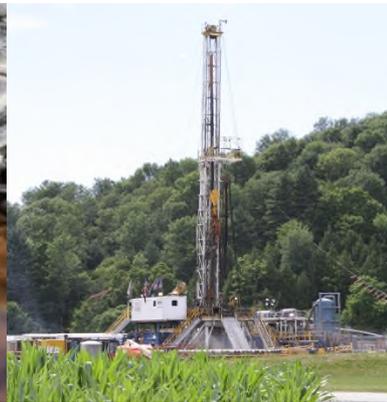


Success in Shale Gas Monitoring

Achievements through Collaboration



Katie Tomsho, Assistant Director of Outreach
Alliance for Aquatic Resource Monitoring

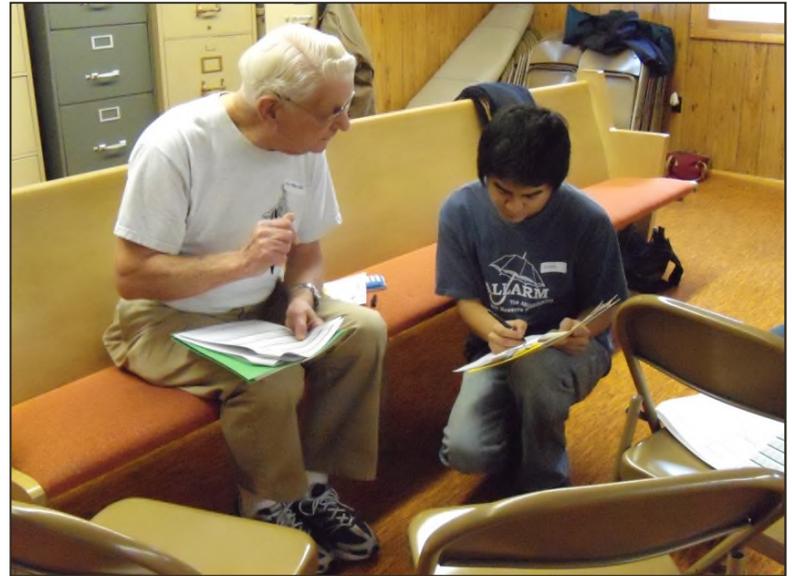


Dickinson



ALLARM Background

Empower communities with scientific tools to monitor, protect, and restore PA streams.



Educate. Engage. Empower.

Who we are



Educate. Engage. Empower.

Project of the Environmental Studies department (1986)

