



United States
Department of
Agriculture

Natural Resources Conservation Service



PENNSYLVANIA NRCS FY 2019 ACCOMPLISHMENTS



PENNSYLVANIA NATURAL RESOURCES CONSERVATION SERVICE

The USDA Natural Resources Conservation Service (NRCS) provides innovative conservation solutions to restore, enhance and protect Pennsylvania's private working lands.



Dean Jackson, recipient of the Aldo Leopold Conservation Award, on his farm in Bradford County with District Conservationist, Mike Hanawalt.



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2019: A YEAR IN REVIEW

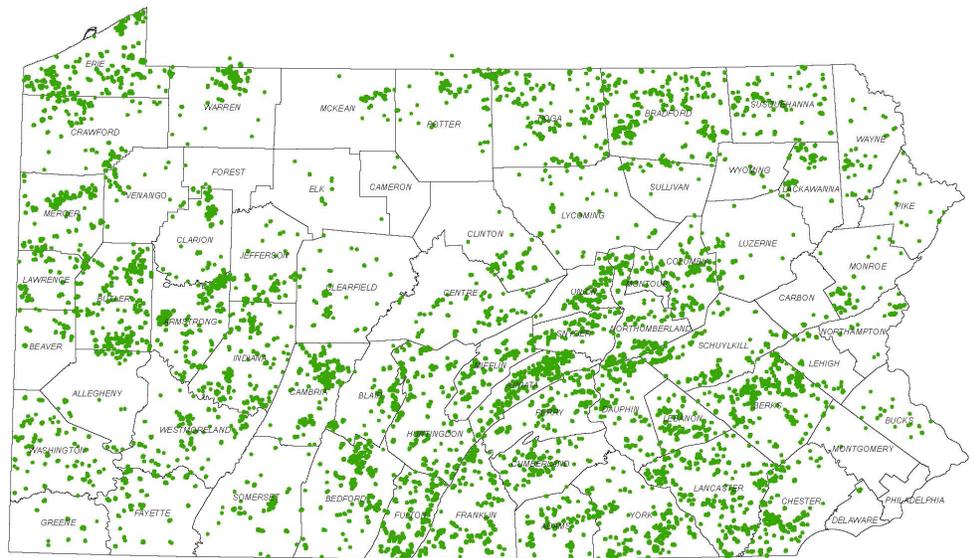
Our voluntary conservation programs provide technical and financial assistance to help farmers, woodland owners, and other land managers address natural resource concerns such as water quality, soil erosion, wildlife habitat, flooding, landscape fragmentation, and much more. Using our Strategic Approach to Conservation, NRCS leverages partnerships across the Commonwealth of Pennsylvania to invest in landscape-scale conservation.

This report captures Pennsylvania NRCS's and its partners' successes throughout fiscal year (FY) 2019, which ran from October 1, 2018 to September 30, 2019.

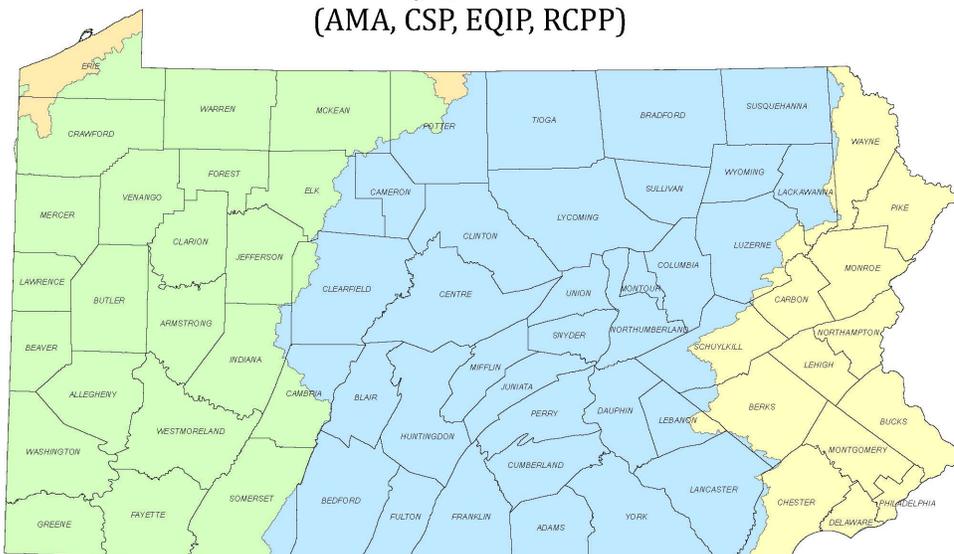
22,128

CONSERVATION PRACTICES APPLIED

In FY 2019, more than 22,000 conservation practices were applied on Pennsylvania's private lands to help improve soil, air, and water quality; enhance wildlife habitat; and preserve land for future generations.



Funding by Watershed (AMA, CSP, EQIP, RCPP)



Ohio River Watershed	Great Lakes Watershed	Chesapeake Bay Watershed	Delaware River Watershed
Contracts.....174	Contracts.....2	Contracts.....411	Contracts.....78
Acres.....27,073	Acres.....123.7	Acres.....48,200	Acres.....6,447
Dollars.....\$6.9 million	Dollars.....\$194,492	Dollars.....\$22.8 million	Dollars.....\$3.5 million
	Note Contracts were only in Potter County in FY19		

FUNDING BY LAND USE

(all programs)

Cropland- \$8 M
Livestock/Pasture- \$21.3 M
Forestland- \$3.4 M

PENNSYLVANIA NRCS FY 2019 INVESTMENTS ON PRIVATE WORKING LANDS

EQIP Environmental Quality Incentives Program		AMA Agricultural Management Assistance Program	
	44,502		2,312
	447		14
	\$25.2 M		\$392,155
CSP Conservation Stewardship Program		RCPP Regional Conservation Partnership Program	
	29,202		4,559
	159		43
	\$4 M		\$3.7 M
* Includes CSP and RCPP-CSP		* Includes RCPP-EQIP	
CTA Conservation Technical Assistance		Symbol Key	
	154,641 *Acres planned		Acres
	1,822		Funding
			Contracts
			Plans

INITIATIVES

National Water Quality Initiative (NWQI)
\$850,255
Organic Initiative <i>(Certified & Transition)</i>
\$180,518
High Tunnel Initiative
\$172,420
Joint Chiefs' Initiative
\$440,170
\$194,492

TOP CONSERVATION PRACTICES APPLIED

Practice	Count	Measurement
Livestock		
Waste Storage	140	No
Heavy-Use Area	537,030	SF
Trails & Walkways	96,370	Ft
Stream Crossings	88	No
Fence	1,002,615	Ft
Roof Runoff	221	No
Prescribed Grazing	6,394	Ac
Agronomic		
No-till	3,080	Ac
Cover Crop	43,866	Ac
Nutrient Management	17,791	Ac
Soil Erosion		
Diversion	59,306	Ft
Waterway	112	Ac
Terrace	47,730	Ft
Lined Outlet	15,392	Ft
Buffers		
Herbaceous Buffer	40	Ac
Forest Buffer	40	Ac

PRESERVING PENNSYLVANIA'S LANDS

WETLAND RESTORATION PRESERVES WILDLIFE HABITAT

Joseph Drda of Crawford County owns and operates a multi-generational farm which he acquired from his great uncle, who was an active farmer. At the time Drda took control, the land was being rented out to a local dairy farmer, who was actively farming a corn and soybean rotation, using conventional tillage and no cover crop.

