



DRAFT LICENSE APPLICATION

Volume II of IV

Exhibit E Appendix A- Part 2 of 3

Niagara Hydroelectric Project
(FERC No. 2466)

October 1, 2021

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 light grey rectangle is at the bottom left. A black rectangle is at the bottom right. The text is positioned to the right of the red rectangle.

Appendix A

Consultation Summary

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September 1, 2020

To: Attached Section 106 Consultation Distribution List

Subject: **Niagara Hydroelectric Project (FERC No. 2466)
Consultation Regarding the Area of Potential Effects (APE)**

Dear Sir or Madam:

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 (Figure 1). The Project is located about 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. Section 106 of the National Historic Preservation Act (Section 106) requires the Commission to take into account the effects of issuing a new license for the continued operation of the Project on historic properties and to afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment¹. Pursuant to the regulations implementing Section 106, Appalachian is consulting with the Virginia State Historic Preservation Officer (SHPO), ACHP, Indian Tribes, and other parties included on the attached Section 106 Consultation Distribution List to determine and document the Area of Potential Effects (APE) for Project relicensing.

Background

Pursuant to the regulations implementing Section 106², the Commission has determined that issuing a new license for the Niagara Project is considered an undertaking with the potential to effect historic properties listed in or eligible for inclusion in the National Register of Historic Places.

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

¹ 54 United States Code § 306108

² 36 C.F.R. Part 800

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.

Concurrent with the January 28, 2019, PAD and NOI required by the ILP, Appalachian requested designation as the Commission's non-federal representative for carrying out informal consultation pursuant to Section 106. The Commission granted Appalachian's request by notice dated March 26, 2019. While Appalachian is authorized to consult in an informal capacity, the Commission remains legally responsible for all agency findings and determinations under Section 106.

On November 6, 2019, Appalachian filed a Revised Study Plan (RSP) with the Commission describing the studies that the Licensee is proposing to conduct in support of relicensing the Project, including a Cultural Resources Study. As described in the RSP, Appalachian preliminarily proposed to define the Study Area/APE to include lands within the FERC-approved Project boundary. It also includes any lands outside of the Project Boundary where cultural resources may be affected by Project-related activities that are conducted in accordance with the FERC license.

Request for Concurrence

At this time, Appalachian is seeking concurrence from the Virginia SHPO, Indian Tribes, ACHP, and other parties included on the attached Section 106 Consultation Distribution List regarding the APE as defined above and delineated on the attached map (Figure 1). Appalachian believes that this definition is appropriate, as the APE currently encompasses all lands necessary for Project operations. If the results of consultation or studies conducted in support of relicensing indicate that the Project is having a potential effect on lands outside the APE, or if Appalachian proposes to undertake Project-related activities outside of the proposed APE, Appalachian will consult with the parties on the attached Section 106 Consultation Distribution List to refine the geographic extent of the APE and will provide FERC with consultation documentation.

Appalachian respectfully requests that the consulting parties provide written concurrence regarding the APE presented herein within 30 days of the date of this letter (e.g., on or before October 1, 2020). If there are any questions regarding the proposed APE or the relicensing

process, please do not hesitate to contact me at me at (614) 716-2240 or by email
jmmagalski@aep.com.

Sincerely,

A handwritten signature in black ink, reading "Jonathan M. Magalski". The signature is written in a cursive, flowing style.

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

Attachment: Niagara Hydroelectric Project Section 106 Consultation Distribution List
Figure 1 – Map of Proposed APE

Niagara Hydroelectric Project (FERC No. 2466)
Section 106 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

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

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

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

State Agencies

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

Tribes

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

Wenonah Haire
Tribal Historic Preservation Officer
Catawba Indian Nation
1536 Tom Steven Rd.
Rock Hill, SC 29730

Deborah Dotson
President
Delaware Nation
PO Box 825
Anadarko, OK 73005

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

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

Chief Richard Sneed
Eastern Band of Cherokee Indians
P.O. Box 455
Cherokee, NC 28719

Elizabeth Toombs
Tribal Historic Preservation Officer
Cherokee Nation
22361 Bald Hill Road
Tahlequah, OK 74464
elizabeth-toombs@cherokee.org

Non-Governmental

Forrest Morgan
President
Archaeological Society of Virginia
12106 Weyanoke Rd.
Charles City, VA 23030
(804) 829-2272

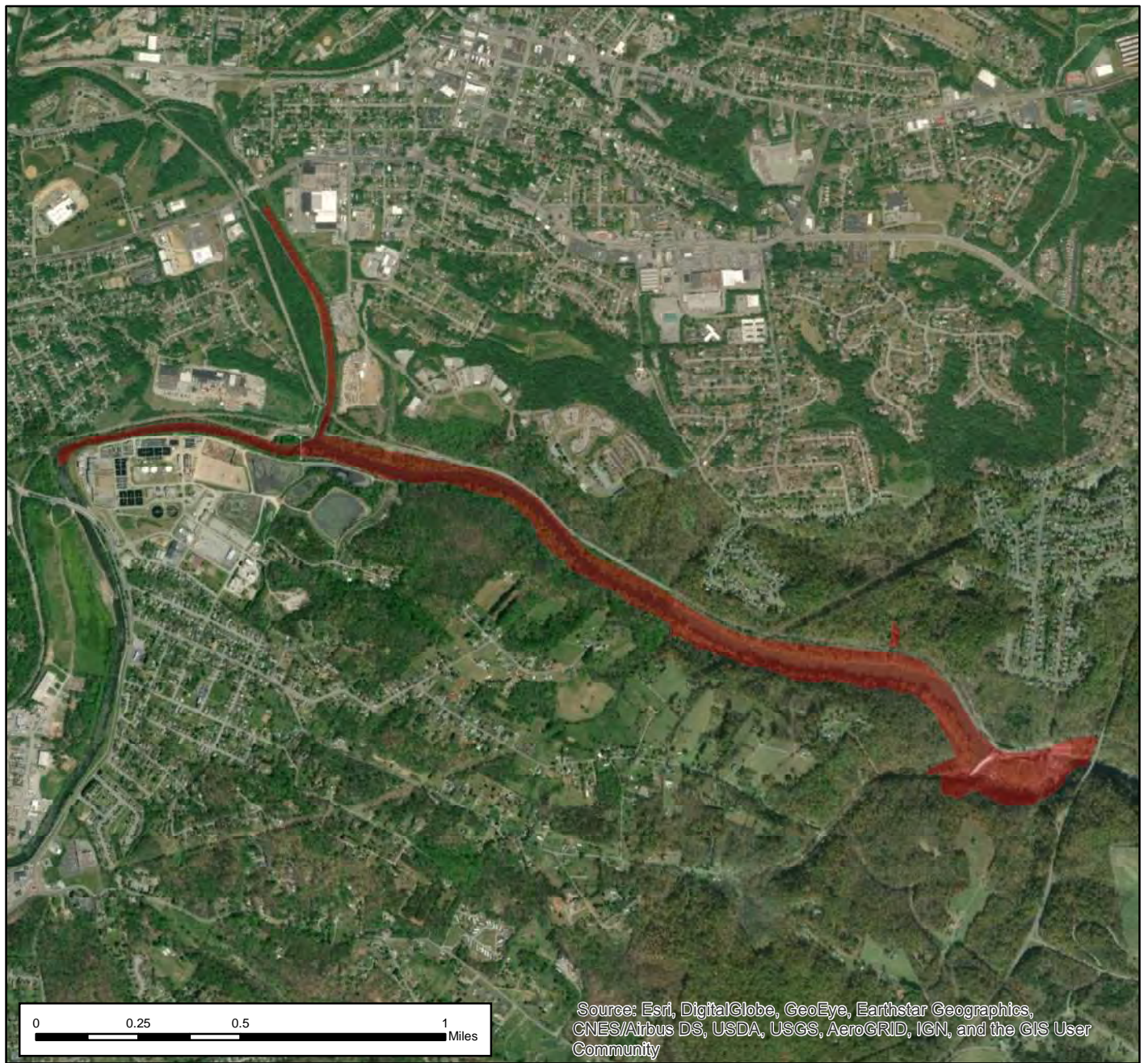


Figure 1. Proposed Niagara Study Area/APE.
Base Map: ESRI World Imagery.



Yayac, Maggie

Subject: FW: DCR Cave Protection Act Permit for Terracon project
Attachments: 44RN170 Excavation Permit Request 9-8-20.pdf

From: Green, William G <Bill.Green@terracon.com>
Sent: Tuesday, September 8, 2020 11:55 AM
To: Orndorff, William <wil.orndorff@dcv.virginia.gov>
Cc: Bulluck, Jason <jason.bulluck@dcv.virginia.gov>; Kirchen, Roger <roger.kirchen@dhr.virginia.gov>; Jonathan M Magalski <jmmagalski@aep.com>; Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>
Subject: RE: DCR Cave Protection Act Permit for Terracon 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.

Good morning, Wil,

Attached is our request for an excavation permit for archaeological site 44RN170, a rockshelter located along the southern bank of the Roanoke River in Roanoke. If you have any questions about the permit request, please don't hesitate to call or e-mail me. Thank you.

Bill Green, M.A., RPA # 10387
Principal
Department Manager | Natural and Cultural Resource Services

Terracon
D (803) 403 1256 | M (803) 354 8126

From: Orndorff, William [mailto:wil.orndorff@dcv.virginia.gov]
Sent: Friday, September 4, 2020 1:47 PM
To: Green, William G <Bill.Green@terracon.com>; Bulluck, Jason <jason.bulluck@dcv.virginia.gov>; Kirchen, Roger <roger.kirchen@dhr.virginia.gov>
Subject: DCR Cave Protection Act Permit for Terracon project

Hi Bill,

DCR does not have a formal application for you to complete. We are in the process of developing an online application, as more people seem to be complying with permitting requirements these days, and we appreciate that.

For now, just send me as an email attachment a letter with accompanying map describing what your proposed activities will be. Please include a statement that you will provide us with a summary of your investigations including copies of any photographs or other media. We will need specific location or area, names of cave, and period of performance. Once we have reviewed this, we will issue a letter to you on official DCR letterhead that will serve as your permit. Please note we will also have to get concurrence from Roger Kirchen or the Department of Historic Resources, whom you first contacted.

Thanks again, and I look forward to reviewing your permit request.

Sincerely,

Wil Orndorff



MONACAN INDIAN NATION

9/16/2020

AEP

**Jonathan Magalski
1 Riverside Plaza
Columbus, OH 43215**

RE: Request for Consulting Party Status on Niagara Hydroelectric Project, FERC #2466
(Roanoke, VA)

Dear Mr. Magalski,

Thank you for contacting us regarding the proposed project in Roanoke County, VA.

The Monacan Indian Nation is a federally recognized sovereign tribe, headquartered on Bear Mountain in Amherst County. Citizens of the Nation are descended from Virginia and North Carolina Eastern Siouan cultural and linguistic groups, and our ancestral territory includes Virginia west of the fall line of the rivers, sections of southeastern West Virginia, and portions of northern North Carolina. At this time, the active Monacan consultation areas include:

Virginia: Albemarle, Alleghany, Amherst, Appomattox, Augusta, Bath, Bedford, Bland, Buchanan, Buckingham, Campbell, Carroll, Charlotte, Clarke, Craig, Culpepper, Cumberland, Dickenson, Floyd, Fluvanna, Franklin, Frederick, Giles, Goochland, Grayson, Greene, Halifax, Henry, Highland, Lee, Loudoun, Louisa, Madison, Mecklenburg, Montgomery, Nelson, Orange, Page, Patrick, Pittsylvania, Powhatan, Prince Edward, Pulaski, Rappahannock, Roanoke, Rockbridge, Rockingham, Russell, Scott, Shenandoah, Smyth, Tazewell, Warren, Washington, Wise, and Wythe Counties, and all contiguous cities.

West Virginia: Greenbrier, Mercer, Monroe, Pendleton, Pocahontas, and Summers Counties.

North Carolina: Alamance, Caswell, Granville, Orange, Person, Rockingham, Vance, and Warren Counties.

At this time, the Nation does not wish to actively participate in this consultation project, because:

	This project is outside our ancestral territory
X	The project's impacts are anticipated to be minimal
	The project is more closely related to _____, which should be contacted to participate in consultation
	The tribal office does not currently have the capacity to participate in this project
	Other:




MONACAN INDIAN NATION

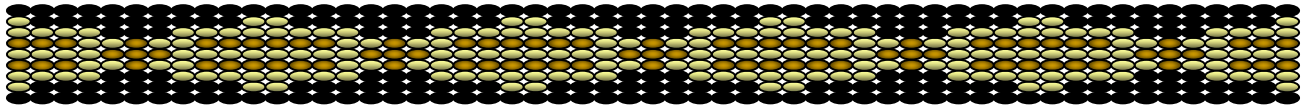
However, the Nation requests to be contacted if:

- Sites associated with native history may be impacted by this project;
- Adverse effects associated with this project are identified;
- Human remains are encountered during this project;
- Unanticipated native cultural remains are encountered during this project;
- Other tribes consulting on this project cease consultation; or
- The project size or scope becomes larger or more potentially destructive than currently described.

Please do not make any assumptions about future consultation interests based on this decision, as priorities and information may change. We request that you send any future consultation communications in electronic form to TribalOffice@MonacanNation.com AND hard copy to PO Box 960, Amherst, VA 24521. We appreciate your outreach to the Monacan Indian Nation and look forward to working with you in the future.

Respectfully,


Chief Kenneth Branham
Monacan Indian Nation



Catawba Indian Nation
Tribal Historic Preservation Office
1536 Tom Steven Road
Rock Hill, South Carolina 29730

Office 803-328-2427
Fax 803-328-5791

September 28, 2020

Attention: Jonathan M. Magalski
Appalachian Power Company
P.O. Box 2021
Roanoke, VA 24022

Re. THPO #	TCNS #	Project Description
2020-1169-2		Niagara Hydroelectric Project (FERC No. 2466)

Dear Mr. Magalski,

The Catawba have no immediate concerns with regard to traditional cultural properties, sacred sites or Native American archaeological sites within the boundaries of the proposed project areas. **However, the Catawba are to be notified if Native American artifacts and / or human remains are located during the ground disturbance phase of this project.**

If you have questions please contact Caitlin Rogers at 803-328-2427 ext. 226, or e-mail Caitlin.Rogers@catawba.com.

Sincerely,

Wenonah G. Haire
Tribal Historic Preservation Officer



COMMONWEALTH of VIRGINIA

Matt Strickler
Secretary of Natural Resources

Department of Historic Resources
2801 Kensington Avenue, Richmond, Virginia 23221

Julie V. Langan
Director

Tel: (804) 367-2323
Fax: (804) 367-2391
www.dhr.virginia.gov

October 2, 2020

Mr. Jonathan M. Magalski
American Electric Power Services Corporation
1 Riverside Plaza
Columbus, Ohio 43215

Re: Niagara Hydroelectric Project (FERC No. 2466)
Roanoke, VA
DHR File No. 2020 - 0437

Dear Mr. Magalski:

The Department of Historic Resources (DHR) has received your request for review of a proposed area of potential effects (APE) for the run-of-river 2.4-megawatt Niagara Hydroelectric Project (Project) located on the Roanoke River in Roanoke County, Virginia, pursuant to 36 Code of Federal Regulations (CFR) Part 800, Section 106 of the National Historic Preservation Act of 1966, as amended. Appalachian Power Company (Appalachian), a unit of American Electric Power (AEP), is the Licensee, owner, and operator of the project. Appalachian is pursuing a new license for the Project pursuant to the Federal Energy Regulatory Commission's (FERC) Integrated Licensing Process, as described in 18 CFR Part 5. The existing FERC license took effect on April 4, 2020 and will expire February 29, 2024.

As described in the Revised Study Plan (RSP) received by our office on September 24, 2020, and echoed in your letter received by our office on September 14, 2020

The APE includes all lands within the Project boundary. The APE also includes any lands outside the Project boundary where cultural resources may be affected by Project-related activities that are conducted in accordance with the FERC license. The Project boundary encompasses all lands that are necessary for Project purposes, all Project-related operations, potential enhancement measures, and routine maintenance activities associated with the implementation of a license issued by the Commission are expected to take place within the Project boundary.

If the results of consultation or studies conducted in support of relicensing indicate that the Project is having a potential effect on lands outside the APE, or if Appalachian proposes to undertake Project-related activities outside of the proposed APE, Appalachian will consult with the parties on the attached Section 106 Consultation Distribution List to refine the geographic extent of the APE and will provide FERC with consultation documentation.

Western Region Office
962 Kime Lane
Salem, VA 24153
Tel: (540) 387-5443
Fax: (540) 387-5446

Northern Region Office
5357 Main Street
PO Box 519
Stephens City, VA 22655
Tel: (540) 868-7029
Fax: (540) 868-7033

Eastern Region Office
2801 Kensington Avenue
Richmond, VA 23221
Tel: (804) 367-2323
Fax: (804) 367-2391

Based on these statements and our review of the information provided, DHR concurs with the proposed definition of the APE.

The RSP states that an architectural survey is not proposed within the APE since the Project has previously been determined to be ineligible for the National Register of Historic Places. Given that almost 30 years has passed since the Niagara Power Station/Dam (DHR ID No. 080-0095) was recommended not eligible for listing in 1991, DHR recommends that the resource's eligibility be reevaluated. DHR also recommends consideration of the Norfolk Southern/The Virginian Railway (DHR ID No. 128-6160), determined potentially eligible for NRHP listing in 2008 and located adjacent to the western portion of the APE, as well as the unevaluated bridge (DHR ID No. 080-5161-0084) spanning the Roanoke River just east of the APE, a contributing resource to the Blue Ridge Parkway Historic District (DHR ID No. 080-5161).

Thank you for contacting our office and we look forward to continuing consultation regarding this project. If you have any questions regarding these comments, please do not hesitate to contact me at 804-482-6103 or email Tim.Roberts@dhr.virginia.gov.

Sincerely,



Timothy Roberts, Archaeologist
Review and Compliance Division

Western Region Office
962 Kime Lane
Salem, VA 24153
Tel: (540) 387-5443
Fax: (540) 387-5446

Northern Region Office
5357 Main Street
PO Box 519
Stephens City, VA 22655
Tel: (540) 868-7029
Fax: (540) 868-7033

Eastern Region Office
2801 Kensington Avenue
Richmond, VA 23221
Tel: (804) 367-2323
Fax: (804) 367-2391



PAMUNKEY INDIAN TRIBE

Terry Clouthier
Cultural Resource
Director

TRIBAL GOVERNMENT
Tribal Office

1054 Pocahontas Trail
King William, VA 23086

(804) 843-2109
FAX (866) 422-3387

THPO File Number: 2021-20

Date: 10/05/2020

Johnathan M. Magalski
Environmental Specialist Consultant
Appalachian Power
American Electric Power Services Corporation
1 Riverside Plaza
Columbus, Ohio 43215

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

Dear Mr. Magalski,

Thank you for contacting the Pamunkey Indian Tribe regarding the proposed undertaking related to reissuing the license for Niagara Hydroelectric Project in Roanoke, Virginia. My office offers the following comments.

My office agrees with the delineated area of potential effect (APE) to address cultural and historic properties.

My office looks forward to reviewing these cultural studies once they are completed.

Thank you for considering our cultural heritage in your decision-making process.

Please submit all correspondence via email whenever possible to the email below.

If you have any questions feel free to email me at terry.clouthier@pamunkey.org.

Sincerely,



The Delaware Nation
Historic Preservation Department
31064 State Highway 281
Anadarko, OK 73005
Phone (405)247-2448

November 9, 2020

To Whom It May Concern:

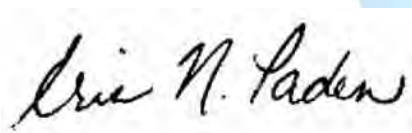
The Delaware Nation Historic Preservation Department received correspondence regarding the following referenced project(s).

Project(s): Niagara Hydroelectric Project (FERC No. 2466)

Our office is committed to protecting tribal heritage, culture and religion with particular concern for archaeological sites potentially containing burials and associated funerary objects.

The Lenape people occupied the area indicated in your letter prior to European contact until their eventual removal to our present locations. According to our files, the location of the proposed project does not endanger cultural, or religious sites of interest to the Delaware Nation. **Please continue with the project as planned** keeping in mind during construction should an archaeological site or artifacts inadvertently be uncovered, all construction and ground disturbing activities should immediately be halted until the appropriate state agencies, as well as this office, are notified (within 24 hours), and a proper archaeological assessment can be made.

Please note the Delaware Nation, the Delaware Tribe of Indians, and the Stockbridge Munsee Band of Mohican Indians are the only Federally Recognized Delaware/Lenape entities in the United States and consultation must be made only with designated staff of these three tribes. We appreciate your cooperation in contacting the Delaware Nation Historic Preservation Office to conduct proper Section 106 consultation. Should you have any questions, feel free to contact our offices at 405-247-2448 ext. 1403.



Erin Paden
Director of Historic Preservation
Delaware Nation
31064 State Highway 281
Anadarko, OK 73005
Ph. 405-247-2448 ext. 1403
epaden@delawarenation-nsn.gov

Yayac, Maggie

Subject: FW: Niagara Hydroelectric Project (VA) -- Filing of ILP Study Progress Report
Attachments: Niagara Second Quarterly Progress Report.pdf

From: Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>

Sent: Tuesday, October 27, 2020 5:29 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>; 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>; 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: Yayac, Maggie <Maggie.Yayac@hdrinc.com>; 'ebparcell@aep.com' <ebparcell@aep.com>; 'jmmagalski@aep.com' <jmmagalski@aep.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 second ILP Study Progress Report with the Commission today. 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 and will be added to the Project's public relicensing website (<http://www.aephydro.com/HydroPlant/Niagara>) in the coming days.

Thank you for your continued attention to this Project and for your understanding as we navigated a challenging field season. 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



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

October 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)
Second Quarterly Study Progress 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).

On July 27, 2020, Appalachian filed with FERC the First Quarterly Study Progress Report, an Updated ILP Study Schedule, and a Request for Extension of Time to file the Initial Study Report. On August 10, 2020, FERC approved this request. As established by the Updated ILP Study Schedule filed on July 27, the Roanoke Logperch Larval Study (a component of the Fish Community Study) and the Wetland, Riparian, and Littoral Habitat Characterization and Shoreline Stability Assessment Studies are scheduled for 2021.

As proposed in Appalachian's November 6, 2019 Revised Study Plan (RSP) and approved in the Commission's December 6, 2019 Study Plan Determination (SPD), Appalachian hereby files the Second Quarterly Study Progress Report for the Project. This progress report describes the activities performed since the First Quarterly Study Progress Report and in quarter 3 (Q3) of 2020, as well as ILP activities generally expected to be conducted in quarter 4 (Q4) of 2020. Unless otherwise described, all relicensing studies are being conducted in conformance with the approved RSP and the Commission's SPD.

General Updates

- As authorized by FERC order dated September 2, 2020, Appalachian is in the process of replacing the existing bottom-hinged, leaf type gate and hoist system in the Project's sluice structure with a bottom-hinged, inflatable Obermeyer (pneumatically actuated) gate and operating system. The existing gate hoist system has been inoperable in 2020 and was maintained in an open position to provide a flow of at least 50 cfs (the required minimum flow for periods when the powerhouse is not generating) at all times. The gate replacement project was originally scheduled for completion in September 2020. The gate replacement project has encountered construction delays associated with the dewatering method for the sluice gate structure and is currently scheduled for completion by mid-November 2020.
- The Q3 field sampling efforts were impacted by periodic heavy storm events which resulted in prevailing high base flow conditions in the Roanoke River watershed. This was further influenced by Hurricane Sally. The study-specific protocols for sampling fish, mussels, and benthic macroinvertebrate communities (referenced in the RSP) provide guidance on establishing the appropriate target flow scenarios to support sampling efforts in a way that is safe and that will result in quality, representative data. The timing and frequency of the storm events resulted in high flow scenarios delaying field crews. Schedule deviations for the individual studies are discussed below in the study specific Q3 progress updates.
- In Q4 2020, data from the on-going field work and studies will be analyzed and summarized in support of the Initial Study Report (ISR) to be filed with FERC on January 11, 2021.

Flow and Bypass Reach Aquatic Habitat Study

- Desktop aquatic habitat/substrate mapping is complete.
- Hydraulic model development progress:
 - Preliminary terrain mesh has been developed.
 - Habitat Suitability Index curves and information for the guilds have been compiled for future incorporation into the model.
- Field verification of desktop aquatic habitat/substrate mapping, bypass reach test flows, and particle size distribution assessments will be conducted after the sluice gate replacement project is complete as these activities require controlled flows in the bypass reach (via the sluice gate). The sluice gate replacement project is currently scheduled to be completed in Q4 2020, however, higher inflows typically occur over the winter and early

spring months which will likely result in postponement of field activities associated with this study until early-summer 2021. Model development is then expected to be completed in Q3 2021.

- Appalachian plans to consult with the applicable agencies at the ISR meeting to review proposed test flow scenarios that will be used to support model calibration and validation activities.

Water Quality Study

- Water quality instruments (i.e., dissolved oxygen [DO] and water temperature sondes) and level loggers were deployed at the locations identified in the RSP the week of July 27, 2020.
- Data from these instruments were subsequently downloaded on four separate occasions, generally every two to three weeks. Due to instrument malfunction, data was not captured from August 12-26, 2020.
- As proposed in the RSP, water quality data downloads were to occur on a monthly basis; however, significant biofouling was observed at the instruments located in the reservoir downstream from Tinker Creek. Data download and instrument maintenance frequency was modified to a two-week interval; however, the biofouling has resulted in several additional time periods where continuous water quality data is not available at this location.
- During instrument downloads, instantaneous water quality measurements were collected using a handheld multi-parameter data sonde (i.e., hydrolab). The instantaneous water quality data will be used to corroborate and/or adjust data collected by the continuous water quality data sondes.
- Water quality data collection as described in the RSP is scheduled to continue through the end of October 2020, at which time data from the instruments will be downloaded and the instruments will be demobilized from the Project.

Fish Community Study

- Field data collection for the general fish community study was initiated in September 2020 with all but three sites being completed before sampling was interrupted due to increasing precipitation in the watershed. The fish community study sampling was completed the week of October 19, 2020 after flows returned to targeted levels and allowed for safe collection of representative samples.
- The adult and young-of-year Roanoke Logperch sampling effort was postponed to September 2020 as established by the updated ILP study schedule. This field data

collection was further delayed due to high stream flows resulting in unsafe sampling conditions. In addition to safety concerns, these higher level base flows resulted in unfavorable habitat conditions. As such, the Roanoke Logperch sampling effort for adult and young-of-year will be rescheduled to 2021. With this change in schedule, each of the life stage-specific sampling efforts for Roanoke Logperch will be performed in 2021, thus providing a data set that is representative of a full Roanoke Logperch reproduction and recruitment in 2021.

- Data compilation is underway for the desktop impingement and entrainment evaluation. Weather and flow conditions and powerhouse operating conditions have delayed the confirmation of the intake velocities originally scheduled for completion in Q3 2020. An attempt will be made to measure intake velocities in Q4 2020 (November), if conditions allow; if the measurement cannot be taken within the remaining field season the measurements will be rescheduled to as soon as practical in 2021. Intake velocities will be analyzed and support the final impingement and entrainment evaluation.
- Appalachian will initiate the Blade Strike Analysis using the most recent version of the model provided by USFWS and will also incorporate available historical information. The analysis and preliminary reporting will be performed in Q4 based on available information. A tentative list of species to be used in the analysis will be noted in the ISR and will include historical data and results of the fish community study in 2020. The final results and report will be developed in 2021 once all site-specific data is gathered, processed, and verified.

Benthic Aquatic Resources Study

- Field data collection for the macroinvertebrate and crayfish community study began in September 2020 but was interrupted due to increasing precipitation and stream flows. Once stream flows returned to a more acceptable range (allowing for safe in stream work and collection of representative samples), sampling was reinitiated and sampling at the remaining macroinvertebrate and crayfish community study sites were completed on October 5, 2020.
- Field data collection for the mussel community study was completed for all proposed sites between October 6 and October 9, 2020. The majority of the Project exhibited limited mussel habitat as the surveyed habitats consist predominantly of boulder and bedrock substrates. The survey efforts collected a total of 4 Eastern elliptio (*Elliptio complanata*); two were collected in Tinker Creek, and two were collected at the most upstream site near the wastewater treatment plant on the Roanoke River. No other live or relic mussel specimens were observed during the survey efforts.

Recreation Study

- The Recreation Visitor Use Online Survey is on-going and will continue into Q4 2020.
 - From April to September 2020 there have been 118 visitors at recreation sites within the Niagara Project area who completed this survey, with a decrease in response rates over the past few months. Canoeing/kayaking has been documented as the primary activity.
- On September 5, 2020, pictures and videos were captured of the spillway and bypass reach to support the Aesthetic Flow Documentation. A final aesthetic site visit is scheduled to be conducted in Q4 2020, under minimum flow (i.e., 8 cfs in the bypass reach) conditions, if feasible.
- Due to travel and in-person meeting restrictions this fall and winter, Appalachian plans to convene with stakeholders to discuss existing and future recreational opportunities in Q1 2021.

Cultural Resources Study

- Consultation letters requesting concurrence from the Virginia State Historic Preservation Officer (SHPO), Advisory Council on Historic Preservation, Indian Tribes, and other parties to determine and document the Area of Potential Effects (APE) for Project relicensing were transmitted via email and mail on September 1, 2020 with responses requested with 30 days of receipt. To date, Appalachian has received responses from the Virginia SHPO, Catawba Indian Nation, Monacan Indian Nation and Pamunkey Indian Tribe who concurred with the definition of the APE. The Virginia SHPO additionally commented they would like additional features within the APE to be evaluated as part of this study.
- The Archeological Phase I Reconnaissance Survey (field effort) of the APE was substantively completed the week of October 12, 2020.

If there are any questions regarding this progress report, please do not hesitate to contact me at (614) 716-2240 or via email at jmmagalski@aep.com

Sincerely,

A handwritten signature in black ink, reading "Jonathan M. Magalski". The signature is written in a cursive style with a large, stylized initial "J".

Jonathan M. Magalski
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American Electric Power Services Corporation

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Subject: FW: AEP Niagara Hydroelectric Project - Proposed Date for ISR Meeting

From: Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>

Sent: Wednesday, December 2, 2020 11:30 AM

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Cc: 'ebparcell@aep.com' <ebparcell@aep.com>; 'jmmagalski@aep.com' <jmmagalski@aep.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>; John Spaeth <jpspaeth@edge-es.com>; Jon Studio <jastudio@edge-es.com>; Frank Simms <fmsimms51@gmail.com>; 'Allyson Conner (allyson.conner@ferc.gov)' <allyson.conner@ferc.gov>

Subject: AEP Niagara Hydroelectric Project - Proposed Date for ISR Meeting

Good afternoon,

I hope you all had a restful and safe Thanksgiving holiday. Pursuant to the ILP schedule, on or by January 11, 2021 Appalachian Power Company plans file the Initial Study Report (ISR) for the Niagara Hydroelectric Project (FERC Project No. 2466). Within 15 days of filing the ISR, Appalachian Power Company is required to have a ISR meeting.

We are planning to virtually host the Niagara ISR meeting on Thursday, January 21, 2021 from 10:00 a.m. - 3:00 p.m. (approx.) with a 30-minute break for lunch. As key stakeholders, we would like to confirm your availabilities so that we can consider making any scheduling adjustments. Once the date is confirmed, a more detailed schedule including proposed times for individual studies will be distributed with the ISR.

Please let me know if you have any unavoidable conflicts with the proposed day or timeframe by December 9th, so we can try to adjust.

Thank you,

Sarah Kulpa
Project Manager

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Yayac, Maggie

Subject: FW: Roanoke Loggerch Take Application

Federal Permit Application

JS

Jon Studio

To: permits@fws.gov; carlita_payne@fws.gov

Cc: John Speeth

Reply

Reply All

Forward

...

Tue 12/22/2020 2:02 PM

Jon Studio 3-200-59 Application Package.pdf

2 MB

Jon Studio 3-200-59 Application Fee.pdf

635 KB

To whom it may concern:

My name is Jon Studio and I am applying for a Federal Permit in my name as I am currently permitted under Dr. Virgil Brack of Environmental Solutions & Innovations, Inc. (ESI) (Permit TE02373A-14). All required application documents are attached (Jon Studio 3-200-59 Application Package) along with payment in the amount \$100 (Jon Studio 3-200-59 Application Fee) to cover the new permit application processing fee. Additionally, a hard copy of the application package and check have been mailed to the Region 3 Endangered Species Permit Office in Bloomington, MN. Please let me know if you have any questions or require additional information.

Thank you,

JON A. STUDIO
Avon, Ohio
M: 440.413.4609
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ENGINEERING & SCIENCE

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edge-es.com

1

FEDERAL ENERGY REGULATORY COMMISSION

Washington, DC 20426

December 22, 2020

OFFICE OF ENERGY PROJECTS

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

VIA FERC Service

Subject: Scoping Document 3 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) or an Environmental Impact Statement (EIS), 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 conducting scoping to ensure that all pertinent issues are identified and analyzed, and that the NEPA document 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 NEPA document. Based on the meetings and the submission of written comments, we updated SD1 and issued SD2 on July 9, 2019.

The Council on Environmental Quality (CEQ) issued a final rule on July 15, 2020, revising the regulations under 40 C.F.R. Part 1500-1518 that federal agencies use to implement NEPA (see Update to the Regulations Implementing the Procedural Provisions of the National Environmental Policy Act, 85 Fed. Reg. 43,304). The Final Rule became effective on and applies to any NEPA process begun after September 14, 2020. An agency may also apply the regulations to ongoing activities and environmental documents begun before September 14, 2020, which includes the Niagara Project. Commission staff intends to conduct its NEPA review in accordance with CEQ's new regulations. Therefore, we have updated SD2, accordingly. SD3 reflects our current view of issues and alternatives to be considered in the NEPA document. ***Key changes from SD2 to SD3 are identified in bold, italicized type.***

SD3 is being distributed to the Commission's official mailing list (see section 7.0 of the attached SD3). 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. In lieu of an email request, you may submit a paper request. Submissions sent via the U.S. Postal Service must be addressed to: Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, 888 First Street, N.E., Room 1A, Washington, DC, 20426. Submissions sent via any other carrier must be addressed to: Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, 12225 Wilkens Avenue, Rockville, Maryland 20852. 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 SD3 supersedes SD2. SD3 is issued for informational use by all interested parties; no response is required. If you have any questions about SD3, the scoping process, or how Commission staff will develop the NEPA document 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 3

SCOPING DOCUMENT 3

NIAGARA HYDROELECTRIC PROJECT

VIRGINIA

PROJECT NO. 2466-034



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

DECEMBER 2020

TABLE OF CONTENTS

1.0 INTRODUCTION	1
2.0 SCOPING	3
2.1 PURPOSES OF SCOPING.....	3
2.2 COMMENTS, SCOPING MEETINGS, AND ENVIRONMENTAL SITE REVIEW	3
3.0 PROPOSED ACTION AND ALTERNATIVES	10
3.1 NO-ACTION ALTERNATIVE.....	10
3.1.1 Existing Project Facilities	10
3.1.2 Existing Project Operations	10
3.2 APPLICANT’S PROPOSAL	11
3.2.1 Proposed Project Facilities and Operation	11
3.2.2 Proposed Environmental Measures.....	11
3.3 DAM SAFETY	13
3.4 ALTERNATIVES TO THE PROPOSED ACTION	13
3.5 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY	13
3.5.1 Federal Government Takeover.....	13
3.5.2 Non-power License	14
3.5.3 Project Decommissioning	14
4.0 SCOPE OF RESOURCE ISSUES	16
4.1 Geologic and Soils Resources.....	16
4.2 Aquatic Resources.....	16
4.3 Terrestrial Resources.....	16
4.4 Threatened and Endangered Species	17
4.5 Recreation, Land Use, and Aesthetic Resources	17
4.6 Cultural Resources	17
4.7 Developmental Resources.....	17
5.0 CURRENT PROCESSING SCHEDULE	18
6.0 COMPREHENSIVE PLANS	19
7.0 MAILING LIST.....	20
APPENDIX A.....	A-1

LIST OF FIGURES

Figure 1. Location of the project. (Source: Appalachian).....	2
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SCOPING DOCUMENT 3

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.⁴ *We will prepare either an environmental assessment (EA) or an **Environmental Impact Statement (EIS)** that describes and evaluates the probable effects, if any, of the proposed action and*

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).

⁴ *The Council on Environmental Quality (CEQ) issued a final rule on July 15, 2020, revising the regulations under 40 C.F.R. Parts 1500 – 1518 that federal agencies use to implement NEPA (see Update to the Regulations Implementing the Procedural Provisions of the National Environmental Policy Act, 85 Fed. Reg. 43,304). The Final Rule became effective on and applies to any NEPA process begun after September 14, 2020. An agency may also apply the regulations to ongoing activities and environmental documents begun before September 14, 2020, which includes the Niagara Project. Commission staff intends to conduct its NEPA review in accordance with CEQ's new regulations.*

alternatives. The *Commission's* scoping process will *help determine the required level of analysis and* satisfy the NEPA scoping requirements, irrespective of whether the Commission *prepares* an EA or an EIS.



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

2.0 SCOPING

Scoping Document 3 (*SD3*) is intended to advise all participants as to the proposed scope of the *NEPA document*. This document contains: (1) a description of the scoping process and *current processing* schedule for the *license application*; (2) a description of the proposed action and alternatives; (3) a preliminary identification of environmental issues; and (4) 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 *NEPA document*;
- identify reasonable alternatives to the proposed action that should be evaluated in the *NEPA document*;
- 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, NGOs, 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 *NEPA document*. 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.

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, written comments were filed by the following entities:

<u>Commenting Entity</u>	<u>Filing Date</u>
Tri-County Lakes Administrative Commission	May 22, 2019
Federal Energy Regulatory Commission	May 22, 2019
U.S. Environmental Protection Agency	May 23, 2019
Roanoke Valley Greenway Commission	May 23, 2019
U.S. Department of the Interior, National Park Service	May 24, 2019
Virginia Department of Environmental Quality	May 24, 2019
Virginia Department of Game and Inland Fisheries	May 24, 2019
Town of Vinton	May 24, 2019
Dr. Paul Angermeier, Virginia Tech	May 24, 2019
U.S. Department of the Interior, Fish and Wildlife Service	May 28, 2019
Roanoke County	May 28, 2019
Roanoke River Blueway Committee	May 28, 2019

On July 9, 2019, we issued SD2, which presented our view of issues and alternatives to be considered in the NEPA document based on comments received during scoping.

As discussed above, CEQ subsequently issued a final rule on July 15, 2020, revising the regulations under 40 C.F.R. Parts 1500 – 1518 that federal agencies use to implement NEPA. The revised regulations repealed the definition of cumulative effects and provided a new definition for effects to be considered in the environmental analysis. Accordingly, we have revised SD2 to address comments related to cumulative impacts and removed the discussion of cumulative effects from section 4.0, consistent with CEQ’s revised regulations.

All comments received are part of the Commission’s official record for the project. ***Information in the official file is available for review on the Commission’s website at <http://www.ferc.gov> using the “eLibrary” link. At this time, the Commission has suspended access to the Commission’s Public Reference Room due to the proclamation declaring a National Emergency concerning the Novel Coronavirus Disease (COVID-19) issued by the President on March 13, 2020. For assistance,***

please contact FERC at FERCOnlineSupport@ferc.gov, (866) 208-3676 (toll free), or (202) 502-8659 (TTY).

2.2.1 Issues Raised During Scoping

The issues raised by participants in the scoping process are summarized below. The summaries do not include every oral or written comment made during the scoping process.

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).⁵ Details on the vertical shaft Francis units can be found in section 4.3.9 of the PAD.

Cumulative Effects

Comment: FWS requests that cumulatively affected resources include the Roanoke logperch (*Percina rex*).

Response: ***In SD2, we stated that the cumulative “effects of continued project operation and maintenance on the federally listed...Roanoke logperch” would be analyzed. As discussed above, however, we have removed the discussion of cumulative effects from section 4.0 of SD3 to be consistent with CEQ’s revised NEPA regulations. Commission staff will consider and evaluate effects from the proposed action and alternatives that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action or alternatives. As noted below in section 4.0, Scope of Resource Issues, the environmental analysis will include an assessment of the effects of continued project operation on Roanoke logperch.***

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

⁵ Appalachian Power Company. 1991. Application for License for Major Water Power Project 5 Megawatts or Less (Project no. 2466). Virginia.

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: In SD2, we stated that, “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.” As discussed above, however, we have removed the discussion of cumulative effects from section 4.0 of SD3 to be consistent with CEQ’s revised NEPA regulations. Commission staff will consider and evaluate effects from the proposed action and alternatives that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action or alternatives. As noted below in section 4.0, Scope of Resource Issues, the environmental analysis will include an assessment of the effects of continued project operation and maintenance on the movement of diadromous fish species (e.g., American eel).

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 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 SD2, staff stated that, “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.” As discussed above, however, we have removed the discussion of cumulative effects from section 4.0 of SD3 to be consistent with CEQ’s revised NEPA regulations. Commission staff will consider and evaluate effects from the proposed action and alternatives that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action or alternatives.

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 *NEPA document* 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 *or SD3*.

Comment: FWS, Virginia Department of Game and Inland Fisheries (Virginia DGIF), and Virginia Department of Environmental Quality (Virginia DEQ) request that the *NEPA document* account for project effects on freshwater mussels.

Response: We modified a bullet in section 4.2 of this document to indicate that the *NEPA document* 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 4.4 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 *NEPA document* 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 *or SD3*.

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 *NEPA document* would address the effects of continued project operation on aesthetics in the project area. Therefore, no changes have been made to SD2 *or SD3*.

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 efilng, then select 'Hydro: Washington DC' in the first efilng 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 **6.0** 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 ***NEPA document*** 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;⁶ (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 and Wildlife Service (FWS), and the Virginia Department of Wildlife Resources (Virginia DWR).

⁶ All elevations herein are referenced to National Geodetic Vertical Datum of 1929 (NGVD 29).

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).⁷

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.

⁷ 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 *NEPA document*.

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.⁸ 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 suggested that federal takeover would be appropriate, and no federal agency has expressed interest in operating the project.

⁸ 16 U.S.C. §§ 791(a)-825(r).

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

As the Commission has previously held, decommissioning is not a reasonable alternative to relicensing in most cases.⁹ Decommissioning can be accomplished in different ways depending on the project, its environment, and the particular resource needs.¹⁰ For these reasons, the Commission does not speculate about possible decommissioning measures at the time of relicensing, but rather waits until an applicant actually proposes to decommission a project, or a participant in a relicensing proceeding demonstrates that there are serious resource concerns that cannot be addressed with appropriate license measures and that make decommissioning a reasonable alternative.¹¹ Appalachian does not propose decommissioning, nor does the record to date demonstrate there are serious resource concerns that cannot be

⁹ See, e.g., *Eagle Crest Energy Co.*, 153 FERC ¶ 61,058, at P 67 (2015); *Public Utility District No. 1 of Pend Oreille County*, 112 FERC ¶ 61,055, at P 82 (2005); *Midwest Hydro, Inc.*, 111 FERC ¶ 61,327, at PP 35-38 (2005).

¹⁰ *In the unlikely event that the Commission denies relicensing a project or a licensee decides to surrender an existing project, the Commission must approve a surrender “upon such conditions with respect to the disposition of such works as may be determined by the Commission.”* 18 C.F.R. § 6.2 (2020). This can include simply shutting down the power operations, removing all or parts of the project (including the dam), or restoring the site to its pre-project condition.

¹¹ See generally *Project Decommissioning at Relicensing; Policy Statement*, FERC Stats. & Regs., Regulations Preambles (1991-1996), ¶ 31,011 (1994); see also *City of Tacoma, Washington*, 110 FERC ¶ 61,140 (2005) (finding that unless and until the Commission has a specific decommissioning proposal, any further environmental analysis of the effects of project decommissioning would be both premature and speculative).

mitigated if the project is relicensed; as such, there is no reason, at this time, to include decommissioning as a reasonable alternative to be evaluated and studied as part of staff's NEPA analysis.

4.0 SCOPE OF RESOURCE ISSUES

In this section, we present a preliminary list of environmental issues to be addressed in the *NEPA document*.¹² 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 *NEPA document*.

4.1 Geologic and Soils Resources

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

4.2 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).

4.3 Terrestrial Resources

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

¹² *Per CEQ's final rule (July 15, 2020), Commission staff will consider and evaluate effects that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action.*

4.4 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.

4.5 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.

4.6 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.

4.7 Developmental Resources

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

5.0 CURRENT PROCESSING SCHEDULE

The decision on whether to prepare an EA or EIS will be determined after the license application is filed and we fully understand the scope of effects and measures under consideration.

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 A to this **SD3**.

6.0 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.

7.0 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 FERCOnlineSupport@ferc.gov or by mail. ***Submissions sent via the U.S. Postal Service must be addressed to:*** Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, 888 First Street, N.E., Room 1A, Washington, DC 20426. ***Submissions sent via any other carrier must be addressed to: Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, 12225 Wilkens Avenue, Rockville, Maryland 20852.*** 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 <https://ferconline.ferc.gov/FERCOOnline.aspx> 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.

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Project No. 2466-034

County of Roanoke
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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	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)

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)



American Electric Power
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Via Electronic Filing

January 11, 2021

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 Initial Study Report and Schedule for Virtual ISR Meeting**

Dear Secretary Bose:

Appalachian Power Company (Appalachian or Licensee), a unit of American Electric Power (AEP), is the Licensee, owner, and operator of the run-of-river, 2.4-megawatt Niagara Hydroelectric Project (Project) (Project No. 2466), located on the Roanoke River in Roanoke County, Virginia.

The Project is currently licensed by the Federal Energy Regulatory Commission (FERC or Commission). The Project underwent relicensing in the early 1990s, and the current operating license for the Project expires on February 29, 2024. Accordingly, Appalachian is pursuing a subsequent license for the Project pursuant to the Commission's Integrated Licensing Process (ILP), as described at 18 Code of Federal Regulations (CFR) Part 5.

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). On July 27, 2020, Appalachian filed an updated ILP study schedule and a request for extension of time to file the Initial Study Report (ISR) to account for Project delays resulting from the COVID-19 pandemic. These delays pushed the start of the 2020 field season into early August 2020 and resulted in some of the spring and summer 2020 field work being rescheduled for 2021. The request was approved by FERC on August 10, 2020, and the filing deadline for the ISR for the Project was extended from November 17, 2020 to January 11, 2021.

During the restricted 2020 field season, Appalachian has conducted studies in accordance with 18 CFR §5.15, as provided in the RSP and as subsequently modified by FERC's SPD. In accordance with 18 CFR §5.15, Appalachian is hereby filing the ISR with the Commission. The ISR describes the Licensee's overall progress in implementing the study plan and schedule, summarizes available data, and describes any variances from the study plan and schedule approved by the Commission.

The Commission's regulations at 18 CFR §5.15(c) require Appalachian to hold a meeting with participants and FERC staff within 15 days of filing the ISR. **Accordingly, Appalachian will hold**

an ISR Meeting via Webex from 10 AM to 3 PM on Thursday, January 21, 2020. An agenda for the ISR Meeting is provided in Attachment 2. Participants are free to join the meeting in part based on interests or availability, but please note that the agenda is intended as an approximation and more or less time may be spent on individual studies, as needed.

Appalachian respectfully requests that the stakeholders interested in participating in the Virtual ISR Meeting contact Maggie Yayac at maggie.yayac@hdrinc.com on or before close of business Tuesday, January 19, 2021 to obtain instructions to join the virtual meeting.

If there are any questions regarding this filing, please do not hesitate to contact me at (614) 716-2240 or 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, Environmental Services

cc: Distribution List
Elizabeth Parcell (AEP)

Niagara Hydroelectric Project (FERC No. 2466)

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Subject: FW: Niagara Hydroelectric Project (VA) -- Filing of Initial Study Report
Attachments: AEP Niagara ISR Transmittal_01.11.2021.pdf

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Subject: Niagara Hydroelectric Project (VA) -- Filing of Initial Study 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 Initial Study Report (ISR) for the Project on January 11, 2021. The ISR describes the Licensee's overall progress in implementing the study plan and schedule, summarizes available data, and describes any variances from the study plan and schedule approved by the Commission.

On behalf of Appalachian, we are notifying stakeholders of the availability of the ISR. For your convenience, a copy of the cover letter filed with the ISR is attached. Appalachian encourages stakeholders to view the complete filing online at FERC's eLibrary at https://elibrary.ferc.gov/eLibrary/filelist?accession_num=20210111-5063. Appalachian will also be adding the ISR to the Project's public relicensing website (<http://www.aephydro.com/HydroPlant/Niagara>) in the coming days.

The Commission's regulations at 18 CFR §5.15(c) require Appalachian to hold a meeting with participants and FERC staff within 15 days of filing the ISR. **Accordingly, Appalachian will hold an ISR Meeting via Webex from 10 AM to 3 PM on Thursday, January 21, 2020.** Appalachian requests that the stakeholders interested in participating in the Virtual ISR Meeting contact Maggie Yayac at maggie.yayac@hdrinc.com on or before close of business Tuesday, January 19, 2021 to obtain instructions to join the virtual meeting.

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

On behalf of AEP and the Niagara Project relicensing team, thank you for your interest in the Niagara Project, and I hope that the start of the new year finds you well.

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Project Manager

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Yayac, Maggie

Subject: FW: Niagara Hydroelectric Project (VA) -- Filing of ISR/Prelim Cultural Resources (Sensitive Information)
Attachments: AEP Niagara ISR Transmittal_01.11.2021.pdf; AEP Niagara Initial Study Report_Final_01.11.2021.pdf; App F_Niagara Prelim Cultural Resources Rpt_PRIV.PDF

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Subject: Niagara Hydroelectric Project (VA) -- Filing of ISR/Prelim Cultural Resources (Sensitive Information)

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.

Hello Everyone,

Please find attached some information for American Electric Power's Niagara Hydroelectric Project located in Roanoke County, Virginia (FERC No. 2466). If you have any questions or concerns about the attached information, please do not hesitate to email me at bill.green@terracon.com or you can reach me by phone at 803-403-1256.

Respectfully Yours,

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Principal

Department Manager | Cultural Resources

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Terracon provides environmental, facilities, geotechnical, and materials consulting engineering services delivered with responsiveness, resourcefulness, and reliability.

Private and confidential as detailed here (www.terracon.com/disclaimer). If you cannot access the hyperlink, please e-mail sender.

Yayac, Maggie

Subject: FW: Niagara Hydroelectric Project (VA) -- Filing of ISR/Prelim Cultural Resources (Sensitive Information)

From: Green, William G <Bill.Green@terracon.com>

Sent: Thursday, January 21, 2021 10:02 AM

To: Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>

Subject: FW: Niagara Hydroelectric Project (VA) -- Filing of ISR/Prelim Cultural Resources (Sensitive Information)

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.

Hey Sarah and Maggie,

FYI – see below from the Catawba. We'll send out hard copies today for both projects.

Bill Green, M.A., RPA # 10387

Principal

Department Manager | Cultural Resources

Terracon

D (803) 403 1256 | M (803) 354 8126

From: Caitlin Rogers [mailto:caitlin.rogers@catawba.com]

Sent: Thursday, January 21, 2021 8:22 AM

To: Green, William G <Bill.Green@terracon.com>

Subject: Re: Niagara Hydroelectric Project (VA) -- Filing of ISR/Prelim Cultural Resources (Sensitive Information)

Good Morning,

The Catawba THPO are still requesting projects be sent via hard copy. Our address is 1536 Tom Steven Road, Rock Hill, SC 29730. If you have any questions let me know.

Thanks

Caitlin

From: Green, William G <Bill.Green@terracon.com>

Sent: Sunday, January 17, 2021 1:02 PM

To: terry.clouthier@pamunkey.org <terry.clouthier@pamunkey.org>; TribalOffice@MonacanNation.com <TribalOffice@MonacanNation.com>; epaden@delawarenation-nsn.gov <epaden@delawarenation-nsn.gov>; Caitlin Rogers <caitlin.rogers@catawba.com>; Roberts, Timothy <tim.roberts@dhv.virginia.gov>

Cc: Jonathan M Magalski <jmmagalski@aep.com>; 'ebparcell@aep.com' <ebparcell@aep.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>; Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>

Subject: Niagara Hydroelectric Project (VA) -- Filing of ISR/Prelim Cultural Resources (Sensitive Information)

Hello Everyone,

Please find attached some information for American Electric Power's Niagara Hydroelectric Project located in Roanoke County, Virginia (FERC No. 2466). If you have any questions or concerns about the attached information, please do not hesitate to email me at bill.green@terracon.com or you can reach me by phone at 803-403-1256.

Yayac, Maggie

Subject: FW: Niagara Hydroelectric Project (VA) -- Filing of ISR/Prelim Cultural Resources (Sensitive Information)
Attachments: AEP Niagara ISR Transmittal_01.11.2021.pdf; AEP Niagara Initial Study Report_Final_01.11.2021.pdf; App F_Niagara Prelim Cultural Resources Rpt_PRIV.PDF

From: Green, William G <Bill.Green@terracon.com>
Sent: Sunday, January 17, 2021 1:10 PM
To: debra.hansen@pamunkey.org
Cc: Jonathan M Magalski <jmmagalski@aep.com>; 'ebparcell@aep.com' <ebparcell@aep.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>; Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>
Subject: RE: Niagara Hydroelectric Project (VA) -- Filing of ISR/Prelim Cultural Resources (Sensitive Information)

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.

Dear Ms. Hansen,

I sent the email below to Terry Clouthier but got an automatic response that correspondence should be directed to you. I have attached the same information for your perusal. Thank you.

Bill Green, M.A., RPA # 10387I
Principal
Department Manager | Cultural Resources

Terracon
D (803) 403 1256 | M (803) 354 8126

From: Green, William G
Sent: Sunday, January 17, 2021 1:03 PM
To: terry.clouthier@pamunkey.org; TribalOffice@MonacanNation.com; epaden@delawarenation-nsn.gov; Caitlin.Rogers@catawba.com; Roberts, Timothy <tim.roberts@dhr.virginia.gov>
Cc: Jonathan M Magalski <jmmagalski@aep.com>; 'ebparcell@aep.com' <ebparcell@aep.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>; Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>
Subject: Niagara Hydroelectric Project (VA) -- Filing of ISR/Prelim Cultural Resources (Sensitive Information)

Hello Everyone,

Please find attached some information for American Electric Power's Niagara Hydroelectric Project located in Roanoke County, Virginia (FERC No. 2466). If you have any questions or concerns about the attached information, please do not hesitate to email me at bill.green@terracon.com or you can reach me by phone at 803-403-1256.

Respectfully Yours,

Bill Green, M.A., RPA # 10387
Principal
Department Manager | Cultural Resources

Terracon
D (803) 403 1256 | M (803) 354 8126



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

February 5, 2021

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)
 Filing of Initial Study Report Meeting Summary**

Dear Secretary Bose:

Appalachian Power Company (Appalachian or Licensee), a unit of American Electric Power (AEP), is the Licensee, owner, and operator of the run-of-river, 2.4-megawatt Niagara Hydroelectric Project (Project) (Project No. 2466), located on the Roanoke River in Roanoke County, Virginia.

The Project is currently licensed by the Federal Energy Regulatory Commission (FERC or Commission). The Project underwent relicensing in the early 1990s, and the current operating license for the Project expires on February 29, 2024. Accordingly, Appalachian is pursuing a subsequent license for the Project pursuant to the Commission's Integrated Licensing Process (ILP), as described at 18 Code of Federal Regulations (CFR) Part 5.

Pursuant to 18 CFR § 5.15(c), Appalachian filed the Initial Study Report (ISR) with the Commission on January 11, 2021. The ISR filing also included notification of the ISR Meeting date, time, and proposed agenda. As required by the ILP schedule within 15 days of the ISR filing, Appalachian held a virtual ISR Meeting via Webex from 10am to 3pm on Thursday, January 21, 2021.

Pursuant to 18 CFR § 5.15(c)(3), Appalachian hereby files for Commission and stakeholder review the ISR Meeting summary. The ISR Meeting presentation is included as an attachment to the ISR Meeting summary.

If there are any questions regarding this filing, please do not hesitate to contact me at (614) 716-2240 or jmmagalski@aep.com.

Niagara Hydroelectric Project (FERC No. 2466-034)
Filing of Initial Study Report Meeting Summary
February 5, 2021
Page 2 of 2

Sincerely,

A handwritten signature in black ink, reading "Jonathan M. Magalski". The signature is written in a cursive style with a large, stylized initial "J".

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

cc: Distribution List
Elizabeth Parcell (AEP)

Niagara Hydroelectric Project (FERC No. 2466)

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Mr. Steve Moyer
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Arlington, VA 22209

Upper Roanoke River Roundtable
PO Box 8221
Roanoke, VA 24014

Yayac, Maggie

Subject: FW: Niagara Hydroelectric Project (VA) -- Filing of Initial Study Report Meeting Summary

From: Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>

Sent: Friday, February 5, 2021 2:40 PM

To: ACHP - John Eddins <jeddings@achp.gov>; Catawba Indian Nation - Wenonah Haire <caitlin.rogers@catawba.com>; County of Roanoke - David Henderson <dhenderson@roanokecountyva.gov>; County of Roanoke - Lindsay Webb <LWEBB@roanokecountyva.gov>; County of Roanoke - Richard Caywood <rcaywood@roanokecountyva.gov>; Delaware Nation - Eric Paden <epaden@delawarenation-nsn.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>; Monacan Indian Nation - Kenneth Branham <TribalOffice@MonacanNation.com>; Pamunkey Indian Tribe - Terry Clouthier <terry.clouthier@pamunkey.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 <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 - 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: 'ebparcell@aep.com' <ebparcell@aep.com>; Jonathan M Magalski <jmmagalski@aep.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>

Subject: Niagara Hydroelectric Project (VA) -- Filing of Initial Study Report Meeting Summary

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 conducted the Initial Study Report (ISR) Meeting on January 21, 2021 and filed the ISR Meeting Summary for the Project on February 5, 2021. The ISR Meeting Summary is now available for stakeholder review. For your convenience, a copy of the cover letter filed with the ISR Meeting Summary is attached. Appalachian encourages stakeholders to view the complete filing online at FERC's eLibrary at https://elibrary.ferc.gov/eLibrary/filelist?accession_num=20210205-5058. Appalachian will also be adding the ISR to the Project's public relicensing website (<http://www.aephydro.com/HydroPlant/Niagara>) in the coming days.

As established by FERC's regulations at 18 C.F.R. § 5.15, the deadline for filing meeting summary disagreements, requests for modifications to studies, or requests for new studies is March 7, 2021.

Should you have any questions regarding this filing, please contact Jon Magalski with AEP at (614) 716-2240 or jmmagalski@aep.com. On behalf of AEP and the Niagara Project relicensing team, thank you for your interest in the Niagara Project.

