

*Soil and Water Yours for Life*

# Durham Soil and Water Conservation District FY19-20 ANNUAL REPORT

## 2020 Raleigh Environmental Award Winner

Durham Soil and Water Conservation District was awarded the Drinking Watershed Protection Award presented by the City of Raleigh for our Stormwater BMP and Stream Restoration project at Southern High School of Energy and Sustainability. Raleigh's drinking water comes from two sources, Lake Benson and Falls Lake, both of which are largely outside of the City of Raleigh's jurisdiction. This award recognizes some of the great things their upstream neighbors are doing to help protect Raleigh's drinking water.

We received this distinguished award for our Stormwater BMP and Stream Restoration project at Southern High School of Energy and Sustainability. This project truly represented incredible environmental stewardship and sustainability. The project was a two-phase effort which included the creation of stormwater wetlands and retention ponds, as well as a stream buffer restoration including the establishment of a 2.23-acre permanent conservation easement along Chunky Pipe Creek directly upstream from Falls Lake. In the end, this project drastically improved stormwater management on the site, created a natural irrigation source to reduce potable water use, restored a streambank and even provided environmental job training to students at the school. [Click here for more information.](#)

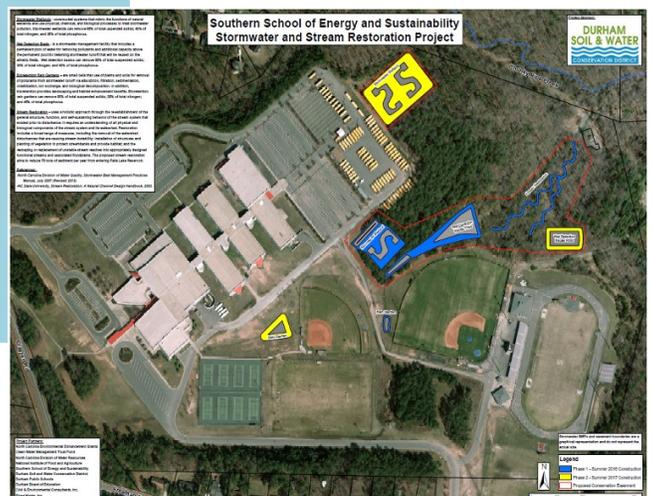


Soil & Water

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## Mission Statement

To conserve, enhance, promote the natural resources of Durham County by providing technical assistance, environmental education information, and economic incentives to County citizens and by exhibiting a diversified program to meet its changing needs.



## Board Members

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 Laura Marie Davis, Secretary/Treasurer  
 David Harris, Financial Officer  
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 Becky Emmons, Associate Supervisor  
 Sheena Mathews, Associate Supervisor

## Staff

Eddie Culberson, Director  
 Lisa Marochak, Senior Administrative Officer  
 Mike Dupree, Agribusiness & Environmental Services Manager  
 Jessica Perrin, Watershed Conservationist  
 Emily Bateman, Natural Resources Conservationist  
 Cherri Smith, Contracted Services Employee  
 Elizabeth Zander, Project Manager- Piedmont Conservation Council  
 Diana Irizarry, Supervisory Soil Conservationist- USDA/NRCS  
 Allie Dinwiddie, Regional Coordinator- NC Division Soil and Water



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# Stream Restoration

## Dunbarton Stream Restoration Project

The Soil and Water Conservation District completed the Dunbarton Project during FY20. The project restored a section of UT to Third Fork Creek using natural channel design techniques from the design plans provided by CEC Engineering. The work restored 1,770 LF of stream that is a direct tributary to Third Fork Creek, which flows into the Jordan Lake. The restoration includes a vegetative buffer with a minimum width of 50 feet on both sides of the stream throughout the project area. A permanent conservation easement surrounding the project was recorded at the Register of Deeds office and will be monitored by the District in perpetuity. The easement (3.53 acres) property was outlined with signage for residents to locate. As this project was funded for the design and construction phase, water quality benefits of this project are already started to be apparent with overbank flooding. Expected stream restoration benefits include improved riffle and pool habitat along the project reach and the nutrient/sediment reductions listed below. This project was funded through a CWMTF grant and the Dunbarton HOA.



Before pictures



Nutrient	Pounds Per year	Pounds Over 30 years
Nitrogen	180.17	5,405.14
Phosphorus	14.93	447.96

*Sediment reduction of 401 tons/yr  
(415 tons/yr to 14 tons/yr) Structures (BMPs) - 34*



After pictures

# Stream Restoration

## Marbrey/Jackson Stream Restoration

During FY 20 the Durham Soil and Water Conservation District completed this stream restoration project in eastern Durham. This project was located on the sediment-impaired Panther Creek. Panther Creek drains a portion of eastern Durham County in a relatively undeveloped section of Durham County. The District partnered with Piedmont Conservation Council to conduct this much needed stream restoration project which lies in the headwaters of Falls Lake. Following 2 ½ months of earth moving construction the project was concluded with students from Southern High School planting trees within the buffer zone. The project generated a reduction of 901 tons of sediment, 529 pounds of total Nitrogen and 34 pounds of total Phosphorus from entering Falls Lake each year. The project restored 4,083 LF of stream utilizing grants from CWMTF, DWR and UNCWI.



