Sanitary Sewer Overflow Initiative Benefits
North Central Texas Council of Governments Environment & Development Department
August 21, 2017
Please welcome our first speaker:

Mary Gugliuzza
Fort Worth Water Department
Fort Worth’s SSOI Program

Mary Gugliuzza, Media Relations and Communications Coordinator
NCTCOG
August 21, 2017
Today’s Presentation

• System Overview
• Regulatory History
• Fort Worth SSOI Program
  • System assessment and maintenance
  • CIP
  • Public Education
Fort Worth System

• 1 treatment plant - Village Creek Water Reclamation Facility
  • Permitted wastewater treatment capacity (MGD) = 166
  • 124.11 MG average daily wastewater treated in FY2016*
• 353.19 square miles in city limits
• ETJ – 302.4 square miles
• 23 wholesale customers
• Over 1.1 million population served *

* Includes Wholesale Customers
Wastewater Collection System

- 3,313 miles in the collection system
- 1 ¼” - 108” (Gravity/Force)
- 9 Major Basins
- 167 Sub-Basins
- 53,783 Manholes and junction chambers
Fort Worth’s Regulatory History

  • Total Estimated Cost of Wet Weather Program: $215.7M

• TCEQ Sanitary Sewer Overflow Initiative (2007-Current)
  • Annual Reporting – Ten Year Program (Voluntary)
  • Documentation of maintenance activities and SSOs
  • Renewal/Replacement and Capacity Improvements
  • Approx. $170M in O&M and Capital Costs reported (FY 08-15)
EPA/DOJ Enforcement Actions

• Houston and Corpus Christi – In Negotiation with DOJ

• Fort Smith, Arkansas - 2015
  ✓ $300,000 Civil Penalty
  ✓ $400,000 spending required to repair and replace leaking private laterals for low-income residential homeowners.
  ✓ Implement 12 year corrective action plan estimated to cost $255 million

• Shreveport - 2013
  ✓ $650,000 civil penalty
  ✓ Required implementation Capacity, Management, Operation and Maintenance Program (CMOM)

• San Antonio - 2013
  ✓ $2.6 million civil penalty
  ✓ 10 year corrective action plan to reduce SSOs ($1.1B – 2025 deadline)
EPA Region SSO Mitigation Project
2016 & 2017

• Compliance Determinations (maintenance, SSOs, capacity)
• Federal Enforcement Actions (if necessary)
Fort Worth Program

• Fort Worth focuses on maintenance, renewal, and replacement of deteriorating and capacity challenged infrastructure

• Fort Worth committed funds for infrastructure rather than penalties

• Team approach

  • Engineering
  • Field Operations
  • Pretreatment

  • Public Education
  • Regulatory
  • Laboratory

  • Village Creek WRF
Key Components

1. Wastewater Master Plan
2. Sewer Asset Management
3. First Responders
4. PM / ICAP (Data)
5. Root Eradication
6. Repairs and Renewals (CIP)
7. FOG
Preventative Maintenance Cleaning

• Clean sewer lines of entire collection system on a pre-defined cycle (At present trying to clean entire system in 10-year cycle)
Material Removed In Cubic Yards In Last Five Years

<table>
<thead>
<tr>
<th>Year</th>
<th>Material Removed (Cubic Yards)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY-13</td>
<td>605</td>
</tr>
<tr>
<td>FY-14</td>
<td>665</td>
</tr>
<tr>
<td>FY-15</td>
<td>549</td>
</tr>
<tr>
<td>FY-16</td>
<td>602</td>
</tr>
<tr>
<td>FY-17</td>
<td>574</td>
</tr>
</tbody>
</table>
Preventative Maintenance CCTV Inspection

- Televise immediately after overflow or stop is controlled
- Determine cause
### Structural rankings based on defects