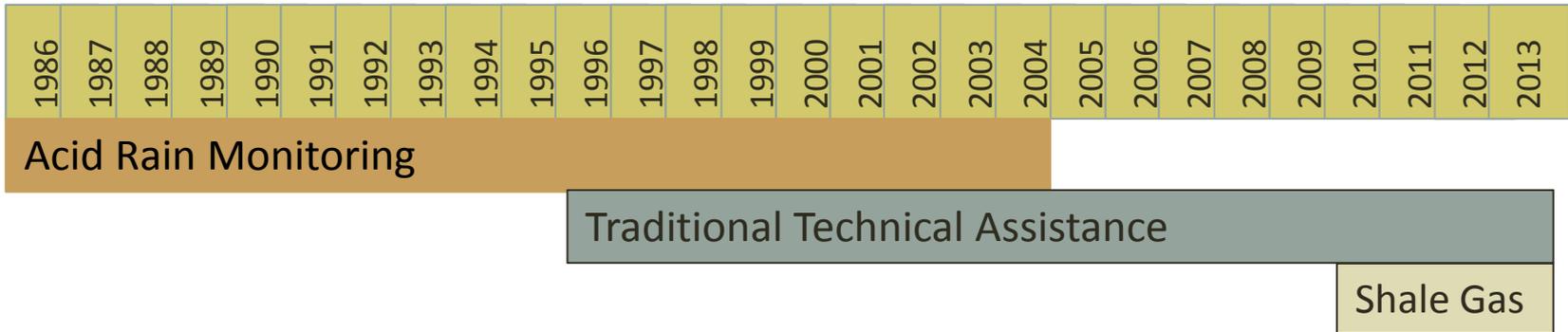
Director: Julie Vastine

Assistant Directors: Jinnie Monismith & Katie Tomsho

Science Advisor/Founder: Candie Wilderman

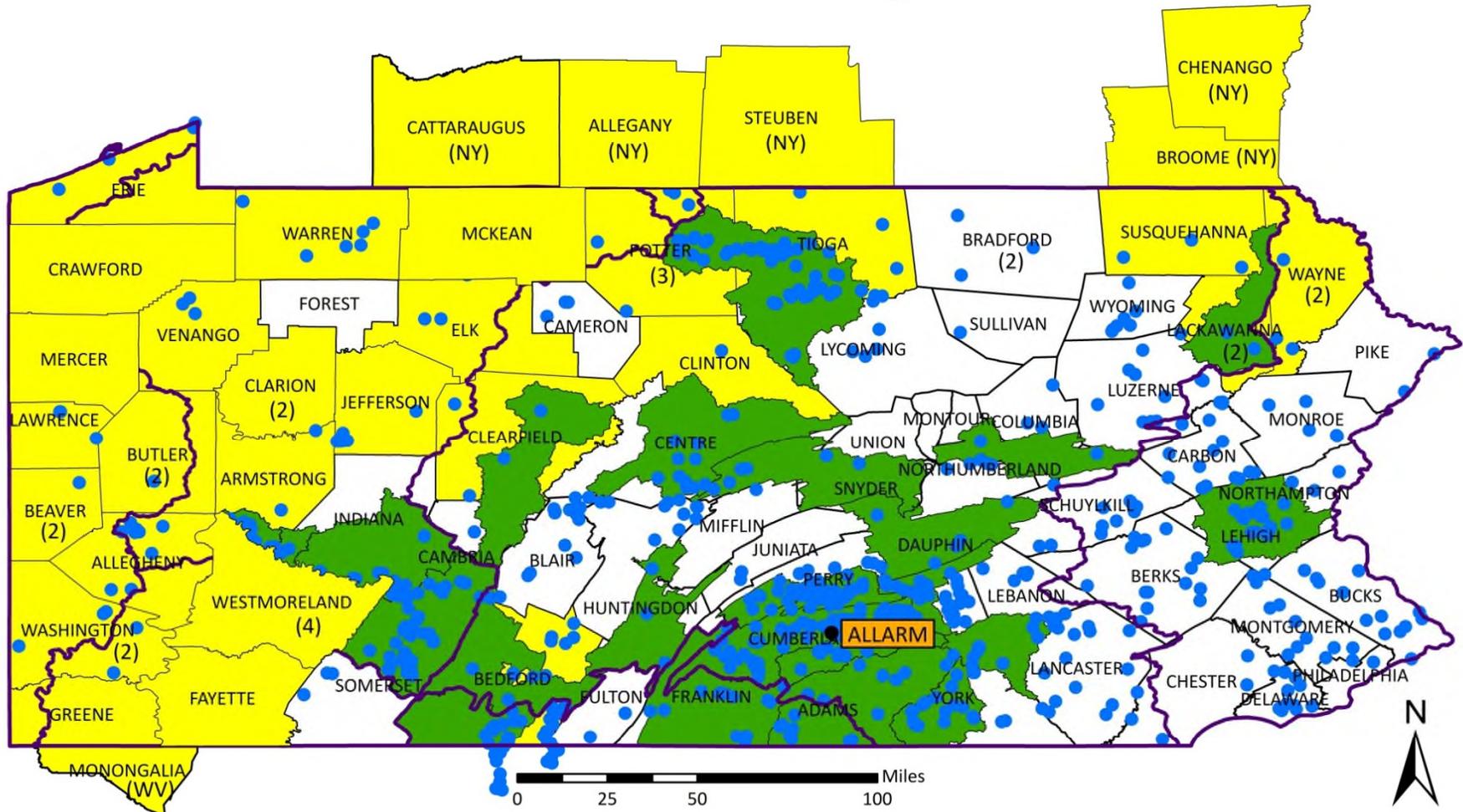
12-14 Dickinson College Students

ALLARM History



Monitoring Program	Region	Volunteers	Outreach
Acid Rain	Statewide	Individuals	Minimal
Traditional TA	Southcentral PA	Groups	Intensive
Shale Gas	Marcellus & Utica	Groups & Individuals	Moderate

