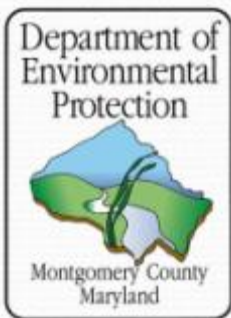


Clearspring

Stormwater Management & Stream Restoration Project



November 6, 2014 Public Meeting

Montgomery County Department of Environmental Protection
Watershed Management Division



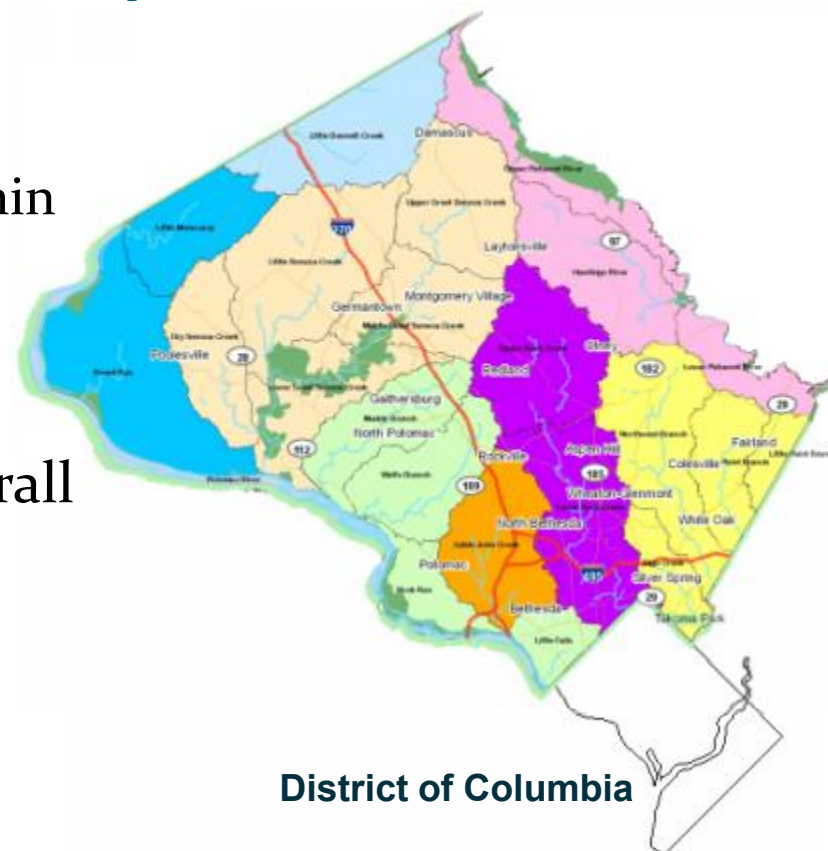


Today's Agenda

- Introductions
 - **Rebecca Winer-Skonovd – Project Manager; Montgomery County DEP/JV**
 - **Paul Bogle– Senior Engineer; Montgomery County DEP**
 - **Jeff Blass – SWM Project Designer; Charles P. Johnson & Associates, Inc.**
 - **Gabrielle Myers – Stream Project Designer**
- Background Information – Why County is Doing This
- Stormwater Management Overview
- Project Objectives
- Project Costs and Benefits
- Design and Permitting Timeline
- What to Expect During Construction

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)