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Structural failure has occurred and/or line has collapsed. Pipe has deteriorated beyond the ability to intermediate repairs. Replace/rehabilitate immediately.</td>
</tr>
<tr>
<td>4</td>
<td>Structure failure identified. Failure imminent and/or partial collapse. Spot repairs difficult due to condition/deterioration/age. Pipe could possibly be maintained for 12 to 24 months (+/-)</td>
</tr>
<tr>
<td>3</td>
<td>Pipe is in poor condition. Major structural defects observed. Estimated time before failure is 2 to 6 years. (+/-)</td>
</tr>
<tr>
<td>2</td>
<td>Pipe is in fair condition with minor to moderate structural defects documented. Estimated time before failure is 6 to 10 years. (+/-)</td>
</tr>
<tr>
<td>1</td>
<td>Pipe is in good/excellent condition. Estimated time before failure is greater than 10 years.</td>
</tr>
</tbody>
</table>
Interceptor Condition Assessment Program
Sewer Stops (First Responders)

• Respond to customer concerns and complaints
• Trace out service lateral and locate city side clean outs
• Routine degrease, root-cut and manhole inspections
SSO Response Procedures

• Introduction (Intent and Responsibilities)
• Reporting Responsibilities
• Normal SSO Reporting Procedures
• Reporting Schedules
• Internal Procedures and Notification
• Severe Rain Event Reporting

Appendix

• Notice of Spill from a Wastewater Facility
• Important Contact Information
• Water Quality Noncompliance Notification
• Flow Estimation Chart
• Public Education Coordinator Process
• TCEQ Chapter 319
Flow Estimation Chart
Monitoring Equipment

- **All Sensors** (12)
- **Alerts** (5)
- **Alarms** (0)
- ** Archived** (16)

**APPLICATIONS**
- **Collection Level** (12)
- **Stock Location** (12)

**LOCATIONS**
- 1420 Elva Warren ID 26929
- 1604 Rogers Rd ID 10592
- 2104 Stratford Park ID 32211
- 2201 Burleson Retta Rd ID 46392
- 2600 Cherry Ln ID 20120
- CRITICAL 5317 Mansfield Hwy ID
- CRITICAL 1600 Cooks Ln ID 5911
- CRITICAL 209 W 8th St ID 22442
- CRITICAL 4370 Sahara PI ID 446
- CRITICAL 6300 Randol Mill Rd ID
- CRITICAL 6400 Overton Ridge ID
- Lake Country Golf Course ID 177
Getting to the root cause

• Every SSO, stoppage and backup is investigated
• Pretreatment staff are notified when problem is traced to a business
• Grease from apartments is big challenge
Capital Improvement Plan

- 2017 Capital Plan Includes $169M in projects
  - About $52 million devoted to construction of large diameter wastewater collector mains
  - Includes collector main projects in Big Fossil, Marine Creek, West Fork, and Sycamore Creek basins
  - Significant effort to increase capacity within the Village Creek basin and reduce wet weather overflows
# 12 Month Look ahead – Large CIP Projects

<table>
<thead>
<tr>
<th>CIP Project Description</th>
<th>Construction Estimate</th>
<th>Bidding Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Big Fossil Parallel Relief Wastewater Main</td>
<td>$7M</td>
<td>Late Fall 2017</td>
</tr>
<tr>
<td>Eagle Mountain to Big Fossil Wastewater Diversion</td>
<td>$7M</td>
<td>Winter 2017</td>
</tr>
<tr>
<td>Village Creek Sludge Storage Facility</td>
<td>$11M</td>
<td>Winter 2017</td>
</tr>
<tr>
<td>West Fork 96” Diameter Sewer Line Rehabilitation</td>
<td>$8M</td>
<td>Winter 2017</td>
</tr>
</tbody>
</table>
Village Creek Collection System SSOs 2011 - 2016

downstream of Burleson Meter Station

near Lake Arlington
Rock GLO/Crowley Sewer Lines

Oversizing Cost Participation with Developments

New Wastewater Collector Main Through Crowley
Upper Village Creek Sewer Lines

Point "A" to Point "C"
Approx. 13,000 LF Parallel Relief Sewer Main
Fort Worth and Burleson
Cost Participation

Point "B" to Point "C"
Approx. 18,000 LF Parallel Relief Sewer Main
Fort Worth and Crowley
Cost Participation

Point "B" Existing Crowley Meter Station

Point "C" Confluence of Burleson, Crowley, and Fort Worth Parallel Relief Sewer Lines

