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CREATING LASTING CONNECTIONS TO NATURE SINCE 1973.

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Trees and Trails: Integrating Riparian Buffer Restoration into Trail Development

TODAY'S PRESENTER:

Kate Ebel, Senior Environmental Scientist

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MISSION & VISION

Founded in 1973, we are the Lehigh Valley's premiere nonprofit land trust.

VISION: A Lehigh Valley and Lehigh River watershed that contain natural areas, connected green spaces, healthy waterways and an enlightened community where people embrace conservation and sustainability.

MISSION: Protect and restore critical natural areas and waterways, and educate the community to create a legacy of a healthy, sustainable environment for future generations.

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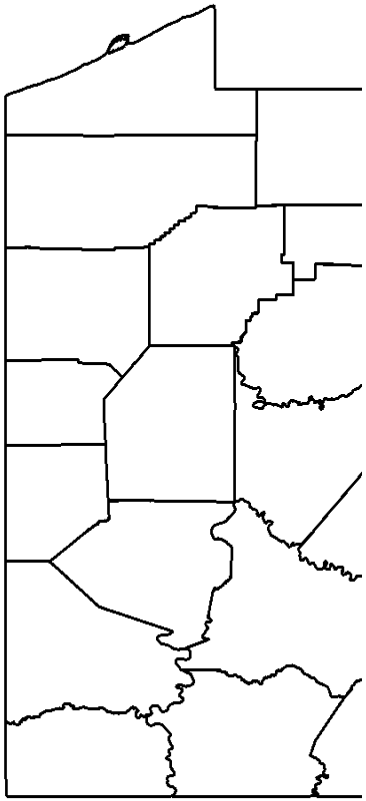
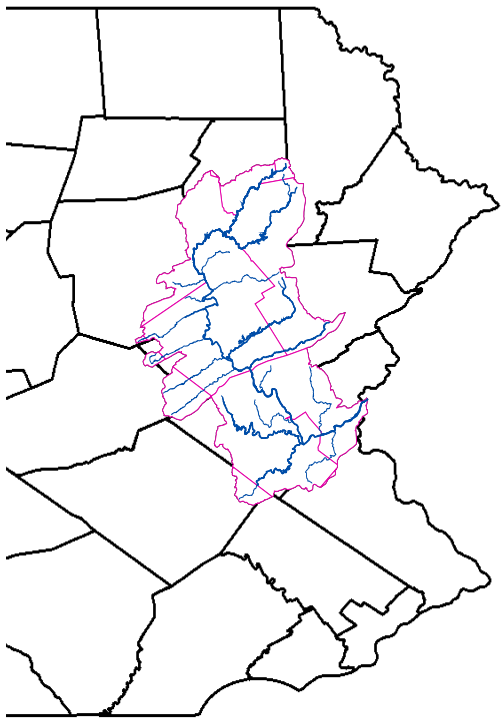
Where We Work





There are about 2000 miles of streams in the Lehigh River watershed

What We Do

- **Land Protection**: Protected more than 54,000 acres of high-conservation value lands. We own & manage 9 nature preserves.
- **Environmental Stewardship**: Steward thousands of acres of wildlife habitat through restoration and management practices
- **Education & Recreation**: Provide nature-based education for more than 15,000 school-age kids annually. Provide hundreds of education and recreation programs for local communities annually.
- **Trails & Greenways**: Develop trail links and greenways through natural areas and along waterways

PARTNERSHIPS!

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Wildlands' Stream Restoration Services

Wildlands Conservancy works with public & private landowners to improve the health of their streams and the sustainability of their land through these restoration methods:

- Riparian Buffers and stream bank restoration
- Wildlife Habitat management
- Dam Removal and stream restoration
- Agricultural Best Management Practices

