimated annual cost of developing power from the proposed project is less than the estimated annual cost to Applicant of developing alternative sources of power.

(6) The power to be produced by the project is needed to meet the load growth in the service area of Applicant.

(7) The project does not affect a Government dam, nor will the issuance of a license therefor, as hereinafter provided, affect the development of any water resources for public purposes which should be undertaken by the United States.

(8) Subject to the terms and conditions hereinafter imposed, the project will be best adapted to a comprehensive plan for improving or developing a waterway or waterways for the use or benefit of interstate or foreign commerce, for the improvement and utilization of water-power development, and for other beneficial public uses, including recreational purposes.

(9) The installed horsepower capacity of the project hereinafter authorized for the purpose of computing the capacity component of the administrative annual charge is 1,333,000 horsepower, and the amount of annual charges, based on such capacity, to be paid under the license for the project, for the costs of administration of Part I of the Act is reasonable as hereinafter fixed and specified.

(10) The generator leads, the 15/345 kv step-up transformers, the 345 kv lines from the transformers to the adjacent 345 kv switchyard, the 345 kv switchyard, the three 345 kv transmission lines from the switchyard to Delhi, New Scotland and Leeds substations, and the necessary appurtenant electrical equipment, are parts of the project within the meaning of Section 3(11) of the Act and should be included in this license, as hereinafter provided.

(11) The exhibits designated and described in paragraph (B) below conform to the Commission's rules and regulations and should be approved as part of this license to the extent therein indicated.

The Commission orders:

(A) This license is hereby issued to Power Authority of the State of New York (Licensee) of New York, New York, under Section 4(e) of the Federal Power Act (Act) for a period of 50 years effective as of May 1, 1969, for the construction, operation, and maintenance of the proposed Blenheim-Gilboa Pumped Storage Project No. 2685, to be located on Schoharie Creek, a tributary of the Mohawk River, in Schoharie County, New York, subject to the terms and conditions of the Act which is incorporated herein by reference as a part of this license and subject to such rules and regulations as the Commission has issued or prescribed under the provisions of the Act.

(B) The proposed Blenheim-Gilboa Project will consist of:

(i) all lands constituting the project area and enclosed by the project boundary or the licensee's interests in such lands, the limits of which are otherwise defined, the use

and occupancy of which are necessary for the purposes of the project; such project area and project boundary being shown and described by certain exhibits which form part of the application for license and which are designated and described as follows:

Exhibit J: (FPC No. 2685-1) entitled "General Map of Project Area", approved only insofar as it shows the general location of the project.

Exhibit K: (FPC No. 2685-3) entitled "Detail Map of Project Area", approved only insofar as it shows the general location of the project.

(ii) project works consisting of:

(1) an upper reservoir having earth embankment sections totaling 12,100 feet overall length with maximum height of 110 feet and crest at elevation 2008 feet (m.s.l.) to maintain a normal maximum operating level at elevation 2003 feet (m.s.l.) and having storage capacity of 16,500 acre-feet; (2) an ungated, submerged circular-weir inlet; (3) a concrete-lined vertical pressure shaft 1000 feet long, a horizontal tunnel 900 feet long, and the manifold 350 feet long; (4) four steel-lined penstock tunnels 12 feet in diameter, each 2,200 feet long, leading to the pumping-generating plant; (5) an outdoor type powerhouse of reinforced concrete housing four pump-turbine motor-generator units, each rated at 250,000 kw with net generating head varying between 1,007 and 1,100 feet; (6) a switchyard, located adjacent to the pumping-generating plant; (7) three 345 kv transmission lines; one to Delhi; one to New Scotland and one to Catskill (Leeds); (8) a lower reservoir with 18,500 acre-feet of gross storage capacity formed by a dam across Schoharie Creek downstream of the pumping-generating plant consisting of an earth embankment across the valley with 1,600 feet crest length at a maximum height of 100 feet with crest at elevation 901 feet (m.s.l.); a concrete-lined, side-chute spillway on the west abutment controlled by three 44 x 36 feet taintor gates; (9) recreational facilities consisting of a visitor's center area, Mine Kill State Park, an upper reservoir overlook, a fishing access area, and essential electric, water supply and sanitary treatment facilities; and (10) appurtenant

facilities: -- the location, nature and character of which are more specifically shown and described by the exhibits hereinbefore cited and by certain other exhibits which also form part of the application for license and which are designated and described as follows:

Exhibit L Sheet No.	FPC No. 2685	Showing
1	-4	Site Plan & Tunnel Profile
2	-5	Powerhouse & Switchyard - Plan & Sections
3	-6	Powerhouse Plan & Sections
4	-7	Dams & Tunnels - Sections & Details
5	-8	Spillway - Plan & Sections
7	-10	Electrical One-Line Diagram
8	-11	Electrical Equipment Plan
9	-12	Electrical Equipment Sections

Exhibit M: consisting of two typewritten sheets entitled "Major Equipment" filed August 15, 1968.

Exhibit R: A report entitled "Recreational Plan" consisting of pages R-1 through R-4 (text) filed August 15, 1968, and Exhibit R Map (FPC No. 2685-13) entitled "Recreation Development Plan", and Consultant's report entitled "Report on Recreation Development Plans," portions approved consisting of: pages 14 through 17 and pages 19 through 35 filed September 6, 1968.

(Note: the Exhibits L and M are approved insofar as they show and describe the general scope of the project)

(iii) all other structures, fixtures, equipment or facilities used or useful in the maintenance and operation of the project or located on the project area, including such portable property as may be used or useful in connection with the project or any part thereof, whether located on or off the project area, if and to the extent that the inclusion of such property as part of the project is approved or acquiesced in by the Commission; also, all riparian or other rights, the use or possession of which is necessary or appropriate in the maintenance or operation of the project.

(C) This license is also subject to the terms and conditions set forth in Form L-11 (Revised November 1, 1968) entitled "Terms and Conditions of License for Unconstructed Major Project Affecting the Interests of Interstate or Foreign Commerce," (FPC) which terms and conditions designated as Articles 1 through 25 except Articles 6, 7, and 8, thereof, are attached hereto and made a part hereof and subject to the following special conditions set forth herein as additional articles.

Article 26. Licensee shall pay to the United States the following annual charge, effective as of May 1, 1969:

> For the purpose of reimbursing the United States for the costs of administration of Part I of the Act, a reasonable annual charge as determined by the Commission in accordance with the provisions of its regulations, in effect from time to time. The authorized installed capacity for such purpose is 1,333,000 horsepower.

Article 27. Licensee shall commence construction of the project within two years from the effective date of this license and shall thereafter in good faith and with due diligence prosecute such construction and shall complete construction of such project works within five years from the effective date of the license.

Article 28. Licensee shall submit in accordance with the Commission's rules and regulations revised Exhibit L drawings and Exhibit M showing the final design of the project works; and the Licensee shall not begin construction of the project structures until the Commission has approved such exhibits.

Article 29. Licensee shall retain a board of three or more independent qualified consultants to assess and make recommendations for safety and adequacy, the specifications, design, and construction of the project. Among other things, the board shall assess: the geology of the project site and surroundings, including the bedrock and overburden of the upper reservoir site for their water holding capabilities:

the proposed design, specifications, and construction of the dike embankments, the associated dike instrumentation, drainage systems, and plans for surveillance during test filling and operation; the proposed design, specifications, and the construction of the powerhouse, waterways, electrical and mechanical equipment involved in water control, emergency power supply and other project works; and the construction inspection program. The Licensee shall submit the board's reports to the Commission covering each portion of the project prior to or simultaneously with the submittal of the corresponding revised Exhibit L final design drawings. The Licensee shall also submit the board's final report covering the construction of the entire project, including a schedule for test filling of the upper reservoir, and the Licensee shall receive Commission approval prior to the initial filling of the project's upper reservoir.

Article 30. Licensee shall submit stability analysis of the upper and lower reservoir embankments based on test values of the embankment and foundation materials actually found. These analyses shall be submitted prior to or at the same time as, the submittal of the revised Exhibit L drawings showing the final design of the embankments.

Article 31. Licensee shall submit the results of hydraulic model studies on the intake/discharge structure of the upper reservoir, and the spillway of the lower reservoir, to insure their proper operation.

Article 32. Primary and back-up systems shall be provided to stop the pumping cycle automatically when the upper reservoir water surface reaches elevation 2005 feet or lower. The Licensee shall design the dike facilities for passing inadvertent overpumpage and obtain rights on sufficient property between the dikes and the Schoharie Creek necessary to convey the resulting discharge from the upper reservoir into Schoharie Creek or the lower reservoir.

Article 33. Licensee shall operate the project reservoirs in such a manner that releases from the lower reservoir during flood flows shall be no greater than flows which would have occurred in the absence of the project.

Article 34. Licensee, following consultation with appropriate Federal, State, and local agencies, shall file Exhibit F and for Commission approval prior to construction,

Exhibits J, K and M for the three 345 kv transmission lines required to transmit power between the project switchyard and the aforesaid Delhi, New Scotland, and Leeds substations prepared in accordance with Sections 4.41 and 4.42 of the Commission's rules and regulations and shall submit plans for preservation and enhancement of the environment as it may be affected by the transmission lines design and location. In preparing this plan Licensee shall give appropriate consideration to recognized guidelines for protecting the environment and to beneficial uses, including wildlife, of the transmission lines rights-of-way.

Article 35. Licensee shall within one year after acquisition of the project land, other than for transmission lines, submit an Exhibit F and for Commission approval Revised Exhibits J and K prepared in accordance with Sections 4.41 and 4.42 of the Commission's rules and regulations.

Article 36. Licensee shall consult with appropriate State and Federal agencies and make, or pay the cost of making, studies to determine: the magnitude of existing fish and wildlife populations and how they will be affected by the construction and operation of the project and any measures needed to protect and develop the fish and wildlife resources of the project area. Based upon findings of the studies, Licensee, shall, following consultation with appropriate State and Federal agencies, prepare a revised Exhibit S which shall include, but not be limited to, consideration of (1) provisions for minimum releases from the lower dam to the 5-mile reach of Schoharie Creek immediately downstream, (2) provisions for developing and managing suitable areas, including the Mine Kill area, as replacement habitat for deer winter range without conflicting with general recreational use at the project, (3) provisions for preventing or alleviating any deer migration blocks created by the project, and (4) a schedule for constructing any facilities and making any changes needed in the operation of the project or for management or development for fish and wildlife enhancement or conservation. The revision of the Exhibit S, as well as any amendments to the Exhibit R required by the fish and wildlife management proposals shall be completed and submitted for Commission approval within 1 year from the date of issuance of this license, with the provision that replacement of lost deer winter browse areas shall be completed and ready for use prior to the initial filling of the reservoirs.

Article 37. Licensee shall, prior to the initial construction consult with the Northeast Regional Director, National Park Service, U.S. Department of the Interior, 143 South Third Street, Philadelphia, Pennsylvania 19106, to determine the extent of any archeological survey and salvage excavations that may be necessary prior to any construction activities and provide an amount not to exceed $1,000 for any needed surveys or salvage excavations to be conducted and completed prior to construction and/or flooding, whichever is applicable.

Article 38. Licensee shall exercise care to insure that project construction activities will not affect adversely the historic, covered Blenheim Bridge and shall minimize any disturbance caused by construction and maintenance of the project works to the scenic values of the area by consulting with the appropriate Federal and State agencies and professional land use planners in developing a plan to blend project works with the natural view, and shall within 9 months of issuance of this license submit for Commission review an architectual rendering showing the plan developed for the major project features including transmission facilities.

Article 39. Insofar as any material is dredged or excavated in the prosecution of any work authorized under the license, or in the maintenance of the project, such material shall be removed and deposited and borrow areas restored to the satisfaction of the Regional Engineer.

(D) The exhibits designated and described in paragraph (B) above are hereby approved as part of this license to the extent indicated therein.

(E) This order shall become final 30 days from the date of its issuance unless application for rehearing shall be filed as provided in Section 313(a) of the Act, and failure to file such an application shall constitute acceptance of

this license. In acknowledgment of the acceptance of this license, it shall be signed for the Licensee and returned to the Commission within 60 days from the date of issuance of this order.

By the Commission. Commissioner Bagge concurring filed a separate statement appended hereto.

(S E A L)

Gordon M. Grant,
Secretary.

IN TESTIMONY of its acknowledgment of acceptance of all of the provisions, terms and conditions of this license, Power Authority of the State of New York, this 17th day of JUNE, 1969, has caused its corporate name to be signed hereto by W. S. CHAPIN, its _____ General Manager, and its corporate seal to be affixed hereto and attested by JOHN C. BRUEL, its _____ Secretary, pursuant to a resolution of its Board of Trustees duly adopted on the 16th day of JUNE, 1969, a certified copy of the record of which is attached hereto.

POWER AUTHORITY OF THE STATE
OF NEW YORK

By W. S. Chapin
General Manager

Attest:

John C. Bruel
Secretary

(Executed in quadruplicate)

THIS IS TO CERTIFY that at a regular meeting of Power Authority of the State of New York held June 16, 1969 a resolution of which the following is a true and complete copy, was adopted:

> RESOLVED, That the Authority hereby accepts the license for the Blenheim-Gilboa Pumped Storage Project, Project No. 2685, issued by the Federal Power Commission on June 6, 1969 (effective May 1, 1969) and all of the provisions, terms and conditions thereof; and be it further
>
> RESOLVED, That the General Manager be authorized and directed to execute the acceptance of such license and that its corporate seal be affixed thereto and attested by the Secretary, and to file three copies of the Order, the acceptance, and this resolution with the Federal Power Commission.

THIS IS TO CERTIFY FURTHER that the resolution above set forth has not been modified, amended or repealed and is in full force and effect, and that W. S. Chapin is General Manager of Power Authority of the State of New York.

John C. Bruel
Secretary
Power Authority of the State of New York

Dated: New York, New York

this 17th day of June, 1969.

Power Authority of the State of New York) Project No. 2685

BAGGE, Commissioner, concurring:

(Issued June 6, 1969)

I concur in the issuance of the license to the Power Authority of the State of New York in this proceeding. However, I would like to present my view of an appropriate and effective interpretation of Article 34 of the license.

Article 34 provides:

> In preparing this plan Licensee shall give appropriate consideration to recognized guidelines for protecting the environment and to beneficial uses, including wildlife, of the transmission lines rights-of-way.

I suggest that the Power Authority of the State of New York, in considering "recognized guidelines for protecting the environment," look to and rely upon the explicit guidelines for the protection of aesthetic and other environmental values set forth in the Report of the Working Committee on Utilities of the President's Council on Recreation and Natural Beauty dated December 27, 1968. A copy of these guidelines is appended to this concurring statement.

Carl E. Bagge

Carl E. Bagge

Guidelines for the Protection of Natural, Historic, Scenic, and Recreational Values in the Design and Location of Rights-of-Way and Transmission Facilities

The Working Committee on Utilities has found that the form and appearance of transmission facilities can be improved if these facilities are creatively designed and constructed with the imaginative use of colors and materials. Moreover, we have found that even with improved form, the appearance of rights-of-way and transmission facilities can be further improved if they are concealed in part by the natural features of the landscape, such as the existing vegetation and terrain, and newly planted vegetation. The guidelines set forth below have followed from these general findings and are applications of them to the kinds of circumstances frequently confronted by management decision-makers in the selection of rights-of-way routes. They are not simply theories, but are objects to be achieved by practice. It is with this in mind that we strongly urge management to make these guidelines in substance a field manual to govern the planning, locating, clearing and maintenance of rights-of-way and the construction of transmission facilities.

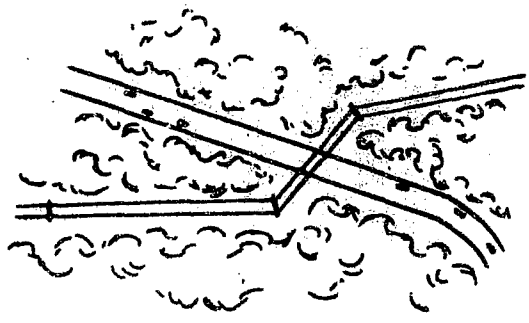
The Selection and Clearing of Rights-of-Way Routes

- Rights-of-way should be selected with the purpose of minimizing conflict between the rights-of-way and present and foreseeable uses of the land on which they are to be located. To this end, existing rights-of-way should be given priority as the locations for additions to existing transmission facilities, and the joint use of existing rights-of-way by different kinds of transmission facilities should be considered.

- Rights-of-way should avoid scenic, recreational and historic areas where possible. If rights-of-way must be routed through scenic, recreational or historic areas, they should be located in corridors least visible from areas of public view.

- Rights-of-way should avoid heavily timbered areas, steep slopes and proximity to main highways where possible.

- Long views of transmission lines perpendicular to highways, down canyons and valleys or up ridges and hills should be avoided. The lines should approach these areas diagonally and should cross them at a slight diagonal.



- Rights-of-way clearings should be kept to the minimum width necessary to prevent interference of trees and other vegetation with the proposed transmission facilities. Trees which would interfere with the proposed transmission facilities and those which could cause damage if fallen should be selectively cut and removed.

POOR EXAMPLE *PREFERRED*

- The time and method of clearing rights-of-way should take into account matters of soil stability, the protection of natural vegetation and the protection of adjacent resources.

- The use of helicopters for the construction on rights-of-way should be considered in mountainous and scenic areas. This would permit rights-of-way to be located in more remote areas and would reduce disturbance of the ground and the number of access roads.

- Trees and other vegetation cleared from rights-of-way in areas of public view should be disposed of without undue delay. If trees and other vegetation are burned, local fire and air pollution regulations should be observed. Unsightly tree stumps which are adjacent to roads and other areas of public view should be cut close to the ground or removed.

- Trees, shrubs, grass and top soil which are not cleared should be protected from damage during construction.

- Rights-of-way should not be cleared to the mineral soil where possible. Where this does occur in scattered areas of the rights-of-way, the top soil should be replaced and stabilized without undue delay by the planting of appropriate species of grass, shrubs and other vegetation which are properly fertilized.

- Soil which has been excavated during construction and not used should be evenly filled back onto the cleared area or removed from the site. The soil should be graded to comport with the terrain and the adjacent land, and the top soil should then be replaced and appropriate vegetation should be planted and fertilized.

- Bulldozing generally should not be done on slopes which exceed 35 percent. Scars on the surface of the ground should be repaired with top soil and replanted with appropriate vegetation.

- Terraces and other erosion control devices should be constructed where necessary to prevent soil erosion on slopes on which rights-of-way are located.

- Where rights-of-way cross streams or other bodies of water, the banks should be stabilized to prevent erosion. Construction on rights-of-way should not damage shorelines, recreational areas or fish and wildlife habitats.

- Replacement of earth adjacent to water crossings should be at slopes less than the normal angle of repose for the soil type involved and sodding or seeding should be accomplished without undue delay.

- Rights-of-way should cross streams or other bodies of water at low lands rather than at high banks or wild areas where possible.

- Blasting should not be done within or near stream channels without adequate protection for fish and other aquatic life.

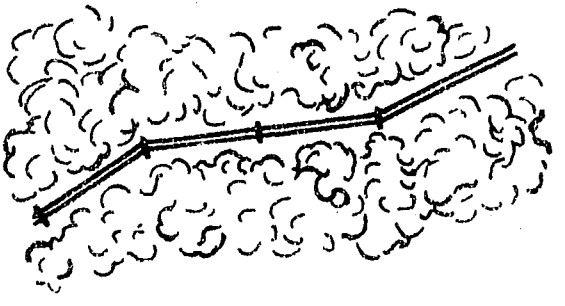
- The so-called "jacking" technique for laying pipe or cable beneath river beds should be used where approach elevations and soil conditions permit.

- Cofferdam techniques to lay pipe or cable across streams should be used in order to permit full flow in one part of the stream while construction work is being performed in another part.

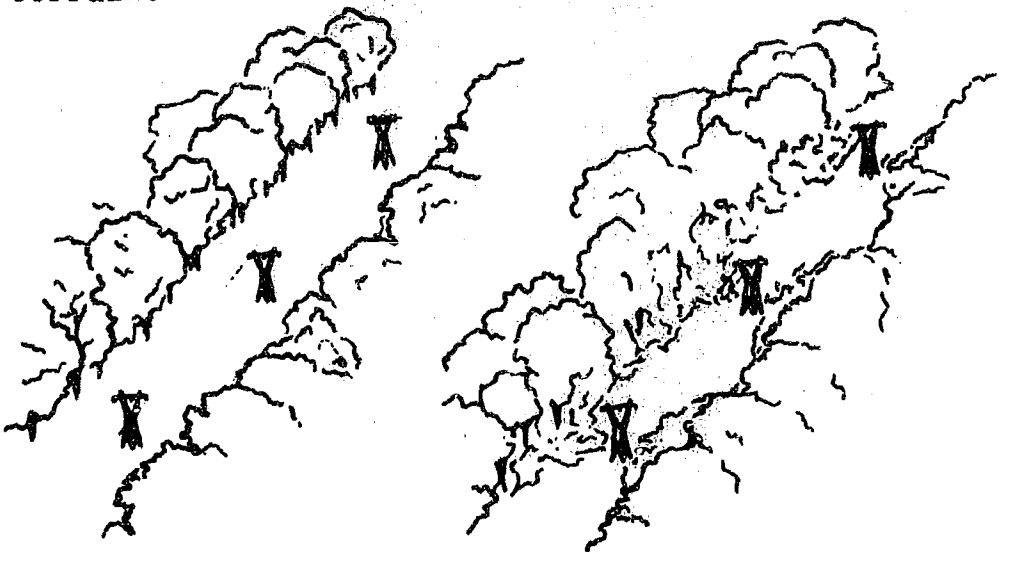
- Care should be taken to avoid oil spills and other types of pollution while work is performed in streams.

- Water used for pipe testing purposes and taken from streams or other bodies of water should be limited to volumes which will not cause harm to the ecology or aesthetics of the area. When the testing water is released, it should be done at least one-fourth mile from the streams or bodies of water into vegetation on levels upland so as not to cause erosion and siltation.

- Rights-of-way strips through forest and timber areas should be deflected and should follow irregular patterns. This will prevent the rights-of-way from appearing as tunnels cut through the timber.

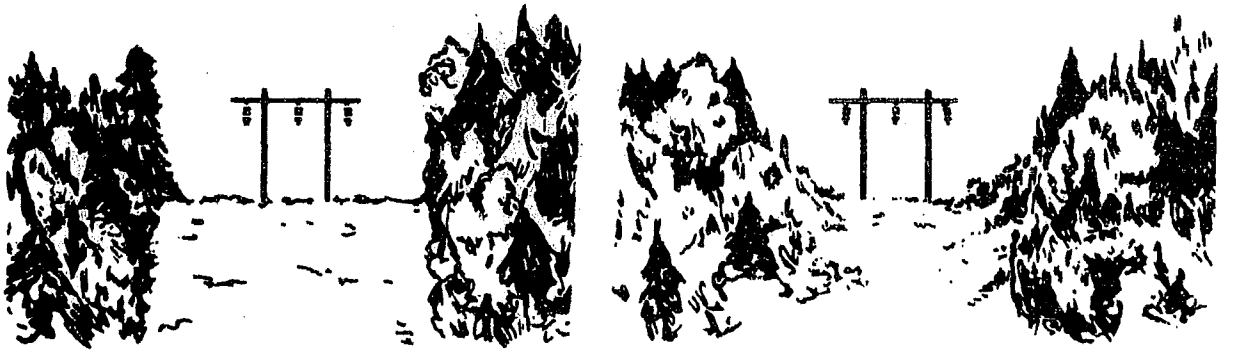


- Rights-of-way strips through forest and timber areas should be cleared with curved, undulating boundaries and trimmed to comport with the topography of the terrain.



POOR EXAMPLE *PREFERRED*

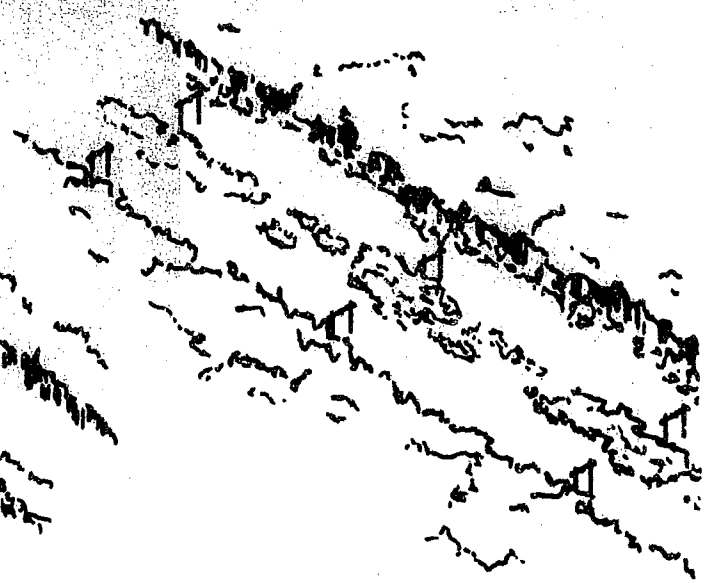
- Small trees and plants should be used to feather back the rights-of-way from grass and shrubbery to larger trees.



POOR EXAMPLE *PREFERRED*

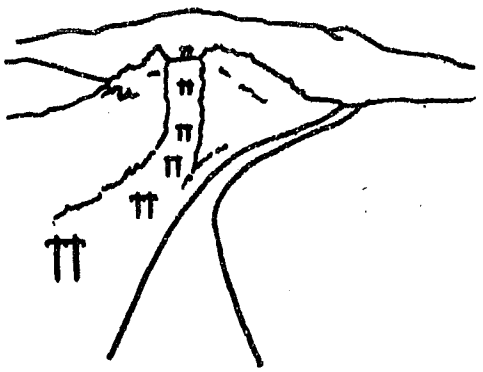
- Where there are several adjacent rights-of-way, low-growing vegetation should be planted between them if possible. Groves of trees should be maintained with lower growing shrubbery on the periphery.

POOR EXAMPLE



PREFERRED

- Rights-of-way should not cross hills and other high points at the crests.



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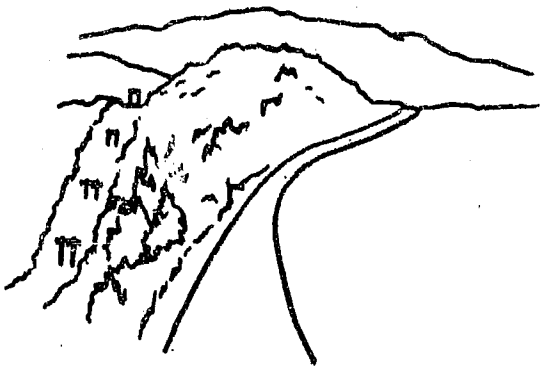


PREFERRED

- If underground transmission lines must be located near the crests of hills or other high points, trenching should be done with small equipment in order to minimize the width of the rights-of-way clearings.

