



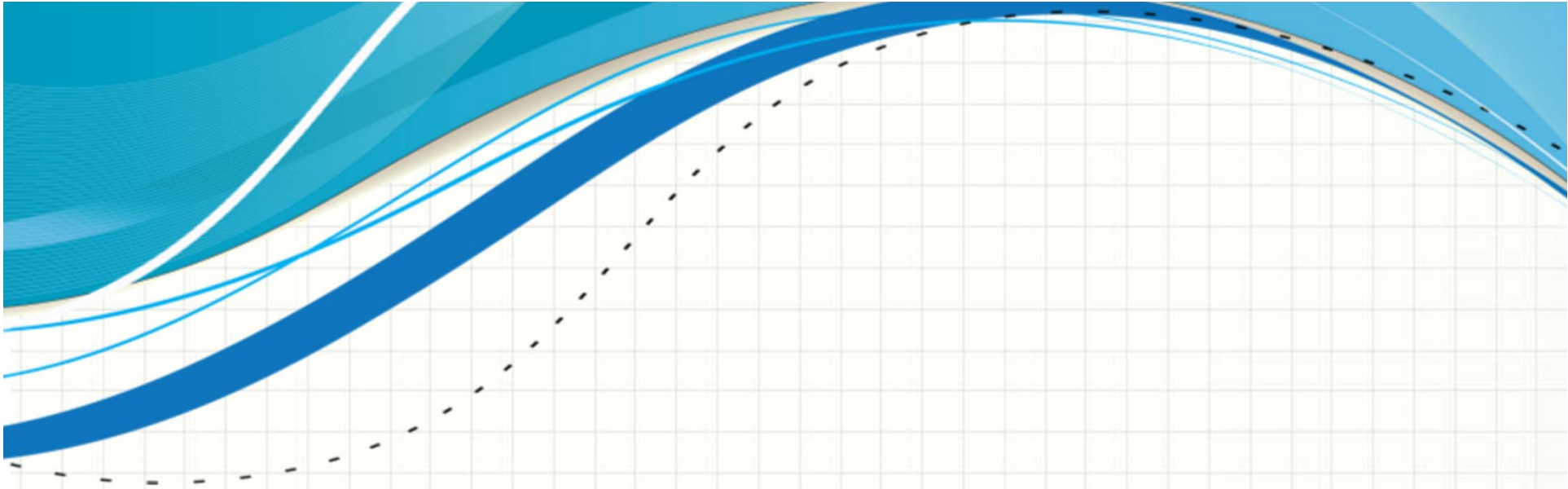
WATER TREATMENT PLANT PROJECT

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Project Overview

- Why is it needed?
- What does the project entail?
- What is the cost?
- Water rate impacts?
- Benefits?

