



EPA Consent Decree  
Annual Informational Meeting  
Integrated Plan/Regional Wet  
Weather Management Plan

January 23, 2018

### Requirements of the Consent Decree

- *“...after providing reasonable notice on its webpage and in a newspaper of general circulation”*
- *“...shall hold an annual informational meeting open to the Localities and the public”*
- *“HRSD shall convey information on the status of the Regional Wet Weather Management Plan, HRSD – Locality cooperation and steps citizens within the Localities can take to protect the receiving waters”*

## Objective of the Consent Decree

- “HRSD, working in consultation with the Localities, to fulfill the objectives of the Clean Water Act with a goal of eliminating Sanitary Sewer Overflows (SSOs)”



---

## Regionalized Approach

---

- Localities and HRSD agreed in Memorandum of Agreement to Regionalized Approach
- HRSD will be responsible for capacity in the regional sanitary sewer system (Localities' systems and HRSD system)

---

## Major Change in Compliance Orders

---

- Special Order by Consent (SOC) modified in December 2014 focuses on Localities' Management, Operations and Maintenance (MOM) issues
  - Eliminates HRSD from SOC
  - Adds Norfolk to SOC and terminates prior Order
- Consent Decree Modification No. 4 references SWIFT and its relationship with the RWWMP. Requires that the approved RWWMP be a material modification to the CD subject to public comment and Court approval

---

## Overall Regulatory Status

---

- HRSD continues to implement requirements of Federal Consent Decree, which was originally entered with the court on February 23, 2010, as modified
- All Consent Decree required submittals have been on time

---

## Rehabilitation Action Plan

---

- Requires addressing specific features with condition defects identified in Consent Decree Condition Assessment Program (CAP)
- EPA/DEQ approved the plan in May 2015
- Addresses more than \$183M of required improvements in gravity mains, force mains, pump stations, and associated system components
- Implementation Plan has three phases through May 2025
- Sixteen projects complete with value more than \$42M

---

## Interim System Improvements

---

- Consent Decree includes requirement to complete 45 CIP projects totaling approximately \$399M.
- 42 projects will be completed by February 23, 2018 , two projects by December 2018 and one project by June 30, 2018
- Of the 45 projects, thirty-six (36) are completed and nine (9) are in construction
- On track for completion by 2018 deadlines however, significant weather delays in early January due to blizzard may impact other remaining projects.

# Management, Operations, and Maintenance (MOM) Program

- MOM Program approved by EPA/DEQ in 2011
- The MOM Program was updated in July 2015 to reflect:
  - Organizational updates
  - Current programs and updated status of initiatives
- Performance measures are continuing to be tracked to evaluate the effectiveness of the programs
- Program update scheduled for 2018

## FY2017 MOM Program Performance

- 56 metrics were tracked for FY2017
- 52 met or exceeded specified goals
  - Includes 6 Consent Decree required metrics
- 2 additional measures are planned to begin tracking with the completion of the RWWMP
- 4 metrics fell short of targets
  - “Miss” Utility Responses – 5 missed out of 58,200
  - SSO Response – There were 16 SSOs that were not initially responded to within the 2-hour required window. All events were inaccessible due to high water during Tropical Storm Julia (3) and Hurricane Matthew (13).
  - SSO Release Reporting – 1 SSO Event could not be reported within the 24-hour required window due to a communication error during Hurricane Matthew.
  - Siphon Chamber Inspection – The 1 SS Siphon chamber was inspected twice during the previous fiscal year, and was not scheduled for inspection in FY2017.

# Consent Decree Performance Measures Review

## Year-over-Year Performance Summary

Metric	Target	FY-12 Actual	FY-13 Actual	FY-14 Actual	FY-15 Actual	FY-16 Actual	FY-17 Actual
Pump Station Annual PM	82*	84	83	83	84	85	87
Back-up Generator Annual PM	55	112	81	121	129	129	121
Force Main Air Vent PM	1,550	3,096	3,274	3,304	3,486	3,327	3,940
Non-Invasive Force Main Inspection (LF)	2,400	15,098	2,800	2,562	4,355	2,562	6,375
Gravity Sewer Inspection (LF)	39,600	72,730	98,185	81,841	89,757	71,595	94,009
Gravity Sewer Cleaning (LF)	29,400	234,463	207,724	194,838	208,059	190,160	203,206

\*The Pump Station target became 86 in FY 17 due to new stations coming on line

## Recent HRSD SSOs

Calendar Year	# of SSOs	Volume (gal)	# of Unknown SSO Volumes (during wet weather)	Total Inches of Rain near ORF
2011	35	1,880,086	13	55
2012	40	22,850,543*	6	52
2013	14	722,237	2	50
2014	29	2,250,915	10	45
2015	18	516,704	3	53
2016	49**	6,148,239**	23**	69**
2017	21	259,057	4	42

\*Included single SSO at Wilroy Road of 18,352,000 gallons. Remaining volume ~4,500,000 gallons for 2012

\*\*Included two major weather events in Hurricane Matthew and Tropical Storm Hermine

## Capacity Related SSOs

Calendar Year	Total # of SSOs	Total Volume Of SSOs (gal)	Volume for Capacity (Gals)	# of Capacity SSOs	Named Storm
2011	35	1,880,086	1,409,796	16	Hurricane Irene
2012	40	22,850,543	4,249,483	31	Hurricane Sandy
2013	14	722,237	584,784	5	Remnants of Hurricane Andrea (1)
2014	29	2,250,915	681,392	15	None
2015	18	516,704	207,177	15	None
2016	49	6,148,239	2,133,775	35	TS Julia & Hurricane Matthew
2017	21	259,057	145,221	13	None

---

## Regional Wet Weather Management Plan (RWWMP)

---

- Integrated Plan/RWWMP submitted to EPA/DEQ on September 28, 2017

- Added reference to SWIFT
- May reference the Integrated Plan as necessary to explain the sequencing or schedules in the RWWMP
- Schedule in the RWWMP shall accommodate expenditures on and revenues from SWIFT **provided that** HRSD demonstrates that greater human health or environmental benefits will be gained through SWIFT before completion of the RWWMP and HRSD provides a schedule for both SWIFT and RWWMP that is as expeditious as possible as determined through an acceptable Financial Capability Assessment and good engineering practice
- Identify and list high priority projects to be implemented concurrently with SWIFT

# EPA's Approach to Integrated Planning

*"... we proceed as one EPA to assure that we work with states and communities to get the most effective as well as cost-effective approaches for meeting our shared objective of clean water that protects public health and the environment"*

