

Dominion Energy
American Eel Working Group
4 May 2022
FINAL MEETING MINUTES

In Person Attendees:

Dominion Energy – Pete Sturke, Taylor Allen, Ben Rice

VDWR – Dan Michaelson

NCWRC – Jeremy McCargo

Virtual Attendees:

Dominion Energy – Susan Gonzales, John Swenarton, Caleb Gaston, Fritz Hoogakker

NMFS – Fritz Rohde, Twyla Cheatwood, Kevin Mack, Bjorn Lake

USFWS – John Ellis, Jesus Morales

NCDMF – Todd Mathes, Holly White

Alumni – Bob Graham

AKRF – Justin Krebs, Carlos Lozano

Stantec – Sam Doyle

Pete opens the meeting with safety and introductions and agenda below. He emphasized the point of the meeting is to review select reports that need to be reviewed by the DFRTAC and submitted to FERC at the end of June 2022. He added that another main point, which is higher in the agenda is the downstream eel project at Roanoke Rapids. He thanked everyone that joined and noted that we have fishway engineers from NMFS and USFWS on the call-in addition to Stantec to discuss the fish friendly turbine project in the details available.

- Welcome and Introductions
- Review agenda and any additions
- Downstream Eel Passage at Roanoke Rapids
 - Population and Movement Study – AKRF
 - Fish Friendlier Turbine discussion
- Gaston Eelway Effectiveness report 2022 – Taylor
- RR Bypass Resident Fish report 2022 – Susan
- RR Bypass Resident Mussel report 2022
- Eelway Operations and Maintenance Manual Review

Pete covers Roanoke Rapids Eelway catch - total catch year to date is 4,163 with 908 from the North Bypass, 3,245 from the South Bypass, and 10 from the Tailrace trap. The current water temperature is around 18C. The siphon is repaired at the North Bypass and the Skimmer Gate at the South Bypass eelway at Rapids is scheduled to be repaired in Fall of 2022. The tailrace pump has been repaired as well. The station is working to spill water from the South end of the bypass when possible.

Pete moved on to the downstream eel passage portion of the agenda and reviewed with the team the high level portion of the population and movement study plans for 2022 and 2023. He mentioned the eel pots will be limited to the main body of Roanoke Rapids Lake in 2022, no Deep Creek or Johnson Pond areas will be sampled. The eel tagging and movement monitoring will continue in 2022 and 2023 with another 10 acoustic tags to be added to the population.

Justin (AKRF) reported on the downstream eel study at Roanoke Rapids. The eel trapping has been paused for winter and will resume from May through October. Justin covered the eel population survey highlights, May through October will be used as the trapping window of study (6 months), tagging and telemetry will continue, we ordered 10 new tags for 2022. 50 tags total throughout the study which will be 60 after this year. Year three of study will focus on 5 areas randomly stratified, no JP and DC. Justin covered the eel migration - 27 eels have out-migrated over the three seasons, 2019-2022. Peak migration was Oct-Nov 2020. One eel left in July in 20-21, maybe due to tagging. Eel lengths ranged from 340-680.

Justin covers plan for 2022, the trapping will continue May-Oct, which are the most productive months. The focus on mark recapture will be to preserve the ongoing eel population. There are 16 tagged eels at large, also 10 additional tagged eels in 2022. The east receivers (3) will be maintained through the 22/23 season. The annual report is drafted, year 3, will finalize the telemetry data after the next download and run the model.

Dan suggested to run a Jolly-Seber model to check the population against other years or methods. Carlos did not know why they did not, Dan says it's not as strong a model but will give good information. Justin mentioned he is comfortable with the current confidence intervals.

