



FINAL LICENSE APPLICATION

Volume II of IV

Part 2 - Consultation Appendix Book 1 of 3

Niagara Hydroelectric Project
(FERC No. 2466)

February 28, 2022

Prepared by:



Prepared for:



An **AEP** Company

BOUNDLESS ENERGY™

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A decorative graphic consisting of several overlapping rectangles. A large red rectangle is on the left. A grey rectangle is at the top right. A black rectangle is at the bottom right. A light grey rectangle is at the bottom left, partially overlapping the red one.

Appendix H

Consultation Summary
Book 1 of 3

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Niagara Relicensing (P-2466) Correspondence Log

DATE	TYPE (FERC accession number, if applicable)	FROM	TO	SUBJECT
August 15, 2017	Letter	HDR Engineering Inc. (HDR)	Project Stakeholders ¹	Pre-Application Document (PAD) Questionnaire
August 15, 2017	Letter	HDR	U.S. Fish and Wildlife Service (USFWS)	Request for Threatened and Endangered Species Information
August 15, 2017	Letter	HDR	Virginia Department of Conservation and Recreation (VDCR)	Request for Threatened and Endangered Species Information
August 15, 2017	Letter	HDR	Virginia Department of Environmental Quality (VDEQ)	Coastal Zone Consistency Request
August 16, 2017	Letter	Bureau of Indian Affairs (BIA)	HDR	Response to PAD Questionnaire
August 16, 2017	Letter	Friends of the Rivers of Virginia (FORVA)	HDR	Response to PAD Questionnaire
August 16, 2017	Letter	USFWS	HDR	Response to PAD Questionnaire
August 16, 2017	Letter	VDEQ	HDR	Response to PAD Questionnaire
August 23, 2017	E-mail	VDCR	HDR	Contacts and Website for Natural Heritage Program
September 1, 2017	Letter	VDEQ	HDR	Response to Coastal Zone Consistency Determination

¹ Project Stakeholder is used to define communication with the larger stakeholder group. It may include representatives from the Federal Energy Regulatory Commission (FERC), U.S. Fish and Wildlife Service (USFWS), U.S. Department of Agriculture, U.S. Forest Service (USFS), U.S. National Park Service (NPS), NOAA Fisheries Service, U.S. Department of Interior, FEMA, U.S. Environmental Protection Agency, U.S. Geological Survey, U.S. House of Representatives, George Washington and Jefferson National Forest, Virginia Department of Environmental Quality (VDEQ), Virginia Department of Game and Inland Fisheries (VDGIF), Advisory Council on Historic Preservation, Freshwater Mollusk Conservation, Virginia Department of Forestry, Virginia Department of Conservation and Recreation (VDCR), Archeological Society of Virginia, Virginia Council on Indians, Virginia Department of Historic Resources, and/or local and state governmental agencies and non-governmental organizations.

Niagara Relicensing (P-2466)
Correspondence Log

DATE	TYPE (FERC accession number, if applicable)	FROM	TO	SUBJECT
September 13, 2017	E-mail	VDCR	HDR	Response to PAD Questionnaire
September 13, 2017	E-mail	VDEQ	HDR	Response to PAD Questionnaire
September 14, 2017	E-mail	Tri-County Lakes Administrative Commission	HDR	Response to PAD Questionnaire
September 15, 2017	E-mail	Roanoke Valley Greenway Commission	HDR	Response to PAD Questionnaire
September 20, 2017	Letter	VDCR	HDR	Review of Biotics Data System for Occurrences of Natural Heritage Resources
October 24, 2017	Letter	Blue Ridge Soil & Water Conservation District	HDR	Response to PAD Questionnaire
April 25, 2018	Letter (20180425-3026)	FERC	Tribal Agencies	Invitation to Participate in the Relicensing Process
September 10, 2018	Letter (20180910-3002)	FERC	Public Files	Update on Initiating Consultation with Tribes
January 28, 2019	Letter (20190128-5131)	AEP	FERC	Notice of Intent (NOI) and PAD
January 28, 2019	E-mail	HDR	Project Stakeholders	Niagara Hydroelectric Project (FERC No. 2466) -- Filing of Notice of Intent (NOI) and PAD
March 1, 2019	Letter	VDCR	HDR	Niagara Comments on NOI and PAD
March 12, 2019	Letter	FERC	Project Stakeholders	Notice of Comment Period Extension
March 26, 2019	Letter (20190326-3016)	FERC	Project Stakeholders	Notice of Intent to File License Application for a New License and Commencing Pre-filing Process

Niagara Relicensing (P-2466)
Correspondence Log

DATE	TYPE (FERC accession number, if applicable)	FROM	TO	SUBJECT
March 26, 2019	Letter (20190323-3012)	FERC	Project Stakeholders	Scoping Document 1 (SD1)
April 19, 2019	Letter (20190419-3028)	FERC	Pamunkey Indian Tribe	Request to Participate in Relicensing
May 2, 2019	E-mail	AEP	Roanoke County	Update on Scoping Meeting
May 3, 2019	E-mail	Roanoke Valley – Alleghany Regional Commission (RVARC)	AEP	Roanoke River PCB
May 20, 2019	Letter (20190520-5132)	Roanoke County Greenway Commission	FERC	Roanoke Valley Greenway Plan
May 22, 2019	Letter (20190522-3012)	FERC	AEP	Comments on the PAD and Study Requests
May 22, 2019	Letter (20190522-5090)	Tri-County Lakes Administrative Commission	FERC	Comments on the PAD
May 23, 2019	Letter (20190523-5164)	Roanoke County Greenway Commission	FERC	2018 Greenway Plan Network Map
May 23, 2019	Letter (20190523-5152)	Roanoke County Greenway Commission	FERC	Comments on the PAD/SD1
May 23, 2019	Letter (20190523-5189)	U.S. Environmental Protection Agency (EPA)	FERC	Comments on the PAD
May 24, 2019	Letter (20190524-5247)	National Park Service (NPS)	FERC	Comments on the PAD/SD1
May 24, 2019	Letter (20190524-5162)	Town of Vinton	FERC	Comments on the PAD
May 24, 2019	Letter (20190524-5228)	VDEQ	FERC	Comments on the PAD/SD1

Niagara Relicensing (P-2466)
Correspondence Log

DATE	TYPE (FERC accession number, if applicable)	FROM	TO	SUBJECT
May 24, 2019	Letter (20190524-5190)	Virginia Department of Game and Inland Fishers (VDGIF)	FERC	Comments on the PAD and Study Requests
May 24, 2019	Letter (20190524-5082)	Virginia Tech (VA Tech)	FERC	Comments on the PAD
May 28, 2019	Letter (20190528-5043)	Roanoke County	FERC	Comments on the PAD
May 28, 2019	Letter (20190528-5005)	Roanoke River Blueway Committee	FERC	Comments on the PAD
May 28, 2019	Letter (20190528-5103)	USFWS	FERC	Comments on the PAD/SD1
May 30, 2019	Letter (20190530-4004)	FERC	Project Stakeholders	Transcript of the Morning Public Scoping Meeting
May 30, 2019	Letter (20190530-4003)	FERC	Project Stakeholders	Transcript of the Evening Public Scoping Meeting
July 9, 2019	Letter (20190709-3004)	FERC	Project Stakeholders	Scoping Document 2
July 10, 2019	E-mail/Letter	AEP	Project Stakeholders	Filing of Proposed Study Plan (PSP) for the Relicensing Studies
July 12, 2019	Letter (20190712-3053)	FERC	Roanoke Valley Greenway Commission	Request for Treatment of a Document as Comprehensive Plan
July 12, 2019	Letter (20190712-3054)	FERC	USFWS	Request for Treatment of a Document as Comprehensive Plan – Roanoke Logperch
July 26, 2019	Letter (20190726-3059)	FERC	Pamunkey Indian Tribe	Consultation with Pamunkey Tribe
August 26, 2019	E-Mail	AEP	VDGIF, USFWS, VDEQ, and VA Tech	Transmit to agencies Historic Fisheries Surveys and Related Studies

Niagara Relicensing (P-2466)
Correspondence Log

DATE	TYPE (FERC accession number, if applicable)	FROM	TO	SUBJECT
September 4, 2019	Letter (20190904-0036)	FORVA	FERC	Comments on PSP Note: Exact same comments filed on September 11, 2019 and were omitted from Consultation Log
September 11, 2019	E-mail	AEP	Roanoke County	Response to Roanoke County Relicensing Questions
September 12, 2019	E-mail	RVARC	Project Stakeholders	Roanoke Blueway Meeting Notes
September 21, 2019	E-mail	AEP	VDGIF, USFWS, VA Tech, VDEQ, and USEPA	Fish Community and Roanoke Logperch Study Plan (Niagara Pre-PSP Agency Coordination)
September 25, 2019	E-mail	VA Tech	Project Stakeholders	Roanoke Logperch Studies
September 25, 2019	E-mail	AEP	VA Tech	Acknowledgement of Roanoke Logperch Studies
October 3, 2019	Letter (20191003-5008)	VA Tech	FERC	Comments on PSP
October 3, 2019	Letter (20191003-5111)	USFWS	FERC	Comments on PSP
October 4, 2019	Letter (20191004-5167)	RVGC	FERC	Comments on PSP
October 7, 2019	Letter (20191007-5094)	VDEQ	FERC	Comments on PSP
October 7, 2019	Letter (20191007-5117)	RRBC	FERC	Comments on PSP
October 7, 2019	Letter (20191007-5119)	EPA	FERC	Comments on PSP
October 7, 2019	Letter (20191007-3032)	FERC	AEP	Comments on PSP

Niagara Relicensing (P-2466)
Correspondence Log

DATE	TYPE (FERC accession number, if applicable)	FROM	TO	SUBJECT
October 7, 2019	Letter (20191007-5142)	VDGIF	FERC	Comments on PSP
October 10, 2019	E-mail	AEP	VDGIF, USFWS, VA Tech, and VDEQ	Fish Community and Roanoke Logperch Study Plan Meeting Minutes and Presentation
November 6, 2019	Letter (20191106-5132)	AEP	FERC	Filing of the Revised Study Plan (RSP)
November 6, 2019	E-mail	HDR	Project Stakeholders	Filing of the RSP
November 11, 2019	E-mail	VA Tech	AEP	Confirmation of Copy of RSP
November 18, 2019	Letter (20191118-5046)	FORVA	FERC	Comments on RSP
November 20, 2019	Letter (20191120-5101)	USFWS	FERC	Comments on RSP
November 20, 2019	Letter (20191120-5148)	VA Tech	FERC	Comments on RSP
November 21, 2019	E-mail	EPA	AEP	Assistance filing Comments on RSP
November 21, 2019	Letter (20191121-5062)	EPA	FERC	Comments on RSP
November 26, 2019	E-mail	USFWS	AEP	Blade Strike Analysis Model
December 6, 2019	Letter (20191206-3007)	FERC	AEP	Study Plan Determination
December 13, 2019	E-mail	HDR	VDCR	Recreation Comments on RSP
February 11, 2020	E-mail	Young Energy Services (YES)	NPS	Recreation Survey Update

Niagara Relicensing (P-2466)
Correspondence Log

DATE	TYPE (FERC accession number, if applicable)	FROM	TO	SUBJECT
February 11, 2020	E-mail	NPS	YES	Confirmation of Recreation Survey Update
March 5, 2020	E-mail	HDR	VA Tech	Roanoke logperch Information Request
March 6, 2020	E-mail	VA Tech	HDR	Response to Roanoke Logperch Information Request
March 20, 2020	E-mail	HDR	VA Tech	Roanoke Logperch Sampling Plan Information
April 29, 2020	E-mail	AEP	Project Stakeholders	Recreation Online Survey
June 29, 2020	Conference Call (WebEx)	AEP	USFWS, VDEQ, and VDGIF	Study Schedule Update Discussion
July 1, 2020	E-mail	AEP	Roanoke County	Recreational Survey Signage
July 7, 2020	E-mail	Roanoke County	AEP	Confirmation of Sign Installation
July 17, 2020	E-mail	AEP	USFWS, VDEQ, and VDGIF	Study Schedule Update Meeting Summary for Review
Jul 27, 2020	Letter (20200727-5160)	AEP	FERC	First Quarterly Study Progress Report, Updated ILP Study Schedule, and Request for Extension of Time to File Initial Study Report (ISR)
July 28, 2020	E-mail	AEP	FERC	Notice of Filing Updated ILP Schedule and Request for Extension of Time
July 28, 2020	E-mail	HDR	Project Stakeholders	Filing of Updated ILP Schedule and ISR Extension Request
July 29, 2020	Letter (20200729-3044)	FERC	Project Stakeholders	Notice of Application for Amendment of License, Soliciting Comments, Motions to Intervene, and Protests
August 3, 2020	E-mail	USFWS	AEP	Concurrence of Meeting Notes
August 10, 2020	Letter (20200810-3000)	FERC	AEP	Order Granting Revised Schedule and Extension of Time for ISR

Niagara Relicensing (P-2466)
Correspondence Log

DATE	TYPE (FERC accession number, if applicable)	FROM	TO	SUBJECT
September 1, 2020	Letter	AEP	Section 106 Consultation Distribution List	Section 106 APE Consultation
September 8, 2020	E-mail	Terracon	VDCR	Cave Protection Act Permit – Excavation Request
September 9, 2020	Letter (20200909-0011)	AEP	FERC	Section 106 APE Consultation
September 16, 2020	Letter	Monacan Indian Tribe	AEP	APE Consultation
September 28, 2020	Letter	Catawba Indian Nation	AEP	APE Consultation
October 2, 2020	Letter	VDHR	AEP	APE Consultation
October 5, 2020	Letter	Pamunkey Indian Tribe	AEP	APE Consultation
October 27, 2020	E-mail/Letter (20201028-5005)	AEP	FERC/Project Stakeholders	Second Quarterly Progress Report
November 9, 2020	Letter	Delaware Nation	AEP	APE Consultation
December 2, 2020	E-mail	HDR	Project Stakeholders	Proposed Date for ISR Meeting
December 22, 2020	E-mail	EDGE	USFWS	Federal Permit Application
December 22, 2020	Letter (20201222-3018)	FERC	AEP	Scoping Document 3
January 11, 2021	Letter (20210111-5063)	AEP	FERC	Filing of ISR
January 11, 2021	Letter (20210111-5063)	HDR	Project Stakeholders	Filing of ISR
January 17, 2021	E-mail	Terracon	Tribal Stakeholders	Filing of ISR and Preliminary Cultural Resources Report (Privileged)

Niagara Relicensing (P-2466)
Correspondence Log

DATE	TYPE (FERC accession number, if applicable)	FROM	TO	SUBJECT
February 5, 2021	Letter (20210205-5058)	AEP	FERC	Filing of ISR Meeting Summary
February 5, 2021	E-mail	HDR	Project Stakeholders	Filing of ISR Meeting Summary
March 4, 2021	Letter (20210304-5042)	Roanoke County	FERC	Comments on the ISR Meeting Summary
March 5, 2021	Letter (20210305-3030)	FERC	AEP	Comments on the ISR Meeting Summary
March 5, 2021	Letter (20210305-5065)	Roanoke Regional Partnership	FERC	Comments on the ISR Meeting Summary
March 5, 2021	Letter (20210305-5075)	Roanoke River Blueway Committee	FERC	Comments on the ISR Meeting Summary
March 8, 2021	Letter (20210308-5025)	Roanoke Valley Greenway Commission	FERC	Comments on the ISR Meeting Summary
March 8, 2021	Letter (20210308-5048)	VDEQ	FERC	Comments on the ISR Meeting Summary
March 8, 2021	Letter (20210308-5065)	USFWS	FERC	Comments on the ISR Meeting Summary
March 26, 2021	E-mail	HDR	USFWS	Self-Certification Letter - 2021 Field Sampling Time of Year Restrictions (TOYR)
March 29, 2021	E-mail	EDGE	VDWR	2021 Field Sampling Waiver Request
March 29, 2021	E-mail	EDGE	VA Tech	RLP Study Update
March 29, 2021	E-mail	HDR	Town of Vinton, RVARC, FORVA , Roanoke County (including Greenway Commission and Blueway), NPS, and VDCR	Recreation Stakeholder Meeting Invitation

Niagara Relicensing (P-2466)
Correspondence Log

DATE	TYPE (FERC accession number, if applicable)	FROM	TO	SUBJECT
April 6, 2021	Letter (20210406-5667)	AEP	FERC	Response to Comments on the ISR
April 6, 2021	E-mail	HDR	Project Stakeholders	Filing of Response to Comments on the ISR
April 6, 2021	E-mail	Roanoke County	HDR	Recreation Project Comments
April 7, 2021	Letter	USFWS	AEP	TOYR Waiver Authorization
April 12, 2021	E-mail	HDR	USFWS and VDWR	TOYR Waiver Request
April 27, 2021	Letter	USFWS	EDGE	Receipt of the Recovery Permit Application
April 30, 2021	Letter (20210430-5599)	AEP	FERC	Third Quarterly Progress Report
May 3, 2021	E-mail	HDR	Project Stakeholders	Third Quarterly Progress Report
May 3, 2021	E-mail	HDR	USFWS	TOYR Waiver Request
May 10, 2021	Letter (20210510-3054)	FERC	AEP	Determination on Requests for Study Modifications
May 10, 2021	E-mail	HDR	USFWS	TOYR Waiver for Macroinvertebrate Study
May 13, 2021	E-mail	USFWS	AEP	TOYR Waiver Update
May 21, 2021	E-mail	HDR	USFWS	Response to Request for Information on Benthic Survey
May 26, 2021	E-mail	USFWS	AEP and HDR	Determination that Macroinvertebrate Study Not Likely Effect Roanoke Logperch
May 26, 2021	E-mail	HDR	USFWS	Macroinvertebrate Study Methodology
May 26, 2021	E-mail	USFWS	HDR	TOYR Waiver
May 26, 2021	E-mail	USFWS	HDR	TOYR Waiver
June 4, 2021	E-mail	HDR	Project Stakeholders	Recreation Stakeholder Meeting Summary and Follow-up

Niagara Relicensing (P-2466)
Correspondence Log

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June 17, 2021	E-mail	HDR	Project Stakeholders	Online Survey Resolution
June 30, 2021	E-mail	HDR	Project Stakeholders	Draft RLP Survey Call Summary
July 14, 2021	E-mail	HDR	USFWS and VDWR	Summary of Roanoke Logperch Larval Drift Study Conference Call
July 22, 2021	Letter	AEP	FERC	Fourth Quarterly Study Progress Report
July 27, 2021	E-mail	HDR	Project Stakeholders	Fourth Quarterly Study Progress Report
July 27, 2021	Letter	USFWS	EDGE	Endangered Species Permit
August 2, 2021	E-mail	EDGE	Project Stakeholders	Roanoke Logperch Update Memorandum
August 6, 2021	E-mail	AEP	HDR, EDGE	Approval of Snorkel Methodology for Fall 2021 RLP Sampling
August 9, 2021	E-mail	USFWS	HDR, AEP, EDGE, VDWR	Concurrence with switch to snorkel methods for fall 2021 RLP sampling
August 9, 2021	E-mail	VDWR	HDR, AEP, EDGE, USFWS	Concurrence with switch to snorkel methods for fall 2021 RLP sampling and recommendations from USFWS
September 8, 2021	Letter	AEP	Project Stakeholders	Cultural Resource Study Report Consultation
October 1, 2021	Letter (20211001-5246)	Appalachian	FERC	Filing of Draft License Application (DLA)
October 4, 2021	Email	HDR	Project Stakeholders	Notice of Filing DLA
October 4, 2021	Email	HDR	Roanoke Valley Greenway Commission	Contact change and notification of filing of DLA
November 3, 2021	Email/Letter	HDR	Project Stakeholders	Fifth Quarterly Study Progress Report
December 6, 2021	Letter (20211206-5160)	AEP	FERC	Filing of Updated Study Reports (USR)
December 6, 2021	E-mail	HDR	Project Stakeholders	Notice of Filing USR

Niagara Relicensing (P-2466)
Correspondence Log

DATE	TYPE (FERC accession number, if applicable)	FROM	TO	SUBJECT
December 15, 2021	Letter (20211215-5059)	USFWS	FERC	Comments on the DLA
December 27, 2021	Letter (20211227-5084)	AEP	FERC	USR Meeting Summary
December 27, 2021	E-mail	HDR	Project Stakeholders	Filing of USR Meeting Summary
December 27, 2021	E-mail	AEP	FORVA	Meeting Attendance and Follow-Up
December 27, 2021	Letter (20211227-5229)	Roanoke County	FERC	Comments on the DLA
December 28, 2021	Letter (20211228-5177)	Roanoke River Blueway Committee	FERC	Comments on the DLA
December 29, 2021	Letter (20211229-3028)	FERC	AEP	Comments on the DLA
December 29, 2021	Letter (20211229-5069)	Roanoke Valley Greenway Commission	FERC	Comments on the DLA
December 30, 2021	Letter (20211230-5172)	Roanoke Regional Partnership	FERC	Comments on the DLA
January 3, 2022	Letter (20220103-5073)	VDWR	FERC	Comments on the DLA
January 27, 2022	Letter (20220127-3057)	FERC	AEP	Comments on the USR
January 28, 2022	Letter (20220128-5460)	Roanoke River Blueway Committee	FERC	Comments on the USR
January 28, 2022	Letter (20220128-5462)	Roanoke Valley Greenway Commission	FERC	Comments on the USR

Niagara Relicensing (P-2466)
Correspondence Log

DATE	TYPE (FERC accession number, if applicable)	FROM	TO	SUBJECT
January 31, 2022	Letter (20220131- 5001)	FORVA	FERC	Comments on the USR



August 15, 2017

**Subject: Niagara Hydroelectric Project (FERC No. 2466)
Relicensing Pre-Application Document Questionnaire**

To the Attached Distribution List:

Appalachian Power Company (Appalachian) is the Licensee and operator of the Niagara Hydroelectric Project (FERC No. 2466) (Project) located on the Roanoke River in Roanoke County, Virginia. The Project is licensed by the Federal Energy Regulatory Commission (FERC).

The existing FERC license for the Project expires on February 29, 2024. Appalachian intends to pursue a new license for the Project and is preparing the Pre-Application Document (PAD) required by FERC's relicensing process. Appalachian has retained HDR, Inc. (HDR) for assistance with the relicensing process, including development of the PAD.

The PAD provides FERC and other entities with existing, relevant, and reasonably available information pertaining to the Project. This information is intended to help identify items of interest and related information needs, develop study requests and study plans, and prepare documents related to analyzing the relicensing application to be prepared by Appalachian. To prepare the PAD, Appalachian will use information in its possession and information obtained from others. On behalf of Appalachian, HDR is currently gathering information to support preparation of the PAD. Consistent with this effort, the purpose of this letter is to:

- 1) Notify interested governmental agencies, local governments, non-governmental organizations, Indian tribes, and individuals of the upcoming relicensing proceeding, and
- 2) Request your help in identifying existing, relevant, and reasonably available information related to the existing Project environment or known impacts or benefits of the Project.

Appalachian's goal is to produce a final comprehensive PAD by the end of 2017 and to file the PAD with the FERC in 2018. We are asking for your help to identify additional information of which you may be aware. To facilitate the information search, we have prepared the attached Pre-Application Document Information Questionnaire (PAD Questionnaire).

Appalachian is requesting that you provide any relevant information for the PAD. Relevant information would include site-or-region specific studies, data, reports, or management plans on any of the following resource areas:

- Geology and soils
- Recreation and land use
- Water resources
- Aesthetic resources
- Fish and aquatic resources
- Cultural resources
- Wildlife and botanical resources
- Socioeconomic resources
- Wetlands, riparian, and littoral habitat
- Tribal resources
- Rare, threatened, and endangered species

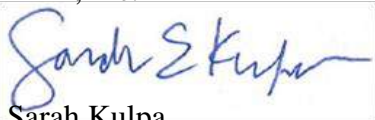
To help ensure that your relevant information and resources are available for inclusion in the PAD, please fill out the attached PAD Questionnaire and return to Sarah Kulpa (of HDR) via email at sarah.kulpa@hdrinc.com or in the enclosed self-addressed, stamped envelope.

HDR intends to include relevant information in the PAD. Therefore, we respectfully request a response within 30 days of receipt of this letter. This will allow time for follow-up contacts that may be necessary. If we do not receive a response from you within 30 days, this will indicate you are not aware of any existing, relevant, and reasonably available information that describes the Project environment or known potential impacts of the Project, and that, unless you are representative of an Indian tribe or federal or state agency, you do not wish to remain on the distribution list for this relicensing process.

We want to thank you in advance for helping identify information that meets the criteria for inclusion in the PAD. We appreciate your assistance and look forward to working with you during the relicensing process. If you have any questions regarding this request or would like additional information, please contact me at sarah.kulpa@hdrinc.com or via phone at (704) 248-3620 or Elizabeth Parcell who represents Appalachian at ebparcell@aep.com or via phone at (540) 985-2441.

Sincerely,

HDR, Inc.



Sarah Kulpa

Project Manager

Attachment

cc: Elizabeth Parcell, on behalf of Appalachian

DISTRIBUTION LIST

Niagara Hydroelectric Project (FERC No. 2466)

Charlene Dwin Vaughn
Advisory Council on Historic
Preservation
401 F Street NW, Suite 308
Washington, DC 20001-2637

Kimberly Bose
Federal Energy Regulatory Commission
888 1st St NE
Washington, DC 20426

FEMA Region 3
615 Chestnut Street
One Independence Mall, Sixth Floor
Philadelphia , PA 19106-4404

John Bullard
NOAA Fisheries Service
Greater Atlantic Reg. Fisheries Office
55 Great Republic Drive
Gloucester, MA 01930-2276

John A. Bricker
US Department of Agriculture
Natural Resources Conservation Service
1606 Santa Rosa Road, Suite 209
Richmond, VA 23229-5014

Harold Peterson
US Department of the Interior
545 Marriott Dr, Suite 700
Nashville, TN 37214

US Department of the Interior
1849 C Street, NW
Washington, DC 20240

Lindy Nelson, US Dept of the Interior
Philadelphia Region
Custom House, Room 244
200 Chestnut Street
Philadelphia , PA 19106

Barbara Rudnick
US Environmental Protection Agency
1650 Arch Street
Philadelphia , PA 19103-2029

Martin Miller
US Fish and Wildlife Service
300 Westgate Center Drive
Hadley, MA 01035

Cindy Schulz
US Fish and Wildlife Service
6669 Short Lane
Gloucester, VA 23061

Elizabeth Merz
US Forest Service
3714 Highway 16
Marion, VA 24354

US Forest Service
1400 Independence Avenue NW
Washington, DC 20230

US Geological Survey
John W. Powell Building
12201 Sunrise Valley Drive
Reston, VA 20192

Bob Goodlatte
US House of Representatives
10 Franklin Road SE, Suite 540
Roanoke, VA 24011

Tim Kaine
US Senate
231 Russell Senate Office Building
Washington, DC 20510

Mark Warner
US Senate
703 Hart Senate Office Building
Washington, DC 20510

Michael Reynolds
US National Park Service
1849 C Street, NW
Washington, DC 20240

Catherine Turton
US National Park Service
US Custom House, 3rd Floor
200 Chestnut Street
Philadelphia , PA 19106

Blue Ridge Parkway
199 Hemphill Knob Road
Asheville, NC 28803-8686

Blue Ridge National Heritage Area
195 Hemphill Knob Road
Asheville, NC 28803

Chris Sullivan
Virginia Department of Forestry
900 Natural Resources Drive
Charlottesville, VA 22903

Jess Jones
Freshwater Mollusk Conservation Center
Virginia Tech
1B Plantation Road
Blacksburg, VA 24061

Brian McGurk
VA Department of Environmental Quality
PO Box 1105
Richmond, VA 23218

Virginia Department of Environmental
Quality
3019 Peters Creek Road
Roanoke, VA 24019

Bettina Sullivan
Virginia Department of Environmental
Quality
PO Box 1105
Richmond, VA 23218

Tim Pace
VA Roanoke River Basin Advisory
Committee
PO Box 1105
Richmond, VA 23218

VA Department of Game and Inland
Fisheries
1132 Thomas Jefferson Road
Forest, VA 24551

Beth Reed
VA Dept of Conservation and Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219

Faye McKinney
VA Dept of Conservation and Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219

DISTRIBUTION LIST
Niagara Hydroelectric Project (FERC No. 2466)

Craig Seaver
VA Dept of Conservation and Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219

Julie Langan
VA Dept of Historic Resources
2801 Kensington Avenue
Richmond, VA 23221

Elizabeth Moore
Archaeological Society of Virginia
PO Box 70395
Richmond, VA 23255

Kelly Thomasson
Virginia Council on Indians
1111 East Broad Street, 4th Floor
Richmond, VA 23219

Terry McAuliffe
Office of the Governor
PO Box 1475
Richmond, VA 23218

Blue Ridge Soil and Water Conservation
District
1297 State Street
Rocky Mount, VA 24151

Thomas C. Gates
Roanoke County
PO Box 29800
Roanoke, VA 24018-0798

Sherman P. Lea, Sr.
City of Roanoke
Noel C. Taylor Municipal Building
215 Church Avenue
Roanoke, VA 24011

Robert Gray
Pamunkey Indian Tribe
191 Lay Landing Road
King William, VA 23086

John Seebach
American Rivers
1104 14th St NW, Suite 1400
Washington, DC 20005

Kevin Richard Colburn
American Whitewater
PO Box 1540
Cullowhee, NC 28779

Steve Moyer
Trout Unlimited
1777 N. Kent Street, Suite 100
Arlington, VA 22209

American Canoe Association
503 Sophia Street, Suite 100
Fredericksburg, VA 22401

Appalachian Trail Conservancy
110 South Park Drive
Blacksburg, VA 24063

Bill Tanger
Friends of the Rivers of Virginia / Friends
of the Roanoke
PO Box 1750
Roanoke, VA 24008-1750

Juanita Callis
Friends of the Rivers of Virginia / Friends
of the Roanoke
PO Box 1750
Roanoke, VA 24008-1750

Nature Conservancy
490 Westfield Road
Charlottesville, VA 22901-1633

Mike Pucci
Roanoke River Basin Association
150 Slayton Avenue
Danville, VA 24540

Upper Roanoke River Roundtable
PO Box 8221
Roanoke, VA 24014

Roanoke River Blueway
313 Luck Avenue SW
Roanoke, VA 24016

Liz Belcher
Roanoke Valley Greenway
1206 Kessler Mill Road
Salem, VA 24153

Blue Ridge Land Conservancy
722 1st Street SW, Suite L
Roanoke, VA 24016

Susan Mills
Friends of the Blue Ridge Parkway
PO Box 20986
Roanoke, VA 24018

Blue Ridge Parkway Foundation
717 South Marshall Street, Suite 105 B
Winston-Salem, NC 27101

**Niagara Hydroelectric Project (FERC Project No. 2466)
Relicensing Pre-Application Document Information Questionnaire**

Appalachian Power Company (Appalachian) is the Licensee and operator of the Niagara Hydroelectric Project (FERC No. 2466) (Project), located along the Roanoke River in Roanoke County, Virginia (see attached map). Appalachian, with assistance from HDR, Inc. (HDR), is beginning the Federal Energy Regulatory Commission (FERC) relicensing process for the Project. Accordingly, Appalachian is preparing a Pre-Application Document (PAD). The PAD provides FERC and other entities with existing, relevant, and reasonably available information pertaining to the Project.

This information is intended to help identify items of interest and related information needs, develop study requests and study plans, and prepare documents related to analyzing the relicensing application to be prepared by Appalachian. To prepare the PAD, Appalachian will use information in its possession and information obtained from others. This PAD Questionnaire will be used by Appalachian to help identify sources of existing, relevant, and reasonably available information that is not currently in Appalachian's possession. Comments and/or questions regarding this request may be sent to Sarah Kulpa with HDR via email at sarah.kulpa@hdrinc.com or via phone at (704) 248-3620, or to Elizabeth Parcell who represents Appalachian at ebparcell@aep.com or via phone at (540) 985-2441.

Please return this questionnaire in the enclosed, self-addressed, stamped envelope within 30 days of receipt to allow for any follow-up contact by Appalachian's or HDR's representative that may be needed. Not responding within 30 days indicates that you are not aware of any existing, relevant, and reasonably available information that describes the existing Project environment or known potential impacts of the Project.

Appalachian and HDR respectfully request the following information:

1. Information about person completing the questionnaire:

Name & Title	
Organization	
Address	
Phone	
Email Address	

Niagara Hydroelectric Project (FERC Project No. 2466)
Relicensing Pre-Application Document Information Questionnaire

2. Do you or your organization know of existing, relevant and reasonably available information that describes the existing Niagara Hydroelectric Project's environment (i.e., information regarding the Roanoke River in or close to the Niagara Hydroelectric Project)?

___ Yes (*If yes, please complete 2a through 2e*) ___ No (*If no, go to 3*)

- a. If yes, please circle the specific resource area(s) that the information relates to:

- | | |
|--|------------------------------|
| ■ Geology and soils | ■ Recreation and land use |
| ■ Water resources | ■ Aesthetic resources |
| ■ Fish and aquatic resources | ■ Cultural resources |
| ■ Wildlife and botanical resources | ■ Socio-economic resources |
| ■ Wetlands, riparian, and littoral habitat | ■ Tribal resources |
| ■ Rare, threatened & endangered species | ■ Other resource information |

- b. Please briefly describe the information referenced above or list available documents (*additional information may be provided on page 4 of this questionnaire*).

- c. Where can Appalachian obtain this information?

Niagara Hydroelectric Project (FERC Project No. 2466)
Relicensing Pre-Application Document Information Questionnaire

- d. Please indicate whether there is a specific representative you wish to designate for a potential follow-up contact by Appalachian's or HDR's representative for the resource area(s) checked above (*additional information may be provided on page 4 of this questionnaire*).

Representative Contact Information

Name	
Address	
Phone	
Email Address	

Name	
Address	
Phone	
Email Address	

- e. Based on the specific resources listed in 2a, are you aware of any specific issues or improvements pertaining to the identified resource area(s)? (*Additional information may be provided on page 4 of this questionnaire.*)

___ Yes (*please list specific issues below*) ___ No

Resource Area	Specific Issue

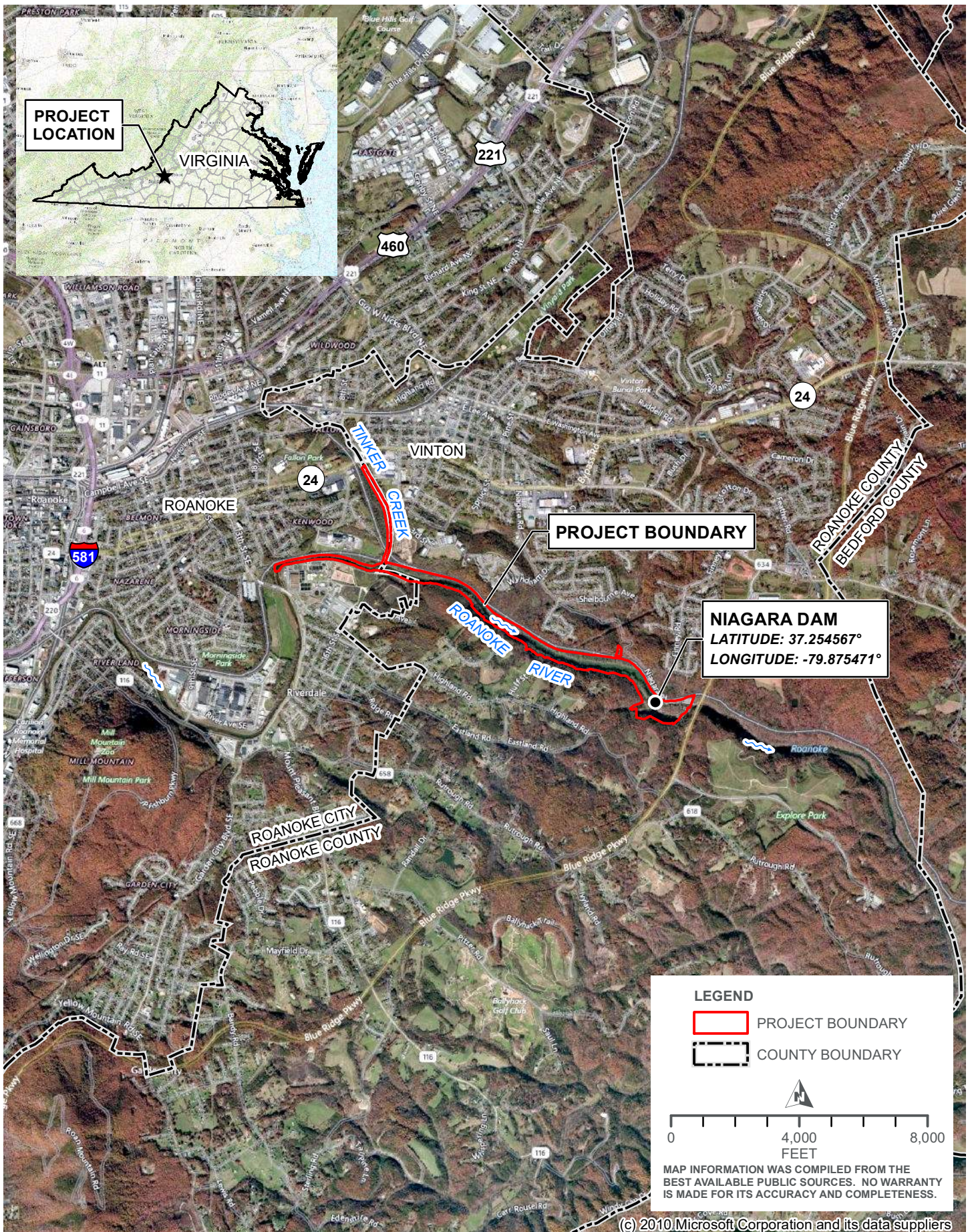
3. Do you or your organization plan to participate in the Niagara Hydroelectric Project relicensing proceeding? ___ Yes ___ No

Niagara Hydroelectric Project (FERC Project No. 2466)
Relicensing Pre-Application Document Information Questionnaire

4. We are interested in your comments. If you have comments and/or questions regarding the Niagara Hydroelectric Project or the relicensing process, please provide below. In addition, this questionnaire has been sent to the people/organizations shown on the attached distribution list; please let us know if there is anyone else you believe should receive this questionnaire that is not included on the attached distribution list.

(Comments and/or questions may be sent via email to: sarah.kulpa@hdrinc.com or ebparcell@aep.com)

As noted above, please return this questionnaire in the enclosed, self-addressed, stamped envelope within 30 days of receipt to allow for any follow-up contact by Appalachian's or HDR's representative that may be needed. Not responding within 30 days indicates that you are not aware of any existing, relevant, and reasonably available information that describes the existing Project environment or known potential impacts of the Project.



PROJECT LOCATION MAP **NIAGARA HYDROELECTRIC PROJECT (FERC NO. 2466)** **ROANOKE COUNTY, VIRGINIA**



August 15, 2017

Martin Miller, Chief
United States Fish and Wildlife Service
Northeast Region 5
300 Westgate Center Drive
Hadley, MA 01035

**Subject: Niagara Hydroelectric Project (FERC No. 2466)
Request for Threatened and Endangered Species Information**

Dear Mr. Miller,

On behalf of Appalachian Power Company (Appalachian), HDR, Inc. (HDR) is gathering information in support of the Pre-Application Document (PAD) for the upcoming Federal Energy Regulatory Commission (FERC) relicensing of the Niagara Hydroelectric Project (FERC No. 2466) (Project). In support of this process, HDR has requested an official species list regarding any threatened or endangered species and any critical habitat within the Project area using the United States Fish and Wildlife Service's (USFWS) IPaC system online.

The Niagara Hydroelectric Project is located on the Roanoke River in Roanoke County, Virginia. The attached report was generated from the USFWS' IPaC system and includes a map that shows the area of interest for which the information was requested and the general location of the facility.

It is our intent to include these results in the PAD. Therefore, we respectfully request your concurrence that this information is accurate within 30 days of the date of this letter. If you have any questions or need additional information regarding this Project or its location, please feel free to contact me at (704) 248-3620 or sarah.kulpa@hdrinc.com.

Thank you for your assistance with this request.

Sincerely,
HDR, Inc.

A handwritten signature in blue ink that reads "Sarah E. Kulpa". The signature is written in a cursive, flowing style.

Sarah Kulpa
Project Manager

Niagara Hydroelectric Project
Request for Threatened and Endangered Species Information
August 15, 2017
Page 2

Attachment

cc: Elizabeth Parcell, on behalf of Appalachian



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032
<http://www.fws.gov/northeast/virginiafield/>



In Reply Refer To:

August 14, 2017

Consultation Code: 05E2VA00-2017-SLI-4484

Event Code: 05E2VA00-2017-E-09984

Project Name: Niagara Hydroelectric Project

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to

utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
 - USFWS National Wildlife Refuges and Fish Hatcheries
-

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Virginia Ecological Services Field Office

6669 Short Lane

Gloucester, VA 23061-4410

(804) 693-6694

Project Summary

Consultation Code: 05E2VA00-2017-SLI-4484

Event Code: 05E2VA00-2017-E-09984

Project Name: Niagara Hydroelectric Project

Project Type: DAM

Project Description: Appalachian Power Company (Appalachian) is the Licensee and operator of the 2.4 megawatt Niagara Hydroelectric Project (FERC No. 2466) (Project) located on the Roanoke River in Roanoke County, Virginia. The Project is licensed by the Federal Energy Regulatory Commission (FERC).

The existing FERC license for the Project expires on February 29, 2024. Appalachian intends to pursue a new license for the Project and is preparing the Pre-Application Document (PAD) required by FERC's relicensing process. Appalachian has retained HDR, Inc. (HDR) for assistance with the relicensing process, including development of the PAD. As part of the data collection for the PAD, Appalachian is requesting information regarding rare, threatened and endangered species and critical habitat within the Project area.

Project Location:

Approximate location of the project can be viewed in Google Maps:

<https://www.google.com/maps/place/37.26401130112308N79.89572250791355W>



Counties: Roanoke, VA | Roanoke, VA

Endangered Species Act Species

There is a total of 3 threatened, endangered, or candidate species on this species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

Mammals

NAME	STATUS
Indiana Bat <i>Myotis sodalis</i> There is a final critical habitat designated for this species. Your location is outside the designated critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Fishes

NAME	STATUS
Roanoke Logperch <i>Percina rex</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1134	Endangered

Critical habitats

There are no critical habitats within your project area under this office's jurisdiction.

USFWS National Wildlife Refuges And Fish Hatcheries

Any activity proposed on [National Wildlife Refuge](#) lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuges or fish hatcheries within your project area.



August 15, 2017

Faye McKinney
Virginia Department of Conservation and Recreation
Natural Heritage Program
600 East Main Street, 24th Floor
Richmond, VA 23219

**Subject: Niagara Hydroelectric Project (FERC No. 2466)
Request for Threatened and Endangered Species Information**

Dear Ms. McKinney,

On behalf of Appalachian Power Company (Appalachian), HDR, Inc. (HDR) is gathering information in support of the Pre-Application Document (PAD) for the upcoming Federal Energy Regulatory Commission (FERC) relicensing of the Niagara Hydroelectric Project (FERC No. 2466) (Project). In support of this process, HDR is requesting information regarding the following within the Project area:

- State-listed threatened or endangered species;
- Species proposed for listing as threatened or endangered, or species of concern;
- Designated or proposed critical habitat; and
- Candidate species.

The Niagara Hydroelectric Project is located on the Roanoke River in Roanoke County, Virginia. The attached map shows the area of interest for which the information is being requested and the general location of the facility.

It is our intent to include the results of this information request in the PAD. Therefore, we respectfully request a response to this request within 30 days of the date of this letter. If you have any questions or need additional information regarding this Project or its location, please feel free to contact me at (704) 248-3620 or sarah.kulpa@hdrinc.com.

Thank you for your assistance with this request.

Sincerely,
HDR, Inc.

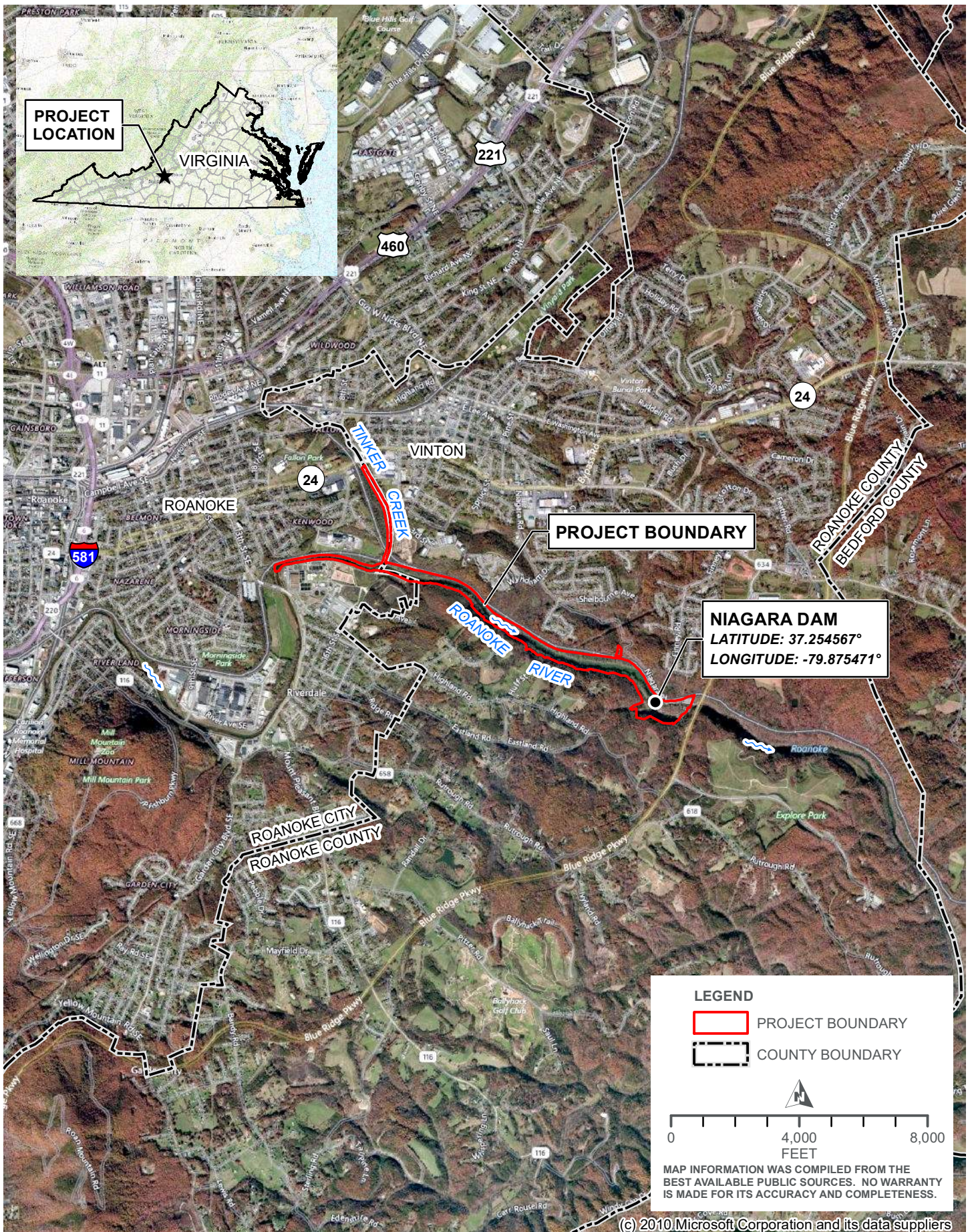
A handwritten signature in blue ink that reads "Sarah E. Kulpa".

Sarah Kulpa
Project Manager

Niagara Hydroelectric Project
Request for Threatened and Endangered Species Information
August 15, 2017
Page 2

Attachment

cc: Elizabeth Parcell, on behalf of Appalachian



PROJECT LOCATION MAP **NIAGARA HYDROELECTRIC PROJECT (FERC NO. 2466)** **ROANOKE COUNTY, VIRGINIA**



August 15, 2017

Bettina Sullivan, Manager
Virginia Department of Environmental Quality
Federal Consistency Office
PO Box 1105
Richmond, VA 23218

**Subject: Niagara Hydroelectric Project (FERC No. 2466)
Coastal Zone Consistency Determination**

Dear Ms. Sullivan,

On behalf of Appalachian Power Company (Appalachian), HDR, Inc. (HDR) is gathering information in support of the Pre-Application Document (PAD) for the upcoming Federal Energy Regulatory Commission (FERC) relicensing of the Niagara Hydroelectric Project (FERC No. 2466) (Project).

Consistent with this effort, HDR is requesting a determination from your office regarding the applicability of the State's Coastal Zone Policies to the Project, which is located on the Roanoke River in Roanoke County, Virginia. Based on a review of applicable information, we do not believe that the Project is located within the State's Coastal Zone and are requesting confirmation of this determination from your office. In support of this confirmation, we have included a map indicating the location of this facility.

It is our intent to include the results of the determination in the PAD. Therefore, we respectfully request a response to this determination within 30 days of the date of this letter. If you have any questions or need additional information regarding this Project or its location, please feel free to contact me at (704) 248-3620 or sarah.kulpa@hdrinc.com.

Thank you for your assistance with this request.

Sincerely,
HDR, Inc.

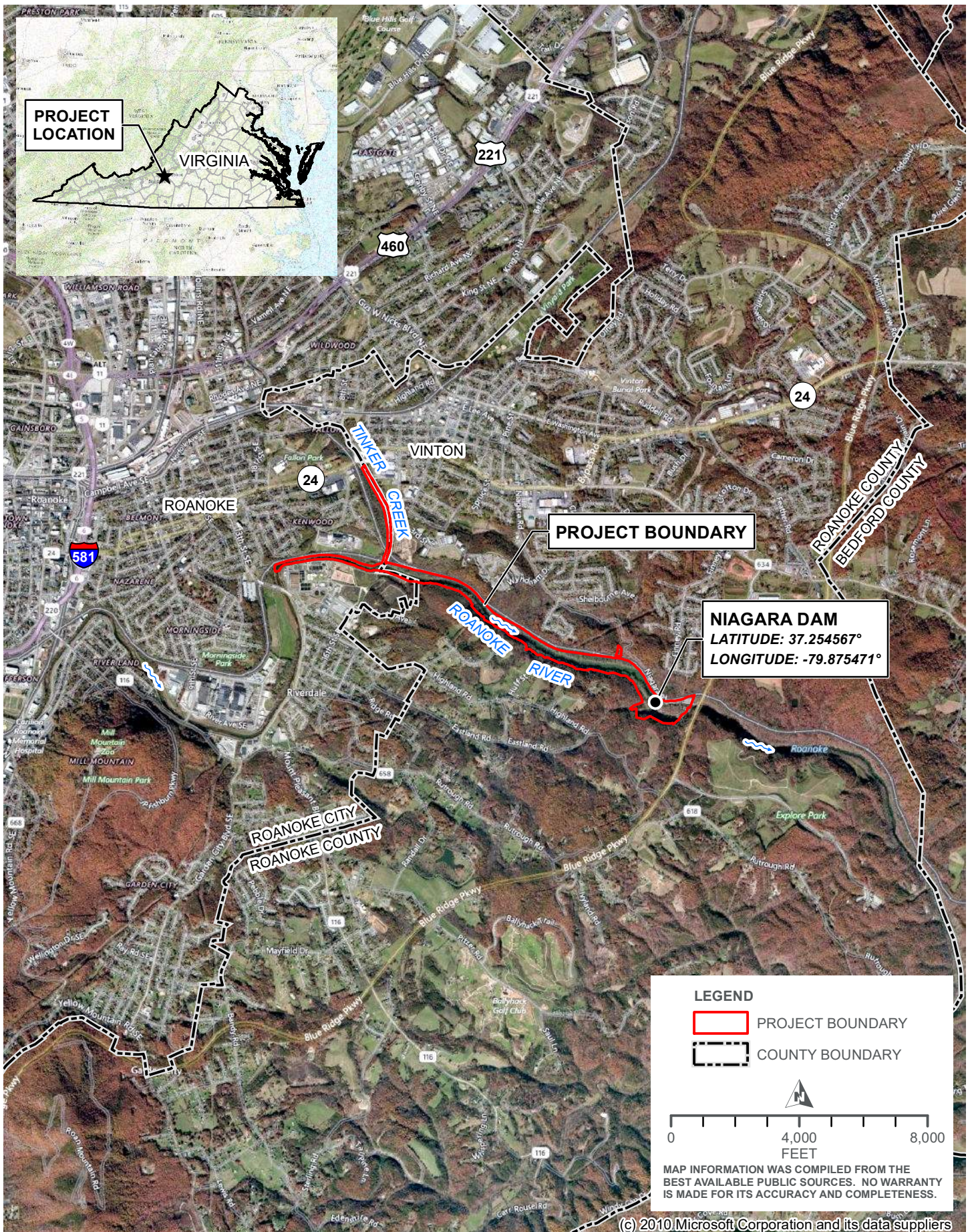
A handwritten signature in blue ink that reads "Sarah Kulpa".

Sarah Kulpa
Project Manager

Niagara Hydroelectric Project
Coastal Zone Consistency Determination
August 15, 2017
Page 2

Attachment

cc: Elizabeth Parcell, on behalf of Appalachian



PROJECT LOCATION MAP **NIAGARA HYDROELECTRIC PROJECT (FERC NO. 2466)** **ROANOKE COUNTY, VIRGINIA**

Niagara Hydroelectric Project (FERC Project No. 2466)
Relicensing Pre-Application Document Information Questionnaire

Appalachian Power Company (Appalachian) is the Licensee and operator of the Niagara Hydroelectric Project (FERC No. 2466) (Project), located along the Roanoke River in Roanoke County, Virginia (see attached map). Appalachian, with assistance from HDR, Inc. (HDR), is beginning the Federal Energy Regulatory Commission (FERC) relicensing process for the Project. Accordingly, Appalachian is preparing a Pre-Application Document (PAD). The PAD provides FERC and other entities with existing, relevant, and reasonably available information pertaining to the Project.

This information is intended to help identify items of interest and related information needs, develop study requests and study plans, and prepare documents related to analyzing the relicensing application to be prepared by Appalachian. To prepare the PAD, Appalachian will use information in its possession and information obtained from others. This PAD Questionnaire will be used by Appalachian to help identify sources of existing, relevant, and reasonably available information that is not currently in Appalachian's possession. Comments and/or questions regarding this request may be sent to Sarah Kulpa with HDR via email at sarah.kulpa@hdrinc.com or via phone at (704) 248-3620, or to Elizabeth Parcell who represents Appalachian at ebparcell@aep.com or via phone at (540) 985-2441.

Please return this questionnaire in the enclosed, self-addressed, stamped envelope within 30 days of receipt to allow for any follow-up contact by Appalachian's or HDR's representative that may be needed. Not responding within 30 days indicates that you are not aware of any existing, relevant, and reasonably available information that describes the existing Project environment or known potential impacts of the Project.

Appalachian and HDR respectfully request the following information:

1. Information about person completing the questionnaire:

Name & Title	Harold Peterson, Natural Resources Officer
Organization	Bureau of Indian Affairs, Eastern Region Office
Address	515 Marcott Dr Ste 700 Nashville, TN 37214
Phone	615-564-6838
Email Address	harold.peterson@bia.gov

Niagara Hydroelectric Project (FERC Project No. 2466)
Relicensing Pre-Application Document Information Questionnaire

2. Do you or your organization know of existing, relevant and reasonably available information that describes the existing Niagara Hydroelectric Project's environment (i.e., information regarding the Roanoke River in or close to the Niagara Hydroelectric Project)?

✓ Yes (If yes, please complete 2a through 2e) No (If no, go to 3)

- a. If yes, please circle the specific resource area(s) that the information relates to:

- | | |
|---|--|
| <input type="checkbox"/> Geology and soils | <input type="checkbox"/> Recreation and land use |
| <input type="checkbox"/> Water resources | <input type="checkbox"/> Aesthetic resources |
| <input type="checkbox"/> Fish and aquatic resources | <input type="checkbox"/> Cultural resources |
| <input type="checkbox"/> Wildlife and botanical resources | <input type="checkbox"/> Socio-economic resources |
| <input type="checkbox"/> Wetlands, riparian, and littoral habitat | <input checked="" type="checkbox"/> Tribal resources |
| <input type="checkbox"/> Rare, threatened & endangered species | <input type="checkbox"/> Other resource information |

- b. Please briefly describe the information referenced above or list available documents (additional information may be provided on page 4 of this questionnaire).

The Pamunkey Indian Tribe has an interest in all projects in Virginia.

- c. Where can Appalachian obtain this information?

The Tribe has a new mailing address:

1054 ~~1054~~ Pocahontas Trail
King William, VA 23086

Niagara Hydroelectric Project (FERC Project No. 2466)
Relicensing Pre-Application Document Information Questionnaire

- d. Please indicate whether there is a specific representative you wish to designate for a potential follow-up contact by Appalachian's or HDR's representative for the resource area(s) checked above (*additional information may be provided on page 4 of this questionnaire*).

Representative Contact Information

Name	
Address	
Phone	
Email Address	

Name	
Address	
Phone	
Email Address	

- e. Based on the specific resources listed in 2a, are you aware of any specific issues or improvements pertaining to the identified resource area(s)? (*Additional information may be provided on page 4 of this questionnaire.*)

☐ Yes (*please list specific issues below*)

☒ No

Resource Area	Specific Issue

3. Do you or your organization plan to participate in the Niagara Hydroelectric Project relicensing proceeding? ☒ Yes ☐ No

Niagara Hydroelectric Project (FERC Project No. 2466)
Relicensing Pre-Application Document Information Questionnaire

4. We are interested in your comments. If you have comments and/or questions regarding the Niagara Hydroelectric Project or the relicensing process, please provide below. In addition, this questionnaire has been sent to the people/organizations shown on the attached distribution list; please let us know if there is anyone else you believe should receive this questionnaire that is not included on the attached distribution list.

(Comments and/or questions may be sent via email to: sarah.kulpa@hdrinc.com or ebparcell@aep.com)

As noted above, please return this questionnaire in the enclosed, self-addressed, stamped envelope within 30 days of receipt to allow for any follow-up contact by Appalachian's or HDR's representative that may be needed. Not responding within 30 days indicates that you are not aware of any existing, relevant, and reasonably available information that describes the existing Project environment or known potential impacts of the Project.

Niagara Hydroelectric Project (FERC Project No. 2466)
Relicensing Pre-Application Document Information Questionnaire

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This information is intended to help identify items of interest and related information needs, develop study requests and study plans, and prepare documents related to analyzing the relicensing application to be prepared by Appalachian. To prepare the PAD, Appalachian will use information in its possession and information obtained from others. This PAD Questionnaire will be used by Appalachian to help identify sources of existing, relevant, and reasonably available information that is not currently in Appalachian's possession. Comments and/or questions regarding this request may be sent to Sarah Kulpa with HDR via email at sarah.kulpa@hdrinc.com or via phone at (704) 248-3620, or to Elizabeth Parcell who represents Appalachian at ebparcell@aep.com or via phone at (540) 985-2441.

Please return this questionnaire in the enclosed, self-addressed, stamped envelope within 30 days of receipt to allow for any follow-up contact by Appalachian's or HDR's representative that may be needed. Not responding within 30 days indicates that you are not aware of any existing, relevant, and reasonably available information that describes the existing Project environment or known potential impacts of the Project.

Appalachian and HDR respectfully request the following information:

1. Information about person completing the questionnaire:

Name & Title	Bill Tanger, Chair, FORVA Bill Tanger, co-chair Ro Riv Blueway Comm
Organizations	Friends of the Rivers of VA Roanoke River Blueway Committee
Address	257 Dancing Tree Lane Hollins VA 24019
Phone Cell	540.266.0237
Email Address	bill.tanger@verizon.net

Niagara Hydroelectric Project (FERC Project No. 2466)
Relicensing Pre-Application Document Information Questionnaire

2. Do you or your organization know of existing, relevant and reasonably available information that describes the existing Niagara Hydroelectric Project's environment (i.e., information regarding the Roanoke River in or close to the Niagara Hydroelectric Project)?

Yes (If yes, please complete 2a through 2e) No (If no, go to 3)

- a. If yes, please circle the specific resource area(s) that the information relates to:

- | | |
|--|---|
| <input checked="" type="checkbox"/> Geology and soils | <input checked="" type="checkbox"/> Recreation and land use |
| <input checked="" type="checkbox"/> Water resources | <input type="checkbox"/> Aesthetic resources |
| <input checked="" type="checkbox"/> Fish and aquatic resources | <input type="checkbox"/> Cultural resources |
| <input checked="" type="checkbox"/> Wildlife and botanical resources | <input type="checkbox"/> Socio-economic resources |
| <input checked="" type="checkbox"/> Wetlands, riparian, and littoral habitat | <input type="checkbox"/> Tribal resources |
| <input checked="" type="checkbox"/> Rare, threatened & endangered species | <input type="checkbox"/> Other resource information |

- b. Please briefly describe the information referenced above or list available documents (additional information may be provided on page 4 of this questionnaire).

Roanoke River Blueway Committee has much information on river recreation, including:

- website
- map
- brochure (under development)
- access issue information

- c. Where can Appalachian obtain this information?

Roanoke River Blueway Committee
TORVA

Niagara Hydroelectric Project (FERC Project No. 2466)
Relicensing Pre-Application Document Information Questionnaire

- d. Please indicate whether there is a specific representative you wish to designate for a potential follow-up contact by Appalachian's or HDR's representative for the resource area(s) checked above (*additional information may be provided on page 4 of this questionnaire*).

Representative Contact Information

Name	Bill Tanger
Address	257 Dancing Tree Lane Hollins VA 24019
Phone	540-266-0237
Email Address	Bill.Tanger@verizon.net

Name	
Address	
Phone	
Email Address	

- e. Based on the specific resources listed in 2a, are you aware of any specific issues or improvements pertaining to the identified resource area(s)? (*Additional information may be provided on page 4 of this questionnaire.*)

☒ Yes (please list specific issues below) ☐ No

Resource Area	Specific Issue
Niagara pond	Portage around dam needs review and better solution
	Access at dam needs better plan

3. Do you or your organization plan to participate in the Niagara Hydroelectric Project relicensing proceeding? ☒ Yes ☐ No

Niagara Hydroelectric Project (FERC Project No. 2466)
Relicensing Pre-Application Document Information Questionnaire

4. We are interested in your comments. If you have comments and/or questions regarding the Niagara Hydroelectric Project or the relicensing process, please provide below. In addition, this questionnaire has been sent to the people/organizations shown on the attached distribution list; please let us know if there is anyone else you believe should receive this questionnaire that is not included on the attached distribution list.

*Dist list:
Susan Mills is no longer the contact
for Friends of the BR Parkway*

(Comments and/or questions may be sent via email to: sarah.kulpa@hdrinc.com or ebparcell@aep.com)

As noted above, please return this questionnaire in the enclosed, self-addressed, stamped envelope within 30 days of receipt to allow for any follow-up contact by Appalachian's or HDR's representative that may be needed. Not responding within 30 days indicates that you are not aware of any existing, relevant, and reasonably available information that describes the existing Project environment or known potential impacts of the Project.

Niagara Hydroelectric Project (FERC Project No. 2466)
Relicensing Pre-Application Document Information Questionnaire

Appalachian Power Company (Appalachian) is the Licensee and operator of the Niagara Hydroelectric Project (FERC No. 2466) (Project), located along the Roanoke River in Roanoke County, Virginia (see attached map). Appalachian, with assistance from HDR, Inc. (HDR), is beginning the Federal Energy Regulatory Commission (FERC) relicensing process for the Project. Accordingly, Appalachian is preparing a Pre-Application Document (PAD). The PAD provides FERC and other entities with existing, relevant, and reasonably available information pertaining to the Project.

This information is intended to help identify items of interest and related information needs, develop study requests and study plans, and prepare documents related to analyzing the relicensing application to be prepared by Appalachian. To prepare the PAD, Appalachian will use information in its possession and information obtained from others. This PAD Questionnaire will be used by Appalachian to help identify sources of existing, relevant, and reasonably available information that is not currently in Appalachian's possession. Comments and/or questions regarding this request may be sent to Sarah Kulpa with HDR via email at sarah.kulpa@hdrinc.com or via phone at (704) 248-3620, or to Elizabeth Parcell who represents Appalachian at ebparcell@app.com or via phone at (540) 985-2441.

Please return this questionnaire in the enclosed, self-addressed, stamped envelope within 30 days of receipt to allow for any follow-up contact by Appalachian's or HDR's representative that may be needed. Not responding within 30 days indicates that you are not aware of any existing, relevant, and reasonably available information that describes the existing Project environment or known potential impacts of the Project.

Appalachian and HDR respectfully request the following information:

1. Information about person completing the questionnaire:

Name & Title	Mr. Richard McCorkle Fish and Wildlife Biologist
Organization	U.S. Fish & Wildlife Service
Address	110 Radnor Rd., Suite 101 State College, PA 16801
Phone	814-206-7470
Email Address	richard_mccorkle@fws.gov

Niagara Hydroelectric Project (FERC Project No. 2466)
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2. Do you or your organization know of existing, relevant and reasonably available information that describes the existing Niagara Hydroelectric Project's environment (i.e., information regarding the Roanoke River in or close to the Niagara Hydroelectric Project)?

 ? Yes (If yes, please complete 2a through 2e) No (If no, go to 3)

- a. If yes, please circle the specific resource area(s) that the information relates to:

- | | |
|--|---|
| <input checked="" type="checkbox"/> Geology and soils | <input type="checkbox"/> Recreation and land use |
| <input checked="" type="checkbox"/> Water resources | <input type="checkbox"/> Aesthetic resources |
| <input checked="" type="checkbox"/> Fish and aquatic resources | <input type="checkbox"/> Cultural resources |
| <input checked="" type="checkbox"/> Wildlife and botanical resources | <input type="checkbox"/> Socio-economic resources |
| <input checked="" type="checkbox"/> Wetlands, riparian, and littoral habitat | <input type="checkbox"/> Tribal resources |
| <input checked="" type="checkbox"/> Rare, threatened & endangered species | <input type="checkbox"/> Other resource information |

- b. Please briefly describe the information referenced above or list available documents (additional information may be provided on page 4 of this questionnaire).

We maintain a GIS database* of federally listed threatened and endangered species locations. Also included are candidate species. Roanoke logperch occurs in the project area. My agency also maintains National Wetland Inventory data which should be available on-line.

*Not publicly available

- c. Where can Appalachian obtain this information?

<https://www.fws.gov/wetlands/> - for NWI data

Niagara Hydroelectric Project (FERC Project No. 2466)
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- d. Please indicate whether there is a specific representative you wish to designate for a potential follow-up contact by Appalachian's or HDR's representative for the resource area(s) checked above (additional information may be provided on page 4 of this questionnaire).

Representative Contact Information

Name	Richard McCorkle
Address	
Phone	
Email Address	

Name	
Address	
Phone	
Email Address	

- e. Based on the specific resources listed in 2a, are you aware of any specific issues or improvements pertaining to the identified resource area(s)? (Additional information may be provided on page 4 of this questionnaire.)

☐ Yes (please list specific issues below)

☐ No

Resource Area	Specific Issue
RTE species	Roanoke logperch entrainment or other effects are possible concern

3. Do you or your organization plan to participate in the Niagara Hydroelectric Project relicensing proceeding? ☒ Yes ☐ No

Pre-Application Document Information Questionnaire for FERC Licensing

1. Contact Information for person completing the questionnaire:

Name & Title: Drew Hammond, Water Withdrawal Permitting & Compliance Manager
Organization: Virginia Department of Environmental Quality
Office of Water Supply
Address: 629 East Main St, Richmond VA 23218
Phone: 804-698-4101
Email Address: Andrew.Hammond@deq.virginia.gov

2. Do you know of any reasonably available materials or information related to the Project or the Project's environment?

☒ Yes (If yes, please complete 2.a. thru 2.e.) ☐ No (If no, please go to 3.)

a. Please indicate the specific resource area(s) for which you have information:

- | | |
|---|---|
| <input checked="" type="checkbox"/> Geology and soils | <input type="checkbox"/> Recreation and land use |
| <input checked="" type="checkbox"/> Water resources | <input type="checkbox"/> Aesthetic resources |
| <input checked="" type="checkbox"/> Fish and aquatic resources | <input type="checkbox"/> Cultural resources |
| <input type="checkbox"/> Wildlife and botanical resources | <input type="checkbox"/> Socio-economic resources |
| <input type="checkbox"/> Wetlands, riparian, and littoral habitat | <input type="checkbox"/> Tribal resources |
| <input type="checkbox"/> Rare, threatened & endangered species | <input checked="" type="checkbox"/> Other resource information WQ |

b. Please briefly describe the information or list available documents: (Additional information may be provided on a separate page.)

- Roanoke River flow data
- Upstream and downstream water users and associated water withdrawals in the Roanoke River and its watershed
- Roanoke River water quality data

c. Where and how can Appalachian obtain this information?

DEQ Office of Water Supply has information on flow data and upstream and downstream water uses. Flow data can also be obtained through the USGS website. Water quality data for the Roanoke River can be obtained from the DEQ website or from the DEQ Water Quality Monitoring Program.

d. Please provide the names of other persons in your organization whom you wish to designate for a potential follow-up contact for the resource area(s) checked above. If you know of others who are not part of your organization but who may have relevant information, please provide their name(s) and contact information as well. **(Additional contacts may be provided on a separate page.)**

Representative Contact Information

Name & Title: Tony Cario, Water Withdrawal Permit Writer
Organization: Virginia Department of Environmental Quality
Office of Water Supply
Address: P.O. Box 1105, Richmond VA 23218
Phone: 804-698-4089
Email Address: Anthony.Cario@deq.virginia.gov

Other Contact Information

Name & Title: Scott Kudlas, Director Office of Water Supply
Organization: Virginia Department of Environmental Quality
Address: P.O. Box 1105, Richmond VA 23218
Phone: (804) 698-4456
Email Address: Scott.Kudlas@deq.virginia.gov

e. Based on the resources listed in 2.a., are you aware of any specific issues pertaining to the identified resource area(s) such as water quality, wildlife habitat, endangered species or cultural resources that may be affected by the Project operations? **(Additional information may be provided on a separate page.)**

☒ Yes (Please list specific issues below) ☐ No

Resource Area

Specific issue

Water quality – May be affected by the alteration of flow affecting water temperature, dissolved oxygen levels or other water quality aspects in the Roanoke River.

Downstream water uses – Downstream water withdrawals for public water supplies or other beneficial uses may be affected by the alterations of flow from a hydroelectric facility and would need to be assessed in any permit review.

3. Do you or your organization plan to participate in the Niagara Hydroelectric Project relicensing process?

☒ Yes (Please list specific issues below) ☐ No

4. We are interested in your comments. If you have comments and/or questions regarding the Niagara Hydroelectric Project, or the relicensing process please provide below:

A Virginia Water Protection Permit (VWP permit) issued by the DEQ Office of Water Supply will be required for any construction activities in the Roanoke River as well as for the alterations of flow related to the operation of a hydroelectric plant on the river. The VWP

permit serves as the Clean Water Act § 401 state certification for the FERC license. Please contact the DEQ Office of Water Supply about the VWP Permitting process.

The following links provide information about the VWP permitting process and flow in the Roanoke River that would be useful to permitting a hydroelectric facility.

<http://www.deq.virginia.gov/Programs/Water/WaterSupplyWaterQuantity.aspx>

<http://www.deq.virginia.gov/Programs/Water/WaterSupplyWaterQuantity/WaterWithdrawalPermittingandCompliance/SurfaceWaterWithdrawalPermittingandFees.aspx>

<https://va.water.usgs.gov/>

Yayac, Maggie

Subject: FW: project submittal with DCR

From: Rhur, Robbie (DCR) [<mailto:Robbie.Rhur@dcr.virginia.gov>]
Sent: Wednesday, August 23, 2017 2:30 PM
To: Kulpa, Sarah
Subject: RE: project submittal with DCR

Hi Sarah;

I am your contact for recreation and scenic resources. Information Services is the section Rene manages. Craig Sever is our Park Director, so if a dam is near a park, he needs it too. In other words all three of us could potentially need copies. I prefer an electronic copy and Rene want projects submitted through the website. Craig would likely prefer electronic too cause he will forward it to the Park manager.

Have a great week
Robbie

From: Kulpa, Sarah [<mailto:Sarah.Kulpa@hdrinc.com>]
Sent: Wednesday, August 23, 2017 2:18 PM
To: Rhur, Robbie (DCR)
Cc: ebparcell@aep.com
Subject: RE: project submittal with DCR

Hi Robbie,

Sorry about that; looked like we were having intermittent email trouble this morning. I received your voicemail – thanks very much for the explanation and directions. We'll resubmit as you've directed.

We would certainly welcome any relevant information regarding recreation and scenic resources. By separate mailings (also addressed to Beth Reed, as well as Craig Seaver and Rene Hypes) we also sent a "PAD Questionnaire" for each of these projects requesting information about a variety of resources, if you are able to respond to those and advise as to any designated DCR contacts for these mailing lists moving forward.

Thank you again for your time and feedback.

Sarah Kulpa
D 704.248.3620 M 315.415.8703



hdrinc.com/follow-us

From: Rhur, Robbie (DCR) [<mailto:Robbie.Rhur@dcr.virginia.gov>]
Sent: Wednesday, August 23, 2017 2:00 PM
To: Kulpa, Sarah
Subject: project submittal with DCR

Good Afternoon Sarah:

My earlier email bounced back, so I thought I would try again.

Two letters, addressed to Beth Reed, were received requesting information regarding potential impacts due to relicensing of the Niagara Dam (FERC # 2466) and Byllesby-Buck Dam (FERC # 2514). While I am happy to provide information regarding recreation and scenic resources you must make a request to DCR's Division of Natural Heritage for our threatened and endangered species information. Please contact Information Services at <http://www.dcr.virginia.gov/natural-heritage/infoservices> to make your request or Rene Hypes at rene.hypes@dcr.virginia.gov.

Thank you

Robbie Rhur
Environmental Review Coordinator/DCR
600 E Main Street 17th Floor
Richmond VA 23219
804-371-2594

Robbie Rhur
Environmental Review Coordinator/DCR
600 E Main Street 17th Floor
Richmond VA 23219
804-371-2594



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

Street address: 629 East Main Street, Richmond, Virginia 23219

Mailing address: P.O. Box 1105, Richmond, Virginia 23218
www.deq.virginia.gov

Molly Joseph Ward
Secretary of Natural Resources

David K. Paylor
Director

(804) 698-4000
1-800-592-5482

September 1, 2017

Sarah Kulpa
HDR, Inc.
440 S. Church Street, Suites 900 & 1000
Charlotte, North Carolina 28202-2075
Via email: sarah.kulpa@hdrinc.com

RE: Niagara Hydroelectric Project (FERC No. 2466), Roanoke County, Virginia

Dear Ms. Kulpa:

This letter is in response to the scoping request for the above-referenced project.

As you may know, the Department of Environmental Quality, through its Office of Environmental Impact Review (DEQ-OEIR), is responsible for coordinating Virginia's review of federal consistency documents prepared pursuant to the Coastal Zone Management Act which applies to all federal activities which are reasonably likely to affect any land or water use or natural resources of Virginia's designated coastal resources management area must be consistent with the enforceable policies Virginia Coastal Zone Management (CZM) Program. Virginia's coastal management area includes most of Tidewater Virginia, as defined by the Code of Virginia § 28.2-100. Roanoke County is not located within Virginia's coastal management area and it appears to be unlikely that this project would affect any land or water use or natural resources of Virginia's designated coastal resources management area. Therefore, a federal consistency certification is not required for this project.

In addition to coordinating federal consistency reviews, DEQ-OEIR is responsible for coordinating Virginia's review of federal environmental documents prepared pursuant to the National Environmental Policy Act (NEPA) and responding to appropriate federal officials on behalf of the Commonwealth. The information below may assist you in the preparation of any NEPA document.

DOCUMENT SUBMISSIONS

In order to ensure an effective coordinated review of the NEPA document, notification of the NEPA document should be sent directly to OEIR. We request that you submit one electronic to eir@deq.virginia.gov (10 MB maximum) or make the documents available for download at a website or a file transfer protocol (ftp) site.

The NEPA document should include U.S. Geological Survey topographic maps as part of the information. We strongly encourage you to issue shape files with the NEPA document. In addition, project details should be adequately described for the benefit of the reviewers.

DATA BASE ASSISTANCE

Below is a list of databases that may assist you in the preparation of a NEPA document:

- DEQ Online Database: Virginia Environmental Geographic Information Systems

Information on Permitted Solid Waste Management Facilities, Impaired Waters, Petroleum Releases, Registered Petroleum Facilities, Permitted Discharge (Virginia Pollution Discharge Elimination System Permits) Facilities, Resource Conservation and Recovery Act (RCRA) Sites, Water Monitoring Stations, National Wetlands Inventory:

- www.deq.virginia.gov/ConnectWithDEQ/VEGIS.aspx

- DEQ Virginia Coastal Geospatial and Educational Mapping System (GEMS)

Virginia's coastal resource data and maps; coastal laws and policies; facts on coastal resource values; and direct links to collaborating agencies responsible for current data:

- <http://128.172.160.131/gems2/>

- MARCO Mid-Atlantic Ocean Data Portal

The Mid-Atlantic Ocean Data Portal is a publicly available online toolkit and resource center that consolidates available data and enables users to visualize and analyze ocean resources and human use information such as fishing grounds, recreational areas, shipping lanes, habitat areas, and energy sites, among others.

<http://portal.midatlanticocean.org/visualize/#x=-73.24&y=38.93&z=7&logo=true&controls=true&basemap=Ocean&tab=data&legends=false&layers=true>

- DHR Data Sharing System.

Survey records in the DHR inventory:

- www.dhr.virginia.gov/archives/data_sharing_sys.htm

- DCR Natural Heritage Search

Produces lists of resources that occur in specific counties, watersheds or physiographic regions:

- www.dcr.virginia.gov/natural_heritage/dbsearchtool.shtml

- DGIF Fish and Wildlife Information Service

Information about Virginia's Wildlife resources:

- <http://vafwis.org/fwis/>

- Environmental Protection Agency (EPA) Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Database: Superfund Information Systems

Information on hazardous waste sites, potentially hazardous waste sites and remedial activities across the nation, including sites that are on the National Priorities List (NPL) or being considered for the NPL:

- www.epa.gov/superfund/sites/cursites/index.htm

- EPA RCRAInfo Search

Information on hazardous waste facilities:

- www.epa.gov/enviro/facts/rcrainfo/search.html

- EPA Envirofacts Database

EPA Environmental Information, including EPA-Regulated Facilities and Toxics Release Inventory Reports:

- www.epa.gov/enviro/index.html

- EPA NEPAassist Database

Facilitates the environmental review process and project planning:

<http://nepaassisttool.epa.gov/nepaassist/entry.aspx>

If you have questions about the environmental review process and/or the federal consistency review process, please feel free to contact me (telephone (804) 698-4204 or e-mail bettina.sullivan@deq.virginia.gov).

I hope this information is helpful to you.

Sincerely,

A handwritten signature in dark ink that reads "Bettina Sullivan". The signature is written in a cursive, flowing style.

Bettina Sullivan, Program Manager
Environmental Impact Review and
Long-Range Priorities

Molly Joseph Ward
Secretary of Natural Resources

Clyde E. Cristman
Director



Rochelle Altholz
*Deputy Director of
Administration and Finance*

David C. Dowling
*Deputy Director of
Soil and Water Conservation
and Dam Safety*

Thomas L. Smith
Deputy Director of Operations

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

MEMORANDUM

DATE: September 13, 2017

TO: Sarah Kulpa, HDR

FROM: Roberta Rhur, Environmental Impact Review Coordinator

SUBJECT: DCR 17-022, Niagara Dam relicensing FERC # 2466

Division of Planning and Recreation Resources

The Department of Conservation and Recreation (DCR), Division of Planning and Recreation Resources (PRR), develops the *Virginia Outdoors Plan* and coordinates a broad range of recreational and environmental programs throughout Virginia. These include the Virginia Scenic Rivers program; Trails, Greenways, and Blueways; Virginia State Park Master Planning and State Park Design and Construction. The remaining DCR divisions have no comments regarding the scope of this project. Thank you for the opportunity to comment.

The Niagara Dam Dams impounds the Roanoke River, which is an established water trail and is a potential scenic river. Because this river is used extensively by recreation boaters DCR recommends serious consideration for safe portage around the dam for the and that any and all safety measures are put into place to allow a safe boating experience.

Yayac, Maggie

Subject: FW: Niagara Hydroelectric Project - Preapplication Document Questionnaire

Maggie Yayac

D 704.248.3666 M 610.299.0959

hdrinc.com/follow-us

From: Kulpa, Sarah
Sent: Wednesday, September 13, 2017 2:11 PM
To: Cario, Anthony (DEQ) <Anthony.Cario@deq.virginia.gov>
Cc: Elizabeth B Parcell <ebparcell@aep.com>
Subject: RE: Niagara Hydroelectric Project - Preapplication Document Questionnaire

Thanks very much, Tony, for your response and the additional information. We have started to identify and compile existing water quality data and may be back in touch with DEQ re: Roanoke River data.

Thanks again for your participation in this process.

Sarah Kulpa

D 704.248.3620 M 315.415.8703



hdrinc.com/follow-us

From: Cario, Anthony (DEQ) [<mailto:Anthony.Cario@deq.virginia.gov>]
Sent: Tuesday, September 12, 2017 5:14 PM
To: Elizabeth B Parcell; Kulpa, Sarah
Subject: Niagara Hydroelectric Project - Preapplication Document Questionnaire

Liz/Sarah, Here is a response regarding the FERC relicense questionnaire for Niagara hydroelectric

Thanks

Tony Cario

Environmental Specialist
Office of Water Supply
Department of Environmental Quality
P.O. Box 1105, Richmond, VA 23218
804-698-4089
anthony.cario@deq.virginia.gov
www.deq.virginia.gov

Yayac, Maggie

Subject: FW: Niagra PAD Questionnaire
Attachments: Niagara Project PAD Questionnaire.doc

From: Paula Shoffner [<mailto:paulas@sml.us.com>]
Sent: Thursday, September 14, 2017 2:38 PM
To: Kulpa, Sarah
Subject: Niagra PAD Questionnaire

Ms. Kulpa,
Please find attached the completed questionnaire referenced above on behalf of Tri-County Lakes Administrative Commission. It was sent to me by Kelly McVane with instructions to return it to you after completion. If you have questions or if you need additional information, please do not hesitate to contact me by email or at the phone number provided below.

Thank you,

Paula Shoffner

Paula Shoffner
Executive Director
Tri-County Lakes Administrative Commission
Phone 540.721.4400

Niagara Hydroelectric Project (FERC Project No. 2466) Relicensing Pre-Application Document Information Questionnaire

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Please return this questionnaire in the enclosed, self-addressed, stamped envelope within 30 days of receipt to allow for any follow-up contact by Appalachian's or HDR's representative that may be needed. Not responding within 30 days indicates that you are not aware of any existing, relevant, and reasonably available information that describes the existing Project environment or known potential impacts of the Project.

Appalachian and HDR respectfully request the following information:

1. Information about person completing the questionnaire:

Name & Title	Paula Shoffner, Executive Director
Organization	Tri-County Lakes Administrative Commission
Address	400 Scruggs Rd, Suite 200 Moneta, VA 24121
Phone	540-721-4400
Email Address	paulas@sml.us.com

Niagara Hydroelectric Project (FERC Project No. 2466)
Relicensing Pre-Application Document Information Questionnaire

2. Do you or your organization know of existing, relevant and reasonably available information that describes the existing Niagara Hydroelectric Project's environment (i.e., information regarding the Roanoke River in or close to the Niagara Hydroelectric Project)?

X Yes (*If yes, please complete 2a through 2e*) ___ No (*If no, go to 3*)

- a. If yes, please circle the specific resource area(s) that the information relates to:

- | | |
|--|---|
| <ul style="list-style-type: none">■ Geology and soils■ Water resources■ Fish and aquatic resources■ Wildlife and botanical resources■ Wetlands, riparian, and littoral habitat■ Rare, threatened & endangered species | <ul style="list-style-type: none">■ Recreation and land use■ Aesthetic resources■ Cultural resources■ Socio-economic resources■ Tribal resources■ Other resource information |
|--|---|

- b. Please briefly describe the information referenced above or list available documents (*additional information may be provided on page 4 of this questionnaire*).

- 1. Debris**
- 2. Sedimentation Build-up**

- c. Where can Appalachian obtain this information?

- | | |
|-------------------------|--|
| 1. Debris | AEP's Annual Debris Report Summary
(see debris reports from Roanoke River area) |
| 2. Sedimentation | Virginia Dept of Conservation and Recreation
Virginia Dept of Environmental Quality |

Niagara Hydroelectric Project (FERC Project No. 2466)
Relicensing Pre-Application Document Information Questionnaire

- d. Please indicate whether there is a specific representative you wish to designate for a potential follow-up contact by Appalachian's or HDR's representative for the resource area(s) checked above (*additional information may be provided on page 4 of this questionnaire*).

Representative Contact Information

Name	Paula Shoffner, Executive Director Tri-County Lakes Administrative Commission
Address	400 Scruggs Rd, Suite 200 Moneta, VA 24121
Phone	540-721-4400
Email Address	paulas@sml.us.com

Name	
Address	
Phone	
Email Address	

- e. Based on the specific resources listed in 2a, are you aware of any specific issues or improvements pertaining to the identified resource area(s)? (*Additional information may be provided on page 4 of this questionnaire.*)

X Yes (*please list specific issues below*) ___ No

Resource Area	Specific Issue
Other:	
Debris	Aggregates and holds debris until a High Flow Event occurs
Sedimentation	Builds up behind dam

3. Do you or your organization plan to participate in the Niagara Hydroelectric Project relicensing proceeding? **X** Yes ___ No

Niagara Hydroelectric Project (FERC Project No. 2466)
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4. We are interested in your comments. If you have comments and/or questions regarding the Niagara Hydroelectric Project or the relicensing process, please provide below. In addition, this questionnaire has been sent to the people/organizations shown on the attached distribution list; please let us know if there is anyone else you believe should receive this questionnaire that is not included on the attached distribution list.

(Comments and/or questions may be sent via email to: sarah.kulpa@hdrinc.com or ebparcell@aep.com)

As noted above, please return this questionnaire in the enclosed, self-addressed, stamped envelope within 30 days of receipt to allow for any follow-up contact by Appalachian's or HDR's representative that may be needed. Not responding within 30 days indicates that you are not aware of any existing, relevant, and reasonably available information that describes the existing Project environment or known potential impacts of the Project.

Yayac, Maggie

Subject: FW: Niagara
Attachments: Niagara Project PAD Questionnaire from LizBelcher.docx

From: Liz Belcher [<mailto:LBELCHER@roanokecountyva.gov>]
Sent: Friday, September 15, 2017 4:01 PM
To: Kulpa, Sarah
Subject: RE: Niagara

I am attaching comments. If you need names, emails, etc, let me know. Also, I took the liberty of sending your form to the Western Virginia Water Authority, which owns the sewage plant, as they were not on your list.

Liz Belcher
Roanoke Valley Greenway Coordinator
1206 Kessler Mill Road
Salem, VA 24153
Office 540-777-6330
Fax 540-387-6146
Cell 540-392-0526
liz.belcher@greenways.org
lbelcher@roanokecountyva.gov

>>> "Kulpa, Sarah" <Sarah.Kulpa@hdrinc.com> 9/11/2017 4:08 PM >>>
Hi Liz,

Absolutely – Word version attached if that helps, and anytime in the next week or even two is fine.

Thanks in advance for your input.

Sarah Kulpa
D 704.248.3620 M 315.415.8703



hdrinc.com/follow-us

From: Liz Belcher [<mailto:LBELCHER@roanokecountyva.gov>]
Sent: Monday, September 11, 2017 3:37 PM
To: Kulpa, Sarah
Subject: Niagara

I have received your letter and questionnaire., but it took several weeks from its date to arrive. I am concerned that my response will not reach you, using USPS, by Sept 15. Is it permissible to email it to you?

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Please return this questionnaire in the enclosed, self-addressed, stamped envelope within 30 days of receipt to allow for any follow-up contact by Appalachian's or HDR's representative that may be needed. Not responding within 30 days indicates that you are not aware of any existing, relevant, and reasonably available information that describes the existing Project environment or known potential impacts of the Project.

Appalachian and HDR respectfully request the following information:

1. Information about person completing the questionnaire:

Name & Title	Liz Belcher Roanoke Valley Greenway Coordinator
Organization	Roanoke Valley Greenway Commission
Address	1206 Kessler Mill Road Salem, VA 24153
Phone	540-777-6330 (office) 540-392-0526 (cell)
Email Address	Liz.belcher@greenways.org

Niagara Hydroelectric Project (FERC Project No. 2466)
Relicensing Pre-Application Document Information Questionnaire

2. Do you or your organization know of existing, relevant and reasonably available information that describes the existing Niagara Hydroelectric Project's environment (i.e., information regarding the Roanoke River in or close to the Niagara Hydroelectric Project)?

☒ Yes (*If yes, please complete 2a through 2e*) ☐ No (*If no, go to 3*)

- a. If yes, please circle the specific resource area(s) that the information relates to:

- | | |
|--|---|
| <input checked="" type="checkbox"/> Geology and soils | <input checked="" type="checkbox"/> Recreation and land use |
| <input checked="" type="checkbox"/> Water resources | <input checked="" type="checkbox"/> Aesthetic resources |
| <input checked="" type="checkbox"/> Fish and aquatic resources | <input checked="" type="checkbox"/> Cultural resources |
| <input checked="" type="checkbox"/> Wildlife and botanical resources | <input type="checkbox"/> Socio-economic resources |
| <input checked="" type="checkbox"/> Wetlands, riparian, and littoral habitat | <input type="checkbox"/> Tribal resources |
| <input checked="" type="checkbox"/> Rare, threatened & endangered species | <input type="checkbox"/> Other resource information |

- b. Please briefly describe the information referenced above or list available documents (*additional information may be provided on page 4 of this questionnaire*).

- Categorical Exclusion draft for Roanoke River Greenway East, WWTP to Blue Ridge Parkway, available through Roanoke County Parks & Rec or VDOT, Salem District
- Roanoke Valley/ Blue Ridge Parkway Trail Plan Environmental Assessment, available through Blue Ridge Parkway
- Roanoke River Blueway website, <http://www.roanokeriverblueway.org/>
- 2007 Update to the Roanoke Valley Conceptual Greenway Plan, <http://greenways.org/>
- 2017 update to the Greenway Plan is in progress, expected spring 2018
- Explore Park Adventure Plan, available from Roanoke County Parks & Rec

- c. Where can Appalachian obtain this information?

Sources are listed above. I am source for update to the Greenway Plan

Niagara Hydroelectric Project (FERC Project No. 2466)
Relicensing Pre-Application Document Information Questionnaire

- d. Please indicate whether there is a specific representative you wish to designate for a potential follow-up contact by Appalachian's or HDR's representative for the resource area(s) checked above (*additional information may be provided on page 4 of this questionnaire*).

Representative Contact Information

Name Liz Belcher	
Address	
Phone	
Email Address	

Name	
Address	
Phone	
Email Address	

- e. Based on the specific resources listed in 2a, are you aware of any specific issues or improvements pertaining to the identified resource area(s)? (*Additional information may be provided on page 4 of this questionnaire.*)

☒ Yes (*please list specific issues below*) ☐ No

Resource Area	Specific Issue
Recreation and land use	Roanoke River Greenway construction
Recreation and land use	Roanoke River Blueway and Niagara portage
Endangered species	Roanoke logperch
Water resources	DEQ TMDL study for Roanoke River

3. Do you or your organization plan to participate in the Niagara Hydroelectric Project relicensing proceeding? ☒ Yes ☐ No

Niagara Hydroelectric Project (FERC Project No. 2466) Relicensing Pre-Application Document Information Questionnaire

4. We are interested in your comments. If you have comments and/or questions regarding the Niagara Hydroelectric Project or the relicensing process, please provide below. In addition, this questionnaire has been sent to the people/organizations shown on the attached distribution list; please let us know if there is anyone else you believe should receive this questionnaire that is not included on the attached distribution list.

Others who should receive this questionnaire:

- George Washington and Jefferson National Forest, 5162 Valleypointe Parkway
Roanoke, VA 24019
- Western Virginia Water Authority, 601 South Jefferson St., Roanoke, VA 24011
- Appalachian Trail Conservancy, 5162 Valleypointe Parkway, Roanoke, VA 24019
(you list them in Blacksburg, which is an old address)

Comments

We have been working with local AEP staff for over 15 years on the Roanoke River Greenway project. This bicycle/pedestrian trail is 100% designed and environmental compliance is almost complete, through Roanoke County and VDOT, with an IPAC submitted to USFWS. Considerable environmental work, including surveys, geotech, wetland inventories, and bat counts, has been done. A portion of this greenway will be on AEP land and will constitute a new recreational feature that needs to be recognized in the re-licensing.

Since the last re-licensing, the Roanoke River Blueway has been established. This river trail has made the portage at Niagara very important. This portage needs improvements.

(Comments and/or questions may be sent via email to: sarah.kulpa@hdrinc.com or ebparcell@aep.com)

As noted above, please return this questionnaire in the enclosed, self-addressed, stamped envelope within 30 days of receipt to allow for any follow-up contact by Appalachian's or HDR's representative that may be needed. Not responding within 30 days indicates that you are not aware of any existing, relevant, and reasonably available information that describes the existing Project environment or known potential impacts of the Project.

Yayac, Maggie

Subject: FW: Niagara - VA DCR-DNH RTE species comments
Attachments: 74357, HDR, FERC 2466, Niagara Hydroelectric Project.pdf

From: nhreview (DCR) [<mailto:nhreview@dcr.virginia.gov>]
Sent: Wednesday, September 20, 2017 4:08 PM
To: Kulpa, Sarah
Cc: ProjectReview (DGIF); 'troy_andersen@fws.gov'; Orndorff, Wil (DCR)
Subject: FERC 2466, Niagara Hydroelectric Project

Ms. Kulpa,

Please find attached the DCR-DNH comments for the above referenced project. The comments are in pdf format and can be printed for your records. Also species rank information is available at <http://www.dcr.virginia.gov/natural-heritage/help> for your reference.

Along with our comments there is an invoice for our services. Please submit a copy of the invoice with payment to the Treasurer of Virginia, Department of Conservation and Recreation, Division of Natural Heritage, 600 East Main Street, 24th Floor Richmond, VA 23219. Payment is due within 30 days of the invoice date.

Please send a confirmation e-mail upon receipt of our comments. Thank you for the opportunity to provide this information.

S. Rene' Hypes
Project Review Coordinator
Department of Conservation and Recreation
Division of Natural Heritage
600 East Main Street, 24th Floor
Richmond, Virginia 23219
804-371-2708 (phone)
804-371-2674 (fax)
rene.hypes@dcr.virginia.gov



**Conserving VA's Biodiversity through
Inventory, Protection and Stewardship**
<http://www.dcr.virginia.gov/natural-heritage/>

Molly Joseph Ward
Secretary of Natural Resources

Clyde E. Cristman
Director



Rochelle Altholz
Deputy Director of
Administration and Finance

David C. Dowling
Deputy Director of
Soil and Water Conservation
and Dam Safety

Thomas L. Smith
Deputy Director of Operations

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

September 20, 2017

Sarah Kulpa
HDR Engineering, Inc.
440 S Church Street, Suites 900 & 1000
Charlotte, NC 28202

Re: FERC 2466, Niagara Hydroelectric Project

Dear Ms. Kulpa:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the information currently in our files, the Roanoke River – North and South Forks Stream Conservation Unit (SCU) is located within the project site. SCUs identify stream reaches that contain aquatic natural heritage resources, including 2 miles upstream and 1 mile downstream of documented occurrences, and all tributaries within this reach. SCUs are given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain; on a scale of 1-5, 1 being most significant. The Roanoke River – North and South Forks SCU has been given a biodiversity significance ranking of B1, which represents a site of outstanding significance. The natural heritage resources of concern associated with this SCU are:

<i>Noturus gilberti</i>	Orangefin madtom	G2/S2/SOC/LT
<i>Percina rex</i>	Roanoke logperch	G1G2/S1S2/LE/LE
<i>Allocaupnia simmonsii</i>	Spatulate snowfly	G3/S1S2/NL/NL

The Orangefin madtom is native to the Roanoke and James River systems of North Carolina and Virginia (NatureServe, 2009). The Orangefin madtom inhabits moderate to strong riffles and runs having little or no silt in moderate-gradient, intermontane and upper Piedmont streams. This species is an intersticine dweller, found in or near cavities formed by rubble and boulders (Jenkins and Burkhead, 1993). Please note that this species is currently classified as a species of concern (not a legal designation) by the United States Fish and Wildlife Service (USFWS) and as threatened by the Virginia Department of Game and Inland Fisheries (VDGIF). Threats to the Orangefin madtom include channelization, siltation, various forms of chronic pollution, catastrophic chemical spills, impoundment, dewatering, and bait-seining (NatureServe, 2009). Its low reproductive rate and short life span (Simonson 1997, Simonson and Neves 1992, Simonson 1987) exacerbate these threats (Burkhead and Jenkins 1991).

The Roanoke logperch is endemic to the Roanoke and Chowan River drainages in Virginia (Burkhead and Jenkins, 1991) and inhabits medium and large, warm and usually clear rivers with sandy to boulder spotted bottoms (NatureServe, 2009). Please note that this species is currently classified as endangered by the USFWS

and the VDGIF. The Roanoke logperch is threatened by channelization, siltation, impoundment, pollution, and de-watering activities (Burkhead & Jenkins, 1991).

Spatulate snowfly is a stonefly documented in only two locations in Virginia. Stoneflies are generally medium-sized to small, somewhat flattened, soft-bodied, rather drab-colored insects found near streams or rocky lake shores (Borror, 1981). They are poor fliers and are seldom found far from water. Stonefly nymphs are often found under stones in streams but may occasionally be found anywhere in a stream where food is available (Borror, 1981). Stoneflies are highly sensitive to any practices that degrade the quality of its aquatic habitat.

In addition, the Roanoke River, Glade Creek and Tinker Creek have been designated by the VDGIF as “Threatened and Endangered Species Waters”. The species within two miles of the project site associated with the Roanoke River T & E Water are the Orange-fin madtom and the Roanoke logperch, and the species within two miles of the project site associated with Glade Creek and Tinker Creek is the Roanoke logperch.

To minimize adverse impacts to the aquatic ecosystem as a result of the proposed activities, DCR recommends the implementation of and strict adherence to applicable state and local erosion and sediment control/storm water management laws and regulations. Due to the legal status of the Roanoke logperch and Orange-fin madtom, DCR also recommends coordination with the USFWS and the VDGIF to ensure compliance with protected species legislation.

The Virginia DCR karst staff screened this project against the Virginia Speleological Survey (VSS) database and the Virginia DMME sinkhole coverage for documented sensitive karst features and caves. DCR does not anticipate adverse impact to karst from the relicensing of the Niagara Hydroelectric Project in the City of Roanoke.

If karst features such as sinkholes, caves, disappearing streams, and large springs are encountered during the project, please coordinate with Wil Orndorff (540-230-5960, Wil.Orndorff@dcr.virginia.gov) to document and minimize adverse impacts. Discharge of runoff to sinkholes or sinking streams, filling of sinkholes, and alteration of cave entrances can lead to surface collapse, flooding, erosion and sedimentation, groundwater contamination, and degradation of subterranean habitat for natural heritage resources. If the project involves filling or “improvement” of sinkholes or cave openings, DCR would like detailed location information and copies of the design specifications. In cases where sinkhole improvement is for storm water discharge, copies of VDOT Form EQ-120 will suffice.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

There are no State Natural Area Preserves under DCR’s jurisdiction in the project vicinity.

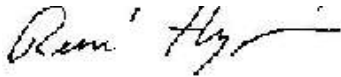
New and updated information is continually added to Biotics. Please re-submit a completed order form and project map for an update on this natural heritage information if the scope of the project changes and/or six months has passed before it is utilized.

A fee of \$125.00 has been assessed for the service of providing this information. Please find enclosed an invoice for that amount. Please return one copy of the invoice along with your remittance made payable to the Treasurer of Virginia, Department of Conservation and Recreation, Division of Natural Heritage, 600 East Main Street, 24th Floor, Richmond, VA 23219. Payment is due within thirty days of the invoice date. Please note late payment may result in the suspension of project review service for future projects.

The VDGIF maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from <http://vafwis.org/fwis/> or contact Ernie Aschenbach at 804-367-2733 or Ernie.Aschenbach@dgif.virginia.gov.

Should you have any questions or concerns, feel free to contact me at 804-371-2708. Thank you for the opportunity to comment on this project.

Sincerely,



S. René Hypes
Project Review Coordinator

CC: Ernie Aschenbach, VDGIF
Troy Andersen, USFWS
Wil Orndorff, DCR-Karst

Literature Cited

Borror, D.J., D. M. De Long, and C. A. Triplehorn. 1981. An Introduction to the Study of Insects. Saunders College Publishing, Philadelphia.

Burkhead, N.M. and R.E. Jenkins. 1991. Roanoke logperch. In Virginia's Endangered Species: Proceedings of a Symposium. K. Terwilliger ed. The McDonald and Woodward Publishing Company, Blacksburg, Virginia. p. 395-397.

Jenkins, R. E., and N. M. Burkhead. 1993. Freshwater fishes of Virginia. American Fisheries Society, Bethesda, Maryland.

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>. (Accessed: June 21, 2010).

Simonson, T. D. 1987. Distribution, ecology, and reproductive biology of the orangefin madtom (*Noturus gilberti*). M.S. Thesis, Virginia Polytechnic Institute & State University, Blacksburg.

Simonson, T. D. 1997. Orangefin madtom. Pages 15-16 in E. F. Menhinick and A. L. Braswell, editors. Endangered, threatened, and rare fauna of North Carolina. Part IV. A reevaluation of the freshwater fishes. Occasional Papers of the North Carolina Museum of Natural Sciences and the North Carolina Biological Survey No. 11.

Simonson, T. D., and R. J. Neves. 1992. Habitat suitability and reproductive traits of the orangefin madtom *NOTURUS GILBERTI* (Pisces: Ictaluridae). American Midland Naturalist 127:115-24.

COMMONWEALTH OF VIRGINIA
Department of Conservation and Recreation

DCR – Natural Heritage
600 East Main Street, 24th Floor
Richmond, VA 23219

Make checks payable to: **TREASURER OF VIRGINIA**

Send payment to the address at the left

Payment is due 30 days after receipt of invoice

Fed I.D. # 54-6004497
DUNS # 8097 44444

Accounts Payable

Sarah Kulpa HDR Engineering, Inc. 440 S Church Street, Suites 900 & 1000 Charlotte, NC 28202	Invoice Number: H-12662
	Invoice Date: September 20, 2017

TAXPAYER ID:
CONTACT
CONTACT Number
FAX Number

47-0680568
Liz Dean, Business Manager, Division of Natural Heritage
(804) 371-2671
(804) 371-2674

DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL AMOUNT
Impact Review	1	EA	90.00	90.00
<i>Element Occurrences</i>	1-5	AT	35.00	35.00
Site Reference				
FERC 2466, Niagara Hydroelectric Project				
			Amount Due:	125.00

BUSINESS UNIT	COST CENTER	ACCOUNT	FUND	PROGRAM	DEPT	AMOUNT	PROJECT	AGENCY USE I	FY
19900	304	4002199	02199	503017	19900	125.00	0000109675	732320000	18

AGENCY REFERENCE	DESCRIPTION



Blue Ridge
Soil & Water Conservation District
1297 State Street
Rocky Mount, Virginia 24151

October 24, 2017

Sarah Kulpa
HDR
440 S. Church Street, Suite 900
Charlotte, NC 28202-2075

Dear Sarah:

The Blue Ridge Soil & Water Conservation District has worked with AEP on several water quality projects around Smith Mountain Lake in Franklin County. We believe that your company has demonstrated in the past that it is committed to preserving good water quality in Smith Mountain Lake and its tributaries.

The BRSWCD requests that AEP keep the Niagara dam in place and continue to operate it if possible. Any breach of this dam whether intended or accidental would send large amounts of impounded sediment downstream that would adversely affect the water quality of lakes and streams in Franklin County and other downstream localities.

Since our organization has a significant interest in our regions' water quality, we would appreciate being kept in the loop in regards to any plans for Niagara Dam going forward.

Sincerely,

Daphne W. Jamison
Chairman

cc: Elizabeth Parcell

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426
April 25, 2018

OFFICE OF ENERGY PROJECTS

Project No. 2466-000 – Virginia
Niagara Hydroelectric Project
Appalachian Power Company

Chief Bill Harris Catawba Indian Nation 996 Avenue of the Nations Rock Hill, SC 29730	Chief Dean Branham Monacan Indian Nation P.O. Bo 1136 Madison Heights, VA 24572
Deborah Dotson, President Delaware Nation P.O. Box 825 Anadarko, OK 73005	

Reference: Tribal Consultation for the Niagara Hydroelectric Project No. 2466

To the Tribal Leaders Addressed,

The Federal Energy Regulatory Commission (Commission) invites your participation in the relicensing process for the existing Niagara Hydroelectric Project No. 2466 (Niagara Project). The Commission's relicensing process is an opportunity for both the licensee and interested agencies, tribes, and other stakeholders to consider the project's existing operation and protection, mitigation, and enhancement measures, and evaluate the need for any changes or additional measures to be implemented over the term of any new license issued for the project. The 2.4-megawatt Niagara Project is located on the Roanoke River in Roanoke County, Virginia. We anticipate that Appalachian Power Company, the licensee for the project, will file a notice of intent and a Pre-Application Document by February 28, 2019, and an application for a new license must be filed by February 28, 2022.

It is very important that a Tribe whose interests could be affected by the Niagara Project participate early in the process so that tribal concerns are addressed. For this reason, please inform us if you have an interest in participating in the relicensing process for the project. In addition, please indicate if you would like to meet with Commission staff to discuss the Commission's licensing process, how your Tribe can participate to the fullest extent possible, your interests and concerns in the affected area, and how to establish procedures to ensure appropriate communication between Commission and

Project No. 2466-000

2

Tribal staffs. The meeting can be limited to Commission and your Tribal staff, or can be open to other Tribes or Appalachian Power Company.

If at all possible, we would appreciate your response by May 25, 2018. The Commission strongly encourages electronic filing. Please file your response using the Commission's eFiling system at <http://www.ferc.gov/docs-filing/efiling.asp>. Commenters can submit brief comments up to 6,000 characters, without prior registration, using the eComment system at <http://www.ferc.gov/docs-filing/ecomment.asp>. You must include your name and contact information at the end of your comments. For assistance, please contact FERC Online Support at FERCOnlineSupport@ferc.gov, (866) 208-3676 (toll free), or (202) 502-8659 (TTY). In lieu of electronic filing, please send a paper copy to: Secretary, Federal Energy Regulatory Commission, 888 First Street N.E., Washington, D.C. 20426. The first page of any filing should include docket number P-2466.

If you have any questions or comments, please contact Allyson Conner at (202) 502-6082, or at allyson.conner@ferc.gov. Ms. Conner will contact you shortly to follow-up on this letter.

Sincerely,



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

cc: Harold Peterson
Bureau of Indian Affairs – Eastern Region
545 Marriott Drive, Suite 700
Nashville, TN 37214

TELEPHONE MEMO

To: Public Files
From: Allyson Conner
Date: September 10, 2018
Docket: P-2466-000
Project: Niagara Hydroelectric Project

Subject: Consultation with Tribes for the Niagara Hydroelectric Project No. 2466

On April 25, 2018, Allyson Conner, staff of the Division of Hydropower Licensing with the Federal Energy Regulatory Commission (Commission), issued a letter initiating tribal consultation for the relicensing process of the existing Niagara Hydroelectric Project 2466-000.

On August 3, 2018, Ms. Conner received an email from Karenne Wood, Department of Cultural Preservation, Monacan Indian Nation, indicating that the tribe is not opposed to the relicensing of the project nor does the tribe intend to initiate formal consultation at this time.

On September 4, 2018, Ms. Conner received an email from Kimberly Penrod, Director of Cultural Resources, Delaware Nation, indicating that the Nation concurs with the proceeding and would like to be consulted on the project. Ms. Penrod stated that the Nation would like to be kept up to date on the progress of the project and should be contacted immediately if any discoveries arise.

On July 17, August 1, and September 7, 2018, Ms. Conner called the Catawba Indian Nation and left a voicemail each time. No calls were returned.



American Electric Power
1 Riverside Plaza
Columbus, OH 43215
aep.com

Via Electronic Filing

January 28, 2019

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

**Subject: Niagara Hydroelectric Project (FERC No. 2466)
 Notice of Intent and Pre-Application Document**

Dear Secretary Bose:

Appalachian Power Company (Appalachian or Applicant), a unit of American Electric Power (AEP) is submitting to the Federal Energy Regulatory Commission (FERC or Commission) the Notice of Intent (NOI) to file an application for a subsequent license and Pre-Application Document (PAD) for the Niagara Hydroelectric Project (FERC No. 2466) (Project) located on the Roanoke River in Roanoke County, Virginia. The existing FERC license for the Project expires on February 29, 2024.

The Applicant is distributing this letter to the stakeholders listed on the distribution list in Appendix A of the PAD. For stakeholders listed in Appendix A who have provided an email address, the Applicant is distributing this letter via e-mail; otherwise, the Applicant is distributing this letter via U.S. mail. Stakeholders interested in the relicensing process may obtain a copy of the NOI and PAD electronically through FERC's eLibrary at <https://elibrary.ferc.gov/idmws/search/fercgensearch.asp> under docket number P-2466 or on the Applicant's website <http://www.aephydro.com/HydroPlant/Niagara>. If any stakeholder would like to request a CD containing an electronic copy of the NOI and PAD, please contact the undersigned at the information listed below. In addition, the Applicant is providing two courtesy paper copies of the NOI and PAD to Commission Staff in the Office of Energy Projects and Office of General Counsel – Energy Projects, as required by the Commission's filing guidelines. The NOI and PAD are available for review at the Applicant's business office during regular business hours located at 40 Franklin Road SW Roanoke, VA 24011.

Appendix D of the PAD includes a single-line electrical diagram of the Project and an existing Exhibit F Project drawing, as required by the Commission's PAD content requirements under 18 CFR § 5.6(d)(2)(iii)(D). The information contained in these drawings are deemed as Critical Energy Infrastructure Information (CEII) under 18 CFR §388.113, thus Appendix D of the PAD is not being distributed to the public. The Applicant is filing Appendix D under the Commission's eFiling guidelines for filing CEII.

In accordance with 18 CFR §5.5(e) of the Commission's regulations, the Applicant requests that the Commission designate Appalachian as the Commission's non-federal representative for

purposes of consultation under Section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. § 470f and the NHPA implementing regulations at 36 CFR Part 800.

In addition, the Applicant requests that FERC designate Appalachian as the non-federal representative for the Project for the purpose of consultation with the U.S. Fish and Wildlife Service and National Marine Fisheries Service, pursuant to Section 7 of the Endangered Species Act (ESA) and the joint agency ESA implementing regulations at 50 CFR Part 402.

We look forward to working with the Commission's staff, resource agencies, Indian Tribes, local governments, non-governmental organizations, members of the public, toward developing a license application for this renewable energy facility. If there are any questions regarding this letter or the NOI or PAD, please contact me at jmmagalski@aep.com or via phone at (614) 716-2240.

Sincerely,

A handwritten signature in black ink, appearing to read "Jonathan M. Magalski". The signature is fluid and cursive, with the first name "Jonathan" and last name "Magalski" clearly distinguishable.

Jonathan M. Magalski
Environmental Specialist Consultant
American Electric Power Service Corporation, Environmental Services

Niagara Hydroelectric Project (FERC No. 2466) Distribution List

Federal Agencies

Mr. John Eddins
Archaeologist/Program Analyst
Advisory Council on Historic Preservation
401 F Street NW, Suite 308
Washington, DC 20001-2637
jeddins@achp.gov

Blue Ridge National Heritage Area
195 Hemphill Knob Road
Asheville, NC 28803

Park Headquarters
Blue Ridge Parkway
199 Hemphill Knob Road
Asheville, NC 28803-8686

Ms. Kimberly Bose
Secretary
Federal Energy Regulatory Commission
888 1st St NE
Washington, DC 20426

FEMA Region 3
615 Chestnut Street
One Independence Mall, Sixth Floor
Philadelphia, PA 19106-4404

George Washington and
Jefferson National Forest
5162 Valleypointe Parkway
Roanoke, VA 24019

Mr. John Bullard
Regional Administrator
NOAA Fisheries Service
Greater Atlantic Regional Fisheries Office
55 Great Republic Drive
Gloucester, MA 01930-2276

Mr. John A. Bricker
State Conservationist
US Department of Agriculture
Natural Resources Conservation Service
1606 Santa Rosa Road, Suite 209
Richmond, VA 23229-5014

Mr. Harold Peterson
Bureau of Indian Affairs
US Department of the Interior
545 Marriott Dr, Suite 700
Nashville, TN 37214
Harold.Peterson@bia.gov

Office of the Solicitor
US Department of the Interior
1849 C Street, NW
Washington, DC 20240

Ms. Lindy Nelson
Regional Environmental Officer, Office of
Environmental Policy & Compliance
US Department of the Interior
Philadelphia Region
Custom House, Room 244
200 Chestnut Street
Philadelphia, PA 19106

Ms. Barbara Rudnick
NEPA Team Leader - Region 3
US Environmental Protection Agency
1650 Arch Street
Philadelphia, PA 19103-2029

Mr. Martin Miller
Chief, Endangered Species - Northeast
Region (Region 5)
US Fish and Wildlife Service
300 Westgate Center Drive
Hadley, MA 01035

Ms. Cindy Schulz
Field Supervisor, Virginia Field Office
US Fish and Wildlife Service
6669 Short Lane
Gloucester, VA 23061

Mr. Richard C. McCorkle
Fish and Wildlife Biologist
Pennsylvania Field Office
US Fish and Wildlife Service
110 Radnor Road, Suite 101
State College, PA 16801
richard_mccorkle@fws.gov

Ms. Elizabeth Merz
US Forest Service
3714 Highway 16
Marion, VA 24354

Mr. Mark Bennett
Center Director of VA and WV
Water Science Center
US Geological Survey
John W. Powell Building
12201 Sunrise Valley Drive
Reston, VA 20192
mrbennet@usgs.gov

Niagara Hydroelectric Project (FERC No. 2466) Distribution List

Hon. Bob Goodlatte
US Congressman, 6th District
US House of Representatives
10 Franklin Road SE, Suite 540
Roanoke, VA 24011

Mr. Michael Reynolds
Acting Director, Headquarters
US National Park Service
1849 C Street, NW
Washington, DC 20240

Ms. Catherine Turton
Architectural Historian, Northeast Region
US National Park Service
US Custom House, 3rd Floor
200 Chestnut Street
Philadelphia, PA 19106

Hon. Tim Kaine
US Senate
231 Russell Senate Office Building
Washington, DC 20510

Hon. Mark Warner
US Senate
703 Hart Senate Office Building
Washington, DC 20510

State Agencies

Dr. Elizabeth Moore
President
Archaeological Society of Virginia
PO Box 70395
Richmond, VA 23255

Blue Ridge Soil and Water Conservation
District
1297 State Street
Rocky Mount, VA 24151

Mr. Jess Jones
Freshwater Mollusk Conservation Center
Virginia Tech
1B Plantation Road
Blacksburg, VA 24061

Mr. Ralph Northam
Governor
Office of the Governor
PO Box 1475
Richmond, VA 23218

Mr. Paul Angermeier
Assistant Unit Leader
Virginia Cooperative Fish and Wildlife
Research Unit
Department of Fisheries and Wildlife
Conservation - Virginia Tech
106 Cheatham Hall
Blacksburg, VA 24061
biota@vt.edu

Mr. Benjamin Hermerding
Secretary of the Commonwealth
Virginia Council on Indians
PO Box 2454
Richmond, VA 23218
benjamin.hermerding@governor.virginia.gov

Ms. Robbie Rhur
Virginia Department of Conservation and
Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219
Robbie.Rhur@dcv.virginia.gov

Ms. Rene Hypes
Division of Natural Heritage
Virginia Department of Conservation and
Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219
rene.hypes@dcv.virginia.gov

Mr. Clyde Cristman
Division Director
Virginia Department of Conservation and
Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219

Ms. Lynn Crump
FERC
Virginia Department of Conservation and
Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219
lynn.crump@dcv.virginia.gov

Mr. Tyler Meader
Locality Liasion - Division of Natural Heritage
Virginia Department of Conservation and
Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219
nhreview@dcv.virginia.gov

Niagara Hydroelectric Project (FERC No. 2466) Distribution List

Mr. Matthew Link
Water Withdrawal Permit Writer
Virginia Department of Environmental Quality
PO Box 1105
Richmond, VA 23218
matthew.link@deq.virginia.gov

Mr. Andrew Hammond
Water Withdrawal Permitting & Compliance
Manager
Virginia Department of Environmental Quality
629 East Main Street
Richmond, VA 23218
andrew.hammond@deq.virginia.gov

Mr. Tony Cario
Water Withdrawal Permit Writer, Office of
Water Supply
Virginia Department of Environmental Quality
PO Box 1105
Richmond, VA 23218
anthony.cario@deq.virginia.gov

Mr. Scott Kudlas
Director, Office of Water Supply
Virginia Department of Environmental Quality
PO Box 1105
Richmond, VA 23218
scott.kudlas@deq.virginia.gov

Blue Ridge Regional Office
Virginia Department of Environmental Quality
3019 Peters Creek Road
Roanoke, VA 24019

Mr. Chris Sullivan
Senior Area Forester
Virginia Department of Forestry
900 Natural Resources Drive
Charlottesville, VA 22903

Mr. Scott Smith
Region 2 Fisheries Manager
Virginia Department of Game and Inland
Fisheries
1132 Thomas Jefferson Road
Forest, VA 24551
scott.smith@dgif.virginia.gov

Ms. Julie Langan
Director and State Historic Preservation
Officer
Virginia Department of Historic Resources
2801 Kensington Avenue
Richmond, VA 23221

Mr. Tim Pace
Chairman
Virginia Roanoke River Basin Advisory
Committee
PO Box 1105
Richmond, VA 23218

Local Governments

Mr. Sherman P. Lea, Sr.
Mayor
City of Roanoke
Noel C. Taylor Municipal Building
215 Church Avenue
Roanoke, VA 24011

Mr. Richard Caywood
Assistant County Administrator
County of Roanoke
PO Box 29800
5204 Bernard Drive
Roanoke, VA 24018
rcaywood@roanokecountyva.gov

Mr. David Henderson
Engineering
County of Roanoke
PO Box 29800
5204 Bernard Drive
Roanoke, VA 24018
dhenderson@roanokecountyva.gov

Ms. Paula Shoffner
Executive Director
Tri-County Lakes Administrative Commission
400 Scruggs Road #200
Moneta, VA 24121
paulas@sml.us.com

Western Virginia Water Authority
601 South Jefferson Street
Roanoke, VA 24011

Tribes

Chief Bill Harris
Catawba Indian Nation
996 Avenue of the Nations
Rock Hill, SC 29730

Deborah Dotson
President
Delaware Nation
P.O. Box 825
Anadarko, OK 73005

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Chief Dean Branham
Monacan Indian Nation
PO Box 1136
Madison Heights, VA 24572

Chief Robert Gray
Pamunkey Indian Tribe
1059 Pocahontas Trail
King William, VA 23086

Non-Governmental

American Canoe Association
503 Sophia Street, Suite 100
Fredericksburg, VA 22401

Mr. John Seebach
American Rivers
1104 14th St NW, Suite 1400
Washington, DC 20005
jseebach@americanrivers.org.

Mr. Brendan Mysliwiec
Associate Director of Governmental Relations
American Rivers
bmysliwiec@americanrivers.org

Mr. Kevin Richard Colburn
National Stewardship Director
American Whitewater
PO Box 1540
Cullowhee, NC 28779
kevin@americanwhitewater.org

Headquarters
Appalachian Trail Conservancy
5162 Valleypointe Parkway
Roanoke, VA 24019

Blue Ridge Land Conservancy
722 1st Street SW, Suite L
Roanoke, VA 24016

Blue Ridge Parkway Foundation
717 South Marshall Street, Suite 105 B
Winston-Salem, NC 27101

Ms. Audrey Pearson
Executive Director
Friends of the Blue Ridge Parkway
PO Box 20986
Roanoke, VA 24018
audrey_pearson@friendsbrp.org

Friends of the Rivers of Virginia
257 Dancing Tree Lane
Hollins, VA 24019

Mr. Bill Tanger
Chairman
Friends of the Roanoke
PO Box 1750
Roanoke, VA 24008
bill.tanger@verizon.net

Ms. Juanita Callis
Friends of the Roanoke
PO Box 1750
Roanoke, VA 24008-1750

Mr. Mike Pucci
Roanoke River Basin Association
150 Slayton Avenue
Danville, VA 24540

Roanoke River Blueway
313 Luck Avenue SW
Roanoke, VA 24016
roanokeriverblueway@gmail.com

Ms. Amanda McGee
Roanoke Valley - Alleghany Regional
Commission
P.O. Box 2569
Roanoke, VA 24010
amcgee@rvarc.org

Ms. Liz Belcher
Roanoke Valley Greenway
1206 Kessler Mill Road
Salem, VA 24153
liz.belcher@greenways.org

Mr. Steve Moyer
Trout Unlimited
1777 N. Kent Street, Suite 100
Arlington, VA 22209

Upper Roanoke River Roundtable
PO Box 8221
Roanoke, VA 24014

Yayac, Maggie

Subject: FW: Niagara Hydroelectric Project (FERC No. 2466) -- Filing of Notice of Intent and Pre-Application Document

Attachments: Niagara Project NOI_PAD Transmittal Letter 20190128.pdf

From: Kulpa, Sarah

Sent: Monday, January 28, 2019 3:14 PM

To: ACHP - John Eddins <jeddins@achp.gov>; American Rivers - Brendan Mysliwiec <bmysliwiec@americanrivers.org>; American Rivers - John Seebach <jseebach@americanrivers.org>; County of Roanoke - David Henderson <dhenderson@roanokecountyva.gov>; County of Roanoke - Richard Caywood <rcaywood@roanokecountyva.gov>; Friends of the Blue Ridge Parkway - Audrey Pearson <audrey_pearson@friendsbrp.org>; Friends of the Roanoke - Bill Tanger <bill.tanger@verizon.net>; Harold Peterson <harold.peterson@bia.gov>; Kevin Colburn - American Whitewater <kevin@americanwhitewater.org> <kevin@americanwhitewater.org>; Roanoke River Blueway <roanokeriverblueway@gmail.com>; Roanoke Valley Alleghany Regional Commission - Amanda McGee <amcgee@rvarc.org>; Roanoke Valley Greenway - Liz Blecher <liz.belcher@greenways.org>; Tri-County Lakes Administrative Commission - Paula Shoffner <paulas@sml.us.com>; USFWS <richard_mccorkle@fws.gov>; USGS - Mark Bennett <mrbenet@USGS.gov>; VA Cooperative Fish and Wildlife Research Unit - Paul Angermeier <biota@vt.edu>; VADCR - Lynn Crump <lynn.crump@dcr.virginia.gov>; VADCR - Natural Heritage <nhreview@dcr.virginia.gov>; VADCR - Robbie Ruhr <Robbie.Rhur@dcr.virginia.gov>; VADEQ - Andrew Hammond <andrew.hammond@deq.virginia.gov>; VADEQ - Anthony Cario <anthony.cario@deq.virginia.gov>; VADEQ - Matthew Link <matthew.link@deq.virginia.gov>; VADEQ - Scott Kudlas <scott.kudlas@deq.virginia.gov>; Virginia Council on Indians - Benjamin Hermerding <benjamin.hermerding@governor.virginia.gov>; Virginia Department of Conservation and Recreation - Rene Hypes <rene.hypes@dcr.virginia.gov>; Virginia Department of Game and Inland Fisheries - Scott Smith <scott.smith@dqif.virginia.gov>

Cc: Jonathan M Magalski <jmmagalski@aep.com>; Elizabeth B Parcell <ebparcell@aep.com>; MacVane, Kelly <Kelly.MacVane@hdrinc.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>; Quiggle, Robert <Robert.Quiggle@hdrinc.com>

Subject: Niagara Hydroelectric Project (FERC No. 2466) -- Filing of Notice of Intent and Pre-Application Document

Niagara Hydroelectric Project Stakeholders:

Appalachian Power Company (Appalachian), a unit of American Electric Power (AEP), is the licensee, owner and operator of the Niagara Hydroelectric Project (FERC No. 2466) (Project) located on the Roanoke River in Roanoke County, Virginia. The Project is operated under a license issued by the Federal Energy Regulatory Commission (FERC). The existing FERC license for the Project expires on February 29, 2024. On January 28, 2019, Appalachian filed the Pre-Application Document (PAD) and Notice of Intent (NOI) to relicense the Project with FERC. The filing of the NOI and PAD mark the formal start of the FERC relicensing process for the Project.

On behalf of Appalachian, we are notifying stakeholders of the availability of the NOI and PAD. For your convenience, a copy of the cover letter filed with these documents is attached. Please note that, due to file size restrictions, the NOI and PAD have not been included in this email. Appalachian encourages stakeholders to view the filings online at FERC's eLibrary at http://elibrary.ferc.gov/idmws/file_list.asp?accession_num=20190128-5131. Appalachian will also be adding the NOI and PAD to the Project's public relicensing website (<http://www.aephydro.com/HydroPlant/Niagara>) in the coming days.

Should you have any questions regarding these filings, please contact Jon Magalski with AEP at (614) 716-2240 or jmmagalski@aep.com.