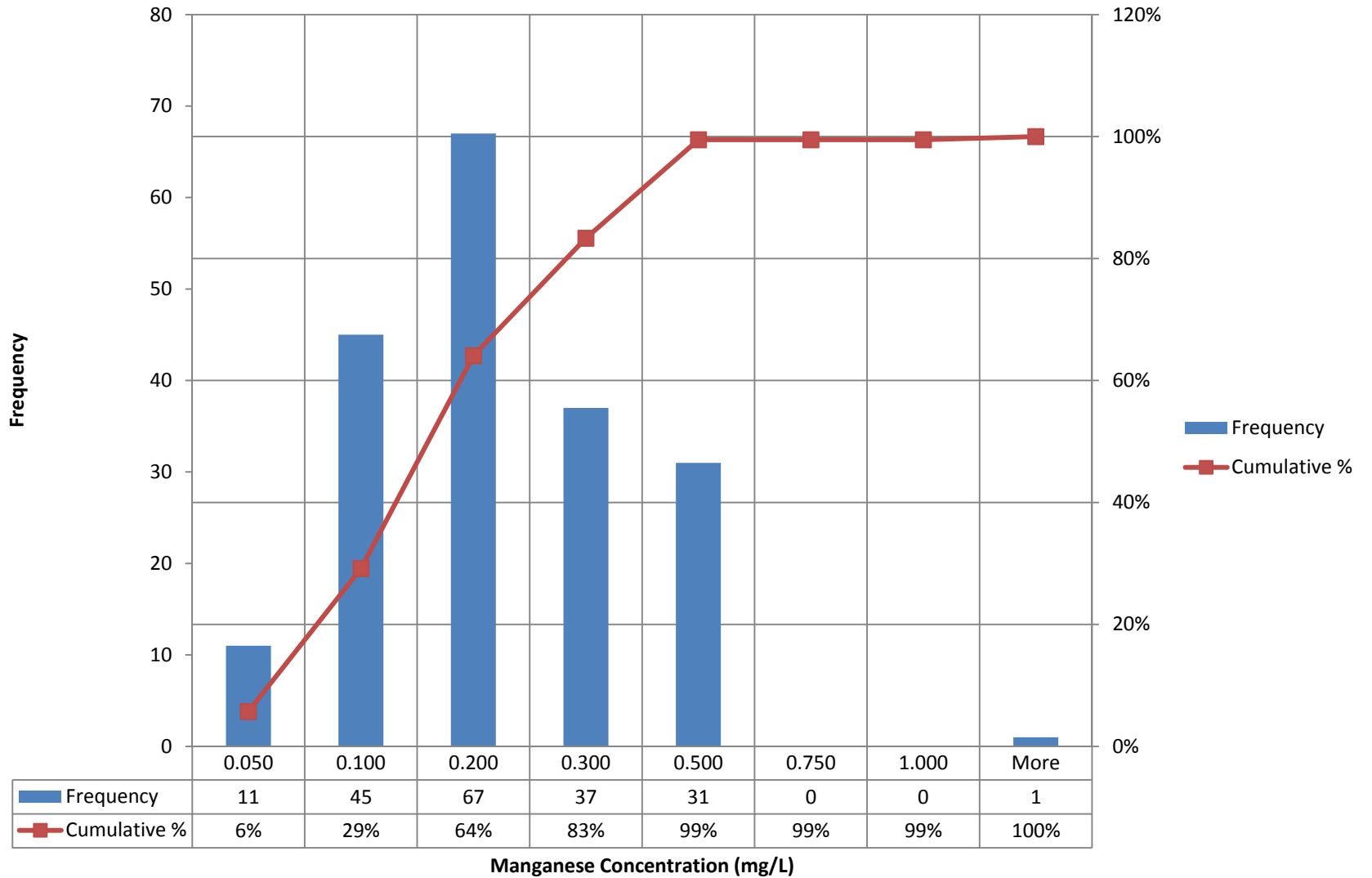


WHY DO WE NEED A TREATMENT PLANT?

Manganese

- Historically an aesthetic issue
 - 5 parts per billion (ppb) to avoid staining
- Regulated by MassDEP due to potential health effects
 - 300 ppb for lifetime of healthy adult
 - 300 ppb for children, infants for 10 days
 - 1000 ppb for 10 days for health adult

