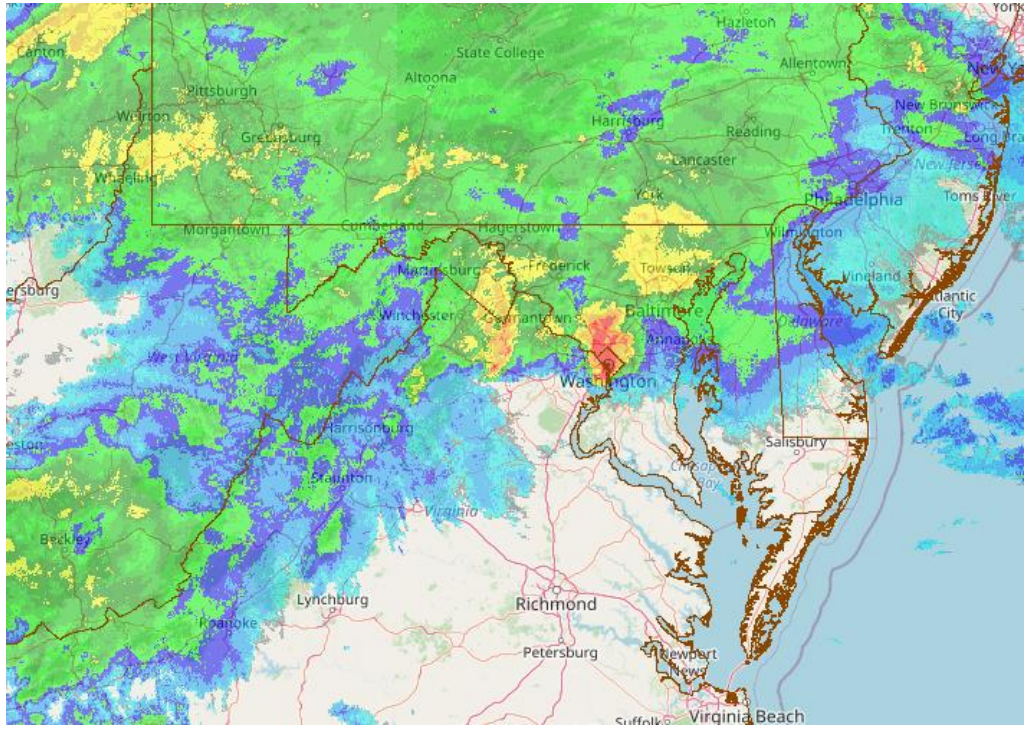
Montgomery County Flood Risk Explorer Release

COG Regional Transportation Resilience Subcommittee Overview
February 2026



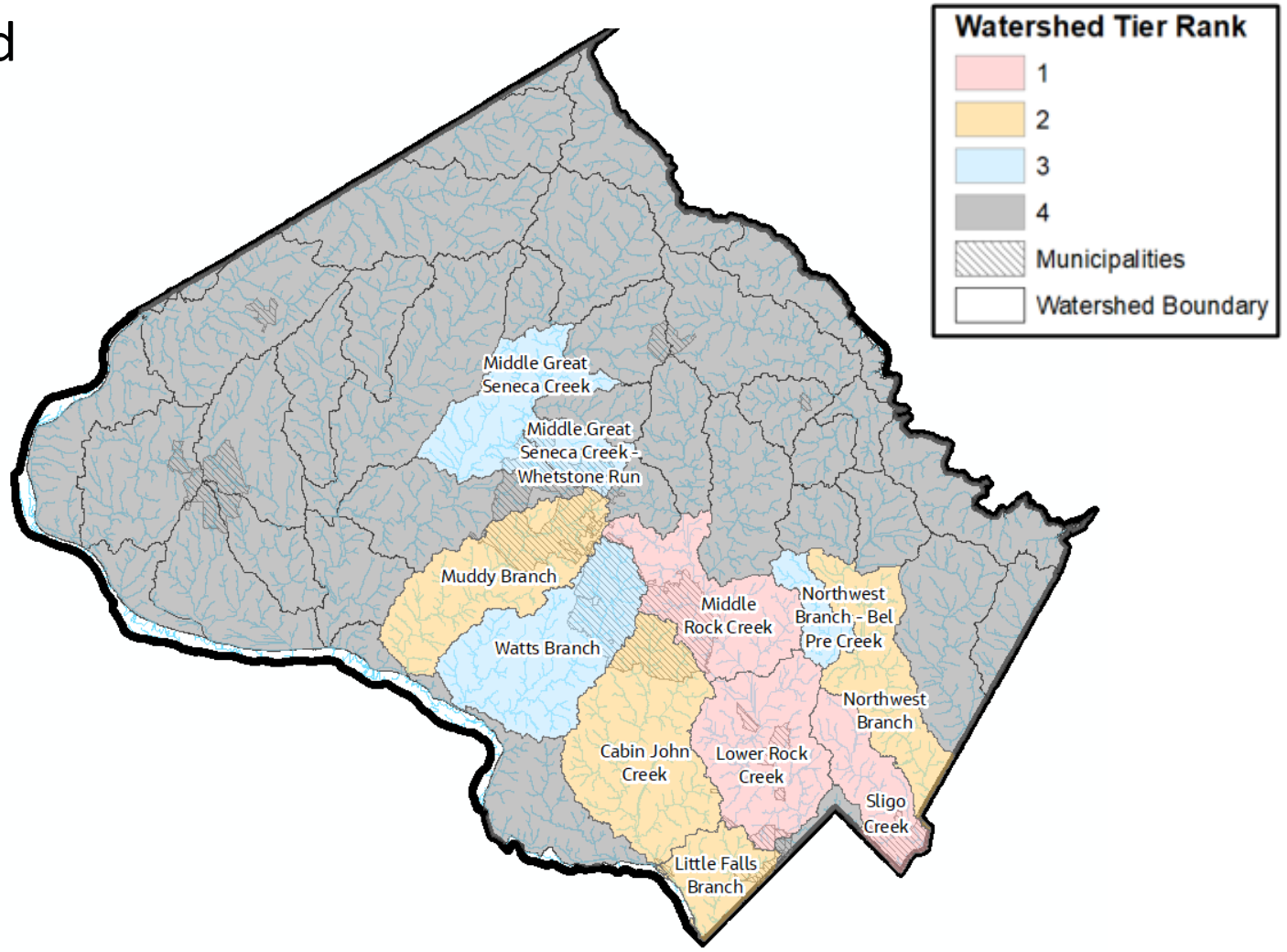
CFMP Modeling and Assessment

Participating Agencies

- Emergency Management & Homeland Security
- Environmental Protection
- Montgomery Parks
- Montgomery Planning
- Permitting Services
- Transportation
- Representatives from the CE's Office

Timeline for Watershed Modeling

- Eleven watersheds will be modeled by 2029.
  - 2025: Sligo Creek
  - 2026: Lower and Middle Rock Creek
  - 2027: Cabin John, Little Falls, Northwest Branch, Bel-Pre Creek, Muddy Branch
  - 2029: Middle Great Seneca, Whetstone Run, Watts Branch
- Models will show flood risk of 10-year, 100-year, and 500-year storms.
- Models will be created for now, 2050, and 2100.



