

# 2017-2018 Annual Report

DURHAM SOIL AND WATER CONSERVATION DISTRICT



**Pictured left to right:** Mike Dupree (staff) Heather Dutra (staff), Lisa Marochak (staff), Ray Eurquhart (Supervisor), Chris Hogan (NCASWCD Past-President), Eddie Culberson (Director), David Harris (Supervisor). Not pictured, Jennifer Brooks (staff)

## “2018 Conservation Technical District of the Year Award” Durham District Recognized at Annual Meeting

The North Carolina Association of Soil and Water Conservation Districts (NCASWCD) selected Durham Soil and Water Conservation District as the 2018 “Conservation Technical District of the Year” for the state of North Carolina. The award was presented to the District Board and staff during the 2018 NCASWCD Annual Meeting held January 7-9 at the Sheraton Imperial Hotel and Convention Center in Durham. The award was also recognized by the Durham County Board of County Commissioners during its monthly meeting on January 22, 2018.

Each year the NCASWCD selects a Soil and Water Conservation District whose overall technical program excels above all 96 Districts in the state. For the past 25 years the Durham Soil and Water Conservation District has been known for having a diversified program that meets the needs of its citizens by conserving, enhancing and promoting the natural resources of the county. It is this locally-led diversified conservation program that has catapulted the Durham District among the leading Districts in the state.

Some of the programs that have separated the Durham District from others have been its Stream Restoration and Stormwater Programs, Community Conservation Assistance Program, Ag Development along with the Bionomic Educational Training Center as well as its award-winning Environmental Educational Program. These programs were made possible by the millions of dollars of grant funding received by the District. Applying for and administering these grants requires tremendous staff effort and have played a vital role in Durham receiving the NCASWCD Conservation Technical District of the Year Award in 2018 for the state of North Carolina.

DURHAM SOIL AND WATER CONSERVATION

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Durham, NC 27701

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Soil & Water



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On September 11th Durham Soil and Water Conservation will be moving to the **Admin II Building** located at **201 E Main Street/Floor 5**, Durham, NC 27701.

Our office will be closed during the move September 11th-12th and will reopen on September 13th at 7 am.

Our phone numbers and email will remain the same.

# District Board & Staff

## DISTRICT BOARD



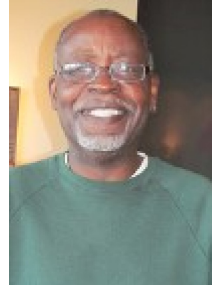
Talmage Layton  
Chairman



Danielle Adams  
Vice Chairman



Curtis Richardson  
Secretary/Treasurer



Raymond Eurquhart  
Supervisor



David Harris  
Supervisor

### Associate Supervisor's



Laura Marie Davis



Mark Dewitt



Becky Emmons



Melissa Rooney



Natalie Murdock



Kathryn Spann

## DISTRICT STAFF

Eddie Culberson- Director

Lisa Marochak- Senior Administrative Officer

Jennifer Brooks- Natural Resources Coordinator

Michael Dupree- Agribusiness & Environmental Services Manager

Heather Dutra- Watershed Conservationist

Cherri Smith- Contracted Services employee

## OTHER STAFF

Elizabeth Zander-Project Manager, Piedmont Conservation Council

Lauren Parker- Soil Conservationist, USDA/NRCS



# Stream Restoration & Stormwater Projects

## MARBRY - JACKSON PROJECT UPDATE

*Construction set for Fall 2018*

The District has partnered with Piedmont Conservation Council to conduct 3,045 linear feet of stream restoration in the headwaters of Falls Lake. Thus far, the project is funded by a Division of Water Resources Grant (\$200,000) and a Clean Water Management Trust Fund Grant (\$450,000). Additional funding (\$143,000) is being pursued to address another unnamed tributary and surveying discovery's. The surveying for the first phase of this project was completed last year, and the environmental permits have recently been received. When completed, the District will hold and monitor a permanent conservation easement

approximately 8 acres in size. The project will generate a reduction of 901 tons of sediment, 529 pounds of total Nitrogen and 34 pounds of total Phosphorus from entering



