



# Beaver Creek No. 1 Supplemental Watershed Plan – Environmental Assessment – Second Public Meeting

Wednesday, October 6, 2021, 6:00 PM EST



# Project Team in Attendance

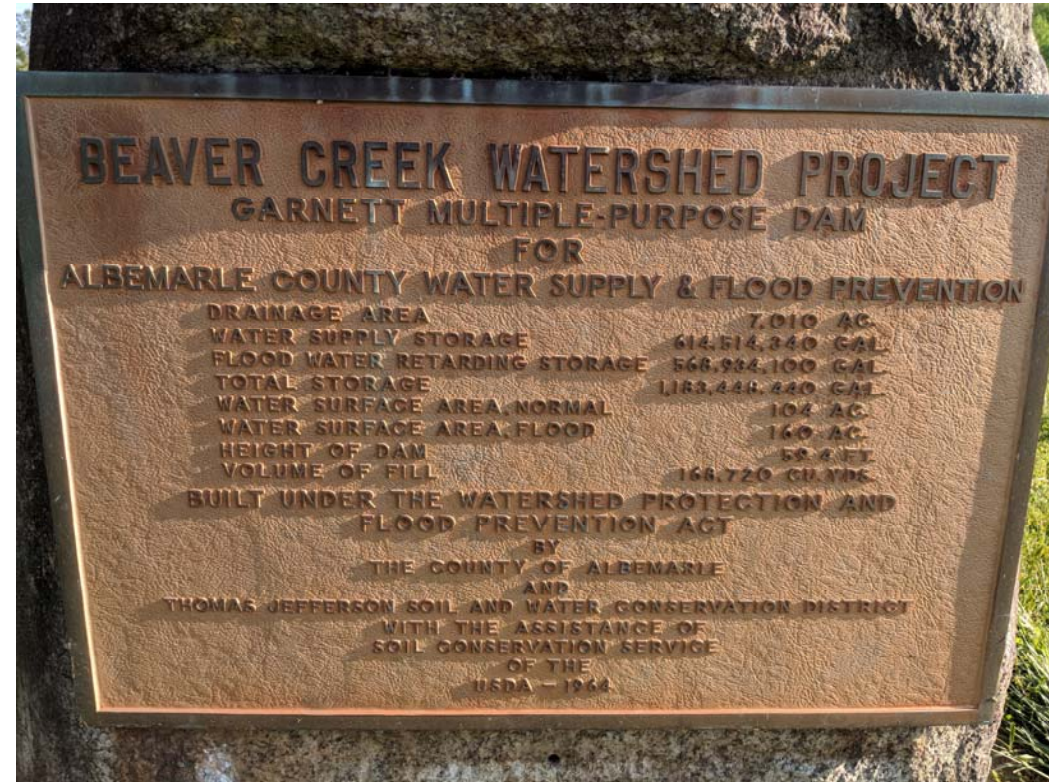
- **Rivanna Water and Sewer Authority – Sponsoring Local Organization**
  - Jennifer Whitaker, PE – Director of Engineering and Maintenance
  - Victoria Fort, PE – Project Manager
- **Albemarle County – Sponsoring Local Organization**
  - Bob Crickenberger – Director of Albemarle County Department of Parks and Recreation
  - Jim Barbour – Parks Superintendent
- **US Department of Agriculture – Natural Resources Conservation Service (NRCS)**
  - Mathew Lyons, PE – State Conservation Engineer
  - Dana Perkins – NEPA Compliance Specialist, Cultural Resource Program Coordinator, Tribal Liaison
  - David Kriz – Assistant State Conservationist – Water Resource Operations
- **Schnabel Engineering, LLC – Planning Study Technical Contractor**
  - Randy Bass, PE – Quality Assurance Officer and Senior Project Consultant
  - J.R. Collins, PE – Project Manager
- **Hazen and Sawyer – Planning Study Environmental Sub-Contractor**
  - Christopher Ramo, PE – Project Manager

# Agenda for this Meeting

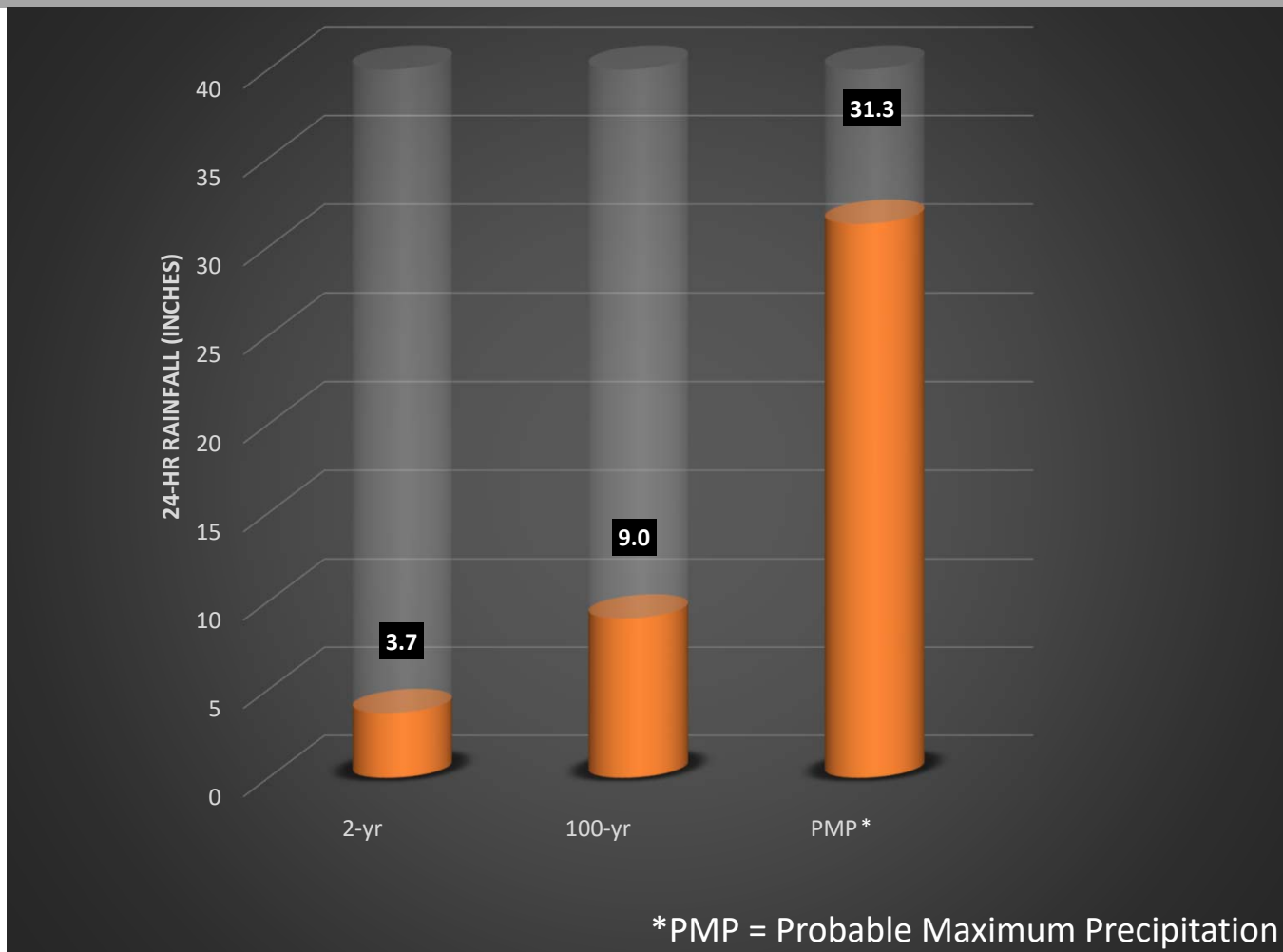
- Overview of Project
- Overview of Federal Watershed Rehabilitation Program
- Update on Status of Supplemental Watershed Planning Study
- Review of Evaluated Spillway Upgrade Alternatives
- Presentation of Recommended Alternative and Conceptual Detour
- Discussion of Pump Station Site Selection Process
- Next Steps
- Questions

