



# JEA Wastewater System Updates

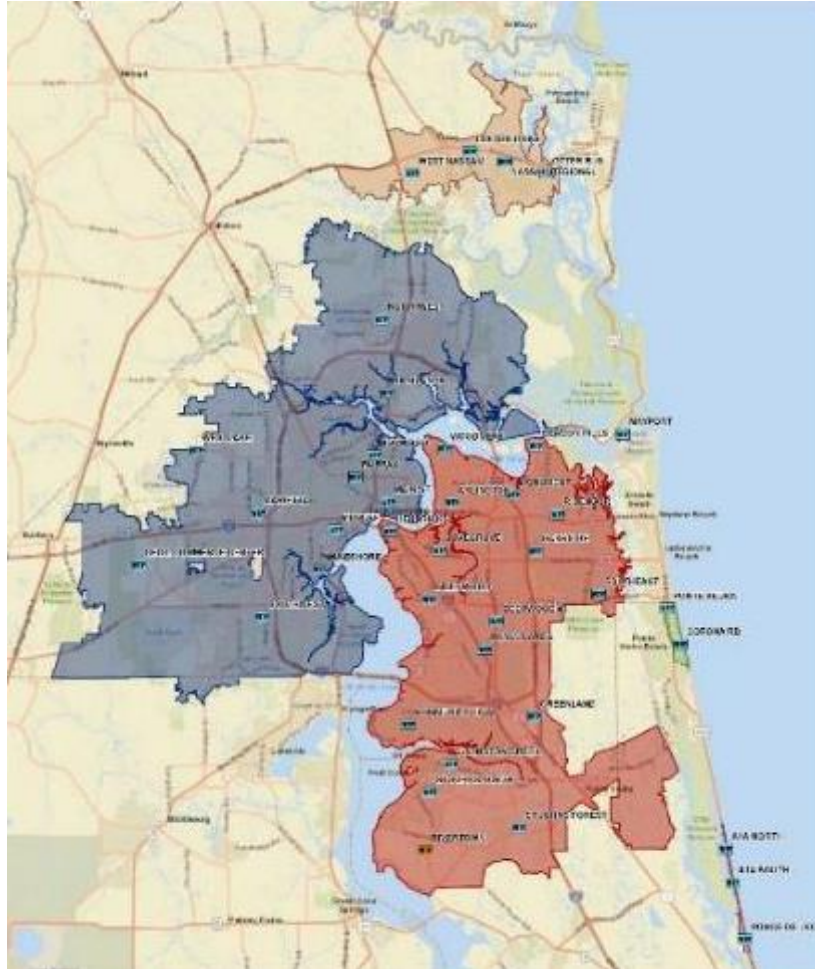
Hai X. Vu, P.E.  
*VP, Water & Wastewater Systems*



*March 22, 2024*

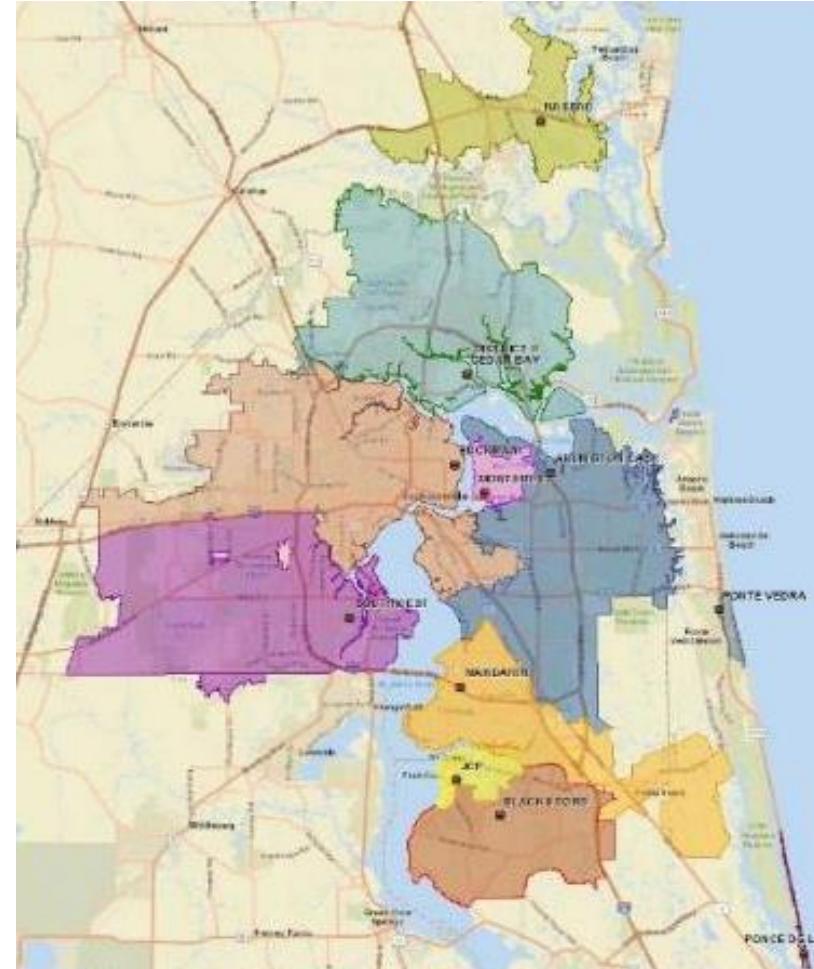


# Water System



- 372,000 customers
- 39 water treatment plants
- 139 production wells
- 5,200+ miles of pipe
- Produces ~120 million gallons per day (MGD)

