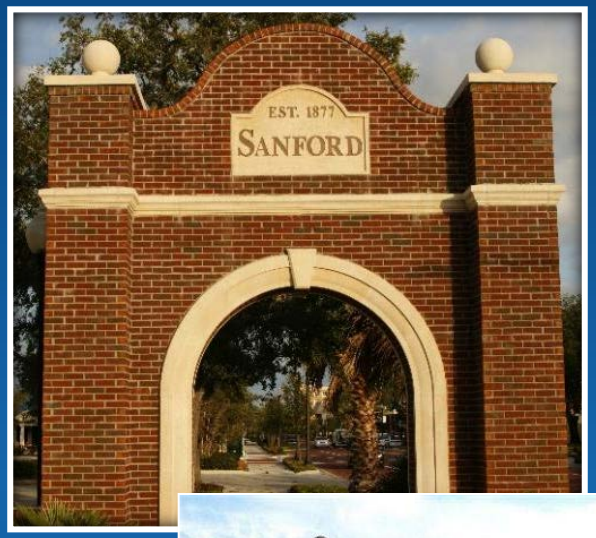
INNOVATIVE AND COST EFFECTIVE APPROACH TO POTABLE WATER PIPE REPLACEMENT

Strategically Focused On Distribution System Water Quality Improvement

City of Sanford & Reiss Engineering

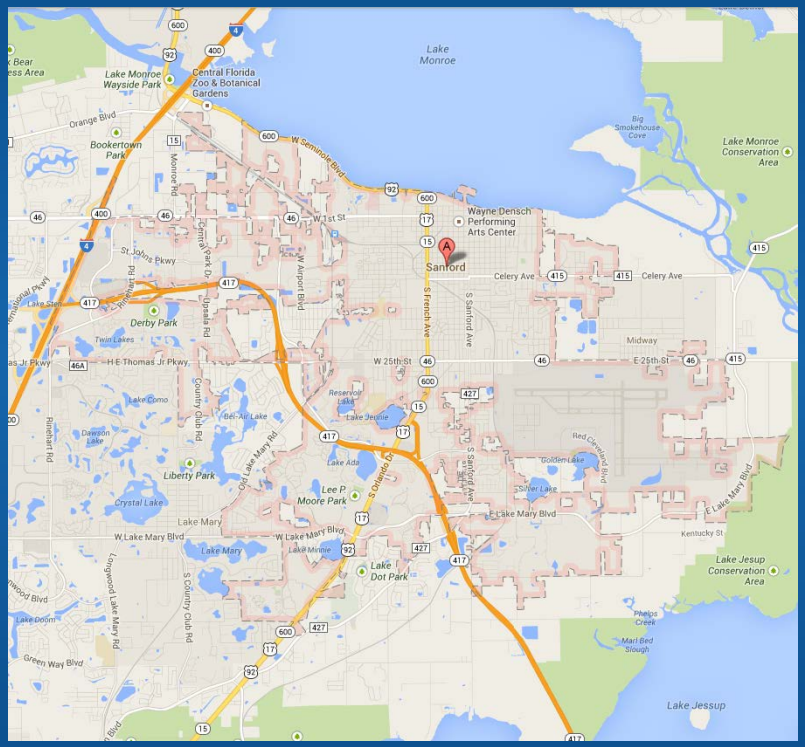
PRESENTATION AGENDA

- Rehabilitation Projects Selection
- Water Quality Forecasting
- Funding Acquisition
- Pipe Bursting Construction Lessons Learned



INTRODUCTION & BACKGROUND

- Sits on the south shore of Lake Monroe, Seminole County
- One of the oldest cities in Florida
  - 1830 – Site of US Army Post named Fort Mellon
  - 1877 – City of Sanford was incorporated and Mellonville was annexed six years later
- Faces infrastructure and water quality challenges
- Seek cost effective solutions



