



# Development of a Comprehensive Flood Management Plan for Montgomery County, Maryland



Metropolitan Washington Council of Governments  
Water Resources Technical Committee  
January 13, 2023

# Why do we need a Comprehensive Flood Management Plan (CFMP)?



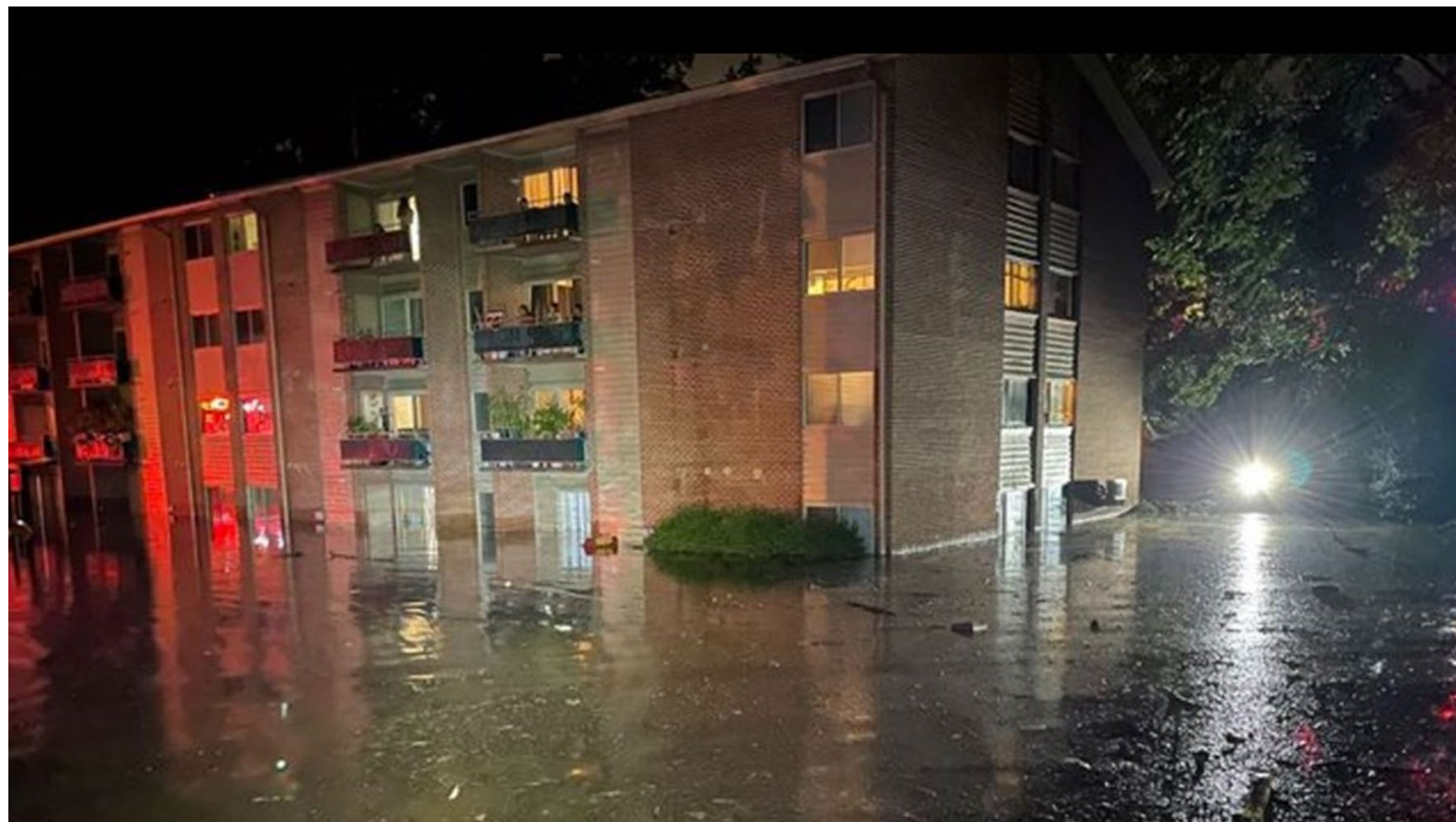
# Why do we need a CFMP?