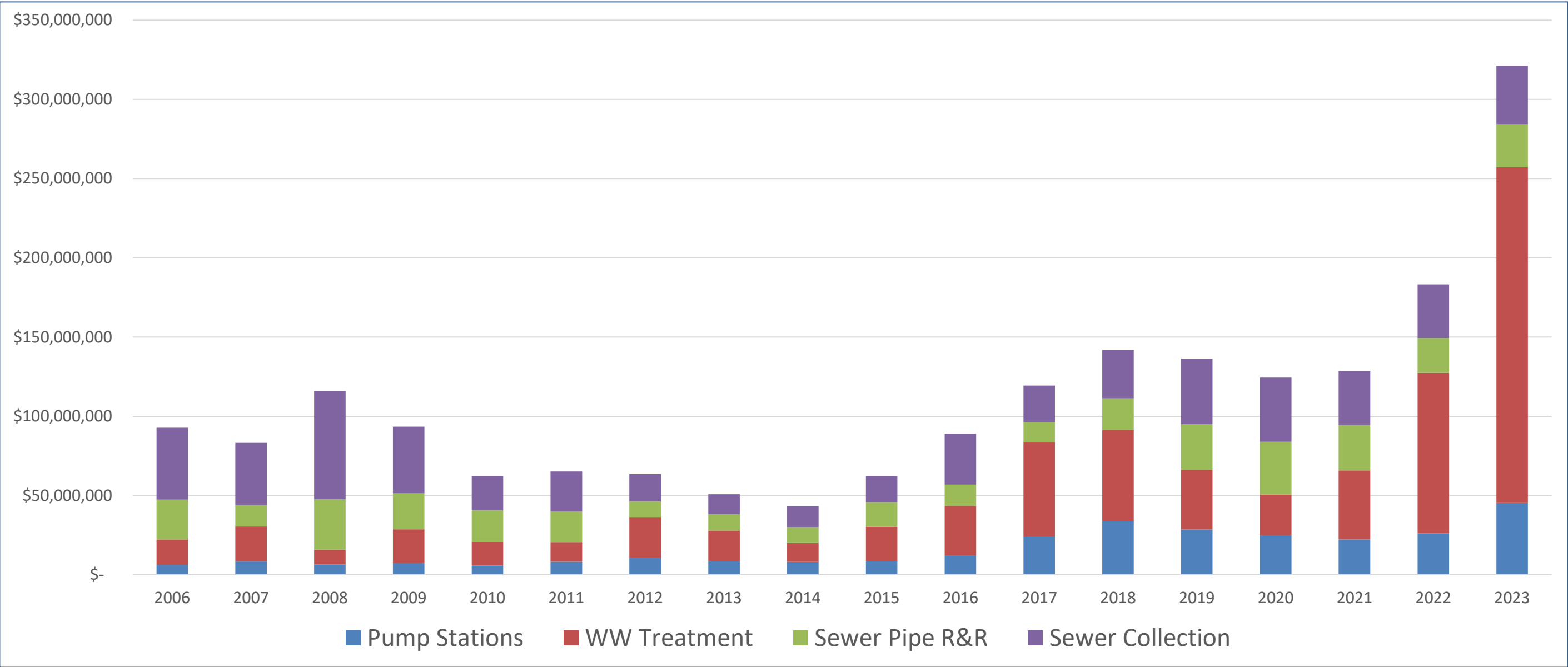
# Wastewater System



- 293,000 customers
- 11 water reclamation facilities
- 1,600+ lift stations
- 4,000+ miles of pipe
- Treats ~80 MGD of wastewater
- Produces 22 MGD of reclaimed water

**JEA serves customers in Duval, St. Johns, Nassau, and Clay counties**

# Investments into Wastewater System since 2006



2006 - 2023	Pump Stations	WW Treatment	Sewer Pipe R&R	Sewer Collection	TOTAL
TOTAL	\$ 295,332,655	\$ 741,618,811	\$ 364,812,602	\$ 575,007,698	\$ 1,976,771,767
AVERAGE	\$ 16,407,370	\$ 41,201,045	\$ 20,267,367	\$ 31,944,872	\$ 109,820,654

