

Council Presentation

on the

Judique Water System

November 15th, 2018

Alan Benninger

Supervisor, Water & Wastewater Operations



Judique Water System

- Service to Judique Residents, Businesses, Visitors and for Fire Protection
 - Volume: 110,000 Litres/day
- Water Source – Rory Brook
 - Municipality's Only Remaining 'Surface' Water Source



Municipal Surface Water Treatment

- Nova Scotia Treatment Standards for Municipal Drinking Water Systems (2012)
 - Engineered Filtration
 - Minimum of 2 Filters
 - Continuous Turbidity Monitoring for Each Filter
 - Must Meet Turbidity Limits

Key Impacts to Surface Water

- Environmental Impacts in Raw Water Quality
 - Heavy Rainfall Events
 - Run-off from Activities in the Watershed
 - Plant Matter Degradation
 - Human, Animal, Bird Inputs/Activities

Recent Process Failures & Challenges

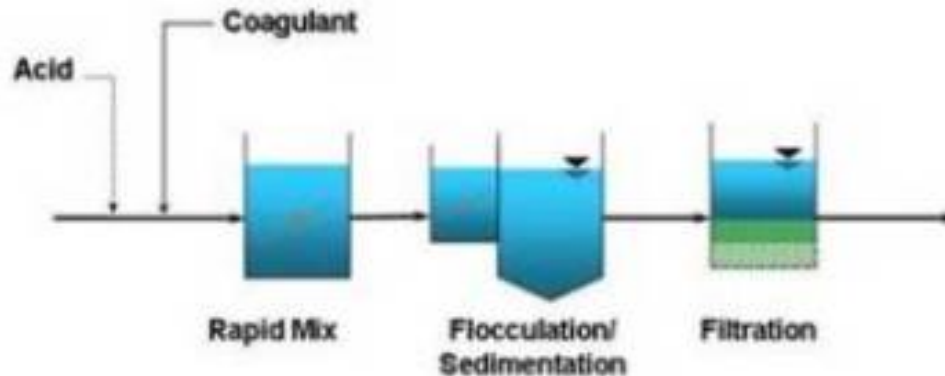
- Chemical Feed Systems
 - Soda Ash Failure on October 21st, 2018
 - Turbidity went above 1.0 – Boil Advisory Required
 - PAC Failure on October 30th, 2018
 - Another exceedance – Advisory Remains
 - 1 of 2 Filters Not Currently Configured to Standards
 - Including Filter-to-Waste Turbidity Monitoring

Process Failures & Challenges

- Unable to Achieve Less Than 0.2 NTU More Than 95% of the Time – Filtered Water
- Elevated Turbidity Levels in Rory Brook
- No Automatic [Switch-Over Capability](#) for Chemical Feed Systems or 2nd Operational [Filter](#)
- Adequate Staff/Time for On-Site Process Control

Current Challenge – Meeting Individual Filter Turbidity Requirements

- **Shall** be less than 0.2 NTU (Nephelometric Turbidity Units) at least 95% of the time
- **Shall not** exceed 1.0 NTU at any time
- Filter-to-Waste **until below** 0.2 NTU



