Loudoun County Virginia
Stormwater Management Program
And Chesapeake Bay TMDL Compliance

Presented to:

American Council of Engineering Companies
Chesapeake Bay TMDL Symposium

February 19, 2020
- Located in Northern Virginia
- 520 square miles
- ~25 miles west of Washington, DC
- 2010 Population ~315,000
- 82% growth since 2000 among highest in nation
- 2018 population 406,850
LOUDOUN COUNTY
STORMWATER STRUCTURES

1950

2018
REGULATIONS

1948
Federal Water Pollution Control Act

1972
Clean Water Act

1990’s
NPDES PHASE I

2002
NPDES PHASE II

2018
Latest NPDES Permit

YEAR

POPULATION

2020
2030

LOCAL REGULATIONS

- Erosion & Sediment Control Ordinance - COL Chapter 1220
  - Administered by Dept. of Building & Development
- Stormwater Management – COL Chapter 1096
  - 1096.01 – Stormwater Management Program
    » Contains VSMP regulations
    » Administered by Dept. of Building & Development
  - 1096.02 – Maintenance of the System
    » Administered by Dept. of General Services
  - 1096.03 – Discharges to the System
    » Illicit Discharge Ordinance; administered by General Services
- Phase II MS4 Permit Compliance Administered by General Services
Design and Construction

Design

Plan & Easement Review
- Permit
- Construction
- Inspection/Bond Release
- Inventory

LOUDOUN COUNTY STORMWATER PROGRAM
DESIGN AND CONSTRUCTION

Design

Plan & Easement Review

• Permit

• Construction

• Inspection/Bond Release

• Inventory
**Design and Construction**

- **Design**
  - Plan & Easement Review
    - Permit
    - Construction
    - Inspection/Bond Release
    - Inventory
GOOD OR BAD, THIS IS WHERE WE ARE

Any stormwater infrastructure such as BMP’s, pipes, inlets, outlets or channels, if placed in an easement dedicated to the County will be inspected and maintained by the County.

Exceptions:

- **Wet Ponds**: Must also have a Maintenance Agreement stating that the County will only maintain the stormwater functionality of the pond.

- **Manufactured Filtration**: Property owner will be responsible for replacement of manufactured filtration devices (FMPA)

- **Underground Detention**: Maintenance will be responsibility of property owner
INSPECTIONS

Inspections Performed On:
- Wet Ponds
- Dry Ponds
- Bioretention
- Underground Facilities
- Filterras (Tree Box Filter)
Typical Maintenance Projects Include:
• Pipe Lining & Spot Repair
• Structure Rehabilitation
• Dredging
• Underground Facility Cleaning
• Dam & Embankment Mowing
PREVENTATIVE MAINTENANCE

Individual BMP Maintenance Plan

BMP Notes
1. CP10270 — Dry Pond
2. Plan Name/Number: STPL-2001-0040
3. Year Built: 2001
4. Control structure is a riser structure with a 1.5" low flow orifice
5. One structural inflow, one pvc roof drain, and an overland emergency spillway

Maintenance Notes
1. Typical maintenance for dry pond
2. Clean the orifice
3. Remove blockages at structures
4. Mow the area(s) delineated in red on the vicinity map

Inspection Notes
1. Typical dry pond inspection
2. Inspect the orifice
3. Inspect the inflows

Elevation

LOUDOUN COUNTY STORMWATER PROGRAM
STORMWATER TEAM

Technical Team: Engineers, Technician, GIS Analyst

Administration

Field Team
CONTRACT MANAGEMENT

• Engineering Services for Stormwater Management Program
  • Three Competitively Bid Engineering Firms (Insp., IDDE inv., design, MS4)
    » Awarded May, 2018 with two 1-year renewals

• Engineering Services for Stormwater Infrastructure and General Surveying
  • Four Competitively Bid Engineering/Survey Firms (Surveys, H&H, design)
    » Awarded November, 2019 with two 1-year renewals

• Job Order Contract for Stormwater Management Program
  • Four Competitively Bid Construction Firms (large repairs, construction)
    » Awarded July, 2019 with two 1-year renewals
LOUDOUN COUNTY STORMWATER PROGRAM

Phase II MS4 General Permit Minimum Control Measures

- Public Involvement
- Construction Runoff
- Illicit Discharge
- Public Education
- Post Construction Runoff
- Pollution Prevention
MINIMUM CONTROL MEASURES

• Construction Run-off – Erosion & Sediment Control Program (B&D)
  • Over 14k inspections last permit year – 62 enforcement actions
  • 197 Notices to Comply, 194 Notices to Comply corrected

• Illicit Discharge Detection and Elimination:
  • Over 300 Dry screenings per year; citizen complaints; inspection notices
  • 52 IDDE cases investigated last permit year (40 resolved, 12 under investigation)

• Pollution Prevention:
  • 15 Pollution Prevention SOP’s developed for County Facilities
  • Permit Mandates SWPPP’s for High Priority Facilities (currently 5)
MINIMUM CONTROL MEASURES

• Public Education:
  • Public Education and Outreach Program – PEOP (revised June, 2019)
    » High-Priority Stormwater Issues
    » Communication through Traditional Written Materials, speaking engagements and Media materials (NoVa Clean Water Partners).

