

## Research and Science Communities Across the Appalachian Region

### Federal - Outside the Department of Interior (DOI)

#### Environmental Protection Agency – Research Centers and Labs

EPA research has provided effective solutions to high-priority environmental problems for the past 40 years. However, single-pollutant, source-specific, and end-of-pipe approaches are limited in their ability to address the increasing complexity of 21st century environmental challenges. EPA’s Office of Research and Development (ORD) is strengthening its planning and delivery of science by implementing an integrated trans-disciplinary research (ITR) approach. ITR is the bringing of people together from different disciplines, perspectives, and experience to define problems, conduct research, and deliver products and outcomes. ORD is realigning its current 12 research areas into four better integrated research programs:

- Sustainable and Healthy Communities (SHC)
- Safe and Sustainable Water Resources (SSWR)
- Air, Climate and Energy (ACE)
- Chemical Safety for Sustainability (CSS)

**National Risk Management Research Laboratory.** EPA’s research program is centered on an important organizing principle called the “risk paradigm.” The risk paradigm consists of two interrelated processes: risk assessment and risk management. Risk management is the identification and prioritization of environmental and health risks (actual or potential threat of adverse effects on living organisms and our environment by effluents, emissions, wastes, resource depletion, etc., arising out of activities), followed by coordinated and economical application of resources to sustainably minimize, monitor, and control the adverse impact events or to maximize the realization of opportunities. (<http://www.epa.gov/nrmrl/>)

**National Center for Environmental Assessment.** The mission of the center is to provide guidance about how pollutants may impact our health and the environment. This is an important piece in the risk assessment process between the ORD bench scientist and EPA’s program and regional office managers who are making regulatory, enforcement, and remedial-action decisions. (<http://www.epa.gov/ncea/>)

**National Exposure Research Laboratory.** EPA’s National Exposure Research Laboratory (NERL) provides international leadership in exposure science and uses an integrated multidisciplinary approach to conduct relevant and responsive research to: develop the knowledge and tools necessary to assess potential exposures and risks to emerging environmental threats, and mitigate exposures to known contaminants and environmental stressors. The NERL provides information to promote the understanding of, and approaches for reducing exposures for making informed decisions to protect public health and the environment. (<http://www.epa.gov/nerl/>)

#### National Oceanic and Atmospheric Administration (NOAA)

National Oceanic and Atmospheric Administration Research Centers - National Oceanic and Atmospheric Administration (NOAA) - NOAA research is conducted at Federal facilities and through partnerships with universities and science institutes to provide accurate weather forecasts, protect and manage the nation’s coastal and ocean resources, and to provide information for planning and response to climate change. NOAA maintains one research center in the LCC. (<http://www.noaa.gov/>)

### U.S. Department of Agriculture

**Forest Service Research and Development.** The research and development (R&D) arm of the U.S. Department of Agriculture (USDA) Forest Service works at the forefront of science to improve the health and use of our Nation’s forests and grasslands. Research has been part of the Forest Service mission since the agency’s inception in 1905. Today, some 500-plus Forest Service researchers work in a range of biological, physical, and social science fields to promote sustainable management of Nation’s diverse forests and rangelands. Their research covers a lot of territory, with programs in all 50 states, U.S. territories, and commonwealths. The work has a steady focus on informing policy and land management decisions, whether it addresses invasive insects, degraded river ecosystems, or sustainable ways to harvest forest products. The researchers work independently and with a range of partners, including other agencies, academia, nonprofit groups, and industry. The information and technology produced through basic and applied science programs is available to the public for its benefit and use. (<http://www.fs.fed.us/research/>)

**Agricultural Research Service Centers.** The Agricultural Research Service of USDA conducts research to: ensure high-quality, safe food, and other agricultural products; assess the nutritional needs of Americans; sustain a competitive agricultural economy; enhance the natural resource base and the environment; and, provide economic opportunities for rural citizens, communities, and society as a whole. The four research centers within the Appalachian LCC are:

- **Appalachian Farming Systems Research Center (Beaver, West Virginia).** Research programs at AFSRC integrate soil-plant-animal resources to develop knowledge and technology that increases profitability of small-farm agricultural enterprises in the Appalachian region while enhancing soil and water quality and environmental integrity. The AFSRC conducts research on soil acidity, karst landscape water quality, and nutrient flow at the soil-plant interface in grazed agricultural systems. Additional information is available through the AFSRC website ([http://www.ars.usda.gov/main/site\\_main.htm?modecode=19-32-00-00](http://www.ars.usda.gov/main/site_main.htm?modecode=19-32-00-00)).
- **National Center for Cool and Cold Water Aquaculture (Leetown, West Virginia).** The National Center for Cool and Cold Water Aquaculture (NCCCWA) conducts research related to aquaculture production. Research focuses primarily on rainbow trout and encompasses genetics, genomics, physiology, aquatic animal health, and aquaculture engineering. (<http://www.ars.usda.gov/Main/docs.htm?docid=17628>)
- **Pasture Systems and Watershed Management Research Unit (University Park, Pennsylvania).** The Pasture Systems and Watershed Management Research Unit (PSWMRU) conducts research to support environmentally and economically sustainable farming in the northeastern U.S. by improving agro ecosystem management. The major research efforts are: (1) Developing fundamental information for establishing, maintaining, and managing diverse forage and grazing lands, recognizing ecosystem services beyond the traditional forage, food, and fiber production to include emerging services such as carbon sequestration, greenhouse gas mitigation, and bioenergy production. (2) Developing fundamental information linking agricultural management with water quality and developing management practices and strategies that balance production and agro ecological services. (3) Using experimental measurements, model development, and whole farm simulation to evaluate system interactions and improve farm management effects on air, soil, and water quality. Additional information on project of the PSWMRU can be obtained via their website ([http://www.ars.usda.gov/main/site\\_main.htm?modecode=19-02-00-00](http://www.ars.usda.gov/main/site_main.htm?modecode=19-02-00-00))
- **North Appalachian Experimental Watershed (Coshocton, Ohio).** The North Appalachian Experimental Watershed (NAEW) conducts research on hydrology, surface runoff, groundwater quality, and erosion for agricultural and other purposes. Specific research includes: (1) Quantification of runoff and water quality risks through analysis of data and precipitation and weather investigations are also a component of the research. (2) Long term data base of measurements from rain gages, watershed flumes and weirs, and automated data collecting lysimeters along with soil and climatology data. (3) Development knowledge of basic water sediment, and chemical movement which are used to develop practical

procedures and verify transport models. (4) Development of safe pesticide and nutrient management strategies while maintaining high agricultural productivity levels. (5) Develop practical management tools for managing pesticide and nutrient runoff. Additional information on the research activities of the NAEW can be found on their website ([http://www.ars.usda.gov/main/site\\_main.htm?modecode=36-05-00-00](http://www.ars.usda.gov/main/site_main.htm?modecode=36-05-00-00)).

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