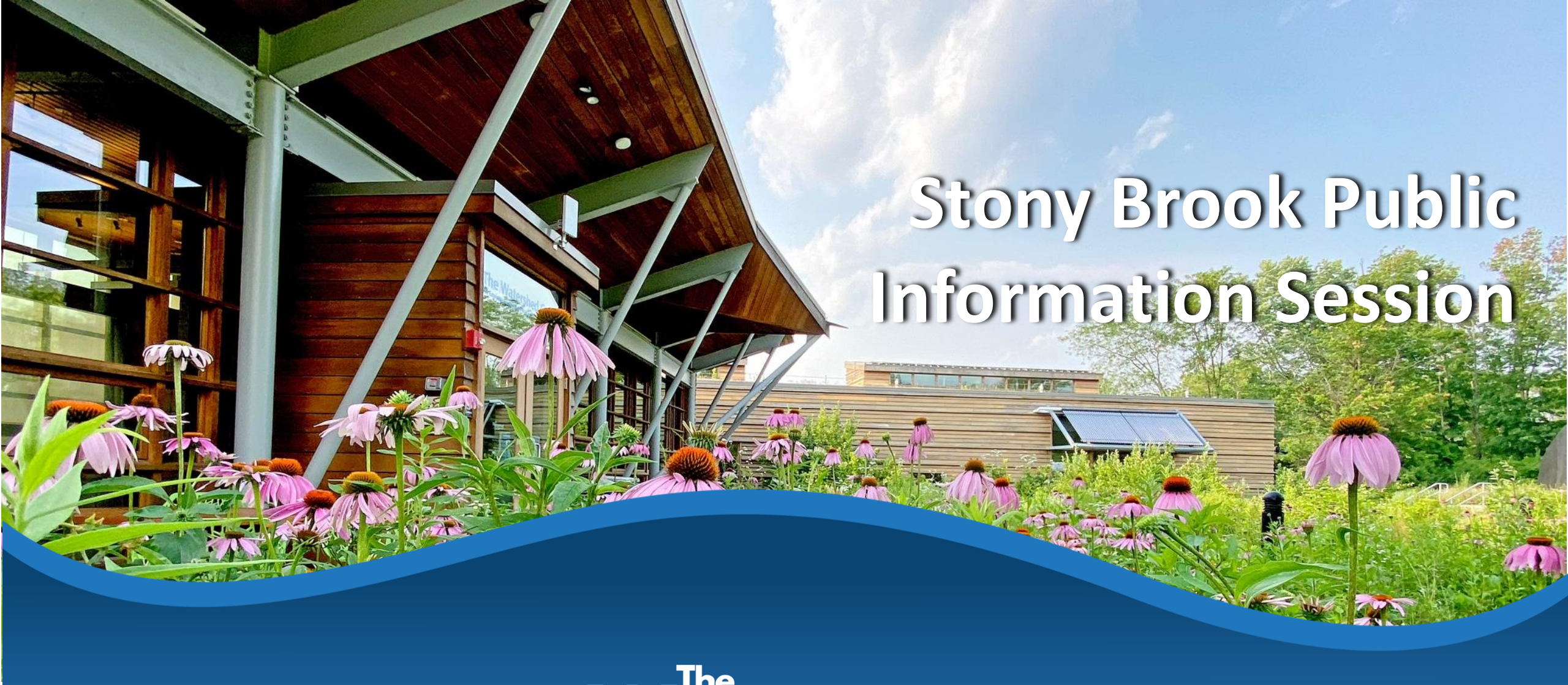


Stony Brook Public Information Session

The Watershed Institute

March 24, 2026

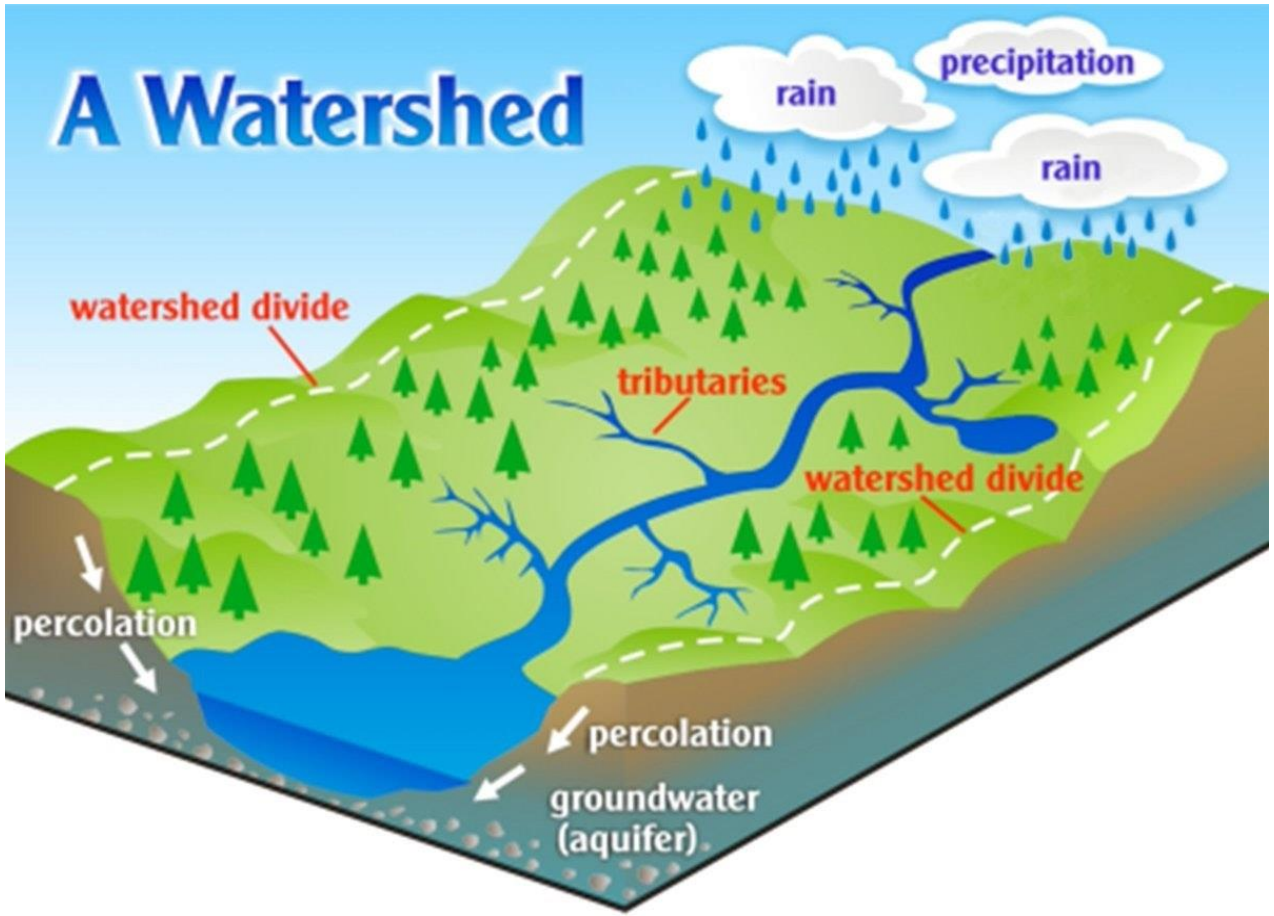
AGENDA

1. Watershed Basics
2. Watershed Improvement Plan
3. Regional Approach
4. Consultant Update
5. Questions
6. Public Comment
    - Survey

The Watershed Institute

What is a Watershed?

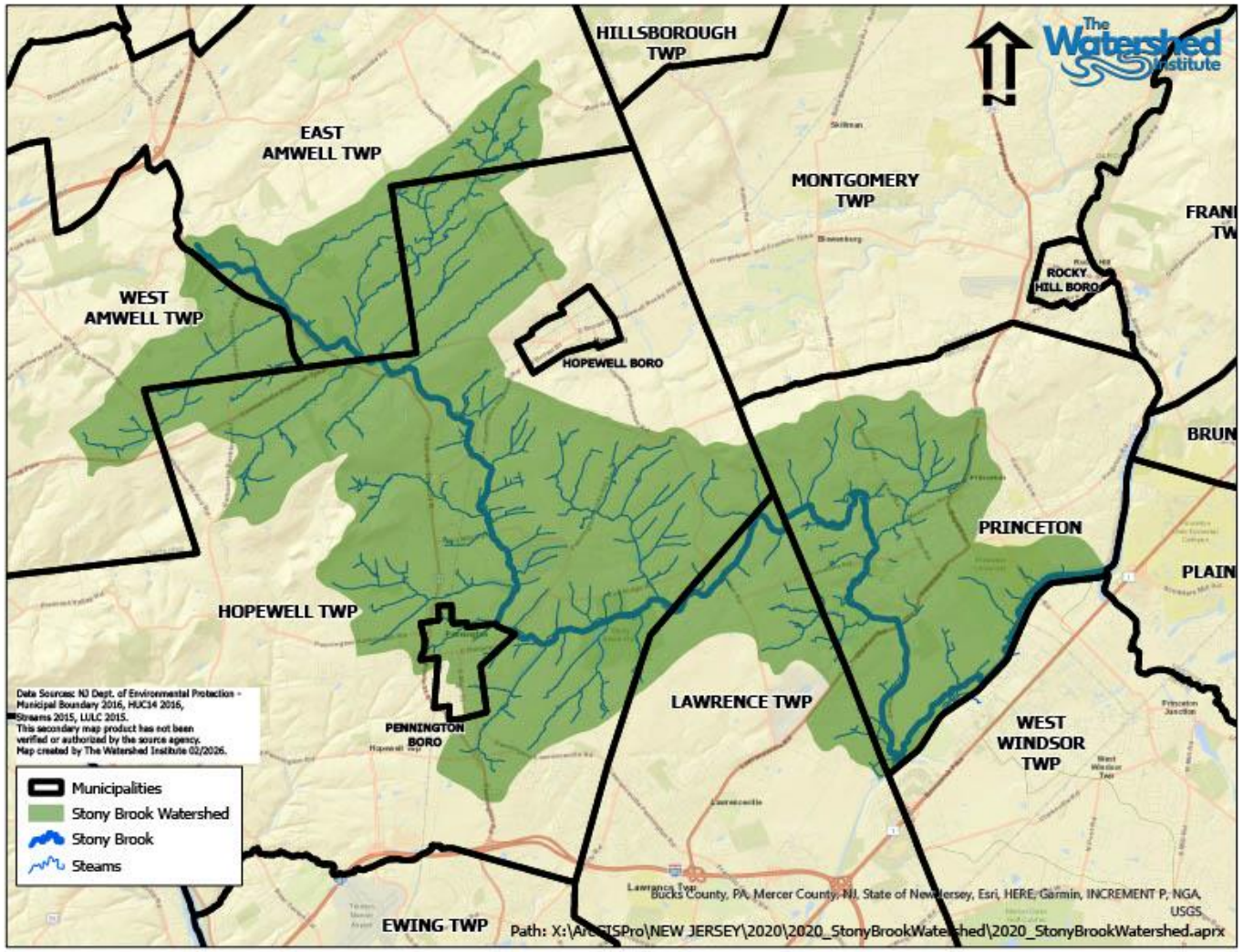
A watershed is an **area of land that drains or "sheds" water** into a particular **body of water**, such as a **stream, river, pond, or lake**.



