

# BUILDING A WORLD OF DIFFERENCE

## HANNIBAL MO CHLORAMINE REPLACEMENT EVALUATION PROJECT UPDATE

8/11/2017



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# PROJECT GOALS

- **Maintain Public Health**
- **Maintain Regulatory Disinfection Compliance**
- **Address referendum to eliminate chloramines**
- **Follow regulatory permitting requirements**
- **Select technology that provides best long term value for City**

# PROJECT STATUS – TASKS COMPLETED TO DATE

- BPW Approved Contract/ Notice To Proceed - *May 8, 2017*
- Plant Site Assessment- *May 12, 2017*
- Bench Scale #1 Samples - *May 12, 2017*
- GAC 1-Yr Simulation Sample - *May 15, 2017*
- Implementation Strategy Memo - *May 25, 2017*
- MDNR Meeting - *May 31, 2017*
- Pilot Aeration Testing- *July 13, 2017*
- Initial Findings Report - *July 20, 2017*
- Bench Scale #2 Samples – *July 25, 2017*
- GAC Pilot System Installed – *August 9, 2017*

# PLANT SITE ASSESSMENT

- Purpose was to review current operation to determine if optimization of any processes could easily be implemented that would significantly minimize DBP formation
- Observations showed plant staff have already implemented a number of optimization activities
  - Adjustments to chlorine feed points to minimize DBP formation
  - Installation of UV Disinfection
  - New powdered activated carbon system
  - Covering filter feed basins
  - Improved coagulation process
- Investigation found no “silver bullet” that would result in significantly lower DBP formation
- Any plant optimization will require additional treatment processes with infrastructure improvements
  - Process evaluation, design, and regulatory approval