Work Performed Under Advisory

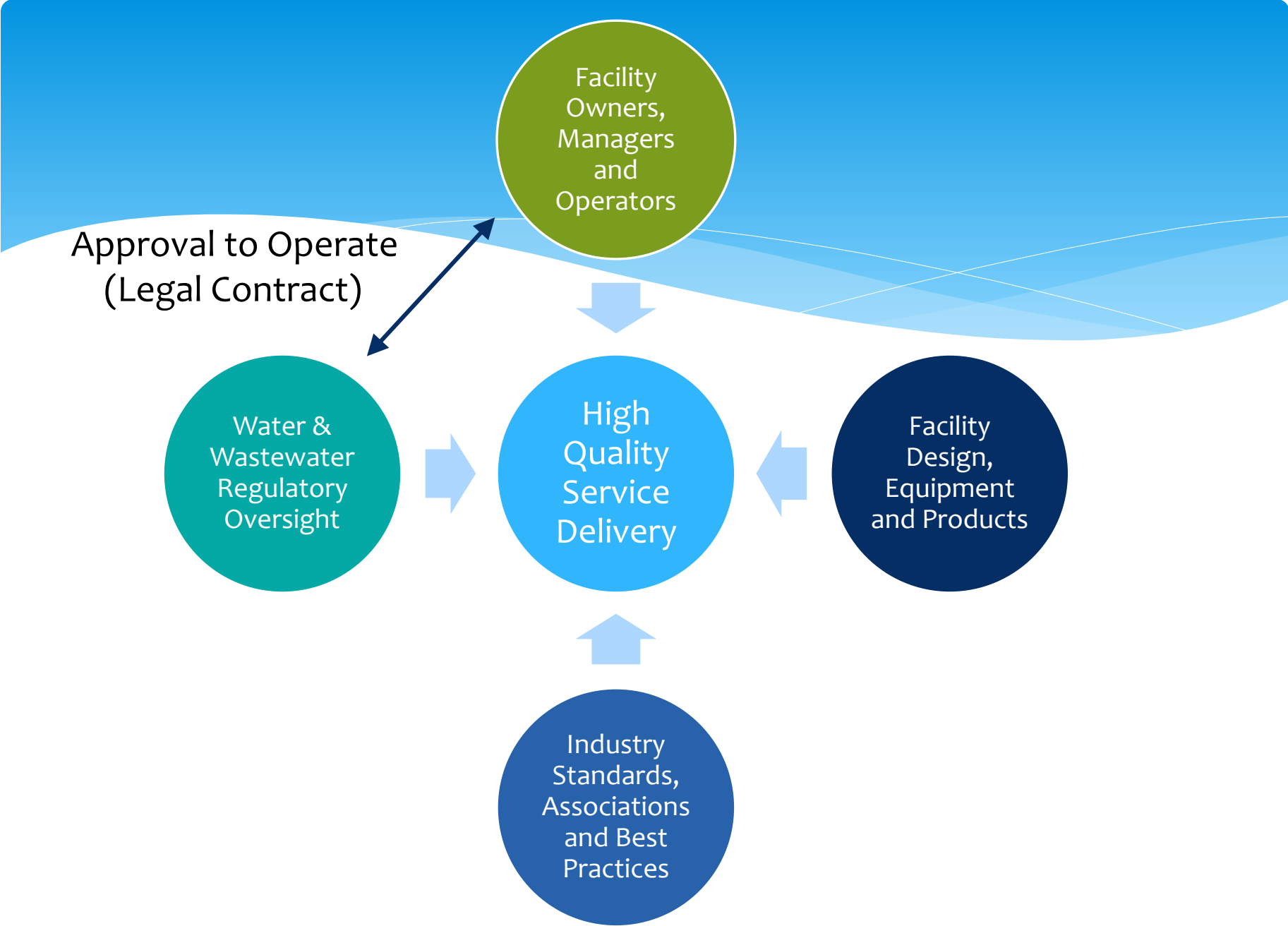
- Repaired Chemical Feed System Failures
- Enhanced Turbidity and Chlorine Residual Monitoring
- Performed Calibration Verification on Filter Turbidity Meter
- Identified Gaps in Operational Oversight

Boil Water Advisory Status

- Boil Advisory Removal Request
 - Sent to NSE
 - Friday, November 9th, 2018
 - Removal Confirmed
 - Tuesday, November 13th, 2018
- Length of Time Under Advisory
 - 23 Days

Drinking Water Events of Note

- **Milwaukee, 1993**
 - Cryptosporidium – expected cause (cattle) – passed through filtration process; 403,000 illnesses; approximately 100 deaths
- **Walkerton, 2000**
 - E-coli, Campylobacter jejuni – contaminated well – disinfection process failure; 2000 illnesses; 7 deaths
- **North Battleford, 2001**
 - Cryptosporidium – expected cause – passed through filtration process; 7,500 illnesses; 0 deaths



Facility Owners, Managers and Operators

Approval to Operate (Legal Contract)

Water & Wastewater Regulatory Oversight

High Quality Service Delivery

Facility Design, Equipment and Products

Industry Standards, Associations and Best Practices

Path Forward & Options

- Bring Treatment Process Up to Standard
 - Assessment: Making Both Filters Fully Operational
 - Filter to Waste; Flow Configuration; Duplex Chemical Feed Systems
- Improve and Enhance Operational Oversight
 - Monitoring; Detailed SOPs; Improved Chemical Feed Systems; Fail-Safe Approaches and QA/QC program
- Implement Use of New Storage Facility
- Assess for Future: Groundwater supply or Upgrade Current Facility
- Implement an Improved Communications Process

Questions