

Drought Update
for the
Rivanna Water and Sewer Authority
Board of Directors



Presented by:

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October 24, 2017

South Fork Rivanna Reservoir



Image taken October 4, 2017

South Fork Rivanna Reservoir



Image taken October 4, 2017

South Fork Rivanna Reservoir

- August 3rd 100% Full
- September 15th 77%
- October 5th 42%

RWSA implements operational changes; contacts DEQ

Drought Management Measures Implemented

1. Mandatory water restrictions to reduce demand
2. Operational changes:
 - Decreased water treatment at the South Rivanna Water Treatment Plant
 - Increased water treatment at the Observatory Water Treatment Plant

	<u>SRWTP</u>	<u>OWTP</u>
Typical	8 mgd	2 mgd
October 5 th	5 mgd	5 mgd

3. Reduced required release to the river

Typical	10 mgd
October 10 th	2 mgd

South Fork Rivanna Reservoir

	<u>Reservoir Capacity</u>	<u>Level (feet)</u>
October 5 th	42%	-6.9
October 18 th *	54%	-5.2

*110 million gallons added during this period

Complete Infrastructure Projects

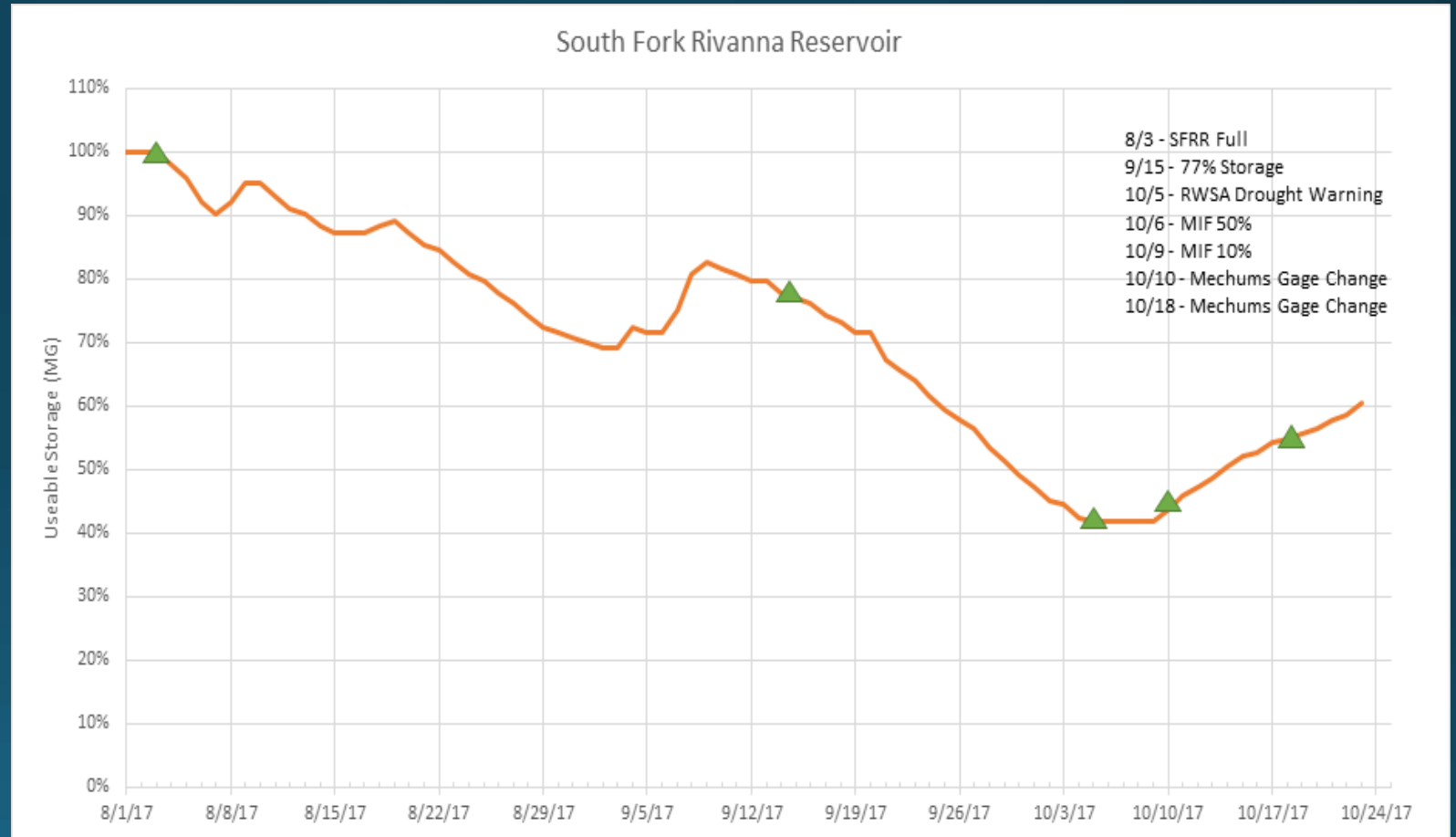
- SFRR to RM Reservoir Waterline
 - \$70 – 100 million
- Observatory Water Treatment Plant Expansion
 - \$10-15 million
- Avon to Pantops Waterline
 - \$13 million