*"A comprehensive and integrated planning approach ... offers the greatest opportunity for identifying cost effective and protective solutions and implementing the most important projects first"*

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

OCT 27 2011

**MEMORANDUM**

SUBJECT: Achieving Water Quality Through Integrated Municipal Stormwater and Wastewater Plans

FROM: Nancy Stoner, Acting Assistant Administrator, Office of Water (OW) [Signature]

Cynthia Giles, Assistant Administrator, Office of Enforcement and Compliance Assurance (OECA) [Signature]

TO: EPA Regional Administrators, OW & OECA Office & Division Directors

One of the most basic objectives of the Clean Water Act (CWA) is to keep raw sewage and pollutants carried by stormwater out of our nation's waters. We have made tremendous strides towards achieving that objective, but much work remains to be done. As we move forward with our work, we must be mindful that many of our state and local government partners find themselves facing difficult financial conditions. Their ability to finance improvements by raising revenues or issuing bonds has been significantly impacted during the ongoing economic recovery. We write this memorandum to make sure that we proceed as one EPA to assure that we work with states and communities to get the most effective as well as cost-effective approaches for meeting our shared objective of clean water that protects public health and the environment.

Integrated Planning for Cost-Effective Solutions

Today, the EPA, states and municipalities often focus on each CWA requirement individually for protecting water quality. As a result, we sometimes assess and implement the best alternative to solve one problem at a time without full consideration of all CWA obligations. This approach may have the unintended consequence of constraining a municipality from implementing the most cost-effective solutions in a sequence that addresses the most serious water quality issues first. We encourage regions to work with the states to engage our local partners regarding all of their National Pollutant Discharge Elimination System (NPDES) related obligations in an orderly manner. A comprehensive and integrated planning approach to a municipal government's CWA waste- and storm-water obligations offers the greatest opportunity for identifying cost-effective and protective solutions and implementing the most important projects first. The CWA and its implementing regulations, policy and guidance provide us

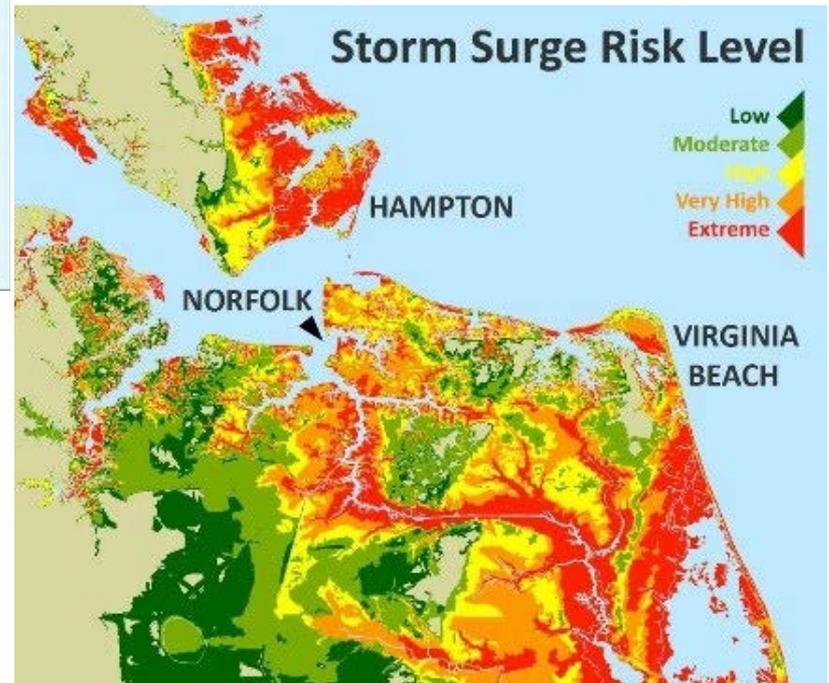
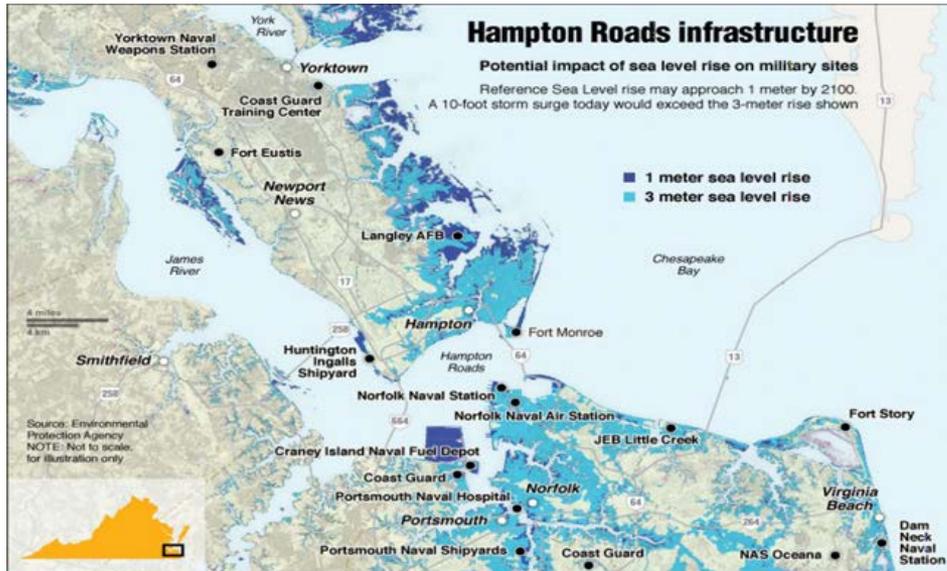
---

## Water Issues Challenging Virginia and Hampton Roads

---

- Restoration of the Chesapeake Bay
  - Harmful Algal Blooms
  - Localized bacteria impairments
  - Urban stormwater retrofits (cost and complexity)
- Depletion of groundwater resources
  - Including protection from saltwater contamination
- Adaptation to sea level rise
  - Recurrent flooding
- Wet weather sewer overflows
  - Compliance with Federal enforcement action

