TOPIC OUTLINE

- Program Overview
- **Sample Projects**
  - 2001
  - 2008
  - **2012**
  - **Big Picture**
- **Sediment Quantification**
- **Moving Forward**

PA Dirt and Gravel Road Program

Project 3: completed 2012

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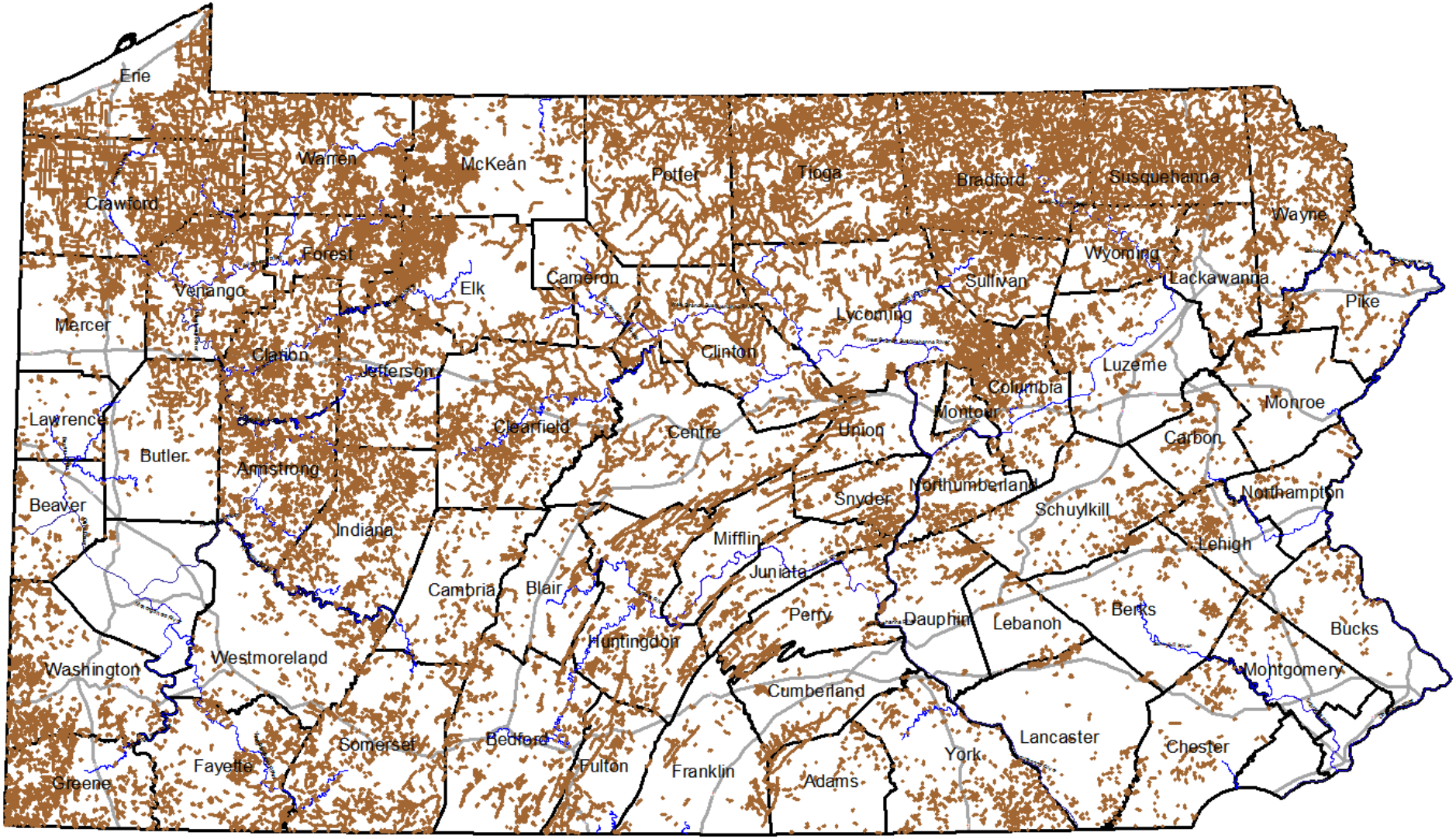
Big Picture