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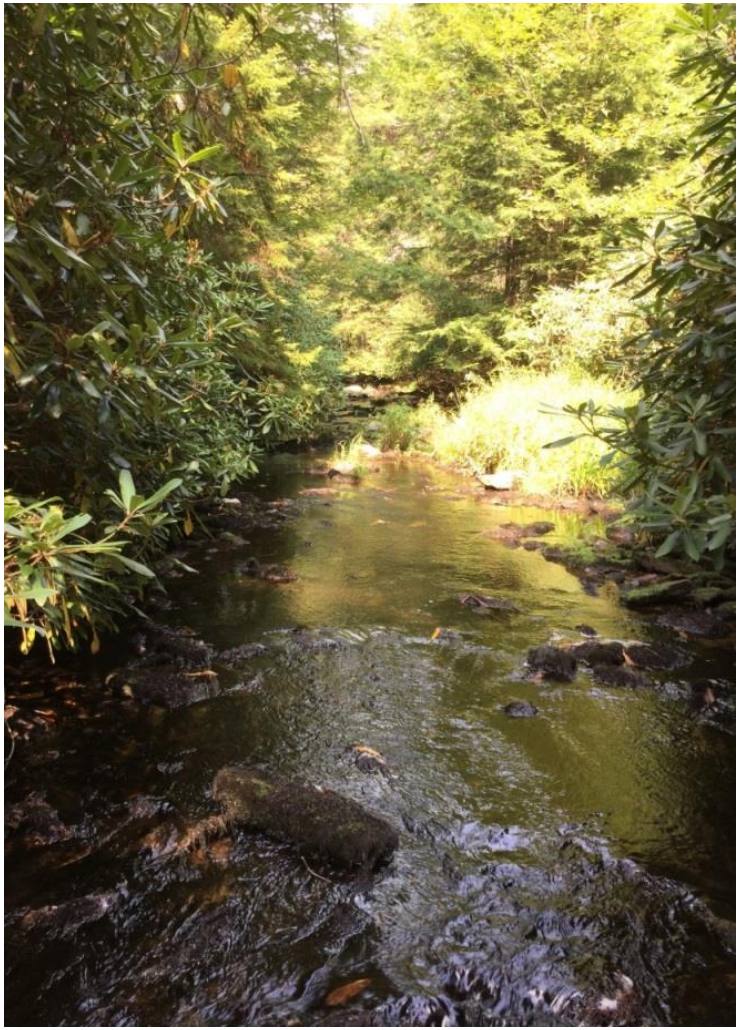
Wildlands Conservancy's Riparian Buffer Work

- 45-year history of stream and habitat restoration
- 2017 Lehigh Valley focus on buffer restoration:
  - With the help of DCNR & other funders, Wildlands planted at 10 sites on approximately 8.5 acres
  - More than 18 partners: municipalities, Environmental Advisory Councils, watershed associations, Trout Unlimited groups, conservation districts, state agencies, schools, private landowners
- 2018 and beyond:
  - 11 buffer restoration sites will be completed in 2018
  - Many more planned for 2019 and future years
  - Expanded partnerships
  - Many coincide with instream restoration efforts