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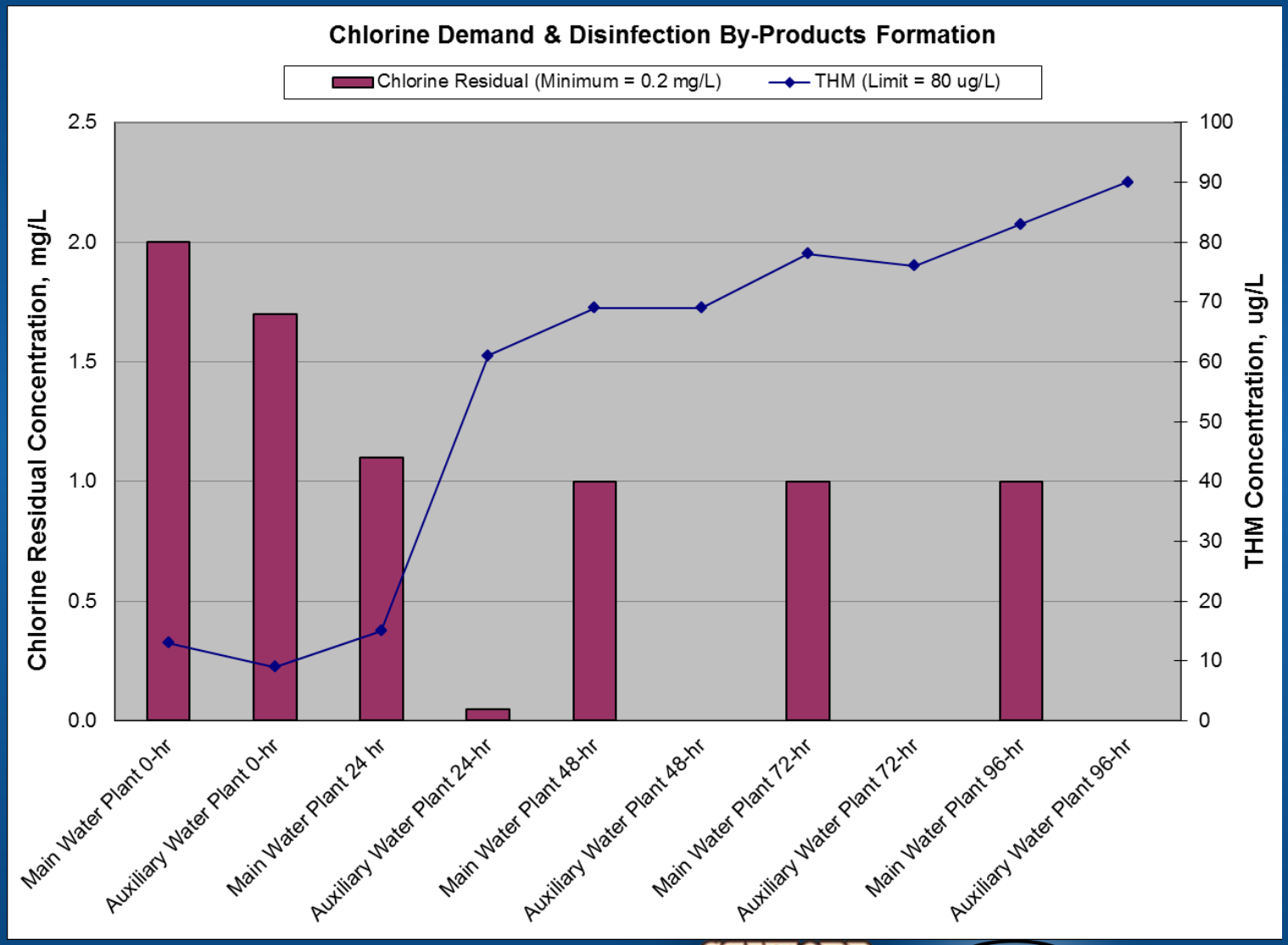

