



# The 'One Water' Approach

AN INTEGRATION OF WATER RESOURCE MANAGEMENT

# Today's Presenters

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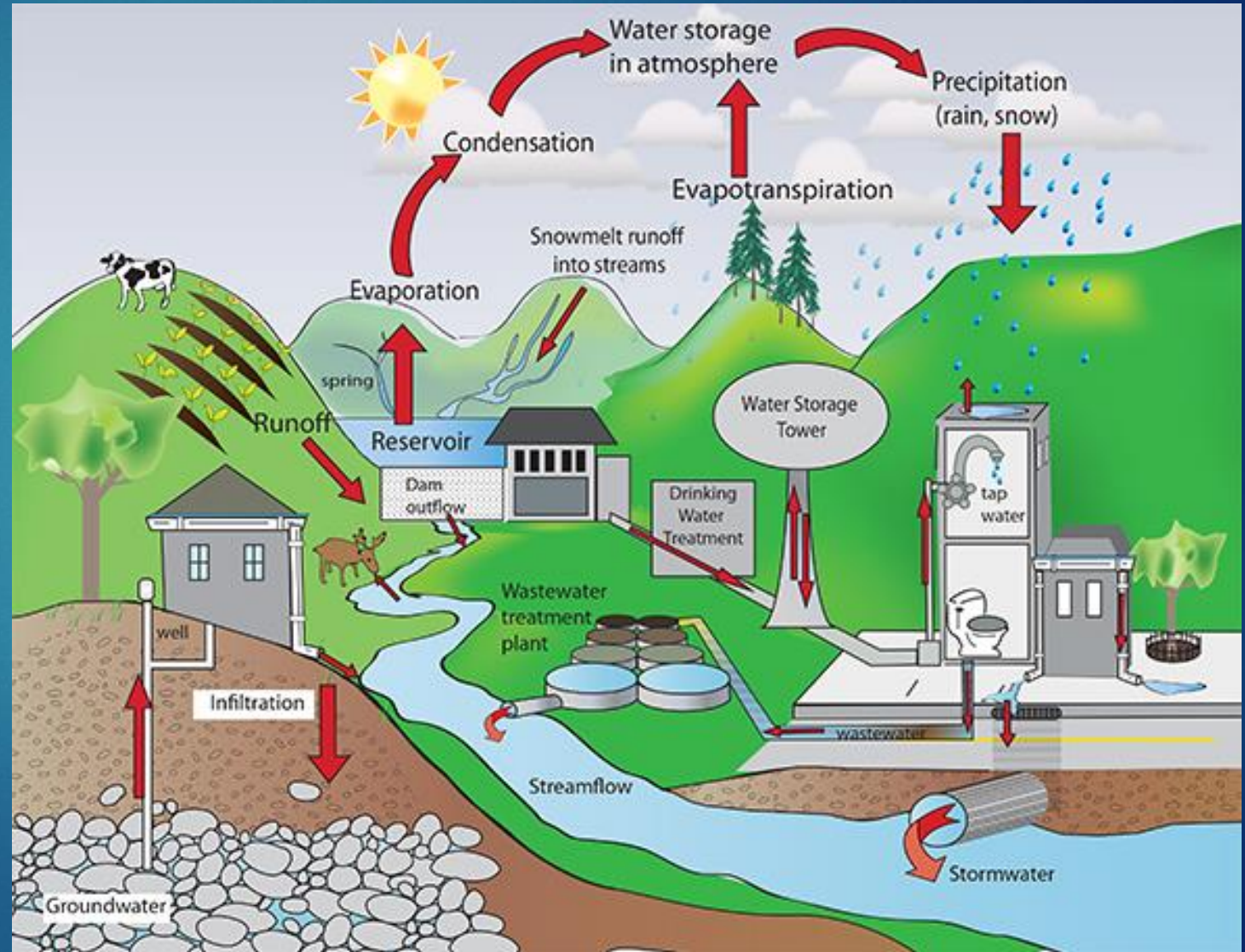
*A special thanks goes out to Jerry Walls for his insight and wisdom in developing today's presentation!*

## One Water Task Force

Mark Huber , AICP (Senior Planner, Lancaster Co.), Jan Bowers (Executive Director Chester Co. Water), Jim Weaver, Aquatic Biologist, (ret. Executive Director Tioga Co. Planning Commission), Eric Jespersen (PA MAGIC), Jerry S. Walls, FAICP (ret. Executive Director Lycoming Co. Planning Commission ), Kimberlie Gridley, Shannon L. Rossman,

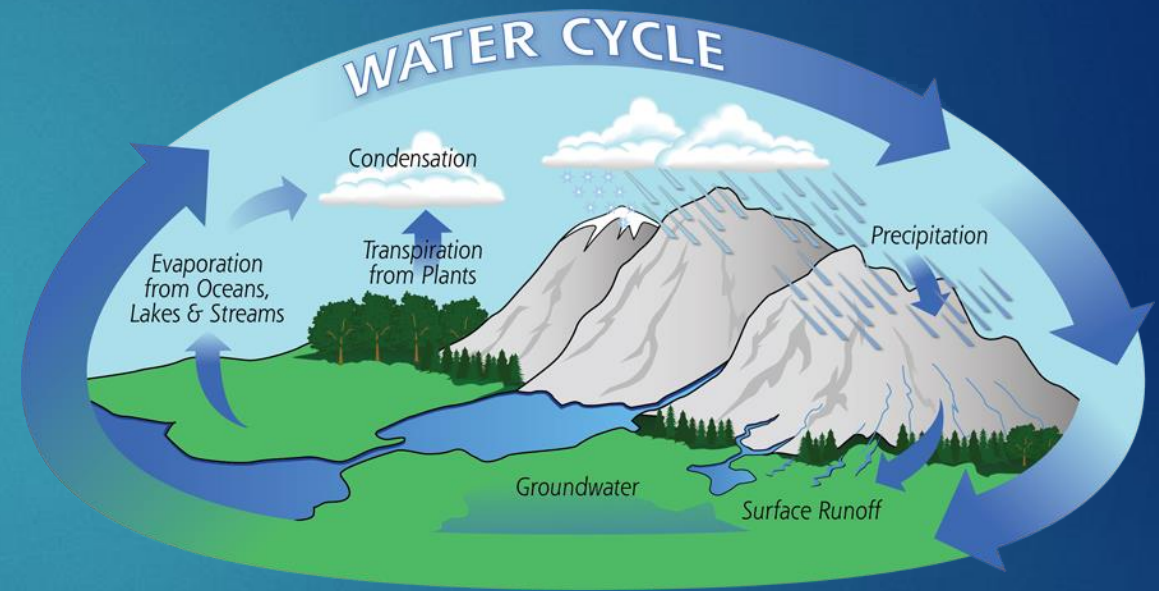
# What is the Scope of IWRM & Planning

- ▶ Groundwater
- ▶ Surface Water
- ▶ Water Quality
- ▶ Water Quantity
- ▶ Land Use
- ▶ Water Use



# Why do IWRM?

- ▶ Acknowledge that the 6 Components are collectively a “single system” of water resources
- ▶ Acknowledge that the 6 Components are all interconnected and inter-dependent
- ▶ Manage human activities in a manner that holistically sustains the water resources system as closely as possible to nature



# How is IWRM different from “Traditional Planning”?

- ▶ Which comes first? The Chicken or the Egg?  
Land Use Projections or Water Use/Needs
- ▶ Focus is on Sustainability
- ▶ Data Driven– Best if GIS based
- ▶ Input from Stakeholders

# How do we accomplish IWRM?

- ▶ Coordination of the 6 Components through:



Enables Leadership for Implementation

# Geographic Layers

- ▶ Water Use Data
- ▶ Water Quality Data
- ▶ Land Use Data
- ▶ Hydrography
- ▶ Political Subdivisions
- ▶ Roads
- ▶ Topography
- ▶ Impervious Cover
- ▶ Land Cover
- ▶ Population Density & Urbanized Areas
- ▶ TMDLs
- ▶ Impaired Waters
- ▶ Floodplains
- ▶ Water System Jurisdictions
- ▶ .....and many more

# Input from Stakeholders!

Open Houses



Newsletters



Local Television Programs



Local Events

Social Media

Surveys

E-News



# Why don't we use IWRM?

- ▶ Cost \$
  - ▶ Time/Effort to Start-Up
  - ▶ Lack of Training
  - ▶ Lack of understanding Benefits
  - ▶ Lack of Staff
  - ▶ Lack of Statewide Planning Support from State Agencies
  - ▶ Etc.....
- 
- ▶ What happens if we don't move towards IWRM?

