Town of Walkersville, MD Stormwater (MS4)Update

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ARRO Consulting

Walkersville Town Meeting - 1/27/2021

Walkersville's Stormwater (MS4) Permit

- The EPA's National Pollutant Discharge Elimination System (NPDES) general permit covers small municipal separate storm sewer systems (MS4s) in certain portions of the State of Maryland. Walkersville is categorized as an MS4 designated by the Maryland Department of the Environment (MDE) under the Clean Water Act (CWA) and associated regulations. MS4 owners and operators covered under this general permit must manage, implement, and enforce management programs for controlling all stormwater discharges. The Town must effectively prohibit pollutants in stormwater discharges or other unauthorized discharges into the MS4 as necessary to comply with Maryland's receiving water quality standards.

Public Education

- Educational stormwater (MS4) pamphlets are available at the Town office, on the Town stormwater webpage, and upon request. These new pamphlets will be distributed with applicable permits/applications moving forward to the public.
  - Town Residents (General Public)
  - Town Residents (Homeowners)
  - Commercial Development
  - Town Staff
- Educational MS4 information is regularly posted on the Town's MS4 Information webpage.
  - Link

Town Residents (General Public)

What is Stormwater?

Stormwater is the water produced from when rain, snow, sleet, etc. fall to earth. This stormwater can either seep into the ground or collect to potentially become a flood.

To protect the people of Walkersville from flooding and protect water quality, the Town has a series of drains, pipes, and water quality improving Best Management Processes (BMPs) called a Municipal Separate Storm Sewer System (MS4).

The MS4 directly drains to our lakes, streams, rivers, and ponds so it plays a very important part in keeping our waters clean.

Did you know that every waterway in Walkersville drains to the Monocacy River, which eventually flows to the Chesapeake Bay? That means that any contaminants released into our watershed are contributing to the degradation of one of the most critically endangered ecosystems in our region.

Walkersville is doing its part to protect local waterways by helping to keep the water clean before it reaches our streams.

You can help too, by following the advice in this pamphlet and by participating in local stormwater events. More information on these events can be found on the back of this of this pamphlet.

Town of Walkersville Stormwater Resources

For more information regarding stormwater events, public meetings, and other public participation opportunities, please visit the Town website at the bottom of this page. The MS4 Information subpage also contains an educational survey and an illicit discharge reporting form.

walkersvillemd.gov/water/ms4-information

Walkersville Town Office

21 West Frederick Street
P.O. Box 249
Walkersville, MD 21793

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(301) 845-4500

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walkersville-md.com/contact-us

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www.walkersvillemd.gov

What is Stormwater?

For Town Residents

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Town Residents (Homeowners)

What is Stormwater?

Stormwater is surface water runoff resulting from a precipitation event or snowmelt. This water can either seep into the ground, or if it is unable to infiltrate, collect to potentially become a flood.

In urban and suburban areas covered with buildings and pavement, much of the stormwater cannot infiltrate into the ground. Instead, it is captured by a series of drains, pipes, and water quality improving Best Management Practices (BMPs) called a Municipal Separate Storm Sewer System (MS4) in order to mitigate the risk of flooding.

The MS4 directly drains to our lakes, streams, rivers, and ponds, and it carries with it everything the runoff picks up along its way to the storm drain. Our MS4 plays a very important part in keeping our waters clean.

What does Construction have to do with it?

Residential construction activities, such as the addition of a deck, pool, driveway, or shed, increase the impervious area of your property. More impervious area means more stormwater runoff, which leads to an increased risk of pollution in our streams.

The loss of infiltration from the increase in impervious surfaces is also to blame for a decreased rate of groundwater recharge. Lack of available groundwater can spell trouble for both wells and municipal water supplies during times of drought.

Additional Resources

For more information on the impacts of development and best practices for residential construction activities, please refer to the websites linked below. Additional stormwater information can be found on the MS4 Information subpage of the Town website.