Attributes of Selected Watersheds

Tier	Watershed	Area (Acres)	Estimated Population	Estimated Population in Areas with SVI > 0.5	% of Population in Areas with SVI > 0.5
1	Middle Rock Creek	10,780	77,117	37,756	49.0%
	Lower Rock Creek	12,005	113,565	26,610	23.4%
	Sligo Creek	6,156	68,817	25,792	37.5%
2	Cabin John Creek	16,303	73,477	5,275	7.2%
	Little Falls Branch	4,821	43,454	0	0.0%
	Northwest Branch	9,706	58,495	21,078	36.0%
	Muddy Branch	12,531	57,984	8,526	14.7%
3	Middle Great Seneca Creek	9,028	58,791	21,503	36.6%
	Middle Great Seneca Creek – Whetstone Run	3,049	44,518	41,154	92.4%
	Northwest Branch – Bel Pre Creek	2,866	27,935	15,919	57.0%
	Watts Branch	14,231	45,036	1,560	3.5%
	Total	**101,476**	**669,189**	**205,173**	**30.7%**

Flooding Website and Flood Risk Explorer

Designed to provide key information on:

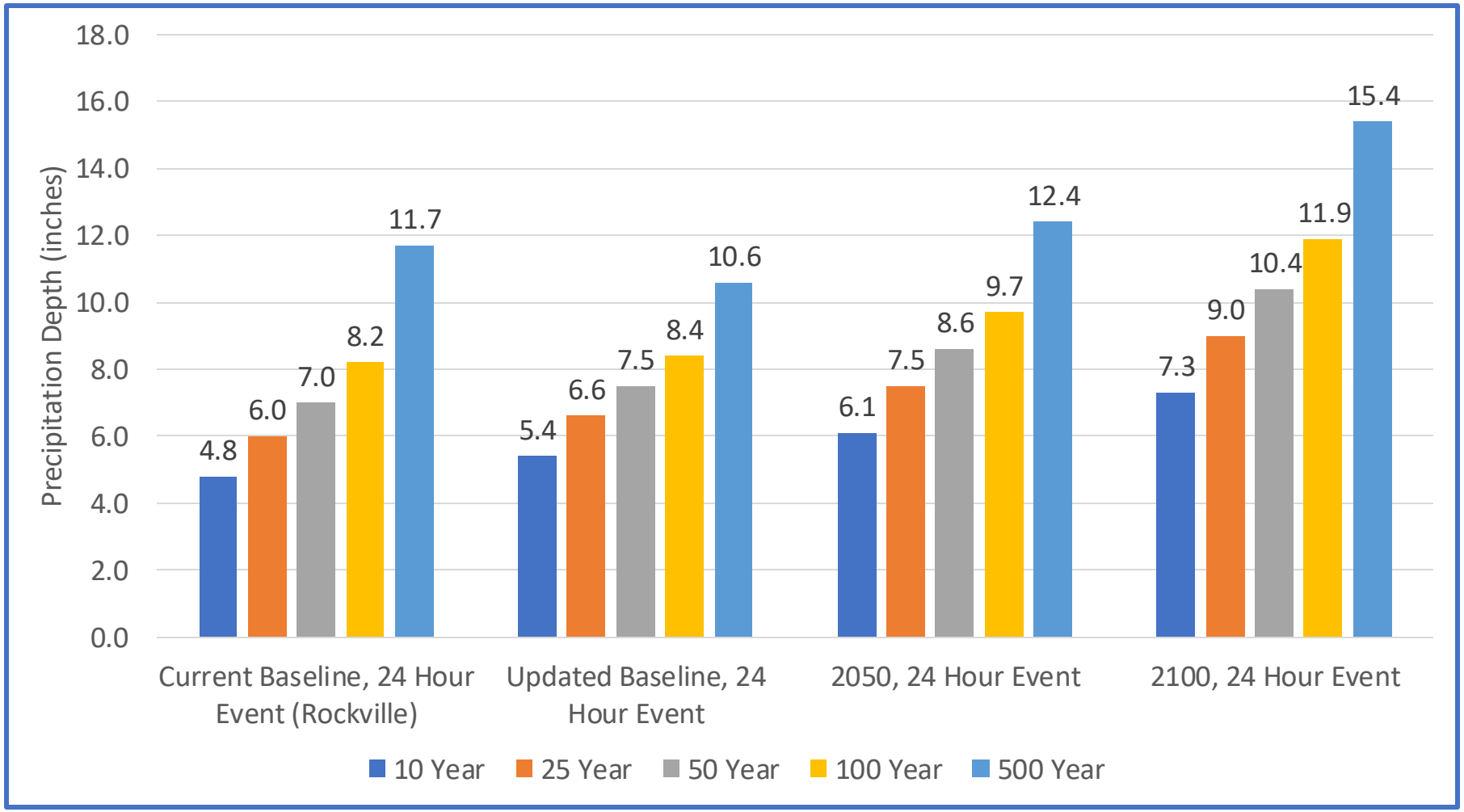
- What to do during a flood
- The elements of stormwater and flood management
- How to understand risk
- How to prepare