Sarah Kulpa

Project Manager

HDR

440 S. Church Street, Suite 900
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sarah.kulpa@hdrinc.com

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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
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March 3, 2021

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

**Re: Niagara Hydroelectric Project (FERC No. 2466-034)
Initial Study Report Meeting Summary
Submission of Comments from Roanoke County, Virginia**

Dear Secretary Bose:

This letter is in response to the Initial Study Report (ISR) virtual meeting hosted by Appalachian Power Company (Appalachian), a unit of American Electric Power (AEP), on January 21, 2021. The Roanoke River is a significant outdoor recreational resource and aesthetic amenity in Virginia's Blue Ridge, which includes Roanoke County, Roanoke City, Botetourt County, the Town of Vinton, and the City of Salem. The development of Explore Park, the Roanoke River Greenway, 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. These recreational amenities are existing or proposed along the Roanoke River which passes through eastern Roanoke County and fall within or adjacent to both the Niagara (P-2466) and Smith Mountain (P-2210) hydroelectric project areas. It is critical that coordination continue between Appalachian, FERC, federal and state agencies, local governments, and other stakeholders to support development of recreational resources along the Roanoke River.

To demonstrate the importance of recreation in our region, the [USA Today Readers' Choice 2021](#) recently named the Roanoke River Blueway as the third "Best Urban Kayaking Spot". The Roanoke River Blueway received a Virginia [Governor's Environmental Excellence Award](#) (i.e., Silver Medal) for Implementation of the [Virginia's Outdoor Plan](#) in 2016, which identifies development of land and water trails as the third most needed activity in the 2017 Virginia Outdoors Demand Survey. The Roanoke River Blueway was also deemed a [Virginia Treasure](#) by the Department of Conservation and Recreation in 2016.

Pursuant to 18 CFR § 5.15 (c)(3), Roanoke County offers the following public interest considerations in regard to the ISR Preliminary Recreation Study dated January 11, 2021 prepared by HDR for Appalachian for your consideration.

1. As shared during the ISR virtual meeting, the National Park Service-Blue Ridge Parkway has informed Roanoke County that the Roanoke River Overlook and Trail located at Milepost 114.9 will be closed March 2021 through March 2022 for rehabilitation of the bridge over the Roanoke River. Additionally, the section of the Blue Ridge Parkway located between State Route 24/Vinton (Milepost 112) south to the Roanoke River Overlook will be closed for public access. These closures will impact the results of any field work and data collection related to the Recreation Use Survey of the Roanoke River downstream of the Niagara Dam to Roanoke County's Explore Park Rutrough Point. Appalachian indicated during the ISR meeting that revisions to the 2021 field season schedule are not proposed. Roanoke County respectfully requests consideration of revisions to the field season schedule to account for the Parkway closures, such as extension of the field work and data collection through October 2022.
2. Roanoke County appreciates the extension of the Recreation Visitor Use Online Survey through October 2021.
3. The following revisions are needed to Figure 3-1 "Existing Project – Related Recreational Facilities Map":
 - a. Please add the Tinker Creek Greenway located in the City of Roanoke, north of the Roanoke River and west of Tinker Creek.
 - b. The location of the Appalachian Project canoe portage access point/put-in located below the Niagara Dam on the Roanoke River should be shown underneath the Blue Ridge Parkway on the north side of the Roanoke River.
 - c. Roanoke County Tax Parcel IDs 071.03-01-10.00-0000 and 080.00-01-35.00-0000, located west of the Blue Ridge Parkway and south of the Niagara Dam, as are incorrectly shown in green as the Blue Ridge Parkway. These two parcels should be denoted in orange, as the parcels are owned by the Virginia Recreational Facilities Authority (VRFA) and leased by Roanoke County for Explore Park.
 - d. Roanoke County Tax Parcel ID 071.03-01-11.00-0000 should be denoted in orange, as it is owned by the VRFA and leased by Roanoke County for Explore Park. This parcel is located south of the Niagara Dam on Highland Road.
 - e. Roanoke County Tax Parcel ID 071.03-01-15.00-0000 should be denoted in orange, as it is owned by the VRFA and leased by Roanoke County for

Explore Park. This parcel is located upstream of the Niagara Dam, south of the Roanoke River, and adjacent to the Niagara Project Boundary.

- f. Roanoke County Tax Parcel IDs 080.00-05-02.01-0000, 080.00-05-03.00-0000, and 080.00-05-04.00-0000, located east of the Blue Ridge Parkway and south of the Roanoke River, are incorrectly shown in green as the Blue Ridge Parkway, when they are actually owned by the Roanoke Valley Resource Authority.
4. Please provide clarification throughout the ISR that the “Rutrough Road Canoe/Kayak Ramp” is managed by Roanoke County for Explore Park and the appropriate name is “Rutrough Point”.
5. Please amend the “Recreation Facilities Inventory and Condition Assessment” to include the Roanoke River Greenway, Tinker Creek Greenway, Roanoke River Blueway, and Explore Park as Non-Project Recreation Facilities.
6. Roanoke County appreciates Appalachian’s inclusion of a Recreational Flow Release Desktop Evaluation to assess the potential for Project operations to support short-term enhancement of flow conditions for downstream boating in the ISR. Roanoke County encourages Appalachian to continue evaluating the possibility of controlled releases throughout the year for recreational purposes that would be advantageous for paddlers during the lower flow late-summer/early-fall months (i.e., July through October) along the Roanoke River downstream of the dam to Explore Park’s Rutrough Point. Class 1 and II whitewater conditions exist downstream of the Niagara Dam, and the Roanoke County 2016 Explore Park Adventure Plan proposes development of an in-river kayak park downstream near the Smith Mountain lake project boundary.
7. In support of the Roanoke River Blueway, Roanoke County 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 lease for Explore Park.
8. 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 continue evaluating trash and debris removal alternatives.

Roanoke County appreciates the opportunity to provide comments on the ISR prepared for Appalachian and look forward to coordinating with FERC and other stakeholders throughout the duration of this relicensing effort. Roanoke County looks forward to participating in the Recreational Use Stakeholder meeting tentatively proposed during the first quarter of 2021 to discuss existing and future recreational opportunities along the Roanoke River, such as the Roanoke River Greenway, Roanoke River Blueway, and Explore Park.

Please forward any questions, comments, or concerns to Lindsay Webb, Roanoke County Department of Parks, Recreation and Tourism at lwebb@roanokecountyva.gov or (540) 777-6328.

Sincerely,

A handwritten signature in blue ink, appearing to read 'R. Caywood', is written over a light blue circular stamp.

Richard L. Caywood, P.E.
Assistant County Administrator

cc: Elizabeth B. Parcell, American Electric Power
Jonathan M. Magalski, American Electric Power
Doug Blount, Roanoke County Director of General Services, Parks, Recreation and Tourism

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426
March 5, 2021

OFFICE OF ENERGY PROJECTS

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

VIA Electronic Mail

Mr. Jonathan Magalski
Environmental Specialist Consultant
American Electric Power
jmmagalski@aep.com

Reference: Comments on Initial Study Report and Meeting Summary

Dear Mr. Magalski,

On January 11, 2021, Appalachian Power Company (Appalachian) filed the Initial Study Report (ISR) for the Niagara Hydroelectric Project (Niagara Project) describing Appalachian's overall progress in implementing the approved study plans. On January 21, 2021, Appalachian held a virtual meeting to discuss the ISR. On February 7, 2021, Appalachian filed its ISR Meeting Summary (Meeting Summary). We have reviewed the ISR and the Meeting Summary and provide our comments in Appendix A, pursuant to 18 C.F.R. § 5.15(c)(4).

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

Sincerely,

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

APPENDIX A

Comments on the Initial Study Report and Meeting Summary

General:

1. To facilitate our NEPA analysis, please file with the draft license application (DLA) the geospatial data (e.g., exports from Global Positioning System (GPS) devices, or Geographic Information System (GIS) shapefiles), including the sampling locations, mesohabitat, substrate, and cover maps; shoreline habitat classifications; and any other GIS data layers that were created as part of the following studies: 1) Bypass Reach Flow and Aquatic Habitat Study, 2) Benthic Aquatic Resources Study, 3) Fish Community Study, 4) Water Quality Study, 5) Shoreline Stability Assessment Study, and 6) Wetlands, Riparian, and Littoral Habitat Characterization Study.

Fish Community Study:

2. In Appendix C of the Preliminary Fish Community Study Report, you provide raw species abundance data for the backpack and electrofishing surveys. As requested in the ISR meeting, please provide summary length and weight information (e.g., size distributions) for each fish species in the updated study report or DLA.



March 5, 2021

RE: Niagara Hydroelectric Project (FERC No. 2466-034)

To whom it may concern,

Please accept our comments to the Initial Study Report meeting hosted by Appalachian Power Company, January 21, 2021.

As a community, we place high value on the region's natural assets and are leveraging them as part of our holistic economic development strategy. The Roanoke River, Explore Park, and Roanoke River Greenway have been identified as key regional outdoor assets, all of which are impacted by the Niagara Hydroelectric Project.

Our region supports sustainable development of recreational resources and opportunities along the Roanoke River and pursuant to 18 CFR § 5.15 (c)(3), we offer the following comments for consideration in response to the ISR Preliminary Recreation Study prepared by HDR for Appalachian Power, dated January 11, 2021.

- The National Park Service, Blue Ridge Parkway, will close the Parkway and overlook/parking at milepost 114.9 to repair the bridge crossing the Roanoke River. This closure will run from March 2021 through March 22. This closure will significantly impact that ability to collect, and subsequent results, of any field work and data collection related to the Recreation Use Survey of the Roanoke River downstream from the Niagara Dam. This overlook/parking is the only access to the river for recreational paddlers and anglers. A revision to the 2021 field season schedule needs to be made, such as an extension through fall 2022. Data will be severely skewed otherwise.
- We fully support that inclusion of a Recreational Flow Release Desktop Evaluation to assess the potential for Project operations to support short-term enhancement of flow conditions for downstream boating in the ISR. We encourage Appalachian to continue evaluating the possibility of controlled releases for recreational paddlers during the lower flow late-summer/early-fall months (i.e., July through October) along the Roanoke River downstream of the dam to Explore Park's Rutrough Point. At a minimum we would request weekend releases during this period. The Roanoke County Explore Park Adventure Plan proposes development of an in-river kayak park downstream near the Smith Mountain lake project boundary and scheduled releases would enhance this.
- In support of the Roanoke River Blueway, we encourage 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 lease for Explore Park.

- Please add the following revisions to Figure 3-1 “Existing Projects-Related Facilities Map”:
 - Add Tinker Creek Greenway
 - The Appalachian Power canoe portage access point/put in located below the Niagara Dam should be show underneath the Blue Ridge Parkway bridge, on the north side of the river.
- Please add the following to the Recreation Facilities Inventory and Condition Assessment as non-project recreation facilities: Roanoke River Greenway, Tinker Creek Greenway, Roanoke River Blueway, and Explore Park.
- 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 our understanding that under current hydroelectric operations, large debris is removed, but most of the trash is allowed to go overtop the spillway, resulting in accumulations below the dam downstream into the Smith Mountain Lake project boundary. We acknowledge 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. Our community organizes community volunteer workdays to remove trash along the river. We encourage Appalachian Power to continue evaluating trash and debris removal alternatives.

The Roanoke Region of Virginia creates economic growth by leveraging natural assets to attract business investment and talent. The Roanoke River is an integral component of this strategy and contribute significantly to the region’s image, tourism, public health, equality, and economic growth.

Please let me know if you have any questions or comments.

Sincerely,

A handwritten signature in black ink, appearing to read "Pete Eshelman", written over a light blue rectangular background.

Pete Eshelman
Director of Outdoor Branding
pete@roanoke.org
(540) 392-6989

ROANOKE RIVER BLUEWAY COMMITTEE

COMMENTS

NIAGARA HYDROELECTRIC PROJECT NO. 2466-034

The Roanoke River Blueway Committee exists 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 Roanoke River Blueway has received the Governor's Award for Environmental Excellence for implementation of the *Virginia Outdoor Plan* in 2016, was designated as a Virginia Treasure in 2016, and received recognition in the USA TODAY Reader's Choice 2021 as the third "Best Urban Kayaking Spot." The Blueway is a valuable asset to the Roanoke Valley.

The Committee is grateful to be part of the Niagara Dam recertification process, and provides the following comments on the Initial Study Report (ISR) as described by Appalachian Power Company (Appalachian), a unit of American Electric Power (AEP), in the virtual meeting on January 21, 2021.

EXTEND RECREATION USE DOCUMENTATION OF BLUE RIDGE PARKWAY

On January 13, 2021, the Committee received word that the Blue Ridge Parkway will be closed at the Roanoke River Overlook for the duration of 2021 and the winter of 2022. This overlook houses a key access point which the Committee had hoped to study to assist with AEP's re-licensing efforts through the placement of an infrared counter provided by the Roanoke Valley – Alleghany Regional Commission (RVARC). The Committee has been informed by the National Park Service (NPS) that placing an infrared counter will be welcome when the Parkway reopens. Planned NPS closures will impact any efforts to assess recreational use of this section of the Blueway. The Committee respectfully requests that any final assessment of recreational use included in the proposed Recreation Study take this into account by extending the window of the Recreation Use Documentation proposed in the ISR into summer and fall of 2022. The Committee offers to provide the results of the infrared counter data collected during this time to support the Recreation Study.

CONSIDER IMPROVEMENTS TO THE PORTAGE

The Committee supports any proposed improvements to the existing portage. Possible improvements to consider include increased or more effective signage, and improvements to the take-out or put-in locations above and below the dam, respectively. Other ideas which should be included in the study of the portage include a phone that could be used to call for assistance and consideration of an access point on river right just above the dam to provide an alternate portage location.

STUDY ACCESS ABOVE THE DAM

Boating recreation could be vastly improved with the creation of a river access on river right just above the dam. 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. Roanoke County has offered to partner with AEP to consider approaches to implementation of this new access location.

INCLUDE GREENWAY USERS IN RECREATION STAKEHOLDERS

The *2018 Roanoke Valley Greenway Plan* clearly outlines the proposed Roanoke River Greenway and the existing sections of Tinker Creek Greenway which overlap the Study Area for this project. The Greenway Commission and the Roanoke Valley – Alleghany Regional Commission have access to infrared counters, previously mentioned in discussion of the Blue Ridge Parkway overlook usage, and would be willing to install one of these infrared counters on the Tinker Creek bridge to assess bicycle and pedestrian usage of this facility. The Roanoke Valley -Alleghany Regional Commission can also provide historical data for Roanoke River Greenway users to assess potential future impacts of the Roanoke River Greenway extension.

CORRECT MAPPING AND TERMS

Numerous corrections to the mapping, terms, and referenced recreation plans for the study area are requested.

- Please amend the “Recreation Facilities Inventory and Condition Assessment” to include the Roanoke River Greenway, Tinker Creek Greenway, Roanoke River Blueway, and Explore Park as Non-Project Recreation Facilities.
- Please include the proposed Roanoke River Greenway alignment from the *2018 Roanoke Valley Greenway Plan* in mapping of the Study Area.
- The ISR refers to Rutrough Point as the “Rutrough Road Canoe/Kayak Ramp”. Please correct the name of this access point.
- Please include the full Tinker Creek Greenway alignment in mapping, including the proposed future sections of the greenway relevant to the study area. Please label Tinker Creek Greenway.
- The location of the Appalachian Project canoe portage access point/put-in located below the Niagara Dam on the Roanoke River should be shown underneath the Blue Ridge Parkway on the north side of the Roanoke River.

The Committee thanks AEP and the FERC for considering our comments, and for the adjustments that have already been made to the ISR per our recommendations. The Committee looks forward to participating in stakeholder interviews and meetings as those are held in the coming year.



1206 KESSLER MILL ROAD

SALEM, VA 24153

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Liz.Belcher@greenways.org

www.greenways.org

March 5, 2021

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. Preliminary Recreation Study Report
2. Initial Study Report Meeting Summary

Dear Secretary Bose:

The Roanoke Valley Greenway Commission provided comments on the Scoping Document, the PAD, and the proposed Recreation Study Plan for Niagara Hydroelectric Project, FERC No. 2466. We feel that the Preliminary Recreation Study Report, January 11, 2021, has addressed some of the concerns previously raised, but has one glaring omission and some inaccurate information on the maps. These concerns were raised at the January 21, 2021 ISR Meeting. I re-iterate them here because the Meeting Summary does not seem to acknowledge the importance of these errors.

1. Omissions

a. Roanoke River Greenway and Tinker Creek Greenway, Non-Project Facilities within the Study Area, Not Discussed as Existing Facilities

The Roanoke River Greenway is the main greenway artery through the Roanoke Valley, planned from Montgomery County to Franklin County at Back Creek. The existing portions of the greenway are only partially shown on the Existing Facilities map and are, in places, covered up on the map by the Study Area Boundary. There is an existing greenway bridge, over 600' long, across the river within the Study Area. This links to Tinker Creek Greenway, which extends beyond the Study Area Boundary at VA 24 (inaccurate on the map) and connects to Wise Avenue. These existing facilities within and adjacent to the Study Area are not correctly shown on the map or included in the Facility Inventory and Condition Assessment.

The eastern leg of Roanoke River Greenway in Roanoke County from the City line to Highland Road is within the Project boundary and is engineered; construction is scheduled to begin in 2021-22. The next section under the Blue Ridge Parkway is also nearing construction and the portion within Explore Park to Back Creek is being designed. **This extension of Roanoke River Greenway will dramatically increase recreation use within the Project area.**

Roanoke County and AEP have been cooperating on coordination of Roanoke River Greenway construction. The Study Plan needs to recognize

these facilities and the opportunity they present for **enhancement** of recreational use of the Project area.

b. Existing Use of Roanoke River and Tinker Creek Greenways (Non-Project Facilities within Study Area) Not Acknowledged

When Roanoke River and Tinker Creek Greenways are recognized as existing facilities, then the Recreation Activities analysis (Table 6-1) becomes inadequate, because bicycling is not included and the fishing and boating access these facilities provide is not acknowledged. The Roanoke Valley Greenway Commission and the Roanoke Valley Alleghany Regional Commission have trail use counters on the greenways throughout the region. While there is not currently a counter on the bridge, there certainly could be one if AEP requested it.

c. Other Non-Project Facilities Not Shown on the Map

The canoe launch on Bennington should be shown on the map, even though it is just beyond the Study Area. It provides access to the Blueway. Garden City Greenway links to Roanoke River Greenway and is within the mapping area. It is not shown on the map. These two facilities should be added to the map, in addition to the corrections for Roanoke River and Tinker Creek Greenways.

2. Extension of Field Season

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. Use of the project area was severely impacted by the 2020 COVID-19 pandemic. Use of the project area in 2021 will be severely impacted by the closure of the Blue Ridge Parkway from March 2021 to March 2022. Not only will the closure prevent access to the Roanoke River Overlook and Fisherman's Trail, the bridge work may require closure of the portage around the dam. Therefore, the use study should be extended at least to fall of 2022.

3. Work with Localities on Trash and Debris Removal

Although AEP has said repeatedly that trash removal at the dam is not its responsibility and not part of this process, trash is a significant issue, a negative impact on recreation, and a recurring comment from the public. AEP should consider removing the trash at the dam or having a small trash barge on the reservoir that functions like the one at Smith Mountain Lake. The localities could cooperate on hauling the refuse and fees for disposal.

We appreciate the inclusion of the Flow Release Evaluation and the Aesthetic Flow Documentation. Both were very interesting and provided important information.

We ask that AEP consider the following solutions to improve recreational opportunities in the Project area:

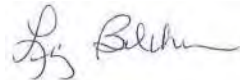
- a. Purchase property on river right near Niagara Dam to provide parking and boating access.
- b. Provide a portage around Niagara Dam on river right.

- 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.
- e. Implement the Flow Release plan for periodic flow increases during summer/fall months.

I look forward to participating in the Recreational Use Stakeholder meeting tentatively proposed during the first quarter of 2021 to discuss existing and future recreational opportunities along the Roanoke River, such as the Roanoke River Greenway, Roanoke River Blueway, and Explore Park.

Thank you for the opportunity to provide comments at this point.

Sincerely,

A handwritten signature in black ink, appearing to read "Liz Belcher", is positioned above the printed name.

Liz Belcher

Roanoke Valley Greenway Coordinator
1206 Kessler Mill Road, Salem, VA 24153
540-777-6330

Liz.belcher@greenways.org



Commonwealth of Virginia

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

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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., Room 1A
Washington, DC 20426

March 8, 2021

**Re: Niagara Hydroelectric Project P-2466-034, Comment on Initial Study Report (ISR)
Meeting Summary**

Dear Secretary Bose:

Thank you for the opportunity to provide comments on the Initial Study Report (ISR) Meeting Summary related to the re-licensing of the Niagara Hydroelectric Project. The Virginia Department of Environmental Quality (DEQ) participated in the ISR Meeting held by American Electric Power (AEP) via WebEx on January 21, 2021 to review with stakeholders the progress and results of studies described in the ISR dated January 11, 2021. Following below are comments by DEQ on the Meeting Summary document dated February 5, 2021.

Water Quality Study

Flow through the bypass reach was greater than normal during the 2020 sampling period described in the ISR and corresponding Meeting Summary because 1) river flows were often greater than normal, and 2) there was a powerhouse outage during the majority of the sampling period. Consequently, the water quality data collected during 2020 may not be representative of bypass reach flows during normal summer low-flow conditions. AEP noted in the ISR and in the Meeting Summary that additional water quality (temperature and dissolved oxygen, or DO) monitoring is recommended during the summer (July-August) of 2021 in order to collect supplemental data during lower flow conditions. AEP also noted in the Meeting Summary that the 2021 water quality sampling period may be extended into September if high water temperatures and low flows extend through that month. DEQ agrees with the planned extension of bypass reach temperature and DO monitoring during 2021 and recommends that the 2021 water quality monitoring period be extended through October 2021 to ensure that a representative record of bypass reach water quality during low flows is collected.

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. A sufficient record of bypass reach flows and water quality will be critical for that evaluation.

Thank you again for the opportunity to provide comments on the ISR Meeting Summary.

Respectfully,

A handwritten signature in black ink, appearing to read "Brian McGurk", is centered below the word "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
John McCloskey, US FWS – via email
Scott Smith, VA DWR – via email



United States Department of the Interior

FISH AND WILDLIFE SERVICE



Virginia Field Office
6669 Short Lane
Gloucester, VA 23061

March 4, 2021

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First St., N.E., Room 1A
Washington, DC 20426

Re: Niagara Hydroelectric Project (FERC
#2466); Review of the Initial Study
Report and Meeting Summary

Dear Secretary Bose:

The U.S. Fish and Wildlife Service (Service) participated in an Appalachian Power Company (Appalachian), a unit of American Electric Power, January 21, 2021, Initial Study Report (ISR) meeting for the Niagara Hydroelectric Project (Federal Energy Regulatory Commission [FERC] #2466) (Project) to discuss progress toward completing approved relicensing studies. The Project is located on the Roanoke River in Roanoke County, VA. Pursuant to 18 CFR § 5.15(c)(4), the Service provides the following comments and recommendations on the ISR and Meeting Summary.

Section 2.1, Bypass Reach Flow and Aquatic Habitat Study

Section 2.1.2, Summary of Study Methods and Results: This section states that one of the goals of the study was to develop an understanding of surface water travel times and water surface elevation responses for varying Obermeyer sluice gate openings. The proposed target flow scenarios are designed to allow 2-Dimensional (2-D) hydraulic model simulations capable of evaluating the full operating range (i.e., 7 cubic feet per second [ft³/s] to 287 ft³/s) of the newly installed Obermeyer sluice gate. The Service previously recommended 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 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. Section 4.6.3 of the Revised Study Plan (RSP) 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. The Service requests clarification that this modeling will be performed as part of this study as stated in the RSP.

Section 2.1.3, Variances from FERC-Approved Study Plan: This section states that higher than normal seasonal flow conditions in the Roanoke River during 2020 was one of the reasons why the Bypass Reach Flow and Aquatic Habitat Study could not be completed in 2020 and will need to be completed in 2021. The higher than normal flows in 2020 also have implications for the water quality

study and whether the water quality measurements are representative of water quality conditions during more normal or below normal flow conditions in the river. The Service recommends that this issue be addressed as part of the Water Quality Study.

Section 2.2, Water Quality Study

Section 2.2.2, Summary of Study Methods and Results: This section states that flows in the bypass reach were atypical (i.e., much higher) than the “normal,” licensed flow regime. To address this issue, Appalachian proposes to install two continuous temperature and dissolved oxygen (DO) data sondes in the bypass reach (one at the upstream monitoring location and the other at the downstream monitoring location) during the warmest portion of the summer in 2021 (typically July and August) to record daily fluctuations in temperature and DO concentrations under a more typical bypass flow regime if feasible. The Service agrees with this proposal. However, the Service recommends that the data collection in the bypass reach be extended until October 31, 2021 to be consistent with the RSP and to capture water quality in the bypass reach during the entire low flow season.

Section 2.2.3, Variances from FERC-Approved Study Plan: This section presents variances from the FERC-approved study plan. The Study Plan Determination (SPD) stated that the water quality study was to be performed from May 1 until October 31, 2020. According to this section, the study was not initiated until late July 2020. No data was collected from August 12-26, 2020 because of equipment malfunction. This means that no water quality data was collected for approximately 14 weeks of the originally planned 28 weeks (50% of the planned study period). It was also stated in Section 2.1.3 that water flows were above normal for most of the 2020 season. More specifically, according to Section 2.2.2 of the 2020 Fish Community Survey Results Report in Appendix C, average annual rainfall for Roanoke, VA was approximately 105 centimeters (cm) and, as of December 1, 2020, Roanoke, VA already accumulated over 157 cm of rain (a 47% increase in average precipitation). The Roanoke River did not reach average annual baseflow during most of the low flow period.

Appalachian stated at the ISR meeting that the Project was not operating from September 9, 2020 until the end of the Water Quality Study. This equates to an additional 7 weeks where the Project was not operating where it is not possible to assess the impact of Project operations on downstream water quality. This corresponds to most of the low flow season when water temperatures reach their maximum and DO issues are most likely. The FERC March 26, 2019, Scoping Document 1 (SD1) and July 9, 2019, Scoping Document 2 (SD2) identified the following environmental resource issue to be analyzed in the Environmental Assessment for the Project relicensing: Effects of continued project operation and maintenance on water quality, including DO and water temperature, upstream and downstream of the impoundment, including the bypassed reach. For this analysis to be possible, the Project must be operating during the entire study.

The Service recommends that the Water Quality Study be repeated in 2021. This recommendation is based on the following: (1) data was not collected or available for approximately 50% of the 2020 study period, (2) there was a 47% increase in average annual precipitation, thus the 2020 data was collected during an abnormally wet year, and (3) the Project was not operating for the last two months of the 2020 study, thus it is not possible to assess the impact of Project operations on water quality during this normally low flow period.

Section 2.2.3, Variances from FERC-Approved Study Plan: This section states that, as proposed in the RSP, water quality data downloads were to occur on a monthly basis; however, significant biofouling was observed on the instruments located in the reservoir downstream from Tinker Creek. Data download and instrument maintenance frequency was modified to a two-week interval; however, the biofouling resulted in several additional time periods where continuous water quality data is not

available at this location. The Service recommends that Appalachian check and clean data loggers weekly during the data collection scheduled for 2021 to avoid the loss of water quality data from biofouling.

Section 2.3, Fish Community Study

Section 2.3.2.2, Summary of Study Methods and Results, Preliminary Impingement and

Entrainment Study: This section states that burst swim speeds for target or representative species were compared to the estimated intake velocity to evaluate whether fish may be susceptible to intake flows at the Project. Fish burst swim speeds obtained from literature indicate that all target species and life stages evaluated, with the exception of eggs, larvae, and juvenile spottail shiner (*Notropis hudsonius*), would be able to avoid entrainment at the Project given that estimated burst swim speeds are greater than approach velocities at the intake. The Service recommends this study address the fact that migratory fish species may be attracted to the intake and may not actively avoid the intake. This can lead to higher entrainment rates for migratory species than likely would be predicted by the current study.

Section 2.3.2.2, Summary of Study Methods and Results, Preliminary Impingement and

Entrainment Study: This section states that entrainment of early life stage fishes (eggs and larvae) is likely minimal given the life history characteristics of species in the vicinity of the Project. This conclusion may not be true for fish in the Family *Percidae*, which includes the federally listed endangered Roanoke logperch (*Percina rex*) (RLP) and other species in the genus *Percina*, as well as species in the genus *Etheostoma*. Larvae from these genera drift for long distances downstream from their spawning habitats (Buckwalter et al. 2019). Dispersal distances for RLP have been estimated to be as much as 55 kilometers (Roberts et al. 2016), although that estimate also includes post-larval dispersal. Therefore, larval RLP spawned above the reservoir have the potential to drift into and through the Project, and thus would have a higher susceptibility to entrainment. The larval drift study planned for 2021 will be useful to assess whether larval RLP are entrained at the Project and to determine the number of larvae passing through the Project.

Section 2.3.3, Variances from FERC-Approved Study Plan: This section states that per the Project RSP and FERCs SPD, intake velocities were to be measured immediately upstream of the intake structure using an acoustic doppler current profiler (ADCP). During the 2020 field season, a combination of high flow events and inoperable turbine-generator units at the Project prevented field data collection efforts. The ISR Meeting Summary states that after several trips to the Project, it became apparent that it would be difficult to get an accurate velocity measurement with an ADCP due to the distance that it would need to be operated from the angled trash racks (8-10 feet upstream), at which point velocities may be equivalent to Roanoke River velocities in other areas of the reservoir, and would likely be lower than the calculated velocity. As a result, approach velocity was calculated using the intake structure and trash rack dimensions along with the design maximum flow capacity of the two generating units. Using this approach, the calculated velocity in front of the intake was estimated to be approximately 1.1 feet per second.

Entrainment is driven by the approach and normal velocities in front of an intake, the related phenomenon of impingement is influenced by the open-area velocity, which is generally expressed as the ratio of the normal velocity to screen or rack porosity. If it is not feasible to directly measure the intake velocity using an ADCP, the Service recommends that Appalachian perform a 1-Dimensional (1-D) analysis, which provides a more accurate estimate of intake velocities than the method used above. The 1-D analysis should calculate normal flow (not approach flow) and open-area velocity (also known as impingement velocity) as per the Service's Fish Passage Engineering Design Criteria (Criteria). The Service's Criteria are available at: <https://www.fws.gov/northeast/fisheries/pdf/USFWS-R5-2019-Fish-Passage-Engineering-Design-Criteria-190622.pdf>. Estimating impingement velocity is

also a 1-D exercise but must be based on accurate drawings so that the analysis accounts for structural steel. The Service requests that Appalachian provide the calculations to the Service for review before using the velocities in the entrainment and impingement study.

The estimate of the open-area velocity is important since fish that contact an intake rack will experience a far greater velocity than the approach velocity. Within several inches of the rack, fish will experience the open-area velocity (see Criteria reference plate 9-1). The open-area velocity is influenced by the blockages created by the structure of the rack. For typical intake racks, this translates to an open-area velocity approximately twice that of the approach velocity. Therefore, we recommend that Appalachian also expand its analysis to compare swimming capability to the open-area velocity.

FERC (1995) noted a positive correlation between debris accumulation and fish impingement on modular inclined screens. One effect, if not the primary effect, of debris accumulation is a localized velocity increase due to a decrease in effective open area. It is reasonable then to expect increased impingement on any intake screen that reduces the gross flow area whether that reduction and increased local velocity are due to steel structure, bars, or accumulated debris. The primary time of year for debris accumulation would be during the fall when the high concentration of leaves in the river could accumulate on the debris racks, resulting in localized increases in the intake velocity compared to the calculated velocity. Debris could also accumulate on the trash racks after high flow events. The ISR Meeting Summary states that there is a barrier that keeps large debris out of the trash racks and the racks are continually clean/cleared of debris for optimal project operation. The Service recommends further clarification as it is unclear that debris cleaning is sufficient to prevent an effect on intake velocities.

Section 2.4, Benthic Aquatic Resources Study

Section 2.4.2.2.2 Summary of Study Methods and Results, Mussel Survey, Abbreviated Surveys:

This section states that surveyors targeted habitat(s) suitable for the occurrence of freshwater mussels and searched those areas at an approximate rate of one minute per square meter in heterogeneous substrates. This does not appear to be a correct statement for the area downstream of the Project. According to Section 3.2.2.5 in the Benthic Aquatic Resources Study Report in Appendix D, there is a large riffle at the bottom of UNIO-Tailrace Survey Area that offered the first continuous area of stable gravel/cobble substrate and may represent the beginning of suitable mussel habitat that was not surveyed. The Service recommends this data gap be addressed during the upcoming field season. This issue is discussed below.

Appendix C – Fish Community Study Report

Section 5.3, Study Results, Qualitative Assessment of Turbine Entrainment Potential: This section states that none of the habitats preferred by the RLP are found in the vicinity of the intake, and therefore, the likelihood of entrainment of RLP is considered low. Because larvae of RLP drift for long distances downstream from their spawning habitats (Buckwalter et al. 2019), the potential for entrainment for RLP during the spawning season (March to June) would be higher than what is presented in Table 5-10 (Qualitative Monthly Turbine Entrainment Potential for Target Species). This issue should be addressed.

Appendix D - Benthic Aquatic Resources Study Report

Section 3.2.2.5, Results, Mussel Habitat and Community, Abbreviated, Roanoke River – UNIO-Tailrace: Both mussel survey areas below the Project in the bypass reach (Roanoke River – UNIO-Bypass) and in the tailrace (Roanoke River – UNIO-Tailrace) appear to provide limited habitat for freshwater mussels based on higher flow rates and coarser substrate. This section states that there is a large riffle at the bottom of the UNIO-Tailrace Survey Area that offered the first continuous area of

stable gravel/cobble substrate and may represent the beginning of suitable mussel habitat. It is unclear why this area was not surveyed for freshwater mussels. The areas of suitable habitat should have been identified prior to performing freshwater mussel surveys to ensure areas of suitable habitat were surveyed. Because this area of suitable habitat was not surveyed, it is not possible to determine whether mussels are present below the Project. To address this data gap, the Service recommends that an additional 500 meter downstream Survey Area be established in this area of suitable habitat below the UNIO-Tailrace Survey Area and surveyed for freshwater mussels.

The RSP stated that the UNIO-Tailrace Survey Area was to start at 500 meters downstream of the tailrace and extend a distance of 500 meters (see Figure 7-2 in the RSP). However, Figure 1 of the Benthic Community Study Report shows the UNIO-Tailrace Survey Area starting at approximately 375 meters downstream of the tailrace and extending 500 meters. Therefore, it appears the UNIO-Tailrace Survey Area was not surveyed at the location specified in the RSP. This appears to have resulted in the first area of suitable habitat for freshwater mussels not being surveyed as Section 3.2.2.5 states that the first area of suitable habitat for freshwater mussels occurs just below the area surveyed. The Service recommends that this area be surveyed following the approach specified in the RSP for the UNIO-Tailrace Survey Area.

Thank you for the opportunity to comment on the ISR and the Meeting Summary. If you have any questions, please contact John McCloskey of this office at (804) 824-2404 or at john_mccloskey@fws.gov.

Sincerely,

Cindy Schulz
Field Supervisor
Virginia Ecological Services

cc: Service, State College, PA (Attn: Rick McCorkle)
Service, Hadley, MA (Attn: Jessica Pica)
VDEQ, Richmond, VA (Attn: Brian McGurk)
VDWR, Forest, VA (Attn: Scott Smith)

Literature Cited

- Buckwalter, J.H., P.L. Angermeier, E.J. Argentina, S.L. Wolf, S.P. Floyd, and E.M. Hallerman. 2019. Drift of larval darters (Family Percidae) in the upper Roanoke River basin, USA, characterized using phenotypic and DNA barcoding markers. *Fishes* 4:59.
- FERC. 1995. Preliminary assessment of fish entrainment at hydropower projects. Vol. 1, A report on studies and protective measures. Report prepared by Stone & Webster Environmental Technology and Services for Office of Hydropower Licensing. Paper No. DPR-10, Washington, DC.
- Roberts, J.H., P.L. Angermeier, and E.M. Hallerman. 2016. Extensive dispersal of Roanoke logperch (*Percina rex*) inferred from genetic marker data. *Ecology of Freshwater Fish*: 25:1-16.

Subject: FW: Self-Certification Letter - Niagara Hydroelectric Project (FERC No. 2466) 2021 Field Sampling TOYR

From: Huddleston, Misty <Misty.Huddleston@hdrinc.com>
Sent: Friday, March 26, 2021 4:01 PM
To: Virginia Field Office, FW5 <virginiafieldoffice@fws.gov>
Cc: Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; Jonathan M Magalski <jmmagalski@aep.com>; jon Studio (jastudio@edge-es.com) <jastudio@edge-es.com>
Subject: Self-Certification Letter - Niagara Hydroelectric Project (FERC No. 2466) 2021 Field Sampling TOYR

Good afternoon,

On behalf of American Electric Power (AEP), Edge Engineering and Science, LLC (EDGE) and HDR, Inc. (HDR) are providing field sampling services associated with relicensing activities for the Niagara Hydroelectric Project (Project) (FERC No. 2466). EDGE and HDR are requesting time-of-year restriction (TOYR) waivers for the Tinker Creek and Roanoke River in Roanoke County, Virginia within the Project area. Although current study plans do not extend to the Smith Mountain Lake, a TOYR waiver is also requested for the Smith Mountain Lake fish assemblage in the event that there is overlap with fish species protected as part of the Smith Mountain Lake fish assemblage and the assemblage of the mainstem Roanoke River, or that the proposed field effort is extended further downstream than the currently proposed Project extent in response to agency requests.

Aquatic biological studies were requested and refined during the development of the Project's Proposed Study Plan, Revised Study Plan, and Study Plan Determination that included coordination with VDWR, USFWS, and USEPA. Three of the requested studies occur during the recommended TOYRs (Table 1). Documents outlining agency requests and specific Project methodologies are located at <http://www.aephydro.com/HydroPlant/Niagara>, but general methods and rationale are provided below as a quick review. This information is provided in addition to the Self Certification Letter and Project Verification Package, as required per the Virginia TOYR guidance document dated February 2021.

This information is also being submitted to the Virginia Department of Wildlife Resources under separate cover.

The applicable TOYRs in the Project area occur in Roanoke River and Tinker Creek for Roanoke Logperch (*Percina rex*; RLP), stocked trout, and Orange-fin Madtom (*Noturus gilberti*). Instream field sampling efforts will target RLP at various life stages and supplemental macroinvertebrate collections. Although additional survey efforts are proposed, those survey activities anticipated during TOYR's are described below.

RLP larvae: Drift net sampling methods include three biologists deploying two, 20-minute net sets at five sample sites in shallow water adjacent to riffle-run habitat once per week for a total of ten weeks (Figure 1). The ten consecutive weekly samples will occur between April 1 and June 30 to align with RLP spawning.

RLP adults and subadults: A three-day sampling period will occur between June 1 and June 30 to determine RLP occupancy of the Project's bypass reach below Niagara Dam during spring flows. Backpack electrofishing methods include two backpack electrofishing units to sample 64 quadrats (eight meters by four meters) in riffle-run habitat (Figure 1).

Macroinvertebrate Sampling: Macroinvertebrates will be collected in the Project area to investigate the temporal changes in macroinvertebrate community. A sampling event is anticipated to occur between March 1 and May 31 to align with Virginia Department of Environmental Quality (VADEQ) stream macroinvertebrate Spring sample index period. Sampling

will involve kick net methods along 100-meter segments of habitat at five quantitative sites (riffle-run) and five qualitative sites (multihabitat) over a three-day period (Figure 1).

**Table 1: Roanoke River and Tinker Creek Time-of-Year Restriction
Waiver Requested Activity**

State-Recommended TOYR	Waiver Activity Request	Activity Date Range
^a March 15 – May 31	Kick Net - Macroinvertebrates	March 1 – May 31
	Drift Net - Larval RLP	April 1 – June 30
^b March 15 – June 30	Kick Net - Macroinvertebrates	March 1 – May 31
	Drift Net - Larval RLP	April 1 – June 30
	Backpack Electrofishing - RLP	June 1 – June 30
^c October 1 – June 15	Kick Net - Macroinvertebrates	March 1 – May 31
	Drift Net - Larval RLP	April 1 – June 30
	Backpack Electrofishing - RLP	June 1 – June 30
^d February 15 – June 15	Kick Net - Macroinvertebrates	March 1 – May 31
	Drift Net - Larval RLP	April 1 – June 30
	Backpack Electrofishing - RLP	June 1 – June 30
^a No sampling in orangefin madtom waters from March 15 th through May 31 st		
^b No sampling in Roanoke logperch waters from March 15 th through June 30 th		
^c No sampling in stocked trout waters from October 1 st through June 15 th		
^d No fish assemblage sampling in Smith Mountain Lake from February 15 – June 15		

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 Hydroelectric Project (FERC No. 2466) - 2021 Field Sampling TOYR Waiver Request
Attachments: online_project_review_certification_SIGNED.pdf; USFWS Project Verification_Niagara_20210326.pdf

From: Jon Studio <jastudio@edge-es.com>
Sent: Monday, March 29, 2021 3:58 PM
To: amy.ewing@dwr.virginia.gov; collectionpermits@dwr.virginia.gov
Cc: Huddleston, Misty <Misty.Huddleston@hdrinc.com>; John Spaeth <jpspaeth@edge-es.com>
Subject: Niagara Hydroelectric Project (FERC No. 2466) - 2021 Field Sampling TOYR Waiver Request

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.

To whom it may concern,

On behalf of American Electric Power (AEP), Edge Engineering and Science, LLC (EDGE) and HDR, Inc. (HDR) are providing field sampling services associated with relicensing activities for the Niagara Hydroelectric Project (Project) (FERC No. 2466). EDGE and HDR are requesting time-of-year restriction (TOYR) waivers for Tinker Creek and Roanoke River in Roanoke County, Virginia within the Project area. Although current study plans do not extend to the Smith Mountain Lake, a TOYR waiver is also requested for the Smith Mountain Lake fish assemblage in the event that there is overlap with fish species protected as part of the Smith Mountain Lake fish assemblage and the assemblage of the mainstem Roanoke River, or that the proposed field effort is extended further downstream than the currently proposed Project extent in response to agency requests.

Aquatic biological studies were requested and refined during the development of the Project's Proposed Study Plan, Revised Study Plan, and Study Plan Determination that included coordination with VDWR, USFWS, and USEPA. Three of the requested studies occur during the recommended TOYRs (Table 1). Documents outlining agency requests and specific Project methodologies are located at <http://www.aephydro.com/HydroPlant/Niagara>, but general methods and rationale are provided below as a quick review.

This information is provided in addition to the USFWS Self Certification Letter and Project Verification Package (attached), as required per the Virginia TOYR guidance document dated February 2021. This information was also submitted to the USFWS.

The applicable TOYRs in the Project area occur in Roanoke River and Tinker Creek for Roanoke Logperch (*Percina rex*; RLP), stocked trout, and Orange-fin Madtom (*Noturus gilberti*). Instream field sampling efforts will target RLP at various life stages and supplemental macroinvertebrate collections. Although additional survey efforts are proposed, those survey activities anticipated during TOYR's are described below.

RLP larvae: Drift net sampling methods include three biologists deploying two, 20-minute net sets at five sample sites in shallow water adjacent to riffle-run habitat once per week for a total of ten weeks (Figure 1). The ten consecutive weekly samples will occur between April 1 and June 30 to align with RLP spawning.

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	Drift Net - Larval RLP	April 1 – June 30
	Backpack Electrofishing - RLP	June 1 – June 30
^d February 15 – June 15	Kick Net - Macroinvertebrates	March 1 – May 31
	Drift Net - Larval RLP	April 1 – June 30

Backpack June 1
Electrofishing - RLP – June
30

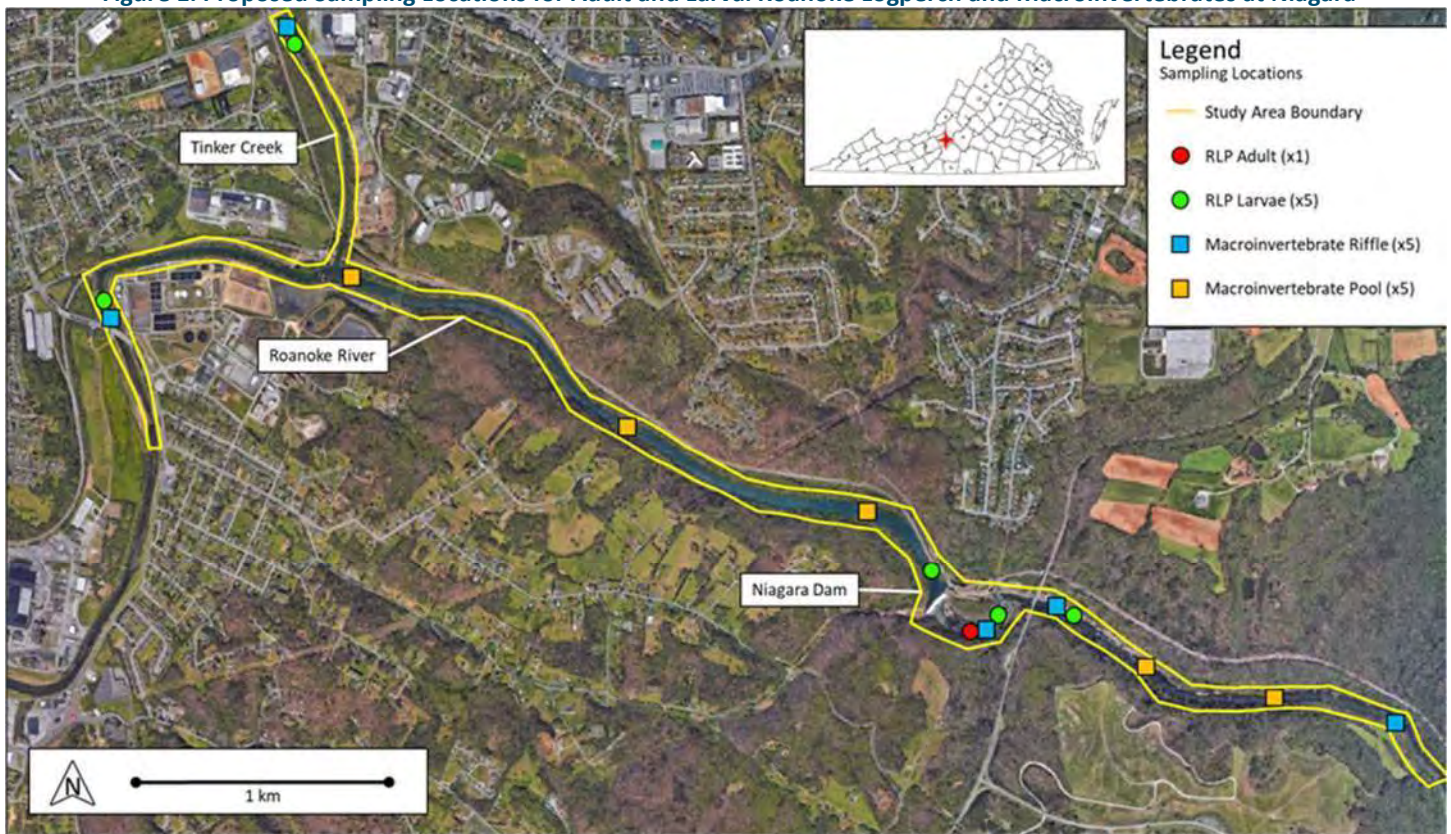
^a No sampling in orangefin madtom waters from March 15th through May 31st

^b No sampling in Roanoke logperch waters from March 15th through June 30th

^c No sampling in stocked trout waters from October 1st through June 15th

^d No fish assemblage sampling in Smith Mountain Lake from February 15 – June 15

Figure 1. Proposed Sampling Locations for Adult and Larval Roanoke Logperch and Macroinvertebrates at Niagara



We appreciate your consideration and request your concurrence on the information herein. Please contact Jon Studio (440-413-4609; jastudio@edge-es.com) or John Spaeth (513-377-0443; jpspaeth@edge-es.com) if you have any questions or require additional information regarding this request.

Thanks,

JON A. STUDIO
Avon, Ohio
M: 440.413.4609
edge-es.com



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:

March 24, 2021

Consultation Code: 05E2VA00-2021-SLI-2810

Event Code: 05E2VA00-2021-E-08113

Project Name: Niagara Hydroelectric Project (FERC No. 2466) 2021 Field Sampling TOYR
Waiver Request

Subject: List of threatened and endangered species that may occur in your proposed project location 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

www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

[http://](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: 05E2VA00-2021-SLI-2810

Event Code: 05E2VA00-2021-E-08113

Project Name: Niagara Hydroelectric Project (FERC No. 2466) 2021 Field Sampling
TOYR Waiver Request

Project Type: POWER GENERATION

Project Description: Location: Tinker Creek and Roanoke River in Roanoke County, Virginia
within the Niagara Hydroelectric Project FERC Project boundary.

Scope: Requesting time-of-year-restrictions (TOYR) waiver for proposed field sampling activities for 2021. Although current study plans do not extend to the Smith Mountain Lake, a TOYR waiver is also requested for the Smith Mountain Lake fish assemblage in the event that there is overlap with fish species protected as part of the Smith Mountain Lake fish assemblage and the assemblage of the mainstem Roanoke River, or that the proposed field effort is extended further downstream than the currently proposed project extent in response to agency requests.

Aquatic biological studies were requested and refined during the development of the Project's Proposed Study Plan, Revised Study Plan, and Study Plan Determination that included coordination with VDWR, USFWS, and USEPA. Three of the requested studies occur during the recommended TOYRs (Table 1). Documents outlining agency requests and specific Project methodologies are located at <http://www.aephydro.com/HydroPlant/Niagara>.

Timing:

Table 1: Roanoke River and Tinker Creek Time-of-Year Restriction
Waiver Requested Activity

State-Recommended TOYR Waiver Activity Request Activity Date Range

(a) March 15 – May 31 Kick Net - Macroinvertebrates March 1 – May 31

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(b) March 15 – June 30 Kick Net - Macroinvertebrates March 1 – May 31

Drift Net - Larval RLP April 1 – June 30

Backpack Electrofishing - RLP June 1 – June 30

(c) October 1 – June 15 Kick Net - Macroinvertebrates March 1 – May 31

Drift Net - Larval RLP April 1 – June 30

Backpack Electrofishing - RLP June 1 – June 30

(d) February 15 – June 15 Kick Net - Macroinvertebrates March 1 – May 31

Drift Net - Larval RLP April 1 – June 30

Backpack Electrofishing - RLP June 1 – June 30

(a) No sampling in orangefin madtom waters from March 15th through May 31st

- (b) No sampling in Roanoke logperch waters from March 15th through June 30th
- (c) No sampling in stocked trout waters from October 1st through June 15th
- (d) No fish assemblage sampling in Smith Mountain Lake from February 15 – June 15

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@37.26009525,-79.887978906288,14z>



Counties: Bedford, Roanoke, and Roanoke counties, Virginia

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.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

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.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Indiana Bat <i>Myotis sodalis</i> There is final critical habitat for this species. The location of the critical habitat is not available. 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 Refuge Lands And Fish Hatcheries

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

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Niagara Hydroelectric Project (FERC No. 2466) 2021 Field Sampling TOYR Waiver Request

Biological Assessment

Prepared using IPaC

March 26, 2021

The purpose of this Biological Assessment (BA) is to assess the effects of the proposed project and determine whether the project may affect any Federally threatened, endangered, proposed or candidate species. This BA is prepared in

accordance with legal requirements set forth under [Section 7 of the Endangered Species Act \(16 U.S.C. 1536 \(c\)\)](#).

In this document, any data provided by U.S. Fish and Wildlife Service is based on data as of March 26, 2021.

Prepared using IPaC version 5.56.1

Niagara Hydroelectric Project (FERC No. 2466) 2021 Field Sampling TOYR Waiver Request Biological Assessment

Table Of Contents

1 Description of the action	6
1.1 Project name	6
1.2 Executive summary	6
1.3 Project description	6
1.3.1 Location	6
1.3.2 Description of project habitat	7
1.3.3 Project proponent information	7
1.3.4 Project purpose	8
1.3.5 Project type and deconstruction	8
1.3.6 Anticipated environmental stressors	10
1.4 Action area	12
1.5 Conservation measures	13
1.5.1 correct electrofishing techniques	13
1.5.2 targeted sampling design	13
1.6 Prior consultation history	13
1.7 Other agency partners and interested parties	13
1.8 Other reports and helpful information	14
2 Species effects analysis	15
2.1 Indiana Bat	15
Justification for exclusion	15
2.2 Northern Long-eared Bat	15
Justification for exclusion	15
2.3 Roanoke Logperch	15
2.3.1 Status of the species	15
2.3.2 Environmental baseline	17
2.3.3 Effects of the action	18
2.3.4 Cumulative effects	19
2.3.5 Discussion and conclusion	19
Relevant documentation	19
3 Critical habitat effects analysis	20
4 Summary Discussion, Conclusion, and Effect Determinations	21
4.1 Effect determination summary	21
4.2 Summary discussion	21

1 Description Of The Action

1.1 Project Name

Niagara Hydroelectric Project (FERC No. 2466) 2021 Field Sampling TOYR Waiver Request

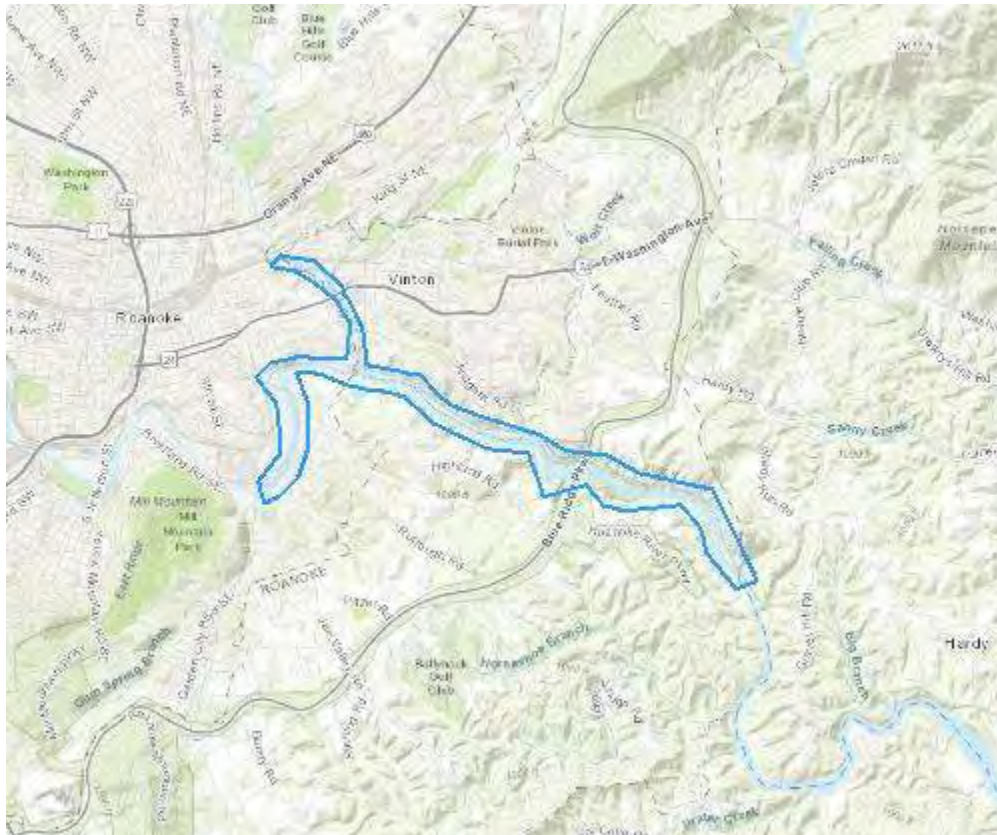
1.2 Executive Summary

See attached Application Form/Package

[Effect determination summary](#)

1.3 Project Description

1.3.1 Location



LOCATION

Bedford, Roanoke, and Roanoke counties, Virginia

1.3.2 Description of project habitat

Habitat does exist within the Project boundary for Roanoke Logperch and we propose to perform field sampling activities (variety of methodologies) within these habitats, to target Roanoke Logperch specifically, at the request of Virginia Department of Wildlife Resources and US Fish and Wildlife Service (USFWS) in support of the Niagara Dam Hydroelectric Project relicensing activities. See attached Application Form (3-200-59) previously submitted to USFWS for the proposed field sampling activities for detailed information.

This consultation is being initiated to request waiver from the existing time-of-year-restrictions (TOYR) to facilitate completion of the field sampling activities described in the Project Description and in the attached USFWS Application Form (3-200-59).

Relevant documentation

- [Jon Studio 3-200-59 Application Package](#)

1.3.3 Project proponent information

Provide information regarding who is proposing to conduct the project, and their contact information. Please provide details on whether there is a Federal nexus.

Requesting Agency

HDR, Inc.

FULL NAME

Misty Huddleston

STREET ADDRESS

440 S. Church St., Ste 900

CITY

Charlotte

STATE

NC

ZIP

28202-2075

PHONE NUMBER

(865) 556-9153

E-MAIL ADDRESS

misty.huddleston@hdrinc.com

Lead agency

Federal Energy Regulatory Commission

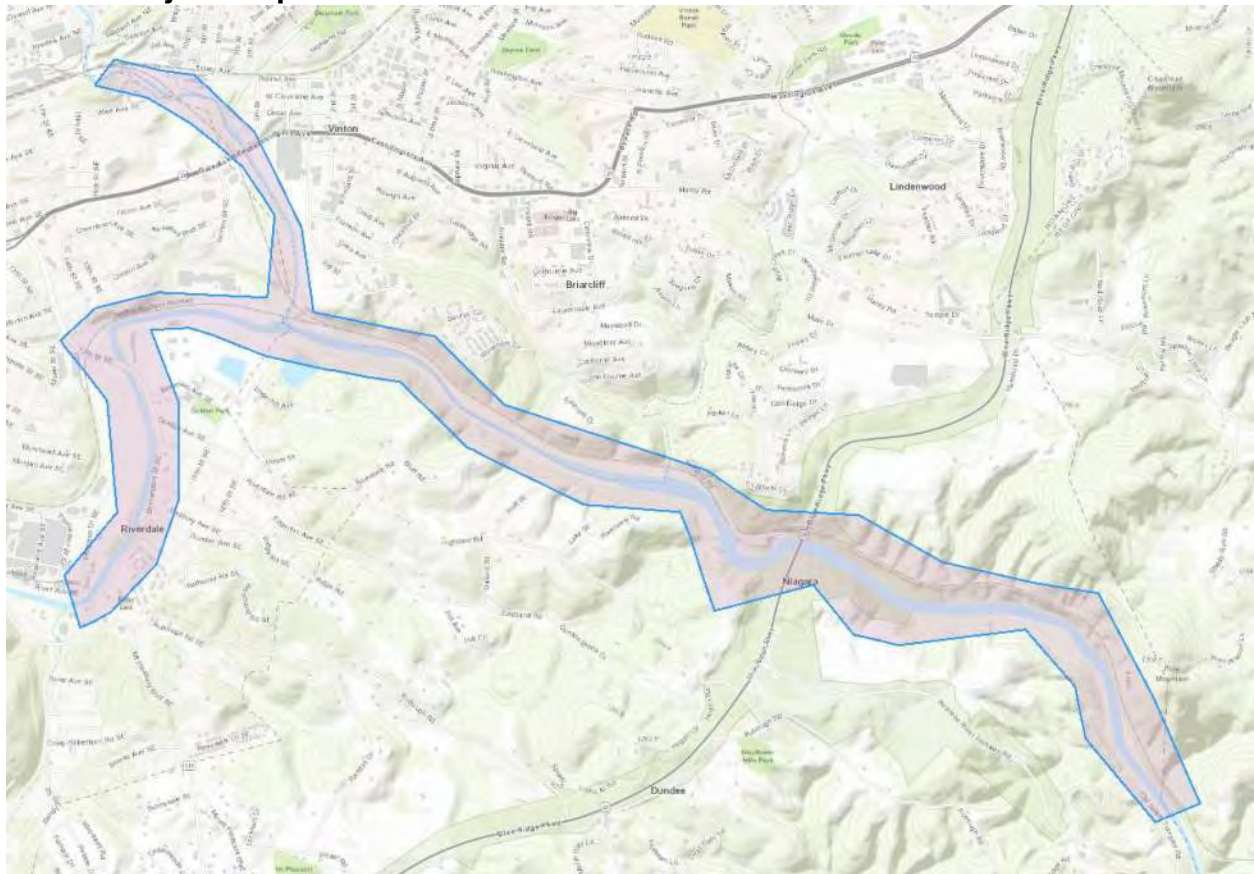
1.3.4 Project purpose

In response to stakeholder and agency requests, Appalachian proposes to perform surveys for Roanoke Logperch within the Project boundary using life stage-specific methodologies, as summarized in the attached Application Package (3-200-59).

