

**Water Resources Monitoring in the
Spring Creek Watershed
Centre County, Pennsylvania**

**Rebecca Dunlap
USDA-CSREES National Water Conference**

The Spring Creek Watershed

Background

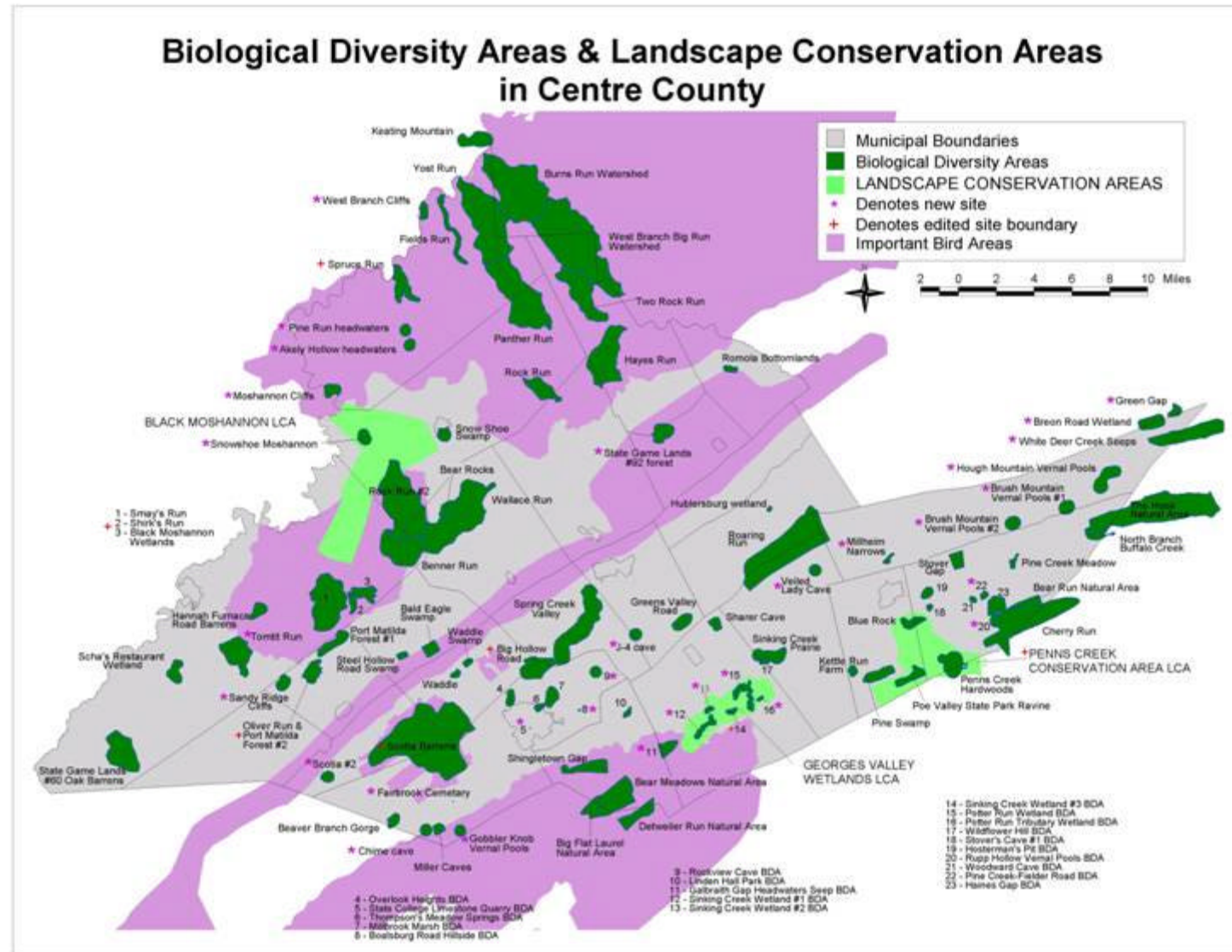
- West Branch of the Susquehanna
- Centre County Pennsylvania
- Appalachian Region of the Ridge and Valley physiographic province



