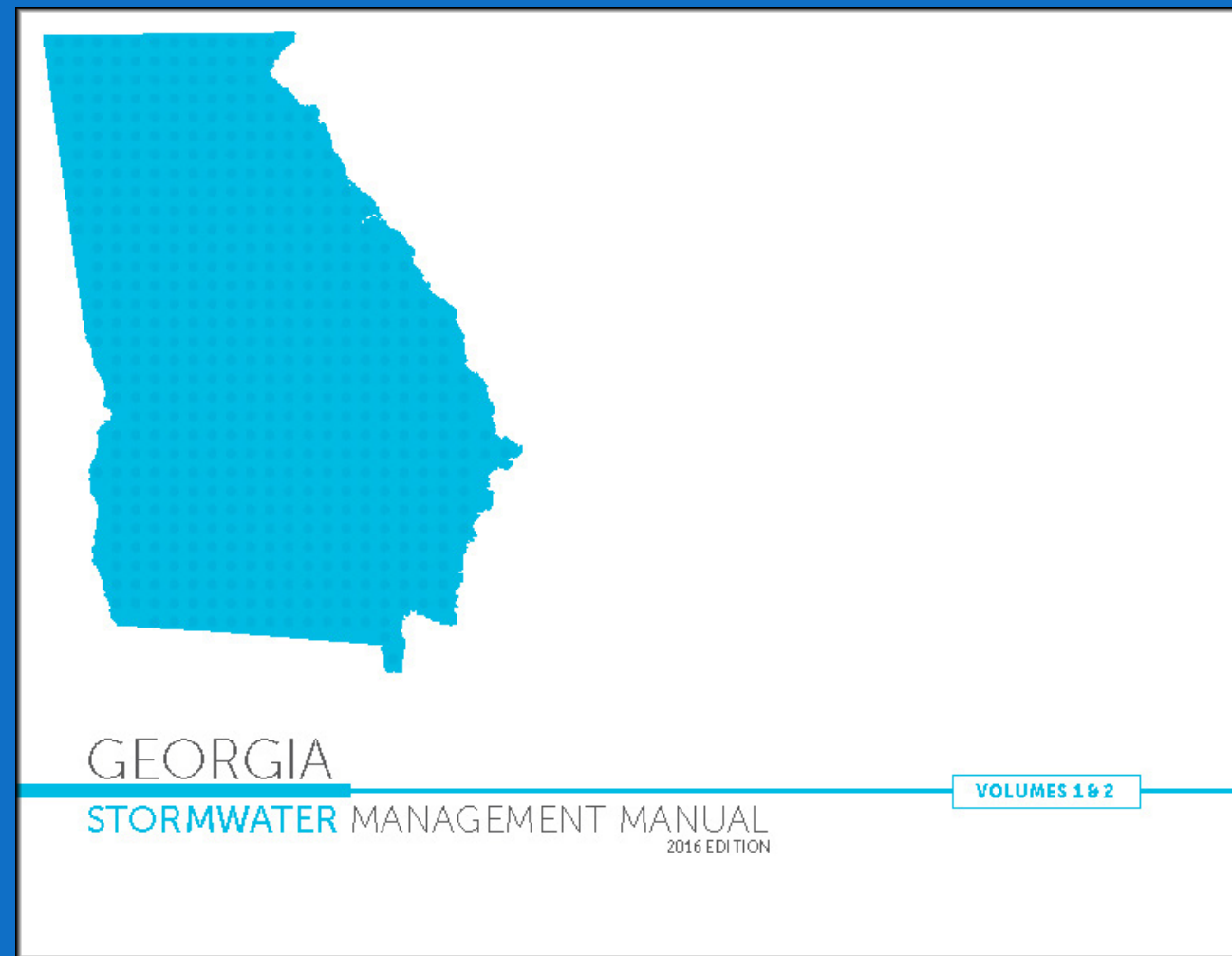


Georgia Stormwater Shorts Downstream Analysis



Atlanta Regional Commission



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*Your first source for best practices in watershed/
stormwater management*

Non-profit 501(c)3, non-advocacy organization
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Work with watershed groups, local, state, and
federal governments

Provide tools communities need to protect
streams, lakes, and rivers

20 staff in MD, VA, PA, NY, SC, and MI

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What is a Downstream Analysis?

