RIVANNA AUTHORITIES
RIVANNA SOLID WASTE AUTHORITY
RIVANNA WATER & SEWER AUTHORITY
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April 5, 2024

The Honorable Charlottesville City Council
P.O. Box 911
Charlottesville, VA 22902

Re: Quarterly Update – April 2024

Councilors:

This quarterly update is to provide general information on the drinking water supply and treatment, wastewater collection and treatment, and refuse disposal and recycling programs managed by the Rivanna Authorities for the benefit of the Charlottesville/Albemarle community, as follows:

1. Repairs to the Rivanna Pump Station at Moores Creek

   During a significant storm event in January 2024, pumps in our largest wastewater pumping station were submerged and disabled by high wastewater flows. A temporary "bypass" pumping system was constructed to convey wastewater around the out-of-service pumping station and into our permanent wastewater treatment facilities. During the initial stage of this event, there were wastewater overflows from manholes in Riverview and Darden Towe Parks. There was also a planned discharge to Moores Creek for a 26-hour period to get wastewater out of the lower levels of the pump station. These events were coordinated with the Virginia Department of Environmental Quality and the Virginia Department of Health. An engineering firm is completing a review of the pump station to assess the causes of the submergence. We are coordinating with our property insurance company regarding a claim for the repairs, estimated to cost $20 – 25 million.

   Additional information and photographs are provided in the attachment.

2. Drinking Water Supply as April 1, 2024:

   A. Our Urban reservoirs (Sugar Hollow, South Rivanna, Ragged Mountain) are 100% full. Beaver Creek Reservoir (Crozet) and Totier Creek Reservoir (Scottsville) are 100% full.

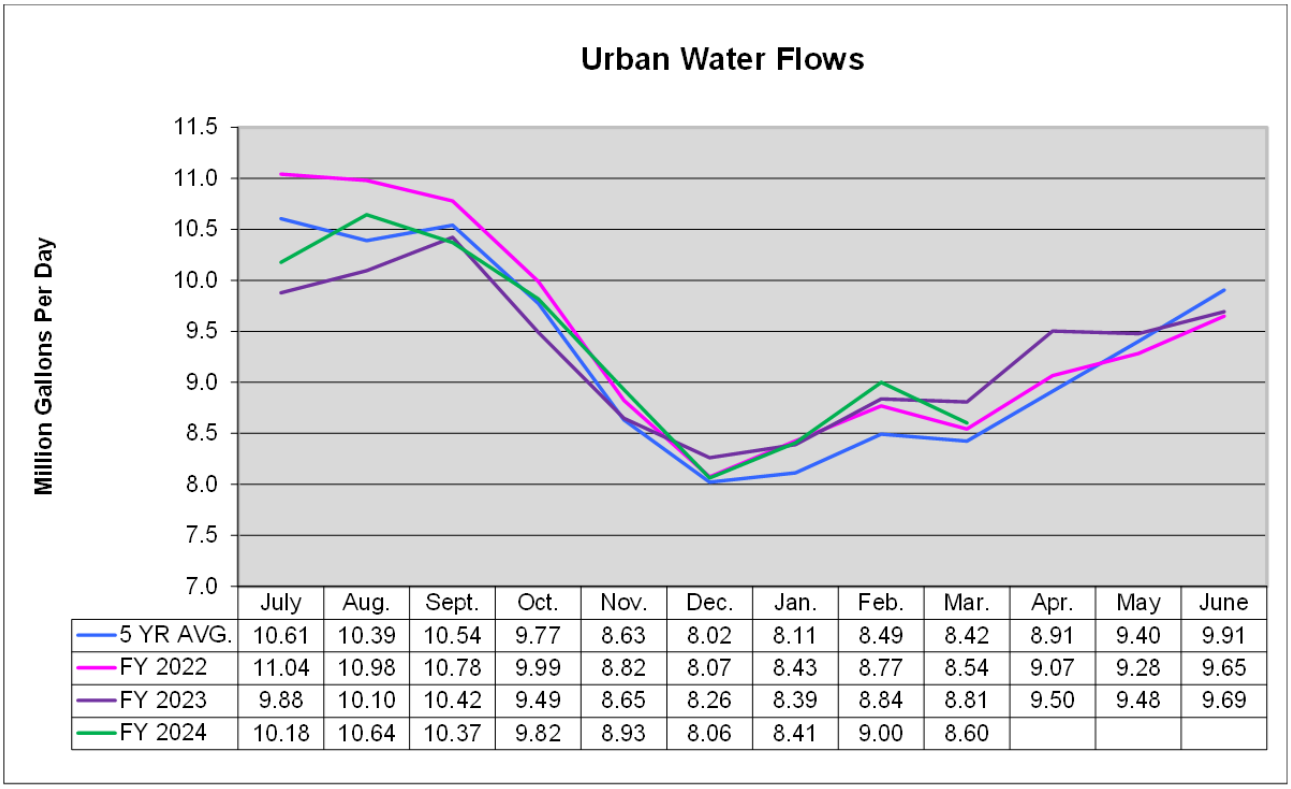
3. Drought Monitoring as of April 1, 2024:

   A. As shown below, precipitation was 1.8 inches above normal from January - March 2024. Our area is no longer in a drought-watch status.

Charlottesville Precipitation					
Year	Month	Observed (in.)	Normal (in.)	Departure (in.)	Comparison to Normal (%)
2021	Jan - Dec	33.82	41.61	-7.79	-19
2022	Jan - Dec	43.53	41.61	+1.92	+5
2023	Jan – Dec	26.95	41.61	-14.66	-35
2024	Jan - Mar	10.46	8.66	+1.80	+21

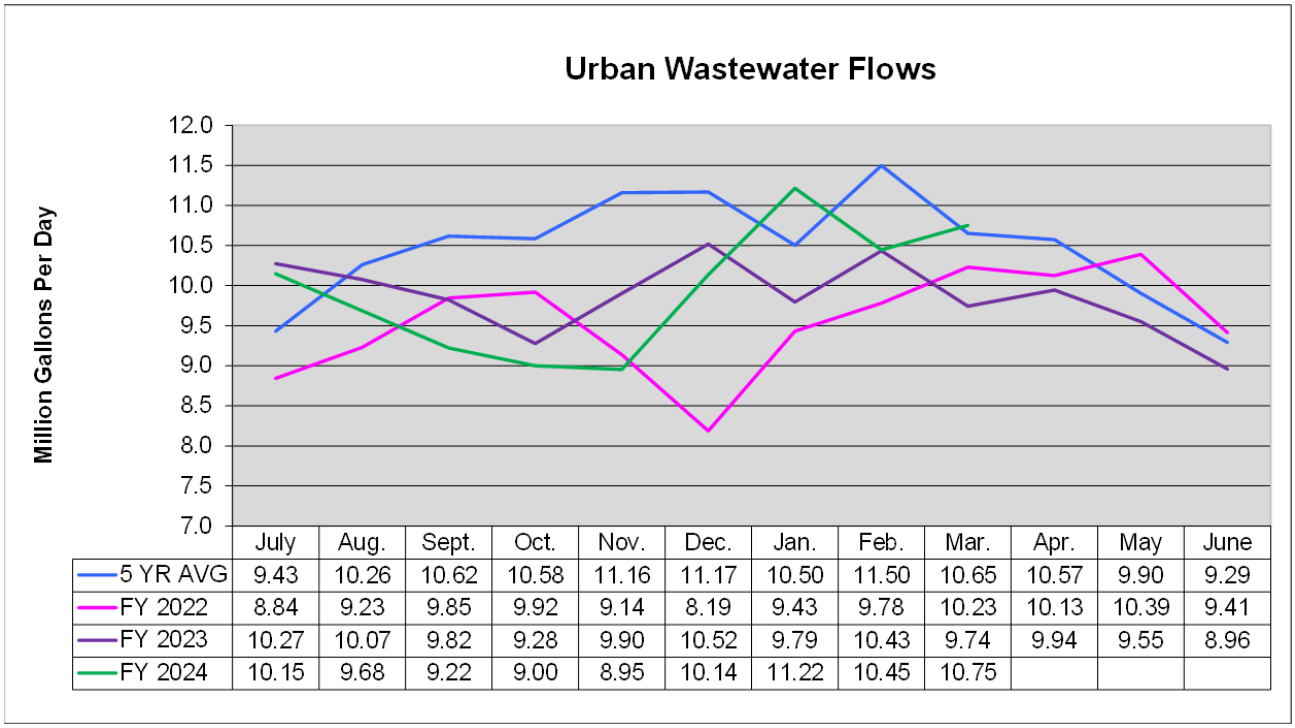
Source: National Weather Service, National Climatic Data Center, Climate Summary for Charlottesville, Charlottesville Albemarle Airport station