Thank you,

Sarah Kulpa

Senior Regulatory Specialist

HDR

440 S. Church Street, Suite 900
Charlotte, NC 28202-2075
D 704.248.3620 **M** 315.415.8703
sarah.kulpa@hdrinc.com

hdrinc.com/follow-us



American Electric Power
1 Riverside Plaza
Columbus, OH 43215
aep.com

Via Electronic Filing

January 28, 2019

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

**Subject: Niagara Hydroelectric Project (FERC No. 2466)
 Notice of Intent and Pre-Application Document**

Dear Secretary Bose:

Appalachian Power Company (Appalachian or Applicant), a unit of American Electric Power (AEP) is submitting to the Federal Energy Regulatory Commission (FERC or Commission) the Notice of Intent (NOI) to file an application for a subsequent license and Pre-Application Document (PAD) for the Niagara Hydroelectric Project (FERC No. 2466) (Project) located on the Roanoke River in Roanoke County, Virginia. The existing FERC license for the Project expires on February 29, 2024.

The Applicant is distributing this letter to the stakeholders listed on the distribution list in Appendix A of the PAD. For stakeholders listed in Appendix A who have provided an email address, the Applicant is distributing this letter via e-mail; otherwise, the Applicant is distributing this letter via U.S. mail. Stakeholders interested in the relicensing process may obtain a copy of the NOI and PAD electronically through FERC's eLibrary at <https://elibrary.ferc.gov/idmws/search/fercgensearch.asp> under docket number P-2466 or on the Applicant's website <http://www.aephydro.com/HydroPlant/Niagara>. If any stakeholder would like to request a CD containing an electronic copy of the NOI and PAD, please contact the undersigned at the information listed below. In addition, the Applicant is providing two courtesy paper copies of the NOI and PAD to Commission Staff in the Office of Energy Projects and Office of General Counsel – Energy Projects, as required by the Commission's filing guidelines. The NOI and PAD are available for review at the Applicant's business office during regular business hours located at 40 Franklin Road SW Roanoke, VA 24011.

Appendix D of the PAD includes a single-line electrical diagram of the Project and an existing Exhibit F Project drawing, as required by the Commission's PAD content requirements under 18 CFR § 5.6(d)(2)(iii)(D). The information contained in these drawings are deemed as Critical Energy Infrastructure Information (CEII) under 18 CFR §388.113, thus Appendix D of the PAD is not being distributed to the public. The Applicant is filing Appendix D under the Commission's eFiling guidelines for filing CEII.

In accordance with 18 CFR §5.5(e) of the Commission's regulations, the Applicant requests that the Commission designate Appalachian as the Commission's non-federal representative for

purposes of consultation under Section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. § 470f and the NHPA implementing regulations at 36 CFR Part 800.

In addition, the Applicant requests that FERC designate Appalachian as the non-federal representative for the Project for the purpose of consultation with the U.S. Fish and Wildlife Service and National Marine Fisheries Service, pursuant to Section 7 of the Endangered Species Act (ESA) and the joint agency ESA implementing regulations at 50 CFR Part 402.

We look forward to working with the Commission's staff, resource agencies, Indian Tribes, local governments, non-governmental organizations, members of the public, toward developing a license application for this renewable energy facility. If there are any questions regarding this letter or the NOI or PAD, please contact me at jmmagalski@aep.com or via phone at (614) 716-2240.

Sincerely,

A handwritten signature in black ink, reading "Jonathan M. Magalski". The signature is fluid and cursive, with the first name "Jonathan" and last name "Magalski" clearly legible.

Jonathan M. Magalski
Environmental Specialist Consultant
American Electric Power Service Corporation, Environmental Services

Niagara Hydroelectric Project (FERC No. 2466)

Distribution List

Federal Agencies

Mr. John Eddins
Archaeologist/Program Analyst
Advisory Council on Historic Preservation
401 F Street NW, Suite 308
Washington, DC 20001-2637
jeddins@achp.gov

Blue Ridge National Heritage Area
195 Hemphill Knob Road
Asheville, NC 28803

Park Headquarters
Blue Ridge Parkway
199 Hemphill Knob Road
Asheville, NC 28803-8686

Ms. Kimberly Bose
Secretary
Federal Energy Regulatory Commission
888 1st St NE
Washington, DC 20426

FEMA Region 3
615 Chestnut Street
One Independence Mall, Sixth Floor
Philadelphia, PA 19106-4404

George Washington and
Jefferson National Forest
5162 Valleypointe Parkway
Roanoke, VA 24019

Mr. John Bullard
Regional Administrator
NOAA Fisheries Service
Greater Atlantic Regional Fisheries Office
55 Great Republic Drive
Gloucester, MA 01930-2276

Mr. John A. Bricker
State Conservationist
US Department of Agriculture
Natural Resources Conservation Service
1606 Santa Rosa Road, Suite 209
Richmond, VA 23229-5014

Mr. Harold Peterson
Bureau of Indian Affairs
US Department of the Interior
545 Marriott Dr, Suite 700
Nashville, TN 37214
Harold.Peterson@bia.gov

Office of the Solicitor
US Department of the Interior
1849 C Street, NW
Washington, DC 20240

Ms. Lindy Nelson
Regional Environmental Officer, Office of
Environmental Policy & Compliance
US Department of the Interior
Philadelphia Region
Custom House, Room 244
200 Chestnut Street
Philadelphia, PA 19106

Ms. Barbara Rudnick
NEPA Team Leader - Region 3
US Environmental Protection Agency
1650 Arch Street
Philadelphia, PA 19103-2029

Mr. Martin Miller
Chief, Endangered Species - Northeast
Region (Region 5)
US Fish and Wildlife Service
300 Westgate Center Drive
Hadley, MA 01035

Ms. Cindy Schulz
Field Supervisor, Virginia Field Office
US Fish and Wildlife Service
6669 Short Lane
Gloucester, VA 23061

Mr. Richard C. McCorkle
Fish and Wildlife Biologist
Pennsylvania Field Office
US Fish and Wildlife Service
110 Radnor Road, Suite 101
State College, PA 16801
richard_mccorkle@fws.gov

Ms. Elizabeth Merz
US Forest Service
3714 Highway 16
Marion, VA 24354

Mr. Mark Bennett
Center Director of VA and WV
Water Science Center
US Geological Survey
John W. Powell Building
12201 Sunrise Valley Drive
Reston, VA 20192
mrbennet@usgs.gov

Niagara Hydroelectric Project (FERC No. 2466) Distribution List

Hon. Bob Goodlatte
US Congressman, 6th District
US House of Representatives
10 Franklin Road SE, Suite 540
Roanoke, VA 24011

Mr. Michael Reynolds
Acting Director, Headquarters
US National Park Service
1849 C Street, NW
Washington, DC 20240

Ms. Catherine Turton
Architectural Historian, Northeast Region
US National Park Service
US Custom House, 3rd Floor
200 Chestnut Street
Philadelphia, PA 19106

Hon. Tim Kaine
US Senate
231 Russell Senate Office Building
Washington, DC 20510

Hon. Mark Warner
US Senate
703 Hart Senate Office Building
Washington, DC 20510

State Agencies

Dr. Elizabeth Moore
President
Archaeological Society of Virginia
PO Box 70395
Richmond, VA 23255

Blue Ridge Soil and Water Conservation
District
1297 State Street
Rocky Mount, VA 24151

Mr. Jess Jones
Freshwater Mollusk Conservation Center
Virginia Tech
1B Plantation Road
Blacksburg, VA 24061

Mr. Ralph Northam
Governor
Office of the Governor
PO Box 1475
Richmond, VA 23218

Mr. Paul Angermeier
Assistant Unit Leader
Virginia Cooperative Fish and Wildlife
Research Unit
Department of Fisheries and Wildlife
Conservation - Virginia Tech
106 Cheatham Hall
Blacksburg, VA 24061
biota@vt.edu

Mr. Benjamin Hermerding
Secretary of the Commonwealth
Virginia Council on Indians
PO Box 2454
Richmond, VA 23218
benjamin.hermerding@governor.virginia.gov

Ms. Robbie Rhur
Virginia Department of Conservation and
Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219
Robbie.Rhur@dcv.virginia.gov

Ms. Rene Hypes
Division of Natural Heritage
Virginia Department of Conservation and
Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219
rene.hypes@dcv.virginia.gov

Mr. Clyde Cristman
Division Director
Virginia Department of Conservation and
Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219

Ms. Lynn Crump
FERC
Virginia Department of Conservation and
Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219
lynn.crump@dcv.virginia.gov

Mr. Tyler Meader
Locality Liasion - Division of Natural Heritage
Virginia Department of Conservation and
Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219
nhreview@dcv.virginia.gov

Niagara Hydroelectric Project (FERC No. 2466) Distribution List

Mr. Matthew Link
Water Withdrawal Permit Writer
Virginia Department of Environmental Quality
PO Box 1105
Richmond, VA 23218
matthew.link@deq.virginia.gov

Mr. Andrew Hammond
Water Withdrawal Permitting & Compliance
Manager
Virginia Department of Environmental Quality
629 East Main Street
Richmond, VA 23218
andrew.hammond@deq.virginia.gov

Mr. Tony Cario
Water Withdrawal Permit Writer, Office of
Water Supply
Virginia Department of Environmental Quality
PO Box 1105
Richmond, VA 23218
anthony.cario@deq.virginia.gov

Mr. Scott Kudlas
Director, Office of Water Supply
Virginia Department of Environmental Quality
PO Box 1105
Richmond, VA 23218
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Mr. Kevin Richard Colburn
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kevin@americanwhitewater.org

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bill.tanger@verizon.net

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313 Luck Avenue SW
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Roanoke, VA 24010
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liz.belcher@greenways.org

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1777 N. Kent Street, Suite 100
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Roanoke, VA 24014

Matthew J. Strickler
Secretary of Natural Resources

Clyde E. Cristman
Director



Rochelle Altholz
*Deputy Director of
Administration and Finance*

Russell W. Baxter
*Deputy Director of
Dam Safety & Floodplain
Management and Soil & Water
Conservation*

Thomas L. Smith
Deputy Director of Operations

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

MEMORANDUM

DATE: March 1, 2019
TO: Sarah Kulpa
FROM: Roberta Rhur, Environmental Impact Review Coordinator
SUBJECT: DCR 19-003, Niagara Hydroelectric Project (FERC No. 2466)

Division of Planning and Recreation Resources

The Department of Conservation and Recreation (DCR), Division of Planning and Recreational Resources (PRR), develops the *Virginia Outdoors Plan* and coordinates a broad range of recreational and environmental programs throughout Virginia. These include the Virginia Scenic Rivers program; Trails, Greenways, and Blueways; Virginia State Park Master Planning and State Park Design and Construction.

We have reviewed the pre-application and offer the following comments regarding recreation, tourism and visual resources. This section of the Roanoke River has been found to be potentially scenic and is popular with the paddling community for these reasons we continue to support a portage study in the project area. There are several other points of interest to recreation users and tourists: the Blue Ridge Parkway, an All American Road [national byway designation] and National Park and Natural Bridge State Park is in the vicinity of the project area.

The remaining DCR divisions have no comments regarding the scope of this project. Thank you for the opportunity to comment.

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Racine Hydroelectric Project

Project No. 2570-032

NOTICE OF COMMENT PERIOD EXTENSION

(March 12, 2019)

On December 14, 2018, AEP Generation Resources, Inc. filed a proposed study plan in support of the re-licensing process for the Racine Hydroelectric Project No. 2570 (Racine Project).¹ Pursuant to 18 C.F.R. § 5.12, participants may file comments, including any revised information or study requests, within 90 days of the date the potential applicant files the proposed study plan. The due date for comments on the proposed study plan is March 14, 2019.

On March 8, 2019, the U.S. Fish and Wildlife Service (FWS) requested a 14-day extension of time to the comment period on the proposed study plan, due to the funding lapse affecting some federal agencies between December 22, 2018 and January 25, 2019. Providing the entire requested extension of time would result in extending the established process plan and schedule for the Racine Project, which would delay the commencement of the first year study season under the Integrated Licensing Process.² Therefore, the Commission is extending the comment period on the proposed study plan to **March 21, 2019**, in order to provide FWS and other affected agencies sufficient time to provide comments without creating undue delays to the study season. This comment period extension will not affect the remainder of the process plan and schedule, and all major pre-filing milestone due dates will conform to the process plan and schedule. Accordingly, the revised study plan, comments on the revised study plan, and the Director's study plan determination will be due April 13, April 28, and May 13, 2019, respectively.

Kimberly D. Bose,
Secretary.

¹ Go to https://elibrary.ferc.gov/idmws/search/intermediate.asp?link_file=yes&doclist=14729056 and select the file link to view the document.

² The process plan and schedule for the Racine Project is included as Appendix A to the Commission's Scoping Document 2, issued on December 12, 2018.

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Appalachian Power Company

Project No. 2466-034

NOTICE OF INTENT TO FILE LICENSE APPLICATION, FILING OF PRE-APPLICATION DOCUMENT (PAD), COMMENCEMENT OF PRE-FILING PROCESS, AND SCOPING; REQUEST FOR COMMENTS ON THE PAD AND SCOPING DOCUMENT, AND IDENTIFICATION OF ISSUES AND ASSOCIATED STUDY REQUESTS

(March 26, 2019)

- a. Type of Filing: Notice of Intent to File License Application for a New License and Commencing Pre-filing Process
- b. Project No.: 2466-034
- c. Dated Filed: January 28, 2019
- d. Submitted By: Appalachian Power Company (Appalachian)
- e. Name of Project: Niagara Hydroelectric Project
- f. Location: On the Roanoke River near the City of Roanoke, Roanoke County, Virginia. The project does not occupy federal lands.
- g. Filed Pursuant to: 18 CFR Part 5 of the Commission's Regulations
- h. Potential Applicant Contact: Jon Magalski, Environmental Specialist Consultant, Appalachian Power Company, 1 Riverside Plaza, Columbus, OH (614) 716-2240, jmmagalski@aep.com.
- i. FERC Contact: Allyson Conner at (202) 502-6082 or e-mail at allyson.conner@ferc.gov.
- j. Cooperating agencies: Federal, state, local, and tribal agencies with jurisdiction and/or special expertise with respect to environmental issues that wish to cooperate in the preparation of the environmental document should follow the instructions for filing such requests described in item o below. Cooperating agencies should note the Commission's policy that agencies that cooperate in the

preparation of the environmental document cannot also intervene. *See* 94 FERC ¶ 61,076 (2001).

k. With this notice, we are initiating informal consultation with: (a) the U.S. Fish and Wildlife Service and/or NOAA Fisheries under section 7 of the Endangered Species Act and the joint agency regulations thereunder at 50 CFR, Part 402, and (b) the State Historic Preservation Officer, as required by section 106, National Historic Preservation Act, and the implementing regulations of the Advisory Council on Historic Preservation at 36 CFR 800.2.

l. With this notice, we are designating Appalachian as the Commission's non-federal representative for carrying out informal consultation, pursuant to section 7 of the Endangered Species Act and section 106 of the National Historic Preservation Act.

m. On January 28, 2019, Appalachian filed with the Commission a Pre-Application Document (PAD; including a proposed process plan and schedule), pursuant to 18 CFR 5.6 of the Commission's regulations.

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

Register online at <http://www.ferc.gov/docs-filing/esubscription.asp> to be notified via e-mail of new filings and issuances related to this or other pending projects. For assistance, contact FERC Online Support.

o. With this notice, we are soliciting comments on the PAD and Commission's staff Scoping Document 1 (SD1), as well as study requests. All comments on the PAD and SD1, and study requests should be sent to the address above in paragraph h. In addition, all comments on the PAD and SD1, study requests, requests for cooperating agency status, and all communications to and from Commission staff related to the merits of the potential application must be filed with the Commission.

The Commission strongly encourages electronic filing. Please file all documents using the Commission's eFiling system at <http://www.ferc.gov/docs-filing/efiling.asp>. Commenters can submit brief comments up to 6,000 characters, without prior registration, using the eComment system at

<http://www.ferc.gov/docs-filing/ecomment.asp>. You must include your name and contact information at the end of your comments. For assistance, please contact FERC Online Support at FERCOnlineSupport@ferc.gov. In lieu of electronic filing, please send a paper copy to: Secretary, Federal Energy Regulatory Commission, 888 First Street, NE, Washington, DC 20426. The first page of any filing should include docket number P-2466-034.

All filings with the Commission must bear the appropriate heading: “Comments on Pre-Application Document,” “Study Requests,” “Comments on Scoping Document 1,” “Request for Cooperating Agency Status,” or “Communications to and from Commission Staff.” Any individual or entity interested in submitting study requests, commenting on the PAD or SD1, and any agency requesting cooperating status must do so by **May 25, 2019**.

p. Although our current intent is to prepare an environmental assessment (EA), there is the possibility that an Environmental Impact Statement (EIS) will be required. Nevertheless, this meeting will satisfy the NEPA scoping requirements, irrespective of whether an EA or EIS is issued by the Commission.

Scoping Meetings

Commission staff will hold two scoping meetings in the vicinity of the project at the time and place noted below. The daytime meeting will focus on resource agency, Indian tribes, and non-governmental organization concerns, while the evening meeting is primarily for receiving input from the public. We invite all interested individuals, organizations, and agencies to attend one or both of the meetings, and to assist staff in identifying particular study needs, as well as the scope of environmental issues to be addressed in the environmental document. The times and location of these meetings are as follows:

Evening Scoping Meeting

Date and Time: Wednesday, April 24, 2019 at 6:30 p.m.
Location: Vinton Library
300 S. Pollard Street
Vinton, VA 24179
(540) 857-5043

Daytime Scoping Meeting

Date and Time: Thursday, April 25, 2019 at 9:00 a.m.

Location: Vinton Library
300 S. Pollard Street
Vinton, VA 24179
(540) 857-5043

SD1, which outlines the subject areas to be addressed in the environmental document, was mailed to the individuals and entities on the Commission's mailing list. Copies of SD1 will be available at the scoping meetings, or may be viewed on the web at <http://www.ferc.gov>, using the "eLibrary" link. Follow the directions for accessing information in paragraph n. Based on all oral and written comments, a Scoping Document 2 (SD2) may be issued. SD2 may include a revised process plan and schedule, as well as a list of issues, identified through the scoping process.

Environmental Site Review

The applicant and Commission staff will conduct an environmental site review of the project on Wednesday, April 24, 2019 at 10:00 a.m. All participants should meet at Niagara Dam located at 1495 Niagara Road, Vinton, VA 24179; thereafter, participants should be prepared to drive or carpool to other locations within the project boundary. To attend the environmental site review, please RSVP via email to Jon Magalski at jmmagalski@aep.com. Persons not providing an RSVP by April 19, 2019, will not be allowed on the environmental site review.

Meeting Objectives

At the scoping meetings, staff will: (1) initiate scoping of the issues; (2) review and discuss existing conditions and resource management objectives; (3) review and discuss existing information and identify preliminary information and study needs; (4) review and discuss the process plan and schedule for pre-filing activity that incorporates the time frames provided for in Part 5 of the Commission's regulations and, to the extent possible, maximizes coordination of federal, state, and tribal permitting and certification processes; and (5) discuss the appropriateness of any federal or state agency or Indian tribe acting as a cooperating agency for development of an environmental document.

Meeting participants should come prepared to discuss their issues and/or concerns. Please review the PAD in preparation for the scoping meetings. Directions on how to obtain a copy of the PAD and SD1 are included in item n of this document.

Project No. 2466-034

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Meeting Procedures

The meetings will be recorded by a stenographer and will be placed in the public record of the project.

Kimberly D. Bose,
Secretary.

FEDERAL ENERGY REGULATORY COMMISSION

Washington, DC 20426

March 26, 2019

OFFICE OF ENERGY PROJECTS

Project No. P-2466-034 – Virginia
Niagara Hydroelectric Project
Appalachian Power Company

Subject: Scoping Document 1 for the Niagara Hydroelectric Project, P-2466-034

To the Party Addressed:

The Federal Energy Regulatory Commission (Commission) is currently reviewing the Pre-Application Document submitted by Appalachian Power Company (Appalachian) for relicensing the Niagara Hydroelectric Project (FERC No. 2466) (Niagara Project). The project is located on the Roanoke River, in Roanoke County, Virginia.

Pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended, Commission staff intends to prepare an environmental assessment (EA), which will be used by the Commission to determine whether, and under what conditions, to issue a new license for the project. To support and assist our environmental review, we are beginning the public scoping process to ensure that all pertinent issues are identified and analyzed, and that the EA is thorough and balanced.

We invite your participation in the scoping process, and are circulating the attached Scoping Document 1 (SD1) to provide you with information on the Niagara Project. We also are soliciting your comments and suggestions on our preliminary list of issues and alternatives to be addressed in the EA, and requesting that you identify any studies that would help provide a framework for collecting pertinent information on the resource areas under consideration necessary for the Commission to prepare the EA for the project.

We will hold two scoping meetings for the Niagara Project to receive input on the scope of the EA. An evening meeting will be held at 6:30 p.m. on Wednesday, April 24, 2019, at the Vinton Library. A daytime meeting will be held at 9:00 a.m. on Thursday, April 25, 2019 at the same location. We will also visit the project facilities on Wednesday, April 24, 2019, starting at 10:00 a.m.

Project No. 2466-034

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We invite all interested agencies, Indian tribes, non-governmental organizations, and individuals to attend one or all of these meetings. Further information on our environmental site review and scoping meetings is available in the enclosed SD1.

SD1 is being distributed to both Appalachian's distribution list and the Commission's official mailing list (see section 10.0 of the attached SD1). If you wish to be added to or removed from the Commission's official mailing list, please send your request by email to ferconlinesupport@ferc.gov or by mail to: Secretary, Federal Energy Regulatory Commission, 888 First Street, N.E., Room 1A, Washington, DC 20426. All written or emailed requests must specify your wish to be removed from or added to the mailing list and must clearly identify the following on the first page: **Niagara Hydroelectric Project No. 2466-034**.

Please review the SD1 and, if you wish to provide comments, follow the instructions in section 6.0, *Request for Information and Studies*. If you have any questions about SD1, the scoping process, or how Commission staff will develop the EA for this project, please contact Allyson Conner at (202) 502-6052 or allyson.conner@ferc.gov. Additional information about the Commission's licensing process and the Niagara Project may be obtained from our website (www.ferc.gov) or Appalachian's licensing website, www.aephydro.com. The deadline for filing comments and study requests is **May 25, 2019**. The Commission strongly encourages electronic filings.

Enclosure: Scoping Document 1

SCOPING DOCUMENT 1
NIAGARA HYDROELECTRIC PROJECT
VIRGINIA
PROJECT NO. 2466-034



Federal Energy Regulatory Commission
Office of Energy Projects
Division of Hydropower Licensing
Washington, DC

MARCH 2019

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SCOPING DOCUMENT 1

Niagara Hydroelectric Project, No. 2466-034

1.0 INTRODUCTION

The Federal Energy Regulatory Commission (Commission or FERC), under the authority of the Federal Power Act (FPA),¹ may issue licenses for terms ranging from 30 to 50 years for the construction, operation, and maintenance of non-federal hydroelectric projects. On January 28, 2019, Appalachian Power Company (Appalachian) filed a Pre-Application Document (PAD) and Notice of Intent to seek a new license for the Niagara Hydroelectric Project, FERC Project No. 2466 (Niagara Project or project).²

The Niagara Project is located on the Roanoke River in Roanoke County, Virginia. The average annual generation from 2010 to 2014 of the project was 8,853 megawatt-hours (MWh).

A detailed description of the project is provided in section 3.0. The location of the project is shown in figure 1. The Niagara Project does not occupy federal lands.

The National Environmental Policy Act (NEPA) of 1969,³ the Commission's regulations, and other applicable laws require that we independently evaluate the environmental effects of relicensing the Niagara Project as proposed, and also consider reasonable alternatives to the licensee's proposed action. At this time, we intend to prepare an environmental assessment (EA) that describes and evaluates the probable effects, including an assessment of the site-specific and cumulative effects, if any, of the proposed action and alternatives. The EA preparation will be supported by a scoping process to ensure identification and analysis of all pertinent issues. Although our current intent is to prepare an EA, there is a possibility that an environmental impact statement (EIS) will be required. The scoping process will satisfy the NEPA scoping requirements, irrespective of whether the Commission issues an EA or an EIS.

¹ 16 U.S.C. § 791(a)-825(r) (2012).

² The current license for the Niagara Project was issued on March 25, 1994, and expires on February 29, 2024.

³ National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321-4370(f) (2012).



Figure 1. Location of the project. (Source: Appalachian).

2.0 SCOPING

Scoping Document 1 (SD1) is intended to advise all participants as to the proposed scope of the EA and to seek additional information pertinent to this analysis. This document contains: (1) a description of the scoping process and schedule for the development of the EA; (2) a description of the proposed action and alternatives; (3) a preliminary identification of environmental issues and proposed studies; (4) a request for comments and information; (5) a proposed EA outline; and (6) a preliminary list of comprehensive plans that are applicable to the project.

2.1 PURPOSES OF SCOPING

Scoping is the process used to identify issues, concerns, and opportunities for enhancement or mitigation associated with a proposed action. In general, scoping should be conducted during the early planning stages of a project. The purposes of the scoping process are as follows:

- invite participation of federal, state, and local resource agencies, Indian tribes, non-governmental organizations (NGOs), and the public to identify significant environmental and socioeconomic issues related to the proposed project;
- determine the resource issues, depth of analysis, and significance of issues to be addressed in the EA;
- identify how the project would or would not contribute to cumulative effects in the project area;
- identify reasonable alternatives to the proposed action that should be evaluated in the EA;
- solicit, from participants, available information on the resources at issue, including existing information and study needs; and
- determine the resource areas and potential issues that do not require detailed analysis during review of the project.

2.2 COMMENTS, SCOPING MEETINGS, AND ENVIRONMENTAL SITE REVIEW

During preparation of the EA, there will be several opportunities for the resource agencies, Indian tribes, NGOs, and the public to provide input. These opportunities occur:

- during the public scoping process and study plan meetings, when we solicit oral and written comments regarding the scope of issues and analysis for the EA;
- in response to the Commission's notice that the project is ready for environmental analysis; and
- after issuance of the EA when we solicit written comments on the EA.

In addition to written comments solicited by this SD1, we will hold two public scoping meetings and an environmental site review in the vicinity of the project. A daytime meeting will focus on concerns of the resource agencies, NGOs, and Indian tribes, and an evening meeting will focus on receiving input from the public. We invite all interested agencies, Indian tribes, NGOs, and individuals to attend one or both of the meetings to assist us in identifying the scope of environmental issues that should be analyzed in the EA. All interested parties are also invited to participate in the environmental site review. The times and locations of the meetings and environmental site review are as follows:

Evening Scoping Meeting

Date and Time: **Wednesday, April 24, 2019 at 6:30 p.m.**

Location: Vinton Library
300 S. Pollard Street
Vinton, VA 24179
(540) 857-5043

Daytime Scoping Meeting

Date and Time: **Thursday, April 25, 2019 at 9:00 a.m.**

Location: Vinton Library
300 S. Pollard Street
Vinton, VA 24179
(540) 857-5043

Environmental Site Review

Date and Time: **Wednesday, April 24, 2019 at 10:00 a.m.**

Location: Niagara Dam
1495 Niagara Road
Vinton, VA 24179-3700

Please RSVP via email to Jonathan Magalski at jmmagalski@aep.com **on or before April 19, 2019** if you plan to attend the environmental site review. Persons not providing an RSVP by April 19, 2019, will not be allowed on the environmental site review. Individuals may not access the site without escort of the facility owner, Appalachian Power Company. Also, persons attending the environmental site review must adhere to the following requirements: (1) persons must be 18 years or older; (2) persons must have a current, valid, government-issued or school photo identification (i.e., driver's license, etc.); (3) persons with open-toed shoes/sandals/flip flops/high heels, etc. will not be allowed on the environmental site review; (4) no photography will be allowed inside the powerhouses; (5) small bags containing personal items for the site visit (i.e., notebooks, maps, water, etc.) will be allowed, but are subject to search; (6) no weapons are allowed on-site; (7) no alcohol/drugs are allowed on-site (or persons exhibiting the effects thereof); (8) hard hats and safety glasses (PPE) will be required while on-site, please bring personal PPE if available, otherwise PPE will be provided; (9) no animals (except for service animals) are allowed on the environmental site review; and (10) individuals participating in the environmental site review will be required to sign a waiver of liability.

The scoping meetings will be recorded by a court reporter, and all statements (verbal and written) will become part of the Commission's public record for the project. Before each meeting, all individuals who attend, especially those who intend to make statements, will be asked to sign in and clearly identify themselves for the record. Interested parties who choose not to speak or who are unable to attend the scoping meetings may provide written comments and information to the Commission as described in section 6.0. These meetings are posted on the Commission's calendar located on the internet at www.ferc.gov/EventCalendar/EventsList.aspx, along with other related information.

Meeting participants should come prepared to discuss their issues and/or concerns as they pertain to the relicensing of the Niagara Project. It is advised that participants review the PAD in preparation for the scoping meetings. Copies of the PAD are available for review at the Commission in the Public Reference Room or may be viewed on the Commission's website (www.ferc.gov), using the "eLibrary" link. Enter the docket number, P-2466, to access the documents. For assistance, contact FERC Online Support at FERCOnlineSupport@ferc.gov or toll free at 1-866-208-3676, or for TTY,

(202) 502-8659. A copy of the PAD also can be obtained from Appalachian's licensing website (<http://www.aephydro.com>) or be available for inspection and reproduction at the following address: Appalachian Power Company, 40 Franklin Road SW, Roanoke, Virginia, 24011.

Following the scoping meetings and comment period, all issues raised will be reviewed and decisions made as to the level of analysis needed. If preliminary analysis indicates that any issues presented in this scoping document have little potential for causing significant effects, the issue(s) will be identified and the reasons for not providing a more detailed analysis will be given in the EA.

If we receive no substantive comments on SD1, then we will not prepare a Scoping Document 2 (SD2). Otherwise, we will issue SD2 to address any substantive comments received. The SD2 will be issued for informational purposes only; no response will be required. The EA will address recommendations and input received during the scoping process.

3.0 PROPOSED ACTION AND ALTERNATIVES

In accordance with NEPA, the environmental analysis will consider the following alternatives, at a minimum: (1) the no-action alternative, (2) the applicant's proposed action, and (3) alternatives to the proposed action.

3.1 NO-ACTION ALTERNATIVE

Under the no-action alternative, the Niagara Project would continue to operate as required by the current project license (i.e., there would be no change to the existing environment). No new environmental protection, mitigation, or enhancement measures would be implemented. We use this alternative to establish baseline environmental conditions for comparison with other alternatives.

3.1.1 Existing Project Facilities

The Niagara Project consists of: (1) a 52-foot-high, 462-foot-long concrete dam, inclusive of the right non-overflow abutment (70 feet) and main spillway (392 feet); (2) a 62-acre impoundment with a gross storage capacity of 425 acre-feet at the normal pool elevation of 884.4 feet;⁴ (3) an 11-foot-diameter, 500-foot-long corrugated metal pipe penstock with associated entrance and discharge structures; (4) a 1,500-foot-long bypassed reach; (5) a 92-foot-long, 58-foot-wide, 42-foot-high concrete powerhouse containing two generating units with a total authorized installed capacity of 2.4 megawatts (MW); (6) a 103-foot-long auxiliary spillway with a crest elevation of 886 feet located downstream of the upstream intake; (7) transmission facilities consisting of 50-foot-long 2.4-kilovolt (kV) generator leads and a 3-phase, 2.4/12-kV, 2,500-kilovolt ampere (kVA) step-up transformer; and (8) appurtenant facilities.

3.1.2 Existing Project Operations

The Niagara Project operates in a run-of-river mode under all flow conditions, where inflow equals outflow. The project is operated to maintain the impoundment at or near elevation 884.4 feet, which is 0.6 feet below the crest of the spillway. During extreme flow conditions, such as rapidly changing inflows, Appalachian operates the project with a minimum impoundment elevation of 883.4 feet. Run-of-river operation may be temporarily modified by operating emergencies beyond the control of Appalachian and for short periods upon mutual agreement among Appalachian, U.S. Fish

⁴ All elevations herein are referenced to National Geodetic Vertical Datum of 1929 (NGVD 29).

and Wildlife Service (FWS), and the Virginia Department of Game and Inland Fisheries (Virginia DGIF).

During periods of high flow, all flows exceeding the maximum generation capacity of the powerhouse are passed over and through the main spillway. When the reservoir elevation reaches 886.0 feet, water begins to spill over the auxiliary spillway. When the tailwater elevation at the powerhouse reaches 832.0 feet, the generating units are shut down.

Appalachian releases a minimum flow of 50 cubic feet per second (cfs), or inflow to the impoundment, whichever is less, below the project. Appalachian provides a total minimum flow of 8 cfs into the bypassed reach through the sluice gate or over the spillway. Flows are measured at the U.S. Geological Survey (USGS) gage located approximately 200 feet downstream of the powerhouse (USGS 2056000 Roanoke River at Niagara, Virginia).

3.2 APPLICANT'S PROPOSAL

The proposed action is to continue the existing operation and maintenance of the Niagara Project.

3.2.1 Proposed Project Facilities and Operation

Appalachian is not proposing any changes to its project facilities or in project operation.

3.2.2 Proposed Environmental Measures

Appalachian proposes to continue the existing operation and maintenance of the Niagara Project which includes the protection, mitigation, and enhancement (PM&E) measures required by the current license and subsequent amendments. These measures are described below.

Geologic and Soil Resources

- There are no existing or proposed PM&E measures related to geology and soils for the Niagara Project. The potential need for PM&E measures will be evaluated during the relicensing process.

Aquatic Resources

- Continue operating the project in a run-of-river mode, maintaining the elevation of the impoundment at or near 884.4 feet (Article 401).
- Continue providing a minimum flow of 50 cfs, or inflow to the project, whichever is less, to the Roanoke River downstream of the powerhouse (Article 402).
- Continue providing a minimum flow of 8 cfs to the project's bypassed reach (Article 403).⁵

Terrestrial Resources

- Continue to follow a Commission-approved Wildlife Management Plan that includes monitoring habitat over the term of the existing license (Article 407).

Threatened and Endangered Species

- There are no existing or proposed PM&E measures related to terrestrial resources for the Niagara Project. The potential need for PM&E measures will be evaluated during the relicensing process.

Recreation and Land Use

- Continue to provide recreation access via a canoe portage trail (Article 411).

Aesthetic Resources

- There are no existing or proposed PM&E measures related to aesthetic resources for the Niagara Project. The potential need for PM&E measures will be evaluated during the relicensing process.

⁵ 93 FERC ¶ 62,049 (2000). Order Approving Modification to Flow Monitoring Plan.

Cultural Resources

- There are no existing or proposed PM&E measures related to cultural resources for the Niagara Project. The potential need for PM&E measures will be evaluated during the relicensing process.

3.3 DAM SAFETY

It is important to note that dam safety constraints may exist and should be taken into consideration in the development of proposals and alternatives considered in the pending proceeding. For example, proposed modifications to the dam structure, such as the installation of flashboards or fish passage facilities, could impact the integrity of the dam structure. As the proposal and alternatives are developed, the applicant must evaluate the effects and ensure that the project would meet the Commission's dam safety criteria found in Part 12 of the Commission's regulations and the Engineering Guidelines (<http://www.ferc.gov/industries/hydropower/safety/guidelines/eng-guide.asp>).

3.4 ALTERNATIVES TO THE PROPOSED ACTION

Commission staff will consider and assess all alternative recommendations for operational or facility modifications, as well as PM&E measures identified by the Commission, the agencies, Indian tribes, NGOs, and the public.

3.5 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

At present, we propose to eliminate the following alternatives from detailed study in the EA.

3.5.1 Federal Government Takeover

In accordance with § 16.14 of the Commission's regulations, a federal department or agency may file a recommendation that the United States exercise its right to take over a hydroelectric power project with a license that is subject to sections 14 and 15 of the FPA.⁶ We do not consider federal takeover to be a reasonable alternative. Federal takeover of the project would require congressional approval. While that fact alone would not preclude further consideration of this alternative, there is currently no evidence showing that federal takeover should be recommended to Congress. No party has

⁶ 16 U.S.C. §§ 791(a)-825(r).

suggested that federal takeover would be appropriate, and no federal agency has expressed interest in operating the project.

3.5.2 Non-power License

A non-power license is a temporary license the Commission would terminate whenever it determines that another governmental agency is authorized and willing to assume regulatory authority and supervision over the lands and facilities covered by the non-power license. At this time, no governmental agency has suggested a willingness or ability to take over the project. No party has sought a non-power license, and we have no basis for concluding that the Niagara Project should no longer be used to produce power. Thus, we do not consider a non-power license a reasonable alternative to relicensing the project.

3.5.3 Project Decommissioning

Decommissioning of the project could be accomplished with or without dam removal. Either alternative would require denying the relicense application and surrender or termination of the existing license with appropriate conditions. There would be significant costs involved with decommissioning the project and/or removing any project facilities. The project provides a viable, safe, and clean renewable source of power to the region. With decommissioning, the project would no longer be authorized to generate power.

No party has suggested project decommissioning would be appropriate in this case, and we have no basis for recommending it. Thus, we do not consider project decommissioning a reasonable alternative to relicensing the project with appropriate environmental measures.

4.0 SCOPE OF CUMULATIVE EFFECTS AND SITE-SPECIFIC RESOURCE ISSUES

4.1 CUMULATIVE EFFECTS

According to the Council on Environmental Quality's regulations for implementing NEPA (40 C.F.R. 1508.7), a cumulative effect is the effect on the environment that results from the incremental effect of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time, including hydropower and other land and water development activities.

4.1.1 Resources that could be Cumulatively Affected

Based on information in the PAD for the Niagara Project, and preliminary staff analysis, we have identified water quality (i.e., dissolved oxygen and water temperature) and aquatic habitat as resources that could be cumulatively affected by the proposed continued operation and maintenance of the Niagara Project in combination with other hydroelectric projects and other activities in the Roanoke River Basin.

4.1.2 Geographic Scope

Our geographic scope of analysis for cumulatively affected resources is defined by the physical limits or boundaries of: (1) the proposed action's effect on the resources, and (2) contributing effects from other non-hydropower activities (municipal and industrial water withdrawals/discharges) within the upper Roanoke River. We have identified the geographic scope for water quality to include the Roanoke River from the confluence of the North and South Forks (near Lafayette, Virginia) to the upper extent of Smith Mountain Lake, the 20,260-acre impoundment for the Smith Mountain Pumped Storage Project FERC No. 2210. We chose this geographic scope because it appears to capture the main municipalities upstream of the Niagara Project impoundment, which may cumulatively affect water quality and aquatic habitat in the identified geographic reach. In addition, this scope encompasses the downstream extent for which project effects are most likely to occur.

4.1.3 Temporal Scope

The temporal scope of our cumulative effects analysis in the EA will include a discussion of past, present, and reasonably foreseeable future actions and their effects on each resource that could be cumulatively affected. Based on the potential term of a new

license, the temporal scope will look 30 to 50 years into the future, concentrating on the effect on the resources from reasonably foreseeable actions. The historical discussion will, by necessity be limited to the amount of available information for each resource. The quality and quantity of information, however, diminishes as we analyze resources further away in time from the present.

4.2 RESOURCE ISSUES

In this section, we present a preliminary list of environmental issues to be addressed in the EA. We identified these issues, which are listed by resource area, by reviewing the PAD and the Commission's record for the Niagara Project. This list is not intended to be exhaustive or final, but contains the issues raised to date. After the scoping process is complete, we will review the list and determine the appropriate level of analysis needed to address each issue in the EA. Those issues identified by an asterisk (*) will be analyzed for both cumulative and site-specific effects.

4.2.1 Geologic and Soils Resources

- Effects of continued project operation and maintenance on shoreline stability of the impoundment.

4.2.2 Aquatic Resources

- Effects of continued project operation and maintenance on water quality, including dissolved oxygen (DO) and water temperature, upstream and downstream of the impoundment, including the bypassed reach.*
- Adequacy of the existing minimum flows for protecting aquatic habitat for resident fishes, including species of special concern (orangeфин madtom), and other aquatic resources downstream of the powerhouse (50 cfs) and in the bypassed reach (8 cfs).*
- Effects of continued project operation and maintenance on aquatic resources, including entrainment and impingement mortality of resident fishes.

4.2.3 Terrestrial Resources

- Effects of continued project operation and maintenance on riparian, wetland, and upland habitat and associated wildlife such as bald eagles.

4.2.4 Threatened and Endangered Species

- Effects of continued project operation and maintenance on the federally listed Indiana bat, northern long-eared bat, and Roanoke logperch.^{*,7}

4.2.5 Recreation, Land Use, and Aesthetic Resources

- Effects of continued project operation and maintenance on recreation, land use, and aesthetics within the project area including the project impoundment, tailrace, and bypassed reach.
- Adequacy of existing recreational facilities and public access to the project to meet current and future recreational demand.

4.2.6 Cultural Resources

- Effects of project operation and maintenance on historic properties and archeological resources that are included in, eligible for listing in, or potentially eligible for inclusion in the National Register of Historic Places.
- Effects of project operation and maintenance on any previously unidentified historic or archeological resources or traditional cultural properties that may be eligible for inclusion in the National Register of Historical Places.

4.2.7 Developmental Resources

- Economics of the project and the effects of any recommended environmental measures on the project's economics.

⁷ Cumulative effects analysis applies only to Roanoke logperch.

5.0 PROPOSED STUDIES

Depending upon the findings of studies completed by Appalachian and the recommendations of the consulted entities, Appalachian will consider, and may propose certain other measures to enhance environmental resources affected by the project as part of the proposed action. Appalachian's initial study proposals are identified by resource area in table 1. Detailed information on Appalachian's initial study proposals can be found in the PAD. Further studies may need to be added to this list based on comments provided to the Commission and Appalachian from interested participants, including Indian tribes.

Table 1. Appalachian's initial study proposals. (Source: Appalachian)

Resource Area and Study Name	Proposed Study
Geology and Soils	
Shoreline Stability Assessment	To provide updated information about existing project conditions, as well as to evaluate the need for any additional erosion control measures at specific areas of concern, Appalachian proposes to conduct a Shoreline Stability Assessment for the project. Appalachian anticipates that this assessment will consist of a survey of the project impoundment to locate any sites of erosion or shoreline instability. Appalachian proposes to inventory, map, and photograph any such areas, using a scoring or ranking system (e.g., Bank Erosion Hazard Index) to try to identify areas that have the potential to erode at unnaturally high rates and to prioritize any areas where remedial action may be needed.
Aquatic Resources	
Water Quality Study	Appalachian proposes to conduct a seasonal temperature and DO study at the project to confirm compliance with water quality standards and designated uses.

Resource Area and Study Name	Proposed Study
	Locations of monitoring equipment will be established through further consultation with Virginia Department of Environmental Quality and other stakeholders. The scope of the study would be limited to the FERC-approved project boundary.
Bypass Reach Aquatic Habitat Study	Appalachian proposes to perform a desktop aquatic habitat assessment of the bypassed reach to determine the amount of available habitat under the 8-cfs minimum flow. Appalachian states that this study may include a review of all work performed to date, and determination of appropriate methodologies used in conjunction with fisheries surveys conducted to update the species composition.
Terrestrial Resources	
Wetland and Riparian Habitat Survey	Appalachian proposes to conduct a wetland and riparian habitat assessment that will consist of field surveys to confirm, classify, and characterize wetland habitats and communities within the project boundary. Wetlands will be mapped and classified using the FWS's wetland classification system, unless otherwise recommended by resource agencies. During the wetland survey, investigators will identify the dominant plants present within a wetland habitat to the species level. During the field habitat surveys, investigators will examine the soil matrix down to approximately 18 inches if possible, and analyze soil

Resource Area and Study Name	Proposed Study
	characteristics in the field for hydric soil indicators. Principal wetland functions and values will also be determined. This study will also include characterization of riparian habitat resources within the project boundary.
Recreation Resources	
Recreational Needs Assessment	Appalachian proposes to conduct a recreational assessment of the project to assess existing recreational opportunities and potential improvements to facilities. Appalachian will incorporate existing monitoring information into the study report and recommendations and the scope will be limited to within the FERC-approved project boundary.

6.0 REQUEST FOR INFORMATION AND STUDIES

We are asking federal, state, and local resource agencies, Indian tribes, NGOs, and the public to forward to the Commission any information that will assist us in conducting an accurate and thorough analysis of the project-specific and cumulative effects associated with relicensing the Niagara Project. The types of information requested include, but are not limited to:

- information, quantitative data, or professional opinions that may help define the geographic and temporal scope of the analysis (both site-specific and cumulative effects), and that helps identify significant environmental issues;
- identification of, and information from, any other EA, EIS, or similar environmental study (previous, on-going, or planned) relevant to the proposed relicensing of the Niagara Project;
- existing information and any data that would help to describe the past and present actions and effects of the project and other developmental activities on environmental and socioeconomic resources;
- information that would help characterize the existing environmental conditions and habitats;
- the identification of any federal, state, or local resource plans, and any future project proposals in the affected resource area (e.g., proposals to construct or operate water treatment facilities, recreation areas, water diversions, timber harvest activities, or fish management programs, along with any implementation schedules);
- documentation that the proposed project would or would not contribute to cumulative adverse or beneficial effects on any resources. Documentation can include, but need not be limited to, how the project would interact with other projects in the area and other developmental activities; study results; resource management policies; and reports from federal and state agencies, local agencies, Indian tribes, NGOs, and the public;
- documentation showing why any resources should be excluded from further study or consideration; and

- study requests by federal and state agencies, local agencies, Indian tribes, NGOs, and the public that would help provide a framework for collecting pertinent information on the resource areas under consideration necessary for the Commission to prepare the EA/EIS for the project.

All requests for studies filed with the Commission must meet the criteria found in Appendix A, *Study Plan Criteria*.

The requested information, comments, and study requests should be submitted to the Commission no later than **May 25, 2019**. All filings must clearly identify the following on the first page: **Niagara Project (P-2466-034)**. Scoping comments may be filed electronically via the Internet. See 18 C.F.R. 385.2001(a)(1)(iii) and the instructions on the Commission's website <http://www.ferc.gov/docs-filing/efiling.asp>. Commenters can submit brief comments up to 6,000 characters, without prior registration, using the eComment system at <http://www.ferc.gov/docs-filing/ecomment.asp>. You must include your name and contact information at the end of your comments. For assistance, please contact FERC Online Support at FERCOnlineSupport@ferc.gov or toll free at 1-866-208-3676, or for TTY, (202) 502-8659. Although the Commission strongly encourages electronic filing, documents may also be paper-filed. To paper-file, please send a paper copy to: Secretary, Federal Energy Regulatory Commission, 888 First Street, NE, Washington, D.C. 20426.

Register online at <http://www.ferc.gov/esubscription.asp> to be notified via email of new filings and issuances related to this or other pending projects. For assistance, please contact FERC Online Support at ferconlinesupport@ferc.gov.

Any questions concerning the scoping meetings, site visits, or how to file written comments with the Commission should be directed to Allyson Conner at (202) 502-6082 or allyson.conner@ferc.gov. Additional information about the Commission's licensing process and the Niagara Project may be obtained from the Commission's website, www.ferc.gov.

7.0 EA PREPARATION SCHEDULE

At this time, we anticipate the need to prepare a single EA. The EA will be sent to all persons and entities on the Commission's service and mailing lists for the Niagara Project. The EA will include our recommendations for operating procedures, as well as PM&E measures that should be part of any license issued by the Commission. All recipients will then have 30 days to review the EA and file written comments with the Commission. All comments on the EA filed with the Commission will be considered in preparation of the license order. A schedule for the EA preparation will be provided after a license application is filed.

The major milestones, with pre-filing target dates are as follows:

<u>Major Milestone</u>	<u>Target Date</u>
Scoping Meetings	April 2019
License Application Filed	February 2022
Ready for Environmental Analysis Notice Issued	
Deadline for Filing Comments, Recommendations, and Agency Terms and Conditions/Prescriptions	
Single EA Issued	
Comments on EA Due	
Deadline for Filing Modified Agency Recommendations	
Order Issued	

A copy of Appalachian's process plan, which has a complete list of relicensing milestones for the Niagara Project, including those for developing the license application, is attached as Appendix B to this SD1.

8.0 PROPOSED EA OUTLINE

The preliminary outline for the Niagara Project EA is as follows:

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9.0 COMPREHENSIVE PLANS

Section 10(a)(2) of the FPA, 16 U.S.C. section 803(a)(2)(A), requires the Commission to consider the extent to which a project is consistent with federal and state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by a project. Commission staff have preliminarily identified and reviewed the plans listed below that may be relevant to the Niagara Project. Agencies are requested to review this list and inform the Commission staff of any changes. If there are other comprehensive plans that should be considered for this list that are not on file with the Commission, or if there are more recent versions of the plans already listed, they can be filed for consideration with the Commission according to 18 CFR 2.19 of the Commission's regulations. Please follow the instructions for filing a plan at <http://www.ferc.gov/industries/hydropower/gen-info/licensing/complan.pdf>.

The following is a list of comprehensive plans currently on file with the Commission that may be relevant to the Niagara Project.

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

U.S. Fish and Wildlife Service. Canadian Wildlife Service. 1986. North American waterfowl management plan. Department of the Interior. Environment Canada. May 1986.

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

Virginia Department of Conservation and Recreation. The 2007 Virginia outdoors plan (SCORP). Richmond, Virginia.

Virginia Department of Environmental Quality. 2015. Commonwealth of Virginia State Water Resources Plan. Richmond, Virginia. October 2015.

Virginia State Water Control Board. 1986. Minimum instream flow study – final report. Annandale, Virginia. February 1986.

10.0 MAILING LIST

The list below is the Commission's official mailing list for the Niagara Project (FERC No. 2466). If you want to receive future mailings for the Niagara Project and are not included in the list below, please send your request by email to efiling@ferc.gov or by mail to: Secretary, Federal Energy Regulatory Commission, 888 First Street, N.E., Room 1A, Washington, DC 20426. All written and emailed requests to be added to the mailing list must clearly identify the following on the first page: Niagara Project No. 2466-034. You may use the same method if requesting removal from the mailing list below.

Register online at <http://www.ferc.gov/esubscribenow.htm> to be notified via email of new filings and issuances related to this or other pending projects. For assistance, please contact FERC Online Support at FERCOnlineSupport@ferc.gov or toll free at 1-866-208-3676, or for TTY, (202) 502-8659.

Official Mailing List for the Niagara Project

Kenneth E. McDonough, ESQ
Assistant General Counsel
1 Riverside Plaza
Columbus, OH 43081

Frank Michael Simms
Hydro Support Manager
40 Franklin Road
Roanoke, VA 24013

John T. Eddins
Advisory Council on Historic Preservation
401 F Street N.W.
Suite 308
Washington, DC 20001-2637

William E. Trout, III
Director
American Canal Society, Inc.
3806 S. Amherst Hwy
Madison Heights, VA 24572
David Mark Shirley
Energy Production Supervisor

American Electric Power Service
Corporation
1 Riverside Plaza
24rd Floor
Columbus, OH 43215

John Whittaker
Winston & Strawn LLP
1700 K St. N.W.
Washington, DC 20006-3817

Elizabeth Parcell
Process Supervisor Senior
40 Franklin Road
Roanoke, VA 24022

Douglas Rosenberger
Plant Manager Hydro
American Electric Power Service
Corporation
40 Franklin Road SW
Roanoke, VA 24011

Thomas St. Pierre
Associate General Counsel - Re
Appalachian Power Company
1 Riverside Plaza, 29th Floor
Columbus, OH 43215

Bedford County Administration
122 E Main St
Bedford, VA 24523-2000

Town of Boones Mill
PO Box 66
Boones Mill, VA 24065-0066

Botetourt County Board of Supervisors
1 W. Main St
Fincastle, VA 24090-3006

Charles V. Ware
Conservation Chair
Coastal Canoeists
PO Box 566
Richmond, VA 23218-0566

Mark Vanover
County Administrator
Dickenson County Board of Supervisors
PO Box 1098
Clintwood, VA 24228-1098

Regional Office
Federal Emergency Management Agency
3003 Chamblee Tucker Rd
Atlanta, GA 30341

David W. Sutherland, Sr.
Fish and Wildlife Biologist
Fish & Wildlife Service, Region 1
177 Admiral Cochrane Dr.
Annapolis, MD 21401

William Stokes
Executive Director
Flannagan Water Authority
52 Flannagan Dam Road
Haysi, VA 24256

Macon C. Sammons, Jr.
County Administrator
Franklin County Administration Offices
40 E. Court St
Rocky Mount, VA 24151-1740

Historic Landmarks Commission
2801 Kensington Ave
Richmond, VA 23221-2470

Shelia Phipps, Librarian
Jonnie B. Deel Memorial Library
PO Box 650
Clintwood, VA 24228-0650

Northern Virginia Regional Park Authority
5400 Ox Rd
Fairfax Station, VA 22039-1022

City of Roanoke
215 Church Ave SW
Roanoke, VA 24011-1517

County of Roanoke
PO Box 29800
Roanoke, VA 24018-0798

City of Salem
PO Box 869
Salem, VA 24153-0869

Donald Baker
Town of Clintwood
PO Box 456
Clintwood, VA 24228-0456

Town of Troutville
PO Box 276
Troutville, VA 24175-0276

U.S. Army Corps of Engineers
District Office
803 Front St.
Norfolk, VA 23510-1011

U.S. Army Corps of Engineers
Louisville District
PO Box 59
Louisville, KY 40201-0059

U.S. Army Corps of Engineers
Divisional Office
Regulatory Branch
550 Main St.
Room 10524
Cincinnati, OH 45202-3222

U.S. Army Corps of Engineers
550 Main Street
Cincinnati, OH 45202

Office of the Solicitor
U.S. Bureau of Indian Affairs
1849 C Street, NW, MS 6557
Washington, DC 20240

Director, Trust Services
U.S. Bureau of Indian Affairs
1849 C St NW, MS-4637
Washington, DC 20240-0001

FERC Contact
U.S. Bureau of Land Management
Land & Renewable Resources
1849 C St NW
Washington, DC 20240

Director, U.S. Department of Interior
1849 C Street, N.W., MS 2430
Office of Environmental Policy &
Compliance
Washington, DC 20240

Anthony R. Conte
U.S. Department of Interior
300 Westgate Center Dr.
Hadley, MA 01035-9587

Michael C. Connor, Esq.
Comm. U.S. Bureau Reclamation
U.S. Department of Interior
1849 C Street NW
Washington, DC 20240-0001

U.S. Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103-2029

Heinz Mueller
U.S. Environmental Protection Agency
Region IV
61 Forsyth Street SW
Atlanta, GA 30303-8931

U.S. Fish & Wildlife Service
Regional Director
300 Westgate Center Drive
Northeast Regional Office
Hadley, MA 01035-9587

Robert W. Goodlatte
U.S. House of Representatives
Washington, DC 20515

U.S. National Park Service
FERC Contact
1924 Building
100 Alabama Street SW
Atlanta, GA 30303-8701

Kevin Mendik, Esq.
NPS Hydro Program Coordinator
U.S. National Park Service
15 State Street
10th floor
Boston, MA 02109

Senator Mark Warner
U.S. Senate
475 Russell Senate Office Building
Washington, DC 20510

Honorable Tim Kaine
U.S. Senate
231 Russell Senate Office Building
Washington, DC 20510

Ron Bush
U.S. Forest Service
1700 Park Avenue SW
Norton, VA 24273-1618

David Purser
NEPA Coordinator
U.S. Forest Service
1720 Peachtree St. NW
Atlanta, GA 30309

Town of Vinton
P.O. Box 338
Vinton, VA 24179-0338

Virginia Department of Conservation and
Recreation
Division of Planning and Recreation
600 E. Main Street
24th Floor
Richmond, VA 23219

Robbie Rhur
Environmental Program Planner
Virginia Department of Conservation and
Recreation
600 East Main Street
Floor 17
Richmond, VA 23219-2094

Bettina Sullivan, Manager
Virginia Department of Environmental
Quality
PO Box 1105
Richmond, VA 23218

Virginia Department of Environmental
Quality
Director
PO Box 1105
Richmond, VA 23218-1105

Jeffrey Hurst
Regional Director
Virginia Department of Environmental
Quality
Southwest Regional Office
355-A Deadmore St
Abingdon, VA 24210

Virginia Department of Agriculture &
Commerce
PO Box 1163
Richmond, VA 23218-1163

Virginia Department of Health
Director
PO Box 2448
Richmond, VA 23218-2448

Virginia Department of Historic Resources
2801 Kensington Avenue
Richmond, VA 23221-2470

Virginia Department of Mines, Minerals,
and Energy
Director, Division of Energy
1100 Bank Street, 11th Floor
Richmond, VA 23219

Virginia Division of Mined Land
Reclamation
Randy Casey, Division Director
P.O. Box 900
Big Stone Gap, VA 24219-0900

Ben McGinnis
Virginia Marine Resources Commission
2600 Washington Avenue, Floor 3
Newport News, VA 23607

Virginia Office of the Attorney General
900 E. Main Street
Richmond, VA 23219-3513

Virginia Soil & Conservation Commission
Director
600 E. Main Street
24th Floor
Richmond, VA 23219

Sherry H. Bridewell
Senior Counsel
Virginia State Corporation Commission
1300 East Main Street, 10th Floor
Richmond, VA 23219

APPENDIX A
STUDY PLAN CRITERIA
18 CFR Section 5.9(b)

Any information or study request must contain the following:

1. Describe the goals and objectives of each study proposal and the information to be obtained;
2. If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied;
3. If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study;
4. Describe existing information concerning the subject of the study proposal, and the need for additional information;
5. Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements;
6. Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate filed season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge; and
7. Describe considerations of level of effort and cost, as applicable, and why proposed alternative studies would not be sufficient to meet the stated information needs.

APPENDIX B NIAGARA PROJECT PROCESS PLAN AND SCHEDULE

Shaded milestones are unnecessary if there are no study disputes. If the due date falls on a weekend or holiday, the due date is the following business day. Early filings or issuances will not result in changes to these deadlines.

Responsible Party	Pre-Filing Milestone	Date	FERC Regulation
Appalachian	Issue Public Notice for NOI/PAD	1/28/2019	5.3(d)(2)
Appalachian	File NOI/PAD	1/28/2019	5.5, 5.6
FERC	Tribal Meetings	2/27/2019	5.7
FERC	Issue Notice of Commencement of Proceeding and Scoping Document 1	3/26/2019	5.8
FERC	Scoping Meetings and Project Site Visit	4/24/2019, 4/25/2019	5.8(b)(viii)
All Stakeholders	File Comments on PAD/Scoping Document 1 and Study Requests	5/25/2019	5.9
FERC	Issue Scoping Document 2 (if necessary)	7/9/2019	5.10
Appalachian	File Proposed Study Plan	7/9/2019	5.11(a)
All Stakeholders	Proposed Study Plan Meeting	8/8/2019	5.11(e)
All Stakeholders	File Comments on Proposed Study Plan	10/7/2019	5.12
Appalachian	File Revised Study Plan	11/6/2019	5.13(a)
All Stakeholders	File Comments on Revised Study Plan	11/21/2019	5.13(b)
FERC	Issue Director's Study Plan Determination	12/6/2019	5.13(c)
Mandatory Conditioning Agencies	File Any Study Disputes	12/26/2019	5.14(a)
Dispute Panel	Select Third Dispute Resolution Panel Member	1/10/2020	5.14(d)

Responsible Party	Pre-Filing Milestone	Date	FERC Regulation
Dispute Panel	Convene Dispute Resolution Panel	1/15/2020	5.14(d)(3)
Appalachian	File Comments on Study Disputes	1/20/2020	5.14(i)
Dispute Panel	Dispute Resolution Panel Technical Conference	1/25/2020	5.14(j)
Dispute Panel	Issue Dispute Resolution Panel Findings	2/14/2020	5.14(k)
FERC	Issue Director's Study Dispute Determination	3/5/2020	5.14(l)
Appalachian	First Study Season	Spring - Fall 2020	5.15(a)
Appalachian	File Initial Study Report	12/5/2020	5.15(c)(1)
All Stakeholders	Initial Study Report Meeting	12/20/2020	5.15(c)(2)
Appalachian	File Initial Study Report Meeting Summary	1/4/2021	5.15(c)(3)
All Stakeholders	File Disagreements/Requests to Amend Study Plan	2/3/2021	5.15(c)(4)
All Stakeholders	File Responses to Disagreements/Amendment Requests	3/5/2021	5.15(c)(5)
FERC	Issue Director's Determination on Disagreements/Amendments	4/4/2021	5.15(c)(6)
Appalachian	Second Study Season	Spring - Fall 2021	5.15(a)
Appalachian	File Preliminary Licensing Proposal (or Draft License Application)	10/1/2021	5.16(a)-(c)
All Stakeholders	File Comments on Preliminary Licensing Proposal (or Draft License Application)	12/30/2021	5.16(e)
Appalachian	File Updated Study Report	12/5/2021	5.15(f)
All Stakeholders	Updated Study Report Meeting	12/20/2021	5.15(f)

Responsible Party	Pre-Filing Milestone	Date	FERC Regulation
Appalachian	File Updated Study Report Meeting Summary	1/4/2022	5.15(f)
Appalachian	File Final License Application	2/28/2022	5.17
All Stakeholders	File Disagreements/Requests to Amend Study Plan	2/3/2022	5.15(f)
Appalachian	Issue Public Notice of Final License Application Filing	3/14/2022	5.17(d)(2)
All Stakeholders	File Responses to Disagreements/Amendment Requests	3/5/2022	5.15(f)
FERC	Issue Director's Determination on Disagreements/Amendments	4/4/2022	5.15(f)

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426
April 19, 2019

OFFICE OF ENERGY PROJECTS

Project No. 2466-034 – Virginia
Niagara Hydroelectric Project
Appalachian Power Company

Chief Robert Gray
Pamunkey Indian Tribe
1054 Pocahontas Trail
King William, VA 23086

Reference: Tribal Consultation for the Niagara Hydroelectric Project No. 2466

Dear Chief Gray,

The Federal Energy Regulatory Commission (Commission) invites your participation in the relicensing process for the existing Niagara Hydroelectric Project No. 2466 (Niagara Project). The Commission's relicensing process is an opportunity for both the licensee and interested agencies, tribes, and other stakeholders to consider the project's existing operation and protection, mitigation, and enhancement measures, and evaluate the need for any changes or additional measures to be implemented over the term of any new license issued for the project. The 2.4-megawatt Niagara Project is located on the Roanoke River in Roanoke County, Virginia. Appalachian Power Company, the licensee for the project, filed a notice of intent and a Pre-Application Document on January 28, 2019, and an application for a new license must be filed by February 28, 2022.

It is very important that a Tribe whose interests could be affected by the Niagara Project participate early in the process so that tribal concerns are addressed.¹ For this reason, please inform us if you have an interest in participating in the relicensing process for the project. In addition, please indicate if you would like to meet with Commission staff to discuss the Commission's licensing process, how your Tribe can participate to the fullest extent possible, your interests and concerns in the affected area, and how to establish procedures to ensure appropriate communication between Commission and

¹ In a letter issued April 25, 2018, the Catawba Indian Nation, Delaware Nation, and the Monacan Indian Nation were invited to participate in tribal consultation for this project.

Project No. 2466-034

2

Tribal staffs. The meeting can be limited to Commission and your Tribal staff, or can be open to other Tribes or Appalachian Power Company.

If at all possible, we would appreciate your response by May 19, 2019. The Commission strongly encourages electronic filing. Please file your response using the Commission's eFiling system at <http://www.ferc.gov/docs-filing/efiling.asp>. Commenters can submit brief comments up to 6,000 characters, without prior registration, using the eComment system at <http://www.ferc.gov/docs-filing/ecomment.asp>. You must include your name and contact information at the end of your comments. For assistance, please contact FERC Online Support at FERCOnlineSupport@ferc.gov, (866) 208-3676 (toll free), or (202) 502-8659 (TTY). In lieu of electronic filing, please send a paper copy to: Secretary, Federal Energy Regulatory Commission, 888 First Street N.E., Washington, D.C. 20426. The first page of any filing should include docket number P-2466.

If you have any questions or comments, please contact Allyson Conner at (202) 502-6082, or at allyson.conner@ferc.gov. Ms. Conner will contact you shortly to follow-up on this letter.

Sincerely,



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

cc: Harold Peterson
Bureau of Indian Affairs – Eastern Region
545 Marriott Drive, Suite 700
Nashville, TN 37214

Yayac, Maggie

Subject: FW: [EXTERNAL] Niagara Dam Hydroelectric Project No. 2466-034 - Scoping Meetings and Official Mailing List

From: Elizabeth B Parcell [mailto:ebparcell@aep.com]
Sent: Thursday, May 2, 2019 3:43 PM
To: Lindsay Webb <LWEBB@roanokecountyva.gov>
Cc: MacVane, Kelly <Kelly.MacVane@hdrinc.com>; David Weir <DWEIR@roanokecountyva.gov>; Jonathan M Magalski <jmmagalski@aep.com>; Doug Blount <DBLOUNT@roanokecountyva.gov>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>; Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>
Subject: RE: [EXTERNAL] Niagara Dam Hydroelectric Project No. 2466-034 - Scoping Meetings and Official Mailing List

Hi Lindsay,

Got your voice message. Hope you enjoyed your vacation and you went somewhere dry!

We missed you at the meeting and unfortunately, I am not available to attend the Blueways meeting tomorrow. We did, however, place the FERC/APCO power point presentation on our website - <http://www.aephydro.com/Content/documents/2019/NiagaraScopingPresentations4-24-19and4-25-19.pdf> which should bring you up to speed. Please note that although the scoping comment deadline is identified as May 25, 2019, after much discussion, we all realized that it is actually May 28th. The 25th is a Saturday, and the 27th is Memorial Day. Hence, the next business day is Tuesday, the 28th.

During the scoping meeting, Jon mentioned the possibility of a recreation work group meeting to get a better idea of the various recreation plans. In the interim, please feel free to identify any pertinent issues.

Look forward to seeing you soon.

Liz



ELIZABETH B PARCELL | PROCESS SUPV
EBPARCELL@AEP.COM | D:540.985.2441
40 FRANKLIN ROAD SW, ROANOKE, VA 24011

From: Lindsay Webb <LWEBB@roanokecountyva.gov>
Sent: Sunday, April 14, 2019 6:18 PM
To: Jonathan M Magalski <jmmagalski@aep.com>; Doug Blount <DBLOUNT@roanokecountyva.gov>
Cc: Elizabeth B Parcell <ebparcell@aep.com>; Kelly.MacVane@hdrinc.com; David Weir <DWEIR@roanokecountyva.gov>
Subject: RE: [EXTERNAL] Niagara Dam Hydroelectric Project No. 2466-034 - Scoping Meetings and Official Mailing List

Hi Jon,

I will not be available for the site visit or scoping meetings. Dave Weir will be representing our department. Our focus will be on recreational access within the Niagara Dam project area (i.e., greenways, blueways, Explore Park, etc.).

Thank you for updating the mailing list with the Roanoke County Board of Supervisors. We look forward to participating in the relicensing process.



Lindsay B. Webb, MPA

Parks Planning and Development Manager
1206 Kessler Mill Road | Salem, VA 24153
(540) 777-6328 | (540) 521-9907 (cell)

>>> Doug Blount 4/12/2019 3:16 PM >>>

Good afternoon. I am meeting with a citizen during site time so I will not be able to attend.

Thanks,

Doug

Doug Blount

Roanoke County Parks, Recreation and Tourism Director
1206 Kessler Mill Road | Salem, VA 24153
(540) 777-6321 (office) | (540) 387-6146 (fax)

dblount@roanokecountyva.gov



>>> Jonathan M Magalski <jmmagalski@aep.com> 4/12/2019 12:56 PM >>>
Hi Lindsay,

Thank you for letting us know that Dave will be attending the site visit on 4/24 and the scoping meeting on 4/25. Will you and Doug also be attending the site visit? No need to provide notice for attending the scoping meetings at the Vinton library, just the site visit so that we can plan accordingly.

Also, thank you for providing the updated contacts for the Roanoke County Board of Supervisors. We will update AEP's mailing list and make sure Doug and Dave are also on it. This mailing list will be used whenever AEP sends out various materials and correspondence.

Regarding the FERC mailing list, that will need to be completed through FERC at <https://www.ferc.gov/docs-filing/eregistration.asp>. Once registered, each individual will need to sign up for Niagara Hydroelectric Project (FERC No. 2466) to receive correspondence from FERC. This will also give each individual access to eFile comments, etc. FERC will present on this process during the scoping meetings.

We look forward to meeting everyone on the 24th and 25th, and working with you all through the relicensing process. If you have any questions in the meantime, please let me know. Have a great weekend...Jon



JONATHAN M MAGALSKI | ENVIRONMENTAL SPEC CONSULT
[JMMAGALSKI@AEP.COM](mailto:jmmagalski@aep.com) | D:614.716.2240
1 RIVERSIDE PLAZA, COLUMBUS, OH 43215

From: Lindsay Webb <LWEBB@roanokecountyva.gov>
Sent: Thursday, April 11, 2019 11:01 AM
To: Jonathan M Magalski <jmmagalski@aep.com>
Cc: Elizabeth B Parcell <ebparcell@aep.com>; ferconlinesupport@ferc.gov; Doug Blount <DBLOUNT@roanokecountyva.gov>; David Weir <DWEIR@roanokecountyva.gov>
Subject: [EXTERNAL] Niagara Dam Hydroelectric Project No. 2466-034 - Scoping Meetings and Official Mailing List

This is an **EXTERNAL** email. **STOP. THINK** before you **CLICK** links or **OPEN** attachments. If suspicious please click the 'Report to Incidents' button in Outlook or forward to incidents@aep.com from a mobile device.

Good morning Jon,

I am contacting you to RSVP Dave Weir with Roanoke County Parks, Recreation, and Tourism to the following meetings related to the Niagara Dam relicensing:

- Environmental Site Visit - April 24, 2019 - 10:00 am at Niagara Dam - 1495 Niagara Road
- Morning Scoping Meeting - April 25, 2019 - 9:00 am at Vinton Public Library

Will you please add our department director to the FERC official mailing list?

Doug Blount, Director
Roanoke County Parks, Recreation and Tourism
1206 Kessler Mill Road
Salem, VA 24153
dblount@roanokecountyva.gov

In the NOI/PAD document dated January 28, 2019, the following elected officials were provided for the Roanoke County Board of Supervisors that needs to be updated:

~~Al Bedrosian~~ **(please update to Phil C. North)**

Hollins Magisterial District
5204 Bernard Drive
Fourth Floor
Roanoke, VA 24014

~~Joseph McNamara~~ **(please update to David F. Radford)**

Windsor Hills Magisterial District
5204 Bernard Drive
Fourth Floor
Roanoke, VA 24014

If you have any questions or concerns about County representation, please advise. I have copied FERCOnlineSupport@ferc.gov and Liz Parcell on this email.

Thank you for the opportunity to participate in the relicensing process for the Niagara Dam.

Lindsay B. Webb, MPA

Parks Planning and Development Manager
1206 Kessler Mill Road | Salem, VA 24153
[\(540\) 777-6328](tel:5407776328) | [\(540\) 521-9907](tel:5405219907) (cell)

Yayac, Maggie

Subject: FW: PCBs
Attachments: Attachments.html

From: Elizabeth B Parcell [mailto:ebparcell@aep.com]
Sent: Friday, May 3, 2019 10:13 AM
To: Jonathan M Magalski <jmmagalski@aep.com>; Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>; MacVane, Kelly <Kelly.MacVane@hdrinc.com>
Subject: FW: PCBs

FYI

From: Amanda McGee <amcgee@rvarc.org>
Sent: Friday, May 3, 2019 9:04 AM
To: Anita McMillan <amcmillan@vintonva.gov>; Audrey Pearson <Audrey_pearson@friendsbrp.org>; Bailey DuBois <bdubois@roanokecountyva.gov>; Ben Tripp <btripp@saalemva.gov>; Betsy Biesenbach <beezinbox@aol.com>; Bill Modica <modicabill2@aol.com>; Bill Tanger <bill.tanger@verizon.net>; Brad Buchanan <buchananbt@montgomerycountyva.gov>; Catherine Fox <cfox@visitvbr.com>; Christopher Blakeman <christopher.blakeman@roanokeva.gov>; David Holladay <dholladay@roanokecountyva.gov>; Dawn Leonard <dawn_leonard@nps.gov>; Donnie Underwood <donnie.underwood@roanokeva.gov>; Dwayne D'Ardenne <dwayne.d'ardenne@roanokeva.gov>; Hil Studios <ablanton@hillstudio.com>; James Revercomb <jamesrevercomb@gmail.com>; Joe Harwell <joe.harwell@roanokeva.gov>; Lindsay Webb <lwebb@roanokecountyva.gov>; Elizabeth B Parcell <ebparcell@aep.com>; liz.belcher@greenways.org; Mary Ann Brenchick (maryann@cleanvalley.org) <maryann@cleanvalley.org>; Matt Miller <mmiller@rvarc.org>; Pat Mathany <pat.bcski@gmail.com>; Pete Eshelman <pete@roanoke.org>; Pete Peters <rpeters@vintonva.gov>; Peter Katt <pkatt@crandalllaw.com>; Renee Powers (renee.powers@roanokeva.gov) <renee.powers@roanokeva.gov>; Ross, Matt <Matt.Ross@franklincountyva.gov>; Steve Buxton <steve_buxton@nps.gov>; Tom Christenbury <tcntville@yahoo.com>; Trudy Stevens (roanoke@walkaboutoutfitter.com) <roanoke@walkaboutoutfitter.com>
Subject: [EXTERNAL] FW: PCBs

All,

Please see the attached from DEQ following our discussion yesterday.

Best,

Amanda

Citrix Attachments

Expires October 30, 2019

roanokepcb_FINAL.pdf	14.8 MB
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Download Attachments

From: Renee Powers <Renee.Powers@roanokeva.gov>
Sent: Thursday, May 2, 2019 4:11 PM
To: Amanda McGee <amcgee@rvarc.org>; Lindsay Webb <LWEBB@roanokecountyva.gov>; Liz Belcher <LBELCHER@roanokecountyva.gov>
Subject: Fw: PCBs

FYI--please send to the whole group but this is the DEQ report on PCBs above the dam and the sedimentation.

Renee Lavin Powers | Trails and Greenways Supervisor
Roanoke Parks and Recreation – A Nationally Accredited Agency
215 Church Ave SW | Room 301 | Roanoke, VA 24011
P: 540.853.5867 | F:540.853.1287 | E: Renee.Powers@RoanokeVa.Gov
PLAY Roanoke | Roanoke GO Fest

Building a Welcoming Community Through PLAY
Health and Well-Being | Inclusion | Service Excellence | Sustainability

----- Forwarded by Renee Powers/Employees/City_of_Roanoke on 05/02/2019 04:10 PM -----

From: "Miller, Richard" <richard.miller@deq.virginia.gov>
To: renee.powers@roanokeva.gov
Date: 05/02/2019 04:09 PM
Subject: PCBs

Here's the report. Pages 30-34 includes the data summary. 4AROA199.60 is the station ID for the station above Niagara Dam. 4AROA199.20 is below Niagara Dam.

Let me know if you have any questions.

--

Drew Miller

Regional Biologist/TMDL Specialist

Virginia Department of Environmental Quality

3019 Peters Creek Road, Roanoke, VA 24019

PHONE 540-562-6873

FAX 540-562-6725

Richard.Miller@deq.virginia.gov

[VADEQBiological Monitoring Web Page](#)

[VADEQProbabilistic Monitoring Web Page](#)

Effective APRIL 1, 2019, DEQ - Blue Ridge Regional Office has relocated to:

901 Russell Drive, Salem, VA 24153

- Please update your records -*(See attached file:*

roanokepcb_FINAL.pdf)

2018 Roanoke Valley Greenway Plan

This plan is available online:
<https://greenways.org/wp-content/uploads/Roanoke-Valley-Greenway-Plan-2018.pdf>



FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426
May 22, 2019

OFFICE OF ENERGY PROJECTS

Project No. 2466-034 – Virginia
Niagara Hydroelectric Project
Appalachian Power Company

Jonathan Magalski
Environmental Specialist Consultant
Appalachian Power Company
1 Riverside Plaza
Columbus, OH 43215

Reference: Comments on Preliminary Study Plans and Request for Studies

Dear Mr. Magalski,

After reviewing the Pre-Application Document (PAD) for the Niagara Hydroelectric Project, participating in discussions at the scoping meetings held on April 24 and 25, 2019, and participating in a project environmental site review on April 24, 2019, we have determined that additional information is needed to adequately assess potential project effects on environmental resources. We have one study request (enclosed in Schedule A) for aquatic resources, and recommend that you consider our comments on the PAD and your preliminary study plans (enclosed in Schedule B). Please provide the requested additional information when you file your proposed study plan, which must be filed by July 9, 2019.

Please include in your proposed study plan, a master schedule that includes the estimated start and completion date of all field studies, when progress reports will be filed, who will receive the reports and in what format, and the filing date of the initial study report. All studies, including fieldwork, should be initiated and completed during the first study season, and the study reports should be filed as a complete package. If, based on the study results, you are likely to propose any plans for measures to address project effects, drafts of those plans should be filed with your Preliminary Licensing Proposal (or draft license application).

Project No. 2466-034

2

Please note that we may, upon receipt and review of scoping comments/study requests from other entities due May 25, 2019, as well as your proposed study plan, request additional studies or information at a later time.

If you have any questions, please contact Allyson Conner at (202) 502-6082, or via email at allyson.conner@ferc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "John B. Smith". The signature is fluid and cursive, with the first name "John" and last name "Smith" being clearly legible, and "B." in the middle.

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

Enclosure: Schedule A
 Schedule B

Project No. 2466-034
Schedule A

Schedule A

Study Request

After reviewing the information in the Pre-Application Document (PAD), we have identified information that is needed to assess project effects. As required by section 5.9 of the Commission's regulations, we have addressed the seven study request criteria in the study request below.

Fish Survey

§5.9(b)(1) – Describe the goals and objectives of each study proposal and the information to be obtained.

The goal of the study is to obtain current information on the fish community in the Roanoke River in the vicinity of the Niagara Hydroelectric Project to enable an analysis of project effects. Information to be collected should include, at a minimum, relative abundance and length frequency data on the fish communities in the impoundment, bypassed reach, and tailwaters. The study should also include a comparison of this data with other water bodies in the region. The study plan should be developed in consultation with the U.S. Fish and Wildlife Service and Virginia Department of Game and Inland Fisheries.

§5.9(b)(2) – If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resources to be studied.

Not applicable.

§5.9(b)(3) – If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.

Sections 4(e) and 10(a) of the Federal Power Act require that the Commission give equal consideration to all uses of the waterway on which a project is located. When reviewing a proposed action, the Commission must consider the environmental, recreational, fish and wildlife, and other non-developmental values of the project, as well as power and developmental values.

§5.9(b)(4) – Describe existing information concerning the subject of the study proposal and the need for additional information.

The PAD summarizes the fish community in the project area, including the Niagara impoundment and sites upstream and downstream of the project, from a study

Project No. 2466-034
Schedule A

2

conducted in 1990 for the previous licensing.¹ In addition, the PAD provides no information on the fish community in the bypassed reach. Current fisheries community data are needed to evaluate any project-related effects on this resource.

§5.9(b)(5) – Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.

Operation of the project reduces flow in a 1,500-foot-long section of the natural river channel and may entrain fish. Current fish data are necessary in order to assess whether project operation is affecting the overall health of the fish community.

§5.9(b)(6) – Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.

If more recent information is not already available from other studies, several fish sampling methodologies could be used to survey the impoundment, bypassed reach, and downstream river including electrofishing, netting, and angling to name a few; all of which have been used successfully in licensing hydroelectric projects. If field work is necessary, one field season should be sufficient to perform the study with a month or two of data analysis and report writing. Specific methodologies and scope can be refined during the study planning phase and study plan meeting(s), if needed.

§5.9(b)(7) – Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.

Cost will depend on whether field work is needed, and if so, the specific methodology chosen. We expect the specific methodology and scope to be refined in consultation with the agencies during the study planning phase. If field work is needed, the study could cost between \$60,000 and \$90,000. If existing information is available, the cost of the study will be minimal.

¹ Appalachian Power Company. 1991. Application for License for Major Water Power Project 5 Megawatts or Less (Project No. 2466).

Project No. 2466-034
Schedule B

Schedule B

Comments on the Pre-Application Document and Preliminary Study Plans

Based on our review of your preliminary study plans outlined in your Pre-Application Document (PAD), we request the following modifications. Please address these requests in your proposed study plans.

Project Operation

In an October 20, 2000, order approving modification to the flow monitoring plan,² the Commission approved the use of a siphon pipe to provide a minimum flow of 8 cubic feet per second (cfs) to the bypassed reach and the use of an ultrasonic flow meter to be mounted on the discharge pipe to monitor the flow. On page 4-10 of the PAD, you state that the minimum flow to the bypassed reach is provided through the sluice gate or flow over the spillway, however, no flow data for the bypassed reach are provided. It was indicated during the site visit that the monitoring device may no longer be operational. When you file your proposed study plan, please clarify if the ultrasonic flow meter is currently in use or when it ceased to become operational, and provide a summary of historic flow data in the bypassed reach, if available.

Bypassed Reach Aquatic Habitat Study

On page 6-4 of the PAD, you propose to conduct an assessment of available habitat under the current 8-cfs minimum flow in the 1,500-foot-long bypassed reach. While your proposed study would describe existing conditions in the bypassed reach, it would not inform the availability of habitat under alternative flow releases. Therefore, in order for staff to determine whether additional flows are needed to protect or enhance aquatic species, staff recommends that the study evaluate habitat availability over a range of flows. We recommend consultation with the U.S. Fish and Wildlife Service and the Virginia Department of Game and Inland Fisheries regarding the target species, species life stages, and flow ranges to be studied as you develop your study plan.

² 93 FERC ¶ 62, 049 (2000).



TRI-COUNTY LAKES ADMINISTRATIVE COMMISSION

400 Scruggs Road, Suite 200

Moneta, VA 24121

Telephone: (540) 721-4400

Leesville Lake

Smith Mountain Lake

May 21, 2019

Federal Energy Regulatory Commission
Office of Energy Projects
Division of Hydropower Licensing

RE: Niagara Project Number P-2466-034 -Virginia
Niagara Hydroelectric Project
Appalachian Power Company

Dear Sirs:

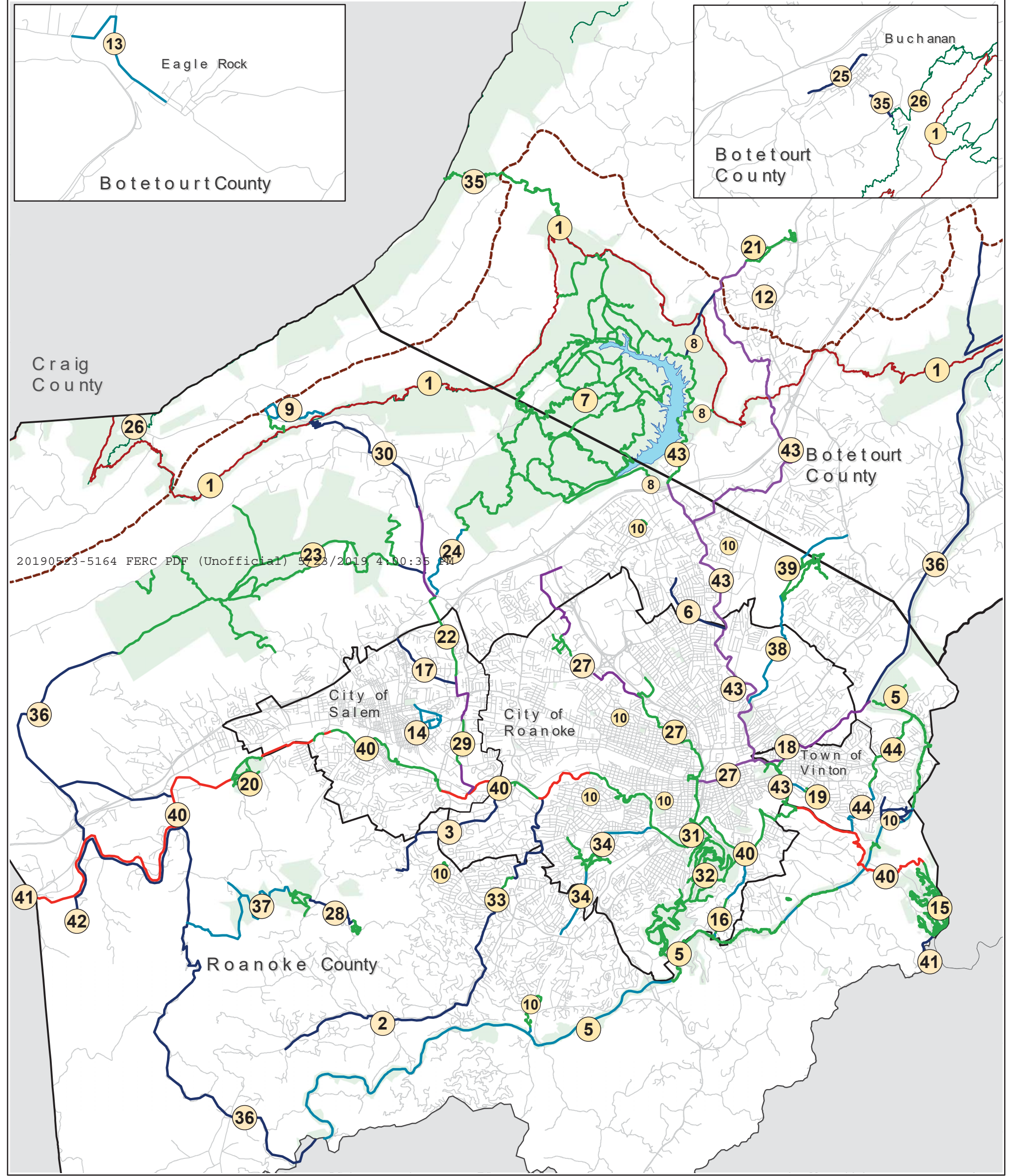
It has been recommended by the Tri-County Lakes Administrative Commission's Environmental Committee, that we provide comment in response to the Scoping Document 1 (SD1) for the above referenced project.

Upon review of the SD1, and the tables on pages 15, 16, and 17 of Appalachian's proposed studies, we acknowledge the absence of a resource area and/or study name that would provide an assessment relative to debris. Therefore, given Appalachian's debris responsibilities for the Smith Mountain Project under their license (Article 411), it is reasonable to believe that a study should be conducted to consider enhancing and/or extending Niagara's catchment equipment to reduce the amount of floating debris that arrives at Smith Mountain Lake by way of the Roanoke River.

Thank you for your consideration of the above.

Sincerely,

Paula Shoffner, Executive Director
Tri-County Lakes Administrative Commission



2018 Greenway Plan Network Map

Prepared by the
REGIONALcommission

- | | | |
|--|---|--|
| 1 - Appalachian Trail | 17 - Gish Branch Greenway | 32 - Mill Mountain Park Trails |
| 2 - Back Creek Greenway | 18 - Glade Creek Greenway | 33 - Mudlick Creek Greenway |
| 3 - Barnhardt Creek Greenway | 19 - Gladetown Trail | 34 - Murray Run Greenway |
| 4 - Birding and Wildlife Trail Sites | 20 - Green Hill Park Trails | 35 - National Forest Connections |
| 5 - Blue Ridge Parkway Trails | 21 - Greenfield Trails | 36 - Perimeter Trail |
| 6 - Carvin Creek Greenway | 22 - Hanging Rock Battlefield Trail | 37 - Poor Mountain Trails |
| 7 - Carvins Cove Trail Network | 23 - Havens Wildlife Management Area Trails | 38 - Read Mountain Greenway |
| 8 - Carvins Cove Connections | 24 - Hinchee Trail | 39 - Read Mountain Trails |
| 9 - Catawba Greenway | 25 - James River Greenway | 40 - Roanoke River Greenway |
| 10 - City, County and Town Park Trails | 26 - Jefferson National Forest Trails | 41 - Roanoke River Greenway Extensions |
| 11 - Craig Creek Trail | 27 - Lick Run Greenway | 42 - Spring Hollow Trails |
| 12 - Daleville Greenway* | 28 - Long Ridge Trail | 43 - Tinker Creek Greenway* |
| 13 - Eagle Rock Greenway | 29 - Mason Creek Greenway | 44 - Wolf Creek Greenway |
| 14 - Elizabeth Greenway | 30 - Masons Cove Greenway | |
| 15 - Explore Park Trail Network | 31 - Mill Mountain Greenway | |
| 16 - Garden City Greenway | | |

Legend

Proposed Greenways

- Category 1 Roanoke River Greenway, Unbuilt
- Category 2 Hard Surface Greenways and Trails, Unbuilt
- Category 3 Greenways and Trails in Design
- Category 4 Conceptual Greenways and Trails
- Category 5 Built Greenways and Trails
- National Forest Trails
- Appalachian Trail
- U.S. Bicycle Route 76
- Locality Boundaries
- Public Lands



*Please see Appendix E for more information about the alternative alignments for Tinker Creek and Daleville Greenways.



1206 KESSLER MILL ROAD

SALEM, VA 24153

540-777-6330

540-387-6146 (FAX)

Liz.Belcher@greenways.org

www.greenways.org

May 23, 2019

Secretary Kimberly D. Bose
Federal Energy Regulatory Commission
888 First Street, NE, Room 1A
Washington, DC 20426

Re: Niagara Hydroelectric Project (P-2466-034)

1. Roanoke Valley Greenway Commission Comments on Scoping Document and Pre-Application Document (PAD)
2. Consideration of the 2018 Roanoke Valley Greenway Plan as a Comprehensive Plan under Section 10(a)(2)(A) of the Federal Power Act
3. Consideration of the Roanoke Valley/ Blue Ridge Parkway Trail Plan Environmental Assessment (2015) and Blue Ridge Parkway General Management Plan/ Environmental Impact Statement (2013) as Comprehensive Plans under Section 10(a)(2)(A) of the Federal Power Act

Dear Secretary Bose:

The Roanoke Valley Greenway Commission was formed in 1997 by an Intergovernmental Agreement among the four local governments of the City of Roanoke, Roanoke County, the City of Salem and the Town of Vinton. In 2016 Botetourt County joined the Commission. The purpose of the Greenway Commission is to promote and facilitate coordinated direction and guidance in the planning, development, and maintenance of a system of greenways throughout the Roanoke Valley. In accordance with the Intergovernmental Agreement, the Greenway Commission's responsibilities are to encourage incorporation of greenways into each jurisdiction's planning efforts, explore greenway opportunities, make recommendations on legislation, investigate funding and grants, recommend standards, pursue partnerships, and coordinate the efforts of the federal, state, and local governments involved.

1. Roanoke Valley Greenway Commission Comments on Scoping Document and Pre-Application Document (PAD)

Greenway Development

The Roanoke Valley Greenway network has been developed over the last 22 years. There are six greenways within the vicinity of the Niagara Hydroelectric Project (Project), in addition to numerous natural surface trails. These greenways are:

- Wolf Creek Greenway in the Town of Vinton and Roanoke County is completed for 2.2 miles from Hardy Road to the Blue Ridge Parkway, with an extension to the Roanoke River (north side) included in the 2018 Greenway Plan. The Appalachian Power Company (Appalachian) service road into the Project Dam and Powerhouse parallels Wolf Creek and is thus in the corridor for extension of this greenway.

- Mill Mountain Greenway is noted in the PAD, providing access from downtown to the Roanoke River, Roanoke River Greenway, Mill Mountain Park, and Mill Mountain Park Trails.
- Garden City Greenway opened in 2019 and provides a paved trail from Roanoke River Greenway to the Blue Ridge Parkway boundary, with access to its paralleling natural surface trail. This new greenway is approximately 1.4 miles upstream from the Project.
- Tinker Creek Greenway in the City of Roanoke is adjacent to the Project boundary, providing 1.9 miles of paved trail parallel to Tinker Creek from Roanoke River to Wise Avenue and Fallon Park. (The section of Tinker Creek Greenway mentioned in the PAD is approximately ten miles upstream from the Project, while the portion described under this bullet is within the Project.)
- Glade Creek Greenway is contiguous with the Project, connecting to Tinker Creek Greenway at Route 24. A 0.4-mile section of this paved greenway opened in 2017 and connects Route 24 (Virginia Avenue) to Walnut Avenue. Another 0.6-mile section extending this greenway to Gus Nicks Boulevard is in the engineering phase, projected to go to construction by the end of 2019. The 2018 Greenway Plan includes additional sections that would extend this greenway to Vinyard Park and the Blue Ridge Parkway.
- Roanoke River Greenway is the main greenway artery through the valley, projected to be 31 miles from Montgomery County to Franklin County at Back Creek. Existing sections begin in western Roanoke County at Green Hill Park and traverse through the Cities of Salem and Roanoke. In the urban area fourteen miles are complete, one mile under construction, five miles in the right-of-way phase, one mile in the engineering phase, and another three miles funded for design and construction. An eastern leg of Roanoke River Greenway is within the Project boundary and is engineered from an existing section in Roanoke City to the Blue Ridge Parkway; it is currently in right-of-way phase; construction is scheduled to begin in 2020. The design for this section is on the south side of Roanoke River, adjacent to the Project Reservoir, then going around the south side of the Project Dam. The next sections will go under the Blue Ridge Parkway and connect to and go through Roanoke County's Explore Park before terminating at the confluence of Back Creek on the upper end of Smith Mountain Lake.

Roanoke County's Parks and Recreation staff has been working with Appalachian over the last five years to facilitate the passage of Roanoke River Greenway through the Niagara Hydroelectric Project. Appalachian has been very helpful in this endeavor and preliminary right-of-way negotiations are underway to obtain easements for the greenway through the Project. We ask that this partnership continue through the relicensing process for the Project. This final section of Roanoke River Greenway is critical to the economic redevelopment of Explore Park and completion of the Roanoke River Greenway through the valley.

Recreational Access to the Project

The Niagara Hydroelectric Project was last licensed in 1993. At that time there was little recreational demand in the area of the Project, and consequently the only recreational amenity provided in the license was a canoe portage around the Dam. Since 1993, there have been many changes in the recreational desires of citizens of the Roanoke Valley as indicated by the Virginia

Department of Conservation and Recreation's 2017 Virginia Outdoors Demand Survey. The survey reported that 45% and 49% of households in the Roanoke Valley Alleghany Region indicated the need for increased access to trails and water access, respectively. The development of the Roanoke Valley Greenway and Blueway systems have helped to meet, and yet have encouraged greater, demand for outdoor recreational opportunities and have been major contributors to economic growth in the region. Completion of the Roanoke River Greenway through the Project will help to provide additional trail access for the public.

The only boating access to the Project Reservoir is provided by the nearest upstream canoe/kayak access facilities in the City of Roanoke (Bridges Access and Bennington Access) and the Town of Vinton (3rd St. off Virginia Avenue). While these facilities and others upstream allow paddlers to get to the Reservoir, there is no public place for boaters to take out and load boats onto vehicles once they get to the Reservoir or Dam. Paddling back upstream to the access areas in Roanoke City and Vinton requires considerable effort; consequently, few people take full advantage of the opportunities on the Reservoir. As part of the Recreational Needs Assessment outlined in the Scoping Document we encourage the applicant to consider development of a boating access facility within the Reservoir on either river left or right. This facility could provide a much needed take out point at Niagara Dam and facilitate improvements to the Project public recreational amenities and the Roanoke River Blueway system.

As mentioned above, the Project license issued in 1993 required that the applicant develop a canoe portage around Niagara Dam. The applicant completed this requirement of the license; however, the portage was never very useful because of the length and location. It is located in a very steep section of the Reservoir, and it is difficult to take out canoes and kayaks. Once you do get the boats out of the water, the portage around the Dam is more than ¼ mile long. In addition, vehicle access to the portage is restricted by a keyed gate. As part of the Recreational Needs Assessment, we would encourage the applicant to review the usefulness of the current portage and consider ways in which the portage can be improved to provide better public access and use.

Trash

Trash and debris in the Roanoke River have been a continual problem in the valley for years. During the relicensing of the Smith Mountain Project (P-2210) this was a major concern for residents of the lake. Trash and debris traveling down the river and through the Niagara Reservoir are gathered by a trash rake and passed over the Project Dam to continue downstream. We understand that the applicant did not generate this trash and debris, but the Dam provides a mechanism for collecting it. Perhaps it is time for the applicant to work together with the waste management departments of the localities upstream and downstream of the Project to develop a cooperative process for removing this trash and debris from the river system. Appalachian spends a considerable amount of time and money every year removing this trash and debris from Smith Mountain Lake. There might be a more economical method for removing the trash at the Project Dam or upstream, instead of letting it accumulate on the river banks of Explore Park and downstream in Smith Mountain Lake.

2. Consideration of the 2018 Roanoke Valley Greenway Plan as a Comprehensive Plan under Section 10(a)(2)(A) of the Federal Power Act.

As mentioned above, the Roanoke Valley Greenway system has been an important recreational resource for the residents of the Roanoke Valley and has also been responsible for considerable economic growth in the valley. Roanoke County has been working with Appalachian for the past five years to route the eastern end of Roanoke River Greenway through the Niagara Project and into Explore Park. Given the importance of greenways to the region and the anticipated incorporation of a greenway into the Project, we request consideration of this plan, which was e-filed on the FERC website May 20, 2019, as a comprehensive plan under section 10(a)(2)(A) of the Federal Power Act.

3. Consideration of the Roanoke Valley/ Blue Ridge Parkway Trail Plan Environmental Assessment (2015) and Blue Ridge Parkway General Management Plan/ Environmental Impact Statement (2013) as Comprehensive Plans under Section 10(a)(2)(A) of the Federal Power Act.

The Blue Ridge Parkway is a National Park adjacent to, and contiguous with, the Project area. Because Niagara Dam is generally inaccessible, the public is most familiar with the Dam by seeing it from the Blue Ridge Parkway and by accessing it from the Parkway's Roanoke River Overlook, Roanoke River Trail, and Fisherman's Trail. The Roanoke Valley Greenway Commission has worked cooperatively with the Parkway since 1997, particularly providing skilled trail volunteers to assist the Parkway with trail construction and maintenance. In 2015 greenway supporters completed over 200 steps to provide access to the river from the Parkway via the Roanoke River and Fisherman's Trails. This access connects to the river at the bottom of the bypass reach and provides access for both fishermen and boaters. We suggest that Appalachian monitor this use as part of its Recreational Needs Assessment as a gauge of the demand and use when recreation facilities are provided. Given that this national park is adjacent to the Project, that this trail currently provides public access to the Project, and that the Project is the primary viewshed from the Blue Ridge Parkway bridge, we suggest that the Project maintenance of buildings, shoreline, and riparian areas be aesthetically pleasing and compatible with the Parkway. Also, we request that the Blue Ridge Parkway plans pertinent to this geographic area be considered as comprehensive plans under section 10(a)(2)(A) of the Federal Power Act.

Thank you for the opportunity to attend the site visit and provide comments at this point.

Sincerely,

Liz Belcher
Roanoke Valley Greenway Coordinator
1206 Kessler Mill Road
Salem, VA 24153
540-777-6330



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

May 23, 2019

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE, Room 1A
Washington, DC 20426

Re: Scoping for an Environmental Assessment for Relicensing the Niagara Hydroelectric Project
(FERC No. 2466-034) (Niagara Project)

Dear Ms. Bose,

In accordance with the National Environmental Policy Act (NEPA) of 1969, Section 309 of the Clean Air Act, and the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 CFR 1500-1508), the U.S. Environmental Protection Agency (EPA) is responding to the Federal Energy Regulatory Commission (FERC) request for scoping suggestions on the planned Environmental Assessment (EA) to analyze and assess the environmental impacts related to relicensing the Niagara Project.

Thank you for the opportunity to provide comments on the scoping document. EPA has prepared both general and specific comments for your consideration in the preparation of the planned EA. EPA recommends consideration of analysis to understand conditions at the site and study of improved practice and operation, to address impacts to resources. Please see attached comments. EPA would be pleased to discuss suggestions in detail at the convenience of the FERC project manager. The staff contact for this project is Matthew Lee. He can be reached at (215) 814-2917 or lee.matthew@epa.gov. We thank you for the opportunity to review this project and participate in the project development as a cooperating agency. EPA looks forward to the continued work on the development of this study.

Sincerely,

Barbara Rudnick
NEPA Program Coordinator
Office of Communities, Tribes & Environmental
Assessment

Enclosure

Enclosure

Technical Comments

Purpose and Need

Since the range of alternatives evaluated is defined by the purpose and need for the project, it is imperative that the purpose and need be clearly identified in the EIS. The purpose or objective of the proposal should be defined in relationship to the need for the action. Therefore, the need for the action should identify and describe the underlying problem or deficiency; facts and analyses supporting the problem or deficiency in the location at the particular time should be specified; and the context or perspective of the agency mission in relation to the need for action stated.

Land Use and Applicable Regulation

The project area should be clearly described, specifying the type and acreage of land impacted. In addition to NEPA, other laws, regulations, permits, licenses and Executive Orders may be applicable to the Proposed Action. EPA recommends a summary of applicable regulatory requirements and approvals with which the Proposed Action will demonstrate compliance be discussed in the EPA.

Environmental Impacts

EPA recommends the applicant examine the potential direct and indirect impacts of the project on the environment. In addition, it is recommended mitigation measures for any adverse environmental impacts be described. Areas recommended for detailed analysis are described below.

Potentially useful information can be accessed from the following on-line tools:

NEPAssist: NEPAssist is a tool that facilitates the environmental review process and project planning in relation to environmental considerations. The web-based application draws environmental data dynamically from EPA Geographic Information System databases and web services and provides immediate screening of environmental assessment indicators for a user-defined area of interest. <https://www.epa.gov/nepa/nepassist>

EnviroMapper for Envirofacts: A single point of access to select U.S. EPA environmental data. This Web site provides access to several EPA databases to provide you with information about environmental activities that may affect air, water, and land anywhere in the United States. With Envirofacts, you can learn more about these environmental activities in your area or you can generate maps of environmental information. <https://www.epa.gov/emefdata/em4ef.home>

Watershed Resources Registry (WRR): The WRR is a GIS tool that fosters a collaborative approach to regulatory streamlining, data sharing, planning and decision-making for sustainable watershed restoration and protection. <http://aii.transportation.org/Pages/Watershed-Resources-Registry.aspx>

Air Resources

Attainment/Non-attainment: The EA should identify areas that meet the NAAQS standard for a criteria pollutant as well as those areas where a criteria pollutant level exceeds the NAAQS.

Submerged Aquatic Vegetation: EPA recommends the EA identify the location of any Submerged Aquatic Vegetation (SAV) beds and fisheries and shell fisheries resources found in the project area as well as any sensitive or high-quality spawning areas. A location map identifying the above resources should be provided. In addition, the EA should describe the existing benthic environment of the project area. A complete species composition list (plants and animals) should be provided for the above-mentioned habitats. A description of the potential impacts to the migration or spawning activities of the animal species in the project area should be provided in the EA as well as proposed mitigation for the possible loss of this habitat. EPA recommends a buffer of 100 ft from any known SAV beds be incorporated into project design.

Threatened and Endangered Species

The Endangered Species Act (ESA) provides for the listing of endangered and threatened species of plants and animals as well as the designation of critical habitat for listed species. The ESA prohibits the taking of any listed species without (for federal agencies) an "Incidental Take Statement." EPA recommends the EA include a description of terrestrial, wildlife and aquatic species in the study area. Any threatened or endangered species and critical habitat for threatened or endangered species should be properly identified. The EA should describe the potential project impacts to these species. The most recent state and federal threatened and endangered species coordination letters should be included in the EA. In addition, EPA recommend that the appropriate state and federal agencies be contacted annually at a minimum regarding these issues.

Due to the presence of the Roanoke Logperch and the Orange-fin Madtom, EPA recommends the applicant consider incorporating the recommended study approach in Bilotta et al 2016 (referenced below).

Terrestrial Resources

EPA recommends the EA provide a description of the terrestrial habitat resources in the study area, which can include species lists for mammals, birds, amphibians, reptiles, and plants present, a summary of composition and characteristics of each community type and the functions and total acreage indicated. Please discuss potential impacts to these communities as a result of operation and maintenance activities and possible mitigation measures to minimize/avoid impacts.

Physiography

EPA recommends the physical and natural resources of the project area be described, including physiographic provinces, topography, climate and geologic setting. Soils at the project should be mapped and outlined. Distribution and classification of soils within the study area, and the major soil types found at the project site should be described.

Hazardous Waste Management

EPA recommends the applicant identify and evaluate any hazardous sites nearby the project boundary. This would include sites being investigated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) or sites regulated under the Resource Conservation and Recovery Act (RCRA). Any impact on these sites from the operation and maintenance of the project should be considered.

Adaptation and Resiliency

EPA recommends that the document include a discussion of reasonably foreseeable effects that changes in the climate may have on the proposed project and the project area. This could help inform the development of measures to improve the resiliency of the proposed project.

Natural and Human Environment, Secondary and Cumulative Impacts

The Council on Environmental Quality (CEQ) in 40 CFR 1508.8 defines secondary effects as "caused by an action and are later in time or farther removed in distance but are still reasonably foreseeable". Examples of these could be the environmental effects of interconnected projects, such as additional infrastructure that may be needed to support the project. Impacts of these types of activities should be considered and evaluated in the EA.

Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time. The CEQ in 40 CFR 1508.7 defines cumulative impacts as "impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions." A cumulative impacts assessment should be a part of the EA.

EPA recommends that the indirect and cumulative impact assessment include analysis specific to resources. EPA also recommends utilizing a trend analysis for resources that may be adversely affected by the proposed alternatives. We suggest an approach that would manage and link proposed projects to overall water quality and habitat on a sub-basin and sub-watershed basis, as well as allow for a full evaluation of public and community impacts that need to be evaluate.

References:

Anderson, D., Maddridge, H., Warren P. and Shucksmith, J. 2015. *The impacts of 'run-of-river' hydropower on the physical and ecological condition of rivers*. Water and Environment Journal. <https://doi.org/10.1111/wej.12101>

Bilotta GS, Burnside NG, Gray JC, Orr HG (2016) *The Effects of Run-of-River Hydroelectric Power Schemes on Fish Community Composition in Temperate Streams and Rivers*. PLoS ONE 11(5): e0154271. doi:10.1371/journal.pone.0154271

Bilotta GS, Burnside NG, Turley MD, Gray JC, Orr HG (2017) *The effects of run-of-river hydroelectric power schemes on invertebrate community composition in temperate streams and rivers*. PLoS ONE 12(2): e0171634. Doi:10.1371/journal.pone.0171634

P. Gibeau, B.M. Connors, W.J. Palen; *Run-of-River hydropower and salmonids: potential effects and perspective on future research*; Canadian Journal of Fisheries and Aquatic Sciences, 2017, 74:1135-1149; <https://doi.org/10.1139/cjfas-2016-0253>



United States Department of the Interior



NATIONAL PARK SERVICE
NORTHEAST REGION
15 State Street
Boston, Massachusetts 02109-3572

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

May 24, 2019
ER 19/0111
Filed Electronically

Review of Notice of Intent to File License Application, Pre-Application Document (PAD), Commencement of Pre-filing Process, Scoping, Soliciting Comments on the PAD and SD, Study Requests, Niagara Hydroelectric Project FERC #2466-034 on the Roanoke River near the City of Roanoke, Roanoke County, Virginia.

Dear Secretary Bose:

The National Park Service (NPS) has reviewed the above referenced FERC Notice issued on March 26, 2019, and offers the following comments and study requests.

NPS Unit Potentially Affected by the Relicensing

The project impact area, or the area in which NPS units are potentially affected by this relicensing, includes a portion of the Blue Ridge Parkway (BLRI). On June 20, 1936, Public Law 74-848, was signed by President Franklin Roosevelt, and officially named the "Blue Ridge Parkway." Secretary of the Interior Harold Ickes had recommended the chosen name in a press release on February 18 after receiving an endorsement from the Division of Geographic Names, which favored the name "because the parkway lies upon the Blue Ridge throughout most of the length of both the parkway and the ridge. It is, geographically, a most appropriate name."

Comprehensive Plans

The NPS has prepared a number of plans associated with BLRI. They include, but are not limited to the following.

The Blue Ridge Parkway General Management Plan/Environmental Impact Statement, completed in 2011. <https://parkplanning.nps.gov/projectHome.cfm?projectID=10419>

The Final General Management Plan provides comprehensive guidance for perpetuating natural systems, preserving cultural resources, and providing opportunities for high-quality visitor experiences along the parkway for the next 20+ years. After more than 75 years since the parkway was established, this is the parkway's first comprehensive management plan.

Roanoke Valley/Blue Ridge Parkway Trail Plan and Finding of No Significant Impact
September 2015.

<https://parkplanning.nps.gov/documentsList.cfm?parkID=355&projectID=10392>

The intent of the project was to determine whether an integrated trail system that would provide critical linkages between the Roanoke Valley Greenways Trail Network and the Blue Ridge Parkway was appropriate after a consideration of project impacts. The proposed trail system would provide the public with a greatly enhanced range of trail opportunities as well as provide the Parkway with rehabilitation and general maintenance assistance from the Roanoke Valley Greenway Commission and associated trail groups.

See also the Blue Ridge Parkway Foundation Document Overview for Virginia/North Carolina.
https://www.nps.gov/blri/learn/management/upload/BLRI_OV_2016_508.pdf

The above referenced completed plans may constitute Comprehensive Plans under Section 10a of the Federal Power Act; the NPS intends to submit them to FERC for such consideration.

Project Area Trails

The Blue Ridge Parkway trails in the Roanoke area were planned in the context of the original design of the Parkway. The trails were intended to follow the Parkway motor road from Stewart's Knob at MP 110.6 to State Route 220 at MP 121.4.

The Roanoke Valley Greenway Commission and Blue Ridge Parkway signed a General Agreement in 2001 allowing the Commission to assist with trail planning, mapping and rehabilitation under the direction of Parkway staff. Ensuing discussions followed to explore options for development of an integrated system that would provide a valley-wide trail system connecting to the Parkway.

The Blue Ridge Parkway Visitors Center and Virginia's Explore Park have both been developed since the current license was issued. As noted in the Roanoke Valley Greenway Commission's (RVGC) comments dated May 23, 2019, the Roanoke Valley Greenway network has been developed over the last 22 years. Those comments discuss the six existing greenways in the project vicinity, as well as ongoing efforts that have been conducted with the valuable assistance of AEP. The Roanoke River Greenway is the primary trail artery and several sections are in various stages of completion and design. Of particular note for the NPS is the eastern leg of Roanoke River Greenway located within the Project boundary which is in the right-of-way

phase; construction is scheduled to begin in 2020. The design for this section is on the south side of Roanoke River, adjacent to the Project Reservoir, then going around the south side of the Project Dam. *The next sections will go under the Blue Ridge Parkway and connect to and go through Roanoke County's Explore Park before terminating at the confluence of Back Creek on the upper end of Smith Mountain Lake.* This key section of trail will allow visitors to traverse on river right from public access points well below the dam all the way up to the project reservoir.

General Comments

The PAD provides information on existing recreation facilities and opportunities provided on project lands and in the vicinity of the project. There have been considerable changes in population density related to development in the vicinity of the projects, recreational use patterns and needs have changed as a result, have affected the way in which the public uses these resources. Additional public parks, access points and trails have been developed in the project vicinity. Existing information normally in the Form 80 data has not been collected since 1997 when an exemption was granted by FERC, and that data will no longer required to be collected periodically by the licensee. Therefore it is important to have the latest and most comprehensive recreational use and needs data currently available.

A number of popular recreational facilities and opportunities have been created within the project area during the term of the current license, and efforts continue to develop additional facilities and options. <https://www.roanokecountyparks.com/373/Trail-Maps> Among them are Explorers Park and the NPS Visitor Center located there. Other land based trails and facilities are more fully described in the RVGC's comments. Several issues associated with the project area were also identified in the Outdoors Demand Survey conducted in 2017.

The current license issued in 1993 required the development of a canoe portage, as described in Section 5.8.2 of the PAD. Although the applicant completed this requirement of the license, the portage was never ideal given its length and location. It is located in a steep section of the Reservoir, making it difficult to take out canoes and kayaks. The portage around the Dam is more than ¼ mile long, and vehicle access to the portage is restricted by a keyed gate. This portage should be evaluated to determine what improvements may be needed consistent with current and projected usage, erosion control, and those whose needs are characterized under the "Americans with Disabilities Act" or ADA, including angling and access options.

Future use estimates should be calculated by assessing future demand for recreation activities and population trends for the expected term of the new license. Growth in recreation activities and recreation use projections for the anticipated growth in recreational use through 2060 should be developed using Outdoor Recreation in American Life: A National Assessment of Demand and Supply Trends (Cordell et al., 1999), Outdoor Recreation Participation in the United States – Projections to 2060 (Bowker et al., 2012), as well as numerous additional sources and commonly used methodologies. Current use estimates should be projected with indexed values of expected changes in the number of recreation days for given activities at the projects to estimate future recreation use in the project for 10-year increments out to 2050.

Aesthetic Flow Study Request

(1) Describe the goals and objectives of each study proposal and the information to be Obtained.

The goals and objectives of the Aesthetic Flow Study (AFS) are to determine the extent to which flows can be modified and or controlled to improve the visitor's experience associated with experiencing spillage or controlled spillage under various flow levels. Information to be obtained would come from photos, videos and direct observations of flows under different levels, magnitude and duration. Information to be developed would include possible measures that could be taken to modify the existing dam to give the licensee additional control over flows, by means of installing removable or notched flashboards or possibly an inflatable type of system. Part of the proposed study would be predicated on what type of controls could be installed in this area.

The USFWS has or will be requesting a bypassed reach flow study that, as proposed, would involve demonstration flows of different magnitudes in order to evaluate how much habitat is available for target species under different flows. That study and as associated flows could overlap with the release of different aesthetic flows.

In addition to releases through the debris sluice gate or the valves that discharge to the bypassed reach, AEP can also ramp down their turbine operations to cause water level in the impoundment to come up, which allows for providing different flows. Inflow available at the time of the study may have a bearing on time, duration and magnitude of flows, but this can be addressed in the study plan to allow for better timing.

(2) If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied;

The Selected Alternative identified in the FONSI GMP/EIS notes that one of the most popular viewing areas in the Roanoke area is the Roanoke River Overlook, as well as the trail that extends down to the base of the dam area. Note also the pending trail segment to be completed that will go under the Blue Ridge Parkway on river right and connect to and go through Roanoke County's Explore Park before terminating at the confluence of Back Creek on the upper end of Smith Mountain Lake. Once completed, this trail will likely see considerable increased use, and provide an opportunity for users to enjoy viewing flows over the dam and through the bypassed reach.

(3) If the requester is a not resource agency, explain any relevant public interest considerations in regard to the proposed study;

Requester is a Federal Resource Agency, the National Park Service.

(4) Describe existing information concerning the subject of the study proposal, and the need for additional information;

An AFS has never been conducted at the site, either before or after its designation as a unit of the National Park System. The results will enable the stakeholders to determine the extent to which flows may be modified to achieve desired future conditions.

(5) Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements;

At certain times, under various flow conditions, virtually no water is going over the falls, making them effectively invisible and inaudible from the overlook.

(6) Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate filed season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge;

Generally accepted practices for Aesthetic Flow Studies would be employed for this study. All Key Observation Points (KOP) are easily. A component of the study is to determine the extent to which the applicant currently has the ability to control and/or modify flows, what measures might be necessary to enable the applicant to better control and/or flows and thus be better able to provide specific timing, duration and magnitude of flows, as well as how and to what extent modifications to project works to allow for increased control of flows might affect project operations, power generation, and revenues.

(7) Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.

This type of study is routinely conducted during FERC proceedings and in this case, can be done at a reasonable cost and time frame. Several KOPs are easily accessible. Conducting an AFS, using photo, video and personal observation is the simplest way to provide the information needed. This includes images from numerous flow levels and conditions and can be used to supplement information to be gathered during the AFS.

Methodologies and examples of this type of study

<https://www.nps.gov/ncrc/programs/hydro/info.htm> are readily available <http://www.hydroreform.org/hydroguide/science/83-waterfalls-and-cascades> and the NPS would assist in the development, conduct and assessment of such a study. See also, <https://www.questia.com/library/journal/1G1-351947034/waterfalls-science-and-aesthetics>

Trash containment, collection and disposal.

Under current operations, large trash is removed, but the vast majority is simply corralled and dumped back into the river, resulting in unsightly and environmentally problematic

accumulations below the dam and far down river into high use areas. This practice is not common at FERC licensed dams, and should be discontinued. A more environmentally sound method would be to develop and install a trash collection system (or conduct such activity manually by boat or small barge), and periodically remove trash from the river to be properly disposed of. This will provide a better user experience for those who use the area below the dam, as trash can often be found well down the river, especially during high flows when trash is dumped down the debris sluiceways or discharge valves. A Debris Management Plan (DMP) should be prepared in consultation with applicable stakeholders, including the NPS. Such a DMP could be similar to those in place for the Smith Mountain Dam (FERC 2210) and Leesville. See May 16, 2019 letter from AEP to the Leesville Lake Association. A better trash collection system at the Niagara Dam would serve to reduce the trash collection necessary in the Smith Mountain impoundment.

The NPS appreciates the opportunity to comment on the PAD and to offer study requests. We look forward to working with the applicant and other stakeholders during this relicensing. Questions or comments should be addressed to Kevin Mendik at kevin_mendik@nps.gov

Sincerely,



Kevin Mendik
NPS Northeast Region
Hydro Program Manager



Town of Vinton

311 S. Pollard Street
Vinton, VA 24179
Phone (540) 983-0607
Fax (540) 983-0646

Barry W. Thompson
Town Manager

May 23, 2019

Secretary Kimberly D. Bose
Federal Energy Regulatory Commission
888 First Street, NE, Room 1A
Washington, DC 20426

Re: Niagara Hydroelectric Project (P-2466-034)

Dear Secretary Bose:

On behalf of the Town of Vinton, I am providing comments in response to the Niagara Hydroelectric Project (P-2466-034) that is located to the southeast of the Town with an access from Niagara Road that is located in the Town of Vinton.

Recreation in Virginia's Blue Ridge, which includes the Town of Vinton, Roanoke and Botetourt Counties, Cities of Roanoke and Salem, is a major contributor to economic growth in the region. The growth of outdoor recreation venues and related businesses over the past twenty years has resulted in the addition of millions of dollars to the area economy. The development of the Roanoke Valley Greenway and Blueway has not only contributed to significant increases in recreation spending but has been instrumental in attracting businesses and individuals moving to the Roanoke Valley. Both the Greenway and Blueway are oriented to the Roanoke River which passes through both the Town of Vinton and Roanoke County and includes the reservoirs for the Niagara Project and Smith Mountain Project along its route. Due to their proximity to the Town and County, any recreation facilities developed and maintained under the requirements of the respective licenses for the referenced projects can have a significant impact on recreation development implemented by others than the licensees for these projects.

The Niagara Hydroelectric Project was last licensed in 1993. At that time there was little recreational demand in the area of the Project, and consequently the only recreational amenity provided in the license was a canoe portage around the Dam. Since 1993, there have been many changes in the recreational desires of citizens of the Roanoke Valley as indicated by the Virginia Department of Conservation and Recreation's 2017 Virginia Outdoors Demand Survey. The survey reported that 45% and 49% of households in the Roanoke Valley Alleghany Region indicated the need for increased access to trails and water access, respectively.

One of the two only boating access to the Project Reservoir is provided by the nearest upstream canoe/kayak access facilities in the **Town of Vinton (3rd Street off Virginia Avenue)** and the

City of Roanoke (Bridges Access and Bennington Access). While these facilities and others upstream allow paddlers to get to the Reservoir, there is no public place for boaters to take out and load boats onto vehicles once they get to the Reservoir or Dam. Paddling back upstream to the access areas in Roanoke City and Vinton requires considerable effort; consequently, few people take full advantage of the opportunities on the Reservoir. As part of the Recreational Needs Assessment outlined in the Scoping Document we encourage the applicant to consider development of a boating access facility within the Reservoir on either river left or right. This facility could provide a much needed take out point at Niagara Dam and facilitate improvements to the Project public recreational amenities and the Roanoke River Blueway system.

In 1997, the Town of Vinton, along with the City of Roanoke, Roanoke County, and the City of Salem formed the Roanoke Valley Greenway Commission. In 2016 Botetourt County joined the Commission. The purpose of the Greenway Commission is to promote and facilitate coordinated direction and guidance in the planning, development, and maintenance of a system of greenways throughout the Roanoke Valley. The development of the Roanoke Valley Greenway and Blueway systems have helped to meet, and yet have encouraged greater, demand for outdoor recreational opportunities and have been major contributors to economic growth in the region. Completion of the Roanoke River Greenway through the Project will help to provide additional trail access for the public.

Wolf Creek Greenway in the Town of Vinton and Roanoke County is completed for 2.2 miles from Hardy Road to the Blue Ridge Parkway, with an extension to the Roanoke River (north side) included in the 2018 Roanoke Valley Greenway Plan. The Appalachian Power Company (Appalachian) service road into the Project Dam and Powerhouse parallels Wolf Creek and is thus in the corridor for extension of this greenway.

The **Town of Vinton's Glade Creek Greenway** is contiguous with the Project, connecting to Tinker Creek Greenway at Route 24/Virginia Avenue. A 0.4-mile section of this paved greenway opened in 2017 and connects Virginia Avenue to Walnut Avenue. Another 0.6-mile section extending this greenway to Gus Nicks Boulevard is in the engineering phase, projected to go to construction by the end of 2019. The 2018 Greenway Plan includes additional sections that would extend this greenway to Vinyard Park and the Blue Ridge Parkway.

Trash and debris in the Roanoke River have been a continual problem in Roanoke Valley for years. During the relicensing of the Smith Mountain Project (P-2210) this was a major concern for residents of the lake. Trash and debris traveling down the river and through the Niagara Reservoir are gathered by a trash rake and passed over the Project Dam to continue downstream. The Town understands that the applicant did not generate this trash and debris, but the Dam provides a mechanism for collecting it. Perhaps it is time for the applicant to work together with the Roanoke Valley and Franklin County Waste Management Departments to develop a cooperative process for removing this trash and debris from the river system. Appalachian spends a considerable amount of time and money every year removing this trash and debris from Smith Mountain Lake. There might be a more economical method for removing the trash at the Project Dam or upstream, instead of letting it accumulate on the river banks of Explore Park and downstream in Smith Mountain Lake.

Thank you for giving Town's personnel the opportunity to attend the site visit on April 24, 2019 and for the opportunity to provide comments at this point. Please contact me if you have any questions or concerns regarding the Town's comments.

Sincerely,

A handwritten signature in blue ink that reads "Barry W. Thompson". The signature is written in a cursive style with a large, stylized 'B' and 'T'.

Barry W. Thompson
Town Manager



Commonwealth of Virginia

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

1111 E. Main Street, Suite 1400, Richmond, Virginia 23219

P.O. Box 1105, Richmond, Virginia 23218

(800) 592-5482

www.deq.virginia.gov

Matthew J. Strickler
Secretary of Natural Resources

David K. Paylor
Director
(804) 698-4000

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

May 24, 2019

Re: Niagara Hydroelectric Project P-2466-034, Request for Comments and Study Requests on SD1 and PAD

Dear Secretary Bose:

Thank you for the opportunity to provide comments on the Pre-Application Document (PAD) and Scoping Document 1 (SD1) related to the re-licensing of the Niagara Hydroelectric Project. Following below are comments on the PAD and SD1.

The Virginia Department of Environmental Quality (DEQ) will require a new Clean Water Act § 401 certification for the current project in conjunction with the FERC relicensing process. This certification is administered according to the Virginia Water Protection (VWP) Permit regulations ([9VAC25-210](#)). The permit application review for the § 401 certification includes an evaluation of the potential effect of the project, when operated and maintained as designed, upon downstream flow-dependent beneficial uses throughout the drought of record for the watershed.

Comments on the PAD:

Section 4.4.1, Current and Proposed Operations: This section states that compliance with Article 402 of the current license requiring a minimum flow downstream of the powerhouse is monitored using USGS gage 02056000. It also states that compliance with Article 403 (requiring a minimum flow in the bypass reach of 8 cfs) "...as measured by the gage immediately downstream of the Project's dam, which is operated and maintained by the USGS with funding provided by Appalachian". No further information was provided regarding the identity of this second gage, and there does not appear to be a gage located in the bypass reach that is identified in the USGS National Water Information System ([NWIS](#)). The details of the water level and flow monitoring plans approved by FERC (see Section 4.5 below) should be

provided and the methods used to monitor compliance with Article 403 should be clearly described.

Section 4.5, Current License Requirements and Compliance History: As stated in this section, Articles 404 through 406 of the current FERC license required submittal, for approval by FERC, of plans for monitoring water elevations and flows to record compliance with Articles 401 through 403 regarding project operation and minimum flows. These plans were submitted and approved by FERC in 1994, and the bypass-reach flow monitoring plan was modified in 2000. The PAD and SD1 state that the project operates in run-of-river mode and meets the minimum flow requirements of these articles, but do not provide any documentation of compliance with Article 403 regarding minimum flow in the bypass reach. The water level and flow data collected in compliance with the current license, if available, should be included and/or summarized as part of the Draft License Application and the VWP permit application for § 401 certification.

Section 5.3.7, Existing Water Quality Data: This section describes the collection of water quality data (specifically temperature, conductivity, and dissolved oxygen (DO) at stations located upstream and downstream of the project. It also states that water quality data are not available for the project reservoir or within the bypass reach. The VWP permit regulations include a requirement that permitted facilities contain conditions requiring compliance with Virginia Water Quality Standards. Therefore, water quality data are needed from these portions of the project in order to demonstrate that the project operations do not violate water quality standards.