# Beaver Creek Dam No. 1 and Reservoir

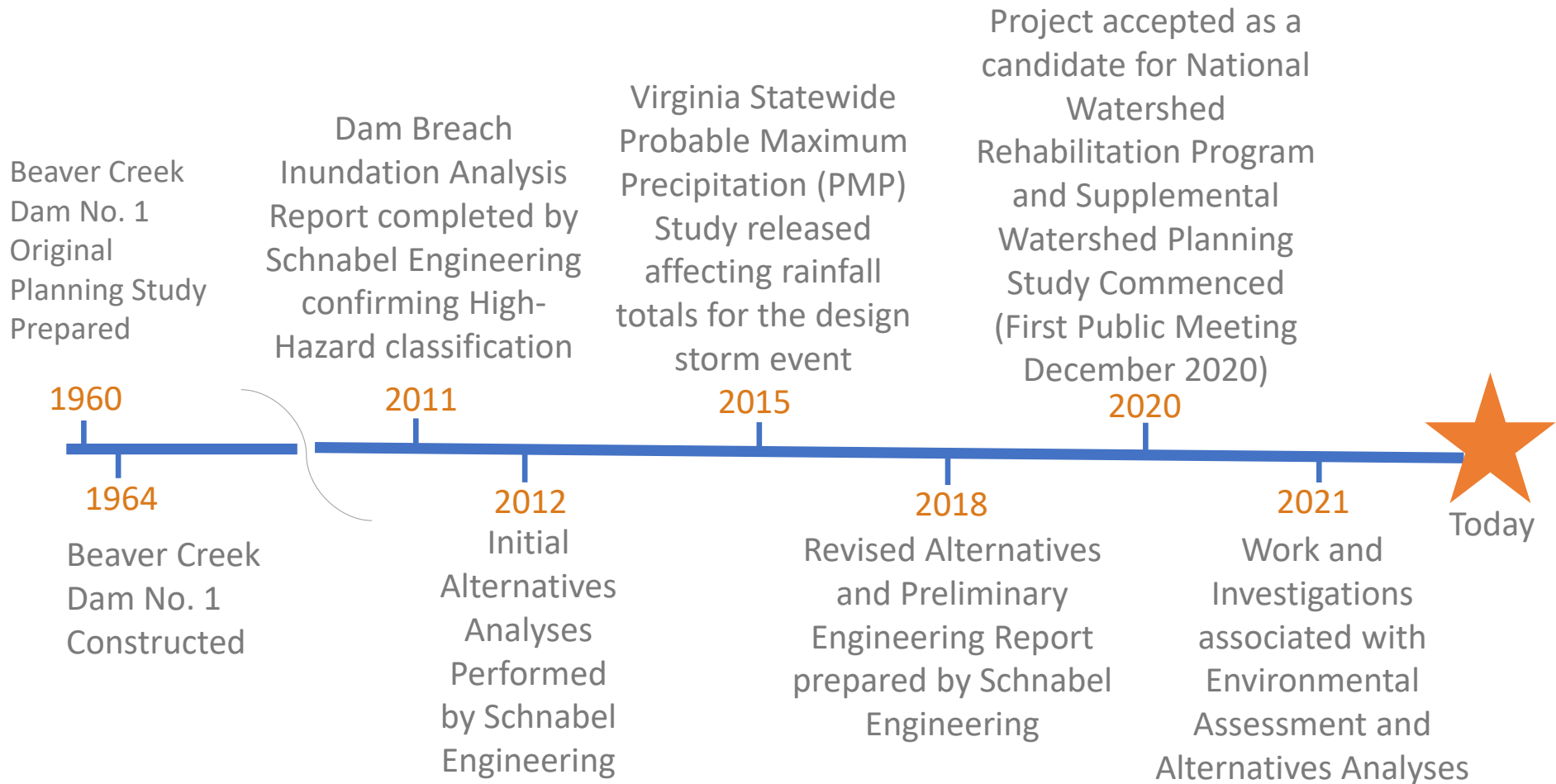
- Constructed in 1964, also known as Charles Mercer Garnett Sr. Dam
- The project was constructed for the purposes of:
  - Water supply
  - Flood Control
  - Recreation (rowing, fishing, picnicking, etc.)
- High-Hazard Potential Dam, but does not meet current Virginia Department of Conservation and Recreation (DCR) Requirements (Reclassified as high-hazard potential in 2013)
- Requirements for high-hazard Potential Dams in Virginia include safely storing and/or passing runoff from 90% Probable Maximum Precipitation (PMP).
  - RWSA requires 100% PMP.