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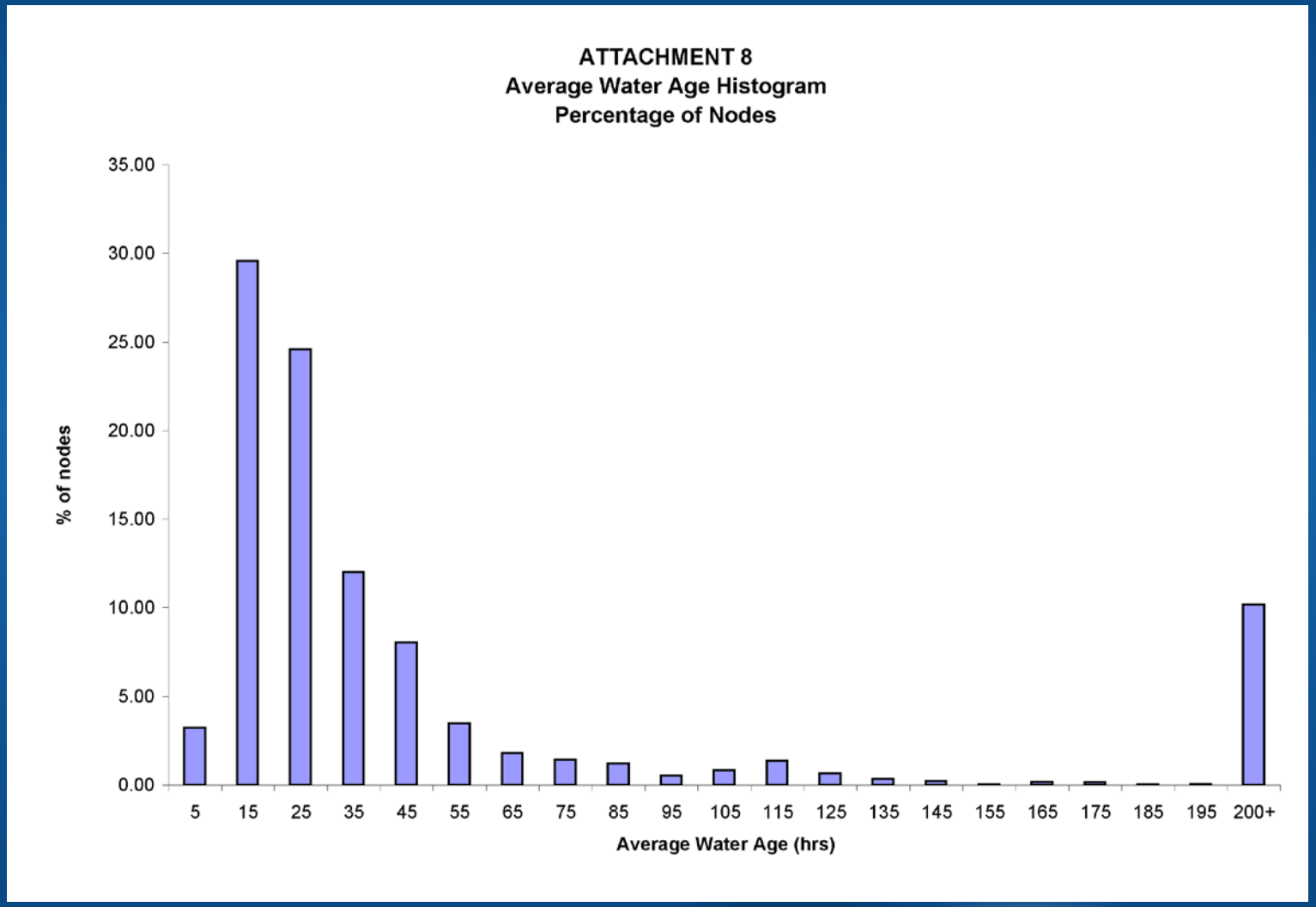