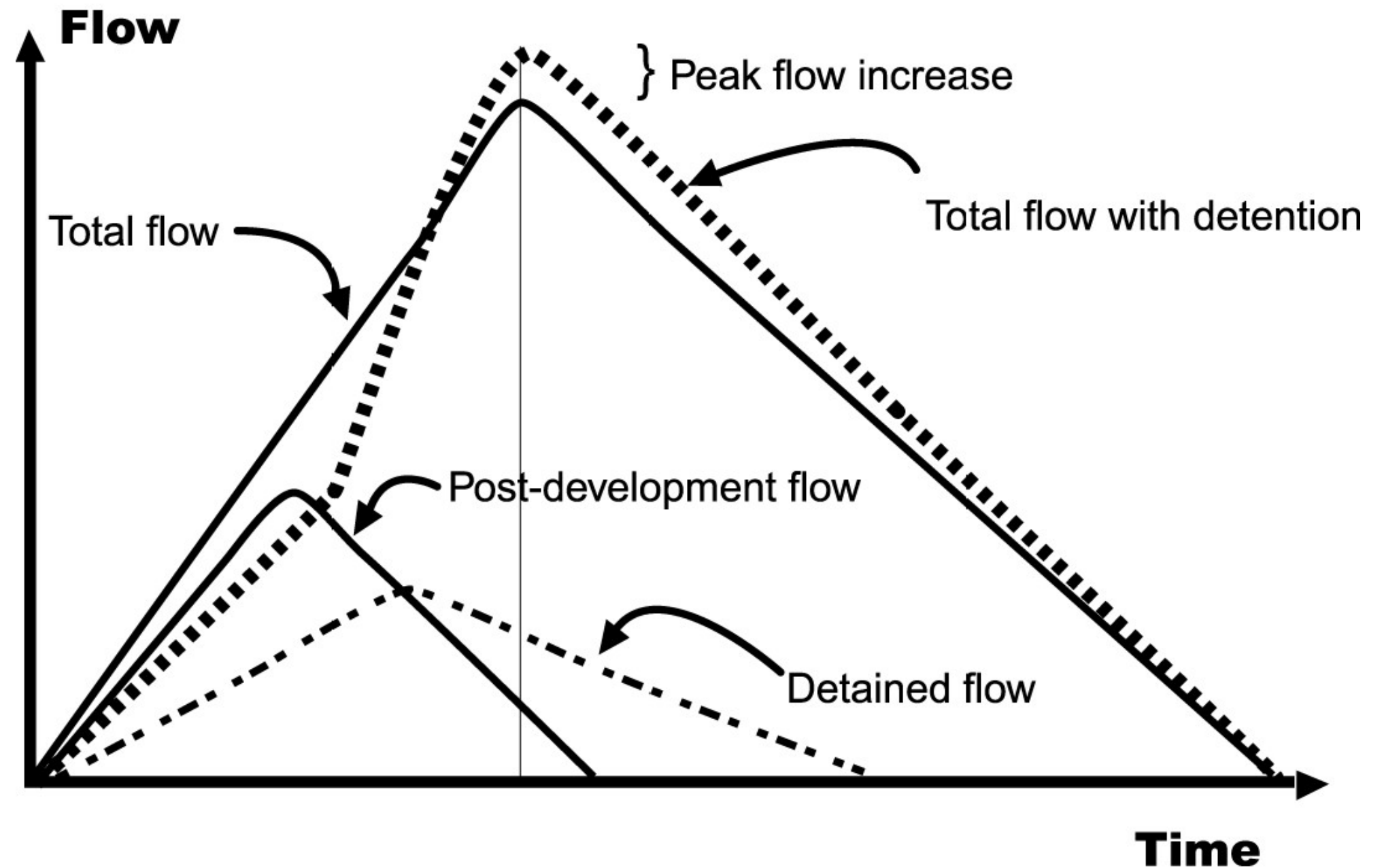
- A comparison of pre-development and post-development peak flows in the watershed to determine the effectiveness of stormwater detention on a given project.

OR

- A look to see if our detention efforts are making things worse for our neighbors.