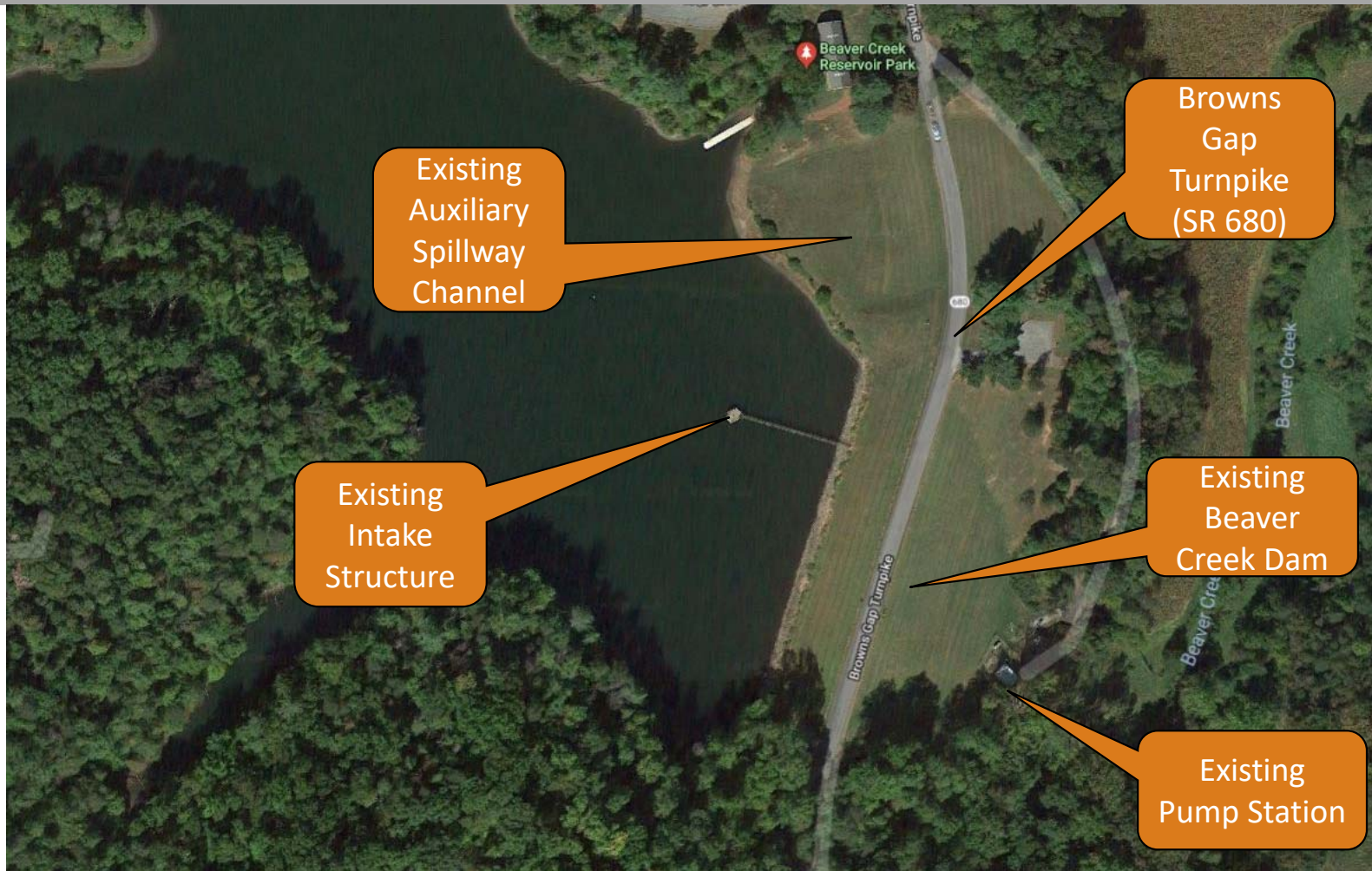
## PMP Rainfall Comparison



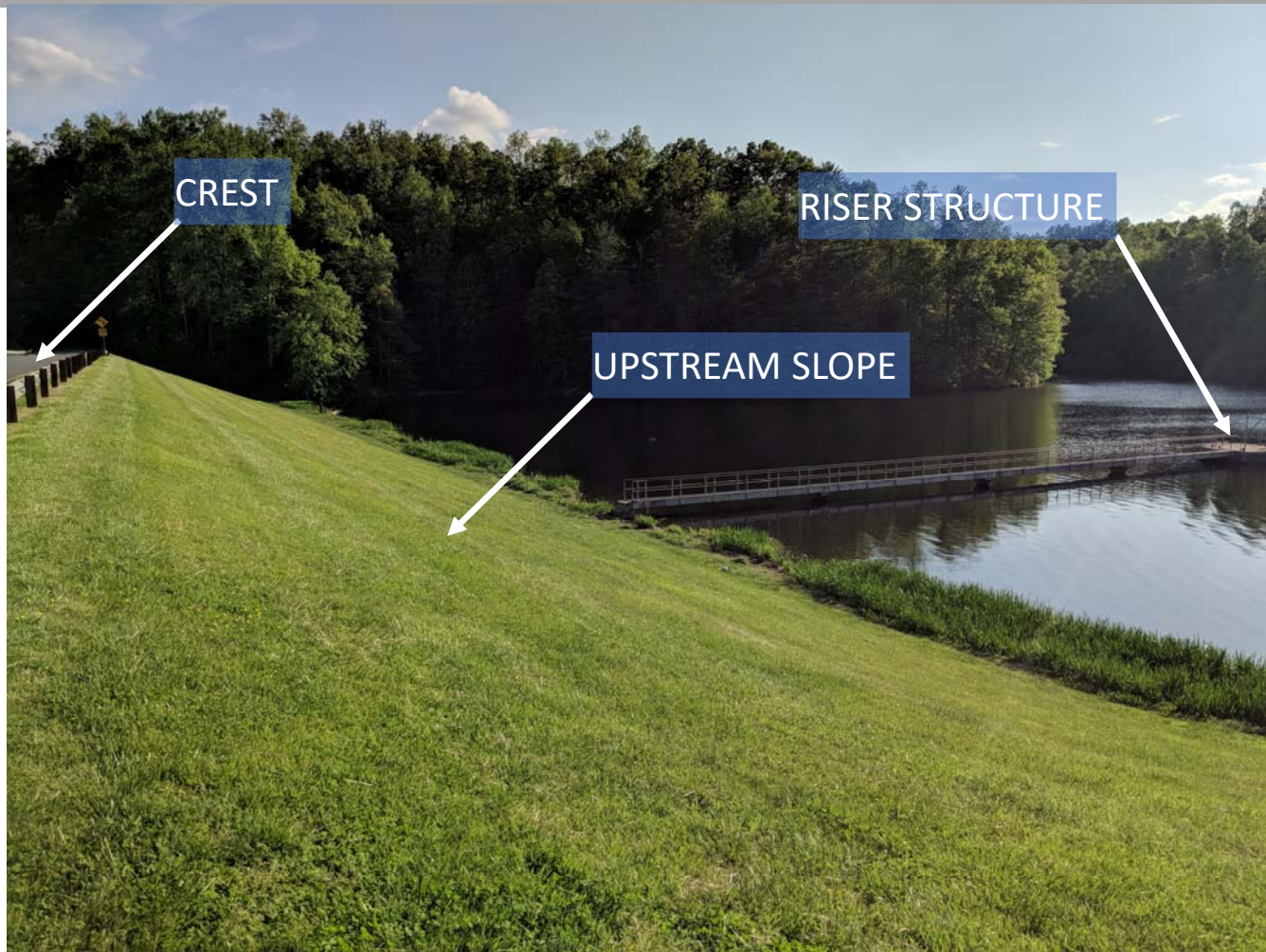
# Project Timeline



# Beaver Creek Dam Site Features



# Upstream Slope and Riser

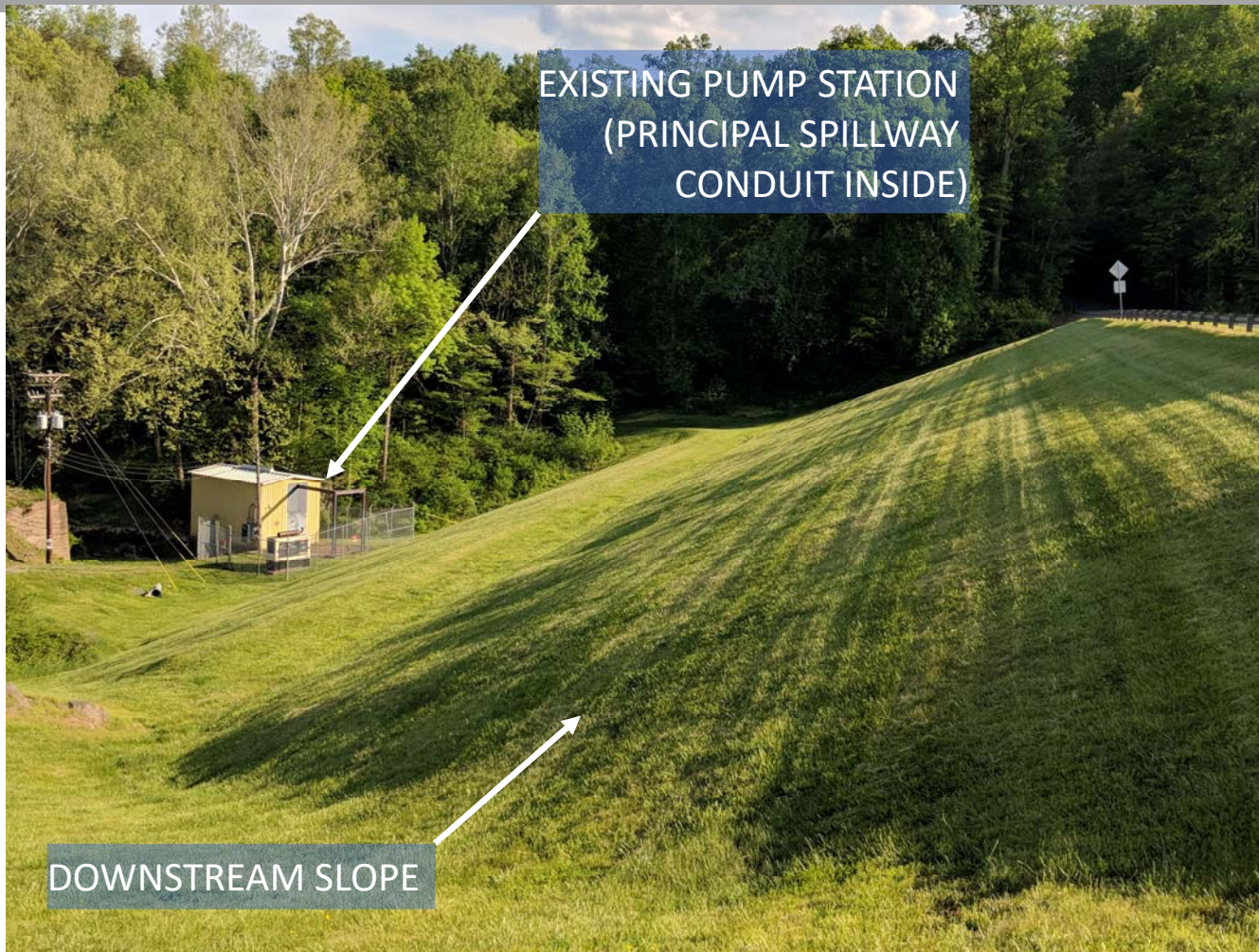




# Top of Reinforced-Concrete Riser Structure



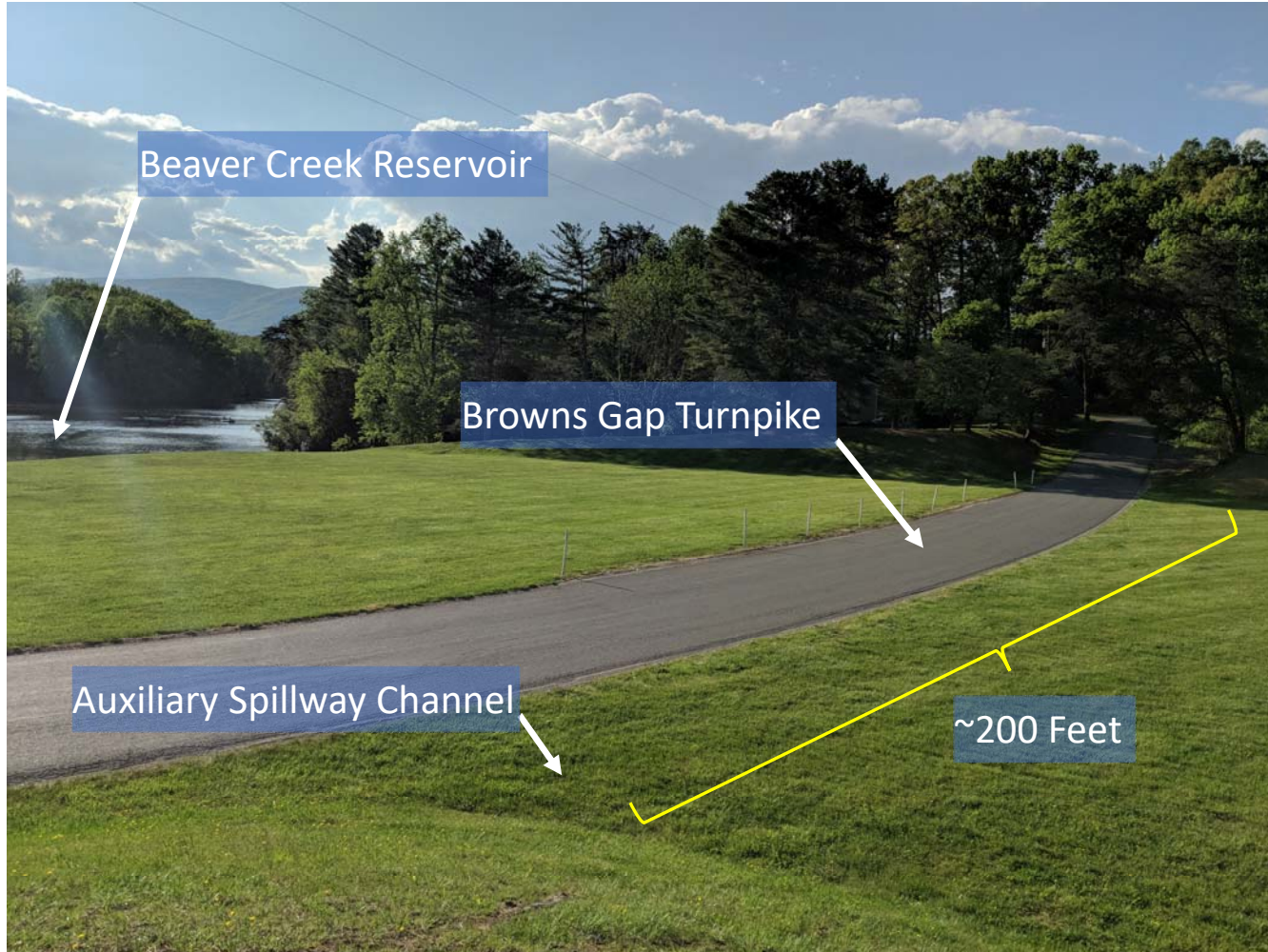
# Downstream Slope and Pump Station



# Pump Station and Spillway Outlet



# Auxiliary Spillway Channel



# National Watershed Rehabilitation Program

- The Federal Government can provide technical assistance and funding assistance for qualifying projects under the USDA-NRCS's Watershed Protection and Flood Prevention Program (PL 83-566)
- Typical Cost Sharing Ratio between NRCS and Sponsors:
  - 65% of Total Design and Construction Costs paid by Federal Government
  - 35% of Total Design and Construction Costs paid by Sponsoring Local Organization (SLO), to be fully borne by Rivanna Water and Sewer Authority
- The Supplemental Watershed Planning Study is a prerequisite to receiving Federal funding\* for the design and construction of the rehabilitation alternative.

\*Funding is not guaranteed and is dependent on the availability of funds appropriated for this purpose at the time of the work.