A portion of the fields were difficult to grow crops depending on the weather. There were wet areas that remained wet throughout the year, which left the land rutted when combined with conventional farming operations. The water ponded in the fields

eventually flowed into the forestland, creating large gullies.

Drda, an avid outdoorsman who wanted to maximize habitat for wildlife on his property, sought assistance from USDA's Natural Resources Conservation Service (NRCS). He implemented multiple conservation practices, including: grassed waterways, potholes, an earthen embankment, and three rock check dams, which helped combat erosion and restore a wetland on his property.

A unique aspect of this project is the rock check dams, which were designed to eliminate and stabilize a large gully that had formed along the field edge and into the forest. The dams were established in the woods to slow the surface water flow and stabilize the soil. These check dams, which were installed in series along the gully, will allow the water table to increase back to its original state and restore the adjacent wetland. A grassed waterway was installed at the existing gully to control water flow and heal the gully.

Overall, this restoration project shows the success of conservation efforts on private lands. These practices have decreased erosion, enhanced wildlife habitat, and are returning the forest to its natural state.



Rock check dams installed along a gully slow water flow and stabilize the soil.

ACEP-ALE

Ag Conservation Easement Program -
Agricultural Land Easement

Enrollments



1,163



\$1.874 M

Closed/Acquired



1,004



\$2.23 M

ACEP-WRE

Ag Conservation Easement Program -
Wetlands Reserve Easement

Enrollments



100



\$476,613

Closed/Acquired



41



\$255,281



This wetland area was created to offset surface ditches that formed behind a dam on the landowner's property, causing flooding and erosion.

Symbol Key



Acres



Funds



SOIL HEALTH

Soil health education and outreach continue to be a priority for Pennsylvania NRCS. In 2019, over 70 events that focused on soil health as a major conservation topic reached approximately 5,000 people throughout the Commonwealth. Events ranged from localized trainings, farmer breakfasts, webinars, discussion forums, pasture walks, cover crop tours, pasture condition trainings, Envirothon study days, field tours of the national Soil and Water Conservation Society (SWCS) conference in Pittsburgh and the annual, state-wide Ag Progress Days event in State College.

In continuation of Pennsylvania's commitment to develop planners who are well-trained in soil health principles, NRCS sponsored Soil Health and Sustainability trainings, one in each of Pennsylvania's three regions for over 75 conservation professionals. Instructors were drawn from a cadre composed of NRCS state and national staff and at least one conservation district. The soil health training in Bloomsburg, PA was featured in the local paper with an article highlighting the soil health practices and educational outreach of one Catawissa farmer who has embraced the use of cover crops and is reaping the benefits in sequestering nutrients, alleviating compaction, increasing infiltration, and reducing erosion. PA NRCS will continue its goal of providing the national curriculum to the nearly 200 professionals seeking conservation planning certification.

AG PROGRESS DAYS

In 2019, NRCS partnered with Capital RC&D and Penn State University to deliver a stream buffer tour and two pasture tours during Ag Progress Days in August. Featured stops were a high stock density

grazing demonstration and a cover crop mix plot. This year's exhibit featured a new, permanent heavy use area with roofed waste storage facility, a solar-powered watering system, various types of living cover crops, hands-on soil pit, and a web soil survey demonstration.



NATIONAL RESOURCES INVENTORY (NRI)

The National Resource Inventory (NRI) is a natural resource inventory conducted by NRCS to provide continuously updated information on the status, condition, and trends of land, soil, water, and related resources on our nation's non-Federal lands. Nationwide, over 800,000 points have been sampled at various intervals since 1982. In FY 2019, there were 1,821 total segments evaluated and the Pennsylvania NRI team completed the local data collection of 921 segments throughout Pennsylvania from 2017 land cover aerial photography.

WETLANDS TRAINING

FY 2019 was a busy year for wetland trainings. NRCS Resource Soil Scientists, in conjunction with

SOIL HEALTH

the Army Corps of Engineers and the Pennsylvania Department of Environmental Protection, held three basic wetlands trainings in Crawford, Centre, and Lycoming Counties for various partners throughout the Commonwealth.

Pennsylvania NRCS also sponsored a national Hydrology for Wetland Restoration and Determinations training. Engineering Hydrologists from South Dakota, Tennessee, and Texas delivered the training to 30 NRCS staff from Pennsylvania, West Virginia, and Virginia. Topics included wetland compliance, hydric soils, hydrology computation and computer models, hydrogeomorphic models, wetland functional assessments, and hydrology field exercises.

TECHNICAL SOILS ASSISTANCE

Resource Soil Scientists and soil survey Field Soil Scientists provided over 3,900 hours of technical soil services in Pennsylvania in 2019. This affected over 59,000 acres and benefited approximately 18,300 people.

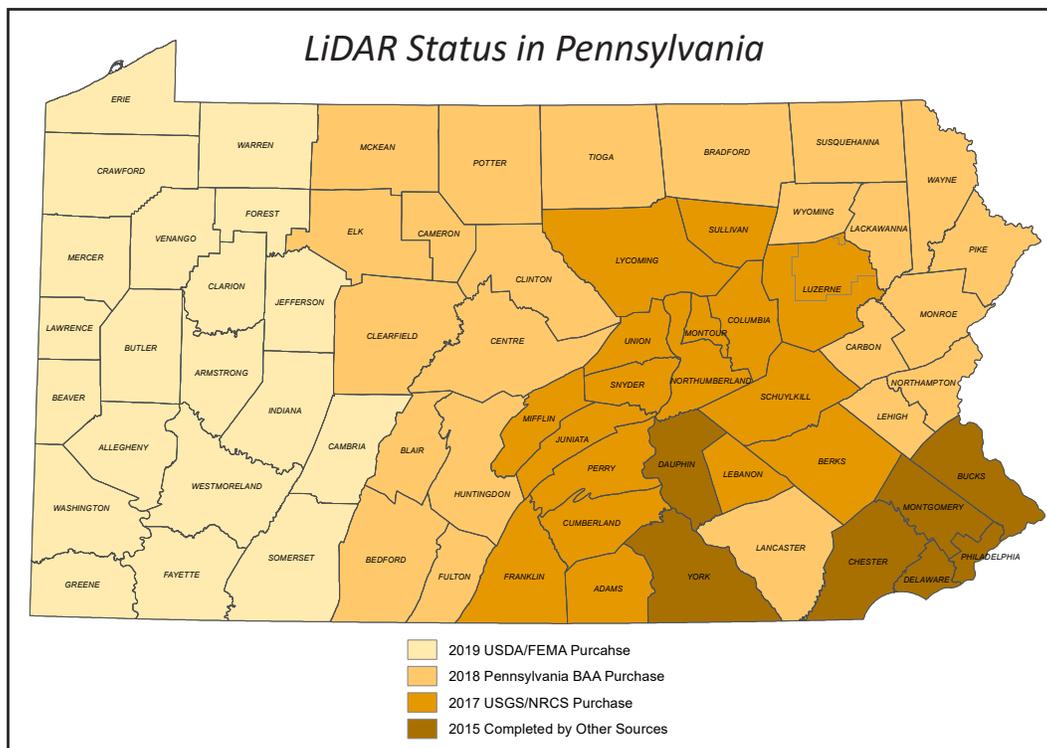
With the goal of investigating how technology can improve the efficiency of conservation planning and implementation, the soils/GIS staff, along with

a volunteer pilot group of field staff, have been testing iPhone and Trimble R1 mobile devices and corresponding apps to use for data collection. Guidance for using the phones in an ArcGIS online environment have been developed and field staff have begun using the devices.