Source Water Manganese Concentration Histogram 2011 to Present



Water Treatment Plant Project

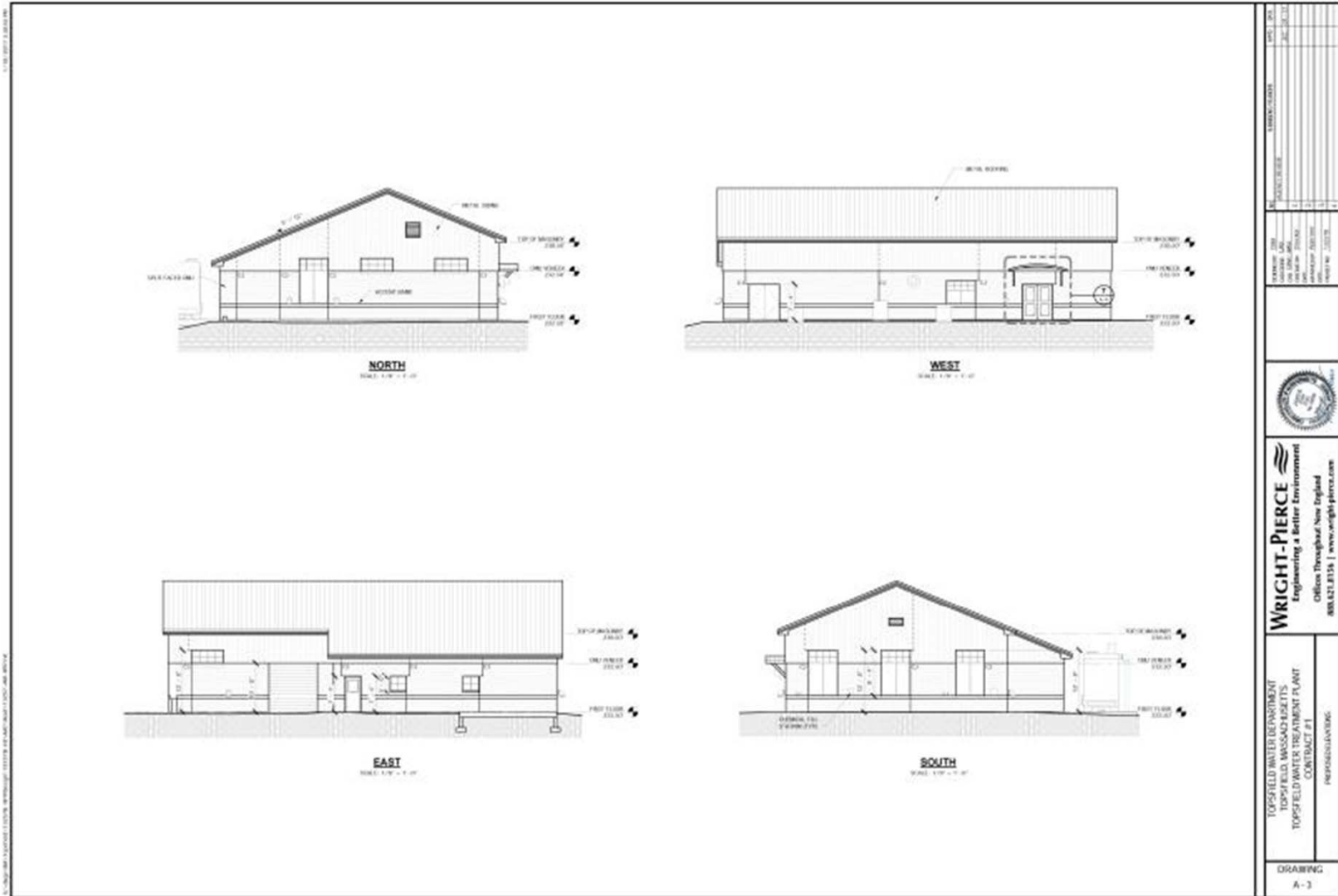
- Greensand Filtration Plant
- Transmission Mains
- Pressure Boosting Station
- Boston Street Tank Altitude Valve

