HRSD's Sustainable Water Initiative for Tomorrow (SWIFT)

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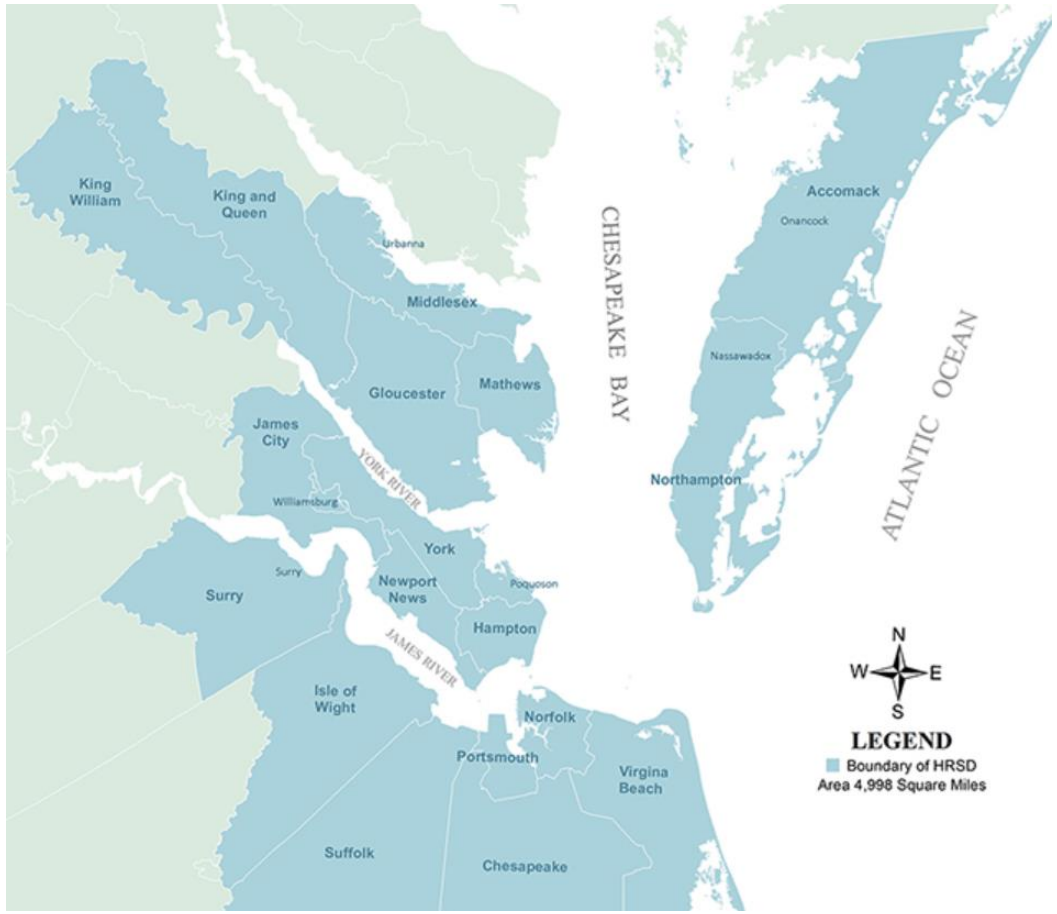
General Manager

About HRSD

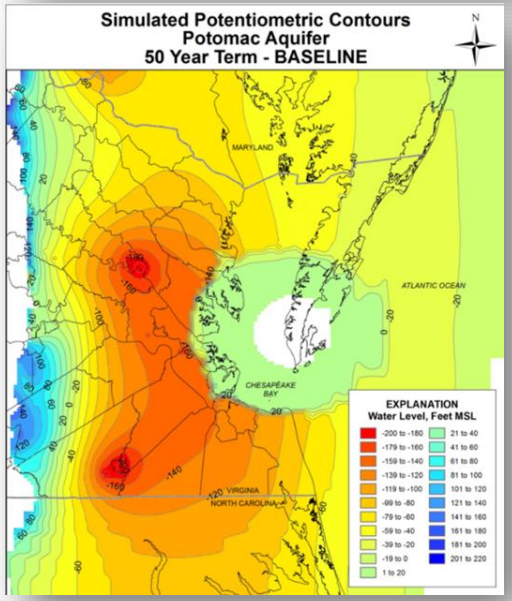
- Political Subdivision created in 1940
- 14th Largest Wastewater Utility
- Population served: 1.9 million
- Serves 20 Cities and Counties
- Combined wastewater treatment capacity: 225 million gallons/day
- Operate 8 major and 6 smaller treatment plants and more than 100 pump stations
- Separate Sanitary System with > 500 miles of pipe



Service area is approx. 5,000 square miles

Coastal Virginia faces two key environmental regulatory pressures:

- Chesapeake Bay Restoration
  - Nutrient Reduction
  - Chesapeake Bay TMDL
- Groundwater Supply
  - Potomac Aquifer