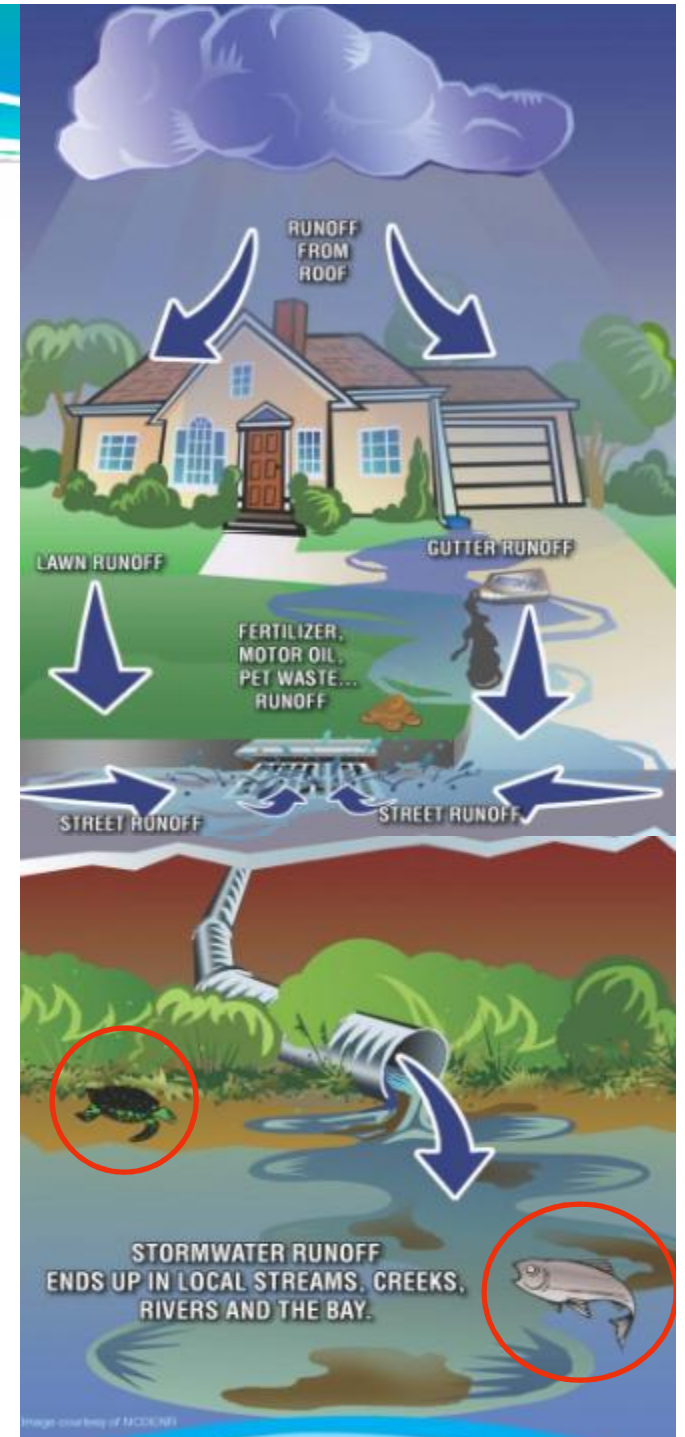


What is Runoff?

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



Watershed 101

Urban Impacts to Streams



Stream in a Watershed with 8% impervious cover.



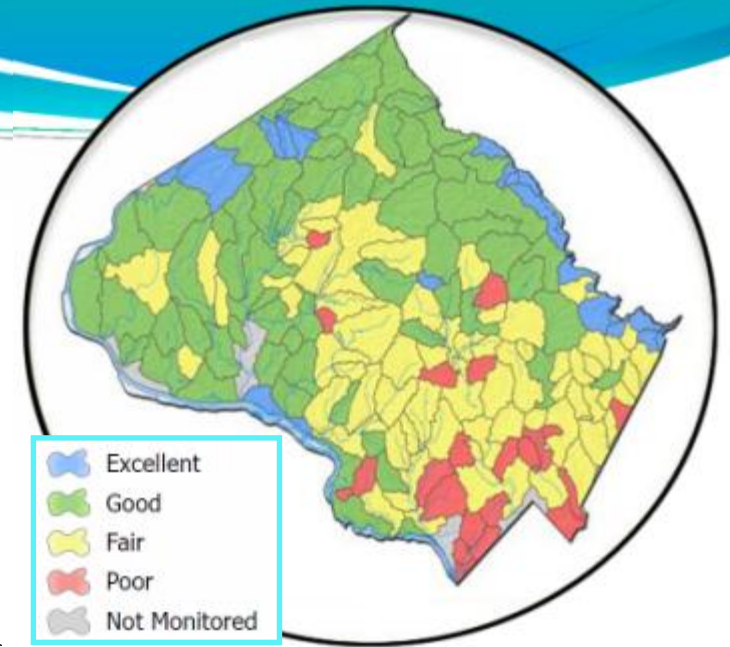
Stream in a Watershed with 20% Impervious Cover



Stream in a Watershed with 30% impervious Cover.

