City of St. Petersburg

Committee of the Whole

Meeting of November 29, 2018 @ 3:00 p.m.

City Hall - Room 100

A. Call to Order – Council Chair Lisa Wheeler-Bowman

B. Discussion Item:

a. Consent Order – Level of Service – Claude Tankersley

C. Next Meeting – December 13, 2018 @ 1:30 p.m.
2019 Calendar setting and
selection of Chair and Vice Chair

D. Adjournment

St. Petersburg's Committee of the Whole Meeting

Wastewater Collection System

Level of Service Discussion

November 29, 2018

Why are we meeting today?

CONSENT ORDER REQUIREMENTS	1st Cycle Flow Monitoring 12/31/16	2nd Cycle Flow Monitoring 12/31/17	Updated Hydraulic Model 10/31/18	Stress Test & Flow Mitigation Report 12/31/18	Integrated Water Resources Master Plan 12/31/19
	DONE	DONE	DONE	DONE	WORK IN PROGRESS
WWOMP Report Sections Completion Schedule	Immediate Action Plan Long Term Action Plan Flow Data Collection June – December	Flow Data Collection May – August Groundwater & Tidal Analysis soorings Public Sewer Analysis I/I Characterization	Infrastructure Model Updates Subcatchment Refinements Model Calibration & Validation	Model Stress Test Final WWOMP Report	Scenario Cost Estimates Level of Service Collection System Master Plan

What is “Level of Service”?

INDUSTRY STANDARD TERMINOLOGY

LOS Definition

Level of service definition.

A basic level of service definition for most collection systems will be to deliver reliable sewer collection services at a minimum cost, consistent with applicable environmental and health regulations. Level of service criteria will be system-specific, but should address CMOM and GASB 34 requirements, particularly in areas where improvements are most needed and will yield the greatest benefits. Examples include:

- Ensuring adequate system capacity for all service areas
- Eliminating system bottlenecks due to pipe blockages
- Reducing peak flow volumes through inflow/infiltration (I/I) controls
- Providing rapid and effective emergency response service
- Minimizing cost and maximizing effectiveness of CMOM programs

Source: USEPA Asset Management for Sewer Collection Systems

Why is LOS Important?

The LOS establishes a minimum level of protection within the collection system against sewer overflows in response to wet weather.

Efforts, Resources, and CIP

Focus

infrastructure improvements on priority areas

Expectations & Choices

Communicate

increased services equals increased cost/rates

Regulators & Stakeholders

Negotiate

rate impacts, risks, performance measures

How to Measure LOS

Performance measurements.
Performance measurements are specific metrics designed to assess whether level of service objectives are being met. Some examples of performance measurements:

- Annual performance goals for sewer system inspection, cleaning, maintenance, rehabilitation, and capital improvement
- Correlating grease control education and enforcement measures with expected reductions in the number, distribution, and severity of grease blockages
- Establishing maximum hourly and monthly peak flow volumes
- Establishing maximum emergency response time to emergency calls, tracking customer complaints and claims for private property restoration
- Performing cost-benefit analysis of key completed activities, taking into account expected vs. actual outcome and budgeted vs. actual cost