1.3.5 Project type and deconstruction

This project is a field survey project.

1.3.5.1 Project map



LEGEND



Project footprint



Fish Community Study Area: Fish community field sampling

1.3.5.2 fish community field sampling

Activity start date

March 31, 2021

Activity end date

June 29, 2021

Stressors

This activity is not expected to have any impact on the environment.

Description

Aquatic biological studies were requested and refined during the development of the Project's Proposed Study Plan, Revised Study Plan, and Study Plan Determination that included coordination with VDWR, USFWS, and USEPA. Three of the requested studies occur during the recommended TOYRs (Table 1). Documents outlining agency requests and specific Project methodologies are located at <http://www.aephydro.com/HydroPlant/Niagara>, but general methods and rationale are provided below as a quick review.

The applicable TOYRs in the Project area occur in Roanoke River and Tinker Creek for Roanoke Logperch (*Percina rex*; RLP), stocked trout, and Orangefin Madtom (*Noturus gilberti*). Instream field sampling efforts will target RLP at various life stages and supplemental macroinvertebrate collections. Although additional survey efforts are proposed, those survey activities anticipated during TOYR's are described below.

RLP larvae: Drift net sampling methods include three biologists deploying two, 20-minute net sets at five sample sites in shallow water adjacent to riffle-run habitat once per week for a total of ten weeks (Figure 1). The ten consecutive weekly samples will occur between April 1 and June 30 to align with RLP spawning.

RLP adults and subadults: A three-day sampling period will occur between June 1 and June 30 to determine RLP occupancy of the Project's bypass reach below Niagara Dam during spring flows. Backpack electrofishing methods include two backpack electrofishing units to sample 64 quadrats (eight meters by four meters) in riffle-run habitat

1.3.6 Anticipated environmental stressors

Describe the anticipated effects of your proposed project on the aspects of the land, air and water that will occur due to the activities above. These should be based on the

activity deconstructions done in the previous section and will be used to inform the action area.

1.3.6.1 Animal Features

Individuals from the Animalia kingdom, such as raptors, mollusks, and fish. This feature also includes byproducts and remains of animals (e.g., carrion, feathers, scat, etc.), and animal-related structures (e.g., dens, nests, hibernacula, etc.).

1.3.6.2 Plant Features

Individuals from the Plantae kingdom, such as trees, shrubs, herbs, grasses, ferns, and mosses. This feature also includes products of plants (e.g., nectar, flowers, seeds, etc.).

1.3.6.3 Aquatic Features

Bodies of water on the landscape, such as streams, rivers, ponds, wetlands, etc., and their physical characteristics (e.g., depth, current, etc.). This feature includes the groundwater and its characteristics. Water quality attributes (e.g., turbidity, pH, temperature, DO, nutrients, etc.) should be placed in the Environmental Quality Features.

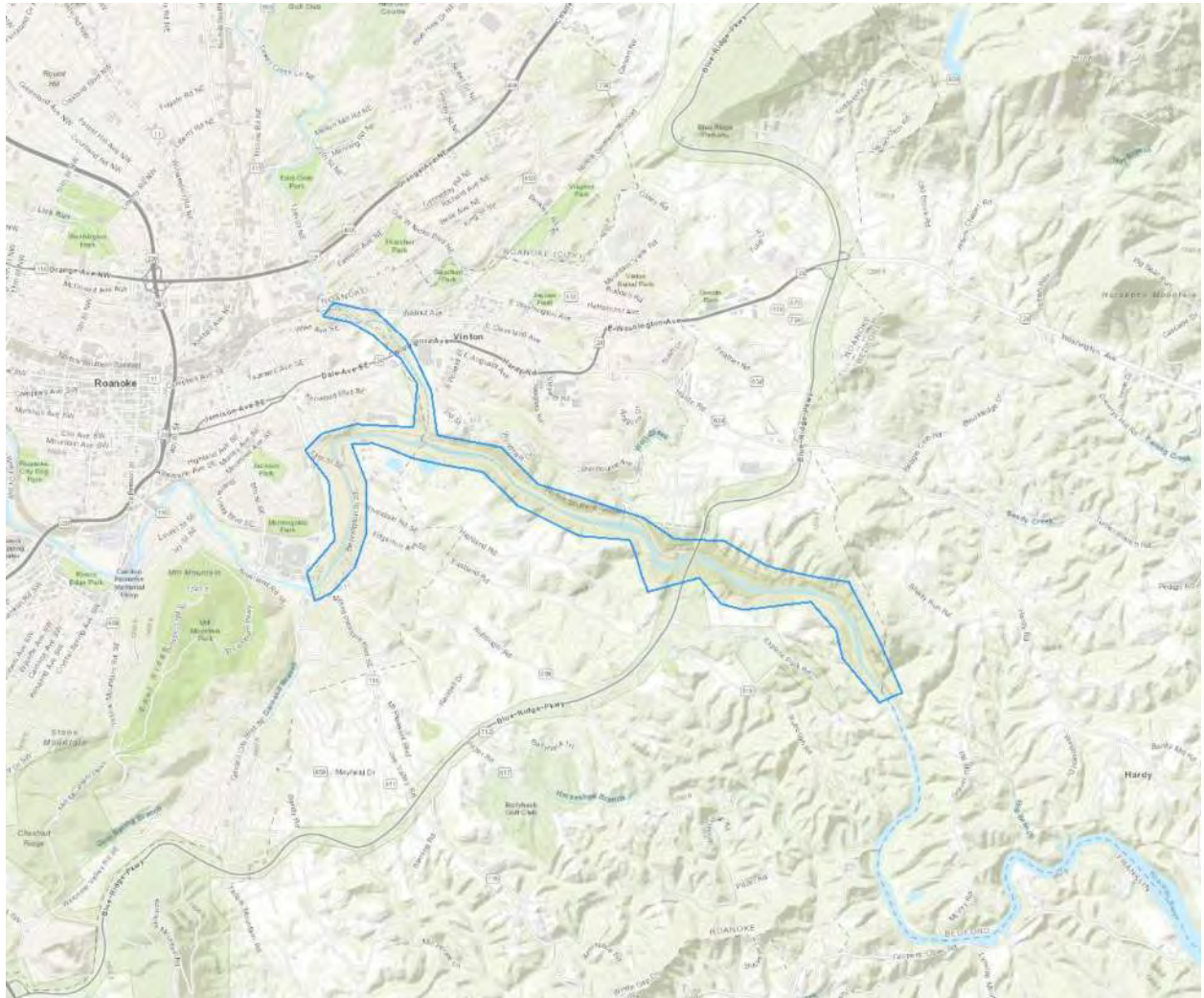
1.3.6.4 Environmental Quality Features

Abiotic attributes of the landscape (e.g., temperature, moisture, slope, aspect, etc.).

1.3.6.5 Soil and Sediment

The topmost layer of earth on the landscape and its components (e.g., rock, sand, gravel, silt, etc.). This feature includes the physical characteristics of soil, such as depth, compaction, etc. Soil quality attributes (e.g., temperature, pH, etc.) should be placed in the Environmental Quality Features.

1.4 Action Area



1.5 Conservation Measures

1.5.1 correct electrofishing techniques

Description

See attached Application Package.

Electrofishing will be used in life stage-specific habitats and when feasible, sampling will be performed using snorkel survey techniques.

Direct interactions

- [electrocution](#)

1.5.2 targeted sampling design

Description

Larval drift study was designed to use the minimum number of sampling events to confidently document drift of eggs and larvae within the Project area, while minimizing the numbers of organisms collected.

Direct interactions

- [collection](#)

1.6 Prior Consultation History

See attached Application Form/Package

July 2020 consulted on the proposed gate replacement project at Niagara Hydroelectric Project.

Project was approved and construction has been initiated.

1.7 Other Agency Partners And Interested Parties

Virginia Department of Wildlife

See list provided in attached Application Form/Package

1.8 Other Reports And Helpful Information

[Project Pre-Application Document \(http://www.aephydro.com/Content/documents/2019/NiagaraNoticeofIntentandPre-Application.pdf\)](http://www.aephydro.com/Content/documents/2019/NiagaraNoticeofIntentandPre-Application.pdf)

[Project Revised Study Plan \(http://www.aephydro.com/Content/documents/2019/NiagaraFilingofRevisedStudyPlanforRelicensingStudiesFERCNo2466.pdf\)](http://www.aephydro.com/Content/documents/2019/NiagaraFilingofRevisedStudyPlanforRelicensingStudiesFERCNo2466.pdf)

[Project Study Plan Determination \(http://www.aephydro.com/Content/documents/2020/20191206_FERC_to_AEP_StudyPlanDetermination.pdf\)](http://www.aephydro.com/Content/documents/2020/20191206_FERC_to_AEP_StudyPlanDetermination.pdf)

[Project Initial Study Report \(http://www.aephydro.com/Content/documents/2021/NiagaraInitialStudyReport01-11-2021.pdf\)](http://www.aephydro.com/Content/documents/2021/NiagaraInitialStudyReport01-11-2021.pdf)

Relevant documentation

- [Jon Studio 3-200-59 Application Package](#)

2 Species Effects Analysis

This section describes, species by species, the effects of the proposed action on listed, proposed, and candidate species, and the habitat on which they depend. In this document, effects are broken down as direct interactions (something happening directly to the species) or indirect interactions (something happening to the environment on which a species depends that could then result in effects to the species).

These interactions encompass effects that occur both during project construction and those which could be ongoing after the project is finished. All effects, however, should be considered, including effects from direct and indirect interactions and cumulative effects.

2.1 Indiana Bat

This species has been excluded from analysis in this environmental review document.

Justification for exclusion

Proposed action involves instream sampling for Roanoke Logperch and benthic macroinvertebrates during established TOYR periods. No upland work is proposed for this effort.

2.2 Northern Long-Eared Bat

This species has been excluded from analysis in this environmental review document.

Justification for exclusion

Proposed action involves instream sampling for Roanoke Logperch and benthic macroinvertebrates during established TOYR periods. No upland work is proposed for this effort.

2.3 Roanoke Logperch

2.3.1 Status of the species

This section should provide information on the species' background, its biology and life history that is relevant to the proposed project within the action area that will inform the effects analysis.

2.3.1.1 Legal status

The Roanoke Logperch is federally listed as 'Endangered' and additional information regarding its legal status can be found on the [ECOS species profile](#).

2.3.1.2 Recovery plans

Available recovery plans for the Roanoke Logperch can be found on the [ECOS species profile](#).

2.3.1.3 Life history information

The Roanoke logperch is a large darter, growing to about 6 inches long. It has a bulbous snout, lateral blotches, back is scrawled, and most fins are strongly patterned. First dorsal fin has an orange band, particularly vivid in mature males. It can be found in larger streams in the upper Roanoke, Smith, Pigg, Otter, Nottoway river systems, and Goose Creek in Virginia and in the Dan, Mayo, Smith river systems and Big Beaver Island Creek in North Carolina. They prefer large sized warm clear streams and riffles, runs and pools with sand, gravel or boulder.

Identified resource needs

Dissolved oxygen

Concentration: normal

Invertebrates

Species: caddisfly larvae of the hydropsychidae and chironomids and other aquatic insects

Runs

Depth: moderate to deep, spatial arrangement: connected to shallow to moderate riffles (male spawning-period habitat) and time of year: april and may

Streamflow

Depth: 16- 30 cm, type: oxbows, backwaters and velocity: slow

Streamflow

Time of year: spring and velocity: fast-flowing

Substrate structure and characteristics

Percent silt: 0-25%, sediment/silt embededness: 0-25% embedded and substrate size: small gravel to boulders

Water temperature

Temperature: 12-14 deg c and time of year: april or may

Water temperature

Temperature: relatively warm

Woody debris

2.3.1.4 Conservation needs

In response to stakeholder and agency requests, Appalachian proposes to perform surveys for Roanoke Logperch within the Project boundary using life stage-specific methodologies, as summarized in the attached Application Package (3-200-59).

2.3.2 Environmental baseline

*The environmental baseline describes the species' health **within the action area only** at the time of the consultation, and does not include the effects of the action under review. Unlike the species information provided above, the environmental baseline is at the scale of the Action area.*

2.3.2.1 Species presence and use

See information summarized in the attached Application Package (3-200-59).

Relevant documentation

- [Appalachian Historical Fisheries Surveys 1991 and 1992](#)
- [Jon Studio 3-200-59 Application Package](#)

2.3.2.2 Species conservation needs within the action area

In response to stakeholder and agency requests, Appalachian proposes to perform surveys for Roanoke Logperch within the Project boundary using life stage-specific methodologies, as summarized in the attached Application Package (3-200-59).

2.3.2.3 Habitat condition (general)

<http://www.aephydro.com/Content/documents/2021/NiagaraInitialStudyReport01-11-2021.pdf>

Supporting documentation

- [Appalachian Historical Fisheries Surveys 1991 and 1992](#)
- [Jon Studio 3-200-59 Application Package](#)

2.3.2.4 Influences

In response to stakeholder and agency requests, Appalachian proposes to perform surveys for Roanoke Logperch within the Project boundary using life stage-specific methodologies, as summarized in the attached Application Package (3-200-59).

2.3.2.5 Additional baseline information

In response to stakeholder and agency requests, Appalachian proposes to perform surveys for Roanoke Logperch within the Project boundary using life stage-specific methodologies, as summarized in the attached Application Package (3-200-59).

2.3.3 Effects of the action

This section considers and discusses all effects on the listed species that are caused by the proposed action and are reasonably certain to occur, including the effects of other activities that would not occur but for the proposed action.

2.3.3.1 Indirect interactions

As part of your project description, you identified that there are no anticipated environmental stressors resulting from your proposed project. Because there are no stressors occurring, no resource needs will be exposed to or affected by changes in the environment. Therefore, no indirect interactions will occur that would result in effects to the Roanoke Logperch.

2.3.3.2 Direct interactions

DIRECT IMPACT	CONSERVATION MEASURES	INDIVIDUALS IMPACTED	IMPACT EXPLANATION
Collection	Targeted sampling design	Yes	See attached Application Package
Electrocution	Correct electrofishing techniques	No	Aquatic biological studies were requested and refined during the development of the Project's Proposed Study Plan, Revised Study Plan, and Study Plan Determination that included coordination with VDWR, USFWS, and USEPA. Three of the requested studies occur during the recommended TOYRs (Table 1). Documents outlining agency requests and specific Project methodologies are located at http://www.aephydro.com/HydroPlant/Niagara , but general methods and rationale are provided below as a quick review.

DIRECT IMPACT	CONSERVATION MEASURES	INDIVIDUALS IMPACTED	IMPACT EXPLANATION
			<p>RLP adults and subadults: A three-day sampling period will occur between June 1 and June 30 to determine RLP occupancy of the Project's bypass reach below Niagara Dam during spring flows. Backpack electrofishing methods include two backpack electrofishing units to sample 64 quadrats (eight meters by four meters) in riffle-run habitat .</p> <p>Electrofishing equipment will be adjusted to function safely, providing minimum dose to facilitate collection while minimizing risks for fish damage or mortality.</p>

2.3.4 Cumulative effects

<http://www.aephydro.com/Content/documents/2021/NiagaraInitialStudyReport01-11-2021.pdf> (<http://www.aephydro.com/Content/documents/2021/NiagaraInitialStudyReport01-11-2021.pdf>)

See attached Application Package

2.3.5 Discussion and conclusion

Determination: NLAA

Compensation measures

See attached Application Package

Relevant documentation

- [Appalachian Historical Fisheries Surveys 1991 and 1992](#)
- [Jon Studio 3-200-59 Application Package](#)

3 Critical Habitat Effects Analysis

No critical habitats intersect with the project action area.

4 Summary Discussion, Conclusion, And Effect Determinations

4.1 Effect Determination Summary

SPECIES (COMMON NAME)	SCIENTIFIC NAME	LISTING STATUS	PRESENT IN ACTION AREA	EFFECT DETERMINATION
Indiana Bat	Myotis sodalis	Endangered	No	NE
Northern Long-eared Bat	Myotis septentrionalis	Threatened	No	NE
Roanoke Logperch	Percina rex	Endangered	Yes	NLAA

4.2 Summary Discussion

See attached Application Form/Package

4.3 Conclusion

See attached Application Form/Package

Table of Contents:

1. Application Form (3-200-59)
2. Introductory Statement and Application Form Supplement
3. Species Experience Table
4. Letters of Recommendation
5. Curriculum Vitae

1. Application Form (3-200-59)



FEDERAL FISH AND WILDLIFE PERMIT APPLICATION FORM U.S. FISH AND WILDLIFE SERVICE



Return to: U.S. Fish and Wildlife Service (USFWS)
[click here for return addresses](#)

Type of Activity: Native Endangered and Threatened Species
Scientific, Enhancement of Propagation, or Survival (i.e.,
Purposeful Take for Recovery)

Complete Sections A or B, and C, D, and E of this application. A U.S. physical address is required in Section C, see instructions for details.
Refer to the Application Form Instructions for information on how to make your application complete and help avoid unnecessary delays.

A. Complete if applying as an individual					
1.a. Last name		1.b. First name		1.c. Middle name or initial	
1.d. Suffix					
2. Date of birth (mm/dd/yyyy)		3. Occupation		4.a. Affiliation/Doing business as (see instructions)	
				4.b. Website URL (if applicable)	
5.a. Telephone number		5.b. Alternate telephone number		6. E-mail address	
B. Complete if applying on behalf of a business, corporation, public agency, Tribe, or institution					
1.a. Name of business, agency, Tribe, or institution			1.b. Doing business as (dba)		
2. Tax identification no.			3.a. Description of business, agency, Tribe, or institution		3.b. Website URL (if applicable)
4.a. Principal officer (P.O.) last name			4.b. P.O. first name		4.c. P.O. middle initial
4.d. P.O. e-mail address					
5. P.O. title			6. Primary contact name		
7.a. P.O. telephone number		7.b. Alternate phone no.		8.a. Primary contact telephone no.	
				8.b. Primary contact e-mail address	
C. All applicants MUST complete					
1.a. Physical address (U.S. Street address; Apartment #, Suite #, or Room #; no P.O. Boxes)					
1.b. City		1.c. State		1.d. Zip code/Postal code	
				1.e. County/Province	
				1.f. Country	
2.a. Mailing address (if different than physical address) and name of contact person (if applicable)					
2.b. City		2.c. State		2.d. Zip code/Postal code	
				2.e. County/Province	
				2.f. Country	
D. All applicants MUST complete					
1. Attach the nonrefundable application processing (check or money order), payable to the U.S. FISH AND WILDLIFE SERVICE in the amount indicated on page 3. Federal, Tribal, State, and local government agencies, and those acting on behalf of such agencies, are exempt from the processing fee – attach documentation of fee exempt status as outlined in Application Form Instructions (50 CFR 13.11(d)).					
2. Do you currently have or have you ever had any Federal Fish and Wildlife permits (includes named on permit or List of Authorized Individuals)?					
<p>Yes. List the number of the most recent permit you have held, or that you are applying to renew or amend:</p> <p>No.</p>					
<p>Certification: I hereby certify that I have read and am familiar with the regulations contained in Title 50, Part 13 of the Code of Federal Regulations and the other applicable parts in subchapter B of Chapter I of Title 50, and I certify that the information submitted in this application for a permit is complete and accurate to the best of my knowledge and belief. I understand that any false statement herein may subject me to the criminal penalties of 18 U.S.C. 1001.</p>					
				Digitally signed by Jonathan Studio Date: 2020.12.21 10:04:22 -05'00'	
Original or electronic signature of individual applicant/Principal Officer (no photocopied or stamped signatures)				Date (mm/dd/yyyy)	

E. ALL APPLICANTS MUST COMPLETE.

Provide the information outlined in Section E. on the following pages. Be as complete and descriptive as possible. Please do not send pages that are over 8.5" x 11," videotapes, or DVDs. See page 9 for information on the Paperwork Reduction Act, Privacy Act, and Freedom of Information Act aspects of your application.

OTHER FEDERAL, TRIBAL, STATE, OR LOCAL APPROVALS OR AUTHORIZATIONS REQUIRED TO CONDUCT YOUR REQUESTED ACTIVITY

Please be aware that there may be other requirements necessary to conduct proposed activities such as obtaining permission to work on Federal or Tribal lands, a Federal bird banding permit, a Tribal, State, county or municipal permit, etc.

Have you obtained all required Federal, Tribal, State, county, municipal or foreign government approval to conduct the activity you propose?

- ☐ **Yes.** Provide a copy of the approval(s). List the Federal agency, tribe, State, county, and/or municipality involved and type of document required. Include a copy of these documents with the application.

- ☐ **I have applied.** List the Federal agency, tribe, State, county, and/or municipality involved, date of application(s), and type of permit(s). Provide the reasons why the authorizations/permits have not been issued.

- ☐ **Not required.** The proposed activity does not require issuance of other approvals and/or authorizations.

No additional permissions are required, as the proposed is a scientific study and not a construction-related or other activity that would disturb additional resources. The study is being conducted in support of the FERC relicensing process for Appalachian Power Company's Niagara Hydroelectric Project. All access to the Roanoke River for study activities will be on lands owned by or covered by easement to Appalachian Power Company. Appalachian Power Company has consulted with federal and state agencies (including USFWS and the Virginia Department of Wildlife Resources) regarding the design of the study, and the study methodology and schedule have been approved by FERC.

APPLICATION TYPE AND PROCESSING FEES

Annual reports and any other required reports under your valid permit(s) must be on file before a permit will be considered for renewal or amendment. Check the appropriate box below for the activity that you are requesting.

- ☐ **Administrative change:** You may update your name, address, telephone number, fax number, or e-mail address in your current application package on file at any time. These changes are considered administrative changes, and an application processing fee is not required. If you wish to make an administrative change, please complete pages 1-4 and indicate the information you are updating (e.g., address, telephone number, etc.). Submit completed pages 1-4 to the appropriate Regional Office (see <https://www.fws.gov/endangered/permits/recovery-permits-contacts.html>).

Requests other than an administrative change require an application processing fee, as described below. Mark the appropriate box and enclose a check or money order payable to the *U.S. Fish and Wildlife Service* in the amount indicated. If you are **fee exempt**, attach evidence or a justification and mark this box ☐ (see section D.1.).

- ☐ **New.** \$100 permit application processing fee
- ☐ **Renewal.** \$100 permit application processing fee. If you are applying to renew a valid permit, your complete application package must be received at least **30 days** prior to the expiration of the valid permit ([50 CFR 13.22](https://www.fws.gov/endangered/permits/recovery-permits-contacts.html)) to avoid a lapse in permit coverage.

Renew my existing valid permit (**without changes**) using my current application on file. Permit no. _____. Provide the required information under Option 1 below.

Renew my existing valid permit (**with changes**). Permit no. _____. Below, indicate your requested amendments(s) and provide the required information under Option 2.

- ☐ **Amendment.** \$50 permit application processing fee: An amendment to a valid permit is requested at a time other than renewal. Permit no. _____.

When the information in your current application package on file has changed, then you must apply for an amendment to your valid permit. For example, **such changes may include the additions of species to the permit and/or changes in location or activities**. Please contact the Regional Recovery Permit Contact within the U.S. Fish and Wildlife Service Region of your proposed activity for technical assistance in making this determination (<https://www.fws.gov/endangered/permits/recovery-permits-contacts.html>). Provide the required information under Option 2 below. ☐ \$0 to **transfer** my existing valid permit. Use Option IV. Below to provide the required information.

Please indicate the amendment(s) you are requesting:

- ☐ Add species (specify) _____
- ☐ Add new activity) _____
- ☐ Add a geographic area _____
- ☐ Change in personnel _____
- ☐ Other (specify) _____

REFERRAL OF A RECOVERY PERMITTEE'S CONTACT INFORMATION (OPTIONAL)

The U.S. Fish and Wildlife Service often receives requests for contact information Permittees who could conduct endangered and threatened species (e.g., presence/absence surveys) contract work. In accordance with our Privacy Act System of Records Notice ([Permits System, Interior, FWS-21](#)), we may release the name, business address, business email address or business telephone number of those who wish to be contacted by third parties to do commercial survey activities. Such information is not normally released under the Freedom of Information Act - unless a compelling need on the part of the general public can be cited.

Please be aware that provision of Permittee contact information does not represent an endorsement by the USFWS of any particular Permittee. A referral is provided at the discretion of each U.S. Fish and Wildlife Service Regional Office as time and workload allow.

Please indicate below your preference for the release of your contact information to third parties.

- ☐ **Yes.** The U.S. Fish and Wildlife Service may release my name, business address, business email address and/or business telephone number to third parties as a referral for endangered and threatened species contract work.
- ☐ **No.** The U.S. Fish and Wildlife Service may not release my name, business address, business email address, and/or business telephone number to third parties.

SEA TURTLES

If your application involves sea turtles, please be aware that we share jurisdiction with National Marine Fisheries Service (NMFS)/National Oceanic and Atmospheric Administration (NOAA) Fisheries for **sea turtles**. We evaluate applications for permits to conduct activities impacting sea turtles on land, or when applicants are conducting activities both on land and in the marine environment, and NMFS/NOAA Fisheries evaluates applications for permits to conduct activities impacting sea turtles in the marine environment. To apply for a permit to conduct activities with sea turtles in the marine environment or other species under NMFS/NOAA Fisheries jurisdiction, please contact the NMFS via their permit web page at <https://www.fisheries.noaa.gov/permits-and-forms>.

DISQUALIFICATION FACTOR

A conviction, or entry of a plea of guilty or *nolo contendere*, for a felony violation of the Endangered Species Act, Lacey Act, Migratory Bird Treaty Act, or the Bald and Golden Eagle Protection Act disqualifies any such person from receiving or exercising the privileges of a permit, unless such disqualification has been expressly waived by the USFWS Director in response to a written petition (50 CFR 13.21(c)).

Have you or, if applying as a business, any of the owners of the business, been convicted, or entered a plea of guilty or *nolo contendere*, forfeited collateral, or are currently under charges for any violations of the Endangered Species Act, Lacey Act, Migratory Bird Treaty Act, or the Bald and Golden Eagle Protection Act?

- ☐ **No.**
- ☐ **Yes.** Provide the following (use a separate page(s) if needed to complete your response:
- a) The individual's name:
 - b) Date of charge:
 - c) Location of incident:
 - d) Court:
 - e) Action taken for each violation:

SPECIFIC RELEVANT ACTIVITY REQUIRED INFORMATION: OPTION 1

Option 1. Renew an existing valid recovery permit without changes.

If you are applying to **renew an existing valid recovery permit without changes**, sign the following statement. The individual signing Section D. on page 1 of the application must also sign the following statement. This certification language is required under 50 CFR 13.22(a).

I certify that the statements and information submitted in support of my original application for a U.S. Fish and Wildlife Service Recovery permit no. TE _____ are still current and correct and hereby request renewal of that permit without changes. I also certify that all annual reports and any additional reporting requirements have been submitted to the USFWS.

Original or electronic signature of individual applicant/Principal Officer

Please legibly write or type the Signatory's name

Date

Signing the above statement completes your renewal application. Please submit completed pages 1- 5 of this application to the Regional Office covering the location of your proposed activity (see <https://www.fws.gov/endangered/permits/recovery-permits-contacts.html>). Requests for permit renewal must be complete and received by the USFWS no later than 30 days prior to the permit expiration to ensure that your current permit remains in effect while we process your request.

SPECIFIC RELEVANT ACTIVITY REQUIRED INFORMATION: OPTION 2

Option 2. New Recovery Permit, or Renewal with Amendment, or Amendment of an Existing Permit

General permit regulations for the USFWS are found at 50 CFR 13. Regulations for Recovery permits under the Endangered Species Act (ESA) can be found at 50 CFR 17.22(a)(1) for endangered wildlife species, 50 CFR 17.32(a)(1) for threatened wildlife species, 50 CFR 17.62 for endangered plant species, and 50 CFR 17.72 for threatened plant species.

Applications for a recovery permit must provide the following specific information (relevant to the activity) in addition to the general information on the previous pages of this application form. Please attach separate pages as needed. In order to assist us in processing your application, please provide the item number (i.e., A.1.a., etc.) that corresponds to the required information before each of your responses.

A. Identify species and activity:

1. For a new Recovery Permit or Amendment of an Existing Permit:
 - a. Provide the common and scientific names of the species being requested for coverage in the permit and their status (endangered (E) or threatened (T)). If you need to search for the scientific name of the species, please visit www.fws.gov/endangered/?ref=topbar. If you are requesting the addition of species to an existing permit, identify the species to be added to your valid permit.
 - b. Provide the number, age, and sex of such species to the extent known.
 - c. Identify the activity(ies) sought to be authorized (i.e., presence/absence survey, nest monitoring, bird banding, etc.) for each species. If you hold a valid permit and you are not requesting changes to authorized activities, indicate "No Changes".
 - d. Provide the project title and project duration (start date/completion date) along with a copy of the study proposal, project funding agreement(s), etc., if applicable.
 - e. If you hold a valid permit and wish to amend it to delete species and/or activities, please identify activities and/or species to be deleted from your valid permit and the reason(s) for the deletion.
2. Also, for the collection of **plants from the wild on lands under Federal jurisdiction**:
 - a. Describe the plant part(s), and the number(s) or other type(s) of indication of material you plan to collect (i.e., whole plant, leaves, pollen, seeds, etc.).
 - b. If the proposed activity involves the collection of seeds from the wild, provide information that evaluates the effects of the seed collection on the reproductive potential of the species at the collection location.

B. Identify the location of the proposed activity:

1. Provide the name of each State, county, Tribal land, and the specific location of the proposed activity site(s) below. Include a formal legal description, section/township/range information, county tax parcel number, local address, or any other identifying property designation that will precisely place the location of the proposed activity site(s) below. Because the permit is enforceable; it is *required* that you list each specific State that you wish to work in.

Location	
State, county, tribal land, and the specific location of the proposed activity:	
Location Description:	

2. If the specific study area is known at the time of application, attach a U.S. Geological Survey map of the study area in 7.5 minute quadrangle (1:24,000) scale, or other appropriately scaled map. If you plan to conduct surveys on a contract basis in the future, these maps can be provided once the specific area is known, however, the counties in which you propose to work in must be provided at this time, or at the very least, the State(s).

3. If your request is for aquatic species, identify the aquatic system (river/lake/stream name, river mile information, and drainage basin).
4. For plant species, identify the lands under Federal jurisdiction (name, address) where the proposed activities will be conducted.

C. Describe the proposed activity:

Provide a statement justifying the permit request, including the items listed below. A copy of the pertinent research or study proposal that provides the required information should be attached if available. Attach additional separate pages as necessary.

1. Describe how the activities or proposal will help recover each species.
 - a. If there is an approved recovery plan, identify the recovery tasks by number and name, if applicable. Include any additional recovery tasks identified in a Spotlight Species Action Plan, if applicable, or in a 5-year status review of the species.
 - b. Identify or provide copies of any previous or similar research conducted on this species.
 - c. If this information exists, explain how the project will attempt to answer questions not answered by earlier research.
 - d. Explain how you will coordinate your efforts with past and ongoing research studies.
2. Describe in detail the purpose(s) and objective(s) of the activities or project.
 - a. Provide the study design, sampling methods and equipment to be used.
 - b. Identify any null hypothesis or other anticipated results from the project that will support the reasoning that the project will enhance the propagation or survival of the affected species.
 - c. Include planned disposition of specimens upon completion of project.
3. Can this activity or project result in the injury, death, or removal from the wild of any individuals of the species?
 - a. If yes, describe all that apply (i.e., injury, death, removal from the wild).
 - b. For each species, please state the maximum number of individuals that would be injured, killed, or removed from the wild: *[If applicable, please identify, based on a reasonable expectation, the number of individuals likely to be injured or killed per activity.]*
 - c. Please state what will be done to minimize the possibility of injury to or death of individuals.
 - d. If the proposed activity would cause the death of individuals from the wild or removal of individuals from the wild, describe your attempts to obtain the wildlife or plant specimens currently held in captivity/nurseries/museums, or produced in captivity. You must demonstrate conclusively that existing specimens are unavailable or your study objectives require new/additional specimens. *[Provide the identity and telephone number of each contact made in this regard.]*
4. Identify contracts and agreements held for the proposed activities (attach a copy or provide the title, funding organization name and address, date of signature, and duration of the contract).

Indicate whether full funding will be available for the completion of the proposed activity. *[If you do not hold a contract at this time, but foresee receiving one, you may apply for a permit contingent upon receiving the contract(s).]*
5. If live wildlife or plants to be covered by the permit are to be held in captivity:

[Note: Under regulations at 50 CFR 17.22(a)(3) and 17.32(a)(3), escape of wildlife held in captivity must be reported immediately to our appropriate Regional Office (see page 9 - USFWS Regional Contacts or www.fws.gov/endangered/regions/index.html).

 - a. Provide a complete description, along with photographs and/or diagrams, of the area and facilities where wildlife or plant(s) will be held and/or maintained in captivity and describe arrangements for care during transportation and maintenance. Include the name and physical address of the area and facilities. *[A separate discussion specific for each species must be provided, when applicable.]*
 - b. Provide the full name and contact information of the person(s) who will care for live specimens, and include a description of their experience in caring for these or similar species, including a resume of their experience in raising, caring for, and propagating these or similar wildlife or plants.
 - c. Provide a copy of any contract or agreement you have secured for care of any live specimens collected under this permit

request if the identified facility is not affiliated with you.

- d. List mortalities and/or injuries resulting from your activities with these or similar species in the last 2 years.
 - e. Provide an explanation of each mortality event and the procedures employed or modified to eliminate any future mortality events.
 - f. Indicate your willingness to participate in a cooperative breeding or propagation program or to contribute data to a database or studbook. Holding wildlife and plants in captivity must comply with our Policy Regarding Controlled Propagation of Species Listed under the Endangered Species Act. This policy can be found on the USFWS Endangered Species web page at www.fws.gov/endangered/laws-policies/policy-controlled-propagation.html. Briefly describe how the proposed activity will comply with this policy.
 - g. State the planned disposition of the collected and/or propagated species after termination of the project/activity.
6. If working in multiple terrestrial and/or aquatic sites, provide the steps, protocols, and methodologies you will follow to prevent the spread of invasive species, infectious disease agents, and parasitic organisms, and to decontaminate vehicles and equipment.

D. Identify the persons who will conduct the proposed activity:

- 1. Provide the full name of all individuals, *including first name, middle initial, and last name*, who you propose will conduct activities under this permit (Please note that only those individuals who will be conducting the proposed activities independently without direct, and on-site supervision of an appropriately permitted individual need be included here).
 - a. If more than one activity is included in the permit application, indicate which activity(ies) will be completed by each individual.
 - b. For each listed individual, please provide a copy of each person's resume and/or curriculum vitae, in addition to specific information on previous professional training and experience conducting the proposed activities with the requested species or similar species. Information must include: dates and locations of previous activities involving these or similar species and the name of the supervising individual(s) under which such activities were conducted, and the approximate number of each species the applicant has worked with at each site.
 - c. For each listed individual, please provide at least two reference letters indicating the name, title, organization, email address, and telephone number preferably from federally permitted persons independent of each individual's place of employment, who can verify the individual's experience with the species.

END OF APPLICATION REQUIREMENTS

APPLICATION FORM INSTRUCTIONS

The following instructions pertain to U.S. Fish and Wildlife Service (USFWS) permit applications. The General Permit Procedures in [50 CFR 13](#) address the permitting process. For simplicity, all licenses, permits, registrations, and certificates are referred to as a permit.

GENERAL INSTRUCTIONS:

- Complete all relevant questions in Sections A or B, C, D, and E.
- **An incomplete application may cause delays in processing or may be returned to the applicant. Be sure you are completing in the appropriate application form for the proposed activity.**
- Print clearly or type the required response. Illegible applications may cause delays.
- Original or electronic signature of the application is required. Faxes or copies of the original signature will not be accepted.
- Mail the original application to the address at the top of page one of the applications or, if applicable, on the attached address list.
- **Keep a copy of your completed application.**
- **Please plan ahead. Allow at least 60 days for your application to be processed; however, some applications may take longer than 90 days to process ([50 CFR 13.11](#)).**
- Applications are processed in the order in which they are received.

SECTION A OR SECTION B:

Section A. Complete if applying as an individual:

- Enter the complete name of the responsible individual who will be the permittee if a permit is issued. Enter personal information that identifies the applicant.
- If you are applying on behalf of a client, the personal information must pertain to the client, and a document evidencing power of attorney must be included with the application.
- **Affiliation or Doing business as (dba):** business, agency, organizational, Tribe, or institutional affiliation directly related to the activity requested in the application (e.g., a taxidermist is an individual whose business can directly relate to the requested activity).

Section B. Complete if applying as a business, corporation, public agency, Tribe, or institution:

- Enter the complete name of the business, agency, Tribe, or institution that will be the permittee if a permit is issued. Give a brief description of the type of business the applicant is engaged in. Provide contact phone number(s) of the business. If you are applying on behalf of a client, a document evidencing power of attorney must be included with the application.
- **Principal Officer** is the person in charge of the listed business, corporation, public agency, Tribe, or institution and who is responsible for the application and any permitted activities. Often the Principal Officer is a Director or President. The **Primary Contact** is the person at the business, corporation, public agency, Tribe, or institution who will be available to answer questions about the application or permitted activities. Often, it is the preparer of the application.

ALL APPLICANTS COMPLETE SECTION C:

- A physical U.S. address is required.
- **Mailing address** is the address to which communications from USFWS should be mailed if different from the applicant's physical address.

ALL APPLICANTS COMPLETE SECTION D:

Section D.1. Application processing fee:

- An application processing fee is required at the time of application, unless exempted under 50 CFR 13. The application processing fee is assessed to partially cover the cost of processing a request. **The fee does not guarantee the issuance of a permit, nor will fees be refunded for applications for which processing has begun.**
- **Documentation of fee exempt status is not required for applications submitted by Federal, Tribal, State, or local government agencies, but must be supplied by those applicants acting on behalf of such agencies.** Such applications must include a letter on agency letterhead and signed by the head of the unit of government for which the applicant is acting on behalf, confirming that the applicant will be carrying out the permitted activity for the agency.

Section D.2. Federal Fish and Wildlife permits:

- List the permit number of your most recently issued USFWS permit.

Section D.3. CERTIFICATION:

- **The individual identified in Section A, the principal officer named in Section B, or a person with a valid power of attorney (documentation must be included in the application) must sign and date the application using original or electronic signature.** This signature legally binds the applicant to the statement of certification. You are certifying that you have read and understand the regulations that apply to the permit. You are also certifying that all information included in the application is true to the best of your knowledge, as described under 50 CFR 13. Be sure to read the statement and re-read the application and your answers before signing.

NOTICES

PRIVACY ACT STATEMENT

Authority: The information requested is authorized by the following: the Bald and Golden Eagle Protection Act (16 U.S.C. 668), 50 CFR 22; the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), 50 CFR 17; the Migratory Bird Treaty Act (16 U.S.C. 703-712), 50 CFR 21; the Marine Mammal Protection Act (16 U.S.C. 1361, et seq.), 50 CFR 18; the Wild Bird Conservation Act (16 U.S.C. 4901-4916), 50 CFR 15; the Lacey Act: Injurious Wildlife (18 U.S.C. 42), 50 CFR 16; Convention on International Trade in Endangered Species of Wild Fauna and Flora (TIAS 8249), 50 CFR 23; General Provisions, 50 CFR 10; General Permit Procedures, 50 CFR 13; and Wildlife Provisions (Import/export/transport), 50 CFR 14.

Purpose: The collection of contact information is to verify the individual has an eligible permit to conduct activities which affect protected species. This helps USFWS monitor and report on protected species and assesses the impact of permitted activities on the conservation and management of species and their habitats.

Routine Uses: The collected information may be used to verify an applicant's eligibility for a permit to conduct activities with protected species; to provide the public and the permittees with permit related information; to monitor activities under a permit; to analyze data and produce reports to monitor the use of protected species; to assess the impact of permitted activities on the conservation and management of protected species and their habitats; and to evaluate the effectiveness of the permit programs. More information about routine uses can be found in the System of Records Notice, Permits System, FWS-21.

Disclosure: Response to the information requested in this form is voluntary. However, submission of requested information is required to process applications for permits authorized under the listed authorities. Failure to provide the requested information may be sufficient cause for the U.S. Fish & Wildlife Service to deny the request.

PAPERWORK REDUCTION ACT STATEMENT

We are collecting this information subject to the Paperwork Reduction Act (44 U.S.C. 3501) to provide the U.S. Fish and Wildlife Service the information needed to decide whether or not to allow the requested use and to respond to requests made under the Freedom of Information Act and the Privacy Act of 1974. The information that you provide is voluntary; however, submission of the requested information is required to evaluate the qualifications, determine eligibility, and document permit applicants. Failure to provide all required information is sufficient cause for the U.S. Fish and Wildlife Service to deny a permit. We may not conduct or sponsor, and you are not required to respond to a collection of information, unless it displays a currently valid OMB control number. OMB has approved this collection of information and assigned OMB Control No. 1018-0094.

ESTIMATED BURDEN STATEMENT

Public reporting for this collection of information is estimated to average 3 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Service Information Clearance Officer, U.S. Fish and Wildlife Service, 5275 Leesburg Pike, MS: PRB (JAO/3W), Falls Church, VA 22041-3803, or via email at Info_Coll@fws.gov. Please do not mail your completed form to this address.

FREEDOM OF INFORMATION ACT NOTICE (FOIA)

For organizations, businesses, or individuals operating as a business (i.e., permittees not covered by the Privacy Act), we request that you identify any information that should be considered privileged and confidential business information to allow the USFWS to meet its responsibilities under FOIA. Confidential business information must be clearly marked "Business Confidential" at the top of the letter or page and each succeeding page and must be accompanied by a non-confidential summary of the confidential information. The non-confidential summary and remaining documents may be made available to the public under FOIA [43 CFR 2.23 and 43 CFR 2.24].

2. Introductory Statement and Application Form Supplement

December 17, 2020

To whom this may concern:

My name is Jonathan A. Studio and I work as an ecological consultant and fish biologist for Edge Engineering & Science, LLC (EDGE). I am applying for a new Federal Scientific Collector's Recovery permit for Roanoke Logperch (*Percina rex*; RLP), which I was previously permitted for while under Virgil Brack's permit (TE02373A-14) at Environmental Solutions & Innovations, Inc. (ESI). The following information is submitted to attain a Federal Scientific Collector's permit that will be used to conduct presence/absence and density surveys for Appalachian Power Company's Niagara Hydroelectric Project (FERC No. 2466-034, Project). The referenced surveys were requested by federal and state agencies to support the FERC relicensing process for the Project. All access to the Roanoke River for study activities will be on lands owned by or covered by easement to Appalachian Power Company. Appalachian Power Company has consulted with federal and state agencies (including U.S. Fish and Wildlife Service [USFWS] and Virginia Department of Wildlife Resources [VDWR]) regarding the design of the study, and the study methodology and schedule have been approved by FERC. All other future project details are unknown until proposed projects are requested, at which point all potential surveys will be coordinated with the proper USFWS Regional and/or Field Office and will receive approval before any work or surveys are conducted.

Before starting my career in environmental consulting, I developed an ichthyological knowledgebase during my undergraduate experiences at Kent State University (2011-2015) in Ohio. I then obtained a master's degree from James Madison University (2016-2018) where I investigated competition between American Eels (*Anguilla rostrata*) and Brook Trout (*Salvelinus fontinalis*) in Virginia streams. During this time, I gained experience leading field crews and conducting backpack electrofishing surveys for stream fishes in Shenandoah National Park and George Washington and Jefferson National Forests. I employed methods such as gastric lavage, PIT tagging, and drift netting that require increased caution and care to safely complete and assure minimal adverse impacts to organisms. I have extensive experience capturing, handling, and accurately identifying fishes in multiple watersheds of multiple states and notably including the Roanoke River.

While employed as an aquatic scientist at ESI, most of my time was spent conducting fish surveys in Virginia, primarily in the Roanoke River basin. I trained and supervised field crews while coordinating with clients and state agencies to successfully complete fish removals in dewatered stream sections for various projects where instream-disturbance activities occurred. I completed fish removals in streams of variable sizes, including many (5+) streams that have suitable habitat or known occupation of RLP, and identified thousands of fishes of more than 30 species. Prior to this Project, I have not handled RLP

during project-related sampling efforts; however, I have performed observations of young-of-year, juvenile, and adult RLP on several occasions while snorkeling for mussel surveys. I also have experience collecting and safely handling a sister species, Common Logperch (*Percina caprodes*) in Ohio.

My role as a vital teammate responsible for drafting a Biological Assessment to comply with ESA Section 7 consultation on a large interstate pipeline project in Virginia required countless hours of research and synthesis of information on RLP from the available literature. This experience increased my familiarity with the autecology of RLP, including its associated assemblage (e.g., status and distribution, habitat requirements, ontogenetic habitat shifts, land-use impacts, effects analysis and determinations, etc.). More recently, I developed a Study Plan with an embedded experimental design for surveying adult, young-of-year, and larval RLP in association with the Niagara Hydroelectric Project on the Roanoke River (in cooperation with the Applicant, VDWR, U.S. Environmental Protection Agency [USEPA], Virginia Department of Environmental Quality [VDEQ], Virginia Tech [Dr. Paul Angermeier], and USFWS – Gloucester Field Office).

In my current role at EDGE, I have managed several hydroelectric relicensing projects (including Niagara) and served as field crew leader in the Roanoke River in Roanoke County, Virginia (September through October 2020). During general fish community backpack electrofishing surveys in September, we captured a single live RLP adult. I safely and successfully handled, evaluated, and returned this individual to the stream. Although I have conducted fish surveys for over seven years, this RLP collection represented a culmination of my experience and preparation.

Specific Relevant Activity Required Information: Option 2

A. Identify species and activity (page 6):

A.1.a. *Percina rex* (Roanoke Logperch; RLP) (Endangered)

A.1.b. Although there is no estimate for abundance of RLP in the Niagara Dam Hydroelectric Relicensing Project (Project) area, Appalachian and AEP (1992) observed 10 RLP and estimated that 24% of the two-mile segment of the Roanoke River below Niagara Dam contained suitable RLP habitat. Further, USFWS (2007) states the upper Roanoke River is occupied by the largest population of RLP.

A.1.c. Activities include individualized survey techniques for each life stage. Survey methods are designed around identifying RLP presence/absence and determining RLP densities. RLP adults (Age 1+) are targeted with backpack electrofishing and

seining methods, young-of-year (YOY) are targeted with seine hauls, and larvae are targeted with drift net sets (see Section C below for detailed methodologies).

A.1.d. Niagara Hydroelectric Project (FERC No. 2466-034). March 2021 – September 2021. Study plan and other Project materials can be found here: <http://www.aephydro.com/HydroPlant/Niagara>. All other potential surveys will be coordinated with the proper USFWS Field Office and will receive approval before any work or surveys are conducted. For the purposes of this permit application, Niagara Hydroelectric Dam Relicensing Project will be the focus of methods and requests.

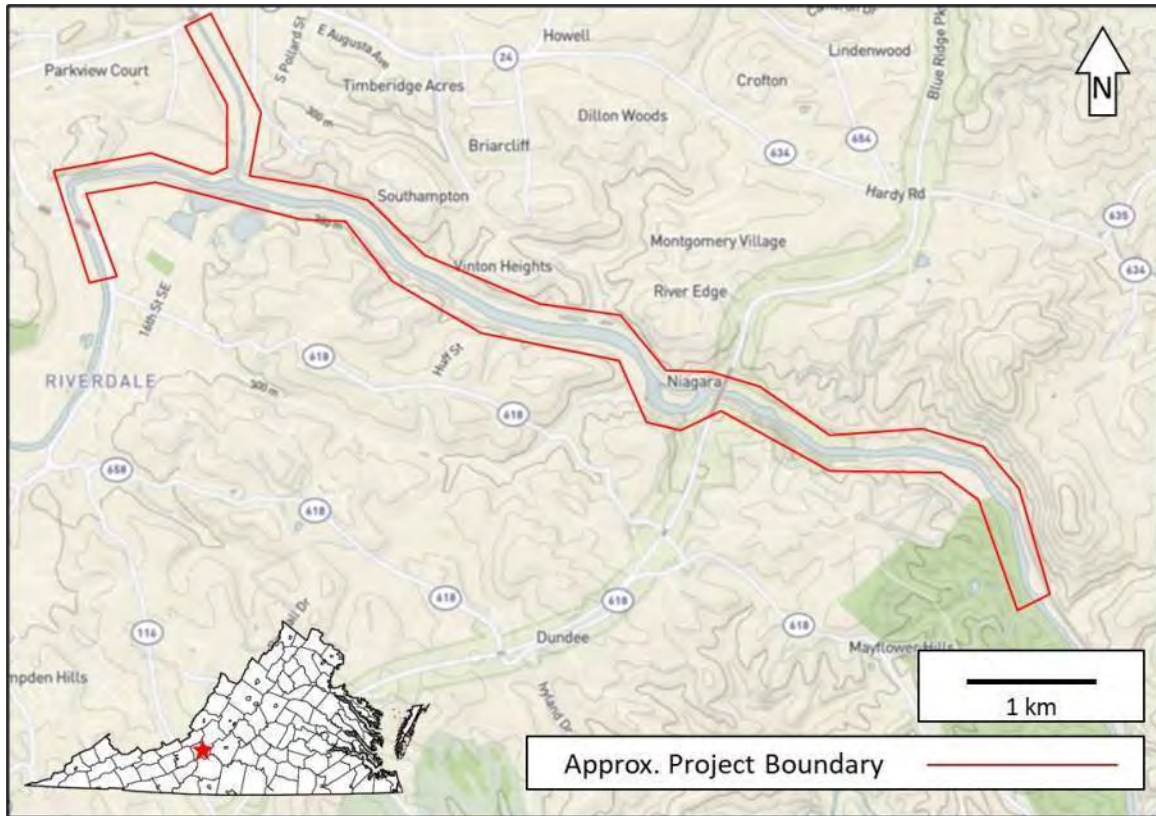
A.1.e. N/A. No deletions requested.

A.2. N/A for all subsections. No plants requested for addition to permit.

B. Identify location of the proposed activity (page 6):

B.1. The Niagara Hydroelectric Project is located in Roanoke County, Virginia. If additional proposed projects are requested range wide for the species, presence/absence and density surveys may also be conducted elsewhere in Virginia and North Carolina throughout their known and historic range (e.g., Upper Roanoke and Dan Rivers and tributaries in the Roanoke River Drainage in Virginia and North Carolina. Nottoway River and tributaries in the Chowan River Drainage). Exact details are unknown until proposed projects are requested at which point all potential surveys will be coordinated with the proper USFWS Regional and/or Field Office and will receive approval before any work or surveys are conducted.

B.2. Current map below (Niagara Hydroelectric Project Area in the Roanoke River, Roanoke County, Virginia):



B.3. Upper Roanoke River system at river mile 355.

B.4. N/A. No plants requested for addition to permit.

C. Describe the proposed activity (page 7):

C.1.a. Avoiding, minimizing, and/or mitigating impacts to RLP can be carried out through project-specific methods and surveys and may further aid in recovery of RLP. More specifically, item seven of 'Actions Needed' within the Roanoke Logperch Recovery Plan (USFWS 1992) reads "monitor population levels and habitat conditions", which will be augmented through Project and future surveys resulting from this permit. Additionally, 'Proposed Recovery Benchmarks' and 'Monitoring Recommendations' sections within An Update to the Roanoke Logperch Recovery Plan (Rosenberger 2007) and item five of 'Recommendations for Future Actions' within RLP 5-Year Review (USFWS 2007) support the need for monitoring to inform recovery of the RLP. Because RLP exhibit ontogenetic habitat shifts, survey efforts targeting various life stages are implemented using separate sampling methods.

Collecting data that helps inform population dynamics and site-specific habitat conditions of RLP through larval surveys in the Upper Roanoke River system may

have a great positive impact on conservation because of how little data there currently is, especially with regards to how dams may potentially impact populations and habitat. Only two larval density studies have ever been completed using drift net methods (Hallerman et al. 2017; Buckwalter et al. 2019), thus there is a large knowledge gap in the early life-stages for this species. The proposed Niagara Hydroelectric Project relicensing studies may potentially lend insight into large-scale population dynamics as USFWS (2007) lists large dams and reservoirs as a potential threat to RLP. Sampling techniques will closely follow methods outlined in these two studies, which has been carefully coordinated with the authors and Virginia Polytechnic Institute and State University (Virginia Tech). Supplementary habitat and water quality parameters documented at the time of surveys will fill existing knowledge gaps and potentially facilitate decisions affecting the recommended actions of the RLP Recovery Plan (USFWS 1992), An Update to the Roanoke Logperch Recovery Plan (Rosenberger 2007), and RLP 5-Year Review (USFWS 2007).

(See Section C.1.c. and C.1.d. for further collaboration efforts)

C.1.b. There have been numerous studies identifying habitat suitability, population trends, and conservation needs of adult and young-of-year RLP (e.g., Anderson 2016, Ensign et al. 2000, Lahey and Angermeier 2007, Roberts et al. 2013, and Rosenberger and Angermeier 2002). However, there have only been two larval RLP studies conducted, both concerning drift timing and larval RLP identification methods (Buckwalter et al. 2019 and Hallerman et al. 2017). Drift nets are the most effective sampling methods for *Percina* (Buckwalter et al. 2019) and now that methods of larval RLP identification are being developed, research on this life stage is necessary to further address emergence timing and use of habitat within developed areas of stream ecosystems. Larval survival is a fundamental component in understanding population dynamics for the species and, at present, insufficient information or data are available.

C.1.c. Earlier research focuses on topics listed in Section C.1.b.

- The proposed study will supplement current data by applying previous research methods to analyze the abundance and density within the Upper Roanoke system, which is one of the more robust subpopulations (Lahey and Angermeier 2007).
- Studying relatively healthy populations and their habitat will lend insight to population structure and inform potential goals for increasing habitat and range.

- Understanding potential habitat use and movement through impoundments may be useful for informing operation and maintenance decisions for dams on the Roanoke River and throughout RLP range.

C.1.d. Coordination and cooperation with research entities drives project-specific experimental design and relevant data is disseminated whenever possible. For example, we have a working relationship with Dr. Paul Angermeier at Virginia Tech who is the leading expert on RLP and has provided invaluable insight to this study and the body of knowledge about the species. Our studies will fill gaps in the current body of research and allow his colleagues to identify and house larval specimens for continued research and educational purposes. Larval specimens will be sent to the lab responsible for publishing the majority of the existing RLP research. The Virginia Tech lab will help refine larval identification methods and add directly to the current knowledge base using the same methods and comparable sites, habitats, and locations. The following are just a few of the individuals who requested these studies and have reviewed and concurred with the proposed methodologies:

Mr. John McCloskey
Fish and Wildlife Biologist, Virginia Field Office
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
richard_mccorkle@fws.gov

Mr. Scott Smith
Region 2 Fisheries Manager
Virginia Department of Wildlife Resources
scott.smith@dwr.virginia.gov

Mr. Brian McGurk
Water Withdrawal Permit Writer
Virginia Department of Environmental Quality
Brian.McGurk@deq.virginia.gov

C.2.a. Study-specific sampling methods for each life stage (adult, YOY, and larvae) are outlined below:

Sampling adult RLP will involve capturing stunned fish in a bag seine that is placed downstream of a backpack electrofishing unit at eight riffle/run sites. Fixed-area quadrat sampling design, which allows for RLP density calculations (Anderson 2016),

will be used to sample sites varying from 500 to 5,000 square meters (1,640 to 16,404 square feet). All eight sites will be sampled between August and October 2021. One of these sites (bypass reach) will include an additional sampling event between May and June 2021, pending approval of a RLP time-of-year restriction waiver from VDGIF and USFWS, because it is hypothesized that more-suitable habitat may be available to RLP during elevated spring flows. A range of habitat parameters (i.e., depth, velocity, silt coverage, and pebble counts) will be measured at each sample site to calculate RLP habitat suitability index (HSI) (Ensign et al. 2000). If RLP are not captured during electrofishing surveys at any of the eight sites, biologists will spend a minimum of one-hour search time snorkeling or diving suitable RLP habitat to augment detectability and minimize false-negative survey efforts. Relative abundance, species richness, body condition, spatial distribution, density, and catch per unit effort will be calculated and compared to historical data and previous studies.

Young-of-year will be sampled between August and October 2021 using life-stage specific techniques outlined in Argentina and Roberts (2014) (i.e., using shoreward seine hauls (≥ 20 per site) in slow moving, shallow, shoreline habitat). Basic water quality and substrate measurements will be collected and recorded at each sample site. All RLP young-of-year individuals will be enumerated and measured for total length and weight. All data will be analyzed with the goal of direct comparison with previously completed YOY RLP studies (e.g., relative abundance, species richness, body condition, spatial distribution, and catch per unit effort).

For adults and young-of-year RLP sampling, the first 30 non-RLP individuals of each species (and all RLP individuals) will be measured for total length and weight. However, all captured individuals will be enumerated and identified to the lowest taxonomic level practicable and released at the location of capture.

RLP larvae will be sampled after dusk from April to June 2021 using two, 20-minute drift net sets per site in riffle/run adjacent habitat. In total, we propose 100 net sets (5 sites, two sets once a week for 10 weeks) using the same methods as Buckwalter et al. (2019). All samples will be preserved in 95% ethanol (resulting in Take) and stored before species identification via morphometric analysis and DNA barcoding at Virginia Tech. All survey protocols and methods were developed in coordination with appropriate state and federal agencies, stakeholders, clients, and RLP experts. Larval RLP data will be analyzed for body condition, spatial distribution, volumetric density, and site-specific habitat parameters will be measured and recorded.

C.2.b. Results will inform Project-specific objectives such as establishing a baseline characterization of presence, abundance, density, and distribution throughout this

section of the Roanoke River, support cumulative effects analysis, and support/inform ESA Section 7 consultation. Results of the adult, YOY, and larval surveys may also potentially inform 'future research' needs posed by Buckwalter et al. (2019) by adding to limited understanding of RLP population demographics and year-class strength and recruitment.

C.2.c. Sampling efforts targeting adult and young-of-year RLP plans to catch and release all live specimens. However, accidental wounding or killing of an animal (e.g., crushing via substrate shifts or stepping on) could potentially happen due to the nature of sampling methods (e.g., electrofishing, kick sets, benthic seining). In the event an animal does expire during survey efforts, the appropriate state and federal agency offices will be notified within 24 hours and the animal is placed in ethanol before being deposited to the preferred repository per USFWS direction. In the case of drift net collections targeting larval RLP, all specimens collected in the drift net will be preserved, stored, sorted, identified, and deposited at Virginia Tech. Due to the nature of larval sampling and processing techniques, posthumous identifications of larval RLP will be made.