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# Flooding Basics



# Background on Flooding

## Fluvial / Riverine

Precipitation creates flows that overtop stream/river channels



## Pluvial / Urban

Precipitation exceeds capacity of local drainage infrastructure



# Background on Flooding

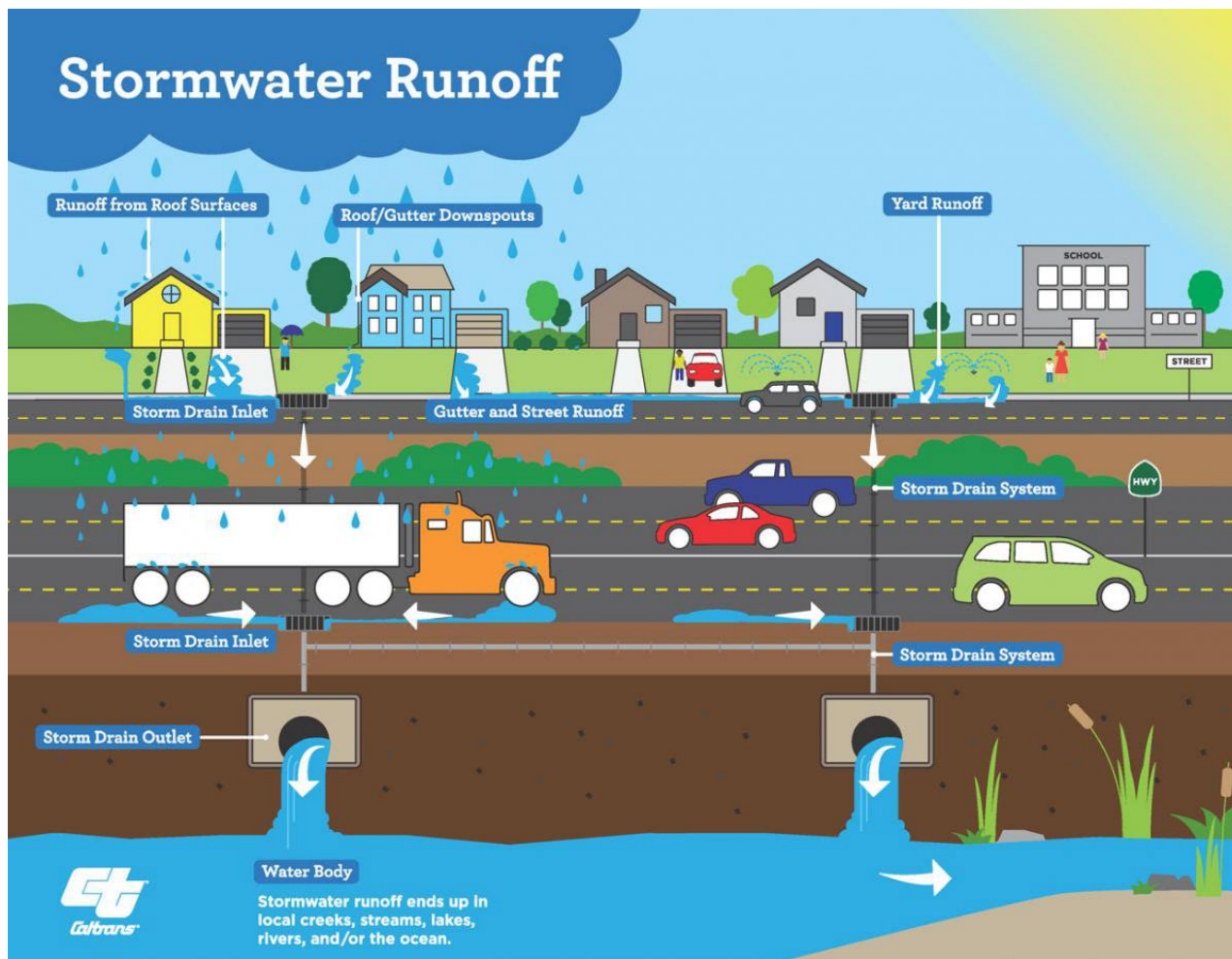
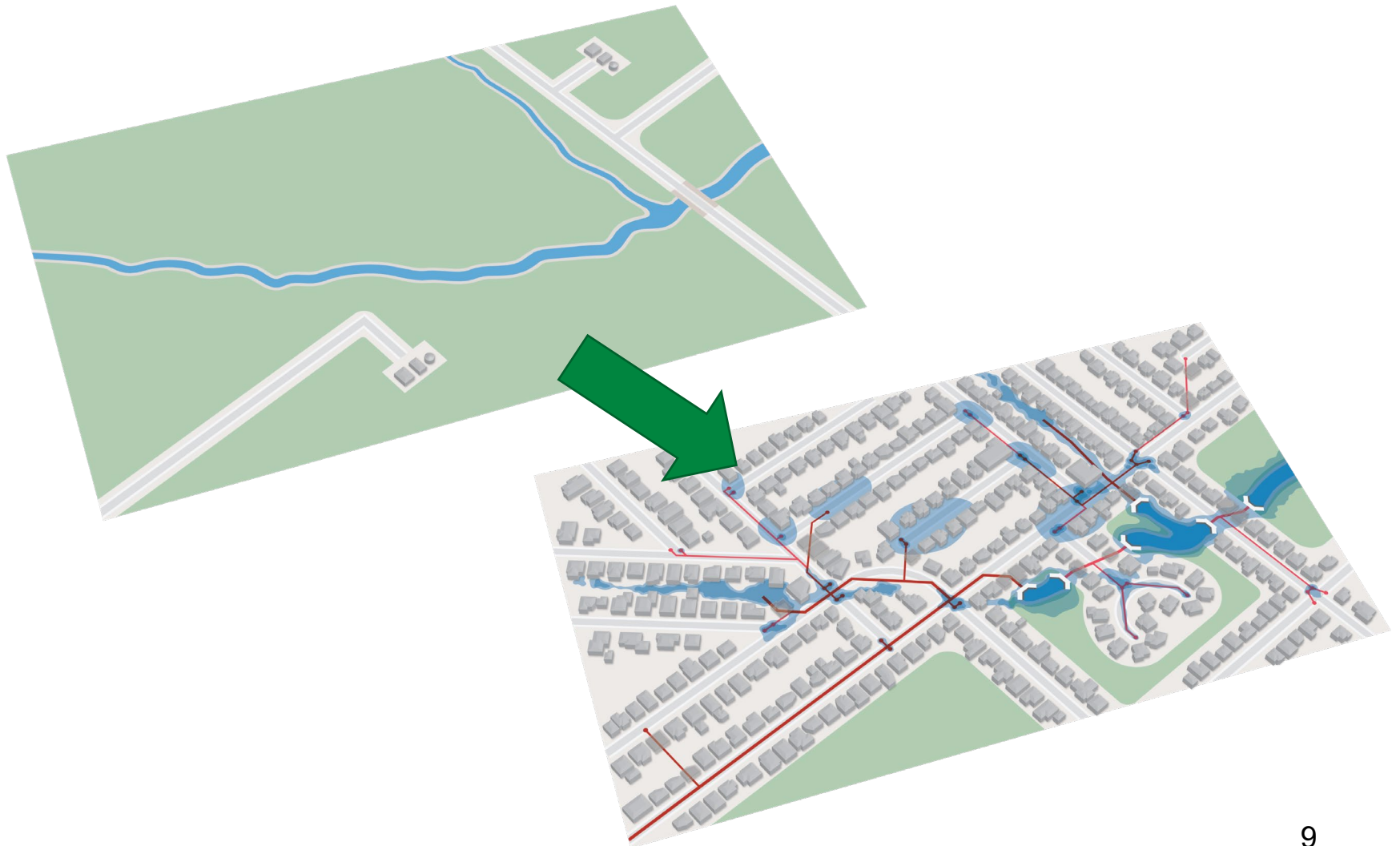


