

Review of the Community's Water Supply Plan



Ragged Mountain Reservoir

Presented to the Land Use and
Environmental Planning Committee

By: Bill Mawyer, Executive Director

May 19, 2023



Rumors Pour When Rain Doesn't

By Eric M. Weiss
September 25, 2002

With Charlottesville reservoirs threatening to dry up in just 88 days, some students at the University of Virginia have entertained thoughts of Christmas break starting around Thanksgiving.

Rumors of an early university shutdown were so pervasive in the past week that college officials Monday sent an e-mail to every student denying plans to send all 18,000 of them home early to conserve water. University officials said fall classes and exams will end on schedule -- 82 days from today.

"Closing early is not something that the university itself has talked about," said Louise Dudley, a U-Va. spokeswoman. "It's a leap from understanding how dire the situation is to the saying that the university will close."

Few doubt the seriousness of the water situation. The university is supplied by the municipal system, whose reservoirs are at 54.1 percent of capacity. City officials said that with no rain and unyielding consumption, they would run out of water in three months.

2002 Drought

Drought Emergency Declared in Virginia

L.A. TIMES ARCHIVES
AUG. 31, 2002 12 AM PT

FROM TIMES WIRE SERVICES

RICHMOND, Va. — Virginia Gov. Mark Warner on Friday declared a state of emergency because of the ongoing drought and banned lawn watering and car washing in most parts of the state.

2002 drought in the Southeast — states from Virginia to Georgia had their driest August-July on record this year.

Aug 2001-Jul 2002 Statewide Ranks
National Climatic Data Center/NESDIS/NOAA



The Rapidan River went dry in 2002, down to to 1 cubic foot per second (cfs). That forced the water system in the Town of Orange into emergency status.



Origin of the CWSP

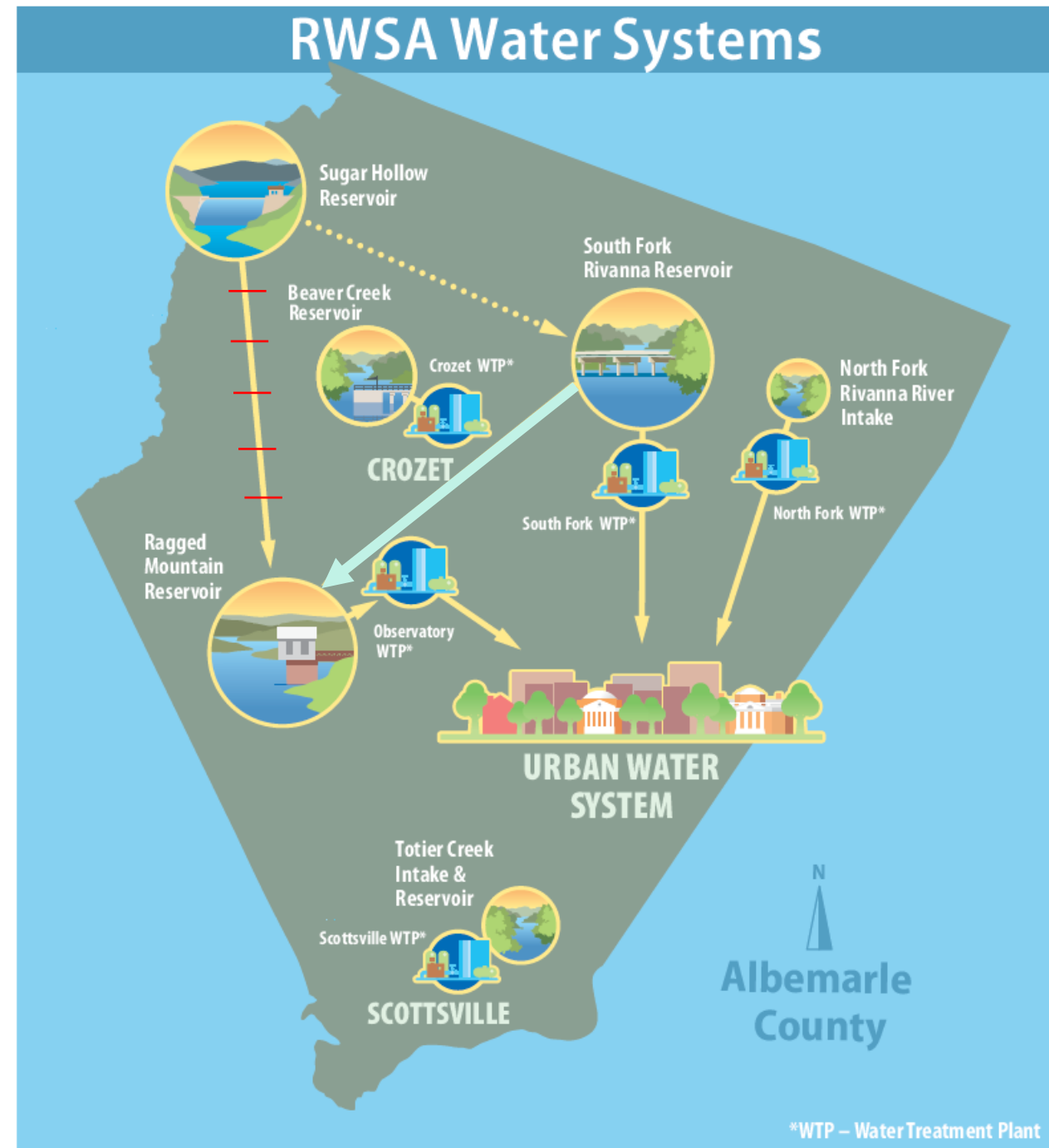
- A historic drought in Central Virginia in 2002 sparked a decade-long planning process to increase the community's Urban water supply.
- The community evaluated many alternatives, including taking water from the James River, but decided to "drink local" and stay within our Rivanna River watershed.
- A community water supply plan was supported by the Board of Supervisors and approved by City Council and the ACSA in 2012.