4. The production of drinking water for the Urban area (Charlottesville and adjacent developed areas of Albemarle, not including Crozet or Scottsville) averaged 8.60 million gallons per day (MGD) in March 2024 (FY 2024), which was above the five-year average for March (8.42 MGD), as shown by the following graph:



	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
5 YR AVG.	10.61	10.39	10.54	9.77	8.63	8.02	8.11	8.49	8.42	8.91	9.40	9.91
FY 2022	11.04	10.98	10.78	9.99	8.82	8.07	8.43	8.77	8.54	9.07	9.28	9.65
FY 2023	9.88	10.10	10.42	9.49	8.65	8.26	8.39	8.84	8.81	9.50	9.48	9.69
FY 2024	10.18	10.64	10.37	9.82	8.93	8.06	8.41	9.00	8.60			

5. Urban wastewater flow for March 2024 (10.75 MGD), including flows from Crozet but not from Scottsville, was above the five-year average for March (10.65 MGD), as shown by the graph below:



	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
5 YR AVG	9.43	10.26	10.62	10.58	11.16	11.17	10.50	11.50	10.65	10.57	9.90	9.29
FY 2022	8.84	9.23	9.85	9.92	9.14	8.19	9.43	9.78	10.23	10.13	10.39	9.41
FY 2023	10.27	10.07	9.82	9.28	9.90	10.52	9.79	10.43	9.74	9.94	9.55	8.96
FY 2024	10.15	9.68	9.22	9.00	8.95	10.14	11.22	10.45	10.75			

6. A general overview of significant current and future drinking water, wastewater and solid waste Capital Improvement Projects is provided below. Cost allocations between the Charlottesville Department of Utilities (non-general Utility funds) and the Albemarle County Service Authority (ACSA), are identified for each project.

   A. <u>Airport Road Water Pumping Station and Piping</u>
   Scope: Provide a drinking water pumping station and piping to improve reliability in the northern area of the Urban Water System.
   Completion: December 2021 – September 2024
   Cost: $10 million: 100% ACSA

   B. <u>Red Hill Water Treatment Plant Upgrade</u>
   Scope: Provide additional space to house water treatment equipment including a granular activated carbon filter.
   Completion: September 2024 – March 2026
   Cost: $2 million: 100% ACSA, with partial grant from County

   C. <u>South Rivanna River Crossing</u>
   Scope: Provide a second pipe (24" diameter; 2900 feet long) using trenchless technology to convey treated drinking water under the river. The second pipe will provide a redundant water supply and increase capacity to serve the northern area of the Urban Water System.

   Completion: December 2024 – December 2026
   Cost: $7 million: 100% ACSA

D. Urban Area "Central Water Line"

Scope: Provide large diameter piping (24" and 36" ductile iron) to strengthen and more efficiently convey drinking water for the benefit of City and County residents and businesses. This five-mile-long piping project with two railroad crossings will extend from the Stadium Road area to the Long Street / E. High Street bridge and follow a route which includes: Stadium Road, Piedmont Avenue, Price Avenue, Lewis Street, Jefferson Park Avenue, Cleveland Avenue, Cherry Avenue, Elliott Avenue, 6th Street SE, South Street, Avon Street, 10th Street NE, Little High Street, 11th Street NE, E. High Street, and a connection near Roosevelt Brown Boulevard.

Completion: December 2024 – December 2028
Cost: $47 million: 52% ACSA / 48% City Utilities

E. Water Pipe and Pump Stations Replacement, Ragged Mountain Reservoir to Observatory Water Treatment Plant

Scope: Replace 4 miles of 36" ductile iron water pipes and pump stations which convey untreated water from the Ragged Mtn Reservoir to the Observatory WTP. These facilities have reached the end of their service lives and require replacement to reliably support the upgraded Observatory WTP.