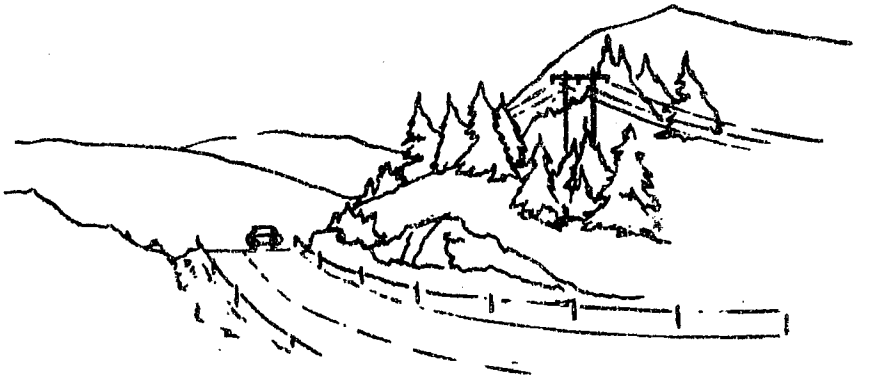
- Roads used during construction should be stabilized without undue delay by erosion control measures and the planting of appropriate grass and other vegetation. These roads should be designed for proper drainage, and water bars to control soil erosion should be installed.

- Access roads should not be constructed on unstable slopes. Where feasible, service and access roads should be used jointly.

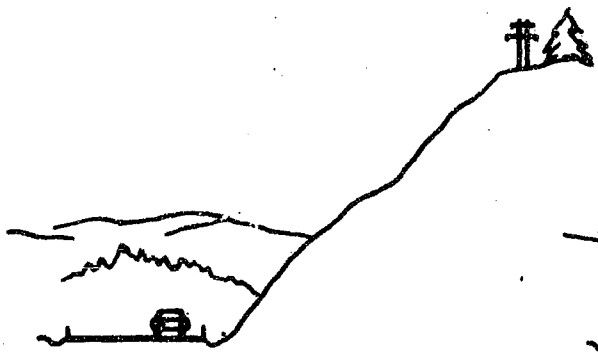
The Location of Transmission Towers and Overhead Lines

- If an overhead line must be routed across uniquely scenic, recreational or historic areas or rivers, the feasibility of placing the line underground should be considered. If the line must be placed overhead, it should be located on a right-of-way least visible from areas of public view.

- Transmission facilities should be located with a background of topography and natural cover where possible. Vegetation and terrain should be used to screen these facilities from highways and other areas of public view.



- Where transmission facilities must be placed on slopes which parallel highways or other areas of public view, they should be located approximately two-thirds the distance up the slopes where feasible. With the slopes as background, the presence of the facilities would be less noticeable.



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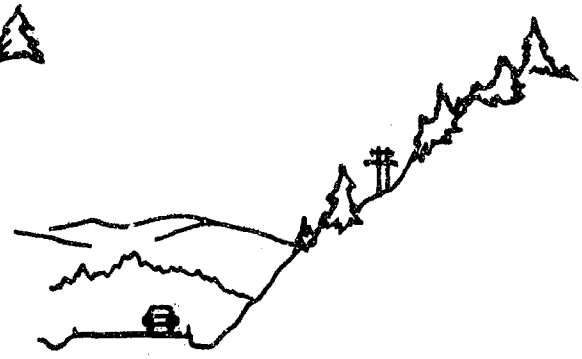
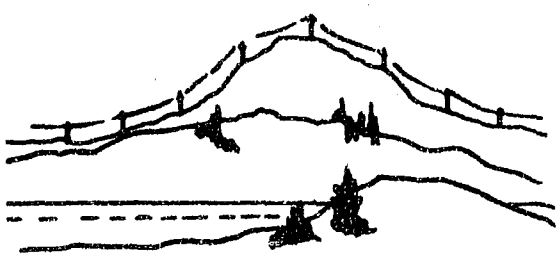


PREFERRED

- Transmission line towers which are in areas of public view should not be placed in a straight-line pattern for long distances through forest or timber areas. They should follow an irregular pattern along rights-of-way alignments which have been deflected.

- Transmission line towers should generally follow the contours of the land.

- Transmission facilities should not cross the crests of hills and other high points. To avoid placing a transmission tower at the crest of a ridge or hill, towers should be spaced below the crest to carry the line over the ridge or hill, and the profile of the facilities should not be silhouetted against the sky.



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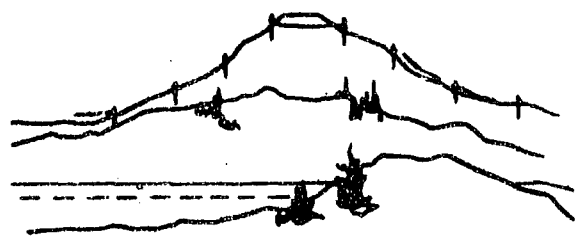

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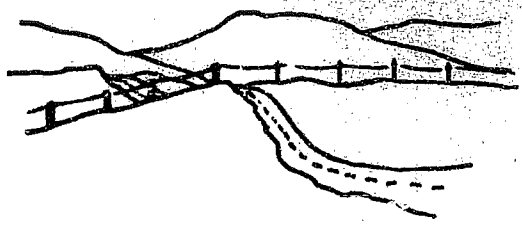
- Transmission lines should not cross highways at the crest of a road or the bottom of a valley.



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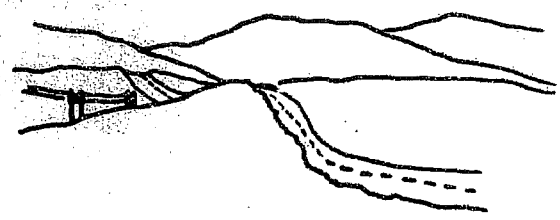
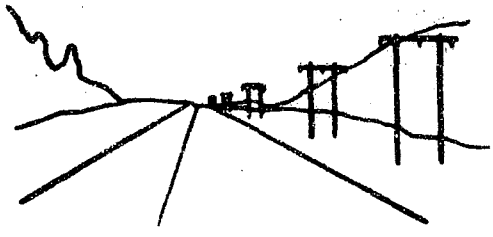


PREFERRED

- Long views of transmission lines parallel to highways should be avoided where possible.



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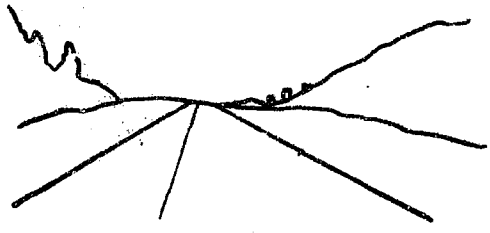

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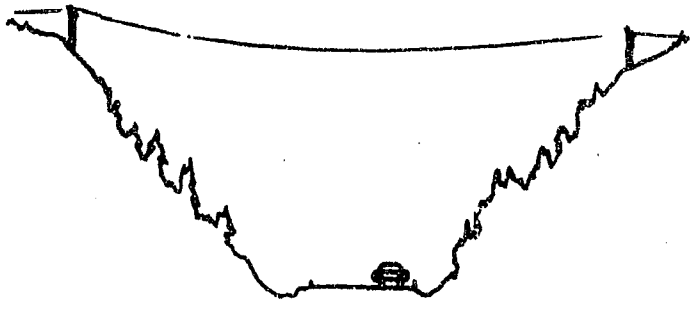
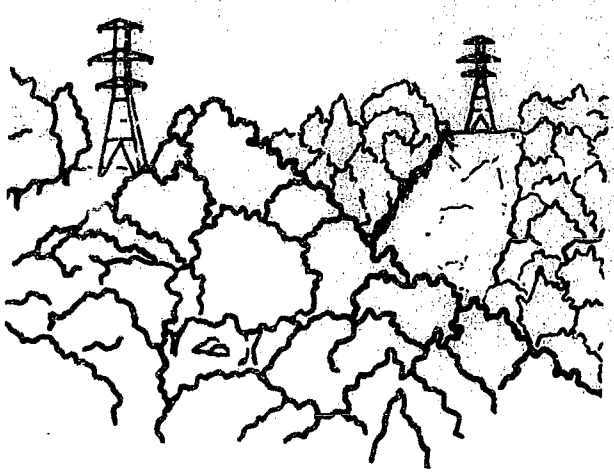
- Transmission lines should cross canyons up-slope from roads which traverse the canyon basins if the terrain permits.



- When crossing valleys in a forest, high, long-span towers should be used to keep the power lines above the trees and to eliminate the need to clear all vegetation from below the lines. Only as much vegetation as is necessary to string the line should be cut.



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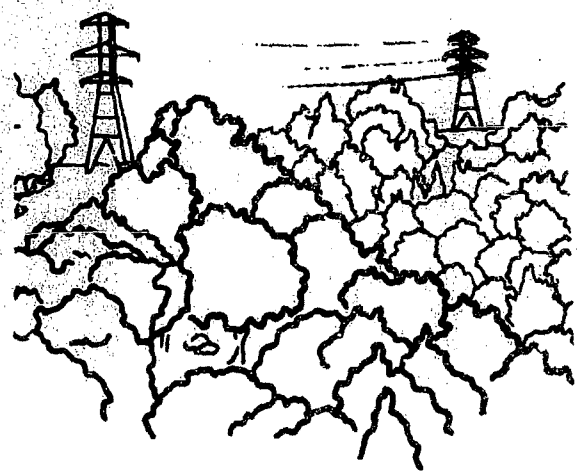
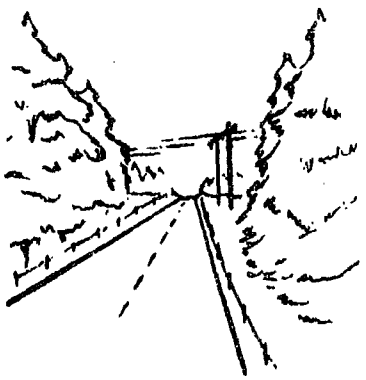


PREFERRED

- Where ridges or timber areas are adjacent to highways or other areas of public view, overhead lines should be placed beyond the ridges or timber areas.

- In forest or timber areas, high, long-span towers should be used to cross highways in order to retain much of the natural growth along the highways.



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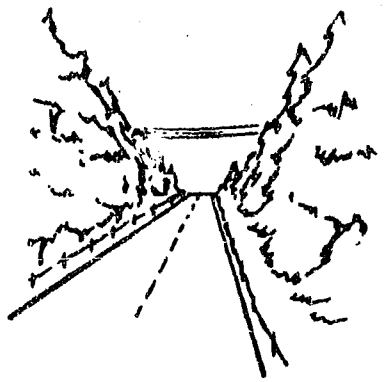
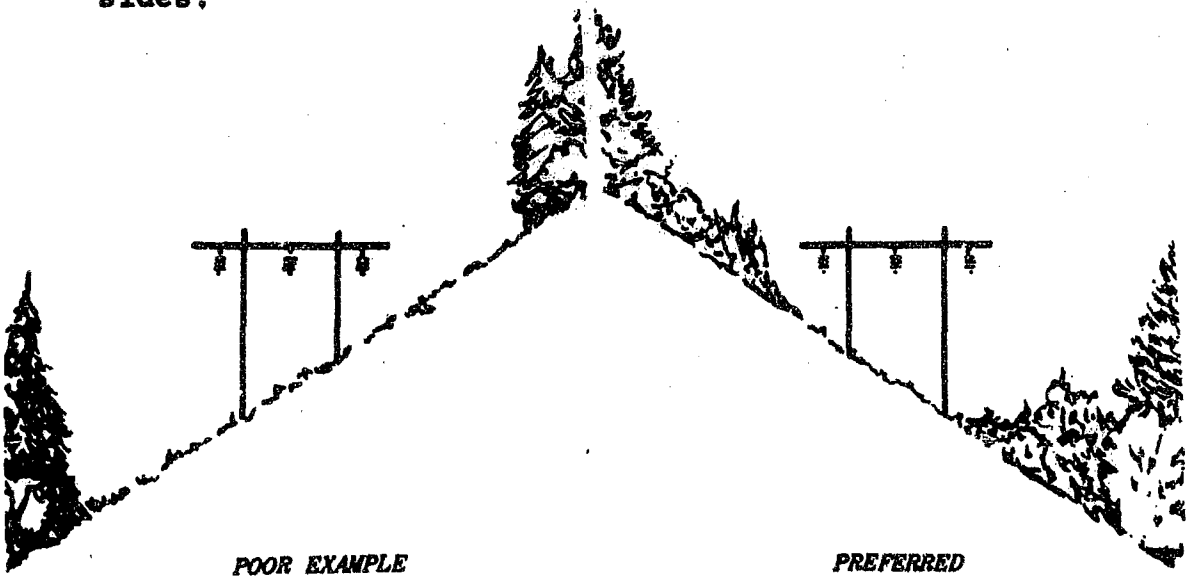
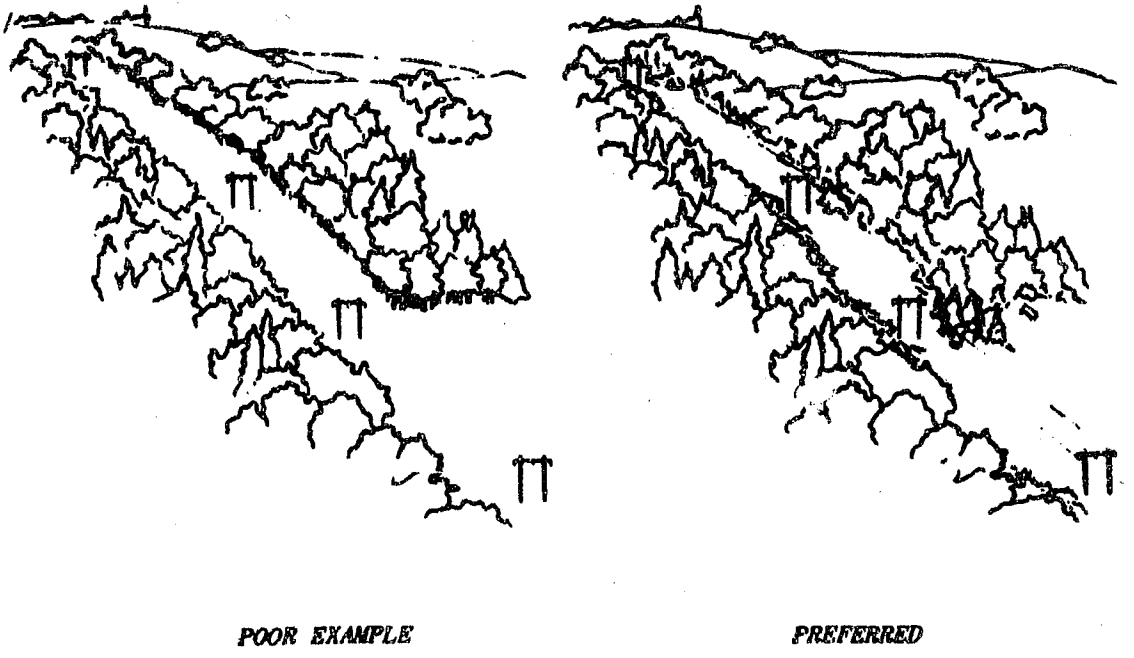


PREFERRED

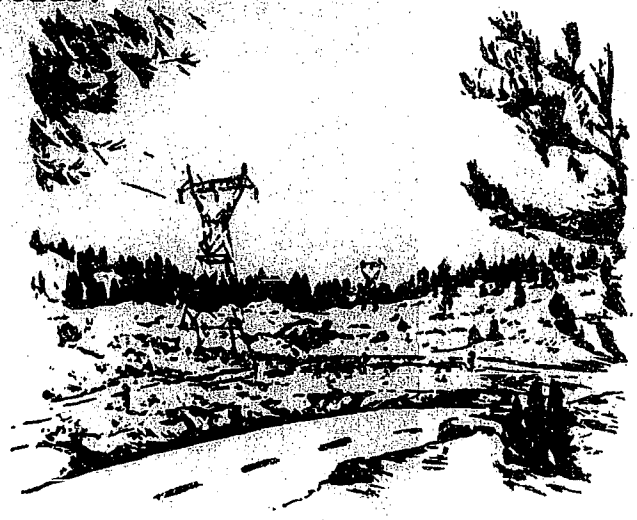
- Rights-of-way should cross hills and mountains obliquely rather than straight up and down the sides.



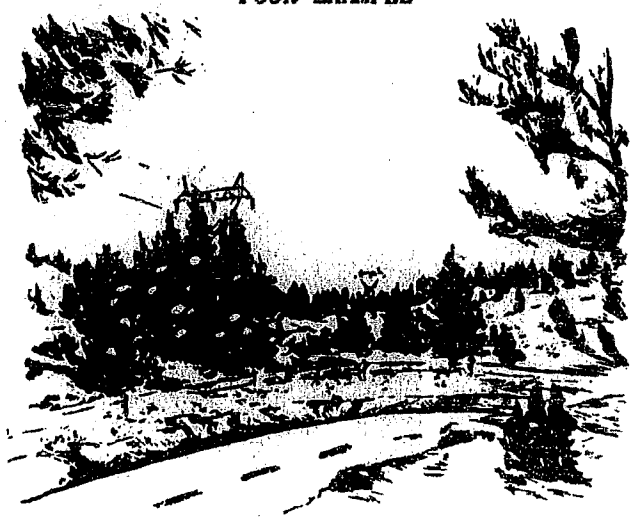
- Where rights-of-way enter dense timber from a meadow or other clearing, trees should be feathered in at the entrance of the timber for a distance of 150-200 yards.



- Native shrubs and trees should be left in place or planted randomly, with the necessary allowance for safety, near the edges of rights-of-way adjacent to roads.



POOR EXAMPLE



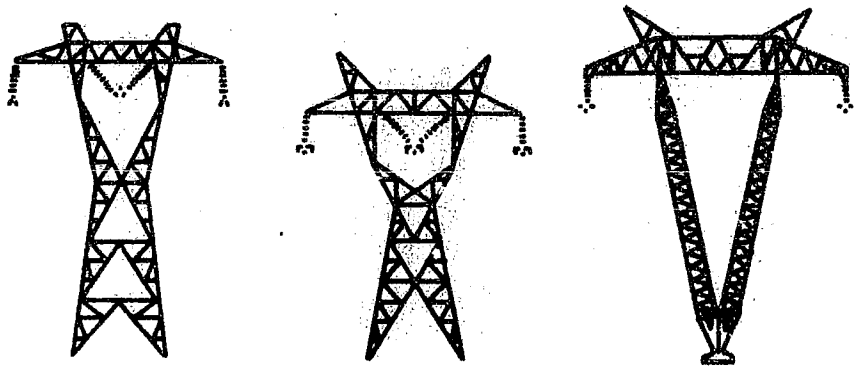
PREFERRED

- Transmission lines should not be located or cross at road intersections or interchanges where possible.

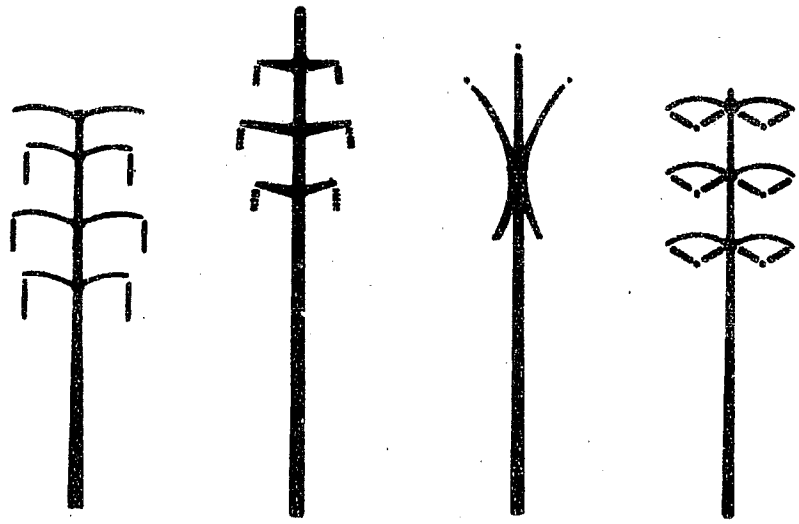
- The Federal Highway Administration and the State Highway Department should be consulted with respect to any applicable guidelines or regulations they might have to govern transmission lines which cross highways.

The Design of Transmission Towers

- The size of transmission towers should be kept to the minimum feasible.

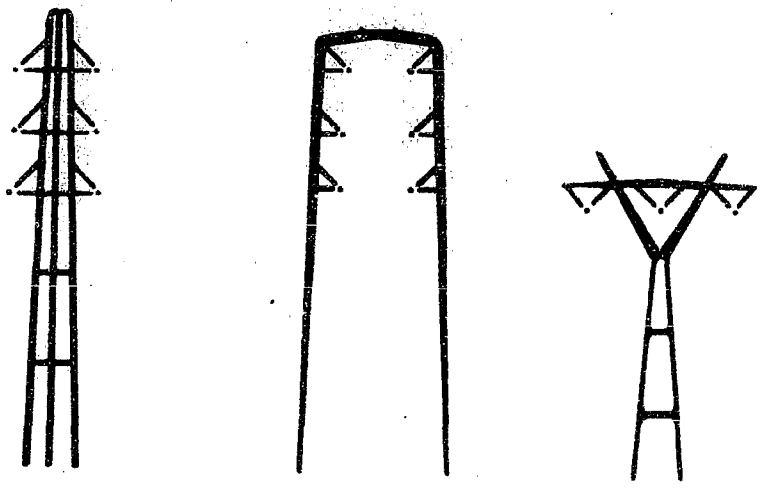


STANDARD TOWER DESIGNS



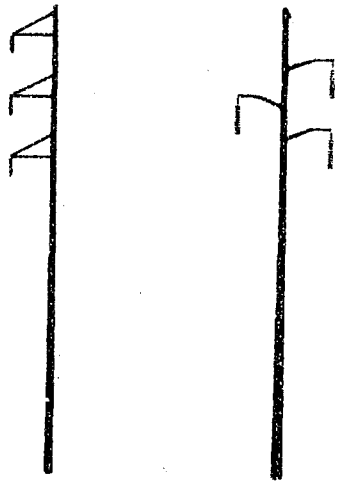
NEWER TOWER DESIGNS

- Simple, but functional, designs of towers and poles should be used. Illustrations of these kinds of structures can be found in the book Electric Transmission Structures, sponsored by the Electric Research Council.



HENRY DREYFUSS & ASSOCIATES DESIGNS

- The use of poles designed without cross-arms for electric transmission lines of 138 kv and below and communications cables should be considered.



- The use of different tower designs at intervals along rights-of-way should be considered.

- Transmission towers should be spaced apart at the maximum feasible distance which would not cause unsightly tower height, conductor sag, or excessive removal of trees.

- The materials used to construct transmission towers and the colors of the components of the towers should comport with the natural surroundings.

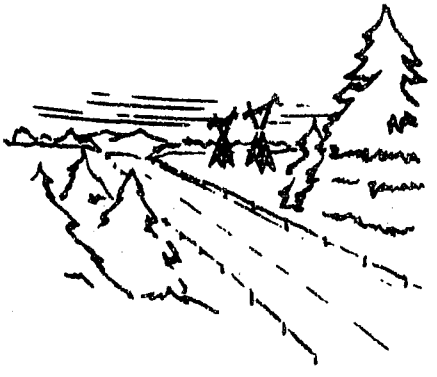
- In addition to steel and aluminum transmission towers, the use of towers constructed of fiberglass, reinforced plastic, laminated wood, concrete, and other materials should be considered.

- The use of treated single or double wood poles should be considered in forest or timber areas.

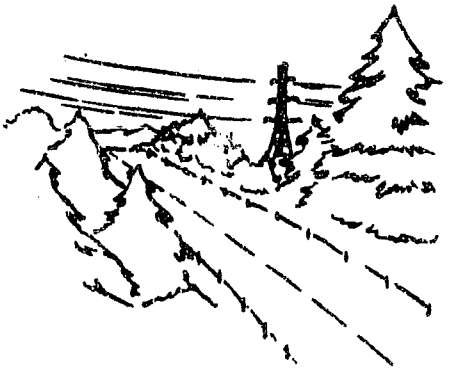
- The use of weathered galvanized steel structures should be considered when transmission towers are to be silhouetted against the sky.

- The form of the insulator should be integrated with the form of the transmission tower. Where both a strain insulator and a post insulator are used on a single tower, the designs of each should be coordinated with the form of the tower.

- Where two or more circuits are required at highway crossings, the use of multiple circuit towers should be considered.



POOR EXAMPLE



PREFERRED

The Maintenance of Transmission Line Rights-of-Way

- Once a cover of vegetation has been established on a right-of-way, it should be properly maintained.

- A grass cover should be maintained in the areas immediately adjacent to transmission towers. Low growing trees, shrubs, herbs and grass should be planted on rights-of-way at adequate distances from transmission facilities.

- Access roads and service roads should be maintained with grass cover, water bars and the proper slope in order to prevent soil erosion.

- In scenic areas, vegetation should be treated with chemicals in late autumn or early spring in order to minimize the impact of the temporary discoloration of the foliage. Chemical growth retardants which would cause permanent discoloration of the foliage should not be used. Care should be taken to assure that chemicals used to control the growth of tree stumps do not damage other vegetation.

- When rights-of-way are inspected to check the operation of appurtenant facilities, attention should be given to locate gullies and fallen timber and to observe the condition of the vegetation. The use of aircraft to inspect and maintain rights-of-way should be encouraged.

Possible Secondary Uses of Rights-of-Way

One of the potential benefits of transmission line routes is that clearings at safe distances adjacent to transmission facilities may be used for secondary purposes. The following should be considered as possible secondary uses of rights-of-way:

--Cultivation of Christmas trees, elderberry or huckleberry bushes, and other nursery stock.
--Parks.
--Golf courses.
--Equestrian or bicycle paths.
--Orchards.
--Picnic areas.
--Bird sanctuaries.
--Game refuges.
--Hiking trail routes.
--General agriculture.
--Winter sports.

The Location of Appurtenant Aboveground Facilities

- The proposed designs and locations of electric substations, pipeline compressor stations, pumping stations, cooling stations, and other aboveground facilities, including meter and regulator stations and communication towers, should be made available to local agencies which have jurisdiction over these matters sufficiently in advance of construction deadlines to permit adequate review.

- Unobtrusive sites should be selected where possible for the location of substations and like facilities.

