Appendix A

Consultation Record

RECORD OF TELEPHONE CONVERSATION
Person Called – Scott Smith,
Affiliation – Virginia Department of Game & Inland Fisheries
Phone Number – (434) 525-7522 Ext. 106
Call Originator – Wayne Dyok
Date – March 23, 2015

Summary of Discussion

I contacted Scott Smith to discuss potential licensing issues for the proposed Scotts Mill Hydro Project and the FERC licensing process. Scott suggested that fish passage for American eel, American shad, and resident species would be a significant issue. In further discussing fish passage, Scott agreed that a trap and transport approach might make the most sense for eels and shad because there are seven dams that fish would need to pass. A second issue would be the type of operation. Scott thought a run of river would make the most sense. Wayne commented that the applicant may ask that a run of river with some deviations might be proposed. A third issue identified by Scott related to project effects on resident fish species. Scott also mentioned the issue of dam removable may come up and may need to be addressed.

With respect to the FERC licensing process, Wayne stated that the applicant would like to use the traditional licensing process (TLP). He asked Scott if the Virginia Department of Game and Inland Fisheries would support a TLP. Scott responded that a TLP would be a better process than the alternative licensing process (ALP). Scott said that he would work with the applicant in a TLP.

Prepared by

Wayne Dyok

RECORD OF TELEPHONE CONVERSATION

Person Called – David Sutherland,
Affiliation – U. Fish and Wildlife Service
Phone Number – (410) 573-4535
Call Originator – Wayne Dyok
Date – April 21, 2015

Summary of Discussion

I contacted David Sutherland to discuss potential licensing issues for the proposed Scott's Mill Hydro Project and the FERC licensing process. I had previously forwarded him the Record of Conversation that I had with Scott Smith of Virginia Department of Game and Inland Fisheries. David agreed with Scott on the issues and suggested that we also add river herring as a candidate species for fish passage.

With respect to the FERC licensing process, Wayne stated that the applicant would like to use the traditional licensing process (TLP). He asked David if the USFWS would object to the TLP. David did not commit to the TLP, but he also did not object to the applicant proposing to use the TLP.

Prepared by

Wayne Dyok

RECORD OF TELEPHONE CONVERSATION

Person Called – Brian McGurk
Affiliation – Virginia Department of Environmental Quality
Phone Number – (804) 698-4180
Call Originator – Wayne Dyok
Date – April 16, 2015

SUBJECT: Proposed Scotts Mill Hydropower Project

Summary of Discussion

I contacted Brian McGurk of the Virginia Department of Environmental Quality to discuss the proposed five MW Scotts Mill Hydro Power Project on the James River near Lynchburg. I explained that Liberty University has a preliminary permit issued by the Federal Energy Regulatory Commission. The applicant (Liberty University) is in the process of preparing a Pre- Application Document (PAD). The applicant would like to use the Traditional Licensing Process (TLP). I asked Brian if he had any objections to using the TLP. Brian responded that he had no preference for the licensing process. He has some familiarity with the TLP.

I mentioned that I had **spoken** with the Virginia Department of Game and Inland Fisheries and the US Fish and Wildlife Service. They indicated the following preliminary issues of concern; fish passage for American eel, American shad, river herring, and possibly resident fish species; recreational access to the headpond and downstream; and a portage around the dam.

I asked Brian what issues of concern DEQ would have; Brian responded that DEQ is concerned about both water quantity and water quality. I commented that a great deal of water quality and water quantity information exists for the James River and that the PAD would include existing information about water quality and quantity. Brian and I agreed that it would be premature for him to suggest studies until he had an opportunity to review the PAD.

Brian asked about the schedule for the issuance of the PAD. I responded that our goal is to distribute the PAD around the end of May. At that time the applicant would be requesting the use of the TLP from FERC. Assuming FERC approves the TLP, the applicant would hold a joint meeting about thirty days after FERC's approval.

Prepared by

Wayne Dyok

RECORD OF TELEPHONE CONVERSATION

Person Called – Jesse Thomas-Blate, Associate Director of River Restoration
Affiliation – American Rivers
Phone Number – 202 347-7550
Call Originator – Wayne Dyok
Date – June 11, 2015

SUBJECT: Proposed Scotts Mill Hydropower Project

Summary of Discussion

I contacted Jesse of American Rivers to discuss their May 26, 2015 letter to Luminaire Technologies wherein they were investigating the possibility of decommissioning Scott's Mill Dam. I explained the complexity of the situation given that there are 6 dams upstream of Scott's Mill within about 22 miles. Jesse understood the complexity of dam removal.

I asked Jesse if American Rivers would assist Luminaire Technologies in funding fish passage since that was one of AR's goals in removing dams. Jesse said she would talk internally and get back to me.

I explained that Liberty University was in the process of preparing a Pre-Application Document for Scott's Mill dam. I asked Jesse if American Rivers would support the Traditional Licensing Process. She responded that she was not the appropriate person for that. She directed me to AR's licensing staff. We agreed to talk again when the PAD was completed.

Prepared by

Wayne Dyok

From: LaBudde, Gregory (DHR) [mailto:Gregory.LaBudde@dhr.virginia.gov]
Sent: Thursday, May 21, 2015 11:58 AM
To: Ben Leatherland
Subject: Scott's Mill Dam Repairs (DHR File No. 2015-3292) | e-Mail #02913

Dear Mr. Leatherland,

The Department of Historic Resources (DHR) has received through our ePIX system the Scott's Mill Dam Repairs project (DHR File No. 2015-3292) for our review and comment. Our comments are provided as technical assistance in assessing the potential impacts of this project on historic resources. Although a U.S. Army Corps of Engineers (Corps) permit will likely be required for this project, at present, we have not been notified by the Corps or any other Federal agency of their involvement or the applicability of Section 106 of the National Historic Preservation Act. If a Federal agency is involved with this project in the future, we reserve the right to provide additional comments under Section 106, if warranted.

It is our understanding that the project involves repairs to the Scott's Mill dam on the James River in Lynchburg. Efforts will be made to repair existing stonework by replacing loose or dislodged stones. If damaged stonework cannot be repaired, then poured-in-place concrete will be used. Ground disturbances, limited to the parking of vehicles and equipment on the south riverbank and the placement of temporary cofferdams in the river during construction, are expected to be minor.

A review of our archives indicates that project area includes the James River and Kanawha Canal Sites in Lynchburg (DHR Inventory No. 118-0209), which is listed on the Virginia Landmarks Register, and the associated canal lock (Site 44CP0069), which is considered potentially eligible for listing in the National Register of Historic Places. However, based on the information submitted for our review, it is DHR's opinion that the proposed repairs will not adversely affect the dam and associated lock.

Thank you for giving us the opportunity to provide technical assistance on this project. If you have any questions concerning our comments, or if we may provide any further assistance, please do not hesitate to contact me.

Sincerely,

Greg LaBudde, Archaeologist
Review and Compliance Division
Department of Historic Resources
2801 Kensington Avenue
Richmond, VA 23221
phone: 804-482-6103
fax: 804-367-2391
gregory.labudde@dhr.virginia.gov

Wayne Dyok <dyok@prodigy.net>

To: Scott Smith McGurk Brian (DEQ) jody.callihan@ferc.gov

CC : Mark Fendig Mark Fendig Ben Leatherland Ben Ward

11/13/15 at 12:18 PM

Good afternoon Scott, Brian and Jody. Attached is the agenda for our December 2, 2015 joint meeting. Jody, even though FERC would not be participating in an official capacity, we hope you can make it. Brian and Scott, I look forward to catching up with you. If you have any questions, please contact me at 916 719-7022. I am currently on the east coast and will be until the joint meeting.

I hope you also get a chance to take a quick look at our website. Our plan is to keep everyone undated on project status via the website.

Regards,

Wayne

Ben Leatherland <bll@handp.com>
To
roger.kirchen@dhr.virginia.gov Marc.Holma@dhr.virginia.gov
CC
Wayne Dyok mfendig@aisva.net Randy Lichtenberger
12/16/15 at 10:45 AM

Hi Roger/Marc,

Here are some photos of the existing Scotts Mill foundation (at the Scotts Mill Dam site on north/left bank side of the James River) that we are discussing on the conference call now (see attached). Please call with any questions. Thanks.

Ben Leatherland, PWD, PWS, CPESC
Sr. Environmental Scientist

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CIVIL ENGINEERING & SURVEYING SINCE 1973

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Phone: 434-522-7686 - Fax: 434-847-0047 - Cell: 540-520-1533
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RECORD OF TELEPHONE CONVERSATION

Conference Call Participants
Roger Kirchen and Marc Holma, Virginia Department of Historic Resources
Phone Number – (804) 482-6069
Ben Leatherland and Randy Lichtenberger, Hurt and Proffitt – (434) 522-7686
Call Originator – Wayne Dyok – (916) 719-7022
Date – December 16, 2015

SUBJECT: Proposed Scott's Mill Hydropower Project, Cultural Resources Work Scope

Summary of Discussion

Update on Dam Repairs

Ben provided an overview of last week's meeting among the U.S. Army Corps of Engineers, the Virginia Marine Resources Commission and Luminaire Technology on permitting requirements for necessary dam repairs to Scott's Mill dam. Permits needed for the repairs will depend upon the repairs to be conducted. It is likely that a nation-wide permit will be needed and that Luminaire Technology will need to submit a pre-construction application. The Virginia Department of Historic Resources (DHR) will have a future opportunity to review any filed permit applications. Ben added that as the Federal Energy Regulatory Commission (FERC) licensing process moves forward, DHR will have an opportunity to review that information as well. Responsibility for implementing the National Historic Preservation Act (NHPA) rests with FERC.

Discussion on Scott's Mill Licensing

Wayne provided a summary of the December 2nd Joint Meeting including a description of the project. DHR representatives said that they had numerous questions on the project. In particular Marc and Roger asked to see maps showing the alternative powerhouse layouts as the Pre-Application Document (PAD) was not clear on the specific location of the powerhouse. **Action Item.** Wayne and Ben agreed to provide a map of the alternative layouts of the powerhouse.

Cultural Resource Issues and Study Plan

Randy began a discussion of potential cultural resources issues by noting that an Area of Potential Effect (APE) has not been firmly established. He continued that there are two known cultural resources: Scott's Mill VLR is National Register of Historic Places (NRHP) eligible but not listed. There are multiple properties listed. The canal lock on river right is identified as an archeological resource.

Randy stated that Figure 9 in the PAD shows the preliminary APE, but Ben added that that was just for the repair work. Roger said that typically the FERC project boundary serves as the APE for FERC projects, but other facilities outside the boundary may be included. For Scott's Mill, Roger thought that for the new powerhouse there may be a need to include other areas downstream. Randy

further stated that the Daniel's Hill Historic District is in the viewshed, but Marc thought that unlikely.

Wayne noted that the powerhouse would likely be about the same height as the dam so water could flow over it during flood conditions. Randy commented that the old Scott's Mill on river left is being considered as an alternate location for a powerhouse. If the powerhouse is not on that side then there is likely to be some type of recreation bypass facility (e.g. portage or sluiceway) and/or a possible cut for fish passage. Roger stated that the Scott's Mill ruins have not been recorded. **Action Item.** Ben agreed to provide DHR with an historic photo of the ruins showing what is currently at the site. Roger asked that the ruins be included in the cultural resources study.

Randy continued that the Liberty University (LU or applicant) plans to solicit feedback from the consulting parties on the study plan in early 2016. The applicant proposes to develop an inventory of cultural resources in 2016. In response to a question from Marc on who the consulting parties are, Wayne responded that the applicant has an initial list of contacts including a number of Indian tribes, but it is preferable if the applicant could work with DHR to ensure that the list was comprehensive. A list of parties consulted to date is included in the PAD. It was agreed that the Virginia Canals and Navigations Society (VC&NS) should be a consulting party.

Action Item. Wayne agreed to prepare a Record of Conversation for the conference call.

Randy said that an intensive survey of the dam would be needed as part of the cultural resources study. Roger responded that it may be useful to have a full inventory. The dam is listed as part of the NPD and several aspects may be impacted by the proposed project. Marc concurred that because the dam contributes to a larger resource it would be a good idea to do the inventory.

Roger said that if the pool is raised, potential impacts to cultural resources that could be flooded and subject to erosion would need to be considered. Wayne responded that the applicant plans to provide a Digital Elevation Terrain (DEM) model of the upstream area, but that the applicant does not plan to raise the flood pool. Randy added that the shoreline of the upstream islands was relatively steep (e.g., Daniel's Island) so he did not anticipate that shoreline erosion would be a problem.

Roger said he would take a look at the upstream water level changes and then make a determination as to whether a survey would be needed. Wayne noted that the island immediately downstream of the project was flooded during the Joint Meeting site visit on December 2nd when flows were about 10,000 cfs.

Randy stated that the transmission line would be a buried 500 foot-long line across the Griffin Pipe yard and this would require a cultural resources survey. Wayne suggested that because this area has been highly disturbed, it should only need a Phase 1 survey.

Roger said that he has already been receiving calls about the project. He recommended that all cultural resources elements be discussed in LU's license application even if they are later dismissed as not being affected.

Randy asked if Roger could pass on the names and numbers of the consulting parties who have expressed an interest in the project. Roger responded that DHR has not coalesced the list yet. The parties agreed that they would share contacts as appropriate among LU, FERC, and DHR.

Wayne proposed that similar to the FERC licensing process for the upstream Cushaw project, the cultural resources effort should include the cultural resources study which would feed into a Programmatic Agreement (PA) and a Historic Properties Management Plan (HPMP). Roger responded that that was DHR's expectation as well.

Action Item. Randy proposed to conduct a reconnaissance level survey and then develop a draft study plan for DHR review in January. Randy agreed to include photographs in the study plan. The study plan will be circulated to consulting parties. Roger noted that underwater archeological resources should be considered in the study plan.

Roger asked that LU consult directly with DHR on cultural resources issues. Wayne responded affirmatively, adding that as FERC's designated Federal representative that was appropriate. Randy will be LU's principal contact with DHR. LU will also add DHR to the project e-list so Roger and Marc will receive addition correspondence associated with the project to keep them informed of other developments as well.

Kirchen, Roger (DHR) <Roger.Kirchen@dhr.virginia.gov>
To
Wayne Dyok Holma, Marc (DHR) Ben Leatherland Randy Lichtenberger
CC
Mark Fendig Luke Graham
01/14/16 at 1:07 PM

This looks fine to me and we support Randy's comments.

Roger W. Kirchen, Director
Review and Compliance Division
Department of Historic Resources
2801 Kensington Avenue
Richmond, VA 23221
phone: 804-482-6091
fax: 804-367-2391
roger.kirchen@dhr.virginia.gov

Re: Scott's Mill Hydroelectirc Project - Draft Joint Meeting Summary

On Sunday, December 27, 2015 1:25 PM, Wayne Dyok <dyok@prodigy.net> wrote:

Greetings all. I hope you are having a great holiday. Attached are draft notes from our December 2, 2015 joint meeting. We propose to post the draft minutes on the http://www.scottsmillhydro.com/ website on Tuesday. If you notice any major errors in the notes that should be immediately corrected, please let me know by early Tuesday morning.

We would appreciate any edits that you might have to the notes by January 11th. We will then incorporate the edits, finalize the notes, post on the web site and file with FERC. It would also be great if you could identify any issues that we may have missed. We can add them as a postscript. Also feel free to use poetic license for the comments you made that we may have not worded the way you intended. We did review the audio and amended our written notes to better reflect what was said.

We are trying to figure out how to post the audio on the website. Unfortunately it is about 240 MB. At a minimum we will be filing with FERC. Hopefully the notes will suffice as the audio is 2 hours and 40 minutes.

We are in the process of preparing the study plans and will have them to you in January. We propose a 30 day review period but if you need a little more time that should be fine.

Again, thank you for attending the site visit and joint meeting.

Regards,

Wayne

SCOTT'S MILL HYDROPOWER PROJECT (FERC NO. 14425)
NOTES OF JOINT MEETING
HELD AT HURT & PROFFITT
2524 LANGHORNE ROAD, LYNCHGBURG VIRGINIA
DECEMBER 2, 2015

Attendees

Lynn Crump, Virginia Department of Conservation and Recreation

Jody Callihan, Federal Energy Regulatory Commission

Larry Jackson, APCO

Brian McGurk, Virginia Department of Environmental Quality

Justin Stauder, City of Lynchburg

Greg Poff, City of Lynchburg

Clay Sinerous, City of Lynchburg

George Palmer, Virginia Department of Game and Inland Fisheries

Scott Smith, Virginia Department of Game and Inland Fisheries

Scott Lyng, Lyng and Son Lumber

Rob Campbell, James River Association

Pat Calvert, James River Association

Ben Leatherland, Hurt & Proffitt

Randy Lichtenberger, Hurt & Proffitt

Mark Fendig, Luminaire Technologies

Kim Stein, Consultant for Liberty University

Eric Thompson, Natel Energy

Luke Graham, Consultant

Wayne Dyok, Facilitator

Site Reconnaissance

Joint Meeting participants attended a site visit in the morning. The site visit began at the James River Canoe Boat Ramp approximately one half mile downstream from Scott's Mill dam. Participants then drove along the south side of the river (river left) from the dam to an upstream railroad trestle crossing of the James River. The participants returned to the south side of the dam and observed the flow over the dam (i.e., approximately 10,000 cfs), the foundation of the old Scott's Mill grist mill, the general location of the hydro project facilities, and a potential portage/boat passage site on the south side of the river. Due to safety considerations participants did not observe conditions on the north side of the river as that is an active industrial facility operated by Griffin Pipe Products[1].

Joint Meeting Introductions

The agency joint meeting commenced at 1:30 pm at the office of Hurt and Proffitt. Wayne Dyok facilitated the meeting. Wayne announced that the meeting was being recorded as required by Federal Energy Regulatory Commission (FERC) regulations. He noted that a goal of the meeting was to capture issues of interest to participants. He also reviewed the agenda: project overview, presentation on Natel Energy concepts, process plan and schedule, and discussion on environmental resource issues. Wayne noted that Liberty University (LU) proposes to provide draft study plans in January and then have participants react to them rather than have participants propose studies by February 2, 2016 as required by FERC regulations. Participants then introduced themselves.

