PRECISION OUTREACH IN THE HALFMOON CREEK WATERSHED

Connecting water quality data + hydrological modeling with collaborative, on-the-ground knowledge for prioritized landowner outreach + watershed planning

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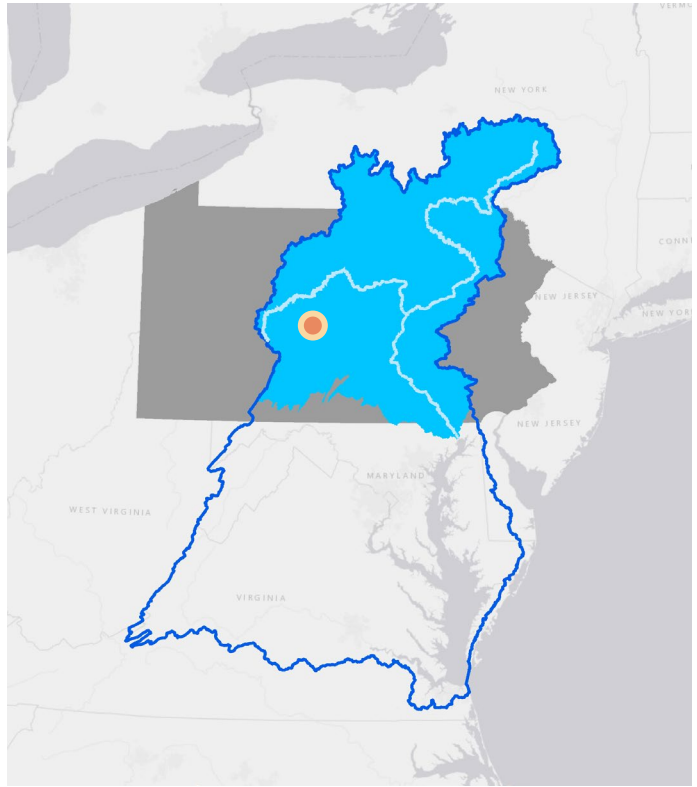
CHESAPEAKE BAY FOUNDATION
Saving a National Treasure

WHAT IS SECTION 319?

- Section 319 refers to the ***nonpoint source pollution management program*** of the Clean Water Act
    - Agricultural runoff, stormwater runoff, acid mine drainage
- Impaired waters on a state's 303(d) list are eligible for federal 319 funds to support technical assistance, financial assistance, education, training, technology transfer, demonstration projects and monitoring

How do you access these 319 funds? With a state and federally-approved Section 319 watershed plan!