Homeowner's Guide to Stormwater Management
http://www.stormwaterguide.org/static/HomeownersGuide.pdf

Protecting Water Quality from Urban Runoff
https://www.epa.gov/sites/production/files/2015-09/documents/nps_urban-facts_final.pdf

Walkersville Town Code
http://walkersvillemd.gov/government/town-code/

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Stormwater & Construction

For Town Residents

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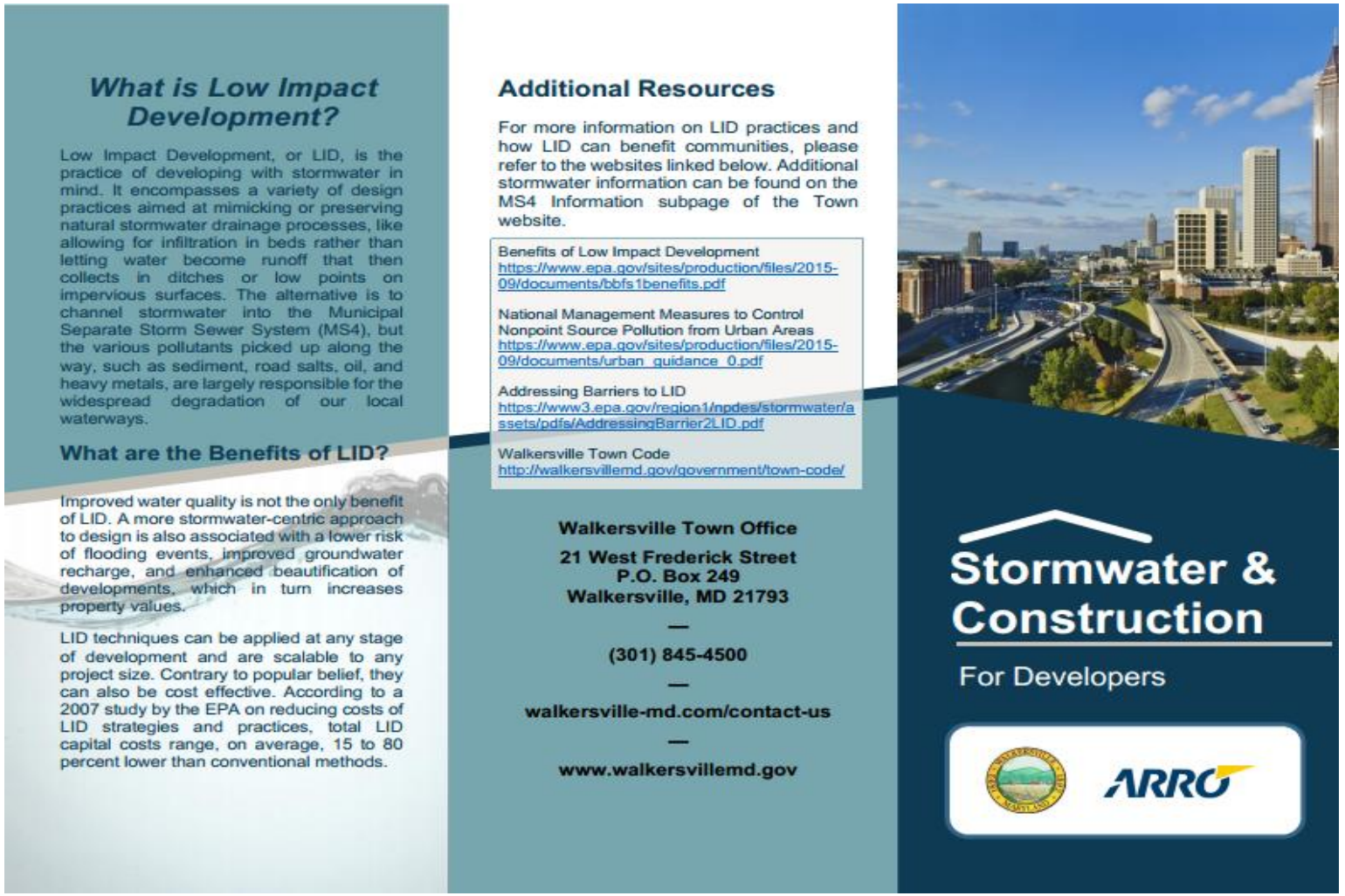
Commercial Development



What is Low Impact Development?

Low Impact Development, or LID, is the practice of developing with stormwater in mind. It encompasses a variety of design practices aimed at mimicking or preserving natural stormwater drainage processes, like allowing for infiltration in beds rather than letting water become runoff that then collects in ditches or low points on impervious surfaces. The alternative is to channel stormwater into the Municipal Separate Storm Sewer System (MS4), but the various pollutants picked up along the way, such as sediment, road salts, oil, and heavy metals, are largely responsible for the widespread degradation of our local waterways.

What are the Benefits of LID?

