EPA Consent Decree
Taming the Condition Monster

Annette Duron, Interim Director, SAWS
Erin Mills, P.E., Freese and Nichols, Inc.
Agenda

- SAWS Background
- Condition CD Requirements
- Basin Planning Consultants
  - 10% Design - Alternative Analysis
    - InfoMaster
    - Professional Judgement
  - 30% Design - Packaging
- Timeline
- Program Effectiveness
San Antonio Water System

• San Antonio is the 7\textsuperscript{th} largest city in the nation.
• The San Antonio Water System (SAWS) serves more than 1.8 million people and over 411,000 wastewater customers in the greater San Antonio area within Bexar County, and parts of Medina and Atascosa Counties.
• ~5,200 miles of sewer main
  • ~ 350 miles Large Diameter
  • ~ 4,850 miles Small Diameter
• ~100,000 manholes
• 300 siphons
• ~80 miles of force main
• 156 lift stations
• 3 WW treatment plants
Consent Decree Status

UNITED STATES OF AMERICA, and

STATE OF TEXAS,

Plaintiffs,

v.

SAN ANTONIO WATER SYSTEM,

Defendant.

Civil Action No. 18-CV-0701-CCR

CONSENT DEGREE

1. ASSESS

2. PLAN

3. REPORT

4. REHAB
<table>
<thead>
<tr>
<th>Asset Description</th>
<th>Miles of Inspections Required Under CD</th>
<th>Miles of Inspections Completed</th>
<th>% Complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small Diameter Gravity Sewer - EARZ, Concrete Pipe and Clay Pipe Installed Prior to 1973</td>
<td>1,869</td>
<td>1,909</td>
<td>102%</td>
</tr>
<tr>
<td>Small Diameter Gravity Sewer - Clay Pipe Installed from 1973 through 1982</td>
<td>410</td>
<td>411</td>
<td>100%</td>
</tr>
<tr>
<td>Large Diameter Gravity Sewer</td>
<td>364</td>
<td>378</td>
<td>104%</td>
</tr>
</tbody>
</table>
Condition Assessment Requirements

- Inspect High Risk Sewer Gravity Mains
  - 350 Miles of Large Diameter
  - 2,280 Miles of Small Diameter
Basins

- Far West
- West
- Central
- East
Basin Planning Consultants
What Does it Mean to Assess A Pipe?
## A-E Condition Scores

<table>
<thead>
<tr>
<th>Condition Rating</th>
<th>Description</th>
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<tr>
<td>A</td>
<td>Mild defects which may include tight non-displaced cracks or other mild material degradation.</td>
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<td>B</td>
<td>Pipe wall deformation from construction impacts or less than 10% of diameter from structural deterioration, minor corrosion, slightly open non-displaced fractures, or other moderate material degradation.</td>
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<td>C</td>
<td>Pipe wall deformation less than 25% from structural deterioration combined with hinge cracks, displaced fractures, or moderate corrosion - but no pipe wall reinforcement visible.</td>
</tr>
<tr>
<td>D</td>
<td>Significant missing material or broken material, severe corrosion with exposed pipe wall reinforcement, or pipe wall deformation greater than 25% from structural deterioration combined with hinge fractures.</td>
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<td>E</td>
<td>Structural collapse, which has or could likely cause SSO; or collapse IS imminent.</td>
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</table>
A Pipe

B/C Pipe

Upstream manhole No: 494703
Downstream manhole No: 494702
Cam Dir: Downstream

USMH: 11882
DSMH: 13985

Fracture Spiral
75.7 ft.
## A-E Condition Scores

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USMH: 15505
DSMH: 2110

101.8 ft.

E - Pipes
BPC Assigned D & E Pipes

"E" pipe: Failure is Imminent
FNI Tries to Tame the Monster

- By June 2018
  - Assign Condition Remedial Measures
  - Package Assets

2018 DUE DATE
Basin Planning: Major Work Phases

Overview: 2 Phases (10% and 30% Phases)

10% Design
- Obtain/evaluate existing data
- Assign/Recommend Condition Remedial Measures
- Develop quantity data
- Prepare deliverables

30% Design
- Perform field verifications/evaluations
- Package assets
- Prepare deliverables
Large Diameter
Large Diameter Map
Small Diameter
Small Diameter Map

That’s a MONSTROUS amount of mileage!
Condition Remedial Measure

Assigned with InfoMaster  
Recommended Using Professional Judgement
InfoMaster Algorithm

Asset History

E Pipe yes/no

Count of Defects > 1/100 lf

Diameter LD/SD

Depth of Pipe >3’ but < 20’

