STEM

Science
Technology
Engineering
Mathematics

2018 ANNUAL REPORT

LANCASTER COUNTY
CONSERVATION DISTRICT

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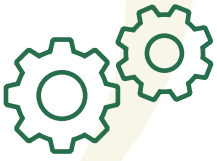
"Tell me and I forget,
Teach me and I remember,
Involve me and I learn."

— Benjamin Franklin






LANCASTER COUNTY CONSERVATION DISTRICT

2018 FINANCIAL REPORT

Income

County Contribution	250,000.00
Non-Lapsing Program Funding	1,580,486.66
Grant Administration Income	179,543.70
Interest Income	44,903.01
Fee Income	498,288.51
Tree Sale Income	46,064.25
Activity Income	16,306.45
Health Care Refund of 2 years	99,451.97
Grant Project Income	813,660.43
Total Income	3,528,704.98

Expense

Employee Salary and Wages	1,628,613.49
Employee Benefits	528,415.73
Travel Expenses	33,945.55
Meeting Expenses	24,008.52
Supplies	20,131.51
Communication Costs	3,845.07
Postage and Meter Rental	7,636.97
Office Rent	100,192.01
Equipment and IT Support	38,749.35
Administrative	42,158.44
Miscellaneous	431.61
District Activities	56,947.77
BMP/Grant Projects	604,976.15
Total Expenses	3,090,052.17

2018 Net Change in Cash Assets

General Operations & Reserve	265,838.01
E&S Department	-37,432.07
District Activities	-730.29
Grant Funds	210,977.16
Net Change	438,652.81

ADMINISTRATOR'S MESSAGE

2018 was a year of many challenges, changes and opportunities. One clear challenge this year was the amount of rain we received. Rainfall records in Lancaster County have been tracked since 1914 and since that time the average annual precipitation recorded has been 41.3 inches. This year, some parts of the county were reported to have received nearly double that amount making 2018 a record breaking, wet year. The impact of that much water was felt across every sector of the county and created challenges in every program we administer at the District. It is understandable that rain is referenced on almost every page of our 2018 Annual Report.

Every year is also full of changes and 2018 was no exception. A change that was felt district-wide was the retirement of our Administrative Assistant, Paula Harnish. Paula started at the District in 1998 and over the last 20 years became the valued administrative editor and partner to many in the office. We celebrated Paula and her retirement in November with a luncheon acknowledging that we will find someone to do her job, but it won't be easy to find someone who will do it with the same grace, courtesy and professionalism that she did.

One of the most striking, and time consuming, opportunities in 2018 was the opportunity to build on the District's 2015 "Get Out The Red" initiative. Three major developments in the effort to make Lancaster County's streams clean and clear included: the January launch of the Clean Water Partners: a cross sector representation of partners who helped to make the clean water initiative a community based issue. Second was the expansion of the District Watershed Program. By adding an Assistant Watershed Specialist position, we are expanding the resource and impact of this important stewardship program to mobilize people and implement projects that help "turn our red streams blue". Third, the opportunity to participate in the development of the Lancaster County WIP. The WIP, Watershed Implementation Plan was requested by the state to help achieve Chesapeake Bay related cleanup goals. It was a unique opportunity for us to utilize state and federal resources to help us craft a Lancaster centric plan and strategy that focused on cleaning up our local waters.

From the front cover to the last page, peppered throughout this account of last year is the phrase STEM. STEM is an educational concept that focuses on using the disciplines of Science, Technology, Engineering and Math to solve real-world problems. It is a way of teaching and learning that is project-based, collaborative and result driven. As you read through this account of last year, know that these are the same strategies and qualities that are core essentials to everything that Lancaster County Conservation District does. As such, it is an appropriate theme for 2018 Annual Report.

–Christopher Thompson, Administrator

CHAIRPERSON'S MESSAGE

One study estimated that by 2018, there would be an estimated 8.65 employees in the United States in STEM-related jobs. STEM a well read acronym for Science Technology Engineering and Math. In the 2018 annual report, the Lancaster County Conservation District has featured many STEM connections in the work of conserving Lancaster County natural resources through Agriculture, Erosion and Sedimentation, Watersheds, and Education.

The future work force will depend on STEM-related jobs. Innovation and initiative are needed to manage the natural resources of Lancaster County. The District has successfully taken the science of natural resources added technology to capture the good works of farmers and homeowners to engineer a future implementation plan that will mathematically add up to improved water quality and sustainable soils.

–Daniel Heller, Board Chairperson

District Directors, Associate Directors and Advisors:
Deb Seibert, Commissioner Craig Lehman, Robert Shearer, Jay Snyder, Daniel Heller, Herb Kreider, Roger Rohrer, Kent Weaver, Bob Wagner, and Ken Meck

Lancaster County Conservation District Staff

EROSION AND SEDIMENTATION PROGRAM

2018 was a record setting year for precipitation in Lancaster County and the surrounding region. The tremendous flooding that followed an extreme rain event was a reminder of why stormwater management is important for new development projects. As development occurs throughout the county, stormwater management is a required step in the planning process before construction can begin. These plans include Best Management Practices known as BMPs. The BMPs are required to be implemented to minimize the impact of stormwater run-off as the land cover changes during the development process. Some of the storm events recorded in 2018 were so intense that they exceeded the capacity of these stormwater BMP designs.