# How do We Implement IWRM?

- ▶ Local - ?
- ▶ County - ?
- ▶ Region - ?
- ▶ State/Others - ?
- ▶ Federal - ?

# Planners Checklist

- ▶ What Data is Available?
  - ▶ In-House
  - ▶ Free from outside source
    - ▶ Verifiable for accuracy
- ▶ Or, create your own
  - ▶ Interns

# One Water Datasets

Natural Drainage Features
Watershed boundaries
Hydrography
Streams
First Order Streams
Lakes and other water bodies
Wetlands
Designated uses for all water bodies and their watersheds (eg, EV, HQ, CWT, etc)
Streams listed by DEP as impaired
Source of impairments
Cause of impairments
Areas with TMDLs
AMD sources
Protective Designations:
Rivers Conservation Plans
Federal Wild & Scenic Rivers
PA Scenic Rivers, Natural Heritage Areas
USGS Stream Gages

Groundwater
Aquifers/recharge areas
Areas served by on-lot residential water wells
Locations of public supply wells
Well withdrawal data
Well head protection areas
Locations of commercial/industrial wells
Existing groundwater pollution:
RCRA/CERCLA sites
LUST remediation sites
Other (e.g. elevated nitrates, industrial contaminants, etc.)
Locations of potential groundwater impacts (underground mines, drilling operations, etc.)

# One Water Datasets (continued)

Water Supply
Locations of surface water withdrawals for:
public water supplies
industrial/commercial (non-potable) water supplies
Water supply distribution system
Location of water supply reservoirs
Source water protection zones (for any water supply systems that have completed source water protection plans)
Public water supply service areas
Public water supply franchise areas

Sanitary Sewer Information
Areas Served by On-lot disposal Systems
On-lot disposal system maintenance records
Public wastewater service areas
Public wastewater franchise areas
Wastewater collection systems
Location of wastewater discharges (industrial/commercial/WWTP, etc.)
Data about discharges

Stormwater System Information
Areas covered by Act 167 plans
2010 Urbanized Area
Municipalities within your planning area that are designated as MS4s
Stormwater infrastructure (inlets/pipes/bmps, etc.)
Municipal
Private
Locations of Stormwater Problems

Flood Data
100 yr (1%) floodplain boundaries
Detailed flood zone data (including cross-sections & BFEs)
Floodway boundaries
500 yr (0.5%) floodplain boundaries
Locations of LOMAs/LOMRs
Repetitive loss/severe repetitive loss properties
Locations of other flood problems
Insured properties
Flood control facilities (dams, levees, regional detention basins, etc.)
Dams Emergency Action Plans & dam breach inundation zones

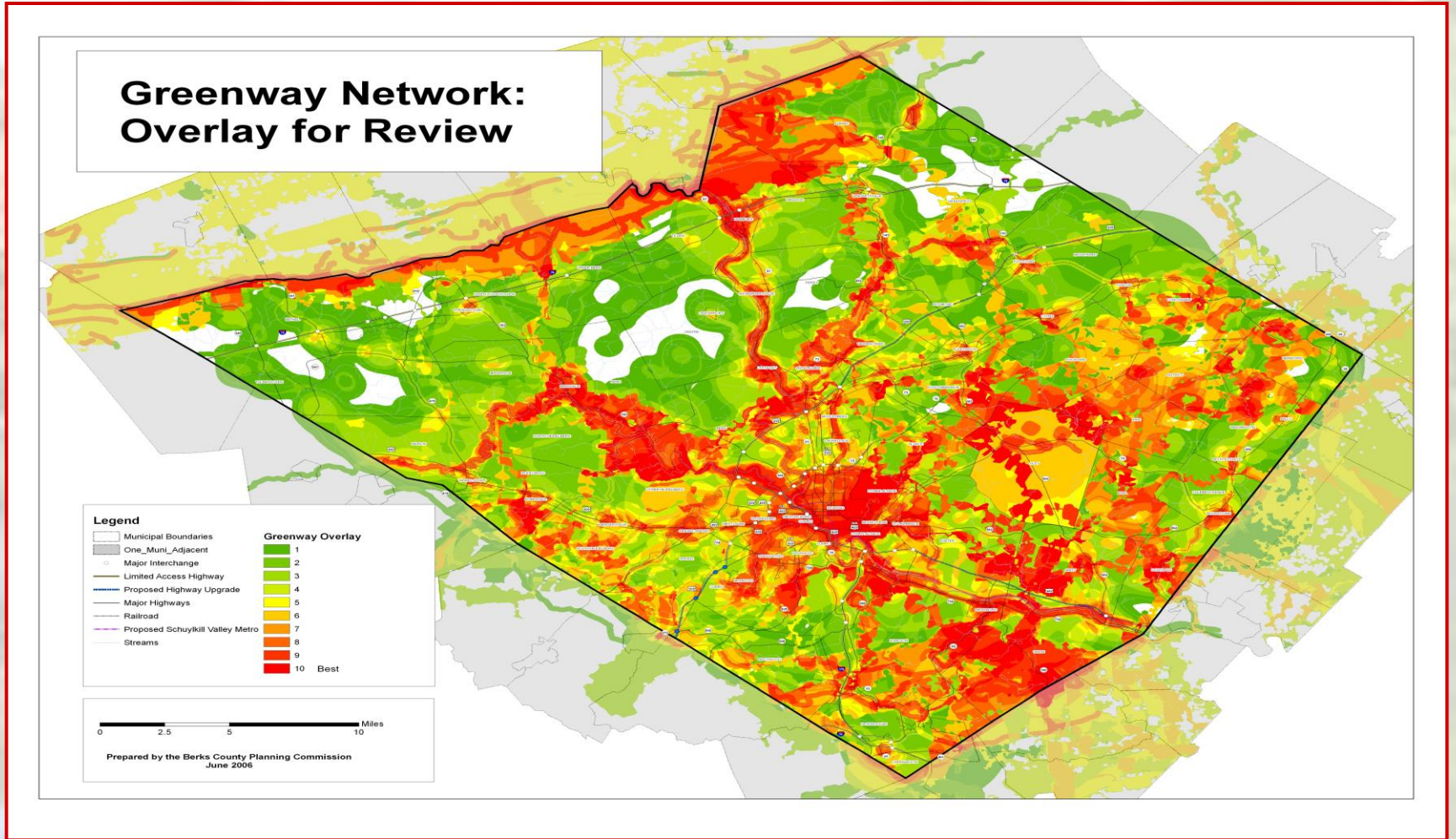
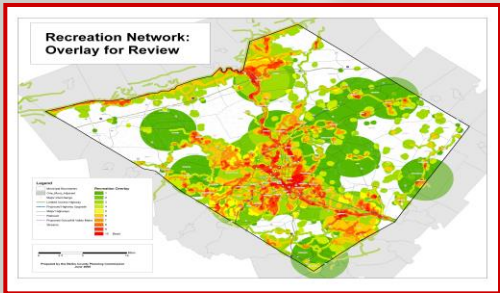
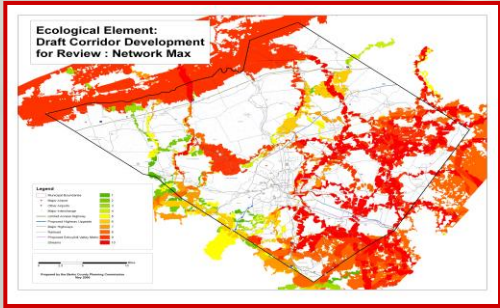
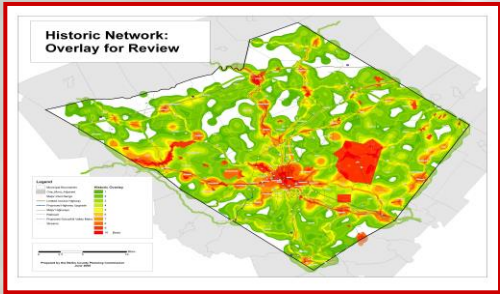
Landscape Factors
Topography ( $\leq 10'$ contour)
USDA Soils
Land use or land cover
Municipal jurisdiction boundaries
Roadways
Population distribution
Current
Projected future
Geology
Agricultural preservation lands
Permanently preserved lands
Aerial photography < 10 yrs old
PNDI resource areas/sensitive habitats (Conservation Planning Polygons)
Recreational resources and parks
Water based recreational features/locations
Locations of marinas
Navigation channels/water transportation infrastructure
Current planning units/areas from county comprehensive plan