The Spring Creek Watershed

Background

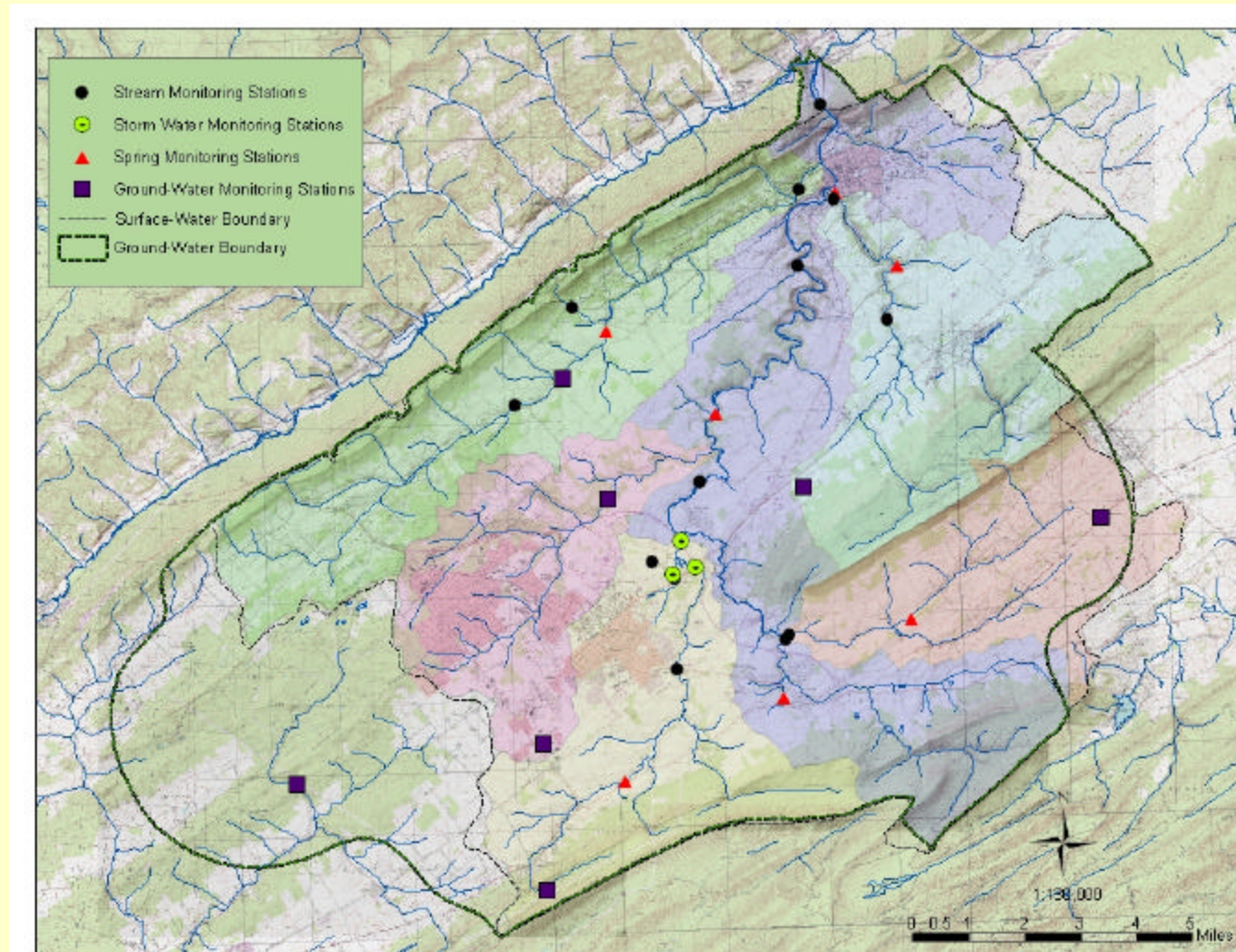
- Biological Diversity Areas
- Important Bird Areas