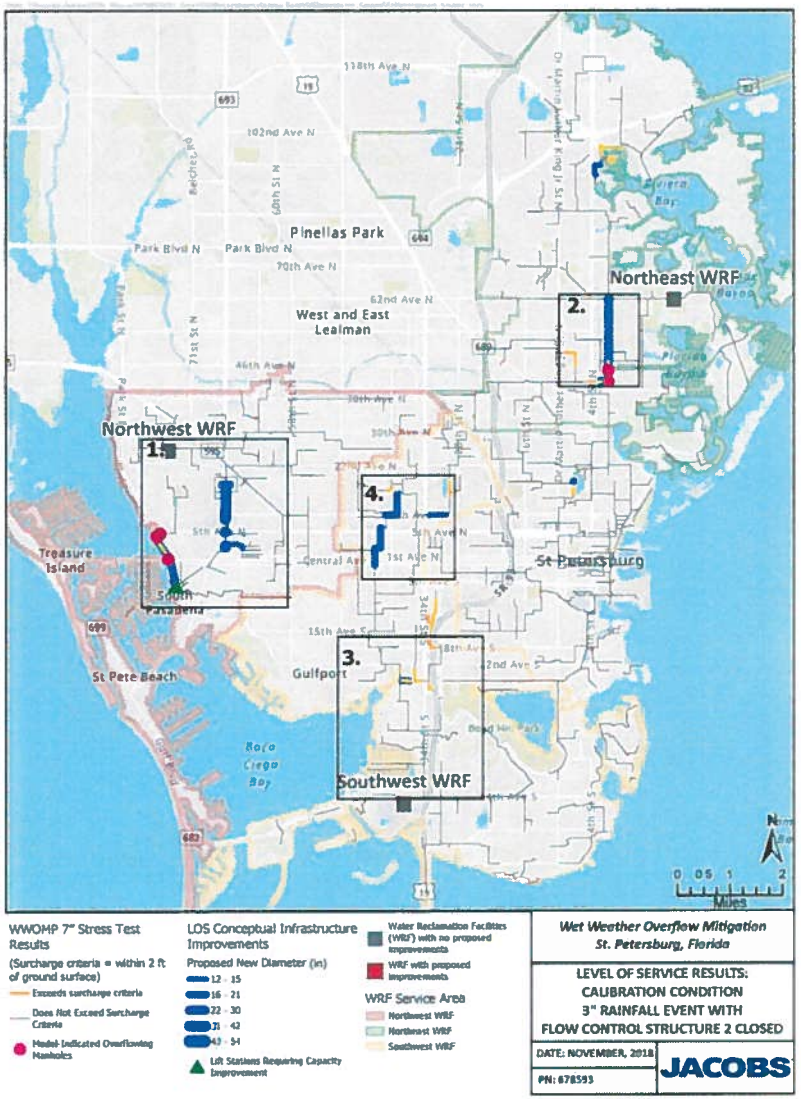
Source: USEPA Asset Management for Sewer Collection Systems

Factors to Consider for LOS Selection

1. What do the regulators require?
2. What are the Utility's performance goals?
3. What LOS do customers expect?
4. What are the physical capabilities of the wastewater collection system assets?
5. What are the City's near-term and long-term resiliency goals?
6. How much investment can ratepayers afford?