https://www.montgomerycountymd.gov/flooding/

Appendixes

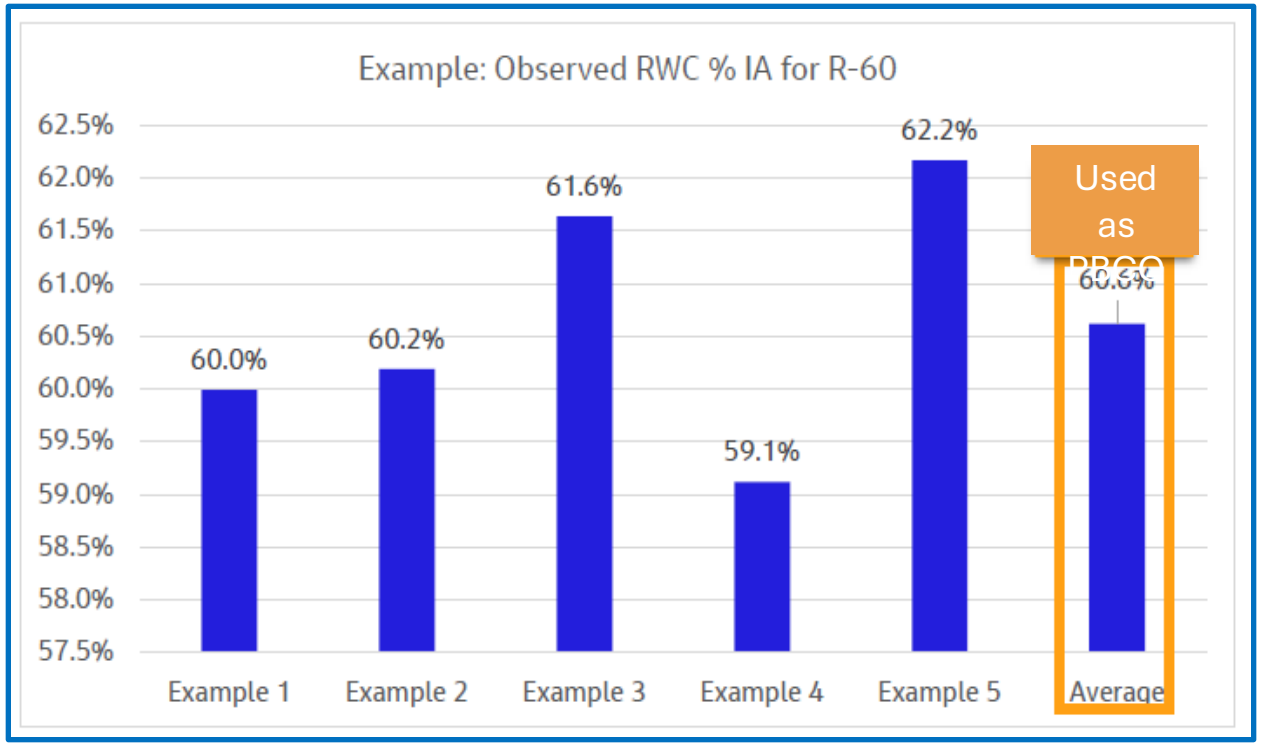
Future Scenario Projections

Rockville Rain Projections to 2100

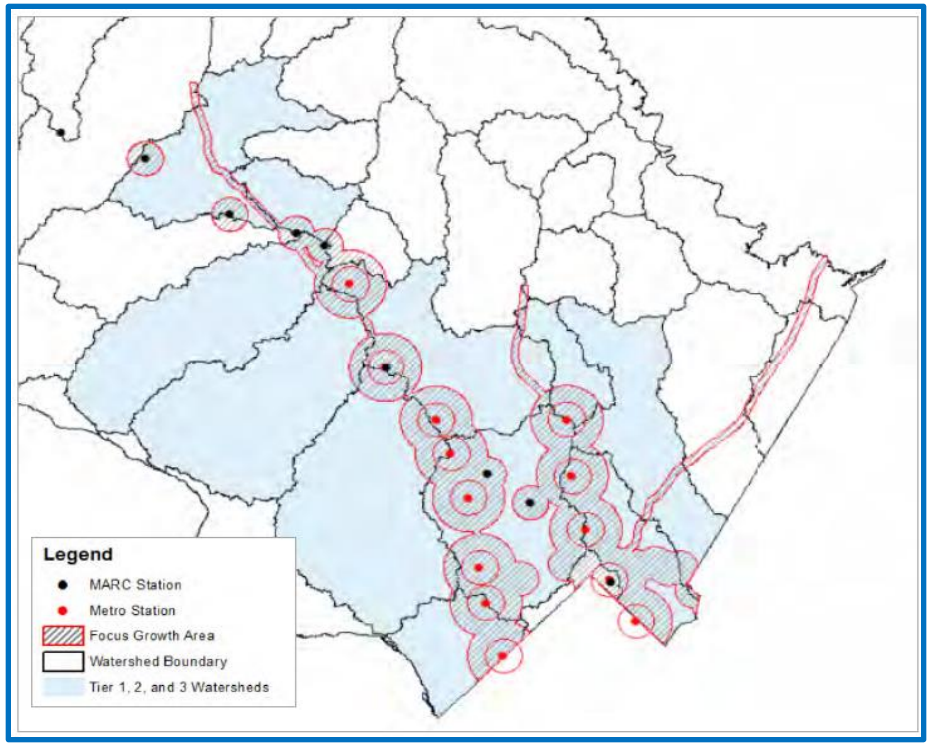


Projected Increases in Impervious Area (IA)

Potential IA based on Current Observations



"Focused Growth Areas" around transit corridors



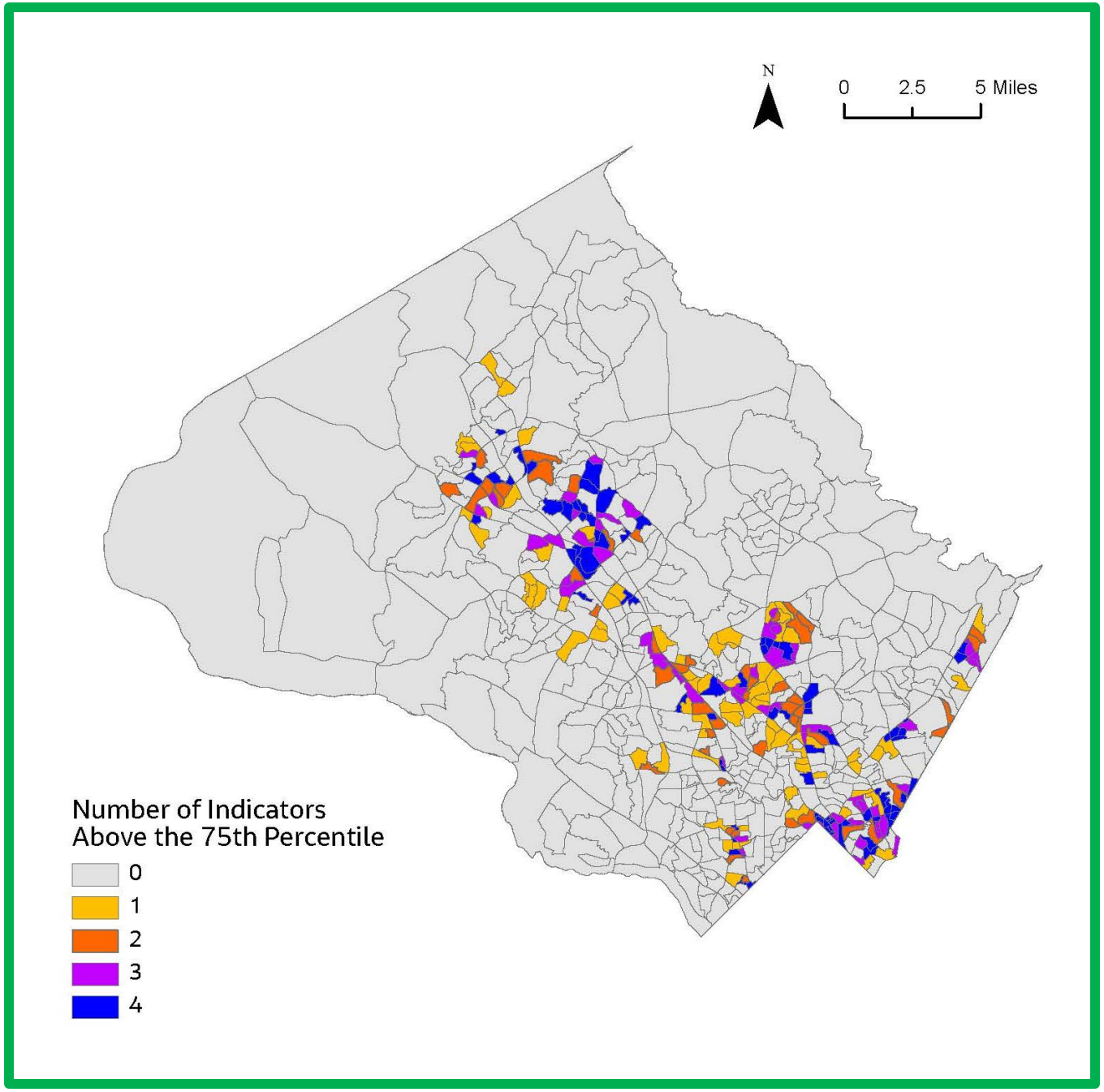
Projected Increases in Impervious Area (IA)