• Public Involvement:
  • Notification and Reporting mechanisms
  • Public Involvement opportunities
    » Household hazardous chemicals collection (along with Solid Waste)
    » Storm Drain Marking; LCPS/Rust Sanctuary Water Walks
    » VTE – Loudoun/Master Gardeners “My Backyard”
MINIMUM CONTROL MEASURES

• Post-Construction Stormwater Management
  • Post-Construction BMP Structural Inspections (permit year 1);
    » 235 Wet and Dry ponds (30 privately owned)
    » 22 Bioretentions
    » 124 Underground BMPs
  • Preventative Maintenance Inspections (484)
STORMWATER PROGRAM BUDGET

- Annual Base Budget for Operations
  - FY 2020 - $770k for contractual services, materials & supplies

- Capital Improvement Plan
  - Driven by Bay TMDL Action Plan reduction requirements:
    - FY 2020 - $6.15M
    - FY 2021 - $6.46M
    - FY 2022 - $6.78M
    - FY 2023 - $7.12M
Bay TMDL Action Plan

- Phase II Plan submitted to DEQ in November, 2019
- 40% of Required Reductions of TN, TP and TSS by 2023
- Phase I Status (progress toward 100% in 2019):
  - TP = 35.9%
  - TN = 22.6%
  - TSS = 27.9%
BAY TMDL ACTION PLAN

• Current Strategies for Achieving Phase II and Phase III goals:
  • Land Use Change (mostly tree planting)
  • Nutrient Management Plans
    • < 1 acre within MS4 area
    • All acreage outside MS4 area
  • Retrofit Projects:
    • Loudoun Valley Estates Constructed Wetlands
    • Bolen Park Stream Restoration
    • Countryside Stream Restoration
    • MD1745 Constructed Wetlands
BAY TMDL ACTION PLAN

• Retrofit Projects:
  • Loudoun Valley Estates Constructed Wetlands
  • ED Dry Pond, retrofit to constructed wetlands
    » Drains 72.85 acres, 17 acres impervious
    » Stormwater Local Assistance Fund (SLAF)
    » Expected completion, Fall of 2020.
**Bay TMDL Action Plan**

- Retrofit Projects:
  - Bolen Park Stream Restoration
  - 1,350 Linear feet
  - SLAF funding, Spring 2020
**Bay TMDL Action Plan**

- Retrofit Projects:
  - Countryside Stream Restoration
  - 1,700 Linear feet
  - In Design, Spring 2021
  - Drains 1,737 acres Suburban Development, over 700 acres impervious cover.
Bay TMDL Action Plan

- Retrofit Projects: MD1745
  - ED Retrofit to Constructed Wetlands
  - Drains 116.6 acres Commercial Development, over 64 acres impervious cover (55%)
  - 77.6 lbs TP Reduction
  - 635 lbs TN Reduction
BAY TMDL ACTION PLAN

• Other Strategies:

• Over Treatment: Usually occurs when additional WQ treatment is proffered by developer on legislative applications

• Street/Parking Lot Sweeping: Only at County Facilities – very little credit

• Nutrient Purchases: To date, 60 lbs TP purchased – Not preferred course, but cost effective with no maintenance

• Pay for Performance Procurement
BAY TMDL ACTION PLAN

• Totaling all Strategies:

• Progress toward 100%:
  • TN  41.6%
  • TP  73.0%
  • TSS 43.1%
Challenges of a fast-growing Phase II MS4
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Baseline Load Reduction Credits for BMPs on Unregulated Lands:

*Baseline for urban practices from new development shall be in compliance with post-construction nutrient loading requirements of the Virginia Stormwater Management Program regulations, which has been set at 0.45 lbs TP/acre/year for practices installed between July 1, 2009 and June 30, 2014 and 0.41 lbs TP/acre/year for projects installed after July 1, 2014. Any POC reductions beyond these values may contribute to the reductions required by the Special Condition.*
CONTRACTUAL OPPORTUNITIES

• Engineering Services for Stormwater Management Program
  • Awarded May, 2018 with two 1-year renewals

• Engineering Services for Stormwater Infrastructure and General Surveying
  • Awarded November, 2019 with two 1-year renewals

• Job Order Contract for Stormwater Management Program
  • Awarded July, 2019 with two 1-year renewals
    » Limited to $500,000, so larger jobs would be Bid

• Nutrient Credit Purchases
  • Plan on one per year through 2023, maybe beyond
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