Project Description and Operation

Wayne provided an overview of the project and its operation based on information provided in the Pre-Application Document (PAD). The proposed project is a low head hydropower project similar to what has previously been proposed, except that LU is considering new technology and proposes to work with licensing participants to develop a fish passage plan. The capacity would be about 3.8 MW, but that capacity has not yet been firmed. Approximately 13,500 MWh of energy would be generated annually. The project would require a short transmission line about 500 feet in length.

The project would be run of river, essentially providing constant flows downstream of Scott's Mill dam. LU is considering using flashboards at the dam and possibly raising the height of the headpond up to 3 feet. If this is done, the project would operate in coordination with the upstream Reusens Project which could then be operated in somewhat of a peaking mode. However, this is only an option to be considered at this time. Wayne commented that there is an opening between the dam and an upstream island. Water from the left side of the river could be passed through this opening to ensure that there is flow down the left side of the river.

Eric Thompson, Natel Energy, presented preliminary concepts for the powerhouse. The current thought is to place the powerhouse in the arch section of the dam towards the right side. Seven or eight turbine units are anticipated. However, the location of the powerhouse could change based upon input from interested parties.

Eric was asked what the hydraulic capacity of the powerhouse would be. This has yet to be determined, but typically run of river projects are designed to accommodate the mean flow or greater.

[1] Participants were shown aerial photographs of the north side of the river during the afternoon meeting.

Hence a capacity of slightly over 3,000 cfs may be a reasonable estimate[2]. As the design is refined, the hydraulic capacity will be confirmed.

Pat Calvert, James River Association, said he envisioned that there would be adverse impacts to the dam and asked if there would be a mitigation plan. Wayne replied that no one from the Virginia Department of Historic Resources (DHR) was able to attend today's meeting, but LU plans to work closely with DHR to address potential impacts. LU would develop a Historic Properties Management Plan. Wayne also noted that parts of the dam are crumbling and the dam owner is working with DHR and the U.S. Army Corps of Engineers to address maintenance issues[3].

Scott Ling, Ling and Son Lumber, asked if LU would consider placing the dam on the east (south) side of the river. Although LU would prefer a site nearer to the transmission line interconnection on the north side, it proposed to work with participants to evaluate reasonable alternatives. In a previous FERC license application, the applicant had proposed a powerhouse on the south side.

Jody Callihan, FERC, asked about the volume of sediment to be excavated for powerhouse construction. There would need to be some level of excavation and construction of a downstream cofferdam (the Scotts Mill dam could serve as the upstream cofferdam). Eric stated that the Natel units do not require a draft tube for unit submergence, and this could result in minimal excavation. However, it may be desirable to have some level of excavation to improve energy generation efficiency.

In response to a question from Jody about access, Mark Fendig, Luminaire Technologies, responded that he has an easement across the property being leased by Griffin Pipe and across the railroad tracks to obtain construction access. Mark added that the transmission line would likely be constructed underground.

Scott asked if water to the powerhouse could be drawn from the right side of the river. LU representatives responded affirmatively. The canal side may be a third option for LU to investigate for a powerhouse.

Pat asked where the power would be used. Mark replied that it would go into the grid, but Griffin Pipe has a greater demand than the power output from the project. Pat noted that a great selling point for the project would be if it could be used locally to minimize power outage disruptions. Wayne said it could and added that project power could be used to restart the local grid after an outage since hydro has that advantage over other generation forms.

There was a discussion on the current status of the dam. It is classified as a low hazard dam, but Luminaire Technologies is in the process of getting approvals to make repairs to the dam.

After the dam discussions, Eric completed his presentation on Natel and the preliminary powerhouse design (see associated Joint Meeting PowerPoint presentation). Natel's objective is to develop

[2] With a 17 foot head and 80 percent turbine efficiency, a 3.8 MW project equates to a powerhouse flow of 3,300 cfs.

[3] Applicant and DHR discussed cultural resources issues on December 16, 2015. Notes from this discussion can be found on the project website at www.scottsmillhydro.com.

standardized turbine/generator designs. One of the advantages of the Natel units is that they are less expensive than traditional low head turbine units.

Process Plan and Schedule

Wayne next reviewed the Process Plan and Schedule. He noted that FERC had recently approved use of the Traditional Licensing Process (TLP). Further FERC designated LU as its Federal representative for Endangered Species Act (ESA) consultation and for consultation with the State Historic Preservation Officer (DHR). LU will be preparing a meeting summary within the next couple of weeks. Comments on proposed studies are due on February 2, 2016, but LU proposes to transmit draft study plans prior to that date so licensing participants can react to LU's draft plans rather than propose studies pursuant to FERC's guidelines. LU would also like to maximize use of its project website at www.scottsmillhydro.com and proposes to communicate with participants using electronic media.

Pat asked about how the Scott's Mill Project would affect Reusens Project operation. Although Reusens is currently not operating, once it is refurbished, it could operate in a coordinated fashion with Scott's Mill. Reusens could release more water during the day filling the 316 acre head pond up to three feet above current water levels. Scott's Mill would release water in a constant flow fashion, lowering the headpond level during the evening. This assumes that flashboards would be added. LU noted that the flashboard heights could be as high as three feet, but could be less than that.

Resource Issues

Recreation - Due to participant schedules, LU began the resources issues discussion with recreation.

Lynn Crump, Virginia Department of Conservation and Recreation (DCR), asked if LU has been in contact with the federal and state agencies responsible for threatened and endangered species (i.e., U.S. Fish and Wildlife Service and DCR Natural Heritage Program). Wayne replied that Hurt & Proffitt will be coordinating with the DCR Natural Heritage Program to get the most updated list of state threatened and endangered species. LU will work with licensing participants to ensure potential effects are addressed.

Wayne summarized the recreation needs presented in the PAD that were extracted from the State Comprehensive Outdoor Recreation Plan. LU believes that there is an opportunity for a canoe portage on the left side of the river, but wants to ensure that they do not incur liability. Lynn cited Commonwealth law that as long as LU did not charge for usage, LU would not be liable. She suggested that LU consider breaching the dam on the left side of the river and creating a flume that would avoid the need to portage. This would also minimize the likelihood of that side of the river from stagnating. The Russel Fork River in Dickenson County and the Appomattox River at Harvell were cited as examples. LU reps agreed to investigate this concept as well as a portage around the dam. Lynn added that if breaching of the left side of the river is provided, it could also facilitate fish passage at the site. Other aspects of the recreation included provision of parking facilities and making facilities Americans with Disability Act (ADA) compliant.

Lynn continued that LU should consider looking at River Road as part of the scenic byway system. Wayne responded that safety is the greatest concern in any recreation endeavor.

Pat recommended that LU consider a boat landing upstream of the dam in the vicinity of or upstream of Harris Creek. Scott Smith, Virginia Department of Game and Inland Fisheries (DGIF), echoed that there was a need for upstream boat access in the headpond.

There was some discussion of what should be included in the project area. Wayne noted that there are two schools of thought. The first is to include only the project facilities within the project boundary and the second is to include the project facilities and the headpond. Typically FERC wants to make sure a licensee has full control over the headpond, especially if it fluctuates. However, on the downside, this could constrain LU from developing their property located upstream of the dam. Pat suggested that the project boundary include the headpond. Scott Smith added that recreation improvements do not necessarily need to be within a FERC project boundary.

Lynn expressed a concern about potential pollution related to the river sediments, particularly if the dam is breached. Wayne commented that LU will be looking at decommissioning as an alternative but because there are 7 dams within a short distance, he postulated decommissioning would not be a viable option. Pollution is an issue that will be considered. Wayne offered that the silt within the impoundment is likely in equilibrium.

Lynn also suggested that LU include some interpretation signage at the mill site, as well as natural heritage interpretation and how this might relate to the James River trail.

Pat commented that he receives the FERC recreation reports for the James River projects and there are essentially no recreation facilities. He added that there is a huge opportunity for camping, hiking and biking. He hoped that LU would consider all these resources.

Rob Campbell, James River Association, said that Amherst County should be engaged on recreation access. He noted that this project could be the start of a water trail. Wayne responded that LU had been in contact with Sara Lu Christian of Amherst County, but she was unable to attend the meeting. He added that LU intends to follow up with her. Discussion ensued about bicycling along River Road, possibly including a bike lane. Lynn suggested that a simple bench would be nice for cyclists. It was also noted that there are no public areas for camping within the Lynchburg area.

Water Resources - Discussion next turned to water resources/water quality issues. It was noted that water rights originating from the J.R. Canal Company had been passed on to the railroad, City of Lynchburg, and Luminaire as successor to the dam. These are flowage rights wherein there is a shared percentage of the river. It was also noted that these rights have not been exercised. Brian McGurk, Virginia Department of Environmental Quality (DEQ), stated that the Commonwealth has a different perspective on water rights. That is, the people own the water based on a 1914 Supreme Court ruling.

Brian said that LU would need to file water protection permits for the project. This includes protection of wetlands and fisheries among others, essentially all components of what goes into a Virginia Water Permit application. He said that DEQ would coordinate with FERC on the permit conditions. The conditions would be finalized after the application is submitted. The application would also need to be submitted to the U.S. Army Corps of Engineers.

Brian asked if the flashboards are added and the headpond water level is raised, would the wetlands be affected? Ben Leatherland, Hurt & Proffitt responded that one third of the island upstream of the dam is comprised of jurisdictional wetlands, with the center portion scooped out. On the left side of the island there is a 10:1 slope. This area may be forested. Depending upon the hydrological regime these trees may be able to survive. It was agreed that the wetland effects would need to be studied as the project moves forward.

Because DEQ collects water quality data immediately downstream of Scott's Mill, further water quality baseline data collection was deemed unnecessary. However, LU will need to assess the effects of diverting water through the powerhouse and away from the left side of the river on water quality both immediately upstream and downstream of Scott's Mill dam. Wayne noted that LU has already flagged this as an issue and had included the issue in the PowerPoint presentation.

Fishery Resources – Participants next discussed fish entrainment and mortality issues. Eric commented that one of the advantages of Natel's turbines is that there is no pressure drop across the turbine blades and that this should reduce fish entrainment injury, as a sudden pressure drop can adversely affect fish. Further turbine blade strikes which can be a cause of fish mortality should be reduced because the blades are spinning at half the speed of water, and this is much slower than with traditional turbines which spin at much greater speeds. Eric added that "computer" fish have fared well in entrainment tests to date on the Natel units. Pat stated that he would like to see real statistics on turbine mortality before he commits to this technology. Eric responded that Natel would have specific entrainment study results by the end of 2016.

Scott Smith said that fish passage would be an important part of the fishery studies. Both migratory and resident species would need to be passed. He said that some species are already present at the dam and there is no sense in delaying passage (e.g., American eel). Scott concurred that there may need to be triggers for other species like American shad. Wayne suggested that since there are seven dams involved, a trap and haul program may make the most sense. Scott agreed that trap and transport was likely the only way to go, but different options should also be considered. It was agreed that American eels could easily be passed upstream, but there is a problem getting them downstream. Wayne suggested that LU capitalize on the downstream passage research being conducted at other hydro projects and include a literature study on downstream passage as part of the study plan. There was general consensus on this but Scott added that nighttime shutdown should be considered. Scott recommended that adaptive management adjustments should be built into the fish passage program. There was no disagreement on this.

Scott continued that mussel surveys were lacking in the impoundment and immediately downstream. He thought there was some likelihood of a few mussel species being present including green floaters. He recommended that LU talk with Brian Watson at DGIF.

Pat said he wanted to see real data for fish species that may be present in the impoundment. The PAD shows that there is little difference in fish species from downstream of Scott's Mill to upstream of Cushaw dam. However, no specific data on impoundment fish species was presented in the PAD. Wayne expressed concern about the cost of potential studies to identify fish species in the impoundment. A species presence/absence assessment would not be a costly study but the cost for distribution and abundance studies could be significant because the studies would need to consider different habitat types, seasonality, life stages, potentially year to year variability, and possibly

require different sampling gear types. Wayne showed a slide of the criteria FERC uses to justify studies, the last criterion of which is cost. Wayne also said that the participants should consider how the fish species data would be used in decision-making. It was agreed that LU would work with DGIF to determine what existing species data was available for the impoundment and what would be required to satisfy study needs.

Scott further requested that LU assess how fish habitat would change with flow changes from one side of the river to the other and the associated water quality effects. He also asked that effects on fish habitat on either side of the river downstream of Scott's Mill dam be evaluated. It was agreed that bathymetry both upstream and downstream of the dam would likely be needed for this assessment. Brian specifically noted that LU should assess effects that may occur during drought conditions.

Wildlife Resources – Although there is not a significant amount of wildlife habitat associated with the project, participants requested that the effects of water level changes from flashboard installation on furbearers be assessed.

Scott said that LU should contact Rick Reynolds, DGIF's bat expert, to determine what studies may be needed to assess the effects on bats, particularly if there might be a loss of trees from water level changes.

Other Issues – No specific land use or socio-economic issues were raised. Wetland issues were covered under water resources. Cultural resources issues were partially discussed under recreation, but LU emphasized that they would be working closely with DHR and other interested parties including the Canal Society and Indian tribes to fully address these issues.

Public Session – There were no attendees to the evening public session except for FERC and LU representatives. No additional issues were identified.

Water Resources
525 Taylor Street • Lynchburg •Virginia • 24501
www.lynchburgva.gov • P 434455-4250 • F 434-845-7353

January 11, 2016

WayneDyok dyok@prodigy.net

Mark Fendig mfendig@web-o.net

Kim Stein (Liberty University). kstein 1609@earthlink.net

Re: Scott's Mill Hydropower Project (FERC No. 14425)
December 2, 2015 Joint Meeting

I am writing on behalf of the City of Lynchburg, Water Resources, to address questions concerning information presented at the Joint Meeting on December 2, 2015. While the City may have additional questions as the plans for the Scott's Mill Hydropower Project (FERC No. 14425) ("Project") progresses, we did want to raise two fundamental questions early to provide an opportunity for further discussion and consideration of the needs of the City of Lynchburg. The most apparent issues for Water Resources, arising from the joint meeting, concern existing rights and obligations related to the dam and protection of the water and wastewater infrastructure of the City of Lynchburg.

1. Subject: Flashboards/ pond level — "LU is considering using flashboards at the dam and possibly raising the height of the headpond up to 3 feet. If this is done, the project would operate in coordination with the upstream Reusens Project, which could then be operated in somewhat of a peaking mode."

   Question: Has the impact to raw water withdrawals and pond level to surrounding City infrastructure been considered? The City utilizes the river for raw water withdrawals and the surrounding area contains public water and wastewater infrastructure (including a major wastewater interceptor and combined sewer overflow ("CSO") structures) that may be impacted.

2. Subject: Maintenance of the Dam and Cost— "Pat Calvert, James River Association, said he envisioned that there would be adverse impacts to the dam and asked if there would be a mitigation plan. Wayne replied that no one from the Virginia Department of Historic Resources (DHR) was able to attend today's meeting, but LU plans to work closely with DI--IR to address potential impacts. LU would develop a Historic Properties

   Management Plan. Wayne also noted that parts of the dam are crumbling and the dam owner is working with DHR and the U.S. Army Corps of Engineers to address maintenance issues."

Question: What has been done to consider existing rights and obligations between the

City and other parties relating, in part, to the City's right to withdraw water from the

James River and the construction and maintenance of the dam across the James River (the Scotts Mill Dam)? Maintenance of the Scotts Mill is the subject of various agreements and amendments to those agreements. The City has an interest in the protection of its rights and the management of its obligations under agreements related to the dam and the water resources in the James River.

Thank you for the opportunity to review the draft joint meeting notes. We look forward to continued discussion concerning the Project. Please refer responses to timothy.mitchell@lynchburgva.gov

Sincerely,

Timothy A. Mitchell, P.E.
Director

cc: L. Kimball Payne, Ill, City Manager
Walter Erwin, City Attorney
Department File

Luke Graham <scottsmillhydro@yahoo.com>
01/18/16 at 6:16 PM

Dear Interested Party

On behalf of Liberty University we would like to thank those who attended the Scott's Mill Dam Joint Meeting on December 2, 2015. Also a big thank you to those who helped us finalize the minutes from the meeting. The final minutes are posted on LU's project website at www.scottsmillhydro.com.

Additionally we have posted Records of Conversations that we believe are relevant to the licensing process, as well as recent filings with FERC. LU intends to keep you updated on events through the website. If your situation changes and you no longer wish to receive periodic updates on the project please send an email to scottsmillhydro@yahoo.com

LU is in the process of preparing draft study plans. We expect to post them on the website this month. Our thinking is to provide a one month review. Please let us know if this does not work for you after you receive the draft plans. We plan to work with participants to try to reach agreement on the study plans prior to executing them.

Federal Energy Regulatory Commission regulations indicate that comments on the PAD and any proposed study plans are due on February 2, 2016. However, the participants agreed at the Joint Meeting that LU would provide draft plans and participants would have an opportunity to comment after receiving the draft plans. Accordingly it is not necessary to submit comments on February 2, 2016 to LU. However, LU would welcome any comments on the PAD that you care to provide at that time.

We look forward to continue working with you on the licensing.

Regards,

Liberty University licensing team

Reply Reply to All Forward More

Luke Graham <scottsmillhydro@yahoo.com>
To
julie.crocker@noaa.gov jeddings@achp.gov slchristian@countyofamherst.com
glen.besa@sierraclub.org catherine-gray@cherokee.org and 38 more...

02/01/16 at 4:54 PM

Good afternoon. Liberty University (LU) had planned to distribute the study plans for the proposed Scott's Mill Hydropower Project last Friday. Regrettably we were unable to do so. LU is continuing to finalize these plans. We have a scheduled site visit to finalize one of the remaining plans on Friday. Accordingly, we anticipate posting these plans on our website early next week. We will allow adequate time for your review once we notify you that the study plans have been posted on the Scott's ll webiste. Again we apologize for any inconvenience.

