

Treated Water System Water Quality Study

Briefing for
Quality of Life Committee
June 26, 2006

Purpose

- This briefing is being provided to inform the Quality of Life Committee of the proposed work to
 - Enable DWU to comply with near-term deadlines for recently adopted federal drinking water regulation
 - Investigate the causes and provide recommended solutions to solve red water and low disinfection residual issues within the distribution system
 - Investigate treatment regimes related to blending multiple water variations from four water sources
- Seek a favorable recommendation for award of an engineering services contract to Malcolm Pirnie, Inc at the June 28, 2006 City Council meeting

BACKGROUND

Last comprehensive water quality analysis review was conducted in 1985.
Regulatory review is necessary due to the addition on additional water sources

Current Regulatory Requirements

- DBP1 Rule
 - Submit data on THMs (trihalomethanes) and HAAs (haloacetic acids)
 - Average samples collected each quarter
 - Average all the quarterly averages to compute a running annual average for the system
 - Average must show less than 80 ug/l THMs and 60 ug/l
- Prepare and Publish an Annual Water Quality Report

New Regulatory Requirements

- Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR or LT2)
 - Review Cryptosporidium data from DWU's surface supply reservoirs
 - Prepare sampling plans for new supplies coming on line in the future
 - Submit required materials to USEPA. July 1, 2006 deadline
- Stage 2 Disinfectant/Disinfection By-Products Rule (DBP2)
 - Prepare mapping and standard monitoring plan for sampling of disinfection by-products (THMs and HAAs)
 - Submit required materials to USEPA/TCEQ by October 1, 2006 deadline
 - Conduct disinfection profiling at East Side and Bachman WTPs due to changes in disinfection process
 - Provide recommendations and plan for long-term compliance with DBP2 requirements

Water Quality

- Conduct forensics review of water quality data, operational procedures, and complaint records (emphasis on 2004 events)
- Identify the contributing factors to the red water events, nitrification, and loss of disinfection residual
- Prepare a short-term action plan with recommended techniques to reduce red water and disinfection residual loss as longer term measures are developed

Treatment Process and Water Quality

- Conduct source to tap profiling to characterize influences of seasonal changes on treated water quality
- Identify impact of blending different waters treated at the three water plants on water stability
- Characterize quality of water at customer city metering points
- Evaluate plant operational procedures including process control parameters, chemical feed practices and their influence on treated water quality

Distribution System Performance & Water Quality

- Evaluate pumping, storage and delivery strategies
- Model water storage facilities and identify potential improvements to facility or operations to maintain water stability
- Evaluate water main flushing practices and make recommendations regarding unidirectional flushing program to reduce water usage while maximizing improvements to quality

Detailed Investigation of Red Water Causes

- Develop corrosion test program
- Construct pilot pipe loop unit using actual pipes harvested from distribution system to evaluate corrosion control measures
- Conduct testing
- Provide recommendations for corrosion mitigation measures to reduce red water

Detailed Investigation to Improve Disinfection Stability

- Develop facility test plan and procedures to evaluate nitrification control measures
- Construct nitrification test facility
- Conduct pilot testing
- Conduct system demonstration testing of recommended control measures
- Provide recommended nitrification control measures to stabilize disinfection residual

Cost Summary

- Part 1 – On the June 28, 2006 agenda
 - Regulatory Tasks \$294,000
 - Investigate Past Water Quality Issues \$249,000
 - Source to Tap Profiling of Treated Water \$372,000
 - Treatment and Distribution Assessment \$434,500
 - Corrosion and Nitrification Pilot Testing \$537,000
 - Final Report, Project Management \$353,500
 - Total Part 1 \$2,240,000**
- Part 2 – To be funded at a future date
 - Plant and distribution system optimization evaluation
 - Pilot and demonstration scale testing of DBP and nitrification control measures identified in Part 1
 - Implementation of unidirectional flushing in selected pressure zones
 - Assistance with implementing long-term compliance plan
 - Cost and Rate assessment model for recommended improvements
 - Estimated Cost Part 2 \$1,400,000**

Next Steps

- Schedule (Part 1)

Summer 2006/Spring 2007	Regulatory Compliance
Summer 2006/Fall 2007	Water quality evaluations, corrosion and nitrification tests and recommended solutions

- Future Schedule (Part 2)

Fall 2007/Summer 2009	Water treatment plant assessments and testing to accomplish chemically and biologically stable water
-----------------------	---

Recommendation

**Support award of Engineering Services
Contract to Malcolm Pirnie, Inc
Item 9 - June 28, 2006 Council Agenda**

Discussion