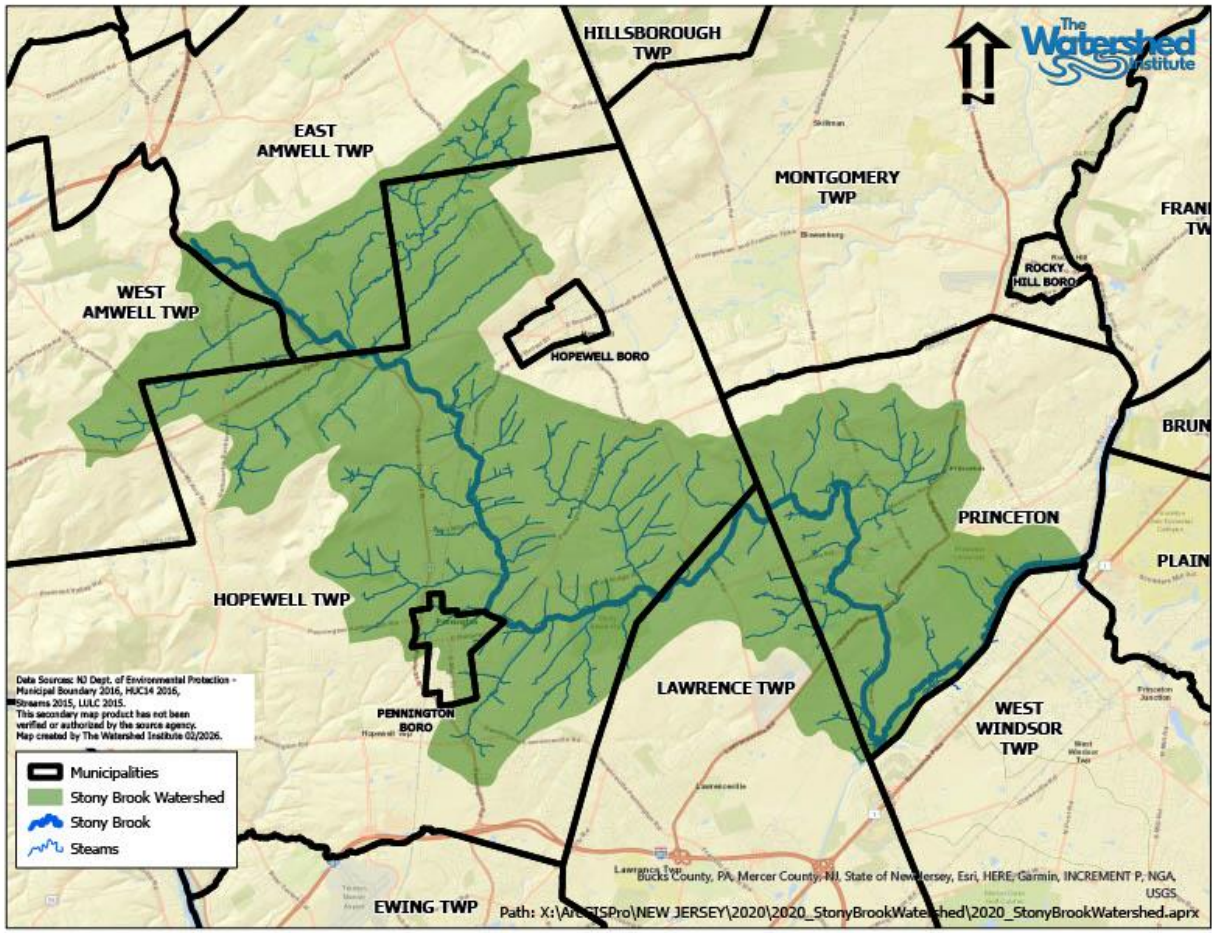
The Watershed Institute

State, Regional, and Local Scale Watersheds

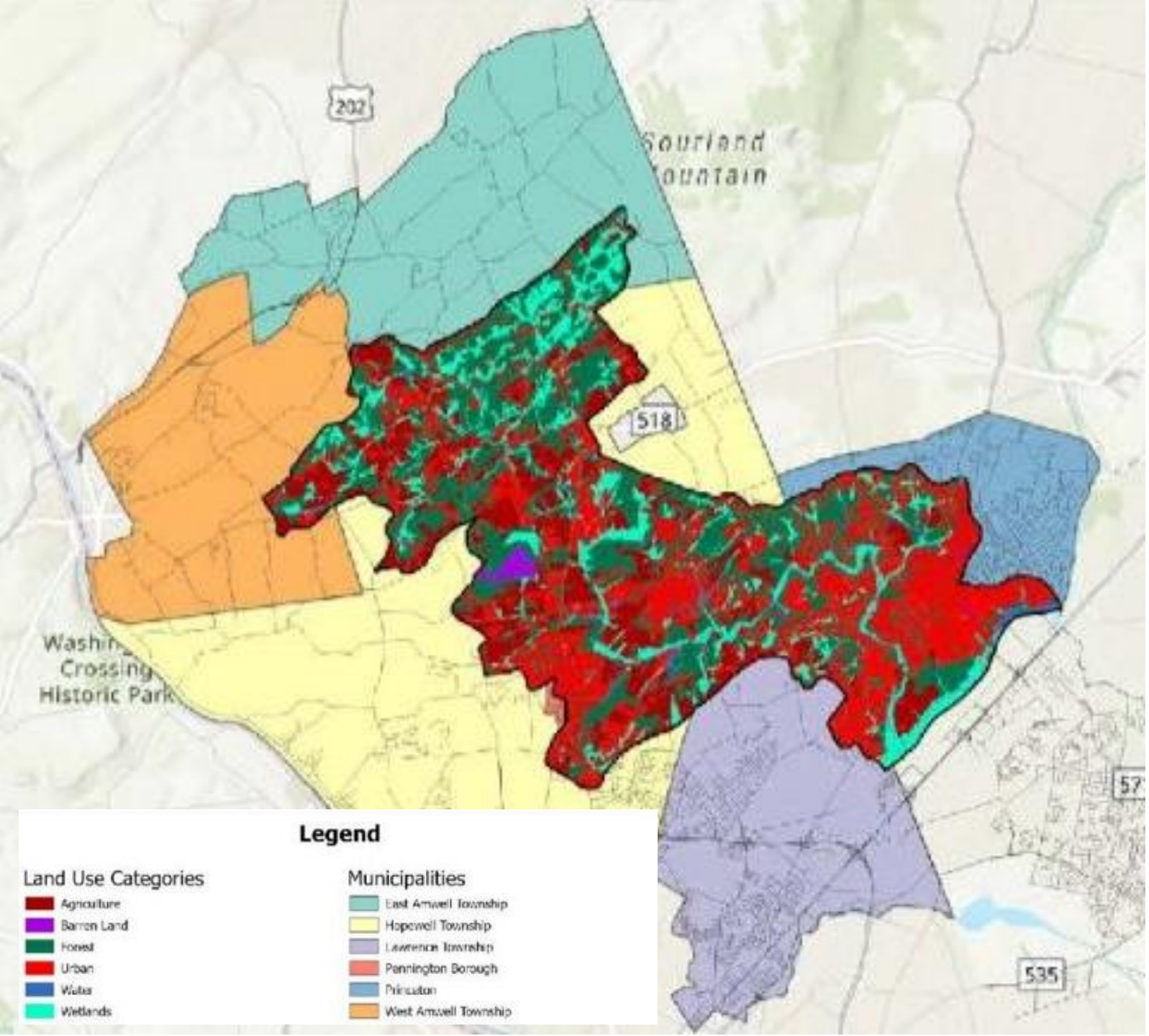
The Stony Brook is a tributary to the Millstone River that runs through Mercer and Hunterdon Counties and has a drainage area of approximately 50 square miles at its mouth.



Stony Brook Watershed Map with Towns

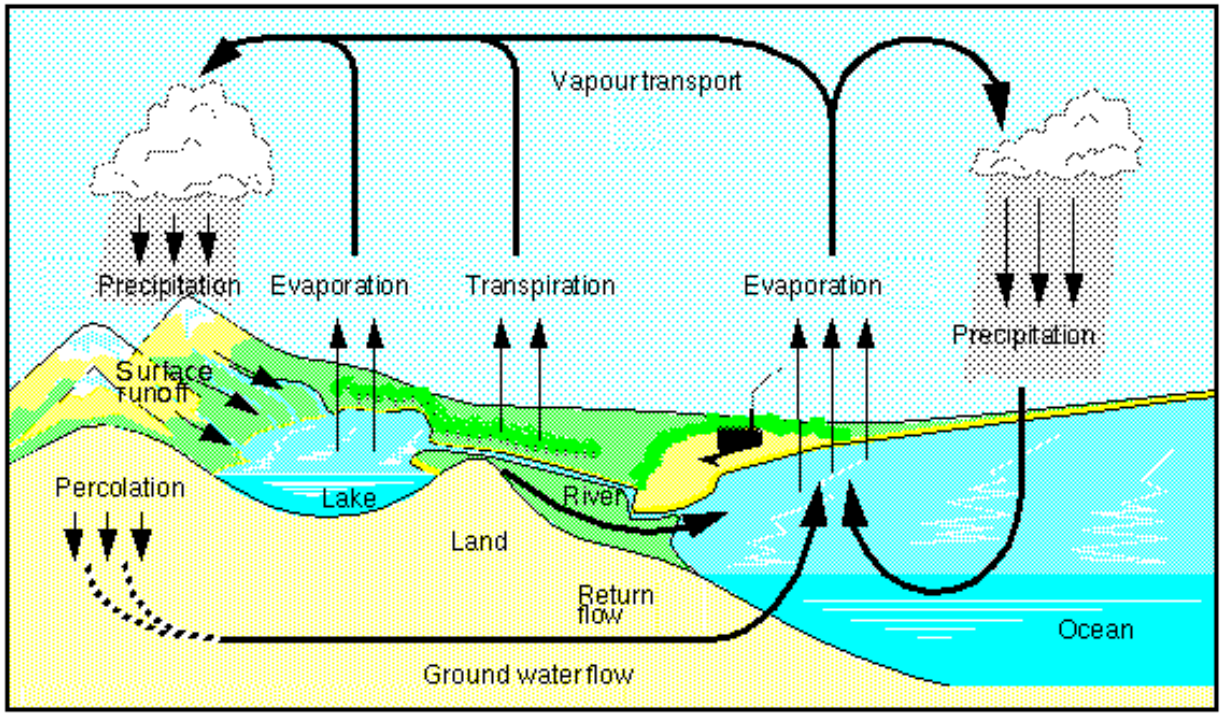


- 2 Counties
  - **Mercer**
  - Hunterdon
- 6 Towns
  - West Amwell
  - East Amwell
  - **Hopewell Township**
  - **Pennington**
  - **Lawrence**
  - **Princeton**

