Appalachian Power Company
Smith Mountain Project No. 2210
Debris Management Plan
Debris Diversion/Collection Device
May 9, 2024

Background

Appalachian Power Company (Appalachian) began implementing its Debris Management Plan (DMP) for the Smith Mountain Project (Project) on April 1, 2010. Section 3.2 Offload/Disposal Sites of the DMP references debris diversion or debris collection devices. Specifically, the DMP states (with emphasis added in **bold)**:

> Based upon the results of the studies related to Debris management, Appalachian does not believe that debris diversion or collection devices are justified. While Appalachian is not proposing the implementation of these devices as part of this management plan at this time, it is recognized that as conditions change, practices that may not be feasible today, may become feasible in the future. That is why Appalachian is including this ongoing evaluation in its plan so that these types of measures will continue to be evaluated during the term of the next license. As part of the evaluation of potential locations for dedicated debris offload/disposal sites, consideration will also be given to evaluating those sites for possible debris diversion and collection devices. **The evaluation of the sites including the potential for providing debris diversion and collection devices will include an engineering and cost-benefit analysis, along with considerations for effects on surrounding property owners, navigation, safety concerns, permitting implications, environmental impacts, and access. Should it appear feasible to consider the installation of a debris diversion and collection device at a dedicated debris offload/disposal site after review of the above described environmental and engineering considerations, a joint pilot project supported by Appalachian, TLAC, LLA, and other stakeholders will be considered.** Appalachian will report on the evaluation of any sites for possible debris diversion and collection devices in its annual report as detailed in Section 5.0.
>
> **Prior to implementation, any proposed plans for new off-loading sites, debris diversion devices or collection devices will be filed with the Commission for review and approval.**

Current Status

The purpose of this document is to update the Debris Management Plan Technical Review Committee (TRC) on the status of the Pigg River Debris Collection Device including the permitting process, and to seek written support from the Tri-County Lakes Administrative Commission (TLAC) and the Leesville Lake Association (LLA). If provided, the letters of support will be included in Appalachian's submission of a Joint Permit Application (JPA) to the US Army Corps of Engineers (USACE), the Virginia Department of Environmental Quality (VDEQ), and the Virginia Marine Resources Commission (VMRC) with the intent to show public support of the project and fulling the DMP's joint pilot project requirement, "Should it appear feasible to consider the installation of a debris diversion and collection device at a dedicated debris offload/disposal site after review of the above described environmental and engineering considerations, a joint pilot project support by Appalachian, TLAC, LLA, and other stakeholders will be considered." After a thorough evaluation of engineering options, a site and structural design have been selected as the preferred debris collection device. Below is a summary of the iterative process used to arrive at this device along with details of the engineering design.

Alternative Site Evaluations

Appalachian evaluated numerous sites both on the Pigg River and on Leesville Lake. Sites were evaluated on navigation (both the ability to access the site as well as not to impact other boating activity), potential effects to aquatic species, accessibility by land and water, potential efficiency of operations, the desire to collect debris before it enters the reservoir, and a high-level assessment of potential environmental constraints. Based on this evaluation, Appalachian selected the preferred site located at the confluence where the Pigg River enters Leesville Lake.

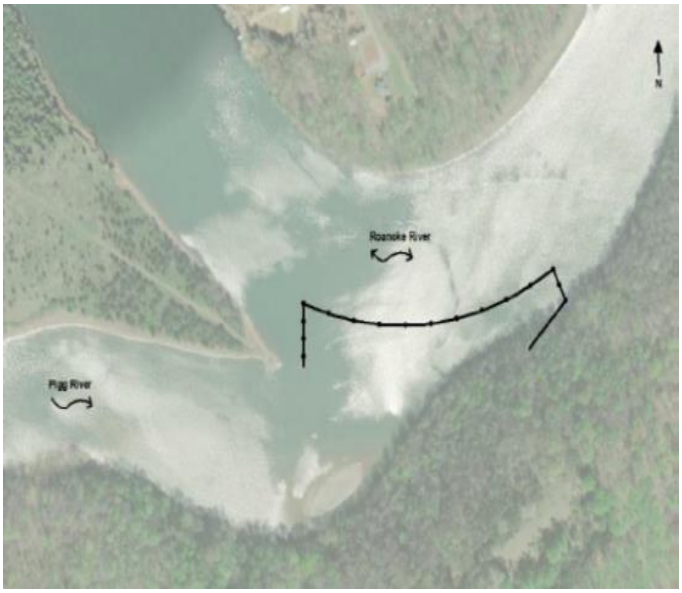
Alternative Designs

In addition to evaluating alternate sites, Appalachian evaluated various device designs at the preferred site. Various engineering firms were initially consulted regarding potential debris capture options. Debris capture options evaluated included the following designs:

- "Modified Fishhook"
- Deflector/Collector

Based on land access and debris removal equipment considerations, it was determined to be advantageous to proceed with the "Modified Fishhook" debris capture design.

