

DBP Compliance

EPA Quarterly Update



Quarter 2 Update: April – June 2024

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The Springfield Water and Sewer Commission (Commission) has embarked on large-scale upgrades to replace 50- to 100-year-old drinking water infrastructure and to achieve compliance with regulatory limits for disinfection by-products (DBPs). This is a quarterly update on projects related to DBP compliance and water supply capacity.

The following projects to reduce DBPs in the Commission's drinking water and maintain a consistent supply of safe drinking water have progressed over the last quarter:

- **Clearwell & Backwash Pump Station** – CH Nickerson continues to work on punch list activities and expects to complete the punch list in the next few weeks. Retrofits completed on the domestic water system in early April successfully stabilized the chlorine concentrations in the treatment plant drinking water, and as a result the contractor was granted full substantial completion dated April 10. Final completion is expected to be granted later this summer after completion of the punch list.
- **New Water Treatment Plant Design** – This project was released for bid on February 28, 2023. Filed sub-bids were opened on June 11 and general bids were opened on June 25. There were three general bids received. The base bids were \$341 million from MWH Constructors, \$314 million from CH Nickerson/O&G, and \$293 million from Walsh Construction Company. The most recent engineer's estimate was \$286 million. Hazen is currently evaluating these bids and developing a recommendation to award. It is anticipated that the contract will be approved by the Commission Board in July. Construction is expected to begin in late 2024 with final completion still projected for September 2028.
- **42-inch Raw Water Transmission Main / Energy Dissipating Valve (EDV) and Equalization Tank Facility** – AECOM released bid documents on February 21, 2024 and bids were open on April 26. Bids were received from Northern Construction, LLC and Baltazar Contractors. Northern provided the lowest bid price of \$28.5 million, approximately \$6 million higher than the engineer's estimate of \$22.6 million. Per AECOM's review and recommendation, the project was awarded to Northern on June 4 with a notice to proceed dated June 12. The contractor is currently developing submittals. The substantial completion date for this project is December 11, 2025.
- **Cobble Mountain Hydroelectric Station Improvements for Primary Raw Water Conveyance** – The Commission is currently considering project approaches in response to the conceptual design documents submitted by Stantec and Kleinfelder in late 2023 and is soliciting Requests for Proposals (RPFs) for peer review of the project to date. Improvements to the power plant and raw water transmission system are projected to be completed in 2027 but the schedule may change as design progresses and more specifics are known about the project.

We have included additional information for each project on the following project update pages.

Please contact us if you would like more information about these projects. More information is also available at <https://waterandsewer.org/projects/>.



Clearwell & Backwash Pump Station

- Project Purpose:** This facility replaced the existing clearwell and backwash, domestic, and process water pumps.
- The existing clearwell was a 1920s slow sand filter that was retrofitted for use as a clearwell and backwash water storage tank for the direct filtration plant in the 1970s. The structural integrity of the clearwell is uncertain and the roof is leaky, allowing rainwater to infiltrate into the filtered water. The roof leaks were temporarily mitigated by the installation of a geomembrane cover over the clearwell. The clearwell could not be taken offline for maintenance, presenting a single point of failure for the direct filtration plant. The existing backwash, domestic, and process water pumps were original to the plant; parts were no longer readily available for more frequently necessary repairs.
- This project provided the reliability and redundancy needed to maintain existing operations and also functioned as the first component of the new water treatment plant.
- Delivery Approach:** Design-Build with AECOM (OPM), Tighe & Bond (Engineer), and CH Nickerson (GC). Financed by MA Drinking Water SRF.
- Design Progress:** Tighe & Bond submitted the final design documents in November 2022.
- Const. Progress:** Retrofits completed on the domestic water system in early April successfully stabilized the chlorine concentrations in the treated water, and as a result the CH Nickerson (contractor) was granted full substantial completion dated April 10.
- The contractor continues to work on punch list activities and is expected to complete the punch list and reach final completion in the next few weeks. The Design Build team is also working through ongoing warranty issues relating to air entrainment in the backwash supply water and in the hydraulic control structure.
- Supply Chain:** No significant supply chain issues at this stage in the project.
- Project Delays:** The original substantial completion date at the onset of this project was February 2023. Due to several factors, including changes in design scope, pipe delivery delays, electrical equipment delays, and startup issues with the domestic water system, a partial substantial completion was granted dated October 13, 2023, with full substantial completion granted April 10, 2024. Final completion is expected to be granted later this summer.
- Operational Issues:** This project continues to require regular coordination between the contractor and the Commission relating to ongoing issues with air entrainment in the backwash supply water and in the hydraulic control structure.
- Schedule:** Final completion is expected to be granted later this summer.