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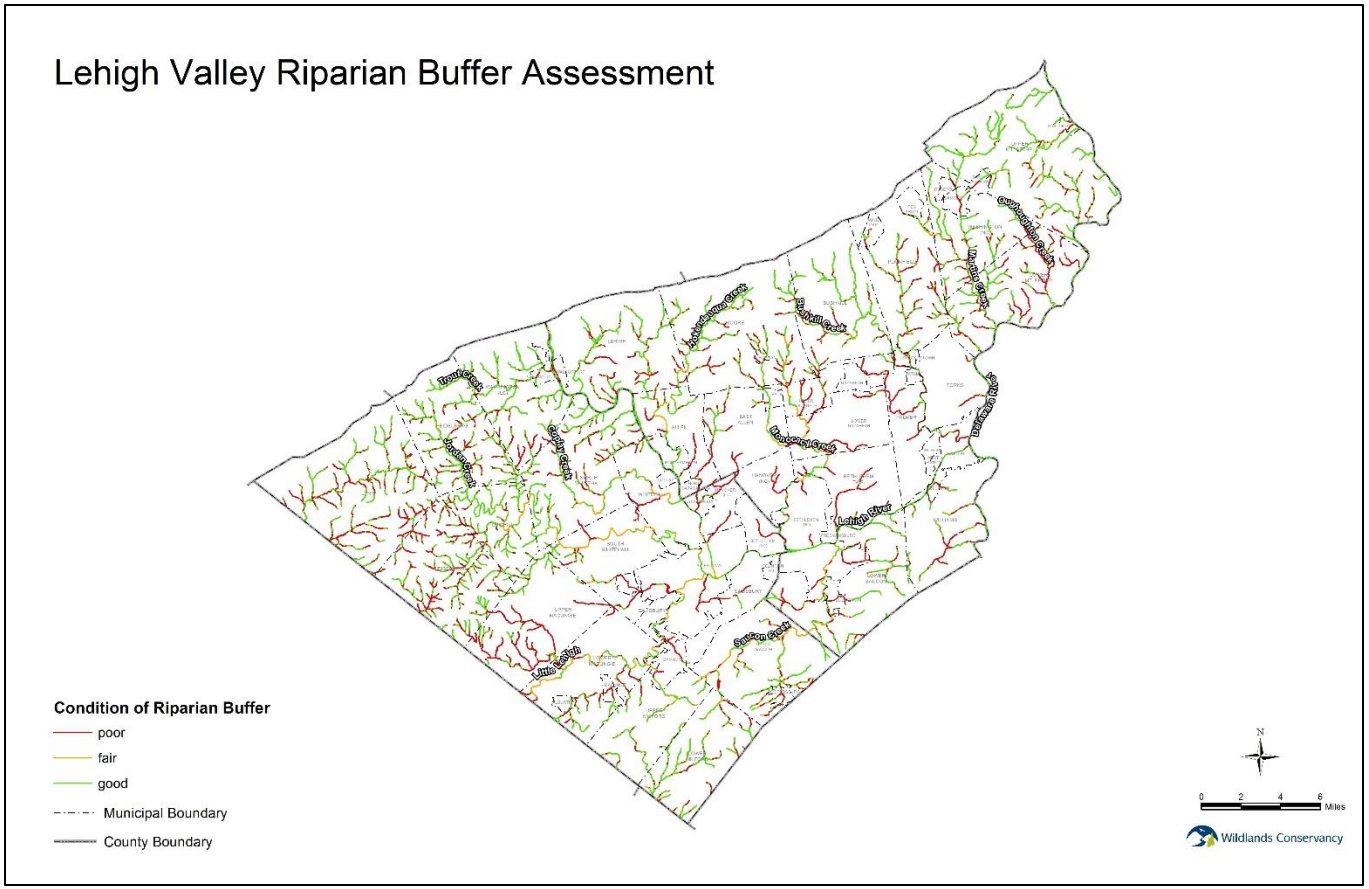
Past Buffer Efforts

- Diverse project partnerships with municipalities, conservation districts, local watershed associations and community groups, homeowners' associations, country clubs, agricultural landowners, schools, and other private landowners
- Primary focus on working with municipalities on public spaces
- Past efforts in prioritizing Lehigh Valley buffer needs
- Need to develop strategy for looking at the Lehigh Valley as a whole



The Lehigh Valley Riparian Buffer Gap Analysis

The Analysis

- Analyzed existing riparian corridor along approximately 1,100 miles of Lehigh Valley streams
- Used newly available University of Vermont 1-m High-Resolution Land Cover data to determine existing buffer composition and identify gaps in buffer coverage

Why?

- Comprehensive analysis of Lehigh Valley buffer needs
- Strategic approach to future buffer work
- Create a resource for those working in buffer restoration
- Identify opportunities for partnership
- Leverage existing projects and funding

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The Buffer Analysis Process

Spatial Analysis

- Use aerial imagery to create stream polygons and lines
  - Ensure accuracy of riparian buffer assessment location
  - Smaller streams represented by lines
- Create 50-foot buffer on either side of the streams
  - Area along either side of the stream to be looked at for gaps in riparian buffer coverage