Ragged Mountain Reservoir Dam

Plan to Increase the Capacity and Reliability of our Public Drinking Water Supply

- Build new, higher dam at RMR to increase storage by 1.6 BG
- Build new pipe from SRR to RMR to fill RMR
- Close existing pipe from SHR



RWSA Reservoir Watersheds

Sugar Hollow

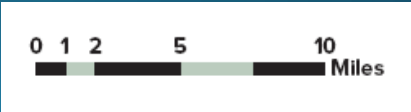
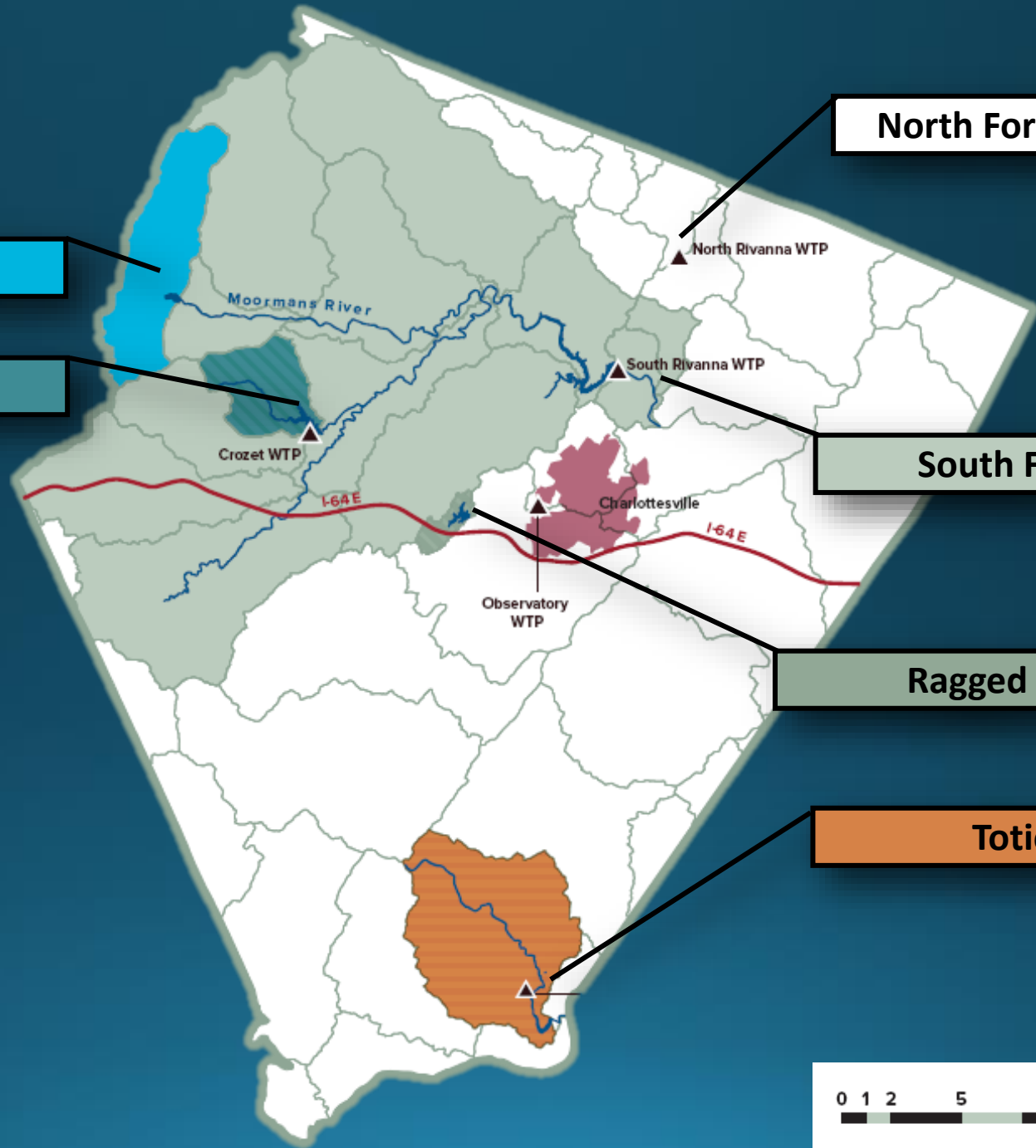
Beaver Creek

North Fork Rivanna River

South Fork Rivanna

Ragged Mountain

Totier Creek



Reservoir Characteristics

Reservoir	Useable Volume* (MG)	Surface Area (Acres)	Watershed (miles ²)
South Fork Rivanna	885	366	259
Ragged Mountain	1,441	170	2
Sugar Hollow	339	47	18
Beaver Creek	500	104	10
Totier Creek	155	66	29

* Data Sources

- South Rivanna 2018 bathymetry
- Ragged Mountain 2018 bathymetry
- Sugar Hollow 2015 bathymetry
- Beaver Creek Reservoir 2016 bathymetry

Environmental permits were approved in 2008 to construct:

- a new dam to increase the storage capacity of the Ragged Mtn Reservoir from 500 MG to 2.1 BG – currently impounding 1.4 BG
- a pipeline between the S. Rivanna Reservoir and the Ragged Mtn Reservoir.
 - U.S. Army Corps of Engineers (10-year permit) expired June 2018; Received extension until June 2023.
 - Virginia Department of Environmental Quality (15-year permit) expired in February 2023. A joint permit reapplication was submitted in 2021. Received administrative approval from VDEQ to continue operations until the permit review process has been completed.