On behalf of LU,

Wayne and Mark

Pat Calvert <pcalvert@jrava.org>
02/02/16 at 6:25 PM

Please accept the attached comments on behalf of James River Association.

Pat Calvert
Upper James Riverkeeper
James River Association
434.964.7635
pcalvert@jrava.org

February 2, 2016
RE: Application for FERC Project No. 14425, Scott's Mill dam hydropower proposal

To Whom It May Concern:

James River Association (JRA) is a conservation organization that has been solely dedicated to restoring and protecting the James River for over thirty-five years. On behalf of our thousands of members and supporters throughout Virginia, JRA provides these comments on the proposed licensure of the Scotts Mill dam hydropower project.

The JRA staff uses Virginia water bodies for scientific study, educational programs and recreational purposes that are vital to our mission. The JRA owns land and holds a lease to other property adjacent to the James River giving it valuable economic interests in protecting water quality. JRA members enjoy a wide range of recreational activities, including fishing, swimming, and boating, throughout the James River basin and in other Virginia water
bodies. Also, our members have important economic, professional and aesthetic interests in the health of Virginia water bodies. Thus, JRA and our members have direct, substantial, past, and ongoing interests that will be affected by this proposed project.

Aquatic Organism Passage

Scott's Mill dam serves as the first upstream complete blockage to fish and aquatic organism passage in the 340-mile mainstem James River. This proposal creates a distinct opportunity to mitigate the effects of this physical obstruction for diadromous and resident freshwater species. As restored passage is an established goal of the both state and federal initiatives in this waterbody, species of concern to consider for restored river passage include: freshwater mussels and host fish species, resident fish species (including smallmouth bass and centrarchids), migratory species (including river herring and shad, lamprey and American eel) and state and federally listed species documented within the impounded and immediate downstream waters.

Documentation Regarding Proposed Generator Units

The Applicant has proposed the use of Natel hydro units for this project. Modeling analyses are

insufficient to establish operational impact of these units. Observational data and statistics that provide critical information -- such as fish impingement and entrainment, measured fish mortality and passage success -- are necessary in order to determine specific product appropriateness for potential application. We request that these units be thoroughly tested and analyzed for effectiveness in protecting aquatic life and ecological integrity. These data and conclusions should subsequently be publicized and scrutinized for review prior to licensure.

Effects of Enhanced Dam Elevation

It was suggested at the December 2, 2015 joint meeting that the dam is proposed to be raised 2 to 3 feet in height. The effects of this alteration both upstream and downstream of the dam should be determined and publicized both in writing and in visual map format. Of particular concern are resulting alterations to shoreline habitats, to downstream amenities (including public boat ramps), to available aquatic habitat and to overall downriver conditions.

Effects of Water Diversion

Also on December 2, 2015, there was a reference to the possibility of physically diverting and concentrating the impounded waters toward the hydro units. It is recommended that the Applicant provide detailed engineering specifications on the effects of such a diversion of water. Of particular concern again are resulting alterations to shoreline habitats, to downstream amenities (including public boat ramps), to available aquatic habitat and to overall downriver conditions.

Determination of Project Area

It was unclear on December 2, 2015 as to where the formal Project Area would extend. It is recommended that the Project Area parameters and boundaries be publicized utilizing map and aerial photography formats.

Water Rights

It was suggested on December 2, 2015 meeting that a claim or claims to private water rights may exist in the Project Area. It is recommended that any claim to and intent to exercise private water rights be forfeited by involved parties as a term of licensure.

Public Boating Access

As no public access is available upstream of Scott’s Mill dam, there exist opportunities to create public access to the upstream, impounded waters and for safe boat passage through the renovated dam. Additional public access to the river in this section would directly contribute to the stated goals of the James River Heritage Trail, as well as the Region 2000 Greenway/Blueway initiative. Public access needs for these navigable waters are listed below:

- Public Boating Access point(s) to impounded waters. Applicant property on River Rd. in Amherst County adjoining the Project Area could serve as a sufficient location for public boating and recreational river access due to its proximity to both the river and the road. Sufficient space is available for parking and for an improved boat ramp.

- Boat passage. Dam designs provide for safe navigation of small watercraft (e.g. canoe, kayak) to safely descend from the impounded section into the free flowing James. Example: Bartlick Dam on Russell Fork in Southwest Virginia.

- Boat portage. The applicant should consider designing safe and public portage that would serve to connect river users between the impounded section and the downstream, free- flowing river.

Public Fishing Access

In submitting their proposal, we request that the applicant consider public access to fishermen and sportsmen. Some of these needs may be supported by the public river access as previously mentioned, but would effectively serve more people if specific fishing areas were provided for the public that will be fishing from the shore or wading from either side of the river. The immediate Project Area regularly supports sport and subsistence fishermen but is limited to areas located downstream of the dam. Suggestions for improvements to and needs for public fishing access are as follows:

- Public Fishing Areas/Shores. The Applicant owns property on River Rd. that could serve as a location to create several suitable public fishing sites. Similar opportunities should be sought on the Lynchburg side as well.

- Public Fishing Areas/Island within impounded waters. The Applicant owns a sizeable island in the impounded section, locally known as Treasure Island. The Applicant should consider providing designated public fishing areas on this island for boater access.

Public Walking / Multi-Use Trails

When drafting their proposal, the applicant should consider installing Multi-use Pedestrian Trails. There are several local trail networks that are in close proximity to the project area and could easily be adjoined to create a larger public trail network. The island which the applicant currently owns would make a green park space and wildlife habitat to add to the nearby urban public spaces in the City of Lynchburg. The applicant also owns property on the Amherst County side of the project area that can serve as a connection to the existing trail network one half mile east on River road. Specific suggestions are listed below:

- Connector Trail to the Blackwater Creek Trail Network. Providing a connection from the project area to the existing trail would make available a new dimension for trail users and provide them with an opportunity to experience a forested space. This feature would further connect the affected community to the City of Lynchburg via a pedestrian pathway.

- Connector Trail to Riveredge Park / Trail Network. This recently renovated park and newly installed trail lies directly downstream from the Project Area in Amherst County. This County intends for this trail to connect Amherst County (Riveredge Park) with the City of Lynchburg (Blackwater Creek Trail) to provide pedestrian and bicycle cross-river transit between Lynchburg and Amherst County. To serve this community, the applicant should look to connect their project area to these existing trail networks.

Public Camping

When considering recreational use of lands near the Project Area, the Applicant should consider providing designated public spaces for camping and outdoor recreation. Treasure Island would meet this need, and could provide the requisite space to allow several campsites separated from a picnic area. There are no such sites for the public to access in the surrounding area and would benefit recreational needs in this section of river. A pedestrian/bicycle bridge to the island would permit access for those who are unable to access the island by boat.

- Treasure Island. This location would be ideal for several primitive campsites, and still have a significant area for picnic tables without disturbing the natural values of this largely vegetated island and wildlife habitat.

- Daniels Island. Same situation could be applied here if the applicant owns the island. It to lies within the impounded area.

Public Parkland

The applicant should consider dedication of public parkland to both view and recreate in the impounded section. As an example, Amherst County's Monacan Park is located immediately upstream of the adjacent Reusens Dam (FERC Project No. 2376) as part of this dam's licensure. The owners of the dam own the parkland and lease that land to the county to have a public area for the community to enjoy the river. This park contains improved boating access, picnic and pavilion facilities, docks and fishing opportunities for the public to enjoy at their convenience. The aforementioned property on River Road would meet this need. Treasure Island was historically a park that served as a frequented and popular destination for the public. Restoring the island to this use would be a tremendous asset for the surrounding communities.

Historical Interpretation

The proposed area for this hydropower project will likely impact several historical community features. The portion of the dam that is located closest to Lynchburg, which is the proposed site of the generator units, is the oldest dam structure -- known as the Horseshoe Dam. This significant historical construction supported and made possible the existence of the James River and Kanawha Canal. Impacts to any portion of the Horseshoe Dam would alter its original state in a way that would make this piece of Lynchburg history remain incomplete in perpetuity. On

the Amherst County (north) side of the dam are the remains of the historic dam's namesake -- Scotts Mill. These structures too are an important historical site that will be potentially impacted by proposed activities. Furthermore, the impounded waters created by this project were once readily available to bateaux, packet boats and to commercial river traffic, which were paramount to the founding of Lynchburg.

As these historical features will be impacted, we recommend that the Applicant develop -- in collaboration with the Lynchburg Museum System and/or qualified stakeholders -- appropriately designed historical interpretive signage that will preserve these critical properties. Signage could be installed at public river access locations and within the project area to inform the public of the historical, commercial and social significance of this section of the James River. Prospective locations where signage could be placed listed are:

- Riveredge Park (Amherst County)
- 7th Street Public Boat Landing (City of Lynchburg)
- River Front Park and Percival's Island (City of Lynchburg)
- Newly dedicated public access areas and parklands

We are optimistic that these comments will prove helpful towards a meaningful and cooperative licensure process. Thank you for providing James River Association with this opportunity to voice our interests through these requests for study consideration. Please feel free to contact me at (434) 964-7635 or PCalvert@JRAva.org if you have any questions or additional requests.

Respectfully submitted,

Patrick L. Calvert
Upper James RIVERKEEPER®

Cc: Mark Fendig, Wayne Dyok, Kim Stein

Wayne Dyok <dyok@prodigy.net>

02/02/16 at 8:02 PM

Pat - Thanks for your comments. I think we are addressing them in the various study plans, but I will go back and verify that we have addressed all of them. This is very helpful.

Wayne

Luke Graham <scottsmillhydro@yahoo.com>
02/08/16 at 4:58 PM

BCC
jeddings@achp.gov Robert Bennet Glen Besa sbanks@blm.gov bmcgreg2010@gmail.com and 38 more...

Dear Licensing Participant:

Liberty University (LU) has now posted the draft study plans for the proposed Scott's Mill Hydroelectric Project on its web site at http://www.scottsmillhydro.com./ Based on informal discussions with licensing participants and the December 2, 2015 Joint Meeting LU developed 17 study plans. These draft plans along with Appendices can be assessed on the web site under the Study Plan tab. http://www.scottsmillhydro.com/study-plan.html The Appendices also show recent photographs of the portion of the site that we were unable to access on December 2nd due to safety considerations.

The study plans reference cultural resources Site Assessment forms. At this time these forms are not being made public.

We respectfully request that you provide your comments on the Pre-Application Document and draft study plans by Wednesday, March 10, 2016. Comments should be emailed to scottsmillhydro@yahoo.com. We would appreciate if you could copy Wayne Dyok at dyok@prodigy.net and Mark Fendig at mfendig@aisva.net. Please let us know if you cannot make that date. Thank you.

Regards,

Mark, Kim, Ben, Luke and Wayne

-----Original Message-----
From: Randy Lichtenberger [mailto:rml@handp.com]
Sent: Tuesday, February 09, 2016 9:48 AM
To: Kirchen, Roger (DHR)

Cc: dyok@prodigy.net; Ben Leatherland; kstein1609@earthlink.net; mfendig@aisva.net
Subject: Scott's Mill Hydro draft CR study plan

Roger,

Please find attached a copy of the draft study plan for cultural resources (see page 51) for the proposed Scott's Mill Hydro Project and corresponding appendices. These have also been posted to and are available for download from the website www.scottsmillhydro.com. I have also attached three site forms, representing the previously recorded resources in the preliminary APE. They are referred to in the draft study plan as Attachments 1 - 3. We have refrained from posting these online until ascertaining from the VDHR that these may be publicly shared. It is my opinion that they do not contain sensitive information and could be shared online, but please let us know if you concur.

We look forward to receiving VDHR's comments on the draft study plan.

Randy Lichtenberger
Director of Cultural Resources

HURT & PROFFITT
2524 Langhorne Road, Lynchburg, VA 24501
Phone: 434-546-6158 - Fax: 434-847-0047
Email: rml@handp.com - Web: www.handp.com

Kirchen, Roger (DHR) <Roger.Kirchen@dhr.virginia.gov>
To
Randy Lichtenberger
CC
dyok@prodigy.net Ben Leatherland kstein1609@earthlink.net mfendig@aisva.net
03/17/16 at 7:08 AM

DHR supports the proposed Cultural Resources Study Plan and has no comment at this time. Further, we do not object to the posting of the three site forms as attachments to the Study Plan; however, we ask that the locational maps appended to each of the forms be removed to protect sensitive locational information for these and adjacent sites.

Roger W. Kirchen, Director
Review and Compliance Division
Department of Historic Resources
2801 Kensington Avenue
Richmond, VA 23221
phone: 804-482-6091
fax: 804-367-2391
roger.kirchen@dhr.virginia.gov

Luke Graham <scottsmillhydro@yahoo.com>

Dear Interested Party:

Liberty University has filed with FERC the attached letter and the draft Study Plan for the Scott's Mill Hydroelectric Project.

Also, there was a typographical error in the weir equation Study Plan 1, with the H and Q being transposed. This was corrected and the document was reposted yesterday. The calculations were correct however.

If you have any questions, feel free to contact Wayne Dyok at 916 719-7022. We look forward to receipt of your comments in March.

Regards,
Wayne

02/12/16 at 11:53 PM

February 12, 2016
Via Electronic Filing
Ms. Kimberly D**.** Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

Re: FERC Project No. P14425-000
Scott's Mill Hydroelectric Power Project
Transmittal of Draft Study Plan

Dear Secretary Ms. Bose:

On behalf of Liberty University (LU), enclosed please find the draft Study Plan for the Scott's Mill Hydroelectric Power Project. LU posted the draft Study Plan on its web site at www.scottsmillhydro.com on February 8, 2016 and pursuant to the Communications Protocol simultaneously emailed resource agencies, Indian tribes, non-government organizations and other interested parties of the availability of the draft Study Plan. LU is requesting that participants comment on the PAD and draft Study Plan by March 10, 2016. LU intends to continue to work with licensing participants to finalize the Study Plan after comments have been received.

Licensing participants and LU agreed at the December 2, 2015 Joint Meeting that LU would prepare the draft Study Plan based upon comments received at the Joint Meeting and additional consultation. LU suggested at the meeting that participants provide their Study Plan comments one month after receipt of the draft Study Plan.

If you have any questions please contact the undersigned at (916) 719-7022.

Respectfully submitted,

Wayne M Dyok

McGurk, Brian (DEQ) <Brian.McGurk@deq.virginia.gov>
03/11/16 at 11:58 AM

Please see the attached memorandum containing comments on the Study Plans.

Brian McGurk, P. G.
Office of Water Supply
Virginia Department of Environmental Quality

brian.mcgurk@deq.virginia.gov
804-698-4180
mailing address: P.O. Box 1105, Richmond VA 23218

Molly Joseph Ward Secretary of Natural Resources
MEMORANDUM

March 11, 2016
COMMONWEALTH of VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY Street address: 629 East Main Street, Richmond, Virginia 23219 Mailing address: P.O. Box 1105, Richmond, Virginia 23218 Fax: 804-698-4019 - TDD (804) 698-4021
To: Kim Stein, Liberty University
From: Brian McGurk, Mark Richards, Mark Bushing (DEQ)
www.deq.virginia.gov

Re: Scotts Mill Hydropower Project (FERC P-14425), Request for Comments on Draft Study Plans
Thank you for the opportunity to provide comments on the Draft Study Plans. Following below are DEQ comments on the draft plan.
Study Plan 1: Water Levels

According to the description of the project, inflow that is less than the hydraulic capacity of the hydropower facility will be diverted to the facility, causing little to no flow over the top of the dam. This will apparently result in little to no flow to a portion of the river downstream for significant periods during low flow conditions on the river. The study plan should include the following:

- Specification of the number and location of upstream and downstream staff gauges and the planned frequency of water level monitoring at each gauge

- It was stated that due to the long period of flow recording in the James, no additional flow data are needed. The study plan should identify the flow gauge(s) from which data will be relied upon and how discharge at other locations will be transferred to the dam location.

- The monitoring should 1) capture low flow periods when there is little to no flow over the dam under the current condition, and 2) occur downstream of the dam along the left side of the river so that post-project effects upon the area immediately downstream can be estimated.

The plan should specify who will perform the monitoring and describe how the proficiency and/or experience of the workers will be determined.

Study Plan 2: Bathymetry Survey

The plan should specify who will perform the survey and describe how the proficiency and/or experience of the surveyors will be determined. Why is the use of sidescan sonar the most appropriate methodology?

David K. Paylor Director
(804) 698-4020 1-800-592-5482
P-14425 Study Plan Comments March 11, 2016

How will the map mentioned in section 10 be used to help determine flow pattern changes for pre- and post-project conditions?

Study Plan 3: Water Quality Effects of Flow and Water Level Changes

The PAD stated that the powerhouse will be located behind the 140-ft long gravity arch spillway. If the project layout has been changed or might be changed from that described in the PAD then the alternative project layouts should be identified explicitly as dependent upon the results of the studies.

The plan should specify who will perform the monitoring and describe how the workers' proficiency and/or experience will be determined. How will appropriate sampling points be determined? Will the sampling include the entire water column?

The plan states that it may be necessary to measure water velocities upstream of Scott's Mill dam to verify existing flow patterns during low flow conditions. Such measurements would be used to verify the accuracy of flow pattern predictions based on bathymetry and water level data. These measurements should be considered as definitely necessary and not optional.

The plan should explain why the approach considered (without a modeling effort to assess changes in flow patterns) should yield reasonable results rather than just including a statement to that effect.

Study Plan 4: Sediment Chemical Analysis

There is obvious concern that PCB contaminated sediment exists upstream of the dam and could be re-suspended during the dredging/sediment excavation effort. While recognized within this proposed study, the characterization appears to fall short.

