Dr. Barry Scheetz Retires from Penn State (well, kind-of)
Effective January of 2012, Barry Scheetz has stepped down from the Director’s position at the Center for Dirt and Gravel Roads. Barry has been at Penn State for over 35 years as a researcher and professor of Civil and Nuclear Engineering. Barry has been involved with the Dirt and Gravel Road Program since before there was an official “Center”, and has served as the Center’s Co-Director from 2001-2007, and Director from 2007-2011.

Barry has not retired completely, but has chosen a “semi-retirement” option where he will continue to work for the University and the Center in a reduced role for the foreseeable future. This arrangement will allow Barry to tie up loose ends at the University while continuing to provide his expertise and support to the Center.

Steve Bloser Takes on Role of Center Director
Effective January of 2012, Steve Bloser has taken on the role of Director of the Center for Dirt and Gravel Roads. Steve has worked with the Dirt and Gravel Road Program and the Center for Dirt and Gravel Roads since 1999, and has been the Assistant Director of the Center since 2010. Steve graduated from Penn State with a B.S. in Environmental Resource Management in 1999, and a M.S. in Environmental Resource Management in 2007.

2012 Annual Maintenance Workshop
The Center is planning to hold its 2012 Annual Dirt and Gravel Road Maintenance Workshop in the Dubois area of Clearfield and Jefferson counties on September 25-26, 2012. Planning is underway to host the conference at Treasure Lake, just 5 minutes north of Dubois.

This year’s workshop will be a slight “changeup” in format from the previous few years when it has been held at a conference center and attached hotel. Accommodations this year will be in the form of modern cottages and condominiums. Both choices are fully modern (full bath, TV, kitchen, etc) and will be thoroughly detailed in registration materials. Registration will once again be available online this year (early registration discount through Aug 1).

Although it is early in the planning phase, this year’s workshop will most likely see a return to the traditional combination of classroom sessions and field trips. Potential field trips include past projects, active demo projects, forestry projects, and maybe even an elk-viewing side trip. Look for full details and registration information in the coming months.
**Mixed Bag**

### Program Funding

The potential for a “Comprehensive Transportation Funding Package” continues to be in the news out of Harrisburg. The Center continues to participate in meetings with the Keystone Transportation Funding Coalition on behalf of the Dirt and Gravel Road Maintenance Program. The Center is working to ensure that if any new transportation funding proposal is made, that the Dirt and Gravel Road Maintenance Program is not forgotten. Program funding has been consistent since 1997. Inflation, however, has effectively reduced the Program’s buying power by nearly 30% over those 15 years.

### Center Presents Research via International Webinar

Center staff will be presenting during a Transportation Research Board (TRB) webinar on April 4, 2012. The 90 minute webinar will feature a 30 minute presentation by Steve Bloser on the findings of various research projects completed in recent years that quantify sediment production from unpaved roads. The webinar is expected to draw several hundred participants from around the world. TRB does charge a $49 fee to participate (per link site, not per person). For more details about the webinar, visit: [http://www.trb.org/ElectronicSessions/Blurbs/168736.aspx](http://www.trb.org/ElectronicSessions/Blurbs/168736.aspx)

### ESM Trainings Outside PA

On occasion, the Center will hold its two-day “Environmentally Sensitive Maintenance for Dirt and Gravel Roads” training course for entities outside Pennsylvania. Interest in the Center, the Program, and the ESM course has been high over the past year. In November, the Center conducted a course in Houston, Missouri, sponsored by the “Top of the Ozarks Resource Conservation and Development Council.” Two additional trainings are planned for 2012. The first is to be held in western Maryland through the MD Department of Natural Resources. A second training is in the planning phase to be held in West Virginia through their department of highways.

### Skype: An Educational Tool?

The Center for Dirt and Gravel Roads is now available via Skype. I know, your first reaction is, “Why do I want to look at those guys?” Well, while video-calling can be fun, the ability to screen-share could be a great educational asset to Conservation Districts, Trout Unlimited, other conservation agencies, or just a concerned citizen. In order to appoint a representative, the entity simply needs to submit their request in writing and have it accepted by the Conservation District Board.

A multi-disciplined and locally knowledgeable active QAB team is a large part of what makes this Program successful.

Have a question? Submit it to [dirtandgravel@psu.edu](mailto:dirtandgravel@psu.edu)

**Center Website:** 10,000 visitors over last 14 months

**dirtandgravelroads.org**

The Center maintains a website with extensive information and resources relating to Environmentally Sensitive Maintenance of Unpaved Roads at [www.dirtandgravelroads.org](http://www.dirtandgravelroads.org). The website, extensively overhauled in early 2011, also contains information and resources directly related to PA’s Dirt and Gravel Road Maintenance Program.

**Website Traffic**

In December of 2010, a traffic counter was placed on the Center’s website. It was moved to the new site in 2011. The counter recorded a total of 8,201 visitors to the site for 2011. This equates to 23 visitors per day or 683 visitors per month. Traffic is relatively consistent throughout the year with a slight surge before the Annual Workshop in September.