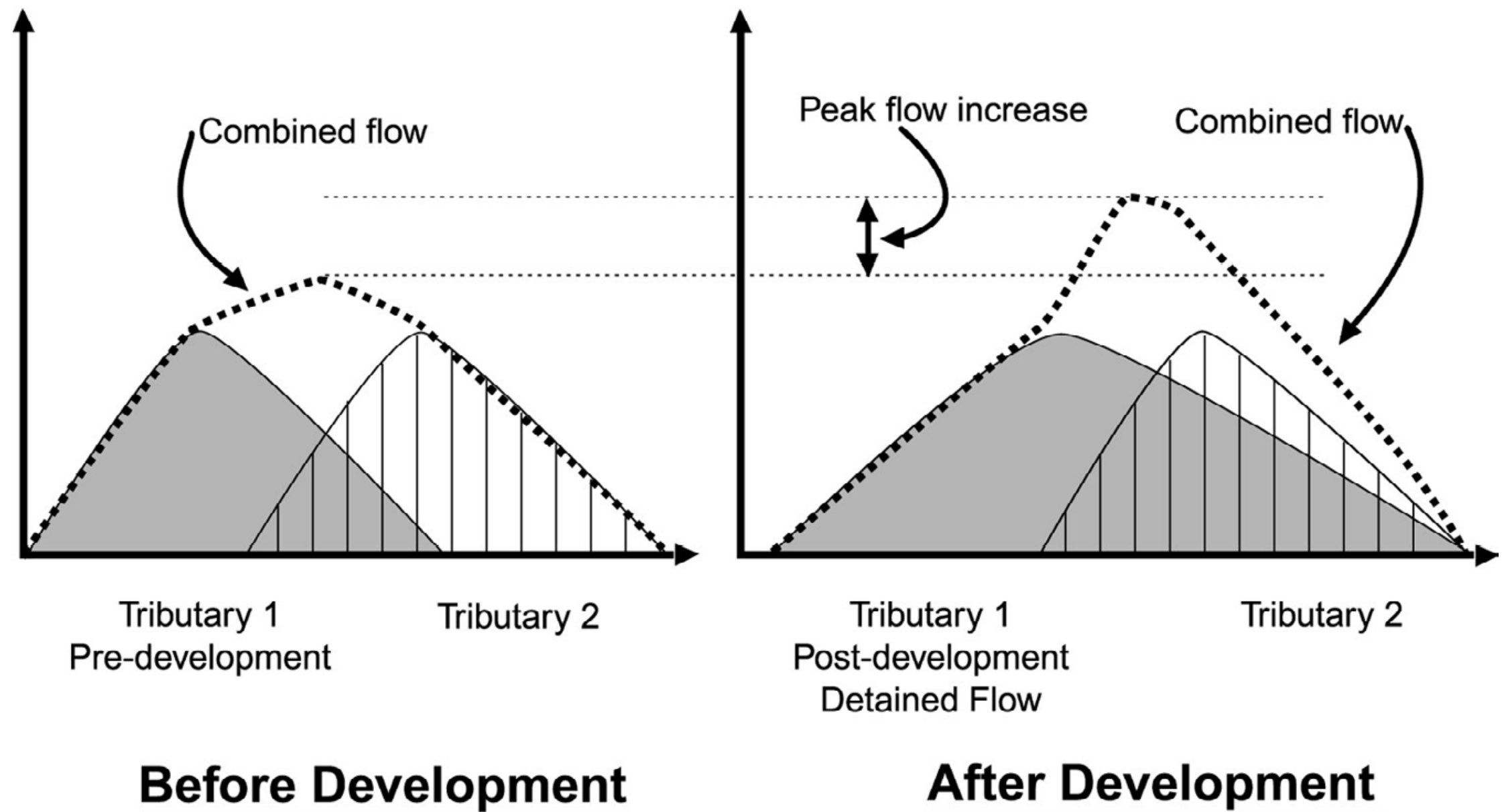


Why is a Downstream Analysis Important?



GSMMP Figure 3.1.9-1 Detention Timing Example

Why is a Downstream Analysis Important?



GSMMM Figure 3.1.9-2 Effect of Increased Post-Development Runoff Volume with Detention on a Downstream Hydrograph

How Does Downstream Analysis fit in with the Other Recommended Stormwater Management Standards?

