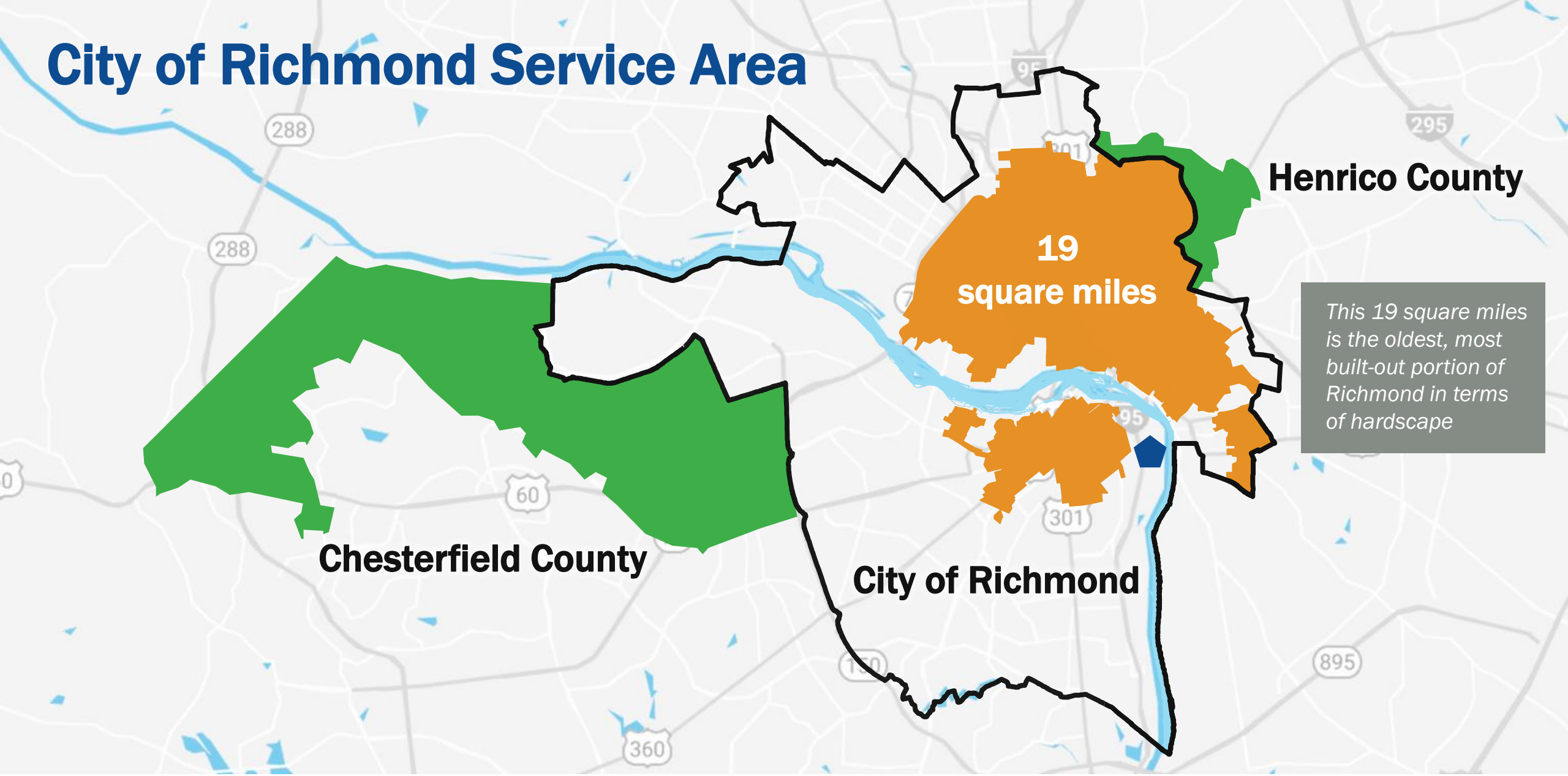
Chesapeake Bay Commission
Building RVAH2O – A Clean Water Success Story
November 10, 2023