LIDAR

LiDAR is extensively used by our engineering, soil survey, and planning staff, but the broader partnership can also benefit from this investment.

To further NRCS's capacity to more effectively and efficiently deliver conservation, in 2017 PA NRCS purchased LiDAR for 16 counties. Despite limited funds in 2018, a LiDAR update was purchased for Lancaster County for future projects. In 2018, state agencies, the Susquehanna River Basin Commission, and other partners also invested in LiDAR and submitted a Broad Agency Announcement to USGS which was accepted and LiDAR was flown for 22 counties in Pennsylvania. This data will be received between November 2019 and February 2020. In 2019, PA NRCS and FEMA combined funds and it is anticipated that by Spring 2020, the remaining counties will be flown and receiving updated LiDAR data.



MANAGING FORESTS AND WILDLIFE

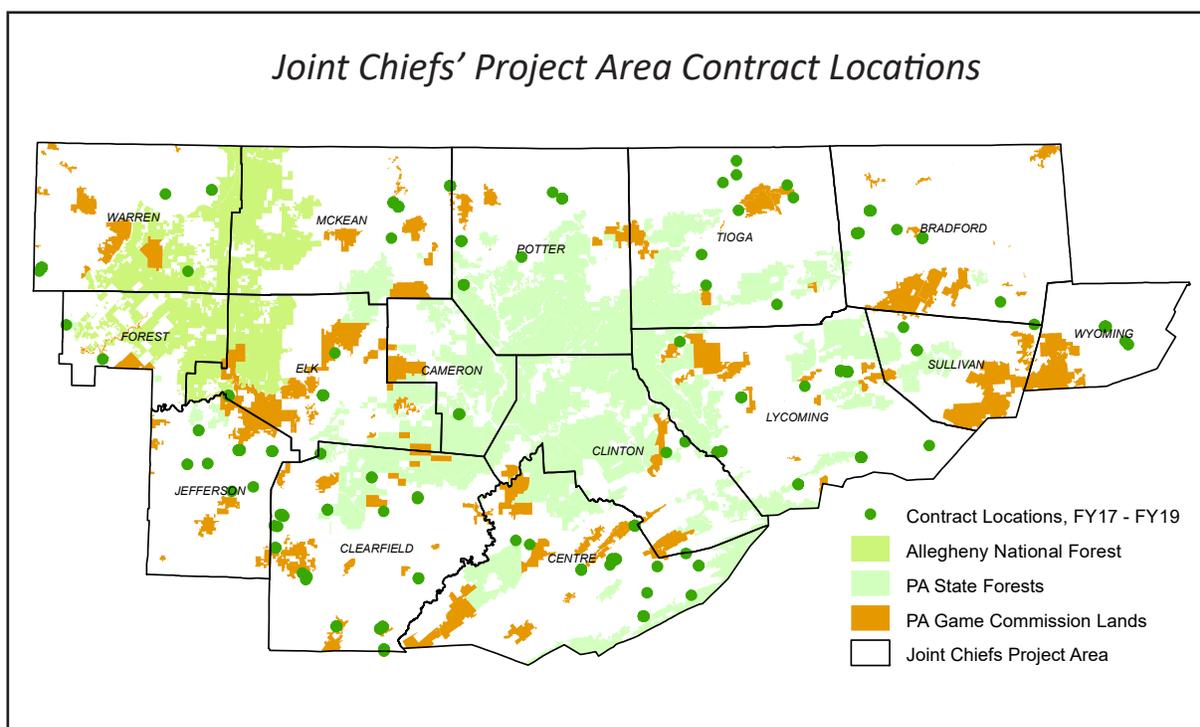
JOINT CHIEFS' LANDSCAPE RESTORATION PARTNERSHIP

The Pennsylvania Joint Chiefs' Landscape Restoration Partnership (LRP) Project, "Sustaining Pennsylvania's Oak Ecosystems through Partnership in Forest Management," completed its third and final year in FY 2019.

The LRP has been a successful collaboration between NRCS, the Allegheny National Forest, the Pennsylvania Game Commission, and the Pennsylvania Department of Conservation and Natural Resources: Bureau of Forestry. Both PA NRCS and the Allegheny National Forest received funds for all three years of the project for the 15-county area in North-Central Pennsylvania. For FY 2019, PA NRCS obligated \$440,170 in financial assistance (FA) funding.

The LRP is helping public and private forest landowners maintain a diversity of forest age classes and species to sustain forest ecosystems that are resilient to stressors. This is helping to improve habitat quality for at-risk species, protect water quality and supplies, and reduce and mitigate the threat of wildfire.

In FY 2019, through the Joint Chiefs' LRP, PA NRCS awarded 27 financial assistance contracts. Twelve contracts for \$29,534 in FA were for Conservation Activity Plans (CAP 106) Forest Management Plans on 1,978.2 acres. The other 15 contracts for \$417,077 in FA were for implementation of conservation practices for the Joint Chiefs' LRP on 3,965.7 Acres.



MANAGING FORESTS AND WILDLIFE

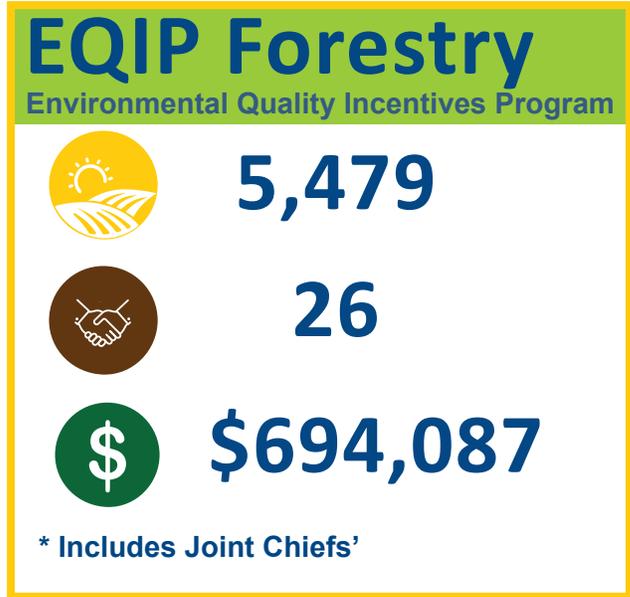
FORESTRY ENHANCEMENT WITH THE CONSERVATION STEWARDSHIP PROGRAM

Pennsylvania NRCS had another successful year enrolling forestland acres in the Conservation Stewardship Program (CSP). CSP aids participants by helping them increase their level of forest stewardship. CSP offers forest managers an opportunity to enhance their operations while adopting conservation enhancements that can improve the conservation of natural resources including improving forest health, increasing wildlife habitat, and improving water quality.