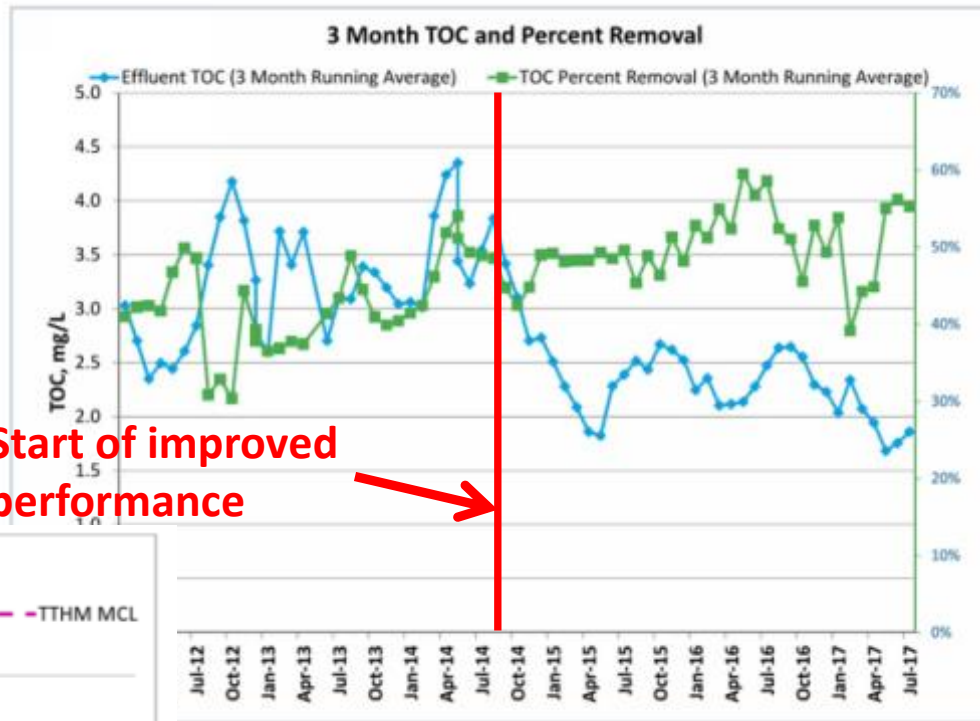


**New  
Covers**

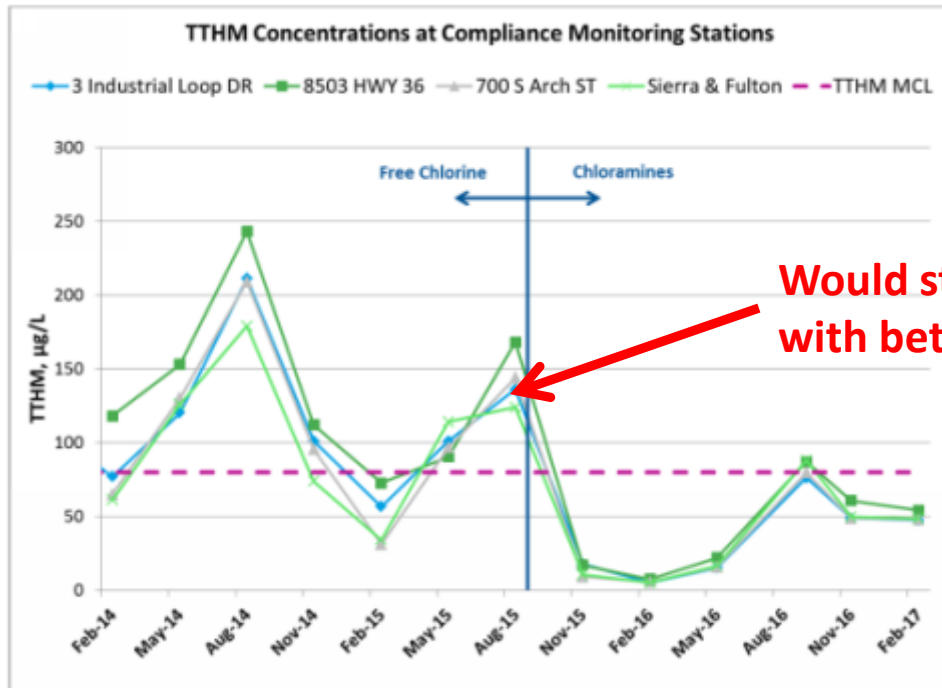
**New PAC  
System**

# HISTORICAL DATA

- Improved TOC removal since late 2014
- TTHMs still exceeded MCLs even with improved performance
- An additional 35-60% removal of TOC required to meet MCL if chloramines aren't used



Start of improved performance



Would still exceed MCL even with better TOC removal

Data shows system improvements required to assure MCLs can be met without chloramines

# MDNR MEETING – MAY 31 2017

- Representatives from B&V, MDNR, and Hannibal
- Goal to outline expected path for implementing modifications to plant
- MDNR committed to assigning engineer for timely responses
- MDNR indicated no post-filter GAC facilities in Missouri
  - Will require additional review/engineering reports for acceptance
  - Pilot testing

# INITIAL FINDINGS REPORT

- **Initial Screening of Alternatives**
  - Coagulation Alternatives
  - Oxidation Alternatives (Chlorine Dioxide, Ozone)
  - Adsorption Alternatives (PAC & GAC)
  - Alternative Approaches (RO, Ion Exchange, Aeration)
- **Distribution System Analysis**
- **Source Water Evaluation**
- **Recommended Alternatives for Further Testing**
  - Enhanced Coagulation
  - Ozone
  - GAC
  - Aeration



# PILOT TESTING

- **Aeration Testing – 7/13/2017**
  - Tested effectiveness of aeration on filter effluent
  - Results showed approx 25% removal of TTHMs
  - No removal of HAA5s
- **GAC Simulation Test #1**
  - Sent 60 gal drum of water to Calgon on 5/15
  - Simulates GAC for 1 yr in 27 day test
  - Awaiting final results
- **GAC Simulation Test #2**
  - Sample to be collected late August
- **GAC Pilot Testing**
  - Pilot Unit Installed 8/9
  - Begin Testing 8/21
  - Testing GAC Filter Caps and Post Filter GAC Vessels
  - Length of Pilot still to be determined





# PROJECT REMAINING TASKS

- Evaluate Results from Bench Scale #2 Samples
- Conduct Second 1-yr GAC Simulation with another manufacturer
- Additional MDNR Discussion
  - Comments on Initial Findings Report
  - Determine required length of GAC pilot
  - Additional permitting requirements
- Submit Draft Preliminary Report – November 2017
  - Develop alternatives with capital and operational cost estimates
  - Provide recommended approach to eliminate chloramines
    - *Recommended plan most likely combination of plant improvements (GAC or Ozone) plus distribution improvements*
- Present final recommendation to Board– December 2017

**Schedule subject to change based on length of pilot and permitting requirements**

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