# Sea Level Rise Threats to Hampton Roads are Significant



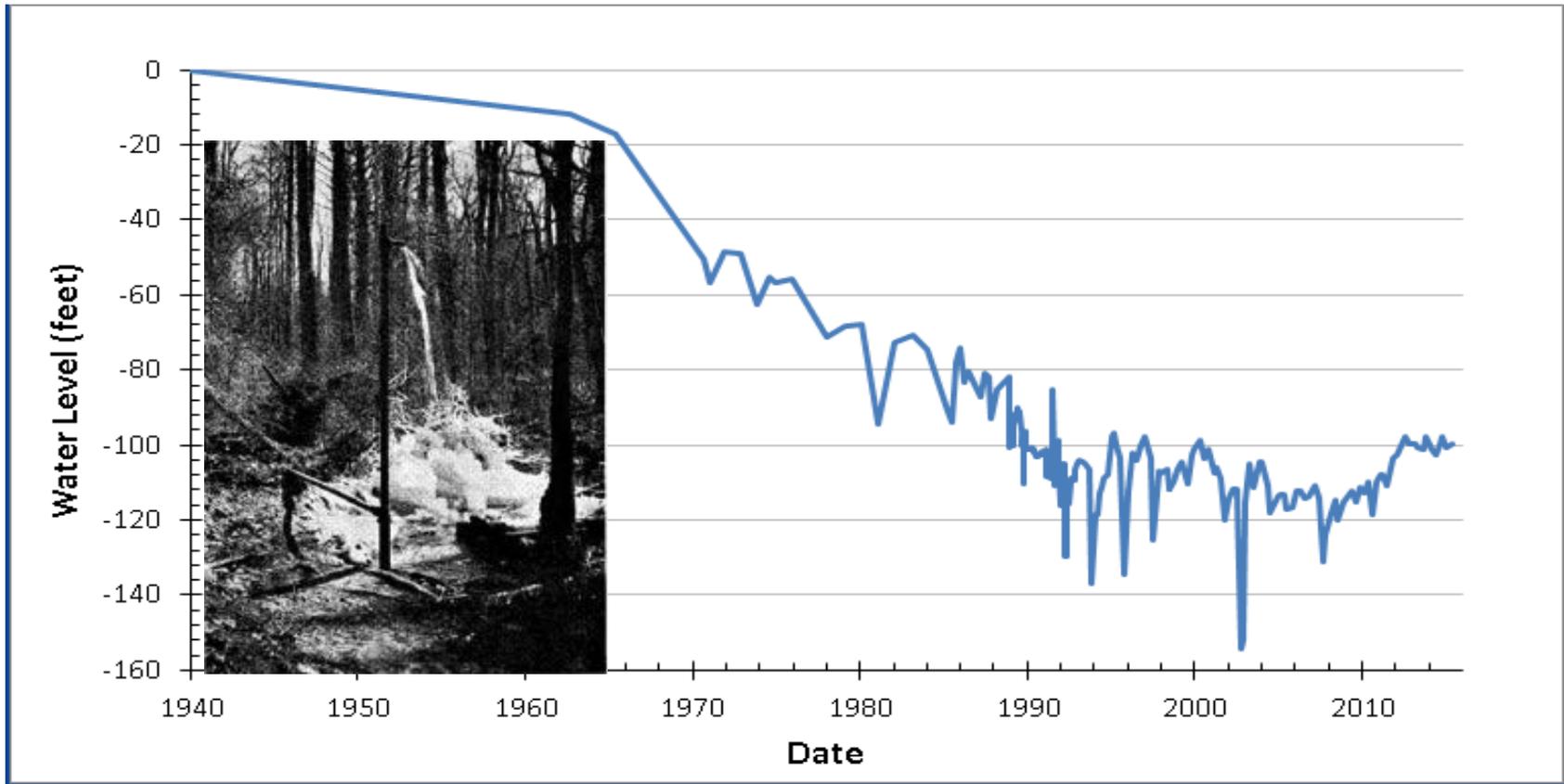
---

# Recurrent Flooding is a Real and Current Problem

---

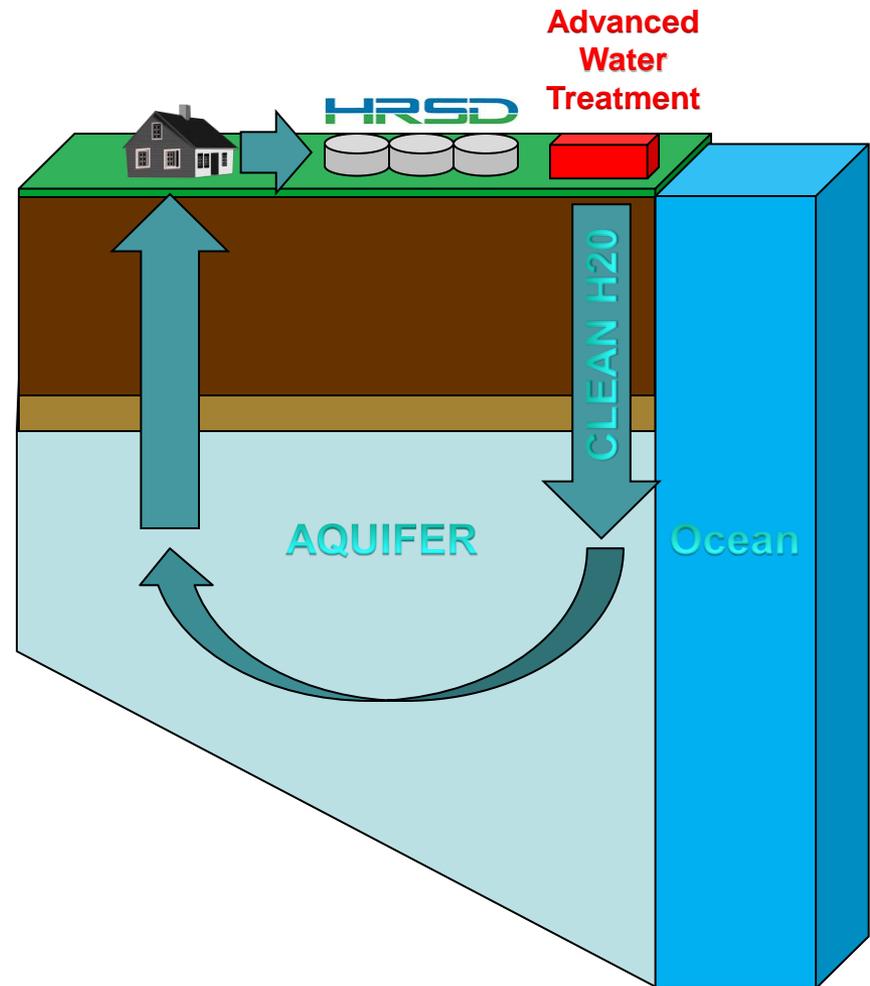


# Overpumping Has Led to Major Declines in the Potomac Aquifer



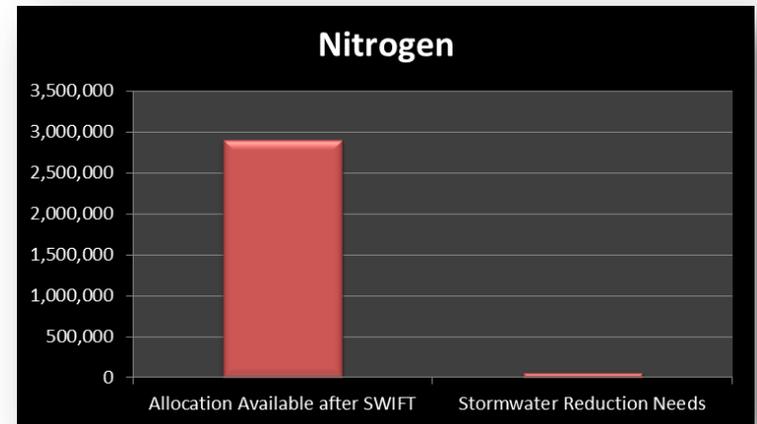
# SWIFT – Sustainable Water Initiative for Tomorrow

- Treat water to meet drinking water standards and replenish the aquifer with clean water to:
  - Provide regulatory stability for wastewater treatment
  - Reduce nutrient discharges to the Bay
  - Reduce the rate of land subsidence
  - Provide a sustainable supply of groundwater
  - Protect the groundwater from saltwater contamination



# Hampton Roads' Localities Stormwater Nutrient & Sediment Reductions

- Required in Virginia's Watershed Implementation Plan (WIP)
- Localities expected to spend \$2.0B (proposed IP reduces to \$500M)
- SWIFT will essentially eliminate HRSD's dry weather discharges
- Virginia has required laws, regulations and infrastructure to facilitate trading
- Draft agreements provided to Localities