Nearly \$2B spent upgrading the WW system over the last 18 years

# Sewer Mains Rehabilitated within 1500' of Rivers & Tributaries

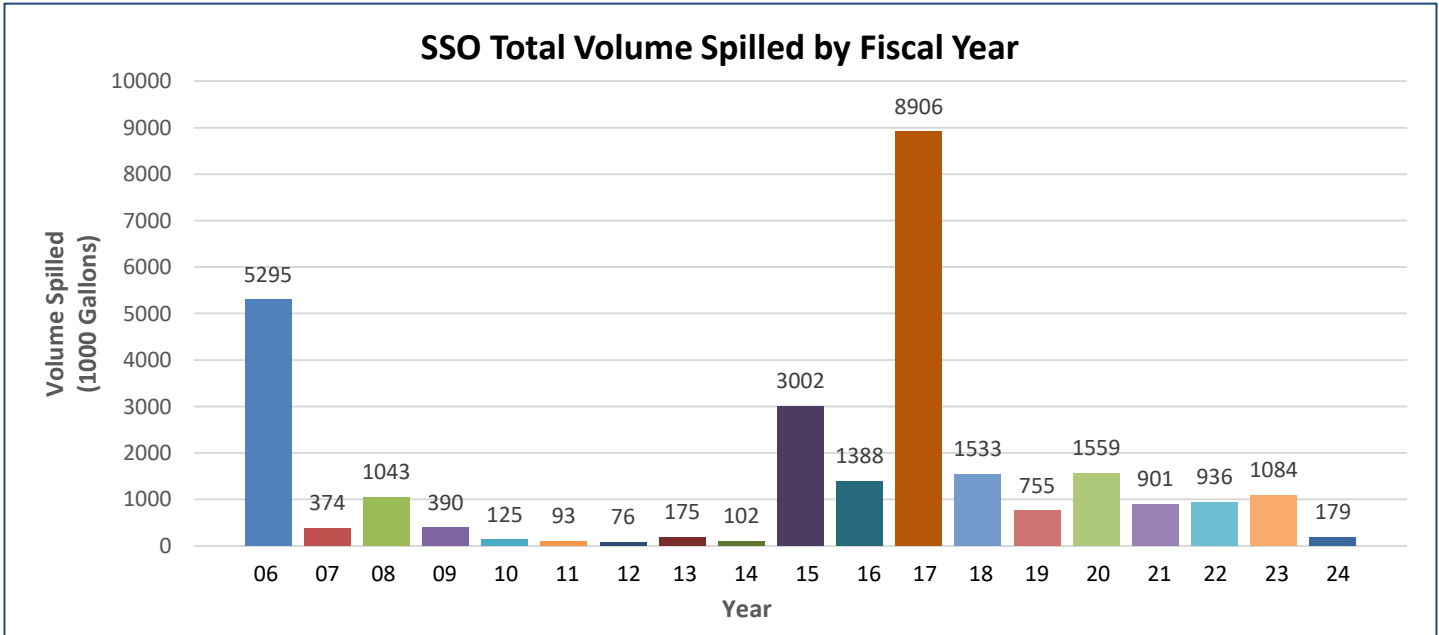
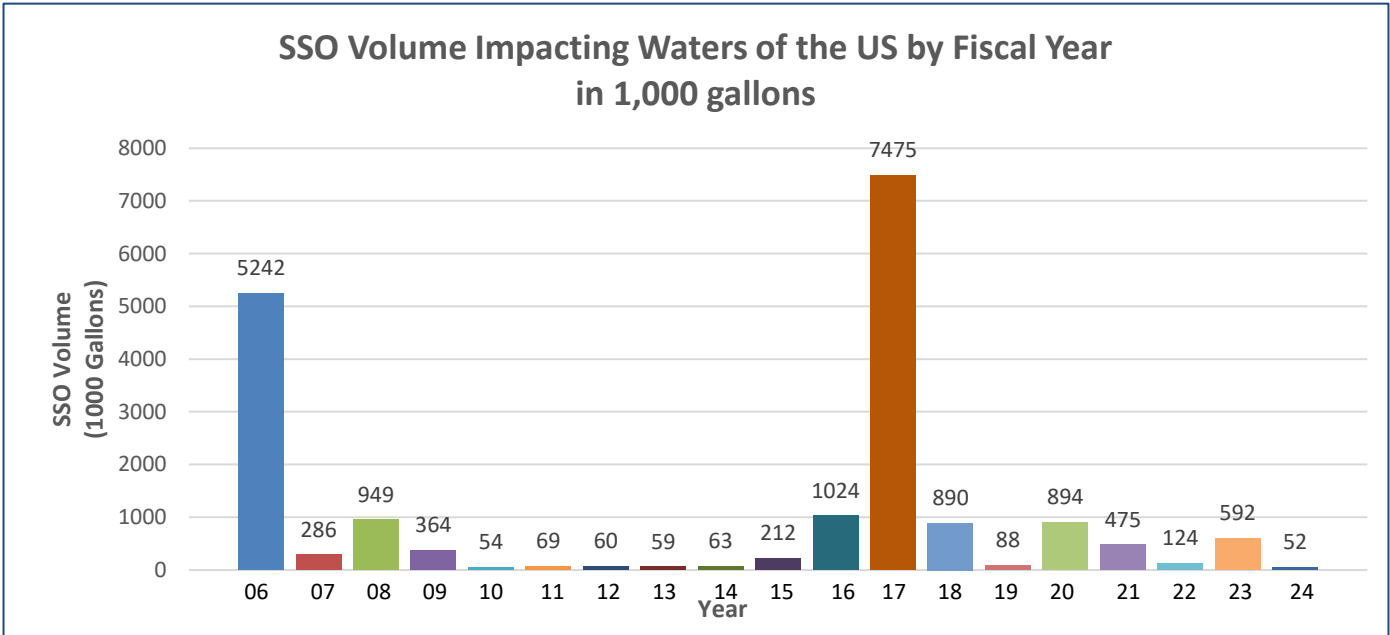
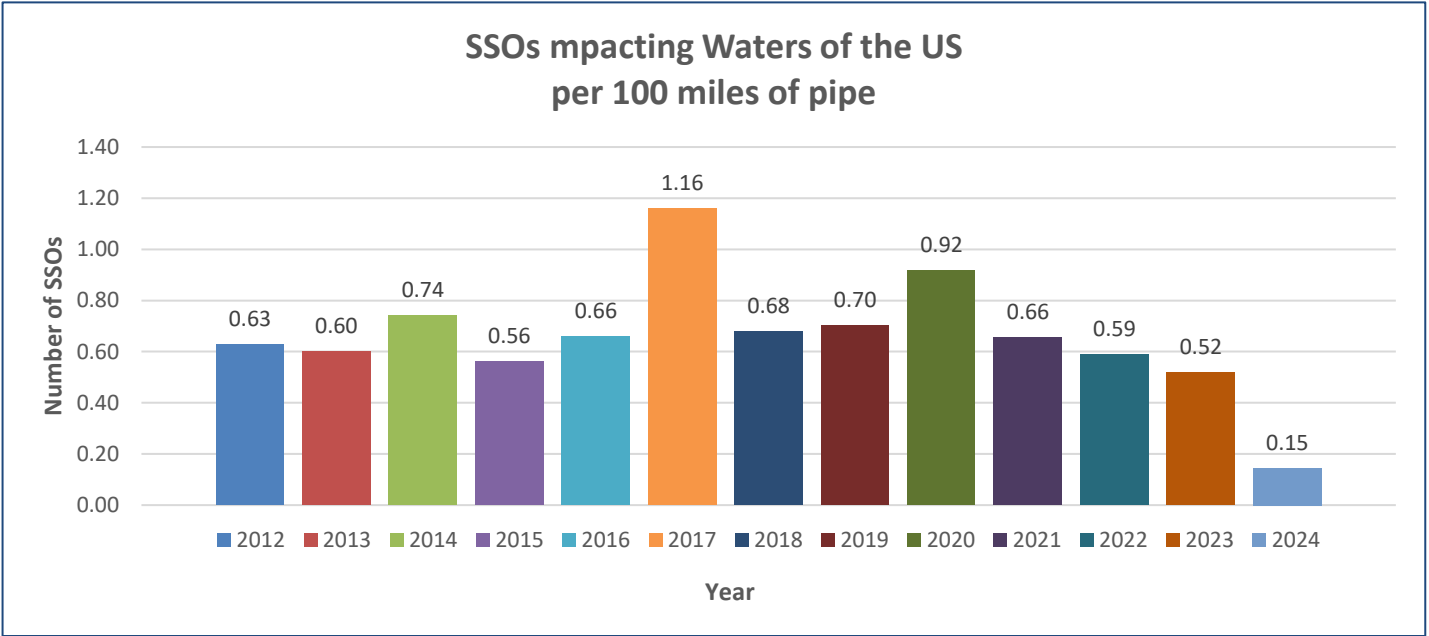
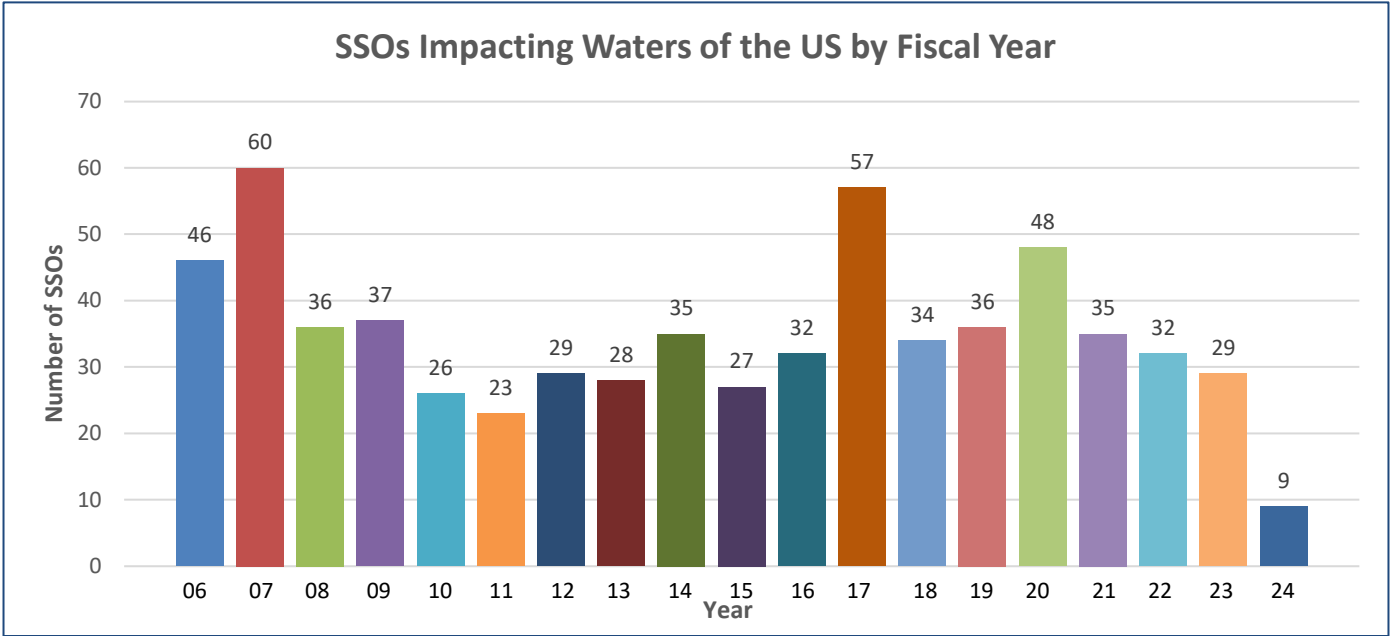


