

Water Quality Projects Update



Council Presentation
May 9th, 2017



Water Quality Progress

- **Objective:** Improve and stabilize water quality in the City's water distribution system
 - **Action:** City adopted a holistic approach and has implemented actions to address the following areas:
 - Source
 - Treatment
 - Distribution System
 - **Status:**
 - Significant improvements in the stability/consistency of water quality have been achieved
 - Longer-term CIP projects are currently underway to continue to improve overall water treatment and distribution.
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Source Actions



ACTIONS TAKEN

- 1 Addl. Raw Water Sampling
- 2 Weather/Seasonal Monitoring
- 3 Bromide Evaluation



CURRENT AND FUTURE ACTIONS

- 4 Solids Management (E13052/E16308)
- 5 Alkalinity and pH Evaluation
- 6 Pre-Sedimentation Evaluation
- 7 Raw Water Analyzers
- 8 Nueces River Pump Station Improvements



Solids Management

Objective

- Minimize impact on water quality
- Improve operational flexibility
- Prepare for long term operations



Status

- In Progress
- Anticipated Completion : **Phase-1 by 2018**





Nueces River Raw Water Pump Station

Objective

- Increase reliability of water delivery
- Reduce operational cost
- Ultimate design flow 200 MGD.

Status

- Selection of Engineers: **Complete**
- System Design: **Complete**
- Anticipated Installation: **2018**





Treatment Actions



- | | |
|-----------------------------|--|
| ① Chemical Dosing Locations | ⑧ New Chlorine Dioxide System |
| ② Analyzer Replacement | ⑨ Coagulant Evaluation |
| ③ Mixing Enhancements | ⑩ Chlorine System Improvements |
| ④ Flow Pacing | ⑪ Solids Removal |
| ⑤ Filter Flow Improvements | ⑫ Pilot Plant System and Testing |
| ⑥ Process Target Changes | ⑬ Raw Water and Chem Feed Improvements (E12211/8643) |
| ⑦ Training and Procedures | |



New Chlorine Dioxide System



Objective

- Improve control of nitrification
- Reduce chlorine demand
- Reduce Disinfection Byproduct Formation

Status

- Exception request from TCEQ: **Approved**
- Design documents to TCEQ: **Complete**
- Final approval of design by TCEQ: **Complete**
- Commissioned: April 17, 2017



Chlorine System Improvements



Objective

- Increase Reliability
- Improve Safety of Operations
- Optimize System Control

Status

- Initial System Assessment: **Complete**
- Selection of Engineer: **Complete**
- Anticipated Completion : TBD



Raw Water and Chemical Feed Improvements



Objective

- Update Chemical Feed Equipment
- Improve Chemical Mixing
- Optimize System Performance

Status

- Selection of Engineers: **Complete**
- System Design: **30% Complete**
- Anticipated Installation: **2018**



Pilot Plant System and Testing



Objective

- Evaluate Changing Water Quality
- Test Alternative Treatment Strategies
- Optimize System Performance



Status

- System Design: **Complete**
- Pilot Construction: **Pending**
- Anticipated Installation: August 2017



Distribution System Actions

ACTIONS TAKEN:

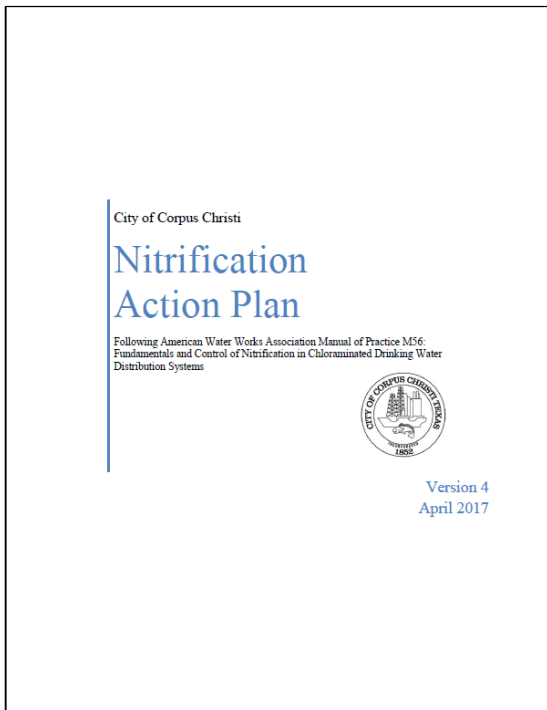
- Cleaned all storage tanks (annually or as needed)
- Evaluated and automated chlorine booster stations
- Updated Nitrification Action Plan (August 2016 and April 2017)
- Evaluated and changed current Conversion Procedures
- Modified distribution system operations
- Tank mixing system Flour Bluff EST