Section 5.4.1, Aquatic Habitat: This section states that inflow exceeds project capacity approximately 17% of the time. This statement implies that, when inflow does not exceed hydraulic capacity (approximately 83% of the time), water does not flow over the dam and the minimum flow of 8 cfs must be released to the bypass reach. Therefore the bypass reach receives water at low rates most of the time. Of particular concern are periods when fish that have populated the bypass reach during periods of spillage may be stranded when inflow drops below the project hydraulic capacity. Detailed information regarding the use of the bypass reach by aquatic organisms is needed to assess whether the 8 cfs minimum release requirement is sufficient to avoid harm to aquatic resources.

Section 6.2.2, Water Resources: This section mentions that the Project has the potential to alter water quality in the bypass reach during periods of minimum flow and high ambient air temperatures. The reference to minimum flow is misleading. If, as is stated in Section 5.4, inflow exceeds the powerhouse capacity only 17% of the time, then it is diverted through the powerhouse around the bypass reach the majority of the time, not just during periods of minimum flow.

Section 7, Comprehensive Plans: This section states that AEP reviewed the July 2017 FERC List of Comprehensive Plans applicable to Virginia. This list has since been updated to include the [Commonwealth of Virginia State Water Resources Plan](#). The applicant should include an updated list of comprehensive plans with subsequent submittals.

Comments on SD1

Section 3.2.2, Proposed Environmental Measures: No changes are proposed to Project operations, including the minimum required flow to the bypass reach. The DEQ Office of Water Supply recommends that the flow monitoring currently required by Article 406 of the current license should be required to be reported on a periodic basis to assist the Project operators and stakeholders in assessing whether the minimum bypass reach flow required by the new license is protective of beneficial uses in the bypass reach and downstream.

Section 5.0, Proposed Studies:

Water Quality Study: A seasonal temperature and DO study is proposed. Details regarding the locations (e.g. in the reservoir, bypass reach, tailwater, or all three), and timing and frequency of water quality sampling were not provided. Such details are needed in order to assess the adequacy of the proposed study for performing its stated purpose of confirming compliance with water quality standards.

Bypass Reach Aquatic Habitat Study: According to the information provided in the PAD, inflow is normally diverted around the bypass reach except for periods of higher-than average flow in the Roanoke River. Therefore, during most months, there may be extended periods of low flow in the bypass reach that are punctuated by periods of higher flow from spillage over the dam. Aquatic resources in the bypass reach may be susceptible to stranding and high temperatures when the inflow rate drops and water stops spilling. The desktop approach proposed to assess habitat in the reach did not mention any site-specific information. Site-specific data regarding the types and numbers of benthic and fish species that use the bypass reach is needed to assess whether the current 8 cfs minimum flow is adequately protective.

In addition, any mussel surveys conducted as part of this study or within the tailwater area should not be limited to SCUBA-only. Such surveys would be expected to include situations when the river flow is relatively low and temperatures relatively warm. Methods using snorkeling, viewscopes, or electrofishing would be more useful and less hazardous to the surveyors.

Recreational Needs Assessment: DEQ agrees with the need for a recreational use survey. As Roanoke County's plans and projects at nearby Explore Park become a reality, there will be substantially more use by boaters, tubers, anglers, etc in the section of the river below Niagara Dam.

Finally, it is very important to note that the information and/or results from the studies conducted to support the Draft License Application, should be incorporated into the VWP permit applications so that the §401 certification is included as part of the Final License Application. It is recommended that, in order to expedite the §401 certification process, the licensee should begin the VWP permit application process as soon as any such studies are complete.

Thank you again for the opportunity to provide comments.

Respectfully,

A handwritten signature in black ink, appearing to read "Brian McGurk", with a stylized flourish at the end.

Brian E. McGurk, P.G.
DEQ Office of Water Supply
P. O. Box 1105, Richmond VA 23218
Brian.McGurk@deq.virginia.gov (804-698-4180)

Cc: Joseph Grist, VA DEQ – via email
Jason Hill, VA DEQ – via email
George Devlin, VA DEQ – via email
Allyson Connor, FERC – via email



Matthew J. Strickler
Secretary of Natural Resources

COMMONWEALTH of VIRGINIA
Department of Game and Inland Fisheries

Gary F. Martel
Acting Executive Director

May 24, 2019

Secretary Kimberly D. Bose
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 201426

**Re: Niagara Project (P-2466-034) – Application for New License
Virginia Dept. of Game and Inland Fisheries Comments on PAD/Scoping Document
and Study Requests**

Dear Secretary Bose:

Thank you for the opportunity to provide input into the relicensing process for the Niagara Hydroelectric Project (P-2466). The mission of the Virginia Dept. of Game and Inland Fisheries (VDGIF) is to conserve and manage wildlife populations and habitat, connect people to Virginia's outdoors, and protect people and property by promoting safe outdoor experiences. Additionally, VDGIF is the state agency responsible for managing aquatic and terrestrial wildlife resources, including rare/listed species of fish and wildlife.

With our mission statement in mind, we have identified several issues regarding the project that we believe should be addressed in the relicensing process. In broad terms, these issues include the following:

- Maintaining the current run-of-river operating scheme for the project to prevent alterations of the natural flow regime downstream from the project.
- Protection and enhancement of populations of fish and other aquatic resources within the area affected by the project. Currently, very little information regarding the fish community upstream and downstream of Niagara Dam exists. Additional data are needed to fully evaluate project impacts.
- Protection and enhancement of populations of the Federally-Endangered Roanoke Logperch (*Percina rex*), located in the project vicinity and downstream. Limited records of this species in the impacted area are available, but additional information is needed to determine project impacts.
- Restoration of habitat through flow management in the bypassed reach of the Roanoke River associated with this project. The current minimum flow regime through this reach was only designed to reduce the likelihood of fish kills. The Agency's management goal for this reach is to restore it so that it supports all species/life stages of aquatic resources present in this portion of the Roanoke River.

- Protection and enhancement of populations of freshwater mussel species potentially in the project area. Currently, little to no information regarding mussels is available for the area impacted by the project. Data are needed to fully assess potential project impacts. Species possibly present include:
 - *Alasmidonta undulata* (Triangle Floater, Tier IV)
 - *Elliptio complanata* (Eastern Elliptio)
 - *Elliptio roanokensis* (Roanoke Slabshell, Tier IV)
 - *Fusconaia masoni* (Atlantic Pigtoe, State Threatened, proposed Federal Threatened, Tier I)
 - *Lampsilis cariosa* (Yellow Lampmussel, Tier II)
 - *Lasmigona subviridis* (Green Floater, State Threatened, Tier II)
 - *Pyganodon cataracta* (Eastern Floater)
 - *Strophitus undulatus* (Creeper, Tier IV)
 - *Utterbackia imbecillis* (Paper Pondshell)
 - *Villosa constricta* (Notched Rainbow, Tier III)
- Passage for resident and migratory species, both upstream and downstream.
- Enhancement of recreational access both upstream and downstream of the Niagara Dam, including foot access (trails) and boat access (boat landings). This would include both river access and parking.
- The amount of debris and trash that accumulate at Niagara Dam. Presently, this material is simply passed downstream, where it impacts habitat and aesthetic values of the Roanoke River between Niagara Dam and Smith Mt. Lake.

Study Requests

In light of the issues identified above, the Dept. of Game and Inland Fisheries requests the following studies in order to fully assess the impacts of the project on aquatic resources and aquatic-based recreation.

Fish Community Assessment

1. *Study Goals and Objectives* – Based upon information presented in the PAD, the applicant is describing the fish assemblage using data from almost 30 years ago. It is extremely likely that the fish assemblage has changed since that time, and thus the data need to be updated. The overall goal of this study would be to describe the fish community in the area of the Roanoke River affected by the project. The primary objective would be to determine the fish community composition (both permanent and seasonal residents) and size structure of fish species in the pool, bypass reach, and downstream reach of the Roanoke River. The secondary objective would be to compare the fish community structure of the bypass reach with that of the reach below the powerhouse in order to evaluate the impacts of operations on the 1500 ft. bypass reach.
2. *Agency Resource Management Goals* – The Dept. of Game and Inland Fisheries is the state agency responsible for managing fish and wildlife resources within the Commonwealth. For this study request, the agency goals will be to determine the current characteristics of fishery resources within the area impacted by the project, in order to fully evaluate potential effects on fishery resources due to project operations.
3. *Public Interest Considerations (non-resource agency)* – n/a
4. *Existing Information and Need* – Based upon information presented in the PAD, no fishery resource data have been collected in the project area since 1991. We are also unaware of any more recent relevant data. Because fish communities in river systems are dynamic, the fish community composition could have changed substantially over 30

years, and while the data from 1991 are useful for comparisons, they do not necessarily describe the current fish community. Additionally, the fish community composition data presented in the PAD appear to be only from the impounded area, and do not include data from either the bypass reach or the reach below the powerhouse. Finally, the existing data may not adequately capture seasonal use of the river by seasonally-resident fish species. Current data are needed in order to fully evaluate project impacts.

5. *Project Nexus* – The project has altered habitat in the Roanoke River by maintaining a pool above the dam and by releasing very limited flows through the bypass reach. All of these alterations could, and likely have, impacted the fish community in the project vicinity. By comparing the community composition and other population indices among the pool above the dam, the bypass reach, and the reach below the powerhouse; a determination can be made regarding the project impacts upon the Roanoke River fish community.
6. *Study Methodology* – This proposal would utilize a combination of electrofishing gear-types to sample the Roanoke River above the dam, in the bypass reach, and below the powerhouse. The pool above the dam can be adequately sampled with boat electrofishing gear. The bypass reach can be sampled with backpack and/or barge-mounted electrofishing gear. The reach below the powerhouse can be sampled using a combination of raft-mounted (deeper habitats) and backpack (wadeable habitats) electrofishing gears. Effort should be measured for all sampling, as should gear efficiency (capture probability). The estimates of capture efficiency can then be utilized to estimate population size for the various species collected. Comparisons should then be made of the fish community composition among the 3 sample areas (pool, bypass, downstream). Additionally, lengths and weights should be recorded for captured fish to compare size indices and relative weight/condition factors among the 3 sample areas. Finally, a seasonal component (spring, summer, fall) should be incorporated into the sampling in order to capture seasonal variations in fish community structure. The suggested duration of this study would be for a minimum of two years in order to evaluate annual variations in fish community composition.
7. *Level of Effort* – This study would require a moderate level of effort (3 sampling events/year for 2 years). Additionally, it would require the use of multiple electrofishing gear types (boat, raft, backpack, and possibly barge) and a sizeable field crew. This level of effort would be necessary in order to evaluate project impacts upon fishery resources using standard methodological approaches. The applicant proposes to utilize past data and perform an undetermined level of additional data collection. It cannot be determined from the PAD whether this is likely to sufficiently document the current status of the fish community in the area impacted by the project. Estimated costs would be \$50,000 - \$100,000/year.

Roanoke Logperch Assessment

The previously proposed study (Fish Community Assessment) should adequately determine the presence and status of Roanoke Logperch in the project vicinity.

Bypass Reach Flow and Habitat Assessment

1. *Study Goals and Objectives* – Based upon information presented in the PAD, flows in the bypass reach were specifically set to prevent stranding of fish species in this reach, but not to provide suitable amounts of habitat to support aquatic life year-round. The goal of this study is to determine the minimum amount of habitat, as regulated by instream

flows, necessary to support all species/life stages of fish and other aquatic life present in this segment of the Roanoke River. One specific objective of this study would be to determine minimum flows needed to provide suitable habitat for a suite of species inhabiting the Roanoke River at a level comparable with non-impacted reaches. A second objective would be to provide suitable habitat for all life stages of Roanoke Logperch at levels similar to non-impacted reaches.

2. *Agency Resource Management Goals* – The Dept. of Game and Inland Fisheries is the state agency responsible for managing fish and wildlife resources within the Commonwealth, including listed species. For this study request, the agency goals will be to determine a recommended flow regime for the bypass reach, in order to restore full ecological function to this 1500 ft. reach.
3. *Public Interest Considerations (non-resource agency)* – n/a
4. *Existing Information and Need* – Based upon information presented in the PAD, no fishery resource or habitat data have been collected in the bypass reach since 1991. We are unaware of any more recent relevant data. The bypass reach represents a significant river segment that currently does not provide the full range of ecological services needed to sustain aquatic communities. Additionally, the current flow regime does not always meet the stated goal of presenting significant flow-related fish kills. In April, 2012, a significant fish kill occurred in the bypass reach due to stranding of large numbers of, primarily, redhorse spp. following a high water event. The dam went from a spilling condition to minimum flows over a short time period, which resulted in very high numbers of redhorse spp. and other species becoming stranded in the bypass reach. The biomass was high enough that dissolved oxygen concentrations in the semi-isolated pools dropped to lethal levels. While fish kills have not been a regular event in the bypass reach, this example does indicate that the 8 cfs minimum is not adequate to support aquatic life in all instances. Thus, a more intensive study than simply a desktop evaluation for desirable flow regimes in the bypass reach is needed.
5. *Project Nexus* – The project has significantly altered habitat in the bypass reach by releasing minimal flows through this reach. During the previous relicensing, VDGIF was not intending to restore full ecological function to this reach. However, in the 30 years since, we have determined that all river segments have intrinsic value and provide a wide range of ecological services. Thus, we now believe that it is imperative that this significant reach be restored to a fully functioning river segment. Additionally, this reach, if restored, would provide an additional 1500 linear feet of habitat for Roanoke Logperch and other aquatic species.
6. *Study Methodology* – We recommend modeling instream flow needs using a PHABSIM approach utilizing guilds instead of individual species. Guild preference curves have been developed for the upper Roanoke River by Vadas and Orth (2001). This study would provide the necessary information to establish suitable flow regimes in the bypass reach for all species/life stages of fish present in this segment of the Roanoke River. Using the guild approach should satisfy the need to evaluate instream flow needs of Roanoke Logperch in this reach, since specific habitat suitability curves for this species are not available.
Vadas, R.L., Jr. and D.J. Orth. 2001. Formulation of Habitat Suitability Models for Stream Fish Guilds: Do Standard Methods Work? Transactions of the American Fisheries Society 130: 217-235.
7. *Level of Effort* – This study would require a moderate level of effort extending over one field season (to capture a minimum of 3 levels of discharge through the reach), since the current ability to manipulate flows in the bypass reach is limited by the lack of available

storage in the reservoir. Anticipated costs would be in the \$50,000-100,000 range. Alternatives to a PHABSIM study exist, but because the guild habitat suitability curves are available and highly applicable to this system (no issues with transferability since they were developed in the upper Roanoke River), this method provides the most robust and defensible way to assess instream flow needs in this reach.

Freshwater Mussel Assessment

1. *Study Goals and Objectives* –The goals of this study proposal would be to assess the presence, distribution, and abundance of any freshwater mussel species inhabiting the area affected by the project. Specific objectives would include the identification of the amount of suitable mussel habitat in the project area, determine the species composition of the extant mussel fauna, evaluate population trends (via the presence of multiple cohorts and overall age structure of the various populations present), and to compare the distribution and abundance of mussels among the pool area, the bypass reach, and the segment downstream from the powerhouse.
2. *Agency Resource Management Goals* – The Dept. of Game and Inland Fisheries is the state agency responsible for managing fish and wildlife resources within the Commonwealth, including listed species. For this study request, the agency goals will be to determine the species composition, abundance, population trends, and available habitat for mussel species in the project impact area.
3. *Public Interest Considerations (non-resource agency)* – n/a
4. *Existing Information and Need* – Currently, essentially no data are available for freshwater mussel species in the area impacted by the project. Thus, in order to assess project impacts on this faunal group, there is a need to determine the presence, abundance, population trends, and amount of habitat available for mussel species in the area.
5. *Project Nexus* – The project has significantly altered habitat in the affected area, which may be impacting mussel populations. Since no data are currently available, it is impossible to assess what these impacts might be. Given the habitat alterations associated with the project (impounded area, bypass reach, movement barrier), one would assume some level of impact to the mussel fauna associated with this project.
6. *Study Methodology* – We recommend mussel surveys be conducted by an approved expert in the impoundment, the bypass reach, upstream of the impoundment, and below the powerhouse. Species composition, abundance, and age structure of collected mussels could be compared to determine project impacts. Available and potential habitat could be assessed by this same approved expert using a standard methodology.
7. *Level of Effort* – This study would require a moderate level of effort extending over one field season. Since no mussel data are currently available, there appear to be no alternatives to this study that would provide the information necessary to assess project impacts. Estimated costs would be in the range of \$25,000-50,000.

Fish Passage Assessment

1. *Study Goals and Objectives* –This study would examine the options for enhancing upstream and downstream fish passage for resident and migratory species, including Roanoke Logperch, at the project location, with the goal of restoring connectivity in this segment of the Roanoke River. The first objective would be to use data from the proposed fish community assessment to determine the species present that would require passage ability. The second goal would be to assess potential upstream fish

passage options (e.g., nature-like fishway, vertical slot weir, fish lift, etc.) given the site characteristics and fish species present. The final goal would be to assess potential downstream fish passage options using these same factors.

2. *Agency Resource Management Goals* – The Dept. of Game and Inland Fisheries is the state agency responsible for managing fish and wildlife resources within the Commonwealth, including listed species. For this study request, the agency goals will be to restore connectivity in this segment of the Roanoke River for resident and migratory fish species, including Roanoke Logperch.
3. *Public Interest Considerations (non-resource agency)* – n/a
4. *Existing Information and Need* – Currently, no data exist regarding options for fish passage at the project. Information describing fish passage specifications exists for some of the species present in this segment of the Roanoke River, but data for some important species (i.e., Roanoke Logperch) are limited or lacking. Additionally, the need for passage cannot be adequately determined without a complete assessment of the adjacent fish community. Theoretically, restoring connectivity would benefit both resident and migratory species by allowing for movement between preferred habitats and restoring geneflow between currently separated populations.
5. *Project Nexus* – The project is a significant barrier to fish passage on the Roanoke River. Currently, upstream passage is essentially impossible, and downstream passage is only available by going over the spillway or through the turbines. In the case of downstream passage, mortality rates are unknown, but can be assumed to be significant. Thus, the project prevents fish from moving to preferred habitat upstream and limits geneflow among populations to one direction, and that is likely to be limited. This has resulted in population fragmentation of resident species, as well as preventing upstream movement of migratory species (e.g., Striped Bass from Smith Mt. Lake).
6. *Study Methodology* – This study would be based upon the assumption that restoring connectivity is desirable and would significantly benefit both resident and migratory species. As a result, the study would focus on examining options for upstream and downstream passage for all species. Information exists regarding passage facility requirements for most of the species likely to be present, although additional information regarding Roanoke Logperch passage requirements will likely be needed. Assuming these data were obtained, the study would utilize existing literature to evaluate fish passage options, and preliminary engineering studies to determine potential fish passage facilities and/or operational methods needed to restore connectivity.
7. *Level of Effort* – The effort required for this study would largely depend upon the amount of information needed to determine fish passage specifications for Roanoke Logperch. Assuming these data were either available or obtained, the remainder of the study would require relatively modest effort. Information regarding the requirements of various fish passage facilities and operational methods could be obtained from the literature, and a preliminary engineering study could then evaluate the feasibility of installing the various options at the project. Estimated costs are unknown.

Recreational Use and Enhancement Assessment

1. *Study Goals and Objectives* – The goals of this study would be to determine the need and potential demand for enhanced recreational access in the project area. The objectives would be to (1) evaluate the potential use of enhanced bank fishing access via trail development; (2) evaluate the potential use of water-borne recreational opportunities via development of boat access points within the project area (above and below the

dam); (3) evaluate options for enhancing both bank and boat access within the project area; and (4) evaluate off-site recreational enhancement options, should options within the project boundary prove to be impractical.

2. *Agency Resource Management Goals* – The Dept. of Game and Inland Fisheries is the state agency responsible for managing fish and wildlife resources, as well as boating recreation, within the Commonwealth. For this study request, the agency goals will be assess the need for enhanced bank and boat access within the project area, as well as assessing potential options within the project boundary (preferable) or off-site for recreational access enhancements.
3. *Public Interest Considerations (non-resource agency)* – n/a
4. *Existing Information and Need* – The Virginia Outdoors Plan and Demand Survey have identified a need for additional water-based recreational opportunities in the Roanoke area. Additionally, the Greenway Commission has a limited amount of use data that should be available to the applicant. There is a need to obtain data on use of the Roanoke River by anglers (bank or boat) and boaters. Currently, access to the project area is limited to a canoe portage and a steep trail downstream. Given the project's location in a major metropolitan area, demand for access is expected to be very high. Better access is needed within the project boundary, both above and below the dam. Since no data exist, the potential level of use of enhanced access is unknown. A recreational use survey could evaluate current use of the Roanoke River in locations with adequate access in order to project anticipated use should access in the project area be enhanced.
5. *Project Nexus* – Currently, the project offers extremely limited access opportunities to the Roanoke River. The presence of the dam effectively blocks most boating traffic through this reach of the river, as the available portage is long and somewhat difficult for most users. Upstream access via the Roanoke River Blueway cannot be fully utilized due to the presence of the dam with no available boating access facilities. Additionally, the lack of developed boating access below the dam effectively limits use of the river between Niagara Dam and Smith Mt. Lake. Developed access locations upstream (Blueway) and downstream (Explore Park) cannot be fully utilized because the dam effectively blocks this portion of the river to most users. In essence, it functions as a major impediment to recreational use on this segment of the Roanoke River.
6. *Study Methodology* – This study would compare actual and potential recreational use by assessing recreational use (hiking, fishing, boating) upstream of the project, within the project area, and downstream of the project. The study would estimate recreational use of the existing greenway and blueway trails upstream of Tinker Creek (areas with adequate access), estimate use within the project boundary, and estimate use between the project and Back Creek (Explore Park). Exact methodologies would be determined via consultation among stakeholders and the applicant, but would likely include methods to estimate amount and type of use of Greenway trails and the Roanoke River by hikers, anglers, and boaters. The duration of the recreational use study would likely be 9 months (spring, summer, fall), and would follow accepted survey practices/designs. The second component of the study would be to evaluate options within and outside the project boundary for recreational access enhancement facilities (e.g., boat access points, trail development, parking, etc.). This would be done in consultation between the applicant and stakeholders.
7. *Level of Effort* – The effort required for this study would be moderate, and would likely require multiple survey personnel. The geographic extent would also be relatively small

(Salem – Explore Park), which would reduce the cost. A duration of 9 months should be sufficient to generate the necessary data. The evaluation of recreational enhancement options would involve a relatively modest level of effort, but would require expertise in trail and boating access development, as well as some level of engineering expertise. Costs associated with the recreational use/demand survey would likely be in the range of \$30,000-50,000, while the cost of assessing access enhancement options would likely be somewhat less.

In addition to the comments and study requests noted above, the Dept. of Game and Inland Fisheries fully supports the comments and study requests submitted by resource agencies (e.g., USFWS, VDEQ, VDCNR), localities (e.g., Roanoke Co.), and NGO's (e.g., Greenway Commission).

Thank you again for the opportunity to provide input. Should there be any questions, or the need for additional information, please contact Scott M. Smith, Regional Fisheries Manager at scott.smith@dgif.virginia.gov or 434/525-7522.

Sincerely,

/s/ Scott M. Smith

Scott M. Smith
Regional Fisheries Manager

Cc: Ernie Aschenbach – VDGIF
Dan Wilson – VDGIF
Ray Fernald – VDGIF
Ron Southwick – VDGIF
Mike Bednarski – VDGIF
Mike Pinder – VDGIF
Brian Watson – VDGIF
Rick McCorkle – USFWS
John McCloskey – USFWS
Lindsay Webb – Roanoke Co.
Paul Angermeier – Virginia Tech

Niagara Project (P-2466-034)

Study Request: Coupling Studies of Hydrodynamics and Fish Behavior to Improve Roanoke Logperch Passage at Niagara Dam

1. *Goals and Objectives*

Comprehensive knowledge of hydrodynamics and fish behavior is essential to designing any effective fish passage technology. The goal of the proposed work is to answer two overarching questions: 1) Are there specific locations or configurations of depth, velocity, and turbulence near Niagara Dam that attract or repel Roanoke Logperch (RLP)? and 2) How might these locations or configurations be manipulated or enhanced to safely pass RLP? We hypothesize that volitional RLP passage can be improved by providing or enhancing hydraulically attractive paths through (or over) dams. Our proposed work develops coupled knowledge of hydrodynamics and RLP behavior that can enable operators of Niagara Dam to increase safe passage of RLP without considerably reducing power generation. Importantly, a desktop analysis would not meet the goal of this study request.

We propose to characterize the hydrodynamics of the flow fields upstream and downstream of Niagara Dam, including its intake structures, various gates, and turbine outflows. This work will help us a) understand which hydraulic features attract/repel RLP and b) recommend how to design hydraulic alterations to improve RLP passage. We will use a combination of hydrodynamic measurements, computational fluid dynamics (CFD) simulations, and fish behavior studies to characterize current and potential pathways for volitional fish passage. Obvious pathways include going through the powerhouse or over the dam crest, but undiscovered pathways may also exist and be amenable to hydraulic enhancement.

Specific objectives of the proposed work are to a) characterize the hydrodynamics near Niagara Dam (upstream and downstream) using measurements and physical modeling based on computational fluid dynamics (CFD); b) relate observed physical conditions to observed RLP behavior and spatial orientation; and c) use this new knowledge to inform turbine operations and future designs of new passage technologies that enhance RLP movement and survival. A major outcome of this work will be a *generalizable framework* for describing hydrodynamic conditions at Niagara Dam over a range of seasonal, flow, and dam-operating conditions, and for relating those conditions (especially velocity and turbulence) to behavioral responses by RLP. With this information in hand, dam operators will have a better understanding of how purposeful hydraulic alteration can affect RLP behavior and promote safe passage.

The final tangible products of this project include:

- Synthesized comprehensive three-dimensional hydrodynamics maps correlated with RLP behavior relative to the dam, providing information for turbine operations and future designs of new passage technologies to enhance RLP passage and survival.
- A generalizable methodological framework describing the hydrodynamic conditions at Niagara Dam and their relation to behavioral responses by RLP. This product will highlight various flow and operational conditions germane to RLP passage.
- A CFD-based “virtual test-rig” to test effects of hypothetical hydraulic manipulations on hydrodynamic characteristics near Niagara Dam for future use.
- A statistical model of relationships among RLP behaviors, seasons, times of day, and CFD-modeled flow dynamics.

2. *Resource Management Goals*

A primary management goal for public water resources is to restore and protect populations of native freshwater fishes, including Roanoke Logperch (*Percina rex*), which is listed as endangered under the U.S. Endangered Species Act of 1973. Government agencies such as the U.S. Fish and Wildlife Service and Virginia Department of Game and Inland Fishes lead efforts to conserve and recover endangered and threatened species, but many other stakeholders also have roles in such efforts. Especially valuable are the roles scientists play in providing new knowledge to inform management actions so that management goals can be met cost-effectively.

3. *Public Interest*

This study request has significant public interest because enhancing fish passage could contribute to a) conservation and recovery of a federally endangered species, b) restoration of the ecological health of Roanoke River upstream and downstream of Niagara Dam, and c) improved fishing.

4. *Existing Information*

The Roanoke logperch (RLP; *Percina rex*) is an endangered fish occurring in the Roanoke River drainage; its strongest population is in Roanoke River upstream of Smith Mountain Lake (Roberts et al. 2013. *Freshwater Biology* 58: 2050–2064); this reach includes the Niagara Hydroelectric Project. In 1990 and 1991, fish surveys conducted for Appalachian Power Company found RLP upstream and downstream of Niagara Dam. RLP have been captured in the Niagara Dam tailwater before it enters Smith Mountain Lake (Rosenberger, 2007. An update to the Roanoke Logperch Recovery Plan. Technical Report to U.S. Fish and Wildlife Service, Virginia Field Office). No information was provided in the pre-application document (PAD) to assess impacts of Niagara Dam on RLP movement and we are not aware of any systematic studies to characterize RLP distribution or movement near Niagara Dam.

Presumably, Niagara Dam is a barrier to movement by RLP, but the extent to which it impairs fish movement is unknown. Roberts et al. 2016 (Ecology of Freshwater Fish 25: 1–16) estimated median lifetime dispersal distances of 6–24 km for RLP in Roanoke River. This information indicates that Niagara Dam is a barrier for many RLP spawned upstream or downstream in Roanoke River. Therefore, additional studies are needed to assess a) how RPL interact with Niagara Dam and b) options for enhancing RLP passage.

5. Nexus to Project Operations and Effects

A key cause of RLP's imperilment is fragmentation of its habitat by dams, which cause a wide range of adverse impacts. In addition to impeding movements crucial to completing RLP's life history, dams and their impoundments a) exacerbate population isolation and genetic drift; b) eliminate spawning, rearing, and foraging habitats; c) entrain larvae through gates and turbines (direct mortality); d) alter temperature and oxygen regimes, which affect growth and survival; and e) starve downstream reaches of gravel/pebble/cobble sediments, which are crucial to RLP spawning and foraging. Collectively, these impacts imposed on RLP by Niagara Dam represent a significant, but unmeasured and unmitigated, "incidental take" of an endangered species. Moreover, none of these impacts is addressed substantively in the PAD. Aside from removing the dam altogether, the main management action that can reduce this take is to enhance fish passage. Therefore, additional studies are needed to assess a) how RPL interact with Niagara Dam and b) options for enhancing RLP passage.

Niagara Dam has operated since its construction with no fish passage facility or requirement. Therefore, cumulative impacts on RLP movement are, and continue to be, significant. These impacts need to be reduced and mitigated to contribute to RLP recovery. Conditions on the new license should include provision for RLP passage. **However, it is not currently possible to make an informed decision regarding how to enhance fish passage without more detailed knowledge of how RLP interact with the hydrodynamics upstream and downstream of Niagara Dam.**

6. Methodology Consistent with Accepted Practice

The proposed work for this study request comprises four main tasks, each of which will be conducted consistent with generally accepted practices. Methods for each task follow.

Task 1 - Hydrodynamic Measurements (Year 1):

We will characterize hydrodynamics upstream and downstream of Niagara Dam. We will collect bathymetric and velocity data using an acoustic Doppler current profiler (ADCP) paired with a real-time kinematic global positioning system (RTK-GPS) deployed from a manned boat. The RTK-GPS will measure our 3-D position at centimeter resolution while the ADCP will measure vertical profiles of 3-D water velocity and bed elevation (actually water depth post-processed into bed elevation along four individual beams, including corrections for boat/instrument pitch

and roll). Data will be collected at roughly one-second intervals using HYPACK hydrographic survey data collection and processing software for bathymetric data collection and Sontek's Riversurveyor Live software for ADCP data collection and processing. Water depth measurements using acoustics are sensitive to variations in the speed of sound in water. Temperature and salinity are the primary factors affecting the speed of sound in water. Reservoir depth is presently unknown; but if it is deep enough to potentially stratify thermally, it may exhibit a temperature gradient from surface to bottom. We will measure temperature and salinity profiles periodically during our surveys. The HYPACK software notes the timestamp and location of these temperature/salinity profiles, computes the speed of sound in water, and spatio-temporally interpolates the speed of sound estimates to correct bathymetric measurements. Additionally, we will use a rod to physically probe the depth at various locations to verify the fidelity of our acoustic bathymetric survey. We will measure bathymetry and velocity upstream of the dam, near intake structures and gates, throughout the reservoir, and downstream of the dam into the free-flowing river. More detail will be obtained near the dam and intake structures because we hypothesize that the flow field in these locations strongly influences fish behavior during migration and other movements.

In order to safely obtain bathymetric and velocity data near the dam crest and intake structures, we will deploy the ADCP and GPS from a tethered boat and maneuver the tethered boat using a rope from the manned boat. In this way, we can maneuver the ADCP nearly to the dam crest and adjacent to the intake structures while maintaining a safe distance in the manned boat farther upstream. We will measure velocity over a range of annual flow conditions (e.g., high, medium, low flow), and as conditions allow, work with the dam operators to coordinate intake/turbine operation to reflect full (two turbines on), partial (one turbine on), and off operating conditions. In effect, we will characterize multiple hydrodynamic conditions during each of a few field surveys.

Hydrodynamic data will be processed in the office to filter spurious data and to prepare the data into a suitable format for use in the CFD modeling (described below). Velocity time-series data at various locations will be used to quantify turbulence characteristics. The results of each detailed flow and operating condition will be summarized in a 3-dimensional map of the flow field upstream of the dam; maps will highlight regions of flow acceleration/deceleration, turbulence levels, and sudden changes in flow direction. (Czuba et al., 2011. Bed morphology, flow structure, and sediment transport at the outlet of Lake Huron and in the upper St. Clair River. *Journal of Great Lakes Research* 37(3): 480-493; Parsons et al., 2013. Velocity Mapping Toolbox (VMT): a processing and visualization suite for moving-vessel ADCP measurements. *Earth Surface Processes and Landforms* 38(11): 1244-1260). Such maps will also be generated from the CFD modeling, but the independently generated characterization of the flow conditions from the hydrodynamic field surveys will serve to validate the major features of the flow simulated by the CFD modeling (Liu et al., 2012. Sediment mobility and bed armoring in the St.

Clair River: insights from hydrodynamic modeling. *Earth Surface Processes and Landforms* 37(9): 957-970).

We will characterize hydrodynamic conditions beyond those observed in the field surveys by installing velocity and stage sensors near the dam. Two or three velocity sensors will be affixed at key locations and measure a horizontal or vertical velocity profile at regular time intervals (e.g., 15 minutes) for the study duration. We envision placing sensors to measure velocities just upstream of the dam crest, near the intake structure, and downstream of the dam. We anticipate that the regions of high and low velocity that deter/attract fish may shift spatially in the reservoir, depending on flow and operating conditions. These velocity measurements will capture the expected shifts in high-flow regions beyond what we could measure during our comprehensive field surveys. A total of four stage sensors will be deployed just below the low-water surface along the bank, both upstream and downstream of the dam. An additional sensor will be deployed in the air over the reservoir to correct water pressure measurements with air pressure measurements to achieve accurate water stage measurements via hydrostatic pressure. These sensors will measure water stage at regular time intervals throughout the study duration. Water-surface elevations will be measured by the RTK-GPS at each sensor location to convert the stage record to water-surface elevation. The stage data will provide another boundary condition for the CFD simulations. We will also deploy a few additional temperature sensors near the dam, distributed throughout the water column, to characterize water temperatures in the reservoir, which may influence fish movement or orientation.



Figure 1. Areas near Niagara Dam where the requested study will be conducted. The two spatial domains for hydrodynamics surveys and simulations are outlined in red.

Task 2 - CFD Simulations (Years 1 and 2):

We will conduct physics-based, high-fidelity computational fluid dynamics (CFD) simulations to obtain detailed information about the velocity field, streamlines, and turbulence levels of water flow upstream and downstream of Niagara Dam across a wide range of flow conditions. In our CFD simulations, incompressible Navier-Stokes equations are discretized using the Finite Volume Method (FVM) with an unstructured grid and the resulting system of equations are numerically solved. Simulations will be conducted for two computational spatial domains, one extending ~100 m upstream of the dam crest and the other extending ~150 m downstream of the powerhouse (see Figure 1). The extent of the domains will ensure that all complex flow features near the dam that may affect fish behavior are represented.

Due to the spatiotemporal complexity of the flow upstream/downstream of a dam, we will use advanced three-dimensional unsteady numerical simulations based on blending Reynolds-Averaged Navier-Stokes (RANS) and Large Eddy Simulations (LES), the so-called hybrid RANS-LES, to ensure that detailed characteristics of the flow are well represented. Hybrid RANS-LES models resolve important flow features such as transient streams and energy-carrying eddies using LES, while near-surface flow is modeled using the RANS approach. The application of these models to Engineering Fluid Mechanics problems has grown extensively over the past few years due to a favorable tradeoff between computational costs and accuracy. Methods proposed here are consistent with generally accepted practices (e.g., Lindberget al. 2013. Methods for locating the proper position of a planned fishway entrance near a hydropower tailrace. *Limnologica* 43: 339-347; Gisen et al. 2017. Optimizing attraction flow for upstream fish passage at a hydropower dam employing 3D detached-eddy simulation. *Ecological Engineering* 100: 344-353).

We will use the bathymetric data obtained from our field surveys (described above) to construct computational domains for simulations. Additionally, the measured velocity profiles will be used as boundary conditions in our CFD simulations, as well as a means to validate our modeling results. To account for turbulence generated at the riverbed or near dam structures, which can significantly affect flow patterns, our simulations will use wall-roughness characterization functions. To accurately represent the river surface and water/air interactions in the numerical models, we will use the Volume of Fluid (VOF) method. The VOF method introduces a volume fraction field F , which for each element in the computational grid contains the fraction of that element's volume that is occupied by a specific fluid. An element in the water phase has $F=1$, an air element has $F=0$, and elements with $0 < F < 1$ are in the numerical interphase. Fluid properties are weighted using this fraction field. The computational grid will be locally refined near the upstream surface of the dam, just downstream of the powerhouse, and near the by-pass reach mouth to capture details of the flow fields in all dimensions. Tests will be conducted to quantify the sensitivity of results to various spatial and temporal resolutions of the simulations.

We will conduct our CFD simulations for a range of river discharge and dam-operating conditions. The main product of our CFD simulations will be 3-dimensional maps of the flow-fields upstream and downstream of the dam. Maps will highlight regions of flow acceleration/deceleration, turbulence levels, and sudden changes in flow direction – all of which may influence a fish’s spatial associations with the dam. In addition, the CFD framework developed here can serve as a “virtual test-rig” to test effects of many other potential hydraulic manipulations on hydrodynamic characteristics near the dam, without actually implementing them in the real world.

Task 3 - Fish Behavior Studies (Years 1-2):

Studies of fish behavior will account for diel (time of day), seasonal, and flow variation that may affect how fishes orient to Niagara Dam and move within the impoundment. Studies will focus on RLP but will also encompass other common species observed near the dam. We expect all three factors (diel cycle, season, and flow) to affect RLP behavior and abundance near the dam. Fish behavior can be observed effectively, and movements quantified, via deployment of underwater cameras. We will conduct five main sub tasks: 1) characterize general patterns of RLP occurrence/abundance near the dam during the full range of annual conditions; 2) describe orientation of RLP relative to the dam (e.g., facing versus parallel, moving versus stationary); 3) identify specific locations near the dam that attract or repel RLP; 4) document shifts in the patterns of RLP location and behavior in response to changes in time of day, season, and river flow; and 5) document shifts in patterns of RLP location and behavior in response to changes in turbine operation.

We will monitor RLP distribution and behavior throughout approximately 22 months, employing a stratified-random sampling design, with more frequent sampling during March – November and daylight hours. Years and days each will be divided into four periods (strata). Sampling days and times will be randomized but subject to anticipated or prearranged changes in flow conditions (e.g., high, medium, low flow and turbines operating versus not operating).

The design goal is to capture at least a replicated sample of RLP behavior for each distinct flow condition defined by the CFD model during each of the period by time-of-day combinations. Given that we will not have control over river flow and associated seasonal temperatures that also likely act as cues for fish behavior we will measure and treat these variables as covariates in a factorial experimental design. The range of flows in which we can observe fish will be limited by high velocity and turbidity. Behavioral responses of RLP to diel cycle, season, and river flow will be modelled with a generalized linear model equivalent of an analysis of covariance (ANCOVA).

We will use underwater observations to characterize RLP’s spatial associations with the dam and associated structures or flow conditions over the full range of temporal factors (i.e., period and

time-of-day). Observations will also aim to determine the conditions under which individuals initiate and/or maintain upstream or downstream movement, as well as how their frequency of movement varies with flow. Observations will be collected by stationary cameras set at strategic places such as upstream across the dam face and intake, downstream below the dam, and at the confluence of the bypass channel with the turbine outflow (Figure 2). Where possible, these cameras and the velocity sensors (described in the hydrodynamic measurements section) will be co-located. Individual orientation, movement, and aggregation are aspects of behavior that will be quantified for statistical analyses.

Camera monitoring will be conducted with GoPro Hero 5 HD cameras capable of videotaping continuously in deep water for up 2.5 hours at a time and also capable of taking time-lapse photos. For nighttime monitoring (and during periods of high turbidity), an underwater infrared video system will be adapted (Chidami et al. 2007. Underwater infrared video system for behavioral studies in lakes. *Limnology and Oceanography: Methods* 5: 371-378). The Go Pro Hero 5 model can also be equipped with infrared lens filters for night and low-light vision.



Figure 2. Locations immediately upstream (top) and downstream (bottom) of Niagara Dam. Red arrows indicate specific locations where stationary underwater cameras might be mounted to collect images of fishes.

Task 4: Synthesize Results (Year 2):

The 3-D, CFD-generated maps of the flow-fields near the dam will highlight regions of flow acceleration/deceleration, turbulence levels, and sudden changes in flow direction; these will be correlated with RLP behavior and abundance data from the fish surveys. The goal is to determine the specific hydrodynamic conditions that attract and/or repel RLP. We will contextualize our results by analyzing long-term flow data from the U.S. Geological Survey gage just downstream of Niagara Dam, and thereby determine when during the year various flow conditions and RLP behaviors are expected to occur. Finally, based on links between hydrodynamic conditions and RLP behavior, we will suggest where/how to alter the flow fields to promote RLP passage. **We believe this synthesized assessment is a critical first step before any effective technology to promote fish passage should be implemented.**

7. Level of Effort, Cost, and Why Alternative Studies Will Not Suffice

The requested study is time- and computation-intensive, requiring coordination among three teams of technicians and experts; separate teams will conduct Tasks 1, 2, and 3. Field crews will generally comprise three persons. Teams will coordinate with dam operators so data can be collected during specific operational conditions. The study duration is a minimum of two years to encompass a wide range of river discharges and seasonal variation in RLP movement. We know of no alternative approaches to characterizing the hydrodynamics near Niagara Dam or how RLP interact with and respond to those hydrodynamics. No alternative studies were proposed in the PAD to address the questions posed in this study request.

Suggested Budget and Justification

Funds will be used to support a) three graduate students (one per team), for 12-15 months each and b) three professors (one per team), for 1-2 months each. Graduate students also will be supported, in part, by teaching assistantships during the project period. Total direct cost for graduate students will be \$156,500; total direct cost for professors will be \$56,000. Funds totaling \$25,000 will be used to purchase equipment and supplies (e.g., cameras and accessories) and support field data collection and instrument deployment. Graduate students will organize and conduct fieldwork, manage sensors, collect and process hydrodynamic data, perform CFD simulations, and write up summaries of all results. Professors will oversee data collection and analysis and model simulations, and ensure successful completion of all tasks. Total estimated cost, including 60% indirect cost charged by Virginia Tech, is \$380,000.

Suggested Investigators (all at Virginia Tech):

Dr. Paul Angermeier (biota@vt.edu)

Dr. Jon Czuba (jczuba@vt.edu)

Dr. Hosein Foroutan (hosein@vt.edu)

Dr. Emmanuel Frimpong (frimp@vt.edu)

Contact information for submitter:

Dr. Paul L. Angermeier

Virginia Cooperative Fish and Wildlife Research Unit

Dept. of Fish and Wildlife Conservation

Virginia Tech

Blacksburg, VA 24061-0321

Phone: 540-231-4501; Fax: 540-231-7580

biota@vt.edu



ROANOKE COUNTY

OFFICE OF THE COUNTY ADMINISTRATOR
5204 Bernard Drive, P.O. Box 29800
Roanoke, Virginia 24018-0798

Richard L. Caywood, P.E.
Assistant County Administrator

TEL: (540) 772-2004
FAX: (540) 561-2884

May 24, 2019

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

Re: Appalachian Power Company Notice of Intent to File License Application, Pre-Application Document (PAD), Commencement of Pre-Filing Process, and Scoping: Niagara Hydroelectric Project (Project No. 2466-034) Submission of Comments from Roanoke County, Virginia

Dear Secretary Bose:

Roanoke County staff have reviewed Appalachian Power Company's Pre-Application Document (PAD) issued in January 2019 and the Federal Energy Regulatory Commission's Scoping Document issued in March 2019. A significant portion of the Niagara Hydroelectric Project boundary is located along the Roanoke River in eastern Roanoke County. Locality staff have reviewed the PAD and Scoping Document and respectfully offer the following comments and recommendations for your consideration.

Recreation

As referenced in Section 5.8 of the PAD, "the Roanoke River is a significant recreation and amenity resource". Outdoor recreation in Virginia's Blue Ridge, which includes Roanoke County, Roanoke City, Botetourt County, the Town of Vinton, and the City of Salem, is a major contributor to economic growth in this region. The development of Explore Park, the Roanoke Valley Greenway system, and the Roanoke River Blueway has not only contributed to significant increases in recreational spending, but has been instrumental in attracting businesses and individuals to the Roanoke Valley. These recreational amenities are located or proposed along the Roanoke River which passes through eastern Roanoke County and falls within the reservoirs for both the Niagara and Smith Mountain (P-2210) hydroelectric project areas. From Roanoke County's perspective, it is critical that mechanisms exist to encourage coordination between the licensee, federal agencies, state agencies, local governments, and other stakeholders to support development of recreational resources.

In 1993, when the Niagara Project was last licensed, there was limited recreational use within the Project boundary, and the Licensee was exempted from filing Form 80 recreation

reports, until further notice on December 3, 1997. In accordance with Article 411, Appalachian supported the installation of a canoe portage around the dam which was coordinated with the Virginia Department of Game and Inland Fishers (DGIF) and Virginia Department of Conservation and Recreation (DCR). Since then, there have been many changes in the recreational desires of citizens of the Roanoke Valley, as indicated by the DCR 2017 Virginia Outdoors Demand Survey. The survey reported that 45% and 49% of households in the Roanoke Valley Alleghany Region indicated the need for increased access to trails and water access, respectively. The development of Explore Park, the greenway network, and the Roanoke River Blueway have helped meet the demands for increased outdoor recreational opportunities and have been major contributors to economic growth in the region.

The PAD provides information on existing recreation facilities and opportunities provided on project lands and in the vicinity of the project boundary. There have been considerable changes in recreational use patterns and needs have changed, impacting the way in which the public uses these resources. Additional public parks, access points and trails have been developed in the project vicinity. Existing recreational data normally required in the Form 80 has not been collected since 1997, when an exemption was granted by FERC. Now recreational data will no longer be required to be collected periodically by the licensee.

Roanoke County supports Appalachian's proposal to conduct a Recreational Needs Assessment for the Niagara Hydroelectric project boundary. Existing recreational usage may be monitored through vehicular and pedestrian counters that can be installed at upstream and downstream portages on the Roanoke River and Tinker Creek. Recreational use estimates may be calculated by assessing future demand for recreation activities and population trends for the expected term of the new license. Current use estimates should be projected with indexed values of expected changes in the number of recreation days for given activities at the projects to estimate future recreation use in the project for 10-year increments out to 2050, or the end of the proposed relicensing period.

State, Regional, and Local Initiatives

Roanoke County's interest in the Niagara project boundary aligns with the following initiatives:

- **The 2016 Roanoke County [Strategic Plan](#)** is a citizen defined set of objectives defining the County as a "vibrant, innovative and scenic community that values its citizens, heritage and quality of life." Continued focus on Explore Park fulfills two of the main pillars of the plan including "Keeping Roanoke County Healthy Clean and Beautiful" and "Positioning the County for Future Economic Growth."
- **The "Visit Virginia's Blue Ridge" [Destination Vision 2030 Study](#)** released in 2017 prioritized the development of outdoor recreation amenities at Explore Park as one of the top regional objectives in our area.

- The [Roanoke Regional Partnership](#) in 2018 highlights the regional need for developing amenities such as river outfitters, campgrounds, cabins and outdoor focus retail operations as critical to the economic growth of our region.

The 2018 [Roanoke Valley Greenway Plan](#) and [Roanoke River Blueway](#) efforts spearheaded by the Roanoke Valley Alleghany Regional Commission prioritize the Niagara Dam area as important crossroads for walking, biking and boating. The Roanoke Valley Greenway Plan may constitute a Comprehensive Plan under Section 10a of the Federal Power Act.

- The 2018 [Virginia Outdoors Plan](#) focuses on recreational fishing and boating access in and around this area of the Roanoke River. The cover page features a section of the Roanoke River Gorge located downstream of the Niagara Dam and Blue Ridge Parkway.
- The intent of the [Virginia Department of Conservation and Recreation Scenic Rivers Program](#) is to identify, designate and help protect rivers and streams that possess outstanding scenic, recreational, historic and natural characteristics of statewide significance for future generations. Roanoke County is currently coordinating with DCR on an application for the eastern section of the Roanoke River located between Roanoke City and Explore Park. Roanoke County requests Appalachian Power Company's support of this designation.
- **Trash containment, collection, and disposal** in the Roanoke River is an impediment to recreational use and has negative effects on wildlife habitat, aquatic resources, and the environmental quality of the Roanoke River. It is Roanoke County's understanding that under current hydroelectric operations, large debris is removed, but the vast majority of trash is allowed to overtop the spillway, resulting in accumulations below the dam downstream into the Smith Mountain Lake project boundary. Roanoke County acknowledges that Appalachian Power did not generate this trash and debris and that Appalachian Power spends a considerable amount of time and money removing trash and debris from the Niagara and Smith Mountain Lake project boundaries.

Roanoke County has been organizing community volunteer work days to remove trash and debris along the Roanoke River downstream at Explore Park. Roanoke County encourages Appalachian Power to evaluate trash and debris removal alternatives. Roanoke County requests that Appalachian Power work with localities and regional entities, such as the Roanoke Valley Resource Authority and Clean Valley Council, to develop a cooperative process for removing this trash and debris from the river. A Debris Management Plan (DMP) could be prepared in consultation with applicable stakeholders.

- As indicated in Section 6.2.1.1 of the PAD, the Niagara Dam is known to impound sediment, and increased sedimentation is attributed to sources such as urban stormwater runoff and stream bank erosion. Roanoke County is concerned about the water quality of the Roanoke River, which is currently considered impaired by the Virginia Department of Environmental Quality, as referenced in Section 5.3.7 of the PAD. Localities adjacent to the Roanoke River are required to address these impairments. Based on the PAD,

Roanoke County understands that Appalachian Power has not regularly drawn down the reservoir for maintenance purposes and sediment is not regularly mechanically removed from the reservoir; however, Roanoke County is concerned about PCB levels in the Roanoke River and fishing limitations, as the release of sedimentation may impact Roanoke County's compliance with MS-4 and TMDL regulations.

Explore Park

Roanoke County signed a 99-year lease with the Virginia Recreational Facilities Authority (VRFA) in 2013 to operate Explore Park, a 1,100 acre recreational facility that straddles the Roanoke River and lies adjacent to both the Niagara and Smith Mountain hydroelectric project boundaries. Development of Explore Park as a regional outdoor recreation destination is among the County's top administrative priorities. The development of Explore Park achieves several key objectives in the areas of regional tourism, economic development, and improved quality of life for our residents. Central to the Explore Park mission is recreational use of the river above and below the Niagara Dam, as well as preservation of the natural amenities and beauty of the Roanoke River Gorge.

In 2016, the Roanoke County Board of Supervisors adopted an [Adventure Plan](#) for Explore Park, consisting of a 20-year vision for the facility, strategic business plan, phasing report, and natural places inventory. The Explore Park Adventure Plan may constitute a Comprehensive Plan under Section 10a of the Federal Power Act. Among the initiatives identified in the plan include:

- Improved River Access;
- Continued development of the Roanoke River Greenway from Roanoke City to Rutrough Road at the confluence of Back Creek and the Roanoke River;
- Development of an In-River Kayak Park downstream of the Niagara Dam; and
- Economic Development opportunities through public private partnerships with outdoor recreation concessionaires.

Now in 2019, Roanoke County is implementing the vision outlined in the Adventure Plan. Working with private partners, regional organizations, the National Park Service, the Roanoke Valley Resource Authority, the VRFA, and public advocacy groups we have made achievements such as:

- Improvements to Rutrough Point, a blueway access point at the confluence of Back Creek and the Roanoke River, located within the Smith Mountain Lake Project boundary, through support from Appalachian Power and FERC;
- Implementation of campground and cabin operations;
- Expansion of programs and events;
- Increase in park attendance of over 150,000 visitors per year;
- Planned opening of an aerial adventure course this summer;

- Planned expansion of agro-tourism business operations this fall;
- Planning opening of a restaurant and brewery this fall; and
- Planned improvements to recreational trails this fall.

Blue Ridge Parkway

The Blue Ridge Parkway is a National Park and All American Road located adjacent to, and contiguous with, the Niagara Project boundary. The Niagara Dam is located within the viewshed of the Parkway and the Roanoke River Overlook (Mile Marker 115). Roanoke County operates the Blue Ridge Parkway Visitor Center which is located in Explore Park. The Blue Ridge Parkway Visitor Center and Roanoke County's Explore Park have both been developed since 1993 when the current Niagara Dam license was issued. The National Park Service (NPS) has prepared a number of plans associated with BLRI which include, but are not limited to the following:

- **The Blue Ridge Parkway General Management Plan/Environmental Impact Statement**, completed in 2011. <https://parkplanning.nps.gov/projectHome.cfm?projectID=10419>

The Final General Management Plan provides comprehensive guidance for perpetuating natural systems, preserving cultural resources, and providing opportunities for high-quality visitor experiences along the parkway for the next 20+ years. After more than 75 years since the parkway was established, this is the parkway's first comprehensive management plan.

- **Roanoke Valley/Blue Ridge Parkway Trail Plan and Finding of No Significant Impact** September 2015.
<https://parkplanning.nps.gov/documentsList.cfm?parkID=355&projectID=10392>

The intent of the project was to determine whether an integrated trail system that would provide critical linkages between the Roanoke Valley Greenways Trail Network and the Blue Ridge Parkway was appropriate after a consideration of project impacts.

- **Blue Ridge Parkway Foundation Document Overview for Virginia/North Carolina.**
https://www.nps.gov/blri/learn/management/upload/BLRI_OV_2016_508.pdf

The above referenced completed plans may constitute Comprehensive Plans under Section 10a of the Federal Power Act.

Because the Niagara Dam is generally inaccessible, the public is most familiar with the dam by seeing it from the Blue Ridge Parkway and by accessing it from the Roanoke River Overlook, Roanoke River Trail, and Fisherman's Trail. The Roanoke Valley Greenway Commission has worked cooperatively with the Parkway since 1997, particularly providing skilled trail volunteers to assist the Parkway with trail construction and maintenance. In 2015, greenway supporters

completed over 200 steps to provide access to the river from the Parkway via the Fisherman's Trail. This access connects to the river at the bottom of the bypass reach and tailrace, providing access for both fishermen and boaters. Roanoke County suggests that Appalachian monitor this use as part of its Recreational Needs Assessment as a gauge of the demand. Given that this national park is adjacent to the Project and given that this trail currently provides the only public access to the Project, we request that the Blue Ridge Parkway plans pertinent to this geographic area be considered as comprehensive plans under section 10(a)(2)(A) of the Federal Power Act.

Roanoke Valley Greenways

The Roanoke Valley Greenway Commission was formed in 1997 by an Intergovernmental Agreement among the four local governments of the City of Roanoke, Roanoke County, the City of Salem and the Town of Vinton. In 2016, Botetourt County was added to the Commission. The purpose of the Greenway Commission is to promote and facilitate coordinated direction and guidance in the planning, development, and maintenance of a system of greenways throughout the Roanoke Valley. In accordance with the Intergovernmental Agreement, the Greenway Commission's responsibilities are to encourage incorporation of greenways into each jurisdiction's planning efforts, explore greenway opportunities, make recommendations on legislation, investigate funding and grants, recommend standards, pursue partnerships, and coordinate the efforts of the federal, state, and local governments involved.

The Roanoke Valley Greenway network has been developed over the last 22 years. There are two greenways within the vicinity of the Project Boundary. These greenways are:

- The **Wolf Creek Greenway** in the Town of Vinton and Roanoke County is completed for 2.2 miles from Hardy Road to the Blue Ridge Parkway, with an extension to the Roanoke River (north side) included in the 2018 Greenway Plan. The Appalachian Power Company service road into Niagara Dam parallels Wolf Creek and is thus in the corridor for extension of this greenway.
- The **Roanoke River Greenway** is the main greenway artery through the valley, projected to be 31 miles from Montgomery County to Franklin County at Back Creek. Existing sections begin in western Roanoke County in Green Hill Park and traverse through the City of Salem and Roanoke City. In the urban area fourteen miles are complete, one mile under construction, five miles in the right-of-way phase, one mile in the engineering phase, and another three miles funded for design and construction.

The section of the Roanoke River Greenway proposed within the Niagara Project boundary is fully designed, currently in right-of-way negotiations with landowners, and construction is scheduled to begin in 2020. Roanoke County has been working with Appalachian over the last five years to facilitate the passage of the Roanoke River Greenway through the Niagara Project boundary. Appalachian has been very helpful in this endeavor and preliminary right-of-way negotiations are underway to obtain easements for the greenway through the project. We would ask that this partnership continue through the relicensing process for the Niagara Project. This final section of

Roanoke River Greenway is critical to the economic redevelopment of Explore Park and completion of the Roanoke River Greenway through the valley.

As mentioned above, the Roanoke Valley Greenway system has been an important recreational resource for the residents of the Roanoke Valley and has also been responsible for considerable economic growth in the valley. Given the importance of greenways to the region and the anticipated incorporation of the greenway into the Project, we request consideration of this plan as a comprehensive plan under section 10(a)(2)(A) of the Federal Power Act.

Roanoke River Blueway

The Roanoke River Blueway Committee exists predominantly to support recreational use of the Roanoke River Blueway, a 45-mile long designated water trail located in the Roanoke Valley that passes through the localities of Roanoke County, the Cities of Salem and Roanoke, and the Town of Vinton, and terminates at the Hardy Ford DGIF access point at Smith Mountain Lake. Recreational boating access to the Niagara Project reservoir is provided by upstream facilities located in the City of Roanoke on the Roanoke River and the Town of Vinton on Tinker Creek. While these facilities and others upstream allow paddlers to get to the reservoir, there is no place for boaters to access the Roanoke River near the dam. Paddling back upstream to the access areas in Roanoke City and Vinton requires considerable effort. The existing canoe portage around the dam, described in Section 5.8.2 of the Pre-Application Document, is difficult to maneuver. Similarly, public access to the portage downstream of the dam underneath the Blue Ridge Parkway bridge is restricted by a gate that requires permission from Appalachian Power.

Roanoke County supports Appalachian's proposal to conduct a Recreational Needs Assessment to evaluate current use of the canoe portage and improvements that may be needed consistent with projected usage, erosion control, and those whose needs are characterized under the Americans with Disabilities Act (ADA). Recreational demand and usage has increased along the Roanoke River and portage improvements, such as installation of an emergency phone, are encouraged. Roanoke County appreciates Appalachian's support of recreational programming on the Roanoke River through the 2018 execution of a right-of-entry permit to Roanoke County Parks, Recreation and Tourism for use of the maintenance access road located north of the Niagara Dam. This right-of-entry permit expires in 2021, and Roanoke County requests continued support for recreational programming and access to the tailrace below the Niagara Dam.

Roanoke County also encourages Appalachian to consider supporting development of a public access facility upstream (river right) and adjacent to the Niagara reservoir that will provide vehicular parking. Roanoke County is interested in partnering with Appalachian to make these blueway improvements possibly on land located adjacent to the Niagara project boundary that is owned by the Virginia Recreational Facilities Authority and under a long term lease for development of Explore Park.

Lastly, Roanoke County encourages Appalachian to assess the possibility of a controlled recreational release that would benefit whitewater boating downstream of the dam and in the bypass reach, especially during the summer and fall months. Section 5.8.1 of the PAD indicates

that class 1 and II whitewater conditions exist downstream of the Niagara Dam, and the Roanoke County Explore Park Adventure Plan proposes development of an in-river kayak park downstream near the Smith Mountain lake project boundary. Roanoke County requests that Appalachian Power conduct an Aesthetic Flow Study in conjunction with the Recreational Needs Assessment to determine what the parameters would be required for controlled releases, and how releases could be coordinated with hydroelectric project operations to reduce impact to downstream aquatic resources. Coordination would be needed with the US Fish and Wildlife Service (USFWS) and the Virginia Department of Game and Inland Fisheries (DGIF).

Closing

Roanoke County appreciates the opportunity to comment on the Appalachian Power Company PAD and FERC Scoping Document. We look forward to working with Appalachian Power and other stakeholders during this relicensing effort. Please forward any questions, comments, or concerns from Roanoke County to Doug Blount, Director of Parks, Recreation and Tourism at dblount@roanokecountyva.gov or (540) 777-6321.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Richard L. Caywood', is written over a light blue rectangular background.

Richard L. Caywood, P.E.
Assistant County Administrator

ROANOKE RIVER BLUEWAY COMMITTEE

COMMENTS

NIAGARA HYDROELECTRIC PROJECT NO. 2466-034

RECREATION STUDIES

The Roanoke River Blueway Committee exists predominantly to support recreational use of the Roanoke River Blueway, a 45-mile long designated water trail located in the Roanoke Valley which passes through the localities of Roanoke County, the Cities of Salem and Roanoke, and the Town of Vinton, and ends in Franklin County at the Hardy Ford DGIF Access at Smith Mountain Lake. The main focus of our comments will deal with recreation access and studies to improve the impacts of the Niagara Dam on the Blueway. We ask to be included in any Recreation Working Group that is used to shape or undertake any recreation studies.

PORTAGE AROUND THE DAM

A primary concern of boaters, fishermen and other outdoor enthusiasts who use or would like to use the Roanoke River is the obstacle presented by Niagara Dam.

The only current portage around the dam involves a boat haul of approximately a quarter mile up a small hill, down a long gravel driveway and over a rocky shoreline often filled with debris and trash. There are major obstacles to access as well, making a take-out by vehicle dependent on prior approval and logistical support from AEP. Any recreational use of this area has thus been severely stunted by the dam.

Accordingly, the Roanoke River Blueway Committee recommends that the portage be included in any recreation study undertaken by AEP. Such a study could focus on two aspects of the portage: first, existing conditions, including the use of the portage by individual boaters as well as the use of the access below the dam by Roanoke County via their right of entry permit; second, opportunities to improve access. Some ideas of improvements to the portage of which the Committee is aware include a phone on location which can be used to call for assistance, improvements to the existing portage takeout above the dam and the shore below the dam, and an access point on river right just above the dam to provide an alternate portage location. This last option is further discussed below.

ACCESS ABOVE THE DAM

Boating recreation could be vastly improved with the creation of a river access on river right just above the dam.

While there are potential impacts to a local wetland and right-of-way concerns that would need to be address in analyzing this option, we believe this possibility needs further investigation.

A river access at this location might reduce or obviate the need for any portage on river left if boaters could use a shuttle around the dam and put in again below the dam. Such considerations should be included in the recreation study. Any proposals from this work should take into account the planned Roanoke River Greenway which is under development in this area.

ACCESS TO THE BYPASS REACH FROM THE BLUE RIDGE PARKWAY

Regular use is currently made of the bypass reach via an informal trail to the river. In 2016 a Fishermen's Trail was created down to the river by installing over 200 steps over rocky ledge and slope. This works for the Roanoke River Gorge, but not for the bypass. Exploring the option for a trail to be built for boaters off the existing parkway overlook trail, which would likely follow an existing informal footpath down the mountain, is requested.

SCHEDULED RELEASES FOR BOATING EVENTS

Recreational releases would benefit boating downriver of the sit and in the bypass reach, especially during the summer months. Documentation is needed to determine what the parameters would be for such releases, and how such releases could be coordinated in order to reduce impact to the fish species which rely on the river for habitat. Coordination would be needed with the US Fish & Wildlife Service and the Virginia Department of Game and Inland Fisheries.

AESTHETIC IMPROVEMENTS

Trash in the river is a major impediment to enjoyable use for boaters, and can also have negative affects on wildlife habitat. Trash along the river above the dam and below the dam could be addressed by a more pro-active program to remove trash before it goes over the dam. AEP should evaluate any possible trash removal options, including partnerships with local organizations already working to improve the water quality of the river such as Roanoke County, Clean Valley Council, or the Blueway Committee.

Trash removal both above and below the dam is an important consideration going forward. The dam is a natural catch point, and installation of a trash boom upriver may help reduce the burden on AEP's existing machinery. Additionally, cleanups in the bypass reach cannot be coordinated without access through AEP property.

ENVIRONMENTAL STUDIES

While the Roanoke River Blueway Committee is primarily focused on recreational use of the river, several of our stakeholders are also actively involved in bettering water quality. Currently, the Roanoke River is considered an impaired stream by the Virginia Department of Environmental Quality, and the localities of the Cities of Salem and Roanoke, the County of Roanoke, and the Town of Vinton, are all required to address these impairments. Recreational use often depends on the perceived safety of being in the water. Additionally, activities such as fishing which may be undertaken by recreational users are dependent on the health of fish stocks.

PCBS IN SEDIMENT

Fishing both above and below the dam is impacted by PCBs in the river. While a study has been done of PCBs in the water column, no study exists of PCBs in the sedimentation behind the dam. The Roanoke River is listed as an impaired stream for PCBs.

The Roanoke River Blueway Committee requests that AEP further measure the PCBs in the sediment behind the dam, and consider methods of future remediation.

ENDANGERED FISH TRAVEL UPRIVER

Dams are an impediment to the breeding habits of certain fish species. The Blueway Committee would also endorse a study of any possible fish methods to address this impediment for the endangered Roanoke Logperch and other endangered or threatened species. Such a study would need to be shaped in partnership with the US Fish and Wildlife Service and the Virginia Department of Game and Inland Fisheries.



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pennsylvania Field Office
110 Radnor Road, Suite 101
State College, Pennsylvania 16801-4850



May 28, 2019

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First St., N.E., Room IA
Washington, DC 20426

RE: Niagara Hydroelectric Project (FERC No. 2466-034) Review of Scoping Document and Pre-Application Document, and Study Requests

Dear Secretary Bose:

The U.S. Fish and Wildlife Service (Service) has reviewed the March 26, 2018 "NOTICE OF INTENT TO FILE LICENSE APPLICATION, FILING OF PRE-APPLICATION DOCUMENT (PAD), COMMENCEMENT OF PRE-FILING PROCESS, AND SCOPING; REQUEST FOR COMMENTS ON THE PAD AND SCOPING DOCUMENT, AND IDENTIFICATION OF ISSUES AND ASSOCIATED STUDY REQUESTS" for the Niagara Hydroelectric Project (FERC No. 2466-034) (Project). The Project is owned and operated by Appalachian Power Company (Appalachian), a unit of American Electric Power, and is located on the Roanoke River in Roanoke County, Virginia. The features associated with the Federal Energy Regulatory Commission (FERC; Commission)-licensed Project include a concrete ogee spillway dam creating a 62-acre reservoir, a metal pipe penstock with associated entrance and discharge structures, and a concrete powerhouse on the north end of the dam containing two generating units with a total installed capacity of 2.4 MW.

Comments on the Scoping Document

Section 3.1.1, Existing Project Facilities, page 7: The bar-spacing on the steel trash racks is not specified. This information is important for evaluating fish entrainment and impingement potential. The Service is also interested in what the intake velocity is within 1 foot of the trash racks.

The Service would also appreciate more details pertaining to the two horizontal bulb turbines, such as runner diameter, rated speed (rpm), and number of blades/buckets.

Section 3.2.2, Proposed Environmental Measures, page 8, Aquatic Resources: Depending on results of requested studies (as noted below), the Service may be recommending revised and/or additional Protection, Mitigation and Enhancement (PM&E) measures.

4.1.1, Resources that could be Cumulatively Affected: The Service agrees with the suggested possible cumulative effects to water quality (i.e., dissolved oxygen (DO) and temperature) and aquatic habitat. We suggest that there may also be cumulative effects to the endangered Roanoke logperch (*Percina rex*) and other aquatic resources that would use the bypassed reach if it were sufficiently wetted and not sediment-starved, and the section of river above the Niagara Dam if it hadn't been converted to a lacustrine impoundment. The dam creates an impoundment, replacing riffle and run habitats that are important to aquatic resources. The same aquatic resources are affected by the Smith Mountain Hydroelectric Project dam which, in combination with the Leesville Dam, operates as a pumped storage project, with both dams creating very large impoundments that also eliminate riffle and run habitats. In addition, the John H. Kerr Dam Hydropower Project (Federal project not regulated by FERC), and the Gaston and Roanoke Dams that comprise the Roanoke Rapids and Gaston Hydroelectric Project, also create large impoundments that eliminate riffle and run habitats in the Roanoke River. All of these projects combine to greatly reduce available riffle and run habitats in the Roanoke River, cumulative effects to which the Niagara Project contributes.

Further supporting the case for cumulative effects, the Virginia Department of Game and Inland Fisheries (VDGIF) has stated that the Smith Mountain and Leesville dams and reservoirs have displaced over 85 miles of what they believe was former habitat in the center of the endangered Roanoke logperch's range. The Service and VDGIF also believe that those dams serve to physically and genetically isolate logperch populations in the upper Roanoke, Pigg and middle Roanoke Rivers. Roanoke logperch adults usually inhabit pools, runs and riffles, and select areas with exposed, silt-free gravel substrate. In the Roanoke and Pigg Rivers, adults were found primarily in runs and riffles (USFWS 2010). Young are usually found in slow runs and pools with clean sandy bottoms. Spawning occurs in deep runs over gravel and small cobble. They feed by flipping over stones and ingesting bottom-dwelling insects. Conversion of large stretches of the Roanoke River to impoundments, with sand, gravel and cobble substrates buried under accumulated silt, thus eliminating habitat for aquatic insects, has eliminated a significant portion of this logperch's former habitat.

Another species that has been impacted by the cumulative effects of multiple hydropower dams and reservoirs is the American eel (*Anguilla rostrata*). It is worth noting that the Niagara Dam was completed several decades prior to completion of any of the other downstream barriers and was, therefore, the first major barrier to upstream eel migration. Since 2009, efforts to trap and transport eels past the Roanoke Rapids Dam in North Carolina have resulted in the safe passage of over 2 million eels into Roanoke Rapids Lake (Sturke et al. 2018), demonstrating that there are large numbers of eels attempting to migrate upstream in the Roanoke River. Radio telemetry studies tracking some of these transported and released eels indicate that these eels are exhibiting natural upstream migratory behavior after release. Trap and transport past the upper dam into Lake Gaston began in 2010, and numbers passed into the upper impoundment have steadily increased each year since then. The U.S. Army Corps of Engineers (USACE) plans to provide, or may have already begun providing, eel passage at the John H Kerr Dam, depending on numbers of eels being passed into Lake Gaston. However, there are no eel passage facilities, or trap and transport efforts, at the Smith Mountain and Leesville dams, nor are there any such

facilities or efforts at the Niagara Project. The American eel's distribution in the Roanoke River at one time extended up into the headwaters ([Dominion 2010] *In* USACE 2016), prior to construction of dams. The Niagara Project contributes to cumulative effects on the American eel population in the Roanoke River.

Other species that historically migrated into the upper Roanoke, prior to dam construction, include the anadromous alewife (*Alosa pseudoharengus*) and blueback herring (*A. aestivalis*) [although land-locked herring are all now apparently hybrids of the two species]. The federally listed endangered Atlantic sturgeon and shortnose sturgeon also occur in the lower Roanoke River, and likely historically migrated far upriver, within the mainstem. Recent studies have documented a population of Atlantic sturgeon that migrate up the Roanoke River in late summer and spawn in September (Smith et al. 2015). In the free-flowing portion of the mainstem Delaware River, both species have been documented far upstream, well above (> 50 miles above) the head of tide. The Niagara Project has also contributed to the cumulative effects of multiple dams on the populations of these migratory species.

A list of threatened and endangered species of the Roanoke River Basin, compiled for the John H Kerr Dam and Reservoir Water Control Plan Final Environmental Assessment (USACE 2016) also includes freshwater mussels such as the green floater (*Lasmigona subviridis*), a species that is currently under review for possible Federal listing under the Endangered Species Act (ESA), the yellow lampmussel (*Lampsilis cariosa*), the Atlantic pigtoe (*Fusconaia masoni*), which has been proposed for listing as threatened under the ESA, and the brook floater (*Alasmidonta varicosa*), also under review for possible listing. The eastern elliptio (*Elliptio complanata*), a relatively common mussel species, also likely occurs in the lower Roanoke, as one of the most successful hosts for this species is the American eel. The barriers to upstream migration of migratory fish and associated dispersal of mussels they host has also led to a loss of important ecosystem services, as healthy mussel communities provide a very significant water filtering service. Providing passage at all of the barriers on the Roanoke River would undoubtedly lead to improved water quality which, in turn, would benefit the fish community and recreational angling. Therefore, the Niagara Project's contribution to cumulative water quality effects should also take into account its contribution to this lost or reduced ecosystem service.

4.1.2, Geographic Scope: The Service does not completely agree with the Commission's defined geographic scope. We believe that the many dams and hydropower projects on the Roanoke River combine to create cumulative effects on fish populations, freshwater mussels and other aquatic resources, as described above. In addition, because of the large number of stacked hydropower projects on the river, we believe the Commission should consider the Roanoke River from the upstream extent of the Niagara impoundment to the first hydropower project dam encountered on the river, Roanoke Rapids. The series of hydropower dams, described above, have caused cumulative impacts to the American eel population, affecting or preventing their upstream migration, and eels that do manage to find their way around these barriers are then, as outmigrating adults, subjected to turbine entrainment at multiple projects. Other migratory species (e.g., walleye) are also prevented from migrating upstream by multiple barriers and subject to entrainment through multiple powerhouses when migrating downstream. The conversion of large stretches of former riverine habitat (i.e., including riffle and run habitats) to

lacustrine conditions with benthic substrates (i.e., sand, gravel, cobble) buried under accumulated silt, is also a cumulative effect that extends down to the Roanoke Rapids Dam. This is a cumulative effect on a federally listed endangered fish species, the Roanoke logperch, which has eliminated much of its habitat within the river. The Niagara Project contributes to this cumulative effect, which extends well downstream of the Commission's suggested geographic scope.

Section 4.2.4, Threatened and Endangered Species: The Service agrees with this list of federally listed threatened and endangered species as potentially occurring in the vicinity of the Project. However, there are several state and federally listed mussel species that have the potential to occur in the Project area that should be added to this list including: Atlantic pigtoe, state threatened and proposed federally threatened; green floater, state threatened; and James spiny mussel (*Pleurobema collina*), federally and state endangered.

Section 5, Proposed Studies, Table 1: The Service will be requesting the following studies in addition to those listed: (1) Benthic habitat quality assessment in the bypass reach and downstream areas, (2) Aquatic habitat instream flow study in the bypass reach, (3) Aquatic macroinvertebrate/crayfish surveys, (4) Fish surveys including Roanoke logperch targeted surveys, (5) Fish protection and upstream and downstream passage studies, (6) Freshwater mussel surveys to be conducted by a qualified/approved surveyor, and (7) Entrainment and impingement study. The Service does not intend to request bat surveys unless there are proposed activities that may require tree/forest removal. It may be possible to combine some of these surveys. For example the Benthic habitat quality assessment could be combined with the Aquatic macroinvertebrate/crayfish surveys; the Entrainment and Impingement study could be combined with the Fish protection and upstream and downstream passage studies; and the Aquatic habitat instream flow study in the bypassed reach could be combined with Appalachian's proposed Bypass Reach Aquatic Habitat Study.

Section 9.0 Comprehensive Plans: The following comprehensive plan should be considered for this Project:

National Marine Fisheries Service and U.S. Fish and Wildlife Service. 2016. Roanoke River Diadromous Fishes Restoration Plan. Raleigh, North Carolina. May 2016.

There is currently considerable effort on the restoration of diadromous fish populations in the Roanoke River, including passage on many of the dams below this Project. Current efforts are focused on the upstream passage of juvenile American eels. As this restoration effort moves upstream there may be a need at some point within the timeframe of the license to evaluate whether passage is needed at this Project.

The Service will also consider filing the following plan for FERC's consideration as a comprehensive plan:

U.S. Fish and Wildlife Service (USFWS). 1992. Roanoke Logperch (*Percina rex*) Recovery Plan. Prepared by G.A. Moser, Annapolis Field Office, U.S. Fish and Wildlife Service,

Annapolis Maryland. Online [URL]:
https://ecos.fws.gov/docs/recovery_plan/920320a.pdf (Accessed May 22, 2019).

Comments on the PAD

Section 4.2, Project Location: This section states the Project is located at approximate river mile 355 on the Roanoke River. Figure 4.2-1 provides an overview of the Project location, setting, and Project boundary. This figure only shows the Project boundary extending as far downstream as just below the powerhouse. It is unclear how the downstream extent of the Project boundary was determined. The Project boundary should extend downstream to the extent of influence from the powerhouse and dam discharge. Without hydraulic modeling or a habitat assessment, the Service recommends that the project boundary extend a minimum of 1.6 km (1 mi) downstream of turbine discharge. This is the area that should be investigated as part of the relicensing studies.

Section 4.3.3, Low-Level Outlets: Appalachian should add more specificity regarding where the trash sluice and valves discharge to (i.e., they discharge to the bypassed reach).

Section 4.3.5, Forebay and Intake: This section states an intake structure is integrated into the left non-overflow section of the main dam. Flow to the penstock is controlled by five inlets equipped with steel head gates, each 6-feet 5-inches wide by 8-feet, 3-inches high. Steel trash racks with 3 5/8 inch clear bar spacing are inclined upstream of the headgates. To protect fish from entering the intake, Service's standards for water intake racks call for a 1-inch (0.75 inch if American eel is present) clear spacing and an approach velocity not exceeding 2 feet per second measured at a distance of 1 foot upstream of the trash tracks. Downstream fish passage options at the Project are currently limited to through the turbines, or passage over the dam at high flows or through the trash sluice at low flows. Passage over the dam is an option that may not be available year round and may not be safe depending on the depth of the plunge pool. If spillage over the dam is reduced as a result of operation of the Project, a large percentage of fish attempting to move downstream past the Project would be forced to travel through the turbines. This would put fish in danger of becoming entrained in the powerhouse turbines resulting in some injury or mortality. It is not clear what measures have been taken to reduce entrainment.

The use of horizontal bars on the trash racks has also been shown to exclude more fish than those with vertical bars having the same spacing, and impinged fish are also better able to escape trash racks with horizontal bars because their side-to-side movements are not restricted as they would be when impinged between vertical bars. There are also examples of trash racks with rounded bars which allow for tighter spacing with much less associated head loss. Sloped racks have demonstrated success in protecting fish from entrainment, particularly American eels. The Service recommends an entrainment study to assess impacts of entrainment on fish in the river (see Study Requests below).

Section 4.3.7, Bypass Reach: This section states the Project includes an approximately 1,500-foot-long bypass reach. An aerial view of the Project structures and bypass reach is provided in

Figure 4.3-1. This section further stated a continuous minimum flow of 8 cubic feet per second (cfs) is provided to the bypass reach when Project inflows are less than or equal to the powerhouse capacity. Based on the aerial view provided in Figure 4.3-1, it appears that much of the bypass reach is dry and would not support aquatic life. The Service would like to revisit this issue of minimum flow requirements in the bypass reach as part of the relicensing.

During periods where only the minimum flow is directed to the bypass reach and the remainder of the flow is directed to the powerhouse, the Service is concerned that fish do not have a viable route to move downstream. The Service requests a fish passage study to evaluate the potential for fish passage both upstream and downstream at different flow regimes (see Study Requests below). We are also concerned with water quality (primarily temperature and DO) during these low flow periods. The Service supports the proposed water quality study to evaluate water quality both upstream and downstream of the Project, including in the bypass reach.

Section 4.3.9, Turbines and Generators: This section states the Project is equipped with two vertical shaft Francis units. Mortality rates of fish passing through Francis turbines are quite variable and frequently greater than those of fish passing through Kaplan turbines (EPRI 1992). For Francis turbines, Eicher (1987) reviewed 22 previous studies and found the reported fish mortality ranging from 5% to 50%. (*In* Fu et al. 2016). The Service recommends an updated entrainment study to assess impacts to fish.

Section 4.4.1, Current and Proposed Operations: This section states Article 403 requires Appalachian to provide a minimum flow of 8 cfs into the bypass reach as measured by the gage immediately downstream of the Project's dam, which is operated and maintained by USGS. This gage is not in the bypass reach but in the mainstem of the river, and there does not appear to be a gage in the bypass reach, thus it is unclear whether the flow in the bypass reach is directly measured or calculated. This should be clarified including what was included in the plan required under Article 404 of the license to file a plan to monitor and record flow required under Article 403 (maintaining 8 cfs in the bypass reach).

Table 4.4-2, Monthly and Annual Average Project Outflows (cfs) (2010-2015): The Service questions whether Project Outflow data covering only a 6-year period is truly representative of average Project outflows. Monthly average outflows may be changing with climate change, but we are interested in a longer period of record for understanding monthly average outflows and how they affect flows (i.e., spillage) to the bypass reach. Below is a table comparing the average monthly outflows provided in this section of the PAD (2010-2015) to the average monthly outflows from the period of record (1926-2018), obtained from USGS Gage 02056000 Roanoke River at Niagara, VA. The monthly averages are similar, although less flow was provided to the bypass reach over the period of record, compared to the 2010-2015 period and, whereas the 2010-2015 data indicate some additional flow to the bypass reach during the month of May, when some fish and mussels species are spawning, there is generally no additional flow, on average, to the bypass reach during the month of May, based on the period of record.

Table Comparing Monthly Outflows from the Period of Record (1926-2018) to Monthly Outflows from 2010-2015, and Associated Flows to the Bypass Reach (assumes additional flow to bypassed reach only when inflow exceeds hydraulic capacity).

Month	2010-2015 Average Outflow (cfs)	Bypass Reach (2010-2015) – Excess (Outflow minus 684* + 8 cfs)	1926-2018 Average Outflow	Bypass Reach (1926-2018) Excess + 8 cfs
January	525	8 cfs	619	8 cfs
February	584	8 cfs	754	78 cfs
March	926	250 cfs	876	200 cfs
April	888	212 cfs	819	143 cfs
May	754	78 cfs	592	8 cfs
June	402	8 cfs	437	8 cfs
July	592	8 cfs	313	8 cfs
August	248	8 cfs	325	8 cfs
September	370	8 cfs	340	8 cfs
October	397	8 cfs	357	8 cfs
November	436	8 cfs	383	8 cfs
December	706	30 cfs	489	8 cfs
Annual Avg	569	8 cfs	525	8 cfs

*Total Project Hydraulic Capacity from PAD

Table 5.3-1, Daily Flow Data: The dates for the period corresponding with the presented data are not provided. The average flows do not match those of the period of record provided by the Service in the above table, and they differ enough that these data likely do not correspond with a significant portion of the period of record. The dates should be provided.

5.3.3, Flow Duration Curves: Flow duration curves are provided in Appendix E. The scale for flow depicted on the y-axis of these curves does not allow for much interpretation or visualization of what percentage of time the flows are within Project hydraulic capacity versus when flows are above that capacity. The Service would be interested in a finer resolution presentation of flow duration, relative to hydraulic capacity.

Section 5.3.6, Federally Approved Water Quality Standards: This section states Project waters are designated as Class IV waters and the minimum DO and daily average DO water quality criteria are designated as 4.0 mg/L and 5.0 mg/L, respectively.

It is the Service's position that the DO criteria (minimum DO level of 4.0 mg/L; average DO minimum of 5.0 mg/L per day) are not fully supportive of optimal growth conditions for many fish and other aquatic species. A literature review by Chamberlain et al. (1980) found that

largemouth bass experienced reduced larval growth at 6 mg/L (temperature: 20-23 degrees C), and juvenile swimming speed was reduced at DO concentrations of < 5.0-6.0 mg/L (temperature = 25 degrees C). Carlson and Siefert (1974) concluded that DO concentrations up to 6.3 mg/L reduced the growth of early stages of the largemouth bass by 10 to 20 percent. Stewart et al. (1967) observed reduced growth of juvenile largemouth bass at 5.9 mg/L and lower concentrations, with significant growth reductions at concentrations below 5.5 mg/L.

In general, prolonged exposure to 4 mg/L causes acute mortality in many invertebrates and non-salmonid fish embryos (Gray et al. 2002). Severe production impairment of early-life-stage non-salmonid species occurs when oxygen falls below 4.5 mg/L (EPA 1986). The Habitat Suitability Index Model for largemouth bass considers a DO concentration of 5-8 mg/L as providing a suitability of 80 percent during midsummer within pools or littoral areas, and a concentration > 8 mg/L as being optimal (suitability rating of 100 percent) (Stuber et al. 1982). Optimal DO concentration for walleye spawning and embryo development is ≥ 6.5 mg/L (McMahon et al. 1984). Therefore, the optimal DO growth range is more likely ≥ 6.5 mg/L for target fish species.

Section 5.3.7, Existing Water Quality Data: This section states that the existing water quality data suggest that inflows to and outflows from the Project meet numeric water quality standards. This section further states that no water quality data are available specifically for the Project reservoir or bypass reach. This represents a data gap that will need to be addressed as part of the water quality study. This section also states that VDEQ collects water quality data along the mainstem of the Roanoke River and the nearest sampling point to the Project is located approximately 480 feet downstream of the powerhouse. Sampling at this location found that DO concentrations ranged from 7.6 mg/L to 14.4 mg/L. However, no data are available between the powerhouse and this sampling location. This data gap will also need to be addressed as part of the water quality study. The Service is particularly interested in water quality during low flow conditions in the summer and fall when water temperatures are high and DO can be low. The Service is also interested in whether the presence of the reservoir raises the temperature in the river compared to the free-flowing river upstream of the Project.

Section 5.4.1.2, Bypass Reach: This section states that during evaluation of the minimum bypass flow for the previous relicensing, VDGIF indicated that their goals were not to establish a permanent fishery habitat but to provide enough flow to aid fish that have travelled into the bypass reach during spills in their return to the downstream channel. It is time to revisit this goal and determine whether creating permanent fishery habitat is a viable goal for the upcoming relicensing. Fish habitat at different flows should be evaluated as part of the bypass reach study.

We would also like to note that there is at least one record of the current goal of avoiding fish stranding and fish kills not being attained, as reported by VDGIF. In April 2012, there was a high water event that ended rather abruptly, such that flows in the bypass reach went from fairly substantial to the minimum in a short amount of time. Apparently during the high flows, a very large number of adult redhorse and other species moved up into the bypass reach, below the dam, and did not move back downstream with the receding flow. Under the current minimum flow, there was not enough water to support this large biomass of fish, resulting in a significant fish kill (almost all redhorse). There was pool connectivity, but the fish did not leave the deeper

pools via the shallow connections to get back to the main channel. The minimum flow to the bypass reach was not sufficient to maintain adequate DO concentration or temperature for the extremely high biomass present in the pools (Scott Smith, VDGIF, personal communication, May 7, 2019). This was the only fish kill event that VDGIF is aware of during the current license term, but suggests that the current required minimum flow is not sufficient to prevent fish kills under all possible scenarios. The Service is interested in a goal of maintaining suitable habitat for all aquatic species throughout the year, at densities similar to those observed in free-flowing reaches of the main channel (e.g., upstream of the Project reservoir and downstream of the extent of Project effects).

Section 5.4.1.3, Tailrace (Below Powerhouse): This section states that potential effects of Project operations on tailwater habitat were evaluated with respect to erosional and depositional considerations, spring spawning habitat, and low-flow summer habitat during the previous relicensing in 1990. The section further states based on field observations during various flows, a flow of 28 cfs was determined to be adequate for fish habitat. This flow to the tailrace should be revisited as part of the current relicensing to determine whether all goals for fish habitat are being met. Of particular concern for the Service is whether the habitat immediately downstream of the Project is starved of sediment, which will limit the suitability of this reach for fish and other aquatic organisms.

Section 5.4.2, Existing Fish and Aquatic Resources: This section states that fish surveys were conducted six times, twice in June and September and once in July and October. Other than the October survey, all surveys were conducted during the warmer parts of the year when water temperatures are high. This may affect the number of species found and their relative abundance, as some species are more difficult to sample or detect at high water temperatures, particularly in the reservoir where fish go deeper during these warmer months. It would be beneficial to sample during the spring and later in the fall to assess whether additional species are present or relative abundance varies with water temperature.

It is also stated that fish passage facilities are not available at downstream facilities and diadromous fish are not present at the Smith Mountain Project; therefore, it is unlikely diadromous fish are present at the Project. This information should be updated. The two most downstream dams on the Roanoke River (Roanoke Rapids and Lake Gaston) are currently required to provide passage for American eels as part of the recent relicensing. The resource agencies are also working with the Corps of Engineers to facilitate eel passage at the Kerr Dam. Eels are currently being trapped and transported above the Roanoke Rapids and Gaston Dams. As this effort progresses upstream, eels may eventually be able to reach the upper Roanoke River.

Table 5.4-1, Fish Collected in Niagara Reservoir in 1990: This table shows four Roanoke logperch were collected in the reservoir, but according to Section 5.4.2, the logperch were collected in an upstream riffle/run site. This should be clarified, given the species' endangered status and the Service's interest in determining potential for this species to become entrained in Project turbines.

Section 5.4.2.1, Entrainment: This section states the calculated intake velocities at upper and lower normal forebay operating elevations at the Project ranged from 0.9 to 1.2 feet/sec, which is very similar to the current velocity of the free-flowing portion of the Roanoke River. Therefore, the intake velocities would be easily avoided by most fish. This conclusion does not take into account the migratory behavior of some species and, therefore, the potential for such species to be attracted to the intake flow as they attempt to move downstream, particularly when this is the only viable downstream migration route when flows are low and no spillage is occurring over the dam. It is unclear whether the previous entrainment study evaluated potential risk to migratory species.

The turbine blade strike analysis was based on Cada (1990), which is out of date. The Service's Fish Passage Engineering group and others have developed turbine blade strike analyses based on a more updated study by Franke et al. (1997). In addition, the fish community may have changed over the past 30 years. Therefore, the Service is requesting a new entrainment study.

Section 5.4.4, Temporal and Spatial Distribution of Fish Communities: This section states that catch rates of most species within reservoir sites were statistically equivalent or greater than catch rates at the upstream riffle/run site. However, most surveys were conducted during summer (i.e., high water temperature) conditions, which may have influenced spatial distribution of some fish species. It is also stated that recent comprehensive temporal or spatial distribution data is not readily available for the fish communities within the vicinity of the Project. This provides justification for updated fish surveys as the fish community may have changed over the past 30 years. As previously stated, surveys should not be limited to summer/warm water conditions, and should be conducted during the spring, summer and fall seasons. The Service may also consider requesting a winter survey focusing on potential for Roanoke logperch to occur within the Project reservoir during this season, as the species is believed to occur under boulders in deep pools during the winter (USFWS 1992).

Section 5.4.7, Freshwater Mussels: This section states seven mussel species have been known to occur within a 3-mile radius of the Project. This list is shown in Table 5.4-2. The table includes Atlantic pigtoe (*Fusconaia masoni*) identified as state threatened and the yellow lance (*Elliptio lanceolata*). The Atlantic pigtoe is proposed for Federal listing as threatened. The yellow lance is currently federally listed as a threatened species. This section and table should be updated to reflect the updated status of these two mussel species. The Service questions the inclusion of the Carolina slabshell mussel (*Elliptio congaraea*) in this list. There is also some uncertainty regarding inclusion of the yellow lance, but we defer to VDGIF regarding the potential for these species to occur in the vicinity of the Project. According to VDGIF, other species that may potentially be found within or downstream of the Project area include the Roanoke slabshell (*Elliptio roanokensis*), yellow lampmussel (*Lampsilis cariosa*), green floater (*Lasmigona subviridis*) which is currently under review for possible Federal listing, Eastern floater (*Pyganodon cataracta*), and paper pondshell (*Utterbackia imbecillis*). There is also a remote possibility for the occurrence of the federally listed endangered James spinymussel (*Pleurobema collina*), which occurs in the Dan River, a major Roanoke River tributary. Due to the potential presence of rare and federally listed mussels, a mussel survey in the Project area is warranted.

Section 5.5.2.2, Avifauna: This section summarizes bird species that occur in Virginia. Our records indicate that there is a bald eagle nest (as of 2014) approximately 1.5 miles downstream of the Project. Other bald eagle nests may occur within or near the Project boundary. The bald eagle was removed from the Federal Endangered Species List on August 8, 2007, and is no longer protected under Section 7 of the ESA; however, bald eagles are protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d). If bald eagles are present in the Project area, we recommend that you follow the Service's Bald Eagle Management Guidelines. These guidelines, as well as additional eagle information, are available on the Service's website.¹ To assist you in making a decision regarding potential impacts to bald eagles, a screening form can also be found on the Service's website.²

Section 5.5.2.4, Invasive Terrestrial Species: This section only provides a general list of invasive plant species that occur within the State. No site-specific survey of invasive plant species has been performed. It is unclear why monitoring of invasive plant species is not included as part of the Wildlife Management Plan in Article 407, as the monitoring and control of invasive plant species is important for maintaining healthy wildlife populations. It is preferable to monitor and implement control measures before invasive plants become widespread. The Service noted several invasive plants along the access road to the Project during the site visit on April 24, 2019. The disturbed nature of the site, particularly around the structures makes the site susceptible to invasion by invasive plants. The Service recommends monitoring and control of invasive plant species be included as part of the Wildlife Management Plan.

Section 5.7.1, Federally Listed Threatened, Endangered, and Candidate Species: This section states that the Service indicated in a letter dated August 14, 2017, that the federally endangered Indiana bat and Roanoke logperch, as well as the federally threatened northern long-eared bat, may occur within the Project vicinity. Since the Service provided these comments, the yellow lance was federally listed as a threatened species on April 3, 2018, although there is some uncertainty as to the potential for this species to occur in the Project area. The Atlantic pigtoe was also proposed to be listed as a threatened species on October 11, 2018, and the green floater is also under review for possible Federal listing. The James spinymussel also has the potential to occur within or near the Project area. Because no recent mussel surveys have been completed in this section of the Roanoke River, mussel surveys are needed to assess whether these species are present.

Table 5.7-1, Rare Species with Historical Records at or within the Project Vicinity: The American eel is listed as a species potentially at or within the Project vicinity. Appalachian should provide additional information on the potential presence of this species at the site. The Service is currently working to restore populations of this migratory species, primarily through the development of upstream passage for juvenile eels at dams. The current status of this species in this section of the Roanoke River should be discussed to better understand potential Project effects on migration. This table also lists the bog turtle as potentially occurring within the

¹ <http://www.fws.gov/northeast/EcologicalServices/eagle.html>

² <http://www.fws.gov/northeast/EcologicalServices/eagleguidelines/constructionnesting.html>

Project vicinity. Additional information should also be provided on this species to determine if additional consideration should be given to assessing potential Project impacts to this species.

Section 5.8, Recreation and Land Use: The Service did not have time to review this section of the PAD, but we have discussed the need for recreational (e.g., access) and aesthetic (e.g., flows to the bypass reach) improvements with our sister agency, the National Park Service (NPS), and we defer to the NPS and support their recommendations.

Section 6.2.1.2, Proposed Studies: This section states Appalachian does not propose to conduct a sedimentation study for this relicensing. In addition, Appalachian does not expect there is a need or management objective to transport sediment below the dam. The Service does not support this position. A sediment study is needed to understand how the dam may affect sediment transport and its potential impacts to areas downstream of the dam, including the bypass reach. The trapping of sediment behind dams can result in a significant decrease in sediment in downstream areas resulting a wider channel, lower habitat diversity, and lower quality habitat for fish and benthic invertebrates. An understanding of sediment transport within the system is needed to fully evaluate how operations have affected the river. A study request to assess sediment habitat in downstream areas is provided below.

Section 6.2.2.2, Proposed Studies: This section states Appalachian proposes to conduct a seasonal temperature and DO study to confirm compliance with water quality standards and designated uses. The Service supports performing a water quality study and would like to work with Appalachian on the development of the study plan. As stated previously, the Service does not believe the current water quality standards for DO are protective of all fish life-stages. A higher DO concentration is recommended to protect aquatic life.

Section 6.2.3.1, Potential Issues: Regarding Appalachian's statement that fish passage facilities are not available at downstream facilities, as previously discussed, there is currently an active trap and transport program for passing American eels above the Roanoke Rapids and Gaston Dams, and a plan in place for the U.S. Army Corps of Engineers to begin passing eels above the John H. Kerr Dam, which may have been implemented by now.

Section 6.2.3.2, Proposed Studies: This section states Appalachian proposes to determine the amount of available habitat under the minimum flow of 8 cfs. While the Service supports this evaluation, an instream flow evaluation of aquatic habitat in the bypass reach is also recommended to assess the amount of potential aquatic habitat that is lost with the current minimum flow and how much habitat could be gained by increasing the minimum flow released over the dam. Based on the photographs provided, it appears the bypass reach is not fully wetted at this minimum flow and the available habitat could be increased with additional flow. As previously discussed, there has also been at least one significant fish kill in the bypass reach during the current license term, illustrating the inadequacy of the currently required minimum flow to attain the goal of preventing such events. A study request to assess the minimum flow is provided below.

This section also states that Appalachian does not propose to conduct a desktop entrainment study at this time, because a detailed entrainment study was conducted for the previous relicensing, and because there have been no significant changes in Project equipment or operations since that time. The Service believes it is premature to make this determination. Because the previous entrainment study was conducted almost 30 years ago, the assumptions and reference studies used do not consider information collected since the last relicensing. In addition, the fish community information was based on surveys conducted during only the summer and early fall and, as such, it is unclear whether the evaluated fish species, including migratory species, or their relative abundance, were representative of the current fish community across all seasons. The requested fish surveys (below) may find rare or sensitive species that were not evaluated as part of the previous entrainment study. These would need to be included in an updated entrainment study. As previously discussed, the turbine blade strike analysis was based on Cada (1990), which is out of date. The Service's Fish Passage Engineering group and others have developed turbine blade strike analyses based on a more updated study by Franke et al. (1997).

This section does not propose benthic macroinvertebrate/crayfish, fish or mussel surveys for this Project. The Service does not support this position. Benthic macroinvertebrate/crayfish, fish and mussel surveys in the vicinity of the Project have either not been performed or are out of date. The Service recommends updated surveys to better understand the resources in the vicinity of the Project and how those resources may be affected by the Project operations. The fish surveys should include methods for documenting the Roanoke logperch, across all seasons, so that the current distribution, both upstream and downstream of the Project, can be assessed.

Section 6.2.4.2, Proposed Studies: This section states that because botanical and wildlife species are likely well-established under the current and proposed operations of the Project facilities, the existing Wildlife Management Plan has provided a means for monitoring habitat over the term of the existing license, and Appalachian does not currently propose any activities at or changes to the Project that would impact habitat, no formal study is being proposed for wildlife and botanical resources. The Service agrees with the proposal to not conduct a botanical study. However, we do recommend invasive plant monitoring (and invasive plant control if needed) be implemented as part of the Wildlife Management Plan.

Section 6.3, Potential Studies or Information Needs List: This section lists the studies that are proposed. The Service recommends additional studies including: benthic habitat quality assessment, aquatic habitat instream flow study for the bypass reach, aquatic macroinvertebrate/crayfish surveys, fish surveys, a mussel survey, and an upstream/downstream fish passage study. An updated entrainment study is also requested, as the previous study is likely out of date, and relied on an out-of-date turbine blade-strike analysis. Study requests addressing the seven required criteria are provided below.

Section 7, Comprehensive Plan: This section lists the comprehensive plans considered applicable to the Project. The following comprehensive plan should also be considered for this Project:

National Marine Fisheries Service and U.S. Fish and Wildlife Service. 2016. Roanoke River Diadromous Fishes Restoration Plan. Raleigh, North Carolina. May 2016. [The Service recently brought this comprehensive plan to FERC's attention, via email sent to Allyson Conner on 5/10/2019, for consideration during this relicensing process]

There is currently considerable effort in the restoration of diadromous fish populations in the Roanoke River, including passage on many of the dams below this Project. As this restoration effort moves upstream there may be a need at some point to evaluate whether passage is needed at this Project.

In addition, the Service will be requesting treatment of the following plan as a comprehensive plan:

U.S. Fish and Wildlife Service (USFWS). 1992. Roanoke Logperch (*Percina rex*) Recovery Plan. Prepared by G.A. Moser, Annapolis Field Office, U.S. Fish and Wildlife Service, Annapolis Maryland. Online [URL]: https://ecos.fws.gov/docs/recovery_plan/920320a.pdf (Accessed May 22, 2019).

References and Literature Cited:

Cada, G.F. 1990. Assessing fish mortality rates. Hydro Review (Feb. 1990): 52-60.

Carlson, A.R., and R.E. Siefert. 1974. Effects of reduced oxygen on the embryos and larvae of lake trout (*Salvelinus namaycush*) and largemouth bass (*Micropterus salmoides*). J. Fish. Res. Board Can. 31:1393-1396.

Chamberlain, A.J., T. Kellar, and D. Maraldo. 1980. Water Quality Requirements for Sport Fishes of the Grand River Watershed: A Literature Review. Grand River Water Management Study Technical Report Series, Report # 13. Ontario Ministry of Natural Resources, Ontario, Canada.

Eicher Associates. 1987. Turbine-related Fish Mortality: Review and Evaluation of Studies. Electric Power Research Institute, Palo Alto, California. EPRI AP-5480.

EPA. 1986. Quality Criteria for Water. EPA: 440/5-86-001.

EPRI. 1992. Fish Entrainment and Turbine Mortality Review and Guidelines. TR-101231. Gray, J.S., R.S. Wu, and Y.Y. Or. 2002. Effects of hypoxia and organic enrichment on the coastal marine environment. Mar Ecol Prog Ser 238: 249-279.

Franke, G.F., D.R. Webb, R.K. Fisher, Jr., D. Mathur, P.N. Hopping, P.A. March, M.R. Headrick, I.T. Lazo, Y. Ventikos, F. Sotiropoulos. Development of Environmentally Advanced Hydropower Turbine System Design Concepts. Idaho National Engineering and Environmental Laboratory, Renewable Energy Products Department, Lockheed

Martin Idaho Technologies Company, Idaho Falls, Idaho. Prepared for the U.S. Department of Energy, Energy Efficiency and Renewable Energy and Hydropower Research Foundation, Inc. INEEL/EXT-97-00639. Voith Report No. 2677-0141.

Fu, T., Z.D. Deng, J.P. Duncan, D. Zhou, T.J. Carlson, G.E. Johnson, H. Hou. 2016. Assessing Hydraulic Conditions through Francis Turbines using an Autonomous Sensor Device. *Renewable Energy* 99: 1244-1252.

McMahon, T.E., J.W. Terrell, and P.C. Nelson. 1984. Habitat suitability information: Walleye. U.S. Fish Wildl. Serv. FWS/OBS-82/10.56. 43 pp.

Smith, J. A., Flowers J. H. & Hightower J. E. (2015) Fall Spawning of Atlantic Sturgeon in the Roanoke River, North Carolina, *Transactions of the American Fisheries Society*, 144:1, 48-54, DOI:10.1080/00028487.2014.965344.

Stewart, N.E., D.L. Shumway, and P. Doudoroff. 1967. Influence of oxygen concentration on the growth of juvenile largemouth bass. *J. Fish. Res. Board Can.* 24:475-494.

Stuber, R.J., G. Gebhart, and O.E. Maughan. 1982. Habitat suitability index models: Largemouth bass. U.S. Dept. Int. Fish Wildl. Serv. FWS/OBS-82/10.16. 32 pp.

Sturke, P., B. Graham, and C. Chamberlain. A rostrata, rostrata. Where for Art Thou, rostrata? 2018. Unpublished slide presentation describing American eel passage efforts on the Roanoke River, 2010-2018. Dominion Energy.

U.S. Army Corps of Engineers. 2016. Final Environmental Assessment: John H. Kerr Dam and Reservoir, Water Control Plan Revision, Virginia and North Carolina.

U.S. Fish & Wildlife Service (USFWS). 2010. Roanoke Logperch (*Percina rex*) fact sheet. USFWS, Virginia Field Office, Gloucester, Virginia.

U.S. Fish and Wildlife Service (USFWS). 1992. Roanoke Logperch (*Percina rex*) Recovery Plan. Prepared by G.A. Moser, Annapolis Field Office, U.S. Fish and Wildlife Service, Annapolis Maryland. Online [URL]: https://ecos.fws.gov/docs/recovery_plan/920320a.pdf (Accessed May 22, 2019).

Study Requests:

I. Benthic Habitat Quality Assessment in the Bypass Reach and Downstream Areas

The Service is requesting an assessment of the quality of benthic habitat in the bypass reach and areas downstream of the Project. The placement of dams in rivers and streams affects sediment transport processes. This typically results in reaches below dams being: (1) starved of certain sediment types; (2) less diverse instream and floodplain habitat; (3) stream bank erosion and channel degradation leading to a wider, deeper stream or river channel; and (4) lower quality

habitat for benthic invertebrates (including mussels) and fish. The Service is interested in an assessment of the quality of benthic habitat in the bypass reach and downstream areas compared to an upstream reference reach that is unaffected by the Project.

1. *Goals and Objectives*

One objective of the study would be to assess the amount and type of benthic habitat in the bypass reach and downstream area. The goal would be to determine how much habitat could be gained by increasing the sediment released downstream. Information that should be obtained would include the sediment grain size and depth in representative habitats and the percentage area of different benthic habitat types (e.g., cobble, gravel, sand, bedrock). This information would be compared to an upstream reference reach to determine the impact of the Project on sediment transport and benthic habitats in the bypass reach and the affected reach of the main channel river, downstream of the Project.

2. *Resource Management Goals*

The resource management goal would be to assess whether the Project is affecting the benthic habitat in the bypass reach and downstream areas and, if the Project is having an effect, determine how to increase the quality and diversity of benthic habitats downstream of the Project in order to support a greater diversity and abundance of aquatic species. An additional goal would be to increase available habitats for the rare, threatened and endangered (RTE) species that are expected to occur in the Roanoke River, but are limited by the lack of appropriate benthic habitat. Habitat use by the Roanoke logperch varies with age in the Roanoke River. According to the Updated Recovery Plan for the Roanoke logperch, age 1+ logperch primarily use deeper areas (15-74 cm), with medium to high water velocities, often directly over gravel substrate in areas dominated by cobble. Burkhead (1983) witnessed four spawnings in the upper Roanoke River when the water was between 12-14°C. These spawnings took place in swift, deep runs over gravel and small cobbles. Lack of appropriate sediment types in the river can affect whether logperch can use the area and successfully reproduce.

3. *Public Interest*

The requestor is a resource agency.

4. *Existing Information*

The Service is not aware of any previous assessment of the benthic habitat in the bypass reach or downstream areas.

5. *Nexus to Project Operations and Effects*

The presence of the Project dam changes the transport of sediment in the river. This may result in areas immediately downstream of the dam being starved of certain types of sediment which, in turn, may decrease the habitat available for RTE species and other benthic species that rely on

high quality benthic habitat to survive and reproduce. Project operations also cause scouring downstream of the powerhouse, also resulting in a lack of sand and gravel substrates.

6. *Methodology Consistent with Accepted Practice*

The characterization of sediment grain size, depth of depositions and habitat types can be accomplished with standard methods. There are a number of accepted pebble count methods that can be applied to an upstream reference reach, the bypass reach, and the affected main channel reach downstream of the Project, in order to compare the particle size distributions in these reaches. The Service would be interested in discussing possible methods with Appalachian and interested stakeholders. Some of the accepted methods include:

Leopold, L.B. 1970. An improved method for size distribution of stream-bed gravel. *Water Resources Research*. 6(5):1357-1366.

Wolman, M.G. 1954. A method of sampling coarse river-bed material. *Transactions American Geophysical Union*. Volume 35. Number 6. Pp. 951-956. See also:

https://andrewsforest.oregonstate.edu/sites/default/files/lter/data/studies/g002/Wolman_Pebble_Count.pdf or
https://cfpub.epa.gov/watertrain/moduleFrame.cfm?parent_object_id=1271&object_id=1274#1274

Methods used by West Virginia Department of Environmental Protection:

<https://dep.wv.gov/WWE/getinvolved/sos/Pages/SOPpebble.aspx>

7. *Level of Effort, Cost, and Why Alternative Studies Will Not Suffice*

The level of effort would be moderate and could be combined with benthic invertebrate/crayfish, fish, and/or mussel surveys, although benthic substrate characterizations associated with such surveys would generally be more subjective, compared to the suggested methods listed above. If combined with other studies, cost should be low.

Burkhead, N.M. 1983. Ecological studies of two potentially threatened fishes (the orangefin madtom, *Noturus gilberti*, and the Roanoke logperch, *Percina rex*) endemic to the Roanoke River drainage. Report to Wilmington District Corps of Engineers, Wilmington, NC.

U.S. Fish and Wildlife Service. 2007. An update to the Roanoke Logperch Recovery Plan.

Hadley, Massachusetts. 84 pp. Online [URL]:

https://www.fwspubs.org/doi/suppl/10.3996/032015-JFWM-026/suppl_file/10.3996_032015-jfwm-026.1.s11.pdf (Accessed May 22, 2019).

II. Aquatic Habitat Instream Flow Study in the Bypass Reach

The Service requests an instream flow study in order to determine an appropriate minimum flow

or range of flows (i.e., monthly or seasonal) for meeting the water quality and physical habitat requirements of aquatic species found in the mainstem Roanoke River downstream of the Project. The study should utilize Acoustic Doppler Current Profiler (ADCP) technology and a 2-dimensional (2-D) hydraulic model, coupled with the Physical Habitat Simulation Model (PHABSIM). Alternative approaches may not be sufficient for accurately and quantitatively evaluating a range of possible minimum flows. The Service also recommends consideration of providing not just one minimum flow, but a range of minimum flows (e.g., monthly or seasonally) that mimic the natural seasonal flow variability to which many aquatic species and life stages have adapted. The Service requests a collaborative approach among Appalachian, Virginia Tech, and the resource agencies, to determine the best approach.

1. *Goals and Objectives*

The primary objective of the study is to identify a bypass reach minimum flow, or range of monthly or seasonal minimum flows, that will support the aquatic species and life stages found in the non-impacted mainstem river downstream of the Project. The goal of the study is to ensure that sufficient flow is provided to the bypass reach, at all times, to meet the habitat requirements of all aquatic species and life stages found downstream of the Project. In order to achieve this goal, additional objectives include selecting a suite of representative species, guilds and life stages for which habitat suitability curves (HSCs) exist or can be developed, and calculating the amount of available habitat for each under a range of flows. This typically involves defining the wetted perimeter and calculating the weighted usable area (WUA) for selected species and life stages representing specific guilds (e.g., shallow fast) at different modeled or demonstrated flows.

Additional objectives include modeling or measuring water depth and velocity through the bypass reach at the different flows, for comparison with HSCs, and quantifying the degree of wetted perimeter and pool connectivity at each evaluated flow. In order to model velocity at different flows, we recommend computational fluid dynamics modeling, which would complement one of the objectives in Virginia Tech's recent study request, although use of ADCP technology during demonstration flows may accomplish the same objective. The Service also requests (1) in-situ monitoring of water quality parameters (i.e., DO, temperature) along established transects under a range of demonstration flows, and (2) pebble counts along these transects in order to determine substrate suitability for meeting spawning and other habitat requirements of selected species. These two objectives could be combined with other requested studies (e.g., water quality study; the Benthic Habitat Quality Assessment, above).

This study should also include an objective for evaluating the macroinvertebrate and crayfish community within the bypass reach, and determining an appropriate flow that will support this community. We recommend the VDEQ's Virginia Stream Condition Index (VSCI) approach for achieving this goal. The Service has also requested a separate macroinvertebrate/crayfish study (below), so it may be possible to combine this aspect of the study with that study.

2. *Resource Management Goals*

Resource management goals include: (1) increasing the abundance and species diversity of aquatic life in the bypass reach; (2) ensuring that flows to the bypass reach provide suitable habitat conditions (including DO and temperature) at all times for species found in the non-impacted mainstem downstream of the Project; and (3) increasing available habitat for RTE species that are expected to occur in the Roanoke River, including the Roanoke logperch.

3. *Public Interest*

The requestor is a resource agency.

4. *Existing Information*

As stated in Section 5.4.1.2, the goal of the minimum flow was not to establish a permanent fishery habitat but to provide enough flow to aid fish that have travelled into the bypass reach during spills in their return to the downstream channel. No hydraulic modeling or detailed flow study was performed to determine the minimum flow, and under the current license there has been at least one documented fish kill (see PAD Section 5.4.1.2. comments), demonstrating the inadequacy of the current minimum flow requirement.

5. *Nexus to Project Operations and Effects*

The Project utilizes a 500 foot long penstock resulting in a bypass reach of approximately 1,500 feet. A minimum flow of only 8 cfs is provided to the bypass reach. This results in much lower flows (approximately 1-2.5% of monthly average inflow) in the bypass reach compared to the rest of the river.

6. *Methodology Consistent with Accepted Practice*

All of the methodologies suggested for consideration are industry-accepted and commonly applied practices in hydropower licensing and relicensing activities. The 2-dimensional modeling approach is preferred for the evaluation of the bypass flow needs, and coupled with the PHABSIM software, this approach would provide an accurate quantitative assessment of changes in available habitat over a wide range of flows. If demonstration flows are provided as part of this study, then photo documentation of each targeted flow should be provided at established stations, and ADCP technology should still be utilized to develop the bathymetry for calculating WUA for selected species/guilds under the different evaluated flows. The VDEQ's VSCI methodology for assessing the health of the macroinvertebrate community is a standard methodology used in Virginia.

7. *Level of Effort, Cost, and Why Alternative Studies Will Not Suffice*

The level of effort and cost will depend on the chosen methodologies, but this type of study is very common in hydropower project relicensing activities. An alternative Delphi (observation of

demonstration flows) approach would be subjective and insufficient for determining an appropriate minimum flow, or range of flows, to meet aquatic resource management goals in the bypass reach. A Delphi approach was used for the previous relicensing, and the resulting selected minimum flow proved to be insufficient to avoid fish kills under all possible scenarios. Alternative approaches are also insufficient for determining the needs of the full suite of fish and other aquatic species found in the Roanoke River, including those of the Roanoke logperch. The Service has requested a collaborative process for choosing methodologies that are acceptable to Appalachian and all interested stakeholders.

III. Aquatic Macroinvertebrate/Crayfish Surveys

Appalachian does not propose to conduct aquatic macroinvertebrate species/life stage surveys. The Project contributes to the disruption of the aquatic/lotic habitat longitudinal continuum, hindering the natural downstream movement of sediment, particulate matter, nutrients, aquatic species and plant propagules. These effects may result in reduced invertebrate density, species richness, and invertebrate community evenness (Bilotta et al. 2017) in the Project impoundment, bypass reach and downstream reaches. A healthy macroinvertebrate community, including native crayfishes, is important to the aquatic food web and the fish community.

1. *Goals and Objectives*

The objectives of this requested study are to compare the occurrences and abundance of crayfish and other macroinvertebrates within the Project boundary with upstream and downstream reference locations. The goal of the study is to determine what the Project effects are on the aquatic macroinvertebrate community.

2. *Resource Management Goals*

The resource management goal of the study is to determine what the Project effects are on the aquatic macroinvertebrate community in order to identify potential protection, enhancement and mitigation measures that could, in turn, benefit the local fish community, including the federally listed endangered Roanoke logperch, which feeds primarily on bottom-dwelling aquatic/larval insect life stages.

3. *Public Interest*

The requestor is a resource agency.

4. *Existing Information*

According to PAD Section 5.4.6, macroinvertebrate sampling has been conducted by the Virginia Department of Environmental Quality (DEQ) along the mainstem of the Roanoke River downstream of the Project. However, based on the limited description of this sampling effort, it is not clear how much of the Project area was sampled or if the study area included the bypass reach. In addition, it is unclear whether reference locations, unaffected by the Project, were

sampled. The DEQ effort did not include any areas upstream of the Project dam. According to the PAD, the community was dominated by net-spinning caddisfly larvae and midges. There was low taxa richness and diversity as well as a low number of pollution-sensitive taxa (i.e., mayflies and stoneflies). Crayfish apparently were not sampled. The Service has not had time to review the full DEQ report cited in the PAD, but, based on this summary, the study did not provide the necessary information for determining Project impacts on the macroinvertebrate/crayfish community.

5. *Nexus to Project Operations and Effects*

The Project contributes to the disruption of the aquatic/lotic habitat longitudinal continuum, hindering the natural downstream movement of sediment, particulate matter, nutrients, aquatic species and plant propagules. These effects may result in reduced invertebrate density, species richness, and invertebrate community evenness (Bilotta et al. 2017) in the Project impoundment, bypassed reach and downstream reaches. A healthy macroinvertebrate community, including native crayfishes, is important to the aquatic food web and the fish community, including the federally listed endangered Roanoke logperch.

6. *Methodology Consistent with Accepted Practice*

The VDEQ's VSCI methodology is a commonly used and accepted approach for this type of study. Haag et al. (2013) and Williams et al. (2014) also describe field methods commonly used for collecting macroinvertebrates and crayfish. Crayfish and macroinvertebrate surveys were also recently conducted by Virginia Tech in support of the Fries Hydroelectric Project (FERC #2883) relicensing.

7. *Level of Effort, Cost, and Why Alternative Studies Will Not Suffice*

The level of effort would involve one field crew sampling during the spring (April-May) and late summer (August-September). It may be possible to combine the spring portion of this study with the requested spring Roanoke logperch/fisheries study. The level of effort is expected to be moderate. The Service is unable to estimate the costs of the study which may vary considerably depending on whether or not this survey can be combined with the fisheries study, and the chosen methodology which may be constrained by Appalachian's policy which prohibits snorkeling surveys at their projects. The Service also recommends that Appalachian consult with Virginia Tech to better determine costs and appropriate survey methods.

Bilotta, G.S., N.G. Burnside, M.D. Turley, J.C. Gray, and H.G. Orr. 2017. The effects of run-of-river hydroelectric power schemes on invertebrate community composition in temperate streams and rivers. PLoS ONE 12(2): e0171634. Doi: 10.1371/journal.pone.0171634.

Haag, W.R., R.J. DiStefano, S. Fennessy, and B.D. Marshall. 2013. Invertebrates and plants. VPages 453-519 in A.V. Zale, D.L. Parrish, and T.M. Sutton, editors. Fisheries Techniques, Third Edition. American Fisheries Society, Bethesda, Maryland.

Williams, K., S.K. Brewer, and M.R. Ellersieck. 2014. A comparison of two gears for quantifying abundance of lotic-dwelling crayfish. *Journal of Crustacean Biology* 34:54-60.

IV. Fish Surveys

We do not agree with Appalachian's conclusion that no fish surveys are needed. Fish surveys are needed in order to obtain an updated assessment of fish populations across all seasons in the vicinity of the Project, and to better understand the distribution of Roanoke logperch within the Project area.

1. *Goals and Objectives*

The goals and objectives of this study are to provide information on the existing fishery resources in the vicinity of the Project including information on the current distribution of the Roanoke logperch in the vicinity of the Project. Fish surveys should be performed both upstream and downstream of the Project, including dam tailwaters and bypass reach, to aid in the determination of what the Project impacts may be and to establish a baseline for future assessments. A comprehensive list of species found in the Project reservoir, and information on how the fish community varies by season, is also necessary to inform the requested ntrainment and impingement study (below). The information to be obtained should include both the temporal and spatial aspects of species distribution; age, size, sex, and condition data; habitat utilization; and fish movement patterns. Information on the habitat present in the river should also be collected.

2. *Resource Management Goals*

Resource management goals include: (1) protecting populations of the federally endangered Roanoke logperch; (2) protecting the existing warmwater fishery; (3) ensuring protection of species that are known or potential hosts for the glochidia (larva) of federally listed and/or rare freshwater mussels; and (5) possibly developing passage measures for these species, as well.

3. *Public Interest*

The requestor is a resource agency.

4. *Existing Information*

Fish surveys were conducted in 1990 and 1991 as part of the previous relicensing. In 1990, fish were sampled in the reservoir by electrofishing, hoop netting, and gill netting. Upper, middle, and lower portions of the reservoir were sampled. In addition, riffle/run habitat was sampled upstream and downstream of the Project. Each station was sampled six times, twice in June and September and once in July and October. A total of 1,936 fish representing 36 species were collected during this study. In 1991, additional sampling was conducted in a 0.25 mile riffle/run

located 0.5 miles downstream of the Project. Three Roanoke logperch were collected during this sampling effort. The Service is not aware of any fish surveys conducted since the last relicensing. Updated information on fish in the vicinity of the Project is needed.

5. *Nexus to Project Operations and Effects*

The Niagara Dam serves as a barrier to upstream and downstream fish migration and may reduce survival of downstream migrants due to turbine entrainment. The Project also redirects flow and changes flow patterns, impacts channel morphology and substrates (e.g., spawning gravels) in downstream areas, and impacts habitats in the impoundment above the dam.

6. *Methodology Consistent with Accepted Practice*

The recommended study uses standard scientific collecting techniques used in most hydro licensing activities. A variety of sampling gear, including gill nets, trap nets, seines, and electroshocking should be used as appropriate for site conditions. In addition, the Service supports Virginia Tech's proposed use of GoPro cameras for monitoring behavior of Roanoke logperch and other fish species immediately upstream of the Project and in the Project tailrace, and use of an underwater infrared video system for monitoring behavior at night and during turbid conditions. The surveys should cover at least three seasons (spring, summer, and fall), and all four seasons if possible (e.g., for Roanoke logperch to determine possible winter use of the Project reservoir). The study should be done for 1 full year, with provision for a second year of study if data collected are inadequate based on review by the Service and other resource agencies, or if river flows are atypical during the initial study year. Information to be collected should include species, size, age, sex, and condition, as well as movement patterns and habitat utilization. Standard water quality data (i.e., water temperature, DO, pH, and conductivity) should be collected in conjunction with these surveys. The study should include the Project reservoir near the dam and powerhouse intake, the dam tailrace area, the Roanoke River beyond the downstream extent of Project effects, and the bypass reach.

7. *Level of Effort, Cost, and Why Alternative Studies Will Not Suffice*

The level of effort would involve one field crew sampling on a seasonal basis. The study would last for 1-2 years. The actual cost is unknown and would depend upon the gear types used, number of sampling locations, local labor costs, and the ability to combine multiple studies (e.g., fisheries and water quality) into one task. All recent surveys in the vicinity of the Project were performed in mid-summer to early fall. No recent spring, late fall or winter surveys have been conducted. New surveys during these times of year are needed. Methods specifically targeting Roanoke logperch should also be employed. The existing data and literature are inadequate to fully address Project impacts, and there are no alternatives to conducting standard fishery surveys. However, Appalachian has flexibility to design the most cost-effective way to acquire the necessary data.

V. Fish Protection and Upstream and Downstream Passage Studies

There are two viable options for the downstream passage of fish including: (1) over the dam/ through the debris sluice gate, and (2) through the penstocks and powerhouse turbines. Without an adequate plunge pool, fish moving over the dam or through the debris sluice gate would be susceptible to injury or mortality. Fish moving downstream through the turbines will be subjected to potential injury or mortality from impingement and entrainment. Many hydroelectric project licenses have incorporated trash racks with 1-inch clear bar spacing to physically exclude most adult fish from the turbines, alternate downstream passage routes, and other features (e.g., reduced approach velocities, adequate plunge pools, etc.) to encourage safe downstream fish passage. In the context of multiple, stacked hydropower projects, cumulative entrainment impacts are likely. Appalachian has not proposed any measures to ensure safe, timely and effective upstream and downstream fish passage. Therefore, we request that upstream and downstream passage studies be undertaken.

1. *Goals and Objectives*

The goals and objectives of this study are to provide information on potential fish passage and protection structures, or other measures that could be utilized at this Project. An additional goal should be to determine whether Roanoke logperch are able to pass through the Project and whether the populations upstream and downstream of the Project are isolated from one another. The information obtained will allow the Service's fishway engineers to evaluate the potential effectiveness of various options.

2. *Resource Management Goals*

Resource management goals include providing safe, timely and effective passage to migratory fish species (e.g., smallmouth bass, largemouth bass, white bass, redhorse, channel catfish), and fish species that serve as glochidial hosts for freshwater mussels found in the Project area. In addition, although it is unlikely that adult Roanoke logperch enter the powerhouse intake, there is some potential for this, given their preferred winter habitat in deep pools; therefore, an additional resource management goal is to prevent entrainment of any individuals that may attempt to move downstream, given their endangered status and the Service's goal of recovering this species.

3. *Public Interest*

The requestor is a resource agency.

4. *Existing Information*

The PAD provides very little information regarding passage alternatives.

5. *Nexus to Project Operations and Effects*

Available options for safe downstream passage are currently very limited, and any fish

attempting to move downstream are likely to be attracted to the powerhouse intake and become entrained in the Project turbines, resulting in some immediate mortality, as well as latent mortality and cumulative mortality from multiple, stacked hydropower projects. Without an adequate plunge pool, fish moving over the dam or through the trash sluice gate are susceptible to injury. There is currently no way for fish to move upstream past the Project.

6. Methodology Consistent with Accepted Practice

The recommended study uses standard literature reviews and site-specific data collection techniques common to most hydropower licensing activities.

7. Level of Effort, Cost, and Why Alternative Studies Will Not Suffice

The level of effort would involve moderate literature review, discussions with fishway engineers, and site-specific data collection. The study could be completed in less than 1 year, but may require more time to design effective facilities or measures. The actual cost is unknown and would depend on the number of alternatives examined. The existing information in the PAD is inadequate to allow for a thorough examination of alternatives; however, most of the information needed should be available in the existing literature.

VI. Mussel Surveys

We do not agree with Appalachian's conclusion that no mussel surveys are needed. The Service is not aware of any mussel surveys in this portion of the Roanoke River. A mussel survey is needed in order to determine whether any federally listed and/or rare freshwater mussel species are present within the potentially affected area, and to determine the potential for operation of the Project to adversely affect any mussel species that may be present. We recommend that a detailed habitat assessment be conducted by an approved surveyor to identify suitable habitat, and that a mussel survey be conducted within all suitable habitat, extending at least as far downstream as the extent of Project effects. Surveys are not needed if the approved surveyor determines that no suitable habitat is present within this potentially affected area.