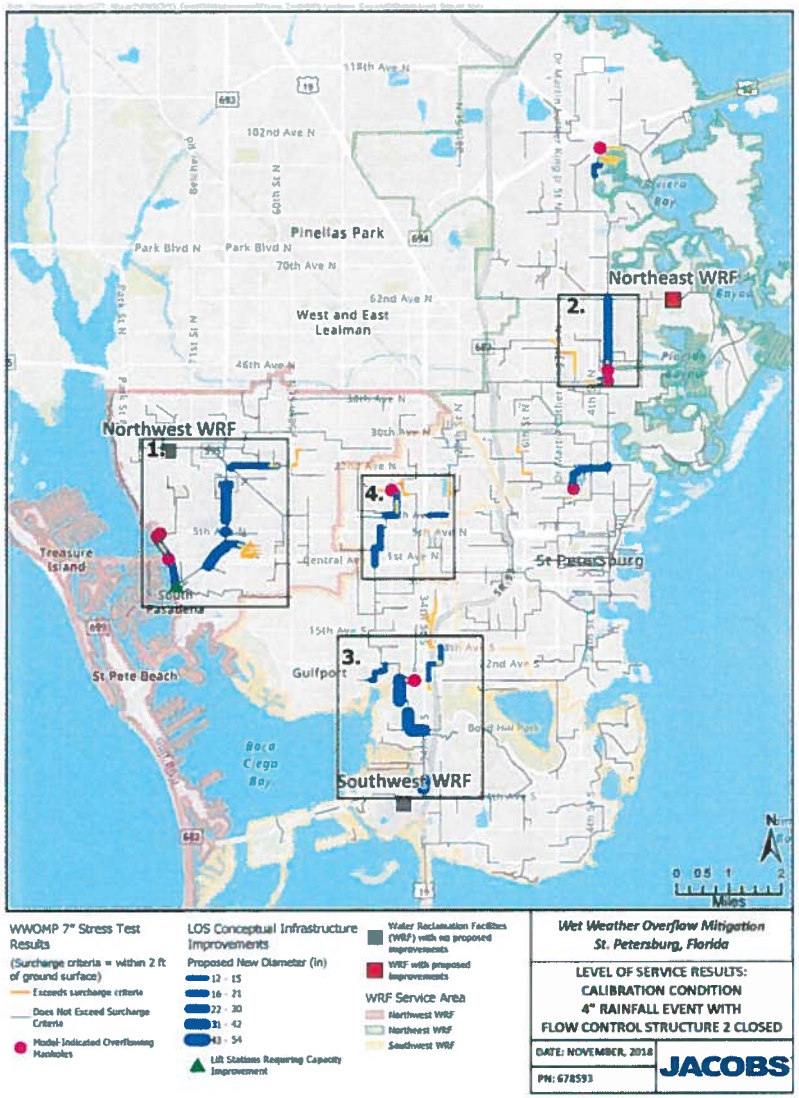
LOS Scenario Costs

CLASS 5 CONCEPTUAL PLANNING COST ESTIMATES



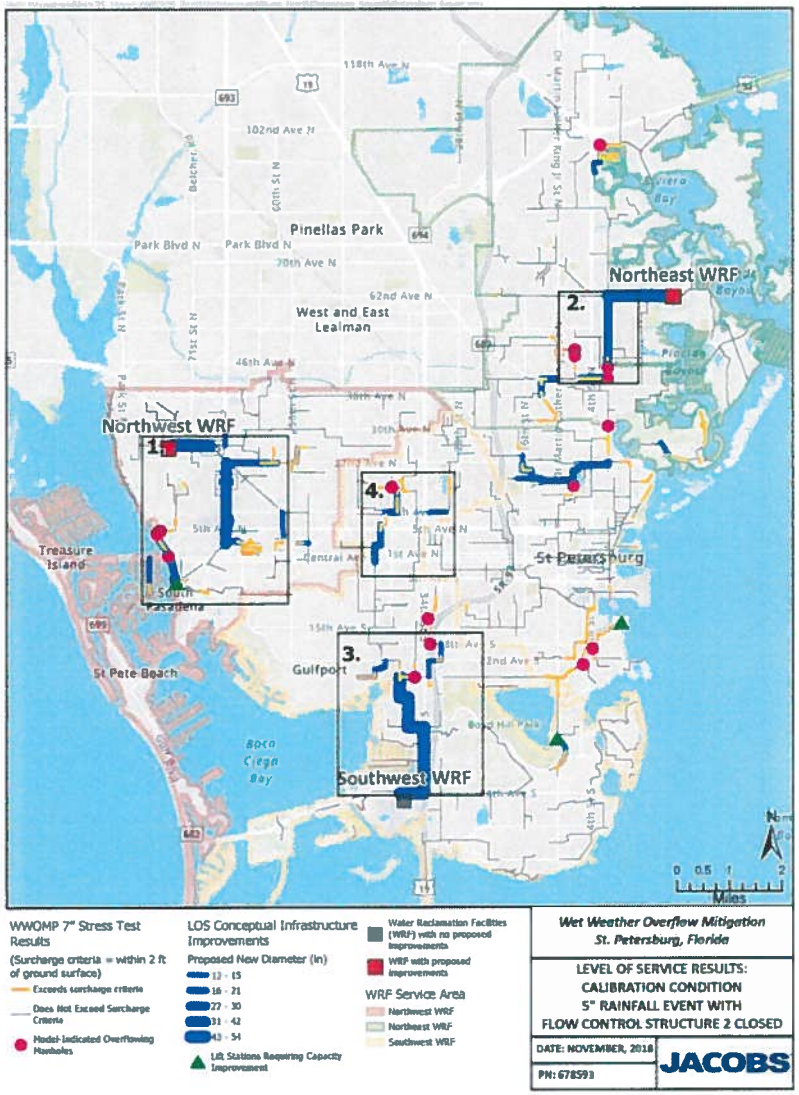
3-inch Rainfall Event

Basin	Modeled Capacity Issues	Conceptual Infrastructure to Address Capacity Issues	Opinion of Cost
NEWRF	2 overflowing MHs 1.8 miles surcharging sewer	1.63 miles of sewer replacement to upsize downstream sewer and sections of trunk sewer to WRF	Construction Cost: $9.5M Capital Cost: $15.6M
NWWRF	3 overflowing MHs 0.8 miles surcharging sewer	1.79 miles of sewer replacement to upsize downstream sewer and sections of trunk sewer to WRF Improvement to 1 downstream Lift Station	Construction Cost: $12.3M Capital Cost: $20.1M
SWWRF	0 overflowing MHs 2.2 miles surcharging sewer	1.44 miles of sewer replacement to upsize downstream sewer and sections of trunk sewer to WRF	Construction Cost: $8.7M Capital Cost: $14.2M
TOTAL	**5 overflowing MHs** **4.8 miles surcharging sewer**	**4.86 miles sewer replacement** **1 Lift Station improvements**	**Construction Cost: $30.4M** **Capital Cost: $49.9M**