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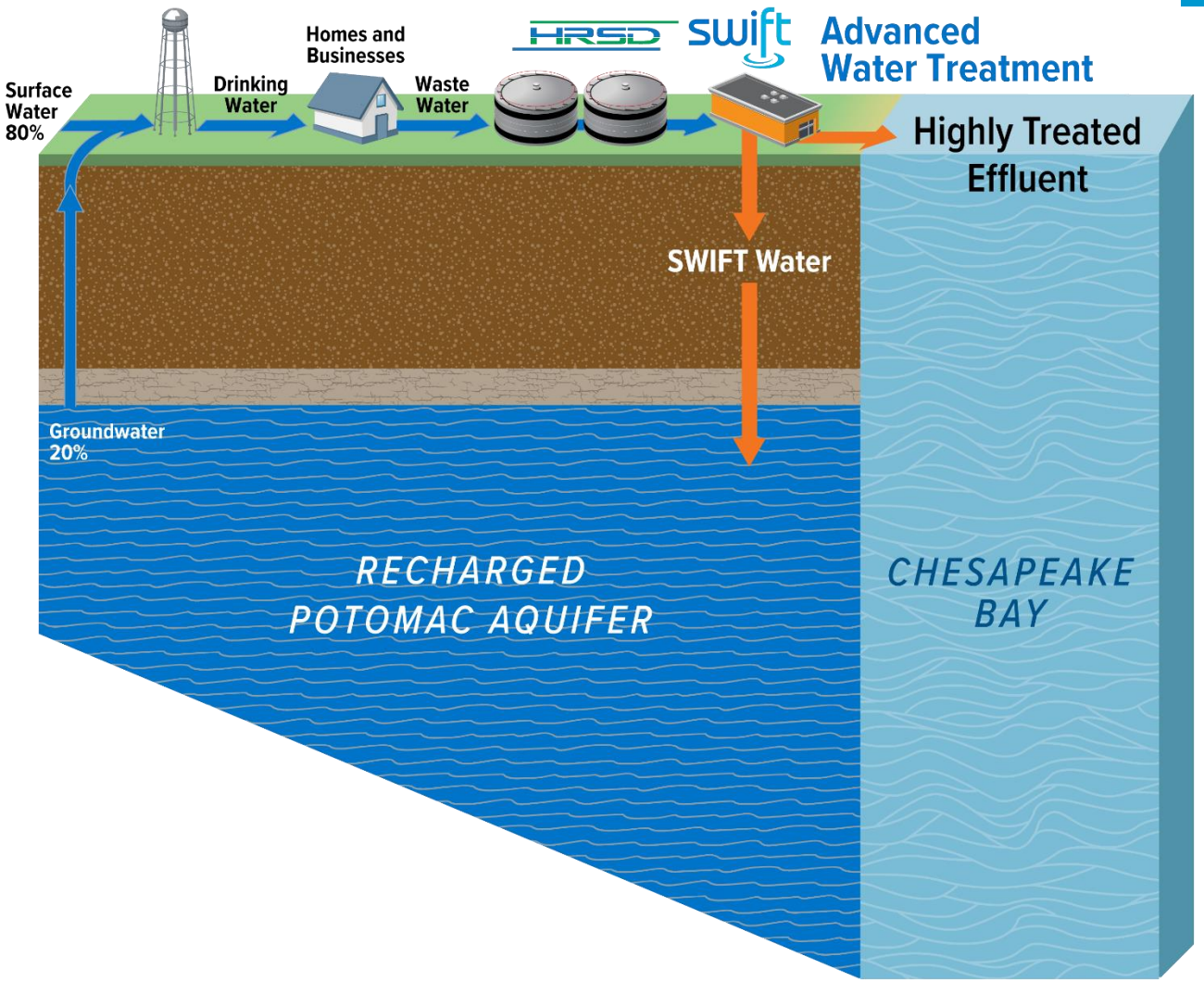


Multiple rounds of advanced treatment applied to produce SWIFT Water that:

- ✓Meets drinking water quality standards
- ✓Dramatically reduces nutrient inputs into the Chesapeake Bay

Virginia's Bay TMDL Phase 3 WIP Relies Heavily on HRSD SWIFT Upgrades

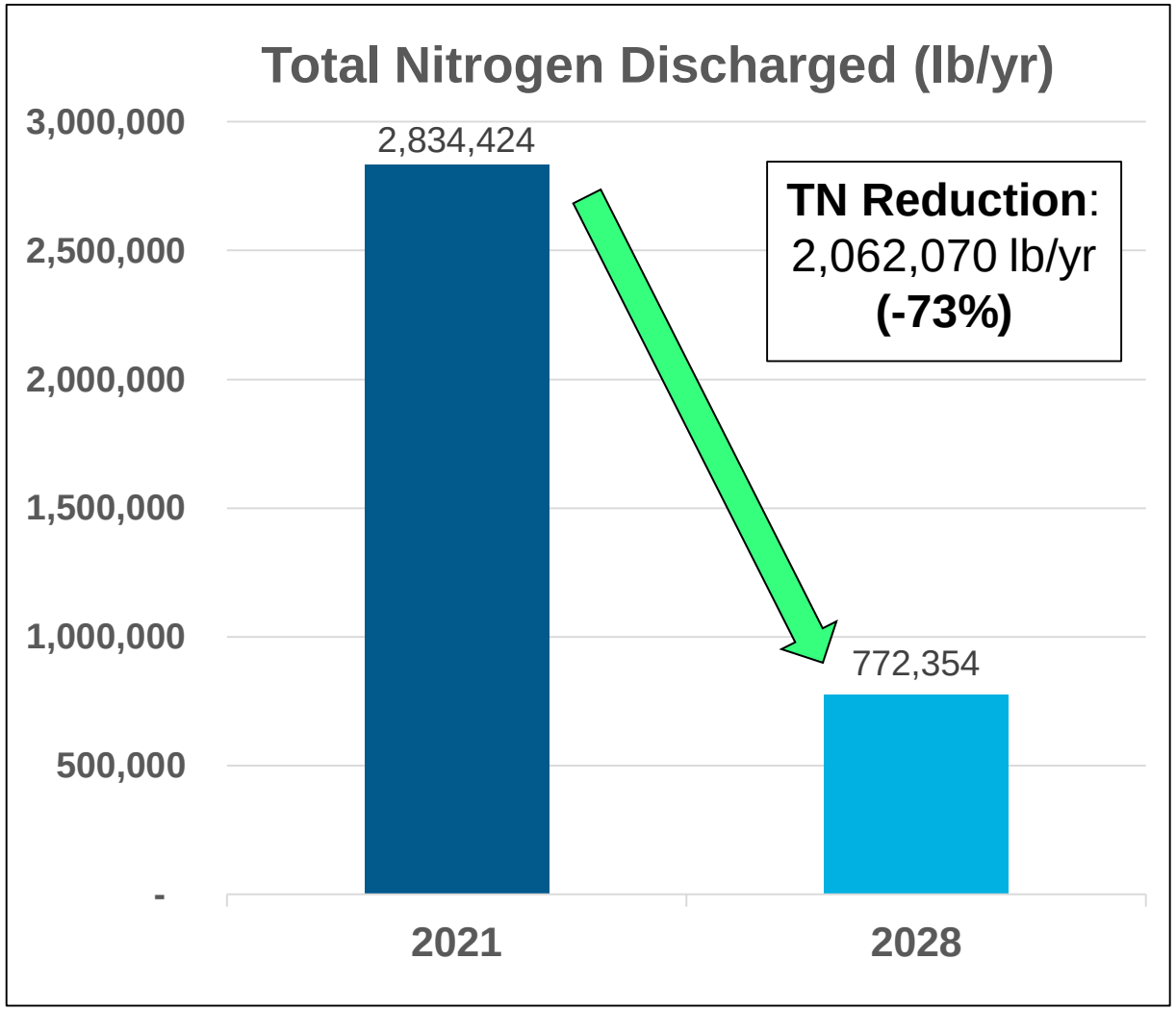
- 2021 Enhanced Nutrient Removal Certainty Program (ENRCP) Project List
- HRSD is aggressively implementing the legislation to meet nutrient reductions on short deadlines