City of Richmond Service Area



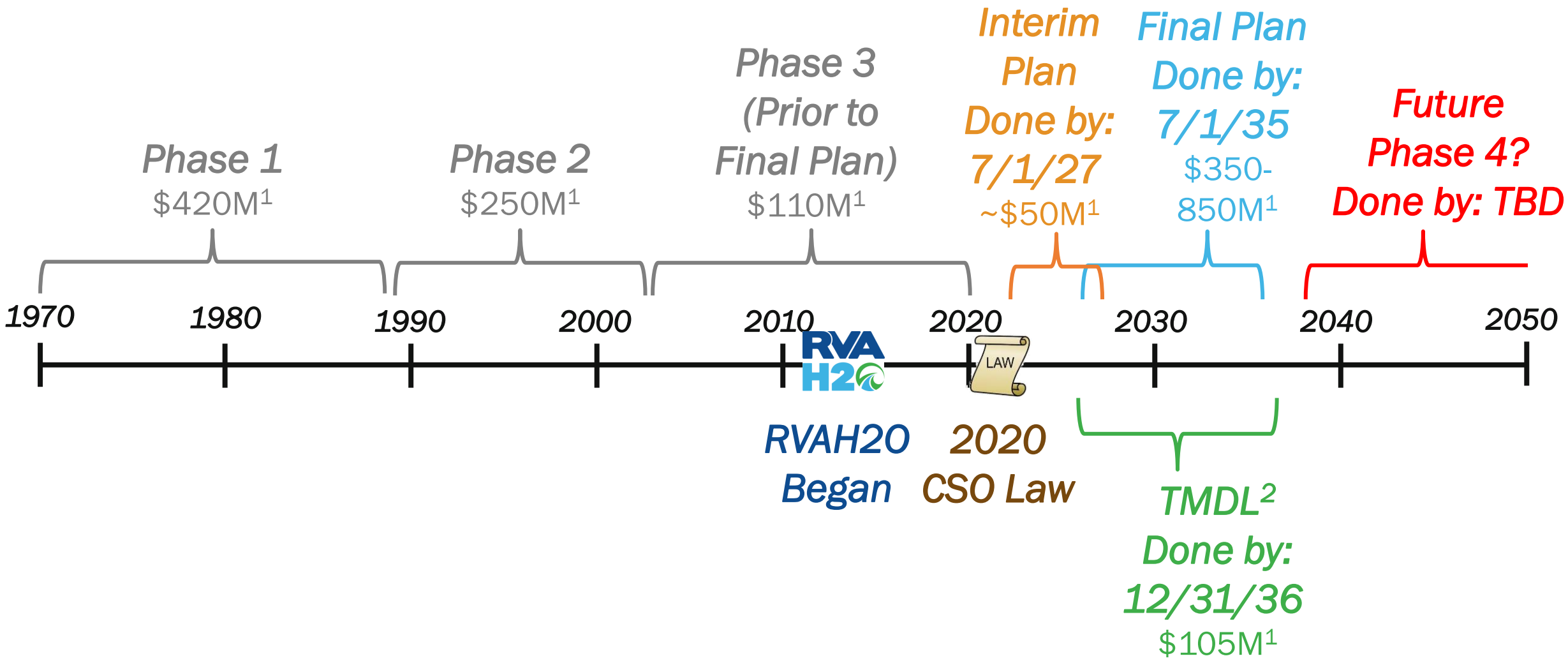
Combined Sewer System Drainage Area

County Area Serviced by City

Wastewater Treatment Plant

Richmond's DPU has been working for decades with partners to improve water quality in the James River

Clean Water Improvement Timeline



1. Cost in August 2023 Dollars
2. James River Bacteria TMDL (Total Maximum Daily Load)

RVAH20 Begins

RVAH2O Goal: Find Ways to Work Together

> Over the last several years, the RVAH2O program has provided a very valuable forum for City stakeholders to work together on water-related issues. As Richmond continues the very challenging work of modernizing its combined sewer system, RVAH2O will ensure a robust and constructive dialogue among stakeholders, and we look forward to participating.

Peggy Sanner
Chesapeake Bay Foundation, Virginia Executive Director

University of Virginia | Institute for Engagement & Negotiation
Shaping Our World Together

Building RVAH20

EPA Frameworks

- Integrated Watershed Management
- Involve Stakeholders
- Characterize Watershed
- Finalize Goals & ID Solutions
- Design Implementation Program
- Implement Program
- Measure & Adapt

- Integrated Planning
- Identify Issues to Address
- Characterize Current System
- Involve Stakeholders
- Identify, Evaluate & Select Alternatives
- Measure
- Adapt

Richmond Framework

- Integrated Water Resources Management Planning
- Watershed Characterization
- Strategy Identification & Selection
- Program Implementation
- Progress Measurement
- Adaptive Management