Improved water quality is not the only benefit of LID. A more stormwater-centric approach to design is also associated with a lower risk of flooding events, improved groundwater recharge, and enhanced beautification of developments, which in turn increases property values.

LID techniques can be applied at any stage of development and are scalable to any project size. Contrary to popular belief, they can also be cost effective. According to a 2007 study by the EPA on reducing costs of LID strategies and practices, total LID capital costs range, on average, 15 to 80 percent lower than conventional methods.

Additional Resources

For more information on LID practices and how LID can benefit communities, please refer to the websites linked below. Additional stormwater information can be found on the MS4 Information subpage of the Town website.

Benefits of Low Impact Development
https://www.epa.gov/sites/production/files/2015-09/documents/bbfs1benefits.pdf

National Management Measures to Control Nonpoint Source Pollution from Urban Areas
https://www.epa.gov/sites/production/files/2015-09/documents/urban_guidance_0.pdf

Addressing Barriers to LID
https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/AddressingBarrier2LID.pdf

Walkersville Town Code
http://walkersvillemd.gov/government/town-code/

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Stormwater & Construction

For Developers

ARRO

Town Staff

Why is Stormwater Important?

The Town of Walkersville is subject to a Maryland Department of the Environment (MDE) General Permit for Municipal Stormwater Discharge. This permit must be renewed every five years and reports on the progress of the permit must be submitted every October 31st. Those reports document the work done to meet permit requirements for the preceding period of July 1st to June 30th.

You probably have been to one of our yearly Municipal Separate Storm Sewer System (MS4) Training days and other MS4 events. Those are a part of what is required by the MDE. This brochure will act as a brief guide for your part of the Town MS4 program.

Town Staff like yourself are involved in all parts of the MS4 program, but the basic components that you will spend the most time on will fall into the following categories:

- Public Education/Public Involvement
- Illicit Discharge Prevention/Detection
- Good Housekeeping of Municipal Properties and Operations

This brochure will go over these tasks, but for more information please feel free to ask the Town Manager or ARRO Staff.

Town of Walkersville Stormwater Resources

A large part of the MS4 program is keeping the Town residents engaged and involved. If a resident asks about more information regarding stormwater events, public meetings, and other public participation opportunities, please direct them to the Town website at the bottom of this page.

The MS4 Information subpage also contains an educational survey and an illicit discharge reporting form.

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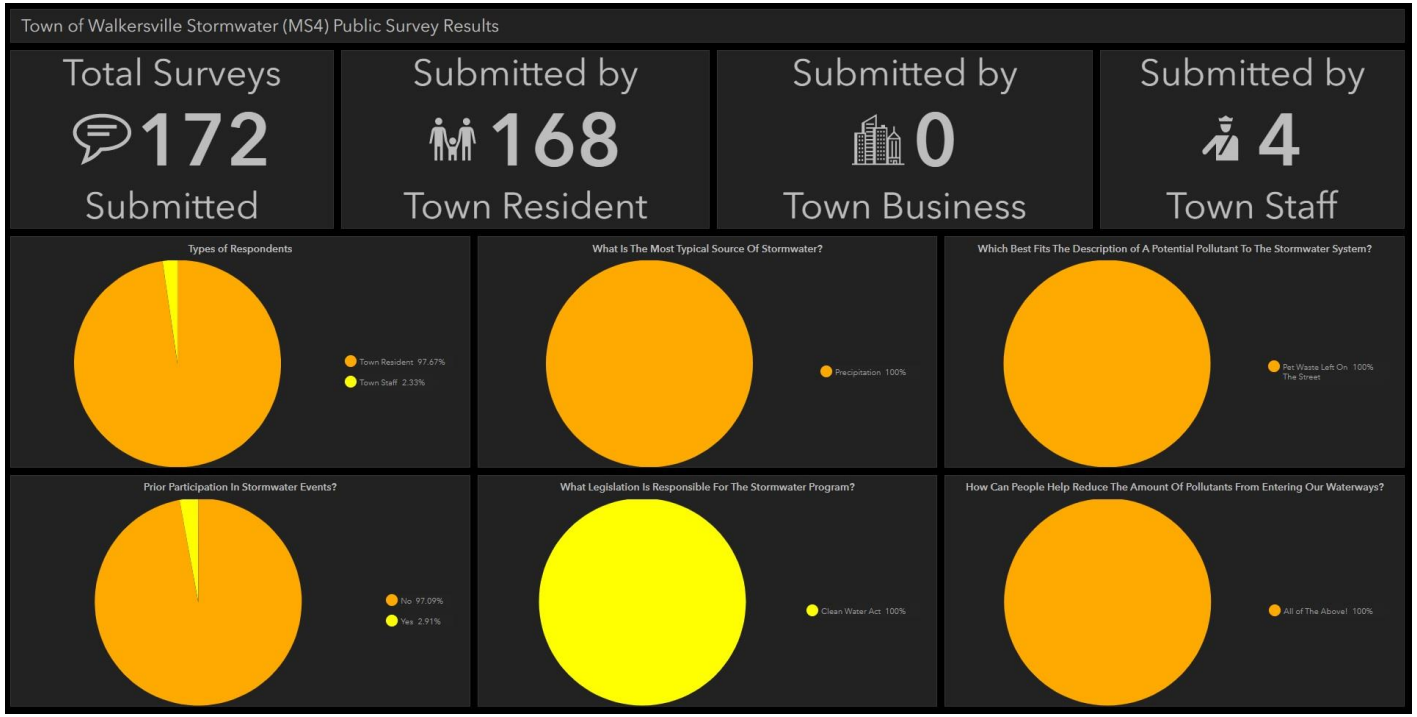
Why is Stormwater Important?