C.3.a. Injury, death, and removal from the wild are a possibility when conducting electrofishing, seining, and drift net surveys (see Section C.2.c). Survey activities will only be performed following coordination and approval by the appropriate USFWS Regional and/or Field Office.

C.3.b. Larval drift rates may be eruptive and/or pulsed and dependent upon environmental conditions during sampling events; therefore, the variance associated with larval capture rates is unknown, but may be wide. The estimated Take associated with proposed RLP larval sampling is based on the best available science (Buckwalter et al. 2019) in a single preceding study (U.S. Fish and Wildlife Service permit TE-697823). During 2015 and 2018 sampling efforts, a total of 18 sites were sampled via drift nets throughout the upper Roanoke River system and a total of 220 RLP larvae were captured in a total of 965 net sets (average CPUE is 0.228 including both survey years). The 75th percentile was 3.25 RLP per drift net set and maximum captured in one set was 9 (when drift net captured one or more larvae of a given species). We propose 100 total net sets (5 sites, two sets once a week for 10 weeks) using the same methods. Based on the aforementioned CPUE, our estimated Take would be 22 RLP larvae. If all net sets reached 75th percentile catch rate, Take would be 325. If all net sets captured the maximum, Take would be 900 RLP larvae. Based on the above information, for 100 proposed net sets, our estimated Take of larval RLP is 200 individuals. Due to the unknown variability in capture rates associated with drift net surveys, a conservative but reasonable approach has been taken that accounts for a

CPUE that is 8 times greater than previously observed. Adult and young-of-year will be released at the location of capture.

C.3.c. To minimize harm to adult RLP, electrofishing units will be calibrated to the conductivity of the water. Surveys will be limited to only what is deemed necessary to collect the data. Captured fish will be placed in large, instream cage nets (but outside of the sampling field) to allow for proper flow-through, temperature, and oxygenation. Care will be taken to minimize handling of specimens to reduce stress and each fish will be released immediately following the collection of morphometric data and photographic ID vouchers.

To minimize harm to young-of-year RLP, only three field personnel will conduct seining efforts to limit potential for trampling. Surveys will be limited to only what is deemed necessary to collect the data. Captured fish will be placed in large, instream cage nets (but outside of the sampling field) to allow for proper flow-through, temperature, and oxygenation. Care will be taken to minimize handling of specimens to reduce stress and each fish will be released immediately following the collection of morphometric data and photographic ID vouchers.

In the case of drift net collections for larval RLP, surveys will be limited to only what is deemed necessary to collect the data scoped by the aforementioned individuals that participated in the study scoping.

C.3.d. N/A. Activities requested under this permit are for required, Project-specific presence/absence and/or density surveys to characterize existing extant populations within the Project area. This information cannot be obtained previous research, museum specimens or captive populations.

C.4. A contractual agreement is in place as of September 2020 between EDGE Engineering & Science (employer) and HDR, Inc. (consultant to Project owner and operator) to complete this study in association with FERC relicensing and Section 7 obligations (prior to relicensing deadline in 2024). All funding is available to the completion of the proposed surveys. The Project owner and operator is currently coordinating a contract with Virginia Tech for the laboratory component of the study, which also includes funding through the conclusion of the study.

C.5. N/A for all subsections. No plants or animals collected under this permit will be held in captivity.

C.6. To prevent the spread of aquatic nuisance and/or invasive species/agents, proper decontamination will be a high priority before surveys begin and when moving

between watersheds. Before mobilizing, all aquatic gear will be sprayed with a solution of diluted bleach, salt, or other appropriate decontamination solutions. When possible, all aquatic gear will also be left out to dry for extended periods of time to further prevent spread of invasive species through desiccation. For terrestrial gear, boot bottoms, buckets, etc. will also be sprayed with a bleach solution or other decontaminant. Vehicles will be run through a car wash to dislodge mud and seeds.

D. Identify the persons who will conduct the proposed activity (page 8):

D.1.a. All surveys related to RLP will be completed by Jonathan A. Studio following coordination with the proper USFWS Regional and/or Field Office and will receive approval before any work or surveys are conducted.

D.1.b. I have enclosed my curriculum vitae, species experience spreadsheet, and letters of recommendation.

D.1.c. Contact information for my references attesting to competency with fish are listed below. Please also see the attached reference letters.

Casey Swecker
Protected Species Practice Leader
Edge Engineering & Science
(304) 633-5808
cdswecker@edge-es.com

Dr. Keith Gibbs
Assistant Professor
Department of Geosciences and Natural Resources
Western Carolina University
(828) 227-3817
wgibbs@wcu.edu

Literature Cited

Anderson, G.B. 2016. Assessment of apparent survival and abundance of Roanoke Logperch in response to short-term changes in river flow. Final Report to the Virginia Department of Game and Inland Fisheries, Blacksburg, VA.

Appalachian Power Company (Appalachian) and American Electric Power Service Corporation (AEP). 1992. An Assessment of the Roanoke Logperch in the Roanoke River Downstream of Niagara Hydroelectric Project. December 1992. 5 pp.

Argentina, J., and J.H. Roberts. 2014. Habitat associations for young-of-year Roanoke logperch in Roanoke River. Final Report to Virginia Department of Game and Inland Fisheries, Blacksburg, VA.

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Ensign, W.E., P.L. Angermeier, B.W. Albanese, and G.H. Galbreath. 2000. Preconstruction monitoring of the endangered Roanoke logperch (*Percina rex*) for the Roanoke River Flood Reduction Project: Phase 3. Final report to the Wilmington District, U. S. Army Corps of Engineers, Wilmington, NC.

Hallerman, E., Wolf, S., Argentina, J., Angermeier, P. and T. Grant. 2017. Phenology and habitat use of larval darters in the upper Roanoke River basin. Final Report to Virginia Department of Game and Inland Fisheries, Blacksburg, VA.

Lahey, A.M. and P.L. Angermeier. 2007. Range-wide assessment of habitat suitability for Roanoke logperch (*Percina rex*). Final report to the Virginia Transportation Research Council.

Roberts, J.H., P.L. Angermeier, and E.M. Hallerman. 2013. Distance, dams, and drift: what structures populations of an endangered, benthic stream fish? *Freshwater Biology*. 58: 2050-2064.

Rosenberger, A.E. 2007. An update to the Roanoke logperch Recovery Plan. Report from University of Alaska Fairbanks to U.S. Fish and Wildlife Service, Gloucester, Virginia.

Rosenberger, A.E., and P.L. Angermeier. 2002. Roanoke logperch (*Percina rex*) population structure and habitat use. Final report to Virginia Department of Game and Inland Fisheries, Blacksburg, VA.

U.S. Fish and Wildlife Service (USFWS). 1992. Roanoke Logperch (*Percina rex*) Recovery Plan. Newton Corner, Massachusetts. 34 pp.

U.S. Fish and Wildlife Service (USFWS). 2007. Roanoke logperch *Percina rex*: 5-year review: summary and evaluation. USFWS, Virginia Field Office, Gloucester, Virginia.

3. Species Experience Table

Roanoke Logperch (*Percina rex*) Experience

Waterbody	State	Date	Latitude	Longitude	Number Encountered	Survey Method	Supervisor
Roanoke River	VA	Summer 2018	37.277626	-80.110948	20*	Snorkeling while recording video and taking photographs	John Spaeth
Roanoke River	VA	Summer 2018	37.233402	-80.197942	20*	Snorkeling while performing mussel survey	John Spaeth
Roanoke River	VA	Summer 2018	37.233402	-80.197942	5*	Snorkeling while performing mussel survey	John Spaeth
Roanoke River	VA	09/15/2020	37.264589	-79.915833	1	Backpack electrofishing	Casey Swecker

* denotes approximation during non-tabulated surveys or observations

4. Letters of Recommendation

December 17, 2020

To whom it may concern,

I am writing in support of Mr. Jon Studio's request to obtain a 'new' Federal Scientific Collector's Recovery permit for Roanoke logperch (*Percina rex*; RLP). Jon is listed on an existing federal permit (#TE02373A-14) under his former employer and is currently requesting consideration to possess a federal permit in his own personal name. Before starting his career in environmental consulting, Jon was a master's student at James Madison University where he investigated competition between American eels and brook trout in Virginia streams. During this time, he gained experience leading field crews and conducting backpack electrofishing surveys for stream fish in Shenandoah National Park and George Washington and Jefferson National Forests. He also used methods such as gastric lavage and PIT tagging that require increased caution and care to be completed safely and with minimal adverse impacts to specimens. He has extensive experience capturing, handling, and accurately identifying fishes in multiple Virginia watersheds including the Roanoke River.

I have had the pleasure of working with Mr. Studio at two different entities where he served as a fisheries lead for the past two and a half years. Jon has an extensive background working across many drainages and on large projects dealing with complex issues surrounding endangered species compliance and addressing sedimentation issues. He is methodical in his approach to organization and it shows in his attention to detail when employing fish sampling protocols and addressing resource agency questions. Jon is advancing our understanding of larval fishes and beginning to answer questions that the fisheries community has been questioning for years. As a member of the scientific fisheries community, a qualified surveyor of endangered fishes in Virginia (including *Percina rex*), and someone who is critical in recommending only the best candidates to work with sensitive species; I could not think of a more passionate conservation fisheries biologist than Jon.

I can vouch firsthand in his abilities to correctly employ field protocols, handle and process rare, threatened, and endangered fishes, and retain taxonomic background and skillset necessary to work at a professional level.

Sincerely,



Casey D. Swecker
Email: cdswecker@edge-es.com
Mobile: 304.633.5808



Department of Geosciences and Natural Resources

331 Stillwell Building
Cullowhee, NC 28723
(828) 227-7367

W. Keith Gibbs, Ph.D.
Department of Geosciences and Natural Resources
Western Carolina University
828-227-2817
wgibbs@wcu.edu

December 17, 2020

To whom it may concern,

I have been working with stream fishes, including rare and protected species, for over fifteen years. I have worked with and for many state and federal agencies, including the U.S. Fish and Wildlife Service, National Park Service, and Environmental Protection Agency, sampling and conserving aquatic resources. I am currently an Assistant Professor in the Department of Geosciences and Natural Resources at Western Carolina University. I am writing this letter in support of Jon Studio to obtain a federal collecting permit for Roanoke logperch (*Percina rex*) as it pertains to conservation and monitoring of this species with his employer, Edge Engineering & Science.

I worked with Jon during summer 2018 collecting and moving fish in the Roanoke River watershed during mitigation efforts related to pipeline installation. We used a variety of sampling gear, including backpack electrofishers, kick seines, and hand nets to collect and remove all fish from a construction right of way. We conducted dozens of fish removals during that time. We encountered a diversity of stream fishes, including many minnows, darters, and madtoms. Jon has substantial experience handling, identifying, releasing, and/or observing live fishes of numerous, and often, sensitive species. We also frequently observed many species, including Roanoke logperch, during snorkel-based mussel surveys.

From my experience with Jon, I am very comfortable recommending him for a Federal Scientific Collector's Recovery permit. He is a diligent, conscientious, and highly knowledgeable biologist who prioritizes fishes' wellbeing and safety. Please feel free to contact me through email or by phone if you have any additional questions.

Sincerely,

A handwritten signature in blue ink, appearing to read "W. Keith Gibbs".

W. Keith Gibbs, Ph.D.
Assistant Professor – Dept. of Geosciences and Natural Resources
Western Carolina University

5. Curriculum Vitae

Jonathan A. Studio

Project Manager / Aquatic Scientist

Jon Studio is a Project Manager and Aquatic Scientist at Edge Engineering and Science, LLC (EDGE) located in Avon, Ohio and headquartered in Houston, Texas. Mr. Studio has been working with Threatened and Endangered (T&E) species since 2016 including more than 20 species of freshwater fish and mollusks, bumble bees, crayfish, birds, bats, and plants. He developed his knowledgebase through a broad range of concentrated coursework and research efforts during his undergraduate and graduate degree programs. Intensive organismal research and consulting project objectives incorporate competitive interactions, developmental stressors, habitat use, migration, population density, critical habitat, and environmental and anthropogenic impacts. As a result of these experiences, Mr. Studio has acquired a deep understanding of the Endangered Species Act (ESA) along with numerous species-specific permitting and field protocol procedures.

Mr. Studio's primary focus as a consultant has been composing Biological Assessments (BA) and Study Plans and completing subsequent field and reporting efforts. Projects include natural gas pipelines, electric transmission lines, hydroelectric dams, stream restoration sites, dredging sites, and barge facilities. Many of these projects required coordination with federal agencies such as Federal Energy Regulatory Commission (FERC), US Fish and Wildlife Service (USFWS), US Forest Service (USFS), and US Army Corps of Engineers (USACE), as well as individual state agencies such as Department of Transportation (DOT), Department of Environmental Quality (DEQ), Department of Wildlife Resources (DWR), and Division of Natural Resources (DNR). Mr. Studio has contributed to projects located in the following states: California, Illinois, Indiana, Kentucky, Maryland, Michigan, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Tennessee, Virginia, and West Virginia. Mr. Studio has gone above and beyond to advance research and conservation in his field as a Certified Associate Ecologist (The Ecological Society of America).

EDUCATION:

JAMES MADISON UNIVERSITY • HARRISONBURG, VA

Master of Science in Biology (2018)

Master's Thesis "Competition and Predation: Interactions between American eels (*Anguilla rostrata*) and Brook Trout (*Salvelinus fontinalis*) in Virginia Mountain Streams"

KENT STATE UNIVERSITY • KENT, OH

Bachelor of Science in Biology (2015)

AREAS OF EXPERTISE:

- | | |
|---|--|
| • Roanoke Logperch (<i>Percina rex</i>) | • Rusty-Patched Bumble Bee (<i>Bombus affinis</i>) |
| • Field Experiment and Survey Design | • Scientific Communication |
| • Technical Writing | • Statistical Analysis |
| • Project Management | • Agency and Permit Coordination |

SELECTED PROJECT EXPERIENCE:

Field of Expertise

- **AEP, Niagara Hydroelectric Dam Relicensing (Virginia)**

Serving as Project Manager for aquatic species field surveys. Completed 2020 general fish, mussel, macroinvertebrate, and crayfish surveys. Planned 2021 Roanoke Logperch (*Percina rex*) species-specific field surveys for larval, young-of-year, and adult life stages. Coordinating with federal and state agencies to satisfy permitting and dam relicensing requirements. (2020 – Present)

- **AEP, Byllesby-Buck Hydroelectric Dam Relicensing (Virginia)**
Serving as Project Manager for aquatic species field surveys. Completed 2020 general fish, macroinvertebrate, and crayfish surveys. Planned 2021 general fish, macroinvertebrate, and crayfish surveys. Coordinating with federal and state agencies to satisfy permitting and dam relicensing requirements. (2020 – Present)
- **MVP – Mountain Valley Pipeline (Virginia and West Virginia)**
Co-author of Biological Assessment, and Supplement to the BA, responsible for aquatic T&E Species and Critical Habitat, Effects Analysis, and Effects Determination sections for Roanoke Logperch (*Percina rex*), Candy Darter (*Etheostoma osburni*), Atlantic Pigtoe (*Fusconaia masoni*), James Spiny mussel (*Parvaspina collina*), and Clubshell (*Pleurobema clava*). Section 7 ESA compliance and substantial coordination with USFWS were necessary for completion of this FERC regulated interstate natural gas pipeline BA. (2019 – 2020)
- **AEP, Niagara Hydroelectric Dam Relicensing (Virginia)**
Co-author of Study Plan for aquatic species surveys and analysis (fish, mussels, macroinvertebrates, and crayfish) including adult, young-of-year, and larval Roanoke Logperch (*Percina rex*). Section 7 ESA compliance and substantial coordination with USFWS were necessary for completion of this FERC regulated hydroelectric dam SP. (2019 – 2020)
- **Rural Action – Walhonding River Purple Catpaw Surveys (Ohio)**
Served as Field Technician responsible for freshwater mussel surveys and data collection for surveys looking to determine if there are unknown populations of Purple Catpaw (*Epioblasma obliquata*) in the Walhonding River in Coshocton County, Ohio. (2018)
- **Private Property, Reservoir Installation (Oklahoma)**
Conducted presence/absence snorkel surveys for freshwater mussels including Ouachita Rock Pocketbook (*Arkansia wheeleri*) and Winged Mapleleaf (*Quadrula fragosa*) prior to dam/reservoir installation. (2019)
- **North Fork Holston, Bridge Construction (Virginia)**
Monitored Spotfin Chub (*Erimonax monachus*) within bridge pillar coffer dam construction footprints in the North Fork Holston River. Backpack electrofishing techniques were used to fully deplete fish from breached coffer dams. Each coffer dam was also surveyed for Spiny River Snails (*Io fluvialis*). (2019)
- **Dominion, Atlantic Coast Pipeline (Virginia, West Virginia)**
Served as Biologist for the ongoing Federally endangered Rusty-Patched Bumble Bee (RPBB, *Bombus affinis*) surveys along the route in Highland, Bath, and Augusta counties Virginia, and Pocahontas County, West Virginia. Surveys follow 2018 USFWS Survey protocols for the RPBB version 2.2 using non-lethal sampling techniques. One-hour surveys are completed for every three acres of potential habitat along the project. Surveys are completed up to four times per patch and, to date, resulted in surveys covering over 1000 3-acre patches. Survey collections to date include 26 RPBBs and over 1,000 bumble bees representing 11 species. Species collected include: *B. affinis*, *B. auricomus*, *B. bimaculatus*, *B. citrinus*, *B. fervidus*, *B. griseocollis*, *B. impatiens*, *B. pensylvanicus*, *B. perplexus*, *B. sandersoni*, and *B. vagans*. Surveys incorporate project review protocols and rapid assessment techniques. Bees are collected via netting and placed into glass vials for identification and photo voucher documentation. (2019)
- **MVP – Mountain Valley Pipeline (Virginia, West Virginia)**
Serving as Field Supervisor for full fish depletions and relocations at all perennial streams along the multi-state pipeline in Virginia via backpack electrofishing and seining. Managed fish removal crews in coordination with environmental and construction leaders to ensure fish removal efforts are compliant with construction timelines. Managed and disseminated all subsequent data and safety information to environmental and construction leaders. (2018-Present)
- **ETC Northeast Pipeline – Revolution Pipeline (Pennsylvania)**
Served as Team Leader assisting in delineating wetlands as post-construction QA/QC and pre-construction mapping in Pennsylvania. Used wetland plants, hydrology, and soil composition to locate and map wetlands. (2018)
- **Iberdrola – Deruyter Pipeline (New York)**
Served as Team Leader assisting in delineating wetlands as post-construction QA/QC and pre-construction mapping in New York. Used wetland plants, hydrology, and soil composition to locate and map wetlands. (2018)

- **Mountain Valley Pipeline Southgate, Atlantic Coast Pipeline, USACE Open End, and CRH Barge Tie Mussel Survey**
Served as Aquatic Scientist preparing and assisting with writing, statistical analysis, and figure generation on a variety of documents including field manuals, study plans, and final reports. (2018)
- **Dominion Energy– Atlantic Coast Pipeline (North Carolina)**
Served as Field Technician completing snorkel surveys to collect, identify and relocate mussels outside of the limits of disturbance in five streams near Rocky Mount, North Carolina. (2018)
- **TransCanada – Line KA (West Virginia)**
Served as Field Technician using view scope methods to collect, identify and relocate mussels outside of the limits of disturbance in a stream in Pineville, West Virginia. (2018)
- **MVP – Mountain Valley Pipeline (West Virginia)**
Served as Field Technician using surface supply air methods to collect, identify and relocate mussels outside of the limits of disturbance in the Greenbrier River near Pence Springs, West Virginia. (2018)
- **Grand River Mussels (Ohio)**
Served as Field Technician using view scope, snorkel, and surface supply air methods to collect, identify and relocate mussels outside of the limits of disturbance in the Grand River near Painesville, Ohio.
- **Harrison Hub Pipeline (Ohio)**
Served as Field Technician using surface supply air methods to collect, identify and relocate mussels outside of the limits of disturbance in Wheeling Creek near Harrison County, Ohio.
- **TransCanada – Line KA (West Virginia)**
Served as Field Technician collecting and identifying crayfish via seining methods for a pre-construction survey in Pineville, West Virginia. (2018)
- **MVP – Mountain Valley Pipeline (Virginia, West Virginia)**
Served as Field Technician helping to conduct migratory bird point counts in near Roanoke, Virginia and Alderson, West Virginia. (2018)
- **AEP – Ohio Heft Station (Ohio)**
Served as Field Technician helping to conduct bat emergence surveys in Lancaster, Ohio. (2018)
- **James Madison University Vivarium (Virginia)**
Served as Trout Room Manager responsible for setting up and maintaining aquatic habitats holding tank and artificial stream channel systems based on the individual needs of a research project. (2016-2018)
- **James Madison University (Virginia)**
Served as Research Field Assistant monitoring habitat use of endangered James spiny mussel in Earlysville, Virginia using an HPR+ PIT tag reader and mark-recapture methods. Manage data, plan all sampling events, and train and supervise undergraduate field assistants. (2016-2018)
- **U.S. Forest Service – Shasta-Trinity National Forest (California)**
Served as Field Assistant designing and implementing experimental transplant of freshwater mussels in collaboration with the Trinity River Restoration Program and the Yurok Tribe. (2017)
- **U.S. Forest Service (USFS) – George Washington and Jefferson National Forest (Virginia)**
PIT tagged eels for a long-term mark-recapture study in cooperation with USFS and Virginia Tech. (2017)
- **James Madison University (Virginia)**
Studied fish species richness with respect to stream acidification in Shenandoah National Park using a Smith-Root LR-24 Electrofisher and three pass depletion methods. (2016)
- **The De Wildt Shingwedzi Cheetah Ranch (Limpopo, South Africa)**
As a volunteer, performed daily tasks pertaining to cheetahs, African wild dogs, vultures, and many other vulnerable creatures within 2,100-acre sanctuary. (2013)

TRAINING/CERTIFICATIONS:

- ASSOCIATE ECOLOGIST, ECOLOGICAL SOCIETY OF AMERICA, 2019
- OSHA 10 HOUR GENERAL INDUSTRY, 2019
- OSHA 40 HOUR HAZWOPER, 2018

- INSTITUTIONAL ANIMAL CARE AND USE COMMITTEE (IACUC) CERTIFIED, 2018

PROFESSIONAL AFFILIATIONS:

- ECOLOGICAL SOCIETY OF AMERICA
- ASSOCIATION FOR THE SCIENCES OF LIMNOLOGY AND OCEANOGRAPHY
- AMERICAN FISHERIES SOCIETY
- NORTHEAST ASSOCIATION OF FISH AND WILDLIFE AGENCIES

PUBLICATIONS/PRESENTATIONS:

Research Projects

- THOM D. TEEARS, STEVE J. BAEDKE, DANIEL M. DOWNEY, JONATHAN A. STUDIO & CHRISTINE L. MAY (2020) WATER CHEMISTRY AND LIGHT EFFECTS ON SURVIVAL OF HATCHING SALMONIDS IN SPRING CHANNELS, JOURNAL OF FRESHWATER ECOLOGY, 35:1, 13-28
- STUDIO, J.A., & C.L. MAY (2018-PRESENT) COMPETITION BETWEEN TOP PREDATORS IN A SMALL MOUNTAIN STREAM: AN INVESTIGATION OF BROOK TROUT AND AMERICAN EELS. (MANUSCRIPT IN PROGRESS)
- STUDIO, J.A., & M.W. KERSHNER. 2015-PRESENT. HABITAT EFFECTS ON LEAF DECOMPOSITION RATE: IMPLICATIONS FOR SPECIES DIVERSITY. (INDEPENDENT UNDERGRADUATE RESEARCH PROJECT CONTINUED BY LAB ASSOCIATES)

Poster and Oral Presentations

- VIRGINIA CHAPTER OF AMERICAN FISHERIES SOCIETY, BLACKSBURG, VA. 'COMPETITION AND PREDATION: INTERACTIONS BETWEEN AMERICAN EELS (*ANGUILLA ROSTRATA*) AND BROOK TROUT (*SALVELINUS FONTINALIS*) IN MOUNTAIN STREAMS' 2019.
- ASSOCIATION OF THE SCIENCES OF LIMNOLOGY AND OCEANOGRAPHY, VICTORIA, BC. 'COMPETITION AND PREDATION: INTERACTIONS BETWEEN AMERICAN EELS (*ANGUILLA ROSTRATA*) AND BROOK TROUT (*SALVELINUS FONTINALIS*) IN MOUNTAIN STREAMS' 2018.
- PERRY MIDDLE SCHOOL 7TH GRADE SCIENCE SEMINAR, PERRY, OHIO. 2018. A SCIENTIFIC ADVENTURE.
- JAMES MADISON UNIVERSITY BIOSYMPOSIUM, HARRISONBURG, VIRGINIA. 2018. COMPETITION AND PREDATION: INTERACTIONS BETWEEN AMERICAN EELS (*ANGUILLA ROSTRATA*) AND BROOK TROUT (*SALVELINUS FONTINALIS*) IN MOUNTAIN STREAMS.
- VIRGINIA CHAPTER OF AMERICAN FISHERIES SOCIETY, FREDERICKSBURG, VIRGINIA. 2018. COMPETITION AND PREDATION: INTERACTIONS BETWEEN AMERICAN EELS (*ANGUILLA ROSTRATA*) AND BROOK TROUT (*SALVELINUS FONTINALIS*) IN MOUNTAIN STREAMS.
- VIRGINIA SEA GRANT GRADUATE RESEARCH SYMPOSIUM, GLEN ALLEN, VIRGINIA. 2018. AMERICAN EELS (*ANGUILLA ROSTRATA*): RECONNECTING COASTAL AND INLAND WATERS OF APPALACHIA.
- NATURE CAMP, VESUVIUS, VIRGINIA. 2017. COMPETITION AND PREDATION: INTERACTIONS BETWEEN AMERICAN EELS (*ANGUILLA ROSTRATA*) AND BROOK TROUT (*SALVELINUS FONTINALIS*) IN MOUNTAIN STREAMS.
- NORTHEAST ASSOCIATION OF FISH AND WILDLIFE AGENCIES, NORFOLK, VIRGINIA. 2017. THE EFFECT OF ULTRAVIOLET-B RADIATION ON BROOK TROUT (*SALVELINUS FONTINALIS*) EGGS.
- VIRGINIA CHAPTER OF AMERICAN FISHERIES SOCIETY, LEXINGTON, VIRGINIA. 2017. THE EFFECT OF ULTRAVIOLET-B RADIATION ON BROOK TROUT (*SALVELINUS FONTINALIS*) EGGS.
- FRESHWATER ECOLOGY RESEARCH SYMPOSIUM, HARRISONBURG, VIRGINIA. 2016. THE EFFECT OF ULTRAVIOLET-B RADIATION ON BROOK TROUT (*SALVELINUS FONTINALIS*) EGGS.

EMPLOYMENT HISTORY:

- EDGE – AQUATIC SCIENTIST – JUNE 2020 TO PRESENT
- ENVIRONMENTAL SOLUTIONS & INNOVATIONS, INC. – AQUATIC SCIENTIST – RAVENNA, OHIO – MAY 2018 TO JUNE 2020

YEARS OF PROFESSIONAL EXPERIENCE:

- 2018 – PRESENT (2.5 YEARS)

E 3.3 Fish Resources

Because of the lack of data concerning the status of fish populations in the Niagara vicinity, fisheries surveys were conducted during June-October, 1990. A second objective of these surveys was to determine whether any project-related impact on the fish fauna is evident. A study plan for this work was submitted to appropriate fish and wildlife agency personnel and went forward subsequent to their input (Exhibit E, Consultation Documentation, Initial Stage Consultations, Fisheries Study Plan).

Adult and juvenile fish were sampled in the Niagara reservoir by electrofishing, hoop netting, and gill netting techniques. Upper, middle, and lower portions of the reservoir were sampled (Figure E-3). In addition, riffle/run habitat was sampled upstream and downstream of the project by electrofishing. Each station was sampled six times, during the periods June 4-6, June 25-27, July 24-26, September 4-6, September 25-

27, and October 16-18, 1990. A complete report of this study is provided in Appendix E-1.

This study collected a total of 1,936 fish representing 34 species (Table E-6). Redbreast sunfish and silver redhorse dominated the samples numerically; and common carp, white sucker, spottail shiner, and golden redhorse were also abundant. In terms of biomass, common carp and silver redhorse comprised the majority of the sample. White sucker, golden redhorse, redbreast sunfish, and channel catfish were also biomass dominants.

Overall, collected fish were relatively free of parasites and physical abnormalities (Table E-7), although certain species (e.g., carp, white sucker) exhibited a fairly high incidence of deformities and fin erosion. This condition is most likely related to the adverse effect on water quality of upstream inputs of urban contaminants, as documented in the SWCB 305(b) water quality assessment (Virginia State Water Control Board, 1988).

Table E-8 compares these survey data to historical data from the Virginia Department of Game and Inland Fisheries species list for this general region of the upper Roanoke River drainage. Listed species not collected in the Niagara survey are generally those typically found in stream or cold water habitats uncharacteristic of the riverine habitats sampled in this survey (e.g., trout, dace) or are associated with Smith Mountain Lake downstream of the project (e.g., striped bass, alewife). Species added to the list by the 1990 survey included grass carp and black bullhead.

One federally-listed endangered species was collected during these studies. Three specimens of the Roanoke logperch (*Percina rex*) were collected on September 25, 1990 and one specimen on October 16, 1990, all

at the upstream riffle/run electrofishing site. The specimens were photographically documented and released. Additional sampling was conducted by APCo and VDGIF on September 12, 1991 to determine if the Roanoke logperch occurred in areas downstream of the project that were not sampled during the 1990 survey. Approximately 0.25 mile of riffle/run habitat was sampled by electrofishing at a location approximately 0.5 mile downstream of the Niagara project. Three Roanoke logperch, each measuring approximately 110 mm in length were collected and released. The other species of concern identified by the VDGIF during pre-consultation correspondence, the orangefin madtom (*Noturus gilberti*), was not collected during the survey and may, therefore, be considered extremely rare or absent from the Niagara vicinity. Continued operation of this facility should have no impact on these two species.

The Roanoke logperch is endemic to the Roanoke River drainage in Virginia and predominately occurs in those portions of the drainage within the Piedmont and Ridge and Valley provinces (Jenkins et al. 1978). Typical habitat for this species is riffles, runs, and pools with sandy to boulder-strewn bottoms, but not deep silt, in warm, usually clear, medium-sized streams. This species is not typically known from impoundments or other lentic environments (Jenkins, 1977a), although two specimens were collected in a cove of Leesville Reservoir in 1989 (VDGIF, 1989). According to Jenkins (1979), the healthiest populations of the Roanoke logperch are found in the upper Roanoke River drainage above Salem, Virginia (Figure E-4). These populations exist at fairly low densities that are apparently unchanged from surveys by Jordan in 1888 (Jenkins, 1977a). The range of the Roanoke logperch has been constricted within historical times, including depletion from the Roanoke River from the City of Roanoke to Smith Mountain Lake, a stretch that includes the Niagara project area, due to point and nonpoint municipal and industrial discharges (Jenkins, 1977a).

The orangefin madtom is a widely, but disjunctly, distributed endemic of the upper Roanoke River drainage of Virginia and North Carolina and the upper James River of Virginia (Figure E-5; Jenkins, 1978). This species occupies riffles and runs of cool-to-warm sections of usually clear, medium-to-large streams. It is another of the highly distinctive upper Roanoke River drainage assemblage and has a distribution above Niagara dam similar to that of the Roanoke logperch (Figure E-5). Recent collections of the orangefin madtom at or above Salem, Virginia, appear similar in abundance to older collections, whereas historical populations at the City of Roanoke now appear to be extirpated due to siltation, eutrophication, and chemical waste discharges (Jenkins, 1977b). According to Jenkins (1977b), this species may typically exist at low densities even in favorable habitat and is one of the most sensitive of the upper Roanoke River ichthyofauna to environmental degradation.

The database provided by the fishery study, along with detailed project design and operational data, can be used to analyze the potential for significant project impact on various aspects of the fishery. The Federal Energy Regulatory Commission (FERC, 1988), in its final environmental impact statement for the upper Ohio River basin, analyzed impact by analogy with available literature. The FERC analysis consisted of evaluating 1) the susceptibility of various organisms and life stages to entrainment, 2) the likelihood that damages would occur to entrained individuals and their populations, and 3) methods for preventing or reducing entrainment. Similar types of analyses were performed by WAPORA, Inc. (1987) to evaluate entrainment potential at the Racine and New Martinsville hydroelectric projects on the Ohio River. Cox Lake Carbonton Associates (1987) used a literature review and project and resident fish characteristics, combined with study findings at a similar project, to demonstrate minimal impact at the Carbonton Hydroelectric Plant on the

Deep River, North Carolina. The approach of analyzing indigenous biotic communities for the purpose of impact assessment has been routinely and successfully applied by governmental agencies, industries, and individual researchers (U.S. EPA, 1984; Karr et al., 1986; Van Hassel and Gaulke, 1986; Ohio EPA, 1987; Van Hassel et al., 1988).

Locational differences in the electrofishing catch-per-unit-effort (CPUE) identified during the 1990 survey are detailed in Table E-9. Of particular interest is the catch comparison between the two riffle/run sampling sites. The site located downstream of Niagara provides comparative data to determine whether the project influences fish assemblages there relative to those found upstream. The data show the catch rates of most species were statistically equivalent or greater than catch rates at the upstream riffle/run site. Gizzard shad, satinfish, shiner, northern hog sucker, shorthead redhorse, v-lip redhorse, bluegill, and largemouth bass CPUE at the downstream site were the highest among all sites (pool and riffle/run). This finding would be expected based on the gradual improvement in water quality from the upstream to downstream site. Length frequency distributions of the dominant fish species at the riffle/run sites were very similar. The downstream riffle/run site, although located less than two miles below the Niagara powerhouse, exhibited no evidence of any increased incidence of turbine-related injuries to fish. Only 3.1% of the fish collected at this site bore any type of physical abnormality compared to 1.2-3.0% at the other sites (Table E-7).

Fish species richness and diversity were fairly similar among all pool and riffle/run sites except for the downstream riffle/run site. This site exhibited higher species' richness and diversity, most likely related to its being the furthest removed from upstream water quality impacts.

E 3.3.1 Entrainment Effects

Analyses were performed to evaluate specific project-related impacts. The potential for entrainment was evaluated based on the known behavioral characteristics and preferred habitat of resident fish species and the potential for adverse effects due to pressure changes, turbulence, shear, and physical contact for the egg-through-adult stages of these species. Other low head hydroelectric projects with many design and operation features similar to those of the Niagara Project have successfully used these types of analyses to evaluate entrainment potential. According to a review by Electric Power Research Institute (1987) of turbine mortality field studies, variability in such studies is too great to allow precise mortality estimates, even on a site-specific basis. Much of this variability can be attributed to unmeasurable factors such as test fish condition, holding and recovery conditions, and subtle environmental and operational effects. Even model experiments often produce unexplained variability. APCo concludes that the analysis of entrainment potential conducted herein, incorporating all of the above-listed factors and supported by field population data, provides a sound assessment of entrainment impact. Analyses were performed based on characteristics of both old turbine Unit 1 and replacement Unit 2, which is planned to be installed in late 1991 (see Exhibit A).

Life history and behavioral characteristics of fish species inhabiting the Niagara pool are important factors in evaluating entrainment potential. Fish species expected to spawn in the pool and their spawning characteristics are listed in Table E-10. Eggs of most of these species possess extremely low entrainment potential because of their adhesive, demersal characteristics and deposition into either nests or sheltered vegetation or other substrate. Similarly, the larvae of most species remain on nest or in sheltered slackwater areas until they become free-

swimming. Only larvae of gizzard shad and the cyprinids can be expected to enter the current in large numbers.

Adult and juvenile fish species of the Niagara pool (Tables E-9 and E-11) differ greatly in their susceptibility to entrainment because of differences in movement behavior. Species such as suckers, flathead catfish, and centrarchids are very unlikely to enter the forebay area in substantial numbers because of their preference for much different habitat (sheltered areas with cover versus open-water habitat of the forebay) and their typically sedentary behavior (except for spawning migrations in some species, which are upstream rather than towards the forebay) (Becker, 1983; FERC, 1988; Scott and Crossman, 1973; WAPORA, 1987). Species that may be found more frequently in the forebay area because of their greater mobility, usually associated with feeding, include gizzard shad, common carp, shiners, white and channel catfish, bullheads, and black crappie.

Fish that approach the plant intake screen have been observed to easily negotiate the moderate current. Screen openings at Niagara are 3 5/8 in. wide. Intake velocities at the face of the intake screen and at the trailing edge of the screen were calculated. These determinations assumed a 600 cfs discharge (steady-state design capacity of the 11 ft.-0 in. ID penstock). Figure E-6 illustrates the component and resultant velocity vectors and how they were derived. Calculated intake screen flow velocities at the screen face and trailing edge are provided in Table E-12. Calculated normal velocities at forebay elevations 885 ft. NGVD and 884 ft. NGVD ranged from approximately 0.9-1.2 feet/sec. This range in intake velocity is very similar to typical current velocity of the free-flowing portion of the Roanoke River measured at the fish survey sites and represents flow conditions easily negotiated by resident species of adult and juvenile fish. Studies of fish swimming speeds have verified their ability to negotiate currents of this magnitude (WAPORA, Inc., 1987) In

addition, similar intake screen standards of 1.5 feet/sec. and 2.5 in. spacing have been applied to low-head (<40 feet) hydros in piedmont and coastal North Carolina warmwater streams (North Carolina Wildlife Resources Commission, 1987).

In the event that a fish enters the penstock and turbine, the greatest opportunity for injury is from contact with a turbine runner blade. Normally, any losses due to turbine passage are due to this factor (Monten, 1985). Loss rates typically increase with fish length in relation to the width of the openings between runner blades. The water passage through the penstock and turbine is designed for smooth, unobstructed flow to the greatest degree possible. The only significant obstructions to flow are twelve stay vanes and twelve wicket gates arranged in a circular pattern preceding the turbine runner. The stay vanes are 21.52 in. in height and 2.25 in. thick at Unit 1, and will be 22.02 in. in height and 2.00 in. thick at Unit 2. The wicket gates are 21.45 in. in height and 3.06 in. thick at Unit 1, and will be 21.48 in. in height and 2.88 in. thick at Unit 2. The opening between fully-open wicket gates is 6.91 in. at Unit 1, and will be 6.47 in. at Unit 2. The relationship between flow rate and wicket gate position achieves smooth relative flow through the turbine. This relationship is essential to efficient unit operation.

Extensive studies of fish orientation to flow past stay vanes and wicket gates have demonstrated that the fish's center of gravity follows the flow line, with the rest of the body oriented to the direction of flow. Collisions of fish with stay vanes and wicket gates are, therefore, negligible (Monten, 1985), as the fish do not contact the vanes perpendicularly but are guided with the flow along the vane surface. As a fish is carried through the wicket gates, its longitudinal axis is most likely to be close to parallel to the gate surfaces, which means close to

a zero angle to flow. Thus, as the fish passes the runner, the probability of striking the leading edge of the blade is dependent primarily upon its length and specific characteristics of the runner.

Probabilities of contact with a runner blade based on specific measurements of the Niagara turbine dimensions are provided in Table E-13 for all fish species of the pools, regardless of entrainment potential. The probability of physical contact of potentially-entrained fish with a turbine runner blade was calculated (Cada, 1990) using the equation

$$P = \frac{l \times n \times R \times a \times \cos \alpha}{f}$$

where P = the probability of blade contact (%)

l = fish length (cm)

n = number of runner blades

R = revolutions per second

a = cross-sectional area of water passage (M²)

α = blade angle

f = discharge (M³/sec).

Probability of contact is less than 10% for young individuals of all species, which would be more likely to be entrained. Mortality resulting from blade strikes would be much lower than this since contact with a blade would range from slight glancing blows to head-on collisions and because the flexibility of fish presents a smaller target than that predicted assuming rigid length (Cada, 1990). Potential increases in strike probability associated with reduced load would be cancelled out by the accompanying reduction in turbine flow velocity (Monten, 1985). Although early life stages are most likely to be entrained, Cada (1990) states that "turbine passage is not likely to harm fish eggs and larvae if hydroelectric facilities are operating at optimal design conditions and cavitation is not excessive."

Turbine mortality tests have been conducted at three facilities with turbine characteristics similar to Niagara (see below).

	<u>Leaburg</u>	<u>Publishers</u>	<u>Sullivan</u>	<u>Niagara</u>
Turbine Type	Francis	Francis	Francis	Francis
Discharge (cfs)	1,100	275	260	379 (Unit 1); 305 (Unit 2)
Head (ft)	89	42	42	61
Turbine Speed (rpm)	225	300	240	277
Blade Tip Velocity (ft/sec)	88	47	64	60 (Unit 1); 57 (Unit 2)
Location (river)	McKenzie	Willamette	Willamette	Roanoke

These tests at the Leaburg, Publishers, and Sullivan facilities resulted in 13-20% mortality (EPRI, 1987).

The low predicted mortality/blade contact for Niagara compared to many other facilities employing Francis-type units is associated primarily with the relatively low runner speed of the former units (blade tip velocity of 57-60 feet/sec compared to >80 feet/sec for most other units).

Pressure changes through the turbines are typically not problems for fish unless pressure reductions are substantial. This is particularly true for fish eggs and early larvae (Cada, 1990). Pressure gradients and pressure distribution of the flow through the project were calculated for APCo by Kvaerner Hydro Power, Inc., for Unit 1, and American Hydro Corporation for Unit 2, based on configuration and operational characteristics specific to the project. The points at which calculations were made are shown in Figure E-7. Figure E-8 illustrates pressure gradient calculations performed specifically for the Niagara turbines indicating that pressure changes associated with turbine passage are likely to be very small compared to pressure regimes tested in controlled experiments that resulted in little or no fish mortality.

Similarly, turbulence and shear effects are likely to be minimal at this project. A review by Cada (1990) of experimental studies of the effects of these stresses on entrained fish concluded that mortalities are unlikely. When the turbine functions at maximum efficiency, calm and relative turbulence-free conditions prevail (Monten, 1985). "Although fragile early life stages should be sensitive to shear damage, their small size apparently minimizes exposure to velocity changes and shear forces" (Cada, 1990).

Cavitation, if significant, can be a factor in fish survival of turbine passage (Turbak et al., 1981). The tendency toward cavitation is described by the plant sigma, a positive, dimensionless number that defines the required depth of the turbine setting in relation to the plant's net head. Assumptions and plant characteristics used in calculation of the cavitation coefficient are provided in Table E-14. The Niagara plant sigma (Figure E-9) and the absence of historical cavitation problems at this facility indicate that cavitation should not be a significant factor affecting fish survival of turbine passage.

The potential for significant entrainment effects at Niagara is extremely low. Behavioral (movement) characteristics and habitat preferences of resident species minimize the likelihood of substantial numbers of fish frequenting the project forebay. For those fish that do approach the project intake, intake velocities are low and easily negotiated by most fish. Turbine passage effects are likely to be restricted primarily to contact with runner blades. Pressure change, cavitation, turbulence, and shear are not likely to cause substantial harm to fish at Niagara. Because of the low head and relatively slow runner speed at this project, blade contacts should be minimal; and mortality should not exceed about 10%. Cada (1990) also finds that non-migratory fish are not likely to be

exposed to turbine passage. Healthy adult and juvenile fish are strong swimmers, and the eggs of most sedentary species are found in nests or adhering to rocks and vegetation.

The predicted low number of fish passage and minimal associated mortality indicate a negligible impact from turbine entrainment on fish populations in the Niagara vicinity. The lack of turbine-induced injuries in the fish assemblage downstream of the project and the strong catches of fish upstream and downstream of Niagara support a conclusion of no adverse changes to fish productivity or aquatic ecosystem structure and function associated with this project.

E 3.3.2 Available Spawning Habitat in the Niagara Pool

Because the Niagara project is not peaked, pool fluctuations do not exceed normal river fluctuation levels. Spawning characteristics of fish species likely to use the Niagara pool for this purpose are provided in Table E-10. Based on these data, fish species were divided into two broad groups according to optimal spawning depth and spawning period. These groups included species spawning at 0.25-6 ft. during March-August (cyprinids, sunfish) and those spawning at 1-8 ft. during April -August (gizzard shad, ictalurids, black basses, black crappie). Spawning habitat available to each of these groups in the Niagara pool was then calculated using recent bathymetry mapping of the pool (Figure E-10) and assuming all areas of the pool at a given depth were usable for spawning. These areas varied by month according to mean monthly fluctuations in river elevation.

The maximum percentage of potential spawning habitat made unavailable due to river fluctuations is summarized in Table E-15 according to spawning group and month. Mean monthly river fluctuations are based on historical data at the Niagara gauge. This analysis indicates that <1-17% of available habitat is potentially exposed under natural riverine

conditions. Highest percentages exposed were for the cyprinid/sunfish group because of their documented selection of often very shallow and easily exposed spawning sites.

No project-related impacts to available spawning habitat in the Niagara pool should occur.

E 3.3.3 Effects on Tailwater Habitat

Potential effects of Niagara operation on tailwater habitat were evaluated with respect to erosional/depositional considerations, spring spawning habitat of Roanoke River fishes potentially using the tailwater, and low-flow summer habitat of resident fishes. The Niagara tailwaters are depicted in Figures E-11, E-14, E-15, and E-17. Erosion and deposition impacts are considered negligible in the Niagara tailwaters because of the steep, rocky, and relatively straight river channel.

Fish species likely to spawn in or near the project tailwaters include white sucker, northern hog sucker, redhorses, and white bass. All of these species would be expected to spawn predominantly during the period March-May. According to FERC (1988), there should be little loss of spawning habitat below hydroelectric facilities in the spring because of typically elevated river flows. Monthly mean river flows (in cfs) at Niagara are as follows:

March	891
April	846
May	553

These compare to a mean annual flow of 510 cfs.

Measurement of tailwater characteristics at Niagara indicates that the river channel is approximately 100 feet in width, and depth of the channel downstream of the immediate vicinity of the powerhouse ranges from 6.5-21 feet. Current velocities in the Niagara tailwater at 275 feet downstream of the powerhouse ranged, in 1989 measurements, from 0.25-0.50 feet/sec across the channel at a gauge flow of 325 cfs, to 0.05-1.60 feet/sec at a discharge of 473 cfs. Fluctuations in tailwater elevations at the Niagara powerhouse during the months of March-May should correspond closely to natural river fluctuations (Table E-15) since, under the proposed mode of operation, the project will not autocycle at inflows above 100 cfs.

The combined characteristics of discharge volume, channel depth, current velocities, and tailwater fluctuations at the Niagara facilities should have no adverse effects on spring spawning habitat.

Many of the above considerations apply also to evaluating potential operational effects on tailwater fish habitat during the summer. Monthly mean river flows (in cfs) at Niagara during the summer are as follows:

June	394
July	281
August	352
September	308

Tailwater fluctuations likely closely match normal river fluctuations during this period of 0.4-1.7 feet.

Of greater interest with respect to fish habitat is potential low-flow effects. Under the proposed mode of operation, the Niagara units will discharge inflow to the project by adjusting wicket gate positions until

flows fall below 100 cfs. Operations below 100 cfs inflow will be established upon completion of additional low-flow evaluations to be conducted with representatives of VDGIF.

To evaluate the possible effects of minimum flow releases on downstream habitat, visual evaluations were conducted on November 15, 1989. Virginia Department of Game and Inland Fisheries personnel were present for this evaluation. Downstream river conditions were observed at a 13-minute autocycle mode typical of operation at extreme low flow. Estimated average hourly flow in this mode of operation was 56 cfs. Flows stabilized at 28 cfs at the nearby USGS gauge during the non-generation portion of autocycle operation. It was apparent from this demonstration that river reaches downstream of the powerhouse were receiving adequate flow for fish habitat considerations. Follow-up visual evaluations have been requested by VDGIF to observe low-flow discharge characteristics following installation of the new Unit 2. This will be scheduled when river flow and operating conditions permit.

E 3.3.4 Effects of Spillway Use

When river flow exceeds the discharge capacity of the plant, excess flow passes over the spillway, which is a free-overflow structure. This event provides flow to a reach of approximately 1,250 feet of riverbed that normally receives only leakage flows from gated openings in the dam. A potential exists for fish to move up into the area below the spillway while flow is being passed and then to be stranded in this area when spilling ceases.

Spillway use is fairly infrequent at Niagara. Table E-16 indicates that plant discharge capacity was exceeded an average of 62 days per year from 1983-1990, mainly during the wet months of February-April. Because the river substrate in the reach downstream of the spillway is rough (Figures

E-14 and E-16), there is an opportunity for pockets of water to remain following cessation of spill, thereby creating the potential for stranding of fish.

To evaluate this situation, visual observations of flow through the bypass reach were made on November 14-15, 1989. Habitat conditions were observed under conditions of no spill, when flow to the bypass consists of low-level leakage and with flow augmented by lowering the sluice gate, located at the northeast end of the spillway, to a point that allowed a calculated 8 cfs flow to the bypass reach. It was concluded from this demonstration that 8 cfs should be adequate to prevent fish from being stranded in stagnant pools in the bypass.

Additional observations were conducted by APCo and VDGIF on September 12, 1991 to measure water temperature and dissolved oxygen in selected pools throughout the bypass reach. Flow through the bypass at the time of these measurements was estimated at 5-6 cfs. A summary of these measurements is provided in Exhibit E, Documentation of Consultations, Second Stage Consultations, Written Correspondence. Results indicated that summer temperature and dissolved oxygen conditions in the bypass reach should be sufficient for aquatic life using this area.

E 3.3.5 Upstream Fish Passage

The VDGIF indicated that a fish passage plan would need to be worked out in the event that oceangoing anadromous fishes reach the project in the future. The 1990 fish survey verified the fact that no fishes requiring upstream passage were present immediately downstream of the project. APCo believes that a standard FERC license article involving reservation of fishways authority is sufficient to address this concern.

E 3.4 Measures Recommended by Agencies

Consultation with agencies concerning possible impacts of the Niagara Hydroelectric Project have focused upon two issues: minimum flows through the turbines and potential fish stranding below the spillway (Exhibit E, Consultation Documentation, Initial and Second Stage Consultations, Written Correspondence and Meeting Notes).

With respect to minimum flow, agency personnel have requested additional visual evaluations of low-flow discharges, once Unit 2 has been returned to service, to determine minimum flow levels that are adequate to maintain fish habitat.

To lessen the potential for fish to become stranded in stagnant pools following spillway use, it was recommended that an 8 cfs flow be maintained in the bypass reach.

E 3.5 Measures Proposed by Applicant

APCo will initiate a measure to provide spill to the bypass reach to maintain flows of approximately 8 cfs. APCo proposes to file a plan with the FERC detailing the methodology by which the 8 cfs will be maintained and monitored in the bypass subsequent to issuance of a new license for the Niagara Project. The plan will be prepared in consultation with VDGIF. Current concepts under consideration include the installation of a control system that would maintain a constant flow over the sluice gate at the spillway. At this time, a proposed monitoring plan would involve installation of a calibrated staff gauge located in the bypass reach. The location and pertinent details for the staff gauge will be finalized in consultation with VDGIF. Both the proposed sluice gate controls and staff gauge are intended to be operational within approximately two years from the date the new license is issued by FERC. Very preliminary estimates

indicate the capital cost for these items to be approximately \$49,200, in 1996 dollars, while the levelized annual cost is estimated at \$6,770.

It is estimated that maintaining 8 cfs in the Niagara bypass reach will result in a loss of 200 MWh per year from the project. Based on the \$55/MWh levelized cost of alternative source power, as presented in Exhibit H, this generation has a levelized cost to APCo of \$11,000 per year over the term of a new license.

Installation of the new Unit 2 turbine is anticipated to eliminate the need to autocycle at inflows greater than approximately 100 cfs. Additional visual evaluations of low-flow turbine discharges will be conducted with representatives of VDGIF as soon as conditions at the project are conducive to this type of evaluation (See Exhibit A, Section A1.3).

E 3.6 Anticipated Continuing Impact

With the measures described in Section E 3.5, there should be no significant continuing impact on any aspect of fish, wildlife, or botanical resources. Following the change to enhance flow to the bypass reach, and pending the outcome of the additional low-flow discharge visual evaluations, no need has been identified for further modification of project operations or facilities.

E 3.7 Description of Proposed Operational Procedures

See Exhibit A, Section A 1.3 for a description of the proposed mode of operation.

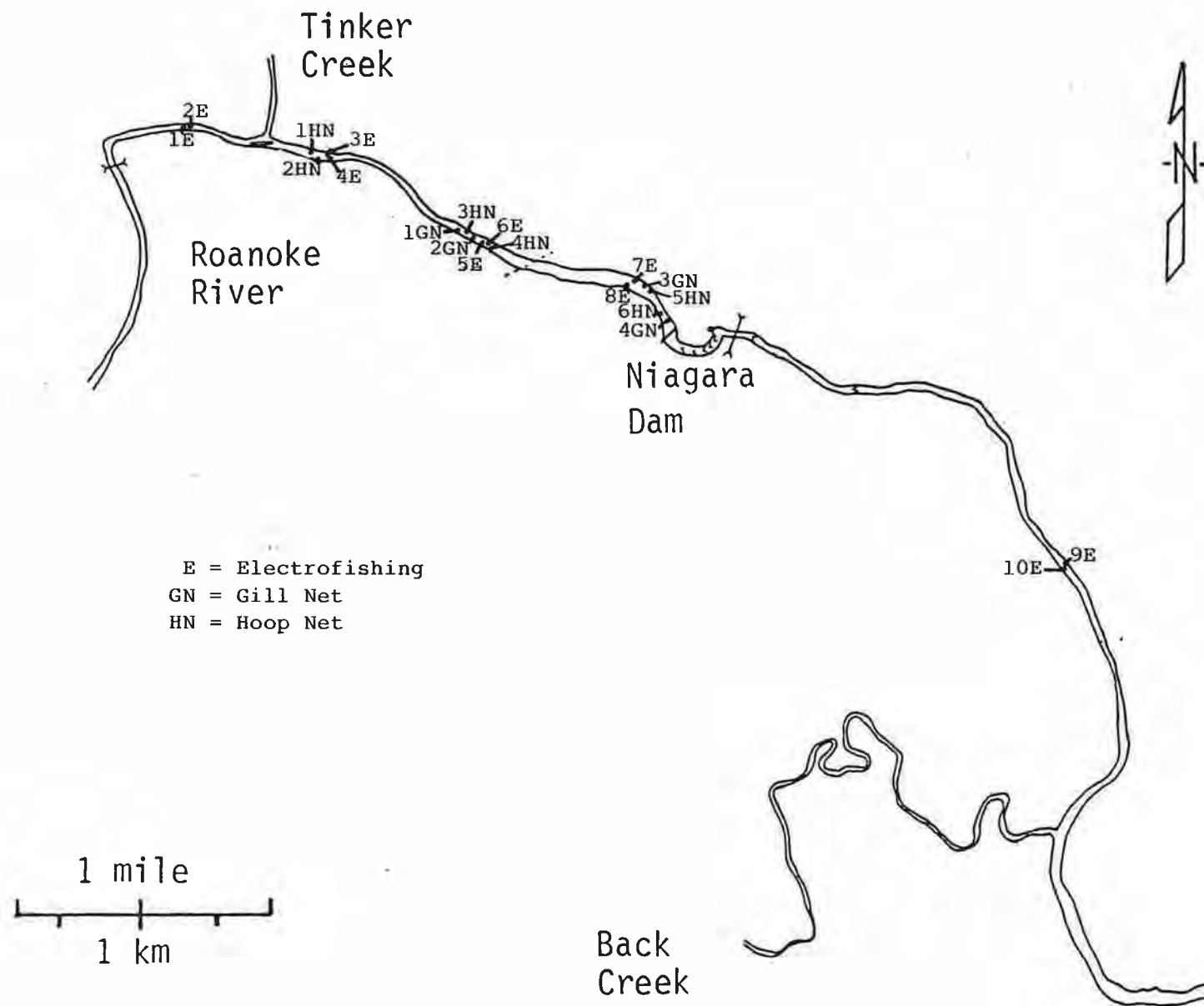


FIGURE E-3

FISH SAMPLING STATIONS IN THE VICINITY OF NIAGARA
HYDROELECTRIC PROJECT, 1990.