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New mixing tanks installed on domestic water system, 05/07/2024



Backwash Facility, 05/06/2024

New West Parish Water Treatment Plant

Project Purpose: This project is for design and construction of a new water treatment plant (WTP) to meet system demand while providing a higher level of treatment to achieve long-term, consistent compliance with the Disinfection By-Product (DBP) Rule. The new WTP will replace the existing direct filtration and slow sand filtration plants, which were not designed to remove adequate dissolved natural organic matter (NOM) to meet current regulatory limits for HAA5s and THMs.

The Commission has been in periodic non-compliance for HAA5s since 2018. To address this issue, after completing several studies, the Commission identified that modifications to the existing plant processes would not be sufficient to achieve compliance, and that the addition of clarification was needed to reliably remove NOM and maintain compliance. Based on the results of a three-season pilot plant operation, Dissolved Air Flotation (DAF) with a polyaluminum chloride coagulant was selected as the clarification process for the new conventional plant.

Delivery Approach: Design-Bid-Build with Hazen (Engineer). Planned financing using WIFIA and SRF.

Progress: This project was released for bid on February 28, 2024. Filed sub-bids were opened on June 11 (extended from April 2) and general bids were opened on June 25 (extended from May 14). The bid openings were extended to allow time for an addendum to be processed, although the final completion date has not been impacted.

Three general bids were received. The base bids were \$341 million from MWH Constructors, \$314 million from CH Nickerson/O&G, and \$293 million from Walsh Construction Company. The most recent engineer's estimate was \$286 million. Hazen is currently evaluating these bids and developing a recommendation to award. It is anticipated that the contract will be approved by the Commission Board in July. Construction is expected to begin in late 2024 with final completion still projected for September 2028.

Supply Chain: Lead times for some electrical equipment can be as high as one to two years. Supply chain impacts on this project are a concern but were considered during the development of the project schedule.

Schedule: The contract is scheduled to be awarded in July of 2024 and to be completed by September 2028 (no change). No project delays were introduced during this past quarter.



October 2023 progress rendering of the new WTP exterior and landscaping



42-inch Raw Water Transmission Main, Energy Dissipating Valve, and Equalization Tank

Project Purpose: This project is for the repair of the 42-inch bypass raw water conveyance PCCP pipeline and construction of a new energy dissipating facility (EDV) at the outlet. The pipeline and EDV facility were damaged when a new EDV failed in 2019. The pipeline and EDV facility provide an important alternative/redundant route for raw water to bypass the Cobble Mountain Hydroelectric Station (CMHS), the Intake Reservoir, and the 72-inch Intake Tunnel. The EDV facility provides necessary energy dissipation for the 42-inch outlet, which conveys high pressure water (approximately 200 psi) directly from Cobble Mountain Reservoir. The project also includes the design of a new raw water equalization (EQ) tank that will be used in the future to directly provide raw water to the new water treatment plant. The EQ tank will eventually replace the need to use the sedimentation basin for raw water storage.

With the 42-inch raw water transmission bypass out of service, the Commission currently relies on the Diversion Gates (the low-level dam outlet) to release water from the Cobble Mountain Reservoir when the CMHS is offline for routine maintenance. This outlet was not designed to operate as a regular intake and is not operable remotely, requiring staff to regularly perform a complicated confined space entry that would require assistance from a technical rescue team should an emergency evacuation be required. With the 42-inch bypass out of service, there is currently no bypass for the 72-inch Tunnel.

Returning this route to service will allow the Commission to take the CMHS and 72-inch Intake Tunnel offline for maintenance when needed while maintaining raw water supply to the current and future water treatment plants.

Delivery Approach: Design-Bid-Build with AECOM (Engineer).

Progress: AECOM released bid documents on February 21, 2024 and bids were open on April 26. Bids were received from Northern Construction, LLC and Baltazar Contractors. Northern provided the lowest bid price of \$28.5 million, approximately \$6 million higher than the engineer's estimate of \$22.6 million. Per AECOM's review and recommendation, the project was awarded to Northern on June 4 with a notice to proceed dated June 12. The contractor is currently developing submittals. The Substantial Completion date for this project is December 11, 2025.

Supply Chain: Supply chain impact on this project is uncertain.