ALLARM Monitoring Assistance



Alliance for Aquatic Resource Monitoring
 Environmental Studies Department
 Dickinson College
 P.O. Box 1773
 Carlisle, PA 17013-2896

www.dickinson.edu/ALLARM
ALLARM@dickinson.edu
 717.245.1565



October 2013

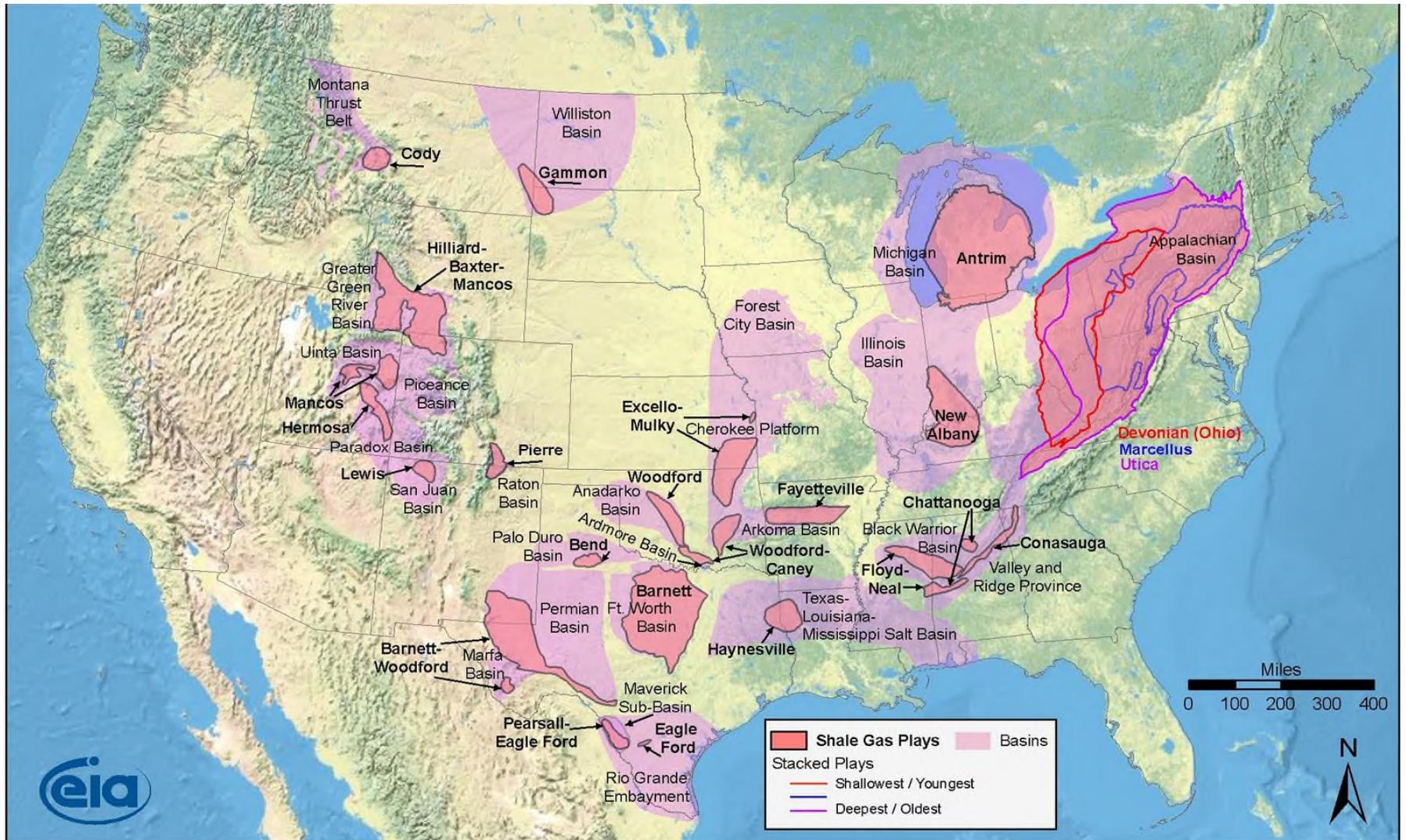
- Acid Rain Sites
- Traditional Technical Assistance
- Shale Gas
- 6 Major PA Watersheds

