

**Workshop 2**  
**Our Groundwater and Surfacewaters are Connected**

*Ground Water-Citizen / Home Owner Monitoring*  
 Hosted by:  
 Lackawanna County Conservation District

Sponsored by:  
 Pocono Northeast RC&D Council  
 Through the C-SAW Program

Funded by: The PADEP  
 Growing Greener Program

Pocono Northeast  
 Resource Conservation & Development Council

B.F. Environmental Consultants  
 Environmental Services, Remediation, Assessment, Compliance, and Planning

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**Project Sponsors**  
**(Providing In-kind Support to This Effort)**

- Pocono Northeast Resource Conservation & Development Council  
<http://www.pnercd.org>
- Lackawanna County Conservation District  
<http://www.lccc.net>
- B.F. Environmental Consultants Inc  
<http://www.bfenvironmental.com>

**CSAW**  
 Consortium for Scientific Assistance to Watersheds

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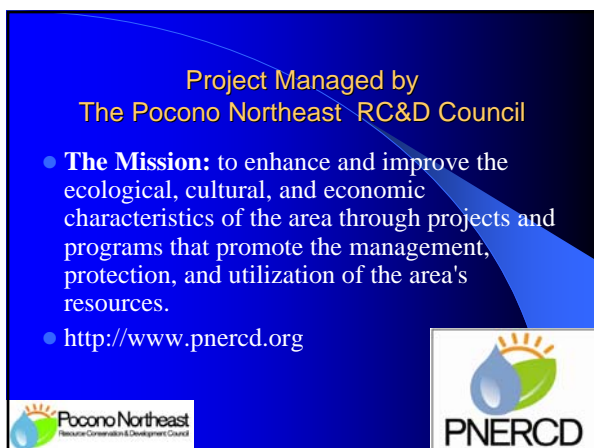
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**Project Managed by**  
**The Pocono Northeast RC&D Council**

- **The Mission:** to enhance and improve the ecological, cultural, and economic characteristics of the area through projects and programs that promote the management, protection, and utilization of the area's resources.
- <http://www.pnercd.org>

Pocono Northeast  
 Resource Conservation & Development Council

PNERCD

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## Coverage Area



*Serving the Following Counties in Pennsylvania: Carbon, Columbia, Lackawanna, Luzerne, Monroe, Montour, Northumberland, Pike, Schuylkill, and Wayne*

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## The Council

- The Council is a nonprofit IRS 501c3 organization .
- The Council Board is composed of concerned citizens and stakeholders that work to improve and promote the management, protection, economic development, and utilization of the area's resources

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## C-SAW -Areas of Assistance

- **Watershed Specific Technical Assistance**
  - Includes Oil & Gas Issues
  - Education Programs
  - Watershed Education and Stormwater Management
- **Mentoring** – Intensive long-term assistance
- **Quality Control and Quality Assurance**



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## C-SAW Web Site Assistance is Free



<http://www.pnercd.org>



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## B.F. Environmental Consultants Inc.



- Professional Consulting Services in the areas of water quality, soils, stormwater, geology, aquifer analysis, and land-development.
- Baseline – Chain-of-Custody
- Expert Testimony
- Water Treatment Process/ Product Development
- <http://www.bfenvironmental.com>



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## Water-Research Center

Education and Outreach Program funded by  
B.F. Environmental Consultants Inc.



### Outreach Programs

- Environmental and Professional Education and Training for Citizens and Local Municipalities
- Water Quality Help Guides – Information Library
- Community and Business Outreach Programs
- Low Cost – Informational Water Testing Program with National Laboratory
- Citizen Monitoring Programs- Developing Low Cost Water Quality Sensors

Website: <http://www.water-research.net>

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## The Health of Your Well Water



Function of  
Well Construction and Placement  
Surrounding Land-use  
Conservation / Your use  
Regional Land Use