Public Unpaved Roads (20,000+ miles)

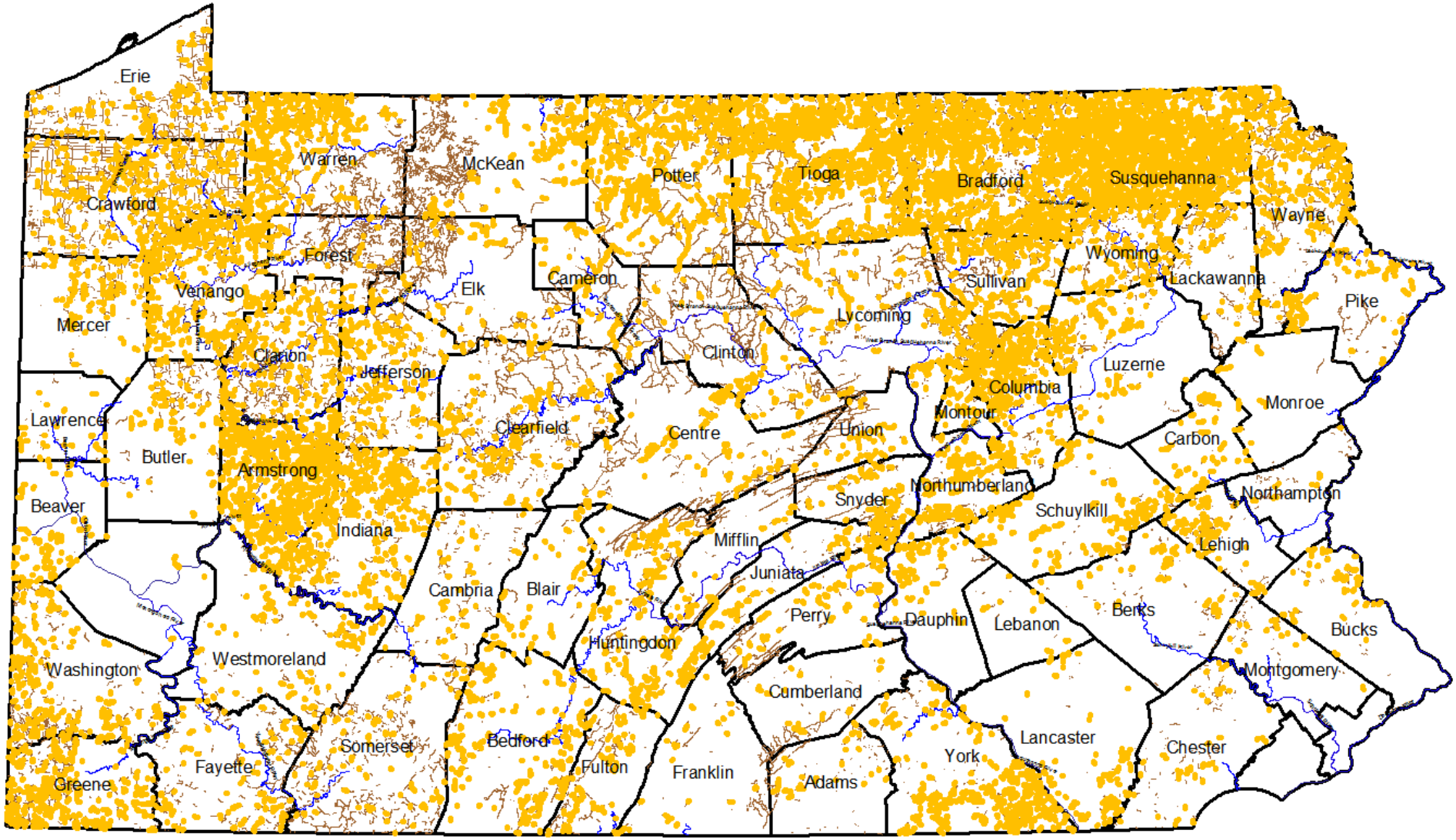
(16,500 municipal)



Big Picture

Public Unpaved Roads (20,000+ miles)

Unaddressed Pollution Sites (14,199 sites)