Point "C" to Point "D"
Approx. 24,000 LF Parallel Relief Sewer Main, Fort Worth, Burleson, and Crowley
Cost Participation

Point "D", End of Project, Downstream limits of capital contributions for parallel relief line from Burleson and Crowley

EXHIBIT "A" - Village Creek Parallel Relief Lines
Middle Village Creek Sewer Lines

Lower Village Creek Improvements funded with SRF Loan with 15% Loan Forgiveness

Lift Station and Force Main around Lake Arlington Impact Fee Funding Eligible
## VC Basin Construction Costs

<table>
<thead>
<tr>
<th>CIP Project Description</th>
<th>Construction Estimate</th>
<th>Construction Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parallel Relief Sewer Through Crowley</td>
<td>$12M</td>
<td>2017 – 2018</td>
</tr>
<tr>
<td>Parallel Relief Sewer Downstream of Crowley</td>
<td>$10M</td>
<td>2017 – 2018</td>
</tr>
<tr>
<td>Parallel Relief Sewer Downstream of Burleson</td>
<td>$7M</td>
<td>2017 – 2018</td>
</tr>
<tr>
<td>VC Parallel Relief Sewer to Everman Connection</td>
<td>$23M</td>
<td>2017 – 2018</td>
</tr>
<tr>
<td>Middle Village Creek Sewer Line Improvements</td>
<td>$7M</td>
<td>2017 – 2018</td>
</tr>
<tr>
<td>Lake Arlington LS and FM</td>
<td>$23M</td>
<td>2019 – 2020</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$82M</strong></td>
<td></td>
</tr>
</tbody>
</table>
Peak Flow Basin Construction
Peak Flow Basin Construction
Outreach

• Bill inserts
• Bill messages
• Booths at events

• Partner with North Central Texas Council of Governments through FOG initiative
Just as fat, oil and grease can cause blockages in your arteries, they can do the same to sewer pipes.

Garbage disposals and detergents that dissolve grease may just pass the problem down the pipe.

Grease comes from meat, salad dressing, butter, margarine, shortening, cooking oils, lard, dairy products, baked goods, food scraps and many other common delights.

Call us first

If you do experience a sewer back up in your home, call the Fort Worth Water Department before calling a plumber.

817-392-4477

A crew will make sure the blockage is not in the city-owned sewer main. You will be notified of what is found and whether you need to call a plumber.

Ways you can help

✔ Always use a paper towel or spatula to thoroughly scrape food scraps and residue from plates and pans into the garbage before washing.

✔ Let melted oils used for cooking solidify in a container on the counter or in the refrigerator.

✔ Take all used solid and liquid cooking oil to the free Environmental Collection Center. Used grease can be recycled into other products. For information, call 817-392-1234.

✗ Never pour oil and grease down the sink or any household drain.

✗ Never pour oil and grease down a storm drain.
Public Notification

• TAC Chapter 319 - General Regulations Incorporated Into Permits
• Subchapter C: Public Notice Of Spills Or Accidental Discharges From Wastewater Facilities Owned Or Operated By Local Governments
• 319.301 - 319.303
• Originally Effective - Dec. 30, 1999
• Revisions Effective - March 31, 2011
Sanitary Sewer Overflows per 100 Miles of Pipe

GOAL = 3.0 to 4.5 SSO PER 100 MILES
Thank you

Mary Gugliuzza
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City of Fort Worth Water Department
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817-392-8253
Please welcome our second speaker:

Scott Hoelzle
North Texas Municipal Water District
“Regional Service Through Unity … Meeting our Region’s Needs Today and Tomorrow”
WASTEWATER SYSTEM

Regional WWTP/Capacity
- Wilson Creek WWTP 56.00 MGD
- Rowlett Creek WWTP 24.00 MGD
- South Mesquite WWTP 33.00 MGD
- Floyd Branch WWTP 4.75 MGD
  TOTAL 118 MGD

Sewer System WWTPs
- Total Number of Plants in Operation: 10
- Total Sewer System Treatment Capacity: 34 MGD

Total Wastewater Treatment Capacity: 152 MGD
A. Upper East Fork Interceptor System