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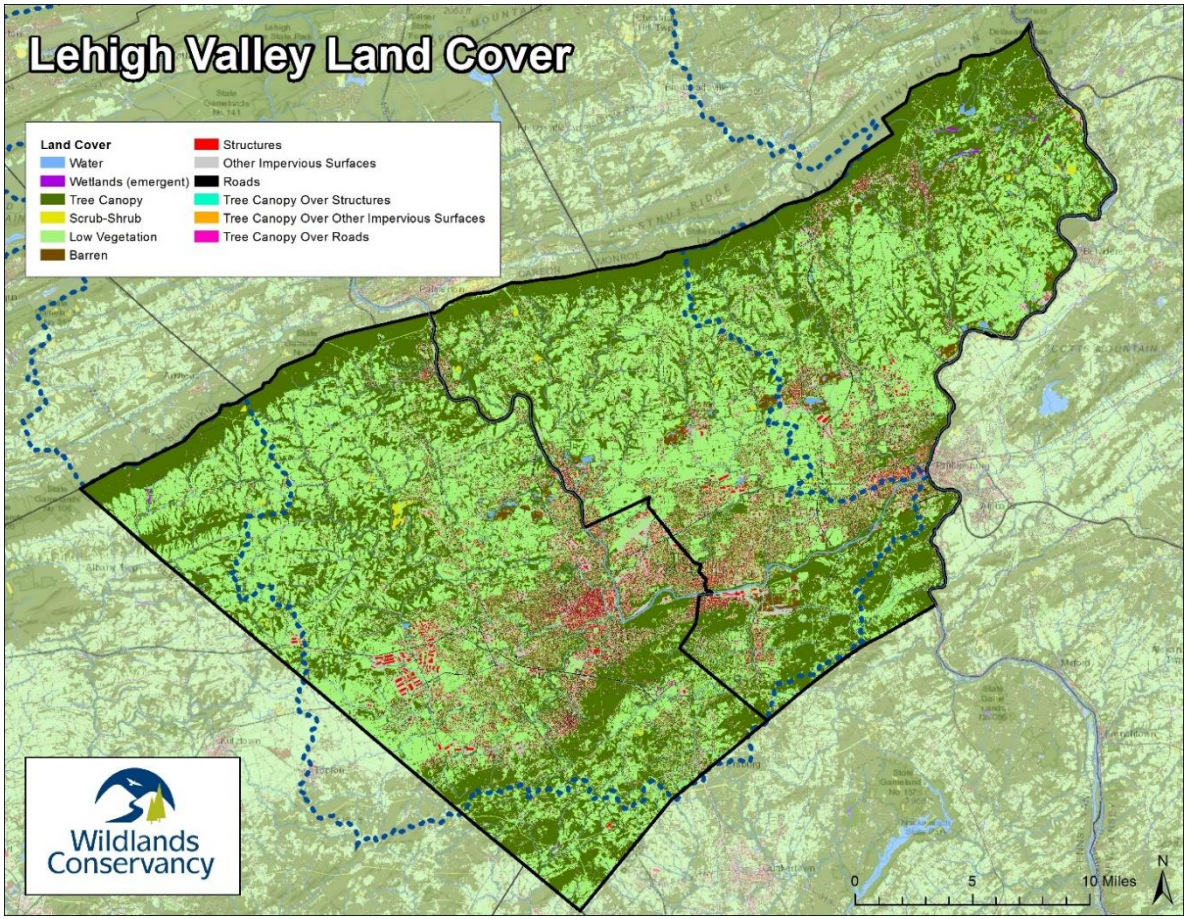
The Buffer Analysis Process Continued

Land Cover Analysis

- Clip the University of Vermont 1-m High-Resolution Land Cover data to the 50-foot buffer
- Select the following Land Cover classifications:
  - a. Barren
  - b. Low Vegetation
  - c. Scrub/Shrub
  - d. Tree Canopy
- Classify a-c as “Buffer Opportunity Area”



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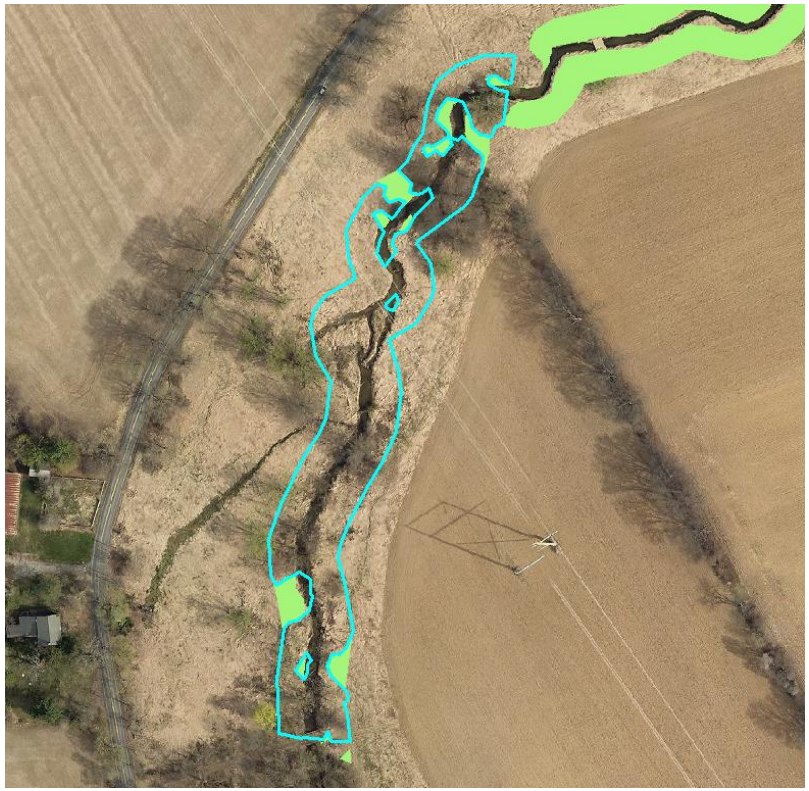
The Buffer Analysis Process Continued

