

RELATED EXPERIENCE

WATERFORD TOWNSHIP AWARD WINNING DRINKING WATER REVOLVING FUND PROJECTS

Johnson & Anderson, Inc. prepared a Reliability Study for Waterford Township, to meet the Michigan Safe Drinking Water Act and Michigan Department of Environmental Quality (MDEQ)

Location:	Waterford Township
Construction Date:	2007 - 2009
Construction Cost:	\$8.9 Million (estimated)
Client:	Waterford Township DPW
Contact:	William Fritz, P.E. DPW Director (248) 618-7451

requirements, indicating that the quantities of treated potable water available in the existing system would not meet future system demands. The Study recommended that the water system, including 10 iron removal facilities and over 350 miles of water main, needed to have increased capacity and reliability to provide treated water to existing and future customers. Therefore, the Township completed a Phase I Pilot Treatability Study at the proposed Water

Treatment Plant (WTP) 31-1 site to determine the ability of two processes to treat water at that location. Two process alternatives based on pressure filtration for iron removal at a rate of 3,000 GPM (4.32 MGD) were considered. An aquifer study at the Section 31 site concluded that the aquifer would be able to supply water at a future rate of 3,000 GPM to the proposed filters.

Two alternatives utilizing pressure filters were studied for water treatment at the site. A process using biological pressure filtration equipment was selected. Cost estimates were developed for a proposed filtration system. The water treatment facility was designed to be housed in a new barn type structure to match the existing farm/park site owned by the Township where the facility was constructed.

J&A developed a Drinking Water Revolving Fund (DWRF) Project Plan for the Waterford Township DPW along with all application documentation so the construction of the new water treatment plant could be funded using a DWRF loan. The DWRF Project Plan also included an expansion at another existing Township water treatment plant, the installation of approximately 3,100 feet of 12-inch water main to complete a necessary loop in the distribution system, and transmission main from the proposed WTP 31-1 to the existing distribution system. The total cost of the DWRF related improvements was \$8.9 Million.

Johnson & Anderson completed the design for the new water treatment plant 31-1, meeting the requirements of the DWRF loan cycle as specified by the MDEQ, including three new wells and pumps that were installed and piped from the new well field to discharge directly into the two pressure filters, chemical additions, a sanitary sewer pump station and force main for filter backwash disposal, the water treatment plant building, and all necessary controls and appurtenances. The new facility is capable of providing 4.32 MGD of treated water to the Township's distribution system.

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All necessary permit applications were filed with the MDEQ for construction permits. During the design phase of the project, J&A completed an extensive study and estimated costs to recommend the use of gaseous chlorine for disinfection of treated water over high strength liquid sodium hypochlorite, on-site generation of chlorine using tablets, or salt brine solution. Cost estimates included both current and long term chemical usage evaluations.

J&A managed a project team consisting of Dmytryka Jacobs Engineers, Inc., who performed the electrical, instrumentation and control and Supervisor Control and Data Acquisition (SCADA) design engineering and design to integrate the new treatment plant operation into the existing treatment and distribution system and Siegal/Toumaala Associates Architects and Planners, Inc. who completed the architectural design of the new water treatment plant.

J&A coordinated construction activities for the new transmission main from the plant to the distribution system with the Oakland County Road Commission and their engineering consultant during the complete reconstruction of the main county road that provides access to the plant.

The project won the American Council of Engineering Companies – *Michigan Chapter 2010 Award of Merit for Engineering*, and the American Public Works Association – *2009 Metro Detroit Chapter and 2010 State of Michigan Chapter Project of the Year*.



**South and East Elevations
Water Treatment Plant**



Pressure Filters and Piping