In FY 2019, 7,361 new forestland acres were enrolled in CSP on 63 tracts, parcels owned by beginning farmers. Of the total FY 2019 CSP contracts, 53 percent were forestry contracts. These contracts totaled \$1,356,796 in financial assistance.

TABLE 1: FY 2019 TOP 5 CONSERVATION PRACTICES PLANNED ON FOREST LANDS

Herbaceous Weed Treatment	3,078
Forest Stand Improvement	845
Early Successional Habitat Development/Management	919



MANAGING FORESTS FOR WARBLERS

Forest management is crucial in creating and maintaining habitat necessary to sustain breeding populations of both golden-winged and cerulean warblers. While golden-wing warblers desire open, early successional forests, cerulean warblers prefer middle-aged to mature forests.

WORKING LANDS FOR WILDLIFE

Through the Working Lands for Wildlife Initiative, USDA’s Natural Resources Conservation Service (NRCS) is assisting private landowners in creating and maintaining desirable habitat for golden-winged warblers in the Appalachian region. Focus is on encouraging the growth of desirable trees, such as oak and hickory, and controlling invasive species in the understory.

Conservation efforts in support of the golden-winged warbler benefit many other species that depend on similar habitat.



Golden-winged Warbler

BAT BENEFITS

NRCS also manages forest and wetland acres to benefit bat species like the Northern long-eared bat, the Indiana bat, the tri-colored bat, the little brown bat, and others. Our efforts include restoring forest ecosystems by both controlling invasive plants and releasing/planting native tree species, like shagbark hickories, that provide vital roosting cover for bats in the spring and summer months. Future work will include man-made roosting structures that should increase bat species’ use of wetland easements and young-forest habitats.

Golden-Winged and Cerulean Warblers



1,489



37



\$1.2 M



Bats provide services to ecosystems such as spreading seeds and controlling pest populations.

SABULA RAILROAD TUNNEL BAT PROJECT

Deep in the woods of Sabula, Pennsylvania lies an old, abandoned railroad tunnel. After years of dormancy, many species of bats have taken refuge here. Through the years, the tunnel had been used by other partners such as the PA Game Commission, US Fish and Wildlife Service, and universities to conduct research on bat populations and diseases, particularly studies on the white-nose syndrome, which has killed 98 percent of Pennsylvania's bat population. However, because of the tunnel's remote location, it has become a popular site for locals and others in search of a secluded place to hang out or ghost hunt. These visitors are detrimental to the ongoing research and the bat populations within the tunnel, and risk spreading white-nose syndrome.

NRCS's Dubois Field Office became involved during the summer of 2017 to help restore the site to protect the bats. When field office staff first visited the site, there proved to be some challenges associated with the restoration plan. It was not evident who the land belonged to, but NRCS was able to determine that the tunnel entrances were split between two separate landowners.

To protect the bat habitat and keep intruders out, the PA Game Commission installed gates. Greg Turner,

from the PA Game Commission, provided the Dubois Field Office and the Clarion Technical Office with standard drawings for the gates.

The next challenge proved to be the physical location of the tunnel. The wet summer and limited access made it difficult for the contractor to move equipment to the site. Since the bats typically start occupying the tunnel in mid-October, the completion date was set for October 1st.

According to Greg Turner, the tunnel only housed big brown bats when they first began conducting research years ago. The population varied depending on how cold the winter was since colder winters drive more big browns from homes in barns to underground sites, like the tunnel. Turner estimated a total of 100-350 bats depending on the year.

They have now confirmed a few tri-colored bats, federally threatened long-eared bats, and up to 66 little brown bats. According to Turner, the number of little browns had increased annually despite the disturbance at the tunnel. He anticipates bat populations to continue to increase since NRCS installed the gates to protect them.



Before: Entrance to the abandoned Sabula Railroad tunnel where many bat species have taken refuge.



After: A gate was installed to protect habitat and keep intruders out.

ENHANCING WATER QUALITY

NATIONAL WATER QUALITY INITIATIVE (NWQI)

Through the National Water Quality Initiative (NWQI), NRCS provides financial and technical assistance to farmers and forest landowners interested in improving water quality in priority watersheds with ag impaired streams. Presently, NWQI is being offered in the following Pennsylvania watersheds (because of the significant natural resource challenges they face):

- Warrior Run
- Beaver and Upper Yellow Creeks
- Upper Kishacoquillas Creek
- Swatara Creek
- Maiden Creek

Our goal is to improve water quality by preventing sediments and nutrients from reaching streams and source water, and ultimately see these streams

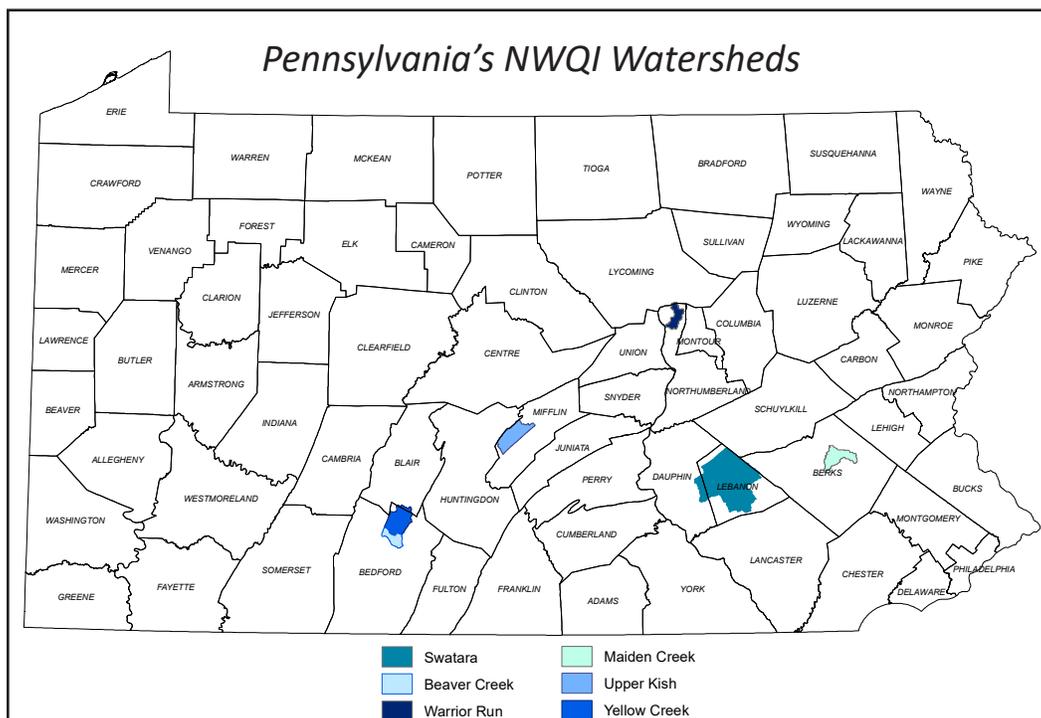
removed from the ag impaired streams list or see source water improved.

In FY 2019, NRCS in Pennsylvania prepared Watershed Assessment Plans as part of the NWQI readiness phase for all five watersheds. The Upper Kishacoquillas Creek, Beaver and Upper Yellow Creek, and Maiden Creek NWQI projects were continued from previous years.

The Swatara Creek and Maiden Creek watersheds are part of a source water protection pilot project aimed at protecting the source of public drinking water for communities.