Water Quality

Standard #1 – Natural Resource Inventory

Standard #2 – Better Site Design Practices for Stormwater Management

Standard #3 – Runoff Reduction

Standard #4 – Water Quality

Water Quantity

Standard #5 – Stream Channel Protection

Standard #6 – Overbank Flood Protection

Standard #7 – Extreme Flood Protection

Standard #8 – Downstream Analysis

Construction and Operations

Standard #9 – Construction Erosion and Sedimentation Control

Standard #10 – Stormwater Management System Operation and Maintenance

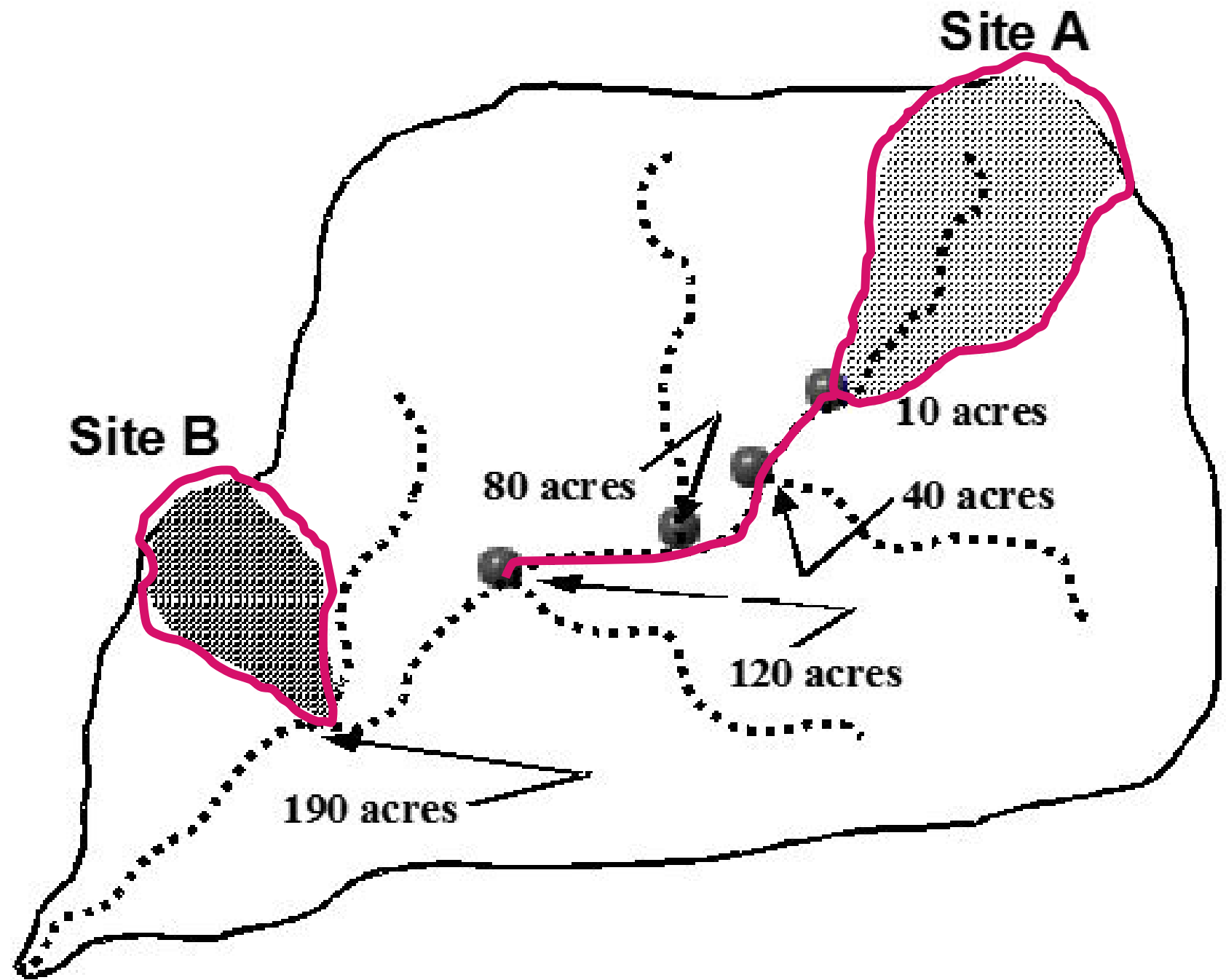
Standard #11 – Pollution Prevention

How Does Downstream Analysis fit in with the Other Recommended Stormwater Management Standards?

- Standard #5 – Stream Channel Protection
 - 24-hour detention of the 1-year storm + erosion prevention and stream buffer preservation
 - If site discharges (or is piped) directly to a large stream/river, may be waived.
- Standard #6 – Overbank Flood Protection
 - Post-development to pre-development detention of 25-year storm.
 - If Standard 5 is waived, add 2-year through 25-year storm.
- Standard #7 – Extreme Flood Protection
 - Control or safely convey 100-year storm without increasing floodplain.
- Standard #8 – Downstream Analysis
 - Check to see that standards 5 through 7 are beneficial downstream of the development.

The 10% Rule

“A downstream peak flow analysis should be provided to the point in the watershed downstream of the site or the stormwater management system where the area of the site comprises 10% of the total drainage area.”



GSMMM Figure 3.1.9-3 Example of the Ten-Percent Rule

Downstream Analysis Approach

1

Determine the target peak flow for the site for predevelopment conditions.

2

Using a topographic map, determine the 10% point.

3

Determine pre-development peak flows and timing of those peaks at each tributary junction, beginning at the detention pond outlet and ending at the next tributary beyond the 10% point.

4

Change the land use on the site to post-development, include the required detention, and re-run the model.

5

Compare pre-development to post-development peak flows for each tributary junction.

6

Adjust the detention facility to ensure that post-development peak flows are lower than pre-development peak flows.

1. In some cases this may mean eliminating detention.

2. In other cases it could mean increasing detention.



More Information on Downstream Analysis



Search: "GDOT Advanced Design Workshops", click on "Certifications & Trainings – GDOT"



Search: "GDOT Downstream Analysis"

Thank You!



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