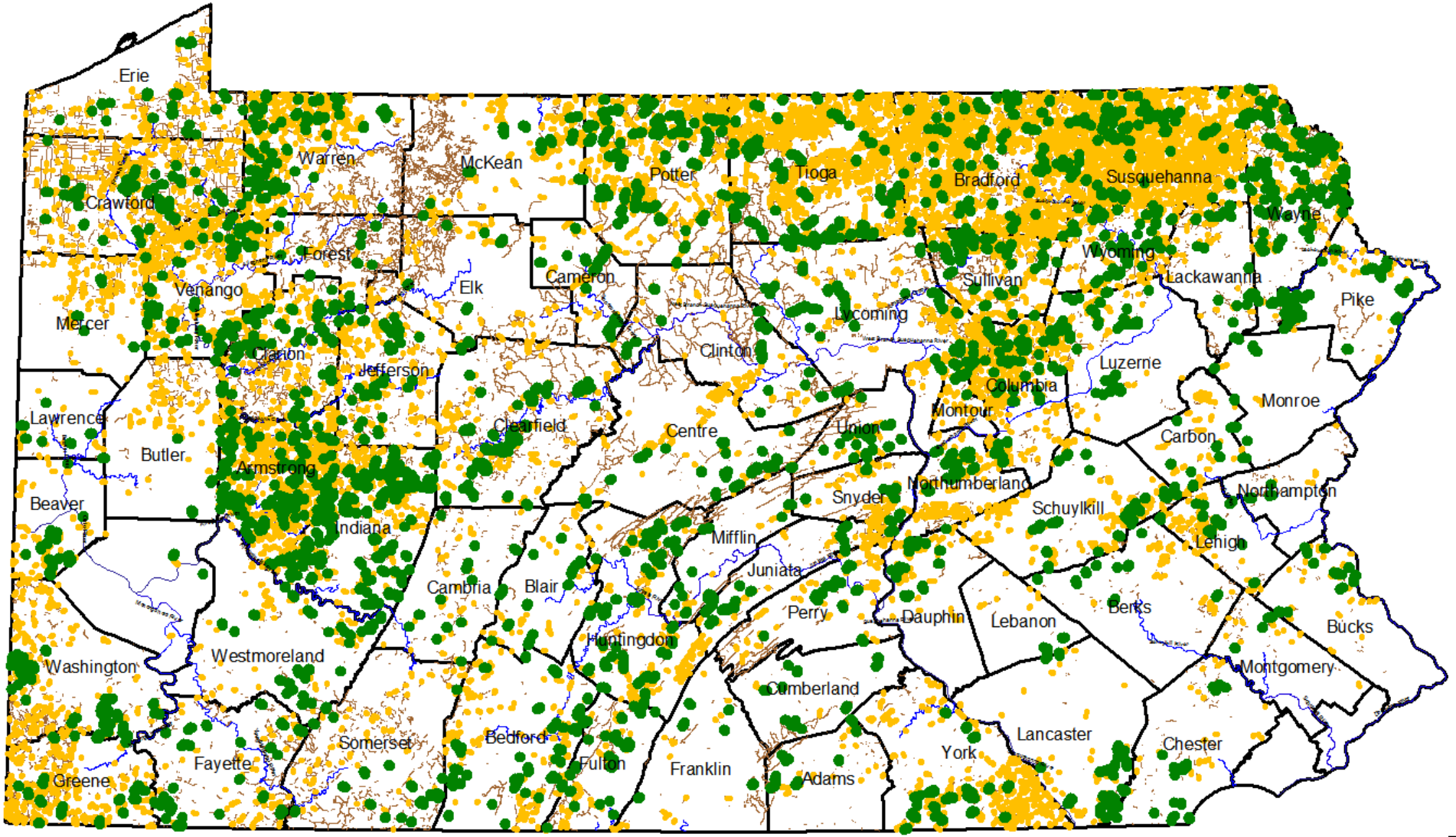


Big Picture

Public Unpaved Roads (20,000+ miles)

Unaddressed Pollution Sites (14,199 sites)

All Funded Worksites (2,427 sites)