First, DEQ suggests U.S. EPA Method 1668 be used for a portion of the sediment samples. This will provide a complete characterization within those samples for all PCB congeners and will account for weathering that may have occurred particularly in the deeper, anaerobic sediments. Targeting a small list of PCB congeners, such as those proposed can lead to an underestimation of total PCBs and an inaccurate level of existing contamination. A list of VELAP certified labs that perform method 1668 can be found on DEQ's PCB TMDL website. EPA Method SW-846- 8082 can also be used but should be calibrated against 1668 to see what percentage of PCB may be missed. A couple of side by side samples should accomplish this task.

Second, the characterization should be spatially more robust. Two samples above and below the dam seems inadequate and would not accurately characterize the existing sediments, especially above the dam. Apparently there are currently three separate locations where the powerhouse could potentially be located. Sampling should occur in each of the three potential powerhouse locations if there is a potential for sediment disturbance in these areas. Also, without knowing the depth of the existing sediments that have accumulated, a 6'depth may not be adequate.

Third, if the sediment is contaminated what measures will be taken to minimize re-suspension and release of the sediment? Also, how and where will the sediment be disposed? Depending on the level of contamination in the sediments, it may be necessary to collect water samples during excavation and have them analyzed for PCBs using method 1668.

The broader list of analytes appears adequate. DDT and metabolites should be retained for evaluation particularly for the deeper sediments.

Study Plan 8: Fish Passage

The development of trigger numbers for implementing upstream fish passage should not be completed until the powerhouse facility specifications have been completed.

Study Plan 10: Wetland Assessment

Jurisdictional determinations have previously been confirmed for Daniel Island and Treasure Island. Digital files are available from DEQ.

Daniel Island has contains wetlands (19.10 acres) on the southern tip of the island (closest to the dam) and an increase of 2-3 feet of water height (somewhere around 514 to 516 elevation) will flood a portion of that area. There are two vernal pools on this island. The study should include an assessment to see if there are rare or endangered species utilizing these pools.

Finally, it is important to note that the additional information and/or results from the studies, along with any other information collected to support the Scotts Mill Project License Application process, should be incorporated into a Virginia Water Protection (VWP) permit application so that the §401 certification is included as part of the Final License Application. It is recommended that, in order to expedite the §401 certification process, the licensee should begin the VWP permit application process as soon as possible.

Please contact Brian McGurk using the contact information below if you have any questions about these comments:

Brian McGurk
DEQ Office of Water Supply
P. O. Box 1105
Richmond VA 23218 Brian.McGurk@deq.virginia.gov 804-698-4180

Cc: Craig Nicol Wayne Dyok Mark Fendig

Scott.Smith@dgif.virginia.gov> Scotts Mill Hydro Team:

Attached are DGIF's comments regarding the proposed study plans for the Scotts Mill Hydro FERC licensing. Please let me know if you have any questions or comments. Scott M. S

To: scottsmillydro@yahoo.com

CC: Wayne Dyok Mark Fendig Palmer, George (DGIF) ProjectReview (DGIF) luke graham

03/11/16 at 1:17 PM

Scotts Mill Hydro Team:

Attached are DGIF's comments regarding the proposed study plans for the Scotts Mill Hydro FERC licensing. Please let me know if you have any questions or comments.

Scott M. Smith

Scott M. Smith
Region 2 Fisheries Manager
Virginia Dept. of Game and Inland Fisheries
1132 Thomas Jefferson Rd.
Forest, VA 24551
434/525-7522 (ext. 106)
scott.smith@dgif.virginia.gov

Molly J. Ward
Secretary of Natural Resources

COMMONWEALTH of VIRGINIA

Department of Game and Inland Fisheries

Robert W. Duncan
Executive Director

10 March, 2016

To: Scotts Mill Hydro FERC Licensing Team

RE: Scotts Mill Hydroelectric Project (FERC No. 14425)
Application for New License
Comments on Draft Study Proposals

Dear Scotts Mill Hydro Team:

The Virginia Dept. of Game and Inland Fisheries (DGIF) has reviewed the Draft Study Plan proposals, and offers the following comments on these proposals.

Study 1 – Water Level Assessment

It is unclear from the document where the staff gages will be located. Particularly downstream from the dam, the location of the gages could be critical. Additional information (planned locations) of these gages is needed to fully assess this study. Additionally, if this study is completed during the first half of 2016, it will likely only cover a relatively narrow range of potential river flows. How will water levels be assessed at unmeasured flows, particularly on the low end of the scale? Finally, it is unclear how water levels downstream can be assessed without the powerhouse in place. Water levels are likely to change substantially downstream once flows are diverted through the powerhouse.

Study 2 – Bathymetric Survey

We believe the bathymetric survey should extend upstream to the base of Reusens Dam, and downstream to the hydraulic control feature located immediately above the mouth of Blackwater Creek. This is the area that will be impacted by elevation changes in the reservoir and flow diversion through the powerhouse. Thus, data will be needed throughout this entire area to evaluate potential impacts from the project operations.

Study 3 – Water Quality

The draft proposes to use water quality data collected approximately 1.25 km below the dam to evaluate the impacts of project operations on temperature and dissolved oxygen (DO). We have concerns that, particularly in the case of DO, this may not be representative of conditions

immediately below the dam. In addition, currently water flows over the top of the dam, which would change when flows are diverted through the powerhouse. Thus, DO levels below the dam may be significantly different under project operating conditions compared with current conditions. Temperature and DO data from the reservoir (particularly under low flow and high temperature conditions) are needed to ascertain the potential for downstream impacts. We would also need to evaluate the alteration of water quality parameters associated with diversion of flows to the powerhouse. Additionally, should project operations result in low DO levels, potential mitigation measures should be investigated.

Study 4 – Sediment Analysis

You may wish to consider adding copper to the metals analysis of the sediments, as this element has been demonstrated to be toxic to aquatic life at elevated levels.

Study 5 – Impoundment Fish Community

We have no additional comments on this proposed study.

Study 6 – Turbine Entrainment/Impingement

Given that a final design for the turbines has not been completed, we cannot provide a determination regarding the adequacy of this proposed study. Since the applicant is considering a novel design (as well as more traditional ones), there are no extant data to evaluate fish entrainment/impingement and passage survival. As such, we cannot evaluate this until a turbine design is determined. Once that has been done, we can then provide guidance as to the appropriate study design. Additionally, a literature-based study may be insufficient to evaluate impacts to aquatic resources, but we cannot determine whether or not empirical data are needed until we know what the turbine design and capacity will be. Therefore, we recommend delaying the design and implementation of this study until the engineering aspects have been completed. This would be particularly applicable should the novel turbine design be chosen.

Study 7 – Impacts to Aquatic Habitat

It is unclear how aquatic habitat will be assessed from the study proposal. Diversion of flows through the powerhouse will result in substantial habitat changes downstream. Given the high quality of the existing habitat, any changes will potentially have deleterious effects on aquatic life. We suggest that, in consultation with stakeholders, a PHABSIM study be undertaken in the reach between the dam and Blackwater Creek. This would include collection of pre- and post-construction data to empirically compare habitat alterations associated with flow diversion. Should these comparisons indicate changes in quantity/quality of habitat, potential mitigation measures should be evaluated as part of this study. A3AAPP

Study 8 – Fish Passage

Based upon the proposed study, we have significant concerns regarding downstream fish passage. The proposal was vague as to how downstream passage would be undertaken and coordinated, particularly among multiple dam operators. We suggest a much more detailed study design regarding downstream passage. We disagree with the statement that little habitat for migratory species currently exists between Cushaw and Scotts Mill dams. In reality, there is a substantial amount of habitat in this reach, particularly when tributaries are included. As such, we believe that fish passage (upstream and downstream) is warranted at all of these dams. Currently, the only migratory species present in substantial numbers in the project area are American Eel and Sea Lamprey. This study proposal should include provisions for passing these species (as well as resident species) around Scotts Mill Dam (upstream and downstream). Additionally, the study should examine upstream/downstream passage of American Shad and resident species in greater detail. As it is currently drafted, the proposed study does not provide sufficient information to determine its suitability, and significantly greater detail is needed.

Study 9 – Mussel Survey

The geographic scope of this study should be Reusens Dam to the mouth of Blackwater Creek, as this is the river segment that will be potentially impacted by project operations. Other than this, we concur with the design of this study.

Study 10 – Wetland Assessment

We have no additional comments on this proposed study.

Study 11 – Terrestrial Resources

We have no additional comments on this proposed study.

Study 12 – Protected Species

We have no additional comments on this proposed study.

Study 13 – Bat Survey

We have no additional comments on this proposed study.

Study 14 – Recreation Resources

We have no additional comments on this proposed study.

Study 15 – Cultural Resources

We have no additional comments on this proposed study.

Study 16 – Visual Resources

We have no additional comments on this proposed study.

Study 17 – Decommissioning

We have no additional comments on this proposed study.

Submitted by
Scott M. Smith
Regional Fisheries Manager
Virginia Dept. of Game and Inland Fisheries
1132 Thomas Jefferson Rd.
Forest, VA 24551
434/525-7522
Scott.Smith@dgif.virginia.gov

Luke Graham <scottsmillhydro@yahoo.com>

03/22/16 at 11:25 AM

Glen,

We talked on Friday about the Scotts Mill Hydropower project. The public comments deadline regarding the study plans for this project has already passed. However, if you still wish to submit comments we will accept them until this Friday (3/25/2016). You can access the proposed study plans at the project website: www.scottsmillhydro.com . If you have any further questions feel free to email us at scottsmillhydro@yahoo.com or you can call me at (907) 227-9861. Hope to see your comments soon.

Regards,

Luke Graham

Luke Graham <scottsmillhydro@yahoo.com>

03/23/16 at 7:34 PM

Pat,

I have attached a copy of my write up for the conversation we had on 3/16/2016 regarding the Scotts Mill Hydropower project study plans. If you have any additional comments or changes you would like to add please let me know and I will make them before posting this record to the website.

Sincerely,

Luke Graham

RECORD OF TELEPHONE CONVERSATION

Person Called- Pat Calvert
Affiliation- James River Association
Phone Number- (434) 964-7635
Call Originator- Luke Graham
Date- March 16, 2016

Summary of Discussion

I contacted Pat Calvert of the James River Association to ask if he had any additional comments regarding the study plans submitted for the Scotts Mill Dam Hydropower Project. Pat expressed that he had already addressed most of his concerns in comments he had previously submitted. However, he did add that he was concerned about the lack of investigation into the perceived water rights of the owners/licensee of the Scotts Mill Dam Hydropower project. Pat stated that he would like to know if the owners/licensee of the Scotts Mill Hydropower Project would seek to exercise any water rights. Additionally, he wanted to know what specific water rights are granted to the owner/licensee of the project according to the Virginia Dept. of Environmental Equality. Pat stated that most of this concern came from the fact that many downstream users (City of Lynchburg, VA) depend upon the James River as a secondary source of drinking water.

Prepared By:

Luke Graham

To
Randy Lichtenberger
CC
dyok@prodigy.net Ben Leatherland kstein1609@earthlink.net mfendig@aisva.net
03/17/16 at 7:08 AM

DHR supports the proposed Cultural Resources Study Plan and has no comment at this time. Further, we do not object to the posting of the three site forms as attachments to the Study Plan; however, we ask that the locational maps appended to each of the forms be removed to protect sensitive locational information for these and adjacent sites.

_____
Roger W. Kirchen, Director
Review and Compliance Division
Department of Historic Resources
2801 Kensington Avenue
Richmond, VA 23221
phone: 804-482-6091
fax: 804-367-2391
roger.kirchen@dhr.virginia.gov

---

daniel crawford <dbcrawford@cox.net>
03/24/16 at 7:47 PM

The use of an existing dam to generate power seems a win-win for all. The Sierra Club's primary focus for decades has been rapid climate change, and robust investment in renewable energy sources is our only hope for avoiding the worst consequences of climate disruption. The Scotts Mill Hydro Project is a step in the right direction.

Dan Crawford
Chair, Roanoke Group, Sierra Club
2311 Kipling St. S.W.
Roanoke, Va. 24018
dbcrawford@cox.net
540-343-5080

To: dyok@prodigy.net

03/29/16 at 8:23 AM

Hi Wayne,

I'm sorry I have not returned your calls. I am in the middle of pulling together a big report that is due out on April 12. Unfortunately, I won't have any time to dedicate to looking at this until after that time. I'm sorry if you've been waiting to hear from me.

Regards,

Jessie

Jessie Thomas-Blate
Associate Director of River Restoration and Most Endangered Rivers Coordinator

American Rivers
1101 14th St., NW, Suite 1400 | Washington, D.C. 20005
Phone: (202) 347-7550 | Email: jthomas@amrivers.org
www.americanrivers.org | Facebook.com/AmericanRivers | Twitter.com/AmericanRivers

Hi Brian, Mark, Mark, and Tony.

Attached are draft notes of our April 19th meeting. They are succinct, but I believe they capture the essence of our discussions. Can you take a quick look at them and edit as you deem appropriate. Thanks.

We would like to file these notes with FERC along with a revised study plan and also include your study plan comment letters and our responses. I hope to send out the revised study plan and comment letters tomorrow.

We will also post everything on the Scott's Mill website once we hear back from you. We have been implementing the study plan and will also have an update on that to our participant list in the next week or so.

Regards,

Wayne.

SCOTT'S MILL HYDROPOWER PROJECT (FERC NO. 14425)
NOTES OF MEETING
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY AND LIBERTY UNIVERSITY REPRESENTATIVES
VDEQ OFFICE
7705 TIMBERLAKE ROAD, LYNCHBURG VIRGINIA
APRIL 19, 2016

Attendees

Brian McGurk, Virginia Department of Environmental Quality (VDEQ)

Mark Bushing, VDEQ

Mark Richards, VDEQ

Anthony Cario, VDEQ

Ben Leatherland, Hurt & Proffitt

Mark Fendig, Luminaire Technologies

Wayne Dyok, H2O EcoPower

Site Reconnaissance

The attendees conducted a site reconnaissance of the north side of Scott's Mill dam adjacent to Griffin Pipe Company property. They observed firsthand the arch section of the dam, canal remnants, water level gauge locations, and potential construction approach.

Meeting Notes

The meeting attendees discussed VDEQ's March 11, 2016 comments on the Scott's Mill Hydropower Project (FERC No. P-14425) draft study plan. Wayne Dyok provided an overview of the water level measurements. Liberty University (LU) concurred with VDEQ comments on water levels. Monitoring will capture low flow periods both upstream and downstream of the dam.

Wayne said that the bathymetry survey was currently being undertaken. He explained how the survey was being conducted and the equipment being used.

Mark Fendig noted that flashboards were installed in the 1960s on Scott's Mill dam. He also commented that debris will be an issue in operating the project.

Mark Bushing stated that VDEQ is not looking for water quality improvements, but is concerned that construction and operation of the project not exacerbate water quality problems.

LU agreed that both water velocity and dissolved oxygen (DO) measurements are appropriate in the headpond and downstream. LU will take synoptic DO measurements during low flow conditions downstream of Reusens dam, halfway between Reusens and Scott's Mill, and immediately upstream of Scott's Mill dam upstream of the arch section of the dam. Additional DO measurements will be made downstream of the Scott's Mill dam. Continuous DO measurements will be taken upstream of the arch section of the dam to better understand diurnal DO variability during low flow conditions. Tony suggested that LU consider pre- and post-project DO sampling. LU concurred with Tony's suggestion.

Attendees next discussed the sediment chemical analysis. VDEQ noted that this part of the James River is impaired for fish tissue and PCBs. A TMDL (total maximum daily load) is expected by 2022. VDEQ commented that some point source measurement of PCBs appear high in the Lynchburg area, suggesting that something is happening upstream. VDEQ asked if there would be resuspension of sediment during construction and operation. Other than dredging upstream during construction, LU does not anticipate resuspension beyond what takes place during current conditions.

LU concurred with using EPA Method 1668. However, because less sediment would be disturbed during construction than originally thought by VDEQ, it was agreed that the number of samples needed could be reduced from VDEQ's March 11 recommendations. Ben Leatherland recommended one or two samples with composites at various depths. Since there is little sediment immediately downstream of the dam, it was thought that only one surficial sample might be needed. (See revised study plan for additional details.)

VDEQ asked about disposal of the dredged sediments. Mark Fendig responded that LU planned to place the dredged sediments on Daniel Island. VDEQ asked that LU define the excavation boundary and the volume of material to be dredged. LU will do this as part of the engineering effort and include in the draft license application. VDEQ said they were not concerned about other organic chlorines.

Attendees next discussed the wetlands assessment. VDEQ stated that there are no wetlands on Treasure Island.

It was also noted that no sediments are behind Rock 10 dam (also known as West Rock Dam), which is downstream from Scott's Mill.

Attendees lastly discussed the Virginia Water Protection permit application. Ideally this permit should be filed as part of the draft license application. VDEQ noted there will be a public noticing period and potentially a public meeting. VDEQ staff noted the process is likely to take 120 days or more with a 30-day public notice. It will be incumbent upon LU to notice the pre-application.

RECORD OF CONVERSATION

Person Called- Alan Weaver

Affiliation- Virginia Department of Game and Inland Fisheries

Phone Number- (804) 367-6795

Call Originator- Luke Graham

Date- May 16, 2016

Summary of Discussion:

I contacted Alan Weaver of Virginia Dept. of Game and Inland fisheries to inquire about fish passage for Scott's Mill Dam. I asked what requirements there would be (in regards to run numbers) to initiate a trap and transport program for American Shad on the James River (at Scott's Mill Dam). Mr. Weaver stated that currently the Shad run on the James River (as well as the Susquehanna river) has been far below their targeted population levels with runs only reaching numbers from ~100- 1000 fish in recent years at Bosher's Dam. He stated that this was far lower than the targeted goal of 1,000,000 fish for the entire James River. Additionally, he noted that instead of having a targeted number of shad reaching Scott's Mill Dam to initiate a trap and transport program, he would be more likely to recommend a daily trap and transport program during peak shad run dates.