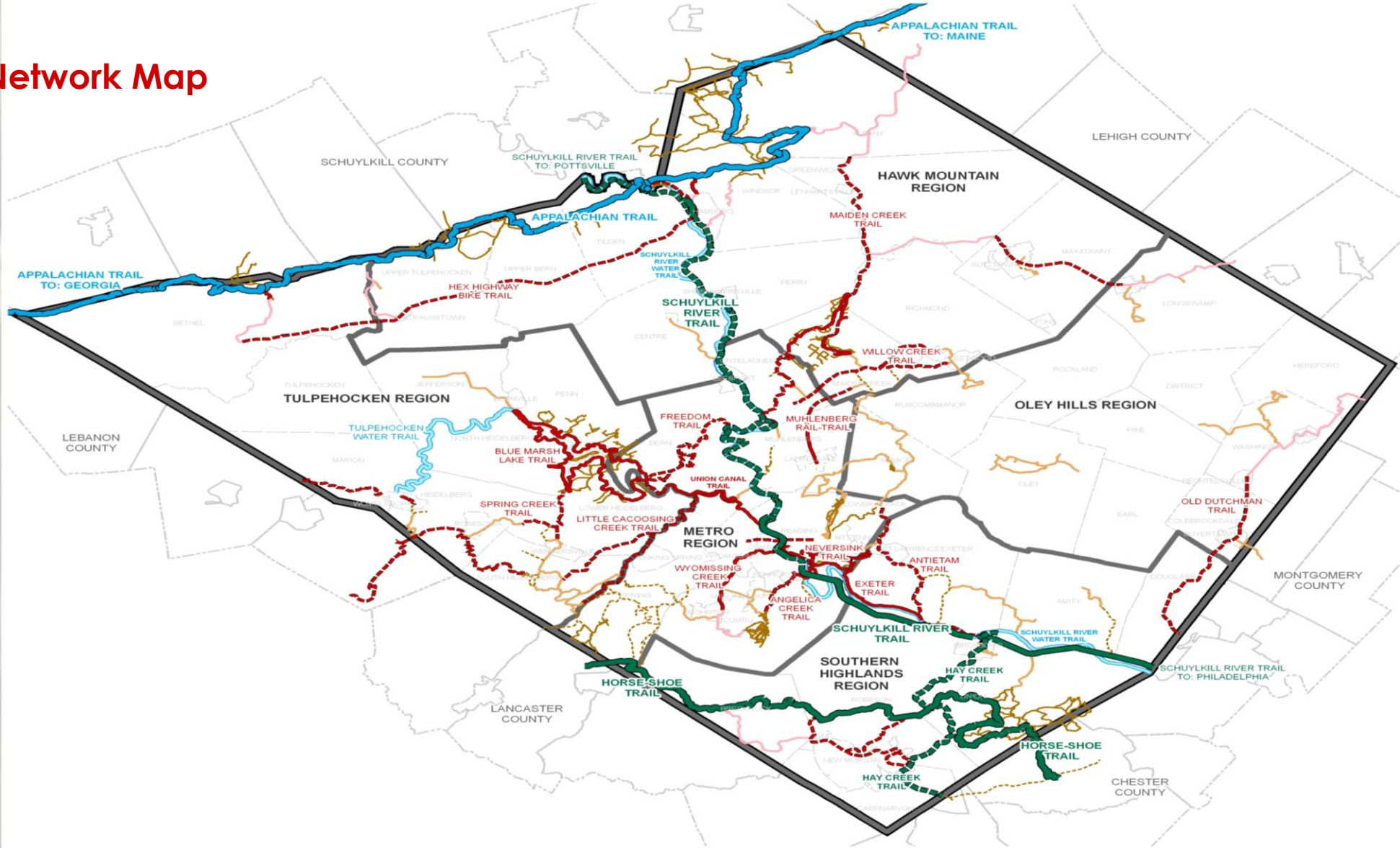
**Map Features**

-  NHD Hydro
-  Grass Lined Swale
-  Stormwater Pipes
-  BMP Area

# Three Elements = Greenway Network

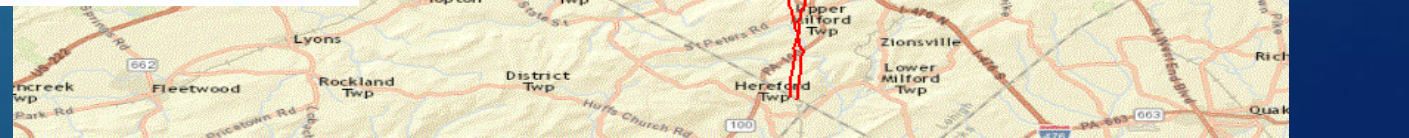
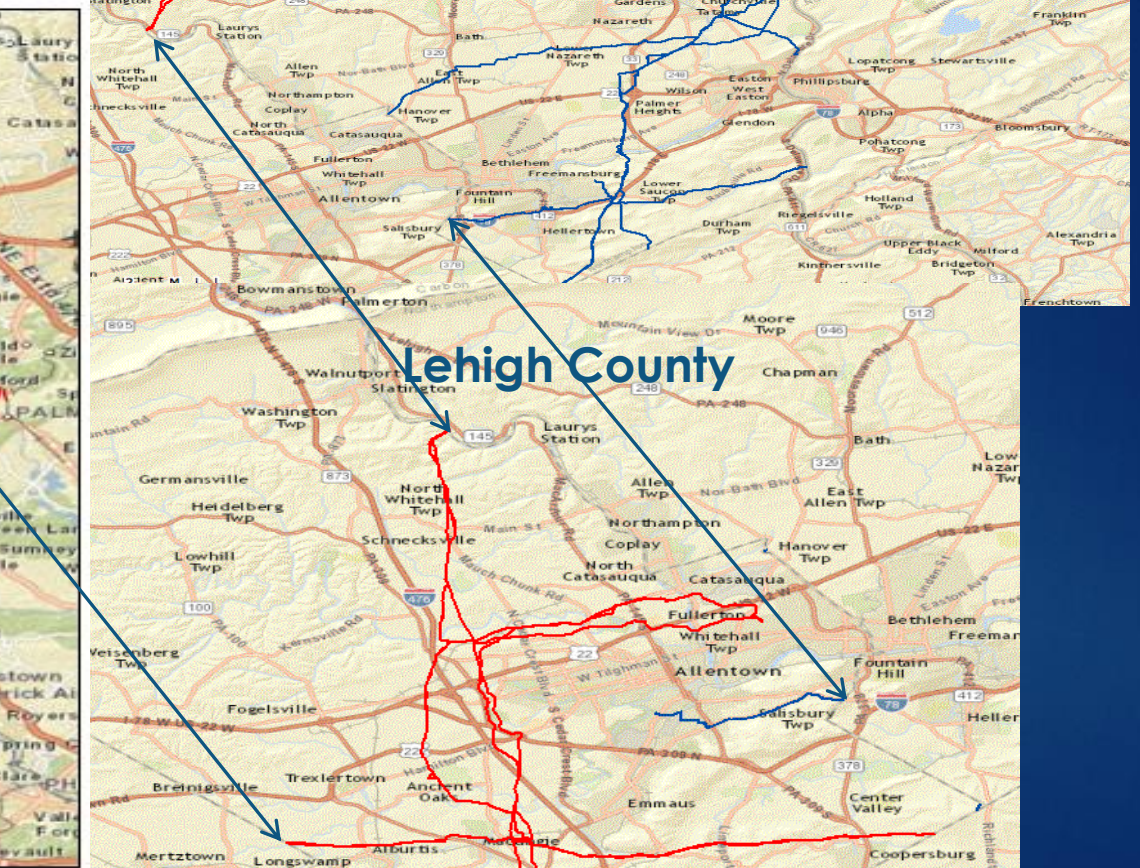
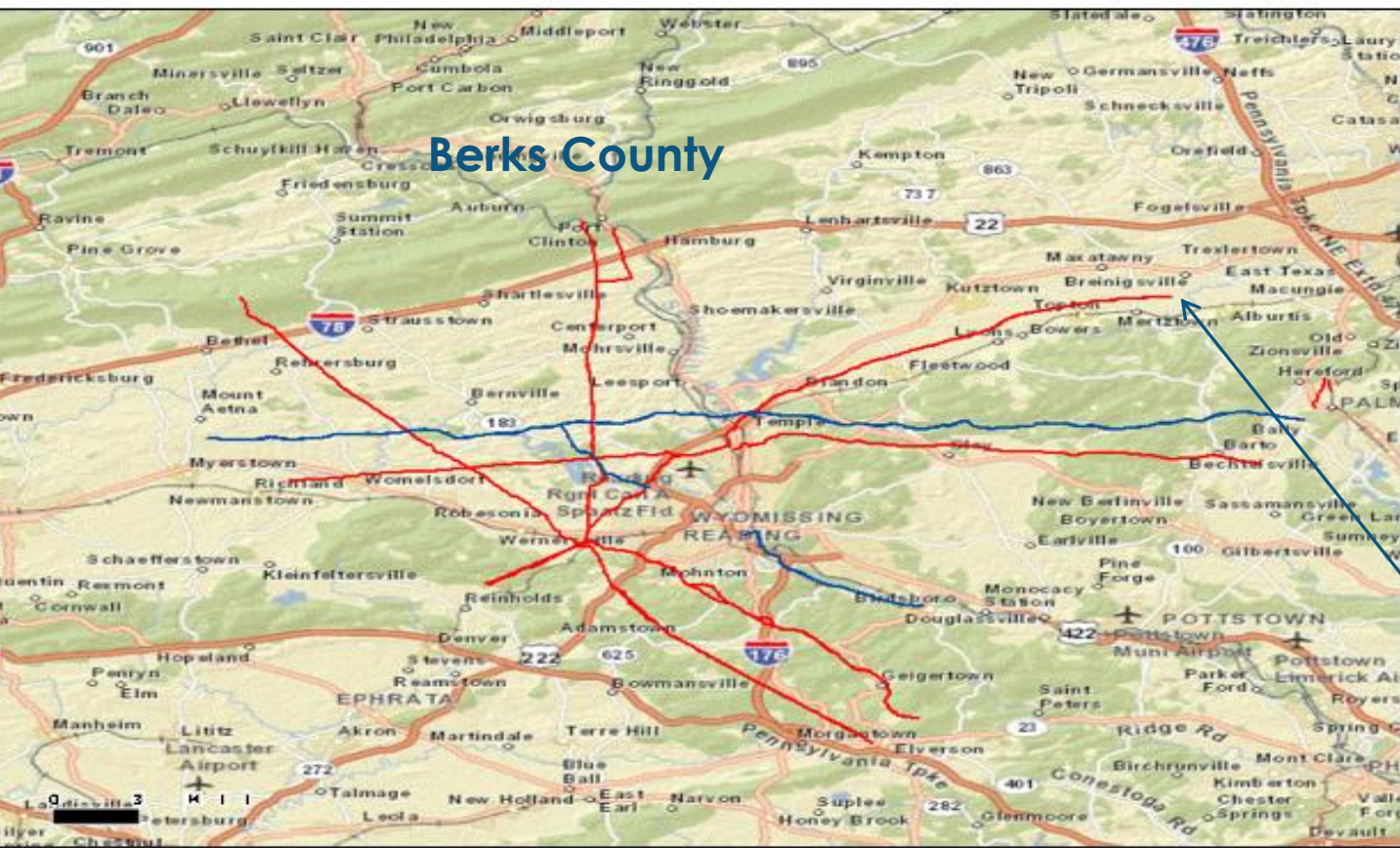
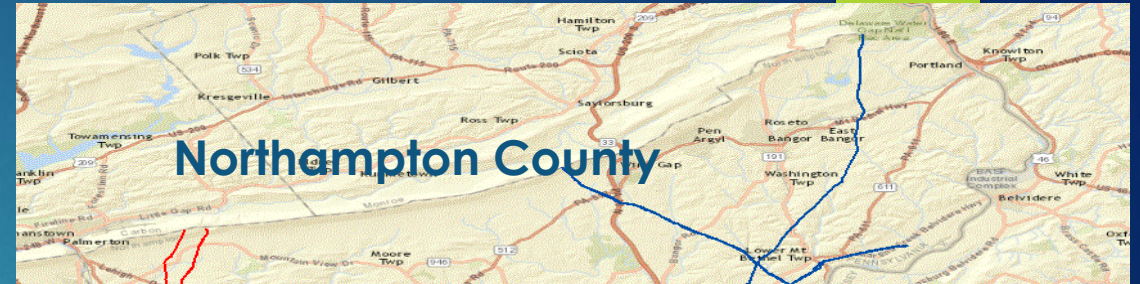