# Supplemental Watershed Plan

- **Plan-Environmental Document (Plan-EA) objectives:**
  - Assess the Beaver Creek No. 1 Watershed
  - Evaluate the performance of the existing watershed structure
  - Develop a plan to address compliance issues (i.e. spillway rehabilitation)
  - Study, evaluate, survey and reduce environmental and social impacts
  - Determine if available federal financial assistance will be allocated to fund the design and construction of the project

## Project Status Update

- Supplemental Watershed Planning Study kicked off in August 2020
- **Phase I** – Identify Problems and Determine Objectives
  - Initial Public Meeting and Scoping Meeting held December 2020
  - Analysis of existing conditions for NRCS and VA DCR requirements  
(Updates to previous analyses)
- **Phase II** – Inventory Resources and Analyze Resource Data

## Project Status Update (Continued)

- **Phase III** – Alternative Formulation, Evaluation, and Decision
  - Develop list of possible alternatives for detailed study
  - Select Sponsor’s Preferred Spillway Upgrade Alternative
- ★ • **Second Public Meeting**
- **Phase IV** – Preparation of Plan-Environmental Document
  - Completion of Draft Plan-Environmental Document in May 2022
  - Receive NRCS and Public Feedback through June 2022
  - Final Plan-Environmental Document submitted to NRCS for Approval – July 2022



## Initial Public and Scoping Meetings

- **December 10, 2020:** Project Team presented information about the project and received feedback on scoping from various state and federal agencies and members of the public via a Virtual (Zoom) meeting.
- **Summary of Identified Concerns by Public:**
  - Browns Gap Turnpike Closure during Construction
    - Impacts to local businesses and residents that use this road
    - Impact on emergency response times
  - Impacts to Public Recreation Areas – loss of open space
  - Impacts to Beaver Creek Sculling & WAHS Rowing Team
  - Impacts to Private Property from new Pump Station Site
  - Impacts to environment
- Meeting recording and slides can be found on RWSA Website

## Alternative Formulation

- Alternatives to address the purpose and need were considered, as well as other NEPA required alternatives.
- Alternatives that did not meet the purpose and need of the project or caused unnecessary impacts to the environment or local community were eliminated from detailed evaluation.
- The team narrowed the selection of feasible alternatives down to **two structural alternatives** that were evaluated in greater detail.

## Alternatives Considered during Study

- Decommissioning
- National Environmental Policy Act (NEPA) No Action
- Future Without Federal Investment (FWOFI)
- Floodproofing of Downstream Structures
- RCC Overtopping/Broad-Crested Weir
  - Over Dam Embankment
  - Over Existing Auxiliary Spillway
- Labyrinth Spillway and Chute with Bridge
  - Over Dam Embankment
  - Through Parking Area in North (left) Abutment
  - Through Existing Auxiliary Spillway
- Gated Spillway with Bridge in North (left) Abutment

# Decommissioning/No Action/FWOFI/Floodproofing

- **Decommissioning and No-Action alternatives were eliminated from further consideration**
  - Reservoir serves as sole water supply source for Crozet Area
  - Dam is subject to Virginia Department of Conservation and Recreation Dam Safety Regulations, which require an upgrade to the spillway to be in compliance
- **Future Without Federal Investment (FWOFI) alternative same as Sponsor's Alternative**
  - Sponsor (RWSA) will need to pursue spillway upgrades regardless of the availability of federal funding
- **Floodproofing Downstream Structures was eliminated from further consideration**
  - Floodproofing of residential and commercial structures in the breach zone may be possible. However, impacts to roadways will still cause the dam to be high-hazard potential based on Virginia Dam Safety regulations, and so compliance will not be met. Floodproofing the homes and businesses and reconstructing the downstream crossings would be cost-prohibitive and create unnecessary environmental impacts.

# Roller Compacted Concrete (RCC) Overtopping

- 2 Alternatives Considered in 2018 Alternatives Analysis:
  - RCC Over Dam Embankment
  - RCC Over Existing Auxiliary Spillway
- Eliminated from further consideration:
  - NRCS policy dictates that a roadway through a spillway situated lower than the dam crest is not permissible.
  - Public concerns raised regarding the criticality of this road to local residents and businesses make any alternative that involves overtopping during the Freeboard Hydrograph (FBH) unfeasible.



# Labyrinth Spillway and Chute with Bridge

- **Labyrinth/Chute Spillways**  
2 Alternatives Included in 2018 Alternatives Analysis
  - **Through Dam Embankment**
  - **Through Existing Auxiliary Spillway**
- Additional Alternative Developed during Supplemental Watershed Planning Study
  - **Through parking area in north (left) abutment**
- Labyrinth Spillway and Chute Through Auxiliary Spillway eliminated from further consideration due to loss of recreational open space



# Gated Spillway with Bridge

- **Gated Spillway Alternatives** considered during Supplemental Watershed Planning Study
- Eliminated from further consideration:
  - Lifetime Maintenance Costs
  - Mechanical/Electrical aspect means more possibilities of failure or mis-operation
  - Wider than labyrinth spillway and still requires a reinforced-concrete chute spillway to convey water to the downstream channel (cost prohibitive for this reason)