For Town Staff

ARRO

Public Involvement

- Public Stormwater Survey
  - Link
- Credit towards MS4 permit
- If you need a paper copy, please call the Town office at (301) 845-4500.
- Results will be finalized July 1, 2021 and submitted with MDE MS4 report in October.



Results as of 1/26/2021 at 0800 EST

Illicit Discharge Detection and Elimination

- Federal regulations define an illicit discharge as "...any discharge to an MS4 that is not composed entirely of stormwater." This can include household cleaners, lawn products, trash, deicers and organic debris. We ask the public to not contaminate our stormwater system with items/materials such as these.
- If you witness and illicit discharge:
  - Fill out the Town's Illicit Discharge Reporting Form
    - Link
  - Call the Town Office at (301) 845-4500

Stormwater Ponds

- The Town's stormwater ponds help store stormwater/runoff and provide water quality treatment.
- Please do not store any personal property in stormwater infrastructure.
- Please avoid disposing of pet waste in or around stormwater infrastructure.
- Please do not enter stormwater infrastructure as the structure could be damaged or more importantly an injury could occur.
- If you are the responsible party of stormwater infrastructure, please conduct regular maintenance according your O&M agreement.

Wet Swale, Solar Drive

Dry Pond, Polaris Drive

Good Housekeeping and Pollution Prevention

- Deicers and rock salt may be great tools for keeping sidewalks and roads safe, but they can be not so great for our environment. According to the EPA Webinar, “Sharing the Road with the Environment”, one teaspoon of salt can cause five gallons worth of water to be considered polluted. This means that you should be careful in the application of deicers. Apply only as much as is needed and keep your supply in a dry location.
- One of the eco-friendliest deicing compounds available is Calcium Chloride, as it is effective to -26° F. In comparison, rock salt stops working at 15° F. Calcium Chloride is an inexpensive and readily available option for deicing your driveways and sidewalks.
- The following deicers meet the EPA’s Safer Choice Standard:

Premier Ice Melter	Safe Step Extreme 8300	ECOS Ice Melt
Premier Pro Ice Melter	Safe Step Nature's Power	Advanced Melt
Superior Sno-N-Ice Melter	Safe Step Power 6300 Enviro-Blend Ice Melt	Nature's Choice
IceAway Max Green	Safe Step Pro Enviro Ice Melter	K-9 Pet-Friendly Ice Melt
Safe Step Sure Paws	Safe Step Pro Mag Chloride Ice Melter	

Chesapeake Bay Restoration Planning

- Maryland's Watershed Implementation Plan (WIP) specifies the nutrient and sediment load reductions required to address the Chesapeake Bay TMDL by 2025.

- This five-year permit term requires permittees to develop planning strategies and work toward implementing water quality improvement projects. Restoration planning strategies and implementation schedules required under this general permit are consistent with addressing the water quality goals of the Chesapeake Bay TMDL by 2025.

- The Town of Walkersville has a 57.23 impervious acre restoration requirement by 2025. Walkersville must update or create new stormwater Best Management Practices (BMPs) to account for treatment of 57.23 impervious acres by 2025.