Treatment Plant Location



Friday, June 16, 2017

Treatment Plant Elevation

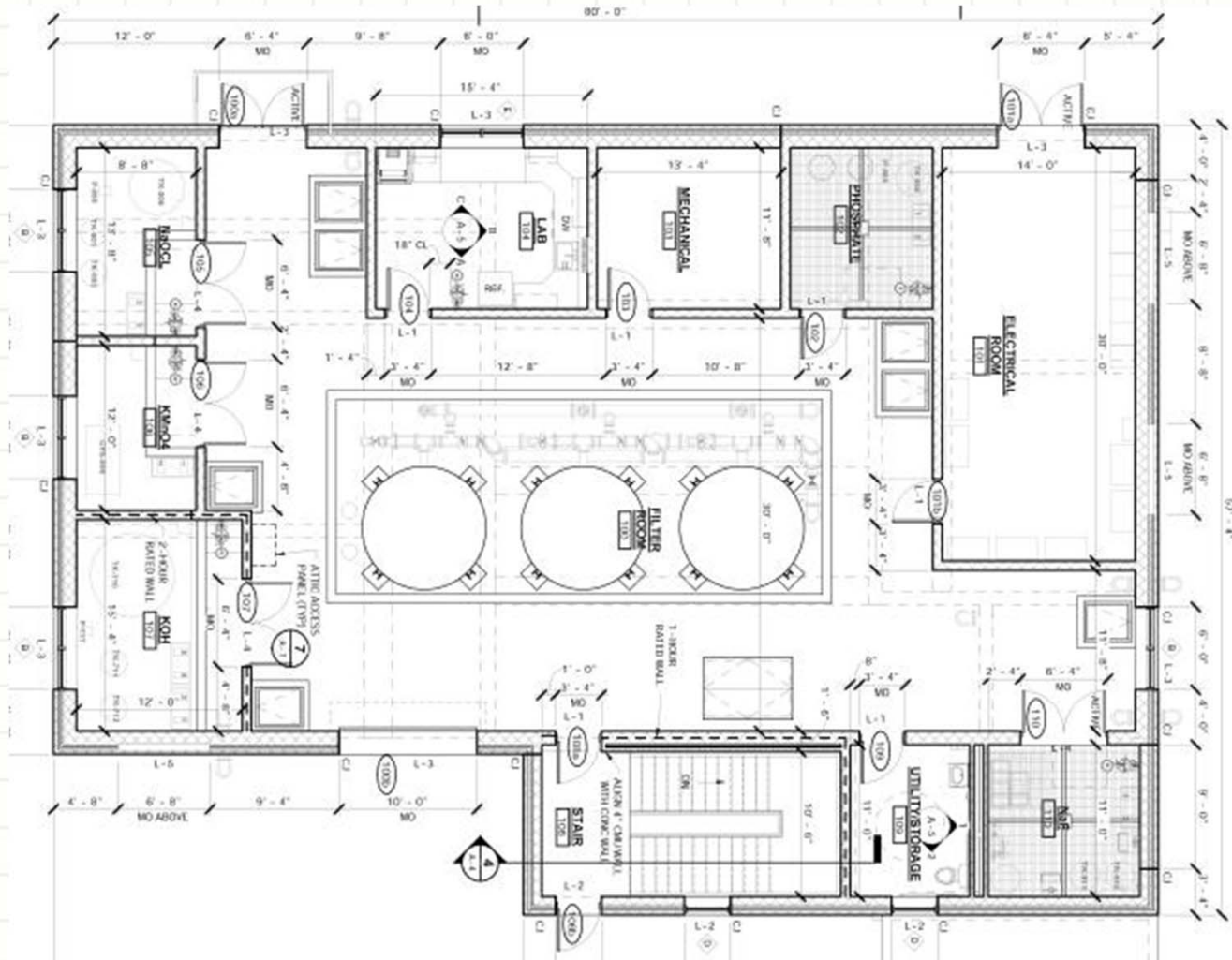


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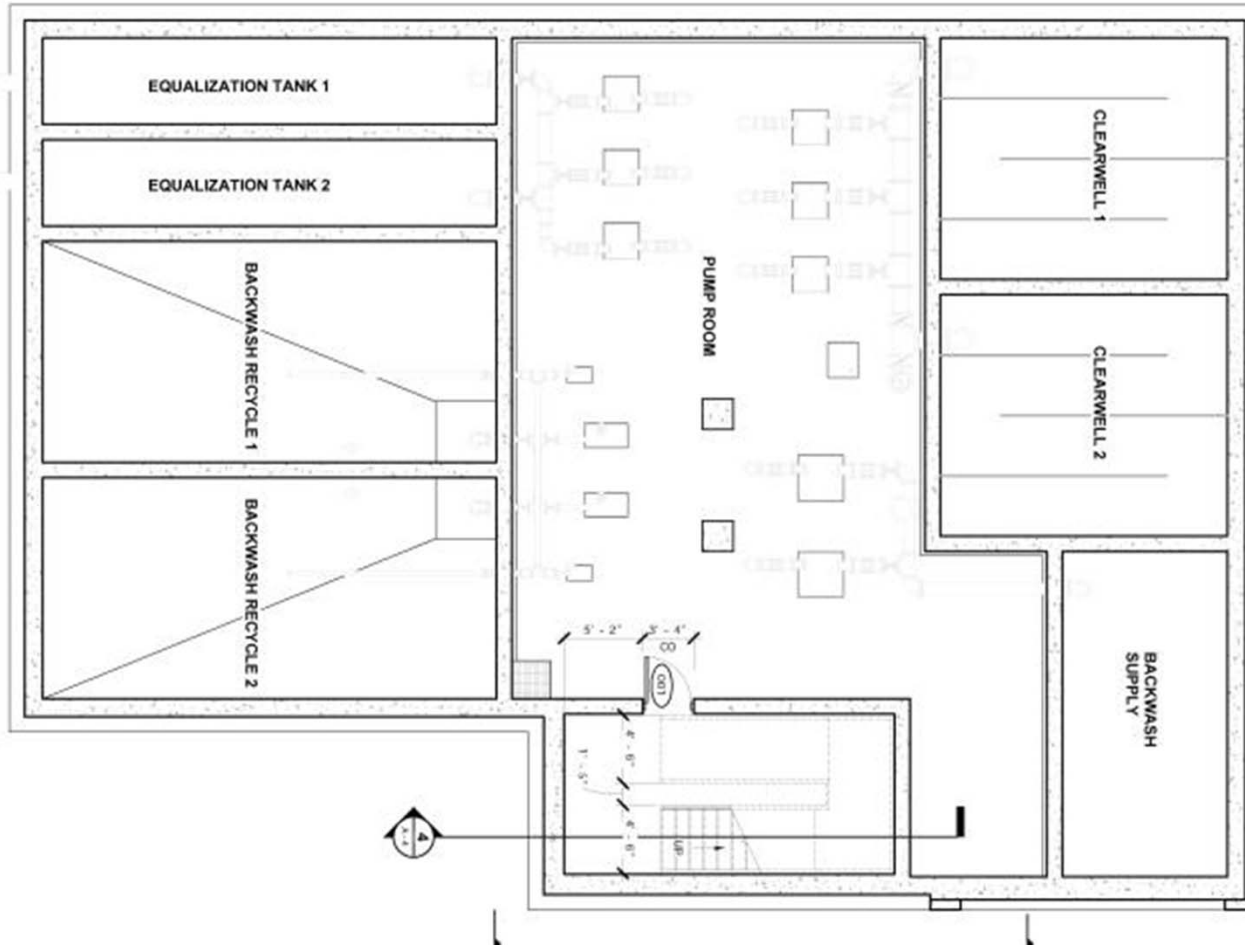
Treatment Methods

- Iron & Manganese Removal
 - Potassium Permanganate, Sodium Hypochlorite, and Greensand Plus Filters
- Corrosion Control
 - Aeration, Potassium Hydroxide, and Phosphates
- Disinfection
 - Sodium Hypochlorite
- Fluoridation
 - Sodium Fluoride