Completion: September 2024 – December 2028
Cost: $46 million: 52% ACSA / 48% City Utilities

F. Recycling Baling Facility, Ivy Material Utilization Center

Scope: Replace the existing recycling materials baling facility which is located on leased property and has exceeded its service life. A new facility is essential to have an effective recycling program. The new facility will include equipment to compress cardboard, mixed paper, and plastic products into separate bales before shipment to a receiving vendor.

Completion: November 2024 – April 2026
Cost: $6.4 million: 70% Albemarle County / 30% City

G. Moores Creek Administration Building Renovation and Addition

Scope: Renovate the existing administration building constructed in the 1980's, including improvements to the Laboratory and Information Technology spaces. The project will also include a building addition to provide spaces for a community education area, staff currently housed in temporary trailers, as well as future staffing.

Completion: April 2025 – December 2027
Cost: $20 million: 52% ACSA / 48% City Utilities

H. Crozet Water Treatment Plant GAC Expansion

Scope: Provide additional facilities and equipment to increase the water treatment capacity of the granular activated carbon filters from 1 to 2 million gallons per day.

Completion: April 2025 - October 2026

Budget: $6.5 million: 100% ACSA with partial VDH grant

I. Moores Creek Structural and Concrete Rehabilitation
Scope: Complete repairs to concrete basins and wastewater treatment facilities constructed in the late 1970's.
Completion: February 2025 – May 2027
Cost: $11 million: 52% ACSA / 48% City Utilities

J. Crozet Wastewater Pump Stations Rehabilitation
Scope: Replace pumps, valves, and electrical gear in four pump stations constructed in the 1980's which convey wastewater from Crozet to the Moores Creek Treatment Plant.

Completion: January 2025 - December 2026
Cost: $10 million: 52% ACSA / 48% City Utilities

K. South Rivanna Reservoir to Ragged Mountain Reservoir Pipe and Pump Station
Scope: Construct a 6.5 mile long, large diameter pipe (36") and pump station to transfer untreated water between the South Rivanna and Ragged Mtn Reservoirs, as required by the community's drinking water supply plan. Complete intake tower modifications and perimeter clearing at the Ragged Mtn Reservoir, as well as a new raw water intake and pump station at the South Rivanna Reservoir. This infrastructure will increase the water storage capacity of the Ragged Mtn Reservoir from 1.4 to 2.1 billion gallons.

Completion: September 2025 – December 2030
Cost: $84 million: 80% ACSA / 20% City Utilities

