

ENVIRONMENTAL STEWARDSHIP, COMMITMENTS, AND COMPLIANCE

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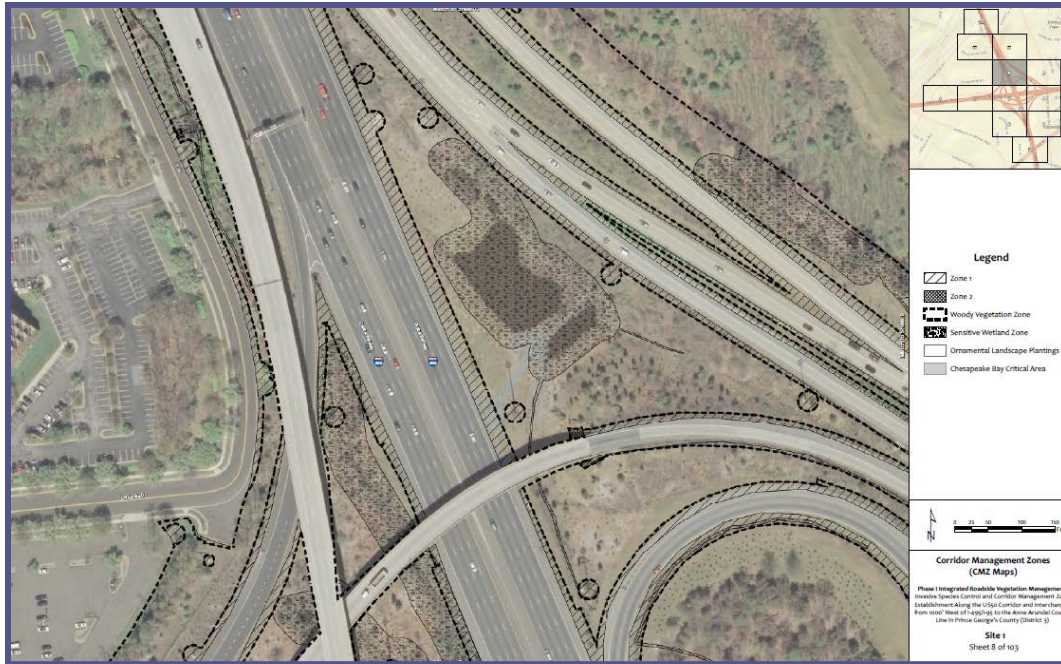
July 20, 2015

Traditional Roadside Stewardship

- SHA Integrated Roadside Vegetation Management (IRVM) approach:
 - ▣ Mowing
 - ▣ Woody Vegetation Control
 - ▣ Herbicide Application
 - ▣ Landscape Planting/Seeding
 - ▣ Invasive Species Control

Vegetation Management Zones

- GIS delineation and mapping based on safety guidelines and green assets



VEGETATION MANAGEMENT ZONES

- Vehicle Recovery Area
- Traffic Barrier
- Woody Vegetation
- Sight Distance
- Structure Maintenance
- Utility Maintenance