Ragged Mountain Dam Project Agreement

➤ Approved in 2012 by the City, ACSA, and RWSA. Established payment terms and directed RWSA to construct and operate:

1. A new earthen dam for the RMR: (ACSA 85%, City 15%)

- *Construction of the new dam was completed in 2014 and the reservoir was filled in 2015*

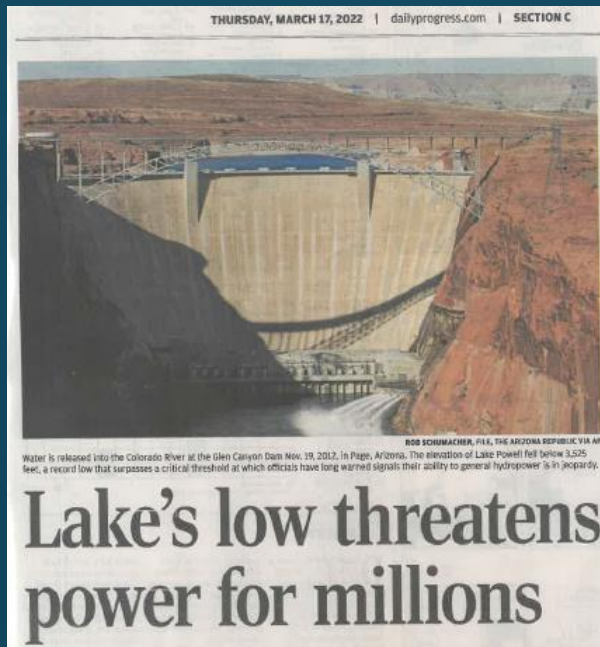
2. The SRR – RMR Pipeline and Pumping Project: (ACSA 80%, City 20%)

- *Scheduled for completion in 2026 – 2030*

3. Intake tower modifications and perimeter grading to raise the RMR water level an additional 12 feet = 700 MG of additional storage capacity, 10 years before the community demand equals 85% of the safe yield (*currently estimated to be 2035*).

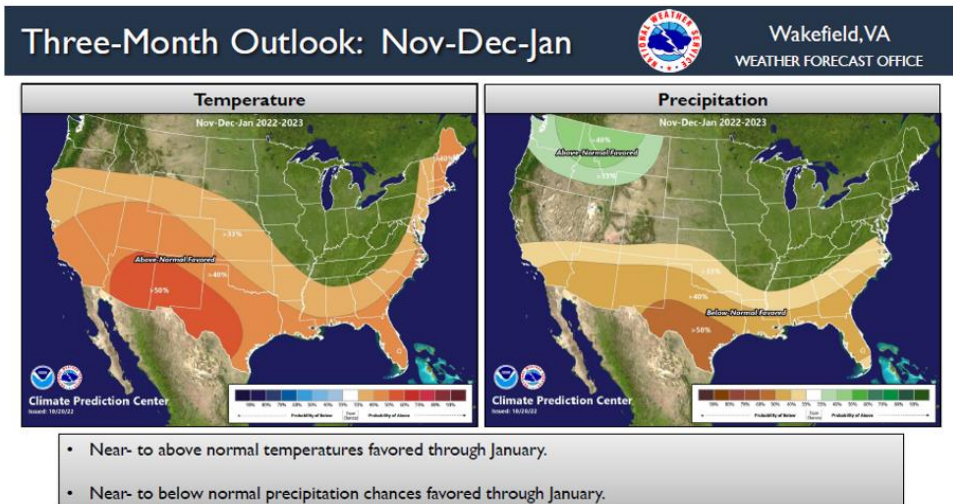
➤ Required RWSA to complete a bathymetric survey of the Urban reservoirs, and an Urban Water Safe Yield and Demand Study, every 10 years beginning in 2020.