Type	Total Feet
Pipe Burst / Rehabbed	42,884.96
CIPP (Lined)	52,363.85

- Sewer Mains Pipe Burst or Rehabbed
- Sewer Mains CIPP (Lined)

Nearly 100,000 feet of pipes rehabilitated

# Sanitary Sewer Overflows



Major storms a significant impact to the wastewater system



# SSO Mitigation

Perform root cause analyses on each SSO incident

Increase monitoring and cleaning efforts

Manhole Inspection, Prioritization, and Rehabilitation or Replacement Program

ARV Inspection, Prioritization, and Rehabilitation or Replacement Program

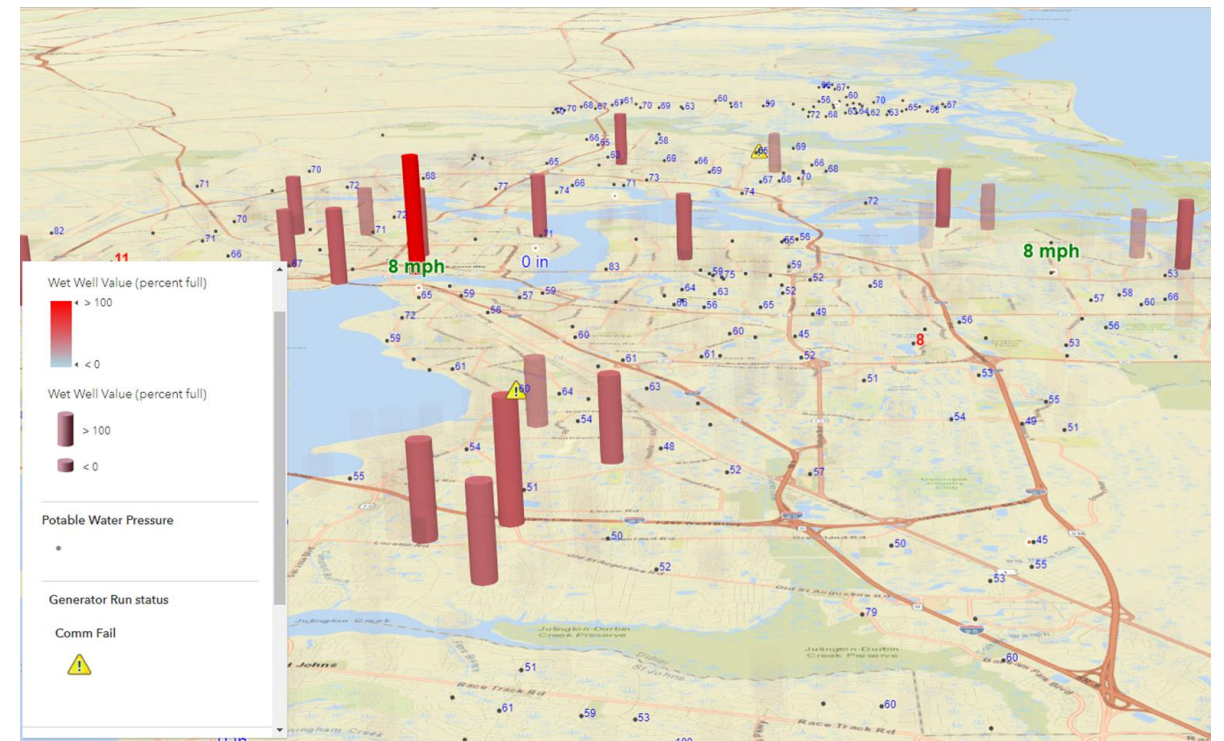
Small-Diameter AC and CI Force Main Replacement Program

Small Diameter Iron and Cement Gravity Main R&R Program

Finalizing a Capacity, Management, Operation and Maintenance (CMOM) Assessment and a comprehensive Wastewater Collection System Action Plan

Leverage in-house technology such as Augmented Operational Intelligence (AOI) to monitor 1600+ lift stations

Add generators and diesel back-up pumps to minimize SSOs at lift stations



Implementing focused, proactive programs to minimize SSOs

# Total Nitrogen Discharge to St. Johns River



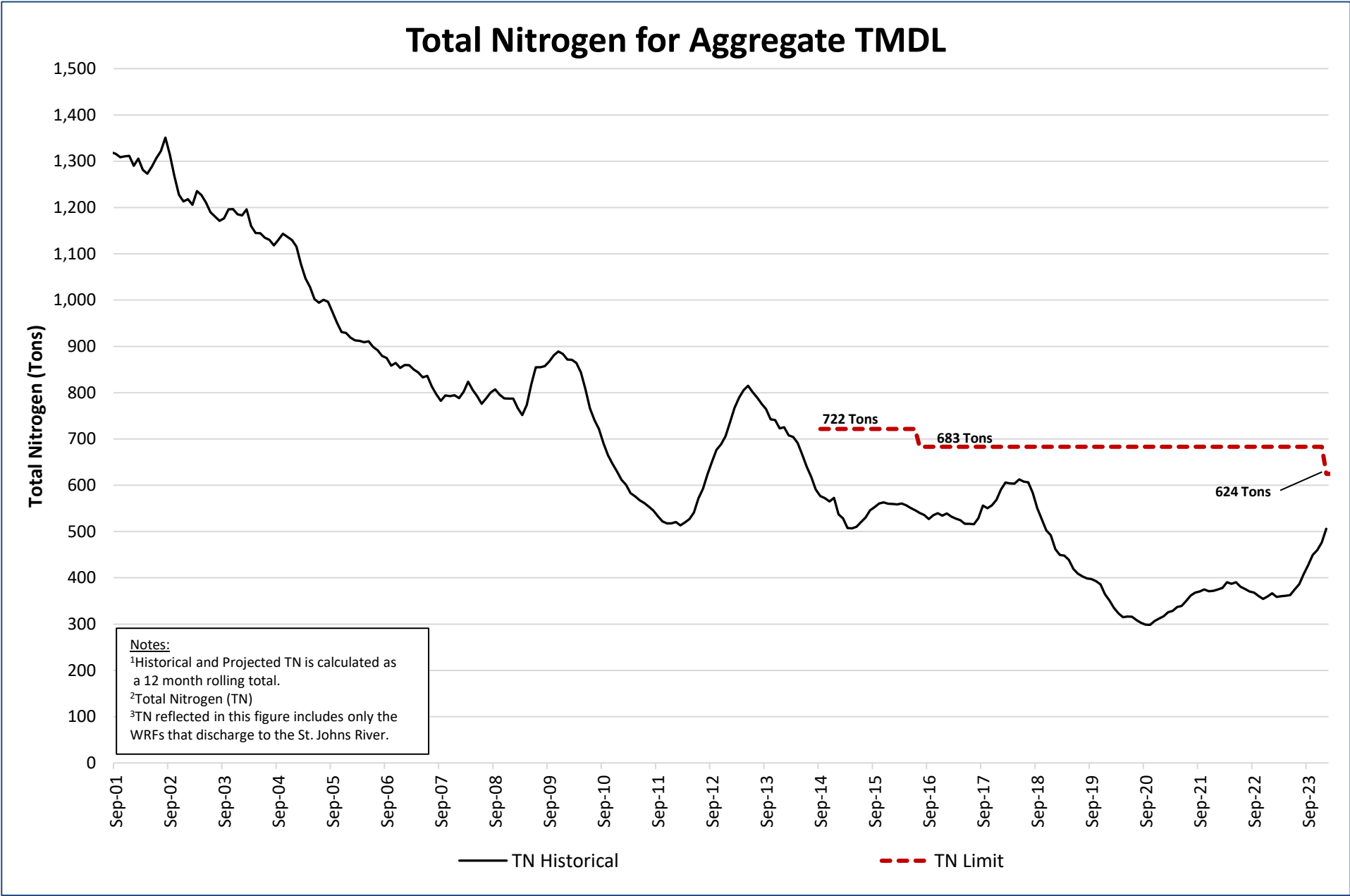
JEA’s TMDL limit: 716.64 Tons/yr  
12 month average: 496.2 Tons/yr