B. Muddy Creek WWTP Conveyance System

C. South Mesquite Regional WWTP Conveyance System

D. Sabine Creek WWTP Conveyance System
RELIABILITY OF OUR REGION’S WASTEWATER SYSTEMS IS CRITICAL TO:

• Safeguard public health
• Protect the environment
• Enable economic development

Many parts of the country, including our region, experience sanitary sewer overflows

Common Causes
• Aging pipes
• Grease clogs
• Inadequate capacity
• Poor construction
SSOI AND CMOM ARE USED TO ADDRESS THESE CAUSES

**SSOI**

- SSOI Reporting
  - Corrective Actions
  - Overflow Emergency Response
- O&M Activities
  - Inspections / Cleanings
- System Evaluation
  - Flow Monitoring
  - Condition assessment
- New and Rehab Projects
- Education and Outreach
- Fats, Oils, & Grease Plan
- Milestone Tracking

**CMOM**

- Capacity
  - Flow Monitoring
  - Hydraulic Modeling
- Management
  - Staff Training
  - Fats, Oils, & Grease Plan
- Operations
  - Flow metering
  - Overflow Emergency Response
- Maintenance
  - Maintenance management system
  - Condition assessment
  - Sewer cleaning
EPA NATIONAL ENFORCEMENT INITIATIVE: WASTEWATER SYSTEM OVERFLOWS

EPA NATIONAL ENFORCEMENT INITIATIVE: WASTEWATER SYSTEM OVERFLOWS

Cumulative Progress Toward Addressing Large Sanitary Sewer Systems with Untreated Sewage Overflows

- Universe ≈ 1103
- Goal: address all 1103 systems by end of FY 2016

Fiscal Year

- Work Done from 1998-2012: 780 Systems
- FY2013: 94 Systems
- FY2014: 883 Systems
- FY2015: 914 Systems
- FY2016 - Goal End Date: 964 Systems

*This initiative focuses on large municipalities whose sanitary sewer systems produce > 10 million gallons per day (mgd) of wastewater.
*Addressed means the system has been assessed and, where appropriate, is subject to a civil judicial complaint, an enforceable federal or state enforcement order, or permit requirements that address the noncompliance.
*Initiated enforcement actions are defined as formal EPA or state civil judicial enforcement referrals requesting filing of a complaint.
### EPA INSPECTED NTMWD’S AND MEMBER CITIES’ WASTEWATER SYSTEMS IN 2014/2015

<table>
<thead>
<tr>
<th>NTMWD Regional WW Members</th>
<th>NTMWD Regional WW Customers</th>
<th>NTMWD Sewer System Participants</th>
</tr>
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<tbody>
<tr>
<td>Allen</td>
<td>Anna</td>
<td>Farmersville</td>
</tr>
<tr>
<td>Forney</td>
<td>Fairview</td>
<td>Fate</td>
</tr>
<tr>
<td>Frisco</td>
<td>Lucas</td>
<td>Frisco</td>
</tr>
<tr>
<td>Heath</td>
<td>Melissa</td>
<td>Lavon</td>
</tr>
<tr>
<td>McKinney</td>
<td>Parker</td>
<td>Murphy</td>
</tr>
<tr>
<td>Mesquite</td>
<td></td>
<td>Rockwall</td>
</tr>
<tr>
<td>Plano</td>
<td></td>
<td>Royse City</td>
</tr>
<tr>
<td>Princeton</td>
<td></td>
<td>Seis Lagos UD</td>
</tr>
<tr>
<td>Prosper</td>
<td></td>
<td>Wylie</td>
</tr>
<tr>
<td>Richardson</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rockwall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seagoville</td>
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POTENTIAL EPA COMPLIANCE APPROACHES

**Letter**
- Self guided implementation of corrective measures
- Continued participation in regional approach
- Comprehensive CMOM implementation expected

**Administrative Order**
- Enforcement administered by EPA Region 6
- Short document, tailored to specific situation
- Individual agreements
- CMOM program req, in collaboration with Region

**Consent Decree**
- Enforcement negotiated with EPA and DOJ in DC
- Long, detailed, starts with DOJ requirements list
- Typically **more expensive** to implement (2 – 20x), little flexibility
WE DESIRED A REGIONAL DEVELOPED SOLUTION RATHER THAN A CONSENT DECREED SOLUTION