- Term credits used to meet TMDL schedule
- Permanent credits offset once SWIFT is in place



## Potential to Offset Stormwater Reductions

	HRSD Bay TMDL Allocations	HRSD Post SWIFT Loads (2030)	Available for other needs	Stormwater Reduction Needs*
<b>Nitrogen</b>				
James	3,400,000	500,000	2,900,000	63,039
York	275,927	25,000	250,927	19,114
<b>Phosphorus</b>				
James	300,009	50,000	250,009	13,088
York	18,395	2,000	16,395	3,887
<b>Sediment</b>				
James	14,000,000	700,000	13,300,000	5,269,142
York	1,400,000	98,000	1,302,000	1,413,762

\* DEQ Regulated Stormwater w/o federal lands

---

## High Priority Project Selection Criteria and Weightings

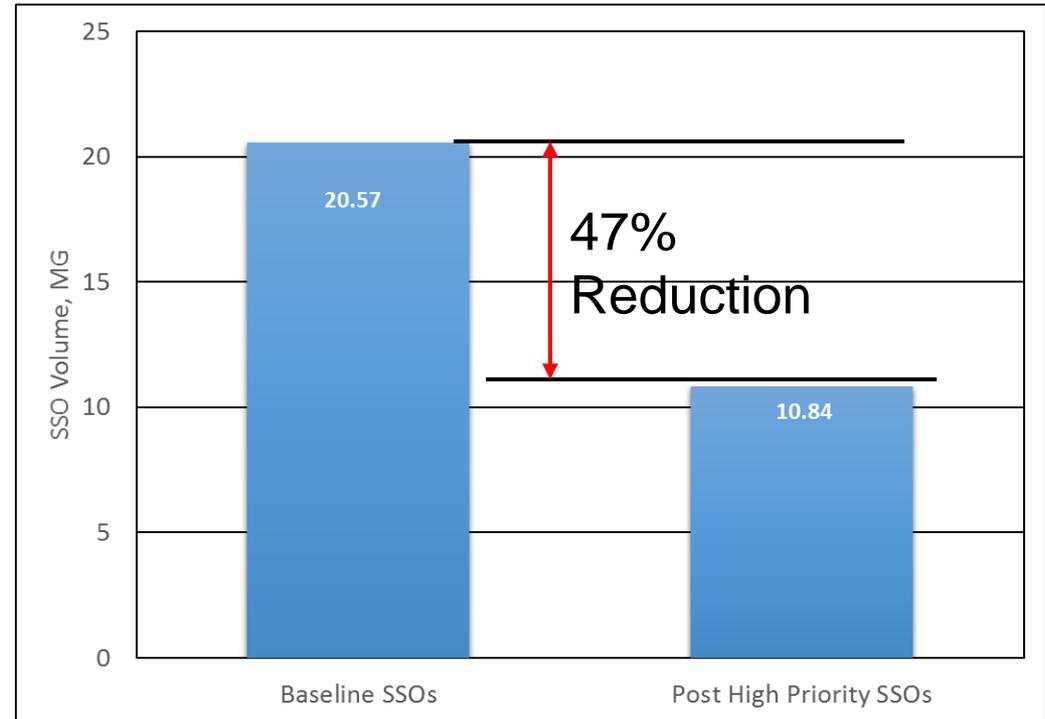
---

- Modeled SSO Load Reduction (50%)
- Modeled Location (30%)
  - Proximity to public beaches(VDH)
  - Proximity to public surface drinking water sources
  - Proximity to open shellfish grounds
  - Proximity to high priority waters
  - Drains to bacteriologically impaired water
  - Reduces I/I to SWIFT plant proximate to open shellfish grounds
- I/I Reduction (20%)