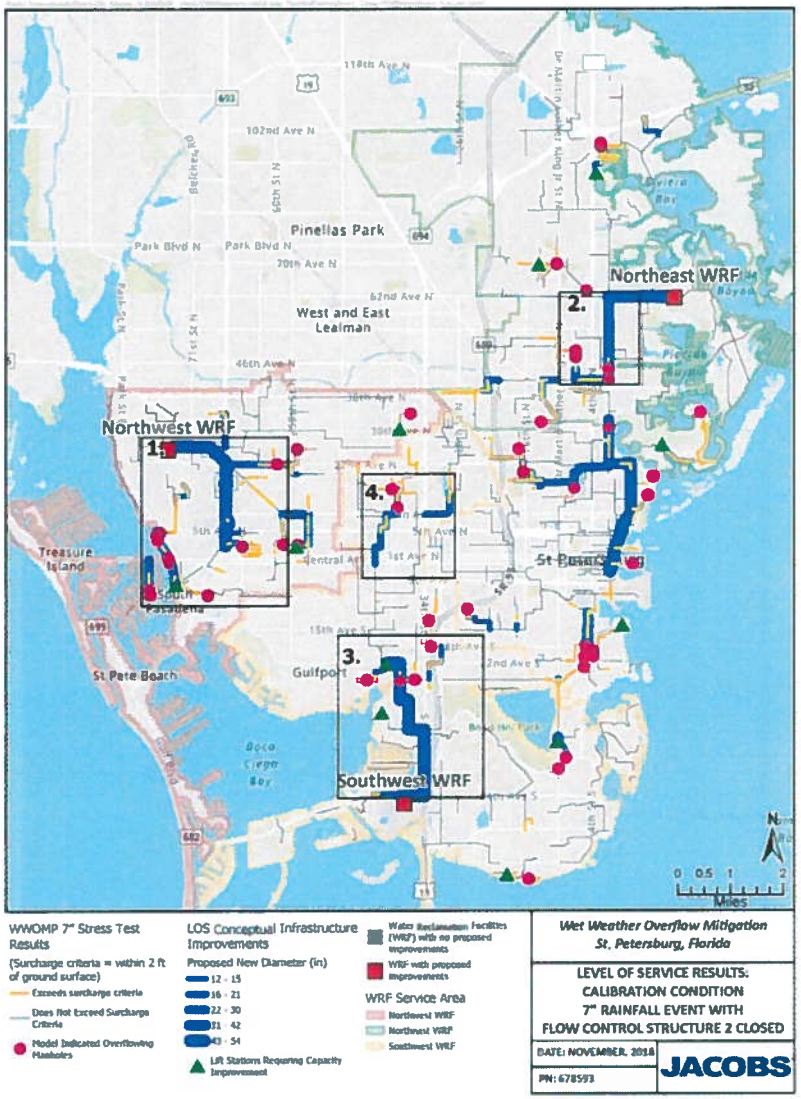
4-inch Rainfall Event

Basin	Modeled Capacity Issues	Conceptual Infrastructure to Address Capacity Issues	Opinion of Cost
NEWRF	3 overflowing MHs 2.6 miles surcharging sewer	1.76 miles of sewer replacement to upsize downstream sewer and sections of trunk sewer to WRF 1 new injection well to dispose of peak wet weather flows	Construction Cost: $13.9M Capital Cost: $22.9M
NWWRF	3 overflowing MHs 2.4 miles surcharging sewer	2.97 miles of sewer replacement to upsize downstream sewer and sections of trunk sewer to WRF Improvement to 1 downstream Lift Station	Construction Cost: $18.5M Capital Cost: $30.4M
SWWRF	3 overflowing MHs 3.8 miles surcharging sewer	4.12 miles of sewer replacement to upsize downstream sewer and sections of trunk sewer to WRF	Construction Cost: $25.5M Capital Cost: $41.9M
TOTAL	**9 overflowing MHs** **8.8 miles surcharging sewer**	**8.85 miles sewer replacement** **1 Lift Station improvements** **1 new Injection Well**	**Construction Cost: $58.0M** **Capital Cost: $95.1M**



5-inch Rainfall Event