However, Mr. Weaver stressed during the conversation that he was more concerned with the passage of American Eel and Lamprey at Scott's Mill Dam. Mr. Weaver stated that currently there is a trap and transport program for American Eel at the Roanoke Rapids Dam. However, he recommended that instead of a trap and transport program, he would rather see Scott's Mill Dam install a vertical slot fishway to allow passage of all fish species within the James River. This was due to the difficulty in having to create different capture/transport programs for all migratory fish species (i.e. American Shad, American Eel, Lamprey etc.) He also noted the importance of resident species fish passage within the James as another reason for being in favor of a vertical slot fishway over other fish passage methods.

Prepared By:

Luke Graham

Pat Calvert <pcalvert@jrava.org>
06/08/16 at 7:52 AM
This message contains blocked images.

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Wayne,

Is LU still pursuing licensure of Scott's Mill dam hydro project?

Thank you,

Pat Calvert
Upper James Riverkeeper
Tel. (434) 964-7635

Wayne Dyok <dyok@prodigy.net>
06/08/16 at 5:06 PM
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Hi Pat. Yes. I will be filing a revised study plan next week. We have been talking with DEQ, DGIF and USFWS.

We also did the bathymetry study and have been monitoring the gauges we installed.

I have been meaning to get out an email to the distribution list.

Feel free to call me at 916 719-7022.

Sent from my iPhone

Wayne Dyok <dyok@prodigy.net>
06/08/16 at 10:09 PM

To: Scott Smith McGurk Brian (DEQ) David Sutherland Kirchen Roger (DHR) Holma Marc (DHR) and 4 more...

CC: Luke Graham Mark Fendig kstein1609@earthlink.net Ben Leatherland Randy Lichtenberger and 2 more...

06/16/16 at 1:19 PM

Good afternoon everyone. After a very frustrating time trying to file the revised study plan for the Scott's Mill Hydropower Project, we were finally successful in getting it filed with FERC this morning. It turns out the problem was on their end, and was not my computer after all. I should have had more faith in my system.

I want to thank all of you for commenting on the draft study plan/Pre-Application Document. We carefully reflected on all the comments and revised the draft plan accordingly. We are including the revised study plan, your comment letters, LU's responses, notes of our meeting with VDEQ, and a record of conversation with Alan Weaver of VDGIF on fish passage as part of this email. We are not including the cultural resources appendices to the study plan because that file is voluminous. You can access it on the Scott's Mill (or FERC) website if you are interested. It does have nice photos of the project, which causes the file to be large.

We will be adding all these files to the website this weekend. We will also get out an update on the project to all participants by next Monday.

As a quick update on the project, we have sufficient water level data at various James River flows to understand the flow/water level relationships up to about 12,000 cfs. We are in the process of examining existing flow patterns. We learned from the bathymetry and velocity measurements taken to date that the flow velocities in the headpond are very slow. This is due to the fact that the headpond is much deeper than we anticipated. Water levels are constant across the river at the dam site. Downstream is a little different. The river is shallow and there is a small water level differential across the dam, with the right side being about 0.2 to 0.3 feet higher than the left side, thus causing some flow from the arch section, laterally to the left side of the river.

We have also been talking to Alan Weaver at VDGIF on fish passage. At this time there seems to be a desire to have fish passage at Scott's Mill immediately into the headpond. This would certainly work to get fish into Scott's Mill headpond and tributaries that feed the headpond. However, we are concerned that if fish passage is added to all the dams, we might not be able to restore fish habitat upstream of Cushaw Dam. While we acknowledge that the James River and Susquehanna Rivers are different, we are well aware of the problems with timely upstream passage when the American shad negotiate each of the 4 dams on the Susquehanna versus when they used to trap and haul the shad. I know David Sutherland is well aware of this, so we plan to counsel with him and VDGIF as the fish passage study effort progresses.

Eric Thompson of Natel has been working with us on the entrainment study. We provided the list of fish species for Natel to evaluate for downstream passage. These include American eel, lamprey, American shad, river herring, and resident species (e.g., bass and suckers). If we have omitted any key fish species, please let us know.

Our critical path study is likely the dissolved oxygen study. We need low flow, hot conditions before we undertake that effort. Once we get that data, we will be assembling the draft license application and draft VWP application. We will certainly stay in touch as the studies progress.

Also feel free to contact me if you have any questions or further comments.

Regards,

Wayne

SCOTT'S MILL HYDROELECTRIC PROJECT (FERC No. 14425)

STUDY PLAN COMMENT RESPONSES

VIRGINIA DEPARTMENT OF GAME AND INLAND FISHERIES

Study 1- Water Level Assessment

Liberty University (LU) proposes to locate staff gauges on the left side of the river, immediately upstream and approximately 100 feet downstream of Scott's Mill dam, and on the right side approximately 50 to 100 feet upstream and downstream of the dam. Two four-foot high gauges will be placed on the left side of the river (north side) on the bank. The bottom elevation of the gauge will be approximately dam crest height in order to capture water levels at the lowest flows and moderately high discharges. The downstream gauge will be similarly placed on the left bank so that the zero point captures the water level during the low summer flows.

Two gauges will be placed on the right bank or on the south side of Daniel Island about 50 feet upstream of the proposed powerhouse location. One gauge will have the zero point at about the dam crest elevation to measure low summer flows. The second 4-foot high gauge will be placed higher on the bank with the zero point just below the four-foot level of the first gauge to provide a continuous record of water levels over about an 8-foor range. This will cover water levels from very low flows to flood flows.

The two downstream gauges will be placed on the right bank downstream of the powerhouse in the vicinity of the tailrace. There will be a similar overlap in gauges heights to span about an 8-foot range in tailwater levels.

The gauges will be surveyed to provide relative water level differences among all gauges and the dam crest elevation.

The gauges will be read manually. The date/hour will be recorded so the data can be correlated with the Holcomb Rock gauge. The goal of this study is to take sufficient readings under various flow conditions to span water levels from flood conditions to low water.

The water levels will be used to verify the coefficient of discharge for the dam. Assuming that sufficient flow ranges are measured, LU will be able to accurately predict upstream and downstream water levels for Holcomb Rock flows.

Periodic measurements of the gauge located near the 7th Street Boat Ramp will also be taken to assist in the overall understanding of streamflow downstream of Scott's Mill Dam.

To assess post project conditions, LU will consider both flashboard and no-flashboard conditions. For the no-flashboard conditions, LU will be able to manage water levels at the dam crest height until the maximum hydraulic capacity of the turbines is reached (i.e., about 4,500 cfs). For flows above 4,500 cfs, water levels will be a function of the weir equation developed for existing conditions, less

the flow that is discharged through the powerhouse. LU will look at the downstream bathymetry and channel hydraulics to estimate backwater conditions on the left side of the river. LU will then be able to determine if some water should be diverted to the left side of the river or if some water should be discharged over the dam to protect water quality and aquatic habitat.

For flashboard conditions, the weir coefficient will be replaced by the discharge coefficient for the proposed flashboards. These coefficients will be obtained from manufacturer data as that information is routinely provided. LU will be able to manage upstream water levels up to the hydraulic capacity of the powerhouse. Above that flow, water will flow over the flashboards. LU's proposed operations will dictate what the water levels will be up to the hydraulic capacity of the turbines. LU will calculate upstream water levels for flow conditions that exceed the hydraulic capacity of the turbines.

Study 2 – Bathymetric Survey

Our sense is that flow patterns upstream near Reusens dam will be dictated by how flow is released over the dam and/or through the turbines. Our initial assessment was that flow patterns upstream of Scott's Mill would be influenced by powerhouse/spillway releases upstream to just upstream of Woodruff Island. Flow patterns may be a little more complicated if flashboards are installed. Because of the uncertainty of flow patterns at this stage since we do not have the bathymetry, LU agrees to expand the bathymetry effort to Reusens Dam. LU concurs with VDGIF to extend the downstream bathymetry to the mouth of Blackwater Creek.

Study 3 – Water Quality

LU agrees that there may be changes in DO and water temperature during low flow and high air temperature conditions. Under current conditions, reaeration of flow is expected downstream of Scott's Mill even if DO is low immediately upstream. This may not be the case during project operations. LU agrees to monitor DO and water temperature at low flow higher temperature conditions upstream and downstream of Scott's Mill Dam. LU will also measure water temperature downstream of Reusens Dam to measure DO degradation as flow moves downstream. LU estimates that it would take aseveral days for water to travel from Reusens Dam to Scott's Mill Dam under existing low flow conditions. This time could be increased if flashboards are installed. Having this information will aide LU in determining potential mitigation measures should DO degrade during post-project conditions. As part of this study LU will investigate mitigation options to protect habitat from decreased DO and higher water temperatures during hot, low flow conditions. Such measures may include discharge of water over the spillway.

Study 4 – Sediment Analysis

LU met with Virginia Department of Environmental Qualtiy on April 19. Based on that meeting it was determined that metals analysis of sediments is not warranted.

Study 6 – Turbine Entrainment/Impingement

LU will consult with VDGIF on the turbine entrainment study as the design is developed. The study will be deferred until more information on the design is available.

Study 7 – Impacts to Aquatic Habitat

LU has concerns that PHABSIM will not provide the requisite data to evaluate impact to aquatic habitat. To our knowledge PHABSIM does not have the ability to determine flow pattern changes. LU's proposal is to assess changes in flow patterns and water quality to estimate habitat effects. Under normal flow conditions, LU expects that velocities upstream of the dam will be less than 1 foot per second (e.g., 3,000 cfs average flow divided by 800 foot width and 5 foot average depth). LU will be able to determine post project depth changes and intends to estimate velocity changes. As a check on velocity, LU proposes to collect velocity data during the bathymetry study at various locations in the impoundment and at two cross sections downstream of Scott's Mill Dam. These velocity measurements can be used as a check on the flow pattern analysis.

Study 8 – Fish Passage

We agree that there is some vagueness in the fish passage study as we have not held discussions with the upstream dam owners. We propose to conduct this as an iterative study with VDGIF, USFWS and other parties that have an interest in fish passage. The first part would be to conduct the literature survey and better understand the current status of fish restoration and timing and initial plans for fish passage (e.g., pass American shad upstream of Scott's Mill only or haul them upstream of Cushaw dam).

We defer to VDGIF on the restoration of habitat between Scott's Mill and Cushaw Dam. We will work with VDGIF on an initial proposal to pass American eel and Sea Lamprey upstream of Scott's Mill. Eel and lamprey passage can be incorporated into project construction. We will expand the study to include passage upstream and downstream of Scott's Mill.

Study 9 – Mussel Survey

LU will expand the mussel survey to include the area from Reusens Dam to the mouth of Blackwater Creek.

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

Study 1- Water Level Assessment

LU concurs with DEQ's recommendations for Study Plan 1. (See response to VDGIF.) LU will correlate the water levels with the Holcomb Rock gauge. LU will also capture water levels during low flow conditions. LU staff or Hurt and Proffitt staff will record water levels.

Study 2 – Bathymetric Survey

The bathymetric survey will be conducted by Luke Graham with local support. As a fishing guide, Mr. Graham routinely uses side scan sonar to monitor bathymetry. He is familiar with mapping water depths. LU plans to use a Humingbird Helix Series side scan sonar. LU will be able to distinguish between soft and hard sediments using this type of sonar. LU believes that side scan sonar will provide the needed results in a cost effective manner.

The map will be used in conjunction with upstream water levels to determine flow patterns. LU will use transects, water level differences, river slope, velocity patterns under existing conditions, and proposed project operations to estimate flow patterns. That information will be used to determine water temperature and DO effects.

Study 3 – Water Quality

LU concurs that the alternative project layouts should utilize study results. As appropriate, mitigation measures will be undertaken to minimize project effects.

LU anticipates that experienced technicians from Hurt and Proffitt will measure water quality parameters. Resumes will be provided to DEQ at DEQ's request.

LU concurs that velocity measurements will be valuable in verifying existing flow patterns. Accordingly LU will take velocity measurements at a number of locations upstream of Scott's Mill Dam and at two cross sections downstream. Because of the relative shallow depth of the river, LU proposes to take velocity measurements at 0.2 and 0.8 depths as that will provide a reasonable average velocity for that location.

LU will explain why this approach is sufficient. Should resource agencies determine that this approach yields insufficient accuracy, a numerical modeling approach could be undertaken. LU will have the necessary information to conduct such modeling with the bathymetry and water level data. Modelers should also be able to estimate Mannings n for the modeling analysis. LU believes that costly modeling is unwarranted because mitigation steps can be undertaken to minimize project effects including passing low flows over the Scott's Mill Dam during low flow, warm conditions.

Study 4 – Sediment Chemical Analysis

During our April 19th meeting, LU discussed the sediment chemical analysis and procedures to minimize re-suspension of materials during construction. Study 4 has been modified accordingly.

Study 5 – Fish Passage

LU is proposing an iterative fish passage study approach (see response to VDGIF). We concur that trigger numbers should be developed later in the fish passage study process.

Study 10 – Wetland Assessment6

Hurt and Proffitt will work with VDEQ to obtain the jurisdictional wetlands information currently available. LU will modify the study plan to assess if there are rare or endangered species using the vernal pools on Daniel Island.

LU will discuss with VDEQ on how best to incorporate information from the licensing process into the Virginia Water Protection permit application.

Wayne Dyok <dyok@prodigy.net>
06/20/16 at 9:19 PM

To: Larry Jackson, APC
Hi Larry. Attached is a letter Liberty University LU) filed with FERC today under the Reusens docket. (It will be posted tomorrow.) Because the proposed Scott's Mill Project can affect Reusens in two significant ways, we deemed it appropriate to notify you through this email and through the FERC docket. I am sure you are aware that LU is considering flashboards at Scott's Mill and these could affect generation at Reusens. Secondly, we are working with the USFWS and VDGIF on fish passage. We initially thought that this would be a trap and haul program. However, in talking further with the resource agencies, we have added volitional fish passage. Given that Reusens is coming up for relicensing we would like to work with you and the resource agencies to determine the best plan going forward. Can you provide the name and contact information for someone at APC that we can include in the consultation process? We expect to contact that individual in July once we have gathered additional information on fish passage.

Kindest regards,
Wayne Dyok

2 Attachments
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June 20, 2016

Via Electronic Filing

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

Re: FERC Project No. P-2376

Reusens Hydropower Project,

Notification of Issues on Scott's Mill Hydropower Project Potentially Affecting Reusens Relicensing

Dear Ms. Bose:

Liberty University (LU), preliminary permit holder for the proposed Scott's Mill Project (FERC Project No. 14425), LU is providing advance notification to the Federal Energy Regulatory Commission (FEFC) and Appalachian Power Company (APC) that the licensing of the Scott's Mill Hydropower Project could affect the Reusens Project in at least two ways. LU is potentially proposing to add flashboards to Scott's Mill Dam that could back water up to Reusens Dam and affect power generation. Secondly, LU is working with resource agencies and interested parties to develop a fish passage plan for the James River upstream of Scott's Mill. Both a trap and haul and a volitional fish passage plan are being considered. At the request of resource agencies LU is considering passage for American shad, river herring, American eel, lamprey, and resident fish species.

LU informed APC of these issues at the Scott's Mill Pre-Application Document joint meeting held on December 2, 2015, at which an APC representative attended. However, at that time LU was considering only a trap and haul program. Through continued discussions with resource agencies, LU and the resource agencies have expanded the study plan to include upstream and downstream passage at Scott's Mill. LU's revised study plan is included in this filing.

Over the several months LU has been implementing the Study Plan for the Scott's Mill Project. In particular, LU is undertaking the initial phase of the fish passage study which is being conducted in an iterative manner.

LU is copying APC on this filing and anticipates APC's full participation in that study, particularly since the license for the Reusens Project expires on March 1, 2022, necessitating APC filing a Notice of Intent with FERC by March 1, 2017 that APC intends to either file for a new license or surrender their existing license for the Reusens Project. LU is also copying the U.S. Fish and Wildlife Service and the Virginia Department of Game and Inland Fisheries who have been working cooperatively with LU on this issue. LU also understands that the Reusens Project has not operated for the last six years and that APC is currently considering upgrades to the project, which could affect future fish passage plans.

Please contact the undersigned at (916) 719-7022 if you have any questions or comments.

Respectfully submitted,

Wayne M. Dyok for

LIBERTY UNIVERSITY, INC.

Cc Larry Jackson, APC
Scott Smith, VDGIF
David Sutherland, USFWS
Kim Stein
Mark Fendig, Luminaire Technologies

From: Wayne Dyok [mailto:dyok@prodigy.net]
Sent: Friday, September 16, 2016 1:04 PM
To: McGurk, Brian (DEQ); Smith, Scott (DGIF); Pat Calvert; Cario, Anthony (DEQ); David Sutherland
Cc: Luke Graham; Mark Fendig; Ben Leatherland
Subject: Fw: DO data compilation

Hi Brian, Scott, Pat, Anthony, and David. Attached are dissolved oxygen data collected by Ben Leatherland of Hurt and Proffitt last Friday and Monday of this week. On Friday, Ben took a longitudinal DO profile from upstream of Reusens to Blackwater Creek. He left the meter in the river just upstream of the arch section over the weekend to get a time history. On Monday, Ben took cross section and vertical profiles. Flow at Holcomb Rock on Monday was about 740 cfs and the air temperature was relatively high at approximately 90 F (32 degrees C). There was almost no flow over the arch section of the dam. (Luke will be putting up some pictures on our website of flow over the dam next week when we have a chance to organize the photos.)

I was pleasantly surprised by the results. The DO was higher than what I would have expected given the low flows and hot temperatures. Upstream of the dam DO varied from 6.6 to 9.0 mg/l over a day. The water temperature varied by less than a degree C. We did see a minor change in DO from surface to bottom in the deepest section of the river (i.e., about 23 feet deep), but that was expected. In essence there was little stratification. Similarly there was not much change in DO longitudinally. In particular with almost no flow going through the section on the right side of Daniel Island the DO in that section of the river was similar to what was measured on the left side (looking downstream). I believe the data provided by Ben are self explanatory.

Based on the results of the DO sampling, our thoughts are that we have sufficient DO data to characterize the baseline DO in the river during hot, low conditions. (Over the week the flow at Holcomb Rock has fallen slightly rom 740 to 704 cfs.) Brian do you agree we have sufficient DO data?