Pete asked when NCDMF checks the receivers. Holly said she checks their receivers every month and Pete would like to include that data in the report. Holly will search the data base if Pete provided the tag IDs. **Action: Pete - send Dominion tag IDs to Greg or Holly. Complete.**

Justin will check the eel size against the traps to make sure <300 mm is captured. Maybe use a trap in the eel tanks to test the retention. The 9" min size will be used, which is a fed (ASMFC addend. 3 2013?) requirement, the required ½"-1/2" mesh size to allow for smaller eels to escape and retain the 9" min. Aquaculture is allowed to use a mesh to cull smaller eels. Todd mentioned he could reach out to check on a reference for the min. size. Pete mentioned the throat is 2x2" so escape may be possible. Bob mentioned that the reason he made the comment is that he wanted to clarify that the population estimate does not apply to the total population, just mature eels. Justin shows the size distribution from the study and mentioned the smaller eels (300mm) were caught in the EF in JP, nothing that small in the traps. **Action Item: Todd to ask ASMFC about eel pot mesh sizing. In progress.**

Pete thanked Justin and Carlos for the presentation and noted that the group will be asked to review the report later in May as noted in the agenda. Dominion will seek the review, comments, and concurrence with the report before sending to FERC at the end of June.

Pete starts Fish Friendly Turbine update. Stantec has been hired for the turbine assessment in conjunction with Mike Sears (Innovasea). The size range used for the eel survival calculation will be 400-800mm TL. The Franke et al (1997) blade strike model will be used for Kaplan turbine with a $\lambda=0.4$. Alden survival will be used for Alden runner. This distinction/difference was made after discussing with Bjorn and Jesus about the methods needed to use for the turbine runner selection. Bjorn says the 0.4 will be used as opposed the 0.1 as typical for salmon, which is applicable with the design of the station. Pete mentioned the FFT assessment work is using NDA's which are proving to be difficult to share information with the DRFTAC. Ben mentioned that the agreements are have made the evaluation of the products challenging and may eliminate some products from assessment.

Pete noted that the timeline detailed in the slide is an important note that he wanted to let the group know today. Stantec, through their analysis and discussions with vendors are recommending and predicting a 2027 installation and operational timeline. Pete asked Sam from Stantec to give some more details which he informed the group that the Alden and the Kaplan runners should be model tested to improve the design but will take around 200 days, the more realistic target for install should be 2027, not 2024.

Ben says he wants to make sure we install the right equipment and then run the model test. Bjorn clarifies that a scale model will be built to test performance and fish? Stantec says the mean linear regression on the model results could be used to validate the model. Bjorn says he knows of a scale model that was done and may make sense to add fish to the model to include in the testing which would maximize the usage of the scale model, the company was named Natel energy. They used video footage for additional data. Sam says the model can be done anywhere they choose, there are few in Switzerland, and the vendors will have a preferred one to use, Europe mostly. Ben asked Bjorn where we should do it, Bjorn said anywhere works. Sam says 1:14 scale for the test is typical. Ben asked if the data would help tune the Franke model? Sam says the biologist could answer that better but the Franke model could. Ben asks if everyone supports the schedule, Bjorn adds that he wants to consider 2027 as conservative, he doesn't want to get complacent and drag it out longer than it needs to be.

Pete mentions the license dates for this requirement and says June of 2022 is no longer the target for the design and that will come next year to 30%, and give us more time to determine engineering. The original intent was to have the runner selected in 2022 but the timeline for construction has informed us we have more time to make this decision as a group and there's no need to rush at this point.

Pete gives future plans for FFT, the survival will need to be determined, Pete asked Bjorn the testing plans, do we need to do both scale and field study, Bjorn says do both, Pete agrees.

Pete starts the survival discussion and recalled the question from February about what is realistic, what should we use? Sam adds the schedule allows for survival discussions with vendors. Sam thinks we will get push back from the vendors for contractual reasons on the survival numbers.

Pete comes back to the survival and asks the agencies for thoughts;

Jesus adds they usually use a local study or plan for this worst case survival. There is not one here. They typically use a high number for a case like this with absence of info, maybe someone else wants to add with more biological expertise.

Bjorn adds that the committee should have a separate meeting and review literature and then come back to Dominion with findings.

Todd mentioned that he is the NC Eel Technical Committee member of the ASMFC and could ask the group to discuss as this is likely an important point for the management of the species.