Treatment Plant Ground Floor Plan



Treatment Plant Basement Floor Plan

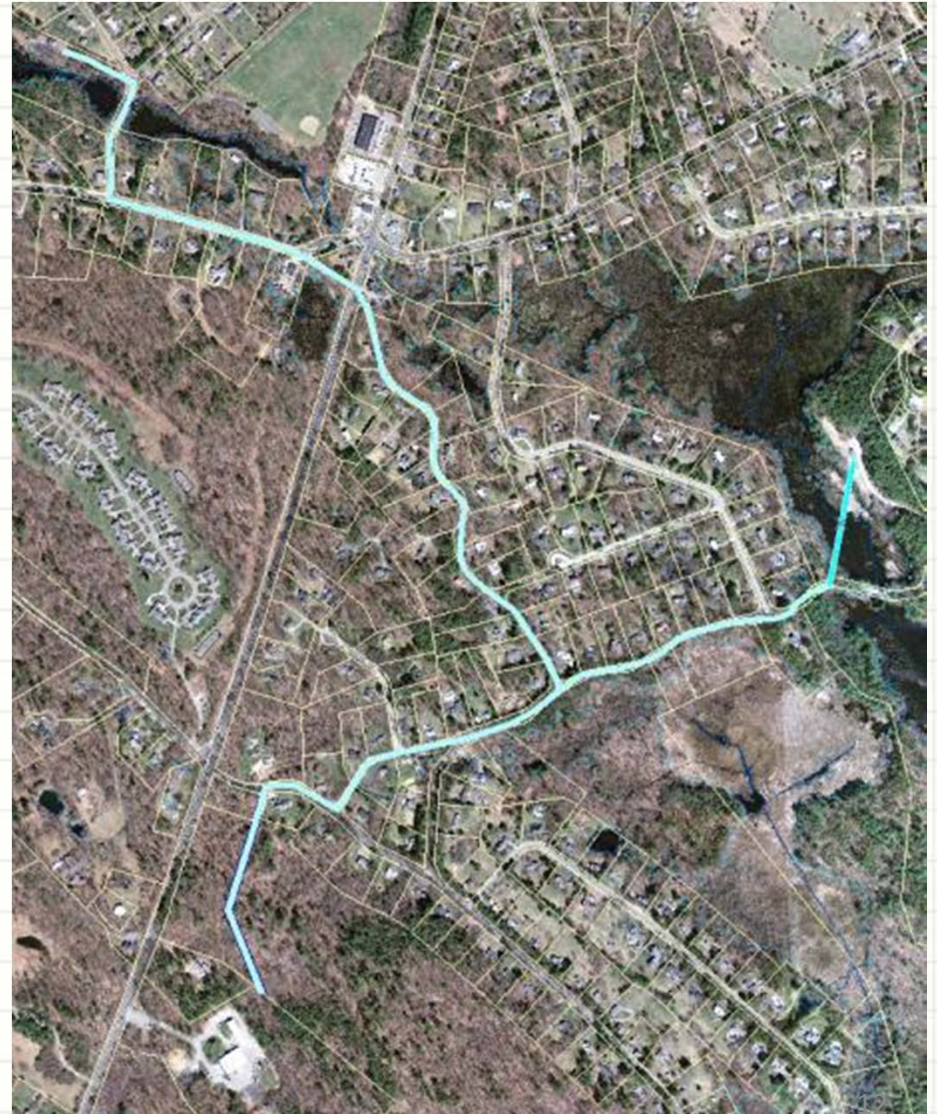


Transmission Mains

Convey water from sources to the treatment plant.