Modified Fishhook Design



Design Criteria

Two design criteria conditions were evaluated:

1) Condition I
    a) Design criteria 85% of historical Pigg River flows [20,500 cubic feet per second (cfs)] with estimated associated debris capture area (6.25 acres).
    b) Based on 2010 Pigg River flow event.
    c) Smaller areal footprint – socketed individual pilings with single boom system.
2) Condition II
    a) Design criteria maximum historical flow (65,600 cfs) with estimated associated debris capture area (10+ acres).
    b) Based on 1987 Pigg River flow event.
    c) Larger areal footprint – clustered pilings with twin boom system.

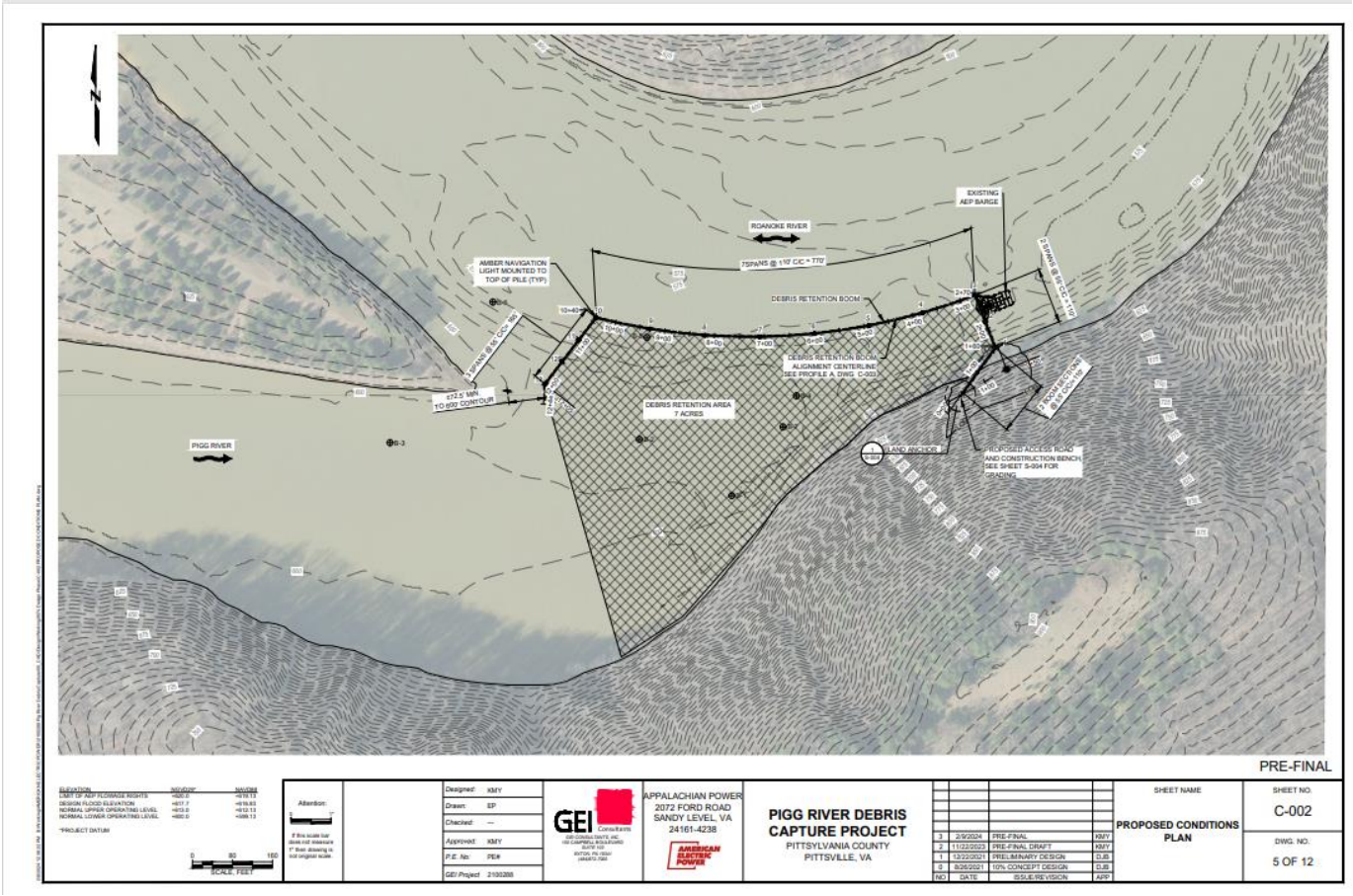
Debris capture/retainage efficiency were analyzed:

1) Standard-industry debris capture efficiency drops off considerably when flows exceed a flow velocity of 5 cfs (maximum efficiency is a little under 5 cfs).
2) Condition I design maximum flow velocity of approximately 5 cfs.
3) Condition II design maximum flow velocity of approximately 9 cfs.

4) Conditions I and II yield nearly identical debris capture/retainage for flow velocities up to 5 cfs.

Based on the analysis, the engineering consulting firm and the device manufacturer concluded Condition I to incorporate the best debris capture efficiency currently available for the Pigg River project. Both designs include controlled release points.

Below is the proposed design. Note a larger version is attached in Appendix A.



Thirteen, 36-inch diameter steel pilings are proposed. The top of the pilings will be at an elevation of 618.5 feet. Each will consist of three micro piles socketed into bedrock and backfilled with grout.

Between each piling will be 36-inch diameter high-density polyethylene (HDPE) multifunction boom material with a 1-foot weighted skirt attached to the bottom. The total length of boom is 1,155 feet. The boom sections will be attached to a HDPE float collar mounted on each piling so that the boom will rise and fall with the water surface elevation. The HDPE boom sections will

float such that the top 2-feet will be above the water line and the bottom 1-foot (and the 1-foot weighted skirt) will be below the water line. Designed break links will be installed between each of the piling section to serve to reduce load forces that may occur if the design criteria is exceeded. The downstream piling located nearest to the southern shoreline will be attached to an onshore rock anchor by a chain. [Appalachian has obtained land rights for installation of the anchor.]

The device design facilitates an approximate 7-acre debris retention area allows for debris barge mooring at multiple locations. Additionally, the design includes an opening of approximately 72 feet at the 600-foot elevation contour for debris removal equipment and recreational watercraft navigation to pass to and from the Pigg River and Leesville Lake.

Operations

Currently, Appalachian uses sectional barge and excavator equipment powered by a push boat for floating debris removal activities from Leesville Lake. Collected floating debris is loaded on the barge and transported to an offload site for proper disposal. Additionally, Appalachian utilizes an approved contractor with similar equipment for debris removal on an as needed basis. Appalachian has also purchased a debris skimmer that will primarily be used to remove smaller floating debris, as needed. Equipment used by Appalachian and its contract crews to remove large and small debris will be utilized at the proposed Pigg River diversion device location on Leesville Lake near mile marker 13. The equipment can access accumulated debris along the diversion device, may be secured to the diversion device in designated locations, or can be utilized within the debris accumulation area. Appalachian and contract crews will monitor debris loading at the debris diversion device and remove accumulated debris when necessary, during the required debris removal period and throughout the year when weather, plant operations, project inflows and other factors allow safe working conditions.

Assistance

Appalachian welcomes the TRC's input regarding signage and lighting.

Process

1) Appalachian consults with Debris Technical Review Committee:

    a. Debris TRC includes representatives from the Virginia Department of Wildlife Resources, the Tri-County Lakes Administrative Commission (TLAC), the Smith Mountain Lake Association, and the Leesville Lake Association (LLA).
    b. Appalachian seeks written project support from TLAC and the LLA prior to submitting a Joint Permit Application.
    c. Letters of support will be included with the application.
2) Appalachian will pursue a JPA from:
    a. USACE
    b. VDEQ
    c. VMRC
3) Prior to the JPA submission, Appalachian will request a Pre-Application meeting with the USACE, VDEQ, and VMRC.
4) The JPA process is anticipated to take 12 to 18 months (est.).
5) If appropriate permit(s) is/are issued, Appalachian will file proposed plans with the Federal Energy Regulatory Commission (FERC) pursuant to the DMP.
6) If approved by FERC, the construction phase of the project is estimated to last approximately 8 months.
7) Additional time will be required for contracting, material procurement, etc.