1. Goals and Objectives

The goals and objectives of this study are to assess the presence, distribution and abundance of freshwater mussels and their habitats within the area affected by the Project and upstream of the impoundment, in order to establish a baseline from which to measure increases or decreases in mussel populations over time, to assess the potential for the proposed Project to adversely affect federally listed mussel species or other mussel species of conservation concern, and to develop protection and mitigation measures for these species if a determination is made that such measures are necessary and appropriate.

2. *Resource Management Goals*

To restore and protect viable populations of freshwater mussels, including federally listed species and other species of conservation concern.

3. *Public Interest*

The requestor is a resource agency.

4. *Existing Information*

We are not aware of any recent, systematic mussel surveys in this portion of the Roanoke River. Therefore, a survey is needed in order to assess the potential for the Project to affect mussel communities, and to establish a baseline for future determinations of any effects of the Project on mussel communities.

5. *Nexus to Project Operations and Effects*

If present, freshwater mussel populations could be impacted by the Project, both directly (scouring, sedimentation, changes in flow distribution) and indirectly (reduced upstream and downstream movements of host fish species, and possible entrainment impacts to host species). Lack of host fish passage options can result in fragmentation of mussel populations and lost genetic exchange, leading to reduced genetic diversity. The replacement of the upstream lotic habitat (e.g., riffles) with lentic habitat that includes benthic substrates smothered by accumulated silt also eliminates suitable habitat for most mussel species. Project effects can also include downstream water quality issues (i.e., DO and temperature effects) which can result in reduced reproduction and recruitment or, in extreme cases, mortality.

6. *Methodology Consistent with Accepted Practice*

While there are Freshwater Mussel [survey] Guidelines for Virginia (https://molluskconservation.org/Mussel_Protocols.html), based on a recent communication from VDGIF, a specific survey methodology is not recommended upfront as that is usually developed in consultation with the surveyor. The Virginia guidelines include a link to the list of approved surveyors in Virginia for Atlantic Slope freshwater mussels.

7. *Level of Effort, Cost, and Why Alternative Studies Will Not Suffice*

The level of effort would be moderate. At a minimum, the river channel and banks upstream and downstream of the Project should be surveyed, extending downstream beyond the influence (e.g., sedimentation) of the Project. A few to several person-days would be required. Costs would be moderate, depending on the number of person-days needed to thoroughly survey the area, and quantitative methods used. Estimated costs would be in the range of \$25,000-50,000. There are no known alternative approaches to determining presence, distribution and abundance of freshwater mussels.

VII. Entrainment and Impingement Study

Appalachian states that because a detailed entrainment study was conducted for the previous relicensing and there have been no significant changes in Project equipment or operations since that time, they do not propose to conduct a desktop entrainment study. The Service does not support this position. The previous turbine blade strike analysis was based on Cada (1990), which is out of date. The Service's Fish Passage Engineering group and others have developed turbine blade strike analyses based on a more updated study by Franke et al. (1997). In addition, the fish community may have changed over the past 30 years. It is also unclear whether all sensitive and rare fish species, including the federally listed endangered Roanoke logperch, were evaluated as part of the previous study and whether attraction of migratory species to the intake flow was considered. Therefore, an updated desktop entrainment study is needed using current information.

1. Goals and Objectives

The goals and objectives of this study are to provide information on survival rates of all species and life stages of fish that may be impinged on powerhouse intake trash racks or entrained in powerhouse turbines, and to develop estimates of annual mortality rates for all species and life stages. Estimates should also consider indirect, latent mortality of injured fish that are subjected to predation (e.g., due to disorientation or loss of equilibrium), disease (e.g., as a result of cavitation injuries) or physiological stress. With regards to the Roanoke logperch, passage of adults through the Project turbines may not be an issue, but larvae of the species, which drift long distances, is very likely. While it may not be feasible to estimate survival rates for logperch larvae, it is feasible to estimate how many enter the intake and pass through the turbines, which would be considered "take" under the ESA.

2. Resource Management Goals

To protect native fish populations and ensure that entrainment and impingement impacts are not resulting in population-level effects to species of conservation concern, including the federally listed endangered Roanoke logperch. Conclusions regarding potential population-level effects should consider the cumulative effects of multiple, stacked hydropower project in the Roanoke River.

3. Public Interest

The requestor is a resource agency.

4. Existing Information

A desktop entrainment study was done as part of the previous relicensing. However, it is unclear that it would still be applicable (e.g., no changes in the fish community; consideration of potential impact to migratory species that would be attracted to the intake). It also does not

consider new research that has been done since the previous study, and is out of date in terms of the blade strike analysis that was used.

5. Nexus to Project Operations and Effects

Operations of the Project result in injury and mortality of a percentage of fish that are impinged on powerhouse intake trash racks or entrained in Project turbines. Entrainment of Roanoke logperch larvae, which drift long distances (multiple km), is also a significant issue potentially affecting this listed species. Passage of larvae or individuals of this species through the Project turbines, which would constitute a form of “take” under the ESA.

6. Methodology Consistent with Accepted Practice

The recommended study uses standard methodologies used in many hydropower licensing activities.

7. Level of Effort, Cost, and Why Alternative Studies Will Not Suffice

The level of effort and cost are to be determined during the study plan development phase. The Service is interested in working with Appalachian, FERC and the other resource agencies to develop a study plan that will address resource agency concerns.

Cada, G.F. 1990. Assessing fish mortality rates. *Hydro Review* (Feb. 1990): 52-60.

Franke, G.F., D.R. Webb, R.K. Fisher, Jr., D. Mathur, P.N. Hopping, P.A. March, M.R. Headrick, I.T. Laczó, Y. Ventikos, F. Sotiropoulos. Development of Environmentally Advanced Hydropower Turbine System Design Concepts. Idaho National Engineering and Environmental Laboratory, Renewable Energy Products Department, Lockheed Martin Idaho Technologies Company, Idaho Falls, Idaho. Prepared for the U.S. Department of Energy, Energy Efficiency and Renewable Energy and Hydropower Research Foundation, Inc. INEEL/EXT-97-00639. Voith Report No. 2677-0141.

VIII. Water Quality

The Service supports the Licensee's proposal to conduct a seasonal temperature and DO study at the Project and would like to work with the Licensee to develop the study plan for monitoring that evaluates the potential for DO and temperature issues in the reservoir and in the river downstream of this Project. We recommend that the study be conducted over a 2-year period to increase the likelihood of conducting the monitoring effort under conditions that are typical for that time of year.

IX. Recreational Access

The Service supports the Licensee's proposal to evaluate the need for any improvements to the existing recreational facilities in the vicinity of the Project. We support any studies

recommended by the resource agencies, county/city officials or NGOs regarding an assessment of recreational use and needs.

In addition to the above study requests, the Service fully supports study requests submitted by the other resource agencies (e.g., VDGIF, VDEQ, EPA), universities (e.g., Virginia Tech), localities (e.g., Roanoke Co.) and NGOs (e.g., Roanoke Valley Greenway Commission).

The Service recommends that the Draft Study Plan developed by the Licensee incorporate all of the above-listed studies. The study proposals incorporated into the Draft Study Plan should be as detailed as possible so that all parties know exactly what is being agreed to when the study plan is approved. We would also appreciate having opportunities to work collaboratively with Appalachian and the other resource agencies in developing study plans.

Thank you for the opportunity to comment on the Scoping Document and PAD, and to provide study requests. If you have any questions, please contact Richard McCorkle of my staff at 814-206-7470.

Sincerely,

A handwritten signature in black ink that reads "Sonja Jahrsdoerfer". The signature is fluid and cursive, with the first name "Sonja" being more prominent than the last name.

Sonja Jahrsdoerfer
Project Leader

Cc: Stephanie Nash – USFWS, BER (ERT)
Diane Opper – USFWS, RO
Cindy Shulz – USFWS, VAFO
Shawn Alam – USDO, OEPC
Lindy Nelson – USDO, OEPC
Valincia Darby – USDO, OEPC
Kevin Mendik - NPS
Scott Smith – VDGIF
Brian McGurk – VDEQ
Paul Angermeier – Virginia Tech

1 UNITED STATES OF AMERICA
2 FEDERAL ENERGY REGULATORY COMMISSION
3 OFFICE OF ENERGY PROJECTS

4 - - - - - x
5 Appalachian Power Company : Project No. P-2466-034
6 - - - - - x Virginia

7
8 NIAGARA HYDROELECTRIC PROJECT

9
10 Vinton Public Library
11 300 South Pollard Street
12 Vinton, Virginia 24179
13 Wednesday, April 24, 2019

14
15 The public scoping meeting, pursuant to notice, convened
16 at 6:30 p.m.

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1 P R O C E E D I N G S

2 MS. CONNER: Good evening, everyone. It's 6:30
3 so we are going to get started. We may have some more folks
4 come in, but we'll go ahead and get to our presentation.
5 So, we are here tonight for the public scoping meetings of
6 the Niagara Hydroelectric Project.

7 A couple things. Please make sure that you sign
8 in with your name and your email address, and that allows
9 our court reporter to spell your name correctly and to
10 attribute your comments to the correct person. Each time
11 that you speak please be sure to state your name and your
12 affiliation, again also so that we have a clear
13 understanding of who is saying what. And after a couple
14 weeks, the transcripts will be part of the public record and
15 they will be available on eLibrary so you can also review
16 those and make sure that your comments were attributed to
17 the correct person.

18 Also on the table we have extra scoping documents
19 that you might want to grab. A couple of times I'll refer
20 to it throughout the presentation for certain things to
21 look at, so you'll have one in your hands, and they're also
22 a couple of brochures. One is Your Guide to Electronic
23 Information at FERC. It allows you to navigate all of the
24 eSystems that we have. And then the Hydropower Licensing,
25 Get Involved, a Guide for the public, also some excellent

1 information to read as you depart later this evening.

2 Okay.

3 So, as far as our agenda, we're going to do an
4 introduction to FERC. We'll talk a little bit about the
5 licensing process, and Jon Magalski will come up and give
6 an overview, and then we'll talk about what is scoping, just
7 to understand what all is involved. We'll go through our
8 resource issues, and that's the point where we'll have our
9 discussion of each of the resource items after each one is
10 talked about, and it will be an open floor discussion. And
11 then I'll let you know how to submit comments and stay
12 informed for future issuances and information. We'll go
13 over some very important dates to keep in mind and then
14 we'll have one more final comment and question period so
15 that we make sure to get everything answered and discussed
16 tonight.

17 A little bit about FERC. We're the Federal
18 Energy Regulatory Commission. We are an independent federal
19 agency that regulates interstate transmission and sale of
20 electricity and natural gas; the interstate transportation
21 of oil by pipeline. We review proposals to build interstate
22 natural gas pipelines, natural gas storage projects, and
23 liquefied natural gas terminals, as well as licensing non-
24 federal hydropower projects which is our purpose here
25 tonight.

1 We are led by five commissioners that are
2 appointed by the president. We currently have four
3 commissioners that are serving and we are, FERC is supported
4 by 12 offices and a staff of about 1,500 employees. So, the
5 Office of Energy Projects is where our team comes from
6 tonight. And there are three divisions within Energy
7 Projects, and so we are with the Division of Hydropower
8 Licensing, that issues hydropower licenses; and with me I'll
9 introduce just briefly.

10 I'm Allyson Conner. I'm the project coordinator
11 and I'll be doing cultural resources, aesthetics, land use
12 and recreation. And then I'll let our team members
13 introduce themselves.

14 MS. SANGUNETT: Hi, I'm Brandi Sangunett, I'll be
15 working on terrestrial resources.

16 MS. BAUER: I'm Laurie Bauer. Also with FERC.
17 I'll be working on aquatic resources and water quality.

18 MS. CONNER: So, we are with the Division of
19 Hydropower Licensing, so we issue the licenses that provide
20 regulations for operation. And then we have our Division of
21 Hydropower Administration and Compliance. They handle the
22 administration of the license after its issued, making sure
23 regulations are complied with. And then we have our
24 Division of Dam Safety and Inspection. Which is pretty self
25 explanatory.

1 So, FERC's authority is derived from the Federal
2 Power Act, which balances the environmental resources with
3 developmental resources. When we issue licenses they can be
4 issued for anywhere from a period of 30 up to 50 years. So,
5 this is a nice visual for you guys just to kind of see how
6 many hydropower projects - so this is federal and non-
7 federal, so the black dots would be like, TVA, Bonneville
8 Power out West, BOM, so all the red dots are actually the
9 FERC-regulated hydropower projects. As you can see they
10 typically tend to be in places with elevation. In the
11 mountains. On the coast and whatnot. And we do have about
12 2,500 licensed or exempted projects specifically in FERC's
13 jurisdictions.

14 So, the purpose of scoping is to gather
15 information for the relicensing of the Niagara Projects.
16 The current license was issued in 1994 and it expires on
17 Leap Day 2024. And it is, scoping is required by the
18 National Environmental Policy Act or NEPA. You'll hear us
19 using NEPA documents, so that's what that means.

20 The licensing process, a real quick overview is
21 that it starts with scoping so that's where we are. And the
22 end result would be a license order. The license order
23 would include terms and conditions for operation as well as
24 environmental protection, mitigation, and enhancement
25 measures. It takes a little while to get to a license

1 order. We have a little road map. So, that's what we're
2 doing with scoping is, we want to gather information that
3 allows us to conduct the environmental review; and we do
4 rely heavily on input from stakeholders because the local
5 folks are the ones who really know what's going on. So,
6 that's information that we want to gather as we're here
7 tonight.

8 We are specifically going through the integrated
9 licensing process. We do have three processes; however,
10 we're focusing tonight on the Integrated Licensing Process.
11 It is founded on three principles, and the first one is
12 early identification and resolution of studies. So, we want
13 to get that as early in the process so that we can make
14 sure that we're covering all of the topics that need to be
15 covered. The second foundation is the integration of agency
16 and tribal permitting process needs including NEPA, the
17 applicant's pre-filing consultation, as well as federal and
18 state permitting needs, such as the section 401 Clean Water
19 Act and Endangered Species Act, and so on. And the third
20 foundation is the establishment of time frames to complete
21 the process steps. That is one of the more significant
22 differences in this process, it is clearly defined when
23 things are due by FERC as well as by the applicant.

24 Here is an overview of the ILP. So, we currently
25 are in the pre-filing timeline right now, which typically

1 last about a year and the Notice of Intent or NOI, and PAD,
2 the Pre-Application Document were filed in January; and the
3 scoping meetings we're doing currently now, there will be a
4 30 day public comment period after we finish these meetings;
5 and then the next phase will be the study plan development.
6 So that all the first year of pre-filing.

7 And then there is one or two years of studies.
8 When the applicant is out in the field collecting
9 information as well as preparing their application. So,
10 pre-filing can last from two to three years, and then once
11 the license application is filed we enter the post-filing
12 phase. That's kind of the understanding of the two
13 different classifications.

14 Post-filing begins when the license application
15 is filed with us and then following that, between the next
16 one-and-a-half to two years, FERC staff conducts an
17 adequacy review; reading through the application and make
18 sure it's complying with regulations, and then there's a
19 public comment period. And once we've gotten all the
20 information that we feel that we need or that we're able to
21 write our environmental assessment, which is an
22 environmental document that's through NEPA, it is also given
23 a public comment period so that folks can weigh on that
24 part. And then the final action is a FERC license order.
25 So, that's the post-filing part.

1 And so, in your scoping document, a very detailed
2 process plan of pre-filing is in Appendix B just to keep
3 aware of where that information is. So, these are pre-
4 filing steps, the first three have already, or are occurring
5 and then we'll go through the rest of the dates for this
6 year. So, the NOI and PAD were filed in January, FERC
7 issued our scoping document in March, about a month ago.
8 We're currently holding scoping meetings. The next big due
9 date is May 25th and that is when scoping comments from
10 stakeholders are due, or applicants or anyone who wants to
11 submit comments. That is the deadline. So, make a note of
12 that one to make sure you get those in, and the comments
13 that are spoken tonight are also included as scoping
14 comments.

15 So, after that, in July, Appalachian will file
16 their proposed study plans and if we need to, FERC will
17 issue a scoping document 2. If more resource or items or
18 issues are identified tonight and we need to amend it, then
19 an SD2 would be issued. And after that in August, there
20 would be a proposed study plan meeting where everyone gets
21 together and talks through the plan and asks more questions,
22 and then there's a time, two months, you have to file
23 comments. So you can let Appalachian know things that might
24 need to be changed or should be added, or not. And then in
25 November there would be the revised study plan that would

1 take in all those comments, potentially; and it might
2 change it and might not change it. And then again there's
3 another comment period. That's a shorter period -- only two
4 weeks after the revised study plan when public comments are
5 taken. And then FERC, after that, has two weeks to issue
6 their study plan determination. And from that study plan
7 determination it's spelled out what studies will be
8 conducted in that next one to two years study period. So,
9 that's the time line for 2019.

10 So, what exactly is scoping? It is a time when
11 we identify environmental issues and concerns within the
12 project area. It allows us to understand the potential
13 effects of the project on aquatic, terrestrial, and the
14 human environment. And the information that we need to
15 analyze these potential impacts, potential effects for NEPA
16 purposes include existing information as well as new
17 information. Those can both be current resource reports,
18 survey data, or studies that maybe have been done in the
19 past or are going on now. So it could be new information
20 that hasn't been published yet. It could be comments from
21 you all, it could be articles, lots of information. So any
22 kind of information you all have, would help inform an
23 understanding of the project. We definitely encourage you
24 to file that information, let us know.

25 Scoping also involves identifying and receiving

1 input on resources that may be cumulatively affected, which
2 is when you consider the effect of the project in
3 conjunction with other activities in the river basin. So,
4 if you imagine multiple dams on a river section, there might
5 be a minor effect on a specific species, but cumulatively it
6 becomes a much larger impact; and so there are certain
7 resources that are cumulatively affected.

8 We also want to know about reasonable
9 alternatives to the project in the applicant's proposed
10 actions, and resources maybe that don't require a detailed
11 analysis; and maybe there are certain things that just
12 aren't present at the project and so we wouldn't need to
13 include those in the environmental assessment. So, we want
14 to #go through these ** topics with information gaps.
15 Throughout the presentation and later on when we go through
16 the resource areas, I would like for you to speak up and let
17 us know any of these things that you have noted.

18 Now, I'm going to give it over to Jon and he's
19 going to give you a project overview.

20 MR. MAGALSKI: Thank you, Allyson. Good evening,
21 everybody. I think I either know or have met everyone in
22 the room today but for the record, my name is Jon Magalski
23 and I'm co-managing the relicensing on behalf of Appalachian
24 Power Company alongside Liz Parcell. And just for the
25 agenda, I'll walk through, I'll give a brief project

1 overview and then talk about the project facilities
2 including the civil works, the recreation facilities, talk a
3 little bit about project operations and then provide my
4 contact information.

5 So the licensee of the Niagara Project is
6 Appalachian Power Company, who is a subsidiary company of
7 American Electric Power, headquartered in Columbus, Ohio.
8 As Allyson mentioned, the current FERC license expires
9 February 29th of 2024. And we filed the NOI and the PAD
10 that started, kind of kicked off the relicensing process on
11 January 28th, 2019. And we chose to use the Integrated
12 Licensing Process because it's a very structured and
13 schedule-driven process, and Allyson kind of gave a high
14 level overview of that schedule at the beginning; but
15 there's a much more detailed schedule in the pre-application
16 document.

17 And then just to note again on the FERC project
18 number, it's 2466-034. And it's important whenever you're
19 filing comments to put that number in the subject line. The
20 Niagara Project is located about six miles southeast of the
21 City of Roanoke in Roanoke County. The project is the
22 upstream-most dam on the Roanoke River, located at
23 approximate river mile 355. The reservoir itself is
24 approximately two miles long and it pretty much extends up
25 to about where Tinker Creek converges and flows into the

1 Roanoke River.

2 The Niagara Project was constructed in 1906 and
3 Appalachian Power took ownership in 1924. The authorized
4 installed capacity of the project is 2.4 megawatts, and it
5 operates in run-of-river mode. The primary features of the
6 project include a two mile long, 62 acre reservoir with 425
7 acre feet storage capacity. A 452 foot long, 52 foot high
8 concrete gravity dam. An 11 foot diameter, 500 foot long,
9 corrugated metal pipe penstock that flows into a 42 foot
10 high concrete powerhouse that contains the two vertical
11 Francis units, each with a generating capacity of 1.2
12 megawatts. The project also includes a 1,500 foot bypass
13 reach and transmission facilities that consist of generator
14 leads and a step-up transformer, and there's no transmission
15 line associated with the project.

16 An overview map of the project, you can kind of
17 see on the far left the dam and the spillway, the intake
18 structure. The 500 foot long penstock and then the
19 powerhouse, and then to the bottom of the aerial is the
20 bypass reach. Regarding recreational facilities, there's
21 one. It's a canoe portage. The upstream takeout is located
22 just upstream of the boat barrier in the reservoir. And
23 then canoes will portage around the dam approximately 1,600
24 feet to the downstream put-in. Then from there it's a short
25 power ride down to Smith Mountain Lake. And it should be

1 noted that American Whitewater lists that stretch of river
2 as class 1 and 2 rapids under normal flow conditions.

3 As I mentioned, the project operates as run-of-
4 river, so basically whatever comes into the project is
5 passed through the project. It's either passed through the
6 powerhouse or over the spillway gate or a combination of
7 both depending on the inflow. But there's no retention of
8 water within the reservoir. There's no operating pool or
9 anything like that, there's no peaking at the Niagara
10 Project.

11 The FERC license requires the project to maintain
12 a reservoir elevation at or near 884.4 feet which is .16
13 below the crest of the spillway. The project is required to
14 release a minimum of 50 CFS or inflow, whichever is less.
15 And that's measured by the USGS gauge at approximately 200
16 feet downstream of the powerhouse. The project also
17 requires Appalachian Power to provide a minimum flow of 8
18 CFS in the bypass reach, and that flow is provided through
19 the sluice gate or through the overflow of the spillway,
20 just depending on inflow.

21 When the reservoir elevation reaches 886 feet
22 water begins to spill over the auxiliary spillway, which is
23 another spillway on the inside of the intake structure
24 itself, not the main spillway. Then when the tail water
25 elevation below the powerhouse reaches 832 feet, power

1 generation ceases just because there's not enough head to
2 generate power.

3 The project is automated and can be operated by
4 AEP's Columbus Operation Center in Columbus, Ohio. That
5 facility is staffed 24/7, 365 days a year. Although it's
6 operated from Columbus, the units themselves have to be
7 started and stopped manually at the powerhouse itself.
8 However, in the event of an emergency, or if there's a need
9 to bring a unit offline, the operation center does have the
10 ability to trip the unit to bring it offline. The facility
11 itself is staffed four days a week, Monday through
12 Thursday, but there is a call out list if somebody needs to
13 come out to start a unit or stop a unit, or if there's an
14 alarm or some other reason they need to go out to the
15 facility there is a call out procedure for someone to come
16 out, and that person or persons are available 24/7, 365 days
17 a year.

18 Here's my contact information and I'll just note
19 that we created a website for the relicensing of Niagara and
20 a few other projects that we're working on right now. It's
21 aephydro.com and that's where we'll be posting all of our
22 filings. So, the pre-application document, the scoping
23 document is on there. And as we go through and start
24 posting and developing study plans, we'll post them there.
25 So, that will be a place that you can retrieve them. And

1 we'll reference that in our distribution.

2 Are there any questions or comments? Any clarity
3 on project operations?

4 MS. BAUER: I have a question.

5 MR. MAGALSKI: Sure.

6 MS. BAUER: Can you I'm sorry, Laurie Bauer
7 with FERC -- Can you describe how the minimum flow in the
8 bypass reach is monitored? I know you said at the USGS
9 gage, south of the dam, the outflow

10 MR. MAGALSKI: Of the, at the outflow? I don't
11 know; Kenny or David, do you want to talk about how the flow
12 to the bypass reach is kind of gauged and monitored? How
13 that's set.

14 MR. BAILEY: It's pretty much estimated from
15 visual.

16 MS. CONNER: Can you say your name?

17 MR. BAILEY: David Bailey. AEP. Frequent
18 estimate from visual, we have measured it in the past with
19 flow meters and we had a Vicom height (ph) installed years
20 ago and use it, but it kept losing suction and it was come-
21 and-go as far as operation; it was a maintenance nightmare,
22 so we abandoned that and just lowered the sluice gate, the
23 trash gate, and let it flow through there. Actually, we're
24 providing more than 8 CFS.

25 MS. BAUER: Great. Thank you.

1 PARTICIPANT: You adjust the elevation of the
2 locks based on inflow -- so there's always a measured volume
3 of water, depth of water has to go through that.

4 MR. MCGURK: Brian McGurk with Virginia DEQ. I
5 was looking at the current license, and it required a
6 monitoring plan and referred to a monitoring plan that was
7 completed in '94, and then I found another file, in our
8 files, that talked about that that was demanded in 2000, and
9 I think it had to do with that siphon not working. So, I
10 was wondering if there were any data from the past on, what
11 we supply as part of the application or whatever on those
12 flows? I'm wondering how often is that 8 CFS or near 8
13 CFS? That would be of interest.

14 MR. MAGALSKI: We do plan to study the bypass
15 reach and those flows to answer those questions. I would
16 have to go back and look at see what existing information is
17 available now. But we do plan on studying the bypass reach.
18 And, is 8 CFS adequate?

19 Does that answer your question?

20 MR. MCGURK: Yes, I'm just, I think it would be
21 good to see whatever data are available so that can be, that
22 can be looked at, and if you're going to include that in
23 your study that you propose here that would be good.

24 MR. MAGALSKI: We do plan on studying that. We
25 will look at the bypass reach.

1 MR. MCGURK: I've got another question.

2 MS. CONNER: Yes, go ahead.

3 MR. MAGALSKI: Sure.

4 MR. MCGURK: It came up this morning, what's the
5 hydraulic capacity of the plant? Just, I'm wondering how
6 much is being diverted to go through the plant when it's
7 running at 100 percent.

8 MR. MAGALSKI: David, do you know the answer to
9 that question? Or we can certainly find out if we don't
10 know today.

11 MR. BAILEY: I'll have to figure that.

12 PARTICIPANT: We'd have to go back to look.
13 Calculate.

14 MR. MAGALSKI: Or is it in the PAD?

15 MS. KULPA: This is Sarah Kulpa, HDR. it is in
16 the PAD, I believe, it's probably around 750. but that's not
17 the exact number. But approximation, I know one unit was
18 about 320 and the other was a little bit higher. So,
19 somewhere between 700 and 800. Yes, it is in the PAD.

20 MR. MAGALSKI: We can certainly check it out.

21 MR. MCGURK: I can look in the PAD. We have that
22 I just haven't.

23 MR. MAGALSKI: Any other questions?

24 MS. BELCHER: Jon, are you going to post this --?

25 MS. CONNER: Can you say your name?

1 MS. BELCHER: Yes, Liz Belcher. On the
2 relicensing website? You had a lot of good data put in
3 there about the plant.

4 MR. MAGALSKI: Yes, we can post the presentation
5 to our website.

6 If there's no additional questions I'll turn it
7 back to Allyson.

8 MS. CONNER: Sure. This is Allyson Conner with
9 FERC. In the PAD, I think this is it: the maximum discharge
10 of unit 1 was 379 CFS and unit 2 is 305 CFS. So, a total of
11 684 CFS. That's on page 4-8 just for reference. All right.

12 If you have a scoping document and you want to
13 turn to page 13, this is our preliminary list of resource
14 issues. And so a couple of questions to think about as we
15 go through it are, if you have any additional issues or
16 concerns or issues that you disagree with, that would be a
17 perfect time to let us know about that. All right.

18 So, we have identified the following resources in
19 scoping document 1 as items to include in our environmental
20 assessment. That would be geology and soils, aquatic
21 resources, terrestrial resources, threatened and endangered
22 species, recreation, land use and aesthetics, cultural
23 resources, and developmental resources. So, we're going to
24 start going through one-by-one at this time and once we're
25 finished a slide then that's the time it will be open for

1 discussion.

2 So, with geology and soil we've identified that
3 we want to study the effects of continued project operation
4 and maintenance on shoreline stability at the impoundment.

5 And as a note, Appalachian has proposed a shoreline
6 stability assessment. So, keep that in mind that that is
7 something that they will be looking at during the study
8 season. Is there anything right off the bat that anyone
9 wants to ask or discuss or bring up about geology and soils
10 specifically?

11 There will be time at the end if a question comes
12 up and I've passed through a resource, so don't feel like
13 you won't get another chance to ask.

14 All right. For aquatic resources. We're going
15 to look at the effects of continued project operation and
16 maintenance on water quality including dissolved oxygen and
17 water temperature upstream and downstream of the impoundment
18 including the bypassed reach. And again, that star means
19 that this in a resource that we've identified that could
20 have cumulative effects.

21 We'll look at adequacy of the existing minimum
22 flows for protecting aquatic habitat for resident fishes
23 including a species of special concern, the orangefin
24 madtom and other aquatic resources downstream of the
25 powerhouse and in the bypassed reach. Again, a cumulatively

1 affected resource.

2 We'll look at the effects of continued project
3 operation and maintenance on aquatic resources including
4 entrainment and impingement mortality of resident fishes.
5 And two studies that are proposed by Appalachian are a water
6 quality study and the bypassed reach aquatic habitat study,
7 which Jon mentioned earlier.

8 So, are there any additional questions
9 specifically regarding aquatic resources at this time?

10 MR. MCGURK: Brian McGurk with Virginia DEQ. I
11 am just wondering, the bullets under aquatic resources don't
12 specifically mention fencing for mussels, I guess, I'm not
13 sure what the proper general term is, but will those be
14 considered as well?

15 MS. CONNER: They would be considered along with
16 the aquatic habitat.

17 MR. MCGURK: Okay. Aquatic resources.

18 Okay. Thanks.

19 MS. CONNER: So, for terrestrial resources we
20 have identified that there may be effects of continued
21 project operation and maintenance on riparian, wetlands, and
22 upland habitat and associated wildlife such as Bald Eagles;
23 and Appalachian has proposed to conduct a wetlands and
24 riparian habitat survey.

25 Any comments on this specific resource area?

1 For threatened and endangered species there are
2 three that have been identified. So, we'll look at the
3 effects of continued project operation and maintenance on
4 the federally listed Indiana Bat, the first picture; on the
5 Northern Long-eared bat, the middle picture, and the Roanoke
6 Logperch, which is the third one. And specifically the
7 Roanoke Logperch could be a cumulatively affected species.

8 Any questions or thoughts on threatened and
9 endangered species at the project?

10 For recreation resources we have two bullets.
11 We'll look at the effects of continued project operation and
12 maintenance on recreation, land use, and aesthetics within
13 the project area including the project impoundment, the
14 tailrace, and the bypass reach as well as the adequacy of
15 existing recreation facilities and public access to the
16 project to meet current and future recreational demands.
17 And Appalachian has proposed a recreation needs assessment
18 to be conducted during the study season.

19 Any comments or questions regarding recreation,
20 land use, or aesthetics?

21 MS. BELCHER: So, Liz Belcher, of the Greenway
22 Coordinator and, you know, if the greenway and the
23 recreation on the greenway were not allowed there could be,
24 really, a region-wide impact so it would be comparable to
25 the recreation impact if that connection were not made.

1 MS. CONNER: All right. Can you give us a little
2 bit of a description of the connector trail and what it
3 would connect?

4 MS. BELCHER: The Roanoke River Greenway section
5 in the City of Roanoke comes to the wastewater treatment
6 plant, it comes down the hill to the river there. And the
7 greenway is designed from there as a ten foot, paved, shared
8 use trail -- bicycles and pedestrians, and runners -- which
9 basically is following along below the slopes, so relatively
10 close to the river. We've already had wetlands and -- that
11 environmental stuff done for the project. When it gets down
12 to the dam area, it curves around the foot of the hill,
13 crosses from Highland upstream where the road crosses the
14 creek, and then goes up the hill towards Highland Road.

15 MS. CONNER: So, it's connecting to currently
16 existing greenway?

17 MS. BELCHER: It's connecting to currently
18 existing at the wastewater treatment. It's, there's funded
19 sections on Highland Road and from the Parkway towards its
20 fore-part, which are also in design phases so it's
21 connecting to things that are already funded.

22 MS. CONNER: And is it on AEP, or Appalachian
23 ground?

24 MS. BELCHER: No, not completely. You know, we
25 do need some easements from some of the adjacent landowners,

1 and sometimes the boundaries between those landowners and
2 the AEP is out of the question. But the greenway does go
3 all the way through Roanoke, Salem, and has parts connecting
4 to West County are all under design and are all funded. So
5 ultimately it will be a 25 mile facility. So, a hole in the
6 middle could be a significant recreation -- to the region.

7 MS. CONNER: Thank you, very much.

8 Any other comments regarding recreation projects?

9

10 As far as cultural resources, we will look at the
11 effects of continued project operation and maintenance on
12 historic properties and archaeological resources that are
13 included and eligible for listing in or are potentially
14 eligible for inclusion in the National Register of Historic
15 Places; as well as the effects of continued project
16 operation and maintenance on any previously unidentified
17 historic or archaeological resources or traditional cultural
18 properties that may be eligible for inclusion in the
19 National Register of Historical Places.

20 So essentially known and unknown. Is a condensed
21 version of these two bullets. Any comments regarding
22 cultural resources?

23 And our last one is our developmental resources.
24 This would be covered by Talo Azar (ph), an engineer for the
25 project, not with us today; but he will be handling the

1 developmental side and looking at the effects of the project
2 and any recommended environmental measures on the economics
3 of the project. Any questions?

4 I won't be able to answer many on that.

5 All right. So, a couple things to remember.

6 There's still time to give oral comments. We'll have one
7 more slide on that, but then the next thing to remember
8 again is that May 25th date in order to file any comments to
9 the Commission. We do prefer the eFiling system, everything
10 electronic is easy, it's on the record, and if you
11 eSubscribe then you get a link specifically to that document
12 as it's filed -- I'll go over that in the next slide.

13 But in the scoping document on page 19 there are
14 instructions of how to eFile so you can understand that
15 process as well as in these handy-dandy brochures. We
16 definitely want you to know and understand how to eFile.
17 Feel free to ask me or any of my co-workers about eFiling,
18 eSubscription and all of that. So, here we go.

19 As far as being able to keep in the loop, so
20 there's FERC online brochure is the one that really spells
21 out and lays out all of the e-processes. We have eRegister,
22 eLibrary, eSubscribe, there's probably one or two more. But
23 this will allow you to really understand exactly what each
24 of those are. So, eSubscription is the one that will send
25 you an email notification with simply a link so it doesn't

1 have the attachment so it doesn't fill up your inbox as far
2 as mega, I almost said megawatts, megabits or, you know, all
3 that stuff. So, you just have a link. So, it's much
4 smaller, so you can subscribe specifically to this project
5 or any other project that is going through the licensing
6 process.

7 And then eLibrary is the mechanism for keeping
8 all of the public documents for the project archives.
9 Public records, you can search for many things from
10 previous relicensings. Some of them may still be on
11 microfilm, so a little bit harder to get but you can still
12 request copies of those, but it's a great starting point to
13 do searches and get information specific to this project so
14 that way you don't have to subscribe to anything. You can
15 just go to the website. The FERC.gov website and then you
16 would click on eLibrary, and you need the project number,
17 the P-2466-034.

18 And then the mailing list. Always a fun topic.
19 It's on page 24 of the scoping document and just to
20 understand this mailing list is our official mailing list
21 from FERC. There's a distribution list in the pre-
22 application document. And there are some differences
23 between the PAD, between the distribution list, and the
24 mailing list. And so we made it a separate, supplemental
25 mailing list to make sure that we were covering everyone.

1 So, if you do not find your name on this mailing list, it
2 means that you won't get hard copies. You could still
3 eSubscribe and get electronic copies, but if you really
4 would like to receive hard copies of any issuance, you need
5 to send an email to efiling@ferc.gov to request to be added
6 to the mailing list to the Niagara Project P-2466. And I
7 can also explain that a little bit later if you have more
8 questions.

9 So, is there a chance, any last final comments
10 that something came up as we were having a little bit of
11 discussion feel free to raise your hand, again, state your
12 name and your affiliations and let us know your comments.

13 MR. MCGURK: Brian McGurk with DEQ. I realize
14 that I guess I have a question about the terrestrial
15 resources issue because I'm not sure what the concern is
16 about wetlands, I guess, I'm just wondering, in other words,
17 if a project is not going to change operation, is there a
18 concern about wetlands specifically that is going on, or
19 not?

20 MS. SANGUNETT: Not necessarily. It's a resource
21 area that we typically look at, and if there's any
22 fluctuations in the reservoir, that's something that we
23 typically look at. We definitely need more information
24 about the location of any wetlands, and then we can go from
25 there to see if there's any specific project-related

1 impacts.

2 MR. MCGURK: All right. I just wondered if
3 there's something going on --

4 MS. SANGUNETT: Not any specific impact that
5 we're aware of. I wanted to point out too, sorry, this is
6 Brandi from FERC. That in Appendix A of the study plan
7 criteria, so if anybody wants to file study requests, it's
8 really important to follow the seven criteria on this page
9 and in Appendix A. You need to address each item in the list
10 for us to be able to evaluate the study requests. If
11 anything gets skipped then it might not get evaluated.

12 MS. BELCHER: Liz Belcher, the Greenway
13 Coordinator. Just looking at the mailing list and I see
14 things like the Blue Ridge Parkway is not on there. And I'm
15 wondering how, I mean, so the agency contacts you have are
16 not-- and I'm just wondering how we might help you with your
17 mailing list.

18 MS. CONNER: That would be great. So, writing an
19 email, pointing out inconsistencies; and if there are, we do
20 have direct contacts, emailing the eFiling at FERC.gov
21 address. Typically we prefer that the actual person submit
22 that email, but if they're no longer with the agency they
23 can't do that but --

24 MS. BELCHER: But if they don't what's happening
25 they can't, they're not

1 MS. CONNER: - Exactly. So, if you do have that
2 information, submit that through the eFiling, yes, eFiling
3 at ferc.gov. That would help us clean up the list, and it
4 goes to a separate entity, like, we don't actually have any
5 access to that mailing list as far as staff, hydropower
6 staff, and so we don't have the ability to make those
7 changes very easily although it seems very simple. It would
8 help us if an email is sent to efiling@ferc.gov to give us
9 correct information and make those changes. We would
10 really appreciate that. We don't want to be sending
11 documents to someone that doesn't want them or if they get
12 returned to us.

13 Any other questions or thoughts? All right.
14 There's nothing. Then we do have the morning scoping
15 meeting in this same room at 9 a.m., and the library opens
16 at 9 so don't come at 8:30 thinking you're going to get your
17 coffee and have a seat. Just FYI. So, we'll all come in at
18 9 and get started shortly thereafter.

19 Yes, Brian.

20 MR. MCGURK: One more question, Brian McGurk from
21 DEQ. You all know that for the 401 certification, you guys
22 all know to submit the PWP application; I was just wondering
23 when you are planning on doing that? I'm kind of new to the
24 ILP process, actually. I have my idea when you ought to do
25 it but I'm just wondering what you're thinking.

1 MS. KULPA: Sarah Kulpa, HDR. The deadline for
2 filing the PWP/401 application under the ILP is based on the
3 timing of FERC's Ready for Environmental Analysis. So, when
4 the license application is filed by the end of February
5 2022, there's a period of time where FERC is reviewing the
6 application, they may issue additional information requests,
7 and then once they have, once Appalachian has addressed any
8 requests from FERC, and FERC has deemed the application
9 complete, they'll issue the Ready for Environmental Analysis
10 and I believe the 401 is due within 60 days.

11 MS. CONNER: Just confirmation that it was filed.

12 MS. KULPA: Correct.

13 MS. CONNER: Yes. And they're not

14 MS. KULPA: Correct. And then that starts the
15 clock. The one year clock for the 401.

16 MS. CONNER: Right.

17 MR. MCGURK: But that, that's the deadline for
18 you to submit an application. You can submit it sooner,
19 correct?

20 MS. CONNER: There's no, yes, that's just the
21 latest, it can be done prior to that.

22 MR. MCGURK: I would encourage you to submit it
23 sooner. before the deadline. That way we can -- I'm not
24 saying now, because you want to go through the studies. But
25 sooner than that deadline. I think it will work better even

1 though we still have the one year deadline.

2 MR. MAGALSKI: Yes, this is Jon with AEP. Let's
3 revisit that in a couple of years. It's such a long process
4 and it's so far out, but that's a good point, and we can
5 revisit that and see where we are. If we have enough
6 information to file a 401 at that time.

7 MS. CONNER: If there's nothing else.

8 Otherwise, again, May 25th is the deadline to
9 file your written scoping comments. So, you have, it's
10 about a month. Today's the 24th so a month from tomorrow.
11 Be sure to have those in if you want them meet the deadline,
12 and then we'll head into the study planning part of the
13 process.

14 So, with that, we will, oh, let me show you one
15 last. My contact information. If you need my email address
16 or my direct phone number I'm happy to answer questions
17 anytime. Brian and I have chatted for, I don't know, a year
18 or two, and today is the first time we ever met actually,
19 so, I'm happy to chat with folks and answer any questions
20 and walk you through the process. There's a lot of steps
21 involved that can be time consuming. It can be frustrating
22 and there's just a lot to know, so please reach out and let
23 me know if you have any specific questions and I'll do my
24 best to get the answer if I don't have it.

25 All right. I hope you all have a great evening

1 and I'll see some or most of you all in the morning. Thank
2 you.

3 [Whereupon at 7:20 p.m., the verbal comment
4 session concluded.]

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1 CERTIFICATE OF OFFICIAL REPORTER

2

3 This is to certify that the attached proceeding
4 before the FEDERAL ENERGY REGULATORY COMMISSION in the
5 Matter of:

6 Name of Proceeding:

7 NIAGARA HYDROELECTRIC PROJECT

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16 Docket No.: P-2466-034

17 Place: Vinton, VA

18 Date: Wednesday, April 24, 2019

19 were held as herein appears, and that this is the original
20 transcript thereof for the file of the Federal Energy
21 Regulatory Commission, and is a full correct transcription
22 of the proceedings.

23

24 Dan Hawkins

25 Official Reporter

1 UNITED STATES OF AMERICA
2 FEDERAL ENERGY REGULATORY COMMISSION
3 OFFICE OF ENERGY PROJECTS

4 - - - - - x
5 Appalachian Power Company : Project No. P-2466-034
6 - - - - - x Virginia

7
8 NIAGARA HYDROELECTRIC PROJECT

9
10 Vinton Public Library
11 300 South Pollard Street
12 Vinton, Virginia 24179
13 Thursday, April 25, 2019

14
15 The public scoping meeting, pursuant to notice, convened
16 at 9:15 a.m.

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1 P R O C E E D I N G S

2 MS. CONNER: All right. Good morning, everybody.
3 Let's go ahead and get started, I think we've given time for
4 folks to come in, but there still may be a few more. But I
5 want to say welcome to the morning scoping morning for the
6 Niagara Hydroelectric Project No. 2466-034. My name is
7 Allyson Conner, I am with FERC, the Federal Energy
8 Regulatory Commission. And I also have two team members
9 with me so I'll let them introduce themselves.

10 MS. SANGUNETT: I'm Brandi Sangunett. I'm the
11 terrestrial resources for the project, also with FERC.

12 MS. BAUER: I'm Laurie Bauer, also with FERC, and
13 I'm working on aquatic resources and water quality.

14 MS. CONNER: And we have a fourth team member,
15 Woohee Choi is our engineer, and he is not with us today but
16 he is also part of our team. All right. I want to make
17 sure that everyone has signed in on the sign-in sheet and I
18 think we've gotten that taken care of.

19 We do have a court reporter here with us today so
20 we do ask that when you speak, before you speak, state your
21 name and your affiliation. What agency or group you are
22 with so that we can attribute your comments to you and so
23 that we have everything in line. And also there will be
24 transcripts that will become part of the public record in
25 about three-ish weeks, so you'll be able to find those on

1 eLibrary and you can read through that and also see everyone
2 else's comments as well as yours. On the back table we do
3 have copies of the scoping document. You're welcome to go
4 grab one if you don't currently have one. I'll refer to it
5 a couple times during the presentation. And there are also
6 two brochures that give some information on the FERC
7 process. Licensing process as well as your eGuide to our
8 website and navigating the different aspects, and being able
9 to get information on specifically on this project or any
10 other project you might be interested in.

11 As far as our agenda today, we'll give you an
12 introduction to FERC. Tell you a little bit about us. I'll
13 give an overview of the licensing process so you can kind of
14 understand what we're doing and where we're going. Then Jon
15 Magalski will give a project overview, so you understand a
16 little bit more about Niagara, talk a little about scoping
17 as well as the resource issues that we've identified that
18 need to be studied during, throughout the licensing process.
19 We'll go through how to submit comments and stay informed
20 throughout the full process. We'll go over some important
21 dates and then we'll have one more time for any final
22 comments or questions.

23 And as a note, when we go through the resource
24 issues, and we will go resource by resource, and after each
25 one I'll ask at that point if there are comments. So,

1 you'll have chances then as well as at the end if something
2 else comes up during discussion to provide comments. So, we
3 want to make sure that you have the opportunities today to
4 get comments and ask questions before we leave.

5 So, the Federal Energy Regulatory Commission, or
6 FERC as we're also called, is an independent federal agency.
7 We're responsible for regulating the interstate
8 transmission and sale of electricity and natural gas. The
9 interstate transportation of oil by pipeline. We review
10 proposals to build interstate natural gas pipelines, natural
11 gas storage projects, and liquefied natural gas terminals as
12 well as licensing non-federal hydropower projects, which is
13 our purpose here throughout this process for Niagara.

14 We are led by five commissioners who are
15 appointed by the president. We currently have four that are
16 serving and FERC is supported by 12 different offices and a
17 staff of about 1,500 employees. So, one of the smaller
18 federal agencies. So, our specific office that my team
19 comes from is in the Office of Energy Projects, which
20 includes three divisions. So, we are from the Division of
21 Hydropower Licensing so we are the ones responsible for
22 issuing licenses for hydropower projects. Then we have the
23 Division of Hydropower Administration and Compliance. They
24 handle it once a license is issued to make sure that an
25 applicant is following the regulations of the license. And

1 then we have our Division of Dam Safety and Inspections, and
2 they go out and make sure that the dams are also up to code
3 and are safe. As safe as can be. FERC's authority is
4 derived from the Federal Power Act which is deemed the
5 balancing act between the environment resources and the
6 developmental resources. And when we issue a license it
7 would be for a term of anywhere from 30 to 50 years. It
8 varies from project to project.

9 This is a visual for you guys just to kind of see
10 the dispersal of hydropower dams throughout the U.S. The
11 red dots are the FERC-regulated hydropower projects and
12 there are about 2,500 licensed or exempted projects
13 throughout the U.S.; and you can see they are typically
14 concentrated in mountainous areas, as the elevation makes
15 hydropower work. So, just to give you a little glimpse of
16 that.

17 The purpose for us to do scoping is to gather
18 information, understand what is going on at the project
19 throughout the whole relicensing process for each project
20 that we work on. This current license was issued in 1994
21 and it does expire Leap Day in 2024, February 29th. Scoping
22 is required by the National Environmental Policy Act which
23 you'll also hear us calling it NEPA, so anytime we say NEPA
24 it's the National Environmental Policy Act.

25 So, scoping, or licensing rather, starts with

1 scoping so that's where we're at today. We're at the
2 beginning of the process and it does end with a license
3 order. And contained within that license order are terms
4 and operations for, terms and conditions for operation and
5 environmental protection, mitigation, and enhancement
6 measures. So, it's the question: How do we get there? And
7 we do that by starting in the scoping process by gathering
8 information, conduct our environmental reviews. Yesterday
9 our site visit helped for all of us to have a visual
10 understanding of how the project is laid out, how it works,
11 to ask questions, and we also rely very much on input from
12 stakeholders. You guys live much closer to the project.
13 You know it, you understand it, you use it and so we want to
14 hear from you all about the project.

15 So the integrated licensing process is one of
16 three processes that FERC uses to license projects and so
17 that, the ILP, also a short term for Integrated Licensing
18 Process, Is founded on three principles. The first one
19 being the early identification and resolution of the
20 studies. And that will be what's going on. A few studies
21 have been identified. They were in the pre-application
22 document, and the next few months will be getting the
23 studies a little bit more solidified and then having a
24 determination of what studies will occur.

25 The second foundation principle, foundational

1 principle is integration of agency and tribal permitting
2 processes including NEPA; the applicant's pre-filing
3 consultation; and federal and state permitting needs which
4 would include a Section 401 water quality certificate from
5 the Clean Water Act or the Endangered Species Act --
6 permits or consultation, thank you. And then the third
7 foundation is the establishment of time frames to complete
8 the process steps. So, that is very unique to the ILP.
9 There are very clear, set dates for when FERC issues certain
10 documents and notices and when the applicant is required to
11 file things and when public comments are due.

12 So, here is an overview of the ILP process. So,
13 within the first year, the first couple of years, we are in
14 pre-filing which is a term that we use for the time before
15 the actual license application is filed. So, it began when
16 the Notice of Intent and Pre-Application Document were
17 filed, which was the end of January. And so we have moved
18 into the scoping meetings and public comment period. And
19 then after that, for the rest of 2019, will be the study
20 plan development. Once the study plan determination has
21 been issued by FERC, there will be a period of one or two
22 years that the applicants will be conducting the studies and
23 preparing their license application. So, that can be, pre-
24 filing can be two to three years long depending on the needs
25 of studies.

1 And then once Appalachian files their license
2 application we enter the post-filing stage, which can last
3 one-and-a-half to two years. So, after the license
4 application is filed with us our staff will review the
5 application. We may ask for additional information at that
6 time, we'll ask for the public comments. That's another
7 time for you all to engage in that process. Once we have
8 all the information that we need, we will write our
9 environmental assessment, we'll issue that and also ask for
10 public comments on the environmental assessment and then the
11 final action is a license order.

12 So the process plan, which is the detailed
13 schedule is in Appendix B of the scoping document. So, if
14 you want to see all of those dates very clearly spelled out
15 that is where you want to look. It has been updated a
16 little bit from the one in the PAD simply because the PAD--
17 or we issued the scoping document a few days earlier than
18 what was in the PAD date, so, just keep that in mind that
19 the process plan in the scoping document is the one that
20 we're following. And that can change depending on other
21 filings and whatnot, but use that one. All right.

22 As far as steps that have been taken and are
23 going to be taken for the rest of this year, January the NOI
24 and PAD were filed, FERC issued the scoping document on
25 March 26th. We're currently having our scoping meetings.

1 So, the next important date for everyone is May 25th, and
2 that is when public scoping comments are due to be filed
3 with FERC. So, you have about a month to get all of that
4 together and to file it and we'll talk about how you file
5 them at the end of the presentation. Yes?

6 PARTICIPANT: I'm trying to remember, does that
7 fall on a Saturday?

8 MS. CONNER: Tell us your name?

9 MR. McCORKLE: Rick McCorkle, U.S. Fish and
10 Wildlife Service.

11 MS. CONNER: Let me look real quick. It does?
12 Okay.

13 MR. McCORKLE: So that would really make it the
14 27th, correct?

15 MS. CONNER: Yes, it would be following Monday.

16 All right. So then after that the proposed study
17 plan will be filed by Appalachian in July, and if we need to
18 issue a Scoping Document 2, which might identify additional
19 resources, depending on comments we receive through scoping,
20 that would also be issued on July 9th. Following that there
21 would be a proposed study plan meeting, followed by an
22 October date to file your comments on the study plans. And
23 then a revised study plan in November. Again, comments on
24 the revised study plan; and then in December FERC would
25 issue the study plan determination which spells out which

1 studies are to be conducted and how they will be conducted.

2 The scoping is the identification of
3 environmental issues and concerns. We want to know what's
4 going on, what you've seen, what you've experienced. It
5 helps us to understand the potential effects of the project
6 on the aquatic, terrestrial, and the human environment. As
7 far as information that we need to analyze these potential
8 effects for NEPA, that would include existing information
9 and new information. It could be study reports. Survey
10 data. Resource reports. It could be news articles.
11 Investigations. Just, eye witness accounts. All of these
12 things are very helpful to understand this project. So, any
13 information that you have that is not known to us, that
14 would be great to be filed on the record and help us to
15 understand what is going on in this area at the Niagara
16 Project.

17 Scoping involves identifying and receiving input
18 on resources that may be cumulatively affected, which is
19 when you consider the effect of the project in conjunction
20 with other activities in the river basin. So, if you
21 imagine a stretch of river that maybe has multiple dams on
22 it, there could be an effect on a specific species at each
23 resource, on one resource, but at all five dams, when you
24 add them up altogether there is a cumulative effect on that
25 resource and we want to know and understand and make sure

1 that those are addressed if that has been identified.

2 And a few of our resource items have been
3 identified, so you will see that star in a couple of the
4 bullets in just a few slides later on. We want to
5 understand or know reasonable alternatives to the projects
6 and the applicant's proposed actions. Then we also want to
7 know about resources that maybe don't require the detailed
8 analysis. They just may not apply to this project. Those
9 would not be contained in the environmental assessment. It
10 would just be something that's not needed.

11 So, please keep these ideas, these thoughts and
12 topics in mind and let us know of information gaps that
13 exist. Things that we just currently don't know but that's
14 why we're here is to gather that information from you all.
15 And then again, as we go through each resource area you'll
16 have a chance to speak on those.

17 And now I'm going to give it over to Jon and
18 he'll give us the overview of the project.

19 MR. MAGALSKI: Thank you, Allyson. Good morning.
20 Thank you all for attending this scoping meeting. My name
21 is Jon Magalski, I work in AEP's Environmental Services
22 Group in Columbus, Ohio. And I am also co-managing the
23 relicensing on behalf of Appalachian Power Company. Here's
24 the high level agenda. I plan to discuss the project
25 facilities, including the civil works, the recreation

1 facility, a little bit on project operations and then
2 provide my contact information.

3 The licensee of the Niagara Project is
4 Appalachian Power Company which is a subsidiary company of
5 American Electric Power which is headquartered in Columbus,
6 Ohio. As Allyson mentioned, the current license expires on
7 February 29th, 2024. We filed the Notice of Intent and Pre-
8 application Document which initiates the relicensing
9 process on January 28th of 2019. We choose to use the
10 Integrated Licensing Process; as Allyson mentioned. it is a
11 very structured and schedule-driven process. And there's a
12 very detailed schedule in the Pre-Application Document with
13 all the major milestone dates. The FERC project number for
14 the Niagara Project is 2466-034, and it's important
15 whenever you make any filings that you include that in the
16 subject line.

17 A little about the project. It's located six
18 miles southeast of the City of Roanoke in Roanoke County.
19 The project is the upstream-most dam on the Roanoke River
20 located at river mile 355. The reservoir itself is
21 approximately two miles long and extends out just beyond
22 where Tinker Creek converges with the Roanoke River.

23 The Niagara Project was constructed in 1906 and
24 Appalachian Power took ownership in 1924. the authorized
25 installed capacity of the facility is 2.4 megawatts and it

1 operates in run-of-river mode. The primary features of the
2 project include a two-mile long, 62 acre reservoir with 425
3 acre-feet storage capacity. A 452 foot long, 52 foot high
4 concrete gravity dam. An 11 foot diameter, 500 foot long
5 corrugated metal pipe penstock which flows into the 42 foot
6 high concrete powerhouse that contains two vertical Francis
7 generating units. Each with the generating capacity of 1.2
8 megawatts. The project also includes a 1,500 foot bypass
9 reach. And some limited transmission facilities, those
10 being some generator leads and a step-up transformer;
11 there's no transmission line associated with the project.

12 Kind of an overview of the project facilities.
13 You can see the main dam, the intake, the auxiliary
14 spillway, and then the 500 foot penstock into the
15 powerhouse, in addition to the bypass reach. Regarding the
16 recreation facility, it's a canoe portage and the upstream
17 takeout is located just upstream of the boat barrier. Once
18 you take out at that point, the canoes and paddlers travel
19 approximately 1,600 feet downstream along the path and
20 roadway to the downstream input or put-in. And then from
21 there it's a short paddle to Smith Mountain Lake. It should
22 be noted that American Whitewater lists that stretch below
23 the project as Class 1 and 2 rapids under normal flow
24 conditions.

25 A little bit about project operations; as I'd

1 mentioned it operates in run-of-the-river mode, so whatever
2 comes into the project, leaves the project. There's no
3 storage, there's no peaking, there's no ability to retain
4 water back, and that water is passed through a combination
5 of means, either to the powerhouse for power generation and
6 over the spillway or through the sluice gate.

7 The current FERC license requires the project to
8 maintain a reservoir at or near elevation 884.4 feet, which
9 is .6 feet below the crest of the spillway. The project is
10 also required to release a minimum of 50 CFS or inflow,
11 whichever is less. And that's measured by the USGS gauge
12 200 feet downstream of the powerhouse. The project is also
13 required to provide a minimum flow of 8 CFS in the bypass
14 reach, and that's typically done through the sluice gate or
15 from the spillway itself just depending on overflow, or the
16 river flows at the time.

17 When the reservoir elevation reaches 886 feet,
18 water begins to spill over the auxiliary spillway which is
19 on the back side of the intake screens. And then when the
20 tailwater elevation below the powerhouse reaches 832 feet
21 the generating units can no longer generate. There's just
22 simply not enough head to generate power at that time. The
23 project is automated and can be operated from AEP's Columbus
24 Operation Center in Columbus, Ohio. That facility is
25 staffed 24/7, 365 days a year. They operate pretty much all

1 of AEP's hydro-generating units and monitor them from that
2 location. Although it's operated in Columbus, the units
3 themselves can only be started and stopped manually at the
4 facility itself.

5 MS. CONNER: I think they're on the next slide.

6 MR. MAGALSKI: Oh, I'm sorry.

7 MR. TANGER: I have a question since you paused
8 there. How often is a person at the dam site?

9 MS. CONNER: Can you state your name, please?

10 MR. TANGER: My name is Bill Tanger and I'm with
11 Friends of the River.

12 MR. MAGALSKI: I'm going to touch on that in one
13 minute. I just want to note, though, that the units can be
14 tripped. They can be brought offline from the Columbus
15 operation center in the event of an emergency or some other
16 reason to bring them off line. The facility itself is
17 staffed four days a week, typically Monday through
18 Thursday. That staff is also on call on a 24/7 basis, 365.
19 So, if the operation center has an alarm or there's a reason
20 to come out and start or stop the units, there's staff
21 available that will be called out to do that.

22 Here's my contact information. I'll note that we
23 created a website for the relicensing. AEPhydro.com - and
24 all of our filings will be posted to that website under the
25 Niagara Project. Right now the PAD and the NOI is posted,

1 the FERC scoping document. As we go through the process we
2 will post the study plans, the studies, the study results
3 onto that website. And whenever we make any distribution of
4 reports and things, you'll receive a notice, assuming you're
5 on our list of contacts. And then you will be directed to
6 that website unless you request the hard copy, which we can
7 provide.

8 Any questions regarding operations of the
9 facility? Yes?

10 MR. TANGER: Bill Tanger again, asking a
11 question. The question I asked is, how often is someone on
12 the site?

13 MR. MAGALSKI: On the site, somebody is there
14 four days a week. Monday through Thursday, typically.

15 MR. TANGER: Like during the day or something?

16 MR. MAGALSKI: During the day.

17 MR. TANGER: There's not somebody there all the
18 time?

19 MR. MAGALSKI: No. No the facility is not
20 staffed all the time. Usually, four days a week, Monday
21 through Thursday to do routine maintenance, inspection of
22 the facility, if there's other needs to go out to the
23 facility off hours, staff is available to go out there, and
24 they'll be notified and called.

25 IF there are no questions for me, I'll turn it

1 back over to Allyson. Thank you.

2 MS. CONNER: All right. So, we'll start - if
3 you want to go to page 13 on the scoping document, that's
4 where we'll be. I will go through the resource issues.
5 This is our preliminary list of resource issues to be
6 addressed in the EA. At this point we'll go through each
7 resource one-by-one, and that's when you all have an
8 opportunity to let us know of any additional issues or
9 concerns or some things that you disagree with; or something
10 maybe we haven't addressed that you would like to see added
11 in the Scoping Document 2.

12 So the resource groups that we have identified to
13 be included in the environmental assessment are geology and
14 soils, aquatic resources, terrestrial resources, threatened
15 and endangered species, recreation, land use and aesthetics,
16 cultural resources, and developmental resources.

17 So, for geology and soils we have identified that
18 the effects of continued project operation and maintenance
19 on shoreline stability of the impoundment should be looked
20 at. And of note is that Appalachian has proposed a
21 shoreline stability assessment to do this exact thing. So
22 does anyone have any specific comments on geology and soils
23 resources?

24 MR. TANGER: Bill Tanger, I just have a question.
25 Why is AEP looking at that study.

1 MR. MAGALSKI: Jon Magalski, AEP. Just to see if
2 the project is having any effect on erosion.

3 MR. TANGER: So, there's no particular problem
4 that you're looking at?

5 MR. MAGALSKI: That's what this study will
6 identify, if there is a problem.

7 MR. TANGER: Right, but there's no particular
8 problem at this time that you're aware of?

9 MR. MAGALSKI: That we're aware of, no.

10 MS. CONNER: All right. We'll move on to aquatic
11 resources. And you will notice two of these bullets do have
12 a star so they've been identified as having a cumulative
13 effect. So, we'll look at the effects of continued project
14 operation and maintenance on water quality including
15 dissolved oxygen and water temperature upstream and
16 downstream of the impoundment, including the bypassed reach.
17 We'll look at adequacy of the existing minimum flows for
18 protecting aquatic habitat for resident fishes including
19 species of special concern such as the Orange-fin Madtom, and
20 other aquatic resources downstream of the powerhouse and in
21 the bypassed reach. And then the effects of continued
22 project operation and maintenance on aquatic resources
23 including entrainment and impingement mortality of resident
24 fishes. And Appalachian has proposed two studies in the
25 aquatic resources. One is a water quality study and the

1 second is the bypassed reach aquatic habitat study.

2 Are there any particular questions or issues that
3 anyone would like to discuss on this topic? Yes?

4 MR. McCORKLE: Rick McCorkle, U.S. Fish and
5 Wildlife Service. We're also concerned about the Roanoke
6 Logperch, which is federally-listed endangered species. So,
7 that's another resource that should be considered; and we're
8 interested in maybe a more robust bypassed reach habitat
9 evaluation, instream flow kind of evaluation. We'll provide
10 details in our study requests. We're interested in a little
11 more than what's currently stated, than are proposed for
12 that.

13 MS. CONNER: Just to note, we will get to
14 threatened and endangered species, and we do have Roanoke
15 Logperch listed; so that has been identified, but thank you
16 for reminding us of that.

17 MR. McCORKLE: Sure.

18 MS. CONNER: Any others? We'll move on to our
19 next resource. All right. So, for terrestrial resources we
20 have identified that, we'll look at the effects of
21 continued project operation and maintenance on riparian,
22 wetlands, and upland habitat and associated wildlife such as
23 Bald Eagles. And Appalachian has proposed to conduct a
24 wetland and riparian habitat survey at the Niagara Project.
25 Any questions on this resource?

1 MR. TANGER: Bill Tanger again. My broad
2 question is, can we get a copy of this presentation?

3 MS. CONNER: The scoping presentation?

4 MR. TANGER: Yes, right.

5 MS. CONNER: Yes, we will file it in the eLibrary
6 and you'll have it that way and if you want to provide your
7 email address, I can email it to you.

8 MR. TANGER: If you could that would be
9 wonderful. Thank you.

10 MR. ABBE: This is John Abbe (ph). and we'll
11 post it to the website as well. Our website, aephydro.com.

12

13 MR. TANGER: Thank you.

14 MS. CONNER: For threatened and endangered
15 species we've identified the effects of continued project
16 operation and maintenance on the federally-listed Indiana
17 Bat. That first picture. And on the Northern Long-eared
18 Bat, which the middle picture. And the Roanoke Logperch,
19 these guys right here. And we have identified that they
20 could be cumulatively impacted also. Specifically the
21 Roanoke Logperch.

22 Anything -- yes?

23 MR. INGOMEYER: Paul Ingomeyer (ph) from Virginia
24 Tech. So, you mentioned these as potentially being
25 affected. Do you have some design on particular studies or

1 do you just recommend that there might be things study?

2 MS. SANGUNETT: Sure. At this point we've just
3 done a species search on IpAC to identify, or actually, the
4 applicant did, to identify what could be at the project.
5 And then the next step would be to identify any potential
6 habitat and then look to see if there's, it's really
7 possible that they're present and then gather any
8 information that's available currently. Like, especially
9 the Logperch, there's quite a few studies going on for that
10 right now.

11 MR. INGOMEYER: And, so who will do that scoping,
12 so to speak? That, the AEP folks are going to do that? Or
13

14 MS. CONNER: What do you mean?

15 MR. INGOMEYER: Well, you said, they're going to
16 look to see -

17 MS. CONNER: Well, that's part of the scoping
18 process so -

19 MR. INGOMEYER: But are you looking to folks
20 here, for example?

21 MS. CONNER: Yes.

22 MR. INGOMEYER: To submit that.

23 MS. CONNER: Yes.

24 MR. INGOMEYER: You're not going to do any
25 assimilation of what's known or not known --

1 MS. CONNER: There are no specific studies
2 proposed but it's very early in the process. We might need
3 --

4 MR. INGOMEYER: Right, but you won't do that
5 yourself.

6 MS. CONNER: No, we, the FERC doesn't do the
7 studies themselves. The applicant would either do it
8 themselves or hire a consultant to do those studies. But
9 if you are interested in having them do a specific study,
10 then you can submit a study request.

11 MR. INGOMEYER: Right. Yes. I know. So, I have
12 a couple questions, then. Just to throw this out as a
13 potential, more focused study for Logperch, I would be
14 concerned that the dam is impeding movement up and
15 downstream, and so there could be studies done to, one,
16 assess to what extent fish can get through the dam in either
17 direction, and then secondly, is there a way to -- if we
18 find, for example, it's a barrier, than there's other ways
19 to mitigate the current structure to enable fish to pass
20 either way. That's just a generic, sort of, topic.

21 MS. CONNER: All right.

22 MS. BAUER: This is Laurie Bauer at FERC. Can
23 you speak to the current knowledge of Roanoke Logperch
24 movement?

25 MR. INGOMEYER: Well, we know that some of them

1 move a lot. We've got recorded, documented movings of up to
2 a kilometer or so, which is really remarkable because
3 they're really hard to find again. And so we have very few
4 directed studies to identify movement patterns that fishes
5 like the Logperch -- most of them don't a lot but a few will
6 move long distances. And these are fairly large river fish.
7 I mean, the Roanoke River proper, for example, right where
8 Smith Mountain Lake is, is probably historically the center
9 of where they like; sort of a biggish river. And so they
10 tend to move more than smaller stream fish might.

11 So, we don't have a good sense for how much they
12 move or when they move or at what life stage they move. But
13 we do know, for example, that the larvae are spawned
14 primarily upstream and then they drift somewhere downstream,
15 and then at some point those animals have to move back
16 upstream because they're not all moving en masse towards the
17 ocean. So, there is movement, we just don't have a good
18 handle on when exactly that occurs.

19 MS. CONNER: Thank you. Yes?

20 MR. McCORKLE: I don't know if this is the
21 appropriate time to bring this up. Rick McCorkle, U.S. Fish
22 and Wildlife Service. But there is a Roanoke Logperch plan,
23 and I thought it had been filed as a comprehensive plan but
24 I did not see it in the list of comp plans in the PAD. I
25 will check on that. but if anyone knows if that was actually

1 filed and accepted as a comprehensive plan I'd like to see
2 that reflected.

3 MS. CONNER: We can definitely check on our list
4 of plans and if I don't see it, I can email you the
5 instructions on how to file the plan.

6 MR. McCORKLE: Thank you. We know how to do
7 that. We're interested in whether it was actually filed.

8 MS. CONNER: Okay. So, you just want to know if
9 it's on our list.

10 MR. McCORKLE: Yes.

11 MS. CONNER: All right. I can definitely check
12 on that. Probably, potentially before we leave today.

13 MR. INGOMEYER: Paul Ingomeyer (ph) again. I
14 have a number of questions about the study submission
15 process. Is this the time to ask it, or is later a better
16 time?

17 MS. CONNER: Now is great.

18 This is all preliminary to the study plan design.

19 MR. INGOMEYER: Could you walk me through the
20 time line for when these studies occur. For example, if
21 there's a study submitted, is there a particular start date
22 it has to occur and an end date has to end, and is there a
23 particular duration of that? Can it extend, for example,
24 into the post-filing stage? Where do these studies fall on
25 the greater time line that was shown several minutes ago?

1 MS. CONNER: So, the Commission will issue our
2 Study Plan Determination in December of 2019. So, the end
3 of this year. Ideally, the study will start in 2020, in the
4 spring time, and typically go through the fall; or if it
5 needs to be a full year, it can be a full year of studies;
6 just depends, you know, each resource has a different time
7 line depending on multiple factors and, or, if it happens to
8 be a very dry year or a very wet year that is when a second
9 year of studies can be conducted.

10 And the idea is to complete all studies before
11 the final license application. That's what informs their
12 application to us and that allows us to write the
13 environmental assessment. We don't want studies to continue
14 and go year after year after year after year. Post-
15 licensing studies are somewhat rare but if there is a
16 specific need or case for it it could potentially be
17 incorporated into a license order; but typically they're all
18 completed before the license application is filed.

19 MR. INGOMEYER: All right. So, it sounds like
20 the typical time line for a study is one year. Could it go,
21 could it be designed to go two years from the get-go?

22 MS. CONNER: It could be, but there needs to be
23 some extenuating reason for that duration. And it would
24 just be on a case-by-case basis. I don't have a specific
25 example to give you. But there is potential for that, yes.

1 We do have allotted two years for a study.

2 MR. INGOMEYER: Well, the reason we just want to
3 know is any given water year can be very different from the
4 next; and so if, for example, we're looking at fish
5 movement, a dry year and a wet year might be dramatically
6 different so it really to say something about it to have
7 some general flexibility, you're going to have some
8 variance in the years. There's no way to predict.

9 MS. CONNER: Right.

10 MR. INGOMEYER: Anytime what the next year is
11 going to be.

12 MS. CONNER: It may be the case that you do a one
13 year study and you determine that you don't really have
14 enough information about the species and so then,
15 occasionally we would have a license order that would allow
16 for adaptive management where regular surveys might be done.
17 It's all dependent on how cost prohibitive it is and, you
18 know, we don't want to place an undue burden on the
19 applicant. But there is definite potential for, like,
20 further surveys after a license order is issued, and we
21 definitely embrace adaptive management.

22 MR. INGOMEYER: I think that statistically
23 speaking, I can say already that one year is not going to be
24 sufficient, Because it can't.

25 MS. CONNER: Right.

1 MR. INGOMEYER: It just can't.

2 MS. CONNER: Right. But initially our goal is to
3 determine if the organism is present, if the habitat is
4 being affected. So, just the initial determination if
5 there is a relationship with the project and the species,
6 and we need to further evaluate.

7 PARTICIPANT: Another question, thank you, that
8 was very helpful. Another question. Is there any precedent
9 for interrupting normal dam operation to accommodate a
10 study?

11 MS. CONNER: Yes, definitely.

12 PARTICIPANT: Because you're interested in the
13 response of fish to different flow dynamics -

14 MS. CONNER: Absolutely. Yes. There might be a
15 flow study, exactly.

16 PARTICIPANT: Work with the people to manipulate
17 the flow.

18 MS. CONNER: Yes, that's very commonly done.
19 Yes.

20 PARTICIPANT: And if, I were, for example, to
21 submit a study for a broad idea, whatever it might be, would
22 that be something that I would work iteratively with the dam
23 operate to kind of -- what it eventually looks like, or do
24 you have to be -

25 MS. CONNER: Yes.

1 PARTICIPANT: - have the polished product right
2 at the get-go?

3 MS. CONNER: Well, as polished as you can get it
4 is great initially. And then we do have the processes where
5 you have the proposed study plan and then you have the
6 revised study plan, and there's comment periods in between.
7 So, yes it's an iterative process up to that point.

8 PARTICIPANT: I would never presume that I could
9 design the right study from the beginning, but having folks
10 iteratively comment and redesign a little bit, that can be
11 helpful.

12 MS. CONNER: And then even the general public can
13 comment on your study requests as well. Go ahead.

14 MR. ABBE: This is John Abbe (ph). I think we
15 need to have any studies nailed down come FERC's study plan
16 determination just so that we don't have this ongoing
17 discussion of what the study design is going to be. We'll
18 have to contract a study. Just keep that in mind. I think
19 once we get to the FERC study plan determination, I think we
20 need to have those details slimmed down.

21 PARTICIPANT: And that would be time?

22 MS. CONNER: December 28th is when it

23 MS. SANGUNETT: December 6th is when the --

24 MS. CONNER: Oh, December 6th.

25 MS. SANGUNETT: -- study plan determination will

1 be issued; but starting in July, so from July to December is
2 five months or so of back-and-forth of getting the studies
3 nailed down.

4 PARTICIPANT: We can have some discussion once we
5 see your proposed studies, proposed, whatever study we might
6 propose and then we can have some discussion with, kind of
7 work through those details.

8 MS. CONNER: Yes, so you can have a working
9 group, for example, if you want to work on it together in
10 more detail than, or to spend more time working on it than
11 what our process provides. If you want to have more
12 meetings or things like that. We're totally open to that.

13 I should also point out that in Appendix A is the
14 criteria that we require the proposed study to contain. So,
15 if you have an additional study requests you must address
16 each of the seven criteria for us to fully evaluate a study.

17

18 MR. ABBE: This is John Abbe (ph). I just wanted
19 to through it out there, too for Rick and Jon to start
20 thinking about is, assuming we were to do infield survey,
21 the consideration of a Section 10A1A permit for that. Our
22 experience has been in the past, in surveys we've done, we
23 pretty much had to stop. If we were to do surveys, we would
24 want to have that in place.

25 MR. MAGALSKI: Okay, thanks for reminding us.

1 MR. INGOMEYER: Paul Ingomeyer again. Another
2 question about process. So, if someone like me, for
3 example, proposed a study, and then that goes into the
4 proposed study list, at what point and by what process do
5 the people who actually conduct the study get input?

6 MS. CONNER: So, the -

7 MR. INGOMEYER: For example, I might not be the
8 one selected to do the work that I proposed, is that right?

9 MS. CONNER: Correct. That's up to the
10 applicant.

11 MR. INGOMEYER: So how that works.

12 MS. CONNER: So, once the final study plan
13 determination is issued then the applicant would go forth
14 and contract out, they would select whoever they want to do
15 the study. There's probably some restrictions on, they have
16 to be approved by the state or determined to have a
17 professional knowledge of a specific species, for example.
18 But

19 MR. INGOMEYER: But the proponent couldn't
20 recommend a particular person?

21 MS. CONNER: Yes, absolutely.

22 MR. INGOMEYER: Okay.

23 PARTICIPANT: A proponent can even conduct the
24 study. That's done, for example -- by Don Norton.

25 MS. CONNER: Yes. Any studies that you've done

1 and that you have results for, you can submit those as well.
2 We're looking for all available information.

3 Any questions?

4 All right, so our next resource is the recreation
5 resources. We have identified there could be effects of
6 continued project operation and maintenance on recreation
7 land use and aesthetics within the project area.
8 Particularly the project impoundment, tailrace, and the
9 bypass reach. We'll also assess the adequacy of existing
10 recreational facilities and public access to the project to
11 meet current and future recreational demands. As I note,
12 Appalachian has proposed a recreational needs assessment.

13 Do we have any comments or discussion that's on
14 this topic?

15 MS. McGEE: Yes, this is Amanda McGee with the
16 Roanoke Valley Allegheny Regional Commission. I had a
17 couple of comments. First, we did notice that some plans
18 were missing from the original PAD document. The Greenway
19 Commission, I'm sure Liz mentioned it last night, has
20 recently adopted the Roanoke Valley Greenway Plan which has
21 alignments that would come through the project boundary.
22 That was adopted in 2018. I think the last reference plan
23 was the 2007 plan in the document.

24 Additionally, I had a question about what exactly
25 is included in the current proposed recreational needs

1 assessment?

2 MS. CONNER: Do you guys have an idea yet of what
3 you're going to focus on for the recreational needs
4 assessment?

5 MR. MAGALSKI: I think we'll develop that based
6 on comments and feedback we get from scoping.

7 MS. McGEE: All right.

8 MR. MAGALSKI: So, we welcome your comments
9 about recreation. I mean, just initially, off the top of my
10 head, as far the portage, we're thinking maybe a survey box
11 that people can fill out when they use the portage.

12 MS. McGEE: All right.

13 MR. MAGALSKI: To kind of get comments about use,
14 and then maybe some work groups to sit down with the people
15 that use it. There's obviously a lot of people that use the
16 river that are interested in it from a recreational
17 perspective, to kind of interview them to get at the
18 recreational needs part of it.

19 MS. CONNER: Do you have a specific thing you are
20 looking for?

21 MS. McGEE: I think trying to capture more
22 specifically that portage, you would definitely be helpful
23 in figuring out, you know, how that is managed going
24 forward and everything. And it sounds like there's an
25 awareness of that need. We have, I have also had

1 conversations with some members of the community who are
2 interested in a whitewater release study, so I wanted to
3 throw it out there as an idea.

4 MR. TANGER: Bill Tanger. Friends of the River.
5 So would it be possible also for an organization like ours
6 or a contractor that we might hire to do a study on
7 recreation?

8 MS. CONNER: Would it be possible for you -

9 MR. TANGER: To do a study.

10 MS. CONNER: To do, like, your own study?

11 MR. TANGER: Yes.

12 MS. CONNER: It's, I mean, as long as you have,
13 you know, access rights. You know, as long they allow you
14 on their land you can, sure. You can perform a study that,
15 you conduct it, you need, you know, whatever. Yes, I mean,
16 you're welcome to do that and then you can file those
17 results with us, you know, if that's, you're looking for
18 information specific.

19 MR. TANGER: Right. We have a number of concerns
20 and -- of course the portage is one, a major one. There was
21 a discussion yesterday about how many people use the pond,
22 that section of the river; it's debatable, for sure, but
23 very few, and the reason for that is because it's a pond.
24 You got a dam at the end and that portage is a pretty
25 difficult portage for many boaters.

1 So, that's one factor, the other is we'd like to
2 see if there's any possibility of creating an access down to
3 the pond, just above the dam. For example, down from
4 Highland Road, possibly; and I know there are issues in
5 there, wetlands, and so forth, but that would make, I think,
6 an excellent option for recreational use of that section..

7 So we'd like you to look at that, AEP, can do
8 that, research as well, provide some maps. Comments on that
9 subject, we want to look into that. And as Amanda has said,
10 also wants to look at recreational water releases for events
11 from Niagara. That's it for the moment.

12 MS. CONNER: All right.

13 MR. WEIR: David Weir (ph), speaking on behalf of
14 Roanoke County. We definitely have a vested interest in the
15 project primarily because Explore Park is an 1100 acre park
16 downstream from Niagara Project, and the County entered into
17 a 99 year lease for the Virginia Recreational Facilities
18 Authority to operate the park, and we've developed a plan,
19 that consists of a 20 year vision for the facility,
20 strategic business plan, airport, and a natural places
21 inventory. Central to the Explore Park project is use of
22 the river below Niagara Dam, and also the preservation of
23 the natural beauty. So, obviously Roanoke County wants
24 to be assured there's not going to be any negative impact on
25 Explore Park's current operations or its future development.

1 Roanoke County also has invested interest in the Greenway
2 Project Amanda referenced. That's Greenway Project number
3 91191, East Roanoke River Greenway that is adjacent to the
4 reservoir above the dam.

5 Roanoke County is also interested in an access
6 point upstream of the dam. A canoe exit point close to the
7 greenway, all connecting down to Explore Park. And lastly,
8 we would also like to have AEP evaluate the possibility for
9 controlled water releases for recreational uses and also a
10 potential riverside park that is part of the adventure plan,
11 future development for Explore Park.

12 MS. CONNER: Thank you.

13 MR. WEIR: One other thing I'll add in there.
14 I'd like to acknowledge AEP as being a good partner for
15 several other projects in conjunction with recreation at
16 Explore Park. They've helped us at the access point at the
17 confluence of Back Creek and Roanoke River. They also did
18 the portage around the dam. So, we acknowledge them as a
19 good community partner.

20 MS. CONNER: Thank you. All right. We'll move
21 on to our next resource, which is cultural resources. We'll
22 evaluate the effects of project operation and maintenance on
23 historic properties and archaeological resources that are
24 included in and eligible for listing in or potentially
25 eligible for included in the National Register of Historic

1 Places. And the effects of project operation and
2 maintenance on any previously unidentified historic or
3 archaeological resources or traditional cultural properties
4 that may be eligible for inclusion in the National Register
5 of Historic Places. So, items that might be known as well
6 as items that might be currently unknown or unidentified.

7 Any comments regarding cultural resources?

8 All right. The final resource area is
9 developmental resources. We'll look at the effects of the
10 project and any recommended environmental measures on the
11 project's economics. Any questions on that?

12 MR. TANGER: If there are no questions, I forgot
13 one thing. Bill Tanger, ORBA. They're also interested in
14 access to the bypass reach, and there's currently an
15 unofficial trail, comes down from the Parkway, it goes down
16 to the bypass reach, and boaters put in there and just do
17 that section above the current official access point, which
18 is the steps that come down to the river. So it would be a
19 point to look at that access as well.

20 MS. CONNER: Access for boating or fishing or
21 both?

22 MR. TANGER: Both. Both. Both. Yes. It's
23 heavily used.

24 MS. CONNER: All right. So, again, we have
25 another chance if a couple more items that come to mind to

1 give comments in just a moment. But I want to let you know
2 about filing comments with us. The deadline for that is May
3 25th, so you can mark that on your calendars and be aware of
4 that. On page 19 of the scoping document, we'll give you
5 instructions for eFiling your comments, and we do prefer
6 eFiling. Doing everything electronically will reduce paper
7 waste. Things to keep in mind. And Your Guide to
8 Electronic Information at FERC, this little brochure also
9 spells everything out. How to use all of the E parts of the
10 system.

11 MR. INGOMEYER: Paul Ingomeyer again. So, just
12 to clarify, following up on Rick's observation that the 25th
13 is a Saturday, that means that really you will accept eFiles
14 up until the end of the day of the 27th?

15 MS. CONNER: Yes. They can be filed on Friday as
16 well.

17 MR. INGOMEYER: Right.

18 MS. CONNER: But Monday would work.

19 MR. MAGALSKI: Until 4:30.

20 MS. KULPA: Sarah Kulpa, HDR, just for
21 clarification that Monday the 27th is the Memorial Day
22 holiday. So, the deadline actually the close of business on
23 Tuesday?

24 MS. CONNER: Yes. It is.

25 (Laughter)

1 MS. CONNER: Yes. We always will give the
2 weekend. If a deadline falls on Saturday it always falls to
3 the next business day, which would be Tuesday.

4 MR. INGOMEYER: Paul Ingomeyer again. So, you
5 mentioned that the criteria are on the Appendix that the
6 studies had to follow. Is there any particular format or
7 template that these need to be in, a page limit and things
8 like that?

9 MS. CONNER: No page limit. This, I mean,
10 identifying the first criteria just fill in as much
11 information as you can. On the second criteria the same
12 thing. Some may apply, some may not. But just in a written
13 report format; there's nothing besides those criteria that
14 it needs to look like. Make sure you identify what the
15 criteria is and then identify it and you'll be good. Yes?

16 MR. McCORKLE: I was just going to say, yes, I
17 was wondering if you were even going to get to that because
18 -- this is Rick McCorkle, US Fish and Wildlife Service, I
19 understand that's very important that those seven criteria
20 be addressed.

21 MS. CONNER: Yes.

22 MR. McCORKLE: For a study request to be
23 accepted.

24 MS. CONNER: Exactly, right. If they're not
25 addressed, if they're not included, then it could be not

1 accepted as a formal study. It may eventually be adopted
2 by Appalachian, but as far as our evaluation of it, those
3 seven criteria are important to be addressed.

4 PARTICIPANT: And is this the time to bring up
5 other studies that we didn't see you propose that we're
6 interested in?

7 MS. CONNER: Absolutely.

8 PARTICIPANT: There were a few things that we
9 were interested in that we didn't see proposed. We support,
10 you know, the water quality survey and the shoreline erosion
11 stability study, and as I mentioned we're interested in the
12 bypass reach study and maybe some tweaks to that, and
13 possibly participating in that depending on what kind of
14 study that is. We would also like to see a mussel survey
15 and we will, in our study request for that, provide the
16 protocol that we like to see followed for that. If there's
17 potential for some rare mussel species to occur, especially
18 downstream of the project, including at least a couple that
19 are currently under review for possible listing under the
20 Endangered Species Act.

21 And we're also interested, and we didn't see a
22 fish survey proposed so we would be interested in fishery
23 surveys and possible combined with a habitat survey; and I
24 do understand the response to Jon's request that there may
25 be a need for a 10A1A, Section 10A1A permit because of the

1 Roanoke Logperch. And we're also -- also addresses somewhat
2 Paul's comments -- we're interested in an upstream,
3 downstream passage evaluation kind of study possibly
4 combined with an entrainment analysis.

5 And I think that's it unless John can think of
6 anything I've missed. So, that's just kind of a heads up of
7 what we will be providing written study requests for those
8 things.

9 MS. CONNER: Sounds good. Thank you.

10 MR. ABBE: This is John Abbe (ph). We were
11 thinking about that and access to the upstream and
12 downstream. Are there boat ramps or places to actually put
13 in a boat?

14 Just throwing it out there, access is pretty, as
15 far as I know, there's really no ramps -- and with the
16 rapids downstream of Niagara, getting a boat in might be a
17 challenge. Any ideas there?

18 If we were to go down the route of surveys.

19 MR. TANGER: To answer that, this is Bill Tanger,
20 FORVA. I want to make sure everybody is aware of the Blue
21 Way and the Blue Way brochure, and in the brochure, the Blue
22 Way map which shows access points all along the Roanoke
23 River. All right. One of which is, the nearest one
24 upstream from the dam is Tinker. At the moment. We don't
25 have one closer to the dam.

1 At any rate, this will give you a starting point
2 for access, official access points. And then the unofficial
3 ones; I mentioned one below in the bypass reach is not an
4 official one; it's just heavily used.

5 MS. MCGEE: Sorry, this, I just wanted to add a
6 clarifying comment -- it's Amanda McGee from Regional
7 Commission -- the Tinker Creek access point is technically
8 within your project boundary, as delineated in the
9 application.

10 MR. MCCORKLE: Rick McCorkle, U.S. Fish and
11 Wildlife Service again. We were discussing this yesterday
12 and it may be more logical to do a different type of fish
13 survey that doesn't require a boat for this size of river.
14 It's not weightable, but we were discussing it yesterday
15 with our state colleagues. There's a type of survey that
16 was developed by someone out of Virginia Tech that involves
17 snorkeling, and you do a fish survey and habitat survey at
18 the same time. You know, within the downstream effects of
19 the project. And so, that, you know, that could be possibly
20 a way to do it without need to access a boat ramp to get a
21 boat in the river.

22 And a mussel survey would be the same thing;
23 snorkeling, so it might even be possible to combine all
24 three of those things.

25 MR. MAGALSKI: This is Jon with AEP. I'm just

1 throwing it out there that our policy doesn't allow, AEP
2 internal policy doesn't allow for snorkeling. We have very
3 strict dive requirements. If you put your head below the
4 water they're very strict dive requirements. I just wanted
5 to throw that out there; it's not as easy to contract
6 somebody to do more conventional surveys as far as land --
7 even scuba-type. It's got to be air supplied. It's very
8 stringent; just wanted to bring that up now for
9 consideration when you make requests about snorkeling.

10 MR. McCORKLE: So, even your subcontractors are
11 held to that requirement?

12 MR. MAGALSKI: Yes. We have very, very stringent
13 dive requirements.

14 MR. McCORKLE: Thank you.

15 MR. INGOMEYER: Paul Ingomeyer again. Does that
16 mean, Jon, that you have to be scuba certified or is it that
17 you can't even do it if you're scuba-certified.

18 MR. MAGALSKI: We pretty much require commercial
19 divers for all of our diving activity. You know, we even
20 require it if it's weightable, that they have to put their
21 head under the water, people have to meet those
22 requirements. Above and beyond certification; they could be
23 certified with scuba. The air has to be supplied from
24 another source, not scuba tanks. Back up divers,
25 communications, it gets very expensive very quickly. I just

1 wanted to mention that now, for consideration.

2 PARTICIPANT: And are there ways to supply the
3 oxygen other than a boat for this type of survey?

4 MR. MAGALSKI: You can do it from shore, yes.
5 But given the remoteness of these locations that might not
6 be -- doing it from the shore.

7 PARTICIPANT: And there are no exceptions to
8 that?

9 MR. MAGALSKI: No. No.

10 PARTICIPANT: Thank you.

11 MS. CONNER: One thing that is hopeful that has
12 happened in past relicensing is the working group, there was
13 an agreement about that, and so each resource, if there is
14 interest in different stakeholders coming together working
15 with AEP to really get those studies more detailed and
16 written out and understanding what would be looked at and
17 how that process would go, AEP would be the one to contact
18 about that and, sort of, get that stuff going. We could
19 help facilitate if necessary, but it's not something that we
20 would initiate. So, just know that Appalachian would take
21 that on if there's interest, get in touch with them. This
22 can be helpful.

23 MR. INGOMEYER: Paul Ingomeyer again. If I'm
24 looking at the criteria, 7 in the appendix, and it says:
25 Describe the considerations of level of effort and cost.

1 I'm not really clear on what that means. Does that mean you
2 have to give a truly precise - what do you mean by 'effort'
3 there?

4 MS. CONNER: Just do the best you can in
5 determining costs. It may not be known, but level of effort
6 is number of hours spent --

7 MR. INGOMEYER: Person hours?

8 MS. CONNER: Yes, exactly.

9 MR. INGOMEYER: And costs could just be an
10 estimate? You don't have to have a precise -

11 MS. CONNER: Yes. So, in order to stay in the
12 loop, then we'll go back to this brochure. This will give
13 you the instructions of how to eSubscribe so that's in
14 order for you to receive an email any time a document is
15 filed on the record you would receive an email with a link
16 as opposed to an attachment to click on and you will be able
17 to go specifically to that document; and you do need the
18 docket number the P-2466-034. When you are searching in our
19 eLibrary system which is our repository; that holds all the
20 documents that have been filed or that have been issued and
21 regarding this project or any other project you might be
22 interested in throughout the U.S. So, that's eLibrary.

23 And then the mailing list, which is always a fun
24 topic was included in this scoping document, and that is our
25 list of folks that have been involved in past procedures

1 and relicensing for this project specifically, and we
2 realize it may not be the most up-to-date so we do want to
3 get it as complete as possible; however, as staff, we don't
4 have access to that mailing list so we do ask that folks
5 email to efiling@ferc.gov If you don't find your name or
6 your agency in the mailing list in the scoping document,
7 that means that you won't get hard copies of documents that
8 are issued.

9 So, if you want to be added you can send an email
10 there and if you find that there's agencies or people on
11 there that are no longer working there or maybe the agency
12 doesn't exist anymore, you can also put that in the email
13 and hopefully it will get changed. We try our best. But
14 eLibrary is the best, eSubscription is the easiest. You
15 can get all the documents for the project. So the mailing
16 list is for the hard copies. Are there any specific
17 questions on that, or eLibrary or any of this?

18 MR. ABBE: This is Jon Abbe. I just want to add
19 to that that AEP has a list as well. I think everybody
20 that's here today is on it; so that list is in the pre-
21 application document and we use that for our distribution
22 list.

23 MS. CONNER: All right. Any last comments or
24 questions that you guys have, that I want to make sure you
25 get answered or at least on record.

1 MR. TANGER: This is Bill Tanger with FORVA
2 again. This is a footnote, the presentation here says this
3 was the last dam upstream on the Roanoke River which is, I
4 think, accurate; but there are other dams upstream on the
5 north and south forks of the Roanoke River. Just for the
6 record.

7 MS. CONNER: Well, if there is nothing else. One
8 last chance, here is my email and my direct phone number.
9 Feel free to give me a call any time you have process
10 questions. I'm happy to work through things with you. And
11 I can also get you in contact with each of our resource team
12 members.

13 So, the next thing, again, is May 25th, which
14 really is May 28th, to file your scoping comments. If you
15 can get your study requests in at that time -- you still
16 have time to get those in but that's coming up, July for the
17 proposed study plan to be so AEP is going to want all those
18 requests, if possible. But again, the working groups are a
19 possibility and being in touch with Jon and their staff in
20 getting all of those things ironed out is ideal.

21 So, anyway, if there are no more questions, then
22 we will adjourn for the day.

23 [Whereupon at 10:04 a.m., the scoping session
24 concluded.]

25

1 CERTIFICATE OF OFFICIAL REPORTER

2

3 This is to certify that the attached proceeding
4 before the FEDERAL ENERGY REGULATORY COMMISSION in the
5 Matter of:

6 Name of Proceeding:

7 NIAGARA HYDROELECTRIC PROJECT

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9

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16 Docket No.: P-2466-034

17 Place: Vinton, VA

18 Date: Thursday, April 25, 2019

19 were held as herein appears, and that this is the original
20 transcript thereof for the file of the Federal Energy
21 Regulatory Commission, and is a full correct transcription
22 of the proceedings.

23

24 Dan Hawkins

25 Official Reporter

FEDERAL ENERGY REGULATORY COMMISSION

Washington, DC 20426

July 9, 2019

OFFICE OF ENERGY PROJECTS

Project No. 2466-034 – Virginia
Niagara Hydroelectric Project
Appalachian Power Company

VIA FERC Service

Subject: Scoping Document 2 for the Niagara Hydroelectric Project, P-2466-034

To the Party Addressed:

The Federal Energy Regulatory Commission (Commission) is currently reviewing the Pre-Application Document submitted by Appalachian Power Company (Appalachian) for relicensing the Niagara Hydroelectric Project (FERC No. 2466) (Niagara Project). The project is located on the Roanoke River, in Roanoke County, Virginia. The project does not occupy federal land.

Under the Integrated Licensing Process, Appalachian must file its preliminary licensing proposal or draft license application by October 1, 2021. The final license application must be filed with the Commission by February 28, 2022, two years before the license expires.

Pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended, Commission staff intends to prepare an environmental assessment (EA), which will be used by the Commission to determine whether, and under what conditions, to issue a new license for the project. To support and assist our environmental review, we are beginning the public scoping process to ensure that all pertinent issues are identified and analyzed, and that the EA is thorough and balanced.

Our preliminary review of the scope of environmental issues associated with the proposed relicensing of the Niagara Project was described in Scoping Document 1 (SD1), issued March 26, 2019. We requested comments on SD1, conducted an environmental site review, and held scoping meetings on April 24 and 25, 2019, to hear the views of all interested agencies and entities on the scope of issues that should be addressed in the EA. Based on the meetings and the submission of written comments received throughout the scoping process, we have updated SD1 to reflect our current view of issues and alternatives to be considered in the EA. ***Key changes from SD1 to SD2 are identified in bold, italicized type.***

Project No. 2466-034

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SD2 is being distributed to the Commission's official mailing list (see section 9.0 of the attached SD2). If you wish to be added to, or removed from, the Commission's official mailing list, please send your request by email to ferconlinesupport@ferc.gov or by mail to: Secretary, Federal Energy Regulatory Commission, 888 First Street, N.E., Room 1A, Washington, DC, 20426. All written or emailed requests must specify your wish to be removed from or added to the mailing list and must clearly identify the following on the first page: **Niagara Hydroelectric Project No. 2466-034**.

You may also register online at <http://www.ferc.gov/docs-filing/esubscription.asp> to be notified via email of new filings and issuances related to this or other pending projects. For assistance, please contact FERC Online Support at ferconlinesupport@ferc.gov.

The enclosed SD2 supersedes SD1. SD2 is issued for informational use by all interested parties; no response is required. If you have any questions about SD2, the scoping process, or how Commission staff will develop the EA for this project, please contact Allyson Conner at allyson.conner@ferc.gov or (202) 502-6082. Additional information about the Commission's licensing process and the Niagara Project may be obtained from our website (www.ferc.gov) or Appalachian's licensing website, www.aephydro.com.

Enclosure: Scoping Document 2

SCOPING DOCUMENT 2
NIAGARA HYDROELECTRIC PROJECT
VIRGINIA
PROJECT NO. 2466-034



Federal Energy Regulatory Commission
Office of Energy Projects
Division of Hydropower Licensing
Washington, DC

JULY 2019

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SCOPING DOCUMENT 2

Niagara Hydroelectric Project, No. 2466-034

1.0 INTRODUCTION

The Federal Energy Regulatory Commission (Commission or FERC), under the authority of the Federal Power Act (FPA),¹ may issue licenses for terms ranging from 30 to 50 years for the construction, operation, and maintenance of non-federal hydroelectric projects. On January 28, 2019, Appalachian Power Company (Appalachian) filed a Pre-Application Document (PAD) and Notice of Intent to seek a new license for the Niagara Hydroelectric Project, FERC Project No. 2466 (Niagara Project or project).²

The Niagara Project is located on the Roanoke River in Roanoke County, Virginia. The average annual generation from 2010 to 2014 of the project was 8,853 megawatt-hours (MWh).

A detailed description of the project is provided in section 3.0. The location of the project is shown in figure 1. The Niagara Project does not occupy federal land.

The National Environmental Policy Act (NEPA) of 1969,³ the Commission's regulations, and other applicable laws require that we independently evaluate the environmental effects of relicensing the Niagara Project as proposed, and also consider reasonable alternatives to the licensee's proposed action. At this time, we intend to prepare an environmental assessment (EA) that describes and evaluates the probable effects, including an assessment of the site-specific and cumulative effects, if any, of the proposed action and alternatives. The EA preparation will be supported by a scoping process to ensure identification and analysis of all pertinent issues. Although our current intent is to prepare an EA, there is a possibility that an environmental impact statement (EIS) will be required. The scoping process will satisfy the NEPA scoping requirements, irrespective of whether the Commission issues an EA or an EIS.

¹ 16 U.S.C. § 791(a)-825(r) (2012).

² The current license for the Niagara Project was issued on March 25, 1994, and expires on February 29, 2024.

³ National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321-4370(f) (2012).



Figure 1. Location of the project. (Source: Appalachian).

2.0 SCOPING

Scoping Document 2 (SD2) is intended to advise all participants as to the proposed scope of the EA and to seek additional information pertinent to this analysis. This document contains: (1) a description of the scoping process and schedule for the development of the EA; (2) a description of the proposed action and alternatives; (3) a preliminary identification of environmental issues and proposed studies; (4) a request for comments and information; (5) a proposed EA outline; and (6) a preliminary list of comprehensive plans that are applicable to the project.

2.1 PURPOSES OF SCOPING

Scoping is the process used to identify issues, concerns, and opportunities for enhancement or mitigation associated with a proposed action. In general, scoping should be conducted during the early planning stages of a project. The purposes of the scoping process are as follows:

- invite participation of federal, state, and local resource agencies, Indian tribes, non-governmental organizations (NGOs), and the public to identify significant environmental and socioeconomic issues related to the proposed project;
- determine the resource issues, depth of analysis, and significance of issues to be addressed in the EA;
- identify how the project would or would not contribute to cumulative effects in the project area;
- identify reasonable alternatives to the proposed action that should be evaluated in the EA;
- solicit, from participants, available information on the resources at issue, including existing information and study needs; and
- determine the resource areas and potential issues that do not require detailed analysis during review of the project.

2.2 COMMENTS, SCOPING MEETINGS, AND ENVIRONMENTAL SITE REVIEW

Commission staff issued Scoping Document 1 (SD1) on March 26, 2019, to enable resource agencies, Indian tribes, non-governmental organizations (NGO's), and the public to more effectively participate in and contribute to the scoping process. In SD1, we requested clarification of the preliminary issues concerning the project and identification of any new issues that needed to be addressed in the EA. We revised SD1 following the scoping meetings, environmental site review, and review of written comments filed during the scoping comment period, which ended May 25, 2019. This SD2 presents our current view of issues and alternatives to be considered in the EA. To facilitate review, key changes from SD1 to SD2 are identified in bold and italicized type.

We conducted scoping meetings in Roanoke, Virginia on April 24 and 25, 2019, and an environmental site review was conducted on April 24, 2019, to identify potential resource issues associated with the Niagara Project. The scoping meetings and environmental site review were noticed in local newspapers and the Federal Register. A court reporter recorded and transcribed oral comments made during both scoping meetings.

In addition to oral comments received at the scoping meetings and written comments received from individuals, written comments were filed by the following entities:

<u>COMMENTING ENTITY</u>	<u>FILING DATE</u>
<i>Tri-County Lakes Administrative Commission</i>	<i>May 22, 2019</i>
<i>Federal Energy Regulatory Commission</i>	<i>May 22, 2019</i>
<i>U.S. Environmental Protection Agency</i>	<i>May 23, 2019</i>
<i>Roanoke Valley Greenway Commission</i>	<i>May 23, 2019</i>
<i>U.S. Department of the Interior, National Park Service</i>	<i>May 24, 2019</i>
<i>Virginia Department of Environmental Quality</i>	<i>May 24, 2019</i>
<i>Virginia Department of Game and Inland Fisheries</i>	<i>May 24, 2019</i>
<i>Town of Vinton</i>	<i>May 24, 2019</i>
<i>Dr. Paul Angermeier, Virginia Tech</i>	<i>May 24, 2019</i>
<i>U.S. Department of the Interior, Fish and Wildlife Service</i>	<i>May 28, 2019</i>
<i>Roanoke County</i>	<i>May 28, 2019</i>
<i>Roanoke River Blueway Committee</i>	<i>May 28, 2019</i>

All comments received are part of the Commission's official record for the project. Information in the official file is available for inspection and reproduction at

the Commission's Public Reference Room, located at 888 First Street, NE, Room 2A, Washington, D.C., 20426, or by calling (202) 502-8371. Information also may be accessed through the Commission's eLibrary system using the "Documents & Filings" link on the Commission's webpage at <http://www.ferc.gov>. Call (202) 502-6652 for assistance.

2.3 ISSUES RAISED DURING SCOPING

The issues raised by participants in the scoping process are summarized and addressed below. Note that the primary purpose of SD2 is to identify the issues to be analyzed in the EA. The summary does not include every oral and written comment made during the scoping process. We revised SD1 to address only those comments relating directly to the scope of environmental issues for the Niagara Project. Comments on the PAD and study requests are not discussed here, but will be considered during study plan development and the ensuing study plan meetings. Further, we do not address comments that are recommendations for license conditions, such as protection, mitigation, and enhancement (PM&E) measures, as these comments will be addressed in the EA or any license order that is issued for this project. We will request final terms, conditions, recommendations, and comments when we issue our Ready for Environmental Analysis (REA) notice. Finally, we do not address comments or recommendations that are administrative in nature, such as requests for changes to the mailing list. Those items will be addressed separately.

General Comments

Comment: U.S. Fish and Wildlife Service (FWS) requests additional information on the existing project facilities, specifically the bar-spacing on the trash racks, the intake velocity within one foot of the trash racks, and more details pertaining to the turbines (e.g., runner diameter, rated speed, number of blades).

Response: As stated in section 4.3.5 of the PAD, the steel trashracks have 3.625-inch bar spacing. Section 5.4.2.1 of the PAD indicates that forebay intake velocities were calculated as part of an entrainment study for the previous re-licensing and ranged from 0.9 to 1.2 feet per second (Appalachian Power Company 1991).⁴ Details on the vertical shaft Francis units can be found in section 4.3.9 of the PAD.

⁴ Appalachian Power Company. 1991. Application for License for Major Water Power Project 5 Megawatts or Less (Project no. 2466). Virginia.

Cumulative Effects

Comment: FWS requests that cumulatively affected resources include the Roanoke logperch (Percina rex).

Response: As indicated in section 4.2.4 of SD1, Roanoke logperch will be included in the cumulative effects analysis. Section 4.1.1 was modified to clarify that Roanoke logperch will be included as a resource that could be cumulatively affected.

Comment: In SD1, staff identified water quality and aquatic habitat as resources that could be cumulatively affected by the continued operation and maintenance of the Niagara Project in combination with other hydroelectric projects and activities in the Roanoke River. FWS requests that cumulatively affected resources include diadromous fish due to the presence of multiple, stacked hydropower projects on the Roanoke River that have collectively inhibited fish migration. FWS states that barriers to fish migration have affected the dispersal of mussels throughout the Roanoke River.

Response: FWS states that diadromous fishes such as American eel, river herring, and sturgeon may have historically migrated into the upper Roanoke River prior to dam construction, and points to efforts in the Roanoke River to restore passage for eels. Currently, upstream passage is provided via trap and transport of eels at Roanoke Rapids and Gaston hydroelectric project (FERC Project No. 2009), and FWS indicates that there are plans to provide passage at the John H. Kerr Dam, operated by the United States Army Corps of Engineers. There are no fish passage facilities at the remaining hydroelectric dams further upstream on the Roanoke River (Leesville and Smith Mountain [FERC Project No. 2210], and Niagara). There is indication that some diadromous species (e.g., American eels and American shad) have historically migrated into the headwaters of the Roanoke River (NMFS and FWS 2016).⁵ Accordingly, we have modified sections 4.1.1 and 4.2.2 to include diadromous fishes as resources that could be cumulatively affected by the continued operation of the Niagara Project in combination with other hydropower projects on the Roanoke River.

Comment: FWS requests that the geographic scope of the cumulative effects analysis on aquatic habitat and water quality be expanded downstream to the first hydropower project dam encountered on the river (Roanoke Rapids). FWS states that the nature of multiple stacked hydropower projects on the Roanoke River has caused

⁵ National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (FWS). 2016. Roanoke River Diadromous Fishes Restoration Plan. Raleigh, North Carolina. May 2016.

cumulative impacts on aquatic resources. The series of dams prevent upstream passage of American eel and other migratory fishes, and subjects them to entrainment and impingement during downstream migration. Restricted eel migration has led to diminished freshwater mussel populations and reduced water quality throughout the Roanoke River. Further, FWS states that with dam construction, large stretches of riverine habitat (including run and riffle habitats) have been converted to lacustrine conditions, eliminating habitat for the endangered Roanoke logperch. FWS believes the dams have contributed to the physical and genetic isolation of logperch populations.

Response: In SD1, staff identified the geographic scope for cumulative effects to include the Roanoke River from the confluence of the North and South Forks to the upper extent of Smith Mountain Lake. Based on information regarding diadromous fish restoration efforts in the Roanoke River (NMFS and FWS 2016), there is some indication that the geographic scope identified by the FWS may be reasonable for diadromous fishes. We acknowledge that the series of dams has altered aquatic habitat across a broad stretch of the Roanoke River. Accordingly, we have modified the geographic scope for the cumulative effects analysis of diadromous fish and aquatic habitat in section 4.1.2 to extend downstream to the Roanoke Rapids Dam.

The known range of the upper Roanoke River population of the Roanoke logperch extends from the Niagara Dam upstream into the North and South Forks (FWS 2007).⁶ Additional populations are located in the Pigg River and tributaries of the middle Roanoke River. Although the historical connectivity of these populations is not well understood, construction of hydroelectric projects has contributed to fragmentation of the species habitat (FWS 2007). Hence, we have modified the geographic scope of cumulative effects for the Roanoke logperch to extend downstream to the confluence of Big Otter Creek with the Roanoke River, which is the known downstream extent of the middle Roanoke River population.

As for expanding the geographic scope for water quality, FWS did not provide evidence to support how the continued operation and maintenance of the Niagara Project in combination with other projects in the basin would affect water quality beyond the scope identified in SD1. Therefore, the geographic scope for water quality will remain as identified in SD1, from the confluence of the North and South Forks of the Roanoke River to the upper extent of Smith Mountain Lake.

⁶ U.S. Fish and Wildlife Service (FWS). 2007. Roanoke logperch (*Percina rex*) 5-Year Review: Summary and Evaluation. Summer 2007. Available online at: <https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=E01G>. Accessed June 24, 2019.

Aquatic Resources

Comment: Several commenters express concern about the adequacy of the existing minimum flow requirement of 8 cubic feet per second (cfs) to support aquatic resources in the bypassed reach of the Roanoke River at the Niagara Dam.

Response: In section 4.2.2 of SD1, staff indicated that the EA would evaluate the effects of project operation, including the existing minimum flow requirement, on fish and aquatic habitat downstream of the project and in the bypassed reach. Therefore, no changes have been made to SD2.

Comment: FWS, Virginia Department of Game and Inland Fisheries (Virginia DGIF), and Virginia Department of Environmental Quality (Virginia DEQ) request that the EA account for project effects on freshwater mussels.

Response: We modified a bullet in section 4.2.2 of this document to indicate that the EA will consider the effects of project operation and maintenance on freshwater mussels.

Threatened and Endangered Species

Comment: FWS states that additional state and federally listed mussel species have the potential to occur in the project area, including Atlantic pigtoe (*Fusconaia masoni*, state threatened and proposed federally threatened), green floater (*Lasmigona subviridis*, state threatened) and James spinymussel (*Pleurobema collina*, federally and state endangered).

Response: In the PAD, the applicant provided a list of threatened or endangered species with the potential to occur in the project area, which included the Indiana bat, northern long-eared bat, and Roanoke logperch. Staff verified this species list using the FWS Environmental Conservation Online System (ECOS) Information for Planning and Consultation (IPaC) website. Although neither Atlantic pigtoe nor James spinymussel were included in the IPaC results for the project area, based on FWS's comments we have included the Atlantic pigtoe and James spinymussel in the bulleted list under section 4.2.4 of federally listed species that could be affected by project operation and maintenance. State-listed species, including freshwater mussels, will be considered in the Aquatic Resources section.

Recreation and Aesthetics

Comment: Several commenters describe the existing canoe portage trail as too long and too steep for re-entry into the tailrace. Multiple commenters also state that vehicular access to the portage is restricted by a keyed gate.

Response: In section 4.2.5 of SD1, staff indicated that the EA would address the adequacy of existing recreational facilities and public access to meet current and future recreational demand. Therefore, no changes have been made to SD2.

Comment: Several commenters describe the need for a debris management plan that would incorporate a trash collection system at the dam. The commenters state that trash passed through the project results in unsightly accumulations of trash below the Niagara Dam and further down river.

Response: In section 4.2.5 of SD1, staff indicated that the EA would address the effects of continued project operation on aesthetics in the project area. Therefore, no changes have been made to SD2.

Comprehensive Plans

Comment: The Roanoke Valley Greenway Commission and Roanoke County request that the Roanoke Valley/Blue Ridge Parkway Trail Plan Environmental Assessment and the Blue Ridge Parkway General Management Plan/Environmental Impact Statement be considered as comprehensive plans. Roanoke County also requests that the Blue Ridge Parkway Foundation Document Overview for Virginia/North Carolina and the Roanoke River Greenway Plan be considered as comprehensive plans.

Response: Entities must file any potential comprehensive plans in accordance with section 2.19 of the Commission's regulations, along with a cover letter indicating that the documents are to be considered as comprehensive plans under section 10(a)(2)(A) of the FPA, with the Commission. State and federal comprehensive plans can be e-filed at: <http://www.ferc.gov/docs-filing/efiling.asp>. Once registered and logged in, click efile, then select 'Hydro: Washington DC' in the first efile menu column, followed by 'Report/Form for Existing Project' in the second column. In the third column, select 'Report/Form' and then click the 'next' button. On the next screen, enter ZZ09-5 as the docket number and click search. Then, select ZZ09-5-000 (using the plus sign) as the appropriate docket for your filing and upload your document or documents.

Comment: FWS identified the Roanoke River Diadromous Fishes Restoration Plan as an existing Commission-approved comprehensive plan that should be considered during our environmental review. In addition, FWS stated that it will consider filing the Roanoke Logperch Recovery Plan for FERC's consideration as a comprehensive plan.

Response: We have added the Roanoke River Diadromous Fishes Restoration Plan to our list of plans that are relevant to the project and have modified section 8.0 accordingly. If FWS submits the Roanoke Logperch Recovery Plan to the Commission as a comprehensive plan pursuant to section 2.19 of the Commission's regulations and it receives approval as a comprehensive plan, in the EA we would consider the extent to which the Niagara Project is consistent with the plan.

3.0 PROPOSED ACTION AND ALTERNATIVES

In accordance with NEPA, the environmental analysis will consider the following alternatives, at a minimum: (1) the no-action alternative, (2) the applicant's proposed action, and (3) alternatives to the proposed action.

3.1 NO-ACTION ALTERNATIVE

Under the no-action alternative, the Niagara Project would continue to operate as required by the current project license (i.e., there would be no change to the existing environment). No new environmental protection, mitigation, or enhancement measures would be implemented. We use this alternative to establish baseline environmental conditions for comparison with other alternatives.

3.1.1 Existing Project Facilities

The Niagara Project consists of: (1) a 52-foot-high, 462-foot-long concrete dam, inclusive of the right non-overflow abutment (70 feet) and main spillway (392 feet); (2) a 62-acre impoundment with a gross storage capacity of 425 acre-feet at the normal pool elevation of 884.4 feet;⁷ (3) an 11-foot-diameter, 500-foot-long corrugated metal pipe penstock with associated entrance and discharge structures; (4) a 1,500-foot-long bypassed reach; (5) a 92-foot-long, 58-foot-wide, 42-foot-high concrete powerhouse containing two generating units with a total authorized installed capacity of 2.4 megawatts (MW); (6) a 103-foot-long auxiliary spillway with a crest elevation of 886 feet located downstream of the upstream intake; (7) transmission facilities consisting of 50-foot-long 2.4-kilovolt (kV) generator leads and a 3-phase, 2.4/12-kV, 2,500-kilovolt ampere (kVA) step-up transformer; and (8) appurtenant facilities.

3.1.2 Existing Project Operations

The Niagara Project operates in a run-of-river mode under all flow conditions, where inflow equals outflow. The project is operated to maintain the impoundment at or near elevation 884.4 feet, which is 0.6 feet below the crest of the spillway. During extreme flow conditions, such as rapidly changing inflows, Appalachian operates the project with a minimum impoundment elevation of 883.4 feet. Run-of-river operation may be temporarily modified by operating emergencies beyond the control of Appalachian and for short periods upon mutual agreement among Appalachian, U.S. Fish

⁷ All elevations herein are referenced to National Geodetic Vertical Datum of 1929 (NGVD 29).

and Wildlife Service (FWS), and the Virginia Department of Game and Inland Fisheries (Virginia DGIF).

During periods of high flow, all flows exceeding the maximum generation capacity of the powerhouse are passed over and through the main spillway. When the reservoir elevation reaches 886.0 feet, water begins to spill over the auxiliary spillway. When the tailwater elevation at the powerhouse reaches 832.0 feet, the generating units are shut down.

Appalachian releases a minimum flow of 50 cubic feet per second (cfs), or inflow to the impoundment, whichever is less, below the project. Appalachian provides a total minimum flow of 8 cfs into the bypassed reach through the sluice gate or over the spillway. Flows are measured at the U.S. Geological Survey (USGS) gage located approximately 200 feet downstream of the powerhouse (USGS 2056000 Roanoke River at Niagara, Virginia).

3.2 APPLICANT'S PROPOSAL

The proposed action is to continue the existing operation and maintenance of the Niagara Project.

3.2.1 Proposed Project Facilities and Operation

Appalachian is not proposing any changes to its project facilities or in project operation.

3.2.2 Proposed Environmental Measures

Appalachian proposes to continue the existing operation and maintenance of the Niagara Project which includes the protection, mitigation, and enhancement (PM&E) measures required by the current license and subsequent amendments. These measures are described below.

Geologic and Soil Resources

- There are no existing or proposed PM&E measures related to geology and soils for the Niagara Project. The potential need for PM&E measures will be evaluated during the relicensing process.

Aquatic Resources

- Continue operating the project in a run-of-river mode, maintaining the elevation of the impoundment at or near 884.4 feet (Article 401).
- Continue providing a minimum flow of 50 cfs, or inflow to the project, whichever is less, to the Roanoke River downstream of the powerhouse (Article 402).
- Continue providing a minimum flow of 8 cfs to the project's bypassed reach (Article 403).⁸

Terrestrial Resources

- Continue to follow a Commission-approved Wildlife Management Plan that includes monitoring habitat over the term of the existing license (Article 407).

Threatened and Endangered Species

- There are no existing or proposed PM&E measures related to terrestrial resources for the Niagara Project. The potential need for PM&E measures will be evaluated during the relicensing process.

Recreation and Land Use

- Continue to provide recreation access via a canoe portage trail (Article 411).

Aesthetic Resources

- There are no existing or proposed PM&E measures related to aesthetic resources for the Niagara Project. The potential need for PM&E measures will be evaluated during the relicensing process.

⁸ 93 FERC ¶ 62,049 (2000). Order Approving Modification to Flow Monitoring Plan.

Cultural Resources

- There are no existing or proposed PM&E measures related to cultural resources for the Niagara Project. The potential need for PM&E measures will be evaluated during the relicensing process.

3.3 DAM SAFETY

It is important to note that dam safety constraints may exist and should be taken into consideration in the development of proposals and alternatives considered in the pending proceeding. For example, proposed modifications to the dam structure, such as the installation of flashboards or fish passage facilities, could impact the integrity of the dam structure. As the proposal and alternatives are developed, the applicant must evaluate the effects and ensure that the project would meet the Commission's dam safety criteria found in Part 12 of the Commission's regulations and the Engineering Guidelines (<http://www.ferc.gov/industries/hydropower/safety/guidelines/eng-guide.asp>).

3.4 ALTERNATIVES TO THE PROPOSED ACTION

Commission staff will consider and assess all alternative recommendations for operational or facility modifications, as well as PM&E measures identified by the Commission, the agencies, Indian tribes, NGOs, and the public.

3.5 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

At present, we propose to eliminate the following alternatives from detailed study in the EA.

3.5.1 Federal Government Takeover

In accordance with § 16.14 of the Commission's regulations, a federal department or agency may file a recommendation that the United States exercise its right to take over a hydroelectric power project with a license that is subject to sections 14 and 15 of the FPA.⁹ We do not consider federal takeover to be a reasonable alternative. Federal takeover of the project would require congressional approval. While that fact alone would not preclude further consideration of this alternative, there is currently no evidence showing that federal takeover should be recommended to Congress. No party has

⁹ 16 U.S.C. §§ 791(a)-825(r).

suggested that federal takeover would be appropriate, and no federal agency has expressed interest in operating the project.

3.5.2 Non-power License

A non-power license is a temporary license the Commission would terminate whenever it determines that another governmental agency is authorized and willing to assume regulatory authority and supervision over the lands and facilities covered by the non-power license. At this time, no governmental agency has suggested a willingness or ability to take over the project. No party has sought a non-power license, and we have no basis for concluding that the Niagara Project should no longer be used to produce power. Thus, we do not consider a non-power license a reasonable alternative to relicensing the project.

3.5.3 Project Decommissioning

Decommissioning of the project could be accomplished with or without dam removal. Either alternative would require denying the relicense application and surrender or termination of the existing license with appropriate conditions. There would be significant costs involved with decommissioning the project and/or removing any project facilities. The project provides a viable, safe, and clean renewable source of power to the region. With decommissioning, the project would no longer be authorized to generate power.

No party has suggested project decommissioning would be appropriate in this case, and we have no basis for recommending it. Thus, we do not consider project decommissioning a reasonable alternative to relicensing the project with appropriate environmental measures.

4.0 SCOPE OF CUMULATIVE EFFECTS AND SITE-SPECIFIC RESOURCE ISSUES

4.1 CUMULATIVE EFFECTS

According to the Council on Environmental Quality's regulations for implementing NEPA (40 C.F.R. 1508.7), a cumulative effect is the effect on the environment that results from the incremental effect of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time, including hydropower and other land and water development activities.

4.1.1 Resources that could be Cumulatively Affected

Based on information in the PAD and *comments received during scoping* for the Niagara Project, and preliminary staff analysis, we have identified water quality (i.e., dissolved oxygen and water temperature), aquatic habitat, *and fisheries resources (i.e., diadromous fishes and Roanoke logperch)* as resources that could be cumulatively affected by the proposed continued operation and maintenance of the Niagara Project in combination with other hydroelectric projects and other activities in the Roanoke River Basin.

4.1.2 Geographic Scope

Our geographic scope of analysis for cumulatively affected resources is defined by the physical limits or boundaries of: (1) the proposed action's effect on the resources, and (2) contributing effects from other non-hydropower activities (municipal and industrial water withdrawals/discharges) within the upper Roanoke River. We have identified the geographic scope for water quality to include the Roanoke River from the confluence of the North and South Forks (near Lafayette, Virginia) to the upper extent of Smith Mountain Lake, the 20,260-acre impoundment for the Smith Mountain Pumped Storage Project FERC No. 2210. We chose this geographic scope because it appears to capture the main municipalities upstream of the Niagara Project impoundment, which may cumulatively affect water quality in the identified geographic reach. *For the Roanoke logperch, we have extended the geographic scope downstream to the confluence of Big Otter Creek with the Roanoke River. This scope encompasses the known downstream extent of the middle Roanoke River population of the Roanoke logperch. For aquatic habitat and diadromous fish, we have extended the geographic scope downstream to the Roanoke Rapids Dam, as multiple hydroelectric projects on the Roanoke River may contribute to cumulative effects on fish migration and riverine habitat.*

4.1.3 Temporal Scope

The temporal scope of our cumulative effects analysis in the EA will include a discussion of past, present, and reasonably foreseeable future actions and their effects on each resource that could be cumulatively affected. Based on the potential term of a new license, the temporal scope will look 30 to 50 years into the future, concentrating on the effect on the resources from reasonably foreseeable actions. The historical discussion will, by necessity be limited to the amount of available information for each resource. The quality and quantity of information, however, diminishes as we analyze resources further away in time from the present.

4.2 RESOURCE ISSUES

In this section, we present a preliminary list of environmental issues to be addressed in the EA. We identified these issues, which are listed by resource area, by reviewing the PAD and the Commission's record for the Niagara Project. This list is not intended to be exhaustive or final, but contains the issues raised to date. After the scoping process is complete, we will review the list and determine the appropriate level of analysis needed to address each issue in the EA. Those issues identified by an asterisk (*) will be analyzed for both cumulative and site-specific effects.

4.2.1 Geologic and Soils Resources

- Effects of continued project operation and maintenance on shoreline stability of the impoundment.

4.2.2 Aquatic Resources

- Effects of continued project operation and maintenance on water quality, including dissolved oxygen (DO) and water temperature, upstream and downstream of the impoundment, including the bypassed reach.*
- Adequacy of the existing minimum flows for protecting aquatic habitat for resident fishes, including species of special concern (orangeфин madtom), and other aquatic resources, *including freshwater mussels*, downstream of the powerhouse (50 cfs) and in the bypassed reach (8 cfs).*

- Effects of continued project operation and maintenance on aquatic resources, including entrainment and impingement mortality of resident fishes.
- *Effects of continued project operation and maintenance on the movement of diadromous fish species (e.g., American eel)**

4.2.3 Terrestrial Resources

- Effects of continued project operation and maintenance on riparian, wetland, and upland habitat and associated wildlife such as bald eagles.

4.2.4 Threatened and Endangered Species

- Effects of continued project operation and maintenance on the federally listed Indiana bat, northern long-eared bat, *Atlantic pigtoe*, *James spinymussel*, and Roanoke logperch.*,¹⁰

4.2.5 Recreation, Land Use, and Aesthetic Resources

- Effects of continued project operation and maintenance on recreation, land use, and aesthetics within the project area including the project impoundment, tailrace, and bypassed reach.
- Adequacy of existing recreational facilities and public access to the project to meet current and future recreational demand.

4.2.6 Cultural Resources

- Effects of project operation and maintenance on historic properties and archeological resources that are included in, eligible for listing in, or potentially eligible for inclusion in the National Register of Historic Places.
- Effects of project operation and maintenance on any previously unidentified historic or archeological resources or traditional cultural properties that may be eligible for inclusion in the National Register of Historical Places.

¹⁰ Cumulative effects analysis applies only to Roanoke logperch.

4.2.7 Developmental Resources

- Economics of the project and the effects of any recommended environmental measures on the project's economics.

5.0 PROPOSED STUDIES

Depending upon the findings of studies completed by Appalachian and the recommendations of the consulted entities, Appalachian will consider, and may propose certain other measures to enhance environmental resources affected by the project as part of the proposed action. Appalachian's initial study proposals are identified by resource area in table 1. Detailed information on Appalachian's initial study proposals can be found in the PAD. Further studies may need to be added to this list based on comments provided to the Commission and Appalachian from interested participants, including Indian tribes.

Table 1. Appalachian's initial study proposals. (Source: Appalachian)

Resource Area and Study Name	Proposed Study
Geology and Soils	
Shoreline Stability Assessment	To provide updated information about existing project conditions, as well as to evaluate the need for any additional erosion control measures at specific areas of concern, Appalachian proposes to conduct a Shoreline Stability Assessment for the project. Appalachian anticipates that this assessment will consist of a survey of the project impoundment to locate any sites of erosion or shoreline instability. Appalachian proposes to inventory, map, and photograph any such areas, using a scoring or ranking system (e.g., Bank Erosion Hazard Index) to try to identify areas that have the potential to erode at unnaturally high rates and to prioritize any areas where remedial action may be needed.
Aquatic Resources	
Water Quality Study	Appalachian proposes to conduct a seasonal temperature and DO study at the project to confirm compliance with water quality standards and designated uses.