HALFMOON CREEK WATERSHED

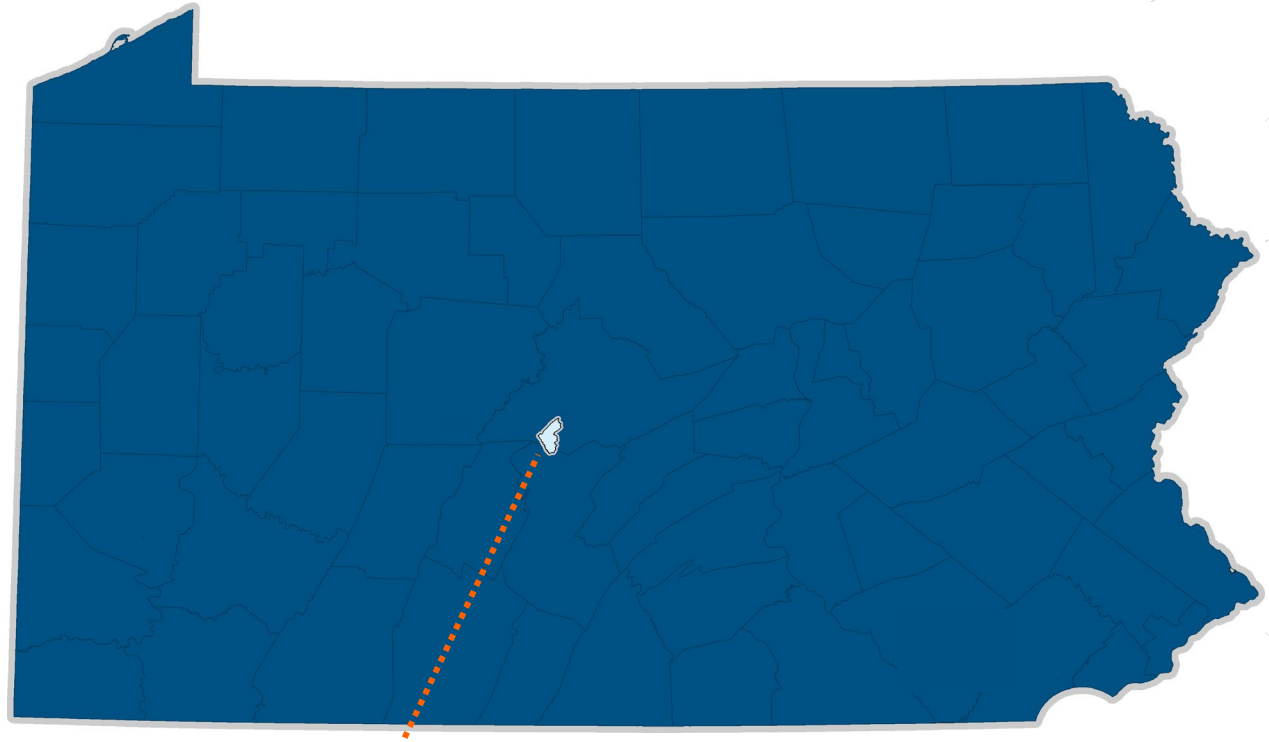


Susquehanna River Watershed

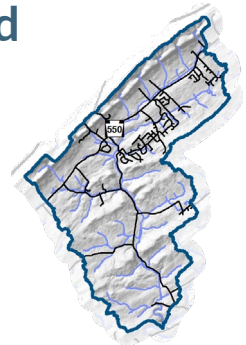
Susquehanna River

Chesapeake Bay Watershed

Halfmoon Creek



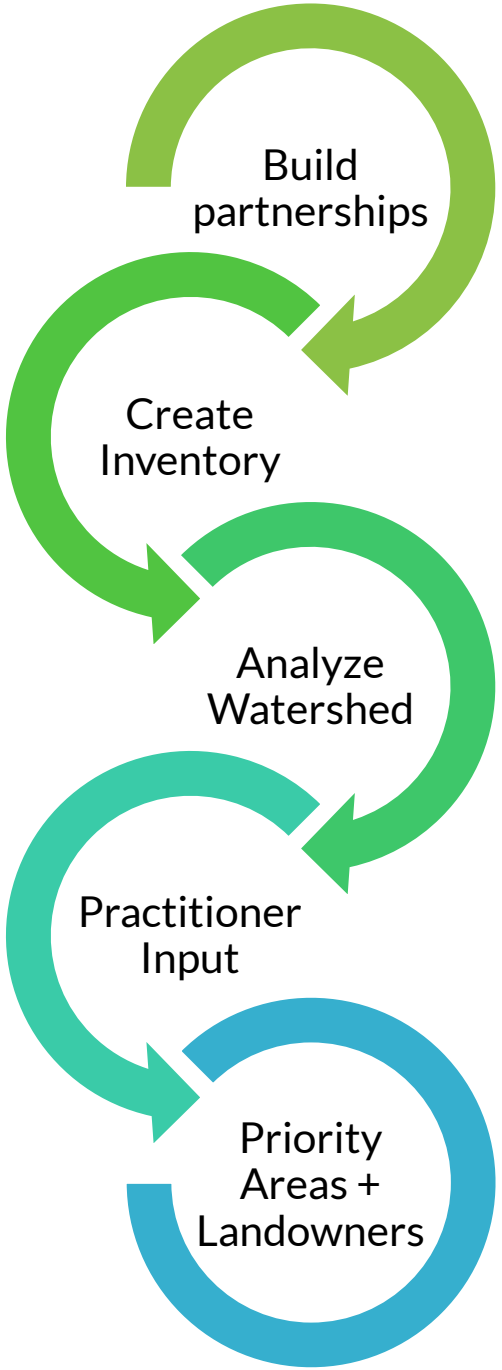
Halfmoon Creek Watershed (HUC-12)



- Ag-impaired watershed in Centre and Huntingdon Co. (just west of State College)
- TMDL for sediment
- ~25 square miles

PROCESS

Building a collaborative team at the onset was crucial in developing a detailed BMP inventory and corroborating our modeling data with on-the-ground knowledge and feedback.



PARTNERSHIPS

We developed a diverse stakeholder committee to benefit from local knowledge, technical expertise, and regional resources.

- County conservation districts
- Local watershed + conservation organizations
- Academic institutions
- State + local governmental agencies
- Local businesses in the watershed
- Planning agencies
- Watershed landowners, farmers, and residents

Upper Spruce Creek Partnership

Have you heard?

The Upper Spruce Creek Partnership is working on several efforts to benefit our community farms, forests, wildlife, and water through maintaining and restoring healthy streams and habitats.

How can I get involved?

Do you want to learn how to handle heavy rains and flash floods on your farm?

A number of best management practices can help minimize the effects of heavy rains while benefiting your farm. Contact us to learn more!

Do you have wooded areas, wet fields, meadows, fence rows, or streams on your property?

Attend an information session or guided field tour hosted by the Scotia Barrens Young Forest Initiative to learn more about how to manage these areas to support wildlife and native plant communities.

Do you want to help create a clean stream plan for Halfmoon Creek?

Attend local meetings to make recommendations and decisions for a healthier Halfmoon Creek. If you are interested, please join our team and let us know if you have any questions!

Upcoming Events

AUGUST:

Ag Progress Days
August 13th - 15th at
Russell E. Larson Agricultural Research Center
Hosted by Penn State

SEPTEMBER:

Managing for Healthy Forests and Wildlife Diversity Tour
September 7th at
John Hoover's Tree Farm (southeast of Blanchard, PA)
Hosted by the Scotia Barrens Young Forest Initiative

OCTOBER:

Walk in Penn's Woods - Musser Gap Trail
October 6th from 1:00 - 4:00 pm
Musser Gap Trail parking area
Hosted by Center for Private Forests and Partners

PennState Extension · pennsylvania DCNR Department of Conservation and Natural Resources · Huntingdon County Conservation District · ClearWater Conservancy · Chesapeake Conservancy · Chesapeake Bay Foundation Pennsylvania · Centre County Conservation District · Halfmoon Creek Our Vision for a Healthy Stream · Western Pennsylvania Conservancy · Scotia Barrens Young Forest Initiative · PennState College of Agricultural Sciences

