

**BEFORE THE FEDERAL ENERGY REGULATORY COMMISSION
APPLICATION FOR LICENSE FOR MAJOR PROJECT –
EXISTING DAM**

Cannonsville Hydroelectric Development

FERC Project No. 13287



**VOLUME 1
Verification Statement
Initial Statement
Exhibits A – E**

City of New York



**Environmental
Protection**

September 2011

VERIFICATION STATEMENT PER 18 CFR § 4.32(a)(4)

New York City Department of Environmental Protection

Application for License for Major Project - Existing Dam

Cannonsville Hydroelectric Development

FERC Project No. 13287

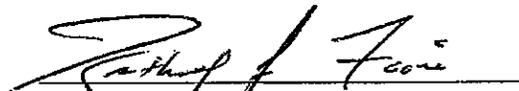
STATE OF NEW YORK

COUNTY OF QUEENS

By: Anthony J. Fiore
Chief of Staff – Operations
New York City Department of Environmental Protection
59-17 Junction Boulevard
Flushing, New York 11373-5108

I, Anthony J. Fiore, being duly sworn, depose and say that the contents of this application are true to the best of my knowledge or belief.

The undersigned Applicant has signed the application this 14th day of September, 2011.

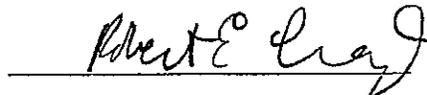


Name: Anthony J. Fiore

Title: Chief of Staff – Operations

New York City Department of Environmental Protection

Subscribed and sworn to before me this 14th day of September, 2011.



Notary Public

Seal:

ROBERT E. CRAIG
Notary Public, State of New York
No. 02CR6197511
Qualified in Queens County
Commission Expires Dec. 1, 2012

TABLE OF CONTENTS

VOLUME 1

VERIFICATION STATEMENT PER 18 CFR § 4.32(a)(4)	i
TABLE OF CONTENTS	ii
LIST OF FIGURES	iv
LIST OF TABLES	vi
LIST OF ACRONYMS AND ABBREVIATIONS	vii
INITIAL STATEMENT PER 18 CFR §§ 4.51 and 4.32(a)	ix
EXHIBIT A: PROJECT DESCRIPTION AND PROPOSED OPERATION	1
(1) Description of Existing Project Works and Hydroelectric Development.....	1
(2) Description of Impoundment.....	3
(3) Description of Turbines/Generators	4
(4) Description of Primary Transmission Lines	4
(5) Specifications of Additional Mechanical, Electrical, and Transmission Equipment Appurtenant to the Project	5
(6) Lands of the United States.....	5
EXHIBIT B: PROJECT OPERATION AND RESOURCE UTILIZATION	7
(1) Project Operation.....	7
(2) Key Elements of the FFMP-OST	9
(3) Average Annual Generation, Plant Factor, Dependable Capacity	14
(4) Minimum, Mean and Maximum Flows.....	15
(5) Operation: Adverse, Mean, and High Water Years.....	16
(6) Area Capacity Curve and Rule Curve	17
(7) Tailwater Rating Curve	17
(8) Power Utilization.....	17
(9) Plans for Future Development.....	18
EXHIBIT C: CONSTRUCTION HISTORY AND PROPOSED CONSTRUCTION SCHEDULE 31	
(1) Existing Facilities	31
(2) Construction Schedule for Hydroelectric Facilities.....	31
EXHIBIT D: STATEMENT OF COSTS AND FINANCING	33
(1) Cost of Original Construction	33
(2) Estimated Amount Payable upon Federal Takeover	33
(3) Estimated Costs of New Development.....	33
(4) Estimated Average Annual Costs of New Development.....	34
(5) Estimated Annual Value of Project Power	35
(6) Sources and Extent of Financing and Annual Revenues	36
(7) Cost to Develop License Application.....	36
(8) On and Off-Peak Value of Power.....	36
(9) Estimated Average Annual Change in Project Generation.....	36
EXHIBIT E: ENVIRONMENTAL REPORT	38
(1) General Description of the Locale.....	38
(2) Water Use and Quality	55

(3) Fish, Wildlife, and Botanical Resources	75
(4) Historical and Archeological Resources	101
(5) Recreational Resources	106
(6) Land Management and Aesthetics.....	113
(7) List of Literature.....	120

VOLUME 2

Exhibit F: Preliminary Design Drawings and Supporting Design Report
 Exhibit G: Project Lands and Boundary

VOLUME 3

Appendix E-1: Correspondance Log

VOLUME 4

Appendix E-2: Impact of Construction Related Activities on Erosion

VOLUME 5

Appendix E-3: Fish Entrainment Report, Literature Based Characterization of Resident Fish Entrainment and Mortality

VOLUME 6

Appendix E-4: Impact of Hydropower Development Construction Related Activities on Wildlife and Botanical Resources, including Wetlands, Riparian, and Littoral Habitat, and Rare, Threatened and Endangered Species

VOLUME 7

Appendix E-5: Phase IA Archeological Literature Review and Sensitivity Assessment

VOLUME 8

Appendix E-6: Impact of Construction Related Activities and New Construction on Aesthetics

VOLUME 9

Appendix E-7: Socioeconomic Study Report

VOLUME 10

Appendix E-8: USGS Report: A Decision Support Framework for Water Management in the Upper Delaware River

LIST OF FIGURES

Figure IS-1: Administrative Code Section 24-364.....	xiv
Figure A-1: Cannonsville Development Site Map.....	6
Figure B-1: NYC Delaware System Usable Combined Storage.....	19
Figure B-2: NYC Delaware System Usable Individual Storage.....	20
Figure B-3: Powerplant Capacity versus Head and Flow for 625 cfs Turbine	21
Figure B-4: Powerplant Capacity versus Head and Flow for 125 cfs Turbine	22
Figure B-5: West Branch Delaware River below Cannonsville Dam – Monthly Flow Duration Curves for Dec, Jan, & Feb (USGS Gage and OASIS Results), Drainage Area = 456 mi ²	23
Figure B-6: West Branch Delaware River below Cannonsville Dam – Monthly Flow Duration Curves for Mar, Apr & May (USGS Gage and OASIS Results), Drainage Area = 456 mi ²	24
Figure B-7: West Branch Delaware River below Cannonsville Dam – Monthly Flow Duration Curves for Jun, Jul & Aug (USGS Gage and OASIS Results), Drainage Area = 456 mi ²	25
Figure B-8: West Branch Delaware River below Cannonsville Dam – Monthly Flow Duration Curves for Sep, Oct, & Nov (USGS Gage and OASIS Results), Drainage Area = 456 mi ²	26
Figure B-9: West Branch Delaware River below Cannonsville Dam – Annual Flow Duration Curve (USGS Gage and OASIS Results), Drainage Area = 456 mi ²	27
Figure B-10: Cannonsville Reservoir Elevation versus Storage Curve	28
Figure B-12: Cannonsville Tailwater Rating Curve	30
Figure E-1: Cannonsville Reservoir Topographic Map.....	48
Figure E-2: NWI & NYSDEC Wetlands near the Cannonsville Reservoir	49
Figure E-3: NWI Wetlands near Cannonsville Dam.....	50
Figure E-4: Instantaneous Peak Flow at West Branch of the Delaware River at Stilesville, NY	51
Figure E-5: Dominant Soil Types within 1 Mile of the Cannonsville Reservoir.....	52
Figure E-6: Soil Types near Cannonsville Dam	53
Figure E-8: Cannonsville Average Monthly Water Supply Withdrawals from 1982-2007, Drainage area at dam = 454 mi ²	65
Figure E-9: NPDES Facilities near the Cannonsville Reservoir.....	66
Figure E-10: Water Quality Sampling Locations near the Cannonsville Reservoir	67
Figure E-11: Cannonsville Reservoir, Sample Site 1WDC – 2006 Temperature Profiles (mid-channel at Cannonsville Dam)	68
Figure E-12: Cannonsville Reservoir, Sample Site 1WDC – 2007 Temperature Profiles (mid-channel at Cannonsville Dam)	69
Figure E-13: Cannonsville Reservoir, Sample Site 1WDC – 2006 DO Profiles (mid-channel at Cannonsville Dam)	70
Figure E-14: Cannonsville Reservoir, Sample Site 1WDC – 2007 DO Profiles (mid-channel at Cannonsville Dam)	71
Figure E-15: Cannonsville Release, Sample Site CNB – 2006 & 2007 Temperature Data (near Stilesville Bridge, at USGS Gage).....	72
Figure E-16: Cannonsville Release, Sample Site CNB – 2006 & 2007 DO Data (near Stilesville Bridge, at USGS Gage).....	73
Figure E-17: Tailrace Reach - Comparison of Water Surface Elevation with 200 cfs in Tailrace Channel Only, and 200 cfs in Spillway Channel Only.....	74
Figure E-18: Project-related Construction and Buffer Zone Areas.....	98
Figure E-19: Vegetative Cover Types and Wetlands in Project-related Construction and Buffer Zone Areas	99
Figure E-20: Invasive Plant Species Found in Project-related Construction and Buffer Zone Areas	100
Figure E-21: Recreation Access near the Cannonsville Reservoir	110
Figure E-22: Cannonsville Reservoir – Areas Open for Recreation and Boat Zones.....	111

Figure E-23: Cannonsville Reservoir – Boating Pilot Program..... 112
Figure E-24: Cannonsville Photo Locations 117
Figure E-25: Cannonsville Viewsheds and Sightlines 118
Figure E-26: C1 – View of Cannonsville from pulloff on State Route 10..... 119
Figure E-27: C2 – View of Cannonsville from State Route 10 119

LIST OF TABLES

Table A-1: Description of Turbines	4
Table B-1: Schedule of Cannonsville Releases (cfs) with 0 MGD FAW	10
Table B-2: Schedule of Cannonsville Releases (cfs) with 10 MGD FAW	10
Table B-3: Schedule of Cannonsville Releases (cfs) with 20 MGD FAW	10
Table B-4: Schedule of Cannonsville Releases (cfs) with 35 MGD FAW	11
Table B-5: Schedule of Cannonsville Releases (cfs) with 50 MGD FAW	11
Table B-6: Schedule of Cannonsville Releases (cfs) with 75 MGD FAW	11
Table B-7: Schedule of Cannonsville Releases (cfs) with 100 MGD FAW	12
Table B-8: Interstate Operation Formula for Diversions and Flow Objectives	13
Table B-9: USGS Gages in Proximity to the Project.....	15
Table B-10: Flow Statistics for USGS Gages in Proximity to the Project.....	16
Table B-11: Flow Statistics at West Branch Delaware River just below Cannonsville Dam based on OASIS Modeling Results.....	16
Table C-1: Cannonsville Construction History.....	31
Table D-1: Cannonsville Opinion of Probable Construction Cost.....	37
Table E-1. Monthly Average Precipitation and Temperature in the West Branch of the Delaware Basin.	38
Table E-2: Land Cover Types; West Branch of the Delaware River.....	40
Table E-3: 2010 Percent Employment Breakdown in Delaware County, NY.....	40
Table E-4: Flood Frequency Flows at USGS Gage located just below Cannonsville Dam	44
Table E-5: New York Fresh Surface Water Quality Classifications.....	57
Table E-6: Summary of New York State Surface Water Quality Criteria	58
Table E-7: Surface Water Quality Classifications of the West Branch Delaware River and Tributaries to Cannonsville Reservoir	59
Table E-8: Sampling Locations for Dissolved Oxygen and Temperature Profiles in the Cannonsville Reservoir	60
Table E-9: Fish Species Potentially Found in the Cannonsville Reservoir.....	75
Table E-10: West Branch of the Delaware River below Cannonsville Dam, Angler Diary Reach Names	76
Table E-11: List of Mammals Potentially Present in the Project Area	84
Table E-12: List of Birds Potentially Present in the Project Area	85
Table E-12: List of Birds Potentially Present in the Project Area	85
Table E-13: List of Amphibians Potentially Present in the Project Area.....	87
Table E-14: List of Reptiles Potentially Present in the Project Area.....	88
Table E-15: Description of Project-related Construction and Buffer Areas	90
Table E-16: Description of Ecological Community Types in Project-related Construction and Buffer Areas	92
Table E-17: Bald Eagle Nest Locations in Proximity to the Project (2009).....	95
Table E-18: OPRHP/NYSM Archeological sites within three miles of the Cannonsville Dam and within or adjacent Cannonsville Reservoir	101
Table E-19: Cannonsville Recreation Uses and Acreages	106
Table E-20: Number of Permitted Boats in Cannonsville Zones.....	107
Table E-21: Land Cover Types; West Branch of the Delaware River Watershed.....	113

LIST OF ACRONYMS AND ABBREVIATIONS

A	ampere
AC	alternating current
APE	area of potential effect
BG	billion gallons
BOCES	Board of Cooperative Education Services (New York State)
C	Celsius
CEII	Critical Energy Infrastructure Information
CFR	Code of Federal Regulations
cfs	cubic feet per second
Co	County
City	City of New York
CSO	Conditional Storage Objective
CT	current transformer
DC	direct current
DCS	distributed control system
DEP	New York City Department of Environmental Protection
DO	dissolved oxygen
DRBC	Delaware River Basin Commission
EPA	Environmental Protection Agency
ENR	Engineering News Record
F	Fahrenheit
FAW	Forecast-based Available Water
FERC	Federal Energy Regulatory Commission
FFMP	Flexible Flow Management Program
FFMP-OST	Flexible Flow Management Program with the Operations Support Tool
ft	foot/feet
ft/s	feet per second
GIS	geographic information system
HPMP	Historic Properties Management Plan
HPP	Habitat Protection Program
HVAC	heating, ventilation and air conditioning
Hz	hertz
IERQ	Interim Excess Release Quantity
kV	kilovolt
kVa	kilovolt-ampere
kW	kilowatt
kWh	kilowatt-hour
L	liter
m	meter
Means	Means Construction Cost Data
MCC	motor control center
mg	milligram
MG	million gallons
MGD	million gallons per day
mm	millimeter
mi ²	square miles
msl	mean sea level
MVA	megavolt ampere

MW	megawatts
MWh	megawatt-hour
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NPV	net present value
NWI	National Wetlands Inventory
NJ	New Jersey
NY	New York
NYCRR	New York Codes, Rules and Regulations
NYISO	New York Independent System Operator, Inc.
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSEG	New York State Electric & Gas Corporation
NYSM	New York State Museum
O&M	operation and maintenance
OASIS	Operational Analysis Simulation of Integrated Systems
OPCC	Opinion of Probable Construction Costs
OPRHP	Office of Parks, Recreation and Historic Preservation
PA	Pennsylvania
PAA	Public Access Area
PFBC	Pennsylvania Fish and Boat Commission
PEM	palustrine emergent
PLC	programmable logic controller
Project	Cannonsville Hydroelectric Development
PT	potential transformer
PVC	polyvinyl chloride
RCNY	Rules of the City of New York
RGGI	Renewable Greenhouse Gas Initiative
rpm	revolutions per minute
RTE	rare, threatened and endangered species
SCADA	Supervisory Control and Data Acquisition
SNTEMP	Stream Network Temperature
SPDES	State Pollution Discharge Elimination System
SWCD	Soil and Water Conservation District
SWPPP	Stormwater Pollution Prevention Plan
USC	United States Code
USDA-NRCS	United States Department of Agriculture - Natural Resources Conservation Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
V	volt
WWTP	wastewater treatment plant
WWQO	Watershed Water Quality Operations

INITIAL STATEMENT PER 18 CFR §§ 4.51 and 4.32(a)

Before the Federal Energy Regulatory Commission

New York City Department of Environmental Protection

Application for License for Major Project – Existing Dam

Cannonsville Hydroelectric Development

FERC Project No. 13287

(1) The City of New York (the “City”), acting through the New York City Department of Environmental Protection (“DEP”), hereby submits to the Federal Energy Regulatory Commission (“FERC”) this application for an original license for the Cannonsville Hydroelectric Development (“Project”), as described in the attached exhibits.

(2) The location of the Project is:

State or territory: New York
County: Delaware
Township: Deposit
Stream or body of water: West Branch of the Delaware River

(3) The exact name and business address of the applicant are:

New York City Department of Environmental Protection
59-17 Junction Blvd.
Flushing , NY 11373-5108

The exact name and business address of each person authorized to act as agent for the applicant in this application are:

Carter H. Strickland, Jr.
Commissioner
New York City Department of Environmental Protection
59-17 Junction Blvd.
Flushing, NY 11373-5108
cstrickland@dep.nyc.gov

Anthony J. Fiore
Chief of Staff – Operations
New York City Department of Environmental Protection
59-17 Junction Blvd.
Flushing, NY 11373-5108
afiore@dep.nyc.gov

(4) The applicant is a municipality, and is claiming preference under section 7(a) of the Federal Power Act.

(5)(i) The statutory or regulatory requirements of the state(s) in which the project would be located that affect the Project as proposed, with respect to bed and banks and to the appropriation, diversion, and use of water for power purposes, and with respect to the right to engage in the business of developing, transmitting, and distributing power and in any other business necessary to accomplish the purposes of the license under the Federal Power Act, are:

- The City is subject to Water Quality Certification from the New York State Department of Environmental Conservation (“NYSDEC”) under 6 NYCRR § 608.9 (2009) and Section 401(a)(1) of the Clean Water Act (33 USC § 1341 (2000)).
- The City is subject to the NYSDEC water quality standards program, specifically 6 NYCRR Part 815, which applies to the Cannonsville Reservoir and West Branch of the Delaware River.
- Diversions, releases, flow objectives and water quality at the Cannonsville Reservoir are subject to the jurisdiction of the Delaware River Basin Commission (“DRBC”) and a 1954 Decree from the United State Supreme Court.¹
- The City is required to comply with the 2007 Filtration Avoidance Determination (“2007 FAD”), issued by the U.S. Environmental Protection Agency (“EPA”) in consultation with the New York State Department of Health. The 2007 FAD authorizes the City to continue to supply unfiltered water to City residents from its Catskill and Delaware water supply system until May 2017, as long as the City meets stringent water quality, disinfection, and site-specific avoidance criteria which make filtration unnecessary. Specific filtration avoidance criteria are established by the Surface Water Treatment Rule (40 CFR § 141.71) and the Interim Enhanced Surface Water Treatment Rule (40 CFR § 141.171).
- Part 671 of NYSDEC’s regulations (6 NYCRR Part 671) require minimum releases from the Cannonsville Reservoir for conservation purposes.
- New York State water classifications and water quality standards (6 NYCRR Parts 700-706) apply to the Cannonsville Reservoir and the West Branch of the Delaware River.
- The City is a municipality existing under the laws of the State of New York, the New York City Charter, and the New York City Administrative Code. New York City Administrative Code Section 24-364 provides that DEP may utilize such water that it now owns or may acquire for the purpose of generating electric current for use by the municipality. A copy of New York City Administrative Code Section 24-364, which describes the City’s authority to engage in developing, transmitting and distributing power is included as [Figure IS-1](#).

(5)(ii) The steps which the Applicant has taken or plans to take to comply with the regulations cited above are:

- The Applicant will request a Water Quality Certification from NYSDEC concurrent with the submittal of the Final License Application for License to FERC.

¹ *New Jersey v. New York*, 347 U.S. 995 (1954). The parties to the decree are the City of New York, the States of Delaware, New Jersey and New York, and the Commonwealth of Pennsylvania (hereinafter, the “Decree Parties”).

- The Project will be operated in a manner that will comply with DRBC requirements and the 1954 Supreme Court Decree. A full discussion, including how the development’s operation will comply with these requirements, is included in Exhibit B.
 - In March 2011, DEP submitted the “2011 Watershed Protection Program Summary and Assessment,” which provided a mid-term assessment of DEP’s efforts to maintain compliance with the 2007 FAD. The mid-term assessment highlights several historic and recent activities undertaken by DEP to improve both the water quality and the utilization of the Cannonsville Reservoir, including: (1) the implementation of nearly 2,000 agricultural best management practices since 1996 to reduce agricultural pollution in the Cannonsville watershed; (2) monthly monitoring of pollutants and nutrient loads, including coliform bacteria, dissolved phosphorous, and turbidity; (3) the observation of optimal conditions for benthic communities at the Cannonsville Reservoir; (4) a comprehensive inventory of forest resources for 2,230 plots in the Cannonsville watershed; (5) institution of the Cannonsville Pilot Boating Program (discussed in more detail in Exhibit E); (6) upgrading the Wastewater Treatment Plants near the Cannonsville Reservoir; and (7) funding stormwater retrofit construction projects for eight communities in the Cannonsville watershed.
 - The City is in compliance with Part 671 of NYSDEC’s regulations. A complete discussion of the conservation releases from the Cannonsville Reservoir, and how the releases comply with NYSDEC’s regulations, is included in Exhibits B and E.
 - The water quality at the Cannonsville Reservoir meets the highest classifications under New York law. The water quality at the Cannonsville Reservoir is routinely monitored by the City’s Watershed Water Quality Operations (“WWQO”) group. West of the Hudson River, WWQO has a staff of 62 people, stationed in two laboratories (Grahamsville and Kingston), who are directly responsible for monitoring and maintaining the high water quality in the Cannonsville Reservoir, among other sites. As discussed further in Exhibit E, there are no long term impacts or changes to water quality resulting from the Project.
- (6) Name and address of the owner of any existing Project-related facilities.
- The dam, spillway, water supply intake chamber, and low-level release works are owned by the City and operated by DEP for purposes of providing water supply to the citizens of New York City.
- (7) In accordance with the requirements of 18 C.F.R. § 4.32(a), the City provides the following information:
- (a) Identify every person, citizen, association of citizens, domestic corporation, municipality, or state that has or intends to obtain and will maintain any proprietary right necessary to construct, operate, or maintain the project:
- As Project proponent, all proprietary rights to construct, operate, and maintain the Project will reside with the City.
- (b) Identify (providing names and mailing addresses):
- (i) Every county in which any part of the project, and any Federal facilities that would be used by the project, would be located:

Hon. James E. Eisel, Sr.
Chairman, Board of Supervisors
Delaware County
111 Main Street
Delhi, NY 13753

The Project will not use any Federal facilities.

- (ii) Every city, town, or similar local political subdivision in which any part of the project would be located or have a population of 5,000 or more people and is located within 15 miles of the project dam:

Hon. Thomas A. Axtell
Supervisor
Town of Deposit
3737 State Highway 8
Deposit, NY 13754

Hon. Joseph A. Maddelone
Supervisor
Town of Sidney
21 Liberty Street
Sidney, NY 13838

Hon. Donald M. Smith
Supervisor
Town of Franklin
21 Bartlett Hollow Road
Franklin, NY 13775

Hon. William Layton
Supervisor
Town of Tompkins
P.O. Box 23
Trout Creek, NY 13847

Hon. Craig Dumond
Supervisor
Town of Masonville
Route 206
Masonville, NY 13804

Hon. Bruce Dolph
Deputy Supervisor
Town of Walton
129 North Street
Walton, NY 13856-1217

- (iii) Every irrigation district, drainage district, or similar special purpose political subdivision in which any part of the project would be located or the owns, operates, maintains or uses any project facilities:

There are no irrigation districts, drainage districts, or other political subdivisions in the area where the Project would be located.

- (iv) Every other political subdivision in the general area of the project that there is reason to believe would likely be interested in, or affected by, the application:

There are no other political subdivisions in addition to those already identified above in the general area of the Project that there is reason to believe would likely be interested in, or affected by, this Application.

(v) All Indian tribes that may be affected by the project:

Vernon Isaac, Chief
Cayuga Indian Nation
P.O. Box 11
Versailles, NY 14168-0011

Robert Odawi Porter, President
Seneca Nation of Indians
P.O. Box 231
Salamanca, NY 14779

Mr. Raymond Halbritter
Oneida Indian Nation of New York
Genesee Street, Ames Plaza
Oneida, NY 13421

Ms. Lana Watt
Seneca Nation of Indians
Tribal Historic Preservation Officer
90 O:hi'yoh Way
Salamanca, NY 14779

Mr. Jesse Bergevin
Oneida Indian Nation
Historic Resource Specialist
2037 Dream Catcher Plaza
Oneida, NY 13421

Robert Chicks, President
Stockbridge-Munsee Band of Mohican Indians
N8476 Moh-He-Con-Nuck Road
P.O. Box 70
Bowler, WI 54416

Leon Shenandoah, Sr., Head Chief
Onondaga Nation
RR 1, Box 270A
Nedrow, NY 13120

Ms. Sherry White
Stockbridge-Munsee Band of Mohican Indians
Tribal Historic Preservation Officer
W13447 Camp 14 Road
P.O. Box 70
Bowler, WI 54416

Mr. Anthony Gonyea
Onondaga Nation
Historic Preservation Office
716 East Washington Street
Suite 104
Syracuse, NY 13210-1502

Bernie Parker, Chief
Tonawanda Band of Senecas
7027 Meadville Road
Basom, NY 14013

Norman Tarbell, Chief
St. Regis Band of Mohawk Indians
412 State Route 37
Akwesasne, NY 13655

Leo Henry, Chief
Tuscarora Nation
5616 Walmore Road
Lewiston, NY 14092

Mr. Arnold L. Printup
St. Regis Band of Mohawk Indians
Tribal Historic Preservation Officer
412 State Route 37
Akwesasne, NY 13655

SUBCHAPTER 4

WATER SUPPLY; MISCELLANEOUS

- § 24-364 Utilization of water to generate electric current.
- § 24-365 Cemetery and burial grounds.

§ 24-364 **Utilization of water to generate electric current.**
The commissioner of environmental protection may, subject to the approval of the board of estimate, utilize such water as the department of environmental protection now owns or as it may hereafter acquire, for the purpose of generating electric current for the use of the municipality, or may permit the utilization of such water for the generation and sale of electric current by an electric corporation which was the owner of a developed or undeveloped water power site or sites affected, acquired or damaged by the execution of a plan or project of the city for an additional water supply, and the commissioner of environmental protection, with the approval of the board of estimate, in connection with the settlement of a resultant

450

Chap. 3]

WATER SUPPLY

§ 24-365

claim for damage made by such electric corporation, may grant or lease to such electric corporation for periods not to exceed fifty years, rights in, or to use, the lands and waters of the city for the generation of electric current as herein provided, for such consideration and on such terms and conditions as are, in the opinion of the commissioner, in the best interests of the city of New York, including but not limited to a general release of such claim, provided that such grant or lease may be made at the time of settlement of the claim as above provided but the period of use under the terms of the lease or grant, not to exceed fifty years, may commence when generation of electric current thereunder shall begin, provided that no additional water shall be used for such purpose than would otherwise be required by the city.

HISTORICAL NOTE

Section added chap 907/1985 § 1

DERIVATION

Formerly § K51-48.0 added chap 929/1937 § 1
Amended chap 804/1946 § 1
Renumbered chap 100/1963 § 1397
(formerly § K41-48.0)



THE CITY OF NEW YORK
OFFICE OF THE MAYOR
NEW YORK, N.Y. 10007

September 15, 2008

Commissioner Emily Lloyd
Department of Environmental Protection
59-17 Junction Blvd.
Flushing, New York 11373

Dear Commissioner Lloyd:

Section 24-364 of the Administrative Code of the City of New York authorizes the Commissioner of Environmental Protection, subject to the approval of the Board of Estimate, to utilize water that the Department of Environmental Protection (DEP) either owns or may acquire for the purpose of generating electric current for the use of the municipality.

In accordance with section 8 of the Charter, which authorizes the Mayor to "exercise all the powers vested in the city, except as otherwise provided by law," as well as section 24-364 of the Administrative Code, I hereby authorize and direct you or your successor to act as the official representative of the City of New York in all matters related to the utilization of water that DEP owns or may acquire for the purpose of generating electric current.

I further authorize you, as Commissioner of Environmental Protection, or your successor: (1) to act on behalf of the City of New York in all matters related to filing applications with the Federal Energy Regulatory Commission or any other public body for the purpose of generating electric current, including but not limited to ensuring that all procedures required in connection with such applications are followed and providing such certifications and additional information as may be required; and (2) to enter into and execute any agreements necessary to generate such electric current and otherwise to act for the City of New York in all matters related to such generation of electricity.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael R. Bloomberg".

Michael R. Bloomberg
Mayor

TOTAL P.02

EXHIBIT A: PROJECT DESCRIPTION AND PROPOSED OPERATION

(1) Description of Existing Project Works and Hydroelectric Development

Existing Project Works

Dam

The Cannonsville Dam was placed into service in 1964 for the purpose of providing water supply to the City of New York. It is located on the West Branch of the Delaware River at 42°03'52.74" North, 75°22'26.26" West in the Town of Deposit, Delaware County, New York ("NY"). The dam is a zoned earthen embankment with a 2,800-foot-long, 45-foot-wide crest rising 175 feet above the valley floor to an elevation of 1175.0 feet above mean sea level ("msl"). The dam is orientated in a north-south direction and is formed by two embankment sections. [Figure A-1](#) is an aerial image showing the main features around the dam and the features associated with the hydroelectric development.

The ungated spillway, located at the right abutment on the north side of the valley, is a stone masonry side channel spillway. The overflow weir is a two-section split-level spillway with a total length of 800 feet. The lower section is 240 feet long with a crest elevation of 1150 feet above msl. The upper section is 560 feet long with a crest elevation of 1158.1 feet above msl.

Water Supply Intake

Water supply withdrawals are obtained through a separate intake chamber located on the south shore of the impoundment roughly five miles upstream of the dam. Water drawn from the Cannonsville Reservoir enters the West Delaware Tunnel and travels approximately 44 miles to the upper end of the Rondout Reservoir. From there, it is carried in the 85-mile long Delaware Aqueduct and through other reservoirs before entering the DEP's water supply distribution system.

Low-Level Outlet Release Works

Low-level outlet release works are operated to convey flow to the West Branch of the Delaware River downstream of the dam and are located in a separate chamber at the south end of the dam. Discharges are made through a concrete intake structure and then through a 17.6 foot diameter concrete diversion conduit that necks down to a 11 foot-11 inch release water conduit. The invert elevation of the outlet works is at 999 feet above msl. The diversion conduit is located on the south side of the valley under the dam and was utilized to carry the river flow during dam construction. It is 1,280 feet long and terminates in a stilling pool that discharges into the river. A concrete plug was placed toward the end of construction to stop flow through this conduit at the gate tower. At this point, flow is diverted upward to an 11.9-foot-diameter release water conduit located immediately above the 17.5-foot-diameter conduit. A concrete gate tower rises above the diversion conduit through the embankment just upstream of the dam centerline. Two Broome-type wheel gates, gate frames, and guides were installed in the gate tower. These gates control water entering the release water conduit, which is constructed on top of the abandoned stream diversion conduit from the gate tower to the low-level release works. The release water conduit, an 11.9-foot-diameter cement mortar-lined steel pipe encased in reinforced concrete, terminates in an 8.8-foot-diameter manifold. The manifold feeds five primary release lines, ranging in size from 54 to 60 inches in diameter and three smaller release lines, ranging in size from 12 to 18 inches in diameter. Flow control is achieved through selectively opening or closing various lines. Three primary release lines are each controlled by two dow-pivot 60-inch valves. The other two primary release lines are each controlled by a dow-pivot valve and a polyjet valve.

All lines terminate with an orifice plate downstream of the valves. Discharges are directed into a downstream stilling pool. Equipment can be moved into the low-level release works building by removing concrete roof slabs, which are presently covered with sod.

Hydroelectric Development

Background

Several turbine vendors were contacted and provided the appropriate data such that the station hydraulic capacity could be sized accordingly. For purposes of this license application, the City selected the largest station hydraulic capacity of 1,500 cubic feet per second (“cfs”). The 1,500 cfs station hydraulic capacity represents the maximum capacity that the City proposes for this Project; however, once final turbine-generator bids are obtained and the ongoing feasibility analysis relating to the Project is completed based on such final bids, DEP reserves the right to modify the final turbine and select a design with a resulting station capacity less than 1,500 cfs in the event that such a design is determined to be the most economical and feasible for the Project.

Drawings of the Project are included in Exhibit F, but are classified as Critical Energy Infrastructure Information (“CEII”). These drawings are considered preliminary until final binding bids are obtained and the ongoing feasibility analysis related to the Project is completed based on such bids. However, it is expected that the final design will not materially alter the location, size and related details of the Project.

Penstocks

The existing conduit leading to the low-level release works will be bifurcated with a wye connection to a 12-foot steel diameter pipe. The 12-foot diameter pipe will run in a south to north direction and will be tapped with four individual wye connections to convey flow to individual steel penstocks leading to four turbines.

Powerhouse

An approximate 168-foot long by 54-foot wide powerhouse will be located adjacent to the existing low-level release works building. Equipment within the powerhouse will include four turbines and generators, switchgear, generator phasing cabinets, control panels, hydraulic power unit, cooling water equipment, station battery and charger, oil/water separator sump with pump, and other related equipment. The powerhouse walls will be cast in place concrete. The conceptual design of the powerhouse includes two entrance/exit locations on the east side of the building at its north and south ends. The roof will be flat, composed of built-up roofing over metal decking and supported on steel wide flange beams at five feet on center spanning the full 54-foot depth of the building. The roof will have a removable hatch to aid in the installation and maintenance of the turbines and generators. A single lay down area in the powerhouse will be accessible by the removable hatch and large items can be placed inside the powerhouse with an external crane. Movement and placement of power generating equipment inside the powerhouse will be accomplished by a 60-ton rail crane running the length of the building.

One set of stoplogs will be included in the powerhouse superstructure to allow dewatering of the draft tube exit chamber.

Tailrace

Excavation will be required for both the powerhouse and tailrace channel. Please refer to Volume 4, Appendix E-2 for a full description of the excavation required for the Project and the measures that will be implemented to protect areas around the tailrace.

Drainage Control

The existing rockfill material on the downstream toe of the embankment serves to drain seepage that passes through the earthen dam. To enhance drainage around the powerhouse, a drainage system will capture the seepage flow and convey it around the powerhouse. A chimney drain will be constructed upstream of the penstock running parallel to the toe of the dam. It will be constructed between the penstock bedding material/backfill and the rockfill material and run the length of the penstocks. A perforated pipe will be located at the base of the chimney drain throughout its length to enhance the seepage conveyance. The perforated pipe will carry flow around the powerhouse and through the tailrace wall. The pipe is proposed to enter the tailrace, with an invert elevation just at the maximum turbine flow capacity tailwater elevation so that tailwater will not back up into the pipe.

A second perforated pipe surrounded by graded filter material will be installed adjacent to the upstream face of the powerhouse. The high point of the pipe will be at the approximate mid-point of the powerhouse, and water will be carried around both sides of the powerhouse. The pipes will discharge through each of the tailrace walls, with the pipe invert at the maximum turbine flow capacity tailwater elevation. Since the existing rockfill material is being used as backfill and the material is coarse, much of the subsurface flow will likely drain around the powerhouse through the voids in the backfill, in addition to the flow captured in the perforated pipe adjacent to the powerhouse.

Construction Related Issues

There will be roughly three months where no flow is passed through the low-level release works to allow for the connection of the turbine. During this period, conservation flow releases and directed releases will be maintained via a temporary siphon with a maximum capacity of 200 cfs. Siphons have a lift of 20 feet, thus the siphon intake will be located at approximately elevation 1130 feet above msl (20 feet below the spillway crest elevation of 1150 feet msl). The siphon will be placed over the spillway crest and flow passed to the spillway channel. The location of staging areas, substation, powerhouse, and new transmission lines is shown in [Figure A-1](#).

The City plans on having the temporary siphon operable during a period when the reservoir temperature profile is isothermal, which typically occurs in the late fall through early spring. The purpose for having the temporary siphon operational during this period is to ensure that water withdrawn from the upper 20 feet of the reservoir is of similar temperature (cold) as the deeper water, and thus cold water releases would be maintained downstream. If the construction schedule or operating conditions prohibit the execution of this plan an alternative method will be proposed which ensures the maintenance of cold water releases during the limited period during which the temporary siphon is operational.

(2) Description of Impoundment

The impoundment, known as the Cannonsville Reservoir, is approximately 12 miles long. The usable storage capacity between the spillway crest elevation (1150 feet above msl) and the lowest recorded elevation (1035 feet above msl) is approximately 92.726 billion gallons (“BG”), or 296,840 acre-feet. The surface area at the spillway crest is approximately 4,670 acres. The mean depth of the impoundment, relative to the spillway crest elevation, is approximately 61 feet. The timing and magnitude of

Cannonsville Reservoir releases is dependent on water supply demands, conservation flow releases, directed releases, discharge mitigation releases, snowpack, and water quality.

The drainage area of the West Branch of the Delaware as measured at the Cannonsville Dam is approximately 454 square miles (“mi²”).

(3) Description of Turbines/Generators

The powerhouse will house four turbine-generator units with a total hydraulic capacity of 1,500 cfs. Two turbines will have a maximum hydraulic capacity of 625 cfs, and two turbines will have a maximum hydraulic capacity of 125 cfs. The turbines are capable of operating down to approximately 40% of their respective maximum hydraulic capacities. Thus, the smaller turbines are capable of operating down to approximately 50 cfs (40% of 125 cfs), while the larger turbines can operate down to approximately 250 cfs (40% of 625 cfs). The larger units have a rated capacity of 5.855 MW, while the smaller units have a rated capacity of 1.185 MW, for a total station capacity of 14.08 MW. The rated head, based on the headpond elevation being at the spillway crest elevation, is approximately 122 feet.

The addition of the turbines will supplement and enhance the redundancy of the existing low-level release works in that additional options for release of water into the West Branch of the Delaware River will be available. The four separately valved turbines will provide up to 1,500 cfs of additional release capacity.

The turbines will be horizontal-shaft, with Francis-type runners, each in a pressure case. [Table A-1](#) summarizes the turbine equipment, which is subject to change after final binding bids are received.

Table A-1: Description of Turbines

Feature	Size
No. of Turbines/Runner Diameter	2 @ 1760 millimeters (“mm”) (5.7 ft) 2 @ 890 mm (2.9 ft)
Turbine Type	Horizontal Francis
Rated Net Head	122 feet (37.2 meters (“m”))
Minimum and Maximum Turbine Hydraulic Capacity	2 @ 50-125 cfs 2 @ 250-625 cfs Maximum Hydraulic Capacity: 1,500 cfs Minimum Operating Hydraulic Capacity: 50 cfs (40% of 125 cfs)
Maximum Electrical Capacity	2 @ 1.185 MW 2 @ 5.855 MW Total Electrical Capacity: 14.080 MW
Rated Speed	2 @ 257.1 revolutions per minute (“rpm”) 2 @ 450 rpm

(4) Description of Primary Transmission Lines

The electrical interconnection between the turbine generation and the New York State Electric & Gas Corporation (“NYSEG”) transmission system will be via the adjacent 46 kilovolt (“kV”) transmission line. A new 46 kV tap will be performed at NYSEG pole #519 and a “slack span” of new 46 kV line will be extended to a new pole. The first new pole will be equipped with a fused group operated switch to protect and isolate the NYSEG transmission line from the new 46 kV line for the development. The new 46 kV line will then continue to a new City-owned substation. This substation will consist of a galvanized “H” frame termination structure with surge arresters, a group operated air break switch, primary net metering potential transformers (“PT’s”) and current transformers (“CTs”), an SF6 outdoor

circuit breaker for transformer protection, and a 20/26.6 megavolt ampere (“MVA”) oil filled transformer with concrete containment pad. A substation control house will be provided to house the protective relays for the transformer, a 120/240 volt (“V”) alternating current (“AC”) power panel for a battery charger, transformer fans and heat, and a direct current (“DC”) battery bank for substation relay and breaker operations. The 120/240 V power source for the substation control house will originate in the adjacent maintenance building. The substation equipment inclusive from the H frame through the transformer will be located in a chain link fenced area with a gravel base. An overhead static wire system for lightning protection will be installed at the substation.

The secondary voltage from this substation will be 12.47 kV and will be run aerially from the transformer secondary bushings to the new powerhouse structure. Because the existing 4.8 kV aerial line extending from the maintenance building to the low level release works building is inadequate for conveying the generator power output to NYSEG. The new aerial 12.47 kV from the transformer will consist of new poles, conductors and cross arms capable of supporting the nominal 16 MVA of generation output. A fiber optic cable link will be installed from the new powerhouse switchgear to the substation. This link will enable communication for relay protection and for the required NYSEG transfer trip control to the generator breakers in the 12.47 kV switchgear.

The 12.47 kV service will terminate in a new metal clad 15 kV switchgear housing located in the new turbine powerhouse. This switchgear will contain vacuum circuit breakers, consisting of one 2000 ampere (“A”) main, four 1200A generator breakers and one 1200A station service breaker. The switchgear will also contain the protective relays and controls for generator synchronization with utility power. New turbine generators will be connected to the switchgear within the powerhouse building utilizing polyvinyl chloride (“PVC”) coated rigid steel raceways. The station service feeder will be connected to a new pad mounted cast coil (dry type) exterior 75 kVA transformer. The transformer secondary output at 120/208 V three phase will be connected to the existing motor control center (“MCC”) on the outfall structure. A new 120/208 V panelboard to support basic building lighting, heating, ventilation and air conditioning (“HVAC”) and miscellaneous power will be installed in the new powerhouse. This panel will be connected to the existing MCC in the low level outlet structure.

(5) Specifications of Additional Mechanical, Electrical, and Transmission Equipment Appurtenant to the Project

Other than the equipment described in the sections above that is necessary to construct the Project, no additional equipment is anticipated.

(6) Lands of the United States

There are no lands of the United States within the Project boundary (See Exhibit G for Project Boundary Maps).

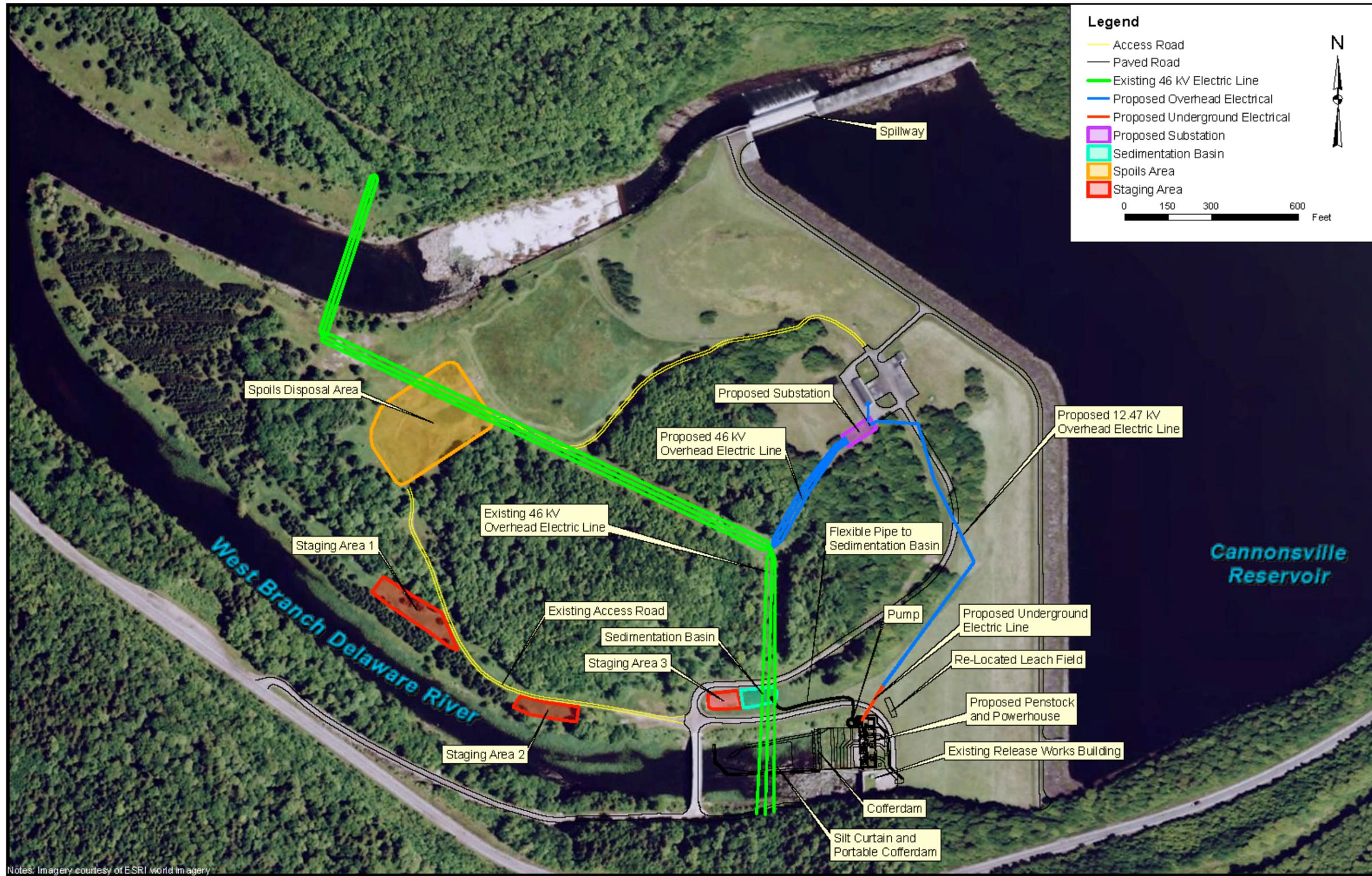


Figure A-1: Cannonsville Development Site Map

EXHIBIT B: PROJECT OPERATION AND RESOURCE UTILIZATION

(1) Project Operation

Background

In order to properly understand the proposed operation of the Project, it is important to provide background on the development of the Delaware River Basin for water supply, as well as background on how the Cannonsville Dam is operated.

In the 1920s, the States of NY and New Jersey (“NJ”) and the Commonwealth of Pennsylvania (“PA”) were interested in the development of water supplies in the Delaware River Basin as a source for meeting their individual needs. Between 1924 and 1927, these States made two attempts to forge an agreement for coordinated development of water supplies. Both attempts, however, were unsuccessful. In 1928, faced with little prospect of a multilateral agreement, and confronted with water shortages and growth pressures, the City, which lies outside the Delaware River Basin, moved to develop new sources of water supply from within the Basin. This action resulted in an interstate conflict and, in 1930, the State of NJ brought an action in the U.S. Supreme Court to enjoin the City and State of NY from using the waters of any tributary to the Delaware River. On May 25, 1931, the Court issued a decree granting the City the right to withdraw 440 million gallons per day (“MGD”) of water from two reservoirs the City planned to build on headwater tributaries feeding the mainstem of the Delaware River. The reservoirs—Neversink on the Neversink River and Pepacton on the East Branch of the Delaware River—became fully operational in the late summer of 1955.

The 1931 decree controlled the States’ and City’s use of the Delaware River Basin waters for 23 years. In 1952, the City filed a petition with the Supreme Court seeking to increase its diversion of Delaware River Basin waters for water supply purposes. After a hearing before a Special Master, the Supreme Court issued a new decree which modified and superseded the 1931 decree. The 1954 decree permitted the City to increase its withdrawal rate to 800 MGD contingent upon its construction of a third in-basin water reservoir—the Cannonsville impoundment on the West Branch of the Delaware River, which was completed in 1967. The 1954 decree also required the City to release from its three upper basin reservoirs into the Delaware River a sufficient quantity of water to meet a flow objective of 1,750 cfs at Montague, NJ. The 1954 decree also permitted an out-of-basin diversion of 100 MGD to central and northeastern NJ. A River Master employed by the United States Geological Survey (“USGS”) was appointed by the Court to administer specific provisions of the decree. Subsequently, in 1961, the Decree Parties entered into a compact with the federal government which created the Delaware River Basin Commission (“DRBC”) to manage this regional resource. The compact empowers the Commission to allocate the waters of the basin to and among the states signatory to the compact and to impose conditions, obligations and release requirements with the limitation that the Commission may not impair, diminish, or otherwise adversely affect the diversions, compensating releases, rights, conditions, obligations or provisions established by the Supreme Court without unanimous consent of the Decree Parties. The DRBC has codified the management of the Delaware River Basin in its Comprehensive Plan, which is based on adaptive management principles. The Comprehensive Plan provides a forum for the Decree Parties and the Commission to adapt reservoir operations to hydraulic conditions and flow needs not contemplated by the Decree on a temporary basis. The Water Code of the River Basin, a component of the Comprehensive Plan, prescribes requirements for diversions, releases, flow objectives, and water quality that have been unanimously agreed upon by the Decree Parties and have gone through the DRBC’s public process.

The DRBC Comprehensive Plan and Water Code have undergone several revisions since 1962. The last promulgation of the Water Code occurred in 1983. Since that time, the DRBC, with agreement of the

Decree Parties, has adopted many resolutions that have temporarily modified the provisions of the Comprehensive Plan and Water Code on an experimental basis. Two of the main revisions include Resolution No. 2004-3, DRBC Docket D-77-20 CP (Revision 7) and Resolution No. 2006-18, DRBC Docket D-77-20 (Revision 9). Revision 7 included interim releases from the Delaware River Basin reservoirs to protect tailwater fisheries in each river. Revision 9 included a temporary spill mitigation program for the Delaware River Basin reservoirs. Revisions 7 and 9 terminated on May 31, 2007, with the goal of developing a comprehensive plan for meeting the various water interests. This collaborative effort resulted in the development of the Flexible Flow Management Program (“FFMP”), which served as the applicable operating protocol from October 1, 2007 until May 31, 2011.

In May 2011, the Decree Parties unanimously agreed on a new operating protocol to govern operations of the City’s Delaware River basin reservoirs (i.e., Cannonsville, Neversink and Pepacton) to replace the prior FFMP protocol. This new plan, referred hereinafter as FFMP with Operations Support Tool (“FFMP-OST”) is currently slated to remain in effect until May 31, 2012, providing an option for the Decree Parties, by unanimous consent, to extend operation of the FFMP-OST for an additional year (i.e., until May 31, 2013). The FFMP-OST builds upon the design principles of the prior FFMP protocol and is intended to facilitate the redirection of water that would otherwise be spilled to managed water, thereby providing the potential for additional releases to benefit downstream rivers to improve protection of downstream habitats and help further cushion local storm impacts when water in the City’s Delaware River basin reservoirs are forecasted to be available for purposes other than the water supply purposes to New York City.

The City plans to operate the Project in accordance with the requirements of the applicable operating protocol agreed to by the Decree Parties, as may be modified from time to time. The water available for generation at the Project will be comprised of conservation releases, directed releases, and water that would otherwise spill to the extent that such releases are consistent with discharge mitigation releases as outlined in such operating protocol.

For the purposes of this Application, the City has based the operation of the Cannonsville hydroelectric development on the FFMP-OST – the operating protocol agreed to by the Decree Parties in effect as of the date of this Application.

Flexible Flow Management Plan with Operations Support Tool

The FFMP-OST is a set of principles, rules, and procedures for the management of storage, water supply diversions, conservation releases, and flow targets relating to the apportioning of water from the Delaware River Basin under the 1954 decree that builds upon the framework of the prior FFMP protocol and is informed by the information and experience gained during the implementation of the prior FFMP protocol as well as input from various stakeholder groups and the public.

The prior FFMP protocol was intended to provide a more adaptive means for managing multiple and competing uses of storage with sustainable sources of water, while protecting water supply rights of the Decree Parties. The FFMP included the following aspects:

- managing discharges (conservation releases) from the City’s Delaware River basin reservoirs;
- assisting in mitigating the impacts of flooding; and
- providing flow in the mainstem and the Delaware Bay to help protect ecological health, and support withdrawal and non-withdrawal uses.

Generally, the FFMP-OST differs from the prior FFMP protocol with respect to the following key elements:

- use of additional tables/schedules of reservoir release rates for the City's Delaware River basin reservoirs, which are developed on the basis of Forecast-based Available Water ("FAW") that is not contemporaneously needed to meet the water supply requirements of New York City;
- use of revised release tables replacing the tables utilized by the prior FFMP protocol;
- use of the City's OST to guide the selection of the appropriate governing release table;
- release rates based, in part, upon the joint recommendations of NYSDEC and the Pennsylvania Fish and Boat Commission set forth in such agencies' Joint Fisheries Paper dated January 12, 2010;
- use of consistent release rates across the release tables during drought conditions (L3, L4 and L5);
- modifications to NJ's diversion during drought conditions and the establishment of a Diversion Offset Bank for New Jersey;
- incorporation of the seasonal releases design from the Temporary Summer 2010 fisheries program conducted under the prior FFMP protocol;
- redirection of the Interim Excess Release Quantity ("IERQ") used to support the seasonal flow increment. (The IERQ under the prior FFMP protocol was intended to increase the Montague, NJ flow objective from 1,750 cfs to 1,850 cfs between June 15th and September 15th);
- use of 6,045 cfs-days of the IERQ to increase the base release rates in the tables;
- return to basing the Montague, NJ flow objective on the location of the Delaware Estuary salt front, and;
- modifying the spill mitigation program to endeavor to maintain reservoir levels at the Conditional Storage Objective ("CSO"), thereby creating a higher probability of maintaining ten percent void spaces in the City's Delaware River basin reservoirs from September 1, 2011 through March 15, 2012

The following section provides information regarding certain key parameters of the FFMP-OST that impact the operation of the Cannonsville hydroelectric development. Additional details regarding the FFMP-OST are included in the Agreement of the Parties to the 1954 U.S. Supreme Court Decree dated June 1, 2011 available at http://water.usgs.gov/osw/odrm/documents/ffmp_ost_052511_final.pdf.

(2) Key Elements of the FFMP-OST

DEP Water Supply Diversions

In accordance with the 1954 Supreme Court decree, the maximum total quantity of water diverted by DEP (combined for Cannonsville, Pepacton and Neversink Reservoirs) from June 1 to May 31 may not exceed 800 MGD, approximately 2,455 acre-feet/day; or 107 million cubic feet/day. Thus, over a standard calendar year of 365 days, the maximum withdrawal volume may not exceed 292,000 million gallons (approximately 896,119 acre-feet; or 39,035 million cubic feet).

Conservation Releases and Discharge Mitigation Releases for Cannonsville Reservoir

The FFMP-OST includes a Habitat Protection ("HPP") Program designed to protect the coldwater fisheries while maintaining aquatic community diversity, structure and function through improved ecological flow releases. The HPP consists of conservation releases designed for the protection of coldwater fisheries below the City's Delaware River basin reservoirs.

Under the FFMP-OST, DEP makes conservation releases from the City's Delaware River basin reservoirs in accordance with [Figure B-1](#) and [Figure B-2](#) and [Table B-1](#) through [Table B-7](#) (specific to the Cannonsville Reservoir only). As shown in [Table B-1](#) through [Table B-7](#), conservation releases from Cannonsville Reservoir vary based on the time of year, available storage capacity of all reservoirs (see storage zones defined in [Figure B-1](#) and [Figure B-2](#) and FAW as determined by the OST. Generally, as the Cannonsville Reservoir storage declines, conservation releases also decline to preserve the drinking water supply. Likewise as the reservoir storage reaches level L1-a, L1-b, and L1-c, conservation releases generally increase.

Table B-1: Schedule of Cannonsville Releases (cfs) with 0 MGD FAW

Cannonsville Storage Zone	Winter		Spring		Summer			Fall		
	<i>Dec 1- Mar 31</i>	<i>Apr 1- Apr 30</i>	<i>May 1- May 20</i>	<i>May 21- May 31</i>	<i>Jun 1- Jun 15</i>	<i>Jun 16- Jun 30</i>	<i>Jul 1- Aug 31</i>	<i>Sep 1- Sep 15</i>	<i>Sep 16- Sep 30</i>	<i>Oct 1- Nov 30</i>
L1-a	1500	1500	*	*	*	1500	1500	1500	1500	1500
L1-b	400	400	*	*	*	*	400	400	400	400
L1-c	110	110	200	250	275	275	275	275	175	110
L2-a	75	75	150	200	225	225	225	225	150	75
L2-b	60	60	135	175	190	190	190	190	135	60
L3	55	55	85	85	135	135	135	85	85	85
L4	50	50	60	60	100	100	100	50	50	50
L5	40	40	40	40	90	90	90	40	40	40

* Indicates storage zone not present at this time period; release is entry in cell below

Table B-2: Schedule of Cannonsville Releases (cfs) with 10 MGD FAW

Cannonsville Storage Zone	Winter		Spring		Summer			Fall		
	<i>Dec 1- Mar 31</i>	<i>Apr 1- Apr 30</i>	<i>May 1- May 20</i>	<i>May 21- May 31</i>	<i>Jun 1- Jun 15</i>	<i>Jun 16- Jun 30</i>	<i>Jul 1- Aug 31</i>	<i>Sep 1- Sep 15</i>	<i>Sep 16- Sep 30</i>	<i>Oct 1- Nov 30</i>
L1-a	1500	1500	*	*	*	1500	1500	1500	1500	1500
L1-b	400	400	*	*	*	*	400	400	400	400
L1-c	125	125	225	300	300	300	300	300	200	125
L2-a	85	85	160	235	245	245	245	235	160	85
L2-b	70	70	140	200	210	210	210	200	140	70
L3	55	55	85	85	135	135	135	85	85	85
L4	50	50	60	60	100	100	100	50	50	50
L5	40	40	40	40	90	90	90	40	40	40

* Indicates storage zone not present at this time period; release is entry in cell below

Table B-3: Schedule of Cannonsville Releases (cfs) with 20 MGD FAW

Cannonsville Storage Zone	Winter		Spring		Summer			Fall		
	<i>Dec 1- Mar 31</i>	<i>Apr 1- Apr 30</i>	<i>May 1- May 20</i>	<i>May 21- May 31</i>	<i>Jun 1- Jun 15</i>	<i>Jun 16- Jun 30</i>	<i>Jul 1- Aug 31</i>	<i>Sep 1- Sep 15</i>	<i>Sep 16- Sep 30</i>	<i>Oct 1- Nov 30</i>
L1-a	1500	1500	*	*	*	1500	1500	1500	1500	1500
L1-b	500	500	*	*	*	*	500	500	500	500
L1-c	150	200	250	300	325	325	325	325	225	150
L2-a	90	140	175	260	275	275	275	260	170	90
L2-b	80	90	150	220	240	240	240	220	145	80
L3	55	55	85	85	135	135	135	85	85	85

L4	50	50	60	60	100	100	100	50	50	50
L5	40	40	40	40	90	90	90	40	40	40

* Indicates storage zone not present at this time period; release is entry in cell below

Table B-4: Schedule of Cannonsville Releases (cfs) with 35 MGD FAW

Cannonsville Storage Zone	Winter		Spring		Summer			Fall		
	<i>Dec 1- Mar 31</i>	<i>Apr 1- Apr 30</i>	<i>May 1- May 20</i>	<i>May 21- May 31</i>	<i>Jun 1- Jun 15</i>	<i>Jun 16- Jun 30</i>	<i>Jul 1- Aug 31</i>	<i>Sep 1- Sep 15</i>	<i>Sep 16- Sep 30</i>	<i>Oct 1- Nov 30</i>
L1-a	1500	1500	*	*	*	1500	1500	1500	1500	1500
L1-b	600	600	*	*	*	*	600	600	600	600
L1-c	175	250	300	375	400	400	400	375	275	175
L2-a	110	175	225	300	325	325	325	300	210	110
L2-b	90	115	175	250	275	275	275	250	150	90
L3	55	55	85	85	135	135	135	85	85	85
L4	50	50	60	60	100	100	100	50	50	50
L5	40	40	40	40	90	90	90	40	40	40

* Indicates storage zone not present at this time period; release is entry in cell below

Table B-5: Schedule of Cannonsville Releases (cfs) with 50 MGD FAW

Cannonsville Storage Zone	Winter		Spring		Summer			Fall		
	<i>Dec 1- Mar 31</i>	<i>Apr 1- Apr 30</i>	<i>May 1- May 20</i>	<i>May 21- May 31</i>	<i>Jun 1- Jun 15</i>	<i>Jun 16- Jun 30</i>	<i>Jul 1- Aug 31</i>	<i>Sep 1- Sep 15</i>	<i>Sep 16- Sep 30</i>	<i>Oct 1- Nov 30</i>
L1-a	1500	1500	*	*	*	1500	1500	1500	1500	1500
L1-b	700	700	*	*	*	*	700	700	700	700
L1-c	200	325	400	400	500	500	500	400	325	200
L2-a	125	200	250	325	400	400	400	325	250	125
L2-b	100	150	200	275	300	300	300	275	150	100
L3	55	55	85	85	135	135	135	85	85	85
L4	50	50	60	60	100	100	100	50	50	50
L5	40	40	40	40	90	90	90	40	40	40

* Indicates storage zone not present at this time period; release is entry in cell below

Table B-6: Schedule of Cannonsville Releases (cfs) with 75 MGD FAW

Cannonsville Storage Zone	Winter		Spring		Summer			Fall		
	<i>Dec 1- Mar 31</i>	<i>Apr 1- Apr 30</i>	<i>May 1- May 20</i>	<i>May 21- May 31</i>	<i>Jun 1- Jun 15</i>	<i>Jun 16- Jun 30</i>	<i>Jul 1- Aug 31</i>	<i>Sep 1- Sep 15</i>	<i>Sep 16- Sep 30</i>	<i>Oct 1- Nov 30</i>
L1-a	1500	1500	*	*	*	1500	1500	1500	1500	1500
L1-b	700	700	*	*	*	*	700	700	700	700
L1-c	225	475	475	525	600	600	600	475	375	225
L2-a	150	400	400	400/450 ⁺	500/525 ⁺	500/525 ⁺	500/525 ⁺	400	300	150
L2-b	100	150	200	275	300	300	300	275	200	100
L3	55	55	85	85	135	135	135	85	85	85
L4	50	50	60	60	100	100	100	50	50	50
L5	40	40	40	40	90	90	90	40	40	40

* Indicates storage zone not present at this time period; release is entry in cell below

+ Second entry after slash indicates reduction in release rate for New Jersey Diversion Offset Bank

Table B-7: Schedule of Cannonsville Releases (cfs) with 100 MGD FAW

Cannonsville Storage Zone	Winter		Spring		Summer			Fall		
	Dec 1-Mar 31	Apr 1-Apr 30	May 1-May 20	May 21-May 31	Jun 1-Jun 15	Jun 16-Jun 30	Jul 1-Aug 31	Sep 1-Sep 15	Sep 16-Sep 30	Oct 1-Nov 30
L1-a	1500	1500	*	*	*	1500	1500	1500	1500	1500
L1-b	700	700	*	*	*	*	700	700	700	700
L1-c	225	475	475	525	600	600	600	475	375	225
L2-a	150	400	400	400/450 ⁺	500/525 ⁺	500/525 ⁺	500/525 ⁺	400	300	150
L2-b	150	400	400	400/450 ⁺	500/525 ⁺	500/525 ⁺	500/525 ⁺	400	300	150
L3	55	55	85	85	135	135	135	85	85	85
L4	50	50	60	60	100	100	100	50	50	50
L5	40	40	40	40	90	90	90	40	40	40

* Indicates storage zone not present at this time period; release is entry in cell below

+ Second entry after slash indicates reduction in release rate for New Jersey Diversion Offset Bank

In addition to the conservation releases discussed above, in order to enhance flood mitigation already provided by the City’s Delaware River basin reservoirs, DEP also makes certain discharge mitigation releases from such reservoirs in accordance with the following guidelines:

- For the period June 16 through April 30, if the combined (Cannonsville, Pepacton and Neversink reservoirs) reservoir usable storage is in Zone L1 (see [Figure B-1](#)) discharge mitigation releases shall be made based upon individual reservoir usable storage in accordance with Zones L1-a, L1-b and L1-c as provided in [Figure B-2](#) and [Table B-1](#) through [Table B-7](#), as applicable. During the period October 1 through April 30, 50% of the water equivalent of snowpack in the watershed above the reservoir shall be included in the determination of combined and individual reservoir usable storage in relation to [Figure B-1](#) and [Figure B-2](#) provided, however, that, under certain circumstances and subject to certain conditions and limitations, DEP may increase the water equivalent of snowpack in the watershed above the reservoirs to be included in determination of combined and individual reservoir usable storage to 100%.
- For the period May 1 through June 15, Zones L1-a and L1-b shall not be applicable in accordance with [Figure B-2](#), and discharge mitigation releases shall be made in accordance with Zone L1-c as provided in [Figure B-2](#) and [Table B-1](#) through [Table B-7](#), as applicable.

Flow Objectives on Delaware River at Montague, New Jersey - Directed Releases

Releases from the City’s Delaware River basin reservoirs should be in quantities designed to maintain, during normal storage conditions (L1 and L2, as shown in [Figure B-1](#)), a minimum basic rate of flow of 1,750 cfs at the USGS gage on the Delaware River at Montague, NJ, as directed by the Delaware River Master in accordance with the 1954 Supreme Court decree.

During drought conditions (L3 through L5, as shown in [Figure B-1](#)), the flow objective for Montague, NJ varies based upon the time of year and location of the Delaware Estuary salt front in accordance with [Table B-8](#).

The Delaware River Master orders directed releases on a daily basis for the purpose of meeting the applicable flow objective at Montague, NJ. The City must comply with these directives but may use any of the three Delaware River basin reservoirs to meet the flow target. The drainage area at the Montague USGS gage is 3,480 mi².

Drought Management

[Figure B-1](#) defines five zones (L1, L2, L3, L4 and L5) of combined reservoir usable storage for Cannonsville, Pepacton, and Neversink reservoirs. Three of the zones constitute drought conditions: (1) Drought Watch (L3); (2) Drought Warning (L4); and (3) Drought Emergency (L5). Additionally, the Normal zone is defined by two zones (L1 and L2). Shown in [Table B-8](#) are the diversions, and flow objectives based on the storage available in the City’s Delaware River basin reservoirs.

Table B-8: Interstate Operation Formula for Diversions and Flow Objectives

NYC Storage Condition	NYC Diversion (MGD)	NJ Diversion (MGD)	Montague Flow Objective (cfs)	Trenton Flow Objective (cfs)
Normal (L1, L2)	800	100	1,750	3,000
Drought Watch (L3)	680	100	1,650	2,700
Drought Warning (L4)	560	100	1,550	2,700
Drought Emergency (L5)	520	85	1,100-1,650*	2,500-2,900*
Severe Drought	(to be negotiated depending upon conditions)			

*Varies with time of year and location of Delaware Estuary salt front

Interim Excess Release Quantity

An IERQ in an amount equal to 15,468 cfs-days is provided. This amount is computed as 83% of the difference between 1,257 MGD (i.e., the highest year’s consumption of the City’s water supply system between 2002 and 2006) and 1,290 MGD (i.e., the City’s current estimate of continuous safe yield of the City’s water supply system obtainable without pumping).

Pursuant to the FFMP-OST, 6,045 cfs-days of the IERQ was incorporated into the release tables to increase the base releases from the City’s Delaware River basin reservoirs. The balance of the IERQ amount (i.e., 9,423 cfs-days) is reserved and may be used for additional releases to meet the applicable Trenton, NJ flow objective during normal reservoir storage conditions (L1 and L2), as determined pursuant to Table B-8, during the June 15 through March 15 period. However, the IERQ required to be released by the City during such period for these purposes shall not exceed 70 BG.

In addition, if unanimously agreed to by the Decree Parties, the remaining balance of the IERQ or a portion thereof can be used to establish an Extraordinary Needs Bank. Such Extraordinary Needs Bank would be used to provide extraordinary water needs to support such research, aquatic-life, or other water-use activity as may be approved by DRBC.

Proposed Mode of Operation

The City plans to operate the Project in accordance with the requirements of the applicable operating protocol agreed to by the Decree Parties, as may be modified from time to time. The water available for generation at the Project will be comprised of conservation releases, directed releases, and water that would otherwise spill to the extent that such releases are consistent with discharge mitigation releases as outlined in such operating protocol. For the purposes of this Application, the City has based the operation

of the Project on the FFMP-OST (i.e., the operating protocol agreed to by the Decree Parties in effect as of the date of this Application).

The City plans on automating the Project by remotely operating the turbines from DEP's Grahamsville office.

(3) Average Annual Generation, Plant Factor, Dependable Capacity

Operations Model

The DEP has developed a simulation model of the City's water supply system (i.e., all 19 impoundments including Cannonsville Reservoir). The model, called the New York City Water Supply Operational Analysis Simulation of Integrated Systems ("OASIS"), which is a proprietary version of the publicly available OASIS model, simulates the water supply demands, conservation releases, directed releases, water level drawdowns, discharge mitigation releases, and other requirements set forth in the FFMP-OST. Output from the OASIS model includes daily reservoir elevation, total discharge, hydropower discharge, conservation release, water supply withdrawal, and spillage. The rules of the FFMP-OST were incorporated into the model to simulate the estimated discharges from the Cannonsville Reservoir using the historic inflow hydrology. Note that for modeling purposes the City's full 800 MGD allocation is included in the analysis.

Historic inflow to Cannonsville Reservoir was computed using a USGS gage on the West Branch of the Delaware River above the impoundment that measures 73% of the inflow. The model includes a set of rules dictating how each of the City's Delaware River basin reservoirs will operate. For example, if flow on the Delaware River drops below the prescribed flow objective for Montague, NJ, the OASIS model will require releases from the City's Delaware River basin reservoirs, as needed, to maintain the applicable Montague prescribed flow. The model's period of record extends from 1948 to 2008. Although some of the Delaware River Basin reservoirs were constructed after 1948, for modeling purposes it was assumed that all of the reservoirs were in place in 1948. The purpose of the modeling effort was to determine how the reservoirs would operate under conditions in the FFMP-OST based on using long-term historic inflow information. The general premise is that the previous 61 years of inflow will be representative of future inflows.

Estimated Average Annual Generation and Hydraulic Capacity of Powerplant

The OASIS model simulated the FFMP-OST conditions. Model outputs—discharges and reservoir elevations—were used along with other inputs in a post-processor to compute daily generation over the 61 years of record. Other inputs to the post-processor included a headloss rating curve, tailwater rating curve, turbine/generator efficiency curve, and the minimum and maximum hydraulic capacity of the turbines. The post-processor computed daily, monthly and annual generation.

The average annual generation was computed by averaging the total annual generation for the 61 years of record. To account for scheduled and unscheduled outages, the computed average annual generation was decreased by 5%. Based on the foregoing, the estimated average annual generation is 42,281 megawatt-hours ("MWh") per year for the Project.

Annual Plant Factor

The total capacity of the Project is 14.08 MW. If the Project were to operate continuously at full capacity year round, it would produce approximately 123,340 MWh. Thus, the annual plant factor equates to approximately 34% (42,281 MWh/123,340 MWh).

Estimate of Dependable Capacity

Discharges available for generation at the Project will be governed by the applicable operating protocol agreed to by the Decree Parties, and will be a function of the releases from the Cannonsville Reservoir as required by such operating protocol. For example, when the Cannonsville Reservoir elevation is exceptionally low, DEP will not release up to the maximum hydraulic capacity of the Project (i.e., 1,500 cfs) as it could impact available water supply withdrawals. Based on the conservation flow releases during Drought Emergency (L5) conditions for the FFMP-OST, which vary seasonally (see [Table B-1](#) through [Table B-7](#)), there may be instances where no generation occurs because the lowest potential conservation release flow during such conditions (i.e., 40 cfs) is less than the lowest flow needed to spin the smallest turbine (i.e., 50 cfs).

According to Civil Engineering Guidelines for Planning and Designing Hydroelectric Developments published by the American Society of Civil Engineers (1989), dependable capacity is defined as “*the load-carrying ability of a powerplant under adverse load and flow conditions.*” For a hydroelectric facility with operating characteristics similar to the Project, this would occur during a period of high demand and low flow. For the Project, November is the lowest discharge month, but not the highest demand period. Typically, the highest demand period is August. The median flow during November and August, based on the FFMP-OST, is 150 cfs and 600 cfs, respectively. The median reservoir elevation during November and August based on the FFMP-OST is 1123.53 and 1133.51 feet above msl, respectively. The resulting dependable capacity of the Project may vary from approximately 1,586 kW to 5,088 kW, in November and August, respectively.

Powerplant Capacity versus Head

[Figure B-3](#) and [Figure B-4](#) show the relationship between powerplant capacity, head and flow for a 625 cfs turbine and 125 cfs turbine, respectively.

(4) Minimum, Mean and Maximum Flows

The USGS currently operates two gaging stations in close proximity to the Project as summarized in [Table B-9](#). One gaging station, located on the West Branch of the Delaware River at Walton, NY, measures 73% of the inflow to Cannonsville Reservoir. A second gage on the West Branch of the Delaware River at Stilesville, NY, located just below Cannonsville Dam, measures the total discharge from Cannonsville Dam, including spill.

Table B-9: USGS Gages in Proximity to the Project

Gage No.	Gage Name	Period of Record	Drainage Area	Comments
01350000	West Br. Delaware River at Walton, NY	Oct 1950-Sep 2007	332 mi ²	Measures 73% of the inflow to Cannonsville Reservoir
01350101	West Br. Delaware River at Stilesville, NY	Jan 1964-Sep 2007	456 mi ²	Measures discharge directly below Cannonsville Dam

Shown in [Table B-10](#) are monthly and annual maximum, minimum, median, and mean flows for the period of available stream flow record for both USGS gages.

Table B-10: Flow Statistics for USGS Gages in Proximity to the Project

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
West Branch Delaware River at Walton, NY, Drainage Area = 332 mi², Period of Record: Oct 1950-Sep 2007													
Min	70	64	74	191	96	36	21	16	13	14	14	17	13
Max	14,500	10,300	16,000	14,500	7,390	22,400	5,430	8,650	11,700	8,860	13,300	10,700	22,400
Mean	669	665	1,117	1,281	669	396	213	162	231	366	643	739	595
Median	358	380	780	923	492	228	121	82	80	152	431	500	330
West Branch Delaware River at Stilesville, NY, Drainage Area = 456 mi², Period of Record: Jan 1964-Sep 2007													
Min	7	7	9	11	24	23	16	26	19	18	16	8	7
Max	7,730	7,340	12,500	13,300	6,780	27,700	7,430	2,340	9,620	6,570	9,230	7,760	27,700
Mean	382	411	821	1,260	701	573	619	628	600	550	355	412	640
Median	51	95	299	973	419	346	427	551	498	320	47	47	333

Note: Cannonsville Dam was constructed in 1964. All flows in cfs.

Shown in [Figure B-5](#) through [Figure B-8](#) are monthly flow duration curves (three months per figure), and shown in [Figure B-9](#) is an annual flow duration curve based on the flows recorded at the USGS Gage below the Cannonsville Dam. Also shown on the monthly flow duration curves are the discharges under the FFMP-OST as predicted by the OASIS model. The period of record for the USGS gage data and FFMP-OST data varies as shown on the figures.

Shown in [Table B-11](#) are flow statistics at the West Branch of the Delaware River just below the Cannonsville Dam based on the FFMP-OST OASIS modeling results.

Table B-11: Flow Statistics at West Branch Delaware River just below Cannonsville Dam based on OASIS Modeling Results

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
West Branch Delaware River at Cannonsville Dam, Drainage Area = 456 mi², Period of Record: 1948-2008, OASIS Modeling Results													
Min	40	40	40	40	40	90	135	90	40	40	40	40	40
Max	6,124	4,679	10,407	15,321	6,727	27,188	7,246	1,823	6,701	7,728	3,477	6,720	27,188
Mean	490	523	708	1,266	576	545	669	659	595	531	337	410	610
Median	225	225	465	1,300	300	500	530	600	475	276	150	150	410

All flows in cfs.

(5) Operation: Adverse, Mean, and High Water Years

The hydraulic capacity of the hydropower facility ranges from 50 to 1,500 cfs. Under the FFMP-OST, during Drought Emergency (L5), conservation releases may be less than 50 cfs during certain times of the year, in which case discharges would be maintained through the existing low level release works and no generation would occur. However, so long as discharges are above 50 cfs, one of the two smaller turbines will operate.

Under average annual release conditions (approximately 610 cfs, based on OASIS model), one large turbine will operate. In general, as the discharge increases, the appropriate number of turbines will be brought on-line to maximize generation. The turbines have been sized such that there is continuous generation for discharges between 50 cfs and 1,500 cfs.