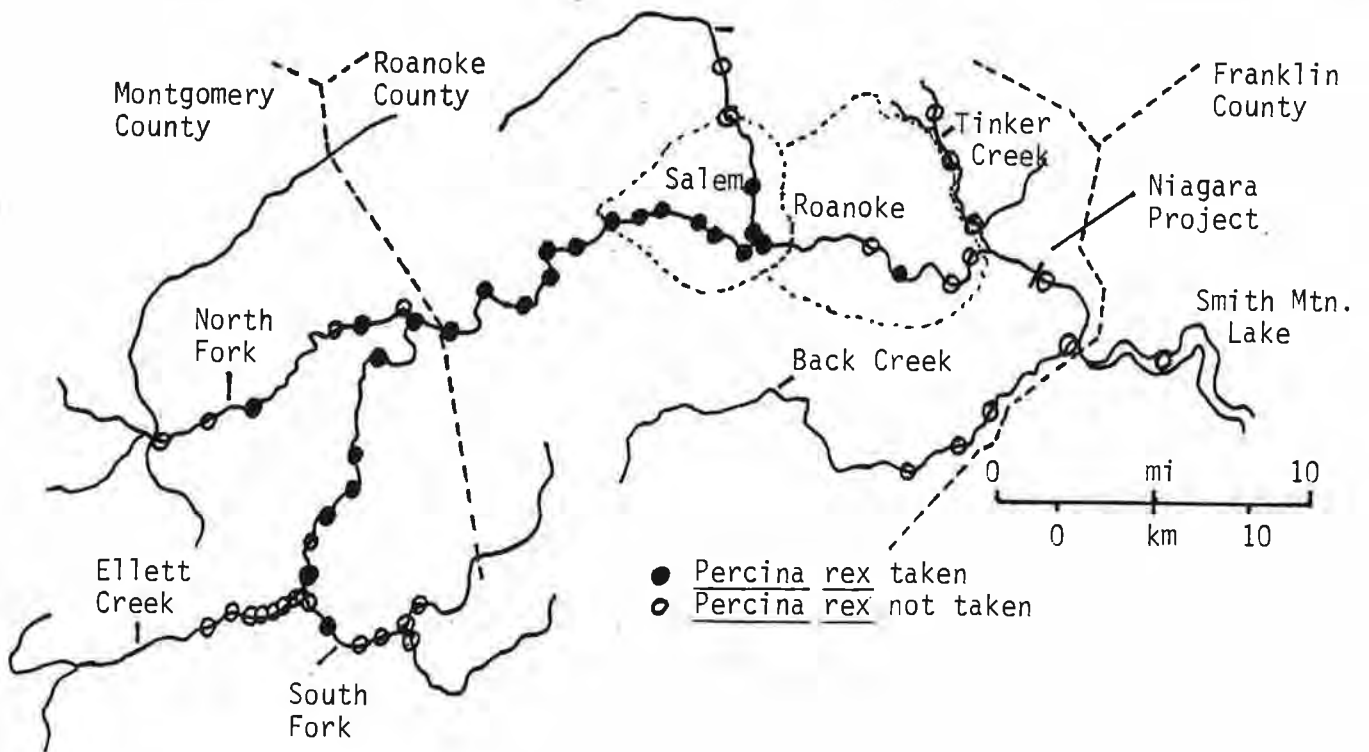
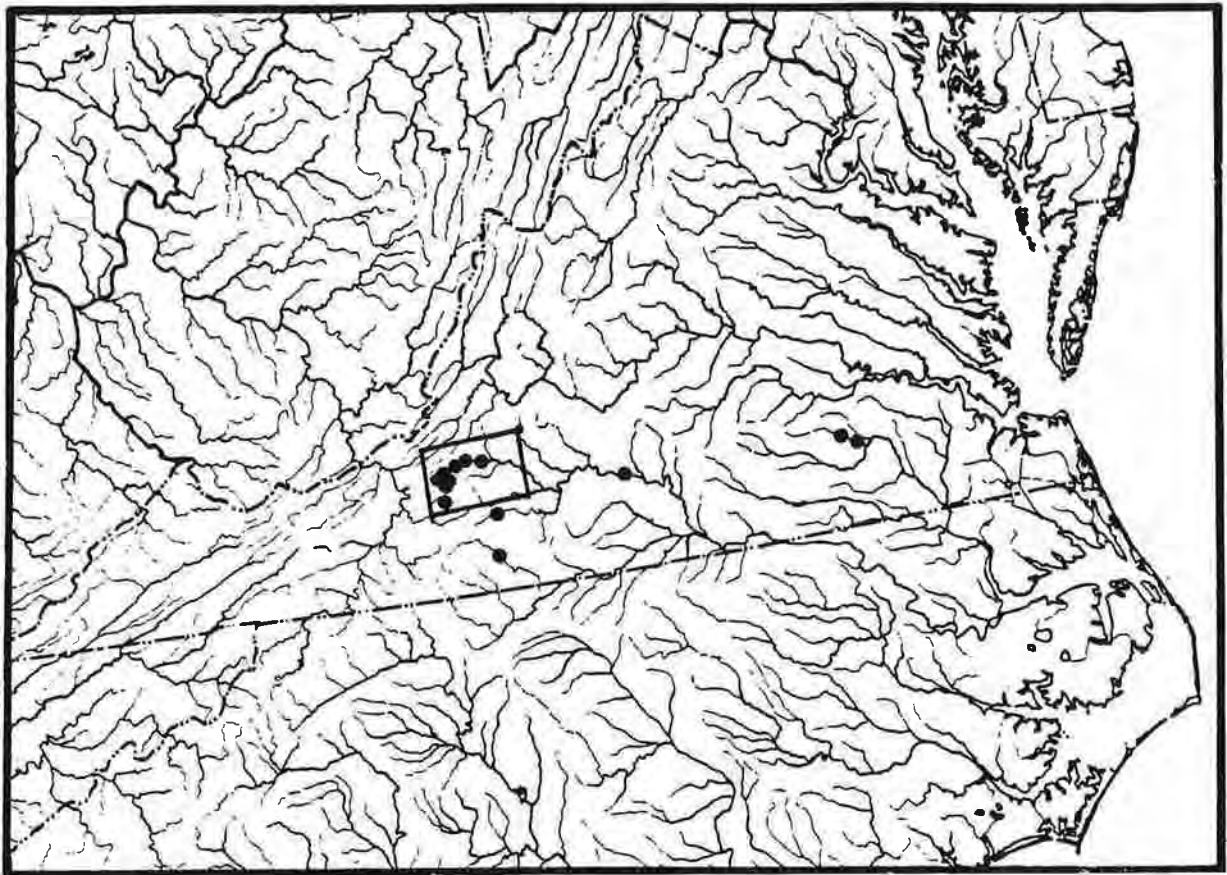


FIGURE E-4

Top: Distribution of the Roanoke logperch (adapted from Jenkins et al. (1978)).

Bottom: Collections of the Roanoke logperch in the upper Roanoke River drainage (boxed area of top map; adapted from Jenkins (1977a)).

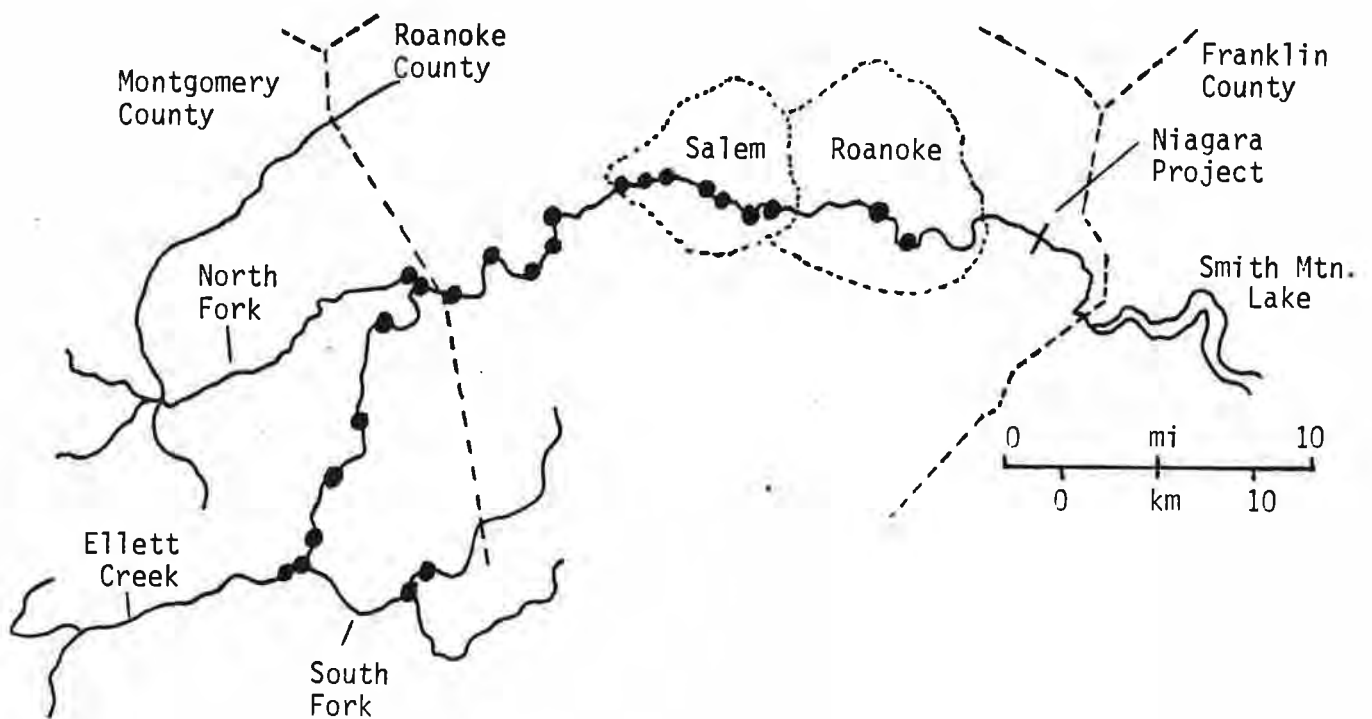
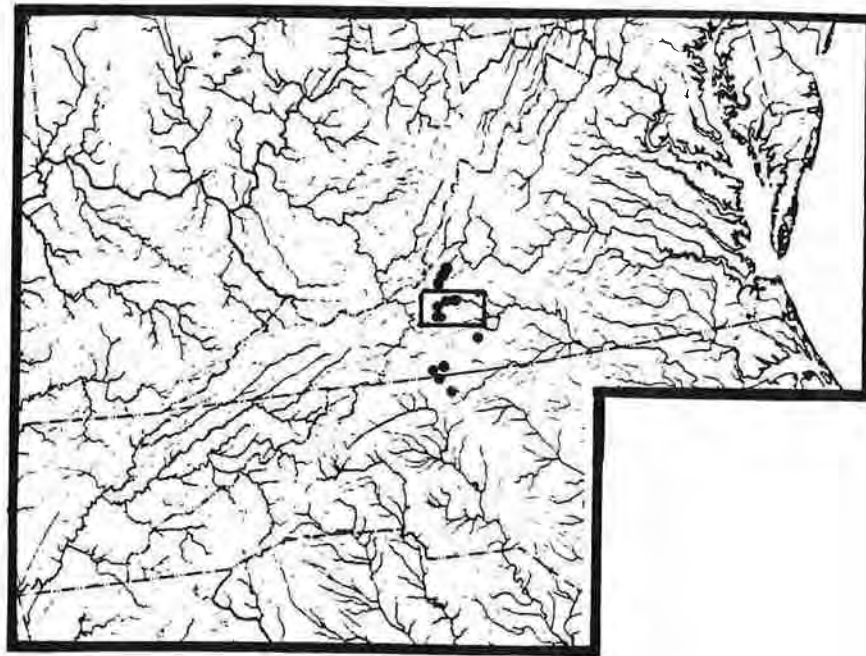
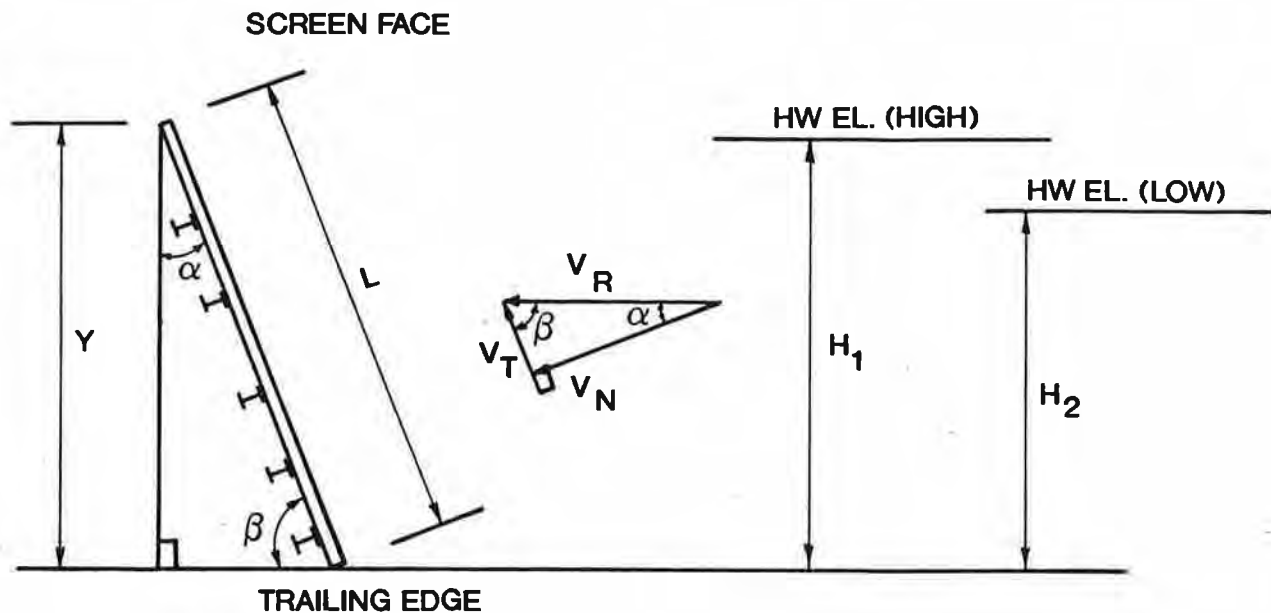


FIGURE E-5

Top: Distribution of the orangefin madtom (adapted from Jenkins 1978).
 Bottom: Collections of the orangefin madtom in the upper Roanoke River drainage (boxed area of top map; adapted from Jenkins (1977b)).



$$\cos \alpha = \frac{Y}{L}, \quad \beta = 90^\circ - \alpha, \quad W = \text{WIDTH OF INTAKE}, \quad Q = \text{FLOW IN CFS}$$

EXAMPLE AT FULL POOL

AT SCREEN FACE:

$$\text{INTAKE AREA} = A_1 = H_1 \times W$$

$$V_R = Q/A_1$$

$$V_T = V_R \sin \alpha$$

$$V_N = V_R \cos \alpha$$

AT TRAILING EDGE:

$$\text{BLOCKED AREA} \perp = \text{BLOCKED AREA} \angle \alpha \cos \alpha$$

$$\text{CONSTRICTED INTAKE AREA} = A_2 = A_1 - \text{BLOCKED AREA} \perp$$

$$V_R = V_R \frac{A_1}{A_2}$$

$$V_T = V_T \frac{A_1}{A_2}$$

$$V_N = V_N \frac{A_1}{A_2}$$

VELOCITIES AT INTAKE SCREENS

FIGURE E-6

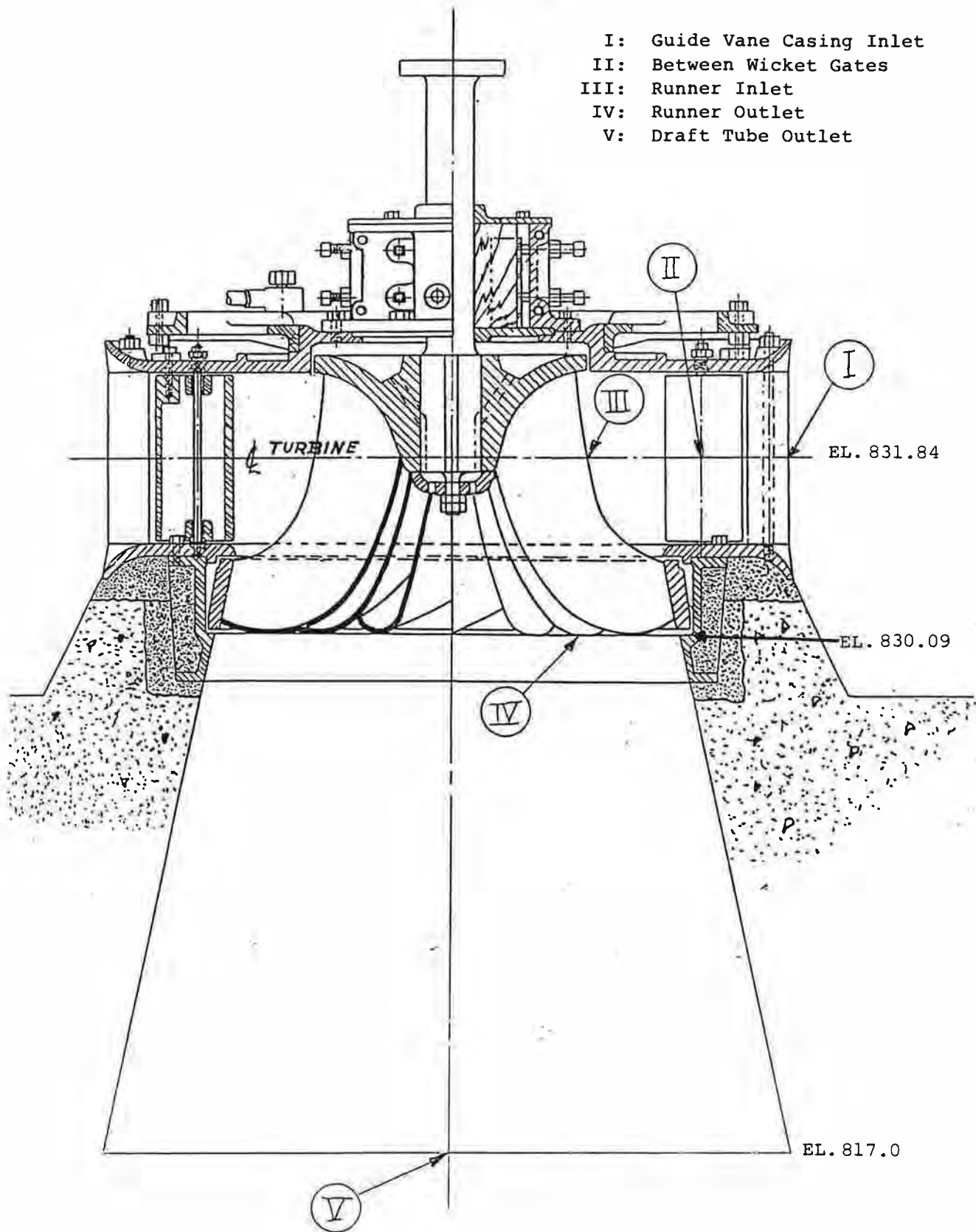


FIGURE E-7

POINTS AT WHICH PRESSURE WAS CALCULATED
 FOR NIAGARA TURBINE.

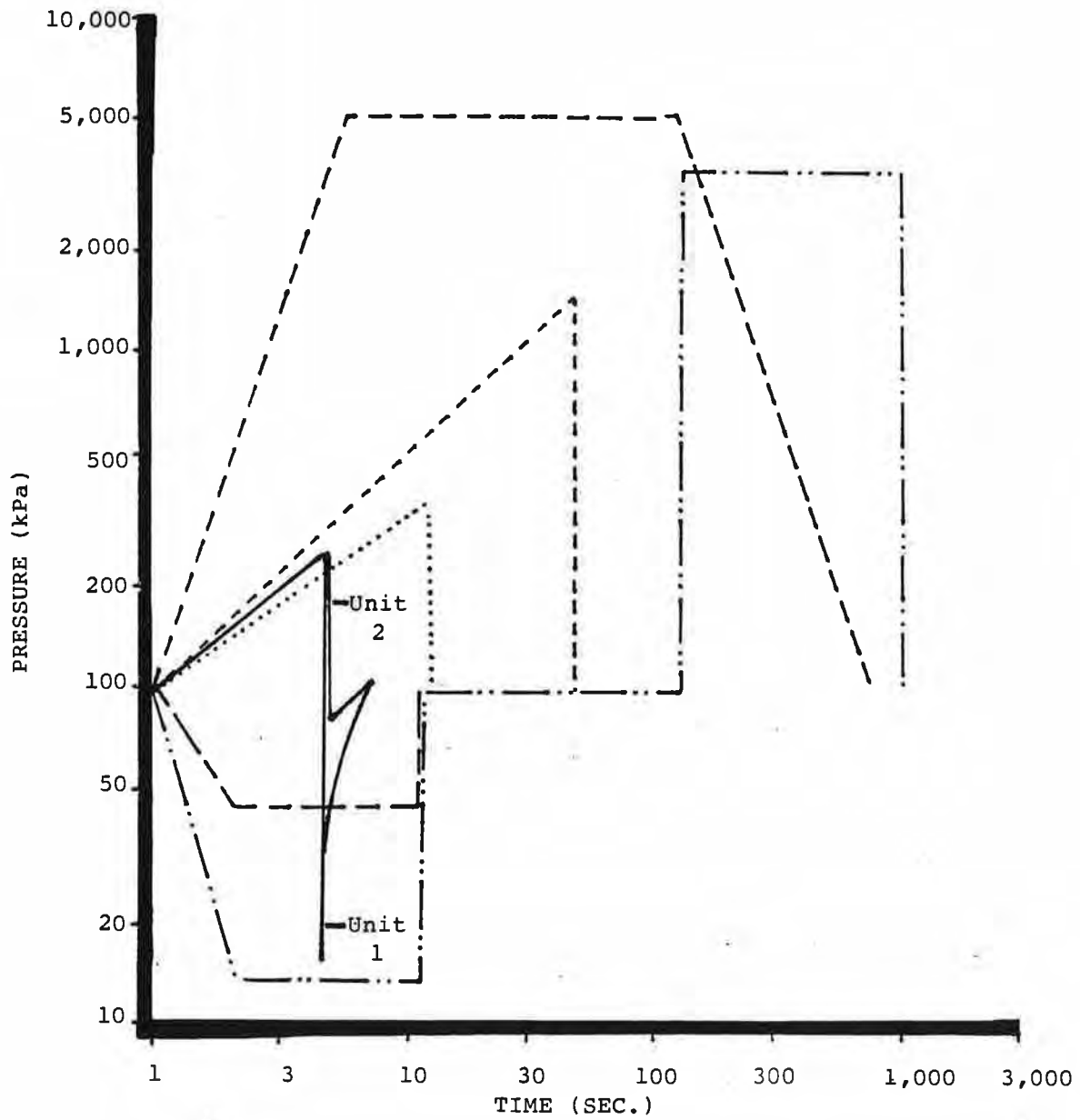


FIGURE E-8

ESTIMATED PRESSURE REGIME THROUGH NIAGARA TURBINE UNITS 1 AND 2 (SOLID LINE) COMPARED TO PRESSURE REGIMES IN EXPERIMENTAL STUDIES WITH FISH (Modified from Cada, 1990).

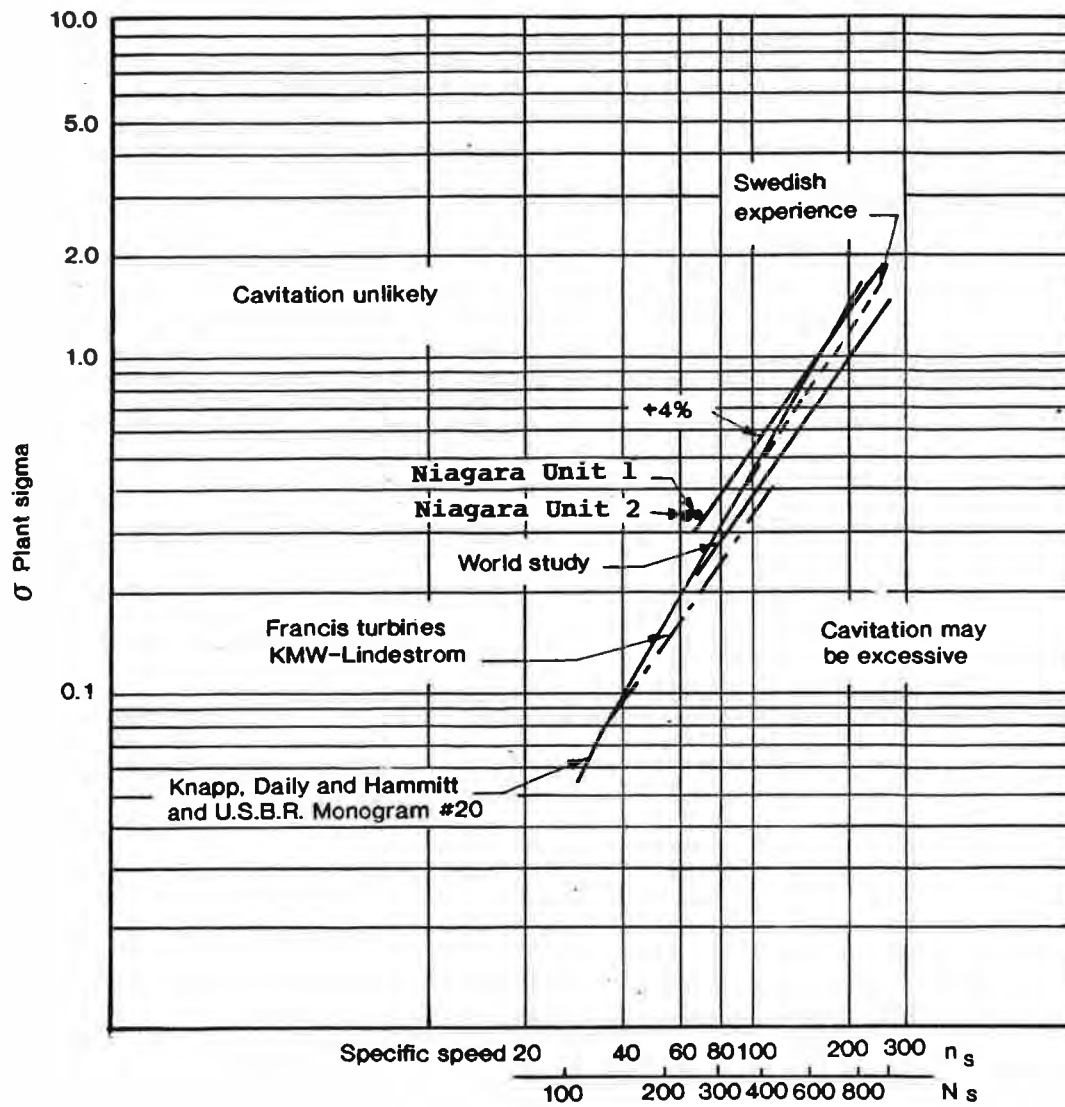
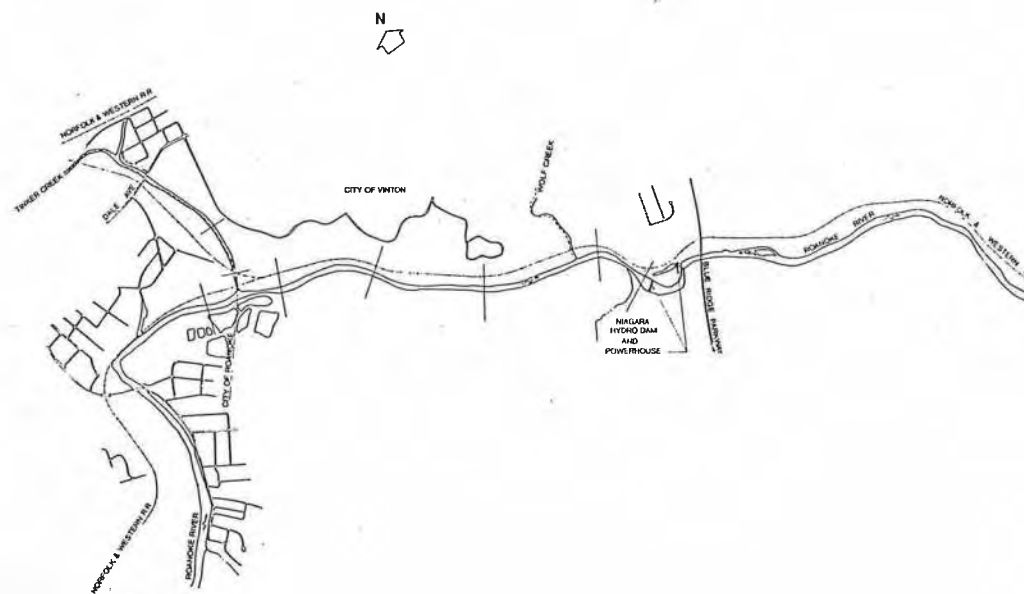


FIGURE E-9

Comparison of experience curves for cavitation coefficient.
(Modified from Warwick et al. 1984)



APPALACHIAN POWER COMPANY
NIAGARA
HYDROELECTRIC PROJECT No. 2466
VIRGINIA

FIGURE E-10
TRANSECTS FLOWN FOR
ROANOKE RIVER BASIN
MAPPING, 1990

TABLE E-1
FLOOD FREQUENCY DATA

<u>Return Interval (yrs)</u>	<u>Flow (cfs)</u>
5	16,885
10	22,029
25	29,647
50	39,186
100	43,510
200	51,723
500	64,131

TABLE E-6
NUMBER AND BIOMASS OF FISH SPECIES COLLECTED NEAR THE NIAGARA HYDROELECTRIC PROJECT,
ROANOKE RIVER, JUNE - OCTOBER 1990

<u>Common Name</u>	<u>Scientific Name</u>	<u>Number</u>	<u>Percent of Total Number</u>	<u>Weight (kg)</u>	<u>Percent of Total Weight</u>
Gizzard Shad	Dorosoma cepedianum	36	1.9	3.81	0.6
Goldfish	Carassius auratus	1	<0.1	0.80	0.1
Grass Carp	Ctenopharyngodon idella	1	<0.1	3.95	0.6
Common Carp	Cyprinus carpio	186	9.6	281.07	42.3
Bluehead Chub	Nocomis leptocephalus	1	<0.1	<0.01	<0.1
Bull Chub	Nocomis raneyi	2	0.1	0.34	<0.1
White Shiner	Notropis albeolus	31	1.6	0.16	<0.1
Satinfin Shiner	Notropis analostanus	8	0.4	0.03	<0.1
Rosefin Shiner	Notropis ardens	1	<0.1	0.02	<0.1
Spottail Shiner	Notropis hudsonius	143	7.4	0.43	0.1
Mimic Shiner	Notropis volucellus	3	0.2	0.02	<0.1
Shiner	Notropis species	2	0.1	0.01	<0.1
Bluntnose Minnow	Pimephales notatus	21	1.1	0.06	<0.1
White Sucker	Catostomus commersoni	175	9.0	61.79	9.3
Northern Hog Sucker	Hypentelium nigricans	2	0.1	0.56	0.1
Silver Redhorse	Moxostoma anisurum	343	17.7	187.92	28.3
Golden Redhorse	Moxostoma erythrurum	106	5.5	27.55	4.1
Shorthead Redhorse	Moxostoma macrolepidotum	7	0.4	3.38	0.5
V-lip Redhorse	Moxostoma pappillosum	3	0.2	0.80	0.1
Torrent Sucker	Moxostoma rhothoecum	1	<0.1	1.30	0.2
White Catfish	Ictalurus catus	15	0.8	8.73	1.3
Yellow Bullhead	Ictalurus natalis	20	1.0	4.50	0.7
Brown Bullhead	Ictalurus nebulosus	12	0.6	3.56	0.5
Black Bullhead	Ictalurus melas	6	0.3	2.49	0.4
Channel Catfish	Ictalurus punctatus	18	0.9	19.80	3.0
Flathead Catfish	Pylodictis olivaris	1	<0.1	2.40	0.4
White Bass	Morone chrysops	4	0.2	0.59	0.1
Rock Bass	Ambloplites rupestris	26	1.3	1.34	0.2
Redbreast Sunfish	Lepomis auritus	555	28.7	24.54	3.7
Pumpkinseed	Lepomis gibbosus	48	2.5	0.61	0.1
Bluegill	Lepomis macrochirus	58	3.0	1.99	0.3
Hybrid Sunfish	Lepomis hybrid	1	<0.1	0.03	<0.1
Smallmouth Bass	Micropterus dolomieu	51	2.6	7.33	1.1
Largemouth Bass	Micropterus salmoides	28	1.4	9.49	1.4

TABLE E-6 (cont'd)

<u>Common Name</u>	<u>Scientific Name</u>	<u>Number</u>	<u>Percent of Total Number</u>	<u>Weight (kg)</u>	<u>Percent of Total Weight</u>
Black Crappie	Pomoxis nigromaculatus	16	0.8	3.20	0.5
Roanoke Logperch	Percina rex	4	0.2	0.01	<0.1
<hr/>					
TOTALS		1,936		664.61	
Number of Species		34			

TABLE E-7

PARASITES AND ABNORMALITIES IN FISH COLLECTED NEAR THE NIAGARA HYDROELECTRIC PROJECT, ROANOKE RIVER,
JUNE - OCTOBER 1990.

Species	<u>Riffle/Run</u> <u>Upstream</u>		<u>Parasites</u> ^a		<u>Upper</u> <u>Pool</u>		<u>Middle</u> <u>Pool</u>		<u>Lower</u> <u>Pool</u>		<u>Riffle/Run</u> <u>Downstream</u>	
	% of		% of		% of		% of		% of		% of	
	No.	Total	No.	Total	No.	Total	No.	Total	No.	Total	No.	Total
Common Carp	1	4.2	--	--	--	--	--	--	--	--	--	--
White Sucker	--	--	--	--	--	--	--	--	1	2.0	--	--
Golden Redhorse	--	--	1	14.3	--	--	--	--	--	--	--	--
Redbreast Sunfish	1	0.6	2	1.6	--	--	--	--	--	--	1	2.5
Pumpkinseed	--	--	--	--	--	--	--	--	--	--	1	20.0
Largemouth Bass	--	--	--	--	1	25.0	--	--	--	--	--	--
Black Crappie	--	--	--	--	--	--	--	--	1	33.3	--	--
TOTALS	2	0.5	3	0.8	1	0.2	2	0.6	2	0.6	2	0.7

Species	<u>Riffle/Run</u> <u>Upstream</u>		<u>Abnormalities</u> ^b		<u>Upper</u> <u>Pool</u>		<u>Middle</u> <u>Pool</u>		<u>Lower</u> <u>Pool</u>		<u>Riffle/Run</u> <u>Downstream</u>	
	% of		% of		% of		% of		% of		% of	
	No.	Total	No.	Total	No.	Total	No.	Total	No.	Total	No.	Total
Common Carp	2	8.3	2	8.0	--	--	--	--	3	8.1	3	7.9
White Sucker	1	4.0	6	12.2	2	4.2	--	--	--	--	--	--
Northern Hog Sucker	--	--	--	--	--	--	--	--	--	--	1	50.0
Silver Redhorse	2	4.4	1	2.4	2	1.4	--	--	--	--	--	--
Golden Redhorse	3	6.0	--	--	--	--	--	--	--	--	--	--
Shorthead Redhorse	--	--	--	--	--	--	--	--	--	--	1	14.3
Black Bullhead	--	--	--	--	--	--	--	--	1	33.3	--	--
Yellow Bullhead	--	--	--	--	--	--	--	--	1	11.1	--	--
Channel Catfish	--	--	--	--	--	--	--	--	1	10.0	--	--
White Bass	--	--	--	--	--	--	--	--	--	--	1	25.0
Redbreast Sunfish	1	0.6	2	1.6	1	0.8	--	--	--	--	--	--

TABLE E-7 (continued)

<u>Species</u>	<u>Riffle/Run Upstream</u>		<u>Upper Pool</u>		<u>Middle Pool</u>		<u>Lower Pool</u>		<u>Riffle/Run Downstream</u>	
	<u>No.</u>	<u>% of Total</u>	<u>No.</u>	<u>% of Total</u>	<u>No.</u>	<u>% of Total</u>	<u>No.</u>	<u>% of Total</u>	<u>No.</u>	<u>% of Total</u>
Pumpkinseed	--	--	--	--	--	--	--	--	1	20.0
Bluegill	--	--	--	--	--	--	--	--	1	2.4
Largemouth Bass	--	--	--	--	1	25.0	1	25.0	1	5.9
TOTALS	9	2.1	11	3.0	6	1.2	7	2.0	9	3.1

^a Parasites recorded: fungus (30%), blackspot (20%), bacterial infection (20%), trematode (10%), leech (10%), anchor worm (10%)

^b Abnormalities recorded: lesions (42.9%), deformities (23.8%), missing body parts (16.7%), eroded fins (14.3%), scars (2.4%)

TABLE E-8
COMPARISON OF FISH SPECIES COLLECTED FROM JUNE - OCTOBER 1990,
NEAR THE NIAGARA HYDROELECTRIC PROJECT TO THE VIRGINIA DEPARTMENT
OF GAME AND INLAND FISHERIES (VDGIF) SPECIES LIST
FOR THE ROANOKE RIVER BASED ON PAST COLLECTIONS.

<u>Family</u> <u>Species</u>	<u>Common Name</u>	<u>Roanoke River</u> <u>(VDGIF)</u>	<u>Niagara</u> <u>(1990)</u>
Amiidae			
<u>Amia calva</u>	Bowfin	x	
Clupeidae			
<u>Alosa aestivalis</u>	Blueback Herring	x	
<u>A. pseudoharengus</u>	Alewife	x	
<u>Dorosoma cepedianum</u>	Gizzard Shad	x	x
Salmonidae			
<u>Oncorhynchus mykiss</u>	Rainbow Trout	x	
<u>Salmo trutta</u>	Brown Trout	x	
<u>Salvelinus fontinalis</u>	Brook Trout	x	
Esocidae			
<u>Esox niger</u>	Chain Pickerel	x	
Cyprinidae			
<u>Campostoma anomalum</u>	Stoneroller	x	
<u>Carrassius auratus</u>	Goldfish	x	x
<u>Clinostomus funduloides</u>	Rosyside Dace	x	
<u>Ctenopharyngodon idella</u>	Grass Carp		x
<u>Cyprinus carpio</u>	Common Carp		x
<u>Exoglossum maxillina</u>	Cutlips Minnow	x	
<u>Nocomis leptocephalus</u>	Bluehead Chub	x	x
<u>N. raneyi</u>	Bull Chub	x	x
<u>Notemigonus crysoleucas</u>	Golden Shiner	x	
<u>Notropis albeolus</u>	White Shiner	x	x
<u>N. altipinnis</u>	Highfin Shiner	x	
<u>N. amoenus</u>	Comely Shiner	x	
<u>N. analostanus</u>	Satinfin Shiner	x	x
<u>N. ardens</u>	Rosefin Shiner	x	x
<u>N. cerasinus</u>	Crescent Shiner	x	
<u>N. hudsonius</u>	Spottail Shiner	x	x
<u>N. procne</u>	Swallowtail Shiner	x	
<u>N. rubellus</u>	Rosyface Shiner	x	
<u>N. spilopterus</u>	Spotfin Shiner	x	
<u>N. volucellus</u>	Mimic Shiner	x	x
<u>Notropis sp.</u>	Shiner sp.		x
<u>Phoxinus oreas</u>	Mountain Redbelly Dace	x	
<u>Pimephales notatus</u>	Bluntnose Minnow	x	x
<u>P. promelas</u>	Fathead Minnow	x	
<u>Rhinichthys atratulus</u>	Blacknose Dace	x	
<u>R. cataractae</u>	Longnose Dace	x	
<u>Semotilus atromaculatus</u>	Creek Chub	x	
<u>S. corporalis</u>	Fallfish	x	
Catostomidae			
<u>Carpiodes cyprinus</u>	Quillback	x	
<u>Catostomus commersoni</u>	White Sucker	x	x
<u>Hypentelium nigricans</u>	Northern Hog Sucker	x	x
<u>H. roanokense</u>	Roanoke Hog Sucker	x	

Table E-8 (cont'd)

Family <u>Species</u>	<u>Common Name</u>	Roanoke River (VDGIF)	Niagara (1990)
<u>Moxostoma anisurum</u>	Silver Redhorse	x	x
<u>M. ariommum</u>	Bigeye Jumprock	x	
<u>M. cervinum</u>	Black Jumprock	x	
<u>M. erythrurum</u>	Golden Redhorse	x	x
<u>M. macrolepidotum</u>	Shorthead Redhorse	x	x
<u>M. pappillosum</u>	V-lip Redhorse	x	x
<u>M. rhothoecum</u>	Torrent Sucker	x	x
Ictaluridae			
<u>Ictalurus catus</u>	White Catfish	x	x
<u>I. melas</u>	Black Bullhead		x
<u>I. natalis</u>	Yellow Bullhead	x	x
<u>I. nebulosus</u>	Brown Bullhead	x	x
<u>I. platycephalus</u>	Flat Bullhead	x	
<u>I. punctatus</u>	Channel Catfish	x	x
<u>Noturus gilberti</u>	Orangefin Madtom	x	
<u>N. insignis</u>	Margined Madtom	x	
<u>Pylodictis olivaris</u>	Flathead Catfish	x	x
Percichthyidae			
<u>Morone americana</u>	White Perch	x	
<u>M. chrysops</u>	White Bass	x	x
<u>M. saxatilis</u>	Striped Bass	x	
Centrarchidae			
<u>Ambloplites cavifrons</u>	Roanoke Bass	x	
<u>A. rupestris</u>	Rock Bass	x	
<u>Lepomis auritus</u>	Redbreast Sunfish	x	x
<u>L. cyanellus</u>	Green Sunfish	x	
<u>L. gibbosus</u>	Pumpkinseed	x	x
<u>L. gulosus</u>	Warmouth	x	
<u>L. macrochirus</u>	Bluegill	x	x
<u>L. microlophus</u>	Redear Sunfish	x	
<u>Lepomis hybrid</u>	Hybrid Sunfish		x
<u>Micropterus dolomieu</u>	Smallmouth Bass	x	x
<u>M. salmoides</u>	Largemouth Bass	x	x
<u>Pomoxis annularis</u>	White Crappie	x	
<u>P. nigromaculatus</u>	Black Crappie	x	x
Percidae			
<u>Etheostoma flabellare</u>	Fantail Darter	x	
<u>E. maculatum</u>	Spotted Darter	x	
<u>E. nigrum</u>	Johnny Darter	x	
<u>E. podostemone</u>	Riverweed Darter	x	
<u>E. vitreum</u>	Glassy Darter	x	
<u>Perca flavescens</u>	Yellow Perch	x	
<u>Percina peltata</u>	Shield Darter	x	
<u>P. rex</u>	Roanoke Logperch	x	x
<u>P. roanoka</u>	Roanoke Darter	x	
<u>Stizostedion vitreum</u>	Walleye	x	
Cottidae			
<u>Cottus bairdi</u>	Mottled Sculpin	x	

TABLE E-9
 MEAN CATCH PER UNIT EFFORT (CPUE) FOR ELECTROFISHING (NUMBER OF FISH)
 NEAR THE NIAGARA HYDROELECTRIC PROJECT, ROANOKE RIVER, JUNE - OCTOBER 1990.
 FOR SPECIES WITH SIGNIFICANTLY DIFFERENT CATCHES AMONG LOCATIONS (IDENTIFIED BY ASTERISKS),
 CPUE VALUES FOLLOWED BY THE SAME LETTER ARE NOT SIGNIFICANTLY DIFFERENT ($P > 0.10$).

Species	Electrofishing CPUE (No./Minute)					P-Value**
	Riffle/Run Upstream	Upper Pool	Middle Pool	Lower Pool	Riffle/Run Downstream	
Gizzard Shad*	0A	0A	0A	0.02A	0.61B	0.01
Common Carp*	0.40B	0.16AB	0.39B	0.07A	0.71B	<0.01
Bluehead Chub	0	0	0	0	0.01	0.41
Bull Chub	0.02	0	0	0	0.02	0.54
White Shiner	0.14	0.24	0.07	0.09	0.02	0.45
Satinfin Shiner*	0A	0A	0A	0A	0.15B	<0.01
Rosefin Shiner	0	0	0	0.01	0	0.41
Spottail Shiner	1.04	0.56	0.31	0.10	0.25	0.21
Mimic Shiner	0	0	0	0.02	0.01	0.54
Bluntnose Minnow	0	0.07	0.11	0.03	0.01	0.28
White Sucker*	0.38B	0.54B	0.39B	0.33B	0.06A	0.02
Northern Hog Sucker*	0A	0A	0A	0A	0.04B	0.08
Silver Redhorse	0.73	0.49	0.49	0.18	0.50	0.18
Golden Redhorse*	0.92B	0.12A	0.03A	0.07A	0.35AB	<0.01
Shorthead Redhorse*	0A	0A	0A	0A	0.16B	0.08
V-lip Redhorse*	0A	0A	0A	0A	0.07B	0.01
White Bass	0	0	0	0	0.05	0.41
Rock Bass*	0.10B	0.01A	0.05AB	0.04AB	0A	0.03
Redbreast Sunfish*	2.45B	1.87AB	1.88AB	1.35AB	0.77A	0.09
Pumpkinseed	0.02	0.27	0.20	0.15	0.11	0.14
Bluegill*	0.03A	0.02A	0.03A	0.18B	0.80C	<0.01
Hybrid Sunfish	0.01	0	0	0	0	0.41
Smallmouth Bass*	0.38B	0.10A	0.08A	0.02A	0.08A	<0.01
Largemouth Bass*	0A	0.03A	0.06A	0.04A	0.33B	<0.01
Black Crappie	0.01	0.02	0	0	0.05	0.11
Roanoke Logperch*	0.08B	0A	0A	0A	0A	0.08

* Species with significantly different catches among locations ($P \leq 0.10$).

** Significance value for chi-square approximation of Kruskal-Wallis test statistic.

TABLE E-10
SPAWNING CHARACTERISTICS OF FISH SPECIES OF THE
NIAGARA HYDROELECTRIC PROJECT RESERVOIR*.

<u>Species</u>	<u>Spawning Period</u>	<u>Spawning Habitat</u>	<u>Spawning Depth (ft)</u>	<u>Egg Deposition</u>	<u>Egg Type</u>
Gizzard Shad	April-August	Vegetation/Margins	1-8	Broadcast	Adhesive, Semi- buoyant
Goldfish	March-August	Vegetation	0.5-6	Broadcast	Adhesive-Demersal
Common Carp	May-August	Vegetation	0.25-6	Broadcast	Adhesive Demersal
Spottail Shiner	May-August	Sandy Shoals	0.25-1.5	Broadcast	Adhesive Demersal
Mimic Shiner	May-July	Vegetation	15-20	Broadcast	Demersal
Bluntnose Minnow	May-July	Sand/Gravel	0.25-8	Nest	Adhesive Demersal
Creek Chub	April-June	Gravel	0.25-6?	Nest	Demersal
White Catfish	May-July	Crevice	1-8?	Nest	Adhesive Demersal
Yellow Bullhead	May-July	Crevice	1-8?	Nest	Adhesive
Brown Bullhead	April-July	Crevice	0.5-8	Nest	Adhesive Demersal
Black Bullhead	May-July	Crevice	2-4	Nest	Adhesive
Channel Catfish	May-July	Crevice	1-8	Nest	Adhesive Demersal
Flathead Catfish	June-July	Crevice	1-8	Nest	Adhesive Demersal
Rock Bass	May-June	Sand/Gravel	0.25-3.5	Nest	Adhesive Demersal
Redbreast Sunfish	May-June	Sand/Gravel	1-5?	Nest	Adhesive Demersal
Green Sunfish	May-August	Sand/Gravel	0.25-1.5	Nest	Adhesive Demersal
Pumpkinseed	May-August	Sand/Gravel	1-2.5	Nest	Adhesive Demersal
Bluegill	May-August	Sand/Gravel	1-5	Nest	Adhesive Demersal
Smallmouth Bass	April-July	Sand/Gravel	1-5	Nest	Adhesive Demersal
Largemouth Bass	April-July	Sand/Gravel	1-5	Nest	Adhesive Demersal
Black Crappie	May-June	Sand/Gravel	1-8	Nest	Adhesive Demersal

* Information consolidated from Becker (1983), Carlander (1969, 1977), and WAPORA, Inc. (1978, 1987).

TABLE E-11
 MEAN CATCH PER UNIT EFFORT (CPUE) FOR COMBINED GILL AND HOPP NETTING
 (NUMBER OF FISH) IN THE NIAGARA HYDROELECTRIC PROJECT RESERVOIR,
 ROANOKE RIVER, JUNE - OCTOBER 1990. FOR SPECIES WITH SIGNIFICANTLY
 DIFFERENT CATCHES AMONG LOCATIONS (IDENTIFIED BY ASTERISKS),
 CPUE VALUES FOLLOWED BY THE SAME LETTER ARE NOT
 SIGNIFICANTLY DIFFERENT ($P > 0.10$).

<u>Species</u>	<u>Gill/Hoop Netting CPUE (No./Net/Day)</u>			<u>P-Value**</u>
	<u>Upper Pool</u>	<u>Middle Pool</u>	<u>Lower Pool</u>	
Goldfish	0	0	0.02	0.41
Grass Carp	0	0	0.02	0.41
Common Carp	0.58	0.69	0.65	0.86
White Sucker	0.50	0.48	0.58	0.92
Silver Redhorse*	0.54A	2.34B	1.48AB	0.02
Golden Redhorse*	0A	0.33B	0.15AB	0.01
Torrent Sucker	0.02	0	0	0.41
White Catfish	0.29	0.08	0.04	0.19
Black Bullhead	0.08	0.02	0.06	0.42
Yellow Bullhead	0.13	0.06	0.19	0.37
Brown Bullhead	0.18	0.02	0.08	0.30
Channel Catfish*	0.04A	0.06A	0.21B	0.06
Flathead Catfish	0	0	0.02	0.41
Rock Bass*	0A	0.19B	0.06AB	<0.01
Redbreast Sunfish	0.17	0.10	0.04	0.17
Smallmouth Bass	0.04	0.04	0.10	0.24
Largemouth Bass	0.04	0	0.04	0.24
Black Crappie	0.08	0.13	0.06	0.17

* Species with significantly different catches among locations ($P \leq 0.10$).

** Significance value for chi-square approximation of Kruskal-Wallis test statistic.

TABLE E-12

NIAGARA HYDRO PROJECT
UPPER INTAKE SCREEN FLOW VELOCITIES
(FPS).

V_R = resultant velocity, V_T = tangential velocity, and
 V_N = normal velocity

At Screen Face	V_R	V_T	V_N
HW El. 885 NGVD	1.013	0.405	0.929
HW El. 884 NGVD	1.087	0.434	0.996
At Trailing Edge:			
HW El. 885 NGVD	1.214	0.485	1.113
HW El. 884 NGVD	1.296	0.518	1.188

TABLE E-13

PROBABILITY (%) OF FISH CONTACT WITH TURBINE BLADES AT
 NIAGARA HYDROELECTRIC PROJECT FOR
 YOUNG-OF-YEAR AND AVERAGE-SIZED ADULT^a

<u>Species</u>	<u>Length (mm)</u> ^b	<u>Probability</u>	
		<u>Unit 1</u>	<u>Unit 2</u>
Gizzard Shad	85	9	8
	250	27	23
Goldfish	45	5	4
	250	27	23
Common Carp	80	9	7
	350*	37	32
White Shiner	25	3	2
	90	10	8
Rosefin Shiner	25	3	2
	65	7	6
Spottail Shiner	30	3	3
	60	6	5
Mimic Shiner	20	2	2
	50	5	5
Bluntnose Minnow	25	3	2
	65	7	6
White Sucker	40	4	4
	240	26	22
Silver Redhorse	40	4	4
	300	32	27
Golden Redhorse	40	4	4
	300	32	27
White Catfish	70	7	6
	275*	29	25
Yellow Bullhead	60	6	5
	250	27	23
Brown Bullhead	60	6	5
	250	27	23
Black Bullhead	50	5	5
	225	24	21
Channel Catfish	70	7	6
	275*	29	25
Flathead Catfish	75	8	7
	275*	29	25
Rock Bass	30	3	3
	175	19	16
Redbreast Sunfish	30	3	3
	125	13	11
Pumpkinseed	30	3	3
	150	16	14
Bluegill	30	3	3
	150	16	14
Smallmouth Bass	60	6	5
	275	29	25
Spotted Bass	60	6	5
	240	26	22
Largemouth Bass	60	6	5
	275	29	25
Black Crappie	50	5	5
	210	22	19

Table E-13 (cont'd)

- a) Turbine measurements used in calculations:
Number of runner blades = 14
RPM = 277
Runner diameter = 53.25 (Unit 1), 52 in. (Unit 2)
Blade angle = 29.2° (Unit 1), 63° (Unit 2)
Turbine discharge = 379 cfs (Unit 1), 305 cfs (Unit 2)
- b) * indicates maximum-size fish estimated to pass 3 5/8-inch opening of intake screens

TABLE E-14

DATA USED FOR CALCULATION OF NIAGARA CAVITATION COEFFICIENT

RPM - 277

Runner Diameter (max. - ft.) = 4.17 (Unit 1); 3.94 (Unit 2)

Circumference (ft.) = 13.09 (Unit 1); 12.37 (Unit 2)

Velocity (blade tip - fps) = 60.43 (Unit 1); 57.11 (Unit 2)

Headwater elevation (norm. max. - ft.) = 884.4

Turbine runner elevation (ft.) = 831.97

Tailwater elevation (min. - ft.) = 820.5

Plant sigma = 0.32

Specific speed = 71.9 (Unit 1); 63.4 (Unit 2)

TABLE E-15

**AVAILABLE SPAWNING HABITAT ACREAGE AND MAXIMUM % EXPOSED BY
RIVER FLUCTUATION AT NIAGARA HYDROELECTRIC PROJECT.**

<u>Month</u>	<u>Spawning Group^a</u>	<u>Habitat Available (acres)</u>	<u>Mean River Fluctuation (ft)^b</u>	<u>% Habitat Exposed</u>
March	A	38.4	2.4	17
April	A	37.9	2.3	17
	B	42.4		9
May	A	34.0	1.2	10
	B	38.5		2
June	A	28.9	0.4	2
	B	35.1		<1
July	A	29.4	0.5	3
	B	35.6		<1
August	A	35.7	1.7	13
	B	40.7		5

a) Spawning Groups

A: Cyprinids, sunfish

B: Gizzard shad, ictalurids, black bass, black crappie

b) Difference between mean maximum and mean minimum Roanoke River gage height at Niagara, 1983-1988.

TABLE E-16

RECORDED RIVER FLOWS EXCEEDING NIAGARA PLANT
HYDRAULIC CAPACITY, 1983-1990

Number of Days Plant Hydraulic Capacity Exceeded

<u>Month</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>	Monthly <u>Mean</u>
January	0	0	1	0	6	3	0	21	4
February	13	13	6	2	15	1	2	28	10
March	19	15	0	4	17	0	9	20	11
April	28	24	0	0	27	1	1	16	12
May	1	9	3	3	7	0	17	10	6
June	0	0	0	0	0	0	12	4	2
July	0	0	0	0	0	0	13	3	2
August	0	5	6	1	0	0	0	3	2
September	0	0	0	1	4	0	14	0	2
October	2	0	0	0	0	0	14	16	4
November	0	0	12	1	2	0	7	1	3
December	12	0	4	10	1	0	1	7	4
Annual Total	75	66	32	22	79	5	90	129	

An Assessment of the Roanoke Logperch
in the Roanoke River Downstream of
Niagara Hydroelectric Project

Appalachian Power Company
40 Franklin Road, S.W.
Roanoke, VA 24011

and

American Electric Power Service Corporation
1 Riverside Plaza
Columbus, OH 43216

December 1992

TABLE OF CONTENTS

	<u>Page</u>
Introduction	1
Methodology.	2
Fish Sampling	2
Habitat Characterization.	3
Results.	3
Fish Sampling	3
Habitat Characterization.	4
Summary.	4
References Cited	5
Figures and Tables	
Photographs	
Appendix	

Introduction

An application for new license for the Niagara Hydroelectric Project (FERC Project No. 2466) was filed with the Federal Energy Regulatory Commission (FERC) in December 1991. Subsequently, the U. S. Fish and Wildlife Service (USFWS) submitted a Request for Additional Studies to the FERC that requested additional surveys to determine the distribution and abundance of the Roanoke logperch (Percina rex) (Photograph 1) in the approximately two-mile stretch of free-flowing Roanoke River from the Niagara powerhouse to the head of the Smith Mountain Lake pool (Figure 1). This request was based on a previous survey conducted in 1991 by Appalachian Power Company (APCo) and American Electric Power Service Corporation (AEPSC), in cooperation with the Virginia Department of Game and Inland Fisheries (VDGIF), reported in the license application, that verified the presence of this federally listed endangered species in this downstream segment of the river, thereby representing an extension of the known range of the Roanoke logperch. The FERC acted on this request in its May 22, 1992 letter to AEPSC, asking that a study be conducted to assess the population of Roanoke logperch downstream of the Niagara project. A study plan (see Appendix) was developed to include the following objectives:

- 1) systematically survey the Roanoke River for the Roanoke logperch from the Niagara powerhouse to the head of the Smith Mountain Lake pool;
- 2) characterize the type and location of habitat being used by any collected logperch; and
- 3) estimate the amount and identify the location of available habitat in this river segment that is of the type used by Roanoke logperch.

A draft study plan was reviewed and approved by both VDGIF and USFWS. The study plan called for completion of field work by September 15, 1992, with a final report to the FERC by

November 16, 1992. However, scheduled sampling on August 27, 1992, was prevented by heavy rain, allowing only gross habitat characterization to be conducted on that date. All potential participants were aware that successful completion of the survey was dependent upon suitable flow conditions, and thus could be subject to short-notice scheduling. Because of continuing wet weather, that resulted in turbid river conditions downstream of the Niagara Project, sampling was delayed until October 22, 1992, when the survey was completed under ideal flow (105 cfs at the Niagara gauge) and water clarity (5 NTU) conditions.

Methodology

Fish Sampling. Roanoke logperch were surveyed on October 22, 1992. Present at the survey were Arthur LaRoche, Bob Albrecht, Scott Smith, and Michael Duval (VDGIF), Jerry Zwart (APCo), and John Van Hassel and Ken Wood (AEPSC). USFWS was notified of the planned survey by telephone on October 19, but was unable to send a representative because of schedule conflicts. The area surveyed consisted of a 1 1/4-mile segment of the Roanoke River directly downstream of the Niagara powerhouse. Habitat characterization of the two-mile, free-flowing segment of the river between the powerhouse and the Smith Mountain Lake headwaters on August 27 had determined that the upper 1 1/4 miles of the segment were predominately riffle/run habitat where logperch might be found, while the lower 3/4 mile of the free-flowing segment was dominated by long, silty pools where logperch would not be expected (see Appendix for summary of August 27 activities).

Logperch were surveyed in the river segment by systematic searching of all riffle/run areas characterized by gravel or cobble substrate by two AEPSC snorkelers. Follow-up backpack electrofishing was conducted by VDGIF personnel for species verification, and to sample areas of sub-optimal habitat that were not searched by snorkeling.

Habitat Characterization. A gross determination of the location of riffle/run and pool habitats in the two-mile free-flowing segment of the river was made by canoe on August 27, 1992. On October 22, in conjunction with the logperch survey, the following data were recorded at each location where a logperch was captured: water temperature (YEW Model SC51 meter), surface and bottom current velocity (Marsh-McBirney Model 201D meter, 5 cm below water surface and 5 cm above bottom), turbidity (Bausch & Lomb nephelometer), depth, direction of flow (compass), substrate composition (visual estimate), and an estimate of the total area of similar habitat surrounding the capture location. Additionally, photographs were taken to provide a general profile of the location of riffle/run/pool habitats in the surveyed segment.

Results

Fish Sampling. A total of ten Roanoke logperch were observed, nine by snorkeling and one (129 mm total length) by electrofishing. Figure 2 depicts the locations where the logperch were found. Other species observed during the survey included gizzard shad (Dorosoma cepedianum), goldfish (Carrassius auratus), common carp (Cyprinus carpio), shiners (Notropis spp.), bluntnose minnow (Pimephales notatus), black jumprock (Moxostoma cervinum), channel catfish (Ictalurus punctatus), margined madtom (Noturus insignis), redbreast sunfish (Lepomis auritus), fantail darter (Etheostoma flabellare), riverweed darter (E. podostemone), and Roanoke darter (Percina roanoka).

Three specimens of the Roanoke logperch collected by electrofishing in September 1991 by VDGIF and AEPSC personnel were from the same area as those observed in the 1992 survey. No other collections of this species are known from this segment of the Roanoke River.

Habitat Characterization. Table 1 provides habitat measurements for each of the nine locations where a logperch was observed by snorkeling. Water temperatures during the survey ranged from 12.6-13.5 C, and turbidity from 5.2-9.7 NTU. Logperch were most often observed on the bottom in locations where the surface current velocity was approximately 0.40 m/sec, and bottom current velocity slightly less. Preferred substrate was cobble/gravel at depths \leq 51 cm. These measurements agree with previous habitat characterizations for this species (Burkhead 1983; Simonson and Neves 1986). There appeared to be no predominate preference for location within a riffle or for the size of the riffle. All of the suitable habitat in the surveyed stretch occurred in eastward-flowing segments of the river channel.

Table 2 provides a general profile of habitat for the surveyed stretch of river. Habitat suitable for the Roanoke logperch was confined to a 2,500-foot segment of the river beginning about 0.5 mile downstream of the Niagara powerhouse (Figure 2: Zones 4-8), and totalling approximately 21,500 ft².