Resource Area and Study Name	Proposed Study
	Locations of monitoring equipment will be established through further consultation with Virginia Department of Environmental Quality and other stakeholders. The scope of the study would be limited to the FERC-approved project boundary.
Bypass Reach Aquatic Habitat Study	Appalachian proposes to perform a desktop aquatic habitat assessment of the bypassed reach to determine the amount of available habitat under the 8-cfs minimum flow. Appalachian states that this study may include a review of all work performed to date, and determination of appropriate methodologies used in conjunction with fisheries surveys conducted to update the species composition.
Terrestrial Resources	
Wetland and Riparian Habitat Survey	Appalachian proposes to conduct a wetland and riparian habitat assessment that will consist of field surveys to confirm, classify, and characterize wetland habitats and communities within the project boundary. Wetlands will be mapped and classified using the FWS's wetland classification system, unless otherwise recommended by resource agencies. During the wetland survey, investigators will identify the dominant plants present within a wetland habitat to the species level. During the field habitat surveys, investigators will examine the soil matrix down to approximately 18 inches if possible, and analyze soil

Resource Area and Study Name	Proposed Study
	characteristics in the field for hydric soil indicators. Principal wetland functions and values will also be determined. This study will also include characterization of riparian habitat resources within the project boundary.
Recreation Resources	
Recreational Needs Assessment	Appalachian proposes to conduct a recreational assessment of the project to assess existing recreational opportunities and potential improvements to facilities. Appalachian will incorporate existing monitoring information into the study report and recommendations and the scope will be limited to within the FERC-approved project boundary.

6.0 EA PREPARATION SCHEDULE

At this time, we anticipate the need to prepare a single EA. The EA will be sent to all persons and entities on the Commission’s service and mailing lists for the Niagara Project. The EA will include our recommendations for operating procedures, as well as PM&E measures that should be part of any license issued by the Commission. All recipients will then have 30 days to review the EA and file written comments with the Commission. All comments on the EA filed with the Commission will be considered in preparation of the license order. A schedule for the EA preparation will be provided after a license application is filed.

The major milestones, with pre-filing target dates are as follows:

<u>Major Milestone</u>	<u>Target Date</u>
Scoping Meetings	April 2019
License Application Filed	February 2022
Ready for Environmental Analysis Notice Issued	
Deadline for Filing Comments, Recommendations, and Agency Terms and Conditions/Prescriptions	
Single EA Issued	
Comments on EA Due	
Deadline for Filing Modified Agency Recommendations	
Order Issued	

A copy of Appalachian’s process plan, which has a complete list of relicensing milestones for the Niagara Project, including those for developing the license application, is attached as Appendix B to this SD1.

7.0 PROPOSED EA OUTLINE

The preliminary outline for the Niagara Project EA is as follows:

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8.0 COMPREHENSIVE PLANS

Section 10(a)(2) of the FPA, 16 U.S.C. section 803(a)(2)(A), requires the Commission to consider the extent to which a project is consistent with federal and state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by a project. Commission staff have preliminarily identified and reviewed the plans listed below that may be relevant to the Niagara Project. Agencies are requested to review this list and inform the Commission staff of any changes. If there are other comprehensive plans that should be considered for this list that are not on file with the Commission, or if there are more recent versions of the plans already listed, they can be filed for consideration with the Commission according to 18 CFR 2.19 of the Commission's regulations. Please follow the instructions for filing a plan at <http://www.ferc.gov/industries/hydropower/gen-info/licensing/complan.pdf>.

The following is a list of comprehensive plans currently on file with the Commission that may be relevant to the Niagara Project.

National Marine Fisheries Service and U.S. Fish and Wildlife Service. 2016. Roanoke River Diadromous Fishes Restoration Plan. Raleigh, North Carolina. May 2016.

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

U.S. Fish and Wildlife Service. Canadian Wildlife Service. 1986. North American waterfowl management plan. Department of the Interior. Environment Canada. May 1986.

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

Virginia Department of Conservation and Recreation. The 2007 Virginia outdoors plan (SCORP). Richmond, Virginia.

Virginia Department of Environmental Quality. 2015. Commonwealth of Virginia State Water Resources Plan. Richmond, Virginia. October 2015.

Virginia State Water Control Board. 1986. Minimum instream flow study – final report. Annandale, Virginia. February 1986.

9.0 MAILING LIST

The list below is the Commission's official mailing list for the Niagara Project (FERC No. 2466). If you want to receive future mailings for the Niagara Project and are not included in the list below, please send your request by email to efiling@ferc.gov or by mail to: Secretary, Federal Energy Regulatory Commission, 888 First Street, N.E., Room 1A, Washington, DC 20426. All written and emailed requests to be added to the mailing list must clearly identify the following on the first page: Niagara Project No. 2466-034. You may use the same method if requesting removal from the mailing list below.

Register online at <http://www.ferc.gov/esubscribenow.htm> to be notified via email of new filings and issuances related to this or other pending projects. For assistance, please contact FERC Online Support at FERCOnlineSupport@ferc.gov or toll free at 1-866-208-3676, or for TTY, (202) 502-8659.

Official Mailing List for the Niagara Project

Kenneth E. McDonough, ESQ
Assistant General Counsel
1 Riverside Plaza
Columbus, OH 43081

Frank Michael Simms
Hydro Support Manager
40 Franklin Road
Roanoke, VA 24013

John T. Eddins
Advisory Council on Historic Preservation
401 F Street N.W.
Suite 308
Washington, DC 20001-2637

William E. Trout, III
Director
American Canal Society, Inc.
3806 S. Amherst Hwy
Madison Heights, VA 24572

David Mark Shirley
Energy Production Supervisor
American Electric Power Service
Corporation
1 Riverside Plaza
24rd Floor
Columbus, OH 43215

John Whittaker
Winston & Strawn LLP
1700 K St. N.W.
Washington, DC 20006-3817

Elizabeth Parcell
Process Supervisor Senior
40 Franklin Road
Roanoke, VA 24022

Douglas Rosenberger
Plant Manager Hydro
American Electric Power Service
Corporation
40 Franklin Road SW
Roanoke, VA 24011

Thomas St. Pierre
Associate General Counsel - Re
Appalachian Power Company
1 Riverside Plaza, 29th Floor
Columbus, OH 43215

Bedford County Administration
122 E Main St
Bedford, VA 24523-2000

Town of Boones Mill
PO Box 66
Boones Mill, VA 24065-0066

Botetourt County Board of Supervisors
1 W. Main St
Fincastle, VA 24090-3006

Charles V. Ware
Conservation Chair
Coastal Canoeists
PO Box 566
Richmond, VA 23218-0566

Mark Vanover
County Administrator
Dickenson County Board of Supervisors
PO Box 1098
Clintwood, VA 24228-1098

Regional Office
Federal Emergency Management Agency
3003 Chamblee Tucker Rd
Atlanta, GA 30341

David W. Sutherland, Sr.
Fish and Wildlife Biologist
Fish & Wildlife Service, Region 1
177 Admiral Cochrane Dr.
Annapolis, MD 21401

William Stokes
Executive Director
Flannagan Water Authority
52 Flannagan Dam Road
Haysi, VA 24256

Macon C. Sammons, Jr.
County Administrator
Franklin County Administration Offices
40 E. Court St
Rocky Mount, VA 24151-1740

Historic Landmarks Commission
2801 Kensington Ave
Richmond, VA 23221-2470

Shelia Phipps, Librarian
Jonnie B. Deel Memorial Library
PO Box 650
Clintwood, VA 24228-0650

Northern Virginia Regional Park Authority
5400 Ox Rd
Fairfax Station, VA 22039-1022

Amanda McGee
Regional Planner II
Roanoke River Blueway Committee
313 Luck Avenue SW
Roanoke, VA 24016

City of Roanoke
215 Church Ave SW
Roanoke, VA 24011-1517

County of Roanoke
PO Box 29800
Roanoke, VA 24018-0798

City of Salem
PO Box 869
Salem, VA 24153-0869

Donald Baker
Town of Clintwood
PO Box 456
Clintwood, VA 24228-0456

Town of Troutville
PO Box 276
Troutville, VA 24175-0276

U.S. Army Corps of Engineers
District Office
803 Front St.
Norfolk, VA 23510-1011

U.S. Army Corps of Engineers
Louisville District
PO Box 59
Louisville, KY 40201-0059

U.S. Army Corps of Engineers
Divisional Office
Regulatory Branch
550 Main St.
Room 10524
Cincinnati, OH 45202-3222

U.S. Army Corps of Engineers
550 Main Street
Cincinnati, OH 45202

Office of the Solicitor
U.S. Bureau of Indian Affairs
1849 C Street, NW, MS 6557
Washington, DC 20240

Director, Trust Services
U.S. Bureau of Indian Affairs
1849 C St NW, MS-4637
Washington, DC 20240-0001

FERC Contact
U.S. Bureau of Land Management
Land & Renewable Resources
1849 C St NW
Washington, DC 20240

Director, U.S. Department of Interior
1849 C Street, N.W., MS 2430
Office of Environmental Policy &
Compliance
Washington, DC 20240

Anthony R. Conte
U.S. Department of Interior
300 Westgate Center Dr.
Hadley, MA 01035-9587

Michael C. Connor, Esq.
Comm. U.S. Bureau Reclamation
U.S. Department of Interior
1849 C Street NW
Washington, DC 20240-0001

U.S. Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103-2029

Heinz Mueller
U.S. Environmental Protection Agency
Region IV
61 Forsyth Street SW
Atlanta, GA 30303-8931

U.S. Fish & Wildlife Service
Regional Director
300 Westgate Center Drive
Northeast Regional Office
Hadley, MA 01035-9587

Robert W. Goodlatte
U.S. House of Representatives
Washington, DC 20515

U.S. National Park Service
FERC Contact
1924 Building
100 Alabama Street SW
Atlanta, GA 30303-8701

Kevin Mendik, Esq.
NPS Hydro Program Coordinator
U.S. National Park Service
15 State Street
10th floor
Boston, MA 02109

Senator Mark Warner
U.S. Senate
475 Russell Senate Office Building
Washington, DC 20510

Honorable Tim Kaine
U.S. Senate
231 Russell Senate Office Building
Washington, DC 20510

Ron Bush
U.S. Forest Service
1700 Park Avenue SW
Norton, VA 24273-1618

David Purser
NEPA Coordinator
U.S. Forest Service
1720 Peachtree St. NW
Atlanta, GA 30309

Town of Vinton
P.O. Box 338
Vinton, VA 24179-0338

Virginia Department of Conservation and
Recreation
Division of Planning and Recreation
600 E. Main Street
24th Floor
Richmond, VA 23219

Robbie Rhur
Environmental Program Planner
Virginia Department of Conservation and
Recreation
600 East Main Street
Floor 17
Richmond, VA 23219-2094

Bettina Sullivan, Manager
Virginia Department of Environmental
Quality
PO Box 1105
Richmond, VA 23218

Virginia Department of Environmental
Quality
Director
PO Box 1105
Richmond, VA 23218-1105

Jeffrey Hurst
Regional Director
Virginia Department of Environmental
Quality
Southwest Regional Office
355-A Deadmore St
Abingdon, VA 24210

Virginia Department of Agriculture &
Commerce
PO Box 1163
Richmond, VA 23218-1163

Virginia Department of Health
Director
PO Box 2448
Richmond, VA 23218-2448

Virginia Department of Historic Resources
2801 Kensington Avenue
Richmond, VA 23221-2470

Virginia Department of Mines, Minerals,
and Energy
Director, Division of Energy
1100 Bank Street, 11th Floor
Richmond, VA 23219

Virginia Division of Mined Land
Reclamation
Randy Casey, Division Director
P.O. Box 900
Big Stone Gap, VA 24219-0900

Ben McGinnis
Virginia Marine Resources Commission
2600 Washington Avenue, Floor 3
Newport News, VA 23607

Virginia Office of the Attorney General
900 E. Main Street
Richmond, VA 23219-3513

Virginia Soil & Conservation Commission
Director
600 E. Main Street
24th Floor
Richmond, VA 23219

Sherry H. Bridewell
Senior Counsel
Virginia State Corporation Commission
1300 East Main Street, 10th Floor
Richmond, VA 23219

APPENDIX A NIAGARA PROJECT PROCESS PLAN AND SCHEDULE

Shaded milestones are unnecessary if there are no study disputes. If the due date falls on a weekend or holiday, the due date is the following business day. Early filings or issuances will not result in changes to these deadlines.

Responsible Party	Pre-Filing Milestone	Date	FERC Regulation
Appalachian	Issue Public Notice for NOI/PAD	1/28/2019	5.3(d)(2)
Appalachian	File NOI/PAD	1/28/2019	5.5, 5.6
FERC	Tribal Meetings	2/27/2019	5.7
FERC	Issue Notice of Commencement of Proceeding and Scoping Document 1	3/26/2019	5.8
FERC	Scoping Meetings and Project Site Visit	4/24/2019, 4/25/2019	5.8(b)(viii)
All Stakeholders	File Comments on PAD/Scoping Document 1 and Study Requests	5/25/2019	5.9
FERC	Issue Scoping Document 2 (if necessary)	7/9/2019	5.10
Appalachian	File Proposed Study Plan	7/9/2019	5.11(a)
All Stakeholders	Proposed Study Plan Meeting	8/8/2019	5.11(e)
All Stakeholders	File Comments on Proposed Study Plan	10/7/2019	5.12
Appalachian	File Revised Study Plan	11/6/2019	5.13(a)
All Stakeholders	File Comments on Revised Study Plan	11/21/2019	5.13(b)
FERC	Issue Director's Study Plan Determination	12/6/2019	5.13(c)
Mandatory Conditioning Agencies	File Any Study Disputes	12/26/2019	5.14(a)
Dispute Panel	Select Third Dispute Resolution Panel Member	1/10/2020	5.14(d)

Responsible Party	Pre-Filing Milestone	Date	FERC Regulation
Dispute Panel	Convene Dispute Resolution Panel	1/15/2020	5.14(d)(3)
Appalachian	File Comments on Study Disputes	1/20/2020	5.14(i)
Dispute Panel	Dispute Resolution Panel Technical Conference	1/25/2020	5.14(j)
Dispute Panel	Issue Dispute Resolution Panel Findings	2/14/2020	5.14(k)
FERC	Issue Director's Study Dispute Determination	3/5/2020	5.14(l)
Appalachian	First Study Season	Spring - Fall 2020	5.15(a)
Appalachian	File Initial Study Report	12/5/2020	5.15(c)(1)
All Stakeholders	Initial Study Report Meeting	12/20/2020	5.15(c)(2)
Appalachian	File Initial Study Report Meeting Summary	1/4/2021	5.15(c)(3)
All Stakeholders	File Disagreements/Requests to Amend Study Plan	2/3/2021	5.15(c)(4)
All Stakeholders	File Responses to Disagreements/Amendment Requests	3/5/2021	5.15(c)(5)
FERC	Issue Director's Determination on Disagreements/Amendments	4/4/2021	5.15(c)(6)
Appalachian	Second Study Season	Spring - Fall 2021	5.15(a)
Appalachian	File Preliminary Licensing Proposal (or Draft License Application)	10/1/2021	5.16(a)-(c)
All Stakeholders	File Comments on Preliminary Licensing Proposal (or Draft License Application)	12/30/2021	5.16(e)
Appalachian	File Updated Study Report	12/5/2021	5.15(f)
All Stakeholders	Updated Study Report Meeting	12/20/2021	5.15(f)

Responsible Party	Pre-Filing Milestone	Date	FERC Regulation
Appalachian	File Updated Study Report Meeting Summary	1/4/2022	5.15(f)
Appalachian	File Final License Application	2/28/2022	5.17
All Stakeholders	File Disagreements/Requests to Amend Study Plan	2/3/2022	5.15(f)
Appalachian	Issue Public Notice of Final License Application Filing	3/14/2022	5.17(d)(2)
All Stakeholders	File Responses to Disagreements/Amendment Requests	3/5/2022	5.15(f)
FERC	Issue Director's Determination on Disagreements/Amendments	4/4/2022	5.15(f)

Yayac, Maggie

Subject: FW: Niagara Hydroelectric Project (VA) -- Filing of Proposed Study Plan
Attachments: Niagara Project PSP Transmittal Letter_20190709.pdf

From: Kulpa, Sarah

Sent: Wednesday, July 10, 2019 10:27 AM

To: ACHP - John Eddins <jeddins@achp.gov>; American Rivers - Brendan Mysliwiec <bmysliwiec@americanrivers.org>; County of Roanoke - David Henderson <dhenderson@roanokecountyva.gov>; County of Roanoke - David Weir <dweir@roanokecountyva.gov>; County of Roanoke - Lindsay Webb <LWEBB@roanokecountyva.gov>; County of Roanoke - Richard Caywood <rcaywood@roanokecountyva.gov>; Friends of the Blue Ridge Parkway - Audrey Pearson <audrey_pearson@friendsbrp.org>; Friends of the Roanoke - Bill Tanger <bill.tanger@verizon.net>; Harold Peterson <harold.peterson@bia.gov>; Kevin Colburn - American Whitewater (kevin@americanwhitewater.org) <kevin@americanwhitewater.org>; Roanoke County Parks - Doug Blount <dblount@roanokecountyva.gov>; Roanoke River Blueway <roanokeriverblueway@gmail.com>; Roanoke Valley Alleghany Regional Commission - Amanda McGee <amcgee@rvarc.org>; Roanoke Valley Greenway - Liz Blecher <liz.belcher@greenways.org>; Smith Mountain Lake Assn - Lorie Smith <TheOffice@SMLAssociation.org>; Town of Vinton - Anita McMillan <amcmillan@vintonVA.gov>; Town of Vinton - Bo Herndon <wherndon@vintonVA.gov>; Town of Vinton - Joey Hiner <jhiner@vintonVA.gov>; Town of Vinton - Kenny Sledd <ksledd@vintonVA.gov>; Tri-County Lakes Administrative Commission - Paula Shoffner <paulas@sml.us.com>; VADEQ - Brian McGurk <Brian.McGurk@deq.virginia.gov>; USFWS <richard_mccorkle@fws.gov>; USFWS - John McCloskey <John_mccloskey@fws.gov>; USGS - Mark Bennett <mrbenet@USGS.gov>; VA Cooperative Fish and Wildlife Research Unit - Paul Angermeier <biota@vt.edu>; VADCR - Lynn Crump <lynn.crump@dcv.virginia.gov>; VADCR - Natural Heritage <nhreview@dcv.virginia.gov>; VADCR - Robbie Ruhr <Robbie.Rhur@dcv.virginia.gov>; VADEQ - Andrew Hammond <andrew.hammond@deq.virginia.gov>; VADEQ - Anthony Cario <anthony.cario@deq.virginia.gov>; VADEQ - Matthew Link <matthew.link@deq.virginia.gov>; VADEQ - Scott Kudlas <scott.kudlas@deq.virginia.gov>; Virginia Council on Indians - Emma Williams <emma.williams@governor.virginia.gov>; Virginia Department of Conservation and Recreation - Rene Hypes <rene.hypes@dcv.virginia.gov>; Virginia Department of Game and Inland Fisheries - Scott Smith <scott.smith@dgif.virginia.gov>
Cc: Jonathan M Magalski <jmmagalski@aep.com>; Elizabeth B Parcell <ebparcell@aep.com>; MacVane, Kelly <Kelly.MacVane@hdrinc.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>; Quiggle, Robert <Robert.Quiggle@hdrinc.com>

Subject: Niagara Hydroelectric Project (VA) -- Filing of Proposed Study Plan

Niagara Hydroelectric Project Stakeholders:

Appalachian Power Company (Appalachian), a unit of American Electric Power (AEP), is the licensee, owner and operator of the Niagara Hydroelectric Project (FERC No. 2466) (Project) located on the Roanoke River in Roanoke, Virginia. The Project is operated under a license issued by the Federal Energy Regulatory Commission (FERC). The existing FERC license for the Project expires on February 29, 2024. Appalachian is pursuing a new license for the continued operation of the Project in accordance with FERC's Integrated Licensing Process (ILP). Pursuant to the ILP, Appalachian filed the Proposed Study Plan (PSP) for the Project on July 9, 2019. The PSP describes the studies that Appalachian is proposing to conduct in support of Project relicensing.

On behalf of Appalachian, we are notifying stakeholders of the availability of the PSP. For your convenience, a copy of the cover letter filed with the PSP is attached. Please note that, due to file size restrictions, the PSP has not been included in this email. Appalachian encourages stakeholders to view the [PSP](#) online at FERC's eLibrary. Appalachian will also be adding the PSP to the Project's public relicensing website (<http://www.aephydro.com/HydroPlant/Niagara>) in the coming days.

Should you have any questions regarding this filing, please contact Jon Magalski with AEP at (614) 716-2240 or jmmagalski@aep.com.

Thank you,

Sarah Kulpa

Project Manager

HDR

440 S. Church Street, Suite 900

Charlotte, NC 28202-2075

D 704.248.3620 **M** 315.415.8703

sarah.kulpa@hdrinc.com

hdrinc.com/follow-us



Appalachian Power Company
P. O. Box 2021
Roanoke, VA 24022-2121
aep.com

Via Electronic Filing

July 9, 2019

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

**Subject: Niagara Hydroelectric Project (FERC No. 2466-034)
 Filing of Proposed Study Plan for Relicensing Studies**

Dear Secretary Bose:

Appalachian Power Company (Appalachian or Applicant), a unit of American Electric Power (AEP) is the Licensee, owner, and operator of the run-of-river 2.4 megawatt (MW) Niagara Hydroelectric Project (Project No. 2466-034) (Project or Niagara Project), located on the Roanoke River in Roanoke, Virginia. The Project is located at approximate river mile 355 on the Roanoke River, approximately 6 miles southeast of the City of Roanoke, Roanoke County, Virginia. The reservoir formed by the Project is approximately 2 miles long and includes the confluence with Tinker Creek.

The existing license for the Project was issued by the Federal Energy Regulatory Commission (FERC or Commission) for a 30-year term, with an effective date of April 4, 1994 and expires February 29, 2024. Accordingly, Appalachian is pursuing a new license for the Project pursuant to the Commission's Integrated Licensing Process (ILP), as described at 18 Code of Federal Regulations (CFR) Part 5. In accordance with 18 CFR §5.11 of the Commission's regulations, Appalachian is filing the Proposed Study Plan (PSP) describing the studies that the Licensee is proposing to conduct in support of relicensing the Project.

Appalachian filed a Pre-Application Document (PAD) and associated Notice of Intent (NOI) with the Commission on January 28, 2019, to initiate the ILP. The Commission issued Scoping Document 1 (SD1) for the Project on March 26, 2019. SD1 was intended to advise resource agencies, Indian tribes, non-governmental organizations, and other stakeholders as to the proposed scope of FERC's Environmental Assessment (EA) for the Project and to seek additional information pertinent to the Commission's analysis.

On April 24 and 25, 2019, the Commission held public scoping meetings in Vinton, Virginia. During these meetings, FERC staff presented information regarding the ILP and details regarding the study scoping process and how to request a relicensing study, including the Commission's study criteria. In addition, FERC staff solicited comments regarding the scope of issues and analyses for the EA. Pursuant to 18 CFR §5.8(d), a public site visit of the Project was conducted on April 24, 2019.

Resource agencies, Indian tribes, and other interested parties were afforded a 60-day period to request studies and provide comments on the PAD and SD1. The comment period was initiated with the Commission's March 26, 2019 notice and concluded on May 25, 2019. During the comment period, a total of twelve stakeholders filed letters with the Commission providing general comments, comments regarding the PAD, comments regarding SD1, and/or study requests.

Proposed Study Plan

Appalachian has evaluated all the study requests and comments submitted by the stakeholders, with a focus on the requests that specifically addressed the seven criteria for study requests as set forth at 18 CFR §5.9(b) of the Commission's ILP regulations. For the study requests that did not address the seven study criteria, where appropriate, Appalachian considered the study in the context of providing the requested information in conjunction with one or more of Appalachian's proposed studies.

The purpose of the PSP is to present the studies that are being proposed by Appalachian and to address the comments and study requests submitted by resource agencies and other stakeholders. The PSP also provides FERC, regulatory agencies, Indian tribes, and other stakeholders with the methodology and details of Appalachian's proposed studies. At this time, Appalachian is proposing to conduct the following studies as described in detail in the PSP:

1. Flow and Bypass Reach Aquatic Habitat Study;
2. Water Quality Study;
3. Fish Community Study;
4. Benthic Aquatic Resources Study;
5. Wetlands, Riparian, and Littoral Habitat Characterization Study;
6. Shoreline Stability Assessment Study;
7. Recreation Study; and
8. Cultural Resources Study.

Appalachian is filing the PSP with the Commission electronically and is distributing this letter to the parties listed on the attached distribution list. For parties listed on the attached distribution list who have provided an email address, Appalachian is distributing this letter via email; otherwise, Appalachian is distributing this letter via U.S. mail. All parties interested in the relicensing process may obtain a copy of the PSP electronically through FERC's eLibrary system at <https://elibrary.ferc.gov/idmws/search/fercgensearch.asp> under docket number P-2466-034, or on Appalachian's website at <http://www.aephydro.com/HydroPlant/Niagara>. If any party would like to request a CD containing an electronic copy of the PSP, please contact the undersigned at the information listed below.

Comments on the PSP, including any additional or revised study requests, must be filed within 90 days of the filing date of this PSP which is no later than October 7, 2019. Comments must include an explanation of any study plan concerns, and any accommodations reached with Appalachian

regarding those concerns (18 CFR §5.12). Any proposed modifications to this PSP must address the Commission's criteria as presented in 18 CFR §5.9(b).

As necessary, after the comment period closes, Appalachian will prepare a Revised Study Plan (RSP) that will address interested parties' comments to the extent practicable. Pursuant to the ILP, Appalachian will file the RSP with the Commission on or before November 6, 2019, and the Commission will issue a final Study Plan Determination (SPD) by December 6, 2019.

Initial Proposed Study Plan Meeting

In accordance with 18 CFR §5.11(e) of the Commission's regulations, Appalachian intends to hold an initial Proposed Study Plan Meeting (PSP Meeting) to describe the background, concepts, and study methods described in the PSP. The PSP Meeting will begin at 9:00 AM on August 1, 2019 at the Jefferson Center, located at 541 Luck Avenue, Suite 221, Roanoke, Virginia 24016.

To assist with meeting planning and logistics, Appalachian respectfully requests that individuals or organizations who plan to attend the meeting please RSVP by sending an email to me at jmmagalski@aep.com on or before July 25, 2019.

If there are any questions regarding the PSP or PSP Meeting, please do not hesitate to contact me at (614) 716-2240 or the e-mail address above.

Sincerely,

A handwritten signature in black ink, appearing to read "Jonathan M. Magalski". The signature is fluid and cursive, with the first name "Jonathan" and last name "Magalski" clearly distinguishable.

Jonathan M. Magalski
Environmental Specialist Consultant
American Electric Power Services Corporation

Enclosure

Niagara Hydroelectric Project (FERC No. 2466) Distribution List

Federal Agencies

Mr. John Eddins
Archaeologist/Program Analyst
Advisory Council on Historic Preservation
401 F Street NW, Suite 308
Washington, DC 20001-2637
jeddins@achp.gov

Blue Ridge National Heritage Area
195 Hemphill Knob Road
Asheville, NC 28803

Park Headquarters
Blue Ridge Parkway
199 Hemphill Knob Road
Asheville, NC 28803-8686

Ms. Kimberly Bose
Secretary
Federal Energy Regulatory Commission
888 1st St NE
Washington, DC 20426

FEMA Region 3
615 Chestnut Street
One Independence Mall, Sixth Floor
Philadelphia, PA 19106-4404

George Washington and Jefferson National
Forest
5162 Valleypointe Parkway
Roanoke, VA 24019

Mr. John Bullard
Regional Administrator
NOAA Fisheries Service
Greater Atlantic Regional Fisheries Office
55 Great Republic Drive
Gloucester, MA 01930-2276

Mr. John A. Bricker
State Conservationist
US Department of Agriculture
Natural Resources Conservation Service
1606 Santa Rosa Road, Suite 209
Richmond, VA 23229-5014

Mr. Harold Peterson
Bureau of Indian Affairs
US Department of the Interior
545 Marriott Dr, Suite 700
Nashville, TN 37214
Harold.Peterson@bia.gov

Office of the Solicitor
US Department of the Interior
1849 C Street, NW
Washington, DC 20240

Ms. Lindy Nelson
Regional Environmental Officer, Office of
Environmental Policy & Compliance
US Department of the Interior, Philadelphia
Region
Custom House, Room 244
200 Chestnut Street
Philadelphia, PA 19106

Ms. Barbara Rudnick
NEPA Team Leader - Region 3
US Environmental Protection Agency
1650 Arch Street
Philadelphia, PA 19103-2029

Mr. Martin Miller
Chief, Endangered Species - Northeast
Region (Region 5)
US Fish and Wildlife Service
300 Westgate Center Drive
Hadley, MA 01035

Ms. Cindy Schulz
Field Supervisor, Virginia Field Office
US Fish and Wildlife Service
6669 Short Lane
Gloucester, VA 23061

Mr. John McCloskey
US Fish and Wildlife Service
John_mccloskey@fws.gov

Mr. Richard C. McCorkle
Fish and Wildlife Biologist, Pennsylvania Field
Office
US Fish and Wildlife Service
110 Radnor Road, Suite 101
State College, PA 16801
richard_mccorkle@fws.gov

Ms. Elizabeth Merz
US Forest Service
3714 Highway 16
Marion, VA 24354

Niagara Hydroelectric Project (FERC No. 2466) Distribution List

Mr. Mark Bennett
Center Director
VA and WV Water Science Center
US Geological Survey
John W. Powell Building
12201 Sunrise Valley Drive
Reston, VA 20192
mrbennet@usgs.gov

Hon. Ben Cline
US Congressman, 6th District
US House of Representatives
10 Franklin Road SE, Suite 510
Roanoke, VA 24011

Mr. Michael Reynolds
Acting Director, Headquarters
US National Park Service
1849 C Street, NW
Washington, DC 20240

Ms. Catherine Turton
Architectural Historian, Northeast Region
US National Park Service
US Custom House, 3rd Floor
200 Chestnut Street
Philadelphia, PA 19106

Hon. Tim Kaine
US Senate
231 Russell Senate Office Building
Washington, DC 20510

Hon. Mark Warner
US Senate
703 Hart Senate Office Building
Washington, DC 20510

State Agencies

Dr. Elizabeth Moore
President
Archaeological Society of Virginia
PO Box 70395
Richmond, VA 23255

Blue Ridge Soil and Water Conservation
District
1297 State Street
Rocky Mount, VA 24151

Mr. Jess Jones
Freshwater Mollusk Conservation Center
Virginia Tech
1B Plantation Road
Blacksburg, VA 24061

Mr. Ralph Northam
Governor
Office of the Governor
PO Box 1475
Richmond, VA 23218

Mr. Paul Angermeier
Assistant Unit Leader
Virginia Cooperative Fish and Wildlife
Research Unit
Department of Fisheries and Wildlife
Conservation - Virginia Tech
106 Cheatham Hall
Blacksburg, VA 24061
biota@vt.edu

Mr. Benjamin Hermerding
Secretary of the Commonwealth
Virginia Council on Indians
PO Box 2454
Richmond, VA 23218
benjamin.hermerding@governor.virginia.gov

Ms. Robbie Rhur
Virginia Department of Conservation and
Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219
Robbie.Rhur@dcr.virginia.gov

Ms. Rene Hypes
Division of Natural Heritage
Virginia Department of Conservation and
Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219
rene.hypes@dcr.virginia.gov

Mr. Clyde Cristman
Division Director
Virginia Department of Conservation and
Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219

Niagara Hydroelectric Project (FERC No. 2466) Distribution List

Ms. Lynn Crump
FERC
Virginia Department of Conservation and
Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219
lynn.crump@dcr.virginia.gov

Mr. Tyler Meader
Locality Liasion - Division of Natural Heritage
Virginia Department of Conservation and
Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219
nhreview@dcr.virginia.gov

Mr. Matthew Link
Water Withdrawal Permit Writer
Virginia Department of Environmental Quality
PO Box 1105
Richmond, VA 23218
matthew.link@deq.virginia.gov

Mr. Andrew Hammond
Water Withdrawal Permitting & Compliance
Manager
Virginia Department of Environmental Quality
629 East Main Street
Richmond, VA 23218
andrew.hammond@deq.virginia.gov

Mr. Tony Cario
Water Withdrawal Permit Writer, Office of
Water Supply
Virginia Department of Environmental Quality
PO Box 1105
Richmond, VA 23218
anthony.cario@deq.virginia.gov

Mr. Scott Kudlas
Director, Office of Water Supply
Virginia Department of Environmental Quality
PO Box 1105
Richmond, VA 23218
scott.kudlas@deq.virginia.gov

Mr. Brian McGurk
Water Withdrawal Permit Writer
Virginia Department of Environmental Quality
PO Box 1105
Richmond, VA 23218
Brian.McGurk@deq.virginia.gov

Blue Ridge Regional Office
Virginia Department of Environmental Quality
3019 Peters Creek Road
Roanoke, VA 24019

Mr. Chris Sullivan
Senior Area Forester
Virginia Department of Forestry
900 Natural Resources Drive
Charlottesville, VA 22903

Mr. Scott Smith
Region 2 Fisheries Manager
Virginia Department of Game and Inland
Fisheries
1132 Thomas Jefferson Road
Forest, VA 24551
scott.smith@dgif.virginia.gov

Ms. Julie Langan
Director and State Historic Preservation
Officer
Virginia Department of Historic Resources
2801 Kensington Avenue
Richmond, VA 23221

Mr. Tim Pace
Chairman
Virginia Roanoke River Basin Advisory
Committee
PO Box 1105
Richmond, VA 23218

Local Governments

Mr. Sherman P. Lea, Sr.
Mayor
City of Roanoke
Noel C. Taylor Municipal Building
215 Church Avenue
Roanoke, VA 24011

Mr. Richard Caywood
Assistant County Administrator
County of Roanoke
PO Box 29800
5204 Bernard Drive
Roanoke, VA 24018
rcaywood@roanokecountyva.gov

Niagara Hydroelectric Project (FERC No. 2466) Distribution List

Mr. David Weir
County of Roanoke
PO Box 29800
5204 Bernard Drive
Roanoke, VA 24018
dweir@roanokecountva.gov

Mr. David Henderson
Engineering
County of Roanoke
PO Box 29800
5204 Bernard Drive
Roanoke, VA 24018
dhenderson@roanokecountyva.gov

Mr. Phil North
Hollins Magisterial District
5204 Bernard Drive, 4th floor
Roanoke, VA 24014

Mr. David Radford
Windsor Hills Magisterial District
5205 Bernard Drive, 4th floor
Roanoke, VA 24014

Ms. Paula Shoffner
Executive Director
Tri-County Lakes Administrative Commission
400 Scruggs Road #200
Moneta, VA 24121
paulas@sml.us.com

Mr. Doug Blount
Director
Roanoke County Parks, Recreation and
Tourism
1206 Kessler Mill Road
Salem, VA 24153
dblount@roanokecountyva.gov

Ms. Lindsay Webb
Parks Planning and Development Manager
County of Roanoke
1206 Kessler Mill Road
Salem, VA 24153
LWEBB@roanokecountyva.gov

Mr. Joey Hiner
Town of Vinton
311 S. Pollard St.
Vinton, VA 24179
jhiner@vintonVA.gov

Mr. Bo Herndon
Town of Vinton
312 S. Pollard St.
Vinton, VA 24180
wherndon@vintonVA.gov

Mr. Kenny Sledd
Town of Vinton
313 S. Pollard St.
Vinton, VA 24181
ksledd@vintonVA.gov

Ms. Anita McMillan
Town of Vinton
amcmillan@vintonVA.gov

Mr. Christopher Whitlow
Interim County Administrator
Franklin County Administration
1255 Franklin Street
Rocky Mount, VA 24151

Western Virginia Water Authority
601 South Jefferson Street
Roanoke, VA 24011

Tribes

Chief Bill Harris
Catawba Indian Nation
996 Avenue of the Nations
Rock Hill, SC 29730

Deborah Dotson
President
Delaware Nation
P.O. Box 825
Anadarko, OK 73005

Chief Dean Branham
Monacan Indian Nation
PO Box 1136
Madison Heights, VA 24572

Chief Robert Gray
Pamunkey Indian Tribe
1059 Pocahontas Trail
King William, VA 23086

Niagara Hydroelectric Project (FERC No. 2466) Distribution List

Non-Governmental

American Canoe Association
503 Sophia Street, Suite 100
Fredericksburg, VA 22401

Mr. Brendan Mysliwiec
Associate Director of Governmental Relations
American Rivers
bmysliwiec@americanrivers.org

Mr. Kevin Richard Colburn
National Stewardship Director
American Whitewater
PO Box 1540
Cullowhee, NC 28779
kevin@americanwhitewater.org

Headquarters
Appalachian Trail Conservancy
5162 Valleypointe Parkway
Roanoke, VA 24019

Blue Ridge Land Conservancy
722 1st Street SW, Suite L
Roanoke, VA 24016

Blue Ridge Parkway Foundation
717 South Marshall Street, Suite 105 B
Winston-Salem, NC 27101

Ms. Audrey Pearson
Executive Director, Friends of the Blue Ridge
Parkway
PO Box 20986
Roanoke, VA 24018
audrey_pearson@friendsbrp.org

Friends of the Rivers of Virginia
257 Dancing Tree Lane
Hollins, VA 24019

Mr. Bill Tanger
Chairman
Friends of the Roanoke
PO Box 1750
Roanoke, VA 24008
bill.tanger@verizon.net

Ms. Juanita Callis
Director
Friends of the Roanoke
PO Box 1750
Roanoke, VA 24008-1750

Mr. Mike Pucci
President
Roanoke River Basin Association
150 Slayton Avenue
Danville, VA 24540

Roanoke River Blueway
313 Luck Avenue SW
Roanoke, VA 24016
roanokeriverblueway@gmail.com

Ms. Amanda McGee
Regional Planner II
Roanoke Valley - Alleghany Regional
Commission
P.O. Box 2569
Roanoke, VA 24010
amcgee@rvarc.org

Ms. Liz Belcher
Greenway Coordinator
Roanoke Valley Greenway
1206 Kessler Mill Road
Salem, VA 24153
liz.belcher@greenways.org

Mr. Steve Moyer
Trout Unlimited
1777 N. Kent Street, Suite 100
Arlington, VA 22209

Upper Roanoke River Roundtable
PO Box 8221
Roanoke, VA 24014

Lorie Smith
Smith Mountain Lake Association
400 Scruggs Road #2100
Moneta, VA 24121
TheOffice@SMLAssociation.org

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426
July 12, 2019

OFFICE OF ENERGY PROJECTS

ZZ09-5-000
P-2466-034

Via USPS First Class Mail

Liz Belcher, Greenway Coordinator
Roanoke Valley Greenways
1206 Kessler Mill Road
Salem, VA 24153

**Subject: Request for Treatment of a Document as a Comprehensive Plan,
Pursuant to Section 10(a)(2)(A) of the Federal Power Act**

Dear Ms. Belcher:

Thank you for providing the Federal Energy Regulatory Commission (Commission) with a copy of the Roanoke Valley Greenway Plan (2018), filed May 20, 2019, for consideration as a comprehensive plan pursuant to section 10(a)(2)(A) of the Federal Power Act (FPA). This document was filed in response to pre-filing activities for the licensing of the Niagara Hydroelectric Project No. 2466.

Section 10(a)(2)(A) of the FPA requires the Commission, in its licensing decisions, to consider the extent to which a project is consistent with Federal or state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by the project.¹ The Commission will treat as a comprehensive plan one that is: (1) prepared by an agency established pursuant to Federal law that has the authority to prepare such a plan, or by a state agency, of the state in which the proposed hydroelectric project is or will be located, authorized to conduct such planning pursuant to state law; (2) is a comprehensive study of one or more of the beneficial uses of a waterway or waterways; (3) specifies the standards, data relied upon, and methodology used in preparing the plan; and (4) is filed with the Secretary of the Commission.²

¹ 16 U.S.C. § 803(a)(2)(A).

² Interpretation of Comprehensive Plans Under Section 3 of the Electric Consumers Protection Act, Order No. 481, FERC Stats. & Regs. ¶ 30,773 (1987); Order on Rehearing, Order No. 481-A, FERC Stats. & Regs. ¶ 30,811 (1988).

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Based on Commission staff's review, the document does not qualify as a comprehensive plan under section 10(a)(2)(A) of the FPA because it was not prepared by a federal or state agency. Commission staff will consider the document as part of its analysis for the Niagara Hydroelectric Project, as it considers all relevant studies and recommendations, in its public interest analysis pursuant to section 10(a)(1) of the FPA.³

If you have any questions, please contact Rachel McNamara at (202) 502-8340 or rachel.mcnamara@ferc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read 'V. Yearick', with a long horizontal stroke extending to the right.

Vince Yearick
Director
Division of Hydropower Licensing

³ 16 U.S.C. § 803 (a)(1).

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426
July 12, 2019

OFFICE OF ENERGY PROJECTS

ZZ09-5-000
P-2466-034

Via USPS First Class Mail

Sonja Jahrsdoerfer
U.S. Fish and Wildlife Service
110 Radnor Rd., Ste. 101
State College, PA 16801

**Subject: Request for Treatment of a Document as a Comprehensive Plan,
Pursuant to Section 10(a)(2)(A) of the Federal Power Act**

Dear Ms. Jahrsdoerfer:

Thank you for providing the Federal Energy Regulatory Commission (Commission) with a copy of the Roanoke Logperch Recovery Plan (1992), filed May 31, 2019, for consideration as a comprehensive plan pursuant to section 10(a)(2)(A) of the Federal Power Act (FPA). This document was filed in response to pre-filing activities for the licensing of the Niagara Hydroelectric Project No. 2466.

Section 10(a)(2)(A) of the FPA requires the Commission, in its licensing decisions, to consider the extent to which a project is consistent with Federal or state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by the project.¹ The Commission will treat as a comprehensive plan one that is: (1) prepared by an agency established pursuant to Federal law that has the authority to prepare such a plan, or by a state agency, of the state in which the proposed hydroelectric project is or will be located, authorized to conduct such planning pursuant to state law; (2) is a comprehensive study of one or more of the beneficial uses of a waterway or waterways; (3) specifies the standards, data relied upon, and methodology used in preparing the plan; and (4) is filed with the Secretary of the Commission.²

¹ 16 U.S.C. § 803(a)(2)(A).

² Interpretation of Comprehensive Plans Under Section 3 of the Electric Consumers Protection Act, Order No. 481, FERC Stats. & Regs. ¶ 30,773 (1987); Order on Rehearing, Order No. 481-A, FERC Stats. & Regs. ¶ 30,811 (1988).

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2

Based on Commission staff's review, we have determined that the document qualifies as a comprehensive plan under section 10(a)(2)(A). This document will be added to the Commission's list of approved comprehensive plans for the Commonwealth of Virginia.

In the future, should this document, or any other previously-approved comprehensive plan prepared by the Fish and Wildlife Service be revised or replaced, please file notification of the change with the Commission and provide copies of the new document(s).

Sincerely,

A handwritten signature in black ink, appearing to read 'V. Yearick', with a stylized flourish at the end.

Vince Yearick
Director
Division of Hydropower Licensing

TELEPHONE MEMO

To: Public Files
From: Allyson Conner
Date: July 26, 2019
Docket: P-2466-034
Project: Niagara Hydroelectric Project

Subject: Consultation with Pamunkey Tribe for the Niagara Hydroelectric Project No. 2466

On April 19, 2019, Allyson Conner, staff of the Division of Hydropower Licensing with the Federal Energy Regulatory Commission (Commission), issued a letter to the Pamunkey Indian Tribe initiating tribal consultation for the relicensing process of the existing Niagara Hydroelectric Project 2466-034.

On June 12, June 28, and July 16, 2019, Ms. Conner called the Pamunkey Indian Tribe and left a voicemail each time. No calls were returned.

Yayac, Maggie

Subject: FW: Niagara Hydro - Historic Fisheries Surveys and Related Studies
Attachments: Niagara Bypass Flow Evaluation 1989.pdf; Niagara Roanoke Logperch Targeted Study1992.pdf; Niagara Fisheries Survey 1990.pdf

From: Jonathan M Magalski [mailto:jmmagalski@aep.com]

Sent: Monday, August 26, 2019 9:57 AM

To: Scott Smith (Scott.Smith@dgif.virginia.gov) <Scott.Smith@dgif.virginia.gov>; McCorkle, Richard <richard_mccorkle@fws.gov>; John McCloskey <john_mccloskey@fws.gov>; Angermeier, Paul <biota@vt.edu>; McGurk, Brian <brian.mcgurk@deq.virginia.gov>

Cc: Elizabeth B Parcell <ebparcell@aep.com>; Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>

Subject: Niagara Hydro - Historic Fisheries Surveys and Related Studies

Good morning Scott, et al.,

As a follow up to our conversation during the Niagara PSP meeting a few weeks ago, please find attached historic reports for the comprehensive fisheries survey, the targeted Roanoke logperch survey and a report related to the bypass reach visual flow evaluation. We are currently working through the fisheries survey plans and will be in touch to discuss in September. In the meantime, please let me know if you have any questions or need anything else.

PS – I've included others for their information and to be transparent.



JONATHAN M MAGALSKI | ENVIRONMENTAL SPEC CONSULT
[JMMAGALSKI@AEP.COM](mailto:jmmagalski@aep.com) | D:614.716.2240
1 RIVERSIDE PLAZA, COLUMBUS, OH 43215

FORVA DIRECTORS

William Tanger, Chair
Friends of the Roanoke River
Rick Roth, Treasurer
Friends of the New River
Del. Watkins M. Abbitt, Jr.
Float Fishermen of Virginia
Juanita Callis
Friends of the Roanoke River
Karen Firehock
Environmental Consultant
Patti Jackson
FORVA
Howard Kirkland
Blue Ridge River Runners
Randi Lemmon
Friends of the New River
Tom Miller
Float Fishermen of Virginia

STEERING COMMITTEE

Tony Adams
Float Fishermen of Virginia
Bob Born
Float Fishermen of Virginia
Bo Calvert
Blue Ridge River Runners
Debbie Coffin
James River State Park
Mark Frondorf
Shenandoah Riverkeeper
Greg Garman
Fisheries Biologist
Terry Grimes
Jackson River Defense Fund
Bob Hicks
FORVA
Kat Imhoff
FORVA
Pete Katt
Creek Freaks of Franklin Co
Jerry Lovelace
Rural Planning Caucus of Virginia
Nelson Mackey
Float Fishermen of Virginia
Shelton Miles
*Citizens for the Preservation
of the River (CPR)*
Trace Noel
Virginia Paddlesports Association
Cole Poindexter
Staunton River Watch
George Santucci
New River Conservancy
Tom Stutts
Friends of the Staunton
Steven Tingle
Headwaters Watch
Charles Vandervoort
Friends of the Shenandoah
Jeff Wold
Float Fishermen of Virginia

FILED
SECRETARY OF THE
COMMISSION August 10, 2019

2019 SEP -3 P 4:19

FEDERAL ENERGY
REGULATORY COMMISSION

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

**Subject: Niagara Hydroelectric Project FERC No.
P-2466-034**

Proposed study for portage around Niagara Dam:

The impact of Niagara Dam on boating and fishing recreation is well known. Over the decades boaters and float fishermen have avoided the Roanoke River section below Tinker Creek as there is no practical portage around the dam. Thus any statistics on past use would be meaningless.

At other dam locations across the country, such impediments have resulted in various solutions ranging from creating a new channel for boating around the dam to maintaining a phone that boaters can use to call for a shuttle ride.

A viable solution to a recreational portage is clearly made difficult by the railroad tracks and by the narrow right of way to and around the dam. There still remain possible options for recreation.

A portage study should include examining the idea of a portage on river right, for example, that would allow for boaters to take out just above the dam and to then use a shuttle vehicle to drive themselves and their boating equipment around to the Blue Ridge Parkway where boaters could then re-enter the river just below the Niagara powerhouse using the Fishermen's Trail and steps that go down to the water.

Access to a river right landing would also help fishermen and boaters as a better place to put in boats to paddle upstream for recreation.

Another option might be to put in a shorter hand carry portage on river right that would then allow boaters to enter the river again just below the dam. This option would allow boaters to float the river in the bypass reach, which is currently used by some kayakers and canoeists today.

A third option, of course, would be to maintain a working phone at the river left takeout that would allow boaters to call for assistance from APCo for a shuttle to below the powerhouse.

A study of the options for a workable portage around Niagara Dam should evaluate these and other ideas solicited from the public and pulled from research on similar hydro projects.

Proposed study for improved access to the Roanoke River below the Niagara Dam:

Currently, access to the bypass reach below the dam is extremely difficult due to the lack of an access point on river right below the dam or an access trail from the Blue Ridge Parkway that would allow boaters to carry their boats upstream to below the dam.

FRIENDS OF THE RIVERS OF VIRGINIA FORVA

FORVA DIRECTORS

William Tanger, Chair
Friends of the Roanoke River
Rick Roth, Treasurer
Friends of the New River
Del. Watkins M. Abbitt, Jr.
Float Fishermen of Virginia
Juanita Callis
Friends of the Roanoke River
Karen Firehock
Environmental Consultant
Patti Jackson
FORVA
Howard Kirkland
Blue Ridge River Runners
Randi Lemmon
Friends of the New River
Tom Miller
Float Fishermen of Virginia

STEERING COMMITTEE

Tony Adams
Float Fishermen of Virginia
Bob Born
Float Fishermen of Virginia
Bo Calvert
Blue Ridge River Runners
Debbie Coffin
James River State Park
Mark Frondorf
Shenandoah Riverkeeper
Greg Garman
Fisheries Biologist
Terry Grimes
Jackson River Defense Fund
Bob Hicks
FORVA
Kat Imhoff
FORVA
Pete Katt
Creek Freaks of Franklin Co
Jerry Lovelace
Rural Planning Caucus of Virginia
Nelson Mackey
Float Fishermen of Virginia
Shelton Miles
*Citizens for the Preservation
of the River (CPR)*
Trace Noel
Virginia Paddlesports Association
Cole Poindexter
Staunton River Watch
George Santucci
New River Conservancy
Tom Stutts
Friends of the Staunton
Steven Tingle
Headwaters Watch
Charles Vandervoort
Friends of the Shenandoah
Jeff Wold
Float Fishermen of Virginia

Access is obtained by use of an informal dirt trail running steeply down from the parkway overlook trail. This trail is an extremely steep, slippery and eroded trail that is hazardous and regularly contributes sediment to the river below.

It can be used only by those in top-notch physical condition, and excludes those who are older, children, or handicapped in any way.

The National Park Service (NPS) now allows volunteer organizations to develop plans and build trails on park service property. A vastly improved trail down to the bypass reach is needed. This will likely require funding to build a better trail than the existing trail.

A study should be done to determine the best way for the public to access the Niagara Dam bypass reach.

Proposed study for recreational releases from the dam:

In the past APCo has cooperated with valley jurisdictions to provide increased releases from the dam. These have been for organized float trips to study the river for various purposes including river cleanups, whitewater recreation evaluations, scenic river designation, fishing capacity and evaluating viewsheds for Explore Park.

The public needs to know if scheduled releases can be obtained, or, if not regularly scheduled, if commitments can be made by APCo to increase flows for special events planned by the community.

We recognize the inherent problems with a run-of-the-river hydro operation and with the lack of storage capacity due to sedimentation behind the dam.

We are aware of the sensitivity of the endangered Roanoke Logperch, but we believe such relatively small additions to the flows should not affect the species, or any other species, in a negative way.

The release of 100 to 200 cfs for special events can mean the difference between having an event or having to cancel it.

A larger question should also be considered. Can there be releases from Spring Hollow Reservoir for special occasions? While Spring Hollow is not within the project boundary, collaboration with APCo could provide greater opportunities for further recreation below the powerhouse.

A study should be done to determine potential releases from Spring Hollow to increase recreational flows.

Proposed study on recreational fishing:

Fishing both above and below the dam is impacted by PCBs in the river. While some monitoring has been done of PCBs in the water column, no study exists of PCBs in the sediment behind the dam.

The sediment behind the dam is thought to contain PCBs.

Much discussion and some theories have been put forth that some PCBs behind the dam are contributing to PCBs flowing downstream and being ingested by fish.

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Float Fishermen of Virginia

A study of any contaminants in the fish below the dam should be undertaken to determine if the fish are safe for consumption.

If not, the river should be posted for whatever contaminants are found. Currently there is no posted warning about fish consumption below the powerhouse.

If PCBs are present but only reintroduced to the river during high water events, that knowledge would help those who consume fish know what the risks are.

FORVA hopes that these proposed studies will help improve recreation above, below and in the bypass reach of the Niagara Dam project area.



Bill Tanger, Chair, Friends of the Rivers of Virginia
Bill.tanger@verizon.net Cell: 540-266-0237

Yayac, Maggie

Subject: FW: [EXTERNAL] FERC Relicensing

From: Jonathan M Magalski
Sent: Wednesday, September 11, 2019 2:34 PM
To: 'Jonathan McCoy' <JMCCOY@roanokecountyva.gov>
Subject: RE: [EXTERNAL] FERC Relicensing

Hi Jon,

Thanks for reaching out and my apologies if it wasn't clear that the presentation would be posted to the website we (AEP) created for the relicensing (<http://www.aephydro.com/HydroPlant/Niagara>). We have been posting AEP generated documents there, including the August 1 presentation.

Yes, you are correct, comments on the Proposed Study Plan are due to FERC by October 7. Have you signed up for FERC's eLibrary? This is the best way to file comments and to receive other stakeholder comments and other notices. The link is: <https://www.ferc.gov/docs-filing/elibrary.asp>. If you need any guidance, please let me know, but it's pretty straightforward. You'll just want to have the Niagara project number handy so you can sign up for those project specific notices. The project number is FERC No. 2466-034.

Let me know if you have any additional questions. Thanks again...Jon



JONATHAN M MAGALSKI | ENVIRONMENTAL SPEC CONSULT
JMMAGALSKI@AEP.COM | D:614.716.2240
1 RIVERSIDE PLAZA, COLUMBUS, OH 43215

From: Jonathan McCoy <JMCCOY@roanokecountyva.gov>
Sent: Wednesday, September 11, 2019 1:07 PM
To: Jonathan M Magalski <jmmagalski@aep.com>
Subject: [EXTERNAL] FERC Relicensing

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Jon,

I hope you're doing well. I have a meeting for the Roanoke River Blueway tomorrow morning and I wanted to reach out to you for any updates on the FERC Relicensing Process. I have in my notes from the meeting on August 1st that comments are due by October 7th.

I never did receive a copy of the presentation for that day. Can you send me one? Or can you let me know where to find it?

Thanks,

Jon McCoy

Jonathan McCoy

Planner I

1206 Kessler Mill Road | Salem, VA 24153

[\(540\) 777-6324](tel:5407776324) | [\(540\) 613-2223](tel:5406132223) (cell)

Yayac, Maggie

Subject: FW: Roanoke River Blueway
Attachments: Meeting Notes 9.12.19.docx; Inventory January 2019.xlsx

From: Amanda McGee <amcgee@rvarc.org>

Sent: Thursday, September 12, 2019 10:51 AM

To: Anita McMillan <amcmillan@vintonva.gov>; Audrey Pearson <Audrey_pearson@friendsbrp.org>; Bailey DuBois <bdubois@roanokecountyva.gov>; Ben Tripp <btripp@saalemva.gov>; Betsy Biesenbach <beezinbox@aol.com>; Bill Modica <modicabill2@aol.com>; Bill Tanger <bill.tanger@verizon.net>; Brad Buchanan <buchananbt@montgomerycountyva.gov>; Catherine Fox <cfox@visitvbr.com>; Christopher Blakeman <christopher.blakeman@roanokeva.gov>; David Holladay <dholladay@roanokecountyva.gov>; Dawn Leonard <dawn_leonard@nps.gov>; Donnie Underwood <donnie.underwood@roanokeva.gov>; Dwayne D'Ardenne <dwayne.d'ardenne@roanokeva.gov>; Hil Studios <ablanton@hillstudio.com>; James Revercomb <jamesrevercomb@gmail.com>; Lindsay Webb <lwebb@roanokecountyva.gov>; Elizabeth B Parcell <ebparcell@aep.com>; liz.belcher@greenways.org; Mary Ann Brenchick (maryann@cleanvalley.org) <maryann@cleanvalley.org>; Matt Miller <mmiller@rvarc.org>; Pat Mathany <pat.bcski@gmail.com>; Pete Eshelman <pete@roanoke.org>; Pete Peters <rpeters@vintonva.gov>; Peter Katt <pkatt@crandalllaw.com>; Renee Powers (renee.powers@roanokeva.gov) <renee.powers@roanokeva.gov>; Ross, Matt <Matt.Ross@franklincountyva.gov>; Steve Buxton <steve_buxton@nps.gov>; Tom Christenbury <tcntville@yahoo.com>; Trudy Stevens (roanoke@walkaboutoutfitter.com) <roanoke@walkaboutoutfitter.com>

Subject: [EXTERNAL] Meeting Notes, Next Meeting Reminder

All,

Please see the attached meeting notes for the Roanoke River Blueway Committee.

Our next meeting will be on October 11, 2019, which is the second Wednesday of October. Going forward we will have standing meeting dates on the second Wednesday of every month. The meetings will be held at 9 am.

I've also attached Renee's spreadsheet from the inventory she performed in January, since there was a request to distribute this again as we discuss projects going forward.

Best,

Amanda McGee

Regional Planner II, AICP
Roanoke Valley-Alleghany Regional Commission
P.O. Box 2569, Roanoke VA 24010
313 Luck Avenue, Roanoke VA 24016
540.343.4417 www.rvarc.org



Blueway Meeting Notes 9.12.19

Attendees:

Renee Power, City of Roanoke
Jon McCoy, Roanoke County
Audrey Pearson, FRIENDS of the BRP
James Revercomb, RMA
Pete Eshelman, RoanokeOutside
Liz Belcher, Greenways
Dwayne D'Ardenne, City of Roanoke
Catherine Fox, Visit Virginia's Blue Ridge
Rachel Nunley, Visit Virginia's Blue Ridge
Bill Tanger, FORVA
Bill Modica, URRR
Amanda McGee, RVARC

FY20 Goals Discussion

Bill and Amanda intend to go to localities over the next few months as planned. The request will be for continuing the existing funding, not for expanding funding.

Renee has been working with Eagle Scouts to address some of the holes in the inventory she did of needed access improvements last fall. Eagle Scouts can build kiosks and canoe racks, but cannot design maps for kiosks or pay to have those installed. Creating a map that could serve all of the localities along the blueway is a good regional project with high visibility. The committee was in agreement for this project.

Renee and Amanda will bring the number of kiosks and costs for printed aluminum signs, as well as options to do the design, to the next meeting.

The committee plans to look at updating and reprinting the brochures in the spring of 2020. There is an option to apply for a Virginia Tourism Grant. Amanda will look into dates.

Bill Tanger asked for a prioritized goal list with our top three projects. He specifically discussed Bridge Street access improvements as a high priority goal. Renee stated that the City would need to see a Scope of Work from the committee to pursue the project. Pete offered to discuss preliminary engineering costs for the project with Balzer, who did the Launch at Reserve PE work pro bono.

Discussion moved to other needed access improvements. Liz asked if it would be possible to put an access point in along the Cook Drive section of the Roanoke River Greenway. Roanoke City will install the bridge for this section in the spring. Renee offered that it would be better to work on improving the Back Country Ski & Sport put in.

Renee and Dwayne stated a desire to remove and rebuild the Smith Park Low Water Bridge. They said they needed citizen support for this project and asked if it would be possible to the committee to fund engineering. They estimated the project would cost \$1-2 million dollars. The committee does not have

the budget for engineering for that project at this time. Bill stated it would be a good idea to have cost estimates for the projects the committee would like to fund or pursue when going back to the localities.

Future Meeting Dates

The committee agreed to meet on the second Friday of each month at 9 am. Amanda will send out the calendar information.

Scenic Rivers Designation

Roanoke County requested a study from DCR of the Scenic Rivers Designation. This project is still ongoing, but there are numerous obstacles to the project. The Scenic Rivers designation requires five miles of eligible water, with an access point at the beginning and end of the stretch. Roanoke County does not have five continuous miles. The most likely option for a designation is to extend the stretch upriver into Roanoke City. However, the City is uninterested in pursuing a designation at this time, as this may cause conflicts with other projects in this area.

Ongoing Improvements Projects

Sediment in the Roanoke River remains an issue. Bill Tanger discussed the Mountain Valley Pipeline as a contributor to the sedimentation of the river.

He also discussed the Rutrough Point efforts, which continue.

Dwayne stated that the City would be putting in a trashboom at Memorial Street Bridge river right in the fall. This has been a two year project which required Army Corps of Engineers approval. It will be a pilot for other potential project locations in the City. The Stormwater department will be responsible for maintenance.

Renee is working on wayfinding upstream of the trash boom. She is also working with Boy Scouts to place a canoe rack at Wasena.

She submitted two requests to present to the upcoming RMS Conference in May of 2020. Her two proposed presentations are on the Navigable Waterways law and on Regional Volunteer Collaboration along the Blueway corridor. The conference is in Richmond May 12-15, and is being combined with the statewide greenway conference.

Jon stated that the FERC relicensing continues, and that official comments on the proposed recreational study plans are due on October 7th.

Roanoke River Blueways Inventory January 2019

Access Point N	Name of Access Point	Jurisdiction	Public vs. Private	Kiosk	Map	Put in Ramp	Rack	Cars park	On river way	Driving wayfinding	On greenway?
	1 East Montgomery County Park	Montgomery County	Public	yes	no	no	no	20	no	None	No
	2 Wayside Park	Roanoke County	Public	no	no	No	no	6	no	None	No
	3 Green Hill Park	Roanoke County	Public	no	no	no	no	26	no	None	Yes
	4 West Riverside Drive	City of Salem	Public	Yes	No	Yes, concrete	Yes	9	no	None	Yes
	5 Cardinal Justice Academy	City of Salem	Public	No	No	Yes, concrete	Yes	~40	no	None	Yes
	6 Eddy Avenue	City of Salem	Public	No	No	No	No	~6	no	None	Yes
Not on Map	Colorado Street	City of Salem	Public	Yes	No	No	No	9	no	None	Yes
	7 Salem Rotary Park	City of Salem	Public	Yes	No	No	Yes	~20	no	None	Yes
	8 Back Country Ski and Sport	City of Salem	Private, open	No	No	No, but stairs to river	Yes	8	no	None	No
Not on map	Bridge Street	City of Roanoke	Public	No	No	No	No	12	On bridge	None	Yes
	9 Wasena Park	City of Roanoke	Public	No	No	No	No	~30	On bridge	None	Yes
Not on map	Roanoke Mountain Adventures	City of Roanoke	Private, open	No	No	No, but some stairs	Yes	~30	On bridge	None	Yes
	10 Smith Park	City of Roanoke	Public	No	No	No	No	~15	Yes	None	Yes
	11 The Launch at Reserve	City of Roanoke	Public	Yes	Yes	Yes, concrete, stairs, rails	Yes	~75	Yes	Yes from arterial	No
	12 13th Street/Bennington	City of Roanoke	Public	No	No	No	No	20	Yes	None	Yes
	13 Tinker Creek/3rd Street	Town of Vinton	Public	Yes	No	Yes, concrete	Yes	~20	No	Yes from arterial	No
	15 Blue Ridge Parkway Roanoke River Overlook	Roanoke County/NPS	Public	No	No	No, trail with many stairs	No	30	no	None	No
Not on map	Explore Park: Journey's End	Roanoke County	Public	No	No	No	No	~75	No	None	No
	16 Explore Park: Rutrough Point	Roanoke County	Public \$	Yes	Yes, not of RRB	Yes, wooden stairs	No	~15	No	None	No
	17 Smith Mountain Lake/Hardy Ford DGIF	Bedford County/DGIF	Public	Yes	Yes, not of RRB	Yes, concrete ramp and dock	No	~100	No	Yes	No
	18 Jae Valley Park (on Back Creek)	Roanoke County	Public	Yes	Yes, not of RRB	No	No	~20-25	No	None	No

Additional Info

playground, picnic shelter, benches, tables
picnic tables and gills, trash cans
playground, picnic shelter, porta john, natural surface trails, athletic fields
bike rack, picnic tables
canoe launch signage and a picnic table
Canoe launch parking sign
Blueways sign on kiosk
picnic tables, trash cans
Back Country has a bathroom, outfitter shop, rentals, demos
Port a john, picnic table, charcoal grill
Bathrooms, picnic shelter, playground, benches, greenway
RMA has a bathroom, runs shuttles, parking lot can be tight and shared with several businesses and apartments
Bathrooms, picnic shelter, playground, benches, greenway
None
bench, porta john
None
None
Trails, picnic areas, bathrooms at Visitor's Center
Trails, picnic areas, bathrooms at Visitor's Center
None
Hiking and biking trails, picnic tables

Yayac, Maggie

Subject: FW: AEP Niagara Hydro (FERC P-2466-034) - Fish Community and Roanoke Logperch Study Plan

Attachments: Niagara Pre-RSP agency coordination conference call_09202019.pdf

From: Jonathan M Magalski [<mailto:jmmagalski@aep.com>]

Sent: Saturday, September 21, 2019 8:47 AM

To: Angermeier, Paul <biota@vt.edu>; Scott Smith (Scott.Smith@dgif.virginia.gov) <Scott.Smith@dgif.virginia.gov>; McCorkle, Richard <richard_mccorkle@fws.gov>; John McCloskey <john_mccloskey@fws.gov>; McGurk, Brian <brian.mcgurk@deq.virginia.gov>; Borsuk, Frank <borsuk.frank@epa.gov>

Cc: Elizabeth B Parcell <ebparcell@aep.com>; Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; Huddleston, Misty <Misty.Huddleston@hdrinc.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>

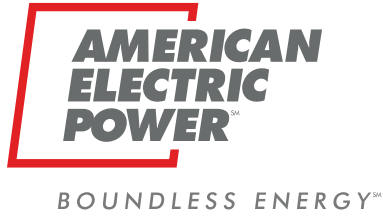
Subject: AEP Niagara Hydro (FERC P-2466-034) - Fish Community and Roanoke Logperch Study Plan

Gentlemen,

Please find attached, AEP's proposed fish community and Roanoke logperch study plan for discussion during our conference call on September 25. I will be updating the meeting invitation with the Webex and conferencing information momentarily. We look forward to the call. Have a great weekend....Jon



JONATHAN M MAGALSKI | ENVIRONMENTAL SPEC CONSULT
[JMMAGALSKI@AEP.COM](mailto:jmmagalski@aep.com) | D:614.716.2240
1 RIVERSIDE PLAZA, COLUMBUS, OH 43215



Niagara Hydroelectric Project FERC No. 2466

Agency Coordination Call for Fish Studies – September 25, 2019



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Call Agenda

1 p.m. – 1:15 p.m.	Introduction Participant Introductions Review of Related Study Requests of Comments Meeting Objectives
1:15 p.m. – 1:30 p.m.	Fish Community Study
1:30 p.m. – 2:00 p.m.	Roanoke Logperch Community Assessment
2:00 p.m. – 2:30 p.m.	Discussion and Wrap-up

Meeting Objectives

- Appalachian developed a Proposed Study Plan (PSP) - filed with FERC on July 9, 2019.
- The PSP meeting was held on August 1, 2019 at the Jefferson Center in Roanoke, Virginia.
- The objectives of this conference call are to:
 - Review the proposed revisions to the Fish Community Study
 - Discuss outstanding concerns regarding the proposed revisions to the Fish Community Study in the RSP
- Comments on the PSP are due to FERC no later than October 7, 2019.

Topics for Discussion

- Recommended changes to Fish Community Study:
 - Remove proposed use of gill or hoop nets
- Comments related to Roanoke Logperch:
 - Potential for occurrence in bypass reach
 - Potential for larval drift (into impoundment)



Fish Community Study



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Fish Community Study: Goals and Objectives

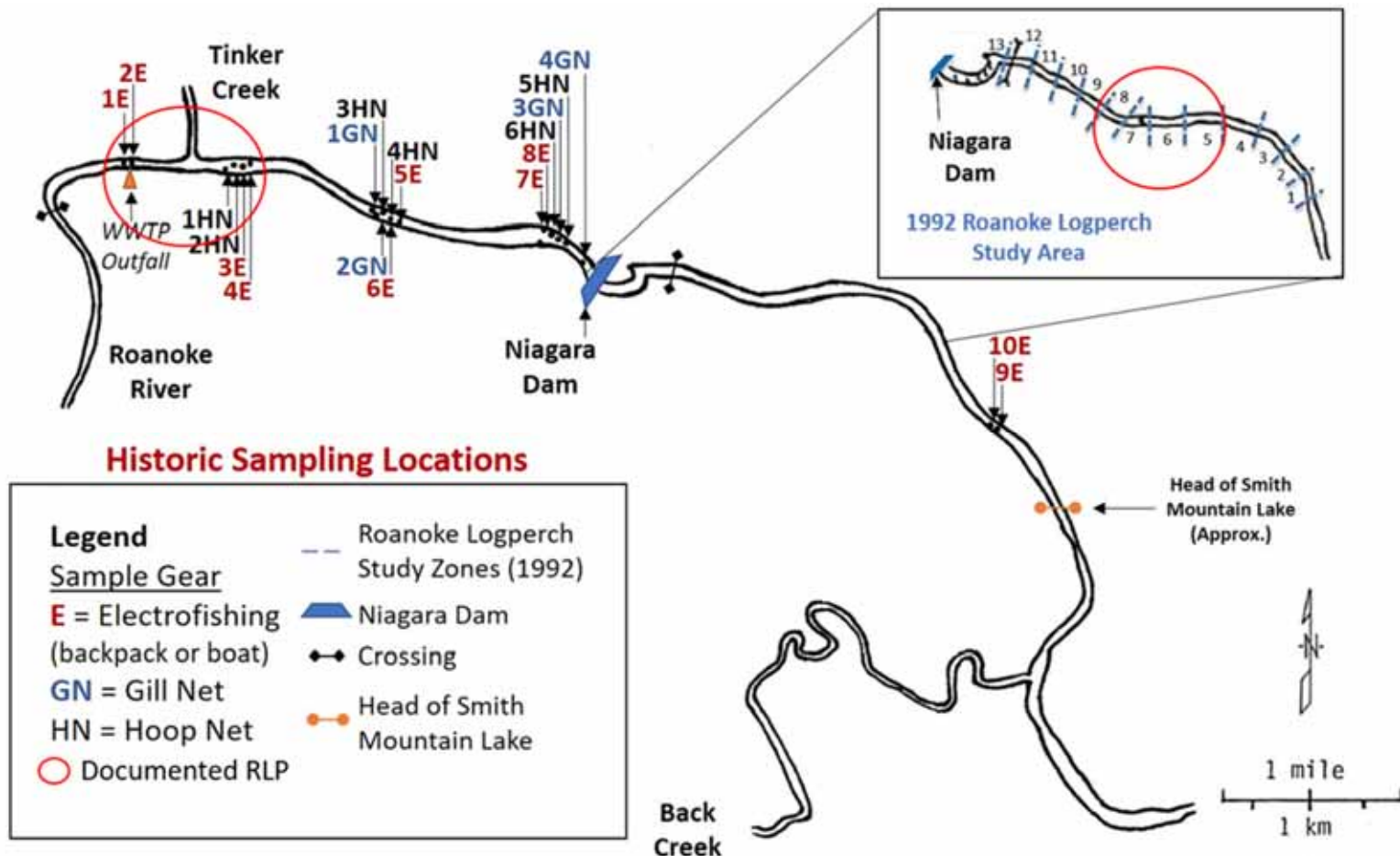
- **Study Goal:** Obtain current information on the fish community in the Roanoke River in the vicinity of the Project to support an analysis of Project effects
- **Specific Objectives (Task 1):**
 - Collect comprehensive baseline of the existing fish community in the vicinity of the Project
 - Compare current fish community data to historical data to evaluate changes to species composition, abundance, or distribution
 - Assess life stage-specific presence and abundance of Roanoke Logperch within the Study boundary

Fish Community Study: Background and Existing Information

- **1990's Fish Surveys**

- Electrofishing, hoop netting, and gill netting; reservoir and riffle/run habitat up- and downstream
- Warmwater fish community: sunfish, bass, redhorse, carp, shad, suckers, shiners, catfish, and four Roanoke Logperch* (*protected species, collected upstream and downstream of Project)
- Longitudinal trend of increasing catch rate, species richness, and abundance from upstream to downstream sites
 - New site added in 1991 (0.5-mi below dam) exhibited greater abundance and species richness than upstream reservoir and riffle/run sites. Three Roanoke Logperch were collected at this location (the most downstream extent of Study Area)
 - In 1992, additional 1.25-mi reach below dam was evaluated to identify available habitat for and presence of Roanoke Logperch

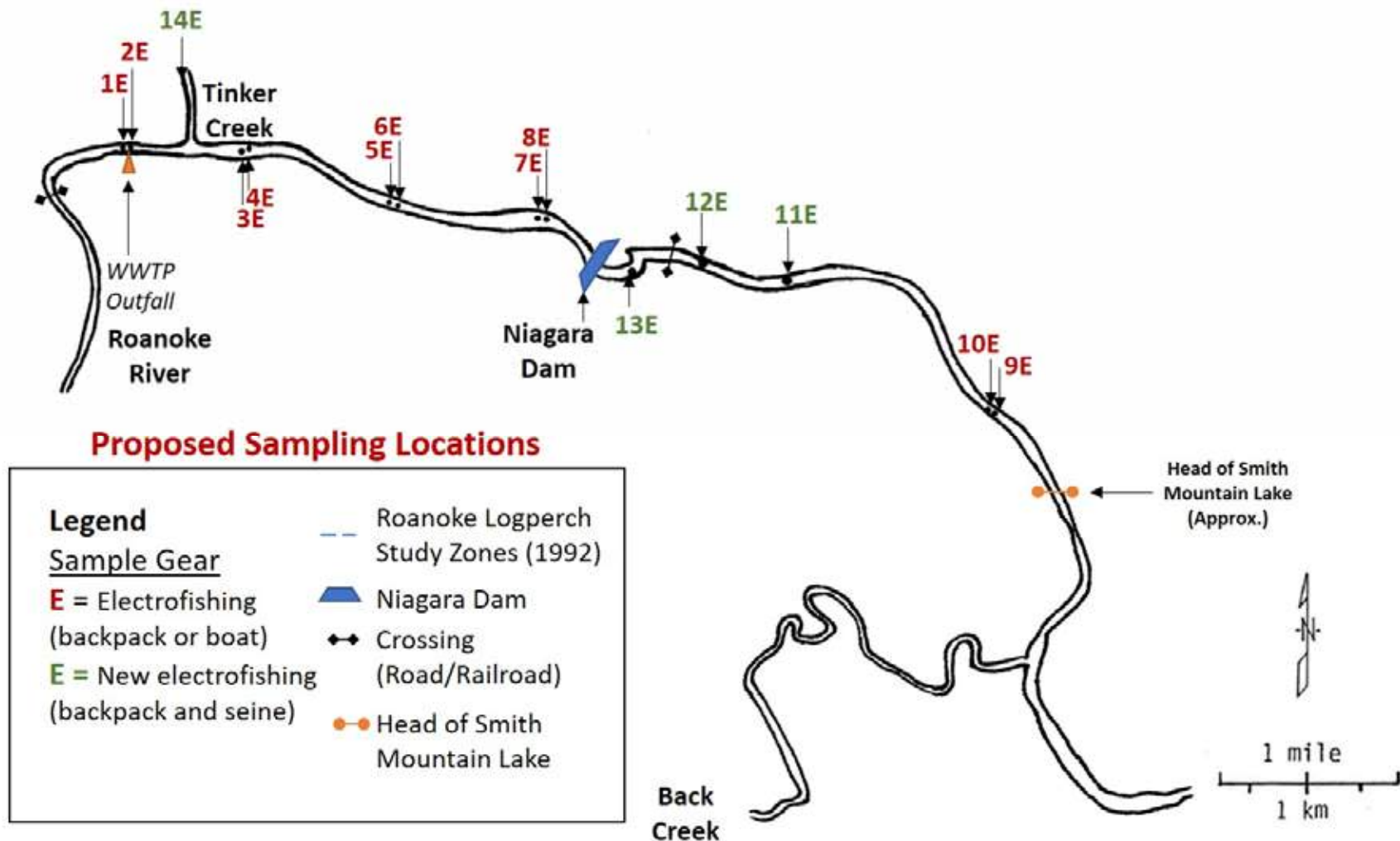
Fish Community Study: Summary of Historical Sampling



Fish Community Study: Methodology

Task 1a	
Fish Community Study	<i>Sampling Requirements:</i> Scientific collection permit
	<i>Field sampling</i> <ul style="list-style-type: none"> • April-June and August-September 2020 • Sample sites: 1989-1990 historical sites, new site on Tinker Creek, new site in bypass reach, and two new sites downstream of Project • Methodology: electrofishing (boat/backpack) and seines • Fish will be enumerated and identified to species; up to 30 individuals per taxon will be measured, weighed and examined
	<ul style="list-style-type: none"> • Calculate catch per unit effort (CPUE) and develop indices of biotic integrity for <i>comparison of study results</i> to historical data to detect trends or changes in the fish community.

Fish Community Study: Proposed Fish Community Study



Fish Community Study: Methodology

Task 1b



Sampling Requirements: Special permit or skilled surveyor requirements will be identified and obtained in coordination with USFWS and VDGIF.

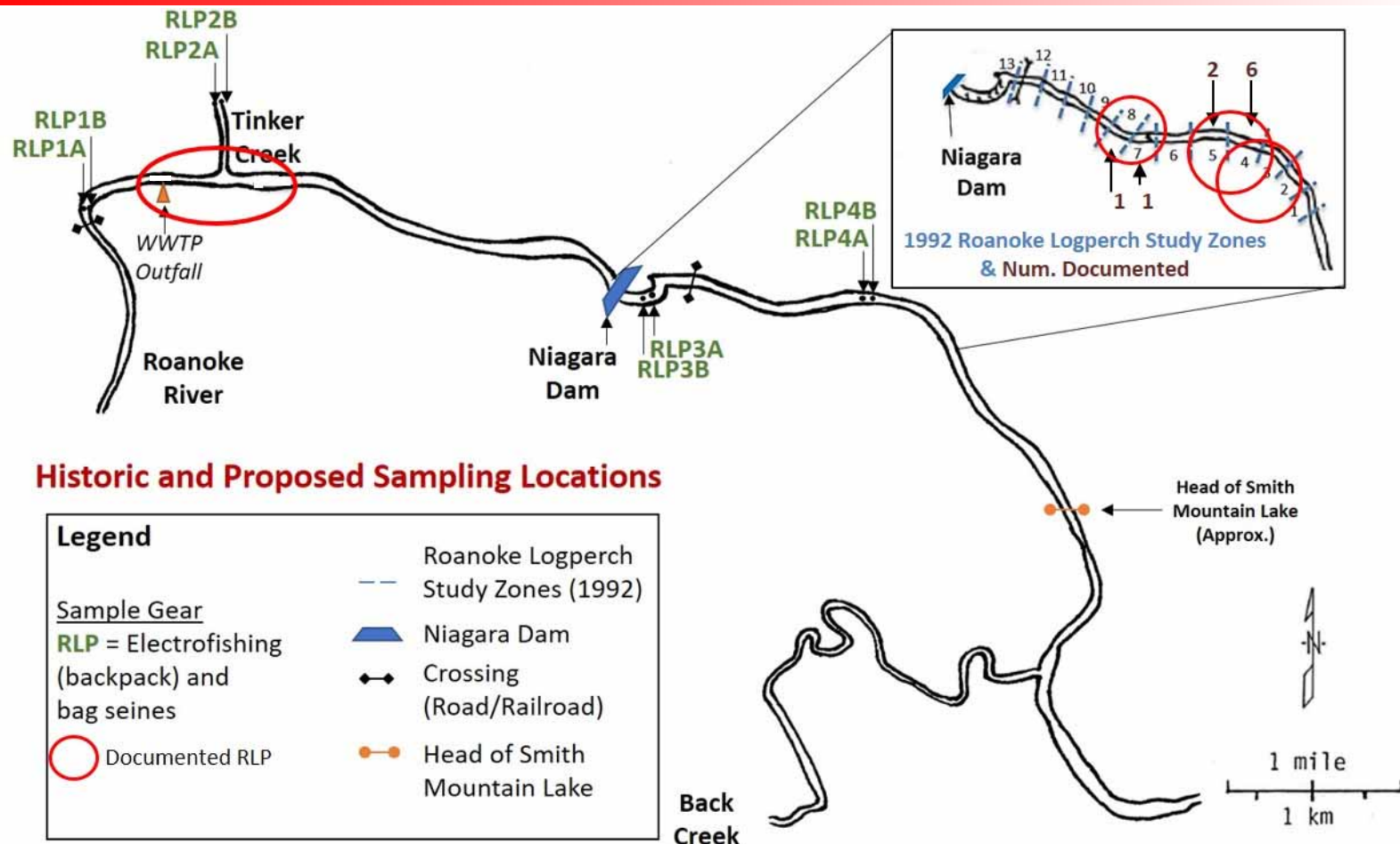
Roanoke Logperch Study

Field sampling

- Sample sites will include 4 historical logperch study sites and four new locations (2 above and 2 below Project)
- Methodology: backpack electrofishing into bag seine using fixed-area quadrats (4m x 2m) and timed snorkel surveys (3 ft maximum depth)
- Adults and juveniles: single event between July and September 2020
- Fish will be enumerated, weighed, and assessed for signs of injury, illness, or parasites

Calculate catch per unit effort (CPUE)
Evaluate results in Initial Study Report

Fish Community Study: Proposed Roanoke Logperch Study



Fish Community Study: Larval Life Stage

- The proposed fish community studies do not include targeted effort for egg or larval Roanoke Logperch life stages
- Larval drift study concerns:
 - Difficult to separate Roanoke Logperch taxonomically at the egg and larval stages
 - Complex sampling methodology will be needed to increase likelihood of sufficient effort and appropriate, life stage-specific habitat

Fish Community Study: Analysis and Reporting

- As part of the study report, the results will include:
 - Spatial and temporal trends in fish community composition and abundance across the study area
 - Documented habitat and species presence for Roanoke Logperch (adult and juvenile)
 - Raw data

Fish Community Study: Schedule and Level of Effort

- Level of effort: ~700 hours
- Cost: ~\$150,000

Task	Proposed Timeframe for Completion
Study Planning and Existing Data Review	September 2019 – March 2020
Fish Community Study	April 2020 – September 2020
Roanoke Logperch Study	July – September 2020
Distribute Draft Study Report with the ISR	December 2020



PSP and Revised Study Plan: Stakeholder Participation

- Comments on the PSP are due to FERC by October 7, 2019. Proposed modifications to the PSP must address the seven FERC study criteria in 18 CFR §5.9(b).
- Formal comments should be filed with FERC and include the FERC Project number in the subject line (P-2466-034). These documents will also be available from FERC's elibrary under Docket P-2466.
- Stakeholders can contact Appalachian with questions or comments:

Jon Magalski

American Electric Power Service Corporation

c/o Appalachian Power Company

1 Riverside Plaza, Columbus, OH 43215

(614) 716-2240 jmmagalski@aep.com

- Appalachian will file the Revised Study Plan (RSP) on or before November 6, 2019.

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Closing



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Yayac, Maggie

Subject: FW: Niagara Hydro - Historic Fisheries Surveys and Related Studies

From: Angermeier, Paul <biota@vt.edu>

Sent: Wednesday, September 25, 2019 2:51 PM

To: Jonathan M Magalski <jmmagalski@aep.com>; Scott Smith (<Scott.Smith@dgif.virginia.gov> <Scott.Smith@dgif.virginia.gov>); McCorkle, Richard <richard_mccorkle@fws.gov>; John McCloskey <john_mccloskey@fws.gov>

Subject: [EXTERNAL] RE: Niagara Hydro - Historic Fisheries Surveys and Related Studies

This is an **EXTERNAL** email. **STOP. THINK** before you **CLICK** links or **OPEN** attachments. If suspicious please click the 'Report to Incidents' button in Outlook or forward to incidents@aep.com from a mobile device.

Hi Jon

Thanks for orchestrating the webex today. As promised, here are copies of the 2 reports I mentioned. Glad to discuss further as needed.

Paul

From: Jonathan M Magalski <jmmagalski@aep.com>

Sent: Monday, August 26, 2019 9:57 AM

To: Scott Smith (<Scott.Smith@dgif.virginia.gov> <Scott.Smith@dgif.virginia.gov>); McCorkle, Richard <richard_mccorkle@fws.gov>; John McCloskey <john_mccloskey@fws.gov>; Angermeier, Paul <biota@vt.edu>; McGurk, Brian <brian.mcgurk@deq.virginia.gov>

Cc: Elizabeth B Parcell <ebparcell@aep.com>; Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>

Subject: Niagara Hydro - Historic Fisheries Surveys and Related Studies

Good morning Scott, et al.,

As a follow up to our conversation during the Niagara PSP meeting a few weeks ago, please find attached historic reports for the comprehensive fisheries survey, the targeted Roanoke logperch survey and a report related to the bypass reach visual flow evaluation. We are currently working through the fisheries survey plans and will be in touch to discuss in September. In the meantime, please let me know if you have any questions or need anything else.

PS – I've included others for their information and to be transparent.



JONATHAN M MAGALSKI | ENVIRONMENTAL SPEC CONSULT
[JMMAGALSKI@AEP.COM](mailto:jmmagalski@aep.com) | D:614.716.2240
1 RIVERSIDE PLAZA, COLUMBUS, OH 43215

FINAL REPORT

Habitat associations for young-of-year Roanoke logperch in Roanoke River

By:

Jane Argentina and James Roberts
Department of Fish and Wildlife Conservation, Virginia Tech
Blacksburg, Virginia 24061

For:

Virginia Department of Game and Inland Fisheries
Blacksburg, Virginia 24060

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Summary

The Roanoke logperch population in the upper Roanoke River has been extensively monitored for 25 years, but the primary focus of this work has been on adults and large juveniles (Age 1 and older). We used quadrat-based seine hauls to examine habitat use of young-of-year (YOY; Age 0) Roanoke logperch at eight sites between May and October 2013 in the upper Roanoke River. YOY were rarely collected; we collected only 33 individuals in only 19 of the 1080 seine hauls that we made. YOY were not collected smaller than approximately 32 mm standard length (SL). YOY were collected more often than expected by chance in seine hauls in sandy, backwater, or *Justicia* patches, and less often than expected by chance in rocky or gravel patches. YOY showed preference for shallow, slow-velocity patches with gravel and cobble substrates throughout the sampling period. Between June and October, mean length of YOY increased from 32 mm to 65 mm (SL), and individuals gradually shifted into deeper water with faster velocity and larger bed substrates. Multiple sampling techniques may be needed to determine site occupancy and abundance, and collection methods should vary with time-of-year to maximize likelihood of YOY capture.

Introduction

Ontogenetic shifts (i.e., changes across life-stages) in habitat use are widely acknowledged in the behavioral ecology of species, but often ignored in general habitat use or patch occupancy studies (e.g. Stauffer et al 1996). The availability of life-stage-appropriate habitats can be critical to the persistence of a species, yet the difficulty of collecting young individuals limits our understanding of the role habitat availability for this life-stage plays in overall population dynamics. Stream fishes, in particular, are difficult to detect at a young age due to sampling conditions (e.g. high flows), low sampling efficiency, or difficulty in identification, but growth and survival during early life history are inherently important to fish population dynamics (e.g., Durham and Wilde 2009).

The federally endangered Roanoke logperch (*Percina rex*) exemplifies our generally poor understanding of early life history for stream fishes. Patterns of habitat use and availability have been characterized for adult, juvenile, and YOY life-stages in several Virginia populations (Rosenberger and Angermeier 2003). However, data for YOY were limited (i.e., less than 18 observations in any population) and based on data collected during a narrow sampling timeframe. This narrow window is unfortunate, because preliminary observations suggest that YOY habitat needs change considerably during their first year (Roberts and Angermeier 2006), indicating that models of YOY habitat suitability need to reflect season-specific variation in habitat use.

Knowledge of habitat suitability and needs for all life-stages is critical to effective management of this endangered species, including assessing the species' responses to

potentially beneficial or harmful human activities. For example, Angermeier and colleagues have spent the past 17 years (1997-2013) monitoring the Roanoke logperch's population responses to a major flood-control project on the Roanoke River in Roanoke, Virginia. The primary hypothesized impact is the mobilization of fine sediment from construction sites into the river, which, when deposited on the stream bottom, could reduce fish feeding and spawning efficiency. To this point, there has been no statistical evidence for construction-induced impacts to adult abundance or the suitability of adult habitat (Anderson et al. 2014). YOY habitat suitability might be just as vulnerable as or more vulnerable than adult habitat suitability to fine-sediment mobilization and deposition, but impacts to YOY habitat have not been a major focus of monitoring due to the lack of a robust understanding of YOY habitat needs over the entire first year of life. This precludes a comprehensive evaluation of the construction project's impacts, and similarly complicates such assessments elsewhere in the species' range.

These long-term monitoring surveys and previous studies have shown that habitats where YOY logperch are found are different than those used by adults. YOY rarely are collected during summer electrofishing surveys in the deep, swift runs where adult fish normally are collected. Based on visual surveys, preferred YOY logperch habitat in the upper Roanoke River appears to be shallow, slow waters in channel margins, tails of pools, backwater areas, and secondary channels (Rosenberger and Angermeier 2003; Roberts and Angermeier 2006). However, these observations are based on relatively narrow timeframes and few observed individuals, and the sampling protocol designed for YOY is unable to detect individuals in faster or deeper water that is difficult to visually survey.

The purpose of this study is to 1) describe associations between YOY logperch and common habitat patches; 2) describe temporal shifts in habitat associations from late spring through early fall; and 3) develop a preliminary model of habitat suitability for YOY logperch. We also use these data to suggest changes to sampling methodology and timing for future YOY studies.

Methods

We quantified habitat associations and temporal changes in distribution between habitat types using targeted, intensive sampling at eight sites in the Roanoke River between May and October 2013 (Figure 1). Sites were located between Salem and Roanoke,

Virginia, the stream reach with the highest population densities of Roanoke logperch in the upper Roanoke River basin (Rosenberger 2007). Sites were selected to coincide with those used by Angermeier and colleagues in the aforementioned monitoring project. These sites had been selected based on availability of habitat thought to be important to YOY logperch and prior visual observations of YOY there (Roberts and Angermeier 2006). Hourly stream temperature was monitored throughout the sampling season using a HOBO tidbit temperature logger. Daily average temperatures were calculated from hourly data. The monitoring station was approximately one kilometer upstream from the downstream-most sampling site (CR1).

Associations between YOY logperch and common habitat patches

Within each site, we used a 6'-tall x 8'-wide seine (1/16" mesh) to survey 20 habitat patches along a 200-300-m long reach at each site (Figure 2). Beginning at the downstream end of the site, we made seine hauls at 10-m intervals, moving upstream. Within each 10-m segment, we began approximately 2 m from the bank and seined towards the bank perpendicularly to the river channel; each patch was sampled with a single seine haul. A 10-m section was not sampled if water velocity was too fast or if bed sediments created an area that we could not sample efficiently with a seine (root wads or rip rap, for example). Depending on available habitat at each site, we sampled patches of sandy and rocky margins, backwaters, and water willow (*Justicia americana*) beds. We quantified microhabitat within each patch by measuring depth, velocity, and substrate size (on a modified Wentworth scale) at each corner of a 1-m² sampling frame placed in the center of each patch and visually estimated embeddedness of the entire sampled patch. These values were later averaged to create a mean value for each variable for each sampled patch. All captured YOY Roanoke logperch (Figure 3) were measured and released alive to the point of capture. Double sampling of individuals during a single survey was unlikely because of the distance between sampled patches.

Temporal shifts in habitat associations

Analysis of variance (ANOVA) models were used to test for spatiotemporal differences in availability of average depth, velocity, and substrate size in seine sets among sites and among sample periods. We used both bi-weekly and monthly averages for this

analysis. Furthermore, we used simple linear regression to test for relationships between YOY length and depth, velocity, and substrate size in occupied patches.

Preliminary model of habitat suitability for YOY logperch.

We inferred habitat preferences by comparing habitat characteristics of patches where YOY were collected (i.e. “occupied”) to those of all sampled patches (i.e. “available”). We used chi-square tests to examine differences between proportions of available and occupied depths, velocities, and substrate sizes by grouping data into bins (0.5-m depth bins, 0.5-m/s velocity bins, and ordinal sediment sizes).

Assessment of sampling efficacy

We compared the sampling efficacy of our seining method to that of previously used methods and related 2013 YOY abundance to previous estimates of YOY densities. Angermeier and colleagues conducted visual surveys for YOY logperch at nine sites on the Roanoke River (eight of which coincide with the present analysis) each summer from 2005-2013, usually during late July or early August. During these surveys, three to four biologists walked slowly upstream along both stream banks of a 100-300-m-long reach that included pool, run, and riffle habitats. All observed YOY logperch were counted, and this count was divided by the total stream length surveyed to estimate YOY density in the reach. These surveys generally occurred between late July and early August, because preliminary work suggested that earlier surveys could not detect YOY due to their small size and later surveys had lower detection because YOY had begun to shift to deeper, swifter areas that were more difficult to visually survey (Roberts and Angermeier 2006).

Analysis of growth rates

We plotted fish length by date collected and ran linear and non-linear, negative exponential growth model (von Bertalanffy model) to estimate growth rate and approximate hatch date. The von Bertalanffy growth model is expressed as the following:

$$l_t = L_{\infty}[1 - e^{-k(t-t_0)}],$$

where l_t is standard length at time t , L_{∞} is the asymptotic length reached by the fish when growth is zero, k is the growth parameter, and t number of days since birth (t_0).

Results

Overall, YOY rarely were collected except at CR1, the most downstream site. Although we collected YOY at three other sites, in each case only a single individual was ever captured (Table 1). No YOY were collected at the remaining four sites (Figure 1). In total, we collected 33 YOY among 19 of 1080 seine sets performed. Though we started sampling May 25, no YOY were collected until June 22, when collected YOY were 31 and 33 mm SL (Figure 4). Maximum observed lengths were recorded in September, when YOY reached up to 67 mm SL, though many were still 50-60 mm SL.

Associations between YOY logperch and common habitat patches

YOY were found in four “rocky” seine hauls, five “sandy” seine hauls, two “backwater” seine hauls, and eight “*Justicia*” seine hauls. There was no apparent tendency for YOY to occur adjacent to particular, main channel habitat configurations; nine occupied seine hauls were adjacent to main-channel riffles and ten occupied hauls were next to runs. None of the adjacent habitat was classified as “pool” habitats during sampling. Bed sediments in occupied seine hauls were typically more than 50% embedded, which is expected because sampling sites were along bank edges where substrates are normally more embedded.

Temporal shifts in habitat associations

Both habitat availability and habitat use changed through time. The results of the ANOVA indicate average depth, velocity, and substrate in sampled patches were significantly different among sampling dates, with depth and velocity usually decreasing through the sampling period, though the declines were not linear or consistent throughout the sampling period. Concurrently, as individuals increased in body size (which increased throughout the sampling period), habitat preferences shifted to deeper (Figure 5; $p < 0.05$, $R^2 = 0.4$) and swifter (Figure 6; $p < 0.05$, $R^2 = 0.15$) water and larger substrates (Figure 7; $p < 0.05$, $R^2 = 0.29$) (Figures 9-11).

Preliminary model of habitat suitability for YOY logperch.

Because most YOY captures occurred at site CR1, we asked whether habitat conditions at this site differed from those at other sites. Average water depth in the sampled area of CR1 was significantly deeper than all other sites ($p < 0.05$). Average

substrate size was significantly larger at CR1 than at CR3 and RR4, but not significantly different from any other sites. No significant difference in average water velocity among sites was found. Despite significant differences in the average depth and substrate among sites, preferred YOY habitat was available at all sampled sites. Because of these differences, further analyses focused on habitat use and availability at CR1, where the majority of YOY were collected.

Proportionally, YOY were more likely to occur in *Justicia*, sandy, and backwater seine sets than expected by chance, and less likely in rocky habitats than expected by chance ($p < 0.05$, Figure 8). YOY proportionally were found in deeper and slower water than expected based on availability within the sampled edge and backwater habitats ($p < 0.05$; Figures 9 and 10). YOY were collected in waters averaging 0.3 m deep (SD = 0.14 m), and in average velocities of 0.06 m/s (SD = 0.061 m/s). They also were found in areas with gravel-cobble (category 3-4) more often than expected ($p < 0.05$) and never in areas dominated by silt or bedrock bed substrates (Figure 11).

Analysis of growth rates

Both linear and exponential curves indicate an average growth of 0.4 mm/day. Using these models to back-calculate hatch dates of projected similar hatch dates of Roanoke logperch, and indicated that in 2013 average hatch likely occurred around May 15. This corresponds closely with both temperatures of historically –observed and captive spawning when water temperatures are near 15° C. Examination of average daily temperatures indicated that the daily average temperature in Roanoke River reached 15° C for the first time on April 7, and remained above 15° C after May 13, approximately the time collected individuals hatched in the Roanoke River. Models indicate that individuals were approximately 65 days old when we collected them on for the first time, on July 22. This model is fit using only YOY data, and is not appropriate for estimating growth rates of older age classes of Roanoke logperch.

Discussion

Roanoke logperch showed preference for specific river-margin habitat types. These preferred areas are backwater, sandy, or *Justicia* patches with slow (< 0.3 m/s) water velocity, shallow depth (mean = 0.3 m), and gravel or cobble substrates. Our results reinforce conclusions about habitat use by YOY Roanoke logperch from previous studies in

that YOY preferentially selected habitat that was deeper and slower than generally available habitat, and they showed a slight shift in habitat preferences as they increased in size. These shifts may reflect changing growth and survival needs and/or changes in susceptibility to predators. Although we were unable to detect YOY smaller than 31 mm (SL), we consistently collected individuals during each survey period after July 22, and these results reflect changing habitat use and growth of YOY throughout their first few months of life.

YOY Roanoke logperch were patchily distributed in the Roanoke River, and in CR1 in 2013, apparently reaching high abundance only at CR1, the downstream-most site sampled. However, suitable habitat was not limited to CR1 nor was there more preferred habitat at CR1 compared to other sites. Previous sampling (Anderson et al. 2014) indicates that abundances of YOY at CR1 are consistently higher than at other sampled sites. We could not, however, attribute this spatial pattern to any measured differences among sites, and we still do not know why YOY are observed more often and in higher densities at CR1. The higher densities could be due to a number of unmeasured factors, including proximity to high-quality spawning habitats, high prey availability or quality, low predation pressure, or meso/macro habitat conditions that enhance growth and survival. Other high-density sites in upper Roanoke River may exist but are currently unknown. Large-scale visual surveys, rather than the repeated sampling that occurred in 2013, to locate other high-density YOY habitats (perhaps over most of the known range in the upper Roanoke River) would allow us to better describe high-quality YOY habitat and factors that affect temporal variability in individual growth and overall YOY abundance.

Our findings suggest that apparent variation in annual abundance of YOY logperch must be interpreted in the context of potential variation in onset of spawning. Based on Anderson et al.'s (2014) monitoring data, 2013 appeared to be a low YOY abundance year relative to previous years (Figure 13). Unfortunately we cannot tease apart whether such differences among years are due to actual differences in abundance or to differences in detection probability across years and sites. Water temperature affects the timing of spawning and the rate of fish growth (Dion and Hughes 2004), both of which affect the likelihood of YOY detection at a given point in time. In the Roanoke River we do not know when spawning occurs and only one spawning event has been described in the scientific literature; in this event, Roanoke logperch were seen spawning in water temperature 12-14C in April (Jenkins and Burkhead 1994). Because of the scarcity of field observations of

spawning, our limited information about timing of spawning and relationship to water temperature is largely based on captive-bred individuals. In aquaculture systems with natural light and temperature regimes, adult Roanoke logperch became active and ready for breeding at approximately 15C (Ruble et al 2009).

We assume spawning is largely cued by water temperature, which varies greatly among years. In 2013, the daily average temperature of the Roanoke River did not reach 15C until April 8 and was not consistently above 15C until May 14. Our first collection of YOY was not until late July, two months after this putative cue for spawning (no YOY were collected prior to this date), and at that time individuals were 31-33 mm SL. In captivity, Roanoke logperch reached this size in one month (Ruble et al. 2009), but we do not know the relationship between growth rates of captive versus wild individuals. Growth rate in captivity may not reflect growth rate in the field because it is sensitive to temperature and food availability, and based on our models we calculate spawning occurred just before or around May 15. Individuals reached 32 mm after 65 days, indicating a much slower growth rate in the wild compared to captive populations. YOY have been seen during visual surveys after July 21 (but not before) during 2005-2013 (Figure 14). From these long-term observations and based on our growth models, we conclude that spawning often occurs between April and June, but not before.

Based on our results, we believe a combination of snorkeling and seining may be the most effective protocol to quantify YOY abundance and habitat use. Snorkeling allows for visual counts in water too deep or habitats too complex for YOY to be captured by seine. Seining allows for estimating growth from accurate length measurements collected across seasons and for quantifying habitat use changes associated with changes in body size. Furthermore, visual surveys should be performed in the last two weeks of August, when YOY are consistently big enough to detect but have not moved into faster, deeper habitats. This timeframe would minimize the likelihood of false absence records.

Acknowledgments

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analysis. This work was carried out under the auspices of Institutional Animal Care and Use Committee protocol 13-077-FIW at Virginia Tech.

Under ordinary circumstances, Paul L. Angermeier (U.S. Geological Survey [USGS], Virginia Cooperative Fish and Wildlife Research Unit, Virginia Tech) would have been a co-author on this report since he contributed significantly to the study design, editing, and administration. However, the USGS recently imposed an onerous, lengthy process for approving final reports to sponsors of Unit projects; the process incurs excessive time and/or monetary costs. To avoid these costs, which would not improve the content, quality, or utility of the final report, he chose to withdraw his name from authorship.

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Table 1. Number of young-of-year Roanoke logperch collected at each site during each sampling period in 2013. (-) indicates that a site was not sampled.

Date	CR1	CR3	CR5	RR1	RR3	RR4	RR5	RR6	Total
5/25	-	-	-	0	-	-	-	-	0
6/15-6/17	0	-	0	-	-	-	-	0	0
6/24-6/26	-	0	0	-	-	0	0	0	0
7/22-7/25	2	0	-	0	0	1	0	0	3
8/7-8/9	9	0	0	0	0	0	0	0	9
8/20-8/21	7	0	0	0	1	0	0	-	8
9/4-9/6	4	0	0	0	0	0	0	0	4
9/14/13	7	0	0	0	-	-	-	-	7
10/2-10/4	1	0	0	0	0	0	0	0	1

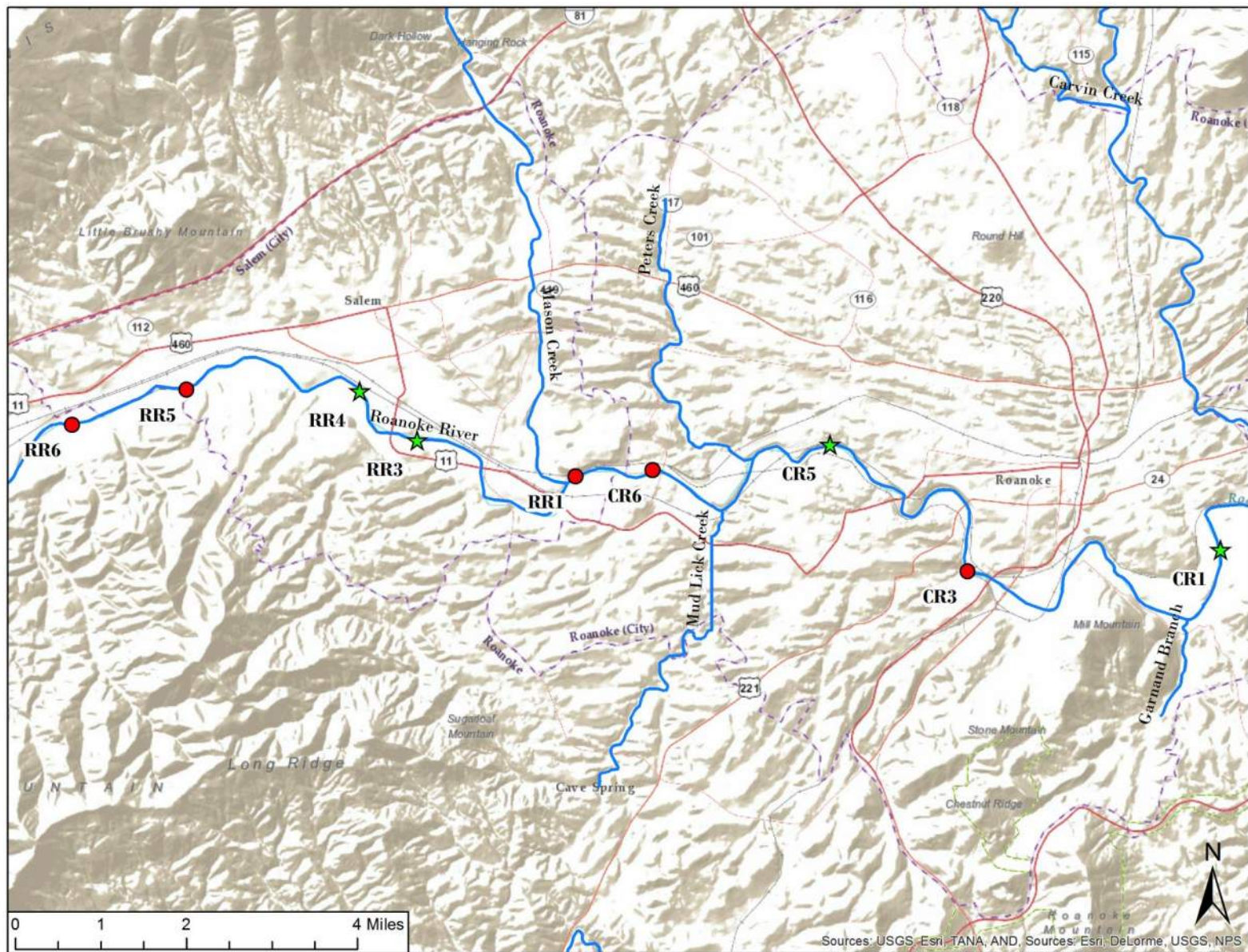


Figure 1. Map of Roanoke loggerperch sampling sites in the upper Roanoke River near Roanoke, Virginia. Red circles indicate no young-of-year were collected, and green stars indicate at least one young-of-year was collected.



Figure 2. Seining technique used to capture young-of-year Roanoke logperch in the Roanoke River.



Figure 3. Young-of-year Roanoke logperch captured by seine on July 22, 2013; standard length = 34 mm.

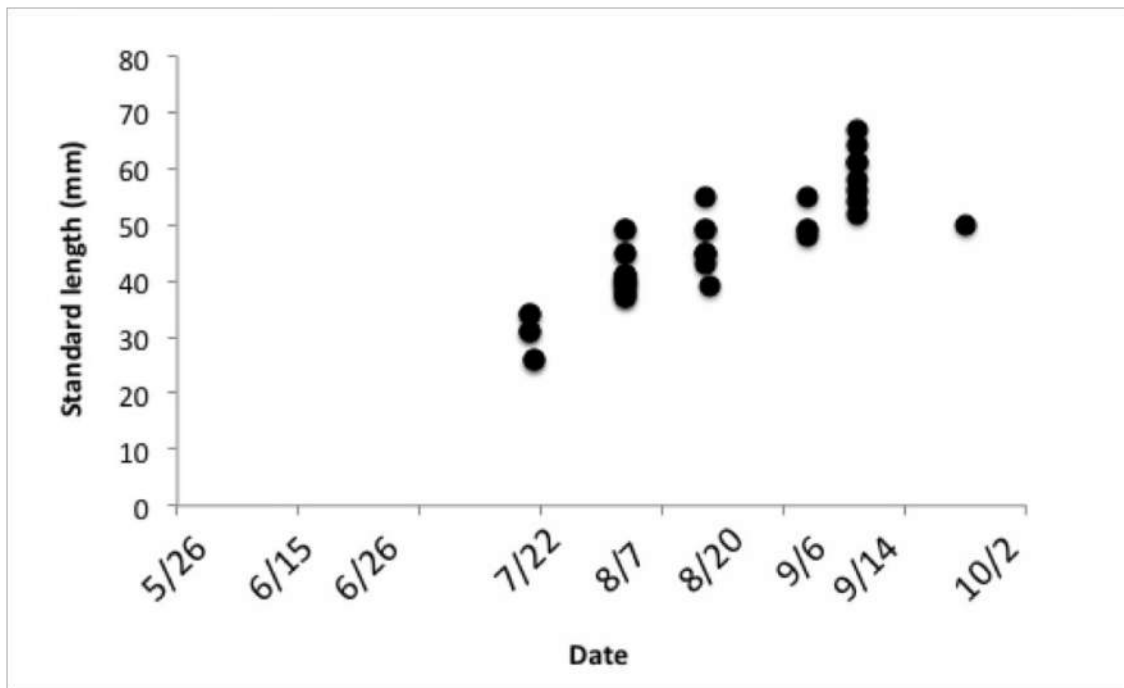


Figure 4. Standard length (mm) of young-of-year Roanoke logperch during each 2013 sampling occasion. No logperch were collected during the first three sampling occasions.

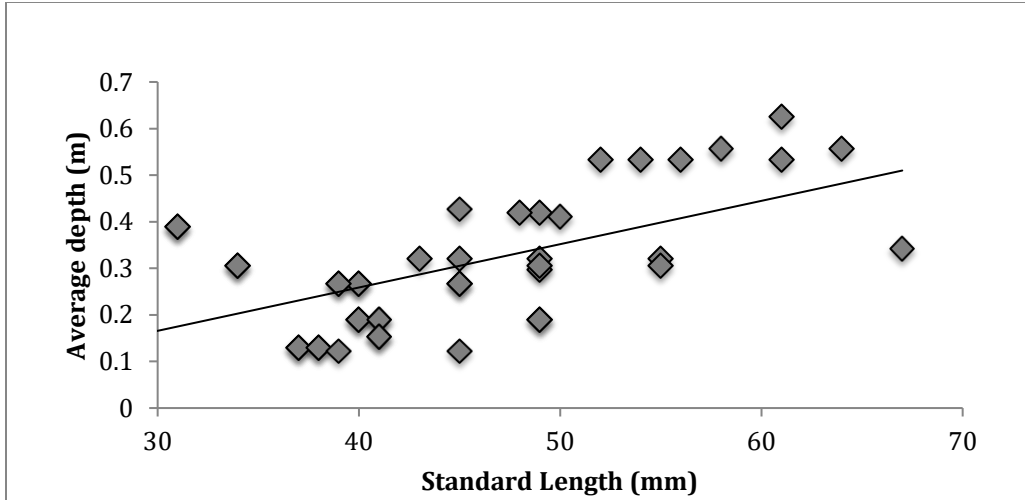


Figure 5. Plot of standard length of young-of-year Roanoke logperch versus average depth in seine hauls where logperch were captured. The plotted line indicates positive relationship between depth in occupied patches and standard length ($p < 0.05$, $R^2 = 0.4$).

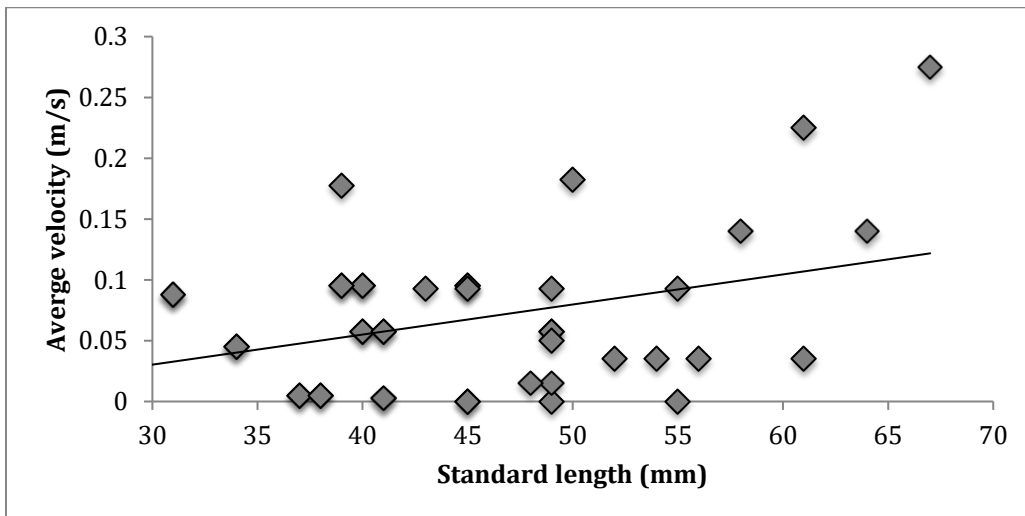


Figure 6. Plot of standard length of young-of-year Roanoke logperch versus average water velocity in seine hauls where logperch were captured. The plotted line indicates positive linear relationship between velocity in patches occupied and standard length ($p < 0.05$, $R^2 = 0.15$).

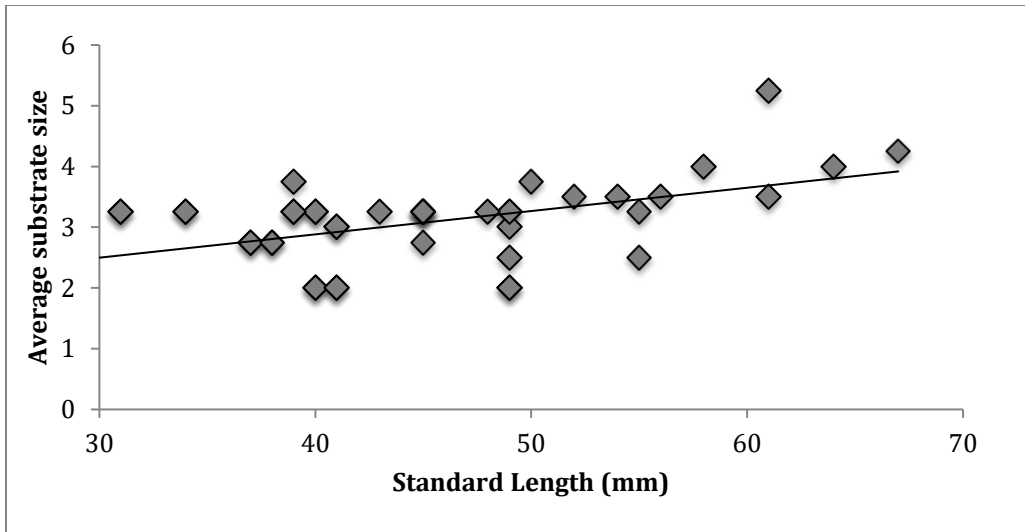


Figure 7. Plot of standard length young-of-year Roanoke logperch versus average substrate size in seine hauls where logperch were captured. The plotted line indicates positive relationship between substrate size in occupied patches and standard length ($p < 0.05$, $R^2 = 0.29$).

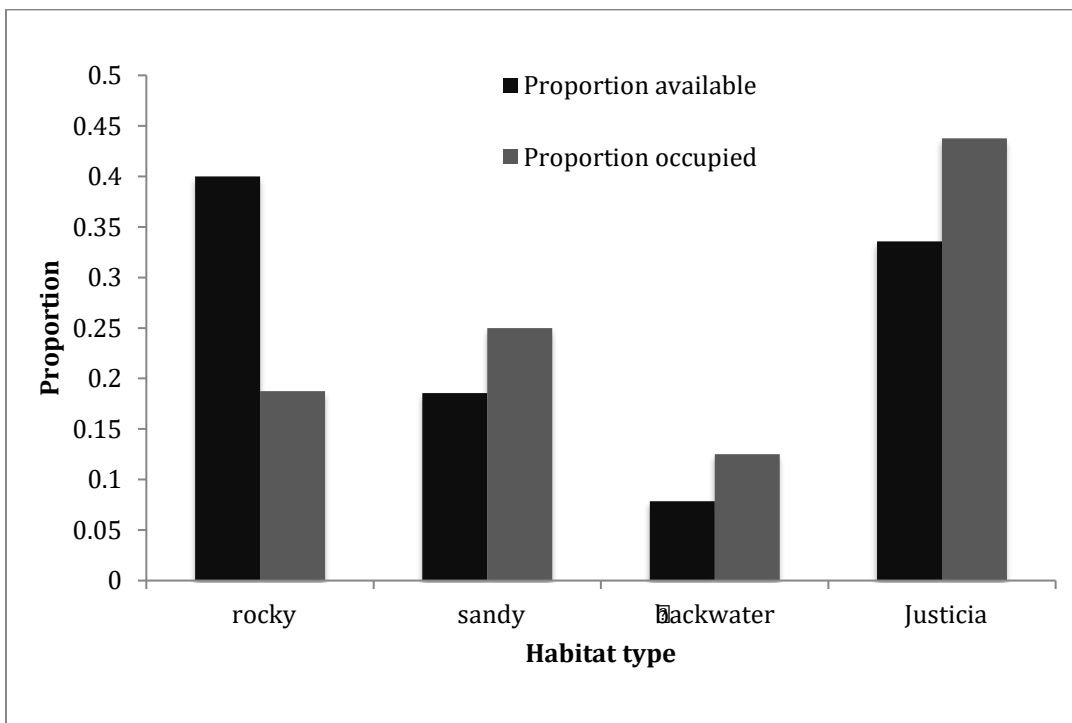


Figure 8. Proportional occurrence of young-of-year Roanoke logperch in seine hauls in four habitat types relative to proportional availability of habitat types at site CR1.

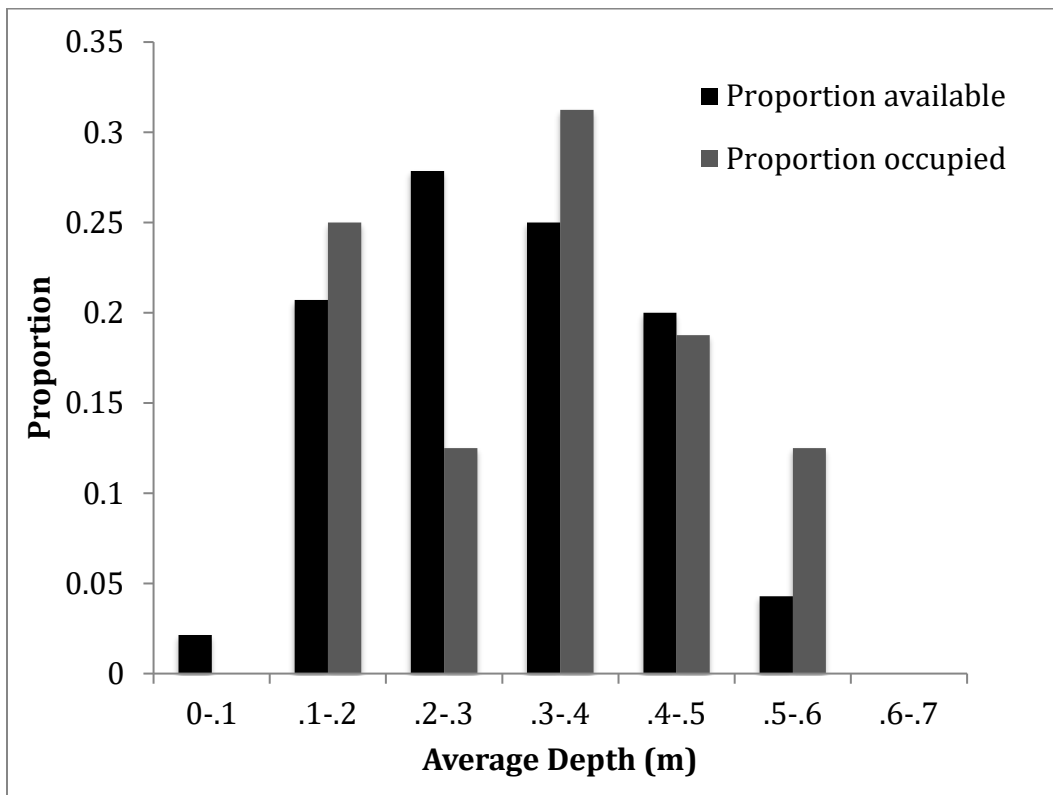


Figure 9. Proportional occurrence of young-of-year Roanoke logperch in seine hauls in different average depths relative to proportional availability of average depths at site CR1.

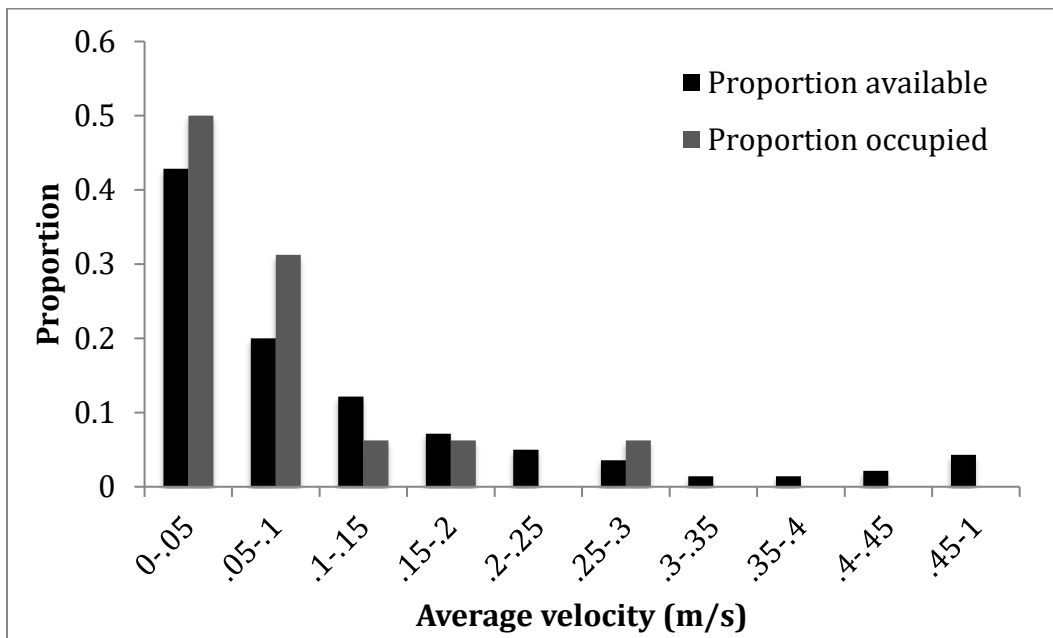


Figure 10. Proportional occurrence of young-of-year Roanoke logperch in seine hauls in different average velocities relative to proportional availability of average velocities available at site CR1.

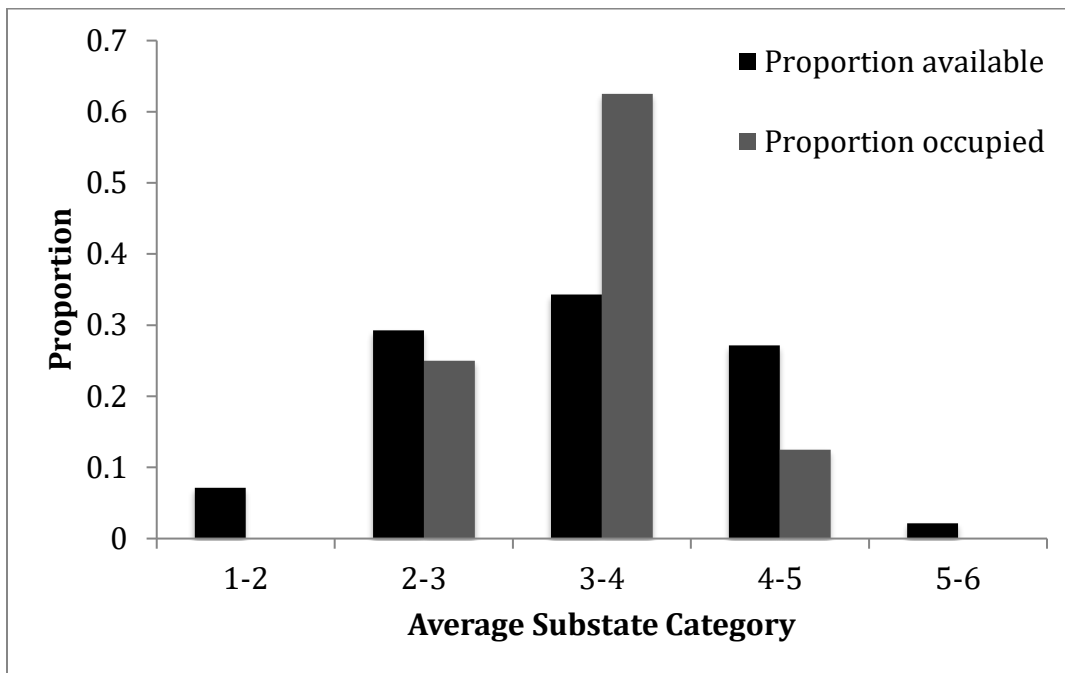


Figure 11. Proportional occurrence of young-of-year Roanoke logperch in seine hauls in different average substrate sizes relative to proportional availability of average substrate sizes at site CR1. 1) silt, 2) sand, 3) gravel, 4) cobble, 5) boulder, 6) bedrock.