The Spring Creek Watershed

Background

- 145 mi² surface water drainage basin
- 175 mi² ground-water drainage basin



The Spring Creek Watershed

Background

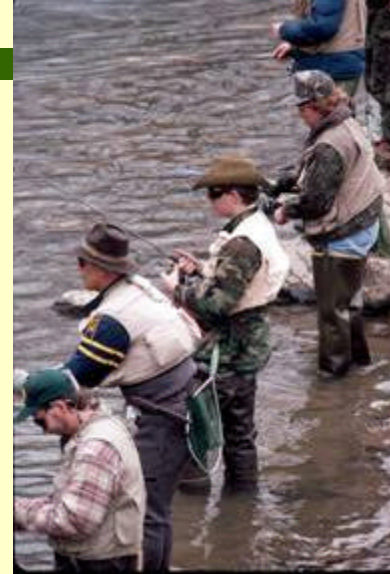


The Pennsylvania State University



The Spring Creek Watershed

Background

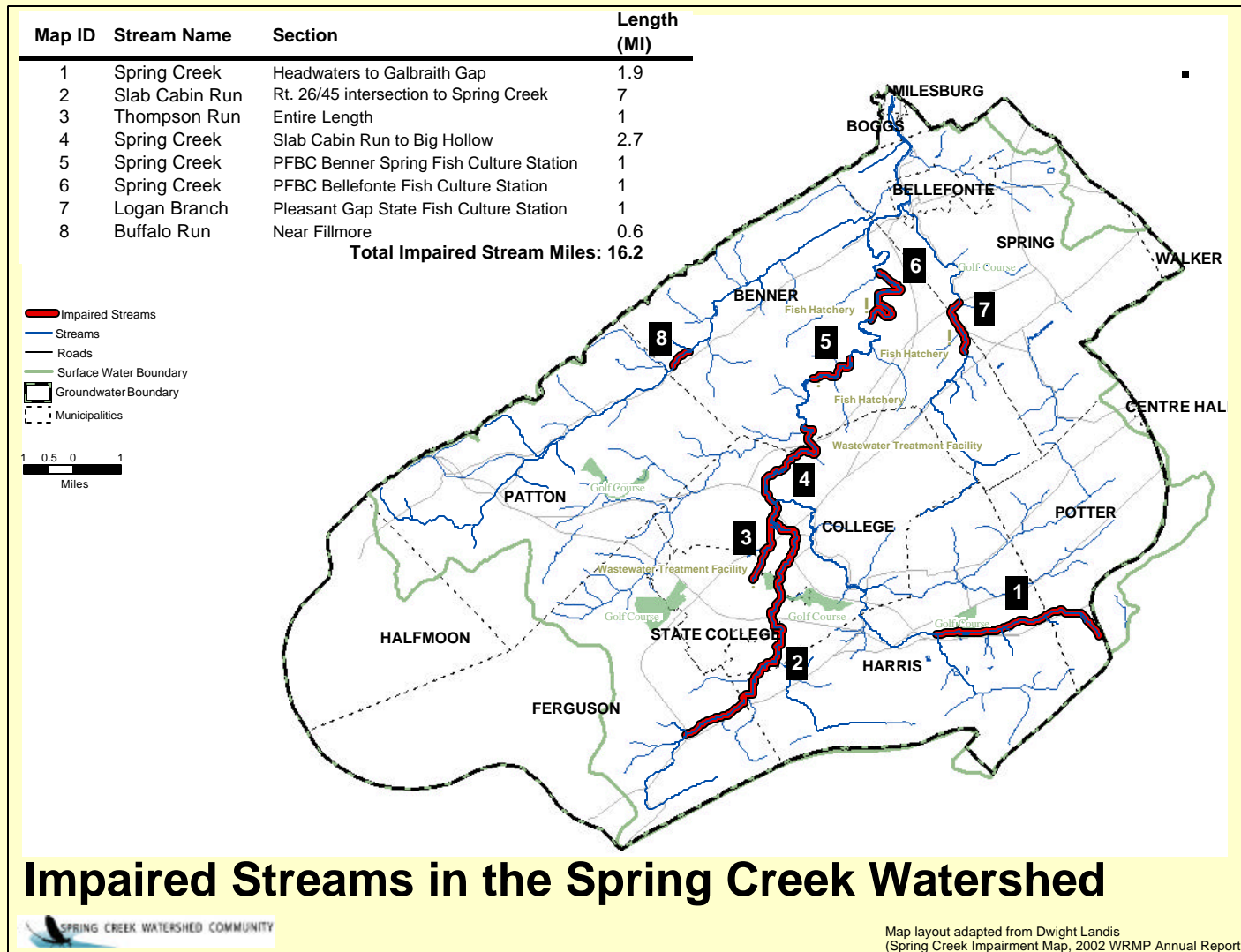


- Famous Wild Trout Fishery
- Economic value of “Fisherman’s Paradise” is approximately \$75,000/mile



The Spring Creek Watershed

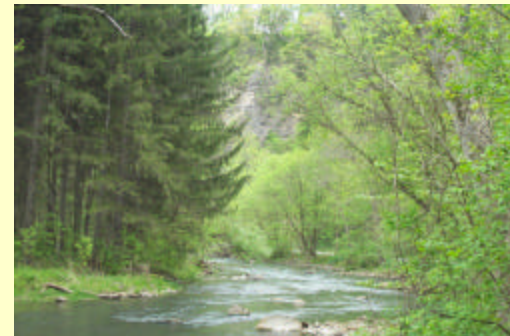
Background



The Spring Creek Watershed Community

Mission Statement

The Spring Creek Watershed Community promotes actions that protect and enhance the quality of life, environment, and the economy throughout the watershed while maintaining and improving the high quality of Spring Creek and its tributaries.



The Spring Creek Watershed Community

Strategic Goals

1. Maximize community involvement and participation in Spring Creek Watershed Community actions
2. ***Measure watershed quality and set goals for improvement***
3. Develop a vision for the future and implement it
4. Increase public awareness of watershed issues through education and communication
5. Increase intergovernmental and interorganizational cooperation



SPRING CREEK WATERSHED COMMUNITY

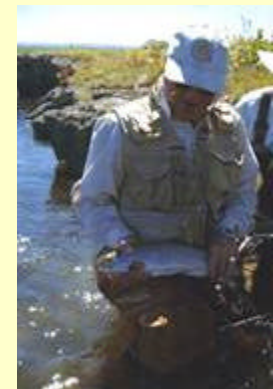
The Water Resources Monitoring Project

Technical Steering Committee

- Designed the Water Resources Monitoring Project (WRMP)