Watershed 101

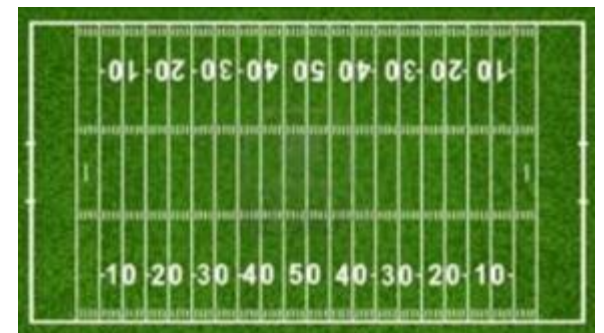
- What is the County doing to protect our Streams?
- Must meet regulatory requirements
 - Federal Clean Water Act permit program
 - MS4 = Municipal Separate Storm Sewer System
- Applies to all large and medium Maryland jurisdictions
- County Programs
 - Restore our streams and watersheds
 - Add runoff 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



What is the County Doing to Protect our Streams?

- Montgomery County is responsible for:
 - What goes into our storm drain pipes
 - What comes out of them
 - What flows into the streams
- DEP is adding stormwater management for 20 % of impervious surfaces
 - (4,292 acres = 6.7 square miles)... About three times the size of Takoma Park.

That's equivalent to 3,307 football fields!

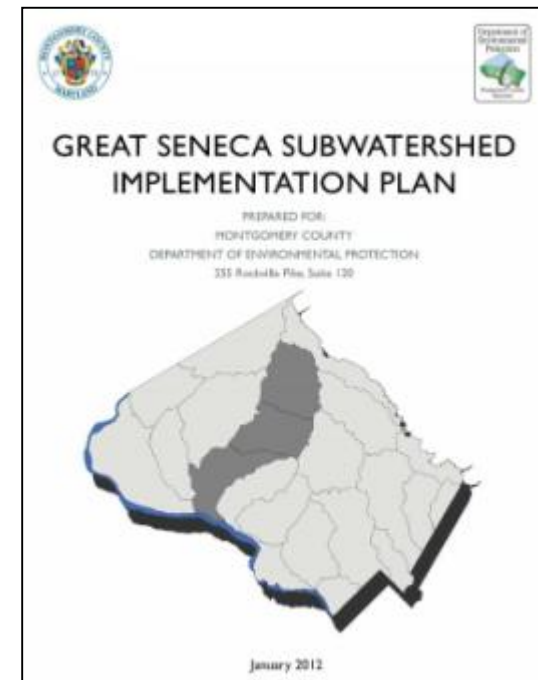


Resources

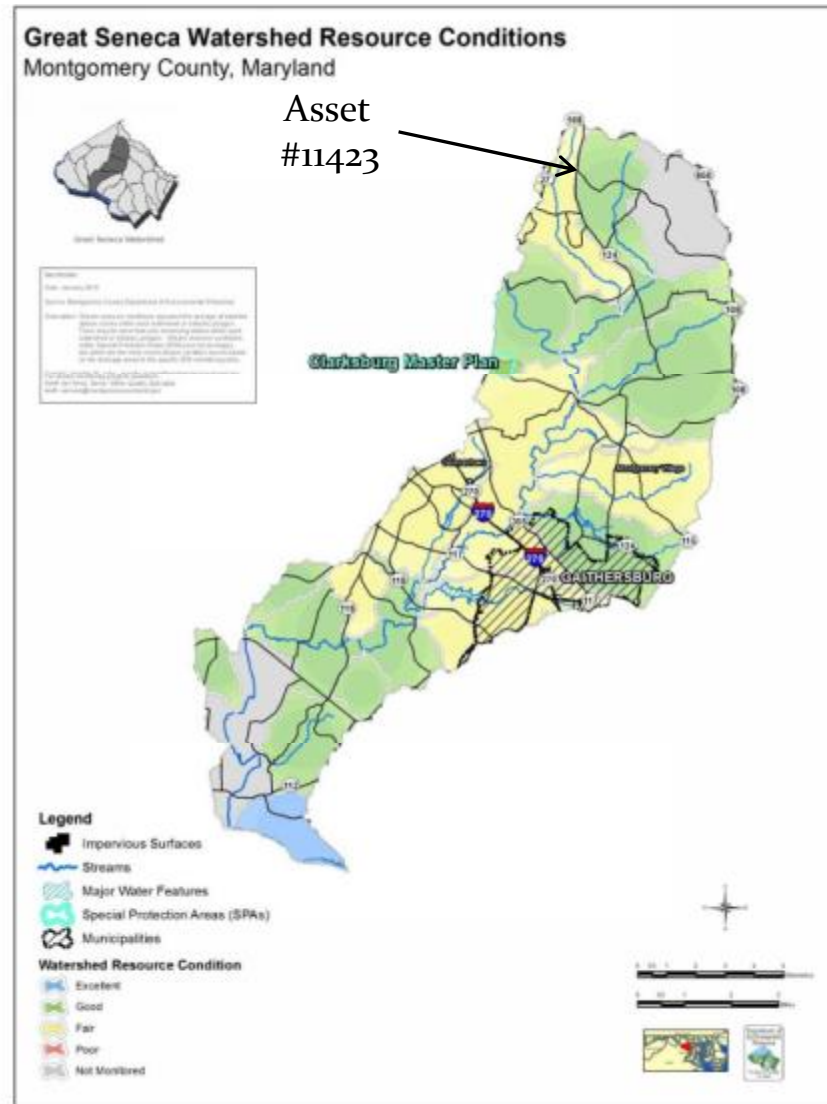
- Specific Project Information
<http://www.montgomerycountymd.gov/DEP/Restoration/clearspring-manor.html>
- General Information
www.montgomerycountymd.gov/DEP
- Living a Green Life: My Green Montgomery
<http://montgomerycountymd.mygreenmontgomery.org/>