1. At the September 26, 2017 Board meeting, RWSA staff stated there was a “3% chance for the combined reservoir levels to be less than 75% after the next 12 weeks”. On October 3, 2017 a Drought Watch was declared. Two days later, RWSA declared a Drought Warning with a request to the City and the County for mandatory restrictions. Please explain the sudden changes after it was said that the water supply was “in relatively good shape”?

- a. Staff used the hydrologic model required by the Regional Drought Management Plan and provided the results to the RWSA Board on September 26, 2017.
- b. Thereafter, staff saw the rapid decline of the South Fork Rivanna Reservoir (SFRR) and moved forward with drought management measures to conserve water storage in the SFRR.

2. The South Fork Rivanna Reservoir (SFRR) water supply dropped to about 22 days. How could that have occurred without any public warning, when the worst level in 2002 was 60 days, and the community then was “extremely worried”?

- a. There was a 32% decline in the South Fork Rivanna Reservoir (SFRR) over a short period from September 15th to October 5th.
- b. Drought management measures were implemented on October 3rd when the consistent decline in the SFRR was identified.



3. How did we go from the South Fork Rivanna Reservoir (SFRR) being full on August 3rd to a Drought Watch level on October 3rd?

- a. Water inflows to the South Fork Rivanna Reservoir (SFRR) were exceeded by the amount of water taken out of the SFRR for treatment, for water to be released to the river, and for water lost through natural evaporation.

4. The Ragged Mountain Reservoir (RMR) has been nearly 90% full during most of this time. Why is the new RMR not providing enough water to offset the loss at South Fork Rivanna Reservoir?

- a. Water cannot be transferred from the Ragged Mountain Reservoir to the South Fork Rivanna Reservoir.
- b. Water treatment capacity of the Observatory Water Treatment Plant cannot fully replace water treatment requirements of the South Rivanna Water Treatment Plant. Water must be produced at both treatment plants to serve Charlottesville and the urban areas of Albemarle County.

5. People in the community have noticed, and commented on, the dramatic reduction in water levels at South Fork Rivanna Reservoir. Why did it take so long for RWSA to publicly address the situation?

- a. Drought management measures were implemented as soon as the consistent decline of the South Fork Rivanna Reservoir (SFRR) was identified.
- b. The SFRR was 100% full on August 3rd and 77% full on September 15th before declining to 45% on October 2nd.

6. Where did the 10 million gallons a day go that was initially talked about? Some have speculated there is a hole in the bottom of the reservoir?

- a. Ten million gallons were initially identified by staff as the difference between inflow and outflow from the reservoir.
- b. Inflow data has been recently reduced on a few of the days between August 3rd and October 3rd. This change created a small reduction in the total inflow volume.
- c. We will test our new meter installed in September 2016 to verify accuracy at all flow volumes.
- d. No evidence of a hole in the floor of the reservoir.