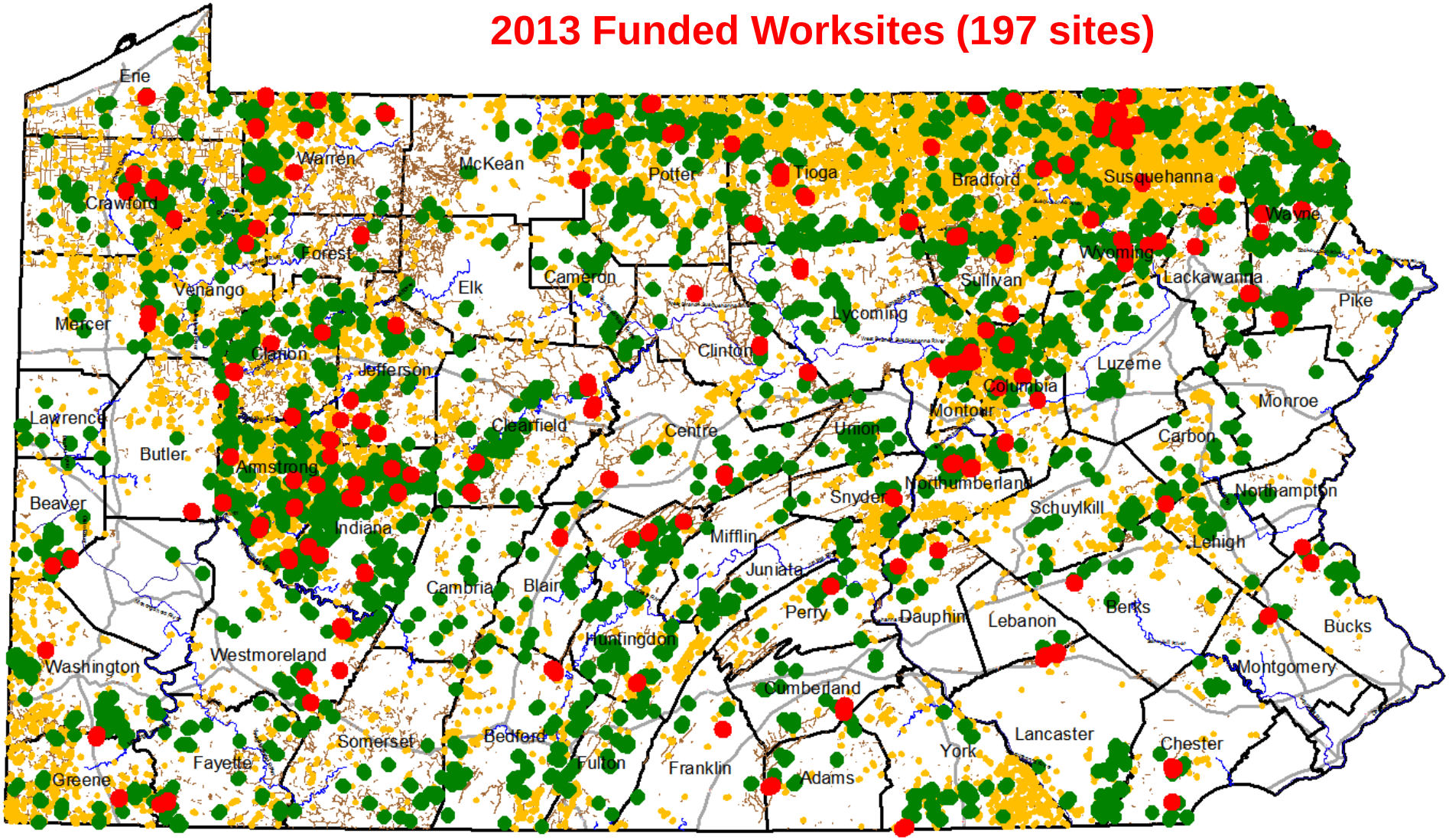
Big Picture

Public Unpaved Roads (20,000+ miles)

Unaddressed Pollution Sites (14,199 sites)

All Funded Worksites (2,627 sites)

2013 Funded Worksites (197 sites)



Big Picture

Environmentally Sensitive Maintenance for Unpaved Roads

PSU Center and USFS - 2011

Underdrains 1 of 4 — **Subsurface Water**

Underdrains:

An underdrain is a drainage system installed under a road or road ditch to collect and transport subsurface water. These buried conduits come in a variety of shapes and sizes and are usually wrapped in geo-textile fabric, which allows water to enter the conduit while keeping sediment out.