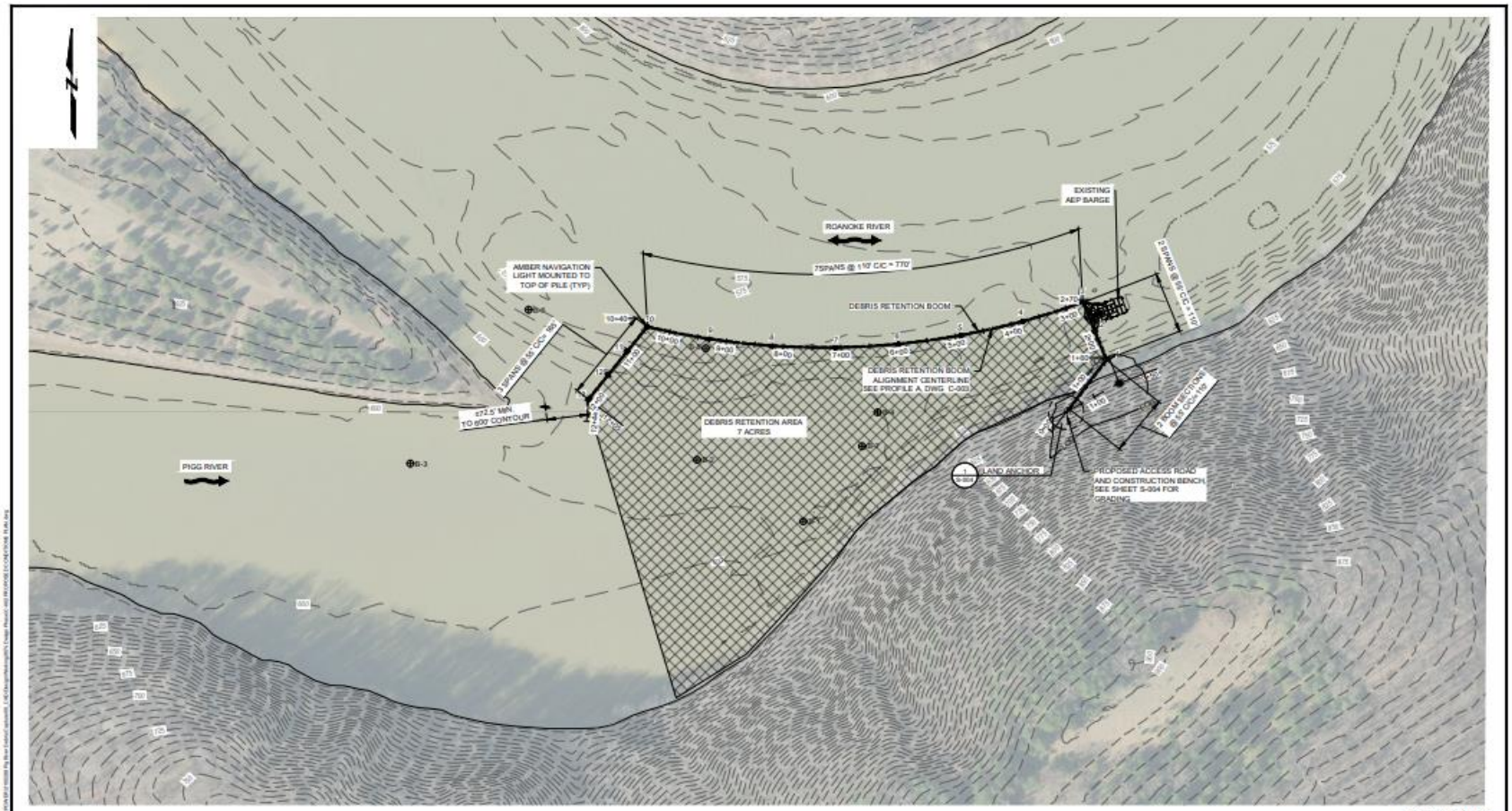
<u>Consultation</u>

Prior to its presentation to the TRC, Appalachian staff met with the adjacent (northern) property owner on April 18, 2024.

Appalachian staff presented a power point presentation to the TRC on April 22, 2024, and provided a copy of this proposal on May 9, 2024.

Please provide comments on the proposed design, letters of support, and suggestions for signage and lighting by June 15, 2024.

Appendix A
Proposed Debris Diversion/Collection Device



Appendix B

Documentation of Consultation