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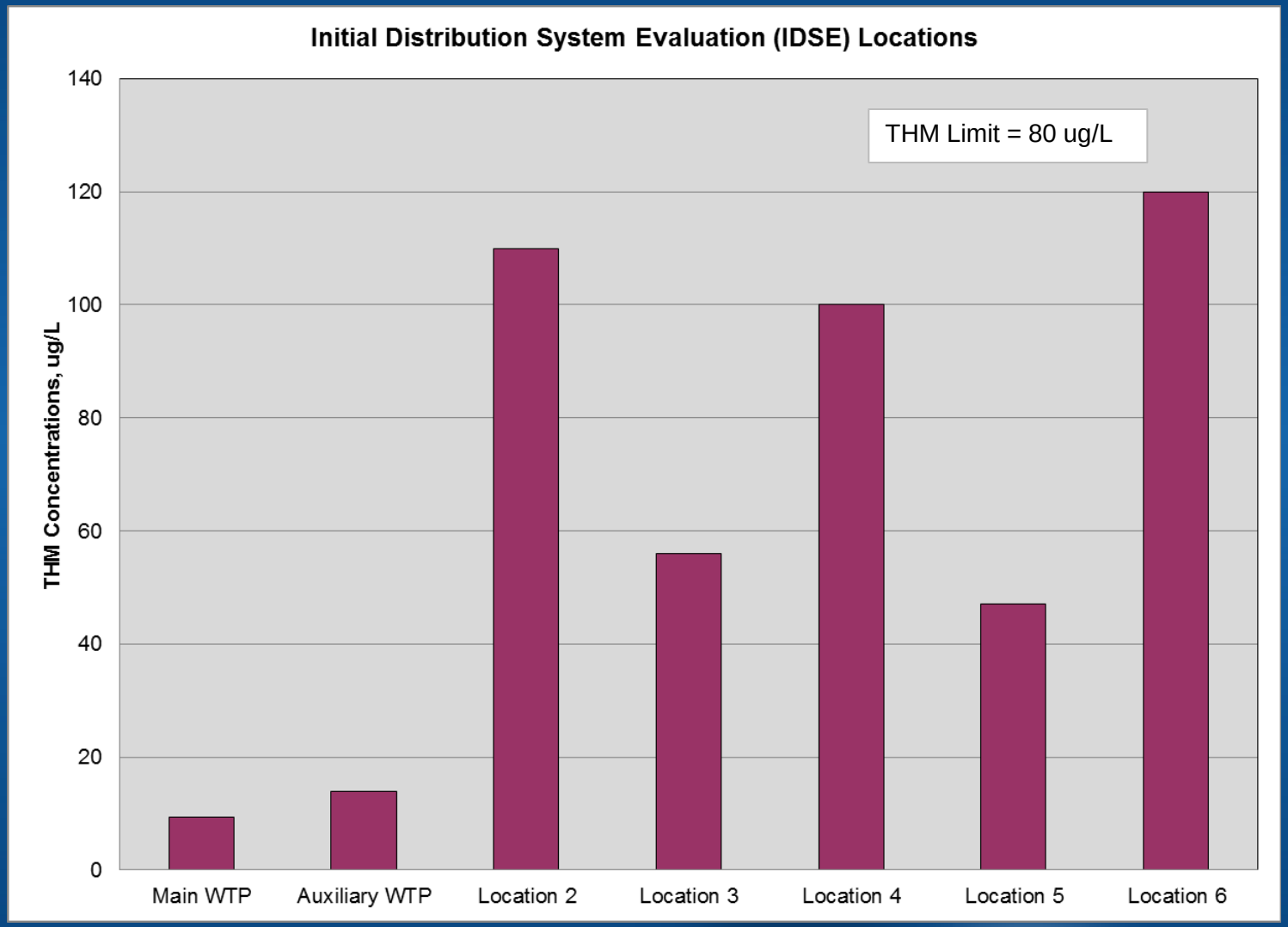