NWQI outreach event at Warrior Run Watershed.



PARTNERSHIP EFFORTS TO IMPROVE DRINKING WATER FOR THOUSANDS

The Saucony Creek winds its way through farms and fields in Berks County, Pennsylvania. Although small in size, it plays a large role in providing drinking water to several nearby communities, including Kutztown and Reading.

As a heavy agriculture area, the nitrates in Kutztown's water supply were approaching the maximum safe levels for drinking water in the early 2000s. In response to continually elevated levels, the Kutztown Borough installed denitrification equipment in the water treatment plant in 2015.

In the meantime, efforts were underway by non-profit organizations, government agencies, and private entities to ensure the safety of the city's water supply, in part by helping local farmers install conservation practices that protect and improve water quality. As part of this effort, USDA's NRCS delivered additional funding for conservation assistance through its National Water Quality Initiative (NWQI).

NRCS EFFORTS

Most of the farms in the Saucony Creek Watershed are small, family-owned crop and/or livestock farms, many are operated by Plain-Sect farmers. NRCS has worked with many of them in the last 12 years to reduce nutrients and sediments from entering Saucony Creek.

Harlan Burkholder owns and operates a 100-acre row crop and beef cattle farm. He also worked with NRCS and other partners to improve water quality in Saucony Creek. When Burkholder bought his farm in 2005, manure was being stored on the ground near the creek that runs through the property because there was limited space near the barn. He had to spread manure on the fields often to keep it from piling up.

Realizing that it's best to spread manure in the growing season and store it in the winter to avoid runoff, he had a nutrient management plan developed for his farm. After applying for NRCS financial assistance, he worked with NRCS to co-invest in a manure storage structure. Now, Burkholder is able to store manure over the winter so he can spread it at optimal times.

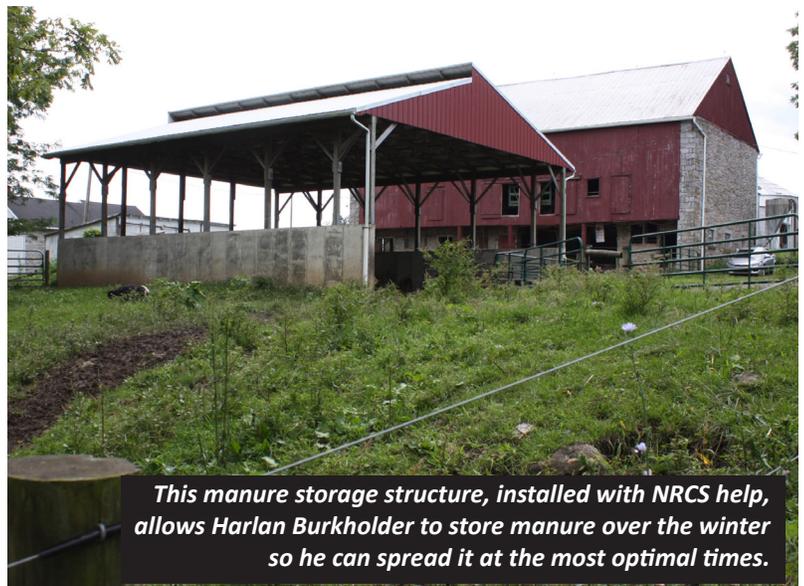
He is grateful for NRCS's help. "As a beginner, there's no way I could have spent money on something like this," he said.

Burkholder also knows the importance of keeping soil healthy with no-till and cover crops. As a 100-percent no-till farmer, Burkholder says, "I have no intentions of doing anything else. It's working."

RESULTS

Together, NRCS and its partners have helped more than 20 farmers in the watershed get conservation on the ground, and NRCS has invested more than \$2 million in targeted assistance in this area alone.

Just two years after the city's water treatment plant was updated with equipment to remove nitrates from the raw water, the plant is running at minimum capacity because the nitrate levels have been reduced by almost half, thanks to the conservation efforts of farmers upstream. Now, the treatment plant's water is within legal safe drinking water requirements and treatment costs also have been significantly reduced. According to Troy Smith, Kutztown Borough Water Plant Manager, "Had this [conservation effort] been done prior to building the new plant, we could have saved \$4 million!"



This manure storage structure, installed with NRCS help, allows Harlan Burkholder to store manure over the winter so he can spread it at the most optimal times.

EMERGENCY WATERSHED PROTECTION

EWP EFFORTS

PA NRCS has completed work from a 2017 Presidentially declared EWP event. The completed work totaled \$126,701 (with \$95,025.75 coming from NRCS and the remaining amount from PA DEP) and included three sites in Bradford County and one in Susquehanna County.

TABLE 3: 2017 DAMAGE SURVEY REPORTS COMPLETED IN FY 2019

County	No. of Sites	No. of Sponsor(s)
Bradford	3	1
Susquehanna	1	1
Total	4	2

In the fall of 2018, 97 damage survey reports or sites were determined eligible and associated with 28 sponsors in 12 counties (Table 4).

January 2019, NRCS approved funding and contracts were developed for the 28 sponsors over the next eight months. The projected cost was \$5,370,000, with NRCS covering 75 percent, or \$4,027,500, and PA DEP picking up the remaining 25 percent.

As of September 30, 2019, 21 sponsors have successfully bid projects and 51 sites were completed. The remaining sites are anticipated to be completed in the fall of 2019, except two that will be completed in 2020.

TABLE 4: DAMAGE SURVEY REPORTS COMPLETED IN FY 2019

County	No. of Sites	No. of Sponsor(s)
Bradford	28	1
Susquehanna	22	9
Lackawanna	2	1
Wyoming	1	1
Sullivan	1	1
Lycoming	5	1
Columbia	13	1
Schuykill	13	6
Northampton	1	1
Berks	3	3
Lebanon	1	1
York	3	2
Total	97	28



DAM REHABILITATION

PENNSYLVANIA DAM REHAB PROGRAM

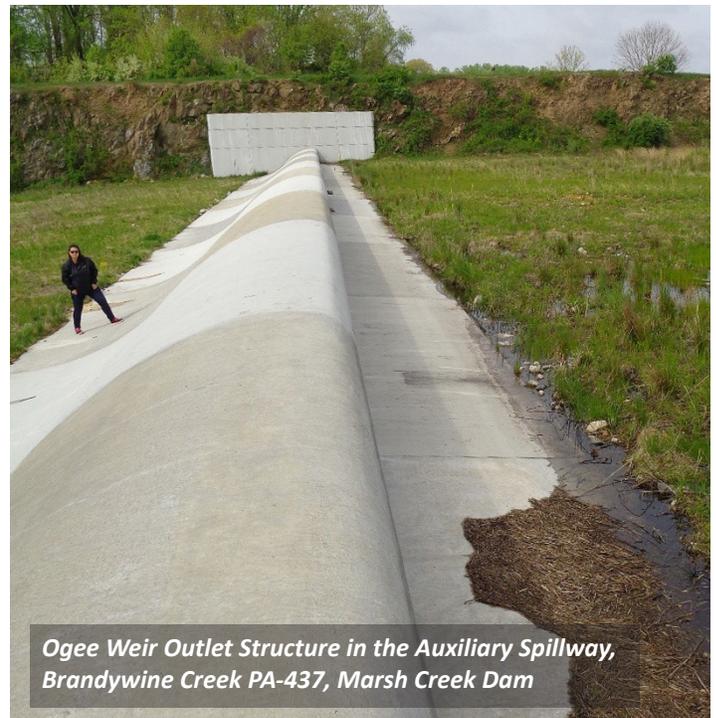
In the 1960's through the 1980's, NRCS assisted with the design and construction of over 80 flood control dams across Pennsylvania. These dams currently protect the homes and public infrastructure below them. Since their construction, the dams have detained millions of gallons of runoff that would otherwise contribute to downstream flooding. While built to be state-of-the-art at the time, rainfall amounts and dam safety criteria have changed since the construction of the dams. Many of these structures are over 50 years old and have reached the end of their project life. Some were originally built as Significant Hazard Potential dams and have now been reclassified as High Hazard Potential.