PARTNER COORDINATION

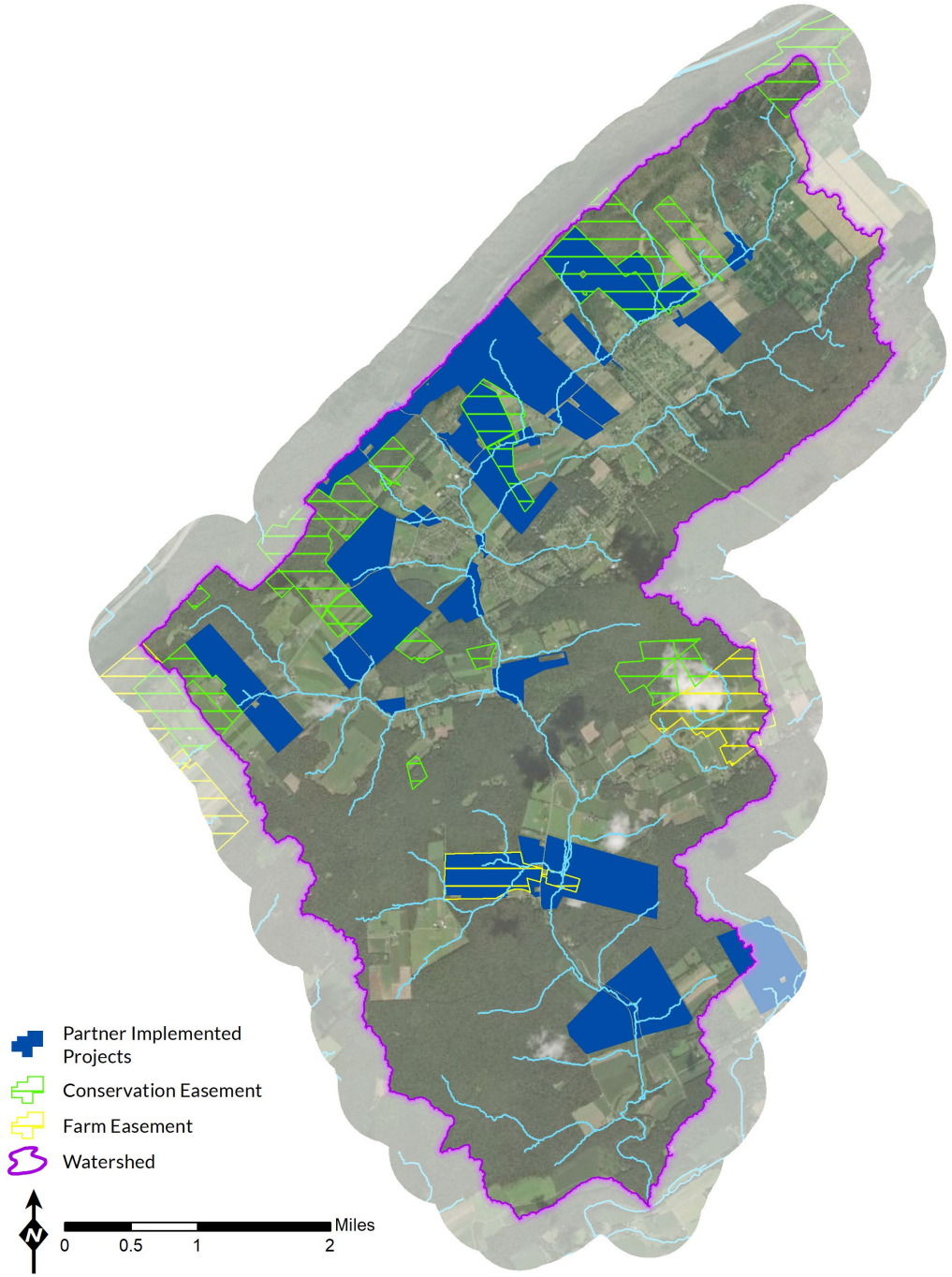
- Number of groups working on several different projects within the Halfmoon Creek Watershed
- We didn't want to create confusion or inundate landowners with several outreach efforts with varying agendas
- Together, partners worked to create a united front and streamline our work
  - Shared project and community information
  - Collaborated on landowner outreach and public events
  - Created a cohesive message

INVENTORY

Before diving in and proposing a plan, we needed to meticulously gather information and inventory the watershed to better understand the current conditions.