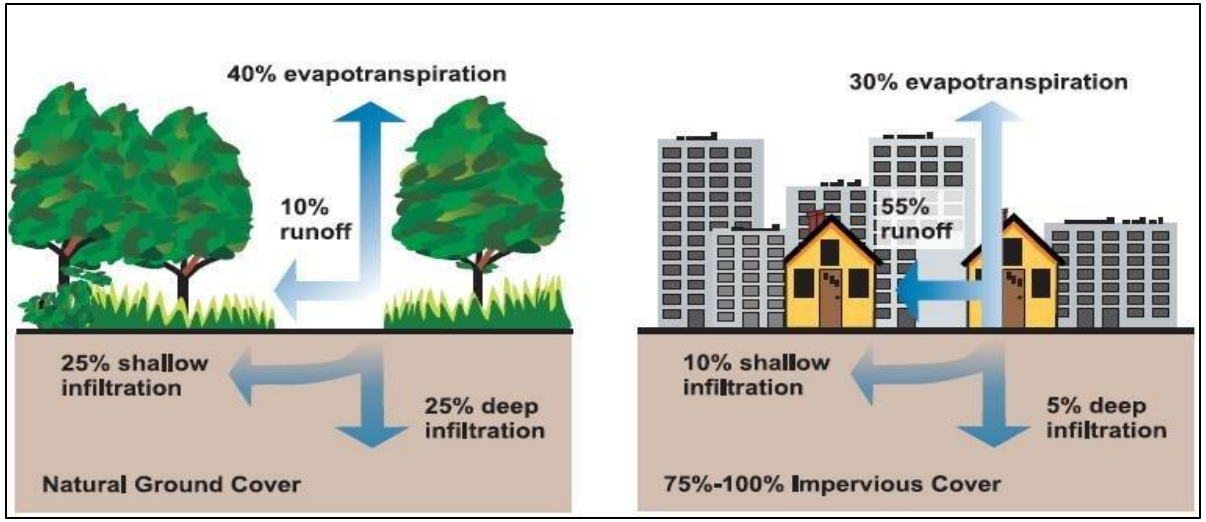


Stony Brook Watershed Impervious Cover

Humans are Changing the Water Cycle



Courtesy Erich Roeckner, Max Planck Institute for Meteorology



Increase in impervious surfaces means less groundwater recharge, less groundwater recharge means increased runoff of surface water, leading to flooding and stream bank erosion.

The Watershed Institute

Flooding

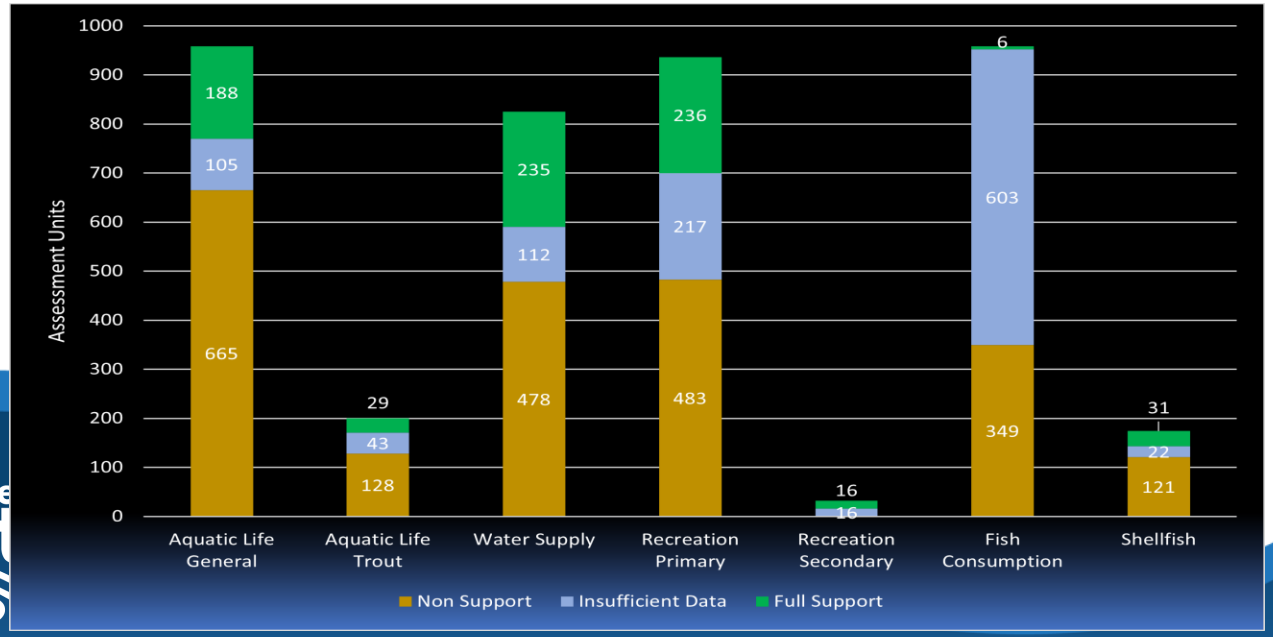
Decreased Groundwater Recharge and Increased Flooding

The Watershed Institute

Watershed Improvement Plans

Objective:

- Improve water quality by reducing contribution of pollutant parameters found in a Total Maximum Daily Load (TMDL)
- Improve water quality by reducing contribution of pollutant parameters causing water quality in Integrated Report
- Reduce and/or eliminate stormwater flooding in the municipality



What is a TMDL?

Total **M**aximum **D**aily **L**oad

- How much pollution is going into a stream now
- How much pollution can the stream handle and meet standards
- Calculate the difference with margin of safety
- Allocate the reductions among various sources.

Table 9. Distribution of TSS WLAs and LAs among source categories for parts of the Carnegie Lake Watershed

Long Term Average Daily Load (kg/d TSS)	Upper Millstone River Watershed			Stony Brook Watershed			Carnegie Lake Direct Watershed		
	Existing Condition	TMDL Allocation	Percent Reduction	Existing Condition	TMDL Allocation	Percent Reduction	Existing Condition	TMDL Allocation	Percent Reduction
Sum of Wasteload Allocations (WLAs)	3,961	1,506	62.0%	2,286	401	82.5%	602	96	84.0%
Treated Effluent from WWTP Discharges[#]	502	953	-89.6%	20	38	-89.6%	0	0	0%
Stormwater from Residential Land Cover Areas	1,615	258	84.0%	1,529	245	84.0%	272	44	84.0%
Stormwater from Other Urban Land Cover Areas	1,843	295	84.0%	737	118	84.0%	329	53	84.0%
Sum of Load Allocations (LAs)	2,775	2,060	25.8%	2,624	1,328	49.4%	58	49	14.9%
Boundary Inputs	0	0	0.0%	0	0	0.0%	0	0	0.0%
Tributary Baseflow	1,267	1,267	0.0%	297	297	0.0%	29	29	0.0%
Stormwater from Agricultural Land Cover Areas	851	136	84.0%	1,543	247	84.0%	10	2	84.0%
Stormwater from Forest and Barren Land Cover Areas	51	51	0.0%	525	525	0.0%	6	6	0.0%
Stormwater from Wetlands Land Cover Areas	605	605	0.0%	260	260	0.0%	13	13	0.0%
Total Margin of Safety (% of LC)	n/a	172	4.5%	n/a	152	8.0%	n/a	24	14.4%
Reserve Capacity (% of WWTP load)	n/a	103	10.8%	n/a	25	66.5%	n/a	0	n/a
Loading Capacity (LC)	6,735	3,841	43.0%	4,909	1,906	61.2%	660	170	74.2%

[#] Although the TSS TMDL allocation is reflective of discharging up to current permitted flow and existing NJDPES permit TSS limits, the WLAs for total phosphorus effectively limit loadings due to TP being present in suspended solids in WWTP effluent.
n/a - not applicable

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Watershed Improvement Plans

Watershed Inventory Report

Due: Dec. 2025

Watershed Assessment Report

Due: Dec. 2026

Watershed Improvement Plan Report

Due: Dec. 2027

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Watershed Inventory Report

- All outfalls
- Drainage areas for each outfall
- Receiving waterbodies for those outfalls
- Water Quality Classification
- Interconnection from municipality into another entity
- Drainage areas for those interconnection
- Interconnection into municipality from another entity
- All storm drain inlets

- Areas associated with each TMDL
- Area associate with each water quality impairment
- Overburdened communities
- Impervious areas
- Location of BMPs

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Watershed Assessment Report

- Assessment of potential water quality improvement projects
- Estimate of percent reduction in loading of TMDL/Impaired
- Estimate of funding for each project and identification of funding
    - NJ Water Bank
    - SWU
    - 319
    - FEMA
    - Etc.
- Estimate of implementation schedule
- Public Information Session
- Comment period on draft plan

The Watershed Institute

Watershed Improvement Plan Report

- Assessment of potential water quality improvement projects
- Estimate of percent reduction in loading of TMDL/Impaired
- Integrating public comment on the plan
- How Overburdened communities are prioritized
- Estimate of cost of each project and identification of funding sources
- Estimate of implementation schedule

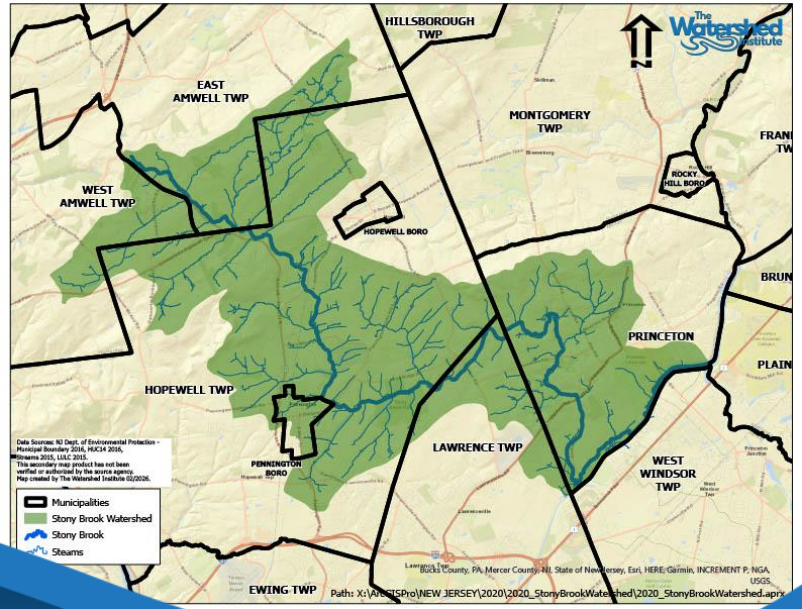
Regional Approaches for a Watershed Improvement Plan

What does a regional approach mean for a Watershed Improvement Plan?