"Forested" Land Cover

- Of the remaining Tree Canopy land cover raster cells:
  - Many consist of mowed grass with sparse trees giving the appearance of tree canopy
  - Used high resolution aerial imagery to identify areas where mowed grass is actually the predominant land cover
  - Opportunity to expand and enhance existing tree canopy
  - Add these to the "Buffer Opportunity Area"



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The Final Product

Buffer Opportunity Areas

- Consist of barren land, low vegetation, scrub/shrub, and areas with scattered trees and mowed grass
- Targeted areas for forested riparian buffers establishment

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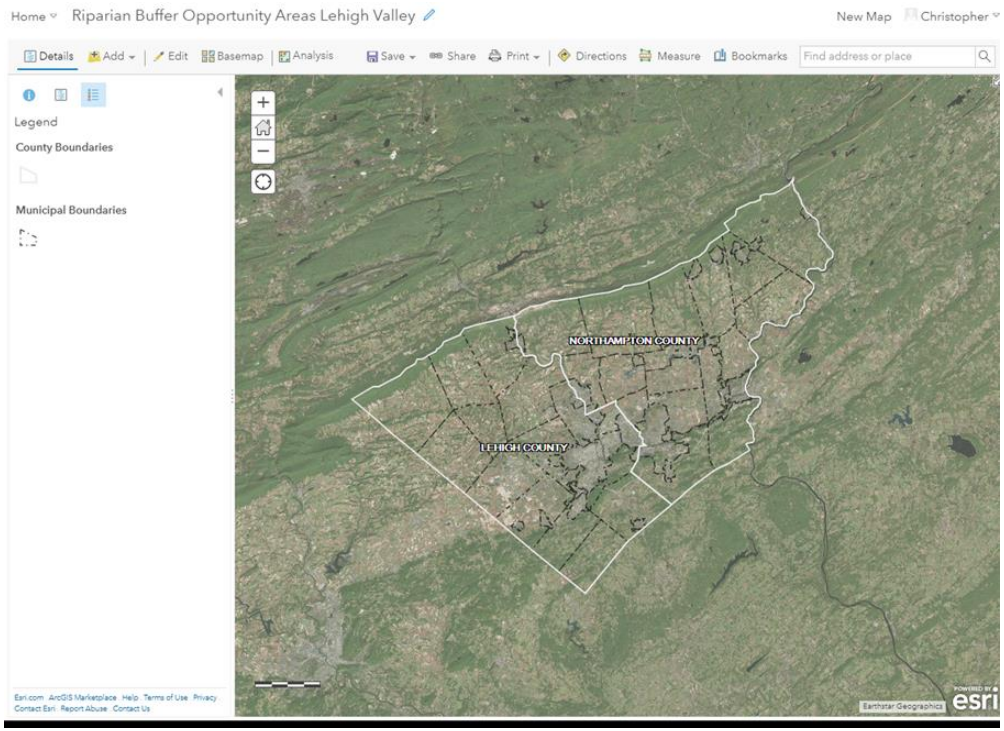
The Online Mapping Tool

Opportunity Areas on an Interactive Map

- ArcGIS Online
- Publicly accessible
- Useful for municipalities, partners, public, etc.