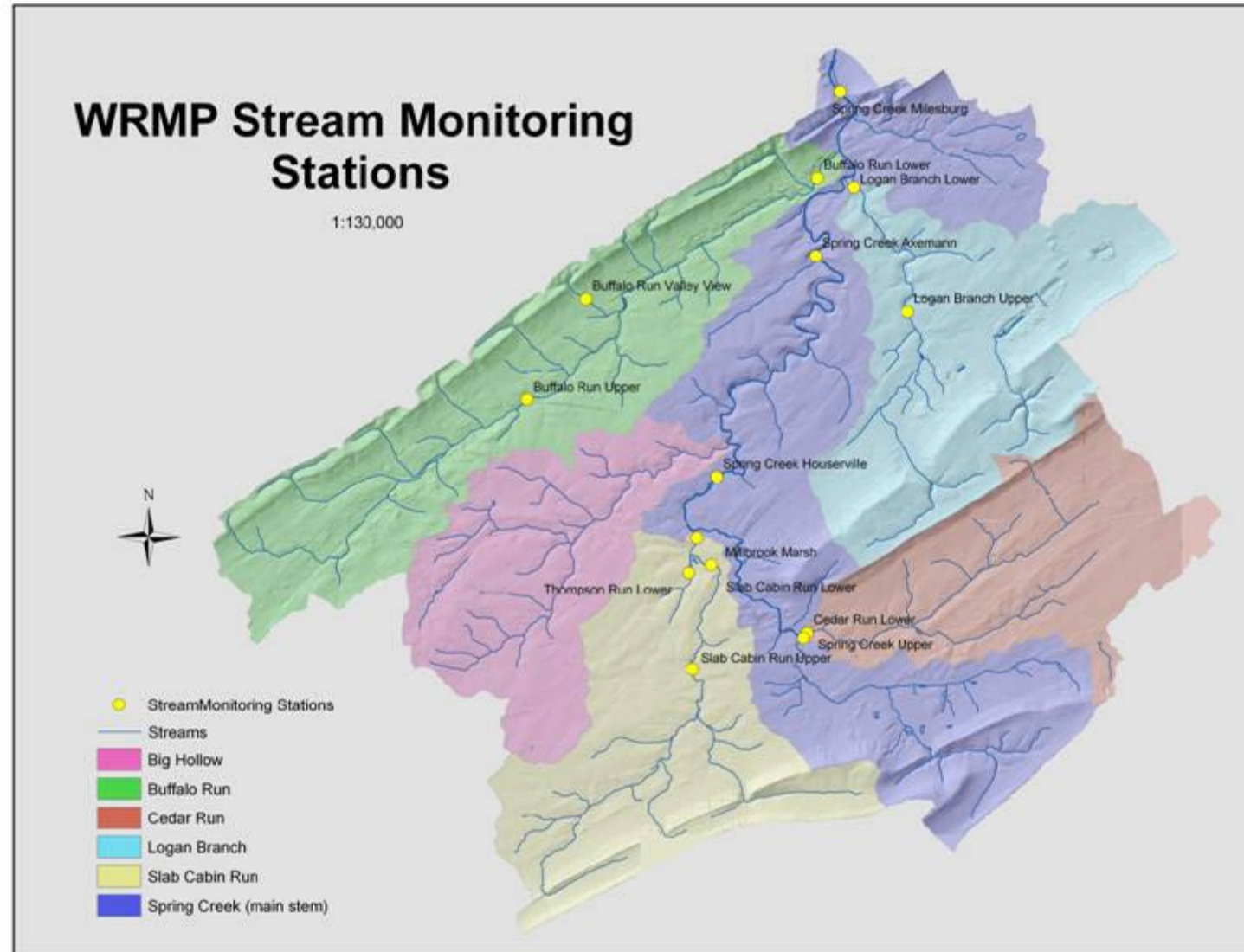
- surface water
- ground water
- storm water

Robert Carline, Ph.D. , Committee Chair, Adjunct Professor and Leader	Pennsylvania Cooperative Fish & Wildlife Unit, USGS
Bert Lavan , Committee Vice-Chair West Nile Virus Program Coordinator	Centre County Planning Office
Hunter Carrick, Ph.D. , Assistant Professor of Aquatic Ecology	Penn State University
Ann Donovan , Watershed Specialist	Centre County Conservation District
Rebecca Dunlap , Staff	ClearWater Conservancy
Todd Giddings, Ph.D., P.G. , Hydrogeologist	Todd Giddings and Associates, Inc.
James Hamlett, Ph.D. , Associate Professor of Agricultural Engineering	Penn State University
Mark Ralston, P.G. , Hydrogeologist	Converse Consultants
Kristen Saacke Blunk , Extension Associate	Penn State University
John Sengle , Water Quality Specialist	PA DEP
Jason Brown , Project Manager	University Area Joint Authority
Rick Wardrop, P.G. , Hydrogeologist and Industrial Contamination Specialist	Shaw Environmental & Infrastructure
Dave Yoxtheimer, P.G. , Senior Hydrogeologist	N.A. Water Systems



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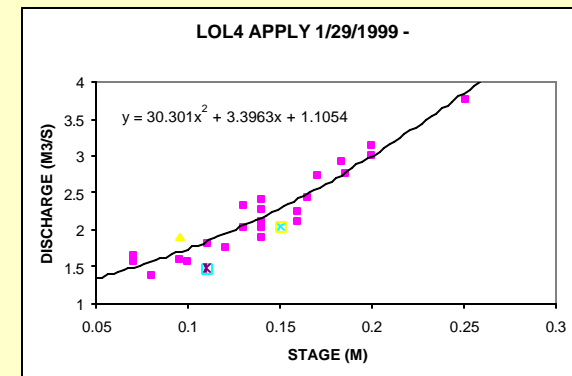
- Network of 14 stream monitoring stations
 - 3 coincide with USGS stations



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Surface Water Data Collection