**Visitors Near and Far**

Perhaps more interesting than the number of website visitors is where those visitors came from. As expected, the majority of visits come from within Pennsylvania by those involved in the PA Dirt and Gravel Road Maintenance Program. A look at the map on the right, however, shows the spread of visitors worldwide. The 500 most recent website visitors came from over 30 different states and 15 different countries. The Center has been fielding inquiries from around the country over the past few years from both public and private entities that are interested in both the Center and the Dirt and Gravel Road Program.

The white dots on the World and US maps above show where the 500 most recent website visitors were located. Green and red dots indicate the 5 most recent visitors. While the concentration around Pennsylvania is as expected, these maps clearly illustrate the broader reach of the website.

**QAQC corner**

The Program’s “Quality Assurance/Quality Control” effort:

Round Two of QAQC visits is underway. Three successful QAQC visits were done in 2011. A full round of 8 QAQC visits is planned for 2012. Center and Program staff are currently working to select counties. If your District is selected, expect to be contacted soon about potential dates for the visit.

For questions about the QAQC process, contact Karen Books at the State Conservation Commission at [kbooks@pa.gov](mailto:kbooks@pa.gov) or 717-787-2103.
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.

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 sites were tested again in late 2011 in order to determine any differences in sediment production compared to the 2010 tests. Two of the sites were covered with “pit-run” material. Pit-run is a locally excavated material of varying quality that is available at a relatively low cost. Two of the sites were covered with “Driving Surface Aggregate (DSA).” DSA is a PENNDOT aggregate specification designed to achieve maximum density for use as an unbound wearing course for unpaved roads.

Rainfall Simulator:

A rainfall simulator, or “Rainmaker,” was used in this study in order to create a controlled and repeatable rain event. This makes it possible to compare sediment production between sites, or to compare sediment production “before” and “after” practices are implemented on a section of road. The Rainmaker, developed by the Center for Dirt and Gravel Road Studies, creates a 0.6” rainfall event in 30 minutes over a 100’ length of road (nearly equivalent to a 2-month return interval for a 30 minute storm for most of Pennsylvania).

The Rainmaker was used on each of the 100’ long road test segments in this study. Each site test consisted of three 30-minute runs of the rainmaker, with 60 minutes of drying time and 20 light-duty vehicle passes between runs to simulate traffic stresses. Flow and sediment samples were taken at regular intervals to determine the total sediment loss for each section of road. The three runs were combined for each section of road to determine the average sediment loss for one 30 minute event. For various reasons, sediment productions from the Rainmaker can be considered conservative in comparison to equivalent natural storms.

The publishers of this publication gratefully acknowledge the financial support of the US Department of Energy and the US Forest Service. For additional information, contact: Center for Dirt & Gravel Roads Studies, Penn State University, 215 Transportation Research Building, University Park, PA 16802 (Toll-Free Phone: 1-866-668-6683, Fax: 814-863-6787, Email: dirtandgravel@psu.edu). Additional copies available on our website at: www.dirtandgravelroads.org
Part I: Sediment Production from Existing Roads

Sediment production was measured on 14 existing oil and gas access roads in the Allegheny National Forest. The table to the right highlights the important site characteristics and sediment production rates of all 14 sites in order of increasing average sediment production.

The average sediment production from the 1,400 feet of road tested in this study was 25 pounds for a single 30 minute rain event of 0.6”. This equates to 1,300 pounds of sediment production per mile of roadway for a single equivalent rain event.

Data Trends and Observations:
- Site A, partially covered by grass, had least amount of sediment production.
- A significant “first flush” effect was seen on all sites where most of the sediment left during the first 5-10 minutes of runoff.
- Without traffic stress (run 1), the best indicators of sediment production from the roads tested were road slope combined with road width, although the correlation was not as strong as expected. After traffic stresses (runs 2&3), the amount sediment increases more dependent on road strength as measured by the California Bearing Ratio (CBR).

Part 2: Sediment Production After Use of New Aggregate

Four of the sites detailed above had a new aggregate surface placed on them in 2011 (sites B & F with “pit-run aggregate,” and sites G & C with Driving “Surface Aggregate”). The newly placed pit-run material reduced sediment production by 39% and 64% (note that these two sites happened to have a higher “before” sediment production). The newly placed Driving Surface Aggregate material showed sediment reductions of 67% and 95%.

A direct comparison shows that the two pit-run sites produced 10 times the amount of sediment of the two DSA sites (average 26.1 lbs and 2.5 lbs respectively). The sediment reductions found here from DSA placement were comparable to previous studies conducted by the Center. Previous research conducted in 2007 showed sediment reductions from DSA placement of 75% after one month and 90%+ after one year compared to existing roads in a similar study. DSA was also unaffected by traffic stress, as illustrated in the graph below (sediment decreases from run 1 to run 3 for DSA, increases for all other sites).

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