IN PROGRESS:

- Tank sampling and inspections (tanks sampled twice/week)
- Navigation Pump Station Monochlor Tank Shark Pilot study
- Back-up power for Navigation and Staples Pump Stations
- Additional pumps at Staples Pump Station
- New analyzers at Staples and Sand Dollar Pump Stations



Updated Nitrification Action Plan



Objective

- More Conservative Treatment Goals
- Revised Action Levels
- Refined Monitoring Plan

Status

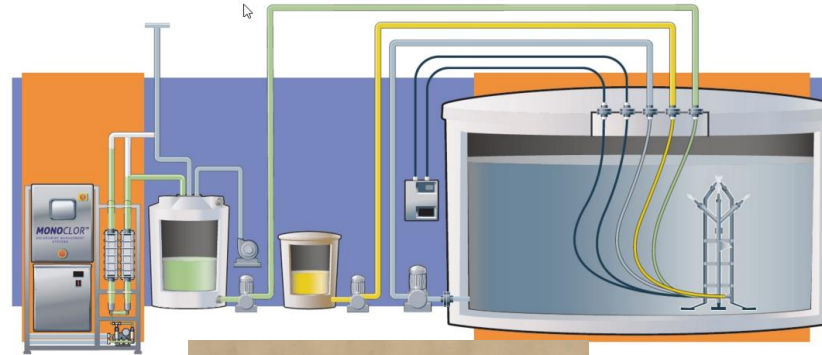
- Document Revisions: **Complete August 2016 and April 2017**
- New Target Implementation: **Complete**
- Monitoring and Site Actions: **On-going**



Tank Mixing and Operation

Objective

- Increase Turnover
- Reduce Water Age
- Improve Chlorine Residual Stability



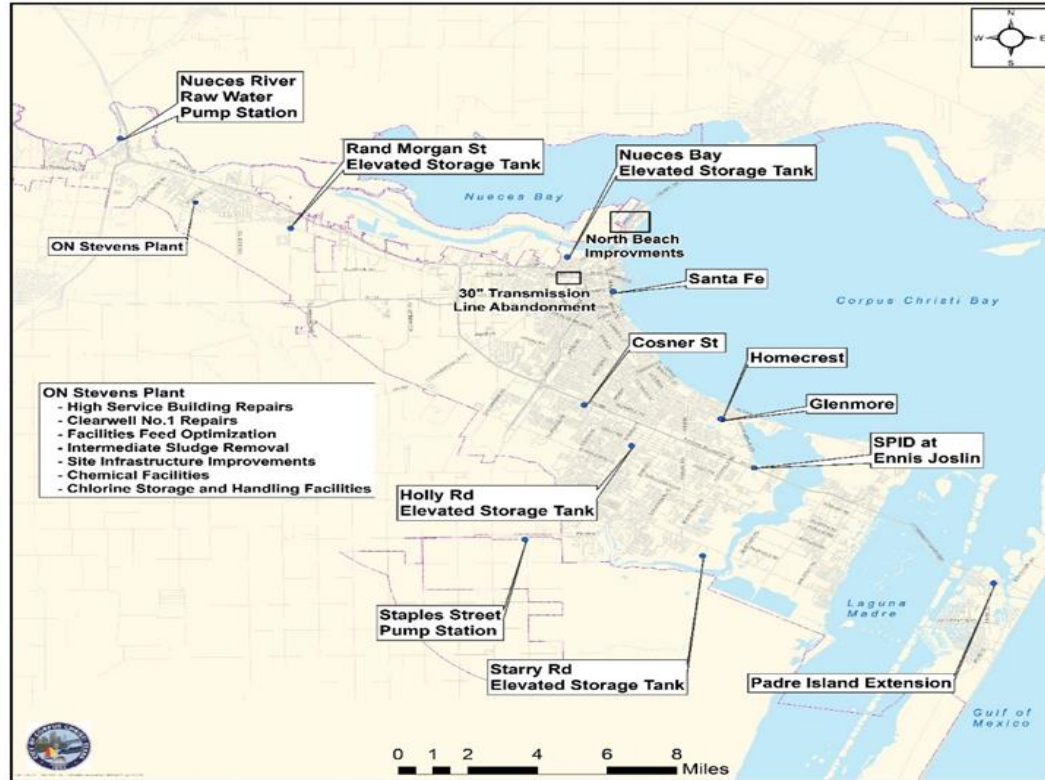
Status

- Operational Changes: Complete
- New Mixer Testing: On-going
- Anticipated Start-up: May 2017