Data Sources: ALLARM, NYS Office of Cyber Security, PA DOT, PSU, USGS, WVDEP



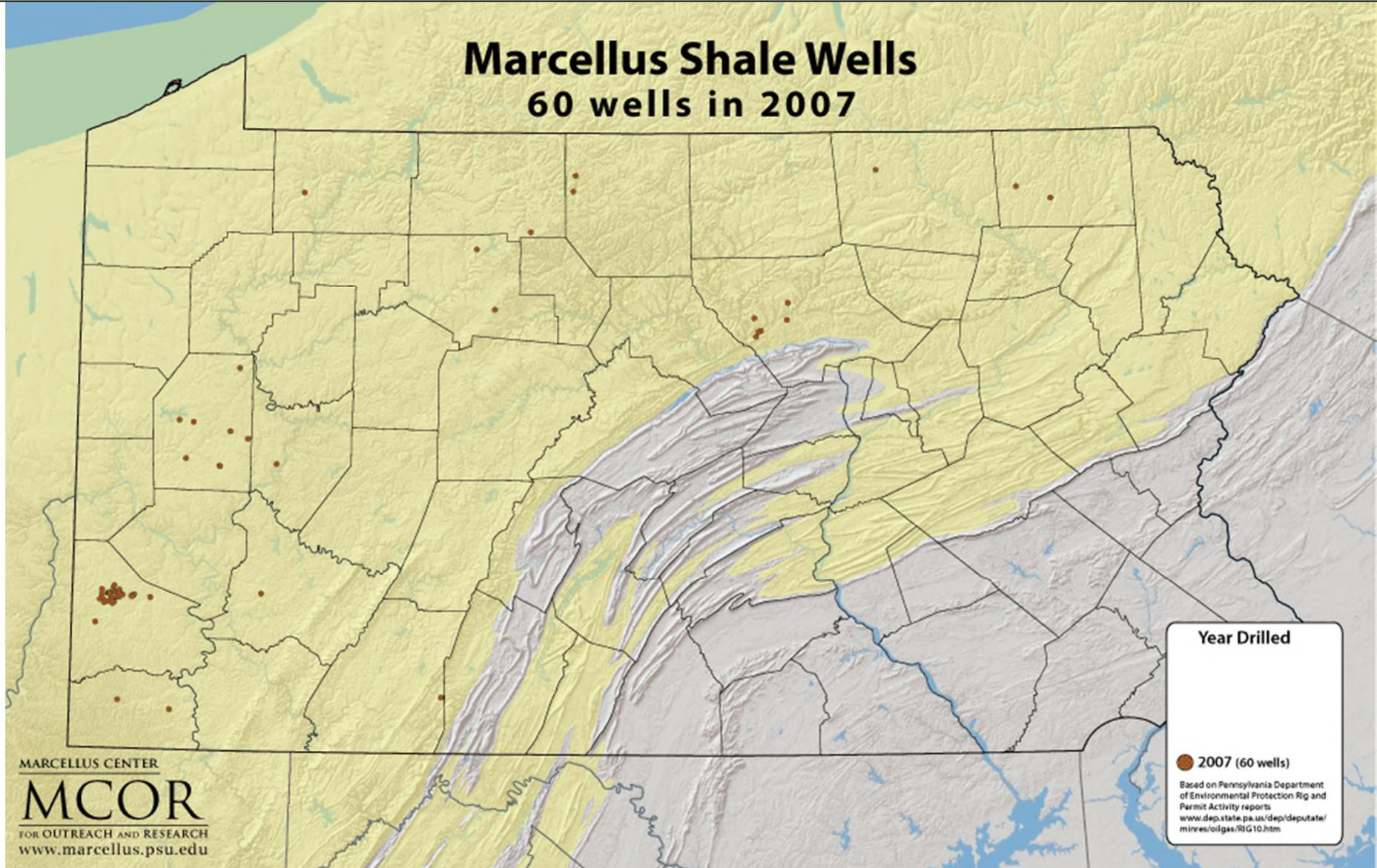
SHALE GAS MONITORING PROGRAM

Shale Gas Plays



Source: Energy Information Administration based on data from various published studies
 Updated: May 28, 2009

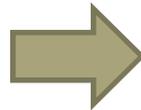
Marcellus Wells in Pennsylvania



Monitoring Approach



Community Concern



Technical Assistance
(ALLARM, CCDs, DRN,
MWA, TU)



Monitoring trainings



Data collection &
quality verification



Data interpretation



Communities use data to report
pollution events, continuous
baseline monitoring

Shale Gas Volunteer Monitoring

- Movement - 2500 people trained since the start of 2010
- ALLARM, County Conservation Districts, Delaware Riverkeeper Network, Mountain Watershed Association, Sierra Club, Trout Unlimited, & Waterdogs



Shale Monitoring Trainings

- Background & Science of Shale Gas
- Permit Tracking & Site Location
- Visual Assessment
- Safety Precautions
- Water Quality Monitoring



Protocol Overview

Survey Type	Parameters	Methodology	Frequency
Chemical	<ul style="list-style-type: none"> • Conductivity and total dissolved solids • Barium and strontium 	<ul style="list-style-type: none"> • LaMotte PockeTester • Certified lab analysis 	<ul style="list-style-type: none"> • Weekly • Twice a year and to confirm contamination event
Water quantity	<ul style="list-style-type: none"> • Surrogate flow 	<ul style="list-style-type: none"> • Stream stage 	<ul style="list-style-type: none"> • Weekly