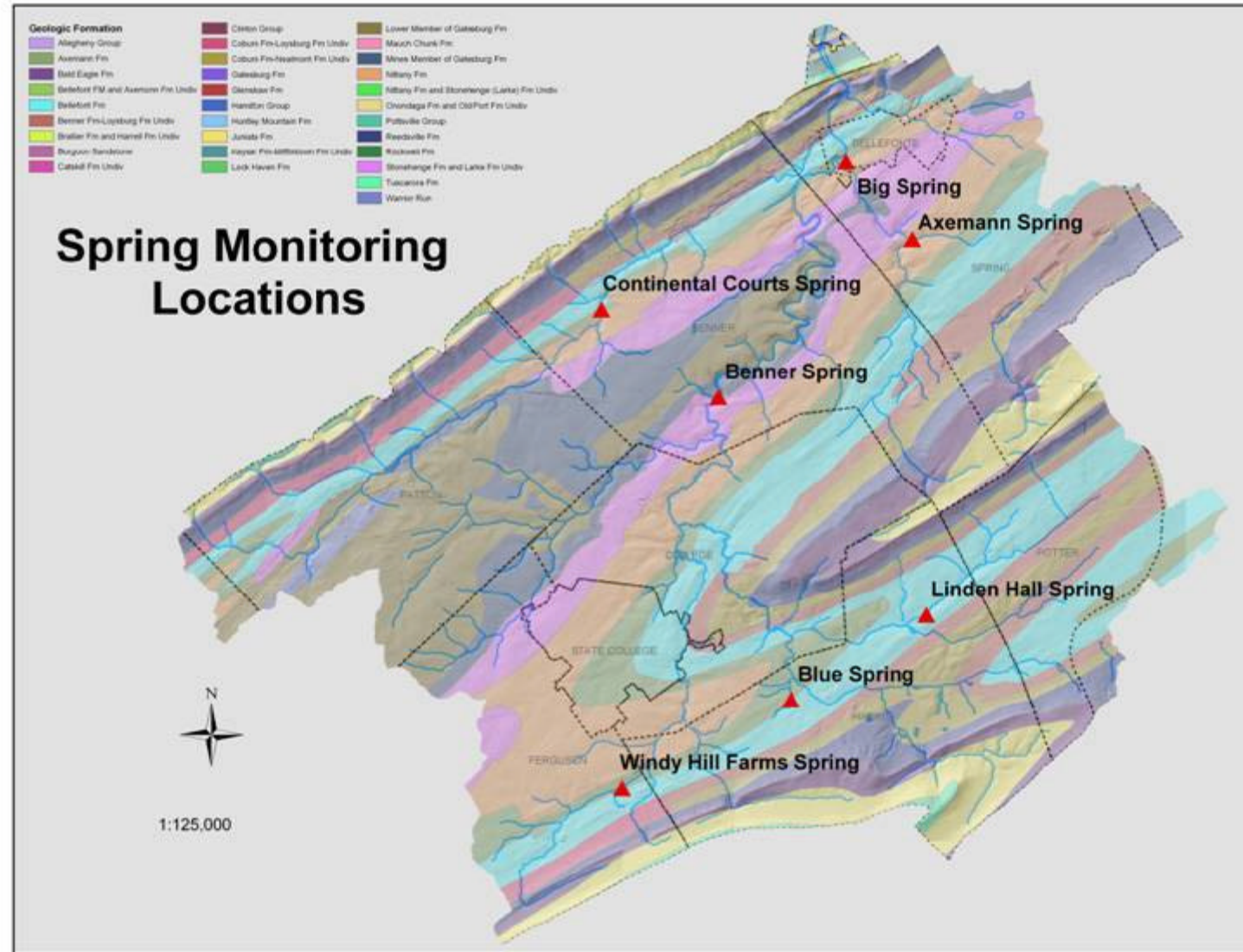
- Continuous Data Collection
 - 30-minute stream flow
 - 1-hour temperature
- 6 weeks
 - Rating curve measurement
- Quarterly
 - Baseflow water quality grabs



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Spring Data

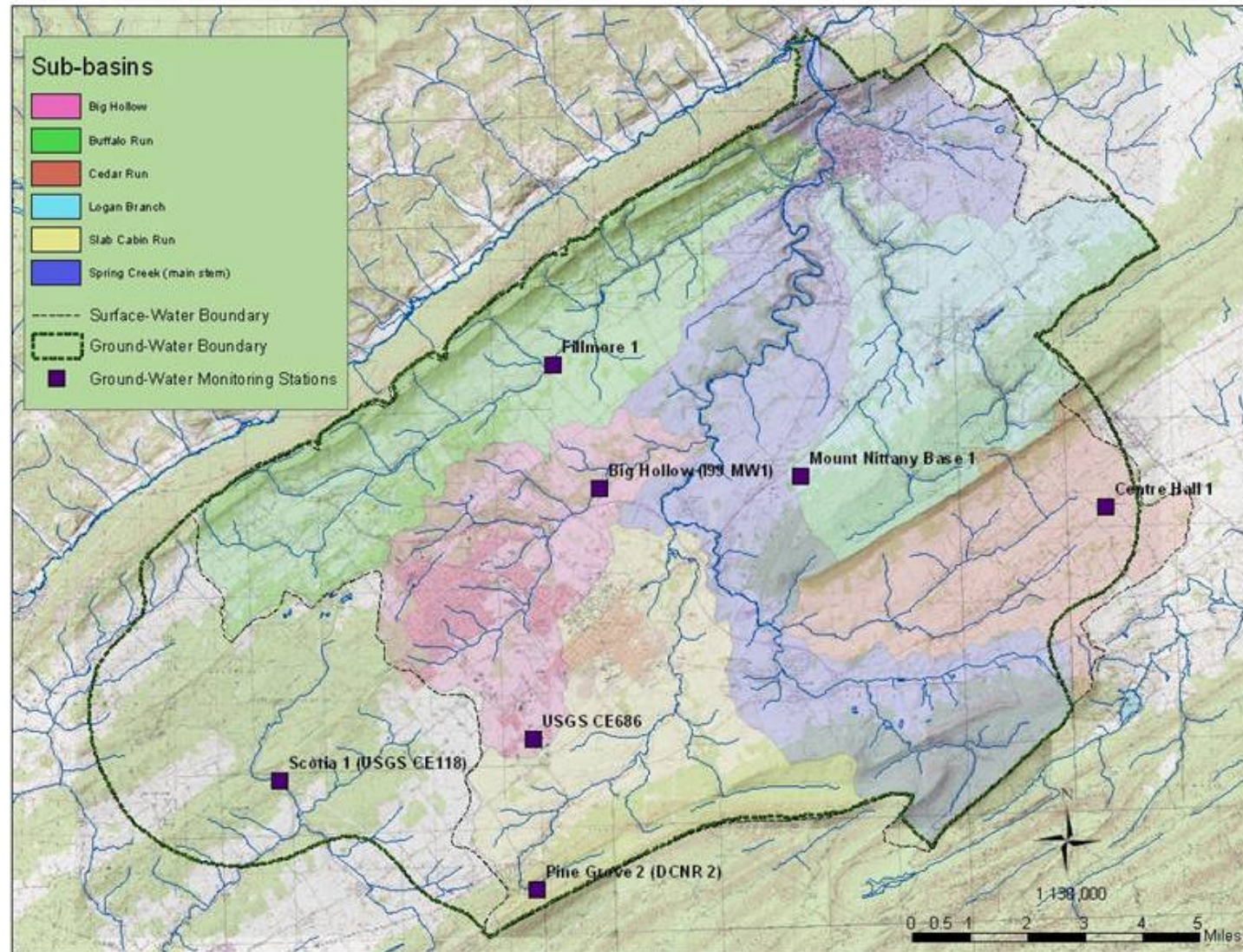
- Network of 7 springs
- Incorporated into quarterly water quality sampling schedule in 2005
- Ground-water quality