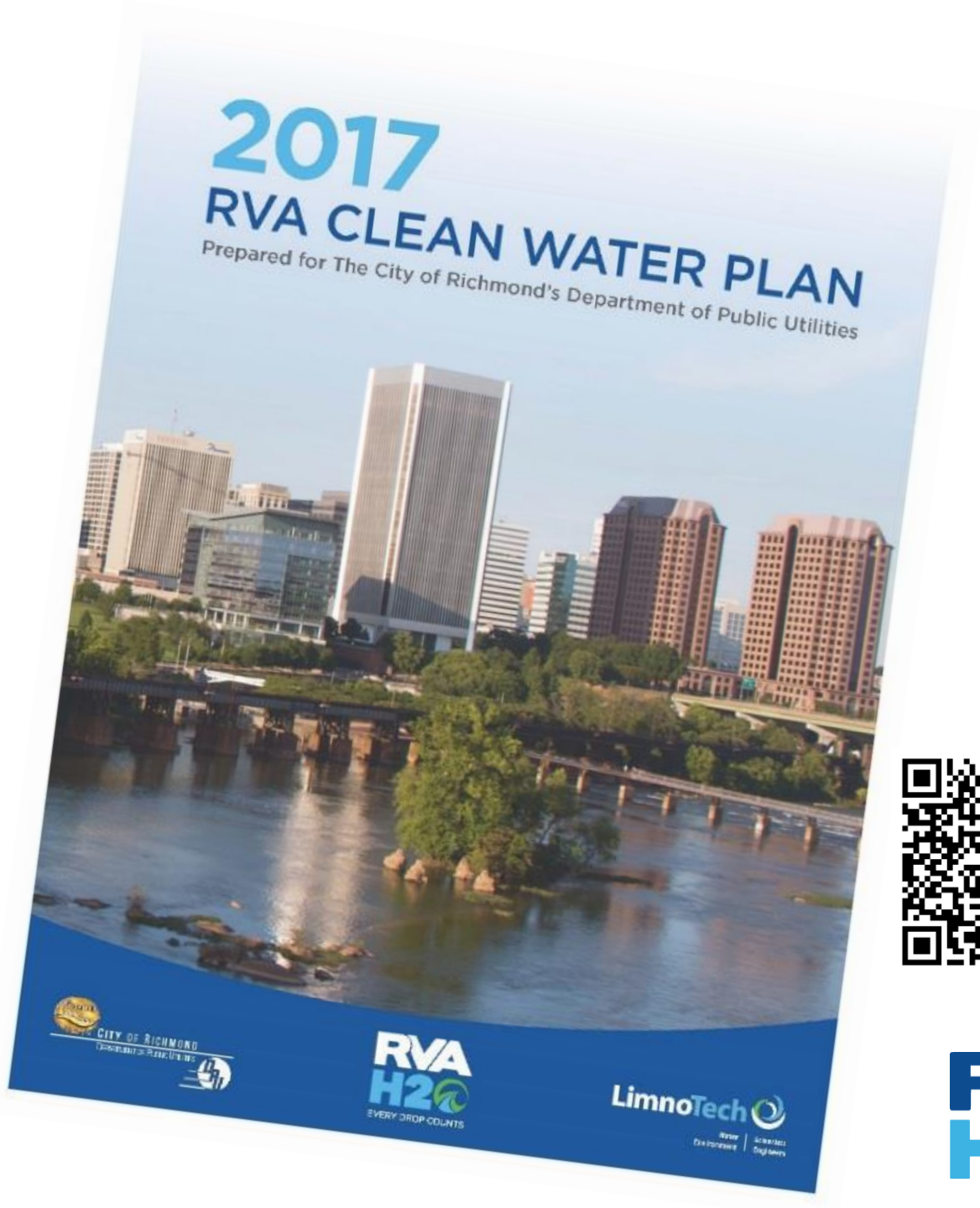
Stakeholder Involvement

VPDES Integrated Permit

RVA Clean Water Plan

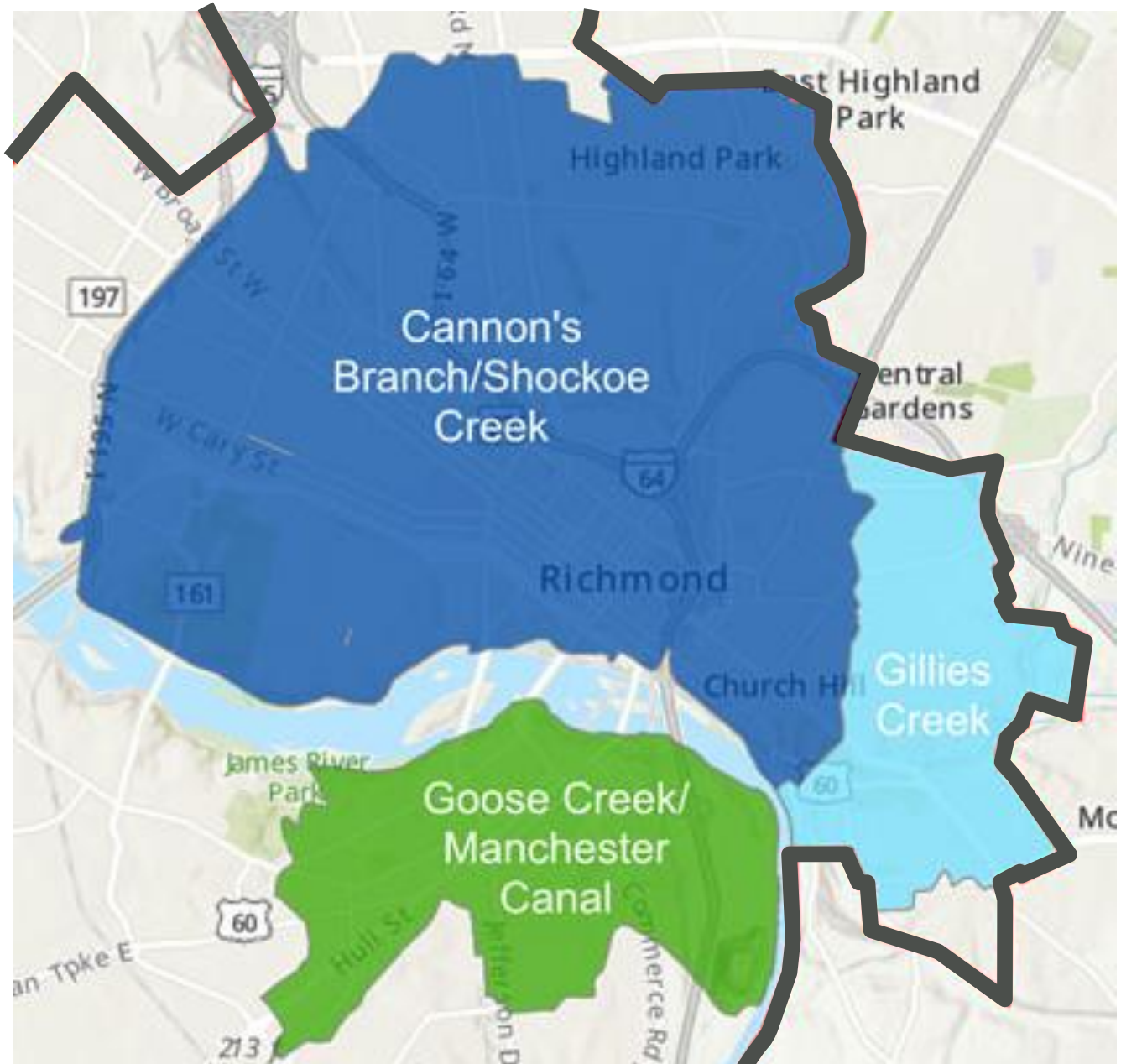
Stakeholder-driven plan that prioritizes reducing pollution in our waterways