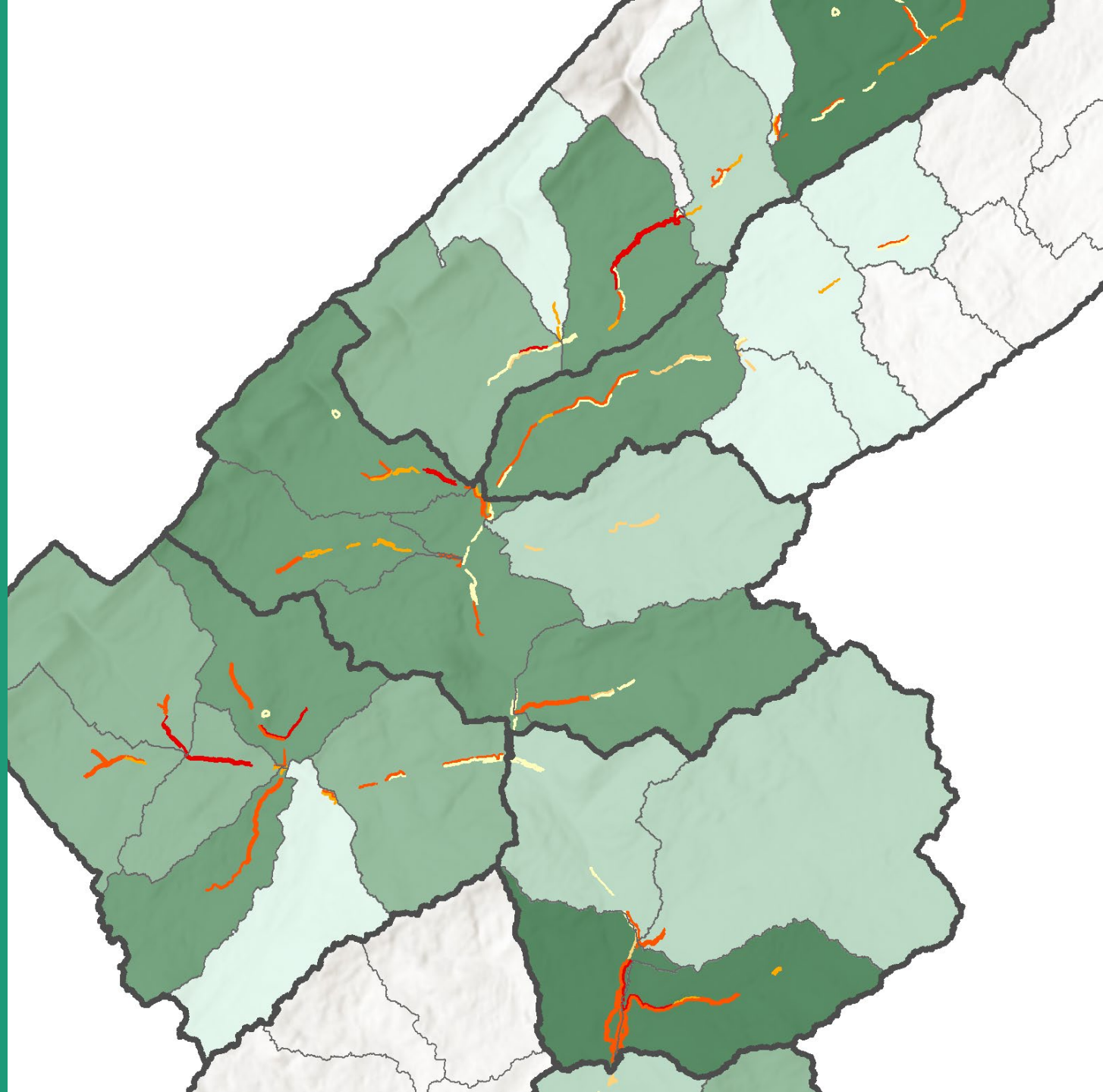
BMP INVENTORY

- Created a single, comprehensive inventory through partner collaboration:
  - Conservation district files and information
  - Partners sharing their project information into a single list
    - Farm field day preparation
  - Penn State Ag + Environment Center windshield surveys (cover crops, tillage, stream BMPs)



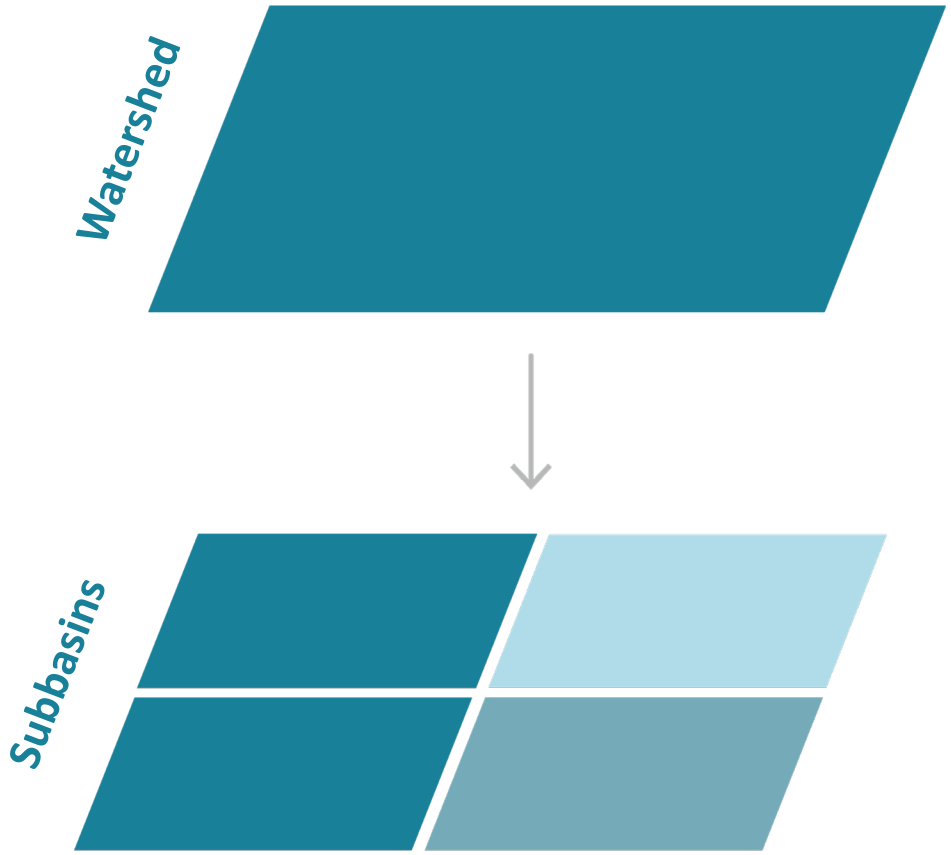
ANALYSIS

The goal of our hydrological modeling was not only to calculate nutrient and sediment loading, but more precisely, to demonstrate where we need to focus our restoration and conservation efforts.