Committed Nutrient Credit Sales:

COJ: 74.69 MT TN/yr  
American Water: 9 MT TN/yr  
Vulcan Materials : 0.02 MT TN/yr  
**Total: 83.71 MT TN/yr  
(or 92.1 Tons/yr)**

20% Buffer: 99.2 Tons/yr

**Available for trade: 29.1 Tons/yr**



Continued reduction of nitrogen to the St. Johns River



# Designing for Resilience

## *JEA's Response to Hurricanes Matthew (2016) and Irma (2017) Flooding*



Source: [www.s.w-x.co/wu/jax-flooding-sheriff-9.11.17](http://www.s.w-x.co/wu/jax-flooding-sheriff-9.11.17)

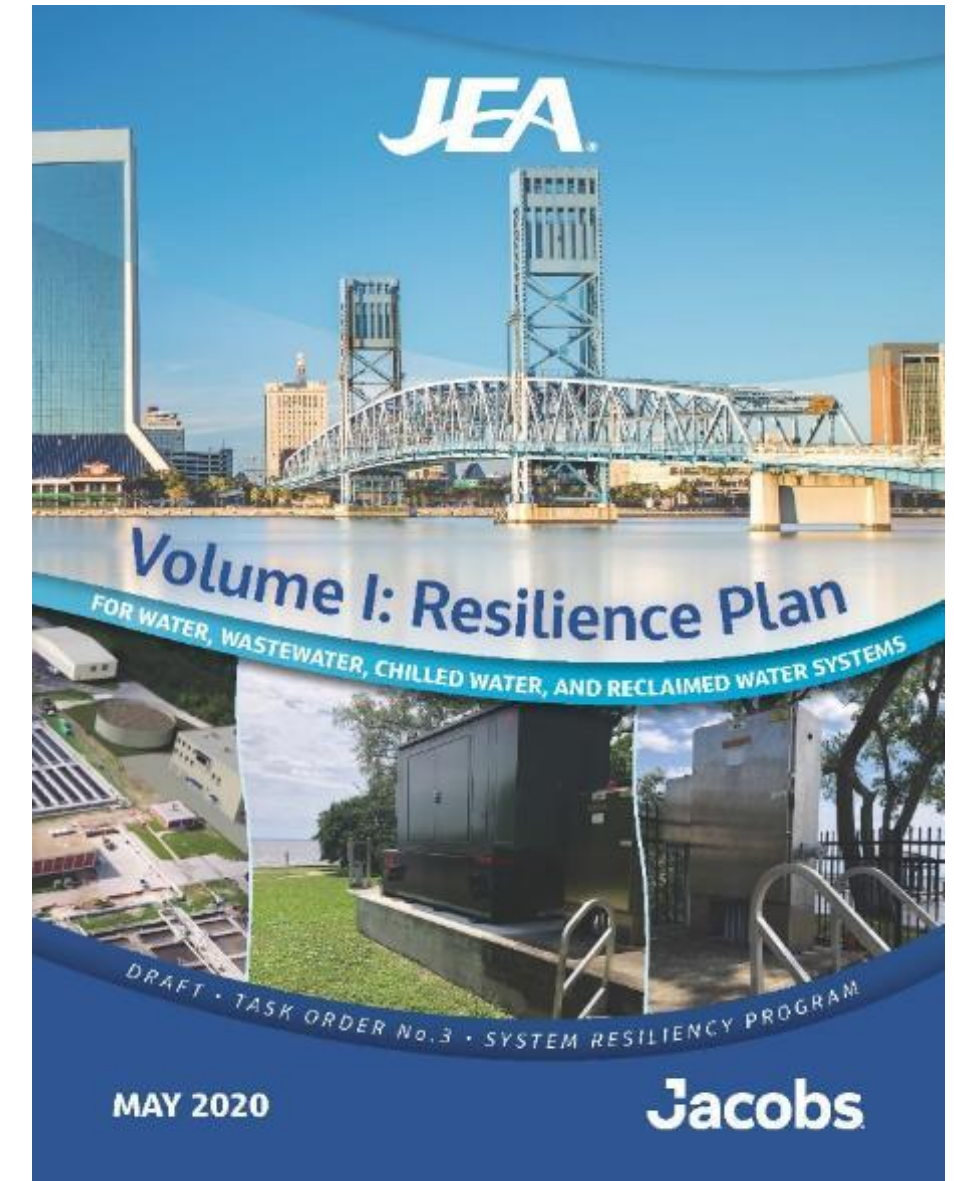


Source: [www.s.w-x.co/wu/jax-flooding-sheriff-9.11.17](http://www.s.w-x.co/wu/jax-flooding-sheriff-9.11.17)



# Resiliency: Goal and Overview

- Understand severe weather, climate risks
- Identify our vulnerabilities
- Update design standards and strategies
- Develop Resilience Plan





# System Resiliency Framework

- Establish future extreme weather scenarios
- Perform surge, riverine and inland flood modeling
- Perform vulnerability assessment
- Perform risk analysis of select JEA facilities
- Develop mitigation and adaptation strategies
- Perform Economic cost-benefit analysis
- Prioritize strategies
- Update design and construction standards
- Develop resiliency plan and implementation roadmap





# Current Efforts

- Develop, implement Capital Improvement Plan for Resilience projects
- Update JEA design standards for resilience
- Continue adding generators, back-up pumps
- Convert overhead to underground electric services at vulnerable and critical pump stations
- Continue with staff training







**Thank You!**





# 2023 North Florida Regional Water Supply Plan

River Accord Task Force  
March 22, 2024

Lori Burklew

Regional Water Supply Planning Coordinator  
Bureau of Water Supply Planning



**St. Johns River**  
Water Management District

# Regional Water Supply Planning Process

- 20-year planning horizon
- Conducted in an open public process
- Coordination with other agencies
- Approval by the Governing Board
- Updated every five years





# 2023 North Florida Regional Water Supply Plan

## Technical Methods

- November 2021 (4-week review)
- Datasets revised January-June 2022
- Second review January-June 2022
- Datasets finalized July 2022

## Constraints Assessment

- November 2022 (6-week review)