- Municipalities within a single watershed will work together to create a Watershed Assessment Report, which can have some benefits.

Benefits:

- Studying the entire watershed helps identify smarter and more efficient solutions.
- Working together reduces duplicated efforts, so towns aren't spending time and resources studying the same issues separately.
- Watersheds don't follow municipal boundaries, so regional solutions can be more cost-effective because planning and identifying solutions is more efficient.
- Working together reduces the chance that DEP will reject inconsistent plans and require municipalities to revise their plans.



Stony Brook Watershed Management Plan
Consultant Update

Presented By:

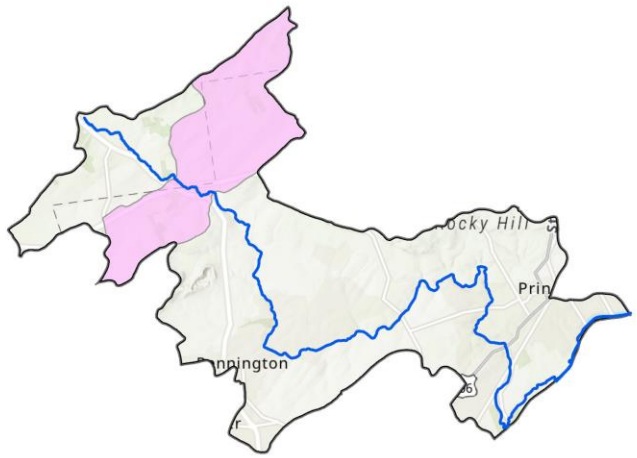
Jim Cosgrove, P.E.
Brian Friedlich, P.E.
Caitlin Gilvey, E.I.T.

March 24, 2026

ONE WATER CONSULTING LLC

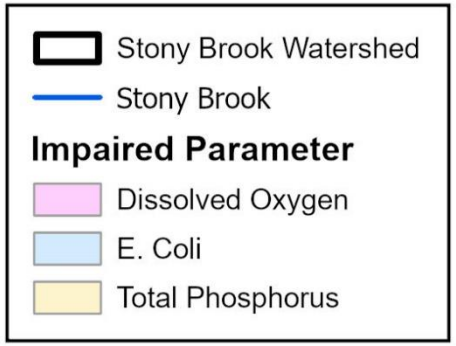
Stony Brook Impairments

Total Phosphorus

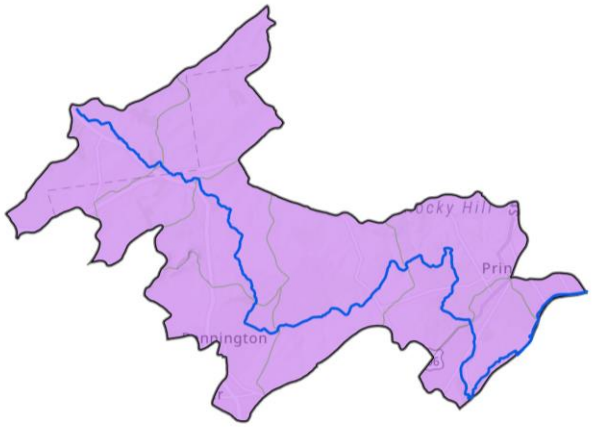


Dissolved Oxygen

E. Coli

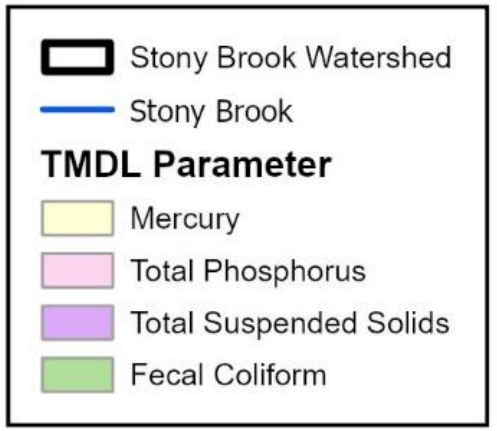


Stony Brook TMDLs



Total Suspended Solids

Fecal Coliform



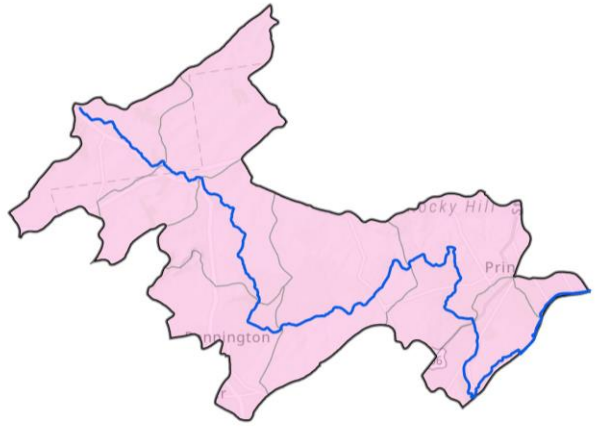
Percent NPS Reductions

TSS: 84%

TP: 84%

Fecal Coliforms: 96%

Mercury: 84%



Total Phosphorus

Mercury

Key Project Activities

Data Collection and Analysis

- Review existing water quality data
- Conduct stream monitoring
- Evaluate current conditions

Sub-watershed Assessment

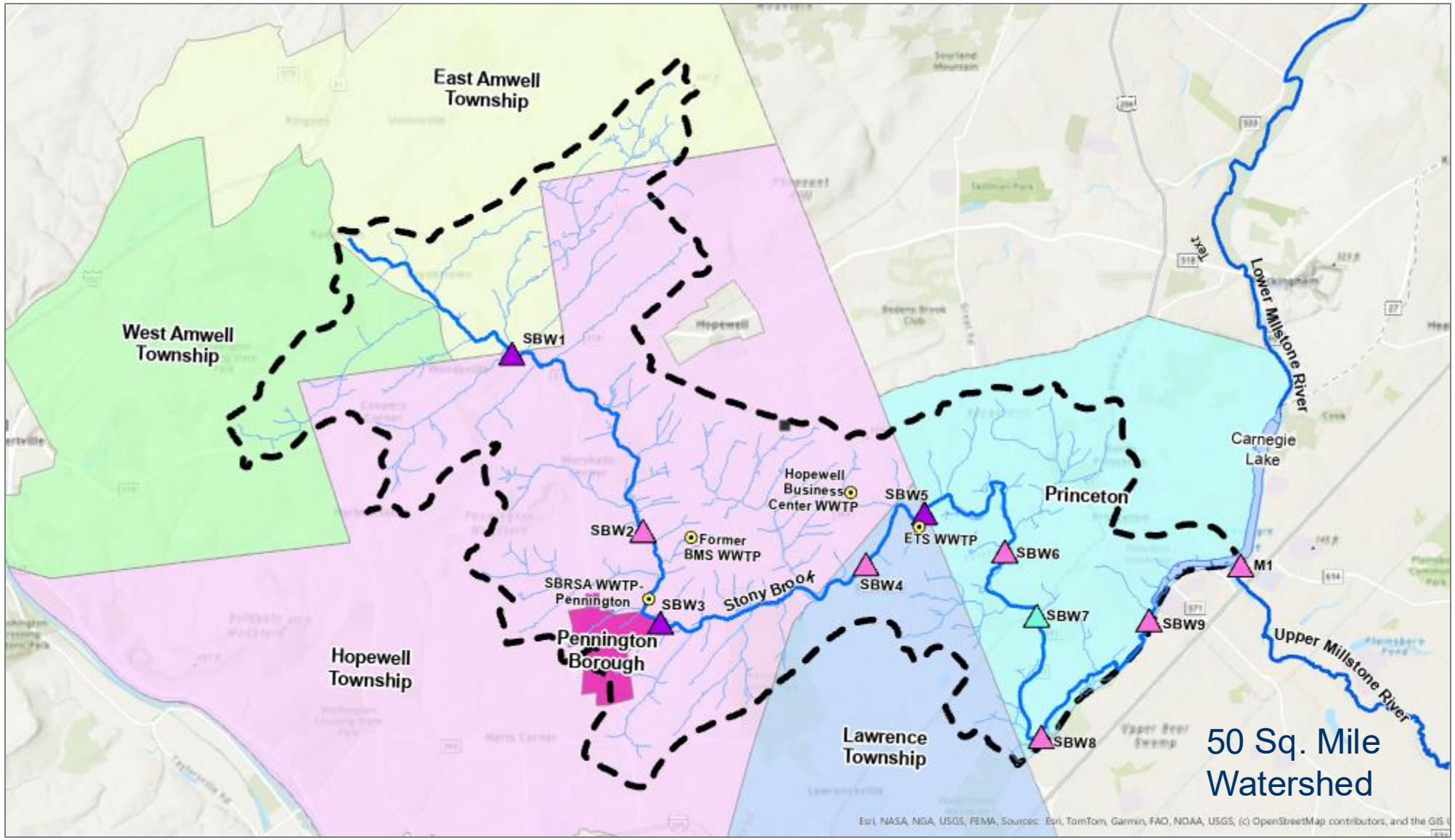
- Map land use and impervious cover
- Calculate pollutant loads
- Map soils and evaluate infiltration potential

Solutions Development

- Identify targeted improvement projects
- Evaluate potential impacts on water quality and flooding

Prepare Watershed Management Plan Report

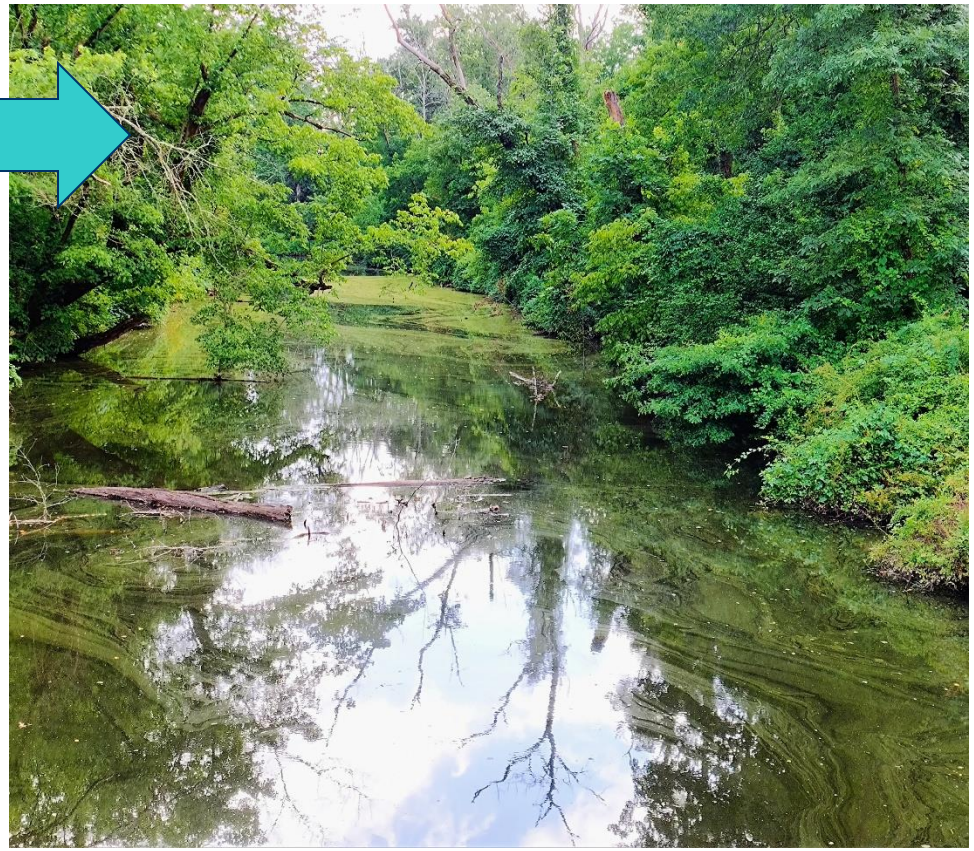
Stony Brook Watershed Monitoring Locations