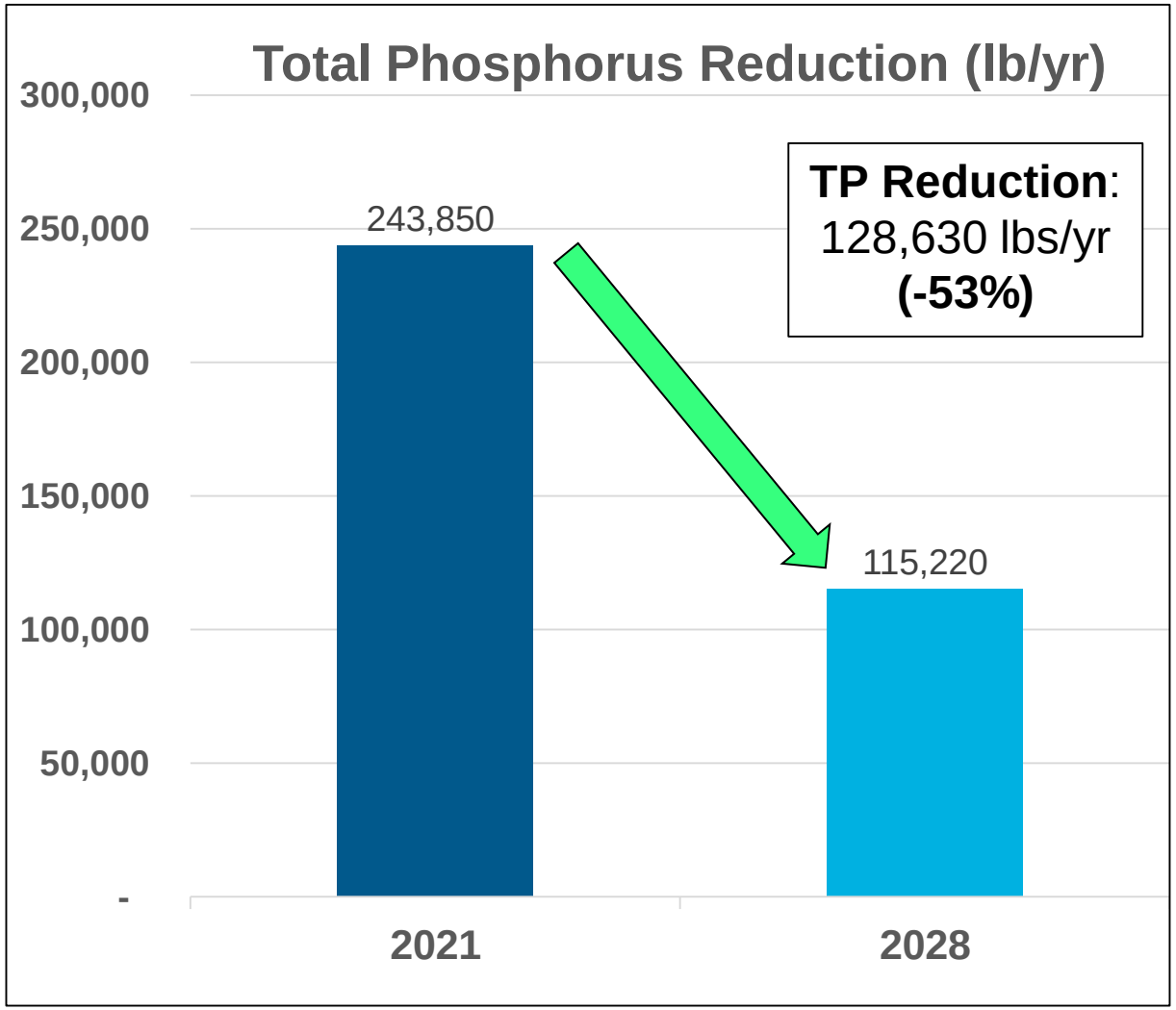
§ 62.1-44.19:14. Watershed general permit for nutrients. (2023 updated section)

1. Priority projects for additional nitrogen and phosphorus removal (schedule for compliance):

PROJECT NAME	DESCRIPTION (COMPLIANCE SCHEDULE)
HRSD-Chesapeake/Elizabeth STP	Consolidate into regional system and close treatment facility (1/1/2023)
HRSD-Boat Harbor WWTP	Convey by subaqueous crossing to Nansemond River WWTP for nutrient removal (1/1/2026)
HRSD-Nansemond River WWTP	Upgrade and expand with nutrient removal technology of 4.0 mg/L total nitrogen (1/1/2026) and 0.30 mg/L total phosphorus (1/1/2032)
HRSD-James River WWTP	Upgrade with nutrient removal technology of 4.0 mg/L total nitrogen (1/1/2026) and 0.30 mg/L total phosphorus (1/1/2028)