2022 Drought



VIRGINIA DROUGHT MONITORING TASK FORCE Drought Status Report October 28, 2022

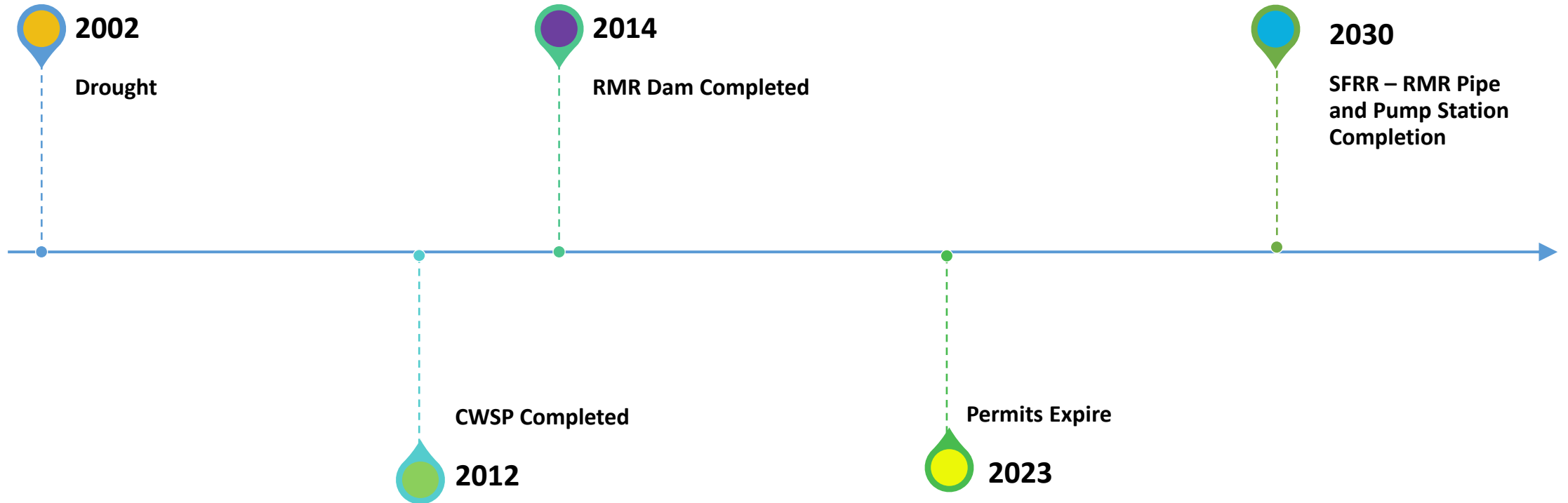
La Niña is favored to continue in the Northern Hemisphere through the spring, resulting in an increased probability of warmer than normal temperatures and below normal precipitation for Virginia.