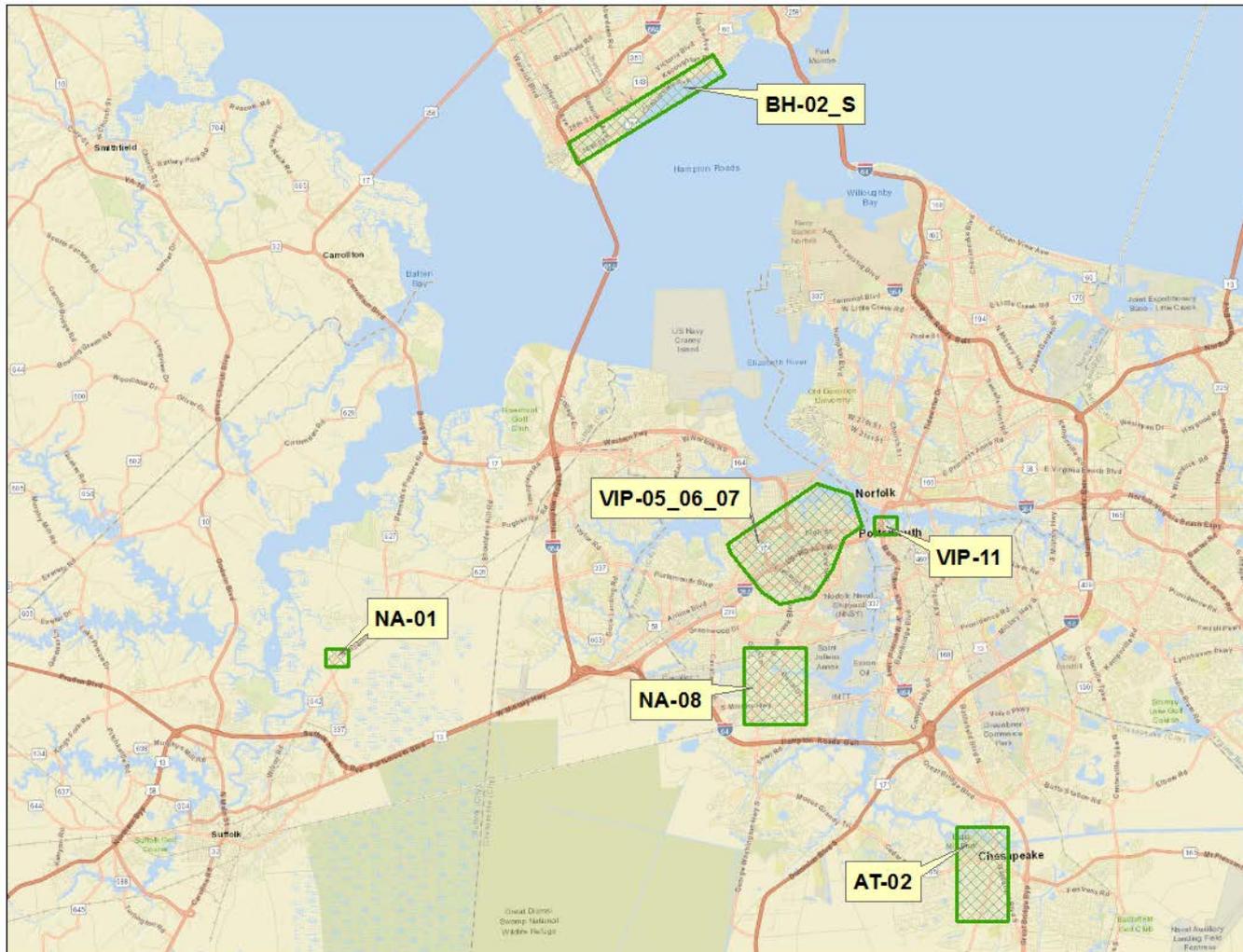
# Potential High Priority Project Impact

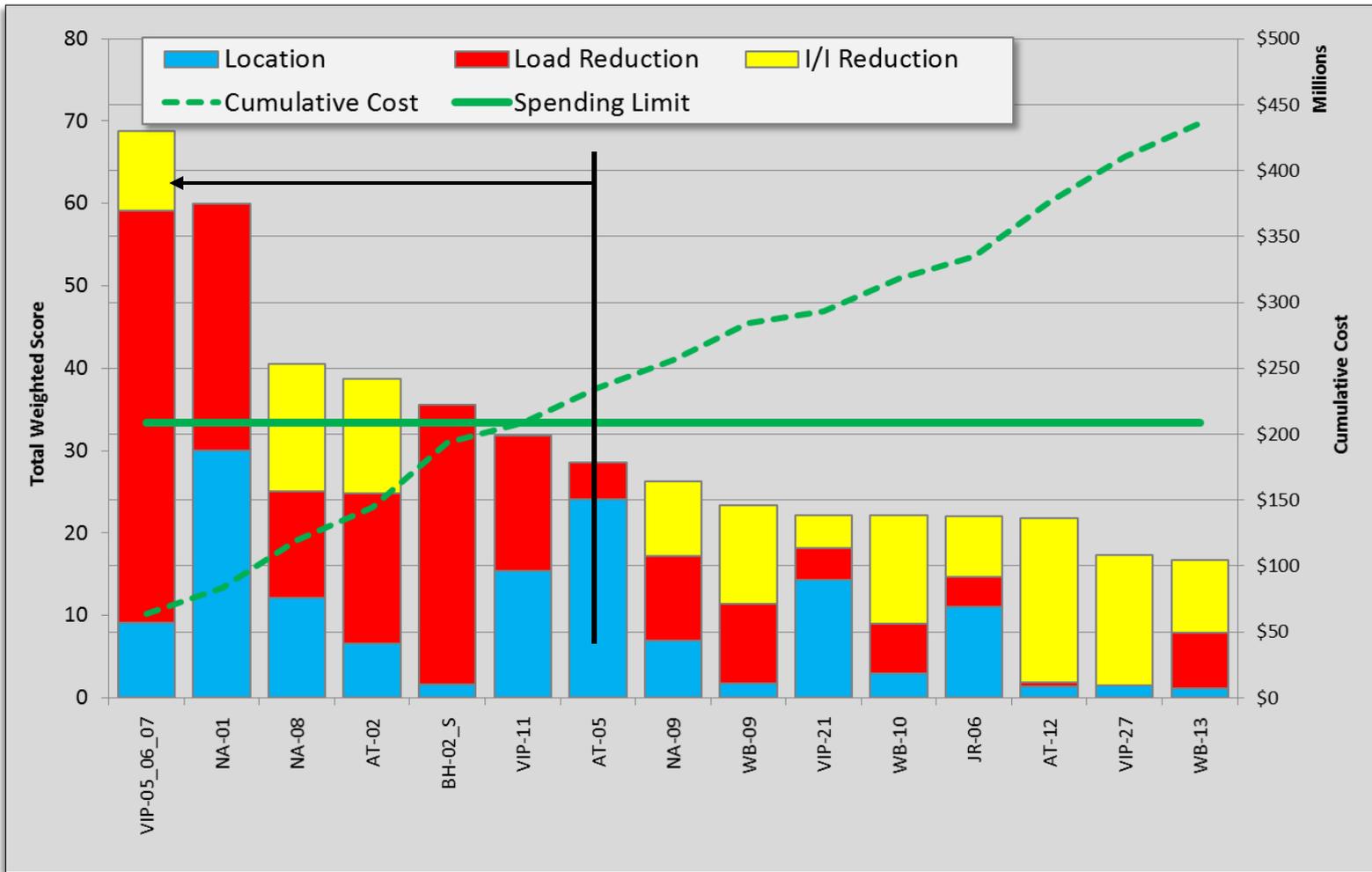
Load reduction as compared to RHM baseline simulation