A great example of improving a stormwater management BMP in the county is the "Conservation of Natural Resources Award" 2019 recipient, Benton Webber. Ben is an engineer for Lancaster Township and the award is being presented for his work in coordinating a stormwater basin retrofit project at the Kensington Club Apartments. This development project was completed many years ago. The stormwater basin at this location was neglected and severely eroded. Throughout 2018, he orchestrated not only repairing the erosion issues but also created additional capacity within the basin so that stormwater generated at the site will be better managed for years to come. This will lead to improved water quality in the receiving water bodies.

The number of new projects and permits submitted during 2018 were higher than 2017, however, review fees were down slightly. This was due to smaller overall disturbed acreage. Three new employees joined the staff in 2018. They have done a terrific job helping team provide a strong field presence and responsiveness for the plan and permit review process. The Chapter 102 and 105 programs provide guidance for planning and permitting for the thriving construction industry in Lancaster County. 2019 promises to be yet another busy construction season as some large pipeline projects are beginning to wrap up while others are slated to begin. Many residential and commercial development projects are in various stages of planning and construction as well. As Lancaster County's economy continues to thrive, so too does the construction industry.

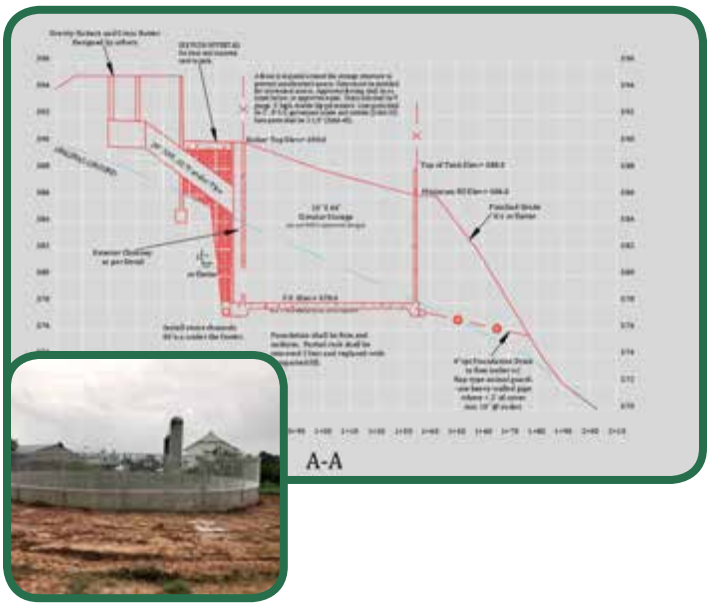
–Nate Kurtz, E&S Program Manager

Year 2018 Chapter 102 / Chapter105 Activity	
E&S Plans	401
Project Acres	6727
Disturbed Acres	1212
Review Fees Collected	$364,735
General NPDES Permits	176
Ind. NPDES Permits	17
NPDES Permit Fees Collected	$112,000
Complaints Received	96
Site Inspections	905
Chapter 105 General Permits	98
Enforcement Actions	2

AGRICULTURE PROGRAM

The Agriculture (Ag) department had a great year in 2018. Ag technicians stayed busy with reviewing 93 Act 38 Nutrient Management Plans and developing 58 Ag Erosion & Sedimentation (Ag E&S)/ Conservation Plans. The importance of these plans can't be stressed enough as they outline the conservation practices needed on the ground and how to address the environmental issues on the farm. Even though the plans are rooted in **Science**, from the chemistry and biology associated with crops and nutrients to weather and soil erosion, District technicians make sure they are both technically sound and practical for the farmer to follow.

2018 saw a major **Technology** change at the District, as staff moved from using the in house Practice Keeper Database system to the new state-wide web-based version. In addition to being a database for Conservation and Nutrient Management Plans; technicians can keep track of Best Management Practices (BMP's) from planning to implementation, compliance inspections, and developing complete conservation plans. Practice Keeper can also be used to export data and generate reports making it easy to see what great work is being done in the county! The Ag staff looks forward to a second year 2019 with the new Practice Keeper system and new updates that will bring even more features.



Ag Dept. Year in Review	
2855.55	**Acres Planned Including** • 42 Ag E&S Plans developed &16 Conservation Plans developed
177	**Completed Designs**
173	**Implemented BMP's** Of the 173 BMP's, 13 manure storages installed
93	**Act 38 Plan Reviews**
302	**Compliance Inspections**

While the Ag staff had a stellar year with planning, they were equally efficient getting designs done and BMP's implemented. In total there were 177 completed designs and 173 BMP's installed including manure storages, heavy use areas, animal trails & walkways, and stream crossings/fencing. When it comes to **Engineering** BMP's Ag staff not only have the skills and knowledge but the tools to design what works, using self-leveling laser levels, and GPS units for surveying and engineering computer software for designing. With a record-setting year for rain it was no easy task for technicians to get out to the field to survey and coordinate getting BMP's implemented.

The **Math** speaks for itself when it comes to the success the Ag department had in 2018. In total there were 42 Ag E&S plans and 16 Conservations plans developed resulting in 2,855.55 acres planned in the county! The Ag Compliance team had another busy year, visiting 302 farms total. They are finishing up their third year now and will visit another 300 farms starting July 2019. The Ag department also saw 2 new employees join the team, one as an Ag Conservation Technician and another as an Ag Compliance Specialist. Both employees are already becoming vital members of the department. In all the Ag staff had a tremendous 2018 and things are looking great for 2019!