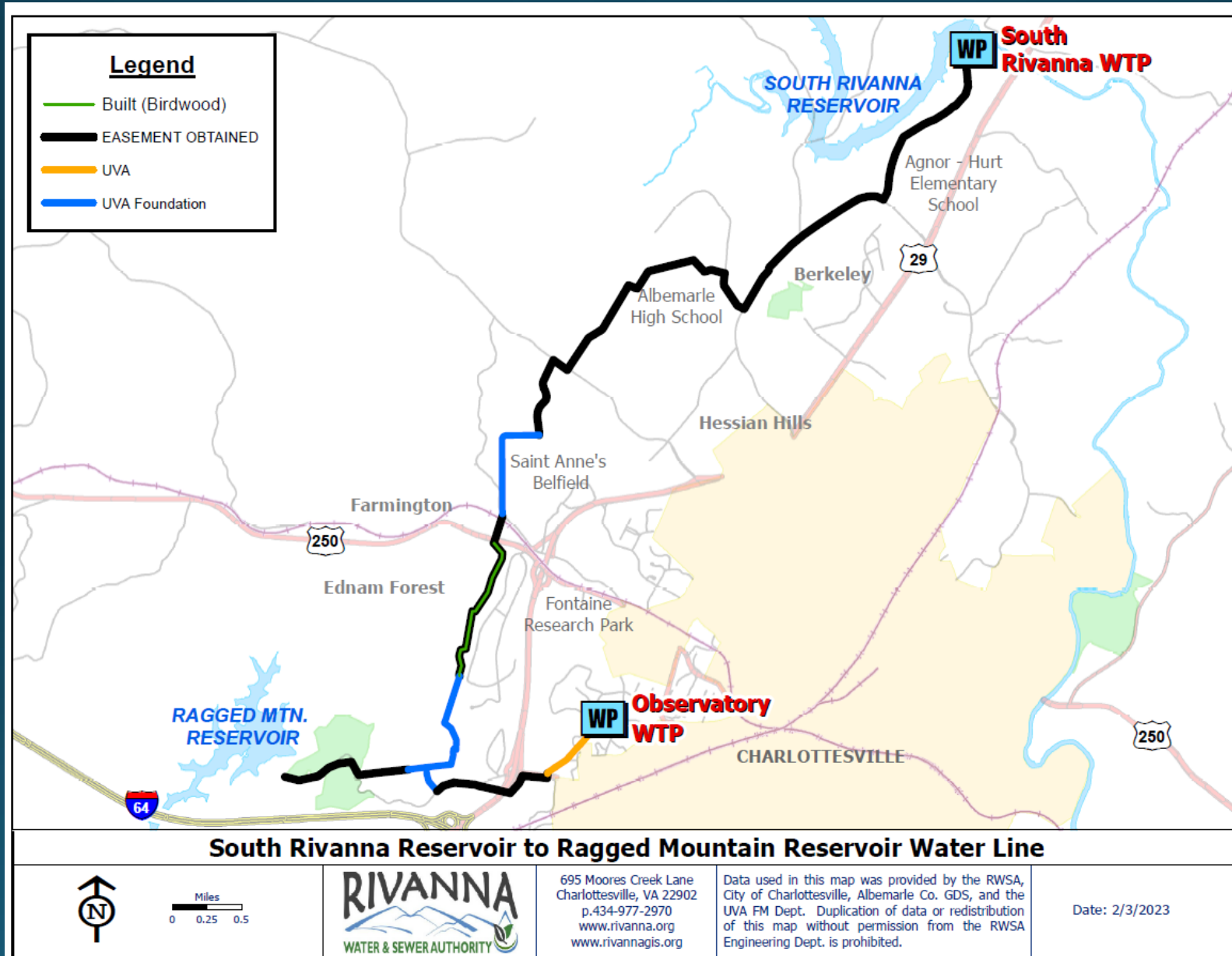


- In 2018, City, ACSA and RWSA approved project completion of 2027 – 2035.
- In 2022, higher temperatures, changing weather patterns and drought conditions occurred across our country.
- We want to be prepared for extended droughts and more intense storms predicted for our future.