The operation of the Project during high flows is dependent on anticipated inflow, reservoir elevation, and the river stage on the West Branch of the Delaware River. A USGS gage at Hale Eddy, approximately eight miles downstream of Cannonsville Dam, is monitored such that Cannonsville Reservoir releases are

managed to stay within two feet of the flood stage. Under high flow events, discharges are still governed by the FFMP-OST. Discharges up to 1,500 cfs may be released depending on the river stage at Hale Eddy and available reservoir storage.

(6) Area Capacity Curve and Rule Curve

[Figure B-10](#) is the Cannonsville Reservoir elevation versus storage curve. The usable storage capacity between the intake elevation and the spillway crest elevation is 92.726 BG or 296,840,000 acre-feet.

[Figure B-11](#) shows the following:

- The average daily reservoir elevation based on OASIS modeling for the period 1948-2008.
- The average daily reservoir elevation based on observed data for the period 1982-2007.
- The spillway crest elevation = 1150 feet above msl.
- The intake sill elevation = 1020.5 feet above msl.
- The 1963 reservoir elevations based on OASIS modeling for the period 1948-2008. The year 1963 had the largest drawdown elevation over the 61-year period of record.
- The 2001 observed reservoir elevations based on the period 1982-2007. The year 2001 had the largest observed drawdown elevation over the 25-year period of record.

The latter two annual reservoir elevation data were added to [Figure B-11](#) to illustrate the range of potential drawdown.

Under average hydrologic conditions, the reservoir elevation is maintained just below the spillway crest in May and June. Starting in mid-June through approximately November, the reservoir elevation is slowly drawn down to meet water supply needs, conservation flow releases, directed releases, and to create storage for the spring freshet. Maximum drawdown generally occurs in November; however, the extent and timing of the maximum drawdown varies annually and is driven by several factors including snowpack, water supply needs, conservation flow releases, directed releases, discharge mitigation releases, and anticipated precipitation. Generally, the greater the moisture content of the snowpack, the larger the reservoir drawdown. Reservoir refill occurs during March and April due to precipitation and snowmelt.

(7) Tailwater Rating Curve

A hydraulic model was developed to estimate the relationship between the tailwater elevation and flow below the low-level release works for purposes of developing a tailwater rating curve. To develop the hydraulic model, river and bridge² cross-section data were surveyed in December 2009. The survey data and flows recorded at the USGS gage below the dam were used to calibrate the hydraulic model to measured water surface elevations at various cross-sections. The uppermost cross-section in the hydraulic model was located immediately below the low-level release works at the powerhouse location; the rating curve (water surface elevation versus flow) for this cross-section represents the tailwater rating curve as shown in [Figure B-12](#).

(8) Power Utilization

A minimal amount of power produced at the Project may be used on-site to offset on-site electricity requirements; however, the bulk of the power will be sold into the wholesale markets administered by the

² An access bridge is located just below the low-level release works.

New York Independent System Operator, Inc. (“NYISO”) or disbursed through a power purchase agreement.

(9) Plans for Future Development

The City currently only plans on developing the hydropower facilities at Cannonsville proposed in this Application. However, the City is also considering developing hydropower facilities at its two other Delaware River basin reservoirs (i.e., Neversink and Pepacton), and intends to submit applications for exemptions from licensing to FERC relating to such hydroelectric developments.

New York City Delaware System Usable Combined Storage (Cannonsville, Pepacton, and Neversink Reservoirs)

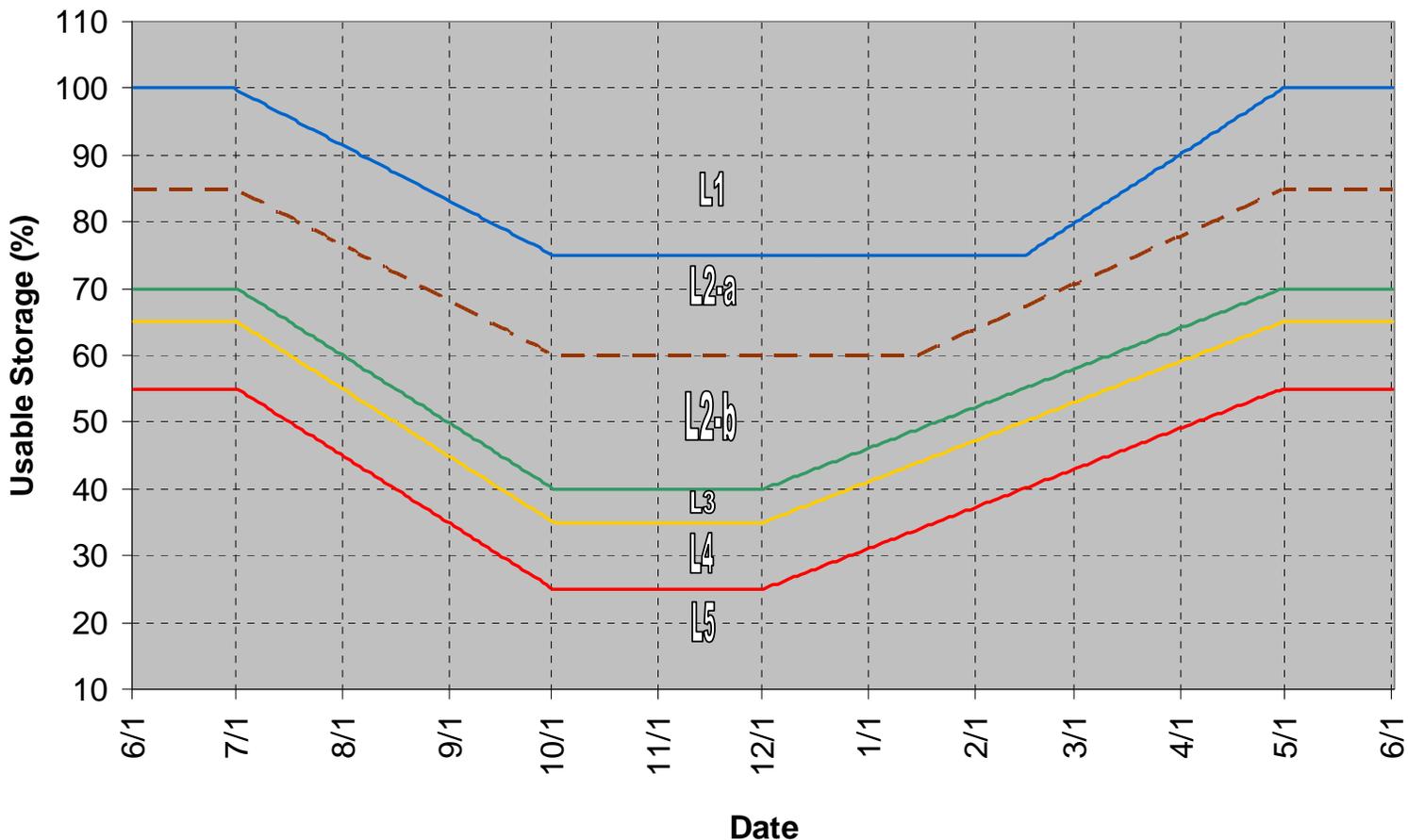


Figure B-1: NYC Delaware System Usable Combined Storage

New York City Delaware System Usable Individual Storage (Cannonsville, Pepacton, and Neversink Reservoirs)

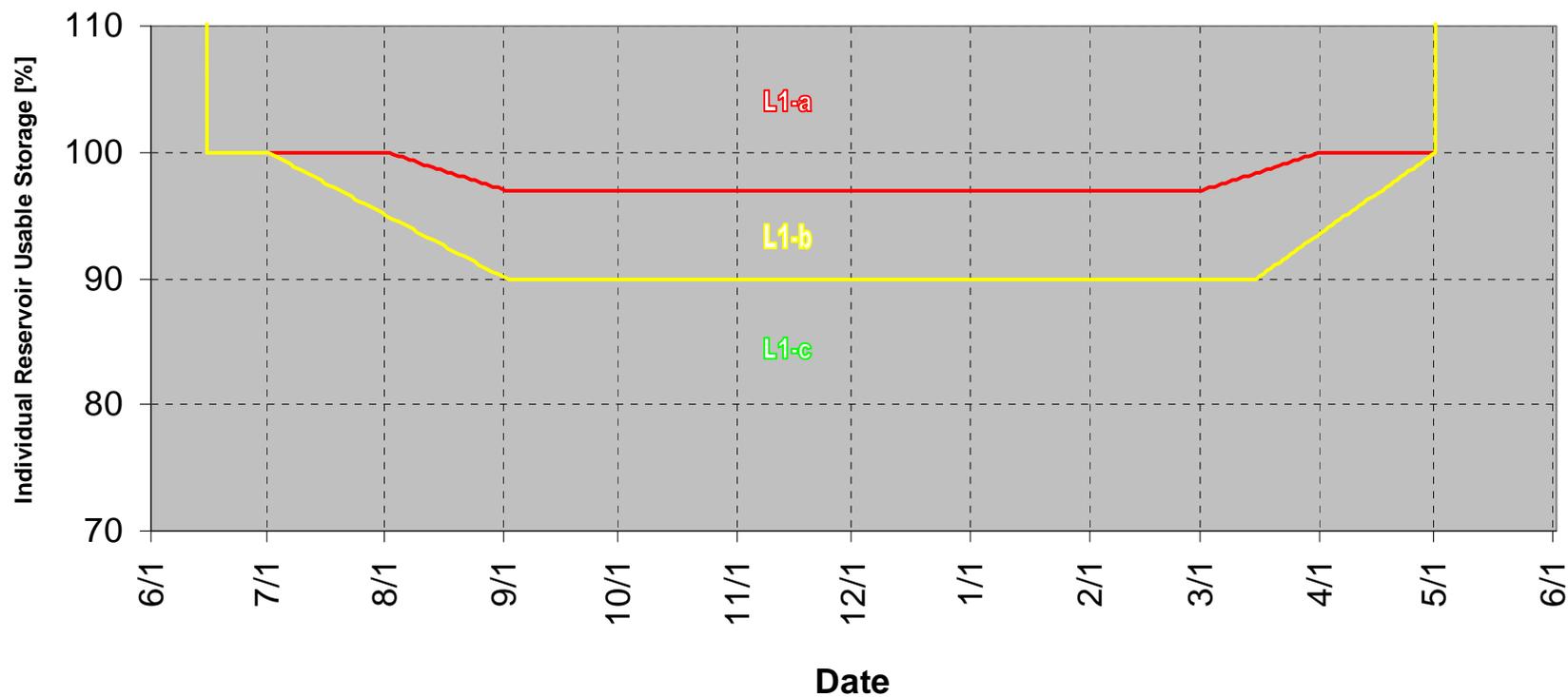


Figure B-2: NYC Delaware System Usable Individual Storage

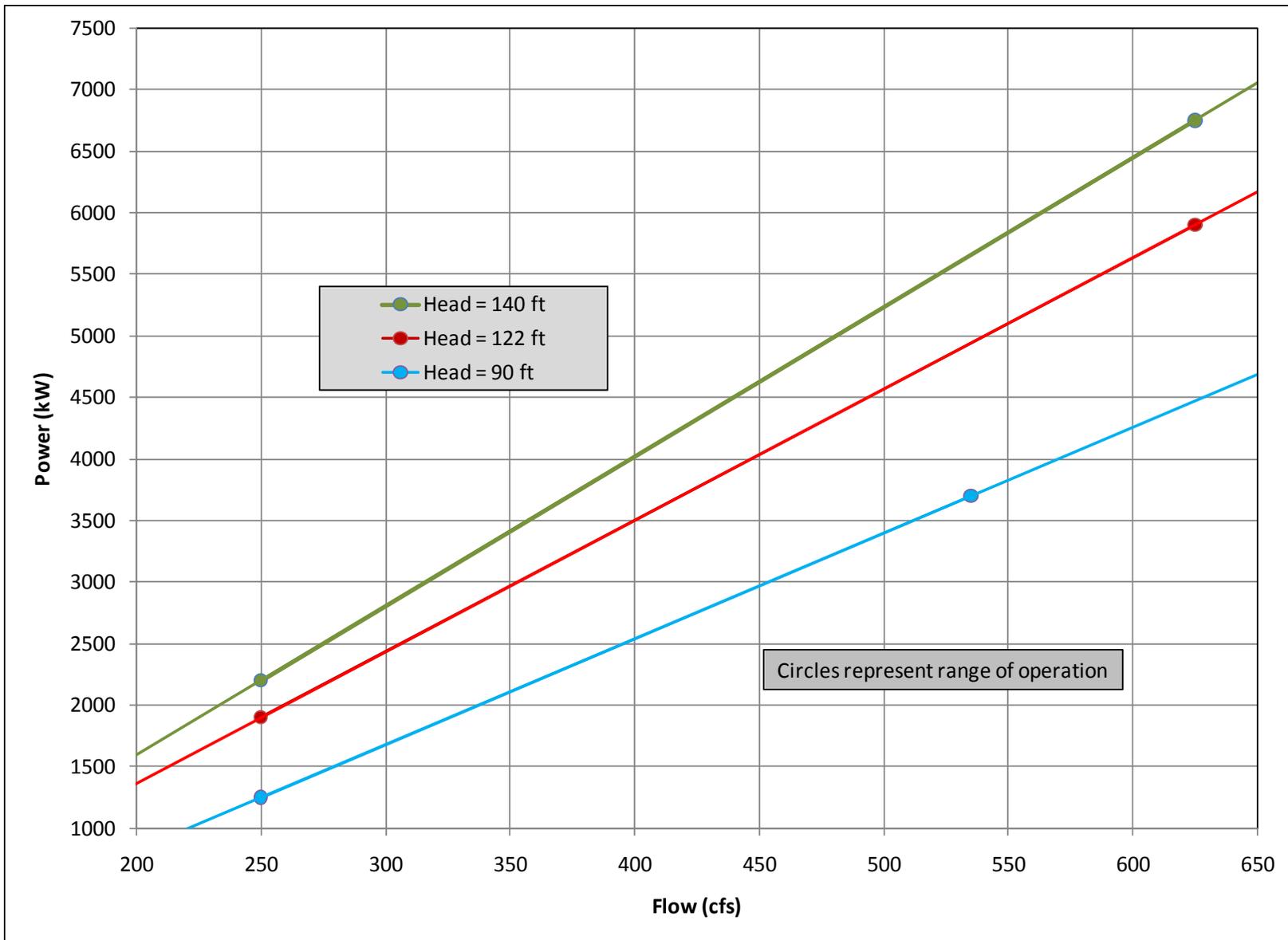


Figure B-3: Powerplant Capacity versus Head and Flow for 625 cfs Turbine

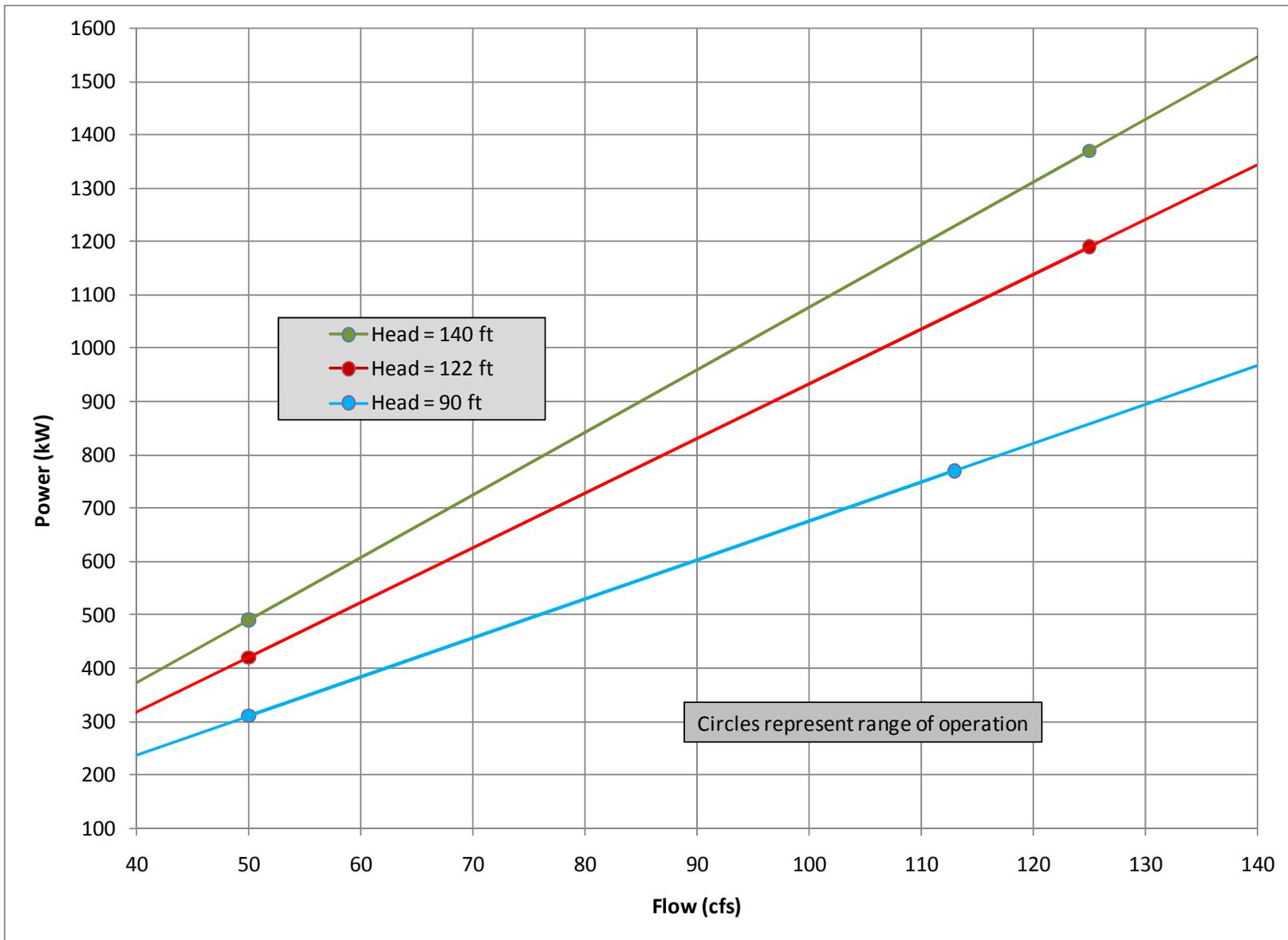


Figure B-4: Powerplant Capacity versus Head and Flow for 125 cfs Turbine

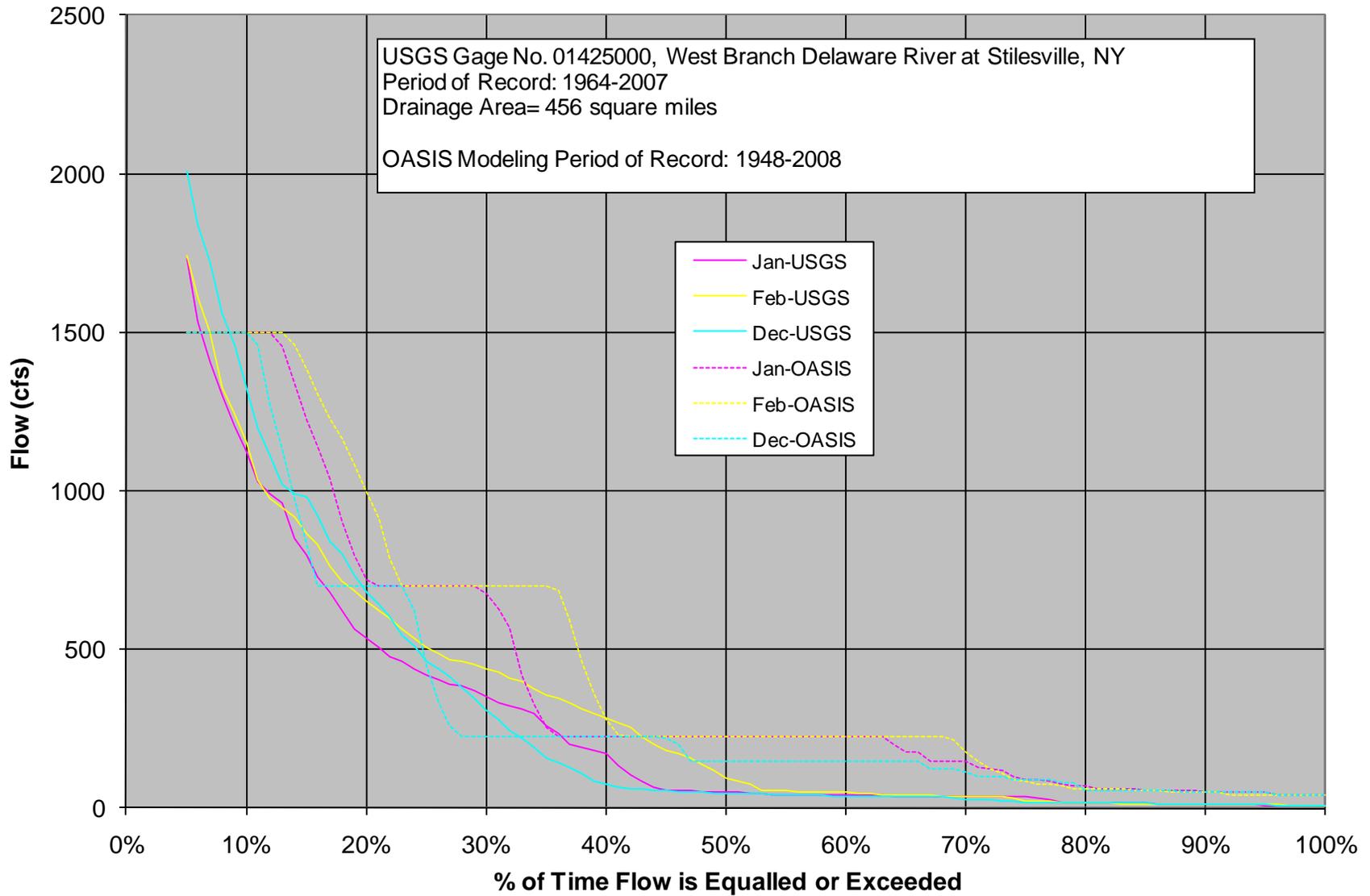


Figure B-5: West Branch Delaware River below Cannonsville Dam – Monthly Flow Duration Curves for Dec, Jan, & Feb (USGS Gage and OASIS Results), Drainage Area = 456 mi²

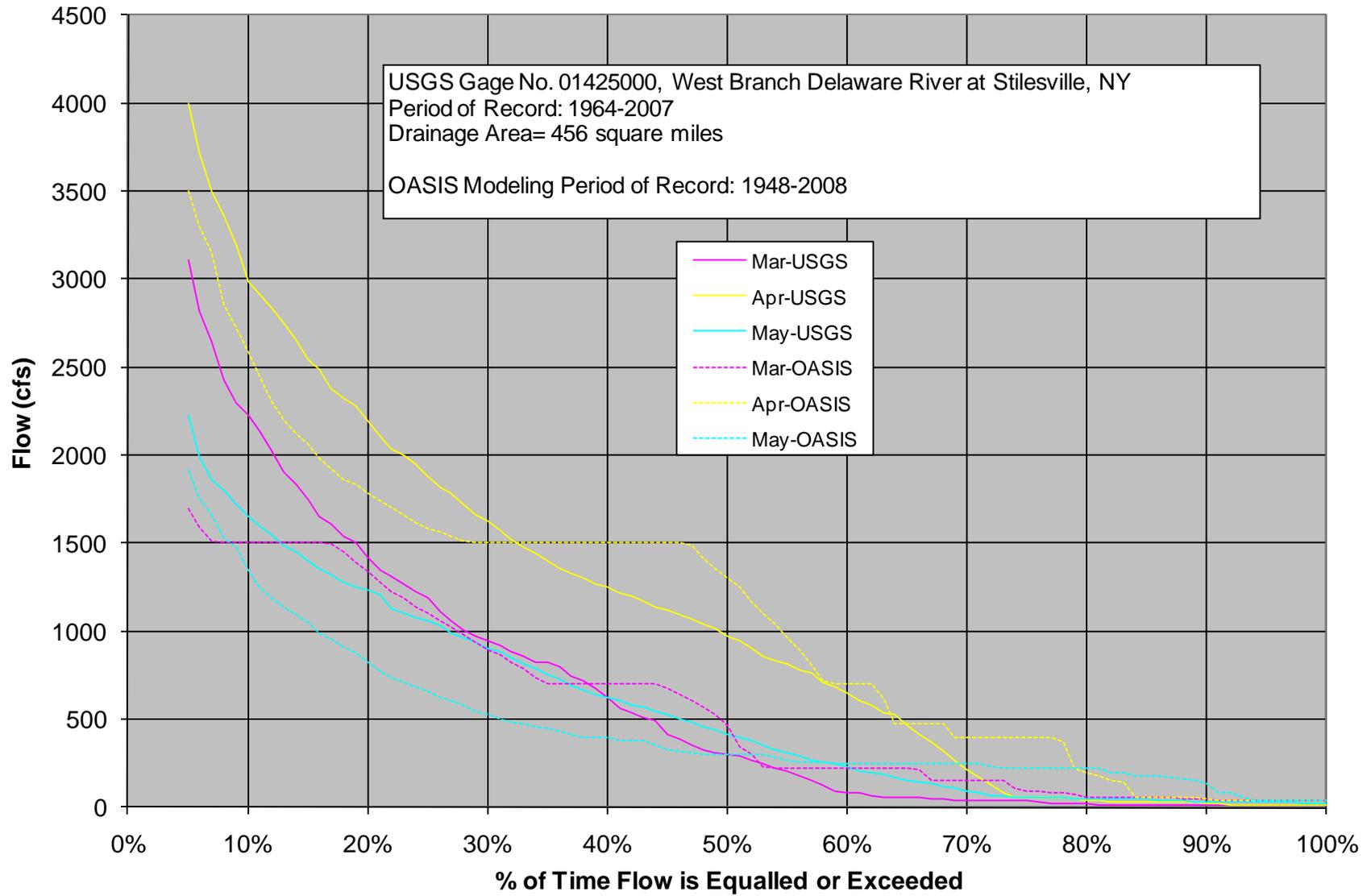


Figure B-6: West Branch Delaware River below Cannonsville Dam – Monthly Flow Duration Curves for Mar, Apr & May (USGS Gage and OASIS Results), Drainage Area = 456 mi²

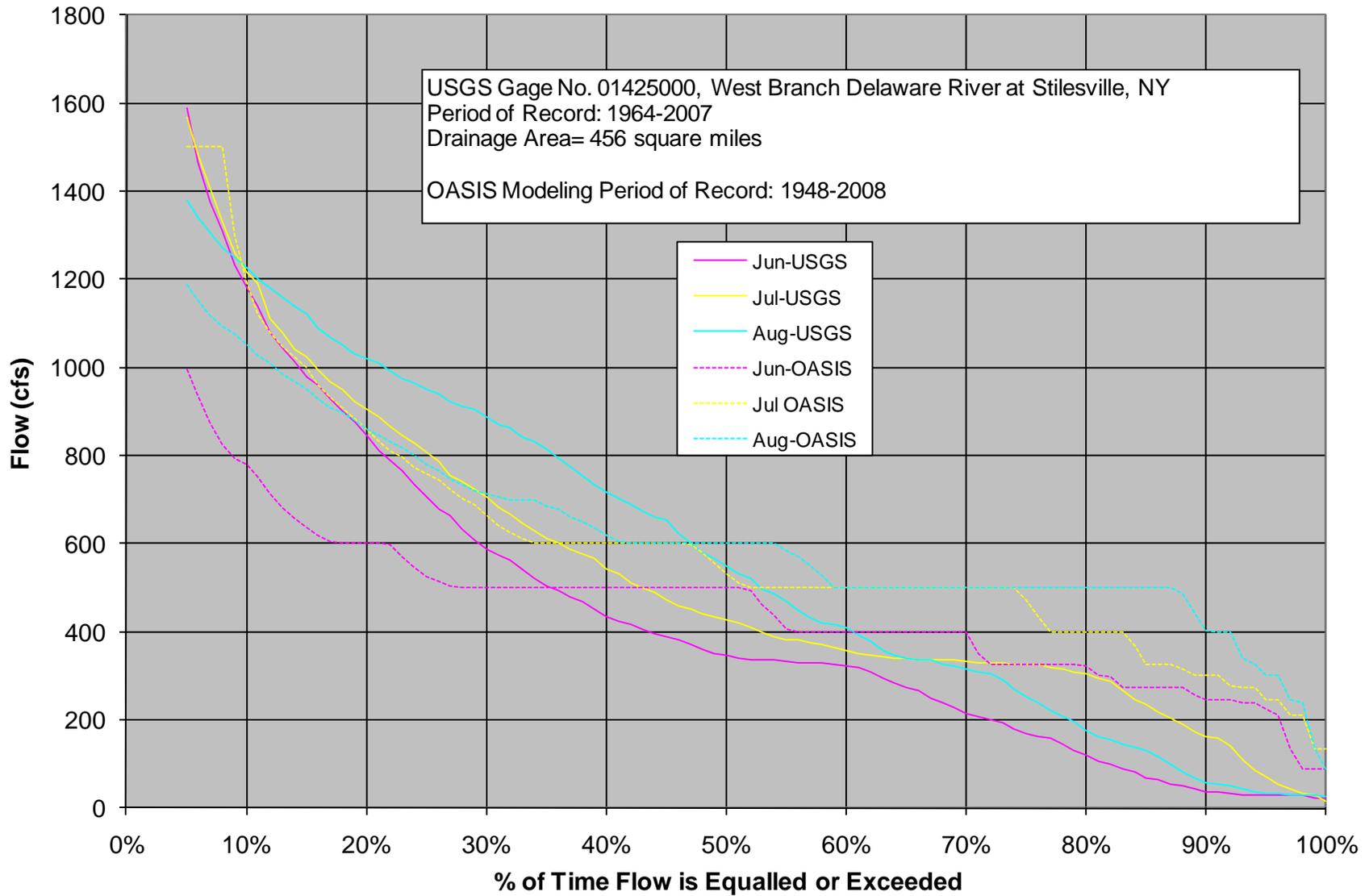


Figure B-7: West Branch Delaware River below Cannonsville Dam – Monthly Flow Duration Curves for Jun, Jul & Aug (USGS Gage and OASIS Results), Drainage Area = 456 mi²

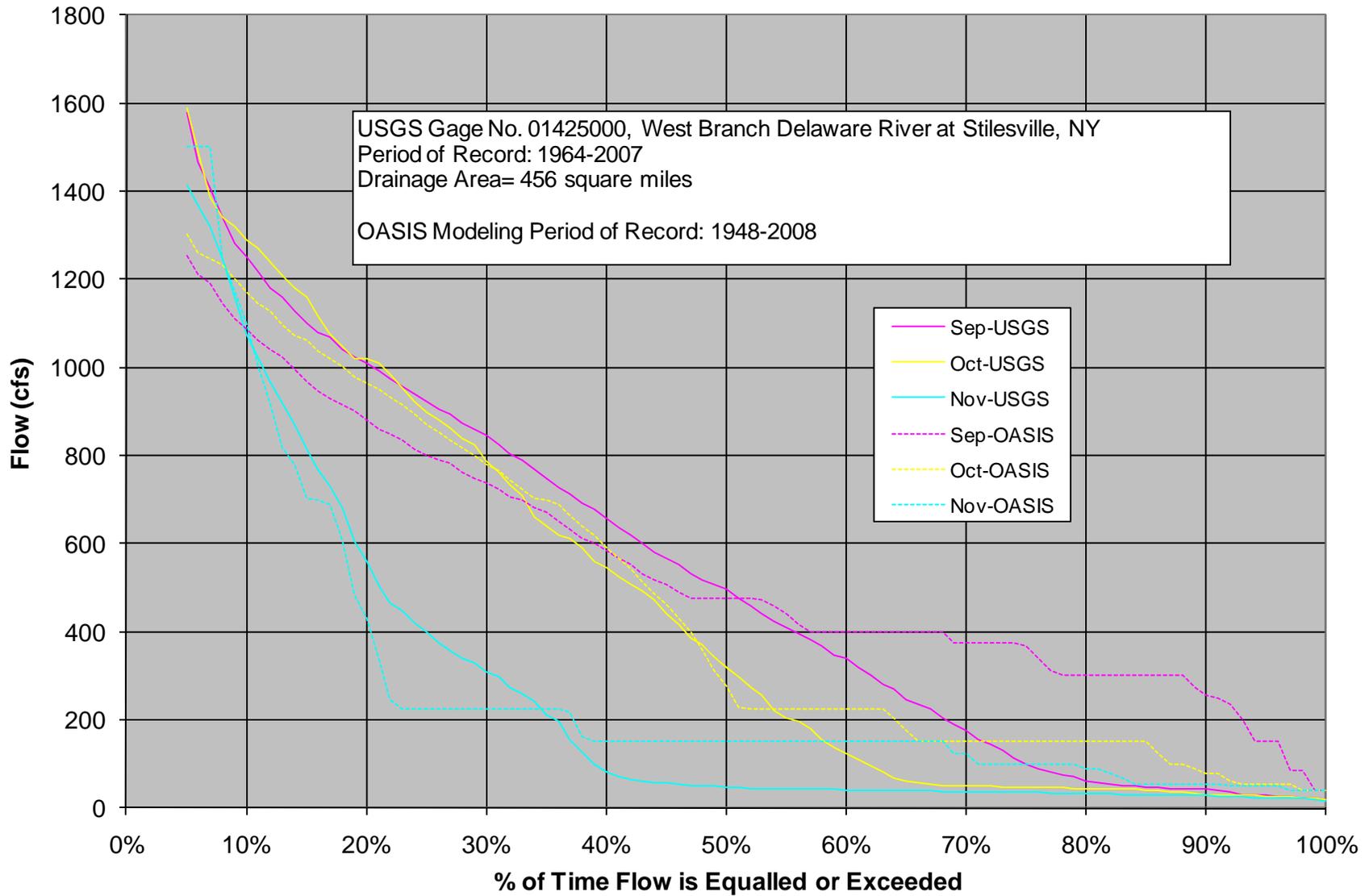
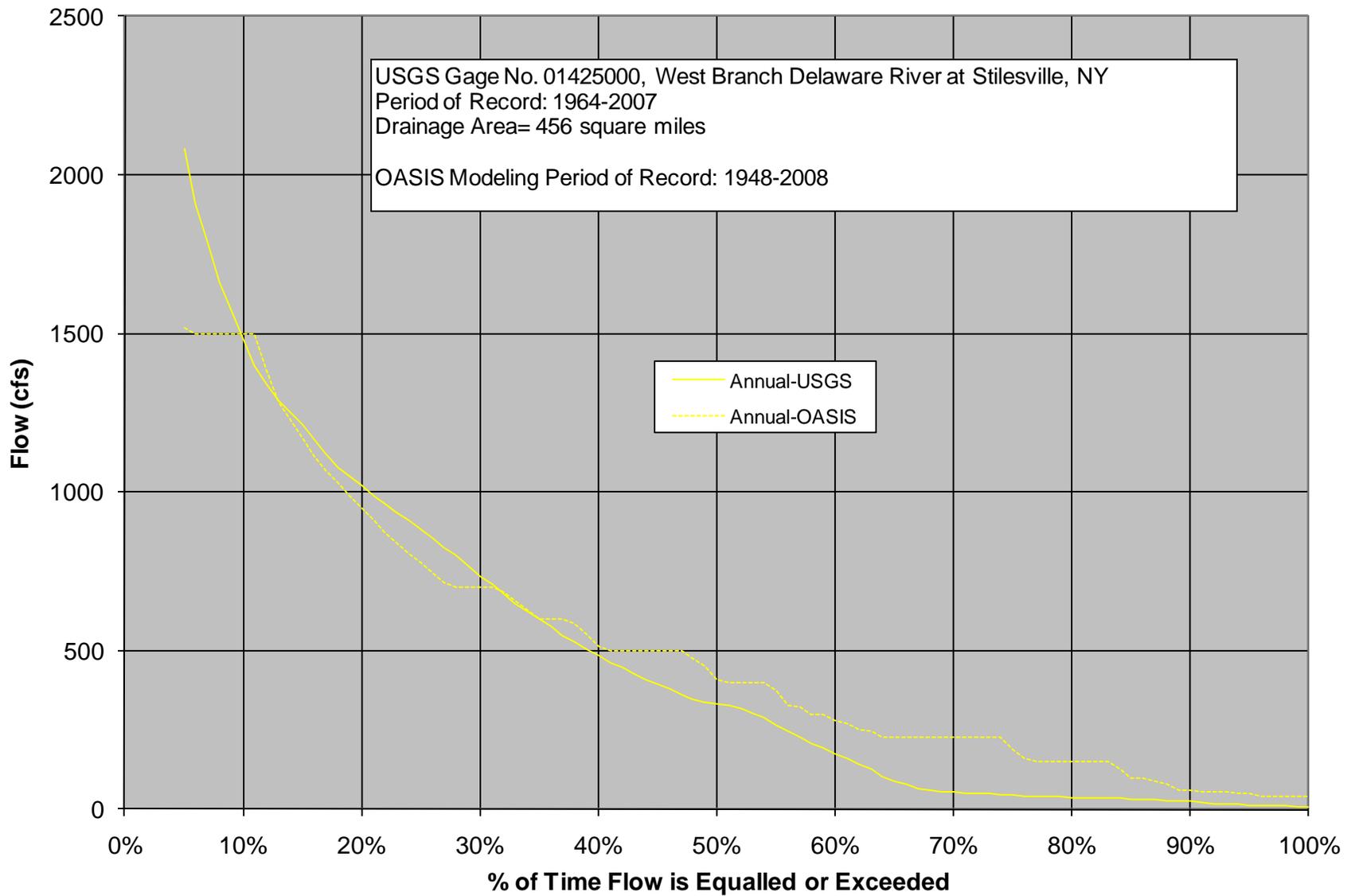


Figure B-8: West Branch Delaware River below Cannonsville Dam – Monthly Flow Duration Curves for Sep, Oct, & Nov (USGS Gage and OASIS Results), Drainage Area = 456 mi²



**Figure B-9: West Branch Delaware River below Cannonsville Dam – Annual Flow Duration Curve (USGS Gage and OASIS Results),
 Drainage Area = 456 mi²**

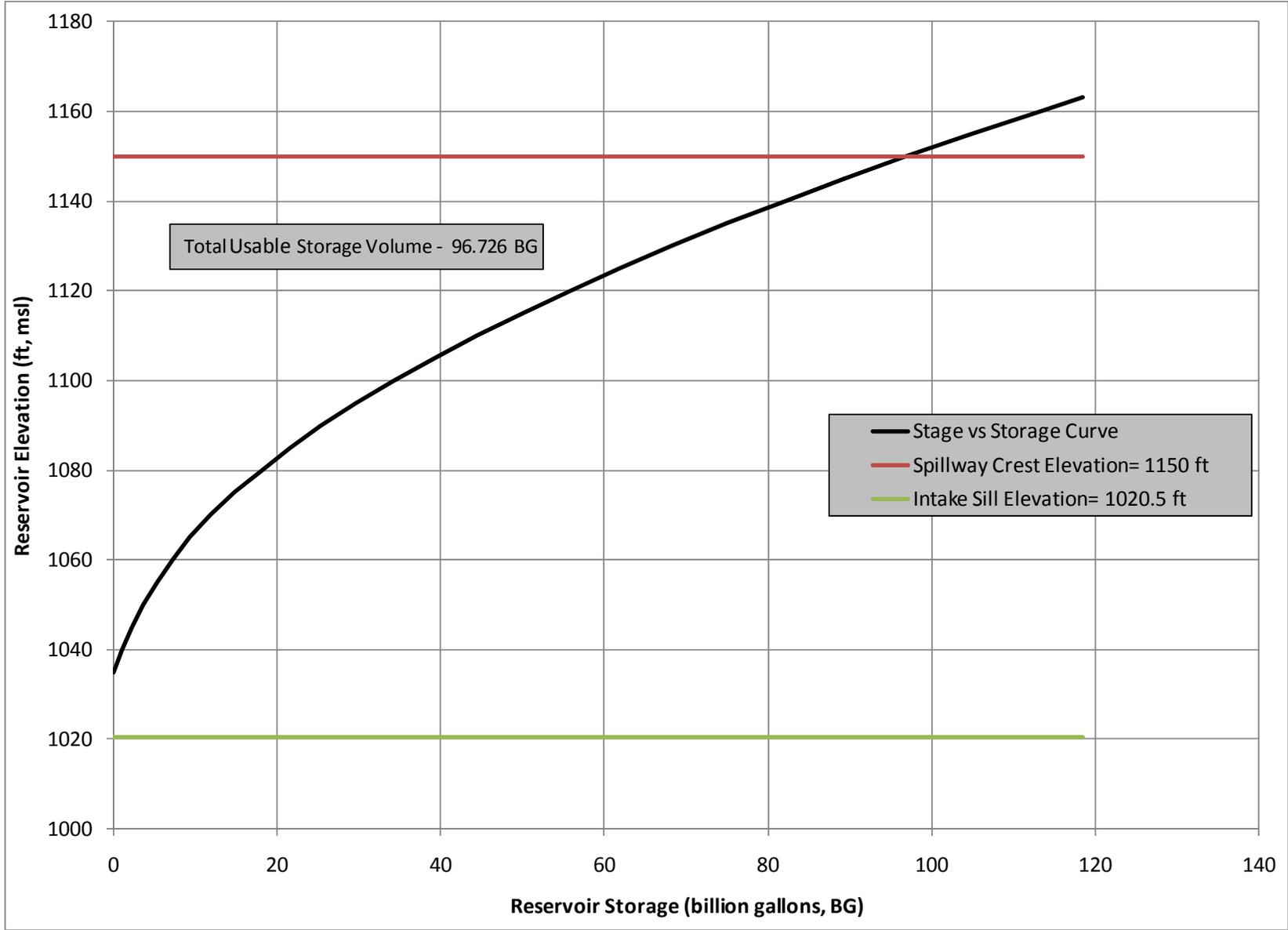


Figure B-10: Cannonsville Reservoir Elevation versus Storage Curve

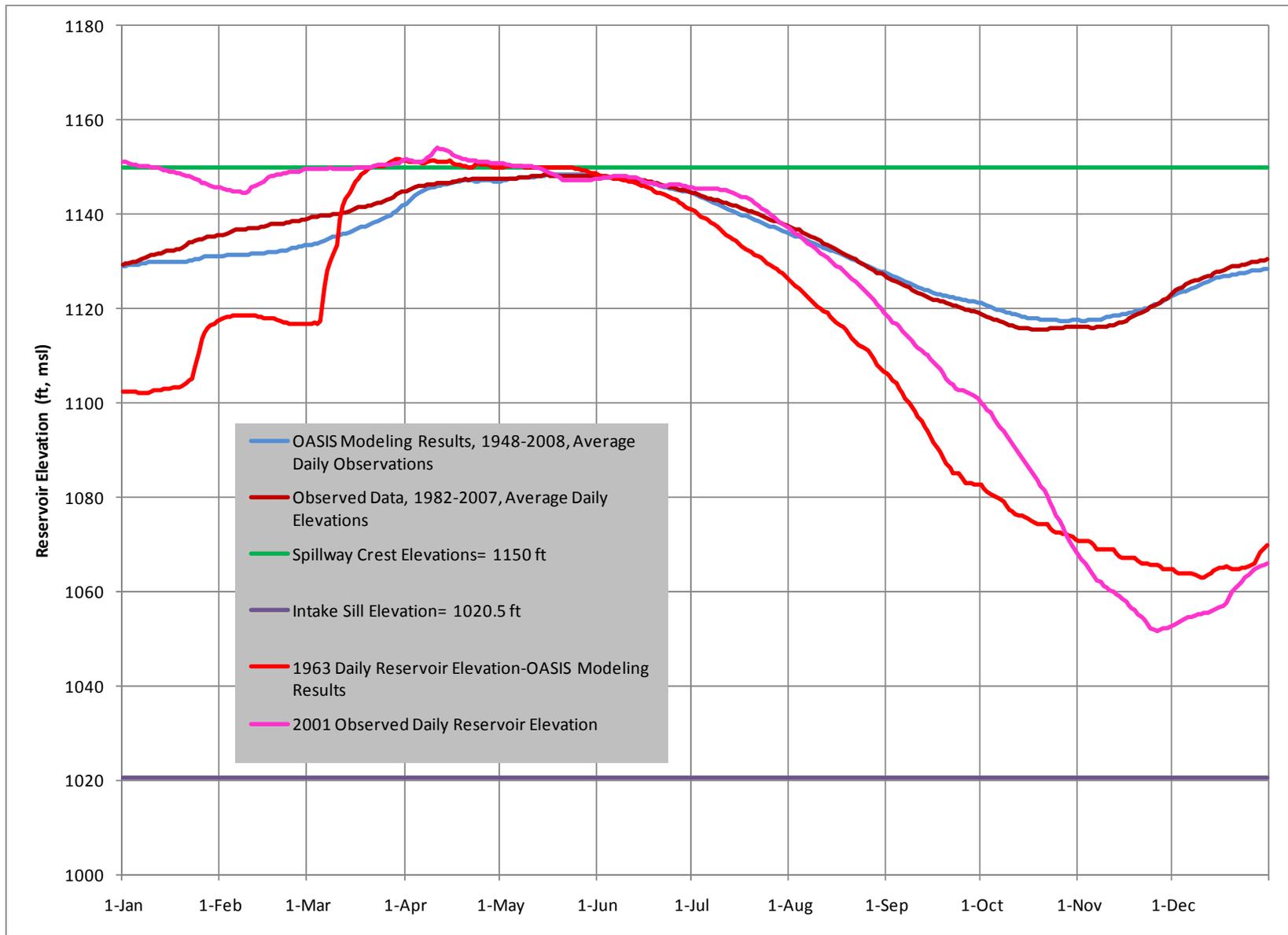


Figure B-11: Cannonsville Reservoir- Annual Elevations

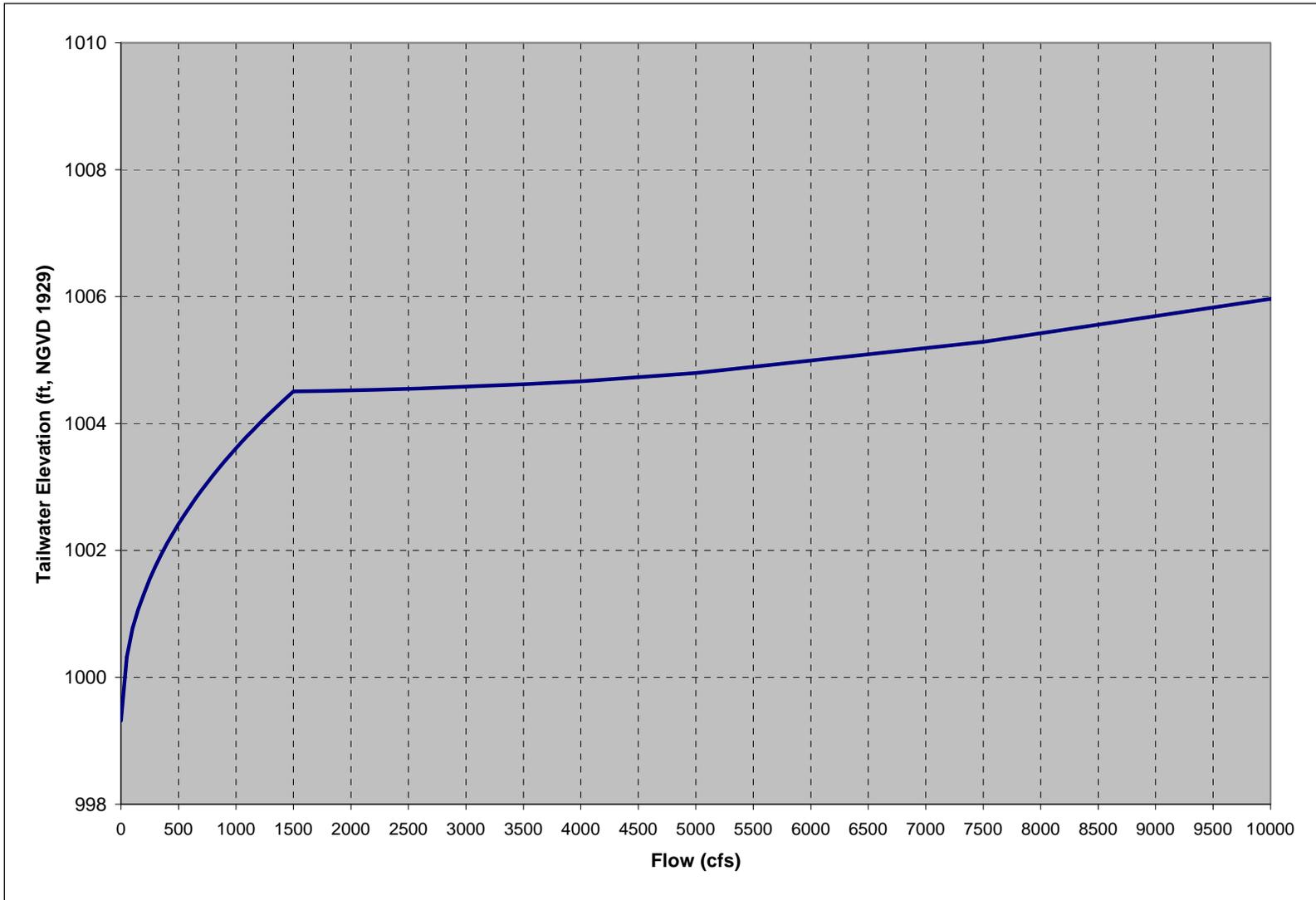


Figure B-12: Cannonsville Tailwater Rating Curve

EXHIBIT C: CONSTRUCTION HISTORY AND PROPOSED CONSTRUCTION SCHEDULE

(1) Existing Facilities

The construction history of the existing facilities related to the Project is summarized in [Table C-1](#).

Table C-1: Cannonsville Construction History

Facility	Construction Commencement	Construction Completion	In-Service Date (commencement of operation)	Additions/ Modifications	Notes (nature of additions/ modifications, proposed new developments, if any)
Dam	1956	1965	1965		
Spillway	1958	1965	1965		Spillway capacity increase evaluation, 2009
Release Works Building	1960	1965	1965	Polyjet Release Valves (5), 1998	Emergency gate tower improvements/isolation of Water Release Facility, 2003
Water Supply Intake Building	1960	1965	1965		Enclosure for intake facility stop shutters, 2003

(2) Construction Schedule for Hydroelectric Facilities

As currently envisioned, work will begin promptly following license issuance and approval of any required plans by FERC’s Regional Office and any other applicable regulatory agencies. Construction activities are scheduled for completion within 36 months after commencement. Full commercial operation of the Project will begin promptly after completion of construction and commissioning activities. The proposed schedule shown below is subject to change pending the timing of obtaining binding bids and the City’s process for reviewing and selecting a contractor.

EXHIBIT D: STATEMENT OF COSTS AND FINANCING

(1) Cost of Original Construction

The total cost of construction for the entire project, according to the City's records, was approximately \$11,695,110 (year of expenditure dollars), based on a contract awarded on July 1, 1960. The City's records do not account for the split between the dam, spillway, water supply intake building, and low-level release works.

The cost associated with the acquisition of lands and damages, additional to the cost of construction, was approximately \$4,220,212 (year of expenditure dollars).

(2) Estimated Amount Payable upon Federal Takeover

In accordance with 18 CFR § 4.51(e)(2) this is not applicable because the City is a municipality.

(3) Estimated Costs of New Development

(i) Cost of Land or Water Rights

All land and water rights were previously secured by the City for development of the water supply system. Accordingly, no such costs are required to be incurred for the purposes of the Project.

(ii) Cost of New Development, including Major Items, Indirect Construction Costs, Interest During Construction and Overhead, Construction, Legal Expenses, Taxes and Contingencies

The City developed an opinion of construction cost ("OPCC") to develop the Project as shown in [Table D-1](#) at the end of this section. The estimated cost to construct the Project is \$42,543,000 in 2012 dollars. All assumptions relative to contingencies, engineering/administration, and construction management are shown in [Table D-1](#). As summarized in the table below, the estimated nominal cost of the Project is \$50,324,000.

Total Estimated Project Development Costs

New Development Costs	Project Costs
Present Value	(2012 - \$000s)
Mobilization/Demobilization	\$2,983
Powerplant structures and improvements	\$4,207
Reservoir Dam and Waterway	\$6,330
Waterwheels, Turbines, and Generator	\$15,270
Accessory electric equipment	\$1,511
Substation and Switching Station Equipment	\$2,100
Transmission Poles and Conductors	\$408
Contingencies (15%)	\$4,921
Sub Total Direct Costs	\$37,730
Eng, Admin, and Part time Construction Services (10%)	\$3,773
Full Time Construction Management	\$1,000
Contractor OPCC and Review, Tunnel Inspection	\$40
Sub Total Indirect Costs	\$4,813
Total Development Costs Excluding Inflation	\$42,543
Nominal Dollars	(2012-2018)
Total Development Costs Including 4% Annual Escalation Rate	\$50,324

(4) Estimated Average Annual Costs of New Development

(i) Cost of Capital

The City expects to finance the Project entirely from public funds, although it is investigating its options for involving private sector financing. The City would fund the Project from general bond proceeds or other general fund moneys. For internal planning purposes to assess feasibility of projects, the New York City Office of Management & Budget directs the use of that an all-in interest rate of 6.75% for long term projects, such as the Project. Depending on the market conditions at the time of debt issuance, the actual interest rate could be higher or lower than the planning rate.

(ii) Local, State, and Federal Taxes

As a municipality, the City is exempt from local, state, and federal taxation.

(iii) Depreciation or Amortization

Straight line depreciation is being applied to capitalized costs over the life of the asset, in this case, 50 years.

Capitalized Project Costs (Year of Expenditure - \$000s)	Annual depreciation Cost (Year of Expenditure -\$000s)
\$50,324	\$1,006

(iv) Operation and Maintenance Expenses

The annual operation and maintenance (“O&M”) cost was estimated based on applying a cost per MWh rate of \$20/MWh (2012 dollars). This amount was determined by the City through evaluation of similar hydroelectric facilities in the region, including certain other facilities owned by the City. Based on this assumption the annual O&M cost was estimated at \$845,620 (2012 dollars). This amount includes O&M expenses, interim replacement costs, administrative and general expenses and contingencies.

In addition to annual O&M costs, a major turbine overhaul has been assumed in year 25 (2043) and a generator re-wind in year 30 (2048).

(v) Estimated Capital Cost and Estimated Annual Operation and Maintenance Expense of Each Proposed Environmental Measure

As described more fully in Exhibit E, the City is not proposing any additional environmental measures beyond the existing measures in place at the Cannonsville Dam and Reservoir. Since there are no proposed environmental measures, there are no estimated capital costs or operation and maintenance expenses associated with such measures.

(5) Estimated Annual Value of Project Power

The value of Project generation is based, in part, on information from the New York Mercantile Exchange and the Energy Information Administration for the period through 2035, adjusted for average growth rate assumptions thereafter. The estimated average annual energy price is \$36.53/MWh (2012 dollars).

Energy generation of the Project was estimated in the OASIS model based on the FFMP-OST operating protocols. The Project’s estimated annual energy production is 42,281 MWh. Consistent with the proposed construction schedule set forth in Exhibit C, it is assumed that actual Project-related construction would begin in approximately 2016 and would be completed by the end of 2018, a period of approximately three years. The table below provides estimates for the annual value of power represented in 2012 dollars.

Estimated Average Annual Value of Power

Assumptions	2012 dollars
Average Annual Price	\$36.53/MWh
Energy Production	42,281MWh
Annual Value of Power	\$1,544,524

(6) Sources and Extent of Financing and Annual Revenues

The City finances capital projects using a combination of debt obligations and internal funding sources. For purposes of this Exhibit D, tax exempt financing costs were estimated assuming the issuance of General Obligation bonds with a term of 30 years as level debt service at an all-in interest rate of 6.75%. The estimated annual debt service expense for the Project is as follows:

Estimated Annual Debt Service Expense for the Cannonsville Hydroelectric Project

	<i>Amount (\$000)</i>
Bond Issuance Amount	\$50,324
Assumed Issuance Costs (2% of bond issue)	\$1,006
Total Bond Issuance Amount	\$51,330
Estimated Annual Debt Service Expense	\$4,033

(7) Cost to Develop License Application

As of September 2011, the total cost to develop the license application, including studies, consultation, and the feasibility assessment was approximately \$700,000.

(8) On and Off-Peak Value of Power

The City will operate the Project based on required conservation flows, directed flows and discharge mitigation flows. The on-peak and off-peak price of power in 2012 was estimated, on average, to be \$41.83/MWh and \$31.90/MWh, respectively.

(9) Estimated Average Annual Change in Project Generation

As the Project is a new hydropower facility this section is not applicable.

Table D-1: Cannonsville Opinion of Probable Construction Cost

Cannonsville Opinion of Probable Construction Cost - Voith two 1760 mm units and two 890 mm units					
15% Contingency, Wye penstock connection at existing tunnel					
Item No.	Item	Quantity	Unit	Unit Price	Cost
330	Land and Land Rights¹				---
	Mobilization/Demobilization (assume 10%)²	1	LS	\$2,982,600	\$2,982,600
331	Powerplant Structures and Improvements				
	Powerhouse Superstructure (includes misc. equip)	1	LS	\$2,946,000	\$2,946,000
	Powerhouse Excavation	25,000	CY	\$20	\$500,000
	Powerhouse Backfill	13,000	CY	\$10	\$130,000
	Sheet Piling	140	TON	\$1,250	\$175,000
	Haul Spoil to Stockpile Area	12,000	CY	\$3.00	\$36,000
	Diversion and Care of Water	80	DAY	\$1,000	\$80,000
	Relocate Sewer Pipe, Pump Sta. and Leach Field	1	LS	\$60,000	\$60,000
	Toe Drain at Powerhouse	1	LS	\$15,000	\$15,000
	SCADA system	1	LS	\$40,000	\$40,000
	Architectural Acrylic Based Simulated Granite Finish	15,000	SF	\$15	\$225,000
	331 Subtotal				\$4,207,000
332	Reservoir, Dam and Waterway				
	Tunnel Demolition	1	LS	\$172,000	\$172,000
	Steel Penstock	1	LS	\$2,195,000	\$2,195,000
	Thrust Blocks	450	CY	\$300	\$135,000
	Penstock, Tailrace and Channel Excavation	15,000	CY	\$20	\$300,000
	Penstock Backfill	4,000	CY	\$10	\$40,000
	Haul Spoil to Stockpile Area	11,000	CY	\$3.00	\$33,000
	Sheet Piling	530	TON	\$1,250	\$662,500
	Tailrace Walls	470	CY	\$350	\$164,500
	Counterweight Butterfly Valves	1	LS	\$1,093,000	\$1,093,000
	Earth Cofferdam for Tailrace and PH Construction	1	LS	\$40,000	\$40,000
	Silt Curtain	1	LS	\$50,000	\$50,000
	Pre-fabricated Cofferdam for Channel Construction	1	LS	\$100,000	\$100,000
	Diversion and Care of Water	140	DAY	\$1,000	\$140,000
	Temp. Conservation Flow Siphon During Construct.	1	LS	\$700,000	\$700,000
	Site Restoration	1	LS	\$100,000	\$100,000
	Haul Road Maintenance	80	DAY	\$1,100	\$88,000
	Dust Control	80	DAY	\$1,000	\$80,000
	Toe Drain at Penstock	1	LS	\$25,000	\$25,000
	Flow Meter in 12 ft Penstock	1	LS	\$60,000	\$60,000
	Wetland Mitigation	1	LS	\$75,000	\$75,000
	Stone Fill in Tailrace	1,100	CY	\$50	\$55,000
	Blowers for 1760 mm turbines	2	EA	\$11,000	\$22,000
	332 Subtotal				\$6,330,000
333	Waterwheels, Turbines and Generator³	1	LS	\$15,270,000	\$15,270,000
334	Accessory Electric Equipment⁴	1	LS	\$1,511,000	\$1,511,000
353	Substation and Switching Station Equipment⁵	1	LS	\$2,100,000	\$2,100,000
355/356	Transmission Poles and Conductors⁵	1	LS	\$408,000	\$408,000
	Subtotal Direct Cost				\$32,808,600
	Contingencies (15%) ⁶				\$4,921,000
	Total Direct Cost⁷				\$37,730,000
	Engineering, Admin. and Part Time Constr.Services (10%) ⁸				\$3,773,000
	Full Time Construction Management				\$1,000,000
	Contractor OPCC and Review, Tunnel Inspection				\$40,000
	Total				\$42,543,000
Notes					
1 - There are no land costs required for Cannonsville. The transmission line connection to the electric system is made on City property.					
2 - The mobilization and demobilization costs are 10% of Item Nos. 331-356.					
3 - Two 1760 mm and two 890 mm horizontal Francis turbines and four generators.					
4 - Control panels, programmable logic controller and hydraulic power unit.					
5 - Costs from O'Brien and Gere Electrical Engineers.					
6 - The contingency is 15% of all items. Rounded to \$1000.					
7 - Rounded to \$1000.					
8 - Includes Soil Borings. Rounded to \$1000.					

EXHIBIT E: ENVIRONMENTAL REPORT

(1) General Description of the Locale

(i) Climate

The climate of the Catskill Mountains is considered primarily humid continental, which tends to dominate the northeastern states. Cool, dry air masses generally move eastward through the area throughout the year, while warm, humid maritime air masses generally move northeastward in the summer (Delaware Co. SWCD, 2007). The summers are cool, with relatively few hot days. Cold winter temperatures prevail whenever Arctic air masses flow southward from central Canada. Mean daily temperatures range from the low 20°F's in the winter to the upper 60°F's in the summer. Rainfall is usually adequate during the growing season (May – September) but deficiencies of precipitation may occur periodically. Mean annual precipitation is approximately 46.69 inches in nearby Walton, NY. Average snowfall in the valleys is near 65 inches, with higher terrains receiving slightly more. [Table E-1](#) shows the monthly averages for precipitation and temperature for the period 1971 through 2000 (NOAA, 2002) (Note: water content in snowfall is computed by the National Weather Service and is included in the precipitation figures). Solar aspect, the orientation of a land slope to the sun, also affects the local microclimatic conditions. South facing land slopes are warmer and drier than the cool, often moist north facing land slopes of the valley.

Table E-1. Monthly Average Precipitation and Temperature in the West Branch of the Delaware Basin

Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
<i>Walton, NY</i>													
Precipitation Normals (inches)	3.29	2.83	3.72	3.98	4.34	4.28	4.31	4.13	4.07	3.91	4.26	3.57	46.69
<i>Delhi, NY</i>													
Average Snowfall (inches)	17.1	10.9	11.9	4.3	0	0	0	0	0	0	4.8	13.7	63.1
Temperature Normals (°F)	21.5	23.6	32.9	44.0	55.3	63.5	67.6	66.3	58.8	47.9	37.8	26.9	45.5
Data from Climatology of the United States Nos. 20 & 81, 1971-2000. National Oceanic and Atmospheric Administration National Climate Data Center.													

(ii) Topography

[Figure E-1](#) shows the general topography of the West Branch of the Delaware River in the vicinity of the Cannonsville Reservoir. The watershed is located in the eastern portion of the Allegheny Plateau physiographic province, which is the northern part of the Appalachian Plateau that extends from southern New York to central Alabama. Locally, the Allegheny Plateau extends throughout southern New York and includes the Catskill Mountains and southern sections of the Mohawk River basin (Isachsen et al., 1991). Rivers and their tributaries have cut the originally level plateau into hilly uplands. The plateau surface is evident in the pattern of hilltops all tending to reach the same elevations in their respective locations in the watershed, creating a dissected plane that slopes gradually upward from northwest to southeast (Delaware Co. SWCD, 2004).

The West Branch of the Delaware River is the principal drainage channel for the basin and delivers flows from northeast to southwest through a relatively narrow, flat-floored valley. The valley is approximately

one mile across at its maximum width, which is in the Village of Walton. Hillsides along the West Branch of the Delaware River valley tend to be asymmetric with steeper slopes facing north and gentler slopes facing south. Tributary streams typically occupy very narrow valleys, or hollows, that generally intersect the West Branch of the Delaware River at right angles (Delaware Co. SWCD, 2004).

(iii) Wetlands

Wetland delineations and classification information in the vicinity of the Cannonsville Reservoir was obtained from the United States Fish and Wildlife Service (“USFWS”) National Wetland Inventory (“NWI”), which was developed from aerial photography. The land surrounding the reservoir is generally not conducive to supporting wetlands. The wetlands present tend to be associated with the areas where tributary streams feed the reservoir.

Included in the following sections are a series of maps showing NWI wetlands within or very near the project boundary for the development site. Wetlands mapped by NYSDEC are also shown for comparison. Note that because the wetlands are shown at a scale covering the entire reservoir area, many of the smaller wetlands may be hard to distinguish due to their size relative to the impoundment.

[Figure E-2](#) shows NWI and NYSDEC wetlands within or near the project boundary. [Figure E-3](#) shows a close-up of NWI wetlands in the vicinity of the dam.

The reservoir is classified as a palustrine limnetic, permanently flooded impoundment with an unconsolidated bottom. There are several small wetlands near the upper end of the impoundment. A few larger wetlands are present at the upper tip of the large north-facing finger bay of the reservoir. The largest is a 52-acre freshwater emergent, seasonally flooded wetland classified as PEM1E. The next largest is a 12-acre deciduous, scrub-shrub, semi-permanent wetland located at the mouth of Trout Creek classified as PSS1/EM1E.

(iv) Vegetative Cover

The periphery of the reservoir is generally remote and undeveloped with the exception of a few roads. The dominant vegetation cover type throughout the basin is deciduous tree forest, with some north facing hill-slopes dominated by coniferous species. Deciduous tree species include maples, beech, birches, oaks, ash and cherries. East hemlock is the predominant conifer; some eastern white pine stands exist, as well as many fields that have been planted with various spruce and pine species. These forests encompass the majority of the upland area and the timber is frequently harvested.

Along watercourses and the adjacent hillsides, cover types range from grass to a mix of grass and shrub, grass, corn and alfalfa. These cover types are indicative of the agricultural character of the basin. The grass and shrub component represents successional land composed of grasses, forbs and woody plants, with hawthorns being common. The grass component includes turf, pasture and hayland.

(v) Land Development

The area surrounding the dam and reservoir is generally remote and undeveloped, consisting primarily of forests or shrubland; little to no development is present throughout the watershed above the dam. The areas proposed for disturbance resulting from the Project consist of mowed lawn along the earthen dam and DEP roads to access the maintenance building and low-level release works building.

In the early settlement days, the entire area was covered by forests. As a result, forest materials were used for construction of equipment and housing. Certain trees were utilized for making fine furniture, while the bark of other trees was used in tanneries. Sugar maple trees were tapped for syrup and sugar (Greene

Co. SWCD, 2007). The DEP allows agricultural uses of City-owned lands in certain cases, including tapping sugar maple trees for sap used to produce maple syrup.

As the forests were cleared, the rocks and stumps were pulled to make way for farmland. The shallow, infertile soil proved not to be conducive to sustained grain farming; however, the abundance of cold-hardy grasses and water supported dairy farming (Delaware Co. SWCD, 2007). Dairy farming and forestry remain the dominant land uses. [Table E-2](#) lists the land cover types within the West Branch of the Delaware River watershed.

Table E-2: Land Cover Types; West Branch of the Delaware River

Cover Type	Land Cover Type expressed in percentages
Forest	68.8%
Shrubland	11.3%
Grassland	N/A*
Urban*	6.7%
Water	1.8%
Wetland	1.2%
Agricultural Land	10.1%
Roads	N/A*

*Roads were not separated from the urban cover type for the West Branch of the Delaware River watershed. Grasslands were not separated from the agricultural land cover type for the West Branch of the Delaware River watershed.

(vi) Population and Socioeconomic Information

The Cannonsville Reservoir is located within Delaware County. The population of the county was 48,057 in 2000 and 47,980 in 2010, remaining relatively unchanged over this period (U.S. Census Bureau).

In 2010, the annual average unemployment rate in Delaware County was 8.7% - nearly equivalent to the statewide annual average unemployment rate of 8.6%, and less than the national average unemployment rate of 9.6% in 2010 (New York State Department of Labor and U.S. Bureau of Labor Statistics). [Table E-3](#) lists the employment breakdown of Delaware County.

Table E-3: 2010 Percent Employment Breakdown in Delaware County, NY

Industry	2010 Employment	% Total
Government (Federal, State and Local)	4,633	30.0%
Manufacturing	3,445	22.3%
Health Care and Social Assistance	1,956	12.7%
Retail Trade	1,634	10.6%
Accommodation and Food Services	978	6.3%
Other Services	501	3.2%
Construction	446	2.9%
Finance and Insurance	422	2.7%
Wholesale Trade	279	1.8%
Information	238	1.5%

Industry	2010 Employment	% Total
Transportation and Warehousing	217	1.4%
Professional and Technical Services	164	1.1%
Agriculture, Forestry, Fishing Hunting	119	0.8%
Mining	109	0.7%
Arts, Entertainment, and Recreation	109	0.7%
Real Estate and Rental and Leasing	78	0.5%
Administrative and Waste Services	68	0.4%
Management of Companies and Enterprises	24	0.2%
Unclassified	13	0.1%
Delaware County Total	15,433	100.0%

Source: New York State Department of Labor, 2011

A. Study – Socioeconomic Study

Hugh O’Neill Ltd d/b/a Appleseed (“Appleseed”) and Bates White, LLC (“Bates White”) conducted a socioeconomic study for the City’s proposed Cannonsville, Pepacton and Neversink hydroelectric developments, which is included in Volume 9, Appendix E-7.

The overall objective of the socioeconomic study was to identify and quantify the impacts of constructing and operating the Project on employment, population, housing, personal income, local government services, local tax revenues and other relevant factors with respect to the municipalities and counties in the vicinity of the Project (“Impact Area”).

In order to accomplish this objective, the following activities were included in the socioeconomic study of the Project:

- Identify the appropriate Impact Area for conducting the socio-economic study, based on the Project location, existing demographic and economic linkages;
- Identify demographic and economic trends for the Impact Area, including:
 - Population;
 - Employment;
 - Personal income;
 - General economic condition;
 - Real estate characteristics;
 - Government Services and Facilities (e.g., police, fire, health, roads, education);
- Identify the economic impacts (direct, indirect, and induced) of Project construction and on-going Project operation on the demographic and economic trends for the Impact Area, including:
 - Evaluating whether the existing supply of housing (temporary and permanent) is sufficient to meet the needs of any additional population resulting from Project construction and operation;
 - Identifying any additional revenues (e.g., taxes) provided to the Impact Area resulting from Project construction and operation;
- Evaluate the incremental local government expenditures in the Impact Area (including school operating costs, road maintenance and repair, public safety costs and public utility costs)

compared to the local government revenues in the Impact Area that would result from Project construction and operation;

- Evaluate the impact of the Project on recreational activities and character of the communities within the Impact Area;
- Identify and quantify, to the extent practicable, environmental externality benefits to the public, generally, associated with Project construction and operation (e.g., air pollution reduction resulting from the offset of fossil-fuel generation by the power generated by the Project); and
- Evaluate the potential impacts of the Project on wholesale electricity prices and electric system reliability in the Impact Area.

Findings and Description of Potential Project-Related Impacts

The Project is estimated to have a modestly positive impact on employment, earnings and economic output in Delaware County. In part, because of the relatively small number of jobs the Project is estimated to create, adverse socioeconomic impacts are likely to be minimal or non-existent.

Moreover, the generation output from the Project is expected to cause a small reduction in wholesale electricity market prices in New York and modest reductions in annual pollutant emissions by fossil-fuel fired generation sources by displacing the output from such sources with the renewable electricity generated by the developments. In addition, the Project may provide modest additional reliability and power quality benefits at both the local and statewide level.

The following sections summarize the key findings of the socioeconomic study.

Economic Impact of Project Construction and Operation

Using the IMPLAN input-output modeling system – an econometric modeling system commonly used in the analyses of economic impacts – the direct, indirect and induced (or “multiplier”) effects of Project construction and ongoing operation was estimated.

Of a total estimated construction cost of approximately \$42.5 million, it is projected that nearly \$3.1 million would be paid either to Delaware County subcontractors or to Delaware County residents employed by non-local contractors and subcontractors, generating 49 person-years of employment for Delaware County residents in construction and related industries during the anticipated 36 month construction period associated with the Project. Through the multiplier effect, construction of the Project is estimated to generate approximately \$1.2 million in additional economic output in Delaware County and ten person-years of employment.

Once fully operational, ongoing operation of the Project is estimated to increase Delaware County’s annual economic by more than \$2.7 million.

Impact on Local Tax Revenues and Local Governmental Services

Assuming that: (a) the market value of the Project development is roughly equal to its estimated construction costs; and (b) equalization rates and tax rates for the applicable town in which the Project would be located are the same as they were in 2010, an estimate of the applicable annual town, county and school property taxes to be paid by the Project was calculated. Utilizing these assumptions, the

estimated annual town, county and school property taxes to be paid by the Project are approximately \$1.7 million.

Due primarily to the relatively small number of equivalent new jobs associated with ongoing operations relating to the Project, the impact of the Project on local government services is expected to be minimal.

Impact on Character of the Affected Communities

The impact the Project on the character of the affected communities is expected to be minimal for several reasons, including: (a) the small increase in labor demands associated with the Project is unlikely to affect wages in either the directly affected industries of the labor force more broadly; (b) because the resident labor force in Delaware County and the immediate surrounding areas would easily absorb the small increase in labor demands generated by the Project, the Project is not anticipated to affect demand for housing or housing costs in the affected communities; and (c) due to its small impact on labor demands, the Project is not expected to affect other aspects of community character such as the predominantly low-density, rural character of the affected communities, existing patterns of land use and development, or the overall mix of local economic activity.

Impacts on Wholesale Energy Prices, Pollutant Emissions and System Reliability

In addition to the traditional socioeconomic impact assessment, three additional analyses were performed to assess the effects of the Project on reducing wholesale energy prices, reducing pollutant emissions and supporting reliability of the electric system.

Wholesale Energy Market Impacts

Electricity generated from the City's proposed Cannonsville, Pepacton and Neversink hydroelectric developments would lower wholesale market energy prices by displacing higher cost marginal generation in some hours. The estimated annual dollar benefit of such price reductions for the western region of the control area administered by the NYISO is approximately \$13.6 million annually.

The generation associated with the Project accounts for approximately 74 percent of such estimated savings, or approximately \$10.1 million annually.

Environmental Externality Benefits

Total generation from the City's proposed Cannonsville, Pepacton and Neversink hydroelectric developments is estimated to be approximately 57,000 megawatt-hours ("MWh") per year of emissions-free electricity, which would provide environmental benefits by displacing generation of electricity from fossil fuels. Electricity generated from the City's three proposed developments will result in reductions in emissions by fossil-fueled generation sources by as much as 64,000 tons of carbon dioxide ("CO₂"), 170 tons of nitrogen oxides ("NO_x"), and 370 tons of sulfur dioxide ("SO₂") annually, depending on the type of fossil-fuel generation displaced by the electricity produced from the City's proposed developments. The estimated CO₂ emissions reductions associated equivalent to removing between approximately 5,600 and 11,100 vehicles from the road, depending on depending on the type of fossil-fuel generation displaced.

The generation associated with the Project accounts for approximately 74 percent of such emissions reductions, or as much as approximately 47,400 tons of CO₂, 127 tons of NO_x, and 274 tons of SO₂. The estimated CO₂ emissions reductions associated with the Project are equivalent to the removal of between

approximately 4,100 and 8,200 vehicles from the road, depending on depending on the type of fossil-fuel generation displaced.

Electric System Reliability Benefits

Interconnection of the Project may provide additional reliability and power quality benefits at both the local and the Statewide level, including the provision of certain ancillary services. These ancillary services are typically used by the transmission system operator to balance supply and demand and maintain the reliability and security of the system within acceptable standards. The ancillary services that the Project may be suited to provide include regulation service and frequency control, and reactive power supply and voltage support. Additionally, the Project may have the effect of delaying the need for NYSEG to invest in upstream capacity needed to meet future load growth along the feeders to which the Project is connected.

