

PA DEP Small Drinking Water Systems Engineering Services Program (ESP) Case Study

Client Name: Ulster Municipal Authority
Location: Ulster Township, Bradford County
Project: GUDI Feasibility Study

Background:

The Ulster Municipal Authority (UMA) Public Water System serves approximately 500 people through 178 service connections with an average demand of 46,000 gallons per day (gpd) through two (2) well sources. Treatment of the well water consists of chlorination. Treated water is pumped into the distribution system and excess water is stored in the 75,000 gallon storage tank. The water treatment system runs automatically based on a level switch located in the storage tank.

Public Health Challenges:

UMA conducted Surface Water Identification Protocol (SWIP) monitoring on Wells #1 and #2. DEP Northcentral Regional Office classified the wells as groundwater under the direct influence of surface water (GUDI). Microscopic particulate analysis of the wells indicated a high risk for surface water influence due to diatoms, algae, and rotifers.



Capacity Issues:

Technical – UMA personnel have reported the well sources still meet the system quantity demands, however reduced production has been observed. The well sources have been deemed GUDIs, therefore, do not meet current regulations without providing further treatment.

Managerial – The Authority was concerned about the added operation and maintenance requirements with filtering the GUDI sources. They requested the Feasibility Study to evaluate the lifecycle costs of the various alternatives.

Financial – UMA has limited financial capabilities to raise capital funds for additional treatment or new source development. The PWS rates are set to cover expenses of the system with a small amount of excess that goes into a reserve fund for maintenance items and small projects. It does not reflect the volunteerism in the community to run the system and major projects have been funded through County and State grants. Also, O&M costs have recently increased substantially due to the higher chlorine disinfection residual required until compliance with the Surface Water Treatment Rule is achieved.



Actions:

A Feasibility Study was completed to determine the most viable alternative to treat the GUDI well sources or to develop a new groundwater source to provide safe drinking water. Options evaluated included interconnection with a neighboring system, development of ground water sources, and various filtration methods of the existing well sources. The Feasibility Study also included the associated costs for each alternative and a 20-year lifecycle cost analysis.

Outcomes:

The Feasibility Study provided an assessment of the existing water system, evaluated technical, managerial, and financial capabilities, projected future consumption and demands, and identified and evaluated alternatives to meet compliance requirements. UMA initially chose to locate test well sites to develop a new groundwater source. However, hydrogeologic field testing results increased concerns over adequate water quality and quantity, therefore, UMA is currently reevaluating the filtration methods and the interconnection with a neighboring system alternatives.



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