Timeline to Increase the Community's Water Supply



Project Location Map



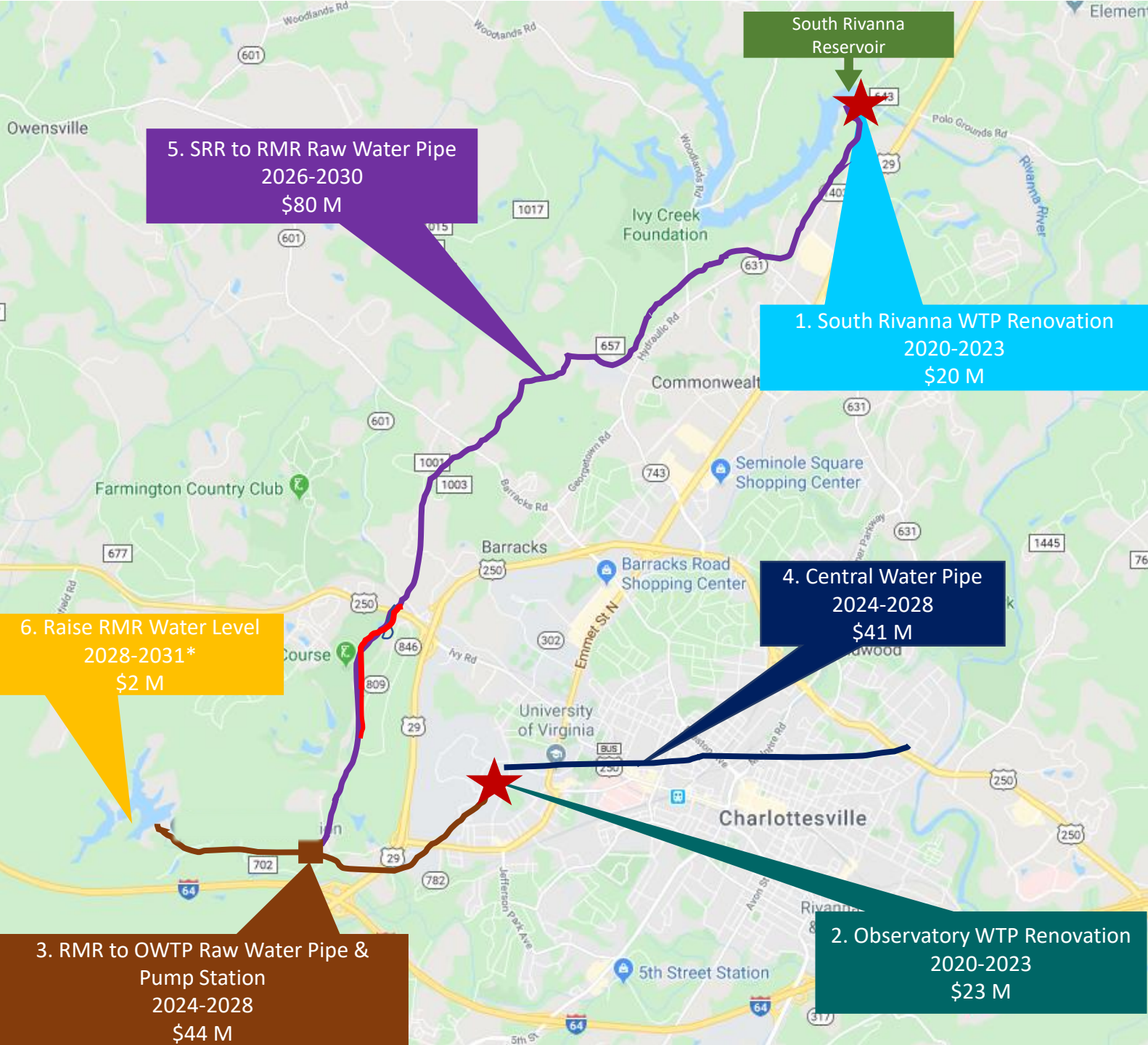
S. Rivanna to Ragged Mtn Reservoir Pipe and Pumping Project

- 36-inch raw water pipe, 8 miles long
- Intake structure in the SR reservoir; an addition to the existing SRR raw water pump station
- 1 new raw water pump station + additional pumps in RM reservoir pump station, 25 MGD transfer capacity
- Oxygenation system to reduce algae in RM reservoir
- Close raw water supply pipe from SH reservoir
- \$80 M estimate: Schedule 2026 - 2030



Water Supply Projects

(April 21, 2023)



1. SR WTP Renovation
2020-2023
\$20 M

2. OB WTP Renovation
2020-2023
\$23 M

3. RMR to OB WTP Raw Water
Pipe & Pump Station
2024-2028
\$44 M

4. Central Water Line
2024-2028
\$41 M

5. SRR to RMR Raw Water Pipe
2026-2030
\$80 M

6. Raise RMR Water Level
2028-2031* *proposed*
\$2 M

City: \$78 M
ACSA: \$132 M
\$210 M

Summary

- Following a “drought of record” in 2002, the community completed a plan to increase the public water supply in 2012.
- The ACSA, City and RWSA have made significant investments in water supply and treatment facilities since 2012 - *about \$85 M.*
- To complete the community plan, additional infrastructure must be constructed- *about \$85 M:*
 - S. Rivanna to Ragged Mtn Pipe and Pumping project. Scheduled for 2026 – 2030.
 - Intake tower and grading around the RMR reservoir to impound an additional 12 feet of water = 700 MG. Scheduled for 2028– 2031, if approved by City Council.

Questions ?