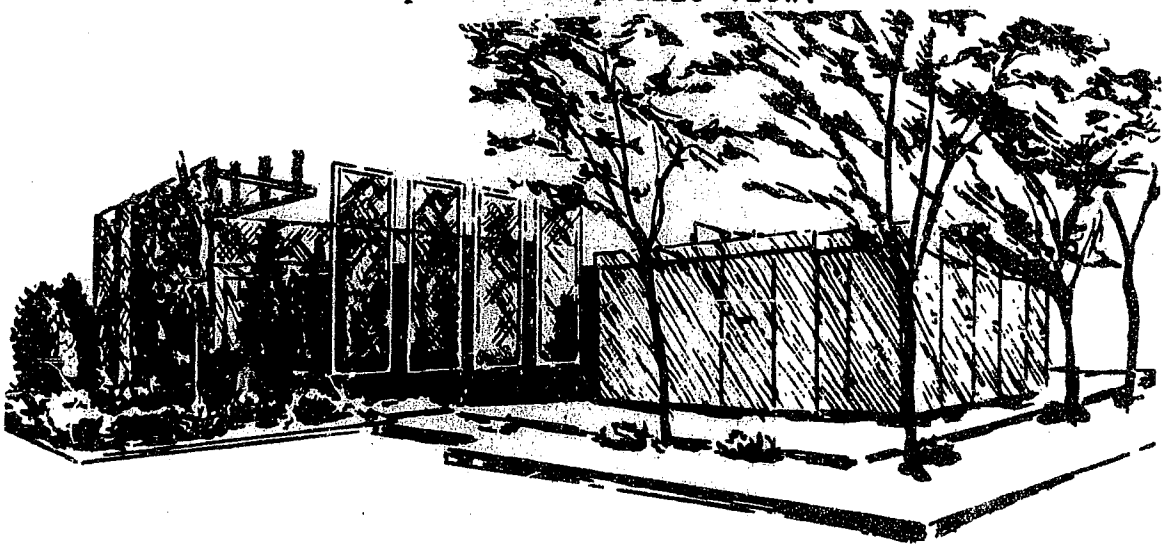
- Potential noise should be considered when the locations for gas turbines, substations and like facilities are being determined. Such facilities should be located in areas where sound will not be resonated.

- The size of substations and like facilities should be kept to the minimum feasible.

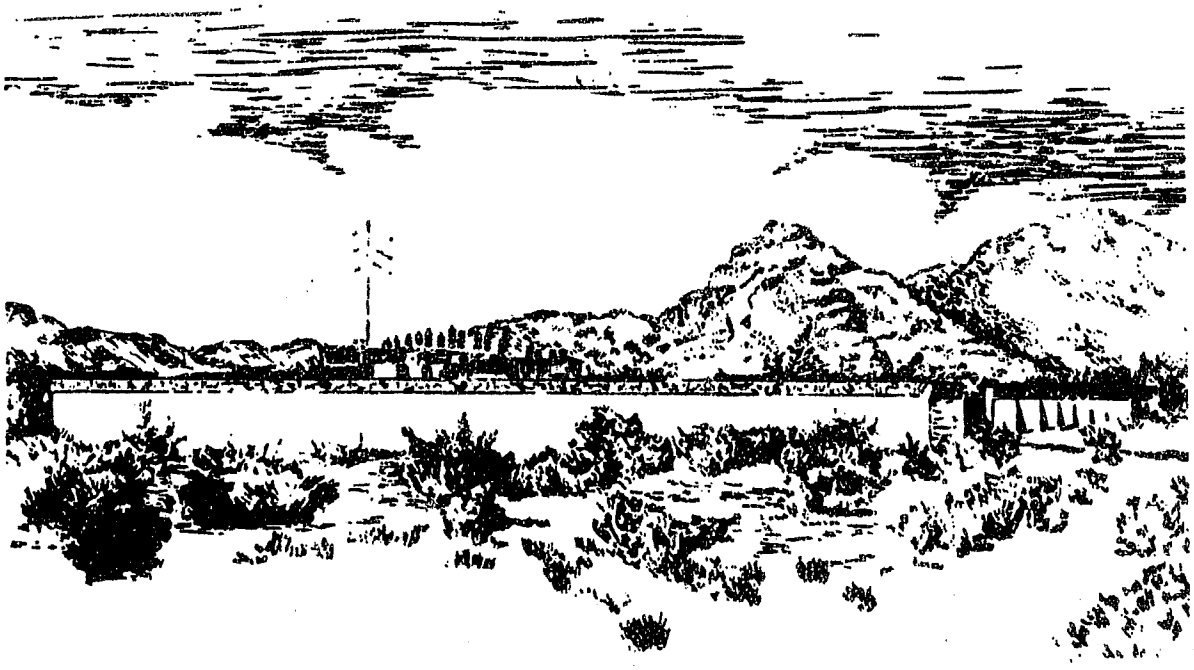
- The designs of the exteriors of substations and like facilities should comport with the surroundings and other buildings in the area. For example, if a substation is to be located in a residential area, its design should comport with the designs of nearby residences.

- If substations are located in residential or other scenic areas, the appurtenant transmission conductors and distribution conductors adjacent to the substations should be placed underground.

- Trees and shrubs should be planted in the area adjacent to substations and like facilities in order to conceal them in part from public view.



- Storage tanks in scenic areas should be placed belowground where feasible. If storage tanks must be placed aboveground, they should be concealed in part by appropriate plantings of trees and shrubs.
- The materials used to construct substations, storage tanks and like facilities and the colors of these materials should comport with the surroundings.



Form L-11
(September 1, 1966)

FEDERAL POWER COMMISSION

TERMS AND CONDITIONS OF LICENSE
FOR UNCONSTRUCTED MAJOR PROJECT AFFECTING
THE INTERESTS OF INTERSTATE OR FOREIGN COMMERCE

Article 1. The entire project, as described in the order of the Commission, shall be subject to all the provisions, terms, and conditions of the license.

Article 2. No substantial change shall be made in the maps, plans, specifications, and statements described and designated as exhibits and approved by the Commission in its order as a part of the license until such change shall have been approved by the Commission: Provided, however: That if the Licensee or the Commission deems it necessary or desirable that said approved exhibits, or any of them, be changed, there shall be submitted to the Commission for approval amended, supplemental, or additional exhibit or exhibits covering the proposed changes which, upon approval by the Commission, shall become a part of the license and shall supersede, in whole or in part, such exhibit or exhibits theretofore made a part of the license as may be specified by the Commission.

Article 3. Said project works shall be constructed in substantial conformity with the approved exhibits referred to in Article 2 herein or as changed in accordance with the provisions of said article. Except when emergency shall require for the protection of navigation, life,

health, or property, no substantial alteration or addition not in conformity with the approved plans shall be made to any dam or other project works under the license without the prior approval of the Commission; and any emergency alteration or addition so made shall thereafter be subject to such modification and change as the Commission may direct. Minor changes in the project works or divergence from such approved exhibits may be made if such changes will not result in decrease in efficiency, in material increase in cost, or in impairment of the general scheme of development; but any of such minor changes made without the prior approval of the Commission, which in its judgment have produced or will produce any of such results, shall be subject to such alteration as the Commission may direct. Upon the completion of the project, or at such other time as the Commission may direct, the Licensee shall submit to the Commission for approval revised maps, plans, specifications, and statements insofar as necessary to show any divergence from or variations in the project area and project boundary as finally located or in the project works as actually constructed when compared with the area and boundary shown and the works described in the license or in the maps, plans, specifications, and statements approved by the Commission, together with a statement in writing setting forth the reasons which in the opinion of the Licensee necessitated or justified variations in or divergence from the approved maps, plans, specifications, and statements. Such revised maps, plans, specifications, and statements shall, if and when approved by the Commission, be made a part of the license under the provisions of Article 2 hereof.

Article 4. The construction, operation, and maintenance of the project and any work incident to additions or alterations shall be subject to the inspection and supervision of the Regional Engineer, Federal Power Commission, in the region wherein the project is located, or of such other officer or agent as the Commission may designate, who shall be the authorized representative of the Commission for such purposes. The Licensee shall cooperate fully with said representative and shall furnish him a detailed program of inspection by the Licensee that will provide for an adequate and qualified inspection force for construction of the project. Construction of the project works or any feature thereof shall not be initiated until the program of inspection for the project works or any such feature thereof has been approved by said representative. The Licensee shall also furnish to said representative such further information as he may require concerning the construction, operation, and maintenance of the project, and of any alteration thereof, and shall notify him of the date upon which work will begin, as far in advance thereof as said representative may reasonably specify, and shall notify him promptly in writing of any suspension of work for a period of more than one week, and of its resumption and completion. The Licensee shall allow him and other officers or employees of the United States, showing proper credentials, free and unrestricted access to, through, and across the project lands and project works in the performance of their official duties. The Licensee shall comply with such rules and regulations of general or special applicability as the Commission may from time to time prescribe for the protection of life, health, or property.

Article 5. The Licensee within two years from date of issuance of the license shall acquire title in fee or the right to use in perpetuity all lands, other than lands of the United States, necessary or appropriate for the construction, maintenance and operation of the project. The Licensee, its successors and assigns shall, during the period of the license, retain the possession of all project property covered by the license as issued or as later amended, including the project area, the project works, and all franchises, easements, water rights, and rights of occupancy and use; and none of such properties shall be voluntarily sold, leased, transferred, abandoned, or otherwise disposed of without the prior written approval of the Commission, except that the Licensee may lease or otherwise dispose of interests in project lands or property without specific written approval of the Commission pursuant to the then current regulations of the Commission. The provisions of this article are not intended to prevent the abandonment or the retirement from service of structures, equipment, or other project works in connection with replacements thereof when they become obsolete, inadequate, or inefficient for further service due to wear and tear; and mortgage or trust deed or judicial sales made thereunder, or tax sales, shall not be deemed voluntary transfers within the meaning of this article.

Article 6. In the event the project is taken over by the United States upon the termination of the license, as provided in Section 14 of the Act, or is transferred to a new licensee under the provisions of Section 15 of the Act, the Licensee, its successors and assigns will be responsible for and will make good any defect of title to or of right of occupancy and use in any of such project property which is necessary or appropriate or valuable and serviceable in the maintenance and operation of the project, and will pay and discharge, or will assume responsibility for payment and discharge, of all liens or incumbrances upon the project or project property created by the Licensee or created or incurred after the issuance of the license: Provided, That the provisions of this article are not intended to require the Licensee, for the purpose of transferring the project to the United States or to a new Licensee, to acquire any different title to or right of occupancy and use in any of such project property than was necessary to acquire for its own purposes as Licensee.

Article 7. The actual legitimate original cost of the original project, and of any addition thereto or betterment thereof, shall be determined by the Commission in accordance with the Act and the Commission's rules and regulations thereunder.

Article 8. After the first 20 years of operation of the project under the license, six percent per annum shall be the specified rate of return on the net investment in the project for determining surplus earnings of the project for the establishment and maintenance of amortization reserves, pursuant to Section 10 (d) of the Act; one-half of the

project surplus earnings, if any, accumulated after the first 20 years of operation under the license, in excess of six percent per annum on the net investment, shall be set aside in a project amortization reserve account as of the end of each fiscal year; Provided, that, if and to the extent that there is a deficiency of project earnings below six percent per annum for any fiscal year or years after the first 20 years of operation under the license, the amount of such deficiency shall be deducted from the amount of any surplus earnings accumulated thereafter until absorbed, and one-half of the remaining surplus earnings, if any thus cumulatively computed, shall be set aside in the project amortization reserve account; and the amounts thus established in the project amortization reserve account shall be maintained therein until further order of the Commission.

Article 9. For the purpose of determining the stage and flow of the stream or streams from which water is diverted for the operation of the project works, the amount of water held in and withdrawn from storage, and the effective head on the turbines, the Licensee shall install and thereafter maintain such gages and stream-gaging stations as the Commission may deem necessary and best adapted to the requirements; and shall provide for the required readings of such gages and for the adequate rating of such stations. The Licensee shall also install and maintain standard meters adequate for the determination of the amount of electric energy generated by said project works. The number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, shall at all times be satisfactory to the Commission and may be

altered from time to time if necessary to secure adequate determinations, but such alteration shall not be made except with the approval of the Commission or upon the specific direction of the Commission. The installation of gages, the ratings of said stream or streams, and the determination of the flow thereof, shall be under the supervision of, or in cooperation with, the District Engineer of the United States Geological Survey having charge of stream-gaging operations in the region of said project, and the Licensee shall advance to the United States Geological Survey the amount of funds estimated to be necessary for such supervision or cooperation for such periods as may be mutually agreed upon. The Licensee shall keep accurate and sufficient record of the foregoing determinations to the satisfaction of the Commission, and shall make return of such records annually at such time and in such form as the Commission may prescribed.

Article 10. The Licensee shall install additional capacity or make other changes in the project as directed by the Commission, to the extent that it is economically sound and in the public interest to do so, after notice and opportunity for hearing.

Article 11. The Licensee shall, after notice and opportunity for hearing, coordinate the operation of the project, electrically and hydraulically, with such other projects or power systems and in such manner as the Commission may direct in the interest of power and other beneficial public uses of water resources, and on such conditions concerning the equitable sharing of benefits by the Licensee as the Commission may order.

Article 12. Whenever the Licensee is directly benefited by the construction work of another licensee, a permittee, or of the United States of a storage reservoir or other headwater improvement, the Licensee shall reimburse the owner of the headwater improvement for such part of the annual charges for interest, maintenance, and depreciation thereon as the Commission shall determine to be equitable, and shall pay to the United States the cost of making such determination as fixed by the Commission. For benefits provided by a storage reservoir or other headwater improvement of the United States the Licensee shall pay to the Commission the amounts for which it is billed from time to time for such headwater benefits and for the costs of making the determinations pursuant to the then current Commission Regulations under the Federal Power Act within 60 days from the date of rendition of a bill therefore and, upon failure to do so, shall thereafter be subject to the payment of the penalties specified in the then current Regulations. The Licensee shall have the right to pay such amounts under protest within the 60-day period and to reconsideration of the determination of the amounts billed or a hearing as provided by the then current Regulations under the Act.

Article 13. The United States specifically retains and safeguards the right to use water in such amount, to be determined by the Secretary of the Army, as may be necessary for the purposes of navigation on the navigable waterway affected; and the operations of the Licensee, so far as they affect the use, storage and discharge from storage of waters affected by the license, shall at all times be controlled by such

reasonable rules and regulations as the Secretary of the Army may prescribe in the interest of navigation, and as the Commission may prescribe for the protection of life, health, and property, and in the interest of the fullest practicable conservation and utilization of such waters for power purposes and for other beneficial public uses, including recreational purposes; and the Licensee shall release water from the project reservoir at such rate in cubic feet per second, or such volume in acre-feet per specified period of time, as the Secretary of the Army may prescribe in the interest of navigation, or as the Commission may prescribe for the other purposes hereinbefore mentioned.

Article 14. On the application of any person, association, corporation, Federal agency, State or municipality, the Licensee shall, after notice and opportunity for hearing, permit such reasonable use of its reservoirs or other project properties, including works, lands and water rights, or parts thereof, as may be ordered by the Commission in the interest of comprehensive development of the waterway or waterways involved and the conservation and utilization of water resources of the region, for water supply for the purpose of steam-electric, irrigation, industrial, municipal or similar uses. The Licensee shall receive reasonable compensation, at least full reimbursement for any damages or expenses which the joint use causes him to incur, for use of its reservoirs or other project properties or parts thereof for such purposes, any such compensation to be fixed by the Commission either by approval of an agreement between the Licensee and the party or parties benefiting or after notice and opportunity for hearing. Applications shall contain

information in sufficient detail to afford a full understanding of the proposed use, including satisfactory evidence that the applicant possesses necessary water rights pursuant to applicable State law, or a showing of cause why such evidence cannot be concurrently submitted, and a statement as to the relationship of the proposed use to any State or municipal plans or orders which may have been adopted with respect to the use of such waters.

Article 15. In the construction or maintenance of the project works, the Licensee shall place and maintain suitable structures and devices to reduce to a reasonable degree the liability of contact between its transmission lines and telegraph, telephone and other signal wires or power transmission lines constructed prior to its transmission lines and not owned by the Licensee, and shall also place and maintain suitable structures and devices to reduce to a reasonable degree the liability of any structures or wires falling or obstructing traffic or endangering life. None of the provisions of this article are intended to relieve the Licensee from any responsibility or requirement which may be imposed by other lawful authority for avoiding or eliminating inductive intereference.

Article 16. The Licensee shall, for the conservation and development of fish and wildlife resources, construct, maintain, and operate, or arrange for the construction, maintenance and operation of such facilities and comply with such reasonable modifications of the project structures and operation as may be ordered by the Commission upon its own motion or upon the recommendation of the Secretary of the Interior or the fish and wildlife agency or agencies of any State in which the project or a part thereof is located, after notice and opportunity for hearing and upon findings based on substantial evidence that such facilities and modifications are necessary and desirable, reasonably consistent with the primary purpose of the project, and consistent with the provisions of the Act.

Article 17. Whenever the United States shall desire, in connection with the project, to construct fish and wildlife facilities or to improve the existing fish and wildlife facilities at its own expense, the Licensee shall permit the United States or its designated agency to use, free of cost, such of Licensee's lands and interest in lands, reservoirs, waterways and project works as may be reasonably required to complete such facilities or such improvements thereof. In addition, after notice and opportunity for hearing, the Licensee shall modify the project operation as may be prescribed by the Commission, reasonably consistent with the primary purpose of the project, in order to permit the maintenance and operation of the fish and wildlife facilities constructed or improved by the United States under the provisions of this article. This article shall not be interpreted to place any obligation on the United States to construct or improve fish and wildlife facilities or to relieve the Licensee of any obligation under this license.

Article 18. The Licensee shall construct, maintain and operate or shall arrange for the construction, maintenance and operation of such recreational facilities including modifications thereto, such as access roads, wharves, launching ramps, beaches, picnic and camping areas, sanitary facilities and utilities, and shall comply with such reasonable modifications of the project structures and operations as may be prescribed hereafter by the Commission during the term of this license upon its own motion or upon the recommendation of the Secretary of the Interior or other interested Federal and State agencies, after notice and opportunity for hearing and upon findings based upon substantial evidence that such facilities and modifications are necessary and desirable, and reasonably consistent with the primary purpose of the project.

Article 19. So far as is consistent with proper operation of the project, the Licensee shall allow the public free access, to a reasonable extent, to project waters and adjacent project lands owned by the Licensee for the purpose of full public utilization of such lands and waters for navigation and recreational purposes, including fishing and hunting, and shall allow to a reasonable extent for such purposes the construction of access roads, wharves, landings, and other facilities on its lands the occupancy of which may in appropriate circumstances be subject to payment of rent to the Licensee in a reasonable amount: Provided, that the Licensee may reserve from public access, such portions of the project waters, adjacent lands, and project facilities as may be necessary for the protection of life, health, and property and Provided, further, that the Licensee's consent to the construction of access roads, wharves, landings, and other facilities shall not, without its express agreement, place upon the Licensee any obligation to construct or maintain such facilities. These facilities are in addition to the facilities that the Licensee may construct and maintain as required by the license.

Article 20. The Licensee shall be responsible for and shall take reasonable measures to prevent soil erosion on lands adjacent to the stream and to prevent stream siltation or pollution resulting from construction, operation or maintenance of the project. The Commission upon request, or upon its own motion, may order the Licensee to construct and maintain such preventive works to accomplish these purposes and to revegetate exposed soil surface as the Commission may find to be necessary after notice and opportunity for hearing.

Article 21. There is reserved to the appropriate department or agency of the United States, or of the State or county involved, the right to take over, maintain, and supervise the use of any project road as a public road.

Article 22. The Licensee shall clear and keep clear to an adequate width lands along open conduits, shall clear lands within the bottom and margin of reservoirs (except as may be otherwise specified in the license), and shall dispose of all temporary structures, unused timber, brush, refuse, or inflammable material resulting from the clearing of lands or from the maintenance or alteration of the project works. In addition, all trees along the margins of reservoirs which may die during operations of the project shall be removed. The clearing of the lands and the disposal of the material shall be done with due diligence and to the satisfaction of the authorized representative of the Commission.

Article 23. If the Licensee shall cause or suffer essential project property to be removed or destroyed or to become unfit for use, without adequate replacement, or shall abandon or discontinue good faith operation of the project for a period of three years, or refuse or neglect to comply with the terms of the license and the lawful orders of the Commission mailed to the record address of the Licensee or its agent, the Commission will deem it to be the intent of the Licensee to surrender the license, and not less than 90 days after public notice may in its discretion terminate the license.

Article 24. Upon abandonment of the project the Licensee shall remove all structures, equipment and power lines from the stream and restore said stream to a condition satisfactory to the Commission's authorized representative and shall fulfill such other obligations under the license as the Commission may prescribe.

Article 25. The right of the Licensee and of its transferees and successors to use or occupy waters, over which the United States has jurisdiction, under the license, for the purpose of maintaining the project works or otherwise, shall absolutely cease at the end of the license period, unless Licensee has obtained a new license pursuant to the then existing laws and regulations or an annual license under the terms and conditions of this license.

Article 26. The terms and conditions expressly set forth in the license shall not be construed as impairing any terms and conditions of the Federal Power Act which are not expressly set forth herein.

Form L-11
(September 1, 1966)

FEDERAL POWER COMMISSION

TERMS AND CONDITIONS OF LICENSE
FOR UNCONSTRUCTED MAJOR PROJECT AFFECTING
THE INTERESTS OF INTERSTATE OR FOREIGN COMMERCE

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health, or property, no substantial alteration or addition not in conformity with the approved plans shall be made to any dam or other project works under the license without the prior approval of the Commission; and any emergency alteration or addition so made shall thereafter be subject to such modification and change as the Commission may direct. Minor changes in the project works or divergence from such approved exhibits may be made if such changes will not result in decrease in efficiency, in material increase in cost, or in impairment of the general scheme of development; but any of such minor changes made without the prior approval of the Commission, which in its judgment have produced or will produce any of such results, shall be subject to such alteration as the Commission may direct. Upon the completion of the project, or at such other time as the Commission may direct, the Licensee shall submit to the Commission for approval revised maps, plans, specifications, and statements insofar as necessary to show any divergence from or variations in the project area and project boundary as finally located or in the project works as actually constructed when compared with the area and boundary shown and the works described in the license or in the maps, plans, specifications, and statements approved by the Commission, together with a statement in writing setting forth the reasons which in the opinion of the Licensee necessitated or justified variations in or divergence from the approved maps, plans, specifications, and statements. Such revised maps, plans, specifications, and statements shall, if and when approved by the Commission, be made a part of the license under the provisions of Article 2 hereof.

Article 4. The construction, operation, and maintenance of the project and any work incident to additions or alterations shall be subject to the inspection and supervision of the Regional Engineer, Federal Power Commission, in the region wherein the project is located, or of such other officer or agent as the Commission may designate, who shall be the authorized representative of the Commission for such purposes. The Licensee shall cooperate fully with said representative and shall furnish him a detailed program of inspection by the Licensee that will provide for an adequate and qualified inspection force for construction of the project. Construction of the project works or any feature thereof shall not be initiated until the program of inspection for the project works or any such feature thereof has been approved by said representative. The Licensee shall also furnish to said representative such further information as he may require concerning the construction, operation, and maintenance of the project, and of any alteration thereof, and shall notify him of the date upon which work will begin, as far in advance thereof as said representative may reasonably specify, and shall notify him promptly in writing of any suspension of work for a period of more than one week, and of its resumption and completion. The Licensee shall allow him and other officers or employees of the United States, showing proper credentials, free and unrestricted access to, through, and across the project lands and project works in the performance of their official duties. The Licensee shall comply with such rules and regulations of general or special applicability as the Commission may from time to time prescribe for the protection of life, health, or property.

Article 5. The Licensee within two years from date of issuance of the license shall acquire title in fee or the right to use in perpetuity all lands, other than lands of the United States, necessary or appropriate for the construction, maintenance and operation of the project. The Licensee, its successors and assigns shall, during the period of the license, retain the possession of all project property covered by the license as issued or as later amended, including the project area, the project works, and all franchises, easements, water rights, and rights of occupancy and use; and none of such properties shall be voluntarily sold, leased, transferred, abandoned, or otherwise disposed of without the prior written approval of the Commission, except that the Licensee may lease or otherwise dispose of interests in project lands or property without specific written approval of the Commission pursuant to the then current regulations of the Commission. The provisions of this article are not intended to prevent the abandonment or the retirement from service of structures, equipment, or other project works in connection with replacements thereof when they become obsolete, inadequate, or inefficient for further service due to wear and tear; and mortgage or trust deed or judicial sales made thereunder, or tax sales, shall not be deemed voluntary transfers within the meaning of this article.

Article 6. In the event the project is taken over by the United States upon the termination of the license, as provided in Section 14 of the Act, or is transferred to a new licensee under the provisions of Section 15 of the Act, the Licensee, its successors and assigns will be responsible for and will make good any defect of title to or of right of occupancy and use in any of such project property which is necessary or appropriate or valuable and serviceable in the maintenance and operation of the project, and will pay and discharge, or will assume responsibility for payment and discharge, of all liens or incumbrances upon the project or project property created by the Licensee or created or incurred after the issuance of the license: Provided, That the provisions of this article are not intended to require the Licensee, for the purpose of transferring the project to the United States or to a new Licensee, to acquire any different title to or right of occupancy and use in any of such project property than was necessary to acquire for its own purposes as Licensee.

Article 7. The actual legitimate original cost of the original project, and of any addition thereto or betterment thereof, shall be determined by the Commission in accordance with the Act and the Commission's rules and regulations thereunder.

Article 8. After the first 20 years of operation of the project under the license, six percent per annum shall be the specified rate of return on the net investment in the project for determining surplus earnings of the project for the establishment and maintenance of amortization reserves, pursuant to Section 10 (d) of the Act; one-half of the

project surplus earnings, if any, accumulated after the first 20 years of operation under the license, in excess of six percent per annum on the net investment, shall be set aside in a project amortization reserve account as of the end of each fiscal year: Provided, that, if and to the extent that there is a deficiency of project earnings below six percent per annum for any fiscal year or years after the first 20 years of operation under the license, the amount of such deficiency shall be deducted from the amount of any surplus earnings accumulated thereafter until absorbed, and one-half of the remaining surplus earnings, if any thus cumulatively computed, shall be set aside in the project amortization reserve account; and the amounts thus established in the project amortization reserve account shall be maintained therein until further order of the Commission.

Article 9. For the purpose of determining the stage and flow of the stream or streams from which water is diverted for the operation of the project works, the amount of water held in and withdrawn from storage, and the effective head on the turbines, the Licensee shall install and thereafter maintain such gages and stream-gaging stations as the Commission may deem necessary and best adapted to the requirements; and shall provide for the required readings of such gages and for the adequate rating of such stations. The Licensee shall also install and maintain standard meters adequate for the determination of the amount of electric energy generated by said project works. The number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, shall at all times be satisfactory to the Commission and may be

altered from time to time if necessary to secure adequate determinations, but such alteration shall not be made except with the approval of the Commission or upon the specific direction of the Commission. The installation of gages, the ratings of said stream or streams, and the determination of the flow thereof, shall be under the supervision of, or in cooperation with, the District Engineer of the United States Geological Survey having charge of stream-gaging operations in the region of said project, and the Licensee shall advance to the United States Geological Survey the amount of funds estimated to be necessary for such supervision or cooperation for such periods as may be mutually agreed upon. The Licensee shall keep accurate and sufficient record of the foregoing determinations to the satisfaction of the Commission, and shall make return of such records annually at such time and in such form as the Commission may prescribed.