–Eric Knoll, Ag Conservation Technician

WATERSHED PROGRAM

Meteorology is defined as the branch of **Science** concerned with the processes of the atmosphere, especially as a means of forecasting the weather. The weather was an on going issue for the District's Watershed Program due to the record setting rainfall received throughout the county in 2018. For the most part stream restoration projects the District or others were either completing or were recently completed held up fairly well with the 2018 flooding events. Only minor fixes were needed. Floodwaters did the most damage to newly planted riparian buffers adjacent to these stream projects. A lot of staff time was devoted to righting tree tubes, removing debris from fences, and replanting lost or damaged trees.

Two of the five (Lititz Borough and Christiana Borough) stream projects the Watershed Program worked on this year assisted local municipalities with meeting their Municipal Separate Storm Sewer System or MS4 requirements . Computer modeling **Technology** has allowed these municipalities to conduct stream restoration work to reduce their sediment loads associated with their MS4 permits. This has resulted in more municipalities looking at stream conservation work as a means of assisting them with this unfunded federal mandate.

Christiana Boro, before (above) and after (below).

Eshleman Run, before (above) and after (below).

The Watershed Program assisted partners with 5 small scale stream restoration projects in 2018. This assistance came through site design work, permit assistance, basic **Engineering**, construction oversight, landowner outreach, and maintenance. This assistance was made possible by the watershed program expanding and adding an assistant watershed specialist to the program. This new position, held by Nate Straw, is funded through several state and federal grants and allows the watershed program to cover a larger watershed footprint throughout the county and its varying water resources.

When you run the numbers of these five small projects they come up to; over 4,350 linear ft. of stream restoration work, nearly 5 acres of riparian buffer created, 2 municipal parks improved, 4 livestock crossings installed, and over 1,000 native trees and shrubs planted to enhance them all. Small projects do add up, **Mathematically** these are significant numbers when we talk about ways to improve local water quality. It is only through combined efforts from big and small projects, like the ones listed here, that will we are able to improve the water quality of the Chesapeake Bay. Despite the weather related issues 2018 was a productive year for the District's Watershed Program.

–Matt Kofroth, Watershed Specialist

DIRT & GRAVEL ROAD, LOW VOLUME ROAD PROGRAM (DGLVR)

2018 has been a very busy year for the District's DGLVR program with well over $335,000 being implemented for various road/watershed improvement projects throughout the county. Add in another $600,000 allocated for future road/watershed projects in 2019/2020 and one can see how this program is providing a valuable service to local municipalities looking for ways to solve stormwater issues on local roads. Take a look at a few highlights from the program.

Hess Road, Eden Township: **Science** tells us that roads next to a stream will flood. Roads made with a gravel base can cause copious amounts of gravel to be deposited into very pristine waterways. This was the case with Hess Rd. For this reason Eden Township used a Dirt & Gravel Rd. grant to realign a stream crossing pipe adjacent to Hess Rd. to lessen stormwater impact and allow the stream to flood naturally without overtopping the road and taking these fine gravels into pristine trout waters.

Cold Springs Road, Rapho Township: New **technology** is all around us and is changing our lives. Sometimes things that are tried-and-true can solve problems for us as good as new technology. This old-is-new-again example is evident in the Cold Springs Road project in Rapho Township where an undersized stream crossing pipe needed replaced. Instead of looking for next-biggest-best- thing to solve the issue, the township recycled a larger culvert that was used as a temporary structure in a development to a new stream crossing for Cold Springs Rd. This was a cost saving for the township, the developer, and the Low Volume Rd. program and fixed the issues facing the road at the same time.

Shelley Road, City of Lancaster: Stormwater **Engineering** for a road project can be costly and time consuming. Though necessary it can be done with conservation in mind as well. Take the Shelley Road Low Volume project in the City of Lancaster. Several iinnovative green infrastructure ideas were used to solve excessive stormwater issues on this road. A rain garden was installed off the road right-of-way to catch downslope runoff before entering the road. Permeable block pavers were used on the side parking areas to allow for more stormwater infiltration. And a Regenerative Step-Pool Stormwater Conveyance System was implemented to catch excess stormwater before it enters a local tributary stream to the Conestoga River. This is a series of pools at the end of stormwater pipe that are planted with native shrubs to soak up stormwater runoff before it enters the local stream.

Before and After pictures of Blackberry Lane project.

Blackberry Lane, Lititz Borough: **Math** can be very important when doing road work . Once again it was essential to look at stormwater and how to capture this in small areas. Like the Blackberry Lane project in Lititz Borough. The Borough used Low Volume Road program funds to design a rain garden area for excess stormwater runoff where the road had a low spot in it and stormwater flows were directed. The Borough worked with a neighboring church, off right-of-way, to implement a rain garden that was the perfect size to capture excess stormwater and allowed it to infiltrate and not enter the storm drain leading to a local stream. This project improved local water quality and beautified the area with native flora instead of mowed grass.