Before pictures

Nutrient	Pounds Per year	Pounds Over 30 years
Nitrogen	529	15,870.00
Phosphorus	34	1,020.00
Sediment	901	27,030.00



After pictures

# Community Conservation Assistance Program (CCAP)

The Community Conservation Assistance Program is a voluntary program that provides landowners with technical assistance and cost-share reimbursement to install best management practices (BMPs) on urban and suburban land. On-site consultations are provided to Durham County residents to address erosion, drainage, and water quality concerns along with evaluating which best management practices may be suitable for a site. Staff also host community outreach meetings with homeowner's associations and local groups to discuss water quality improvement in Durham County.

BMPs that are available through CCAP include rain gardens, grass swales, cisterns, critical area plantings, impervious surface conversion, and streambank stabilization projects. The primary mission of CCAP is to reduce the amount of sediment and nutrients from reaching our streams due to their negative impact on water quality and aquatic habitat. While some activities were delayed or cancelled during the last quarter of FY20 due to COVID 19, many activities and accomplishments were still completed throughout the program year.

In FY19, Durham Soil and Water Conservation District received \$30,000 from the City of Durham to implement stormwater control measures (SCMs) such as rain gardens, cisterns, and impervious surface conversion. During FY20, Durham Soil and Water staff were pleased to conduct outreach efforts and site visits in order to encumber and expend these funds. At least half of these SCMs will be installed in designated priority areas, with the goal of assisting historically underserved communities in Durham. This collaboration effort is a renewal of the partnership that began with the City of Durham funds in FY14. Such funds are vital to the success of the Community Conservation Assistance Program in Durham!



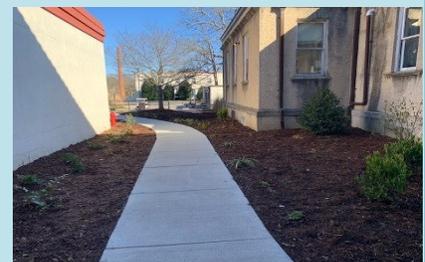
Cistern—Strobino

## FY20 CCAP Measurable Achievements

118	Technical Assistance Consultations and Site Visits
18	Applications for Assistance Received (including rollovers)
8	Contracts Approved
17	Stormwater BMPs Installed
60.31	Acres treated by BMPs
4.49	Pollution Removed: Pounds of Nitrogen (annually)
0.37	Pollution Removed: Pounds of Phosphorous (annually)
2.19	Tons of Soil Saved (annually)
\$4,950	Grant Funds Received for Future Projects
\$34,616	Landowner Cost-share Reimbursement



Before— Hillandale Elem.



Impervious Surface Conversion to Trees and Shrubs—NCSSM



After— Hillandale Elem.

# Impaired Stream Improvement Program (ISIP)



Before picture

The Impaired Stream Improvement Program (ISIP) seeks to implement conservation best management practices on impaired streams in low-income areas. The selected projects target stream sites where the amount of sediment and/or nutrients entering the stream can be reduced using best management practices (BMPs). Several different conservation BMPs can be utilized in Durham County to improve the health of these urban streams, including: streambank stabilization, critical area planting, rain gardens, and riparian buffers.

ISIP provides landowners who self-certify as low income with 100% cost-share for BMP installations on their property in cases where water quality concerns are identified. A 'Limited Resource Self-Certification' form has been created and updated for use with this program based on the FY 2019 Income Limits for Durham-Chapel Hill, NC HUD Metro FMR Area (U.S. Department of Housing and Urban Development).



Construction picture

During fiscal year 2019-2020, the District entered into one contract with a qualifying landowner. The contract has a 5-year maintenance requirement that the landowners must abide by for all installed practices, beginning once construction is completed. The Durham District contracted with CFB Contracting, LLC -a certified, insured environmental contractor- to implement the best management practices designed by Durham SWCD staff for a total cost of \$20,000.

Due to COVID-19 and weather-related project delays, the project will be installed in July-August of 2020. The project site is located on Milan Street in the Ellerbe Creek watershed of the Neuse River Basin. The project will stabilize 117' of streambank and enhance the stream with a riparian buffer installation. These BMPs reduce nutrient and sediment delivery and increase the amount of wildlife habitat and forage due to the native plants installed. Reductions will be reported in FY21 when the project is complete.