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Ground-Water Wells

- Network of 7 ground-water wells
- 2 coincide with USGS wells



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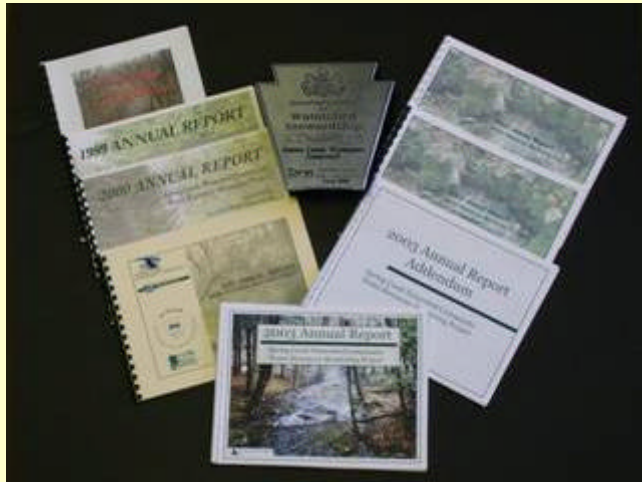
Ground Water – Continuous Data Collection



Water level (3 hr)

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Communicating Results



Annual Reports



Local Events



Media



Classes

The Water Resources Monitoring Project

Storm-Water Monitoring

- Slab Cabin Run Bioretention Project
 - Reconnect Slab Cabin Run with the adjacent wetland
 - Rock vane structures
- Collect pre-project data
- Trout Unlimited's Embrace A Stream Grant



WRMP Storm-Water Monitoring Sites

Scale= 1:8,000



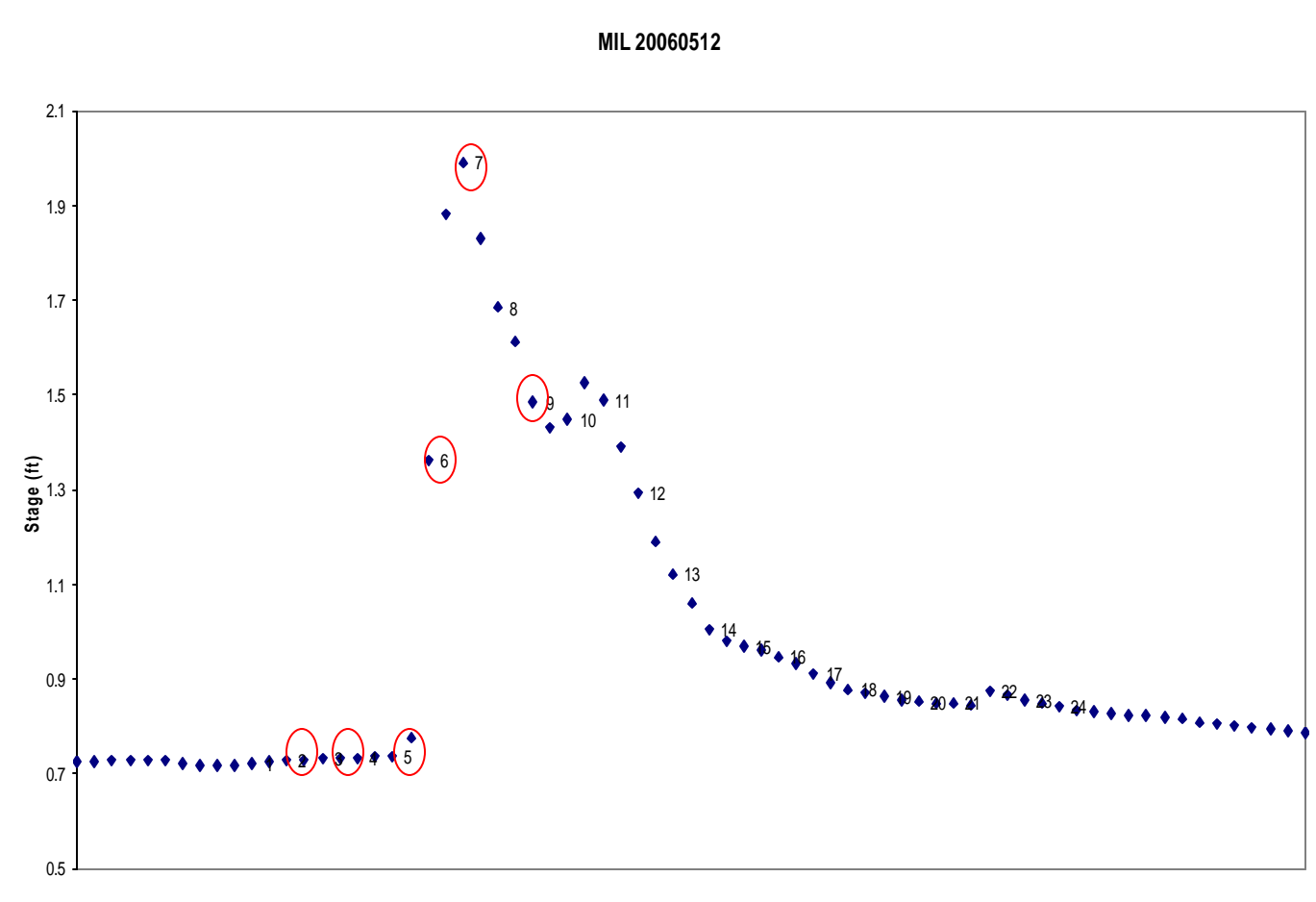
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Storm-Water Monitoring: Water Quality Samples