Project Selection

- Ponds constructed in early 1980s
- Located in a key watersheds (Great Seneca Creek) for pond retrofits
- Ponds are at or near the end of service life
- Meet current safety and design standards
- Opportunity for water quality treatment and ecological benefits

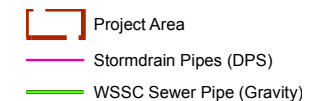
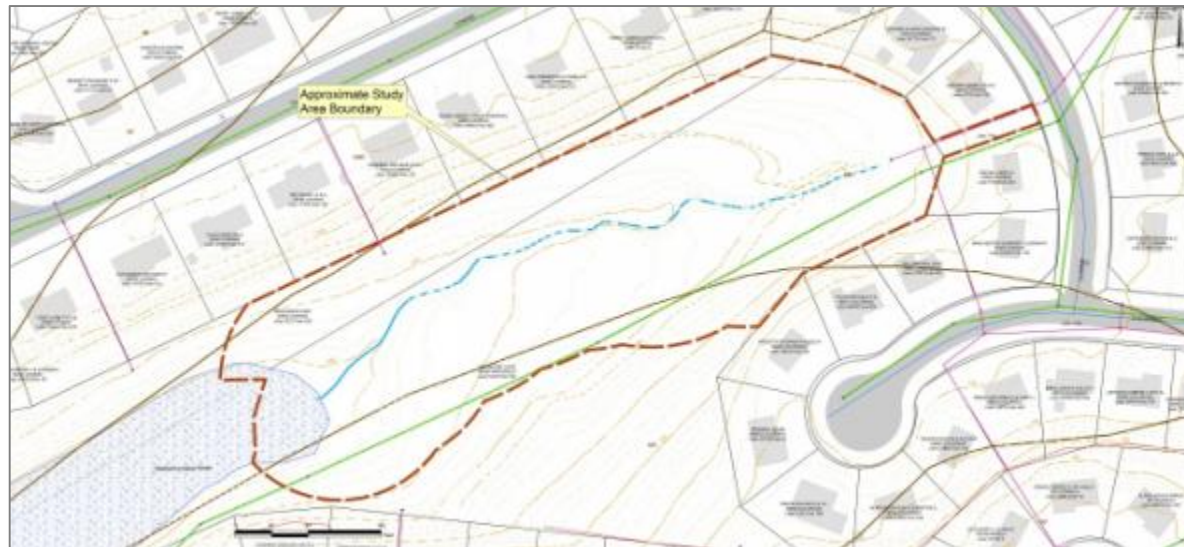


Project Location



Project Objectives - Stream

- Reconnect the stream channel to its floodplain
- Improve Water Quality
- Improve In-Stream & Floodplain Habitat
- Create new and Enhance Existing Wetlands