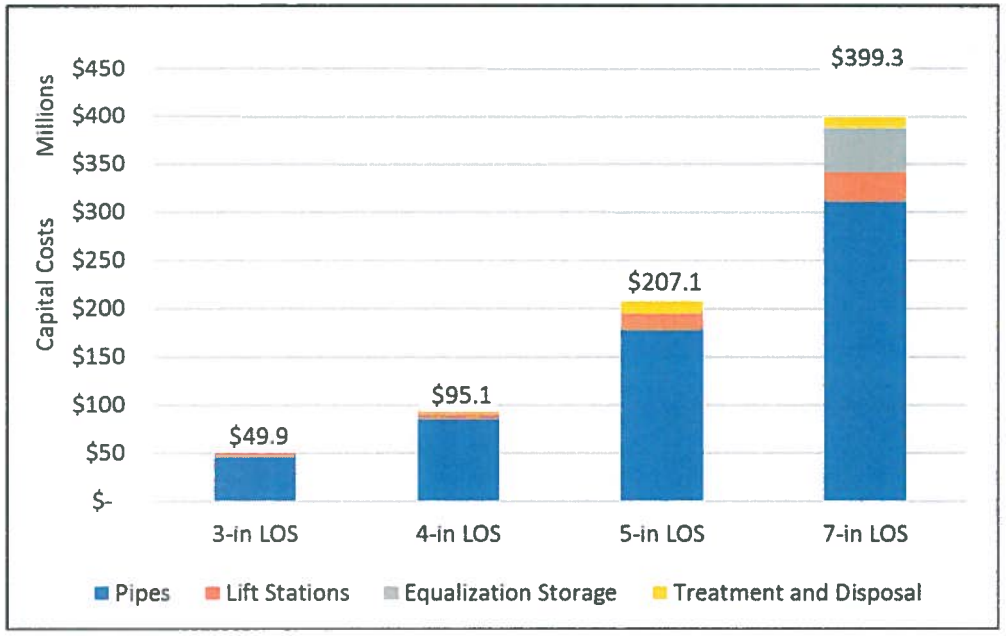
Basin	Modeled Capacity Issues	Conceptual Infrastructure to Address Capacity Issues	Opinion of Cost
NEWRF	5 overflowing MHs 4.9 miles surcharging sewer	3.72 miles of sewer replacement to upsize downstream sewer and sections of trunk sewer to WRF 1 new injection well to dispose of peak wet weather flows	Construction Cost: $28.4M Capital Cost: $46.5M
NWWRF	3 overflowing MHs 4.5 miles surcharging sewer	5.58 miles of sewer replacement to upsize downstream sewer and sections of trunk sewer to WRF Improvement to 1 downstream Lift Station 1 new injection well to dispose of peak wet weather flows	Construction Cost: $37.9M Capital Cost: $62.2M
SWWRF	8 overflowing MHs 10.7 miles surcharging sewer	7.95 miles of sewer replacement to upsize downstream sewer and sections of trunk sewer to WRF Improvement to 2 downstream Lift Stations	Construction Cost: $60.0M Capital Cost: $98.4M
TOTAL	16 overflowing MHs 20.1 miles surcharging sewer	17.25 miles sewer replacement 3 Lift Station improvements 2 new Injection Wells	Construction Cost: $126.3M Capital Cost: $207.1M