Pre-construction picture (panorama)



# Agriculture Cost Share Assistance Program (ACSP)

The Agriculture Cost-Share Assistance Program (ACSP) is a voluntary program for qualifying farmers and agricultural landowners to address natural resource concerns on the land and nonpoint source pollution from agricultural activities. The program provides technical, educational, and financial assistance for the installation of conservation best management practices to address water quality issues found on the farm. The ACSP has been putting conservation on the ground across NC since the mid-1980s. Here in Durham County, the programs administered by the Durham Soil and Water Conservation District.

The program is 100% voluntary on the part of the producer/landowner to help them improve the natural resources; air, soil, plant, animal, and water; on their property by utilizing/installing conservation BMPs. Participants can be reimbursed up to 75% of a predetermined average cost for each BMP installed. The applicant is responsible for the remaining 25% of the costs. In some situations, new or limited resource farmers can be eligible for up to 90% cost share.

The Durham County Agriculture Cost Share Assistance Program (ACSP) received \$67,647 from state appropriations, including a repayment allocation of \$19,034, for the conservation best management practices (BMPs) in fiscal year 2020. Of the state appropriated funds, 100% were allocated to local Durham County producers/landowners for the following conservation BMPs; 1 manure composting facility, 1 heavy use area, 1 stream protection well and pumping plant, 3 watering tanks, 6.1 acres of micro-irrigation, 1 manure application system. The BMPs will mitigate or prevent future losses of nutrients and soil from the farms & nearby streams, thereby improving overall water quality in Durham County. Estimated reductions expected once the BMPs are installed are 73.5 pounds per year of Nitrogen saved, 29.22 pounds per year of Phosphorus saved and 7.55 tons per year of Soil saved.



Composter picture



Watering Tanks



Heavy Use Area

The District staff will be working closely with these producers over the next couple of years to provide technical assistance during the installation of the BMPs. Once completed, the District will monitor the BMPs for 10 years to ensure their function and continued use.

During FY 20, Durham staff was allocated \$12,048 to provide contract management/construction oversight on cost-share contracts for two repairs to a 2019 disaster response program non-field farm road repair.



Road Repair picture

# Agriculture Water Resources Assistance Program (AgWRAP)



Established in 2012, the NC Agricultural Water Resources Assistance Program (AgWRAP) is available to assist the Durham County agriculture community with water resource needs. Instead of being water quality driven like ACSP, the AgWRAP program is strictly water quantity-based to help address water resource concerns/needs on farms. AgWRAP's intended to; identify opportunities to increase water use efficiency, availability, and storage, implement best management practices (BMPs) to conserve and protect water resources, increase water use efficiency and increase water storage and availability for agricultural purposes.

The state legislated appropriation for AgWRAP is considerably smaller than ACSP. Therefore the District allocation is much lower than the ACSP. In FY 2020, the Durham District received \$23,512 and allocated the entire amount to two Durham County farmers for the installation of two new "ag-only" wells for irrigation purposes. The new wells will provide much-needed water for two new/beginning farmers in Durham County, growing 2+ acres of vegetables, berries, and fruit. The new ag wells will help ensure the success of their crops in times of drought and enable them to expand their production as well as providing a safe, clean means of irrigation.

Durham District received an additional \$18,000 to install NC AgWrap's first water collection reuse system. In this system, three seasonal high tunnels were guttered and drained into six cisterns collecting rooftop runoff to provide water for irrigation inside the high tunnels. Also, the system provided an additional 2 acres of vegetable and berry production. Altogether, Durham received \$41,512 to assist farmers with reliable and safe water for their production needs.



Water Reuse

Similar to the NC Ag Cost Share Program, once an AgWRAP contract has been signed and approved, the producer has 2 to 3 years to complete the installation of all BMPs.

## Culberson Receives Award

Soil and Water Conservation District Director Eddie Culberson received his 35 years of service award from the North Carolina Association of Soil and Water Conservation Districts at their Annual Meeting held on January 7, 2020. The meeting was held in Charlotte, NC.

Pictured left to right: 2019 NC Association President, Myles Payne and Durham Soil and Water Director, Eddie Culberson



# Contracted Services Employee

The Durham SWCD's contract employee, Cherri Smith, has continued to work for the district inventorying streams on agricultural lands and assisting in the field with riparian buffer determinations. To date, approximately 7,000 acres of agricultural lands in Durham County have been surveyed on the ground and entered in Practice Keeper software. These data are used to determine the percentage of streams with state-regulated intact riparian buffers as well as to target those streams that would benefit from agricultural cost share funds.