- The Potential IA based on Current Observations results increase total percent IA from **40% (2019) to 50% at the mid-term and 59% at the long-term.**
- The Focus Growth Area Scenario results increase total percent IA from **40% (2019) to 51% at the mid-term and 64% at the long-term.**

Vulnerability Assessments

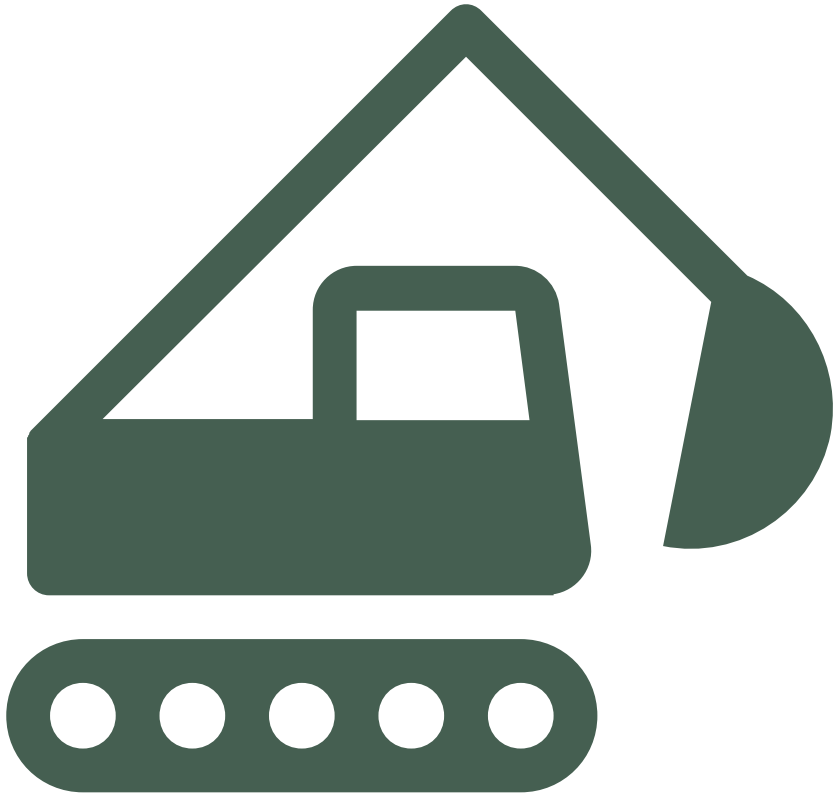
Determined Areas with Residents with Greatest Vulnerability to Floods

- Persons of Low Income
- Households with Limited English Proficiency
- Persons of Color
- Persons with Disability



Conducted a Vulnerability Assessment

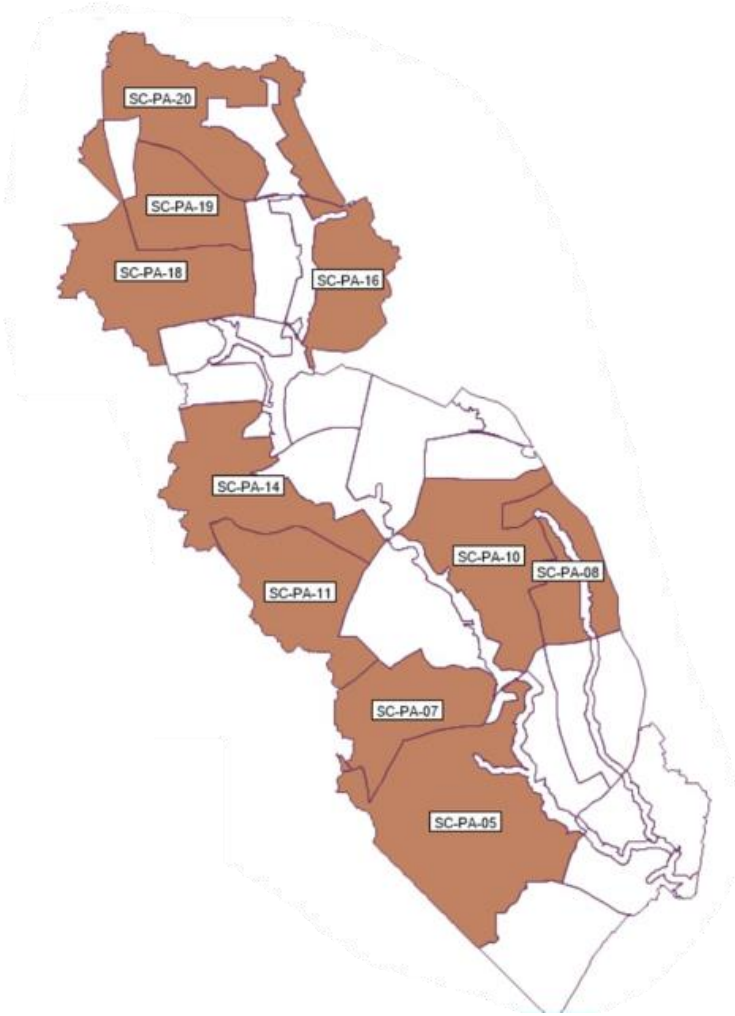
Criterion	Measure of Criterion within the Problem Area	Use
Non-Residential Buildings	Number of non-residential buildings (property land use classification)	Analysis
Residential dwelling units	Number of EDUs potentially	Analysis
Socially Vulnerable Areas	Flooded area of social vulnerability	Analysis
Total Impervious Area	Total flooded impervious area	Analysis
Critical Facilities and Infrastructure	Number of critical facilities and infrastructure	Analysis
Environmentally Sensitive Areas	USFWS National Wetlands Inventory area	Analysis
Roads	Length of road within flooded area	Analysis
Residential Buildings	Number of residential buildings (property land use classification)	For information
Multifamily residential	Number of multifamily buildings (property land use classification)	For information
Total flooded area	Total flooded area	For information



Assessing Mitigation Alternatives

Prioritization of Potential Mitigation Projects

- Most significant problem areas identified using flood exposure score
  - 10 problem areas selected for alternatives analysis
- Performance thresholds set for 10-year 2050 storm event
  - #1 = HGL @ 2′ below rim elevation
  - #2 = 6″ of surface flooding