Physical	<ul style="list-style-type: none"> • Gas Related Earth Disturbance • Spills and Discharges • Gas Migration or Leakage • Pipelines 	<ul style="list-style-type: none"> • Visual survey 	<ul style="list-style-type: none"> • Weekly
TU Coldwater Baseline Parameters	<ul style="list-style-type: none"> • pH • Temperature 	<ul style="list-style-type: none"> • ColorpHast strips • LaMotte PockeTester 	<ul style="list-style-type: none"> • Weekly • Weekly

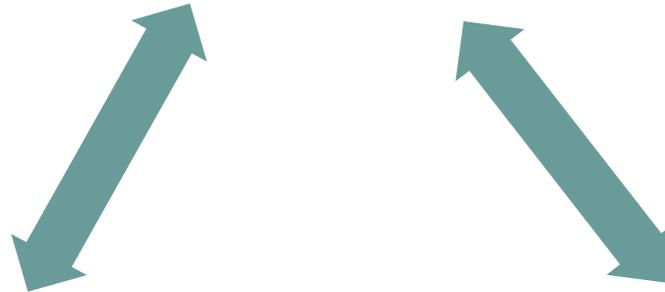
Weekly Monitoring

Conductivity, TDS,
Temperature
In-stream testing



Visual
Observation
Checklist

Stage Monitoring



Visual Assessment Checklist

Monitor Name: _____ Date: _____
Stream Name: _____ Site Coordinates: _____

Observations for Gas Related Earth Disturbances

Streams:	Observed	N/A	Pipeline?	Photo Taken
Visual evidence of sediment entering stream, pond, or other body of water				
• Sediment plume				
• Discolored water				
• Increased sediment deposition on the stream bottom				

Access Points:	Observed	N/A	Pipeline?	Photo Taken
• Mud/sediment/sludge from access road travels to main road				
• Mud/sediment/sludge from access road enters road ditch				
• Access road not stabilized with appropriate material (i.e. gravel)				
• Access road crosses stream and drainage from road enters directly into stream				
• Access road banks are not stabilized (no mulch, seeding, vegetation, etc.)				