7. There is some speculation that the dam gates malfunctioned and released excess water to the river. Is that the real cause of the sudden drop in the reservoir level?

- a. Two gates, constructed in 1966, were releasing about three million gallons per day. This release has now been decreased to 0.5 million gallons per day.
- b. The 3rd gate has a new meter installed in September 2016. Installation of the meter was certified by the on-site manufacturer's representative.
- c. We will test the new meter to ensure it is measuring flow correctly.



8. If it doesn't rain and we have an abnormally dry winter, as some long-range forecasts are predicting, what plan does RWSA have to provide the community with an adequate supply of drinking water?

- a. Release water from Sugar Hollow Reservoir to supply the SFRR.
- b. Release water from the Beaver Creek Reservoir to supply SFRR.
- c. Request a reduction in the release to the river to less than 10%.
- d. Use pumps to access additional water in the lower level of SFRR. This water has not been included in our calculations of "useable" reservoir storage.

9. How do you address the statement that “the water supply plan is broken, and the in-stream releases required in the permit drained the reservoir?” Is this the cause of the water conservation measures?

- a. The Water Supply Plan is working. The additional water supply created by constructing the new Ragged Mountain Reservoir (RMR) has increased our water supply by one billion gallons. Additional projects included in the Water Supply Plan are in progress, including:
 - i. Alignment acquisition for a water line from the RMR to SFRR
 - ii. An expansion of the Observatory Water Treatment Plant to allow treatment of a greater volume of water stored in the RMR

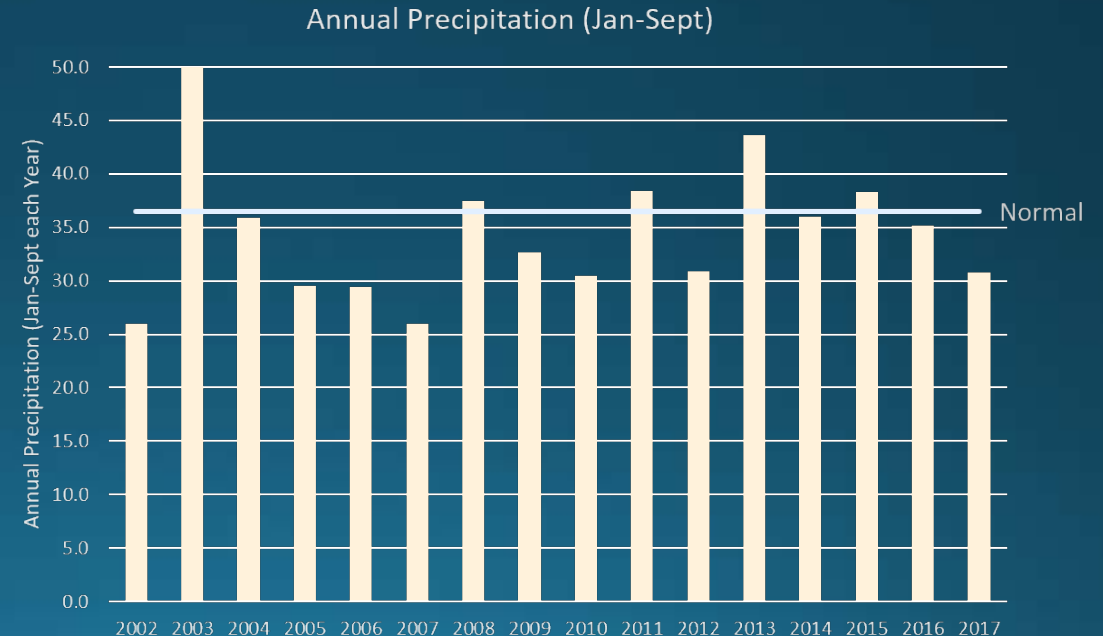
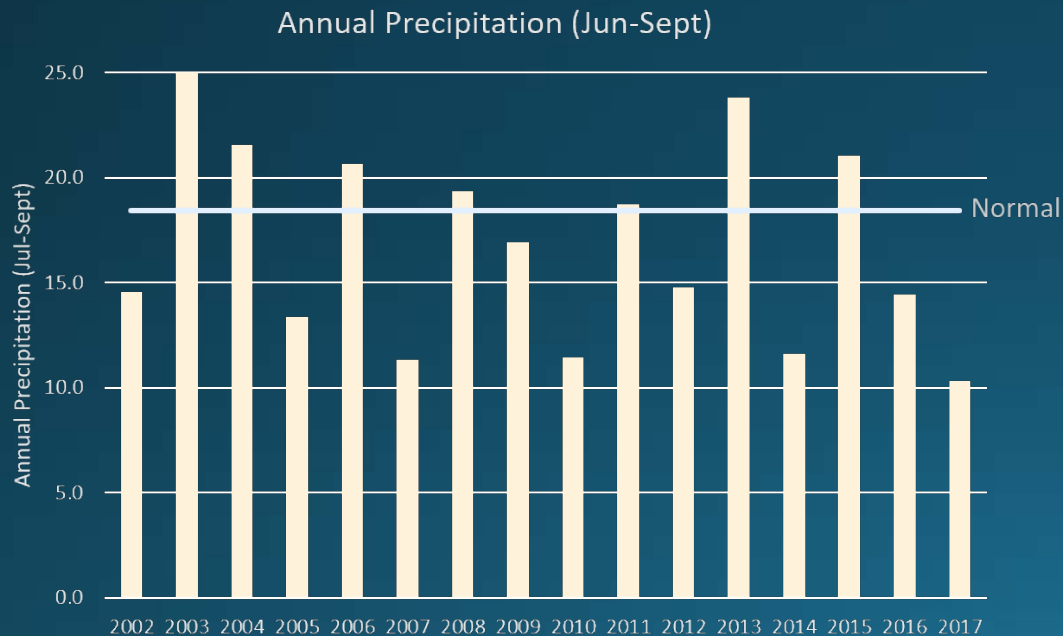
- b. Another important project is underway to extend a major water line from Avon Street to Pantops Mountain.