(vii) Floodplain Presence and Flood Events

The Cannonsville Reservoir is managed such that reservoir elevations are lowered in the late summer and fall to maintain water supply needs and downstream conservation flow releases and directed releases. The lowering of the water level continues through the fall providing storage capacity for the spring freshet. The seasonal operation allows the reservoir to operate in a store mode during flood events; the FFMP-OST dictates the maximum permitted release through the low-level release works during flood events. Discharge mitigation releases up to 1,500 cfs are passed through the low-level outlet works depending on the reservoir elevation and the river stage at the USGS gage at Hale Eddy, located approximately eight miles downstream of the Cannonsville Dam on the West Branch of the Delaware River. The National Weather Service flood stage at Hale Eddy is 11.0 feet. Based on the FFMP, Zone L1 discharge mitigation releases will not be made from Cannonsville Dam when the river stage at Hale Eddy is above 9.0 feet, or is forecasted to be above 9.0 feet within 48 hours of planned discharge mitigation releases.

USGS Gage No. 0142500, located directly below Cannonsville Dam records the total discharge (spill over the dam and low-level outlet releases) from the dam. The drainage area of the gage and dam is the same--456 mi². The period of record for the gage extends from 1952 to current; however, construction of the dam began in 1956 and was completed in 1965. A Log-Pearson Type III flood frequency analysis was conducted using the instantaneous annual peak flows for the full period of record to estimate the 10-, 50-, 100- and 500-year floods; the results are shown in [Table E-4](#).

Table E-4: Flood Frequency Flows at USGS Gage located just below Cannonsville Dam

Return Interval	Estimated Flood Flow
10-year	14,610 cfs
50-year	24,250 cfs
100-year	28,700 cfs
500-year	39,730 cfs

[Figure E-4](#) shows the instantaneous annual peak flows recorded at the gage for the period of record. The highest recorded flow on record, 33,100 cfs, occurred on June 28, 2006. This flow was equivalent to approximately the 200-year flood based on the Log-Pearson Type III flood frequency analysis.

(viii) Geology and Soils

Geology

The West Branch of the Delaware River watershed is located in the eastern portion of the Allegheny Plateau, which is a part of the Appalachian Plateau physiographic province 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, and all of it was 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 whole region a rugged, hilly aspect. The Appalachian Plateau is highest in the eastern part of the state, where it forms the Catskill Mountains.

This region is characterized by nutrient-poor soils and successional communities comprised of northern hardwood and spruce-fir forests. The region consists of a deeply dissected plateau sloping gently to the southwest ([Greene Co. SWCD, 2007](#)). The streams and rivers have cut this originally level plateau province into upland hills. The plateau surface is evident in the pattern of hilltops all tending to reach similar elevations in the watershed ([Delaware Co. SWCD, 2004](#)). The erosional characteristics of the sedimentary rock formations found in this region are responsible for the typical valley-ridge topography of the Catskill Mountains ([Greene Co. SWCD, 2007](#)).

Generally, 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. The sediments that form the Devonian Period bedrock are interpreted to be the deposits of a vast deltaic river system that are often referred to as Catskill Delta deposits. The Catskill Delta deposits were buried beneath younger sediments and then uplifted as a plateau. Prior to and during the uplifting, intersecting sets of vertical fractures formed. As the overlying rock was eroded away over time, streams incised multiple channels in the slowly rising plateau ([Greene Co. SWCD, 2007](#)).

The rivers deposited layers of sediment that eventually became the current sandstone, siltstone, and shale beds of the plateau valleys. Rock groups and some of their component formations include:

- The Genesee Group, including the Unadilla and Oneonta formations;
- The Sonyea Group, including the Lower Walton formation;
- The Moscow Group (hosts the famous Gilboa forest fossils); and
- The West Falls group, including the Slide Mountain and Upper Walton formations.

None of these formations include beds of limestone, but rather include silica. As such, they are considered acidic rocks and spring water rising through these layers tends to be low in calcium and magnesium carbonates ([Delaware Co. SWCD, 2004](#)).

Surficial Geology and Soils

Long periods of glaciation deposited varying layers of glacial till in the valleys and uplands of the project area. The most recent Laurentide ice sheet reached a maximum thickness over the Catskill region approximately 22,000 years ago and fully retreated only about 12,000 years ago. The retreating glaciers left ice deposits in the valleys, sometimes long after the uplands were relatively ice-free. Meltwater flowed around and beneath the remaining ice, removing much of the silt and clay from the sand and gravel. As a result, gravelly terraces and kame (ice-contact sand and gravel) deposits tend to occur along valley margins where they were left when the ice sheets began their retreat ([Greene Co. SWCD, 2007](#)).

Lakes impounded by ice and recessional moraines allowed silt and clay to settle and form thick deposits. Other areas were scoured by the glacial runoff. Soil series descriptions are presented below and were adapted from the USDA-NRCS Soil Survey Division Official Soil Survey Descriptions website (accessed 10 December 2008).

Soil groups found in the West Branch of the Delaware River watershed are listed below in order of highest to lowest percentage. Dominant soil groups or types within the one-mile buffer surrounding the Project area are shown in [Figure E-5](#) and listed below:

- Halcott, Mongaup, & Vly soils (23%)
- Lackawanna & Bath soils (22%)
- Oquaga, Lordstown, & Arnot soils (15%)

A close-up of specific soil types in the vicinity of Cannonsville Dam is shown in [Figure E-6](#).

Arnot: The Arnot series consists of shallow, somewhat excessively to moderately well drained soils formed in loamy till. Bedrock is at depths of to 10 to 20 inches. Slope ranges from 0 to 70 percent. Saturated hydraulic conductivity in the mineral soil is moderately high or high. Arnot soils developed in a thin mantle of till of Wisconsin age. The till is derived mainly from acid sandstone, siltstone, and shale. In some places the regolith is a mixture of till and residuum. Elevation ranges from 1000 to 1800 feet above msl. The Arnot series is considered to be the lithic analogue of the Lordstown and Oquaga series.

Bath: The Bath series consists of very deep, well drained soils formed in till. They are nearly level to steep soils on uplands. Slope ranges from 0 to 60 percent.

Halcott: The Halcott series consists of shallow, somewhat excessively drained soils formed in till. They are nearly level to very steep soils on glaciated bedrock controlled uplands. Permeability is moderate or moderately rapid throughout. Thickness of the solum ranges from 6 to 20 inches. Depth to bedrock ranges from 10 to 20 inches. The Halcott series is the frigid analogue of the Arnot series.

Lackawanna: The Lackawanna series consists of very deep, well drained soils on uplands. They formed in till derived from reddish colored sandstone, siltstone, and shale. A dense fragipan is present starting at a depth of 17 to 36 inches below the soil surface. Slope ranges from 0 to 55 percent. Depth to bedrock is greater than 60 inches. Lackawanna soils are on nearly level to steep glaciated uplands. The elevation of these soils ranges from 750 to 1800 feet above msl.

Lordstown: The Lordstown series consists of moderately deep, well drained soils formed 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. Thickness of solum and depth to bedrock ranges from 20 to 40 inches. Lordstown soils are nearly level to very steep soils with slopes ranging from 0 to 90 percent. These soils formed in till and cryoturbated material derived from siltstone and sandstone on bedrock controlled landforms of glaciated dissected plateaus. Elevation ranges from 800 to 1800 feet above msl. Lordstown is the mesic equivalent of Mongaup.

Mongaup: The Mongaup series consists of moderately deep, well drained soils formed in till derived from sandstone, siltstone and shale. They are nearly level through very steep soils on hillsides and hilltops in glaciated, bedrock controlled uplands. Depth to hard bedrock is 20 to 40 inches. Slope ranges from 0 to 70 percent. Thickness of solum and depth to bedrock ranges from 20 to 40 inches. These soils formed in acid till on bedrock controlled uplands. Elevation ranges from 1000 to 2400 feet above msl.

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 inches. Oquaga soils are in uplands and formed in a thin mantle of reddish till with lithology dominated by the local and underlying reddish sandstone, siltstone, and shale.

Vly: The Vly series consists of moderately deep, well drained or somewhat excessively drained soils formed in till. These soils are on glaciated bedrock controlled uplands. Slope ranges from 0 to 70 percent. Thickness of the solum and depth to bedrock ranges from 20 to 40 inches. Vly soils are on bedrock controlled till uplands. These soils formed in reddish till that is derived from reddish sandstone, siltstone and shale. Elevation ranges from 1750 to 4025 ft. above msl.

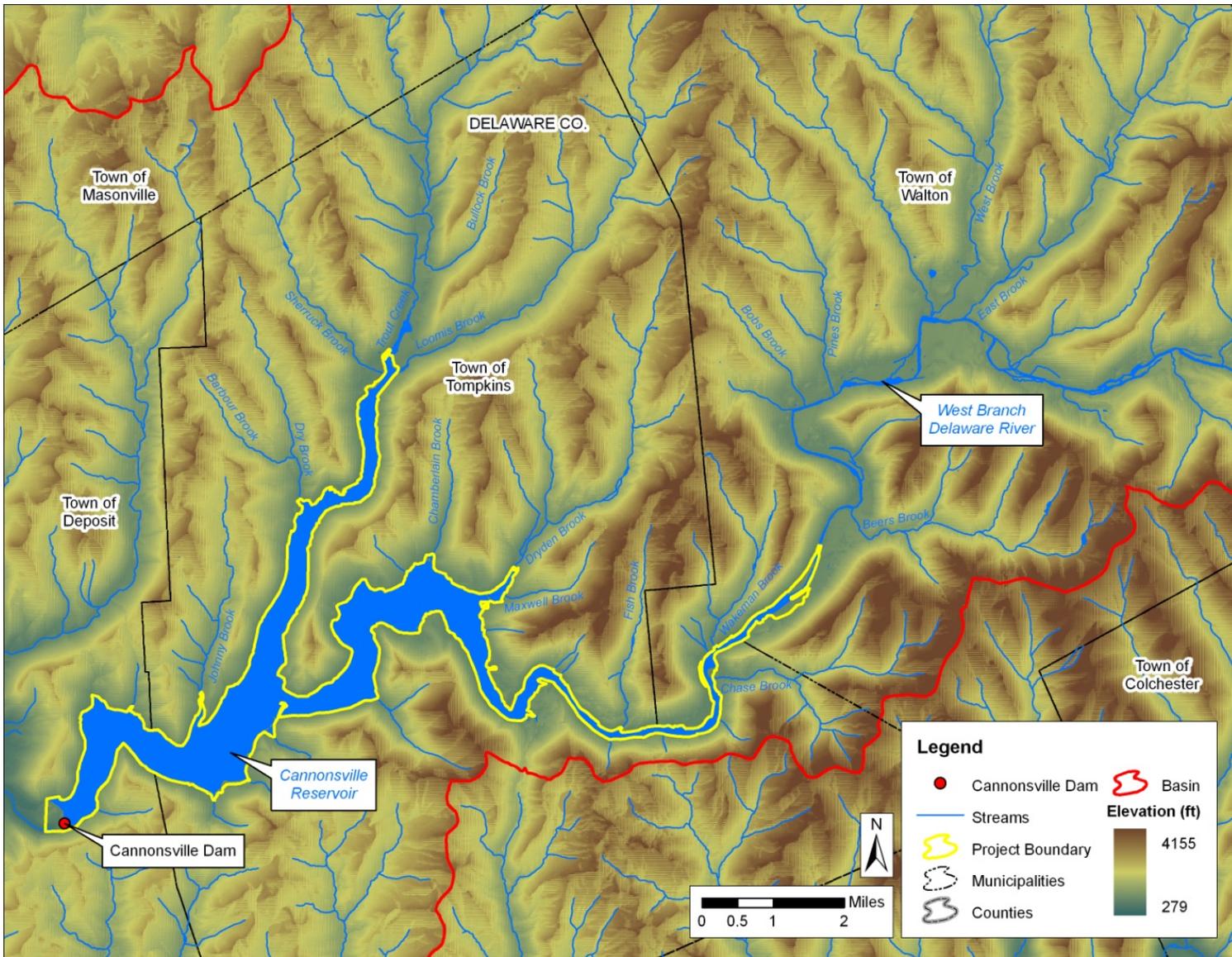


Figure E-1: Cannonsville Reservoir Topographic Map

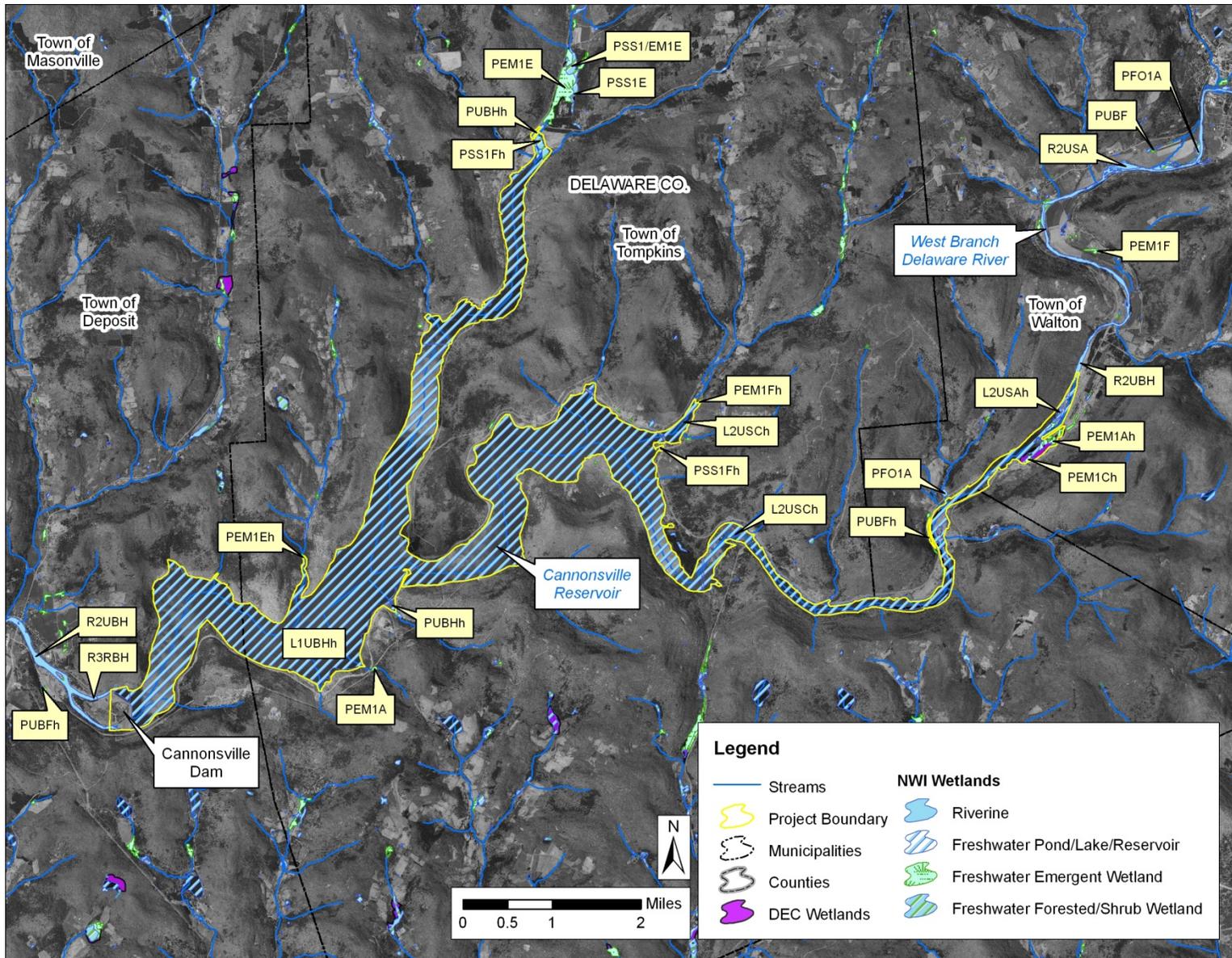


Figure E-2: NWI & NYSDEC Wetlands near the Cannonsville Reservoir

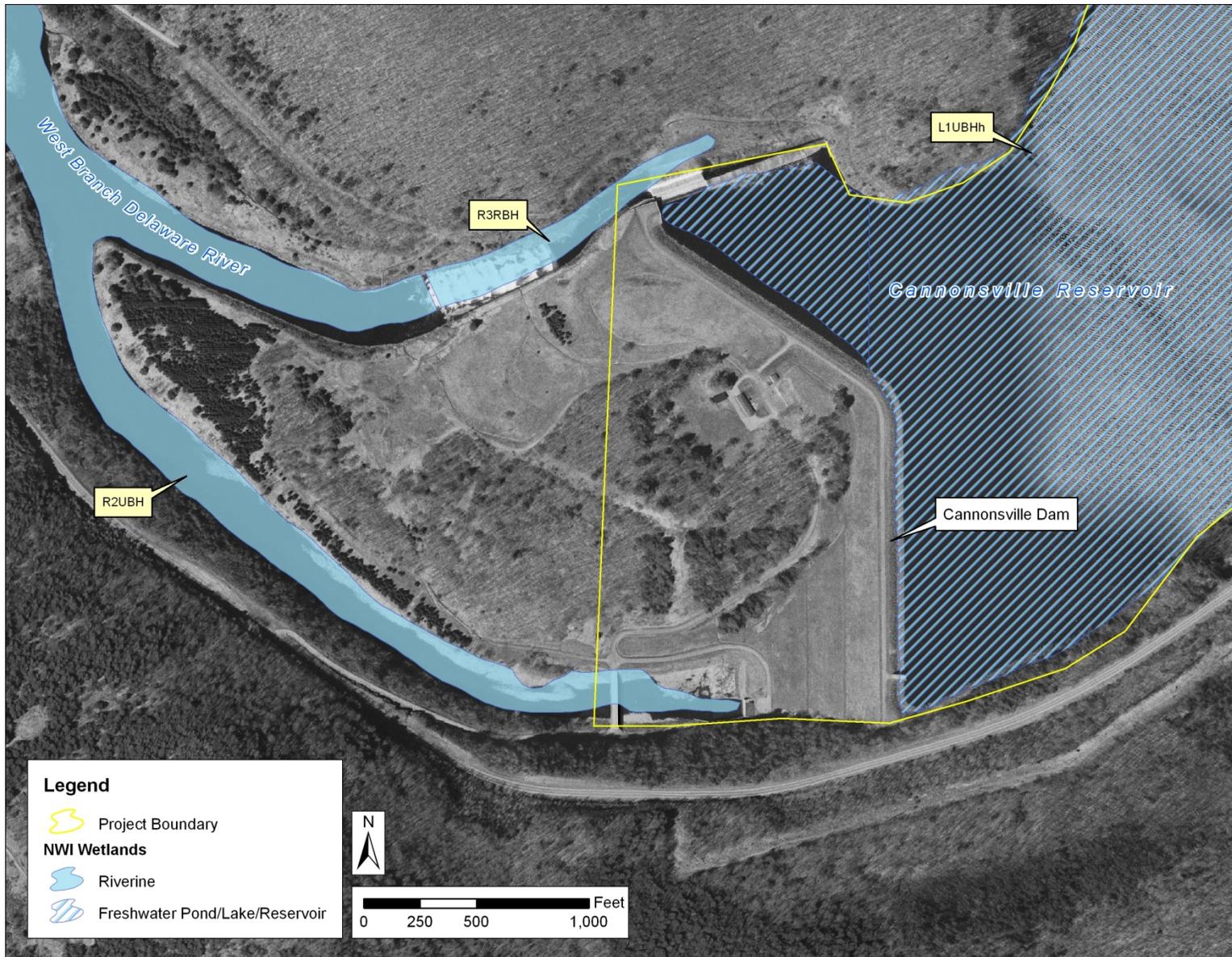


Figure E-3: NWI Wetlands near Cannonsville Dam



USGS 01425000 WEST BR DELAWARE RIVER AT STILESVILLE NY

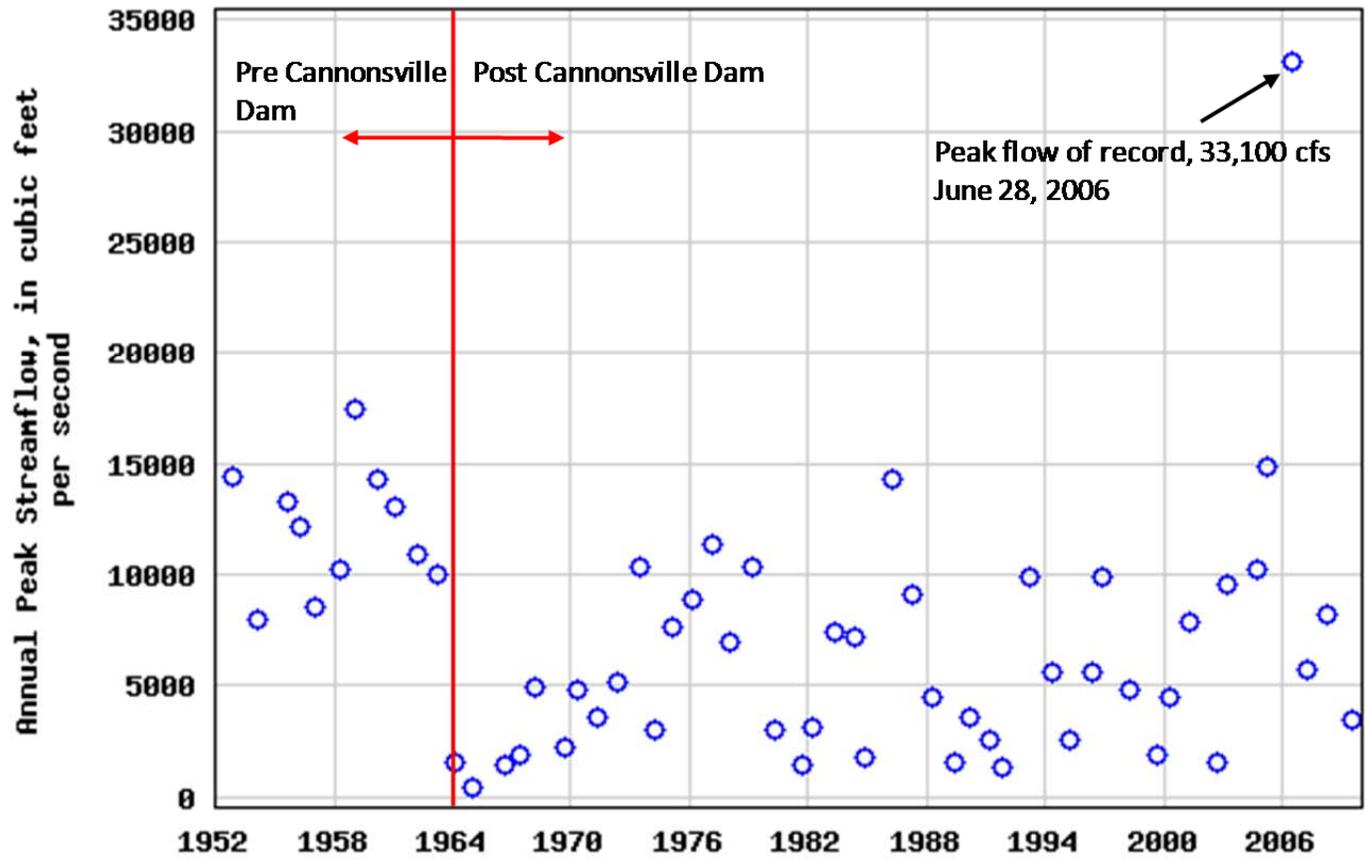


Figure E-4: Instantaneous Peak Flow at West Branch of the Delaware River at Stilesville, NY

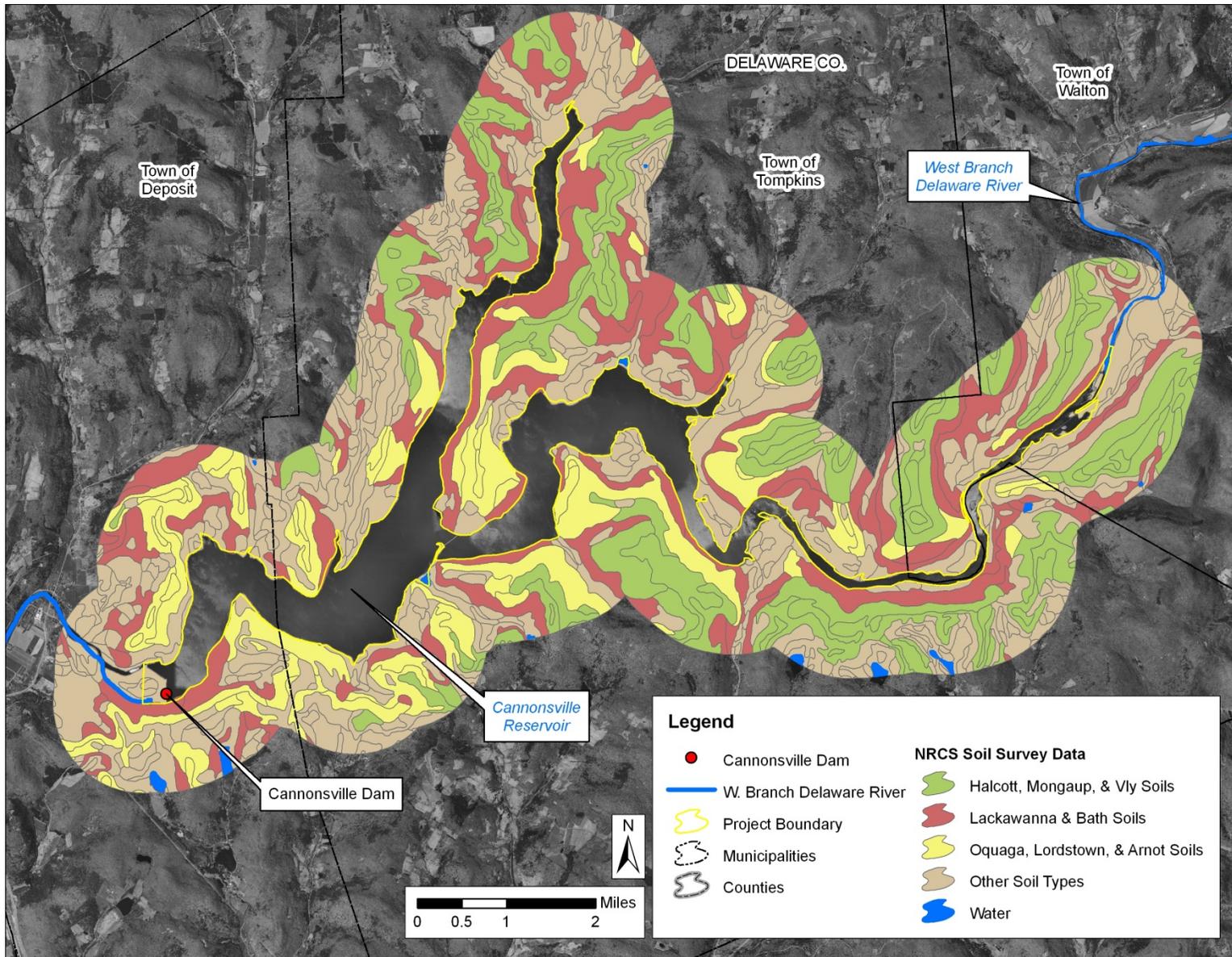


Figure E-5: Dominant Soil Types within 1 Mile of the Cannonsville Reservoir

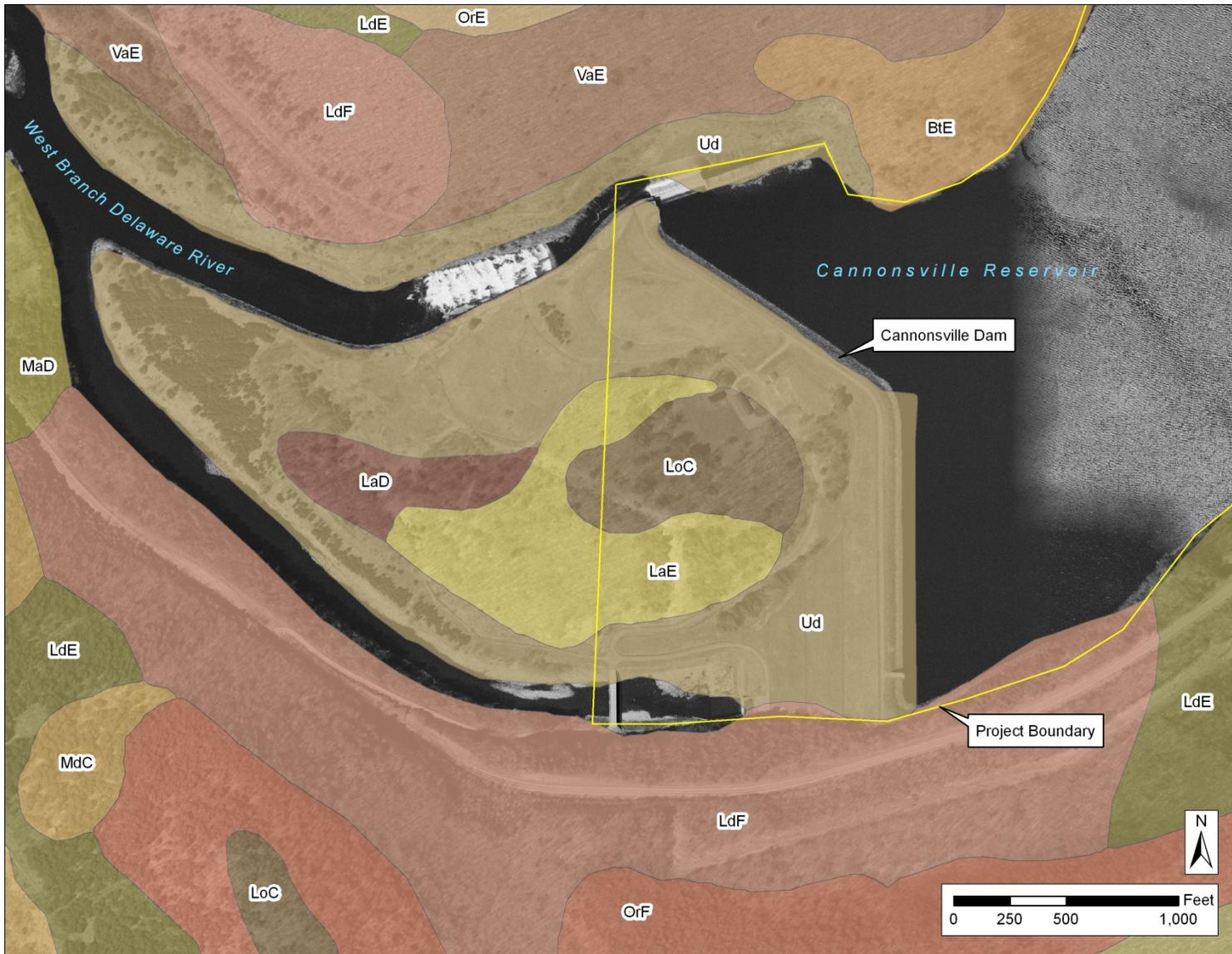


Figure E-6: Soil Types near Cannonsville Dam

See legend of soil types on following page.

Legend for Figure E-6

Soils near Cannonsville Dam	
	BtE - Bath channery silt loam, 25 to 35 percent slopes
	LaD - Lackawanna flaggy silt loam, 15 to 25 percent slopes
	LaE - Lackawanna flaggy silt loam, 25 to 40 percent slopes
	LdE - Lackawanna and Bath soils, 15 to 35 percent slopes, very stony
	LdF - Lackawanna and Bath soils, 35 to 55 percent slopes, very stony
	LoC - Lordstown channery silt loam, 8 to 15 percent slopes
	LoE - Lordstown channery silt loam, 25 to 40 percent slopes
	MaC - Maplecrest gravelly silt loam, 8 to 15 percent slopes
	MaD - Maplecrest gravelly silt loam, 15 to 25 percent slopes
	MdC - Mardin channery silt loam, 8 to 15 percent slopes
	OrE - Oquaga, Lordstown, and Arnot soils, 15 to 35 percent slopes, very rocky
	OrF - Oquaga, Lordstown, and Arnot soils, 35 to 70 percent slopes, very rocky
	Ud - Udorthents, graded
	VaE - Valois very fine sandy loam, 25 to 60 percent slopes

(2) Water Use and Quality

(i) Description of Existing and Proposed Uses of Project Waters

All correspondence on the Project, including all environmental resource areas, is included in Volume 3, Appendix E-1.

Cannonsville Dam and reservoir is one of several water supply dams that are owned by the City and operated by DEP to provide potable water for New York City and four nearby counties. The entire water supply system currently provides approximately 1.1 BG of unfiltered high quality drinking water daily to approximately nine million New York State residents (approximately 50% of the State's total population), as well as the millions of tourists and commuters who visit New York City annually.

The DEP has maintained long-term records on water supply withdrawals from Cannonsville Reservoir. [Figure E-7](#) is a bar chart showing the total annual water supply withdrawal for consumptive purposes from 1982 to 2007. The annual withdrawal volume varies, ranging from a low of 14,687 million gallons ("MG") in 2006 to a high of 105,536 MG in 1992. The average annual withdrawal volume over the period 1982-2007 was 55,492 MG. The variation in annual withdrawal volumes is a function of many issues including storage capacity, precipitation, snowfall, water quality in the City's water supply reservoirs, and demand.

[Figure E-8](#) shows the average monthly withdrawal volume for consumptive purposes from 1982 to 2007. The minimum and maximum withdrawal volume ranged from 2,623 MG in November to 6,342 MG in March.

There are three registered National Pollutant Discharge Elimination System ("NPDES") facilities in the immediate vicinity of the Cannonsville Reservoir as shown in [Figure E-9](#). The local Board of Cooperative Education Services ("BOCES") has a wastewater treatment plant ("WWTP") on Trout Creek, which flows into the middle portion of the reservoir. Two facilities are located on the West Branch of the Delaware River just upstream of the Cannonsville Reservoir. The Village of Walton maintains a WWTP that discharges into the river. Kraft, Inc. discharges non-contact cooling water only from a facility just upstream of the Walton WWTP. There are several other facilities considerably farther up in the West Branch of the Delaware River Basin ([NYCDEP, 2000](#)).

DEP is proposing to use dam releases, specifically discharges to the West Branch of the Delaware River, to generate hydroelectric power at the Project. As described in Exhibits A and B, DEP is proposing to generate with discharges up to 1,500 cfs.

(ii) Description of Existing Water Quality in Project Waters

Water Quality Standards

New York State water classifications and water quality standards apply to the Cannonsville Reservoir and the West Branch of the Delaware River. [Table E-5](#) describes NYSDEC fresh surface water classifications. Only Class AA and A waters are designated as suitable for drinking; however, other uses include primary and secondary contact, fishing, and recreational activities. This designation may also be given to waters that, upon treatment for naturally occurring impurities, meet New York State Department of Health ("NYSDOH") drinking water standards. [Table E-6](#) describes the water quality criteria for the various water quality classifications. Additional designations of 'T' or 'TS' may be added to the classifications if the watercourse contains sufficient dissolved oxygen ("DO") to support trout (T) and/or trout spawning (TS). Watercourses that are designated as C(T), C(TS), B or A are protected streams, subject to additional regulations and require a state permit to disturb the bed or banks.

The water quality standards program is a New York State program with EPA oversight. It predates the federal Clean Water Act and protects both surface and groundwater. Standards and guidance values were developed to protect New York State's waters. The guidance values were derived and continue to be revised according to scientific procedures identified in Title 6 of the NYCRR.

[Table E-7](#) includes the water quality classifications of the West Branch of the Delaware River.³

³ With respect to additional classifications shown in the table, which do not relate to the Project, "S" pertains to saline surface waters; "I" is an additional classification of saline surface waters; "G" pertains to fresh groundwater; and "GS" pertains to saline groundwater.

Table E-5: New York Fresh Surface Water Quality Classifications

Class	Description and Designated Uses
AA	The best usages of Class AA waters are: a source of water supply for drinking, culinary or food processing purposes; primary and secondary contact recreation; and fishing. The waters shall be suitable for fish, shellfish, and wildlife propagation and survival. This classification may be given to those waters that, if subjected to approved disinfection treatment, with additional treatment if necessary to remove naturally present impurities, meet or will meet New York State Department of Health drinking water standards and are or will be considered safe and satisfactory for drinking water purposes.
A	The best usages of Class A waters are: a source of water supply for drinking, culinary or food processing purposes; primary and secondary contact recreation; and fishing. The waters shall be suitable for fish, shellfish, and wildlife propagation and survival. This classification may be given to those waters that, if subjected to approved treatment equal to coagulation, sedimentation, filtration and disinfection, with additional treatment if necessary to reduce naturally present impurities, meet or will meet New York State Department of Health drinking water standards and are or will be considered safe and satisfactory for drinking water purposes.
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.
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 may limit the use for these purposes.
D	The best usage of Class D waters is fishing. Due to such natural conditions as intermittency of flow, water conditions not conducive to propagation of game fishery, or stream bed conditions, the waters will not support fish propagation. These waters shall be suitable for fish, shellfish, and wildlife survival. The water quality shall be suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes.

Table E-6: Summary of New York State Surface Water Quality Criteria

Parameter	Classes	Standard
Taste-, color-, and odor-producing, toxic and other deleterious substances	AA, A, B, C, D, SA, SB, SC, I, SD, A-Special, GA, GSA, GSB	None in amounts that will adversely affect the taste, color or odor thereof, or impair the waters for their best usages.
Turbidity	AA, A, B, C, D, SA, SB, SC, I, SD, A-Special	No increase that will cause a substantial visible contrast to natural conditions.
Suspended, colloidal and settleable solids	AA, A, B, C, D, SA, SB, SC, I, SD, A-Special	None from sewage, industrial wastes or other wastes that will cause deposition or impair the waters for their best usages.
Oil and floating substances	AA, A, B, C, D, SA, SB, SC, I, SD, A-Special	No residue attributable to sewage, industrial wastes or other wastes, nor visible oil film nor globules of grease.
Garbage, cinders, ashes, oils, sludge and other refuse	SA, SB, SC, I, SD	None in any amounts.
Phosphorus and nitrogen	AA, A, B, C, D, SA, SB, SC, I, SD, A-Special	None in amounts that will result in growths of algae, weeds and slimes that will impair the waters for their best usages.
Radioactivity	A-Special	Should be kept at the lowest practicable levels, and in any event should be controlled to the extent necessary to prevent harmful effects on health.
Thermal discharges	GA, GSA, GSB	None in amounts that will impair the waters for their best usages.
Thermal discharges	AA, A, B, C, D, SA, SB, SC, I, SD, A-Special	See 6 NYCRR Part 704, Criteria Governing Thermal Discharges.
Flow	AA, A, B, C, D, A-Special	No alteration that will impair the waters for their best usages.
pH	AA, A, B, C, AA-Special, A-Special, GA	Shall not be less than 6.5 nor more than 8.5.
	D	Shall not be less than 6.0 nor more than 9.5.
	SA, SB, SC, I, SD	The normal range shall not be extended by more than one-tenth (0.1) of a pH unit.
Dissolved oxygen (DO)	A-Special	In rivers and upper waters of lakes, not less than 6.0 mg/L at any time. In hypolimnetic waters, it should not be less than necessary for the support of fish life, particularly cold water species.
	AA, A, B, C, AA-Special	For trout spawning waters (TS), the dissolved oxygen ("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 non-trout 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	A-Special	Shall not exceed 200 mg/L.
	AA, A, B, C, AA-Special, GA	Shall be kept as low as practicable to maintain the best usage of waters but in no case shall it exceed 500 mg/L.
Odor	GA	Shall not exceed a threshold number of 3.

Parameter	Classes	Standard
Color	GA	Shall not exceed 15 color units (platinum-cobalt method).
Turbidity	GA	Shall not exceed 5 nephelometric units.
Total Coliform (per 100mL)	AA	The monthly median value and more than 20 percent of the samples, from a minimum of five examinations, shall not exceed 50 and 240, respectively.
	A, B, C, D, SB, SC	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.
	A-Special	The geometric mean, of not less than five samples, taken over not more than a 30-day period shall not exceed 1,000.
Fecal Coliform (per 100 mL)	A, B, C, D, SB, SC	The monthly geometric mean, from a minimum of five examinations, shall not exceed 200

Source: NYSDEC, 2008b

Table E-7: Surface Water Quality Classifications of the West Branch Delaware River and Tributaries to Cannonsville Reservoir

Water Body	Classification	Standards	Notes
West Br. Delaware River	B	B(T)	As the river enters the reservoir
Cannonsville Reservoir	A	A(T)	Main body of reservoir
Cannonsville Reservoir	AA	AA(T)	Within 1 mile of intake
West Br. Delaware River	B	B(T)	NY-PA boundary to Cannonsville Dam
Chase Brook	A	A(TS)	Lower stream as it enters the reservoir
Fish Brook	A	A(T)	Lower stream as it enters the reservoir
Dryden Creek	A	A(TS)	Lower stream as it enters the reservoir
Chamberlain Brook	A	A(T)	Lower stream as it enters the reservoir
Loomis Creek	A	A(T)	Lower stream as it enters the reservoir
Trout Creek	A	A(TS)	Lower stream as it enters the reservoir
Sherruck Brook	A	A(TS)	Lower stream as it enters the reservoir
Dry Brook	A	A(TS)	Lower stream as it enters the reservoir
Johnny Brook	A	A(T)	Lower stream as it enters the reservoir

Source: NYSDEC, 2008b

Historic Water Quality Data

The water quality of the City’s water supply, its watershed streams, reservoirs, WWTP’s, and aqueducts, is routinely monitored by the City’s Watershed Water Quality Operations (“WWQO”) group. West of the Hudson River, WWQO has a staff of 62 people, stationed in two laboratories (Grahamsville and Kingston), who are directly responsible for monitoring and maintaining the high water quality in the water supply system.

The WWQO staff includes facility managers, field and laboratory directors, chemists, microbiologists, laboratory support and sample collection personnel, scientists, technical specialists, and administrative staff. The Grahamsville and Kingston laboratories are certified by the NYSDOH Environmental Laboratory Approval Program for over 70 environmental analyses in the non-potable water and potable water categories. These analyses include physical parameters (e.g., pH, turbidity, color, conductivity), chemical parameters (e.g., nitrates, phosphates, chloride, chlorine residual, alkalinity), microbiological parameters (e.g., total and fecal coliform bacteria, algae), trace metals (e.g., lead, copper, arsenic, mercury, nickel), and organic parameters (e.g., organic carbon). Pathogens (e.g., Giardia, Cryptosporidium, and viruses) are assessed at the Kingston laboratory.

Water quality monitoring of the water supply is conducted for a host of reasons including regulatory compliance, meeting Filtration Avoidance Determination requirements, modeling, and surveillance. The rationale, analytes, sites, and frequencies are outlined for these and other specific objectives in a comprehensive Watershed Water Quality Monitoring Plan. Standard water quality data collection includes temperature and DO; a summary of this data for 2006 and 2007 are described below.⁴

Cannonsville Reservoir – Dissolved Oxygen and Temperature Profiles

Limnological surveys of the Cannonsville Reservoir have historically been performed by the DEP twice monthly from April through November. The surveys include DO and temperature profiles at various locations in the reservoir.

Shown in [Figure E-10](#) and listed in [Table E-8](#) are the DO and temperature sampling locations in the Cannonsville Reservoir.

Table E-8: Sampling Locations for Dissolved Oxygen and Temperature Profiles in the Cannonsville Reservoir

Sample ID No.	Sample Location Description
1WDC	Cannonsville Reservoir, Site 1, mid-channel at Cannonsville Dam
2WDC	Cannonsville Reservoir, Site 2, mid-channel at the spot from which Johnny Brook can be sighted, as approached from the west.
3WDC	Cannonsville Reservoir, Site 3, up Trout Creek arm, mid-channel between two hills on west bank
4WDC	Cannonsville Reservoir, Site 4, mid-channel across from the water supply intake chamber
5WDC	Cannonsville Reservoir, Site 5, mid-channel at widest part of the bay at Chamberlain Brook
6WDC	Cannonsville Reservoir, Site 6, mid-channel at the influent of the West Branch of the Delaware River

Shown in [Figure E-11](#) and [Figure E-12](#) are temperature profiles for Sample Site 1WDC for 2006 and 2007, respectively. This sampling location was selected due to its close proximity to the intake leading to

⁴ 2006 and 2007 were originally selected because they were the two most recent years of complete data available at the time the City filed its Pre-Application Document relating to the Project. However, the data from these years is used in this Application because it is representative of the water quality trends relating to the Project.

the low-level release works. Shown in [Figure E-13](#) and [Figure E-14](#) are DO profiles for Sample Site 1WDC for 2006 and 2007, respectively.

As the temperature profiles show, a thermocline generally develops during May and June. As the summer progresses, the thermocline moves lower in the reservoir and there are greater thermal differences between surface water temperatures and bottom temperatures. Near the intake to the low-level release works, the water temperatures ranged from 6-10 degrees Celsius (“°C”), which is much colder than the surface water temperatures (which could be as high as 25°C in the summer). As described later, the water temperatures in the West Branch of the Delaware River, just below the dam, are typically less than 10°C when the flow is comprised only of the low-level release works discharge.

As the DO profiles show, in the spring the DO concentrations are relatively uniform throughout the water column. As summer begins and air temperatures warm, DO concentrations become stratified, with lower concentrations in the lower depths of the reservoir. As described below, the DO concentrations in the West Branch of the Delaware River, immediately below the dam, are well above New York State water quality standards.

Cannonsville Dam Release – West Branch of the Delaware River – DO and Temperature

Conservation flow releases and directed releases are maintained through the low-level release works and into the West Branch of the Delaware River. In addition, when the spillway crest is exceeded spill flows are passed to the West Branch of the Delaware River. The DEP obtains DO and temperature data below the dam near the USGS gage (Sample Site CNB—see [Figure E-8](#)), which represents conservation flow releases, directed releases and spillage flows. Sampling is conducted monthly (at a minimum) throughout the year and the samples are generally collected between 9:00 am and 11:00 am.

[Figure E-15](#) shows the 2006 and 2007 temperature data, while [Figure E-16](#) shows the 2006 and 2007 DO concentrations. Also shown on the temperature and DO figures are the total discharges on the dates that water quality data was collected as recorded at the USGS gage. The reason for displaying discharge is that although there are times when the water temperature may rise, this is attributable to spillage where warmer temperatures from the reservoir surface water are mixing with the cooler low-level outlet releases.

As [Figure E-15](#) shows, water temperatures at the USGS gage are cool throughout the year due to the deep intake leading to the low-level release works. The highest measured water temperature during the two years occurred on September 5, 2006 at 16.7 °C. However, releases were generally less than 10°C throughout the year.

As [Figure E-16](#) shows, DO concentrations are relatively high in the spring and gradually decline to a low point in the early fall before rebounding again. This phenomenon was observed in 2006 and 2007. Generally, DO levels were well above State standards; however, the lowest reading, which occurred on October 1, 2007, was 5.6 milligrams per liter (“mg/L”)- all other measurements were above 7 mg/L.

(iii) Minimum Flow Releases, Changes in Project Works or Operations, or Other Measures Recommended by the Agencies for Protecting or Improving Water Quality

Minimum Flow Releases: In 1977, NYSDEC issued regulations that required minimum releases from the City’s Delaware River basin reservoirs for conservation purposes. As noted in Exhibit B, the City operates the Cannonsville Reservoir to maintain conservation flows in the West Branch of the Delaware River in accordance with the operating protocol agreed to by the Decree Parties. The conservation flow requirements of the FFMP-OST – the applicable operating protocol in effect as of the date of this Application – ensures compliance with such NYSDEC release requirements

Changes in Project Works or Operation: The existing facilities at Cannonsville will be modified to include the following major features needed for the Project: (1) a powerhouse located adjacent to the existing low-level release works building; (2) new overhead and underground electric lines; and (3) a substation located adjacent to the existing maintenance building.

The DEP plans on maintaining conservation flow releases, directed releases, and discharge mitigation releases from the Cannonsville Reservoir in accordance with the requirements of the applicable operating protocol agreed to by the Decree Parties. The only difference in operations is that up to 1,500 cfs of these releases will be capable of being conveyed through turbines associated with the Project for the purpose of generating power.

Evaluation – Impact on Water Quality due to the Project: There are no long term impacts or changes to water quality resulting from the Project. Required flow releases will be maintained in accordance with the requirements of the applicable operating protocol agreed to by the Decree Parties. In addition, the hydropower intake will be the same as the current intake related to required discharges from the reservoir.

Short term unavoidable adverse impacts to water quality during construction will occur in the tailrace channel.⁵ There will be roughly three months where no water is conveyed to the tailrace channel when the pipe leading to low-level release works is bifurcated to accommodate the powerhouse. During this period, conservation flow and directed releases will be maintained in the spillway channel via a temporary siphon installed over the spillway crest. The temporary siphon will have the capacity to convey up to 200 cfs into the spillway channel. The City plans on having the temporary siphon operable when the reservoir temperature profile is isothermal. The purpose for having the temporary siphon operable during this period is to maintain cold water releases downstream.

Hydraulic modeling was conducted on (a) the tailrace channel, (b) the spillway channel, and (c) from the confluence of the tailrace and spillway channels to the USGS gage located further downstream. The hydraulic model was run assuming 200 cfs was maintained in the spillway channel only (no water discharge to the tailrace channel) via a temporary siphon to determine if it creates a backwater up the tailrace channel. The hydraulic modeling demonstrated that a backwater extends up the tailrace channel to the low-level release works outlet (see [Figure E-17](#)), when 200 cfs is maintained in the spillway channel. However, the water depth, and channel width in the tailrace channel is reduced and there is no velocity. The water depth, channel width, and distance from the confluence up the tailrace channel will be reduced further for temporary siphon releases less than 200 cfs. Water in the tailrace channel will be backwatered (pool-like) and will be subject to increased heating due to decreased water depth and channel width. In addition, the lack of flowing water through the tailrace channel may impact DO in this reach on a diurnal basis. DO concentrations in the tailrace channel may be higher during the daylight hours when plants emit oxygen; while DO concentrations during the night hours may be lower than “normal” when plants respire.

A. Study – Impact of Construction-Related Activities on Erosion

Preliminary erosion and control measures were developed for the Project to prevent water quality impacts as a result of construction activities. The full report, which also addresses the City’s proposed Pepacton and Neversink hydroelectric developments, is included in Volume 4, Appendix E-2.

⁵ The tailrace channel is defined as the reach from the low-level release works discharge point to the confluence with the spillway channel. The spillway channel is defined as the reach from the spillway to the confluence with the tailrace channel, or the West Branch of the Delaware River.

During construction, sediment and erosion control measures and stormwater management practices will be employed to minimize erosion and prevent sedimentation in surface waters. All erosion and sediment control measures will be designed and implemented in accordance with the *New York State Standards and Specifications for Erosion and Sediment Control* (NYSDEC, 2005). A NYSDEC State Pollution Discharge Elimination System (“SPDES”) General Permit for Stormwater Discharges will be required because the area of soil disturbance is more than one acre. As part of this permit, a stormwater pollution prevention plan (“SWPPP”) will be required.

Prior to any ground disturbing activities, all applicable soil erosion and sediment controls (silt fencing, temporary berms, turbidity curtains, portable dams, hay bales, sedimentation basins, etc.) will be installed and maintained. Upon the completion of construction, all disturbed areas will be restored. As appropriate, the areas will be repaved, covered with gravel, or covered with top soil, mulch, and seed.

Details on the erosion control measures are included in the full report. It is expected that once the Project advances to the final design stage, a more detailed sediment and erosion control plan will be prepared and submitted as part of the permitting process.

(iv) Existing or Proposed Measures for Protecting or Improving Water Quality

Water quality conditions in the Cannonsville Reservoir and West Branch of the Delaware River are excellent; water temperatures are cool year-round due to the low-level outlet releases and DO concentrations are above state standards. The DEP is not proposing any changes in operations or measures to improve water quality conditions. The DEP carefully monitors water quality in the reservoir and in the West Branch of the Delaware River due to its use for water supply purposes.

The resource agencies (USFWS and NYSDEC) did not request any additional measures to improve water quality.

(v) Continuing Impact on Water Quality of Continued Operation of the Project; Existing or Proposed Measures for Protecting or Improving Water Quality

There is no continuing impact on water quality due to continued Project operation because no changes to existing operations at Cannonsville Reservoir are proposed as a result of the Project.

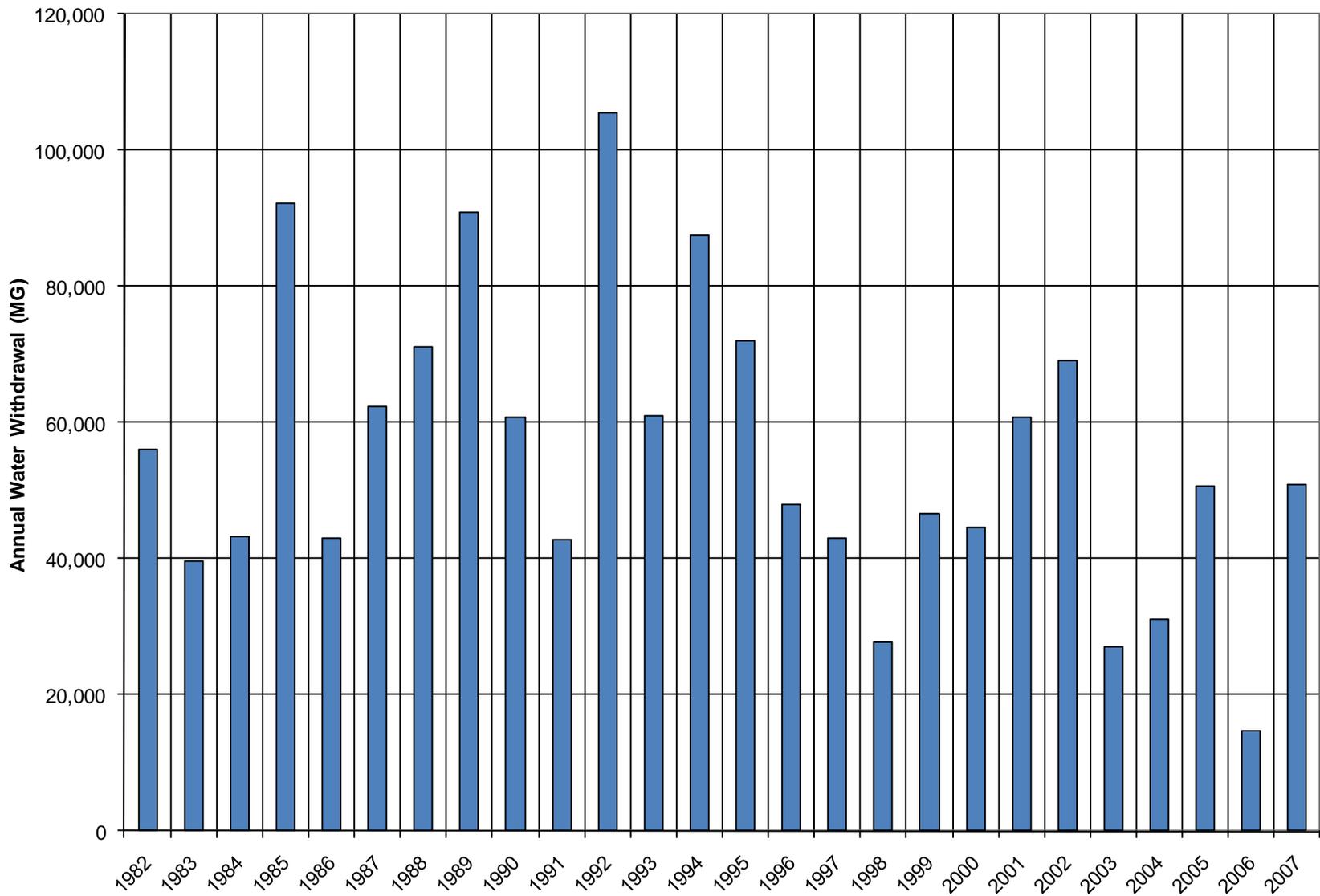


Figure E-7: Cannonsville Annual Water Supply Withdrawals from 1982-2007, Drainage area at dam = 454 mi²

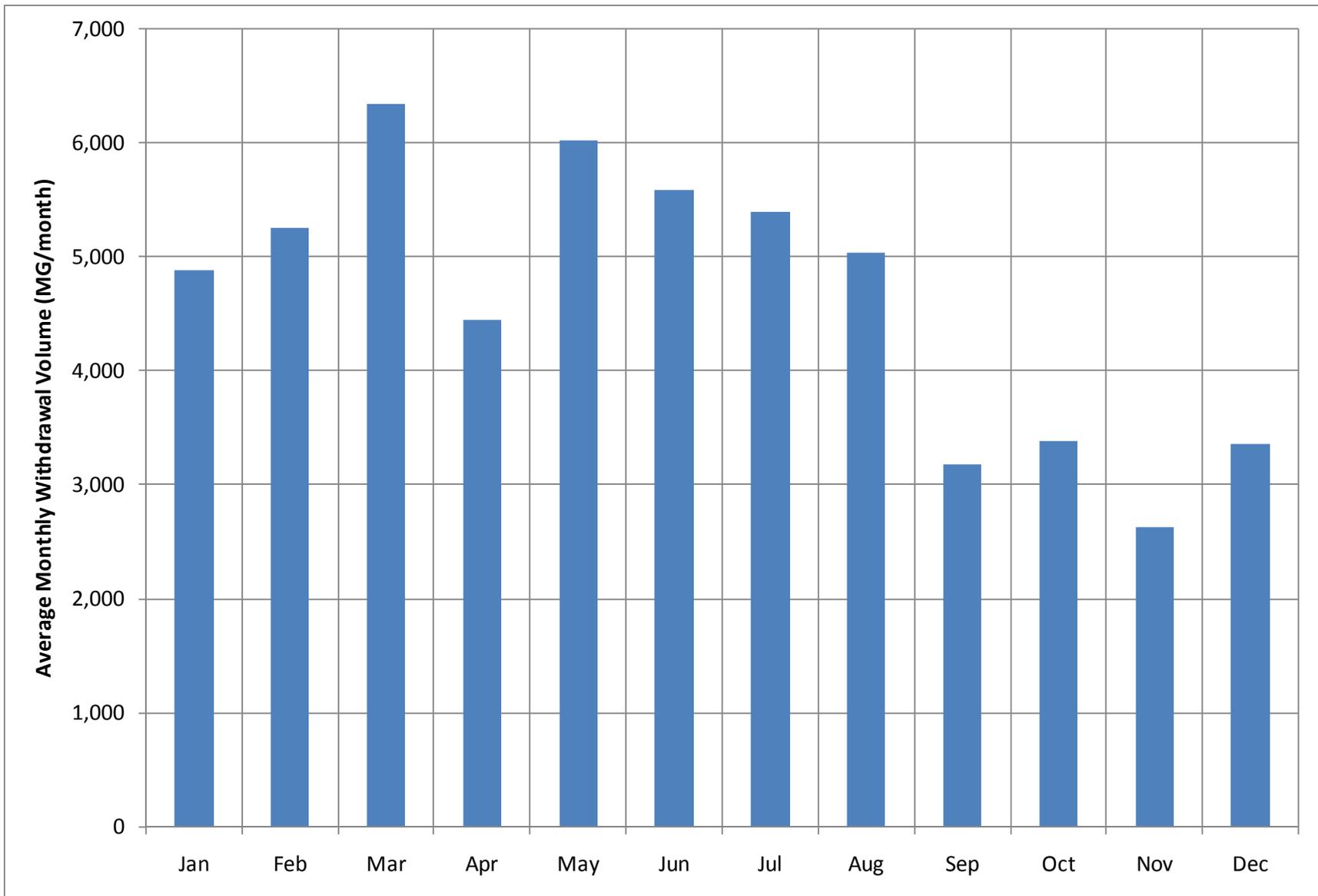


Figure E-8: Cannonsville Average Monthly Water Supply Withdrawals from 1982-2007, Drainage area at dam = 454 mi²

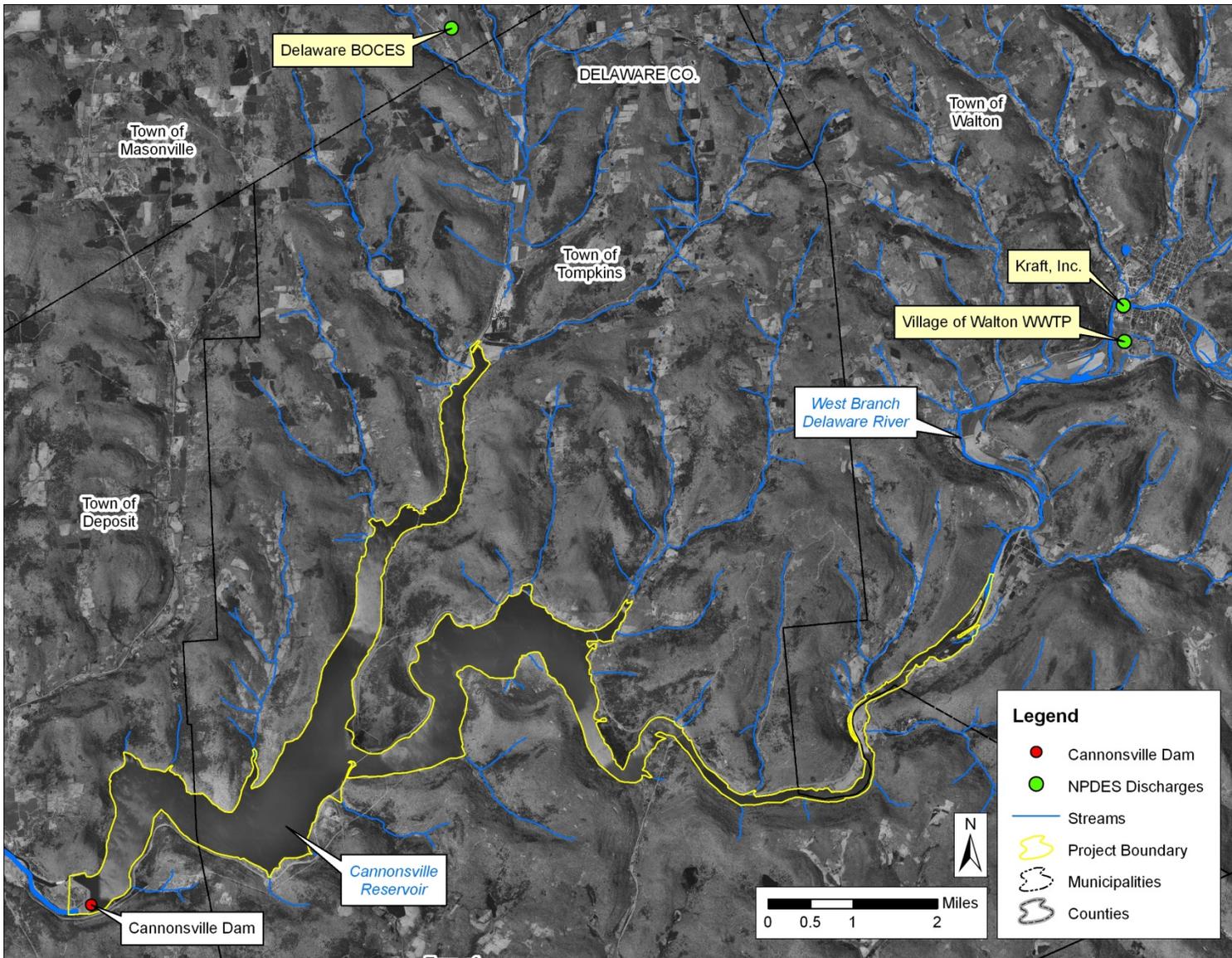


Figure E-9: NPDES Facilities near the Cannonsville Reservoir

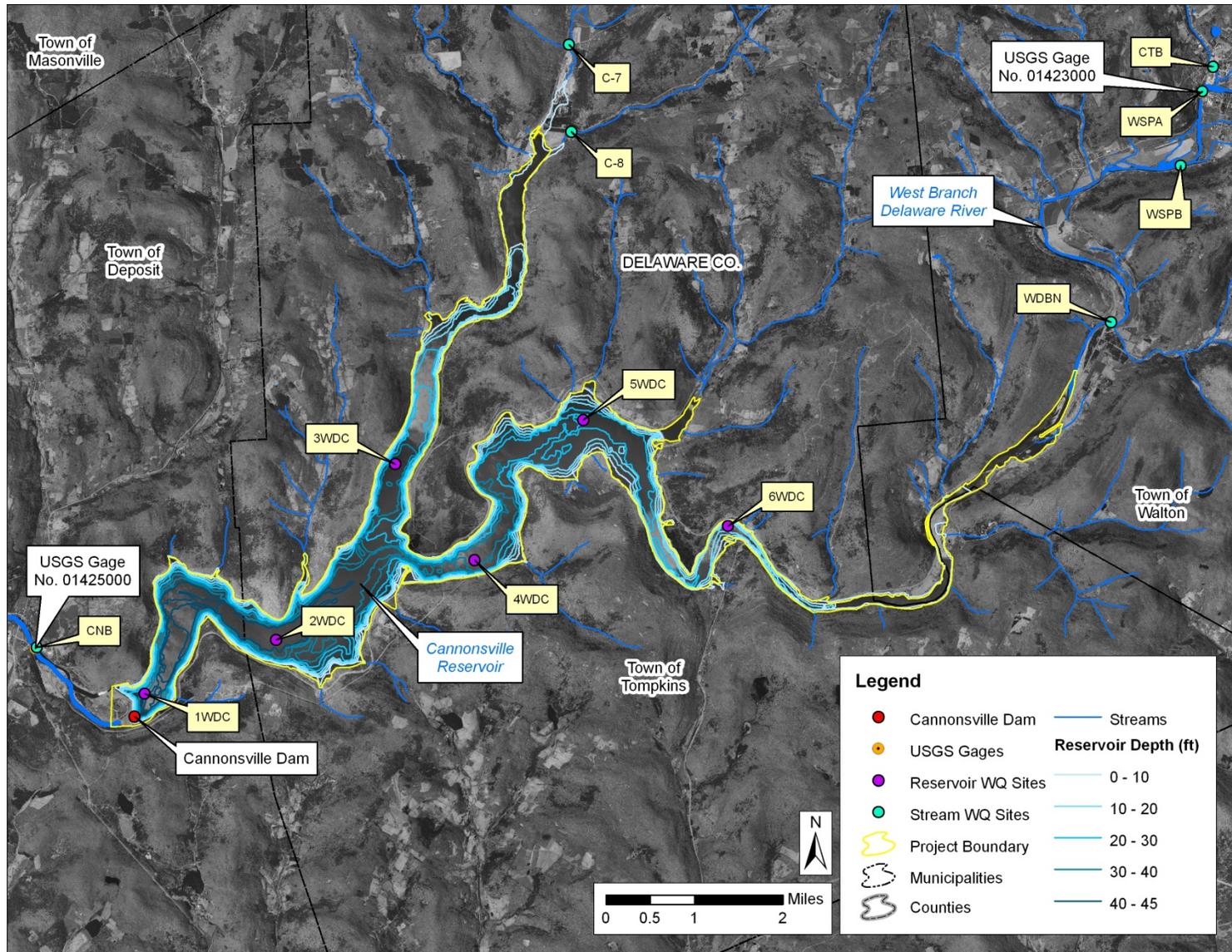


Figure E-10: Water Quality Sampling Locations near the Cannonsville Reservoir

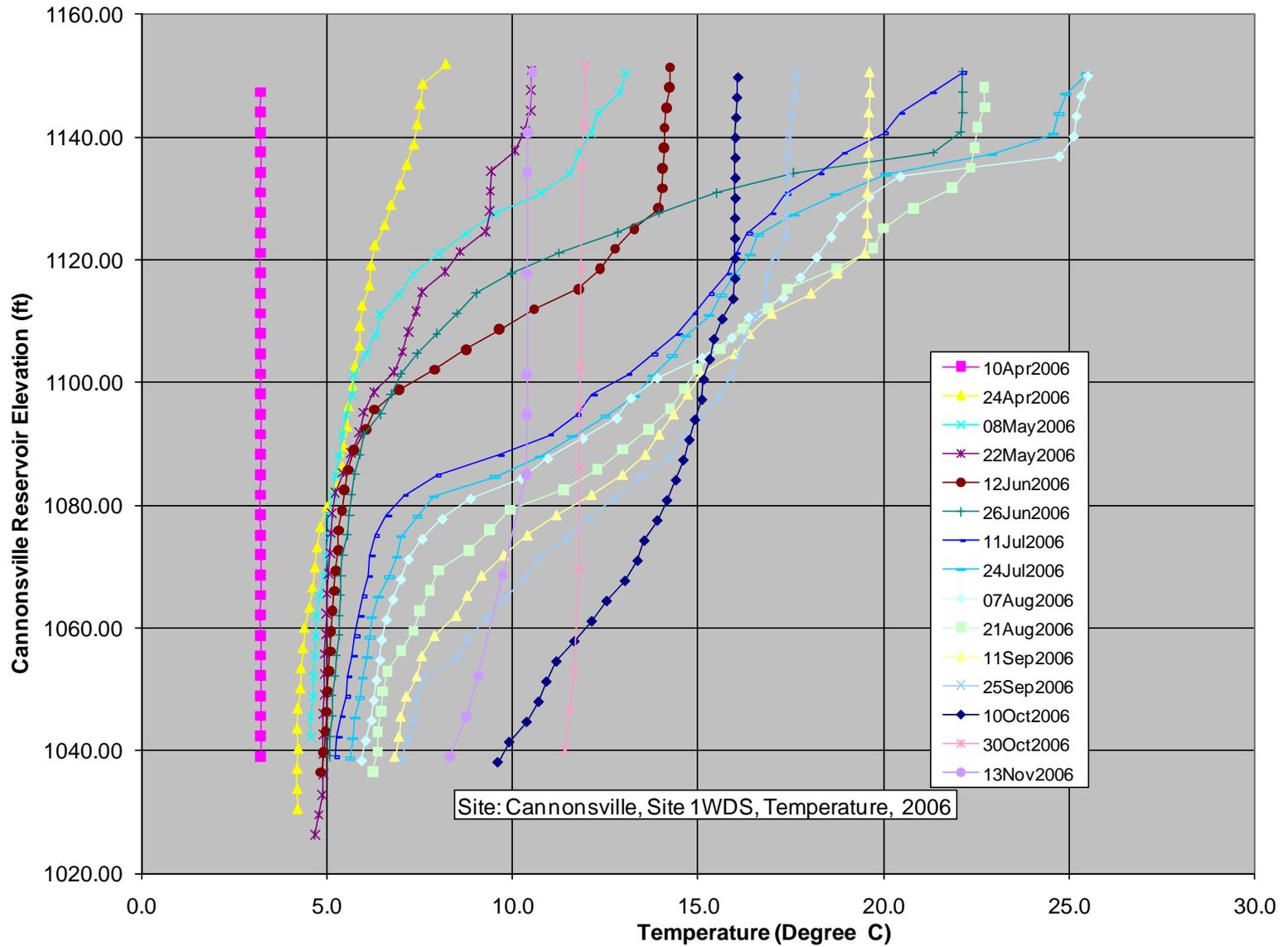


Figure E-11: Cannonsville Reservoir, Sample Site 1WDC – 2006 Temperature Profiles (mid-channel at Cannonsville Dam)

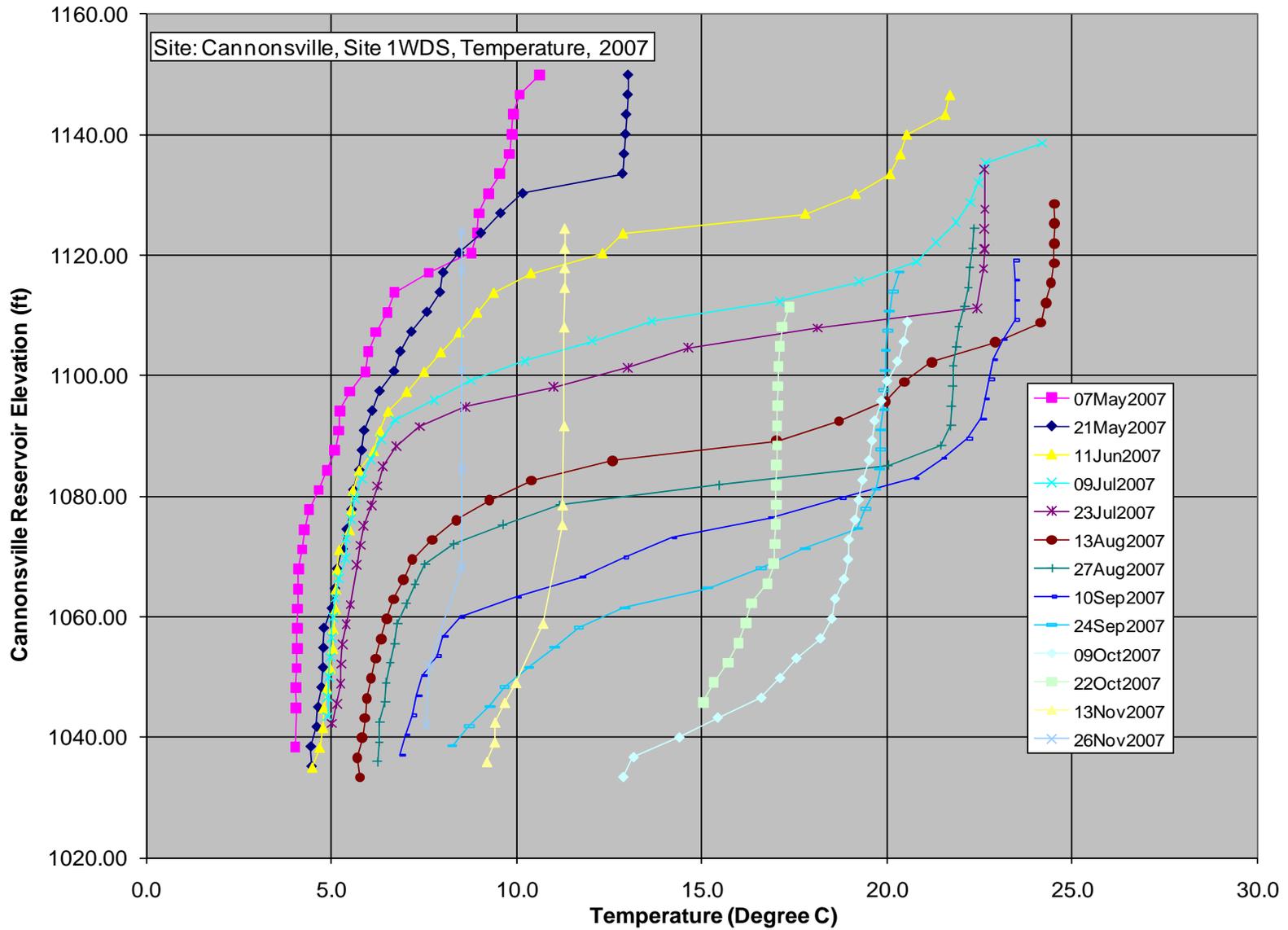


Figure E-12: Cannonsville Reservoir, Sample Site 1WDC – 2007 Temperature Profiles (mid-channel at Cannonsville Dam)