Image Source: California Department of Transportation (CalTrans)



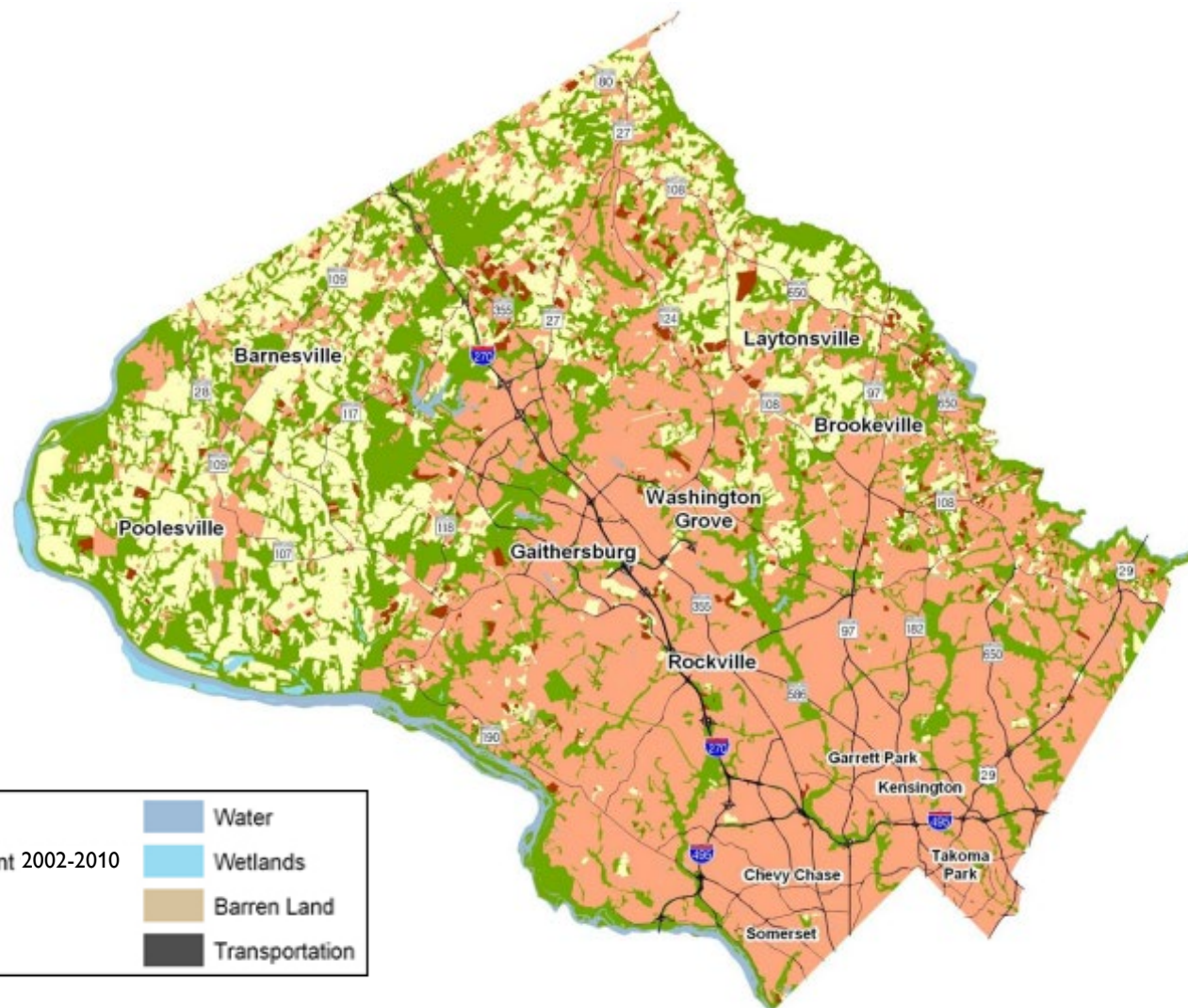
# Background on Flooding



Why is flood risk increasing?



# Changes in Flood Risk – Urbanization



Source: Maryland Department of Planning

# Changes in Flood Risk – Aging Infrastructure



**The Washington Post**  
*Democracy Dies in Darkness*

TRANSPORTATION

## I-270 sinkhole work could last weeks during drainage pipe repairs

By Justin George  
June 21, 2022 at 5:45 p.m. EDT

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Maryam Shahzad  
@maryam\_mcm · Follow