In addition, this employee has continued to update the Voluntary Agricultural District (VAD) Program database and add new farms to this program. There are currently 7,448 acres enrolled in the VAD Program in Durham County. Cherri has also continued to check the accuracy of a farmland inventory that was completed in 2016. The goal of this inventory was to capture those farms not included in the VAD Program and not being farmed by Durham's large leasing farmers. For the purposes of this inventory, farms were classified as one of the following categories: agriculture, community garden, equine, livestock, and point farm (small farms with less than \$1,000 in sales). So far, 50 acres of community gardens and 5,287 acres of point farms have been evaluated for accuracy.

For the calendar year 2020, Cherri has also helped monitor the District's six completed stream restoration and stormwater retrofit projects. Monitoring reports along with photographic documentation are now on file for the following projects: 1) 3,500 linear feet of restoration of Lick Creek, a major tributary to Falls Lake; 2) 900 linear feet of restoration of a tributary to Rocky Creek and a 10,000 square foot stormwater wetland in the Jordan Lake watershed; 3) over 8,000 linear feet of restoration of streams in the Sandy Creek watershed and a three-celled stormwater wetland, all on Duke University property in the Jordan Lake watershed; 4) 3,900 linear feet of restoration of three unnamed tributaries to Falls Lake; 5) 2,000 linear feet of restoration of a tributary to Lake Michie, a water supply reservoir for Durham; and 6) 925 linear feet of stream restoration and six stormwater retrofits on Southern High School property in the Falls Lake watershed.

## Piedmont Conservation Council (PCC)



Piedmont Conservation Council (PCC) is a regional nonprofit organization started in 1967 under the Resource Conservation and Development program through the USDA. PCC serves ten counties, including Durham County, implementing projects that further our communities' sustainability.

This past fiscal year, in partnership with Durham Soil and Water Conservation District, PCC completed a 4,083 linear foot stream restoration project along Panther Creek with a \$450,000 grant received from the Clean Water Management Trust Fund (CWMTF) and a \$110,000 grant received from the Upper Neuse Clean Water Initiative.

PCC continues to expand Durham's Bionomic Education Training Center (BETC) program to all ten of its counties through a \$150,000 grant received from the National Institute of Food & Agriculture (NIFA). This three-year project is providing training and support to 38 teachers and over \$70,000 to install stormwater best management practices.

Currently, PCC is serving as the project manager for a small stream restoration and debris removal project on Sevenmile Creek through funding DCSWCD received from the Emergency Watershed Protection program due to Hurricane Florence.



PCC Full Council

# Durham Received Hurricane Florence and Hurricane Michael Emergency Funding



Durham county farmers and landowners alike felt the effects of both Hurricane Florence and Hurricane Michael. The heavy rainfall in such a short time and wind gusts caused several types of damage to fences, barns, crops, farm roads, fields, and streams. To help, several emergency programs were funded through Federal, State, and Private funding. North Carolina Department of Agriculture and Consumer Services Hurricane Florence Agricultural Disaster Program of 2018 was funded by the North Carolina General Assembly with a \$240 million bill to provide direct payments to farmers that reported crop loss. North Carolina Division of Soil and Water award Durham Soil and Water Conservation District \$22,500 out of a requested \$43,500 to provide cost share assistance with 3 farm road repair contracts. Natural Resource Conservation Service received funding through FEMA to provide cost share assistance with stream debris removal. Pasture Renovation and Cover crop seed initiative, which provided Durham County farmers with 1000 pounds of free seed for reseeding pastures or winter cover on crop fields. The initiative was made possible with funding from state Farm Bureaus around the country and Duke Energy.

## Hydrilla Update

A pilot project launched in 2015 to control hydrilla in the Eno River has reduced the amount and growth rate of the non-native, highly invasive weed, with little to no-long term effect on other plant life or river species, according to the Eno River Hydrilla Management Task Force. Durham County is represented through its Soil and Water Conservation District whom serves on the Eno River Hydrilla Management Task Force.



Members of this multi-agency task force introduced the herbicide fluridone into a section of the waterway at Eno River State Park, located in Orange and Durham counties, in the summer of 2016 as a part of a pilot project that would determine if herbicide treatment in a flowing river would be as effective as it has been in lakes elsewhere in North Carolina. Researchers monitoring the Eno River found that hydrilla density and the length of hydrilla shoots were noticeably reduced in treated areas. Meanwhile, a companion laboratory study indicated the herbicide at the concentrations use had no adverse effects on non-target species, including the most sensitive — freshwater mollusks, including the panhandle pebblesnail, a rare species in North Carolina.

Hydrilla was first discovered in the Eno River basin in the early 1990s in Lake Orange, which is located upstream of Hillsborough. In 2009, biologists confirmed hydrilla in another upstream reservoir, West Fork Eno Reservoir. The plant fragments easily and those fragmented sections can grow into new plants. The hydrilla at Eno River State Park likely came from fragments that floated down from upstream reservoirs. The N.C. Division of Water Resources is actively managing hydrilla in both reservoirs.