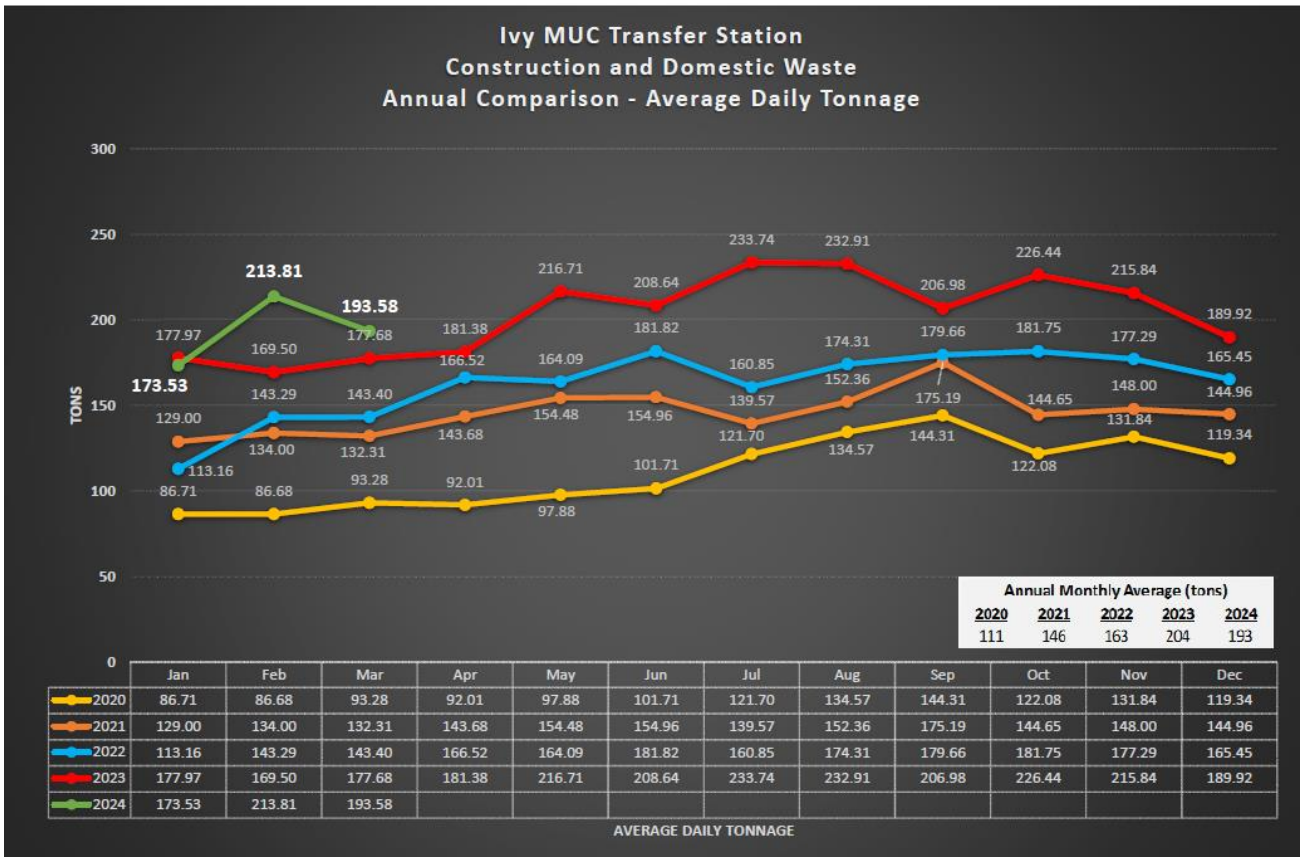
L. Beaver Creek Dam, Pump Station and Piping Improvements
Scope: Replace the spillway, which protects the reservoir dam, along with the water pump station and piping which conveys untreated water to the Crozet Water Treatment Plant.

Completion: April 2026 – January 2029
Cost: $47 million: 100% ACSA with partial federal NRCS grant

M. Upper Schenks Branch Wastewater Piping Replacement, Phase II
Scope: Replace sewer piping installed in the mid 1950's, in conjunction with the City's sewer upgrade program, to increase system capacity. The new piping will be located along McIntire Road between the McIntire Recycling Center and Preston Avenue.

Completion: TBD
Cost: $5.5 million: 100% City Utilities

7. Average daily refuse volume at the Ivy Transfer Station has increased from 93 tons per day in March 2020 to 194 tons per day in March 2024, as shown below. Our contract hauler is driving about 15 trailer loads of refuse to Henrico County for disposal each day, Monday – Friday. A planning study to review future expansion alternatives for the refuse transfer program is underway.



Please let me know if you have any questions.

Sincerely,

William I. Mawyer, Jr., P.E.
Executive Director

cc: RSWA Board of Directors
RWSA Board of Directors

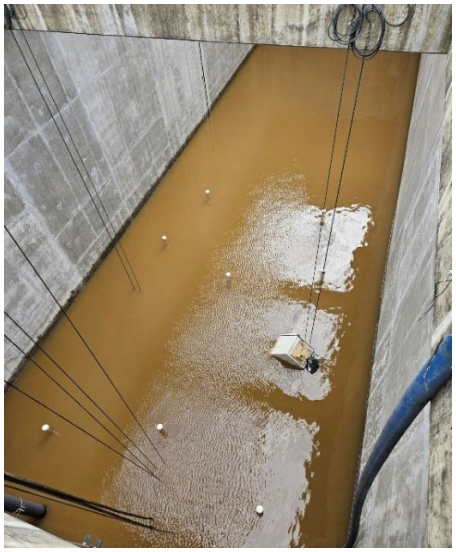
Attachment: Rivanna Pump Station Update Information

Moores Creek Advanced Water Resource Recovery Facility
Rivanna Pump Station Update 4/3/2024

The Moores Creek Advanced Water Resource Recovery Facility (MCAWRRF) is the facility which processes the wastewater received from approximately 130,000 public wastewater customers in Charlottesville and the adjacent developed areas of Albemarle County, including Crozet.

What happened at the Rivanna Pump Station?