Pictured right:  
before restoration



## WALKER PROJECT UPDATE

*Construction set for Fall 2018*



before picture

This project is funded through a Clean Water Management Trust Fund Grant (\$400,000) and is located on a sediment-impaired unnamed tributary to Little Lick Creek near the headwaters of Falls Lake. The District has a completed survey on this stream restoration project involving 2,200 linear feet. Army Corp of Engineering (404) and Division of Environmental Quality (401) permits were received this spring. The final design will be approved with landowners this summer and then bids will be received from contractors. Once completed the District will hold and monitor an approximate 6 acre permanent conservation easement. When constructed the project will reduce 467 tons of sediment, 383 pounds of total Nitrogen and 25 pounds of total Phosphorus from entering Falls Lake each year.



# S O U T H E R N   H I G H   P H A S E   I I C O M P L E T E D

Construction was completed in November 2017 for the Southern High School of Energy and Sustainability Stormwater Phase II Project. This project drains into Chunky Pipe creek which flows to Little Lick Creek and finally to Falls Lake. The project’s design was provided by Civil Engineering Consultants and called for the installation of three stormwater BMPs (stormwater wetland, wet detention reuse pond, and bioretention rain garden) to reduce sediment and storm flows into the Falls Lake Reservoir. RiverWorks, Inc. out of Cary was the construction contractor for the project. The District received the necessary environmental permits on July 6, 2016 during the Phase I design permit request. The rain garden installed captures the 1-inch storm draining from the school roof tops, soccer field, and tennis courts. The stormwater wetland captures the 1-inch storm for 9 acres of adjacent impervious parking lot and bus storage. The constructed reuse pond can hold approximately 400,000 gallons of water above the permanent pool in order to be reused on the athletic fields. Water from both Phase I and Phase II reuse ponds will help reduce the schools dependency on potable water and save the school approximately \$15,000 per year in water cost.

Southern High School’s agribusiness program received \$5,000 to procure, propagate, and install wetland vegetation plants within the constructed BMPs. A permanent conservation easement (2.2 acres) encumbering the project was recorded in the County’s Register of Deeds Office and will be held and monitored by the District in perpetuity.

This project was funded by the North Carolina Environmental Enhancement Grant Program (\$435,000) and the North Carolina Division of Water Resources (90,000). Below are the nutrient removal rates for each BMP.

<b>Nutrient Removal Rates</b>			
<b>BMP</b>	<b>TN (lbs/year)</b>	<b>TP (lbs/year)</b>	<b>TSS (lbs/year)</b>
Bioretention Rain Garden	13.78	1.74	682.97
Stormwater Wetland	46.97	5.31	2,423.53
Wet Detention Reuse Pond	13.21	2.46	534.24



Before



Picture taken with a drone of Northern High School students planting the wetland

# WARD STREAM RESTORED

The District completed construction on the Jim Ward property during December 2017. This stream restoration site is located off Hamlin Road near the headwaters of Falls Lake in Durham County. The design was provided by Civil Engineering Consultants and called for the construction of 3,600 linear feet. Land Mechanic Designs from Johnston County was the construction contractor and restored 3,604 linear feet of stream along the unnamed tributary to Falls Lake. All necessary permits were originally obtained July 7, 2017 during the design phase. A total of 208 Best Management Practices (BMP's) were installed on the stream during construction. These BMP's helped reduce sediment from 976 tons/year. Additional nutrient reductions achieved were 682 lbs/year of nitrogen and 44 lbs./year of phosphorus. A total of 102 watershed drainage acres were treated. The restoration site included a vegetative buffer (9.2 acres) with a minimum width of 50 feet on both sides of the stream. A permanent conservation easement encumbering the project was recorded at the Register of Deeds Office in Durham County and the District will hold and monitor this conservation easement for perpetuity. The District collaborated with Northern High School teachers and students to procure, propagate, and install approximately 360 potted plants. This project helped sustain the Northern Agribusiness program by purchasing \$5,000 of plant material.

