

Jordan Avenue Station

159 Jordan Avenue | Brunswick, Maine

Open House

September 10, 2026

11 AM to 3 PM



Quality and Reliability Since 1903

Brunswick & Topsham Water District | (207) 729-9956

www.btwater.org

The Brunswick and Topsham Water District (BTWD) worked with the Naval Facilities Engineering Systems Command (NAVFAC) and CDM Smith to bring improvements to the Jordan Avenue Station Facility. The \$20 million-dollar project is now providing the community with high-quality drinking water that has undergone robust treatment. The system uses greensand filtration (GSF), granular activated carbon (GAC), and anion exchange (AIX) resin to treat the water.

Improved Water Quality

Jordan Station is the smallest of BTWD's three plants. It averages 515 gallons per minute (GPM) with a maximum capacity of 1,000 GPM. It features raw water pumps with a vacuum assist system from the wellfield. The previous treatment process consisted of aeration, disinfection, addition of phosphate and fluoride, and finished water pumping.

The new system builds on this approach to provide improved water quality to the community.



Bench-Scale Testing

While working with NAVFAC and BTWD, CDM Smith tested the proposed treatment systems at small scale to confirm the design concept would work at full scale. A bench-scale testing approach was used to confirm GAC as the primary Per- and Polyfluoroalkyl Substances (PFAS) treatment step, compare AIX against Fluorosorb, and assess PFAS treatment from AIX addition

as a polishing step. Rapid Small Scale Column Testing (RSSCT) was critical in assessing this site's groundwater with the actual treatment media being considered.

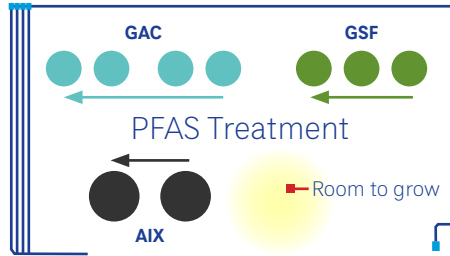
The results showed that using GAC and AIX together was more effective at treating PFAS than using one method by itself, and that using AIX after GAC offered the best treatment of PFAS.



The Final Treatment Plan and Design

After testing various treatment methods, BTWD agreed with the Navy's recommended plan of treating water with greensand filters (GSF), granular activated carbon (GAC), and anion exchange (AIX), in that order. GSF removes iron and manganese from the water, GAC removes natural organics and PFAS, and AIX finishes off the PFAS treatment process.

The final design included three GSF, four GAC, and two AIX vessels. These treatment processes are described below.



The Jordan Avenue Station is designed to allow additional treatment if media requirements change. This will allow further improvements to be made in the future.

1 Greensand Filters (GSF)

The first step in the treatment process is GSF. These filters function to remove iron and manganese from the water using a graded sand that is coated with manganese dioxide. Water flows into each greensand filter through a common header. Iron and manganese are removed in these vessels with the help of sodium hypochlorite.



2 Granular Activated Carbon (GAC)

After passing through greensand filters, the water is split between two GAC contactor trains that remove PFAS. As the water flows through the contactors, the carbon media adsorbs PFAS and is removed from the water prior to the final stage of treatment which is anion exchange.

3 Anion Exchange (AIX)

Water is treated through the anion exchange train after it has been processed by the GAC. These vessels are capable of removing even more PFAS molecules that scientists are working to measure. While currently all measurable PFAS is removed in Step 2 (above), many facilities, like this one, now use resins to allow the highest level of treatment.



Aeration

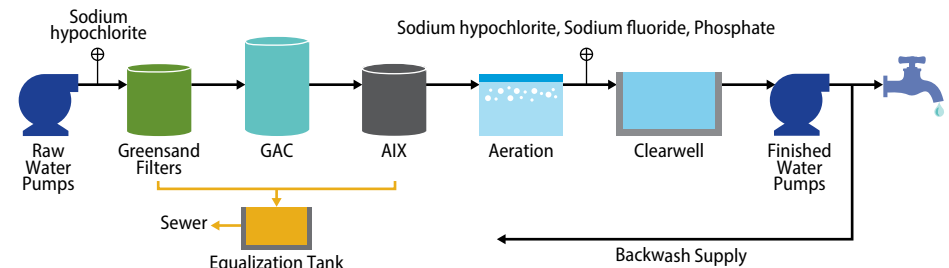
Before chemicals are added, the water must go through an aeration process. The purpose of this step is to adjust the water's pH. HEPA filtered air is supplied by blowers into the aeration units. The air is sent from the bottom

of the units up to the surface in the form of bubbles. These bubbles allow carbon dioxide to leave the water, which makes the water's pH a neutral level of 7.

Clearwell Tank and Finished Water Pumps

The clearwell tank functions to give the water enough contact time with the sodium hypochlorite so that any disease-causing organisms in the water can be killed before the water is pumped out. The clearwell tank can hold up to 68,000 gallons of water.

The finished water pumps supply water to the distribution system from the clearwell tank. These 100 horsepower pumps deliver water at flow rates up to 1,000 gallons per minute (GPM).



The Complete Process

Prior to this project, water flowed through Jordan Station via raw water pumps to aeration, before addition of sodium hypochlorite, sodium fluoride, and phosphate. After this, it traveled to the clearwell and was then delivered to the public by finished water pumps.

This project allowed the treatment process to be updated to provide improved water quality. In the new system, the water runs through

greensand filters, GAC, and AIX before reaching aeration. The system uses treated water as a backwash supply, and backwash water is sent to the equalization tank that meters backwash water flow to the sewer. PFAS is captured in the media that is handled and disposed of separately on an annual basis as the media requires.

Thanks to:



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