- ❑ Bacteria
- ❑ Nutrients
- ❑ Sediment



RVA Clean Water Plan – Three Priority Watersheds

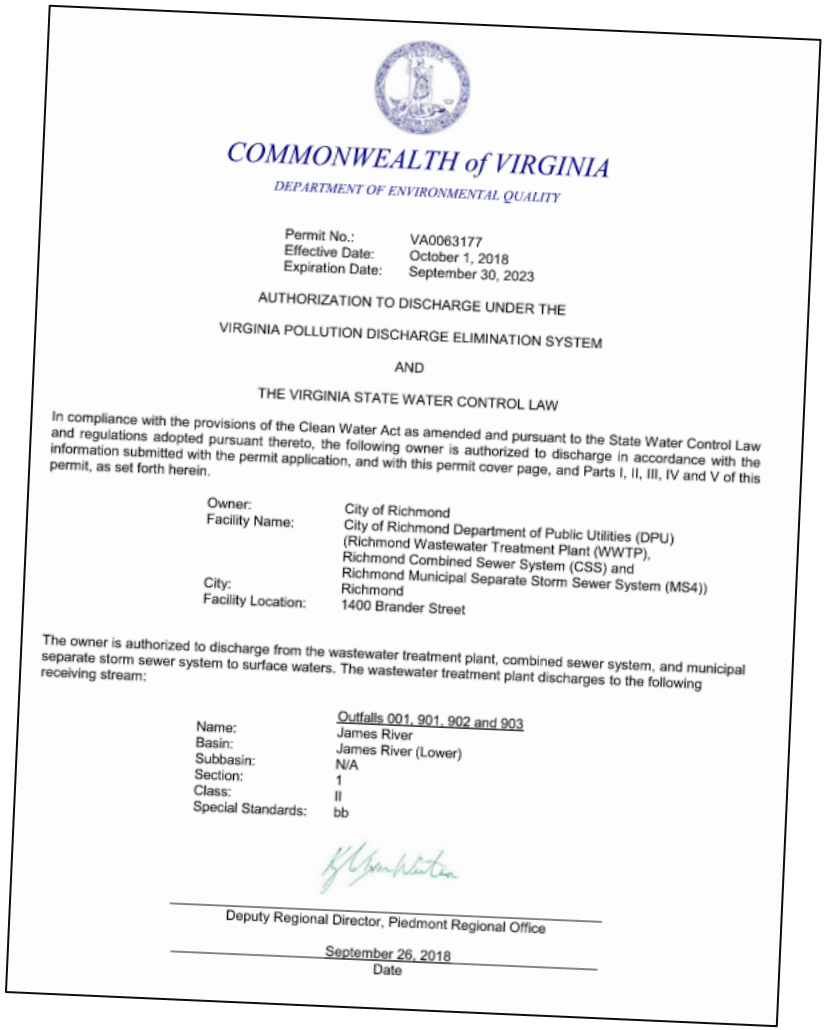
Highest pollutant loads in these watersheds



RVAH2O Outcomes

Permit and GI Master Plan

1st Integrated Permit in VA



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

Permit No.: VA0063177
Effective Date: October 1, 2018
Expiration Date: September 30, 2023

AUTHORIZATION TO DISCHARGE UNDER THE

VIRGINIA POLLUTION DISCHARGE ELIMINATION SYSTEM

AND

THE VIRGINIA STATE WATER CONTROL LAW

In compliance with the provisions of the Clean Water Act as amended and pursuant to the State Water Control Law and regulations adopted pursuant thereto, the following owner is authorized to discharge in accordance with the information submitted with the permit application, and with this permit cover page, and Parts I, II, III, IV and V of this permit, as set forth herein.

Owner: City of Richmond
Facility Name: City of Richmond Department of Public Utilities (DPU) (Richmond Wastewater Treatment Plant (WWTP), Richmond Combined Sewer System (CSS) and Richmond Municipal Separate Storm Sewer System (MS4))
City: Richmond
Facility Location: 1400 Brander Street