MDE BMP Costing Guide

- Estimated total BMP costs using MDE's BMP Costing Guide (Updated 2011).
- These estimated costs are based off prevailing wages and are used by MDE for planning purposes only. These costs are typically higher than actual planning, design, and construction costs.
- Actual costs can be calculated based on project site conditions, types and sources of materials and labor, existing infrastructure design, etc.
- Actual costs can be developed through ARRO, or any other firm, by creating a preliminary site-specific plan, design, and construction scope of work.
- Project costs to be paid by the Town, private entities, grants, donations, or other funding sources.

Stormwater BMP		(6) Number of Impervious Acres Treated	Cost per Impervious Acre Treated			
			County-based Costs		Lifetime Costs	
			(7) Initial Cost	(8) Average Annual Maintenance Cost	(9) Total (Over 20 Years)	(10) Annual Costs (Over 20 Years)
Impervious Urban Surface Reduction		1	$ 96,250	$ 885	$ 113,957	$ 5,698
Urban Forest Buffers		1	$ 33,000	$ 1,210	$ 57,207	$ 2,860
Urban Grass Buffers		1	$ 23,650	$ 870	$ 41,057	$ 2,053
Urban Tree Planting		1	$ 33,000	$ 1,210	$ 57,207	$ 2,860
Wet Ponds and Wetlands (New)		1	$ 24,115	$ 763	$ 39,368	$ 1,968
Wet Ponds and Wetlands (Retrofit)		1	$ 63,998	$ 763	$ 79,251	$ 3,963
Dry Detention Ponds (New)		1	$ 39,000	$ 1,231	$ 63,620	$ 3,181
Hydrodynamic Structures (New)		1	$ 42,000	$ 3,531	$ 112,620	$ 5,631
Dry Extended Detention Ponds (New)		1	$ 39,000	$ 1,231	$ 63,620	$ 3,181
Dry Extended Detention Ponds (Retrofit)		1	$ 67,500	$ 1,231	$ 92,120	$ 4,606
Infiltration Practices w/o Sand, Veg. (New)		1	$ 58,450	$ 866	$ 75,770	$ 3,789
Infiltration Practices w/ Sand, Veg. (New)		1	$ 61,250	$ 906	$ 79,370	$ 3,969
Filtering Practices (Sand, above ground)		1	$ 49,000	$ 1,431	$ 77,620	$ 3,881
Filtering Practices (Sand, below ground)		1	$ 56,000	$ 1,631	$ 88,620	$ 4,431
Erosion and Sediment Control		1	$ 26,000	$ 10	$ 26,207	$ 1,310
Urban Nutrient Management		1	$ 61,000	$ 31	$ 61,620	$ 3,081
Street Sweeping		1	$ 6,049	$ 451	$ 15,079	$ 754
Urban Stream Restoration		1	$ 64,500	$ 891	$ 82,320	$ 4,116
Bioretention (New - Suburban)		1	$ 46,875	$ 1,531	$ 77,495	$ 3,875
Bioretention (Retrofit - Highly Urban)		1	$ 183,750	$ 1,531	$ 214,370	$ 10,719
Vegetated Open Channels		1	$ 24,000	$ 610	$ 36,207	$ 1,810
Bioswale (New)		1	$ 42,000	$ 931	$ 60,620	$ 3,031
Permeable Pavement w/o Sand, Veg. (New)		1	$ 239,580	$ 2,188	$ 283,347	$ 14,167
Permeable Pavement w/ Sand, Veg. (New)		1	$ 335,412	$ 3,060	$ 396,603	$ 19,830