This project was funded for the design and construction however, water quality benefits are already starting to be apparent with over bank flooding. The new stream channel, since the beginning of construction, has had a couple bankfull events where the floodwaters were able to spread onto the floodplain and reduce stresses inside the channel. This project was constructed with funds provided by the Clean Water Management Trust Fund (\$400,000) and Upper Neuse Clean Water Initiative (\$360,000) grants.



Before– landowner Jim Ward with Director Eddie Culberson



Northern High Students Planting Buffer



After



## SOIL AND WATER DIRECTOR RECEIVES AWARD

Eddie Culberson, Director of Durham Soil and Water Conservation received the **Professional Achievement in Water Quality Award** during the Hugh Hammond Bennett Chapter Awards Luncheon on February 23, 2018. The award was received from the Hugh Hammond Bennett Chapter of the Soil and Water Conservation Society. Eddie received the award because he has been instrumental in improving water quality in Durham County with the numerous stream restoration and stormwater projects he has helped to complete. Since 2000 Eddie has worked with several engineering firms to partner with the District on projects and has been granted over 7.9 million dollars in funding for the design, permitting and construction of the projects. Congratulations to Eddie Culberson on all his years of service and dedication to improving water quality in Durham County.



Pictured left to right: Matthew Kinane- HHB Chapter President, Lisa Marochak– Durham Soil and Water Senior Administrative Officer, Eddie Culberson-Durham Soil and Water Director and David Harris Durham SWCD Supervisor



# Eno River Hydrilla Update

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Hydrilla was first discovered in the Eno River watershed 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 Durham District represents Durham County on the Eno River Hydrilla Management Task Force to actively manage Hydrilla in the Eno River. Hydrilla crowds out native vegetation as it grows, reduces recreational opportunities, and can harm fish and bird species. Dense Hydrilla beds can create a toxin that is known to lead to death in waterfowl. The plant can also clog intakes where rivers and reservoirs are used for drinking water supplies and irrigation. Biologists say that since Hydrilla grows quickly and can form new plants from tiny fragments, it could become a nuisance to recreation and water supply at Falls Lake. The following is a three year snapshot of the treatment:

The fluridone-based herbicide Sonar Genesis® is being applied to a 22-mile target zone of the river from just south of Lake Ben Johnston in the Town of Hillsborough to Roxboro Road in Durham county. The herbicide is being applied at a level well below limits established by the U.S. Environmental Protection Agency. Property owners adjacent to the treated section of the river have been cautioned against using river water for irrigation during this treatment.

The Eno River Hydrilla Management Task Force is a partnership of local, state and federal governments that has worked since 2007 to evaluate and address the Hydrilla threat in the Eno River. The group consists of representatives from Orange and Durham counties, the Town of Hillsborough, the Cities of Durham and Raleigh, as well as representatives from state agencies that include the Division of Water Resources, Wildlife Resources Commission, State Parks and North Carolina State University. For more information on the project, visit <http://nc-ipc.weebly.com/eno-river-hydrilla-project>.

## Contracted Services Employee

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Durham County Soil and Water welcomed Cherri Smith as a contractor in December 2017. She has been working on entering contracts into the Practice Keeper software and recently she has been assisting in the field with buffer determinations. Cherri has a Bachelor's Degree in Applied Ecology from Bucknell University and a Master of Environmental Management from Duke University.

Pictured left: Cherri doing a buffer determination at a Durham County farm.



## Tour

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On November, 2017 The Durham Soil and Water Conservation District took Director, Vernon Cox, with the NC Division of Soil and Water on a tour of some Durham County farms, Stream Restoration Projects and CCAP Projects.