7-inch Rainfall Event

Basin	Modeled Capacity Issues	Conceptual Infrastructure to Address Capacity Issues	Opinion of Cost
NEWRF	10 overflowing MHs 9.0 miles surcharging sewer	5.88 miles of sewer replacement to upsize downstream and trunk sewer to WRF Improvement 3 downstream Lift Stations 1 new injection well for peak flows 5 MG Equalization Storage, 5 MGD PS	Construction Cost: $53.9M Capital Cost: $88.5M
NWWRF	14 overflowing MHs 9.5 miles surcharging sewer	9.09 miles of sewer replacement to upsize downstream and trunk sewer to WRF Improvement 3 downstream Lift Stations 1 new injection well for peak flows 5 MG Equalization Storage, 5 MGD PS	Construction Cost: $70.0M Capital Cost: $114.9M
SWWRF	24 overflowing MHs 17.5 miles surcharging sewer	15.56 miles of sewer replacement to upsize downstream and WRF trunk sewer Improvement 4 downstream Lift Stations 5 MG Equalization Storage, 5 MGD PS 15 MGD Influent Pump Station	Construction Cost: $119.5M Capital Cost: $195.9M
TOTAL	48 overflowing MHs 36 miles surcharging sewer	30.53 miles sewer replacement 10 Lift Station improvements 2 new Injection Wells 15 MG Equalization Storage	Construction Cost: $243.5M Capital Cost: $399.3M

Comparing the LOS Scenarios



Post-Construction Vulnerabilities

To further assess the future vulnerabilities associated with the selection of the 3", 4", or 5" LOS scenarios, model simulations were performed to evaluate the response in the collection system to the 7" rainfall scenario assuming each of these levels of service were addressed.

Model Simulation	Number of Overflowing Manholes	Miles of Sewer Surcharging to within 2 feet of Ground Surface
Calibration Conditions Model **Construct No Improvements**	48	35.9

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Calibration Conditions Model + **Construct $49.9M for 3-in LOS Improvements**	44	35.1

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Calibration Conditions Model + **Construct $49.9M for 3-in LOS Improvements**	44	35.1
Calibration Conditions Model + **Construct $95.1M for 4-in LOS Improvements**	35	34.5