We have coordinated the mussel survey with Brian Watson. That is planned for the first two weeks in October. Brian plans to participate in the survey.

We are also talking to Eagle Creek Energy, the entity that is purchasing Reusens, on fish passage. Scott, I hope to get in touch with you soon to coordinate that effort.

The remaining studies are moving along including the engineering effort. We should have an update for licensing participants in the next couple of weeks.

Mark and I met with LU on Monday and we plan to have further discussions with LU in the coming weeks as we map out the licensing schedule and further develop the engineering design and cost estimate.

Please let me know if you have any questions.

Kindest regards,

Wayne

On Tuesday, September 13, 2016 6:59 AM, Ben Leatherland <bll@handp.com> wrote:

Hi Mark/Wayne,

Attached, please find the compiled DO data from the riverbank (on Friday, 9/9/16), from upstream of the Scott's Mill Dam arch section (Friday-Saturday, 9/9/16-9/10/16), and from the main channel of the river near the buoys (Monday, 9/12/16).

A few notes and observations:

1) The data were collected on sunny days in late summer, with daytime temperatures of 75-90 degrees F, when there had been no rain in the previous four to five days.

2) Data were collected using a YSI Pro ODO meter (s/n 16F102537), which was new at the time of sampling, and was calibrated to barometric pressure on 9/9/16, according to YSI instructions (and based on Lynchburg Airport NWS/NOAA preceding 72-hr data, corrected for sea level).

3) The 9/9/16 riverbank data and longer-term 9/9/16-9/10/16 data were from depths of less than 0.5m.

4) The batteries in the DO meter died on 9/10/16, and therefore limited the volume of 9/9/16-9/10/16 data.

5) Aquatic vegetation and algae may be partly responsible for the higher daytime DO measurements.

6) The 9/12/16 cross-section data were collected by trailing the meter cable/probe behind a canoe, using 10s logging intervals. Due to the forward movement of the canoe, the actual measurement depths are likely slightly less than the noted cable lengths.

7) The 9/12/16 cross-section data were collected from the left riverbank to Daniel Island. As a result, the deepest/fastest water measurements are generally within the first half of the data for each cross-section.

8) A total of four vertical profiles were measured, all in the main river channel upstream of the Scotts Mill Dam straight section. Profiles 1-3 were in the main channel of the river, within 100m of the left riverbank. Vertical Profile 3 was the deepest of the three. Vertical Profile 4 was within 100m of Daniel Island. No vertical profile data was collected upstream of the Scotts Mill Dam arch section.

9) The 9/12/16 vertical profiles suggest a gradual decrease in temp and DO with increasing depth. The temp range was generally 1.2-2.0 degrees C, which would seem to indicate little thermal stratification through the water column.

10) The 9/12/16 vertical profiles suggest a general decrease in DO with increasing depth, with 20.8-25.9% difference between highest and lowest measurements. The lowest measured DO was 82.5% (Vertical Profile 3, at approximately 8-10m depth). The highest DO measurement was 108.5% (Vertical Profile 1, within 1-2m of the water surface).

Please review these data, and call with any questions. Thanks, and have a great day.

Ben Leatherland
Environmental Scientist

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CIVIL ENGINEERING & SURVEYING SINCE 1973

2524 Langhorne Road, Lynchburg, VA 24501
Phone: 434-847-7796 x686 - Fax: 434-847-0047 - Cell: 540-520-1533
Email: bll@handp.com - Web: www.handp.com

From: Wayne Dyok [mailto:dyok@prodigy.net]
Sent: Monday, September 12, 2016 1:20 PM
To: Ben Leatherland
Cc: mfendig@aisva.net
Subject: Re: DO data from deployed meter

If that is possible, can you take a reading across the river where the buoys are. And take a couple of vertical profiles.

Sent from my iPhone

On Sep 12, 2016, at 1:15 PM, Ben Leatherland <bll@handp.com> wrote:

Hi Mark/Wayne,

Here are the DO data from the deployed meter (see below). Unfortunately, the measurements ended after 21 hours. The batteries were dead when we picked up the meter this morning. As expected, the lowest DO measurement was at night (at about 3am) and the highest measurement was during the day (at about 10am). Please review, and give me a call to discuss. I'm on a conference call until about 2:00pm. Do you want us to go collect deeper water data today?

Thanks.

50m u/s of Scott's Mill Dam arch section, 9/9/16-9/10/16, site 012, beginning at 16:24pm							
Meter time	**Actual time**	**DO (%)**	**DO (mg/L)**	**Temp (^{o}C)**	**Pressure (mm Hg)**	**Depth (m)**	**Notes**
0:37	17:01	100.9	7.9	27.9	753.1	0.3	
1:37	18:01	99.6	7.8	27.9	752.9	0.3	6pm, 9/9/16
2:37	19:01	99.0	7.8	27.9	752.9	0.3	
3:37	20:01	96.5	7.6	27.8	752.8	0.3	8pm
4:37	21:01	95.1	7.5	27.8	753.2	0.3	
5:37	22:01	94.1	7.4	27.7	753.2	0.3	10pm
6:37	23:01	92.0	7.2	27.7	753.9	0.3	
7:37	0:01	89.8	7.1	27.6	754.3	0.3	12 midnight, 9/9/16
8:37	1:01	88.7	7.0	27.6	754.9	0.3	
9:37	2:01	86.0	6.8	27.6	755.5	0.3	2am, 9/10/16
10:37	3:01	**83.9**	**6.6**	27.5	755.9	0.3	
11:37	4:01	89.8	7.1	27.6	756.2	0.3	4am
12:37	5:01	91.8	7.2	27.8	756.1	0.3	
13:37	6:01	95.8	7.5	27.9	755.8	0.3	6am
14:37	7:01	97.5	7.6	28.0	755.6	0.3	

15:37	8:01	108.0	8.4	28.2	755.4	0.3	8am
16:37	9:01	114.9	9.0	28.2	755.0	0.3	
17:37	10:01	**113.2**	**8.8**	28.3	754.9	0.3	10am
18:37	11:01	109.2	8.5	28.1	755.2	0.3	
19:37	12:01	102.2	8.0	28.0	755.9	0.3	12 noon, 9/10/16
20:37	13:01	98.8	7.8	27.9	756.8	0.3	
21:37	14:01	95.3	7.5	27.8	757.3	0.3	2pm

Ben Leatherland
Environmental Scientist

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McGurk, Brian (DEQ) <Brian.McGurk@deq.virginia.gov>

To: Wayne Dyok
CC: Cario, Anthony (DEQ) Bushing, Mark (DEQ) Richards, Mark (DEQ)
09/29/16 at 9:45 AM

Wayne

I got your phone message yesterday. I consulted with my colleagues about the sufficiency of the water quality data that you sent. Please see their questions that I've highlighted in the emails below.

Also, I presume that a report describing Study #3 and its results will be prepared and submitted to FERC, as with results from the other Studies. Is that correct? I see on your website that there are images of the bathymetry. Have reports been prepared for Studies #1 & #2?

Once the reports of the Studies are complete, I'm figuring that you will prepare and submit to DEQ an application for a Virginia Water Protection (VWP) permit. Do you have a projected time frame for the preparation and submittal of that application?

Thanks!

Brian

Brian McGurk, P. G.
Office of Water Supply
Virginia Department of Environmental Quality
brian.mcgurk@deq.virginia.gov
804-698-4180
mailing address: P.O. Box 1105, Richmond VA 23218

From: Cario, Anthony (DEQ)
Sent: Thursday, September 29, 2016 12:04 PM
To: Bushing, Mark (DEQ); McGurk, Brian (DEQ)
Subject: RE: DO data compilation

Brian,

I would also like to see a map of where these samples were taken and some more weather info.

I would like them to submit a comparison of their data to other ambient data for that section of the James River to show that it falls in the range of what's expected. The air temperature is not terribly high when they measured. Higher day and night temperatures earlier in the summer may cause some lower DO numbers and temp numbers but hard to say really.

Tony Cario

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

From: Bushing, Mark (DEQ)
Sent: Thursday, September 29, 2016 7:44 AM
To: McGurk, Brian (DEQ)
Cc: Cario, Anthony (DEQ)
Subject: RE: DO data compilation

Agree, this seems to be Study Plan #3.

Couple quick things I would request;

- the time that the samples (only one with times is the Deployed DOP meter) were taken;
- a little more weather info (have that it was sunny on 9/9, but what about the other days? have no rain within 4 days on the 9th, but on the 12th, no rain within 5 days – hum, how can that be?);
- a map showing where each of the sites (12) and the cross-sections and vertical profiles were taken (not shown in the study plan);
- what is the difference between these Cross-sections (1vs. 2 and 3a vs. 3b? these say the same things?);
- vertical profiles should be known depth, not approximate. Looking at the vertical profiles, I am quite surprised that there is 30 feet of depth anywhere in that stretch of the river. could be wrong.

Mark F. Bushing
DEQ BRRO-L
434-582-6240

From: McGurk, Brian (DEQ)
Sent: Wednesday, September 28, 2016 7:53 AM
To: Bushing, Mark (DEQ)
Cc: Cario, Anthony (DEQ)
Subject: FW: DO data compilation

Hey Mark

Could you take a look at these water quality data collected around Scotts Mill Dam? Wayne has asked me whether these data are sufficient for their study. It appears to me that what they've reported follows Study Plan #3 (Water Quality Effects of Flow and Water Level Changes, attached). Do you think that this is sufficient?

Thanks!

Brian McGurk, P. G.
Office of Water Supply
Virginia Department of Environmental Quality
brian.mcgurk@deq.virginia.gov
804-698-4180
mailing address: P.O. Box 1105, Richmond VA 23218

Reply Reply to All Forward More
Wayne Dyok <dyok@prodigy.net> .

Good afternoon Brian, Tony, Mark and Mark. Here is our initial response to your email.

First, we have completed studies 1 and 2, but not prepared reports. We have not made a final determination whether we will do short specific reports or include the information in the draft application and as a supplement to the Virginia Water Protection Permit. For the water level measurements, we have data at the lower and average flows and even moderately high flows. I am hopeful that Mark will get the water levels for the flows currently being experienced (i.e., about 20,000 cfs). The upstream water levels behave exactly as we predicted from the weir equation.

We did experience some vandalism or flow destruction of the downstream gage on the left side of the river, but we have sufficient data for the tailwater rating curve and updated our energy calculation accordingly.

Believe it or not, the deepest point in the headpond is about 25 feet deep. This was measured by Luke in the bathymetry survey and then Ben went out and collected water temperature and DO data in the area where the buoys are located which is the deepest part of the headpond. His

measurement corroborated the bathymetry study results as he measured a depth of about 8 meters (i.e., 26 feet).

I forwarded your email to Ben. He will factor your questions/requests into his report or section write up for the draft application. For sure we will include a map with the locations of the measurements. We will also include additional information about the weather on all sampling days. To the extent that Ben can come up with ambient DO data, we ill include that with our assessment.

We had to wait until flows got to about 1,000 cfs before we could take the DO measurements as we felt low flows would be most critical for the DO measurements. When we got to a low flow level, we were still experiencing relatively hot conditions. We just did not get the low flows until around the end of August. The good news is that DO was not a problem even in the areas with very little or no flow such as upstream of the arch arch section of the dam.

As for when we file the draft application, I cannot give you a definitive date. We are planning for about the end of the year. We have another internal meeting with LU coming up in about two weeks and I am hopeful that everything will come together to proceed as quickly as possible to wrap up all studies and prepare the draft application and VWPP.

Brian - Mark Fendig and I will be back in touch with you after the LU meeting.

Wayne

McGurk, Brian (DEQ) <Brian.McGurk@deq.virginia.gov>

Hi Wayne I hope that you are enjoying the Holidays immensely. Just checking in with you regarding the status of preparing a JPA for the Scotts Mill Dam project.

Take care,

Brian

Brian McGurk, P. G.
Office of Water Supply
Virginia Department of Environmental Quality
brian.mcgurk@deq.virginia.gov
804-698-4180
mailing address: P.O. Box 1105, Richmond VA 23218

From: Wayne Dyok [mailto:dyok@prodigy.net] Sent: Saturday, October 01, 2016 6:00 PM To: McGurk, Brian (DEQ) Cc: Cario, Anthony (DEQ); Bushing, Mark (DEQ);

To: Wayne Dyok
12/28/16 at 12:57 PM

To: McGurk, Brian (DEQ)
CC: Cario, Anthony (DEQ) Mark Fendig
12/28/16 at 1:41 PM

Hi Brian. First, happy holidays and best wishes for the new year.

Yes, we are working on the license application and the 401 application. We have completed all the field studies. The engineering is lagging a bit because our consultant was overbooked, but they should catch up in January. I need their input before we can complete a couple of the studies.

I expect to have an update in about 2 weeks. Starting next Tuesday, I will be out of pocket until about mid-January as I am having a surgical procedure to repair my shoulder.

Kindest regards,

Wayne

From: Wayne Dyok [mailto:dyok@prodigy.net]
Sent: Friday, August 04, 2017 12:10 AM
To: Sutherland, David; Smith, Scott (DGIF)
Cc: Brett Towler; Mark Fendig
Subject: Re: Scotts mill dam on the James River

David, Scott and Brett - Would you be available for a conference call with Eagle Creek Energy (Reusens) and Mark Fendig and me (Scott's Mill) on either August 24 or 25?

Mark and I convened a conference call with Eagle Creek to coordinate our fish passage efforts. We discussed options for passing both Sea Lamprey and American eel and potentially American shad down the road. They would like to hear directly from you on what species need passing, the associated timing of fish passage, and your thoughts on how best to pass the fish (e.g., trap and haul and some type of fish ladder).

Brett, can we talk early next week? As David likely mentioned to you, we are in the final stages of preparing our draft license application for the Scott's Mill Hydropower Project. Irrespective of how the discussion with Eagle Creek turns out, I would like to get your thoughts on fish passage, monitoring, and O&M.

Regards,
Wayne

RECORD OF TELEPHONE CONVERSATION
REUSENS AND SCOTT'S MILL HYDROPOWER PROJECTS

Conference Call Participants
Scott Smith – Virginia Department of Game and Inland Fisheries (VDGIF)
Alan Weaver – Virginia Department of Game and Inland Fisheries
David Sutherland – US Fish and Wildlife Service (USFWS)
Jessica Pica – USFWS
Brett Towler – USFWS
Bob Gates – Eagle Creek Energy (Reusens Project)
Dan Parker – Eagle Creek Energy (Reusens Project)
Mark Fendig – Owner Scott's Mill Dam, rep for Liberty University
Wayne Dyok – Consultant for Scott's Mill Project Licensing

Date – August 25, 2017

Agenda

1. Fish species to pass
2. Upstream Passage
3. Downstream Passage
4. Monitoring
5. Maintenance

Summary of Discussion

Fish Species Passage

After the introductions, the resource agencies[4] stated that they would like to see river connectivity, passage of anadromous and catadromous fish and resident fish species. More specifically, there appears to be an immediate need to pass American Eel and Sea Lamprey. Scott's Mill representatives noted that they have been moving forward on the licensing of Scott's Mill assuming that, at a minimum, American Eel and Sea Lamprey would need to be passed.

Eagle Creek asked if there was a fish restoration plan for the James River. At this time, no James River restoration plan has been developed, but the agencies operate under the Atlantic States Marine Fisheries management plans. However, there has been a concerted effort to restore anadromous fish, and specifically American Shad. The VDGIF pointed out that American Shad, American Eel and Sea Lamprey pass through the Boshers vertical slot fishway annually along with 20 plus other riverine fish species. The participants concurred that restoration of American Shad has not yet achieved target levels to fill the amount of spawning

[4] Collectively VDGIF and USFWS are referred to as resource agencies. Since they are working together on fish passage, these notes do not differentiate among agency participants.

and rearing habitat upstream of Bosher's Dam. The agencies commented that there are a variety of reasons for the low abundance. Hence in the short-term, American Shad passage is not as critical as for other species, but could become critical in the future.

Besides American Eel and Sea Lamprey, there was no final decision as to what additional species need to be passed now or in the longer term. The agencies will make a final decision later that will consider the James River basin upstream of Richmond, including the 7 dams situated within a 22-mile section of the James River, species needs, passage cost, and likelihood of success. (There is approximately 137 miles of mainstem habitat between Bosher's Dam and Scott's Mill Dam. There is an additional 153 miles of habitat on major James River tributaries between Scott's Mill and Boshers Dam. Upstream of Cushaw Dam, there is a considerable amount of mainstem and tributary habitat that historically supported diadromous fish, although dams on the James River have limited fish movement since the 1840's.)

Eagle Creek observed that a trap and haul program might best serve the needs of the basin upstream of Scott's Mill because of the challenges and costs associated with moving aquatic species upstream of 7 dams. (This could be a more significant challenge at Reusens as the Reusens Dam is about 40 feet high.)

Scott's Mill representatives observed that Gizzard Shad have been reported by anglers to be immediately downstream of Scott's Mill dam and American Eel have been observed as far upstream as Cushaw Dam, but not in great numbers. This was confirmed by VDGIF.

In response to a question about the Scott's Mill dam licensing status, Wayne responded that the draft application is expected to be distributed in September. For a variety of reasons, Liberty University will likely transfer the license to another entity after the license is issued. In the meantime, the application is being prepared with the intent to have safe, timely, and effective fish passage for both American Eel and Sea Lamprey.

Eagle Creek noted that they expected to start relicensing of Reusens in about 18 to 24 months. (The Reusens license expires on February 29, 2024.)