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The Results

Lehigh Valley Breakdown

- Approximately 4,000 acres of Buffer Opportunity Area
  - 24% of LV Floodplains
- Low vegetation by far the largest acreage
  - 3,180 acres
- Most Opportunity Areas on private land
  - About 86%
- 25% of private land buffers are Opportunity Areas
- 22% of public land buffers are Opportunity Areas

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The Uses

Online Mapping Tool

- Comprehensive identification of gaps in buffer coverage, where planting is possible
- Potential planting sites can be identified based on:
  - Stream, watershed, municipality, or other general location
  - Landowner type (i.e. public, agricultural, utility, etc.)
  - Land cover type (i.e. existing vegetation type)
  - Proximity to impaired stream reaches
  - Proximity to existing and proposed trails
- Can be used to:
  - Identify new project areas
  - Analyze buffer coverage in a given area (i.e. in a watershed)
  - Match up buffer restoration needs with existing project areas

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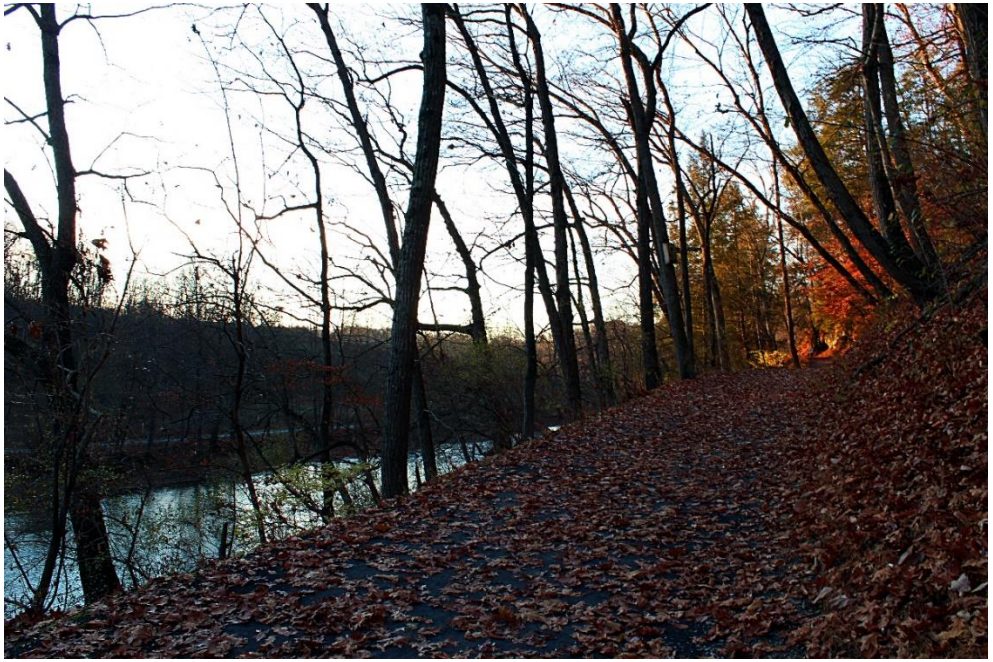
Taking a Holistic Approach



Leveraging and Expanding Existing Projects

- Opportunities to combine riparian buffer restoration with other efforts:
  - Instream restoration and habitat improvement
  - Streambank stabilization
  - Help satisfy MS4 requirements as applicable
  - Invasive species management
  - Open space/park development
  - Rain & pollinator gardens
  - Trail development along streams

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Trees and Trails

Buffer Opportunity Areas & Trails

- 39 open trails along stream corridors, totaling 300 miles
  - 9.2 miles of which fall within Opportunity Areas
- 51 proposed trails along stream corridors, totaling 299 miles
  - 8.4 miles of which fall within Opportunity Areas

Riparian Buffers along Trails

- Model BMPs - demonstration of well-managed natural resources
- Opportunity for public education and engagement
- Expanded recreational opportunities
- Opportunity to experience nature in public spaces
- Create wildlife habitat and improve waterways