Project Location



Stream Length: 801 Linear Feet | Stream USE Class: I-P

Stream Drainage Area

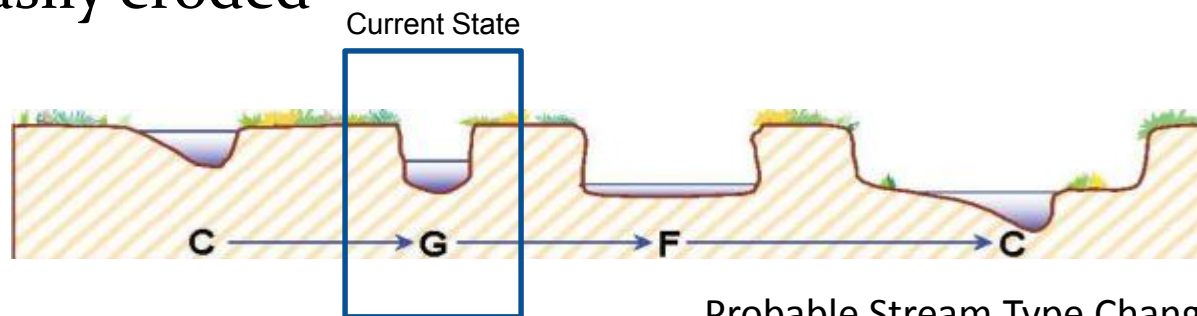


- Building
- Stormdrain Pipe
- WSSC Sewer Pipe
- Drainage Area Boundary

Drainage Area: 55 Acres | Impervious: 23% |

Clearspring Stream Conditions

- Primarily a Rosgen G4 channel
- The upper reaches of the stream channel are actively downcutting
- At the pond, the channel is an unstable multi-thread channel
- Native soils are very loose and easily eroded



Probable Stream Type Changes over time

Causes of Instability

- Channel piping & loss of riparian buffers in the headwaters
- In-stream modifications (i.e. culverts)
- Increased runoff from development
- Increase in sediment load
- Deep unstable headcut
- No access to floodplain, highly entrenched
- Increased slope, higher velocity