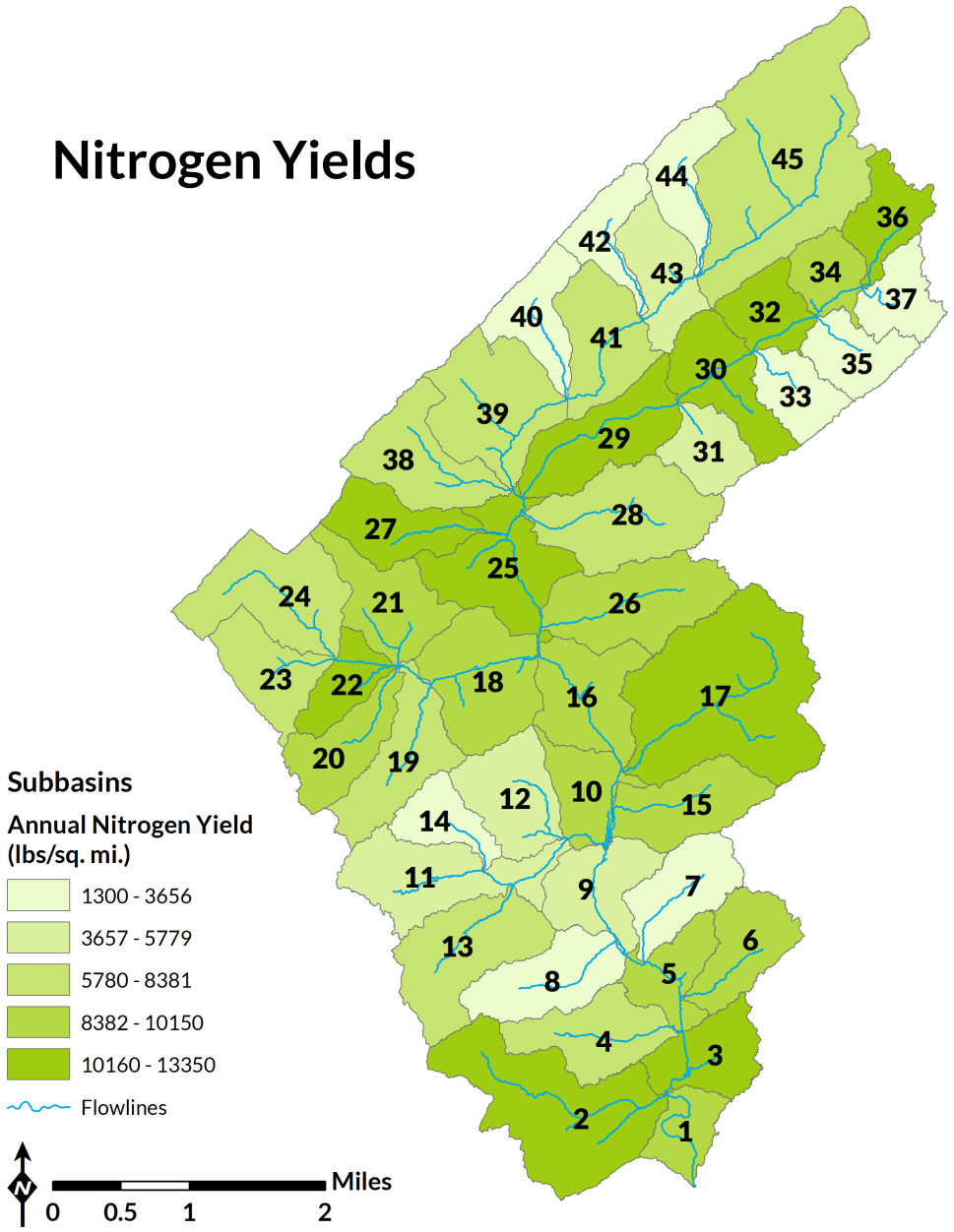


ANALYSIS

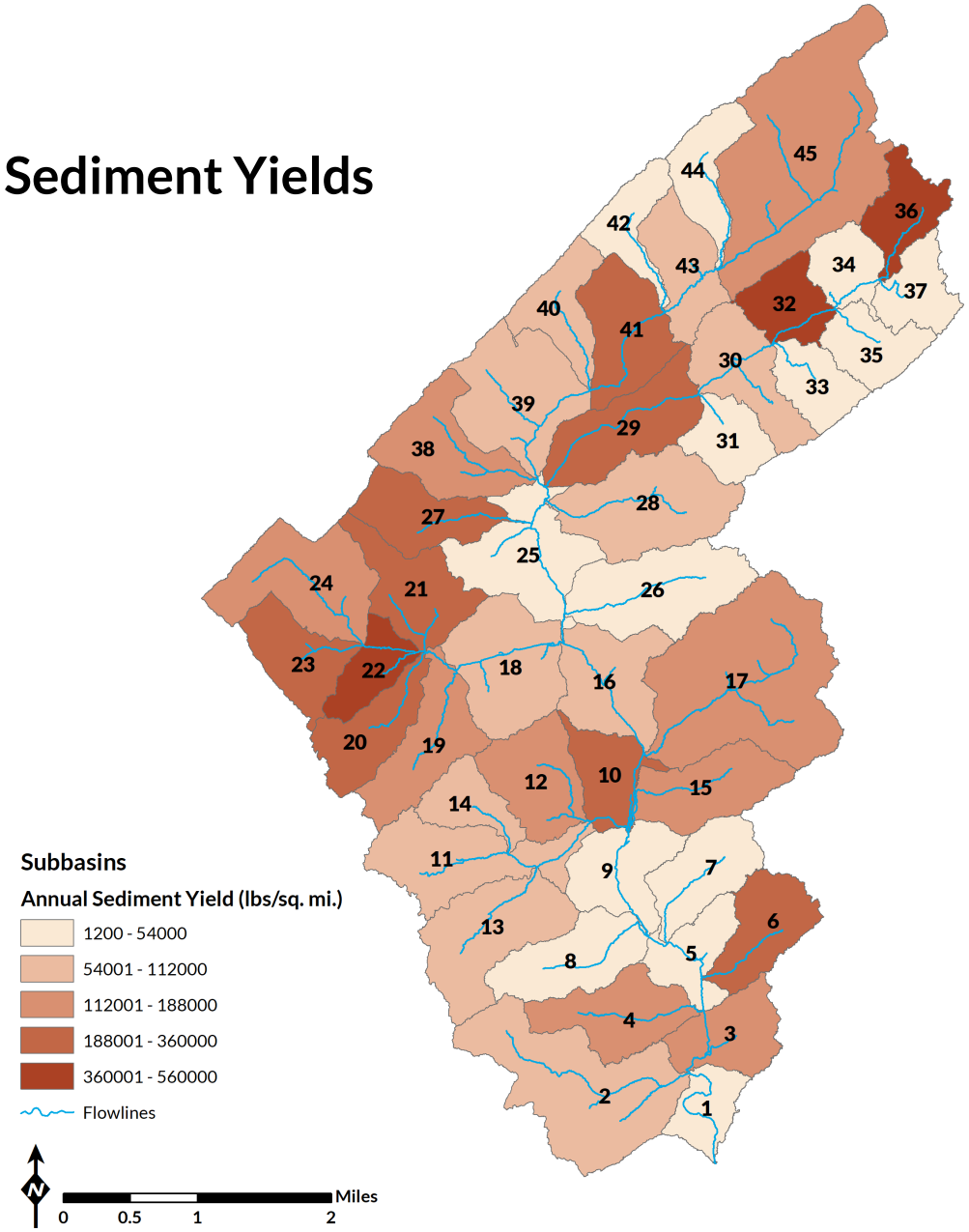
- Created a customized approach using the efficient online platform of Model My Watershed
- Flow path analysis to delineate smaller subbasins within the watersheds
  - 45 in Halfmoon
- ***Identified "hot spot" nutrient and sediment loading areas***