Alternative Project Conversion Rate

Table B.4 Alternative Urban BMPs and Impervious Acre Credit

Alternative BMP	Calculating Impervious Acre Credit[1]	Impervious Acre Equivalent
Mechanical Street Sweeping	Acres swept multiplied by 0.07 = acres of credit	0.07
Regen/Vacuum Street Sweeping	Acres swept multiplied by 0.13 = acres of credit	0.13
Reforestation on Pervious Urban	Acres of reforested land multiplied by 0.38 = acres of credit	0.38
Impervious Urban to Pervious	Acres of reforested land multiplied by 0.75 = acres of credit	0.75
Impervious Urban to Forest	Acres of reforested land multiplied by 1.00 = acres of credit	1.00
Regenerative Step Pool Storm Conveyance (SPSC)[2]	Located in dry or ephemeral channels; credit is based on rainfall depth treated	Varies[2]
Catch Basin Cleaning	Tons of dry material collected multiplied by 0.40 = acres of credit	0.40
Storm Drain Vacuuming	Tons of dry material collected multiplied by 0.40 = acres of credit	0.40
Mechanical Street Sweeping	Tons of dry material collected multiplied by 0.40 = acres of credit	0.40
Regen/Vacuum Street Sweeping	Tons of dry material collected multiplied by 0.40 = acres of credit	0.40
Stream Restoration	Linear feet of stream restored multiplied by 0.01 = acres of credit	0.01
Outfall Stabilization	Linear feet of outfall stabilized multiplied by 0.01 = acres of credit; max credit is 2 acres per project	0.01
Shoreline Management	Linear feet of shoreline restored multiplied by 0.04 = acres of credit	0.04
Septic Pumping	Units pumped (annually) multiplied by 0.03 = acres of credit	0.03
Septic Denitrification	Units upgraded (w/denitrification) multiplied by 0.26 = acres of credit	0.26
Septic Connections to WWTP	Units connected to a WWTP multiplied by 0.39 = acres of credit	0.39

1. For more information on calculating credits for alternative BMPs, see *Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated* (MDE, 2014).
2. Full impervious area credit is granted when practice treats 1 inch of rainfall. If the full WQ_v is not provided, then the impervious area credit is based on the percentage of 1 inch that is treated. Described in Appendix B, Section III.B.

Potential Restoration Projects for Walkersville

- Increased Street Sweeping
- Storm Drain Vacuuming
- Tree Planting
- New/Retrofitted Stormwater Facilities
  - Swales
  - Wet Ponds
  - Bioretention Facilities
  - Infiltration Facilities

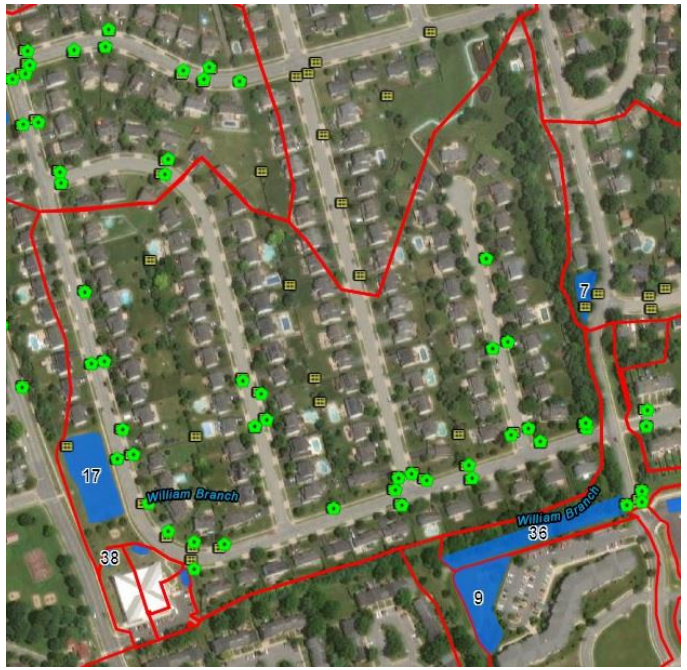
Potential Restoration Schedule

Type of Restoration Project	BMP Code	Cost ($)	Average Annual Maintenance Cost ($)	Imperv. Acres Treated	Cost per Acre Treated ($)	Imperv. Acre Target and Balance
						57.23
Tree Planting	FPU	16,500	605	0.50	33,000	56.73
Street Sweeping	MSS	12,098	903	2.00	6,049	54.73
Storm Drain Vacuuming	SDV	3,025	226	0.50	6,050	54.23
BMP 23 Retention Pond (Wet Pond)	PEWT	215,588	6,818	8.94	24,115	45.29
BMP 18 Retention Pond (Wet Pond)	PEWT	292,274	9,600	12.12	24,115	33.17
BMP 17 Retention Pond (Wet Pond)	PEWT	280,457	8,870	11.63	24,115	21.54
BMP 13 Retention Pond (Wet Pond)	PEWT	263,095	8,321	10.91	24,115	10.63
NEW Retention Pond (Wet Pond)	PEWT	256,342	8,107	10.63	24,115	0.00
Totals		1,322,879	42,845	57.23		0.00