# Cost Share

## A G C O S T S H A R E



Ag well

The Agriculture Cost Share Assistance Program (ACSP) is a voluntary program for qualifying farmers and agricultural landowners to address natural resource concerns and nonpoint source pollution from agricultural activities. The program provides technical, educational and financial assistance for the installation of conservation best management practices (BMPs) 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 it is 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 ACSP received \$42,412 from state appropriations for conservation BMPs in fiscal year 2018. Of the state appropriated funds, 100% were allocated to local Durham County producers/landowners for the following conservation BMPs: 1 ac of field borders, 955 ft of livestock exclusion fencing, 1 livestock heavy use area, 2 livestock waterers with pipeline, 1 well repair and 1 manure composting facility. The BMPs will mitigate or prevent future losses of nutrients and soil from the farms and nearby streams, thereby improving overall water quality in Durham County. Estimated reductions expected once the BMPs are installed are 58.32 pounds of Nitrogen, 18 pounds of Phosphorus and 27 tons per year of soil per year. The District also allocated \$15,195 in 319 grant funds for a livestock exclusion system project of a farm within the Falls Lake Watershed during FY 18 for the following practices: 160 ft of livestock exclusion fencing, an ag well with pipeline and 1 livestock waterer.



field border

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.



drinker

Also during FY 18, Durham staff provided contract management/construction oversight on cost share contracts from fiscal years 16, 17 & 18. District staff worked to assist producers with the construction and completion of 11 ACSP best management practices that were contracted in FY 16, 17 or 18. They are as follows: 160 ft of livestock exclusion fencing, 2 ag wells with pipeline for livestock alternate watering systems, 3 livestock waterers, 3 rooftop runoff management systems, 1 livestock heavy use area and 1 ac of field borders for the treatment of 15 acres of cropland.



# AGRICULTURAL WATER RESOURCES ASSISTANCE PROGRAM

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 is intended to; Identify opportunities to increase water use efficiency, availability and storage, Implement best management practices (BMPs) to conserve and protect water re-



sources, 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 smaller than the ACSP. In FY 2018 the Durham District received \$8,589 and that entire amount was allocated to a Durham County farmer for the installation of a new "ag-only" well for irrigation purposes. The new well will provide much needed water for a new/beginning farm family in Durham County that are growing 2+ acres of vegetables, berries and fruit.



*AgWRAP pipeline*

With no streams, ponds or wells on the newly established farm, the farmers were collecting rain water to supplement their crops irrigation needs. The new ag well will help ensure the success of their crop in times of drought and enable them to expand their production.

Due to a higher demand than available local funds, the District submitted grant applications on behalf of 4 local farmers for micro-irrigation projects. 2 applications were submitted and awards by the NC Division of Soil and Water Conservation's Competitive Regional Grant process for a total of \$16,697. An additional 2 applications were submitted and awarded by the NC Foundation of Soil and Water Conservation for a total of \$29,956.27.

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. During FY 2018, District staff worked to assist producers with the construction and completion of 4 AgWRAP best management practices that were contracted in FY 16 and 17. District staff also oversaw the construction and completion of 6 best management practices that were funded as part of a NC Foundation of Soil and Water Conservation special grant. All together the following best management practices were installed in FY 18; 4 microirrigation pump & filters, 4 acres of microirrigation tubing and 2 ag wells for crop irrigation.



*AgWRAP pump work*



*AgWRAP irrigation*



# Cost Share

## COMMUNITY CONSERVATION ASSISTANCE PROGRAM and IMPAIRED STREAM IMPROVEMENT PROGRAM

Through the Community Conservation Assistance Program (CCAP) and the Impaired Stream Improvement Program (ISIP), Durham County Soil & Water provides non-agricultural landowners with technical and financial cost-share assistance to address significant drainage, erosion, and water quality issues. Staff members can assist landowners in addressing their concerns by developing personalized conservation plans which include a suite of site-specific stormwater best management practices (BMPs) including rain gardens/bioretention cells, grass swales, cisterns, critical area plantings, and streambank stabilization projects. ISIP is funded by Durham County Government & provides 100% cost share for low income participants.

