Achieving Best in Class Performance for Collection Systems

The Winston-Salem Program Management Approach
Contents

- Background .............................................................................. Where are we and How did we get here?
- Initial “Quick Assessment” .......................................................... Where do we want to be?
- Fast Start & Strategic Planning ...................................................... How do we get to where we want to be?
- Year 1 -What was planned and what was accomplished ......................... And go!
- Year 2 – What’s next?
Background

- It all starts with a request from EPA
  - 308 data request letter
  - Data scrubbing and response assistance
  - The Results - a LOV letter

- Rapid Assessment of Opportunities
  - Master plan review
  - Operational gap analysis
    - Interviews
    - Document Review
    - Report out

- City of Winston-Salem decision to avoid Compliance Action

- Transition to the CSIP format

Rapid Assessment of Opportunities

- Master plan review
- Operational gap analysis
  - Interviews
  - Document Review
  - Report out

City of Winston-Salem decision to avoid Compliance Action

Transition to the CSIP format
CSIP Program “Quick Start” Approach

- Continuation of Rapid Assessment
  - Designed to identify immediate ROI activities
    - Assess the state of the collection system
    - Near Term Condition
    - Discover Known Operational issues
    - Develop an understanding of IT related issues
  - Key Performance Indicators Concurrent with Strategic Planning process
    - Perform a SWOC or “WS”-OC
    - Incorporate previous Master Planning and PAS 55 Assessments
    - Review known KPI’s
Mission and Vision

Vision
We will be a top-performing utility supported by a trained, knowledgeable, and proactive staff, dependable equipment, efficient processes, effective information management, and fair and affordable rates.

Mission
To improve collection and conveyance of wastewater while protecting the environment and community we serve by complying with all regulatory requirements.
Overarching Concepts of the Program

- Ownership and Accountability
- Team Integration
- Knowledge Transfer
- Operational Optimization
- Condition and Capacity Assessment
- Design and Delivery of Construction Solutions
Quick Start Components (Accomplishments)

- Sewer Cleaning Data Collection (SOPs)
- Sewer Cleaning Frequency Optimization (Tools)
  - Dynamic Risk based model
  - Tools and training
- Identify and Implement right level of cleaning effort
Quick Start Components (Accomplishments)

- Near Term Condition Assessment Support
  - Desk Top Assessment
  - Develop a 4S sampling approach
  - Prioritize Repairs
  - Inform Capital Budgets
Quick Start Components (Accomplishments)

- SSO Response
  - Training on data collection
  - Updated SOP's
  - SSO Review Meeting Enhancements
  - Root Cause Determination Approach

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SSO Event Review Checklist

<table>
<thead>
<tr>
<th>Event Address: NB 421 &amp; Silas Creek PW</th>
<th>SR #: 1115953</th>
<th>Confirmed Problem Asset ID #: 1303368</th>
<th>Discharge</th>
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<tbody>
<tr>
<td>Response Time (Hr):</td>
<td>Duration (Hr):</td>
<td>.25</td>
<td>Volume (gallons):</td>
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<tr>
<td>Date of Event: 8/2/2017</td>
<td>Date of Review Meeting: 8/10/2017</td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Responders: Manns, Vincent</td>
<td>Reviewers:</td>
<td>Kim Duncan, Dustin Stephens, Will Beck, Elizabeth Lowell, Dave Saun, Palmatier</td>
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<tr>
<td>Potential for Intent to Enforce? NO □</td>
<td>YES □</td>
<td>Private? NO □</td>
<td></td>
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</table>

Summary of Actions Performed

Customer reported sewer leaking in the woods. We washed the main line to get it unstopped. Got the CTTV’d, and then wash the main line and then get it CCTV’d.

898671 – CCTV Inspection – Closed – 8/2/17
898672 – Sewer Overflow Follow-up – Closed – 8/2/17
898673 – Sewer Main Stopped – Closed – 8/2/17
Quick Start Components (Accomplishments)

- Deep Dive Operational Gap Assessment
  - Develop an Optimization Plan (5 year Road map) Based on gaps identified
    - Management
    - Condition and Capacity Assessment
    - Cleaning Optimization, Root Control, and Easement Management
    - Construction and Repair
    - Lift Station Operations
    - FOG Programs
    - SSO Response
    - Planning and Scheduling
    - Information Systems Support
    - Staff Augmentation
<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
</table>

**Legend:**
- I.EA/CI: Increase Sales
- I.EA/CI: Increase Sales
- I.EA/CI: Increase Sales
- I.EA/CI: Increase Sales
- I.EA/CI: Increase Sales
Overarching Concepts

- Ownership and Accountability (Through Chartering)
  - Agree on Purpose of the program and each initiative
  - Agree on Roles of participants
  - Develop the Mission and Vision statements
  - Integrate with strategic planning
  - Integrate Consulting Knowledge with Operational Knowledge
Overarching Concepts

Integration and Knowledge Transfer (Ownership and Accountability)

- Road Map Initiatives have
  - Client Lead
  - Client Vice-Lead
  - Client Champion
  - Consultant Lead
  - Milestones
  - Challenges and mitigations

- Goals
  - Get the right staff in the right place with the right tools
  - Working the consultant out of a job

A long term work plan and staffing forecast optimizes allocation of responsibilities to CCUC and the HDR Team.
Overarching Concepts

- Operational Optimization
  - Follow the road map
  - Change Course when Necessary
    - Adapt the plan to the things discovered along the way
      » “Definition of an SSO”
      » Tying back to Strategic Planning
        - Strategic Communications
        - Leadership Training
Overarching Concepts

- Condition and Capacity Assessment
  - 4S- Statistically Significant Sample Set
  - Field Verification and Micro Calibration
  - Optimization of Capital Dollars
  - Red Flags!!!!!
Overarching Concepts

- Design and Delivery of Construction Solutions
  - IDIQ (~45 defects under review or construction as we speak)
  - Progressive Design Build
  - Traditional SSES and Repair
3 The Success

In fiscal year 2017, we recorded 4.9 SSOs per 100 miles of pipe. That's the lowest number of SSOs ever.