–Matt Kofroth, Dirt and Gravel Road, Low Volume Road Program Coordinator

Dirt & Gravel Road Projects Funded in March 2018		
Municipality	*Road*	*Awarded*
Elizabeth	Pumping Station Road	$ 3,570.00
Elizabeth	Segloch Road	$ 3,060.00
Martic	Tucquan Glen Road	$ 13,068.00
Eden	Cherry Hill Road	$ 64,275.00
Leacock	Red Lane	$ 18,924.00
Drumore	Fishing Creek Road	$ 21,580.60
Low Volume Road Projects Funded in May & September 2018		
Earl	Cabin Road	$ 24,164.10
Lititz Borough	West Lockup Lane	$ 60,120.00
East Cocalico	Buzzard Road	$ 28,677.54
East Cocalico	Indiandale Road	$ 6,768.72
Lancaster City	North Christian Street	$ 133,219.64
Drumore	Scalpy Hollow Road	$ 35,729.00
Drumore	Furniss Road	$ 35,582.00
East Earl	Turkey Hill Road	$ 10,905.00
West Lampeter	Mentzer Road	$ 86,785.00
Conestoga	Valley Road	$ 8,402.00
Earl	Redwell Raod	$ 11,496.00
East Petersburg Borough	Garden Street	$ 36,354.00
	TOTAL	$ 602,680.60

PLAIN SECT OUTREACH

2018 was another busy year for Plain Sect Outreach Coordinator, Dennis Eby. Many farmers called for help with their Manure Management Plans. This continues to be a great outreach opportunity to educate farmers one-to-one about the responsible use of manure generated on their farms.

No-till transplanter machinary is a form of zero tillage or direct drilling to grow crops each year without disturbing soil through tillage or cultivation. This was the fourth season that Dennis coordinated the loanable no-till transplanter program. This program made possible by a grant provided a no-till transplanter for planting no-till tobacco or a few acres of no-till pumpkins if time permitted at no cost to the farmer. This successful program has resulted in 10 similar transplanters being built and used in fields during the planting season.

ACCOMPLISHMENTS	
239	Farm visits (most related to manure management plans).
76	Manure Management Plans completed.
19	Farmers used the loanable no-till transplanter (37 acres of tobacco, 11 acres of pumpkins, & .5 acres of cole crops).
46	Meetings attended with display about the Lancaster County Conservation District (LCCD), spoke at many, reached approximately 3200 farmers, including 2,200 Plain Sect attendees.
1	Coordinated a Plain Sect leadership meeting for LCCD with 19 Amish (10 bishops) & 8 Old Order Mennonites in attendance.

No-till tobacco acreages have increased substantially in Lancaster County since this new style loanable planter system was started by LCCD in 2015. Several farmers have also successfully modified their conventional planters for no-till. In 2018, LCCD launched a new No-till Tobacco Incentive Program. This program was designed for farmers who wanted to try no-till tobacco and were reimbursed for their planter rental cost plus an additional $100 per acre incentive payment. In addition, if the participating farm did not have the required Agriculture Erosion and Sediment Conservation Plan and Manure Management Plans, LCCD completed plans in consultation with the farmer.

Educating the Plain Sect in soil and water conservation continues to be the key to implementing more practices on farms throughout Lancaster County. Plain Sect own nearly half of the land in the county. Their cooperation is greatly needed to meet the conservation goals for Lancaster County.

–Dennis Eby, Plain Sect Coordinator

CONSERVATION EDUCATION

The acronym STEM is a familiar part of the District Education Program. STEM stands for Science, Technology, Engineering and Math. Very simply, the many aspects of the District Education Program incorporated this acronym through interdisciplinary and hands on lessons, activities, and programs in 2018.

Sallie Gregory, Education Coordinator led efforts in 2018 that included 5,875 participants who attended 177 programs. Presentations addressed the PA Science/Technology, and Environment and Ecology Standards featuring natural resources, watersheds, water conservation, and soil.

The *Manure Management Planning for Youth Animal Projects* curriculum was completed. Sallie collaborated with Jennifer Fetter, Penn State Extension, and Deb Seibert, Manheim Central Ag Educator in designing and developing a **science** based project book for youth members of 4-H, FFA, and Ag Education classroom. The activities and career connections provide youth with the building blocks for managing manure from a project animal. The goal of the grant project was to have students begin to understand Pennsylvania Department of Environmental Protection's regulations. Trainings and project books will be made available through the state 4-H program, and FFA in 2019. The project book can also be accessed electronically for download.

Design and layout **technology** supported the completion of a laminated macroinvertebrate identification and stream assessment chart was made possible through a grant. The chart provides teachers and students with a useful key to identify macroinvertebrates or aquatic bugs through descriptions and pictures. An added feature on the chart explains the method each bug uses in a stream to find food. These aquatic bugs play a vital role in food chains found in every stream.

A partner project with the PA Game Commission was **engineered** to produce the first District based webinar. The webinar offered to the public and schools was part of the Ag and the Environment day during Lancaster County Ag Week. Titled Managing Farmlands for Yields and Wildlife, this resource remains accessible on line at the both the District and PA Game Commission websites.

Mitch Gochnauer, District Intern, spent the summer working with Sallie Gregory and Matt Kofroth, Watershed Specialist. Part of his work experience took him into the field to maintenance projects in riparian buffers, along with fisheries surveys, and stream project surveying. In the second half of his work experience Mitch taught in collaboration with Sallie at the state Ag Educator Conference, and led lessons and activities at the Lancaster County Youth Conservation School. His assistance was greatly appreciated throughout the summer.