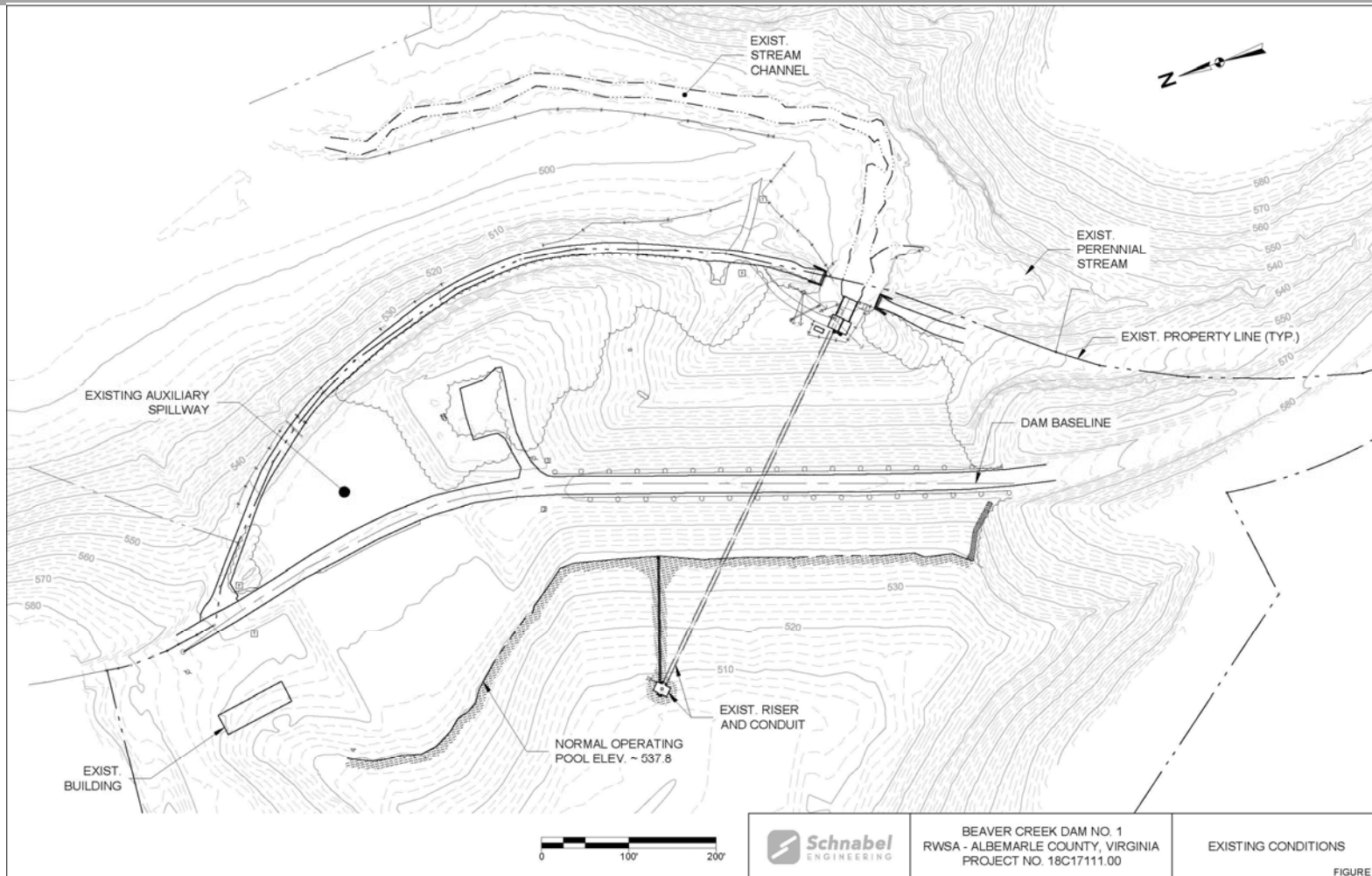


# Two Structural Alternatives Evaluated in Detail

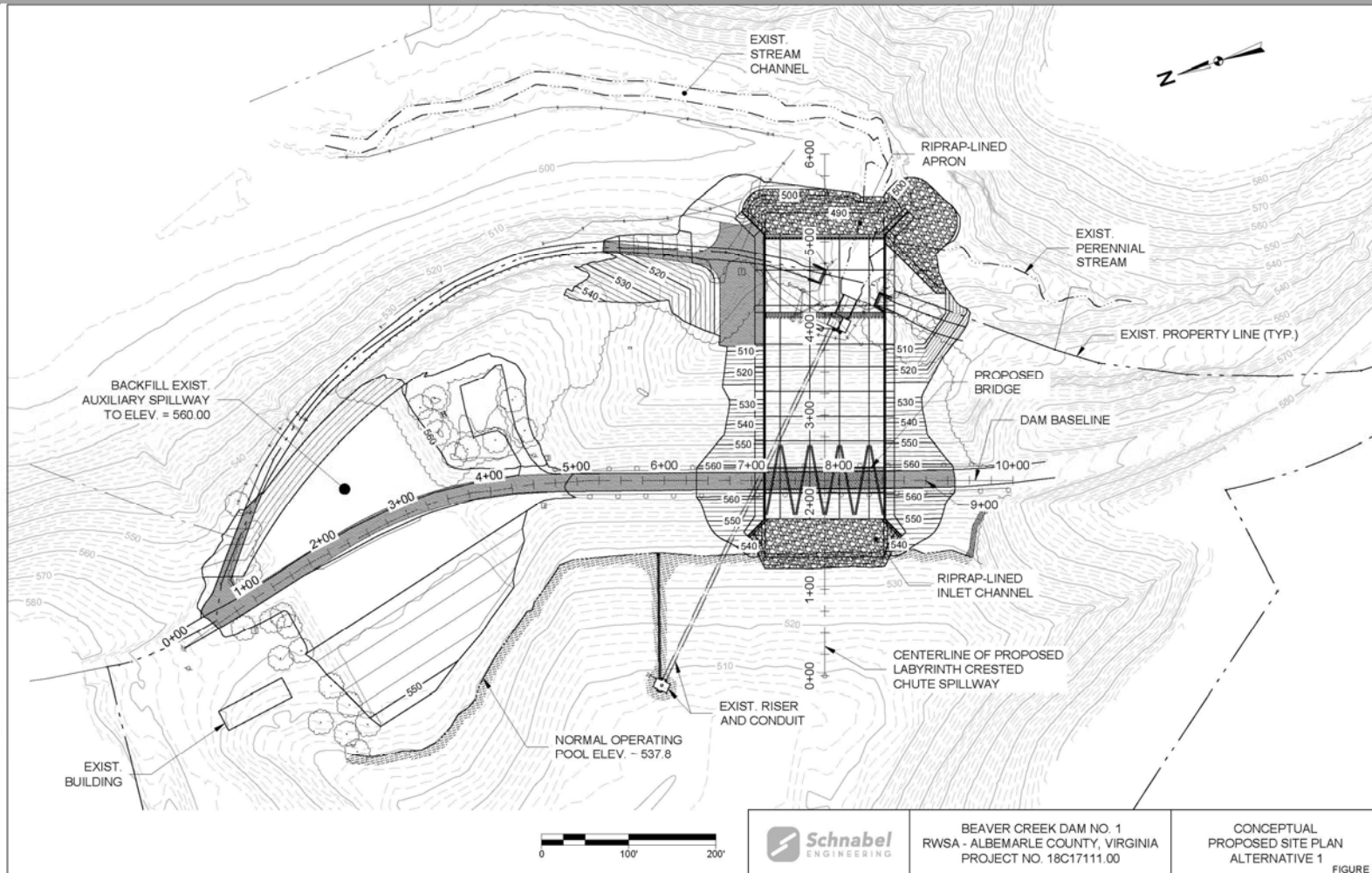




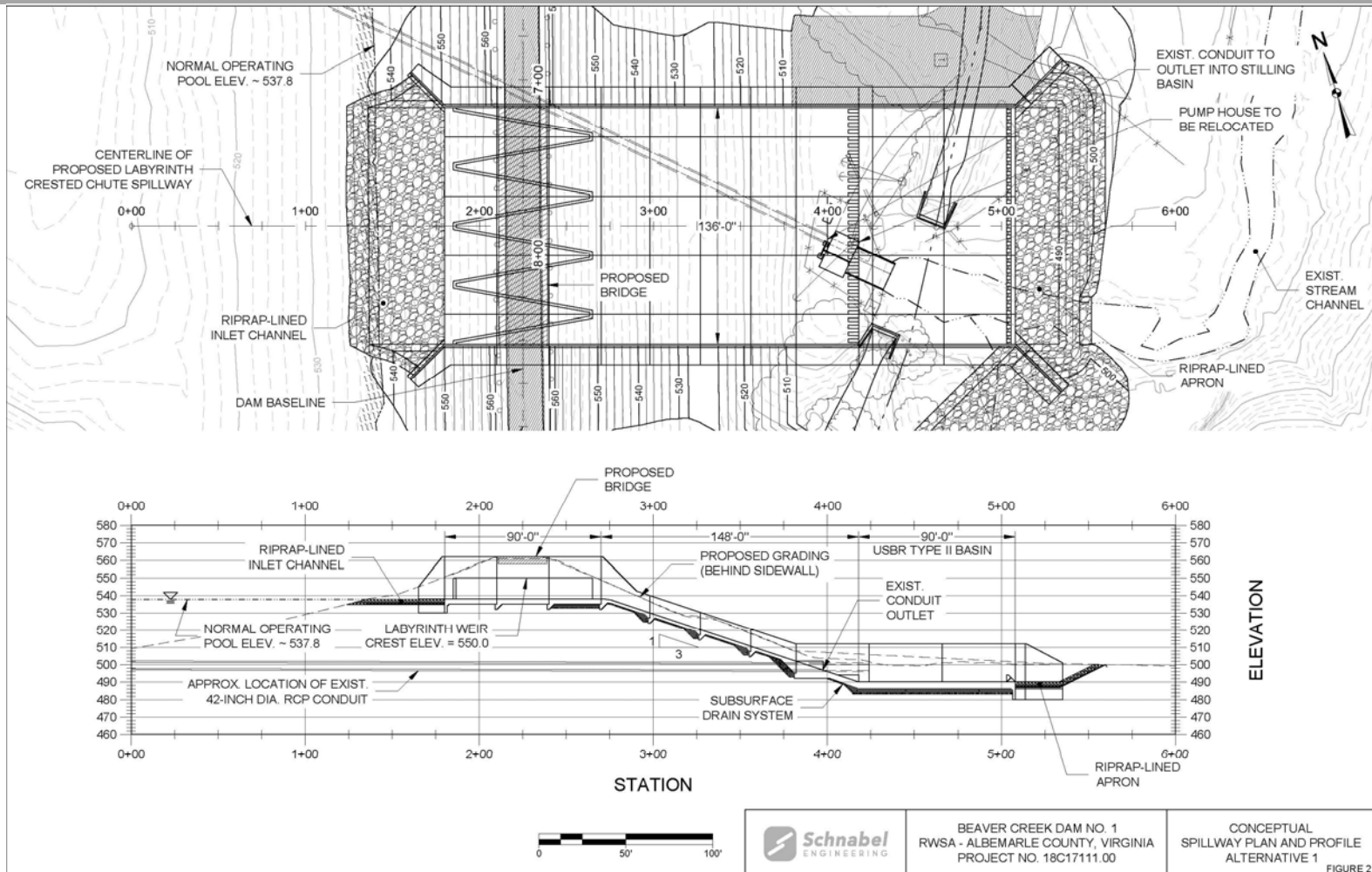
# Existing Site Plan



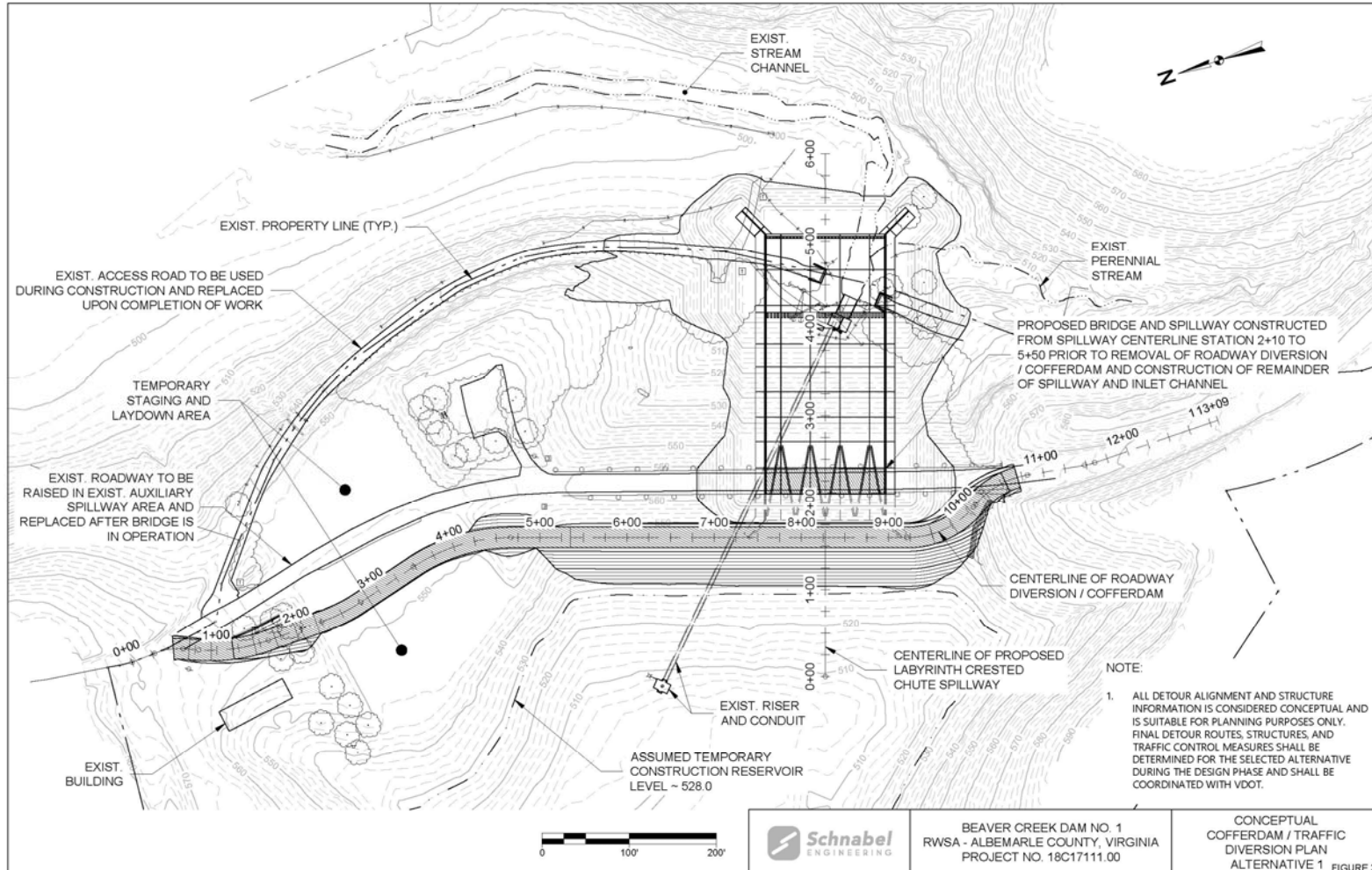
# Alternative 1 – Labyrinth Spillway and Chute through Earthen Embankment