Stony Brook Photos

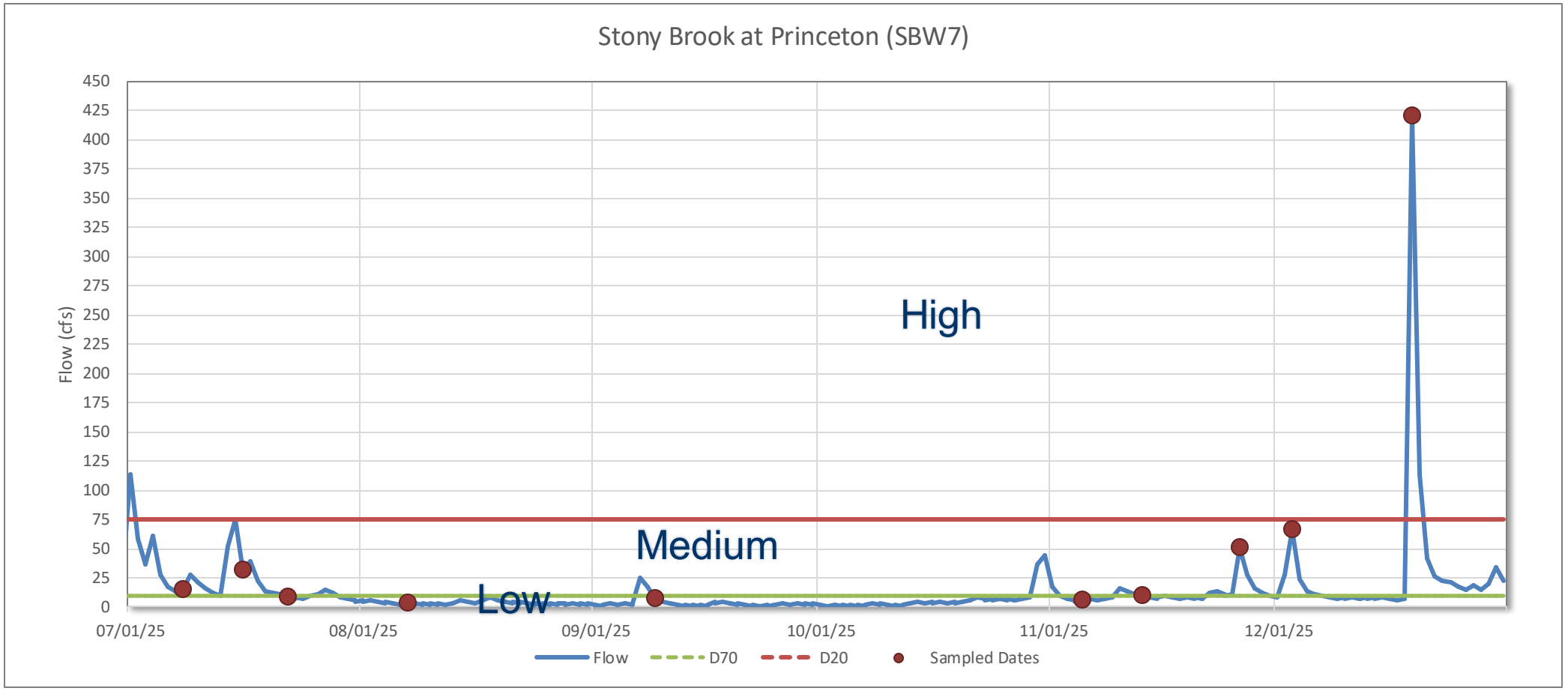
SBW1

SBW5



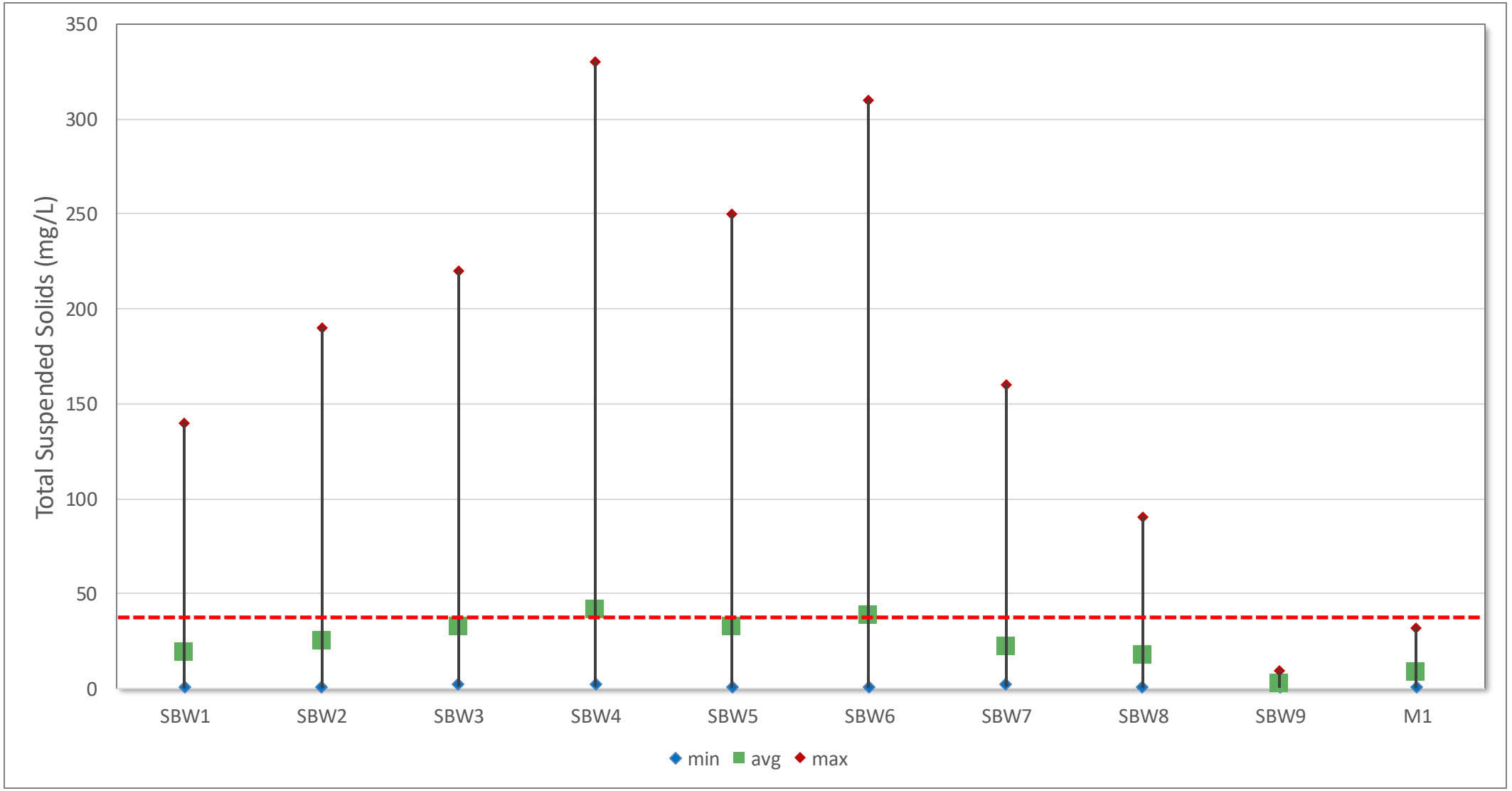
SBW9

Sampling Events – Flow Conditions

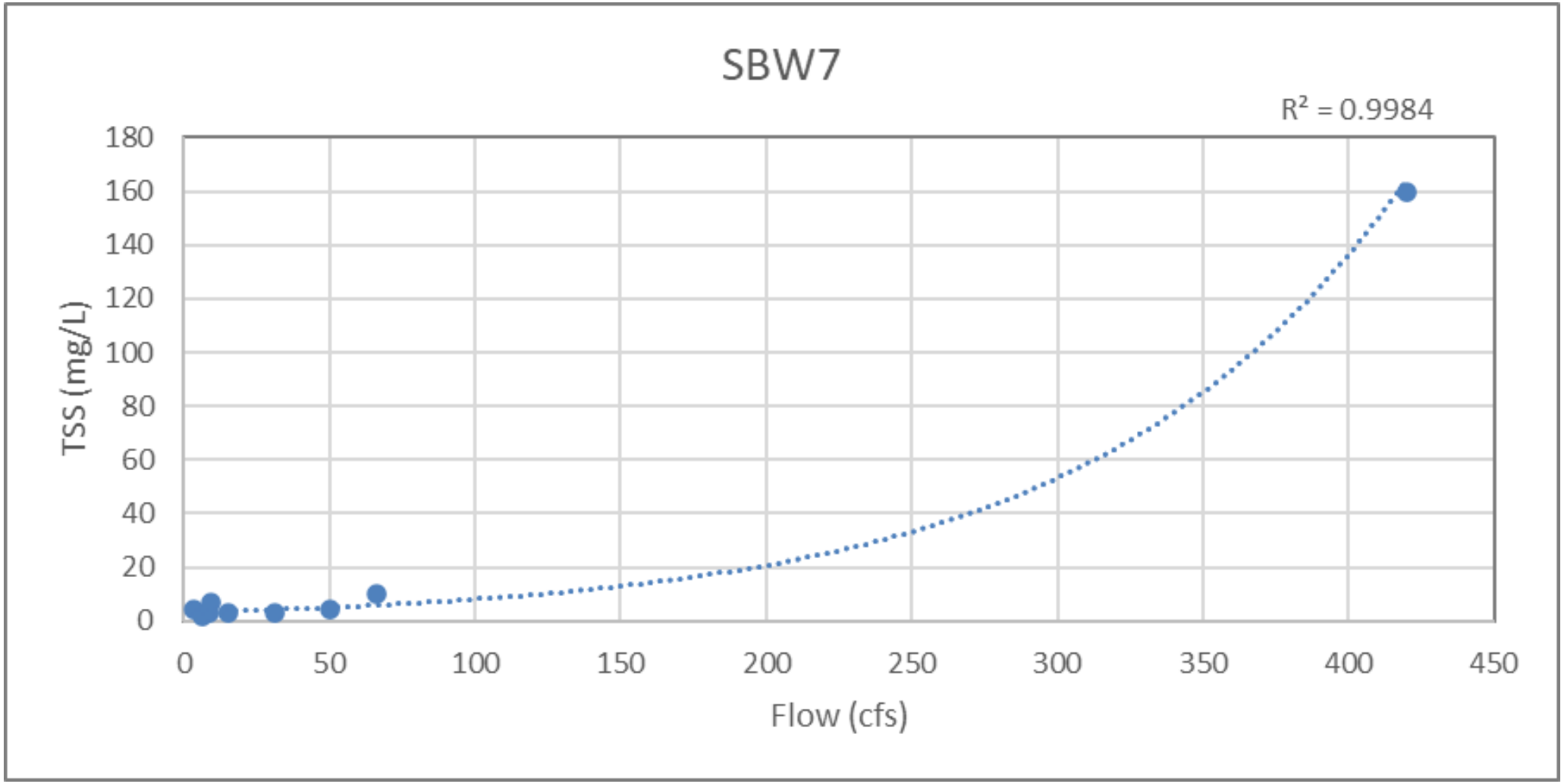


Completed 10 Sampling Events - 4 low flow events; 5 medium flow events; 1 high flow event