Article 10. The Licensee shall install additional capacity or make other changes in the project as directed by the Commission, to the extent that it is economically sound and in the public interest to do so, after notice and opportunity for hearing.

Article 11. The Licensee shall, after notice and opportunity for hearing, coordinate the operation of the project, electrically and hydraulically, with such other projects or power systems and in such manner as the Commission may direct in the interest of power and other beneficial public uses of water resources, and on such conditions concerning the equitable sharing of benefits by the Licensee as the Commission may order.

Article 12. Whenever the Licensee is directly benefited by the construction work of another licensee, a permittee, or of the United States of a storage reservoir or other headwater improvement, the Licensee shall reimburse the owner of the headwater improvement for such part of the annual charges for interest, maintenance, and depreciation thereon as the Commission shall determine to be equitable, and shall pay to the United States the cost of making such determination as fixed by the Commission. For benefits provided by a storage reservoir or other headwater improvement of the United States the Licensee shall pay to the Commission the amounts for which it is billed from time to time for such headwater benefits and for the costs of making the determinations pursuant to the then current Commission Regulations under the Federal Power Act within 60 days from the date of rendition of a bill therefore and, upon failure to do so, shall thereafter be subject to the payment of the penalties specified in the then current Regulations. The Licensee shall have the right to pay such amounts under protest within the 60-day period and to reconsideration of the determination of the amounts billed or a hearing as provided by the then current Regulations under the Act.

Article 13. The United States specifically retains and safeguards the right to use water in such amount, to be determined by the Secretary of the Army, as may be necessary for the purposes of navigation on the navigable waterway affected; and the operations of the Licensee, so far as they affect the use, storage and discharge from storage of waters affected by the license, shall at all times be controlled by such

reasonable rules and regulations as the Secretary of the Army may prescribe in the interest of navigation, and as the Commission may prescribe for the protection of life, health, and property, and in the interest of the fullest practicable conservation and utilization of such waters for power purposes and for other beneficial public uses, including recreational purposes; and the Licensee shall release water from the project reservoir at such rate in cubic feet per second, or such volume in acre-feet per specified period of time, as the Secretary of the Army may prescribe in the interest of navigation, or as the Commission may prescribe for the other purposes hereinbefore mentioned.

Article 14. On the application of any person, association, corporation, Federal agency, State or municipality, the Licensee shall, after notice and opportunity for hearing, permit such reasonable use of its reservoirs or other project properties, including works, lands and water rights, or parts thereof, as may be ordered by the Commission in the interest of comprehensive development of the waterway or waterways involved and the conservation and utilization of water resources of the region, for water supply for the purpose of steam-electric, irrigation, industrial, municipal or similar uses. The Licensee shall receive reasonable compensation, at least full reimbursement for any damages or expenses which the joint use causes him to incur, for use of its reservoirs or other project properties or parts thereof for such purposes, any such compensation to be fixed by the Commission either by approval of an agreement between the Licensee and the party or parties benefiting or after notice and opportunity for hearing. Applications shall contain

information in sufficient detail to afford a full understanding of the proposed use, including satisfactory evidence that the applicant possesses necessary water rights pursuant to applicable State law, or a showing of cause why such evidence cannot be concurrently submitted, and a statement as to the relationship of the proposed use to any State or municipal plans or orders which may have been adopted with respect to the use of such waters.

Article 15. In the construction or maintenance of the project works, the Licensee shall place and maintain suitable structures and devices to reduce to a reasonable degree the liability of contact between its transmission lines and telegraph, telephone and other signal wires or power transmission lines constructed prior to its transmission lines and not owned by the Licensee, and shall also place and maintain suitable structures and devices to reduce to a reasonable degree the liability of any structures or wires falling or obstructing traffic or endangering life. None of the provisions of this article are intended to relieve the Licensee from any responsibility or requirement which may be imposed by other lawful authori for avoiding or eliminating inductive intereference.

Article 16. The Licensee shall, for the conservation and development of fish and wildlife resources, construct, maintain, and operate, or arrange for the construction, maintenance and operation of such facilities and comply with such reasonable modifications of the project structures and operation as may be ordered by the Commission upon its own motion or upon the recommendation of the Secretary of the Interior or the fish and wildlife agency or agencies of any State in which the project or a part thereof is located, after notice and opportunity for hearing and upon findings based on substantial evidence that such facilities and modifications are necessary and desirable, reasonably consistent with the primary purpose of the project, and consistent with the provisions of the Act.

[redacted] Whenever the United States shall desire, in connection with the project, to construct fish and wildlife facilities or to improve the existing fish and wildlife facilities at its own expense, the Licensee shall permit the United States or its designated agency to use, free of cost, such of Licensee's lands and interest in lands, reservoirs, waterways and project works as may be reasonably required to complete such facilities or such improvements thereof. In addition, after notice and opportunity for hearing, the Licensee shall modify the project operation as may be prescribed by the Commission, reasonably consistent with the primary purpose of the project, in order to permit the maintenance and operation of the fish and wildlife facilities constructed or improved by the United States under the provisions of this article. This article shall not be interpreted to place any obligation on the United States to construct or improve fish and wildlife facilities or to relieve the Licensee of any obligation under this license.

Article 18. The Licensee shall construct, maintain and operate or shall arrange for the construction, maintenance and operation of such recreational facilities including modifications thereto, such as access roads, wharves, launching ramps, beaches, picnic and camping areas, sanitary facilities and utilities, and shall comply with such reasonable modifications of the project structures and operations as may be prescribed hereafter by the Commission during the term of this license upon its own motion or upon the recommendation of the Secretary of the Interior or other interested Federal and State agencies, after notice and opportunity for hearing and upon findings based upon substantial evidence that such facilities and modifications are necessary and desirable, and reasonably consistent with the primary purpose of the project.

[redacted] the Licensee shall allow the public free access, to a reasonable extent, to project waters and adjacent project lands owned by the Licensee for the purpose of full public utilization of such lands and waters for navigation and recreational purposes, including fishing and hunting, and shall allow to a reasonable extent for such purposes the construction of access roads, wharves, landings, and other facilities on its lands the occupancy of which may in appropriate circumstances be subject to payment of rent to the Licensee in a reasonable amount: Provided, that the Licensee may reserve from public access, such portions of the project waters, adjacent lands, and project facilities as may be necessary for the protection of life, health, and property and Provided, further, that the Licensee's consent to the construction of access roads, wharves, landings, and other facilities shall not, without its express agreement, place upon the Licensee any obligation to construct or maintain such facilities. These facilities are in addition to the facilities that the Licensee may construct and maintain as required by the license.

Article 20. The Licensee shall be responsible for and shall take reasonable measures to prevent soil erosion on lands adjacent to the stream and to prevent stream siltation or pollution resulting from construction, operation or maintenance of the project. The Commission upon request, or upon its own motion, may order the Licensee to construct and maintain such preventive works to accomplish these purposes and to revegetate exposed soil surface as the Commission may find to be necessary after notice and opportunity for hearing.

Article 21. There is reserved to the appropriate department or agency of the United States, or of the State or county involved, the right to take over, maintain, and supervise the use of any project road as a public road.

Article 22. The Licensee shall clear and keep clear to an adequate width lands along open conduits, shall clear lands within the bottom and margin of reservoirs (except as may be otherwise specified in the license), and shall dispose of all temporary structures, unused timber, brush, refuse, or inflammable material resulting from the clearing of lands or from the maintenance or alteration of the project works. In addition, all trees along the margins of reservoirs which may die during operations of the project shall be removed. The clearing of the lands and the disposal of the material shall be done with due diligence and to the satisfaction of the authorized representative of the Commission.

Article 23. If the Licensee shall cause or suffer essential project property to be removed or destroyed or to become unfit for use, without adequate replacement, or shall abandon or discontinue good faith operation of the project for a period of three years, or refuse or neglect to comply with the terms of the license and the lawful orders of the Commission mailed to the record address of the Licensee or its agent, the Commission will deem it to be the intent of the Licensee to surrender the license, and not less than 90 days after public notice may in its discretion terminate the licence.

Article 24. Upon abandonment of the project the Licensee shall remove all structures, equipment and power lines from the stream and restore said stream to a condition satisfactory to the Commission's authorized representative and shall fulfill such other obligations under the license as the Commission may prescribe.

Article 25. The right of the Licensee and of its transferees and successors to use or occupy waters, over which the United States has jurisdiction, under the license, for the purpose of maintaining the project works or otherwise, shall absolutely cease at the end of the license period, unless Licensee has obtained a new license pursuant to the then existing laws and regulations or an annual license under the terms and conditions of this license.

Article 26. The terms and conditions expressly set forth in the license shall not be construed as impairing any terms and conditions of the Federal Power Act which are not expressly set forth herein.

84 FERC ¶ 62,040

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

New York Power Authority) Project No. 2685-005

ORDER APPROVING FLOOD EROSION CONTROL PLAN

(Issued July 13, 1998)

New York Power Authority (NYPA), licensee for the Blenheim-Gilboa Project, FERC No. 2685, filed a flood erosion control plan on January 16 and supplemented the plan on February 17 and June 17, 1998. The licensee filed the plan in accordance with license article 20. The Blenheim-Gilboa Project is on Schoharie Creek in Schoharie County, New York.

BACKGROUND

The Commission issued a license to NYPA for the construction, operation, and maintenance of the Blenheim-Gilboa Project on June 6, 1969. 1/ The project began operating in 1973 using an upper and lower reservoir to pump and store water for hydropower generation. The lower reservoir is on Schoharie Creek and the upper reservoir is at the top of a hill, east of the lower reservoir. The project is essentially a closed loop system which daily employs its usable storage between the lower and upper reservoirs by pumping at night and generating during the day.

The lower reservoir is operated so that outflows generally equal inflows. Outflows from the reservoir are controlled by a gated spillway leading to a concrete-lined chute and stilling basin. A 1,500-foot-long channel, downstream from the stilling basin, ties into the existing creek alignment at almost a right angle, as shown in Figure 1.

Immediately downstream of the intersection between the spillway channel and the natural alignment of Schoharie Creek is an overflow channel on the north side of the creek. The overflow channel receives flows from the main creek channel during periods of high flows. High flows also erode cobbles and sediment from the sides of the spillway channel downstream of the stilling basin. The eroded material collects on the interior of the bend which forces flows towards the entrance of the overflow channel. The bend and entrance to the overflow channel are within the project boundary.

In the past, NYPA has built up the bank of Schoharie Creek at the entrance to the overflow channel at the request of

1/ 41 FPC p. 712.

CAB 1, DRW 4, POUCH 35
FERC - WATER
1658

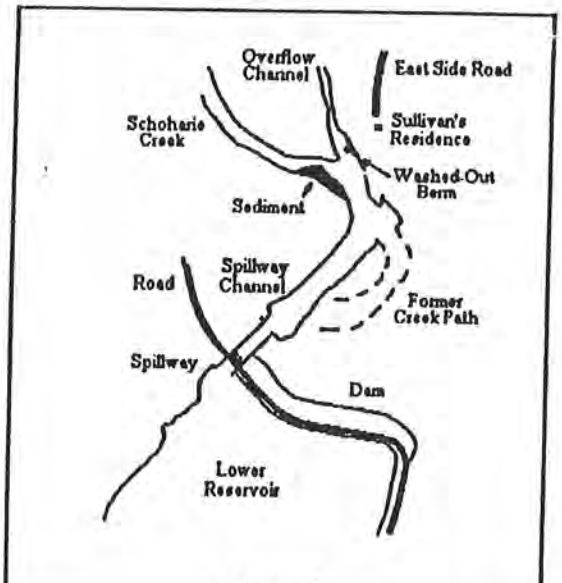

Figure 1

property owners along the overflow channel. In 1980 and 1987, NYPA removed cobbles which collected on the interior of the bend and placed them at the entrance to the overflow channel. The top of the cobble berm was about elevation 810 feet, matching surrounding creek bank levels. With the berm in place, the overflow channel received flows about once every one to two years when creek flows exceeded about 6,500 cfs.

In January 1996, the project experienced a flood with maximum inflows to the lower reservoir exceeding 80,000 cfs. During the flood, the cobble berm at the entrance to the overflow channel was washed away. In November and December 1996, residents along the overflow channel informed the Commission that the licensee never reconstructed the berm. The residents claimed that, without the berm, the overflow channel frequently passes flows which flood and erode their properties.

Following the complaints, the Commission and NYPA corresponded several times regarding possible modifications to alleviate future flooding and erosion at the bend and along the overflow channel. On June 25, 1997, Commission staff visited the site and met with representatives of the licensee, downstream residents, and local agencies. The meeting provided information staff used to determine if NYPA should modify the bend.

In a July 28, 1997 letter to the licensee, the Commission requested, under the authority of license article 20 2/, that NYPA take steps to prevent the continued erosion and flooding at the bend and along the overflow channel. In the letter, the Commission recommended measures the licensee could take to prevent the erosion and flooding. By letter dated August 27, 1997, the licensee indicated it would follow the recommendations suggested by the Commission and submit the final flood erosion control plan for the Commission's approval in January 1998.

DESCRIPTION OF PLAN

The licensee submitted the flood erosion control plan on January 16 and supplemented the plan on February 17 and June 17, 1998. The licensee proposes to complete the erosion control measures downstream of the lower reservoir's spillway through two phases of construction. After construction, NYPA also proposes periodic maintenance dredging at the bend for the continued passing of flows to the main channel of Schoharie Creek.

During Phase I of construction, NYPA proposes to remove excess material deposited on the interior bend, realign the centerline of Schoharie Creek at the bend, and restore the streambank elevation at the entrance to the overflow channel to elevation 810 feet. This would restore the outer bend to its pre-flood conditions and direct more flows to the main channel of Schoharie Creek. The licensee proposes to perform all phase I construction during the summer low flow period of 1998.

During Phase II of construction, NYPA proposes to place rip-rap on the sides of the spillway channel immediately downstream of the stilling basin. The rip-rap should protect the material along the sides of the spillway channel from eroding and collecting on the interior of the bend. The licensee proposes that phase II construction take place during the summer low flow period of 1999.

2/ Article 20 of the license for the Blenheim-Gilboa Project, states:

"The licensee shall be responsible for and shall take reasonable measures to prevent soil erosion on lands adjacent to the stream and to prevent stream siltation or pollution resulting from construction, operation, or maintenance of the project. The Commission upon request, or upon its own motion, may order the licensee to construct and maintain such preventive works to accomplish these purposes and to revegetate exposed soil surface as the Commission may find to be necessary after notice and opportunity for hearing."

STAFF'S REVIEW AND FINDINGS

The Commission issued a public notice for the flood erosion control plan on March 4, 1998. In response to the notice, the U.S. Fish and Wildlife Service filed comments providing technical assistance by letter dated April 20, 1998. The Commission received no objections to the proposed work.

Commission staff prepared an Environmental Assessment (EA) 3/ for the plan. In the EA, staff concludes that the proposed plan would not constitute a major federal action significantly affecting the quality of the human environment.

Staff finds the work described in the flood erosion control plan is in accordance with the requirements of license article 20 of the Blenheim-Gilboa Project. The proposed construction during the summer low flow periods of 1998 and 1999, and continued maintenance, should alleviate flooding and erosion along the overflow channel for stream flows less then 6,500 cfs.

The Director orders:

(A) The flood erosion control plan filed on January 16 and supplemented on February 17 and June 17, 1998, is approved.

(B) The licensee must notify the Commission's New York Regional Office before it starts, and after it completes, each phase of construction.

(C) The licensee shall, within 90 days after the completion of construction, file with the Commission revised exhibit K and L drawings showing the constructed configuration of Schoharie Creek downstream from the lower reservoir's spillway.

3/ Environmental Assessment, Blenheim-Gilboa Project, FERC No. 2685-005--New York, July 1998. The EA is issued as an appendix to this order.

(D) This order constitutes final agency action. Requests for rehearing by the Commission may be filed within 30 days of the date of issuance of this order, pursuant to 18 C.F.R. § 385.713.

Joseph A. Migala

Carol L. Sampson
Director
Office of Hydropower Licensing

UNITED STATES OF AMERICA 133 FERC ¶ 62,060
FEDERAL ENERGY REGULATORY COMMISSION

New York Power Authority Project No. 2685-024

ORDER APPROVING REVISED EXHIBITS J, K, and M
AND REVISISING ANNUAL CHARGES

(Issued October 19, 2010)

1. On September 1, 2010, and supplemented on October 15, 2010, New York Power Authority (NYPA), licensee for the Blenheim-Gilboa Project, FERC No. 2685,[1] filed revised exhibit J and K drawings and Exhibit M for Commission approval. The project is located on the Schoharie Creek, Schoharie County, New York.

Background

2. In an order issued on June 3, 2010,[2] the license for the Blenheim-Gilboa Project was amended by deleting from the license project's three 345-kV transmission lines: Fraser-Gilboa line, Gilboa-Scotland line; and Gilboa-Leeds line. Ordering paragraph (B) of the order required NYPA to file a revised exhibit M, and revised exhibit J and K drawings reflecting the deletion of the transmission lines.

Review

3. NYPA in its filing stated that the revised Exhibit M filed reflects not only the deletion of the transmission lines but also the actual capacities of the upgraded turbines and generators authorized in an April 28, 2006 order amending the license.[3]

4. Our review found that the revised exhibit M, which reflects the deletion of the three transmission lines and the updating of authorized upgraded generating

[1] 41 FPC 712, Order Issuing License (Major), issued June 6, 1969.

[2] 131 FERC ¶ 62,208, Order Amending License, issued June 3, 2010.

[3] 115 FERC ¶ 62,109 Order Amending License, issued April 28, 2006.

units, conforms to the Commission's rules and regulations and is approved by this order. We georeferenced the Exhibit K drawings and found them in agreement with our current mapping requirements. The Exhibit J and K drawings accurately depict the project area map and the project boundary as authorized and also conform to the Commission's rules and regulations and are approved in ordering paragraph (B) of this order. However, the Exhibit K drawings must include horizontal reference datum before preparing the drawings in aperture card and electronic formats. In ordering paragraph (C) we are requiring the licensee to file the approved exhibit drawings in aperture card and electronic file formats.

5. The revised Exhibit M included maximum guaranteed capacities of the pump turbine units at various net heads and at best and full gate efficiencies. In its supplemental filing, NYPA stated that the modified units have a maximum capability of 290 megawatts (MW) each and the unit controls are programmed to limit each unit to 290 MW regardless of external conditions, e.g. unusually large head differential, etc. Therefore, the installed capacity of the project remains at 1,160 MW as authorized in the April 28, 2006 order amending the license.

6. In its supplemental filing the licensee included the dates the upgraded units returned to service. In accordance with the Commission's regulations, for a municipal licensee the effective date for annual charges will be the Commencement of operation of each upgrade unit.[4] Therefore, ordering paragraph (D) of this order revises Article 26 of the license to reflect authorized installed capacity of the project based on the unit upgrades.

The Director orders:

(A) The revised Exhibit M filed on September 1, 2010, is approved and made part of the license superseding the Exhibit M approved on September 15, 1976.

(B) The following revised Exhibit J and K drawings, filed on September 1, 2010, are approved and assigned exhibit drawing number as shown in the following table:

[4] 18 C.F.R. § 11.1(d)(6)

Exhibit	FERC No.	Title	Superseding
J-1	2685-64	General Map of Project Area	2685-15
K-1	2685-65	Project Boundary Map	2685-52
K-2	2685-66	Project Boundary Map	2685-53
K-3	2685-67	Project Boundary Map	2685-54
K-4	2685-68	Description of Project Boundary	2685-55
K-11	2685-69	Lower Spillway Topographic Detail	2685-62

The superseded Exhibit drawings 2685-15, 2685-52 through 55, 2685-62, and Exhibit drawings 2685-56 through 60 showing the project boundary along the three deleted transmission lines, are eliminated from the license.

(C) Within 45 days of the date of issuance of this order, the licensee shall file the approved exhibit drawing in aperture card and electronic file formats. The exhibit K drawings must include horizontal reference datum before preparing the drawings in aperture card and electronic formats.

a) Three sets of the approved exhibit drawing shall be reproduced on silver or gelatin 35mm microfilm. All microfilm shall be mounted on type D (3-1/4" X 7-3/8") aperture cards. Prior to microfilming, the FERC Project-Drawing Number (i.e., P- 2685-64) shall be shown in the margin below the title block of the approved drawing. After mounting, the FERC Drawing Number shall be typed on the upper right corner of each aperture card. Additionally, the Project Number, FERC Exhibit (i.e., K-1), Drawing Title, and date of this order shall be typed on the upper left corner of each aperture card. See Figure 1.

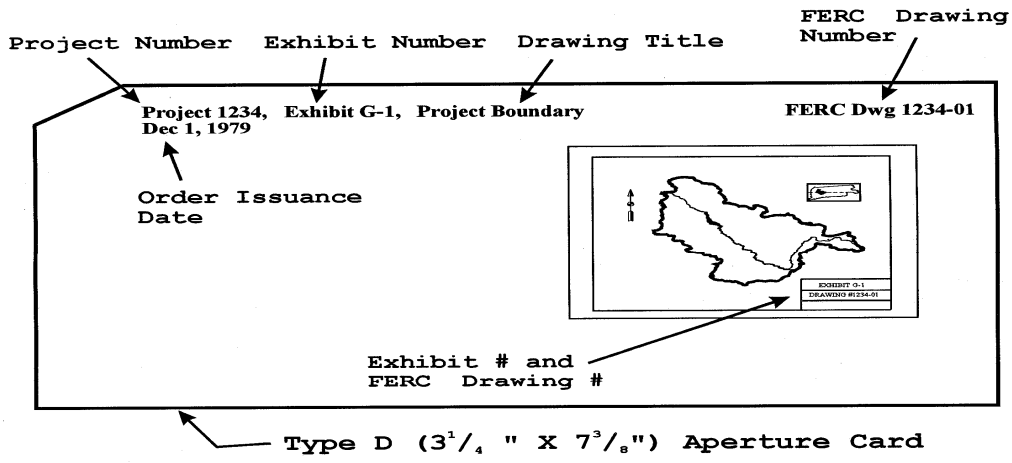

Figure 1. Sample Aperture Card Format

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

b) The licensee shall file two separate sets of exhibit drawing in electronic raster format with the Secretary of the Commission, ATTN: OEP/DHAC. A third set shall be filed with the Commission's Division of Dam Safety and Inspections New York Regional Office.

Each Exhibit K drawing that includes the project boundary must contain a minimum of three known reference points (i.e., latitude and longitude coordinates, or state plane coordinates), arranged in a triangular format for GIS georeferencing the drawing to the polygon data. The spatial reference for the drawing (i.e., map projection, map datum, and units of measurement) must be identified on the drawing and each reference point must be labeled. The reference points must be based on a standard map coordinate system. In addition, each project boundary drawing must be stamped by a registered land surveyor.

c) The licensee shall file two separate sets of the project boundary data in a georeferenced electronic file format (such as ArcView shape files, GeoMedia files, MapInfo files, or a similar GIS format) with the Secretary of the Commission, ATTN: OEP/DHAC. The filing shall include both polygon data and all reference points shown on the individual project boundary drawings. A single electronic boundary polygon data file is required for the project boundary. Depending on the electronic file format, the polygon and point data can be included in a single file with multiple layers. The georeferenced electronic boundary data file must be positionally accurate to ±40 feet in order to comply with National Map Accuracy Standards for maps at a 1:24,000 scale. The file name(s) shall include: FERC Project Number, data description, date of this License, and file extension in the following format [P-2685, boundary polygon/or point data, MM-DD-YYYY.SHP]. The data must be accompanied by a separate text file describing the spatial reference for the georeferenced data: map projection used (i.e., UTM, State Plane, Decimal Degrees, etc.), the map datum (i.e., North American 27, North American 83, etc.), and the units of measurement (i.e., feet, meters, miles, etc.). The text file name shall include: FERC Project Number, data description, date of this License, and file extension in the following format [P-2685, project boundary metadata, MM-DD-YYYY.TXT].

(D) Article 26 of the license is revised to read:

Article 26: The license shall pay the United States the following annual

charges as determined by the Commission for the purpose of reimbursing the United States for the cost of administration of Part I of the Act. The authorized installed capacity for that purpose is as follows:

Item	Authorized Capacity MW	Effective Date
After Unit 2 Upgrade	1,040	May 25, 2007
After Unit 1 Upgrade	1,080	May 31, 2008
After Unit 3 Upgrade	1,120	May 30, 2009
After Unit 4 Upgrade	1,160	May 22, 2010

(E) This order constitutes final agency action. Any party may file a request for rehearing of this order within 30 days from the date of its issuance, as provided in section 313(a) of the FPA, 16 U.S.C. § 8251 (2006), and the Commission's regulations at 18 C.F.R. § 385.713 (2010). The filing of a request for rehearing does not operate as a stay of the effective date of this order, or of any other date specified in this order. The licensee's failure to file a request for rehearing shall constitute acceptance of this order.

M. Joseph Fayyad
Engineering Team Lead
Division of Hydropower Administration
and Compliance

29 FERC ¶62,407

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Project No. 2685-000

Power Authority of the
State of New York

Order Granting Waiver
(Issued December 28, 1984)

On October 23, 1984, the Power Authority of the State of New York (Authority), Licensee for the Blenheim-Gilboa Project (FERC No. 2685), filed a request for waiver of that portion of Article 32 requiring that rights be obtained for property between the Project's upper reservoir spillway and Schoharie Creek. The intent of that portion of Article 32 is that the licensee have flowage rights should there be an incident causing overpumping and use of the emergency spillway of the upper reservoir.

In compliance with the additional requirement of Article 32, the Licensee has provided multiple surveillance and monitoring systems and has developed several redundant methods to make overfilling of the upper reservoir extremely unlikely. Multi-level alarms have been installed at both the upper and lower reservoirs with connections provided to the Blenheim-Gilboa Control Room and the Emergency Control Center at Marcy. Both are manned 24 hours per

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1/ Authority to act on this matter is delegated to the Director, Office of Hydropower Licensing, under §375.314 of the Commission's regulations, 49 Fed. Reg. 29,369 (1984) (Errata issued July 27, 1984) (to be codified at 18 C.F.R. §375.314). This order may be appealed to the Commission by any party within 30 days of its issuance pursuant to Rule 1902, 18 C.F.R. §385.1902, (1983). Filing an appeal and final Commission action on that appeal are prerequisites for filing an application for rehearing as provided in Section 313(a) of the Act. Filing an appeal does not operate as a stay of the effective date of this order or of any other date specified in this order, except as specifically directed by the Commission.

day. In addition, there are primary and secondary systems to automatically shut the plant down at high reservoir levels. During flood flow periods, extra operation personnel are assigned for water management. Security patrols make routine surveillance of both reservoirs at least once every 8 hours. In addition, overfilling the reservoir would most likely only occur during periods of high flood flows in Schoharie Creek at which time the Authority would implement its early flood warning system pursuant to the Emergency Action Plan requirements in Part 12 of the Commissions's Regulations.