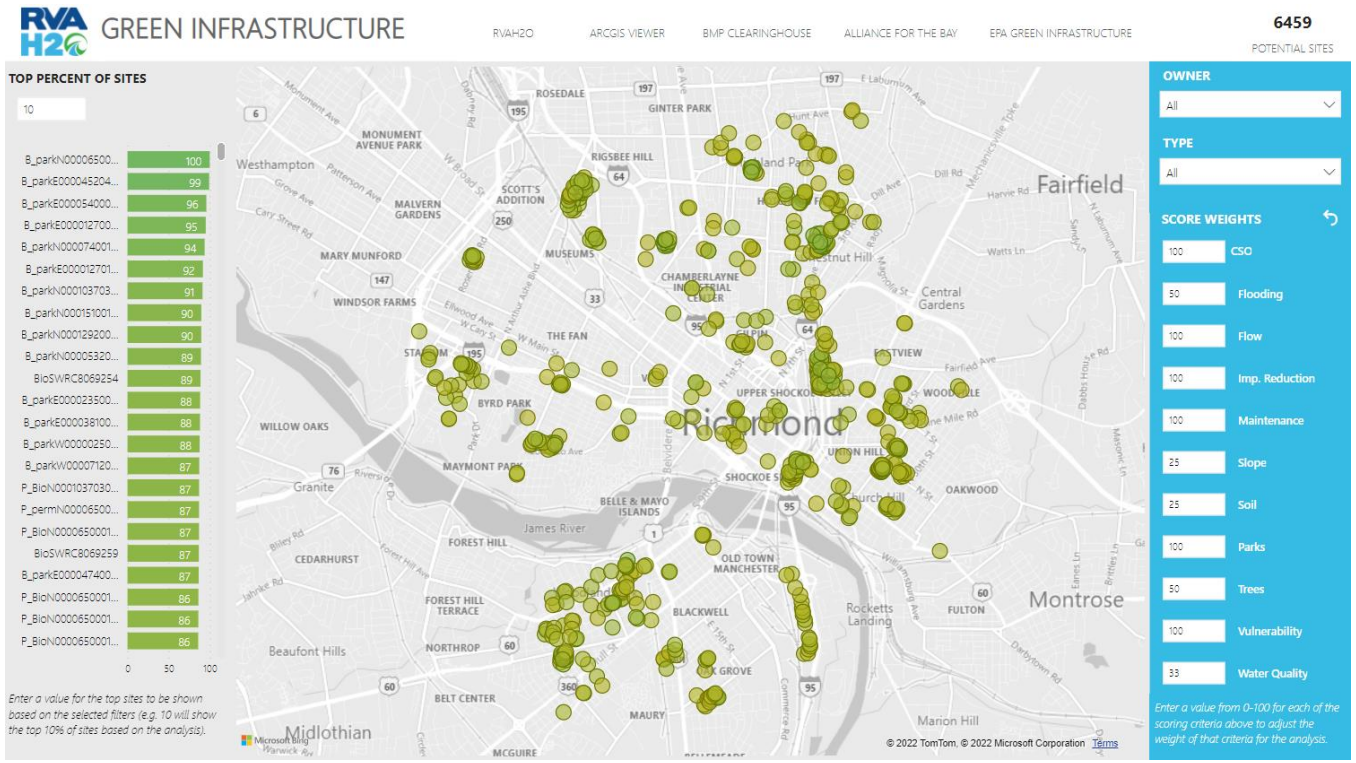
The owner is authorized to discharge from the wastewater treatment plant, combined sewer system, and municipal separate storm sewer system to surface waters. The wastewater treatment plant discharges to the following receiving stream:

Outfalls 001, 901, 902 and 903
Name: James River
Basin: James River (Lower)
Subbasin: N/A
Section: 1
Class: II
Special Standards: bb

Deputy Regional Director, Piedmont Regional Office

September 26, 2018
Date

Green Infrastructure Master Plan



ALLIANCE for the Chesapeake Bay

RVA H2O

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ARCADIS

RVAH2O Outcomes: Nutrient and Sediment Removal

Green Infrastructure Projects

18 - City Projects

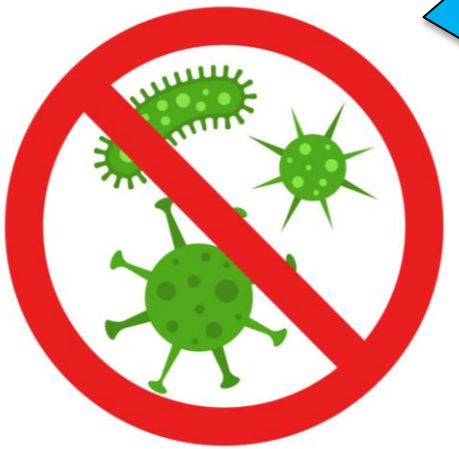
Greening of the Libraries

8 - Partner Projects (8)