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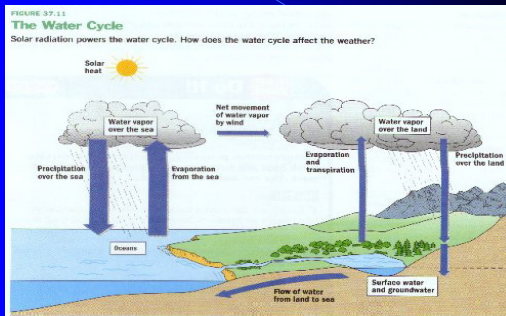
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## The Water Cycle When We Put this All Together for PA



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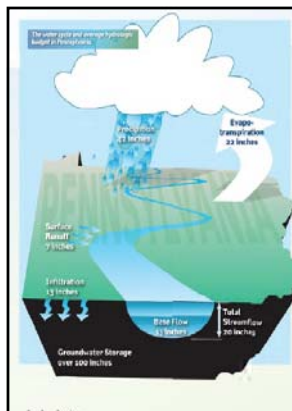
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## Water Budget for PA

In  
Precipitation – 42 inches

Out  
Evapotranspiration – 22”  
Total Streamflow – 20”  
Baseflow – 13”  
Surface Runoff – 7”

**Therefore, 65% of streamflow is groundwater discharge.**

Other  
Storage in Groundwater  
Aquifers over 100 inches\*  
\* This is our “Water” Cushion.

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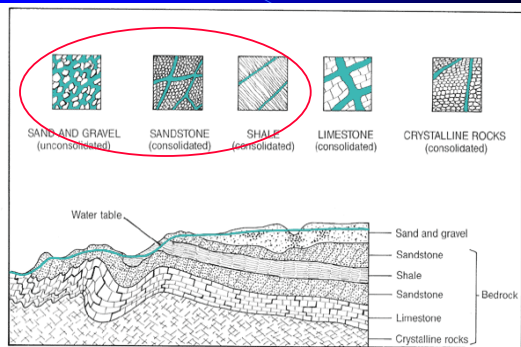
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## Primary Aquifers in PA




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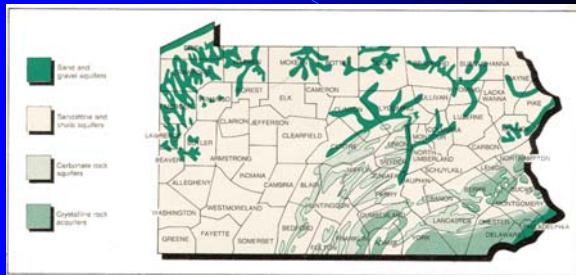
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## Sources of Water - Aquifers



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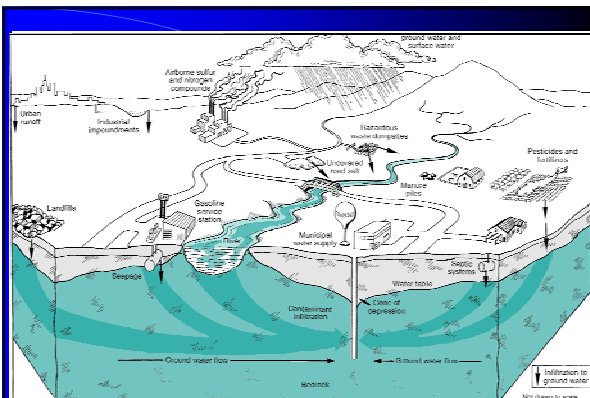
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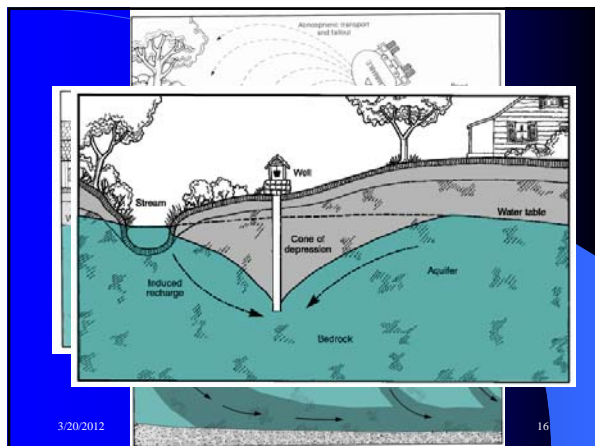
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### This is Drinking Water in PA?