The Lancaster County Envirothons program included three days of events for students in grade 3 -12. 439 Lancaster County students participated. Sallie collaborated with Mary Ann Schlegel, Naturalist – Lancaster County Parks and Recreation, District staff, and volunteers to plan the event. Hempfield High School placed first at the Senior High Envirothon and went on to represent the county at the state contest. **Mathematics** made it clear the team at one of the highest scores in the history of the event,445 points out of 500. Their enthusiasm for the event was infectious. They studied and prepared placing 15 out of 67 counties.

In July, with a full house of 27 students the 40th annual Lancaster County Youth Conservation School was held. Total graduates of the school include 1,140. During the week students constructed kestrel boxes, banded mourning doves, practiced firearm safety, and put new canoeing skills into practice. The study focus of the week involved groups of students looking at a conservation issue that highlighted each decade of the school. Discussions asked students forecast conservation issues of the future that were placed in a time capsule and will be revisited by students in 10 years. The seven day six night program also marked the beginning of the rainy season that set up shop in the county and inspired creative solutions to rainy day learning.

2018 highlighted just a few of the projects and programs that included STEM, an integral part of the Education Program.

–Sallie Gregory, Education Coordinator

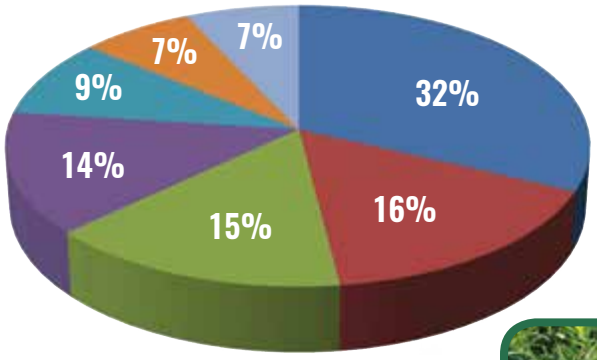
OMBUDSMAN PROGRAM

The PA Agricultural Ombudsman Program handles public relations, education and conflict management related to agriculture. At face value, that doesn't sound like STEM would be needed to do this job. But, I use it a lot. Let me explain.

Science I have a degree in Environmental Resources Management, which is a science-based degree. I spent 5 ½ years as an ag resources technician prior to becoming an Ag Ombudsman. I use my understanding of science to explain best management practices and modern agriculture to the general public; or explain soil health to farmers; or teach how to properly dispose of dead animals using mortality composting (it's all about the carbon to nitrogen ratio!). Science helps me explain to farmers their options to control fly outbreaks using cultural, biological and chemical management practices.

Technology Agriculture can feed the world thanks to new technologies related to planting crops, disease resistance, animal care, harvesting equipment, and food preservation techniques. However, many non-farm people don't understand the vital reasons for technological advances, and tend to resist agriculture keeping up with modern advancements. Therefore, I spend time explaining, educating about and defending technology.

Technological advances in stormwater management also plays a role in the Ombudsman responsibilities. I spent time in 2018 on the York County Stormwater Authority Implementation "Outreach and Communications" subcommittee focused on telling the residents about an option for York County to improve water quality through a dedicated funding source. The Authority (if approved in 2019) would potentially be utilizing new technologies for plans, designs and practices in stormwater management.



Engineering When you think of engineering, do you think of long mathematical equations and difficult college courses being required? I'm glad some people are wired for those details. Engineering can also mean the organization, orchestration and management of details to make something happen. Farmers engineer things all the time! For example, farmers' projects can include assembling broken things to make them work, to planning exactly what to plant, when to plant it, how deep to plant it, and how to keep the pests from destroying. That's engineering too. I was involved in a Cover Crop Champions program supported by the National Wildlife Federation this year, which spent time encouraging farmers to begin or strengthen their use of cover crops, rotational grazing, crop diversity, and no-till planting. It takes many tactics and intentional management to engineer the improvement of soil health.

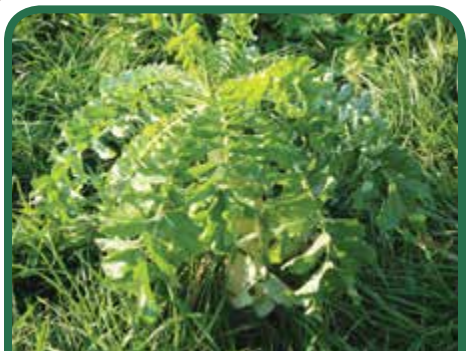
Math Adding, subtracting, multiplying or dividing. I don't typically use algebra or calculus, but I do need to keep track of multiple budgets from multiple funding sources—and the income and expenses assigned to each grant. I calculate how many hours I spend on projects, how many people I impact through my responsibilities and decide how to prioritize my responsibilities.

In 2018, I spent many hours

- coordinating responses to 25+ fly complaints from 11 different counties in Eastern PA.
- researching answers to 16 assorted requests for Agriculture related information.
- working on 15 "special projects" as the Eastern PA Agricultural Ombudsman or as a subcontractor for different funding sources

The PA Agricultural Ombudsman Program relies on STEM, sprinkled heavily with the Art of human interaction. And I wouldn't have it any other way.

–Shelly Dehoff, PA Ombudsman



Promotion of Tillage Radishes as part of the Cover Crop Champions Program

Interaction with the Public during Lancaster Co Ag Week.