Pete recommends Todd should be involved with their experience with the 9" min. and familiarity to the local area.

Fritz adds he agrees to take it to the ASMFC Eel TC to make it consistent with everyone along the Atlantic Coast. Jesus adds he thinks the conversation needs to be had about what happens if they don't

meet the survival standard to have resolution laid out, so the whole project is not redone. He noted that we should determine the options for not meeting the standard.

Dan adds that the size class may need to be taken into consideration but it maybe very difficult to do.

Pete adds that's important, geographically, because the downstream migrating eels are typically larger in northern latitudes. Pete mentions this will be applicable up and down the east coast. Todd mentions that this survival determination is very important and maintaining the downstream stock is important on a population level.

Jeremy asked about the survival so far, Pete mentions that out of 12 outmigrants we have 2 that assumed to be mortalities, around 85%. Justin added the sample size is small. Todd asked if we had eels that made it down stream to the inlet, Pete confirms the few we documented/detected at Oregon Inlet.

Action item: Todd ask the ACFMC/AETC for guidance on eel survival. Complete and in progress.

Pete says that the summer 2022 would be a good timeline to regroup on the survival discussion, Todd suggests maybe a quarterly meeting for just this topic.

Action item: Teams meeting with Todd after ACFMC/AETC has time to do some research. TBD.

Pete mentions the eel working group may have some good information to share on survival as well. He thanked the group for the discussion and noted that we're on the right track for Roanoke Rapids and eels in general. These discussions going forward will be really helpful for Dominion and would anticipate this being important for other folks along the east coast as well. Fritz noted that quarterly downstream eel discussions for the group would be ideal as he thinks we definitely need to have Dr. Wilson Laney's input on this matter.

Gaston Eelway Update

Taylor covered the Gaston Eelway update. He noted that there have been 1,825 eels caught at the North and South Gaston Eelways thus far in 2021 (as of 29 April 2022). He noted that there have been 3 recaptures of Coded Wire Tagged eels which have been retained but the tags have not been pulled yet.

Taylor described the cumulative catch for 2022 and showed the group that the catch is ahead of all previous years. He moved on to the length frequency distributions of the eels caught at the Gaston Eelways from 2019 – 2022. He noted that Fritz Hoogakker put the violin plots together but he would argue it's more stingray shaped. This shows that there has been an increase in the range of eels that are being captured but the average is about the same. He continued by showing that the largest eels caught (~400mm TL) have been in 2021 and 2022 after the new eelways began operations. Taylor noted that the North Gaston catch is already at 454 for the year.

Todd asked if the 2019-2021 catches for the North Eel ramp were zero's or if those were not in operation. Pete clarified that it was not in operation for those years so are not zero's.

Taylor continued and noted that the South Gaston catch as of the end of April was currently 1,371 which again, is ahead of previous years. He then reviewed the monthly record catches and showed that March and April have experienced record catches for the North and South Gaston Eelways and hopes that trend continues.

Taylor moved on to the next slide and discussed the Gaston effectiveness report that the DFRTAC will be asked to review in May/June before submitting to FERC at the end of June 2022. He reviewed the three questions that determine effectiveness:

1. What proportion of eels in Roanoke Rapids Lake find and enter eelways? He reviewed that the increase in catch/abundance compared to historical catches seems to indicate that the door is effectively open for eels and the new eelways are working as designed.
2. Are eels being passed safely? He reviewed that since the South and North Gaston Eelways have been in operation, only 4 mortalities have been associated with passage operations which is less than 0.01 percent of the total number caught and passed upstream.
3. What proportion of eels experience fallback into Roanoke Rapids Lake? He reviewed that there have been 6 recaptures (4 in 2021) out of 8,395 CWT eels passed into Lake Gaston which is less than 0.01% of the total passed. He did note that there had been a few more tagged eels captured this week which will have the tags removed and added to this report before sharing with the group. He noted that the time at large (time from initial tagging and passage upstream to recapture at the Gaston Eelways) ranged from 3 days to 553 days.