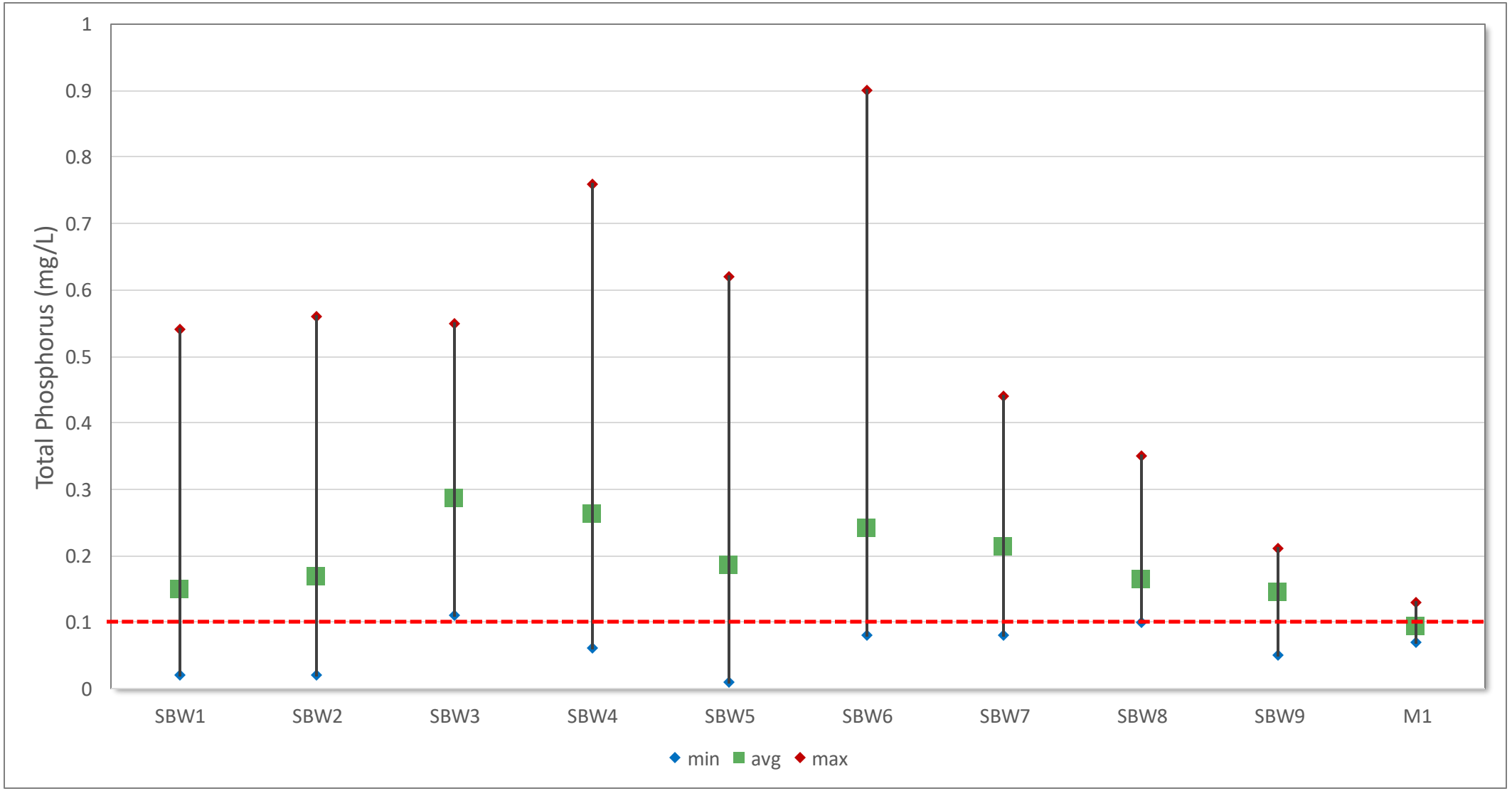
Water Quality Results – Total Suspended Solids



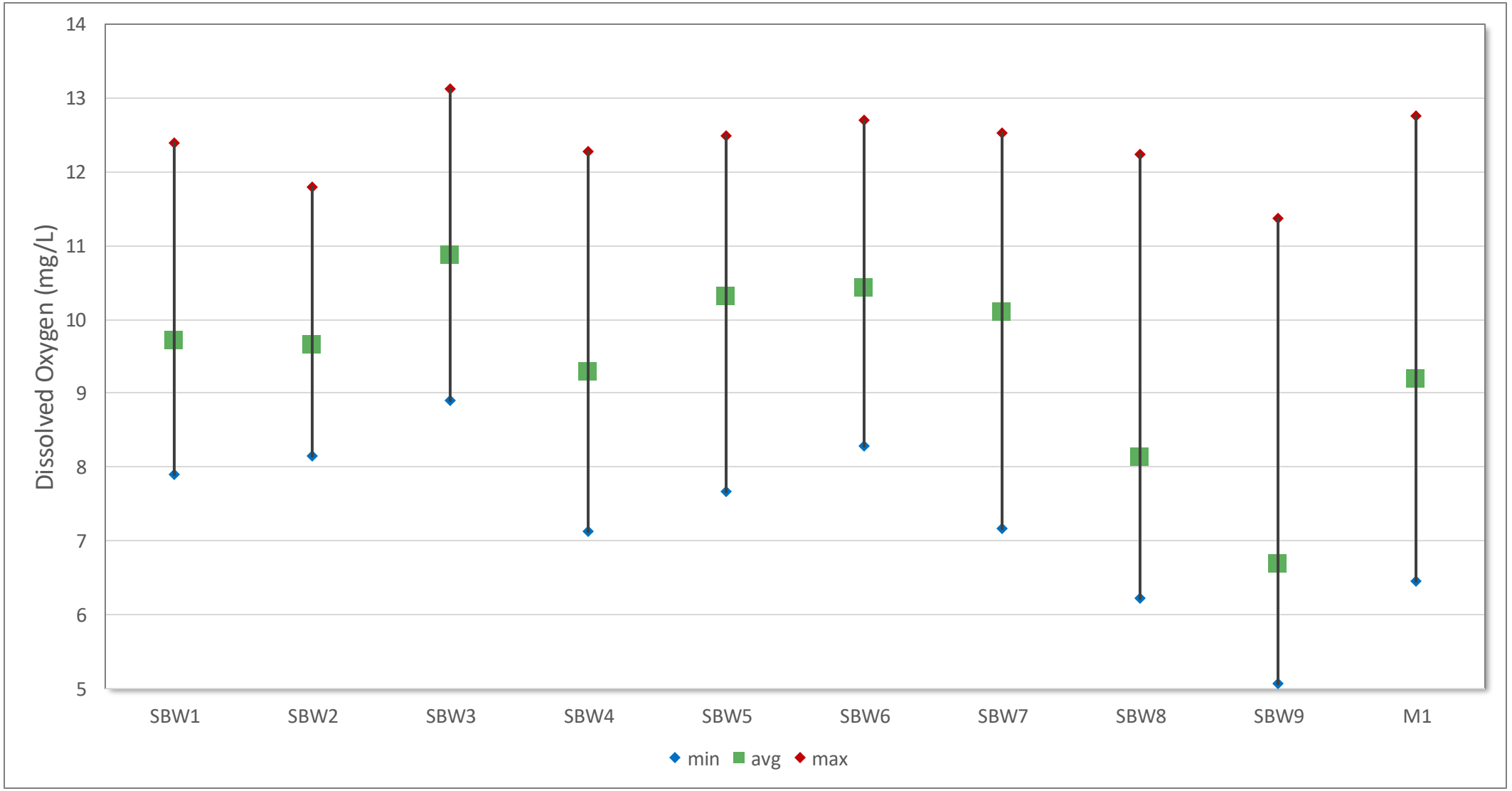
Water Quality Results – Total Suspended Solids



Water Quality Results – Total Phosphorus



Water Quality Results – Dissolved Oxygen



Historical Water Quality Comparison

Location	Total Phosphorus				Total Nitrogen			
	SBW2	SBW3	SBW7	SBW9	SBW2	SBW3	SBW7	SBW9
2003 Avg.	0.07	0.50	0.12	0.17	1.34	3.29	1.60	1.78
2025 Avg.	0.17	0.29	0.21	0.14	0.91	1.41	0.98	0.88