Upstream Fish Passage

The agencies suggested that Scott's Mill work closely with them on the upstream design before a draft license application is developed. Wayne responded that is the intent, particularly once conceptual ideas and resource goals are integrated. **Action Item.** Scott's Mill will work with its fish passage consultant and the USFWS to lay out potential fish passage approaches. This will include a trap and haul program, a nature-like fishway around the dam, and a fishway design to move American Eel and Sea Lamprey into the Scott's Mill headpond. Agencies specifically asked about the potential for a nature-like fishway. Preliminary work done by Scott's Mill indicates that a nature-like fishway would be on the order of 400 to 600 feet-long based on a head of about 17 feet. Given the limited room on the left side of the James River, necessary fishway length, and the fact that most flow will be on the right side of the river, the left side may not be feasible. Also on the right side, space is limited by the needs of U.S. Pipe Company for

storing their pipe. Hence Scott's Mill has been focusing on the area immediately to the left of the arch section of the dam as that area was historically used to provide for fish passage.

Action Item. Wayne suggested that it might be best to include the options for fish passage in the draft license application and then continue to work on the approach that is in the best public interest during the 90-day application review period.

Action Item. Scott's Mill representatives will contact the other owners of the hydropower projects upstream (i.e., Holcomb Rock, Coleman Falls, Big Island, Snowden and Cushaw) to set up another conference call with resource agencies and dam owners. This meeting should occur once Scott's Mill preliminary information on fish passage becomes available.

Downstream Passage

This agenda item was not discussed due to lack of time.

Monitoring

Wayne asked what type of monitoring requirements the resource agencies would expect to see. Because these are relatively small run-of-river projects, they cannot afford high monitoring costs. It was agreed that fish counts would be needed at least initially to monitor passage success. VDGIF monitors the James River mainstem annually and that will certainly help with the monitoring. However, tributaries are not currently monitored. Scott's Mill requested that the agencies work with the dam owners to develop a plan that limits overall costs and possibly includes more agency involvement. This should be at a basin level upstream of Bosher's dam.

Maintenance

This agenda item was also not discussed due to lack of time.

Agencies also asked about mussels. Wayne responded that Brian Watson of VDGIF had been provided a copy of the mussel survey conducted upstream and downstream of Scott's Mill dam. The report will be included as an appendix in the Scott's Mill license application.

September 29. 2017
RECORD OF TELEPHONE CONVERSATION for SCOTT'S MILL HYDROPOWER PROJECTS, P-14425

Conference Call Participants
Scott Smith – Virginia Department of Game and Inland Fisheries (VDGIF)
Alan Weaver – VDGIF
David Sutherland – US Fish and Wildlife Service (USFWS)
Jessica Pica – USFWS
Brett Towler – USFWS
Greg Allen – Alden Research Laboratory (Alden)
Steve Amaral - Alden
Wayne Dyok – Consultant for Scott's Mill Project Licensing

Agenda

6. Overview of Alden Fish Passage Report
7. Status of James River American Shad Stocking
8. Short-term Fish Passage Approach
9. Longer-term Fish Passage Approach
10. DOE Fish Passage Funding Opportunity Announcement
11. Scott's Mill License Application Status

Summary of Discussion

Before the participants discussed the agenda, David Sutherland asked if the applicant had filed the last conference call notes with FERC. Wayne Dyok responded that they would be included in the consultation record, but if the agencies preferred, the record of conversation could be filed on its own. He suggested that it might be better if both those notes and the notes from the ensuing conversation be filed at the same time. The call summary notes will be filed with the FERC following the review of this summary.

1. Overview of Alden Fish Passage Report

Alden provided an overview of their September 21, 2017 Hydro Fish Passage Initial Assessment report that they had prepared for the Scott's Mill Hydropower Project. Alden considered American Eel, Sea Lamprey, American Shad and other riverine fish species.

Wayne was asked if FERC had agreed to the increased head that Scott's Mill is proposing for the project by adding either 2-foot high flashboards or a 2-foot high cap. Wayne explained that the applicant has not discussed this in detail with FERC, but plans to propose the spillway cap/flashboards to essentially maintain similar upstream water levels to what are experienced today and to increase annual generation. Applicant proposes to maintain a constant water level just below the proposed crest elevation of 516.4 feet until the hydraulic capacity of the plant is reached (i.e., about 4500 cfs). Under existing conditions, water levels during flows of 3200 cfs

are about 1 1/2 feet above the dam crest and under low flows about one foot. (Applicant will provide a table comparing pre- and post-project water levels in the license application and how the change affects flooding and fish passage.)

Alden described the American eel and sea lamprey upstream passage approach to use a ramp with substrate and pegs for smaller eel, which could be used at the project.

The participants discussed examples of sea lamprey passage on the west coast and in Ireland. Alan Weaver noted that Bosher's dam passes large numbers of sea lamprey. Data on passage is contained in a thesis prepared by a Virginia Commonwealth University student. **Action Item.** Alan will send a digital version of the thesis and provide to Alden and the rest of the group. David Sutherland noted that Turner's Falls fishway on the Connecticut River has quite a few lamprey. Wayne agreed that the license application will discuss the need for lamprey passage.

Scott observed that the middle James River has eels in the 180 mm range with the smallest being about 130 to 140 mm. Alan added that the eels at Bosher's range from 6 to 9 inches (150 to 230 mm).

Greg Allen stated that a key consideration in passage of American eel and sea lamprey would be where to site the ramp. It was noted that American eel and sea lamprey are not great swimmers. How Sea Lamprey release and reattach will also be a passage design criteria as well as a suitable substrate to accommodate passage of both species.

Steve Amaral commented that sea lamprey passage experience is limited, but Steve believes that current eel ramps have been functioning in a manner that facilitates sea lamprey passage. Brett Towler noted the design work that the U.S. Army Corps of Engineers has been doing with lamprey on the west coast. Pacific Lamprey (Lampetra tridentate) are not exactly the same as Sea Lamprey (Petromyzon marinus) so we need to be sure that design is based on our east coast Sea Lamprey's ascending ability. Wayne said that Alden would work with the agencies on a ramp design as soon as agreement could be reached on how best to move forward with fish passage.

Alden then summarized the design approach for riverine and anadromous fish passage. A vertical slot fishway was found to be the best option, but could be 520 feet long to accommodate potential dam elevation changes. Alan suggested that the Alden design was conservative compared to the Bosher's design which has a 0.75 foot drop per pool with 13 pools 10 feet by 12 feet long and a slope of 6.25 percent. Slot width is 16". Alan felt that Bosher's was effective in passing fish, specifically noting that Bosher's passed as many as 4000 gizzard shad per hour. Greg responded that Alden had used the new guidelines from the US Fish and Wildlife Service, resulting in a more conservative design than at Bosher's dam. Participants acknowledged that if the Bosher's design criteria were to be used the estimated $5 to $10 million cost could be reduced.

Greg also noted that a vertical slot design was preferable to a Denil fishway, because of the number of species to be passed. Wayne cautioned the group that Alden's design was a high-level approach based on the guidelines and that if this option were selected, the applicant would work with the agencies on the specifics of the design.

Greg next described the nature-like fishway, which based on a 2 percent slope could require a length of 850 feet. The challenge is in finding a location for the nature-like fishway. Wayne suggested that the abandoned water supply canal could be considered if channel width could be reduced from the 20-foot design width assumed by Alden. The cost of the nature-like fishway was similar to the vertical slot and perhaps less if the US Fish and Wildlife Service guidelines are used. An agency field visit to Scott's Mill is being considered in the next few weeks to consider passage options.

Lastly Greg described the trap and haul approach. Although the cost is similar to that of other designs, an advantage is that it could provide upstream passage at more than one dam. The agencies suggested that Alternative 2 (vertical slot) provides more bang for the buck, because a trap and haul program could be built in with that option, as well as the immediate volitional passage for all species. The agencies also mentioned that quite a bit of habitat exists between the dams (main stem and accessible tributaries). Further discussion on the preferred approach was deferred to later in the discussion.

2. James River American Shad Stocking Program

Wayne Dyok noted that Alden had provided him with a "Bay Journal" article that Virginia was halting the shad stocking program in the James River, because there were only limited signs of recovery (Karl Blankenship, Bay Journal, September 17, 2017), and the amount of money spent on shad fry stocking was not justified. It was originally thought that opening up the James River and placing a fishing moratorium on American shad would trigger a restoration, but unfortunately the long-term average was only about 200 returning adults annually through the fall zone up to and through the fishway. It was thought that passage of American shad at Scott's Mill will not be required for some time. The Virginia Institute of Marine Science (VIMS) catch index is downriver of Richmond, but has also been well below targets. There is no total American Shad annual population estimate for the James River, only indices of abundance from the fishway count and the VIMS catch index. There is spawning habitat on the James in the fall zone below Bosher's fishway and in several tidal miles downstream of Richmond. The total number returning to the James River annually is a much higher number than at the Bosher's fishway. The Bosher's count is only providing information on the numbers of Shad moving into the middle James beyond Richmond, not the number of Shad in the entire James River. While there is spawning habitat available downstream of Boshers Dam, access to all historical spawning and rearing habitat is considered to be a necessary part of **fully** restoring the James River American Shad population.

In response to a question from Wayne on what might be the cause of the low returns, it was thought that the inshore and off-shore commercial fishing, as well as loss of habitat are important factors effecting the stock abundance. Wayne asked why the Potomac American shad restoration program seemed to be doing well. David responded that the Potomac River was an unregulated river with high quality habitat and good water quality. David added that passage on the Susquehanna might also be better if the fish were better managed with the hydro turbines. It may just be a matter of time for the James River.

3. Short-term Fish Passage Approach

Wayne presented the applicant's short-term approach. He suggested that it makes sense to immediately pass American eel and sea lamprey and the applicant is prepared to do so. He suggested that in the longer term a trap and haul program could be implemented, or perhaps a vertical slot fishway at Scott's Mill. He expressed concern that the cost of fish passage at each dam via a vertical slot fishway may not be supported by the upstream projects, especially the smaller ones, and a project like Reusens that has about a 40-foot head would have a very large cost. He then added that the Big Island dam is key to the operation of Georgia Pacific's mill located there. He did not see that dam being removed. He further noted that Reusens serves as a water supply reservoir for the City of Lynchburg. Scott Smith commented that Reusens is actually the secondary water supply source for Lynchburg. It is unlikely that Reusens dam would be decommissioned if the hydro project became uneconomic to operate because of a fish passage requirement. Wayne also stated that it is also unlikely for the Scott's Mill dam to be decommissioned because it serves as an emergency water supply.

Scott noted that he had previously talked to the City engineers and they informed him that Scott's Mill dam was not needed for operation of the emergency supply. He had previously had the same understanding as Wayne that the City needed Scott's Mill dam for its emergency supply. **Action Item.** Wayne to verify with the City of Lynchburg whether Scott's Mill dam is needed for the City's emergency water supply.[5]

David commented that the USFWS would work with all upstream dam owners to ensure passage at all dams with consideration of the economic costs associated with passage. David continued that he favored the one stage passage option (i.e., something like the vertical slot fishway that could pass all species including American eel and sea lamprey) He did not prefer the trap and transport option. He also noted it would be a Herculean task to get all participants to agree on a fish passage program now, considering that licenses expire at different times. He also said it is challenging to get FERC to open up a project license.

Alan echoed David's thoughts. He expressed concern that if only American eel and sea lamprey are passed now, developing a trigger for non-diadromous fish passage would be problematic because non-diadromous fish that would benefit from a passage facility are already present. These local fish that spend their entire life cycle in the freshwater river still move up and down stream for spawning and feeding purposes. Additionally, if Scott's Mill includes a vertical slot fishway then that could be used to trap fish and transport fish upstream. Wayne commented that is a possibility but the applicant either needs additional outside funding from grants or upstream dam owners, who might be inclined to participate in a trap and haul program if that avoided the high cost of upstream fish passage at their facility. He noted that Scott's Mill will produce about

[5] Subsequent to the conference call Wayne spoke with Mark Fendig, owner of Scott's Mill dam. He stated that Scott's Mill dam is needed for the City to maintain its water right. Point of technicality here, Lynchburg does not have a "water right", per se. They have a valid Virginia Water Protection Permit that allows them to withdraw a permitted amount of water. However, this is not the same thing as a "water right".

20,000 MWh annually. At about $50/MWh that equates to an annual income of $1,000,000. Adding $5 to $10 million in capital costs would almost surely render Scott's Mill uneconomic without additional outside funding. At this time, Scott's Mill is able to accommodate some level of fish passage, but not the full amount for a vertical slot fishway.

Wayne acknowledged the agencies desires. He reiterated his concern that the hydropower projects on the James River could not support fish passage at each dam because of the high cost. He said that he had hoped the agencies would approve a short-term plan for passage of American eel and sea lamprey, with a longer-term goal of passage for resident and other anadromous species. Given that the agencies did not want to take that direction, he asked the agencies to conference and get back to the applicant on how they would like to proceed with fish passage. **Action Item.** The agencies will discuss and amend the minutes to reflect how they wish to continue fish passage discussions or inform the applicant of their fish passage requirements and have the applicant work directly with them on the design, assuming the applicant is willing to try that approach.

David said this discussion did not cover downstream migration. Wayne agreed and said that the Scott's Mill power plant was being designed to minimize mortality to downstream migrants to the extent possible. Further the turbines being proposed are slower rotating turbines. Since there would be flow over the dam when flows exceed the hydraulic capacity of the plant, this could also be a mechanism for downstream passage. Wayne also said that the upstream dam owners would also be required to implement downstream fish passage. Wayne recommended that a conference call be held among all dam owners and the agencies to talk about fish passage. David suggested that such a conference call was premature.

4. Longer-term Fish Passage

Because the agencies preferred a one stage alternative, the longer-term approach was subsumed in agenda item 3.

5. DOE Funding Opportunity Announcement

Wayne noted that the US Department of Energy had recently issued a Funding Opportunity Announcement for grant funding for modular fish passage designs. He asked if the agencies would be willing to draft letters of support for Scott's Mill being used as a test site. David agreed that USFWS would be willing to support Scott's Mill as a test site for cost-effective and safe fish passage.

6. Scott's Mill License Application Status

Wayne said that although there is a little more work needed to wrap up the Scott's Mill license application, the hope is to get agreement on the fish passage approach and then expeditiously wrap up the application. Wayne had hoped to get concurrence on a short- and longer-term approach and then have Alden work directly with the agencies to develop a conceptual approach for fish passage. He noted that since there is no agreement yet, the collaborative fish passage

design approach would need to wait until after the agencies conferred and Wayne could talk with his client.

David asked to have the study reports provided to the agencies. **Action Item.** Wayne agreed to talk with the applicant to see if he would release the letter reports for the studies. Some are stand alone, but others are included directly into the license application, making it difficult to pull out those studies. Wayne decided that since the application needs to be filed soon because the preliminary permit is expiring, he was just planning to include the reports with the draft application.

Additional Agency Comments October 17, 2017

As requested by the applicant's consultant in the October 29, 2017 call summary, and in light of the pending expiration of the preliminary permit application on November 13, 2017, the State of Virginia Department of Game and Inland Fisheries and the U.S. Fish and Wildlife Service (Agencies) would like to provide the following comments on the Scott's Mill Preliminary Permit coordination leading to the draft application. The following recommendations are likely the most cost effective for the applicant and provides the most assurance for safe, timely and effective fish passage at the proposed Scott's Mill Project. A bypass around the dam with a nature-like-fishway is still a consideration pending a site visit later this year.

1. The Agencies requested copies of the study results, but have not received most of the reports. While the freshwater mussel survey report was provided to us weeks ago, all of the other reports regarding hydrology, flow and habitat have not been provided to the agencies. The Agencies requested recommendations on fish passage must be considered preliminary in the absence of the study reports. The agencies will conduct a site visit as soon as November and look forward to our review of the studies for the hydroelectric project.

2. The Agencies first recommendation is for construction of volitional American eel (eel) and sea lamprey (lamprey) passage over the Scott's Mill Dam and in to the headpond behind the dam. This permanent eel and lamprey passage structure, and or passage structures, may need to be removable during the winter for safety. The Agencies consider this the preferred measure for eel and lamprey passage at Scott's Mill Dam.

3. A second recommendation is providing fish passage for American shad and non-diadromous species from downstream of Scott's Mill Dam to the headpond upstream of the dam. This could be in the form of a vertical-slot fishway, a nature-like fishway, or a trap and transport facility. The Agencies can provide additional comments regarding the design, location, time of construction etc. of any proposed fish passage facility once the applicant determines the type of fish passage facility they wish to pursue.

RECORD OF TELEPHONE CONVERSATION
SCOTT'S MILL HYDROPOWER PROJECT

Conference Call Participants
Scott Smith – Virginia Department of Game and Inland Fisheries (VDGIF)
Alan Weaver – VDGIF
David Sutherland – US Fish and Wildlife Service (USFWS)
Greg Allen – Alden Research Laboratory (Alden)
Brian McMann – Alden
Kathie Leighton – Littoral Power Systems (LPS)
Wayne Dyok – Consultant for Scott's Mill Project Licensing

Date – November 6, 2017

Agenda

12. American Eel and Sea Lamprey Conceptual Fish Passage Design
13. Upstream Anadromous and Resident Fish Passage
14. Department of Energy Fish Passage Funding Opportunity Announcement

Summary of Discussion

1. American Eel and Sea Lamprey Conceptual Fish Passage Design

After introductions, Greg Allen, Alden, provided an overview of the American Eel and Sea Lamprey conceptual fish passage design. He referred to the design figures previously transmitted to the agencies. Since American eel migrate along the margins, Alden determined that the best location for siting the upstream passage was on the river banks. Since there are no specific upstream fishway designs for Sea Lamprey on the east coast, experience at other passage facilities provided the basis for siting. At these locations, Sea Lamprey tend to follow the main flow. Accordingly, Alden sited the first ladder on the north (left) side of the river adjacent to the dam abutment and the second facility adjacent to the powerhouse, at the location of the old fishway. Greg noted that the ramp design for American Eel and Sea Lamprey is similar in slope and width. Alden is proposing one ramp at each location as identified on drawings A1 and B1. Alden proposes to adjust the substrate for species and size. Vertical pegs will be used for larger American eel. Geotech fabric will be used for smaller eels and smother surfaces for Sea Lamprey. As we get further into the design, the design will be adjusted to include additional specifics on dimensions and substrate. The design is based on a maximum head of 17 feet, with resting boxes being placed every 10 vertical feet. Sea Lamprey require about the same number of resting boxes.