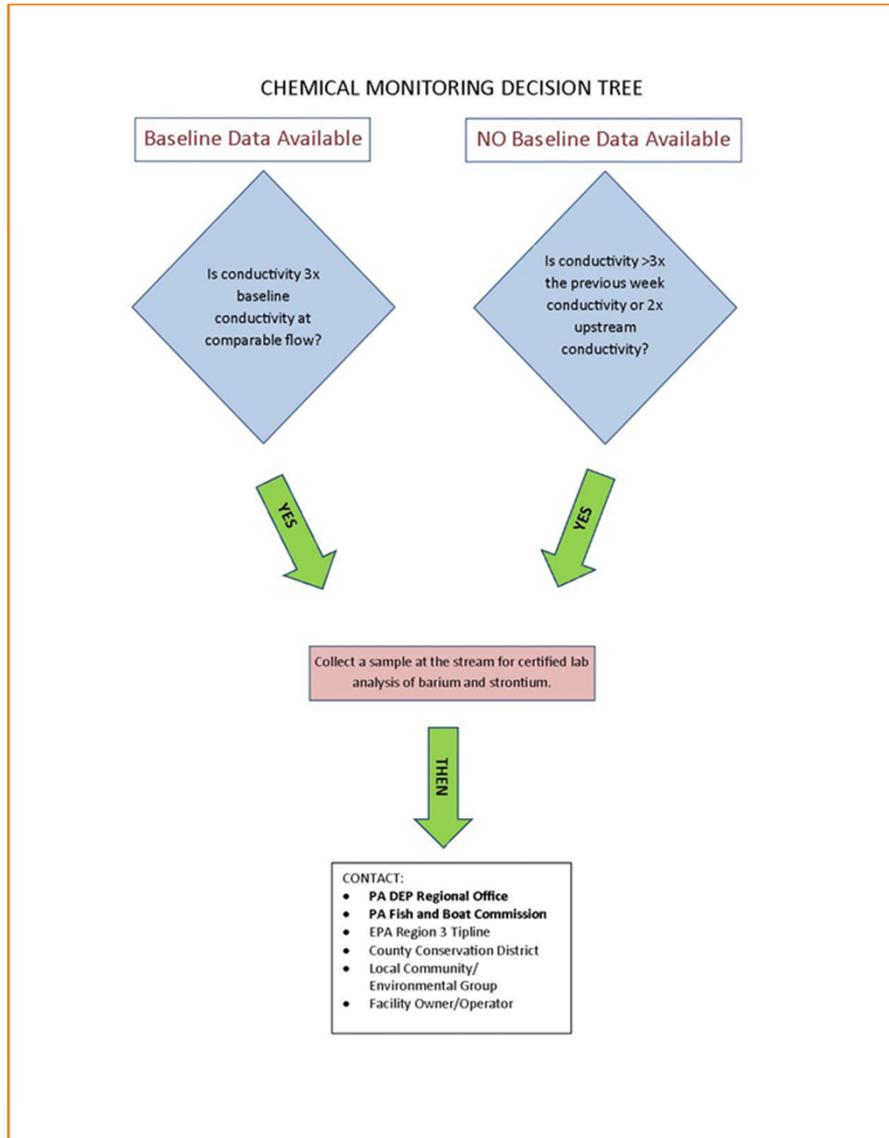
Ditch Pits, Storage Ponds, Staging Areas:	Observed	N/A	Pipeline?	Photo Taken
• Earth has been disturbed to edge of water body, there are no controls to stop or filter runoff				
• Check access across the site throughout with no debris block				
• Ditches of sediment control structures go directly into a water body without filtering or slowing runoff				
• Ditches of sediment control structures are not stabilized (no mulch, seeding, vegetation, etc.)				