# Trail Network Map





# Pipelines



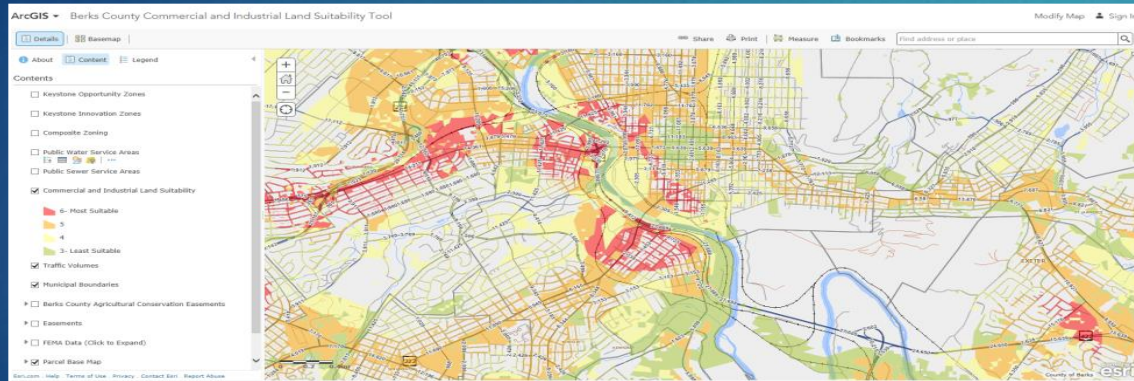
# Economic Development

## Web Map Tool

- Created for Economic Development Outreach

Ranked from most suitable to least suitable

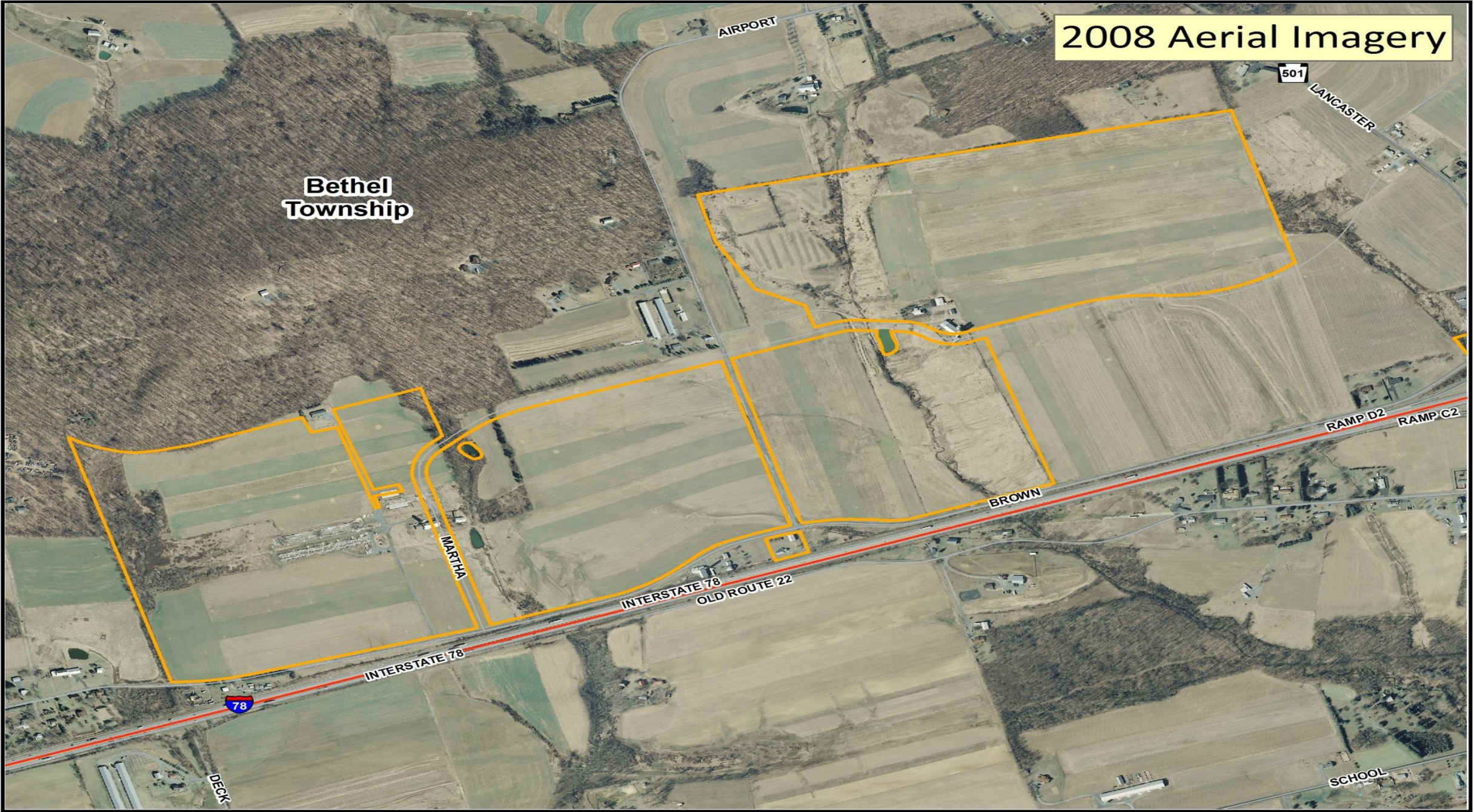
- ▶ Ranks sites based upon infrastructure



- ▶ On-site water
- ▶ On-site sewer
- ▶ Distance to interchanges
- ▶ Distance to major routes
- ▶ Environmental Hazards (ranking is impacted negatively if hazard is present)
- ▶ Zoning Classification