On January 9, 2024, high rain and wastewater flows may have damaged equipment in the Rivanna Pump Station causing it to malfunction, become submerged, and discontinue operations. This resulted in several wastewater overflows from manholes in and around Riverview and Darden Towe parks.

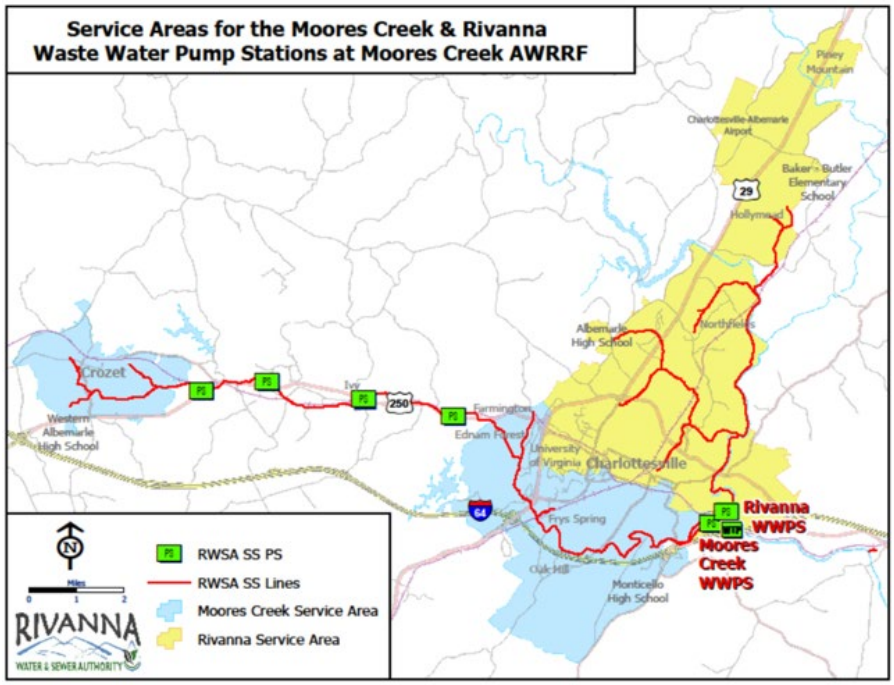


Submerged pump station wet well

Submerged pump station pump room.

What is the Rivanna Pump Station?

The Rivanna Pump Station is located at the MCAWRRF in Charlottesville. Wastewater comes to this facility primarily through gravity driven flows from the northern parts of Charlottesville and Albemarle County each day. This facility pumps between 5 and 50 million gallons of wastewater daily. It is the largest pump station in the wastewater system and serves approximately 60% of the public utility customers in our community. The pump station lifts wastewater received at the Moores Creek plant vertically about 100 feet so that it can be treated and eventually, once treatment is completed, released into Moores Creek.



The yellow highlight area is the service area for the Rivanna Pump Station.

What was RWSA's response?

In coordination with our contractors and the Virginia Department of Environmental Quality, the Rivanna Water & Sewer Authority's team responded immediately to continue service and minimize any impacts on the environment. A temporary pumping system was put into place to convey normal wastewater flows around the damaged Rivanna Pump Station for treatment. Unfortunately, for one 26-hour period, it was necessary to discharge untreated wastewater into Moores Creek to get the water out of the lower levels of the pump station. We coordinated this discharge with Virginia DEQ prior to the wastewater discharge, and the agency notified users down river from the discharge. Areas in the parks where the overflows occurred have been raked, cleaned, and sanitized and the manholes have been restored. There have been no overflows in the parks since January 18, 2024.

By February 14, 2024, RWSA Maintenance staff and contractors completed a 55 million gallon per day pumping and piping bypass system that will convey wastewater around the damaged pump

station to complete the normal treatment process. This system will allow RWSA to manage higher wastewater flows that are received during storm events.

55 million gallons per day pumping bypass system

55 million gallons per day bypass pumping system

What is going on now with the Rivanna Pump Station?