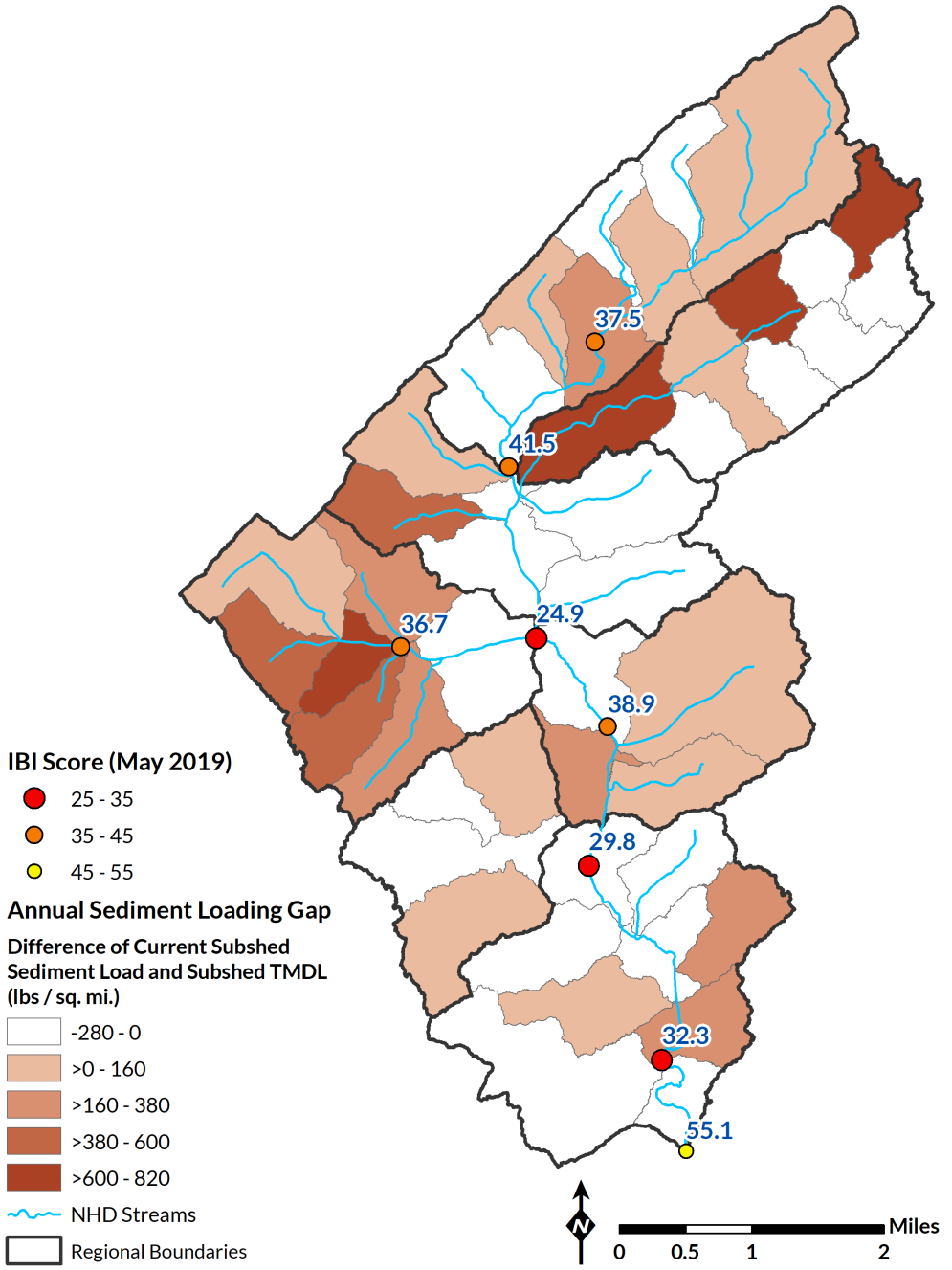
Nitrogen Yields



Sediment Yields



MONITORING


37.5
41.5
36.7
24.9
38.9
29.8
32.3
55.1
IBI Score (May 2019)
25 - 35
35 - 45
45 - 55
Annual Sediment Loading Gap
Difference of Current Subshed Sediment Load and Subshed TMDL (lbs / sq. mi.)
-280 - 0
>0 - 160
>160 - 380
>380 - 600
>600 - 820
NHD Streams
Regional Boundaries
N
Miles
0
0.5
1
2