GREEN ASSETS

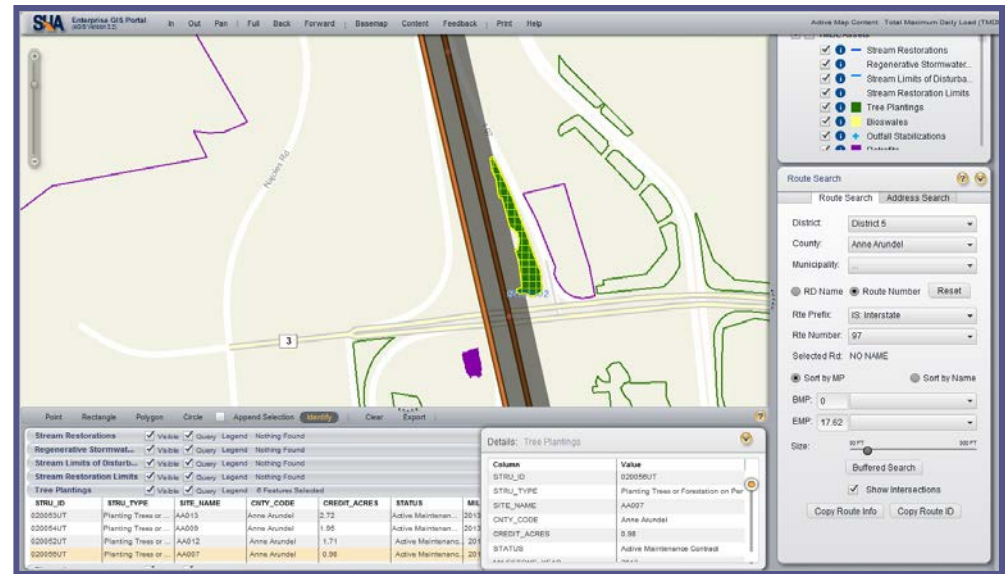
- Turfgrass
- Native Meadow
- Landscape Bed/Tree
- Reforestation
- Stormwater Management Facility
- Wetland / Sensitive Sites
- Invasive Species

Technology in Environmental Stewardship

□ Green Asset Management System (GAMS)

■ Enterprise GIS Database

- Stream Restoration
- Facilities
- Drainage Conveyance
- Reforestation Planting
- Stormwater Management
- Wetlands
- Invasive Species



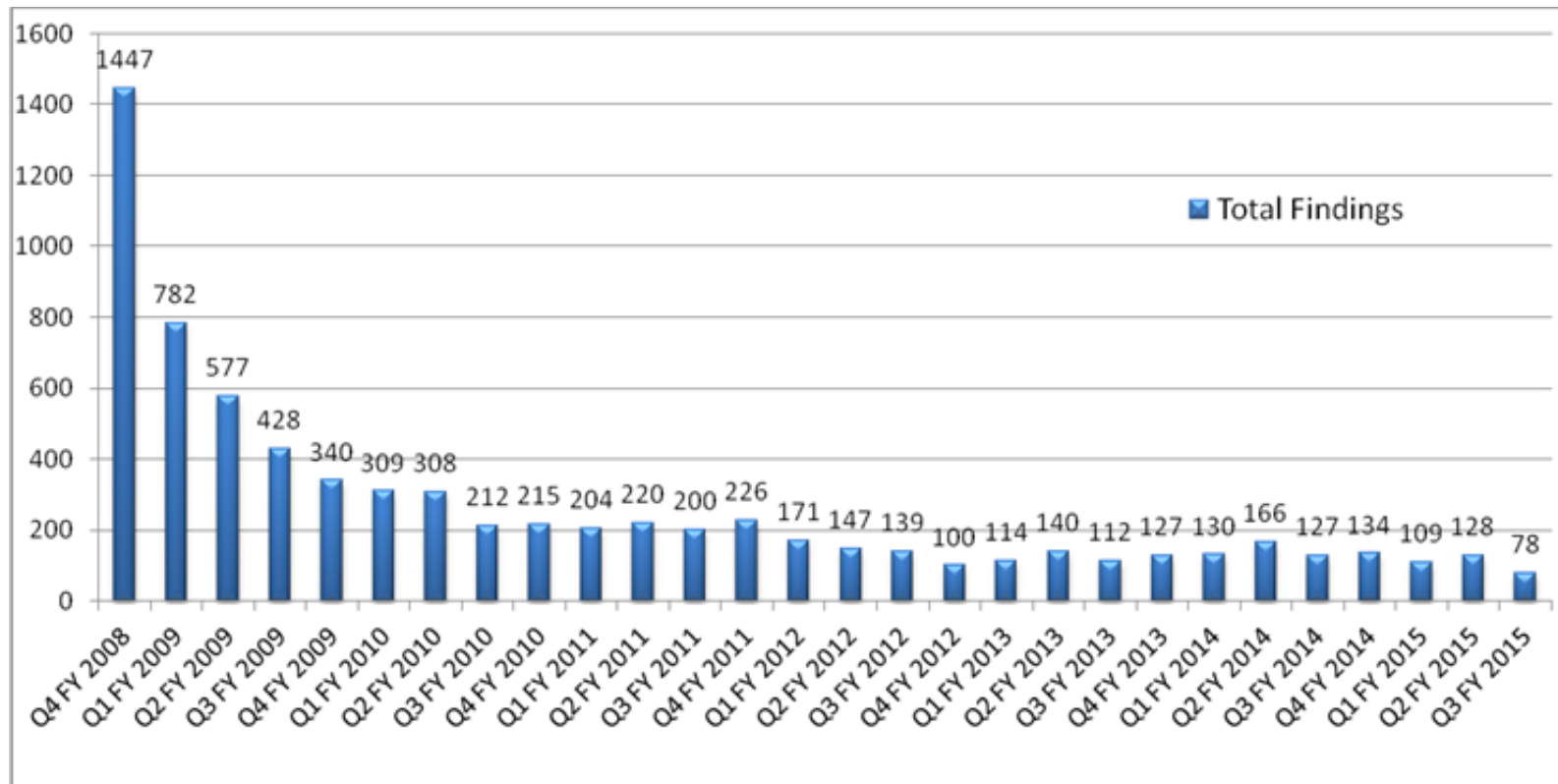
□ Database contains site specific information

