Watershed Concepts Lightning Round

Hampton Roads Sanitation District SWIFT Program Overview

Andrew Newbold, PE, BCEE | Hazen and Sawyer

OWEA Nutrient Management Workshop
Hampton Roads Sanitation District - HRSD

- Provide wastewater treatment for 18 localities (250 mgd treatment capacity)
- Serve 1.7 million people (20% of all Virginians)
- Independent political subdivision with Governor appointed Commission
Water Issues Challenging Virginia and Hampton Roads

• Depletion of groundwater resources
  o Including protection from saltwater contamination

• Water quality concerns
  o Chesapeake Bay restoration

• Sea level rise
  o Compounded by land subsidence

• Wet weather sewer overflows (SSO)
  o Compliance with Federal enforcement action
HRSD costs are rising to treat water to higher standards. Treated water currently discharged to area waterways – no beneficial use.
SWIFT – Sustainable Water Initiative for Tomorrow

• Treat water to meet drinking water standards and replenish the aquifer with clean water to:
  - Reduce nutrient discharges to the Bay
  - Provide regulatory stability for wastewater treatment
  - Provide a sustainable supply of groundwater
  - Reduce the rate of land subsidence
• Artesian wells in early 1900s – groundwater wells required valves not pumps!
• In about 100 years have gone from water levels at 31 feet above sea level to 200± feet below.
Modeled Potomac Aquifer water levels with and without SWIFT
James River Basin – TN
Similar results with TP and TSS and in other river basins.

WLA – Nutrient Waste Load Allocation in lbs/yr
Addressing Wet Weather Sewer Overflows

Executed nutrient trading agreements with 11 MS4 localities
Sequence Prioritizes the Greatest Water Quality Benefits

2019

SWIFT (~$1B)

High Priority RWWMP Projects (~$200 M)

Pathogen Tracking Program ($10M)

2030

Final Measures Plan

Sustainable Water Initiative for Tomorrow
Phase 1 - Concept Feasibility
Phase 2 - Concept Development & Pilot Testing
Phase 3 - Concept Demonstration, SWIFT Research Center

Sustainable Water Initiative for Tomorrow
Phase 1 - Concept Feasibility
Phase 2 - Concept Development & Pilot Testing
Phase 3 - Concept Demonstration
Phase 4 - Facility Plan Development
Phase 5 - Implementation Plan
Phase 6 - Full Scale Facility Implementation

Sustainable Water Initiative for Tomorrow
Questions?
Andrew Newbold, PE, BCEE
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Sustainable Water Initiative for Tomorrow
SWIFT Research Center Process

1. Flocculation and Sedimentation
2. Ozone Contact
3. Biologically Active Filtration
4. Granular Activated Carbon Contactors
5. Ultraviolet Disinfection
6. Chlorine Contact
7. Chemical Addition
8. Aquifer Recharge

Sustainable Water Initiative for Tomorrow