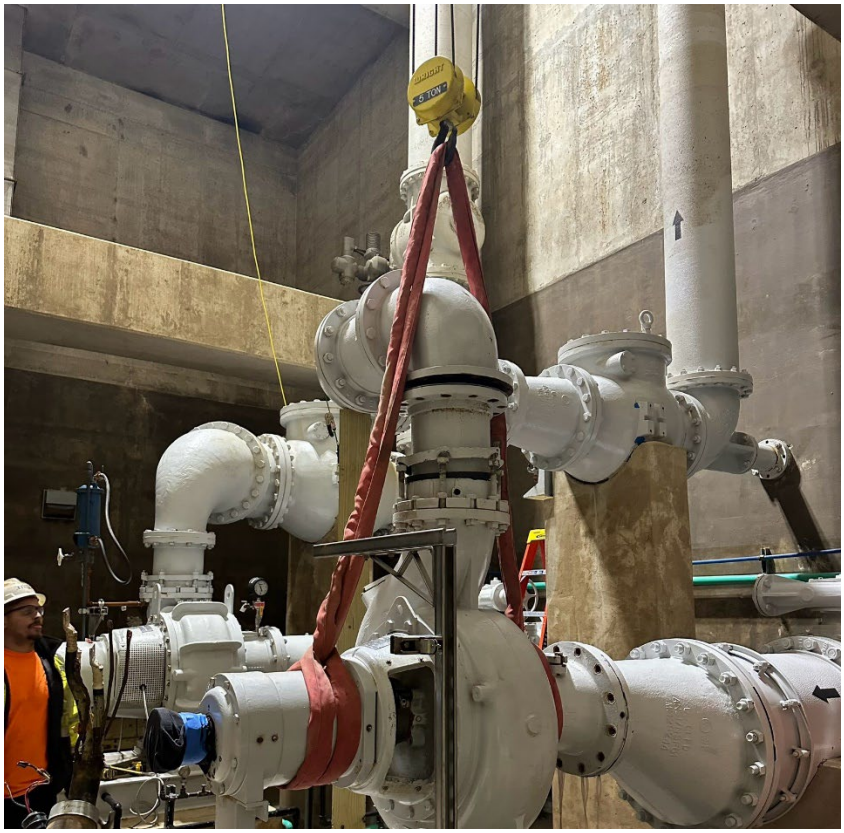
We have completed installation of a 55 million gallon per day bypass pumping system, removed all of the temporary pumps from generator power and tied them into normal utility power, programmed temporary controls, and converted the bypass pumps to automated operation. The temporary generators that were being used for power have been removed from site negating the need for a VDEQ temporary air quality permit and saving $50,000 - $75,000 per month in operating costs.

Our engineers have completed field investigations, performed a damage assessment inspection on the pump station electrical system, and coordinated the removal and inspection of equipment. Contractors drained the interior pump station piping followed by the dismantling, cleaning, packaging, and removal of all six permanent pumps and motors. The pumps and motors have been shipped to a facility in North Carlina for evaluation. The motor operated plug valves and check valves were inspected in place by manufacturer representatives.

Daily Photos

March 21, 2024

Pumps removed from pump station.


Pump rigged for removal.

February 21, 2024


Cleaned pump room.