- Also tracks site inspections/assessments and photos

Internal Facility Audits

- Audits of 101 facilities
- Categories
 - ▣ Air quality
 - ▣ Asbestos
 - ▣ Drinking water / water supply
 - ▣ Lead based paint
 - ▣ Waste (universal, non-hazardous, hazardous)
 - ▣ Stormwater
 - ▣ Pesticide management
 - ▣ Underground & aboveground storage tanks
 - ▣ Wastewater

Internal Facility Audits



EPA Third Party Audits

Voluntary Disclosure Agreement

- September 2008 - SHA & EPA enter an audit agreement
- Set audit schedule
 - 101 facilities
 - Audit categories:
 - Air quality
 - Drinking water / water supply
 - Waste (universal, non-hazardous, hazardous)
 - Stormwater
 - Pesticide management
 - Wastewater

EPA Third Party Audits

Voluntary Disclosure Agreement

- October 2011
 - ▣ Audits completed
 - ▣ Final disclosure reports submitted to EPA
- Results:
 - ▣ 292 non-compliance findings identified and disclosed
 - ▣ 0 economic benefit penalties assessed by EPA
- Findings
 - ▣ Set completion dates
 - ▣ Failure would result in federal fines
- Spot Audits

EPA Third Party Audits

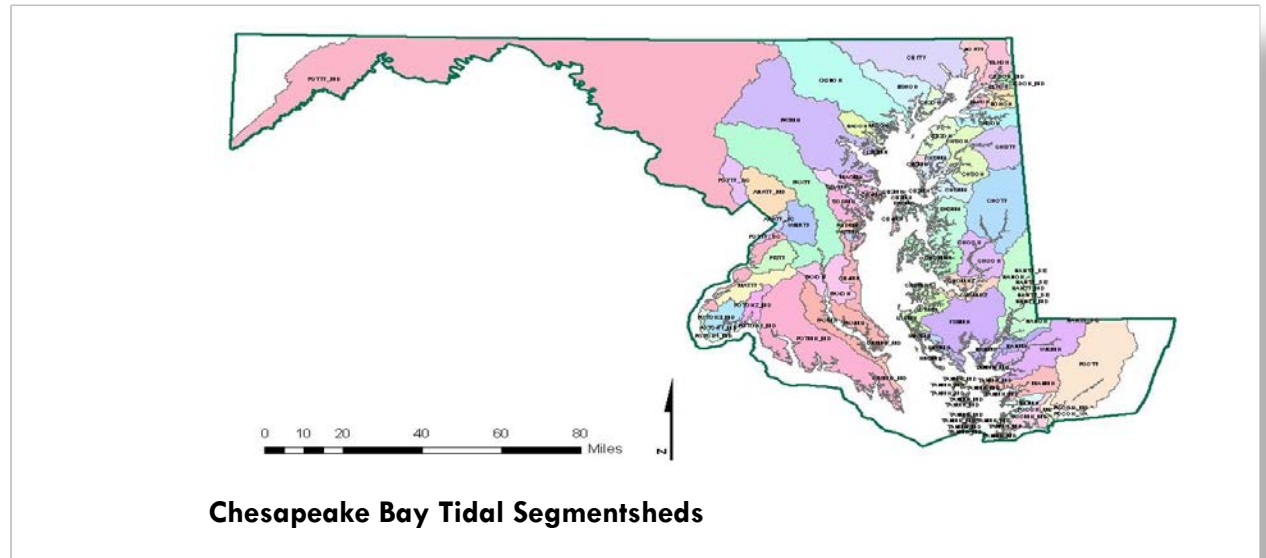
Voluntary Disclosure Agreement

□ Positive Outcomes:

- ▣ Identified systematic issues
- ▣ Provided benchmark of the noncompliance areas
- ▣ Avoided potentially steep fines
- ▣ Increased awareness
- ▣ Gained “buy-in” from maintenance staff
- ▣ Hazardous material removal contract

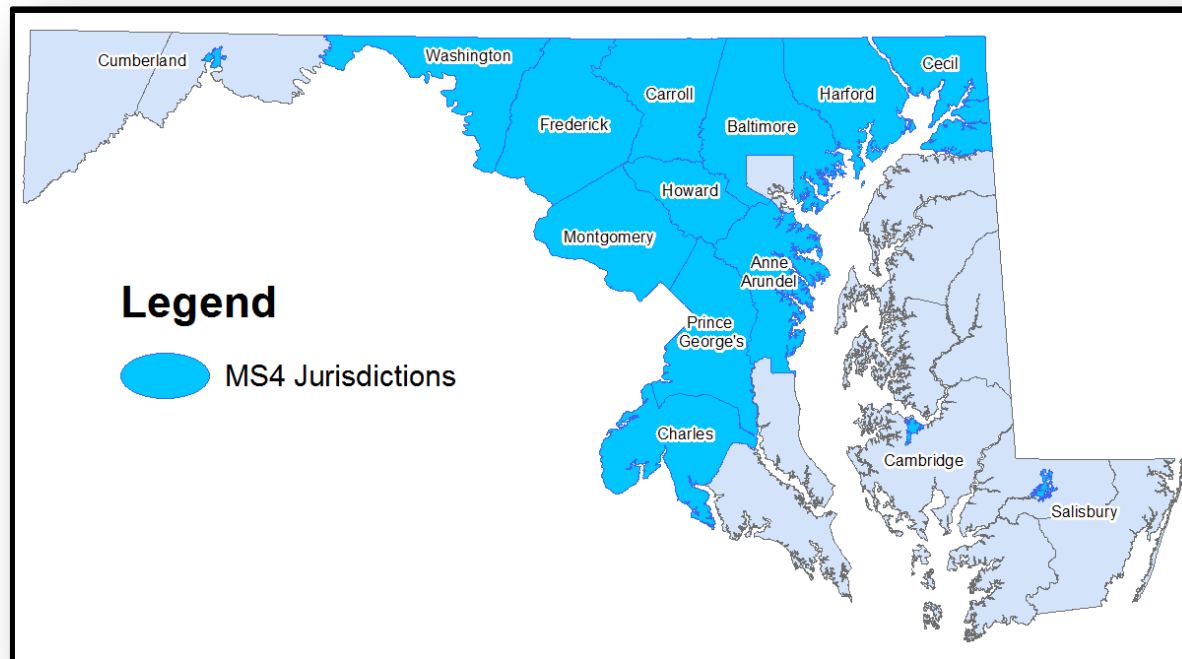
Federal Clean Water Act

- NPDES Permit
 - ▣ Municipal Separate Storm Sewer System (MS4) Permit
- Chesapeake Bay Agreement
 - ▣ Bay Total Maximum Daily Load (TMDL)



