

BNR Wastewater Treatment Facility Upgrade & Expansion Interceptor Sewer Improvements

Client: Brookville Municipal Authority

Jefferson County, PA

Year: 2020 Cost: \$17,000,000



In response to a PA DEP consent order to eliminate sewer overflows and plant bypassing, the Brookville Municipal Authority directed Gwin, Dobson & Foreman to provide a solution. After an extensive flow monitoring program and planning study, GD&F recommended that all wet-weather sewer flow be conveyed to the treatment plant. This involved the construction of a wet-weather pumping station, new interceptor sewer system and upgrade and expansion of the wastewater treatment plant.

Treatment Plant Capacity & Process Parameters

- Capacity: 2.5 MGD (ADF); 12 MGD (Peak)
- Design Nutrient Discharge Concentrations – 6.0 mg/l (TN) and 0.80 mg/l (TP)

Unit Operations and Process Systems

- New Raw Sewage Lift Station with Self-Priming Pumping System
- New Headworks Building with Fine Screens and Vortex Grit Separators
- Suspended Growth Nutrient Removal Technology configured for Hybrid 5-Stage Bardenpho Process
- Turbo Blower High Efficiency Air Supply System
- Fine Bubble Membrane Diffuser System and Submersible Mixers
- Reactor Feed Distribution Box with Gravity Step Feed System for Wet Weather Flows
- Final Clarification using Spiral-Blade Collection Mechanism and Stamford Baffles
- Recycle Pumping for Return Activated Sludge, and Nitrate Flows
- Ultraviolet Disinfection and Cascade Aeration Channel
- Solids Handling – Conversion of Anaerobic Sludge Digesters to Aerobic Digestion



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Interceptor Sewer Improvements

- 17,500 LF of 12 to 30-in. PVC/HDPE interceptor sewer pipe
- Three (3) major stream crossings of Redbank Creek using directional boring techniques
- Three (3) inverted siphons capacity improvements

The project was successful in eliminating sanitary sewer overflows and plant bypassing. This was accomplished by a 9 MGD capacity wet-weather lift station and 12.0 MGD wastewater treatment plant. The treatment plant employs a Hybrid 5-Stage Bardenpho process to achieve complete nitrogen removal, the first in the DEP Northwest Region.

Impact on rate payers was minimized through affordable project financing including over \$7.5 million in grants. Brookville will be in compliance with all DEP clean water regulations, including future nutrient removal, for many years to come.