Soil & Water staff provide outreach and education to individuals throughout Durham County, but specifically focused this past year on providing educational presentations to Home Owners Association (HOA) and community groups in the impaired watersheds of Northeast Creek, Third Fork, Ellerbe, and Little Lick Creeks. Nutrient management training and cistern workshops were offered to local contractors and groups including TROSA Lawn Care. CCAP and ISIP funding also supports opportunities for green infrastructure job skill training for Durham Public School students participating in Durham County Soil & Water’s Bio-nomic Education Training Center (BETC) program. The BETC program will be discussed in more detail later in this report.



*NCSSM cistern irrigating critical area planting*



*Students & teachers participating in the BETC program install a downspout disconnection and a critical area planting*

FY18 CCAP/ISIP Measurable Achievements	
223	Technical Assistance Consultations
33	Applications for Assistance Received
22	Conservation Plans Developed
43	Stormwater BMPs Designed
27	Contracts Approved
37	Stormwater BMPs Installed
491	Acres treated by BMPs
33.5	Pollution Removed: Lbs of Nitrogen over 10 yrs
3.7	Pollution Removed: Lbs of Phosphorous over 10 yrs
608,030	Pollution Removed: Lbs of Sediment over 10 yrs
\$111,503	Landowner Cost-share Reimbursement (Source: County funds & outside grant funds)
14	Community Events
416	Education/Outreach Event Participants



*CCAP Rain Garden in Action*



# Cost Share Spot Checks

## Ag Cost Share & Ag Water Resources AP Spot check findings:

Most ACSP & AgWRAP BMPs have a required 10 year maintenance period once installed and during that time can be subject to random inspections by the Durham Soil & Water Conservation District. As such the Durham District is required to conduct annual spot checks on 5% of all Agricultural Cost Share Program (ACSP) and Agriculture Water Resources Assistance Program (AgWRAP) contracts.

During the FY 18 Spot Checks, 13% of ACSP and 29% AgWRAP contracts still under maintenance by the participating applicants or landowners were visited and evaluated on May 24, 2018. District staff were accompanied by District Board Supervisors, David Harris, Danielle Adams and Associate Supervisor Natalie Murdock. During the spot checks it was determined that all sites were in compliance with all NC Cost Share Commission and USDA NRCS standards & rules.



*Associate Supervisor, Natalie Murdock holding a baby goat during the spot checks.*



*Vice Chair, Danielle Adams; Associate Supervisor, Natalie Murdock; Soil Conservationist, Lauren Parker with USDA/NRCS and Director, Eddie Culberson during the 2018 ACSP & Ag WRAP Spot Checks*

## CCAP Spot check findings:

On April 25, 2018 one supervisor and two district staff visited seven CCAP sites. During the spot check it was observed that six contracts were in compliance and one cistern needed repair. The cistern that needed repair was out of service, but the landowner had repairs underway.



*Pictured right: Supervisor, Ray Eurquhart and Mike Dupree during the CCAP Spot Check*

# Watershed

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## AGRICULTURE COMPLIANCE WITH THE FALLS LAKE RULES

The Durham Local Advisory Committee (LAC) met on April 20, 2018 for the annual review of crop data and discussed the Local Nutrient Control Strategy as outlined by Falls Reservoir Nutrient Management Strategies. The tool used to estimate nitrogen reductions by Durham farmers shows that nitrogen has been reduced by 79% from the 2006 baseline. Durham farmers have continued to exceed the 20 percent reduction in nitrogen loading mandates by stage 1 of this rule. The Nitrogen Loss Estimate Worksheet (NLEW) that was compiled has indicated that the nitrogen losses of 79% from the baseline in 2006. Durham farmers have continued to exceed the 20 percent reduction according to the Phase I mandate.