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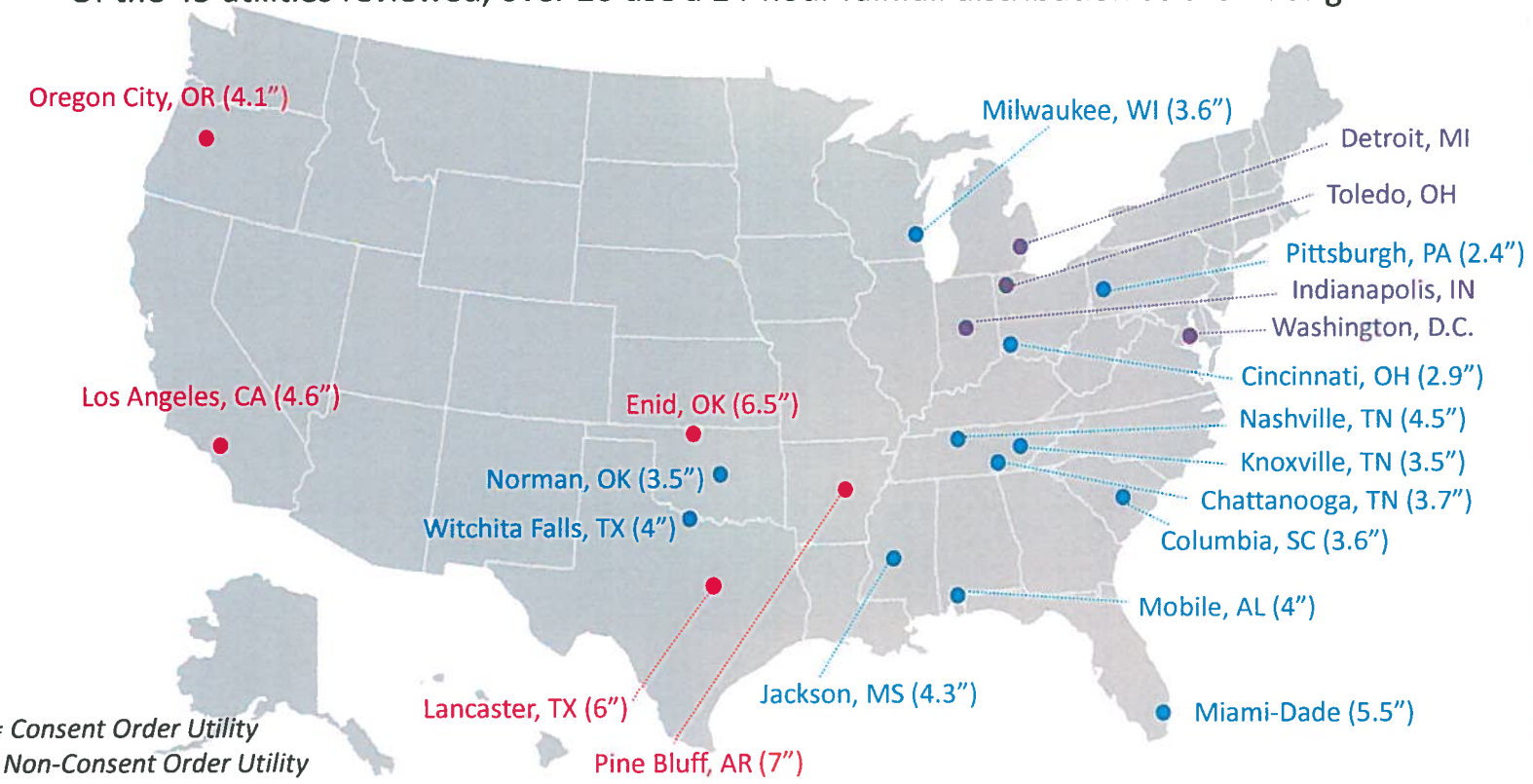
Calibration Conditions Model **Construct No Improvements**	48	35.9
Calibration Conditions Model + **Construct $49.9M for 3-in LOS Improvements**	44	35.1
Calibration Conditions Model + **Construct $95.1M for 4-in LOS Improvements**	35	34.5
Calibration Conditions Model + **Construct $207.1M for 5-in LOS Improvements**	10	18.5

What are other Utilities selecting for their LOS?

WASTEWATER COLLECTION SYSTEMS

Other Utilities' LOS

Of the 45 utilities reviewed, over 20 use a 24-hour rainfall distribution as their design standard.



Blue = Consent Order Utility
Red = Non-Consent Order Utility
Purple = Consent Order Utility rainfall depth not specified

While this is by no means a comprehensive survey of utilities, it does provide the City with information regarding common practice and corroborates the 4 or 5-inch rainfall scenario as a reasonable LOS selection.

Next Steps

1. **LOS Decision for Planning**
   - Establish planning criteria for Master Plan Team

2. **Collection System Facility Plan**
   - Focus on sewers and lift stations Asset Management needs forecast

3. **Integrated Master Plan**
   - Focus on peak wet weather capacity for sewers and WRFs


Thank you!
Questions?