In 2012, Pennsylvania was selected as one of 12 states to engage in the PL-566 Watershed Protection and Flood Prevention Act Rehabilitation program. Pennsylvania NRCS had been diligently working with eight sponsors in the national effort to rehabilitate their dams, ensuring that flood control dams built under the PL-566 program are safe and meet current dam design criteria. An initial funding of over \$11 million helped start the process of doing initial dam assessments on almost 50 sites, planning on nine sites, design on five sites, and construction on one site.

The engineering work was done using engineering firms selected from the National Indefinite Delivery Indefinite Quantity (IDIQ) process. PA NRCS engineering staff negotiated and hired several private engineering firms to do the planning, design, and construction quality control. PA NRCS engineering, its National Water Management Center (NWMC) and its National Design, Construction, and Soil Mechanics Center (NDCSMC) staff reviewed and commented on all the work in the various phases and were also involved with working with state regulators and keeping the sponsors involved and informed.

In FY 2019, 16 site walks of the dams were completed. Planning work was completed on four rehabilitations, and design work was authorized. Funding was secured to begin one new plan which will include four dams within the Lackawaxen Watershed. Two other rehabilitations are under design. Construction contracting was begun on one dam, and nine dam assessments were completed. There is potential to start construction on at least one additional dam rehabilitation in the coming year.

In addition to the Watershed Rehabilitation Program, NRCS acquired funds through the Watershed and Flood Prevention Operations program to begin Watershed Plans for four projects in Chester, Lancaster, Westmoreland, and Wyoming Counties. These projects are focused on addressing land treatment and flood protection within the watersheds.



Ogee Weir Outlet Structure in the Auxiliary Spillway, Brandywine Creek PA-437, Marsh Creek Dam

TABLE 2: WATERSHED REHAB ACCOMPLISHMENTS FOR FY 2019

Dam	Watershed	County	Sponsor	Milestone Achieved	Anticipated Construction
Conneautville Dam	Conneautville	Crawford	Borough of Conneautville	Design being Permitted	2021
Beaver Creek Dam	Brandywine Creek	Chester	Chester County Water Resource Authority	Design being Finalized	2020
Hibernia Dam	Brandywine Creek	Chester	Chester County Water Resource Authority	Construction Bid	2020
Kintz Creek Dam	Greene Dreher	Pike	Pike County	Design Underway	2022
Beechwood Dam	Mill Creek	Tioga	PA Fish and Boat Commission	Watershed Plan Authorized; Design Underway	2024
Rainbow Dam	Mill Run	Crawford	City of Meadville	Watershed Plan Authorized; Design Underway	2024
Hamilton Dam	Marsh Creek	Tioga	Wellsboro Borough Municipal Authority	Watershed Plan Authorized; Design Underway	2023
Core Creek Dam	Neshaminy Creek	Bucks	Bucks County	Watershed Plan Authorized; Design Underway	2023
Martin, Varcoe, Finkleday & Garret Dams	Lackawaxen Tributaries	Wayne	Wayne County	Watershed Plan Begun	TBD

Conservation Innovation Grants

During fiscal year 2019, seven Conservation Innovation Grant (CIG) proposals were received for a total request of \$456,198. After evaluation and ranking, two proposals were selected for funding totaling \$136,920. The proposals will address the priority categories of non-industrial private forestland and urban farming. In addition, the following three demonstration projects were completed:

Innovative Cattle Heavy Use Area Protection Using Wood Chip Surface – (funded in FY 2018) The Bradford County Conservation District demonstrated the implementation of a heavy use area (HUA) protection that previous studies concluded will help decrease runoff volume and nutrient levels in runoff, improve cattle comfort and performance, and lower construction costs. Most of the HUA area is surfaced with a 12-inch-thick layer of wood chips with a drainage system underneath that collects precipitation and leachate that filter through. The leachate is then treated in a vegetated treatment area. Wood chips are maintained seasonally by removing the top several inches of chips and manure for composting and field application. New chips are placed, maintaining a clean, dry, off-concrete cattle HUA.

Promotion of soil health and integrated pest management in Pennsylvania urban agricultural producers through use of cover cropping and no-till techniques as well as IPM, mulching, and barrier promotion for fall greens production – (funded in FY 2017) The Pennsylvania Horticultural Society worked with Philadelphia farmers and gardeners to demonstrate how the use of soil health, no-till, and integrated pest management techniques can help them increase and sustain production, and improve the condition of the City's natural resources. Over 100

individuals received training in the use of no-till and soil health. Sixty producers planted multispecies cover crops, and twenty of them conducted soil testing before and after to track soil health improvement. Salt hay mulching was implemented by 100 producers to help improve air and water quality, and 40 producers used insect netting and kaolinite clay powder as integrated pest management practices.

Demonstrating Soil Building Capacities of Stropharia Rugosoannulata as a Means for Breaking Down Wood Waste into Soil Organic Carbon – (funded in FY 2017) The Methodist Services in Philadelphia demonstrated the use of *Stropharia Rugosoannulata* (wine cap mushrooms) to provide a more cost-effective way for urban farms to increase soil health, while also increasing farm revenues. The current method is generally purchasing compost from a private producer or municipality. The wine cap mushrooms decompose wood chips, an unwanted landscape industry byproduct, in a reasonable time period (about a year), thus decreasing the demands on municipal composting facilities and helping urban farmers build soil in a more cost-effective way. The organic material derived from the breakdown of wood chips when used as a soil amendment in the degraded urban soils, increases soil organic matter, soil aggregates size, and water holding



Wine Cap mushrooms help create healthy soil.

capacity, which benefits crops and the City's efforts in meeting TMDL goals.



OUTREACH AND TRAINING

PA CIVIL RIGHTS

The Pennsylvania Civil Rights Advisory Committee (CRAC) continued to hold quarterly meetings across the state in FY 2019 to encourage discussion between field staff and the CRAC. This year, The CRAC visited the 2019 Pennsylvania Farm Show in Harrisburg, WB Saul High School in Philadelphia, Fischer's Windy Ridge Dairy in Beaver County, and Woerth It Hollow, a farm offering equine assisted therapy, in Lancaster County.

Within NRCS, the committee has been busy presenting Civil Rights topics on the monthly statewide teleconference, writing articles for the weekly newflash, and assisting field offices in identifying and removing barriers to employees with physical disabilities.

OUTREACH ACTIVITIES

The Special Emphasis Program Managers (SEPM's) have played an integral part in the role of the Civil Rights program in Pennsylvania this fiscal year. Examples of typical outreach activities include hosting meetings and networking events, speaking about programs and opportunities for historically-underserved producers, speaking about NRCS career opportunities at university and school career day events, and assisting with soils class curriculums.