- Volume Eliminated 9.73MG
- 47% Reduction to modeled baseline



# High Priority Project Areas





---

# Overall RWWMP Costs

---

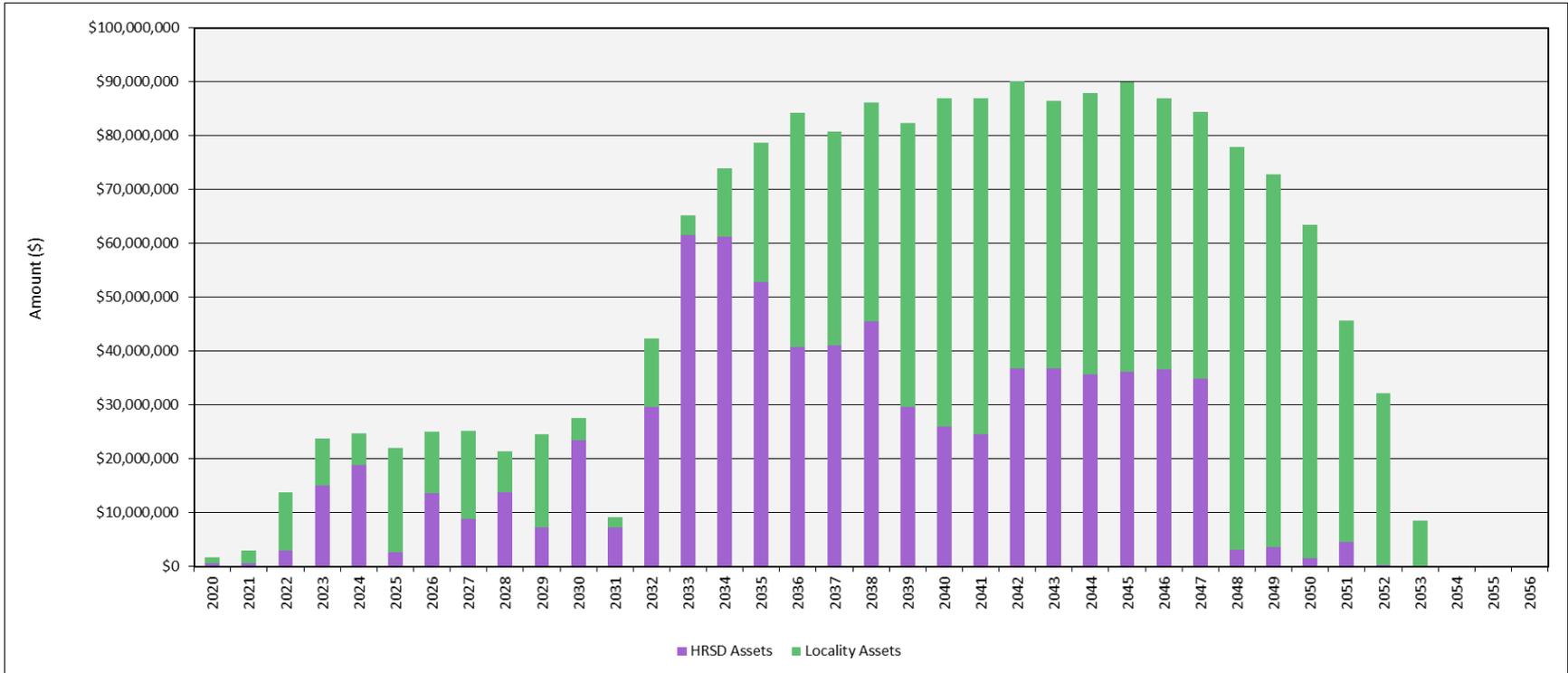
---

## Regional Wet Weather Management Plan

---

- Overall = \$1.816B
  - Wet Weather Capacity Improvements = \$963.7M
  - I/I Reduction Program = \$852.3M
- Scheduled 176 Projects
  - 532 Elements grouped and sequenced w/ hydraulic considerations
- Implementation Timeframe
  - 2020-2030 High Priority (6 Projects)
  - 2030-2053 Remaining RWWMP Projects