50% Corrosion

Other 50%

Iron / Manganese

Sediment / Gases

Bacteria

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### What Sensors Should We Purchase ?

- Just What We are Pretty Sensitive Sensors
  - Smell
  - Appearance
  - Taste
  - Visual
  - Operational Issues or Problems
  - Systematic or Event Based

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## Types of Clues



Visual Clues



Operation Problems



Smelly Water



Taste Test

These work well with hardness, iron, Manganese, sulfur, some gases, sediment, Sodium, chloride – but this does not help with trace metals, organics, or bacteria

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## What Low-Cost Sensors Or Tools Can Help?



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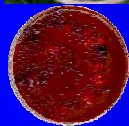
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## Laboratory Needed to Identify



Bacteria



Trace Metals – Lead, Copper  
Arsenic  
Organics – BTEX, MTBE

Other Parameters  
Barium  
Strontium  
Radiological

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## Recommendations

- Annual Water Screen – this is the 3<sup>rd</sup> Training Event – Scheduled for April 24, 2012 – Bring Your Well Water Sample.
- Conduct an Annual Water Test
  - Certified or Baseline/Chain-of-Custody
  - Informational (Mail-Order) Program

**Maintain and Check Your Water System**

Mail Samples to Laboratory  
 Informational Testing (Certified Methods)  
<http://www.water-research.net>

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## Regular Maintenance

- Divert Surfacewater Runoff Away from Wellhead
- Annual Water Test
- Annual Maintenance on Water Treatment Systems
- Conserve Water/ Fix Leaks
- Proper Use and Storage of Chemicals and other Hazards

**Remember We ALL Live Downstream**

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## Educating the Community

Download a Free Copy (pdf) or Link to a copy at <http://www.bfenvironmental.com>

Also:

1. New Booklet available April 2012.
2. New Web-portal on Methane Gas Migration And Mitigation (available now)

Help Promote the Citizens Groundwater Surfacewater Database to Your Community Partners.

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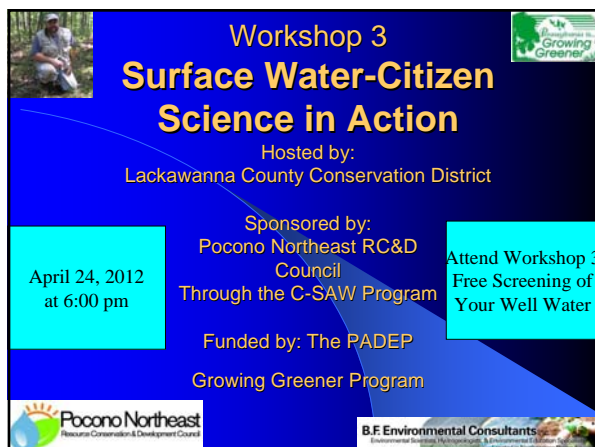
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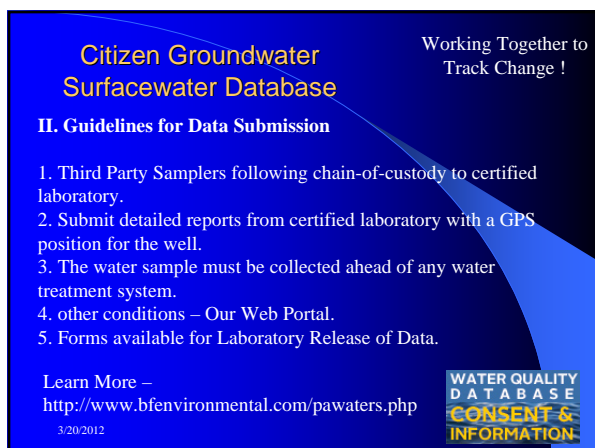
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