Alan Weaver, VDGIF, said that upstream eel passage was fairly well known. He noted Sea Lamprey are not the same as what is passed on the west coast and may require a ground-breaking design.

Wayne observed that the Scott's Mill dam owner embraces fish passage and is willing to work towards installing a vertical slot fishway. If Sea Lamprey passage is not successful at the American eel/Sea Lamprey passage locations, then a vertical slot fishway would resolve that concern, assuming licensing parties could agree on design and funding of a cost-effective vertical slot fishway. Alan thought that use of the various substrates for the ramp design may cover his concerns.

David Sutherland, USFWS, inquired why the second American eel/Sea Lamprey passage facility was more towards the middle of the dam, rather than on the south bank. He suggested that it may be difficult for American Eel swimming up the south bank to get across the powerhouse flow. He recommended an entrance downstream of the tailrace as an alternative. Greg agreed that the eel ramp could be placed on the south (right) bank. Participants agreed that the location of the second eel ramp should be moved to the right bank.

Alan stated that if the eel ramp is moved to the right bank. Then the vertical slot fishway could be located at the site of the old fishway, adjacent to the powerhouse. **Action Item.** The participants agreed to move the second American Eel/Sea Lamprey ramp to the right bank. This permits the vertical slot fishway to be located immediately to the left of the powerhouse.

Alan inquired about the near field and far field for American Eel and Sea Lamprey attraction flow. The concern was that American Eel and Sea Lamprey may not be attracted in the same way. If attraction flow conditions need to be species specific, it may require having separate entrances and one common passage channel – if that is even feasible. David concurred and asked about where the quiescent water would be. Wayne responded that during upstream migration periods, the powerhouse could be operated such that the turbine units on the right side could be left off if flows are less than the 4,500 cfs hydraulic capacity of the plant. This may result in quiescent water being available on the right bank (south side). Engineering analysis is required with any design.

In response to a question about the turbine units, Kathie Leighton, LPS, said that a couple of turbines are slightly different than other units in that they have controls while other units are fixed. Since the controlled units would operate more frequently, Wayne recommended that these units be put further away from the right bank. USFWS has expressed the importance of fish friendly turbines, and plan to withhold additional comments until they have designs to evaluate.

Kathie continued that these "controller" units have pitch and frequency control to optimize efficiency over a range of flow conditions. The remaining units would be fixed to minimize turbine costs. In response to a question about turbine speed, Kathie stated that LPS is working with the manufacturer to reduce the turbine speed. At this time, the maximum speed is 400 rpm, but it is hoped that the speed could be reduced to between 150 to 200 rpm.

Alan postulated that the overall attraction flow at location A may be quiescent and that might not be best for the vertical slot fishway. He asked if it might be possible to adjust the location of the vertical slot fishway to find the appropriate flow field. To ensure appropriate attraction flows at

the vertical slot fishway, Wayne suggested that discharge from one or possibly two turbine units on the left side of the powerhouse could be adjusted to direct flow to the left. He noted that the discharge point from the tailrace would be about 60 feet downstream of the arch section based on the current design. This could act as both an attraction flow and to facilitate circulation of water immediately downstream of the spillway during lower flow periods when there is little or no flow passing over the spillway. At present there is an island that separates the proposed tailrace discharge from the area downstream of the spillway. Deepening of the opening between the island and the dam may be needed to provide some flow on the left side of the island.

Alan asked if the Applicant is proposing one eel ramp at either location A or location B, or two ramps. Greg responded that Alden had recommended providing ramps at both locations. Alan commented that made sense. Wayne added that Alden was given design flexibility to propose superior solutions. If the ramp costs were prohibitive, then the concept of one or two ramps could have been revisited, but based on the estimated cost, Applicant concurs that both ramps should be installed.

Wayne continued that for the short term after construction, the Applicant would be responsible for testing and monitoring of the ramps to ensure that they functioned properly. As for long term operation and monitoring, he proposed that the Applicant continue to work with the agencies on a longer-term plan. Agency participation in operation and monitoring of the ramps will be important. The agencies responded that that sounded good. It will be important to get good passage numbers at the ramps.

Greg noted that the current ramp design is compatible with monitoring since the outlet has a higher elevation than the headpond. In response to a question from David about whether the plan includes a location for collection and monitoring, Greg said that the plan is simpler than that. The passed fish could be monitored by placing a bucket at the end of the ramp and checked on a daily basis. David recommended that Alden talk to Stuart Welsh of the Shenandoah Cooperative Unit since they have a fully functioning monitoring system at the Millville site. This is a secure location that is automated. He suggested that something like this be integrated into the eel passage. **Action Item.** Greg agreed to look into this and contact Stuart (304-293-2941 x35006).

Alan asked if the eel ramp would be removable for floods. Greg replied that Alden has looked into this. The ramps could be removed in the fall. However, the locations are relatively sheltered and it might be more cost effective to leave the ramps in place and just repair them after floods. This can be more fully addressed during the detailed design.

David commented that Potomac 4 and 5 designs are protected. Jessica Pica commented that typically the USFWS designs for a 50-year flood. Wayne responded that a 50-year flood design may not be needed here because the tailwater rises so quickly that there is little head difference between the upstream and downstream water levels at high flood flows. A more critical case could be at lower floods. This will need to be examined during the detailed design phase. Greg concurred that based on his review of the flood conditions, a 50-year flood may not be the best approach for the design.

Participants next talked about having a site visit to review the design location options for both the ramps and vertical slot fishway. Wayne mentioned that the site visit should also consider the old, abandoned waterworks canal on the right bank as a nature-like fishway. The participants agreed that this made sense as an alternative.

Wayne mentioned that the Applicant is looking at distributing the draft license application on November 20th. A November 14th site visit to confirm locations was deemed appropriate. Scott Smith will provide a boat to better observe the potential fish passage locations.

Alan and Greg discussed the separate substrates that will be incorporated into the ramp design. Alan said he was satisfied that one ramp could accommodate both American Eel and Sea Lamprey and the various size categories of each species subject to proof by monitoring in the case of Sea Lamprey since less is known about using this type of passage for Sea Lamprey.

Wayne mentioned that the location of the ramp on the left bank makes it more challenging to have a canoe portage on the left side of the river as there is little room on that side of the river between the dam and road. Scott agreed that a portage around the dam was an important element of the project. **Action Item.** Wayne and Scott will discuss the location of the canoe/kayak portage at the November 14th site visit.

2. Upstream Anadromous and Resident Passage

Wayne presented two options for moving forward with the vertical slot fishway. The preferred option is to have all dam owners between Scott's Mill and Cushaw cooperate to fund the vertical slot fishway with a trap and haul component. In this way, at least for the next licensing period, the dam owners would not need to install similar upstream facilities at their projects, other than the American Eel and Sea Lamprey ramps. The second option is to acquire grant funding similar to what was done at Bosher's dam. It was agreed that obtaining grant funding if the hydropower project moves forward would be difficult because many potential funding entities cannot fund private developments.

Wayne commented that some third-party funding may already be available since a need for fish passage has already been established. He continued that the owner of the dam, and not necessarily the Applicant, would like to see fish passage move forward irrespective of whether the Scott's Mill Hydropower Project moves forward. At this time, the project economics look reasonable, particularly since LPS has come in to design a modular system and reduced costs by about 30 percent from a conventional design. Therefore, it is likely that the project will move ahead, but potential power off-takers will not commit to a power sales agreement until after a license is issued and the project is real. If a power sales agreement cannot be reached (a more unlikely outcome) and the project needs to sell into the PJM system, the power sales rates could make the project marginally uneconomic. In that event, the agencies could still work with the dam owner to obtain the necessary grant funding. Wayne said the dam owner would like to make this a win-win situation for the fish.

Scott asked if the nature-like fishway is a viable option, and could it be built to also serve as a trap and transport facility. Greg answered that the nature-like fishway could be designed more like a traditional fishway at the exit point, so it could be used for trap and transport. In this way, flow can also be controlled. Scott stated that if this turns out to be the more viable option then VDGIF would be fine with that approach as well.

3, Department of Energy Fish Passage Funding Opportunity Announcement

Kathie provided an overview of the US Department of Energy (DOE) Funding Opportunity Announcement (FOA) on Fish Passage. DOE is soliciting proposals for new approaches to fish passage in an effort to reduce the design and construction costs. Given that there are about 412 projects that will be up for relicensing in the near future and that many of these are smaller projects, DOE is looking for innovative approaches to pass key fish species. LPS is pursuing this opportunity and has taken a modular approach to reduce costs. If the fish passage components can be standardized and applied across a variety of sites, these building blocks can be constructed off-site and capitalize on economies of scale. This could reduce construction costs. LPS is preliminarily considering using the Bosher's dam vertical slot fishway as a reference site. LPS would like to reduce civil costs on the order of 50 percent.

Kathie continued that LPS is interested in working with the resource agencies on establishing engineering criteria for a large number of facilities. If Bosher's Dam is used, then Scott's Mill Dam might present a good opportunity to verify the approach. The DOE FOA would provide some grant funding, but it would be great if additional grant funding could be made available. Kathie added that Alden is a key member of the LPS team.

Scott asked if this was akin to a Lego fishway. Kathie agreed with Scott's analogy.

Alan noted that he had worked on the design and monitoring at Bosher's Dam. He said the agencies already have the criteria for fish passage established and the basic design has not changed. The key is to site the fishway properly. Both rock excavation and dam alteration were deemed necessary at Bosher's Dam. The construction cost in 1999 was $1.5 million. Similar fishways today might be on the order of $3.5 to 5 million. Alan added that it would be hard for him to imagine that a new (modular type) facility could be built for less money. He continued that they were able to obtain grant funding and private donations because the dam was a municipal facility. Henrico draws water from behind the dam. He was doubtful that state and federal grant monies could be obtained for a private venture.

Wayne commented that that it is understood for a FERC licensed project and that is why the base plan is to work with upstream dam owners to develop a trap and transport approach and thereby limit the upstream owners' liability. Both the Reusens and Snowden projects are coming up for relicensing soon. It is hoped that they will cooperate on a basin-wide approach. If that fails, it may still be possible to move forward with the Scott's Mill Hydro development, but the Applicant would need to consider all the variables affecting project economics. As noted previously in these minutes, the Dam owner is willing to continue to work with the agencies if

cooperation is not forthcoming and the project economics no longer work. In a worst-case scenario, the hydropower project does not go forward, but the fish passage facility does through additional grant funding. The Scott's Mill Dam owner is willing to move forward on the basis that the dam remains and additional grant monies can be made available beyond which the dam owner can raise. The Scott's Mill Dam owner cannot afford to be out-of-pocket for the fish passage costs, but will certainly cooperate to make fish passage happen. If this worst case happens, then the upstream owners will need to deal with fish passage as part of their own relicensing.

Scott thought this approach looked reasonable to him. David asked what species would be passed. Wayne responded that the agencies would need to make that determination, but it could include resident fish species, Gizzard Shad, and in future, American Shad. Of course, American Eel and Sea Lamprey would also be passed.

Alan noted that Bosher's was the only vertical slot fishway in Virginia, but there were numerous others going in elsewhere. These are cast in place projects, but he thought that there could be cost savings for portions of fishways that are constructed off-site and shipped.

David asked Kathie about whether DOE has established criteria for upstream and downstream passage. She responded that this would be one of the first tasks to be undertaken if LPS is awarded a DOE grant. She proposed that this could be developed with the resource agencies. At this time, DOE's preference is for passage of fish species of concern (e.g. Endangered Species Act-listed fish, adult American Eel, and migratory fish). LPS has considered the species being passed at Bosher's and thought that the species being passed there would be a good first start.

David talked about the Susquehanna River as an example for establishing the passage criteria. He also spoke about the eel passage opportunities on the Potomac River. **Action Item.** Kathie agreed to share a non-proprietary summary of the concept paper submitted to DOE. If the agencies are interested in participating, then LPS would like to work with them to help define the requirements. **Action Item.** Wayne agreed to provide Kathie with the contact information for the agency call participants.

SCOTT'S MILL HYDROPOWER PROJECT
FISH PASSAGE SITE RECONNAISSANCE

Participants
Scott Smith – Virginia Department of Game and Inland Fisheries (VDGIF)
Alan Weaver – VDGIF
Dan Goetz - VDGIF
David Sutherland – US Fish and Wildlife Service (USFWS)
Jessica Pica - USFWS
Mark Fendig – Luminaire Technologies
Wayne Dyok – Consultant for Scott's Mill Project Licensing

Date – November 14, 2017

Summary of Site Reconnaissance

The USFWS and VDGIF met with representatives of the proposed Scott's Mill Hydropower Project at the Scott's Mill Dam site to identify potential sites for: (1) American Eel and Sea Lamprey upstream passage, (2) a vertical slot fishway for passage of anadromous and resident fish species, and (3) a nature-like fishway. James River flow during the site reconnaissance was approximately 1,200 cfs at Holcomb Rock gauge.

The USFWS, VDGIF, and Scott's Mill representatives were in agreement at the outset that upstream fish passage is immediately needed for American Eel and Sea Lamprey irrespective of whether hydropower is a part of the project. The parties agreed to work together to make that happen. It makes most sense to construct the upstream passage at the same time as the proposed power plant is constructed in order to minimize project costs. No decision has yet been made on the timing for the installation of upstream passage of other anadromous fish and resident fish species pending an alternative analysis.

The participants first observed the arch section of the dam on the right side of the river (west side) and the old "fishway" located adjacent to the arch section of the dam. There was general agreement that the American Eel/Sea Lamprey passage structure on the right side of the arch section was appropriately located along the bank. Under certain alternatives, it is preferable to provide a quiescent water area on the right side of the arch section to attract American Eel. Other alternatives could be enhanced by rotating the power plant so that the discharge is directed away from the right bank, and the turbine discharge is across the river and along the upstream end of the island. The area across the river from the power plant is a productive fish habitat area. To reduce head loss, it may be requested to deepen the existing approximately 100-foot wide opening. This will be done during the detailed design of the power plant and fishways. Wetland impacts to the island habitat should be minimized to the maximum extent possible in the later designs.

The VDGIF and USFWS were pleased with the concept designs Alden Laboratory has completed for American Eel/Sea Lamprey fishway at the Scott's Mill Dam. The resource agencies and Scott's Mill representatives were in agreement that the detail designs should continue to involve all parties to ensure the design meets the needs of the target fish species.

The participants next examined the proposed location for a vertical slot fishway. The old fishway location may be an appropriate location if required attraction flows can be established in conjunction with the fishway entrance. A potential concern for fish swimming up the right side might be how they would get across the powerhouse flow. This will need to be given further consideration during the detailed design phase of the project. Since long-term plans call for fish passage, consideration of the vertical slot or nature-like fishway should be taken into account during the design of the power plant. All the alternatives are still in review by the fish biologists and fish passage engineers.

The site reconnaissance participants next assessed the existing 22-foot wide water works canal as a possibility for a nature-like fishway. This is the only feasible location on the right side of the dam for a nature-like fishway. If the 22-foot width is acceptable for the nature-like fishway, the portion of the water works canal near the dam seemed suitable, as well as the area upstream of the dam. The water works canal would be suitable for the first 200 feet downstream of the dam. Downstream of that, the nature-like fishway would conflict with the US Pipe Company operations. The existing pipe storage area could be relocated, but it would be important to avoid siting of the nature-like fishway near the US Pipe buildings. There appears to be sufficient room to locate the nature-like fishway entrance upstream of the US Pipe buildings, but the vertical bank would need to be excavated where the entrance would be located. Further downstream the water works canal discharges into the James River and that would simplify the construction effort, but use of this portion would adversely affect US Pipe operations. Accordingly, it was thought that having the entrance about 500 feet downstream of the dam would be the least disruptive to the US Pipe operations. Having the nature-like fishway entrance this far downstream of the dam is a potential concern because the upstream migrants may have a difficult time finding the entrance and may swim upstream of it and possibly never find the fishway entrance. An initial recommendations would place the entrance less than 100 feet downstream of the turbine discharge. The installation of a low-head check dam or some other directional device was discussed as a possible way to direct upstream migrants into the nature-like fishway. However, this may not accommodate upstream migrants that end up on the far side of the large island. Use of the waterworks canal would require coordination with the Virginia Department of Historic Resources as the waterworks canal is listed on the National Register of Historic Places.

The last stop on the reconnaissance was to examine the American Eel/Sea Lamprey fishway on the left (east) side of the river. There was general agreement on the location of the fishway as shown on the Alden drawings. It was thought that it might be preferable to locate most of the fishway structure on the left side of the abutment wall to protect it from flood flows and debris. Scott's Mill representatives also plan to construct a canoe portage on the left side of the river. It is hoped that this could be constructed to the left of the fishway. Design of the portage will need

to wait until the fishway design is completed. There is not a lot of room between the dam abutment and River Road, so the two items will need to be coordinated.

The USFWS asked if the Applicant was proposing a veil over the spillway. The Applicant stated that they had not intended to have a veil unless it was needed for water quality purposes, but they would look into having a veil similar to the requirement at Cushaw Dam.[6] The challenge in having a veil over the dam is lack of control of the water surface to the level required, particularly since the dam is so wide. The applicant had planned to maintain the water level at the crest of the dam to maximize the head for power generation. Applicant recognizes that at times controlling the water level at the crest would periodically cause some water to flow over the dam, particularly when upstream flows increase. Water also would flow over the dam when flows exceed the 4,500 cfs capacity of the turbines. The agencies are concerned with maintaining a minimum flow across the width of the river during the summer month's low flow period. The results of the bathymetry and hydrology studies under the proposed operating conditions will assist the agencies with understanding the water conditions in the river channel during project operations.

[6] After the site reconnaissance, Scott's Mill representatives estimated that a 1-inch veil would be equivalent to a flow of 60 cfs and a ½ inch veil would be about 30 cfs. The flow over the dam was 1200 cfs, equivalent to about 7.5 inches. A one foot head over the dam is about 2500 cfs.