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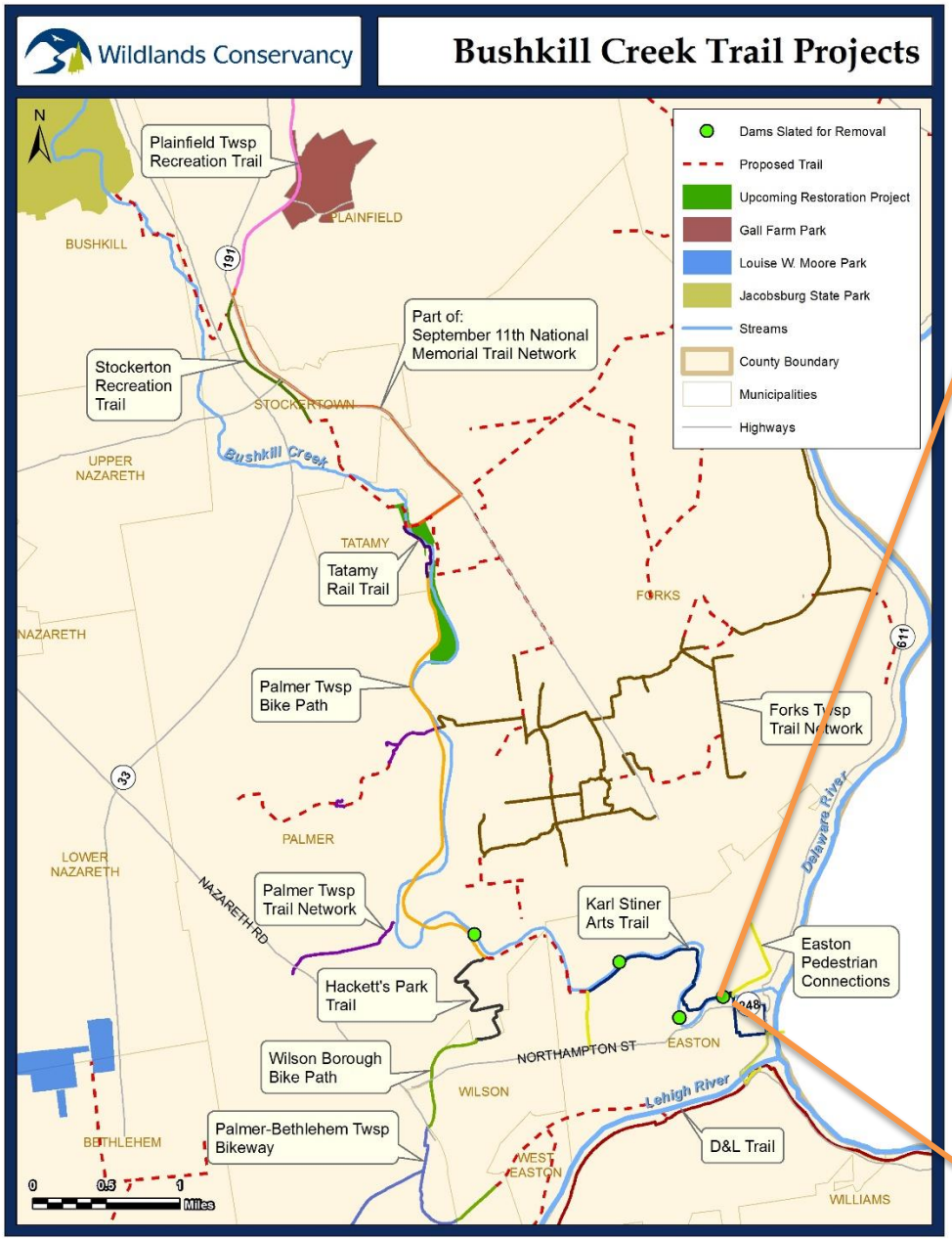
Practical Examples: Whitehall Township's Jordan Creek Greenway

- Trail construction completed 2017

Practical Examples: Bushkill Creek Restoration



Practical Examples: Lower Macungie Township

Plans for the Property:

- Plantings along new trail
- Plantings around pond and other areas
- Wildlife-focused management of natural areas
- Riparian buffer plantings
- The result: a public space with habitat for wildlife, an improved stream corridor, and numerous recreational opportunities

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Practical Examples: Coplay Creek and the Ironton Rail Trail

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Practical Examples: Trout Creek Park

Practical Examples: Millbrook Farms

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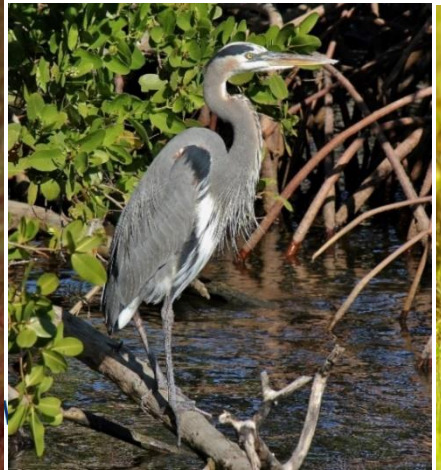
Expanded Recreational Opportunities…