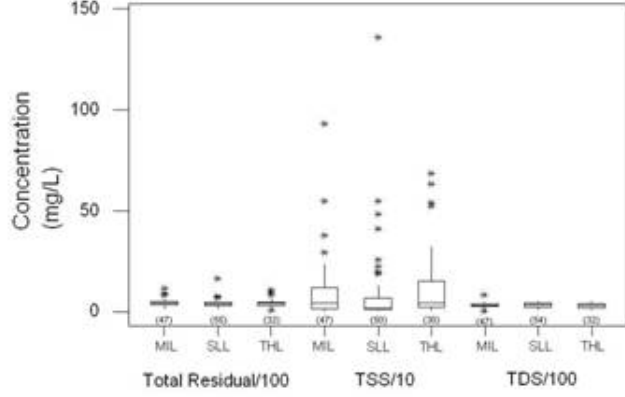
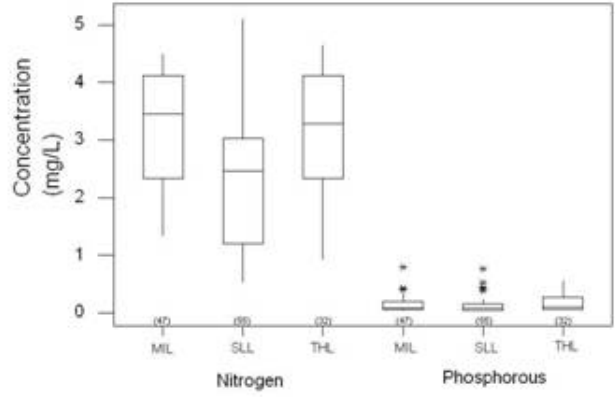
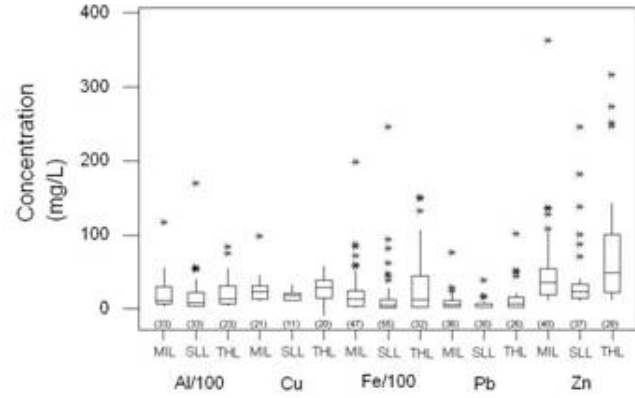
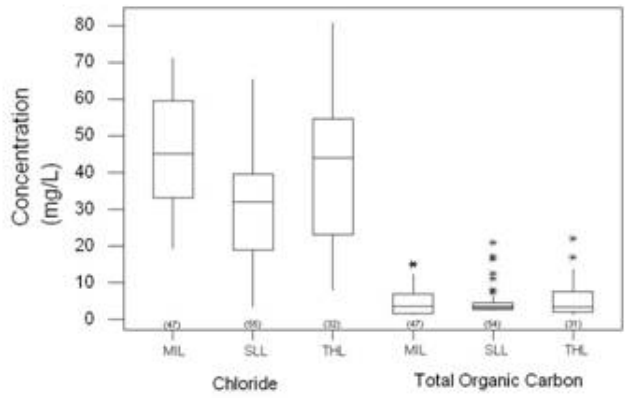
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Storm-Water Monitoring: After an Event



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Storm-Water Monitoring: Results



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Storm-Water Monitoring: Results

- Median concentrations for most constituents $THL > SLL$
 - Exceptions: TOC, TDS
- Solid parameters were similar at all 3 stations
- Slab Cabin Run has slightly less suspended material
- Concentrations for MIL reflected the range of concentrations observed at the two upstream sites
 - Exceptions: Fe, Nitrogen, Cl – may be a result of intervening surface runoff