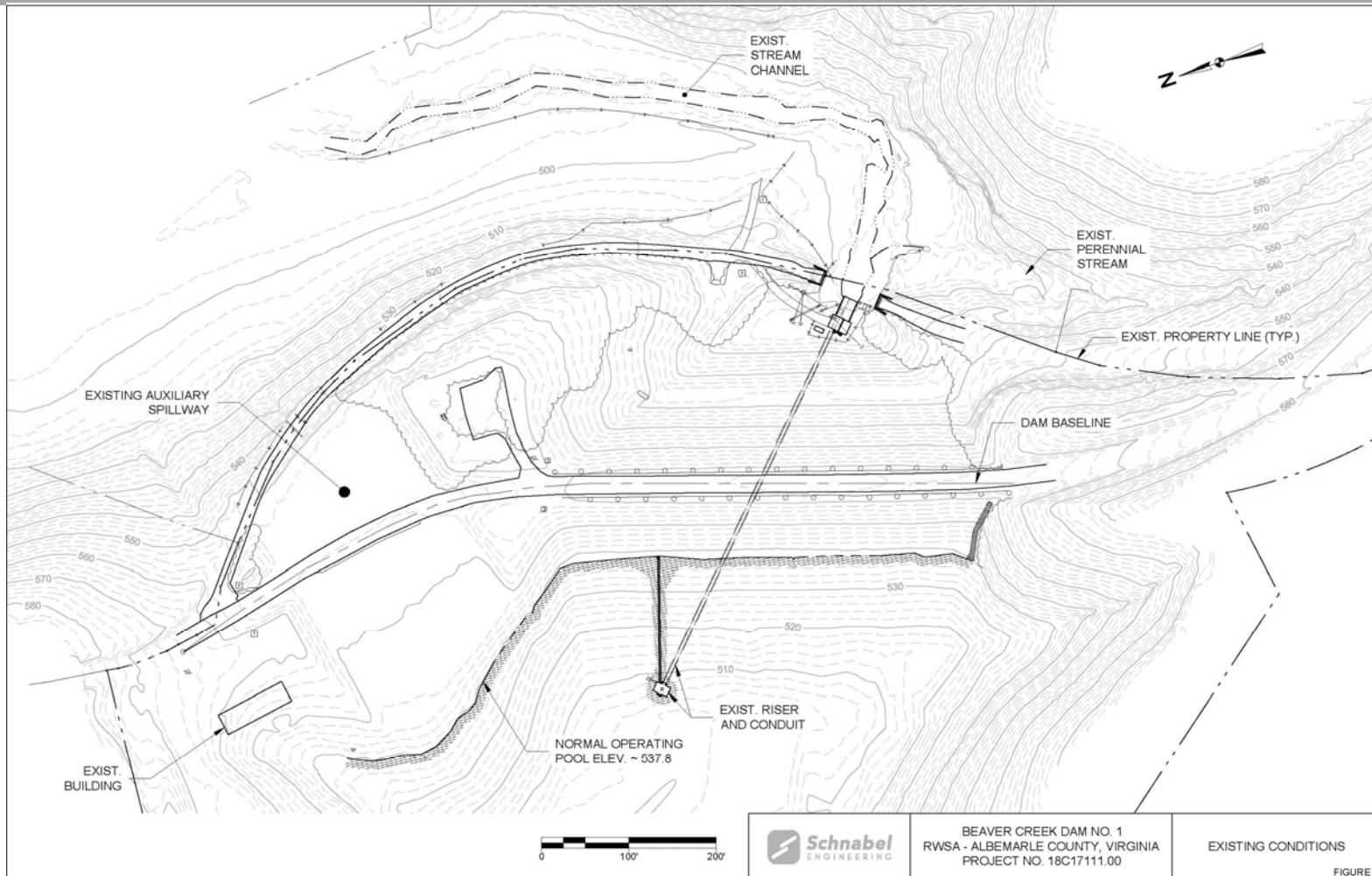
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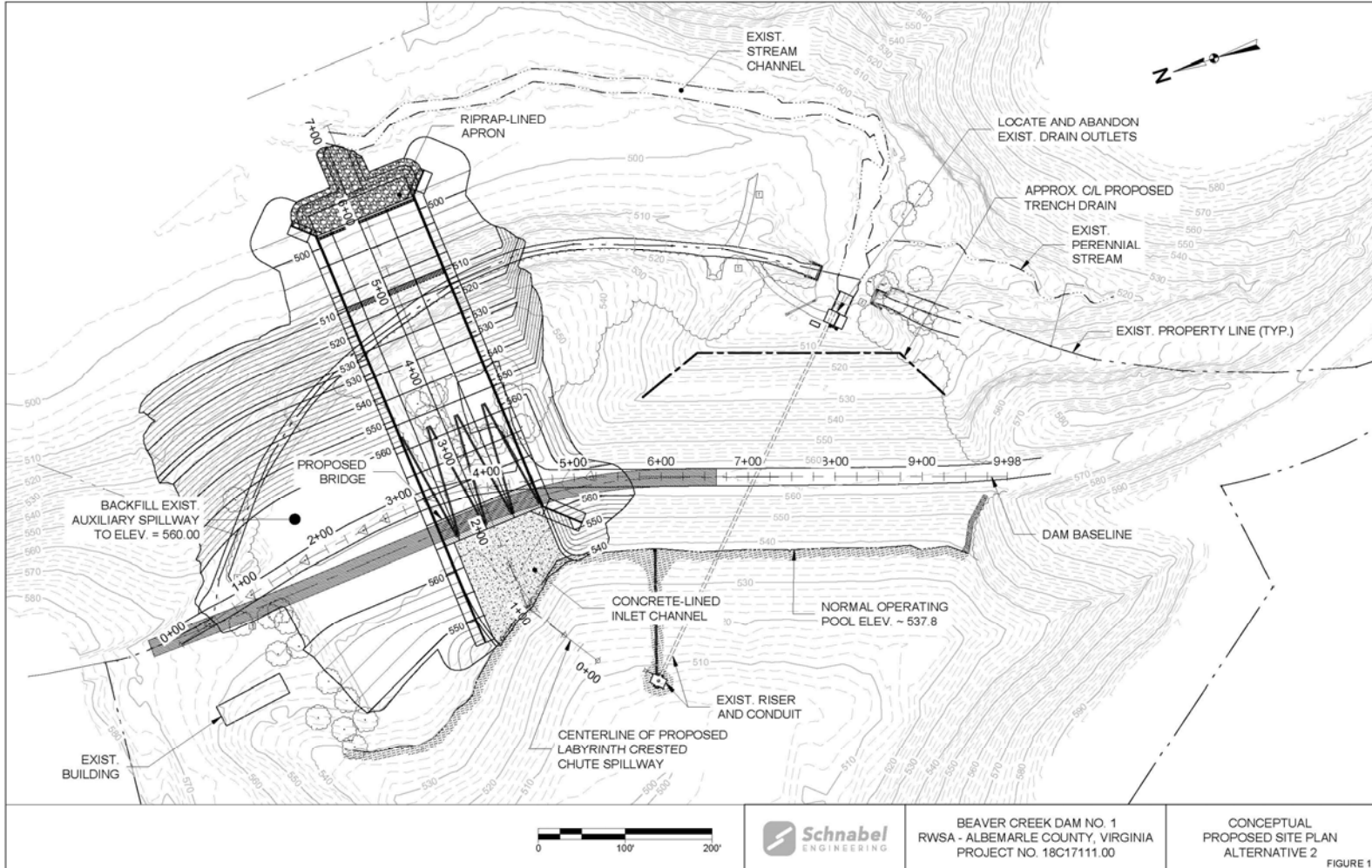
# Alternative 1 – Conceptual Detour/Staging - Plan