Significant Reduction in Nutrients discharged by 2028 – Lower James River Basin



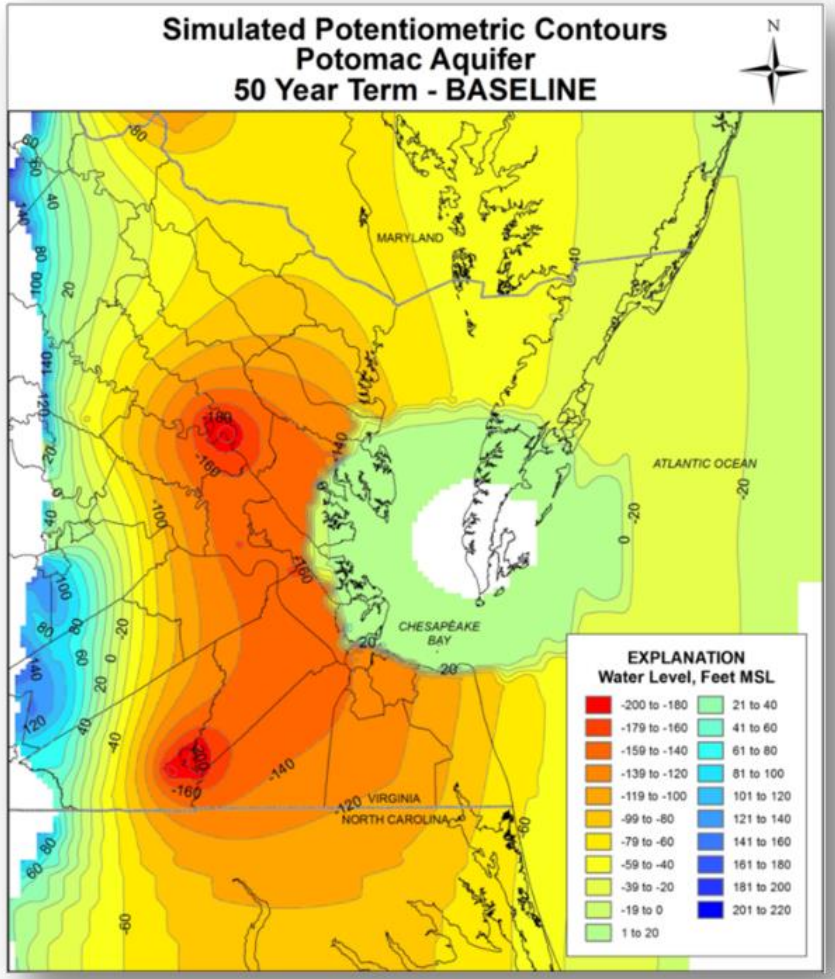


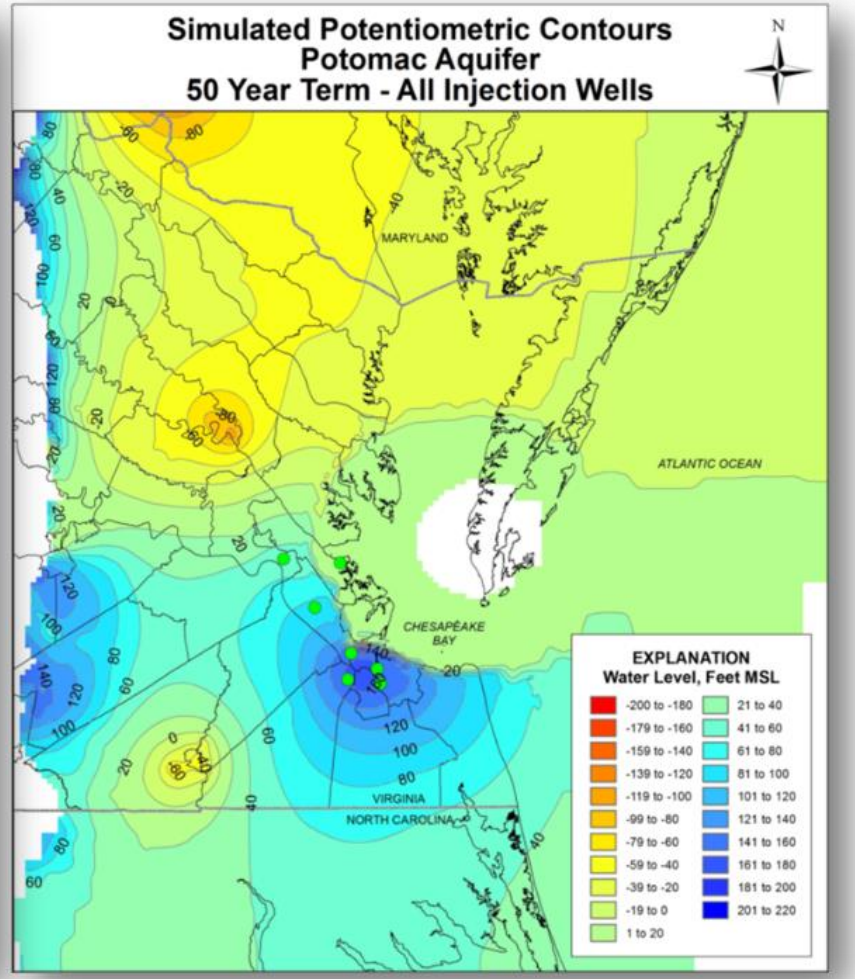
Enhanced Nutrient Removal Certainty Program (ENRCP)
WQIF needs through 2028 –$1.3 Billion

ENRCP Projects	Total Project Cost	WQIF Eligible Cost	Est. Grant Amount (% of Eligible)
Chesapeake-Elizabeth Offline	$185M	$134M	$101M
James River SWIFT	$579M	$460M	$345M
Boat Harbor Offline	$456M	$385M	$289M
Nansemond SWIFT	$971M	$971M	$534M
	$2,162M	$1,950M	**$1,269M**