One of our primary focuses this year was to bring down SSOs. Not only have we seen a 25 percent drop from last year, but this year has been our lowest year ever.

We focused on the problems we could solve and reduced operations and maintenance related SSOs.

To effectively reduce SSOs, we are focused on what causes those SSOs in the first place. O&M-related SSOs are our largest cause of SSOs; as such, we’ve focused on what we can do to address these. This has meant more and better sewer pipe cleaning to remove accumulations of roots, grease, and debris in the system as well as a continued focus on restaurant inspections to reduce contributions of grease to our system.

As we increase our sewer line cleaning production, we will continue to reduce the number of SSOs caused by O&M issues.
Year 1 Outcomes – KPI’s

Year-to-Date SSOs per 100 Miles of Pipe

The number of SSO occurrences declined from FY2016 and FY2015 by 25% and 38% respectively. This reduction demonstrates our progress in achieving our long-term goals. As we look toward FY2018, we will continue to emphasize preventative maintenance and begin to focus on other causes of SSOs to help this trend continue.

Planned and Reactive Work

It is a program goal to shift from being more reactive to proactive in maintaining the collection system. Overall, FY2017 saw a positive trend in proactive cleaning. In FY2018, a focus on training, equipment, and operating practices for crews will continue to support this trend.

Collection System Improvement Program

Cleaning Productivity vs. Goals

To date, we continue to remain ahead of schedule on our permit cleaning measurement of 10% of the system per year and this year is the outreach we have come to achieving our initial goal of 20%. In FY2017, we began a proactive, scheduled cleaning program, which establishes a new, even more aggressive goal. In FY2018 initiatives focusing on cleaning effectiveness and a review of collection maintenance scores before inventory is expected to increase crew productivity.

SSOs by Aggregated Cause

Causes of SSOs are grouped into larger categories based on remediation measures. The success of the cleaning and rehabilitation programs will be measured by the reductions in SSOs seen in these aggregated categories. Year 1 of the CSP focused heavily on C&M-related SSOs, which saw a decline of nearly 25% since last year.
Year 2 Outcomes – KPI’s

Our SSO performance in FY2017 declined significantly from the previous two years. This reduction demonstrates our progress in achieving our long-term goals. As FY2018 begins, we are seeing this trend continue. We will continue to emphasize preventative maintenance and begin to focus on in-house productivity, capital planning and capacity assessment, and other causes of SSOs to help this trend continue.
Year 2 Upcoming Goals and Objectives

- Capital Planning
- SSO progress to Date
- Cleaning to date
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Presenters</th>
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<tbody>
<tr>
<td>Monday @ 9:30</td>
<td>Policy and Management</td>
<td>Winston-Salem CSIP- Achieving Best in Class Performance Through an Integrated Team program Management Approach</td>
<td>David Saunders, Courtney Driver, Damon Dequenne</td>
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<tr>
<td>Monday @ 10:05</td>
<td>Policy and Management</td>
<td>Statistically Significant Sample Set: A Streamlined Approach to Condition Assessment for the City/County Utilities Commission</td>
<td>Erich Scherch, Alex Palmatier, Michael Stover</td>
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<td>Monday @ 10:40</td>
<td>Policy and Management</td>
<td>To Build or not to Build-: Field Verification Methods for Capital Planning</td>
<td>Tina Whitfield, Michael Stover</td>
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<td>Monday @ 1:45</td>
<td>Collection and Distribution</td>
<td>Setting Sewer Maintenance Crews up for Success</td>
<td>HDR Subcontractors for W-S CSIP Steve Tilson, Laurie Chase, Kim Duncan</td>
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<tr>
<td>Monday @ 4:30</td>
<td>Special Topics</td>
<td>Change Management and the I of the Pyramid</td>
<td>HDR Subcontractors for W-S CSIP John Evans (Blue Cypress) and Damon Dequenne</td>
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<tr>
<td>Tuesday @ 10:45</td>
<td>Special Topics</td>
<td>The Project Delivery Side of the Winston-Salem Collection System Improvement Program: Using Progressive Design Build to Deliver Capital Projects</td>
<td>Chris Brown</td>
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<td>Tuesday @ 2:15</td>
<td>Collection and Distribution</td>
<td>Risk Based Predictive maintenance Solutions for Cleaning Sewer Mains</td>
<td>Alex Palmatier, Kim Duncan</td>
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<tr>
<td>Tuesday @ 3:55</td>
<td>Special Topics</td>
<td>To Know or not to Know- An actionable Approach to Performance Management</td>
<td>Elizabeth Lowell, Mike Koivisto</td>
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