

City of Rochester Hills, MI
Water Distribution Model Evaluations

Meeting with Community Development
April 22, 2004

AGENDA

- Review of Previous Meeting
 - Benefits of Water Storage (pressure, fire flow, peak demand reduction)
 - Review of DWSD Rate Structure
 - Revised reservoir sizing based on actual recorded flow and pressure data
 - Confirmed reservoir locations (Tienken & Adams, Avon & Rochester)
 - Evaluated water rate reduction with system storage
 - Revised project cost estimates
 - Estimated payback period

- DWSD Coordination
 - Rochester Hills is first community to request documentation from DWSD related to storage issues
 - Resubmitted model to show that there are no impacts to DWSD transmission facilities
 - Worst case maximum day demand conditions
 - Input actual diurnal curve
 - Removed booster pumping station on east side of City
 - Translational errors with conversion of modeling data to DWSD model
 - Met with DWSD Engineering and Billing Rate staff
 - Verbal conditional approval of project from DWSD Engineering
 - Requested printouts of tables from model
 - Will provide approval letter no later than May 3, 2004
 - Rate Supervisor will begin drafting letter for approval of language by legal staff , pending receipt of letter from Engineering

- Rate Reduction Issues
 - Once storage is constructed, historical data used to compute maximum day demand factors will be disregarded
 - Typically based on a 4 year average
 - First few years may result in fluctuations in max. day factor
 - Important to control max. day demand through water restrictions, etc. during first few years
 - Rate reduction for the reduction in peak hour demand will not kick in until one year after system is in operation

Rochester Hills, Michigan Water System Study

Presentation of Findings

March 18, 2004



Project Background

- Original Study Completed September 2002
- Goals
 - Identify pressure deficiencies in NW section of existing system
 - Develop methods to lower peak usage
 - Identify potential system improvements



Project Background

- Prepared system-wide hydraulic water distribution model
- Evaluated storage to increase pressure and reduce peak usage

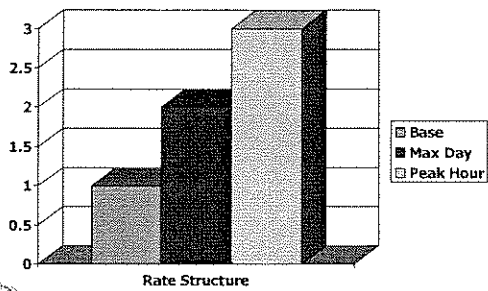


DWSD Rate Structure

- Five Factors
 - Base
 - Maximum Day
 - Peak Hour
 - Elevation
 - Distance



DWSD Rate Structure



Original Study Conclusions

- Recommended two 2-million gallon storage tanks
- \$7.3 million estimated construction cost
- 5 –7 year payback

Further Evaluation

- Evaluate Flow Patterns
- Confirm Storage Size and Location
- Confirm DWSD Contract Commitments
- Confirm Economic Evaluation

Study Findings – Data Review

- One Month of City Data
- 3 Months of DWSD Data – July – September 2003
- Flow Distribution is more balanced during Peak Demand
- Supply Pressure Varies Considerably

Study Findings - Storage

- Flow Control Valves at Feed Points
- 2.0 MG Tank & Booster Station Required at North Location
- 3.0 MG Tank & Booster Station Required at South Location
- North Location: Tienken & Adams
- South Location: Avon & Rochester



Study Findings – Rate Analysis

- Fees reduced by \$1.18 Million based on 2004/2005 rates
- DWSD Rates potentially reduced from \$15.60/Mcf to \$12.75/Mcf



Study Findings – Estimated Capital Costs

- Construction \$6.7 Million
- Engineering \$1.3 Million

- Total Project Costs \$8.0 Million

- Includes 20% contingency; 20% engineering



Study Results – DWSD Discussions

- Water Rate Division
 - Understand rate calculation
 - Verbal concurrence on impact of storage
 - No intent to change rate structure
 - Future peak charges distributed to systems without storage
 - Requires concurrence from DWSD Engineering



Study Results – DWSD Discussions

- Engineering Division
 - No impact on DWSD facilities
 - Use higher peaking factors for design
 - No increase in flow from east side



Study Results – Payback Period

- Based on current rates and DWSD commitment
- Approximately 6 years



Life Cycle Analysis

- Average Equivalent Annual Cost
 - With Storage \$650,000
 - Without Storage \$2,100,000



Potential Tank Style