Task force members voted to halt the treatment in 2020 but continue to monitor Eno River.

The Eno River Hydrilla Management Task Force involves partners from Durham and Orange Counties, the City of Durham, the Town of Hillsborough, N.C. Division of Parks and Recreation, the N.C. Wildlife Resources Commission, the N.C. Division of Water Resources.

# 2019 Annual Farmers Appreciation Dinner



On November 18, 2019, the Durham Soil and Water Conservation District (SWCD) hosted their Annual Farmers Appreciation Dinner held at Neil and Catherine Frank's beautiful 330-acre cattle farm set in the rolling hills of Rougemont, North Carolina. The evening commenced with the Jordan and Northern High Schools' Future Farmers of America (FFA) students leading the group in the Pledge of Allegiance followed by NC Division of Soil and Water's Director, Vernon Cox, and

Deputy Director, David Williams, singing the National Anthem. The event was well attended by 105 local farmers with some notable attendees including Durham SWCD Board of Supervisors Chair, Talmage Layton; Vice Chair, Danielle Adams; Financial Officer, David Harris; and Associate Supervisor, Mark Dewitt. The District was also pleased to have the National Conservation Foundation's Envirothon Program Manager, Jennifer Brooks in attendance along with Durham County Cooperative Extension Director, Donna Rewalt.



The Keynote Speaker at the dinner was the North Carolina Agricultural Commissioner, Steve Troxler. After recognizing Durham's long history of agriculture, Troxler emphasized that even though agriculture is still the number one industry in the state, we must prioritize preserving farmland because of our rapidly expanding urban areas. In order to accomplish this goal, farmland easements will play an important role as well as the development of more overseas markets. New small farmers will also play an important role in the preservation of agriculture and have already been crucial in the expansion of farmers' markets throughout North Carolina.

The 2019 Durham Farm Family of the Year was presented to Jason Marbrey by Durham SWCD Director, Eddie Culberson. This award recognizes farmers who go above and beyond to implement innovative and cost-effective conservation techniques. In the past few years, Mr. Marbrey has taken the initiative to exclude cattle from all streams and ponds on his property, incorporate heavy use areas, and provide his animals with clean water through a well and watering system that uses solar power



whenever possible. To complement these best management practices, a 3,045 linear foot stream restoration project was completed on his farm.



The evening concluded with the presentation of the 2019 Durham Farm Heritage Hall of Fame Inductee. This award honors individuals who have been instrumental to the success and excellence of agriculture, either as a farmer or in an agriculturally related field. Mr. William Sparrow was bestowed this honor by Mark Waller, Durham County Farm Bureau Board Member. Bill Sparrow is a long-time member of the Durham farming community, has served as Assistant County Cooperative Extension Agent, has owned a well-established plant nursery since 1961, and was a Durham County Farm Bureau Board Member.

# EDUCATION

## Envirothon

### Durham Envirothon Teams and Training Events

The Durham Soil and Water staff provided training to 38 teachers in Durham Public Schools on August 21, 2019. The teachers received information and resources on how to train teams for the NC Envirothon. This training event was the kickoff of the 2020 Durham District Envirothon Program. The teachers were able to learn how to register their teams, what resources were available for them, and the program's alignment with the NC Course of Study Science Standards.

The Durham District trained middle and high school students for the Envirothon competition. A series of 12 different training sessions with nine teams from three schools was conducted and focused on soil, wildlife, and aquatics. All of the trainings provided students with a practice test and hands-on identification. Each session was timed and mimicked the competition allowing the students to become familiar with the importance of teamwork and how the actual event would feel.



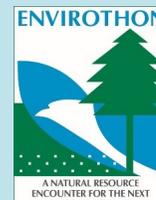
### Area, State, and National Competition's

Due to safety concerns prompted by COVID-19, the Area IV Envirothon scheduled for March 19, 2020 in Franklin County was cancelled. The NC Envirothon scheduled for April 24-25, 2020 at Cedarock Park was also cancelled due to COVID-19. Options are being explored by the NC Envirothon Committee for a modified and/or virtual competition for 2021 to accommodate health concerns and state mandates.



The 2019 NCF-Envirothon was held in North Carolina from July 28-August 2, 2019 at North Carolina State Uni-

versity. Each host selects a theme for their competition, and the selected theme was "Agriculture & the Environment...Knowledge & Technology to Feed the World." 53 teams from the United States, Canada, and China competed in the weeklong event, and the North Carolina team placed second overall! The Durham Soil and Water Conservation District Board and staff provided countless hours of volunteer time preparing and helping to host the event, along with monetary support through donations. The glowing reviews from students, advisors, and guests illustrated the over whelming consensus that North Carolina hosted a spectacular event in 2019!