PARTNER INPUT

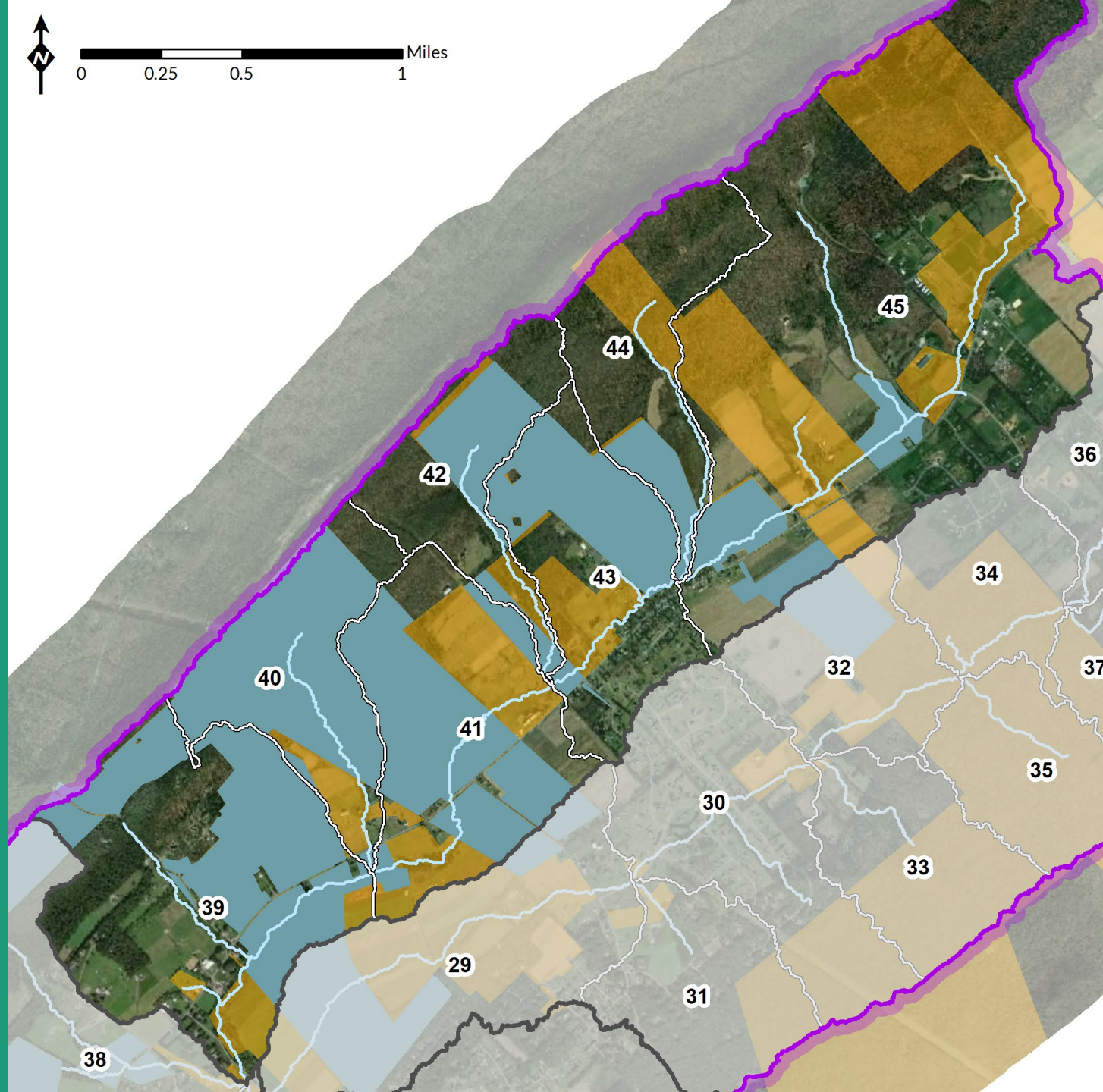
It was imperative to verify our hydrological modeling data and make sense of the data with the knowledge and experience of our partner team.

TAKING DATA TO THE NEXT LEVEL

- Datasets:
  - Sediment + nutrient loading
  - IBI (Index of Biological Integrity) scores over time
  - Tier I + II parcels (Chesapeake Conservancy)
- Conversations put data into context:
  - ***Do the high-loading areas agree with on-the-ground conditions and knowledge?***
  - ***Where are we likely to have most success?***
  - ***Who do we need to be talking to?***
  - ***Who is best suited to talk to these landowners?***
  - ***What other information do we need?***

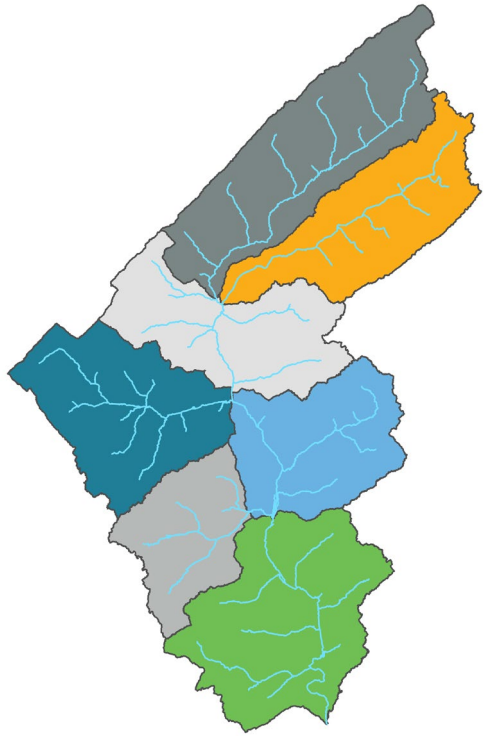
PRIORITIZATION

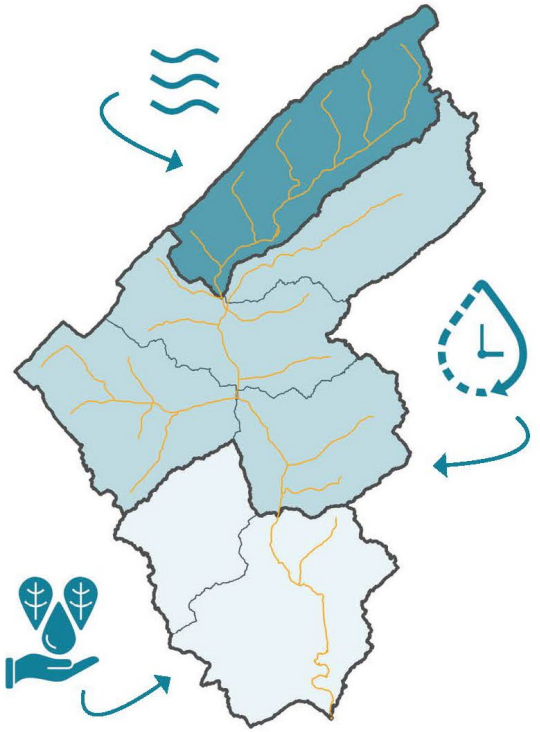
Together, our detailed data and wealth of on-the-ground knowledge allowed us to form a tangible plan of where to concentrate our conservation efforts for maximum benefit.