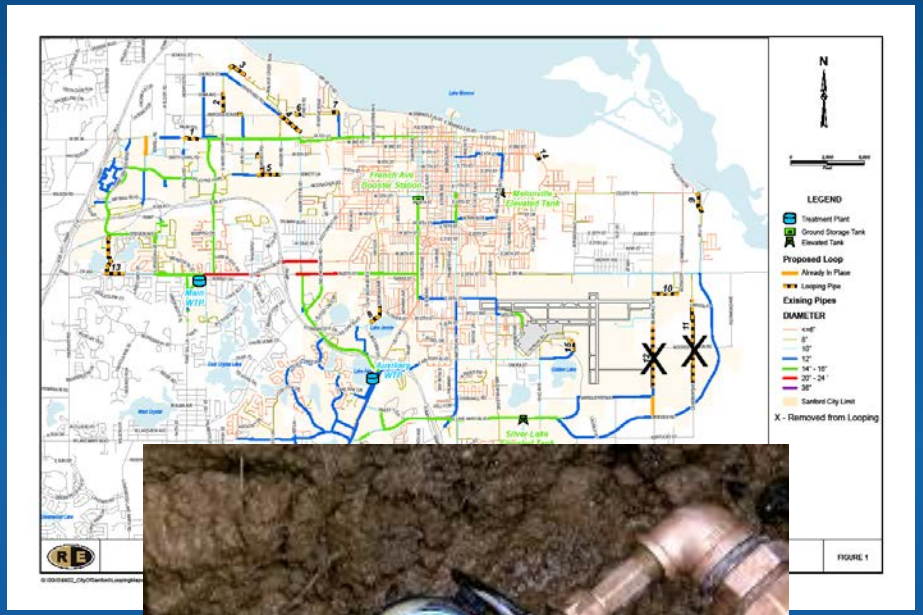
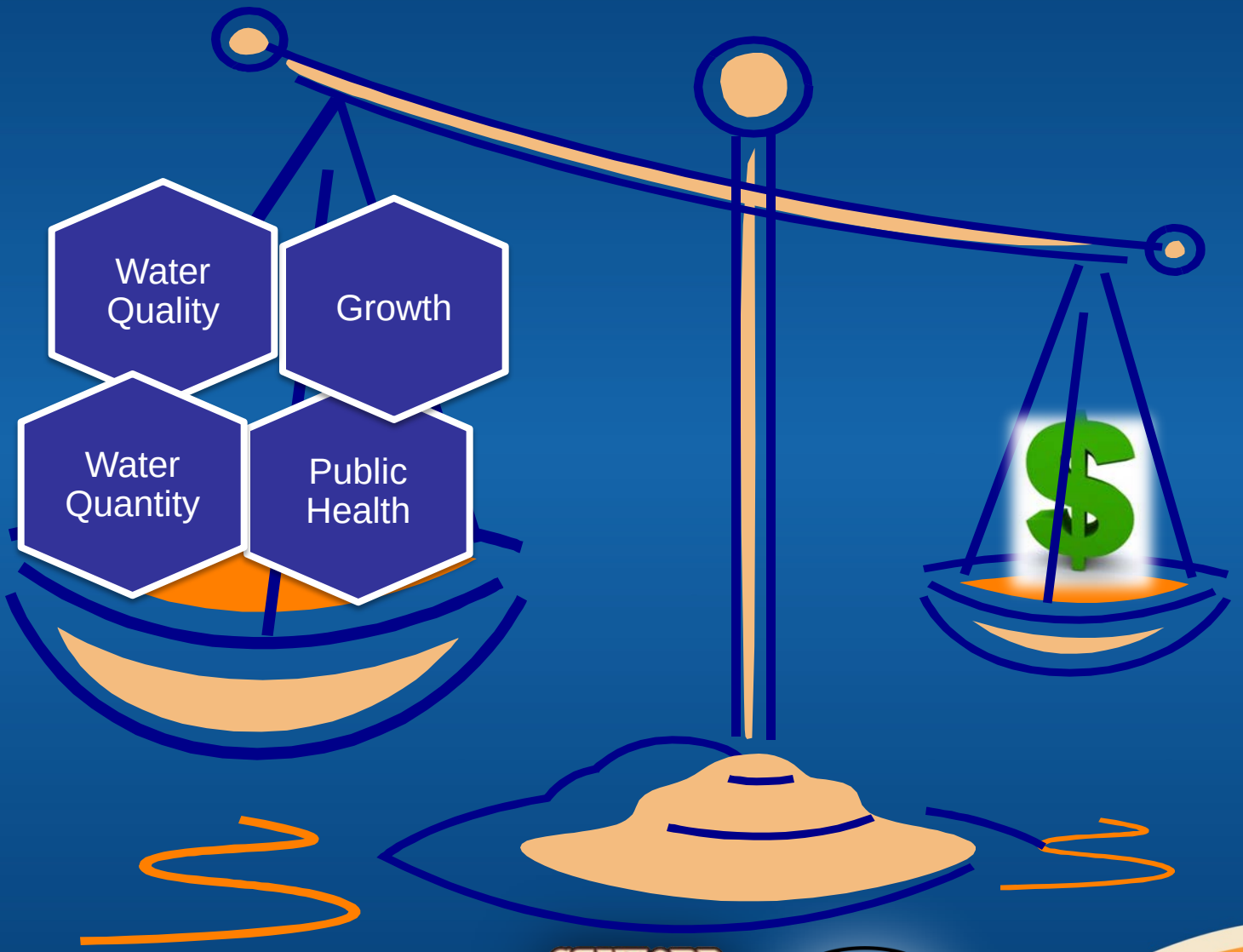