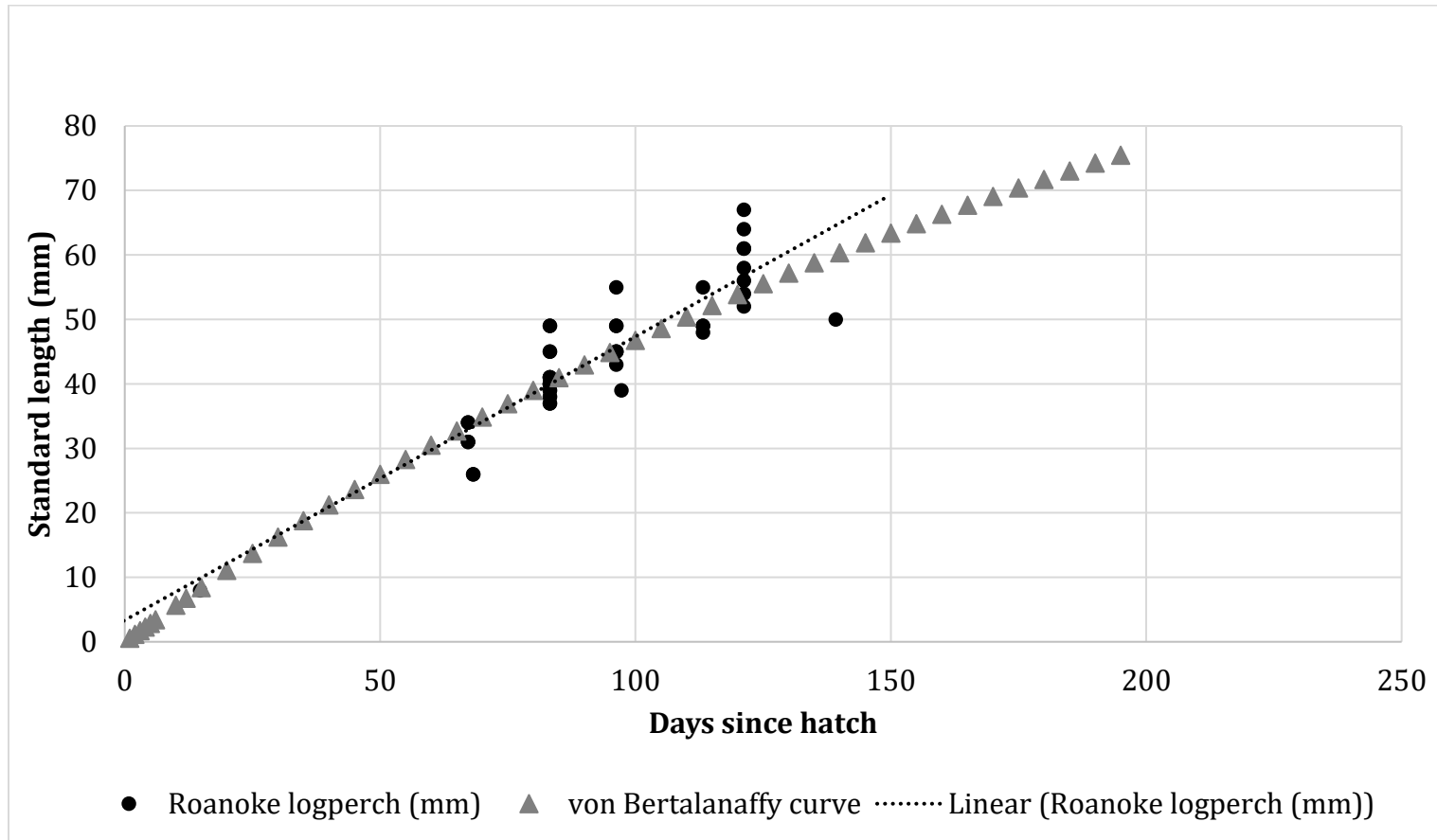


Figure 12. Growth rate estimates for Roanoke logperch based on linear (black dashed line) or von Bertalanffy (grey triangles) model. Black circles indicate standard length of individuals collected. Days since hatch are estimated days based on approximations from the growth models.

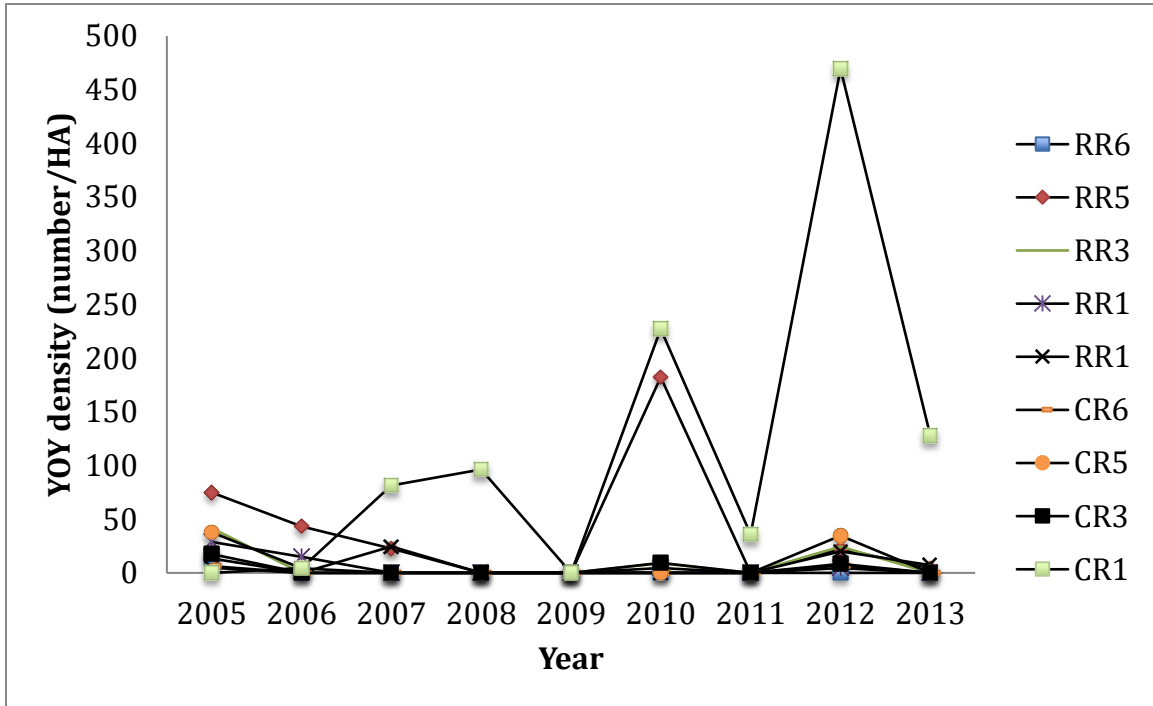


Figure 13. Density (number/hectare) of young-of-year (YOY) Roanoke logperch visually sampled in August 2005-2013 at nine sites in the Roanoke River (Anderson et al 2014).

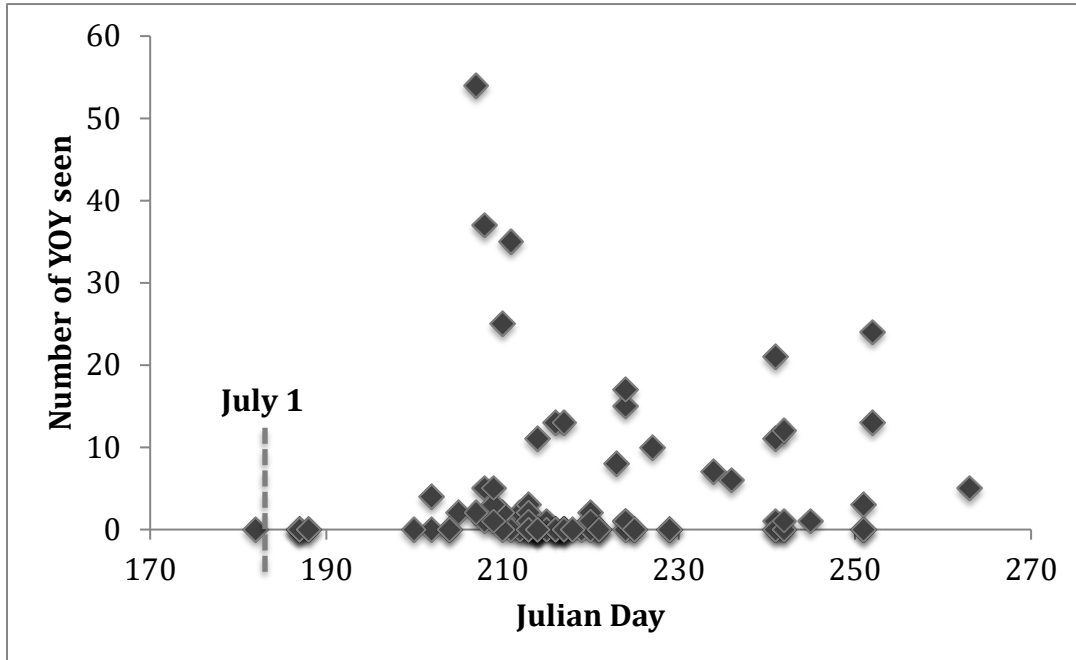


Figure 14. Plot of the day visual surveys were performed versus number of young-of-year Roanoke logperch seen during each visit across 9 sample sites. Data are from July-September 2005-2013 at nine sites in the Roanoke River. Dashed line indicates July 1.

Phenology and Habitat Use of Larval Darters in the Upper Roanoke River Basin

Final Report

By

Eric Hallerman

Tom Grant

Jane Argentina

and

Skylar Wolf

Department of Fish and Wildlife Conservation, Virginia Polytechnic Institute and State University,
Blacksburg, Virginia 24061

For:

Virginia Department of Game and Inland Fisheries
2206 South Main Street, Suite C
Blacksburg, VA 24060

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Background

Current knowledge of stream fish dispersal and habitat use is based primarily on post-larval stages, whereas year-class strength and population dynamics are often driven by larval survival. However, survival and growth rates and spatiotemporal patterns of dispersal and habitat use are unexplored for most species, especially nongame species. To understand how larval fishes affect population structure and dynamics, we need a better understanding of the ecology of fish larvae. Unfortunately, studies of larval fish have been scarce due to the difficulty in collecting them and identifying individuals to species.

The upper Roanoke River is home to six darter species, including the federally endangered Roanoke Logperch (*Percina rex*), which is endemic to the Roanoke, Dan, and Nottoway river basins of Virginia and North Carolina. Little is known about the larval ecology of *P. rex* or of the other five darters (*P. nevisense*, *P. roanoka*, *Etheostoma podostemone*, *E. nigrum*, and *E. flabellare*) in the upper Roanoke. Because all of the Roanoke's darters occur in other Virginia rivers, our findings will enhance understanding of larval fish ecology across much of Virginia and across other darter species, many of which are imperiled.

Spatiotemporal patterns of emergence or dispersal for larval darters in the upper Roanoke system are largely unknown. Further, there is little information available to distinguish logperch larvae from larvae of other darters. Such knowledge is crucial to assess vulnerability of and limitations to logperch populations, especially in the context of manageable anthropogenic impacts (e.g., water withdrawals, urbanization) that can affect logperch recruitment. For example, we do not know which river reaches function as reliable sources of logperch recruitment or the extent of dispersal by larval logperch.

Emerging genetics-based tools can help overcome the difficulty of larval fish identification and facilitate studies of larval fish ecology, but these tools need to be refined for species-specific applications. Mitochondrial cytochrome oxidase I (*COI*) gene sequencing has become a fast, inexpensive way to accurately identify individuals to species (Ivanova et al. 2007, April et al. 2011, Peoples et al. 2016).

In this first study of larval fish ecology in the upper Roanoke River system, we sampled larval darters from several sites and then used known mitochondrial *COI* gene sequences to identify larvae to species. We aimed to identify key areas of the upper Roanoke drainage used by larval darters, describe the timing of spawning and larval development, and investigate linkages among water temperature, river discharge, day length, and spawning periods. This new knowledge will aid in the conservation of these species. Initially, we identified five study objectives: 1) Identify key areas of the upper Roanoke used by larvae of six darter species, including Roanoke Logperch; 2) Describe the timing of spawning and larval development for darters; 3) Use sibship analysis to estimate duration and distance of larval movement; 4) Investigate linkages among water temperature, river discharge, day length, and darter spawning periods; and 5) Create an identification key based on photographs of captured and laboratory-reared darter larvae. We met these objectives with varying success.

Field methods

We used light traps and drift nets to sample larval fishes in the upper Roanoke system at eight sites (Table 1) from 18 March to 4 June 2015. Sites encompassed a longitudinal gradient of known Roanoke Logperch habitats and presumably represented the spatial variation in environmental conditions encountered by larval darters. We attempted to sample each site twice per week, but staffing limitations and high flows (March 27, April 19, and May 2) sometimes prevented us from sampling at

that frequency. Each site was sampled 13-16 times (Table 2). Sampling began each day around 8 pm and was completed between 11 pm and 1 am. Typically, sampling was conducted by two teams, which each sampled two sites per night.

The sampling schedule for each night (for each team) comprised two visits to each of two sites (i.e., four sites sampled each night). Upon first arriving at a site, we deployed four light traps (two quatrefoil and two benthic-funnel). Traps were fitted with LED lights to attract larvae. One quatrefoil and one benthic-funnel light trap were paired together in relatively deep water (usually in a run or pool > 0.5 m deep) to allow comparisons of their effectiveness. The second benthic-funnel light trap was placed separately in a shallow margin area (7-15 cm deep), a habitat configuration in which we frequently observed larval fishes. The second quatrefoil light trap was placed separately in a run or pool. All light traps were placed in slack water. Once deployed, the traps remained in place until the end of the sampling night (about 2 hours).

After light traps were deployed, we set drift nets. We staked two drift nets (approximately abreast) into the substrate in a riffle or run. Depth and velocity were measured at the mouth of each net. Drift was sampled for 20 minutes per sample. Two 20-minute samples were collected by each net on each night at a site: the first sample just after light traps were deployed and the second sample while light-trap samples were being retrieved and processed later in the night.

All material in a sample was placed in a glass jar or plastic bottle and fixed in 95% ethanol. Samples were separated and labeled by site, collection gear, and date. They were transported to Virginia Tech that night, then taken into the laboratory for storage the following day.

We collected temperature data via instream loggers deployed at six sites (South Fork, North Fork, Bohon Hollow, Mill Lane, Wasena Park, and River's Edge). We did not deploy temperature loggers at the Greenhill Park or Downstream Hospital sites because they were near other sites. Temperature loggers were programmed to record hourly readings throughout their deployment period (17 March – 11 June). However, the logger at North Fork malfunctioned and recorded temperature only once per day (at 12:00 am). Data from this logger were omitted from the analysis herein because we could not calculate a median daily temperature. In addition, the logger at Wasena Park was stolen between 23 April and 11 June, so we lack temperature data for this site after 22 April. For each site, we computed median water temperature for each day of record. We then calculated the median across sites for each of those days (i.e., herein we report the daily median of the medians). Temperature data from Wasena Park were included for dates 17 March – 22 April.

River discharge was taken as that occurring at the U.S. Geological Survey gauge at Glenvar, Virginia.

Table 1. Geospatial coordinates of eight sites at which larval fishes were sampled. Site codes are shown in parentheses. Site locations are shown in Figure 1.

Site	Latitude, Longitude
South Fork (SF)	37°12'00.33" , 80°14'22.99"
North Fork (NF)	37°13'57.10" , 80°15'13.86"
Bohon Hollow (BH)	37°14'58.77" , 80°08'31.28"
Greenhill Park (GP)	37°16'39.74" , 80°06'30.79"
Mill Lane (ML)	37°17'07.24" , 80°04'57.1"
Wasena Park (WP)	37°15'59.92" , 79°57'50.15"
River's Edge (RE)	37°15'11.42" , 79°56'45.08"
Downstream Hospital (DH)	37°15'23.84" , 79°56'24.63"

Site descriptions

South Fork- This site is where Seneca Hollow Road crosses South Fork Roanoke River. The upper end of the site is a run that spills over a low-water dam and turns into a riffle-run complex. It is in a wooded area adjacent to agricultural fields.

North Fork- This site is where North Fork Road crosses North Fork Roanoke River. A small tributary enters the stream on the left descending bank. There is intensive agriculture on both sides of the river.

Bohon Hollow- This site is where Bohon Hollow Road crosses Roanoke River. It is our most-upstream site on the mainstem. Upstream of the bridge is a run that becomes a riffle complex downstream.

Greenhill Park- This site is in Greenhill Park in Salem, VA. It is a deep run with a pool and a large gravel bar on the right descending bank. There is heavy industry on the left descending bank.

Mill Lane- This site is just upstream of where Mill Lane crosses Roanoke River in Salem, VA. It is a riffle-run complex flanked by urban land use.

Wasena Park- This site is upstream of the footbridge at Wasena Park in Roanoke, VA. It is at the head of an island complex featuring runs, riffles, small pools, and a braided channel.

River's Edge- This site is in Roanoke, VA adjacent to the River's Edge recreational fields and just upstream of the footbridge that crosses Roanoke River. The site is surrounded by intensive urban land use. The left descending bank is next to deep, swift water. The right descending bank is next to shallow water and an island complex.

Downstream Hospital- This site is a few hundred meters downstream of Carilion Roanoke Memorial Hospital in Roanoke, VA and is our most-downstream site. It is in the right descending channel (the left descending channel is separated by a large island). It is a riffle-run complex that becomes a deep pool-run downstream. The site is surrounded by intensive urban land use.

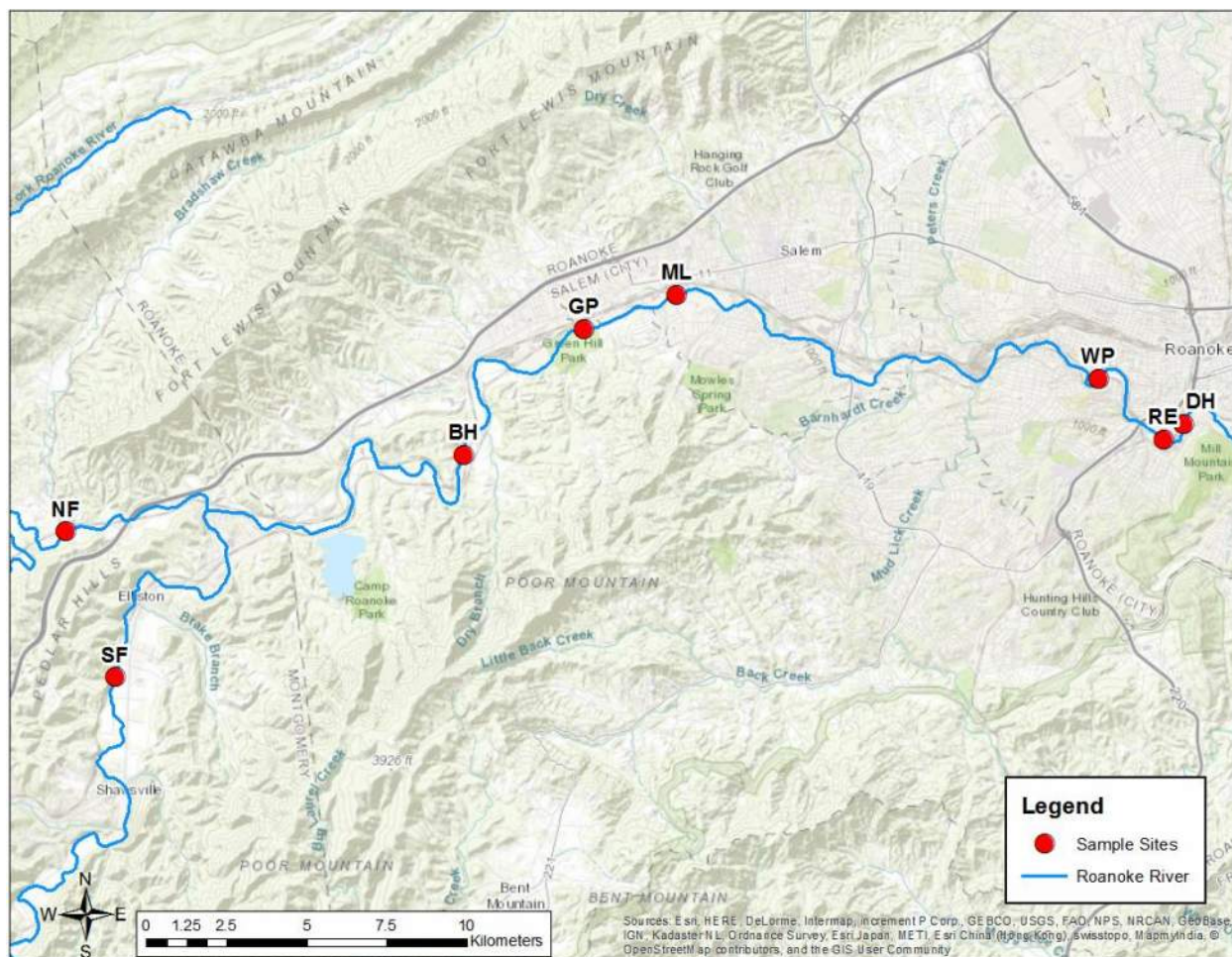


Figure 1. Map of sites sampled for larval darters. Site codes are given in Table 1.

Table 2. Sample dates for eight sites at which larval fishes were collected.

Site	Dates sampled (month/day) in 2015	Number of samples
South Fork	3/18, 4/1, 4/7, 4/13, 4/23, 4/27, 5/4, 5/6, 5/12, 5/18, 5/21, 5/27, 6/1, 6/4	14
North Fork	3/18, 4/1, 4/7, 4/13, 4/23, 4/27, 5/4, 5/6, 5/12, 5/18, 5/21, 5/27, 6/1, 6/4	14
Bohon Hollow	3/25, 3/31, 4/7, 4/13, 4/23, 4/24, 4/28, 4/30, 5/5, 5/6, 5/11, 5/14, 5/21, 5/27, 6/1, 6/4	16
Greenhill Park	3/25, 3/31, 4/6, 4/13, 4/23, 4/24, 4/28, 4/30, 5/5, 5/6, 5/11, 5/14, 5/21, 5/27, 6/1, 6/4	16
Mill Lane	3/25, 3/31, 4/6, 4/12, 4/27, 4/29, 5/5, 5/10, 5/13, 5/19, 5/25, 5/28, 6/3	13
Wasena Park	3/30, 4/6, 4/12, 4/18, 4/24, 4/27, 4/29, 5/4, 5/10, 5/13, 5/19, 5/25, 5/28, 6/3	14
River's Edge	3/23, 3/30, 4/2, 4/8, 4/18, 4/24, 4/27, 4/29, 5/4, 5/7, 5/11, 5/14, 5/20, 5/26, 5/28, 6/3	16
Downstream Hospital	3/23, 3/30, 4/2, 4/8, 4/28, 4/29, 5/5, 5/7, 5/11, 5/14, 5/20, 5/26, 5/28, 6/3	14

Sample processing methods

Samples usually were sorted within one week of collection. Drift samples were placed into sorting trays, where all larval fishes were removed, counted, and placed in 25-ml plastic vials containing 95% ethanol. Vials were labeled with the same information as their corresponding sample jars, as well as the total number of larval fishes in the vial. In particular, samples were labeled by site of capture, method of collection, date of collection and trap number or letter (e.g., benthic-funnel trap a or b; quatrefoil trap 1 or 2).

We visually sorted larval fishes to separate darters from other taxa, based on Simon and Wallus (2005). The contents of each 25-ml vial was placed into a Petri dish and inspected under a dissecting microscope. All larvae from each sample identified as a percid (i.e., darter) were moved to a separate 25-ml vial containing 95% ethanol. Each new vial was labeled with the original sample information, as well as the count of presumptive darters in the sample.

Although the initial sorting and storing of sampled larvae occurred soon after fieldwork was completed in June 2015, Tom Grant resigned from the project in July 2015, resulting in little progress being made the rest of that year.

In January 2016, Drew Sodergren was hired to revive sample processing. Unfortunately, by January 2016, 462 of the 1469 larval darters collected had become desiccated because of improperly fastened lids on their storage vials. Rehydration of the desiccated samples was attempted by mixing one part Dawn dish soap with 50 parts de-ionized (DI) water and immersing the desiccated samples in this solution for two days. After immersion was complete and the samples had rehydrated, samples were rinsed with DI water to remove the remaining soap solution and stored in 20% ethanol for one day. For

each of the two following days, the ethanol concentration was increased by 20% until a final concentration of 60% was achieved for indefinite storage.

The restored condition of the rehydrated specimens (ID numbers 1003-1469) was highly variable. We generally observed greater rehydration success with large specimens than small specimens. Rehydrated fish < 6mm in total length were especially damaged, often to the point where little meristic data could be collected from them due to their brittleness and faded coloration. Many rehydrated samples took on a translucent appearance. Specimens > 6mm in total length exhibited variable success in rehydration. Many specimens clearly retained myomere coloration, making some meristic counts possible. However, even myomere counts were unobtainable from 189 specimens due to faded coloration, small size, physical damage, shriveling, or curling.

Meristic and morphometric data were collected for each larval darter if possible. These data were collected by Stephen Floyd and Drew Sodergren. Larval specimens were processed in no particular order, except that rehydrated samples were processed last. Each specimen was placed under a microscope (Leica DFC295 with a KL1500 LCD light source), then given a unique identification number (in addition to their field collection label). Each specimen's number corresponded directly to an Excel file entry and an image file with the same name as the label. Within the Excel file, each specimen was represented by a row of meristic counts and documented via the Leica picture software. Counts include pre-anal length, post-anal length, total length, pre-anal myomeres, post-anal myomeres, total myomeres, and pre-anal body length as a percentage of total length. Additionally, on some rehydrated specimens, where myomeres could not be counted but vertebral counts or fin-ray counts were feasible, these data were recorded.

Etheostoma and *Percina* individuals were separated from other fish larvae using the number of pre-anal myomeres. Simon and Wallus (2005) reported that *Percina* exhibit more pre-anal myomeres than *Etheostoma*. Each larval darter specimen was stored in its own plastic vial (microcentrifuge tube), which contained a piece of write-in-rain paper showing the specimen's ID number; this number was also written on top of the vial. Larval specimens are now stored in 339 Latham Hall at Virginia Tech.

Genetic laboratory methods

Meeting all study objectives hinged on identifying field-collected larvae to species via mitochondrial *COI* gene sequences. We extracted DNA from larval specimens using the Qiagen Blood and Tissue Kit. The quantity and quality of DNA were assessed using a μ Lite Spectrophotometer (NanoDrop, Cambridge, UK).

Initially, we sought to utilize two sets of 'universal' fish primers (Ivanova et al. 2007) to identify larvae. These primers have been utilized in many papers, perhaps most notably in April et al. (2011). Over the course of three months in 2017, we attempted to amplify the DNA from the collected individuals using these two sets of universal primers. We immediately encountered problems with DNA failing to amplify during the polymerase chain reactions (PCR). While attempting to resolve this issue, many changes were made to the PCR protocol, including use of two types of *Taq* DNA polymerase, use of different concentrations of key reagents (e.g., buffer, DNA template, $MgCl_2$, and primers), cleaning of template DNA to remove potential inhibitors, and replacement of nearly every reagent. After achieving no success via these changes, we directed our focus to evaluation of these 'universal' fish primers. Upon a closer examination of April et al. (2011), we concluded that their primers were not well suited for amplifying *Percina* DNA. We infer that the authors reported results for successful amplifications, but did not report results for species whose DNA had not supported amplification.

To circumvent this unexpected hurdle, we designed custom primers that could amplify DNA of *Percina* species within the Roanoke River system. We chose three *Percina* (*P. nevisense*, *P. roanoka*, and *P. rex*) and three *Etheostoma* (*E. nigrum*, *E. vitreum*, and *E. podostemone*) species to design the custom primers (Table 3). We chose this suite of species simply because their gene sequences were archived in GenBank. Regardless of the precise details of primer design, we can subsequently identify a larva to species on the basis of *COI* sequence if at least one sequence for that species is archived in GenBank. Thus, our use of *E. vitreum* (absent from the upper Roanoke) versus *E. flabellare* (common in the upper Roanoke) in the primer design was not critical to outcomes of our larval identification. We used sequence data from distinct species to see which runs of nucleotides were variable and which were invariable. We then chose the invariable runs for primer design.

We acquired DNA sequences for our six focal species from GenBank ([ncbi.nlm.nih.gov/genbank/](https://www.ncbi.nlm.nih.gov/genbank/)), and used the Primer Blast tool (https://www.ncbi.nlm.nih.gov/tools/primer-blast/index.cgi?ORGANISM=163822&INPUT_SEQUENCE=DQ536430.1&LINK_LOC=nucore) to identify candidate primer pairs for the mitochondrial *COI*, *ND2*, and *cytB* regions for *Percina macrolepidia*, the only *Percina* species for which the whole mitochondrial genome is available on GenBank. Using these primers and a PCR protocol designed around their T_m (melting/annealing temperature) specifications, DNA from the collected larvae was successfully amplified for all three regions. Because DNA barcoding has been based upon the *COI* gene and there is a large reference database, we went forward with amplifications of *COI* for unidentified percid larvae.

We performed PCR amplification of the *COI* mitochondrial region using a modified protocol of Ivanova et al. (2007). PCR reactions had a volume of 22 μ L, including 14.7 μ L of ultrapure water, 2 μ L of 5xPCR buffer (10 mM KCl, 10 mM $(\text{NH}_4)_2\text{SO}_4$, 20 mM Tris-HCl (pH 8.8), 2mM MgSO_4 , and 0.1% Triton X-100), 2 μ L MgCl_2 (25mM), 0.1 μ L of each dNTP (10 mM), 0.1 μ L of *Taq* DNA polymerase (New England Biolabs), 0.4 μ L (10 μ M) of each custom primer (PrexCOIF and PrexCOIR), and 2 μ L of DNA template. We conducted all reactions on a BioRad MyCycler with a thermocycle profile of: 94°C for 2 minutes; 35 cycles of: 94°C for 40 seconds, 52°C for 60 seconds, and 72°C for 90 seconds; and a final extension for 10 minutes at 72°C. Amplification products were sent to the Virginia Biocomplexity Institute (VBI) for sequencing of forward and reverse sequences. Bidirectional sequences were aligned, assembled, and trimmed using Geneious 10.0.9 software (Geneious, Auckland, New Zealand). We used the Basic Local Alignment and Search Tool (BLAST; Altschul et al. 1990) to search GenBank for archived sequences with high sequence identity. Sequences were considered a match when > 98% sequence identity was shown for a percid species known to occur in the Roanoke River system.

Table 3. Custom DNA primers designed for the target regions of the mitochondrial genome in Roanoke River *Percina*.

PRIMER	REGION	SEQUENCE 5' - 3'	GC %	T_m (°C)
PrexCOIF	<i>COI</i>	TGC TTG AGC CGG AAT AGT GG	55.0%	57.4
PrexCOIR	<i>COI</i>	TAC TCC GGA GGA GGC AAG AA	55.0%	57.6
PrexCytBF	<i>CytB</i>	TTA CCC AGA TCC TCA CGG GC	60.0%	59.0
PrexCytBR	<i>CytB</i>	GAG GGT GGC GTT ATC TAC GG	60.0%	57.4
PrexND2F	<i>ND2</i>	CTT TGC CCT CCT GCT TCA GA	55.0%	57.4
PrexND2R	<i>ND2</i>	GTG CTT TGG CTC AAG ATG TG	50.0%	54.5

Aquaculture laboratory methods

Meeting Objective 5 required us to hold adult darters in tanks, where we could induce spawning and produce larvae of known identity. We constructed a tank system modeled after that used by Conservation Fisheries, Incorporated (CFI, Knoxville, TN; Photograph 1). The tank system was housed in Virginia Tech's Aquaculture Center (VTAC). Adult darters were kept in 20-gallon "long" tanks. To disturb spawning adults as little as possible, we outfitted tanks with an apparatus to passively catch emerging larvae. In particular, the outflow of each 20-gallon tank poured into a catch-bucket outfitted with a 500-micron sieve allowing water to drain out while retaining larvae. Larvae were collected from catch-buckets with a turkey baster and moved to pelagic rearing dishes (Photograph 2) with slowly circulating water. Each pelagic rearing dish had a drip-feed apparatus to distribute food over long periods of time to ensure that larvae had access to food. All larval fishes were fed a mixture of freshly hatched brine shrimp and artificial rotifers. To provide material for photographs, larval fish were euthanized with buffered MS-222 and preserved in 95% ethanol.

Through late summer and early autumn of 2014, we collected potential broodstock for Fantail Darter ($n=7$), Riverweed Darter (7), Johnny Darter (10), Roanoke Darter (9), and Chainback Darter (6) via electrofishing. We were unable to collect sufficient broodstock for Roanoke Logperch (1) due to the late approval of our USFWS sub-permit. We attempted to collect Roanoke Logperch for two full days (29-30 December), but collected only one specimen.

In December 2014, we reduced the photoperiod inside the VTAC to 10 hours to mimic winter. We also reduced the water temperature as much as possible (to 10-12 degrees C) given the facilities' capacity. In late January 2015, we started slowly increasing the photoperiod by 15 minutes per week to mimic the onset of spring.



Photograph 1. Overall arrangement of the tank system used to hold adult darters and retain and rear their spawned larvae. The upper tanks held broodstock. The white buckets are the catch-buckets designed to passively capture larvae.



Photograph 2. Pelagic dish for rearing larvae. The sieve in the middle prevents larvae from flowing out. The bottle (upper right) is a drip-feeder that delivers food.

Results

General

A total of 12,762 larval fishes were collected during the 2015 sampling period. After visually screening all samples, we identified 1,459 as larval darters. Some older larvae were visually identified as Roanoke Logperch, based on its characteristic snout.

We focused our analysis on larvae that were most likely to be *P. rex*, which have 20 or more pre-anal myomeres (Simon and Wallus 2005). All larval darters (300 individuals) with 20 or more pre-anal myomeres, plus one specimen with 19 pre-anal myomeres (*E. nigrum*), were digested (entire specimen) with proteinase K, then their DNA was extracted and amplified. Two larvae were discarded during the extraction process due to contamination. The remaining 299 samples were submitted to the Virginia Biocomplexity Institute for genetic sequencing.

Genetic identification of larval darters was generally successful. Sequences for 268 larvae matched, at 99-100% identity, with archived *COI* sequences for one of five darter species known to occur in the Roanoke River. An additional 17 consensus sequences matched archived species with less certainty and were excluded from further analyses. Geneious software was unable to align the forward and reverse sequences for 14 specimens. In these cases, forward and reverse sequences were assessed separately using BLAST. For this analysis, we considered species identification reliable if there was consensus on the species between forward and reverse sequences and at least one sequence returned a match > 98%. We assigned a positive identification to only one larva using this method; the other 13 remained unidentified. Overall, based on molecular markers, we identified 114 larval *P. rex*, 18 *P. nevisense*, 113 *P. roanoka*, 4 *E. nigrum*, and 20 "*E. variatum*" (Table 4). Although Variegate Darter is not known from the upper Roanoke system, 20 *COI* sequences matched that of *E. variatum* with high (99%) identity, while sequences from 18 other larvae (not included in our analysis herein) matched to *E. variatum* with less

(83 - 98%) consensus. In this report, we refer to the 20 larvae with high percentage identity scores as “*E. variatum*”.

With the molecular identifications in hand, we went back to assess whether pre-anal myomere counts were useful for identification of larval darters. Pre-anal myomere counts ranged from 20 to 26 for *P. rex* (Figure 2). As we did not genetically assay larvae with fewer pre-anal myomeres, some *P. rex* larvae may remain among those specimens with 18 or 19 pre-anal myomeres. Our findings for other larval darters showed similar patterns. Figure 2 shows distributions of pre-anal myomere counts for *E. nigrum* (mean = 19.75; standard deviation [SD] = 0.5), “*E. variatum*” (mean = 21.50 (1.57 SD)), *P. nevisense* (mean = 22.56 (1.54 SD)), *P. rex* (mean = 22.65 (1.63 SD)), and *P. roanoka* (mean = 20.50 (0.76 SD)). These results show considerable variation for this trait in larval darters, with the exception of *E. nigrum*, for which the number of observations was very small ($n = 4$). More critically for our purposes, there was considerable overlap of pre-anal myomere counts among species (Figure 2), leading us to conclude that such counts are not useful for distinguishing among larval darter species occurring in the upper Roanoke River system.

Table 4. Larval species composition, identified via molecular markers, at eight sample sites.

Site	Code	<i>P. rex</i>	<i>P. nevisense</i>	<i>P. roanoka</i>	“ <i>E. variatum</i> ”	<i>E. nigrum</i>	Total
Bohon Hollow	BH	12		8			20
Downstream Hospital	DH	23		28			51
Greenhill Park	GP	5	2	23	3	1	34
Mill Lane	ML	3	8	18	9	2	40
North Fork	NF	4		3		1	8
River’s Edge	RE	26	8	22	7		63
South Fork	SF	10		6	1		17
Wasena Park	WP	31		5			36
	Total	114	18	113	20	4	269

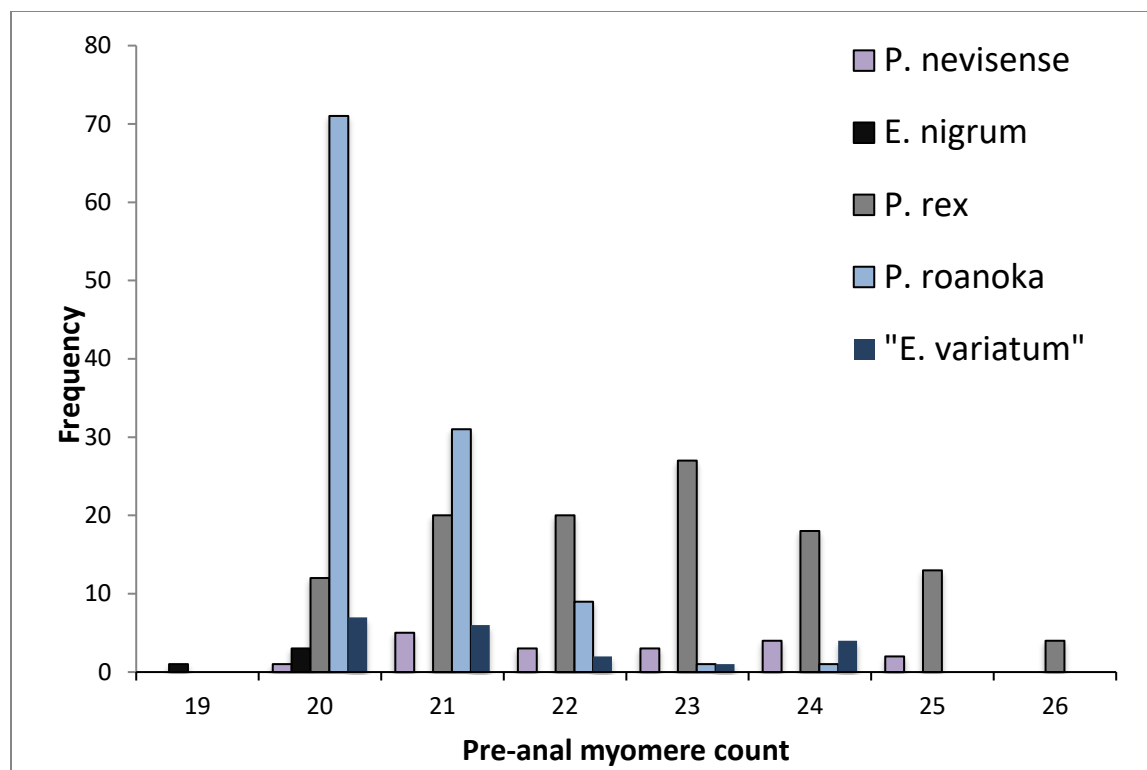


Figure 2. Frequency distribution of pre-anal myomere counts in sampled larvae of five darter species.

Objective 1: Identify key areas of the upper Roanoke used by larvae of six darter species, including Roanoke Logperch

Darters were present at all sites sampled. Of the specimens analyzed, Roanoke Logperch and Roanoke Darter were by far the most abundant and widespread, occurring at all sites (Table 4). Logperch were most abundant at the Wasena Park, River's Edge, and Downstream Hospital sites and least abundant at the Mill Lane, North Fork, and Greenhill Park sites. Notably, the River's Edge and Downstream Hospital sites are the farthest downstream. Other darter species exhibited species-specific spatial patterns, with none closely matching that of logperch. Eighteen *P. nevisense* were observed in the mainstem Roanoke River. *P. roanoka* larvae were observed in all river reaches, especially in the mainstem Roanoke River, and exhibited an overall abundance similar to *P. rex*. Four *E. nigrum* and twenty "*E. variatum*" were identified, mostly in the mainstem Roanoke River.

We identified no *E. flabellare* or *E. podostemone* larvae but they probably remain among our unprocessed specimens. Their absence from our results herein is not surprising given that, on average, *E. flabellare*, *podostemone*, and *nigrum* have 15 pre-anal myomeres (Simon 1994, Simon and Wallus 2005). The rarity of *Etheostoma* (e.g., four specimens of *E. nigrum*) among our processed samples strongly suggests that our choice to process only those specimens with at least 20 pre-anal myomeres biased our processed specimens against finding *Etheostoma*. The design of our primers was such that we expect to be able to identify *Etheostoma* species, including *flabellare* and *podestemone*, in any larval samples that we eventually analyze genetically.

Objective 2: Describe the timing of spawning and larval development for darters

Larval darters appeared in our samples episodically, with each species exhibiting marked unimodal or bimodal peaks in catch. Although precise fertilization-to-emergence times are unknown, they are highly temperature-dependent (warmer temperatures accelerate emergence). Given the observed water temperatures, we estimate that larvae emerged within two weeks of spawning (Emmanuel Frimpong, Virginia Tech, personal communication). Thus, larval catch is a reasonable indicator (with a lag-time) of fish spawning activity. We began sampling on 18 March but did not collect any larval fish until 12 April, when we collected darters and other fish taxa. Both of the sites sampled on this date (Wasena Park and Mill Lane) produced *Percina* larvae. *Etheostoma* larvae did not appear in samples until 27 April. Larvae of both darter genera were collected throughout the rest of the sampling period.

The phenology of larval catch was species- and site-specific (Table 5). However, patterns must be viewed cautiously because most of our *Etheostoma* larvae remain unanalyzed. Roanoke Logperch exhibited the longest larval period (12 April – 4 June) and individuals ranged in total length (TL from 6.3 mm to 15.65 mm). Johnny Darter exhibited the shortest period (25 May – 3 June), perhaps because our sampling concluded just as this species entered its main spawning period. Dates of first and last larval capture varied widely among species. By the end of our sampling period (4 June), larval emergence for *P. rex*, *P. nevisense*, and “*E. variatum*” appeared to be nearly finished, while catches of *P. roanoka* and *E. nigrum* were increasing. As explained above, we cannot speak to the timing of emergence of *E. flabellare* and *E. podostemone* larvae because they did not occur among our processed specimens. This caveat probably also applies to most of the *E. nigrum* we collected.

Gear-types varied considerably in their capture efficacy. As in other analyses, however, patterns must be viewed cautiously because most of our *Etheostoma* larvae remain unanalyzed. We collected larval darters in each of the three gear-types used, but most (75%) larvae were collected in drift nets, a passive sampling gear most likely to capture individuals unable to swim upstream against the current (Table 6). Quatrefoil traps and benthic-funnel light traps, which capture larvae that actively swim into them, were much less effective at collecting larval darters. Benthic-funnel light traps were particularly ineffective in collecting larval darters. We found only four individuals in these traps over the sampling season: two *P. rex* and two *P. roanoka*. In contrast, 64 individuals were collected in quatrefoil traps. Trap-type success varied among species and developmental size within species. Individuals collected in quatrefoil traps were larger than those collected in drift nets across all sampled species. A paired t-test showed that *P. rex* larvae were significantly ($p < 0.001$) larger (mean TL = 10.51) in samples from traps (mean TL = 10.51) than from drift nets (mean = 9.02). *P. nevisense* were only collected in quatrefoil traps when larval total length was > 10 mm. The *P. roanoka* we collected averaged 7.4 mm TL in drift nets and 11.75 TL in quatrefoil traps.

Table 5. Counts of larval darter species by sample date and site. Site codes are given in Table 4.

RE							NF						
Date	P. rex	P. nevisense	P. roanoka	"E. variatum"	E. nigrum	Total	Date	P. rex	P. nevisense	P. roanoka	"E. variatum"	E. nigrum	Total
18-Apr		3					27-Apr	1					
24-Apr	4	2					6-May	1					
27-Apr		2		1			12-May	1					
4-May				1			18-May			1			
7-May	14						1-Jun					1	
11-May	2		2				4-Jun	1		2			
14-May	4	1	11	4			Total	4	0	3	0	1	8
20-May	2		3				ML						
25-May			1				12-Apr	1	1				
26-May				1			28-Apr		2				
3-Jun			5				29-Apr	1	3		1		
Total	26	8	22	7	0	63	5-May		2				
DH							10-May			1			
28-Apr	1						13-May	1		4	7		
29-Apr	1						19-May			1	1		
5-May	1						25-May			1		1	
11-May	11						28-May			1			
14-May	5						3-Jun			10		1	
20-May	4		11				Total	3	8	18	9	2	40
26-May			12				GP						
28-May			5				13-Apr	1	2				
Total	23	0	28	0	0	51	23-Apr						
WP							28-Apr	1			1		
12-Apr	12						30-Apr	1					
14-Apr	4						6-May	1					
18-Apr	3						11-May	1			1		
29-Apr	1						14-May			2	1		
4-May	5		1				21-May			4			
10-May			2				1-Jun			12		1	
13-May	6		1				4-Jun			5			
25-May			1				Total	5	2	23	3	1	34
Total	31	0	5	0	0	36	BH						
SF							13-Apr	5					
4-May	1						28-Apr	2					
5-May	1						30-Apr	1					
6-May			1				5-May	1					
12-May	1						11-May	2		3			
18-May	3		1	1			14-May	1		1			
27-May	3		1				21-May			1			
1-Jun	1		2				27-May			1			
4-Jun			1				1-Jun			1			
Total	10	0	6	1	0	17	4-Jun			1			
							Total	12	0	8	0	0	20

Table 6. Summary of catch (number of larvae) for five darter species and three gear-types: benthic-funnel light traps (Benthic), drift nets (Drift), and quatrefoil traps (Quatrefoil). Catches are summed across all sample dates.

	Benthic	Drift	Quatrefoil
<i>P. nevisense</i>		14	4
<i>E. nigrum</i>		3	1
<i>P. rex</i>	2	85	27
<i>P. roanoka</i>	2	80	31
" <i>E. variatum</i> "		19	1
Total	4	201	64

Objective 3: Use sibship analysis to estimate duration and distance of larval movement

Following the experimental design of Roberts et al. (2016), we intended to infer dispersal patterns for members of different full- and half-sib families, focusing on *P. rex* larvae. Such information would enable us to characterize minimum movement distances and duration. However, we faced significant and unanticipated technical issues, especially insufficient numbers of *P. rex* larvae to conduct a meaningful sibship analysis. In particular, to analyze sibship for *P. rex* larvae, we would need a few hundred larvae collected at a given site and time. These samples would need to be screened using DNA markers at six to eight loci to have enough variability to definitively and defensibly ascertain family relationships (e.g., full- versus half-sibs). Further, to draw inferences about family dispersal, this procedure would need to be conducted simultaneously at multiple (e.g., five to six) sites in the system. In retrospect, given the larval capture rates we observed, a sibship analysis would require a study with much greater sampling intensity than the one reported on herein. Thus, even if we had not been forced to reinvent our DNA-amplification protocol (described above), available funding for this project would have been inadequate to support the more intensive field sampling and genetic analysis needed to support a sibship analysis.

Objective 4: Investigate linkages among water temperature, river discharge, day length, and darter spawning periods

River temperature varied considerably across sites and dates. Temperature exhibited a typical longitudinal pattern, with slightly cooler temperatures at higher elevations. The South Fork site generally had the lowest temperature, while temperatures in the North Fork site were more similar to those in mainstem sites. Temperatures at all sites followed a similar warming trend through the sampling period. A cold snap in late April dropped the temperature at all sites by 3-5 degrees Celsius, perhaps affecting spawning by *P. rex*, *P. nevisense*, and "*E. variatum*". As expected, river temperature and discharge were generally inversely related, except during a flood on approximately 19 April.

Larval catch of each species exhibited no strong relations to river temperature or discharge (Figures 3-7) but the spatial resolution of our temperature data may be too coarse to show such patterns. Moreover, patterns must be viewed cautiously because most of our *Etheostoma* larvae remain unanalyzed. Figures 3-7 relate the date-specific larval catch of *P. rex*, *P. nevisense*, *P. roanoka*, "*E. variatum*", and *E. nigrum*, respectively, to river discharge and median river temperature across five of our eight sites. *P. rex* and *P. nevisense* had already begun spawning before the flood on 19 April, after which larval catch of these species declined and later rebounded. Larvae of other species were collected only after this flood. Catch of "*E. variatum*" larvae declined after a smaller flood on 2 May and then rose to the highest number observed. All three *Percina* species began spawning as water temperature rose through 15°C, "*E.*

variatum” at 10° C, and *E. nigrum* at 20° C. Noting that all *Percina* species initiated spawning before all *Etheostoma* species, we suspect that day length may also be a critical cue for spawning. However, as discussed above, the observed phenology of larval emergence may be biased by our choice to analyze only those larvae with > 19 pre-anal myomeres.

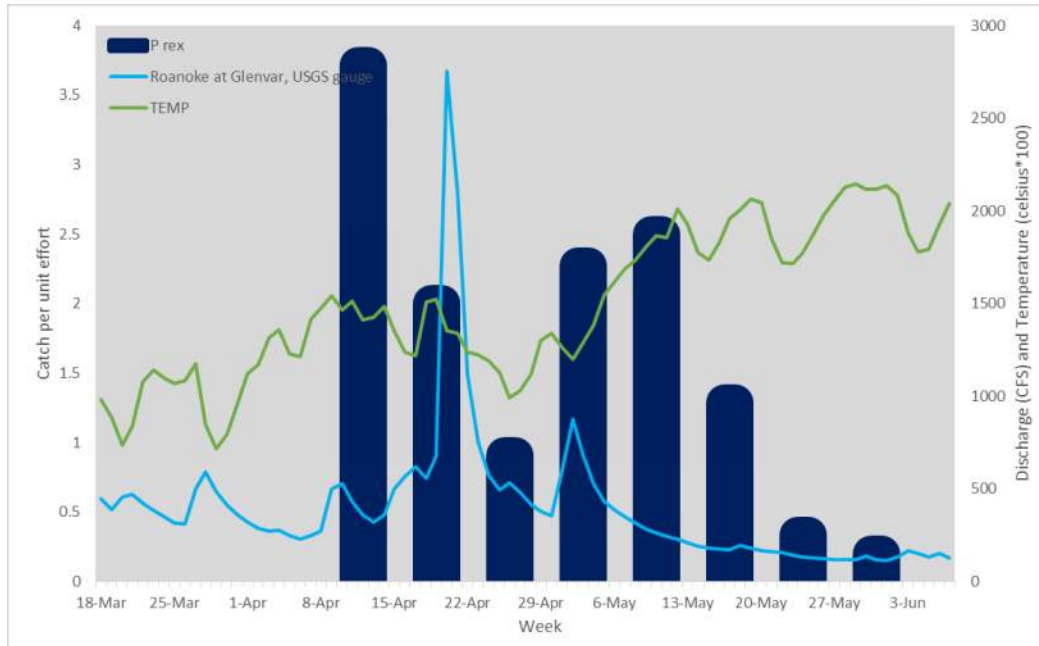


Figure 3. Relations among *Percina rex* larval catch, Roanoke River discharge, and river temperature during 18 March – 3 June. The histogram shows weekly *P. rex* catch-per-unit-effort (larvae/sites sampled each week). The blue line shows discharge (cubic feet per second; CFS) at the U.S. Geological Survey (USGS) gauge at Glenvar, Virginia. The green line shows median daily temperature (TEMP) across five sites.

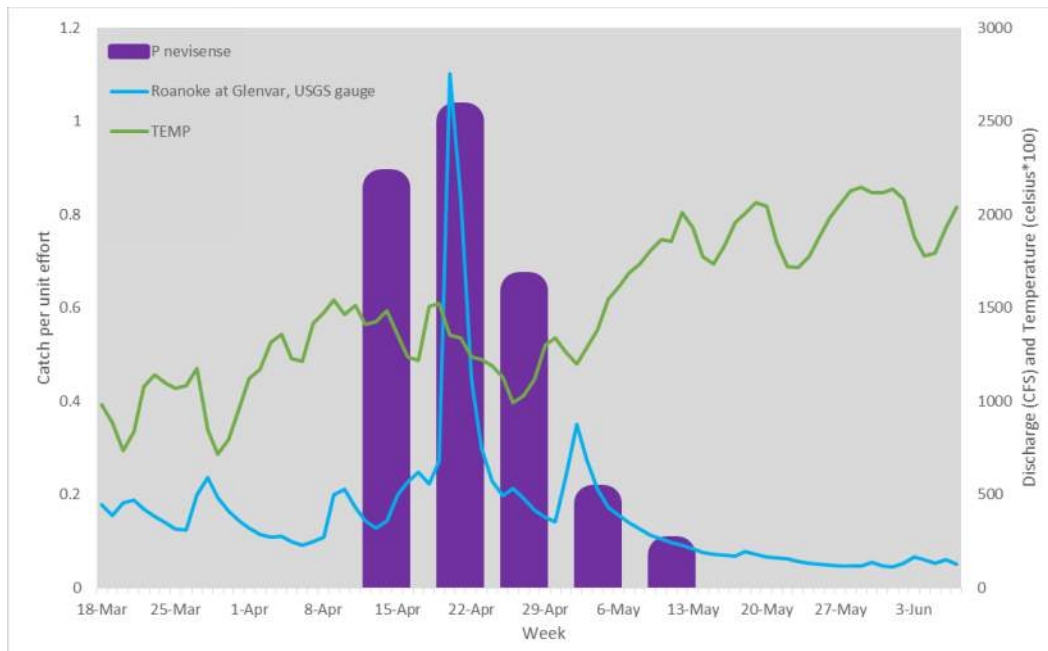


Figure 4. Relations among *Percina nevisense* larval catch, Roanoke River discharge, and river temperature during 18 March – 3 June. Format follows that of Figure 3.

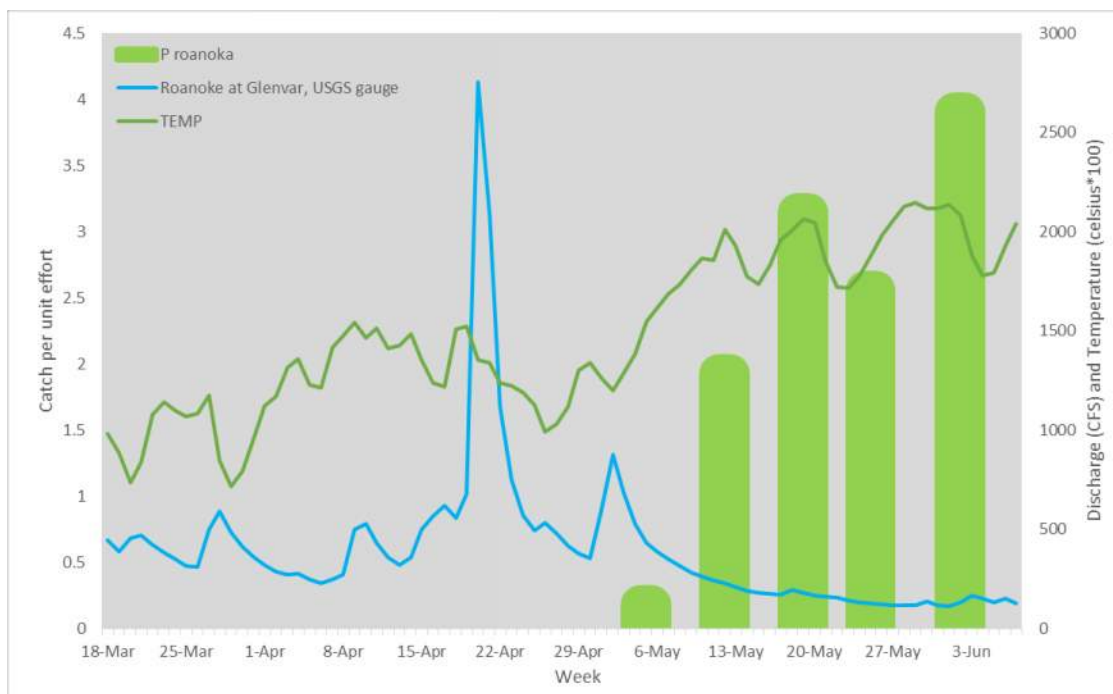


Figure 5. Relations among *Percina roanoka* larval catch, Roanoke River discharge, and river temperature during 18 March – 3 June. Format follows that of Figure 3.

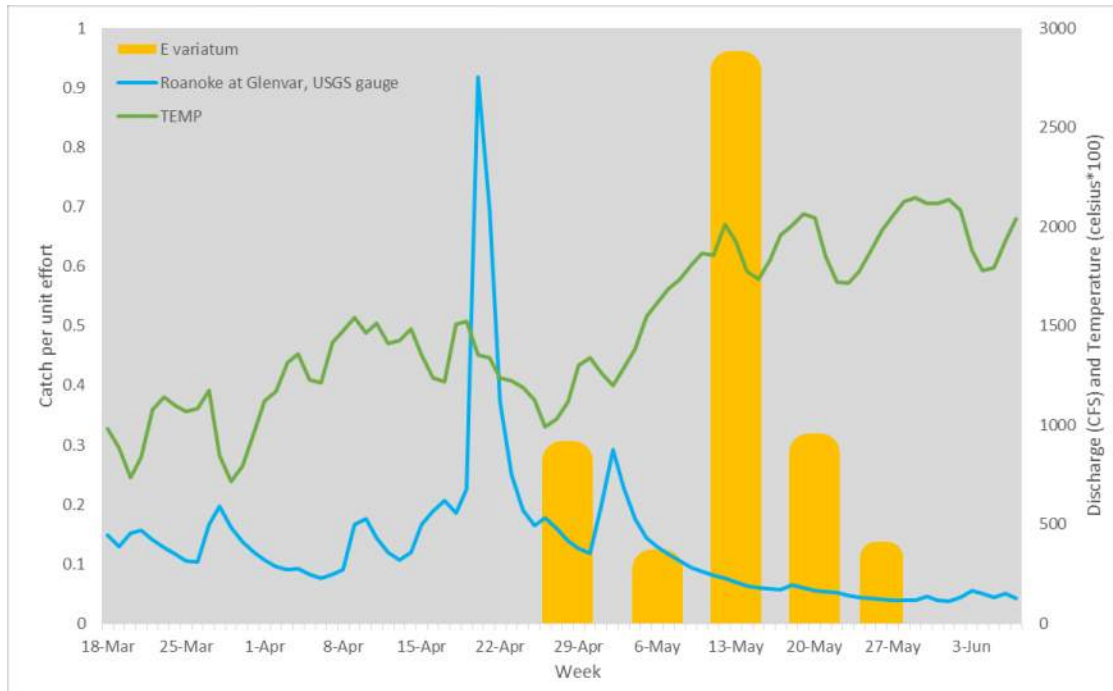


Figure 6. Relations among "*Etheostoma variatum*" larval catch, Roanoke River discharge, and river temperature during 18 March – 3 June. Format follows that of Figure 3.

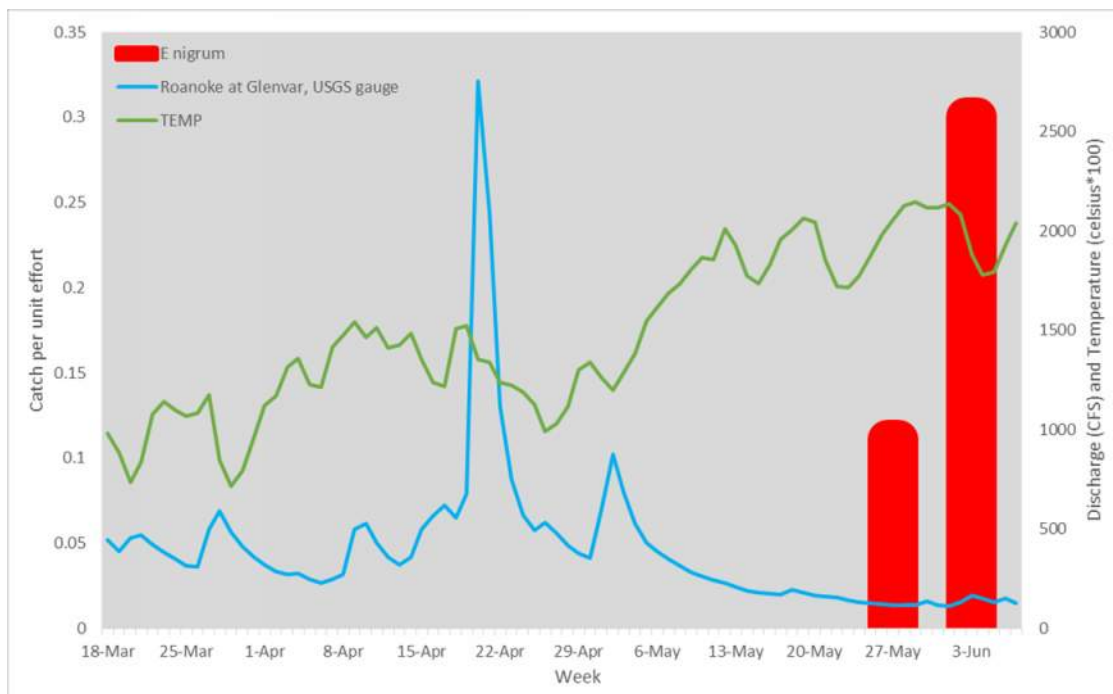


Figure 7. Relations among *Etheostoma nigrum* larval catch, Roanoke River discharge, and river temperature during 18 March – 3 June. Format follows that of Figure 3.

Objective 5: Create an identification key based on photographs of captured and laboratory-reared darter larvae

We individually labeled, measured, and photographed all larval darters prior to genetic analyses. The database of morphological traits and photographs is in hand. Completing genetic analyses for the remaining specimens would add to data available for developing a key. With all these data, we believe it could be feasible to create a preliminary key for larval darter identification. However, the limited time and budget for this project precluded our meeting this objective for this report. Given: a) the difficulty of holding and raising darters (see below), b) the early departure of Tom Grant, and c) the lack of sufficient funds, further progress on this objective is infeasible at this time.

Our initial plan was to use comparisons of lab-reared and wild-caught larvae, at a range of developmental stages, to develop an identification key. Although that plan failed, we did gain some knowledge of the difficulties and nuances associated with rearing darters. In particular, we observed some spawning success by the darters in our tank system at the VTAC. Johnny Darters spawned first, laying their eggs on the underside of a PVC joint (Photograph 3). We moved the eggs to a pelagic rearing dish, but all eggs became infested with mold within a week. The Johnny Darters laid three more clutches throughout the spring of 2015 but all eggs succumbed to fungus. As a result, we preserved only one larval Johnny Darter on 16 March, the day it hatched.

The only other species that spawned was Roanoke Darter. Three larvae first appeared in a catch-bucket on 5 February. We preserved one, but did not recover the others. Another larva appeared in a catch-bucket on 10 February, but disappeared soon after being placed in the pelagic rearing dish. Larval Roanoke Darters next appeared on 4 March, when five appeared in a catch-bucket. All larvae were again moved to a pelagic rearing dish, but disappeared overnight. We suspect they were attracted to the white sieve, then became stuck to it and died. The next Roanoke Darter larvae appeared on 30 March. Two were moved from a catch-bucket to a pelagic rearing dish. This time, we placed a continuously shining light on the edge of the dish. This seemed to stop the disappearance of larvae, perhaps because they were attracted to the light rather than the sieve. We euthanized one larva on day 5 and one on day 10. No more larvae appeared in the catch-buckets. In total, we preserved three Roanoke Darter larvae (one each on days 0, 5, and 10 post-hatch).

Several reasons may explain why so few darters spawned. First, although the photoperiod was reduced during winter, safety lights had to remain lit during the night, thereby preventing the space from becoming completely dark. Additionally, due to limited chilling capacity, we were not able to reduce the temperature in the tanks to mimic winter temperatures in Roanoke River. Lastly, we are unsure whether adult fish ever acclimated to the tanks well enough to feel comfortable enough to spawn. The fish that did spawn did so much earlier than anticipated, perhaps due to the peculiar temperature and light regime.



Photograph 3. Johnny Darter eggs found on 14 March 2015.

Discussion

While it would be useful to have real-time estimates of the phenology and species composition of emerging larvae, fisheries scientists have been limited in their ability to identify larval fishes – including darters – to species based simply on morphology. The advent of DNA barcoding introduces the possibility of identifying and counting wild-caught larval fishes. That is, with the development of an archive of mitochondrial DNA cytochrome oxidase I (*COI*) sequences, it is possible to amplify that gene from DNA extracted from larvae collected in the field and to identify them to species by searching archived DNA sequences on GenBank. Here, we describe development of methods for identifying larval darters captured in the field and present results showing proof-of-concept. While we focus on darters in the upper Roanoke system, these methods can be applied to other fishes and river systems, including but not limited to cyprinids (Peoples et al. 2017).

Our results showed that “universal” PCR primers for mitochondrial *COI* were not universally reliable, so we developed and demonstrated primers that did work for our focal darter species. Our results also showed that the numbers of pre-anal myomeres were not useful criteria for identifying *Percina* species. We analyzed only those individuals with 20 or more pre-anal myomeres. Future work might address identification of individuals with < 20 pre-anal myomeres.

Our results show that larvae of *P. rex* and other darters of the Roanoke River can be collected using multiple gear-types, and drift nets are particularly effective at collecting larvae as they passively move with the current. Benthic-funnel light traps were much less effective than quatrefoil traps. Many *Percina* species enter the drift during their larval phase (Simon and Wallace 2005). We successfully captured *P. rex* from the drift at all sampled sites, indicating spawning takes place in the North Fork, South Fork and mainstem of the Roanoke River. As *P. rex* grew, we also collected them in traps, suggesting they may

shift in behavior from dispersing downstream to settling into the benthos. However, our limited data do not allow us to distinguish between effects of sampling-gear efficiency and effects of changing *P. rex* density on catch rates.

Our work extends knowledge of the spawning ecology of *P. rex*. Jenkins and Burkhead (1994) reported that spawning probably occurs in mid-April and early May and may not extend into June in the upper Roanoke River. Our results (Figure 3) showed *P. rex* may spawn as early as late March, given that larvae first appeared in samples on 12 April. These larvae probably resulted from spawns occurring one to two weeks earlier. High abundance of *P. rex* larvae was observed in mid-April, declined after a flood, and then climbed to a second peak in early May. *P. rex* larvae were found in all river reaches sampled, with highest abundances in the mainstem Roanoke River. Noting no clear correlation between river discharge and larval catch, we suggest that day length and water temperature are critical cues for gametic maturation and spawning. A larger data set and analysis with information theoretic modeling may resolve the relative importance of these cues.

Numerous observations of *P. roanoka* larvae contribute to our knowledge of its spawning ecology as well. On the basis of gonadal condition, Hobson (1979) reported the spawning period as late May to early June in the Virginia mountains. Jenkins and Burkhead (1994) reported observation of spawning in the upper Roanoke River system on 23 April 1982. We first collected *P. roanoka* larvae on 4 May at Wasena Park. Numbers observed kept rising through our sampling period, with the highest number on our last collection dates in early June at Mill Lane. *P. roanoka* larvae were observed at all collection sites, with the highest numbers in the mainstem Roanoke River.

Our understanding of factors influencing the demographics of *P. rex* populations is limited. A key factor is presumed to be larval recruitment. We can obtain reasonable estimates of the number of spawners, but only at the end of the first growing season when juveniles can be captured with a seine can we estimate year-class strength (Roberts et al. 2016). With the development of the *COI* assay for darters demonstrated herein, along with knowledge of appropriate sampling methodology, we can more purposefully seek to relate larval abundance to subsequent recruitment of *P. rex* or other darters of interest.

The observation of larval darters whose *COI* sequences exhibited high similarity with those of *E. variatum* was unexpected, as neither *E. variatum* nor other saddle darters (i.e., *E. osburni*, *E. kanawhae*) are known to occur in the Roanoke River. Some *COI* sequences matched that of *E. variatum* with high (99%) identity, others with less (83 - 98%). Notably, the consensus sequences that identified with *E. variatum* are much longer than sequences matching other species, which may indicate the sequences extend beyond the *COI* region or are poorly aligned.

To further explore the validity of our “*E. variatum*” specimens, we compared our photographs of “*E. variatum*” larvae to images of known *E. variatum* larvae. This comparison was based on myomere counts, pigmentation patterns, overall larval size, and size at yolk-sac absorption. Taken together, these morphological features of “*E. variatum*” did not match those of *E. variatum* reared in tanks from adults collected in the Big Sandy River drainage (Pike County, KY), and were so variable among “*E. variatum*” specimens that we suspect multiple species are represented. Further, our morphological comparison indicates that “*E. variatum*” are not *E. podostemone* or *E. nigrum*, based on myomere counts and body size. Overall, this comparison casts doubt on the accuracy of our identification of “*E. variatum*” based solely on the species label returned by GenBank but leaves us puzzled about the true species identity of these specimens.

The observed discordance between the morphological and molecular analyses of "*E. variatum*" warrants further exploration. Some of the consensus sequences for "*E. variatum*" specimens were notably long and did not exhibit the 99-100% homology that we expect for a true match; hence, the identifications based on gene sequence patterns remain somewhat questionable. We suspect that some part of the analyzed *COI* sequence is homologous to a percid and the putative "*E. variatum*" identification followed from that, but resolving this puzzle will require additional genetic analysis (see 'Potential next steps' below).

Imperfect DNA match or not, our findings raise the possibility that *E. variatum* or another saddle darter has been introduced into the Roanoke River system but not yet been detected as a fully identifiable juvenile or adult. We suggest that fish surveyors be watchful for these potential new invaders during upcoming surveys, particularly between our Greenhill Park and Mill Lane sites (near Salem) and near our River's Edge site (in Roanoke), where these larvae were collected.

Potential next steps

Much remains unknown about early life history of Roanoke Logperch and darters in general. We suggest, and outline below, four potential studies to follow and build upon the work presented herein. Each study would require additional resources. Studies are ordered to reflect our assessment of their relative importance and cost-effectiveness (1 = top priority).

1. Complete the genetic analysis of the 1160 larval darters remaining in storage from this project. This would enable us to complete the preliminary spatiotemporal analysis, as well as contribute data for other studies. Analyzing the specimens with 18 or 19 pre-anal myomeres would be especially instructive, as some are likely Roanoke Logperch. Analyzing all the remaining larval darters would also provide a clearer picture of overall darter dynamics, especially for *Etheostoma* species.
2. Resolve the "*E. variatum*" puzzle. This could be approached on four fronts. First, because Jane Argentina surveyed genetic differentiation in *E. variatum*, we have reference DNA samples on hand. We could compare their *COI* sequences with those of "*E. variatum*" and with those stored in GenBank to more definitively assess the validity of our species identifications. Second, we may be able to analyze "*E. variatum*" DNA with a different gene (e.g., ND2 or cytochrome b) for which we have already developed primers. If so, these parallel results could be compared with those presented herein. Third, we could determine whether DNA from other known darter specimens from the upper Roanoke system is identified by GenBank as *E. variatum*. Fourth, we could carefully compare the morphology depicted in our images of "*E. variatum*" to that in a) images of other specimens that we identified to species in this study and b) images of larval darters with known identities that occur in the upper Roanoke system, as available from other larval-fish experts. Collections (or lack thereof) of adult saddle darters or other non-native species near where "*E. variatum*" were collected may provide the final solution to this puzzle.
3. Use existing and supplemental larval specimens to develop a larval darter key. This would require detailed analysis of specimen images, coupled with genetic identification, and ultimately provide a tool to simplify future identification of wild-caught larvae.
4. Conduct a more intensive and extensive survey of larval darters in the upper Roanoke system. A key design feature would be to ensure adequate sample sizes to support a sibship analysis, as initially planned for this project.

Acknowledgments

We thank Fleming Bors-Koefoed, Stephen Floyd, Zach Martin, Mike Pinder, Brandon Plunkett, and Drew Sodergren for their assistance in the laboratory and field and with data analysis. This work was conducted under the auspices of U.S. Fish and Wildlife Service Permit #TE697823-4 and the Institutional Animal Care and Use Committee protocol 14-106-FIW at Virginia Tech. Funding was provided by a grant from American Electric Power managed through the Virginia Department of Game and Inland Fisheries.

Under ordinary circumstances, Paul L. Angermeier (U.S. Geological Survey [USGS], Virginia Cooperative Fish and Wildlife Research Unit, Virginia Tech) would have been senior author on this report since he contributed significantly to the study design, writing, and administration. However, the USGS has an onerous, lengthy process for approving final reports to sponsors of Unit projects; the process incurs excessive time and/or monetary costs. To avoid these costs, which would not improve the content, quality, or utility of the final report, he chose to withdraw his name from authorship.

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Yayac, Maggie

Subject: FW: Niagara Hydro - Historic Fisheries Surveys and Related Studies

From: Jonathan M Magalski [mailto:jmmagalski@aep.com]

Sent: Wednesday, September 25, 2019 5:36 PM

To: Angermeier, Paul <biota@vt.edu>; Scott Smith (Scott.Smith@dgif.virginia.gov) <Scott.Smith@dgif.virginia.gov>; McCorkle, Richard <richard_mccorkle@fws.gov>; John McCloskey <john_mccloskey@fws.gov>

Subject: RE: Niagara Hydro - Historic Fisheries Surveys and Related Studies

Thank you, Paul for the information and thanks everyone for participating in today's call. I think it was a valuable and productive discussion. Have a nice evening....Jon



JONATHAN M MAGALSKI | ENVIRONMENTAL SPEC CONSULT

JMMAGALSKI@AEP.COM | D:614.716.2240
1 RIVERSIDE PLAZA, COLUMBUS, OH 43215

From: Angermeier, Paul <biota@vt.edu>

Sent: Wednesday, September 25, 2019 2:51 PM

To: Jonathan M Magalski <jmmagalski@aep.com>; Scott Smith (Scott.Smith@dgif.virginia.gov) <Scott.Smith@dgif.virginia.gov>; McCorkle, Richard <richard_mccorkle@fws.gov>; John McCloskey <john_mccloskey@fws.gov>

Subject: [EXTERNAL] RE: Niagara Hydro - Historic Fisheries Surveys and Related Studies

This is an **EXTERNAL** email. **STOP. THINK** before you **CLICK** links or **OPEN** attachments. If suspicious please click the 'Report to Incidents' button in Outlook or forward to incidents@aep.com from a mobile device.

Hi Jon

Thanks for orchestrating the webex today. As promised, here are copies of the 2 reports I mentioned. Glad to discuss further as needed.

Paul

From: Jonathan M Magalski <jmmagalski@aep.com>

Sent: Monday, August 26, 2019 9:57 AM

To: Scott Smith (Scott.Smith@dgif.virginia.gov) <Scott.Smith@dgif.virginia.gov>; McCorkle, Richard <richard_mccorkle@fws.gov>; John McCloskey <john_mccloskey@fws.gov>; Angermeier, Paul <biota@vt.edu>; McGurk, Brian <brian.mcgurk@deq.virginia.gov>

Cc: Elizabeth B Parcell <ebparcell@aep.com>; Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>

Subject: Niagara Hydro - Historic Fisheries Surveys and Related Studies

Good morning Scott, et al.,

As a follow up to our conversation during the Niagara PSP meeting a few weeks ago, please find attached historic reports for the comprehensive fisheries survey, the targeted Roanoke logperch survey and a report related to the bypass reach visual flow evaluation. We are currently working through the fisheries survey plans and will be in touch to discuss in September. In the meantime, please let me know if you have any questions or need anything else.

PS – I've included others for their information and to be transparent.



JONATHAN M MAGALSKI | ENVIRONMENTAL SPEC CONSULT
JMMAGALSKI@AEP.COM | D:614.716.2240
1 RIVERSIDE PLAZA, COLUMBUS, OH 43215

Niagara Project (P-2466-034)

The following comments refer to the Proposed Study Plan (PSP) and updated study plan (Fish Community Study) presented by AEP via conference call on 25 September 2019.

Study Request 1: Assessing Use of Project Waters by Larval Roanoke Logperch

The study plan (fish community study) presented via conference call on 25 September 2019 states in slide 13:

“The proposed fish community studies do not include targeted effort for egg or larval Roanoke Logperch life stages

- Larval drift study concerns:
 - Difficult to separate Roanoke Logperch taxonomically at the egg and larval stages
 - Complex sampling methodology will be needed to increase likelihood of sufficient effort and appropriate, life stage-specific habitat”

These concerns seem overstated. Recent work shows RLP larvae can be reliably distinguished from most co-occurring darter species via morphometric measures (primarily pre-anal myomere count). The most similar species (*P. nevisense*) is much less abundant. Further, the field sampling for RLP larvae is not especially complex or intensive. Processing the samples, sorting and photographing larvae, and doing the morphometric analysis is more time consuming. However, stopping short of verifying species identity via DNA barcoding (which is expensive) would still enable us to estimate about how many RLP larvae enter and exit the Project area. In any case, it’s not clear why sampling “complexity” justifies NOT sampling for RLP larvae, especially when proven methods are available and unmeasured incidental take is highly likely. More specifics regarding this study request follow.

1. Goals and Objectives

- a. Fill the knowledge gaps associated with assessing and mitigating incidental take of RLP, especially for larvae, upstream of, within, and downstream of the Project. These gaps are based on existing data summarized in the PAD.
- b. Assess distribution and abundance of RLP larvae upstream of the Project (in Roanoke River and Tinker Creek), at the upstream (reservoir-river) boundary of the Project, downstream of the powerhouse, and in the by-pass reach.
- c. Use meristic and morphometric features to identify RLP larvae from field samples.
- d. Compare RLP larval catch rates among sampling locations to assess differences in abundance attributable to the Project.

2. Resource Management Goals

A primary management goal for public water resources is to restore and protect populations of native freshwater fishes, including Roanoke Logperch (*Percina rex*), which is listed as endangered under the U.S. Endangered Species Act of 1973. Government agencies such as the U.S. Fish and Wildlife Service and Virginia Department of Game and Inland Fishes lead efforts to conserve and recover endangered and threatened species, but many other stakeholders also have roles in such efforts. Especially valuable are the roles scientists play in providing new knowledge to inform management actions so that management goals can be met cost-effectively.

3. Public Interest

This study request has significant public interest because it could contribute to a) conservation and recovery of a federally endangered species and b) restoration of the ecological health of Roanoke River upstream and downstream of Niagara Dam.

4. Existing Information

The Roanoke Logperch (RLP; *Percina rex*) is an endangered fish occurring in the Roanoke River drainage; its strongest population is in Roanoke River upstream of Smith Mountain Lake (Roberts et al. 2013. *Freshwater Biology* 58: 2050–2064); this reach includes the Niagara Hydroelectric Project. In 1990 and 1991, fish surveys conducted for Appalachian Power Company found RLP upstream and downstream of Niagara Dam. RLP have been captured in the Niagara Dam tailwater before it enters Smith Mountain Lake (Rosenberger, 2007. An update to the Roanoke Logperch Recovery Plan. Technical Report to U.S. Fish and Wildlife Service, Virginia Field Office).

Although RLP do not migrate distances comparable to many diadromous fishes, their movements typically far exceed the extent of the Project's boundaries. Roberts et al. (2016. *Ecology of Freshwater Fish* 25: 1–16) reported that 61 half-sibling pairs of RLP were captured an average of 14 km (maximum of 55 km) apart across the Roanoke River watershed over a 2-year period. The authors estimated the median lifetime dispersal distance of RLP to be 6–24 km. Most of this distance is covered during the first year of life.

RLP larvae enter the drift after hatching and ride the current for several km before moving to side channel and pool margin habitats to grow into juveniles. Thus, RLP larvae certainly enter the Project area during spawning season (early April to early June) but their abundance, spatial extent, and rates of survival are unknown. The sharp decrease in flow velocity, during typical discharge, as Roanoke River enters the Project area presumably leads to most RLP larvae settling to the river bottom, then dying because RLP larvae are poor swimmers, with limited ability to swim upstream. I know of no previous studies (including desktop studies) to help estimate Project impacts on early-life mortality of RLP. It is also possible that during high spring flows some RLP larvae drift all the way to the intake and go through the turbines or are carried over the dam into the bypass reach. Thus, sampling for RLP larvae downstream of the dam (but upstream of any riffles that might provide spawning habitat), as well as at

the mouth of the bypass reach, is warranted. Overall, it is likely that the Project substantially restricts movement and/or increases mortality for RLP living upstream and downstream of the Project, thereby qualifying as incidental take.

5. Nexus to Project Operations and Effects

A key cause of RLP's imperilment is fragmentation of its habitat by dams, which cause a wide range of adverse impacts. In addition to impeding movements crucial to completing RLP's life history, dams and their impoundments a) exacerbate population isolation and genetic drift; b) eliminate spawning, rearing, and foraging habitats; c) entrain larvae through gates and turbines (direct mortality); d) alter temperature and oxygen regimes, which affect growth and survival; and e) starve downstream reaches of gravel/pebble/cobble sediments, which are crucial to RLP spawning and foraging. Collectively, these impacts imposed on RLP by Niagara Dam represent a significant, but unmeasured and unmitigated, incidental take of an endangered species. Moreover, none of these impacts is addressed substantively in the PAD. Additional study of the distribution and abundance of RLP (all life stages) in and near the Project is needed to test AEP's belief that "aquatic resources downstream are [not] presently being significantly impacted by Project operations".

As currently presented, the PSP is not designed to fill the knowledge gaps germane to assessing and mitigating incidental take of RLP, especially for early-life stages. This shortcoming stems from the fact that previously used conventional methods (i.e. "historical fish community surveys") are ill-suited to documenting RLP distribution and abundance. Further, RLP data collected for the relicensing surveys conducted in 1990-1991 do not provide the statistical power needed to credibly assess potential Project impacts. AEP now proposes "using a combination of electrofishing and snorkel survey techniques" to sample for RLP. These methods may suffice for adult and subadult life-stages but are not appropriate for early life-stages. Although AEP asserts "The use of snorkel surveys can be an important tool for locating larval ... stages", I know of no cases where snorkel surveys have been used to document occurrence of RLP larvae, and strongly doubt such an approach is feasible. Further, the spatiotemporal design of the proposed surveys is not explained in sufficient detail to ensure the resulting data will provide the statistical power needed to credibly assess potential Project impacts on RLP.

As AEP correctly asserts, RLP "is not typically found in reservoirs or other lentic environments, preferring riverine habitat types and silt-free, loosely embedded substrate". However, I know of no studies documenting RLP use of a river-reservoir boundary, such as occurs in the upstream portion of the Project. It seems highly likely that various life-stages of RLP commonly use these relatively lotic habitats, especially during certain seasons. Documenting the spatiotemporal extent of this use is crucial to managing the Project in ways that minimize incidental take of RLP.

In conclusion, additional focused studies are needed to a) accurately document the distribution and abundance of RLP (all life stages) in and near the Project and b) assess potential impacts of the Project on RLP in terms of likely incidental take. In particular, distinct sampling protocols – not implemented in

previous Project surveys – are needed to document the distribution and abundance of RLP larvae, young-of-year juveniles, and adults (including subadults).

6. *Methodology Consistent with Accepted Practice*

The proposed work for this study request will be conducted consistent with generally accepted practices. The methods outlined herein draw heavily from recent and ongoing analogous studies in Roanoke River conducted by Dr. Eric Hallerman and colleagues at Virginia Tech.

I propose a spatial design with 7 sample sites:

1. upstream Roanoke River at AEP's RLP1 site shown in slide 12 of their 25 Sep 2019 presentation;
2. upstream Tinker Creek at AEP's RLP2 site shown in slide 12 of their 25 Sep 2019 presentation;
3. Roanoke River at upstream Project boundary;
4. Tinker Creek at upstream Project boundary;
5. 500 meters downstream of Tinker Creek mouth (or further upstream if river velocity is inadequate for drift-net sampling);
6. between the powerhouse and the mouth of the bypass reach;
7. at the mouth of the bypass reach.

Each site will be sampled with similar frequency and effort. Methods from analogous studies are summarized below.

We used drift nets to sample larval fishes during the RLP spawning period (early April – early June). Sites were sampled on average once every 4.2 days. Each night, two teams sampled 2–3 sites each. Sampling began soon after sunset and was completed by 2 am. Sampling at each site included two 20-minute drift-net sets (early and late) of one net. Drift nets were staked into the substrate in a riffle or run. Depth and velocity were measured at the mouth of each net. All solid material (larvae + debris) from a sample was placed in glass jars containing 95% ethanol.

Larval darters were separated based on distinguishing characters, including vent location, yolk sac and oil globule characters, pectoral fin development, myomere count, and pigmentation patterns. Each darter larva was photographed under magnification and stored in 95% ethanol in a microcentrifuge tube labeled with a unique identification number.

We counted preanal myomeres (*PM*) and measured total length (*TL*) along with seven other body measurements, which we expressed relative to (i.e., as a ratio of) *TL*, including: preanal length (*RPREL*, tip of snout to posterior margin of vent), head height (*RHEADH*, apex of optic lobe to ventral margin of head), head length (*RHEADL*, tip of snout to pectoral fin insertion), snout length (*RSNOUTL*, tip of snout to anterior margin of eye iris), eye diameter (*REYED*, longitudinal iris diameter), pectoral fin length (*RPECL*, from foremost visible point of insertion to distal tip of the membranous edge), and caudal peduncle height (*RPEDH*, least peduncle height excluding finfold. We counted all preanal myomeres

between the anterior-most myoseptum and an imaginary vertical line drawn at the posterior margin of vent, including any bisected by the line.

Findings to date show that *Etheostoma* and *Percina* have completely disjoint distributions of *RPECL*, with all *Etheostoma* having *RPECL* ≥ 0.11 (approximately $2 \times$ eye diameter) and all *Percina* < 0.11 ($1 \times$ eye diameter). *PM* completely segregated *P. roanoka* (*PM* < 21) from the two other *Percina* species (*PM* ≥ 21), but 2 of 19 *P. nevisense*, along with 14 of 36 *P. rex* had *PM* = 23.

A principal components analysis shows how darter larvae were distributed in multivariate morphometric space (Figure 2 below). Groups of larvae along the first component (x axis) were generally consistent with species identifications from DNA barcoding, but the three *Percina* species overlapped marginally. The first component, which contrasted *PM* and *RPREL* against the other variables (except *RSNOUTL*), explained 63% of the variation among the eight morphometric variables.

A classification-tree model also shows how morphometrics can be used to identify larval darters to species (Figure 3 below). Important morphometrics in the classification tree included *PM*, *RPECL*, and *RPEDH*. The model was 100% accurate in predicting genus (*Etheostoma* or *Percina*) and 89.5% accurate in predicting species overall. Among the misclassifications, two *P. nevisense* were predicted to be *P. rex*.

Overall, after considering both morphometrics and pigmentation, *P. nevisense* versus *P. rex* is the only species pair among Roanoke River darters for which some uncertainty remains. About 10% of *P. nevisense* – those with 23 *PM* – may be misclassified as *P. rex*, but no *P. rex* are likely to be misclassified as *P. nevisense*. However, these species can be distinguished readily via genetic markers. Given that *P. nevisense* is much less common than *P. rex*, reasonably accurate estimates of the distribution and abundance of RLP larvae can be obtained even if DNA barcoding is not used to confirm identities of larvae that may be either *P. nevisense* or *P. rex*.

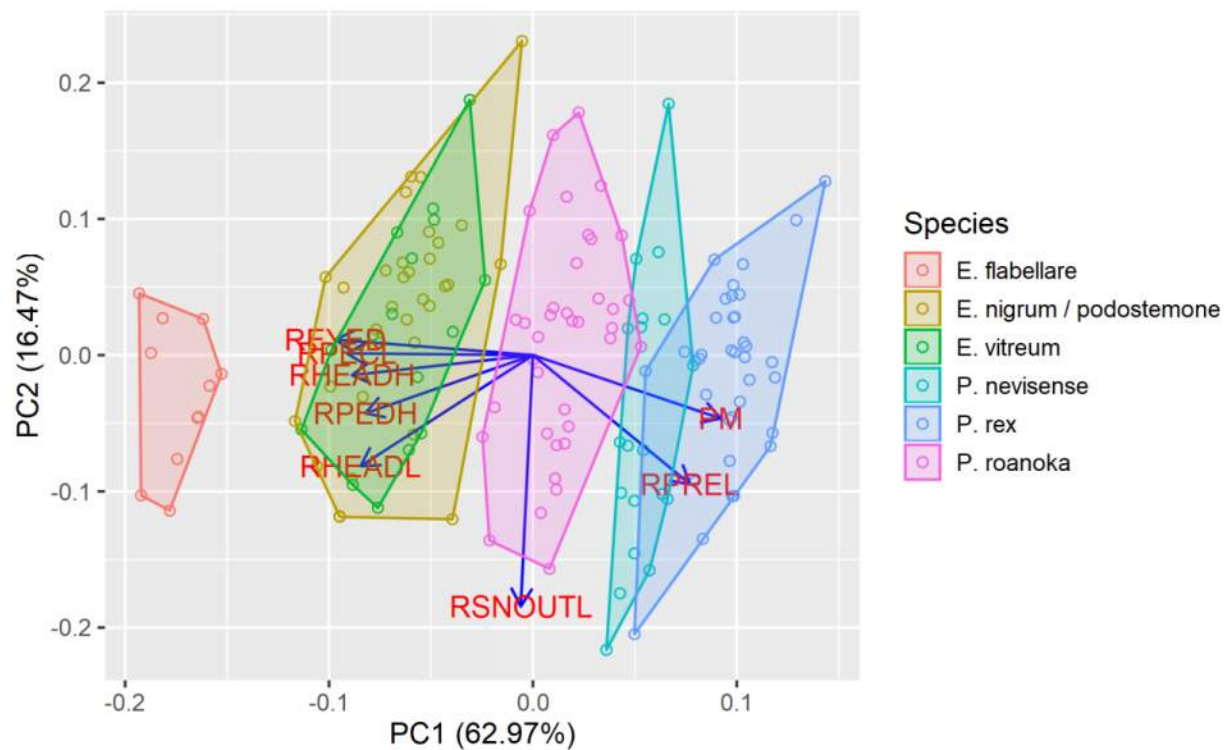


Figure 2 from Buckwalter et al (2019). Biplot from principal components (PC) analysis of eight morphologic variables measured on 152 larvae of six darter species. Each plotted circle represents one larva.

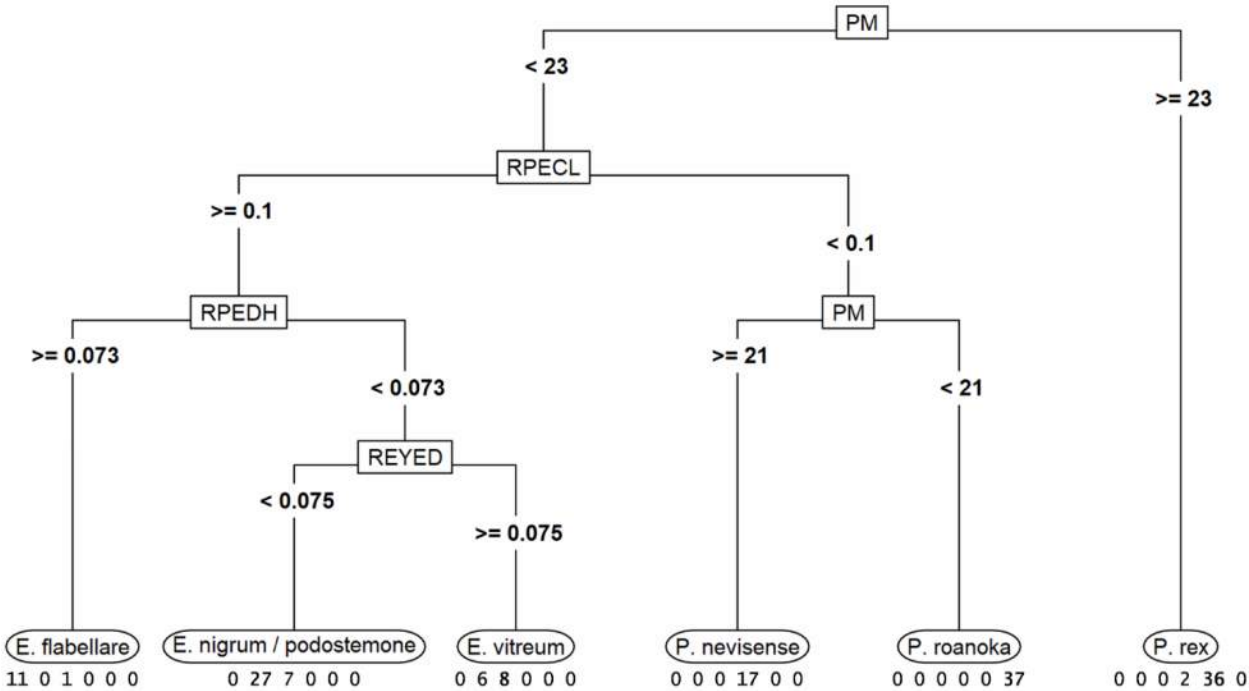


Figure 3 from Buckwalter et al (2019). Classification tree model used to predict the species of 152 larval darters based on eight morphologic variables, only four of which appeared in the final model: preanal myomere count (*PM*); relative (to total length) pectoral fin length (*RPECL*), relative caudal peduncle height (*RPEDH*), and relative eye diameter (*REYED*). Counts at the bottom of the tree represent 136 correct (bold) and 16 misclassified identifications when the tree model was run on held-out larvae from 10-fold cross-validation. Counts are sorted alphabetically by species name.

References

Buckwalter, J. et al. 2019. Drift of larval darters (Family Percidae) in the upper Roanoke River basin, USA, characterized using phenotypic and DNA barcoding markers. Unpublished manuscript.

Hallerman, E.M. et al. 2017. Phenology and habitat use of larval darters in the upper Roanoke River basin. Final Report to Virginia Department of Game and Inland Fisheries.

7. Level of Effort, Cost, and Why Alternative Studies Will Not Suffice

We know of no alternative approaches to assessing distribution and abundance of RLP larvae. No alternative studies were proposed in the PAD to address the assessment posed in this study request. Based on recent and ongoing analogous studies, I estimate that the **direct cost of the study requested above will be \$62,000 - \$68,000**. However, indirect costs will increase the total cost by an unknown amount, depending on AEP’s negotiations with the eventual vendor.

Study Request 2: Assessing Use of Project Waters by Young-of-year Roanoke Logperch

The study plan (fish community study) presented via conference call on 25 September 2019 states in slide 14:

“As part of the study report, the results will include:

- Spatial and temporal trends in fish community composition and abundance across the study area
- Documented habitat and species presence for Roanoke Logperch (adult and juvenile)”

The proposed work, as described, **does not document any patterns for juvenile RLP**. All Age 1+ RLP are indistinguishable by length. Only young-of-year (YOY) juveniles are distinguishable by length but this age group is not addressed in AEP’s proposed work. Surveys to establish distribution and abundance of YOY RLP do not require complex methods. Such surveys could be based on standardized seining (per previous studies) at selected near-shore sites in the Project area, as well as upstream and downstream. These seine-based surveys can be supplemented with visual surveys conducted from the riverbank. Most survey sites for YOY could be near the sites used to survey adult RLP. More specifics regarding this study request follow.

1. Goals and Objectives

- a. Fill the knowledge gaps associated with assessing and mitigating incidental take of RLP, especially for YOY, upstream of, within, and downstream of the Project. These gaps are based on existing data summarized in the PAD.
- b. Assess distribution and abundance of RLP YOY upstream of the Project (in Roanoke River and Tinker Creek), at the upstream (reservoir-river) boundary of the Project, and downstream of the powerhouse.
- c. Assess microhabitat suitability for RLP YOY along pool margins at all sample locations.
- d. Compare RLP YOY catch rates and microhabitat suitability among sampling locations to assess differences attributable to the Project

2. Resource Management Goals

A primary management goal for public water resources is to restore and protect populations of native freshwater fishes, including Roanoke Logperch (*Percina rex*), which is listed as endangered under the U.S. Endangered Species Act of 1973. Government agencies such as the U.S. Fish and Wildlife Service and Virginia Department of Game and Inland Fishes lead efforts to conserve and recover endangered and threatened species, but many other stakeholders also have roles in such efforts. Especially valuable are the roles scientists play in providing new knowledge to inform management actions so that management goals can be met cost-effectively.

3. Public Interest

This study request has significant public interest because it could contribute to a) conservation and recovery of a federally endangered species and b) restoration of the ecological health of Roanoke River upstream and downstream of Niagara Dam.

4. Existing Information

The Roanoke Logperch (RLP; *Percina rex*) is an endangered fish occurring in the Roanoke River drainage; its strongest population is in Roanoke River upstream of Smith Mountain Lake (Roberts et al. 2013. *Freshwater Biology* 58: 2050–2064); this reach includes the Niagara Hydroelectric Project. In 1990 and 1991, fish surveys conducted for Appalachian Power Company found RLP upstream and downstream of Niagara Dam. RLP have been captured in the Niagara Dam tailwater before it enters Smith Mountain Lake (Rosenberger, 2007. An update to the Roanoke Logperch Recovery Plan. Technical Report to U.S. Fish and Wildlife Service, Virginia Field Office).

RLP larvae enter the drift after hatching and ride the current for several km before moving to side channel and pool margin habitats to grow into juveniles. Thus, RLP larvae certainly enter the upstream portion of the Project area during spawning season (early April to early June) but their distribution and abundance as YOY juveniles are unknown. Some may find their way to the impoundment margins and grow into YOY juveniles, especially in the upstream portion of the Project. I know of no previous studies (including desktop studies) to help estimate Project impacts on early-life mortality of RLP. It is also possible that during high spring flows some RLP larvae drift all the way to the intake and go through the turbines or are carried over the dam into the bypass reach. Thus, sampling for RLP YOY downstream of the dam, as well as in the bypass reach, is warranted.

Recent study of YOY RLP shows they prefer sandy, backwater, or *Justicia* patches over rocky or gravel patches (see Argentina and Roberts. 2014. Habitat associations for young-of-year Roanoke Logperch in Roanoke River. Final Report to Virginia Department of Game and Inland Fisheries). YOY RLP also prefer shallow, slow-velocity patches with gravel and cobble substrates. Between June and October, mean length of YOY RLP increase from 32 mm to 65 mm (standard length), and they gradually shift into deeper, faster water with coarser substrates. Argentina and Roberts (2014) also noted that YOY RLP are difficult to capture and recommended that multiple sampling techniques be used to determine site occupancy and abundance.

5. Nexus to Project Operations and Effects

A key cause of RLP's imperilment is fragmentation of its habitat by dams, which cause a wide range of adverse impacts. In addition to impeding movements crucial to completing RLP's life history, dams and their impoundments a) exacerbate population isolation and genetic drift; b) eliminate spawning, rearing, and foraging habitats; c) entrain larvae through gates and turbines (direct mortality); d) alter temperature and oxygen regimes, which affect growth and survival; and e) starve downstream reaches of gravel/pebble/cobble sediments, which are crucial to RLP spawning and foraging. Collectively, these impacts imposed on RLP by Niagara Dam represent a significant, but unmeasured and unmitigated,

incidental take of an endangered species. Moreover, none of these impacts is addressed substantively in the PAD. Additional study of the distribution and abundance of RLP (all life stages) in and near the Project is needed to test AEP's belief that "aquatic resources downstream are [not] presently being significantly impacted by Project operations".

As currently presented, the PSP is not designed to fill the knowledge gaps germane to assessing and mitigating incidental take of RLP, especially for early-life stages. This shortcoming stems from the fact that previously used conventional methods (i.e. "historical fish community surveys") are ill-suited to documenting RLP distribution and abundance. Further, RLP data collected for the relicensing surveys conducted in 1990-1991 do not provide the statistical power needed to credibly assess potential Project impacts. AEP now proposes "using a combination of electrofishing and snorkel survey techniques" to sample for RLP. These methods may suffice for adult and subadult life-stages but electrofishing is not appropriate for early life-stages. Further, the spatiotemporal design of the proposed surveys is not explained in sufficient detail to ensure the resulting data will provide the statistical power needed to credibly assess potential Project impacts on RLP.

As AEP correctly asserts, RLP "is not typically found in reservoirs or other lentic environments, preferring riverine habitat types and silt-free, loosely embedded substrate". However, I know of no studies documenting RLP use of a river-reservoir boundary, such as occurs in the upstream portion of the Project. It seems highly likely that various life-stages of RLP commonly use these relatively lotic habitats, especially during certain seasons. Documenting the spatiotemporal extent of this use is crucial to managing the Project in ways that minimize incidental take of RLP.

In conclusion, additional focused studies are needed to a) accurately document the distribution and abundance of RLP (all life stages) in and near the Project and b) assess potential impacts of the Project on RLP in terms of likely incidental take. In particular, distinct sampling protocols – not implemented in previous Project surveys – are needed to document the distribution and abundance of RLP larvae, young-of-year juveniles, and adults (including subadults).

6. Methodology Consistent with Accepted Practice

The proposed work for this study request will be conducted consistent with generally accepted practices. The methods outlined herein draw heavily from recent analogous studies in Roanoke River conducted by Dr. Paul Angermeier and colleagues at Virginia Tech.

I propose a spatial design with 7 sample areas:

1. 0-2 km upstream of the upper Project boundary in Roanoke River;
2. 0-1 km upstream of the upper Project boundary in Tinker Creek;
3. 0-2 km downstream of the upper Project boundary in Roanoke River;
4. 0-1 km downstream of the upper Project boundary in/near Tinker Creek;
5. in the bypass reach;
6. between the mouth of the bypass reach and the lower boundary of the Project; and

7. 0-2 km downstream of the lower Project boundary in Roanoke River.

Each area will be sampled with similar frequency and effort. In particular, sampling will focus on available habitat patches preferred by RLP YOY, including sandy, backwater, and *Justicia* patches and shallow, slow-velocity patches with gravel and cobble substrates; these patches typically occur along river margins. Methods are summarized below from Argentina and Roberts (2014. Habitat associations for young-of-year Roanoke Logperch in Roanoke River. Final Report to Virginia Department of Game and Inland Fisheries).

We quantified YOY RLP distributions and habitat associations using targeted, intensive sampling in the Roanoke River from mid-July through September. Within each site, we used a 6'-tall x 8'-wide seine (1/16" mesh) to sample fishes in 20 habitat patches along a 200-300-m long reach. Beginning at the downstream end of the site, we made seine hauls at 10-m intervals, moving upstream. Within each 10-m segment, we began approximately 2 m from the bank and seined toward the bank perpendicularly to the river channel; each patch was sampled with a single seine haul. A 10-m section was not sampled if water velocity was too fast or if bed sediments created an area that we could not sample efficiently with a seine (root wads or rip rap, for example). Depending on available habitat at each site, we sampled patches of sandy and rocky margins, backwaters, and water willow (*Justicia americana*) beds. All captured YOY RLP were measured and released alive at the point of capture.

We quantified microhabitat within each patch by measuring depth, velocity, and substrate size (on a modified Wentworth scale) at each corner of a 1-m² sampling frame placed in the center of each patch and visually estimated embeddedness of the entire sampled patch. These values were later averaged to create a mean value for each variable for each sampled patch.

The seining methods described above should be supplemented with visual surveys, as described in Roberts et al. 2016 (A long-term study of ecological impacts of a flood reduction project to an endangered riverine fish: lessons learned for assessment and restoration. Water 8, 240; doi:10.3390/w8060240) and summarized here. Visual surveys are based on methodical shoreline walks along low-velocity pool-margin habitats during July-August. Sampling was performed at base-flow conditions by two to four investigators slowly walking upstream while scanning shallow areas for juvenile *P. rex*. During surveys, all investigators wore polarized sunglasses and took great care to not disturb the water surface. RLP YOY counts were converted to an estimate of population density by dividing the number of individuals observed by the length of river surveyed.

7. Level of Effort, Cost, and Why Alternative Studies Will Not Suffice

We know of no alternative approaches to assessing distribution and abundance of RLP YOY. No alternative studies were proposed in the PAD to address the assessment posed in this study request. Based on recent analogous studies, I estimate that the **direct cost of the study requested above will be \$24,000 - \$27,000**. However, indirect costs will increase the total cost by an unknown amount, depending on AEP's negotiations with the eventual vendor.

Study Modification Request: Assessing Habitat Suitability of Project Waters for Roanoke Logperch

The study plan (fish community study) presented via conference call on 25 September 2019 states in slide 14:

“As part of the study report, the results will include:

- Spatial and temporal trends in fish community composition and abundance across the study area
- Documented habitat and species presence for Roanoke Logperch (adult and juvenile)”

Although it is a good idea to assess habitat suitability for Roanoke Logperch (RLP), there is no description presented in the PSP or the updated study plan regarding how that will be done. This methodology needs to be added. **Habitat assessments should be completed at all sites used to survey for adult, subadult, and YOY RLP.**

1. Goals and Objectives

- a. Fill the knowledge gaps associated with suitability of microhabitat for RLP upstream of, within, and downstream of the Project. These gaps are based on existing data summarized in the PAD.
- b. Assess microhabitat suitability in riffle-runs upstream of the Project (in Roanoke River and Tinker Creek), at the upstream (reservoir-river) boundary of the Project, downstream (in Roanoke River) of the Project, and in the by-pass reach.

2. Resource Management Goals

A primary management goal for public water resources is to restore and protect populations of native freshwater fishes, including Roanoke Logperch (*Percina rex*), which is listed as endangered under the U.S. Endangered Species Act of 1973. Government agencies such as the U.S. Fish and Wildlife Service and Virginia Department of Game and Inland Fishes lead efforts to conserve and recover endangered and threatened species, but many other stakeholders also have roles in such efforts. Especially valuable are the roles scientists play in providing new knowledge to inform management actions so that management goals can be met cost-effectively.

3. Public Interest

This study request has significant public interest because it could contribute to a) conservation and recovery of a federally endangered species, b) restoration of the ecological health of Roanoke River upstream and downstream of Niagara Dam, and c) improved fishing.

4. Existing Information

The Roanoke Logperch (RLP; *Percina rex*) is an endangered fish occurring in the Roanoke River drainage; its strongest population is in Roanoke River upstream of Smith Mountain Lake (Roberts et al. 2013. *Freshwater Biology* 58: 2050–2064); this reach includes the Niagara Hydroelectric Project. In 1990 and 1991, fish surveys conducted for Appalachian Power Company found RLP upstream and downstream of Niagara Dam. RLP have been captured in the Niagara Dam tailwater before it enters Smith Mountain Lake (Rosenberger, 2007. An update to the Roanoke Logperch Recovery Plan. Technical Report to U.S. Fish and Wildlife Service, Virginia Field Office).

5. *Nexus to Project Operations and Effects*

A key cause of RLP's imperilment is fragmentation of its habitat by dams, which cause a wide range of adverse impacts. In addition to impeding movements crucial to completing RLP's life history, dams and their impoundments a) exacerbate population isolation and genetic drift; b) eliminate spawning, rearing, and foraging habitats; c) entrain larvae through gates and turbines (direct mortality); d) alter temperature and oxygen regimes, which affect growth and survival; and e) starve downstream reaches of gravel/pebble/cobble sediments, which are crucial to RLP spawning and foraging. Collectively, these impacts imposed on RLP by Niagara Dam represent a significant, but unmeasured and unmitigated, "incidental take" of an endangered species. Moreover, none of these impacts is addressed substantively in the PAD. Additional study of the condition of RLP habitat in and near the Project is needed to test AEP's belief that "aquatic resources downstream are [not] presently being significantly impacted by Project operations".

6. *Methodology Consistent with Accepted Practice*

The proposed work for this modification request will be conducted consistent with generally accepted practices.

A widely used quantitative assessment of habitat suitability for RLP is described in Ensign et al. (2000) and Anderson and Angermeier (2015). Briefly, this approach samples a series of 1-m² cells centered on (and occurring every 3 m along) a series of transects throughout the study reach. Depth and water velocity (cm s⁻¹) are taken at the center of the cell. Within each cell, we measure depth (cm) and water velocity (cm s⁻¹) at 0.6 times depth at the center of the cell and describe how much of the area of the cell is covered by silt using a five-point scale. A pebble-count is also used to describe the substrate size at five locations equally spaced across the width of the cell. Ordinal particle sizes are assigned using the modified Wentworth scale. The five substrate measurements are then averaged to obtain a mean substrate size for analysis. These four variables are then used to evaluate the suitability of the cell for Age-1+ Roanoke Logperch based on the habitat suitability index (HSI) developed by Ensign and Angermeier (1994) and Ensign et al. (2000). The HSI for each cell is calculated, then placed into a suitability category.

A habitat suitability index (HSI) for RLP in Roanoke River was developed by Ensign and Angermeier (1994) based on habitat availability-versus-use data collected during underwater observation of adult RLP. Habitat suitability mapping and analysis were accomplished using spatial interpolation procedures in ArcGIS for each sampled site. Cartesian coordinates were based on the transect georeferencing system described above, and interpolation was used to predict habitat values for unmeasured cells that occurred between measured cells. We used an inverse distance-weighting interpolation routine for silt-cover, the ordinal variable, and a universal kriging interpolation routine for the three continuous variables. Once each cell in the grid was assigned its empirical or estimated habitat values, we calculated a HSI value for each cell and assigned a suitability category based on RLP adult preference values. Using the cell values, we calculated the proportion of cells in a site that were in each suitability category. Spatiotemporal changes in these proportions can be used to gauge shifts in the availability of suitable RLP habitat.

References

Anderson, G.B. and P.L. Angermeier. 2015. Assessing Impacts of the Roanoke River Flood Reduction Project on the Endangered Roanoke Logperch. Annual report to U.S. Army Corps of Engineers, Wilmington, NC.

Ensign, W.E. and P.L. Angermeier. 1994. Summary of population estimation and habitat mapping methods for the Roanoke River Flood Reduction Project. Final Report to U.S. Army Corps of Engineers, Wilmington, NC.

Ensign, W. E., P. L. Angermeier, B. W. Albanese, and G. H. Galbreath. 2000. Pre-construction monitoring of the endangered Roanoke Logperch (*Percina rex*) for the Roanoke River Flood Reduction Project: Phase 3. Final report to U. S. Army Corps of Engineers, Wilmington, NC.

7. Level of Effort, Cost, and Why Alternative Studies Will Not Suffice

We know of no alternative approaches to characterizing microhabitat suitability for RLP. No alternative studies were proposed in the PAD to address the assessment posed in this study modification request. Proposed methods to assess habitat suitability will add a few person-hours to each fish survey. We estimate total additional cost to be < \$10,000.

Minor Comments on AEP-Proposed Studies:

The study plan (fish community study) presented via conference call on 25 September 2019 states in slide 11:

“Field sampling for RLP (Task 1b)

- Sample sites will include 4 historical logperch study sites and four new locations (2 above and 2 below Project)
 - Methodology: backpack electrofishing into bag seine using fixed-area quadrats (4m x 2m) and timed snorkel surveys (3 ft maximum depth)
 - Adults and juveniles: single event between July and September 2020
 - Fish will be enumerated, weighed, and assessed for signs of injury, illness, or parasites
- Calculate catch per unit effort (CPUE)”

I suggest two minor modifications to the study plan:

1. Conduct field sampling in late summer (September), as young-of-year RLP are much more likely to be captured during this period than in July-August.
2. Measure total length of all RLP captured to enable distinctions between young-of-year versus Age 1+.

Contact information for submitter:

Dr. Paul L. Angermeier
Virginia Cooperative Fish and Wildlife Research Unit
Dept. of Fish and Wildlife Conservation
Virginia Tech
Blacksburg, VA 24061-0321
Phone: 540-231-4501; Fax: 540-231-7580
biota@vt.edu



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Pennsylvania Field Office
110 Radnor Road, Suite 101
State College, Pennsylvania 16801-4850



October 3, 2019

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
Mail Code: DLC, HL-11.2
888 First St., NE
Washington, DC 20426

RE: **Niagara Hydroelectric Project (FERC No. 2466-034) Proposed Study Plan
Comments**

Dear Secretary Bose:

The U.S. Fish and Wildlife Service (Service) has reviewed Appalachian Power Company's (Appalachian) Proposed Study Plan for Relicensing Studies (PSP), filed with the Federal Energy Regulatory Commission (FERC) on July 9, 2019, for the Niagara Hydroelectric Project (Project; FERC No. 2466-034). The Service also participated in the August 1, 2019 PSP meeting held in Roanoke, Virginia. The Project is located at approximately river mile 355 on the Roanoke River, approximately 6 miles southeast of the City of Roanoke, in Roanoke County, Virginia. The Service filed comments on the Scoping Document (SD1) and Pre-Application Document (PAD), and study requests, on May 28, 2019. The Service offers the following comments on the PSP in accordance with 18 CFR §5.12.

3.2, Study Requests Deemed Not Appropriate for Study, 3.2.1, Sediment: While the Service believes that the critical information from this study can be incorporated into other studies as stated (Flow and Bypass Reach Aquatic Habitat Study and Benthic Aquatic Resource), it is unclear from the information provided that the primary objective from this study request will be met by these other studies. The primary objective is to determine whether the river below the dam is sufficiently starved of sediment to reduce the quality and quantity of habitat for benthic invertebrates and fish. These other studies will need to address this issue.

Appalachian has elected not to adopt this larger sediment study as part of the PSP. Three reasons for not adopting this study were provided. One of the reasons is the existing outlet structure does not provide a means to pass reservoir sediment. This ignores the use of other methods to augment sediment downstream including mechanical placement. A second reason for not

adopting this study as stated by Appalachian is that any sediment that could be passed would likely travel through the bypass reach and settle into Smith Mountain Reservoir. This would likely not be a significant issue if sediment augmentation was ongoing as needed to maintain optimal benthic invertebrate and fish habitat. The third reason for not adopting the study as stated in this section is Appalachian does not believe the aquatic resources downstream are presently being significantly impacted by Project operations. The specific issue regarding sediment transport has not yet been studied and it would be premature to make conclusions regarding potential impacts to aquatic species downstream of the dam.

3.2, Study Requests Deemed Not Appropriate for Study, 3.2.3, Hydrodynamics and Fish Behavior: While this study was deemed not appropriate for study, there is at least one goal of the study that the Service believes should be incorporated into other studies. In addition, the Service questions Appalachian's rationale regarding its belief that "it is premature to study the need for Project modifications or other measures related to fish passage without justification that such measures are required or reasonable" while choosing not to adopt at least some elements of this proposed study that would help to determine whether or not there is justification for such modifications or measures.

The effects of the Project on the federally listed endangered Roanoke logperch (e.g., barrier to upstream and downstream movements; possible source of mortality for larvae that drift into the Project impoundment; genetic isolation of upstream and downstream sub-populations) likely results in "incidental take" as defined under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.; ESA). Under the ESA, "take" is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct" (ESA §3(29)). "Harm" is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. "Harass" is defined by the Service as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering (50 CFR §17.3).

The Service supports the proposed study's goal of characterizing Roanoke logperch's spatial associations with the dam and associated structures or flow conditions over a full range of temporal factors. In addition, we support Appalachian's proposal to revisit whether additional study or protection measures are required for this species in the Initial Study Report (ISR), based on the results of the Fish Community Survey proposed in the PSP. The Service has additional comments below regarding possible changes to the Fish Community Survey methods to increase the efficacy of the study for determining the Roanoke logperch's distribution and abundance, across all life stages, in relation to the Project.

3.2.4, Fish Passage: Appalachian states that the Roanoke logperch is not typically found in reservoirs or other lentic environments. This is generally true of adults, but there may be some potential for larvae to drift into the impoundment and either settle out of the water column or pass through Project turbines. According to Rosenberger (2007), isolated specimens of logperch have been found in Beaverdam Creek Cove and Moorsman's Cove of Smith Mountain Reservoir

Therefore, it appears logperch have some ability to utilize reservoirs. In addition, while Appalachian is correct that it is not a migratory species, tagged Roanoke logperch were documented moving 3.2 km and 2.5 km between study sites (Roberts et al. 2007), and another study estimated a median lifetime dispersal distance of 6-26 km (Roberts et al. 2016).

This section states Appalachian does not believe there is an appreciable population benefit to Roanoke logperch for providing passage of this species upstream at Niagara dam. It is unclear on what this statement is based particularly since this issue has not yet been studied. There would be clear benefits to logperch downstream of the dam if they were not isolated from other populations in the river, particularly as it relates to genetic isolation and inbreeding. In addition, if a chemical spill or other hazard were to impact this population, it could be difficult for this population to recover because of its physical isolation from other populations.

The Service appreciates Appalachian's willingness to consider a study plan modification following completion of the ISR, to evaluate downstream passage alternatives if such measures are found to be potentially appropriate, based on the results of the Fish Community Survey. In order to fully inform any such decision, the Service recommends that the proposed Fish Community Survey methods be refined to ensure that occurrences and distribution of all life stages of Roanoke logperch (i.e., including larvae and young of year [YoY]) in the vicinity of the Project are documented, including any occurrences within the impoundment or near the Project intake. This will also require survey efforts during multiple seasons in order to document all life stages.

6.6.1, Flow and Bypass Reach Aquatic Habitat Study, Methodology, Task 1 – Literature Review and Desktop Assessment: Regarding selection of species of interest, the Service recommends a guild approach, utilizing the guild density histograms developed in relationship to four habitat variables (% cover; average substratum size; water depth; average water column velocity) in a study conducted by Vadas and Orth (2001) for the upper Roanoke River drainage. The study grouped fish species into seven habitat guilds, including four guilds for rheophiles (species that live in flowing water) (fast riffle; riffle-run; fast generalist; shallow rheophilic) and three guilds for limnophiles (species that live in lakes or pools) (pool-run; open pool; pool cover). Representative fish taxa included minnows, darters, suckers, catfishes, sunfishes and sculpins.

A separate habitat suitability analysis is needed for Roanoke logperch, and we recommend the Virginia Department of Transportation Fish and Habitat Survey Protocol (Anderson, unpublished; Anderson and Angermeier 2015; Roberts and Angermeier 2005), which includes specific habitat suitability indices (substrate category; % silt cover; water depth; water velocity) for age-1+ (adult and juvenile, non-fry) Roanoke logperch. Because of the pronounced habitat shifts exhibited by the species as it develops (Rosenberger and Angermeier 2003), the habitat suitability index (HSI) developed for Age-1+ logperch is not directly applicable to Age-0 (fry) logperch. For Age-0 Roanoke logperch habitat evaluations, the Service recommends the HSI developed by Roberts and Angermeier (2006), with modification to substrate measurements described in Roberts and Angermeier (2007).

6.6.3.1, Mesohabitat Mapping Verification: We appreciate Appalachian's proposed adoption of substrate characterization methods previously recommended by the Service; however, after further review of methodologies already developed for the Roanoke River and Roanoke logperch, we recommend habitat mapping characterization methods that follow the above recommendations (section 6.6.1 comments), including utilization of a different substrate characterization approach (modified Wentworth scale).

6.6.3.2, Flow and Water Level Assessment: The Service recommends representative bypass reach flow releases ranging up to a maximum flow release that will enable accurate hydraulic modeling of the average annual flow (532 cfs) for the 30-year hydrologic period from January 1, 1988 through December 31, 2017 (i.e., modeling of the bypassed reach under this annual flow).

The first bulleted paragraph under this section states a range of representative flows of interest, developed in consultation with interested relicensing participants, will be released at the dam into the bypass reach via the existing sluice gate. The Service recommends hydraulic modeling also be performed with water spilling over the dam instead of only through the sluice gate to see how this changes the available habitat within the bypass reach. If the same flow was evaluated using these two different release methods (sluice gate versus dam spillage), a comparison of the available habitat between methods can be made.

The second to last bulleted paragraph under this section states that total flow in the tailwater and bypass reach under each target flow release will be determined by generation and sluice gate opening calculations and/or direct flow measurements using an appropriate velocity meter, and that cross-sections will be established to facilitate direct flow measurements. The Service requests the use of a velocity meter to also record velocity measurements at different depths, under each target flow release, at the cross-section that will be established for calculating total flow. The Service previously requested the establishment of cross-sections in the bypassed reach for conducting pebble counts and measuring temperature and dissolved oxygen (DO) at each of the demonstration flows. We request that at least one of these cross-sections be established at a riffle, if the bypass reach includes riffle habitat, and that velocity measurements also be taken at this riffle cross-section. At a minimum, velocity measurements should be taken at 20 percent of depth and 80 percent of depth, where total depth is greater than 1.5 feet, or at 60 percent depth where total depth is less than 1.5 feet. We understand that hydraulic modeling results will include modeled velocities under the different flows, but it is not explicitly stated in the study plan that in-field velocity measurements also will be taken. In-field measurements can be used to verify modeled velocities. This information will be important for determining habitat suitability for target species/guilds under different flow scenarios.

6.6.4, Task 4 - Hydraulic Model Development: The Service requests additional details regarding the spatial resolution of some of the model inputs, including the digital terrain model and the Manning's roughness coefficient input. For example, how will the Manning's roughness coefficient be applied, spatially?

6.7, Analysis and Reporting, 5. Substrate characterization and mapping of the bypass reach (including Wolman pebble count data): As previously stated, the Service requests the

use of the modified Wentworth scale for substrate characterization, to be consistent with the recommended and already established habitat suitability analysis approach for Roanoke logperch in the Roanoke River (see Sections 6.6.1 and 6.6.3.1 comments, above).

6.7., Analysis and Reporting, 7. An evaluation of potential available aquatic habitat for species of interest (e.g., Orange-fin Madtom and Roanoke Logperch) using substrate, depth, and velocity parameters developed in Tasks 1 - 4: In addition to evaluating substrate in terms of particle size, a fourth habitat variable that was included in the HSI model developed for the Roanoke logperch in the Roanoke River (see above references in Sections 6.6.1 and 6.6.3.1) was percent silt cover. The Service requests the evaluation of four habitat variables, to be consistent with the aforementioned HSI model for this species: (1) depth; (2) velocity; (3) substrate particle size; and (4) percent silt cover. We recognize it may not be possible to model percent silt cover, but request that this habitat variable be evaluated during the substrate characterization and mapping, which will include pebble count data.

7.6.1, Water Quality Study, Methodology, Task 1: This section lists the proposed locations of the water quality instrumentation. The most upstream location identified (in the reservoir upstream of the confluence of Tinker Creek) is located within the impoundment. The Service recommends water quality be measured upstream of the impoundment in a free-flowing section of the river as an upstream reference to assess how the project (including both the impoundment and powerhouse) impacts water quality in the river. The addition of this location would be consistent with the information needed by FERC to complete the Environmental Assessment (EA) as described in Section 7.1. The first bullet in this section states FERC identified the effect of operations on water quality upstream and downstream of the impoundment as an environmental resource issue to be analyzed in the EA for the Project relicensing.

Water quality monitoring instrumentation locations proposed for downstream of the dam and powerhouse include one location in the tailrace below the powerhouse and two locations in the bypass reach (upstream section and downstream section). If the water quality data show that a low temperature and/or low DO plume is present downstream of the powerhouse discharge, an additional year of monitoring may be needed to define the vertical, lateral and longitudinal extent of this plume. Of particular interest would be whether this impact to water quality extends downstream to where Roanoke logperch are known to occur. A second year of monitoring may also be needed if abnormally high flows are experienced during this monitoring period, or if water quality information cannot be collected during an extended low flow period as these low flow periods are when water quality would be expected to be affected the most.

The last paragraph states that in the forebay of the impoundment, data sondes (sensors) will be deployed at two discrete depths to determine the existence and extent, if any, of thermal and DO stratification occurring in the impoundment. Information should be provided on how these two depths will be selected to ensure any thermal and/or DO stratification is identified as part of this study.

7.7, Water Quality Study, Analysis and Reporting: This section states that data analysis will be performed after all data have been collected. Results of this study will be summarized in a

final study report. The types of analysis that will be performed with the data are not discussed. The Service recommends the analysis include how water quality changes during different river flows and Project operations (e.g., most flow going through the powerhouse versus some flow going over the dam and through the bypass reach). We are interested in a comparison of hourly operations to water quality.

Study Plan Criteria (CFR 18 § 5.11 (b)-(e)) Addressed for Service's Requested Monitoring of Water Quality in a Free-Flowing Section of the Roanoke River, Upstream of the Project Impoundment:

1. Goals and Objectives

The Service's goal for the proposed water quality study is to ensure that the Project is not having an adverse water quality effect on fish and wildlife resources. The objectives of this study are to provide baseline and Project-influenced water quality information, and to determine whether project operations are having an effect on water quality and aquatic resources in the Roanoke River. These objectives cannot be completely met by the proposed water quality study as currently designed.

2. Resource Management Goals

Currently there are periods of time when most inflow is diverted to the powerhouse, thus significantly reducing flow to the bypass reach. The impounding of water above the dam may also result in temperature and DO effects. Resource management goals include ensuring the protection of existing fish and macroinvertebrate communities in the vicinity of the Project, and ensuring that the Project does not cause adverse water quality effects to the federally listed endangered Roanoke logperch. An additional resource management goal is ensuring that the Project bypass reach provides suitable habitat conditions for fish and other aquatic resources found in other nearby reaches of the Roanoke River.

3. Public Interest

The requestor is a resource agency.

4. Existing Information

The PAD included historical water quality data collected by the U.S. Geological Survey and the Virginia Department of Environmental Quality (VDEQ) upstream and downstream of the Project area. Temperature, DO, pH and specific conductivity data indicate that inflows to and outflows from the Project meet numeric water quality standards (9VAC25-260-50) required to support designated uses identified at 9VAC25-260-10. However, no water quality data specific to the Project reservoir or bypass reach are available.

5. Nexus to Project Operations and Effects

Operation of the Project involves the diversion of most inflow to the powerhouse when river flows are within the Project's hydraulic capacity, resulting in a minimum flow to the bypass reach (8 cfs) that represents only 1.5 percent of the average Project inflow (532 cfs) for the 30-year hydrologic period from 1988 through 2017. Impoundment of the river above the dam may also result in temperature and DO effects.