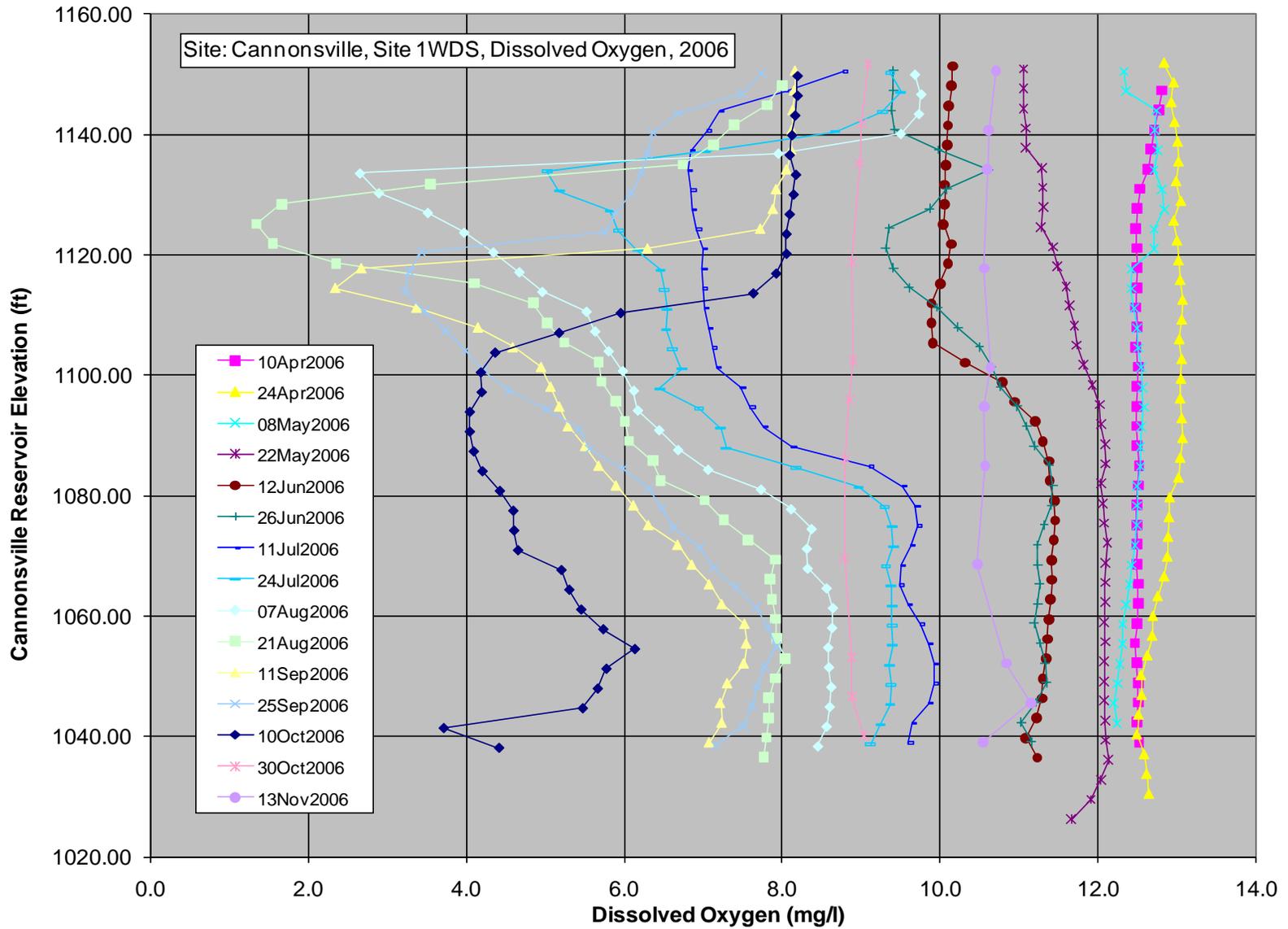


Figure E-13: Cannonsville Reservoir, Sample Site 1WDC – 2006 DO Profiles (mid-channel at Cannonsville Dam)

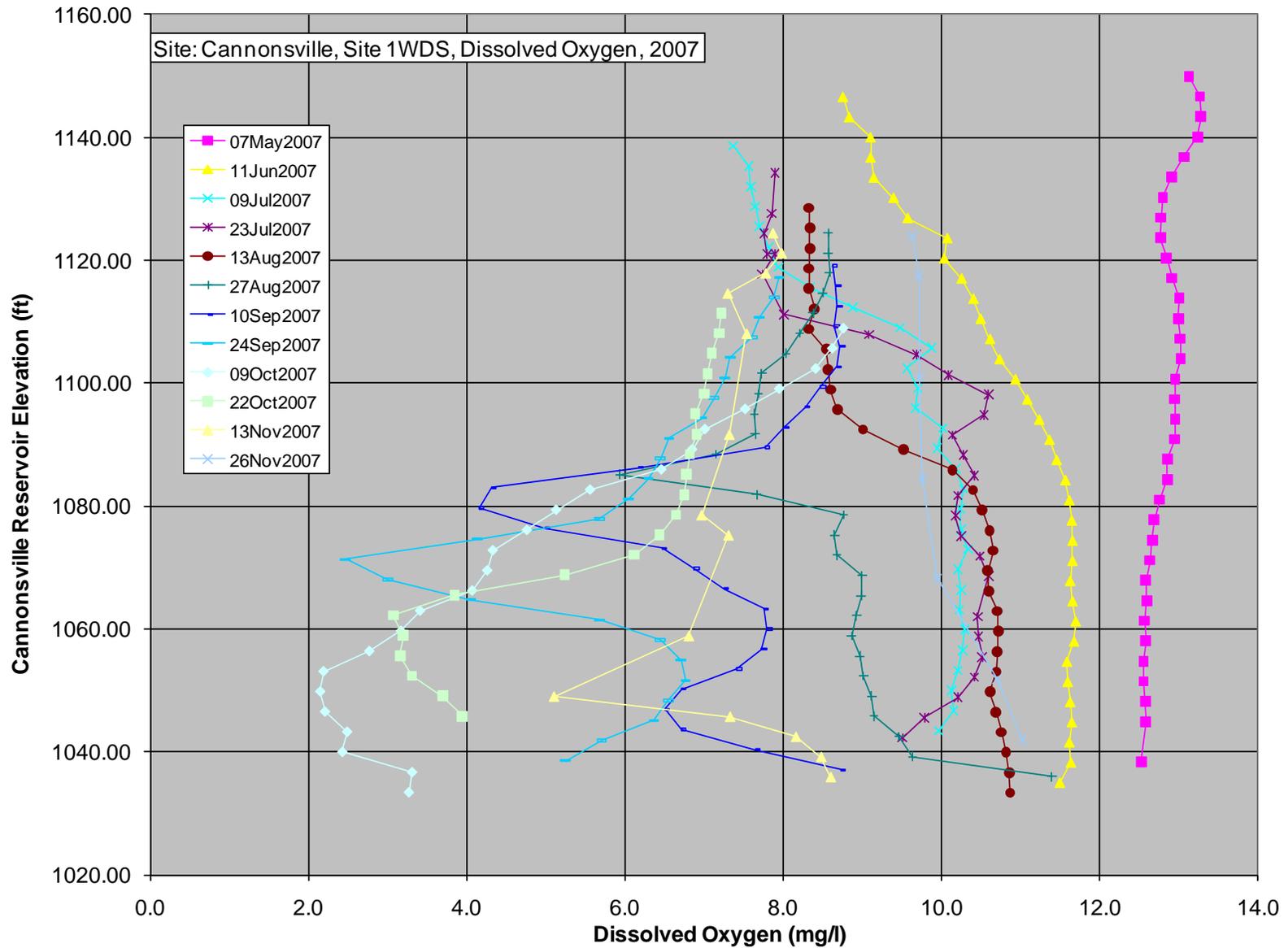


Figure E-14: Cannonsville Reservoir, Sample Site 1WDC – 2007 DO Profiles (mid-channel at Cannonsville Dam)

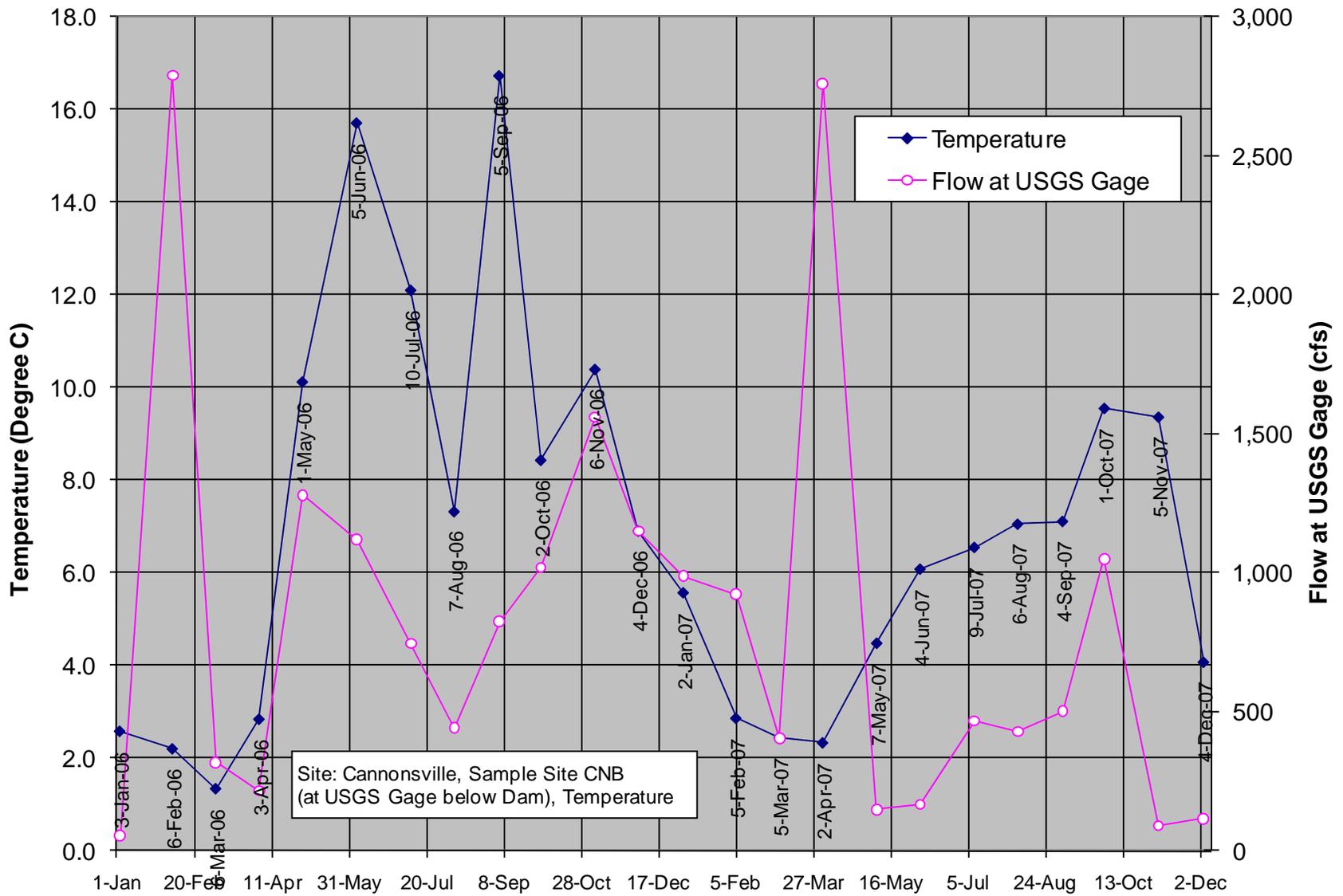


Figure E-15: Cannonsville Release, Sample Site CNB – 2006 & 2007 Temperature Data (near Stilesville Bridge, at USGS Gage)

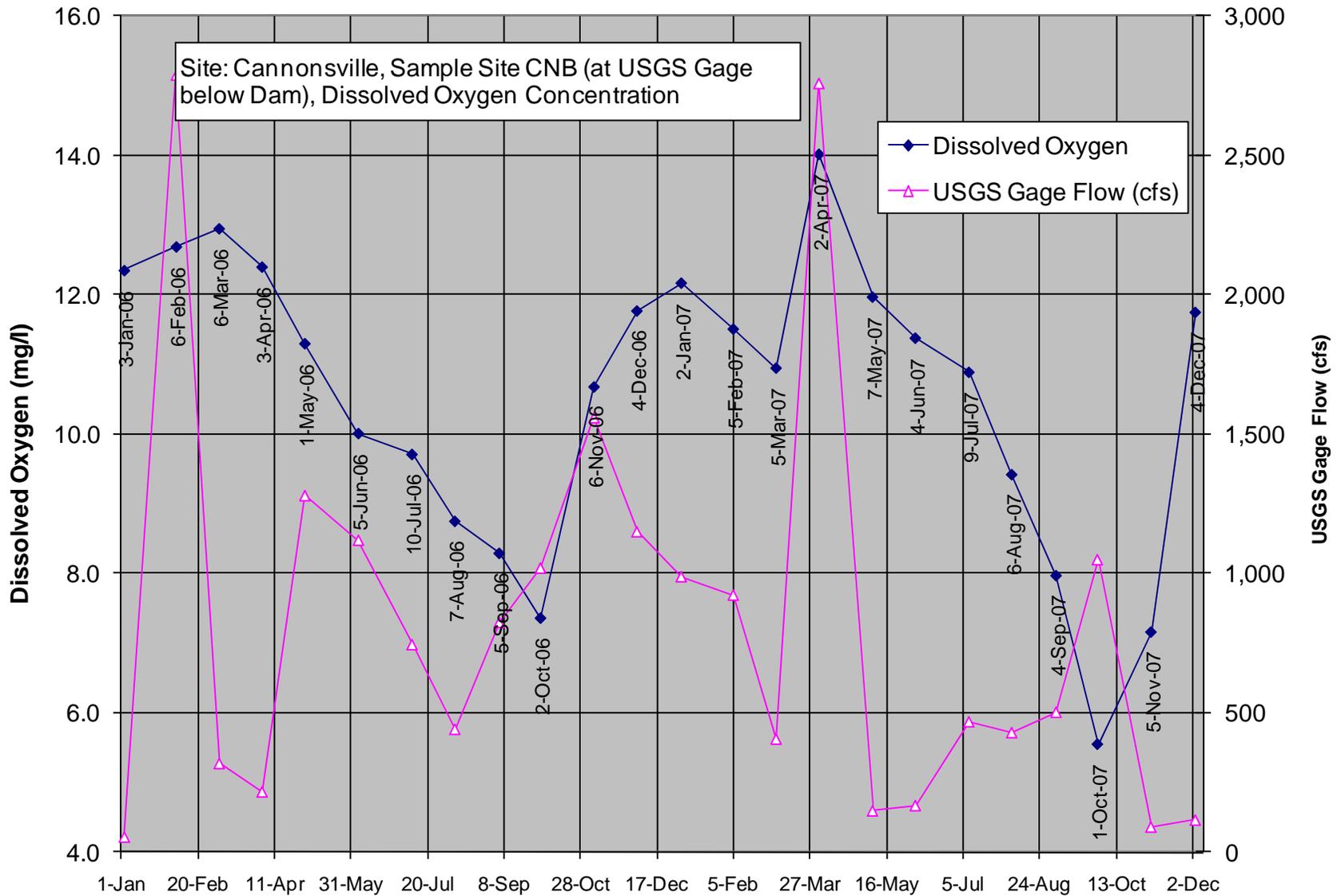


Figure E-16: Cannonsville Release, Sample Site CNB – 2006 & 2007 DO Data (near Stilesville Bridge, at USGS Gage)

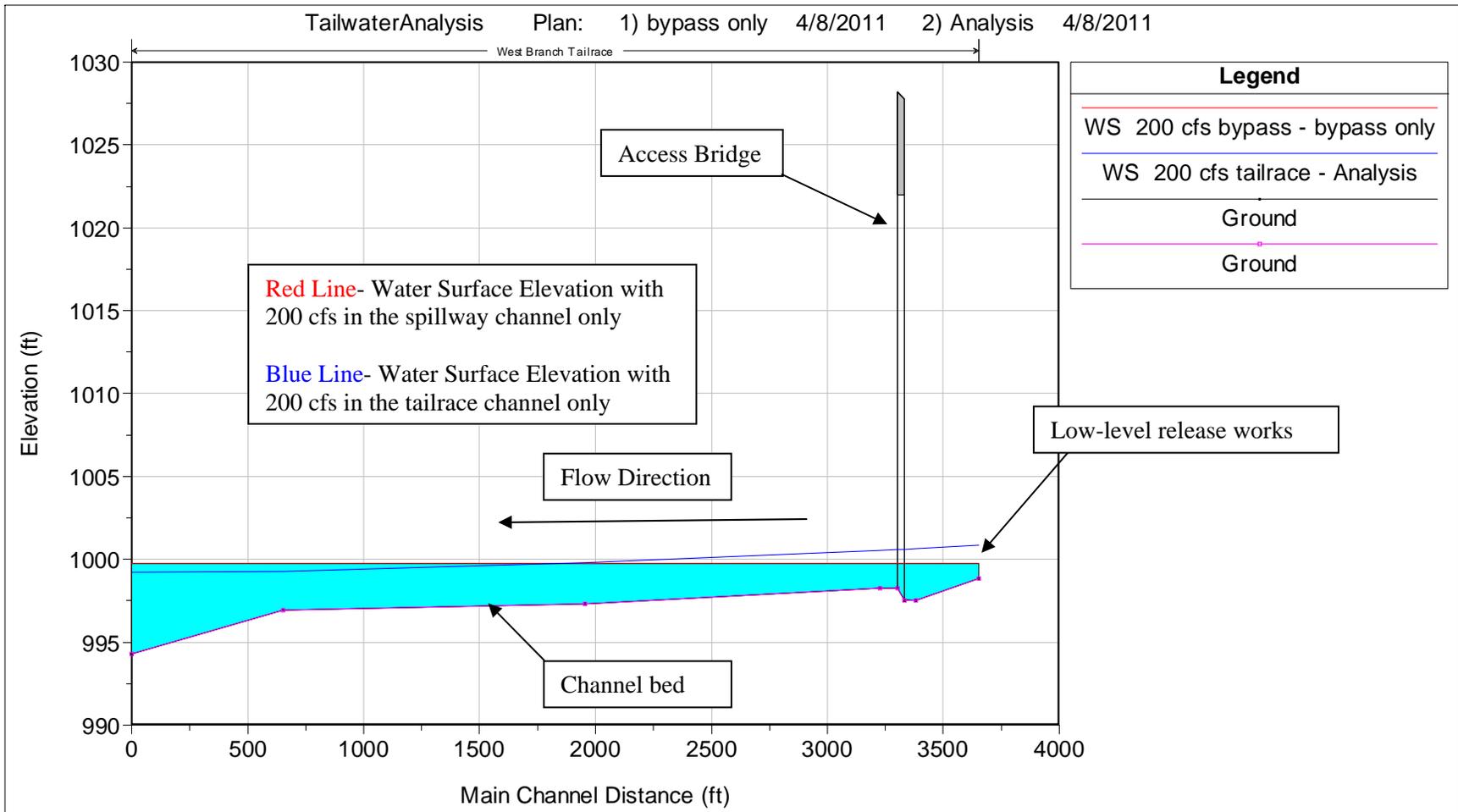


Figure E-17: Tailrace Reach - Comparison of Water Surface Elevation with 200 cfs in Tailrace Channel Only, and 200 cfs in Spillway Channel Only

(3) Fish, Wildlife, and Botanical Resources

(i) Description of Fish Wildlife, and Botanical Resources

Fishery Resources

West Branch of the Delaware River above Cannonsville Reservoir and Tributaries

The West Branch of the Delaware River is generally separated into two areas—above and below the Cannonsville Reservoir. From its headwaters in Schoharie County to the Cannonsville Dam, the West Branch of the Delaware River runs approximately 43 miles and passes through mostly farmland. Brown trout are stocked by the State in mid-April and again in mid-May. Approximately one-third of the brown trout residents are wild fish. It has been reported that wild brook trout can be found in the tributaries that empty into the West Branch of the Delaware River as well as the lower sections of tributaries that empty into the Cannonsville Reservoir. Brook trout are not stocked by NYSDEC biologists and are not as abundant in the upper river as brown trout (Delaware Co. SWCD, 2004). Large and smallmouth bass, chain pickerel, and yellow perch also are present in the upper West Branch of the Delaware River.

Cannonsville Reservoir

The Cannonsville Reservoir supports both warm and coldwater fish communities. Fish species found in the reservoir are listed in [Table E-9](#). The NYSDEC manages the upper (above Cannonsville Dam) West Branch of the Delaware River as a coldwater trout fishery and has been monitoring trout populations in the reservoir through angler creel surveys and angler diaries. Brown trout were stocked in the reservoir from 2005 to 2008 to determine whether the population would respond to enhancement efforts. The study results indicate that the population has responded well to the stocking and has provided additional opportunities to catch trout. Through angler diaries recorded since the inception of the reservoir stocking program, the trout fishery has been monitored and will continue to be monitored (NYSDEC 2005; 2007a; 2007b, 2008b).

Table E-9: Fish Species Potentially Found in the Cannonsville Reservoir

Common Name	Scientific Name	Common Name	Scientific Name
Brown trout	<i>Salmo trutta</i>	White sucker	<i>Catostomus commersonii</i>
Brook trout	<i>Salvelinus fontinalis</i>	Slimy sculpin	<i>Cottus cognatus</i>
Smallmouth bass	<i>Micropterus dolomieu</i>	Fallfish	<i>Semotilus corporalis</i>
Yellow perch	<i>Perca flavescens</i>	Creek chub	<i>Semotilus atromaculatus</i>
Alewife	<i>Alosa pseudoharengus</i>	Blacknose dace	<i>Rhinichthys atratulus</i>
Rock bass	<i>Ambloplites rupestris</i>	Longnose dace	<i>Rhinichthys cataractae</i>
Pumpkinseed	<i>Lepomis gibbosus</i>	Common shiner	<i>Luxilus cornutus</i>
Bluegill	<i>Lepomis macrochirus</i>	Golden shiner	<i>Notemigonus crysoleucas</i>
Chain pickerel	<i>Esox niger</i>	Tessellated darter	<i>Etheostoma olmstedii</i>
Brown bullhead	<i>Ameiurus nebulosus</i>	Goldfish	<i>Carassius auratus</i>
Common carp	<i>Cyprinus carpio</i>	Rudd	<i>Scardinius erythrophthalmus</i>
Black crappie	<i>Pomoxis nigromaculatus</i>		

West Branch of the Delaware River below the Cannonsville Dam

Cold water releases in the summer from the Cannonsville Reservoir provide suitable temperatures for trout to reside in the entire 17.7 miles to the confluence with the East Branch of the Delaware River. Consequently, the West Branch of the Delaware River below the Cannonsville Reservoir supports a renowned trout fishery. Fish population sampling showed that brown trout are the most abundant species followed by rainbow trout and lastly a small component of brook trout. Additionally, trout abundance was

higher in the upper reaches (near the dam) than in the lower 12 miles to the confluence with the East Branch of the Delaware River (NYSDEC 2008a).

The NYSDEC conducted an Angler Diary Program within five reaches in the West Branch of the Delaware River (below Cannonsville dam) from 2002 through 2007 as listed in [Table E-10](#). Although the Angler Diary Program extended to the East Branch of the Delaware River, Delaware River mainstem, and Neversink River, the West Branch of the Delaware River comprised 61% of the hourly angler effort. Additionally, the majority of trout were caught in the West Branch of the Delaware River, with smaller proportions caught in the East Branch of the Delaware River and mainstem of the Delaware River. Angler catches were dominated by wild brown trout with a small component of reservoir and Oquaga Creek hatchery brown trout. Small numbers of rainbow and brook trout were caught, and did not comprise a large portion of the West Branch of the Delaware River catch (NYSDEC 2007c).

Table E-10: West Branch of the Delaware River below Cannonsville Dam, Angler Diary Reach Names

Reach No.	Starting At	Ending At	Reach Name
1	Cannonsville Dam	Stilesville Weir	Cannonsville Dam
2	Stilesville Weir	Route 17 Bridge, Deposit	Stilesville
3	Route 17 Bridge, Deposit	Lower Boundary No Kill Zone	No Kill
4	Lower Boundary No Kill Zone	NY-PA Border (Monument Pool)	Hale Eddy
5	NY-PA Border (Monument Pool)	Confluence with the Delaware River	Border Water

The trout fishery in the lower West Branch of the Delaware River is managed under special regulations. The entire section in New York has open season from April 1 through October 15. There is a 12-inch minimum length limit and a two fish creel limit with no fishing allowed outside the listed season dates. Additionally, fishing is prohibited in the 1.4 mile reach between the dam and the Town of Stilesville. The season dates for the section that borders New York and Pennsylvania are the first Saturday after April 11 to October 15. Fishing is allowed in this section outside the regular season, but there is an artificial lure, catch-and-release only restriction.

In 1992, a 2.2 mile reach of the West Branch of the Delaware River in the Town of Deposit was designated with a “No Kill” regulation in an attempt to demonstrate the trout potential of the river. The regulation was popular among anglers and catch rates were higher immediately following implementation.

A 12-inch minimum size limit and three fish creel limit was implemented in 1991 as it was believed that the nine inch size limit did not make use of the excellent survival and growth potential of the river. Although catch rates did not improve with the implementation of these regulations, the mean length of creel trout increased (NYSDEC 2007c).

The National Marine Fisheries Service (“NMFS”) was sent a letter on July 19, 2011 to verify that the West Branch of the Delaware River is not considered Essential Fish Habitat.

[As of the filing date of this Application, no response has been received from NMFS regarding the City’s July 19th letter.]

Aquatic Habitat Study

Background: The USGS received Congressional funding to study instream habitat needs in the upper portion of the Delaware River Basin, including the East and West Branches of the Delaware River and the

Neversink River. These three tributaries were studied from the City's Delaware River basin reservoirs to their respective confluences with the Delaware River. The specific objectives of the study were:

- The quantification of habitat metrics over a range of discharges and seasons at selected locations in the three tributaries and the mainstem of the Delaware River.
- Development of a prototype Delaware River Decision Support System to assist the DRBC and stakeholders in analyzing and interpreting water management and reservoir operations alternatives.

The USGS study resulted in a report entitled *A Decision Support Framework for Water Management in the Upper Delaware River* and was published in 2007 (Bovee, Waddle, Bartholow, and Burris, 2007). It contains considerable information on the East and West Branches of the Delaware River and the Neversink River. The USGS report has been included in Volume 10, Appendix E-8.

Segmentation and Target Species: The West Branch of the Delaware River was segmented into two reaches based on geomorphic changes, temperature classification (coldwater, transitional or warmwater) and target species. Within the two reaches, representative study sites were selected based primarily on planform. The reaches included Cannonsville Dam to the confluence with Oquaga Creek (segment WB0, 2.4 miles, 456 mi²), and from Oquaga Creek to Hancock, NY (segment WB1, 14.4 miles, 595 mi²). The target species of interest were brown trout adult, brown trout juvenile, shallow-fast guild and shallow-slow guild.

Habitat Suitability: Ranges of suitable depths and velocities for each of the target species were defined using the Delphi process, which is described in much greater detail in the USGS report. In short, the Delphi process results in developing relationships between depth, velocity and substrate relative to habitat—commonly called habitat suitability index curves. A hydraulic model was developed within the representative study sites to compute the range of depths and velocities over a range of flows.

Habitat versus Flow Relationships: Using the hydraulic modeling results, in addition to the habitat suitability index curves, habitat versus flow relationships were developed for each species. Shown in Appendix 3 of the USGS report are the habitat versus flow relationships on the West Branch of the Delaware River for the various fish species. The habitat versus flow relationships developed as part of this study and others (Sheppard, 1983) informed the development of conservation flows contained in the FFMP. In fact, NYSDEC and Pennsylvania Fish and Boat Commission ("PFBC") jointly developed a paper entitled "Recommended Improvements to the Flexible Flow Management Program for Coldwater Ecosystem Protection in Delaware River Tailwater" dated January 12, 2010. The paper represents the collaborative effort of fisheries biologists from both NYSDEC and PFBC and summarizes how previous fish habitat studies were used to develop a conservation flow regime below the Cannonsville, Downsville and Neversink Dams. The paper is available at the following weblink: http://www.dec.ny.gov/docs/fish_marine_pdf/delaflexflow.pdf

A. Study – Literature Based Characterization of Resident Fish Entrainment and Mortality

DEP was requested by USFWS and NYSDEC to evaluate the potential for fish entrainment and mortality at the City's proposed Cannonsville, Pepacton and Neversink hydroelectric developments. A study plan was developed in consultation with USFWS and NYSDEC. The full study report, which applies to the City's proposed Cannonsville, Pepacton and Neversink hydroelectric developments, is included in Volume 5, Appendix E-3.

Entrainment

The DEP used an incremental analysis approach to determine the potential for fish entrainment, including: (1) evaluating which fish species and life stages have the potential to be present in the vicinity

of the Cannonsville intake structure based on habitat preferences; (2) evaluating water quality conditions at the intake location and reservoir water levels to determine how these factors affect the potential for fish entrainment; and (3) comparing swimming speeds of fish that may be susceptible to entrainment to calculated water velocities at the intake structure. In addition, results of field-based entrainment and survival studies were reviewed at other hydroelectric projects where quantitative sampling was conducted, and applying these results to site-specific conditions at the Project to evaluate the potential impacts of entrainment on the identified fish species of potential concern in Cannonsville Reservoir.

Water quality factors may influence the distribution and movements of cold water fish in the Cannonsville Reservoir. Because the reservoir capacity is often reduced during hot, dry summers, entrainment potential is the greatest during these situations. When the volume of the bottom layer of the reservoir decreases, fish may be forced to concentrate near the intake area where cooler, more oxygenated water is located, thereby increasing entrainment potential. Thus, the potential for fish entrainment and impingement peaks during dry summer drawdowns, and the fish species most likely subject to entrainment are those seeking deep, cool water as thermal refuge, such as brown and brook trout, rainbow smelt, and alewife. Likewise in the winter, because the bottom layer of the reservoir is warmer than the surface, fish may tend to congregate near the bottom and stay active throughout the winter, thus having a moderate potential of being in the vicinity of the intake structure during the winter.

Fish that spend at least part of their life cycle in deep, cool waters are likely to be found in the vicinity of the existing deep water intake associated with the Project. As part of the entrainment analysis, literature-based swim speed data for these fish were compared to the intake velocity. The maximum hydroelectric capacity of the Project is 1,500 cfs, resulting in an intake⁶ velocity of 2.9 feet per second (“ft/s”). However, in considering conservation and directed release flows at Cannonsville Reservoir (i.e., the flows utilized for power generation) based on the OASIS modeling of the FFMP-OST (i.e., the operating protocol in effect at the time of this Application), the median annual discharge associated with such operating protocol is 410 cfs, resulting in an intake velocity of 0.80 ft/s – below the USFWS intake velocity design criteria of 2 ft/s.

Although adults and large juveniles of some species may exhibit behavior that would potentially expose them to entrainment during generation (such as trout seeking out cool, deep water during summer, or deep-water refuge during winter) such species generally exhibit swimming performance exceeding the expected intake velocity.

Some fish species such as juvenile white suckers and adult and juvenile catfishes, including bullheads and margined madtom, were identified as having minimal likelihood of being found near the intake structure based on habitat preferences but could not be ruled out from the potential for entrainment solely because their swimming speed is unknown based on the available literature.

Based on the habitat and life history requirements and swimming speeds of the fish species found in the Cannonsville Reservoir, fish entrainment is expected to be low for all species. Additionally, because there is no shoreline habitat near the intake structure, and the intake structure is located in deep-water habitat, the risk of entrainment for fry and juvenile fishes—regardless of intake velocity—is minimal.

Mortality

Fish mortality due to entrainment through the hydroelectric development, pressure differential between the intake location and the downstream release point, and impingement on intake protection devices was also evaluated.

⁶ There are two openings at the intake – one 10 feet by 15 feet, and another 7 feet by 15 feet for a total gross area of 510 ft². The back rack clear spacing is approximately 7.5 inches.

Due to the existing deep water intake structure associated with the Project, the pressure differential between the intake location and the low-level release works experienced by a potentially entrained fish is likely to cause significant fish mortality regardless of the presence or absence of hydroelectric facilities at this site. Under most reservoir water level conditions, it is likely that any fish entrained and passed through the low-level release works would not survive due solely to the pressure differential that would be experienced between the intake structure and the low-level release works. Therefore, the addition of turbines and their potential effects on entrained fish is unlikely to materially affect fish mortality at Cannonsville Reservoir.

Intake Protection

The deep water intake structure at Cannonsville already utilizes intake protection in the form of bar racks.

Regardless, various options for providing additional intake protection were evaluated. A brief overview of the common physical and behavioral barriers for intake protection including the constructability and feasibility thereof were assessed, as described in the full report (see Volume 5, Appendix E-3), but these options were determined to be unnecessary and/or not viable alternatives for The Project.

Based on the assessment of potential entrainment and mortality at the Project, the City is not proposing additional intake protection measures as part of the Project.

Fish Passage

At the request of USFWS, the need for downstream fish passage and any appropriate mechanisms to facilitate passage was examined relative to the resource agencies' (i.e., USFWS and NYSDEC) expressed objectives for downstream fisheries management. The feasibility of providing downstream fish passage either through the low-level release works or at the surface of the Cannonsville Reservoir was evaluated. Physical factors related to water quality impacts of downstream fish passages at Cannonsville were also addressed.

Because of the high fish mortality rate associated with the large pressure differentials between the existing intake structure and low-level release works associated with the Project, the low-level fish passage alternative was determined to be impractical.

The potential for providing surface-oriented downstream fish passage facilities was also evaluated. It was determined that the changes to downstream temperature regimes arising from the conveyance flows associated with surface-oriented passages at Cannonsville Reservoir would likely adversely affect the downstream coldwater fisheries by warming up the river. Because the fisheries management objectives for the West Branch of the Delaware River is focused on providing coldwater trout fisheries, such a result would be inconsistent with these management objectives. Additionally, downstream fish passage is not required to complete the life cycles of any fish species in the reservoir.

For these reasons, constructing downstream fish passage at Cannonsville Reservoir as part of the Project is neither desirable nor warranted. Accordingly, the City is not proposing any such downstream fish passage as part of the Project.

Consultation and Conclusion

The entrainment report was provided to NYSDEC and USFWS for review and comment. As stated in the NYSDEC comment letter of December 8, 2010 (see Volume 3, Appendix E-1), NYSDEC concluded that based on the information provided by DEP regarding the operation of the Project, the Project will not have a significant impact on fish mortality at Cannonsville, thus, no additional field studies were deemed necessary. The NYSDEC noted that its determination was based on the fact that the City was proposing to

maintain flows consistent with the requirements of the operating protocol agreed to by the Decree Parties and not proposing to modify the magnitude, frequency, duration, or timing of such discharges. The NYSDEC noted that if there is a change in the proposed operation that would increase flows through the turbines and release structures, then further studies or protective measures may be warranted.

Similarly, as stated in the USFWS comment letter of September 15, 2010 (see Volume 3, Appendix E-1), USFWS concluded that, based on the information provided and the results of the entrainment analysis conducted, no further studies were necessary at this time.

The initial entrainment analysis discussed with NYSDEC and USFWS was based on the FFMP – the operating protocol agreed to by the Decree Parties in effect at the time the consultation with NYSDEC and USFWS was conducted. Effective June 1, 2011, the FFMP was superseded by the FFMP-OST. Accordingly, subsequent to the discussions with NYSDEC and USFWS, the prior analysis was updated to reflect the change in the applicable operating protocol. However, although the FFMP-OST generally results in a slightly greater overall volume of releases from Cannonsville Reservoir compared to the FFMP, the findings and conclusions based on the FFMP, which were previously discussed with NYSDEC and USFWS and served as the basis for their respective conclusions regarding the lack of need for additional studies at this time, remain valid and are unchanged by the revised analysis based on the FFMP-OST. In particular, the change in operating protocol has no impact on the fact that the pressure differential between the intake structures and the release works associated with the Project experienced by any potentially entrained fish is likely to cause significant fish mortality regardless of whether hydropower facilities are added at the site. A comparative analysis of the two flow regimes was presented to NYSDEC, USFWS, and other stakeholders on July 21, 2011.

Evaluation – Impacts on Aquatic Resources due to Project Construction

The Project will not create any long term impacts or changes to aquatic habitat. The City will maintain flow releases in accordance with the requirements of the operating protocol agreed to by the Decree Parties.

A short term unavoidable impact to aquatic resources will occur in the tailrace channel. There will be a period, estimated to be on the order of three months, where no water is conveyed to the tailrace channel to allow tie-in of the new powerhouse. During this period, conservation flow releases and directed releases will be provided via a temporary siphon over the spillway crest to convey up to 200 cfs into the spillway channel.

As noted earlier, when flow is maintained in the spillway channel only, the tailrace channel is partially backwatered resulting in reduced water depths and channel widths. This reduction in wetted area will directly impact aquatic habitat in the tailrace channel. To alleviate these short-term impacts, prior to ceasing low-level outlet releases, the releases will be ramped down to permit fish in the tailrace channel to relocate further downstream to avoid potential stranding. In addition, DEP proposes to walk the 4,000-foot long tailrace reach immediately after the releases are ceased to physically relocate any potentially stranded fish and mussels below the tailrace channel/spillway channel confluence and into deeper waters.

Wildlife Resources

The Project is located in a section of the State that is generally sparsely populated and relatively remote. The large tracts of forested mountains support a wide variety of wildlife. [Table E-11](#) through [Table E-14](#) (end of section) list mammal, bird, amphibian, and reptile species potentially present in the Project area. Bald eagles use the Project area for nesting and wintering. The Mongaup and Delaware Rivers support the highest concentration of wintering bald eagles in New York State and one of the highest concentrations in the northeast. Additionally, waterfowl likely use the stream corridor and reservoir for nesting and feeding.

The species listed in [Table E-11](#) through [Table E-14](#) were generated from the West Branch Delaware River Stream Corridor Management Plan (Delaware Co. SWCD, 2007 and 2004), and the USFWS' Significant Habitats and Habitat Complexes of the New York Bight Watershed (USFWS, 1997). The list includes the vast majority of species likely to be found in the Project area.

Federal and State Rare, Threatened and Endangered Species

During the study plan development process, existing data relative to rare, threatened and endangered ("RTE") species were gathered. The New York Natural Heritage Program and USFWS's website was consulted to verify and update RTE information for the Project area. The initial RTE species identified as having the potential of being found in the Project were as follows:

- Dwarf wedge mussel (federally-listed Endangered)
- Indiana bat (federally-listed Endangered)
- Bog turtle (federally-listed Threatened)
- Northern wild monkshood (federally-listed Threatened)
- Brook floater (state-listed Threatened)
- Bicknell's thrush (state-listed Special Concern)
- Timber rattlesnake (state-listed Threatened)
- Jefferson salamander (state-listed Special Concern)
- Longtail salamander (state-listed Special Concern)

As noted in the USFWS' February 12, 2010 comment letter on DEP's proposed study plan, suitable habitats for the Indiana bat and bog turtle in NY have not been found at elevations above 900 and 1,000 feet, respectively. Given that the Cannonsville Dam is located above elevation 1,400 feet, it is unlikely that the habitat for these species would be present in or near the areas that would be impacted by the construction or operation of the Project. The NYSDEC was contacted to determine if they agree with USFWS' assertion that the Indiana bat and bog turtle are not likely to be found in project area given the high altitude, and they agreed in an email correspondence. Based on this information from USFWS and NYDEC, the assessment did not include these two species.

NMFS has jurisdiction over marine species and migratory fish, working within the Endangered Species Act to promote marine species and habitat stewardship. NMFS has indicated that there are no jurisdictional, listed or proposed endangered or threatened species or critical habitats in the Delaware River in the immediate vicinity of the Project.

Based on the foregoing, the RTE species having the potential of being found in the Project area based on their respective geographic range and habitat preferences are described below:

Dwarf wedge mussel (federally listed Endangered)

Typical habitat for this mussel includes running waters of all sizes, from small brooks to large rivers. Bottom substrates include silt, sand and gravel, which may be distributed in relatively small patches behind larger cobbles and boulders. The river velocity is usually slow to moderate. Dwarf wedge mussels appear to select or are at least tolerant of relatively low levels of calcium in the water.

Northern wild monkshood (federally-listed Threatened plant species)

The Northern wild monkshood is noted for its very distinctive, blue hood-shaped flowers which bloom between June and September. The plant is typically found on shaded to partially shaded cliffs, algific talus slopes, or on cool, streamside sites. These areas have cool soil conditions, cold air drainage, or cold

groundwater flowage. On algific talus slopes, these conditions are caused by the outflow of cool air and water from ice contained in underground fissures. These fissures are connected to sinkholes and are a conduit for the air flows.

Brook floater (state listed Threatened)

The Brook Floater is strictly a running water species favoring gravelly riffles in creeks and small rivers. Considered to be a species of creeks and small rivers where it is found among rocks in gravel substrates and in sandy shoals, the brook floater inhabits flowing-water habitats. Although typically found in riffles and moderate rapids, this species can be found in a range of flow conditions but is usually not found in very slow flow conditions. The species has no consistent substrate preference but it is thought to prefer stable habitats such as coarse sand and gravel.

Bicknell's thrush (state-listed Special Concern bird species).

The Bicknell's thrush is an elusive neotropical migrant that breeds in the high elevation forests of northeastern North America and winters in the Caribbean. It is a habitat specialist restricted to montane forests of balsam fir. In New York, the Bicknell's thrush breeds at high elevations in the Adirondack and Catskill Mountains, which represent the southern-most boundary of its breeding range. Because of its preference for stands of dense fir trees on ridgelines, the Bicknell's thrush is often associated with recently disturbed areas characterized by standing dead conifers and dense regrowth of balsam fir.

Timber rattlesnake (state-listed Threatened reptile species)

Populations of the timber rattlesnake were once found on Long Island and in most mountainous and hilly areas of New York State, except in the higher elevations of the Adirondacks, Catskills, and Tug Hill region. They are now found in isolated populations in southeastern New York, the Southern Tier, and in the peripheral eastern Adirondacks. Timber rattlesnakes are generally found in deciduous forests in rugged terrain in these areas. In the summer, pregnant females seem to prefer open, rocky ledges where temperatures are higher, while the males and non-pregnant females seem to prefer cooler, thicker woods where the forest canopy is more closed.

Jefferson salamander (state-listed Special Concern amphibian species)

The geographic range of the Jefferson salamander includes southern New York, northern New Jersey, and most of Pennsylvania to Ohio and southern Indiana. Jefferson salamanders have a strong affinity for upland forests and prefer to reside most of the year in well drained deciduous or mixed forest, within 250 to 1600 meters of a small vernal pool or pond, commonly surrounded by alder, red maple, buttonbush, and dogwood. They hide beneath leaf litter, loose soil, and stones, or in rotting logs, rodent burrows, or subterranean burrows which they excavate. Vernal pools, or temporary ponds, are necessary for reproduction and need to be full of dead and decaying leaves for cover and overhanging bushes or grass for egg deposition.

Jefferson salamanders hibernate underground in the winter months, usually near breeding sites. In March and April (sometimes as early as February), they begin to migrate to breeding ponds which is thought to be triggered by the first early warm spring rains or other conditions of high humidity and above-freezing temperatures. Adult Jefferson salamanders are rarely seen outside of the breeding season, but are presumed to eat earthworms and other invertebrates underground. The ideal time of year to locate the Jefferson salamander is during the breeding months of March and April.

Longtail salamander (state-listed Special Concern amphibian species)

The range of the longtail salamander extends from southern New York and northern New Jersey southwest through southern Illinois, southeastern Missouri, as well as western Tennessee. Longtail salamanders can be found near streams or around caves, where they seek shelter under rocks, rotting logs, or in shale banks. Adults are found in moist or wet terrestrial situations, usually along the borders of streams, seeps, or wetlands. Breeding presumably occurs in late autumn and early winter. Eggs are laid in the winter, but are rarely found, probably because they are attached to rocks in dark, subsurface streams or seepages. The aquatic larvae hatch in 4-12 weeks and probably complete metamorphosis in the same year, although some may remain as larvae until the following spring or summer.

Bald eagle (state-listed Threatened bird species)

Historically, bald eagles nested in forests along the shorelines of oceans, lakes or rivers throughout most of North America, often moving south in winter to areas where water remained open. Wintering grounds are from southern Canada south, along major river systems, in intermountain regions, and in the Great Plains. In the northern United States, bald eagles will typically begin courting and nest building in the winter. The typical breeding season for the bald eagles in the vicinity of the Project begins with nest construction in January and ends with the last chick fledged in early summer. The locations of existing nesting areas of bald eagles in the vicinity of the Project were identified from DEP records prior to conducting any field work. DEP located two bald eagle nests within one mile from the Cannonsville Dam.

Table E-11: List of Mammals Potentially Present in the Project Area

Common Name	Scientific Name	Common Name	Scientific Name
Eastern Coyote	<i>Canis latrans</i>	Hairy-tailed Mole	<i>Parascalops breweri</i>
Eastern Pipistrelle	<i>Pipistrellus subflavus</i>	Eastern Mole	<i>Scalopus aquaticus</i>
Eastern Red Bat	<i>Lasiurus borealis</i>	Small-footed Myotis	<i>Myotis leibii</i>
Hoary Bat	<i>Lasiurus cinereus</i>	Big Brown Bat	<i>Eptesicus fuscus</i>
Indiana Myotis	<i>Myotis sodalis</i>	Eastern Red Bat	<i>Lasiurus borealis</i>
Silver-haired Bat	<i>Lasionycteris noctivagans</i>	New England Cottontail	<i>Sylvilagus transitionalis</i>
Woodland Jumping Mouse	<i>Napaeozapus insignis</i>	Snowshoe Hare	<i>Lepus americanus</i>
Long-tailed Shrew	<i>Sorex dispar</i>	European Hare	<i>Lepus europaeus</i>
Southern Bog Lemming	<i>Synaptomys cooperi</i>	Eastern Chipmunk	<i>Tamias striatus</i>
Porcupine	<i>Erethizon dorsatum</i>	Woodchuck	<i>Marmota monax</i>
Red Fox	<i>Vulpes vulpes</i>	Eastern Gray Squirrel	<i>Sciurus carolinensis</i>
Gray Fox	<i>Urocyon cinereoargenteus</i>	Eastern Fox Squirrel	<i>Sciurus niger</i>
White-tailed Deer	<i>Odocoileus virginianus</i>	Red Squirrel	<i>Tamiasciurus hudsonicus</i>
Black Bear	<i>Ursus americanus</i>	Southern Flying Squirrel	<i>Glaucomys volans</i>
Fisher	<i>Martes pennanti</i>	Northern Flying Squirrel	<i>Glaucomys sabrinus</i>
Bobcat	<i>Lynx rufus</i>	North American Deermouse	<i>Peromyscus maniculatus</i>
Eastern Cottontail	<i>Sylvilagus floridanus</i>	White-footed Mouse	<i>Peromyscus leucopus</i>
Eastern Cougar ^{1,2}	<i>Felis concolor cougar</i>	Eastern Woodrat	<i>Neotoma floridana</i>
River Otter	<i>Lutra canadensis</i>	Southern Red-backed Vole	<i>Myodes gapperi</i>
Muskrat	<i>Ondatra zibethicus</i>	Meadow Vole	<i>Microtus pennsylvanicus</i>
Beaver	<i>Castor canadensis</i>	Rock Vole	<i>Microtus chrotorrhinus</i>
Mink	<i>Mustela vison</i>	Woodland Vole	<i>Microtus pinetorum</i>
Striped Skunk	<i>Mephitis mephitis</i>	Northern Bog Lemming	<i>Synaptomys borealis</i>
Raccoon	<i>Procyon lotor</i>	Roof Rat	<i>Rattus rattus</i>
Virginia Opossum	<i>Didelphis virginiana</i>	Brown Rat	<i>Rattus norvegicus</i>
Cinereus Shrew	<i>Sorex cinereus</i>	House Mouse	<i>Mus musculus</i>
American Water Shrew	<i>Sorex palustris</i>	Meadow Jumping Mouse	<i>Zapus hudsonius</i>
Smoky Shrew	<i>Sorex fumeus</i>	American Marten	<i>Martes americana</i>
American Pygmy Shrew	<i>Sorex hoyi</i>	Ermine	<i>Mustela erminea</i>
Northern Short-tailed Shrew	<i>Blarina brevicauda</i>	Long-tailed Weasel	<i>Mustela frenata</i>
North American Least Shrew	<i>Cryptotis parva</i>	Moose	<i>Alces americanus</i>
¹ Federally Endangered ² State Endangered			

Table E-12: List of Birds Potentially Present in the Project Area

Common Name	Scientific Name	Common Name	Scientific Name
Acadian Flycatcher	<i>Empidonax virescens</i>	Chipping Sparrow	<i>Spizella passerina</i>
Alder Flycatcher	<i>Empidonax alnorum</i>	Cliff Swallow	<i>Hirundo pyrrhonota</i>
American Black Duck	<i>Anas rubripes</i>	Common Grackle	<i>Quiscalus quiscula</i>
American Crow	<i>Corvus brachyrhynchos</i>	Common Merganser	<i>Mergus merganser</i>
American Goldfinch	<i>Carduelis tristis</i>	Common Raven	<i>Corvus corax</i>
American Kestrel	<i>Falco sparverius</i>	Common Yellowthroat	<i>Geothlypis trichas</i>
American Redstart	<i>Setophaga ruticilla</i>	Cooper's Hawk ³	<i>Accipiter cooperii</i>
American Robin	<i>Turdus migratorius</i>	Dark-eyed Junco	<i>Junco hyemalis</i>
American Woodcock	<i>Scolopax minor</i>	Downy Woodpecker	<i>Picoides pubescens</i>
Bald Eagle ⁴	<i>Haliaeetus leucocephalus</i>	Eastern Bluebird	<i>Sialia sialis</i>
Bank Swallow	<i>Riparia riparia</i>	Eastern Kingbird	<i>Tyrannus tyrannus</i>
Barn Swallow	<i>Hirundo rustica</i>	Eastern Meadowlark	<i>Sturnella magna</i>
Barred Owl	<i>Strix varia</i>	Eastern Phoebe	<i>Sayornis phoebe</i>
Belted Kingfisher	<i>Megaceryle alcyon</i>	Eastern Screech Owl	<i>Megascops asio</i>
Bicknell's Thrush ³	<i>Catharus bicknelli</i>	Eastern Towhee	<i>Pipilo erythrophthalmus</i>
Black-and-white Warbler	<i>Mniotilta varia</i>	Eastern Wild Turkey	<i>Meleagris gallopavo</i>
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	Eastern Wood-pewee	<i>Contopus virens</i>
Blackburnian Warbler	<i>Dendroica fusca</i>	European Starling	<i>Sturnus vulgaris</i>
Black-capped Chickadee	<i>Poecile atricapillus</i>	Field Sparrow	<i>Spizella pusilla</i>
Blackpoll Warbler	<i>Dendroica striata</i>	Golden-crowned Kinglet	<i>Regulus satrapa</i>
Black-throated Blue Warbler	<i>Dendroica caerulescens</i>	Golden-winged Warbler ³	<i>Vermivora chrysoptera</i>
Black-throated Green Warbler	<i>Dendroica virens</i>	Grasshopper Sparrow ³	<i>Ammodramus savannarum</i>
Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>	Gray Catbird	<i>Dumetella carolinensis</i>
Blue-headed Vireo	<i>Vireo solitarius</i>	Great Blue Heron	<i>Ardea herodias</i>
Blue Jay	<i>Cyanocitta cristata</i>	Great Crested Flycatcher	<i>Myiarchus crinitus</i>
Blue-winged Warbler	<i>Vermivora pinus</i>	Great Horned owl	<i>Bubo virginianus</i>
Bobolink	<i>Dolichonyx oryzivorus</i>	Hairy Woodpecker	<i>Picoides villosus</i>
Broad-winged Hawk	<i>Buteo platypterus</i>	Hermit Thrush	<i>Catharus guttatus</i>
Brown Creeper	<i>Certhia americana</i>	Hooded Merganser	<i>Lophodytes cucullatus</i>
Brown-headed Cowbird	<i>Molothrus ater</i>	House Finch	<i>Carpodacus mexicanus</i>
Brown Thrasher	<i>Toxostoma rufum</i>	House Sparrow	<i>Passer domesticus</i>
Canada Goose	<i>Branta canadensis</i>	House Wren	<i>Empidonax minimus</i>
Canada Warbler	<i>Wilsonia canadensis</i>	Indigo Bunting	<i>Passerina cyanea</i>
Cedar Waxwing	<i>Bombycilla cedrorum</i>	Killdeer	<i>Charadrius vociferus</i>
Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>	Least Flycatcher	<i>Empidonax minimus</i>
Chimney Swift	<i>Chaetura pelagica</i>	Louisiana Waterthrush	<i>Seiurus motacilla</i>
Magnolia Warbler	<i>Dendroica magnolia</i>	Spotted Sandpiper	<i>Actitis macularius</i>

Common Name	Scientific Name	Common Name	Scientific Name
Mallard	<i>Anas platyrhynchos</i>	Swamp Sparrow	<i>Melospiza georgiana</i>
Mourning Dove	<i>Zenaida macroura</i>	Swainson's Thrush	<i>Catharus ustulatus</i>
Mourning Warbler	<i>Oporomis philadelphia</i>	Tree Swallow	<i>Tachycineta bicolor</i>
Nashville Warbler	<i>Vermivora ruficapilla</i>	Tufted Titmouse	<i>Baeolophus bicolor</i>
Northern Bobwhite	<i>Colinus virginianus</i>	Turkey Vulture	<i>Cathartes aura</i>
Northern Cardinal	<i>Cardinalis cardinalis</i>	Veery	<i>Catharus fuscescens</i>
Northern Flicker	<i>Colaptes auratus</i>	Vesper Sparrow	<i>Poocetes gramineus</i>
Northern Goshawk ³	<i>Accipiter gentiles</i>	Warbling Vireo	<i>Vireo gilvus</i>
Northern Oriole	<i>Icterus spurius</i>	Whip-poor-will ³	<i>Caprimulgus vociferous</i>
Northern Rough-winged Swallow	<i>Stelidopteryx serripennis</i>	White-breasted Nuthatch	<i>Sitta carolinensis</i>
Northern Saw-whet Owl	<i>Aegolius acadicus</i>	White-throated Sparrow	<i>Zonotrichia albicollis</i>
Northern Waterthrush	<i>Seiurus noveboracensis</i>	Willow Flycatcher	<i>Empidonax traillii</i>
Olive-sided Flycatcher	<i>Contopus cooperi</i>	Winter Wren	<i>Troglodytes troglodytes</i>
Ovenbird	<i>Seiurus aurocapillus</i>	Wood Duck	<i>Aix sponsa</i>
Pileated Woodpecker	<i>Dryocopus pileatus</i>	Wood Thrush	<i>Hylocichla mustelina</i>
Pine Siskin	<i>Carduelis pinus</i>	Worm-eating warbler	<i>Helmitheros vermivorus</i>
Common Name	Scientific Name	Yellow-bellied Flycatcher	<i>Empidonax flaviventris</i>
Pine Warbler	<i>Dendroica pinus</i>	Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>
Prairie Warbler	<i>Dendroica discolor</i>	Yellow-billed Cuckoo	<i>Coccyzus americanus</i>
Purple Finch	<i>Carpodacus purpureus</i>	Yellow-rumped Warbler	<i>Dendroica coronata</i>
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	Yellow-throated Vireo	<i>Vireo flavifrons</i>
Red-breasted Nuthatch	<i>Sitta canadensis</i>	Yellow Warbler	<i>Dendroica petechia</i>
Red-eyed Vireo	<i>Vireo olivaceus</i>		
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>		
Red-shouldered Hawk ³	<i>Buteo lineatus</i>		
Red-tailed Hawk	<i>Buteo jamaicensis</i>		
Red-winged Blackbird	<i>Agelaius phoeniceus</i>		
Rock Pigeon	<i>Columba livia</i>		
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>		
Ruby-throated Hummingbird	<i>Archilochus colubris</i>		
Ruffed Grouse	<i>Bonasa umbellus</i>		
Savannah Sparrow	<i>Passerculus sandwichensis</i>		
Scarlet Tanager	<i>Piranga olivacea</i>		
Sharp-shinned Hawk ³	<i>Accipiter striatus</i>		
Snowy Owl	<i>Bubo scandiacus</i>		
Song Sparrow	<i>Melospiza melodia</i>		
³ State Special Concern			
⁴ State Threatened			

Table E-13: List of Amphibians Potentially Present in the Project Area

Common Name	Scientific Name
Allegheny Mountain Dusky Salamander	<i>Desmognathus ochrophaeus</i>
Jefferson Salamander ³	<i>Ambystoma jeffersonianum</i>
Spotted Salamander	<i>Ambystoma maculatum</i>
Dusky Salamander	<i>Desmognathus fuscus</i>
Redback Salamander	<i>Plethodon cinereus</i>
Slimy Salamander	<i>Plethodon glutinosus</i>
Spring Salamander	<i>Gyrinophilus porphyriticus</i>
Northern Two-lined Salamander	<i>Eurycea bislineata</i>
Longtail Salamander ³	<i>Eurycea longicauda</i>
Four-toed Salamander	<i>Hemidactylum scutatum</i>
Common Mudpuppy	<i>Necturus maculosus</i>
Northern Red Salamander	<i>Pseudotriton ruber ruber</i>
Northern Leopard Frog	<i>Rana pipiens</i>
Wood Frog	<i>Rana sylvatica</i>
Bullfrog	<i>Rana catesbeiana</i>
American Toad	<i>Bufo americanus</i>
Gray Treefrog	<i>Hyla versicolor</i>
Green Frog	<i>Hyla cinerea</i>
Spring Peeper	<i>Pseudacris crucifer</i>
Pickerel Frog	<i>Rana palustris</i>
³ State Special Concern	

Table E-14: List of Reptiles Potentially Present in the Project Area

Common Name	Scientific Name
Wood Turtle	<i>Clemmys insculpta</i>
Eastern Box Turtle	<i>Terrapene carolina</i>
Common Snapping Turtle	<i>Chelydra serpentina</i>
Northern Painted Turtle	<i>Chrysemys picta</i>
Spotted Turtle	<i>Clemmys guttata</i>
Common Gartersnake	<i>Thamnophis sirtalis</i>
Timber Rattlesnake ⁴	<i>Crotalus horridus</i>
Eastern Hognose	<i>Heterodon platirhinos</i>
Brownsnake	<i>Storeria dekayi</i>
Smooth Greensnake	<i>Opheodrys vernalis</i>
Red-bellied Snake	<i>Storeria occipitomaculata</i>
Milksnake	<i>Lampropeltis triangulum</i>
Northern Copperhead	<i>Agkistrodon contortrix</i>
Ring-necked Snake	<i>Diadophis punctatus</i>
Northern Watersnake	<i>Nerodia sipedon</i>
⁴ State Threatened	

Botanical Resources

The Project area is within the Northeastern Highlands ecoregion and the Appalachian Plateau physiographic province. In general, this area is characterized by nutrient-poor soils and is blanketed by beech-birch-maple hardwood forests with the upper elevations transitioning to spruce-fir forests. Oak-hickory forests are also present in some of the low valleys. Though the land was typically heavily forested, it was cleared for farmland in the early nineteenth century. The forests have naturally re-grown as the farmland was abandoned beginning in the mid-1800s (USFWS, 1997).

The dominant species that comprise the northern hardwood forest are American beech (*Fagus grandifolia*), yellow birch (*Betula alleghaniensis*), and sugar maple (*Acer saccharum*). The shrub layer in this type of forest generally consists of hobblebush (*Viburnum lantanoides*), maple-leaved viburnum (*Viburnum acerifolium*), and raspberries (*Rubus* spp.). The oak-hickory low elevation forests are dominated by red oak (*Quercus rubra*), white oak (*Q. alba*), chestnut oak (*Q. prinus*), scrub oak (*Q. ilicifolia*), shagbark hickory (*Carya ovata*) and bitternut hickory (*C. cordiformis*). The shrub layer generally consists of flowering dogwood (*Cornus florida*), witch hazel (*Hamamelis virginiana*), shadbush (*Amelanchier arborea*), and choke-cherry (*Prunus virginiana*). The high elevation spruce-fir forests are generally dominated by red spruce (*Picea rubens*) and balsam fir (*Abies balsamea*) with the shrub layer dominated by huckleberry (*Gaylussacia buccata*), lowbush blueberry (*Vaccinium angustifolium*), and mountain laurel (*Kalmia latifolia*) on rocky outcrops (USFWS, 1997).

Several populations of the federally threatened northern monkshood (*Aconitum noveboracense*) occur in the Catskill high peaks and the globally rare Jacob's ladder (*Polemonium caeruleum*) may be found in similar areas. The moist woods of the Catskills support two of the only three known extant populations of nodding pogonia (*Triphora trianthophora*) in New York and the only populations of musk-root (*Adoxa moschatellina*). The Catskills are also home to other state-listed threatened or endangered plant species (USFWS, 1997).

B. Study – Impact of Hydroelectric Development Construction-Related Activities on Wildlife and Botanical Resources, including Wetlands, Riparian, and Littoral Habitat, and Rare, Threatened and Endangered Species

A field assessment of the Project area was conducted by two field biologists on June 29-30, 2010 and April 26, 2011. The assessment included documentation of habitat conditions in areas that will be temporarily or permanently disturbed as part of the Project, as well as in 100 foot buffer zones around the disturbed areas (see [Figure E-18](#)). The field biologist traversed the areas designated on [Figure E-18](#) to document wildlife resources, botanical resources, and RTE species. The full report, which pertains to the City's proposed Cannonsville, Pepacton and Neversink hydroelectric developments, is included in Volume 6, Appendix E-4.

Botanical Resources

Vegetative cover types in the areas proposed for disturbance (i.e., construction-related activities) and associated buffer zones relating to the Project consist of open fields, mixed forest and, in the area of the tailrace excavation, emergent and riverine wetlands and deepwater habitats. [Table E-15](#) provides a description of construction and buffer areas and [Figure E-19](#) presents this information on a map. [Table E-16](#) lists the ecological community types observed during the field assessment.

Impacts to upland botanical resources will be limited to temporary disturbances to existing mowed fields, which will serve as the construction staging areas. No impacts to upland botanical resources within the buffer locations are expected. The locations of the generator lead, substation, and interconnection facilities are located primarily in mowed areas and thus are not expected to cause or lead to any adverse

environmental impacts. However, selective trimming and removal of adjacent trees will occur, as necessary. Clearing this corridor will result in minor fragmentation of the upland forest, but this area is isolated from surrounding continuous forest blocks due to the river channels and dam. Therefore, the fragmentation is not expected to cause impacts to wildlife passage routes.

Table E-15: Description of Project-related Construction and Buffer Areas

Parcel No.	Description	Notes
C-1	Proposed spoils disposal area	Mowed field
C-1a	Proposed spoils disposal area buffer zone	Primarily mowed turf, with a few scattered trees; Stone-lined drainage ditch present
C-2	Proposed spoils disposal area buffer zone	Mixed upland forest with areas of brush understory; Contains existing unpaved access road
C-3	Proposed spoils disposal area buffer zone	Primarily mowed turf, with areas of shrub and scattered ornamental trees
C-4	Proposed Staging Area 1 buffer zone	Deciduous forest
C-4a	Proposed Staging Area 1 buffer zone	Groundwater-fed wetland
C-5	Proposed Staging Area 1	Open field containing a few coniferous trees
C-5a	Proposed Staging Area 1 buffer zone	Open field, adjacent to and inclusive of a portion of Vernal Pool 3
C-6	Proposed Staging Area 1 buffer zone	Mature Norway spruce plantation; very little understory
C-7	Proposed Staging Area 1 buffer zone	Riverbank. Vegetated riparian zone, primarily herbaceous plants
C-8	Proposed Staging Area 2	Mowed field, bordered by drainage swales on east and west
C-9	Proposed Staging Area 2 buffer zone	Mature Norway spruce plantation; very little understory
C-10	Proposed Staging Area 2 buffer zone	Floodplain wetland; dominant plant species is reed canarygrass
C-11	Proposed Staging Area 2 buffer zone	Shrubby upland
C-12	Proposed Staging Area 2 buffer zone	Riverbank. Mix of tree, shrub and herbaceous riparian plants. Contains drainage swale
C-13	Shoreline buffer zone	Shrubby shoreline dominated by black locust seedlings (invasive species)
C-14	Tailrace excavation area	Emergent wetland, dominated by reed canarygrass
C-15	Access road and release works	Paved area
C-16	Buffer zone between access road and riverbank	Mowed turf
C-17	Septic tank & underground electric line	Mowed turf
C-18	Open channel of Delaware River	Free-flowing, shallow, no submerged vegetation
C-19	Buffer zone	Mixed mature forest, extremely steep
C-23	Proposed Staging Area 3	Mowed turf
C-24	Proposed Overhead electric line buffer zone	Thin strip of mixed upland forest with a small seep along edge toward a man-made drainage ditch

Parcel No.	Description	Notes
C-25	Existing overhead electric line	Mowed turf with drainage ditch
C-26	Proposed Overhead electric line buffer zone	Mixed upland forest with minimal ground cover
C-27	Proposed Overhead electric line buffer zone	Mixed upland forest containing Vernal Pool 1
C-28	Proposed Overhead electric line from substation to NYSEG poles	Mixed upland forest
C-29	Proposed substation location	Mowed turf

Table E-16: Description of Ecological Community Types in Project-related Construction and Buffer Areas

Parcel	System	Subsystem	Ecological Community
C-1	Terrestrial	Terrestrial Cultural	Mowed lawn
C-1a	Terrestrial	Terrestrial Cultural	Mowed lawn
C-2	Terrestrial	Forested Upland	Rich mesophytic forest
C-3	Terrestrial	Forested Upland	Rich mesophytic forest
C-4	Terrestrial	Forested Upland	Rich mesophytic forest
C-4a	Palustrine *	Forested Mineral Soil Wetlands	Persistent emergent, saturated wetland
C-5/5a	Terrestrial	Terrestrial Cultural	Mowed lawn
C-6	Terrestrial	Terrestrial Cultural	Spruce/fir plantation
C-7	Terrestrial	Open Upland	Herbaceous riparian riverbank**
C-8	Terrestrial	Terrestrial Cultural	Mowed lawn
C-9	Terrestrial	Terrestrial Cultural	Spruce/fir plantation
C-10	Palustrine *	Open Mineral Soil Wetlands	Persistent emergent, seasonally flooded wetland
C-11	Terrestrial	Open Upland	Successional shrubland
C-12	Terrestrial	Open Upland	Shrub/tree riparian riverbank**
C-13	Terrestrial	Terrestrial Cultural	Riprap artificial shore**
C-14	Palustrine*	Open Mineral Soil Wetlands	Persistent emergent, seasonally flooded wetland
C-15	Terrestrial	Terrestrial Cultural	Paved road/path
C-16	Terrestrial	Terrestrial Cultural	Riprap artificial shore**
C-17	Terrestrial	Terrestrial Cultural	Mowed lawn
C-18	Riverine*	Natural Stream	Lower perennial, unconsolidated bottom, permanently flooded
C-19	Terrestrial	Forested Upland	Hemlock-northern hardwood forest
C-23	Terrestrial	Terrestrial Cultural	Mowed lawn
C-24	Terrestrial	Forested Upland	Hemlock-northern hardwood forest
C-25	Terrestrial	Terrestrial Cultural	Mowed lawn
C-26	Terrestrial	Forested Upland	Hemlock-northern hardwood forest
C-27	Terrestrial	Forested Upland	Hemlock-northern hardwood forest
C-28	Terrestrial	Forested Upland	Hemlock-northern hardwood forest
C-29	Terrestrial	Terrestrial Cultural	Mowed lawn

Notes: * Indicates wetland community type classified using Cowardin *et al.*, 1979. ** Indicates riparian community type not found in Edinger *et al.*, 2002.

Invasive Plant Species

The invasive plants species found in the proposed construction areas and associated buffer zones relating to the Project are listed below and the locations are shown on [Figure E-20](#).

- Reed canarygrass
- Black locust
- Common mullein
- Multiflora rose
- Japanese knotweed
- Common mugwort

- Japanese barberry
- Honeysuckle
- Hairy willow herb
- Autumn olive

Wetlands, Riparian and Littoral Habitats

The NWI mapped deepwater habitats in the Project area include the Cannonsville Reservoir and the West Branch of the Delaware River. The Cannonsville Reservoir is classified as *lacustrine, limnetic, unconsolidated bottom, permanently flooded and impounded* (L1UBHh). The upper portion of the spillway channel is classified as *riverine, upper perennial, unconsolidated bottom, permanently flooded* (R3RBH). Starting approximately 2,000 feet below the spillway, the spillway channel is classified as *riverine, lower perennial, unconsolidated bottom, permanently flooded* (R2UBH). The tailrace channel is classified as *riverine, lower perennial, unconsolidated bottom, permanently flooded* (R2UBH). There are no NYSDEC regulated wetlands present in or adjacent to the construction areas.

During the field study, three unmapped wetlands were identified as shown in [Figure E-19](#). The first is a wetland of less than 0.1 acre north of Staging Area 1 in a depressional, spring-fed location (parcel no. C-4A). Although surrounded by upland forest, this wetland is classified as *palustrine, persistent emergent, saturated wetland* (PEM1B) due to the emergent vegetation and saturated soils conditions found there. Dominant wetland plants found included jewelweed, sensitive fern, marsh bedstraw, horsetail and foxtail sedge.

The floodplain (parcel no. C-10) in the buffer area adjacent to staging area 1 is classified as *palustrine, persistent emergent, seasonally flooded wetland* (PEM1E). This wetland is 0.6 acres and is classified as a palustrine system due to the presence of persistent emergent plants, primarily reed canarygrass, and is a seasonally flooded riparian system. Other dominant plants found in this location included jewelweed, sensitive fern, and spotted joe pye weed.

The area for tailrace excavation consists of two wetland types. The open water channel (parcel no. C-18) is classified as *riverine, lower perennial, unconsolidated bottom, permanently flooded*, as described above, because there were no submerged aquatic vegetation species found in this area and the bottom substrate was a mix of gravel and cobble overlain by silt. Adjacent to the channel, in the area proposed for excavation (parcel no. C-14), is a wetland of approximately 1.05 acres classified as *palustrine, persistent emergent, seasonally flooded* (PEM1E). This wetland is classified as a palustrine system due to the presence of persistent emergent plants, such as reed canarygrass and yellow rocket, and is a seasonally flooded riparian area. Additional wetland plants found in this location include jewelweed and shrub willows.

The riparian and littoral areas of the tailrace channel were observed during the April site visit. Starting at the low-level release works building and looking downstream, the river right⁷ riparian area downstream to the access bridge (parcel no. C-13) is a riprapped shore with moderately sloped 10-foot high banks dominated by shrub cover. Downstream of the access bridge, the riparian area remains moderately sloped and high, but is naturally vegetated and contains an expansive sidebar containing herbaceous vegetation (dominated by reed canarygrass). The river right shoreline vegetation consists of a mix of plantation trees (Norway spruce), white pine, black locust, sycamore, multiflora rose and invasive Japanese knotweed. Staying on river right from a point approximately 2,500 feet downstream of the low-level release works to the confluence with the spillway channel, the bank slope flattens out and the riparian vegetation transitions to herbaceous cover. The river left riparian area consists of a moderately steep riprapped bank with shrubby vegetation from the low-level release works building to a point just downstream of the

⁷ River right refers to the right side of the river while looking in the downstream direction.

access bridge. Beyond this point the bank becomes extremely steep and forested. The spillway channel riparian zone of both riversides consists of riprap banks.

The tailrace channel is a long deep run containing extensive sidebars on river right, and one riffle area approximately 1,000 feet downstream of the release works. The littoral area is composed of very fine silt and clay lacking any submerged vegetation. The sidebars were submerged during the April visit due to relatively high flows occurring at this time.

Discharges from the low-level release works will cease for roughly three months when tie-in to the powerhouse occurs. As noted previously, this will result in reducing the wetted width and depth in the tailrace channel. The area immediately below the low-level release works will be dewatered for excavation. Downstream areas will remain partially wetted due to the backwater received from the spillway channel. Based on hydraulic modeling, if 200 cfs is maintained in the spillway channel, water depths in the tailrace channel will be lower (one foot or less) for approximately 1,600 feet downstream of the low-level release works (see [Figure E-17](#)). Downstream of this point, water depths will be at or above levels related to the same flow provided through the low-level release works. Normal velocities in tailrace channel vary according to the flow releases; water velocity is expected to be zero during the time releases from the low-level releases works ceases. Because this area will remain partially wetted during construction, impacts to the riparian and littoral areas as well as the plant and animal species that use these areas as habitat, are not anticipated.

Wildlife Species and Habitat Observations

Wildlife observations in the construction areas and associated buffer zones relating to the Project included: American crow, red-winged blackbird, pileated woodpecker, Eastern cottontail, whitetail deer, common merganser, Northern flicker, Canada goose, American robin, and black capped chickadee. Hermit thrush was also recognized as being present based on sound/auditory observation.

Three vernal pools were identified during the April 2011 field work. Vernal Pool 1 is located in a mixed upland forest with little ground cover (parcel no. C-27) adjacent to a mowed area near the paved road ([Figure E-19](#)), but outside any proposed construction areas and/or associated buffer zones relating to the Project. This small depression was approximately 200 ft² and part of a man-made drainage ditch and contained cinder blocks and old road signs at the outlet. No signs of biological life were observed in Vernal Pool 1.

Vernal Pool 2 was located outside of the buffer zone adjacent to the overhead electric line (parcel no. C-28). This pool was approximately 600 ft² and supported wildlife, as a Northern red-backed salamander was observed. Because Vernal Pool 2 is located outside of any of the proposed construction areas and/or associated buffer zones relating to the Project, no material impacts to Vernal Pool 2 are anticipated to occur as a result of construction-related activities.

Vernal Pool 3 is approximately 7,500 ft² in area and a small portion thereof is located within the outer limits of the buffer zone associated with proposed Staging Area 1 (parcel no. C-5). This vernal pool is fed by seasonal groundwater seepage which is captured in a long, ditch-like depression adjacent to the mowed field, and it extends well beyond the study area. Approximately 20 amphibian egg masses were found in this pool.

Based on the site visits, many of the areas where construction will occur are currently disturbed (mowed); and thus offer little valuable wildlife habitat. The upland forest areas in the buffer zones around the construction areas provide very good wildlife habitat as do the vernal pools found at the site. However, given that the areas will not be disturbed during construction, their relative character is not expected to be materially impacted by construction-related activities associated with the Project.

RTE Species and Habitat Observations

The locations of existing nesting areas of bald eagles in the vicinity of the Project were identified from DEP records prior to conducting any field work. As shown in [Table E-17](#), DEP located six bald eagle nests in the vicinity of the Project in 2009.

Table E-17: Bald Eagle Nest Locations in Proximity to the Project (2009)

Nest ID	Reservoir	County	Town	Distance To Dam (Miles)
NY 13	Cannonsville	Delaware	Deposit	1.5
NY 34	Cannonsville	Delaware	Tompkins	5.8
NY 88	Cannonsville	Delaware	Deposit	1
NY 89	Cannonsville	Delaware	Tompkins	8.7
NY 89	Cannonsville	Delaware	Tompkins	9
NY 93	Cannonsville	Delaware	Tompkins	1

Adult and juvenile bald eagles were observed flying in the vicinity of the Cannonsville Dam during the field assessment on June 29-30, 2010. However, no nesting, roosting or feeding activities were observed near the construction areas and/or associated buffer zones relating to the Project. Bald eagles were also observed during the April 26, 2011 field work. Juvenile and adult bald eagles were observed perched over the tailrace channel, two adult eagles were perched above the spillway, and a few others were observed soaring around the reservoir. However, consistent with the June 2010 field assessment, no nesting or feeding activities were observed near the Project-related construction areas and/or associated buffer zones.

Vernal Pool 3 described above could potentially serve as suitable habitat for the Jefferson and longtail salamanders.

No other RTE species or habitat was observed in the proposed construction areas and/or associated buffer zones relating to the Project.

(ii) Description of Measures Recommended by Agencies for Enhancement of Project Impacts on Fish, Wildlife, and Botanical Resources

No recommendations for enhancement of Project impacts on fish, wildlife and botanical resources were provided by USFWS or NYSDEC.