# Program Cash Flow by Spending Type



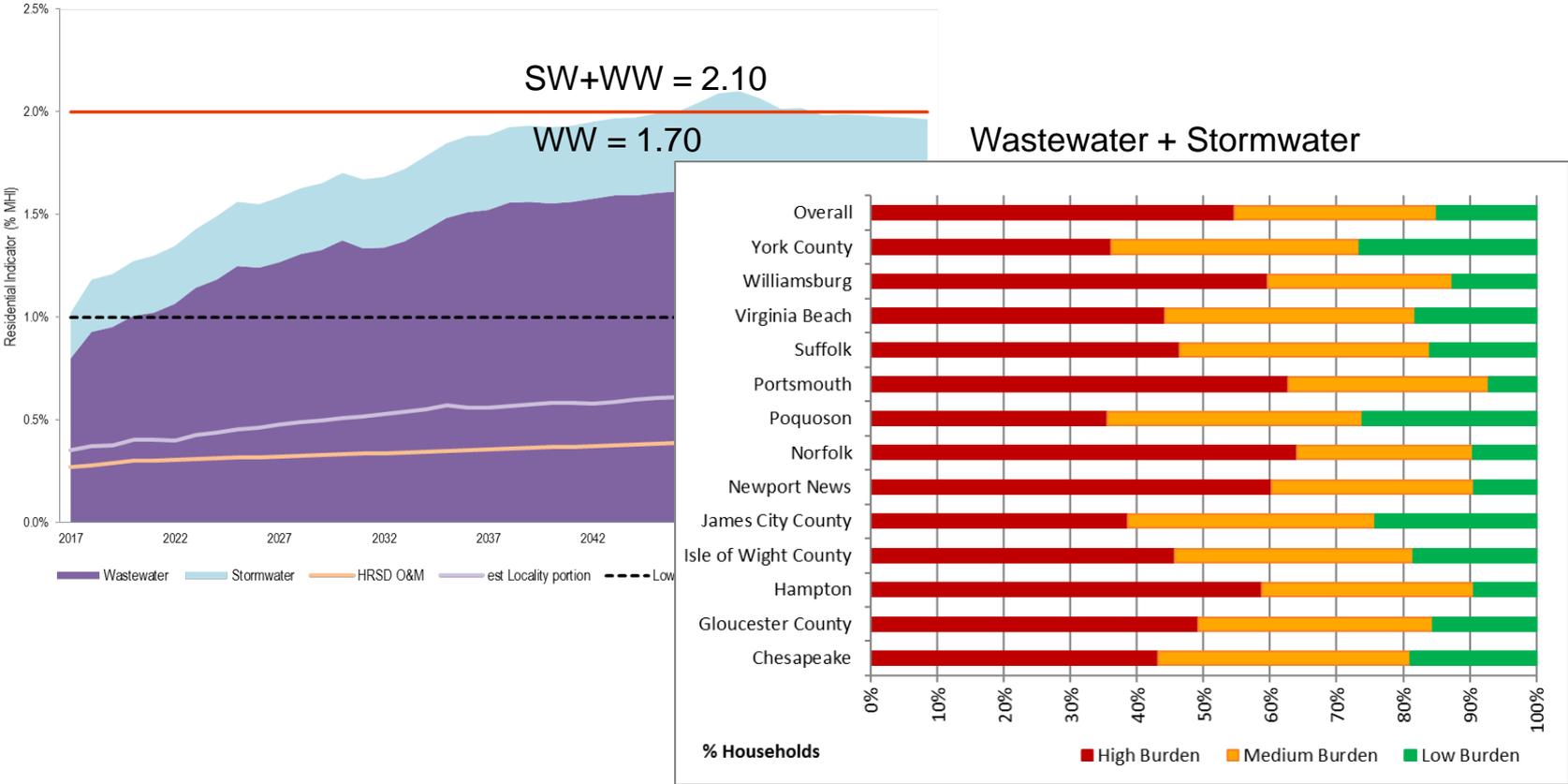
---

# Affordability Review

---

# High Burden Preliminary Impact

## Peak Residential Indicator Year: 2049



## Income Quintiles

Quintile	Average Income	Upper Limit	Peak RI, Integrated Plan/RWWMP
Lowest	\$14,183	\$26,219	9.2%
Second	\$36,722	\$47,510	3.5%
Third	\$59,118	\$72,168	2.2%
Fourth	\$89,292	\$109,998	1.5%
Highest	\$176,797	N/A	0.7%
Top 5 Percent	\$185,056	N/A	0.7%

Quintile brackets from ACS 5-Year 2015; MSA: Virginia Beach-Norfolk-Newport News, VA-NC Metro Area (part); Virginia

\$1,302 Peak CPH WW+SW

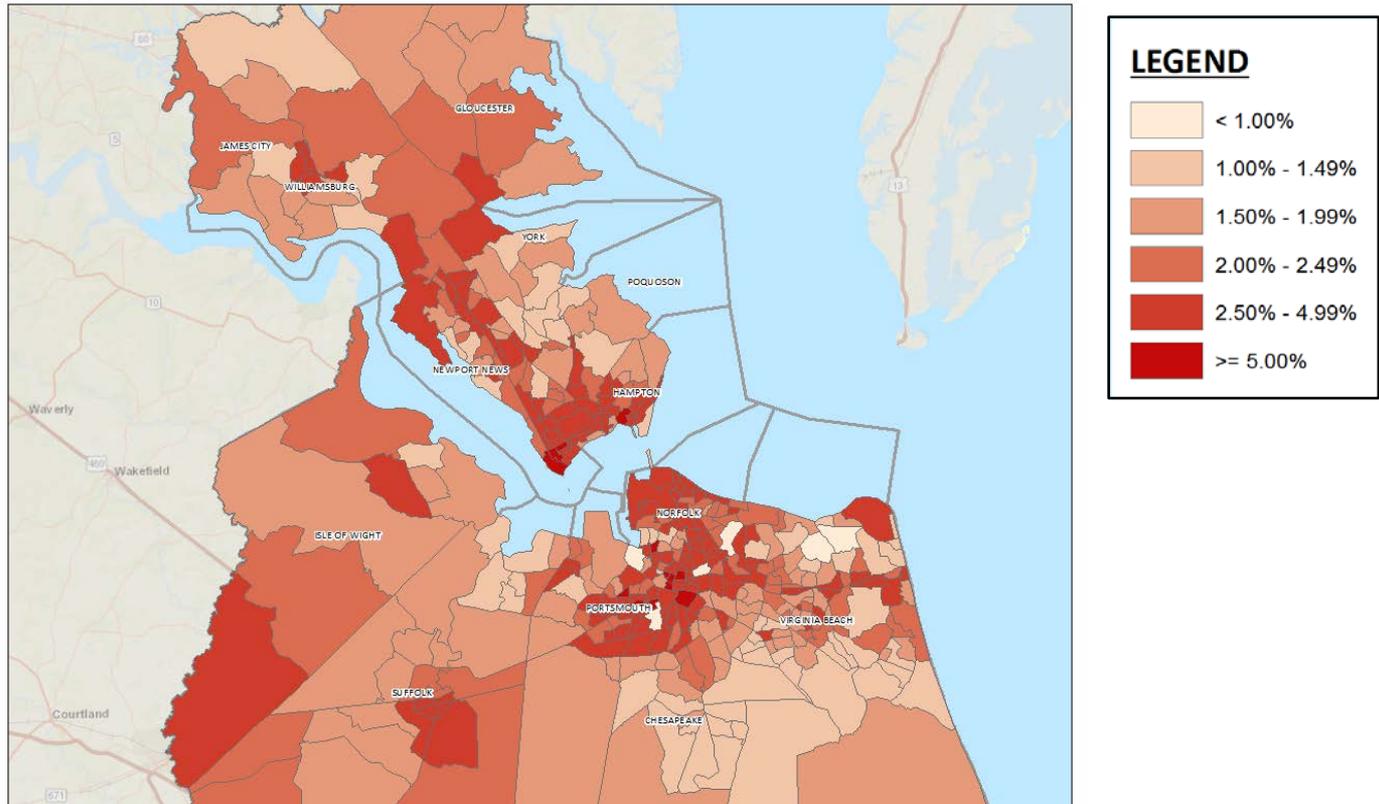
@ Regional MHI: 2.10%

@ Lowest Quintile: 9.18%

# Census Tract Household Utility Cost Burden

- Costs are already high burden for some
- Much broader impact at implementation peak

Peak CPH Wastewater + Stormwater



---

## Adaptive Management Approach

---

- Applying iterative decision-making in the face of multiple uncertainties and adjusting the course of solutions in the future to adapt to changing conditions