It is ordered that:

The requirement of Article 32 that rights be obtained for property between the upper Reservoir Spillway of Project No. 2685 and Schoharie Creek is waived.

This waiver does not relieve the Licensee of any responsibility or liability resulting from the operation of Project No. 2685.

Quentin A. Edson

Quentin A. Edson
Director, Office of
Hydropower Licensing

20100603-3008 FERC PDF (Unofficial) 06/03/2010

UNITED STATES OF AMERICA 131 FERC ¶ 62,208
FEDERAL ENERGY REGULATORY COMMISSION

New York Power Authority Project No. 2685-023

ORDER AMENDING LICENSE

(Issued June 03, 2010)

1. On April 9, 2010, New York Power Authority, licensee for the Blenheim Gilboa Project, FERC No. 2685[1] filed an application to amend its license. The licensee is requesting Commission approval to delete from the project's license three 345-kV transmission lines: Fraser-Gilboa line, Gilboa-Scotland line; and Gilboa-Leeds line. The project is located on the Schoharie Creek, Schoharie County, New York.

BACKGROUND

2. Pursuant to section 4(e) of the Federal Power Act (FPA), the Commission licenses "dams, water conduits, reservoirs, powerhouses, transmission lines, or other project works necessary or convenient for .....the development, transmission, and utilization of power..."[2] FPA section 3(11) [3] defines a "project" as including "the primary line or lines transmitting power therefrom to the point of junction with the distribution system or with the interconnected primary transmission system."

3. According to the licensee, the three transmission lines at the time of licensing and construction of the project were intended to provide substantial electrical capacity from the project. However, the lines currently are components of a regional interconnected transmission system. In 1999, the Commission placed all three lines under the direct operational control of the New York Independent System Operator (NYISO).

4. According to the licensee, under an agreement between NYISO and Transmission owners, the three lines are subject to NYISO dispatching, and are available for non-discriminatory access under the terms and conditions of the

[1] 41 FPC 712, Order Issuing License (Major), issued June 6, 1969.
[2] 16 U.S.C. 797(e).
[3] 16 U.S.C. 796(11).

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NYISO open access transmission tariff. Additionally, the three lines are subject to NYISO security and control.

REVIEW

Transmission Facilities

5. The test applied by the Commission to define what is a "primary transmission line" for FPA Part I purposes is that primary lines are:

> "those necessary to ensure the "viability" of the project in the event of Federal takeover. If a line "is used solely to transmit power from [Commission] licensed projects to load centers," and if, without it "there would be no way to market the full capacity of the project," then that line is primary to the project...."[4]

6. A public notice of the licensee's proposal to remove the transmission lines from the license was issued on April 21, 2010, with May 21, 2010 as deadline for comments, motions to intervene and protests. By a letter dated May 19, 2010, the Department of Interior stated that it has no objection to the proposed amendment.

7. In its filing, the licensee included a one-line diagram and a listing of transmission facilities under NYISO, NYISO's Transmission and Dispatching Operation Manual, and transmission line loading diagrams. Our review of this information found that the three transmission lines included in project's license carry energy and capacity from both project and non-project sources to remote customer loads. Accordingly, we conclude that the three lines are no longer primary lines for the project and will be deleted from the license.

Revised Exhibits

8. With the deletion of the transmission lines from the project's license the project's boundary and other exhibit drawings need to be revised. Therefore, ordering paragraph (B) of this order requires the licensee to submit revised exhibit drawings for Commission approval. The revised drawings should be in accordance with the Commission's regulations at 18 C.F.R. §§ 4.39 and 4.41.

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[4] See Pacific Gas and Electric Company, 85 FERC ¶ 61,411 at p.62,559 (1998) and the orders cited therein.

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The Director orders

(A) New York Power Authority's application filed on April 9, 2010, to amend the license for the Blenheim Gilboa Project, FERC No. 2685, to remove from the project's license three transmission lines: Fraser-Gilboa line, Gilboa-Scotland line; and Gilboa-Leeds line, is approved.

(B) Within 90 days of issuance of this order, the licensee shall file for Commission approval, a revised exhibit M and revised exhibits J, K and L drawings, as applicable, reflecting the deletion of the three transmission lines from the license. All revised exhibit drawings must be prepared in accordance with current Commission's regulations at 18 C.F.R. §§ 4.39 and 4.41(b), (g) and (h).[5]

(C) This order constitutes final agency action. Requests for rehearing by the commission may be filed within 30 days of the date of issuance of this order, pursuant to 18 C.F.R. §385.713.

M. Joseph Fayyad
Engineering Team Lead
Division of Hydropower Administration
and Compliance

[5] Sections 4.39 and 4.41 (h) require, among other things, that each sheet of the project boundary drawings must contain a minimum of three known reference points; the latitude and longitude coordinates, or state plane coordinates, of each reference point must be shown; and each drawing must be stamped by a registered land surveyor.

Document Content(s)

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UNITED STATES OF AMERICA
FEDERAL POWER COMMISSION

OPINION NO. 751-A

Power Authority of the State of New York	}	Project No. 2685

OPINION AND ORDER DENYING
REHEARING, REOPENING AND STAY

Issued: April 27, 1976

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LICENSE, PRIMARY TRANSMISSION LINE, FISH AND WILDLIFE, WILDLIFE, RECREATION, POWER POOL, COLLATERAL ATTACK, PRACTICE AND PROCEDURE (Exceptions), PRACTICE AND PROCEDURE (Reopening), STAY, RELIABILITY

UNITED STATES OF AMERICA
FEDERAL POWER COMMISSION

Before Commissioners: **Richard L. Dunham, Chairman; Don S. Smith, John H. Holloman III, and James G. Watt.**

Power Authority of the State of New York)	Project No. 2685

OPINION NO. 751-A

OPINION AND ORDER DENYING REHEARING, REOPENING AND STAY

(Issued April 27, 1976)

Per Curiam:

The Town of Durham, Association for the Preservation of Durham Valley, Brooks Atkinson, Marshall Bell, Barry H. Garfinkel, Alfred Gellhorn, Arthur Goldschmidt, Walton McClure, Earl Morse and Agnes O'Neil (Durham, et al.) on February 26, 1976, filed an application for rehearing of Opinion No. 751 issued January 29, 1976. The Greene County Planning Board and the Town of Greenville (Greene County) on February 27, 1976, also filed an application with respect to Opinion No. 751, and a petition to reopen and motion for a stay. In Opinion No. 751 the Commission affirmed and adopted the Initial Decision issued July 1, 1974, and authorized the Power Authority of the State of New York (PASNY), licensee for the Blenheim-Gilboa Pumped Storage Project in Schoharie County, New York, to construct a primary 345 kv overhead transmission line from Gilboa to Leeds. The transmission line would follow designated Route B-1, would be convertible to support two 345 kv lines or one 765 kv line, and would be subject to a number of conditions relating principally to environmental matters. In the opinion of the Commission most of the numerous contentions made by the applicants for rehearing are fully covered by the Initial Decision or Opinion No. 751, so that additional comments would be redundant, but further discussion is appropriate with respect to a number of issues.

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CONTENTIONS ON REHEARING

Greene County says that PASNY never filed a properly prepared or adequate Exhibit W, which relates to environmental matters (18 C.F.R. § 2.81, Appendix A to Part 2). However, Exhibit W was not prescribed until the Commission's Order No. 415-C issued December 19, 1972 (48 F.P.C. 1442), although PASNY applied for its construction authorization on November 24, 1969 and filed proposals for alternate routes for the Gilboa-Leeds line on December 4, 1970. PASNY filed a report on "Transmission Line Planning and Design for Preservation and Enhancement of Environment" on November 24, 1969, and on November 2, 1971, PASNY filed its Environmental Report (Ex. 33) which described Routes A - E and methods of construction with maps and diagrams. It keyed its discussion to the criteria set forth in the National Environmental Policy Act (NEPA). 1/ PASNY, in effect, has complied with NEPA and our applicable regulations. 2/

Greene County says that the Commission erred in accepting PASNY's assertion as to the need for the Gilboa-Leeds line and should have independently investigated its allegation instead of adopting it. The position of Greene County has been independently assessed by the Commission. There is substantial evidence of record as to the need for the Gilboa-Leeds line. In addition to the evidence presented by PASNY, the Commission had before it and considered the testimony of Staff Witness Jessel (Tr. 1188 et seq.) and the Final Environmental Impact Statement (FEIS) prepared by its Staff (Ex. 71, pp. 101-106), all in reaching the Commission determination that a transmission line between Gilboa and Leeds is necessary for project operational purposes which include electric reliability services of the Blenheim-Gilboa plant and transmission capacity to carry power from the project to New York City and points elsewhere throughout the interconnected transmission system networks. See Section 3(11) of the Federal Power Act.

Greene County says the Commission erred in failing to adopt the proposed additional findings of Intervenors. These, as Opinion No. 751 says, are immaterial, unnecessary or draw incorrect conclusions. However, proposed finding "L" states that PASNY has failed to submit either a recreation plan or a fish and wildlife plan for its proposed transmission line right of way. Article 43 of the license, prescribed in Opinion No. 751, provides for the development of a recreation plan in cooperation with the New York Office of Parks and Recreation and, if appropriate, the filing for Commission

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1/ 83 Stat. 852 (1970); 42 U.S.C. § 4321, et seq. (1970).
2/ See Order No. 415 issued December 4, 1970 (44 F.P.C. 1531).

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approval of an amendment to Exhibit R. Article 36 prescribed by our order of June 6, 1969 granting the license (41 F.P.C. 712, 718) provides for further Commission regulation of PASNY in respect to the Gilboa-Leeds line by requiring from PASNY a revised Exhibit S relating to fish and wildlife. We shall provide that Exhibit S be supplemented to reflect construction of the transmission line.

Greene County says that it was erroneous to rule that doing the kind of comprehensive programmatic review requested by Intervenors would delay things. We did mention delay if we waited to determine whether a license is issued for the Breakabeen project. For the purposes for which we license the Gilboa-Leeds line it is not possible or necessary to make a comprehensive review of future transmission development in New York and the Northeast region. There is much material in the record on this matter but the plans are not firm, and it was necessary to approve the Gilboa-Leeds line in the light of what the record showed.

We agree that it was PASNY and not Greene County that on May 3, 1974, sent Presiding Administrative Law Judge Levy a later New York Power Pool Plan 3/ which is somewhat different than that appearing in the FEIS and in Appendix E to Opinion No. 751. A map attached to the new plan shows a proposed 765 kv line between Gilboa and Leeds. It is noted that one Gilboa-Leeds 345 kv circuit is required as soon as possible (awaiting FPC approval); the second Gilboa-Leeds 345 kv circuit in 1980; and studies are in progress on the timing of conversion of both 345 kv circuits to single circuit 765 kv operation. 4/ We deny that it is a major error that neither Judge Levy nor the Commission had taken notice of subsequent plans as well as numerous plans, proceedings, rulings, orders and opinions of the Public Service Commission of New York (PSC). After extensive hearings the Judge closed the record, as it was necessary to do in order to arrive at a decision.

Greene County contends that the Commission's discussion of direct current alternatives is erroneous in that it ignores the New York Power Pool Plan to use this alternative as early as 1980 for the same alleged purpose as the Gilboa-Leeds line. It is difficult to see that other lines would have the same purpose as the Gilboa-Leeds line, and, obviously, they would be constructed under different conditions. The 1974 New York Power Pool Plan, referred to above, lists proposed underground transmission lines, but they all appear to be close to cities, principally New York City, where there is urban or suburban development and a high population.

3/ 1974 Report of Member Electric Corporations of the New York Power Pool and the Empire State Electric Energy Research Corporation, April 1, 1974.

4/ Id. Vol. 2, p. 306.

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Greene County says that it is not true that there was no geological issue in this proceeding and objected to having cross examination of a geologist limited by the Judge. We meant that there was no geological issue of importance here, and the Judge, in order to qualify the witness, did not have to allow cross examination on a trench-digging project at Niagara Falls, nor at the TVA, nor in the Indus Valley in Pakistan (Tr. 535-539).

Greene County states that it is not true that Frank Burgraff, its witness, an employee of PSC and the State of New York, appeared pursuant to a subpoena, was called to attack collaterally New York State's comments on the Staff Draft Environmental Impact Statement or was not supposed to be Intervenor's expert witness. While Mr. Burgraff appeared through arrangement with the PSC, he was not sponsored by the PSC and appeared in response to a subpoena (Tr. 3518, 3526). Although Counsel for Greene County denied that Mr. Burgraff was called to collaterally attack conclusions and opinions of the State (Tr. 2102), Counsel asked him questions on positions taken by the State and the Judge prevented such inquiries (Tr. 3544, 3558-3559, 3562). We think it entirely appropriate and reasonable that a State employee, who has been called as a witness not be compelled to testify on positions taken by the State, nor should the State be compelled to furnish an expert witness to another party on ultimate conclusions (Tr. 2162, 3528, 3547-48, 3550).

Greene County asserts that it is not true that the jurisdiction of PSC does not extend to PASNY's lines. We referred to statements in the transcript indicating that PASNY was not generally subject to the jurisdiction of PSC. However, we do not intend to make a determination of such a question, nor is it material. Of course, primary lines, such as the Gilboa-Leeds line, are subject to the jurisdiction of this Commission as part of the project works as we have found in granting the license (41 F.P.C. 712, 715).

We agree with Greene County that the primary responsibility for developing alternatives lies with the Commission's Staff which has borne that responsibility. Of course, there is no reason why the Intervenors should not also present evidence on alternatives; we merely note that they have not in any substantial degree done so.

Greene County contends that the Commission did not rule in a reasoned manner on its exceptions to numerous findings of the Administrative Law Judge. Greene County itself merely lists a number of the findings as not supported by credible evidence or substantial evidence. Durham, et al. makes a similar contention. In the opinion of the Commission the Judge's findings as adopted by it are supported by the record. There is no requirement that it make a specific ruling on each

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exception if the conclusions and reasons are clear. N.L.R.B. v. Wichita Television Corp., 277 F.2d 579, 585 (10th Circ. 1960), certiorari denied, 364 U.S. 871 (1960).

Durham, et al. reiterate their argument that PASNY or the Commission should reimburse the Intervenors for fees and expenses. This matter is covered in Opinion No. 751 and further comment is not necessary.

REOPENING

Greene County argues that because of the time that has elapsed since the record closed on September 19, 1973, the record should be reopened to take additional evidence. In almost all cases circumstances do change in the course of time which inevitably elapses after the record is closed to allow time for the exchange of briefs, the preparation of an initial decision, exceptions, briefs opposing exceptions, study of the record by the Commission and the issuance of a final decision. There would be little hope that the administrative process would ever be consummated if reopening were necessary "because some new circumstance has arisen, some new trend has been observed, or some new fact discovered". I.C.C.v. Jersey City, 322 U.S. 503, 514 (1944); City of Detroit v. F.P.C., 230 F.2d 810, 822-823 (D.C. Circ. 1955), certiorari denied 352 U.S. 829 (1956). In a proper case, of course, it may be necessary and appropriate to reopen the record, but that has not been shown here.

Specifically, Greene County argues that the Blenheim-Gilboa project has been able to operate without the Gilboa-Leeds line in service. The record, however, shows that three lines, not two, are needed for reliability because of possible outages and because of the loads of interconnecting utilities that affect use of the Gilboa-New Scotland and Gilboa-Frazier lines. Further, changes in electric power use and growth in New York State, pointed out by Greene County, have no necessary importance. The Gilboa-Leeds line will have to be built to render the delivery of 1000 Mw of power from the Blenheim-Gilboa plant reliable. A smaller future growth in New York State would not make the output of the Gilboa-Blenheim plant any more reliable. The transmission system should be designed to permit delivery of the power in any case.

The possible impact of 765 kv transmission with respect to audible noise, production of ozone, induced currents or effects on the earth's radiation belts are likewise irrelevant. We are not approving a 765 kv transmission line, but merely requiring that the line to be built be convertible to 765 kv if and when this may become necessary and if it meets relevant standards at the time of proposed conversion with the approval of the Commission, assuming under the circumstances it remains a primary line as determined by Section 3(11), of the Federal Power Act.

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We recognize that a 1976 Power Pool plan will be different than that appearing or the 1974 plan which PASNY sent to the Judge. However, our approval of the Gilboa-Leeds line does not depend on the details of Power Pool development, but on the needs, as set forth in Opinion No. 751 and in this opinion and order, including the operation of the Blenheim-Gilboa plant as a reliable source of power.

Recent research by the former New York State Atomic and Space Development Authority with respect to the design of overhead transmission lines is no reason to change our order. Under Article 40 the Licensee is required to retain a board of independent environmental consultants to advise it on, among other things the design of tower structures. The board is to submit reports to the Licensee which is to submit copies to the Commission. Thus there is no reason why the Licensee should not plan and build the most suitable transmission towers, and we shall assure ourselves that this will be done.

The fact that the population of New York City may be lower by the end of the century and that it shows a declining use of the subways again does not change the situation significantly. We are approving the Gilboa-Leeds line to meet present needs. The power needs of the year 2000 are speculative now.

STAY

Greene County asks that the order in Opinion No. 751 be stayed until the conclusion of further proceedings in this case, including any court review. In our opinion it would be improper to grant a stay under the circumstances here. Greene County has not made a strong showing that it is likely to prevail on the merits. While PASNY will probably build the Gilboa-Leeds line if no stay is granted, we do not consider this an irreparable injury to Greene County. The route of the line has been adjusted in the light of the record to cause as little damage to the environment and to cause as little injury to the scenic beauty of the area as possible. On the other hand failure to build the line promptly could cause injury to the users of power generated at the Blenheim-Gilboa plant and would be derogatory of the public interest. See Virginia Petroleum Jobbers Association v. F.P.C., 259 F.2d 921 (D.C. Circ. 1958).

The Commission further finds:

(1) The assignments of error and grounds for rehearing of Opinion No. 751 set forth in the applications for rehearing of Greene County and Durham, et al. present no facts or legal principles that would warrant any change in or modification of the Commission's Opinion No. 751, issued January 29, 1976, as supplemented by the above discussion and as amended below.

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(2) Good cause has not been shown to reopen this proceeding or to grant a stay as requested by Greene County.

The Commission orders:

(A) The applications for rehearing filed by Greene County and Durham, et al. are denied.

(B) The requests to reopen and to grant a stay by Greene County are denied.

(C) Article 36 as prescribed by the order of June 6, 1969 (41 F.P.C. 712, 718) is amended by adding the following sentence. "Within six months of commencing construction of the Gilboa-Leeds line, Licensee shall file a supplement to Exhibit S to reflect the acquisition of the right-of-way and the construction and maintenance of the line along Route B-1 as specified in the Commission's order of January 29, 1976."

By the Commission. Chairman Dunham, concurring, filed a separate statement appended hereto.

(S E A L)

Kenneth F. Plumb,
Secretary.

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Power Authority of the State of New York) Project No. 2685

(Issued April 27, 1976)

DUNHAM, Chairman, Concurring:

While I fully concur in the Commission's Opinion as it is written, I am attaching the present statement in order to respond to one of Greene County's arguments which relates to me personally. Greene County says that one of the reasons for reopening the record is to determine my relationship to PASNY, James Fitzpatrick, T. Norman Hurd, John Loeb, Jr. or Lewis Stone. Greene County states that the three latter persons were reported in the press as having tried to influence the positions of certain New York State agencies in this case. As Director of the Budget for the New York State Government I had no responsibility with respect to PASNY insofar as the subject project is concerned. Furthermore, I have no recollection of any conversations with officials of PASNY or with any of the individuals named above concerning the Gilboa-Leeds power line project.

Richard L. Dunham

Richard L. Dunham
Chairman

FEDERAL POWER COMMISSION
WASHINGTON, D. C. 20426
EQUAL OPPORTUNITY EMPLOYER

POSTAGE AND FEES PAID
FEDERAL POWER COMMISSION

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UNITED STATES OF AMERICA
FEDERAL POWER COMMISSION

OPINION NO. 751

Power Authority of the State of New York) Project No. 2685

751

OPINION AND ORDER AFFIRMING AND ADOPTING
INITIAL DECISION AUTHORIZING CONSTRUCTION
OF PROPOSED GILBOA-LEEDS TRANSMISSION LINE

Issued: January 29, 1976

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UNITED STATES OF AMERICA
FEDERAL POWER COMMISSION

Power Authority of the State of New York) Project No. 2685

OPINION NO. 751

APPEARANCES

Thomas F. Moore, Jr., Scott B. Lilly, and John C. Mason for the Power Authority of the State of New York

Robert J. Kafin and Neil E. Needleman for Greene County Planning Board and Town of Greenville

Donald Tirschwell for Joe Segelman, Intervenor

Barry H. Garfinkel for Town of Durham, New York, Association for the Preservation of Durham Valley, Brooks Atkinson, Marshall Bell, Barry H. Garfinkel, Alfred Gelhorn, Arthur Goldschmidt, Walton McClure, Earl Morse, and Agnes O'Neil, Intervenors

Mark Heller for the Town of Westerlo

Alfred S. Forsyth for the Sierra Club

John D. Lane, Robert W. Harmon, and James Whitfield, Jr., for the Staff of the Federal Power Commission

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UNITED STATES OF AMERICA
FEDERAL POWER COMMISSION

LICENSE (Primary Line); NATIONAL ENVIRONMENTAL POLICY ACT; PRIMARY TRANSMISSION LINE; ENVIRONMENTAL PROTECTION (Transmission Line); PRACTICE AND PROCEDURE (Hearing); FEES

Before Commissioners: Richard L. Dunham, Chairman; Don S. Smith, John H. Holloman III, and James G. Watt.

Power Authority of the State of New York)	Project No. 2685

OPINION NO. 751

OPINION AND ORDER AFFIRMING AND ADOPTING INITIAL DECISION AUTHORIZING CONSTRUCTION OF PROPOSED GILBOA-LEEDS TRANSMISSION LINE

(Issued January 29, 1976)

DUNHAM, Chairman:

This proceeding concerns a request by the Power Authority of the State of New York (PASNY) under Section 4(e) of the Federal Power Act 1/ for Commission approval of a primary transmission line from the Blenheim-Gilboa Pumped Storage Project in Schoharie County, New York, to the Town of Leeds in Greene County, New York (see attached map). Local opposition to the proposal developed and an appeal was taken to the United States Court of Appeals for the Second Circuit on procedural matters arising under the Natural Environmental Policy Act of 1969 (NEPA) 2/ resulting in the decision in Greene County Planning Board v. FPC, 455 F.2d 412 (2nd Cir.), cert. denied 409 U.S. 849 (1972) (Greene County I). After hearing and the exchange of briefs, Presiding Administrative Law Judge William C. Levy issued his initial decision on July 1, 1974, authorizing the construction of the Gilboa-Leeds line. We herein affirm and adopt that initial decision as the decision of the Commission.

1/ 41 Stat. 1065-1066 (1920), 49 Stat. 840-841 (1935), 61 Stat. 501 (1947); 16 U.S.C. § 797(e)(1970).
2/ 83 Stat. 852 (1970); 42 U.S.C. § 4321, et seq. (1970).

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BACKGROUND

On June 6, 1969, the Commission granted a license to PASNY, a public benefit corporation created by the laws of the State of New York, to construct and operate the Blenheim-Gilboa Project including, as part of the project works, three primary 345 Kv transmission lines. 3/ While the license issued by that decision generally authorized construction of the project, Article 34 thereof specifically prohibited construction of the transmission lines until further Commission approval was given.

On November 24, 1969, PASNY applied for construction authorization under Article 34, filing exhibits showing the proposed designs and locations of the three transmission lines, one of which was to run from the project switchyard in the Town of Gilboa, Schoharie County, New York, approximately 37 miles to the Leeds substation in the Town of Athens, Greene County, New York (the "Gilboa-Leeds line"). Opposition to the Gilboa-Leeds line developed in Greene County and in January and February 1970, shortly after NEPA went into effect, petitions to intervene were filed by the Town of Durham, the Association for the Preservation of Durham Valley, Brooks Atkinson, Marshall Bell, Barry H. Garfinkel, Alfred Gelhorn, Arthur Goldschmidt, Walton McClure, Earl Morse and Agnes O'Neil (collectively, Durham), the Greene County Planning Board and the Town of Greenville in Greene County (collectively, Greene County), Joe Segelman, and the Sierra Club. On April 10, 1970, the Commission approved the application and exhibits insofar as they related to the Gilboa-Fraser and Gilboa-New Scotland transmission lines as to which no protests or petitions were filed, but it reserved consideration of the Gilboa-Leeds transmission line. 4/ On May 19, 1970, the Commission granted all of the pending petitions to intervene; and subsequently it granted petitions to intervene which were filed at later times by the Town of Westerlo in adjacent Albany County, the Cornwallville Conservation Corporation, and Congressman Hamilton Fish, Jr., and the Citizens to Preserve the Hudson Valley.

After meeting with various persons interested in the affected area, and following additional studies, PASNY filed with the Commission on December 4, 1970, two alternative proposals for routing the Gilboa-Leeds transmission line. On March 26, 1971, PASNY filed with the Commission and transmitted to the intervenors its Environmental Report, showing,

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3/ 41 F.P.C. 712 (1969).
4/ 43 F.P.C. 521 (1970).

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among other matters, three possible variations of the two alternative proposals. Various prehearing motions and appeals resulted in the decision in Greene County I on January 17, 1972, holding among other matters, that the Commission's initial regulations under NEPA requiring PASNY to submit an Environmental Report did not comply with the mandate of NEPA requiring the Commission staff to prepare a detailed environmental impact statement before the administrative law judge would issue his initial decision.

Following Greene County I, the Commission revised its "Statement of General Policy to Implement Procedures for Compliance With the National Environmental Policy Act of 1969" 5/ in the manner which had been suggested by the Second Circuit and, pursuant to such revised regulations (18 CFR § 2.81), the Commission staff prepared and circulated a draft environmental impact statement (DEIS), which the Staff later revised to a final environmental impact statement (FEIS) and offered in evidence. During the course of the hearing the intervenors challenged both such statements, and the Commission, by order issued June 15, 1973 6/ deferred its decision to consider the objections which had been raised. On September 9, 1973, the record of almost 4,000 pages of transcript and numerous exhibits was closed, and by orders issued September 27, 1973, 7/ and, October 25, 1973 8/, the Commission indicated that it would consider the objections in conjunction with the anticipated exceptions to the Presiding Administrative Law Judge's initial decision, In the meanwhile, however, the intervenors moved for a stay of the proceeding which was denied by the United States Court of Appeals for the Second Circuit in Greene County II. 9/

In his initial decision of July 1, 1974, including 157 numbered additional findings and conclusions, Judge Levy authorized PASNY to construct a 345 kv overhead transmission line from Gilboa to Leeds along a route designated as B-1, but including at either end segments of Route A-1. On August 1, 1974 Durham filed a brief on exceptions accepting the Initial Decision sub silentio insofar as it authorizes construction of the line along Route B-1, and excepting to certain of the numbered additional findings and conclusions relating to Route A-1 and to Judge Levy's failure to award certain fees and expenses. The Sierra Club and Joe Segelman, together with Greene County, joined in Durham's brief. Greene County

5/ Implementation of the National Environmental Policy Act of 1969, 48 F.P.C. 1442 (1972), reh. denied, 49 F.P.C. 359 (1973), amended, 49 F.P.C. 12801 (1973); 18 C.F.R. §§ 2.80-2.82, Appendix A (1975).