(vi) Statement of Existing and Proposed Measures for Enhancement of Fish, Wildlife, and Botanical Resources

Relative to fish and aquatic resources, the City maintains seasonal conservation flow releases through the low-level release works for the protection of aquatic resources in the West Branch of the Delaware River. Moreover, the City will maintain required releases in accordance with the requirements of the applicable operating protocol agreed to by the Decree Parties. During the period of construction when discharges from the low-level release works are ceased in order to allow for tie-in of the new powerhouse, conservation releases will be maintained via a temporary siphon over the spillway crest.

Relative to wildlife, the Project area is home to breeding populations of bald eagles. The bald eagle is protected under the Bald and Golden Eagle Protection Act (16 U.S.C. §§ 668-668d) and the Migratory Bird Treaty Act (16 U.S.C. §§ 703-712), and continues to be listed as a threatened species in New York State.

The DEP currently monitors bald eagle activity at Cannonsville Reservoir and will continue to do so during Project-related construction. Based on the field observations, there does not appear to be any nesting or roosting habitat (e.g., tall trees) in the construction areas or associated buffer zones relating to the Project. However, bald eagle habitat use may change from year to year. Accordingly, prior to construction, DEP proposes to identify any bald eagle nests within one mile of any Project-related construction activities (i.e., the distance criteria included in the agreed to study plans related to the Project). DEP will provide this information to USFWS and NYSDEC, maps will be developed, and conceptual buffer zones around nests will be established, as appropriate.

Further, to prevent disturbances to nests, foraging areas, and roosting areas, restrictions may be incorporated into the construction plan associated with the Project, as appropriate, consistent with the suggested measures in the USFWS Bald Eagle Management Guidelines (USFWS, 2007). These measures may include:

- Avoid clear cutting or removal of overstory trees within 330 feet of eagle nests at any time.
- If nests are found within 330-660 feet of the construction areas, construction sequencing may be altered to occur outside of the nesting season (typically January – July), in consultation with USFWS and NYSDEC, depending on whether the construction activity will be visible from the nest.
- Currently it is not anticipated that blasting will be required for the tailrace excavation. If site conditions require shallow blasting, DEP will consult with USFWS and NYSDEC, as necessary, regarding any required blasting plans.

Construction activities are not likely to adversely affect foraging activities of bald eagle. The tailrace excavation area is localized to a relatively small area (~1 acre), and there are other undisturbed areas that would afford ample alternative foraging opportunities, such as Cannonsville Reservoir, the channel downstream of the spillway, and other downstream locations. Based on the foregoing, no specific mitigation measures are proposed at this time. New information regarding bald eagle nest locations at the time of construction may warrant additional protection measures as indicated above.

As noted above Vernal Pool 3 is located at the outer limits of the 100 foot buffer zone associated with proposed Staging Area 1 and could potentially serve as suitable habitat for the Jefferson and longtail salamanders. DEP proposes to avoid Vernal Pool 3 and mark the area such that it is not disturbed by any construction related activities.

Relative to invasive plant species, the City will strive to avoid any invasive plant species, if possible. In those locations, where disturbance may occur, the City will take precautions to not further spread these species to other areas. The spoils with potential invasive seeds and rhizomes will be placed on the spoils disposal area and covered with landscape fabric to debilitate the vegetation. The City will then place six inches of topsoil on the fabric and seed with a cold season grass mix.

(iv) Description of Continuing Impact on Fish, Wildlife, and Botanical Resources by Continued Operation

Continued Project operations will have no continuing impacts on botanical and wildlife resources. Continued Project operations will have the potential to entrain fish. It was determined, however, that due to the existing deep water intake structure associated with the Project, the pressure differential between such intake structure and the low-level release works experienced by any potentially entrained fish is

likely to cause significant fish mortality—regardless of whether hydropower facilities are added to this site.



Figure E-18: Project-related Construction and Buffer Zone Areas

Notes: Imagery source: ESRI world imagery. All other data layers created by Gomez and Sullivan Engineers, P.C.

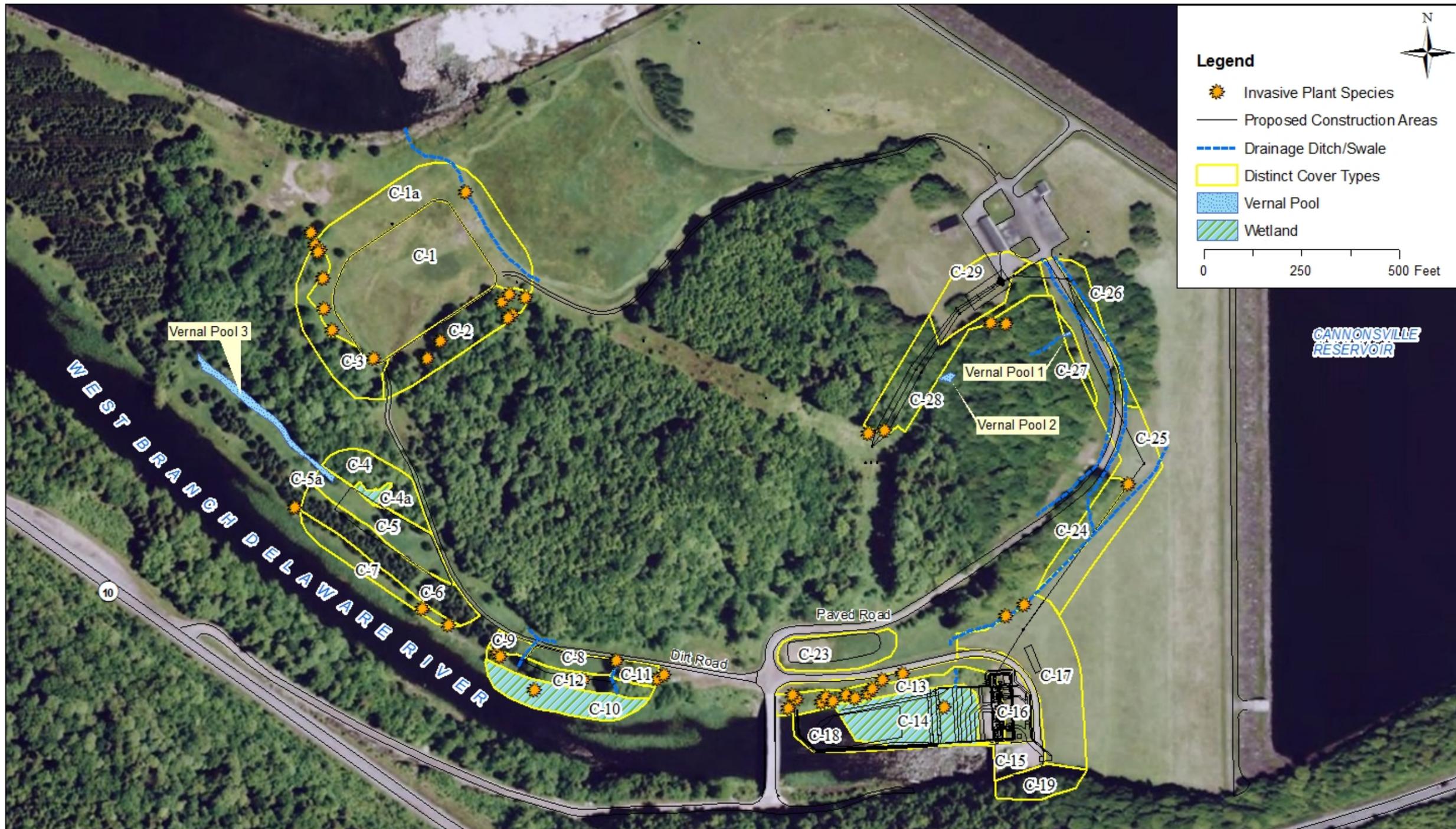


Figure E-19: Vegetative Cover Types and Wetlands in Project-related Construction and Buffer Zone Areas

Notes: Imagery source: ESRI world imagery. All other data layers created by Gomez and Sullivan Engineers, P.C.

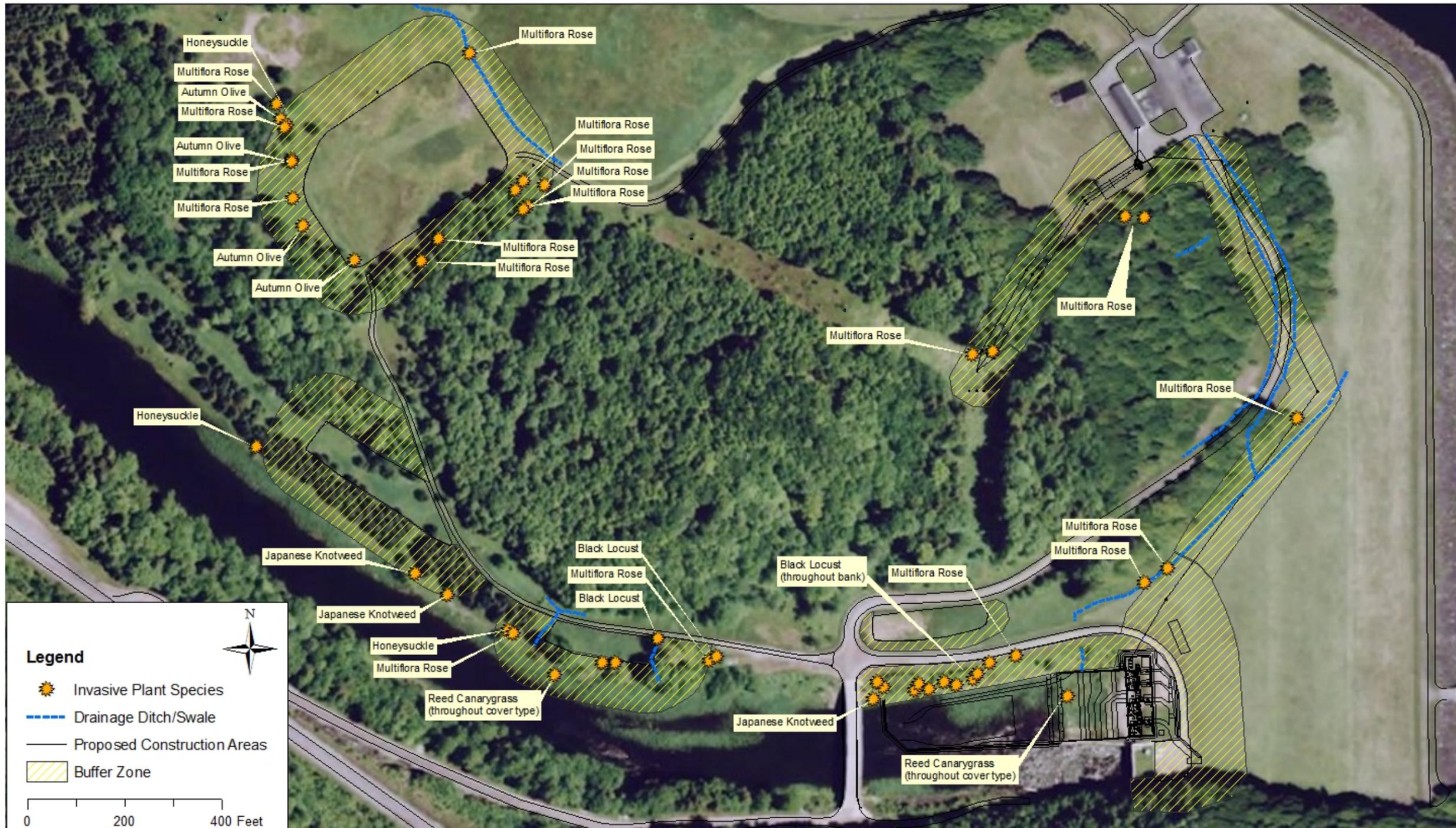


Figure E-20: Invasive Plant Species Found in Project-related Construction and Buffer Zone Areas

Notes: Imagery source: ESRI world imagery. All other data layers created by Gomez and Sullivan Engineers, P.C.

(4) Historical and Archeological Resources

(i) Sites Listed or Eligible for Inclusion in the National Register of Historic Places

A. Study- Phase IA Archeological Literature Review and Sensitivity Assessment

Hartgen Archeological Associates, Inc. (“Hartgen”) conducted a Phase IA Archeological Literature Review and Sensitivity Assessment for the City’s proposed Cannonsville, Pepacton and Neversink hydroelectric developments, which is included in Volume 7, Appendix E-5.

A systematic search was conducted through the archeological site files maintained by the New York State Office of Parks, Recreation and Historic Preservation (“OPRHP”) and the New York State Museum (“NYSM”) located at the OPRHP archives on Peebles Island, in Waterford, NY. Information concerning all reported precontact and historic period archeological sites within a three-mile (4.8 km) radius of the dam was collected. In addition, data relating to those sites located within and immediately adjacent to the reservoir, but outside of the 3-mile (4.8 km) search radius was also collected. The OPRHP’s electronic database was also searched for properties listed on or eligible for listing on both the State and National Registers of Historic Places (“National Register”) that are located within or immediately adjacent to each of the dam sites. The following summarizes the research findings.

OPRHP and NYSM Identified Archeological Sites

The NYSM and OPRHP files contain 33 reported sites within three miles (4.8 km) of Cannonsville Dam and 14 reported sites outside of the three-mile (4.8 km) search radius but within or immediately adjacent to the reservoir. These sites include 39 historic sites and eight precontact sites. The nearest site, a mid 19th-century sawmill, was identified during a 1979 historic industrial resources survey and is located immediately adjacent to the east side of Cannonsville Dam. Thirty-four of the historic sites located within three miles (4.8 km) of Cannonsville Dam or within and adjacent to the reservoir were identified over the course of the 1979 historic industrial resources survey by utilizing historic maps rather than subsurface archeological investigation. All of those sites identified during the 1979 survey represent 19th-century industrial complexes that were once located along the Delaware River or its contributing tributaries; many of which are now submerged within Cannonsville Reservoir. The location, brief description, and National Register status of each site are provided below in [Table E-18](#). The National Register status of each resource is determined by the OPRHP. Typically, resources are determined to be eligible or ineligible for listing on the National Register based on criteria developed by the National Park Service (1990, revised 2002). In some circumstances, resources have not been evaluated and are listed as unevaluated, in several other instances there were no records to indicate whether resources were evaluated or unevaluated; and for the purposes of this table are listed as unknown.

Table E-18: OPRHP/NYSM Archeological sites within three miles of the Cannonsville Dam and within or adjacent Cannonsville Reservoir.

OPRHP #	NYSM #	Identifier	Description	National Register Status	Location in Relation to Dam
02506.000001		Cider mill (WBD-139)	Mid 19th-century map documented industrial site	Unevaluated	1.5 miles (2.4 km) northeast (now within reservoir boundary)
02506.000002		Sawmill (WBD-141)	Mid 19th-century map documented industrial site	Unevaluated	Immediately adjacent to the east side of dam
02506.000003		Sawmill (WBD-142)	Mid 19th-century map documented industrial site	Unevaluated	1.3 miles (2 km) northwest
02506.000009		H. Hess Sawmill	Remains of stone foundation	Unevaluated	2.4 miles (3.8 km)

OPRHP #	NYSM #	Identifier	Description	National Register Status	Location in Relation to Dam
		(WBD-156)	and dam associated with mid 19th-century sawmill		northeast
02506.000010		Sawmill, Wagon Shop (WBD-157)	Mid 19th-century map documented industrial site	Unevaluated	2.1 miles (3.3 km) north
02506.000011		Blind Manufacture (WBD-158)	Mid 19th-century map documented industrial site	Unevaluated	2.2 miles (3.5 km) northwest
02506.000012		Ira Snyder Carding Mill (WBD-159)	Mid 19th-century map documented industrial site	Unevaluated	1.4 miles (2.2 km) northwest
02506.000013		Ira Snyder Axe Factory (WBD-160)	Mid to late 19th-century map documented industrial site	Unevaluated	1.4 miles (2.2 km) northwest
02506.000014		Ira Snyder Sawmill (WBD 161)	Mid to late 19th-century map documented industrial site	Unevaluated	1.4 miles (2.2 km) northwest
02506.000015		Southern NY Power Co. (WBD-160A)	Foundation remains as well as smokestack, sills, and exterior waterwheel associated with early 19 th -century power plant	Unevaluated	1.4 miles (2.2 km) northwest
02506.000016	5851	Briggs Site (SUBi-1124)	Late Archaic and Woodland period camp site	Unevaluated	1.3 (2.0 km) miles northwest
02506.000017		Site 2	Late Archaic camp site	Not eligible	1.7 miles (2.7 km) west
02506.000018		DEL-186	Historic quarry	Unevaluated	1.5 miles (2.4 km) south
02506.000019		DEL-187	Historic quarry	Unevaluated	2.1 miles (3.3 km) southeast
02506.000020		DEL-189	Historic quarry	Unevaluated	2.5 miles (4.0 km) southeast
02506.000024		DEL-9932	Undated stone foundation; possibly a barn	Unevaluated	4,900 ft (1,493 m) southwest
02506.000026		Deposit Airport I Site (SUBi-2048)	Late Archaic, Middle Woodland, and Late Woodland components: chert flakes, fire-cracked rock, points, biface, pottery fragments	Unevaluated	2.5 miles (4.0 km) southwest
02506.000027		Deposit Airport II Site (SUBi-2049)	Archaic through Late Woodland: biface, points, pottery fragments, flakes, and an adze	Unevaluated	2.4 miles (3.8 km) southwest
02506.000028		Wheeler Historic Site (SUBi-2070)	Architectural and domestic deposits dating to the mid-19 th century	Unevaluated	2.4 miles (3.8 km) southwest
02518.000002		Sawmill (WBD-97)	Mid 19 th -century map documented industrial site	Unevaluated	9.5 miles (15.2 km) northeast
02518.000004		Sawmill (WBD-99)	Mid 19th-century map documented industrial site	Unevaluated	7 miles (11.2 km) northeast (now within reservoir boundary)

OPRHP #	NYSM #	Identifier	Description	National Register Status	Location in Relation to Dam
02518.000009		N. Boyd Sawmill (WBD-103)	Mid 19th-century map documented industrial site	Unevaluated	6.9 miles (11.1 km) northeast (now within Dryden Brook inlet of reservoir boundary)
02518.000010		Sawmill (WBD-104)	Mid 19th-century map documented industrial site	Unevaluated	6.4 miles (10.2 km) northeast (now within reservoir boundary)
02518.000011		Gregory Sawmill (WBD-105)	Early through mid 19th-century map documented industrial site	Unevaluated	6.1 miles (9.8 km) northeast (now within reservoir)
02518.000012		Sawmill (WBD-106)	Early 19th-century map documented industrial site	Unevaluated	5.5 miles (8.8 km) northeast (now within reservoir boundary)
02518.000013		W.H. Sprague Lumber Manufactory (WBD-107)	Mid 19th-century map documented industrial site	Unevaluated	3.6 miles (5.7 km) northeast (now within reservoir boundary)
02518.000014		E.B. & M.W. Owens Wagon Shop, Blacksmith Shop (WBD-109)	Mid 19th-century map documented industrial site	Unevaluated	3.5 miles (5.6 km) northeast (now within reservoir boundary)
02518.000025		J. Tillotson Sawmill (WBD-128)	Mid 19th-century map documented industrial site	Unevaluated	7.9 miles (12.7 km) northeast (now within reservoir boundary)
02518.000026		W. Huggins/W.B. McGibbon Sawmill (WBD-130)	Early through mid 19 th -century map documented industrial site	Unevaluated	5.5 miles (8.8 km) northeast (now within reservoir boundary)
02518.000028		Sprague/Ogden & Leal/Jester/Deposit Milling Co./McLaughlin Gristmill (WBD-132)	Early through late 19th-century map documented industrial site	Unevaluated	3 miles (4.8 km) northeast (now within reservoir boundary)
02518.000029		J.A. Kenyon Tannery (WBD-133)	Mid through late 19th-century map documented industrial site	Unevaluated	3 miles (4.8 km) northeast (now within reservoir boundary)
02518.000030		Sawmill (WBD-134)	Early through mid 19th-century map documented industrial site	Unevaluated	3 miles (4.8 km) northeast (now within reservoir boundary)

OPRHP #	NYSM #	Identifier	Description	National Register Status	Location in Relation to Dam
02518.000031		Huntington Sawmill (WBD-135)	Early through late 19th-century map documented industrial site	Unevaluated	2.1 miles (3.3 km) east (now within reservoir boundary)
02518.000033		E. Boyd Sawmill (WBD-137)	Mid 19th-century map documented industrial site	Unevaluated	2.9 miles (4.6 km) northeast
02518.000034		Burr Map Sawmill (WBD-138)	Early 19th-century map documented industrial site	Unevaluated	1.5 miles (2.4 km) northeast (now within reservoir boundary)
02519.000032		E. Beers/W. Beers/O. Hanford Sawmill (WBD-96)	Mid 19th-century map documented industrial site	Unevaluated	9.4 miles (15.1 km) northeast
02544.000003		Tannery (WBD-162)	Mid 19th-century map documented industrial site	Unevaluated	2 miles (3.2 km) west
02544.000004		Deposit Steam Mill (WBD-163)	Mid 19th-century map documented industrial site	Unevaluated	2 miles (3.2 km) west
02544.000005		R. H. Evans Cottage D Sawmill (WBD-164)	Mid 19th-century map documented industrial site	Unevaluated	1.9 miles (3.0 km) west
02544.000006		W. Evans/B.E. Hadley Sawmill (WBD-165)	Mid 19th-century map documented industrial site	Unevaluated	1.9 miles (3.0 km) west
02544.000007		Hadley Steam Mill (WBD-167)	Late 19th-century map documented industrial site	Unevaluated	2.1 miles (3.3 km) west
02544.000008		N.K.W. Sash Factory (WBD-168)	Mid 19th-century map documented industrial site	Unevaluated	2.2 miles (3.5 km) west
02544.000009		Organ Factory and Wagon Shop (WBD-169)	Mid 19 th -century map documented industrial site	Unevaluated	2.3 miles (3.7 km) west
02544.000013		Deposit Airport III Site	Chert flakes, cortical chunk, chert shatter fragments	Unevaluated	2.4 miles (3.8 km) west
	761	No information	One fluted projectile point identified as a stray find	Unknown	3 miles (4.8 km) northeast (now within reservoir boundary)
	3131	No information	Reported location of a precontact village burial site	Unknown	1.4 miles (2.2 km) west
	8407	No information	Reported traces of precontact occupation	Unknown	2 miles (3.2 km) west

State and National Register of Historic Places

A review of the OPRHP computer inventory identified no properties listed on the State or National Register of Historic Places or eligible for such a listing immediately adjacent to the Cannonsville Dam.

Findings and Recommendations

Although the Project area has moderate sensitivity for both precontact and historical archaeological sites, the potential for locating intact archaeological sites that may be eligible for the National Register has been

greatly diminished by the prior construction related to Cannonsville Reservoir and Dam. Land clearing, moving and building associated with such prior construction has thoroughly disturbed the Project area. Accordingly, there is no likelihood of locating archaeological sites at the proposed location of the turbines, powerhouse or substation at the Cannonsville hydroelectric development. Similarly, the proposed transmission line, staging areas and spoils area are all located in areas of previous disturbance. Therefore, based on these findings, the City is not proposing to conduct additional archaeological work/studies with respect to the Cannonsville hydroelectric development.

(ii) Description of Measures Recommended by the Agencies for Locating, Identifying and Salvaging Resources that would be Affected by Existing or Proposed Operations

The OPRHP was provided with the Hartgen Archeological Associates report, which included a Phase IA Archeological Literature Review and Sensitivity Assessment for the City's proposed Cannonsville, Pepacton and Neversink hydroelectric developments. In a July 20, 2011 email (see Appendix E-1) from OPRHP to DEP, they noted the following:

- OPRHP concurred with Hartgen's findings that the direct impact areas associated with the Project have all be previously disturbed, and therefore there is no need for Phase IB testing.
- An Historic Properties Management Plan ("HPMP") should be developed for each hydroelectric development, which should address the many sites identified by Hartgen that are now submerged as well as the potential for more sites and continued erosion of them along the edges of the reservoir.
- OPRHP noted that for the submerged sites, the HPMP should acknowledge they exist, identify that any substantial reservoir drawdown could expose them, and address the potential for future archeological research.

(iii) Statement of Activities Proposed for Locating, Identifying and Salvaging Resources

Since the potential for locating intact archaeological sites that may be eligible for the National Register has been greatly diminished by the prior construction related to Cannonsville Reservoir and Dam, the City is not proposing to locate, identify or salvage resources.

(5) Recreational Resources

(i) Description of Existing Recreational Facilities at the Project

The Cannonsville Reservoir is approximately 150 miles from New York City and 120 miles from Albany, NY. As of August 25, 2011, the City owns approximately 30,705 acres in fee simple within the Cannonsville Reservoir Basin (also known as the West Branch of the Delaware River watershed) and 834 acres just outside the basin (connecting DEP land within). Of these 31,539 total acres owned in fee simple by the City, 21,417 acres are available for public recreation. Public access areas (“PAA”) to City-owned property and other recreation features in the vicinity of the reservoir are shown in [Figure E-21](#) and listed in [Table E-19](#). There are several large tracts of DEP-owned land opened for public recreation that border the impoundment (a DEP access permit is required on some of these lands as noted on the figure).

Table E-19: Cannonsville Recreation Uses and Acreages

Recreation Unit	Use	Acres
Johnny Brook	Hunting	3,791
Speedwell Mountain	PAA	3,908
Berston	Hunting	871
Barbour Brook	PAA	417
Fletcher Hollow	PAA	358
Sands Creek	Hunting	1,608
Roods Creek	PAA	349
	Total	11,302

The reservoir provides fishing opportunities for trout, bass, carp, perch, pickerel, panfish, and bullhead. The reservoir shorelines are open for fishing from shore. Many people park along the public roads and walk to the waters’ edge. Brown trout are the primary sought-after species, but brook trout and rainbow trout are occasionally caught as well. The West Branch of the Delaware River and the reservoir are actively managed fisheries by NYSDEC. The West Branch of the Delaware River and tributaries above the reservoir are renowned for their trout fishery.

The area around the West Branch of the Delaware River offers four managed trail systems for year-round recreation off City-owned land. The Catskill Scenic Trail lies on the old Ulster-Delaware railroad bed and parallels the West Branch of the Delaware River for about 19 miles, crossing it at several points. Another trail system, including the Utsayantha Trail, has stunning views of the West Branch of the Delaware River. Also, the West Branch Preserve, which was donated to The Nature Conservancy in 1973, consists of two short trails (Delaware Co. SWCD, 2004). Other protected areas in the vicinity of the reservoir not owned by the City include:

- Oquaga Creek State Park
- Chenango Valley State Park
- Hunt’s Pond State Park
- Salt Spring State Park
- Bear Spring Mountain Wildlife Management Area

(ii) Estimate of Existing and Potential Recreational Use of the Project Area during the Daytime and Nighttime

Recreational activities available to the public outside of City-owned lands include camping, hiking, fishing, canoeing, kayaking, hunting, mountain biking, cross-country skiing, snowmobiling, horseback riding, picnicking, swimming, and bird watching. At night, people fish along the Cannonsville shoreline,

although it is more popular to fish from a boat. Night angling use appears evenly distributed during the spring, summer, and fall.

Hunting for deer, turkey, and small game is permitted throughout most of the City-owned lands around the reservoir, but all hunters must first obtain a DEP Access Permit. Hunting, fishing, hiking, and trapping are permitted in PAAs without an Access Permit. PAAs include City-owned lands that are across a public road but within a few hundred feet of a reservoir shoreline but do not include lands that are immediately adjacent to the reservoir. Listed in [Table E-19](#) and shown in [Figure E-21](#) are the areas open for hunting with an Access Permit.

Hiking is permitted only in PAAs (see [Figure E-21](#)). The topography is “rolling” to steep, and there are no designated trails. Therefore, hikers must “bushwhack” and/or follow previously established logging roads.

The number of permitted boats currently found in each zone (see [Figure E-22](#) for zones) on the reservoir is shown in [Table E-20](#).

Table E-20: Number of Permitted Boats in Cannonsville Zones

Zone	No. of Boats
Unassigned	3
ZONE 1	51
ZONE 2	53
ZONE 3	69
ZONE 4	5
ZONE 5	57
ZONE 6	35
ZONE 7	6
ZONE 8	10
ZONE 9	108
ZONE 10	39
Total	436

There are three designated parking areas at Cannonsville Reservoir, with capacities of three, six, and 10 vehicles, for scenic vistas or overlooks.

Cannonsville Reservoir Recreational Boating Pilot Project

In 2008, DEP began developing a pilot program to expand recreational boating opportunities at the Cannonsville Reservoir. A committee was formed consisting of DEP staff, the Delaware County Chairman of the Board of Supervisors, the Town Supervisors of the Towns of Tompkins and Deposit, the Delaware County Watershed Affairs Commissioner, representatives from the EPA, NYSDEC, NYSDOH, and the Catskill Center for Conservation and Development. The committee pursued a program that allows several different types of watercraft (kayaks, canoes, sculls, rowboats, johnboats, and sailboats) to be used. Most of the watercraft can be launched from several specified sites around the reservoir, and small sailboats can be launched from a single site (see [Figure E-23](#)). The launch sites were coordinated with NYSDEC to prevent conflicts with nesting eagles and with the New York State Department of Transportation for public safety for access along NY State Route 10. The program includes requirements for participants to obtain Access Permits and Recreational Boat Tags which are given to boaters after they have their vessels and appurtenant devices (oars, paddles, sails) steam cleaned. Boaters are able to secure temporary (seven days or less) or seasonal boat tags. The program runs from Memorial Day weekend through Columbus Day each year for three successive years starting in 2009. The Rules for the

Recreational Use of Water Supply Lands and Waters have been amended to include this program and became effective May 15, 2009.

(iii) Description of Measures Recommended by Agencies for Creating, Preserving or Enhancing Recreational Opportunities

The USFWS and NYSDEC did not provide any recommendations for creating, preserving or enhancing recreational opportunities.

(iv) Existing Recreational Measures to be Enhanced

DEP will maintain the current recreational measures already established at Cannonsville Reservoir; no new recreational measures are proposed as part of the Project.

(v) Material and Information Regarding the Resources and Facilities Identified under (i) and (iv) of this Section

- (a) Identification of the entities responsible for implementing, constructing, operating, or maintaining any existing or proposed measures or facilities;

Existing recreational facilities will continue to be managed and maintained by DEP. Maps showing existing recreational facilities are shown in [Figure E-21](#), [Figure E-22](#) and [Figure E-23](#). No new recreational facilities are proposed as part of the Project.

- (b) A schedule showing the intervals following issuance of a license at which implementation of the measures or construction of the facilities would be commenced and completed;

Not applicable. No new recreational facilities are proposed as part of the Project.

- (c) An estimate of the costs of construction, operation, and maintenance of any proposed facilities, including a statement of the sources and extent of financing;

Not applicable. No new recreational facilities are proposed.

- (d) A map or drawing that conforms to the size, scale, and legibility requirements of §4.39 showing by the use of shading, cross-hatching, or other symbols the identity and location of any facilities, and indicating whether each facility is existing or proposed (the maps or drawings in this exhibit may be consolidated); and

Maps showing existing recreational facilities are shown in Exhibit G. All recreation facilities depicted already exist; no new facilities are proposed as part of the Project.

(vi) A description of any areas within or in the vicinity of the proposed project boundary that are included in, or have been designated for study for inclusion in, the National Wild and Scenic Rivers System, or that have been designated as wilderness area, recommended for such designation, or designation as a wilderness study area under the Wilderness Act.

There are no known areas within or in the vicinity of the Project area that are included in or have been designated for study for inclusion in the National Wild and Scenic Rivers System.

There are no known areas within the Project area that are known to be under the provisions of the Wilderness Act or that have been designated as wilderness areas, recommended for designation as wilderness area, or designated as wilderness study.

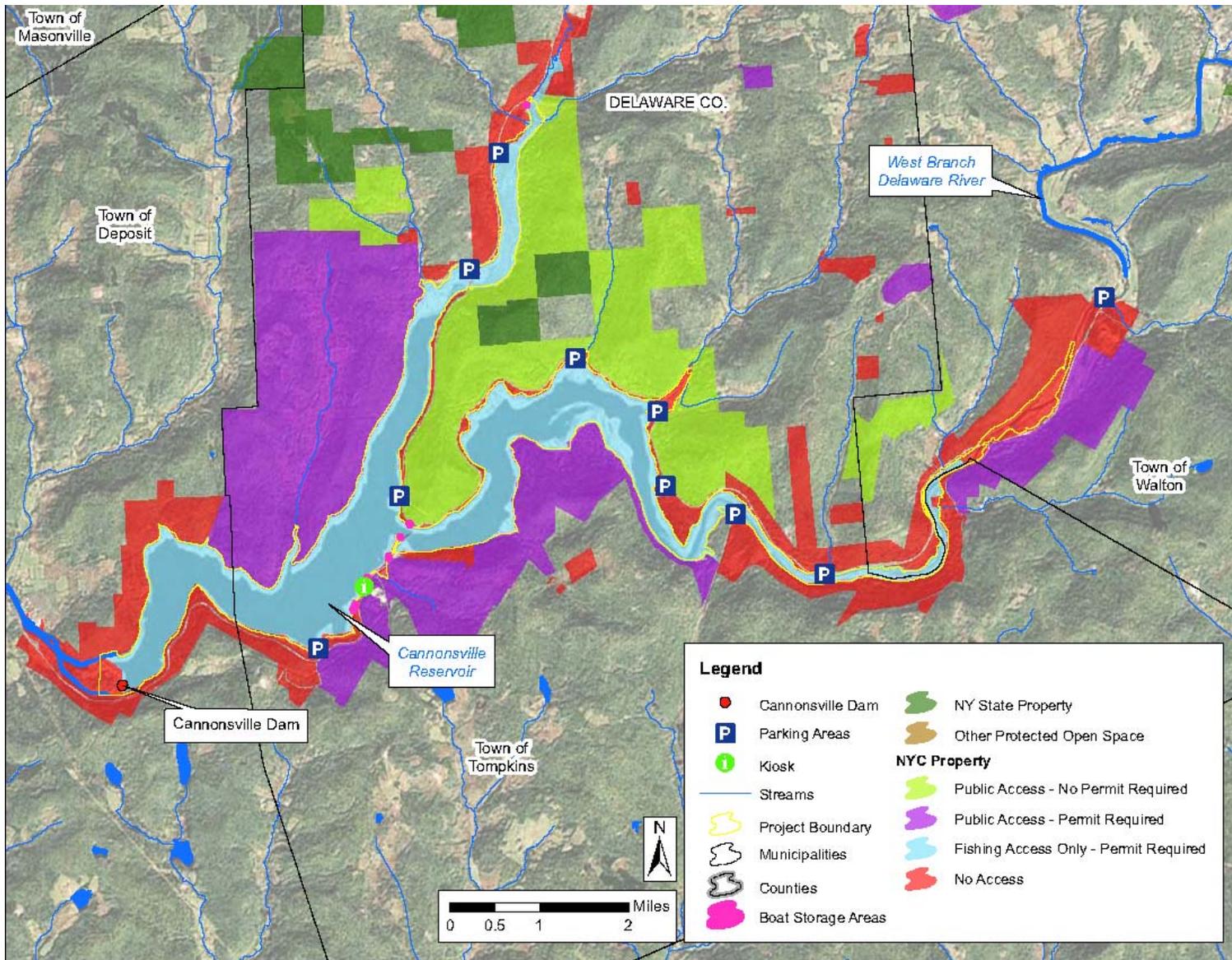


Figure E-21: Recreation Access near the Cannonsville Reservoir

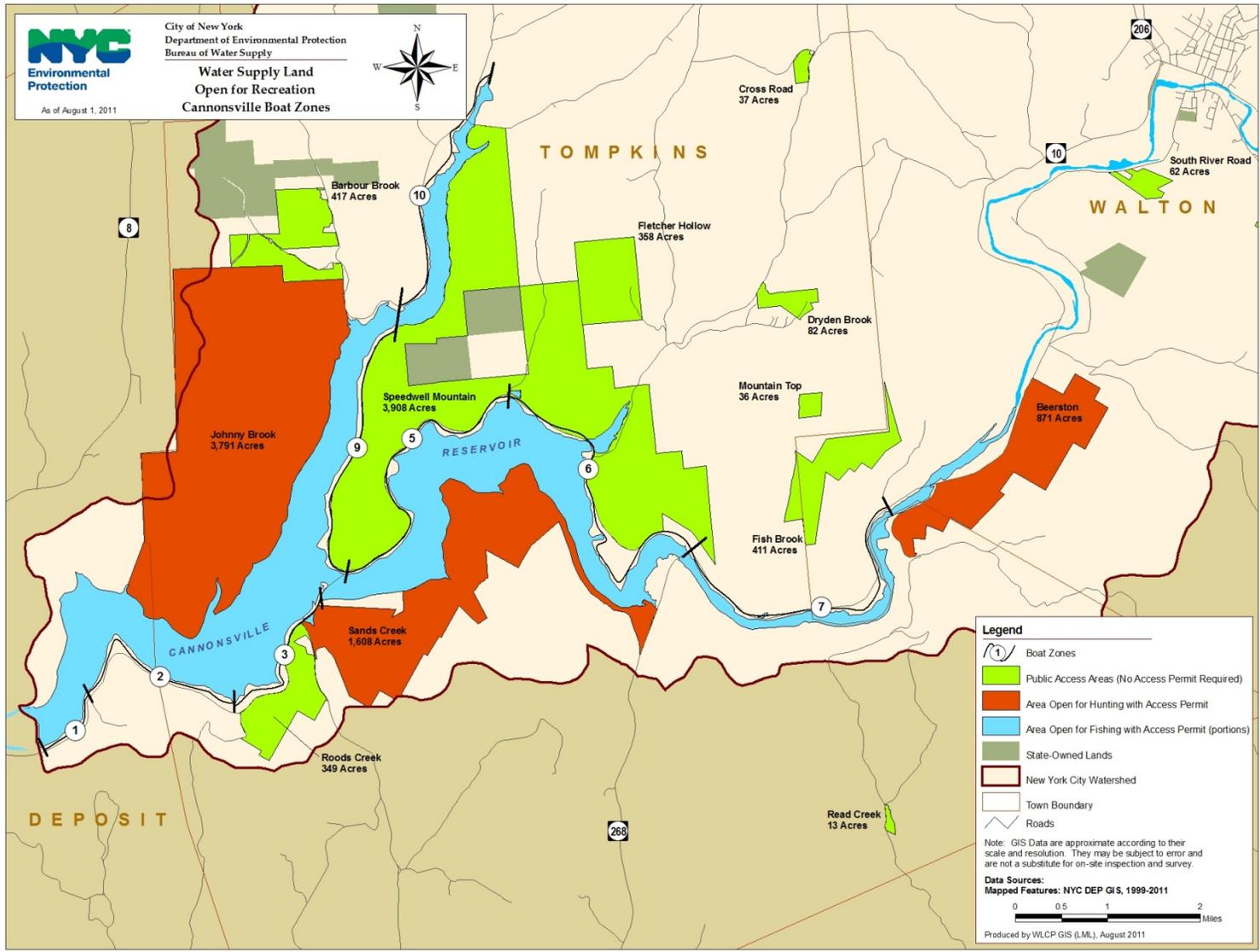


Figure E-22: Cannonsville Reservoir – Areas Open for Recreation and Boat Zones

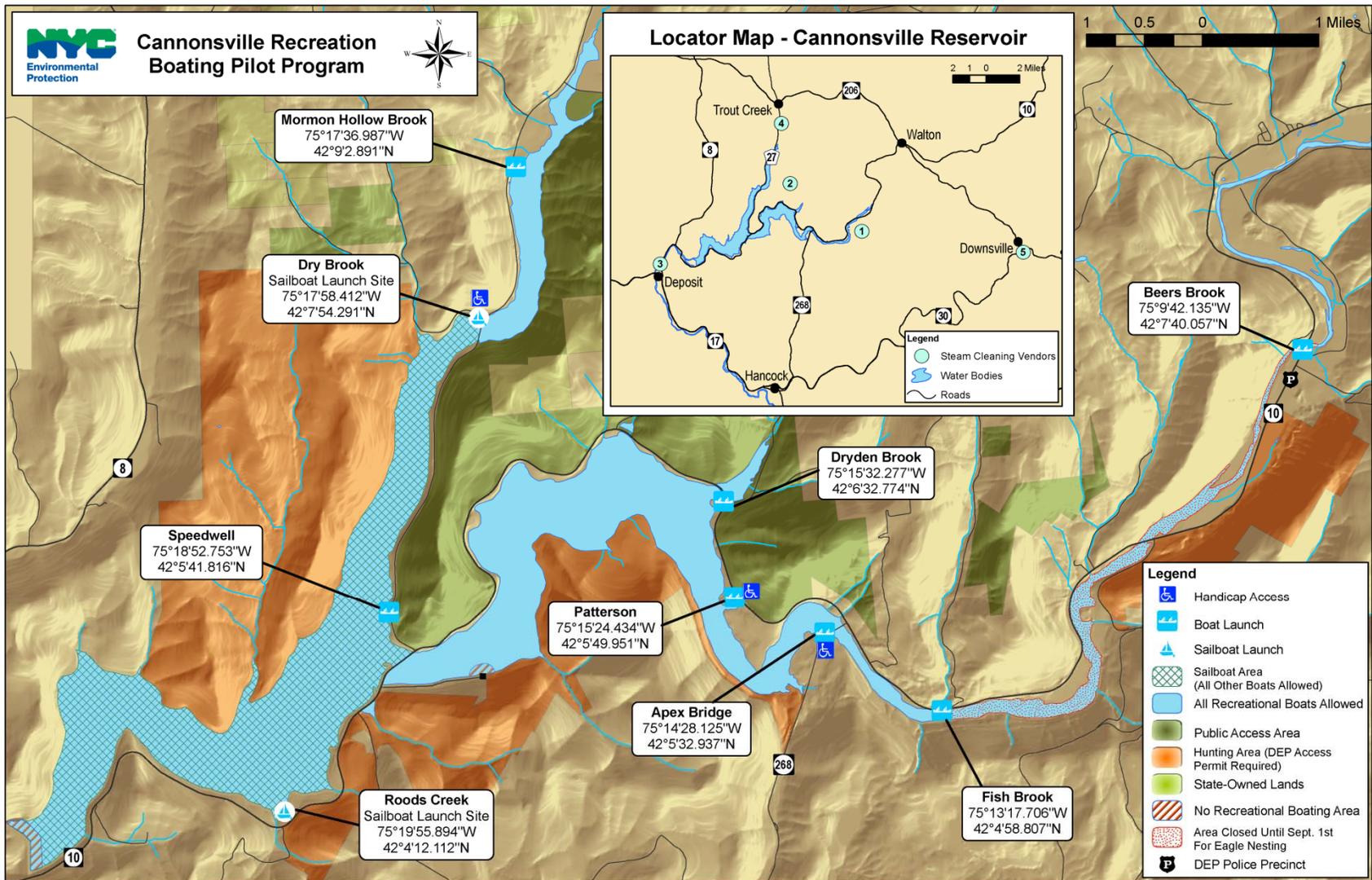


Figure E-23: Cannonsville Reservoir – Boating Pilot Program

(6) Land Management and Aesthetics

(i) Description of Existing Development and Use of Project Lands and Lands Abutting the Project Impoundment

Land Resources

The existing development consists of the following major features:

- Earthen Dam
- Spillway
- Intake
- Low-Level Release Works
- Water Supply Withdrawal Building

The land surrounding the reservoir and dam are dominated by forest cover. There is extremely limited development in the Project Area, with the exception of State Route 10. No infrastructure, in the forms of buildings, is located within the entire shoreline. All lands within the Project boundary are City-owned.

[Table E-21](#) lists the land cover in the West Branch of the Delaware River watershed.

Table E-21: Land Cover Types; West Branch of the Delaware River Watershed

Cover Type	Land Cover Type expressed in percentages
Forest	68.8%
Shrubland	11.3%
Grassland	N/A*
Urban*	6.7%
Water	1.8%
Wetland	1.2%
Agricultural Land	10.1%
Roads	N/A*

*Roads were not separated from the urban cover type for West Branch watershed. Grasslands were not separated from the agricultural land cover type for the West Branch watershed.

The lands immediately around the hydroelectric development consist of mowed lawn, access roads, and large stands of trees as shown in [Figure A-1](#).

Aesthetic Resources

A. Study – Impact of Project Related Construction and Permanent Facilities on Aesthetic Resources

The DEP conducted an aesthetic study of the Project area. The full report, which addresses the City's proposed Cannonsville, Pepacton and Neversink hydroelectric developments collectively, is included in Volume 8, Appendix E-6.

Background

A field survey focused on public viewsheds at the location of the low level release works and powerhouse, the work/staging areas, the substation and the route for interconnection facilities associated with the Project. The survey considered both the long-term aesthetic impacts of new construction, and temporary impacts as a result of construction activities. On June 28, 29, and 30, 2010, the field survey was conducted and photographs were taken documenting the current character of the Project Area. In addition, photographs were taken from identified public viewsheds as well as from City-owned lands, referred to as “restricted areas”.

[Figure E-24](#) shows the photo locations from the Project area, which are labeled C1-C6. Photo locations are color-coded and reflect publicly accessible viewsheds (C1-C2) and restricted area viewsheds (C3-C6). ArcGIS software was used to determine what, if any, public viewsheds of the development could be seen from the reservoir. Using a digital elevation model and 3D analyst extension, it was determined that the only sightlines from readily-accessible public viewsheds are from State Route 10, as shown on C1 and C2.⁸ However, the views of the Project from those locations are highly obstructed by the surrounding vegetation.

Using Adobe Photoshop, photo renderings were developed to depict the visual effect permanent structures and appurtenances related to the Project will have on the character of the Project area and, to the extent such new facilities are visible, to depict their aesthetic effect. Because a permanent powerhouse and substation will be constructed, photo renderings were developed from views not publically accessible. These renderings demonstrate the effects the powerhouse and substation will have on the character of the area.

Aesthetics Assessment

[Figure E-25](#) shows the sightlines from the potential viewsheds discussed above . Based on the field survey and the ArcGIS analysis (which included a digital elevation model and 3D analyst extension), it was concluded that the areas proposed for disturbance relating to the Project are not visible along any of the sightlines from the public viewsheds east of Cannonsville Dam. The height of the earthen dam exceeds the height of the new structures and appurtenances associated with the Project. Therefore, and as shown in [Figure E-25](#), the dam fully screens the areas proposed for disturbance relating to the Project from the eastern viewsheds. Moreover, the dense vegetation around such areas similarly screens the Project-related structures from the northern, western, and southern public viewsheds.

[Figure E-26](#) shows a public viewshed located on State Route 10, about one-half mile east of the areas proposed for disturbance relating to the Project. This photograph demonstrates the above conclusion that Cannonsville Dam, as well as the vegetation in the area of the viewshed and behind the dam, fully screen the areas proposed for disturbance relating to the Project. Indeed, the existing service building that is next to the planned location of the substation is not visible at all from this location, indicating that the substation and other appurtenances related to the Project also will not be visible.

To the west of the areas proposed for disturbance relating to the Project there is a pull-off on State Route 10, just before the access road, shown on [Figure E-27](#). This viewshed is about 1,700 feet from the Project construction-related activities to occur at the dam. Due to the dense vegetation around this public viewshed, the bulk of the areas proposed for disturbance relating to the Project are fully screened. Although, construction vehicles entering and leaving the development site would be visible from this

⁸ While Cannonsville Reservoir is generally accessible to the public, boaters must stay at least 500 feet away from Cannonsville Dam and the spillway.

location, the relatively compact nature of the construction activities and the plan to dispose of spoils on-site, the number of vehicle trips is expected to be relatively limited and primarily involve mobilization, deliveries, demobilization, and the arrival and departure of the construction workers.

Findings

The Project will not have any material adverse impact on aesthetics or the character of the Project area because none of the areas proposed for disturbance relating to the Project are visible from the identified public viewsheds. Moreover, most of the new structures and appurtenances related to the Project will be constructed adjacent or near to existing structures, thereby minimizing the magnitude of the disruption to the natural environment. To the extent possible, the new structures will be constructed using materials and techniques that will harmonize them with the existing structures. Further, while the distances from the public viewsheds to the areas proposed for disturbance relating to the Project and the dam are sufficient to screen such areas from most vantage points, a majority of the trees comprising the vegetative screening are coniferous, obstructing views even during winter months.

(ii) Description of Proposed Measures

Because no material adverse impacts have been identified related to the construction activities or permanent structures to be added as part of the Project, the development and assessment of mitigation strategies is not warranted.

(iii) Wetlands and Floodplains

As noted previously, DEP intends on continuing to operate the Cannonsville Reservoir consistent with current operations whereby water levels are drawn down in the summer and fall period and then refilled during the spring. As operation of the reservoir is not changing there are no anticipated impacts on wetlands associated with hydroelectric operations. A few larger wetlands are present at the upper tip of the large north-facing finger bay of the reservoir. The largest is a 52-acre freshwater emergent, seasonally flooded wetland classified as PEM1E. The next largest is a 12-acre deciduous, scrub-shrub, semi-permanent wetland located at the mouth of Trout Creek classified as PSS1/EM1E.

Wetland and floodplain impacts due to Project-related construction or constructed related activities (excavation) are located in the tailrace area just downstream of the new powerhouse associated with the Project. The area for tailrace excavation consists of two wetland types. The open water channel (parcel no. C-18) is classified as *riverine, lower perennial, unconsolidated bottom, permanently flooded*, because there were no submerged aquatic vegetation species found in this area and the bottom substrate was a mix of gravel and cobble overlain by silt. Adjacent to the channel, in the area proposed for excavation (parcel no. C-14), is a wetland of approximately 1.05 acres classified as *palustrine, persistent emergent, seasonally flooded* (PEM1E). This wetland is classified as a palustrine system due to the presence of persistent emergent plants, such as reed canarygrass and yellow rocket, and is a seasonally flooded riparian area.

Just over one acre of emergent wetland (parcel C-14) will be impacted by the construction of the powerhouse and tailrace. Impacts will include excavation and removal of the vegetation and substrate to allow for a deeper tailrace area to accommodate the turbine draft tube. The existing riverine deepwater habitat (parcel C-18) will also be excavated to allow for a deeper tailrace channel. There will be no net loss of wetlands due to this construction. However, the emergent wetland will be transformed into deepwater habitat.

The emergent wetland is currently of poor value due to the incursion of the invasive plant species reed canarygrass. Unlike native wetland vegetation, dense stands of reed canarygrass have little value for wildlife. Few species eat the grass, and the stems grow too densely to provide adequate cover for small mammals and waterfowl. Accordingly, no mitigation measures are proposed.

(iv) Statement of Applicant's Ability to Provide a Buffer Zone Around the Impoundment for the Purpose of Ensuring Public Access and Protection Recreational and Aesthetic Values of Impoundment and Shoreline

The City already owns a buffer zone around the impoundment and already provides public access to the reservoir for certain recreational purposes. Public access to the impoundment through these buffer zones will not be affected by the Project.

(v) Description of Applicant's Policy, if any, with Regard to Permitting Development of Piers, Docks, Boat Landings, Bulkheads, and Other Shoreline Facilities on Project Lands and Waters

Private development is not allowed on the City-owned lands associated with the Project.

(vi) Location Maps

As noted above the new facilities generally cannot be seen from any public viewshed. Moreover, most of the new structures and appurtenances related to the Project will be constructed adjacent or near to existing structures, thereby minimizing the magnitude of the disruption to the natural environment. To the extent possible, the new structures will be constructed using materials and techniques that will harmonize them with the existing structures. In addition, any new facilities located on City-owned lands must meet the applicable requirements of the City's Design Commission.

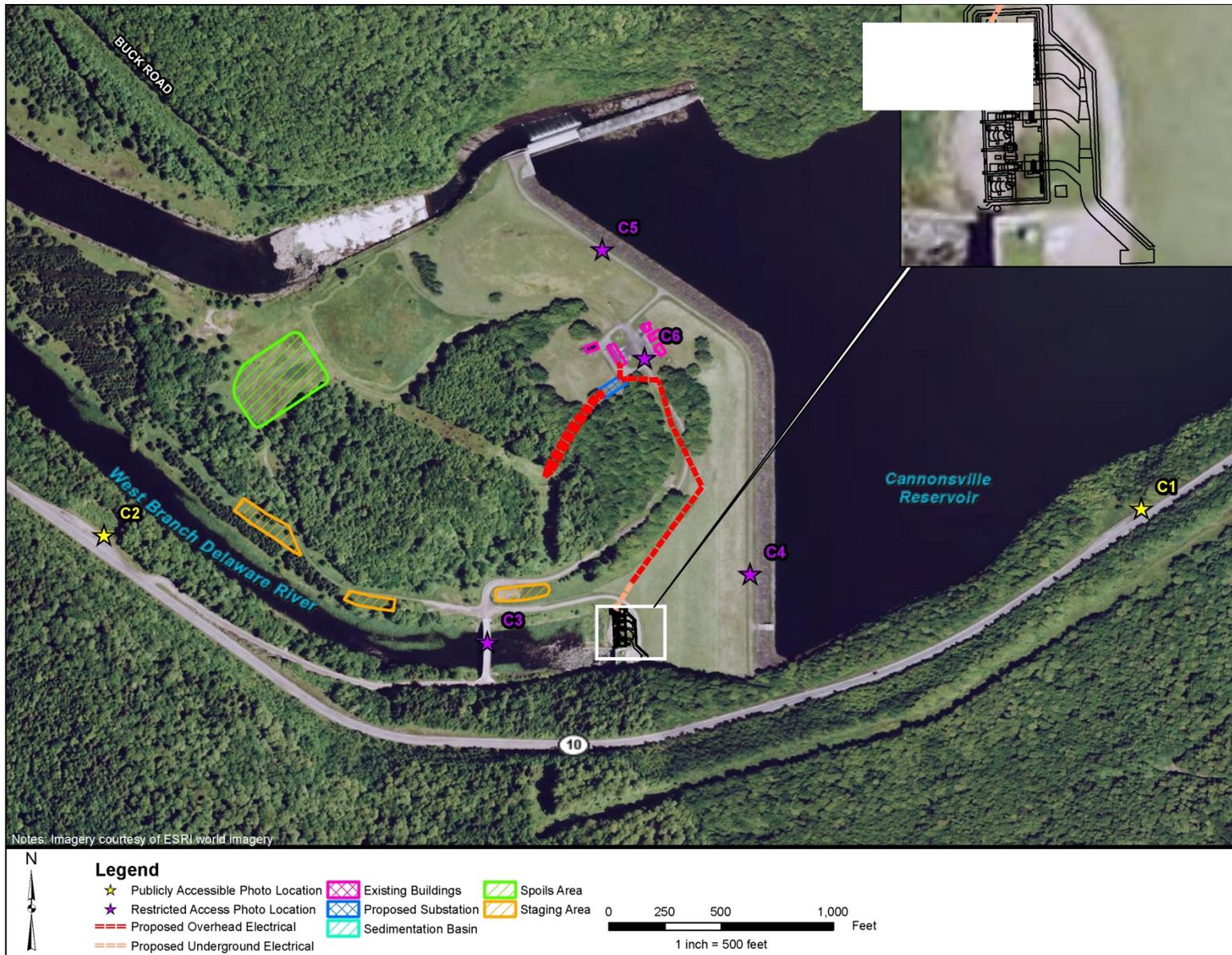


Figure E-24: Cannonsville Photo Locations

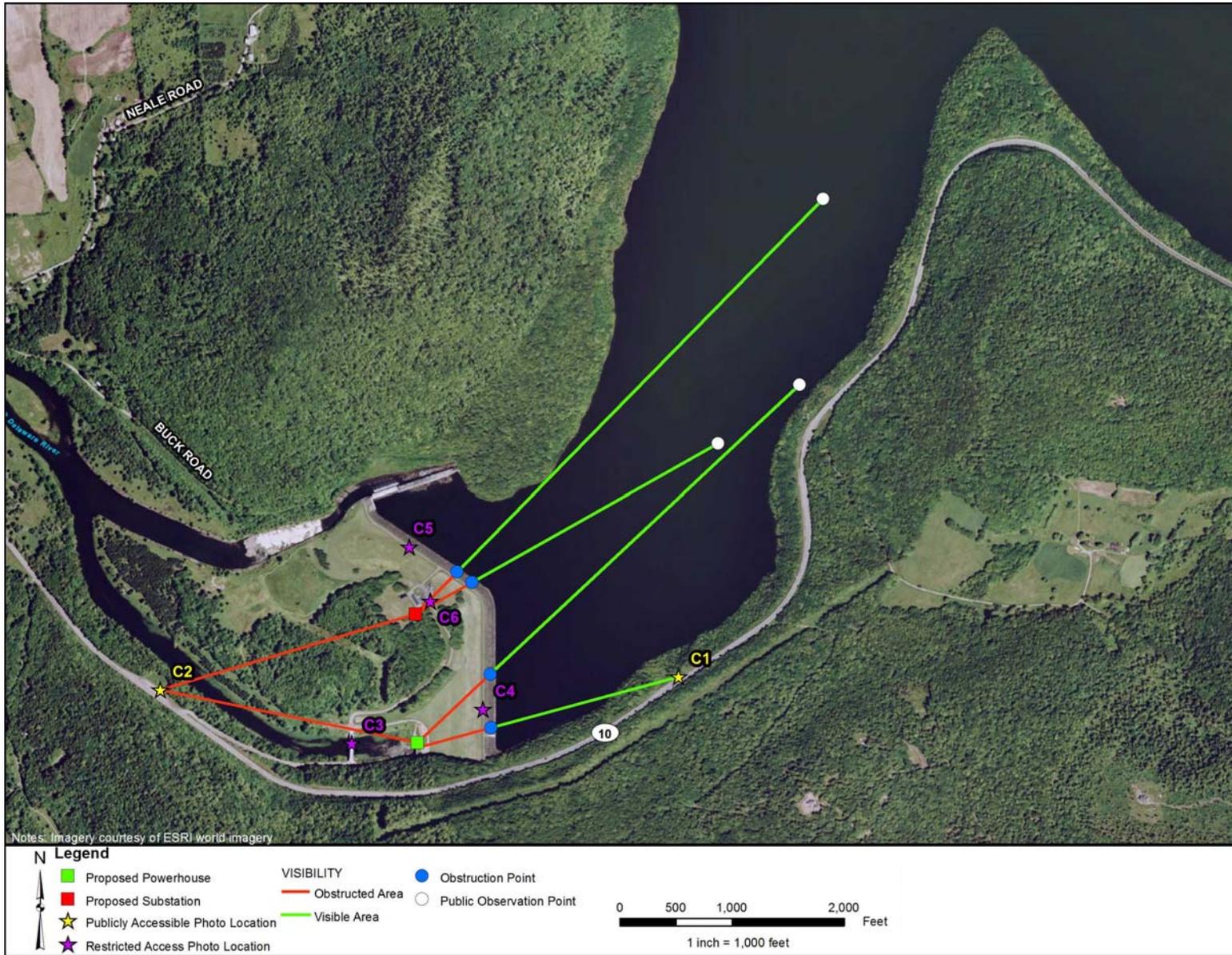


Figure E-25: Cannonsville Viewsheds and Sightlines

Figure E-26: C1 – View of Cannonsville from pulloff on State Route 10



Figure E-27: C2 – View of Cannonsville from State Route 10



(7) List of Literature

Agreement of the Parties to the 1954 U.S. Supreme Court Decree Effective June 1, 2011.

Bovee, K.D., Waddle, T.J., Bartholow, J., and Burris, L. 2007. A decision support framework for water management in the upper Delaware River: Open-file report 2007-1172. U.S. Geological Survey. Reston, VA.

Cole, J. C., P. A. Townsend, and K. N. Eshleman. (2008). *Predicting flow and temperature regimes at three Alasmidonta heterodon locations in the Delaware River*. Technical Report NPS/NER/NRTR—2008/109. National Park Service. Philadelphia, PA.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. (1979). *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Fish and Wildlife Service, FWS/OBS-79/31, Washington, D.C. 131 pp.

Delaware County Soil and Water Conservation District [SWCD]. (2004). West Branch of the Delaware River draft stream corridor management plan. New York: New York City Department of Environmental Protection Stream Management Program.

Delaware County Soil and Water Conservation District [SWCD]. (2007). East Branch of the Delaware River draft stream corridor management plan. New York: New York City Department of Environmental Protection Stream Management Program.

Edinger, G.J., D.J. Evans, S. Gebauer, T.G. Howard, D.M. Hunt, and A.M. Olivero (editors). 2002. Ecological Communities of New York State. Second Edition. A revised and expanded edition of Carol Reschke's Ecological Communities of New York State. (Draft for review). New York Natural Heritage Program, New York Department of Environmental Conservation, Albany, NY.

Federal Energy Regulatory Commission [FERC]. (2004). *Evaluation of mitigation effectiveness at hydropower projects: Fish passage*. Washington, D.C.: Division of Hydropower Administration and Compliance, Office of Energy Projects.

Greene County Soil and Water Conservation District [SWCD]. (2007). *Schoharie Creek management plan*. New York: New York City Department of Environmental Protection Stream Management Program.

Isachsen Y.W., E. Landing, J.M. Lauber, L.V. Rickard and W.B. Rogers (eds.) (1991). *Geology of New York: A simplified account*. Educational Leaflet 28. New York State Museum, Albany, NY

McBride, N.D. (1995). *Summary of 1993 and 1994 trout population studies on the Upper Delaware tailwater*. Stamford, NY: New York State Department of Environmental Conservation.

National Oceanic and Atmospheric Administration National Climate Data Center. Climatography of the United States Nos. 20 & 81, 1971-2000.

New York Natural Heritage Program [NYNHP]. (2008a). *Online conservation guide for Alasmidonta heterodon*. Available from: <http://www.acris.nynhp.org/guide.php?id=8375>. Accessed December 4, 2008.

- New York Natural Heritage Program [NYNHP]. (2008b). *Online Conservation Guide for Alasmidonta varicosa*. Available from: <http://www.acris.nynhp.org/guide.php?id=8378>. Accessed 4 December 2008.
- New York State Department of Environmental Conservation [NYSDEC]. (2001). *West Branch Delaware River biological assessment*. Bureau of Watershed Assessment and Research Stream Biomonitoring Unit.
- New York State Department of Environmental Conservation [NYSDEC]. (2005). *Pepacton/Cannonsville Reservoirs 2007 angler diary summary*. Stamford, NY: NYSDEC.
- New York State Department of Environmental Conservation [NYSDEC]. (2007a). *Delaware tailwaters 2007 angler diary summary*. Stamford, NY: NYSDEC.
- New York State Department of Environmental Conservation [NYSDEC]. (2007b). *Pepacton/Cannonsville Reservoirs 2007 angler diary summary*. Stamford, NY: NYSDEC.
- New York State Department of Environmental Conservation [NYSDEC]. (2007c). *Delaware Tailwaters 2008 angler diary program*. Stamford, NY: NYSDEC.
- New York State Department of Environmental Conservation [NYSDEC]. (2008a). *Delaware River tailwater monitoring final report*. Stamford, NY: NYSDEC
- New York City Department of Environmental Protection [NYCDEP]. (2008). *Wastewater treatment plants in the NYC watersheds (GIS dataset)*. New York: NYCDEP Bureau of Water Supply.
- New York State Department of Environmental Conservation NY Standards and Specifications for Erosion and Sediment Controls (August, 2005). <http://www.dec.ny.gov/chemical/29066.html>
- Sheppard, J.D. 1983. New York reservoir releases monitoring and evaluation program on the Delaware River summary report: Technical report 83-5. New York State Department of Environmental Conservation. Albany, NY.
- US Census Bureau, <http://2010.census.gov/2010census/>
- US Fish and Wildlife Service [USFWS]. (1997). Significant habitats and habitat complexes of the New York Bight watershed. Catskill High Peaks Complex #34. Southern New England-New York Bight Coastal Ecosystems Program.
- U.S. Fish and Wildlife Service. 2007. National bald eagle management guidelines. Washington, D.C.
- U.S. Fish and Wildlife Service. National Wetlands Inventory Maps. <http://www.fws.gov/wetlands/Data/DataDownload.html>.
- Williams, C.N. Jr., M.J. Menne, R.S. Vose, and D.R. Easterling. (2005). Historical climate data website. Available from: <http://cdiac.esd.ornl.gov/epubs/ndp019/ndp019.html>. National Climatic Data Center, National Oceanic and Atmospheric Administration. Accessed 15 January 2009.

**BEFORE THE FEDERAL ENERGY REGULATORY COMMISSION
APPLICATION FOR LICENSE FOR MAJOR PROJECT –
EXISTING DAM**

Cannonsville Hydroelectric Development

FERC Project No. 13287



**VOLUME 2
Exhibits F-G**

**PUBLIC VERSION – Critical Energy Infrastructure
Information Has Been Removed**

City of New York



**Environmental
Protection**

September 2011

EXHIBIT F: PRELIMINARY DESIGN DRAWINGS AND PRELIMINARY SUPPORTING DESIGN REPORT

The attached document includes existing conditions drawings as well as preliminary design drawings showing plans, elevations, and sections of the principal project works for the Cannonsville Hydroelectric Development (“Project”) proposed by the City of New York (“City”), through the New York City Department of Environmental Protection (“DEP”). Note that the preliminary drawings are subject to change once final bids are retained and the ongoing feasibility analysis related to the Project is completed based on such bids. In addition to the drawings, the attached document includes the supporting design report.

The Project design drawings and supporting design report provided in Exhibit F constitutes Critical Energy Infrastructure Information (“CEII”) in accordance with 18 C.F.R. § 388.113(c). The Commission has previously recognized that such data and information constitutes CEII.¹ Moreover, the Commission’s “Guidelines for Filing Critical Energy Infrastructure Information (CEII)” expressly recognizes that Exhibit F is CEII.² Accordingly, the CEII in Exhibit F has been removed from this Public Version of Volume 2 of the license application for the Project. Procedures for obtaining access to CEII may be found at 18 CFR § 388.113. Requests for access to CEII should be made to the CEII Coordinator of the Federal Energy Regulatory Commission (“FERC”) and may be completed electronically pursuant to the requirements specified on FERC’s website (<http://www.ferc.gov/legal/ceii-foia.asp>).

¹ See, e.g., *Critical Energy Infrastructure Information*, 102 FERC ¶ 61,190 (Order No. 630) at P 32 (2003); and *Critical Energy Infrastructure Information*, 108 FERC ¶ 61,121 (Order No. 649) at P 15 (2004).

² Federal Energy Regulatory Commission, *Guidelines for Filing Critical Energy Infrastructure Information (CEII)* at 5, available at: <http://www.ferc.gov/help/filing-guide/file-ceii/ceii-guidelines/guidelines.pdf>.

EXHIBIT G: PROJECT LANDS AND BOUNDARY

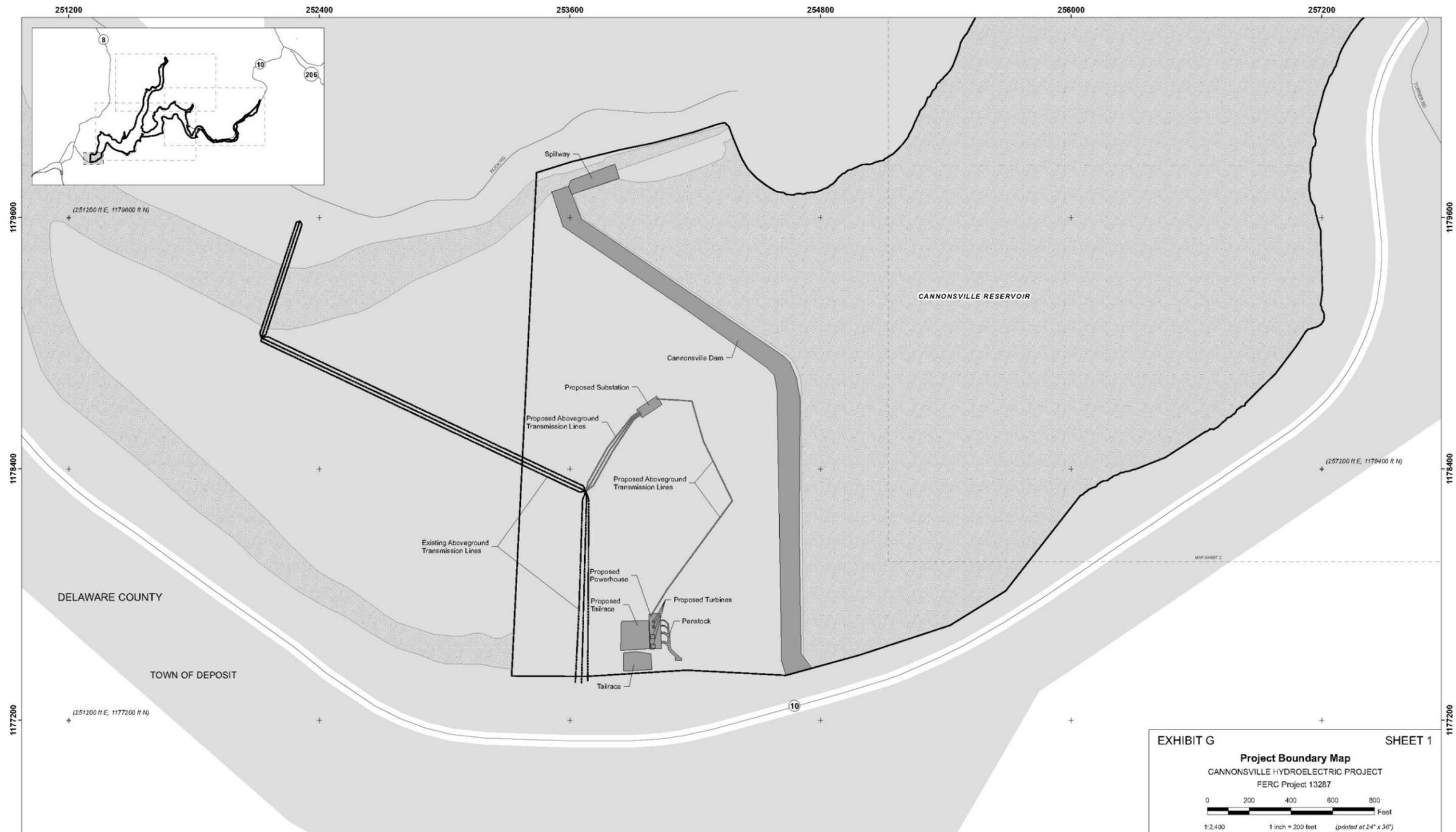
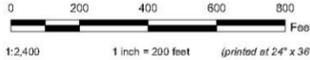


EXHIBIT G SHEET 1

Project Boundary Map
CANNONSVILLE HYDROELECTRIC PROJECT
FERC Project 13287



REVISIONS			
NO.	DATE	DESCRIPTION	BY
1			
2			
3			
4			
5			

THIS DRAWING IS PART OF THE APPLICATION FOR LICENSE BY THE UNDERSIGNED THIS _____ DAY OF MAY 2011.

BY: _____ Date _____

I HEREBY STATE THAT THE FERC PROJECT BOUNDARY DELINEATION FOR THE NATURAL DAM HYDROELECTRIC PROJECT AS SHOWN ON THIS EXHIBIT G IS DEVELOPED WITHIN REASONABLE ACCURACIES AS REQUIRED BY 16CFR41 TO THE GEOGRAPHIC LOCATION BASED ON A GRAPHICAL POSITIONING IN REFERENCE TO 1:5,000 SCALE ORTHO IMAGERY, 1:5,000 SCALE DIGITAL ELEVATION PRODUCTS, AND USGS QUADRANGLE MAPPING WITHIN +/- 40 FEET. THE PROJECT BOUNDARY LINE WAS ADJUSTED AND OR ROTATED TO BEST FIT WITHIN THE 1:5,000 SCALE ORTHO IMAGERY AND 1:5,000 DIGITAL ELEVATION MAP FEATURES GRAPHICALLY AND WAS NOT FIELD SURVEYED.

BY: _____ Date _____
(Name) (Date)

Legend

- + Reference Point
- Ⓚ Kiosk
- Ⓜ Parking Area
- Existing Aboveground Transmission Line
- Proposed Aboveground Transmission Line
- Existing Aboveground Distribution Line
- Proposed Underground Distribution Line
- Street Segment
- Tributary
- ▭ Project Boundary
- ▭ Map Sheet
- ▭ Municipality
- ▭ Project Feature
- ▭ Boat Storage
- ▭ New York City Land
- ▭ Water Body

Map Datum: NAD 1983

Map Projection: NAD83 State Plane New York East Zone (Feet)

Declination changing by 0" 1' E/year



EXHIBIT G SHEET 2

Project Boundary Map
CANNONSVILLE HYDROELECTRIC PROJECT
FERC Project 13287

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1			
2			
3			
4			
5			

THIS DRAWING IS PART OF THE APPLICATION FOR LICENSE BY THE UNDERSIGNED THIS _____ DAY OF MAY 2011.

BY: _____ Date _____

I HEREBY STATE THAT THE FERC PROJECT BOUNDARY DELINEATION FOR THE NATURAL DAM HYDROELECTRIC PROJECT AS SHOWN ON THIS EXHIBIT G IS DEVELOPED WITHIN REASONABLE ACCURACIES AS REQUIRED BY 16CFR41 TO THE GEOGRAPHIC LOCATION BASED ON A GRAPHICAL POSITIONING IN REFERENCE TO 1:5,000 SCALE ORTHO IMAGERY, 1:5,000 SCALE DIGITAL ELEVATION PRODUCTS, AND USGS QUADRANGLE MAPPING WITHIN +/- 40 FEET. THE PROJECT BOUNDARY LINE WAS ADJUSTED AND OR ROTATED TO BEST FIT WITHIN THE 1:5,000 SCALE ORTHO IMAGERY AND 1:5,000 DIGITAL ELEVATION MAP FEATURES GRAPHICALLY AND WAS NOT FIELD SURVEYED.

BY: _____ Date _____
 (Name) (Date)

Legend

- + Reference Point
- Ⓚ Klask
- Ⓜ Parking Area
- Existing Aboveground Transmission Line
- Proposed Aboveground Transmission Line
- Existing Aboveground Distribution Line
- Proposed Underground Distribution Line
- Street Segment
- Tributary
- ▭ Project Boundary
- ▭ Map Sheet
- ▭ Municipality
- ▭ Project Feature
- ▭ Boat Storage
- ▭ New York City Land
- ▭ Water Body

Map Datum: NAD 1983

Map Projection: NAD83 State Plane New York East Zone (Feet)

Declination changing by 0" 1' E/year



EXHIBIT G SHEET 3

Project Boundary Map
CANNONSVILLE HYDROELECTRIC PROJECT
FERC Project 13287

0 1,000 2,000 3,000 4,000 Feet
 1:12,000 1 inch = 1,000 feet (printed at 24" x 36")

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1			
2			
3			
4			
5			

THIS DRAWING IS PART OF THE APPLICATION FOR LICENSE BY THE UNDERSIGNED THIS _____ DAY OF MAY 2011.
 BY: _____ Date _____

I HEREBY STATE THAT THE FERC PROJECT BOUNDARY DELINEATION FOR THE NATURAL DAM HYDROELECTRIC PROJECT AS SHOWN ON THIS EXHIBIT G IS DEVELOPED WITHIN REASONABLE ACCURACIES AS REQUIRED BY 16CFR41 TO THE GEOGRAPHIC LOCATION BASED ON A GRAPHICAL POSITIONING IN REFERENCE TO 1:5,000 SCALE ORTHO IMAGERY, 1:5,000 SCALE DIGITAL ELEVATION PRODUCTS, AND USGS QUADRANGLE MAPPING WITHIN +/- 40 FEET. THE PROJECT BOUNDARY LINE WAS ADJUSTED AND OR ROTATED TO BEST FIT WITHIN THE 1:5,000 SCALE ORTHO IMAGERY AND 1:5,000 DIGITAL ELEVATION MAP FEATURES GRAPHICALLY AND WAS NOT FIELD SURVEYED.
 BY: _____ Date _____

Legend

- Reference Point
- Kiosk
- Parking Area
- Existing Aboveground Transmission Line
- Proposed Aboveground Transmission Line
- Existing Aboveground Distribution Line
- Proposed Underground Distribution Line
- Street Segment
- Tributary
- Project Boundary
- Map Sheet
- Municipality
- Project Feature
- Boat Storage
- New York City Land
- Water Body

Map Datum: NAD 1983
Map Projection: NAD83 State Plane New York East Zone (Feet)
 Declination changing by 0" 1' E/year



EXHIBIT G SHEET 4

Project Boundary Map
CANNONSVILLE HYDROELECTRIC PROJECT
FERC Project 13287

0 1,000 2,000 3,000 4,000 Feet
 1:12,000 1 inch = 1,000 feet (printed at 24" x 36")

REVISIONS			
NO.	DATE	DESCRIPTION	BY
1			
2			
3			
4			
5			

THIS DRAWING IS PART OF THE APPLICATION FOR LICENSE BY THE UNDERSIGNED THIS _____ DAY OF MAY 2011.