# Annual Conservation Contest & Awards Celebration

The Durham SWCD held its annual Conservation Contests for K through 9th graders in Durham County for FY19-20. Each year the District invites students to participate in several different contests. The Poster Contest is open to 3rd-6th grade, the Essay Contest for 6th graders, Computer Slide Show contest for 6th grade, Computer Designed Poster for 9th grade and the Public Speaking Contest for 7th-8th graders. The theme for the 2019-2020 contest was 'Wetlands are Wonderful'. The District awards a 1st and 2nd place entry from each contest and grade level. The first place winner advanced on to an Area level contest. Also, the district holds a bookmark contest for students in K-2nd grade. The bookmark theme for FY2020 was 'Pollinators'.

## CONGRATULATIONS to ALL the 2019-2020 Durham SWCD Conservation Contest Winners

### Poster

#### 6th grade

1st – Lucia Harrington, Githens MS  
2nd – Jalynn Brandon, Githens MS

#### 5th grade

1st – Jahir Nolasco, Holt Elementary

#### 4th grade

1st – Jocelyn Fernandez, Holt Elementary  
2nd – Isabella Anderson, Voyager Academy

#### 3rd grade

1st – Lucas Gomez, Holt Elementary  
2nd – Cameron Bumphus, Holt Elementary

### Essay

1st – Michael Koonce, Githens MS school  
2nd – Miles Cromer, Githens MS school

### Public Speaking

#### 8th grade

1st – Louisa Jenniches, Lakewood Montessori MS

#### 7th grade

1st – Sarah Tolman, Lakewood Montessori MS  
2nd – Zackary Davis, Lakewood Montessori MS

### Computer Slide Show

1st - Sophia McKnight, Githens MS  
2nd - Rebecca Mitchell, Githens MS

### Bookmark

#### Kindergarten

1st - Shiloh Kuhns, R.N. Harris  
2nd - Roslyn Palmer, Morehead Montessori

#### 1st grade

1st - Alice Isard, Morehead Montessori  
2nd - Henry Palmer, Morehead Montessori

#### 2nd grade

1st - Brynn Downs, Immaculate Conception  
2nd - Harrison Meyer, Morehead Montessori

### In the Area IV level contest winners:

- ◆ Lucia Harrington won 2nd place for 6th grade Poster Contest.
- ◆ Michael Koonce won 1st place for 6th Essay Contest. His entry advanced on to a state level contest.

Due to COVID-19 the 2020 Area IV Speech Contest and the NCASWCD State Speech Contest were cancelled.

## Annual Awards Celebration

Due to the pandemic, we were unable to hold an in-person awards celebration, so the district decided to honor all the award recipients in another way. We gave all the 1st and 2nd place winners a yard sign that they proudly displayed in their front yards. The 1st place winners received \$50, and the 2nd place winners received \$25. Also, the 1st place bookmark winners received reproduced copies of their bookmarks that staff laminated for their entire class. The teachers of each first-place winner received \$30 to help purchase teacher supplies.



**Shiloh Kuhns**  
1st place Bookmark- Kindergarten



**Brynn Downs**  
1st place Bookmark  
Second Grade



**Alice Isard**  
1st place Bookmark— First Grade



**Sidonia Irven-Moore**  
1st place Public Speaking  
7th Grade



# 2019 Environmental Field Days

FY19-20 the Durham SWCD Board and staff sponsored there Annual Durham County Environmental Field Days event for 3<sup>rd</sup> graders. The event took place at the DPS Hub Farm on October 23-24, 2019. One hundred seventy-three students spent the day learning about soils, wetlands, macroinvertebrates, watersheds, forestry, wildlife, the ecosystem, and much more from resource professionals and hands-on presentations.



# 2019-2020 Classroom Presentations

Throughout the school year, the District staff are called on to present various natural resource topics to schools and children's groups from grade levels pre-K to 12th. Classroom presentations range from a variety of topics. Some of the more popular ones from the last school year included: recycling, composting, vermicomposting, soils, wetlands, seeds, animal identification skills, animal life cycles, and insects. Staff also participate in several local science day events and booths throughout the year. Even though the 2019-2020 school year was cut short, the Soil and Water Staff were able to reach 1270 students in FY20.



# 2019 Durham Big Sweep



50 cleanups  
 659 volunteers  
 1,532 volunteer hours  
 10,240 pounds of litter removed from our parks, neighborhoods and creeks  
 3,520 pounds of recycling diverted from the landfill  
 2,803 pounds of bulky items (e.g. tires, furniture, etc.)

We had **16 more cleanups** and **120 more volunteers** participate during Big Sweep this year compared to last. More individuals are learning about Big Sweep and more are wanting to help their community become cleaner and healthier for everyone to enjoy.