Bonus: SWIFT Provides a Sustainable Water Supply

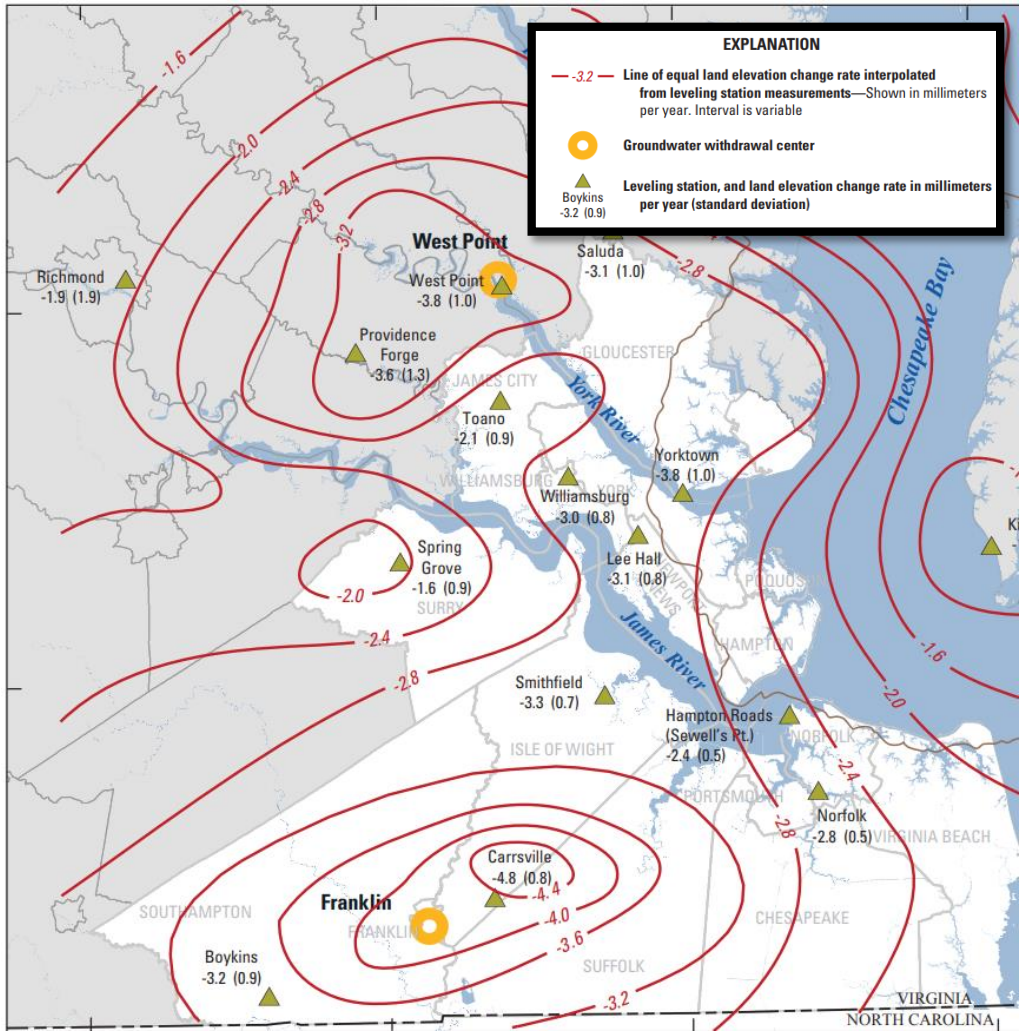
- Aquifer does not naturally replenish
- 77% of Critical Cells resolved
- Reverses decades of declines



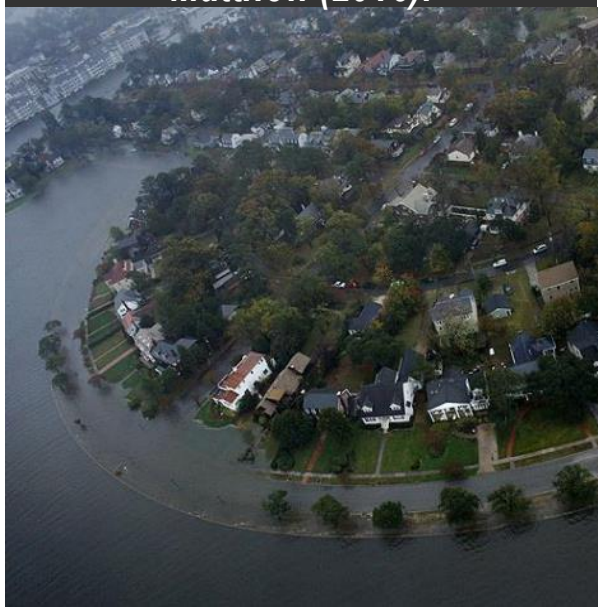


Bonus: Sea-Level Rise Mitigation - Potential to Slow Land Subsidence

- NOAA estimates **one-third of Sea-Level Rise** is due to land subsidence



Norfolk, VA after Hurricane Matthew (2016):