BY: _____ Date _____

I HEREBY STATE THAT THE FERC PROJECT BOUNDARY DELINEATION FOR THE NATURAL DAM HYDROELECTRIC PROJECT AS SHOWN ON THIS EXHIBIT G IS DEVELOPED WITHIN REASONABLE ACCURACIES AS REQUIRED BY 16CFR41 TO THE GEOGRAPHIC LOCATION BASED ON A GRAPHICAL POSITIONING IN REFERENCE TO 1:5,000 SCALE ORTHO IMAGERY, 1:5,000 SCALE DIGITAL ELEVATION PRODUCTS, AND USGS QUADRANGLE MAPPING WITHIN +/- 40 FEET. THE PROJECT BOUNDARY LINE WAS ADJUSTED AND OR ROTATED TO BEST FIT WITHIN THE 1:5,000 SCALE ORTHO IMAGERY AND 1:5,000 DIGITAL ELEVATION MAP FEATURES GRAPHICALLY AND WAS NOT FIELD SURVEYED.

BY: _____ Date _____

Legend

- Reference Point
- Kiosk
- Parking Area
- Existing Aboveground Transmission Line
- Proposed Aboveground Transmission Line
- Existing Aboveground Distribution Line
- Proposed Underground Distribution Line
- Street Segment
- Tributary
- Project Boundary
- Map Sheet
- Municipality
- Project Feature
- Boat Storage
- New York City Land
- Water Body

Map Datum: NAD 1983

Map Projection: NAD83 State Plane New York East Zone (Feet)

Declination changing by 0" 1' E/year

**BEFORE THE FEDERAL ENERGY REGULATORY COMMISSION
APPLICATION FOR LICENSE FOR MAJOR PROJECT –
EXISTING DAM**

Cannonsville Hydroelectric Development

FERC Project No. 13287



VOLUME 3

Appendix E-1: Correspondence Log

City of New York



**Environmental
Protection**

September 2011

DEP- New York City Department of Environmental Protection
 NMFS- National Marine Fisheries Service
 NYSDEC- New York State Department of Environmental Conservation
 FERC- Federal Energy Regulatory Commission
 PFBC- Pennsylvania Fish and Boat Commission
 PDEP- Pennsylvania Department of Environmental Protection

Date	Type of Correspondence	To	From	Regarding
5/19/2009	Letter	Service List	Mark Wamser, Gomez and Sullivan	Request for Information for use in developing Pre-Application Document (PAD)
11/2/2009	Letter	Anthony Fiore	Diane Rusanowsky, NMFS	Endangered and Threatened Species, Fish and Wildlife Coordination Act Species, Essential Fish Habitat
8/13/2009	PAD, NOI	FERC, Service List	Kevin Lang, Couch White	Filing of the Notice of Intent (NOI) PAD
8/13/2009	Letter	FERC, Service List	Kevin Lang, Couch White	Request to use the Traditional Licensing Process (TLP)
8/14/2009	Letter	Kevin Lang, Couch White	David Sampson, NYSDEC	NYSDEC has no objections to using TLP
8/18/2009	Letter	Kevin Lang, Couch White	David Stillwell, USFWS	USFWS has no objects to using TLP
8/24/2009	Letter	FERC	Morgan Lyle, Public	Opposes DEP's use of TLP
8/27/2009	Letter	FERC	Fred Nelson, Public	Opposes DEP's use of TLP
8/28/2009	Letter	FERC	Thomas Axtell, Town of Deposit, NY	Opposes DEP's use of TLP
8/30/2009	Letter	FERC	Edward Smith, Public	Opposes DEP's use of TLP
8/31/2009	Letter	FERC	Town of Blenheim	Opposes DEP's use of TLP
9/2/2009	Letter	FERC	Robert Hornovick, Town of Colchester	Opposes DEP's use of TLP
9/3/2009	Letter	FERC	Peter Bracci, Town of Delhi	Opposes DEP's use of TLP
9/4/2009	Letter	FERC	Earl VanWormer, Schoharie County	Opposes DEP's use of TLP
9/8/2009	Letter	FERC	William Wellman, NY State Trout Unlimited	Petition to Intervene
9/10/2009	Letter	FERC	David Fanslau, Sullivan County	Opposes DEP's use of TLP
9/11/2009	Letter	FERC	John Bonacic, NY State Senator	Opposes DEP's use of TLP
9/11/2009	Letter	FERC	Mark Hartle, PFBC	PFBC recommends Integrated Licensing Process
9/18/2009	Letter	FERC	John Zimmerman on behalf of: Friends of the Upper Delaware, North Delaware River Watershed Conservancy, Aquatic Conservation	Opposes DEP's use of TLP

Date	Type of Correspondence	To	From	Regarding
			Unlimited	
10/21/2009	Letter	Kevin Lang, Couch White	Jeff Wright, FERC	FERC approves use of TLP
10/23/2009	Letter	Senator John Bonacic	Jeff Wellinghoff, FERC	Response to Senator John Bonacic
11/24/2009	Letter	FERC	Kevin Lang, Couch White	Notification of Joint Meeting, Information Meetings and Site Visits
12/15/2009		FERC, Service List	Kevin Lang, Couch White	Site visit of Cannonsville, Neversink and Pepacton Developments during the day Informal Public Meeting held at Sullivan County Community College during the evening
12/16/2009		FERC, Service List	Kevin Lang, Couch White	Joint Meeting held in Kingston, NY in the morning Site visit of Schoharie Development during the day Informal Public Meeting held at Schoharie County Building during the evening
1/7/2010	Letter	FERC	Harold Roeder, Upper Delaware Council	Opposes DEP's use of TLP
1/11/2010	Letter	FERC	Andrew Boyar, Town of Highland	Opposes DEP's use of TLP
2/5/2010	Email	Steve Patch, USFWS Kent Sanders, NYSDEC Larry Wilson, NYSDEC Norm McBride, NYSDEC Robert Angyal, NYSDEC Michael Flaherty, NYSDEC David Sampson, Esq., NYSDEC	Anthony Fiore, DEP	Transmittal of Draft Study Plans
2/8/2010	Meeting Minutes	Present: Anthony Fiore, DEP John Vickers, DEP Robie Craig, Esq, DEP Jeff Helmuth, DEP Tom Baudanza, DEP Michael Usai, DEP Robert Principe, DEP Linda Geary, Esq, DEP Tom Sullivan, Gomez and Sullivan Mark Wamser, Gomez and Sullivan		Meeting to discuss Draft Study Plans- timing of study, level of effort, and methodology

Date	Type of Correspondence	To	From	Regarding
		Kevin Lang, Couch White Steve Patch, USFWS Kent Sanders, NYSDEC Larry Wilson, NYSDEC Norm McBride, NYSDEC Robert Angyal, NYSDEC Michael Flaherty, NYSDEC David Sampson, Esq., NYSDEC		
2/10/2010	Letter	FERC	Kevin. Lang, Couch White	Filing of Transcripts from Public Meetings and Joint Meeting
2/12/2010	Letter	Anthony Fiore, DEP	David Stilwell, USFWS	Review of NOI and PAD and Initial Study Requests
2/12/2010	Letter	Anthony Fiore, DEP	Kent Sanders, NYSDEC	Study Requests
2/19/2010	Letter	Anthony Fiore, DEP	John Hines, PDEP	Study Requests
4/13/2010	Email	Mark Wamser, Gomez and Sullivan	Kent Sanders, NYSDEC	No need to evaluate Indiana Bat and Bog Turtles
6/15/2010	Email	Kent Sanders, NYSDEC Norm McBride, NYSDEC Steve Patch, USFWS	Anthony Fiore, DEP	Transmittal of Revised Study Plans
7/1/2010	Email	Anthony Fiore, DEP	Kent Sanders, NYSDEC	Comments on Revised Study Plans
8/4/2010	Email	Steve Patch, USFWS Kent Sanders, NYSDEC Larry Wilson, NYSDEC Norm McBride, NYSDEC Robert Angyal, NYSDEC Michael Flaherty, NYSDEC David Sampson, Esq., NYSDEC Mark Woythal, NYSDEC	Anthony Fiore, DEP	Transmittal of Entrainment Report
8/23/2010	Meeting Minutes	Anthony Fiore, DEP DEP Linda Geary, NYC Law Dept Thomas DeJohn, DEP Jason George, Gomez and Sullivan Mark Danvetz, DEP Mark Wamser, Gomez and Sullivan Robert Principe, DEP Craig Arnold, Gomez and Sullivan Robie Craig, DEP Legal Tom Sullivan, Gomez and Sullivan		Discussion on Entrainment Report, and Revised Study Plans

Date	Type of Correspondence	To	From	Regarding
		Tom Baudanza, DEP Kevin Lang, Couch White Sangu Iyer, DEP Garrett Bissell, Couch White Jeff Helmuth, DEP Kent Sanders, NYSDEC Mike Flaherty, NYSDEC Larry Wilson, NYSDE Norm McBride, NYSDEC Mark Woythal, NYSDEC Steve Patch, USFWS		
9/8/2010	Email	Steve Patch, USFWS Kent Sanders, NYSDEC Larry Wilson, NYSDEC Norm McBride, NYSDEC Robert Angyal, NYSDEC Michael Flaherty, NYSDEC David Sampson, Esq., NYSDEC Mark Woythal, NYSDEC	Anthony Fiore, DEP	Transmittal of Addendum to Entrainment Report
9/15/2010	Letter	Anthony Fiore, DEP	David Stillwell, USFWS	No further comments on Entrainment Report or Addendum to the Entrainment Report
9/24/2010	Letter	Anthony Fiore, DEP	Kent Sanders, NYSDEC	Comments on Entrainment Report and Addendum to the Entrainment Report
10/19/2010	Letter	Kent Sanders, NYSDEC Larry Wilson, NYSDEC Norm McBride, NYSDEC Robert Angyal, NYSDEC Michael Flaherty, NYSDEC David Sampson, Esq., NYSDEC Mark Woythal, NYSDEC	Anthony Fiore, DEP	Letter responding to NYSDEC's September 24, 2010 letter regarding Entrainment Study
12/8/2010	Letter	Anthony Fiore, DEP	Kent Sanders, NYSDEC	No fisheries surveys are needed so long as releases are made according to the FFMP.
7/11/2011	Email	Stakeholders	Anthony Fiore, DEP	Invite email and agenda for a meeting to discuss the study reports.
7/19/2011	Letter	Susan Greene, National Marine Fisheries Service	Mark Wamser, Gomez and Sullivan Engineers, P.C.	Request final determination on Essential Fish Habitat
7/20/2011	Email	Anthony Fiore, DEP	Douglas Mackey, Office of Parks Recreation and Historic	Comments on Hartgen's Cultural Resources Report

Date	Type of Correspondence	To	From	Regarding
			Preservation	
7/21/2011	Meetings	Stakeholders	DEP	Day meeting in Kingston, NY and evening meeting in Walton, NY were held to discuss the study reports.
8/3/2011	Letter	Kevin Lang, Couch White	David Stillwell, USFWS	Comments on Entrainment Report
7/31/2011	Email	Anthony Fiore, DEP	Susan Kross, Public (Ellenville)	Questions on Proposed Project
8/8/2011	Email	Susan Kross, Public (Ellenville)	Anthony Fiore, DEP	Responses to Questions on Proposed Project
8/11/2011	Letter	David Stillwell, USFWS	Kevin Lang, Couch White	Addressed comments raised by USFWS in the Entrainment Report

NOTE: While other correspondence may have been received this log includes only such correspondence that relates to the Cannonsville development



DEPARTMENT OF ENVIRONMENTAL PROTECTION

59-17 Junction Boulevard
Flushing, New York 11373

Steven W. Lawitts
Acting Commissioner

May 19, 2009

Re: West of Hudson Hydroelectric Project, FERC No. 13287

Dear Sir/Madam:

The New York City Department of Environmental Protection (NYCDEP) filed a preliminary permit application with the Federal Energy Regulatory Commission (FERC) on September 15, 2008 to develop the West of Hudson Hydroelectric Project. On March 20, 2009, the FERC issued a preliminary permit to the NYCDEP. The preliminary permit provides the City three years in which to study the West of Hudson Hydroelectric Project.

The West of Hudson Hydroelectric Project consists of four developments at existing dams and reservoirs that comprise integral components of the City of New York's water supply system. The dams and reservoirs are owned by the City of New York and operated by the NYCDEP. The four developments are listed in Table 1.

Table 1: Proposed Hydropower Developments, West of Hudson Hydroelectric Project

Development Name	Dam Name	River	Drainage Area at Dam (sq mi)	Station Hydraulic Capacity (cfs)	Proposed Installation Capacity (kW)
Cannonsville	Cannonsville	West Branch Delaware River	454 mi ²	1,130	12,100
Neversink	Neversink	Neversink River (tributary to Delaware)	92.6 mi ²	160	1,650
Pepacton	Downsville	East Branch Delaware River	372 mi ²	270	3,100
Schoharie	Gilboa	Schoharie Creek	316 mi ²	1,050	12,900

The location of each development is shown on the map attached to this letter.

As part of the licensing process, the NYCDEP is developing a Pre-Application Document (PAD), which summarizes the available background information on the project. The information in the PAD is presented under the following topic areas:

1. Description of the Project Location, Facilities, and Operations
2. Description of Existing Environment and Resource Impacts
 - Geology & Soils
 - Water Quantity & Quality Resources



www.nyc.gov/dep

- Wetlands, Riparian, Littoral Habitat
 - Rare, Threatened, & Endangered Species
 - Recreation & Land Use
 - Cultural Resources
 - Aesthetic Resources
 - Socio-Economic Resources
 - Tribal Resources
 - General Description of Basin
3. Preliminary List of Issues and Studies
 4. Summary of Contacts

Because the four developments have been managed and operated by the NYCDEP for water supply needs for decades, the NYCDEP already has a significant amount of background information on the facilities. However, **we need your help**. We would appreciate receiving any information your organization may have collected on the environmental, recreational, and/or historical/archeological resources at these four developments. Listed below are specific areas addressed in the PAD. If you have data that is relevant to these focus points we would appreciate you forwarding that information to us:

- Fisheries - any stocking records, regulation and management plans, population surveys, creel surveys, target fish community, diadromous fish information (if applicable), etc.
- Water Quality - any water quality data collected within the project area including temperature and dissolved oxygen studies in the reservoirs and below the dams.
- Wetlands - any known wetlands that occur within the project area (e.g., impoundment down to the project tailrace);
- Any historical, archeological or cultural resources in the project area;
- Any rare, threatened or endangered species in the project area;
- Any recreational information in the project area; and
- Any other relevant information.

We would be most appreciative if you could provide us with any pertinent additional information by June 12, 2009. If needed, we can visit your office to retrieve and copy any pertinent information. Please let us know if a visit to your office works best for you so we can coordinate accordingly.

We appreciate your assistance in providing background information so we can prepare our Pre-Application Document.

Sincerely,



Anthony J. Fiore
Director of Planning & Sustainability

cc: Mark Wamser, Gomez and Sullivan
Kevin Lang, Couch-White

Attachments: Figure 1, Contact List



New York City's Water Supply System

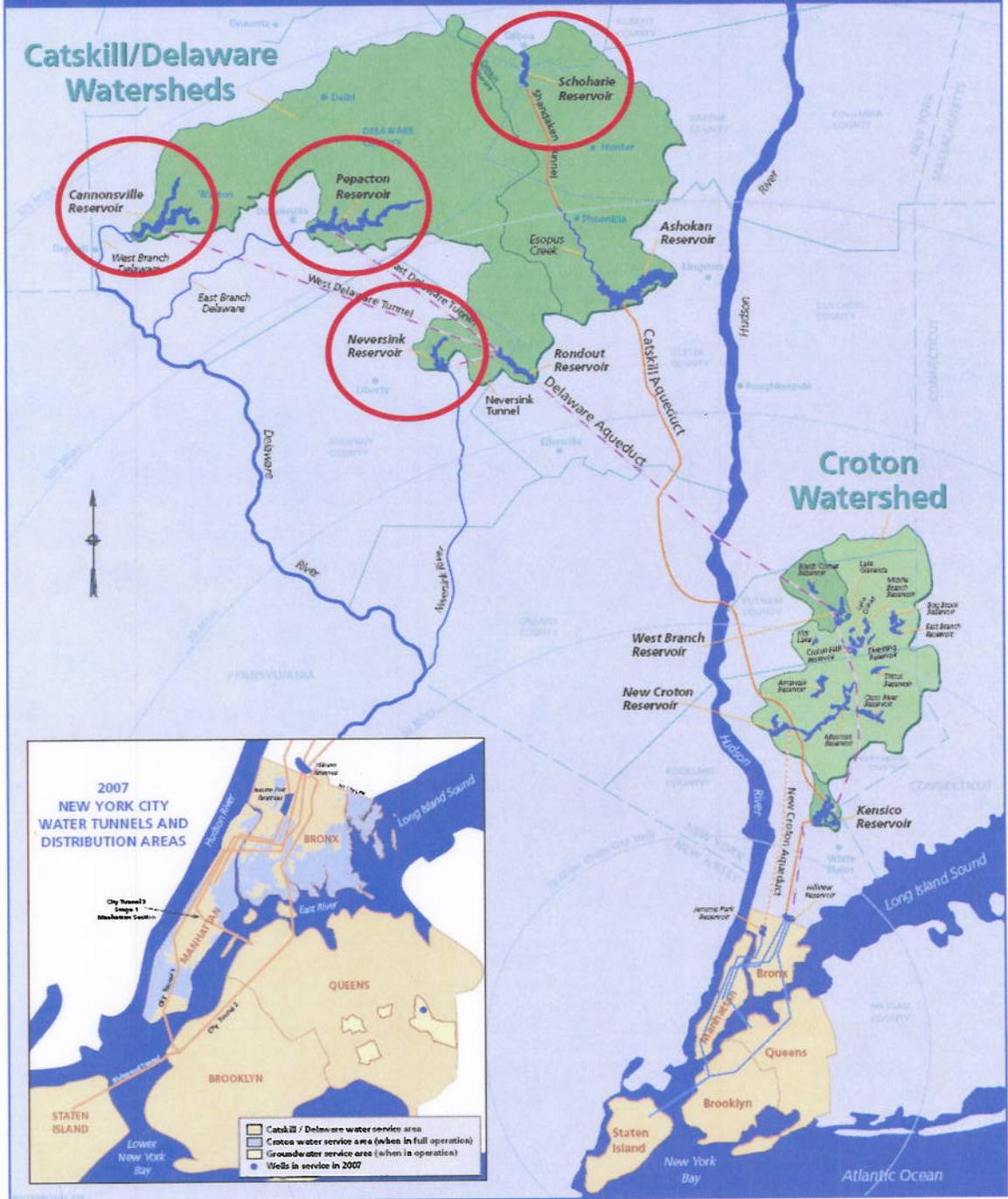


Figure 1: Location of West of Hudson Proposed Hydroelectric Projects

Federal Agencies

Atlantic States Marine Fisheries Comm.
1444 Eye Street, NW - 6th Floor
Washington, DC 20005

Julie Crocker
National Marine Fisheries Service
One Blackburn Drive
Gloucester, MA 01930-2298

NOAA Fisheries Northeast Regional Office
55 Great Republic Drive
Gloucester, MA 01930-2298

NOAA's National Marine Fisheries Service
Northeast Fisheries Science Center
166 Water Street
Woods Hole, MA 02543-1026

Kevin Mendik
National Park Service
15 State Street
Boston, MA 02109

Cynthia Wilkerson
National Park Service
Northeast Region-US Custom House
US Custom House
200 Chestnut Street, 5th Floor
Philadelphia, PA 19106-2816

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

Steve Patch
US Fish and Wildlife Service
3817 Luker Road
Cortland, NY 13045

David Stillwell
US Fish and Wildlife Service
3817 Luker Road
Cortland, NY 13045

Grace Musumeci
Environmental Protection Agency
290 Broadway, Fl 25
New York, NY 10007-1823

Myron Elkins
Bureau of Land Management
7450 Boston Boulevard
Springfield, VA 22153-3121

U.S. Army Corps of Engineers
Jacob K. Javits Federal Building
26 Federal Plaza, Room 2109
New York, NY 10278-0090

Environmental Protection Agency
Regional Office
290 Broadway
New York, NY 10007-1866
Federal Emergency Management Agency
Regional Office
26 Federal Plaza
Suite 1337
New York, NY 10278

Native American

Mohawk National Council of Chiefs
398 State Route 37
Hogansburg, NY 13655

A. Francis Boots
St. Regis Mohawk Tribe
82 Indian Village Road
Akwesasne, NY 13655

Mr. Loran Thompson
St. Regis Mohawk Tribe
412 State Route 37
Akwesasne, NY 13655

Arnold L. Printup, THPO
St. Regis Mohawk Tribe
412 State Route 37
Akwesasne, NY 13655

Sherry White
Cultural Resources Coordinator
Stockbridge-Munsee Community
PO Box 70
N8510 Moh-He-Con-Nuck Rd.
Bowler, WI 54416

Mr. Robert Chicks
President
Stockbridge-Munsee Community
PO Box 70
N8510 Moh-He-Con-Nuck Rd.
Bowler, WI 54416

Mr. Raymond Halbritter

Oneida Indian Nation of New York
5218 Patrick Road
Verona, NY 13478

Ray Halbritter
Nation Representative
Oneida Indian Nation
5218 Patrick Road
Verona, NY 13498

Irving Powless
Chief
Onondaga Indian Nation
RR#1, Box 319 B
Nedrow, New York 13120

Mr. Brian Patterson
Oneida Indian Nation
PO Box 1
Route 5
Vernon, NY 13476

Jesse Bergevin
Historic Resources Specialist
Oneida Indian Nation
Member Legal Services
PO Box 1, Route 5
Vernon, NY 13476

Ms. Kathleen Mitchell, THPO
Seneca Nation Tribal Historic Preservation
467 Center Street
Salamanca, NY 14779

Seneca Nation of New York
Cattaraugus Reservation
William Seneca Building
12837 Route 438
Irving, NY 14081

Mr. Barry E. Snyder
Seneca Nation of Indians
1490 Route 438
Irving, NY 14081

Mr. Clint HalfTown
Cayuga Nation of New York
PO Box 11
Versailles, NY 14168-0011

Emerson Webster
Tonawanda Band of Senecas
7027 Meadville Road
Basom, NY 14013

Mr. Kevin Jonathan

Tonawanda Band of Senecas
7027 Meadville Road
Basom, NY 14013

Mr. Kenneth Poodry
Tonawanda Band of Senecas
7027 Meadville Road
Basom, NY 14013

Leo R. Henry
Tuscarora Nation
2006 Mt. Hope Road
Lewiston, NY 14092

Tuscarora Nation
5616 Walmore Road
Lewiston, New York 14092

Mr. Irving Powless, Jr.
Onondaga Indian Nation
RR1, Box 319-B
Nedrow, NY 13120

Anthony Gonyea
Onondaga Nation Historic Preservation Office
716 East Washington Street, Suite 104
Syracuse, NY 13210-1502

Bureau of Indian Affairs
1849 C Street, NW
Washington, DC 20240

James Kardatzke
Bureau of Indian Affairs
Eastern Regional Office
711 Stewarts Ferry Pike
Nashville, TN 37214

State Agencies

NYSDEC-DFWMR
NY Natural Heritage Program
625 Broadway, 5th Floor
Albany, NY 12233-4757

Mark S. Woythal
NYS DEC
625 Broadway
Albany, NY 12233

William C. Janeway, Regional Director
NYS Department of Environmental
Conservation Region 3
21 South Putt Corners Road
New Paltz, NY 12561

Eugene Kelly, Regional Director
NYS Department of Environmental
Conservation
Region 4
1130 North Westcott Road
Schenectady, NY 12306-2014

Ms. Kathleen LaFrank
New York State Historic Preservation Office
Peebles Island
PO Box 189
Waterford, New York 12188-0189

Mr. Travis Bowman
New York State Historic Preservation Office
Peebles Island
PO Box 189
Waterford, New York 12188-0189

New York State Office of Parks, Recreation, and
Historic Preservation
Agency Building 1, Empire State Plaza
Albany, New York 12238

William Nechamen
NYS Department of Environmental
Conservation
Chief, Flood Plain Management
625 Broadway
Albany, NY 12233-3507
Phone: (518) 402-8146

Mark Klotz, P.E.
NYS Department of Environmental
Conservation
Chief, Water Quantity Section
625 Broadway
Albany, NY 12233-3504
Phone: (518) 402-8098

Philip Bein, Watershed Inspector General
NYS Office of the Attorney General
The Capitol
Albany, NY 12233

Other:

Delaware River Basin Commission
25 State Police Drive
P.O. Box 7360
West Trenton, NJ 08628-0360

Stephen F. Blanchard
Delaware River Master
US Geological Survey
National Center, MA-415
Reston, VA 20192

Gary N. Paulachok, P.G.
Deputy Delaware River Master
US Geological Survey
Milford Professional Park
10 Buist Road, Suite 304
Milford, PA 18337

Roger Sokol, Ph.D.
Bureau of Water Supply Protection
NYS Department of Health
Flanigan Square, 547 River Street
Troy, NY 12180-2216

**National Marine Fisheries Service
Habitat Conservation Division
Milford Field Office, 212 Rogers Avenue
Milford, Connecticut 06460**

DATE: 2 November 2009

TO: Mr. Anthony J. Fiore, Director of Planning & Sustainability
The City of New York
Department of Environmental Protection
59-17 Junction Boulevard
Flushing, NY 11373

SUBJECT: **Proposed Hydropower Developments, West of Hudson Hydroelectric Project;
Cannonsville Dam/Development [West Branch of Delaware River] & Downsville Dam/Pepacton Development
[East Branch of Delaware River], Delaware County, Neversink Dam/Development [Neversink River], Sullivan
County, and Gilboa Dam/Schoharie Development [Schoharie Creek], Schoharie County, New York**



Diane Rusanowsky
(Reviewing Biologist)

We have reviewed the information provided to us regarding the above subject project. We offer the following preliminary comments pursuant to the Endangered Species Act, the Fish and Wildlife Coordination Act and the Magnuson-Stevens Fishery Conservation and Management Act:

Endangered and Threatened Species

XX There are no endangered or threatened species under the jurisdiction of this agency in the **immediate** project area.

Fish and Wildlife Coordination Act Species

XX The following may be present in the project vicinity: Resident and diadromous fishes, forage and benthic species

Please contact the appropriate Regional Office of the New York State Department of Environmental Conservation to confirm the presence of diadromous or resident aquatic populations. Habitat use by some species or life stages may be seasonal (e.g. over-wintering or spawning)

Essential Fish Habitat

XX No Essential Fish Habitat (EFH) has been designated in the **immediate** project vicinity. However, we note that potential adverse project impacts to diadromous fishes or other species that are prey of federally managed fishery resources would constitute at least an indirect effect on EFH quality and quantity downstream. There is not sufficient information in your submittal to determine if the nature and extent of such impacts would require an essential fish habitat assessment should these activities require federal authorizations or receive federal funding. We will make a determination regarding the nature and scope of any EFH coordination that may be necessary when sufficient information becomes available for us to base a definitive conclusion regarding this issue.



DEPARTMENT OF ENVIRONMENTAL PROTECTION

59-17 Junction Boulevard Flushing, New York 11373

Steven W. Lawitts Acting Commissioner

SS/

SPL

13222 ✓

May 19, 2009

Re: West of Hudson Hydroelectric Project, FERC No. 13287

Dear Sir/Madam:

The New York City Department of Environmental Protection (NYCDEP) filed a preliminary permit application with the Federal Energy Regulatory Commission (FERC) on September 15, 2008 to develop the West of Hudson Hydroelectric Project. On March 20, 2009, the FERC issued a preliminary permit to the NYCDEP. The preliminary permit provides the City three years in which to study the West of Hudson Hydroelectric Project.

The West of Hudson Hydroelectric Project consists of four developments at existing dams and reservoirs that comprise integral components of the City of New York's water supply system. The dams and reservoirs are owned by the City of New York and operated by the NYCDEP. The four developments are listed in Table 1.

Table 1: Proposed Hydropower Developments, West of Hudson Hydroelectric Project

Development Name	Dam Name	River	Drainage Area at Dam (sq mi)	Station Hydraulic Capacity (cfs)	Proposed Installation Capacity (kW)
Cannonsville	Cannonsville	West Branch Delaware River	454 mi ²	1,130	12,100
Neversink	Neversink	Neversink River (tributary to Delaware)	92.6 mi ²	160	1,650
Pepacton	Downsville	East Branch Delaware River	372 mi ²	270	3,100
Schoharie	Gilboa	Schoharie Creek	316 mi ²	1,050	12,900

The location of each development is shown on the map attached to this letter.

As part of the licensing process, the NYCDEP is developing a Pre-Application Document (PAD), which summarizes the available background information on the project. The information in the PAD is presented under the following topic areas:

1. Description of the Project Location, Facilities, and Operations
2. Description of Existing Environment and Resource Impacts
 - Geology & Soils Resources
 - Water Quantity & Quality

rec'd 6/2/09

MAY 26 2009





New York City's Water Supply System

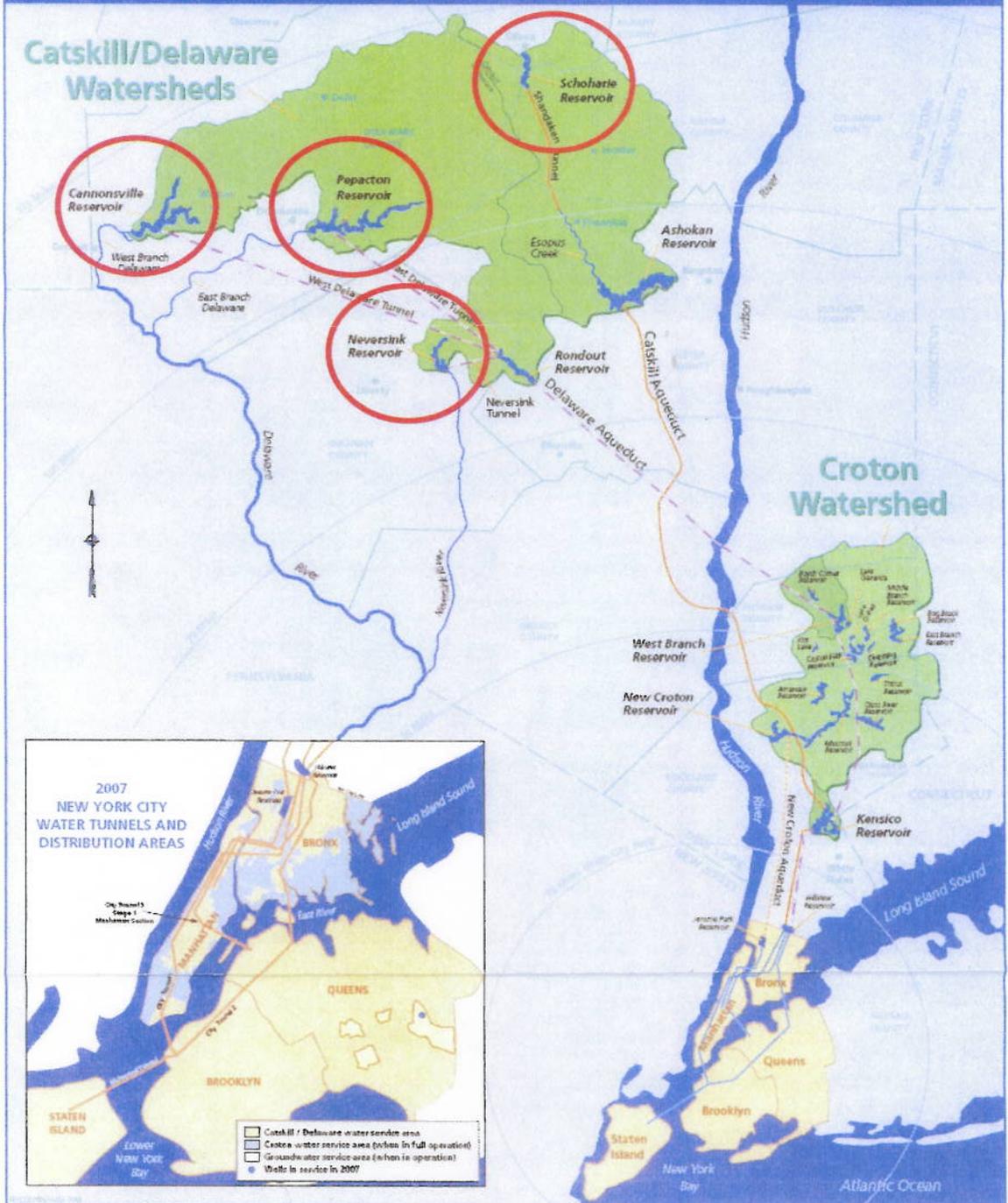


Figure 1: Location of West of Hudson Proposed Hydroelectric Projects

August 13, 2009

VIA ELECTRONIC FILING

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

Re: Project No. 13287-000 – City of New York West of Hudson Hydroelectric Project –
Notification of Intent to File an Original License Application, Pre-Application
Document, and Application to Use the Traditional Licensing Process

Dear Secretary Bose:

On September 15, 2008, the City of New York (“City”), acting through the New York City Department of Environmental Protection (“NYCDEP”), filed an application for a preliminary permit for its proposed West of Hudson Hydroelectric Project (“Project”). The Project involves the development of hydroelectric facilities on four of the dams and reservoirs that comprise a portion of its water supply system. By Order issued March 20, 2009, the Federal Energy Regulatory Commission (“Commission”) issued a Preliminary Permit to the City, thereby facilitating its ability to proceed with its data collection, studies, and evaluation of the Project.¹

In accordance with that Order and the Commission’s regulations, the City hereby commences the pre-filing process by filing its Notification of Intent (“NOI”) and Pre-Application Document (“PAD”) for the Project. As directed by the Order,² and pursuant to Section 5.3 of the Commission’s regulations, 18 CFR § 5.3, the City is concurrently, but under separate cover, seeking approval to use the Traditional Licensing Process (“TLP”) for this Project.

In accordance with Section 5.5 of the Commission’s regulations, 18 CFR § 5.5, the NYCDEP is simultaneously distributing copies of the NOI, PAD, and request to use the TLP

¹ *City of New York and Delaware County Electric Cooperative*, 126 FERC ¶ 62,215 (2009).

² *Id.* at P 16.

Hon. Kimberly D. Bose

August 13, 2009

Page 2

to relevant federal and state resource agencies, Indian tribes, non-governmental organizations, and other potentially interested parties. The NYCDEP has also published notice of these filings in the following newspapers that are in general circulation in the Project region:

- The Times-Herald Record, Middletown, NY
- Daily Freeman, Kingston, NY
- Press & Sun Bulletin, Binghamton, NY
- Oneonta Daily Star, Oneonta, NY
- Mountain Eagle, Stamford, NY

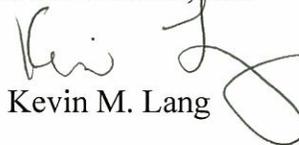
If there are any questions or comments regarding the NOI, PAD, or any information provided by the City, please contact either of the following:

Anthony J. Fiore
Director of Planning & Sustainability
59-17 Junction Boulevard, 19th Floor
Flushing, NY 11373-5108
Tel: 718-595-6576
Email: AFiore@dep.nyc.gov

Kevin M Lang, Esq.
Couch White, LLP
540 Broadway
P.O. Box 22222
Albany, NY 12201
Tel: 518-320-3421
Email: klang@couchwhite.com

Respectfully submitted,

COUCH WHITE, LLP


Kevin M. Lang

KML/glm

Enclosures

cc: Distribution List
Kathryn Garcia
Anthony Fiore, P.E.
Paul V. Rush, P.E.
John Vickers, P.E.
Robert Craig, Esq.
Linda Geary, Esq.
Thomas Sullivan, P.E. (Gomez and Sullivan)
Mark Wamser, P.E. (Gomez and Sullivan)

August 13, 2009

VIA ELECTRONIC FILING

Hon. Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Re: Project No. 13287-000 – City of New York West of Hudson Hydroelectric Project; Request for Approval to Use the Traditional Licensing Process

Dear Secretary Bose:

Pursuant to Section 5.3 of the Federal Energy Regulatory Commission's ("Commission") regulations, 18 CFR § 5.3, and for the reasons sets forth herein, the City of New York ("City") hereby requests use of the Traditional Licensing Process ("TLP") for the licensing of Project No. 13287-000, the West of Hudson Hydroelectric Project ("Project"). Concurrent with this filing, but under separate cover, the City is filing its Notification of Intent and Pre-Application Document for the Project.

Background

The Project consists of four hydroelectric developments located on the City of New York's water supply system. The four developments and their associated rivers are:

Development	Dam Name	River
Cannonsville	Cannonsville	West Branch Delaware River
Neversink	Neversink	Neversink River
Pepacton	Downsville	East Branch Delaware River
Schoharie	Gilboa	Schoharie Creek

The dams and reservoirs are owned by the City of New York and operated by the New York City Department of Environmental Protection ("NYCDEP"). They are an integral part of the City's water supply system, which provides high quality unfiltered water for New York City and four nearby counties. In total, the water supply system provides

approximately 1.1 billion gallons of high quality drinking water daily to approximately nine million New York State residents (about 50% of the State's total population), as well as the millions of tourists and commuters who visit New York City each year. The four developments are located within the Catskill and Delaware Watershed areas, which provide over 90% of the City's water supply.

Through this Project, the City seeks to develop hydroelectric power on its water supply system while simultaneously maintaining the critical water supply operations in accordance with drinking water needs, conservation releases, directed releases, and water quality standards. Because the water supply functions are paramount, the City intends to integrate the hydroelectric operations into its current practices and to generate electricity only from water that is released for non-water supply purposes.¹

Likelihood of Timely License Issuance [18 CFR § 5.3(c)(1)(ii)(A)]

The City was issued a Preliminary Permit ("Permit") for the Project on March 20, 2009.² The Permit has a three-year term, which expires on March 1, 2012. In order for the City to take advantage of the priority position afforded by the Permit, it must file an Application for License relating to the Project with the Commission and an accompanying Application for 401 Water Quality Certification with the New York State Department of Environmental Conservation prior to March 1, 2012.³ By its concurrent filing of a Notification of Intent ("NOI") and Pre-Application Document ("PAD"), the City is initiating the pre-filing consultation process contemplated by the Commission's regulations.

¹ During the pre-application process, the NYCDEP intends to assess the extent to which electricity can be economically generated at each development site.

² City of New York and Delaware County Electric Cooperative, 126 FERC ¶ 62,215 (2009).

³ While the City presently intends to seek a single license for the Project, it may seek individual licenses, or exemptions from licensing, for each development. That decision will be made based on the studies, assessments, and evaluations conducted over the next two years, as well as discussions with Commission Staff and interested parties, and the City's analysis of whether and how the hydroelectric facilities can be incorporated into its operations at each development site without jeopardizing its paramount water supply functions.

To meet the March 1, 2012 date, the City, acting through the NYCDEP, will need to circulate a Draft License Application on or before October 1, 2011 (*i.e.*, 150 days prior to filing a Final License Application). To do so, the NYCDEP will need to complete the majority of its licensing studies during the 2010 field season. In order to utilize the full 2010 field season, the NYCDEP will need to have completed issue identification and study scoping by February 2010.

Under the Integrated Licensing Process (“ILP”), issue identification and study scoping will take a minimum of 10 months, as the NYCDEP and the Commission must work through that Process’ sequential steps and proscribed timeframes. Thus, under the ILP Process, the NYCDEP will not have a final study plan determination letter until sometime in May 2010, thereby preventing it from undertaking and completing all of the requisite studies during the 2010 field season.

In contrast, the first stage of consultation (including consultation on study plans) under the TLP can be completed in six to seven months. Therefore, the NYCDEP would be able to complete study plan development by February 2010 and commence its licensing studies at the start of the 2010 field season, thereby ensuring that the City can remain on schedule to file a Final License Application on or before the expiration of its Permit on March 1, 2012.

Complexity of the Resource Issues [18 CFR § 5.3(c)(1)(ii)(B)]

The significant issues anticipated by the City in the licensing process for the Project relate to water management, including flow management, operation of, and releases from, the reservoirs, maintenance and enhancement of the fisheries in the Delaware River Basin, and preservation and enhancement of aquatic biota and threatened and endangered species in each of the river systems. While the City recognizes that water management issues of this type are complex, the setting for this Project is different than for most hydroelectric projects because of pre-existing nature of the dams and reservoirs. That is, because of nature of the water supply and the area in which it is located, the City and these development sites are subject to a panoply of regulations and regulatory oversight.⁴ Accordingly, much of the information relating to the Project that would be typically requested in a Commission licensing proceeding has already been developed because of this extensive regulatory oversight (*e.g.*, instream flow studies, fisheries studies, operations models), as further described in the section below regarding the availability of information. Moreover, the

⁴ The City’s operation of the Delaware water supply system is governed by a Decree issued by the United States Supreme Court in New Jersey v. New York, 347 U.S. 995 (1954) (“1954 Decree”) and subject to the regulatory oversight of the Delaware River Basin Commission (“DRBC”), United States Environmental Protection Agency, Delaware River Master (an employee of the United States Geological Survey), New York State Department of Environmental Conservation, and New York State Department of Health.

licensing of hydroelectric projects in New York is a mature endeavor with the resource agencies, the NYCDEP, and many of the interested parties all having a long and successful history of identifying issues, scoping studies, and achieving resolutions that satisfactorily address their various respective interests.

Additionally, most, if not all, of the issues that could be raised in this proceeding have existed and been the subject to extensive litigation, discussion, collaboration, and regulatory intervention for decades. As a result, the interested parties have a significant history of working together to address these matters. The flexibility provided by the TLP, as opposed to the strict timeframes dictated by the ILP, better facilitate the necessary collaborative process that will need to occur between and among the resource agencies, interested parties, and the NYCDEP to address these issues during the licensing process. In fact, the prescriptive timeframes of the ILP are likely to unnecessarily hamper such collaborative efforts, leading to discord, divisiveness, and unnecessary litigation (with its concomitant costs and resource burdens) before the Commission.

Level of Anticipated Controversy [18 CFR § 5.3(c)(1)(ii)(C)]

The water management issues highlighted above have been contentious for many years, but many of them have been addressed in the Flexible Flow Management Program (“FFMP”), a plan developed under the auspices of the 1954 Decree and the DRBC. Although the DRBC has yet to incorporate the FFMP into the Water Code for the Delaware River Basin, the NYCDEP has committed to implementing and following its procedures and requirements while the DRBC goes through its regulatory process for codification of the FFMP. As a result, while the NYCDEP expects some interested parties to raise these water management issues before the Commission, the level of controversy should be less than that which existed prior to the development of the FFMP.

The NYCDEP also expects some interested parties to raise other water use issues, such as increasing the amount of water released from the reservoirs and increasing the amount and type of public access to the reservoirs. However, while potentially controversial, such issues have already been addressed by the 1954 Decree and/or the statutory and regulatory requirements that comprehensively govern the water supply system. For example, because the primary function of the reservoirs is to provide drinking water to over nine million people, and because the water supply system is unfiltered,⁵ the permissible uses of the reservoirs must be limited.

The resolution of virtually all issues is best addressed through a collaborative process involving the resource agencies, the NYCDEP, and all interested parties, similar to the process that resulted in the FFMP, rather than costly and extensive litigation. For such a

⁵ See United States Environmental Protection Agency, *New York City Filtration Avoidance Determination*, July 2007.

collaborative process to succeed, it must be provided flexibility in terms of timing because of the complex nature of these issues and the varying interests of the parties. The strict timeframes of the ILP do not provide the necessary flexibility to foster such a collaborative effort. In contrast, the flexibility provided by the TLP will provide all of the parties more time to address these issues in a mutually agreeable fashion, rather than requiring the Commission to resolve these issues via protracted and undoubtedly contentious litigation.

Relative Cost of the Traditional Licensing Process Compared to the Integrated Licensing Process [18 CFR § 5.3(c)(1)(ii)(D)]

Due to the resource agencies' familiarity with the TLP, the water supply system, and the Delaware River Basin, as well as the time constraints associated with the Permit, and the NYCDEP's commitment to enhanced consultation, the NYCDEP is confident that under the TLP, it will be able to provide the Commission with a Final License Application for the Project at less cost and in less time than that required by the ILP. Factors contributing to this conclusion include: (i) the flexible nature and timelines of the TLP would allow the NYCDEP to work cooperatively with the resource agencies and interested parties to develop information needed to resolve issues; (ii) this same flexibility is most likely to foster consensus-building and settlement or other mutually acceptable resolutions of disputed issues; (iii) a reduced, or potential lack of, need for Commission Staff involvement in the pre-filing stage; (iv) the NYCDEP, resource agencies, and interested parties could focus their efforts on seeking substantive agreements and resolution of the issues and avoid the costs and other resource commitments needed to file comments and undertake other actions needed to comply with the regimented nature of the ILP; (v) by working collaboratively instead of adhering to rigid deadlines, the NYCDEP, resource agencies, and interested parties should be able to focus the issues and the scope of additional studies the NYCDEP must perform; and (vi) because of their familiarity with the issues and the TLP, as well as the flexibility provided by the TLP, the resource agencies and interested parties would be able to reduce their overall costs of participating in the licensing process.

The Amount of Available Information [18 CFR § 5.3(c)(1)(ii)(E)]

As discussed above, the four reservoirs and dams associated with the Project have been operated by the NYCDEP for decades and are already subject to extensive requirements and regulatory oversight. As a result, issues relating to the Project and information that would otherwise be requested in the course of the licensing process have, largely, already been studied and/or developed. A voluminous amount of data and information is already available regarding the dams and reservoirs, rivers, river basins, watersheds, fisheries, upland habitats, operational impacts on the surrounding environment, and other related topics. Moreover, numerous studies have been conducted by the NYCDEP, state agencies, federal agencies, the DRBC, and others.

The TLP will allow interested parties to understand the breadth, nature, and content of this pre-existing information, which should lead to agreements to narrow the issues and the scope of additional studies to be undertaken. The prescriptive timeframes of the ILP will unnecessarily restrict the ability of interested parties to properly comprehend the large body of information and data that is already available, and to appropriately tailor their study and other information requests

Other Pertinent Factors [18 CFR § 5.3(c)(1)(ii)(F)]

For budgetary and planning purposes, as well as to adequately communicate the process to interested parties, the NYCDEP respectfully requests that the Commission provide a decision on this request to use the TLP for the Project within 60 days of the filing of this request. Granting the City's request will not infringe on the ability for resource agencies, interested parties, or the public to provide comments on the Project, or on their ability to have their comments addressed during the licensing process.

For all of the foregoing reasons, the City respectfully requests that the Commission grant this request and authorize the City to use the TLP for the licensing of the Project

As required by 18 CFR § 5.3(d)(1), the NYCDEP is concurrently providing copies of this request to all affected resource agencies, Indian tribes, and potentially interested parties. As required by 18 CFR § 5.3(d)(2), the NYCDEP is publishing notice of this request simultaneously with the publication of notice of availability of the NOI and PAD in five local newspapers of general circulation in the counties where the Project is located.

By this letter, the City is notifying the resource agencies, Indian tribes, and potentially interested parties that comments on this application must be provided to the Commission and the City no later than 30 days following the filing date of this document. All comments should reference Project No. 13287-000 – City of New York West of Hudson Hydroelectric Project, and they should address, as appropriate to the circumstances of the request, the following topics:

- Likelihood of timely license issuance;
- Complexity of the resource issues;
- Level of anticipated controversy;
- Relative cost of the TLP compared to the ILP;
- The amount of available information and potential for significant disputes over studies; and
- Other factors believed by the commenter to be pertinent.

Hon. Kimberly D. Bose
August 13, 2009
Page 7

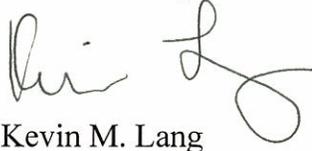
Comments should be submitted to the Commission electronically pursuant to 18 CFR § 385.2003(c), or by sending an original and eight copies to:

Office of the Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Copies of the comments should be sent to the undersigned at klang@couchwhite.com or the address set forth above, and to NYCDEP at zinniar@dep.nyc.gov or to Zinnia Rodriquez, NYCDEP, 19th Floor, 59-17 Junction Boulevard, Flushing, NY 11373-5108.

Respectfully submitted,

COUCH WHITE, LLP

A handwritten signature in black ink, appearing to read "Kevin M. Lang", written in a cursive style.

Kevin M. Lang

KML/glm

cc: Distribution List
Kathryn Garcia
Anthony Fiore, P.E.
Paul V. Rush, P.E.
John Vickers, P.E.
Robert Craig, Esq.
Linda Geary, Esq.
Thomas Sullivan, P.E. (Gomez and Sullivan)
Mark Wamser, P.E. (Gomez and Sullivan)

New York State Department of Environmental Conservation



Office of General Counsel, 14th Floor
625 Broadway, Albany, New York 12233-1500
FAX: (518) 402-9018 or (518) 402-9019
Website: www.dec.ny.gov

August 14, 2009

VIA ELECTRONIC FILING

Hon. Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Re: Project No. 13287-000 City of New York West of Hudson
Hydroelectric Project; Request for Approval to Use the Traditional
Licensing Process

Dear Secretary Bose:

The Department of Environmental Conservation (“DEC”) has no objections to the use of the Traditional Licensing Process pursuant to the above-captioned project. DEC has reviewed the application and found it to be consistent with 18 CFR §5.3.

Because of the delicate geography and unique nature of the water resources of this area, we are also committed to helping to give this project the highest level of environmental review.

Sincerely,
David S. Sampson

David S. Sampson
Associate Counsel
Office of General Counsel
14th Floor
Department of Environmental
Conservation
625 Broadway
Albany, NY 12233-1500

cc: Distribution List

Faxed 8/20/09

ORIGINAL



United States Department of the Interior



FISH AND WILDLIFE SERVICE

3817 Luker Road
Cortland, NY 13045

August 18, 2009

Kevin M. Lang, Esq.
Couch White, LLP
540 Broadway
PO Box 22222
Albany, NY 12201

**RE: City of New York West of Hudson Hydroelectric Project (FERC #13287)
Request to Use the Traditional Licensing Process**

Dear Mr. Lang:

The U.S. Fish and Wildlife Service (Service) has received the August 13, 2009, Notification of Intent to File an Original License Application and Pre-Application Document for the subject project. The Service does not object to the use of the Traditional Licensing Process (TLP) for this project. As requested by your consultants, Gomez and Sullivan, we are hereby providing you with this letter of concurrence regarding the use of the TLP. 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, C. Hogan)
FERC, Washington, DC (K. Bose)

Morgan Lyle
621 6th Street
East Northport NY 11731

Office of the Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington DC 20426

Aug. 24, 2009

I write to express my opposition to New York City's request for the Traditional approach to licensing for West of Hudson Hydroelectric Project, Project No. 13287. The rivers downstream of the proposed project (east and west branches of the Delaware River, Neversink River, Schoharie Creek) are extremely valuable, highly sensitive and extremely complex natural resources and any project with potential impact on these rivers should be subjected to the highest possible level of scrutiny. The hydroelectric proposal will generate a great deal of controversy and a transparent integrated licensing process is essential.

Sincerely,

Morgan Lyle

Dear Sir,

It has come to my attention that New York City for its West of Hudson Hydroelectric Project, Project No. 13287, wants to file for the ability to produce hydro power from the upper Delaware River water shed. Specifically utilizing the water the Cannonsville, the Peapacton and the Neversink dams. Further I understand they want to file with the traditional approach rather than the integrated approach to avoid studies on the environmental impact of their plans.

Please make sure that the City must pursue the integrated approach which mandates environmental impact studies. The upper Delaware watershed is an ecological gem with its world famous wild trout fishery. It also supports the habitat of the dwarf wedge mussel, which is currently on the endangered species list.

It is critically important that environmental studies are conducted to insure that New York City's plans for hydro generation does not impact the wild trout or the Zebra Mussel. Without these studies New York City Could endanger the wild trout species which exist in these waters.

Regards,

Fred Nelson
13 Robert Dr.
Chatham, NJ 07928

ORIGINAL

TOWN OF DEPOSIT

3 Elm Street
 Deposit, New York 13754
 PHONE: 607-467-2433
 FAX: 607-467-1414

August 28, 2009

FILED
 SECRETARY OF THE
 COMMISSION
 2009 SEP -4 A 10:19
 FEDERAL ENERGY
 REGULATORY COMMISSION

Hon. Kimberly D. Bose
 Secretary
 Federal Energy Regulatory Commission
 888 First Street, NE
 Washington, DC 20426

Re: Project No. 13287-~~000~~⁰⁰² — City of New York West of Hudson Hydroelectric Project

Dear Secretary Bose,

I am writing to provide comment to the New York City ("City") request for a waiver, permitting it to use the Traditional Process in favor of the Integrated Licensing Process ("ILP"), dated August 13, 2009, in its pursuit of a license for the above-cited project. Because of the level of controversy surrounding the project and the complexity of resource issues as well as the very real likelihood that the City will not pursue the project, we respectfully request the Commission deny the City's request. We believe the City's request would preclude meaningful opportunity for comment provided by the FERC Integrated Licensing Process.

Denial of the City's request will ensure that participants in the licensing proceeding will have a full and meaningful opportunity to contribute. The City's proposed studies will assist it in determining whether this project can be pursued in a way that both ensures the financial viability of the project and maintains the essential character of the land surrounding the water resources at issue in this licensing proceeding. The ILP process provides the necessary framework through which the permittee and the participants can engage in an open dialogue regarding the necessary studies to be performed.

STANDARD FOR GRANTING WAIVER

The onus is on the applicant to demonstrate to the Commission that the Commission should waive its regulations and discard the ILP in favor of the Traditional Process. The standard for such a demonstration is "good cause shown." In determining whether an applicant has met this standard in requesting that the Commission deviate from the default ILP and pursue licensing through the Traditional Process, the Commission has determined that it will analyze the five following factors:

- (1) the likelihood of timely license issuance;
- (2) the complexity of the resource issues;

- (3) the level of anticipated controversy;
- (4) the amount of available information and potential for significant disputes over studies; and
- (5) the relative cost of the traditional process compared to the integrated process.

As the Commission has stated, it will consider how easy it anticipates the licensing process to be:

The more likely it appears from the participants' filings that an application will have relatively few issues, little controversy, can be expeditiously processed, and can be processed less expensively under the traditional process, the more likely the Commission is to approve such a request.

Unfortunately, this proceeding does not present tidy issues that the Commission may easily mediate but instead has stirred considerable controversy that will cast doubt on the City's ability to successfully complete the licensing process on time.

DISCUSSION

This proceeding presents a number of unique challenges and the likely inclusion of a number of different parties, all with varied interests. The project will likely be controversial in light of the City's actions to date in the proceedings which deprive much of the economic benefit to the area based on the City's competing against the Delaware County Electric Cooperative in securing the preliminary permit. In addition, the City is likely to cause further economic hardship in the upstate region through its Land Acquisition Program in the region. Finally, the City's project would produce significantly less hydroelectric power than the alternative that was proposed by the Delaware County Electric Cooperative, thus reducing the renewable energy benefits to the region and the State and thus increasing greenhouse gas emissions. The discussion below addresses each of the five factors the Commission will use to evaluate requests for a waiver of the requirements to use the ILP.

The Likelihood of Timely License Issuance

In its request for the use of the traditional licensing process, the City details an aggressive licensing timeline. The City, however, fails to acknowledge the need for ample opportunity for public comment and consideration as part of the licensing process.

Complexity of the Resource Issues

The water resources at issue would present any potential licensee with a number of difficulties because of the complexity of the water flow and management issues. As the City notes, the usual issues connected to projects of this size and nature — maintenance of fisheries and recreation areas, protection of ecosystems, and coordination with existing structures on and uses of the water resource — are complicated by a myriad of actors at various levels of three state governments. Controversies surrounding water flow from the Delaware River Basin have reached the Supreme Court on two occasions, and the water flow is still subject to oversight per a decree of the Supreme Court.

The City, however, suggests an unrealistic ability to coordinate during the proceedings. The City has a history of failing to consult with the region. Although many issues concerning flow management and other operational concerns of any potential hydroelectric project have already been resolved, new disputes will inevitably arise that will need thoughtful consideration

Level of Anticipated Controversy

The City underestimates the level of anticipated controversy that the pursuit of this project has and will create. The Commission granted the City its instant permit in a contested proceeding in which the Commission denied the first-filed Delaware County Electric Cooperative (“DCEC”) request for a preliminary permit. Prior to the City’s submission of a competing preliminary application, the DCEC consulted with and built local support for its filing before this Commission. As an upstate neighbor to the communities in which the reservoirs are located, DCEC assured both local elected officials in the area and recreational groups that enjoy use of these waters that it could develop the project in a manner consistent with its current use. Relying on its municipal preference, however, the City filed a competing application drawn closely from the DCEC filing and ultimately defeated the DCEC’s application.

As noted, the DCEC enlisted the support of numerous local public officials in its efforts to develop the site. In recognition of its efforts to secure a permit to study the feasibility of its proposed project, the DCEC secured the support of U. S. Senator Charles Shumer, who issued a press release on July 14, 2009 praising DCEC for proposing the project and criticizing the City for its lack of action and cooperation causing delay to this significant new renewable resource.

Based on the foregoing concerns, we are concerned that the Traditional Licensing Process will not allow all voices to be heard, particularly local voices that have a strong interest in seeing that this project is developed in a way that assures continued use and enjoyment of the surrounding recreational area.

The Amount of Available Information and Potential for Significant Disputes over Studies

As the City indicates, the long and contentious history of the reservoirs and dams at issue in this proceeding has resulted in a large amount of data and studies. As noted above, however, concerns over such items as flow management and other operational issues have been studied and subjected to the oversight of three regulatory schemes.

More basic questions, however, surrounding the newly proposed uses of the river, reservoirs, and dams have not been broached. New studies will need to be performed to determine the effect of adding a hydroelectric generating facility on the environmental habitat, the use of the water resources and surrounding land for recreational purposes, and the overall character of the site.

Because the City is geographically remote from the actual sites of the proposed developments, questions will inevitably arise as to whether the City will work to ensure that the basic character of the site—environmentally—will be retained. The river provides bountiful fishing as well as a certain degree of tourism, all of which needs to be protected during the study, planning, and design phases of any project.

The Relative Cost of the Traditional Process Compared to the ILP

The water resources and the surrounding land serve as pristine areas and are the source of recreation and regional opportunities. For many communities, the water resources serve as a lifeblood. Studies will be needed to determine the true impact of these projects on the region, recreational uses, and the environment. Furthermore, commenters will need adequate time to review study proposals to ensure that they will be designed and conducted in a way that ensures the City has all necessary data in the pursuit of a license and the design of any hydroelectric facility thereafter.

As the Commission has noted, early resolution of disputes concerning studies is one of the most central means of ensuring timeliness of the licensing process. In addition, the pre-filing study dispute resolution procedures included within the Traditional Process are rarely invoked. From the perspective of commenters, one of the most important features in the ILP is the procedural timeliness involved in the study process.

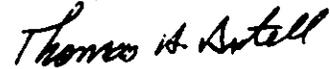
In its request, however, the City cites the flexibility inherent in the Traditional Process as a reason to waive the requirement that it use ILP. From the perspective of local residents and those that will participate in an effort to ensure that the overall character of the water resources and surrounding lands will be retained, this so-called “flexibility” for the City actually results in fewer and less meaningful opportunities for comment. The ILP provides the permittee and commenters a better chance at collaboration because they can collaborate on the study plan prior to implementation. It ensures that the commenters have an

opportunity to voice concerns at each step of the licensing process, especially at the critical study phase.

Conclusion

For the reasons described herein, we request the Commission reject the City's request to use the Traditional Process.

Sincerely,

Handwritten signature of Thomas A. Axtell in black ink.

Thomas A. Axtell, Supervisor

Dear Sir,

It has come to my attention that New York City wants to file for the ability to produce hydro power from the upper Delaware River water shed. Specifically the Cannonsville, the Peapacton and the Neversink dams. Further I understand they want to file with the traditional approach rather than the integrated approach to avoid studies on the environmental impact of their plans.

Please ensure that the City pursues the integrated approach which mandates environmental impact studies.

The upper Delaware watershed is an ecological gem with it's world famous wild trout fishery. It also supports the habitat of the dwarf wedge mussel, which is on the endangered species list. Additionally the trout fishery and general environs are major contributors to the economies of the small communities which already struggle to survive. It is critically important that environmental studies are conducted to insure that New York City's plans for hydro generation does not impact the wild trout or the Zebra Mussel

SECRET

2009 SEP 21

August 31, 2009

Hon. Kimberly D. Bose
 Secretary
 Federal Energy Regulatory Commission
 888 First Street, NE
 Washington, DC 20426

Re: **Project No. 13287-000** — **City of New York West of Hudson Hydroelectric Project**

Dear Secretary Bose,

I am writing to provide comment to the New York City ("City") request for a waiver, permitting it to use the Traditional Process in favor of the Integrated Licensing Process ("ILP"), dated August 13, 2009, in its pursuit of a license for the above-cited project. Because of the level of controversy surrounding the project and the complexity of the resource issues as well as the very real likelihood that the City will not pursue the project, we respectfully request the Commission deny the City's request. We believe the City's request would preclude meaningful opportunity for comment as provided by the FERC Integrated Licensing Process.

Denial of the City's request will ensure that participants in the licensing proceeding will have a full and meaningful opportunity to contribute. The City's proposed studies will assist it in determining whether this project can be pursued in a way that both ensures the financial viability of the project and maintains the essential character of the land surrounding the water resources at issue in this licensing proceeding. The ILP process provides the necessary framework through which the permittee and the participants can engage in an open dialogue regarding the necessary studies to be performed.

STANDARD FOR GRANTING WAIVER

The onus is on the applicant to demonstrate to the Commission that the Commission should waive its regulations and discard the ILP in favor of the Traditional Process. The standard for such a demonstration is "good cause shown." In determining whether an applicant has met this standard in requesting that the Commission deviate from the default ILP and pursue licensing through the Traditional Process, the Commission has determined that it will analyze the five following factors:

- (1) the likelihood of timely license issuance;
- (2) the complexity of the resource issues;
- (3) the level of anticipated controversy;
- (4) the amount of available information and potential for significant disputes over studies; and

(5) the relative cost of the traditional process compared to the integrated process.

As the Commission has stated, it will consider how easy it anticipates the licensing process to be:

The more likely it appears from the participants' filings that an application will have relatively few issues, little controversy, can be expeditiously processed, and can be processed less expensively under the traditional process, the more likely the Commission is to approve such a request.

Unfortunately, this proceeding does not present tidy issues that the Commission may easily mediate but instead has stirred considerable controversy that will cast doubt on the City's ability to successfully complete the licensing process on time.

DISCUSSION

This proceeding presents a number of unique challenges and the likely inclusion of a number of different parties, all with varied interests. The project will likely be controversial in light of the City's actions to date in the proceedings which deprive much of the economic benefit of the project to the area based on the City competing against the Delaware County Electric Cooperative in securing the preliminary permit. In addition, the City is likely to cause further economic hardship in the upstate region through its Land Acquisition Program in the region. Finally, the City's project would produce significantly less hydroelectric power than the alternative that was proposed by the Delaware County Electric Cooperative, thus reducing the renewable energy benefits to the region and the State and thus increasing greenhouse gas emissions. In the discussion below addresses each of the five factors the Commission will use to evaluate requests for a waiver of the requirement to use the ILP.

The Likelihood of Timely License Issuance

In its request for use of the traditional licensing process, the City details an aggressive licensing timeline. The City, however, fails to acknowledge the need for ample opportunity for public comment and consideration as part of the licensing process.

Complexity of the Resource Issues

The water resources at issue would present any potential licensee with a number of difficulties because of the complexity of the water flow and management issues. As the City notes, the usual issues connected to projects of this size and nature—maintenance of fisheries and recreation areas, protection of eco-systems, and coordination with existing structures on and uses of the water resource—are complicated by a myriad of actors at various levels of three state governments. Controversies surrounding water flow from the Delaware River Basin have reached the Supreme Court on two occasions, and the water flow is still subject to oversight per a decree of the Supreme Court.

The City, however, suggests an unrealistic ability to coordinate during the proceedings. The City has a history of failing to consult with the region. Although many issues concerning flow management and other operational concerns of any potential hydroelectric project have already been resolved, new disputes will inevitably arise that will need thoughtful consideration and resolution.

Level of Anticipated Controversy

The City underestimates the level of anticipated controversy that the pursuit of this project has and will create. The Commission granted the City its instant permit in a contested proceeding in which the Commission denied the first-filed Delaware County Electric Cooperative (“DCEC”) request for a preliminary permit. Prior to the City’s submission of a competing preliminary permit application, the DCEC consulted with and built local support for its filing before this Commission. As an upstate neighbor to the communities in which the reservoirs are located, DCEC assured both local elected officials in the area and recreational groups that enjoy use of these waters that it could develop the project in a manner consistent with its current use. Relying on its municipal preference, however, the City filed a competing application drawn closely from the DCEC filing and ultimately defeated the DCEC’s application.

As noted, the DCEC enlisted the support of numerous local public officials in its efforts to develop the site. In recognition of its efforts to secure a permit to study the feasibility of its proposed project, the DCEC secured the support of U.S. Senator Chuck Schumer, who issued a press release on July 14, 2009 praising DCEC for proposing the project and criticizing the City for its lack of action and cooperation causing delay to this significant new renewable resource.

Based on the foregoing concerns, we are concerned that Traditional Licensing Process will not allow all voices to be heard, particularly local voices that have a strong interest in seeing that this project is developed in a way that assures continued use and enjoyment of the surrounding recreational area.

The Amount of Available Information and Potential for Significant Disputes over Studies

As the City indicates, the long and contentious history of the reservoirs and dams at issue in this proceeding has resulted in a large amount of data and studies. As noted above, however, concerns over such items as flow management and other operational issues have been studied and subjected to the oversight of three state regulatory schemes.

More basic questions, however, surrounding the *newly proposed* uses of the river, reservoirs, and dams have not been broached. New studies will need to be performed to determine the effect of adding a hydroelectric generating facility on the environmental habitat, the use of the water resources and surrounding land for recreational purposes, and the overall character of the site.

Because the City is geographically remote from the actual sites of the proposed developments, questions will inevitably arise as to whether the City will work to ensure that the basic character of the site—environmentally and recreationally—will be retained. The river provides bountiful fishing as well as a certain degree of tourism, all of which needs to be protected during the study, planning, and design phases of any project. Accordingly, significant disputes will arise over the course of the licensing project.

The Relative Cost of the Traditional Process Compared to the ILP

The water resources and the surrounding land serve as pristine areas and are the source of recreation and regional opportunities. For many communities, the water resources serve as a lifeblood. Studies will be needed to determine the true impact of these projects on the region, recreational uses, and the environment. Furthermore, commenters will need adequate time to review study proposals to ensure that they will be designed and conducted in a way that ensures the City has all necessary data in the pursuit of a license and the design of any hydroelectric facility thereafter.

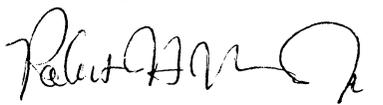
As the Commission has noted, early resolution of disputes concerning studies is one of the most central means of ensuring timeliness of the licensing process. In addition, the pre-filing study dispute resolution procedures included within the Traditional Process are rarely invoked. From the perspective of commenters, one of the most important features in the ILP is the procedural timelines involved in the study process.

In its request, however, the City cites the flexibility inherent in the Traditional Process as a reason to waive the requirement that it use the ILP. From the perspective of local residents and those that will participate in an effort to ensure that the overall character of the water resources and surrounding lands will be retained, this so-called “flexibility” for the City actually results in fewer and less meaningful opportunities for comment. The ILP provides the permittee and commenters a better chance at collaboration because they can collaborate on the study plan prior to implementation. It ensures that commenters have an opportunity to voice concerns at each step of the licensing process, especially at the critical study phase.

CONCLUSION

For the reasons described herein, we request the Commission reject the City’s request to use the Traditional Process.

Sincerely,



Town Supervisor

Town of Blenheim

P.O. Box 928

N. Blenheim, NY 12131

TOWN OF COLCHESTER

72 Tannery Road * PO Box 321 * Downsville, NY 13755 * Phone (607) 363-7169
 Supervisor- Robert A. Homovich Town Clerk- Julie B. Townsend
 Town Council- Cindy L. Donofrio - Mark W. Mattson - Wayne R. Knorr - Gilbert D. Clöse

September 02, 2009

Hon. Kimberly D. Bose
 Secretary
 Federal Energy Regulatory Commission
 888 First Street, NE
 Washington, DC 20426

Re: Project No. 13287-000 — City of New York West of Hudson Hydroelectric Project

Dear Secretary Bose,

I am writing to provide comment to the New York City ("City") request for a waiver, permitting it to use the Traditional Process in favor of the Integrated Licensing Process ("ILP"), dated August 13, 2009, in its pursuit of a license for the above-cited project. Because of the level of controversy surrounding the project and the complexity of the resource issues as well as the very real likelihood that the City will not pursue the project, we respectfully request the Commission deny the City's request. We believe the City's request would preclude meaningful opportunity for comment as provided by the FERC Integrated Licensing Process.

Denial of the City's request will ensure that participants in the licensing proceeding will have a full and meaningful opportunity to contribute. The City's proposed studies will assist it in determining whether this project can be pursued in a way that both ensures the financial viability of the project and maintains the essential character of the land surrounding the water resources at issue in this licensing proceeding. The ILP process provides the necessary framework through which the permittee and the participants can engage in an open dialogue regarding the necessary studies to be performed.

STANDARD FOR GRANTING WAIVER

The onus is on the applicant to demonstrate to the Commission that the Commission should waive its regulations and discard the ILP in favor of the Traditional Process. The standard for such a demonstration is "good cause shown." In determining whether an applicant has met this standard in requesting that the Commission deviate from the default ILP and pursue licensing through the Traditional Process, the Commission has determined that it will analyze the five following factors:

- (1) the likelihood of timely license issuance;
- (2) the complexity of the resource issues;
- (3) the level of anticipated controversy;
- (4) the amount of available information and potential for significant disputes over studies; and

(5) the relative cost of the traditional process compared to the integrated process.

As the Commission has stated, it will consider how easy it anticipates the licensing process to be:

The more likely it appears from the participants' filings that an application will have relatively few issues, little controversy, can be expeditiously processed, and can be processed less expensively under the traditional process, the more likely the Commission is to approve such a request.

Unfortunately, this proceeding does not present tidy issues that the Commission may easily mediate but instead has stirred considerable controversy that will cast doubt on the City's ability to successfully complete the licensing process on time.

DISCUSSION

This proceeding presents a number of unique challenges and the likely inclusion of a number of different parties, all with varied interests. The project will likely be controversial in light of the City's actions to date in the proceedings which deprive much of the economic benefit of the project to the area based on the City competing against the Delaware County Electric Cooperative in securing the preliminary permit. In addition, the City is likely to cause further economic hardship in the upstate region through its Land Acquisition Program in the region. Finally, the City's project would produce significantly less hydroelectric power than the alternative that was proposed by the Delaware County Electric Cooperative, thus reducing the renewable energy benefits to the region and the State and thus increasing greenhouse gas emissions. In the discussion below addresses each of the five factors the Commission will use to evaluate requests for a waiver of the requirement to use the ILP.

The Likelihood of Timely License Issuance

In its request for use of the traditional licensing process, the City details an aggressive licensing timeline. The City, however, fails to acknowledge the need for ample opportunity for public comment and consideration as part of the licensing process.

Complexity of the Resource Issues

The water resources at issue would present any potential licensee with a number of difficulties because of the complexity of the water flow and management issues. As the City notes, the usual issues connected to projects of this size and nature—maintenance of fisheries and recreation areas, protection of eco-systems, and coordination with existing structures on and uses of the water resource—are complicated by a myriad of actors at various levels of three state governments. Controversies surrounding water flow from the Delaware River Basin have reached the Supreme Court on two occasions, and the water flow is still subject to oversight per a decree of the Supreme Court.

The City, however, suggests an unrealistic ability to coordinate during the proceedings. The City has a history of failing to consult with the region. Although many issues concerning flow management and other operational concerns of any potential hydroelectric project have already been resolved, new disputes will inevitably arise that will need thoughtful consideration and resolution.

Level of Anticipated Controversy

The City underestimates the level of anticipated controversy that the pursuit of this project has and will create. The Commission granted the City its instant permit in a contested proceeding in which the Commission denied the first-filed Delaware County Electric Cooperative ("DCEC") request for a preliminary permit. Prior to the City's submission of a competing preliminary permit application, the DCEC consulted with and built local support for its filing before this Commission. As an upstate neighbor to the communities in which the reservoirs are located, DCEC assured both local elected officials in the area and recreational groups that enjoy use of these waters that it could develop the project in a manner consistent with its current use. Relying on its municipal preference, however, the City filed a competing application drawn closely from the DCEC filing and ultimately defeated the DCEC's application.

As noted, the DCEC enlisted the support of numerous local public officials in its efforts to develop the site. In recognition of its efforts to secure a permit to study the feasibility of its proposed project, the DCEC secured the support of U.S. Senator Chuck Schumer, who issued a press release on July 14, 2009 praising DCEC for proposing the project and criticizing the City for its lack of action and cooperation causing delay to this significant new renewable resource.

Based on the foregoing concerns, we are concerned that Traditional Licensing Process will not allow all voices to be heard, particularly local voices that have a strong interest in seeing that this project is developed in a way that assures continued use and enjoyment of the surrounding recreational area.

The Amount of Available Information and Potential for Significant Disputes over Studies

As the City indicates, the long and contentious history of the reservoirs and dams at issue in this proceeding has resulted in a large amount of data and studies. As noted above, however, concerns over such items as flow management and other operational issues have been studied and subjected to the oversight of three state regulatory schemes.

More basic questions, however, surrounding the *newly proposed* uses of the river, reservoirs, and dams have not been broached. New studies will need to be performed to determine the effect of adding a hydroelectric generating facility on the environmental habitat, the use of the water resources and surrounding land for recreational purposes, and the overall character of the site.

Because the City is geographically remote from the actual sites of the proposed developments, questions will inevitably arise as to whether the City will work to ensure that the basic character of the site—environmentally and recreationally—will be retained. The river provides bountiful fishing as well as a certain degree of tourism, all of which needs to be protected during the study, planning, and design phases of any project. Accordingly, significant disputes will arise over the course of the licensing project.

The Relative Cost of the Traditional Process Compared to the ILP

The water resources and the surrounding land serve as pristine areas and are the source of recreation and regional opportunities. For many communities, the water resources serve as a lifeblood. Studies will be needed to determine the true impact of these projects on the region, recreational uses, and the environment. Furthermore, commenters will need adequate time to review study proposals to ensure that they will be designed and conducted in a way that ensures the City has all necessary data in the pursuit of a license and the design of any hydroelectric facility thereafter.