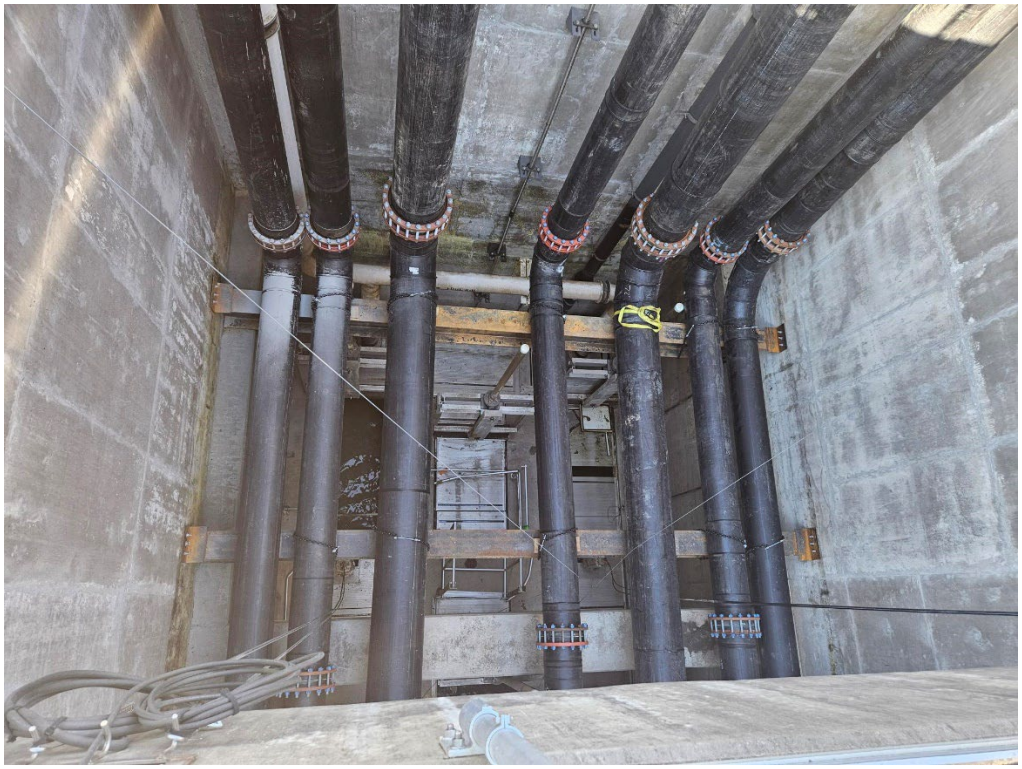
February 20, 2024

Cleaning in the upper level of the pump room before (left) and after (right).

February 16, 2024

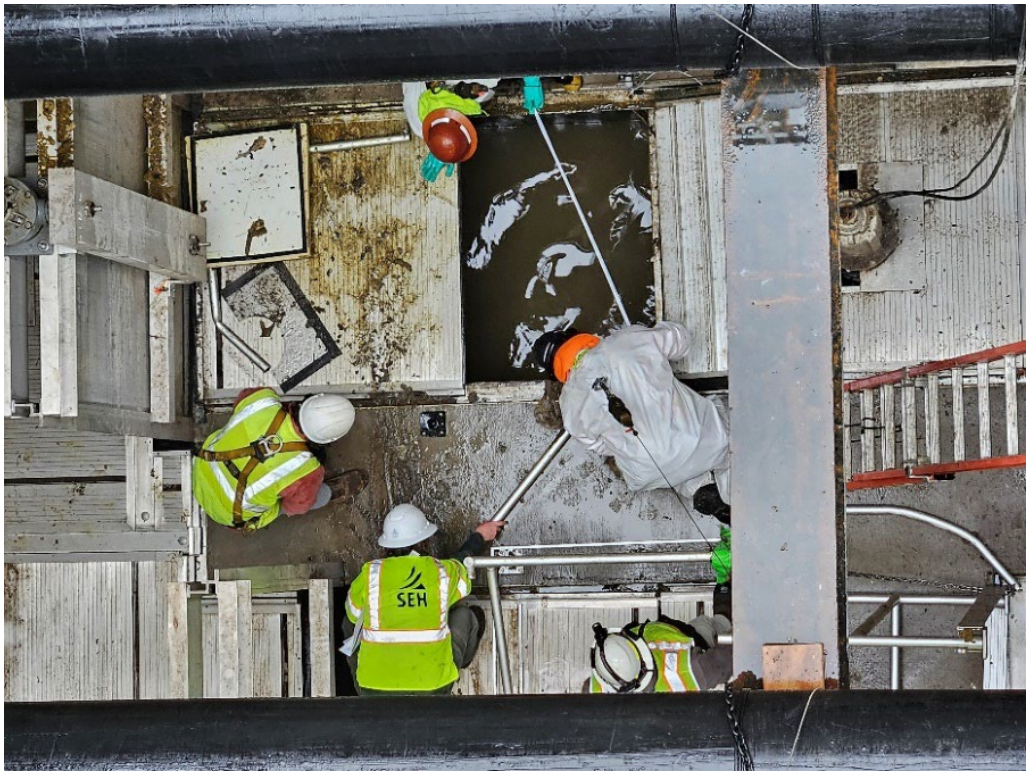
55 million gallons per day bypass pumping system

February 14, 2024



Bypass system pipes in the wet well.

February 12, 2024



Continuing work in the wet well

February 9, 2024

Large bypass system pipes

February 8, 2024

Bypass system pipes.