Summary

A survey of the Roanoke River for 1 1/4 miles downstream of Niagara Hydroelectric Project on October 22, 1992, found ten specimens of the federally endangered Roanoke logperch (Percina rex) using snorkeling and electrofishing techniques. The logperch were most often observed on cobble/gravel riffles less than 51 cm in depth, with current velocities near 0.40 m/sec. The logperch appeared to be confined to a 2,500-foot segment of the river that begins about 0.5 mile downstream of the Niagara powerhouse, and which contains approximately 21,500 ft² of available logperch habitat. Based on this survey and the documented habitat specificity of this species, the Roanoke logperch is not likely to populate areas within the two-mile reach of the Roanoke River between Niagara and the head of the Smith Mountain Lake pool that are outside of the 2,500-foot segment where they were collected.

References Cited

- 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 prep. for U.S. Army Corps of Eng., Wilmington Dist., Wilmington, N.C.
- Simonson, T.D., and R. J. Neves. 1986. A status survey of the orangefin madtom (Noturus gilberti) and Roanoke logperch (Percina rex). Report prep. for Virginia Comm. Game Inland Fish., Richmond.

FIGURES AND TABLES

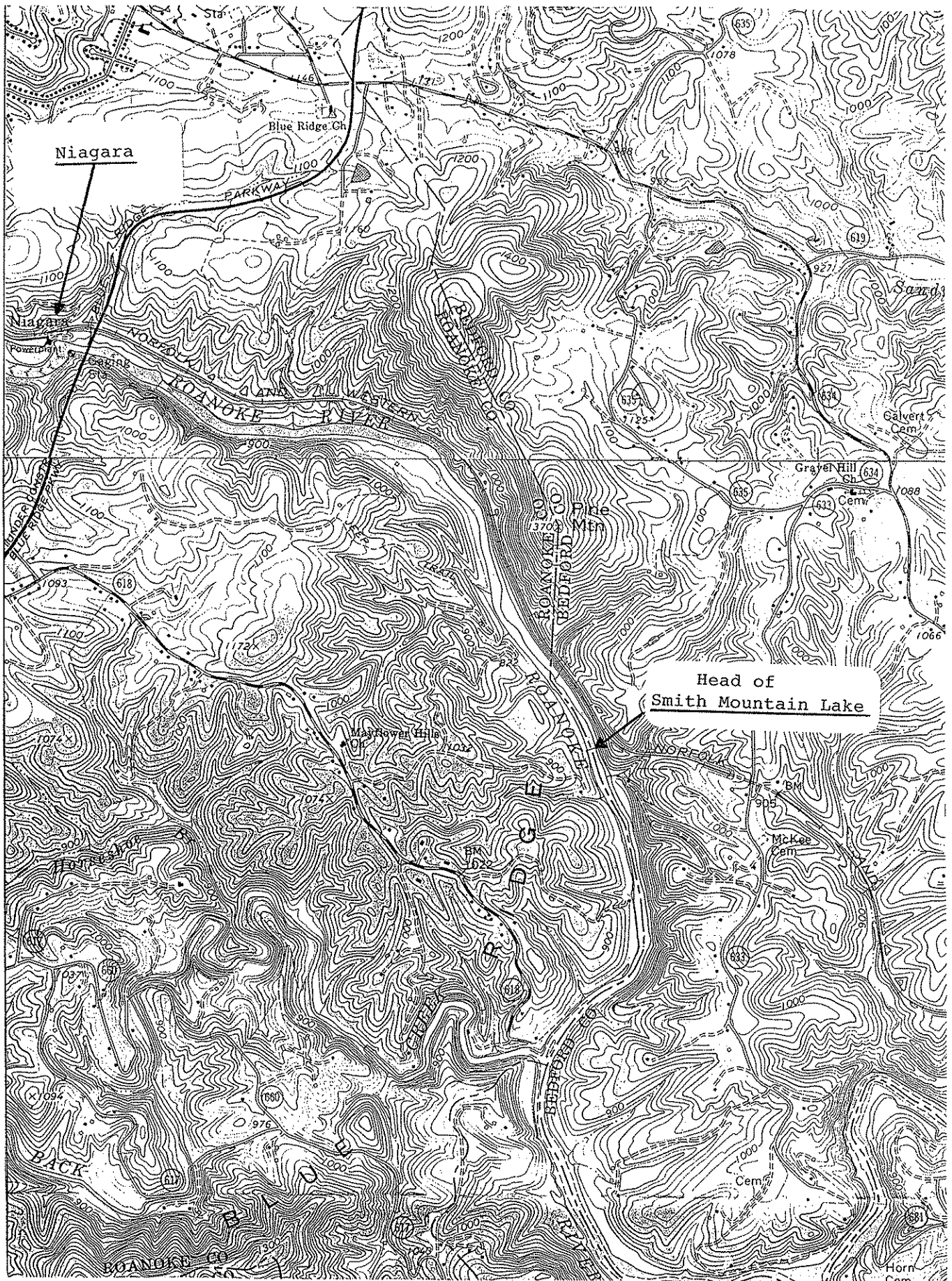


Figure 1

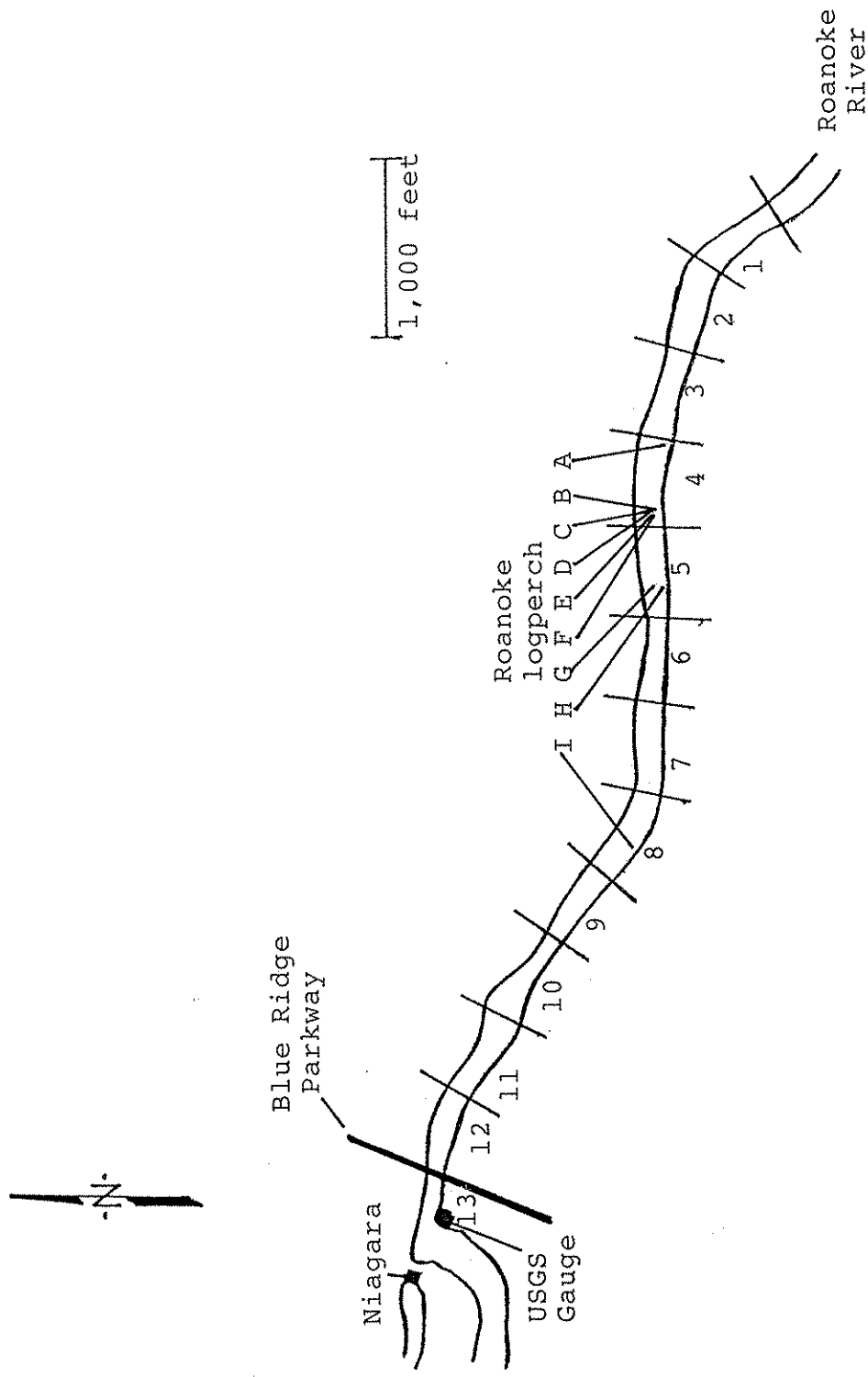


Figure 2
Location of survey zones and Roanoke logperch observations,
October 22, 1992

Table 1. Habitat measurements at Roanoke logperch collection locations (see Figure 2).

Logperch*	Water Temperature(C)	Current Velocity (Surface) (m/sec)	Current Velocity (Bottom) (m/sec)	Turbidity(NTU)	Depth(cm)	Direction of Flow**	Substrate	Similar Habitat at Capture Location(m ²)
A	12.6	0.38	0.24	5.2	40	96°E, 105°ESE	large cobble	20
B	12.6	0.40	0.10	5.2	20	90°E, 113°ESE	cobble/gravel	710
C	12.6	0.40	0.24	5.2	10	90°E, 113°ESE	cobble/gravel	710
D	12.6	0.41	0.34	5.2	10	90°E, 129°SE	cobble/gravel	710
E	12.6	0.35	0.21	5.2	10	90°E, 80°E	cobble/gravel	710
F	12.6	0.66	0.66	5.2	10	90°E, 95°E	cobble/gravel	710
G	12.7	0.18	0.30	5.2	40	85°E, 50°NE	cobble over bedrock	240
H	12.7	0.46	0.38	5.2	51	85°E, 75°ENE	cobble/sand over bedrock	240
I	13.5	0.60	0.63	9.7	9	112°ESE, 150°SSE	cobble over bedrock	50

* see Figure 2 for capture location

** Readings are: Channel orientation, current bearing at capture location

Table 2. General profile of habitat for the Roanoke River from Niagara Hydro downstream for a distance of 1.25 miles.

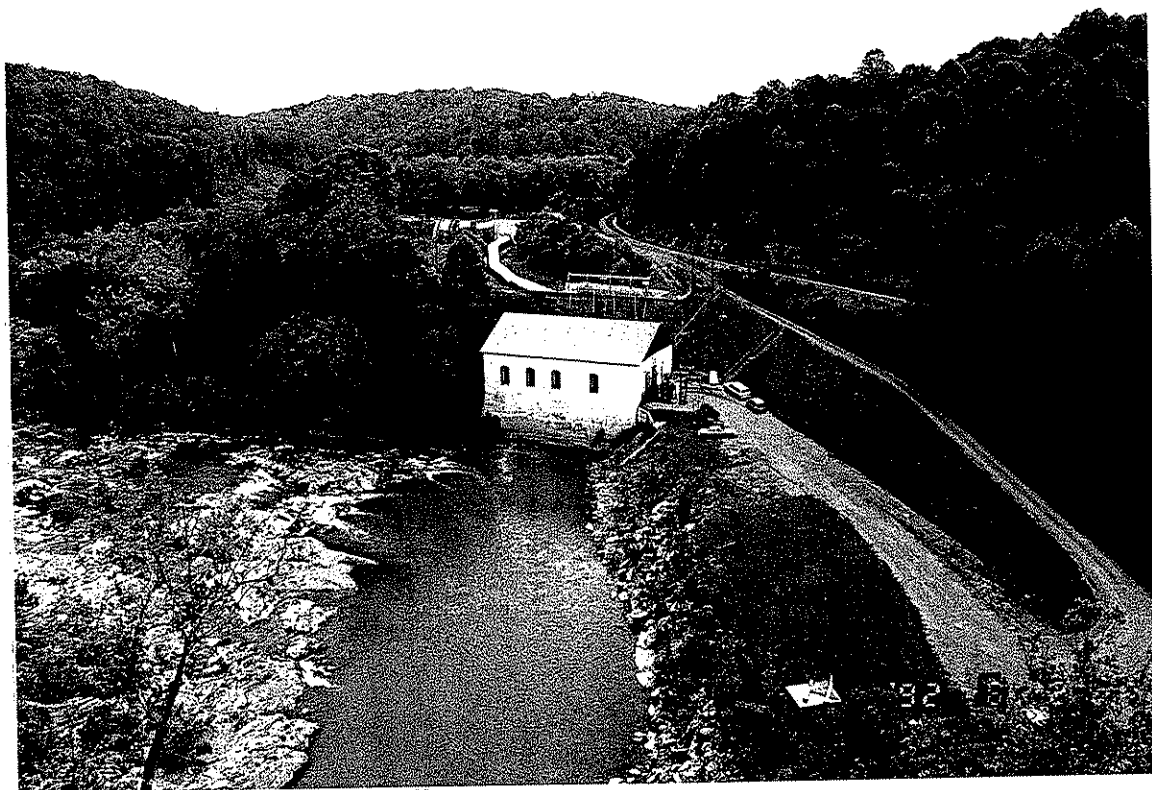
<u>Zone*</u>	<u>Photograph</u>	<u>Description of Habitat</u>	<u>Roanoke loggerperch Occurrence</u>
1	none	predominately pool	unlikely
2	none	predominately pool	unlikely
3	none	predominately pool	unlikely
4	#2	cobble/gravel riffles at upper and lower ends, shallow run in-between	six observed
5	#3	cobble over bedrock riffle at upper end, shallow run below	two observed, one collected
6	#4	shallow run, predom- inately bedrock	unlikely
7	#5	riffle and run of cobble over bedrock	possible in riffle
8	#6	riffle and run of cobble over bedrock	one observed
9	#7	riffle and deep pool, swift current, boulders and bedrock	unlikely
10	#8	swift, deep chute through boulders and bedrock	unlikely
11	#9	swift, deep chute through boulders and bedrock	unlikely
12	#10	deep run through boulders and bedrock	unlikely
13	#11	deep run through boulders and bedrock (project tailwaters)	unlikely

* See Figure 2 for location

Photographs

<u>No.</u>	<u>Description</u> [*]
1	Roanoke logperch collected by electrofishing, September 12, 1991
2	Roanoke River Survey Zone 4, looking upstream
3	Roanoke River Survey Zone 5, looking upstream
4	Roanoke River Survey Zone 6, looking upstream
5	Roanoke River Survey Zone 7, looking upstream
6	Roanoke River Survey Zone 8, looking upstream
7	Roanoke River Survey Zone 9, looking upstream
8	Roanoke River Survey Zone 10, looking downstream
9	Roanoke River Survey Zone 11, looking upstream
10	Roanoke River Survey Zone 12, looking downstream from the Blue Ridge Parkway
11	Roanoke River Survey Zone 13 (tailwaters), looking upstream from Blue Ridge Parkway

* See Figure 2 for location of survey zones



11 - Roanoke River Survey Zone 13 (tailwaters),
looking upstream from Blue Ridge Parkway

Roanoke River gorge from atop Parkway bridge (opposite of
Niagara). Note people at Parkway overlook on right side
of river.



9 - Roanoke River Survey Zone 11, looking upstream



10 - Roanoke River Survey Zone 12, looking downstream from the Blue Ridge Parkway



7 - Roanoke River Survey Zone 9, looking upstream



8 - Roanoke River Survey Zone 10, looking downstream



5 - Roanoke River Survey Zone 7, looking upstream



6 - Roanoke River Survey Zone 8, looking upstream



3 - Roanoke River Survey Zone 5, looking upstream



4 - Roanoke River Survey Zone 6, looking upstream



1 - Roanoke logperch collected by electrofishing,
September 12, 1991



2 - Roanoke River Survey Zone 4, looking upstream

APPENDIX

STUDY PLAN

An Assessment of the Roanoke Logperch
in the Roanoke River Downstream of
Niagara Hydroelectric Project

Appalachian Power Company
40 Franklin Road, SW
Roanoke, Virginia 24011

and

American Electric Power Service Corporation
1 Riverside Plaza
Columbus, Ohio 43215

June 1992

Introduction

An application for new license for Niagara Hydroelectric Project (FERC Project No. 2466) was submitted to the Federal Energy Regulatory Commission (FERC) in December 1991. Subsequently, the U.S. Fish and Wildlife Service (USFWS) submitted a Request for Additional Studies to the FERC that requested additional surveys to determine the distribution and abundance of the Roanoke logperch (Percina rex) in the approximately two-mile stretch of free-flowing Roanoke River from the Niagara powerhouse to the head of the Smith Mountain Lake pool (Fig. 1). This request was based on a survey conducted in 1991 by Appalachian Power Company (APCo) and American Electric Power Service Corporation (AEPSC), in cooperation with the Virginia Department of Game and Inland Fisheries (VDGIF), reported in the license application, that verified the presence of this federally-listed endangered species in this downstream segment of the river, thereby representing an extension of the known range of the Roanoke logperch. The FERC acted on this request in its May 22, 1992 letter to AEPSC, asking that a study be conducted to assess the population of Roanoke logperch downstream of the Niagara project. The following study plan was developed to include these objectives:

- (1) systematically survey the Roanoke River for the Roanoke logperch from the Niagara powerhouse to the head of the Smith Mountain Lake pool;
- (2) characterize the type and location of habitat being used by any collected logperch; and
- (3) estimate the amount and identify the location of available habitat in this river segment that is of the type used by Roanoke logperch.

Methodology

Fish Sampling. AEPSC/APCo or their hired consultant will coordinate sampling with VDGIF and USFWS. The segment of the Roanoke River from the Niagara powerhouse to the head of the Smith Mountain Lake pool will be surveyed using a small boat during a low-flow period in late summer-early fall of 1992. All

riffle/run areas characterized by gravel or cobble substrate in the segment will be thoroughly sampled using backpack electrofishing equipment. The size (total length), condition, and location of all collected Roanoke logperch will be recorded, and all specimens will be returned to the river.

Habitat Characterization. At each location where a logperch is captured, the following data will be recorded: water temperature, surface and bottom current velocity, turbidity, depth, direction of flow, substrate composition (visual estimate), and an estimate of the total area of similar habitat surrounding the capture location. Additionally, a general profile of the location of riffle/run/pool habitats in the entire segment and the prevalent substrate type in each area will be prepared.

Study Schedule

<u>Activity</u>	<u>Deadline</u>
Complete field work	September 15, 1992
Final report submitted for agency review	September 30, 1992
Agency comments on report due	October 30, 1992
Final report and agency comments submitted to FERC	November 16, 1992

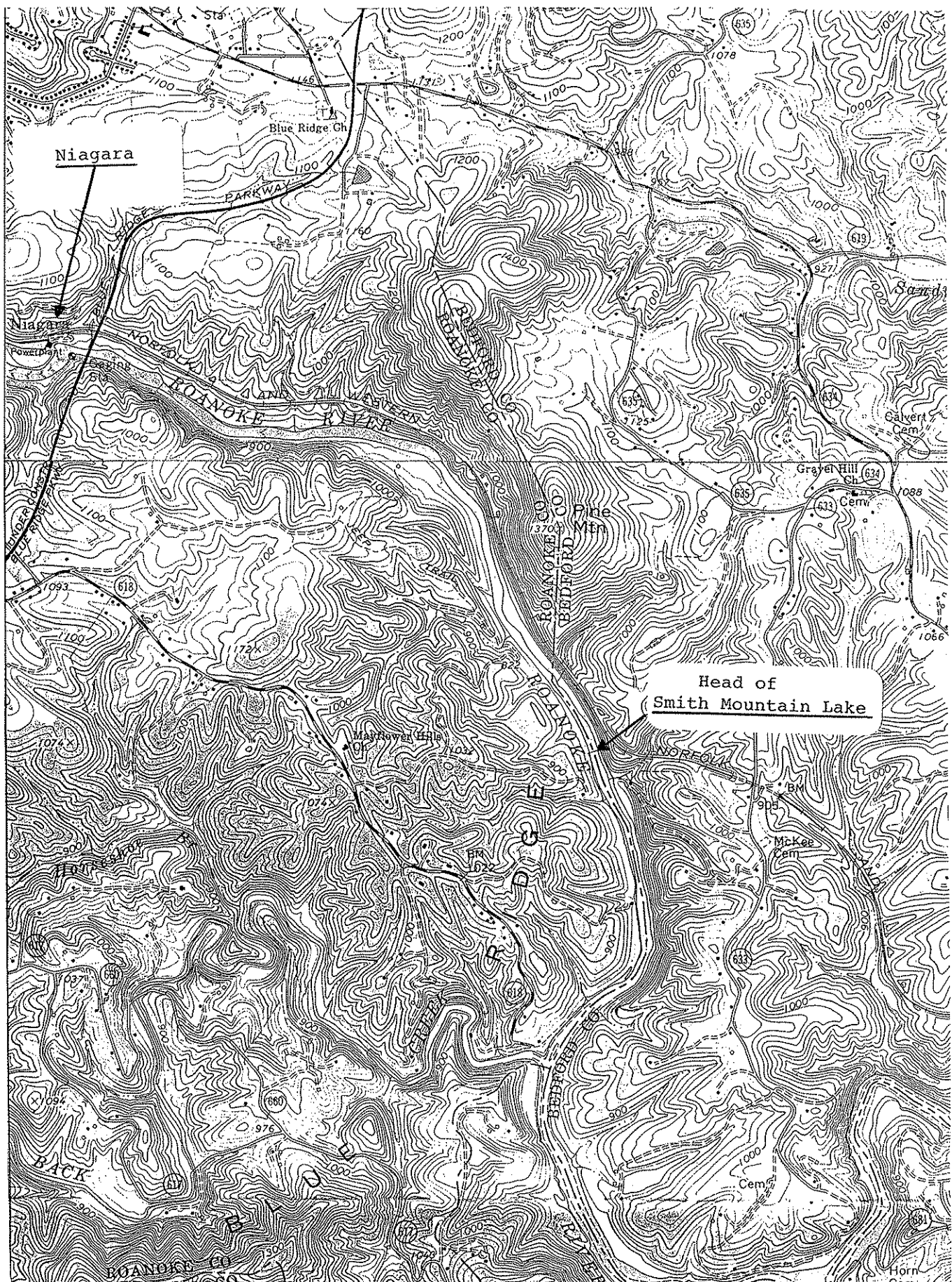


Figure 1

American Electric Power
Service Corporation
1 Riverside Plaza
Columbus, OH 43215
614 223 1000



TO LIST ATTACHED:

September 9, 1992

Dear Sir:

Re: Applachian Power Company
Niagara Hydroelectric Project
FERC Project No. 2466
Roanoke Loggerch Survey and Visual Evaluation of Powerhouse
Discharges

Attached is a summary of the activities and discussion that took place on August 27-28 at the referenced project. Representatives of Virginia Department of Game and Inland Fisheries, U.S. Fish and Wildlife Service, Appalachian Power Company, and American Electric Power Service Corporation were in attendance.

It is requested that those in attendance at the Niagara Project on August 27-28 notify me in writing of their concurrence with the attached summary or of any comments related to the summary. Please let me know at (614) 223-1249 if you have any questions.

Sincerely,

A handwritten signature in cursive script that reads 'John H. Van Hassel'.

John H. Van Hassel
Environmental Engineering Group

JHV/wfv/02/1E

Enclosure

cc: Dean Shumway - FERC

bcc: J. D. Zwart/J. L. Fariss
K. V. Wood
R. W. Harmon
M. Karas

Mr. Arthur LaRoche
Department of Game and Inland Fisheries
209 East Cleveland Avenue
Vinton, Virginia 24179

Mr. Scott Smith
Department of Game and Inland Fisheries
Route 6, Box 410
Forest, Virginia 24551

Mr. Bob Albrecht
Department of Game and Inland Fisheries
Route 6, Box 410
Forest, Virginia 24551

Mr. Robert D. Kelsey
U.S. Department of the Interior
Fish and Wildlife Service
Division of Ecological Services
1825 Virginia Street
Annapolis, Maryland 21401

Mr. Andy Moser
U.S. Department of the Interior
Fish and Wildlife Service
1825 Virginia Street
Annapolis, Maryland 21401

Mr. Neal Emerald, Second Vice President
Virginia Wildlife Federation
4033 Poplar Street
Fairfax, Virginia 22030-5231

Regional Director
U.S. Department of the Interior
Fish and Wildlife Service
1 Gateway Center
Suite 700
Newton Corner, Massachusetts 02158

Mr. Charles V. Ware
Conservation Chairman
Coastal Canoeists
3003 Stonewall Avenue
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Mr. Dennis H. Treacy
Assistant Attorney General
Commonwealth of Virginia
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Mr. Bud Bristow, Executive Director
Virginia Department of Game and Inland Fisheries
P. O. Box 11104
Richmond, Virginia 23230

Mr. Anthony R. Conte
Regional Solicitor, Northeast Region
U.S. Department of the Interior
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Newton Corner, Massachusetts 02158

Appalachian Power Company
Niagara Hydroelectric Project
FERC No. 2466

Roanoke Logperch Survey and Visual Evaluation of
Powerhouse Discharges

August 27-28, 1992

ATTENDEES:

Bud LaRoche (8/28 only)	Virginia Department of Game and Inland Fisheries (VDGIF)
Scott Smith	VDGIF
Bob Albrecht (8/27 only)	VDGIF
Robert Kelsey	U.S. Fish & Wildlife Service (USFWS)
Andy Moser	USFWS
Jerry Zwart	Appalachian Power Company (APCo)
John Van Hassel	American Electric Power Service Corporation (AEPSC)
Ken Wood	AEPSC

The meeting took place at the Niagara Hydroelectric Project to assess the population of the federally endangered Roanoke logperch downstream of the project, and to conduct visual evaluations of the adequacy of turbine discharge practices for protecting downstream aquatic habitat when project inflows are less than 100 cfs. These evaluations were to be performed in response to USFWS and VDGIF comments during second stage relicensing consultations, and to a subsequent request for additional information under Schedule A by the FERC.

1. Roanoke Logperch Survey

Sampling of Roanoke logperch was to have been conducted on August 27 by either snorkeling or electrofishing. A heavy rain shower in the upper Roanoke River watershed during the previous afternoon caused a large increase in suspended solids in the river as compared to the clear, low-flow conditions that had been present. The participants agreed that neither snorkeling nor electrofishing for logperch would be effective under these turbid conditions, which were likely to continue to be present in the river for at least a few days. The participants then decided to traverse the two-mile segment of river from the Niagara powerhouse downstream to the Smith Mountain Lake headwaters by canoe in order to obtain a preliminary assessment of available habitat where

Roanoke logperch could be expected to be found. This survey determined that the upper $1\frac{1}{4}$ miles of the segment were predominately riffle-run habitat where logperch might be found, while the lower $\frac{3}{4}$ mile of the free-flowing segment and an additional $\frac{3}{4}$ mile of headwater habitat that was transversed was dominated by long, silty pools where logperch would not be expected. John Van Hassel of AEPSC proposed that the logperch survey should concentrate on the upper, riffle-run portion of the segment. Other attendees indicated that this approach would be acceptable.

The participants agreed that a representative of APCo would track river conditions, and notify the attendees when conditions for sampling logperch were present. This notification would include as much lead time as possible, but it was agreed among the participants that a lead time as short as a day or two could occur if only a brief period of optimum river conditions was expected.

2. Turbine Discharge Observations

Additional rainfall on August 28, when visual evaluations were to be conducted, caused the demonstration to be cancelled. Based on inservice performance tests of the new Unit 2, Jerry Zwart of APCo recommended that any proposals to autocycle a unit at project inflows below 100 cfs be abandoned, and that the project be operated to continuously pass flow either through the turbines or over the spillway.

Bud LaRoche of VDGIF suggested that this would be the preferred alternative, and that visual observation of the low-flow discharge would no longer be necessary. He indicated, however, that the demonstration probably still needs to be videotaped in order to satisfy the FERC request for additional studies. Mr. LaRoche indicated that his major remaining concern was that there be no downstream flow lag between unit shutdown and spill flow reaching the river below the powerhouse via the bypass, and suggested that a demonstration of how APCo will handle this situation would be useful. Jerry Zwart of APCo indicated that this could be done by specifying a minimum flow at the downstream Niagara gage of 50 cfs (10% MAF) or inflow, whichever is less, during this

transition period. This transition flow would be provided through the overflow sluice gate located at the main spillway. The participants agreed that this was the only remaining issue to be resolved regarding discharge at river flows below 100 cfs.

Robert Kelsey of USFWS then asked whether ramping of flows when going from two-unit operation to one-unit operation (assuming a 700 cfs discharge with two units versus 350 cfs with one unit) would be necessary to minimize any impact on downstream aquatic habitat. After some discussion, the participants agreed that the likelihood of any impact associated with this situation is very small, but that the issue probably needs to be evaluated. This will be accomplished when the low-flow evaluations are rescheduled.

Yayac, Maggie

Subject: FW: Niagara Hydroelectric Project (FERC No. 2466) - RLP Larval Drift Study

From: Jon Studio <jastudio@edge-es.com>

Sent: Monday, March 29, 2021 4:04 PM

To: Angermeier, Paul <biota@vt.edu>

Cc: Huddleston, Misty <Misty.Huddleston@hdrinc.com>; John Spaeth <jpspaeth@edge-es.com>

Subject: Niagara Hydroelectric Project (FERC No. 2466) - RLP Larval Drift 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.

Dr. Angermeier,

We wanted to touch base with you and provide an update on the status of the Roanoke Logperch (RLP) Larval Drift Study. We learned from a recent status request that USFWS has the permit application under review for publication in the Federal Register for a required 30 day public comment period (regulation 50 CFR 13.11). The USFWS stated that they are experiencing delays in publishing notices in the Federal Register so they could not provide an estimated timeline for receiving the permit. Based on this information, unless something changes very soon, it is unlikely that the permit will be issued in time to get the project kicked-off on the original timeline. HDR/Edge/AEP are discussing internally how to proceed if the permit is not authorized in time to capitalize on some portion of the 2021 RLP spawning season. We can provide you with an update as we learn more on this issue.

In the meantime, we are moving forward with preparations in case things work out and we are able to initiate the Larval Drift Study. We hope to gain your perspective regarding the timing of RLP larval sampling events this spring for the Niagara Dam project (Project). Your insight will help us employ the methods within the current Project scope most effectively. Based on your previous suggestions, we hope to begin sampling the second week of April. Timing of larval drift is based on the time of year (dates) in numerous studies but we understand that each year may differ slightly. It is generally noted that spawning occurs between 12-14 degrees Celsius, and wondered if our sampling start date should take into account water temperatures? Further, we plan to work around rain/high-flow events whenever possible, but realize we will undoubtedly encounter these weather conditions at some point during the 10-week sampling period. While considering rain events, we plan to sample during the rising limb of the hydrograph if necessary. If your experience informs a more effective time to sample during high-flow events, please let us know. We appreciate your time and consideration.

Thanks,

JON A. STUDIO

Avon, Ohio

M: 440.413.4609

edge-es.com



Yayac, Maggie

Subject: FW: AEP Niagara Hydroelectric Project - Recreation Stakeholder Meeting Invitation

From: Yayac, Maggie

Sent: Monday, March 29, 2021 5:07 PM

To: rcaywood@roanokecountyva.gov; Lindsay Webb <LWEBB@roanokecountyva.gov>; Liz Belcher <LBELCHER@roanokecountyva.gov>; pete@roanoke.org; Anita McMillan <amcmillan@vintonva.gov>; riverdancer1943@gmail.com; Amanda McGee <amcgee@rvarc.org>; michael.clark@roanokeva.gov; dawn_leonard@nps.gov; Wampler, Jennifer <jennifer.wampler@dc.virginia.gov> <jennifer.wampler@dc.virginia.gov>
Cc: Elizabeth B Parcell <ebparcell@aep.com>; Jonathan M Magalski <jmmagalski@aep.com>; Kulpa, Sarah <sarah.kulpa@hdrinc.com>; Frank Simms <fmsimms51@gmail.com>

Subject: AEP Niagara Hydroelectric Project - Recreation Stakeholder Meeting Invitation

Good evening,

As you are aware, as part of the relicensing effort for the Niagara Hydroelectric Project (FERC No. 2466), Appalachian Power Company (Appalachian), a unit of American Electric Power (AEP), is conducting a Recreation Study. As discussed at the ISR Meeting on January 21, 2021, Appalachian plans to host a virtual stakeholder meeting with primary recreation stakeholders this spring.

The purpose of this meeting is to gather information about current and future Roanoke River-oriented recreation initiatives and projects in the vicinity of the Niagara Project. We would like to give each stakeholder group 15 minutes to present to Appalachian and other stakeholders: (1) what your group is currently working on, and (2) your interests in specific recreational improvements in and around the Niagara Project.

If you are interested in participating, please respond to Maggie Yayac (maggie.yayac@hdrinc.com) with your availability to attend the below dates and times. If your group would like to present during the meeting please let us know (and note your topic(s) of interest) so we can plan a more detailed agenda. Once we have a general consensus on availability and interest in presenting, we will send out a meeting invitation with a link to join the web conference.

Potential dates for the Niagara Project Recreation Stakeholder Meeting:

- Tuesday, April 20th from 2-4pm
- Thursday, April 22nd from 9-11am
- Wednesday April 28th from 9-11am

Please let me know if you have any questions or if anyone has been inadvertently left off this invitation list.

Maggie Yayac

Regulatory Specialist

HDR

440 South Church Street, Suite 900
Charlotte, NC 28202

D 704.248.3666 **M** 610.299.0959

Maggie.Yayac@hdrinc.com

hdrinc.com/follow-us



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

Via Electronic Filing

April 6, 2021

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)
 Response to Comments on the Initial Study Report**

Dear Secretary Bose:

Appalachian Power Company (Appalachian or Licensee), a unit of American Electric Power (AEP), is the Licensee, owner, and operator of the run-of-river, 2.4-megawatt Niagara Hydroelectric Project (Project) (Project No. 2466), located on the Roanoke River in Roanoke County, Virginia. The Project is currently licensed by the Federal Energy Regulatory Commission (FERC or Commission). The Project underwent relicensing in the early 1990s and the current operating license for the Project expires on February 29, 2024. Accordingly, Appalachian is pursuing a subsequent license for the Project pursuant to the Commission's Integrated Licensing Process (ILP), as described at 18 Code of Federal Regulations (CFR) Part 5.

Pursuant to 18 CFR § 5.15(c), Appalachian filed the Initial Study Report (ISR) with the Commission on January 11, 2021. The ISR filing also included notification of the ISR Meeting date, time, and proposed agenda. As required by the ILP schedule, within 15 days of the ISR filing Appalachian held a virtual ISR Meeting via Webex from 10am to 3pm on Thursday, January 21, 2021. The ISR meeting summary was filed with FERC on February 5, 2021. Stakeholder comments on the ISR meeting summary were due by March 7, 2021.

The following parties provided written comments in response to Appalachian's filing of the ISR meeting summary: FERC staff, Roanoke County, United States Fish and Wildlife Service (USFWS or the Service), Roanoke Regional Partnership, Roanoke River Blueway Committee, Roanoke Valley Greenways, and the Virginia Department of Environmental Quality (VDEQ).

Appalachian is hereby providing responses to stakeholder comments received on the ISR, including general comments and requests as well as those that constitute a request for a modified

or new study.¹ Based on the information presented in the ISR and at the ISR meeting and provided by commenting entities in their responses, Appalachian does not believe that any modifications to existing studies or new studies are required. Appalachian has, however, made a good faith effort to accommodate reasonable requests, including extension of certain study activities into the 2021 field season, as explained in detail in Appalachian's responses below.

General

Stakeholder Comments:

FERC requests that in order to facilitate the National Environmental Policy Act (NEPA) analysis, Appalachian should file with the draft license application (DLA) the following: the geospatial data (e.g., exports from Global Positioning System (GPS) devices, or Geographic Information System (GIS) shapefiles), including the sampling locations, mesohabitat, substrate, and cover maps; shoreline habitat classifications; and any other GIS data layers that were created as part of the following studies: 1) Bypass Reach Flow and Aquatic Habitat Study, 2) Benthic Aquatic Resources Study, 3) Fish Community Study, 4) Water Quality Study, 5) Shoreline Stability Assessment Study, and 6) Wetlands, Riparian, and Littoral Habitat Characterization Study.

Appalachian's Response:

Appalachian will submit applicable GIS data directly to FERC staff for the purposes described above in conjunction with the DLA, as available. (Because the DLA will be filed before the Updated Study Report (USR), for certain studies final geospatial data may not be available until and provided concurrently with the FLA).

Water Quality Study

Stakeholder Comments:

Due to concerns that water quality measurements collected during the 2020 study period may not be representative of water quality conditions at normal or below normal flow conditions, the VDEQ and USFWS recommended that bypass reach temperature and dissolved oxygen (DO) monitoring in 2021 be extended through October 2021 to ensure that water quality during low flow periods is captured.

¹ Pursuant to section 5.15(d) of the Commission's regulations, any proposal to modify a required study must be accompanied by a showing of good cause, and must include a demonstration that: (1) approved studies were not conducted as provided for in the approved study plan; or (2) the study was conducted under anomalous environmental conditions or that environmental conditions have changed in a material way. As specified in section 5.15(e), requests for new information gathering or studies must include a statement explaining: (1) any material change in law or regulations applicable to the information request; (2) why the goals and objectives of the approved study could not be met with the approved study methodology; (3) why the request was not made earlier; (4) significant changes in the project proposal or that significant new information material to the study objectives has become available; and (5) why the new study request satisfies the study criteria in section 5.9(b).

In addition, the USFWS recommends that the Water Quality Study be repeated in 2021 based on the following: (1) data was not collected or available for approximately 50% of the 2020 study period, (2) there was a 47% increase in average annual precipitation, thus the 2020 data was collected during an abnormally wet year, and (3) the Project was not operating for the last two months of the 2020 study, thus it is not possible to assess the impact of Project operations on water quality during this normally low flow period.

USFWS also recommends that Appalachian check and clean data loggers weekly during data collection to avoid the loss of water quality data from biofouling.

Appalachian's Response:

Appalachian agrees with VDEQ's and USFWS's statements that flows in the bypass reach during the 2020 water quality study season were not representative of typical or minimum bypass flow conditions at the Project. Appalachian believes this is not primarily due to river flows, but instead to the inoperability (i.e., held in constant open position) of the trash sluice gate and the extended powerhouse outage reported in the Preliminary Water Quality Study Report. Consistent with VDEQ's and USFWS's request for additional water quality data collection in the bypass reach in 2021, for the upcoming 2021 water quality study season, Appalachian proposes to reinstall two continuous temperature and DO data sondes in the bypass reach (one at the upstream monitoring location and the other at the downstream monitoring location) from July – September. Due to the effort and costs associated with extending the field sampling for an additional month relative to the value of the additional data collected to the overall Water Quality Study, Appalachian proposes to continue sampling through October if water temperatures do not appear to be decreasing by the end of September. Appalachian does not believe that the need for continued sampling in the bypass reach beyond September be based on flow conditions, unless the July – September sampling period fails to capture water quality conditions at the approximately required minimum bypass flow of 8 cfs and it is projected (based on Project operating conditions and weather forecasts) that bypass reach flows will decrease to this level in October. To coincide with this additional bypass reach data collection, Appalachian also proposes to reinstall a continuous temperature and DO data sonde in the tailrace to capture additional data during powerhouse operations.

Appalachian will check and clean the data sondes at approximately two-week intervals² and adjust accordingly depending on degree of biofouling observed in the field. Based on the 2020 data collection effort, biofouling was less prevalent at the non-reservoir monitoring locations. The existing plan to check and clean the data sondes at these locations at two-week intervals is based on the direct experiences of Appalachian's consultant with instrumentation in these locations in 2020 and takes into appropriate consideration the significant increase in study costs and efforts to perform this task on a weekly basis.

² The term approximately is used here because of the potential for fieldwork to be shifted and rescheduled to accommodate site conditions and field personnel safety.

Except as noted in the paragraph below, Appalachian does not propose to collect additional water temperature, DO, pH, and specific conductivity data at the upstream and reservoir locations in 2021. Appalachian does not believe that doing so would significantly improve the understanding of water quality at these locations, or result in different conclusions than presented in the Preliminary Water Quality Study Report. To evaluate USFWS's comments, Appalachian's consultant conducted a review of water quality data collected at the U.S. Geological Survey (USGS) Roanoke River at Thirteenth Street Bridge gage (USGS 02055080), which is at the upstream end of the Niagara impoundment, to see how water quality parameters measured at the upstream Project locations in 2020 compare to those measured for inflow to the Project in previous years for which (continuous) water quality data is available. This review revealed that **baseflow and episodic significant precipitation events do not appear to impact water quality in the upstream reservoir locations**. Even during 2008, which is the third driest year on record³, Roanoke River water temperature and pH upstream of the Project met Virginia Class IV water quality standards. Specific conductivity concentrations recorded in 2008 were also consistent with concentrations measured during the 2020 study period. This indicates that even under very low flow conditions, water temperature, pH, and specific conductivity measurements upstream of the Project are similar to those collected by Appalachian in 2020, under higher prevailing baseflow conditions. DO data were not collected at the Thirteenth Street Bridge location in 2008; however, concentrations at this location during September 2019 ranged from 6.8 – 10.0 milligrams per liter (mg/l) under a monthly average flow of only 108.5 cubic feet per second (cfs), which was less than half the September 2020 monthly average flow of 256.4 cfs. DO concentrations and water temperatures measured at the Thirteenth Street Bridge gage were similar between September 2019 and 2020 indicating that lower project inflows do not necessarily equate to significant differences in water temperatures or DO concentrations.

Based on the results and conclusions presented in the Preliminary Water Quality Study Report and the historic flow and water quality data provided by the Thirteenth Street gage, water temperature, DO concentrations, and pH meet state water quality standards during periods of high and low Project inflows. Additional collection of continuous water quality data, which is largely redundant with that already being done [by others] at the Thirteenth Street gage, is neither warranted nor necessary to evaluate potential Project impacts on water quality.

As stated in the Preliminary Water Quality Study Report, water quality at the Project forebay monitoring location met Virginia Class IV water quality standards for temperature, DO, and pH during the entire 2020 study period. While the generating units were not operating during the last two months of the study period, this resulted in a worse-case scenario whereby 100 percent of the inflow to the Project was routed away from the powerhouse and into the bypass reach. The only significant decrease in DO concentrations observed during the study period occurred during the week immediately after the start of an unplanned outage which began on September 8, 2020 and

³ Based on flows recorded at the Roanoke River at Roanoke, VA gage (USGS 02055000) from 1900 – 2020. This gaging station is approximately 2.6 river miles upstream from the Thirteenth Street Bridge gage (USGS 02055080).

lasted through the end of the study period on November 10, 2020. During a more typical year when the units are operating, temperature and DO stratification in the forebay area would be minimized as flow is routed to the powerhouse. Because this “worse case” condition for water quality in the forebay was captured during the 2020 study season, Appalachian does not believe it necessary to repeat continuous water quality data collection at this location in 2021 and does not believe that the return on this effort with respect to informing the results of the Water Quality Study is commensurate with the additional effort and cost. Appalachian appreciates, however, stakeholders’ interests in confirming 2020 Water Quality Study results in the forebay location during the 2021 field season. Therefore, Appalachian proposes that during equipment checks and data downloads for the bypass reach and tailrace monitoring locations, Appalachian will also collect discrete water quality profile data (temperature, DO, pH, and specific conductivity) at the forebay monitoring location. Additionally, Appalachian proposes to reinstall a continuous temperature and DO data sonde in the tailrace that can be correlated with the Thirteenth Street data.

Because Appalachian is not proposing to reinstall the upstream and reservoir continuous monitoring locations in 2021, water quality data (temperature, DO, pH, and specific conductivity) recorded at the Thirteenth Street Bridge USGS gaging station and Tinker Creek above Glade Creek at Roanoke, VA (USGS 0205551614) monitoring location will be included in the USR to represent water quality for Project inflow.

Benthic Aquatic Resources

Stakeholder Comments:

USFWS notes that there is a large riffle at the bottom of the UNIO-Tailrace Survey Area that offered the first continuous area of stable gravel/cobble substrate and may represent the beginning of suitable mussel habitat that was not surveyed. To address this data gap, USFWS recommends that an additional 500 meters of the downstream Survey Area be established in this area of suitable habitat below the UNIO-Tailrace Survey Area and surveyed for freshwater mussels.

Appalachian’s Response:

During review of USFWS’s comment summarized above, it came to the attention of Appalachian and Appalachian’s consultants that the ISR figure illustrating the UNIO-Tailrace Survey Area did not accurately represent the area that was actually surveyed (instead portraying a relic shapefile created during the study planning process). Additionally, the ISR text provided an oversimplified summary of the survey effort completed in that location. Appalachian’s consultants have corrected these errors, and Attachment 1 to this filing provides figures illustrating the correct location and extent of the UNIO-Tailrace Survey Area that was evaluated during the 2020 field effort. As shown in these figures, the mussel survey for the UNIO-Tailrace Survey Area was initiated further downstream from the Blue Ridge Parkway Bridge, extended downstream for 500 meters, and covered the full extent delineated in the Revised Study Plan (RSP) methods and maps.

With respect to USFWS's request for expanded mussel survey, Appalachian notes the following:

- The selection of sites and proposed methodology identified in the RSP and completed during the 2020 field season were developed in consultation with specialty staff from the Virginia Department of Wildlife Resources (DWR).
- The UNIO-Tailrace Survey Area is already located well downstream of the Project boundary.
- Results of the 2020 Mussel Survey indicated that very low mussel density and diversity exists throughout the study area, a trend that was consistent above and below Niagara Dam and in Tinker Creek. The low density and diversity observed during the study is attributable to numerous confounding factors in the watershed, including but not limited to: (1) the high proportion of bedrock in the study reach; (2) the Roanoke River flows through the City of Roanoke before reaching Niagara Dam and is influenced by urban point source and non-point source impacts, and (3) the upstream watershed is also influenced by residential and agricultural land uses and runoff.
- The stretch of Roanoke River between the lower extent of the study area and the Smith Mountain Project downstream may offer additional small patches of potential mussel habitat. However, a portion of the area requested for further survey effort was already included in the 2020 survey, as shown in Attachment 1.

On the basis of the following, Appalachian does not propose to perform additional mussel survey as requested by USFWS. (1) The results of the 2020 Mussel Survey indicate mussel density and diversity of the Roanoke River near the Project is very low. (2) The downstream extent of the 2020 field sampling efforts was just over a mile downstream of the Niagara Dam. The requested expanded area is beyond the extent of hydraulic influence of Project operations. Appalachian also does not believe that results of additional survey in this downstream reach would meaningfully inform the development of license requirements for the run-of-river Niagara Project. (3) The 2020 survey was conducted in conformance with the approved Study Plan and included specific agency consultation regarding sampling locations and methods. The completed study fulfills the study objectives and did not result in any new information that is material to the study objectives and merits additional study.

Fish Community

Stakeholder Comments:

FERC requests a summary of length and weight information (e.g., size distributions) for each fish species collected during the backpack and electrofishing surveys (note: this request was made during the ISR meeting as well).

Appalachian's Response:

A summary of fish length and weight data by species and sampling methodology will be provided in the final Fish Community Study Report to be submitted with the USR.

Stakeholder Comments:

USFWS indicates that if it is not feasible to directly measure the intake velocity using an ADCP, they would recommend that the Licensee perform a 1-Dimensional (1-D) analysis, which would provide a more accurate estimate of intake velocities than the method used in the study. The 1-D analysis should calculate normal flow (not approach flow) and open-area velocity (also known as impingement velocity) as per the Service's Fish Passage Engineering Design Criteria (Criteria). They also request that Appalachian provide the calculations for review before using the velocities in the entrainment and impingement study.

Regarding the susceptibility of fish to impingement/entrainment at the Project based on their burst swim speeds, USFWS recommends that Appalachian address the fact that migratory fish species may be attracted to the intake and may not actively avoid the intake, which can lead to higher entrainment rates for migratory species than would be predicted by the current (entrainment) study. USFWS also recommends that the Licensee expand its analysis to compare swimming capability to the open-area velocity; the estimate of the open-area velocity is important since fish that contact an intake rack will experience a far greater velocity than the approach velocity (within several inches of the rack, fish will experience the open-area velocity per Criteria reference Plate 9-1). The open-area velocity is influenced by the blockages created by the structure of the rack and for typical intake racks, this translates to an open-area velocity approximately twice that of the approach velocity.

Appalachian's Response:

Appalachian and Appalachian's consultants appreciate USFWS's technical review and feedback on this study. In the experiences of Appalachian's consultant, approach velocities are typically used in desktop entrainment and impingement analyses and are compared to swim burst speeds of target fish species to determine their ability to escape velocities directly in front of the intake structure. As requested by USFWS, as part of the ongoing Fish Community Study, Appalachian's consultant will calculate open-area velocity at the intake structure trash rack and compare fish swim burst speeds to the open-area velocity, as fish that contact the trash racks would be exposed to an increased intake velocity on the trash rack bars. Corresponding assumptions, inputs, and results for both calculations will be presented in the final entrainment and impingement study report to be submitted with the USR.

Stakeholder Comments:

USFWS requests further clarification regarding whether the racks are continually cleaned/cleared of debris for optimal project operation and if debris cleaning is sufficient to prevent an effect on intake velocity.

Appalachian's Response:

Appalachian will present, in the USR, the requested additional description of operating protocol for cleaning the trash racks in front of the intake structure. Discussion in the USR will address the frequency and magnitude of the debris clearing process and the expected efficacy of the process at maintaining consistent intake velocities.

Stakeholder Comments:

USFWS requests that the following issue be addressed: Section 5.3 states that none of the habitats preferred by the Roanoke Logperch (RLP) are found in the vicinity of the intake, and therefore, the likelihood of entrainment of RLP is considered low. Because larvae of RLP drift for long distances downstream from their spawning habitats (Buckwalter et al. 2019), the potential for entrainment for RLP during the spawning season (March to June) would be higher than what is presented in Table 5-10 (Qualitative Monthly Turbine Entrainment Potential for Target Species).

Appalachian's Response:

Although larval RLP may drift large distances downstream from spawning sites, it is unknown if larval RLP in the Roanoke River drift a sufficient distance to become susceptible to entrainment at the Niagara Dam intake structure. In accordance with the approved RSP, an RLP Larval Drift Study is currently proposed and planned for the upcoming 2021 field season, pending issuance of a Section 10(a)(1)(A) permit from the USFWS's regional office to support the field study sampling efforts. An application for this permit was filed by Appalachian's consultant in December and discussed during the ISR meeting. Results of the study will then be used to refine the determination of RLP susceptibility to entrainment at the Niagara intake structure. In the event that the RLP Larval Drift Study is not able to be completed in 2021, the qualitative assessment of larval RLP susceptibility to entrainment will be revised from low to moderate susceptibility to provide a more conservative assessment of risk.

Bypass Reach Flow

Stakeholder Comments:

USFWS notes that Section 4.6.3 of the RSP 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. The Service requests clarification that this modeling will be performed as part of this study as stated in the RSP.

Appalachian's Response:

Appalachian will simulate bypass flow releases via the Obermeyer trash sluice gate and across the spillway crest to evaluate differences in depth and flow patterns in the bypass reach. If there are significant differences in depths and velocities that extend below the bedrock pool at the toe of the spillway, habitat modeling results will be developed and evaluated to determine if there are differences in the amount and location of potential available habitat.

While the hydraulic/habitat model will be capable of simulating minimum flows over the spillway crest, Appalachian has not assessed the feasibility or practicality of operating the Project in this manner (i.e., at a constantly higher reservoir level to deliverable minimum flows to the bypass reach via the overflow spillway during certain periods).

Recreation Study

Study Plan Revision Requests

Stakeholder Comments:

Due to the upcoming scheduled closing of a portion of the Roanoke River Trail and Overlook from March 2021 – March 2022 for rehabilitation of the Blue Ridge Parkway bridge over the Roanoke River, Roanoke County, Roanoke Regional Partnership, Roanoke Valley Greenways, and Roanoke River Blueway Committee request that the final assessment of the Recreation Study be amended to extend the window of field data collection through the fall of 2022.

Appalachian's Response:

Appalachian does not propose to continue the Recreation Study in 2022 (after the filing of the FLA) to accommodate the abovementioned Blue Ridge Parkway bridge closure. Construction at the Blue Ridge Parkway has been delayed a month already, and the National Park Service estimates construction will continue through Spring of 2022, so a full season of data collection may not even be feasible in 2022. Appalachian's consultant will complete the Recreation Use Documentation task to the best of their ability in 2021 at the Roanoke River Overlook and Trail (Non-Project facility) and expects and to conduct at least two on-site interviews before the closing. Appalachian has also collected relevant information about the Roanoke River Overlook and Trail through the online survey (which will continue through the 2021 study season) as well as anecdotal observations of recreation usage of this area made by Appalachian and Appalachian's consultants in 2020 and 2021.

Postponing the Recreation Use Documentation task (or even a portion of it) until 2022 would constrain Appalachian from completing the Recreation Study on time and in alignment with the ILP schedule. In summary, if planned construction at the Blue Ridge Parkway closes the Roanoke River Outlook and Trail, the Recreation Use Documentation task will not be completed at this location due to circumstances beyond Appalachian's control (i.e. COVID-19 in 2020 and Blue Ridge Parkway construction in 2021). However, the Recreation Use Documentation task will continue as planned to gather use data at the other Non-Project facilities listed in the RSP.

In the RSP, it was assumed that personnel obtaining visitor use data from the Roanoke River Overlook and Trail would also assess usage of the Project canoe portage since the put-in is located directly across the river and is visible from the end of the Roanoke River Trail. However, since Appalachian may not be able to access the Roanoke River Trail throughout the course of the 2021 study, Appalachian proposes to install a trail camera in the vicinity of the portage put-in location

to record any activity during the Recreation Use Documentation timeframe (May through October).

Based on collection of data and relevant information about the Roanoke River Trail through other study activities and stakeholder consultation, Appalachian does not believe that conducting the Recreation Use Documentation task of the Roanoke River Overlook and Trail (a Non-Project Recreation Facility) would meaningfully inform the development of license requirements for the Niagara Project.

Stakeholder Comments:

Roanoke Valley Greenways requested that the Roanoke River and Tinker Creek Greenways be included in the Recreation Facility Inventory, which would update the analysis to include bicycling and additional fishing and boating access.

The Roanoke Regional Partnership, Roanoke River Blueway Committee, and Roanoke County requested that the Roanoke River Greenway, Tinker Creek Greenway, Roanoke River Blueway, and Explore Park are added to the Recreation Facility Inventory as Non-Project Recreation Facilities.

Appalachian's Response:

Appalachian does not propose to expand or modify the Recreation Facility Inventory task of the Recreation Study. The Recreation Facility Inventory was completed in 2020 in full conformance with the approved RSP, with results provided in the ISR. Appalachian does not believe that the stakeholders' requests to expand this task to include additional Non-Project Recreation Facilities that lack a nexus to Project operation and effects meet the ILP criteria for a modified or additional study.

Recommended Recreation Improvements

Stakeholder Comments:

The Roanoke River Blueway Committee, Roanoke County, and the Roanoke Regional Partnership encourage Appalachian to consider supporting development of a public access facility upstream (river-right) and adjacent to the Niagara reservoir that will provide vehicular parking. 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.

Roanoke County is interested in partnering with Appalachian to make these blueway improvements possibly on land located adjacent to the Project boundary that is owned by the Virginia Recreational Facilities Authority and under a lease for Explore Park. Roanoke River Blueway Committee concurs with this request and added that any proposals from this work should take into account the planned Roanoke River Greenway which is under development in this area.

Roanoke Valley Greenways has requested that Appalachian consider the following solutions to

improve recreational opportunities in the Project area: purchase property on river-right near Niagara Dam to provide parking and boating access, provide a portage around Niagara Dam on river-right, and provide Roanoke County with right-of-way for Roanoke River Greenway on river-right on AEP-owned land.

Appalachian's Response:

Appalachian appreciates the detailed comments provided by stakeholders and looks forward to additional consultation with recreation stakeholders in 2021 to inform Appalachian's licensing proposal and to identify opportunities for practical cooperation regarding regional recreation initiatives with a nexus to the Niagara Project.

Stakeholder Comments:

Roanoke River Blueway Committee indicated support for any proposed improvements to the existing portage. Possible improvements to consider include increased or more effective signage, and improvements to the take-out or put-in locations above and below the dam, respectively. Other ideas which should be included in the study of the portage include a phone that could be used to call for assistance and consideration of an access point on river right just above the dam to provide an alternate portage location.

Appalachian's Response:

Appalachian will continue to study use of the Project canoe portage in 2021 through installation of a trail camera, as described above. Also as previously noted, Appalachian looks forward to additional consultation with recreation stakeholders in 2021 to inform Appalachian's licensing proposal and to identify opportunities for practical cooperation regarding regional recreation initiatives with a nexus to the Niagara Project.

Recreation Flow Releases

Stakeholder Comments:

Roanoke County and Roanoke Regional Partnership encourages Appalachian to continue evaluating the possibility of controlled releases for recreational purposes that would be advantageous for paddlers during the lower flow late-summer/early-fall months (i.e., July through October) along the Roanoke River downstream of the dam to Explore Park's Rutrough Point. At a minimum, Roanoke Regional Partnership request weekend releases during this period. The 2016 Roanoke County Explore Park Adventure Plan proposes development of an in-river kayak park downstream near the Smith Mountain Lake Project boundary and scheduled releases would enhance this. They also note Class I and II white water conditions exist downstream of the Niagara Dam.

Appalachian's Response:

Appalachian appreciates the additional information provided in these comments and looks forward to additional consultation with recreation and other resource stakeholders in 2021 to inform

Appalachian's licensing proposal.

Existing Recreation Facilities Map Updates

Numerous comments were filed related to figures presented in the Preliminary Recreation Study Report. Appalachian has proactively updated the Existing Recreation facilities map where feasible, and a revised version of this map with the below noted revisions is provided in Attachment 2.

Stakeholder Comments:

Roanoke County and the Roanoke River Blueway Committee request that the Rutrough Road Canoe/Kayak Ramp Non-Project facility name be updated to Rutrough Point.

Appalachian's Response:

The Existing Project-Related Recreation Facilities map has been updated to reflect Rutrough Point. Appalachian will use this naming convention in the USR as well.

Stakeholder Comments:

Roanoke County, Roanoke River Blueway Committee, and Roanoke Regional Partnership request updates to the Existing Project-Related Recreation Facilities map.

Appalachian's Response:

Appalachian has updated the Existing Project-Related Recreation Facilities map to include the following requests:

- Added the Tinker Creek Greenway Bridge and the Roanoke River Greenway.
- Added a portage location at the Bennington trailhead.
- Moved the Niagara Portage canoe access closer to the Blue Ridge Parkway.
- Appalachian has to the best of their ability aligned the parcel and recreation facility data publicly available and requested by the stakeholders into the Existing Project-Related Recreation Facilities map. If the stakeholders have a GIS file with more specific details requested that what is publicly available, please e-mail geospatial data or figures to Appalachian so the map can be more effectively updated.

Proposed recreational facilities have not been added to the map at this time (e.g., extensions of the greenway) as the map is intended to illustrate existing recreation facilities around the Study Area (Attachment 2). Garden City Greenway was not added to the map, as it is far upstream and outside of the Study Area.

Debris and Trash

Stakeholder Comments:

Roanoke County, Roanoke Regional Partnership, and Roanoke Valley Greenways encourage

Appalachian to continue evaluating trash and debris removal alternatives; Roanoke Valley Greenways also recommends that Appalachian consider removing trash at the dam or having a small trash barge on the reservoir.