This underdrain collects water from springs and seeps under the road ditch.

Criteria for Underdrain Use:

- Where spring flow discharges onto the road.
- Where seeps appear on the surface of the road.
- Where road shoulders are continually wet and rutting.
- Where road ditches have frequent standing water or active flow due to springs and seeps.
- Where upslope bank is unstable and frequently fails due to excess moisture.

Important Underdrain Considerations:

- Never use underdrains to handle surface flows. Sediment will drop out and clog drain.
- Like crosspipes, install all underdrains with at least a one-percent slope to carry water to the outlet.
- Always cover underdrains with at least 8 inches of fill.
- Outlet underdrains separately from ditch drainage.
- Consider animal guards on outlets to prevent clogging.

Benefits of Underdrains

- Inexpensive and easily installed.
- Decrease volume of water on road surface.
- Allows road bank, ditch, and base to dry out.
- Separates subsurface water from road runoff.
- Saves money by reducing maintenance time and costs associated with perennially wet roadsides.

Underdrains 1 of 4 — Subsurface Water

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Sediment Quantification

Rainfall Simulator

Sediment Quantification

Rainfall Simulator

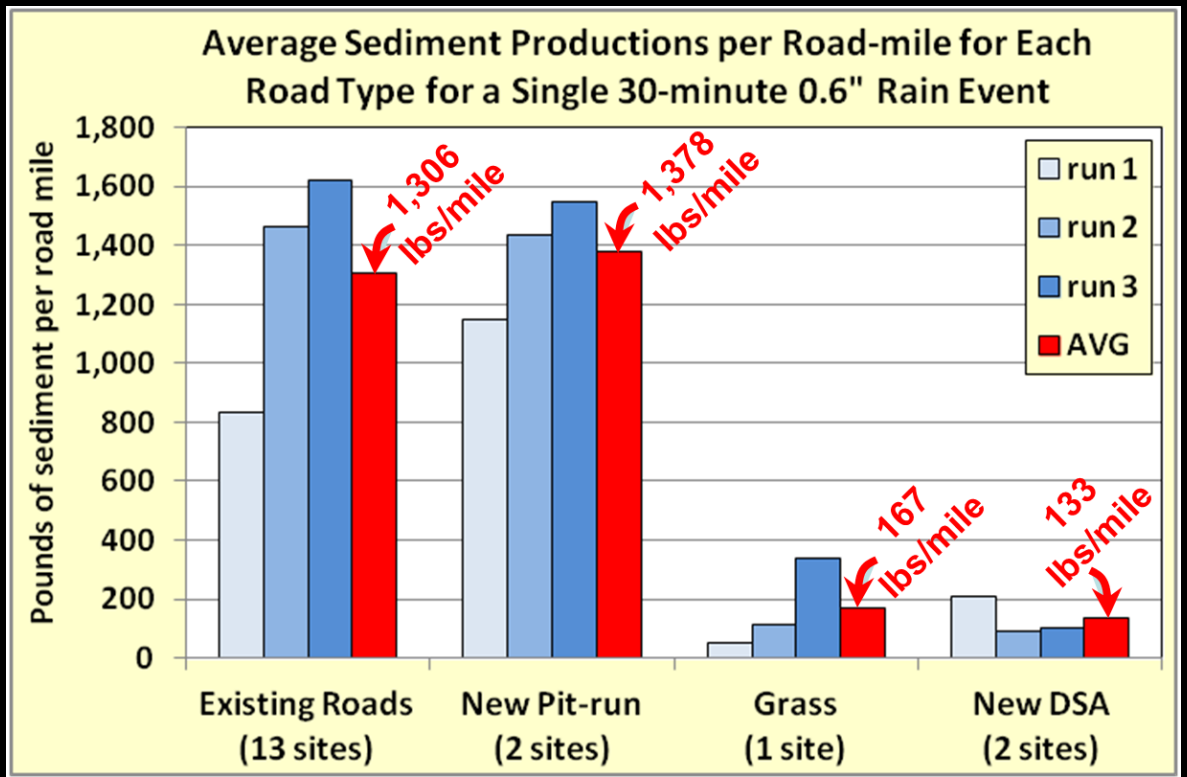
Sediment Quantification

Sediment Quantification

Sediment Quantification

What have we learned

- **Quality aggregate can reduce sediment loss by 90% for years.**
- A single 30 minute 0.55” event (1.5 month return interval) Can produce 1,000 lbs/mile of sediment