TMDL Program

- Impervious Surface Restoration:
 - ▣ Require 20% restoration by 2020
- Pollutant Load Reductions:
 - ▣ Reduce pollutant discharges 60% by 2017, 100% by 2025



Pollutants of Concern to SHA

- Nutrients
 - ▣ Nitrogen
 - ▣ Phosphorous
- Sediment
- Chlorides (Salt)
- Illicit Discharges
- Trash and Litter



Watershed Implementation Plan (WIP)

by 2025

- Bioretention/Rain Gardens
- Dry Detention Ponds
- Extended Detention Ponds
- Stormwater Retrofits
- Catch Basin Cleaning
- Urban Filtering
- Urban Infiltration
- Litter
- Urban Stream Restorations
- Urban Tree Plantings
- Vegetated Open Channels
- Wet Ponds and Wetlands
- BioSwales
- Forest Conservation
- Outfall Stabilization
- Street Sweeping
- Salt Reduction

Watershed Implementation Plan (WIP)

by 2025

- Bioretention/Rain Gardens
- Dry Detention Basins
- Extended Detention
- Stormwater
- Catch Basins
- Urban Filter
- Urban Infiltration
- Litter
- Urban Stream Restorations
- Urban Tree Plantings
- Urban Channel
- Wetlands
- Urban Grazing
- Street Sweeping
- Salt Reduction

- 19,876 AC of drainage areas
- 7,073,080 lbs of debris
- 74,468 LF of streams
- 5,657 AC of trees planted
- 26,675 miles of sweeping annually

Maintenance Impacts

- Bioretention/Rain Gardens
- Dry Detention Ponds
- Extended Detention Ponds
- Stormwater Retrofits
- **Catch Basin Cleaning**
- Urban Filtering
- Urban Infiltration
- **Litter**
- Urban Stream Restorations
- **Urban Tree Plantings**
- Vegetated Open Channels
- Wet Ponds and Wetlands
- **BioSwales**
- Forest Conservation
- Outfall Stabilization
- **Street Sweeping**
- **Salt Reduction**

Street Sweeping

- Contract mechanism
- Industry limitations
- Impact on routine sweeping
- Measurement parameters
 - ▣ Pounds versus 25 cycles
- Reporting
- Watershed of route



BioSwales

- ❑ Mowing restrictions
 - ▣ Hand mowing
 - ▣ Fall mowing of herbaceous vegetation
- ❑ Reseed
- ❑ Stabilization
- ❑ Remove plant waste, sediment and litter
- ❑ Location identification



OED Maintained

- Trees
 - ▣ Hand mowing in between
 - ▣ Trimming
- Meadows
 - ▣ Location identification
 - ▣ Reduces mowable acres
- Stream Restoration
 - ▣ Permitting requirements
 - ▣ Spawning season limitations



BMPs on the Horizon

- Litter removal
 - ▣ Measurement parameters
- Inlet cleaning
 - ▣ Measurement parameters
- Salt reduction in winter operations
 - ▣ 2010 Legislation to create Salt Management Plan



Salt Management Plan

- Anti-icing
 - ▣ All interstates, freeways, and expressways
 - ▣ 14 brine makers across the state
- Environmental impact practices
 - ▣ Well maintained salt structures
 - ▣ Salt contamination
 - ▣ MDSS



Salt Management Plan

- Training & education
 - ▣ Snow college
- Equipment
 - ▣ Spreader calibration
 - ▣ Tailgate flaps
 - ▣ Tow plows
 - ▣ Dual wing plows



Stormwater & Drainage Asset Management Program

- As of 2014, SHA owns and maintains over:
 - ▣ 3,100 permanent stormwater management facilities
 - ▣ 180,000 hydraulic structures
 - ▣ 100,000 conveyances
- Program:
 - ▣ Locate
 - ▣ Inspect
 - ▣ Evaluate
 - ▣ Remediate



Stormwater & Drainage Asset Management Program

- Performance rating for each asset type
 - ▣ No Response Required
 - ▣ Minor Maintenance
 - ▣ Major Maintenance or Repair
 - ▣ Retrofit Design