2008 Aerial Imagery

Bethel  
Township



AIRPORT

501

LANCASTER

BROWN

RAMP D2

RAMP C2

INTERSTATE 78

OLD ROUTE 22

MARTHA

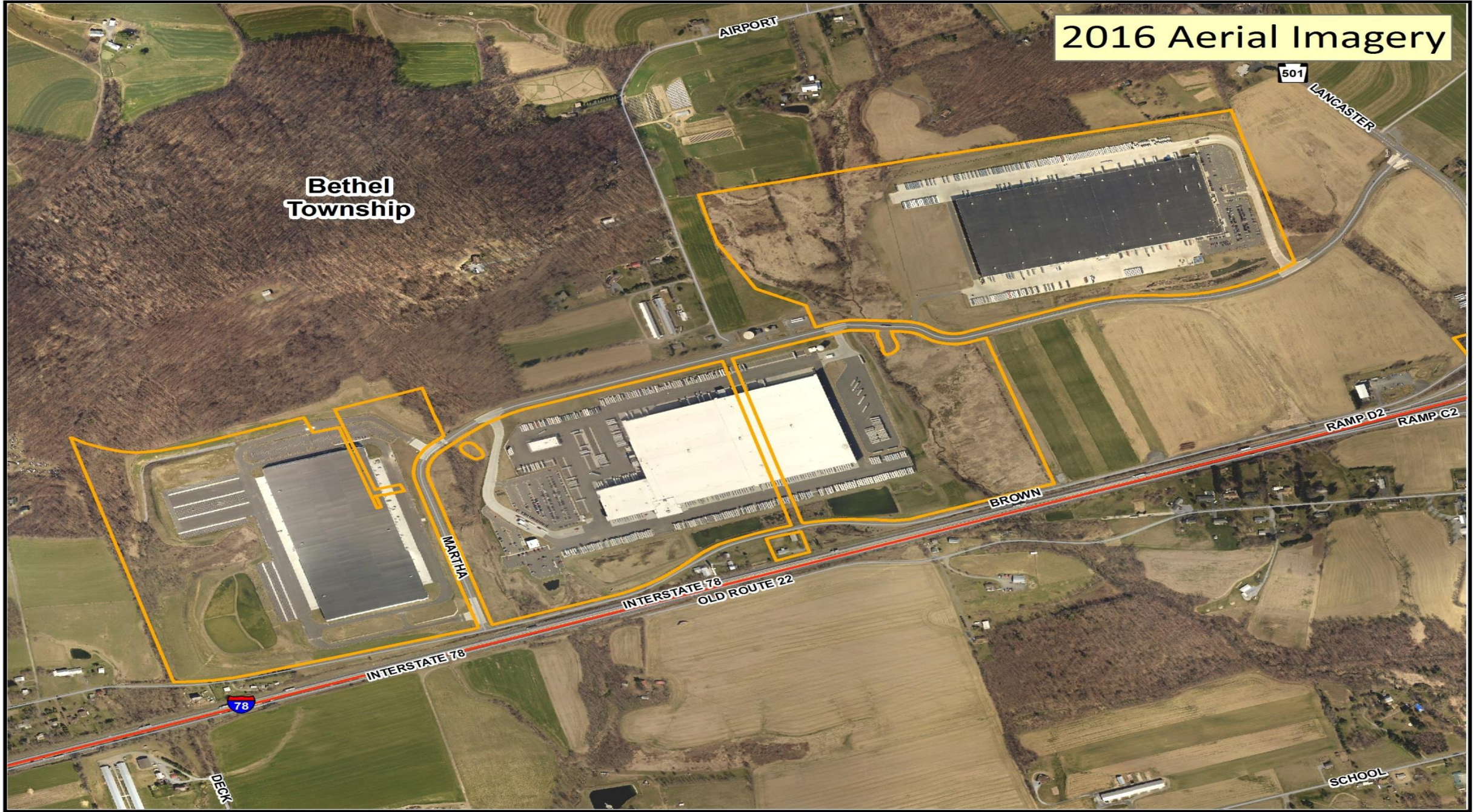
DECK

SCHOOL

78

2016 Aerial Imagery

Bethel  
Township



AIRPORT

501

LANCASTER

MARTHA

BROWN

RAMP D2

RAMP C2

INTERSTATE 78  