More information: Handout 2

Research Summary

Center for Dirt and Gravel Road Studies

Sediment Production from Shallow Oil & Gas Access Roads in the Allegheny National Forest

3/2012

Research Overview:

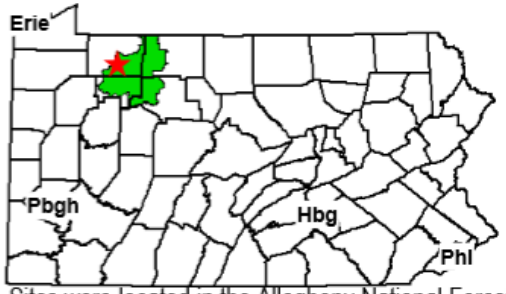
This project quantified sediment production from 14 sections of road used by the shallow oil and gas industry within the Allegheny National Forest. In addition to these 14 "existing condition" road tests, four of the sites then had a new surface applied, after which testing was repeated. The purpose of this research was to quantify and compare sediment production rates from existing roadways, and to determine any change in sediment runoff after placement of new aggregate surfaces on the road.

This document is a summary only, full report is available at "www.dirtandgravelroads.org" under "research."

funding: U.S. Department of Energy, National Energy Technology Laboratory; and U.S. Department of Agriculture, Northern Research Station

Study Details:

Shallow oil and gas development has been occurring in the Allegheny National Forest (ANF) for most of the last century. As of 2010, there were an estimated total of 9,800 wells throughout the ANF. Many wells are still in production today and are serviced by a network of over 3,000 miles of roadway (1,300 ANF and 1,700 oil/gas). New wells are still being drilled and current estimates are that this network of roads will be expanded to over 3,550 miles by 2020. Erosion and sedimentation from this extensive and increasing network of roads has become a growing environmental concern.



Sites were located in the Allegheny National Forest just southwest of Warren, PA

Phase I: 14 sections of roadway were chosen for testing in cooperation with personnel from the Allegheny National Forest (ANF). The road sections were chosen to cover a wide variety of traffic levels, slopes, and widths typical of the road network. Testing was completed on these 14 existing road segments in 2010. The purpose of this testing was to determine sediment productions for these roads and attempt to identify site characteristics affecting sediment production.

Phase II: Four of the 14 road sections above had new aggregate placed on them in early 2011. These four

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Moving Forward

- **PA Act 89 of 2013 (transportation bill)**

Moving Forward

- **PA Act 89 of 2013 (transportation bill)**
  - **7X Program Funding increase**
    - ~~$5M Annual Funding~~ **$35M Annual Funding**

Moving Forward

- **PA Act 89 of 2013 (transportation bill)**
  - **7X Program Funding increase**
    - ~~$5M Annual Funding~~ **$35M Annual Funding**
  - **Low-volume Paved Roads**
    - **Minimum $8M for work on paved roads with less than 500 adt.**
  - **Effective FY 2014-15**

PA Dirt and Gravel Road Program

Moving Forward

Final thoughts…

- Glad to see these issues being acknowledged by a larger audience.
- Education, interagency cooperation, and local control have been keys to our success.
- There are existing “BMPs” to pull from.
- Likely to implement ~500 projects next year!!!

Moving Forward

Wherever this workshop leads, we would like to stay involved.

We invite you to learn from from both our successes and our failures.

Also in attendance:

- **Karl Brown:** Executive Secretary, PA State Conservation Commission
- **Dave Creamer:** PSU Center staff

PA Dirt and Gravel Road Maintenance Program

2,500 projects and counting

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