PROJECT PROFILE

LENOX TOWNSHIP WATER SYSTEM RELIABILITY & MASTER PLAN
LENOX TOWNSHIP, MACOMB COUNTY, MICHIGAN

TRI-COUNTY Engineering Consultants

OWNER / CLIENT
LENOX TOWNSHIP
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PROJECT START - END
JAN 2018 - DEC 2008

PROJECT COST
N/A

KEY PERSONNEL
SERMED K. SAIF, PE

PROJECT NO.
LX18009

48701 Hayes Road
Shelby Twp, MI 48315

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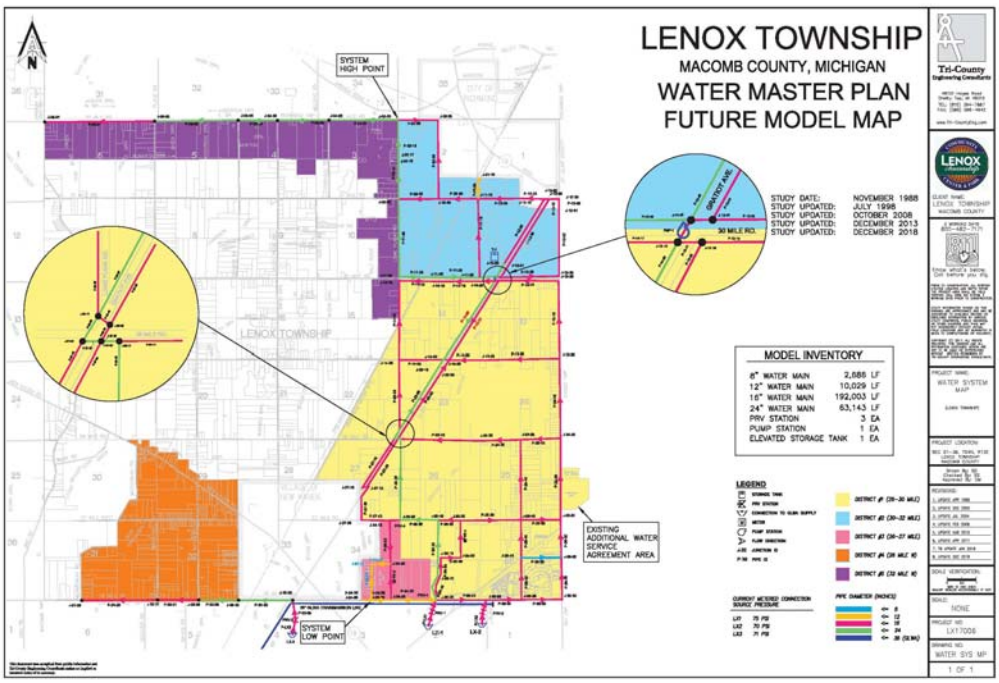
BACKGROUND
Lenox Township is in the early stages of growth and development. With the extension of the sanitary sewer interceptor to the eastern third of the Township and business developments along the Gratiot Avenue corridor, the Township has prompted the development of a Water System Master Plan to analyze the current and future water system demands. The master plan included revisions of the Lenox Township water service district boundaries, analysis of the additional outside service district areas, study of the existing water system, revision to the system demand based on current zoning, updates to the Grate Lakes Water Authority (GLWA) supply pressures, and recommendations for the water system upgrades.

LOCATION
The sanitary service district is master planned from 26 Mile Road to the north limits of the Township and from the Grand Trunk Western Rail Road / Lowe Plank Road to County Line Road.

SCOPE
The current and ultimate system demands were calculated for each section in the Township and the additional service districts. Population projections were based on current zoning for Lenox Township and surrounding communities. Flow demands were based on "Merritt, Standard Handbook for Civil Engineers, McGraw-Hill, 1983." These demands were used to determine whether the system met the current "10 States Standards (GLUMRB 1992)".



SPECIAL FEATURES
The system demands were evaluated using the hydraulic software WaterCAD® version 10 and the Hazen-Williams methodology for determining flow resistance. Steady state system performance was analyzed for average day, maximum day, and maximum hour flow. Additionally, a fire flow analysis was performed under maximum day flow conditions. Analysis of the ultimate system's performance was also completed over time by utilizing a diurnal curve, which analyzed the fluctuation of the demand over a 24-hour period. A time-based analysis assisted in the evaluation of the filling and emptying of an elevated storage tank and related booster station. The system was designed with three pressure districts to overcome the geographic challenges.