Sampling Takeaways

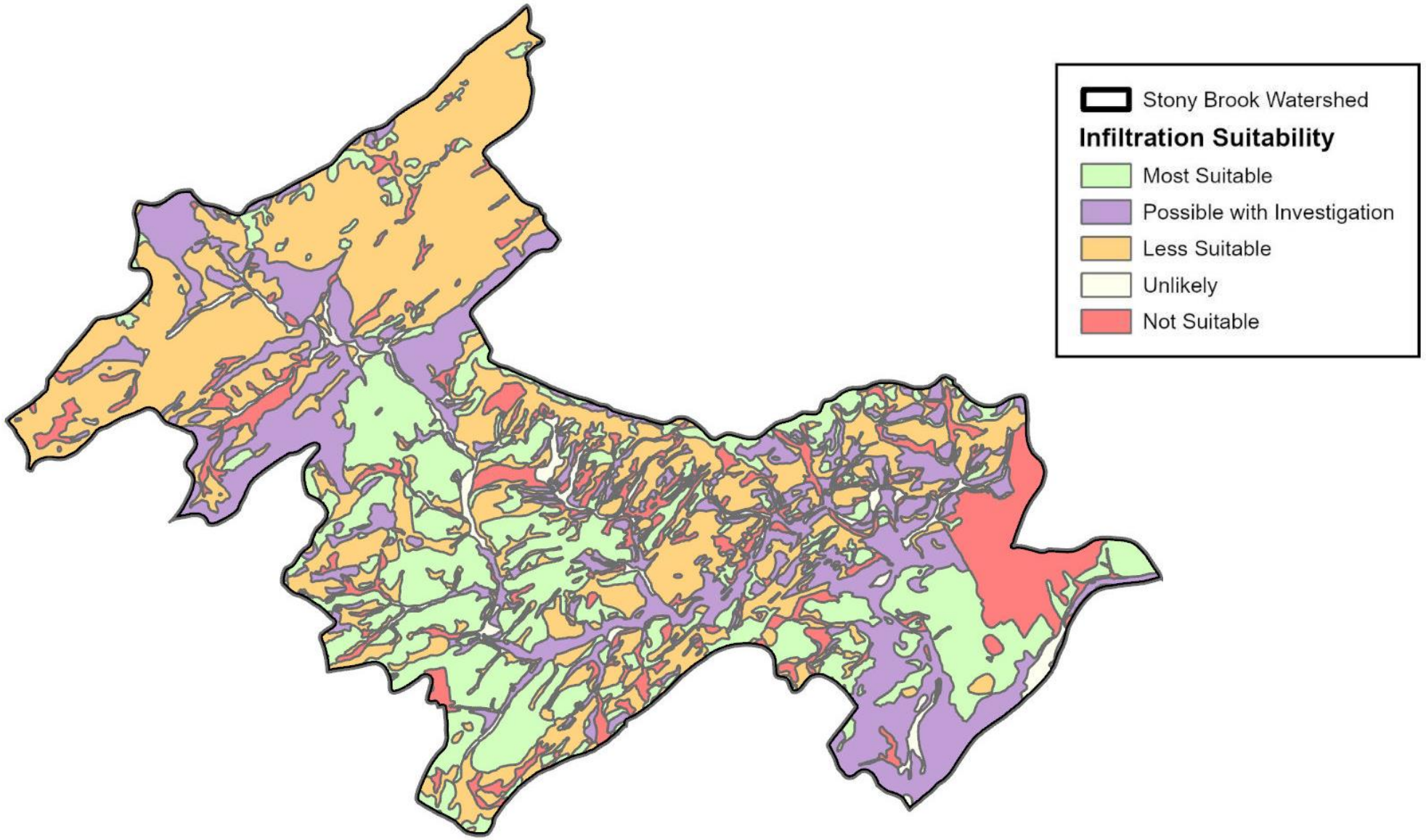
- TSS concentrations increase dramatically under high flow conditions illustrating impact of erosion.
- Phosphorus concentrations exceed 0.1 mg/l standard throughout, but dissolved oxygen concentrations good.
- Phosphorus concentrations improved since 2003 in Pennington due to upgrade of SBRSA Pennington WWTP, but increased upstream and further downstream.
- Nitrogen concentrations improved since 2003 at all locations.

Infiltration Suitability Mapping

- Used soil characteristics and depth to restrictive features to highlight areas most likely to succeed with infiltration projects
- Supports targeted project siting as a planning tool
- Additional investigation will be required prior to design and implementation

		Depth to Water Table or Bedrock			
		0"	0"-24"	24"-36"	>36"
Hydrologic Soil Group	Unknown	Not suitable	Less Suitable	Possible with investigation	Possible with investigation
	A	Not suitable	Less Suitable	Possible with investigation	Most Suitable
	B	Not suitable	Less Suitable	Possible with investigation	Most Suitable
	C	Not suitable	Less Suitable	Less Suitable	Less Suitable
	A,B,C / D	Not suitable	Unlikely	Unlikely	Unlikely
	D	Not suitable	Not suitable	Not suitable	Not suitable

Infiltration Suitability



Stormwater Improvement Project Types

- Impervious Cover Disconnection
- Green Infrastructure
  - Rain Gardens, Pervious Pavement, Bioswales, Infiltration Systems, Cisterns, Stormwater Wetlands
- Stormwater Retrofits (Wet Ponds and Detention Basins)
- Stream/Lake Restoration
- Floodplain Reconnection
- Reforestation

Stormwater BMP Alternatives Matrix

Project Type	Pathogens		Nutrients	Nutrient-Impacted		Sediment		Flooding	
	E. Coli	Fecal Coliform	Total Phosphorous	pH	DO	TSS	Turbidity	Flow Rate	Volume
Disconnect/Distribute/Decentralize									
Illicit Connection/Dumping Controls									
Improved Source Control									
Resource Protection / Stream Restoration									
Public Education									
Street/Storm Drain Maintenance									
Tree and Vegetative Planting									
Bioretention Systems									
Grass Swales									
Infiltration Basins/Trenches									
Manufactured Treatment Devices (MTDs)									
Retrofitting Basins									
Standard Constructed Wetlands									
Vegetated Filter Strips									
Pervious Paving									
Rain Gardens									
Rain Barrels & Cisterns									

Next Steps

- April 2026
  - Sub-watershed impervious cover analysis
  - Sub-watershed pollutant loading analysis
- May 2026
  - Improvement project identification & site visits
- June/July 2026
  - Conceptual BMP designs
  - Expected impact of improvement projects
- August/September 2026
  - Watershed Management Plan Report

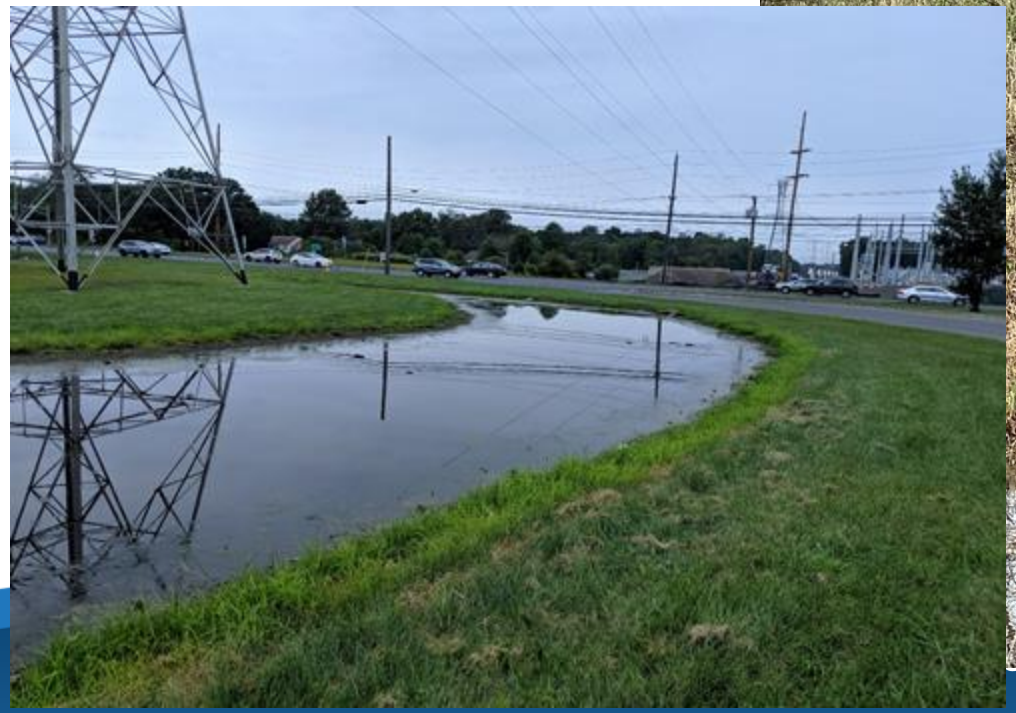
Questions?

The Watershed Institute

Public Comment

What we are looking for:

- Where, in your municipality, do you see:
  - Flooding
  - Stream Bank Erosion
  - Non-functioning Stormwater Basins
  - Other stormwater related issues

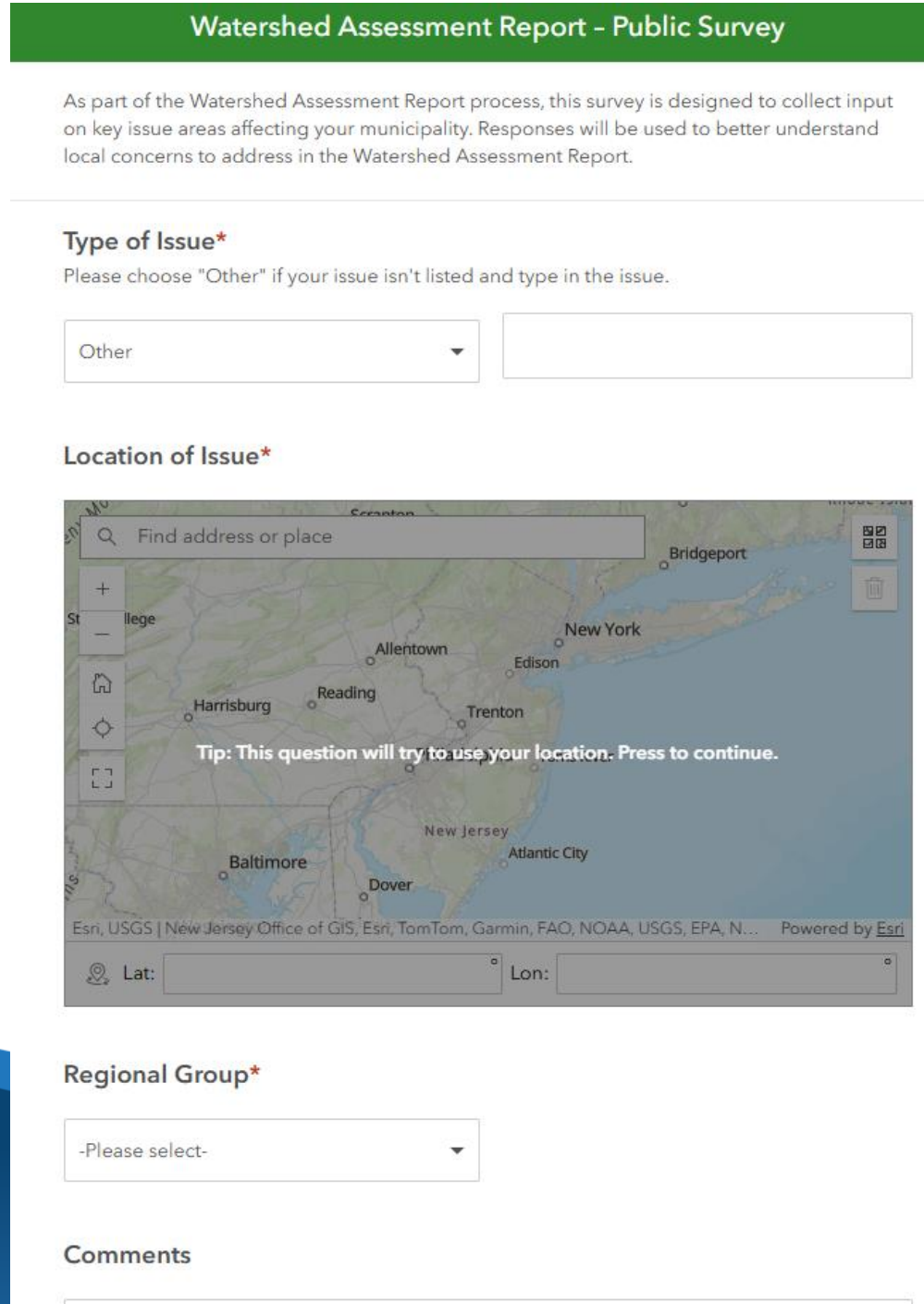


Survey

The Watershed Institute has created a survey for the public to detail where they have seen issues with stormwater within their municipality.