Pete thanked Talyor for the review and noted that the last bullet on that slide indicates that the Gaston Distribution Studies are underway. The spring event was recently completed and zero eels were observed. Dan and Jeremy both noted that the eel signs are up at the public boat launches but there may be opportunities for us to share those digitally with a wider audience around the Roanoke Rapids Lake, Lake Gaston, and Kerr watershed. Pete noted that and will send them the digital version of the signs for sharing. **Action item – Pete to share digital version of Eel distribution sign. COMPLETE.**

Bypass Resident Fish Report

Susan started covering the bypass resident fish report. She noted that the report is currently in internal review and will be submitted to DFRTAC by 23 May 2022. The 2021 CPUE was very similar to that of the sampling in 2016. Fewer species were collected than in 2016 but 2 new species were collected. She reviewed the length frequencies which were similar to 2016 for common catches. There were three metrics used to evaluate the bypass reach fish population health, all were excellent.

Fritz R. asked about the new species, they were Golden Redhorse and Shorthead Redhorse.

Bob added that they make spawning runs into the bypassed reach.

Justin asks about insectivores and their abundance, how many species were represented?

Susan mentioned the Redbreast Sunfish, Margined Madtom, redhorses, and several others.

Pete noted that the Moxostoma (Redhorses) seemed to be Young of the year fish and were caught in slower moving waters in the bypass. Dr. Steve McIninch from VCU identified these in the lab.

Pete gave an update on the resident mussel survey done by NCWRC. The rewatering occurred in 2007. Eight surveyors, 62.5 person hours, 10 species, 2236 mussels found! The rare Northern Lance was the most collected, 1741. Some tissue was submitted to the state museum for age and growth. Two new live species detections.

Bypass Resident Mussel Report

Pete informed the group that he's been in contact with Michael Fisk from NCWRC about the Bypass Resident Mussel survey from 2021 and report that's also due to FERC in June of 2022. Unfortunately, Michael wasn't able to join the meeting but he did provide Pete with a copy of a presentation he recently gave to some NCWRC staff about the report. Pete reviewed the presentation material which included a record number of live mussels discovered in the bypass during the 2021 mussel survey (over 2,000). In total, the surveyors found 10 species with the most abundant being the Northern Lance and Eastern Elliptio. This survey also marked the first live detections of two species: Triangle Floater and Roanoke Slabshell. Pete noted that he is reviewing the report and should have a copy to share with the DFRTAC after getting final edits back from NCWRC.

Moving on, Pete introduced the Operations and Maintenance manual for the Rapids and Gaston eelways. The license requires we develop a manual in conjunction with the DFRTAC and ensuring we get approval from NMFS before submitting to FERC for approval. Pete gave a quick overview and requested a review from the DFRTAC. He noted that the manual is long but the bulk of it is ~30 pages where the frequency and details of daily/weekly operations are explained. He also noted that the manual includes the collection permits and stocking permits for operations.

Fritz asked about splitting the eels between DC and the RRL.

Jeremy adds that we should discuss. Taylor adds that the logic at Gaston was to release the eels above the dam and let the eels decide on path through the system which is different from our current RRL approach. Should we still do that, maybe revisit later? Pete agreed. Maybe revisit before next year to change for next stocking permit. Fritz mentioned Wilson will want to be involved in these discussions.

Action Items:

DFRTAC review the O&M manual.

Add RR eel stocking location discussion to the fall DFRTAC meeting.

Pete brought up the last slide of the presentation and asked for any other questions the group may have. He also noted that there are several conferences coming up if travel restrictions are loosened a bit.

Fritz asked about the AEIG EPRI conference and what that entails as the members of this group may be very interested. Pete mentioned that he has attended with Bob in the past and is mostly comprised of industry members but will be open to others (agencies, consultants, etc) in Cornwall, Ontario (Moses-Sanders Dam). Pete will get some info. Kevin could possibly present?

Action item: Info for AEIG to DFRTAC.

Pete went over schedule upcoming reports and field work.

No further questions, meeting adjourned.