BMP Retrofits to Wet Ponds

BMP 13
Owned By: Private - HOA
Impervious Acres Untreated: 10.91

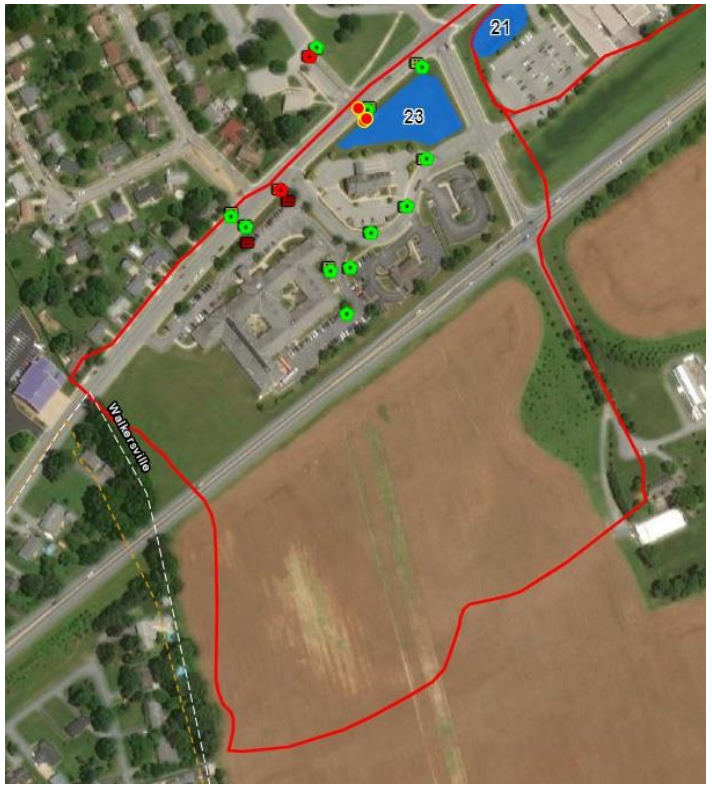
BMP 17
Owned By: Private Owner- HOA
Impervious Acres Untreated 11.63



BMP Retrofits

BMP 18
Owned By: Private Owner-HOA
Impervious Acres Untreated: 12.12

BMP 23
Owned By: Private Owner
Impervious Acres Untreated: 8.94



New Wet Pond BMP

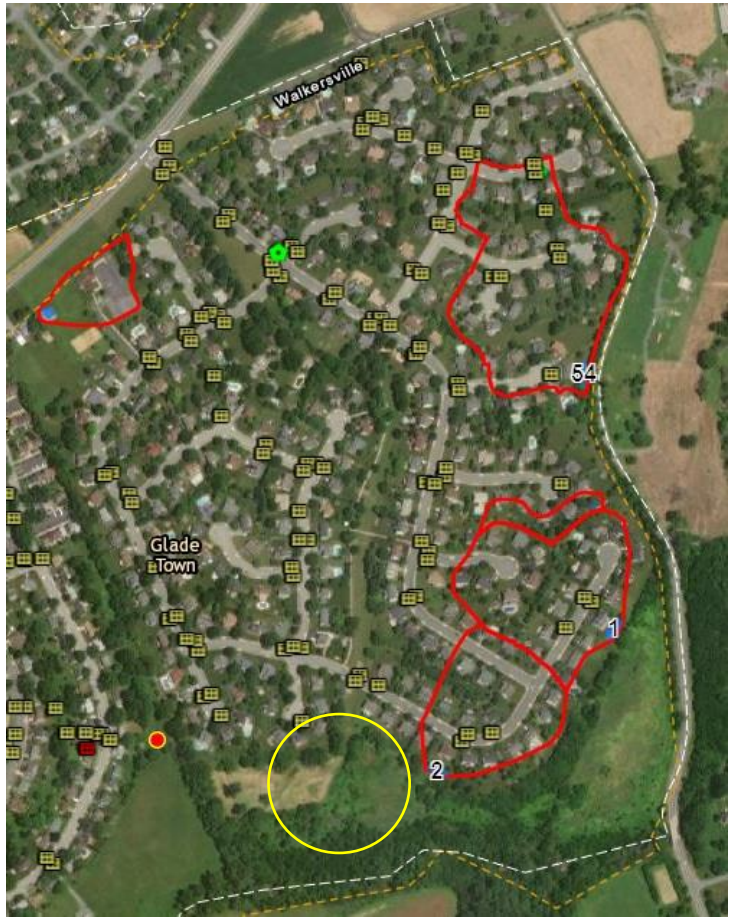
BMP: Glade Town Neighborhood

Owned By: Private Owner-HOA

Impervious Acres Untreated: Approx. 12

Other Notes:

- Previous discussion of bioswale.
- Natural Area in the southern portion of development.
- Minimal current BMP treatment.