In FY 2019, SEPMs participated in several targeted outreach events, including the Chambersburg Harvest Festival, PA Women in Agriculture Symposium, and India Day.

BLACK HISTORY MONTH CELEBRATION

For a second year in a row, PA NRCS hosted a Black History Month Celebration. Many members of the local Ethiopian Community in/around Harrisburg, as well as NRCS staff, enjoyed an authentic Ethiopian lunch and coffee ceremony while listening to presentations about black history.

WOMEN LEADERS ROUNDTABLE

In May, a roundtable discussion with women agricultural leaders was held to bring together various groups to discuss issues and challenges facing women farmers/landowners, identify resources that are available, and form an alliance between the participants moving forward. Close to 30 women leaders in agriculture and natural resources fields participated in this networking event and a directory of resources for women farmers and landowners is being developed.



Women leaders participate in a round-table discussion to address issues and challenges facing women farmers/landowners.

OUTREACH AND TRAINING

UNDERSERVED OUTREACH

The outreach highlight of the year was the event, “Farming and Conservation Opportunities for Hispanic, African American, and Other Underserved Farmers,” held April 9th in Berks County. About 25 historically-underserved producers from across Pennsylvania attended. Participants heard from NRCS and other USDA agencies about conservation assistance, loan programs, land access, production assistance, and marketing. Additionally, partners from agricultural organizations supported the farmers with information on soil health, education, and community-based programming. Producer feedback was very positive and several have requested NRCS assistance as a result. Also, partners in conservation in Philadelphia and Pittsburgh have invited our collaboration to hold similar events in FY 2020.

CIVIL RIGHTS ADVISORY COMMITTEE MEETING AT FISCHER’S WINDY RIDGE DAIRY

The third-quarter meeting of the PA Civil Rights Advisory Committee was held in July at Fischer’s Windy Ridge Dairy in Fombell, PA (Beaver County). A business meeting was followed by lunch and a tour of the family-run dairy operation.

Chris and Steve Fischer own and operate Fischer’s Windy Ridge Dairy. They raise around 40 registered jersey’s, bottling and selling the milk and homemade ice cream along with other products at their store on the farm.

NRCS first began working with the Fischers in 2007 to help them transition to no-till and have been working with them ever since to make numerous improvements on their farm. Through the years, they have installed a six-month liquid manure storage and heavy use area, and improved their tie stall barn with gravity gutters, which reduced in-barn work by one hour.

The Fischers have implemented cover crops with their no-till system to further improve soil health. They’ve also made energy improvements, implemented animal composting, and made additional enhancements through several Conservation Stewardship Program (CSP) contracts. In 2019, the Fischers expressed interest in learning more about soil health and how they can improve their operation by integrating more covers crops.

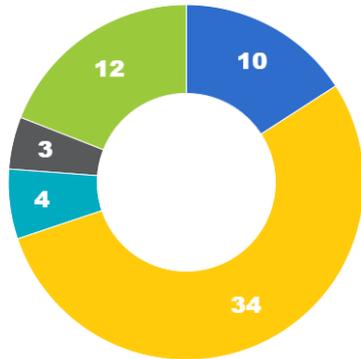
Through their continued stewardship, and by adding a store and bottling their own milk a few years ago, the Fischers have been able to weather some of the uncertainties that have become common in the dairy industry and maintain a profitable family business.



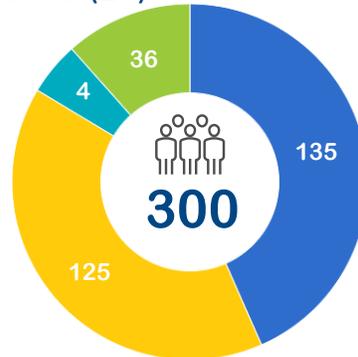
TRAINING

PA NRCS continues to place a large emphasis on training its own employees as well as those of the conservation partnership. In FY 2019, PA NRCS hosted 38 trainings. The charts below provide a breakdown of those in attendance.

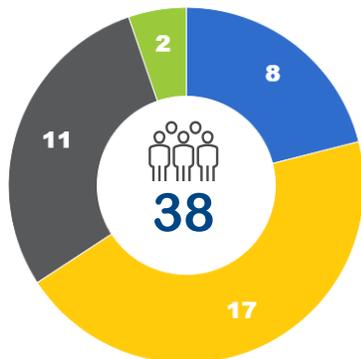
BOOT CAMP TRAININGS (BASIC AND ADVANCED) (2)



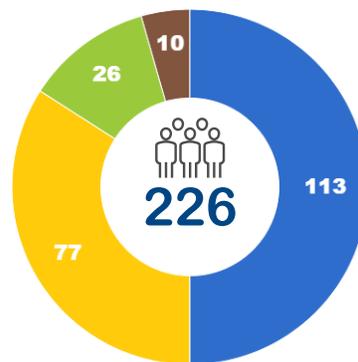
AREA & FIELD OFFICE ENGINEERING TRAINING (24)



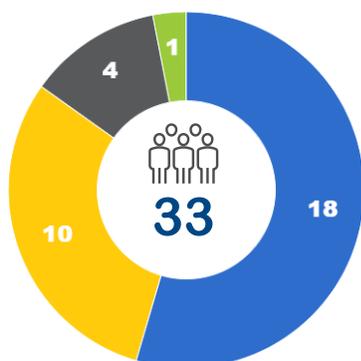
CONSERVATION PLANNING (2)



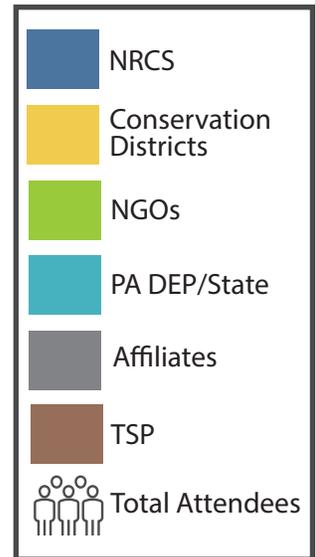
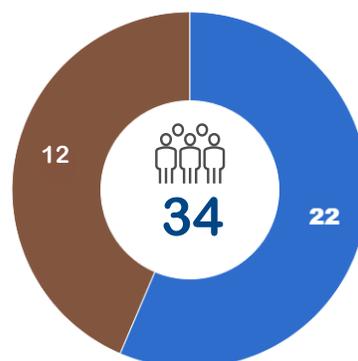
STATEWIDE ENGINEERING TRAINING (9)



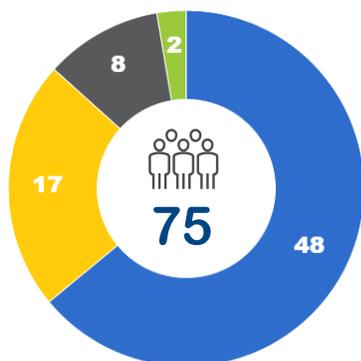
CULTURAL RESOURCES



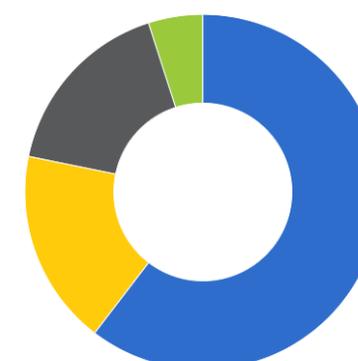
CNMP WORKSHOP (1)



SOIL HEALTH & SUSTAINABILITY



WORKING EFFECTIVELY WITH PLAIN PRODUCERS



OUTREACH AND TRAINING

EQUINE PARTNERSHIP AND TRAINING

For the past few years, PA NRCS has invested in activities and programs that transfer innovative approaches and technologies to equine owners through contributory agreements with both Delaware Valley University and Penn State University. Activities included field days and pasture walks, equine trainings that focus on pasture management and soil health, and a “train-the-trainer” program for conservation district and NRCS staff. Through the PA conservation partnership collaborations, several products were delivered to the field and landowners: equine pasture condition scoring and monitoring tools, an equine landowner video and BMP guide, landowner outreach materials, and technical fact sheets.