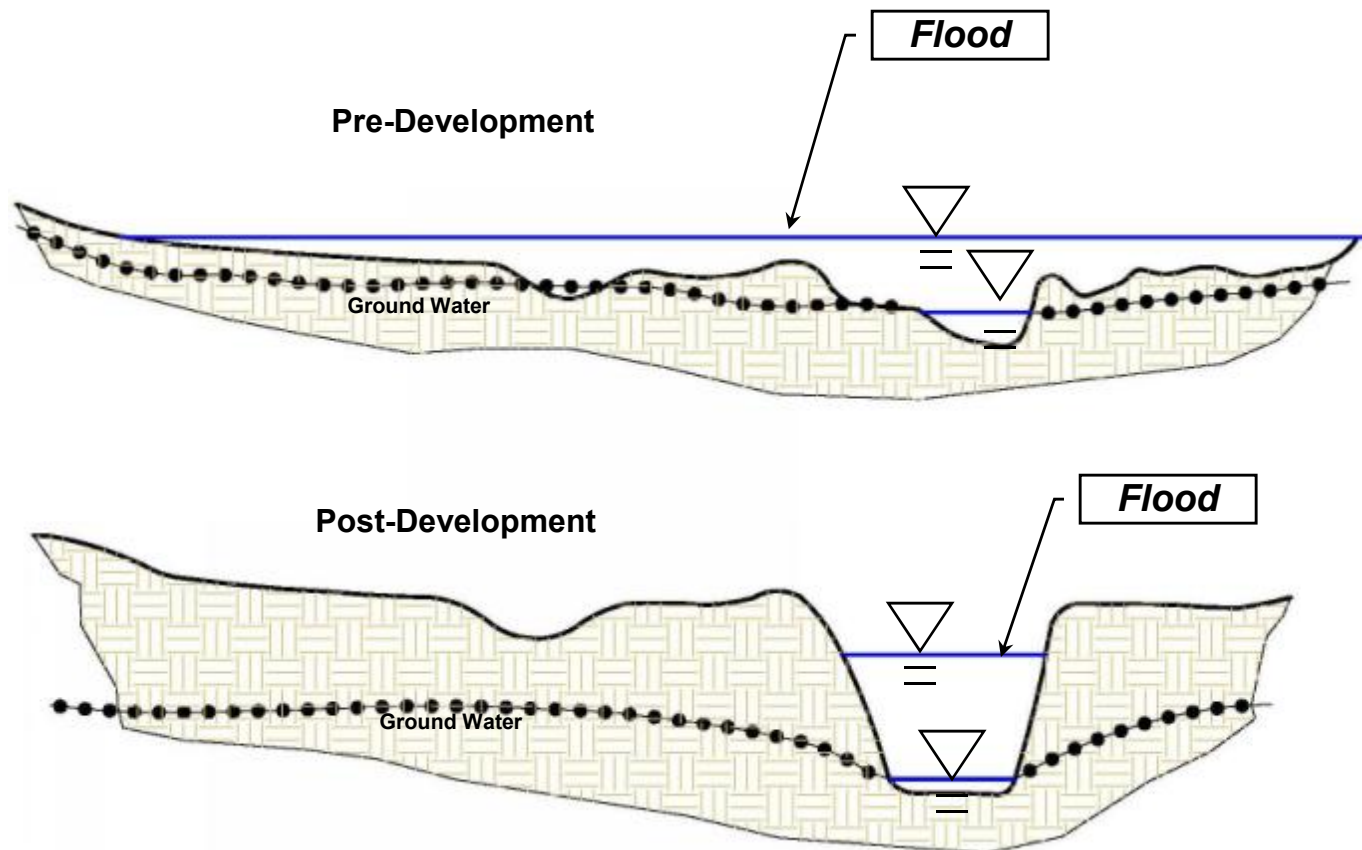


Severely Eroded Bank with Vegetation Loss



Deep Headcut Moving Upstream

Floodplain Connectivity



Channel Realignment

- #1 priority is reconnecting the stream to its floodplain
- Create a stable C channel
- Reduce bank erosion and sediment supply



Glenora Tributary: Previous Condition



Channel Realignment: Glenora Tributary. City of Rockville. Construction 2014

In-Stream Structures

- Riffles and step pools reproduce natural stream conditions
- Riffles, pools and glides create a variety of habitats for fish and invertebrates
- Fish/invertebrates such as darters, cattsflies, midges, damselflies, and dragonflies likely to return



Glenora Tributary: Constructed Riffle

Stream Bank Grading

- Allows floodplain access during storm events
- Allows vegetation to establish
- Higher storm flows to the floodplain slow water velocities and reduce stress on the banks



Grade Control

- In-stream grade control structures are implemented to reduce bank erosion
- Riffles increase oxygen and reduce water velocity
- Pools dissipate energy and material loads



Tree Stabilization & Riparian Planting

Stream bank vegetation increases floodplain and in-stream habitat, stabilizes banks and helps maintain stream temperatures by providing shade during hot summer months



Donnybrook Tributary: Riparian Planting 2014



Wilde Lake Reach D: Riparian Planting

Common Riparian Trees/Plants

Trees:

Red
Maple



Sycamore



Shrubs:

Buttonbush



Spicebush



Live
stakes:

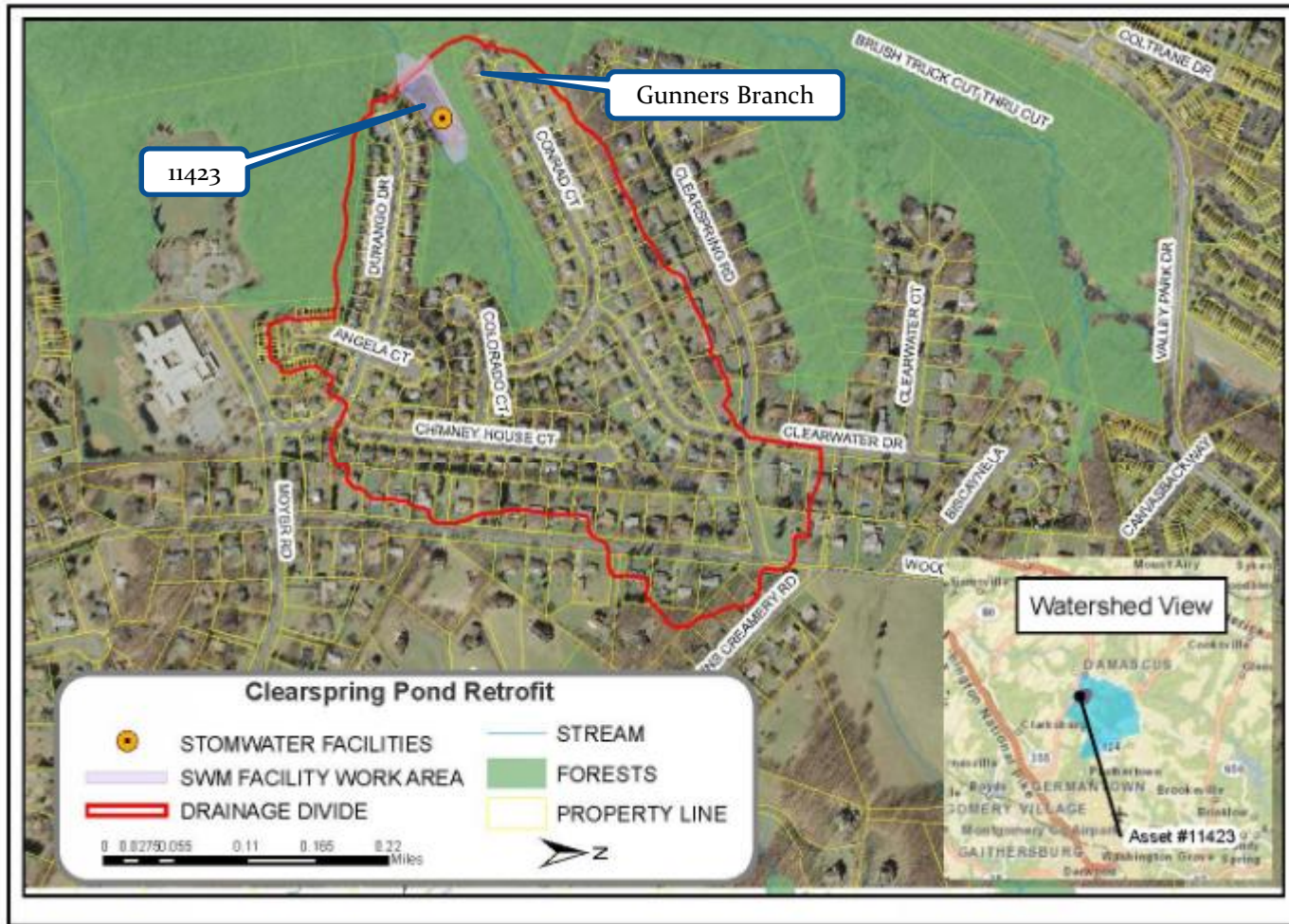
Black Willow



Silky Dogwood

Images Source: <http://plants.usda.gov>

Clearspring Stormwater Pond



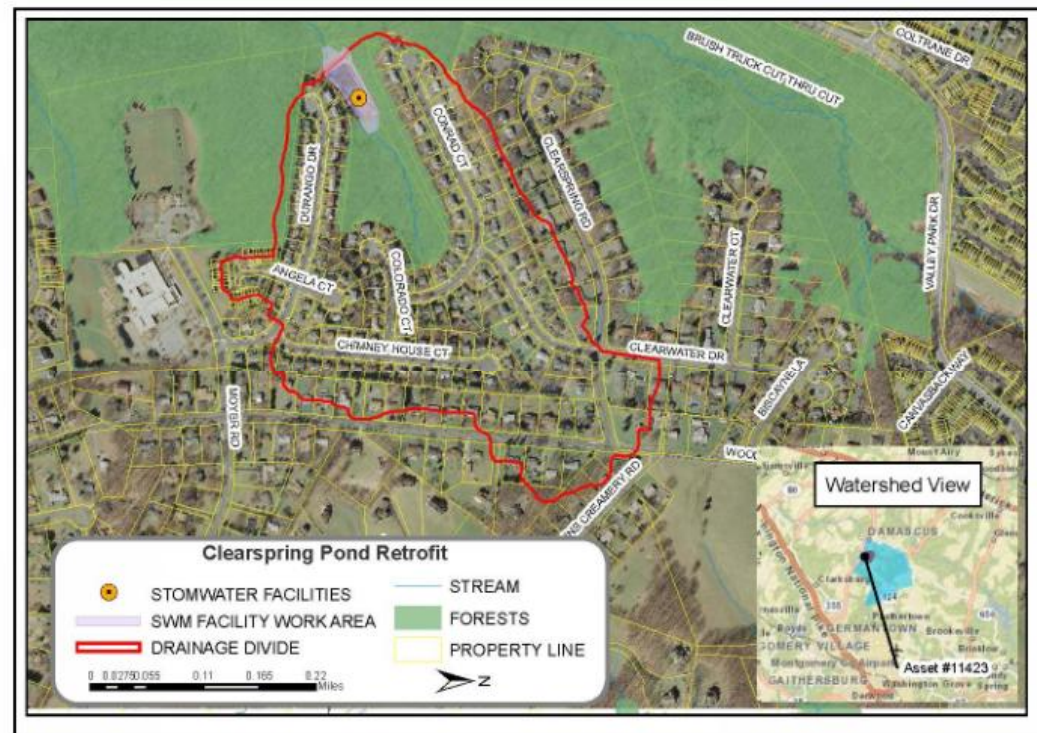


Project Objectives

- STORMWATER MANAGEMENT
 - Increase permanent pool for water quality
- STREAM PROTECTION
 - Modify outlet works to better regulate pond discharge and protect Magruder Branch and Seneca Creek streams
- MAINTENANCE
 - Replace existing riser with a water-tight structure
 - Replace dam embankment and install impervious core
 - Install internal drain in downstream embankment
- AESTHETICS/ENVIRONMENT
 - Landscape the pond to improve aquatic habitat and aesthetics
 - Augment existing environmental features such as forest and wetlands where possible

Stormwater Pond Drainage Area

- Clearspring Pond (Asset #11423)
 - 66.14 Acres
 - 23.5% Impervious



Pond 11423

- Stormwater Management Dry Pond
 - 16' High Earth Embankment Dam
 - Adjacent residential properties
 - Does not meet current SWM requirements to achieve any MS4 credit.
 - Heavily silted



Existing Metal
Outlet Structure

Large amount of sediment
buildup in pond

Pond 11423



Project Objectives – Stormwater Management

- Increase permanent pool storage to provide maximum water quality treatment
- Modify outlet works to provide maximum channel protection treatment



Project Objectives - Streams

- Modify outlet works to better regulate pond discharge and protect Magruder Branch and Great Seneca Creek
- Achieve full water quality and channel protection treatment



Project Objectives - Maintenance

- Replace existing riser with water-tight structure
- Install impervious core in dam embankment
- Install internal drain in downstream embankment



Project Objectives - Aesthetics

- Sod and landscape facility with native vegetation to improve aesthetics



Project Objectives - Landscaping

- Trees:
 - Red Maple
 - American Hornbeam
 - Black Gum
 - White Oak
 - Swamp White Oak
- Shrubs:
 - Winterberry
 - Arrowhead
- Aquatic Emergents:
 - Blue Flag
 - Purple Stem Aster