Bonus: Prevents Saltwater Intrusion into Potomac Aquifer

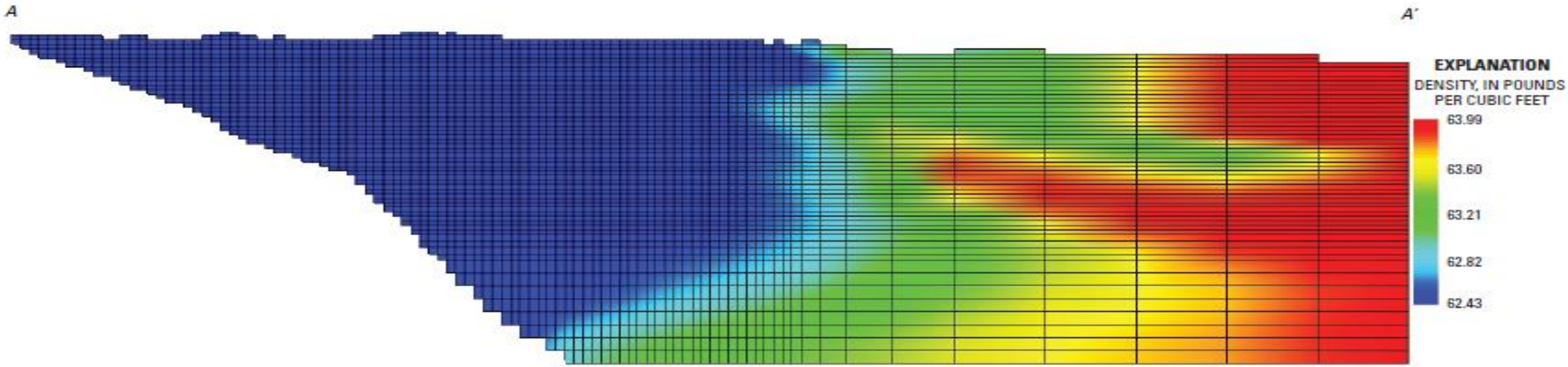
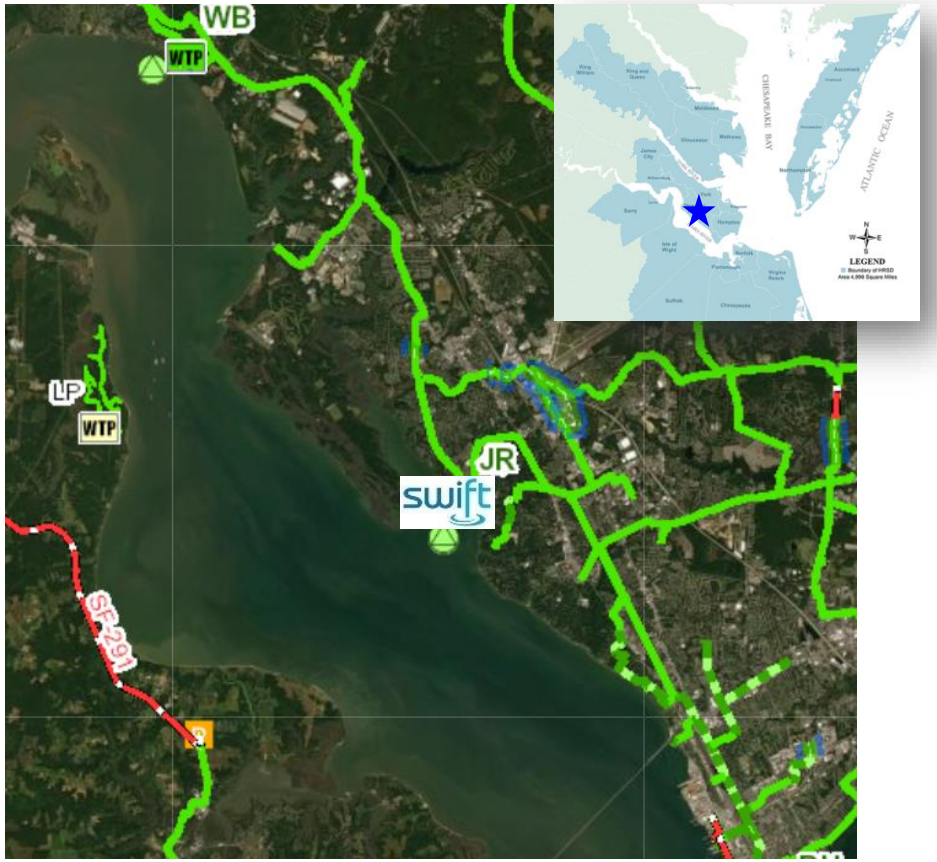


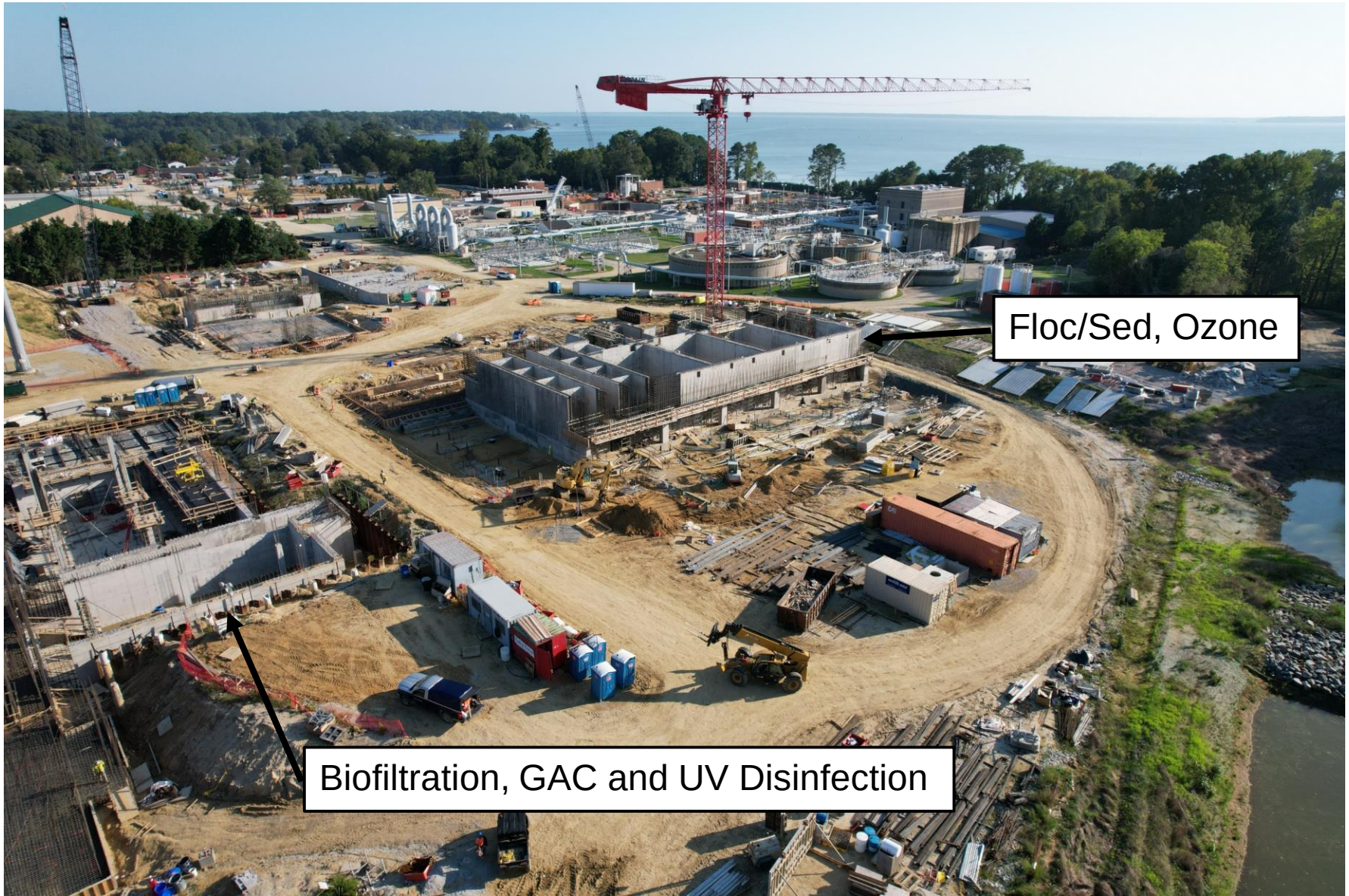
Figure A3. Simulated water density near the saltwater transition zone of the Virginia Coastal Plain. (Location of cross section shown in figure A2.)