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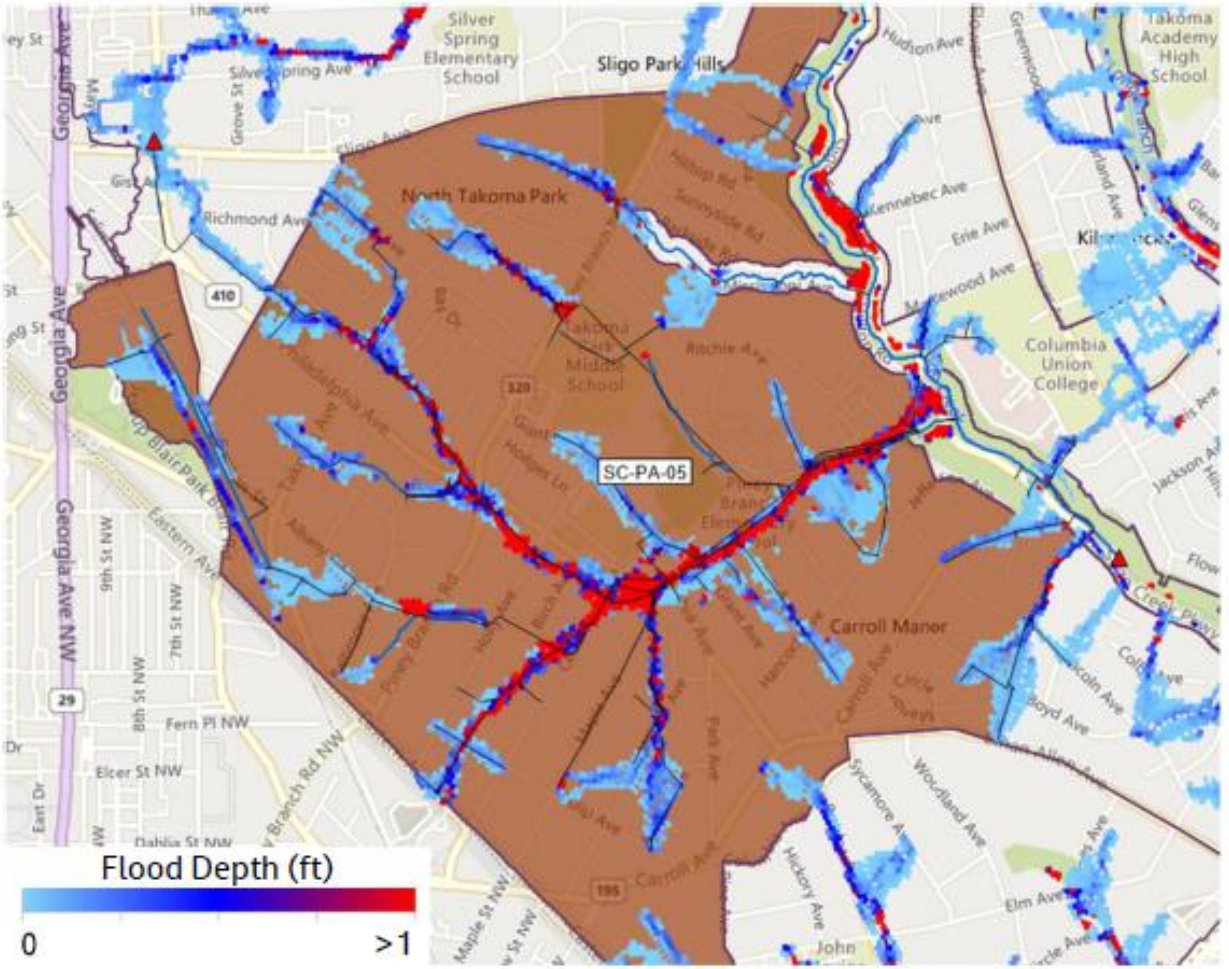

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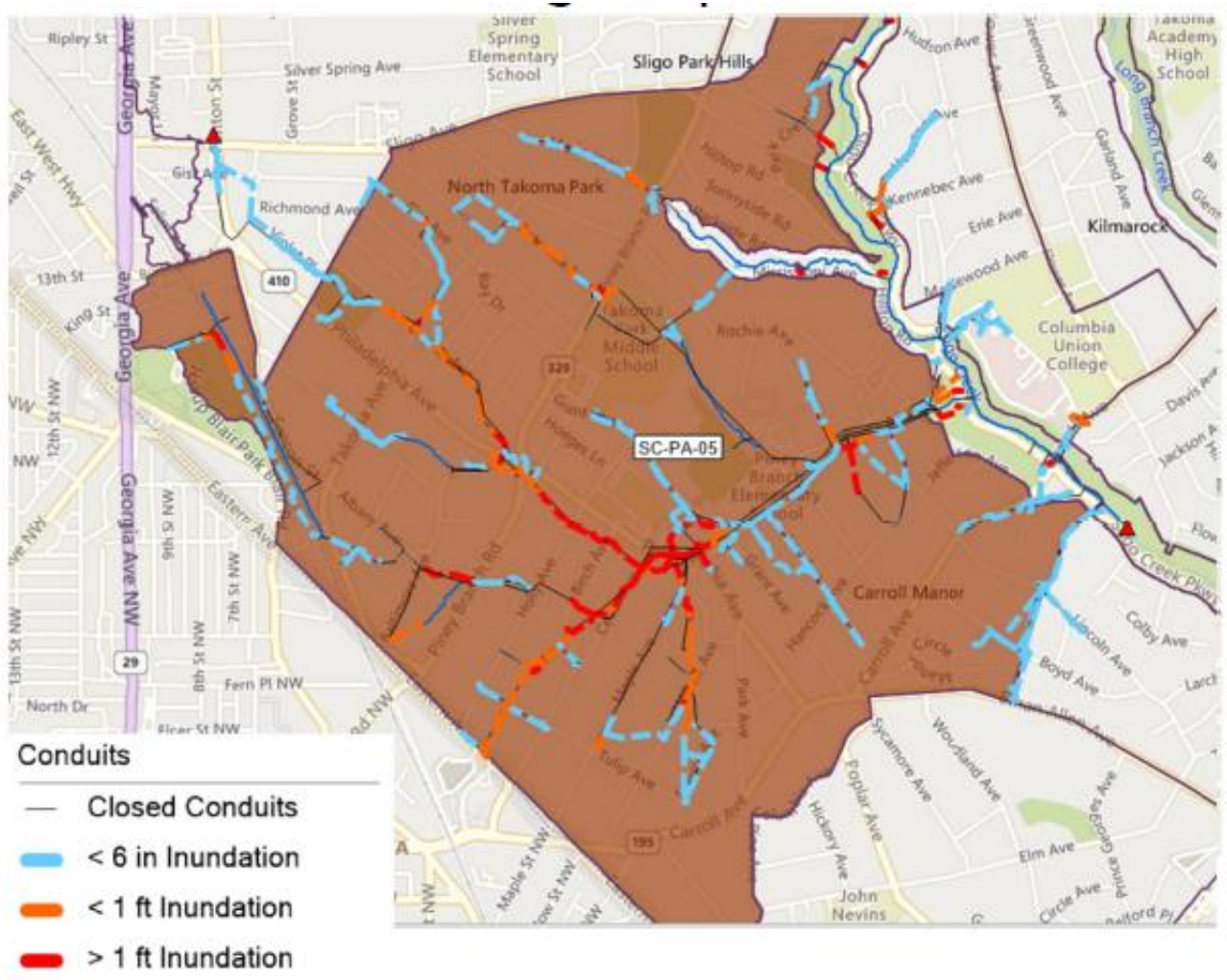