The sinkhole on I-270 from the Muddy Branch Road overpass. @mymcmedia

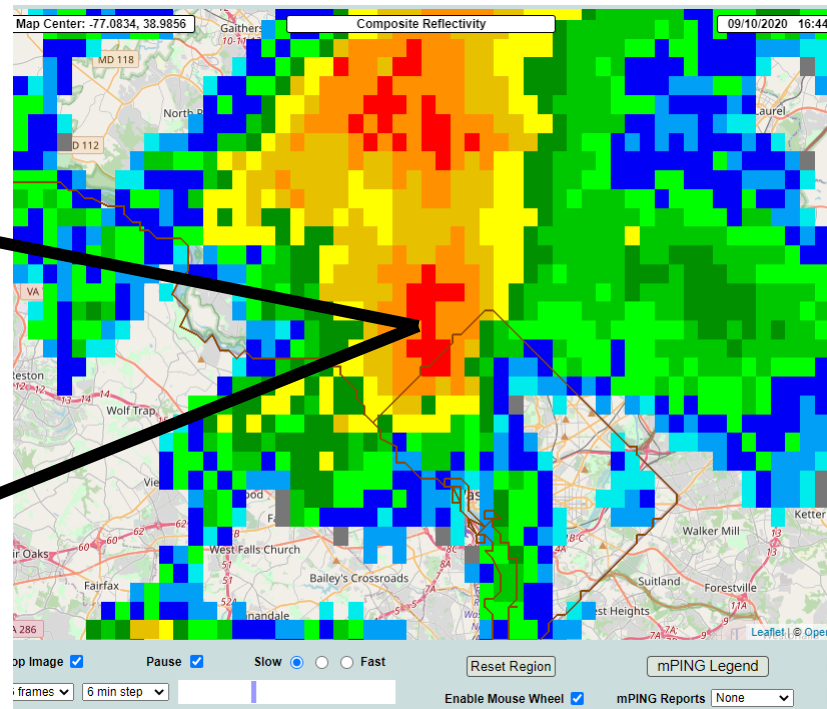
Watch on Twitter

Image sources: MoCo Show, Washington Post

# Changes in Flood Risk – More Intense Storms



**High-intensity events exceeding storm drain inlet capacity result in localized flooding impacts**



*Weather radar showing cumulative 3-hour rainfall for the September 10, 2020 storm cell—a high-intensity short-duration event, with rain intensities as high as 10 inches per hour for 1 to 3 hours in some areas.*

*Source: NOAA Multi-Radar Multi-Sensor (MRMS) Operational Product Viewer*

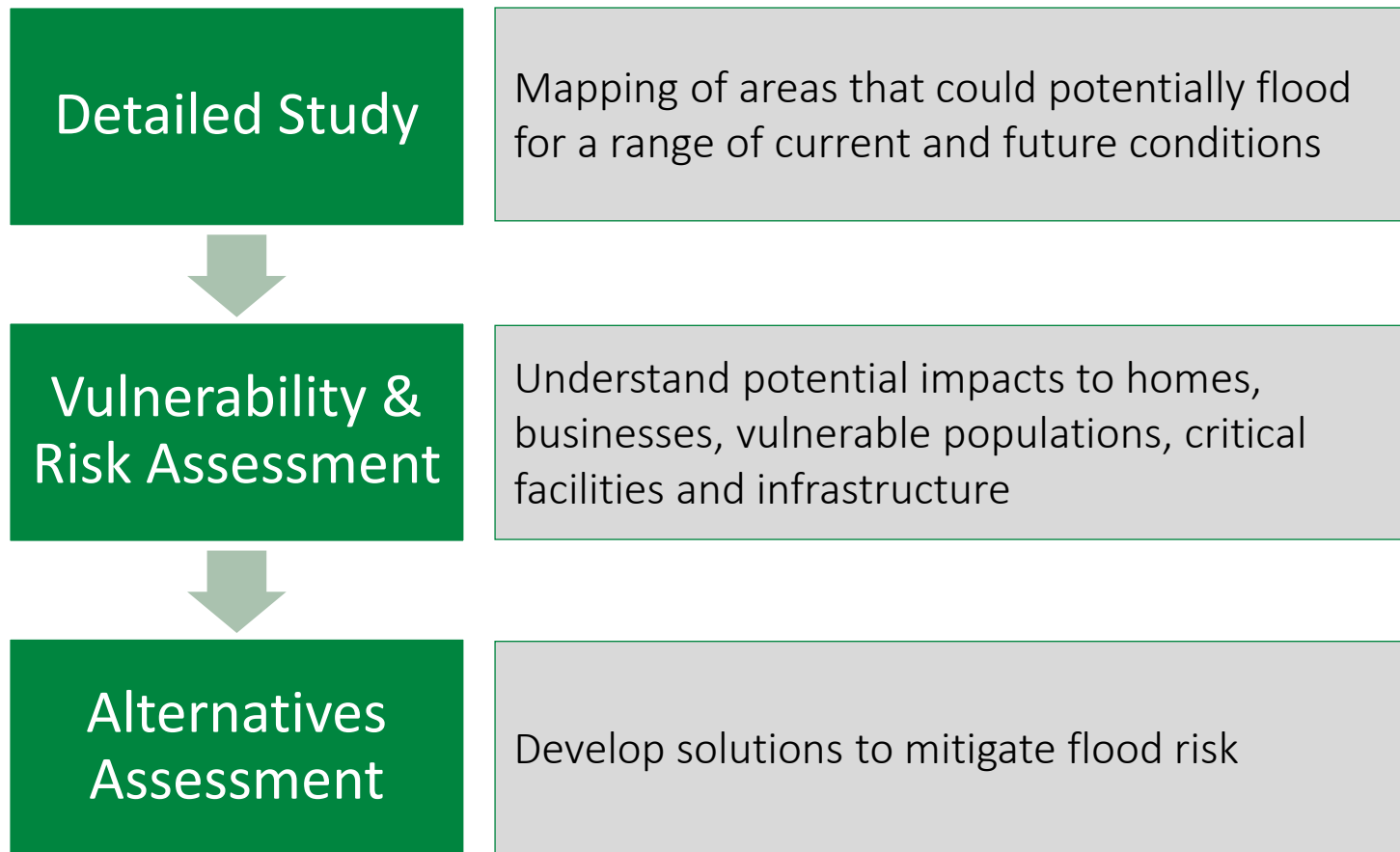
# The Comprehensive Flood Management Plan