Schedule: The combined project is now projected to be completed in December 2025, which is later than projected in the 2023 quarterly updates. Some project delays were related to needing to secure a waiver from EPA WIFIA program for the specified valves for the facility which are not made in America. Other delays have been related to the need to coordinate some aspects of the design with the design of the new WTP.

Cobble Mountain Hydroelectric Station Improvements for Primary Raw Water Conveyance

Project Purpose: The Cobble Mountain Hydroelectric Station (CMHS) is an essential component of the Commission's raw water conveyance system. As part of the primary raw water conveyance route, the CMHS delivers water from the Broome Gate Intake down to the Intake Reservoir while generating power by using the 450-foot elevation difference between the two reservoirs. This project will identify alternatives for upgrades to hydropower generation in response to failing infrastructure at the facility. The existing 1930 turbines are mostly beyond the end of their operational lives, with only one out of the original three turbines currently operational on a limited schedule to limit wear and reduce the risk of failure.

When the CMHS is offline for maintenance, the remaining routes for raw water conveyance are the 42-inch bypass (currently out of service) and the low-level Diversion Gates, which are not designed for regular operation. Restoring the CMHS conveyance route is vital to establishing reliable raw water conveyance for the Commission.

Delivery Approach: Design-Bid-Build with Kleinfelder/Stantec (Engineer) with some Design-build improvements being considered.

Progress: Stantec and Kleinfelder submitted alternatives for project delivery last quarter, following the completion of conceptual design documents for improvements to the CMHS in late 2023. The Commission is currently considering project approach alternatives and is soliciting Requests for Proposals (RPFs) for peer review of the project to date. Improvements to the power plant are projected to be completed in 2027 but the schedule may change as design progresses and more specifics are known about the project.

Supply Chain: Supply chain impacts on this project are currently unknown but are a concern.

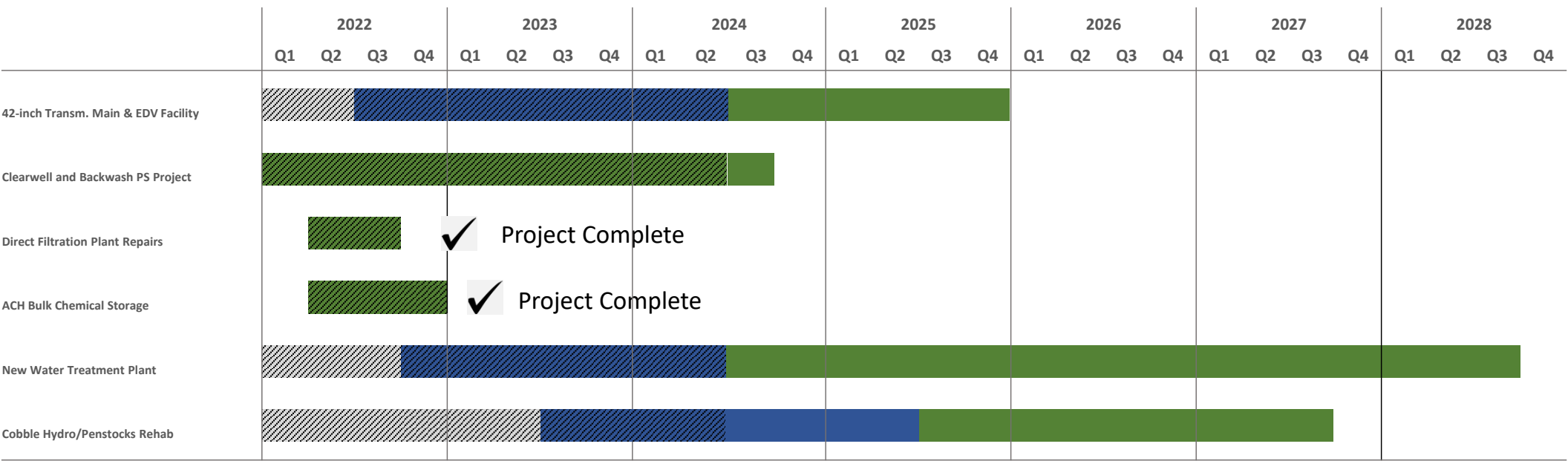
Schedule: This project is currently projected to be completed in 2027, but this date is subject to change as design progresses.



Powerhouse Generator Room in 1931 (left), Powerhouse Generator Room in 2022 (right)

Engineering Capital Projects Schedule

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Note: Schedule is generalized and subject to change