2018 ACCOMPLISHMENTS

Conservation Through Science-Based Tools & Standards

Since 1935, NRCS has developed science-based tools and standards in agronomy, forestry, engineering, economics, wildlife biology and other disciplines. Through a 9-step planning process, these tools and standards are used by local field office conservationists to help landowners plan and implement conservation practices on their properties. The goal being to ensure productive lands in harmony with a healthy environment.

> "Land must be expertly cared for if it is to be maintained in a productive state."
>
> *-Hugh Hammond Bennett*

Conservation Practice Implementation

NRCS staff in local field offices and technical centers draw on decades of experience in a variety of sciences and disciplines to develop solutions to complex resource concerns on private lands. These solutions not only protect or restore the natural resource, but also meet the goals and objectives of the landowners with which we work. NRCS conservationists, biologists, foresters, soil scientists, technicians, and engineers work collaboratively, alongside landowners, to turn a plan into action.

NRCS soil health demos at Ag Progress Days.

COMMON CONSERVATION PRACTICES INSTALLED IN LANCASTER COUNTY

	2014	2015	2016	2017	2018
Waste Storage Facilities (no.)	12	11	13	24	17
Grassed Waterways (ac.)	13	18	18	18	12
Terrace Systems (ft.)	16,400	16,500	32,900	22,600	17,889
Conservation Plantings & Buffers (ac)	25	25	111	167	102

Conservation Financial Assistance Programs

NRCS continues to offer innovative financial assistance programs intended to ease some of the economic burden that may arise when landowners implement conservation practices on their land. This is just one additional way to providae landowners with the necessary means to protect our natural resources. NRCS economists and program analysts work together to annually evaluate conservation program payment schedules to ensure that reasonable financial resources are available to landowners that are interested making conservation improvements.

CONTRACT OBLIGATIONS

	2014	2015	2016	2017	2018
ALL NRCS PROGRAMS	$1,291,386.00	$2,146,743.00	$3,032,577.00	$3,637,616.00	$1,154,093

FINANCIAL ASSISTANCE PAYMENTS

	2014	2015	2016	2017	2018
ALL NRCS PROGRAMS	$2,192,330.00	$1,783,112.00	$1,605,043.00	$2,350,184.00	$2,024,484

Conservation practice survey.

Education and Outreach

While one emphasis of NRCS field conservationists is to act as an educational resource to landowners in the community, we also recognize the need to recruit individuals that are committed to conservation and want to apply their education and experience to deliver conservation assistance to ensure all people have access to a healthy environment.

The USDA Pathways Programs offers career opportunities for students from high school through post-graduate school. In 2018 the Lancaster field office hosted two Pathways Interns. Our interns not only gained valuable work experience, but also provided important technical assistance directly to landowners within the community. Through these relationships, NRCS introduces the next generation of conservationists to new opportunities.

–Heather Grove, District Conservationist

CREP

A lot goes into creating a CREP conservation plan for a forested riparian buffer project. When planning a site, it is important to have knowledge regarding beneficial and native plants, the ability to identify invasive, nonnative plant species as well as wildlife, insects, and fisheries who utilize a forested riparian buffer. One needs to understand the trees and shrubs they are planted, how these plants are a benefit to the stream and the wildlife that call forested riparian buffers home.

When working on CREP plans for the program we at times use a GPS unit to measure the buffer perimeter. The GPS points taken on site are then downloaded onto an aerial map in the mapping system used by the federal government called Customer Service Toolkit. These maps are then included in the CREP conservation plan. They are comprised of soils, topographic, and plan maps with riparian buffer acreage, roads names, stream names, and field borders on them.

Certain practices like livestock crossings and watering facilities are installed along with a forested riparian buffer. These practices will be surveyed and designed to the Natural Resource Conservation Service (NRCS) standard and specifications. A qualified soil technician or engineer complete the surveys on site in the field with the help of other staff and then will finish the design in the office.

When looking at the acreage of the buffer we need to be able to figure out number of native trees and shrubs per acre, per species. The program requires that we plant an average of 200 stems per acre.

A year old CREP buffer with streambank fencing.

With that in mind we then need to figure out how many 2-foot shrub and 5-foot tree tubes will be needed for the overall project. The length of fence is included in a plan. We measure the fence using the aerial map and then a wheel when certifying the fence practice. The wheel will give us an accurate measurement.

These are a just few instances when planning a CREP forested riparian buffer we need to think about science, the technology created to complete plans, the engineering work that is required for a project, and the math skills for figuring out stem counts and fencing lengths.

There are currently 410 CREP contracts in the county. Contracts include riparian buffers, grassland practices, and wildlife practices for a total of 2,123 acres. There are 261 contracts with 1,198 acres of forested riparian and wetland practices in Lancaster County. 21 additional landowners signed up for the program in 2017 enrolling 117 acres and 22 landowners in 2018 with 140 acres of CREP. We are waiting on new rules of the Farm Bill and once the guidance is out the Farm Service Agency will be able to start taking new sign up.

–Ashley Spotts, Restoration Specialist – Chesapeake Bay Foundation

During the recent Pennsylvania Association of Conservation Districts, Inc. and the State Conservation Commission 71st Joint Annual Conference, several conservationists from across the state were recognized. The Lancaster County Conservation District is pleased to honor Jay Snyder, Board Director who received the Ann Rudd Saxman Conservation District Director Excellence Award. Jay is well deserving of this honor as many would say at the local level. It's wonderful to share his dedication and commitment to conservation statewide.