Pipeburst/CIPP/Open-Cut

PACP Codes

E-Pipe 8” in diameter 6’ deep
Professional Judgement

<table>
<thead>
<tr>
<th>Overall condition of pipe</th>
<th>Count of severe defects that need a point Repair</th>
<th>Diameter of Pipe</th>
<th>Location of Pipe</th>
<th>Depth of Pipe</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-Pipe</td>
<td>1 defect</td>
<td>8” pipe</td>
<td>Located in an alley</td>
<td>6’ deep</td>
</tr>
</tbody>
</table>

Pipeburst
30%

Package Assets
Cannot Package All Assets for Rehab

- LD Category D Pipes
- LD Category E Pipes
- SD Category D Pipes
- SD Category E Pipes
- 2018
Small Diameter

Urgent (Condition E Under Roads)  E Pipes under roads that align with COSA bond projects
Large Diameter

2018

- Trenchless E Pipes
- Open-Cut Replace E-Pipes
Packaging Pipes

Priority Small Diameter
1. Urgent (Condition E Under Roads)
2. Pipes under roads that align with COSA bond projects
3. Location

Large Diameter
1. Trenchless
2. Open-Cut Replace
<table>
<thead>
<tr>
<th>Construction Access</th>
<th>Yes</th>
<th>Dellwood Dr</th>
</tr>
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<td>Operational Access</td>
<td>Yes</td>
<td>Dellwood Dr</td>
</tr>
<tr>
<td>Jurisdictional Water</td>
<td>No</td>
<td>None likely.</td>
</tr>
<tr>
<td>Exist Utilities</td>
<td>Yes</td>
<td>Fewer Poles, OHE, Parallel to 8&quot; Water Line, Crosses 12&quot; Water Main and 2&quot; Gas Main</td>
</tr>
<tr>
<td>Permit Conditions</td>
<td>Yes</td>
<td>COSA ROW Permit (Dellwood Dr), COSA Floodplain Development Permit</td>
</tr>
<tr>
<td>Endangered Species</td>
<td>No</td>
<td>None likely.</td>
</tr>
<tr>
<td>Karst Zones</td>
<td>Yes</td>
<td>Within karst zone 3. Karst survey required.</td>
</tr>
<tr>
<td>Critical Habitat</td>
<td>No</td>
<td>No wetlands mapped.</td>
</tr>
<tr>
<td>Environmental factors</td>
<td>No</td>
<td>Not within Edwards Aquifer. No action required.</td>
</tr>
<tr>
<td>Hazardous Sites</td>
<td>Former Station at North Towne Plaza is a LUST site immediately west of the segment. Recommend field investigation for any unreported sites and/or dumps.</td>
<td></td>
</tr>
<tr>
<td>Archeological Sites</td>
<td>No</td>
<td>No known cultural resources conflict. Coordination with CosA CHP needed. If work will exceed five acres or 5,000 cubic yards of earth moving, consultation with THC needed.</td>
</tr>
<tr>
<td>Geomorphology issues</td>
<td>Yes</td>
<td>Potential Ground Water May be Encountered</td>
</tr>
<tr>
<td>Geotechnical issues</td>
<td>Yes</td>
<td>Geology: Pecan Gap, Rock Excavation Equipment May be Required. Potential Sloughing and Caving May Occur</td>
</tr>
</tbody>
</table>

**Easement Required (number of parcels)**: 0

**By-Pass Pumping Information**

- **Peak Wet Weather (MGD)**: From Model for Pipes > 12" - Calculated for Pipes < 12" with Mannings Assuring Full Flow: 3.43
- **Avg Day (MGD)**: From Model for Pipes > 12" - 0.84
- **US Suction Manhole**: 10548
- **DS Discharge Manhole**: 8473

**Street Repair Data**

- **Street Width**: 24
- **Quantity of Street Repair (LF)**: 347.00
- **Trench Repair**: Full
- **PCI**: 75

**30% Package Number**

- **Reason Selected for 30%**
  - Base or Additional Pipe
  - Reviewed in 10% Design
  - On CPMS Project

- **E Under Roads BPC**
  - Base Pipe: Yes
  - No
Consent Decree Timeline

Nearing Completion of the Alternatives Analysis Phase

- **Today**: Condition/Capacity Assessment Reports January 2018
- **Remedial Measures Plans January 2019**
- **2023**: ROW projects
- **2025**: Post-Consent Decree Work

- **Capacity & Condition Assessment**
- **Alternatives Analysis & 30% Design**
- **Capacity and Condition Remedial Measures: Design & Construction**
- **Phase I & II Early Action Program CIP Project Implementation**
- **CMOM (Focus on O&M Programs)**
193 SSOs for 2017 a record low!
Condition Tamed

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