6. Methodology Consistent with Accepted Practice

The requested study modification, deployment of a water quality monitoring sonde in the free-flowing section of the Roanoke River upstream of the impoundment, is consistent with standard water quality monitoring studies which include reference sites that are necessary for determining Project effects. The addition of this monitoring location would be consistent with the information needed by FERC to complete the EA as described in Section 7.1. The first bullet in this section states FERC identified the effect of operations on water quality upstream and downstream of the impoundment as an environmental resource issue to be analyzed in the EA for the Project relicensing.

7. Level of Effort, Cost, and Why Alternative Studies Will Not Suffice

This requested study modification is not expected to result in significant increases in study costs or level of effort. There is no alternative for establishing an upstream water quality reference site that is unaffected by the Project.

8.1, Fish Community Study, Study Requests: The Service requested that the Fish Community Study include appropriate methods to demonstrate presence and status of American eel in the Project area. Although the proposed study methodologies do not include appropriate methods specific to American eel, the Service has determined that this species is highly unlikely to be present in the vicinity of the Project because upstream passage measures for eels have not been implemented at the Smith Mountain Pumped Storage Project (FERC #2210), which includes two dams that are located downstream of the Project. The Service will be recommending appropriate American eel monitoring efforts (e.g., eel ramps) during the Ready for Environmental Analysis stage of this relicensing, contingent upon American eel passage being provided at the Smith Mountain Project during the term of the new license.

8.2, Fish Community Study, Goals and Objectives: The Service recommends that Virginia Tech (Dr. Paul Angermeier), VDEQ and the U.S. Environmental Protection Agency (EPA) also be consulted during development of the final Fish Community Study plan.

8.3., Fish Community Study, Study Area: We appreciate the expansion of the study area to include a reach of the river upstream of the confluence of Tinker Creek. However, riffle habitat within this reach appears to be limited. The Service requests consideration of extending the study area an additional ~150 meters upstream beyond the currently proposed upstream terminus of the study area (PSP Figure 8-1. Fish Community Study Area), in order to capture a large riffle

feature that is just downstream of the 13th Street/Bennington Street Bridge. During the September 25, 2019 Agency Coordination Call for Fish Studies, Appalachian proposed to move the upstream general fisheries survey locations (sites 1E and 2E) farther upstream, to correspond with the most upstream Roanoke logperch sampling locations (RLP1A and RLP1B). To the extent these locations include sufficient riffle/run habitat, the Service supports this proposed study modification.

In addition, the Service requests that the downstream reach (i.e., below the dam), as presented in PSP Figure 8-1, be extended farther downstream. Studies conducted in support of Project relicensing in 1991 and 1992 (APCO and AEPSC 1992) encompassed a reach of the river extending 1.25 miles downstream from the Niagara powerhouse, based on a determination that this river segment was predominantly riffle/run habitat where Roanoke logperch might be found. Suitable Roanoke logperch habitat was confined to a 2,500-foot segment of the river beginning about 0.5 mile downstream of the Niagara powerhouse (i.e., beyond the currently proposed downstream terminus of the study area), and totaling approximately 21,500 square feet. For purposes of documenting Roanoke logperch downstream of the Project area and comparing results of the currently proposed study to those of the 1992 study, the Service supports additional sampling locations (RLP4A, RLP4B, 9E, 10E, 11E) that were proposed by Appalachian during the September 25, 2019 Agency Coordination Call for Fish Studies.

8.4.1, Fish Community, paragraph 5 beginning at the bottom of page 45: Appalachian states that the 1991 additional sampling (for Roanoke logperch) was conducted in a 0.25-mile riffle/run habitat reach of the river located 0.5 miles downstream of the Project. This statement is confusing because our understanding is that the additional sampling was conducted in 1992 and the study report for that study (APCO and AEPSC 1992) states that the study encompassed a reach of the river extending 1.25 miles downstream of the powerhouse, and that suitable habitat for the Roanoke logperch was confined to a 2,500-foot (~ 0.5-mile) segment of the river beginning about 0.5 mile downstream of the Niagara powerhouse. Adding to this confusion is the fact that Appalachian does not provide citations for the two fisheries studies (APCO and AEPSC 1991; APCO and AEPSC 1992), but instead cites only the 1991 license application, which preceded the additional, Roanoke logperch-specific, study that was required by the FERC, in response to a request by the Service.

8.6.1.2, Fish Community Study, Field Sampling: Sampling will be performed during daylight hours in the late spring/early summer (May - June) and late summer/early fall (August - September). The Roanoke logperch targeted surveys should include surveys for all life stages including larval, juvenile and adult. Larval surveys are best conducted starting in April, which is outside the proposed sampling time. The Service recommends that larval drift surveys be conducted starting in April within the project area to assess potential impacts on Roanoke logperch. Because of time-of-year restrictions (TOYR) to protect Roanoke logperch during the breeding season (March 15 - June 30), no electrofishing should occur in the river until after June 30th. To accommodate this TOYR, fish surveys should be performed in summer (July - August) and fall (October - November).

The proposed methodology provided on September 23, 2019 states that the proposed fish community studies will not include targeted effort for larval Roanoke logperch life stages. This is not acceptable to the Service. The Roanoke logperch is a federally listed endangered species, and the Project's effects on this species likely results in incidental take under the Endangered Species Act. This incidental take needs to be quantified, and the extent to which larvae of this species are present in the Project area will have a bearing on any recommended mitigation measures. Forgoing any effort to document and quantify this life stage in the Project area will result in the resource agencies and other stakeholders assuming that larvae are present.

Regarding Appalachian's concerns related to larval drift sampling, the Service recommends sampling using drift nets (20-minute sets), twice per week (mid-April through early June) after dark, weather and flows permitting. Collected samples should be visually sorted under a dissecting microscope, based on meristic and morphometric features. Ideally, larvae should be identified to the species level using DNA barcoding; however, recognizing the expense of this level of identification, sorting of larvae using meristic and morphometric features would allow for an estimation of how many Roanoke logperch larvae are present in the Project area. Recent work has demonstrated that Roanoke logperch larvae can be reliably distinguished from most co-occurring darter species via morphometric measures (P. Angermeier, personal communication, 1 October 2019). The most similar species (*Percina nevisense*) is much less abundant.

Drift net sampling should be conducted at the following locations:

1. RLP1 upstream Roanoke River survey location (per September 25, 2019 webinar presentation), at the downstream end of the riffle/run
2. RLP2 upstream Tinker Creek survey location (per September 25, 2019 webinar presentation), at the downstream end of the riffle/run
3. Upstream Roanoke River Project boundary
4. Upstream Tinker Creek Project boundary
5. Approximately 500 meters downstream of the upstream Project boundary, but upstream of the waste water treatment plant outfall; or 500 meters downstream of Tinker Creek
6. Immediately downstream of the powerhouse discharge
7. At the mouth of the bypass reach

This section states the use of snorkel surveys can be an important tool for locating larval and juvenile life stages of Roanoke logperch. However, snorkel surveys are not an appropriate method for surveying for larval Roanoke logperch as they are small and are drifting in the water column. More appropriate methods (e.g., drift nets) will need to be used for larval surveys. Snorkel surveys are also not effective for surveying YoY Roanoke logperch. According to Rosenberger and Angermeier (2002), no YoY logperch were observed during snorkeling surveys. Instead YoY were surveyed by walking through backwaters, secondary channels, and the river edges to locate schools of YoY fish. When an individual or school of YoY fish were observed, the surveyor identified any logperch found in the area. More recent work by Argentina and Roberts (2014) found YoY logperch were rarely collected successfully using seines and recommended multiple sampling techniques to determine site occupancy and abundance.

Adult Roanoke logperch surveys should follow previously established protocols (e.g., Roberts et al. 2016b) which involve establishment of transects and sampling of quadrats along transects, using a combination of electrofishing and seine nets. The protocols also include habitat characterization within established quadrats along each transect, measuring the four habitat variables described above (depth, velocity at 0.6 x depth, substrate size using the modified Wentworth scale, and percent silt cover).

Study Plan Criteria (CFR 18 § 5.11 (b)-(e)) Addressed for Service's Requested Roanoke Logperch Larval Drift Net Surveys:

1. Goals and Objectives

The Service's goal for inclusion of drift net sampling for Roanoke logperch larvae is to identify any Project effects on all life stages of the federally listed endangered Roanoke logperch and, where justified, recommend appropriate mitigation measures to address Project effects. Objectives include documenting Roanoke logperch larvae in the vicinity of the Project, developing quantitative estimates of Roanoke logperch larvae within the Project area, and determining the fate of any Roanoke logperch larvae found within the Project area.

2. Resource Management Goals:

The Service's resource management goals related to this requested study modification are to identify all Project effects on all life stages of the Roanoke logperch, and recommend mitigation measures to address any Project effects on Roanoke logperch and ensure that any Project effects will not hinder recovery of the species.

3. Public Interest

The requestor is a resource agency

4. Existing Information

Adult Roanoke logperch have been documented in riffle and run habitats both upstream and downstream of the Project (e.g., APCO and AEPSC 1992). However, there is no information on other life stages of the Roanoke logperch in the vicinity of the Project, or the fate of any Roanoke logperch larvae that may drift into the Project area.

5. Nexus to Project Operations and Effects

The Project dam represents a barrier to upstream and downstream movements of Roanoke logperch. In addition, the impoundment created by the dam is unlikely to support Roanoke logperch and has replaced a portion of the free-flowing Roanoke River that historically provided suitable habitat for the species. There is also the potential for larval Roanoke logperch to drift into the impoundment which may be inhospitable to this life stage. Roanoke logperch larvae may also pass through the powerhouse, through the debris sluice gate or over the Project dam.

These may not be safe downstream routes of passage for any Roanoke logperch larvae that may pass through the Project.

6. Methodology Consistent with Accepted Practice

Established methods for documenting larval Roanoke logperch in the Roanoke River have been described by Hallerman et al. (2017).

7. Level of Effort, Cost, and Why Alternative Studies Will Not Suffice

The level of effort is expected to be moderate, and sorting and identifying Roanoke logperch larvae based on morphometric characteristics will require an appropriate level of experience and expertise. The Service estimates that this study plan modification will cost \$62,000 to \$68,000 (not including indirect costs). We are not aware of any alternative methods for documenting and estimating numbers of Roanoke logperch larvae entering and/or passing through the Project area.

8.6.2, Task 2 - Impingement and Entrainment Desktop Study: There is no mention of a blade strike analysis in this section. As the Service stated in its May 28, 2019 study request, the blade strike analysis conducted during the previous Project relicensing was based on Cada (1990), which is out of date, and we continue to recommend a blade strike analysis based on a more updated study by Franke et al. (1997). This issue was discussed at the August 1, 2019 Proposed Study Plan meeting.

Study Plan Criteria (CFR 18 § 5.11 (b)-(e)) Addressed for Service's Requested Use of the Franke et al. (1997) Blade Strike Equation in the Desktop Entrainment Analysis:

1. Goals and Objectives

The Service's goal for the updated desktop impingement and entrainment analysis, including use of the updated blade-strike equation, is to obtain an accurate and up-to-date estimate of intake impingement and turbine entrainment injury and mortality for the present-day fish community in the vicinity of the Project. Objectives include: 1) developing a comprehensive list of fish species that may enter the Project intake or become impinged on the intake trash rack; 2) developing seasonal numeric estimates for each fish species (including Roanoke logperch and all possible life stages, if applicable), that may be subject to entrainment or impingement at the Project; 3) determining swim speeds and behaviors of different life stages of all fish species that may be subject to impingement or entrainment; 4) estimating numbers and life stages of species that may become impinged or entrained on a seasonal basis; 5) conducting blade-strike analyses, based on Franke et al. (1997), to develop seasonal estimates of injuries and mortalities for each species and life stage subject to entrainment; and 6) provide replacement cost estimates for species and numbers of individuals lost to impingement or entrainment, based on the most up-to-date American Fisheries Society replacement costs.

2. *Resource Management Goals*

Resource management goals include determining whether or not impingement on Project intake screens or entrainment in Project turbines is contributing to population-level effects to any of the fish species (including Roanoke logperch) that may become impinged or entrained and, if justified, developing appropriate mitigation measures.

3. *Public Interest*

The requestor is a resource agency.

4. *Existing Information*

Project entrainment effects were estimated in support of the previous Project relicensing (APCO 1991). The previous estimates relied on an outdated blade-strike analysis Cada (1990), which uses a blade strike mathematical equation attributed to Von Raben (1957). In this equation, the fish is essentially modeled as a meridional line segment and the blade is modeled as a point, and it was initially assumed that any impact by the blade along any portion of the fish length would be fatal (Franke et al. 1997). The phenomenon that small fish (relative to blade size) may be transported around the blade leading edge was not considered (Franke et al. 1997). In addition to addressing this shortcoming, Franke et al. (1997) observed that, while the meridional component of the fish length was considered, the tangential component of length was not considered, and the authors explained this by presenting an example where the tangential projection of the fish length is greater than the blade-to-blade spacing, where it is not possible for the fish to pass through the entrance edge region of a runner without touching a runner blade, in which case the actual strike probability is 100 percent; hence, the Von Raben equation results in false blade strike probabilities of less than 100 percent for such fish. By considering the tangential projection of fish length, Franke et al. (1997) developed a more accurate blade strike prediction. The updated blade strike equation was also improved by, among other things, replacing some of the ad hoc estimates of flow angle, using Euler's equation to evaluate flow angle based on known values of key operating parameters such as head and discharge (Franke et al. 1997).

5. *Nexus to Project Operations and Effects*

Available options for safe downstream passage are currently very limited, and any fish attempting to move downstream are likely to be attracted to the powerhouse intake and become impinged on the intake trash rack or entrained in Project turbines, resulting in some injury and mortality.

6. *Methodology Consistent with Accepted Practice*

The blade-strike analysis used in the previous entrainment study (APCO 1991) relied on an outdated equation (see #4, above). The requested use of the more up-to-date and improved blade-strike analysis (Franke et al. 1997) is consistent with currently accepted practice. In addition, the Service's Fish Passage Engineering team has developed a Microsoft Excel-based

turbine blade-strike analysis model that can be made available to assist Appalachian with the requested analysis.

7. Level of Effort, Cost, and Why Alternative Studies Will Not Suffice

The level of effort and cost is not expected to exceed that of the impingement, entrainment and blade-strike analyses that Appalachian has already committed to undertake as a part of this Project relicensing. In addition, there is the potential for cost savings if Appalachian is interested in using the blade-strike analysis model developed by the Service's engineers.

9.4.2, Benthic Aquatic Resources Study, Mussel Community: Table 9-1 lists the mussel species known to occur within 3 miles of the project and includes the Atlantic pigtoe, shown as a state threatened species. This species is also proposed for Federal listing as a threatened species. This table should be updated to reflect this current status.

9.6.1.2, Benthic Aquatic Resources Study, Task 1 - Macroinvertebrate and Crayfish Community Study, Field Sampling: Benthic macroinvertebrate sampling will be conducted in the reservoir, tailrace, and bypass reach. Sampling also needs to be conducted upstream of the reservoir in a free-flowing section of the river. This will be used to assess the community upstream of the project and assess potential impacts to any mussels upstream that get washed downstream into the reservoir during high flow events. The surveys also need to be conducted further downstream than the tailrace in appropriate habitat since the downstream impacts of the project have not yet been determined.

9.6.2.2, Benthic Aquatic Resources Study, Task 2 - Mussel Habitat and Community Study, Field Sampling: The mussel survey will consist of up to ten line-transects located throughout the Study area based on the type and quantity of available habitats identified in the Desktop Benthic Habitat Assessment. It is unclear how it was determined that a maximum of 10 line-transects was sufficient to assess the composition of mussel populations within the project area. It is also unclear this level of sampling would be sufficient to determine whether any state or federally listed mussels are present in the project area with a high degree of certainty. The number of transects should be based on the amount of habitat present. Justification for this approach will need to be provided. The approved mussel surveyor, the Virginia Department of Game and Inland Fisheries (VDGIF) and the Service can help Appalachian develop a study design for mussel surveys in the river with an appropriate level of effort.

The area to be surveyed as part of the mussel study is not provided. The Service recommends a full survey be conducted. According to the "Freshwater Mussel Guidelines for Virginia (USFWS and VDGIF 2013), a full survey would require a mussel survey 200 meters upstream and 800 meters downstream of the project. To assess potential impacts to mussels that may get washed into the impoundment, the first area with good mussel habitat upstream of the reservoir should be surveyed. To assess potential impacts to mussels downstream of the project, the area between the discharge and 800 meters downstream should be surveyed for mussels. This approach would be consistent with the current guidelines.

9.6.3.1, Benthic Aquatic Resources Study, Task 3 - Benthic Habitat Assessment, Field

Sampling: A benthic habitat assessment will be performed according to VDEQ protocol and will include scoring habitat characteristics such as substrate and cover availability, substrate embeddedness, flow velocity and depth, sedimentation, frequency of riffles, bank stability, vegetative protection, and riparian zone in order to evaluate the quality of benthic habitat in the survey areas. It is not clear that this effort will address the issue of whether the benthic habitat below the dam is starved of sediment and is therefore reducing the quality and quantity of habitat for benthic organisms. To make this determination, it would be more appropriate to compare the benthic habitat below to an upstream reference reach not impacted by a dam.

10.1, Wetlands, Riparian, and Littoral Habitat Characterization Study, Study Requests:

The FERC identified the effects of continued Project operation and maintenance on riparian, wetland, and upland habitat and associated wildlife such as bald eagles as an environmental resource to be analyzed in the EA for the Project relicensing. However, the goals and objectives for this study discussed in Section 10.2 only discuss the characterization of vegetation in the study area and do not include any objectives to assess wildlife use within the Project area. This should be added to this study, particularly river-dependent wildlife such as the bald eagle to assess how the project may be impacting these wildlife species. According to the Center for Conservation Biology Eagle Nest locator (<https://ccbbirds.org/what-we-do/research/species-of-concern/virginia-eagles/nest-locator/>), there is an eagle nest (active as of 2014) located 1.25 miles downstream of the Project. There may be other nests within the Project area as not all nests have been mapped. A survey of eagle nests within the Project area is recommended.

10.2, Wetlands, Riparian, and Littoral Habitat Characterization Study, Goals and Objectives, Fourth Bullet:

Using the results of the desktop characterization and field verification, a map will be developed to identify the location and species of any invasive aquatic vegetation. A map also should be developed identifying the location of invasive plant species in the riparian and upland areas within the Project Area. This information will be useful for determining if any control of invasive plants is needed as part of the Wildlife Management Plan.

10.3, Wetlands, Riparian, and Littoral Habitat Characterization Study, Study Area: The study area for this study includes the terrestrial and appropriate aquatic habitats as shown on Figure 1-3. As stated previously for the fish and mussel studies, the project area for this study should be expanded both upstream, to include free-flowing sections of the river, and downstream, to include areas downstream to Smith Mountain Lake, to more fully assess impacts from the Project.

Thank you for your consideration in this matter. If you have any questions regarding this matter, please contact Richard McCorkle of my staff at 814-206-7470.

Sincerely,



Sonja Jahrsdoerfer
Project Leader

Cc: Stephanie Nash – USFWS, BER (ERT)
Kevin Mendik – NPS
Scott Smith – VDGIF
Brian McGurk – VDEQ
Paul Angermeier – Virginia Tech

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1206 KESSLER MILL ROAD

SALEM, VA 24153

540-777-6330

540-387-6146 (FAX)

Liz.Belcher@greenways.org

www.greenways.org

October 4, 2019

Secretary Kimberly D. Bose
Federal Energy Regulatory Commission
888 First Street, NE, Room 1A
Washington, DC 20426

Re: Niagara Hydroelectric Project (P-2466-034)

1. Roanoke Valley Greenway Commission Comments on Recreation Study Plan
2. Consideration of Alternative Solutions to Inadequate Recreation Facilities

Dear Secretary Bose:

The Roanoke Valley Greenway Commission provided comments on the Scoping Document and PAD. We feel that the proposed Recreation Study within the Proposed Study Plan (PSP), Niagara Hydroelectric Project, FERC NO. 2466, July 9, 2019, does not adequately address our comments or those of others. While the PSP does respond to the National Park Service request for Aesthetic Flow Documentation, others who did not respond in accordance with 5.9b still have valid comments which should be given consideration.

1. Roanoke Valley Greenway Commission Comments on Recreation Study Plan

a. Inadequate Response to Study Requests (12.1)

While 12.1 of the Proposed Study Plan summarizes comments into five bullets from five agencies, it does not address other comments or clearly tell how the Recreation Study will address these requests. There is global assurance that the Commission will consider “all relevant studies and recommendations”, but there is no step in the Recreation Study that documents this.

b. Goals and Objectives (12.2)

While the goal of the study to determine the need for enhancement of the existing portage or the need for additional recreation facilities is stated, the bullets’ focus, as written and explained, will not sufficiently address these needs. The Study needs to gather information not only on the portage at Niagara, but also on the other boating facilities upstream and downstream. This is a river, and current use and demand within the Project area should not be considered in isolation. There is use upstream and downstream which would continue or expand into the Project area if there were facilities to accommodate such use. Analyzing the effects of the Project operation only on Project-related recreation facilities is insufficient, because Project operation impacts facilities both up and downstream.

c. Study Area (12.3)

The Study Area needs to be extended downstream to Back Creek because of the significant impact of the Project on recreation use on that adjacent river section.

d. Background and Existing Information (12.4)

This section quotes the PAD without acknowledging additional information provided during the scoping period to improve the Recreation Study. For instance, we submitted the 2018 Roanoke Valley Greenway Plan and documented in comments that there are six greenways within the Project Study Area. Others, such as Roanoke County, also submitted comments and plans. There is no acknowledgement of terrestrial use except AEP's portage trail. AEP owns land adjacent to the river and that land could be, and is, used for recreation. The Project impacts recreation activities within the Project Area, but also upstream and downstream.

This section needs to include a review of all plans that are impacted by the Project and an analysis of how the Project might restrict or facilitate implementation of those plans. While those plans may not be "comprehensive" because they were not written by federal or state agencies, this is the point at which there should be documentation that those plans will be read and analyzed to facilitate cooperative relationships with those local entities and to capitalize on opportunities to improve recreation within the Project area.

e. Task 1 – Inventory and Condition Assessment(12.6.1)

The inventory should consider other facilities in addition to the Niagara portage, such as the Tinker Creek boat launch, other access points upstream and downstream such as at Bennington and Rutrough Roads, and other recreation facilities in the Study Area.

f. Task 2 (12.6.2)

One meeting is insufficient. A consultant should not be told to schedule "a meeting" for a focused discussion with the expectation they will then know everything about existing and future recreational opportunities. While developing the study, the consultant needs to go to the offices of other agencies as well as meet with stakeholders, including local governments and NGO's, to consult, learn what else is happening in the area, and review plans and mapping that they have.

g. Task 3 – Online Survey(12.6.3)

The survey needs to be more widely publicized than by signs at three locations and the Project website. A notice should be sent to outfitters, shops that provide boating equipment, paddling and fishing groups, and other media and social media outlets such as Roanoke Outside.

h. Task 4 – Use Documentation (12.6.4)

This documentation should be expanded to include cameras at the Tinker Creek and Rutrough Road boat launches.

i. Analysis and Report (12.7)

The Report should include:

- 1) A research and review section documenting other plans and recreation programs that were reviewed and portions that were considered;
- 2) A list of potential cooperative recreation projects in the Study Area; and
- 3) Opportunities within the scope and beyond the scope of the project.

2. Consideration of Alternative Solutions to Inadequate Recreation Facilities

The stated goal of the Recreation Study is to determine the need for enhancement of existing facilities and the need for additional recreational facilities to support the current and future demand. This can only be done with a true picture of the current and future demand.

The Roanoke region is in the process of building Roanoke River Greenway, the main greenway artery through the valley, from Montgomery County to Franklin County at Back Creek. The eastern leg in Roanoke County from the City line to Highland Road is within the Project boundary and is engineered; construction is scheduled to begin in 2020 - 2021. The next sections are in the engineering phase and will go under the Blue Ridge Parkway and connect to and go through the County's Explore Park before terminating at the confluence of Back Creek. This facility will dramatically increase recreation use within the Project area. We ask that the partnership between the County and AEP for rights-of-way continue through the relicensing process, so that the greenway does not get held up. This final section of Roanoke River Greenway is critical to the economic redevelopment of Explore Park and completion of the Roanoke River Greenway through the valley.

We ask that AEP consider the following solutions to improve recreational opportunities in the Project area.

- a. Purchase property on river right near Niagara Dam to provide parking and boating access.
- b. Provide a portage around Niagara Dam on river right.
- c. Work with the localities to provide debris removal at the dam and sponsor periodic clean ups of trash in the Project Area.
- d. Provide Roanoke County with right-of-way for Roanoke River Greenway on river right on AEP land.

Thank you for the opportunity to provide comments at this point.

Sincerely,



Liz Belcher

Roanoke Valley Greenway Coordinator
1206 Kessler Mill Road, Salem, VA 24153
540-777-6330



Commonwealth of Virginia

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

1111 E. Main Street, Suite 1400, Richmond, Virginia 23219

P.O. Box 1105, Richmond, Virginia 23218

(800) 592-5482

www.deq.virginia.gov

Matthew J. Strickler
Secretary of Natural Resources

David K. Paylor
Director
(804) 698-4000

October 7, 2019

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

Re: Niagara Hydroelectric Project P-2466-034, Request for Comments and Study Requests on Proposed Study Plan

Dear Secretary Bose:

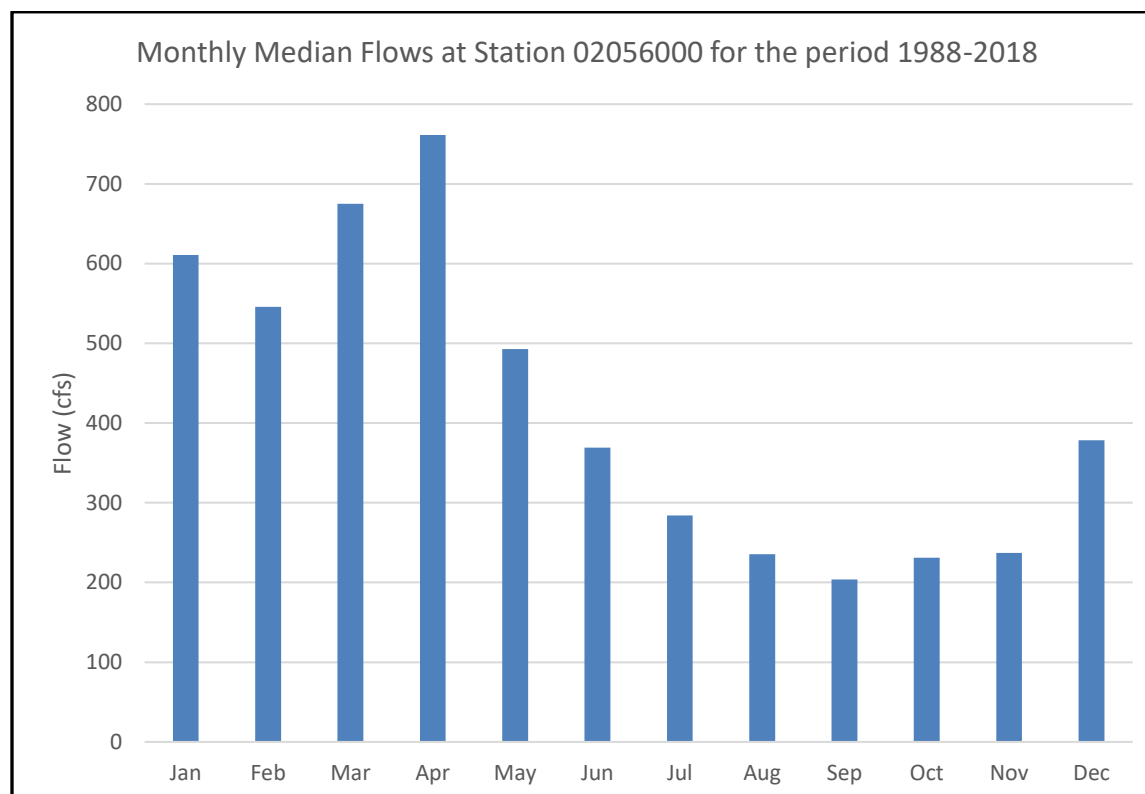
Thank you for the opportunity to provide comments on the Proposed Study Plan (PSP) for Relicensing Studies related to the Niagara Hydroelectric Project. DEQ has reviewed the PSP that was filed with the Federal Energy Regulatory Commission (FERC) on July 9, 2019. DEQ also participated in the August 1, 2019 PSP meeting held in Roanoke, Virginia. DEQ previously filed comments on the Pre-Application Document and Scoping Document on May 24, 2019. Following below are comments on the PSP.

Section 6: Flow and Bypass Reach Aquatic Habitat Study:

The stated goals of this proposed study include evaluation of 1) the efficacy of the current minimum flow requirement for the bypass reach (8 cubic feet per second, or cfs), 2) the effects of higher minimum required flows, and 3) the need for ramping rates related to potential fish stranding in the bypass reach. It is stated in Section 6.4 that flows in excess of the powerhouse discharge capacity (684 cfs) are passed over and through the spillway, implying that, under normal operating conditions, all flows less than 684 cfs are diverted through the powerhouse and only the minimum flow of 8 cfs goes to the bypass reach. Flow records from gaging station 02056000, located just downstream of the powerhouse, that are available from the U.S. Geological Survey's National Water Information System (NWIS) database indicate that the monthly median flow rates in the Roanoke River at that location are generally less than 684 cfs during most months of the 1988-2018 period planned for the study (see figure below). The PSP notes in Section 5 that, although flows through the bypass reach are not presently measured, they can be estimated by subtracting powerhouse outflow (calculated from generation data) from the gaged flow at station 02056000. Such estimates should be made and incorporated into the Flow

Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission

and Bypass Reach Aquatic Habitat Study. A time series of estimated flow in the bypass reach would provide critical information on the timing and frequency of various flow rates through the bypass reach and would inform and guide the decision regarding what representative flow rates should be used for the remainder of the study.



(from data downloaded from [NWIS](#) on October 4, 2019)

Section 8: Fish Community Study:

Given that flow in the bypass reach may commonly equal the minimum flow during the proposed sampling periods, there may be a potential for fish to occupy the bypass reach only during higher than median flow periods when water is allowed to pass over the dam. This potential variability of the presence of fish species in the bypass reach should be recognized and taken into account when scheduling field sampling. Flexibility in the sampling schedule should include 1) sampling in the bypass reach outside of the two time periods given in the PSP (May-June and August-September), 2) sampling during extended periods of above-minimum flow in the bypass reach, rather than during brief (1-2 day) periods of such flow, 3) scheduled reductions in generation to increase bypass reach flow, and/or 4) consideration of a second year of fish data collection if flows remain at minimum flow levels during the scheduled sampling months or if reduced generation cannot be accomplished for a sufficient period.

As you are aware, DEQ will require a new Clean Water Act § 401 certification for the current project in conjunction with the FERC relicensing process. This certification is administered according to the Virginia Water Protection (VWP) Permit regulations ([9VAC25-210](#)). The

Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission

permit application review for the § 401 certification includes an evaluation of the potential effect of the project, when operated and maintained as designed, upon downstream flow-dependent beneficial uses. The information and/or results from the studies conducted to support the Draft License Application should be incorporated into the VWP permit application so that the §401 certification is included as part of the Final License Application. It is recommended that, in order to expedite the §401 certification process, the licensee should begin the VWP permit application process as soon as studies are completed.

Thank you again for the opportunity to provide comments.

Respectfully,



Brian E. McGurk, P.G.
DEQ Office of Water Supply
P. O. Box 1105, Richmond VA 23218
Brian.McGurk@deq.virginia.gov (804-698-4180)

Cc: Joseph Grist, VA DEQ – via email
Jason Hill, VA DEQ – via email
George Devlin, VA DEQ – via email
Allyson Connor, FERC – via email

October 7, 2019

ROANOKE RIVER BLUEWAY COMMITTEE

COMMENTS

NIAGARA DAM HYDROELECTRIC PROJECT NO. 2466-034, COMMENTS ON THE RECREATION STUDY PLAN

12.2 GOALS AND OBJECTIVES

The study plan published on the FERC website indicates the following goals and objectives for a Recreation Study:

- Gather information on the condition of the one FERC-approved public recreation facility at the Project and identify any need for improvement;
- Characterize current recreational use of the Project area;
- Estimate future demand for public recreation at the Project;
- Solicit comments from stakeholders on potential enhancements or new facilities; and
- Analyze the effects of Project operation on Project-related recreation facilities.

The Goals and Objectives do not explicitly state that recommendations for improvements to the facilities will be included as a product of the study. The Roanoke River Blueway Committee is interested in maintaining some method of bypassing or portaging around the dam, as it is a barrier to recreational use of the Roanoke River Blueway. It is the hope of the Committee that the Recreation Study would also result in specific recommendations to improve the portage facility, whether by Appalachian or by Appalachian in partnership with local governments and other entities.

12.6 METHODOLOGY

12.6.2 TASK 2- CONVENE MEETING WITH STAKEHOLDERS TO DISCUSS EXISTING AND FUTURE RECREATIONAL OPPORTUNITIES

In the interest of assisting Appalachian to reach the maximum number of stakeholders in our community, the Roanoke River Blueway Committee would like to offer assistance with this task. Specifically, the Roanoke River Blueway Committee represents several key stakeholders who could be impacted in this project, and offers to coordinate with Appalachian and Appalachian's consultants to ensure that these stakeholders are involved in this meeting.

12.6.3 TASK 3 – RECREATION VISITOR USE ONLINE SURVEY

The Roanoke River Blueway Committee would like to recommend distribution of the Recreation Visitor Use Online Survey through our contacts, webpage, and social media sites. The Committee feels that posting at the listed launch points, while likely to catch many users, will not be sufficient to successfully reach the majority of Blueway users. Postings are often disregarded or not noticed by users, and the FERC project website is not a logical venue for Blueway information for most users. The Roanoke River Blueway Committee is happy to work with Appalachian Power and their consultants to provide this additional distribution method.



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029**

October 7, 2019

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
Mail Code: DLC, HL-11.2
888 First St., NE
Washington, DC 20426

Re: Niagara Hydroelectric Project (FERC No. 2466-034) Proposed Study Plan

Dear Ms. Bose:

The U.S. Environmental Protection Agency (EPA) has begun coordination with the Federal Energy Regulatory Commission's (FERC) in development of the Niagara Hydroelectric Project (Project) Environmental Assessment (EA) in compliance with the National Environmental Policy Act (NEPA). The EPA appreciates the interagency coordination taking place to study the Project and FERC's leadership in project impact analysis. The EPA has participated with the interagency team to consider issues associated with Roanoke River, especially study of sediment and the federally-listed endangered Roanoke logperch. Please find below and attached some recommendations for the EA analysis of the Project. We support the suggestions proposed by our federal partners including the U.S. Fish and Wildlife Service.

The primary objective of the proposed sediment study is to determine whether the Roanoke River below the Niagara dam is sufficiently starved of sediment to reduce the quality and quantity of habitat for benthic invertebrates and fish. The EPA agrees with the resource agencies that the current proposal by the facility is inadequate to provide the scientific information concerning the sediment issue and the applicant should incorporate the recommendations of the resource agencies.

The effects of the Project on the endangered Roanoke logperch (such as barriers to upstream and downstream movements and potential genetic isolation of the sub-populations) result in 'incidental take' as defined under the Endangered Species Act. The EPA agrees with the resource agencies that proposed fish community survey methods should be refined to ensure that the occurrence and distribution of all life stages of Roanoke logperch (i.e. larval, young-of-year, and adult) in the vicinity of the Project are documented and addressed in the studies.

The EPA recommends the applicant include the monitoring of water quality in the free-flowing section of the Roanoke River upstream of the Project impoundment. The objectives of the study are to



provide baseline and Project-influenced water quality information, and to determine whether the Project operations are having an effect on water quality and aquatic resources in the Roanoke River. This additional monitoring location will provide the required scientific information to evaluate the effects of the Project, if any, on the aquatic life and water quality of the Roanoke River.

Please find attached detailed technical suggestions in development of the Project study. If you have any questions regarding the recommendations, please feel free to contact me at (215) 814-332 or Rudnick.barbara@epa.gov or the staff contact for this project is Mr. Matthew Lee; he can be reached at (215) 814-2917 or Lee.Matthew@epa.gov.

Sincerely,

Barbara Rudnick
NEPA Program Coordinator
Office of Communities, Tribes &
Environmental Assessment

Enclosure

Enclosure

**Niagara Hydroelectric Project (FERC No. 2466-034) Proposed Study
Technical Comments**

Please consider the technical comments below in development of the study of the Niagara Project:

Section 8.6.1.2, Fish Community Study, Field Sampling. The EPA recommends targeted surveys of the Roanoke logperch should include surveys for all life stages including larval, young-of-year and adult. The applicant should work with the resource agencies to develop an appropriate monitoring plan to collect the required scientific information.

Section 8.6.2, Task 2 -Impingement and Entrainment. The EPA recommends using the most recent scientific methods in the blade strike analyses. The most updated study is Franke et al. (1997) which should be used by the applicant.

Section 9.6.2.2. Benthic Aquatic Resources Study. Task 1. Mussel Habitat and Community Study, Field Sampling. The EPA agrees with the resource agencies that the current proposed study is inadequate and the applicant should work with the resource agencies to develop an assessment study using the best available science for the assessment of the freshwater mussel community (e.g. Freshwater Mussel Guidelines for Virginia by VDGIF 2013).



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

October 7, 2019

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
Mail Code: DLC, HL-11.2
888 First St., NE
Washington, DC 20426

Re: Cooperating Agency Role in the Development of an Environmental Assessment for Relicensing the
Niagara Hydroelectric Project (FERC No. 2466-034)

Dear Ms. Bose:

The U.S. Environmental Protection Agency (EPA) has begun coordination with the Federal Energy Regulatory Commission's (FERC) in your development of the Niagara Hydroelectric Project Environmental Assessment (EA) announced earlier this year, in compliance with the National Environmental Policy Act (NEPA). EPA is pleased to commit to an active role as a cooperating agency for the subject project.

The Council of Environmental Quality (CEQ) has determined that a cooperating agency has the responsibility to assist the lead agency by participating in the process at the earliest possible time. This participation includes engaging in the scoping process; in developing information and preparing environmental analyses including portions of the environmental assessment where the cooperating agency has special technical expertise; and in making available staff support at the lead agency's request to enhance the lead agency's interdisciplinary capabilities. Our role as a cooperating agency in support of the subject EA will consist of providing comments on general NEPA compliance and Clean Water Act (CWA), Section 404 as well as providing technical support in the development of the EA.

The many benefits of enhanced cooperating agency participation in the preparation of NEPA analyses include: disclosing relevant information early in the analytical process; applying available technical expertise and staff support; and establishing a mechanism for addressing intergovernmental issues. Other benefits of enhanced cooperating agency participation include fostering intra- and intergovernmental trust (e.g., partnerships at the community level) and a common understanding and appreciation for various governmental roles in the NEPA process, as well as enhancing agencies ability to adopt environmental documents.



Due to resource constraints, we may limit our attendance of project meetings and hope that video or telephone conference opportunities may be made available. Given reasonable time frames, we would be pleased to review preliminary project documentation including preliminary draft versions of the EA. CEQ guidance recognizes that, while the lead agency has overall responsibility for the content of the EA, status as a cooperating agency should not be construed as expressing agreement with the lead agency regarding the conclusions to be drawn from the EA or selection of the preferred alternative. In addition, EPA has a number of independent responsibilities related to the proposed project and we retain our independent obligations and responsibilities pursuant to Section 309 of the Clean Air Act (CAA), Sections 402(d) and 404(b), (c), and (q) of the CWA.

Thank you for the opportunity to be a cooperating agency on this project. We look forward to working with you to ensure that a scientifically sound and sufficient EA is developed for this project. If you have any questions, please feel free to contact me at (215) 814-3322 or Rudnick.barbara@epa.gov or the staff contact for this project is Mr. Matthew Lee; he can be reached at (215) 814-2917 or Lee.Matthew@epa.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Barbara Rudnick', with a stylized flourish at the end.

Barbara Rudnick
NEPA Program Coordinator
Office of Communities, Tribes &
Environmental Assessment

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426
October 7, 2019

OFFICE OF ENERGY PROJECTS

Project No. 2466-034 – Virginia
Niagara Hydroelectric Project
Appalachian Power Company

VIA FERC Service

Mr. Jonathan Magalski
Environmental Specialist Consultant
American Electric Power Services Corporation
P.O. Box 2021
Roanoke, VA 24022-2021

**Reference: Staff Comments on the Proposed Study Plan and Additional
Information Requests for the Niagara Hydroelectric Project No. 2466**

Dear Mr. Magalski:

We have reviewed your Proposed Study Plan for the Niagara Hydroelectric Project (Niagara Project), filed with the Federal Energy Regulatory Commission on July 9, 2019. In addition to our verbal comments provided during the August 1, 2019, proposed study plan meeting, we are providing comments (Schedule A) pursuant to section 5.12 of the Commission's regulations. We have also included additional information requests in Schedule B. We anticipate that Appalachian Power Company will take our comments into consideration during development of the revised study plan, which must be filed with the Commission by November 6, 2019.

Project No. 2466

We appreciate the opportunity to comment on your Proposed Study Plan for the Niagara Project. Please contact Allyson Conner at (202) 502-6082 or allyson.conner@ferc.gov if you have any questions.

Sincerely,

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

Enclosure: Schedule A
 Schedule B

SCHEDULE A

Comments on the Proposed Study Plan (PSP)

Flow and Bypass Reach Aquatic Habitat Study

1. In section 6.2, you state that one of the objectives of the Flow and Bypass Reach Aquatic Habitat Study is to evaluate the need for ramping rates related to potential fish stranding in the bypassed reach. However, no further information is provided on how this objective will be met. In the revised study plan (RSP), please describe the methodology that will be used to evaluate the need for ramping rates for the bypassed reach.
2. In section 6.6.3.2, you describe field data that will be collected to support development of a 2-D hydraulic model in the Niagara Project's tailwater and bypassed reach. To calibrate the model, depth and wetted perimeter data will be collected at three target flows. In the RSP, please explain how the target flows will be selected.
3. In section 6.7, you state that analysis and reporting will include "an evaluation of potential available aquatic habitat for species of interest (e.g., orangefin madtom and Roanoke logperch)." Your RSP should include a refined target species list developed in consultation with the U.S. Fish and Wildlife Service, Virginia Department of Game and Inland Fisheries, and Virginia Department of Environmental Quality so that we can better understand the species focus of your aquatic habitat study.

Water Quality Study

1. In section 7.6.1, you describe the locations of the continuous water quality monitoring sites. In the forebay, data loggers will be placed at two discrete depths to determine the existence and extent of any thermal and dissolved oxygen stratification occurring in the impoundment. At the remaining locations, one logger will be deployed. In the RSP, please specify the depths at which the loggers will be located and provide justification for why the depths were chosen.

Fish Community Study

1. Additional information is needed in regard to study methodology to more clearly understand the anticipated level of effort that would be associated with the fish community study. In section 8.6.1.2, you describe general areas for fish sampling within the study area (upstream reach, reservoir, tailrace, bypassed reach) and state that "to the extent practical, sampling sites will be placed to overlap with historical

sampling locations.” The RSP should include additional information on the sampling allocation, including the number and locations of sampling sites. In addition, you state that an initial evaluation will be performed to identify microhabitats for Roanoke logperch and that additional surveys will be conducted in these microhabitats using a combination of electrofishing and snorkel surveys. In the RSP, please describe how the microhabitats will be identified, the minimum number of microhabitats that will be selected for sampling, and the minimum number of transect surveys that would be conducted within each survey location. However, as stated in section 8.6.1.2, the use of snorkel is contingent on the ability of Appalachian to receive internal approval for performing in-water survey work. In the event that snorkel methodology is not approved by Appalachian, please describe alternative techniques that would be used to conduct the Roanoke logperch surveys.

Benthic Aquatic Resources Study¹

1. In section 9.6.1 (Macroinvertebrate and Crayfish Community Study), you describe general areas for macroinvertebrate and crayfish sampling within the study area (reservoir, tailrace, bypassed reach) and state that “to the extent practical, sampling sites will be placed to overlap with historical sampling locations.” The RSP should include additional information on the sampling allocation, including the number and locations of proposed sampling sites.
2. In section 9.6.2 (Mussel Habitat and Community Study), you state that mussel sampling will be performed along line transects in areas identified as potential mussel habitat. You propose to identify areas of potential mussel habitat as part of the “Desktop Benthic Habitat Assessment;” however, it is unclear if you are referencing the Literature Review and Desktop Assessment in section 6.6.1 of the Flow and Bypass Reach Aquatic Habitat Study or section 9.6.3 Benthic Habitat Assessment of the Benthic Aquatic Resources Study. Further, if the former is to be used, the geographic scope of the study area is limited to the tailwater, bypassed reach, and river reach downstream of the Niagara powerhouse (section 6.3), whereas the proposed study area for the Mussel Habitat and Community Study also includes areas of the Roanoke River and tributary streams upstream of the Niagara Dam (section 9.3). In the RSP, please clarify the study area for the Mussel Habitat and Community Study, how mussel habitat will be identified, and how mussel survey locations will be selected.

¹ The proposed Benthic Aquatic Resources Study includes a Macroinvertebrate and Crayfish Community Study, Mussel Habitat and Community Survey, and Benthic Habitat Assessment as separate tasks under the larger study.

Schedule A
Project No. 2466

3. You state that the mussel surveys will be performed by an approved, qualified mussel surveyor, and may include snorkel and scuba techniques. However, as stated in section 9.6.2.2, the use of scuba and snorkel is contingent on the ability of Appalachian to receive internal approval for performing in-water survey work. In the RSP, please describe alternative techniques that would be used should such approval not be granted.

SCHEDULE B

Additional Information Requests

1. The last paragraph of section 5.6.1 in the pre-application document (PAD) references the “2016 riparian forest wildlife habitat plan.” We cannot find any other reference to such a plan in the PAD or any other recent document associated with this project. Please provide a copy of this plan or provide additional detail to clarify what the paragraph is referencing.
2. Section 10.4.2 of the PSP states that “many species likely to occur within the Project vicinity typically use wetland or riparian habitats at some point in their lives for permanent, temporary, or transient uses.” However, section 5.6.2 of the PAD states that there is no available information on specific wildlife species within wetland and riparian habitats of the project vicinity. Please explain why a basic survey of wildlife within these habitats was not included as part of the Wetland, Riparian, and Littoral Habitat Characterization Study proposed in the PSP.
3. In sub-section 6.2.4.1 of the PAD, you state that “ongoing operations may temporarily impact some generalist terrestrial wildlife species, however these species will likely move to adjacent habitat, returning once the activities are complete.” Please provide an explanation on how it was determined that only generalist species might be affected by operations, especially in habitats where existing information on wildlife is unavailable (as per section 5.6.2 of the PAD). Additionally, please provide information supporting your statements that (1) any such impacts would only be temporary and (2) that wildlife would move and then return to their original habitat.
4. As noted by the U.S. Fish and Wildlife Service (FWS) in its comment letter on May 28, 2019, Table 5.7-1 of the PAD lists the bog turtle as a species with historical records at or within the project vicinity. The species is currently listed as potentially occurring in Floyd County immediately south of Roanoke County.² Thus, please explain why this species was included in Table 5.7-1 of the PAD and not considered for inclusion in the PSP.

² <https://www.dgif.virginia.gov/wildlife/information/bog-muhlenberg-turtle/>.



COMMONWEALTH of VIRGINIA

Department of Game and Inland Fisheries

Matthew J. Strickler
Secretary of Natural Resources

Ryan J. Brown
Executive Director

October 7, 2019

Secretary Kimberly D. Bose
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 201426

Re: Niagara Project (P-2466-034) – Request for Comments, Proposed Study Plan and New Study Requests

Dear Secretary Bose:

Thank you for the opportunity to provide comments on the Proposed Study Plan (PSP) for the Niagara Hydroelectric Project (P-2466-034). The mission of the Virginia Dept. of Game and Inland Fisheries (VDGIF) is to conserve and manage wildlife populations and habitat, connect people to Virginia's outdoors, and protect people and property by promoting safe outdoor experiences. Additionally, VDGIF is the state agency responsible for managing aquatic and terrestrial wildlife resources, including rare/listed species of fish and wildlife.

We concur with and support the comments recently submitted by USFWS, VDEQ, and Dr. Paul Angermeier (Virginia Tech) regarding the PSP for this project. In addition, we offer the following comments on the PSP.

6. Bypass Reach Habitat Study – We generally concur with the methodology proposed by the applicant for evaluating habitat conditions in the bypass reach under alternative flow regimes. However, in previous comments, we (VDGIF) stated that our resource management goal for this reach was to restore full ecological functionality to this river segment. It is uncertain from the PSP, whether this study will provide the necessary information to compare habitat in the Bypass Reach with that found in unaltered reaches of the Roanoke River. The applicant states that this study will encompass the "tailwater, bypass reach, and river reach downstream", but the study area needs to be better defined. In order to compare flow alternatives in the bypass reach, we will need to assess habitat conditions downstream from the project (below the confluence with the bypass reach). Given that the bypass reach is approximately 1500 ft. in length, we suggest that a further 1500 ft. of similar habitat (e.g., relatively shallow riffles, runs, shoals, etc.) downstream of the project be included in this study. This may require a somewhat non-contiguous study area, as it would be inappropriate to compare habitat in deep pool areas (as found in certain areas below the project) with that in the bypass reach. We further recommend that the study area be delineated in consultation with USFWS, VDEQ, and VDGIF. Determination of habitat amount/quality in the downstream reach will allow for meaningful comparison of habitat quality/quantity in the bypass reach under alternative flow regimes, given

the goal of restoring full functionality to this impacted reach. Without this baseline for comparison, it will be difficult to assess the ecological impacts of various flow alternatives.

8. Fish Community Study – As stated previously, we support the comments already submitted by USFWS, VDEQ, and Dr. Paul Angermeir (VT) regarding this study. We would emphasize the need for larval/juvenile Roanoke Logperch (RLP) sampling (as identified by Dr. Angermeir) in order to assess the impacts of project operations on this listed species. We have consulted with the applicant (and other resource agencies) regarding this study, and have reached general consensus on the majority of the details (with the exception of the larval/juvenile RLP sampling, which is under review by the applicant).

12. Recreation Study – The applicant proposes to assess current recreational use in the project area, as well as to solicit stakeholders for recreational enhancement suggestions. However, given the very high potential demand for recreational access to the project, and the very limited facilities currently present, the proposed study will not address the true need for recreational access enhancement. In previous comments, VDGIF suggested that the applicant compare existing recreational use within the project boundaries, with existing recreational use in a segment of the Roanoke River that is not influenced by the project (e.g., upstream of the project boundary). This will provide a realistic comparison of recreational demand and use between the project area and an area with reasonably good access. The proposed study will not adequately address the actual demand for recreational access at the project, as the current limited recreational facilities significantly curtails recreational use. Without a comparable survey of use in an unimpacted river segment, it will be exceedingly difficult to determine the true recreational demand for access and facilities within the project boundary.

Thank you again for the opportunity to provide comments. Should there be any questions, please contact Scott Smith (scott.smith@dgif.virginia.gov or 434/525-7522).

Sincerely,



Scott M. Smith
Regional Fisheries Manager
Virginia Dept. of Game and Inland Fisheries
1132 Thomas Jefferson Rd.
Forest, VA 24551
Scott.smith@dgif.virginia.gov
434/525-7522

Cc: E. Aschenbach (VDGIF)
D. Wilson (VDGIF)
R. Southwick (VDGIF)
B. McGurk (VDEQ)
R. McCorkle (USFWS)
J. McCloskey (USFWS)
P. Angermeier (VT)

Yayac, Maggie

Subject: FW: AEP Niagara Hydro (FERC P-2466-034) - Fish Community and Roanoke Logperch Study Plan
Attachments: Niagara_Roanoke Logperch_Fish Community_Meeting Summary_09252019.pdf

From: Jonathan M Magalski [mailto:jmmagalski@aep.com]

Sent: Thursday, October 10, 2019 3:17 PM

To: Angermeier, Paul <biota@vt.edu>; Scott Smith (Scott.Smith@dgif.virginia.gov) <Scott.Smith@dgif.virginia.gov>; McCorkle, Richard <richard_mccorkle@fws.gov>; John McCloskey <john_mccloskey@fws.gov>; McGurk, Brian <brian.mcgurk@deq.virginia.gov>; Borsuk, Frank <borsuk.frank@epa.gov>

Cc: Elizabeth B Parcell <ebparcell@aep.com>; Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>; Huddleston, Misty <Misty.Huddleston@hdrinc.com>; Jon Studio <JStudio@envsi.com>; John Spaeth <jspaeth@envsi.com>

Subject: RE: AEP Niagara Hydro (FERC P-2466-034) - Fish Community and Roanoke Logperch Study Plan

Good afternoon,

Please find attached our meeting notes for the subject call held on September 25, 2019. Also contained in the document are the slides presented during the call. Please let us know if you have any questions or want to clarify anything in the notes.

We appreciate your time and feedback during the call and look forward to working with you through the relicensing process....Jon



JONATHAN M MAGALSKI | ENVIRONMENTAL SPEC CONSULT
[JMMAGALSKI@AEP.COM](mailto:jmmagalski@aep.com) | D:614.716.2240
1 RIVERSIDE PLAZA, COLUMBUS, OH 43215

From: Jonathan M Magalski

Sent: Saturday, September 21, 2019 8:47 AM

To: 'Angermeier, Paul' <biota@vt.edu>; 'Scott Smith' (<Scott.Smith@dgif.virginia.gov>) <Scott.Smith@dgif.virginia.gov>; 'McCorkle, Richard' <richard_mccorkle@fws.gov>; 'John McCloskey' <john_mccloskey@fws.gov>; 'McGurk, Brian' <brian.mcgurk@deq.virginia.gov>; Borsuk, Frank <borsuk.frank@epa.gov>

Cc: Elizabeth B Parcell <ebparcell@aep.com>; Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; Huddleston, Misty <Misty.Huddleston@hdrinc.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>

Subject: AEP Niagara Hydro (FERC P-2466-034) - Fish Community and Roanoke Logperch Study Plan

Gentlemen,

Please find attached, AEP's proposed fish community and Roanoke logperch study plan for discussion during our conference call on September 25. I will be updating the meeting invitation with the Webex and conferencing information momentarily. We look forward to the call. Have a great weekend....Jon



JONATHAN M MAGALSKI | ENVIRONMENTAL SPEC CONSULT
[JMMAGALSKI@AEP.COM](mailto:jmmagalski@aep.com) | D:614.716.2240
1 RIVERSIDE PLAZA, COLUMBUS, OH 43215

Meeting Summary

Project:	Niagara Hydroelectric Project (FERC No. 2466)
Subject:	Fish Community and Roanoke Logperch Study Plan
Date:	Wednesday, September 25, 2019
Location:	WebEx (1:00pm-2:30pm)
Attendees:	Jon Magalski (AEP) Liz Parcell (AEP) Scott Smith (VDGIF) Paul Angermeier (VA Tech) Rick McCorkle (USFWS) John McCloskey (USFWS) John Spaeth (ESI) Jon Studio (ESI) Brian McGurk (VDEQ) Sarah Kulpa (HDR) Misty Huddleson (HDR) Maggie Yayac (HDR)

Introduction

Jon M. (AEP) introduced two new additions to the team, John Spaeth/Jon Studio from ESI. Jon M. (AEP) reviewed meeting objectives and the agenda.

Fish Community Study: Goals and Objectives

- Misty provided an overview of the fish community study goal and reviewed the 1990's fish surveys previously completed, including illustrating historical sampling sites and locations where Roanoke Logperch were collected.
- Rick asked whether there was actually riffle-run habitat upstream of the confluence of Tinker Creek (historical sampling site at upper limit of Project boundary). Based on aerial imagery and reports from this group, this area does appear to be a riffle, though the group agreed that a better riffle area is located upstream of the Project boundary, at the next upstream bend in the Roanoke River.
- Misty reviewed the methodology for the fish community study (Task 1a of the Revised Study Plan)
 - Paul questioned if the two season study would include the same sites and methodology (Misty confirmed).
 - Paul noted the spring season may be difficult because Roanoke Logperch may be present and the VDGIF has a Time of Year Restriction, so that electrofishing won't be allowed to occur until the beginning of July. Group agreed that it would be satisfactory to limit the general community survey to a single sampling event (July/August timeframe).
 - Rick, Scott, and Paul agreed that a spring survey for Roanoke Logperch would be beneficial.

- **Action Item:** Scott is going to check with VDGIF environmental group to see if they can waive the time-of-year-restrictions and approve a collector's permit to allow an electrofishing survey of the bypass reach (where Roanoke Logperch are not known to occur) during the spring months. Also will need to coordinate and receive approval from USFWS.
- Paul asked about the intent of weighing/measuring the fish. Misty noted that this will give us general health data and was an agency (VDGIF) request. Paul noted that weight does not provide much value for non-game species.
- Misty clarified that 30 fish per transect will be examined, although all fish collected will be identified. **Action Item:** Clarify in the RSP.
- The group discussed using Index of Biological Integrity (IBI) as a method/tool for evaluating fish communities.
 - Paul does not think there is an IBI developed for Roanoke River and thus it may not be the best indicator of the fish community. Scott agreed.
 - Jon M. noted that this is a data analysis consideration and will not affect the data collection (survey), so can be determined in the future if this or other statistical comparison method is most appropriate.
 - USFWS clarified they previously recommend DEQ Virginia Stream Condition Index in relation to macroinvertebrates (not fish community).
 - Misty clarified that data will be compiled and summarized using descriptive statistics and general fish community metrics (species diversity, abundance, dominance, number of recreational taxa, etc.). Results will also be compared to historical data.
 - **Action Item:** Remove IBI reference and update language in the RSP.
- Misty illustrated the proposed new (4) and historical fish study site locations.
 - Rick questioned the most upstream survey location (1E/2E) since group agreed better habitat upstream. He noted that for comparison to historical data it may be useful, but if there is no suitable habitat than you may not need to survey there. Misty noted that these two locations were just for the fish community survey and there will be different locations for the Roanoke Logperch.
 - **Action Item:** AEP to evaluate (for the RSP) moving upstream sampling location for fish community survey to match Roanoke Logperch upstream sampling location.

Roanoke Logperch Study

- John Spaeth (ESI) provided background of ESI's qualifications and resources. John discussed Roanoke Logperch sampling requirements and proposed field sampling approach.
- Jon M. (AEP) indicated that snorkeling may be possible in wadeable areas (e.g., <3 ft depth) to augment the electrofishing and potentially detect juveniles, but still contingent upon AEP corporate dive coordinator approval and site conditions.
- Paul questioned the spatial extent being sampled at each of the proposed Roanoke Logperch survey locations. John S. (ESI) noted that this will be habitat driven and will include as many quadrats within the suitable habitat as possible. Adjacent survey sites (shown on figures) represent two separate riffle areas being evaluated in the same general location, often on opposite sides of the river. Group discussed potential size of each location; Paul noted that 20m seems a bit small. John asked Paul what a recommended survey reach would be. Paul noted that it will vary due to suitable habitat but he could foresee 20-30 net

sets per survey location. John Studio (ESI) noted that for example, survey point 1A had a 100m reach, but moving downstream the riffle-run habitats are smaller. **Action Item:** RSP to provide clarification on approach – each sample site will consist of an assessment of the entire suitable habitat in that location and will include as many net sets (quadrat samples) needed to provide 100% sample coverage of suitable habitat.

- Scott asked if Paul had detection probability based on quadrats surveyed. Paul noted that he doesn't have this information readily available, their 10% detection probability comes from survey efforts involving tagging fish and re-sampling (different than the proposed study).
- Discussion of whether a single sampling event would be sufficient for Roanoke Logperch. Paul stated that he can't say so definitively, but it is possible and likely based on his experiences, particularly if survey done during late summer/low-flow period. Young-of-year (YOY) are more easily observed later in the year as they attain larger body size. Sample during that period increases odds of documenting multiple life stages (if present).
 - Brian asked about sampling in the bypass reach during this same period. Discussion of whether Roanoke Logperch could occur in bypass reach during the spring when flows are higher and then move out of area as flows recede. Scott will talk internally about spring sampling in the bypass reach. Group agreed that it would be ideal to survey for Roanoke Logperch in the bypass reach in the spring and summer/late fall (2 times/year), pending VDGIF/USFWS approval to remove time-of-year restriction (if/as applicable). Snorkeling may not be possible during the higher/swifter flow conditions. The rest of the survey locations will just be surveyed in the late summer/fall timeframe. **Action Item:** HDR to clarify in the RSP survey season timeframes and locations.
- Paul requested measuring lengths of Roanoke Logperch if caught. **Action Item:** HDR to clarify lengths will be recorded in Task 1b of the RSP.
- John S. (ESI) noted that there is not an anticipated targeted effort for egg or larval Roanoke logperch life stages since it's difficult to identify the specimens taxonomically and may entail a complex or significant sampling effort.
 - Rick noted that this is a problem and feels strongly that there should be an effort to document the larval presence/absence. Rick noted that USFWS needs to know the use of the Project area by all life stages to determine take for the Biological Opinion. Absent this information, they may have to assume a worst-case scenario.
 - Scott noted that without any information it is hard to provide mitigation methods and VDGIF would also assume larvae presence in the reservoir. Jon M. (AEP) noted potential to sequence the study, first documenting the presence/location of adults (and juveniles) before surveying for larvae.
 - Paul said that eggs are not of a concern. There's high likelihood that larvae are entering the impoundment since they can drift in an order of kilometers. VA Tech's field work showed that it is relatively easy to sort out Roanoke Logperch larvae. Paul disagreed that a complex sampling effort is required and suggested larval drift net sets as an option.
 - John S. asked Rick if USFWS could provide or point to any examples of projects where larvae were surveyed to provide numbers for Incidental Take determination. USFWS did not have any examples specific to Roanoke Logperch.

- Paul noted that a recent VA Tech study report on Roanoke Logperch was submitted to VDGIF. Additionally, they are submitting a manuscript in the next few weeks.
Action item: Paul to send Jon M. available references.
- Jon M. (AEP) questioned the effort/timeframe on larvae drift.
 - Paul noted the locations would be the same as the adult survey locations currently proposed just above confluence with Tinker Creek and just below confluence (upper reach of impoundment).
 - Paul noted that at each site could have a rotation set up and drift nets deployed for 20 minutes every three days from mid-April to the first week of June.
 - Paul noted the major effort is sorting the larvae out.
 - Paul noted that you need to sample enough to capture different river stages and temperature. Larvae appear 1-2 weeks after spawning (temperature-dependent).
- Discussion of interest/value in sampling for larvae downstream of the Project (not resolved; for AEP consideration in the RSP).
- VDGIF recognized that the primary concern for the Roanoke Logperch survey is the level of effort and noted that there is the potential for reduced sampling with interpolation of catch per unit effort.
- Misty confirmed that the fish community study report will include the fish community composition and abundance and document identified suitable habitat and species presence of the Roanoke Logperch, along with raw data collected during the surveys.
- Paul requests a description of the adult Roanoke Logperch transect habitats in the study report. **Action Item:** Clarify in the RSP level of habitat description to be provided in the study report.
- Discussion of whether additional effort is appropriate to target juvenile Roanoke Logperch. Paul recommended running seine nets through potential habitat along edges for juvenile and to target shallow, clean gravel/pebble or vegetated habitat locations. **Action Item:** Paul to provide Jon M. with existing guidance/ reports on juvenile and larval sampling methodology.
- Discussion of whether sampling methods would capture Orange-fin Madtom, if present. Group agreed that Roanoke Logperch targeted surveys would detect this species as well (if present).
- Group generally reached consensus on the general fish community survey locations and methods. Group agreed that it is acceptable to drop the hoop net and gill net sampling as historically conducted/proposed in the PSP. Expectation that current electrofishing methods will capture species present.
- **Action Item:** AEP/HDR refine study activities schedule and cost estimates in the RSP.

Attachment: Fish Community and Roanoke Logperch Study Plan PowerPoint



American Electric Power
1 Riverside Plaza
Columbus, OH 43215
aep.com

Via Electronic Filing

November 6, 2019

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

**Subject: Niagara Hydroelectric Project (FERC No. 2466-034)
 Filing of Revised Study Plan for Relicensing Studies**

Dear Secretary Bose:

Appalachian Power Company (Appalachian or Applicant), a unit of American Electric Power (AEP) is the Licensee, owner, and operator of the run-of-river 2.4 megawatt (MW) Niagara Hydroelectric Project (Project No. 2466) (Project or Niagara Project), located on the Roanoke River in Roanoke County, Virginia. The Project is located at approximate river mile 355 on the Roanoke River, approximately 6 miles southeast of the City of Roanoke. The reservoir formed by the Project is approximately 2 miles long and includes the confluence with Tinker Creek.

The existing license for the Project was issued by the Federal Energy Regulatory Commission (FERC or Commission) for a 30-year term, with an effective date of April 4, 1994 and expires February 29, 2024. Accordingly, Appalachian is pursuing a new license for the Project pursuant to the Commission's Integrated Licensing Process (ILP), as described at 18 Code of Federal Regulations (CFR) Part 5. In accordance with 18 CFR §5.11 of the Commission's regulations, Appalachian is filing the Proposed Study Plan (PSP) describing the studies that the Licensee is proposing to conduct in support of relicensing the Project.

Background

Appalachian filed a Pre-Application Document (PAD) and associated Notice of Intent (NOI) with the Commission on January 28, 2019, to initiate the ILP. The Commission issued Scoping Document 1 (SD1) for the Project on March 26, 2019. SD1 was intended to advise resource agencies, Indian tribes, non-governmental organizations, and other stakeholders as to the proposed scope of FERC's Environmental Assessment (EA) for the Project and to seek additional information pertinent to the Commission's analysis.

On April 24 and 25, 2019, the Commission held public scoping meetings in Vinton, Virginia. During these meetings, FERC staff presented information regarding the ILP and details regarding the study scoping process and how to request a relicensing study, including the Commission's study criteria. In addition, FERC staff solicited comments regarding the scope of issues and

Niagara Hydroelectric Project (FERC No. 2466-034)
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analyses for the EA. Pursuant to 18 CFR §5.8(d), a public site visit of the Project was conducted on April 24, 2019.

Resource agencies, Indian tribes, and other interested parties were afforded a 60-day period to request studies and provide comments on the PAD and SD1. The comment period was initiated with the Commission's March 26, 2019 notice and concluded on May 25, 2019. During the comment period, twelve stakeholders filed letters with the Commission providing general comments, comments regarding the PAD, comments regarding SD1, and/or study requests. FERC issued Scoping Document 2 (SD2) on July 9, 2019 to provide information on the proposed action and alternatives, the environmental analysis process FERC staff will follow to prepare the EA, and a revised list of issues to be addressed in the EA.

In accordance with 18 CFR §5.11, Appalachian developed a Proposed Study Plan (PSP) for the Project that was filed with the Commission and made available to stakeholders on July 9, 2019. The purpose of the PSP was to present the studies proposed by Appalachian and to address the comments and study requests submitted by resource agencies and other stakeholders. The PSP described Appalachian's proposed approaches for conducting studies and addressed agency and stakeholder study requests. Pursuant to 18 CFR §5.11(e), Appalachian held a PSP Meeting on August 1, 2019, for the purpose of clarifying the PSP, explaining any initial information gathering needs, and addressing any outstanding issues associated with the PSP. Appalachian distributed additional information requested during the meeting to FERC staff and agencies by email communications subsequent to the PSP meeting.

Resource agencies and stakeholders were afforded 90 days from the date of the PSP filing (i.e., until October 7, 2019) to provide comments on the PSP or to request additional studies. The Commission's regulations require that comments on the PSP include an explanation of any study plan concerns and any accommodations reached with Appalachian regarding those concerns (18 CFR §5.12). Any proposed modifications to the PSP are also required to address the Commission's criteria as presented in 18 CFR §5.9(b).

Appalachian received timely formal comments on the PSP from FERC, U.S Fish and Wildlife Service (USFWS), Virginia Department of Game and Inland Fisheries (VDGIF), Virginia Polytechnic Institute and State University (Virginia Tech), Friends of the Rivers of Virginia (FORVA), Roanoke Valley Greenway Commission (RVGC), Environmental Protection Agency (EPA), Roanoke River Blueway Commission (RRBC), and Virginia Department of Environmental Quality (VDEQ) as described and included in the enclosed RSP. In developing the RSP, Appalachian has carefully evaluated and considered all agency and stakeholder comments and study requests received, as well as discussions during and communications following the PSP meeting.

Revised Study Plan

In developing the RSP, Appalachian evaluated all the study requests and comments submitted by the stakeholders, with a focus on the requests that specifically addressed the seven criteria for study requests as set forth at 18 CFR §5.9(b) of the Commission's ILP regulations. For the study requests

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that did not address the seven study criteria, where appropriate, Appalachian considered the study in the context of providing the requested information in conjunction with one or more of Appalachian's proposed studies.

This RSP takes into account the Commission's July 9, 2019 SD2 as well as comments on the PSP filed by stakeholders. Based on Appalachian's review of the requested studies, the FERC criteria for study requests under the ILP, the discussions during the PSP meeting, and formal comments on the PSP, Appalachian is proposing to conduct the following studies as described in detail in the RSP:

1. Flow and Bypass Reach Aquatic Habitat Study;
2. Water Quality Study;
3. Fish Community Study;
4. Benthic Aquatic Resources Study;
5. Wetlands, Riparian, and Littoral Habitat Characterization Study;
6. Shoreline Stability Assessment Study;
7. Recreation Study; and
8. Cultural Resources Study.

Appalachian is filing the RSP with the Commission electronically and is distributing this letter to the parties listed on the attached distribution list. For parties listed on the attached distribution list who have provided an email address, Appalachian is distributing this letter via email; otherwise, Appalachian is distributing this letter via U.S. mail. All parties interested in the relicensing process may obtain a copy of the RSP electronically through FERC's eLibrary system at <https://elibrary.ferc.gov/idmws/search/fercgensearch.asp> under docket number P-2466-034, or on Appalachian's website at <http://www.aephydro.com/HydroPlant/Niagara>.

Comments on the RSP must be filed within 15 days of the filing date of this RSP which is no later than November 21, 2019. The Commission will issue a final Study Plan Determination by December 6, 2019.

If there are any questions regarding the RSP, please do not hesitate to contact me at (614) 716-2240 or by email jmmagalski@aep.com.

Sincerely,



Jonathan M. Magalski
Environmental Specialist Consultant
American Electric Power Services Corporation

Enclosure

Niagara Hydroelectric Project (FERC No. 2466) Distribution List

Federal Agencies

Mr. John Eddins
Archaeologist/Program Analyst
Advisory Council on Historic Preservation
401 F Street NW, Suite 308
Washington, DC 20001-2637
jeddins@achp.gov

Blue Ridge National Heritage Area
195 Hemphill Knob Road
Asheville, NC 28803

Park Headquarters
Blue Ridge Parkway
199 Hemphill Knob Road
Asheville, NC 28803-8686

Ms. Kimberly Bose
Secretary
Federal Energy Regulatory Commission
888 1st St NE
Washington, DC 20426

FEMA Region 3
615 Chestnut Street
One Independence Mall, Sixth Floor
Philadelphia, PA 19106-4404

George Washington and Jefferson National
Forest
5162 Valleypointe Parkway
Roanoke, VA 24019

Mr. John Bullard
Regional Administrator
NOAA Fisheries Service
Greater Atlantic Regional Fisheries Office
55 Great Republic Drive
Gloucester, MA 01930-2276

Mr. John A. Bricker
State Conservationist
US Department of Agriculture
Natural Resources Conservation Service
1606 Santa Rosa Road, Suite 209
Richmond, VA 23229-5014

Mr. Harold Peterson
Bureau of Indian Affairs
US Department of the Interior
545 Marriott Dr, Suite 700
Nashville, TN 37214
Harold.Peterson@bia.gov

Office of the Solicitor
US Department of the Interior
1849 C Street, NW
Washington, DC 20240

Ms. Lindy Nelson
Regional Environmental Officer, Office of
Environmental Policy & Compliance
US Department of the Interior, Philadelphia
Region
Custom House, Room 244
200 Chestnut Street
Philadelphia, PA 19106

Ms. Barbara Rudnick
NEPA Team Leader - Region 3
US Environmental Protection Agency
1650 Arch Street
Philadelphia, PA 19103-2029

Mr. Martin Miller
Chief, Endangered Species - Northeast
Region (Region 5)
US Fish and Wildlife Service
300 Westgate Center Drive
Hadley, MA 01035

Ms. Cindy Schulz
Field Supervisor, Virginia Field Office
US Fish and Wildlife Service
6669 Short Lane
Gloucester, VA 23061

Mr. John McCloskey
US Fish and Wildlife Service
John_mccloskey@fws.gov

Mr. Richard C. McCorkle
Fish and Wildlife Biologist, Pennsylvania Field
Office
US Fish and Wildlife Service
110 Radnor Road, Suite 101
State College, PA 16801
richard_mccorkle@fws.gov

Ms. Elizabeth Merz
US Forest Service
3714 Highway 16
Marion, VA 24354

Niagara Hydroelectric Project (FERC No. 2466) Distribution List

Mr. Mark Bennett
Center Director of VA and WV Water Science
Center
US Geological Survey
John W. Powell Building
12201 Sunrise Valley Drive
Reston, VA 20192
mrbennet@usgs.gov

Hon. Ben Cline
US Congressman, 6th District
US House of Representatives
10 Franklin Road SE, Suite 510
Roanoke, VA 24011

Mr. Michael Reynolds
Acting Director, Headquarters
US National Park Service
1849 C Street, NW
Washington, DC 20240

Ms. Catherine Turton
Architectural Historian, Northeast Region
US National Park Service
US Custom House, 3rd Floor
200 Chestnut Street
Philadelphia, PA 19106

Hon. Tim Kaine
US Senate
231 Russell Senate Office Building
Washington, DC 20510

Hon. Mark Warner
US Senate
703 Hart Senate Office Building
Washington, DC 20510

Mr. Matthew Lee
US Environmental Protection Agency
lee.matthew@epa.gov

State Agencies

Dr. Elizabeth Moore
President
Archaeological Society of Virginia
PO Box 70395
Richmond, VA 23255

Blue Ridge Soil and Water Conservation
District
1297 State Street
Rocky Mount, VA 24151

Mr. Jess Jones
Freshwater Mollusk Conservation Center
Virginia Tech
1B Plantation Road
Blacksburg, VA 24061

Mr. Ralph Northam
Governor
Office of the Governor
PO Box 1475
Richmond, VA 23218

Mr. Paul Angermeier
Assistant Unit Leader
Virginia Cooperative Fish and Wildlife
Research Unit
Department of Fisheries and Wildlife
Conservation - Virginia Tech
106 Cheatham Hall
Blacksburg, VA 24061
biota@vt.edu

Mr. Benjamin Hermerding
Secretary of the Commonwealth
Virginia Council on Indians
PO Box 2454
Richmond, VA 23218
benjamin.hermerding@governor.virginia.gov

Ms. Robbie Rhur
Virginia Department of Conservation and
Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219
Robbie.Rhur@dcr.virginia.gov

Ms. Rene Hypes
Division of Natural Heritage
Virginia Department of Conservation and
Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219
rene.hypes@dcr.virginia.gov

Mr. Clyde Cristman
Division Director
Virginia Department of Conservation and
Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219

Niagara Hydroelectric Project (FERC No. 2466) Distribution List

Ms. Lynn Crump
FERC
Virginia Department of Conservation and
Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219
lynn.crump@dcr.virginia.gov

Mr. Tyler Meader
Locality Liasion - Division of Natural Heritage
Virginia Department of Conservation and
Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219
nhreview@dcr.virginia.gov

Mr. Matthew Link
Water Withdrawal Permit Writer
Virginia Department of Environmental Quality
PO Box 1105
Richmond, VA 23218
matthew.link@deq.virginia.gov

Mr. Andrew Hammond
Water Withdrawal Permitting & Compliance
Manager
Virginia Department of Environmental Quality
629 East Main Street
Richmond, VA 23218
andrew.hammond@deq.virginia.gov

Mr. Tony Cario
Water Withdrawal Permit Writer, Office of
Water Supply
Virginia Department of Environmental Quality
PO Box 1105
Richmond, VA 23218
anthony.cario@deq.virginia.gov

Mr. Scott Kudlas
Director, Office of Water Supply
Virginia Department of Environmental Quality
PO Box 1105
Richmond, VA 23218
scott.kudlas@deq.virginia.gov

Mr. Brian McGurk
Water Withdrawal Permit Writer
Virginia Department of Environmental Quality
PO Box 1105
Richmond, VA 23218
Brian.McGurk@deq.virginia.gov

Blue Ridge Regional Office
Virginia Department of Environmental Quality
3019 Peters Creek Road
Roanoke, VA 24019

Mr. Chris Sullivan
Senior Area Forester
Virginia Department of Forestry
900 Natural Resources Drive
Charlottesville, VA 22903

Mr. Scott Smith
Region 2 Fisheries Manager
Virginia Department of Game and Inland
Fisheries
1132 Thomas Jefferson Road
Forest, VA 24551
scott.smith@gdif.virginia.gov

Ms. Julie Langan
Director and State Historic Preservation
Officer
Virginia Department of Historic Resources
2801 Kensington Avenue
Richmond, VA 23221

Mr. Tim Pace
Chairman
Virginia Roanoke River Basin Advisory
Committee
PO Box 1105
Richmond, VA 23218

Local Governments

Ms. Anita McMillan
Town of Vinton
amcmillan@vintonVA.gov

Mr. Christopher Whitlow
Interim County Administrator
Franklin County Administration
1255 Franklin Street
Rocky Mount, VA 24151

Mr. Sherman P. Lea, Sr.
Mayor
City of Roanoke
Noel C. Taylor Municipal Building
215 Church Avenue
Roanoke, VA 24011

Niagara Hydroelectric Project (FERC No. 2466) Distribution List

Mr. Richard Caywood
Assistant County Administrator
County of Roanoke
PO Box 29800
5204 Bernard Drive
Roanoke, VA 24018
rcaywood@roanokecountyva.gov

Mr. David Weir
County of Roanoke
PO Box 29800
5204 Bernard Drive
Roanoke, VA 24018
dweir@roanokecountva.gov

Mr. David Henderson
Engineering
County of Roanoke
PO Box 29800
5204 Bernard Drive
Roanoke, VA 24018
dhenderson@roanokecountyva.gov

Mr. Phil North
Hollins Magisterial District
5204 Bernard Drive, 4th floor
Roanoke, VA 24014

Mr. David Radford
Windsor Hills Magisterial District
5204 Bernard Drive, 4th floor
Roanoke, VA 24014

Ms. Paula Shoffner
Executive Director
Tri-County Lakes Administrative Commission
400 Scruggs Road #200
Moneta, VA 24121
paulas@sml.us.com

Mr. Doug Blount
Director
Roanoke County Parks, Recreation and
Tourism
1206 Kessler Mill Road
Salem, VA 24153
dblount@roanokecountyva.gov

Ms. Lindsay Webb
Parks Planning and Development Manager
County of Roanoke
1206 Kessler Mill Road
Salem, VA 24153
LWEBB@roanokecountyva.gov

Mr. Joey Hiner
Town of Vinton
311 S. Pollard St.
Vinton, VA 24179
jhiner@vintonVA.gov

Mr. Bo Herndon
Town of Vinton
312 S. Pollard St.
Vinton, VA 24180
wherndon@vintonVA.gov

Mr. Kenny Sledd
Town of Vinton
313 S. Pollard St.
Vinton, VA 24181
ksledd@vintonVA.gov

Western Virginia Water Authority
601 South Jefferson Street
Roanoke, VA 24011

Tribes

Chief Bill Harris
Catawba Indian Nation
996 Avenue of the Nations
Rock Hill, SC 29730

Deborah Dotson
President
Delaware Nation
P.O. Box 825
Anadarko, OK 73005

Chief Dean Branham
Monacan Indian Nation
PO Box 1136
Madison Heights, VA 24572

Chief Robert Gray
Pamunkey Indian Tribe
1059 Pocahontas Trail
King William, VA 23086

Non-Governmental

American Canoe Association
503 Sophia Street, Suite 100
Fredericksburg, VA 22401



American Electric Power
1 Riverside Plaza
Columbus, OH 43215
aep.com

Mr. Kevin Richard Colburn
National Stewardship Director
American Whitewater
PO Box 1540
Cullowhee, NC 28779
kevin@americanwhitewater.org

Headquarters
Appalachian Trail Conservancy
416 Campbell Ave SW #101
Roanoke, VA 24016-3627

Blue Ridge Land Conservancy
722 1st Street SW, Suite L
Roanoke, VA 24016

Blue Ridge Parkway Foundation
717 South Marshall Street, Suite 105 B
Winston-Salem, NC 27101

Ms. Audrey Pearson
Executive Director
Friends of the Blue Ridge Parkway
PO Box 20986
Roanoke, VA 24018
audrey_pearson@friendsbrp.org

Friends of the Rivers of Virginia
257 Dancing Tree Lane
Hollins, VA 24019

Mr. Bill Tanger
Chairman
Friends of the Roanoke
PO Box 1750
Roanoke, VA 24008
bill.tanger@verizon.net

Ms. Juanita Callis
Director
Friends of the Roanoke
PO Box 1750
Roanoke, VA 24008-1750

Mr. Mike Pucci
President
Roanoke River Basin Association
150 Slayton Avenue
Danville, VA 24540

Roanoke River Blueway
313 Luck Avenue SW
Roanoke, VA 24016
roanokeriverblueway@gmail.com

Ms. Amanda McGee
Regional Planner II
Roanoke Valley - Alleghany Regional
Commission
P.O. Box 2569
Roanoke, VA 24010
amcgee@rvarc.org

Ms. Liz Belcher
Greenway Coordinator
Roanoke Valley Greenway
1206 Kessler Mill Road
Salem, VA 24153
liz.belcher@greenways.org

Mr. Steve Moyer
Trout Unlimited
1777 N. Kent Street, Suite 100
Arlington, VA 22209

Upper Roanoke River Roundtable
PO Box 8221
Roanoke, VA 24014

Lorie Smith
Smith Mountain Lake Association
400 Scruggs Road #2100
Moneta, VA 24121
TheOffice@SMLAssociation.org

Yayac, Maggie

Subject: FW: Niagara Hydroelectric Project (VA) -- Filing of Revised Study Plan
Attachments: Niagara Project RSP Transmittal Letter 20191106.pdf

From: Kulpa, Sarah

Sent: Wednesday, November 6, 2019 4:24 PM

To: ACHP - John Eddins <jeddings@achp.gov>; County of Roanoke - David Henderson <dhenderson@roanokecountyva.gov>; County of Roanoke - David Weir <dweir@roanokecountyva.gov>; County of Roanoke - Lindsay Webb <LWEBB@roanokecountyva.gov>; County of Roanoke - Richard Caywood <rcaywood@roanokecountyva.gov>; Friends of the Blue Ridge Parkway - Audrey Pearson <audrey_pearson@friendsbrp.org>; Friends of the Roanoke - Bill Tanger <bill.tanger@verizon.net>; Harold Peterson <harold.peterson@bia.gov>; Kevin Colburn - American Whitewater (kevin@americanwhitewater.org) <kevin@americanwhitewater.org>; Roanoke County Parks - Doug Blount <dblount@roanokecountyva.gov>; Roanoke River Blueway <roanokeriverblueway@gmail.com>; Roanoke Valley Alleghany Regional Commission - Amanda McGee <amcgee@rvarc.org>; Roanoke Valley Greenway - Liz Blecher <liz.belcher@greenways.org>; Smith Mountain Lake Assn - Lorie Smith <TheOffice@SMLAssociation.org>; Town of Vinton - Anita McMillan <amcmillan@vintonVA.gov>; Town of Vinton - Bo Herndon <wherndon@vintonVA.gov>; Town of Vinton - Joey Hiner <jhiner@vintonVA.gov>; Town of Vinton - Kenny Sledd <ksledd@vintonVA.gov>; Tri-County Lakes Administrative Commission - Paula Shoffner <paulas@sml.us.com>; VADEQ - Brian McGurk <Brian.McGurk@deq.virginia.gov>; USEPA - Matthew Lee <lee.matthew@epa.gov>; USFWS <richard_mccorkle@fws.gov>; USFWS - John McCloskey <John_mccloskey@fws.gov>; USGS - Mark Bennett <mrbennet@USGS.gov>; VA Cooperative Fish and Wildlife Research Unit - Paul Angermeier <biota@vt.edu>; VADCR - Lynn Crump <lynn.crump@dcr.virginia.gov>; VADCR - Natural Heritage <nhrefview@dcr.virginia.gov>; VADCR - Robbie Ruhr <Robbie.Rhur@dcr.virginia.gov>; VADEQ - Andrew Hammond <andrew.hammond@deq.virginia.gov>; VADEQ - Anthony Cario <anthony.cario@deq.virginia.gov>; VADEQ - Matthew Link <matthew.link@deq.virginia.gov>; VADEQ - Scott Kudlas <scott.kudlas@deq.virginia.gov>; Virginia Council on Indians - Emma Williams <emma.williams@governor.virginia.gov>; Virginia Department of Conservation and Recreation - Rene Hypes <rene.hypes@dcr.virginia.gov>; Virginia Department of Game and Inland Fisheries - Scott Smith <scott.smith@dgif.virginia.gov>
Cc: Jonathan M Magalski <jmmagalski@aep.com>; Elizabeth B Parcell <ebparcell@aep.com>; MacVane, Kelly <Kelly.MacVane@hdrinc.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>; Quiggle, Robert <Robert.Quiggle@hdrinc.com>

Subject: Niagara Hydroelectric Project (VA) -- Filing of Revised Study Plan

Niagara Hydroelectric Project Stakeholders:

Appalachian Power Company (Appalachian), a unit of American Electric Power (AEP), is the licensee, owner and operator of the Niagara Hydroelectric Project (FERC No. 2466) (Project) located on the Roanoke River in Roanoke County, Virginia. The Project is operated under a license issued by the Federal Energy Regulatory Commission (FERC). The existing FERC license for the Project expires on February 29, 2024. Appalachian is pursuing a new license for the continued operation of the Project in accordance with FERC's Integrated Licensing Process (ILP). Pursuant to the ILP, Appalachian filed the Revised Study Plan (RSP) for the Project on November 6, 2019. The RSP responds to additional study comments Appalachian received in response to the Proposed Study Plan filing and describes the studies that Appalachian is proposing to conduct in support of Project relicensing.

On behalf of Appalachian, we are notifying stakeholders of the availability of the RSP. For your convenience, a copy of the cover letter filed with the RSP is attached. Please note that, due to file size restrictions, the RSP has not been included in this email. Appalachian encourages stakeholders to view the filing online at FERC's eLibrary at https://elibrary.ferc.gov/idmws/file_list.asp?accession_num=20191106-5132. Appalachian will also be adding the RSP to the Project's public relicensing website (<http://www.aephydro.com/HydroPlant/Niagara>) in the coming days.

Should you have any questions regarding this filing, please contact Jon Magalski with AEP at (614) 716-2240 or jmmagalski@aep.com.

Thank you,

Sarah Kulpa

Project Manager

HDR

440 S. Church Street, Suite 900

Charlotte, NC 28202-2075

D 704.248.3620 **M** 315.415.8703

sarah.kulpa@hdrinc.com

hdrinc.com/follow-us

Yayac, Maggie

Subject: FW: Niagara Hydroelectric Project (VA) -- Filing of Revised Study Plan

From: Angermeier, Paul <biota@vt.edu>

Sent: Monday, November 11, 2019 1:47 PM

To: Jonathan M Magalski <jmmagalski@aep.com>

Subject: [EXTERNAL] RE: Niagara Hydroelectric Project (VA) -- Filing of Revised Study Plan

This is an **EXTERNAL** email. **STOP. THINK** before you **CLICK** links or **OPEN** attachments. If suspicious please click the '**Report to Incidents**' button in Outlook or forward to incidents@aep.com from a mobile device.

Jon

Thanks for the backup. I think the problem is just that the links don't like Internet Explorer. Google Chrome works fine.

Paul

From: Jonathan M Magalski <jmmagalski@aep.com>

Sent: Monday, November 11, 2019 10:04 AM

To: Angermeier, Paul <biota@vt.edu>

Subject: RE: Niagara Hydroelectric Project (VA) -- Filing of Revised Study Plan

Hi Paul,

Try this link:

<http://www.aephydro.com/Content/documents/2019/NiagaraFilingofRevisedStudyPlanforRelicensingStudiesFERCNo2466.pdf>

I checked access to the document remotely and from my phone. Both worked fine so it may be a firewall issue on your end. Let me know if the above link doesn't fully load the RSP. If it doesn't load, I'll try a file transfer.

Thanks for bringing this to my attention.....Jon

From: Angermeier, Paul <biota@vt.edu>

Sent: Monday, November 11, 2019 9:56 AM

To: Jonathan M Magalski <jmmagalski@aep.com>

Subject: [EXTERNAL] FW: Niagara Hydroelectric Project (VA) -- Filing of Revised Study Plan

This is an **EXTERNAL** email. **STOP. THINK** before you **CLICK** links or **OPEN** attachments. If suspicious please click the '**Report to Incidents**' button in Outlook or forward to incidents@aep.com from a mobile device.

Hi Jon

I tried unsuccessfully to access the RSP several times via the link below to the Project website. The 1st page comes up but the pdf is inoperable. Any suggestions?

Thanks, Paul

From: Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>

Sent: Wednesday, November 6, 2019 4:24 PM

To: ACHP - John Eddins <jeddins@achp.gov>; County of Roanoke - David Henderson

<dhenderson@roanokecountyva.gov>; County of Roanoke - David Weir <dweir@roanokecountyva.gov>; County of Roanoke - Lindsay Webb <LWEBB@roanokecountyva.gov>; County of Roanoke - Richard Caywood <rcaywood@roanokecountyva.gov>; Friends of the Blue Ridge Parkway - Audrey Pearson <audrey_pearson@friendsbrp.org>; Friends of the Roanoke - Bill Tanger <bill.tanger@verizon.net>; Harold Peterson <harold.peterson@bia.gov>; Kevin Colburn - American Whitewater (kevin@americanwhitewater.org) <kevin@americanwhitewater.org>; Roanoke County Parks - Doug Blount <dblount@roanokecountyva.gov>; Roanoke River Blueway <roanokeriverblueway@gmail.com>; Roanoke Valley Alleghany Regional Commission - Amanda McGee <amcgee@rvarc.org>; Roanoke Valley Greenway - Liz Blecher <liz.belcher@greenways.org>; Smith Mountain Lake Assn - Lorie Smith <TheOffice@SMLAssociation.org>; Town of Vinton - Anita McMillan <amcmillan@vintonVA.gov>; Town of Vinton - Bo Herndon <wherndon@vintonVA.gov>; Town of Vinton - Joey Hiner <jhiner@vintonVA.gov>; Town of Vinton - Kenny Sledd <ksledd@vintonVA.gov>; Tri-County Lakes Administrative Commission - Paula Shoffner <paulas@sml.us.com>; UADEQ - Brian McGurk <Brian.McGurk@deq.virginia.gov>; USEPA - Matthew Lee <lee.matthew@epa.gov>; USFWS <richard_mccorkle@fws.gov>; USFWS - John McCloskey <John_mccloskey@fws.gov>; USGS - Mark Bennett <mrbennet@USGS.gov>; Angermeier, Paul <biota@vt.edu>; VADCR - Lynn Crump <lynn.crump@dcr.virginia.gov>; VADCR - Natural Heritage <nhreview@dcr.virginia.gov>; VADCR - Robbie Ruhr <Robbie.Rhur@dcr.virginia.gov>; VADEQ - Andrew Hammond <andrew.hammond@deq.virginia.gov>; VADEQ - Anthony Cario <anthony.cario@deq.virginia.gov>; VADEQ - Matthew Link <matthew.link@deq.virginia.gov>; VADEQ - Scott Kudlas <scott.kudlas@deq.virginia.gov>; Virginia Council on Indians - Emma Williams <emma.williams@governor.virginia.gov>; Virginia Department of Conservation and Recreation - Rene Hypes <rene.hypes@dcr.virginia.gov>; Virginia Department of Game and Inland Fisheries - Scott Smith <scott.smith@dgif.virginia.gov>
Cc: Jonathan M Magalski <jmmagalski@aep.com>; Elizabeth B Parcell <ebparcell@aep.com>; MacVane, Kelly <Kelly.MacVane@hdrinc.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>; Quiggle, Robert <Robert.Quiggle@hdrinc.com>

Subject: Niagara Hydroelectric Project (VA) -- Filing of Revised Study Plan

Niagara Hydroelectric Project Stakeholders:

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On behalf of Appalachian, we are notifying stakeholders of the availability of the RSP. For your convenience, a copy of the cover letter filed with the RSP is attached. Please note that, due to file size restrictions, the RSP has not been included in this email. Appalachian encourages stakeholders to view the filing online at FERC's eLibrary at https://elibrary.ferc.gov/idmws/file_list.asp?accession_num=20191106-5132. Appalachian will also be adding the RSP to the Project's public relicensing website (<http://www.aephydro.com/HydroPlant/Niagara>) in the coming days.

Should you have any questions regarding this filing, please contact Jon Magalski with AEP at (614) 716-2240 or jmmagalski@aep.com.

Thank you,

Sarah Kulpa
Project Manager

HDR
440 S. Church Street, Suite 900
Charlotte, NC 28202-2075
D 704.248.3620 M 315.415.8703
sarah.kulpa@hdrinc.com

Bill Tanger, Roanoke, VA.

Under Recreation Study 10.1 last paragraph: "FORVA noted that tailwater fishing on river right is very common." This should read: "FORVA noted that tailwater boating and fishing on river right are very common."

Under 10.4 (2): Outlook should be changed to "Overlook".

Under 10.4 second bullet: Boat access is already provided via the NPS trail from the Overlook parking lot, but it is informal and needs to be better designed and built. FORVA is not referring to boating access directly below the dam, but via the NPS informal trail now being used.

Under 10-4 next paragraph: FORVA is requesting recreational flows below the powerhouse. We realize a flow release at the dam is not feasible.

Under 10.6: The Roanoke River Trail should be specifically the Fishermens Trail branch of the Roanoke River Trail.

FORVA supports the proposed recreation study and especially the proposed meeting with recreational stakeholders.



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Pennsylvania Field Office
110 Radnor Road, Suite 101
State College, Pennsylvania 16801-4850



November 20, 2019

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
Mail Code: DLC, HL-11.2
888 First St., NE
Washington, DC 20426

RE: Niagara Hydroelectric Project (FERC No. 2466-034) Revised Study Plan Comments

Dear Secretary Bose:

The U.S. Fish and Wildlife Service (Service) has reviewed the November 6, 2019, *Filing of Revised Study Plan for Relicensing Studies* for the Niagara Hydroelectric Project (Federal Energy Regulatory Commission [Commission; FERC] Project No. 2466), filed by Appalachian Power Company (Appalachian or Applicant). The Project is located on the Roanoke River in Roanoke County, Virginia, approximately 6 miles southeast of the City of Roanoke. The Service filed comments on the Proposed Study Plan (PSP) on October 3, 2019, which Appalachian has included in Appendix B of the Revised Study Plan (RSP).

The following comments are provided in accordance with 18 CFR §5.13(b), and pursuant to the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

3.1.1, Study Requests Deemed Not Appropriate for Study, Fish Passage: The Service appreciates Appalachian's consideration of the possible need to evaluate alternatives to physical Project modifications if the results of the Fish Community Survey indicate a need linked to a specific resource management goal to provide upstream fish passage. We also appreciate Appalachian's consideration of the possible need to evaluate the feasibility and cost of downstream fish passage alternatives for target species, in the event that additional measures are found to be potentially appropriate.

Table 3-2, Summary of Study Requests and Study-Related Comments in Response to the PSP: The first response in this table is to a request by FERC to “Describe the methodology that will be used to evaluate the need for ramping rates for the bypass reach.” Appalachian’s response, in part, is that ramping rates are not applicable at this Project due to the ungated nature of the spillway. The Service disagrees with this response. It is our understanding that ramping rates at hydroelectric projects are generally related to turbine operations. For example, there may be situations where the Project is shut down, during which flow to the bypass reach may increase substantially, causing fish to enter and ascend the bypass reach. Under a worst-case scenario, the Project may then go from no generation to full generation by bringing both units on-line, simultaneously, which could result in a rapid dewatering of the bypass reach, creating the potential for fish stranding (Nagrodski et al. 2012; Irvine et al. 2015; Schmutz et al. 2015; Moreira et al. 2019). Alternatively, to avoid fish stranding, the Project could bring units on-line, one at a time, possibly delaying startup of the second unit until 1 hour after the first unit is brought on-line. It is our understanding that this more gradual ramping approach or reduced ramping rate would avoid rapid dewatering of the bypass reach, which would provide more opportunity for fish to exit the bypass reach as portions of it become dewatered (Nagrodski et al. 2012; Irvine et al. 2015; Schmutz et al. 2015; Moreira et al. 2019).

There is at least one documented incident of fish stranding at the Project, where there was a resulting fish kill (mostly redhorse species). The Service and the Virginia Department of Game and Inland Fisheries (VDGIF) referenced this incident in previous comments. Given the importance of avoiding fish kills in the bypass reach, the Service believes FERC has made an appropriate request that should be addressed.

Table 3-2, pp 28-29: Regarding Appalachian’s statement that HSI (habitat suitability index) curves are not currently available for the Roanoke logperch (*Percina rex*; RLP), an HSI for this species in the Roanoke River was developed by Ensign and Angermeier (1994), and subsequently modified by Ensign et al. (2000). The Service would like to discuss the possible use of this HSI for assessing habitat suitability for this species as an objective of the Flow and Bypass Reach Aquatic Habitat Study.

Table 3-2, Summary of Study Requests and Study-Related Comments in Response to the PSP: The Service stated if the water quality data show that a low temperature or dissolved oxygen (DO) plume is present downstream of the powerhouse, an additional year of monitoring may be needed to define the vertical, lateral, and longitudinal extent of this plume. The Response provided does not specifically address this issue. The Service stands by the original comment that additional monitoring would be needed if the monitoring during the first year shows an effect on temperature or DO downstream of the Project.

Page 42, bottom row in comment response table, regarding invasive species: Based on Appalachian’s statement that the study area does not include significant upland terrestrial habitat, it seems reasonable for any upland invasive species to also be identified, given the limited area that would need to be surveyed. In addition, although part of Appalachian’s justification is that no impacts are expected from Project operations, the Service is concerned about the potential for

this limited area, given it has been disturbed by past Project development and also receives regular traffic, to become a source for the introduction and spread of invasive species. The Service is aware of many other hydropower projects that are required to periodically undertake plant inventories in upland areas surrounding Project works, and implement invasive species control programs. In addition, vehicle and foot traffic by Project staff are directly related to Project operations, and are potential vectors for the introduction and spread of invasive species. Therefore, we consider this a reasonable request in order to avoid the unchecked spread of an invasive species originating from the disturbed areas surrounding the Project works.

Section 4.1, Flow and Bypass Reach Aquatic Habitat Study, Study Requests: This section states Appalachian’s consultant noted that the sluice gate is the only operation control of water level at the dam (other than the powerhouse intake), so it may not be possible to provide a controlled flow release beyond the capacity of this outlet. The Service understands the dam is ungated, with the exception of the sluice gate, which makes controlled releases over the dam crest difficult. However, given sufficient inflow, we believe it is possible to provide a controlled flow release over the crest of the dam, beyond the capacity of the sluice gate, through reduced turbine operations or Project shutdown, with the sluice gate closed.

Table 4-2, Species of Interest to be Evaluated in the Flow and Bypass Reach Aquatic Habitat Study:

- The Fast Riffle guild should include at least one darter species (e.g., Roanoke darter, *Percina roanoka*). In the previous formulation of habitat suitability models for stream fish guilds which focused on the upper Roanoke River, Vadas and Orth (2001) indicated that the fast riffle guild was dominated by darters.
- Although inclusion of a darter in the Riffle-Run guild is appropriate (Vadas and Orth 2001), we question the inclusion of the common logperch (*Percina caprodes*), as this species does not occur in the Roanoke River (Jenkins and Burkhead 1993). We understand that this species may be included as a surrogate because an HSI model was developed for this species, but we note that you have also appropriately included the RLP in this guild, for which an HSI model was also developed.
- In addition to gizzard shad (*Dorosoma cepedianum*), the Service requests inclusion of at least one other species for the Open Pool guild. Vadas and Orth (2001) found minnow species to be prominent in this guild. We recommend consideration of spottail shiner (*Notropis hudsonius*) or satinfish shiner (*N. analostanus*). Channel catfish (*Ictalurus punctatus*) is another species that could be considered for inclusion in this guild. The Service recommends that Appalachian and/or their consultant discuss representative species for the various guilds with the resource agencies and Virginia Tech before finalizing them.
- For the Pool Cover guild, consider replacing the non-native common carp (*Cyprinus carpio*) with bluntnose minnow (*Pimephales notatus*) which was among the dominant species attributed to this guild by Vadas and Orth (2001). The Service does not see any value in assessing the habitat suitability of the bypass reach for a non-native species.

4.7, Flow and Bypass Reach Aquatic Habitat Study, Analysis and Reporting: Although Appalachian has indicated that velocity measurements will be taken at an established cross section during evaluation flow releases, and that these measurements will be used to calibrate or verify modeled velocities, there is no mention in Section 4.7 of providing the results of these velocity measurements. The Service requests that reporting include a table of velocity measurements for each evaluation flow.

The Service also previously requested collection of water quality data (e.g., DO, temperature) at different flow releases, at an established cross section, and requests that reporting also include a table comparing results of water quality measurements to the different flow releases.

4.7, Flow and Bypass Reach Aquatic Habitat Study, Analysis and Reporting, study results 3 and 6: As previously requested, the Service is also interested in an evaluation of the relationship between flow to the bypass reach and wetted area, flow patterns and hydraulic connectivity, under scenarios where flow to the bypass reach is provided via the spillway, as opposed to through the sluice gate.

5.2, Water Quality Study, Goals and Objectives, second bullet: One of the goals and objectives of the water quality study is to provide data to determine the presence and extent, if any, of temperature and DO stratification in the Niagara impoundment. Related to this issue, if there is any temperature and/or DO stratification of the impoundment, an additional goal would be to determine whether this stratification affects water quality downstream in the tailrace and if so, the magnitude of this impact relative to the free-flowing section of the river upstream of the Project.

5.6.1, Water Quality Study, Methodology, Task 1 - Continuous Water Temperature and DO Monitoring: This section states that Appalachian proposes to monitor temperature and DO using multi-parameter water quality instrumentation at seven locations as described in this section and shown in Figure 5-1. If temperature and DO are affected by the presence of the reservoir compared to the upstream reference, additional instruments would need to be deployed farther downstream of the currently proposed locations to determine the downstream extent of this impact. In this case, the study area discussed in Section 5.3 and identified in Figure 5-1 for the water quality study would need to be extended farther downstream.

This section also states water temperature and DO data sondes are proposed to be deployed for a single season, from May 1, 2020 through September 30, 2020 and will collect data at 15 minute intervals. High air and water temperatures and low flow conditions can extend beyond September 30; therefore, the Service recommends the data sondes be deployed through October 31, 2020.

6.2, Goals and Objectives, third bullet: A stated objective of the Fish Community Study is to collect information regarding the current status (abundance and distribution) of the RLP (including larval, Young-of-Year (YOY), and adults) in the vicinity of the Project for the purpose of establishing a baseline and to potentially support the Commission's cumulative

effects analyses. While the Service recognizes that the Commission defines the baseline as the existing conditions at the Project at the time of relicensing, under the ESA the Service considers both past and present impacts [50 CFR § 402.02].

6.6.2, Fish Community Study, Methodology, Task 1b - RLP Study, bottom of page 87 and top of page 88: While the Service understands Appalachian's concerns regarding the proposed methods for distinguishing RLP larvae from larvae of other species, we have our own concerns regarding Appalachian's statement that results of the study should not be used in defining Protection, Mitigation, & Enhancement (PM&E) measures specific to the RLP. A primary objective of the study, from the Service's perspective, is to determine how continued operation of the Project may affect this endangered species during the next license term. The Service will be expected to provide its concurrence or non-concurrence with any effects determinations made by the Commission. If study results indicate adverse effects to this species will result from continued operation of the Project, the Service has an obligation to then recommend PM&E measures. Therefore, given Appalachian's reluctance to accept any recommended PM&E measures that may result from the study, due to their lack of confidence in the proposed approach for distinguishing RLP larvae from larvae of other species, we recommend the proposed study be modified to include genetic analysis (DNA-barcoding) of collected larvae in order to definitively identify any RLP larvae that are collected.

We also believe that previous concerns regarding the costs of genetic analysis may be unfounded. We are aware of a recent genetic analysis of Chesapeake logperch specimens that was conducted in order to determine whether there are genetically distinct populations of this species in the Chesapeake Bay drainage. The analysis was completed for a fraction of the cost of an average hydropower relicensing study. However, we recognize that the cost may be higher when multiple species are being analyzed, so a hybrid approach should also be considered where meristic (countable trait) and morphometric features are used to eliminate all species except for RLP and the one species that is known to be very similar morphometrically (chainback darter, *Percina nevisense*), after which these remaining larvae would be subjected to genetic analysis and separation.

Regarding Appalachian's expressed deep concern that the results of this study could lead to an overestimate of RLP larval drift into the Project reservoir, the above recommendation to reconsider the use of DNA-barcoding, or a combination of approaches (i.e., Step 1: separation based on meristic and morphometric features; Step 2: DNA-barcoding to do the final separation of the two morphologically similar species), will address this concern.

Study Plan Criteria (CFR 18 § 5.11 (b)-(e)) Addressed for Service's Requested Modification to RLP Larvae Study:

1. Goals and Objectives

The Service's goal for requesting the use of DNA-barcoding to distinguish RLP larvae from larvae of other species is to identify any Project effects on the larval life stage of this federally-

listed endangered species and, where justified, recommend appropriate mitigation measures to address Project effects. Objectives include documenting RLP larvae in the vicinity of the Project, developing quantitative estimates of RLP larvae within the Project area, and determining the fate of any RLP larvae found within the Project area. The Service will be expected to concur with any endangered species effects determinations made by the Commission or, if demonstrable Project adverse effects are found, to develop a Biological Opinion with an associated Incidental Take Statement. However, the Service will be unable to do so in the absence of quantitative data describing Project effects on all life stages of this species.

2. Resource Management Goals:

The Service's resource management goals related to this requested study modification are to identify all Project effects on all life stages of the RLP, and recommend mitigation measures to address any Project effects on RLP and ensure that any Project effects will not hinder recovery of the species.

3. Public Interest

The requestor is a resource agency

4. Existing Information

There is no information on the larval life stage of the RLP in the vicinity of the Project, or the fate of any RLP larvae that may drift into the Project area. Although methods have been developed for using meristic and morphometric features to distinguish RLP larvae from larvae of other species, those methods have not yet been published or subjected to peer-review. However, an approach has been found to be effective, with a high level of confidence, for distinguishing RLP larvae from all but one other closely related species that is not expected to be common or abundant in the Project area. DNA bar-coding is known to be reliable for distinguishing RLP larvae from larvae of other species, and can be used in this case to separate RLP larvae from all other species, or as a last step, after morphometric separation, to separate RLP larvae from the only other species that is morphometrically similar. A very recent study involving the genetic analysis of Chesapeake logperch (*Percina bimaculata*) populations, conducted in order to determine whether there are genetically distinct sub-populations of this species, was completed for a fraction of the cost of a typical relicensing study.

5. Nexus to Project Operations and Effects

The Project dam represents a barrier to upstream and downstream movements of RLP. In addition, the impoundment created by the dam is unlikely to support RLP and has replaced a portion of the free-flowing Roanoke River that historically provided suitable habitat for the RLP. There is also the potential for larval RLP to drift into the impoundment which may be inhospitable to this life stage. RLP larvae may also pass through the powerhouse, through the debris sluice gate or over the Project dam. These may not be safe downstream routes of passage for any RLP larvae that may pass through the Project.

6. Methodology Consistent with Accepted Practice

Established methods for documenting larval RLP in the Roanoke River have been described by Hallerman et al. (2017). Methods for separating RLP larvae from those of other species using meristic and morphometric features have recently been improved to the point that RLP larvae can be separated from all but one species (chainback darter) that is very similar at this life stage, but is much less common in the Project area. DNA bar-coding can be used instead, or as a final step to separate the two similar species.

7. Level of Effort, Cost, and Why Alternative Studies Will Not Suffice

The level of effort is expected to be moderate. Assuming a two-step approach is used, the Service estimates that methods for sorting and identifying RLP larvae based on meristic and morphometric characteristics will cost \$55,000 to \$65,000. We are currently seeking estimates for DNA bar-coding to separate RLP larvae from those of the one species that is known to be morphometrically similar. The cost of the recent genetic study of Chesapeake logperch populations was approximately \$10,000 (sample size ~ 300). Cost for separating RLP from chainback darter will depend on the number of larval samples. We are not aware of any alternative methods for documenting and estimating numbers of RLP larvae entering and/or passing through the Project area.

6.6.2.2, Field Sampling: Appalachian states that each of the adult RLP survey locations will be sampled using paired sites. The paired sites are shown in Figure 6-3 as occurring directly across from one another, presumably within the same riffle-run habitat feature. The Service recommends relocating one sample effort from each of these locations, so that there is a single sampling effort at each location/habitat feature, and twice the number of sampling locations compared to the current proposal. This would provide some degrees of freedom and allow for an analysis of variance. The current proposal does not include enough replicates for statistical analysis.

Based on a review of aerial imagery, there appear to be at least two riffle sections downstream of the 13th Street overpass. We appreciate Appalachian's willingness to expand the survey area to include the large riffle feature just downstream from this overpass (proposed sample sites RLP1A and RLP1B), but instead of conducting paired surveys at this location, we request that one of the sampling efforts from this pair be relocated to the smaller riffle just upstream of the channel bend, approximately 160 meters downstream from the 13th Street overpass. Alternatively, sampling could be conducted at the upper and lower ends of the extensive riffle below the overpass.

Regarding the proposed downstream paired adult RLP sampling sites (RLP4A and RLP4B), this section of the Roanoke River includes several separate riffle sections that were sampled for RLP in 1992 (APCO and AEPSC 1992). Based on a review of Figure 2 in the resulting study report, the species was captured in at least three separate riffle-run features in this section of the river. In Figure 2 of the report, the river is broken up into numbered survey zones. RLP was collected

from zones 4, 5 and 8. One specimen was captured in the most downstream riffle-run feature in zone 4, four specimens were captured in the most upstream riffle-run feature in this same zone, two specimens were captured in zone 5, and one specimen was captured in zone 8. In the interest of comparing results from the currently proposed study to those of the 1992 study, and to increase the number of replicates, the Service requests that one of the proposed sampling sites (RLP4A or RLP4B) be relocated to a different riffle-run feature in this section of the river; one that corresponds with one of the 1992 survey zones where RLP was collected in 1992. We ask that Appalachian confirm that the two separate sampling locations correspond with survey zones where the species was found in 1992.

Regarding the proposed Tinker Creek paired adult RLP sampling sites (RLP2A and RLP2B) and the proposed bypass reach paired sampling sites (RLP3A and RLP3B), the Service requests that these pairs also be spatially separated so that each site is located in a different riffle-run feature, in order to increase the number of replicates.

Regarding the proposed (YOY) survey locations, the Service does not consider the limited number of sites to be sufficient. We recommend at least two separate survey locations in Tinker Creek, one upstream and one downstream near the mouth. The two proposed upstream YOY survey locations in the mainstem Roanoke River (YOY1 and YOY3) may be sufficient if YOY3 is upstream of the impoundment and includes suitable, wadable, habitat; otherwise, we recommend relocating YOY3 farther upstream to appropriate habitat that is wadable. We also question the location of YOY4, which is in the impoundment. Unless this location includes appropriate shallow-water habitat that is wadable, we recommend relocating YOY4, possibly to a location downstream of the Project's influence, where there are currently no proposed YOY survey sites. We recommend either the addition of a downstream YOY survey site, possibly corresponding with RLP4A or RLP4B, or the relocation of YOY4 to this section of the river. In addition to YOY5, which appears to be located at the mouth of the bypass reach, we recommend an additional YOY survey location within the bypass reach, upstream of YOY5.

Table 7-1, Mussel Species Known to Occur within Three Miles of the Project: This table shows the yellow lance (*Elliptio lanceolata*) as potentially occurring near the Project. There is no Federal listing designation for this species shown in the table. The yellow lance is listed as a federally threatened species. This information should be added to the table.

7.4.2, Benthic Aquatic Resources Study, Background and Existing Information, Mussel Community: This section states the invasive Asiatic clam (*Corbicula fluminea*) has been identified in the Roanoke River; however, it has not been identified within the study area. If no recent mussel surveys have been completed in the study area as stated in Section 7.4.2, it is unclear how this conclusion can be made. It would be more appropriate to state that the presence of the Asiatic clam within the study area is unknown. One objective of the proposed mussel survey should be to determine whether the Asiatic clam is present within the study area and its relative abundance.

7.5, Project Nexus: Potential Project effects on benthic aquatic resources may include impacts to benthic habitat due to flow fluctuations, sediment deposition in the impoundment and diminished sedimentation downstream of the dam, and reduced transport of particulate matter, nutrients, and plant propagules. There may also be potential Project effects from changes in water quality and a reduction in large woody debris downstream.

7.6.3.2, Benthic Aquatic Resources Study, Methodology, Task 3 - Mussel Habitat and Community Study, Field Sampling: Appalachian proposes to conduct one season of mussel survey data collection following project-specific methods modified from the Draft Freshwater Mussel Guidelines for Virginia. The Applicant should contract with a qualified mussel surveyor. Enclosures 4 and 5 of the mussel guidelines provide web links to lists of pre-approved mussel surveyors. If a pre-approved surveyor is not selected, please provide the proposed surveyor's qualifications and proposed survey design to the Service and VDGIF a minimum of 30 days prior to survey initiation.

Abbreviated mussel surveys are anticipated at five locations including: lower reaches of Roanoke river, lower reaches of Tinker Creek, bypass reach below the dam, 0.5-kilometer downstream of the tailrace, and lower portions of Wolf Creek. The proposed sample locations are shown in Figure 7-2. This section further states the survey reach lengths are 500 meters at all sites except the bypass reach which is only 315 meters long. The surveys will be completed using a variety of methods. This section does not specify the level of effort or whether all appropriate habitat would be surveyed within each survey reach. It is unclear from the information provided that the level of effort would be sufficient to document the presence of listed species. This would typically be accomplished through the development of species-richness curves to have high confidence that all mussel species present in the river have been documented. Appalachian should work with the Service and VDGIF to develop an acceptable approach for mussel surveys in the river.

8.6.2.3, Wetlands, Riparian, and Littoral Habitat Characterization Study, Methodology, Task 2 - Field Verification, Riparian Zone: Invasive species identified during the assessment will be noted on the field data sheets. The Service supports an assessment of invasive species within the riparian zone and adjacent uplands as disturbances along entrance roads and around buildings often facilitate the introduction and spread of invasive plant species. If invasive plant species are identified within the Project area, additional information should be provided on the relative abundance of these species to determine whether there is a need to monitor and/or provide control of these species as part of the Wildlife Management Plan.

Thank you for your consideration of the Service's comments. If you have any questions or would like to discuss these comments, please contact Richard McCorkle of my staff at 814-206-7470.

Sincerely,



Sonja Jahrsdoerfer
Project Leader

Literature Cited and References:

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Niagara Project (P-2466-034)

The following comments by Paul L. Angermeier refer to the Revised Study Plan (RSP) released by AEP on 6 November 2019.

3.2.2 Study Requests Deemed Not Appropriate for Study

Roanoke Logperch Larval Study (pages 51-52)

AEP raises several concerns about my requested larval Roanoke Logperch (RLP) study. I address those concerns below.

Using DNA barcoding to identify larvae to species is more expensive than relying simply on meristic and morphometric analyses, which do not completely distinguish *P. rex* from *P. nevisense*, but the additional cost of DNA barcoding does not seem “disproportionate” relative to the added accuracy in identification. DNA barcoding, if properly calibrated, is the “gold standard” for larval identification. Virginia Tech’s previous studies of RLP larvae in Roanoke River (supervised by P.L. Angermeier) suggest that <50 larvae would require DNA barcoding, which would not represent an exorbitant cost. Further, data in Buckwalter et al. (2019; Supplemental Figure 1) suggest *P. nevisense* larvae stop occurring in the drift after mid-May, while *P. rex* larvae occur through mid-June.

Methods to distinguish larval *Percina* in Roanoke River have progressed substantially since the Hallerman et al. (2017) report. Current methods are summarized in the Buckwalter et al. (2019) manuscript, which is in its second round of review at the journal *Fishes* and will probably be published by Jan 2020. This manuscript also has been approved for publication by the US Geological Survey. When completed, these collective peer reviews will validate the study’s general findings. However, AEP is correct in asserting that the larval identifications themselves have not been “validated by independent taxonomists or laboratories”. AEP is welcome to design and arrange such a validation if they think that is necessary or helpful. Although a dichotomous key has not been developed to distinguish larval darters in the Roanoke River system, Buckwalter et al. (2019) demonstrated the great majority of larval darters can be reliably identified to species via meristic and morphometric analysis. The work reported in Buckwalter et al. is now the “best available science” germane to larval *P. rex*, which is not to say that future studies will not improve methods for distinguishing larval darters.

AEP’s concern that Virginia Tech’s requested larval RLP study “could lead to an over-estimate of Roanoke Logperch drift into the Project reservoir” seems exaggerated. Findings of Buckwalter et al. (2019) show that “~10% of *P. nevisense* – those that have $PM = 23$ – may be misclassified as *P. rex*”, which could lead to an overestimate of RLP larvae if species identifications are based solely on meristic and morphometric analyses. However, the number of larvae likely to be erroneously identified via this approach is small (< 10), given that a) *P. rex* larvae are ~8 times more abundant than *P. nevisense* larvae and b) *P. nevisense* larvae disappear from the drift

after mid-May. Of course, even this slight overestimate can be avoided by simply applying DNA barcoding to the questionable larvae.

AEP's comment that Virginia Tech's requested RLP larval study lacks consideration of "naturally occurring levels of larval (or juvenile) mortality" seems irrelevant. All fish suffer mortality. It is not clear why mortality should be considered explicitly for larval fishes but not for all the other fishes captured in their proposed surveys. Moreover, the Endangered Species Act protects all individuals of listed species such as RLP. Thus, a meaningful estimate of RLP incidental take due to the Project must take into account, to the extent practical, all life stages. AEP's assertion to the contrary notwithstanding, Virginia Tech's requested RLP larval study will "inform the development of license requirements, particularly with respect to analyses triggered by Section 7 of the Endangered Species Act". In fact, this study will provide crucial information that cannot be provided otherwise and has not been provided heretofore.

All the studies cited above have been conducted via standard methods used to study riverine larval fishes. Thus, AEP's concerns about meeting study criterion 6 are unfounded. Further, their concerns (here and elsewhere) seem to be based on a misunderstanding of the concept "best available science" (BAS), which is generally interpreted literally. All scientific knowledge comes with some uncertainty. Correctly applying BAS does not mean one ignores or rejects uncertain knowledge; rather, it means one recognizes the uncertainty and interprets findings appropriately. Knowledge of imperiled fishes need not be perfect or infallible to be useful or the "best available" (Sullivan et al. 2006. Defining and implementing best available science for fisheries and environmental science, policy, and management. *Fisheries* 31: 460-465). The science cited above regarding RLP larval ecology is far more advanced than the science available 5 years ago, and is clearly the best available for assessing Project impacts on RLP.

6 Fish Community Study (pages 76-95)

In the Goals and Objectives subsection and elsewhere throughout this section, AEP repeatedly uses language such as "analysis of project effects", "comparison of ... data", "comprehensive baseline", "determine significant changes", "current status", and "cumulative effects analyses". Such characterizations, analyses, and comparisons require a replicated spatial design that supports a credible statistical analysis – at minimum t-tests (for 2 treatments) or analyses of variance (for > 2 treatments). However, AEP's proposed spatial design is grossly inadequate and clearly violates the criteria for "best available science" or "generally accepted scientific practices" for the proposed analyses because it largely lacks replication. Replicates are essential to estimating variance in ecological conditions within treatments, and this variance is essential to meaningful comparisons or other analyses across treatments. Sites in Tinker Creek and Roanoke River do not qualify as replicates because the disparity in waterbody size. At least 2 sites (preferably more) in each waterbody are needed to even begin the proposed analyses.

Riverine habitats and biota are notoriously variable across space and/or time. My experience (> 30 years) in sampling the Roanoke River system suggests that 3-5 replicates (per treatment) are needed to conduct any meaningful comparison of ecological conditions there. An analogous situation of too few sites also applies in the bypass reach and downstream of the tailrace. The impoundment could be reasonably divided into 3 longitudinal zones, each with its own set of replicated sites. In short, AEP's proposed spatial design provides almost no statistical power to detect differences in RLP catch along spatial (e.g., upstream versus downstream) or temporal (e.g., present versus future) gradients. Thus, AEP's design virtually ensures that no statistically supported "effects" of the Project will be revealed. All one realistically could determine with their design is if RLP were detectable versus undetectable, a condition that precludes providing useful input to management choices.

A related shortcoming is AEP's "paired sites", which seem to be located in the same riffle but on opposite sides of the creek/river. Such sites would be pseudoreplicates (artificial inflation of the number of replicates) that do not support valid statistical analyses (see Hurlbert, 1984. Pseudoreplication and the design of ecological field experiments. *Ecological Monographs* 54: 187–211). Riffle fishes use the entire riffle; there is no evidence that parts of a riffle can be meaningfully considered independent "sites" in the context of the analyses the data are supposed to support. Valid replicate sites in each treatment (e.g., upstream versus downstream of the Project) would need to be in distinct riffles.

I am not familiar enough with the study area to recommend specific sites to fulfill the stated study objectives. Instead, I suggest AEP coordinates with whomever ends up doing the Fish Community Study to conduct a detailed reconnaissance to identify where suitable sites exist, then choose those that best fit study objectives. Different objectives are likely to require different suites of sites.

On page 88, AEP resurrects their somewhat muddled concern about collecting and using data from a study of larval RLP. First, it is not clear how learning more about RLP larval abundance in the Project area is "undesirable", especially since zero knowledge exists now. Second, it is not clear what AEP's suggested process of "finalization and validation" would look like or who would decide when it was complete. Virginia Tech's requested larval RLP study was based on methods and findings now in the final stages of peer review by a bona fide scientific journal. Publication in such journals is generally considered an adequate validation of science. However, because all scientific knowledge evolves, seeking a "finalized" method or result is misguided. Third, AEP's comment implies they prefer to develop "PM&E measures specific to the Roanoke Logperch" on the basis of no information rather than on the basis of newly revealed (and perhaps imperfect) information. Surely, some carefully collected and interpreted data would be more instructive (and desirable) in developing PM&E measures for RLP than no data at all.

On pages 94-95, AEP outlines a Quality Assurance Plan. The proposed plan is reasonable but it is not clear who the "independent taxonomists" would be or how they would be selected. Also, AEP's assertion notwithstanding, no dichotomous key has been developed for larval darters in Roanoke River.

Yayac, Maggie

Subject: FW: Niagra Hydroelectric Project FERC 2466-034- Revised Study Plan
Attachments: Niagra revised study plan FERC EA 112119.pdf

From: Rudnick, Barbara <Rudnick.Barbara@epa.gov>
Sent: Thursday, November 21, 2019 12:07 PM
To: Jonathan M Magalski <jmmagalski@aep.com>; Allyson Conner <Allyson.Conner@ferc.gov>
Cc: Okorn, Barbara <Okorn.Barbara@epa.gov>; Lee, Matthew T. <lee.matthew@epa.gov>
Subject: [EXTERNAL] RE: Niagra Hydroelectric Project FERC 2466-034- Revised Study Plan

This is an **EXTERNAL** email. **STOP. THINK** before you **CLICK** links or **OPEN** attachments. If suspicious please click the 'Report to Incidents' button in Outlook or forward to incidents@aep.com from a mobile device.

Allison and Jon,
Please find the attached technical comments for the Niagara project. Please let us know if you have questions or if we can schedule time for you to talk to our staff who provided the technical review.
Jon, thank you for helping us with the filing process.

Regards,
Barbara Rudnick, P.G.
NEPA Program Coordinator
U.S. EPA Region III
Office of Communities, Tribes & Environmental Assessment
1650 Arch Street (3RA10)
Philadelphia PA 19103
215-814-3322

From: Jonathan M Magalski <jmmagalski@aep.com>
Sent: Thursday, November 21, 2019 11:55 AM
To: Okorn, Barbara <Okorn.Barbara@epa.gov>
Cc: Rudnick, Barbara <Rudnick.Barbara@epa.gov>
Subject: RE: Niagra Hydroelectric Project FERC 2466-034- Revised Study Plan

Great, I look forward to reviewing them and working with USEPA through the process. If you have any questions or would like to discuss anything, please feel free to give me a call. Thanks.....Jon



JONATHAN M MAGALSKI | ENVIRONMENTAL SPEC CONSULT
JMMAGALSKI@AEP.COM | D:614.716.2240
1 RIVERSIDE PLAZA, COLUMBUS, OH 43215

From: Okorn, Barbara <Okorn.Barbara@epa.gov>
Sent: Thursday, November 21, 2019 11:20 AM
To: Jonathan M Magalski <jmmagalski@aep.com>
Cc: Rudnick, Barbara <Rudnick.Barbara@epa.gov>
Subject: [EXTERNAL] RE: Niagra Hydroelectric Project FERC 2466-034- Revised Study Plan

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Thanks! It worked

From: Jonathan M Magalski <jmmagalski@aep.com>
Sent: Thursday, November 21, 2019 11:11 AM
To: Okorn, Barbara <Okorn.Barbara@epa.gov>
Cc: Rudnick, Barbara <Rudnick.Barbara@epa.gov>
Subject: RE: Niagara Hydroelectric Project FERC 2466-034- Revised Study Plan

On the phone currently, but try dropping the “-034” in the system. Let me know if that does the trick.