6/ 49 F.P.C. 1378 (1973).

7/ 50 F.P.C. 833 (1973).

8/ 50 F.P.C. 1243 (1973).

9/ Greene County Planning Board v. FPC, 490 F.2d 256 (2nd Cir. 1973).

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additionally on August 12, 1974, filed a lengthy brief on exceptions taking the following general positions: (1) the conduct of the hearing contained so many errors as to preclude the compilation of a full and fair record, and the Initial Decision continues the judge's prejudicial conduct of the case; (2) the Initial Decision and the record upon which it is based improperly and narrowly define the applicable project scope and thereby make it impossible for the Commission to assess the need for the transmission line, to perform its comprehensive planning function, to comply with NEPA or adequately to consider alternatives; (3) the record does not support Route B or any other route. 10/ The Commission staff, on September 16, 1974, and PASNY, on September 18, 1974, filed briefs opposing exceptions supporting the Initial Decision.

We may note first that the construction and operation of a transmission line will have a certain impact on the environment during the relatively short period of its construction and a different impact thereon following construction and during the relatively long term operating life of the line. While the impact during construction, no matter how significant from an environmental point of view, will be minimal over time, the impact following construction and during the operating life of the line will be significant over time whether or not it is significant from an environmental point of view. With these distinctions in mind, and recognizing that NEPA is concerned with both the short and long term adverse effects of our actions, we call particular attention to Judge Levy's finding that "The major adverse environmental impact is visual and aesthetic." 11/ No participant had filed an exception to that finding. Indeed, as noted by Judge Levy, Durham witness Dr. David Lowenthal, an eminent geographer and historian, testified (Tr. 3067) that "the locating of transmission lines is not one of the major ecological disturbers."

Secondly, Section 105 of NEPA 12/ provides: "The policies and goals set forth in this Act are supplementary to those set forth in existing authorizations of Federal agencies." We issued the license herein pursuant to the authorization conferred by Section 4(e) of the Federal Power Act and upon an express finding, as mandated by Section 10(a) of the

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10/ Durham states, in this connection, that all variations of Route A were properly rejected.

11/ Initial Decision at 16.

12/ 83 Stat. 854 (1970); 42 U.S.C. § 4335 (1970).

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Federal Power Act 13/, that "the project will be best adapted to a comprehensive plan for improving or developing a waterway or waterways for the use or benefit of interstate or foreign commerce, for the improvement and utilization of water-power development, and for other beneficial public uses, including recreational purposes." Unless, therefore, the adverse environmental impact of the proposed Gilboa-Leeds transmission line would outweigh the benefits of the comprehensive plan selected under the Federal Power Act, a finding which is not supported by the record of this proceeding, we must consider NEPA not as an obstacle to the construction or operation of the transmission line but as a supplementary directive for minimizing the project's adverse environmental impact consistent with other considerations, such as cost.

INITIAL DECISION

After discussing the background of the proceeding and the positions of the parties, including the intervenors' position that the Gilboa-Leeds transmission line is not needed, Judge Levy concluded that the "line is necessary and should be authorized unless its environmental impact is so substantial as to outweigh the transmission benefits of the proposed line." The 1,000 MW operating capacity of the Blenheim-Gilboa Pumped Storage Project represents more than 4 percent of the installed generating capacity of the State of New York, he found, and approximately 11 percent of the installed generating capacity of Consolidated Edison Company of New York (Con Ed), the principal supplier of electric energy in New York City and nearby Westchester County, and is routed by the New York Power Pool principally to upstate New York during the winter and to New York City during the summer. And while the Blenheim-Gilboa Pumped Storage Project has been completed and can be and is being operated at maximum head with the existing Gilboa-New Scotland line to the northeast and Gilboa-Fraser line to the soutwest, the Gilboa-Leeds line to the southeast is needed, according to PASNY, "for the reliability and stability of the project is a necessary component of the project in the expert opinion of every engineer who participated in planning the project or who testified in this proceeding."

Judge Levy considered the pertinent aspects of the New York transmission system and found that there is no efficient and reliable means of moving power from the Blenheim-Gilboa Pumped Storage Project south to the metropolitan New York City area without the Gilboa-Leeds transmission line. Since there are two 345 kv lines from New Scotland (Albany) south to Leeds and three such lines from Leeds south to metropolitan New York City, Blenheim-Gilboa power cannot be moved to that area

13/ 41 Stat. 1068 (1920), 49 Stat. 842 (1935); 16 U.S.C. § 803(a) (1970).

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by way of New Scotland when the two circuits from New Scotland to Leeds are operating at full capacity. As a result, he said, a 345 kv transmission line would provide an essential third such circuit to Leeds. And Blenheim-Gilboa power cannot be moved to the New York metropolitan area by way of Fraser when the 345 kv circuit from Fraser, is completed to Ramapo in southern New York and is in full use meeting the requirements of New York State Electric and Gas Corp. and Orange and Rockland Utilities, Inc. Furthermore, he found, loss of the Gilboa-New Scotland line would result in the loss in the availability of at least half of the Blenheim-Gilboa power unless there is a Gilboa-Leeds line which can transmit the power "because, the record shows, such an output limitation will be required to prevent instability of the entire Gilboa Project and to prevent thermal overloads on the New York Power Pool interconnected system."

Judge Levy selected Route B-1, a modification of Route B proposed by PASNY, as the best route which is developed in the record, stating that "the environmental and visual impact is the decisive factor because the differences in costs, engineering, and other quantifiable costs and benefits between the two routes /A-1 and B-1/ are relatively minor." As already noted, the Judge actually incorporated portions of Route A-1. Thus he would employ Route A-1 from the Gilboa Station to Common Point A, Route B-1 from Common Point A to Common Point B, and Route A-1 from Common Point B to the Leeds substation. In this last segment he uses an alternative A-1 as described in Appendix A and shown on the map, Appendix B.

In order to resolve a conflict principally between PASNY and the Commission staff with respect to utilizing conventional steel lattice towers and the more costly and aesthetic H-frame towers, Judge Levy conditioned his authorization upon a new Article 40 under which a board of independent environmental consultants would advise PASNY, among other matters, upon the utilization of particular design towers at specific locations. He rejected underground lines because the visual benefit is far outweighed by the greater ecological damage during construction, the cost of underground lines which are approximately ten times greater than the cost of overhead lines, lesser reliability under current technology, and greater problems of maintenance and repair.

Among other matters, Judge Levy said that

> "Section 10(a) /of the Federal Power Act/ requires in substance that the Leeds line cannot be authorized unless it be 'best adapted to a comprehensive plan' or development; and NEPA requires that, in the formulation of a comprehensive plan, environmental factors be given at least equal consideration with economic, engineering, and other technical factors in the decision making process."

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He noted that on March 30, 1973, PASNY filed an application to construct and operate the Breakabeen Pumped Storage Project No. 2729 about six miles from Blenheim-Gilboa, that shortly thereafter PASNY commenced studies for the construction of substantial fossil or nuclear fuel base load generating facilities in the vicinity of Leeds or the adjacent Hudson Valley area, that studies in the record indicate that a 765 kv line will be needed between Gilboa and Leeds and that a 765 kv circuit is capable of transmitting four to six times more power than a 345 kv circuit with a large reduction in the amount of land required for transmission corridors. He then found: "Consequently, it is environmentally desirable that long range planning requirements and contingencies be met by a single circuit 345 kv line on conventional steel lattice towers, except where pole H-frame towers may be required, capable of supporting two 345 kv circuits, capable of later conversion into a single circuit 765 kv line on the same 250 foot right-of-way using the same structures as are now necessary for the single 345 kv Leeds line." 14/

SCOPE OF THE RECORD

In its exceptions to the initial decision Greene County argues that the proposed Gilboa-Leeds line is but a small piece of a long range comprehensive plan for generating and transmission facilities and cannot be considered in isolation. Greene County would greatly enlarge the scope of the project here involved which is composed of the Blenheim-Gilboa pumped storage facility and its three primary transmission lines. Obviously our approval of the Gilboa-Leeds line must be considered in connection with the existing and proposed transmission lines, generating stations and other electric facilities of the interconnected systems to satisfy the criteria of the Federal Power Act and NEPA. However, Greene County contemplates a "project" which includes the 345 kv bulk transmission system in New York State with links to New York City, the extra high voltage system (765 kv) in New York State, the proposed Breakabeen Pumped Storage Project and proposed large thermal generating stations to be built by PASNY in the vicinity of Leeds. Greene County adds that no analysis of the long range cumulative environmental impact of a Gilboa-Leeds line is contained in the Initial Decision, the environmental statements or elsewhere in the record, and that the record cannot support the decision reached.

14/ Initial Decision at pp. 6-7.

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As pointed out by PASNY and the Staff the relationships between the Gilboa-Leeds line and adjacent 345 kv lines, built and to be built, are covered by the record and the initial decision. It is shown that Gilboa-Leeds is needed and will fit into the developing regional grid. As noted on the map, Appendix D, Leeds is connected by two lines running north to New Scotland and by two lines running south to Pleasant Valley east of the Hudson and thence to New England and New York City as well as by a line to Roseton and Rock Tavern west of the Hudson, which will be extended to Ramapo, which, in turn, is connected to New York City and New Jersey. It is thus most necessary to promptly connect the Gilboa-Blenheim plant to Leeds so that its instantly available hydro power can be made available to the several load centers, particularly New York City. The record shows that the energy from Blenheim-Gilboa could not reliably be carried to New York City via Fraser or via New Scotland and Leeds, for Niagara-Mohawk's lines from New Scotland to Leeds might be in full use or the interconnection from Fraser to Ramapo might be tied up by the requirements of other companies. Furthermore, any electrical difficulties on these routes could result in the Blenheim-Gilboa generators being out of service without the alternate Gilboa-Leeds route.

Based on the evidence briefly outlined herein and considered at great length by the Judge, we conclude that the proposed Gilboa-Leeds line is necessary as an integral part of the existing and proposed segments of the New York 345 kv grid. Contrary to Greene County, we do not think that in determining whether to approve the Gilboa-Leeds lines we must go further and review precisely what other 345 kv lines may be built and what alternatives still remain to the whole 345 kv network in New York State or the northeast. We see no requirement for this in NEPA or the Power Act. Part of the 345 kv network has been built and other segments will be needed in the future. The evidence here shows that the connections between Leeds and New York City must be strengthened regardless of the Gilboa-Leeds line because power will flow from the north as well as from possible new generating stations in the Leeds area. Our purpose is to approve a primary line for the Gilboa-Blenheim Project so that under Section 10(a) of the Federal Power Act 15/ the project will be best adapted to a comprehensive plan for improving or developing a waterway for the benefit of interstate commerce. Even though we do not have jurisdiction under the Federal Power Act over the siting and construction of transmission lines, apart from primary lines, 16/ we properly considered the present and proposed 345 kv network. Compare Alice Henry v. FPC.,

15/ 41 Stat. 1068; 99 Stat. 842; 16 U.S.C. 803(a).

16/ Section 3(11), 49 Stat 838 (1935), 16 U.S.C. 796(11) (1970); Section [illegible](e), 49 Stat. 840-841 (1935); 61 Stat. 501 ( ), 16 U.S.C. 797(e)(1970); Section 201, 49 Stat. 848 (1935), 67 [illegible] at. 461 (1953), 16 U.S.C. 824 (1970).

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513 F.2d 395, 403-404 (D.C. Cir. 1975). However, it would be impossible for the power grid to develop if all of the segments had to be considered at one time before the precise locations of the generating stations and lines are determined. Therefore we should not wait until some indefinite period in the future when the plans for the grid have become entirely firm. In Municipal Electric Association of Massachusetts v. FPC, 414 F.2d 1206 (D.C. Cir. 1969) we were upheld in granting a license for a project even though there had not been complete overall planning of the power needs and resources of the region involved.

Greene County further claims that the record should have contained a comprehensive and detailed environmental impact analysis of the proposed and planned 765 kv extra high voltage grid system in the northeastern United States as well. It says that a 765 transmission system is a new program which should first be looked at generally before individual 765 kv projects are considered.

The FEIS, (Ex. 71, Appendix C) shows a New York Power Pool Plan for a 765 kv transmission system as of 1991. See map, Appendix E. It includes an existing line from Edic in Central New York State to New Scotland south of Albany and proposed lines extending south to Pleasant Valley near New York City, to Massena in the north and to the western end of the state. Lines would extend to Gilboa from Edic and from Oakdale lying to the west. The Gilboa-Leeds line is proposed at 765 kv, and from Leeds a 765 kv line would extend across the Hudson and south to Pleasant Valley.

Greene County says that on May 3, 1974, it transmitted to Judge Levy a later New York Power Pool plan which involves a different arrangement of lines and provides for no Gilboa to Leeds 765 kv circuit. We must recognize that the 765 kv plan shown in the FEIS may not represent what actually will be built. However, the record indicates that it is likely that a 765 kv line will be needed between Gilboa and Leeds. The Staff witness Jessel explained that the network would require such a line, for no one would build a network and leave it hanging with only one line to Pleasant Valley where most of the service has to go and that Leeds is the only practical point to get across the Hudson with a 765 kv line (Tr. 2687-88).

We do not know the exact date when the Gilboa-Leeds line should be raised to 765 kv. When this should occur will depend on the development of the high voltage network in New York and the northeast region. Under Section 202 of the Act 17/ we are authorized to encourage the interconnection and coordination of facilities, but we have no authority to grant permission for the building of power lines except those that are primary lines in connection with a hydroelectric project. 18/

17/ 49 Stat. 848 (1935), 16 U.S.C. § 824a(a)(1970).
18 See Footnote __ supra.

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While the record is full on the environmental aspects of the Gilboa-Leeds line and deals with future plans as to the development of 345 kv and 765 kv lines with which the Gilboa-Leeds line will interconnect, these plans are not yet firm. We know from the record that one 345 kv circuit is now required to connect Blenheim to the transmission network, and that the plans are sufficiently definite that provisions should be made for a second 345 kv circuit and conversion to a single 765 kv circuit. We thus have not blinded ourselves to potential developments, but have considered the Gilboa-Leeds line in the light of future plans and possibilities. See Greene County Planning Board, supra, 455 F.2d at p. 424. This does not require us to delay a determination on the Gilboa-Leeds line until we can evaluate the whole future northeastern transmission network. Hence we conclude that we should authorize the Gilboa-Leeds line with place for a second 345 kv circuit, so that it can be converted to a single 765 kv circuit because of the strong possibility that this will be necessary in the future.

Greene County in this connection cites Scientists' Institute for Public Information v. A.E.C., 481 F.2d 1079 (D.C. Cir. 1973), where the court held that the A.E.C. should issue an environmental statement about the whole program, which was still in an experimental stage. Here use of 765 kv lines is a known technique and such lines are already installed in New York State, but operating at 345 kv at this time. To require an environmental study of the future 345 kv or 765 kv grids would prevent the building of the Gilboa-Leeds line for years and would delay the reliable utilization of the power generated by the Blenheim-Gilboa project. There is no need for an environmental impact statement to consider alternatives whose effect cannot be reasonably ascertained and whose implementation is deemed remote and speculative. Life of the Land v. Brinegar, 485 F.2d 460 (9th Cir. 1973), cert. denied 416 U.S. 961 (1974).

In this connection Named Individual Members of the San Antonio Conservation Society v. Texas Highway Department, 446 F.2d 1013 (5th Cir. 1971) is not in point. There the Court held that the Secretary of Transportation had to consider a whole highway, which was proposed to run through a park, not merely segments. Here a 345 kv line will interconnect the Blenheim-Gilboa project with other portions of the 345 kv network at Leeds. It will be less disturbing to the environment and less expensive to make the line convertible to 765 kv as needed. This is very different from approving two segments of a highway, but not the middle portion, as in the San Antonio case.

Greene County further contends that the Breakabeen Project No. 2729 and proposed new generators near Leeds must be considered. On March 30, 1973, PASNY filed an application to build Breakabeen, a pumped storage project, on Schoharie Creek about six miles north and downstream from the Blenheim-Gilboa Project. One 345 kv transmission line is proposed for

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this project to be carried by the towers of the Gilboa-Leeds line. Greene County argues that there is an intimate connection between the two proceedings since the right of way determined in this case may prejudge the results in the Breakabeen case. Now is the time, Greene County says, to determine system alternatives, for a Gilboa-Leeds line may make the Breakabeen project unavoidable.

As discussed above, the record shows that at the present time a single 345 kv circuit is necessary to carry Blenheim-Gilboa power from Gilboa to Leeds. We have no record before us as to whether the Breakabeen project should be licensed. Breakabeen is not a reason for licensing the Gilboa-Leeds line, but could be a reason for building a line which will accommodate a second 345 kv circuit. It is upgradeable to 765 kv, not to serve Breakabeen but the grid. Further, we do not know whether there will be base load plants in the vicinity of Leeds. The Gilboa-Leeds line may be used to carry pumping power from them to Gilboa, but we do not rely on the building of such plants to support licensing the Gilboa-Leeds line. To delay a determination on the Gilboa-Leeds line for several years until a license is issued for Breakabeen would be contrary to the public interest.

Greene County argues also that the record contains no consideration of true alternatives to the Gilboa-Leeds line particularly the alternatives of building additional lines from Gilboa to New Scotland and Leeds, and from Gilboa to Fraser, Cooper's Corners, Rock Tavern, Roseton and Leeds. The record, including the FEIS (Ex. 71) covers these and other alternatives discussed below.

ROUTES BETWEEN GILBOA AND LEEDS

Greene County argues that no Gilboa-Leeds line can be approved in this proceeding, but, if a line is to be approved, the record will not support Route B chosen by the Judge. As the Judge says, PASNY described five transmission corridors (A,B,C,D,E,) as possible routes for an overhead 345 kv transmission line from Gilboa to Leeds (see attached map Appendix C). PASNY also presented testimony and exhibits on a fully underground route (Route X) and a less fully underground route (Route Y). A 15.1 mile underground double circuit segment along Route A-1 in the Town of Durham was designated Z-1 and a 13.0 mile underground double circuit segment along Route A-1 in the Town of Cairo was designated Route Z-2.

The Staff made independent studies of Routes A, B, C, D and E. It also made a study of the route running north to New Scotland and back to Leeds (Route F) and the route south to Fraser, Rock Tavern, and Roseton and back to Leeds (Route G) and a route along a petroleum products pipeline (Route H). Staff also laid out a possible underground route described in the FEIS.

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The Judge concluded that Route B, as modified by PASNY (Route B-1), was the superior proposal. He noted that the most scenic aesthetic, historical, and cultural values in the impact area were found in the Durham Valley and along the Susquehanna Turnpike, and that Route B-1 swings north of Route A-1 and avoids the Durham Valley, the Town of Durham and the Turnpike taking advantage of the ridges and shallow valley around Greenville for better concealment and less visual impact. Further, he noted that C is 5-7 miles longer through populated Albany County, D makes numerous crossings over Catskill Creek, and E would have the greatest adverse visual impact skylining the higher Catskill elevations.

Greene County contends that the environmental witnesses testified principally about Route A and only secondarily about Route B and it is impossible to tell whether routes alternative to Route B would be superior. It also says PASNY mentioned an additional alternative in its application and showed a route along a pipeline right of way that was not closely examined by PASNY or the Staff. Greene County itself did not supply any evidence as to which route was most suitable through its direct Witnesses Burgraff (Tr. 3527) and King (Tr. 3582). Its rebuttal Witness Blackburn (Tr. 3709-39, 3894-3978) testified on direct examination briefly as to the disadvantages of Routes A and B, describing photographs taken, and answered a few questions on Route C, but it was made plain that he had made no substantial study of Route C (Tr. 3924, 2938).

PASNY, on the other hand, argues that it would be ridiculous and uneconomic to make detailed studies and expend large sums of money on all possible alternatives when there were two routes and their modifications which showed the best promise. However Routes C, D, and E were studied in sufficient depth to determine that they were not environmentally desirable, practicable or feasible. As for Route H, the pipeline route, the pipeline right-of-way is narrow and goes off to the north in Albany County instead of towards Leeds (Tr. 3805; Ex. 71, p. 90). The pipeline right-of-way was secured over objections of property owners and its widening would require that a number of buildings, some occupied, be torn down or moved. (Tr. 123-25, 131-33, 3807-08). The increased cost for acquiring the additional right-of-way, plus other costs, would increase the estimated capital cost of the transmission line along corridor H significantly; for example, 4.7 to 7.7 million dollars more than the "C" route. (Ex. 71, p. 44). A transmission line constructed on the pipeline corridor would be difficult to screen at road crossings and would cross numerous areas of marsh land and wetland (Ex. 33, p. 8; Ex. 71, p. 222). Construction of a transmission line along the pipeline would require installation of a cathodic protection system to prevent the pipeline from corroding. In view of these considerations and the fact that the petroleum products pipeline route extends in the wrong direction, it was properly rejected here. PASNY felt it

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impractical to prepare a recreation plan or wildlife report until determination of the route and consultation with Federal and State Agencies as would be required by the Judge's Article 43 and Article 36 in the original license.

Staff points out it travelled Routes A-E several times since 1971, consulted local authorities and kept Greene County's planning goals in mind. It notes further that to preserve the scenery it advocated a design which would permit upgrading the line to avoid the necessity of new rights-of-way in Greene County in the foreseeable future. While in its brief before the Judge, the Staff advocated a variation of Route A, it did not except to the Judge's choice of Route B-1.

The five routes, A-E, with variations of A and B suggested by the Staff and PASNY, are described fully in the record including the FEIS, and are shown on the map Appendix C. Roughly speaking, Route A, as originally presented by PASNY, follows the straightest line from Gilboa to Leeds and is 33.2 miles long. Staff's Route A-1 shows variations near Gilboa, midway in the Durham Valley, and near the Leeds substation. Routes B-E diverge from Route A at a point about eight miles from Gilboa (common point A) and come together again about 27 miles from Gilboa (common point B). Route C lies furthest to the north traversing Albany County. Route B lies four miles to the south, largely in Greene County, and, as modified, is now called B-1. Route D cuts across diagonally from B to A. Route E lies furthest to the south, partly in the Catskill Mountains.

The costs estimated by PASNY and mileage of the five routes are shown below as a basis of comparison. It is assumed that one 345 kv circuit is installed on steel lattice towers capable of supporting two such circuits and convertible to carry one 765 kv single circuit as follows:

Route	Mileage	Cost
A-1 (as modified by PASNY)	34.4	14,961,000
B-1	36.6	15,156,000
C */	41.3	20,931,000
D */	35	19,129,000
E */	35	17,487,000

*/ In its brief PASNY applied the unit costs estimated for Routes A, B, A-1 and B-1 to Routes C, D, and E adjusted to reflect detailed layout on plan and profile drawings including all environmental considerations.

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We agree with the Judge that Routes C, D, and E are not as practical, desirable or preferable compared to Routes A or B as modified, on either, environmental, engineering or economic bases. Route C would involve more land; it would pass through bogs and wetlands, disturbing wildlife; it is located close to small communities and near new developments; and it would have a substantial scenic impact in open areas. The nature of the terrain and required screening would increase capital and operating costs. Route D would be near State Highway 81, would cross Catskill Creek ten times, and would have considerable visual exposure. Route E would infringe on resort areas, would cross state conservation land, would be in close proximity to the northern boundary of the Catskill Forest Preserve and would pass through heavily timbered areas. It would be costly to build because of side-slope terrain and lengthy construction roads in wooded areas.

While Route A and variations of it designed to reduce the environmental impact would be most direct and least costly, we agree with the Judge that for environmental reasons it is not as desirable as Route B-1. This is because the Durham Valley, traversed by Route A-1, represents a single area that permits visibility for a considerable distance,while Route B-1 traverses the dissected plateau to the north and is less visible because of the small hills and forest (Tr. 3754-55).

As noted above, the record, including the FEIS, covers additional alternatives without establishing a new transmission corridor from Gilboa to Leeds. For Route F a circuit could be built from Gilboa to New Scotland on a 250 foot right-of-way belonging to PASNY abutting a 150 foot right-of-way now in use. Additional right-of-way would have to be obtained between New Scotland and Leeds. The whole line would be about 60 miles long and,as a single circuit overhead line supported by lattice work towers convertible to double circuit 345 kv use or single circuit 765 kv use,would have a capital cost of $23,750,000, compared to $15,156,000 for a similar 35 mile line along Route B-1 to Leeds.

The line from Gilboa to New Scotland would be vulnerable because of contingencies that could take out both lines on the same right-of-way and because of the concentration of transmission which would result at New Scotland. A 765 kv line from New Scotland to Leeds would close the 765 kv transmission loop at the wrong place; it would eliminate the southeastern New York electric systems from the 765 kv loop and would reduce their high voltage supply to one source, thereby adversely affecting the reliability of power supply.

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From the environmental viewpoint another circuit along the Gilboa-New Scotland corridor would require the use of the full 400 foot wide right-of-way and the adverse impact on scenic and other environmental values would be increased substantially without corresponding benefit of service reliability.

Route G, the alternative route via Fraser involves further problems and would be even less desirable. This route would be 105 miles long and the capital costs would vary from $35,000,000 to $43,000,000 depending on the type of supporting structures. It would also require reinforcing circuits as far as Ramapo substation. A new circuit would require an additional width of right-of-way for most of the distance; already a great deal of opposition has developed in local communities to such construction. Even if environmental, scenic, wildlife, and other natural resources problems were not so difficult and extensive, this alternative would not have sufficient capacity to Leeds to meet system needs. Nor would it avoid the future need of a Gilboa to Leeds 765 kv transmission corridor.

As noted by the Judge, studies were made and testimony was presented on the possibility of full or partial undergrounding of the more direct routes between Gilboa and Leeds. PASNY presented a fully underground Route X and a less fully underground Route Y, and Staff also presented an underground Route. In addition, PASNY presented segmented underground and overhead lines. The record indicates that undergrounding would cost about ten times that of an equivalent overhead line. Further, while undergrounding would eliminate the scenic impact of towers and overhead conductors, undergrounding requires a completely cleared right-of-way and a maintained access road along its entire length. Also excavations of the trench requires large spoil areas and hauling of excavated material.

Direct current alternatives, either overhead or underground, would offer certain advantages, such as a narrower right-of-way, and certain disadvantages, such as an inability to withstand sudden reversals of flow, but the high cost of the terminal equipment would be prohibitive. The record also shows that generating alternatives, gas turbine, steam or nuclear, to produce capacity would be six times or more as expensive as a transmission line.

