Chadswood SWM Pond
Repair and Retrofit Project

October 27, 2014 Public Meeting

Montgomery County Department of Environmental Protection
Watershed Management Division
Today’s Agenda

- Sources of Water
- Montgomery County background
- What is a Watershed & Runoff?
- Introduction to Stormwater and the MS4 Program
- Project Objectives
- Chadswood SWM Design Overview
- Project Costs and Benefits
- Design and Construction Timeline
- What to Expect During Construction
- Significant Hazard Dam
Sources of Water

- About 97% is salt water
- About 2% is frozen
- Only 1% is available for drinking water
  - 95% from groundwater across the Country
  - 32% from groundwater, 68% from surface water in Maryland
    - Potential for greater impacts from runoff in Maryland
Montgomery County, MD

- 500 sq. miles
- 1,000,000 people
  - Second only to Baltimore City within Maryland in average people per square mile
  - 184 languages spoken
- About 12% impervious surface overall
  - About the size of Washington DC
- Over 1,500 miles of streams
- Two major river basins:
  - Potomac
  - Patuxent
- Eight local watersheds

Impervious: Not allowing water to soak through the ground.
What is a Watershed?

- A *watershed* is an area from which the water above and below ground drains to the same place.
- Different scales of watersheds:
  - Chesapeake Bay
  - Eight local watersheds
  - Neighborhood (to a storm drain)
What is Runoff?

Water that does not soak into the ground becomes surface runoff. This runoff flows over hard surfaces like rooftops, driveways and parking lots collecting potential contaminants and flows:

- Directly into streams
- Into storm drain pipes, eventually leading to streams
- Into stormwater management facilities, then streams

**Two Major Issues:**

**Volume/Timing of Runoff**

**Water Quality**
What is the County doing to protect our Streams?

- Must meet regulatory requirements
  - Federal Clean Water Act permit program
  - MS4 = Municipal Separate Storm Sewer System
- Applies to all large and medium Maryland jurisdictions
- County programs
  - Restore our streams and watersheds
    - Add runoff management
  - Meet water quality protection goals
    - Reduce pollutants getting into our streams
  - Educate and engage all stakeholders
    - Individual actions make a difference
  - Focus on watersheds showing greatest impacts
MS4 permit, what is it?

• Montgomery County is responsible for:
  • What goes into our storm drain pipes
  • What comes out of them
  • What flows into the streams
• Requires additional stormwater management for 20 percent of impervious surfaces (4,292 acres = 6.7 square miles). That’s about three times the size of Takoma Park.

  That’s equivalent to 3,307 football fields!
Watershed Management Division

- Stormwater Permit Coordination
  - Reporting, Monitoring, and Watershed Outreach
- Stormwater Facility Maintenance
  - Inspections and Maintenance
- Watershed Restoration
  - Stormwater Retrofits and Stream Restoration
  - RainScapes
- Construction Management
  - Oversees project construction
  - Administers contracts and procurement
Resources

For information such as:

- Local watershed groups
- Regional and national groups
- General information
  [www.montgomerycountymd.gov/DEP](http://www.montgomerycountymd.gov/DEP)
- Living a Green Life: My Green Montgomery
Project Selection

- Pond constructed in early 1980s
- Located in a key watersheds (Great Seneca Creek) for pond retrofits
- Pond are at or near the end of service life: multiple problems
- Does not meet current safety and design standards
- Opportunity for water quality treatment and ecological benefits
Project Location

Chadswood

Figure 2: Stream resource conditions for the Great Seneca subwatershed
Chadswood SWM Pond
Drainage Areas

- Total Drainage Area
  - Drainage Area: 323.54 ac
  - Impervious Area: 45.046
  - 13.9% Impervious

Sub-Drainage Areas

<table>
<thead>
<tr>
<th></th>
<th>Drainage Area (ac)</th>
<th>Impervious Area (ac)</th>
<th>Percent Impervious (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dayspring Pond</td>
<td>129.2</td>
<td>6.96</td>
<td>5.4%</td>
</tr>
<tr>
<td>Neelsville Pond</td>
<td>116.67</td>
<td>19.67</td>
<td>16.9%</td>
</tr>
<tr>
<td>Chadswood Pond</td>
<td>77.67</td>
<td>18.42</td>
<td>23.7%</td>
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Site Description

- Stormwater Management Dry Pond
  - 18’ High Earth Embankment Dam
  - Adjacent residential properties
  - Does not meet current SWM requirements to achieve any MS4 credit.
Site Deficiencies

- Slope failures on upstream embankment
- Multiple sink holes
- Spillway pipe failures
- Upstream Dam embankment was not constructed properly: too steep, poor compaction.
- Structural failures in storm drain pipes
- Sediment and debris collected in pond and principal spillway pipes
Site Deficiencies

- Stormwater Management Dry Pond
  - Large slope failure
  - Steep upstream embankment
  - Exposed principal spillway pipe
  - Multiple sinkholes
Site Deficiencies

- Exposed principal spillway pipe
- Joint separation in principal spillway pipe
- Large slope failure around spillway pipe
Project Objectives