PRIORITIZATION

- **SWOT (Strength, Weakness, Opportunity, Threat)** analysis allowed partners to process multiple datasets (inventory, hydrological modeling, IBI scores) in a simple way
- Prioritized 7 regions into ***3 restoration tiers***, while still identifying unique strategies for each





SWOT (Strength, Weakness, Opportunity, Threat) Analysis of the Region:

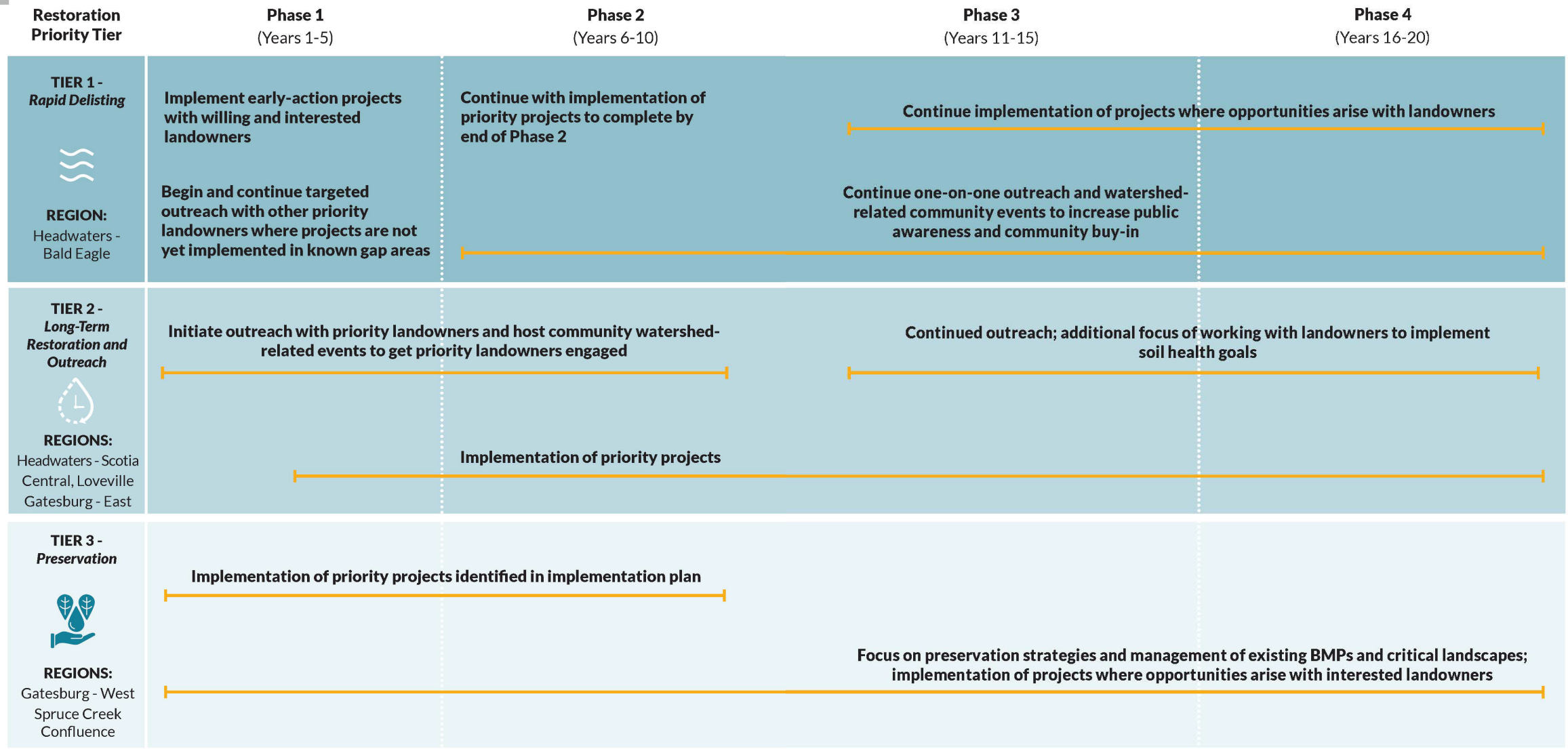
	Helpful in achieving water quality goals	Harmful to achieving water quality goals
CURRENT	STRENGTHS	WEAKNESSES
FUTURE	OPPORTUNITIES	THREATS

Rapid Delisting

Long-term Outreach + Restoration

Preservation

PRIORITIZED AND PHASED IMPLEMENTATION SCHEDULE



* *Sediment reduction indicator is a calculation of anticipated reductions according to our modeling - not based upon measured reductions in-stream.*

PHASE 1 MILESTONES:

- Completion of website
- Tier 1 outreach events
- Completion of early-action projects in Tier 1 region

* **SEDIMENT REDUCTION: 69,244 lbs/yr** (50% of Tier 1 sediment-loading target)

PHASE 2 MILESTONES:

- Completion of targeted project goals for Tier 1 region
- Tier 2 outreach events

* **SEDIMENT REDUCTION: 367,055 lbs/yr** (100% of Tier 1 sediment-loading target; 25% of Tier 2 sediment loading target)

PHASE 3 MILESTONES:

- 75% completion of targeted project goals for Tier 2 regions
- Tier 2 outreach events

* **SEDIMENT REDUCTION: 824,191 lbs/yr** (100% of Tier 1 sediment-loading target; 75% of Tier 2 sediment-loading target)

PHASE 4 MILESTONES:

- Completion of targeted project goals for Tier 1, 2, and 3 regions
- Completion of soil health goals

* **SEDIMENT REDUCTION: 1,107,300 lbs/yr** (100% of Tier 1, 2, and 3 sediment-loading target with soil health BMP goals)

CONCLUSION

- Many hands make light work!
- Landowners don't see "***us***" as different entities with distinct projects; therefore, working as a united front helps earn their trust
- Utilize trusted members of the community to forge new connections and open the door
- Let data guide discussions rather than solely direct action

THANK YOU

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