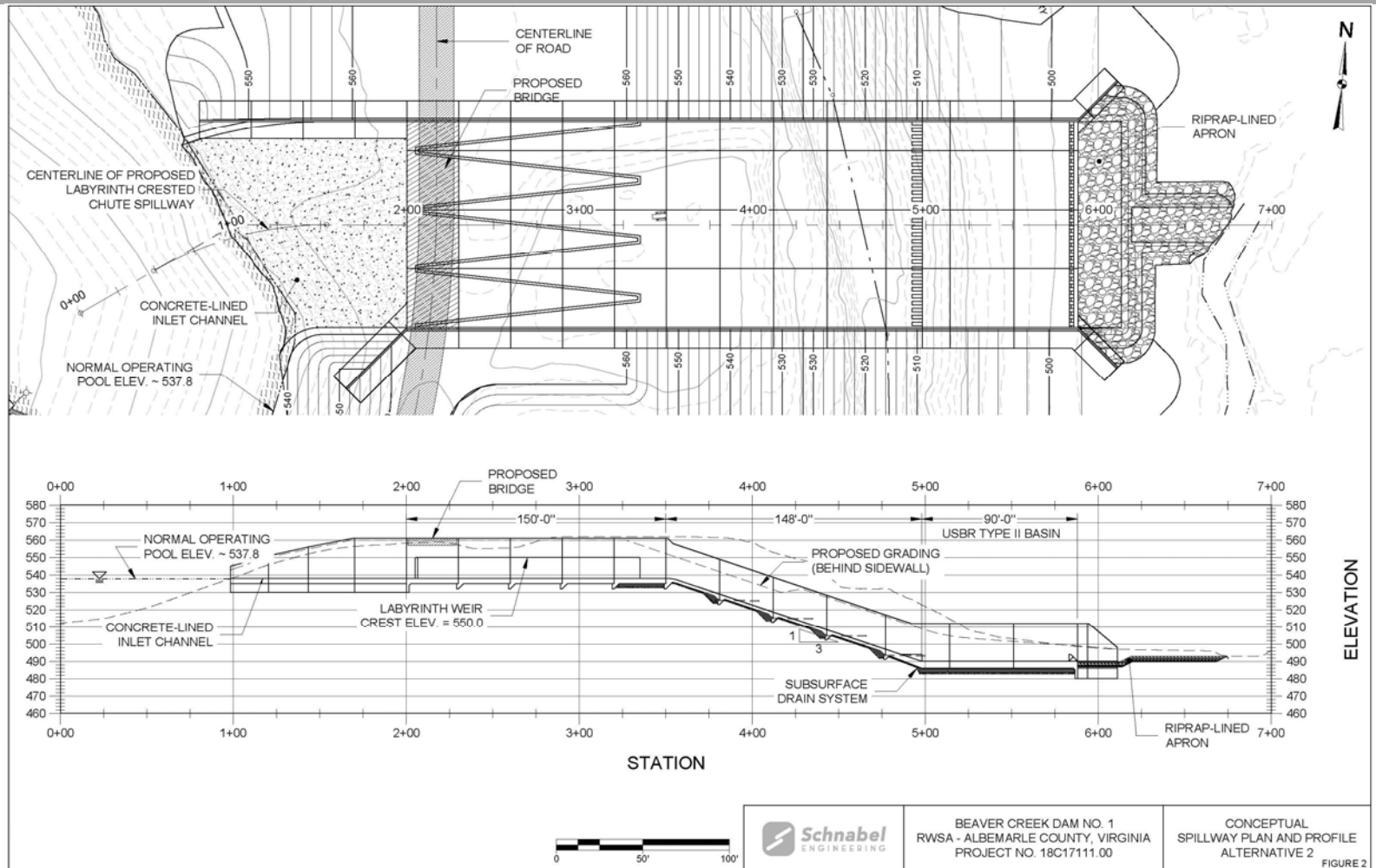
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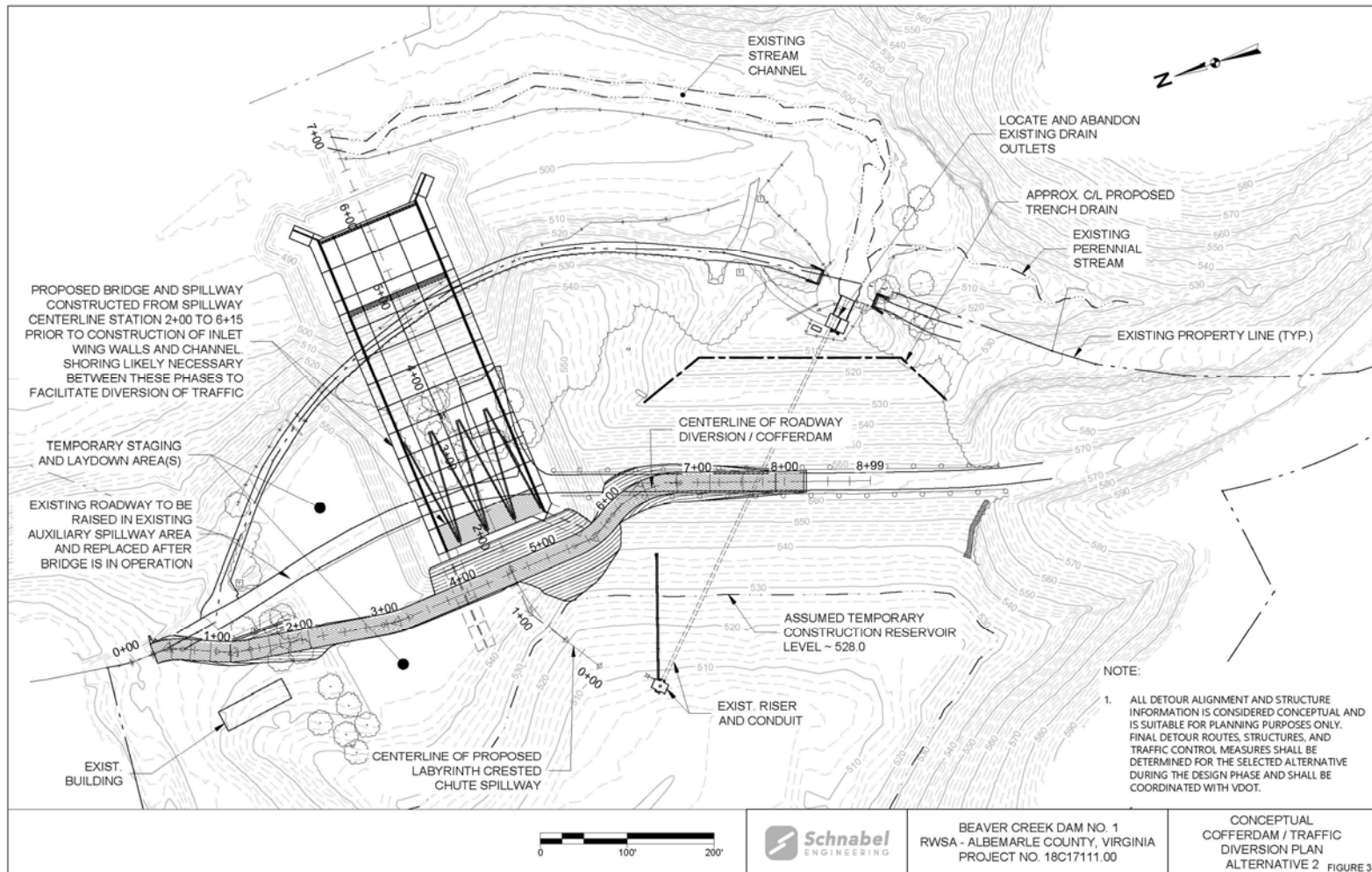
# Alternative 2 – Labyrinth Spillway and Chute through Parking Area



# Alternative 2 – Labyrinth Spillway and Chute through Parking Area



# Alternative 2 – Conceptual Detour/Staging - Plan





# EcoSystems Services Scoping Table

Ecosystem Services	Relevant to the Proposed Action		Rationale
	Yes	No	
<b>Provisioning (tangible goods provided for direct human use and consumption)</b>			
Food		X	
Fiber		X	
Water	X		Public 1.6 MGD water supply reservoir.
Timber		X	
Biomass		X	
<b>Regulating (maintain world in which it is possible for people to live, providing critical benefits that buffer against environmental catastrophe)</b>			
Flood and Disease Control	X		Maintain current flood control benefits.
Water Filtration		X	
Climate Stabilization		X	
Crop Pollination		X	
<b>Supporting (underlying processes maintaining conditions for life on Earth)</b>			
Nutrient Cycling	X		Maintain erosion and sediment control benefits.
Soil Formation		X	
Primary Production	X		Maintain crop and pasture production by maintaining flood control benefits.
<b>Cultural (make the world a place in which people want to live)</b>			
Recreational Use	X		Beaver Creek Sculling club and Rowing Club use lake regularly, Recreational Areas are a value to the sponsors and community.
Spiritual		X	
Aesthetic Viewsheds		X	
Tribal Values		X	The Tribal response received during early scoping expressed interest only in the case of an inadvertent discovery of remains. Additional consultation will be conducted during the Plan-EA process.

# Environmental Impact Comparison of Alternatives

	Impacts – Labyrinth Spillway and Chute over Dam (Alternative 1, Preferred)	Impacts – Labyrinth Spillway and Chute through Left Abutment (Alternative 2)
Waterways	Up to: 100 feet of Stream (temporary*) 250 feet of Stream (permanent)	Up to: 250 feet of Stream (temporary*) 50 feet of Stream (permanent)
Wetlands	Up to 0.005 acres (permanent)	Up to 0.005 acres (temporary*)
NPDES/VPDES	Temporary*	Temporary*
Air Quality	Temporary*	Temporary*
Endangered/Threatened Species	Potential Temporary*	Potential Temporary*
Migratory Birds	Temporary *	Temporary*
Bald / Golden Eagles	None Identified	None Identified
Invasive Plant Species	Potential*	Potential*
Riparian Areas	Up to: 0.6 acres of Forest (temporary*) 1.3 acres of Forest (permanent)	Up to: 0.5 acres of Forest (temporary*) 1.1 acres of Forest (permanent)
Cultural Resources	None Identified	None Identified
Environmental Justice	None Identified	None Identified

*\*To be managed throughout construction to reduce potential impacts by using best management practices and coordination*