OLD ROUTE 22

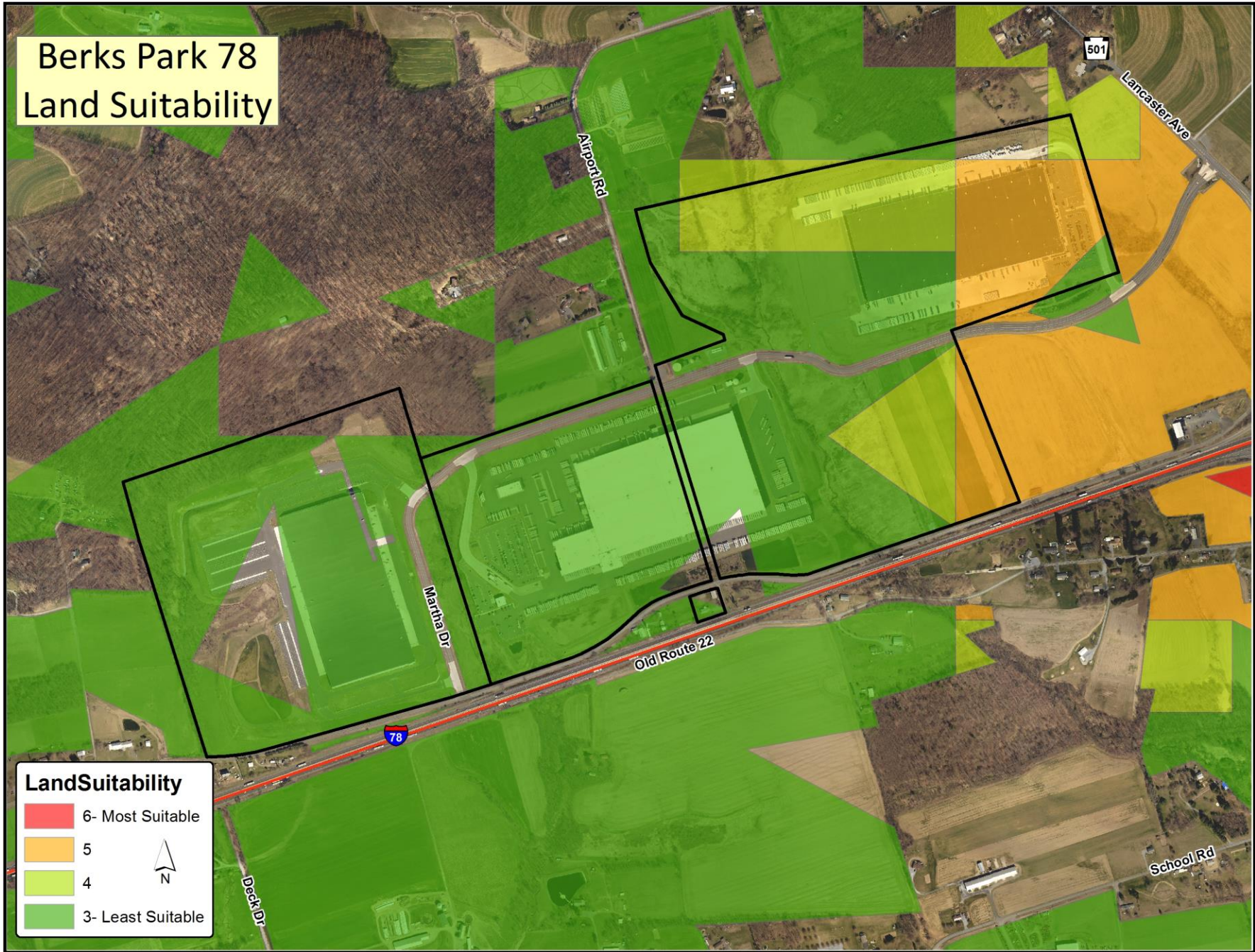
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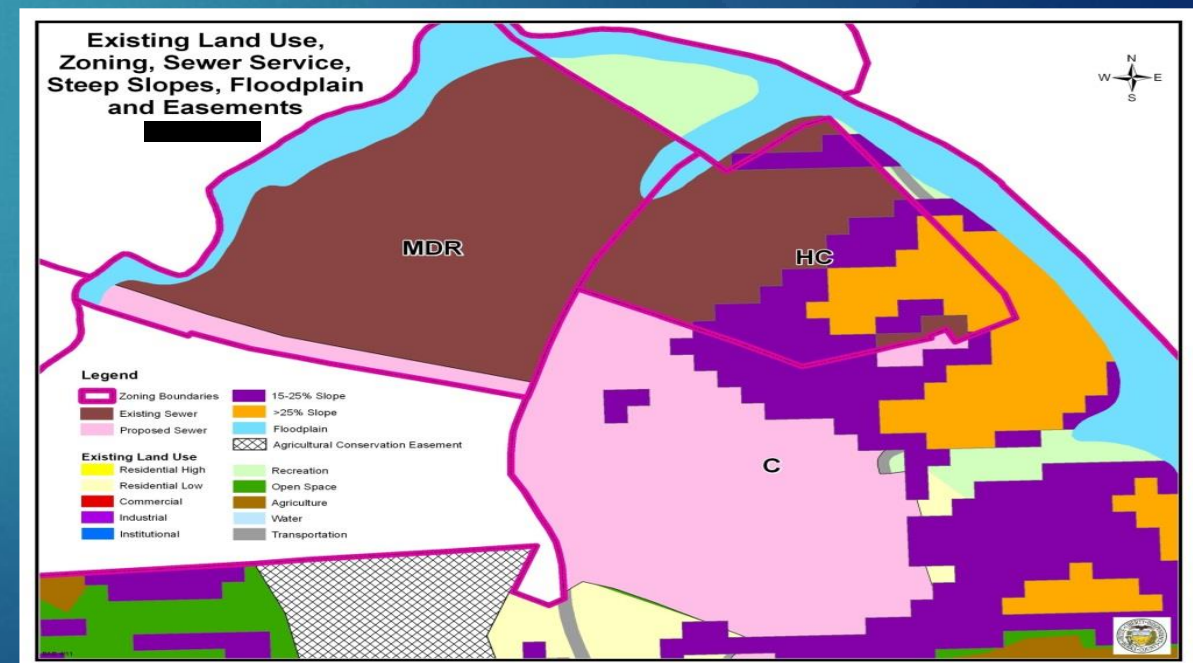
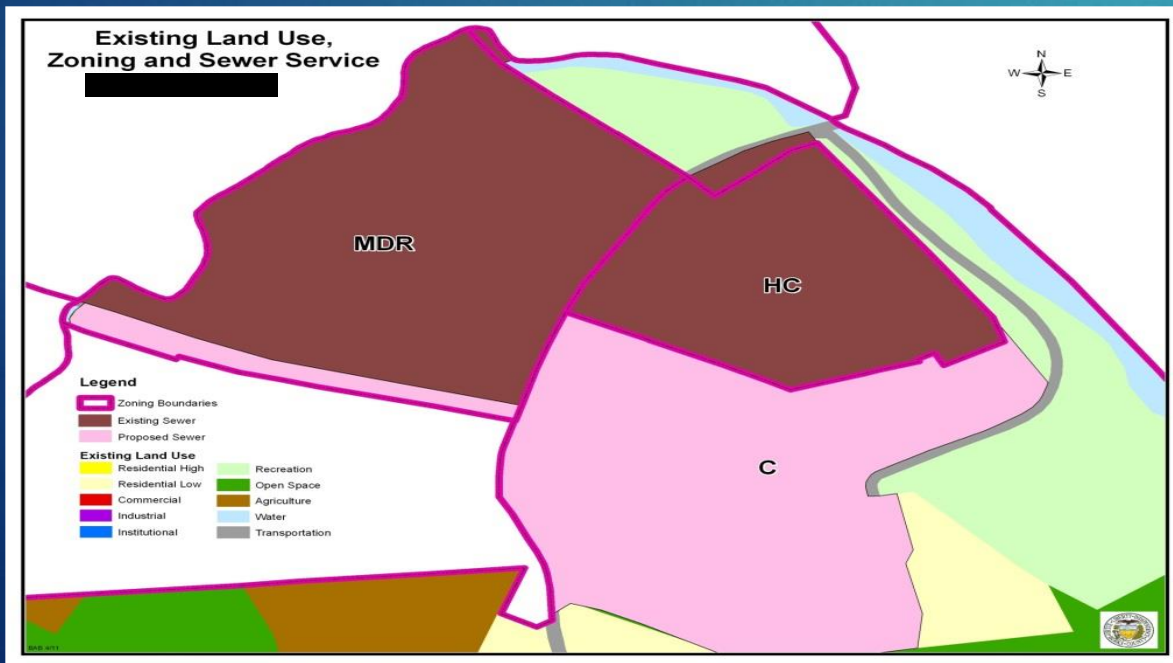
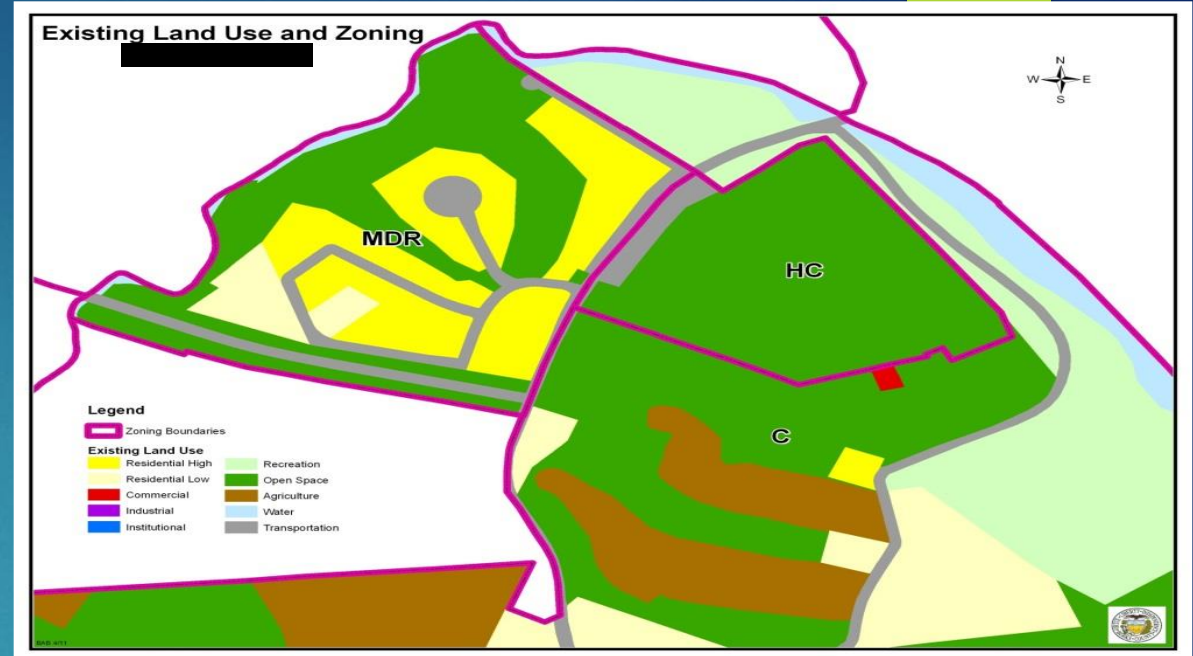
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SCHOOL