Appalachian's Response:

Appalachian supports educational outreach and trash cleanup on the Roanoke River and routinely removes large debris at the intake such as tires. Appalachian appreciates the additional information provided in these comments and looks forward to additional consultation with stakeholders in 2021 to inform Appalachian's licensing proposal and to identify opportunities for practical cooperation, including educational outreach, trash cleanups within the Roanoke River watershed, and removal of large debris (e.g., tires) at the Project intake.

Appalachian sincerely appreciates the detailed comments provided by relicensing stakeholders and has put careful consideration into the proposals and commitments presented in this response. If there are any questions regarding this filing, please do not hesitate to contact me at (614) 716-2240 or jmmagalski@aep.com.

Sincerely,



Jonathan M. Magalski
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Attachments

Attachment 1 – Benthic Aquatic Resources Study Figures
Attachment 2 – Existing Recreation Facilities Map

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Niagara Hydroelectric Project (FERC No. 2466)

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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

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

Mr. Jess Jones
Freshwater Mollusk Conservation Center Virginia
Tech
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Dr. Ralph Northam
Governor
Office of the Governor
PO Box 1475
Richmond, VA 23218

Mr. Paul Angermeier
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Unit
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Mr. Benjamin Hermerding
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Virginia Council on Indians
PO Box 2454
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benjamin.hermerding@governor.virginia.gov

Mr. Clyde Cristman
Division Director
Virginia Department of Conservation and
Recreation
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Ms. Rene Hypes
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Mr. Tyler Meader
Locality Liasion - Division of Natural Heritage
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Niagara Hydroelectric Project (FERC No. 2466) Distribution List

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Ms. Jennifer Wampler
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Mr. Andrew Hammond
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Niagara Hydroelectric Project (FERC No. 2466) Distribution List

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Mr. Phil North
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Roanoke, VA 24014

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Mr. Pete Eshelman
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Western Virginia Water Authority
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Mr. David Radford
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Non-Governmental

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Niagara Hydroelectric Project (FERC No. 2466) Distribution List

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Roanoke, VA 24016-3627

Blue Ridge Land Conservancy
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Roanoke, VA 24011-2001

Blue Ridge Parkway Foundation
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Winston-Salem, NC 27101

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Executive Director
Friends of the Blue Ridge Parkway
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Chair
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Roanoke Valley Greenway
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John Rupnik
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TheOffice@SMLAssociation.org

Mr. Steve Moyer
Trout Unlimited
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Arlington, VA 22209

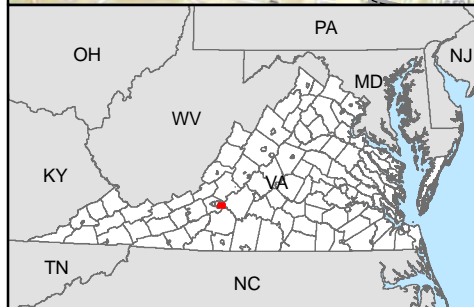
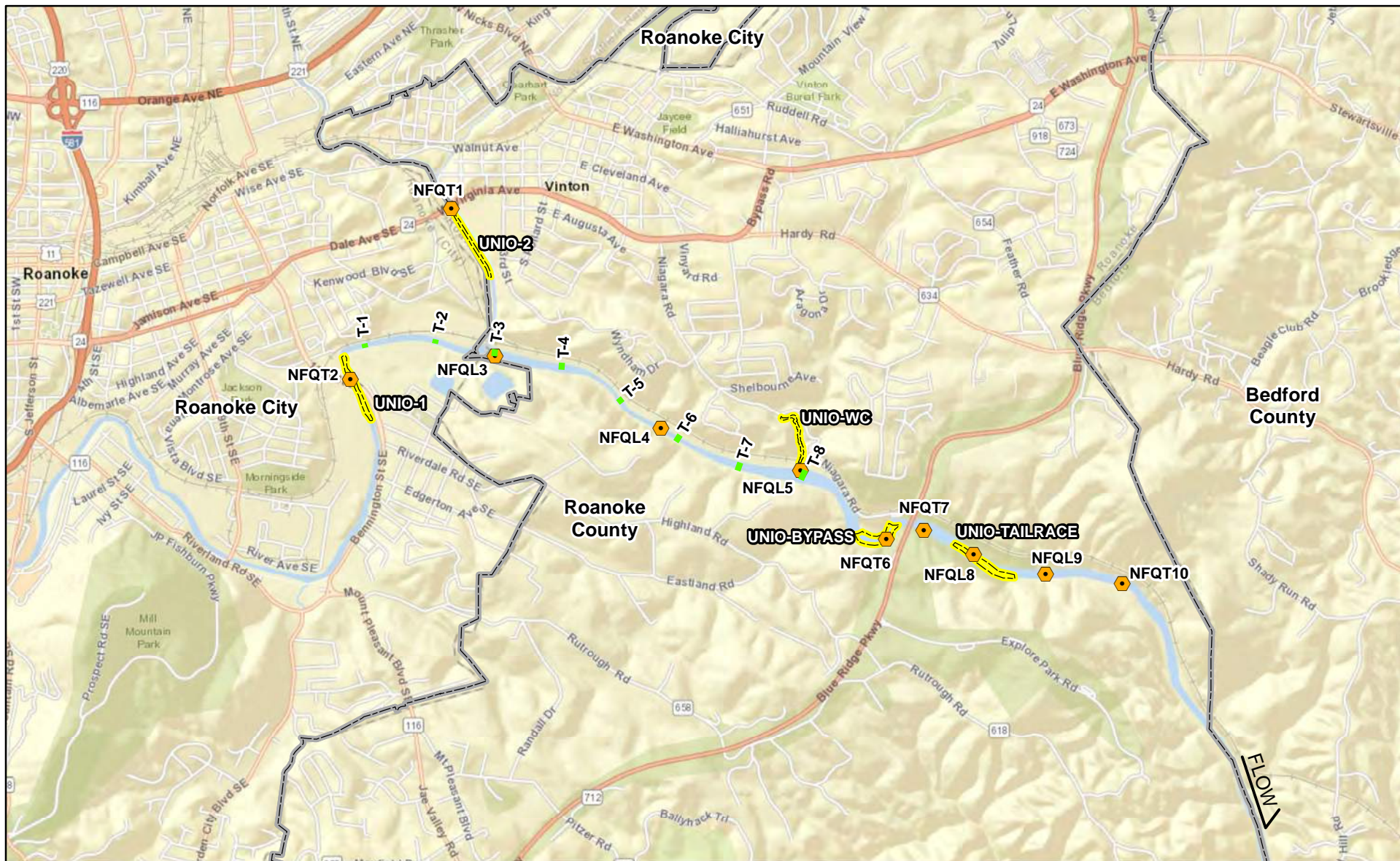
Upper Roanoke River Roundtable
PO Box 8221
Roanoke, VA 24014

A decorative graphic on the left side of the page consists of four overlapping rectangles: a large red rectangle, a smaller grey rectangle above it, a larger grey rectangle below it, and a black rectangle at the bottom right.

Attachment 1

Benthic Aquatic
Resources Study
Figures

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Legend

- Macroinvertebrate Sample Location
- Mussel Survey Transect
- Mussel Survey Area
- County Boundary

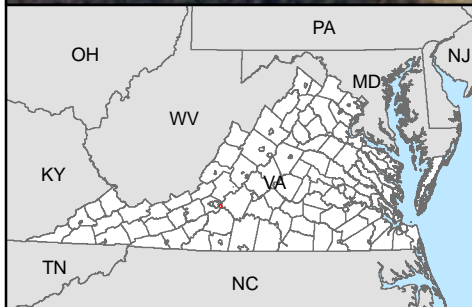
Scale

0 0.5 1
Kilometers


Scale: 1:39,370

American Electric Power
Niagara Dam Benthic Aquatic Resource Study
 Figure 1

Overall Niagara project area including quantitative (NFQT) and qualitative (NFQL) macroinvertebrate survey sites and transect (T) and abbreviated (UNIO) mussel survey sites on the Roanoke River in Roanoke County, Virginia



Legend

 Mussel Survey Area



0 50 100
Meters

Scale: 1:3,937



American Electric Power Niagara Dam Benthic Aquatic Resource Study

Figure 24

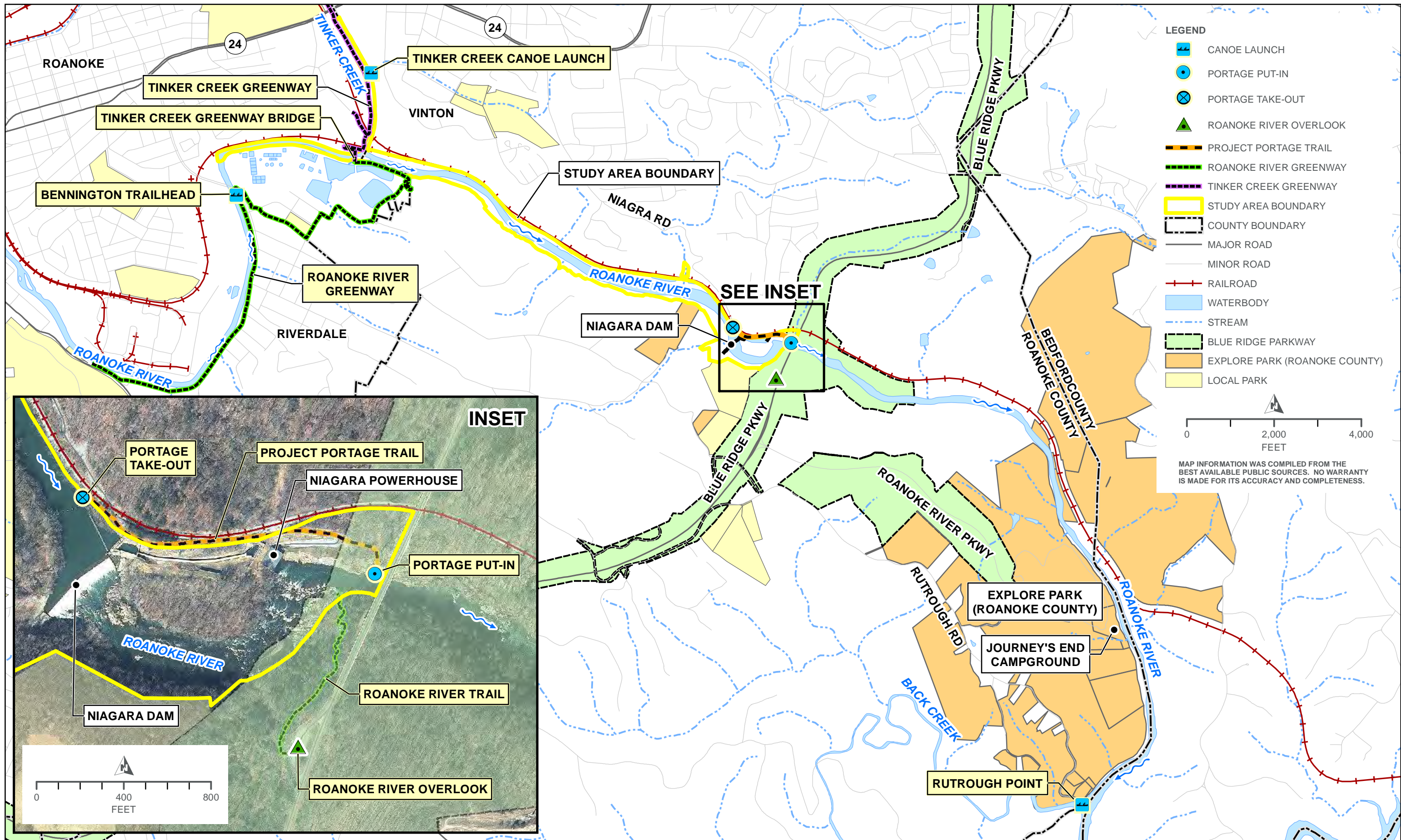
Abbreviated mussel survey extent in mixed habitat
in Roanoke County, Virginia

A decorative graphic on the left side of the page consists of four overlapping rectangles: a large red rectangle, a smaller grey rectangle above it, a larger grey rectangle below it, and a black rectangle at the bottom right.

Attachment 2

Existing Recreation Facilities Map

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Yayac, Maggie

Subject: FW: Niagara Hydroelectric Project (VA) -- Filing of Response to Comments on the Initial Study Report

From: Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>

Sent: Tuesday, April 6, 2021 3:59 PM

To: ACHP - John Eddins <jeddings@achp.gov>; Catawba Indian Nation - Wenonah Haire <caitlin.rogers@catawba.com>; County of Roanoke - David Henderson <dhenderson@roanokecountyva.gov>; County of Roanoke - Lindsay Webb <LWEBB@roanokecountyva.gov>; County of Roanoke - Michael Clark <Michael.Clark@roanokeva.gov>; County of Roanoke - Richard Caywood <rcaywood@roanokecountyva.gov>; Delaware Nation - Eric Paden <epaden@delawarenation-nsn.gov>; Friends of the Blue Ridge Parkway - Audrey Pearson <audrey_pearson@friendsbrp.org>; Friends of the Rivers of Virginia - Bill Tanger <riverdancer1943@gmail.com>; Harold Peterson <harold.peterson@bia.gov>; Kevin Colburn - American Whitewater (kevin@americanwhitewater.org) <kevin@americanwhitewater.org>; Monacan Indian Nation - Kenneth Branham <TribalOffice@MonacanNation.com>; NPS - Dawn Leonard <dawn_leonard@nps.gov>; Roanoke County Parks - Doug Blount <dblount@roanokecountyva.gov>; Roanoke Regional Partnership - Pete Eshelman <pete@roanoke.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>; 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 - Kenny Sledd <ksledd@vintonVA.gov>; Town of Vinton - Nathan McClung <nmcclung@vintonVA.gov>; Tri-County Lakes Administrative Commission - Paula Shoffner <paulas@sml.us.com>; 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 - Jennifer Wampler <jennifer.wampler@dcr.virginia.gov>; VADCR - Natural Heritage <nhreview@dcr.virginia.gov>; VADCR - Robbie Ruhr <Robbie.Ruhr@dcr.virginia.gov>; VADEQ - Andrew Hammond <andrew.hammond@deq.virginia.gov>; VADEQ - Anthony Cario <anthony.cario@deq.virginia.gov>; VADEQ - Brian McGurk <Brian.McGurk@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>; 'ebparcell@aep.com' <ebparcell@aep.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>

Subject: Niagara Hydroelectric Project (VA) -- Filing of Response to Comments on the Initial Study 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 Initial Study Report (ISR) for the Project on January 11, 2021, held a virtual ISR Meeting on January 21, 2021, and filed a summary of the ISR meeting with FERC on February 5, 2021. Several relicensing stakeholders provided written comments in response to the meeting summary. In accordance with 18 CFR 5.15(c), Appalachian has filed responses to stakeholder comments.

On behalf of Appalachian, we are notifying stakeholders of the availability of this response to comments filing. Appalachian encourages stakeholders to view the filing online at FERC's eLibrary at

https://elibrary.ferc.gov/eLibrary/filelist?accession_num=20210406-5667. Appalachian will also be adding this filing to the Project's public relicensing website (<http://www.aephydro.com/HydroPlant/Niagara>) in the coming days.

On behalf of Appalachian, thank you for your participation in this relicensing. Should you have any questions regarding this filing, please contact Jon Magalski with AEP at (614) 716-2240 or jmmagalski@aep.com.

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: [EXTERNAL] FW: AEP Niagara Hydroelectric Project - Recreation Stakeholder Meeting Invitation

-----Original Message-----

From: Yayac, Maggie <Maggie.Yayac@hdrinc.com>
Sent: Wednesday, April 7, 2021 9:13 AM
To: Michael.Clark@roanokeva.gov
Subject: RE: [EXTERNAL] FW: AEP Niagara Hydroelectric Project - Recreation Stakeholder Meeting Invitation

Hi Michael,

Thank you very much for your comments. You are correct we are continuing to study the potential of recreation releases into this second study year. I believe that Lindsay Webb is the go to contact for this project and she keeps Doug apprised of the progress, but I will certainly double check with her.

Have a great week,

Maggie Yayac
D 704.248.3666 M 610.299.0959
hdrinc.com/follow-us

-----Original Message-----

From: Michael.Clark@roanokeva.gov <Michael.Clark@roanokeva.gov>
Sent: Tuesday, April 6, 2021 9:20 AM
To: Yayac, Maggie <Maggie.Yayac@hdrinc.com>
Subject: Re: [EXTERNAL] FW: AEP Niagara Hydroelectric Project - Recreation Stakeholder Meeting Invitation

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.

Thanks for the email, Maggie. With the dam itself outside the city limits, I do not plan on attending the meetings and don't have any comments from a professional standpoint. I would, however, encourage you to email Doug Blount, Director of General Services and Parks, Recreation, and Tourism for Roanoke County, to see if he would like some time to speak. His agency operates Explore Park so they certainly have a vested interest in this.

From my own personal standpoint, as well as anecdotally from members of my staff, if the dam can't be removed (which we know is not realistic), it would be ideal to have recreational releases in the summer. I understand that was included in the preliminary report and I think as an outdoor branded area, this would go a long way in catering to the recreational paddlers in and outside the region.

Thanks, again.

Best regards,

Michael.

* * * * *

Michael Clark, CPRP | Director
Roanoke Parks and Recreation - A Nationally Accredited Agency
215 Church Avenue | Room 303 | Roanoke, VA 24011
P: 540.853.2236 | F: 540.853.1287 | E: Michael.Clark@RoanokeVA.gov PLAY Roanoke | Roanoke GO Fest

Building a welcoming community through PLAY Health and Well-Being | Inclusion | Service Excellence | Sustainability

From: "Yayac, Maggie" <Maggie.Yayac@hdrinc.com>
To: "michael.clark@roanokeva.gov" <michael.clark@roanokeva.gov>
Date: 04/05/2021 09:28 AM
Subject: [EXTERNAL] FW: AEP Niagara Hydroelectric Project - Recreation
Stakeholder Meeting Invitation

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.

Good morning Michael,

I wanted to check-in to make sure this e-mail did not get lost and to confirm whether or not you planned to attend. I'd like to send out a placeholder meeting invite on Wednesday, so we can get it on everyone's calendar. Please let me know if you plan on attending and if so, what dates below work for you. Also, if you'd like to take the floor for 15 minutes to present some of your topics of interest.

Thanks!

Maggie Yayac
D 704.248.3666 M 610.299.0959
hdrinc.com/follow-us

From: Yayac, Maggie
Sent: Monday, March 29, 2021 5:07 PM
To: rcaywood@roanokecountyva.gov; Lindsay Webb <LWEBB@roanokecountyva.gov>; Liz Belcher <LBELCHER@roanokecountyva.gov>; pete@roanoke.org; Anita McMillan <amcmillan@vintonva.gov>; riverdancer1943@gmail.com; Amanda McGee <amcgee@rvarc.org>; michael.clark@roanokeva.gov; dawn_leonard@nps.gov; Wampler, Jennifer <jennifer.wampler@dcr.virginia.gov>
<jennifer.wampler@dcr.virginia.gov>
Cc: Elizabeth B Parcell <ebparcell@aep.com>; Jonathan M Magalski <jmmagalski@aep.com>; Kulpa, Sarah <sarah.kulpa@hdrinc.com>; Frank Simms <fmsimms51@gmail.com>
Subject: AEP Niagara Hydroelectric Project - Recreation Stakeholder Meeting Invitation

Good evening,

As you are aware, as part of the relicensing effort for the Niagara Hydroelectric Project (FERC No. 2466), Appalachian Power Company (Appalachian), a unit of American Electric Power (AEP), is conducting a Recreation Study. As discussed at the ISR Meeting on January 21, 2021, Appalachian plans to host a virtual stakeholder meeting with primary recreation stakeholders this spring.

The purpose of this meeting is to gather information about current and future Roanoke River-oriented recreation initiatives and projects in the vicinity of the Niagara Project. We would like to give each stakeholder group 15 minutes to present to Appalachian and other stakeholders: (1) what your group is currently working on, and (2) your interests in specific recreational improvements in and around the Niagara Project.

If you are interested in participating, please respond to Maggie Yayac (maggie.yayac@hdrinc.com) with your availability to attend the below dates and times. If your group would like to present during the meeting please let us know (and note your topic(s) of interest) so we can plan a more detailed agenda. Once we have a general consensus on availability and interest in presenting, we will send out a meeting invitation with a link to join the web conference.

Potential dates for the Niagara Project Recreation Stakeholder Meeting:

Tuesday, April 20th from 2-4pm
Thursday, April 22nd from 9-11am
Wednesday April 28th from 9-11am

Please let me know if you have any questions or if anyone has been inadvertently left off this invitation list.

Maggie Yayac
Regulatory Specialist
HDR
440 South Church Street, Suite 900
Charlotte, NC 28202
D 704.248.3666 M 610.299.0959
Maggie.Yayac@hdrinc.com
hdrinc.com/follow-us



United States Department of the Interior

FISH AND WILDLIFE SERVICE



Virginia Field Office
6669 Short Lane
Gloucester, VA 23061

Date:

Self-Certification Letter

Project Name:

Dear Applicant:

Thank you for using the U.S. Fish and Wildlife Service (Service) Virginia Ecological Services online project review process. By printing this letter in conjunction with your project review package, you are certifying that you have completed the online project review process for the project named above in accordance with all instructions provided, using the best available information to reach your conclusions. This letter, and the enclosed project review package, completes the review of your project in accordance with the Endangered Species Act of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884), as amended (ESA). This letter also provides information for your project review under the National Environmental Policy Act of 1969 (P.L. 91-190, 42 U.S.C. 4321-4347, 83 Stat. 852), as amended. A copy of this letter and the project review package must be submitted to this office for this certification to be valid. This letter and the project review package will be maintained in our records.

The species conclusions table in the enclosed project review package summarizes your ESA conclusions. These conclusions resulted in:

- “no effect” determinations for proposed/listed species and/or proposed/designated critical habitat; and/or
- Action may affect the northern long-eared bat; however, any take that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR § 17.40(o) [as determined through the Information, Planning, and Consultation System (IPaC) northern long-eared bat assisted determination key]; and/or
- “may affect, not likely to adversely affect” determinations for proposed/listed species and/or proposed/designated critical habitat.

We certify that use of the online project review process in strict accordance with the instructions provided as documented in the enclosed project review package results in reaching the appropriate determinations. Therefore, we concur with the determinations described above for proposed and listed species and proposed and designated critical habitat. Additional coordination with this office is not needed.

Candidate species are not legally protected pursuant to the ESA. However, the Service encourages consideration of these species by avoiding adverse impacts to them. Please contact this office for additional coordination if your project action area contains candidate species.

Should project plans change or if additional information on the distribution of proposed or listed species, proposed or designated critical habitat becomes available, this determination may be reconsidered. This certification letter is valid for 1 year.

Information about the online project review process including instructions and use, species information, and other information regarding project reviews within Virginia is available at our website http://www.fws.gov/northeast/virginiafield/endspecies/project_reviews.html. If you have any questions, please contact Troy Andersen of this office at (804) 824-2428.

Sincerely,

A handwritten signature in blue ink that reads "Cynthia A. Schulz". The signature is written in a cursive style and is positioned above the printed name.

Cindy Schulz
Field Supervisor
Virginia Ecological Services

Enclosures - project review package



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:

March 24, 2021

Consultation Code: 05E2VA00-2021-SLI-2810

Event Code: 05E2VA00-2021-E-08113

Project Name: Niagara Hydroelectric Project (FERC No. 2466) 2021 Field Sampling TOYR
Waiver Request

Subject: List of threatened and endangered species that may occur in your proposed project location 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://](http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html)

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
-

From: ernie.aschenbach@dwr.virginia.gov on behalf of [ProjectReview \(DGIF\) - rr](#)
To: [rr dgif-Collection Permits](#); jastudio@edge-es.com; [Huddleston, Misty](#); jpspaeth@edge-es.com; [rr ProjectReview \(DGIF\)](#)
Cc: [Amy Ewing](#); [Scott Smith](#)
Subject: Fwd: Niagara Hydroelectric Project (FERC No. 2466) - 2021 Field Sampling TOYR Waiver Request
Date: Wednesday, April 7, 2021 1:58:19 PM
Attachments: [image001.png](#)
[online_project_review_certification_SIGNED.pdf](#)
[USFWS Project Verification Niagara 20210326.pdf](#)
[23405_DWR_email_NiagaraProjectRelicensingStudyScheduleUpdateMeetingNotes_20200717ss.pdf](#)
[23405_NiagaraProjectRelicensingStudyScheduleUpdateMeetingNotes_20200629usfws.pdf](#)

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ESSLog 23405; Niagara Study relicensing study schedule

The attached request was forwarded to me.

The request and proposed sampling schedule remain appropriate for the work being performed on behalf of American Electric Power (AEP), Edge Engineering and Science, LLC (EDGE) and HDR, Inc. (HDR) are providing field sampling services associated with relicensing activities for the Niagara Hydroelectric Project (Project) (FERC No. 2466). EDGE and HDR are requesting time-of-year restriction (TOYR) waivers for Tinker Creek and Roanoke River in Roanoke County, Virginia within the Project area.

Thanks.

Please note the Department of Wildlife Resources (DWR) new email addresses end in @dwr.virginia.gov*



Ernie Aschenbach

Environmental Services Biologist

P 804.367.2733

Email: Ernie.Aschenbach@dwr.virginia.gov

Virginia Department of Wildlife Resources

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A 7870 Villa Park Drive, P.O. Box 90778, Henrico, VA 23228-0778

www.dwr.virginia.gov

----- Forwarded message -----

From: **Smith, Scott** <scott.smith@dwr.virginia.gov>

Date: Fri, Apr 2, 2021 at 3:45 PM

Subject: Re: Niagara Hydroelectric Project (FERC No. 2466) - 2021 Field Sampling TOYR Waiver Request

To: Aschenbach, Ernst <ernie.aschenbach@dwr.virginia.gov>

Cc: Ewing, Amy (DGIF) <amy.ewing@dwr.virginia.gov>, ProjectReview (DGIF)

<projectreview@dwr.virginia.gov>, rr dgif-Collection Permits <collectionpermits@dwr.virginia.gov>

Hey Ernie,

Yes, the request is still acceptable. They are doing this work at the request of natural resource agencies, so a waiver is appropriate.

SS

----- Forwarded message -----

From: **Aschenbach, Ernst** <ernie.aschenbach@dwr.virginia.gov>

Date: Tue, Mar 30, 2021 at 9:30 AM

Subject: Fwd: Niagara Hydroelectric Project (FERC No. 2466) - 2021 Field Sampling TOYR Waiver Request

To: Smith, Scott (DGIF) <scott.smith@dwr.virginia.gov>, Ewing, Amy (DGIF)

<amy.ewing@dwr.virginia.gov>, ProjectReview (DGIF) <projectreview@dwr.virginia.gov>, Ernst Aschenbach

<ernie.aschenbach@dwr.virginia.gov>, rr dgif-Collection Permits <collectionpermits@dwr.virginia.gov>

ESSLog 23405; Niagara Study relicensing study schedule

Scott

FYI.

According to our records, you represented DWR on the 7/17/2020 discussions of the study plan schedule with AEP, HDR/consultants, and USFWS.

Please see the recent request that Amy and DWR Collections (permits) staff received and advise if the request is acceptable.

Please note the Department of Wildlife Resources (DWR) new email addresses end in @dwr.virginia.gov*



Ernie Aschenbach

Environmental Services Biologist

P 804.367.2733

Email: Ernie.Aschenbach@dwr.virginia.gov

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----- Forwarded message -----

From: **Ewing, Amy** <amy.ewing@dwr.virginia.gov>

Date: Tue, Mar 30, 2021 at 8:48 AM

Subject: Fwd: Niagara Hydroelectric Project (FERC No. 2466) - 2021 Field Sampling TOYR Waiver Request

To: Aschenbach Ernst ieq58323 <ernie.aschenbach@dwr.virginia.gov>

Hi Ernie,

I assume this is something you would handle. If I need to do anything, let me know.

Amy



Amy Martin Ewing

Environmental Services Biologist

Manager, Wildlife Information

she/her/hers

P 804.367.2211

Department of Wildlife Resources

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www.VirginiaWildlife.gov

----- Forwarded message -----

From: **Jon Studio** <jastudio@edge-es.com>

Date: Mon, Mar 29, 2021 at 3:57 PM

Subject: Niagara Hydroelectric Project (FERC No. 2466) - 2021 Field Sampling TOYR Waiver Request

To: amy.ewing@dwr.virginia.gov <amy.ewing@dwr.virginia.gov>, collectionpermits@dwr.virginia.gov <collectionpermits@dwr.virginia.gov>

Cc: Huddleston, Misty <Misty.Huddleston@hdrinc.com>, John Spaeth <jpspaeth@edge-es.com>

To whom it may concern,

On behalf of American Electric Power (AEP), Edge Engineering and Science, LLC (EDGE) and HDR, Inc. (HDR) are providing field sampling services associated with relicensing activities for the Niagara Hydroelectric Project (Project) (FERC No. 2466). EDGE and HDR are requesting time-of-year restriction (TOYR) waivers for Tinker Creek and Roanoke River in Roanoke County, Virginia within the Project area. Although current study plans do not extend to the Smith Mountain Lake, a TOYR waiver is also requested for the Smith Mountain Lake fish assemblage in the event that there is overlap with fish species protected as part of the Smith Mountain Lake fish assemblage and the assemblage of the mainstem Roanoke River, or that the proposed field effort is extended further downstream than the currently proposed Project extent in response to agency requests.

Aquatic biological studies were requested and refined during the development of the Project's Proposed Study Plan, Revised Study Plan, and Study Plan Determination that included coordination with VDWR, USFWS, and USEPA. Three of the requested studies occur during the recommended TOYRs (Table 1). Documents outlining agency requests and specific Project methodologies are located at <http://www.aephydro.com/HydroPlant/Niagara>, but general methods and rationale are provided below as a quick review.

This information is provided in addition to the USFWS Self Certification Letter and Project Verification Package (attached), as required per the Virginia TOYR guidance document dated February 2021. This information was also submitted to the USFWS.

The applicable TOYRs in the Project area occur in Roanoke River and Tinker Creek for Roanoke Logperch (*Percina rex*; RLP), stocked trout, and Orange-fin Madtom (*Noturus gilberti*). Instream field sampling efforts will target RLP at various life stages and supplemental macroinvertebrate collections. Although additional survey efforts are proposed, those survey activities anticipated during TOYR's are described below.

RLP larvae: Drift net sampling methods include three biologists deploying two, 20-minute net sets at five sample sites in shallow water adjacent to riffle-run habitat once per week for a total of ten weeks (Figure 1). The ten consecutive weekly samples will occur between April 1 and June 30 to align with RLP spawning.

RLP adults and subadults: A three-day sampling period will occur between June 1 and June 30 to determine RLP occupancy of the Project's bypass reach below Niagara Dam during spring flows. Backpack electrofishing methods include two backpack electrofishing units to sample 64 quadrats (eight meters by four meters) in riffle-run habitat (Figure 1).

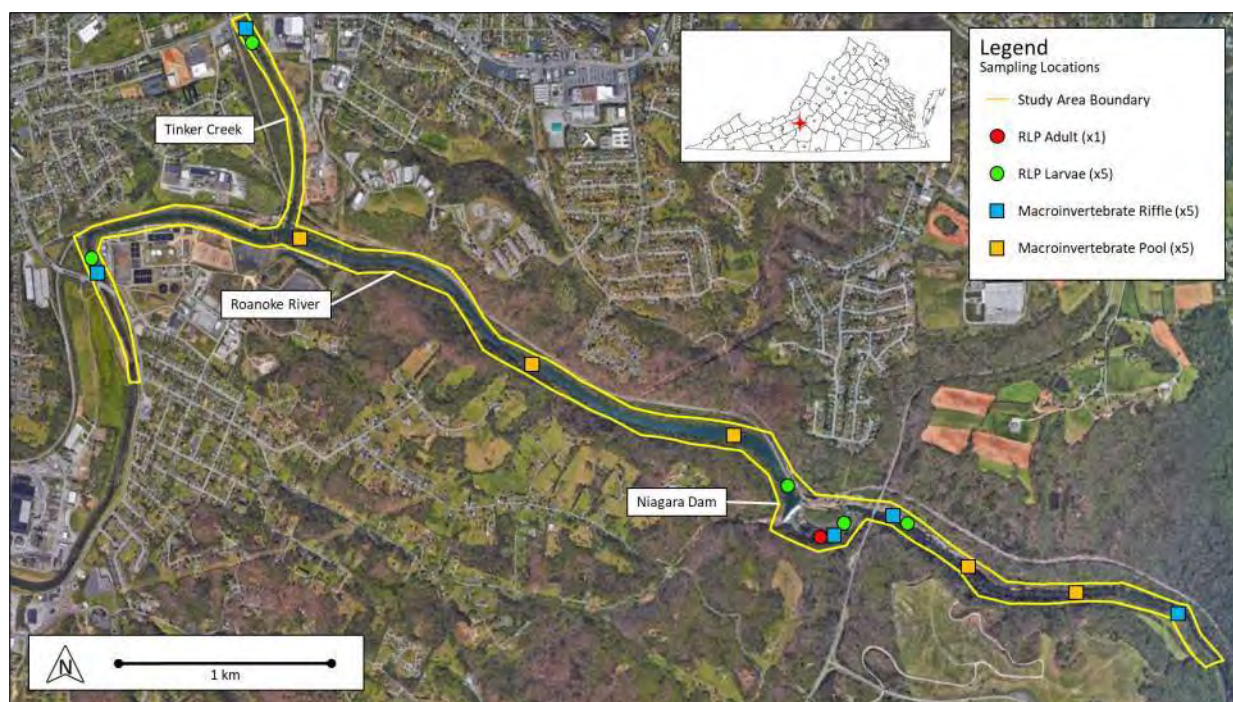
Macroinvertebrate Sampling: Macroinvertebrates will be collected in the Project area to investigate the temporal changes in macroinvertebrate community. A sampling event is anticipated to occur between March 1 and May 31 to align with Virginia Department of Environmental Quality (VADEQ) stream macroinvertebrate Spring sample index period. Sampling will involve kick net methods along 100-meter segments of habitat at five quantitative sites (riffle-run) and five qualitative sites (multihabitat) over a three-day period (Figure 1).

**Table 1: Roanoke River and
Tinker Creek Time-of-Year
Restriction Waiver Requested
Activity**

State-Recommended TOYR	Waiver Activity Request	Activity Date Range
^a March 15 –	Kick Net -	March 1 – May

May 31	Macroinvertebrates	31
	Drift Net - Larval RLP	April 1 – June 30
^b March 15 – June 30	Kick Net - Macroinvertebrates	March 1 – May 31
	Drift Net - Larval RLP	April 1 – June 30
	Backpack Electrofishing - RLP	June 1 – June 30
^c October 1 – June 15	Kick Net - Macroinvertebrates	March 1 – May 31
	Drift Net - Larval RLP	April 1 – June 30
	Backpack Electrofishing - RLP	June 1 – June 30
^d February 15 – June 15	Kick Net - Macroinvertebrates	March 1 – May 31
	Drift Net - Larval RLP	April 1 – June 30
	Backpack Electrofishing - RLP	June 1 – June 30
^a No sampling in orangefin madtom waters from March 15 th through May 31 st		
^b No sampling in Roanoke logperch waters from March 15 th through June 30 th		
^c No sampling in stocked trout waters from October 1 st through June 15 th		
^d No fish assemblage sampling in Smith Mountain Lake from February 15 – June 15		

Figure 1. Proposed Sampling Locations for Adult and Larval Roanoke Logperch and Macroinvertebrates at Niagara



We appreciate your consideration and request your concurrence on the information herein. Please contact Jon Studio (440-413-4609; jastudio@edge-es.com) or John Spaeth (513-377-0443; jpspaeth@edge-es.com) if you have any questions or require additional information regarding this request.

Thanks,

JON A. STUDIO

Avon, Ohio

M: 440.413.4609

edge-es.com



Subject: FW: FW: Niagara Hydroelectric Project (FERC No. 2466) - ESSLog 23405- TOYR Waiver Request

Attachments: 23405_NiagaraProjectRelicensingStudyScheduleUpdateMeetingNotes_20200629usfws.pdf; Niagara Project Study Plan Coordination Call with Services_20190925.pdf; USFWS Project Verification_Niagara_20210326.pdf

From: Huddleston, Misty <Misty.Huddleston@hdrinc.com>

Sent: Monday, April 12, 2021 4:23 PM

To: Aschenbach, Ernst <ernie.aschenbach@dwr.virginia.gov>; rr dgif-Collection Permits <collectionpermits@dwr.virginia.gov>; jastudio@edge-es.com; jpspaeth@edge-es.com; Amy Ewing <amy.ewing@dwr.virginia.gov>; Scott Smith <scott.smith@dwr.virginia.gov>; Pinder, Mike (DGIF) <mike.pinder@dwr.virginia.gov>; Watson, Brian (DGIF) <brian.watson@dwr.virginia.gov>; McCloskey, John <john_mccloskey@fws.gov>; Harris, Johnathan (DGIF) <johnathan.harris@dwr.virginia.gov>; ProjectReview (DGIF) <projectreview@dwr.virginia.gov>; Sumalee Hoskin <sumalee_hoskin@fws.gov>; McCorkle, Richard <richard_mccorkle@fws.gov>; shirl.dressler@dwr.virginia.gov

Cc: Fernald, Ray (DGIF) <ray.fernald@dwr.virginia.gov>; Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; Jonathan M Magalski <jmmagalski@aep.com>

Subject: RE: FW: Niagara Hydroelectric Project (FERC No. 2466) - ESSLog 23405- TOYR Waiver Request

Ernie,

Thanks for speaking with me last Friday regarding the request for a time-of-year-restriction (TOYR) waiver that HDR and Edge Engineering and Science (EDGE) submitted on behalf of Appalachian Power Company (Appalachian), a unit of American Electric Power for the Niagara Hydroelectric Project (Project; FERC # 2466), located on the Roanoke River in Roanoke County, Virginia. Based on our discussion, I am providing additional background information to support the waiver request.

Background:

Appalachian is pursuing a license renewal under the FERC Integrated Licensing Process. Detailed information on the proposed sampling methods for both the macroinvertebrate and adult RLP studies are provided in the Project Revised Study Plan and the FERC Study Plan Determination; available on the FERC e-library under Project No. 2466 or at the Appalachian Project website: <http://www.aephydro.com/HydroPlant/Niagara>.

Appalachian coordinated with Virginia Department of Wildlife Resources (VDWR) and U.S. Fish and Wildlife Service (USFWS) for the proposed studies during development of the Proposed Study Plan, scoping, and development of the Revised Study Plan. During a September 25, 2019 scoping call (see attachment dated 9/25/2019), Rick McCorkle (USFWS), Scott Smith (VDWR), and Paul Angermeier (Virginia Tech University) agreed that a spring survey for adult RLP in the bypass reach would help determine:

1. Presence of suitable habitat for adult RLP use during higher spring flows; and
2. Utilization of available habitat by adult RLP during higher spring flows.

Based on input during that call, the group agreed that the use of snorkeling methods to perform the adult RLP survey within the bypass reach would present safety risks, as the study goal is to determine if adult RLP are moving into and utilizing potential habitat created by Project spill into the bypass reach during spring months. The flows that we need to evaluate within the bypass reach in order to answer the study questions are likely not conducive to completing a safe and effective snorkel survey. As such, the need for a TOYR waiver was discussed during the September 25, 2019 coordination call, and the Revised Study Plan indicated that completion of spring sampling for the macroinvertebrate study and adult RLP study were contingent on receiving a waiver of the TOYR.

Purpose and Need:

The TOYR waiver is needed to support spring field sampling efforts for:

1. A benthic macroinvertebrate study; and
2. Field sampling of the bypass reach to determine if adult Roanoke Logperch (RLP) are moving into and potentially using the bypass reach during this higher flow period.

Methods:

1. The proposed benthic macroinvertebrate sampling effort would:
 - a. Consist of qualitative and quantitative sample collection;
 - b. Use sampling equipment and techniques that are consistent with Virginia Department of Environmental Quality (2008) sampling protocols; and
 - c. Be performed according to the Revised Study Plan (including revisions based on the FERC Study Plan Determination and input from VDWR and USFWS).
2. The proposed adult RLP sampling effort would:
 - a. Target the Niagara bypass reach during higher spring flows;
 - b. Target available RLP habitat located in the lower portion of the bypass reach;
 - c. Utilize backpack electrofishing methods;
 - d. Include fish standard length and a photograph of collected RLP, followed by their immediate release as near as possible to the site of collection.

Let me know if there is interest/need for a group call to discuss this topic or if there is additional information that is needed to respond to our request for a TOYR waiver for either the macroinvertebrate study or the adult Roanoke Logperch sampling effort.

Thanks,
Misty

Misty Huddleston, PhD
Associate, SR. Environmental Scientist
D 704.248.3614 M 865.556.9153

hdrinc.com/follow-us

From: Aschenbach, Ernst <ernie.aschenbach@dwr.virginia.gov>

Sent: Friday, April 9, 2021 2:10 PM

To: Huddleston, Misty <Misty.Huddleston@hdrinc.com>; rr dgif-Collection Permits

<collectionpermits@dwr.virginia.gov>; jastudio@edge-es.com; jpspaeth@edge-es.com; Amy Ewing

<amy.ewing@dwr.virginia.gov>; Scott Smith <scott.smith@dwr.virginia.gov>; Ernst Aschenbach

<ernie.aschenbach@dwr.virginia.gov>; Pinder, Mike (DGIF) <mike.pinder@dwr.virginia.gov>; Watson, Brian (DGIF)

<brian.watson@dwr.virginia.gov>; McCloskey, John <john_mccloskey@fws.gov>; Harris, Johnathan (DGIF)

<johnathan.harris@dwr.virginia.gov>; ProjectReview (DGIF) <projectreview@dwr.virginia.gov>; Sumalee Hoskin
<sumalee_hoskin@fws.gov>

Cc: Fernald, Ray (DGIF) <ray.fernald@dwr.virginia.gov>

Subject: Re: FW: Niagara Hydroelectric Project (FERC No. 2466) - 2021 Field Sampling TOYR Waiver Request

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ESSLog 23405; Niagara Study relicensing study schedule

Misty et al.,

Hello!

I forwarded via separate email a recent email update was forwarded to me. Some of you may have already received this information.

Via (that separate) email clarifying that USFWS has not issued a waiver -- the USFWS recommendation regarding FESE Roanoke logperch TOYR and electroshocking is:

- **Electroshocking for adults** – should only occur after they have first started with snorkeling and RLP have not been caught or they can provide evidence that snorkeling is not working. No electroshocking within the RLP time-of-year restrictions (March 15-June30).
- Based on this recent update, DWR supports this recommendation.
- DWR-Collection Permits, Shirl Dressler-Setzer also notified you not to proceed.

If the DWR-collection permittees, DWR- and/or USFWS staff have additional questions, clarification, or comments pertaining to the proposed study schedule, please advise (by responding to all and forwarding as appropriate). This will help ensure pertinent information reaches those who need it. Any remaining concerns will need to be addressed as appropriate.

I do not recall being part of the previous discussions pertaining to the proposed study and schedule. Nevertheless, after receiving additional information, I will continue to try to help facilitate resolution, if necessary. I will try to call you.

Thanks.

Please note the Department of Wildlife Resources (DWR) new email addresses end in @dwr.virginia.gov*



Ernie Aschenbach

Environmental Services Biologist

P 804.367.2733

Email: Ernie.Aschenbach@dwr.virginia.gov

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www.dwr.virginia.gov

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 Huddleston (HDR).

Misty reviewed the methodology for the fish community study (Task 1a of the Revised Study Plan)

- 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.

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.

→ Below are direct quotes (and table) from RSP, reviewed by agencies:

- Adult Roanoke Logperch sampling events will occur at each of the four locations between August-October 2020 during suitable stream flow conditions that align with previous studies done within the study area. Subject to approval by VDGIF and USFWS as noted below, one additional sampling event will occur in the bypass reach (i.e., RLP3A/RLP3B) between May-June 2020 because it is hypothesized that more-suitable habitat will be available to Roanoke Logperch during the spring (elevated river flows) rather than the fall (reduced river flows). The spring sampling event may allow for determination of differences in habitat availability and occupation during discrepant flow regimes. It is important to note that the spring sampling event will require a Roanoke Logperch time-of-year restriction waiver from VDGIF and USFWS and safe flow conditions to conduct the surveys within the bypass reach, if waived.

Table 6-1. Proposed Fish Community Study Schedule

Task	Proposed Timeframe for Completion
Study Planning and Existing Data Review	September 2019 – April 2020
Fish Community Study	August – October 2020
Roanoke Logperch Adult Surveys	May – June ¹ , August – October 2020
Roanoke Logperch Young-of-Year Surveys	August – October 2020
Roanoke Logperch Larval Surveys	April – June 2020
Desktop Impingement and Entrainment Evaluation	December 2019 – November 2020
Distribute Draft Study Report with the ISR	December 2020

¹Spring sampling will only be performed in the bypass reach, assuming a waiver is granted from the USFWS and VDGIF for sampling within the time-of-year restriction period.



April 30, 2021

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)
 Third Quarterly Study Progress Report – Spring 2021**

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 or Commission) Integrated Licensing Process (ILP).

Pursuant to 18 Code of Federal Regulations (CFR) § 5.15(c), Appalachian filed the Initial Study Report (ISR) with the Commission on January 11, 2021, which summarized study activities performed in 2020, as well as ILP activities expected to be completed in 2021.

This Third Quarterly Study Progress Report describes the activities performed since the ISR was filed, including activities that occurred in quarter 1 (Q1) of 2021 and activities expected to be conducted in quarter 2 (Q2) of 2021. Unless otherwise described, all relicensing studies are being conducted in conformance with the approved Revised Study Plan (RSP) and the Commission's Study Plan Determination (SPD).

General Updates – ILP Process and Milestones

- As required by the ILP schedule, within 15 days of the ISR filing, Appalachian held a virtual ISR meeting via WebEx on Thursday, January 21, 2021 which included participation by agencies and stakeholders with interest in the Project.
- The ISR meeting summary was filed with FERC on February 5, 2021. Stakeholders' comments on the ISR meeting summary were due by March 7, 2021. Appalachian filed responses to stakeholder comments with FERC on April 6, 2021.

Bypass Reach Flow and Aquatic Habitat Study

- The GIS-based desktop aquatic habitat assessment and Habitat Suitability Index curves for the aquatic species that will be modeled in the bypass reach, as well as the proposed test flow scenarios that will be used to support model calibration and validation activities, were summarized in the Preliminary Bypass Reach Flow and Aquatic Habitat Study Report provided in the ISR.
- Field data collection is planned for the 2021 field season (likely late Q2 or early quarter 3 [Q3]) to avoid higher inflows that typically occur over the early spring months. Once the field data has been collected, a two-dimensional (2D) aquatic habitat model will be developed. Modeling results, conclusions, and recommendations will be provided in the Updated Study Report (USR) in the fourth quarter (Q4) of 2021.

Water Quality Study

- Field data collected during the 2020 field season were summarized in the Preliminary Water Quality Study Report provided in the ISR.
- As described in the ISR and subsequent comments filed by Appalachian, Appalachian plans to reinstall two continuous temperature and dissolved oxygen (DO) data sondes in the bypass reach (one at the upstream monitoring location and the other at the downstream monitoring location) from July – September 2021 (with the possibility of extending through October 2021 depending on water temperatures and bypass reach flow conditions). Appalachian also proposes to reinstall a continuous temperature and DO data sonde in the tailrace (during the same period) to capture additional data during powerhouse operations.
- As described in Appalachian's response to comments filing, Appalachian plans to collect discrete water quality profile data at the forebay monitoring location during equipment checks and data downloads for the continuous monitoring instrumentation.
- Additional water quality data collected during the 2021 field season will be summarized, along with any conclusions or recommendations, in the USR in Q4 2021.

Fish Community Study

- A single season of field data collection for the general fish community study was completed between September and October 2020. Results from the effort were reported in the ISR.
- As communicated in previous study progress reports and requested by U.S. Fish and Wildlife Service (USFWS) in March 2020, Appalachian rescheduled the adult and young-of-year Roanoke Logperch sampling efforts, which were originally planned for 2020, to 2021.

- A Larval Drift Study was planned for early spring 2021 to coincide with the Roanoke Logperch (*Percina Rex*) spawning window. Data collection efforts were scheduled to start at the beginning of April 2021 and continue for 10 consecutive weeks, ending in mid-June. The study requires (prior to field data collection) a Section 10(a)(1)(A) permit from the USFWS regional office. An application for the federal recovery permit was submitted in December 2020 by Edge Engineering & Science, LLC (EDGE) on behalf of Appalachian (Application ID: CS0003751, Permit ID:PER0002735). The timing of this application filing was discussed during the ISR, including with representatives of USFWS. The 30-day public comment period for the permit application was initiated by USFWS via public notice published in the Federal Register on April 28, 2021. Based on the date of publication, the 30-day public comment period, and anticipated time required for Appalachian's subconsultant to receive permit (if approved), Appalachian is unable to complete the Larval Drift Study, as proposed in the RSP. It is not possible to delay the start of the study to mid-June, as Roanoke Logperch will have completed their spawning season in the Roanoke River by then. Appalachian plans to consult with agencies and stakeholders in Q2 regarding potential alternatives or next steps for this study task.
- Field sampling for adult and young-of-year Roanoke Logperch will be completed between August and October 2021. A separate adult Roanoke Logperch sampling event is planned between May and June 2021 to determine if the adult life stage moves into the Niagara bypass channel during higher spring flow conditions. This sampling effort is pending the receipt of a waiver of time-of-year-restrictions (TOYR) in place for protection of Roanoke Logperch. A request for waiver of the TOYR was submitted to the Virginia Department of Wildlife Resources (VDWR) and USFWS by EDGE and HDR on behalf of Appalachian on March 29, 2021, and Appalachian has been in frequent communication with these agencies regarding the status of this request. Appalachian understands that the USFWS and VDWR held an informal virtual coordination meeting on April 23, 2021 to allow agency personnel to discuss the driver, needs, risks, and concerns with approving the TOYR waiver to facilitate spring 2021 field sampling studies. Conclusions of the meeting have not been shared with Appalachian, and coordination efforts concerning the waiver are ongoing at this time. Without the TOYR waiver approval, Appalachian will be unable to determine if adult Roanoke Logperch utilize the Niagara bypass channel, as requested by the USFWS during the study planning stage of this ILP.

- Appalachian will initiate the Turbine Blade Strike Evaluation for Niagara using the most recent version of the USFWS Turbine Blade Strike Analysis Model¹ and will also incorporate available historical information. A tentative list of species collected at the site to be used in the analysis was presented in the ISR. The analysis and reporting will be performed in Q2 2021 and results will be included in the USR.

Benthic Aquatic Resources Study

- Field data collection for the macroinvertebrate and crayfish community was completed between September and October 2020. Taxonomic identification of samples was completed in Q1 2021. Detailed results of the study and data analyses will be provided in the USR. A brief summary of the data is provided here:
 - Crayfish
 - i. A few Crayfish specimens representing a single family (Cambaridae) from the genus *Fraxonius* were collected at the farthest upstream and most downstream sampling locations.
 - Macroinvertebrates:
 - i. The total number of taxa collected at study sites was between 8 and 22; the lowest number of taxa (between 8 and 12 species) occurred in samples collected in the bypass channel.
 - ii. The diversity of the EPTs (Ephemeroptera, Plecoptera, Trichoptera) was consistently on the low end and varied between two and nine species. The largest diversity occurred at the farthest upstream riffle (Site NFQT2) in the study area. The density of EPT organisms varied between 5 and 65 organisms; the lowest densities were documented in the bypass reach and tailrace sample locations. No Plecoptera specimens were collected.
 - iii. Specimens from five families of Gastropods and two families of clams (Asian and Fingernail clams) were collected across the study area; these specimens had low relative abundance.
- A second benthic macroinvertebrate and crayfish field sampling effort is currently planned for spring 2021. Appalachian's consultant presently plans to complete the macroinvertebrate and crayfish sampling effort prior to the end of the spring

¹ U.S. Fish and Wildlife Service (USFWS). 2020. TBSA Model: A Desktop Tool for Estimating Mortality of Fish Entrained in Hydroelectric Turbines. Excel file dated December 9, 2020.

macroinvertebrate index period (May 31) as defined by VDEQ 2008. Appalachian has been informed by agencies that the TOYR waiver from USFWS and VDWR for the protection of Roanoke Logperch extends to this sampling effort as well. As described above for the Fish Community Study, Appalachian is actively pursuing this waiver request and coordination is ongoing with the USFWS and VDWR. In the absence of the TOYR waiver authorization, Appalachian will have to delay field sampling effort for the benthic macroinvertebrate and crayfish study until after the end of the TOYR window (June 30). Field sampling would then be initiated as soon as possible in July 2021, as conditions allow. Results of the laboratory processing, taxonomic identification, and data processing will be provided in the USR.

Recreation Study

- The Recreation Visitor Use Online Survey is on-going and will continue to be available in support of the Recreation Use Documentation survey.
- One of the facilities included in the Recreation Use Documentation task is the Roanoke River Overlook and Trail. Construction at the Blue Ridge Parkway is expected to begin in Q2 2021, which will force the trail to close; therefore, HDR's sub-consultant, Young Energy Services (YES) completed four in-person surveys at this facility ahead of schedule, including weekdays and weekends. The remainder of the facilities included in Recreation Use Documentation task will be surveyed by YES beginning in Q2 2021 according to the schedule presented in the RSP.
 - In the RSP, it was assumed that YES would obtain visitor use data from the Roanoke River Overlook and Trail and would also assess usage of the Project canoe portage since the put-in is located directly across the river and is visible from the end of the Roanoke River Trail. Closure of the Blue Ridge Parkway will, however, inhibit access to the Roanoke River Trail throughout the majority of the 2021 study season. As an alternative to in-person periodic observation of the portage from across the river, Appalachian plans to install a trail camera in the vicinity of the portage put-in location to record activity during the Recreation Use Documentation timeframe (May through October 2021).
- Appalachian hosted a virtual (WebEx) meeting on April 20, 2021 for interested recreation stakeholders. In addition to Appalachian and Appalachian's consultants (HDR and YES), the following entities participated in this meeting: Roanoke River Blueway Committee, Town of Vinton, Friends of the Rivers of Virginia (FORVA), Roanoke Valley Greenways, Virginia Department of Conservation and Recreation, Roanoke Regional Partnership, and Roanoke County. The meeting included presentations by Roanoke County, Roanoke River

Blueway Committee, and FORVA and provided updates on recreational initiatives, priorities, and recommendations from these organizations.

Cultural Resources Study

- Data collection for the Cultural Resources Study was completed in 2020 and summarized in the ISR. Appalachian completed the remaining fieldwork, the geomorphology survey, during the week of April 19, 2021. Complete results of this study will be filed with the USR.

If there are any questions regarding this progress report, please do not hesitate to contact me at (614) 716-2240 or via email at jmmagalski@aep.com

Sincerely,

A handwritten signature in black ink, reading "Jonathan M. Magalski". The signature is written in a cursive style with a large, stylized initial "J".

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

Yayac, Maggie

Subject: FW: Niagara Hydroelectric Project (VA) -- Filing of ILP Study Progress Report
Attachments: Niagara Third Quarterly Progress Report April 2021.pdf

From: Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>

Sent: Monday, May 3, 2021 5:24 PM

To: ACHP - John Eddins <jeddings@achp.gov>; Catawba Indian Nation - Wenonah Haire <caitlin.rogers@catawba.com>; County of Roanoke - David Henderson <dhenderson@roanokecountyva.gov>; County of Roanoke - Lindsay Webb <LWEBB@roanokecountyva.gov>; County of Roanoke - Michael Clark <Michael.Clark@roanokeva.gov>; County of Roanoke - Richard Caywood <rcaywood@roanokecountyva.gov>; Delaware Nation - Eric Paden <epaden@delawarenation-nsn.gov>; Friends of the Blue Ridge Parkway - Audrey Pearson <audrey_pearson@friendsbrp.org>; Friends of the Rivers of Virginia - Bill Tanger <riverdancer1943@gmail.com>; Harold Peterson <harold.peterson@bia.gov>; Kevin Colburn - American Whitewater (kevin@americanwhitewater.org) <kevin@americanwhitewater.org>; Monacan Indian Nation - Kenneth Branham <TribalOffice@MonacanNation.com>; NPS - Dawn Leonard <dawn_leonard@nps.gov>; Roanoke County Parks - Doug Blount <dblount@roanokecountyva.gov>; Roanoke Regional Partnership - Pete Eshelman <pete@roanoke.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>; 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 - Kenny Sledd <ksledd@vintonVA.gov>; Town of Vinton - Nathan McClung <nmcclung@vintonVA.gov>; Tri-County Lakes Administrative Commission - Paula Shoffner <paulas@sml.us.com>; 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 - Jennifer Wampler <jennifer.wampler@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 - Brian McGurk <Brian.McGurk@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>; 'ebparcell@aep.com' <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 third ILP Study Progress Report with the Commission on Friday, April 30. We are notifying stakeholders and distributing an electronic copy of this submittal (attached). The filing can also be viewed online at FERC's eLibrary and will be added to the Project's public relicensing website (<http://www.aephydro.com/HydroPlant/Niagara>) in the coming days.

Thank you for your continued interest in this Project. 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

Salazar, Margaret

Subject: FW: [EXTERNAL] RE: FW: Niagara Hydroelectric Project (FERC No. 2466) - ESSLog 23405-TOYR Waiver Request

From: Huddleston, Misty <Misty.Huddleston@hdrinc.com>

Sent: Monday, May 3, 2021 4:12 PM

To: McCloskey, John <john_mccloskey@fws.gov>

Cc: Fernald, Ray (DGIF) <ray.fernald@dwr.virginia.gov>; Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; Jonathan M Magalski <jmmagalski@aep.com>

Subject: RE: [EXTERNAL] RE: FW: Niagara Hydroelectric Project (FERC No. 2466) - ESSLog 23405- TOYR Waiver Request

John,

Thank you for the update on the waiver request. I will get started on coordinating a call with the individuals copied on this email correspondence, Dr. Paul Angermeier, and Jon Studio (Edge Engineering and Science).

I will be sending along an email sometime tomorrow with suggested time slots for this week as potential options for a group call.

Thanks,
Misty

Misty Huddleston, PhD
Associate, SR. Environmental Scientist
D 704.248.3614 M 865.556.9153

hdrinc.com/follow-us

From: McCloskey, John <john_mccloskey@fws.gov>

Sent: Monday, May 3, 2021 3:37 PM

To: Huddleston, Misty <Misty.Huddleston@hdrinc.com>

Cc: Fernald, Ray (DGIF) <ray.fernald@dwr.virginia.gov>; Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; Jonathan M Magalski <jmmagalski@aep.com>

Subject: Re: [EXTERNAL] RE: FW: Niagara Hydroelectric Project (FERC No. 2466) - ESSLog 23405- TOYR Waiver Request

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,

The resource agencies are requesting a call to discuss the request for a TOYR waiver to conduct benthic macroinvertebrate samples and perform spring adult RLP surveys in the bypass reach using electrofishing. The RLP experts with the resource agencies had a call on April 23, and we have reached an agreement on a path forward. We would appreciate if you could set up a call for everyone to talk so we can reach resolution on this issue. The resource agencies ask that Dr. Paul Angermeier (copied) also be included on the invite because of his expertise in RLP surveys.