Matt Kofroth, Watershed Specialist, was recognized by the Alliance for the Chesapeake Bay receiving the Watershed Champion award during their annual Environmental Awards at Annapolis, MD. As the Watershed Specialist for almost 20 years, Matt has coordinated volunteer monitoring programs, helped to organize local watershed associations, reviewed and written grants for restoration projects and created resource for county homeowners to improve their water use. In the truest sense of the action of a champion, Matt has an unrivaled commitment to bettering the waterways of Lancaster County.

TREE SEEDLING SALE

The 44th Annual Lancaster County Conservation District Tree Seedling Sale included 499 orders for 30,600 plants and trees. The team of Conservation District staff, directors, and Natural Resources Conservation Service staff along with several volunteers filled each order. The fundraiser in support of District programs raised $12,817 with an increase of $3,400 from 2017. Species selection differs from year to year. In 2018 Carex pensylvanica, a member of sedge family was new to the sale and was popular. The species was chosen as its native and does well to cover ground in shaded areas. Hosted at the Farm and Home Center, several perennials and trees that didn't appear on the order form were offered for sale the day of pick up. Free compost was made available to customers courtesy of Manheim Township composting.

Eight local Watershed Associations participated in the sale as a fundraiser for their individual groups. $373 was refunded to these associations. Garden Spot FFA, Lampeter Strasburg FFA, Donegal Booster Club, Manheim FFA and Manor FFA also participated this year as a fundraiser for their chapters, earning back 20% of all sales. $907 was refunded to their chapters.

The investment in the Tree Sale allows the Conservation District to continue valuable education programs relating to watersheds, wetlands, and conservation practices

–Sallie Gregory and Matt Kofroth, Co-Chairs

Sonia Wasco was recognized at the Lancaster County Youth Conservation School for 40 years of service to the program. Commissioner Craig Lehman honored her with a proclamation on behalf of the county. Her dedication and leadership is an inspiration to volunteer staff. Sonia's commitment to motivating and working with a new class of students each year is a hallmark of the unique educational program.

Governor Award for Evironmental Excellence recognized Pequea Creek Watershed Association for their efforts in the **Big Beaver-Esh Farm Stream Restoration.** The project minimizes erosion from Big Beaver Creek and reconnects the creek to the natural floodplain. The association regraded high streambanks, installed stream flow structures, planted streambank stabilizing vegetation, and constructed livestock fencing. The improvements prevented the loss of valuable land and reduced sediment levels by 121,000 pounds, nitrogen levels by 202 pounds, and phosphorous levels by 183 pounds annually. Source: https://pecpa.org

Conservation Foundation of Lancaster County

Conservation Foundation of Lancaster County

Income

Grants Received	208177.00
Gifts & Donations	2395.00
Fees Generated	18970.00
Administrative Income	0.00
Fundraising Income	0.00
Program Income	486.00
Total	230,028.00

Expenses

Project Dollars Expended	115093.00
Administrative Expense	4983.00
Consulting Expense	1297.00
Sponsorship Expense	6250.00
Fundraising Expense	5014.00
Program Expense	889
Total	133,526.00

PROJECTS /GRANTS HIGHLIGHTS:

Fishing Creek Grant for the Fishing Creek Watershed

Grant received from the National Fish and Wildlife Foundation (NFWF). The collaborative partnership was developed to pursue 100% stream exclusion of livestock in three subwatersheds of the Fishing Creek Watershed. The Foundation portion if the grants which is ongoing will focus on contracting with the District to review the conservation plans and then to provide coordination and funding for livestock exclusion fencing along Fishing Creek. It is anticipated that streambank fencing will be completed in 2019.

Career Pathways for Agriculture Equipment Service Technicians Grant

Grant received from the Steinman Foundation. The grant is ongoing to help to develop an apprentice program for high school graduates interested in the agriculture equipment field. A kick-off meeting was held in May 2017 with Scott Sheely, PA Department of Agriculture. Curriculum and assessments for the Apprenticeship Program have been completed. The first students began their program during the summer of 2018.

Extraordinary Give Project

Grant received from the Lancaster County Community Foundation. 59 Donors participated in Lancaster County's Largest Day of Giving, the Extraordinary Give. Donations of $3,543 supported the Lancaster County Envirothons and the 41st anniversary of the Lancaster County Youth Conservation School.

Cocalico Creek Headwaters Floodplain Restoration Grant

Grant received in 2018 from the Pennsylvania Department of Environmental Protection (PA DEP) for the design and permitting of floodplain restoration of the Cocalico Creek and an unnamed tributary. The project will produce quantifiable benefits in the form of sediment and nutrient load reductions, stream and wetland restoration, invasive species removal, native habitat establishment and flood storage and stormwater management. It is anticipated the design will be completed in 2019.