From: Okorn, Barbara <Okorn.Barbara@epa.gov>
Sent: Thursday, November 21, 2019 11:03 AM
To: Jonathan M Magalski <jmmagalski@aep.com>
Cc: Rudnick, Barbara <Rudnick.Barbara@epa.gov>
Subject: [EXTERNAL] RE: Niagara Hydroelectric Project FERC 2466-034- Revised Study Plan

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Thank you John. We can't get the docket number in the system. Its not coming up. Any suggestions?

From: Jonathan M Magalski <jmmagalski@aep.com>
Sent: Thursday, November 21, 2019 10:46 AM
To: Okorn, Barbara <Okorn.Barbara@epa.gov>
Subject: RE: Niagara Hydroelectric Project FERC 2466-034- Revised Study Plan

Hi Barb,

Per my voicemail, all comments regarding the Niagara Project relicensing should be addressed to FERC (see below) and contain “Niagara Hydroelectric Project FERC No. P-2466-034” in the subject line. FERC strongly encourages paperless electronic filing of comments through its eFiling system. Information regarding this system can be found at the FERC webpage <https://www.ferc.gov/docs-filing/ferconline.asp>. In order to eFile comments, interested parties must have an [eRegistration](#) (note hyperlink) account. After creating an account, the comments can be [eFiled](#) (note hyperlink).

Alternatively, comments can be submitted to FERC at the address below via hard copy, but be aware that documents sent to FERC by regular mail can be subject to docket posting delays. Given that FERC must make their Study Plan Determination by December 6, 2019, eFiling would be most advantageous.

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

If you have not yet created an account, it would be worth doing as not only will you be able to eFile comments, but you will also receive notice and a link to other documents filed regarding the project (i.e. other stakeholder comments). I hope this helps, I'll try giving you a call back after a bit. If you have additional questions in the meantime, please let me know. Thanks....Jon



JONATHAN M MAGALSKI | ENVIRONMENTAL SPEC CONSULT
JMMAGALSKI@AEP.COM | D:614.716.2240
1 RIVERSIDE PLAZA, COLUMBUS, OH 43215

From: Okorn, Barbara <Okorn.Barbara@epa.gov>
Sent: Thursday, November 21, 2019 10:14 AM
To: Jonathan M Magalski <jmmagalski@aep.com>
Subject: [EXTERNAL] Niagra Hydroelectric Project FERC 2466-034- Revised Study Plan

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Hi Jon,

I also left you a voice mail message. Is it sufficient to email our comments to you? If you aren't accepting emails what is the requirement?

Thanks, Barb

Barbara Okorn
Office of Communities, Tribes, & Environmental Assessment
US EPA, Region III
1650 Arch Street (3RA10)
Philadelphia, PA 19103
215-814-3330



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029**

November 21, 2019

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
Mail Code: DLC, HL-11.2
888 First St., NE
Washington, DC 20426

Re: Niagara Hydroelectric Project (FERC No. 2466-034) Filing Revised Study Plan for Relicensing

Dear Ms. Bose:

The U.S. Environmental Protection Agency (EPA) has continued coordination with the Federal Energy Regulatory Commission's (FERC) in development of the Niagara Hydroelectric Project (Project) Environmental Assessment (EA) in compliance with the National Environmental Policy Act (NEPA). The EPA appreciates the interagency coordination taking place to study the Project and FERC's leadership in project impact analysis. The EPA has participated with the interagency team on the project and has reviewed the Revised Study Plan submitted November 6, 2019 by Appalachian Power Company (Appalachian), the applicant for the Niagara Project.

Please find attached detailed technical suggestions regarding the revisions made to the Study Plan. If you have any questions regarding the recommendations, we would be pleased to coordinate with our technical expert who provided review on the subject matter. Please feel free to contact me at (215) 814-332 or Rudnick.barbara@epa.gov or the staff contact for this project is Mr. Matthew Lee; he can be reached at (215) 814-2917 or Lee.Matthew@epa.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Barbara Rudnick", is positioned below the word "Sincerely,".

Barbara Rudnick
NEPA Program Coordinator
Office of Communities, Tribes &
Environmental Assessment

Enclosure



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Enclosure

Niagara Hydroelectric Project (FERC No. 2466-034) Revised Study Plan Technical Comments

Please consider the technical comments below regarding Revised Study Plan (RSP):

Page 51. Study Requests Deemed Not Appropriate for Study. Roanoke Logperch Larval Study. The plan states: 'However, in the interest of efficiently advancing through this ILP and satisfying relicensing stakeholder requests, Appalachian has included methods and provisions to conduct the larval drift study in Section 6 of this RSP. In the event that this study is approved by the Commission and conducted by Appalachian, Appalachian assumes that relicensing stakeholders and Commission staff acknowledge the constraints that include state of the science (with respect to larval identification by the recommended methods) and limitations regarding interpretation and application of collected data, and support and cooperate with the quality control measures proposed by Appalachian for laboratory processing.' The EPA comments that the best available science is proposed with the use of the Hallerman et al 2017 and the option for genetic assessment is available (see additional detail below).

Page 61-62. Table 4-2. The fish species selected for each guild should be discussed and approved with the resource agencies (i.e Virginia Department of Game and Inland Fisheries (VDGIF), VA Department of Environmental Quality and US Fish and Wildlife Service (USFWS)) along with experts from Virginia Polytechnical Institute. Appalachian should be hesitant to use non-native fish such as Common Carp and Channel catfish in the guilds. We recommend the final selection of the fish used in the guild process be a collaborative process with the resource agencies and based on the actual fish community of the Roanoke River. It is appropriate that Appalachian has used the HSI developed for the Roanoke logperch in this guild process.

Page 70. 5.2 Goals and Objectives: The document states: 'Provide data (temperature and DO concentration) to determine the presence and extent, if any, of temperature or DO stratification in the Niagara impoundment.'

We recommend the stream reach downstream of the impoundment also be assessed for adverse effects of temperature and dissolved oxygen and the extent, if any, of adverse effects on temperature and dissolved oxygen be evaluated on other downstream reaches.

Page 87. 6.6.2 Task 1b – Roanoke Logperch Study: The document states: 'The proposed Study includes a larval drift assessment at the request of stakeholders. However, given the potential implications of the data resulting from this Study, Appalachian has concerns regarding the existence of a definitive taxonomic key (see Section 6.6.2.2) that can be used to distinguish Roanoke Logperch from other percids collected in the Study. In the absence of a definitive, independently validated, and cost effective method of processing and separating Roanoke Logperch larvae from other similar Percina larvae collected in the study, Appalachian believes that the use of the resulting larval fish data to satisfy the objectives listed above would set an undesirable precedent and may not reflect the "best available scientific information."'

EPA recommends that Appalachian use the best available scientific information which is the Hallerman et al (2017) document. In addition, the use of eDNA, fish DNA, and other genetic techniques for fish identification and fish community surveys are established in the literature. Appalachian should consider using this available scientific technique to complete the requested study. It is stressed that the use of formaldehyde in the preservation of the fish samples should not be used if any genetic evaluation will be

completed on the samples. The use of ethanol is the suggested preservative for genetic studies. The EPA Office of Research Division has a project on fish eDNA as an assessment tool for streams and river fish communities. EPA and other resource agencies would be pleased to discuss issues to use of the best available science with Appalachian. The use of the results of the Roanoke Logperch Study should be used in the PM&G measures. Otherwise, the agencies cannot complete an assessment of the effects of the project on the ESA species.

Page 105 7.6.3 Task 3. Mussel Habitat and Community Study: 'FERC and EPA requested clarification of the extent of the Mussel Community Study area, how mussel habitat will be identified, and how many survey locations will be selected.'

In the RSP, Appalachian has maintained its proposal to use a modified version of the Freshwater Mussel Guidelines for Virginia. The EPA has concerns about the modifications and recommends that Appalachian work directly with VDGIF and USFWS on the final study plan and methods. Unless the authors of the method approve, the method should not be modified.

Yayac, Maggie

Subject: FW: [EXTERNAL] I remembered the other thing I failed to mention on our call yesterday
Attachments: Turbine Blade Strike Analysis 190214.xlsm

From: McCorkle, Richard [mailto:richard_mccorkle@fws.gov]
Sent: Tuesday, November 26, 2019 10:45 AM
To: Jonathan M Magalski <jmmagalski@aep.com>
Cc: Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>
Subject: Re: [EXTERNAL] I remembered the other thing I failed to mention on our call yesterday

Jon and Sarah,

Attached is the Excel-based Turbine Blade Strike Analysis model for use in the Niagara entrainment study. It was developed, based on Franke et al. (1997) blade strike equations, by our lead fish passage engineer, Brett Towler. Please document any adjustments you make to certain parameters. For example, there is a correlation coefficient (λ) which is currently set to 0.2. Changes to this coefficient will affect blade strike estimates, so expect the Service to ask for a justification for any such adjustments to this coefficient. Please let me know if you have any questions.

Happy Thanksgiving!

Rick

On Tue, Nov 26, 2019 at 10:25 AM Jonathan M Magalski <jmmagalski@aep.com> wrote:

Hi Rick,

Yes, we plan to use that model and thank you for the offer to provide it to us. Please send it to Sarah Kulpa (copied) and myself. Much appreciated, Happy Thanksgiving....Jon



JONATHAN M MAGALSKI | ENVIRONMENTAL SPEC CONSULT
JMMAGALSKI@AEP.COM | D:614.716.2240
1 RIVERSIDE PLAZA, COLUMBUS, OH 43215

From: McCorkle, Richard <richard_mccorkle@fws.gov>
Sent: Tuesday, November 26, 2019 10:02 AM
To: Jonathan M Magalski <jmmagalski@aep.com>
Subject: [EXTERNAL] I remembered the other thing I failed to mention on our call yesterday

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Jon,

The other thing I meant to mention to you on the phone yesterday was that I saw that, for Niagara, there is interest in taking us up on our offer to provide the blade strike analysis model that our engineers developed, based on Franke et al. (1997), for use in that component of the entrainment study.

Please confirm and let me know who (at HDR?) I should send the Excel-based model to.

Thanks!

Rick

--

Richard C. McCorkle

Fish and Wildlife Biologist

U.S. Fish & Wildlife Service

Pennsylvania Field Office

110 Radnor Road, Ste 101

State College, PA 16801

814-206-7470

"The nation behaves well if it treats the natural resources as assets which it must turn over to the next generation increased and not impaired in value."- President Theodore Roosevelt

--

Richard C. McCorkle
Fish and Wildlife Biologist
U.S. Fish & Wildlife Service
Pennsylvania Field Office
110 Radnor Road, Ste 101
State College, PA 16801
814-206-7470

“The nation behaves well if it treats the natural resources as assets which it must turn over to the next generation increased and not impaired in value.”- President Theodore Roosevelt

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, DC 20426
December 6, 2019

OFFICE OF ENERGY PROJECTS

Project No. 2466-034 – Virginia
Niagara Hydroelectric Project
Appalachian Power Company

VIA FERC Service

Mr. Jonathan Magalski
Environmental Specialist Consultant
American Electric Power Services Corporation
P.O. Box 2021
Roanoke, VA 24022-2021

Reference: Study Plan Determination for the Niagara Hydroelectric Project

Dear Mr. Magalski:

Pursuant to 18 C.F.R. § 5.13(c) of the Commission's regulations, this letter contains the study plan determination for the Niagara Hydroelectric Project (Niagara Project) located on the Roanoke River in Roanoke County, Virginia. The determination is based on the study criteria set forth in section 5.9(b) of the Commission's regulations, applicable law, Commission policy and practice, and the record of information.

Background

On July 9, 2019, Appalachian Power Company (Appalachian) filed its Proposed Study Plan (PSP) for eight studies covering water quality, aquatic habitat and fishery resources, terrestrial resources, recreation resources, and cultural resources in support of its intent to relicense the project.

Appalachian held its initial Study Plan Meeting on August 1, 2019. Comments on the PSP were filed by Commission staff, Friends of the Rivers of Virginia, the U.S. Fish and Wildlife Service (FWS), Dr. Paul Angermeier of Virginia Tech's Department of Fish and Wildlife Conservation (Dr. Angermeier), Roanoke Valley Greenway Commission, the Virginia Department of Environmental Quality (Virginia DEQ), Roanoke River Blueway Committee, the Environmental Protection Agency (EPA), and the Virginia Department of Game and Inland Fisheries (Virginia DGIF).

On November 6, 2019, Appalachian filed a Revised Study Plan (RSP) that includes revisions to six of the eight studies in the PSP. Comments on the RSP were filed by FWS, Bill Tanger on behalf of Friends of the Rivers of Virginia, Dr. Angermeier, and EPA.

Study Plan Determination

Appalachian's RSP is approved with the staff-recommended modifications discussed in Appendix B. As indicated in Appendix A, of the eight studies proposed by Appalachian, four are approved with staff-recommended modifications and four are approved as filed by Appalachian. This determination also addresses three additional studies requested by stakeholders, not adopted by Appalachian, and not required by this determination (see Appendix A). In Appendix B, we explain the specific modifications to the study plan and the bases for modifying, adopting, or not adopting requested studies. Although Commission staff considered all study plan criteria in section 5.9 of the Commission's regulations, staff only reference the specific study criteria that are particularly relevant to the determination.

Studies for which no issues were raised in comments on the RSP are not discussed in this determination. Unless otherwise indicated, all components of the approved studies not modified in this determination must be completed as described in Appalachian's RSP. Pursuant to section 5.15(c)(1) of the Commission's regulations, the initial study report for all studies in the approved study plan must be filed by December 5, 2020.

Nothing in this study plan determination is intended, in any way, to limit any agency's proper exercise of its independent statutory authority to require additional studies. In addition, Appalachian may choose to conduct any study not specifically required herein that it feels would add pertinent information to the record.

Project No. 2466-034

3

If you have any questions, please contact Allyson Conner at allyson.conner@ferc.gov or (202) 502-6082.

Sincerely,

Terry L. Turpin
Director
Office of Energy Projects

Enclosures: Appendix A – Summary of determinations on proposed and requested study modifications and studies requested but not adopted by Appalachian
Appendix B – Staff’s recommendations on proposed and requested study modifications and studies requested

Project No. 2466-034

APPENDIX A

**SUMMARY OF DETERMINATIONS ON PROPOSED AND REQUESTED
STUDY MODIFICATIONS AND STUDIES REQUESTED BUT NOT ADOPTED
BY APPALACHIAN**

Study	Recommending Entity	Approved	Approved with Modifications	Not Required
Flow and Bypass Reach Aquatic Habitat Study	Appalachian		X	
Water Quality Study	Appalachian		X	
Fish Community Study	Appalachian		X	
Benthic Aquatic Resources	Appalachian		X	
Wetlands, Riparian, and Littoral Habitat Characterization Study	Appalachian	X		
Shoreline Stability Assessment Study	Appalachian	X		
Recreation Study	Appalachian, Virginia DGIF	X		
Cultural Resources Study	Appalachian	X		
Benthic Habitat Quality Assessment in the Bypass Reach and Downstream Areas	FWS			X
Fish Protection and Upstream and Downstream Passage Studies	FWS, Virginia DGIF			X

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Hydrodynamics and Fish Behavior to Improve Roanoke Logperch Passage at Niagara Dam	Dr. Angermeier			X
--	----------------	--	--	---

Project No. 2466-034

APPENDIX B

STAFF'S RECOMMENDATION ON PROPOSED AND REQUESTED STUDY MODIFICATIONS AND STUDIES REQUESTED

The following discusses staff's recommendations on studies proposed by Appalachian, requests for study modifications, and requests for additional studies. We base our recommendations on the study criteria outlined in the Commission's regulations [18 C.F.R. section 5.9(b)(1)-(7)].

I. Required Studies

Flow and Bypass Reach Aquatic Habitat Study

Applicant's Proposed Study

Appalachian proposes to conduct a flow and habitat study for the Niagara Project's tailwater and bypassed reach using a combination of a desktop assessment, field surveys, and hydraulic modeling. The desktop assessment would include a literature review of available information and mapping of mesohabitats (e.g., pool, riffle, run, shoal) and Manning's roughness coefficient using aerial photography. Light detection and ranging (LiDAR) and photogrammetry data would be collected and used to produce a topographic map of the bypassed reach. Appalachian would then develop and calibrate a two-dimensional (2-D) hydraulic model that would be used in conjunction with an operations model [the Computerized Hydro Electric Operations Planning Software (CHEOPS) platform] to assess how aquatic habitat (depth and flow velocity) in the tailrace and bypassed reach varies across flows and project operation scenarios.

Hydrology data from the U.S. Geological Survey (USGS) gage (No. 05026000) in the Roanoke River at Niagara, Virginia (years 1926 through 2019) would be used to develop the CHEOPS model, which would be used to simulate flow releases under various inflow conditions and operating requirements. Appalachian would calibrate and validate the 2-D hydraulic model with flow and water depth measurements collected in the bypassed reach and tailwater under multiple flow scenarios. Test flows in the bypassed reach would range from the existing minimum flow requirement of 8 cubic feet per second (cfs) up to 200 cfs. For each flow scenario, incremental changes in depth and wetted area in the bypassed reach and tailrace would be determined, and Wolman pebble counts would be conducted along one to two transects before and after each controlled flow release scenario. Substrate and mesohabitat maps, and depth and velocity simulations would be used in combination with habitat suitability indices for species guilds to evaluate potential available habitat under each modelled flow scenario.

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*Flow Release*Comments on the Study

In comments on the PSP, the U.S. Fish and Wildlife Service (FWS) recommends that hydraulic modeling also be performed with water spilling over the dam instead of only through the sluice gate to see how this changes the available habitat within the bypassed reach. In the RSP, FWS further explains that given sufficient inflow, it may be possible to provide a controlled flow release over the crest of the dam through reduced turbine operations or project shutdown with the sluice gate closed.

Discussion and Staff Recommendation

In section 4.1 of the RSP, Appalachian notes that the sluice gate is the only operational control of the water level at the dam (other than the powerhouse intake), so it may not be possible to provide a controlled flow release beyond the capacity of this outlet. However, in section 4.6.3 of the RSP it states that the 2-D model would be capable of simulating different flow release points to the bypassed reach including through the sluice gate and over the spillway crest. Appalachian further states that calibration flows will be released into the tailwater and bypassed reach for purposes of collecting depth and wetted area data under various powerhouse and spillway flow regimes and spillway flow release points (i.e., either through the existing sluice gate or across the crest of the spillway). While it does not specify the details for how it would provide flow over the spillway, it appears that Appalachian has sufficiently addressed FWS' concern in the RSP.

*Velocity and Water Quality Measurements*Comments on the Study

Appalachian proposes to measure velocity at an established cross-section during the test flow releases and to use these measurements to calibrate or verify modeled velocities. In comments on the RSP, FWS requests that a table of the velocity measurements for each evaluation flow be included in the project report.

In addition, in comments on the PSP and RSP, FWS requested collection of water temperature and dissolved oxygen at an established cross-section during the evaluation flow releases. It similarly requests that a table with water quality measurements under the different flow releases be included in the project report.

Project No. 2466-034

Discussion and Staff Recommendation

As Appalachian will already be collecting other information within the established cross-section under different flow releases, collecting dissolved oxygen (DO) and temperature measurements should require minimal additional cost and effort and would help illustrate potential changes in these parameters under the range of flows. We recommend that this water quality data be collected, and that the velocity and water quality measurements be included in the project report as requested by FWS.

*Species of Interest*Comments on the Study

In the RSP, Appalachian proposes to use species guilds and habitat relationships previously developed for the upper Roanoke River to evaluate habitat suitability (Vadas and Orth 2001).¹ Appalachian refined the specific species included in each of the four rheophilic² (fast riffle, riffle-run, fast generalist, shallow rheophilic) and three limnophilic³ (pool-run, open pool, pool cover) guilds developed by Vadas and Orth (2001). Selected species include those that were observed in previous surveys, protected species, and those of management concern, including Roanoke logperch, which is federally listed as endangered under the Endangered Species Act. In comments on the RSP, FWS suggests several additional changes to which species are included in the guild groupings (e.g., including a darter species in the “Fast Riffle” guild).

Although Roanoke logperch is included in one of the proposed species guilds, in the RSP, Appalachian states that peer-reviewed habitat suitability index curves specific to Roanoke logperch are not available and does not propose to develop them as part of this study. In comments on the RSP, FWS states that individual habitat suitability analyses are also needed for Roanoke logperch and suggests that Appalachian use a previously

¹ Vadas, R. L., Jr., and D. J. Orth. 2001. Formulation of Habitat Suitability Models for Stream Fish Guilds: Do the Standard Methods Work? Transactions of the American Fisheries Society 130:217-235.

² “Rheophilic” fish species prefer fast moving water.

³ “Limnophilic” fish species prefer slow moving to stagnant water.

Project No. 2466-034

developed habitat suitability index for Roanoke logperch (Ensign and Angermeier, 1994; Ensign et al., 2000; Anderson and Angermeier, 2015).^{4,5,6}

Discussion and Staff Recommendation

Evaluating habitat suitability within the bypassed reach for species guilds following Vadas and Orth (2001) is a reasonable approach, especially for a situation like here where individual habitat suitability curves are not available for all species. There are similarities among the species at the guild level sufficient to analyze the relationships between flow and habitat for all of the affected species. We recommend that Appalachian incorporate FWS' suggested minor changes to the species guild groupings.

Although Appalachian states that peer-reviewed habitat suitability indices are not available for Roanoke logperch, in section 6.6.2 of the RSP (Task 1b – Roanoke Logperch Study within the Fish Community Study), it proposes to evaluate habitat suitability for Roanoke logperch within targeted survey areas, including two areas within the bypassed reach using a previously developed habitat suitability index. Appalachian does not explain why this index would be inappropriate to use to evaluate changes in available Roanoke logperch habitat in the bypassed reach under different flow regimes as FWS suggests. Given the resource agencies noted management goals for Roanoke logperch and the availability of a species-specific habitat suitability index that Appalachian proposes to apply in section 6.6.2 of the RSP, evaluating habitat suitability for this species would refine the information on potential aquatic habitat in the bypassed reach provided by the guild approach for logperch noted above with minimal additional effort [(section 5.9)(b)(7)]. Therefore, Appalachian should evaluate habitat suitability for both species guilds and Roanoke logperch as part of the Flow and Bypass Reach Aquatic Habitat Study.

⁴ Ensign, W. E., and P. L. Angermeier. 1994. Summary of population estimation and habitat mapping procedures for the Roanoke River Flood Reduction Project. Final Report to the Wilmington District, U. S. Army Corps of Engineers, Wilmington, NC.

⁵ Ensign, W. E., and P. L. Angermeier. 1994. Summary of population estimation and habitat mapping procedures for the Roanoke River Flood Reduction Project. Final Report to the Wilmington District, U. S. Army Corps of Engineers, Wilmington, NC.

⁶ Anderson, G. B., and P. L. Angermeier. 2015. Assessing impacts of the Roanoke River Flood Reduction Project on the endangered Roanoke Logperch. 2015 Annual Report to the Wilmington District, U. S. Army Corps of Engineers, Wilmington, NC.

Project No. 2466-034

Water Quality Study

Applicant's Proposed Study

Appalachian proposes to conduct a Water Quality Study to assess the effects of project operation on water quality parameters, including water temperature and DO. The single year study would be conducted from May 1, 2020 through September 30, 2020. Continuously recording data sondes would be placed at seven sites to measure water temperature and DO at 15-minute intervals. These sites include: (1) upstream of the confluence of the Roanoke River with Tinker Creek; (2) Tinker Creek; (3) the upper end of the impoundment; (4) the forebay; (5) the upper bypassed reach; (6) the lower bypassed reach; and (7) the tailrace (see figure 5-1 of the RSP).

At this time, the exact location of the forebay monitoring location has not been determined. A reconnaissance of the forebay area would be made prior to selection of a suitable/representative monitoring location. Two sondes would be deployed at discrete depths in the forebay to assess the extent of DO and temperature stratification in the project's impoundment. Data would be downloaded from the sondes every month; during these monthly downloading events, surface measurements of water temperature, DO, pH, and specific conductance would also be taken at each site. Additionally, monthly depth profiles of temperature and DO would be collected at each forebay site. Appalachian notes that, based on the results of the monthly depth profiles, it may adjust the deployment depths of the sondes in the forebays, if needed.

Length of Study

Comments on the Study

Appalachian proposes to deploy the continuously monitoring data sondes May 1, 2020 through September 30, 2020. In its comments on the RSP, FWS states that high air and water temperatures and low-flow conditions can extend beyond September 30 and therefore recommends the data sondes be deployed through October 31, 2020.

In its comments on the RSP, FWS requests that if the water quality data show that a low temperature or DO plume is present downstream of the powerhouse, an additional year of monitoring may be needed to define the vertical, lateral, and longitudinal extent of this plume. Further, they state that a second year of monitoring may be required if abnormally high flows are experienced during 2020, or if data cannot be collected during an extended low-flow period when water quality would be expected to be affected the most.

Project No. 2466-034

Discussion and Staff Recommendation

Streamflow data at the U.S. Geological Survey (USGS) Gage No 02056000, located on the Roanoke River just downstream of the Niagara Project, indicates that in some years, including 2019, relatively low flow was observed into mid-October. Therefore, we recommend that the study plan be modified to extend the water quality monitoring through October 31.

If weather conditions in 2020 are unusually wet and cool, then the Water Quality Study may need to be repeated in 2021 as Appalachian notes in its RSP. On the other hand, if summer weather conditions are unusually dry and hot (e.g., a worst-case scenario for water quality parameters) and water quality parameters are consistent with state water quality standards, there would be no need to collect an additional year of data. Consistent with the ILP regulations (18 C.F.R section 5.15), the need for a potential second study season will be evaluated based upon review of the water quality study results presented in the Initial Study Report (due December 5, 2020). Therefore, at this time, it is premature to recommend a second study season.

Deployment Depths of Data Sondes in the Forebay

Comments on the Study

In the RSP, as described above, Appalachian proposes to place the upper and lower data sondes at one-third and two-thirds depth below normal pond elevation. Further, it states that the depths of the forebay sondes may be adjusted, if necessary, during the study period based on a comparison of the continuous temperature and DO results with the monthly depth profile measurements.

Discussion and Staff Recommendation

It is likely that the onset of stratification (to the extent stratification occurs in the impoundment) will not begin until well after the proposed start date (May 1) for the Water Quality Study, perhaps not until mid-summer. Adjusting the depths of the sondes mid-study (e.g., based on monthly vertical profiles) could bias and complicate interpretation of the study results. The greatest (vertical) differences in temperature and DO in the forebay would be expected between the surface and bottom water rather than the middle portions of the water column within which Appalachian proposes to monitor. Although the exact location of the forebay monitoring site has not yet been determined, Appalachian states that the maximum depth of the impoundment is 10 feet, which translates to the upper and lower sondes being deployed at depths of approximately 2 to 3 and 6 to 7 feet, respectively. As such, we recommend that the study plan be modified to specify that the sondes will be placed as close to the surface and bottom of the water column as is feasible, and that their locations remain fixed to ensure the data collected is

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representative of the maximal degree of stratification that occurs in the forebay. Placing sondes as vertically far apart as possible would obviate the need to continuously re-evaluate and possibly re-adjust the location of the sondes to ensure they are above and below any thermoclines that develop.

Continuous Water Quality Monitoring Site Locations

Comments on the Study

In comments on the RSP, FWS states that if the results of the continuous monitoring show that temperature and DO are “affected by the presence of the reservoir” compared to the most upstream location, then additional instruments would need to be deployed farther downstream of the currently proposed site locations to determine the downstream extent of the impact. In its comments on the RSP, the Environmental Protection Agency (EPA) recommends that Appalachian monitor temperature and DO in the stream reach downstream of the impoundment.

Discussion and Staff Recommendation

FWS does not clarify how it would define temperature and DO to be “affected by the presence of the reservoir” nor did FWS or EPA recommend specific locations for additional downstream sampling sites. In addition, adding instrumentation to additional sites midway through the sampling season as FWS suggests would result in an incomplete record at those locations. Currently, Appalachian proposes to monitor temperature and DO at a total of three sites downstream of the impoundment. If water quality parameters are inconsistent with state standards in the tailrace and/or bypassed reach during the 2020 season, then consistent with the ILP regulations (18 C.F.R. 5.15), the need for additional downstream monitoring can be evaluated during review of the Initial Study Report.

Fish Community Study

Applicant’s Proposed Study

Appalachian proposes to conduct a Fish Community Study that includes three main components or sub-studies⁷: (1) a Fish Community Survey sub-study, (2) a Roanoke Logperch sub-study, and (3) an Impingement and Entrainment Desktop sub-study.

⁷ The term ‘sub-study’ is used herein by staff to help differentiate and describe the multiple studies contained within the broad Fish Community Study and Benthic Aquatic Resources Study.

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For the Fish Community Survey sub-study, Appalachian proposes to conduct electrofishing surveys across 15 sites in the impoundment, tailrace, and bypassed reach between August and October of 2020 to characterize the fish community at the Niagara Project. Seven sampling locations would be selected to overlap with historical sampling locations to facilitate temporal comparisons. Supplemental sampling locations would be selected in riffle/run habitat at three sites to augment potential collections of Roanoke logperch. Daytime backpack electrofishing would be conducted at seven riverine (non-impoundment) sites, including the tailrace and bypassed reach (see figure 6-2 of the RSP). The non-wadeable⁸ impoundment would be divided into reaches (upper, middle, lower) and two parallel transects would be established within each reach along the shoreline. Appalachian would enumerate, measure (total length), and weigh fish collected at each site and also measure temperature, DO, pH, specific conductance, and record Secchi disk depths at each sampling site.

In the RSP, Appalachian proposes to conduct a Roanoke logperch sub-study in order to further evaluate the abundance and distribution of larval, young-of-the year (YOY), and adult Roanoke logperch in the project area. Appalachian would coordinate with FWS and Virginia Department of Game and Inland Fisheries (Virginia DGIF) to obtain necessary permits prior to initiating sampling. Electrofishing would be conducted to sample adult Roanoke logperch between August and October of 2020 at paired sites at each of four locations (see figure 6-3 of the RSP). The proposed sampling locations, which include the Roanoke River upstream of the project impoundment, the lower reach of Tinker Creek, and downstream of the Niagara tailrace, were selected based on records of prior observation of either Roanoke logperch individuals or potentially suitable riffle habitat. Subject to waiver of seasonal sampling restrictions for Roanoke logperch by Virginia DGIF and FWS, Appalachian would conduct an additional sampling event within the bypassed reach between May and June of 2020. Habitat variables (water depth, velocity, silt coverage, and pebble counts) would be recorded at each sample site and used to evaluate the habitat suitability at each site based on a previously developed habitat suitability index. As YOY Roanoke logperch often occur in different habitats than adults (e.g., sandy, backwater, shallow) and are not effectively sampled by electrofishing, Appalachian would conduct seine and visual surveys for YOY Roanoke logperch at five sites with preferred YOY habitat (see figure 6-3 of the RSP).

Appalachian proposes to conduct weekly driftnet surveys to collect larval Roanoke logperch between early April and early June 2020. Nocturnal surveys targeting larval Roanoke logperch would be performed at five sites, including upstream, within, and

⁸ “Non-wadeable” as defined by: U.S. Environmental Protection Agency (EPA). 2019. National Rivers and Streams Assessment 2018/19 Field Operations Manual Non-Wadeable Version 1.2. EPA-841-B-17-003b. Washington, DC.

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downstream of the Niagara impoundment (see figure 6-3 in the RSP). Morphometric characteristics would be used to first separate larval darters from other fish families, and then to identify larval darters to the lowest taxonomic resolution, following recently developed methods by Virginia Tech’s College of Natural Resources and Environment (Buckwalter et al., In review; Hallerman et al. 2017).^{9,10} However, Appalachian expresses some concern that Roanoke logperch larvae cannot be identified accurately and in a cost-effective manner. Specifically, it notes that potential confusion with a similar species, the chainback darter, could lead to an overestimation of Roanoke logperch larvae in the project area. In a recent study, Buckwalter et al. (In review) found that approximately 10 percent of chainback darter individuals were misclassified as Roanoke logperch. Appalachian proposes to develop a Quality Assurance Plan for laboratory processing and would send 20 percent of larval samples to an independent laboratory specializing in fish taxonomy for verification.

The Impingement and Entrainment Desktop sub-study would include a standard desktop evaluation of entrainment and impingement risk, including blade strike mortalities, of selected target species—the list for which would be based on the results of the Fish Community Survey sub-study (i.e., species common in the impoundments) and those species of conservation and management interest based on consultation with the resource agencies. In addition, approach velocities would be measured in front of each development’s intakes with an Acoustic Doppler Current Profiler (transect sampling approach) when operating at both its maximum and efficient generation rates.

Roanoke Logperch Adult and YOY sampling

Comments on the Study

In comments on the RSP, FWS and Dr. Angermeier recommend changes to Appalachian’s proposed sample design to survey adult Roanoke logperch. Dr. Angermeier states that Appalachian’s proposal to survey “paired sites” means that both sites in a pair would be located in the same riffle but on opposite sides of the river. Because fish like the Roanoke logperch use the entire riffle, the sites would be considered pseudoreplicates rather than independent sites. FWS recommends conducting only one survey in each habitat feature and reallocating the second site to different habitat features in order to provide enough replicates for statistical analysis (i.e., eight independent sites

⁹ Buckwalter, J., Angermeier, P. and Hallerman, E. In review. Drift of larval darters (Family Percidae) in the upper Roanoke River basin, USA, characterized using phenotypic and DNA barcoding markers. Fishes.

¹⁰ Hallerman, E., Wolf, S., Argentinia, J., Angermeier, P. and Grant, T. 2017. Phenology and habitat use of larval darters in the upper Roanoke River basin. Final Report to Virginia Department of Game and Inland Fisheries.

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rather than four paired sites). FWS further provides several specific suggestions for additional locations containing potential Roanoke logperch habitat to which the sites could be moved to.

FWS states that the proposed five sampling sites for YOY Roanoke logperch are insufficient and suggests adding a second site to each of Tinker Creek and the bypassed reach, respectively. In addition, FWS suggests relocating the site within the reservoir to a location downstream of the project.

Discussion and Staff Recommendation

FWS' recommendation to modify the sampling design for adult Roanoke logperch to sample eight independent sites rather than the four paired sites that Appalachian proposes is consistent with generally accepted practices in the scientific community [section 5.9(b)(6)]; and should require minimum effort/cost to implement since the same number of sites would be surveyed. We recommend that Appalachian make FWS' suggested changes to the sampling design.

The FWS-suggested changes for the YOY survey would require the addition of three sites (one each in Tinker Creek, the bypassed reach, and the reach downstream of the tailrace, respectively), or two if Appalachian relocates the proposed site in the reservoir. If Appalachian has identified potential habitat for Roanoke logperch YOY in the reservoir, then this habitat would be important to survey in order to assess potential effects of the project on the species. If appropriate habitat is not identified in the reservoir, it would be reasonable to move this site as FWS suggests. Currently, the only proposed site for YOY sampling downstream of the dam is in the tailrace. An additional site within the bypassed reach, if suitable habitat is identified, and downstream in the river reach where sampling for adult Roanoke logperch is proposed would provide valuable information on the distribution of YOY Roanoke logperch in the project area. It is unclear why an additional site would be needed further upstream in Tinker Creek, as this would likely be outside of the influence of the project. Hence, we don't recommend requiring Appalachian to survey an additional site in Tinker Creek but do recommend that the study plan be modified to include the above-noted two additional sites downstream of the dam.

Roanoke Logperch Larvae Sampling

Comments on the Study

As noted above, Appalachian expresses some concern that Roanoke logperch larvae can be confidently identified to the species level due to potential confusion with a similar species, the chainback darter. However, in comments on the RSP, Dr. Angermeier notes that the Roanoke logperch is more abundant than the chainback darter

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in the Roanoke River, and chainback darter larvae are present in the river earlier in the spring, so the number of misclassifications is likely to be less than what was found by Buckwalter et al. (In review).

In comments on the RSP, FWS, EPA, and Dr. Angermeier support Appalachian's proposal to conduct driftnet surveys for Roanoke logperch larvae. FWS states that information on all lifestages of Roanoke logperch is needed to determine how continued operation of the project may affect the species over the next license term, to estimate incidental take, and to recommend relevant protection, mitigation, and enhancement (PM&E) measures. FWS, EPA, and Dr. Angermeier suggest that DNA barcoding be used to verify the taxonomic classifications. Specifically, FWS recommends a two-step approach where larvae are first separated by morphometric features and then DNA barcoding would be used to separate Roanoke logperch and the chainback darter. Specific cost estimates were not provided for DNA barcoding, but FWS notes that the cost of a recent genetic study of Chesapeake logperch was approximately \$10,000 for around 300 samples.

Discussion and Staff Recommendation

Roanoke logperch have been observed in the project area,^{11,12} as well as at locations further upstream in the Roanoke River.¹³ Larvae are thought to drift downstream for several kilometers before settling in shallow, nearshore habitats, but whether larvae from upstream locations drift as far downstream as the Niagara Project is unknown. Appalachian's proposed driftnet surveys, in conjunction with the fish community sampling and targeted sampling for Roanoke logperch adults and YOY, would provide information on the status of the species in the project area.

The use of morphometric, meristic, and genetic tools to identify fish larvae are consistent with generally accepted practices in the scientific community [section 5.9(b)(6)]. Appalachian's proposal to have a subset of larval samples independently verified is reasonable. Therefore, we recommend that Appalachian have the subsample verified either by morphometric methods, DNA barcoding, or other standard

¹¹ Appalachian Power Company and American Electric Power Service Corporation. 1992. An Assessment of the Roanoke Logperch in the Roanoke River Downstream of Niagara Hydroelectric Project. December, 1992. 5 pp.

¹² Appalachian Power Company and American Electric Power Service Corporation. 1991. The Status of Fish Populations in the Vicinity of Niagara Hydroelectric Project. April 11, 1991. 37 pp.

¹³ Rosenberger, A. and P. Angermeier. 2003. Ontogenetic shifts in habitat use by the endangered Roanoke Logperch (*Percina rex*). Freshwater Biology 4: 1563-1577.

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methodology. Compared to the total cost of the study, the difference in cost of the available methods to conduct the independent verification would be relatively minor.

Benthic Aquatic Resources Study

Applicant's Proposed Study

Appalachian proposes to conduct a Benthic Aquatic Resources Study that includes three main components or sub-studies: (1) a Macroinvertebrate and Crayfish Community sub-study, (2) a Benthic Habitat Assessment sub-study, and (3) a Mussel Habitat and Community Survey sub-study.

For the Macroinvertebrate and Crayfish Community sub-study, Appalachian proposes to conduct two field sampling events, one in the spring (March 1 through May 31) and another in the fall (September 1 through November 30) of 2020. Surveys would be conducted within the lower reaches of streams entering the reservoir, the reservoir, tailrace, and bypassed reach (see figure 7-1 in the RSP). Crayfish would be targeted by sampling in appropriate habitats using kick-netting, seine hauling, and dip-netting techniques. Other macroinvertebrates would be collected following Virginia DEQ's methods to sample single habitats (e.g., riffle/run) and multihabitats and the data analyzed using common indices to evaluate benthic macroinvertebrate community health and similarity (e.g., the Hilsenhoff Biotic Index,¹⁴ percent intolerant species, etc.).

A Benthic Habitat Assessment would be performed at all survey locations for macroinvertebrates/crayfish following Virginia DEQ's "Methods for Habitat Assessment for Streams" protocol.¹⁵ A suite of habitat characteristics, including substrate and cover availability, substrate embeddedness, flow velocity, depth, sedimentation, frequency of riffles, bank stability, vegetative protection, and riparian zone would be scored on a scale of 0-10 in order to evaluate the quality of benthic habitat in the survey areas. Results from the Benthic Habitat Assessment surveys would be used to evaluate patterns in species composition, abundance, or distribution throughout the study area. Additionally, the Benthic Habitat Assessment within the bypassed reach would be reviewed along with

¹⁴ The Hilsenhoff Biotic Index estimates the overall tolerance of the macroinvertebrate community in a sampled area by weighting the relative abundance of various taxonomic groups.

¹⁵ Virginia DEQ. 2008. Biological Monitoring Program Quality Assurance Project Plan for Wadeable Streams and Rivers. Division of Water Quality, Richmond, VA.

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the results of the Flow and Bypass Reach Aquatic Habitat Study to evaluate how aquatic habitat may be increased under various flow scenarios.

The Mussel Habitat and Community Survey sub-study would include a combination of qualitative timed searches (i.e., abbreviated surveys) and systematic transect searches conducted between April 1 and October 31 of 2020 following methods modified from the “Draft Freshwater Mussel Guidelines for Virginia.”¹⁶ Abbreviated surveys would be conducted in reaches ranging from 315 to 500 meters in length in Tinker Creek, Wolf Creek, the Roanoke River upstream of the reservoir, the bypassed reach, and below the tailrace (see Figure 7-2 in the RSP) using view-bottom buckets, snorkeling, SCUBA and/or surface supplied air. Surveyors would target habitat suitable for freshwater mussels and record the location, species, and count of observed mussels. Transect surveys would be performed at 8 linear transects spaced every 500 meters within the reservoir using SCUBA and/or surface supplied air. The location, species, counts, and lengths (up to 50 individuals per species) would be recorded.

Mussel Survey Methodology

Comments on the Study

In comments on the RSP, EPA expresses concern about Appalachian’s proposal to use modified mussel survey protocols and recommends that Appalachian work with Virginia DGIF and FWS to finalize the study plan and methods.

In comments on the RSP, FWS recommends that Appalachian contract with a qualified mussel surveyor from a list of pre-approved surveyors. Should Appalachian select a surveyor that is not pre-approved, FWS requests that Appalachian submit the proposed surveyor’s qualifications and survey design to FWS and Virginia DGIF at least 30 days prior to the survey initiation. FWS notes that the yellow lance (*Elliptio lanceolata*) is federally listed as threatened and that freshwater mussel surveys should include the invasive Asiatic clam (*Corbicula fluminea*). In regards to the abbreviated surveys, FWS states that it is unclear whether the level of effort is sufficient to document the presence of listed species and that a typical approach would be to develop species richness curves. It recommends that Appalachian work with FWS and Virginia DGIF to develop an approach to survey mussels.

Discussion and Staff Recommendation

EPA does not state which modifications to Appalachian’s adaptation of the mussel survey protocol it is concerned with. However, as FWS notes, Appalachian does not

¹⁶ FWS and Virginia DGIF. 2018. Draft Freshwater Mussel Guidelines for Virginia. Virginia Field Office, Gloucester, Virginia.

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provide the length of time or other measure of effort that will be used in the abbreviated surveys nor articulate how target habitats in the sampling reach would be identified. We recommend that Appalachian modify the study plan to include this information for the qualitative timed-search surveys.

In the RSP, Appalachian notes that if a federally listed species is encountered, FWS and Virginia DGIF would be contacted within 24 hours. In addition to the listed species mentioned in the RSP, the yellow lance should be included in this group of listed species. FWS does not recommend a specific protocol to survey for Asiatic clams. Due to the lack of information on the presence of this species in the project area, we recommend that any Asiatic clam individuals observed as part of the mussel survey, be identified and counted.

In the PSP, Appalachian states that a qualified, approved mussel surveyor for the Virginia Atlantic Slope would be used to conduct the mussel surveys. However, this information was not included in the RSP. We recommend that Appalachian modify the study plan to clarify that it will use an approved surveyor.

II. Studies Requested but Not Adopted by Appalachian

Benthic Habitat Quality Assessment in the Bypass Reach and Downstream Areas (Sediment Study)

Study Request

FWS requests an assessment of the quality of the benthic habitat in the bypassed reach and areas downstream of the Niagara Project to determine how much aquatic habitat could be gained by increasing the sediment released downstream. FWS proposes that information about sediment and substrate in the bypassed reach collected during this study be compared to an upstream reference reach to determine the impacts of the project on sediment transport and benthic habitats in the bypassed reach and the Roanoke River downstream of the project. The goal of the study would be to assess whether the project is affecting benthic habitat in the bypassed reach and downstream, and if the project is having an effect, determine how to increase the quality and diversity of benthic habitats downstream of the project in order to support a greater diversity and abundance of aquatic species, including the federally endangered Roanoke logperch. FWS notes that age 1+ logperch have been observed to inhabit and spawn in areas with gravel and small cobble substrates. FWS states that lack of appropriate sediment types in the river can affect whether logperch can use the area and successfully reproduce.

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Discussion and Staff Recommendation

Appalachian has incorporated aspects of the requested study into the Flow and Bypass Reach Aquatic Habitat Study, including the characterization and quantification of existing benthic habitat in the bypassed reach, substrate measurements, and mesohabitat/substrate mapping. However, Appalachian has not adapted FWS' larger study request. It states that the existing outlet structures at the project do not provide a means to pass reservoir sediment beyond that which is passed through the turbines or in spills at the dam during periods of high inflow. In the RSP, Appalachian states that maintaining a supply of coarse sediment in the bypassed reach is not feasible due to the turbulent and high velocity hydraulic conditions that occur as a result of the high gradient of the natural streambed in the vicinity of the project and periodic high-flow events. Appalachian believes that any gravel added to the system would likely be moved downstream to Smith Mountain Lake during the next high-flow event under present-day conditions and that adding sediment in one-time, large volume applications has the potential to smother substrates that support mussels, macroinvertebrates, and provide spawning substrates for fish. Lastly, Appalachian does not believe that aquatic resources are being significantly impacted by current project operation.

FWS does not explain how Appalachian's proposed Flow and Bypass Reach Aquatic Habitat Study does not fulfill their overall goal to assess the quality of benthic habitat within the bypassed reach [(section 5.9)(b)(7)]. The substrate data collected as part of that study along with habitat suitability modelling should provide the necessary information to inform any needed gravel augmentation, for instance. Therefore, we do not recommend requiring the Sediment Study.

Fish Protection and Upstream and Downstream Passage Studies

Study Request

FWS states that because Appalachian has not proposed measures to ensure safe, timely, and effective upstream and downstream fish passage, it is requesting that upstream and downstream passage protection studies be undertaken. FWS indicates that its species of concern include smallmouth bass, largemouth bass, redhorse, channel catfish, and Roanoke logperch, as well as unspecified fish species that serve as hosts for freshwater mussels. Virginia DGIF indicates that its resource management goal is to restore connectivity in this segment of the Roanoke River for resident and migratory fish species, including Roanoke logperch. The proposed study would include a literature search of available passage designs for as well as information on the relative effectiveness of each design. FWS also recommends that site-specific data (flows, velocities, water depths, and substrates) be collected to aid in the design of protection and passage facilities.

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Appalachian states an updated baseline of the existing fish community in the vicinity of the project and potential for fish entrainment or impingement will be evaluated as part of the Fish Community Study. It notes that fish passage facilities are not currently available at several downstream hydroelectric projects on the Roanoke River, including Smith Mountain Lake, and that migratory diadromous fish species are not known to be present in the vicinity of the Niagara Project. Appalachian indicates that, based on the results of the Fish Community Study, additional fish protection and passage measures may be considered, but are not being proposed at this time.

Discussion and Staff Recommendation

Once completed, the proposed desktop entrainment and impingement study should provide information on the magnitude of impingement and entrainment mortality of resident fishes at the project. In addition, the information collected from the fish community survey would inform potential population-level effects of the project (e.g., a lack of particular size or age classes suggestive of reduced spawning success and/or failed recruitment of resident fishes). Collectively, these studies should provide information that would determine the need for species-specific fish passage and/or protection measures at the project. As such, at this time we do not recommend that Appalachian be required to conduct the Fish Passage and Downstream Protection Studies requested by FWS and Virginia DGIF.

Coupling Studies of Hydrodynamics and Fish Behavior to Improve Roanoke Logperch Passage at Niagara Dam

Study Request

Dr. Angermeier requests a study to characterize the hydrodynamics of the flow fields upstream and downstream of Niagara Dam and powerhouse to relate observed physical conditions with Roanoke logperch spatial distribution and behavior. An Acoustic Doppler Current Profiler would be used during multiple field surveys to collect bathymetric and velocity data upstream and downstream of the dam, including the reservoir. Velocity would be measured over a range of annual flow and operating conditions. In addition, velocity and stage sensors would be installed near the dam to continuously monitor velocity and water stage over the study duration (one year). The data collected would be used to conduct computational fluid dynamics (CFD) simulations to obtain detailed information about the velocity field, streamlines,¹⁷ and turbulence levels of water flow upstream and downstream of Niagara Dam across a wide range of flow conditions.

¹⁷ In CFD, streamlines are lines that are instantaneously tangent to the velocity vector of the flow.

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Fish behavior studies (Roanoke logperch and other species) would be conducted as an additional task in this study. Underwater observations collected from stationary cameras would be used to observe and quantify Roanoke logperch's spatial associations with the dam and associated structures or flow conditions over time. The CFD model-generated maps of flow-fields near the dam would be correlated with Roanoke logperch behavior and abundance data from the fish surveys, with the goal of determining the specific hydrodynamic conditions that attract or repel Roanoke logperch and informing a recommendation for where and how to alter the flow fields to promote Roanoke logperch passage.

Discussion and Staff Recommendation

As previously described, the Roanoke logperch has been observed in surveys further upstream in the Roanoke River as well as downstream of the Niagara dam,¹¹ but the status of the species in the project area is unknown. While isolated specimens have been observed in coves of Smith Mountain Lake, the species is most frequently associated with riffle and run habitat in the Roanoke River.¹⁸ Information from several tasks in the Fish Community Study (Fish Community Survey, Roanoke Logperch Study, and Impingement and Entrainment desktop substudy) will provide baseline information on the abundance and distribution of Roanoke logperch upstream and downstream of the Niagara dam, including the reservoir and bypassed reach. Until the Fish Community Study is completed, it would be premature to conduct a study to inform downstream passage of Roanoke logperch at the Niagara Project. Therefore, we do not recommend that Appalachian be required to conduct this study.

¹⁸ Rosenberger, A. E. 2007. An Update to the Roanoke Logperch Recovery Plan. Report to the U.S. Fish and Wildlife Service, Gloucester, VA. 84 pp.

Yayac, Maggie

Subject: FW: Niagara Hydroelectric Project (VA) -- Filing of Revised Study Plan

From: Kulpa, Sarah
Sent: Friday, December 13, 2019 11:03 AM
To: Crump, Lynn <lynn.crump@dcv.virginia.gov>
Cc: Roberta Rhur <robbie.rhur@dcv.virginia.gov>; 'jmmagalski@aep.com' <jmmagalski@aep.com>; 'ebparcell@aep.com' <ebparcell@aep.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>; Frank Simms <fmsimms51@gmail.com>
Subject: RE: Niagara Hydroelectric Project (VA) -- Filing of Revised Study Plan

Thanks for the comments, Lynn, and we'll add you to the Recreation Study email list for activities or consultations in 2020.

Happy holidays,

Sarah Kulpa
D 704.248.3620 M 315.415.8703

hdrinc.com/follow-us

From: Crump, Lynn [<mailto:lynn.crump@dcv.virginia.gov>]
Sent: Friday, December 13, 2019 10:16 AM
To: Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>
Cc: Roberta Rhur <robbie.rhur@dcv.virginia.gov>
Subject: Re: Niagara Hydroelectric Project (VA) -- Filing of Revised Study Plan

Dear Sarah,

We do not have any specific comments at this time. However, we would like to be included in the Recreation Study. Here are some considerations that should be included in the study:

- portage access around the dam
- the continued development of the Roanoke River Blueway
- the section below the dam is qualified for Va Scenic River designation

Close by recreation can be seen on the VA Outdoors Mapper at: <http://consapps.dcr.virginia.gov/dnh/vop/vopmapper.htm>

Please let me know if you have any questions.

Thank you for your consideration, Lynn

Lynn Crump, PLA, ASLA, Scenic Resources Coordinator
DCR -Planning & Recreation Resources
600 East Main Street, 24th Floor, Richmond, VA 23219
(804) 786-5054, FAX (804) 371-7899
http://www.dcr.virginia.gov/recreational_planning/srmain.shtml

Virginia Is for *Outdoor* Lovers!

On Wed, Nov 6, 2019 at 4:24 PM Kulpa, Sarah <Sarah.Kulpa@hdrinc.com> wrote:

Niagara Hydroelectric Project Stakeholders:

Appalachian Power Company (Appalachian), a unit of American Electric Power (AEP), is the licensee, owner and operator of the Niagara Hydroelectric Project (FERC No. 2466) (Project) located on the Roanoke River in Roanoke County, Virginia. The Project is operated under a license issued by the Federal Energy Regulatory Commission (FERC). The existing FERC license for the Project expires on February 29, 2024. Appalachian is pursuing a new license for the continued operation of the Project in accordance with FERC's Integrated Licensing Process (ILP). Pursuant to the ILP, Appalachian filed the Revised Study Plan (RSP) for the Project on November 6, 2019. The RSP responds to additional study comments Appalachian received in response to the Proposed Study Plan filing and describes the studies that Appalachian is proposing to conduct in support of Project relicensing.

On behalf of Appalachian, we are notifying stakeholders of the availability of the RSP. For your convenience, a copy of the cover letter filed with the RSP is attached. Please note that, due to file size restrictions, the RSP has not been included in this email. Appalachian encourages stakeholders to view the filing online at FERC's eLibrary at https://elibrary.ferc.gov/idmws/file_list.asp?accession_num=20191106-5132. Appalachian will also be adding the RSP to the Project's public relicensing website (<http://www.aephydro.com/HydroPlant/Niagara>) in the coming days.

Should you have any questions regarding this filing, please contact Jon Magalski with AEP at (614) 716-2240 or jmagalski@aep.com.

Thank you,

Sarah Kulpa

Project Manager

HDR

440 S. Church Street, Suite 900
Charlotte, NC 28202-2075
D 704.248.3620 **M** 315.415.8703
sarah.kulpa@hdrinc.com

hdrinc.com/follow-us

Yayac, Maggie

Subject: FW: Niagara Hydroelectric Project (FERC No. 2446) Relicensing - Recreation Study
Attachments: Recreation Survey Questionnaire.docx; Online Survey Information Flyer.docx

From: Frank Simms [mailto:fmsimms51@gmail.com]
Sent: Tuesday, February 11, 2020 1:07 PM
To: steve_buxton@nps.gov
Subject: Niagara Hydroelectric Project (FERC No. 2446) Relicensing - Recreation Study

Mr. Buxton:

My name is Frank Simms. I represent Young Energy Services (YES) which has been retained by Appalachian Power Company (Appalachian) to be involved in the relicensing of Appalachian's Niagara Hydroelectric Project (FERC No. 2466) (Project) located on the Roanoke River in Roanoke County, Virginia.

YES is responsible for the development of the Recreation Study for the relicensing effort. Those responsibilities include the gathering of data reflecting the use of the recreation facilities in the area. As part of that effort, YES staff will be taking surveys of individuals utilizing the facilities for the Roanoke River Trail. Views of the Niagara Project are available to visitors to the Blue Ridge Parkway from the Roanoke River Trail. In addition, the trail allows access to the Roanoke River for fishing, canoeing, and kayaking immediately below the Project Powerhouse. For these reasons, the Roanoke River Trail has been selected as one of the four recreation facilities where use surveys are to be taken. The surveys, scheduled for two days per month beginning in May and ending in October of this year, will follow the Online Survey Questionnaire attached. Those individuals who elect not to complete a survey form at the Roanoke River Trail will have the opportunity to take an information flyer (copy attached) on how to complete the survey online.

The cooperation of the National Park Service in this effort is greatly appreciated. If you have any questions or comments regarding the activities planned by YES at the Roanoke River Trail, please contact me at your convenience.

Thank you,

Frank M. Simms

Young Energy Services

Main Phone: 540-989-8089

Yayac, Maggie

Subject: FW: [EXTERNAL] Niagara Hydroelectric Project (FERC No. 2446) Relicensing - Recreation Study

From: **Buxton, Stephen K** <Steve_Buxton@nps.gov>

Date: Tue, Feb 11, 2020 at 1:50 PM

Subject: Re: [EXTERNAL] Niagara Hydroelectric Project (FERC No. 2446) Relicensing - Recreation Study

To: Frank Simms <fmsimms51@gmail.com>

Okay

From: Frank Simms <fmsimms51@gmail.com>

Sent: Tuesday, February 11, 2020 1:07 PM

To: Buxton, Stephen K <Steve_Buxton@nps.gov>

Subject: [EXTERNAL] Niagara Hydroelectric Project (FERC No. 2446) Relicensing - Recreation Study

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Thank you,

Frank M. Simms

Young Energy Services

Main Phone: 540-989-8089

Cell Phone: 540-204-7328

Email: fmsimms51@gmail.com

Yayac, Maggie

Subject: FW: Information Request for Niagara Project

From: Huddleston, Misty

Sent: Thursday, March 5, 2020 3:13 PM

To: biota (biota@vt.edu) <biota@vt.edu>

Cc: Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; Ziegler, Ty <Ty.Ziegler@hdrinc.com>; Jonathan M Magalski <jmmagalski@aep.com>

Subject: Information Request for Niagara Project

Dr. Angermeier:

Good afternoon.

Comments on the FERC Study Plan Determination for Niagara reference existing habitat suitability information and indices and cite a couple of papers: Ensign and Angermeier 1994 and Roberts and Angermeier 2005. We have located and reviewed the two referenced documents and they do not seem to present what we typically use for habitat suitability curves (i.e., separate curves or histograms providing depth, velocity, substrate, and cover criteria for each guild).

Do you know if life stage-specific habitat suitability curves along these lines have been developed for the Roanoke River? If so, if you know which reference contains this information, can you forward it along? Roberts and Angermeier 2015 refers to indices described in Roberts and Angermeier 2006, however I have been unable to locate that specific report.

[Roberts, J. H., and P. L. Angermeier. 2006. Assessing impacts of the Roanoke River Flood Reduction Project on the endangered Roanoke logperch. Final report to the Wilmington District, U. S. Army Corps of Engineers, Wilmington, NC.](#)

Also, looking at some of the information from Rosenberger 2002 and Roberts and Angermeier 2015, there are references to a 9-category Wentworth scale. Do you have something showing the particle size or substrate type used for the 9 categories?

Any assistance you can provide would be tremendously appreciated.

Also, as you work on your proposal for the laboratory work, let us know if you have questions or need additional information.

Regards,
Misty

Misty Huddleston, PhD
Associate, SR. Environmental Scientist

HDR
440 S. Church Street, Suite 900
Charlotte, NC 28202-2075
D 704.248.3614 **M** 865.556.9153
Misty.Huddleston@hdrinc.com

hdrinc.com/follow-us

Yayac, Maggie

Subject: FW: Information Request for Niagara Project
Attachments: 2005 RRFRP Final Report.pdf; vdot_sample_protocol.pdf

From: Angermeier, Paul [mailto:biota@vt.edu]
Sent: Friday, March 6, 2020 4:02 PM
To: Huddleston, Misty <Misty.Huddleston@hdrinc.com>
Cc: Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; Ziegler, Ty <Ty.Ziegler@hdrinc.com>; Jonathan M Magalski <jmmagalski@aep.com>
Subject: RE: Information Request for Niagara Project

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Misty

To my knowledge, conventional HSI curves have not been developed for Roanoke Logperch (RLP). They were not required for our work and nobody paid us to develop them. However, the papers you cite do contain sufficient info on habitat use by Age-0 and Age-1+ RLP in Roanoke River to map site-specific suitability, which we regularly reported to USACE. I know of no existing protocols for assessing habitat suitability for other RLP life stages.

I'm attaching the requested report as well as the protocol we now use to assess habitat suitability for Age-1+ RLP.

I couldn't quickly find a 9-categ scale, and I'm not sure it's needed. There are many typologies based on Wentworth scaling. We now use a 7-categ scale.

I haven't had time to work on the proposal yet but plan to start next week.

Let me know if you need more info. Paul

From: Huddleston, Misty <Misty.Huddleston@hdrinc.com>
Sent: Thursday, March 5, 2020 3:13 PM
To: Angermeier, Paul <biota@vt.edu>
Cc: Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; Ziegler, Ty <Ty.Ziegler@hdrinc.com>; Jonathan M Magalski <jmmagalski@aep.com>
Subject: Information Request for Niagara Project

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Also, as you work on your proposal for the laboratory work, let us know if you have questions or need additional information.

Regards,
Misty

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HDR
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Charlotte, NC 28202-2075
D 704.248.3614 **M** 865.556.9153
Misty.Huddleston@hdrinc.com

hdrinc.com/follow-us

From: [Huddleston, Misty](#)
To: [biota \(biota@vt.edu\)](mailto:biota@vt.edu)
Cc: [Kulpa, Sarah](#); [Yayac, Maggie](#)
Subject: AEP-Niagara Project Update
Date: Friday, March 20, 2020 6:03:00 PM

Paul,

Good evening. Following up with you regarding the status of items from our call this week.

1. I am still working on getting you an example Standard Operating Procures that you can review. I should have this ready for your review by Monday.
This will include an example Chain-of-Custody form.
2. Sarah and I spoke with our subconsultant contact yesterday and clarified that they are experienced with performing larval drift studies and follow very specific procedures (same as I detailed on our call) for processing the material from the sample net and into the sample container. The goal being to avoid the need to manually transfer sample material using forceps, spoons, hands, or other methods by rinsing the net repeatedly into a sieve and then washing material from sieve into container. Every effort is made to avoid damage to the fragile specimens and to maintain the targeted concentration of preservative.
3. The subconsultant provided an estimate for the number of samples that they anticipate collecting:
Current plan will result in approximately 100 RLP larval samples will be collected and submitted to Virginia Tech for analyses. Below is the derivation for the # samples:
 $10 \text{ weeks} \times 5 \text{ sites} \times 2 \text{ samples/site} = 100 \text{ samples.}$
4. The final item is regarding the contract pricing for sample processing. Is it possible for you to provide cost proposal using a per sample price, as opposed to showing the overhead rate? Larval fish sample processing and taxonomy at commercial laboratories is typically billed on a per sample price. If feasible, this would be our preferred approach. We would want to see a per sample price for the sorting and taxonomy component and then a per specimen price for the DNA barcoding based on an estimated number with a “not to exceed” qualification.

Let me know if you have questions or wish to discuss this information further.

Have a nice weekend and stay safe.

Regards,
Misty

Misty Huddleston, PhD
Associate, SR. Environmental Scientist

HDR
440 S. Church Street, Suite 900
Charlotte, NC 28202-2075
D 704.248.3614 M 865.556.9153
Misty.Huddleston@hdrinc.com

Yayac, Maggie

Subject: FW: Niagara Project (FERC No. 2466) Recreation Study

From: Elizabeth B Parcell [mailto:ebparcell@aep.com]

Sent: Wednesday, April 29, 2020 4:35 PM

To: dweir@roanokecountyva.gov; john_mccloskey@fws.gov; biota@vt.edu; bill.tanger@verizon.net; richard_Mccorkle@fws.gov; amcgee@RVARC.org; scott.smith@dgif.virginia.gov; audrey_pearson@friendsbrp.org; liz.belcher@greenways.org; brian.mcgurk@deq.virginia.gov; roanokeriverblueway@gmail.com
Cc: Frank Simms (fmsimms51@gmail.com) <fmsimms51@gmail.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>; Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; Jonathan M Magalski <jmmagalski@aep.com>; David W Bailey <dwbailey@aep.com>

Subject: Niagara Project (FERC No. 2466) Recreation Study

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good afternoon,

I hope this e-mail finds you all well, in good health, and ready for the evening rains. Appalachian Power Company is continuing the Recreation Study for the Niagara Project (FERC No. 2466). As scheduled in the Recreation Study Plan approved by FERC in December, Appalachian has developed a recreation visitor use online survey to provide respondents the opportunity to give feedback electronically.

The Online Survey has been posted to the Project website as a way to capture data from recreationists. This survey can be extended through the 2021 recreation season, if needed. This notification will be included in the upcoming quarterly Progress Report, which will also include schedule revisions due to COVID-19 safety restrictions.

Please find the online survey here: <http://www.aephydro.com/HydroPlant/Niagara>

Please let me know if you have any questions.

Liz



ELIZABETH B PARCELL | PROCESS SUPV
EBPARCELL@AEP.COM | D:540.985.2441 | C:540.529.4191
40 FRANKLIN ROAD SW, ROANOKE, VA 24011

Yayac, Maggie

Subject: FW: [EXTERNAL] - Niagara Recreational Survey Signage

From: Elizabeth B Parcell [mailto:ebparcell@aep.com]

Sent: Wednesday, July 1, 2020 11:48 AM

To: Lindsay Webb <LWEBB@roanokecountyva.gov>

Cc: Elijah T Meador <etmeador@aep.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>; Jonathan M Magalski <jmmagalski@aep.com>

Subject: RE: [EXTERNAL] - Niagara Recreational Survey Signage

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Thank you Lindsay for your email.

If you would like to print, laminate and post the sign on the kiosk, that would be great. Appalachian has the ability to do metal signs so if the laminated version appears to be deteriorating as a result of the numerous and heavy rains that never seem to end, let me know and we can make one – with the suggested map and post it.

Per the Revised Study Plan, the on-line survey is to be available through October. However, it was subsequently noted that Appalachian could extend the availability of the online survey into 2021, if needed. Also in the Study Plan, we are only required to post the sign at Rutrough Road, Tinker Creek and the Niagara Portage. Although not required at other locations, there is no harm in posting it at the other sites that you mention.

Will you please confirm when the sign is up and if you post them at the other two sites? Thanks for your assistance.

Hope you have a nice holiday weekend. Be safe.

Liz



ELIZABETH B PARCELL | PROCESS SUPV
EBPARCELL@AEP.COM | D:540.985.2441 | C:540.529.4191
40 FRANKLIN ROAD SW, ROANOKE, VA 24011

From: Lindsay Webb <LWEBB@roanokecountyva.gov>

Sent: Friday, June 26, 2020 2:14 PM

To: Elizabeth B Parcell <ebparcell@aep.com>

Subject: Re: [EXTERNAL] - Niagara Recreational Survey Signage

This is an **EXTERNAL** email. **STOP. THINK** before you **CLICK** links or **OPEN** attachments. If suspicious please click the '**Report to Incidents**' button in Outlook or forward to incidents@aep.com from a mobile device.

Hi Liz,

Will you confirm the size of the sign, and how long would you like the sign up?

The map and rules fill up the viewable space in the kiosk at Rutrough Point, but something could be placed on the exterior of the kiosk or installed on a separate post. Our department can print a temporary sign (11" x 17" maximum size), laminate it, and install on the outside of the kiosk, if that suits you? We can also install a temporary sign at Explore Park in kiosks located near the Visitor Center and Journeys End (where the Blue Mountain Adventures river tubing program is located).

How do you feel about revising the sign (see attached) to include a Roanoke River Blueway map? I am concerned that the general public won't know what the "Niagara Project" is, or understand it's relationship with the Roanoke River Blueway.

Thanks,

Lindsay B. Webb, MPA

Parks Planning and Development Manager

1206 Kessler Mill Road | Salem, VA 24153

(540) 777-6328 | (540) 521-9907 (cell)



>>> Elizabeth B Parcell <ebparcell@aep.com> 6/24/2020 5:47 PM >>>

Lindsay,

Appalachian Power Company is seeking permission to install a sign as depicted in the attachment at the Canoe Access at the end of Rutrough Road. If acceptable, we could put it in the County's kiosk or have a separate installation. If you have specific instructions on how or where, please let us know.

Many thanks. I look forward to hearing from you.

Liz



ELIZABETH B PARCELL | PROCESS SUPV
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40 FRANKLIN ROAD SW, ROANOKE, VA 24011

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Yayac, Maggie

Subject: FW: [EXTERNAL] - Niagara Recreational Survey Signage

From: Lindsay Webb [mailto:LWEBB@roanokecountyva.gov]

Sent: Tuesday, July 7, 2020 3:57 PM

To: ebparcell@aep.com

Cc: etmeador@aep.com; jmmagalski@aep.com; Yayac, Maggie <Maggie.Yayac@hdrinc.com>; Charlie Goens <CGOENS@roanokecountyva.gov>; Scott Ramsburg <SRAMSBURG@roanokecountyva.gov>

Subject: RE: [EXTERNAL] - Niagara Recreational Survey Signage

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Liz,

Our department printed, laminated, and placed the signs on the kiosks in Explore Park, including Rutrough Point, the Visitor Center, and Journeys End. If we have any issues with them deteriorating or being vandalized, we will let you know so you can print the metal signs.

If AEP needs help promoting the recreation survey in other ways, please let us know. We can help promote the survey through Roanoke County social media, newsletters, etc.

Hope you and your family are doing well and had a great 4th of July!

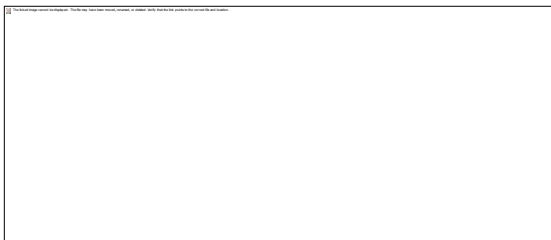
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Parks Planning and Development Manager

1206 Kessler Mill Road | Salem, VA 24153

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40 FRANKLIN ROAD SW, ROANOKE, VA 24011

From: Lindsay Webb <LWEBB@roanokecountyva.gov>
Sent: Friday, June 26, 2020 2:14 PM
To: Elizabeth B Parcell <ebparcell@aep.com>
Subject: Re: [EXTERNAL] - Niagara Recreational Survey Signage

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Parks Planning and Development Manager

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Yayac, Maggie

Subject: FW: Niagara Project Relicensing Study Schedule Update Meeting Notes
Attachments: N Niagara_Study Schedule Update_Meeting Summary 06 29 2020.pdf

From: Elizabeth B Parcell [mailto:ebparcell@aep.com]

Sent: Friday, July 17, 2020 3:38 PM

To: McCorkle, Richard <richard_mccorkle@fws.gov>; McCloskey, John <john_mccloskey@fws.gov>; Brian McGurk (Brian.McGurk@deq.virginia.gov) <Brian.McGurk@deq.virginia.gov>; scott.smith@dgif.virginia.gov

Cc: Yayac, Maggie <Maggie.Yayac@hdrinc.com>; Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; Jonathan M Magalski <jmmagalski@aep.com>

Subject: Niagara Project Relicensing Study Schedule Update Meeting Notes

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Good afternoon,

Attached please find a draft summary of our discussion from a couple weeks ago regarding the updated ILP study schedules and request to FERC for extension of the deadline to file the ISR. We plan to include a copy of this summary in the upcoming FERC filing. Please provide any comments or questions on the attached summary as soon as you can get to it, or no later than the end of next week.

Thanks and happy Friday! Have a great weekend.

Liz



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EBPARCELL@AEP.COM | D:540.985.2441 | C:540.529.4191
40 FRANKLIN ROAD SW, ROANOKE, VA 24011



Aschenbach, Ernst <ernie.aschenbach@dwr.virginia.gov>

Fwd: Niagara Project Relicensing Study Schedule Update Meeting Notes

1 message

Smith, Scott <scott.smith@dwr.virginia.gov>

Fri, Jul 17, 2020 at 3:49 PM

To: Ernst Aschenbach <ernie.aschenbach@dwr.virginia.gov>

Ernie,

For the Niagara FERC files (Roanoke R). Have a good weekend.

SS

----- Forwarded message -----

From: **Elizabeth B Parcell** <ebparcell@aep.com>

Date: Fri, Jul 17, 2020 at 3:37 PM

Subject: Niagara Project Relicensing Study Schedule Update Meeting Notes

To: McCorkle, Richard <richard_mccorkle@fws.gov>, McCloskey, John <john_mccloskey@fws.gov>, Brian McGurk (Brian.McGurk@deq.virginia.gov) <Brian.McGurk@deq.virginia.gov>, scott.smith@dgif.virginia.gov <scott.smith@dgif.virginia.gov>

Cc: Yayac, Maggie <Maggie.Yayac@hdrinc.com>, Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>, Jonathan M Magalski <jmmagalski@aep.com>

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40 FRANKLIN ROAD SW, ROANOKE, VA 24011

--

**Scott M. Smith***Regional Fisheries Manager***P 434.525.7522 / M 434.907.2793****Virginia Department of Wildlife Resources***CONSERVE. CONNECT. PROTECT.***A 1132 Thomas Jefferson Rd., Forest, VA 24551**

7/20/2020

Commonwealth of Virginia Mail - Fwd: Niagara Project Relicensing Study Schedule Update Meeting Notes

www.VirginiaWildlife.gov



N Niagara_Study Schedule Update_Meeting Summary 06 29 2020.pdf

287K



American Electric Power
1 Riverside Plaza
Columbus, OH 43215
aep.com

July 27, 2020

VIA ELECTRONIC FILING

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

**Subject: Niagara Hydroelectric Project (FERC No. 2466-034)
First Quarterly Study Progress Report, Updated ILP Study Schedule, and
Request for Extension of Time to File Initial Study Report**

Dear Secretary Bose:

Appalachian Power Company (Appalachian or Applicant), a unit of American Electric Power (AEP) is the Licensee, owner, and operator of the run-of-river 2.4 megawatt (MW) Niagara Hydroelectric Project (Project No. 2466) (Project or Niagara Project), located on the Roanoke River in Roanoke County, Virginia. The Project is currently undergoing relicensing following the Federal Energy Regulatory Commission's (FERC's or Commission's) Integrated Licensing Process (ILP).

The purposes of this filing are to (1) inform FERC and Project stakeholders of revised timeframes for conducting certain field activities to be performed pursuant to the approved ILP Study Plan for the Project and (2) request Commission approval of a modification to the approved ILP Process Plan and Schedule that would extend the filing deadline for the Initial Study Report (ISR) for the Project from December 5, 2020 to January 11, 2021. As further explained below, these modifications are required in light of ongoing and presently anticipated resource and schedule challenges associated with the ongoing Novel Coronavirus Disease (COVID-19) pandemic and are not expected to impact Appalachian's ability to timely file an application for a new license by the statutory deadline (February 29, 2024).

This filing also serves as Appalachian's First Quarterly Study Progress Report for the Project. This progress report describes the activities performed since this Study Plan Determination (SPD), as well as ILP activities generally expected to be conducted in quarter 3 (Q3) of 2020.

Niagara Hydroelectric Project (FERC No. 2466-034)

First Quarterly Study Progress Report, Updated ILP Study Schedule, and Request for Extension of Time to File

Initial Study Report

Page 2 of 4

Background

In accordance with 18 CFR §5.11 of the Commission's regulations, Appalachian developed a Revised Study Plan (RSP) for the Project that was filed with the Commission and made available to stakeholders on November 6, 2019. On December 6, 2019 FERC issued the Study Plan Determination (SPD). The RSP, as subsequently approved by the FERC, establishes Appalachian's proposed schedule to complete desktop and field activities and develop reports for the following studies. A proposed study schedule is included in the RSP for each of the studies listed below:

1. Flow and Bypass Reach Aquatic Habitat Study;
2. Water Quality Study;
3. Fish Community Study;
4. Benthic Aquatic Resources Study
5. Wetlands, Riparian, and Littoral Habitat Characterization Study;
6. Shoreline Stability Assessment Study;
7. Recreation Study; and
8. Cultural Resources Study.

Updated Study Schedule and Study Progress

Appalachian's intent, at the time of filing the RSP, was to complete ILP study activities in the first ILP study season (2020) to the greatest extent possible. The study schedules were based on an expectation of commencing field work by early April and developing draft study reports and the ISR by early December 2020.

Appalachian commenced the Recreation Study in November 2019 and began capturing aesthetic flow documentation at that time. The Recreation Facility Inventory and Condition Assessment was completed in the fall of 2019. Additionally, Appalachian initiated the recreation visitor use online survey on April 27, 2020 and distributed notification of the availability of the online survey to interested agencies. Signs prompting visitors to complete the survey were installed at associated recreation facilities (Tinker Creek Canoe Launch, the Niagara Portage Put-In, and the Rutrough Road Canoe/Kayak Ramp) in June. Appalachian notes the National Park Service did not grant permission for installation of a similar sign at the Roanoke River Trail on National Park Service property.

Due to prevailing restrictions on non-essential travel and safety considerations for staff who would be traveling for and performing fieldwork, Appalachian and Appalachian's consultants have not been able to commence fieldwork for the other studies (i.e., studies requiring intensive periods of

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fieldwork in the spring) as originally proposed in the RSP. Appalachian and Appalachian's consultants continue to monitor evolving conditions and presently anticipate commencing field study activities concurrent with this filing. As a result, conduct of several season-sensitive spring field studies will have to be deferred until the second (2021) study season, and the study period for the water quality study will be shortened (though notably is still expected to include the majority of the targeted low inflow and high temperature season). Other studies that would potentially have commenced in the spring or early summer are expected to be shifted in the mid- to late summer or fall seasons. On a resource allocation basis, Appalachian does not expect to be able to complete all of the required ILP study activities within the remaining study season. As such, Appalachian proposes to also shift the timing conducting studies that are more baseline condition-characterization in nature to 2021.

A detailed schedule is attached (Attachment 1), which shows the schedule proposed in the RSP alongside the revised proposed schedule.

Appalachian shared an earlier version of this table with the primary resource agencies (U.S. Fish and Wildlife Service, Virginia Department of Wildlife Resources, Virginia Department of Conservation and Recreation, and the Virginia Department of Environmental Quality) and conducted a conference call on June 29, 2020 to review the revised study schedule and solicit agency feedback and comments. Participants in this meeting concurred with Appalachian's proposed schedule revisions, and minor revisions to the schedule were made based on comments received during this meeting, as documented in the meeting summary included in Attachment 2.

Request for Extension of Time to File the ISR

Because the study delays forced by COVID-19 conditions are expected to lead to significant field study activities continuing through the fall of 2020, it will not be feasible to develop draft study reports and a comprehensive ISR by the December 5, 2020 deadline if significant field study activities continue through the fall of 2020. Appalachian believes that a comprehensive ISR, inclusive of draft study reports where possible, will be to the benefit of the ILP process for this Project, as well as to Project stakeholders. As such, Appalachian is requesting that the deadline to file the ISR be extended to January 11, 2021. Appalachian does not propose and is not requesting any subsequent adjustment of the ISR deadline (December 5, 2021).

Appalachian notified the agencies listed above of Appalachian's intention to file a request for extension of time to file the ISR (and the subsequent shift of the ISR meeting and comment deadline into early 2021) during the June 29, 2020 conference call. As indicated in the attached meeting summary, participants in this meeting did not express any opposition to or concerns with this request.

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Appalachian notes the extraordinary circumstances that have shifted the ILP study schedule for the Project and believes this request is consistent with recent guidance from the Commission and Commission staff regarding potential impacts of COVID-19 on non-statutory deadlines and required notifications to and approvals by FERC. Appalachian thanks the Commission staff for their consideration of this request and hopes that this filing finds Commission staff and Project stakeholders in good health.

If there are any questions regarding the RSP, please do not hesitate to contact me at (614) 716-2240 or by email jmmagalski@aep.com.

Sincerely,

A handwritten signature in black ink, appearing to read "Jonathan M. Magalski". The signature is fluid and cursive, with the first name "Jonathan" and last name "Magalski" clearly distinguishable.

Jonathan M. Magalski

Environmental Specialist Consultant

American Electric Power Services Corporation

Attachments (2)

cc: Distribution List

Niagara Hydroelectric Project (FERC No. 2466) Distribution List

Federal Agencies

Mr. John Eddins
Archaeologist/Program Analyst
Advisory Council on Historic Preservation
401 F Street NW, Suite 308
Washington, DC 20001-2637
jeddins@achp.gov

Blue Ridge National Heritage Area
195 Hemphill Knob Road
Asheville, NC 28803

Park Headquarters
Blue Ridge Parkway
199 Hemphill Knob Road
Asheville, NC 28803-8686

Ms. Kimberly Bose
Secretary
Federal Energy Regulatory Commission
888 1st St NE
Washington, DC 20426

FEMA Region 3
615 Chestnut Street
One Independence Mall, Sixth Floor
Philadelphia, PA 19106-4404

George Washington and Jefferson National
Forest
5162 Valleypointe Parkway
Roanoke, VA 24019

Mr. John Bullard
Regional Administrator
NOAA Fisheries Service
Greater Atlantic Regional Fisheries Office
55 Great Republic Drive
Gloucester, MA 01930-2276

Mr. John A. Bricker
State Conservationist
US Department of Agriculture
Natural Resources Conservation Service
1606 Santa Rosa Road, Suite 209
Richmond, VA 23229-5014

Mr. Harold Peterson
Bureau of Indian Affairs
US Department of the Interior
545 Marriott Dr, Suite 700
Nashville, TN 37214
Harold.Peterson@bia.gov

Office of the Solicitor
US Department of the Interior
1849 C Street, NW
Washington, DC 20240

Ms. Lindy Nelson
Regional Environmental Officer, Office of
Environmental Policy & Compliance
US Department of the Interior, Philadelphia
Region
Custom House, Room 244
200 Chestnut Street
Philadelphia, PA 19106

Ms. Barbara Rudnick
NEPA Team Leader - Region 3
US Environmental Protection Agency
1650 Arch Street
Philadelphia, PA 19103-2029

Mr. Martin Miller
Chief, Endangered Species - Northeast
Region (Region 5)
US Fish and Wildlife Service
300 Westgate Center Drive
Hadley, MA 01035

Ms. Cindy Schulz
Field Supervisor, Virginia Field Office
US Fish and Wildlife Service
6669 Short Lane
Gloucester, VA 23061

Mr. John McCloskey
US Fish and Wildlife Service
John_mccloskey@fws.gov

Mr. Richard C. McCorkle
Fish and Wildlife Biologist, Pennsylvania Field
Office
US Fish and Wildlife Service
110 Radnor Road, Suite 101
State College, PA 16801
richard_mccorkle@fws.gov

Ms. Elizabeth Merz
US Forest Service
3714 Highway 16
Marion, VA 24354

Niagara Hydroelectric Project (FERC No. 2466) Distribution List

Mr. Mark Bennett
Center Director of VA and WV Water Science
Center
US Geological Survey
John W. Powell Building
12201 Sunrise Valley Drive
Reston, VA 20192
mrbennet@usgs.gov

Hon. Ben Cline
US Congressman, 6th District
US House of Representatives
10 Franklin Road SE, Suite 510
Roanoke, VA 24011

Mr. Michael Reynolds
Acting Director, Headquarters
US National Park Service
1849 C Street, NW
Washington, DC 20240

Ms. Catherine Turton
Architectural Historian, Northeast Region
US National Park Service
US Custom House, 3rd Floor
200 Chestnut Street
Philadelphia, PA 19106

Hon. Tim Kaine
US Senate
231 Russell Senate Office Building
Washington, DC 20510

Hon. Mark Warner
US Senate
703 Hart Senate Office Building
Washington, DC 20510

Mr. Matthew Lee
US Environmental Protection Agency
lee.matthew@epa.gov

State Agencies

Dr. Elizabeth Moore
President
Archaeological Society of Virginia
PO Box 70395
Richmond, VA 23255

Blue Ridge Soil and Water Conservation
District
1297 State Street
Rocky Mount, VA 24151

Mr. Jess Jones
Freshwater Mollusk Conservation Center
Virginia Tech
1B Plantation Road
Blacksburg, VA 24061

Mr. Ralph Northam
Governor
Office of the Governor
PO Box 1475
Richmond, VA 23218

Mr. Paul Angermeier
Assistant Unit Leader
Virginia Cooperative Fish and Wildlife
Research Unit
Department of Fisheries and Wildlife
Conservation - Virginia Tech
106 Cheatham Hall
Blacksburg, VA 24061
biota@vt.edu

Mr. Benjamin Hermerding
Secretary of the Commonwealth
Virginia Council on Indians
PO Box 2454
Richmond, VA 23218
benjamin.hermerding@governor.virginia.gov

Ms. Robbie Rhur
Virginia Department of Conservation and
Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219
Robbie.Rhur@dcr.virginia.gov

Ms. Rene Hypes
Division of Natural Heritage
Virginia Department of Conservation and
Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219
rene.hypes@dcr.virginia.gov

Mr. Clyde Cristman
Division Director
Virginia Department of Conservation and
Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219

Niagara Hydroelectric Project (FERC No. 2466) Distribution List

Ms. Lynn Crump
FERC
Virginia Department of Conservation and
Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219
lynn.crump@dcr.virginia.gov

Mr. Tyler Meader
Locality Liasion - Division of Natural Heritage
Virginia Department of Conservation and
Recreation
600 East Main Street, 24th Floor
Richmond, VA 23219
nhreview@dcr.virginia.gov

Mr. Matthew Link
Water Withdrawal Permit Writer
Virginia Department of Environmental Quality
PO Box 1105
Richmond, VA 23218
matthew.link@deq.virginia.gov

Mr. Andrew Hammond
Water Withdrawal Permitting & Compliance
Manager
Virginia Department of Environmental Quality
629 East Main Street
Richmond, VA 23218
andrew.hammond@deq.virginia.gov

Mr. Tony Cario
Water Withdrawal Permit Writer, Office of
Water Supply
Virginia Department of Environmental Quality
PO Box 1105
Richmond, VA 23218
anthony.cario@deq.virginia.gov

Mr. Scott Kudlas
Director, Office of Water Supply
Virginia Department of Environmental Quality
PO Box 1105
Richmond, VA 23218
scott.kudlas@deq.virginia.gov

Mr. Brian McGurk
Water Withdrawal Permit Writer
Virginia Department of Environmental Quality
PO Box 1105
Richmond, VA 23218
Brian.McGurk@deq.virginia.gov

Blue Ridge Regional Office
Virginia Department of Environmental Quality
3019 Peters Creek Road
Roanoke, VA 24019

Mr. Chris Sullivan
Senior Area Forester
Virginia Department of Forestry
900 Natural Resources Drive
Charlottesville, VA 22903

Mr. Scott Smith
Region 2 Fisheries Manager
Virginia Department of Game and Inland
Fisheries
1132 Thomas Jefferson Road
Forest, VA 24551
scott.smith@gdif.virginia.gov

Ms. Julie Langan
Director and State Historic Preservation
Officer
Virginia Department of Historic Resources
2801 Kensington Avenue
Richmond, VA 23221

Mr. Tim Pace
Chairman
Virginia Roanoke River Basin Advisory
Committee
PO Box 1105
Richmond, VA 23218

Local Governments

Ms. Anita McMillan
Town of Vinton
amcmillan@vintonVA.gov

Mr. Christopher Whitlow
Interim County Administrator
Franklin County Administration
1255 Franklin Street
Rocky Mount, VA 24151

Mr. Sherman P. Lea, Sr.
Mayor
City of Roanoke
Noel C. Taylor Municipal Building
215 Church Avenue
Roanoke, VA 24011

Niagara Hydroelectric Project (FERC No. 2466) Distribution List

Mr. Richard Caywood
Assistant County Administrator
County of Roanoke
PO Box 29800
5204 Bernard Drive
Roanoke, VA 24018
rcaywood@roanokecountyva.gov

Mr. David Weir
County of Roanoke
PO Box 29800
5204 Bernard Drive
Roanoke, VA 24018
dweir@roanokecountva.gov

Mr. David Henderson
Engineering
County of Roanoke
PO Box 29800
5204 Bernard Drive
Roanoke, VA 24018
dhenderson@roanokecountyva.gov

Mr. Phil North
Hollins Magisterial District
5204 Bernard Drive, 4th floor
Roanoke, VA 24014

Mr. David Radford
Windsor Hills Magisterial District
5204 Bernard Drive, 4th floor
Roanoke, VA 24014

Ms. Paula Shoffner
Executive Director
Tri-County Lakes Administrative Commission
400 Scruggs Road #200
Moneta, VA 24121
paulas@sml.us.com

Mr. Doug Blount
Director
Roanoke County Parks, Recreation and
Tourism
1206 Kessler Mill Road
Salem, VA 24153
dblount@roanokecountyva.gov

Ms. Lindsay Webb
Parks Planning and Development Manager
County of Roanoke
1206 Kessler Mill Road
Salem, VA 24153
LWEBB@roanokecountyva.gov

Mr. Joey Hiner
Town of Vinton
311 S. Pollard St.
Vinton, VA 24179
jhiner@vintonVA.gov

Mr. Bo Herndon
Town of Vinton
312 S. Pollard St.
Vinton, VA 24180
wherndon@vintonVA.gov

Mr. Kenny Sledd
Town of Vinton
313 S. Pollard St.
Vinton, VA 24181
ksledd@vintonVA.gov

Western Virginia Water Authority
601 South Jefferson Street
Roanoke, VA 24011

Tribes

Chief Bill Harris
Catawba Indian Nation
996 Avenue of the Nations
Rock Hill, SC 29730

Deborah Dotson
President
Delaware Nation
P.O. Box 825
Anadarko, OK 73005

Chief Dean Branham
Monacan Indian Nation
PO Box 1136
Madison Heights, VA 24572

Chief Robert Gray
Pamunkey Indian Tribe
1059 Pocahontas Trail
King William, VA 23086

Non-Governmental

American Canoe Association
503 Sophia Street, Suite 100
Fredericksburg, VA 22401

Niagara Hydroelectric Project (FERC No. 2466) Distribution List

Mr. Kevin Richard Colburn
National Stewardship Director
American Whitewater
PO Box 1540
Cullowhee, NC 28779
kevin@americanwhitewater.org

Headquarters
Appalachian Trail Conservancy
416 Campbell Ave SW #101
Roanoke, VA 24016-3627

Blue Ridge Land Conservancy
722 1st Street SW, Suite L
Roanoke, VA 24016

Blue Ridge Parkway Foundation
717 South Marshall Street, Suite 105 B
Winston-Salem, NC 27101

Ms. Audrey Pearson
Executive Director
Friends of the Blue Ridge Parkway
PO Box 20986
Roanoke, VA 24018
audrey_pearson@friendsbrp.org

Friends of the Rivers of Virginia
257 Dancing Tree Lane
Hollins, VA 24019

Mr. Bill Tanger
Chairman
Friends of the Roanoke
PO Box 1750
Roanoke, VA 24008
bill.tanger@verizon.net

Ms. Juanita Callis
Director
Friends of the Roanoke
PO Box 1750
Roanoke, VA 24008-1750

Mr. Mike Pucci
President
Roanoke River Basin Association
150 Slayton Avenue
Danville, VA 24540
Roanoke River Blueway
313 Luck Avenue SW
Roanoke, VA 24016
roanokeriverblueway@gmail.com

Ms. Amanda McGee
Regional Planner II
Roanoke Valley - Alleghany Regional
Commission
P.O. Box 2569
Roanoke, VA 24010
amcgee@rvarc.org

Ms. Liz Belcher
Greenway Coordinator
Roanoke Valley Greenway
1206 Kessler Mill Road
Salem, VA 24153
liz.belcher@greenways.org

Mr. Steve Moyer
Trout Unlimited
1777 N. Kent Street, Suite 100
Arlington, VA 22209

Upper Roanoke River Roundtable
PO Box 8221
Roanoke, VA 24014

Lorie Smith
Smith Mountain Lake Association
400 Scruggs Road #2100
Moneta, VA 24121
TheOffice@SMLAssociation.org

ATTACHMENT 1

ILP STUDY SCHEDULE UPDATE

Table 1. Proposed Changes to the 2020-2021 Study Plan Schedule for the Niagara Project (FERC No. 2466)

Proposed Changes to the 2020-2021 Study Plan Schedule for the Niagara Project (FERC No. 2466)			
Study	Activities	Approved Timeframe for Completion (RSP and SPD)	Proposed Timeframe for Completion (July 2020 update)
Flow and Bypass Reach Aquatic Habitat Study	Topographic Mapping and Photogrammetry Data Collection	Fall 2019	Completed (January 2020)
	Desktop Habitat Assessment	Spring 2020	July – September 2020
	Mesohabitat Mapping and Substrate Characterization Field Data Collection	Summer 2020	September – October 2020*
	Distribute Proposed Flow Test Scenario Framework to Interested Parties for Review	June/July 2020	August 2020
	Conduct Flow and Water Level Assessment and Hydraulic Model Development	June - October 2020	September – December 2020*
	Distribute Draft Study Report with the ISR	December 2020	January 2021
Water Quality Study	Study Planning and Existing Data Review	February – April 2020	July – August 2020
	Continuous and Monthly Water Quality Monitoring (Dissolved Oxygen and Temperature)	May – October 2020	July – October 2020
	Distribute Draft Study Report with the ISR	December 2020	January 2021
Fish Community Study	Study Planning and Existing Data Review	September 2019 – April 2020	July 2020
	Fish Community Study	August – October 2020	Late September - Early November 2020
	Roanoke Logperch Adult Surveys (spring sampling conditioned on receipt of waiver from USFWS for sampling within time-of-year restriction period)	May – June 2020, August – October 2020	August – October 2020, May – June 2021
	Roanoke Logperch Young-of-Year Surveys	August – October 2020	August – October 2020
	Roanoke Logperch Larval Surveys	April – June 2020	April – June 2021
	Desktop Impingement and Entrainment Evaluation	December 2019 – November 2020	July – December 2020
	Distribute Draft Study Report with the ISR	December 2020	January 2021

* Schedule for completion of fieldwork requiring minimum flow conditions in bypass reach is conditioned on replacement of the sluice gate as presently scheduled and planned by AEP for September 2020 (prior FERC approval required). Scheduled fieldwork that cannot be completed in the fall of 2020 due to this or any other conditions would be rescheduled for 2021 (as soon as possible in the 2021 field season, given required inflow and operating conditions).

Proposed Changes to the 2020-2021 Study Plan Schedule for the Niagara Project (FERC No. 2466)			
Study	Activities	Approved Timeframe for Completion (RSP and SPD)	Proposed Timeframe for Completion (July 2020 update)
Benthic Aquatic Resources Study	Study Planning and Existing Data Review	November 2019 – February 2020	August – September 2020
	Benthic Habitat Assessment	March – October 2020	September – October 2020
	Macroinvertebrate and Crayfish Community Study	March – October 2020	September – October 2020, April – May 2021
	Mussel Habitat and Community Survey	April – October 2020	August – October 2020
	Distribute Draft Study Report with the ISR/USR	December 2020	January 2021/December 2021
Wetlands, Riparian, and Littoral Habitat Characterization	Desktop Mapping of Wetland, Riparian, and Littoral Habitats	September 2019 – March 2020	September 2020 – March 2021
	Field Verification of Preliminary Maps and Identified Wetlands, Riparian, and Littoral Habitat Characterizations	April – July 2020	April – July 2021
	Distribute Draft Study Report with the USR	December 2020	December 2021
Shoreline Stability Assessment Study	Study Planning and Data Review	September 2019 – March 2020	September 2020 – March 2021
	Shoreline Survey and Determination of Areas Potentially Needing Remediation	April – July 2020	April – July 2021
	Distribute Draft Study Report with the USR	December 2020	December 2021

Proposed Changes to the 2020-2021 Study Plan Schedule for the Niagara Project (FERC No. 2466)			
Study	Activities	Approved Timeframe for Completion (RSP and SPD)	Proposed Timeframe for Completion (July 2020 update)
Recreation Study	Study Planning and Existing Data Review	November 2019 – March 2020	Completed
	Recreation Facility Inventory and Condition Assessment	November 2019	Completed
	Convene Meeting with Stakeholders	July – August 2020	September – November 2020
	Recreation Visitor Use Online Survey	May – October 2020	May 2020 – October 2021
	Recreational Use Documentation (2x/month)	May – October 2020	May – October 2021
	Aesthetic Flow Documentation (Quarterly)	November 2019 – November 2020	November 2019 – November 2020
	Recreational Flow Release Desktop Evaluation	August 2020 – October 2020	August 2020 – October 2020
	Distribute Draft Study Report with the ISR/USR	December 2020	January 2021/December 2021
Cultural Resources Study	Determination of Area of Potential Effect (APE)	January – June 2020	July – September 2020
	Background Research and Archival Review	January – June 2020	August 2020 – November 2020
	Phase I Reconnaissance Survey of APE	May – October 2020	April – July 2021
	Inventory of Traditional Cultural Properties	October 2019 – October 2020	September 2020 – October 2021
	Distribute Draft Study Report with the ISR/USR	December 2020	December 2021
	Historic Properties Management Plan (if necessary)	With the DLA or Preliminary Licensing Proposal	

ATTACHMENT 2

JUNE 29, 2020 MEETING SUMMARY

From: Elizabeth B Parcell <ebparcell@aep.com>
Sent: Friday, July 17, 2020 3:54 PM
To: Yayac, Maggie; Kulpa, Sarah; Jonathan M Magalski
Subject: FW: Niagara Project Relicensing Study Schedule Update Meeting Notes
Attachments: [EXTERNAL] Re: Niagara Project Relicensing Study Schedule Update Meeting Notes

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

From: Elizabeth B Parcell
Sent: Friday, July 17, 2020 3:37 PM
To: 'McCorkle, Richard' <richard_mccorkle@fws.gov>; 'McCloskey, John' <john_mccloskey@fws.gov>; Brian McGurk (Brian.McGurk@deq.virginia.gov) <Brian.McGurk@deq.virginia.gov>; 'scott.smith@dgif.virginia.gov' <scott.smith@dgif.virginia.gov>
Cc: Yayac, Maggie <Maggie.Yayac@hdrinc.com>; 'Kulpa, Sarah' <Sarah.Kulpa@hdrinc.com>; Jonathan M Magalski (jmmagalski@aep.com) <jmmagalski@aep.com>
Subject: Niagara Project Relicensing Study Schedule Update Meeting Notes

Good afternoon,

Attached please find a draft summary of our discussion from a couple weeks ago regarding the updated ILP study schedules and request to FERC for extension of the deadline to file the ISR. We plan to include a copy of this summary in the upcoming FERC filing. Please provide any comments or questions on the attached summary as soon as you can get to it, or no later than the end of next week.

Thanks and happy Friday! Have a great weekend.

Liz



ELIZABETH B PARCELL | PROCESS SUPV
EBPARCELL@AEP.COM | D:540.985.2441 | C:540.529.4191
40 FRANKLIN ROAD SW, ROANOKE, VA 24011

Meeting Summary

Project:	Niagara Hydroelectric Project (FERC No. 2466)
Subject:	ILP Study Schedule Update
Date:	Monday, June 29, 2020
Location:	WebEx (10:00am-11:00am)
Attendees:	Scott Smith (VDGIF) Rick McCorkle (USFWS) John McCloskey (USFWS) Brian McGurk (VDEQ) Jon Magalski (AEP) Liz Parcell (AEP) Sarah Kulpa (HDR) Maggie Yayac (HDR)

Introduction

Liz (AEP) thanked everyone for being available to discuss the Niagara Project and explained that the purpose of the meeting would be to discuss the changes to the ILP study schedule due to COVID-19 travel restrictions and related concerns. Liz noted that a revised schedule was provided in the meeting invite.

Study Schedule Update

- Sarah (HDR) explained that AEP is currently planning on initiating field studies in July and expects to continue field work through the fall, potentially into November if needed. Time-sensitive spring studies that were not able to be completed due to travel restrictions have been re-scheduled for the spring of 2021. AEP is aiming to collect field data this year in support of the bypass reach, aquatic resources, and water quality studies, where doing so is compatible with the remaining study season, and studies that are more baseline characterization in nature are being postponed to 2021. This will allow AEP and their consultants to appropriately allocate resources to priority studies.
- AEP plans on filing the revised schedule with FERC and will also be requesting an extension of time to file the Initial Study Report (from December 6, 2020 to January 11, 2021) and to conduct the Initial Study Report meeting. Sarah noted that this schedule change will not affect the schedule for filing of the Updated Study Report in 2021 or the overall licensing schedule. The extension is being requested to provide more time for AEP and their consultants to develop preliminary or draft study reports for filing with the ISR, following the completion of field activities this fall.
- AEP hopes to file the study schedule update and request for extension of time to file the ISR as soon as possible and is seeking agency feedback on the revised schedule and the request during this call.

- Sarah provided a high level overview of the revised schedule for ILP study activities, as described in the table distributed with the meeting invite and that will be filed with FERC.

Flow and Bypass Reach Aquatic Habitat Study

- LiDAR data and orthoimagery have been captured at the Niagara Project and HDR will be using this information to begin building the hydraulic model to support the Flow and Bypass Reach Aquatic Habitat Study (i.e. identify level logger placement, flow test scenarios, etc.). Additionally, the flow test scenario will be developed and sent to agencies for review and comment in August. Flow tests are scheduled to take place in October as long as the sluice gate replacement construction is complete by that time.

Sluice Gate Replacement/ Draft Non-Capacity Amendment

- The existing sluice gate operating system (hoist) is presently not operational, so the gate is being maintained in an open position to pass a minimum flow of 50 cfs at all times. Minimum flow (i.e., 8 cfs) conditions and the ability to control the release through the sluice gate are required to complete fieldwork for the Flow and Bypass Reach Aquatic Habitat Study. This will be achieved through replacement of the existing bottom-hinged leaf-type gate with a pneumatic Obermeyer gate in the existing sluice structure. This maintenance activity is the subject of the draft non-capacity amendment application that AEP distributed to agencies for review in May.
- Construction cannot begin on the replacement sluice gate until FERC has approved the non-capacity amendment. If the sluice gate replacement is not completed as scheduled this fall, fieldwork for the Flow and Bypass Reach Aquatic Habitat Study will be postponed until 2021 (as soon as feasible given Project inflow conditions).
- Sarah noted that to date AEP had received VDEQ and VDGIF's comments on the draft application. USFWS and VDEQ briefly discussed previous intent to perform internal modeling with respect to potential flow releases for the relicensing study, however VDEQ noted that was no longer planned. Liz forwarded to USFWS (Rick and John) a copy of VDEQ's comments on the draft application for reference.
- Rick asked about the capacity of the new Obermeyer gate and if it would be able to provide an appropriate range of minimum flows that may be tested or recommended through the relicensing.
 - Sarah noted that the Obermeyer gate is quite versatile and will be able to release the full range of the existing sluice gate, though likely in a more precise manner, particularly at the low end of flow releases. As shown in the combined minimum flow release plan and report included in the draft non-capacity amendment application, the capacity of the gate goes up to about 300 cfs under the normal reservoir range.
 - **Action Item:** USFWS will provide comments regarding the replacement of the gate within the week. (Note comments were provided by email July 2, 2020.)

- John (USFWS) explained that the threatened and endangered species portion of the Service's review would be best completed by AEP proceeding through the Virginia Field Office's online review process. **Action Item:** John to send the link for the online project review process. (Note link was provided after the call).
 - John explained that this process expedites projects that result in determinations of no effect or not likely to adversely affect listed species.
 - Sarah stated that AEP will initiate the online review process and may file the non-capacity amendment with FERC while this process and any response required from USFWS is pending.
- Scott (VDGIF) and Brian (VDEQ) recommended building more flexibility into the schedule for the Bypass Reach Study due to potential for delay of the fieldwork due to installation of the new gate. **Action Item:** HDR/AEP to update the revised schedule and/or include footnote regarding timing of studies conditioned on sluice gate replacement.

Water Quality Study

- Sarah reviewed the Revised Study Plan (RSP) requirements of the Water Quality Study for the Project (continuous and monthly monitoring at 7 locations).
- Sarah explained that under the updated study schedule water quality monitoring is expected to begin in late July and would proceed through October. HDR and AEP believe this will still sufficiently capture the low flow and high temperature period of the year.
- Discussion of whether the abbreviated monitoring period will be sufficient to complete the Water Quality Study. Scott noted that it would depend on the outcome of the data as to whether or not the shortened period would be representative and useful. Brian asked if the initial year was not sufficient would it be reasonable to do additional field data collection next year. Jon (AEP) noted that the second study season is available through the ILP and that the need for additional data collection would be evaluated and discussed in the ISR and during the ISR Meeting.
- The group concurred it is worthwhile to collect as much data as feasible for the remaining field season.

Fish Community Study

- Sarah explained that the Fish Community Study would still be conducted sometime in August or September (into October if needed). The schedule has not changed. Generally, agencies are interested in the cooler water temperatures and would appreciate AEP targeting a fall study.
- AEP plans on conducting the fall adult Roanoke logperch surveys within the same general timeframe as originally approved in the RSP. However, the time-sensitive spring/early summer adult Roanoke logperch survey would be pushed into next year.

- The young-of-year Roanoke logperch survey is proposed to be completed in the same timeframe as approved in the RSP (August-October 2020). USFWS and VDGIF agreed that minimum (i.e. 8 cfs) flow conditions are not required to complete this survey and that higher bypass reach flows may be more appropriate for this survey. Therefore the gate replacement is not a critical path activity for the aquatic surveys scheduled for this fall.
- The larval Roanoke logperch survey has been rescheduled for next spring.
- HDR plans on providing 2020 results in a preliminary study report that would also include a preliminary desktop impingement and entrainment study. The final Fish Community study report would be prepared at the end of 2021 as part of the Updated Study Report.
- Brief discussion in response to question raised by John (USFWS) about how the larval study results would be integrated into the desktop impingement and entrainment study. Methods for evaluating the results of the larval study have not been determined, as this is not a common licensing study. HDR and AEP do not expect to use USFWS's blade strike model or the larger methodology proposed for the desktop impingement and entrainment study to evaluate larval entrainment.
- Also in support of the desktop impingement and entrainment study, intake velocity measurements are scheduled for completion in 2020.

Benthic Aquatic Resources Study

- The Macroinvertebrate and Crayfish Study will proceed with the fall sampling this year, and the spring survey sampling season is being shifted to 2021.
- The mussel habitat and community survey window has been tightened up (still within the original timeframe proposed in the RSP), scheduled for completion in August – October 2020.

Wetland, Riparian, and Littoral Habitat, Shoreline Stability and Cultural Studies

- Desktop and fieldwork rescheduled for spring-summer 2021.

Recreation Study

- AEP began the online survey data collection in late April 2020 and it will likely extend through the 2021 recreation season.
- In-person observations will be postponed until 2021 to avoid close contact with recreation users and adhere to social distancing guidelines.
- Discussion of how this is likely an irregular recreation usage year (potentially a combination of higher and lower recreation use levels) due to the COVID-19.
- Desktop activities including the recreation flow release assessment are still expected to be completed this year for preliminary reporting in the ISR.
- AEP has an ongoing aesthetic flow documentation task that will wrap up in November.

Other

- AEP plans on submitting an update to FERC shortly and would like to mention that they've consulted with the agencies and that there was verbal agreement that there was no opposition.
- The agencies all agreed that they are in agreement with the schedule adjustments and AEP's request for extension of time to file the ISR.

Yayac, Maggie

Subject: FW: AEP Byllesby-Buck and Niagara ILP schedule updates and ISR extension requests
Attachments: AEP ByllesbyBuck Project Revised ILP Schedule and ISR Extension Request.pdf; AEP Niagara Project Revised ILP Schedule and ISR Extension Request.pdf

From: Jonathan M Magalski [mailto:jmmagalski@aep.com]
Sent: Tuesday, July 28, 2020 8:37 AM
To: Allyson Conner <Allyson.Conner@ferc.gov>
Cc: Elizabeth B Parcell <ebparcell@aep.com>
Subject: AEP Byllesby-Buck and Niagara ILP schedule updates and ISR extension requests

Good morning Allyson,

I hope you are doing well and staying cool. As you may have already seen, yesterday afternoon we filed an ILP schedule update and ISR extension request for Byllesby-Buck and Niagara to the relicensing dockets. As explained in these filings, the COVID-19 crisis and associated travel restrictions and safety precautions cancelation of our spring ILP study seasons. We are finding ways to move forward now and are finally commencing field study activities this week (initiation of water quality monitoring at Niagara). We've developed updated ILP Study Schedules (Attachment 1 of each of the attached filings) and discussed these with the agencies (USFWS, VDEQ, and VDGIF – now VDWR) on conference calls late last month. The agencies were very supportive and glad that we're able to proceed with much of the field data collection this summer and fall. The updated study schedules are now being provided as information to FERC and additional project stakeholders.

The attached filings also formally request extensions of time to file the ISRs (60 days for Byllesby-Buck, 36 days for Niagara). For safety reasons, we are having to push much of our field study activities, as well as in-office post-processing efforts, into the October-November time period. The requested extensions would allow Appalachian and our consultants additional time to develop study summaries and complete evaluations where we are able to based on the data collected, without compromising the overall ILP schedules. We discussed these extension requests with agencies during the ILP schedule update meetings, and the agencies were all supportive of these requests, recognizing the extraordinary circumstances imposed by the pandemic.

Thanks for your attention to these filings, and please don't hesitate to contact me if you have any questions or would like to further discuss. Have a great rest of your week and stay safe.....Jon

JONATHAN M MAGALSKI | ENVIRONMENTAL SPEC CONSULT
[JMMAGALSKI@AEP.COM](mailto:jmmagalski@aep.com) | D:614.716.2240
1 RIVERSIDE PLAZA, COLUMBUS, OH 43215

Yayac, Maggie

Subject: FW: Niagara Hydroelectric Project (VA) -- Filing of ILP Study Progress Report
Attachments: AEP Niagara Project Rev ILP Schedule and ISR Extension Request.pdf

From: Kulpa, Sarah

Sent: Tuesday, July 28, 2020 11:05 AM

To: ACHP - John Eddins <jeddings@achp.gov>; County of Roanoke - David Henderson <dhenderson@roanokecountyva.gov>; County of Roanoke - David Weir <dweir@roanokecountyva.gov>; County of Roanoke - Lindsay Webb <LWEBB@roanokecountyva.gov>; County of Roanoke - Richard Caywood <rcaywood@roanokecountyva.gov>; Friends of the Blue Ridge Parkway - Audrey Pearson <audrey_pearson@friendsbrp.org>; Friends of the Roanoke - Bill Tanger <bill.tanger@verizon.net>; Harold Peterson <harold.peterson@bia.gov>; Kevin Colburn - American Whitewater (kevin@americanwhitewater.org) <kevin@americanwhitewater.org>; Roanoke County Parks - Doug Blount <dblount@roanokecountyva.gov>; Roanoke River Blueway <roanokeriverblueway@gmail.com>; Roanoke Valley Alleghany Regional Commission - Amanda McGee <amcgee@rvarc.org>; Roanoke Valley Greenway - Liz Blecher <liz.belcher@greenways.org>; Smith Mountain Lake Assn - Lorie Smith <TheOffice@SMLAssociation.org>; Town of Vinton - Anita McMillan <amcmillan@vintonVA.gov>; Town of Vinton - Bo Herndon <wherndon@vintonVA.gov>; Town of Vinton - Joey Hiner <jhiner@vintonVA.gov>; Town of Vinton - Kenny Sledd <ksledd@vintonVA.gov>; Tri-County Lakes Administrative Commission - Paula Shoffner <paulas@sml.us.com>; VADEQ - Brian McGurk <Brian.McGurk@deq.virginia.gov>; USEPA - Matthew Lee <lee.matthew@epa.gov>; USFWS <richard_mccorkle@fws.gov>; USFWS - John McCloskey <John_mccloskey@fws.gov>; USGS - Mark Bennett <mrbennet@USGS.gov>; VA Cooperative Fish and Wildlife Research Unit - Paul Angermeier <biota@vt.edu>; VADCR - Lynn Crump <lynn.crump@dcr.virginia.gov>; VADCR - Natural Heritage <nhrefview@dcr.virginia.gov>; VADCR - Robbie Ruhr <Robbie.Rhur@dcr.virginia.gov>; VADEQ - Andrew Hammond <andrew.hammond@deq.virginia.gov>; VADEQ - Anthony Cario <anthony.cario@deq.virginia.gov>; VADEQ - Matthew Link <matthew.link@deq.virginia.gov>; VADEQ - Scott Kudlas <scott.kudlas@deq.virginia.gov>; Virginia Council on Indians - Emma Williams <emma.williams@governor.virginia.gov>; Virginia Department of Conservation and Recreation - Rene Hypes <rene.hypes@dcr.virginia.gov>; Virginia Department of Game and Inland Fisheries - Scott Smith <scott.smith@dgif.virginia.gov>
Cc: Jonathan M Magalski <jmmagalski@aep.com>; Elizabeth B Parcell <ebparcell@aep.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>

Subject: Niagara Hydroelectric Project (VA) -- Filing of ILP Study Progress Report

Niagara Hydroelectric Project Stakeholders:

Appalachian Power Company (Appalachian), a unit of American Electric Power (AEP), is the licensee, owner and operator of the Niagara Hydroelectric Project (FERC No. 2466) (Project) located on the Roanoke River in Roanoke County, Virginia. The Project is operated under a license issued by the Federal Energy Regulatory Commission (FERC). The existing FERC license for the Project expires on February 29, 2024. Appalachian is pursuing a new license for the continued operation of the Project in accordance with FERC's Integrated Licensing Process (ILP).

Pursuant to the ILP, Appalachian filed the first ILP Study Progress Report with the Commission on July 27, 2020. We are notifying stakeholders and distributing an electronic copy of this submittal (attached). The filing can also be viewed online at FERC's eLibrary at http://elibrary.ferc.gov:0/idmws/file_list.asp?document_id=14879369 and will be added to the Project's public relicensing website (<http://www.aephydro.com/HydroPlant/Niagara>) in the coming days.

In addition to summarizing progress on ILP studies to date, this filing serves to inform FERC and Project stakeholders of revised timeframes for conducting certain ILP study activities, given schedule modifications driven by the ongoing COVID-19 pandemic. This filing also formally requests a brief extension of time from FERC to file the Initial Study Report at the end of this study year.

On behalf of Appalachian, I hope this email finds you in good health, and thank you for your understanding as we navigate challenging conditions. Should you have any questions regarding this filing, please contact Jon Magalski with AEP at (614) 716-2240 or jmmagalski@aep.com.

Thank you,

Sarah Kulpa
Project Manager

HDR
440 S. Church Street, Suite 900
Charlotte, NC 28202-2075
D 704.248.3620 **M** 315.415.8703
sarah.kulpa@hdrinc.com

hdrinc.com/follow-us

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Appalachian Power Company

Project No. 2466-035

NOTICE OF APPLICATION FOR AMENDMENT OF LICENSE, SOLICITING
COMMENTS, MOTIONS TO INTERVENE, AND PROTESTS

(July 29, 2020)

Take notice that the following hydroelectric application has been filed with the Commission and is available for public inspection:

- a. Type of Proceeding: Application non-capacity amendment of license
- b. Project No.: 2466-035
- c. Date Filed: July 15, 2020
- d. Licensee: Appalachian Power Company
- e. Name of Project: Niagara Hydroelectric Project
- f. Location: The project is located on the Roanoke River in Roanoke County, Virginia.
- g. Filed Pursuant to: Federal Power Act, 16 USC 791a - 825r.
- h. Licensee Contact: Elizabeth Parcell, Appalachian Power Company, PO Box 2021, Roanoke, VA 24011, (540) 985-2441 ebparcell@aep.com
- i. FERC Contact: Rebecca Martin, (202) 502-6012, Rebecca.martin@ferc.gov
- j. Deadline for filing comments, interventions, and protests Deadline for filing comments, motions to intervene, and protests: **August 28, 2020.**

The Commission strongly encourages electronic filing. Please file comments, motions to intervene, and protests using the Commission's eFiling system at <http://www.ferc.gov/docs-filing/efiling.asp>. Commenters can submit brief

comments up to 6,000 characters, without prior registration, using the eComment system at <http://www.ferc.gov/docs-filing/ecomment.asp>. You must include your name and contact information at the end of your comments. For assistance, please contact FERC Online Support at FERCOnlineSupport@ferc.gov, (866) 208-3676 (toll free), or (202) 502-8659 (TTY). In lieu of electronic filing, you may submit a paper copy. Submissions sent via the U.S. Postal Service must be addressed to: Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, 888 First Street NE, Room 1A, Washington, DC 20426. Submissions sent via any other carrier must be addressed to: Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, 12225 Wilkins Avenue, Rockville, Maryland 20852. The first page of any filing should include docket number P-2466-035. Comments emailed to Commission staff are not considered part of the Commission record.

The Commission's Rules of Practice and Procedure require all intervenors filing documents with the Commission to serve a copy of that document on each person whose name appears on the official service list for the project. Further, if an intervenor files comments or documents with the Commission relating to the merits of an issue that may affect the responsibilities of a particular resource agency, they must also serve a copy of the document on that resource agency.

- k. **Description of Request:** The applicant proposes to replace the existing bottom-hinged, leaf-type gate and hoist system in the sluice structure at the dam with a bottom-hinged, inflatable Obermeyer (pneumatically actuated) gate and operating system. The gate replacement is needed to improve project operations and allow for remote operation to directly control the reservoir surface elevation and provide required minimum flows. No ground disturbing activities are proposed.
- l. **Locations of the Application:** This filing may be viewed on the Commission's website at <http://www.ferc.gov> using the "eLibrary" link. Enter the docket number excluding the last three digits in the docket number field to access the document. You may also register online at <http://www.ferc.gov/docs-filing/esubscription.asp> to be notified via email of new filings and issuances related to this or other pending projects. For assistance, call 1-866-208-3676 or e-mail FERCOnlineSupport@ferc.gov, for TTY, call (202) 502-8659. Agencies may obtain copies of the application directly from the applicant.
- m. **Individuals desiring to be included on the Commission's mailing list** should so indicate by writing to the Secretary of the Commission.
- n. **Comments, Protests, or Motions to Intervene:** Anyone may submit comments, a protest, or a motion to intervene in accordance with the requirements of Rules of Practice and Procedure, 18 CFR 385.210, .211, .214, respectively. In determining

the appropriate action to take, the Commission will consider all protests or other comments filed, but only those who file a motion to intervene in accordance with the Commission's Rules may become a party to the proceeding. Any comments, protests, or motions to intervene must be received on or before the specified comment date for the particular application.

- o. Filing and Service of Documents: Any filing must (1) bear in all capital letters the title "COMMENTS", "PROTEST", or "MOTION TO INTERVENE" as applicable; (2) set forth in the heading the name of the applicant and the project number of the application to which the filing responds; (3) furnish the name, address, and telephone number of the person commenting, protesting or intervening; and (4) otherwise comply with the requirements of 18 CFR 385.2001 through 385.2005. All comments, motions to intervene, or protests must set forth their evidentiary basis. Any filing made by an intervenor must be accompanied by proof of service on all persons listed in the service list prepared by the Commission in this proceeding, in accordance with 18 CFR 385.2010.

Kimberly D. Bose,
Secretary.

Yayac, Maggie

Subject: FW: [EXTERNAL] Niagara Project Relicensing Study Schedule Update Meeting Notes

From: McCloskey, John <john_mccloskey@fws.gov>

Sent: Monday, August 3, 2020 3:12 PM

To: Elizabeth B Parcell <ebparcell@aep.com>

Cc: McCorkle, Richard <richard_mccorkle@fws.gov>

Subject: Re: [EXTERNAL] Niagara Project Relicensing Study Schedule Update Meeting Notes

This is an **EXTERNAL** email. **STOP. THINK** before you CLICK links or OPEN attachments. If suspicious please click the 'Report to Incidents' button in Outlook or forward to incidents@aep.com from a mobile device.

Liz,

The Fish and Wildlife Service (Rick and myself) have reviewed the meeting notes from the ILP Study Schedule Update on June 29, 2020. We don't have any comments. The meeting notes provide an accurate summary of what was discussed.

John.

John McCloskey
Fish and Wildlife Biologist
U.S. Fish and Wildlife Service
6669 Short Lane
Gloucester, VA 23061
T: (804) 824-2404
F: (804) 693-9032
Visit us at <http://www.fws.gov/northeast/virginiafield>

From: Elizabeth B Parcell <ebparcell@aep.com>

Sent: Friday, July 17, 2020 3:37 PM

To: McCorkle, Richard <richard_mccorkle@fws.gov>; McCloskey, John <john_mccloskey@fws.gov>; Brian McGurk (Brian.McGurk@deq.virginia.gov) <Brian.McGurk@deq.virginia.gov>; scott.smith@dgif.virginia.gov <scott.smith@dgif.virginia.gov>

Cc: Yayac, Maggie <Maggie.Yayac@hdrinc.com>; Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; Jonathan M Magalski <jmmagalski@aep.com>

Subject: [EXTERNAL] Niagara Project Relicensing Study Schedule Update Meeting Notes

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

Good afternoon,

Attached please find a draft summary of our discussion from a couple weeks ago regarding the updated ILP study schedules and request to FERC for extension of the deadline to file the ISR. We plan to include a copy of this summary in the upcoming FERC filing. Please provide any comments or questions on the attached summary as soon as you can get to it, or no later than the end of next week.

Thanks and happy Friday! Have a great weekend.

Liz

ELIZABETH B PARCELL | PROCESS SUPV
EBPARCELL@AEP.COM | D:540.985.2441 | C:540.529.4191
40 FRANKLIN ROAD SW, ROANOKE, VA 24011

FEDERAL ENERGY REGULATORY COMMISSION

WASHINGTON, D.C. 20426

August 10, 2020

OFFICE OF ENERGY PROJECTS

Project No. 2466-034 – Virginia
Niagara Hydroelectric Project
Appalachian Power Company

VIA Electronic Mail

Jonathan Magalski
Environmental Specialist Consultant
American Electric Power Services Corporation
1 Riverside Plaza
Columbus, OH 43215
jmmagalski@aep.com

**Subject: Revised Process Plan and Schedule for the Niagara Hydroelectric Project
No. 2466**

Dear Mr. Magalski:

On July 9, 2019, the Commission issued a process plan and schedule under the Integrated Licensing Process (ILP) for Appalachian Power Company's (Appalachian) Niagara Hydroelectric Project No. 2466 (Niagara Project). The process plan and schedule set pre-filing milestones and deadlines for, among other things, filing study reports, requesting modifications to the approved study plan, filing a preliminary licensing proposal (or draft license application), and filing the final license application.

On November 6, 2019, Appalachian filed a revised study plan (RSP) that included eight proposed studies in support of its intent to relicense the project. On December 6, 2019, the Commission issued a study plan determination for the project approving Appalachian's RSP with staff-recommended modifications.

On July 27, 2020, Appalachian filed its first quarterly study progress report, an updated ILP study schedule, and a request for an extension of time to file the initial study report (ISR) to account for the effects of the Coronavirus pandemic. Appalachian states that current restrictions on non-essential travel and safety considerations for its staff, who would be travelling for and performing the fieldwork, have prevented several of the studies from taking place in the spring and summer of 2020, as originally scheduled in the RSP. Appalachian anticipates commencing fieldwork for a number of studies in the

fall of 2020; however, multiple season-sensitive studies must be delayed until the spring of 2021.¹ On June 29, 2020, Appalachian consulted the U.S. Fish and Wildlife Service, Virginia Department of Wildlife Resources, Virginia Department of Conservation and Recreation, and the Virginia Department of Environmental Quality via conference call to discuss potential changes to the study schedule. All participants concurred with Appalachian's proposed schedule revisions.

Specifically, Appalachian requests that the Commission revise the process plan and schedule to allow Appalachian to file the ISR on January 11, 2021. Appalachian states that it would not be feasible to complete the fieldwork, study reports, and ISR by the current December 5, 2020 deadline. Appalachian states that a deadline extension would provide sufficient time to conduct fieldwork during the fall of 2020, to develop the associated draft study reports, and to finalize a comprehensive ISR. The process plan and schedule for the second study season in 2021 would remain unchanged.

To allow Appalachian additional time to complete the first season's field studies, develop the draft study reports, and complete the ISR, the request to extend the due date for filing the ISR to January 11, 2021 is granted. The revised process plan and schedule for the Niagara Project is attached.

If you have any questions, please contact Allyson Conner at (202) 502-6082 or allyson.conner@ferc.gov.

Sincerely,

Vince Yearick
Director
Division of Hydropower Licensing

Attachment: Revised Process Plan and Schedule

¹ See Attachment 1, ILP Study Schedule Update, of Appalachian's request filed on July 27, 2020.

ATTACHMENT 1

NIAGARA PROJECT REVISED PROCESS PLAN AND SCHEDULE

Shaded milestones are unnecessary if there are no study disputes. If the due date falls on a weekend or holiday, the due date is the following business day. Early filings or issuances will not result in changes to these deadlines.

Responsible Party	Pre-Filing Milestone	Date	FERC Regulation
Appalachian	First Study Season	Spring - Fall 2020	5.15(a)
Appalachian	File Initial Study Report	1/11/2021	5.15(c)(1)
All Stakeholders	Initial Study Report Meeting	1/26/2021	5.15(c)(2)
Appalachian	File Initial Study Report Meeting Summary	2/10/2021	5.15(c)(3)
All Stakeholders	File Disagreements/Requests to Amend Study Plan	3/12/2021	5.15(c)(4)
All Stakeholders	File Responses to Disagreements/Amendment Requests	4/11/2021	5.15(c)(5)
FERC	Issue Director's Determination on Disagreements/Amendments	5/11/2021	5.15(c)(6)
Appalachian	Second Study Season	Spring - Fall 2021	5.15(a)
Appalachian	File Preliminary Licensing Proposal (or Draft License Application)	10/1/2021	5.16(a)-(c)
All Stakeholders	File Comments on Preliminary Licensing Proposal (or Draft License Application)	12/30/2021	5.16(e)
Appalachian	File Updated Study Report	12/5/2021	5.15(f)
All Stakeholders	Updated Study Report Meeting	12/20/2021	5.15(f)
Appalachian	File Updated Study Report Meeting Summary	1/4/2022	5.15(f)
Appalachian	File Final License Application	2/28/2022	5.17
All Stakeholders	File Disagreements/Requests to Amend Study Plan	2/3/2022	5.15(f)

Project No. 2466-034

4

Responsible Party	Pre-Filing Milestone	Date	FERC Regulation
Appalachian	Issue Public Notice of Final License Application Filing	3/14/2022	5.17(d)(2)
All Stakeholders	File Responses to Disagreements/Amendment Requests	3/5/2022	5.15(f)
FERC	Issue Director's Determination on Disagreements/Amendments	4/4/2022	5.15(f)