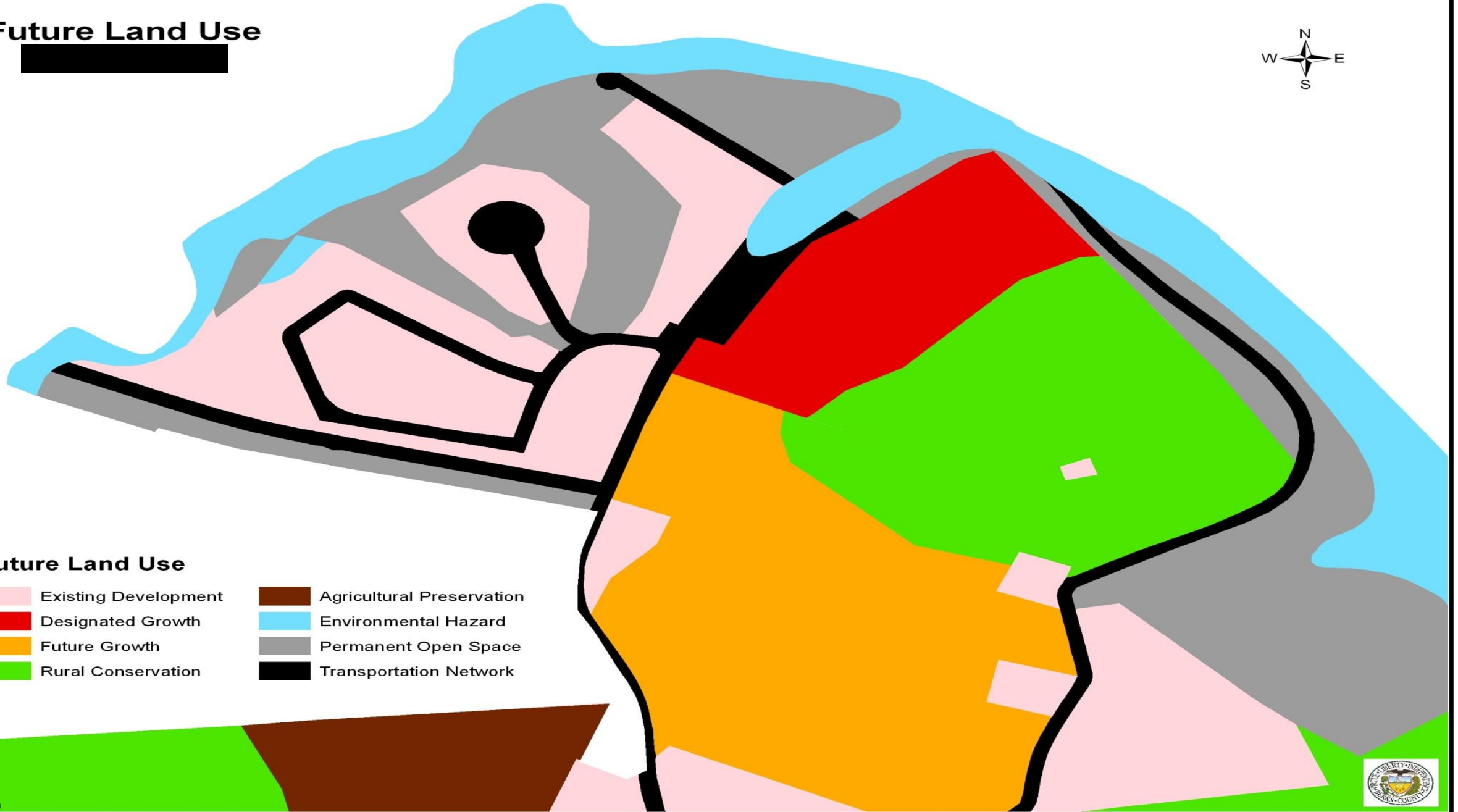
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# Berks Park 78 Land Suitability