TOTAL IMPACTS OF THE THREE-YEAR PARTNERSHIP EFFORT INCLUDE:

- 124 field staff received equine train-the-trainer programming
- 38 field staff attended training webinars, “Understanding Horse Farms”
- 936 landowners reached by equine partnership programs
- 15 equine pasture walks and 11 joint equine workshops with conservation districts and partners statewide were held



Laura Kenny, of Penn State Extension, instructs a group during a pasture management and field day training at Delaware Valley University.

PARTNERSHIP HIGHLIGHTS

FY 2019 AGREEMENTS

In FY 2019, PA NRCS administered ten different technical support agreements that provided additional staff to work on NRCS conservation activities in Pennsylvania. Approximately 75-80 affiliates contributed additional staffing valued at more than \$5 million. These agreements were with partner entities including five Resource Conservation and Development Councils (RC&Ds), Pheasants Forever, the National Older Workers Career Center, the Chesapeake Bay Foundation, and two individual conservation districts. The affiliate employees conducted conservation planning and provided technical assistance, program support, and administrative support for PA NRCS offices.

NRCS also had an interagency agreement for \$75,517.50 with the US Fish and Wildlife Service (FWS). Under this agreement, FWS provided wildlife expertise and services for bog turtle conservation and protection, and for the promotion and conservation of pollinator species.

NRCS also has a large agreement with the Pennsylvania Association of Conservation Districts (PACD) to provide services for three different activities: conservation district support, engineering services, and training. The first activity utilized staff services from 11 different conservation districts and 20 full and part-time employees. The work that was accomplished under the agreement by 11 full-time equivalent conservation district employees is summarized in Table 5. Funding and examples of work performed for all three activities is shown in Table 6.

TABLE 5: PACD AGREEMENT FY 2019 ACCOMPLISHMENTS

Components	Number	Hours
Conservation Plans	107	6,204
Inventory and Evaluation	26	592
Surveys	87	508
Practice Design/ Layout	219	4,020
Construction Quality Assurance	77	1,599
Total:	619	13,477

Contributor	Funding
Conservation District	\$182,159
NRCS	\$601,124
Total Contribution	\$783,283

TABLE 6: PACD AGREEMENT ACTIVITIES

Activity: District Employee Support			Activity: Engineering Support			Activity: Training		
NRCS Funding	District Funding	Total Funding	NRCS Funding	DEP Funding	Total Funding	NRCS Funding	SCC Funding	Total Funding
\$601,124	\$182,159	\$783,283	\$71,772	\$7,172	\$143,544	\$21,780	\$22,497	\$44,277

PARTNERSHIP HIGHLIGHTS

RCPP

The Regional Conservation Partnership Program (RCPP) encourages partners to join in efforts with producers to increase the restoration and sustainable use of soil, water, wildlife, and related natural resources on regional or watershed scales. Through the program, NRCS and its partners help producers install and maintain conservation activities in selected project areas. Partners leverage RCPP funding in project areas and report on the benefits achieved.

TABLE 7: PENNSYLVANIA NRCS RCPP PROJECT STATUS

Effective Date	RCPP Project	Lead Partner	Total Allocated	Total Obligated
FY 2014-2015	Productive Farms and Clean Streams for Berks and Chester Counties	Stroud Water Research Center	\$1,189,502	\$1,115,800
FY 2014-2015	Delaware River Watershed Working Lands Conservation and Preservation Partnership	National Fish and Wildlife Foundation	\$4,396,999	\$4,272,810*
FY 2014-2015	Comprehensive Watershed Conservation in Dairy and Livestock Landscapes of the Chesapeake Bay	National Fish and Wildlife Foundation	\$2,975,999	\$2,954,233
FY 2014-2015	Mason-Dixon Working Lands Partnership	Alliance for the Chesapeake Bay	\$516,124	\$502,814
FY 2014-2015	Cerulean Warbler Appalachian Forestland Enhancement (1 and 2)	Chesapeake Bay Foundation	\$3,307,796	\$3,256,848
FY 2017	Soil Health: Improving Land, Water, and Producer Profitability	Chesapeake Bay Foundation	\$210,000	\$194,319
FY 2018	CCCD Partnership for Chesapeake Bay Water Quality	Chester County Conservation District	\$2,500,000	\$1,327,292
FY 2018	Implementing BMP's & CNMP's on PA Preserved Farms	Pennsylvania Department of Agriculture	\$4,814,254**	\$2,061,662
	Total		\$19,910,674	\$15,685,778

* Includes WRP

** Includes ALE

All projects have been completed, except CCCD Partnership (53% complete) and Implementing BMP's (43% complete).

EARTH TEAM VOLUNTEERS

EARTH TEAM PROGRAM

Every year, Pennsylvania holds an Earth Team Challenge as a friendly competition among groups of employees, field offices, technical offices, and the State Office. In FY 2019, three Southeast region offices recorded the most hours, one with 920 hours, another with 220 hours, and a third with 191 hours.

For time first time in the history of the Earth Team tracking database, Pennsylvania achieved 100 percent participation in the Earth Team Program. PA NRCS was recognized for this achievement with a letter of recognition and certificate of appreciation from NRCS Chief Lohr.

EARTH TEAM VOLUNTEER SPOTLIGHT

Shippensburg University students, Troy Alleman and Cameron Weiser spent their summer working as volunteer interns. Troy is an intern for the Franklin County Conservation District and Chambersburg Natural Resources Conservation Service (NRCS), while Cameron is a volunteer for Carlisle NRCS. Troy, a retired Navy veteran, is graduating with a master's degree in the Spring of 2020. Together, they have conducted field certification and CTA reporting for approximately 6,000 acres. This helped the field team in completing approximately 80 percent of its reporting goal for the year!

Along with his work this summer, Troy has spent many hours as an Earth Team volunteer over the last year and a half. Cameron, an undergraduate, spent his summer alongside Troy during his first internship with NRCS. Troy and Cameron are both majoring in Geo Environmental Studies. After graduation, Troy would like to work for NRCS, and Cameron is interested in land use planning with community engagement.

Earth Team



3,029
Hours



298
Volunteers



\$77,027*

* Hours valued at \$25.43



Shippensburg University students Cameron Weiser (left) and Troy Alleman (right) spent their summer helping NRCS staff in Chambersburg and Carlisle.



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