ENRCP Project - James River Plant SWIFT

- Total Project Cost = $579M
- WQIF Elig Cost = $460M
- Grant Amount (75% of Elig) = ~ $345M
- TN Reduction = ~ 200,000 lbs/yr
- TP Reduction = ~ 13,000 lbs/yr
- Status = Under Construction
- Schedule Completion: April 2026



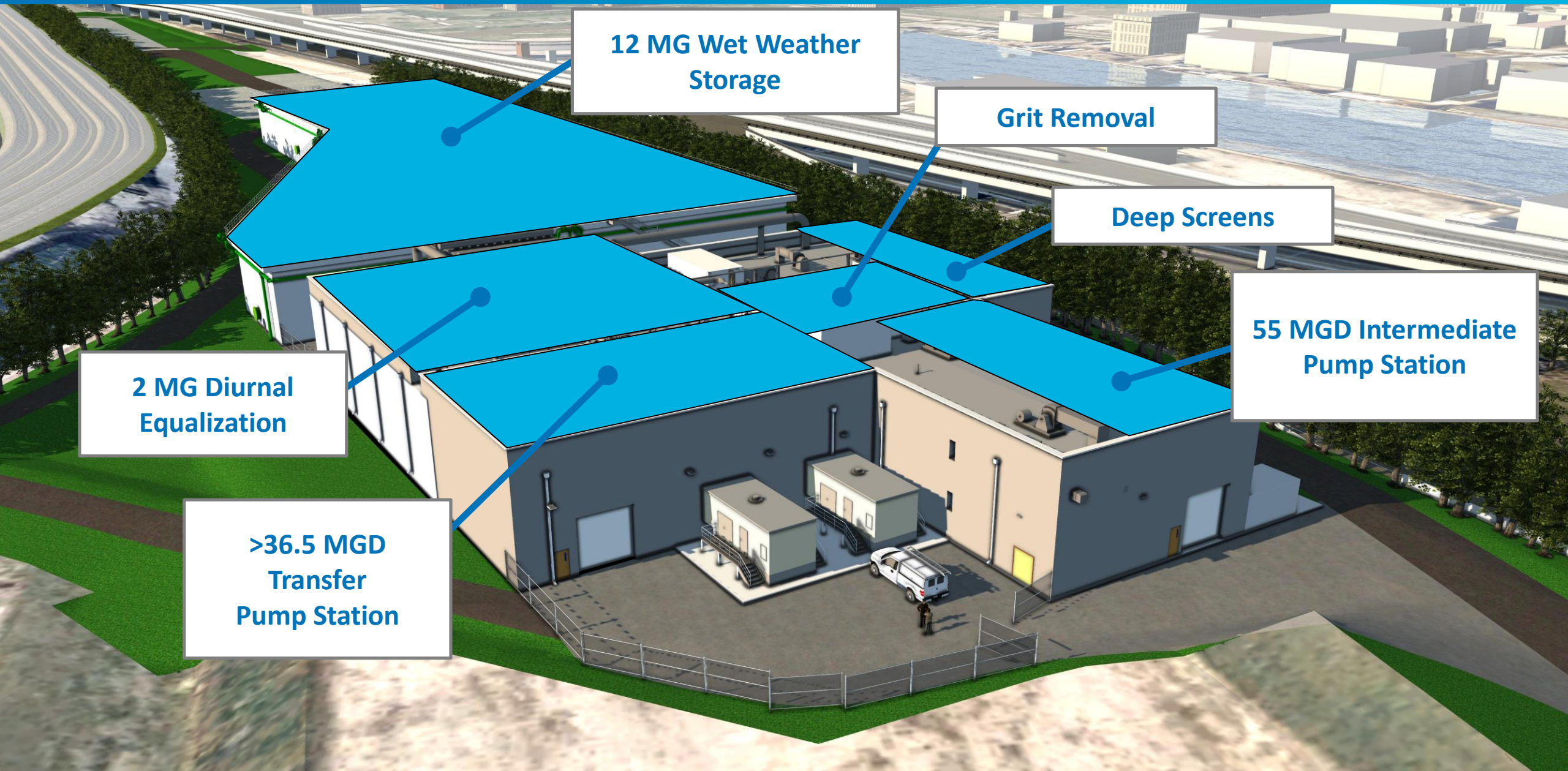
SWIFT taking shape at the James River Plant



ENRCP Project - Boat Harbor Diversion to Nansemond

- **Conveyance** projects to divert flow to the Nansemond TP
- Total Project Cost = $456M
- WQIF Elig Cost = $385M
- Grant Amount (75% of Elig) = $289M
- TN Reduction = ~ 620,000 lbs/yr
- Status = In Design
- Schedule Completion:
  - 12/2025 (Transmission Main)
  - 6/2026 (Pump Station)