# Future Land Use



## Future Land Use

- |  |   |
|--|---|
|  Existing Development |  Agricultural Preservation |
|  Designated Growth    |  Environmental Hazard      |
|  Future Growth        |  Permanent Open Space      |
|  Rural Conservation   |  Transportation Network    |



# A Call to Action

- ▶ **One Water** is based upon the idea that all water within a watershed is hydrologically interconnected and is most effectively and sustainably managed using an integrated approach. One Water advances the rationale for managing water supply, wastewater, and stormwater as one resource—because that is how it exists in nature. The benefits of One Water include improved resource sustainability (greater reliability, security, and resilience), conservation of natural waters and related ecosystems, and flood avoidance. (Source: American Planning Association, “Planners and Water”, 2017)





**Integrated Water Resources Management is:**

**“The coordinated planning, development, protection, and management of water, land and related resources in a manner that fosters sustainable economic activity, improves or sustains environmental quality, ensures public health and safety, and provides for the sustainability of communities and ecosystems.”**

**— American Water Resources Association**



**American Water Resources Association asserts that clean water is a basic human right and an economic and ecological necessity and explains that implementing Integrated Water Resources Management involves commitment to the following:**

- **Planning for long term sustainability,**
- **Participatory decision making,**
- **Management based on sound science and hydrologic units,**
- **Realistic measurement of outcomes, and**
- **Continuous improvement of institutional capacity at all levels.**



Increased awareness and application of One Water PA principles at the state and local levels are essential to help address many increasingly complex planning and growth management issues that revolve around water in Pennsylvania.

# Legal & Policy Issues

- ▶ Narrow scope of fragmented existing State Water Laws and agency regulations
- ▶ Failure to update the PA State Water Plan at the specified 10 Year interval spelled out in the 2005 Plan
- ▶ Lack of an over-arching designated LEAD State Agency for Water Planning Issues
- ▶ Need for Leadership by the State Planning Board
- ▶ Need for stronger policy support from CCAP + PSAB + PSAB

# Integration of One Water into the PA State Water Plan

- ▶ Implementation
- ▶ Implementation
- ▶ Implementation....

# Where do we go from here?

- ▶ Planners – Municipal + Regional and County Planning agencies + State Planning Board + APA/PA need to PUSH HARD for improved State Agency Policy and allocation of grants to undertake Water-Related Planning Studies and Policy Development to include upgrading of SALDO and Zoning Ordinances
- ▶ Planners need to engage municipal and regional Water Authorities as well as private water companies who own and operate water supply and distribution systems.
- ▶ County Planners need to organize/coordinate new county-level or multi-municipality Water Authorities/Entities who can legally exercise jurisdiction to protect Source Water resources

# And...

- ▶ Need to engage Watershed organizations and other interested groups such as local chapters of Trout Unlimited + Fishing Clubs
- ▶ Planners need to explain the importance of proactive water resource planning and management to local business leaders and Chambers of Commerce so they see the ROI (Return On Investment) for public sector investments that will enable future economic development and community fiscal viability
- ▶ Improved communication between agencies and across state lines

# Priority Actions of CPDAP

Participate with the State Geospatial Board and GIS Pro in their activities.

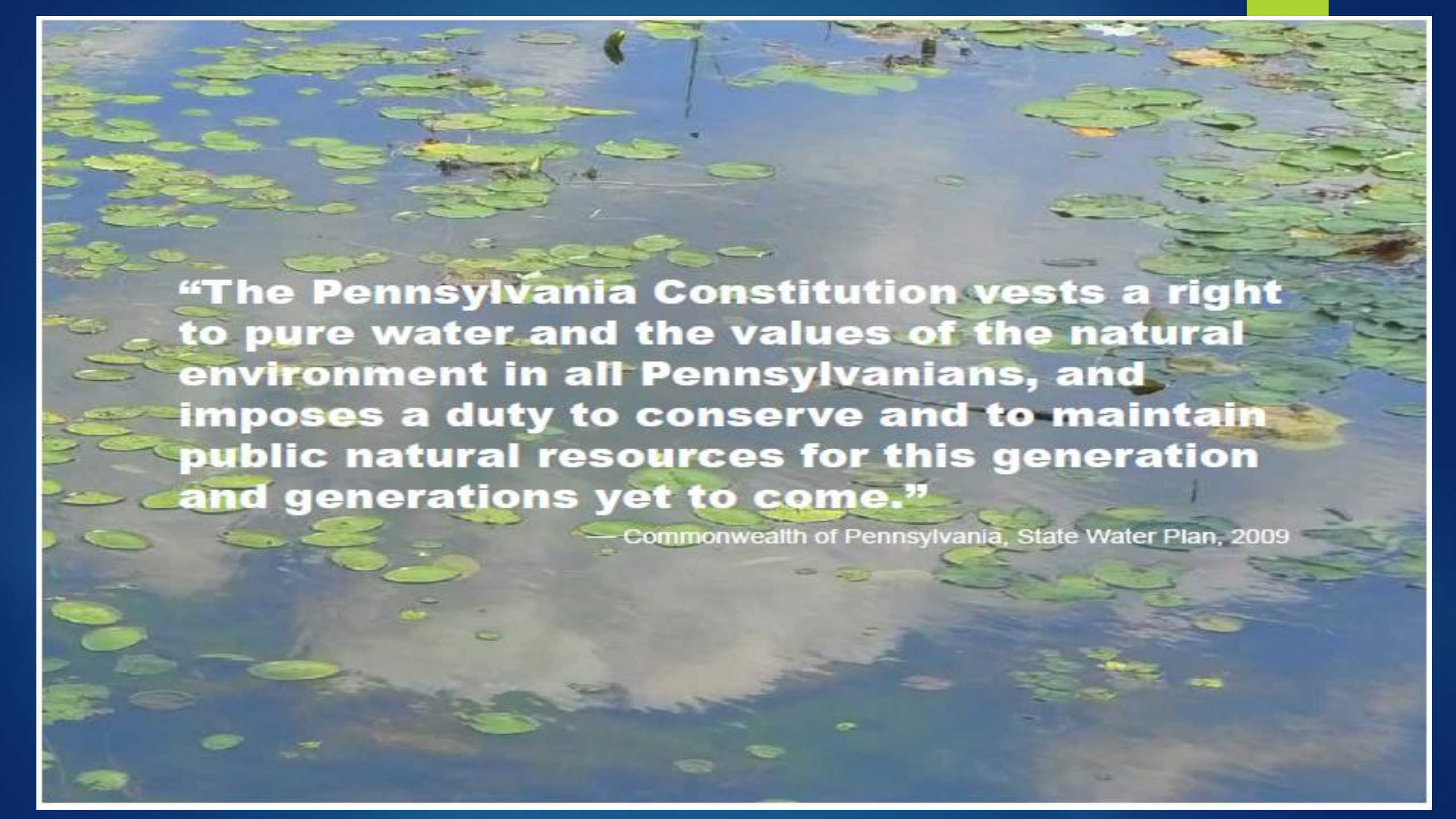
Create opportunities to increase the capacity of County GIS and Planning Departments.

Design steps to **Implement the State Water Plan.**

Identify and assist in next generation of county IWRM Plans.

Compile a comprehensive list of needed datasets for counties, agencies, major players in the realm of water.



A photograph of a pond with numerous green lily pads floating on the water. The water is a deep blue, and there is a clear reflection of a cloudy sky in the center of the pond. The text is overlaid on the left side of the image.

**“The Pennsylvania Constitution vests a right to pure water and the values of the natural environment in all Pennsylvanians, and imposes a duty to conserve and to maintain public natural resources for this generation and generations yet to come.”**

Commonwealth of Pennsylvania, State Water Plan, 2009