• MAINTENANCE AND REPAIR
  • Replace existing risers with water-tight structure
  • Reconstruct upstream slope, including clay liner
  • Install internal drain in downstream embankments
  • Repair existing spillway pipes inside embankment
  • Replace storm drain outfall locations with appropriate riprap stone to prevent erosion from stormwater

• STORMWATER MANAGEMENT
  • Modify outlet works to better regulate pond discharge to protect Great Seneca Creek watershed
Repair and Retrofit Actions

- Replace Existing Risers
- Re-build Existing Embankment Slope
- Repair Existing Spillway Pipes
- Proposed Stockpile and Staging area
Sediment Control Plan
Stormwater Management Plan

- Stormdrain realignment
- Concrete riser
- Spillway pipes to be sliplined
- Seepage control filter
- Extend embankment slope, clay liner

Regional Stormwater Management Plan View
Pond Repair and Retrofit (2021)
Chadswood
Germantown, MD
Election District
Montgomery County, Maryland

Charles F. Johnson & Associates, Inc.
Design Features- Maintenance

• Maintenance
  • Replace existing risers
  • Repair spillway pipes by slip-lining
  • Install impervious core along upstream slope
  • Install internal drain in downstream embankment
  • Re-grade upstream embankment
Design Features- Streams

- Stream protection
  - Modify outlet works to better regulate pond discharge and protect Seneca Creek
  - Maximize water quality and channel protection volume
  - Provide 24-hour detention for stream channel protection
Project Impacts

- **Road Closure** – Portion of Cross Laurel Drive and sidewalks will be closed during construction
- **School Bus** – school bus to be rerouted (MCPS)
- **Utilities** – utilities located in and around the embankment may be impacted.
- **Construction Traffic** – construction traffic enter and exit roadways Monday – Friday, 7AM to 4PM.
- **Noise** – construction traffic and noise will typically occur Monday – Friday, 7AM to 4PM. County Noise Ordinance will be followed.
Project Implementation

Project Cost: $762K (finance by WQPC*)
Contractor: Meadville Land Services
Construction Management: Mo Co DEP
Designer: Charles P. Johnson and Associates

Permits and Inspections:
Maryland Department of the Environment Dam Safety Division
Mo Co Department of Permitting Services – Sediment Control
Mo Co Department of Permitting Services – Right-of-Way
Maryland National-Capital Park and Planning Commission - Tree Protection

*Water Quality Protection Charge
Construction Schedule

- Notice to Proceed: November 15, 2014
- Phase I: November 15 to March 1, 2015 (before stream closure)
- Phase II: Work during stream closure (March 1 to June 15)
- Phase III: Work after June 15
- Project to be completed by July 30, 2015
Sediment Control Plan
Phase I

- Mobilization
- Installation of sediment control, construction fencing, staging area, tree protection, etc.
- Demolition
- Installation of Stream Diversion
- Sliplining of Principal Spillway pipes
- Embankment Construction including clay face
- Riser Construction
Phase II

- Completion of riser construction
- Installation of riser appurtenances
- Completion of embankment grading
- Installation of seepage control filter
- Stormdrain relocation
Phase III

- Removal of diversion wall
- Finish riser construction
- Final embankment grading
- Site restoration and final stabilization
- Sediment Control removal
Utility Impacts

• Special care will be taken to minimize the utility impacts
• No interruption of service is anticipated

• Utility inside embankment include:
  • Electric
  • Fiber Optic Cable
  • Sewer
  • Phone/Cable/Internet
  • Water
  • Gas
Project Benefits

- **Safety** - repair dam to prevent any further deterioration
- **Maintenance** – safer operating structure that will require minimal structural maintenance in future.
- **Water Quality**– improved water quality and stream water temperature through better management of runoff. CPv=77.5%, WQv=115% to maximum extent practicable (MEP)
- **Environmental** – reduced downstream discharge allows for natural self-repair of stream channel.
What to expect during construction

- **Duration**
  - Approximately 8 to 9 months

- **Construction Hours**
  - Monday through Friday, 7AM – 4PM

- **Public Safety**
  - Open sides of site will be fenced with orange construction safety fence to separate construction from residents.

- **Traffic**
  - Impacts to traffic from entering and exiting construction traffic and contractor parking during the day. The portion of Cross Laurel Drive located on the embankment will be closed for the duration of the project.

- **Noise**
  - Contractor is required to comply with Montgomery County Noise Ordinance.

- **Sediment**
  - Contractor will be required to comply with Montgomery County Sediment Control Permit and not track dirt onto roads
Significant Hazard Dam

- Significant Hazard Dam: Loss of life possible, damage to roads, utilities
- Emergency Action Plan: to reduce the risk of human life loss and injury and minimize property damage during an unusual or emergency event at the dam
- Emergency Response
- Plan Activation
- Operation and Monitoring
- Dam Safety Inspections
- Staff Gage
Questions?

For more information:

- www.montgomerycountymd.gov/DEP/water/major-stormwater-project.html#chadswooddrypond
- Gene Gopenko, 240-777-7723, gene.gopenko@montgomerycountymd.gov