# Comprehensive Flood Management Plan



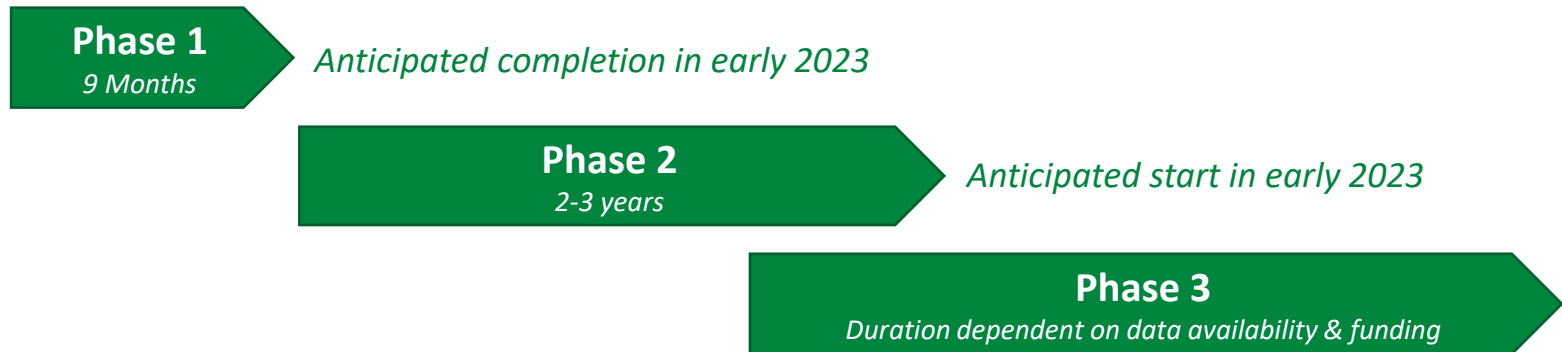
The Comprehensive Flood Management Plan (CFMP) will develop solutions to flooding based on an understanding of current and future flood risk.