POTENTIAL SOLUTIONS

- Water loss and water age reduction
- Disinfection optimization
- Pipe rehabilitation and looping
- WTP Improvements
- Replace obsolete meters

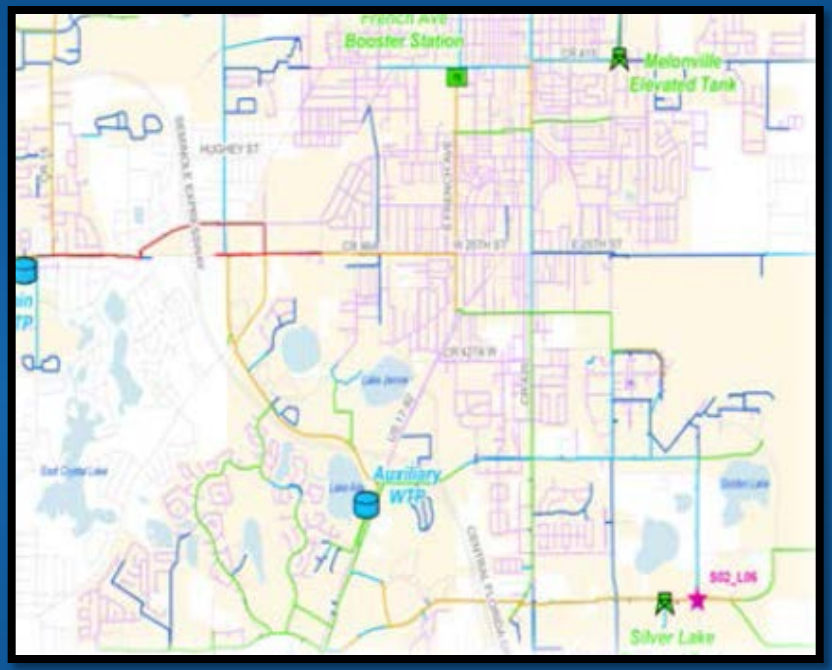


BUDGET PLANNING



HYDRAULIC MODEL DEVELOPMENT

- One to one GIS approach
- Key components
  - Facilities
  - Water Mains and Key Valves
  - Calibration
  - Model Evaluations