As the Commission has noted, early resolution of disputes concerning studies is one of the most central means of ensuring timeliness of the licensing process. In addition, the pre-filing study dispute resolution procedures included within the Traditional Process are rarely invoked. From the perspective of commenters, one of the most important features in the ILP is the procedural timelines involved in the study process.

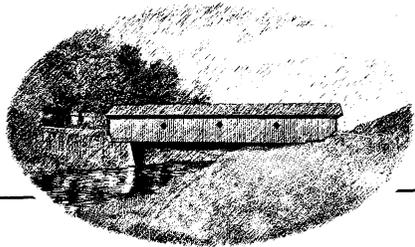
In its request, however, the City cites the flexibility inherent in the Traditional Process as a reason to waive the requirement that it use the ILP. From the perspective of local residents and those that will participate in an effort to ensure that the overall character of the water resources and surrounding lands will be retained, this so-called “flexibility” for the City actually results in fewer and less meaningful opportunities for comment. The ILP provides the permittee and commenters a better chance at collaboration because they can collaborate on the study plan prior to implementation. It ensures that commenters have an opportunity to voice concerns at each step of the licensing process, especially at the critical study phase.

CONCLUSION

For the reasons described herein, we request the Commission reject the City’s request to use the Traditional Process.

Sincerely,





TOWN OF DELHI

5 Elm Street, Delhi, New York 13753

ORIGINAL

607-746-TOWN (8696)

Fax: 607-746-7847

September 3, 2009

P-13287-002

FEDERAL ENERGY
REGULATORY COMMISSION

2009 SEP - 9 A 9:44

FILED
SECRETARY OF THE
COMMISSION

Hon. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Dear Secretary Bose;

We are formally requesting that The FERC deny New York City's request to allow them to use "Traditional Licensing Process" (TLP) for proposed projects to develop hydroelectric generation facilities on any of the City owned Reservoirs.

Granting the TLP to the City is a deviation from the established licensing process and would not hold the City to a structured timeline for completion nor provide opportunity of neither public visibility nor comment.

Based on the City's comments we question the City's intention to fully develop this renewable resource. Instead, we believe local interest would be better served through the Delaware County Electric Cooperative (DCEC), which submitted an application to FERC to develop this resource in May of 2007.

Please do not hesitate to call me at any time.

Sincerely,

Peter J. Bracci
Supervisor Town of Delhi

PJB/djc
cc: Town Board



Schoharie County
OFFICE OF CLERK, AUDITOR & PURCHASING AGENT

P.O. Box 429, County Office Building
Schoharie, NY 12157
Phone: (518) 295-8347 Fax: (518) 295-8482



Board of Supervisors, Chairman
Earl VanWormer, III

Karen Miller, Clerk
Sheryl Largeteau, Deputy Clerk
Karen Hathaway, Deputy Clerk

ORIGINAL

September 4, 2009

Hon. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

FEDERAL ENERGY REGULATORY COMMISSION
 2009 SEP 15 PM 14:18
 RECEIVED

RE: Project No. 13287-000 – City of New York West of Hudson Hydroelectric Project.

Dear Secretary Bose,

I am writing to provide comment to the New York City (“City”) request for a waiver, permitting it to use the Traditional Process in favor of the Integrated Licensing Process (“ILP”), dated August 13, 2009, in its pursuit of a license for the above-cited project. Because of the level of controversy surrounding the project and the complexity of the resource issues as well as the very real likelihood that the City will not pursue the project, we respectfully request the Commission deny the City’s request. We believe the City’s request would preclude meaningful opportunity for comment as provided by the FERC Integrated Licensing Process.

Denial of the city’s request will ensure that participants in the licensing proceeding will have a full and meaningful opportunity to contribute. The city’s proposed studies will assist it in determining whether this project can be pursued in a way that both ensures the financial viability of the project and maintains the essential character of the land surrounding the water resources at issue in this licensing proceeding. The ILP process provides the necessary framework through which the permittee and the participants can engage in an open dialogue regarding the necessary studies to be performed.

STANDARD FOR GRANTING WAIVER

The onus is on the applicant to demonstrate to the Commission that the Commission should waive its regulations and discard the ILP in favor of the Traditional Process. The standard for such a demonstration is “good cause shown.” In determining whether an applicant has met this standard in requesting that the Commission deviate from the default ILP and pursue licensing through the traditional Process, the Commission has determined that it will analyze the five following factors:

1. The likelihood of timely license issuance;
2. The complexity of the resource issues;
3. The level of anticipated controversy;
4. The amount of available information and potential for significant disputes over studies;
and

5. The relative cost of the traditional process compared to the integrated process.

As the Commission has stated, it will consider how easy it anticipates the licensing process to be:

The more likely it appears from the participants' filings that an application will have relatively few issues, little controversy, can be expeditiously processed, and can be processed less expensively under the traditional process, the more likely the Commission is to approve such a request.

Unfortunately, this proceeding does not present tidy issues that the Commission may easily mediate but instead has stirred considerably controversy that will cast doubt on the City's ability to successfully complete the licensing process on time.

DISCUSSION

This proceeding presents a number of unique challenges and the likely inclusion of a number of different parties, all with varied interests. The project will likely be controversial in light of the City's actions to date in the proceedings which deprive much of the economic benefit of the project to the area based on the City competing against the Delaware County Electric Cooperative in securing the preliminary permit. In addition, the city is likely to cause further economic hardship in the upstate region through its Land Acquisition Program in the region. Finally, the city's project would produce significantly less hydroelectric power than the alternative that was proposed by the Delaware County Electric Cooperative, thus reducing the renewable energy benefits to the region and the State add thus increasing greenhouse gas emissions. The discussion below addresses each of the five factors the Commission will use to evaluate requests for a waiver of the requirement to use the ILP.

The Likelihood of timely License Issuance

In its request for use of the traditional licensing process, the City details an aggressive licensing timeline. The city, however, fails to acknowledge the need for ample opportunity for public comment and consideration as part of the licensing process.

Complexity of the Resource Issues

The water resources at issue would present any potential licensee with a number of difficulties because of the complexity of the water flow and management issues. As the City notes, the usual issues connected to projects of this size and nature – maintenance of fisheries and recreation areas, protection of eco-systems, and coordination with existing structures on and uses of the water resource – are complicated by a myriad of actors at various levels of three state governments. Controversies surrounding water flow from the Delaware River Basin have reached the Supreme Court on two occasions, and the water flow is still subject to oversight per a decree of the Supreme Court.

The City, however, suggests an unrealistic ability to coordinate during the proceedings. The City has a history of failing to consult with the region. Although many issues concerning flow management and other operational concerns of any potential hydroelectric project have already been resolved, new disputes will inevitably arise that will need thoughtful consideration and resolution.

Level of Anticipated Controversy

The City underestimates the level of anticipated controversy that the pursuit of this project has and will create. The Commission granted the City its instant permit in a contested proceeding in which the Commission denied the first-filed Delaware County Electric Cooperative (“DCEC”) request for a preliminary permit. Prior to the City’s submission of a competing preliminary permit application, the DCEC consulted with and built local support for its filing before this Commission. As an upstate neighbor to the communities in which the reservoirs are located, DCEC assured both local elected officials in the area and recreational groups that enjoy use of these waters that it could develop the project in a manner consistent with its current use. Relying on its municipal preference, however, the city filed a competing application drawn closely from the DCEC filing and ultimately defeated the DCEC’s application

As noted, the DCEC enlisted the support of numerous local public officials in its efforts to develop the site. In recognition of its efforts to secure a permit to study the feasibility of its proposed project, the DCEC secured the support of U.S. Senator Chuck Schumer, who issued a press release on July 14, 2009 praising DCEC for proposing the project and criticizing the city for its lack of action and cooperation causing delay to this significant new renewable resource.

Based on the foregoing concerns, we are concerned that Traditional Licensing Process will not allow all voices to be heard, particularly local voices that have a strong interest in seeing that this project is developed in a way that assures continued use and enjoyment of the surrounding recreational area.

The Amount of Available Information and Potential for Significant Disputes over Studies

As the City indicates, the long and contentious history of the reservoirs and dams at issue in this proceeding has resulted in a large amount of data and studies. As noted above, however, concerns over such items as flow management and other operational issues have been studied and subjected to the oversight of three state regulatory schemes.

More basic questions, however, surrounding the newly proposed uses of the river, reservoirs, and dams have not been broached. New studies will need to be performed to determine the effect of adding a hydroelectric generating facility on the environmental habitat, the use of the water resources and surrounding land for recreational purposes, and the overall character of the site.

Because the City is geographically remote from the actual sites of the proposed developments, questions will inevitably arise as to whether the City will work to ensure that the basic character of the site-environmentally and recreationally- will be retained. The river provides bountiful fishing as well as a certain degree of tourism, all of which needs to be protected during the study, planning, and design phases of any project. Accordingly, significant disputes will arise over the course of the licensing project.

The Relative Cost of the Traditional Process Compared to the ILP

The water resources and the surrounding land serve as pristine areas and are the source of recreation and regional opportunities. For many communities, the water resources serve as a lifeblood. Studies will be needed to determine the true impact of these projects on the region, recreational uses, and the environment. Furthermore, commenters will need adequate time to review

study proposals to ensure that they will be designed and conducted in a way that ensures the City has all necessary data in the pursuit of a license and the design of any hydroelectric facility thereafter.

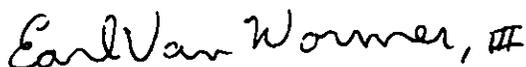
As the Commission has noted, early resolution of disputes concerning studies is one of the most central means of ensuring timeliness of the licensing process. In addition, the pre-filing study dispute resolution procedures included within the Traditional Process are rarely invoked. From the perspective of commenters, one of the most important features in the ILP is the procedural timelines involved in the study process.

In its request, however, the City cites the flexibility inherent in the Traditional Process as a reason to waive the requirement that it use the ILP. From the perspective of local residents and those that will participate in an effort to ensure that the overall character of the water resources and surrounding lands will be retained, this so-called "flexibility" for the City actually results in fewer and less meaningful opportunities for comment. The ILP provides the permittee and commenters a better chance at collaboration because they can collaborate on the study plan prior to implementation. It ensures that commenters have an opportunity to voice concerns at each step of the licensing process, especially at the critical study phase.

CONCLUSION

For the reasons described herein, we request the Commission reject the City's request to use the Traditional Process.

Sincerely,



Earl VanWormer III, Chairman
Schoharie County Board of Supervisors



NEW YORK STATE COUNCIL OF TROUT UNLIMITED

7 Helen Street

Plattsburgh NY 12901

wellman1985@charter.net

8 September 2009

Subject: Petition to Intervene: Project -13287 NYC West of Hudson

Ms Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street NE
Washington DC 20426

FILED
SECRETARY OF THE
2009 SEP-16
11:51:16 P 2:07
FEDERAL ENERGY REGULATORY COMMISSION
RECEIVED

Dear Secretary Bose:

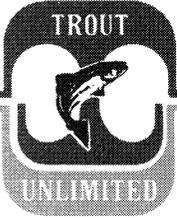
Enclosed are an original and eight copies of a Petition to Intervene in the above captioned matter.

Service has been made on those on the current service list electronically and by US mail, as appropriate.

Sincerely,

William H. Wellman, Region 5 Vice President, New York State Council of Trout Unlimited

ORIGINAL



NEW YORK STATE COUNCIL OF TROUT UNLIMITED

7 Helen Street
Plattsburgh NY 12901
wellman1985@charter.net
8 September 2009

PETITION TO INTERVENE-PROJECT P-13287 NYC WEST OF HUDSON

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street NE
Washington DC 20426

SECRET
PROJECT P-13287
SEP 16 P 2 07
FEDERAL ENERGY REGULATORY COMMISSION

Dear Secretary Bose:

Pursuant to Rule 214 of the Rules, Practices and Procedures (18 CFR Section 385.314) the New York State Council of Trout Unlimited hereby petitions the Federal Energy Regulatory Commission to grant it full party status in the above-captioned proceeding. The persons to whom communications should be addressed and to whom service of proceedings should be made are as follows:

William H. Wellman
7 Helen Street
Plattsburgh NY 12901
wellman1985@charter.net

Ron Urban
PO Box 815
Port Ewan, NY 12466
ronsgonefishing@aol.com

Roy Lamberton

Manny Zanger

PO Box 90

62 Beaverkill Mountain Road

East Berne NY 12059

Roscoe NY 12776

Roymcl@aol.com

beamoc@hvc.rr.com>

As grounds for its Petition, the New York State Council of Trout Unlimited states as follows:

The New York State Council of Trout Unlimited (NYSCTU) consists of 36 chapters and over 8,000 members across the State of New York. As America's foremost cold water fisheries and habitat conservation organization, Trout Unlimited has a vital interest in the preservation of America's fishing heritage. The New York State Council and its constituent chapters are frequent interveners in proceedings such as this and in other legal and administrative matters concerned with fisheries conservation, water quality, and similar issues. The area proposed for development under this project contains some of America's prime cold-water trout fisheries. Protection of these irreplaceable resources is of utmost importance.

Members of the New York State Council are residents of and anglers in the area impacted by the proposed development, and fish and enjoy the recreational benefits inherent in the area. Thus, no other party can represent Trout Unlimited's interest in this matter.

No disruption to the proceedings or any prejudice or additional burden to any party will result from the granting of this petition.

In light of the foregoing, the New York State Council of Trout Unlimited respectfully petitions for intervention.

Sincerely,

A handwritten signature in black ink, appearing to read "William H. Wellman". The signature is written in a cursive, flowing style.

William H. Wellman, Region 5 Vice President, New York State Council of Trout Unlimited

CC: NYSCTU; Service List; TU National

DAVID P. FANSLAU, M.G.A., ICMA-CM
COUNTY MANAGER

TEL. 845-807-0450
FAX 845-794-0230



**COUNTY OF SULLIVAN
COUNTY MANAGER'S OFFICE
SULLIVAN COUNTY GOVERNMENT CENTER
100 NORTH STREET
PO BOX 5012
MONTICELLO, NY 12701**

September 10, 2009

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

Re: Project No. 13287-000 – City of New York West of Hudson Hydroelectric Project

Dear Secretary Bose:

This letter is submitted by the County of Sullivan (the "County") in response to the City of New York (the "City") requesting that the Commission use the Traditional Licensing Process ("TLP") for review of the City's application for licensing of the West of Hudson Hydroelectric Project. The County hereby recommends that the Commission deny this request.

The County hereby urges the Commission to deny the City's request for use of the TLP and direct the City to follow the Integrated Licensing Process ("ILP"), which, as the default position under the law, provides for more stringent timetables for all parties and for more frequent and earlier opportunities for public involvement in the process. The Sullivan County Legislature has determined that the level of controversy that surrounds the project, as evidenced in the long history of complex negotiations between the City and its Watershed Communities, and the complexity of the resource issues involved both warrant denial of this request (see Resolution attached) and that the project be reviewed under the ILP.

The County and associated municipalities were notified of the City's "Request for Approval to Use the Traditional Licensing Process," filed August 13, 2009, concurrently with the City's filing of a "Notification of Intent to File an Original License Application" (NOI) and its Pre-Application Document (PAD). By way of background, this project represents an effort to develop hydroelectric power on the four existing

dams of the Cannonsville, Neversink, Pepacton and Schohairie Reservoirs, which comprise part of the City's water supply system. The County received notification as an interested party, due to the fact that the Neversink Reservoir is located in the Town of Neversink, which lies within the County of Sullivan. The Sullivan County municipalities of Neversink, Fallsburg, Liberty, Thompson, Bethel and Rockland were all notified as well, due to their proximity to the project.

For reference, portions of the towns of Liberty, Neversink and Fallsburg are located within the New York City Watershed. The County and these municipalities all participate as members of the Coalition of Watershed Towns. Moreover, the County's land area falls almost entirely within the Upper Delaware River watershed, as overseen under federal compact by the multi-state Delaware River Basin Commission. For these reasons, the County closely monitors activities within the basin, including those upstream of the County's land area, for their potential impacts on the County and on the system as a whole.

It is the County's understanding that the ILP is the default procedure for licensing as established by Congress in the federal government's Energy Policy Act of 2005, and that, among the options for FERC's review of such projects, the ILP provides for maximum disclosure, transparency and timely opportunities for public input. Therefore, it is the County's view that the magnitude of the project, the number of communities affected, and the extent of the resource issues that must be considered all warrant use of the Integrated Licensing Process for this project.

The County finds the City's justification for using the TLP to be insufficient. Any hardship regarding the timetables presented by the ILP are self-imposed and do not justify use of any process that provides for less than the maximum opportunity for public involvement that the law allows. Therefore, it is the County's view that the Commission should direct the City to use the ILP and that the City be required to demonstrate a good-faith effort to develop the project within the timetables allowed.

For the reasons contained herein, the County vehemently opposes the request by the City to use the TLP and urges the Commission to deny this request.

Sincerely,

A handwritten signature in black ink that reads "David P. Fanslau". To the right of the signature is a circular stamp containing the initials "D.P.F.".

David P. Fanslau
County Manager

Cc: Hon. Charles E. Schumer, United States Senate
Hon. Kirsten Gillibrand, United States Senate
Hon. Maurice D. Hinchey, United States House of Representatives
Hon. John J. Bonacic, New York State Senate
Hon. Aileen M. Gunther, New York State Assembly

Encl.



THE SENATE
STATE OF NEW YORK

RANKING MINORITY MEMBER
COMMITTEES ON
HOUSING, CONSTRUCTION
& COMMUNITY DEVELOPMENT
RACING, GAMING & WAGERING

JOHN J. BONACIC
SENATOR, 42ND DISTRICT

September 11, 2009

COMMITTEES
BANKS
CODES
JUDICIARY
LOCAL GOVERNMENT

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

007

2009 SEP 21

Re: Project No. 13287-~~000~~ – City of New York West of Hudson Hydroelectric Project

Dear Secretary Bose:

I am writing in opposition to the City of New York's desire to use the Traditional Licensing Process (TLP) as it relates to the City's application for licensing of the West of Hudson Hydroelectric Project. This project represents an effort to develop hydroelectric power on four New York City owned reservoirs - the Cannonsville, Neversink, Pepacton and Schoharie Reservoirs. Three of these reservoirs – Cannonsville, Neversink, and Pepacton are in my Senate District.

The City of New York has consistently shown an inability to work with localities in my Senate District when it comes to managing its water supply. The City's attempt to use the TLP would limit, if not exclude, public input from watershed municipalities, as they seek to develop a hydro project.

With respect to hydro power in particular, the City has shown an open hostility to working with local community organizations, such as the Delaware County Electric Cooperative (DCEC) in the Catskills. The City has repeatedly given assurances to DCEC that the City will work with them. Unfortunately, the City has repeatedly failed to live up to their promises.

The inability to work with or trust the City with respect to their hydro related actions should mandate the use of the Integrated Licensing Process ("ILP"). The ILP provides for more stringent timetables for all parties and for more frequent and earlier opportunities for public involvement in the process. The historic difficulties between watershed communities and the City – in everything from what type of sports activities are permitted on City owned lands in the watershed, to costs of community septic systems, to reservoir storage and release levels, to the



maintenance of aqueducts are well known. The controversies are near constant. An open process, as only the ILP provides, is the best way to diminish that controversy and ensure a workable hydro project actually comes to fruition.

Communities in my Senate District were notified of the City's "Request for Approval to Use the Traditional Licensing Process," on August 13, 2009, concurrently with the City's filing of a "Notification of Intent to File an Original License Application" (NOI) and its Pre-Application Document.

Any hardship claimed by the City in their effort to use the TLP are also without merit and are self-imposed. The Commission should direct the City to use the ILP and also require the City to develop the project within the timetables allowed.

Sincerely,


JOHN J. BONACIC
State Senator

JJB:lcc

cc: Senator Schumer
Senator Gillibrand
Delaware County Board of Supervisors
Sullivan County Legislature



Pennsylvania Fish & Boat Commission

Division of Environmental Services

450 Robinson Lane
Bellefonte, PA 16823
Phone: 814-359-5133
Fax: 814-359-5175

Electronically filed with FERC at <https://ferconline.ferc.gov/eFiling.aspx>

September 11, 2009

The Honorable Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Re: Docket No. P-13287-002 City of New York West of Hudson Hydroelectric Project
Request for approval to use Traditional Licensing Process

Dear Secretary Bose:

The Pennsylvania Fish and Boat Commission (PFBC) is an independent administrative commission of the Commonwealth of Pennsylvania with authority to manage and promulgate rules and regulations concerning protection, preservation and management of fish, aquatic life, reptiles and amphibians and recreational boating. We request that the PFBC be added to the contact list for this docket since our agency has a vested interest in waters affected by hydroelectric facilities proposed under this docket. The West Branch of the Delaware River and Delaware main stem are boundary waters between our state and New York in the vicinity of the proposed docket projects. PFBC has the regulatory responsibility to manage the recreational fishery of these waters as well as to protect the dwarf wedge-mussel, a state listed endangered species, located in these downstream waters. The 1954 Supreme Court Decree referenced by the project sponsor's August 13, 2009 letter includes flow targets at Montague, New Jersey and Trenton, New Jersey. Our agency has been very active in providing input on the Flexible Flow Management Plan also referenced in New York City Department of Environmental Protection's filed material. Potential impacts of the hydroelectric operation and the reservoir releases they depend on have potential impacts to the Delaware Bay and we observed no communication with New Jersey, Pennsylvania and Delaware.

It is our agency's recommendation that an Integrated Licensing Process (ILP) be followed instead of the Traditional Licensing Process (TLP) for a number of reasons.

- In general, the City's request for permission to use the TLP greatly understates or underestimates the complexity of the resources issues involved, the level of controversy involved, and the potential for study disputes, which are all relevant factors in determining whether good cause can be shown for abandoned the ILP in favor of the TLP.
- Although the TLP is described as a "mature endeavor" in New York, the fact that important agencies and representatives from New Jersey and Pennsylvania have not been invited into the process through direct contact supports use of the ILP.
- The FERC licensing process for hydroelectric facilities is separate from reservoir operations as defined and constrained in the 1954 Supreme Court Decree.

Our Mission:

www.fish.state.pa.us

To protect, conserve and enhance the Commonwealth's aquatic resources and provide fishing and boating opportunities.

The Hon. Kimberly Bose

September 10, 2009

Page 2

- Management decisions in recent history have not been implemented in a transparent publicly participated process such as those provided by the ILP; they have been adopted following closed door Decree Party negotiations with limited outside input.
- The Decree Party negotiations have not included a federal agency representative, which would be more readily utilized in the ILP.
- The claim that issue identification has been subject to litigation or regulatory intervention is not shared by the PFBC. The legal requirements to change a Supreme Court Decree require a different avenue of activity than evaluating hydroelectric generation feasibility and environmental impacts associated with a FERC license.
- The time requirements for this project constitute a rather circular argument. The fact that a preliminary permit expires on March 1, 2012 should not cause only activities that support this deadline to be considered. Currently available information has supported reservoir management for water supply and best use of undiverted water. It has not been applied to hydroelectric generation, for which the capability has not yet been determined. It is understood that only water in excess of that required for water supply use will be used for generation, but we are not confident issues important to Pennsylvania will be identified and studied.
- The Flexible Flow Management Program currently used to manage water released from reservoirs based on available storage is by nature flexible. Many if not most public comments received have been unfavorable regarding this program. By definition, it is flexible, and subject to change. The ILP will allow a broad range of operational alternatives to be considered in terms of power generation and potential environmental impacts.

Thank you for providing the opportunity to comment. Please contact me at (814) 359-5133 or e-mail mhartle@state.pa.us if you have any questions or require additional information.

Sincerely,

Mark A. Hartle, Chief
Aquatic Resources Section
Division of Environmental Services

c: PFBC – L. Young, J. Arway, D. Arnold, D. Pierce
PA DEP – Abdulhossain Liaghat – Central Office, JR Holtmaster – NE Region
Kevin M. Lang, Couch White, LLP
NY DEC – Mark Woythal, Douglas Sheppard
DRBC – Carol Collier

Zimmerman & Associates

Environmental Litigation, Mediation, Enforcement & Compliance, Counseling

September 18, 2009

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

Re: Project No. 13287-000 – City of New York West of Hudson Hydroelectric Project

Dear Secretary Bose:

Friends of the Upper Delaware River, Inc., North Delaware River Watershed Conservancy Ltd. and Aquatic Conservation Unlimited, LLC, request that the Commission deny the City of New York's request to use the Traditional Licensing Process ("TLP") rather than the Integrated Licensing Process ("ILP") for review of the City's application for licensing of the West of Hudson Hydroelectric Project. The ILP is the default procedure under the Commission's licensing process and should be used in this case because it provides earlier and more frequent public participation opportunities.

The City also represents in its request to use the TLP that "the level of controversy should be less than that which existed prior to the development of the FFMP." Either New York City has not been paying attention or it seriously underestimates the level of controversy related to the Flexible Flow Management Program (FFMP). It does note that the Delaware River Basin Commission (DRBC) has not incorporated the FFMP into the DRBC's water code, but fails to explain that there was an extremely high level of controversy about the FFMP and the proposed water code amendments. This controversy in large measure was the reason that the DRBC withdrew its water code proposal in December 2008 and has yet to prepare a new proposal. Meanwhile, the City has been using the FFMP to control diversions and releases from its Delaware River Basin reservoirs (Cannonville, Pepacton and Neversink) with no acknowledgment of, let alone responsiveness to, the controversial issues that were presented to DRBC through the public input and comment process if follows.

In deciding whether to allow the City to use the TLP rather than the ILP, it is particularly important for the Commission to understand that a great portion of the controversy regarding the FFMP is that it was developed behind closed doors with no direct public involvement or opportunity to comment. The only entities that were included in the process that developed the FFMP were the five parties to the 1954 U.S. Supreme Court decree in *State of New Jersey v. State of New York and City of New York*. The first view the public had of the FFMP was when it was released at a DRBC meeting on September 26, 2007, a few hours after the decree parties had completed their secret negotiations and less than five days before it went into effect. Since

Zimmerman & Associates

Environmental Litigation, Mediation, Enforcement & Compliance, Counseling

Hon. Kimberly D. Bose

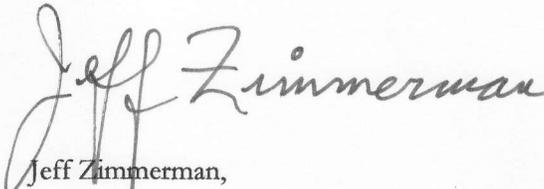
September 18, 2009

Page 2

then, the decree parties have modified the FFMP five times and each time have done so in secret, only announcing after the fact the changes that they made.

In summary, if the Commission approves New York City's request to use the TLP rather than the ILP, it will be rewarding the City for its total lack of transparency in its reservoir operations, an action that flies in the face of the public process at the core of the ILP.

Respectfully submitted,



Jeff Zimmerman,

cc: Distribution list

FEDERAL ENERGY REGULATORY COMMISSION

WASHINGTON, D. C. 20426

October 21, 2009

OFFICE OF ENERGY PROJECTS

Project No. 13287-001-- New York
West of Hudson Project
City of New York

Kevin M Lang, Esq.
Couch White, LLP
540 Broadway
P. O. Box 22222
Albany, NY 12201

RE: Authorization to Use the Traditional Licensing Process

Dear Mr. Lang:

In a letter filed August 13, 2009, submitting a notice of intent (NOI) and pre-application document (PAD), you requested use of the traditional licensing process (TLP) in preparing a license application for the proposed 29.75-MW West of Hudson Project. The project would be located on Schoharie Creek, the West Branch Delaware River, the East Branch Delaware River, and the Neversink River, in Schoharie, Delaware and Sullivan Counties, New York.

In the August 13, 2009, edition of The Times Herald-Record, The Daily Freeman, and The Daily Star Newspapers you published notice of your request to use the TLP. Your notice contained the information required in sections 5.3(d)(1) and (2) of the Commission's regulations, including a statement requesting that comments on the request to use the TLP be filed with the Commission no later than 30 days following the filing date of the request. Comments were filed by the U.S. Department of the Interior (Interior); the New York State Department of Environmental Conservation (New York DEC); State Senator John Bonacic; the Towns of Deposit, Delhi, Blenheim, and Colchester New York; Sullivan and Schoharie Counties, New York; the Pennsylvania Fish and Boat Commission; Edward Smith; Fred Nelson; Morgan Lyle; and the Friends of the Upper Delaware River, Inc., et al.

Interior and New York DEC commented that they have no objection to use of the TLP. The remaining commenters requested the TLP be denied for a variety of reasons including: (1) a perception that environmental studies would not be conducted under the TLP; (2) a perception of less than adequate public participation with the TLP; (3) an expected high level of controversy due at least in part to the commenters past experience with the applicant; (4) the potential for study disputes; and (5) a perception that the

Project No. 13287-001

2

applicant will ultimately not pursue the project.

I have reviewed your TLP request and the comments that have been filed. Despite some of the perceptions of the commentors, the TLP does require consultation with federal, state, and local agencies; Indian tribes; and members of the public. It also requires a public meeting and preparation of a draft license application for comment. Studies are required to be conducted under the TLP, and when there are disputes over studies, a dispute resolution mechanism is in place that provides for Commission resolution. From an applicant's perspective, however, you should be aware that under the TLP, additional studies may be requested after the application is filed to ensure that staff have sufficient information to address all issues raised during the Commission's environmental review. To that end, I strongly recommend that you address the issues raised by the commentors during pre-filing consultation. Based on the information provided, I am granting your request to use the Commission's Traditional Licensing Procedures.

If you have any questions, please contact Michael Spencer at (202) 502-6093.

Sincerely,

Jeff Wright
Director
Office of Energy Projects

cc: Public Files
Mailing List

P-13287-002

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, DC 20426

**ASSOCIATED
PUBLIC FILE**

OFFICE OF THE CHAIRMAN

October 23, 2009

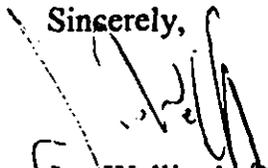
The Honorable John J. Bonacic
Room 815 – Legislative Office Bldg.
New York State Senate
Albany, NY 12247

Dear Senator Bonacic:

I am writing in response to your September 11, 2009, letter regarding the potential West of Hudson Hydroelectric Project (Federal Energy Regulatory Commission Project No. 13287-002). Specifically, you object to the City of New York’s request to use the traditional licensing process (TLP) in its preparation of a license application for the project. You state that the City’s attempt to use the TLP in this case would limit input from watershed municipalities during the licensing process.

Please note that both the integrated licensing process (ILP) and the TLP require *consultation with federal, state and local agencies; Indian tribes; and members of the public during application preparation.* The primary difference between the two processes involves when studies are conducted. With the ILP, the majority of the information needed to support the application is gathered during the pre-filing stages whereas with the TLP, additional data, and sometimes studies, are needed after the application is filed. Regardless of the licensing process that is used in this case, please be assured that all concerns raised during the Commission’s environmental review will be addressed.

I appreciate your comments regarding this project. If I can be of further assistance in this or any other Commission matter, please let me know.

Sincerely,

Jon Wellinghoff
Chairman

2009-00188

COUCH WHITE

counselors and attorneys at law

Couch White, LLP
540 Broadway
P.O. Box 22222
Albany, New York 12201-2222
(518) 426-4600

Kevin M. Lang
Partner
Direct Dial: (518) 320-3421
Telecopier: (518) 426-0376
email: klang@couchwhite.com

November 24, 2009

VIA ELECTRONIC FILING

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

Re: Project No. 13287-000 – City of New York West of Hudson Hydroelectric Project – **Notice of Joint Meeting and Site Visits**

Dear Secretary Bose:

Pursuant to 18 C.F.R. § 4.38(b)(3)(i)(A)(3), the City of New York (“City”) hereby provides written notice of its upcoming joint meeting and site visits to be conducted in accordance with the requirements of 18 C.F.R. § 4.38(b)(3)(ii) for the City’s proposed West of Hudson Hydroelectric Project (“Project”). As further described herein, a joint meeting regarding the Project will be held on December 16, 2009. The City has also scheduled two separate site visits for the Project on December 15 and 16, 2009. In addition, the City has scheduled two informal public meetings regarding the Project to occur on the same dates as the site visits.

On September 15, 2008, the City, acting through the New York City Department of Environmental Protection (“NYCDEP”), filed an application for a preliminary permit for the Project. The Project involves the development of hydroelectric facilities on four of the dams and reservoirs that comprise a portion of the City’s water supply system. By order issued March 20, 2009, the Federal Energy Regulatory Commission (“Commission”) issued a preliminary permit to the City, thereby facilitating its ability to proceed with its data collection, studies, and evaluation of the Project. On August 13, 2009, the City commenced the pre-filing process for the Project with the filing of its Notification of Intent and Pre-Application Document. Coincident with this filing, the City also filed a Request for Approval to Use the Traditional Licensing Process (“TLP”). The Commission, by letter order dated October 21, 2009, granted the City’s request to use the TLP for the Project. Therefore, in accordance with the first stage consultation requirements of the TLP, the City hereby provides written notice of the scheduling of a joint meeting and site visits.

November 24, 2009

Page 2

A. JOINT MEETING

The City has scheduled a joint meeting regarding the Project that is open to all interested resource agencies, Indian tribes, members of the public and other interested parties on December 16, 2009, commencing at 9:00 a.m. and ending at 11:30 a.m. The joint meeting will be held at the NYCDEP's Kingston Office, 71 Smith Avenue, Kingston, New York 12401. An agenda regarding the joint meeting is attached hereto as Attachment A.

The purpose of the joint meeting is to: provide an overview of the Project and the information provided in the City's Pre-Application Document filed with the Commission on August 13, 2009; discuss the licensing process and timeline; present the City's proposed studies to support its license application; receive comments from participants regarding these proposed studies and suggestions for additional studies; and identify and clarify the scope of issues for this phase of the Project's licensing process.

B. SITE VISITS

Given the geographic location of the reservoirs associated with the Project, the City will conduct site visits on two separate days. On December 15, 2009, there will be a site visit for Cannonsville, Neversink and Pepacton reservoirs (the Delaware River Basin Developments), commencing promptly at 10:30 a.m. The City will provide bus transportation on a first-come, first-served basis. The bus will pick up interested persons at the Sullivan County Community College, 112 College Road, Loch Sheldrake, New York 12759. The City anticipates that this site visit will be completed by 4:00 p.m. An agenda regarding the site visit for the Delaware River Basin Developments is attached hereto as Attachment B.

On December 16, 2009, the City will conduct a site visit for the Schoharie Development, commencing promptly at 2:30 p.m. The City will provide bus transportation on a first-come, first-served basis. The bus will pick up interested persons at the Gilboa Town Hall, 373 State Route 990V, Suite 1, Gilboa, New York 12076. The City anticipates that this site visit will be completed by 4:00 p.m. An agenda regarding the site visit for the Schoharie Development is attached hereto as Attachment C.

C. NOTICE OF THE JOINT MEETING AND SITE VISITS

In accordance with the requirements of 18 C.F.R. § 4.38(g), the City will publish notice of the joint meeting and site visits in the following newspapers of general circulation in the Project region: (a) The Times-Herald Record – Middletown, NY; (b) The Daily Freeman – Kingston, NY; (c) The Press & Sun-Bulletin – Binghamton, NY; (d) The Daily Star – Oneonta, NY; and (e) The Mountain Eagle – Stamford, NY.

November 24, 2009

Page 3

D. INFORMAL PUBLIC MEETINGS

In addition to the joint meeting and site visits described above, the City will also hold two separate informal public meetings regarding the Project that are open to all interested parties. The purpose of these public meetings is to provide an overview of the Project, discuss the licensing process and timeline, and receive public comments regarding the Project.

The Delaware River Basin Developments informal public meeting will be held on December 15, 2009, commencing at 7:00 p.m. This public meeting will be held at the Sullivan County Community College, Seelig Theatre, 112 College Road, Loch Sheldrake, New York 12759. An agenda regarding this informal public meeting is attached hereto as Attachment D.

On December 16, 2009, the Schoharie Development informal public meeting will commence at 7:00 p.m. This public meeting will be held at the Schoharie County Office Building, Board of Supervisors Chambers, 3rd Floor, 284 Main Street, Schoharie, New York 12157. An agenda for this informal public meeting is attached hereto as Attachment E.

If you have any questions regarding this filing, please feel free to contact me directly.

Respectfully submitted,

COUCH WHITE, LLP

Kevin M. Lang

Kevin M. Lang

KML/glm

Enclosures

cc: Service List
Mr. Michael Spencer (via email)
Ms. Kathryn Garcia (via email)
Mr. Anthony Fiore (via email)
Paul V. Rush, P.E. (via email)
John Vickers, P.E. (via email)
Robert Craig, Esq. (via email)
Linda Geary, Esq. (via email)
Thomas Sullivan, P.E. (via email)
Mark Wamser, P.E. (via email)

ATTACHMENT A

Agenda for Joint Meeting

FERC Project No. 13287-000

Date: December 16, 2009

Time: 9:00 a.m. – 11:30 a.m.

Location: NYCDEP's Kingston Office, 71 Smith Avenue, Kingston, New York 12401

Agenda:

- I. Welcome and Introductions
- II. Overview of Project
- III. Review of FERC Licensing Process and Timeline
- IV. Overview of Information Provided in PAD
- V. Discussion of Study Plans
- VI. Solicitation of Comments
- VII. Next Steps
- VIII. Adjournment

ATTACHMENT B

**Agenda for Site Visit of the
Cannonsville, Neversink and Pepacton Developments
Associated with the City of New York's West of Hudson Hydroelectric Project**

FERC Project No. 13287-000

Date: December 15 2009

Time: 10:30 a.m. – 4:00 p.m.

Starting/Ending Location: Sullivan County Community College, 112 College Road, Loch Sheldrake, New York 12759 (“SCCC”)

Agenda:

The City of New York (“City”) will make transportation via bus available on a first-come, first-served basis. The bus will pick up individuals interested in attending the site visit for the Delaware River Basin Developments (i.e., Cannonsville, Neversink and Pepacton) associated with the City’s West of Hudson Hydroelectric Project (“Project”) promptly at 10:30 a.m. The site visit and bus pick up will start from SCCC. From SCCC, the site visit will depart for Neversink Reservoir. After stopping at Neversink Reservoir, the site visit will continue to Cannonsville Reservoir, followed by Pepacton Reservoir. Once the site visit at Pepacton Reservoir is completed, the bus will return to SCCC.

ATTACHMENT C

**Agenda for Site Visit of the Schoharie Development
Associated with the City of New York's West of Hudson Hydroelectric Project**

FERC Project No. 13287-000

Date: December 16, 2009

Time: 2:30 p.m. – 4:00 p.m.

Starting/Ending Location: Gilboa Town Hall, 373 State Route 990V, Suite 1, Gilboa, New York 12076 (“Gilboa Town Hall”)

Agenda:

The City of New York (“City”) will make transportation via bus available on a first-come, first-served basis. The bus will pick up individuals interested in attending the site visit for the Schoharie Development associated with the City’s West of Hudson Hydroelectric Project (“Project”) promptly at 2:30 p.m. The site visit and bus pick up will start from the Gilboa Town Hall. From the Gilboa Town Hall, the site visit will depart for Schoharie Reservoir. Once the site visit at Schoharie Reservoir is completed, the bus will return to the Gilboa Town Hall.

ATTACHMENT D

**Agenda for Informal Public Meeting Regarding the
Cannonsville, Neversink and Pepacton Developments
Associated with the City of New York's West of Hudson Hydroelectric Project**

FERC Project No. 13287-000

Date: December 15, 2009

Time: 7:00 p.m. – 10:00 p.m.

Location: Sullivan County Community College, Seelig Theatre, 112 College Road, Loch Sheldrake, New York 12759

Agenda:

- I. Welcome and Introductions
- II. Overview of Project and Information Available
- III. Overview of FERC Licensing Process and Timeline
- IV. Solicitation of Comments
- V. Adjournment

ATTACHMENT E

**Agenda for Informal Public Meeting Regarding the Schoharie Development
Associated with the City of New York's West of Hudson Hydroelectric Project**

FERC Project No. 13287-000

Date: December 16, 2009

Time: 7:00 p.m. – 10:00 p.m.

Location: Schoharie County Office Building, Board of Supervisors Chambers, 3rd Floor, 284
Main Street, Schoharie, New York 12157

Agenda:

- I. Welcome and Introductions
- II. Overview of Project and Information Available
- III. Overview of FERC Licensing Process and Timeline
- IV. Solicitation of Comments
- V. Adjournment



ORIGINAL Upper Delaware Council

PO Box 192, 211 Bridge Street, Narrowsburg, New York 12764-0192 • (Tel.) 845-252-3022 • (Fax) 845-252-3359

William E. Douglass, Executive Director • David B. Soete, Senior Resource Specialist
Laurie Ramie, Public Relations/Fund Raising Specialist • Carol Coney, Office Manager

January 7, 2010

KIMBERLY D. BOSE, SECRETARY
FEDERAL ENERGY REGULATORY COMMISSION
888 FIRST STREET, N.E. ROOM 1A
WASHINGTON DC 20426

RE: Project No. 13287-~~000~~ 002
City of New York West of Hudson Hydroelectric Project

FILED
SECRETARY OF THE
COMMISSION
2010 JAN 19 A 10:26
FEDERAL ENERGY
REGULATORY COMMISSION

Dear Secretary Bose:

The Upper Delaware Council (UDC) is aware that, on August 13, 2009, the City of New York made a request to the Federal Energy Regulatory Commission (FERC) for a waiver permitting it to use the Traditional Process in favor of the Integrated Licensing Process (ILP) in its pursuit of a license for the above-cited project. Because of the level of controversy surrounding the project and the complexity of the resource issues, we respectfully request that the Commission deny the City's request. Instead, we recommend that FERC require that the ILP be followed to ensure that participants in the licensing proceeding will have a full and meaningful opportunity to provide comments.

The City's proposed studies will assist it in determining whether this project can be pursued in a way that both ensures the financial viability of the project and maintains the essential character of the land surrounding the water resources at issue in this licensing proceeding. The ILP provides the necessary framework through which the permittee and the participants can engage in an open dialog regarding the necessary studies to be performed.

The UDC is the non-profit organization responsible for the coordinated implementation of the 1986 River Management Plan for the Upper Delaware Scenic and Recreational River, a component of the National Wild and Scenic Rivers System. Our voting members are the two states (NY and PA) and 13 local governments (NY Towns and PA Townships) which border on the Upper Delaware River. The Delaware River Basin Commission (DRBC) is a non-voting member of the Council. We operate under a direct contractual relationship with the National Park Service (NPS) for the oversight, coordination, and implementation of many elements of the River Management Plan.

Working together to conserve the Upper Delaware Scenic and Recreational River

Town of Hancock • Town of Fremont • Town of Delaware • Town of Cohecton • Town of Tusten • Town of Highland • Town of Lumberland
Town of Deepark • Lackawaxen Township • Shohola Township • Westfall Township • State of New York • Commonwealth of Pennsylvania
Delaware River Basin Commission • In partnership with the National Park Service

The Upper Delaware Scenic and Recreational River corridor was designated by Congress in 1978 for its outstanding natural resources. It is home to numerous threatened and endangered plant and animal species. It is a popular recreational-boating destination, a world-class trout fishery, and is recognized by the Audubon Society as an Important Bird Area. It is a Pennsylvania water trail. Part of the river is included in the Pennsylvania Rivers Conservation Registry and the Pennsylvania Route 6 Heritage Corridor. It also includes a significant section of the Upper Delaware Scenic Byway and contributes three sites to the New York State Revolutionary War Heritage Trail. An estimated 250,000 people visit the River corridor each year.

Section 1271 of the Wild and Scenic Rivers Act, under which the Upper Delaware Scenic and Recreational River was designated in 1978, states:

"It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations. The Congress declares that the established national policy of dam and other construction at appropriate sections of the rivers of the United States needs to be complemented by a policy that would preserve other selected rivers or sections thereof in their free-flowing condition to protect the water quality of such rivers and to fulfill other vital national conservation purposes."

Since its inception, the UDC has been advocating for improved flows and management of the water resources. We have participated in the DRBC's Flexible Flow Management Program (FFMP) currently used to manage water released from the New York City reservoirs based on available storage. By definition, it is flexible, and subject to change. We are also very concerned about flooding issues. The ILP will allow a broad range of operational alternatives to be considered in terms of power generation and potential environmental impacts.

Thank you for providing the opportunity to comment.

Sincerely,



Harold G. Roeder, Jr.,
Chairperson

cc: Hon. David A. Paterson, NY Governor
Hon. Charles Schumer, US Senator, NY
Hon. Kirsten Gillibrand, US Senator NY
Hon. Maurice D. Hinchey, Jr., US Congressman, 22nd District NY
Hon. John Hall, US Congressman, 19th District NY
Hon. John Bonacic, NY State Senator, 42nd District
Hon. Aileen M. Gunther, NY State Assemblywoman, 98th District
Hon. Clifford W. Crouch, NY State Assemblyman, 107th District
Hon. Edward G. Rendell, PA Governor
Hon. Arlen Specter, US Senator, PA
Hon. Robert P. Casey, US Senator, PA
Hon. Christopher Carney, US Congressman, 10th District PA
Hon. Lisa Baker, PA State Senator, 20th District
Hon. Michael T. Peifer, PA House of Representatives, 139th District
Hon. Sandra J. Major, PA State Representative, 111th District
Carol Collier, Executive Director, Delaware River Basin Commission
Pete Grannis, Commissioner, NYS DEC
William Janeway, Regional Director, NYS DEC - Region 3
Steve Schassler, Regional Director, NYS DEC - Region 4
William Rudge, NYS DEC and UDC Rep.
Michael Flaherty, NYS DEC and UDC Alternate
Dennis DeMara, PA DCNR and UDC Rep.
Gary N. Paulachok, Deputy Delaware River Master, USGS
Douglas J. Austen, Ph.D, Executive Director, PA Fish and Boat Commission
Mayor Michael R. Bloomberg, New York City
Caswell F. Holloway, Commissioner, NYC DEP
Dan Wenk, Acting Director, National Park Service
Dennis Reidenbach, Northeast Regional Director, National Park Service
Sandra Schultz, Acting Superintendent, National Park Service - UDSRR
File

ORIGINAL
TOWN OF HIGHLAND
Town Supervisor
ANDREW BOYAR

lawboy@hvc.rr.com
(845) 557-8901
Fax: (845) 557-0257

PO Box 177
4 Proctor Road
Eldred, NY 12732

January 11, 2010

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E. Room 1A
Washington DC 20426

Re: Project No. 13287-000
City of New York West of Hudson Hydroelectric Project

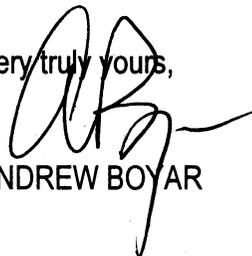
FILED
SECRETARY OF THE
COMMISSION
2010 JAN 22 A 10:46
FEDERAL ENERGY
REGULATORY COMMISSION

Dear Secretary Bose:

The Town of Highland is aware that, on August 13, 2009, the City of New York made a request to the Federal Energy Regulatory Commission (FERC) for a waiver permitting it to use the Traditional Process in favor of the Integrated Licensing Process (ILP) in its pursuit of a license for the above-cited project. Because of the level of controversy surrounding the project and the complexity of the resource issues, we respectfully request that the Commission deny the City's request. Instead, we recommend the FERC require that the ILP be followed to ensure that participants in the licensing proceeding will have a full and meaningful opportunity to provide comment.

The City's proposed studies will assist in determining whether this project can be pursued in a way that both ensures the financial viability of the project and maintain the essential character of the land surrounding the water resources at issue in this licensing proceeding. The ILP provides the necessary framework through which permittee and the participants can engage in an open dialog regarding the necessary studies to be performed.

Thank you for considering our comments.

Very truly yours,

ANDREW BOYAR

AB:dk
Cc: Upper Delaware Council

Mark Wamser

Subject: Hydro - Study Plans
Location: Kingston (DEP Offices)
Start: Mon 2/8/2010 10:00 AM
End: Mon 2/8/2010 12:00 PM
Recurrence: (none)
Meeting Status: Accepted
Organizer: Fiore, Anthony

Meeting documents attached.



Meeting Agenda 2-8-10.pdf Study Plans for
2-8-10 Meeting...

Hydro - Study Plans - Meeting

Meeting Insert Format Text Developer

Save & Close
 Calendar
 Delete
 Appointment
 Scheduling
 Accept
 Tentative
 Decline
 Propose New Time
 Reply
 Reply to All
 Forward
 Forward
 Show As: Busy
 Recurrence
 Time Zones
 Categorize
 Private
 High Importance
 Low Importance
 Spelling
 Proofing

100% 010 Monday, February 08, 2010 Tuesday, February 09, 2010

	10:00	11:00	12:00	1:00	2:00	3:00	4:00	8:00	9:00	10:00	11:00	12:00	1:00	2:00	3:00	4:00	8:00	9:00
All Attendees	[Hatched Pattern]																	
<input checked="" type="checkbox"/> Fiore, Anthony <FioreA@dep...>																		
<input checked="" type="checkbox"/> Stephen Patch <fws.gov>																		
<input checked="" type="checkbox"/> Kent Sanders <kpsander@...>																		
<input checked="" type="checkbox"/> David Sampson <dssampso@...>																		
<input checked="" type="checkbox"/> Larry Wilson <lrwilson@qw...>																		
<input checked="" type="checkbox"/> Michael Flaherty <mflaher@...>																		
<input checked="" type="checkbox"/> Mark Woythal <mwoyth@...>																		
<input checked="" type="checkbox"/> Norman McBride <ndmbrid@...>																		
<input checked="" type="checkbox"/> Robert Anaya <rkangval@...>																		
<input checked="" type="checkbox"/> Vickers, John <JVickers@dep...>																		
<input checked="" type="checkbox"/> Helmut, Jeffrey <JHelmut@...>																		
<input checked="" type="checkbox"/> Principe, Robert <RPrincipe@...>																		
<input checked="" type="checkbox"/> Craig, Robert <RobertCr@de...>																		
<input checked="" type="checkbox"/> Geary, Linda <GearyL@dep.r...>																		
<input checked="" type="checkbox"/> Mark Wamser <mwamser@...>																		
<input checked="" type="checkbox"/> Tom Sullivan <tsullivan@oon...>																		
<input checked="" type="checkbox"/> Usai, Michael <MUsai@dep.n...>																		
<input checked="" type="checkbox"/> Page, Mark <MarkPa@dep.m...>																		
<input checked="" type="checkbox"/> Iyer, Sangamithra <Sangami...>																		
<input checked="" type="checkbox"/> Lenz, Paul <PLenz@dep.nyc...>																		
<input checked="" type="checkbox"/> Garcia, Kathryn <KathrynG@...>																		

Add Others Options
 Start time: Mon 2/8/2010 10:00 AM
 End time: Mon 2/8/2010 12:00 PM



**CITY OF NEW YORK
WEST OF HUDSON HYDROELECTRIC PROJECT**

FERC Project No. 13287-000

AGENDA AND MEETING NOTES

NYCDEP, Kingston, NY
February 8, 2010
10:00 am

I. Introductions

Notes: Mr. Fiore welcomed everyone to the meeting and thanked them for participating. The attendees went around the room and introduced themselves. The attendees included:

For the Applicant:

Anthony Fiore, NYCDEP
John Vickers, NYCDEP
Robie Craig, Esq., NYCDEP
Jeff Helmuth, NYCDEP
Tom Baudanza, NYCDEP
Michael Usai, NYCDEP
Robert Principe, NYCDEP

Linda Geary, Esq., NYC DOL
Tom Sullivan, Gomez & Sullivan
Mark Wamser, Gomez & Sullivan
Kevin Lang, Esq., Couch White

For USFWS:

Steve Patch

For NYSDEC:

Kent Sanders
Larry Wilson
Norm McBride

Robert Angyal
Michael Flaherty
David Sampson, Esq.

II. Status of Schoharie Development

Notes: Mr. Fiore explained that at the present time, none of the options that had been studied appear to be economically and technically feasible. The NYCDEP is continuing to evaluate development options for that site, but no project is being proposed at that location right now. In response to a question from NYSDEC, Mr. Fiore explained that flow considerations are the primary driver of the feasibility conclusions.

Mr. Sullivan added that the City has evaluated a longer time frame than what would be acceptable to most developers and incorporated the City's more advantageous financial capability. He observed that if the economics do not work for the City, they would not work for any other developer, either.

III. Proposed Operations and Turbine Sizing

- a. Cannonsville Development
- b. Pepacton Development
- c. Neversink Development

Notes: Mr. Wamser explained that none of the Delaware River projects (Cannonsville, Pepacton, and Neversink) will be operated as peaking units or otherwise in a manner that will maximize their generation output. Rather, they will be operated based on the flows and releases contemplated by the FFMP. As of now, all three projects will use Francis-type turbines. Cannonsville will require the construction of a new power house, while Pepacton and Neversink will involve replacing an existing valve with a turbine and very little work outside the existing gate house structures. Mr. Wamser noted that the space in each valve chamber is very limited, and the installation of the turbines will be difficult.

IV. Fish Entrainment and Intake Protection

- a. Existing Drawings – Intake Gross Area and Bar Rack Clear Spacing
- b. Level of Effort
- c. Methodology

Notes: Mr. Wamser first provided some background on the fish species located in the reservoirs and known hydrologic conditions. He then explained the layout, location, bar sizing, clear spacing, and total area of the intake structures for each site using drawings, topographical maps, and pictures. He noted that the intake structures at each site are very different, with the gross area and velocities in front of the intakes similarly being very different. Mr. Sullivan added that while the intake for Neversink is located at the edge of the building, the intakes for Cannonsville and Pepacton are located in the reservoir with no support or other structures overhead, making access to those structures, such as for cleaning and debris removal, difficult.

A question was posed regarding the condition of the Cannonsville intake structure, and Mr. Vickers responded that it was last inspected by divers two years ago, no problems were identified, and no debris was found.

A discussion of the velocities ensued. Mr. Wamser explained that the numbers presented to the agencies at the meeting were conservatively high. As the analysis is refined, and other factors that impact the flow of water into and around the intake structures are included, the gross areas of the intake structures are likely to be considered larger than first stated, and the velocities will be correspondingly reduced. It was observed by a few participants that the velocities at Pepacton and Neversink are already within acceptable parameters and do not present cause for concern.

Mr. Sullivan then discussed the FERC's expanding reliance on literature reviews over field studies. He added that many field studies have been performed, with millions of dollars spent, but the results were not conclusive and fish entrainment and impingement issues remains as contested after the studies were performed as they had been without the studies. He therefore asked the agencies if they would accept a literature review in this matter as sufficient.

Mr. McBride stated that he was primarily concerned with Cannonsville because the water level in that reservoir can and often does drop to 20 % - 30 % of its capacity, and a few years ago, it dropped to 4 % of its capacity. At such low levels and with the high velocities around the intake structure, he continued, fish are more likely to become entrained. Indeed, the NYSDEC was aware of at least two instances of fish kills related to fish becoming entrained and impinged in the Cannonsville valve works. In contrast, he observed that the water levels at Pepacton and Neversink tended to remain relatively constant, and the velocities at the intakes make entrainment less likely (he said he was not aware of any reports of entrainment at Pepacton). Mr. Flaherty added that seasonal variations are also important, and the fish in the reservoirs move from shallow to deep water based on relative water temperatures, with the highest accumulations near the thermocline (during the winter, the deeper water tends to be warmer than the water near the surface). In response to this statement, Mr. Sullivan acknowledged that a seasonal analysis would be needed (and accomplished via the literature review).

Mr. Patch stated that behavioral barriers have not been successful with trout and some other species. At other projects, sound barriers worked for only some types of trout, while others swam right by the barriers. Therefore, he does not believe such barriers would be effective for this project.

A number of participants from NYSDEC commented that a literature review would be an acceptable first step, but a literature review will not identify the types and numbers of fish located near the intake structures in the three reservoirs. Therefore, they believe that some field studies, which could include gill netting, hydroacoustics, or a combination of both, will

be needed. Further, because of the seasonal variations in water temperature, there is a potential that the number and types of fish located near the intake structures will be seasonally different; therefore, they believe seasonal field studies will be needed. Given the differences between Cannonsville and the other reservoirs (noted above), though, they agreed that it may make sense to focus on Cannonsville and treat the results of its field studies as equally applicable to the other reservoirs.

A question was then posed regarding the need for, and frequency of, cleaning the bar racks and valves. Mr. Vickers explained that the polyjet valves rarely get clogged,. The water pressure and velocity is such that obstructions are either immediately forced through the holes or over time are broken down until they pass through the holes. The racks at Neversink accumulate sticks and branches and are cleaned once or twice a year.

NYSDEC then requested that the NYCDEP provide details on the studies that have been performed at the three sites so that they can understand what information already exists and what additional information must be gathered to properly evaluate the Project.

Mr. Vickers proposed bypassing the studies and moving directly to a discussion of acceptable mitigation measures, such as adding mesh screens. However, Mr. Sullivan suggested that discussing mitigation is premature because at two of the sites velocities are very low and entrainment should not be an issue at all.

NYSDEC then requested that the NYCDEP share data from its other reservoirs and the hydroelectric units operated by NYPA on those reservoirs and tunnels (specifically, Ashokan and Kensico). Messrs. McBride and Sanders observed that the NYSDEC never weighed in on protections at those sites when licensing exemptions were granted for them in 1980. Because there have been reports of fish kills at those sites, the NYSDEC may be receptive to considering intake protections for those units outright or as off-site mitigation of the potential entrainment impacts at Cannonsville. Mr. Fiore then explained that the Kensico hydroelectric unit would be decommissioned in the near future, so no protections would be needed at that site.

Returning to the issue of field studies, the attendees agreed that the critical period to be studied is likely late summer and early fall. Therefore, if field studies are to be performed, they could occur during the 2010 field season and into the winter of 2010-2011. If necessary, additional studies could be performed in the spring of 2011 without delaying completing all work in time to file an application in March 2012. Mr. Flaherty added that for Ashokan and Neversink, the critical periods for studying alewives is December through February when the warmer water is at the lower depths.

- V. Construction-Related Activities on Wildlife and Botanical Resources, Wetlands, Riparian and Littoral Habitat, and Rare, Threatened and Endangered Species
- a. Timing of Study
 - b. Level of Effort
 - c. Methodology

Notes: Mr. Wamser explained the NYCDEP's plans for conducting field studies in these areas and the level of effort the NYCDEP proposes to employ. At Pepacton and Neversink, the areas impacted will be very small. At Cannonsville, temporary siphons will be needed at a latter stage of the construction project while the new facilities are connected to the existing discharge/release works. The siphons are needed to satisfy the FFMP flow requirements. Some concerns were expressed that the siphons will draw warm water from the top of the reservoir, while the releases draw cold water from the bottom of the reservoir. Discussion ensued on the need to properly plan for the releases such that the down stream fisheries are not negatively impacted. In particular, the siphons should not be used from June through early September.

- VI. Construction-Related Activities on Erosion
- a. Timing of Study
 - b. Level of Effort
 - c. Methodology

Notes: Mr. Sullivan stated that the NYCDEP would prepare an erosion control plan, and that over time, the plan would be refined and revised as appropriate. He added that the plan would need to be approved by the agencies. There were no comments.

- VII. Impacts on Land Use and Recreation
- a. Need for Study

Notes: Mr. Wamser noted that a study of the potential impacts of construction and operation on land use and recreation was mentioned in the PAD. However, based on the proposed design, configuration, and location of the hydroelectric units and related facilities, it now does not appear that there would be any impacts on either land use or recreation. Therefore, he indicated that the NYCDEP is considering not conducting such a study and asked if either agency had any objections. There was a brief discussion among the group that the areas to be disturbed appeared to be minimal and unlikely to impact recreations activities at the sites. Further, because most of the work, and new facilities, would either be inside existing buildings or in areas that are not generally visible to the public, no land use impacts are apparent or worthy of study.

Meeting with Resource Agencies

February 8, 2010

Page 6

The meeting concluded with Mr. Fiore and Mr. Sullivan noting that they would consider the agencies' comments and looked forward to receiving the agencies' proposals for studies. Mr. Fiore thanked everyone for attending and stated that the discussions would continue. The meeting was then adjourned.



Couch White, LLP
540 Broadway
P.O. Box 22222
Albany, New York 12201-2222
(518) 426-4600

Kevin M. Lang
Partner
Direct Dial: (518) 320-3421
Telecopier: (518) 426-0376
email: klang@couchwhite.com

February 10, 2010

VIA ELECTRONIC FILING

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

Re: Project No. 13287-000 – City of New York West of Hudson Hydroelectric Project – **Filing of Transcripts from Public Meetings and Joint Meeting**

Dear Secretary Bose:

Pursuant to 18 C.F.R. § 4.38(b)(4), the City of New York (“City”) hereby files copies of the transcripts of the public meetings conducted on December 15, 2009 and December 16, 2009, and the joint meeting conducted on December 16, 2009 regarding the City’s proposed West of Hudson Hydroelectric Project (“Project”).

The attachments to this letter are as follows:

1. Attachment A – Transcript from the Public Meeting conducted December 15, 2009 at the Sullivan County Community College in Loch Sheldrake, New York;
2. Attachment B – Transcript from the Joint Meeting conducted December 16, 2009 at the New York City Department of Environmental Protection’s (“NYCDEP”) Office in Kingston, New York; and
3. Attachment C – Transcript from the Public Meeting conducted December 16, 2009 at the Schoharie County Office Building in Schoharie, New York.
4. Attachment D – Proof of Publication for the Public Notices regarding the Public Meetings, Joint Meetings and Site Visits

Upon reviewing the transcripts provided by the reporting service retained by the NYCDEP, we discovered a number of transcription errors, typographical errors, and party identification errors. We corrected the transcripts using our best efforts and asked the reporting service to correct and re-issue the documents. Some of those changes were not made by the service, however, so we further corrected the transcripts manually.

February 10, 2010

Page 2

Notwithstanding our efforts, there are portions of the transcript in which the comments provided were transcribed incorrectly or incompletely. Because the reporting service did not make a backup audio recording, these problems could not be rectified.

Regardless of any quality issues with respect to the transcript from the joint meeting, it is important to note that City and NYCDEP officials involved with the Project were present at the meeting and took notes regarding the comments provided and intend to address, to the extent necessary, the concerns and issues that were raised. Moreover, in an effort to avoid the recurrence of the transcription problems, the City and NYCDEP will implement improvements for future meetings regarding the Project that require the creation of a record pursuant to the rules and regulations of the Federal Energy Regulatory Commission. Such improvements will include utilizing a different reporting service and a requirement that the reporting service use an audio recording device in addition to the stenographic transcription.

If you have any questions regarding this filing, please feel free to contact me directly.

Respectfully submitted,

COUCH WHITE, LLP

Kevin M. Lang

Kevin M. Lang

KML/glm

Enclosures

cc: Service List
Mr. Michael Spencer (via email)
Mr. Anthony Fiore (via email)
Robert Craig, Esq. (via email)
Linda Geary, Esq. (via email)

J:\DATA\Client6 12456-13409\12804\FERC Filings\Transcript Filing.doc



United States Department of the Interior

FISH AND WILDLIFE SERVICE

3817 Luker Road
Cortland, NY 13045



February 12, 2010

Mr. Anthony J. Fiore
Director of Planning and Sustainability
59-17 Junction Boulevard, 19th Floor
Flushing, NY 11373-5108

**RE: West of Hudson Hydroelectric Project (FERC #13287)
Review of Notice of Intent to File an Original License Application and Pre-Application Document and Initial Study Requests**

Dear Mr. Fiore:

The U.S. Fish and Wildlife Service (Service) has reviewed the August 13, 2009, *Notice of Intent to File an Original License Application and Pre-Application Document* (PAD) for the West-of-Hudson Hydroelectric Project (Project), located on Schoharie Creek, the Neversink River, and the East and West Branches of the Delaware River in Schoharie, Delaware, Sullivan, and Greene Counties, New York. The Project consists of four hydroelectric developments totaling 29.75 MW. However, it is our understanding that the Schoharie development has not been determined to be economically feasible. As such, at this point in time, the New York City Department of Environmental Protection (NYCDEP) is proceeding with a review of three developments totaling 16.85 MW. The Service has the following comments and study requests.

Review of Pre-Application Document

The Service has reviewed the PAD and found that it adequately describes the proposed Project and the resources in the vicinity of the Project. We have no specific comments on the PAD.

Study Requests

The Federal Energy Regulatory Commission (FERC) has granted the NYCDEP's request to use the Traditional Licensing Process (TLP) for this Project. Under the TLP, the FERC does not have to approve the Study Plan, as they do with the Integrated Licensing Process. This allows flexibility to conduct studies in stages, with the parties agreeing on next steps following each stage. In addition, the Service and other stakeholders have the opportunity to request additional studies, if required, after the submittal of the Draft Application.

On February 8, 2010, a meeting was held in Kingston, New York, which included the NYCDEP, the New York State Department of Environmental Conservation (NYSDEC), and the Service. The NYCDEP's Proposed Draft Study Plan (DSP) was provided to the Service at the meeting,

and appropriate studies were discussed. Based on that meeting and our review of the DSP, the Service recommends that the following studies be undertaken during the upcoming field season.

Fish Entrainment, Protection, and Downstream Passage

Each of the Project's reservoirs is part of the City of New York's water supply. The hydroelectric turbines will be installed to utilize water that is currently being released into downstream riverine reaches according to the Flexible Flow Management Plan (FFMP) that governs water releases from the Cannonsville, Pepacton, and Neversink Reservoirs. These releases consist of conservation releases, directed releases, and water that would otherwise spill. There is no intent on the part of the NYCDEP to alter the current FFMP as part of this licensing. As such, flows into the downstream reaches of the Neversink River and East and West Branches of the Delaware River should not change as a result of Project operation.

However, flow releases will now pass through turbines rather than through release valves or other mechanisms, subjecting any entrained fish to potential injury and mortality from the turbines. Therefore, it is important that the NYCDEP identify the potential for fish entrainment, as well as impingement on any Project intake screens. Since these studies may demonstrate that entrainment mortality is a potential project impact, the NYCDEP should also explore alternatives to minimize and mitigate for this mortality.

Each reservoir supports warmwater/coldwater fisheries, with brown trout (*Salmo trutta*) and brook trout (*Salvelinus fontinalis*) being the primary game fish species, along with smallmouth bass (*Micropterus dolomieu*) and chain pickerel (*Esox niger*) in Cannonsville Reservoir, rainbow trout (*Oncorhynchus mykiss*), smallmouth bass, and chain pickerel in Pepacton Reservoir, and smallmouth bass and landlocked Atlantic salmon (*Salmo salar*) in Neversink Reservoir. The NYSDEC currently stocks the reservoirs, as well as upstream and downstream reaches, with brown trout.

The Service recommends the following sequence of studies to address the fish protection and passage issues.

I. Fish Entrainment Literature Surveys

The NYCDEP has proposed a literature review of existing entrainment studies conducted on similar reservoirs with similar fish communities to determine the likelihood that entrainment will occur. The Service is not aware of any entrainment studies that have been conducted at hydroelectric facilities on similar reservoirs in New York, in particular, those with a coldwater fishery and deep intakes. In addition, the studies that were conducted in the 1990's in New York were generally site-specific, with minimal transferability of data. In some instances, adjacent turbines at one hydroelectric facility yielded remarkably different entrainment and mortality data. There were also differences between hydroelectric facilities located on the same river, and among hydroelectric facilities located on similar, nearby rivers. These entrainment studies also experienced many logistical problems, resulting in relatively large confidence intervals around the data, in particular the mortality data.

However, the Service agrees that an entrainment literature survey is a good starting point to locate existing data and to identify the range of levels of entrainment and mortality for the

species of concern that have been found at other projects using turbines similar to those proposed for this Project.

The NYCDEP has proposed the following level of effort:

- Summarize the fish species and life stages present in each reservoir.
- Evaluate which fish species and life stages could be present at the low level intakes, based on habitat preferences.
- Evaluate water quality conditions (specifically dissolved oxygen and temperature) at the intake locations to determine the potential for fish entrainment.
- Evaluate the likelihood of fish entrainment given the fish species and life stages present in each reservoir, water quality conditions at each intake, and water depth at each intake.
- Characterize the proposed turbines (size, runner diameter, speed, etc.).
- Develop literature-based estimates of entrainment and mortality potential.

In addition to these proposed tasks, the NYCDEP should also evaluate:

- Likely differences in entrainment potential based on time of year, water temperatures, water levels in each reservoir, the location of the thermoclines, and stratification of the reservoirs.

It is likely that the fish communities move around as the reservoir levels vary and the water temperature changes. Many of the fish may be following the thermocline. Thus, it is likely that entrainment probability varies considerably throughout the year and will likely be different for each reservoir.

This study will produce rough estimates of the likelihood of various fish species and life stages being entrained at each reservoir and a range of potential mortalities likely to be found with the proposed turbine types.

1. *Goals and Objectives*

The goals and objectives of this study are to provide information on the potential for fish to be entrained into the Project intakes and on the potential levels of mortality that could be expected for those fish that are entrained.

2. *Resource Management Goals*

The Neversink River and the East and West Branches of the Delaware River, in the vicinity of the proposed Project, are managed by the NYSDEC as a mixed warmwater-coldwater fishery, with brook trout, brown trout, smallmouth bass, and chain pickerel as the primary game fish species. Landlocked salmon are also a species of concern for the Neversink Reservoir. Protection of fish from entrainment and impingement mortality is the goal of the Service.

3. *Public Interest*

The requestor is a resource agency.

4. *Existing Information*

The PAD includes little information regarding the likelihood of impingement and entrainment. The purpose of this study is to identify existing information.

5. *Nexus to Project Operations and Effects*

The proposed Project may result in greater entrainment and impingement of fish than currently occurs with the existing release structures. In addition, the fish will pass through turbines, which is not currently the case, therefore increasing the likelihood of mortality from entrainment.

6. *Methodology Consistent with Accepted Practice*

The recommended study uses standard literature reviews used in most hydro licensing activities.

7. *Level of Effort, Cost, and Why Alternative Studies Will Not Suffice*

The level of effort would involve a few months and be relatively inexpensive. This step is a necessary precursor to any additional data collection.

II. Fisheries Field Surveys

Upon completion of the literature review, the NYCDEP should prepare a report for distribution to the NYSDEC, the Service, and other appropriate stakeholders. A meeting should then be held to determine whether additional field data collection is needed to determine where different fish species and life stages are located at various times of the year and at various reservoir levels. Such a study, if needed, should encompass a variety of seasons and reservoir levels. This study may be needed at one, two, or all three reservoirs, depending on the results of the literature surveys.

Field collections should be done using gill nets with a variety of mesh sizes following protocols previously used by the NYSDEC in sampling conducted in these reservoirs. The exact details of sampling design and location should be developed in consultation with the Service and the NYSDEC. The data from these surveys will supplement and support the literature data to further refine the likelihood of entrainment and mortality.

1. *Goals and Objectives*

The goals and objectives of this study are to provide information on the potential for fish to be entrained into the Project intakes and on the potential levels of mortality that could be expected for those fish that are entrained.

2. *Resource Management Goals*

The Neversink River and the East and West Branches of the Delaware River, in the vicinity of the proposed Project, are managed by the NYSDEC as a mixed warmwater-coldwater fishery, with brook trout, brown trout, smallmouth bass, and chain pickerel as the primary game fish

species. Landlocked salmon are also a species of concern for the Neversink Reservoir. Protection of fish from entrainment and impingement mortality is the goal of the Service.

3. *Public Interest*

The requestor is a resource agency.

4. *Existing Information*

The PAD includes little information regarding the likelihood of impingement and entrainment. The purpose of this study is to field verify the literature review from Study I.

5. *Nexus to Project Operations and Effects*

The proposed Project may result in greater entrainment and impingement of fish than currently occurs with the existing release structures. In addition, the fish will pass through turbines, which is not currently the case, therefore increasing the likelihood of mortality from entrainment.

6. *Methodology Consistent with Accepted Practice*

The recommended study uses standard fisheries field collection techniques used in most hydro licensing activities.

7. *Level of Effort, Cost, and Why Alternative Studies Will Not Suffice*

The level of effort would involve sampling for 6 months to 1 year, depending on data needs. Additional field seasons may be needed if an appropriate variety of water levels and temperatures is not available during the first field season. This study will be necessary if the results of the literature review are inadequate to address the entrainment issue.

III. Evaluation of Fish Protection Alternatives

This study will be conducted concurrently with Study I and consist of a literature review of potential fish protection and exclusion alternatives. The NYCDEP has proposed to investigate physical barriers such as bar racks, angled bar racks, barrier nets, and Eicher screens, as well as behavioral barriers such as light, sound, electric fields, and air bubble curtains. Based on our knowledge of current literature, it is unlikely that the NYCDEP will discover a behavioral barrier, or combination of barriers, that will effectively exclude the variety of fish species found in these reservoirs. However, exploring the existing literature is a necessary first step to narrow the field of potential alternatives.

The proposed hydroelectric installations have very low approach velocities projected at Pepacton and Neversink Reservoirs at full pond. However, the approach velocities at Cannonsville Reservoir are well above the Service's guidelines of less than 2 feet per second (fps). As part of the evaluation of physical barriers, the NYCDEP should determine the approach velocities (as measured 1 foot in front of the racks or other intake structures) at a variety of reservoir elevations likely to be encountered over the life of the license. The NYCDEP should also investigate alternative locations and configurations for each type of physical barrier that would enable them

to minimize the approach velocities. Approach velocities above 2 fps could result in unacceptable levels of fish impingement and mortality and may rule out certain alternative physical barriers at some locations.

Hydroelectric developers throughout New York have frequently installed trash racks with clear spacing of 1" for warmwater species and ¾" for salmonids. These spacings physically prevent most adult game species from entering the turbines, and may have some level of behavioral deterrent for smaller fish. The NYCDEP should investigate the feasibility of installing narrow-spaced trash racks at each site and any problems that are likely to be encountered, such as fish impingement or clogging with trash and debris. These latter two problems may be ameliorated by the design and location of the trash racks, or by installing appropriate cleaning mechanisms.

Barrier nets are not common in New York. However, they may prove to be more feasible at these sites than narrow-spaced trash racks. Depending on the results from Studies I and II, barrier nets may only be needed during certain seasons or at certain water levels or temperatures. The most serious potential problems with the use of barrier nets would be debris loading, installation and removal, and storage when not in use. However, these nets appear to be a viable option and this alternative should be thoroughly investigated.

The NYCDEP has also explored the use of Eicher screens or similar modular inclined screens. Other alternatives, such as the FISHIS™ screen proposed by the developer who filed a competing preliminary permit for this project, should also be explored as potential fish protection options.

Following completion of this review, the NYCDEP should prepare a report and meet with the Service and the NYSDEC to discuss potential alternatives. Assuming that fish entrainment mortality remains as a concern, agreement on fish protection alternatives may preclude the need for further fisheries investigations (Study II).

1. *Goals and Objectives*

The goals and objectives of this study are to provide information on the potential alternatives available to minimize fish entrainment into the Project turbines under various water level and temperature conditions.

2. *Resource Management Goals*

The Neversink River and the East and West Branches of the Delaware River, in the vicinity of the proposed Project, are managed by the NYSDEC as a mixed warmwater-coldwater fishery, with brook trout, brown trout, smallmouth bass, and chain pickerel as the primary game fish species. Landlocked salmon are also a species of concern for the Neversink Reservoir. Protection of fish from entrainment and impingement mortality is the goal of the Service.

3. *Public Interest*

The requestor is a resource agency.

4. *Existing Information*

The PAD includes little information regarding mechanisms to minimize fish entrainment and impingement. The purpose of this study is to identify potential alternatives and weigh the relative merits of each alternative.

5. *Nexus to Project Operations and Effects*

The proposed Project may result in greater entrainment and impingement of fish than currently occurs with the existing release structures. In addition, the fish will pass through turbines, which is not currently the case, therefore increasing the likelihood of mortality from entrainment. Fish protection measures may be necessary to minimize entrainment and impingement.

6. *Methodology Consistent with Accepted Practice*

The recommended study uses standard literature reviews used in most hydro licensing activities.