- **Baton Rouge** $1.4B
- **Honolulu** $3.5B
- **Kansas City** $2.5B
- **St. Louis** $4.7B
- **San Antonio** $2.6B
- **Corpus Christi** $800M
- **Cleveland (NEORSD)** $3.0B
- **Virginia Beach (HRSD)** $2.2B
- **Miami** $4.6B
- **Seattle** $2.2B
- **Ongoing CD Implementation**
- **Ongoing CD Negotiations**
- **Oakland (East Bay MUD)** $300 M Public
- **>$500 M Private**
- **Atlanta** $3.2B
- **Baton Rouge** $1.4B
- **Houston** $5B

Produced by the Cartographic Research Lab
University of Alabama
AVERAGE MONTHLY COSTS WATER, WASTEWATER

THE PRICE OF WATER: 2015
Combined water, sewer and stormwater prices for households in 30 major U.S. cities.

Seattle and Atlanta have the highest total monthly bills. Each is building costly underground storage facilities and treatment plants to comply with federal requirements to reduce raw sewage that is dumped into lakes and rivers.

Seattle: $310
Atlanta: $326

San Francisco: $260
Los Angeles: $171
San Diego: $126
Phoenix: $76
San Antonio: $136
Houston: $97
Memphis: $110
Indianapolis: $124
Columbus: $152
Indianapolis: $148
Memphis: $139
Columbus: $158
Indianapolis: $186
Boston: $153
New York: $135
Philadelphia: $153
San Antonio: $133
Jacksonville: $133
Austin: $225
Dallas: $209
Miami: $111
San Diego: $164
Las Vegas: $61
Chicago: $91
Detroit: $139
Milwaukee: $73
Salt Lake City: $59

Water prices pay for treating, pumping, and delivering water, while sewer prices cover the cost of cleaning the water that goes down the drain.

Sewer prices are often higher than water prices because more energy and chemicals are required for treatment. Following the Clean Water Act, the federal government gave grants for new treatment plants during the 1970s and 1980s. Over the past three decades, however, new spending has been cut off for local sewer infrastructure.

Stormwater fees are not included in every city's monthly bill. Some cities use general tax revenues to pay for projects to reduce polluted runoff from streets and parking lots. However, those projects must then compete for funds with other departments like police and schools.

Source: Circle of Blue

Note: Fee amounts may vary by utility and city, and are subject to change.
DEVELOPED UNDERSTANDING OF EPA CONCERNS

- Regional coordination
- Joint capacity management for regional system
- Comprehensive CMOM implementation tailored to prevent SSO’s by District and Communities
- Ongoing system maintenance – condition inspection, cleaning, rehabilitation
Established regional collaboration to respond to EPA concerns.

- Establish regional collaboration mechanism
- Develop corrective action plans for each of our systems
- Regular update meetings with EPA
- Formalizing commitment to regional solution
REGIONAL COLLABORATION AVOIDED
CONSENT DECREES

- MOU executed by all demonstrated commitment of parties (cities & NTMWD) to each other and EPA
- Work together to develop a model Regional CMOM program
- Focuses on regional wastewater system members
- Provides a forum to work regionally to establish desired outcomes of enforcement action
- Model program establishes consistency with understanding all parties’ unique implementation
REGIONAL COLLABORATION AVOIDED CONSENT DECREES, BUT REQUIRED CMOM

- Continued participation in regional approach
- CMOM plan development and implementation expected to align with EPA expectations.

- Enforcement administered by EPA Region 6
- Continued participation in regional approach expected
- CMOM plan developed required for individual cities in 12-month period (completed Dec ’16). Implementation expected to align with EPA expectations.

- Consent Decree Avoided
Regional CMOM Plan documents linkages between NTMWD & Communities: Reporting, monitoring, etc.
REGIONAL APPROACH TO DEVELOP CMOM PLAN

CMOM Plans

CMOM Plans with information unique to each entity (Community to develop).
Satisfies 360 day AO submittal requirement.

Model CMOM

Model CMOM (guidance document) early Feb. Provides structure and guidance for developing CMOM Plan.