Third Fork Creek Clean-up



City/County employee clean-up

Boy Scout Troop 440



KEEP DURHAM BEAUTIFUL'S

## BIG SWEEP 2019

SEPTEMBER-OCTOBER

Thank you to all of our volunteers for making this year the largest Big Sweep yet!

OVER 16,000 POUNDS OF WASTE REMOVED FROM 50 CLEANUP SITES

 <b>649</b> VOLUNTEERS <small>NUMBER OF VOLUNTEERS</small>	 <b>1,512</b> HOURS <small>NUMBER OF VOLUNTEER HOURS</small>
 <b>10,040</b> LBS. LITTER <small>LBS. OF LITTER REMOVED FROM OUR PARKS, NEIGHBORHOODS AND CREEKS</small>	 <b>3,520</b> LBS. RECYCLING <small>LBS. OF LITTER DIVERTED FROM LANDFILL</small>
 <b>2,803</b> LBS. BULKY ITEMS <small>LBS. OF ITEMS GOING TO LANDFILL</small>	

JOIN US AGAIN NEXT YEAR FOR BIG SWEEP 2020!



# Ag Economic Development

## Agricultural Economic Development Grant Program

In FY19-20 The Durham County Board of County Commissioners approved an Agricultural Economic Development Grant Program and has allocated \$50,000 for the fiscal year. The program's purpose is to offer cost share grants to assist farmers along with promoting Agriculture Development and Outdoor Environmental Learning Centers in schools.

The County has a successful economic development plan that offers cash incentives to businesses that create jobs in the community. This incentive programs mimics the same outcome but is directed to support farms, new and beginning entrepreneurs and to support agriculture education in schools. This program provides two types of grants: small grants for Agriculture Development in schools, Up to \$1,000.00 and Grants for farmers: Up to \$5,000.00

Program Data	FY 20
Funding level	\$50,000
Request for funding from applicants	\$172,959
Number of applications reviewed	26
Number of farm applications	22
Number of M/WBE applications (farms)	14
Number of farm projects funded	6
Percentage of M/WBE contracts awarded to farms	84%
Number of Farms requesting funding for Food Safety Compliance	10
Percentage of Infrastructure projects funded for wholesale readiness	80%
Number of projects funded for regulatory compliance (FMSA)	4
Number of farms pursuing GAP	3

An Agricultural Economic Development Grant Subcommittee was formed with nine (9) members. Representatives from local nonprofits, the Farmland Protection Advisory Board, The Durham Farm Bureau, the Farm Service Agency and the Durham SWCD evaluate each application and administer the program for Durham County.

*Service Quality and effectiveness of the program and the extent in which it is meeting the objectives are summarized in the table to the right.*

Outcomes	FY20
Number of jobs created (as reported by farms)	7
Number of projects that improved access/equity	2
Projects with food sales to Farmer FoodShare	1
Projects with food sales to local markets	6
Number of projects reporting an increase in sales	3



Jordan High Agriculture Students received support for their lamb program



*"Thank you Durham Soil & Water for the life of water that you have given to UCAN's Catawba Trail Farm. The overarching results are the increase in access which creates pathways to equity for residents of Durham County."*

# Ag Economic Development

## Bionomic Education Training Center (BETC)

Between June 24, 2019 and July 25, 2019 the BETC Summer Green Team, made up of 10 Durham Public Schools (DPS) teachers and staff and 32 interns participating in the Durham YouthWorks Internship Program implemented 10 new Best Management Practices (BMP) and provided

maintenance on eight green infrastructure projects and two community gardens. The purpose of the program is to introduce youth to careers in agriculture and the green infrastructure industries as well as engage them in community service projects. The Program implements an instructional delivery system that expands students' opportunities for experiential learning and inquiry-based investigative skills, while improving their Agri-science and math/science literacy comprehension. Perhaps most importantly, the Program has been successful in meeting the needs of students across a broad socioeconomic spectrum. Integrating STEM concepts and humanitarian concepts, students learn how to solve current, important societal problems such as the relationship between storm water runoff and water quality.

Water Quality Benefits Tracked	
Number of Teachers and Students Impacted	41
Hours of Green Infrastructure Training for Teachers	28 hours
Stormwater Management Projects Installed	10
Pounds of Nitrogen Removed From Waterways	49.3 lbs.
Pounds of Phosphorus Removed From Waterways	1.5 lbs.
Tons of Sediment Saved	44,342.32 lbs.



Community Service Outcomes	
Number of Community Service Hours	5370
Number of Community Gardens Assisted	2
Number of Farms Assisted	6

This program's success has been made possible by partnerships with the Durham Soil & Water Conservation District Board of Supervisors, Amy Davis DPS Grants & Research, Durham YouthWorks, DPS Director of Career & Technical Education Dr. Julie Pack, DPS Grounds Supervisor Aaron Rider and his staff, various school principals and PTA leaders, the Friends of the Hub Farm nonprofit, and local community members. Grant funding from Duke Energy STEM Grant Program, the Piedmont Conservation Council, the Durham Farmland Protection Advisory Board and the Durham Farm Bureau, have also made the program and projects possible.