Streams:	Observed	N/A	Pipeline?	Photo Taken
• Unusual color in the water				
• Discolored water (brown or grey, like on the water surface)				
• Persistent foam and/or bubbles before there's normal agitation				
• Foam the water or other responses in the water or along the bank				
• Evidence of illegal dumping				

Streams:	Observed	N/A	Pipeline?	Photo Taken
• Gas bubbling to surface				
• Unusual odor (other than mercaptan compounds)				

Observation description:

Decision Trees & Reportable Events

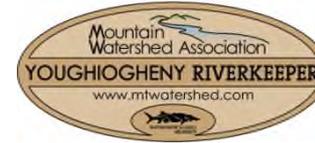


Reportable Event Steps:

1. Re-calibrate meter and re-test your water.
2. Collect a sample for barium & strontium analysis.
3. Contact your local group leaders.
4. Contact enforcement agencies.

Successful Support System

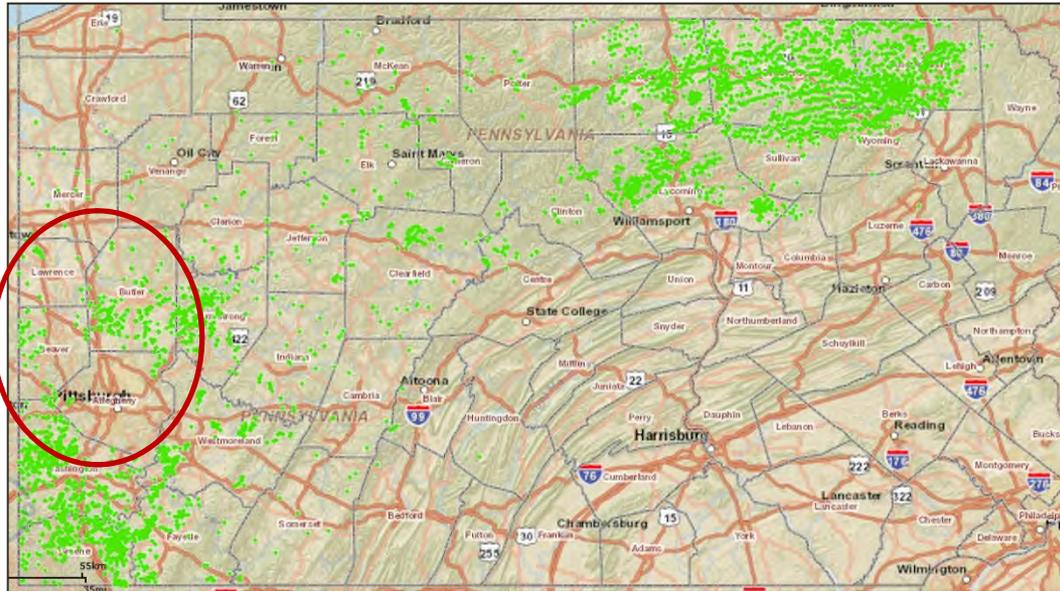
- Network of Service Providers
- Quality Assurance/Quality Control
- Monitoring Group Support
- Data Checking & Review
- Tailored Follow-up Support





VOLUNTEER MONITORING SUCCESSES

Western Pennsylvania



- ALLARM Volunteers
- Marcellus Outreach Butler
- Fracking Truth Alliance
- Mountain Watershed Association