Other Potential Projects

- Fountain Rock Park
  - Tree Planting
  - Stream Restoration
- Walkersville Community Park
  - Tree Planting
  - Stream Restoration
- Heritage Farm Park
  - Tree Planting
  - Stream Restoration
- Walkersville Watershed
  - Stream Restoration
- Walkersville Farm Property
  - Tree Planting

Walkersville Community Park/Fountain Rock Park

- Tree Planting
  - Available acreage – approx. 26 acres.
  - Potential 9.88 acres of credit toward impervious restoration.
  - Labor and materials could be coordinated through the Town.
- Stream Restoration
  - Approx. 3,200 linear ft. of stream.
  - Potential 32 acres of credit toward impervious restoration.

Heritage Farm Park

Potential Projects

- Tree Planting
  - Available acreage – approx. 66 acres.
  - Potential 25.08 acres of credit toward impervious restoration.
  - Labor and materials could be coordinated through the Town.
- Stream Restoration
  - Approx. 2,950 linear ft. of stream.
  - Potential 29.5 acres of credit toward impervious restoration.

Walkersville Watershed

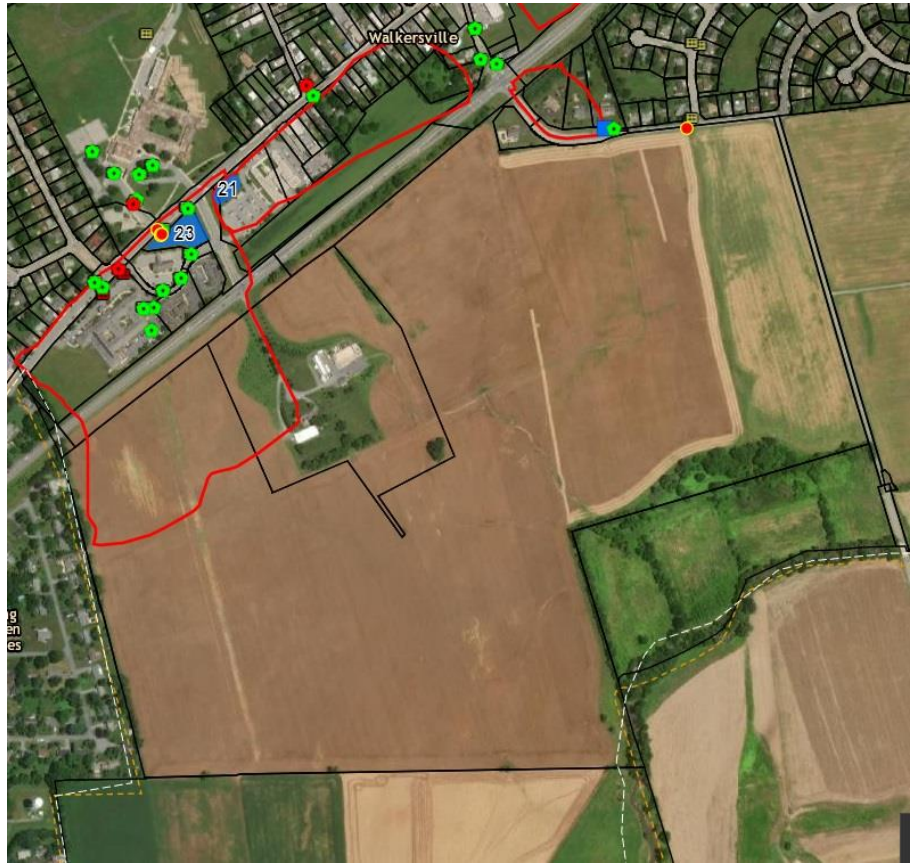
Potential Projects

- Stream Restoration
  - Approx. 5,800 linear ft. of stream.
  - Potential 58 acres of credit toward impervious restoration.

Walkersville Farm Property

Potential Projects

- Tree Planting
  - Available acreage – approx. 200 acres.
  - Potential 76 acres of credit toward impervious restoration.
  - Labor and materials could be coordinated through the Town.



Questions/Comments?

- Questions may be presented during this presentation or submitted to the Town in the form of a written comment.