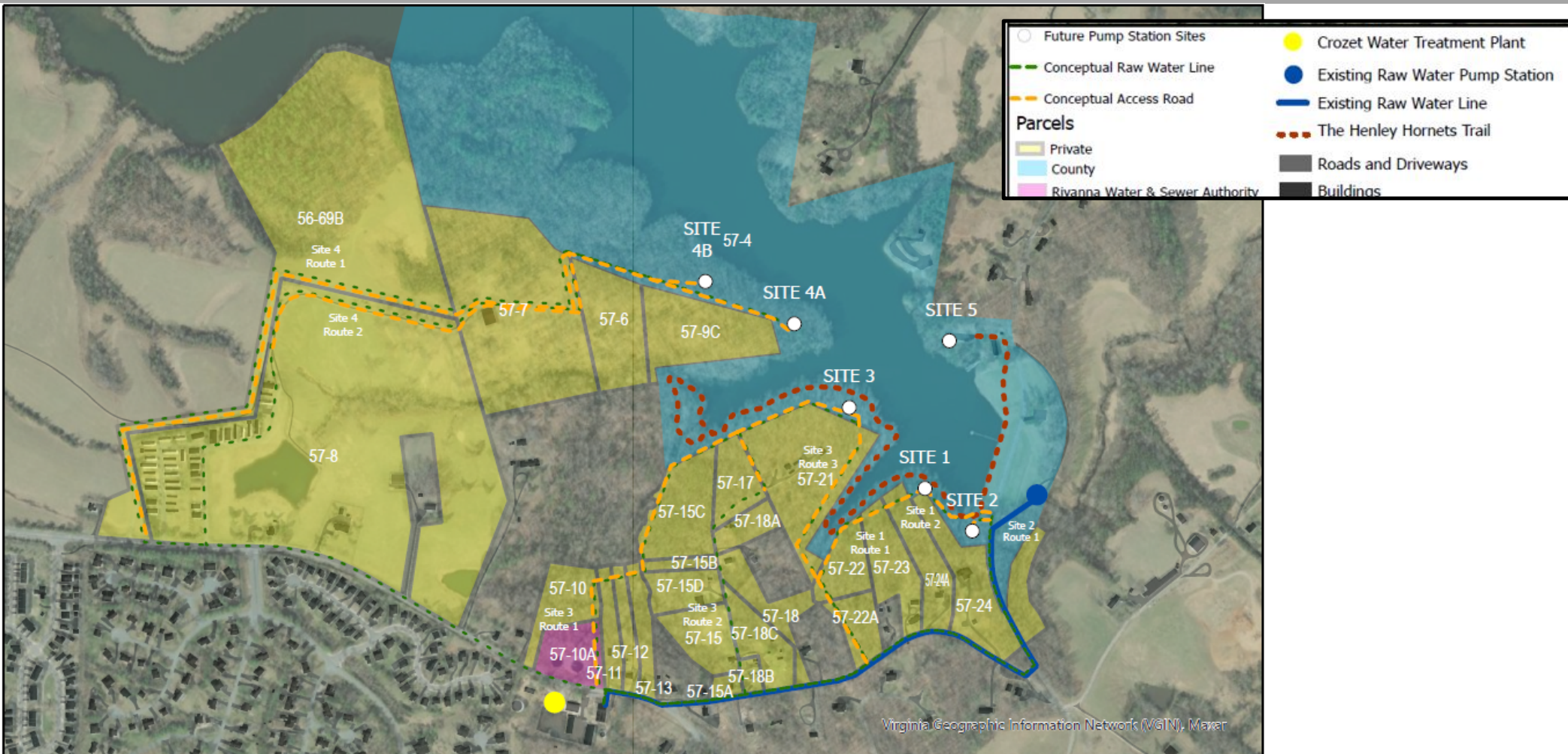
## Sponsor's Preferred Alternative – Alternative 1

- The Sponsors have selected **Alternative 1: Reinforced-Concrete Labyrinth Crested Chute Spillway over Existing Earthen Embankment** as the preferred spillway upgrade alternative due primarily to the following considerations:
  - Incorporates an on-site temporary detour to maintain traffic flow across site.
  - Smallest overall footprint (maintains open space for recreation)
  - Preserves existing public parking area adjacent to the dam
  - Least impact to downstream property owner
  - Allows for use of auxiliary spillway as staging area during construction
  - Lower cost as compared with Alternative 2
- Other considerations related to Alternative 1 include:
  - Will require relocation of raw water pump station at toe of dam
  - Small overall environmental impact

# Raw Water Pump Station Site Selection

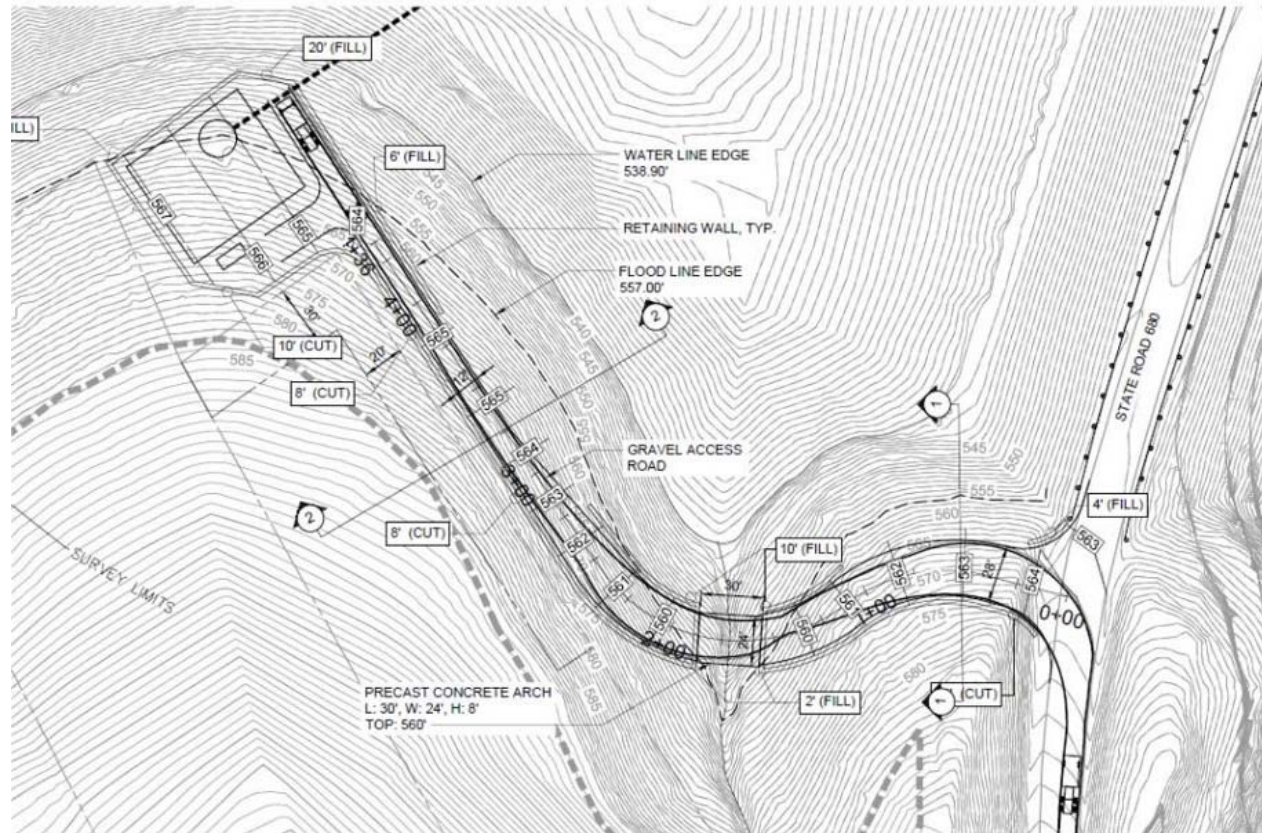
- **6 potential sites** were identified around Beaver Creek Reservoir on Albemarle County property. 3 sites would require permanent private easements for access and raw water line construction.
- Initial evaluation included site visits, desktop analysis of environmental and private property impacts, preliminary site layouts, and construction cost estimates.
- Adjacent property owners raised concerns about Site 3 and requested additional study of all viable pump station sites.
- Staff performed additional assessments of sites 1-4b, including the following:
  - Cultural Resources Survey
  - Wetland Delineation
  - Desktop analysis of impacts to wooded areas, riparian buffer areas, public trails, private property, and critical slopes
  - Refined Conceptual Site Layouts and Cost Estimates

# Pump Station Selection Sites Considered



# Selected Raw Water Pump Station Site – Site 1

- RWSA Staff, in consultation with Albemarle County Service Authority (ACSA), Albemarle County and RWSA Board of Directors, selected Site 1 for the new pump station with access from Browns Gap Turnpike
- Lowest overall environmental and private property impacts of reviewed site and access route alternatives



## Next Steps:

- Draft Plan-Environmental Document Complete May 2022
- Public Comment Period on Draft Plan-EA (May-June 2022)
- Study Completion – July 2022
- Final Design and Permitting Phase – 2022-2023
- Construction 2024-2026

## Public Participation – Questions, Concerns, & Comments

- Members of the public are invited and encouraged to submit questions, concerns, and comments regarding the selected spillway upgrade alternative at this time or following the meeting.
- Questions, concerns, and comments may be submitted by e-mail to [jcollins@schnabel-eng.com](mailto:jcollins@schnabel-eng.com) or in writing to:
  - Schnabel Engineering, LLC
  - Attn: J R. Collins
  - 12301 Research Blvd., Building 4, Suite 150
  - Austin, Texas 78759
- Questions, concerns, and comments associated with this meeting will be accepted through Wednesday, October 20, 2021
- Recordings and slides from this meeting and the December 10, 2020 Public Meeting can be found at:  
<https://www.rivanna.org/rwsa-projects-map/beaver-creek-improvements/>





Thank you for Participating in the  
Beaver Creek No. 1 Supplemental Watershed Plan –  
Environmental Assessment – Second Public Meeting