Next Steps

- Finalize online mapping tool
- Begin identifying high priority, feasible projects
- Create a strategy for landowner outreach
- Begin developing projects that align with funding goals
- Look for areas to expand existing and past work
- Continue natural resource stewardship and restoration in public spaces
- Ongoing public outreach and education
- Expand partnerships throughout the Lehigh Valley

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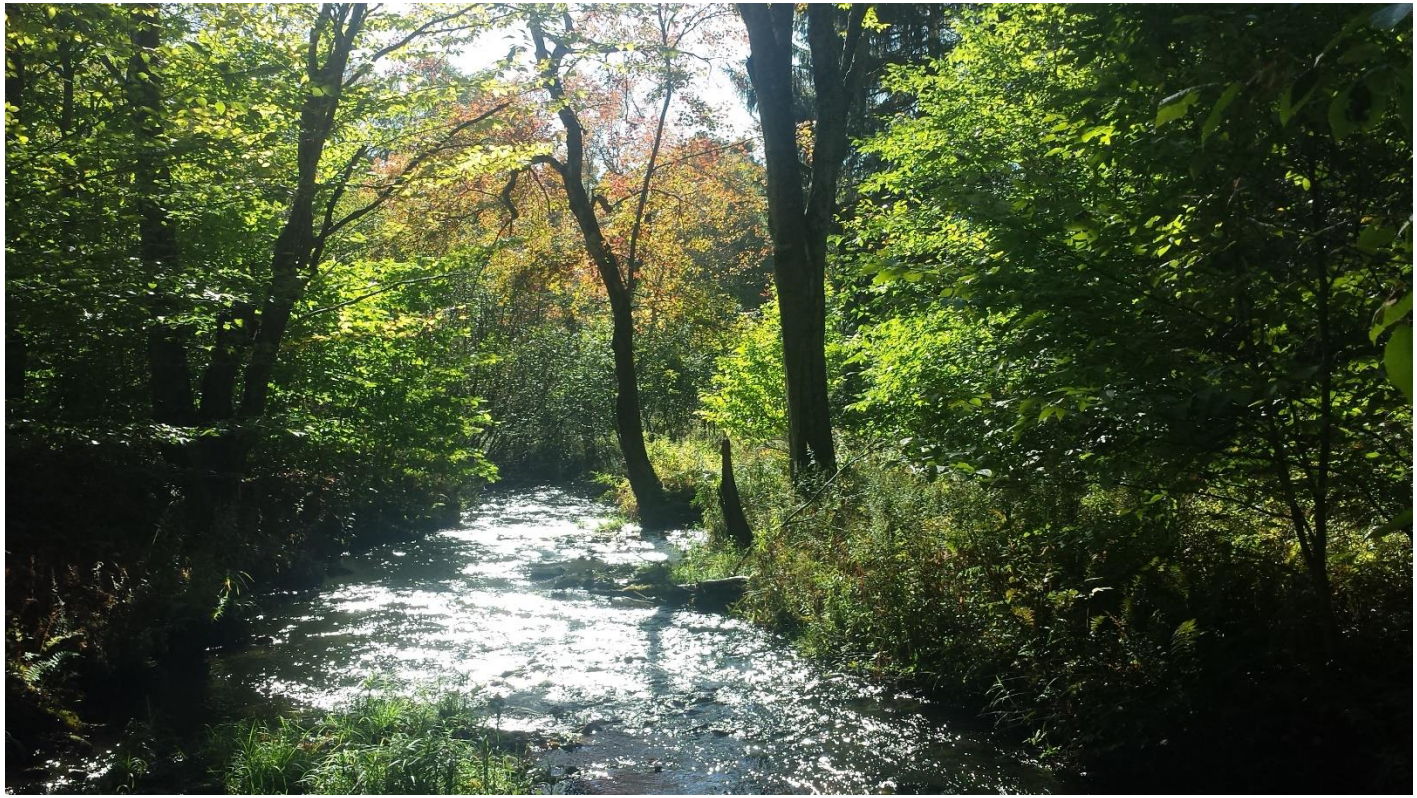
Thank You!



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