## Project Solicitation

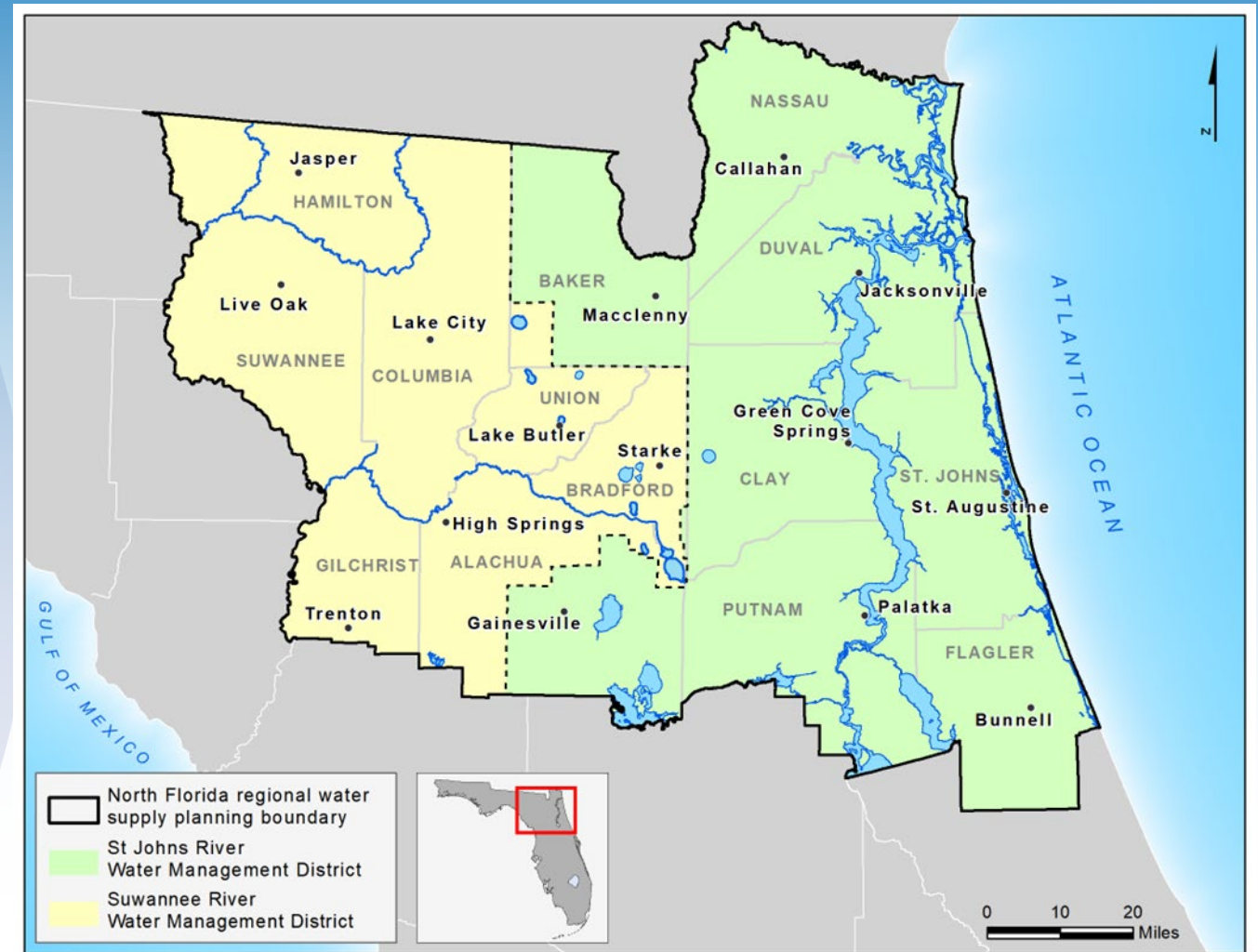
- February-April 2023

## Draft 2023 NFRWSP Workshop

- September 2023 (3-week review)

## 2023 NFRWSP Approval

- Dec 12, 2023, SJRWMD and SRWMD Governing Board Meetings



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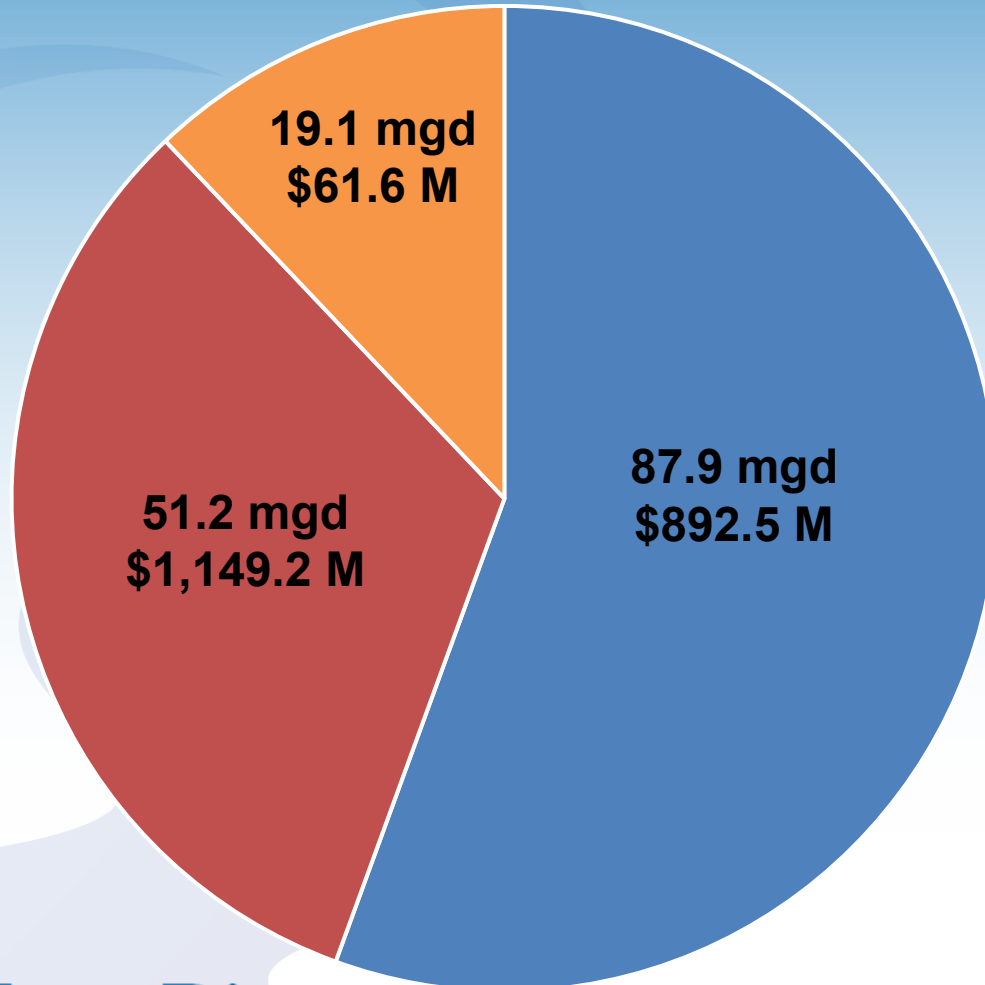
# Conclusions