Bellmeade Green Street

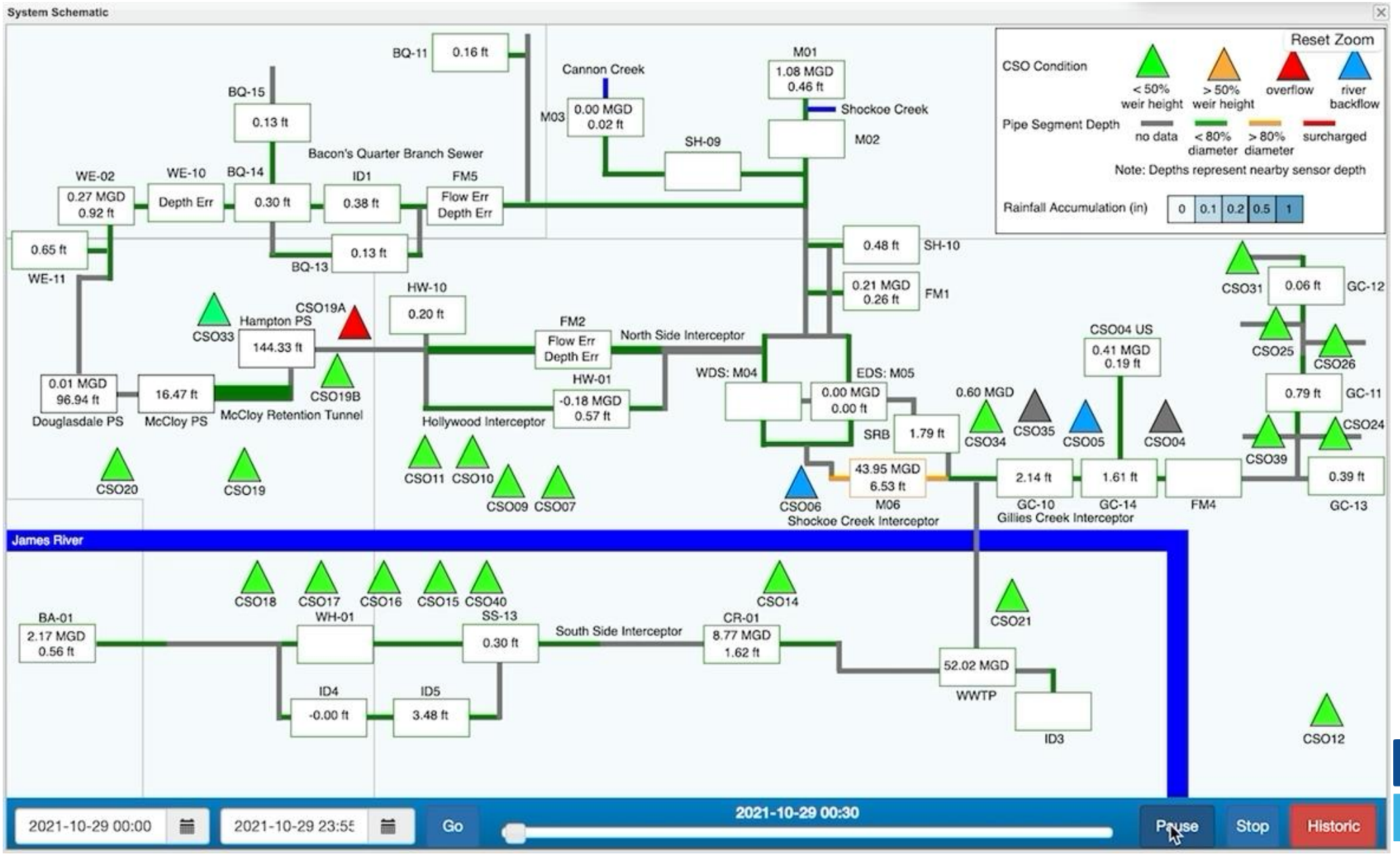
RVAH2O Outcomes: Bacteria Reduction

WWTP Expansion (75 MGD to 140 MGD)



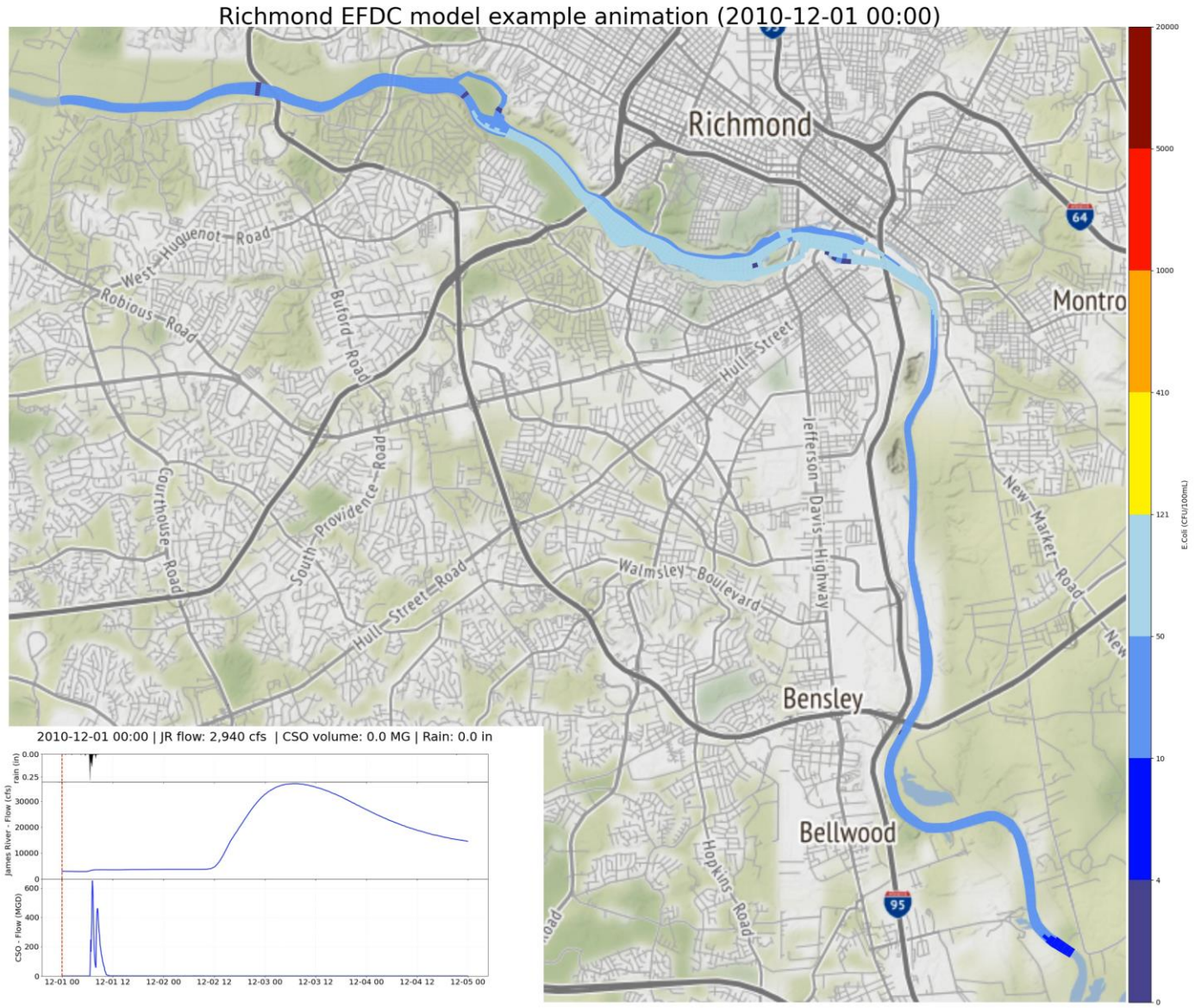
Reduction of ~10 Million (Billion CFUs) since 2021