HYDRAULIC MODEL USES

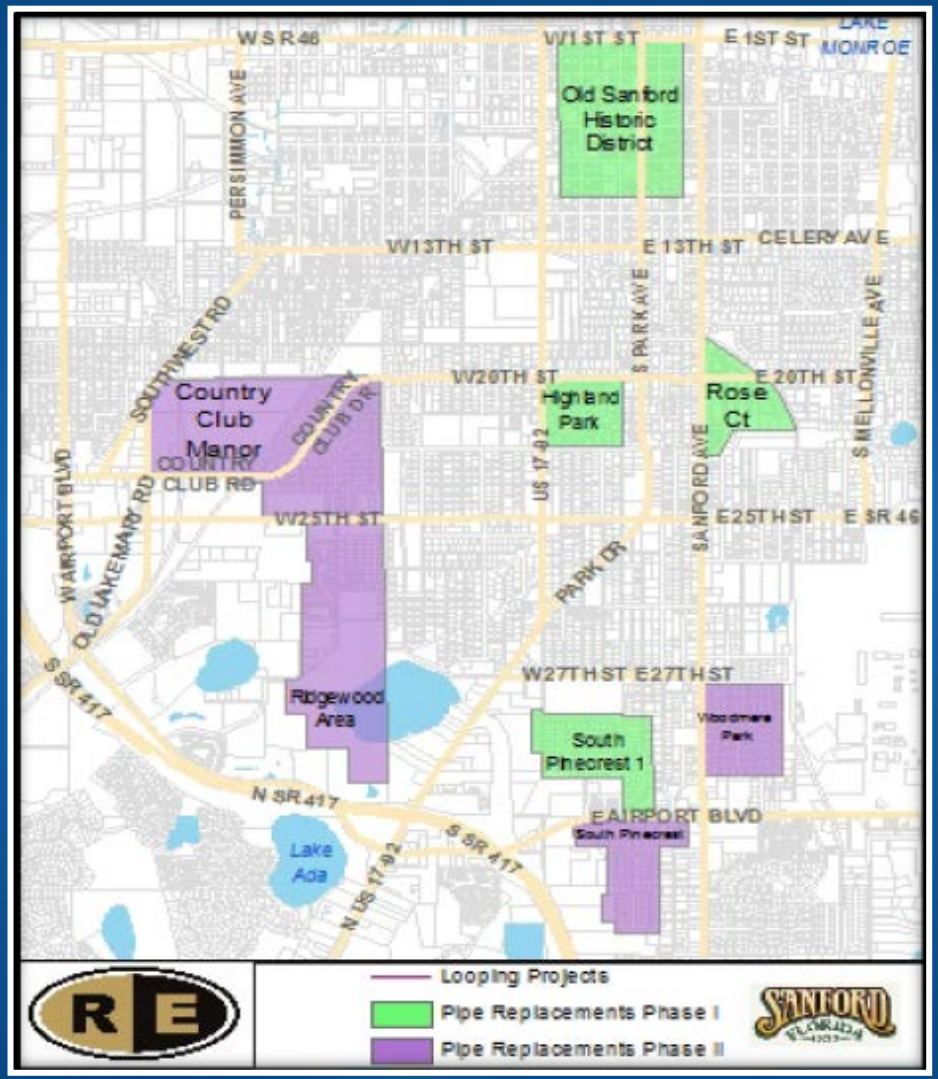
- Store distribution system infrastructure information
- Optimize/Design flushing programs
- Evaluate water quality
- Effective planning tool
  - Forecasting
  - Prioritization
- Solve your problems
- Acquire project funds
  - Grants
  - Loans

REHABILITATION PROJECTS SELECTION

- 38 pipe replacements were identified to improve water quality
- 9 looping projects and other projects were identified
- Hydraulic Model used to select:
  - 8 key pipe replacement projects
  - 6 looping projects