WRMP Storm-Water Monitoring Sites

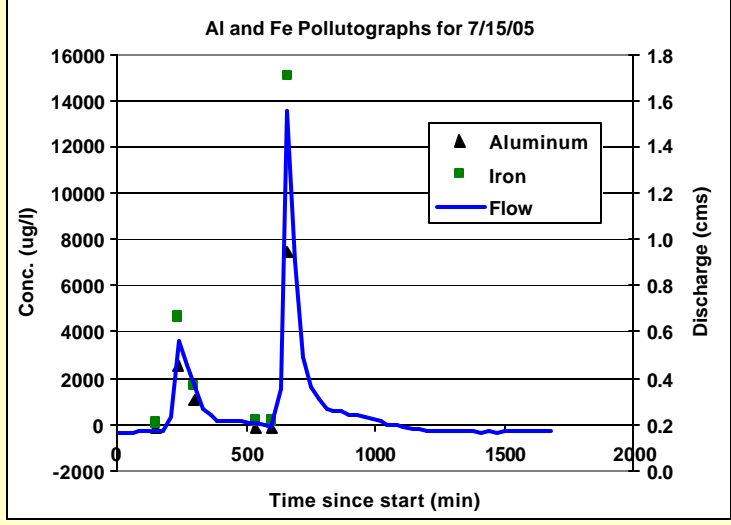
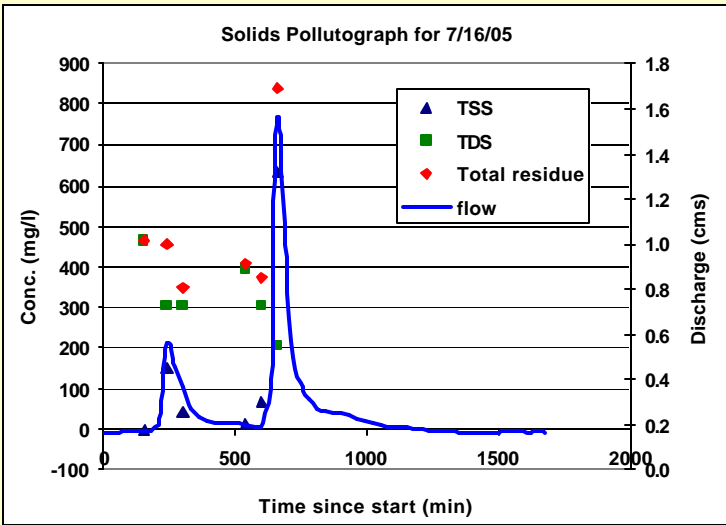
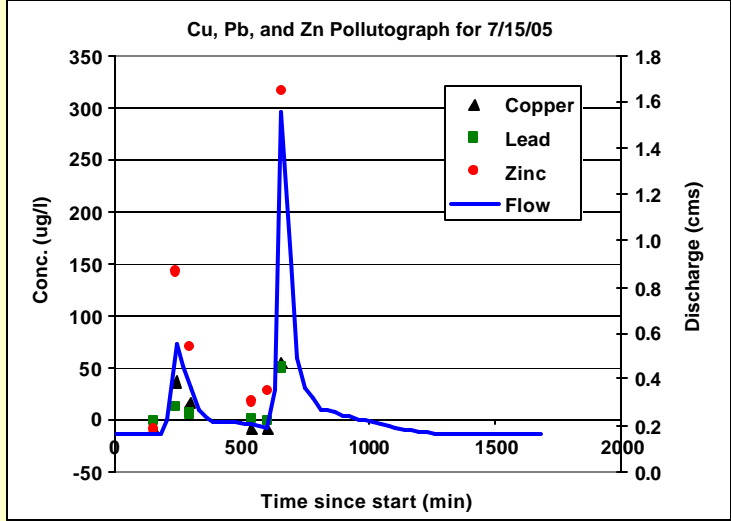
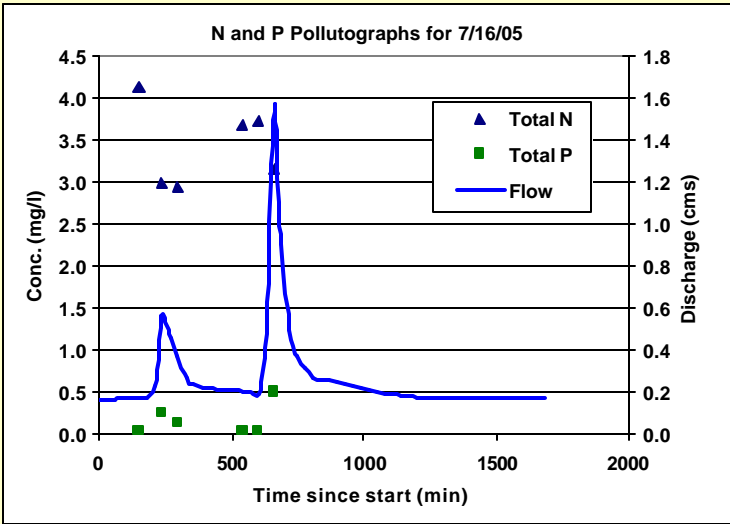
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Storm-Water Monitoring: Results



The Water Resources Monitoring Project

How are we unique?

- Special Projects and start-up costs
 - ~93,000 Grants
- Core costs funded with local contributions
 - > \$365,000 since 1998
 - Municipalities
 - Authorities
 - Penn State
 - Local Trout Unlimited
 - \$65,000 for 2007