Virginia's First Smart Sewer



James River Water Quality Model – Animation

December 1 , 2010 Rain Event: 1.33-in



River Flow →

Rain →

More Bacteria

>WQS Limit

Less Bacteria

Today's Challenges
2020 CSO Law

2020 CSO Law Requirements

The City of Richmond is required to develop Interim and Final Plans:

- **Interim Plan submitted July 2021**; construction to be completed 7/1/27
- **Final Plan due July 2024;** construction to be completed by 7/1/35

Interim Plan

Purpose	Identify the most efficient, cost-effective, quick turnaround projects to reduce CSO volume
Deadlines	✓ Plan Due: July 1, 2021 • Design Start: July 1, 2022 • Construction End: July 1, 2027

Development Process

Project Identification › Initial Screening › Project Evaluation › Final Screening › Project Selection

Interim Plan – Project Selection

PROJECT		Overflow Volume Reduction (MG)
In-Line Storage		
1	CSO 21	16.2
2	CSO 40 #1	12.3
Diversion		
3	CSO 19A	10.3
4	CSO 19B	2.2
5	CSO 20	8.9
Dynamic Underflow Control		
6	CSO 04	5.1
7	CSO 24	3.8
8	CSO 39	3.6
Controls Updates		
9	Level 1 Controls	78.7
10	Level 2 Controls	41.2