10. Is now the time to remove the sediment since the South Fork Rivanna Reservoir is down?

- a. The time required to obtain permits to perform a dredging project would be lengthy. In addition, a location for dewatering and disposal of dredge material has not been identified or secured.

11. What are the differences in rainfall from August to mid-September in 2015, 2016, and 2017?

Rainfall (Inches)		
	June – September	January – September
2017	10	31
2016	14	35
2015	21	38
Normal	18	36



12. What “data driven points” determine when Emergency Water Restrictions would be declared by the RWSA Board? How do we give the community adequate notice that such restrictions are forthcoming?

- a. Emergency restrictions are not anticipated in the foreseeable future as the water level in the SFRR has been increasing daily since October 5th. Considerations for declaring an Emergency will include:
 - i. The water level in the SFRR
 - ii. A significant decline in the water level in the SFRR
 - iii. Short and long-term weather forecasts
 - iv. The water level in the Sugar Hollow Reservoir
 - v. The water level in the Beaver Creek Reservoir
- b. If emergency measures are necessary, the community will be notified through media channels, the Rivanna webpage, and social media.

13. Did RWSA lower the reservoirs in anticipation of the hurricane season?

- a. We did not lower the SFRR anticipating a major storm due to the uncertainty of storms impacting our area. Staff evaluates dam safety needs prior to tropical storm events.

14. Does the current Drought Management Plan work? If not, will the Drought Management Plan be revised?

- a. The Drought Management Plan works, but will be reviewed with VDEQ, and supplemented as needed to capture the benefits realized through our experiences this year.

15. Going forward, what is RWSA doing to prevent a water shortage from happening next summer and fall?

- a. This is the first summer/fall since the new Ragged Mountain Dam was constructed and filled (2014-2015), and the initial opportunity to exercise the revised drought management program for the three urban reservoirs. Through this experience we will be better positioned with our operational and facility procedures to effectively manage our water supply, treatment, and distributions resources and minimize future water shortages.