SHA Facilities - Compliance Programs

- Petroleum Tank Management Program
 - ▣ Release prevention, detection, and reporting
 - ▣ 296 tanks at approximately 128 facilities
 - ▣ 1 million gallons



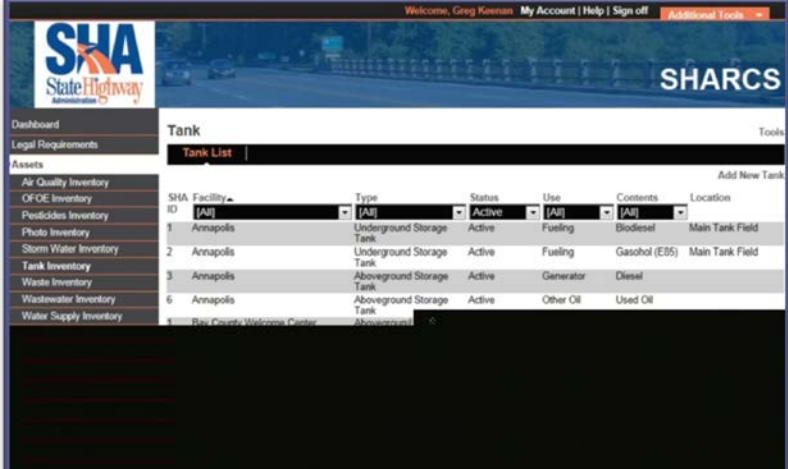
SHA Facilities - Compliance Programs

- Stormwater / Wastewater Program
 - ▣ Storm water discharge permit (12-SW) at 32 permitted facilities
 - Quarterly inspections
 - ▣ New wash bays
 - ▣ Salt brine with secondary containment
 - ▣ Material storage structure for erodible material
 - ▣ Storm Water Pollution Prevention Plans (SWPPP) at 97 facilities
 - ▣ Spill Prevention Control & Countermeasures (SPCC) plans at 45 facilities.
 - ▣ 10 individual wastewater discharge permits

SHA Facilities -

Environmental Mgmt. System (EMS)

- ❑ Asset management approach
- ❑ Data warehouse / task tracker
- ❑ Environmental Compliance Training
- ❑ Routine Inspection Program
- ❑ 3rd- Party Audit Program under development
- ❑ Ongoing SOP development and refinement
- ❑ Business Plan activities



SHA State Highway Administration

SHARCS

Dashboard
Legal Requirements
Assets
Air Quality Inventory
OFOE Inventory
Pesticides Inventory
Photo Inventory
Storm Water Inventory
Tank Inventory
Waste Inventory
Wastewater Inventory
Water Supply Inventory

Tank

Tank List

Add New Tank

SHA ID	Facility	Type	Status	Use	Contents	Location
1	Annapolis	Underground Storage Tank	Active	Fueling	Biodiesel	Main Tank Field
2	Annapolis	Underground Storage Tank	Active	Fueling	Gasohol (E85)	Main Tank Field
3	Annapolis	Aboveground Storage Tank	Active	Generator	Diesel	
6	Annapolis	Aboveground Storage Tank	Active	Other Oil	Used Oil	

SHA Business Plan

Environmental Stewardship & Compliance (ESC)

- Maintenance initiatives are well represented under ESC Key Performance Area of SHA's Business Plan
- Performance Measures
 - ▣ Road salt BMP pilot projects
 - ▣ Non-compliance findings at SHA maintenance facilities
- Strategies
 - ▣ *Salt Management Plan*
 - ▣ *Maintain 90% functionality for SWM facilities*
 - ▣ *Enhance EMS to bring all facilities into compliance*
 - ▣ *Develop plan to bring maintenance operations into compliance*
 - ▣ *Sustainable vegetation management approach*

Looking Ahead

- Transportation Asset Management
 - Green Asset Management System
 - Asset Data Warehouse
- Mobile field tool in development
 - Site assessments incorporated while in the field



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Questions?