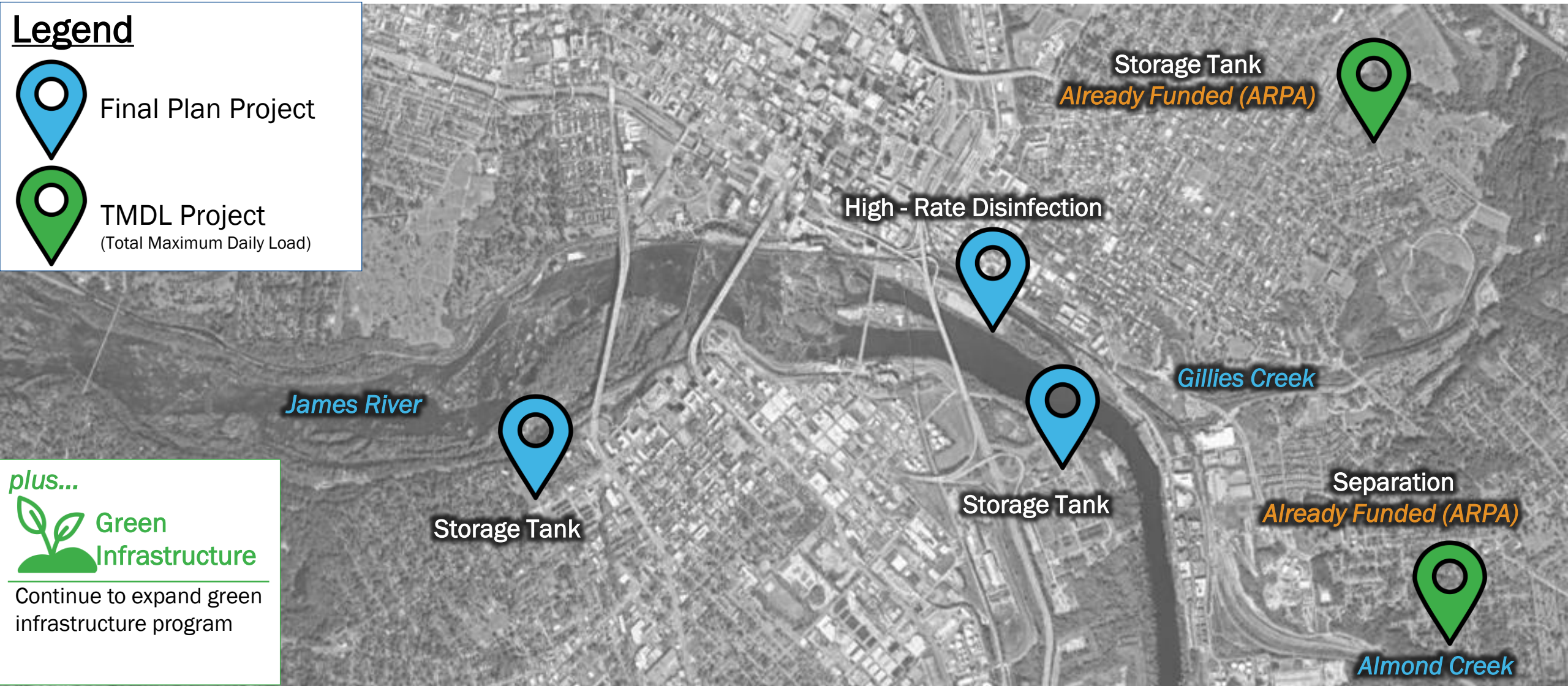
Final Plan

Purpose	Meet bacteria reduction requirements from the Consent Order and Bacteria TMDL
Deadlines	• Plan Due: July 1, 2024 • Design Start: July 1, 2025 • Construction End: July 1, 2035
Development Process	Project Identification › Initial Screening › Project Evaluation › Final Screening › Project Selection

WE ARE HERE

Final Plan – Preliminary Project Selection

86% Reduction in Bacteria ~$600-700M



DEQ Coordination

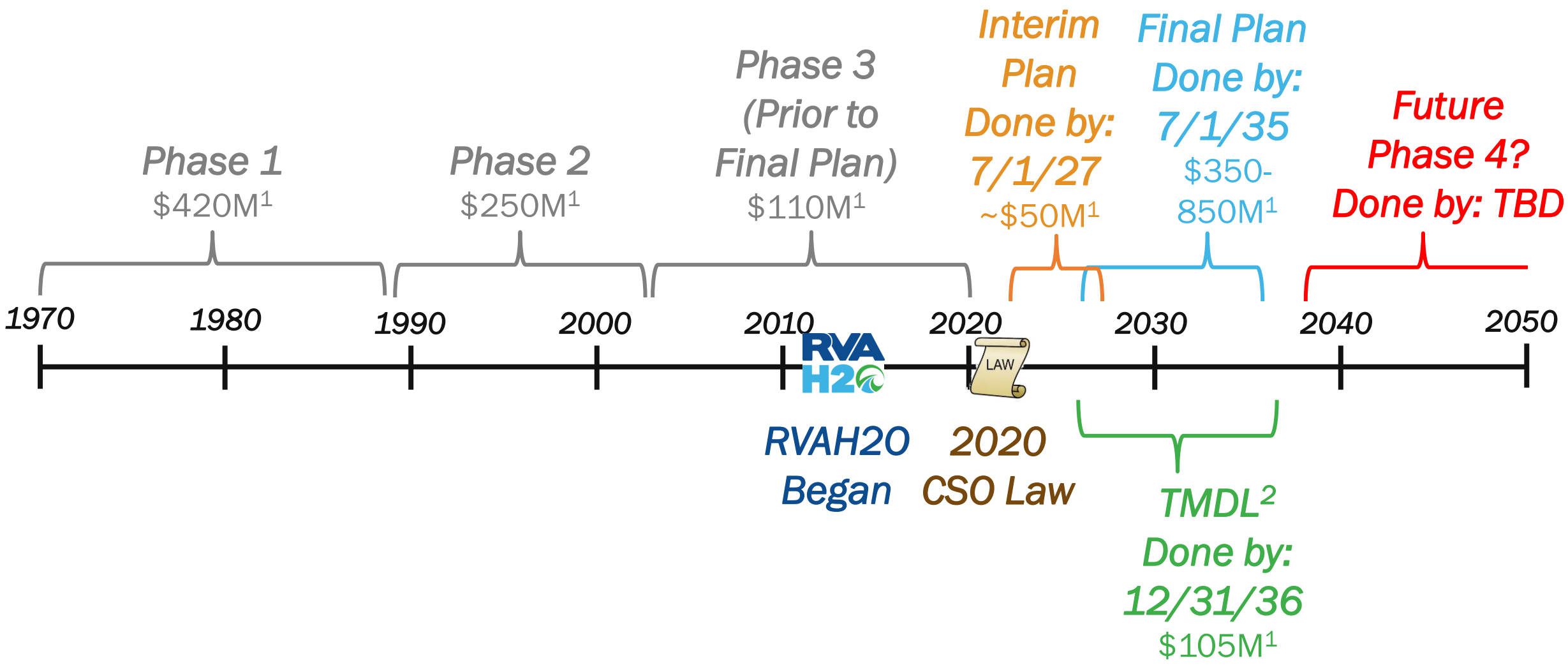
- ❑ 27 meetings with DEQ
  - Interim Plan development and implementation
  - Final Plan development

Public Stakeholder Group

- ❑ **18 member group**
  - Two from each City Council District
- ❑ **Nine meetings to-date**
  - Review and monitor Final Plan Development
  - Share and receive feedback from their communities

PSG Members touring Gillies Creek CSO Outfalls on August 31st

Where We're Going



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Lessons Learned

- Collaboration is key: involve public and technical stakeholders
- Advocacy and education are critical to success
- Look for common goals
- Communicate transparently and often
- Neutral facilitators help to build trust
- Trust takes time and patience
- Stay positive and keep telling your story