- Projected 135 mgd increase in groundwater demand from 2015 to 2045
- Future demand **cannot be met with traditional sources** without potential impacts to water resources
- The NFRWSP identifies 160 mgd of **project options**, at a total cost of \$2.3 B to meet future water demands while sustaining water resources and related natural systems
- Potential funding options – District, state, federal and private





# Project Options to Meet Future Demand

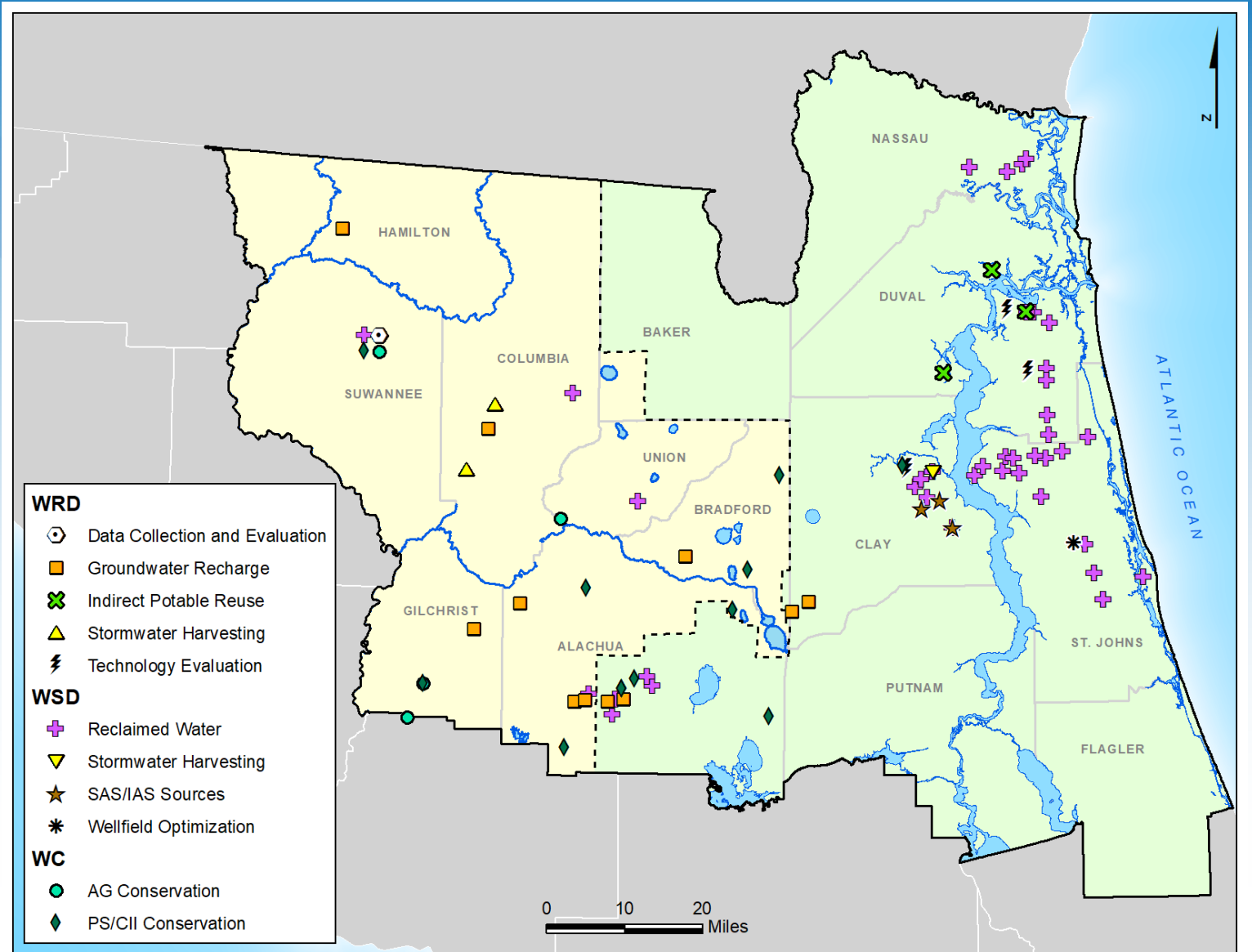


- Water Supply Development
- Water Resource Development
- Water Conservation



# 2023 NFRWSP Project Options

- 160 mgd estimated benefit
- 118 potential project options
  - 52 water supply
  - 23 water resource development
  - 24 water conservation
  - 19 conceptual
- Total cost of \$2.3 billion





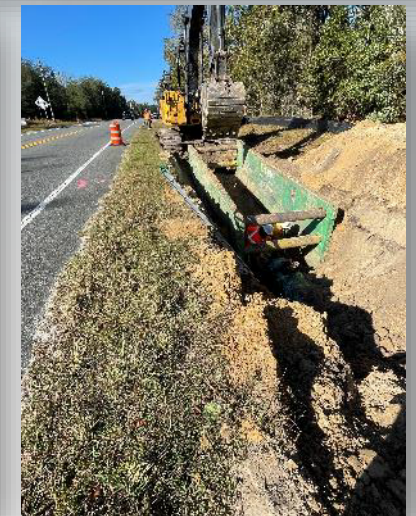
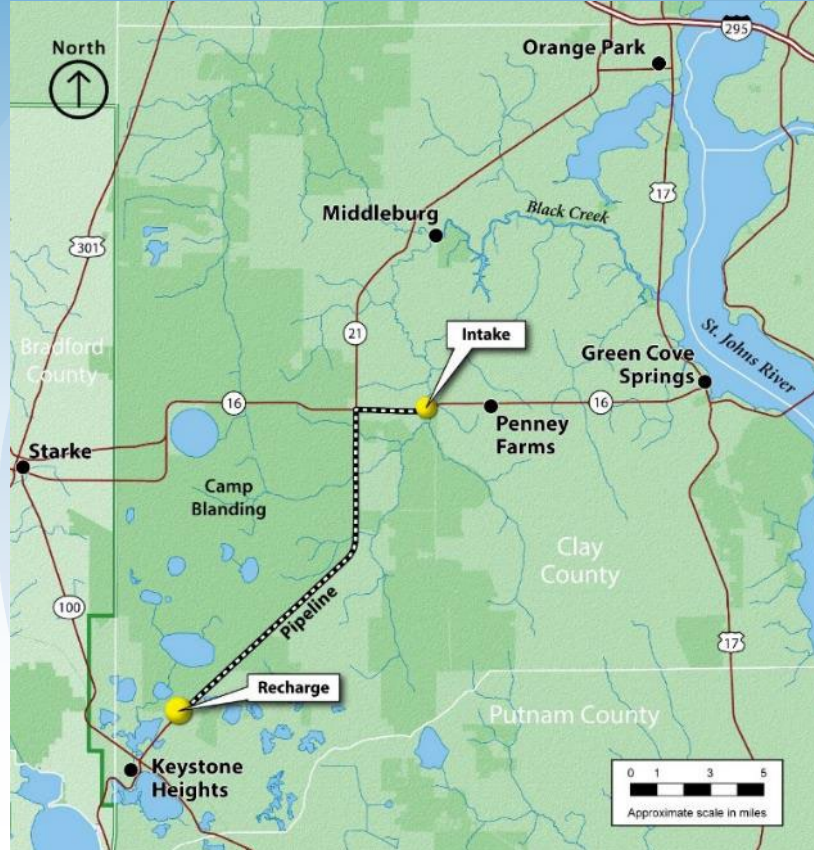