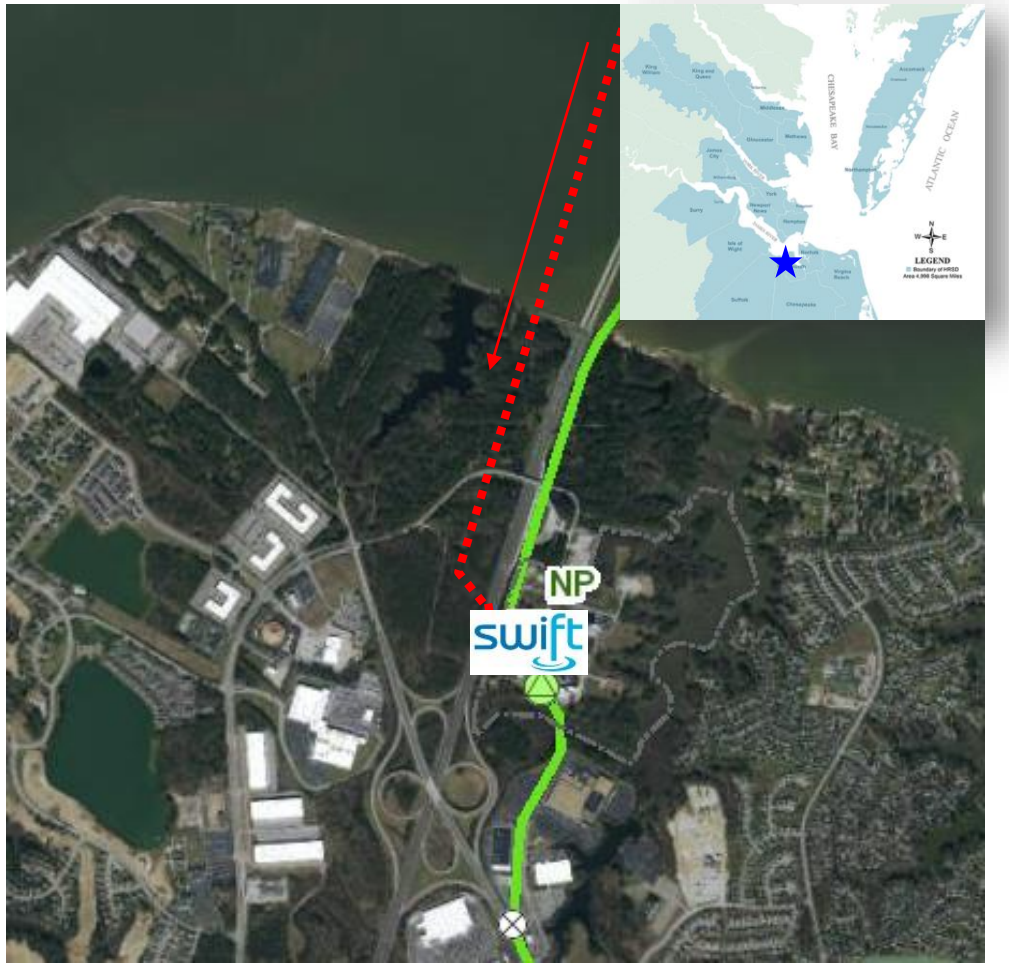
Boat Harbor Plant replaced with Pump Station



5 Miles of new force main will connect Boat Harbor pump station and Nansemond treatment plant

ENRCP Project - Nansemond Plant SWIFT

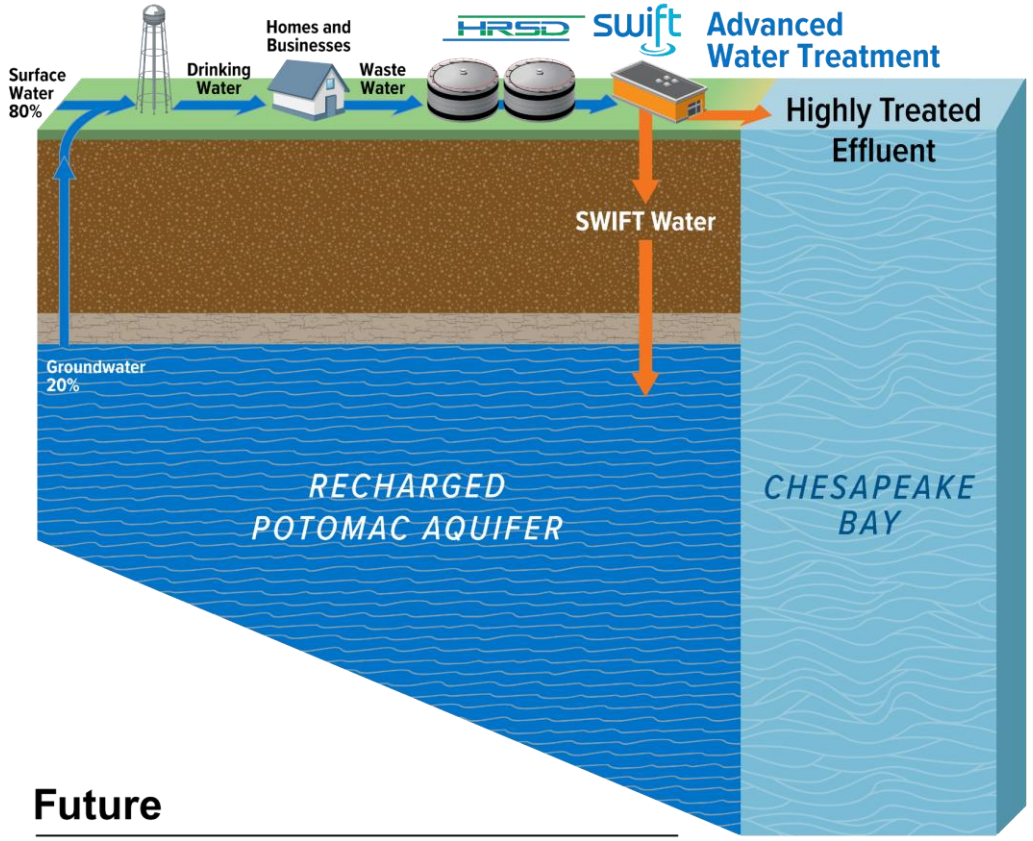
- Cost = $971M
- WQIF Elig Cost = ~ $971M
- Grant Amount (55% of Elig) = $534M
- TN Reduction = ~ 250,000 lbs/yr
- TP Reduction = ~ 88,000 lbs/yr
- Status – Design/Construction
- Schedule Completion:
  - 9/2025 Phase 1
  - 10/2028 Phase 2



Structures are taking shape at Nansemond Plant

Summary

- SWIFT provides significant benefits
  - Nutrient Reduction (ENRCP)
  - Sustainable Water Supply
  - Sea-level Rise mitigation
  - Prevents saltwater intrusion
- James River completed in 2026
- Boat Harbor completed in 2026
- Nansemond completed in 2028
- $1.3 Billion in WQIF Grant Eligible Costs
- TMDL Phase 3 WIP Success



Questions?

Please contact us to tour our SWIFT Research Facility
SWIFT@HRSD.com