Thanks, 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

Work cell (while teleworking): 757-378-8410

Visit us at <http://www.fws.gov/northeast/virginiafield>

From: Huddleston, Misty <Misty.Huddleston@hdrinc.com>

Sent: Monday, April 12, 2021 4:23 PM

To: Aschenbach, Ernst <ernie.aschenbach@dwr.virginia.gov>; rr dgif-Collection Permits <collectionpermits@dwr.virginia.gov>; jastudio@edge-es.com <jastudio@edge-es.com>; jpspaeth@edge-es.com <jpspaeth@edge-es.com>; Amy Ewing <amy.ewing@dwr.virginia.gov>; Scott Smith <scott.smith@dwr.virginia.gov>; Pinder, Mike (DGIF) <mike.pinder@dwr.virginia.gov>; Watson, Brian (DGIF) <brian.watson@dgif.virginia.gov>; McCloskey, John <john_mccloskey@fws.gov>; Harris, Johnathan (DGIF) <johnathan.harris@dwr.virginia.gov>; ProjectReview (DGIF) <projectreview@dwr.virginia.gov>; Hoskin, Sumalee <sumalee_hoskin@fws.gov>; McCorkle, Richard <richard_mccorkle@fws.gov>; shirl.dressler@dwr.virginia.gov <shirl.dressler@dwr.virginia.gov>

Cc: Fernald, Ray (DGIF) <ray.fernald@dwr.virginia.gov>; Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; Jonathan M Magalski <jmmagalski@aep.com>

Subject: [EXTERNAL] RE: FW: Niagara Hydroelectric Project (FERC No. 2466) - ESSLog 23405- TOYR Waiver Request

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

Ernie,

Thanks for speaking with me last Friday regarding the request for a time-of-year-restriction (TOYR) waiver that HDR and Edge Engineering and Science (EDGE) submitted on behalf of Appalachian Power Company (Appalachian), a unit of American Electric Power for the Niagara Hydroelectric Project (Project; FERC # 2466), located on the Roanoke River in

Roanoke County, Virginia. Based on our discussion, I am providing additional background information to support the waiver request.

Background:

Appalachian is pursuing a license renewal under the FERC Integrated Licensing Process. Detailed information on the proposed sampling methods for both the macroinvertebrate and adult RLP studies are provided in the Project Revised Study Plan and the FERC Study Plan Determination; available on the FERC e-library under Project No. 2466 or at the Appalachian Project website: <http://www.aephydro.com/HydroPlant/Niagara>.

Appalachian coordinated with Virginia Department of Wildlife Resources (VDWR) and U.S. Fish and Wildlife Service (USFWS) for the proposed studies during development of the Proposed Study Plan, scoping, and development of the Revised Study Plan. During a September 25, 2019 scoping call (see attachment dated 9/25/2019), Rick McCorkle (USFWS), Scott Smith (VDWR), and Paul Angermeier (Virginia Tech University) agreed that a spring survey for adult RLP in the bypass reach would help determine:

1. Presence of suitable habitat for adult RLP use during higher spring flows; and
2. Utilization of available habitat by adult RLP during higher spring flows.

Based on input during that call, the group agreed that the use of snorkeling methods to perform the adult RLP survey within the bypass reach would present safety risks, as the study goal is to determine if adult RLP are moving into and utilizing potential habitat created by Project spill into the bypass reach during spring months. The flows that we need to evaluate within the bypass reach in order to answer the study questions are likely not conducive to completing a safe and effective snorkel survey. As such, the need for a TOYR waiver was discussed during the September 25, 2019 coordination call, and the Revised Study Plan indicated that completion of spring sampling for the macroinvertebrate study and adult RLP study were contingent on receiving a waiver of the TOYR.

Purpose and Need:

The TOYR waiver is needed to support spring field sampling efforts for:

1. A benthic macroinvertebrate study; and
2. Field sampling of the bypass reach to determine if adult Roanoke Logperch (RLP) are moving into and potentially using the bypass reach during this higher flow period.

Methods:

1. The proposed benthic macroinvertebrate sampling effort would:
 - a. Consist of qualitative and quantitative sample collection;
 - b. Use sampling equipment and techniques that are consistent with Virginia Department of Environmental Quality (2008) sampling protocols; and
 - c. Be performed according to the Revised Study Plan (including revisions based on the FERC Study Plan Determination and input from VDWR and USFWS).
2. The proposed adult RLP sampling effort would:
 - a. Target the Niagara bypass reach during higher spring flows;

- b. Target available RLP habitat located in the lower portion of the bypass reach;
- c. Utilize backpack electrofishing methods;
- d. Include fish standard length and a photograph of collected RLP, followed by their immediate release as near as possible to the site of collection.

Let me know if there is interest/need for a group call to discuss this topic or if there is additional information that is needed to respond to our request for a TOYR waiver for either the macroinvertebrate study or the adult Roanoke Logperch sampling effort.

Thanks,

Misty

Misty Huddleston, PhD

Associate, SR. Environmental Scientist
D 704.248.3614 M 865.556.9153

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From: Aschenbach, Ernst <ernie.aschenbach@dwr.virginia.gov>

Sent: Friday, April 9, 2021 2:10 PM

To: Huddleston, Misty <Misty.Huddleston@hdrinc.com>; rr dgif-Collection Permits <collectionpermits@dwr.virginia.gov>; jastudio@edge-es.com; jpspaeth@edge-es.com; Amy Ewing <amy.ewing@dwr.virginia.gov>; Scott Smith <scott.smith@dwr.virginia.gov>; Ernst Aschenbach <ernie.aschenbach@dwr.virginia.gov>; Pinder, Mike (DGIF) <mike.pinder@dwr.virginia.gov>; Watson, Brian (DGIF) <brian.watson@dwr.virginia.gov>; McCloskey, John <john_mccloskey@fws.gov>; Harris, Johnathan (DGIF) <johnathan.harris@dwr.virginia.gov>; ProjectReview (DGIF) <projectreview@dwr.virginia.gov>; Sumalee Hoskin <sumalee_hoskin@fws.gov>

Cc: Fernald, Ray (DGIF) <ray.fernald@dwr.virginia.gov>

Subject: Re: FW: Niagara Hydroelectric Project (FERC No. 2466) - 2021 Field Sampling TOYR Waiver Request

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.

ESSLog 23405; Niagara Study relicensing study schedule

Misty et al.,

Hello!

I forwarded via separate email a recent email update was forwarded to me. Some of you may have already received this information.

Via (that separate) email clarifying that USFWS has not issued a waiver -- the USFWS recommendation regarding FESE Roanoke logperch TOYR and electroshocking is:

- **Electroshocking for adults** – should only occur after they have first started with snorkeling and RLP have not been caught or they can provide evidence that snorkeling is not working. No electroshocking within the RLP time-of-year restrictions (March 15-June30).
- Based on this recent update, DWR supports this recommendation.
- DWR-Collection Permits, Shirl Dressler-Setzer also notified you not to proceed.

If the DWR-collection permittees, DWR- and/or USFWS staff have additional questions, clarification, or comments pertaining to the proposed study schedule, please advise (by responding to all and forwarding as appropriate). This will help ensure pertinent information reaches those who need it. Any remaining concerns will need to be addressed as appropriate.

I do not recall being part of the previous discussions pertaining to the proposed study and schedule. Nevertheless, after receiving additional information, I will continue to try to help facilitate resolution, if necessary. I will try to call you.

Thanks.

Please note the Department of Wildlife Resources (DWR) new email addresses end in @dwr.virginia.gov



Ernie Aschenbach

Environmental Services Biologist

P 804.367.2733

Email: Ernie.Aschenbach@dwr.virginia.gov

Virginia Department of Wildlife Resources

CONSERVE. CONNECT. PROTECT.

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FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, DC 20426
May 10, 2021

OFFICE OF ENERGY PROJECTS

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

VIA Electronic Mail

Mr. Jonathan Magalski
Environmental Specialist Consultant
American Electric Power
jmmagalski@aep.com

Reference: Determination on Requests for Study Modifications for the Niagara Hydroelectric Project

Dear Mr. Magalski:

Pursuant to 18 C.F.R. § 5.15 of the Commission's regulations, this letter contains the determination on requests for modifications to the approved study plan for Appalachian Power Company's (Appalachian) Niagara Hydroelectric Project No. 2466 (Niagara Project). The determination is based on the study criteria set forth in sections 5.9(b) and 5.15(d) and (e) of the Commission's regulations, applicable law, Commission policy and practice, and Commission staff's review of the record of information.

Background

The study plan determination (SPD) for the project, issued on December 6, 2019, required Appalachian to conduct eight studies and file an initial study report on those studies. On January 11, 2021, Appalachian filed the initial study report. As required by the regulations, the report describes the progress made in implementing the study plan and includes an explanation of reported variances from the study plan and schedule. On January 21, 2021, Appalachian held an Initial Study Report meeting and filed a summary of the meeting on February 5, 2021. Comments on the meeting summary and Initial Study Report were filed by: Roanoke County on March 4, 2021; Roanoke Regional Partnership and Roanoke River Blueway Committee on March 5, 2021; and Roanoke Valley Greenway Commission, Virginia Department of Environmental Quality (Virginia

DEQ), and the U.S. Fish and Wildlife Service (FWS) on March 8, 2021. Appalachian filed reply comments on April 6, 2021.

Comments

Some of the comments received do not specifically request modifications to the approved studies or new studies. This determination does not address these types of responses, which include comments on the presentation of data and results; comments disputing the interpretation of study results; recommendations for protection, mitigation, or enhancement measures; and comments on issues that Commission staff previously addressed in the December 6, 2019 SPD. This determination only addresses specific recommendations to modify the approved study plan.

Study Plan Determination

Pursuant to section 5.15(d) of the Commission's regulations, any proposal to modify a required study must be accompanied by a showing of good cause, and must demonstrate that: (1) the approved study was not conducted as provided for in the approved study plan, or (2) the study was conducted under anomalous environmental conditions or that environmental conditions have changed in a material way. As specified in section 5.15(e), requests for new information gathering or studies must include a statement explaining: (1) any material change in law or regulations applicable to the information request, (2) why the goals and objectives of the approved study could not be met with the approved study methodology, (3) why the request was not made earlier, (4) significant changes in the project proposal or that significant new information material to the study objectives has become available, and (5) why the new study request satisfies the study criteria in section 5.9(b).

As indicated in Appendix A, modifications to two studies were requested; one of the requested modifications is approved and one is not required. The bases for modifying the study plan are explained in Appendix B (Requested Modifications to Approved Studies). Commission staff considered all study plan criteria in section 5.9 of the Commission's regulations; however, only the specific study criteria particularly relevant to the study in question are referenced in Appendix B.

Please note that nothing in this determination is intended, in any way, to limit any agency's proper exercise of its independent statutory authority to require additional studies.

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

Sincerely,

Terry L. Turpin
Director
Office of Energy Projects

Enclosures: Appendix A – Summary of determinations on requested modifications to approved studies

Appendix B – Commission staff's recommendations on requested modifications to approved studies and new study requests

APPENDIX A

SUMMARY OF DETERMINATIONS ON REQUESTED MODIFICATIONS TO APPROVED STUDIES (see Appendix B for discussion)

Study	Recommending Entity	Approved	Approved with Modifications	Not Required
Requested Modifications to Approved Studies				
<i>Water Quality Study</i>	FWS, Virginia DEQ		X	
<i>Benthic Aquatic Resources Study</i>	FWS			X

APPENDIX B

STAFF RECOMMENDATIONS ON REQUESTED MODIFICATIONS TO APPROVED STUDIES AND NEW STUDY REQUESTS

Water Quality Study

Background

Appalachian conducted a water quality study to assess the effects of project operation on parameters including temperature and dissolved oxygen (DO). Continuously recording data sondes were placed at eight sites to measure temperature and DO at 15-minute intervals from July 29 through November 10, 2020. These sites included: (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 (surface and bottom); (5) the upper bypassed reach; (6) the lower bypassed reach; and (7) the tailrace (see figure 3-1 of the *Preliminary Water Quality Study Report*). In addition, during the initial deployment and subsequent data download events, discrete multi-parameter water quality measurements of temperature, DO, pH, and specific conductivity were collected at each monitoring location, including vertical profiles at the sites in the impoundment and forebay.

Due to higher than average flows for much of the 2020 study season, which could have led to atypical temperature and DO conditions, Appalachian proposes to reinstall two continuously recording sondes in the bypassed reach and one sonde in the tailrace to measure temperature and DO from July through September of 2021.

Requested Study Modifications

Study modification requests were filed by the U.S. Fish and Wildlife Service (FWS) and by the Virginia Department of Environmental Quality (Virginia DEQ). We address the requested modifications separately below.

1. Additional study season

Requested Study Modification

In its comments on the Initial Study Report (ISR) meeting summary, FWS recommends that the entire Water Quality Study be repeated in 2021. FWS states that an additional study season is needed because data were not collected or available for approximately 50% of the planned 2020 study period, data that were collected are not representative of normal conditions at the project because precipitation and flow conditions were higher than average in 2020, and the data that were collected for

approximately 2 months (September 8 through November 10) cannot be used to assess project operational effects on water quality because the project was not operating during this period.

Comments on Requested Study Modification

In its reply comments, Appalachian states that it agrees that flow conditions in 2020 were wetter than normal, but that the wetter than normal conditions only affected temperature and DO in the bypassed reach and tailrace, but not in the forebay, impoundment, and upstream of the impoundment.

Regarding the forebay water quality monitoring, Appalachian asserts that the 2020 forebay water quality data represent water quality for the “worst-case” scenario, because 100 percent of the inflow to the project in the late summer/fall of 2020 was routed into the bypassed reach rather than through the forebay and powerhouse. Therefore, the forebay was stagnant and subject to poor water quality caused by water temperature and DO stratification. Appalachian asserts that during a more typical year when the units are operating, temperature and DO stratification in the forebay area is minimized because flow is routed to the powerhouse. Therefore, in lieu of conducting additional continuous monitoring in the forebay, Appalachian proposes to collect water quality profile data (temperature, DO, pH, and specific conductivity) at the forebay monitoring location when it conducts equipment checks and data downloads for the bypassed reach and tailrace monitoring locations (i.e., approximately every 2 weeks).

Regarding the need for additional monitoring in the impoundment and further upstream, Appalachian states that it reviewed the historical water quality record for the U.S. Geological Survey (USGS) gage on the Roanoke River at Thirteenth Street Bridge (No. 02055080), which is at the upstream end of the project impoundment. Appalachian observed that since at least 2008, which was the third driest year on record, water quality has been relatively constant regardless of flow and precipitation. Appalachian therefore concludes that water quality data collected in the impoundment and further upstream in 2020 are representative of water quality at and near the project under very low- and high-flow conditions. In lieu of reinstalling continuously recording sondes in the upper end of the impoundment, Tinker Creek, and the Roanoke River upstream of the confluence with Tinker Creek, Appalachian proposes to include 2021 water quality data (temperature, DO, pH, and specific conductivity) recorded at both the Thirteenth Street Bridge USGS gage and USGS gage at Tinker Creek above Glade Creek (USGS 0205551614) in the Updated Study Report (USR).

Discussion and Staff Recommendation

Additional water quality monitoring in the project tailrace and bypassed reach is warranted given the abnormal flow conditions downstream of the project dam during the

2020 study season as described above. The additional continuous DO and temperature monitoring proposed for the tailrace and bypassed reach should provide sufficient information on the effects of project operation on bypassed reach and tailrace DO and temperature.

Regarding the need to resample the forebay in 2021, data provided in the ISR demonstrates that while the project was operating, temperature and DO were similar at the surface and bottom of the forebay confirming Appalachian's assertion that little to no temperature and DO stratification occurs while the project is generating. The data also show that during the first week of the powerhouse outage, DO decreased in the forebay, particularly at the bottom confirming that DO stratification occurs when the project does not operate for an extended period as occurred in 2020. Therefore, the forebay water quality data gathered in 2020 during an extended period of powerhouse shutdown does represent the "worst-case" scenario, and therefore, another full season of continuous water quality monitoring in the forebay is unnecessary. The proposed discrete, biweekly collection of water quality data in the forebay in 2021 would require relatively low effort and could be used to confirm the aforementioned conclusions reached from the 2020 data collection.

Due to the proximity of the USGS gages to the upper extent of the project impoundment, Appalachian's proposal to analyze 2021 continuous monitoring data from the USGS gages rather than re-installing its own sondes at the three most upstream locations is reasonable, particularly since the powerhouse outage is unlikely to have influenced water quality at the upstream locations as demonstrated above by Appalachian. Therefore, we concur with Appalachian's proposal to include 2021 water quality monitoring data from the two upstream USGS gages in the USR in lieu of conducting additional water quality monitoring in the impoundment and further upstream.

In summary, we recommend that Appalachian conduct the proposed continuous monitoring in the bypassed reach and tailrace in 2021, as well as the discrete, biweekly collection of water quality data in the forebay. Therefore, we do not recommend modifying the study plan to repeat continuous water quality monitoring at the three upstream or forebay monitoring locations.

2. Length of study season

Requested Study Modification

Virginia DEQ and FWS recommend that temperature and DO monitoring in the bypassed reach be extended through October 2021 to ensure that water quality during low-flow periods is captured.

Comments on Requested Study Modification

In its reply comments, Appalachian states that due to the effort and costs associated with extending the field sampling for an additional month, it proposes to only extend the sampling through October if water temperatures do not begin decreasing by the end of September. Appalachian further states that it does not believe that continued sampling in the bypassed reach beyond September is needed unless no water temperature and DO data are collected at the currently required bypassed reach minimum flow of 8 cfs during the July through September period and weather forecasts indicate that bypassed reach flows of about 8 cfs are likely in October.

Discussion and Staff Recommendation

The study plan determination (SPD) required water quality monitoring through October 31, 2020, based on historical data indicating that low-flow conditions in the Roanoke River often extend into October. As Appalachian acknowledges, flows in the bypassed reach during the 2020 water quality study season were not representative of typical conditions at the project, in part due to the inoperability (i.e., held in constant open position) of the trash sluice gate and the extended powerhouse outage. Therefore, monitoring through October would ensure that Appalachian captures the entire period where low flows and/or high temperatures may occur, which is necessary to inform potential license requirements. Therefore, consistent with the SPD, we do not agree with the triggers for monitoring through October as proposed by Appalachian and instead recommend that the continuous monitoring in the bypassed reach and tailrace continue through October 31 during the 2021 study season.

3. Equipment maintenance

Requested Study Modification

FWS recommends that Appalachian check and clean data sondes weekly during the 2021 study season to avoid the loss of water quality data from biofouling.

Comments on Requested Study Modification

Appalachian proposes to download the data and check and clean the data sondes at approximately 2-week intervals and would adjust accordingly depending on the degree of biofouling observed in the field. In its reply comments, Appalachian states that the chosen frequency of equipment checks is based on observations during the 2020 field season. Biofouling was less prevalent at the non-impoundment monitoring locations during the 2020 data collection, and performing cleaning on a weekly basis is unnecessary and would result in a significant increase in cost and effort.

Discussion and Staff Recommendation

While biofouling of the data sondes resulted in some data loss in 2020, as Appalachian noted, it was less of an issue at the downstream locations that Appalachian is required to study again in 2021. Appalachian's proposal to check and clean the data sondes at 2-week intervals and to adjust as needed is reasonable and should be frequent enough to ensure the data sondes continue to operate. We recommend that Appalachian increase the frequency to weekly only if biofouling is found to hamper data collection.

Benthic Aquatic Resources Study

Freshwater Mussel Survey

Background

As part of the Benthic Aquatic Resources Study, Appalachian conducted a freshwater mussel survey to characterize mussel habitat and community composition in the project area in the fall of 2020. A combination of transect and abbreviated surveys were conducted following methods modified from the "Draft Freshwater Mussel Guidelines for Virginia."^{1,2} Transect surveys were performed at eight sites spaced every 500 meters within the impoundment and immediately upstream of the impoundment. Linear transects were established across the width of the impoundment, perpendicular to stream flow, and ranged from 30 to 75 meters in length. Surveyors searched transects for mussels at an approximate rate of one minute per square meter in heterogeneous substrates. Methods used to locate mussels included wafting and raking sediment, searching through aquatic vegetation, and overturning cobble, boulder, and woody debris. No live mussels were recorded in the transect surveys.

Surveys were also conducted in five reaches of riffle and/or run habitats ranging from 315 to 500 meters in length in: (1) Tinker Creek, (2) Wolf Creek, (3) the Roanoke River upstream of the impoundment, (4) the bypassed reach, and (5) below the tailrace using viewscopes, snorkeling, and surface supplied air.³ Surveyors targeted habitat(s)

¹ FWS and Virginia DGIF. 2018. Draft Freshwater Mussel Guidelines for Virginia. Virginia Field Office, Gloucester, Virginia.

² Transect surveys were conducted in pool habitats and include searching all habitat along the entire length, while abbreviated surveys were conducted at sites with mixed habitat and included searching for mussels in suitable habitat throughout the site.

³ The use of surface supplied air is a sampling technique whereby the diver is supplied breathing gas from the surface, either from the shore or from a diving support vessel.

suitable for the occurrence of freshwater mussels and searched those areas at an approximate rate of one minute per square meter in heterogeneous substrates using similar methods as those used in the transect surveys. A total of four Eastern Elliptio (*Elliptio complanata*) were observed and collected during the abbreviated surveys in Tinker Creek and the Roanoke River upstream of the impoundment.

Requested Study Modification

In its comments on the ISR meeting summary, FWS notes that there is a large riffle at the lower extent of the most downstream survey area (“UNIO-Tailrace Survey Area”) that includes a continuous area of stable gravel/cobble substrate and may represent the beginning of suitable mussel habitat that was not surveyed. In addition, FWS states that the location of the UNIO-Tailrace Survey Area differs from the location proposed in the approved study plan. Specifically, the UNIO-Tailrace Survey Area was to start 500 meters downstream of the tailrace and extend a distance of 500 meters to a point 1,000 meters downstream of the tailrace. However, figure 1 in the Benthic Aquatic Resources Study Report shows the UNIO-Tailrace Survey Area started approximately 375 meters rather than 500 meters downstream of the tailrace with the result that the survey ended 875 meters instead of 1,000 meters downstream of the tailrace. FWS states that this appears to have resulted in the first area of suitable mussel habitat not being surveyed and recommends that an additional 500 meters of area below that which was surveyed in 2020 be surveyed for freshwater mussels in 2021.

Comments on Requested Study Modification

In its reply comments, Appalachian states that the figure in the ISR illustrating the UNIO-Tailrace Survey Area contained an outdated shapefile created during the study planning process and did not accurately represent the area that was actually surveyed. In its response comments, Appalachian provided new figures illustrating the correct location and extent of the UNIO-Tailrace Survey Area that was evaluated during the 2020 field effort. The revised figures show that the survey was initiated approximately 500 meters downstream of the tailrace and extended 500 meters downstream, thereby covering the full extent delineated in the approved study plan. Appalachian states that it is not proposing to conduct additional mussel surveys as requested by FWS because the sampling locations and survey methodology were developed in consultation with staff from the Virginia Department of Wildlife Resources, the results of the 2020 survey indicate mussel density and diversity in the Roanoke River near the project is very low, and that the requested expanded area is beyond the extent of hydraulic influence of project operations.

Discussion and Staff Recommendation

The additional information provided by Appalachian in its reply comments indicates that it surveyed the full extent of the survey area as proposed in the approved study plan. In addition, while additional suitable mussel habitat may be located further downstream than the area surveyed in 2020, there is no reason to conclude that project operation would affect areas more than 1,000 meters downstream of the tailrace. FWS does not demonstrate the nexus between project operation and freshwater mussel resources in the Roanoke River more than 1,000 meters downstream of the tailrace or explain how the additional mussel survey would inform potential license requirements [section 5.9(b)(5)]. Therefore, we do not recommend modifying the study to require Appalachian to conduct an additional freshwater mussel survey downstream of the project.

Yayac, Maggie

Subject: FW: RE: TOYR Waiver for Macroinvertebrate Study at Niagara Hydroelectric Project

From: Huddleston, Misty <Misty.Huddleston@hdrinc.com>

Sent: Monday, May 10, 2021 4:42 PM

To: McCloskey, John <john_mccloskey@fws.gov>

Cc: Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; jon Studio (jastudio@edge-es.com) <jastudio@edge-es.com>; Jonathan M Magalski <jmmagalski@aep.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>

Subject: RE: TOYR Waiver for Macroinvertebrate Study at Niagara Hydroelectric Project

Mr. McCloskey,

Good afternoon.

Based on discussions during our group call last week, the Virginia Department of Wildlife Resources and US Fish and Wildlife Service were in agreement that there were no concerns with Appalachian completing the spring benthic macroinvertebrate sampling activities at the Niagara Project. At the end of the call, you took the action item to send over something to Appalachian and HDR that provides documentation of the Service's waiver of the time-of-year-restrictions for Roanoke River instream work during the Niagara Logperch spawning season. If there is not a formal document that is required, can you provide confirmation via email?

The spring index period for benthic macroinvertebrate sampling in Virginia ends on May 31st, so we would like to get the field team scheduled to get in the field as soon as possible.

Can you provide an update on the status of the waiver request? Alternatively, can you reply with your concurrence that Appalachian is granted a waiver of the time-of-year-restrictions on instream work and can move forward with completing the benthic macroinvertebrate spring field sampling, as proposed in the Niagara Project Revised Study Plan?

Again we appreciate the great discussion on the call last week and look forward to hearing from you.

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

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Yayac, Maggie

Subject: FW: [EXTERNAL] RE: RSVP for May 25 Racine Updated Study Report Meeting

From: McCloskey, John <john_mccloskey@fws.gov>
Sent: Thursday, May 13, 2021 1:20 PM
To: Jonathan M Magalski <jmmagalski@aep.com>
Cc: McCorkle, Richard <richard_mccorkle@fws.gov>
Subject: Re: [EXTERNAL] RE: RSVP for May 25 Racine Updated Study Report Meeting

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Hi Jon,

I am still working on the waiver. It is more complicated than I thought it would be. I hope to get this issue resolved soon. When I do, I will let you know.

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
Work cell (while teleworking): 757-378-8410

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From: Jonathan M Magalski <jmmagalski@aep.com>
Sent: Thursday, May 13, 2021 11:15 AM
To: McCloskey, John <john_mccloskey@fws.gov>
Cc: McCorkle, Richard <richard_mccorkle@fws.gov>
Subject: [EXTERNAL] RE: RSVP for May 25 Racine Updated Study Report Meeting

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Thanks, John. I'll add you to the meeting invite.

On another note, has any additional consideration been given to the TOYR for the macroinvertebrate sampling at Niagara? HDR and Edge are looking at scheduling the sampling in conjunction with some sampling at another project. Confirmation of the waiver for the macroinvertebrate sampling is much appreciated. Please let me know if you have questions or would like to have a call to discuss.

From: McCloskey, John <john_mccloskey@fws.gov>
Sent: Thursday, May 13, 2021 10:15 AM
To: Jonathan M Magalski <jmmagalski@aep.com>
Cc: McCorkle, Richard <richard_mccorkle@fws.gov>
Subject: [EXTERNAL] RSVP for May 25 Racine Updated Study Report Meeting

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Jon,

Confirming that I am planning to participate in the May 25 Racine USR WebEx Meeting from 1-4 p.m.

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

Work cell (while teleworking): 757-378-8410

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Subject: FW: [EXTERNAL] RE: TOYR Waiver for Macroinvertebrate Study at Niagara Hydroelectric Project
Attachments: Niagara Benthic Sample Sites.jpg

From: Huddleston, Misty <Misty.Huddleston@hdrinc.com>
Sent: Friday, May 21, 2021 5:42 PM
To: McCloskey, John <john_mccloskey@fws.gov>
Cc: Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; jon Studio (jastudio@edge-es.com) <jastudio@edge-es.com>; Jonathan M Magalski <jmmagalski@aep.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>
Subject: RE: [EXTERNAL] RE: TOYR Waiver for Macroinvertebrate Study at Niagara Hydroelectric Project

John,
Thank you for the follow-up email.
See below for responses to the questions your provided.

- How often will sampling occur? [Sampling will occur over a two day period as soon as we have the TOYR waiver approval.](#)
- How much foot traffic along the streambed is expected? [During sampling, only one person will be in the water.](#)
- How many people will be walking through the habitat? [Only one person. All travel between sites will occur on shore or by canoe to avoid disturbing the streambed to the maximum extent possible.](#)
- How many sites will be sampled? [10 total sites \(100 meter transect each\) with 5 located in riffle/run \(quantitative\) habitat and 5 in pool \(qualitative\) habitat. See attached Figure illustrating proposed sampling locations.](#)
- Exactly what methods they're using? [Sampling will be performed following methods detailed in the Virginia Department of Environmental Quality \(VDEQ\). 2008. Biological Monitoring Program Quality Assurance Project Plan for Wadeable Streams and Rivers. Quantitative and Qualitative methods may include kick nets, dipnets, rock picking, and limited seine hauls to target crayfish.](#)

[Additional details regarding the Project and the proposed sampling effort can be found in the Revised Study Plan at the follow link:](#)
<http://www.aephydro.com/HydroPlant/Niagara>

Let us know if there is anything else needed to process this request.
Thanks and have a nice weekend,
Misty

Misty Huddleston, PhD
Associate, SR. Environmental Scientist
D 704.248.3614 M 865.556.9153

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From: McCloskey, John <john_mccloskey@fws.gov>
Sent: Friday, May 21, 2021 1:10 PM
To: Huddleston, Misty <Misty.Huddleston@hdrinc.com>
Cc: Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; jon Studio (jastudio@edge-es.com) <jastudio@edge-es.com>; Jonathan M Magalski <jmmagalski@aep.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>
Subject: Re: [EXTERNAL] RE: TOYR Waiver for Macroinvertebrate Study at Niagara Hydroelectric Project

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Misty,

I discussed the benthic macroinvertebrate study with the endangered species lead for the Roanoke logperch and she needs additional information to determine whether the benthic sampling is likely or not likely to adversely affect RLP. Her request is below:

Understanding the specific project details such as the magnitude, timing, and duration of the impact will help us with our determination. If you have the answers to questions below that will help us understand the impact and ensure a LAA determination is appropriate.

- How often will sampling occur?
- How much foot traffic along the streambed is expected?
- How many sites will be sampled?
- How many people will be walking through the habitat?
- Exactly what methods they're using?

Once you have provided this additional information, she will make a determination on whether or not the sampling is likely to adversely affect RLP and decide whether a waiver can be granted.

John.

John McCloskey

Fish and Wildlife Biologist

U.S. Fish and Wildlife Service

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F: (804) 693-9032

Work cell (while teleworking): 757-378-8410

Visit us at <http://www.fws.gov/northeast/virginiafield>

From: Huddleston, Misty <Misty.Huddleston@hdrinc.com>

Sent: Monday, May 10, 2021 4:42 PM

To: McCloskey, John <john_mccloskey@fws.gov>

Cc: Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; jon Studio (jastudio@edge-es.com) <jastudio@edge-es.com>; Jonathan M

Magalski <jmmagalski@aep.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>

Subject: [EXTERNAL] RE: TOYR Waiver for Macroinvertebrate Study at Niagara Hydroelectric Project

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Mr. McCloskey,

Good afternoon.

Based on discussions during our group call last week, the Virginia Department of Wildlife Resources and US Fish and Wildlife Service were in agreement that there were no concerns with Appalachian completing the spring benthic macroinvertebrate sampling activities at the Niagara Project. At the end of the call, you took the action item to send over something to Appalachian and HDR that provides documentation of the Service's waiver of the time-of-year-restrictions for Roanoke River instream work during the Niagara Logperch spawning season. If there is not a formal document that is required, can you provide confirmation via email?

The spring index period for benthic macroinvertebrate sampling in Virginia ends on May 31st, so we would like to get the field team scheduled to get in the field as soon as possible.

Can you provide an update on the status of the waiver request? Alternatively, can you reply with your concurrence that Appalachian is granted a waiver of the time-of-year-restrictions on instream work and can move forward with completing the benthic macroinvertebrate spring field sampling, as proposed in the Niagara Project Revised Study Plan?

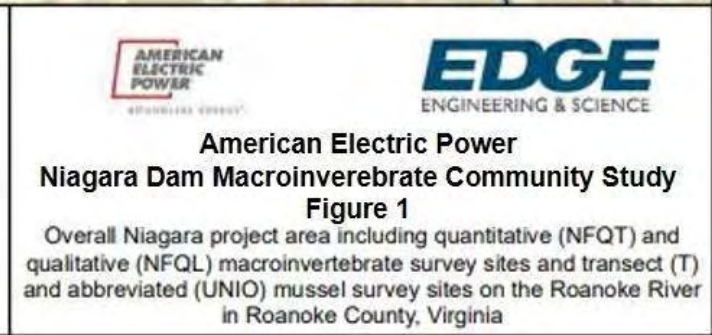
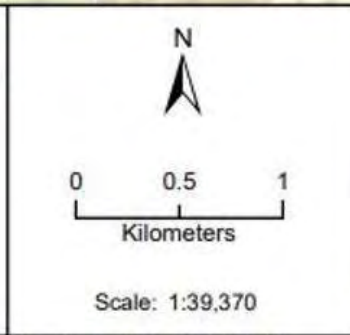
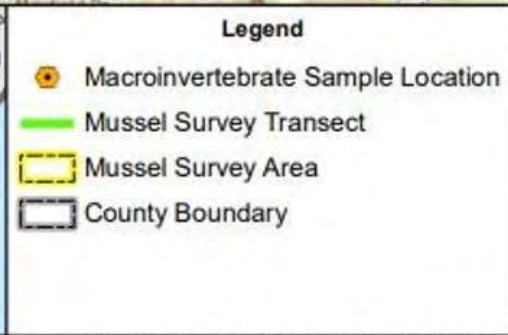
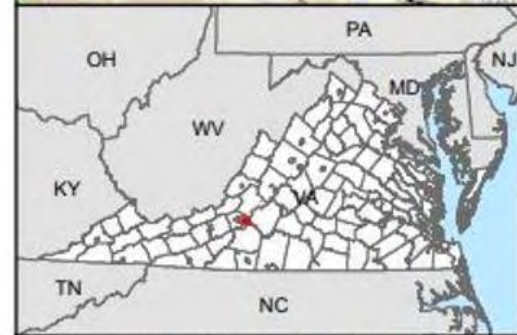
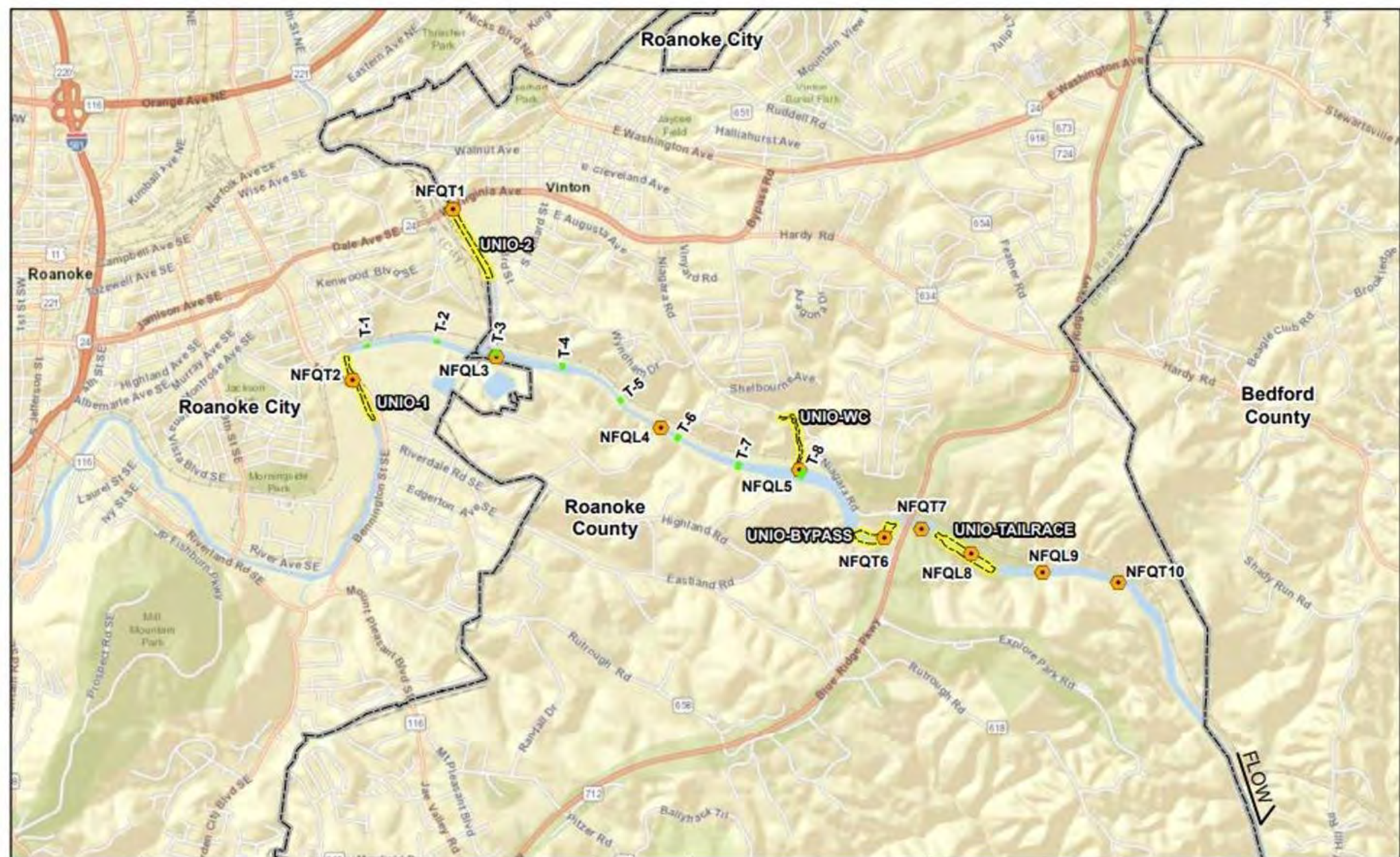
Again we appreciate the great discussion on the call last week and look forward to hearing from you.

Regards,
Misty

Misty Huddleston, PhD
Associate, SR. Environmental Scientist

HDR
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From: [Hoskin, Sumalee](#)
To: [Huddleston, Misty](#)
Cc: [Andersen, Troy M](#); [McCloskey, John](#); [McCorkle, Richard](#); [Jon Studio](#); [Kulpa, Sarah](#); [Jonathan M Magalski](#); [Yayac, Maggie](#)
Subject: RE: [EXTERNAL] RE: Macroinvertebrate Study at Niagara Hydro Project during RLP TOYR
Date: Wednesday, May 26, 2021 1:00:07 PM

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Misty,

To clarify, there is no such thing as a "TOYR waiver" your project, as described, is not likely to adversely affect the Roanoke logperch therefore it can proceed.

Sumalee

~~~~~  
Sumalee Hoskin  
US Fish & Wildlife Service  
[6669 Short Lane](#)  
[Gloucester, VA 23061](#)

sumalee\_hoskin@fws.gov  
Tel: 804-693-6694 ex. 2414  
Fax: 804-693-9032  
Visit us at <http://www.fws.gov/northeast/virginiafield/>

---

**From:** Huddleston, Misty <Misty.Huddleston@hdrinc.com>  
**Sent:** Wednesday, May 26, 2021 12:55 PM  
**To:** Hoskin, Sumalee <sumalee\_hoskin@fws.gov>  
**Cc:** Andersen, Troy M <troy\_andersen@fws.gov>; McCloskey, John <john\_mccloskey@fws.gov>; McCorkle, Richard <richard\_mccorkle@fws.gov>; Jon Studio <jastudio@edge-es.com>; Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; Jonathan M Magalski <jmmagalski@aep.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>  
**Subject:** [EXTERNAL] RE: Macroinvertebrate Study at Niagara Hydro Project during RLP TOYR

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Sumalee,  
Thank for the information.

Can you confirm that this email transmittal serves as the "waiver of TOYR" for Roanoke Logperch



and that we are allowed to proceed with the macroinvertebrate sampling effort? Thanks,  
Misty

Misty Huddleston, PhD  
Associate, SR. Environmental Scientist  
D 704.248.3614 M 865.556.9153

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---

**From:** Hoskin, Sumalee <[sumalee\\_hoskin@fws.gov](mailto:sumalee_hoskin@fws.gov)>  
**Sent:** Wednesday, May 26, 2021 12:51 PM  
**To:** Huddleston, Misty <[Misty.Huddleston@hdrinc.com](mailto:Misty.Huddleston@hdrinc.com)>  
**Cc:** Andersen, Troy M <[troy\\_andersen@fws.gov](mailto:troy_andersen@fws.gov)>; McCloskey, John <[john\\_mccloskey@fws.gov](mailto:john_mccloskey@fws.gov)>;  
McCorkle, Richard <[richard\\_mccorkle@fws.gov](mailto:richard_mccorkle@fws.gov)>; Jon Studio <[jastudio@edge-es.com](mailto:jastudio@edge-es.com)>; Kulpa, Sarah  
<[Sarah.Kulpa@hdrinc.com](mailto:Sarah.Kulpa@hdrinc.com)>; Jonathan M Magalski <[jmmagalski@aep.com](mailto:jmmagalski@aep.com)>; Yayac, Maggie  
<[Maggie.Yayac@hdrinc.com](mailto:Maggie.Yayac@hdrinc.com)>  
**Subject:** Macroinvertebrate Study at Niagara Hydro Project during RLP TOYR

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Misty,  
We have reviewed your request to conduct a benthic macroinvertebrate survey. The following comments are provided under provisions of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884), as amended.

The proposed benthic macroinvertebrate sampling includes 10 sites. Seven sites are in the mainstem of the Roanoke River, habitat occupied by the federally listed endangered Roanoke logperch (*Percina rex*). Sampling follows the 2008 Virginia Department of Environmental Quality methodology; per the methodology the sampling period ends May 31. The proposed sampling will occur over a 2-day period during the Roanoke logperch time-of-year restriction (March 15- June 30). Sampling may include standard aquatic dip net (approximately 1-foot wide), kick nets and rock picking. Only one person will be in the water. Travel between sampling sites will occur by canoe or on shore to avoid disturbing the streambed. The approximate width of the Roanoke River at the sampling sites is 115 feet.

Based on the expected amount of streambed that will be disturbed, the short duration of disturbance and the small amount of sediment that will be generated, we believe the effects of the survey on the Roanoke logperch will be insignificant and discountable and the proposed survey is not likely to adversely affect this species.

Sumalee

~~~~~  
Sumalee Hoskin
US Fish & Wildlife Service
[6669 Short Lane](http://6669_Short_Lane)
[Gloucester, VA 23061](http://Gloucester_VA_23061)

sumalee_hoskin@fws.gov

Tel: 804-693-6694 ex. 2414

Fax: 804-693-9032

Visit us at <http://www.fws.gov/northeast/virginiafield/>

Salazar, Margaret

Subject: FW: [EXTERNAL] RE: TOYR Waiver for Macroinvertebrate Study at Niagara Hydroelectric Project

From: Huddleston, Misty <Misty.Huddleston@hdrinc.com>
Sent: Wednesday, May 26, 2021 9:53 AM
To: McCloskey, John <john_mccloskey@fws.gov>
Cc: Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; jon Studio (jastudio@edge-es.com) <jastudio@edge-es.com>; Jonathan M Magalski <jmmagalski@aep.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>
Subject: RE: [EXTERNAL] RE: TOYR Waiver for Macroinvertebrate Study at Niagara Hydroelectric Project

John,

I have conferred with the field team and we will not be using seine hauls. The field team plans to use the rock picking method, which is also the method they used to perform the fall 2020 crayfish survey at the Niagara Project. So the plan still calls for only one team member to be in the water during the rock picking effort.

At this point it does not appear that we will have the TOYR waiver in time to get a team deployed and sampling completed by May 31st (the end of the spring index sampling period per VDEQ 2008). If provided a waiver, we could get the crew deployed and sampling completed within the next two weeks as long as weather and flows are acceptable. Without the waiver, we would not be able to sample until July 2021. Do you or others at FWS have concerns regarding the use of macroinvertebrate data collected outside of the spring index period in support of the Niagara FERC license application?

Thanks,
Misty

Misty Huddleston, PhD
Associate, SR. Environmental Scientist
D 704.248.3614 M 865.556.9153

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From: McCloskey, John <john_mccloskey@fws.gov>
Sent: Wednesday, May 26, 2021 8:57 AM
To: Huddleston, Misty <Misty.Huddleston@hdrinc.com>
Cc: Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; jon Studio (jastudio@edge-es.com) <jastudio@edge-es.com>; Jonathan M Magalski <jmmagalski@aep.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>
Subject: Re: [EXTERNAL] RE: TOYR Waiver for Macroinvertebrate Study at Niagara Hydroelectric Project

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Misty,

Can you provide clarification on the statement that limited seine hauls may be used to collect crayfish? You state that only one person will be in the water during sampling. However, the use of a seine would generally require multiple people to use.

John.

John McCloskey

Fish and Wildlife Biologist

U.S. Fish and Wildlife Service

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F: (804) 693-9032

Work cell (while teleworking): 757-378-8410

Visit us at <http://www.fws.gov/northeast/virginiafield>

From: Huddleston, Misty <Misty.Huddleston@hdrinc.com>

Sent: Friday, May 21, 2021 5:41 PM

To: McCloskey, John <john_mccloskey@fws.gov>

Cc: Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; jon Studio (jastudio@edge-es.com) <jastudio@edge-es.com>; Jonathan M Magalski <jmmagalski@aep.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>

Subject: RE: [EXTERNAL] RE: TOYR Waiver for Macroinvertebrate Study at Niagara Hydroelectric Project

John,

Thank you for the follow-up email.

See below for responses to the questions your provided.

- How often will sampling occur? [Sampling will occur over a two day period as soon as we have the TOYR waiver approval.](#)
- How much foot traffic along the streambed is expected? [During sampling, only one person will be in the water.](#)
- How many people will be walking through the habitat? [Only one person. All travel between sites will occur on shore or by canoe to avoid disturbing the streambed to the maximum extent possible.](#)
- How many sites will be sampled? [10 total sites \(100 meter transect each\) with 5 located in riffle/run \(quantitative\) habitat and 5 in pool \(qualitative\) habitat. See attached Figure illustrating proposed sampling locations.](#)
- Exactly what methods they're using? [Sampling will be performed following methods detailed in the Virginia Department of Environmental Quality \(VDEQ\). 2008. Biological Monitoring Program Quality Assurance Project Plan for Wadeable Streams and Rivers. Quantitative and Qualitative methods may include kick nets, dipnets, rock picking, and limited seine hauls to target crayfish.](#)

[Additional details regarding the Project and the proposed sampling effort can be found in the Revised Study Plan at the follow link:](#)

<http://www.aephydro.com/HydroPlant/Niagara>

Let us know if there is anything else needed to process this request.

Thanks and have a nice weekend,
Misty

Misty Huddleston, PhD
Associate, SR. Environmental Scientist
D 704.248.3614 M 865.556.9153

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From: McCloskey, John <john_mccloskey@fws.gov>
Sent: Friday, May 21, 2021 1:10 PM
To: Huddleston, Misty <Misty.Huddleston@hdrinc.com>
Cc: Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; jon Studio (jastudio@edge-es.com) <jastudio@edge-es.com>; Jonathan M Magalski <jmmagalski@aep.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>
Subject: Re: [EXTERNAL] RE: TOYR Waiver for Macroinvertebrate Study at Niagara Hydroelectric Project

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Misty,

I discussed the benthic macroinvertebrate study with the endangered species lead for the Roanoke logperch and she needs additional information to determine whether the benthic sampling is likely or not likely to adversely affect RLP. Her request is below:

Understanding the specific project details such as the magnitude, timing, and duration of the impact will help us with our determination. If you have the answers to questions below that will help us understand the impact and ensure a LAA determination is appropriate.

- How often will sampling occur?
- How much foot traffic along the streambed is expected?
- How many sites will be sampled?
- How many people will be walking through the habitat?
- Exactly what methods they're using?

Once you have provided this additional information, she will make a determination on whether or not the sampling is likely to adversely affect RLP and decide whether a waiver can be granted.

John.

John McCloskey

Fish and Wildlife Biologist

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From: Huddleston, Misty <Misty.Huddleston@hdrinc.com>

Sent: Monday, May 10, 2021 4:42 PM

To: McCloskey, John <john_mccloskey@fws.gov>

Cc: Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; jon Studio (jastudio@edge-es.com) <jastudio@edge-es.com>; Jonathan M Magalski <jmmagalski@aep.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>

Subject: [EXTERNAL] RE: TOYR Waiver for Macroinvertebrate Study at Niagara Hydroelectric Project

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Mr. McCloskey,

Good afternoon.

Based on discussions during our group call last week, the Virginia Department of Wildlife Resources and US Fish and Wildlife Service were in agreement that there were no concerns with Appalachian completing the spring benthic macroinvertebrate sampling activities at the Niagara Project. At the end of the call, you took the action item to send over something to Appalachian and HDR that provides documentation of the Service's waiver of the time-of-year-restrictions for Roanoke River instream work during the Niagara Logperch spawning season. If there is not a formal document that is required, can you provide confirmation via email?

The spring index period for benthic macroinvertebrate sampling in Virginia ends on May 31st, so we would like to get the field team scheduled to get in the field as soon as possible.

Can you provide an update on the status of the waiver request? Alternatively, can you reply with your concurrence that Appalachian is granted a waiver of the time-of-year-restrictions on instream work and can move forward with completing the benthic macroinvertebrate spring field sampling, as proposed in the Niagara Project Revised Study Plan?

Again we appreciate the great discussion on the call last week and look forward to hearing from you.

Regards,

Misty

Misty Huddleston, PhD
Associate, SR. Environmental Scientist

HDR
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Charlotte, NC 28202-2075

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Misty.Huddleston@hdrinc.com

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From: [McCloskey, John](#)
To: [Huddleston, Misty](#)
Cc: [Kulpa, Sarah](#); [jon Studio \(jastudio@edge-es.com\)](#); [Jonathan M Magalski](#); [Yayac, Maggie](#)
Subject: Re: [EXTERNAL] RE: TOYR Waiver for Macroinvertebrate Study at Niagara Hydroelectric Project
Date: Wednesday, May 26, 2021 8:56:50 AM

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Misty,

Can you provide clarification on the statement that limited seine hauls may be used to collect crayfish? You state that only one person will be in the water during sampling. However, the use of a seine would generally require multiple people to use.

John.

John McCloskey
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From: Huddleston, Misty <Misty.Huddleston@hdrinc.com>
Sent: Friday, May 21, 2021 5:41 PM
To: McCloskey, John <john_mccloskey@fws.gov>
Cc: Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; jon Studio (jastudio@edge-es.com) <jastudio@edge-es.com>; Jonathan M Magalski <jmmagalski@aep.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>
Subject: RE: [EXTERNAL] RE: TOYR Waiver for Macroinvertebrate Study at Niagara Hydroelectric Project

John,

Thank you for the follow-up email.

See below for responses to the questions your provided.

- How often will sampling occur? [Sampling will occur over a two day period as soon as we have the TOYR waiver approval.](#)
- How much foot traffic along the streambed is expected? [During sampling, only one person will be in the water.](#)
- How many people will be walking through the habitat? [Only one person. All travel between](#)

sites will occur on shore or by canoe to avoid disturbing the streambed to the maximum extent possible.

- How many sites will be sampled? 10 total sites (100 meter transect each) with 5 located in riffle/run (quantitative) habitat and 5 in pool (qualitative) habitat. See attached Figure illustrating proposed sampling locations.
- Exactly what methods they're using? Sampling will be performed following methods detailed in the Virginia Department of Environmental Quality (VDEQ). 2008. Biological Monitoring Program Quality Assurance Project Plan for Wadeable Streams and Rivers. Quantitative and Qualitative methods may include kick nets, dipnets, rock picking, and limited seine hauls to target crayfish.

Additional details regarding the Project and the proposed sampling effort can be found in the Revised Study Plan at the follow link:

<http://www.aephydro.com/HydroPlant/Niagara>

Let us know if there is anything else needed to process this request.

Thanks and have a nice weekend,

Misty

Misty Huddleston, PhD
Associate, SR. Environmental Scientist
D 704.248.3614 M 865.556.9153

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From: McCloskey, John <john_mccloskey@fws.gov>

Sent: Friday, May 21, 2021 1:10 PM

To: Huddleston, Misty <Misty.Huddleston@hdrinc.com>

Cc: Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; jon Studio (jastudio@edge-es.com) <jastudio@edge-es.com>; Jonathan M Magalski <jmmagalski@aep.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>

Subject: Re: [EXTERNAL] RE: TOYR Waiver for Macroinvertebrate Study at Niagara Hydroelectric Project

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Misty,

I discussed the benthic macroinvertebrate study with the endangered species lead for the Roanoke logperch and she needs additional information to determine whether the benthic sampling is likely or not likely to adversely affect RLP. Her request is below:

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How often will sampling occur?

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- How many people will be walking through the habitat?
- Exactly what methods they're using?

Once you have provided this additional information, she will make a determination on whether or not the sampling is likely to adversely affect RLP and decide whether a waiver can be granted.

John.

John McCloskey
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Visit us at <http://www.fws.gov/northeast/virginiafield>

From: Huddleston, Misty <Misty.Huddleston@hdrinc.com>

Sent: Monday, May 10, 2021 4:42 PM

To: McCloskey, John <john_mccloskey@fws.gov>

Cc: Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; jon Studio (jastudio@edge-es.com) <jastudio@edge-es.com>; Jonathan M Magalski <jmmagalski@aep.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>

Subject: [EXTERNAL] RE: TOYR Waiver for Macroinvertebrate Study at Niagara Hydroelectric Project

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Mr. McCloskey,

Good afternoon.

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instream work during the Niagara Logperch spawning season. If there is not a formal document that is required, can you provide confirmation via email?

The spring index period for benthic macroinvertebrate sampling in Virginia ends on May 31st, so we would like to get the field team scheduled to get in the field as soon as possible.

Can you provide an update on the status of the waiver request? Alternatively, can you reply with your concurrence that Appalachian is granted a waiver of the time-of-year-restrictions on instream work and can move forward with completing the benthic macroinvertebrate spring field sampling, as proposed in the Niagara Project Revised Study Plan?

Again we appreciate the great discussion on the call last week and look forward to hearing from you.

Regards,
Misty

Misty Huddleston, PhD
Associate, SR. Environmental Scientist

HDR
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Charlotte, NC 28202-2075
D 704.248.3614 M 865.556.9153
Misty.Huddleston@hdrinc.com

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Salazar, Margaret

Subject: FW: [EXTERNAL] RE: Macroinvertebrate Study at Niagara Hydro Project during RLP TOYR

From: Hoskin, Sumalee <sumalee_hoskin@fws.gov>

Sent: Wednesday, May 26, 2021 1:00 PM

To: Huddleston, Misty <Misty.Huddleston@hdrinc.com>

Cc: Andersen, Troy M <troy_andersen@fws.gov>; McCloskey, John <john_mccloskey@fws.gov>; McCorkle, Richard <richard_mccorkle@fws.gov>; Jon Studio <jastudio@edge-es.com>; Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; Jonathan M Magalski <jmmagalski@aep.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>

Subject: RE: [EXTERNAL] RE: Macroinvertebrate Study at Niagara Hydro Project during RLP TOYR

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Misty,

To clarify, there is no such thing as a "TOYR waiver" your project, as described, is not likely to adversely affect the Roanoke logperch therefore it can proceed.

Sumalee

~~~~~  
Sumalee Hoskin  
US Fish & Wildlife Service  
[6669 Short Lane](#)  
[Gloucester, VA 23061](#)

sumalee\_hoskin@fws.gov  
Tel: 804-693-6694 ex. 2414  
Fax: 804-693-9032  
Visit us at <http://www.fws.gov/northeast/virginiafield/>

---

**From:** Huddleston, Misty <Misty.Huddleston@hdrinc.com>

**Sent:** Wednesday, May 26, 2021 12:55 PM

**To:** Hoskin, Sumalee <sumalee\_hoskin@fws.gov>

**Cc:** Andersen, Troy M <troy\_andersen@fws.gov>; McCloskey, John <john\_mccloskey@fws.gov>; McCorkle, Richard <richard\_mccorkle@fws.gov>; Jon Studio <jastudio@edge-es.com>; Kulpa, Sarah <Sarah.Kulpa@hdrinc.com>; Jonathan M Magalski <jmmagalski@aep.com>; Yayac, Maggie <Maggie.Yayac@hdrinc.com>

**Subject:** [EXTERNAL] RE: Macroinvertebrate Study at Niagara Hydro Project during RLP TOYR

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Sumalee,

Thank for the information.

Can you confirm that this email transmittal serves as the "waiver of TOYR" for Roanoke Logperch and that we are allowed to proceed with the macroinvertebrate sampling effort? Thanks,

Misty

**Misty Huddleston**, PhD  
Associate, SR. Environmental Scientist  
D 704.248.3614 M 865.556.9153

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---

**From:** Hoskin, Sumalee <[sumalee\\_hoskin@fws.gov](mailto:sumalee_hoskin@fws.gov)>  
**Sent:** Wednesday, May 26, 2021 12:51 PM  
**To:** Huddleston, Misty <[Misty.Huddleston@hdrinc.com](mailto:Misty.Huddleston@hdrinc.com)>  
**Cc:** Andersen, Troy M <[troy\\_andersen@fws.gov](mailto:troy_andersen@fws.gov)>; McCloskey, John <[john\\_mccloskey@fws.gov](mailto:john_mccloskey@fws.gov)>; McCorkle, Richard <[richard\\_mccorkle@fws.gov](mailto:richard_mccorkle@fws.gov)>; Jon Studio <[jastudio@edge-es.com](mailto:jastudio@edge-es.com)>; Kulpa, Sarah <[Sarah.Kulpa@hdrinc.com](mailto:Sarah.Kulpa@hdrinc.com)>; Jonathan M Magalski <[jmmagalski@aep.com](mailto:jmmagalski@aep.com)>; Yayac, Maggie <[Maggie.Yayac@hdrinc.com](mailto:Maggie.Yayac@hdrinc.com)>  
**Subject:** Macroinvertebrate Study at Niagara Hydro Project during RLP TOYR

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Misty,

We have reviewed your request to conduct a benthic macroinvertebrate survey. The following comments are provided under provisions of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884), as amended.

The proposed benthic macroinvertebrate sampling includes 10 sites. Seven sites are in the mainstream of the Roanoke River, habitat occupied by the federally listed endangered Roanoke logperch (*Percina rex*). Sampling follows the 2008 Virginia Department of Environmental Quality methodology; per the methodology the sampling period ends May 31. The proposed sampling will occur over a 2-day period during the Roanoke logperch time-of-year restriction (March 15- June 30). Sampling may include standard aquatic dip net (approximately 1-foot wide), kick nets and rock picking. Only one person will be in the water. Travel between sampling sites will occur by canoe or on shore to avoid disturbing the streambed. The approximate width of the Roanoke River at the sampling sites is 115 feet.

Based on the expected amount of streambed that will be disturbed, the short duration of disturbance and the small amount of sediment that will be generated, we believe the effects of the survey on the Roanoke logperch will be insignificant and discountable and the proposed survey is not likely to adversely affect this species.  
Sumalee

~~~~~  
Sumalee Hoskin
US Fish & Wildlife Service
[6669 Short Lane](#)
[Gloucester, VA 23061](#)

sumalee_hoskin@fws.gov
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