We conclude with the Judge that an alternating current 345 kv overhead Gilboa-Leeds single circuit transmission line along Route B-1 convertible to double circuit 345 kv overhead use and to single circuit 765 kv overhead use would be preferable to all other alternatives on the basis of environmental and non-environmental grounds; it would be an important component of the 345 kv and 765 kv transmission networks; and the Licensee should

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be authorized to construct it. In accordance with the Initial Decision the licensee should retain a board of independent environmental consultants to advise on the placement of steel pole H-frame towers, other construction details, and maintenance of the line, with reports subject to the approval of the Commission.

It appears that the Judge in describing the course of Route B-1 in his Finding 157 intended to use a Staff alternative to Route A which turns slightly to the east and runs north of Route A as it approaches the New York Throughway. This is a proper variation to move the route away from Green Lake. (Ex. 71, p. 57). However, contrary to the Staff, the Judge would adopt PASNY's proposal that the line turn south before it reaches Route 9W because this would be visually less obtrusive and more suitable for a double circuit 345 kv line or a single circuit 765 kv line than if it came down on the east side of 9W before entering the Leeds substation. This is shown on the map, Appendix B hereto and in Appendix A which represents the Judge's Finding 157 revised to make this clear.

THE CONDUCT OF THE HEARING

Greene County takes strong exception to the conduct of the hearing. It charges the Administrative Law Judge with conducting the hearing "unfairly and lawlessly", "ignoring facts", failing to act in a "judicial manner", and making an "unreasonable, unfair and unlawful ruling" and presiding over a "kangaroo court". After reviewing the record we are of the opinion that such characterizations of an Administrative Law Judge, and Judge Levy in particular (who has retired) are not worthy of a practitioner before the Federal Power Commission. We are not attempting to say that every ruling was correct or every statement made by Judge Levy is appropriate, but we are of the opinion that he conducted a hotly contested proceeding with fairness and efficiency. In any case there is nothing to show that his rulings aggrieved Greene County or other Intervenors.

Among numerous complaints Greene County cites a statement of Judge Levy indicating that there would be a rebuttal phase of the proceeding (Tr. 1941-42), and nine months later a statement on September 4, 1973, that the Judge would not have a separate form of rebuttal session (Tr. 3382). The Judge said he did not want to argue about what he said in the transcript (Tr. 3384), but he received the testimony of a number of witness on the next to the last day of the hearing in Washington on September 18, 1974, and that of Greene County's witness Blackburn on the last day of the hearing, September 19, 1973, when he was cross-examined (Tr. 3890). Clearly Greene County had been given its opportunity regardless of how he designated the closing phase of the hearing.

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Further, Greene County cites a request for any Staff engineering reports on the three lines from the Blenheim-Gilboa project. Counsel for Greene County had asked why there had been designated three primary lines for the project, and the witness had answered that the Staff after study would recommend only those lines whose principal function would be for project purposes (Tr. 1785-1786). When Staff counsel said he had not searched for such a report and the Judge ruled that under the circumstances that he had no alternative to denying the request, Greene County called this "one of the most unreasonable, unfair and unlawful rulings in the annals of adminstrative law". However, as the Judge said, the request was for a document that, so far as he knew, did not exist or was not available (Tr. 3882). Furthermore, the primary status of the lines as part of the project was res judicata (41 F.P.C. 712, 714-715). We find no reason that Greene County is entitled to the Staff's engineering reports. Compare Indiana & Michigan Electric Company, 33 F.P.C. 739 (1965) affirmed Indiana & Michigan Electric Company v. FPC, 365 F.2d 180 (7th Cir. 1966) cert. denied, 385 U.S. 972 (1966).19/

Greene County further objects to the Judge cutting off its cross-examination saying that the Judge was only interested in cross-examination as a data gathering device rather than as a tool to test the probity or competency of the witnesses. The record in this case and the cross-examination by Greene County was lengthy. 20/ The Judge cut it off where it extended to collateral matters and matters of remote relevancy. Thus he prevented questioning a witness about trench digging in connection with another project. Although the witness was a geologist, there was no geological issue in the present proceeding (Tr. 535-539). He stopped cross-examination of a witness about another witness' testimony on the ratio of cost of underground to overhead transmission where the ratio was known to be high and the exact ratio was not relevant (Tr. 769). He also prevented cross-examination on information that was otherwise available or of which he could take notice. These included such things as whether PASNY had presented a recreation plan for the transmission line area and whether sites considered were in the National Register of Historic Places (Tr. 1853).

19/ Under the Freedom of Information Act, 5 U.S.C. §552 (b)(5) there are exempt "inter-agency or intra-agency memorandums or letters which would not be available by law to a party other than an agency in litigation with the agency."

20/ The total transcript of hearings covered 3995 pages; cross examination by Counsel for Greene County is found at Tr. 500-505, 527-530, 534-574, 586-587, 643-676, 704-713, 740-827, 865-870, 875-1011, 1136-1137, 1326-1327, 1569-1576, 1622-1788, 1816-1854, 2306-2319, 2537-2541, 2589-2593, 2608-2609, 2652-2760, 2826-2833, 2933-2934, 2944-2945, 2957-3012, 3087-3092, 3095-3127, 3168-3181, 3615-3619, 3810-3816.

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Greene County takes issue with the Judge ruling against a question to the Staff witness as to whether on the basis of the FEIS the Staff was recommending a 765 kv line (Tr. 2716). The Judge considered that the FEIS (p. 118) spoke for itself. We agree that this was needless cross-examination. Greene County also objects to the Judge preventing questions directed to Staff environmental witness Hauck as to where PASNY would obtain funds for a wider transmission line right-of-way (Tr. 2372). We think it clear that questions on such a matter to this witness were entirely inappropriate.

To conclude, counsel for the intervenors have attempted to carry out cross-examination on peripheral matters and on matters already covered and from inappropriate witnesses so that the proceedings were extended without warrant. We do not fault the Judge on his rulings; in any case if he were overly strict, no injury was done to the intervenors.

Denial of cross-examination as to matters not material is not prejudicial. N.L.R.B. v. Friedrich, 116 F.2d 888, 889 (5th Cir. 1940). The extent of cross-examination, on collateral matters is peculiarly within the discretion of the trial judge unless there has been a plain abuse. Basic Books v. F.T.C., 276 F.2d 718, 721 (7th Cir. 1960). Even if the Judge makes an error in excluding material from cross-examination the agency's decision will not be reversed unless substantial justice so requires and not where the excluded material was useless to the case. Dolcin Corp. v. F.T.C., 219 F.2d 742 (D.C. Cir. 1954), cert. denied, 348 U.S. 981 (1955).

Greene County further argues that the Judge's prejudicial conduct also disrupted the presentation of direct testimony. Its complaint goes to the presentation as a witness by Greene County of Frank Burgraff, Chief of Transmission Facilities Certification and Planning Office of the Office of Environmental Planning of the New York State Public Service Commission (Tr. 3527). The F.P.C. staff arranged for Mr. Burgraff to appear, and he was subpoenaed. Greene County objects to the Judge's ruling that he could not be qualified as an expert witness and to the Judge's refusal to let him testify with respect to New York's comments included in the FEIS (Tr. 3561). Earlier the Judge had determined that a state employee should not be called as an expert witness for Greene County when the apparent purpose of the examination would be to require a collateral attack on New York's Comments and Conclusions (Tr. 2162).

The witness testified in response to questioning by Greene County's counsel on the standards and methodology of New York with respect to environmental matters in certifying transmission lines, although its jurisdiction does not extend to

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the lines of PASNY (Tr. 3539-43). When, however, counsel for Greene County asked him whether the comparative environmental impact of an alternative to the Gilboa-Frazier-Rock Tavern-Ramapo route had been evaluated, the Judge sustained the objection (Tr. 3562).

In our opinion the Judge was correct in limiting the testimony of witness Burgraff. As he pointed out, New York was not a party, but had filed comments included in the FEIS (Ex. 71). A New York State employee required to appear should not be forced to testify on New York's comments. Furthermore, the FEIS was prepared by the F.P.C. staff, and staff witnesses had been cross-examined at length on this document.

Finally, Greene County contends that the Judge made a major error in receiving the Staff's FEIS (Ex. 71) into evidence. It argues that Exhibit 71 is a collection of unsworn to, undocumented opinions and conclusions and no reasonable man would rely on it. Greene County I required that the FEIS, in accordance with Section 102(2)(c) of NEPA, must accompany the proposal through the existing agency review processes, which the Court interpreted to include the hearing. Therefore, we believe, in accordance with Section 2.81(b) of our Regulations that the FEIS should be placed in evidence. It was compiled by Staff members including a fishery biologist, a geologist, an electrical engineer, a wildlife biologist, a landscape architect and a forester, and these individuals were subject to cross-examination and were cross-examined. Thus, there is substantial evidence in the record which supports the FEIS. The record clearly indicates the efforts of counsel for Greene County to protract these proceedings. The Judge noted a memorandum dated April 25, 1972, that was prepared by Greene County's counsel and presented to the County in which computations were made of savings to the County from opposition to the Gilboa-Leeds line both on the basis of savings to date and on the basis of savings if the "fight" continues but is lost.

The Judge also notes a refusal on the part of Intervenors to accept adverse rulings on evidence or procedure, and the continuation of argument after such rulings had been made. 21/ In addition, he notes that Intervenor counsel delayed the progress of the hearing by ignoring directions to file their testimony and failing to appear at a conference to discuss procedures. After postponements, which were understandable in view of the Court litigation, 22/ the Intervenors were to file their testimony on January 18, 1972 (Tr. 1882). They

21/ See for example Tr. 535-539, 3120-21, 3557-3575.
22/ The Second Circuit Opinion in Greene County II was issued January 17, 1972.

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did not do so, nor did they attend a prehearing conference called by the Judge on January 28, 1972, but filed a letter prepared by counsel for Greene County objecting to filing of their testimony until after the filing of the Staff's impact statement (Tr. 1866), which is dated May, 1973. Although by notice of May 10, 1973 the Judge extended the time for filing their evidence until May 21, 1973, Greene County did not file its evidence at that time, nor had it filed its evidence by the time of the hearing sessions in Albany in early September, 1973 (Tr. 3391). On September 6, 1973, Greene County presented witnesses Burgraff (Tr. 3527) and King (Tr. 3582), New York State employees, and examined them orally. Greene County did not serve testimony until September 17, 1973 (Tr. 3705) just before the termination of the hearing on September 19, 1973.

FEES AND EXPENSES

Durham, with the concurrence of Greene County, the Sierra Club, and Joe Segelman, excepts to the Judge's denial of their motion that PASNY or, in the alternative, the Commission pay reasonable attorneys' fees and expenses of expert witnesses. In support of its request Durham argues that its participation in the proceedings established a landmark ruling in Greene County I and assisted the Judge by the presentation of highly qualified expert witnesses. In doing so it claims that many hundreds of hours of attorneys' time had been directed to this matter and many thousands of dollars of expenses and fees have been incurred.

Greene County cites Greene County I as recognizing that the Commission could entertain an application for fees and expenses at the close of the proceedings although at that posture of the proceedings it would not order the Commission or PASNY to pay the fees and expenses.

The Court in Greene County I could see no Congressional mandate for requiring the payment of fees and expenses in Section 309 or 314(c) of the Federal Power Act or in Section 102(1) of NEPA cited by Greene County, but would not make a final determination of that point in view of the procedural disposition. Durham cites Wilderness Society v. Morton, 495 F.2d 1026 (D.C. Cir. 1974) where the court held that environmental groups challenging the Trans-Alaska Pipeline could recover costs and reasonable attorneys' fees. However, it would not assess attorneys' fees against the United States or the State of Alaska. The case was reversed in Aleyska Pipeline Serv. v. Wilderness Soc., ___ U.S. ___, 44L. Ed 141, 95 Sup. Ct. 1612 (1975) where the Court held that the Courts had no roving authority to allow counsel fees as costs.

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Upon considering this matter further we do not find that Intervenors here have made a case for an award of expenses and fees even if we had the authority to make such an award. The Intervenors represent local towns and land owners who could conceivably have been damaged by the Gilboa-Leeds line. They had every right to present their cases as have countless other intervenors in cases before the Commission, who intervene for the benefit of local areas either because they do not desire the building of a hydroelectric project or pipeline or because they want it and the energy supplies made available. These intervenors are protecting their own interests, and we see no reason to grant them fees and expenses. If they were generally allowed, a large financial burden would be imposed on this Commission and the taxpayer or upon the utility involved and inevitably on its ratepayers. In the absence of a mandate in the statute we are loath to attempt such an expensive departure from past practice.

EXCEPTIONS TO THE JUDGE'S NUMBERED FINDINGS

Durham contended that certain of the Judge's numbered findings (32, 117, 127, 128) relating to Route A or A-1 between Gilboa and Leeds are erroneous. We need not rule on the accuracy or completeness of these findings since the Judge chose Route B-1, and we agree with his choice. It would appear that Durham is correct that Findings 85 and 96 erroneously refer to Route A-1 and should refer to Route B-1.

Greene County lists fifteen findings (2, 4, 5, 8, 10, 15, 16, 19, 22, 23, 30, 32, 33, 105, 129) which it alleges are incomplete and misleading and would add additional material in each case. In our opinion the additions are either redundant, misleading, irrelevant, or immaterial when viewed in the context of the record, the Judge's decision and this opinion. Greene County also proposes 12 additional findings. These, in our opinion, are immaterial, unnecessary or draw incorrect conclusions. Greene County lists further findings that it says are not supported by credible evidence or by substantial evidence, are contrary to the evidence, are irrelevant, cannot be made because the record does not contain a consideration of all relevant factors necessary to support them, or are erroneous as a matter of law. In our opinion Greene County arrives at its conclusions because it disagrees with the Judge's granting approval of a Gilboa-Leeds line. The findings of the Judge as supplemented by those in the opinion are sufficient, we believe, to support the conclusion.

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LICENSE ARTICLES

Greene County would add to and modify the License Articles contained in the Judge's ordering clauses. In most cases we believe these changes are unjustifiable or the same effect is achieved by other means. In Article 40(A) Greene County would require that one member of the board of independent environmental consultants be approved by the Department of Environmental Conservation of the State of New York rather than the "State of New York". We think that it is appropriate to leave this matter to the State. Further, in Article 40(A) Greene County would, except for good cause, have the recommendations of the Board binding and give it the power to halt construction work. We think this would be delegating our responsibilities which we can exercise on the basis of the information and report required by Article 40 if the line is not being constructed in accordance with the license.

Greene County asks that the requirement that the Licensee furnish information in Article 40(B) be amended to include Intervenors. In view of their legitimate interest in this matter we shall require the Licensee to make such information available for public inspection in the project area

In Article 41 Greene County would require that the Licensee not acquire another transmission line right-of-way within 25 miles. Such a provision would extend beyond our jurisdiction which is confined in this proceeding to the primary line of a licensed hydroelectric project. It also would require that 1% of the cost of the line would be allocated to landscaping and beautification. The matter of selective clearing, feathering of rights of way and screen and other selective plantings are covered by Article 40(A) relating to the functions of the Board of environmental consultants.

In Article 42 Greene County would provide that each construction contract shall contain an express agreement by the contractors to observe the license conditions naming the Commission, property owners and local governments as third party beneficiaries. Also the provision would permit the Licensee to deduct from payments due the replacement value of trees and shrubs unnecessarily damaged. We think these provisions would tend to delay the work giving the Intervenors and others an opportunity to stop it outside their right to participate in this proceeding. Article 42 does require that contracts incorporate rules and conditions to be observed by contractors in locating spoils, and protecting cultural values and archeological sites. Furthermore, Article 40 covers broadly the treatment of environmental values and natural resources. Further, we are requiring by Article 44 a revised Exhibit F, which is required pursuant to the Commission's Regulations (18 CFR § 4.41). Exhibit F requires details of all land acquisitions including a listing of the entity from whom acquired, the acreage acquired, and the nature and extent of the right acquired.

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In Article 43 Greene County would require that Licensee, prior to construction, submit a revised Exhibit R to provide for recreation facilities costing no less than 2% of the cost of the line. Article 43 already provides that on those right-of-way lands acquired, Licensee shall consult and cooperate with the New York Office of Parks and Recreation on incorporating those lands in an Exhibit R. We think that the requirement sought by Greene County would delay construction of the project and be too rigid in application.

In Article 44 Greene County would have Licensee file with the Intervenors, as well as the Commission, revised or additional Exhibits J, K, and M for Commission approval as now required. In addition Greene County would have the exhibits specify the right-of-way, the location of structures, the various measures controlling the environment, and so forth. In our opinion these matters are sufficiently covered by the requirements for such exhibits stated in § 4.41 of our Regulations under the Federal Power Act and by Article 40 below. We shall require these to be available for public inspection in the project area.

The Commission further finds:

The Initial Decision of the Administrative Law Judge issued July 1, 1974, authorizing PASNY to construct a transmission line from Gilboa to Leeds should be adopted as the decision of the Commission as supplemented herein.

The Commission orders:

(A) The Initial Decision of the Administrative Law Judge issued July 1, 1974, is adopted as the decision of the Commission as supplemented herein.

(B) Licensee (PASNY) is authorized to construct a 345 kv overhead transmission line from Gilboa to Leeds, in accordance with applicable Commission regulations, along designated Route B-1 as heretofore described and as described in Appendices A and B hereto. The 1,351.5 KcMil 23/ ACSR non-reflective conductors shall be supported by steel lattice russet surface non-reflective towers and pole-type H-frame structures suitable for conversion at a later time to support two 345 kv lines or one 765 kv line.

(C) The Presiding Administrative Law Judge's rulings remanded by order of October 25, 1973, having been considered in the light of the entire record, are hereby reaffirmed. All additional relief requested directly of the Commission and referred to Administrative Law Judge by the order of October 25, 1973, is also denied.

23/ Formerly referred to as MCM.

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(D) The line shall be built, operated and maintained in compliance with (1) the terms of the license for Project 2685, giving appropriate consideration to Commission guidelines as issued November 27, 1970, in Order No. 414, Docket No. R-365, and (2) the following special conditions which are hereby incorporated as part of the license for Project No. 2685.

Article 40. Licensee, in the detailed design and in the planning, construction, and maintenance of the overhead transmission line from Gilboa to Leeds, shall:

(A) retain a board of independent environmental consultants including a safety engineer, a forester, a landscape architect and a transmission line construction engineer, one of whom shall be recommended by the State of New York.

(1) To advise the Licensee as to measures including placement of steel pole H-frame towers at crossings of scenic and other roads as may be needed to protect and develop the environmental values and natural resources of the transmission line right-of-way, and its affected contiguous areas, including but not limited to construction specifications, access roads, stream crossings, selective clearing and "feathering" of rights-of way, excavation, disposal of spoils, use of plant growth retardants, screen and other selective plantings, use of heavy equipment, location and selection of color and design of tower structures and methods of stringing conductors, prevention of soil erosion and slides, construction methods, protection of archaeological and other cultural values, and drainage works such as culverts and bridges. The board shall continue to operate for a period of up to three years following completion of construction of the line, monitoring environmental impacts of the line and making recommendations for such reasonable measures needed to mitigate those impacts,

(2) To submit to the Licensee bimonthly reports prior to construction and monthly reports during construction of the transmission line, and annual reports thereafter during the period the board is retained,

(B) Not less than 30 days prior to the initiation of construction furnish to the Commission and make available for public inspection in the project area detailed information on the proposed location and height of each tower, copies of construction contracts, copies of contracts relating to environmental matters, and such additional information as may be required by this Commission concerning the primary transmission line authorized for construction herein; and Licensee shall

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promptly submit to the Commission such actual changes and adjustments as may be made upon the recommendation of the environmental consultant board as provided for in Paragraph A of this Article. Additionally, Licensee shall promptly submit to the Commission copies of the reports of the board of consultants referred to above.

Article 41. The overhead transmission line from Gilboa to Leeds shall be constructed on a right-of-way 250 feet wide, provided that no less than a 25-foot width on either of the outer sides of the right-of-way shall be utilized to a reasonable extent for "feathering" through timbered areas, selective plantings for wildlife habitat, screening cleared areas or roads, improving wildlife uses, and otherwise lessening the scenic impact of the transmission line.

Article 42. Licensee for the purpose of protecting and developing the environmental values and natural resources of the right-of-way and its contiguous lands shall incorporate into contracts for construction of the overhead transmission line from Gilboa to Leeds such specifications that will provide contractors with rules and conditions to be observed in locating spoils, protecting cultural values and any archaeological sites discovered during excavations, and otherwise provide appropriate guidance and lines of communication for the above purposes.

Article 43. Licensee, on those right-of-way lands obtained in fee, shall consult and cooperate with the New York Office of Parks and Recreation in determining the need for incorporating those lands or parts thereof in the Project Exhibit R for public outdoor recreational uses. If appropriate Licensee shall file for Commission approval an amendment of Exhibit R.

Article 44. The Licensee shall file with the Commission and make available for public inspection in the project area a revised Exhibit F and for Commission approval revised or additional Exhibits J, K and M to show the location and description of the transmission line as approved herein. Construction shall not commence prior to the approval of Exhibits J, K, and M.

(E) Exceptions not granted are hereby denied.

By the Commission.

(S E A L)

Mary Kidd Peak,
Acting Secretary.

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(157) It is in the public interest that Licensee be authorized to construct a transmission line along PASNY Route B-1 (see Appendix B). A general description of the route is as follows:

A transmission line about 36.6 miles long along PASNY Route B-1 would occupy lands in the towns of Gilboa and Conesville of Schoharie County, Rensselaerville of Albany County and Durham, Greenville, Cairo and Athens of Greene County (Ex. 55-C).

Route B-1 begins at the Gilboa Switchyard in Gilboa Township and extends in a southerly direction for about 0.3 mile. From this point it proceeds generally on a bearing about 15 degrees south of east for 9 miles (Ex. 55-C). It first passes between Bear Mountain and Reed Hill and continues along its course in substantially a straight line, crossing Valenti, Kingsley, Mabie, Flat Creek, Back and McGuire Roads and Platter Kill and two of its tributaries. It enters the Town of Conesville soon after crossing McGuire Road. In the Town of Conesville it crosses Davis, Wood, and Brand Roads, County Roads 59 and 18 and East Conesville Road and Bear and Manor Kills and three tributaries thereof, to reach a point about 0.4 mile west of Schoharie County Route 3 to the point designated as Common Point "A" (7/1226-27; Ex. 55-C, Ex. 71 - pp. 197, 201).

From Common Point "A" Route B-1 takes a northeasterly course toward the southwest corner of Albany County to a point in Albany County about 1100 feet north of the southwest corner of Albany County, a distance of 2.5 miles. In this reach, the route crosses the unpaved Red House Road connecting to Route 3 from the north. Route B-1 parallels County Highway 3 (in Schoharie County) which becomes County Highway 354 in Albany County, at a distance varying from about 900 to 1600 feet. Most of this reach is through lightly wooded area, with some cleared land at each end. Through parts of this section a line would be visible from the village of Durham and the Susquehanna Turnpike (7/1233-34; Ex. 55-C).

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Route B-1 continues in a slightly more easterly direction for a distance of another 2.5 miles to a point in Albany County, about 1000 feet south of State Highway 81, about 1500 feet east of State Highway 145 and about 500 feet north of the Albany-Greene County line. In this section Route B-1 crosses County H ghway 354, Engle Road, State Highway 145 and Catskill Creek. This section is largely cleared but there are some interspersed parcels that are wooded (7/1234; Ex. 55-C).

Next, Route B-1 turns slightly northward and runs about 0.4 mile to a point south of State Highway 81 and about 300 feet north of the Albany County line where it turns about 14 degrees northward and runs for a length of about 0.6 mile to a point about 400 feet west of State Highway 81 and about 800 feet north of the Albany County line, then turns slightly northward again and extends about 2500 feet to a point east of State Highway 81 and about 1600 feet north of the Albany County line, then runs parallel to the Albany County line for about 0.65 mile to Fish Road where it turns slightly northward and extends about 0.5 mile to a point about 0.4 mile north of the Albany County line and 1000 feet west of Niles Road. This section of the route right-of-way crosses Catskill Creek, State Highway 81 and Fish Road. The deviation northward by-passes some nearby buildings and other developments. This section is somewhat cleared at the western and at the eastern ends with scattered wood cover in between (7/1234; 15/2092-2098; Ex. 55-C).

Route B-1 then turns southward and runs for a distance of about 2.2 miles but in a direction about 15 degrees south of east to a point in Greene County about 1600 feet south of the Albany County line and about 800 feet east of Saybrook Valley Road. It crosses Niles, Siebert and Gifford Roads in Albany County and Saybrook Hill Road, Tenmile Creek and Saybrook Valley Road in Greene County. This section of the route is mostly wooded with clearings in the western, central and eastern parts (7/1234-35; 15/2092-2098; Ex. 55-C).

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Route B-1 now turns about 33 degrees to the south and extends about 1.4 miles almost to McCafferty Road to a point about 1000 feet northwest of the intersection of McCafferty Road and State Highway 81. At this point Route B-1 swings slightly eastwardly and runs for about 0.95 mile to a point about 800 feet west of the Durham-Greenville town line and about 0.3 mile south but slightly east of the intersection of Old Plank and Gibson town roads. In this reach, the route crosses MacKay, McCafferty and Old Plank Roads. Except for the western end, most of this section is cleared and the route avoids two groups of buildings on State Highway 81 (7/1235; Exs. 55-C, Ex. 71-p. 201).

The route continues, upon turning 36 degrees north toward east, for a distance of about 600 feet west of County Highway 35 and about 2600 feet northeast of the junction of Red Mill Road and County Highway 35. In this stretch, the route crosses Carter Bridge and Big Woods Roads. This section is mostly wooded but there are a few cleared patches (7/1235; Ex. 55-C).

Route B-1 next turns more to the south and runs southeasterly about 1.5 miles to a point about 4000 feet east of State Highway 32, 1300 feet south of County Highway 41 and about 3800 feet southeast ofthe intersection of State Highway 32 and County Highway 41. In this reach the route crosses Basic Creek and County Highways 32,41, and 35. This reach is fairly well developed in the Greenville area, and is mostly wooded with cleared portions near the western and central parts (7/1235-36; Ex. 55-C).

Route B-1 now turns more southerly on a bearing almost due southeast and runs about 0.7 mile to a point about 600 feet south of the northern part of Fox Hill Road and about 1800 feet west of the intersection of Fox Hill Road and County Highway 41 (cf. 15/2102). The route next takes a turn slightly eastward and runs about 2.0 miles to a point 800

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feet east of Vly Road and 1400 feet northeast of the intersection of Vly and Drake Hill Roads (cf. 15/2104-2107). In this section, the route crosses Fox Hill Road, State Highway 41, Waldron and Vly Roads, and Jan De Bakers Kill. This section is mostly wooded in the western part and partially cleared in the eastern part (7/1236; Ex. 55-C).