Current Capital Improvement Plan





Current Capital Improvement Plan (CIP)

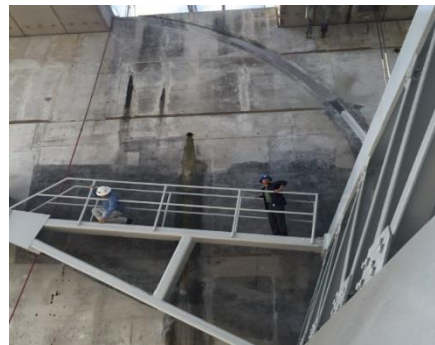
Project Name	Cost (\$M)	Start	Completion
Nueces River Raw Water Pump Station	16.8	Sep 2014	Jul 2018
ON Stevens Chlorine Storage and Handling Facilities Improvements	9.0	Mar 2017	Feb 2019
ON Stevens Chemical Facilities (Alum, Polymer and LAS) Replacement	16.7	May 2016	Jan 2020
ONSWTP Raw Water Influent Improvements	25.0	May 2016	Jan 2020
ONSWTP Interim Sludge Management Improvements	6.5	May 2016	Sep 2017
ONSWTP Fluoride Feed System Improvement	1.1	Oct 2015	Jul 2017
Alternative Capacity Power Generation (ACR Phase 1)	1.2	May 2015	Sep 2017
Staples Street Pump Stations Phase 2 - Third and Forth Pumps	3.3	May 2015	Jun 2017
Elevated Water Storage Tanks (ACR Implementation Phase 2)	12.5	Jun 2014	Feb 2018
Elevated Water Storage Tanks (ACR Implementation Phase 3)	18.0	Oct 2016	Nov 2020

	Source
	Treatment
	Distribution System



Water System Projects in Action

- Choke Canyon Spillway Gates Repair Project





Water System Projects in Action

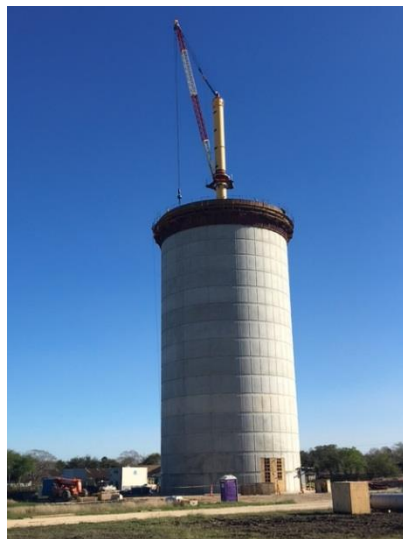
- Sludge Removal-
Phase I
(Lagoon 7)





Water System Projects in Action

- New Elevated Storage Tanks at Holly Road and Rand Morgan
- Elevated Water Storage Tanks (ACR Implementation Phase 2)





Water System Projects in Action

- Construction of High Service#3 at O.N. Stevens Water Treatment Plant
- Will assist in increasing capacity to 200 MGD





Summary of Current Status

- City has implemented source, treatment, and distribution system actions to address water quality concerns.
- City has seen significant improvements in the stability of water quality throughout the distribution system as a result of these actions.
- City has several long-term projects that are currently underway to modernize the water treatment plant and distribution system.



Current Status of Backflow Items

Commercial Backflow Devices:

- City has executed service contracts with six contractors to test, repair and/or replace delinquent backflow devices
- 90 day period to complete approximately 1,000 devices

Industrial Backflow Devices:

- 78 Notices were initially sent to properties with Industrial Agreements
- 12 Complete responses, 36 responses in progress, 30 whom we have contacted directly.
- April 21, sent certified letters to the 30 industrial customers.



Current Status of Backflow Items

Private Water Wells - Backflow Devices:

- Identified registered Waterwells
- Cross referenced wells with city water service
- Preparing letter to send to water well owners requesting compliance
- Estimate letters going out to owners by mid-May