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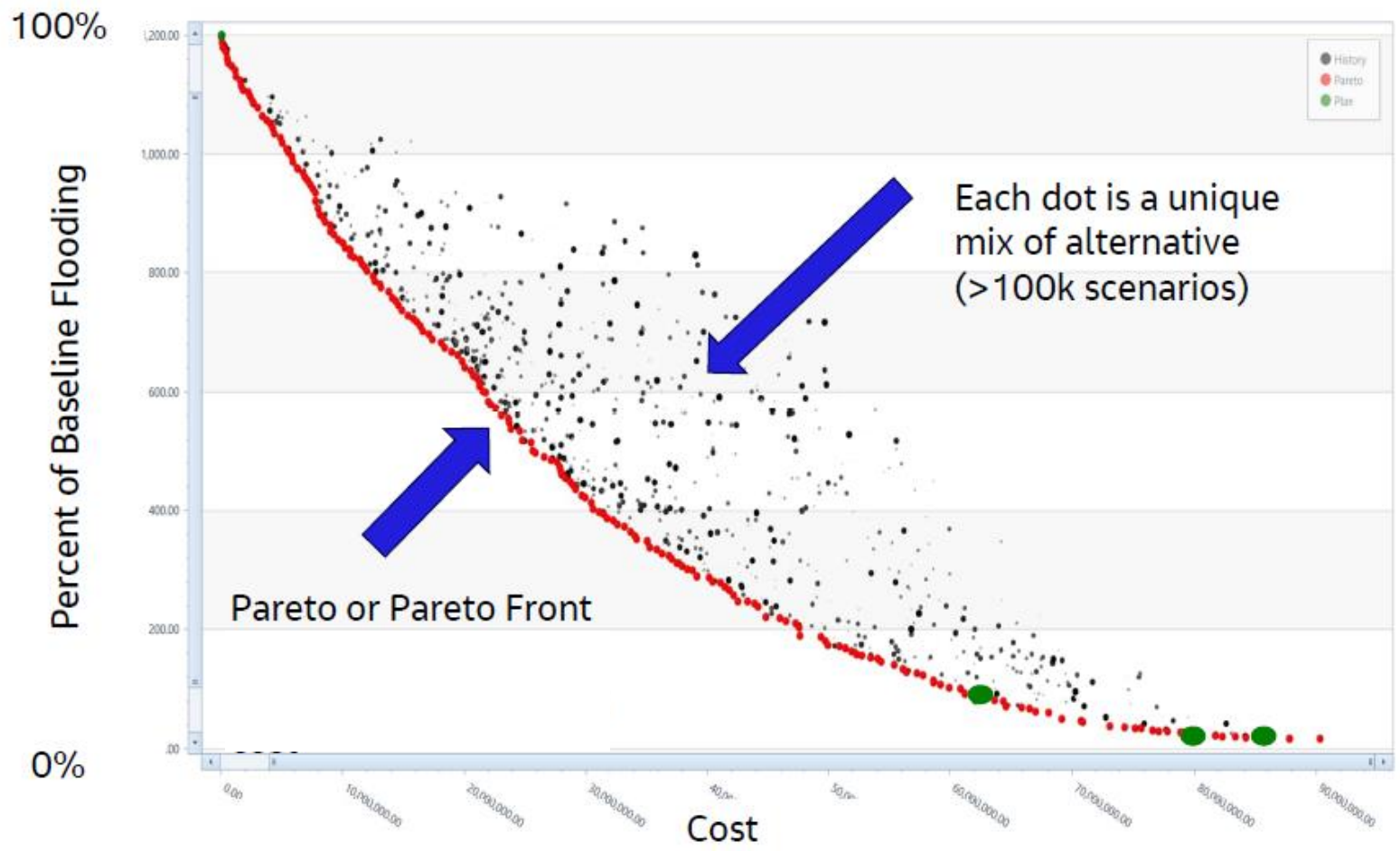


Prioritization of Potential Mitigation Projects

Performance Objective	HGL 2' below rim elevation				6" of surface flooding	
Concept Type	Conveyance Only		Mixed Conveyance & Storage		Mixed Conveyance & Storage	
Problem Area	CIP Cost (M$)	% Flooding Remaining	CIP Cost (M$)	% Flooding Remaining	CIP Cost (M$)	% Flooding Remaining
SC-PA-05	$155.6	2.0%	$166.1	2.5%	$120.5	6.7%
SC-PA-20	$60.6	1.8%	$69.1	0.5%	$46.4	10.1%
SC-PA-18	$52.1	21.0%	$64.4	17.0%	$45.6	24.0%
SC-PA-07	$34.4	1.0%	$32.7	1.5%	$32.2	1.8%
SC-PA-11	$34.0	3.8%	$35.9	3.0%	$26.2	10.7%
SC-PA-19	$34.7	9.0%	$45.8	5.0%	$34.7	12.0%
SC-PA-10	$31.6	4.1%	$32.7	2.1%	$30.5	5.1%
SC-PA-14	$50.6	2.3%	$51.8	2.1%	$40.8	12.3%
SC-PA-16	$44.4	2.4%	$41.5	2.4%	$35.9	15.3%
SC-PA-08	$41.9	3.3%	$47.7	1.3%	$38.2	7.0%
Total Cost ($)	**$539.9**		**$587.7**		**$450.9**	

Prioritization of Potential Mitigation Projects

Priority Zones are Defined by Several Input Layers

	Source	Note
Critical Facilities	Hazard Mitigation Plan (+ some other locations)	Additional penalty added for surface flooding **adjacent or impacting access to critical facilities**
Social Vulnerability Areas	CFMP Layer (using EPA EJScreen data for income, race, language, and disability)	Additional penalty added for all surface flooding **within SVA polygons**
Multi-Family Residential Buildings	Planning Building Footprints (land use classification)	Additional penalty added for surface flooding **adjacent or impacting access to MF homes**
Deep Flooding	PCSWMM Flood Model Results	**All surface flooding greater than 2-feet** will receive additional penalty

Prioritization of Potential Mitigation Projects

Performance Objective	Scenario 1 CF & MFR – 6" or less		Scenario 2 All Priority Zones – 6" or less		Scenario 3 All Zones - 6" or less	
	Mixed Conveyance & Storage					
Problem Area	**CIP Cost (M$)**	**LF of Improvements**	**CIP Cost (M$)**	**LF of Improvements**	**CIP Cost (M$)**	**LF of Improvements**
SC-PA-05	$24.6	7.2k	$44.8	13.9k	$84.7	25.0k
SC-PA-20	$3.8	2.0k	$19.3	9.7k	$29.1	11.8k
SC-PA-18	$12.7	3.4k	$18.5	5.6k	$35.4	10.9k
SC-PA-19	$11.1	4.5k	$17.7	7.2k	$19.5	8.3k