CMOM Outline

Example Outline provided by NTMWD in early Feb.
Satisfies 120 day AO submittal requirement.
CMOM OBJECTIVES

Developed in collaboration with communities

- Identify, evaluate, and address areas of excessive I/I in the wastewater collection system
- Develop and maintain adequate capacity in the wastewater collection system
- Inspect, assess, and maintain wastewater collection system assets to increase reliability and extend asset service life at the least cost to customers
- Develop and implement SOPs and train staff on an ongoing basis to support succession planning and effectively manage O&M
- Maintain records of work performed on the wastewater collection system to measure CMOM performance
- Fund wastewater collection system operations, maintenance, and capacity development
- Communicate with and educate the public about how their activities can impact the wastewater collection system
REGIONAL CMOM COORDINATION PLAN EXAMPLES

- Documents linkages between NTMWD and communities
  - Background and historical info
  - Budget coordination
  - Communication and reporting
- Critical standard operating procedure (SOP) attachments
  - Request for Wastewater Connections and Point of Entry Protocol
  - Regional Hydraulic Model SOP
  - Notification of Flow Diversion and Outage Protocol
MAJOR FY 17 NTMWD CMOM IMPLEMENTATION INITIATIVES

• Written CMOM Plan Complete

• Lift Station Condition Assessments
  • Establish baseline condition
  • Establish PM schedules
  • Identify urgent needs
  • Develop LS specific O&M manuals
MAJOR FY 17 NTMWD CMOM IMPLEMENTATION INITIATIVES

• Pipeline Condition Assessments
  • Establish baseline condition
  • Identify rehabilitation needs
  • Identify cleaning needs

• Asset Management
  • Maximo Spatial Implementation
  • Maximo OERP (overflow response) Automation
MAJOR FY 17 NTMWD CMOM IMPLEMENTATION INITIATIVES

- Initiate expanded capacity assessment for UEFIS and South Mesquite Conveyance System

1. Develop/Update Model
   - District system & proposed modeling areas in Community systems
     - 2017-2018

2. Capacity Assessment
   - System capacity for level of service & planning horizon
     - 2018-2019

3. Capacity Assurance
   - Alternatives to meet level of service and/or goals
     - 2019-2020

Thereafter, proposed master planning cycle: every 5 years
COLLABORATIVE REGIONAL APPROACH HAS YIELDED POSITIVE RESULTS

• Allows local utilities to determine necessary investments to provide safe, affordable, and reliable services

• Framework to avoid future enforcement by implementing sustainable practices

• EPA Feedback
  • “Very impressed with the coordination, communication, and commitment that has been demonstrated by the District and cities”
  • Concerned each community will get the funding needed. Will be conducting follow up inspections. Will write Administrative Orders where needed
  • “Very close to being sustainable”
"Coming together is a beginning. Keeping together is progress. Working together is success." --Henry Ford
Better Together:
Regional Collaboration and CMOM in North Texas

North Central Texas Council of Governments
August 21, 2017

Scott Hoelzle
NTMWD
Wastewater Conveyance Manager

Jenna Covington
NTMWD
Assistant Deputy Director – Wastewater

Ken Hall
CH2M
Vice President
Does the TCEQ SSO Initiative protect us?

Sanitary Sewer Overflow Initiative

Addresses an increase in the number of overflows. Encourages corrective action before there is harm to human health and safety or the environment.

What is the Sanitary Sewer Overflow Initiative?

The Sanitary Sewer Overflow (SSO) Initiative is a voluntary program initiated in 2004 in an effort to address an increase in SSOs due to aging collection systems throughout the state and encourage corrective action before there is harm to human health and safety or the environment.

What are the Benefits of Participating?

- A participating system will not be subject to formal enforcement by TCEQ for most continuing SSO violations, as long as the overflows are addressed by the SSO plan. Note: Participation in the TCEQ’s SSO Initiative does not preclude federal enforcement action by the Environmental Protection Agency.
- Participation allows the municipality to direct resources towards corrective actions rather than having to pay penalties associated with an enforcement order in addition to the corrective actions.
- Participation ensures that SSOs addressed by the SSO plan will not affect the system’s compliance-history rating.
**Contact**

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