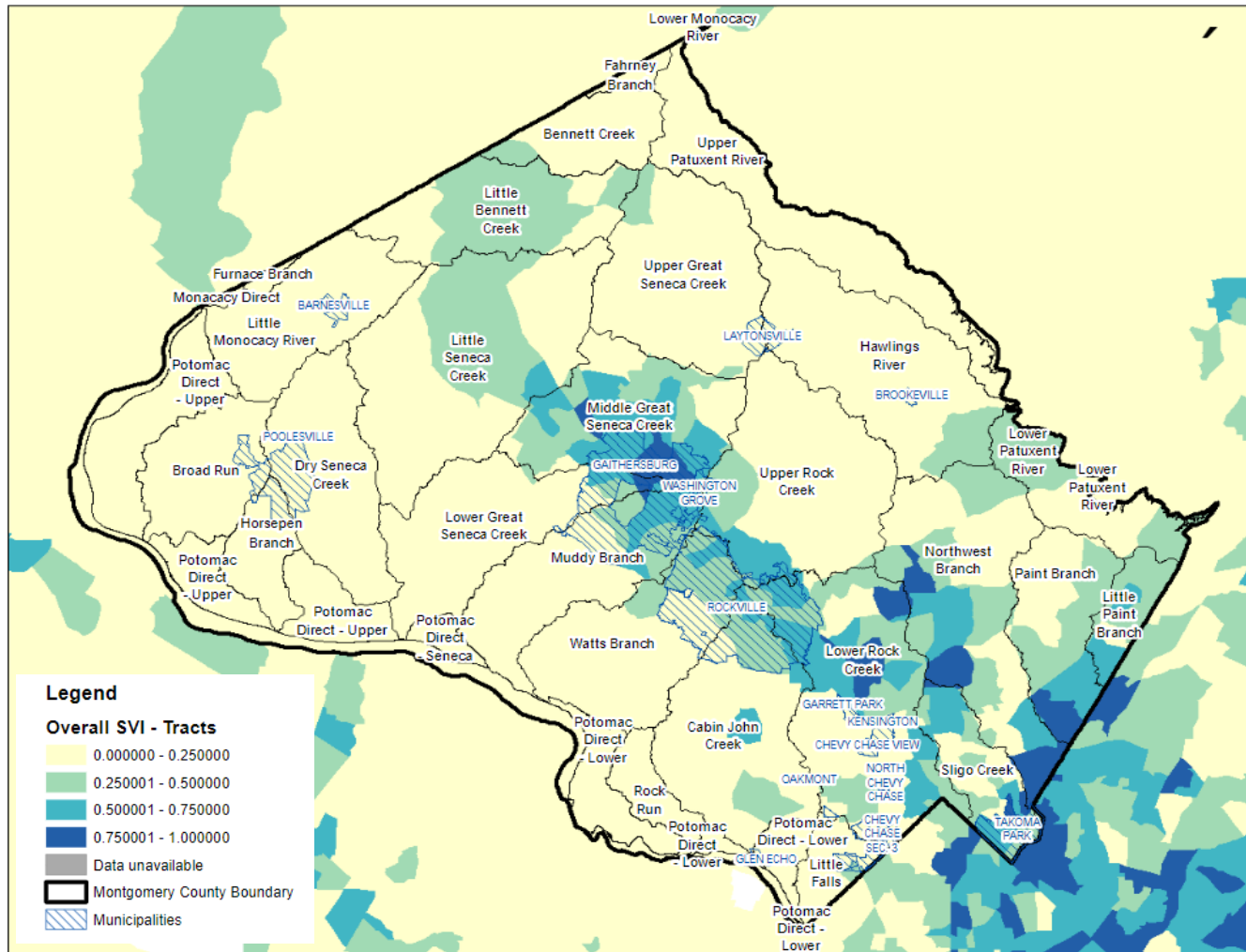
# Comprehensive Flood Management Plan

- Phase 1: Understand current organizational approach to flooding and identify recommended changes
- Phase 2: Detailed studies including flooding risk assessment, vulnerability analysis, and preliminary alternatives analysis
- Phase 3: Implementation of flood mitigation alternatives





# Comprehensive Flood Management Plan



# Comprehensive Flood Management Plan



Jurisdiction	Area <sup>1</sup> (sq. mi.)	Population <sup>1</sup> (July 2021 est)	Capital Program
City of Alexandria	15	155,000	FY22 - FY31 <sup>2</sup> \$170 million, 11 projects
Arlington County	26	233,000	FY23 - FY32 <sup>3</sup> \$229 million, 16 projects
Montgomery County	493	1,055,000	???

[1] <https://www.census.gov/quickfacts/fact/table/US/PST045222>

[2] <https://www.alexandriava.gov/stormwater-management/storm-sewer-capacity-projects>

[3] <https://www.arlingtonva.us/files/sharedassets/public/budget/documents/cip-webpage/1.-cip-final/stormwater/3.-stormwater-management-stormwater-infrastructure-capacity-improvements.pdf>

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