Previous Results

Performance Objective	All Zones - HGL 2' below rim elevation		
	Mixed Conveyance & Storage		
Problem Area	**CIP Cost (M$)**	**LF of Improvements**	
SC-PA-05	$166.1	41.5k	
SC-PA-20	$69.1	24.2k	
SC-PA-18	$64.4	15.1k	
SC-PA-19	$45.8	16.7k	

Working Group Priorities

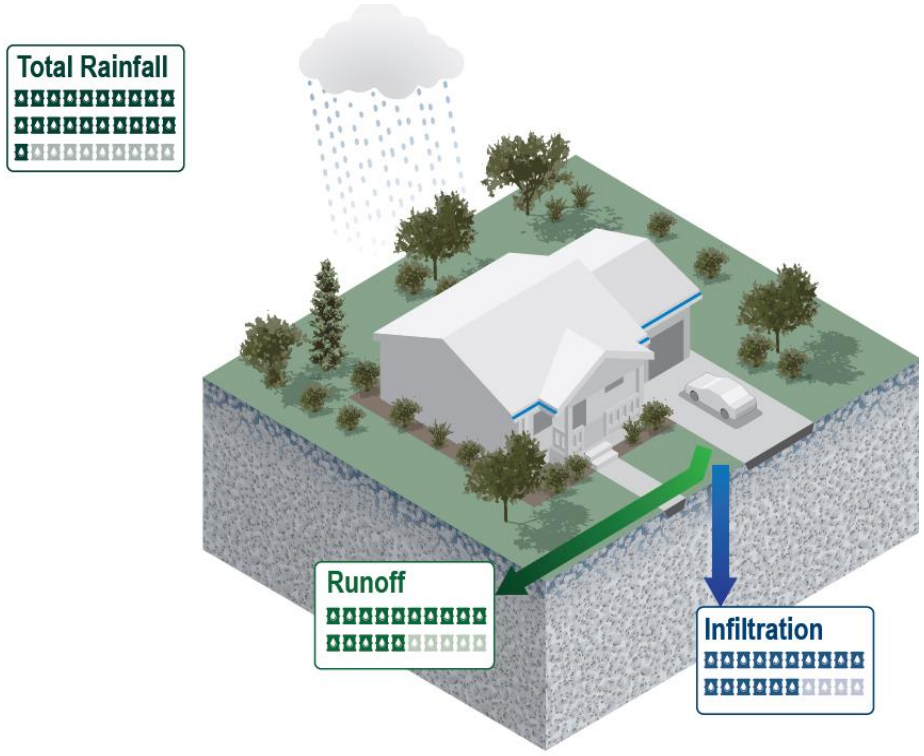
Key Working Group Topics for 2026

1. Outreach
   - Multifamily homes with demonstrated flood risk
   - General public
2. Policy
   - Building codes
   - Real estate disclosures
   - Incentive system
3. Programs
   - Technical assistance for property owners
   - CRS