AFFILIATE HIGHLIGHTS

Retention Basin

Lancaster County Clean Water Consortium

- Refined the Goals, Mission and Vision statements.
- Redesigned the website
- Sponsor of Lancaster County Water Week.
- Hosted 3rd annual golf tournament during Water Week raising $2,377.35 for the Stormwater Mini-Grant program.
- Two Stormwater Mini-Grants were awarded in 2018 to West Earl Township and South West End Inc for green infrastructure projects. Total amount awarded was $10,000.
- An Education and Outreach subcommittee was formed to better formulate training sessions
- Held an educational workshop for municipalities entitled Stream Restoration 101
- Held Engineers Roundtable to discuss various stormwater topics.
- Participated in the Chiques Creek NFWF Grant – Ag, Residential, Municipal Teams.
- Participated in the Chiques Creek Watershed Expo
- Co-sponsored the Meadow Inspection Workshop held at the Penn State Research Farm
- Worked with PennState students for their Communications Toolkit class project

Clean Water Partners

Still in the early phases of growth, the Lancaster Clean Water Partners flourished in 2018 by setting the stage for a collective impact approach to a local environmental issue, listening to the needs of partners across the county, and embracing unique opportunities for collaboration and water quality improvement. Allyson Gibson was hired as coordinator. The group hosted 2 full partner meetings with approximately 75 people at each meeting, launched Action Teams of partners from multiple sectors, helped expand the awareness of clean water, participated in multiple speaking engagements such as The Chamber's business consortiums and regional watershed conferences, grew a communications list to over 165 people, and maintained a consistent social media presence that highlighted both the collective impact approach and local water quality issues. For the second half of the year, the Partners led the team that developed Lancaster County's local strategy for Pennsylvania's Watershed Implementation Plan (WIP), which uses a collective voice of experts to address Lancaster County's goal: a reduction of 11 million pounds of nitrogen and 500,000 pounds of phosphorus by 2025. A success was engaging municipalities, private industry, conservation professionals, local government officials, agriculture specialists, and more in the entire process, elevating the strength of the clean water work in 2019 and beyond.

Retention Basin

Infiltration Area

Board of Directors

Daniel C. Heller, *Chairman*
Robert Shearer, *Vice Chairman*
Herb Kreider
Kenneth Meck
Roger Rohrer
Richard Shellenberger
Jay Snyder
Sonia Wasco
Craig Lehman, *County Commissioner*
Donald M. Robinson, *Dir. Emeritus*

Associate Directors

Darrell Becker
Frank R. Burkhart
Lisa A. Graybeal
Ernest M. Orr, Jr.
Gregory Strausser
Robert E. Wagner
Kent Weaver, *Treasurer*

District Advisors

John Beiler
James E. Hershey
Matthew J. Mack
David D. Miller
Kenneth M. Rutt
Kathleen V. Schreiber
Deb Seibert
Alfred Wanner Jr.
Matthew Young
Cynthia Zawrotuk

Lancaster County Conservation District Staff

Administration

Christopher Thompson, *Administrator*
Gerald Heistand, *Business Manager*
Kim Dugan, *Sec./Receptionist*
Holly Shaub, *Sec./Receptionist*

Erosion and Sedimentation

Nate Kurtz, *Department Manager*
Emily Broich, *Resource Conservationist*
Liz Deming, *Resource Conservationist*
Jim Fricke, *Resource Conservationist*
Eric Hout, *Resource Conservationist*
Suzanne Kopp, *E & S Secretary*

Agriculture

Jeff Hill, *Ag. Program Manager*
Kevin Seibert, *Ag Compliance Coordinator*
James Saltsman, *Ag Eng Tech Spec*
Adam Hartz, *Ag Eng Tech Spec*
Kent Bitting, *Professional Engineer*
Francesca DePrator, *Ag Compl. Insp*
Justin Furnia, *Ag Compliance Insp*
Nick Biondi, *Ag Conservation Tech*
Greg Heigel, *Ag Conservation Tech*
Kevin Lutz, *Ag Conservation Tech*
Steven Reiff, *Ag Conservation Tech*
Maddie Klein, *Ag Conservation Tech*
Eric Knoll, *Ag Conservation Tech*
Samantha Adams, *Ag Conservation Tech*
Brittany Smith, *Ag Conservation Tech*
Dennis Eby, *Plain Sect Outreach*

Watershed and Education

Shelly Dehoff, *Ag/Public Liaison*
Sallie Gregory, *Education Coordinator*
Matthew Kofroth, *Watershed Specialist*
Nate Straw, *Watershed Assistant*
Allyson Gibson, *Clean Water Partners Coor.*

USDA Natural Resources Conservation Service

Heather Grove, *District Conservationist*
Kefeni Kejela, *Soil Conservation/District Conservationist*
Gary Ballina, *Civil Engineering Tech*
Mark Myers, *Soil Conservationist*
Sally Barnes, *Soil Conservation Tech*
Meeghan Orr *Program Assistant*
Ashley Spotts, *Restoration Specialist-CBF*
Jeff Sholly, *TAG Engineer*
Jenna Emore, *Wildlife Biologist, Pheasants Forever*

Vision Statement

The Lancaster County Conservation District will be the premiere conservation organization regarded by all citizens as a leader in the innovative stewardship of our natural resources. We will be a source of up-to-date technical assistance to address environmental concerns and a central clearinghouse providing credible, current information and education regarding the environment. We will coordinate environmental protection for future generations while encouraging profitable business enterprises.

The mission of the Lancaster County Conservation District is to focus on the **stewardship** of land, water, and other natural resources; to make all citizens **aware** of the interrelationships between human activities and the natural environment; to provide **assistance** for current efforts in natural resource conservation; to develop and implement **programs** which promote the stewardship of natural resources; and to enlist and coordinate help from public and private sources in accomplishing this mission.

LANCASTER COUNTY CONSERVATION DISTRICT

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All photos within this report provided by LCCD and NRCS.