Mains laid on:

- North Street
 - Boardman to Ipswich
- Ipswich Road
 - North to Route 1
- Averill Street
- Perkins Row
 - #250 to Meetinghouse
- Meetinghouse Lane
- Howlett Street
 - Meetinghouse to Route 1



Project Costs

- Bids opened on May 31st
- Contract #1 – Water Treatment Plant
 - Low bid of \$7.316 million
- Contract #2 – Transmission Mains
 - Low bid of \$1.523 million
- Professional Services
 - Designer - \$784,000
 - OPM - \$256,000
- Project Cost with contingency - \$10.4 million
 - \$9.25 million from borrowing
 - \$1.15 million from Retained Earnings / Warrant Articles

Rate Impacts

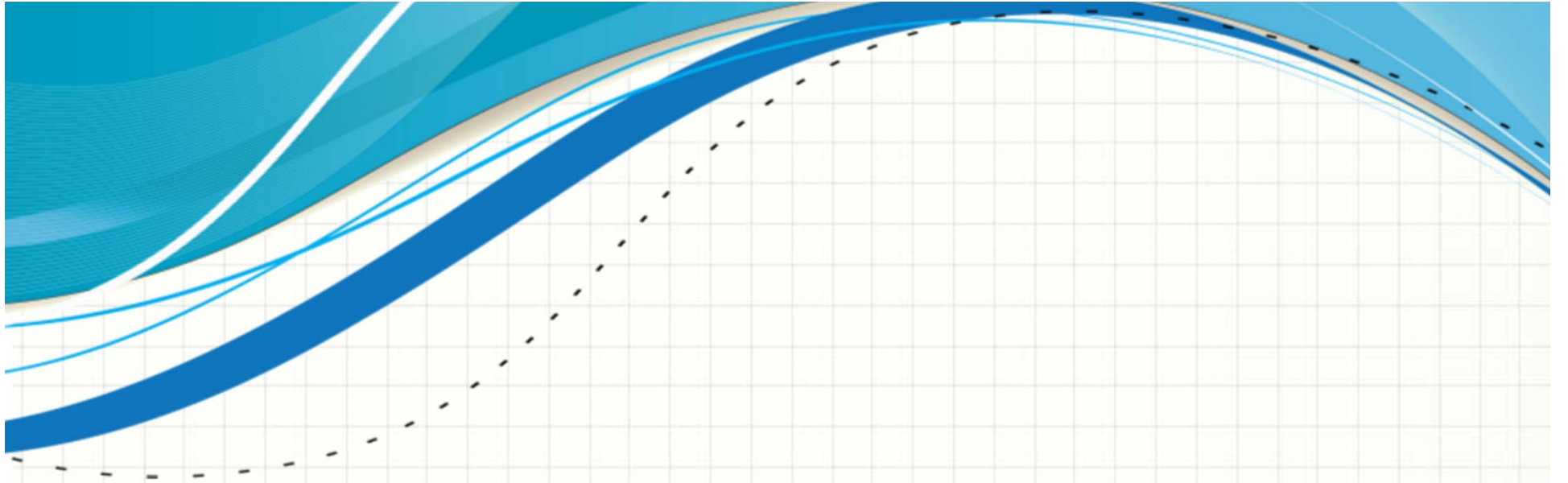
- Water Enterprise Fund
 - Isolated from tax rate
 - Project costs recovered through water rates & fees

Rate Impacts

- Annual increase of \$1.22 per day for average customer
 - Based on:
 - FY2017 water rates
 - Conservative interest rate
 - Aggressive repayment schedule

Project Benefits

- Water Quality Improvements
 - Manganese removal
 - Pilot testing showed virtually all Mn removed
 - More robust corrosion control
 - Further reduce lead & copper corrosion
 - Plant designed to meet Groundwater Rule
 - Minimum disinfectant contact time requirement
 - Water more of a finished product leaving plant