Route B-1 next turns more southward and runs about 1.3 miles to a point about 2100 feet west of the Greenville-Coxsackie town line and about 0.45 mile southeast of the intersection of the Gayhead-Earlton Road and King Hill Road. In this section the route crosses Drake Hill Road and Gayhead-Earlton Road, and its right-of-way would parallel and abut Kings Hill Road. This section is mostly cleared and the route passes near some buildings in the vicinity of the junction of Vly and Drake Hill Roads (7/1236; Ex. 55-C).

The next section of Route B-1 is about 2.5 miles long. It connects to the point about 0.45 mile southeast of the intersection of Gayhead-Earlton and King Hill Roads, and runs in a more southerly direction in its southeastern course to Common Point "B" in the town of Cairo about 800 feet northeast of the intersection of Ira Vail Road and Novack Road, and about 600 feet east of Ira Vail Road. The route crosses the State Scenic Schoharie Turnpike in a fairly open area, and Deyo Road. This section is generally wooded in the northern and southern parts and mostly cleared in the middle section (7/1236-37; Ex. 55-C, 71-pp. 66-69).

At this point Route B-1 now turns a bit eastward and continues southeastward for about 0.7 mile to a point about 1000 feet west of Rudolph Weir Road and about 0.4 mile southwest on the intersection of Harold C. Meyer Road and Rudolph Weir Road. In this part, Route B-1 crosses two small, unnamed tributaries of Catskill Creek and Indian Ridge Road. Most of this part of the route is wooded (7/1229-30; Ex. 55-C, Ex. 71-pp. 197, 201).

Route B-1 next turns slightly southward and runs about 1.4 miles to a point about 0.4 mile west of Potic Mountain Road and about 0.6 mile northwest of the junction of High Hill and Center Roads. In this section, the route crosses Rudolph Weir Road and Potic Creek (7/1230; Ex. 71-pp. 197, 201).

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At this point between Potic Creek and Potic Mountain Road, Route B-1 turns slightly to the east and runs southeastward about 1.7 miles to a point near Green Lake Road where it turns slightly to the south for 0.6 mile about 500 feet east of its crossing of Green Lake Road and about 0.5 mile south of the junction of Green Lake Road and the Schoharie Turnpike. In this reach, Route B-1 crosses Potic Mountain Road, High Hill Road, an unpaved road, the New York Thruway, Green Lake Road, and a dead end road. This is mostly through wooded land (7/1230; 15/2086-2088; Ex. 55-C, Ex. 71-pp. 197, 201).

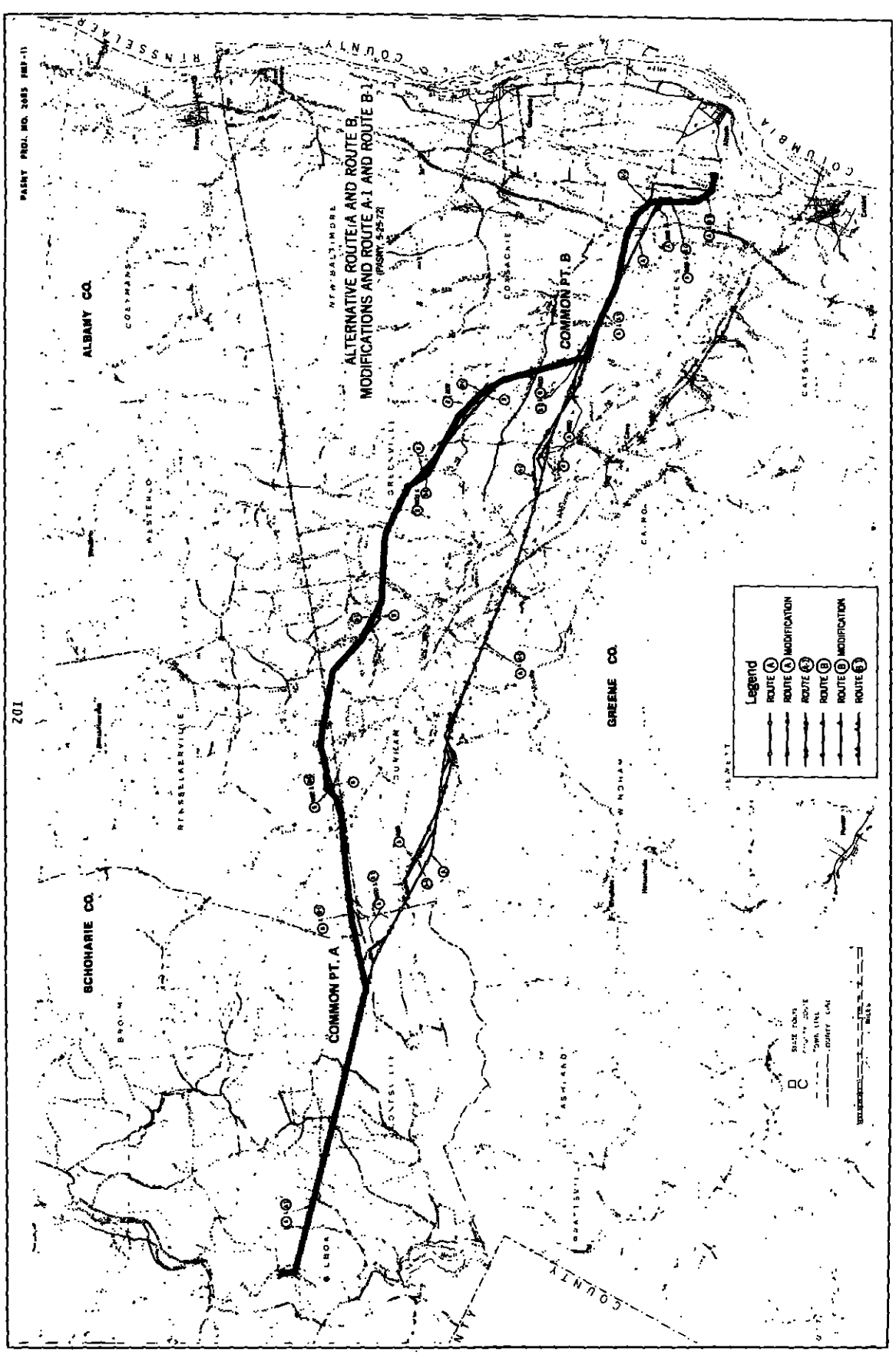
At the point 0.2 mile east of the dead end road 49A (originally part of the Green Lake Road) Route B-1 turns to the south and extends southeastward about 0.8 mile, including 0.2 mile to Vosen Kill, another 0.1 mile to Vosen Kill Road and 0.5 mile to a point west of U.S.Highway 9W. In this reach, which parallels Route 28, the route crosses Vosen Kill and Vosen Kill Road. Most of this part of the route is wooded except for an open area east of the New York Thruway (7/1230-31; Ex. 55-C; Ex. 71-pp. 197, 201).

About 0.4 mile before crossing 9W, Route B-1 takes a north-south direction by turning a sharp angle to the south. This section runs about 1.3 miles and is located near the upper part of a ridge between Vosen Kill Road and U.S. Highway 9W. This section is wooded and has a meadow west of the ridge. Some of the towers would be visible from the New York Thruway (7/1231; Ex. 71-p.201). After running for 1.3 miles the route turns southeastward for about 0.5 mile crossing to the east side of 9W (Ex. 55-C).

The final segment takes an easterly direction and runs about 0.4 mile to the Leeds substation from a point about 0.4 mile west of the Penn-Central Railroad tracks and about 0.5 mile northeast of the intersection of U.S. 9W and County Route 74, crossing the Penn-Central Railroad tracks, a side road and some cleared land on its run to its terminal at Leeds. This final alignment would parallel two existing overhead lines into the switchyard at Leeds.

Project No. 2685

APPENDIX B



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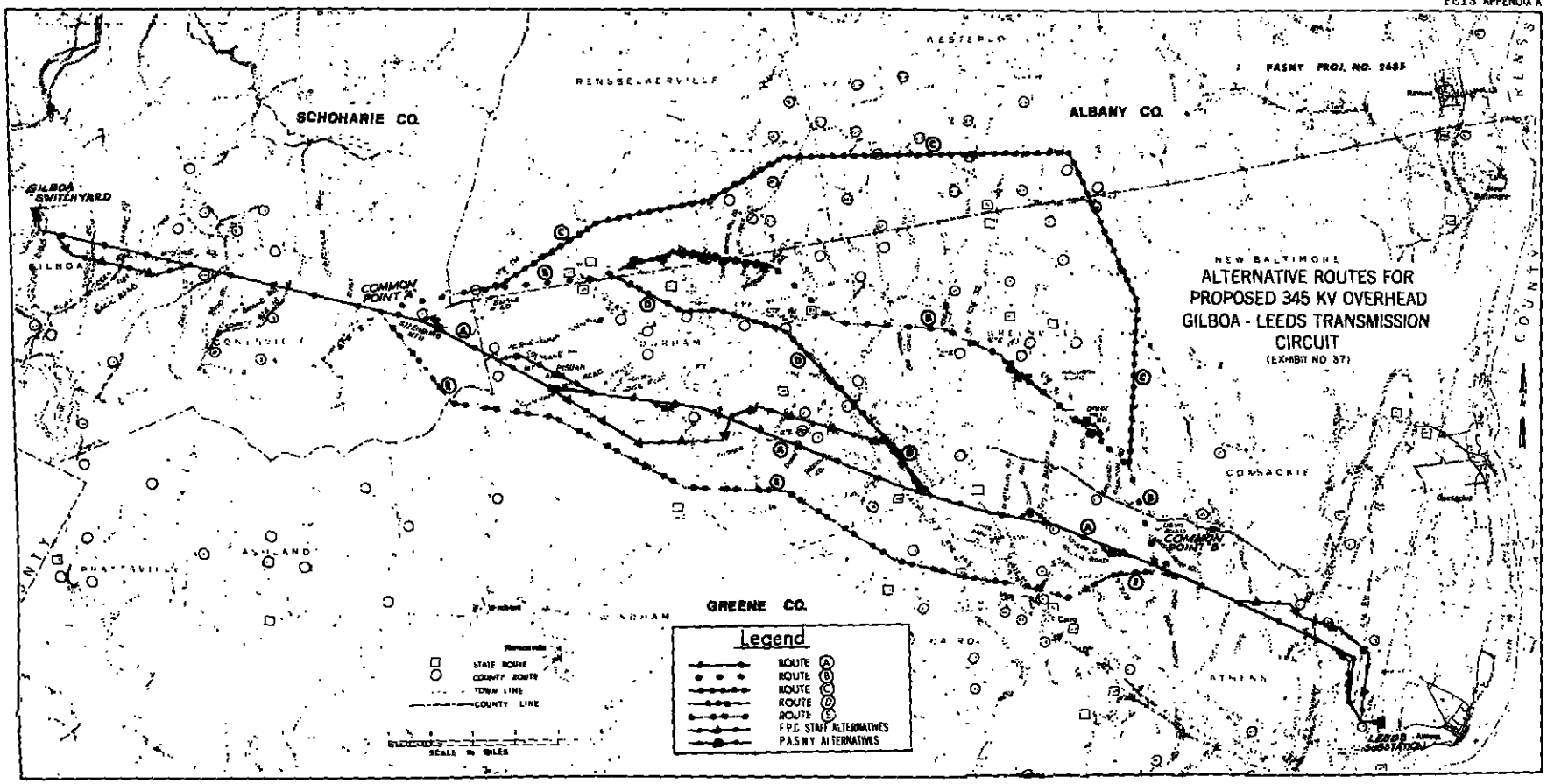

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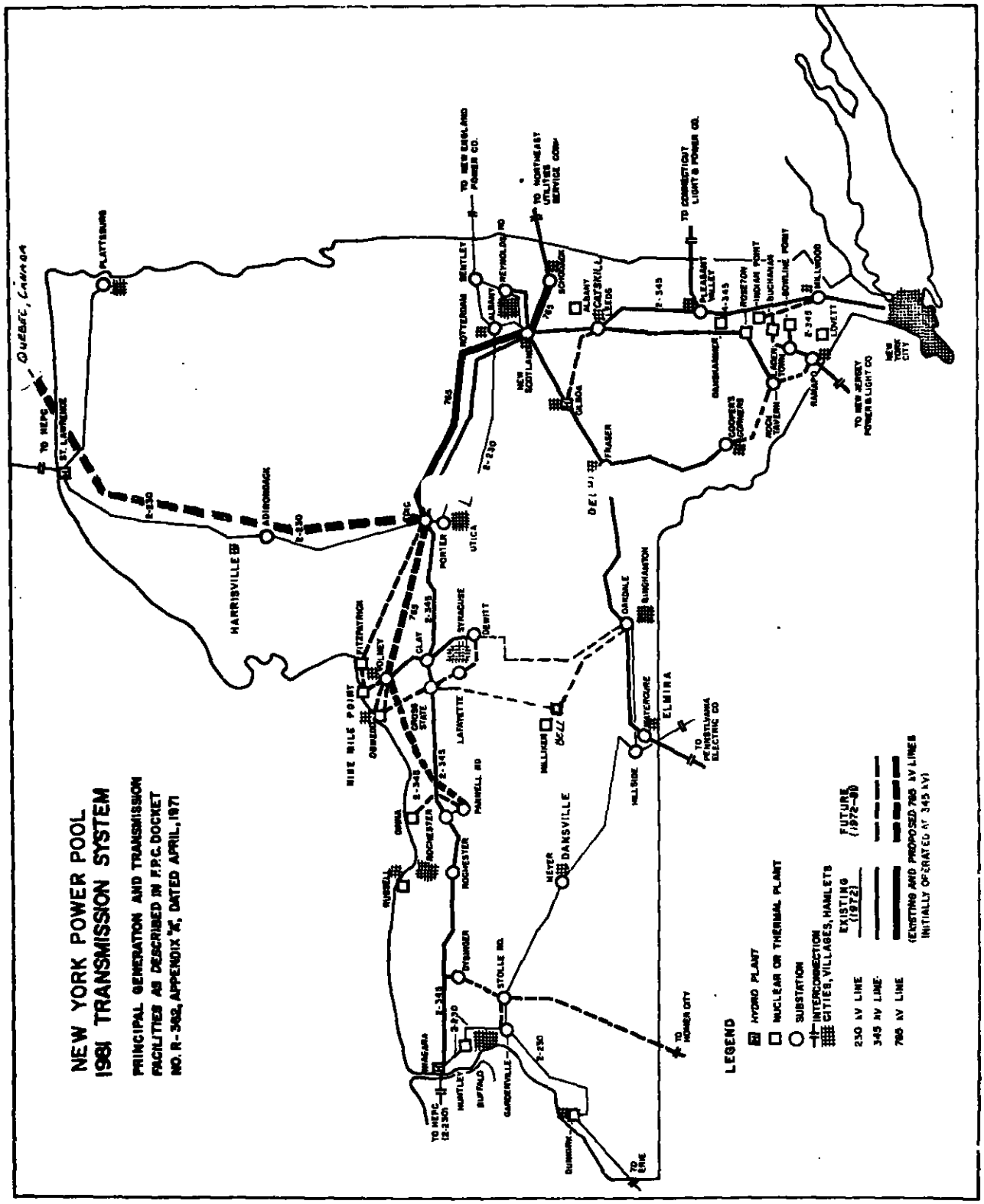
APPENDIX D

Project No. 2685
FEIS Appendix B



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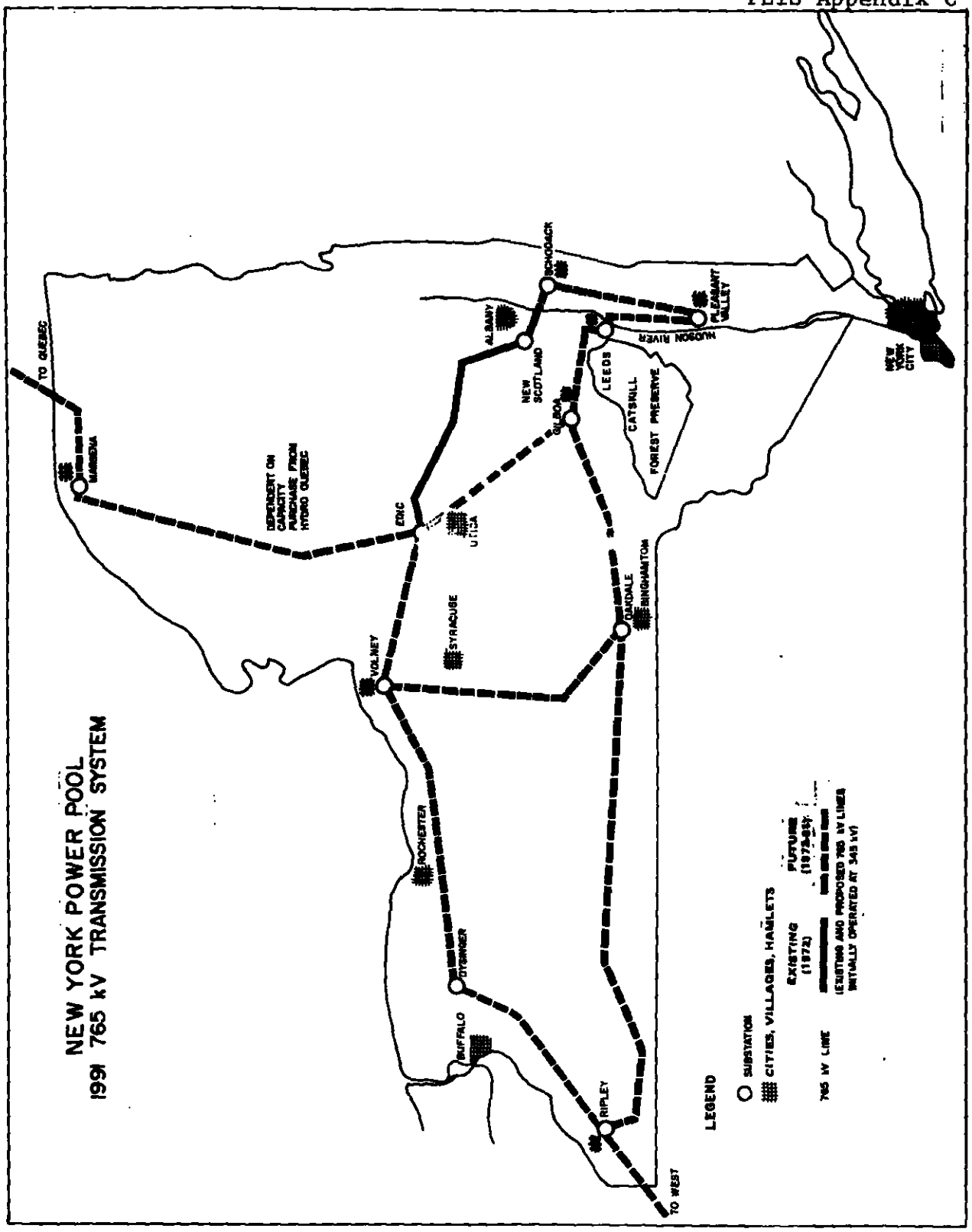
APPENDIX E

Project No. 2685
FEIS Appendix C



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UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

New York Power Authority Project No.2685-015

ORDER AMENDING ARTICLE 40

(Issued August 2, 2001)

On July 2, 2001, the New York Power Authority (licensee) filed a request to amend article 40 of the Opinion and Order Affirming and Adopting Initial Decision Authorizing Construction of Proposed Gilboa-Leeds Transmission Line, issued January 29, 1976[1]. The Gilboa-Leeds 345 kV transmission line extends from the Blenheim-Gilboa Power Project on Valenti Road in Gilboa, New York to a substation owned by the Niagara Mohawk Power Corporation in Leeds, NewYork.

The January 1976 Order adopted the Administrative Law Judge's July 1, 1974 Initial Decision, which provided that "pesticides and herbicides" were not to be used in the "preparation or maintenance" of the rights-of-way for the Gilboa-Leeds line. However, it did allow for the use of growth regulators. The licensee has requested that they be allowed to use herbicides in the rights-of-way to control the resurgent tree growth resulting from clearing work in 1999.

The licensee consulted with the State of New York Department of Public Service (NYDPS) and the New York State Department of Environmental Conservation (NYDEC), and found a broad consensus that the licensee's discrete use of herbicides on the transmission line rights-of-way would result in more cost-effective and less environmentally intrusive long term vegetation management.

In a letter dated March 5, 2001, the NYDPS stated that they concurred with the licensee's recommendation as long as the licensee complies with the following recommendations: the licensee follows the principles outlined in the New York Energy Alliance document entitled, "Integrated Vegetation Management"; all regulations promulgated by the NYDEC concerning the use of herbicides including notification; the licensee abide by existing easement agreements regarding herbicide use; and that the licensee update and follow its draft right-of-way vegetation management plan regarding

[1] 55 FPC 297.

vegetation management activities. The NYDEC concurred with the licensee's proposal to use herbicides in a letter dated May 7, 2001.

The licensee concurred with the agencies' recommendations. The licensee's request to amend article 40 to allow for the use of herbicides in the transmission line rights-of-way, is reasonable and justified and should be approved.

The Director orders:

(A) Article 40 of the Opinion and Order Affirming and Adopting Initial Decision Authorizing Construction of Proposed Gilboa-Leeds Transmission Line, issued January 29, 1976, is amended by adding the following new paragraph (C):

> (C) Notwithstanding the provisions of Finding and Conclusion number 145 of the Administrative Law Judge's Initial Decision on the Proposed Gilboa-Leeds Transmission Line (Project No. 2685) dated July 1, 1974, the Licensee shall conduct long-term right-of-way management in accordance with accepted integrated vegetation management practices, including the use of herbicides. The Licensee will comply with all applicable New York State Statutes and regulations governing the use of herbicides, and will recognize and abide by existing easement agreements concerning herbicide use.

(B) This order constitutes final agency action. Requests for rehearing by the Commission may be filed within 30 days of the date of issuance of this order, pursuant to 18 CFR § 385.713.

George H. Taylor
Group Leader
Division of Hydropower Administration
and Compliance

BG
FPC 2685
DOC
#

POWER AUTHORITY OF THE STATE OF NEW YORK

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SENIOR VICE PRESIDENT & GENERAL COUNSEL

February 24, 1981

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

Honorable Kenneth F. Plumb
Secretary
Federal Energy Regulatory Commission
825 North Capitol Street, N.E.
Washington, D.C. 20426

Subject: Amendment of the License for Project No. 2685 By Adding Article No. 40 and by Amending Article No. 5

Dear Mr. Plumb:

We have received a letter from Mr. William W. Lindsay, Director of the Office of Electric Power Regulation, offering us an opportunity to amend the license for Project No. 2685 by adding a new standard article. The new article gives the Licensee authority to grant permission for certain uses of project lands and waters and to convey certain interests in project lands, without prior Commission approval. By this letter, we accept that new article as an amendment to the project license. The new article should be designated Article No. 40. A copy of the new article, with that article number filled in, is attached to this letter.

In our judgment, the new article substantially amends the authority currently contained in Article No. 5 of the license for Project No. 2685. Accordingly, we request that this article be amended as shown on the enclosed copies.

FILED
OFFICE OF THE SECRETARY
1981 FEB 25 AM 10: 31
FEDERAL ENERGY
REGULATORY COMMISSION

Sincerely,

POWER AUTHORITY OF THE
STATE OF NEW YORK

by George T. Berry
George T. Berry
President and Chief Operating Officer

Attachment:
New license Article No. 40
Amended Article No. 5

Article 40. (a) In accordance with the provisions of this article, the Licensee shall have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain other types of use and occupancy, without prior Commission approval. The Licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the Licensee shall also have continuing responsibility to supervise and control the uses and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed, under this article. If a permitted use and occupancy violates any condition of this article or any other condition imposed by the Licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the Licensee shall take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, cancelling the permission to use and occupy the project lands and waters and requiring the removal of any non-complying structures and facilities.

(b) The types of use and occupancy of project lands and waters for which the Licensee may grant permission without prior Commission approval are: (1) landscape plantings; (2) non-commercial piers, landings, boat docks, or similar structures and facilities; and (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline. To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the Licensee shall require multiple use and occupancy of facilities for access to project lands or waters. The Licensee shall also ensure, to the satisfaction of the Commission's authorized representative, that the uses and occupancies for which it grants permission are maintained in good repair and comply with applicable State and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the Licensee shall: (1) inspect the site of the proposed construction, (2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site, and (3) determine that the proposed construction is needed and would not change the basic contour of the reservoir shoreline. To implement this paragraph (b), the Licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the Licensee's costs of administering the permit program. The Commission reserves the right to require the Licensee to file a description of its standards, guidelines, and procedures for

implementing this paragraph (b) and to require modifications of those standards, guidelines, or procedures.

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

(d) The Licensee may convey fee title to, easements or rights-of-way across, or leases of project lands for: (1) construction of new bridges or roads for which all necessary State and Federal approvals have been obtained; (2) sewer or effluent lines that discharge into project waters, for which all necessary Federal and State water quality certificates or permits have been obtained; (3) other pipelines that cross project lands or waters but do not discharge into project waters; (4) non-project overhead electric transmission lines that require erection of support structures within the project boundary, for which all necessary Federal and State approvals have been obtained; (5) private or public marinas that can accommodate no more than 10 watercraft at a time and are located at least one-half mile from any other private or public marina; (6) recreational development consistent with an approved Exhibit R or approved report on recreational resources of an Exhibit E; and (7) other uses, if: (i) the amount of land conveyed for a particular use is five acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from the edge of the project reservoir at normal maximum surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year. At least 45 days before conveying any interest in project lands under this paragraph (d), the Licensee must file a letter to the Director, Office of Electric Power Regulation, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked Exhibit G or K map may be used), the nature of the proposed use, the identity of any Federal or

State agency official consulted, and any Federal or State approvals required for the proposed use. Unless the Director, within 45 days from the filing date, requires the Licensee to file an application for prior approval, the Licensee may convey the intended interest at the end of that period.

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

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

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

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

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

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

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

AMENDED ARTICLE 5

Article 5. The Licensee within two years from date of issuance of license shall acquire title in fee or the right to use in perpetuity all lands, other than lands of the United States, necessary or appropriate for the construction, maintenance and operation of the project. The Licensee, its successors and assigns shall, during the period of the license, retain the possession of all project property covered by the license as issued or as later amended, including the project area, the project works, and all franchises, easements, water rights, and rights of occupancy and use; and none of such properties shall be voluntarily sold, leased, transferred, abandoned, or otherwise disposed of without the prior written approval of the Commission, except [that the Licensee may lease or otherwise dispose of interests in project lands or property without specific written approval of the Commission pursuant to the] as provided for by Article 40 herein or by then current regulations of the Commission. The provisions of this article are not intended to prevent the abandonment or the retirement from service of structures, equipment, or other project works in connection with replacements thereof when they become obsolete, inadequate, or inefficient for further service due to wear and tear; and mortgage or trust deed or judicial sales made thereunder, or tax sales, shall not be deemed voluntary transfers within the meaning of this article.

Explanation: Matter double-underscored is new.
Matter in [] to be omitted.