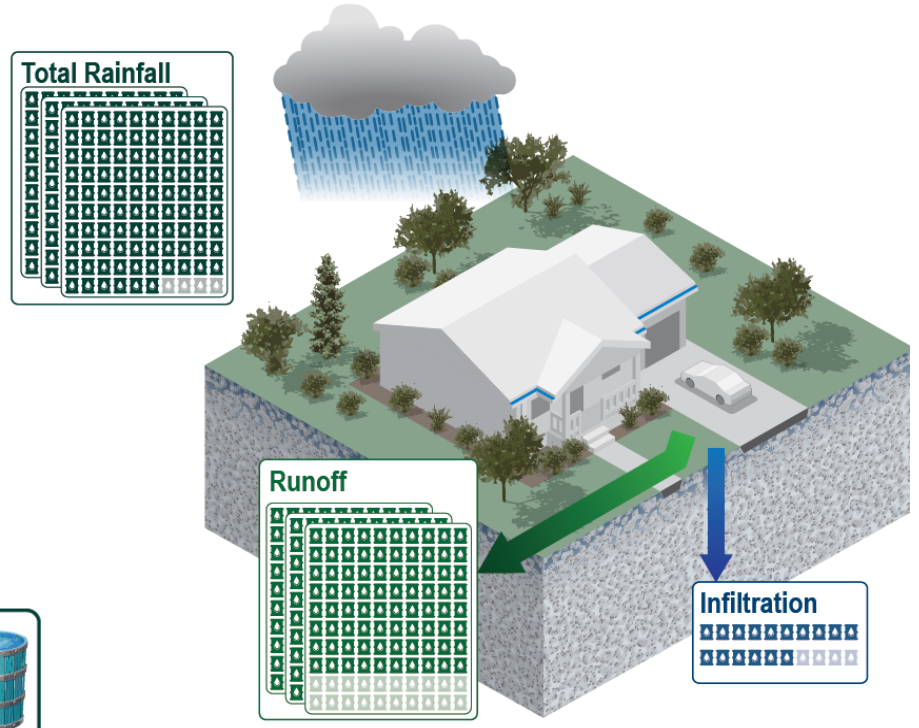
Understanding Large Storms

Infiltration: Bigger Storms = More Stormwater

Light Rain
0.25 inches in 1 hours



1 icon is equal to
1 55-gallon rain barrel



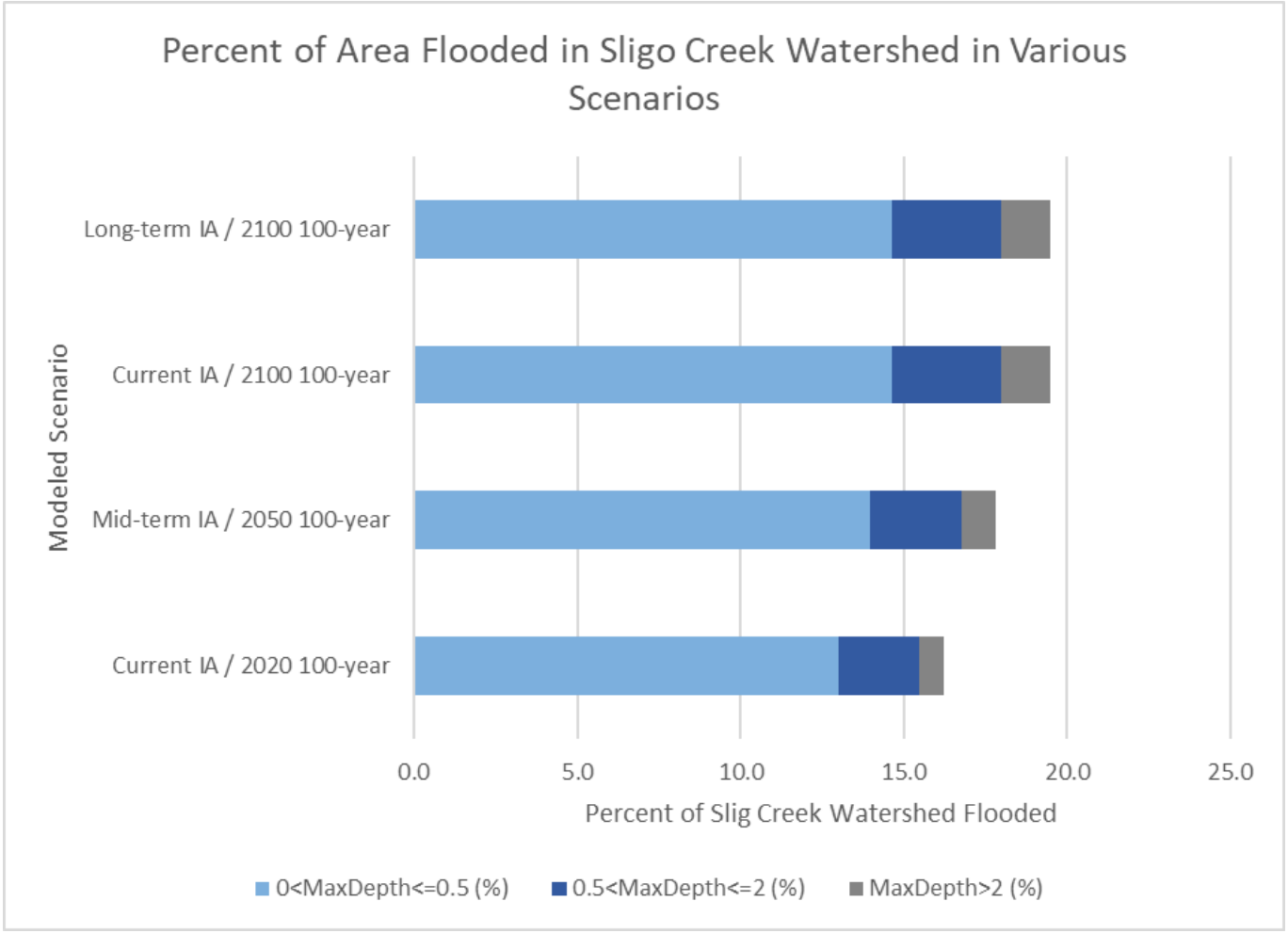
10-Year Storm
2.4 inches in 1 hour

Infiltration by the Numbers

Storm Event	Light Rain (0.25 in/hr)	10-Year Storm (2.4 in/hr)
Number of Barrels		
Rainfall	31	296
Infiltration	16	16
Runoff	15	280
Fraction of Rainfall		
Rainfall	100%	100%
Infiltration	52%	5%
Runoff	48%	95%

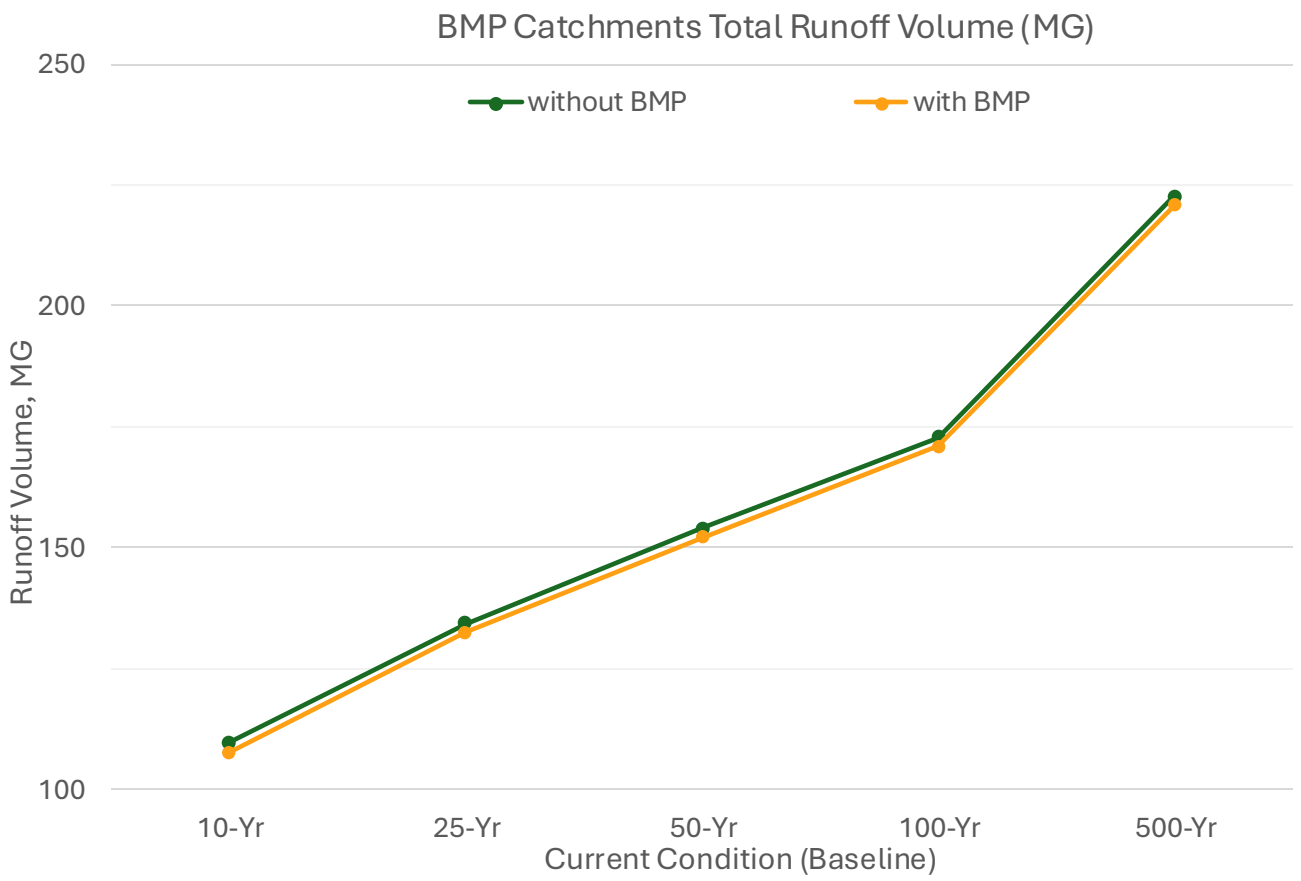
Impact of Impervious Area

- For larger storms, impervious area coverage has less of an impact as the ground becomes saturated.



Impact of Stormwater Management Best Management Practices (BMPs) in Sligo Creek

When totaled watershed-wide, the average runoff volume reduction is between 1.8% for a 10-year storm and 0.8% for a 500-year storm.



Comparative BMP Function within a Catchment

- Average catchment reduction is approximately
  - 1.3% for the 10-year storm
  - 0.6% for the 500-year storm
- Maximum reduction observed is in two catchments with a large number of BMPs (townhouse developments)