Organization	Description of Support	Total Contribution
Duke Energy STEM Grant	Teacher Salaries and supplies	\$54,000
Piedmont Conservation Council (PCC)	Water Quality Cost Share grant	\$7,000
Durham Public Schools Career & Technical Education	Transportation expenses & Teacher Salaries	\$8,000
YouthWorks	Student salaries	\$48,000
Durham Farmland Protection Advisory Board	Supplies	\$1500
Durham Farm Bureau	Lunch	\$200
Durham Soil & Water Conservation District	Cost Share Assistance for Projects	\$7399
The Park Foundation, West Point on the Eno Park	Project Funding	\$4928
George Watts Elementary PTA	Project Funding	\$1560
Hillandale Elementary PTA	Project Funding	\$1868
DPS Maintenance Department	Equipment and personnel	\$1020
<b>Total</b>		<b>\$135,475</b>

## NCSSM Mini Term Environmental Research Project

The District participated in the planning and execution of a seven-day research project with Dr. Erin Quinlan and 14 students from NCSSM. The research project focused on aquatic biology and the health of closed aquatic systems. The students studied the biology and the control of aquatic plants and best management practices for maintaining a balance of desirable plants in a pond. Students assisted a survey of the pond to determine the pond volume, collected and analyzed the water for nutrient content, identified the algae species, and replanted the pond with beneficial aquatic vascular plants.



## Farmland Protection Advisory Board (FPAB) Breakfast Series

Each winter the FPAB hosts monthly breakfast and information session for famers.

On December 19, 2019 the breakfast topic included a discussion of cost share and grant opportunities in Durham. Durham SWCD staff along with NRCS staff introduced cost share and grant opportunities for 38 citizens.



On January 16, 2019, 42 citizens attended breakfast to hear information regarding Hemp. The guest speakers included: Dr. Thomas Melton, the Chair of N.C. Industrial Hemp Commission who talked about the current and probable future hemp rules, laws, and regulations and Mart Bumgarner, the Agriculture Extension Agent from Orange County.

## FY19-20 Conservation Store



Moby Rain Barrel  
Sold 1



Ivy Rain Barrel  
Sold 4



Tree Seedlings  
Sold 689



Wildflower  
Sold 2



Bird Box  
Sold 1

### No Till-Drill Rental



The rental rate for the drill is \$12 per acre with a \$100 deposit. Interested renters can contact the District today to inquire about renting.

In FY19-20 275.90 acres were planted by 14 renters

# Watershed

## Agriculture Compliance with the Falls Lake Rules

The Durham Local Advisory Committee met on February 20, 2020, for the annual review of crop data and discussed the Local Nutrient Control Strategy as outlined by Falls Lake Reservoir Nutrient Management Strategies. Durham farmers reported 473 acres of corn, 950 acres of soybeans, 576 acres of tall fescue, 50 acres of orchard grass, and 142 acres of tobacco for a total of 2,191 acres of cropland in the crop year 2019. The Nitrogen Loss Estimate Worksheet (NLEW) compiled has indicated the nitrogen losses of 85% from the baseline in 2006. Durham farmers have continued to exceed the 20 percent reduction according to the Phase I mandate.

## Tri-County Pasture & Livestock Management Field Day



Durham SWCD continues to see a need for more outreach and information on livestock production and pasture management related issues. The District coordinated the annual Pasture & Livestock Management Field Day on September 26th, 2019, in partnership with the Person Soil & Water Conservation District, Orange Soil & Water Conservation District, the Orange County Cooperative Extension Service, the Person

County Cooperative Extension Service and the Durham County Cooperative Extension Service. The event was held at Deerfield Farms and Dawnbreaker Farms in Person County. Participants heard from industry experts on numerous topics such as animal handling techniques, metsulfuron and toxic endophyte, the importance of hay



quality, and management strategies for year-round grazing systems. Over 100 interested livestock producers from Durham, Orange, Person, and beyond attended the event with very positive feedback on surveys taken afterward. The annual event was planned for September of 2020 but postponed due to the Covid-19 pandemic. For more information, contact Durham Soil & Water. Sponsors of the event included First Hand Foods, the Durham-Orange Cattlemen's Association, Person Cattlemen's Association, Durham Farm Bureau, Person Farm Bureau, NCSU, Amazing Grazing, Hurdle Mills Farm Supply, Camp Chemical Corporation, NC Cattlemen's Association, NC Forage & Grassland Council, Southern States, Pasture Management Systems Inc., Carolina Farm Credit, and Bio-Zyme, Smokey Dave's BBQ, and Dawnbreaker Farms.