7. *Level of Effort, Cost, and Why Alternative Studies Will Not Suffice*

The level of effort would involve a few months and be relatively inexpensive. This step is necessary to evaluate appropriate protection, mitigation, and enhancement measures.

IV. Downstream Fish Passage Studies

The Project dams serve as barriers to upstream and downstream fish migration. Fish moving downstream will be subjected to potential mortality from impingement and entrainment. The NYCDEP should investigate the need for downstream fish passage and any appropriate mechanisms to facilitate this movement. This study is tied into the previous studies, since an increase in fish entrainment and mortality with hydro operations as opposed to the current release structures could result in the need for effective downstream passage where it may not have been historically needed or desired.

The NYCDEP should consult with the NYSDEC regarding their management plans for the rivers and the desirability of allowing/encouraging downstream fish passage. The NYCDEP should explore alternative structures that could be utilized with any proposed entrainment reduction measures to facilitate safe downstream passage for fish moving downriver. Such structures would include sluices and pipes with appropriate plunge pools. Should some form of inclined screen be recommended for fish protection, a passage sluice often accompanies such a structure. The NYCDEP should prepare a report on the need for such a structure and the designs that could be utilized. The NYCDEP should then meet with the Service and the NYSDEC, in conjunction with fish protection discussions, to determine the need for such facilities.

1. *Goals and Objectives*

The goals and objectives of this study are to determine the need for fish passage structures and to provide information regarding potential fish passage structures that could be utilized at these sites. The information obtained will allow the Service's biologists and fishway engineers to evaluate the potential effectiveness of various options.

2. *Resource Management Goals*

The Neversink River and the East and West Branches of the Delaware River, in the vicinity of the proposed Project, are managed by the NYSDEC as a mixed warmwater-coldwater fishery, with brook trout, brown trout, smallmouth bass, and chain pickerel as the primary game fish species. Landlocked salmon are also a species of concern for the Neversink Reservoir. Fish attracted to the intakes and prevented from entering the intakes by screening measures may need an alternative downstream passage facility to avoid being impinged or entrained.

3. *Public Interest*

The requestor is a resource agency.

4. *Existing Information*

The PAD includes little information regarding the need for, and mechanisms to allow, downstream fish movement. This study will develop existing information and allow for a discussion of need and alternatives.

5. *Nexus to Project Operations and Effects*

The proposed Project may result in greater entrainment and impingement of fish than currently occurs with the existing release structures. In addition, the fish will pass through turbines, which is not currently the case, therefore increasing the likelihood of mortality from entrainment. Fish passage measures may be necessary to allow the fish an alternative route to avoid impingement and entrainment.

6. *Methodology Consistent with Accepted Practice*

The recommended study uses standard literature reviews used in most hydro licensing activities.

7. *Level of Effort, Cost, and Why Alternative Studies Will Not Suffice*

The level of effort would involve a few months and be relatively inexpensive. This step is necessary to evaluate the need for downstream passage measures as well as the measures most likely to be feasible.

Rare, Threatened, and Endangered Species

There are four Federally-listed species residing within the counties where the Project is located. These include the dwarf wedge mussel (*Alasmidonta heterodon*), Indiana bat (*Myotis sodalis*), bog turtle (*Clemmys muhlenbergii*), and northern wild monkshood (*Aconitum noveboracense*). Two of these species, the Indiana bat, and bog turtle, in New York State, have not been found in otherwise suitable habitat at elevations above 900 feet and 1,000 feet, respectively. Neither are likely to be impacted by habitat modifications, if any, resulting from the project development and operation, as the Neversink, Pepacton and Cannonsville Reservoir elevations are all greater than 1,200 feet above sea level. Although the bald eagle (*Haliaeetus leucocephalus*) was removed from the Federal Endangered Species List on August 8, 2007, it is still protected under the Bald

and Golden Eagle Protection Act (16 U.S.C. 668-668d) and the Migratory Bird Treaty Act (16 U.S.C. 703-712; Ch. 128; July 13, 1918; 40 Stat. 755). In addition, the bald eagle is still listed as threatened by the State of New York. Since bald eagles are present in the Project area, the Service recommends that you follow the Bald Eagle Management Guidelines found on our website (<http://fws.gov/northeast/nyfo/es/section7.htm>) prior to commencement of any construction activities. The NYCDEP proposes to develop mitigation plans, in consultation with the NYSDEC, to prevent disturbance to existing nests. The Service should be included in this consultation.

Development of hydroelectric facilities on these reservoirs may impact the remaining above-listed species. Potential impacts and measures to avoid or minimize these impacts must be addressed in the Draft License Application.

V. Dwarf Wedge Mussel

The Federally-listed (endangered) dwarf wedge mussel is found in the Neversink River. The Service's main concerns relate to any changes in flows or water levels that may occur as a result of the development of this Project, and any direct or indirect impacts from changes in flow or entrainment of fish species that serve as hosts for the parasitic larval life history stage in the mussels. Although the NYCDEP has not proposed any changes to existing flows, some stakeholders have advocated a reassessment of flow releases as part of this licensing. Since the issue of changes in flows has been broached, the potential exists for this licensing activity to alter flows in the Neversink River. As such, any impacts from flow changes on the dwarf wedge mussel must be identified.

The NYCDEP should identify any studies necessary to characterize the Project's potential impacts on dwarf wedge mussels, including their host fish species. Methodologies for such studies, and completion of the studies themselves should be undertaken in close coordination and consultation with the Service's endangered species biologists, the U.S. Geological Survey, and the NYSDEC's Endangered Species Program (for NYSDEC, contact Mr. Peter Nye at 518-402-8859).

1. *Goals and Objectives*

The goals and objectives of this study are to determine the potential Project impacts on the dwarf wedge mussel, a Federally-listed endangered species.

2. *Resource Management Goals*

The Neversink River harbors a population of the endangered dwarf wedge mussel. The Service's goal is to protect this species from further losses and to allow the population to recover to levels that will allow it to be delisted.

3. *Public Interest*

The requestor is a resource agency.

4. *Existing Information*

The PAD provides limited information on the dwarf wedge mussel in the Neversink River.

5. *Nexus to Project Operations and Effects*

The proposed Project may impact host fish species and may alter flows in the Neversink River, thus affecting dwarf wedge mussels.

6. *Methodology Consistent with Accepted Practice*

The recommended study will use standard scientific study practices and literature reviews.

7. *Level of Effort, Cost, and Why Alternative Studies Will Not Suffice*

The level of effort would involve a few months and be relatively inexpensive. This study is necessary to evaluate potential project impacts on an endangered species.

Impacts of Construction-Related Activities

The NYCDEP has proposed a series of studies to address the impacts of construction-related activities on wildlife and botanical resources, wetlands, riparian and littoral habitat, and rare, threatened, and endangered species. The NYCDEP proposed the following study items in the footprint of the specific areas where construction will actually occur:

- Consult with the NYSDEC, the Service, and the New York Natural Heritage Program on known rare, threatened, and endangered species locations and wetlands mapped to confirm work accomplished for the PAD.
- Update the list of mammals, reptiles, amphibians, and birds from the PAD.
- Develop site maps showing the construction areas.
- Complete field studies to document existing habitat conditions in the designated areas.
- Evaluate how construction-related activities could impact wetlands, wildlife, botanical species, and rare, threatened, and endangered species.
- Determine if modifications to construction sequencing could reduce impacts.
- Develop a mitigation plan in consultation with the agencies.

Except as related to other studies listed above, the Service concurs with this approach.

VI. **Impacts of Construction-Related Activities**

1. *Goals and Objectives*

The goals and objectives of this study are to determine the impacts of construction-related activities on wetlands, botanical resources, rare, threatened, and endangered species, and wildlife and their habitats.

2. *Resource Management Goals*

The Neversink River and the East and West Branches of the Delaware River, in the vicinity of the proposed Project, are managed by the NYSDEC as a mixed warmwater-coldwater fishery, with brook trout, brown trout, smallmouth bass, and chain pickerel as the primary game fish species. Landlocked salmon are also a species of concern for the Neversink Reservoir. Construction activities may impact resources of concern to the Service.

3. *Public Interest*

The requestor is a resource agency.

4. *Existing Information*

The PAD includes limited information on construction designs and location and potential habitat impacts.

5. *Nexus to Project Operations and Effects*

The construction activities related to development of the Project may have adverse impacts on wildlife, wetlands, botanical resources, or rare, threatened, and endangered species.

6. *Methodology Consistent with Accepted Practice*

The recommended study uses standard literature and field reviews used in most hydro licensing activities.

7. *Level of Effort, Cost, and Why Alternative Studies Will Not Suffice*

The level of effort would involve a few months and be relatively inexpensive. This step is necessary to evaluate potential impacts from construction-related activities.

Recreation and Land Use

The Service concurs with the NYCDEP's assessment that there does not appear to be any impact on recreation or land use from construction-related activities. Unless Project plans change, there is no need to undertake additional studies related to these topics at this time.

* * * * *

We appreciate the opportunity to review the PAD and make study recommendations. We look forward to working closely with the NYCDEP to develop the study plans and assess potential

project impacts. If you have any questions or desire additional information, please contact Steve Patch at 607-753-9334. For consultation on endangered species issues, please contact Robyn Niver at the same number.

Sincerely,



for David A. Stilwell
Field Supervisor

cc: Service List
Gomez and Sullivan, Henniker, NH (T. Sullivan)
NYSDEC, Albany, NY (M. Woythal, D. Sampson)
NYSDEC, Stamford, NY (K. Sanders)
NYSDEC, New Paltz, NY (L. Wilson)
FERC, Washington, DC (K. Bose)
DOI, Newton, MA (A. Tittler)
FWS, Hadley, MA (C. Orvis)

New York State Department of Environmental Conservation

Division of Environmental Permits, Region 4

65561 State Highway 10, Stamford, New York 12167-9503

Phone: (607) 652-7741 • FAX: (607) 652-3672

Website: www.dec.state.ny.us



Alexander B. Grannis
Commissioner

February 12, 2010

Mr. Anthony Fiore
New York City Department of Environmental Protection
59-17 Junction Blvd
Flushing, NY 11373

RE: DEC ID#4-1246-00063/00003
West of Hudson Hydro Project
Request for Studies Proposal

Dear Mr. Fiore:

The Department has reviewed the Preliminary Application Document for the above referenced FERC License proposal. In order for the Department to make its required findings under Section 401 of the Clean Water Act the following studies on the projects impacts on fish and wildlife resources need to be undertaken.

Oxygen Depletion

Two issues concerning oxygen levels are germane to this project. The first is that the intakes at these reservoirs are at significant depth. Oxygen levels at these depths are unknown and have a direct bearing on the use of this area of the water column by fish which directly relates to their susceptibility of entrainment and impingement.

Secondly if the oxygen levels are depleted in the intake water what impact to the receiving water will occur? Waters discharged to the receiving waters needs to meet State Water Quality Standards for oxygen levels.

Entrainment

Studies detailing the fish entrainment and mortality of the current operations and proposed changes are needed. The number size, species and seasonal fluctuations need to be assessed so that the appropriate mitigative measures can be implemented.

Occasional entrainment through the release structure at Cannonsville has occurred in the past. This seems to be associated with drawing the reservoir down to low levels and or when the hypolimnion nears the elevation of the intakes. Winter water temperature conditions can also concentrate fish in the lower levels of the reservoir.

Level of Effort: NYCDEP has proposed to do only literature research entrainment studies. This level of effort may not be sufficient to support issuance of the Water Quality Certificate. Following initial review of the literature NYCDEP should be prepared to conduct field studies to answer any remaining issues for the late summer-fall and winter seasons.

Impingement

The installation of water turbines into the bypass flows may increase the overall mortality associated with the reservoirs. Studies adequate to quantitatively and qualitatively assess this increase are needed to determine what mitigation strategies are appropriate and their effectiveness.

Potential for Improvements to the FERC In-Conduit Exemptions

Our records do not indicate that the Department was afforded the opportunity to review and comment on the FERC exemptions issued for the In Conduit Hydropower facilities in the West of Hudson System. Given the large volumes of water that are delivered in the system and the lack of screening the potential for entrainment, impingement and mortality exists. If the West of Hudson system is looked as a whole, the potential to benefit fisheries resources may be accomplished more efficiently by addressing fish mortality associated with the Exempted turbines than by just addressing the newly proposed turbines.

Technology Review

The NYCDEP has constructed, operated and maintained a large number of reservoirs, aquaducts and tunnels for many years. There are undoubtedly many unpublished reports and studies concerning fish entrainment, impingement, mortality as well as oxygen levels, A review of these documents should be made and pertinent information be supplied to the resource agencies so that these issues can be clarified and narrowed. The proposed studies can then be focused on specific questions and time and efforts not wasted on gathering redundant information.

We look forward to developing the above studies with you in the near future.

Sincerely,



Kent P. Sanders
Deputy Regional Permit Administrator
Region 4 Stamford

Cc: WOH Review Team



Pennsylvania Department of Environmental Protection

Rachel Carson State Office Building
P.O. Box 2063
Harrisburg, PA 17105-2063
February 19, 2010

Office of Water Management

717-783-4693

Mr. Anthony J. Fiore
Director of Planning and Sustainability
59-17 Junction Boulevard, 19th Floor
Flushing, NY 11373-5108

RE: West of Hudson Hydroelectric Project (FERC#13287)
Review of Notice of Intent to File an Original License Application and Pre-Application Document and Initial Study Requests

Dear Mr. Fiore:

The Pennsylvania Department of Environmental Protection (PA DEP) has reviewed the August 13, 2009, Notice of Intent to File an Original License Application and Pre-Application Document for the West-of-Hudson Hydroelectric Project that was filed by the New York City Department of Environmental Protection (NYC DEP). The PA DEP has the following study request for NYC DEP's three Delaware River Basin Reservoirs (the reservoirs) Hydroelectric Project (Project).

Review of Pre-Application Document (PAD)

The Flexible Flow Management Program (FFMP) is currently used to manage the reservoirs. The FFMP by nature is an adaptive and flexible means of managing multiple and competing water uses in the reservoirs and is subject to change. The PAD filed with the Federal Energy Regulatory Commission (FERC) for this Project clearly relies on the current FFMP. Because the existing version of FFMP is subject to change by negotiation and is the subject of proposed Delaware River Basin Commission (DRBC) Water Code amendments, an assessment of the potential changes to the FFMP, therefore, must be addressed.

In Chapter 3, Project Location, Facilities and Operation, there is discussion of proposed operations. It is not clear from the PAD how adaptability and flexibility measures of the FFMP are included in the design assumptions for the Project. The following study is requested if the specific considerations that were utilized to develop the PAD did not account for FFMP flexibility.



Study Request

Water supply and water resources in the reservoirs are insufficient to meet the optimum needs of all basin-wide uses and users (including but not limited to water supply to New York City and downbasin users, flood mitigation, salinity repulsion, recreational activities, and aquatic habitat) at all times. The FERC license for New York City's Hydroelectric facilities is separate from reservoir operations subject to the 1954 Supreme Court Decree. The impact and relative priority of water and power demand of the Project with respect to other uses in the DRB as defined in the evolving FFMP is of great significance to the downbasin water users, including the Commonwealth of Pennsylvania.

The PA DEP is requesting a Downbasin Impact Assessment Study to be performed to address the potential limitations the Project could impose to future evolution of the FFMP.

Downbasin Impact Assessment Study

The current FFMP considers the following factors/parameters in management of the DRB water resources: diversions; releases (flow objectives—Montague and Trenton and conservation release rate); excess release quantity; release variation as a function of time of day, season, duration, lead time for changes, flexibility, operating rules, etc.; different drought conditions; and salinity repulsion. While this is not an exhaustive list of variables, the variables are subject to change based on the DRB needs and consensus of the Decree parties. FFMP changes in the management variables will affect the amount, timing period, and season of power generation water availability and relates directly to the hydro power operation needs.

The existing FFMP does not address hydroelectric operations from the reservoirs. We believe power generation operating parameters may have a significant impact on future FFMP options for optimum management of downstream resources. The Downbasin Impact Assessment study is required to assess this Project under projected future scenarios.

Goals and Objectives

The goal of this study should be to identify critical parameters to ensure sufficient flexibility is employed to this Project that allows for optimum future management of DRB waters or a minimization of undesirable limitations for the future management of the downbasin DRB waters.

Short-term and long-term changes to the DRB needs may change and thereby direct future FFMP revisions. An assessment must be conducted on the potential limitations of the Project that may be imposed on the future evolution of the FFMP.

Resource Management Goals

The water resources of the DRB reservoirs are managed according to the 1954 Supreme Court Decree and its revisions. The goals of the resource management agencies, PA DEP in particular, are to optimize the use of the DRB water resources based on the 1954 Supreme Court Decree and its revisions including the current FFMP and future FFMP.

Public Interests

The requestor is a resource agency.

Existing Information

The FFMP and the PAD.

Nexus to Project Operations and Effects

The operation of the reservoirs is based on the current FFMP and the generation of power is a new activity not addressed in the existing FFMP. However, the FFMP is subject to change and for such a long-term project such as hydropower generation, different scenarios of reservoir operations under projected or potential changes to the operating rules needs to be evaluated and the flexibility, modification, and feasibility of the Project to be assessed.

Methodology

The recommended study will be based on procedures for general engineering feasibility studies and address applicable factors including economic, feasibility along with sensitivity analysis to determine the flexibility/feasibility of the Project as a function of expected variation in the FFMP operating rules and criteria resulting from hydroelectric generation.

Level of Effort, Cost and Why Alternative Studies Will Not Suffice

For a river basin with an extensive diversity of water uses and users, an additional impact on basin waters resulting from new hydroelectric operations can easily add another layer of complexity to the management of the water resources of the basin. For this reason, this Project requires a more comprehensive feasibility study.

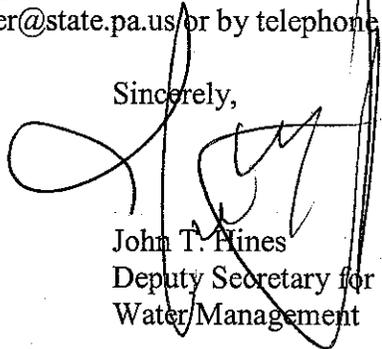
Mr. Anthony J. Fiore

4

February 19, 2010

We appreciate the opportunity to review the PAD and make study recommendations. We look forward to working closely with the NYC DEP to develop the study plans and assess potential project impacts. If you have any questions or desire additional information, please contact Susan Weaver by e-mail at suweaver@state.pa.us or by telephone at 717-783-8055.

Sincerely,

A handwritten signature in black ink, appearing to read "John T. Hines", is written over the typed name and title.

John T. Hines
Deputy Secretary for
Water Management

cc: Carol Collier, DRBC
Brian Barner, PFBC

Mark Wamser

From: Kent Sanders [kpsander@gw.dec.state.ny.us]
Sent: Tuesday, April 13, 2010 10:54 AM
To: Mark Wamser
Cc: David Sampson; Larry Wilson; Michael Flaherty; Mark Woythal; Norman McBride; Robert Angyal
Subject: NYC Studies

Mark,

Please see Norms response to your question on downstream fish passage. Our Division of Wildlife also indicates that Bog Turtle and Bat studies are not necessary for the projects in Delaware County and as I believe that the Neversink work is internal to the current intake building, there are no potential turtle or bat impacts.

Kent

Downstream fish passage is not an issue for the Region 4 NYC reservoirs. I assume the question refers to fish passage via spillage since passage thru the release structure would be considered entrainment which is a totally different issue.

There is no need to prevent fish from moving out of the reservoir downstream. In the East and West Branches, summer water temperatures are too cold for warmwater species to thrive. Following the 2006 flood event, we had record numbers of smallmouth bass, carp, and panfish in the West Branch. The numbers of these fish declined annually. By 2009, warmwater fish numbers were back to normal which is present but very sparse. Alewives from Cannonsville and Pepacton Reservoirs provide forage to downstream trout populations. However, summer water temperatures are again too cold for alewives to thrive or even survive. Reservoir brown trout also move over the these 2 dams in generally low numbers and these fish do contribute to the downstream trout fishery. Schoharie Creek below the Schoharie Dam currently supports a warmwater fishery as does Schoharie Reservoir. Smallmouth bass, walleye, and walleye that spill over the dam can survive in the river but many of the lake species do not do well in a riverine environment. Whatever is in Schoharie Reservoir is also present in the two Blenheim-Gilboa pumped storage reservoirs

There is no need to facilitate downstream fish passage since it will not enhance the downriver fish populations. Although mortality probably occurs, it can not be significant since we do not get reports of fish kills.

Entrainment, as stated at the beginning of this email is a totally different issue. Currently and in the future, any fish entrained thru the release structure or hydropower facility will die shortly after discharge to the river. Cause of death will be the pressure change from deep water (>50 ft) when entrained to 0 ft when discharged from the release works. Mortality is probably 100%. However, entrainment may not be an issue except occasionally. We certainly had no complaints of dead fish when Cannonsville Reservoir was reduced to 4% of capacity in 2001. Cannonsville is often reduced to 25-30% of capacity during hot, dry summers. Again, we do not get complaints of dead or dying fish. Regardless, NYC DEP should determine the approach velocities at various distances from the intake which would facilitate a better evaluation of entrainment impacts. As Mike Flaherty pointed out, the dead fish may be concentrated in the reach below the dam that is closed to public access. In that case, anglers and other water recreationists may not know that a fish kill event had occurred.

Norm

Mark Wamser

From: Fiore, Anthony [FioreA@dep.nyc.gov]
Sent: Tuesday, June 15, 2010 9:13 AM
To: 'Kent Sanders'; 'Stephen_Patch@fws.gov'; 'ndmcbride@gw.dec.state.ny.us'
Cc: Lang, Kevin; 'Mark Wamser'; 'Tom Sullivan'; Vickers, John; Craig, Robert; Geary, Linda
Subject: WOH Hydroelectric Project - Study Plans
Attachments: Study Plans 6-14-10.pdf

Please find our Study Plans attached. We would like to get consensus with you on these so we can begin the field work in earnest. Please let me know if you agree with the approach. We would like to mobilize field forces by July 1st, so if you could let me know if you have any issues or comments on the study plans before then that would be greatly appreciated.

We would also like to schedule a meeting to go over our findings on the fish entrainment research. Realizing the summer vacationing season is fast approaching I would like to see if we could reserve time during the last week of July. Please let me know if you have any conflicts.

Thanks,
-Anthony-

Anthony J. Fiore | Chief of Staff & Senior Advisor on Sustainability - Operations | NYC Environmental Protection
(718) 595-6529 | (917) 682-4492 | afiore@dep.nyc.gov



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.

Sent via email on 7/1/2010 from Kent Sanders, NYSDEC to Anthony Fiore, DEP

NYSDEC Comments on NYC DEP Study Plans West of Hudson Hydroelectric Project

Task 60. Intake protection Evaluation

The emphasis on physical barriers as opposed to sound, light and other deterrents is to be encouraged.

Evaluating locations and configurations that would minimize approach velocities to 2 FPS or less “consistent with USFWS protocols.” I’m not familiar with this protocol but the velocity seems high in my experience. With other types of water intakes the benchmark has been set at 0.5 FPS or less. I suggest that should be the target.

Fisheries Field Surveys

Fisheries field studies should be considered necessary, at least at Cannonsville.

Task 210. Sampling

This section proposes experimental gillnets set in front of the intakes as the method for sampling. I suggest that some type of sampling that filters a portion of the water flowing through the conduit downstream of the intake should also be devised to collect a representative sample of any juvenile fish that are susceptible to entrainment and too small to be captured in gillnets.

FERC Exemptions

We raised the issue of the impingement and entrainment at the existing hydroelectric facilities in the NYC reservoir system at our last meeting. Quantifying the impingement and entrainment at the existing facilities was not done for the FERC exemptions issue for the existing hydros so this would be useful information for determining if measures to reduce I&E at these facilities are warranted.

Reductions in I&E at these facilities may be used as mitigation for potential impacts at the new proposed facilities. Installation of screens, diversions, etc. may be more feasible and cost effective at the existing intakes.

Mark Wamser

From: Fiore, Anthony [FioreA@dep.nyc.gov]
Sent: Wednesday, August 04, 2010 5:30 PM
To: 'Kent Sanders'; 'Larry Wilson'; 'Michael Flaherty'; 'Norman McBride'; 'Robert Angyal'; 'David Sampson'; 'Stephen_Patch@fws.gov'; Vickers, John; Helmuth, Jeffrey; DeJohn, Thomas; Principe, Robert; Allen, Michael; Baudanza, Thomas; Page, Mark; Iyer, Sangamithra; Lang, Kevin; 'Jason George'; 'Mark'; 'Tom Sullivan'; Garcia, Kathryn; Rush, Paul; Craig, Robert; Geary, Linda; Mahnovski, Sergej
Cc: Danvetz, Mark; Cushman, Elissa Stein; Nicholas, Donna; West, Todd; Usai, Michael; Legg, Debra
Subject: Hydro - Fish Entrainment Report Review
Attachments: NYCDEP Entrainment Report Final.pdf

Attached please find the fish entrainment report for review at our meeting. If you have any questions please do not hesitate to contact me.



**City of New York
West of Hudson Hydroelectric Project**

FERC Project No. 13287-000

AGENDA AND MEETING NOTES

August 23, 2010
10:00 a.m.

DEP Office, 71 Smith Avenue, Kingston, NY

I. Welcome and Introductions

Notes: Mr. Anthony Fiore (New York City Department of Environmental Protection or “DEP”) welcomed everyone to the meeting and thanked them for participating. The attendees then introduced themselves. The attendees were as follows:

For the Applicant:

Anthony Fiore, DEP
Thomas DeJohn, DEP
Mark Danvetz, DEP
Robert Principe, DEP
Robie Craig, DEP Legal
Tom Baudanza, DEP
Sangu Iyer, DEP
Jeff Helmuth, DEP

Linda Geary, NYC Law Department
Jason George, Gomez and Sullivan
Mark Wamser, Gomez and Sullivan
Craig Arnold, Gomez and Sullivan
Tom Sullivan, Gomez and Sullivan
Kevin Lang, Couch White
Garrett Bissell, Couch White

For the New York State Department of Environmental Conservation (“NYSDEC”):

Kent Sanders
Mike Flaherty
Larry Wilson
Norm McBride
Mark Woythal (via Teleconference)

For the United States Fish and Wildlife Service (“USFWS”):

Steve Patch

II. Fish Entrainment Study

Notes: Mr. Sullivan provided a brief overview of the Fish Entrainment Study conducted for the Project and indicated that the objectives of the meeting were as follows:

1. Obtain feedback from NYSDEC and USFWS regarding whether the study conducted will meet each respective agencies' requirements for NEPA [National Environmental Policy Act] and 401 Water Quality certification [Section 401 of the Clean Water Act];
2. Obtain feedback from NYSDEC and USFWS regarding additional data needs to meet each respective agencies' needs with respect to fish entrainment considerations; and
3. Obtain feedback from NYSDEC and USFWS regarding the Revised Study Plans for the Project.

Mr. George identified that the objective of the Fish Entrainment Study conducted for the Project were as follows:

1. Evaluate the potential for fish entrainment and mortality associated with the Project;
2. Assess the need for, appropriateness and feasibility of additional intake protection measures; and
3. Analyze the feasibility and appropriateness of downstream fish passages.

Mr. George then proceeded with a presentation providing an overview of the Fish Entrainment Study conducted for the Project and the findings of such study (see presentation attached hereto).

Mr. Wilson asked whether the velocity calculations relating to Neversink were based on all of the intakes being open. If so, Mr. Wilson claimed that this would explain why the velocities at Neversink decrease as the water level drops because the number of openings being included in the calculation of the gross area decreases.

Mr. Wamser and Mr. Sullivan responded that the velocity calculations at all of the reservoirs were based on the gross area in front of the existing screens and not at the racks.

Mr. Sullivan further explained that the design flow of the turbines selected for each Project development could impact the velocities. The feasibility analysis for the Project is currently ongoing and in the event that the final design would increase velocities above those indicated in the study and addendum to the study would be prepared to identify any such modifications and the impacts relating thereto; however, currently, it is not anticipated any major modifications are likely to occur.

Mr. Wilson asked whether DEP is proposing to measure the actual velocities after implementation of the Project.

Mr. Wamser indicated that DEP was not proposing to do so. Instead, if determined to be necessary, DEP would look to design additional intake protection based on estimates of what velocities are likely to be.

Mr. George explained that this study was different from most other studies because of the significant pressure differentials that exist between the intakes and the downstream releases regardless of whether turbines are present; therefore, for this Project, there was less focus on turbine mortality.

Mr. Sullivan indicated that the velocities estimated for Neversink are so low as to obviate the need for additional intake protection and although 1 inch spaced racks are the most feasible additional intake protection identified for Cannonsville and Pepacton, if additional protection is deemed necessary, having such racks at depths of 130 feet and 170 feet presents significant challenges both for initial construction and ongoing maintenance.

Mr. Sanders questioned whether at Cannonsville the larger turbines anticipated by the current design could be throttled or whether they operate as an “on/off” only.

Mr. Sullivan responded that the turbines have the flexibility to control their flow.

Mr. Wamser further indicated that the flows to the turbine are rarely expected to push them to their maximum ratings.

Mr. Sanders asked how the lack of a littoral zone in the vicinity of the intakes affect the likelihood of entrainment.

Mr. George indicated that this is more of an issue for Neversink due to the existence of intakes at different depths.

Mr. Sanders responded that the lack of littoral habitat appears to make no difference with respect to this Project.

Mr. Sullivan responded that, with respect to Neversink, regardless of whether littoral habitat is present the estimated velocities are so low as to obviate the need for additional intake protection.

Mr. Sanders stated that the entrainment potential is highest during high drawdown periods when the pressure differentials will be the lowest. Mr. Sanders questioned whether during these periods the pressure differentials will still be too great to override the potential impacts of turbine mortality.

Mr. George indicated that they did investigate the pressure differentials that existed during the 2005 entrainment event at Cannonsville. This event, in which significant fish mortality was observed, occurred during a drawdown event in which the fish were exposed to pressure differential resulting from approximately 70 feet of head.

Mr. Sullivan indicated that they would look at pressure differentials over a range of water depths including times when the entrainment potential is expected to be highest and provide this additional information.

Mr. McBride indicated that the East Sidney Reservoir previously experienced a fish kill event with head levels as low as 30 feet.

Mr. Sullivan asked what the general sense was of NYSDEC and USFWS as to whether the information provided by the study meets the needs of the respective agencies for 401 water quality certification and NEPA.

Mr. Patch responded affirmatively with respect to NEPA.

Mr. Sanders indicated that NYSDEC needed additional information regarding pressure differentials under high drawdown conditions.

Mr. Wilson stated that with respect to water cooling intakes for certain fossil-fuel fired generation facilities the EPA requires the velocities at such intakes to be less than 0.5 ft/second. Mr. Wilson further indicated that the burst swim speed may not be the most relevant factor to examine because fish may not be inclined to react quickly. Mr. Wilson indicated that the Project does not appear to present any change in conditions at Cannonsville or Pepacton due to the pressure differentials at these locations, but Neversink may present a different situation. The lack of a littoral zone near the intake structure at Neversink may not mean that fish would not be present in this area as the rock face surface could provide feeding opportunities for fish. Mr. Wilson stated that at Neversink the DEP does not operate all the intake levels at once; therefore the projected velocities will be higher than estimated because of a smaller surface area associated with way in which DEP operates Neversink. Accordingly, Mr. Wilson indicated that the velocities estimated in the study may be understated and should be recalculated based on the way in which DEP operates Neversink.

Mr. Vickers clarified that the velocities estimated for Neversink are actually the velocities into the release chamber and not the velocities at the intake to the downstream release which would provide water supply for power generation at Neversink. The intake for the downstream release is located at the bottom of the release chamber and the stop shutters at various elevations are for the purposes of water supply only and would, therefore, have no affect on entrainment potential for the Project.

Mr. Wilson responded that Neversink may present the need for additional review.

Mr. Sanders indicated that NYSDEC required additional information focusing on when the potential for entrainment is highest.

Mr. Sullivan indicated that additional analysis could be provided assessing pressure differentials during high drawdown. In addition, more information will be provided regarding the details of the existing release works at Neversink.

Mr. Wilson asked whether DEP has experienced any maintenance issue with respect to the bar racks in place today at the reservoirs.

Mr. Danvetz responded that DEP has not experienced any major debris issues with respect to the intakes at Cannonsville and Pepacton.

Mr. Vickers added that debris tends to settle out in the reservoirs prior to the location of the intakes and confirmed that DEP has not experienced debris issues at Neversink.

Mr. McBride suggested that DEP may want to provide additional information regarding the amounts being taken for water supply versus downstream releases in assessing the entrainment issue because DEP is pulling a lot more water overall for water supply purposes out of these reservoirs than for downstream releases.

Mr. Sanders asked whether there were any known issues with zebra mussels in these reservoirs.

Mr. Vickers responded that no zebra mussels were known to be in these reservoirs.

Mr. Sullivan stated that there was a need to establish a deadline for comments from NYSDEC and USFWS in response to the report and proposed a three-week timeframe, establishing the deadline for written comments as September 15, 2010.

Mr. Fiore responded that DEP will need to provide follow-up in response to the issues raised today before the agencies would be able to respond.

Mr. Sullivan confirmed that the additional information to be provided was a further assessment of pressure differentials over a greater range of drawdown conditions, additional details regarding the physical setup of the release works at Neversink, and information regarding the relative amount of flows for water supply purposes at each reservoir.

III. Revised Study Plans

Notes: Mr. Wamser asked if NYSDEC or USFWS had any comments regarding the Revised Study Plans for the Project.

Mr. Sanders stated that because these Projects involve the addition of generation facilities at existing structures that he didn't see many potential issues.

Mr. McBride indicated that the proposed location for the Cannonsville powerhouse may be within a federal wetland but that DEP would need to further investigate this issue.

An additional question was raised as to whether specific measures needed to be developed with respect to the protection of Bald Eagles.

Mr. McBride asked for confirmation of whether his understanding that there are no Bald Eagle nests located near the existing downstream releases was accurate.

Mr. Danvetz indicated that he believed Mr. McBride's understanding was correct.

Mr. McBride indicated that NYSDEC would be able to identify and provide additional information regarding Bald Eagle nest locations.

Mr. Sullivan indicated that discussions are currently ongoing with DEP regarding the existing protection measures with respect to Bald Eagles.

Mr. Patch stated that he did not see any issues with the Revised Study Plans.

IV. Next Steps

Mr. Sullivan asked whether NYSDEC and USFWS would be able to provide written comments in response to the Entrainment Study and the Revised Study Plans by September 15, 2010.

Mr. Sanders indicated that NYSDEC should be able to do so.

Mr. Sullivan stated that September 15, 2010 would be set as the date for written comments from the agencies regarding the Entrainment Study and the Revised Study Plans.

S:\DATA\Client6 12456-13409\12804\Fish Entrainment Report\Resource Agency Meeting 8-23-10 - Official Meeting Notes.doc

Mark Wamser

From: Fiore, Anthony [FioreA@dep.nyc.gov]
Sent: Wednesday, September 08, 2010 11:30 AM
To: 'Kent Sanders'; 'Larry Wilson'; 'Michael Flaherty'; 'Norman McBride'; 'Robert Angyal'; 'David Sampson'; 'Stephen_Patch@fws.gov'; Vickers, John; Helmuth, Jeffrey; DeJohn, Thomas; Principe, Robert; Allen, Michael; Baudanza, Thomas; Page, Mark; Iyer, Sangamithra; Lang, Kevin; 'Jason George'; 'Mark'; 'Tom Sullivan'; Garcia, Kathryn; Rush, Paul; Craig, Robert; Geary, Linda; Mahnovski, Sergej
Cc: Danvetz, Mark; Cushman, Elissa Stein; Nicholas, Donna; West, Todd; Usai, Michael; Legg, Debra
Subject: Hydro - Fish Entrainment Report Addendum
Attachments: NYCDEP Entrainment Report Addendum 9 2 2010.pdf

Please find attached the response to the additional request for information discussed at the August 23rd meeting. If you have any questions please give me a call.

Best Regards,
-Anthony-

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



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.



United States Department of the Interior



FISH AND WILDLIFE SERVICE

3817 Luker Road
Cortland, NY 13045

September 15, 2010

Mr. Anthony J. Fiore
Director of Planning and Sustainability
59-17 Junction Boulevard, 19th Floor
Flushing, NY 11373-5108

**RE: West of Hudson Hydroelectric Project (FERC #13287)
Review of Study Plans**

Dear Mr. Fiore:

The U.S. Fish and Wildlife Service (Service) has reviewed a variety of documents related to the licensing of the West of Hudson Hydroelectric Project. These documents include the June 14, 2010, *Study Plans*, the August 2010 *Fish Entrainment Report – Literature Based Characterization of Resident Fish Entrainment and Mortality*, and the September 2010 *Addendum to the Fish Entrainment Report*. We also participated in the August 23, 2010, meeting to discuss the Study Plans and the Entrainment Report.

The Study Plans, as described in the report and presented at the meeting, are acceptable to the Service. The Entrainment Report and Addendum adequately characterize the likelihood of fish entrainment and mortality and the potential options available for fish passage. The Service does not foresee any further studies at this time.

We appreciate the opportunity to review the documents. If you have any questions or desire additional information, please contact Steve Patch at 607-753-9334.

Sincerely,

David A. Stilwell
Field Supervisor

cc: Gomez and Sullivan, Henniker, NH (M. Wamser)
NYSDEC, Albany, NY (M. Woythal)
NYSDEC, Stamford, NY (K. Sanders)

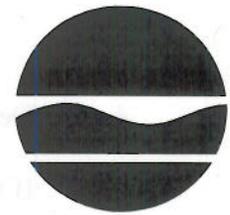
New York State Department of Environmental Conservation

Division of Environmental Permits, Region 4

65561 State Highway 10, Stamford, New York 12167-9503

Phone: (607) 652-7741 • FAX: (607) 652-2342

Website: www.dec.state.ny.us



Alexander B. Grannis
Commissioner

September 24, 2010

Mr. Anthony Fiore
New York City Department of Environmental Protection
59-17 Junction Blvd
Flushing, NY 11373

RE: DECID# 0-9999-00143
West of Hudson Hydro Project
Fisheries Study Plans

Dear Mr. Fiore:

Thank you for the opportunity to review the Literature Review and Addendum. Based on that information and Department records the Department does not believe that entrainment at the Pepacton and Cannonsville Reservoirs is a significant issue under the current flow regime.

The Department remains concerned over the proposals fisheries impacts at the Neversink Reservoir. In order to bring this process forward the Department has the following proposal:

The level of mortality of entrained fish due rapid decompression at all three reservoirs is assumed to be high. However, no actual documentation is presented as to that the rate may actually be. Either additional documentation as to what depth/ pressure would cause mortality approaching 100% should be provided or the information should be developed during the field season.

As indicated in the reports submitted by NYC DEP, the intake configuration at the Neversink dam is somewhat unique. The intake is a vertical tower equipped with eight ports. The literature review dated September 2010, does not adequately address a facility with this intake design.

This Department requests that a site specific study be conducted for the proposed new Neversink hydroelectric facility. The study should be designed to provide the following information:

1. An estimate of the number of fish drawn into the conduit
2. The species of fish drawn into the conduit
3. An estimate of the mortality rate for fish drawn into the conduit

4. Determine if there are assemblages of fish in the zone of withdrawal
5. If there are assemblages provide information on their seasonal and diurnal movements.

The NYS DEC feels that hydro-acoustic equipment or the use of Didson cameras may be particularly useful in answering some of these questions

Please submit a proposed monitoring plan to this Department for review and approval by October 22, 2010. If you have any questions or need further information, please don't hesitate to contact me.

Sincerely,



Kent P. Sanders
Deputy Regional Permit Administrator
Region 4 – Stamford

CC: WOH Review Team
S. Patch, USF&WS



Caswell F. Holloway
Commissioner

Anthony 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

October 19, 2010

Kent P. Sanders
Deputy Regional Permit Administrator
NYSDEC
Region 4 Sub-office
65561 State Highway 10, Suite 1
Stamford, NY 12167

Re: DEP West of Hudson Hydroelectric Project (FERC Project No. 13287)
Fisheries Study Plans

Dear Mr. Sanders:

The New York City Department of Environmental Protection (DEP) is in receipt of your letter dated September 24, 2010 providing comments on the West of Hudson Hydroelectric Project (Project) Fisheries Study Plan, and Entrainment Report and Addendum thereto. The Study Plans were submitted to the New York State Department of Environmental Conservation (NYSDEC) and the United State Fish and Wildlife Service (USFWS) on June 14, 2010, and the *Fish Entrainment Report - Literature Based Characterization of Resident Fish Entrainment and Mortality* (Entrainment Report) was submitted for review on August 17, 2010. A meeting was held with NYSDEC and USFWS on August 23, 2010 to discuss the Study Plans and the Entrainment Report. As a result of that meeting, DEP prepared an *Addendum to the Fish Entrainment Report* (Addendum), which was distributed for review on September 8, 2010.

In your letter, you indicated that the NYSDEC remains concerned with the potential impacts to fisheries from the proposed hydroelectric development at the Neversink Reservoir, and requested additional information on fish mortality due to pressure differentials of potentially entrained fish. The purpose of this letter is to respond to your concerns and address your requests for additional information.

Pressure Mortality

The NYSDEC requested that either additional documentation be provided as to what depth/pressure causes fish mortality approaching 100%, or the information should be developed during the field season. In the Entrainment Report and Addendum, focus was given to mortality related to the pressure gradient between the high pressure present at the low-level intake structures and the low pressure present at the downstream releases. To supplement the information provided in the Entrainment Report and Addendum, additional literature research was conducted to address NYSDEC's request, and is summarized below.

Most of the research conducted on this topic is related to turbine-passage mortality as there is a pressure gradient through a turbine, *i.e.*, a relatively high level of pressure prior to entering the turbine followed by a short low pressure region on the downstream side of the turbine runner blades. However, these studies can be applied to generally predict the effects of pressure differences on fish passing from deep water reservoirs to shallower stream environments.

Cada, *et al.* 1997 reviewed several experiments that examined the effects of pressure increases and decreases on fish and reports that there is considerable variation in the response of fish to pressure reductions¹. In their review, Cada, *et al.* 1997 summarized percent mortality among test fishes versus the ratio of exposure pressure² (P_e) to acclimation pressure³ (P_a), expressed as ratio = P_e / P_a .

Based on these studies of a variety of fish, Cada, *et al.* 1997 suggested that, as a general fish protection measure, exposure pressures should fall to no less than 60% of the value to which entrained fish are acclimated. This factor serves as a guideline for zero mortality for all fish species studied. Back calculating⁴ to determine acclimation depth using this ratio results in an acclimation depth of 23 feet. Accordingly, at acclimation depths less than 23 feet, all fish passed downstream to atmospheric pressure would be expected to show no direct mortality from pressure effects.

However, with respect to NYSDEC's inquiry regarding the depth/pressure that would cause mortality approaching 100%, one study (Hogan, 1941 cited in Cada, *et al.* 1997) reported that a P_e / P_a ratio of 40% resulted in 100% mortality in crappie (a sunfish). In the case of the Project, this ratio translates to an acclimation depth of 51 feet. This value is supported by a separate pressure study that reported swim bladders in four inch long perch burst, thus leading to mortality, when pressure was reduced to 40% of acclimation values (Jones 1951, cited in Cada, *et al.* 1997).

In addition to being species-specific, pressure mortality is dependent on other factors such as time of exposure, dissolved gas levels and other factors related to indirect mortality. Nevertheless, the 2005 observation of yellow perch mortality due to entrainment at Cannonsville Reservoir occurred at an acclimation depth of 71 feet, consistent with the findings above.

Information on mortality relative to pressure changes in salmonids indicates that a minimum P_e / P_a ratio of 30% or higher may be appropriate as protective criteria for physostomous fish⁵ (Abernathy, *et al.* 2001). Back calculating to determine acclimation depth using this ratio results

¹ Cada, *et al.* 1997 suggested that the variation in fish responses may have been due to differing test methods and small sample sizes.

² Exposure pressure is analogous to the water pressure experienced by fish after release into the downstream environment.

³ Acclimation pressure is the water pressure experienced by fish at the point of entrance to the intake structure.

⁴ Acclimation depth was determined first by solving the ratio equation for P_a ($P_a = P_e / \text{ratio}$) then converting P_a to water depth.

⁵ Physostomous species such as salmon, trout, minnows, and catfish have a pneumatic duct which connects the air bladder to the esophagus and allows for venting air from the swim bladder within seconds, resulting in the ability to rapidly adjust to changing water pressure. Physoclists such as bass, sunfish, and perch must adjust pressure within the swim bladder via diffusion into the blood, which takes hours.

in an acclimation depth of 80 feet. As presented in the Addendum, the acclimation depth for fish entering the intake to the proposed hydroelectric development at Neversink Reservoir is 151 feet at full pond. Acclimation depths of 80 feet or less in Neversink Reservoir occurs less than 3 percent of the time on an annual basis, thereby indicating that there is a very limited time during the year when acclimation depths would be expected to be equal to or less than the applicable criteria for protection.

Site Specific Information for Neversink Reservoir

The NYSDEC letter states, “As indicated in the reports submitted by DEP, the intake configuration at the Neversink dam is somewhat unique. The intake is a vertical tower equipped with eight ports. The literature review dated September 2010, does not adequately address a facility with this intake design.”

Although the common intake is a vertical tower with eight segments that span the length of the water column, the intake that conveys water from the forebay to the stream release is at a fixed location at the bottom of the water column (see Attachment 1). It is from this point that water will be conveyed to the proposed hydroelectric turbine. DEP believes that because: (a) the intake to the proposed hydroelectric development is in deep water with an acclimation depth under full pond equal to 151 feet; (b) the intake velocities are very low under all conditions; and (c) acclimation depths consistent with even the less limiting protective criteria associated with physostomous species occurs less than 3% of the time in the Neversink Reservoir fish entrained in the stream release would suffer high mortality rates due to pressure differentials. However, regardless of this expectation DEP believes based on the configuration outside and within the Neversink intake structure the likelihood of entrainment to the stream release is low.

The Addendum (see page 11) clarified a statement made in the Entrainment Report that misrepresented the entrainment potential of fish entering the common intake. DEP revised this statement to indicate that the design of the intake structure is such that all occurrences of potential fish entrainment to the proposed hydroelectric development at Neversink Reservoir would occur at the horizontal troughs on the floor of the intake structure and not from fish entering the common intake in the upper portions of the water column (see Attachment 1).

DEP has evaluated the life history and habitat preferences of the fish species living in the Neversink Reservoir to predict their likelihood of fish being in the vicinity of the intake and to determine the potential for entrainment of any such fish likely to be found in the vicinity of the intake. DEP concluded that fish entrainment at the proposed Neversink development is expected to be low for all species based on the following factors:

1. Lack of littoral zone habitat in the vicinity of the intake structure. The intake structure is located in an excavated channel—an approximately 600-foot-long and 22- to 32-foot-wide intake channel excavated in rock, with vertical bedrock walls. Because of this lack of littoral habitat, smaller fish are not expected to be in the vicinity of the common intake structure.

3. Low intake velocities. Approach velocities at the common intake are very low: 0.35 ft/s at maximum reservoir drawdown and 0.09 ft/s at full pond. At these velocities, most fish can swim away from the intake thus avoiding entrainment.
4. Intake protection. Neversink has close-spaced bar racks (2-inch clear spaced), affording protection to fish that may be in the vicinity of the Neversink intake structure.

NYSDEC also requested that the report include “An estimate of the mortality rate for fish drawn into the conduit.” Based on the additional information provided above, DEP contends that, while entrainment potential is low for all species, mortality of potentially entrained fish will be significant – with or without the proposed hydroelectric development – due to pressure effects. Based on the pressure differentials between the intake structure and the release works it is likely that any fish entrained through the release structure at the proposed Project development will not survive.

It is the opinion of DEP that the information provided to date to evaluate fish entrainment at the proposed Neversink development appropriately and adequately addresses the questions posed by NYSDEC in their study request. Accordingly, based on the totality of the information provided to date, including the information provided herein, DEP contends that a site specific fisheries study at Neversink Reservoir is not warranted and, therefore, respectfully requests NYSDEC’s concurrence with this approach.

If you have any questions regarding the information herein or would like to discuss it further, please do not hesitate to contact me at (718) 595-6529 or via email at afiore@dep.nyc.gov. Thank you in advance for your prompt attention to, and careful consideration of, this matter. DEP looks forward to continuing to work with NYSDEC regarding this Project.

Respectfully submitted,



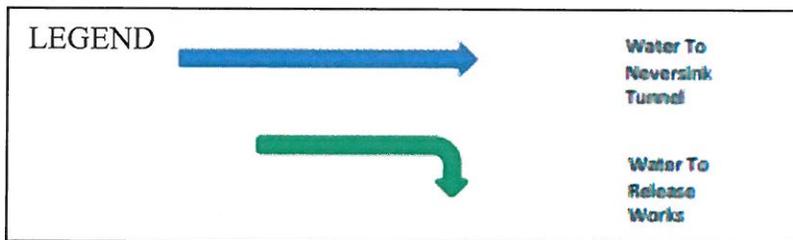
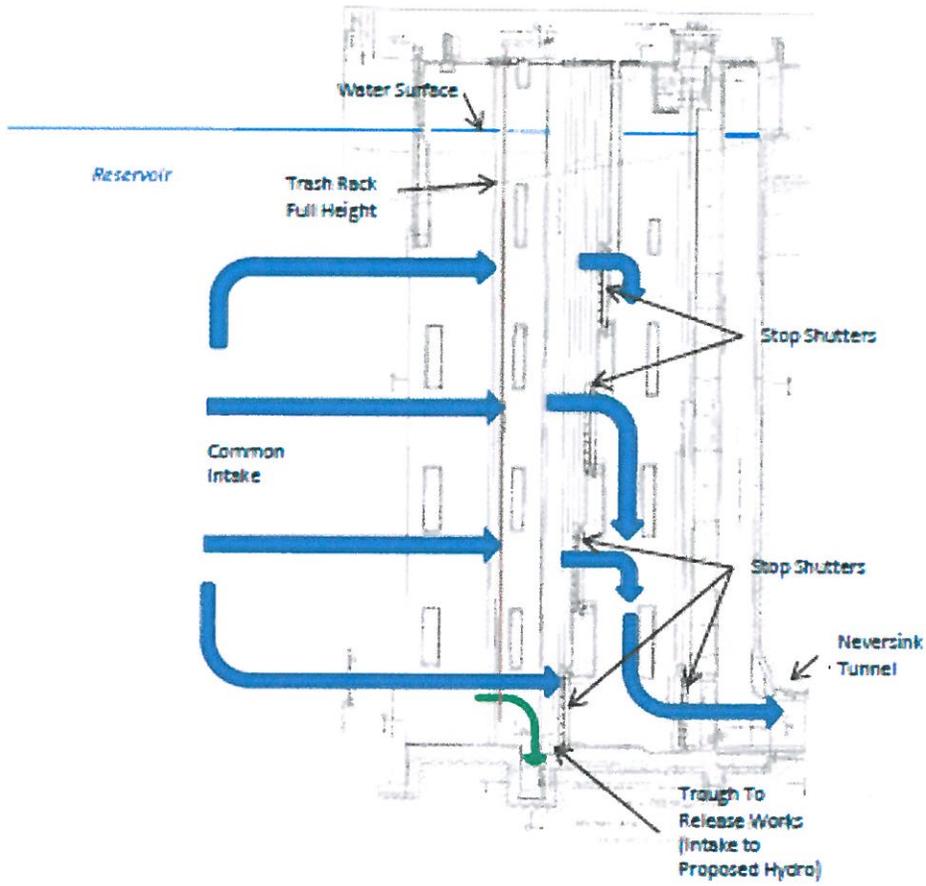
Anthony J. Fiore

c: Dave Sampson, Associate Counsel, NYSDEC
Mark Woythal, Director In-Stream Flow Unit, NYSDEC
Larry Wilson, Biologist, NYSDEC
Michael Flaherty, Biologist, NYSDEC
Norman McBride, Biologist, NYSDEC
David A. Stilwell, Field Supervisor, USFWS
Steven Patch, Fish and Wildlife Biologist, USFWS
Kevin Lang, Partner, Couch White
Mark Wamser, P.E., Water Resource Engineer, Gomez and Sullivan

References:

- Abernathy, C.S, B.G. Amidan, and G.F. Cada. 2001. Laboratory studies of the effects of pressure and dissolved gas supersaturation on turbine- passed fish. Pacific Northwest National Laboratory. PNNL-13470. Hydropower Program, U.S. Department of Energy, Idaho Falls, Idaho.
- Cada, G.F., C.C. Coutant, and R.R. Whitney. 1997. Development of biological criteria for the design of advanced hydropower turbines. DOE/ID-10578. Hydropower Program, U.S. Department of Energy, Idaho Falls, Idaho.

Attachment 1: Cross Section of Neversink Intake Structure



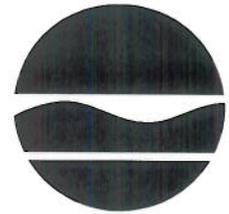
New York State Department of Environmental Conservation

Division of Environmental Permits, Region 4

65561 State Highway 10, Stamford, New York 12167-9503

Phone: (607) 652-7741 • FAX: (607) 652-2342

Website: www.dec.state.ny.us



Peter M. Iwanowicz
Acting Commissioner

December 8, 2010

Mr. Anthony Fiore
New York City Department of Environmental Protection
59-17 Junction Blvd
Flushing, NY 11373

RE: DECID# 0-9999-00143
West of Hudson Hydro Project
Fisheries Study Plans

Dear Mr. Fiore:

Thank you for your October 19, 2010 response to our latest information request

After reviewing the additional information provided, the Department has determined that under the current Flexible Flow Management Plan (FFMP) flow regime, the addition of hydroelectric facilities as proposed will not have a significant impact on fisheries mortality at the Cannonsville, Pepacton and Neversink reservoirs and no further field studies are necessary.

However, this determination is based upon the NYCDEP's assertion that "...The NYCDEP is not proposing to modify the magnitude, frequency, duration, or timing of discharges due to the proposed hydropower facilities. Flows available for generation at these facilities will be based on the conservation or directed releases..." and the information provided that entrainment mortality under the current FFMP approaches 100%. If there is a change in proposed operations that would increase the flow through the turbines and release structures, then further studies or protective measures may be warranted.

The Department reserves the right to revisit this issue if the project changes in a way that would lead to additional fish mortality.

If you have any questions or need further information please don't hesitate to contact me.

Sincerely,

A handwritten signature in black ink that reads "Kent P. Sanders".

Kent P. Sanders
Deputy Regional Permit Administrator
Region 4 - Stamford

Cc: WOH Review Team
S. Patch, USF&WS

Mark Wamser

From: Fiore, Anthony [FioreA@dep.nyc.gov]
Sent: Monday, July 11, 2011 6:24 PM
To: A. Scott Andres; Aaron Bennett; Abdolhossain Liaghat; Alan Rosa; Amy Shallcross; Bill Clarke; Bill Douglas; Dan Palm; Dan Plummer; David Plummer; Diane Galusha; Diane Tharp; Elaine Reichart; Goldstein, Eric; Gary N. Paulachok; Glenn Debrowsky; glenn Erikson; Jesse J. Bergevin; Joe Miri PhD (joe.miri@dep.state.nj.us); John A. Bonafide; John Osinski; John Suloway; John Talley; John Zimmerman; Joseph Libonati; Karen Greene; Knutson.Lingard@epamail.epa.gov; L. Helle Maide (helle.maide@nypa.gov); Larry Wilson; Louis Rea; Mark A. HHartle; Mark Woythal; Martha Bellinger (mabellin@gw.dec.state.ny.us); Matthew Stoddard; Maya K. vanRossum; Michael Fischer; Michael Flarehty; Michael Triolo; Norman McBride; Young, Pamela; Patch Steve (stephen_patch@fws.gov); peter.giasemis@nypa.gov; Richard Kenyon; Ron Leonard; Ron Urban; Sherrie & Howard Bartholomew; Stephanie Baxter; Stephen F. Blanchard; steve.walsh@drbc.state.nj.us; William Little; William S. Cummings, Jr.; William Wellman
Subject: WOH Hydro Project Update
Attachments: Meeting Agenda 7-21-11_Final.pdf

DEP will be holding meetings on July 21st to provide an update on our West of Hudson Hydroelectric Project, FERC Project No. 13287. The primary focus of this meeting will be to provide an overview of the studies conducted in support of the license application. These studies centered around: Entrainment and Intake Protection; Terrestrial Biology and Rare, Threatened, and Endangered Species; Erosion Control; Aesthetics; Socio-Economics; and Archaeological, Tribal, and Cultural Resources. The purpose of the public meetings is to: discuss the results of the studies; receive comments from participants regarding those results; and discuss the City's plans for seeking approval of the project from FERC. An agenda is attached.

The details regarding the public meetings are as follows:

Public Meetings

Daytime: Date: July 21, 2011
 Start Time: 10:00 a.m.
 End Time: 12:00 p.m.
 Location: NYCDEP's Kingston Office, 71 Smith Avenue, Kingston, New York 12401

Evening: Date: July 21, 2011
 Start Time: 7:00 p.m.
 End Time: 9:00 p.m.
 Location: Walton Town Hall, 129 North Street, Walton, New York 13856.

Regards,
Anthony

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

 *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.



41 Liberty Hill Road
PO Box 2179
Henniker, NH 03242
T (603) 428-4960
F (603) 428-3973

July 19, 2011

Ms. Susan Greene
National Marine Fisheries Service
James J. Howard Marine Sciences Laboratory
74 Magruder Rd
Highlands, NJ 07732

Re: West of Hudson Hydroelectric Project
FERC No. P-13287

Dear Ms. Greene:

On May 19, 2009, the New York City Department of Environmental Protection (DEP) contacted the National Marine Fisheries Service (NMFS) regarding its proposed West of Hudson Hydroelectric Project. The Project consists of the additional of hydroelectric generating equipment and associated facilities at the following existing water supply dams and reservoirs in New York:

Dam Name	Reservoir Name	River
Cannonsville Dam	Cannonsville Reservoir	West Branch of the Delaware River
Downsville Dam	Pepacton Reservoir	East Branch of the Delaware River
Neversink Dam	Neversink Reservoir	Neversink River

The Project also includes a development at the Gilboa Dam and Schoharie Reservoir, located on the Schoharie Creek. However, at this time that development does not appear to be feasible. Therefore, while it investigates alternatives to its original design, DEP has suspended environmental studies and work towards a license application for that development.

By memorandum dated November 2, 2009, the NMFS responded to DEP, providing information on endangered and threatened species and Essential Fish Habitats (EFH). A copy of that memorandum is attached to this letter. Although no EFH have been designated in the vicinity of the Project, NMFS noted that it required additional information to determine whether an EFH assessment would be required.

One of the primary premises of the Project is that DEP will not change its operation of the water supply system to increase the output from the hydroelectric facilities. In other words, the conservation flows from the reservoirs (from which power will be generated) will not change as a result of the Project. Presently, those flows are memorialized in the "Flexible Flow Management Program" (FFMP). Commencing on June 1, 2011, conservation releases have been in accordance with a variant of the FFMP, known as the Operations Support Tool, or OST-FFMP. This tool estimates water availability using a forecast based mass balance and selects the release schedule that most closely matches the water availability.

Over the past approximate 1.5 years, DEP has met with the US Fish and Wildlife Service (USFWS) and New York State Department of Environmental Conservation (NYSDEC) to discuss the Project and the need for, and scope of, environmental studies to support the license application. The agencies requested that DEP examine the potential impact of the Project on fish entrainment and impingement and rare, threatened, and endangered species. DEP has performed these studies and, pertinent to this letter, determined that the Project will not directly cause or lead to fish entrainment or impingement. This conclusion was based on, among other things, the depth of the intake structures, the types and sizes of fish species that may be located near the intake structures, and the absence of any change in intake velocities due to the Project.

This information was discussed with the USFWS and DEC, as was DEP's intent to maintain conservation flows below all three dams for the protection of aquatic resources, in accordance with the FFMP and its successor flow regimes (such as the OST-FFMP). Given the conclusions of the environmental study, and because DEP does not intend to modify its releases for purposes of the Project, the USFWS and NYSDEC have not required any in-stream flow studies below the dams. For the same reasons presented to the USFWS and DEC, DEP does not believe that the Project will cause or lead to any potential indirect impacts on EFH quality and quantity downstream of the three developments.

DEP plans to file a Draft License Application with the FERC for the Cannonsville Development and Applications for Exemption from Licensing for the Neversink and Pepacton Developments (due to their small size). For the reasons set forth herein, DEP respectfully requests that NMFS provide a letter confirming that the Project would not create an indirect effect on EPH quality and quantity downstream of the three developments. Please send your response letter to the undersigned.

If you have any questions, please feel free to contact me at 603-428-4960. Thank you for your attention to this matter.

Sincerely,



Mark Wamser, PE
Water Resource Engineer

cc: Anthony Fiore, DEP via email AFiore@dep.nyc.gov
Kevin Lang, Couch White via email klang@COUCHWHITE.COM
Steve Patch, USFWS via email stephen_patch@fws.gov
Kent Sanders, NYSDEC via email kpsander@gw.dec.state.ny.us

Mark Wamser

From: Fiore, Anthony [FioreA@dep.nyc.gov]
Sent: Wednesday, July 20, 2011 8:54 AM
To: 'mwamser@gomezandsullivan.com'; jgeorge@gomezandsullivan.com; Lang, Kevin; 'Garrett Bissell' (GBissell@CouchWhite.com)
Cc: Tom Sullivan; Craig, Robert; Geary, Linda
Subject: FW: WOH Hydro Project Update

FYI

From: Mackey, Douglas (PEB) [mailto:Douglas.Mackey@oprhp.state.ny.us]
Sent: Wednesday, July 20, 2011 7:52 AM
To: Fiore, Anthony
Cc: Bonafide, John (PEB); mkirk@hartgen.com
Subject: RE: WOH Hydro Project Update

Anthony,

I have looked over the Hartgen report which they got to me on Friday. I concur with their findings that the direct impact areas of your project have all be previously distrubed, and therefore there is no need for Phase IB testing at the project areas as defined in the report. There should still be HPMPs developed for each project as indicated in your 2009 submission however, and they should address the many sites that Hartgen identified which are now submerged as well as the potential for more sites and continued erosion of them along the edges of the reservoir. Typically we see language that identifies this potential, calls for regular monitoring, and if any extensive erosion is noted in areas of high potential, to have those areas examined. Regarding the Submerged sites, the document should acknowledge that they exist, identify that any substantial draw down of the reservoir could expose them, and address the potential for future archaeological research (identify how a researcher could gain access/permission to work on the sites) . I will be happy to work with you through all this in the coming weeks. As for tomorrow's meeting, I was already scheduled to be elsewhere by the time your initial invitation arrived. After looking over the Hartgen report, I believe my advice above should be sufficient so that there is no need for me to attend tomorrow. If you believe otherwise, or have specific questions you need to have addressed - please get back to me today. I will be out of touch during the remainder of the day, but will check my email this evening to see if you have responded.

Doug Mackey
OPRHP

From: Fiore, Anthony [FioreA@dep.nyc.gov]
Sent: Thursday, July 14, 2011 1:49 PM
To: Mackey, Douglas (PEB)
Cc: Bonafide, John (PEB); mkirk@hartgen.com
Subject: RE: WOH Hydro Project Update

Dear Mr. Mackey:

Please be assured that it has always been our intention to include the State Historic Preservation Office ("SHPO") as part of our consultation efforts on the Project. SHPO was invited to the Joint Meeting for the Project held on October 26, 2009, at which the City's plans for the Phase 1A study were discussed. As you are aware, SHPO has also been invited to attend our upcoming meeting on July 21, 2011. The City of New York ("City") retained Hartgen Archeological Associates, Inc. ("Hartgen") to conduct a Phase 1A Literature Review and Archeological Sensitivity Assessment ("Phase 1A Study") in order to help the City identify potential historic, architectural, archeological, or cultural impacts of the Project and determine whether detailed analysis and field studies are needed.

The Phase 1A Study has just recently been completed. The report concludes that the Project will be constructed almost entirely in areas that have previously been disturbed by the construction of the City's dams and reservoirs. Therefore, no field studies or other analyses have been recommended. In addition, to directly respond to your questions, explain the work performed to date, and address any concerns you may have, I have asked Matt Kirk, the lead consultant from Hartgen, to contact you directly and provide a copy of the Phase 1A Study.

If you have any additional questions or concerns, or if you would like to discuss further, please do not hesitate to contact me.

Regards,
Anthony

From: Mackey, Douglas (PEB) [mailto:Douglas.Mackey@oprhp.state.ny.us]
Sent: Tuesday, July 12, 2011 11:23 AM
To: Fiore, Anthony
Cc: Bonafide, John (PEB)
Subject: RE: WOH Hydro Project Update

Mr. Fiore,

Thank you for advising the New York State Historic Preservation Office (SHPO) of the upcoming meetings. As you may be aware, our agency is tasked with reviewing any historic/architectural/archaeological/cultural issues related to projects with Federal involvement (permits, license or funding) in accordance with Section 106 of the National Preservation Act. We first became aware of the project in 2009 and in June and August of that year we responded, to NYCDEP and to Couch White LLP, our interest in assisting you as needed. Our office has received no additional correspondence or information of any kind since August 2009.

Based on the agenda you provided and your email it appears that reports on related issue have been completed, yet nothing has ever been submitted to us for review, nor have we been consulted on the scope of those studies as called for in the Section 106 regs. Typically we are provided the opportunity to review such material well in advance of public meetings and have the opportunity to provide our comments to the applicant to be considered in advance. Have the studies actually been completed - or is this meeting just to help set a scope of studies? If studies have been completed, when should we expect to receive them for review?

I look forward to your response so that we can plan to participate as appropriate.

Thank you

Doug Mackey

Douglas Mackey
New York State Office of Parks, Recreation and Historic Preservation
Peebles Island
PO Box 189
Waterford, NY 12188
(518) 237-8643 x 3291



 Please consider the environment before printing this email.

From: Bonafide, John (PEB)
Sent: Tuesday, July 12, 2011 8:00 AM



United States Department of the Interior



FISH AND WILDLIFE SERVICE

3817 Luker Road
Cortland, NY 13045

August 3, 2011

Mr. Kevin M. Lang
Couch White, LLP
PO Box 22222
Albany, NY 12201-2222

**RE: West of Hudson Hydroelectric Project (FERC #13287)
Review of Study Reports**

Dear Mr. Lang:

The U.S. Fish and Wildlife Service (Service) has reviewed the five study reports for the West of Hudson Hydroelectric Project that were provided to us on July 11, 2011. These reports were discussed at a July 21, 2011, public meeting which the Service attended. The reports we reviewed are as follows:

- Phase IA Archeological Literature Review and Sensitivity Assessment
- Impact of Construction-Related Activities on Wildlife and Botanical Resources, including Wetlands, Riparian, and Littoral Habitat, and Rare, Threatened, and Endangered Species
- Aesthetics Report
- Impacts of Construction-Related Activities on Erosion
- Fish Entrainment Report

The Service has no comments on the first four studies. We have the following comments on the Fish Entrainment Report.

In Section 8.1 (2nd paragraph), the report indicates that intake protection could be achieved "...by enclosing the intake areas with close-spaced bar racks *larger* than the current openings [emphasis added]." This appears to imply that the new racks would have larger spacing than the existing racks, which is not what is intended. This statement should be clarified. In addition, the photos showing the front and side views of the Cannonsville intake structure are supposed to appear on page 114 but are missing.

We appreciate the opportunity to review the study reports and look forward to reviewing your draft license application. If you have any questions or desire additional information, please contact Steve Patch at 607-753-9334.

Sincerely,



for David A. Stilwell
Field Supervisor

cc: NYSDEC, New Paltz, NY (M. Flaherty)

From: susan kross [<mailto:sbkross@hotmail.com>]

Sent: Sunday, July 31, 2011 6:16 PM

To: Fiore, Anthony

Subject: Two "Q's" for you

Dear Mr. Fiore:

I was glad to read Adam Bosch's recent article on the upstate reservoir hydroelectrification project in the "Times Herald Record."

However, I'd appreciate your fielding a few questions that have thus come to mind, as follows:

- Why -- when energy is at such a premium, people are out of work by the thousands, and all predictions point to electricity usage continuing to increase -- was the project scaled down?

- Why was it decided that turbines not be located in the aqueducts supplying NYC water?

Looking forward to your reply,

All the best,

Susan Kross
Ellenville

8-8-2011

Dear Susan,

Thanks for your interest in the project. While there are many complicated factors that go into building these sorts of developments I will try to give short, clear answers to your questions:

- The initial sizing was based on the theoretical capacity just considering the volume of water available. This is without any engineering done. As the project gets further along and engineering studies are conducted other considerations such as the amount of time water is available, size/space requirements and turbine sizing come into play. Generally hydroelectric is better than other renewable projects like wind and solar because hydro has a higher capacity factor. The capacity factor is the product of the volume of renewable energy available and the time it is available for; in this case water. At Schoharie there is a fair volume of water available, but only for a very short period of time – during the Spring. The turbines need to be sized to capture the maximum volume of water available in the Spring. Since turbines have a limited operating range when the volume of water decreases there is no longer sufficient pressure to spin the turbines. Essentially the turbines would spin for 2-3 months of the year and lay idle the rest of the time, resulting in a very low capacity factor and very poor power economics. We do however, continue to look at this location to see if we can come up with a viable solution and are in fact designing in a connection point for hydroelectric on a new lower level release structure that is in the final stages of design with construction expected to be complete in 2015. While the capacity at Neversink and Pepacton decreased as a result of these factors (mostly space constraints) the capacity at Cannonsville actually increased.
- There are already 3 hydroelectric facilities on the aqueducts.

I hope the above answered your questions. If you have any others please let me know.

Best Regards,
Anthony

August 11, 2011

Mr. David A. Stilwell
Field Supervisor
United States Department of the Interior
Fish and Wildlife Service
3817 Luker Road
Cortland, NY 13045

Re: FERC Project No. 13287 – West of Hudson Hydroelectric Project

Dear Mr. Stilwell:

We are in receipt of the U.S. Fish and Wildlife Service's ("Service") August 3, 2011 letter regarding the study plans prepared on behalf of the City of New York ("City") in connection with the above-entitled project. In that letter, the Service provided two comments on the Fish Entrainment Report. Please accept this letter as the City's response to those comments.

Comment 1:

In Section 8.1 (2nd paragraph), the report indicates that intake protection could be achieved "...by enclosing the intake areas with close-spaced bar racks *larger* than the current openings [emphasis added]." This appears to imply that the new racks would have larger spacing than the existing racks, which is not what is intended. This statement should be clarified.

Response:

The Service is correct that the sentence should be clarified to more accurately convey that the reference was to a larger bar rack structure, not a larger spacing between the bar racks. We have modified the Fish Entrainment Report as follows to address this comment:

Intake protection could be provided at Cannonsville by mounting a bar rack one foot in front of the entire intake structure (including the front and side of the intake structure), which would yield a greater intake surface area. The bar racks would be comprised of 5/8-inch vertical bars with 1-inch clear spacing between the bars and would be manufactured to fit into the existing stop log slots.

Please let me know if you have any concerns with this modified language.

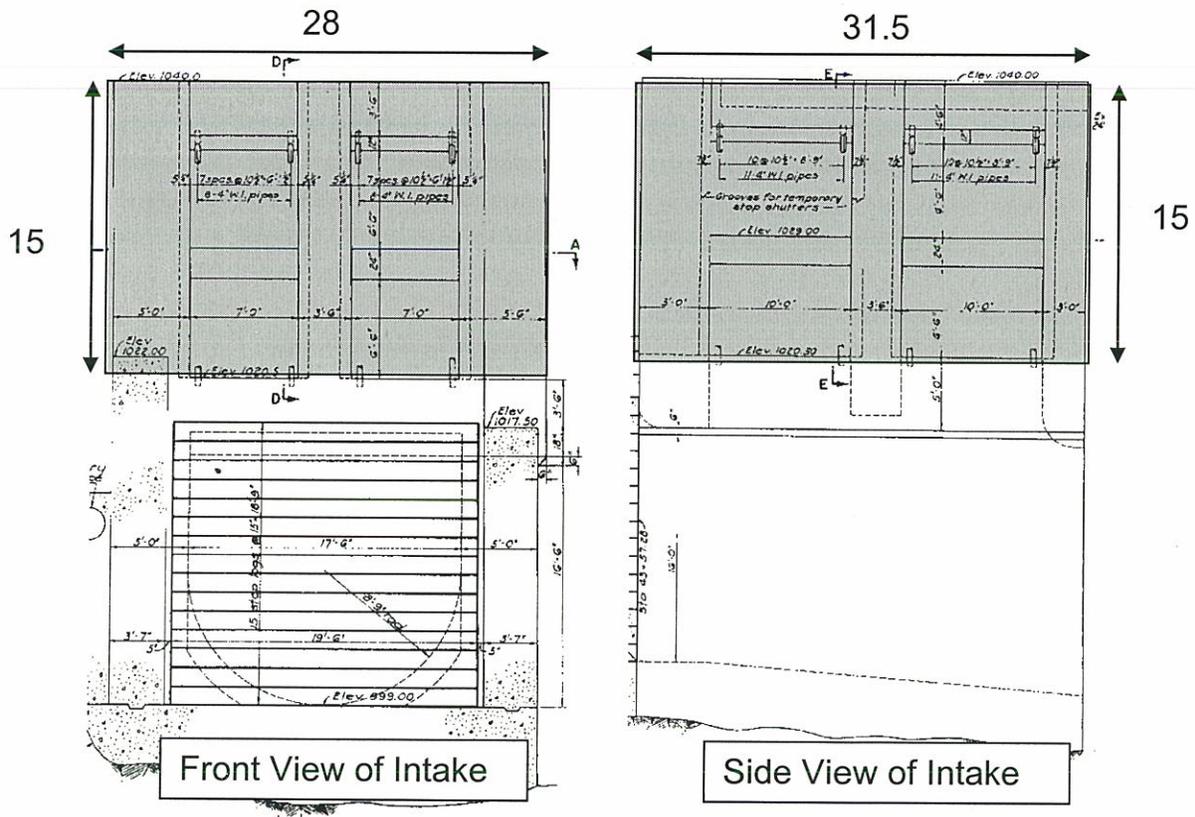
Comment 2:

In addition, the photos showing the front and side views of the Cannonsville intake structure are supposed to appear on page 114 but are missing.

Response:

We apologize for the confusion. It appears that the diagrams were inadvertently omitted from the report. Also, the Service's comment caused us to review and modify the language to more accurately describe the information presented. The corrected language and the drawings are as follows:

Below are reproductions of the as-built drawings of the front and side of the intake structure. The gross area of the proposed intake racks is shown in red shading and equates to 892.5 ft². This gross area is sufficient to meet the 2 ft/s design criteria for all three proposed turbine configurations. Fabricating the bar racks to slide into the existing stop log slots would allow the bar racks to be removed for maintenance or when the stop logs must be put into place for downstream or tunnel maintenance. An automatic cleaning system could be installed to periodically clean the bar racks if required due to biofouling. The system would consist of rotating brushes that move on a track located over the face of each bar rack.

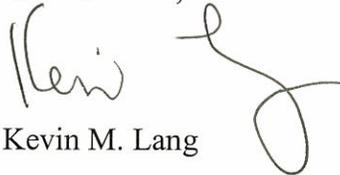


Mr. David A. Stilwell
August 11, 2011
Page 3

A corrected version of the Fish Entrainment Report is included with this letter. If you have any further questions or concerns, please do not hesitate to contact me.

Sincerely,

COUCH WHITE, LLP

A handwritten signature in black ink, appearing to read "Kevin M. Lang". The signature is written in a cursive style with a large, looping "K" and a long, sweeping tail.

Kevin M. Lang

KML/glm

cc: Mr. Anthony J. Fiore
Ms. Martha Bellinger (w/ enc.)
Mr. Michael Flaherty (w/ enc.)

S:\DATA\Client6 12456-13409\12804\Corres\Stilwell.It.docx