 - Soft Rush



Red Maple



American Hornbeam



Winterberry



Blue Flag



Project Costs

- **Financial** – estimated cost of \$1,242,000 financed through MCDEP CIP Program using funds generated through the Water Quality Protection Charge
- **Forest** – tree clearing to comply with state dam safety laws along the downstream toe of the dam.
- **Traffic** – construction traffic enter and exit roadways Monday – Friday, 7AM to 4PM
- **Neighborhood** – construction traffic and noise will typically occur Monday – Friday, 7AM to 4PM



Project Benefits

- **Water** – improved water quality and stream water temperature through better management of runoff
- **Environmental** – reduced downstream discharge allows for natural self-repair of stream channel. Increased aquatic and riparian habitat through landscaping and reforestation.
- **Recreational** – increased aesthetic appeal of ponds
- **Maintenance** – safer operating structure that will require minimal structural maintenance in future.



Estimated Design and Permitting Timeline

- **Design** – November 2013 – October 2015
- **Approvals** – September/October 2015
- **Permits** – November 2015
- **Bidding** –December 2015
- **Construction (estimated)** – Jan. 2015– May 2015



What to Expect During Construction

- **Duration**
 - Approximately 5 months
- **Construction Hours**
 - Monday through Friday, 7AM – 4PM
- **Safety**
 - Open sides of site will be fenced with orange construction safety fence to separate construction from residents.
- **Traffic**
 - Minor impacts to traffic from entering and exiting construction traffic and contractor parking during the day.
- **Noise**
 - Contractor is required to comply with Montgomery County Noise Ordinance – site elevation will help alleviate noise pollution.
- **Sediment**
 - Contractor will be required to comply with Montgomery County Sediment Control Permit and not track dirt onto roads



Questions?

For more information:

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rebecca.winer-skonovd@montgomerycountymd.gov