REHABILITATION PROJECTS PRIORITIZATION

- Pipe bursting and looping projects are divided between:
  - Phase I (completed in April 2011)
  - Phase II – (under construction)
  - 78,300 linear feet



SANFORD FLORIDA 1877

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PROJECT FUNDING

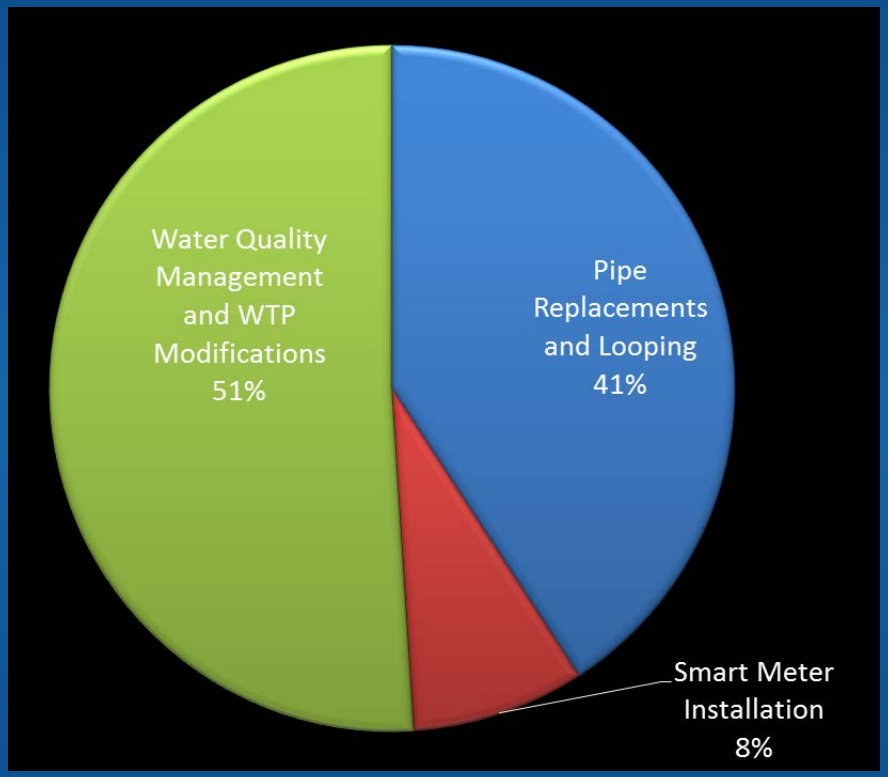
- State Revolving Fund (SRF) Request for Priority List Inclusion
  - Public Health Risk
  - Median Household Income
- Water Rates Increases

PROJECT FUNDING

- Type of Information Needed for Grants/SRF Loans:
  - Tools Available to Assess Infrastructure Problems
  - Identify and Prioritize Infrastructure Problems
  - Infrastructure Problems Evaluation
  - Compliance Issues
  - Future Regulatory Requirements
  - CIP Planning
  - Grants / Loans?
  - Infrastructure Rehabilitation Needs Database

FUNDING ALLOCATION

- WQ Management and WTP Modification ($10M)
  - Studies
  - GAC/Ozone WTP Design and Construction
- Pipe Replacement and Looping ($8M)
  - 78,300 linear feet completed
- Smart Meter Installation ($2M)
  - Residential and large meters replaced
  - 50% water loss reduction



PIPE BURSTING CONSTRUCTION LESSONS LEARNED

- Conduct field verification prior to construction
- Document site before and after construction
- Communicate with the public
- Implement timely team member meetings
- Manage Data Collection (GIS)
- Update Distribution System Hydraulic model
- Develop documentation
- Replacement method works for Sanford

SUMMARY

- Pipe bursting construction provided cost effective solution
- Distribution system water quality improved as predicted
- Water loss minimized by 50%
- Forecast information provided key justification for grant and low rate loan
- Successful project completion documented
- Completion schedule December 2014