Please select:

- **The type of issue**
  - Flooding, Erosion, Non-functioning Stormwater Basin, or Other
    - A text box will appear for a description of "Other"
- **The Regional Group**
  - Stony Brook

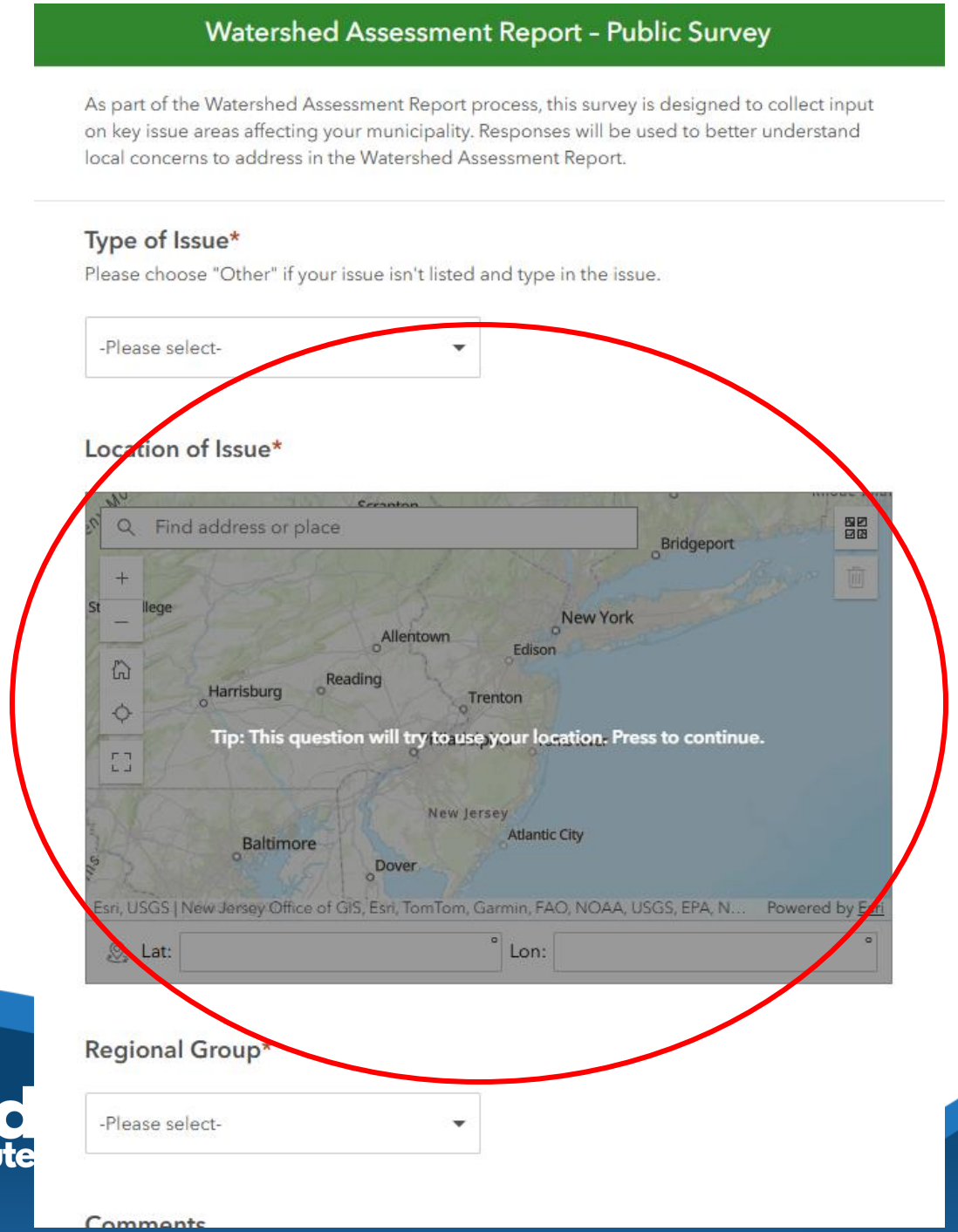


Survey

The Watershed Institute has created a survey for the public to detail where they have seen issues with stormwater within their municipality.

Please select:

- **Location of issue**
  - Click on map
    - Either
      - Allow the map to use your location (if you are close to location of the issue)
      - Input address of issue
  - Where you click on the map, the pin will move to
    - Please put pin near issue

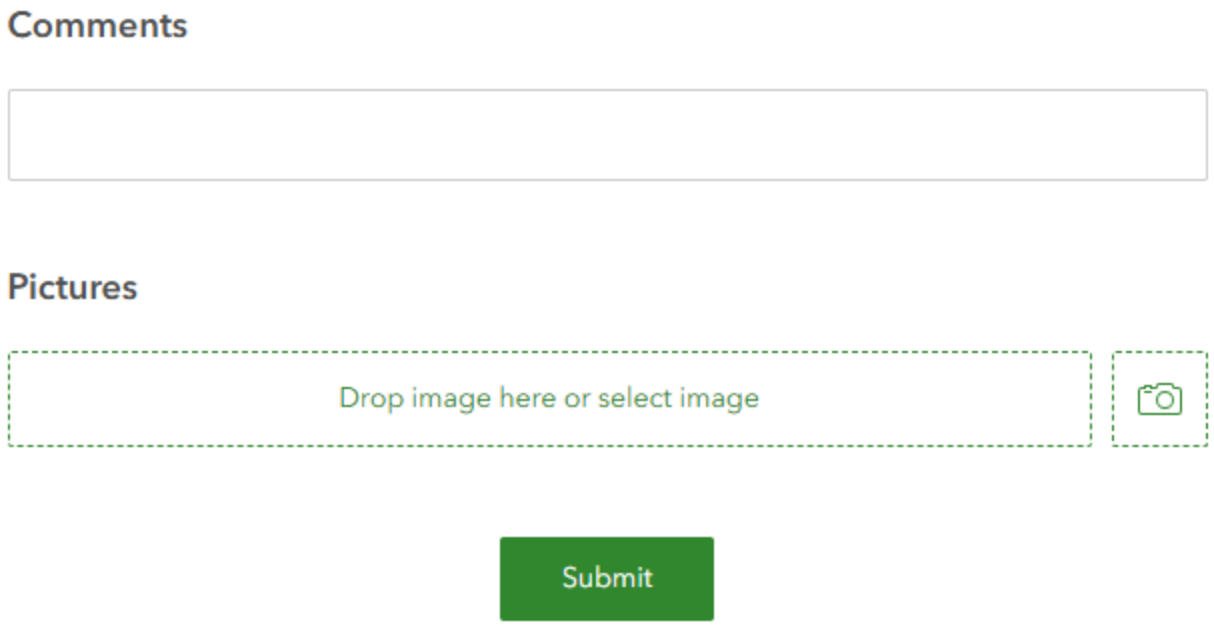


Survey

The Watershed Institute has created a survey for the public to detail where they have seen issues with stormwater within their municipality.

Optional (but helpful):

- Additional comments on issue
- Pictures of issue



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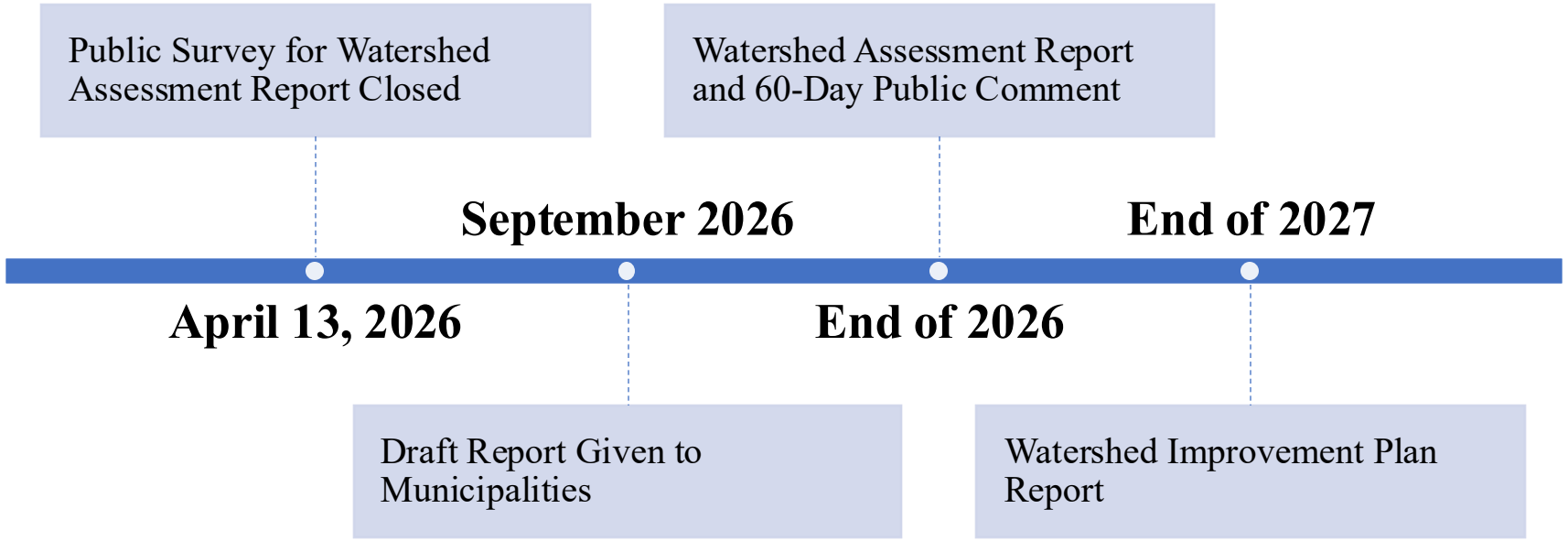
Public Comment

Please use the QR code to the right to report issue areas within your municipality.

Please submit input by **April 13, 2026**

The Watershed Institute

What's Next?



The Watershed Institute

Thank You!

If you have any other questions, comments, or concerns, please email:
stonybrookwatershed@thewatershed.org

Recording of this meeting will be available on The Watershed Institute's YouTube channel: **@TheWatershedInstitute**

Public Survey QR Code

Submit by **April 13, 2026**

The Watershed Institute