# Water Resource Development

## 23 projects, 51.2 mgd, \$1.2 B

### Black Creek Water Resource Development Project



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# Water Conservation

## 24 projects, 16.8 mgd, \$57.5 M

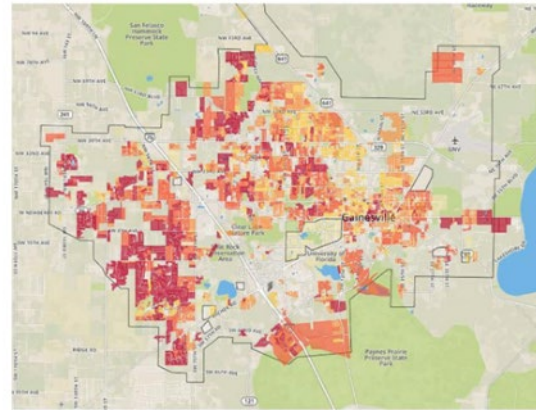
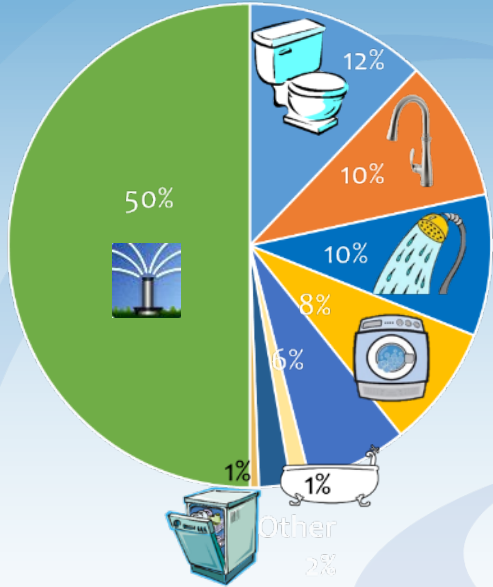


Figure 2. Water consumption in the Gainesville Regional Utilities (GRU) service territory. Color coding shows how some subdivisions use more water than others. Darker colors mean a higher water use.

Credit: UF/IFAS H<sub>2</sub>OSAV



Landscape Irrigation and Florida-Friendly Landscaping™ Design Standards

CREATED DECEMBER 2006, UPDATED TBD 2023



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# Regional Water Supply Plan Implementation

- Districts have notified **public water supply** entities with projects in the plan
  - PWS entity must submit annual project progress reports
- **Local governments** must amend their Comprehensive Plans to include updated Water Supply Facilities Work Plans by June 12, 2025
  - Work Plans must demonstrate sufficient water supply for at least the next 10 years
- **Districts** continue work with partners to develop projects





# CONTACT INFORMATION

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Doug Conkey/Intergovernmental Coordinator/904-730-6287

Steve Fitzgibbons/Intergovernmental Planner/386-312-2369

Deirdre Irwin/Water Conservation Coordinator/386-329-4341

Derek Busby/Cost-Share Project Manager/386-329-4459

2023 NFRWSP link

<https://northfloridawater.com/watersupplyplan/index.html>



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# EXTRA SLIDES



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# Water Supply Development Options

Type	Number of Projects	Estimated Benefit (mgd)	Estimated Total Cost (\$M low range)
Aquifer Storage and Recovery	NA	NA	NA
Brackish Groundwater	NA	NA	NA
Reclaimed Water	45	78.7	\$849.3
SAS/IAS Water Sources	4	5.0	\$29.9
Surface Water	NA	NA	NA
Stormwater	1	0.2	\$2.9
Wellfield Optimization	1	0.0	\$10.5
<b>Total</b>	<b>51</b>	<b>87.9</b>	<b>\$892.5</b>



# Water Resource Development Options

Type	Number of Projects	Estimated Benefit (mgd)	Estimated Total Cost (\$M)
Data Collection and Evaluation	1	0.0	\$4.0
Groundwater Recharge	12	32.7	\$262.0
Indirect Potable Reuse	4	17.4	\$788.3
Reservoirs	NA	NA	NA
Seawater	NA	NA	NA
Stormwater/Surface water	2	0.03	\$11.1
Technology Evaluation	3	1.0	\$83.9
<b>Total</b>	<b>22</b>	<b>51.2</b>	<b>\$1,149.2</b>





# Water Conservation Project Options

Type	Number of Projects	Estimated Benefit (mgd)	Estimated Total Cost (\$M low range)
Agricultural Conservation	6	12.4	\$20.3
PS/CII Conservation	17	6.8	\$41.3
Total	23	19.1	\$61.6



FOR THE PERMANENT RECORD OF NEFRC

FOR THE PERMANENT RECORD OF THE 4/22/23 RIVER

THE 7/28/2023

RESILIENCY

SUBCOMMITTEE OF THE INFRASTRUCTURE

COMMITTEE BY JOHN T. NOONEY

ADVOCATING FOR THE

BETH PAYNE

ACCORD TASK FORCE

JIMMY PALUSO - CHAIR

TOM MICHAEL BARKER - JWC

RIEK HARTLEY - JWC

ADAM HOYLES - ? LISA

ST. JAMES RIVERKEEPER RIVANA

RIVER

NEFRE ACCORD

APPRAISE NEED

DEVELOP A PROTECT 2023-0807?

RESILIENCY TOURISM

NEFRE ACCORD

\* MAY 18, 2023

ECOTOURISM - TRAILS STEERING

COMMITTEE MEETING

FOR MICHAEL FACKLER

LAUREN FISHER (JW) \$100,000,000 JURY SETTLEMENT TRIAL

FOR 2024-0166 (2024-0169 FEMA) 2024-0175, 2024-0107

2024-0161, 2024-0172, 2024-0135, 2023-0780

2024-0178

N-NORTH

E-EAST

F-FLORIDA

R-REGIONAL

C-CENTER

FOR RESILIENCY

POTTSBURG CREEK PUBLIC PARK

8356 BASCOM RD. JAX FL 322

JACKSONVILLE CITY COUNCIL DIST. 4

CPAC PLANNING DIST. 3 SCHOOL BOARD DIST. 3

NEXT TO A FEMA HOUSE

FOR THE PERMANENT RECORD OF THE 4/6/2023

NEFRE 10-AM MEETING BY JOHN T. NOONEY - 2023-0819

8356 BASCOM RD. JACKSONVILLE FL 32216 VERO5EY@AOL.COM

NFLT-RECOGNIZES THE RECREATIONAL VALUE OF POTTSBURG CREEK PUBLIC PARK IN DISTRICT 4

CPAC-3-SCHOOL BOARD-3

3/22/2024 EVIDENCE RIVER ACCORD TASK FORCE