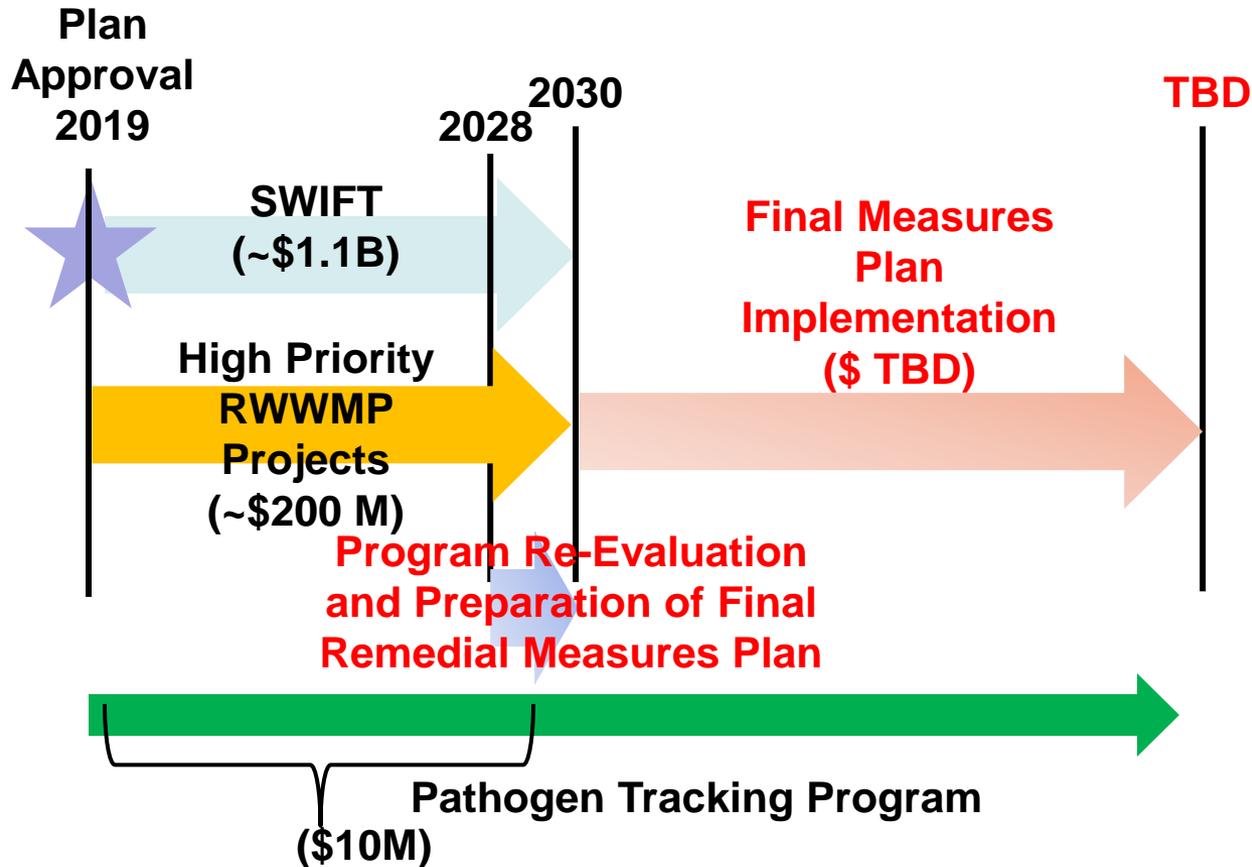
- Sea level rise and recurrent flooding
- Magnitude and spatial patterns of growth
- Future of numerous major DoD facilities
- Long term trend in I/I
- Regional economic vitality and household income and employment levels
- Regional environmental and public health priorities

- HRSD and Localities have entered into nutrient trading agreements to apply SWIFT reductions to stormwater requirements
- Prioritize the projects that provide the highest benefit to human health and the environment
- Allows for appropriate sequencing of projects/programs
- Provides for adaptive management strategies to adjust programs based on results and changing circumstances

## Regional Adaptive Plan

Phase	Activities	Cost, \$M	Schedule
1	Planning, Condition Assessment, Prompt Repairs, Interim System Improvements, Rehab Action Plan	\$700	2008 - 2025
2	SWIFT and High Priority Projects	\$1,308	2020 - 2030
3	Re-Evaluation and Development of Final Remedial Measures Plan for Priority Capacity Related SSOs	\$2	2028 - 2030
4	Implementation of Final Remedial Measures Plan	TBD	TBD

# Sequence Places the Greatest Water Quality Benefits First



---

## Coordination with Localities

---

- Meetings with individual Localities to review capacity enhancements in their systems
- Periodic meetings of Capacity Team
- Monthly Directors of Utilities meetings
- HRSD providing GIS, flow, pressure and rainfall data to Localities

- Annual newsletter (due out before February 23, 2018)
- Annual public informational meeting with public notice (January 23, 2018)

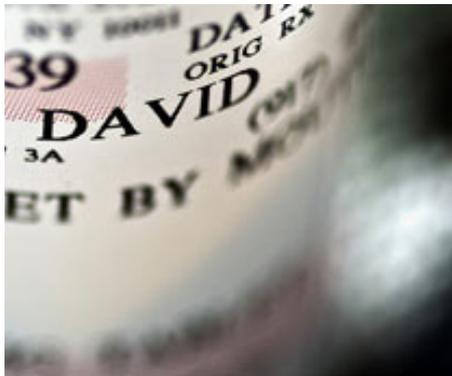
## Steps Citizens Can Take to Protect Receiving Waters

- Report Sanitary Sewer Overflows – Call your local utility department
- Inspect home, yard and sewer service pipes to ensure separation between storm and sanitary systems
- Reduce storm water runoff by using rain barrels, rain gardens and establishing a buffer



## Steps Citizens Can Take to Protect Receiving Waters (Cont.)

- Practice proper disposal of pharmaceuticals, household chemicals, food wastes and kitchen grease – minimize use of or eliminate garbage disposal



## Steps Citizens Can Take to Protect Receiving Waters (Cont.)

- Improve water quality by raising oysters
- Limit synthetic fertilizer and other lawn chemical applications – use natural products like compost



# Steps Citizens Can Take to Protect Receiving Waters (Cont.)

- Pick up animal waste
- Avoid feeding wildlife
- Support “No Dumping” and use boater pump out facilities



---

Questions?

---