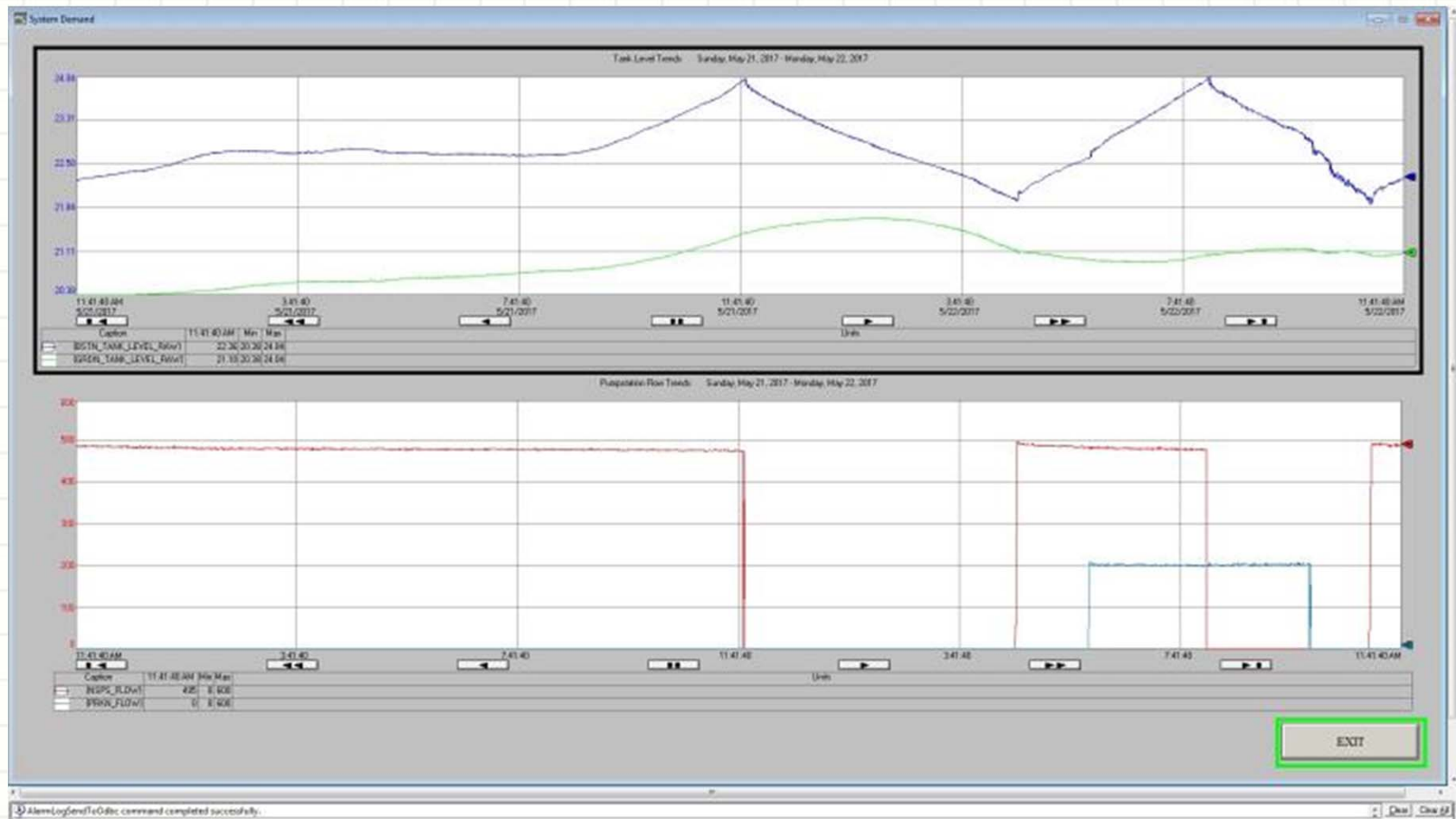


QUESTIONS?

Booster Station

- WTP site situated on hill, low pressure
- Requires fire suppression system
- Booster station needed
- Will be sized to supply Public Works Building

Boston Street Tank Altitude Valve



Corrosion Control

- Lead & Copper Rule Compliance
- pH Adjustment
 - Started in mid-1990's
 - 20+ years in compliance
- EPA changed guidelines
 - Requires additional treatment method to meet current guidelines – Aeration