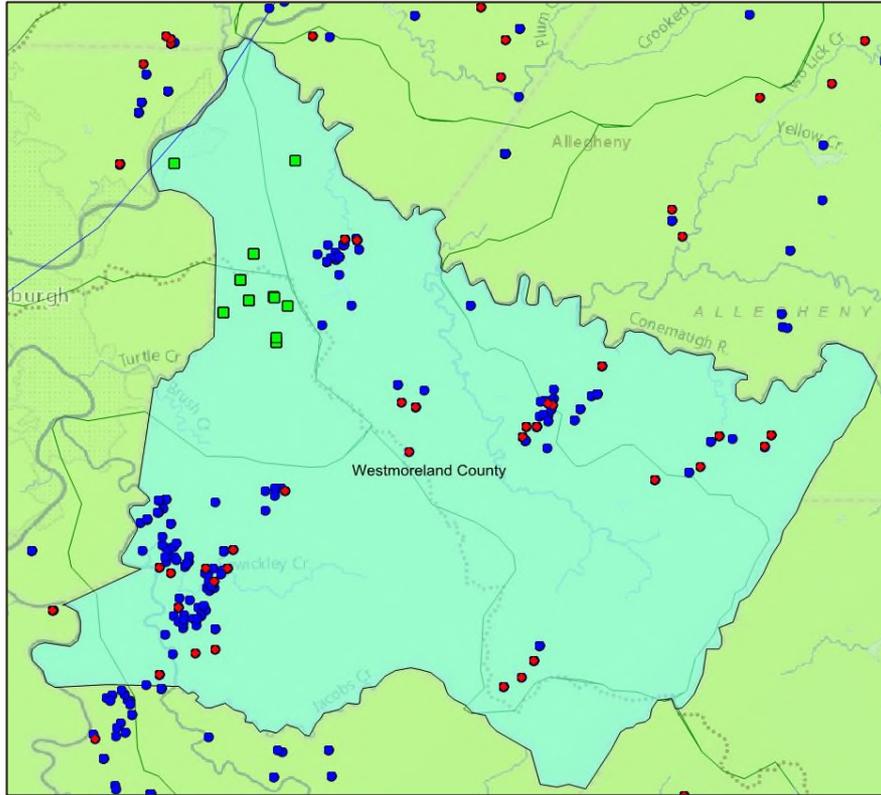
Coordinated group able to act on environmental issues, political issues, and community impact issues.



Mountain Watershed Association
YOUGHIOGHENY RIVERKEEPER



Murrysville Stream Monitoring Group



(Shale Network, 2013)

Murrysville group proactively tests local waterways for contamination

By [Daveen Rae Kurutz](#)

Published: Wednesday, Sept. 12, 2012, 8:59 p.m.

A group of Murrysville residents want to make sure nothing is contaminating local streams.

For the past several weeks, members of the Murrysville Stream Monitoring Group have been checking eight local waterways to find out which pollutants, if any, are in the streams.

"All we're looking for is better safety," said Ellen Spain, coordinator of communication and education for the group. "If we see something, we'll tell someone about it. Our concern now is testing as many streams from the source to past a drilling site."

The group checks Haymaker Run, Turtle Creek, Pucketa Creek, Lyons Run, Steel Run, Thompson Run, Poke Run and streams near Beaver Run Reservoir — where Consol Energy has more than a dozen Marcellus shale wells — on a weekly basis. Test results are sent to Dickinson College for analysis, Spain said. Some of those water sources also are monitored by the Turtle Creek Watershed and Mountain Watershed programs.

Joe Guthrie organized the group after he and his wife, Wanda, found out about a workshop last winter on stream monitoring. At the time, the pair were entrenched in citizen movements to ensure Marcellus shale drilling wouldn't damage the area or its water supply.

"It seemed like something that might be a good thing for Murrysville to do," Guthrie said. "There were others interested in getting out and doing something as opposed to just going to meetings and talking about it."

About Daveen Rae Kurutz



Daveen Rae Kurutz 412-856-7400
x8627
Staff Reporter
Murrysville Star

[Contact Us](#) | [Video](#) | [Photo Reprints](#)

Details

FYI

The Murrysville Stream Monitoring Group will host an educational workshop on Nov. 14 at 7 p.m. at the East Suburban Unitarian Universalist Church on Sardis Road. For information on the group, call Joe Guthrie at 724-327-2767.

Daily Photo Galleries



Tuesday - February 18, 2014

This Just In Blog

[Maps: Deaths caused by road crashes vs. cancer](#)

February 18, 2014

Questions?

717.245.1565

ALLARM@dickinson.edu

www.dickinson.edu/ALLARM

Shale Gas Monitoring Toolkit:

<http://blogs.dickinson.edu/marcellusmonitoring/>