## PROGRESS ON THE LOCAL NUTRIENT CONTROL STRATEGY

The Falls Reservoir Water Supply Nutrient Strategy for Agriculture requires the Durham County LAC to develop a Local Nutrient Control Strategy for all agriculture operations regulated by this rule. Durham County SWCD has developed an inventory of agricultural operations totaling over 17,000 acres and is currently conducting a field based assessment of each of these operations with surface waters. This assessment will help identify areas where implementation of BMPs will have the most benefit for nutrient reductions to Fall Lake. This will be an ongoing process for years to come.

## NUTRIENT MANAGEMENT TRAINING & COMPLIANCE WITH THE JORDAN LAKE RULES

The District offered a Nutrient Management training to 49 members of the TROSA Landscape crew. The training covered the information required by the Jordan Lake Rules pertaining to the commercial application of fertilizer. The training is still required for any person who applies fertilizer to more than five acres of land in the Jordan.



# Ag Development

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## FPAB DONATES MONEY TO SCHOOLS

The Farmland Protection Advisory Board donated \$950 to assist the Northern High program to upgrade their greenhouse and the Board donated \$900 to the Jordan High to support the lamb project.



# Ag Development

## 2017 DURHAM CITY/COUNTY SUMMER YOUTH WORK PROGRAM

The **Bionomic Educational Training Center (BETC)** is a workforce development training program for middle and high school students with a curriculum that addresses water quality via stormwater retrofit design and implementation. The success of this program has been made possible by partnerships with Durham Public Schools (DPS), the Durham Soil & Water Conservation District Board of Supervisors, DPS Director of Career & Technical Education, Rick Sheldahl, DPS Executive Director of Maintenance, Kenneth Barnes and his staff, various school principals and PTA leaders, Friends of the DPS Hub Farm, and local community members.



Grant funding from the Smith Richardson Foundation, the Longleaf Collective, and Duke Energy Water Resources Funds have also made the program and projects possible.

For six weeks during the summer, the City/County Summer Youth Work Program (**2017 Sumer BETC**

**Green Team**) of five teachers and seventeen youth interns learned to design and install green infrastructure projects at Durham Public Schools. These projects included seven rain gardens, a streamside buffer, and two critical area plantings and a cistern.



## BETC TEACHER TRAININGS

The BETC curriculum was shared with 38 Durham Public School teachers at two teacher training events at Southern High School and Lowe's Grove Middle School. Both schools have implemented portions of the BETC curriculum in the classroom and installed rain gardens onsite. With the success of the BETC curriculum at the high school level, we worked with a team of high school and elementary school teachers to adapt the curriculum to the 5<sup>th</sup> grade level, a turning point in most students' academic careers. We will be piloting the newly developed 5<sup>th</sup> grade curriculum this upcoming year and gathering data on the effectiveness of the curriculum, similar to the academic study that was funded last year by the Smith Richardson Foundation.



# KEEP DURHAM BEAUTIFUL POLLINATOR GRANT

The District collaborated with local nonprofit Keep Durham Beautiful on a grant that provided the materials for four schools - Southern HS, Riverside HS, Lowes Grove MS and Northern HS - to grow pollinator plant species as a fundraiser. The schools grew 2,400 plants in total and each held a spring pollinator plant sale fundraiser. Riverside HS, Southern HS, and Northern HS earned \$2,529, \$1,590, and \$825 respectively in sales with remaining plants utilized by the City/County Summer Youth Work Program (2018 BETC Summer Program). Lowe's Grove MS earned several hundred dollars and purchased soil and mulch and installed a pollinator garden on campus.



*Riverside High Principal Tonya Williams Left and Ray Eurquhart presenting a check for plants.*



*Pictured above: Lowes Grove Middle School Pollinator bed and pictured right: Lowes Grove Middle School students*



*Pictured above: Northern High School Pollinator plants*

# BETC PROGRAM GRANT FUNDING



*Pictured above/left: Duke Energy's Indira Everett presenting a check to District Supervisor Ray Eurquhart and 2018 City/County Summer Youth Program participants .*

*Pictured above /right: Talmage Layton accepting the Duke Energy Water Resources Fund Award by Artist Jonathan Pellitteri who used 150 blocks to symbolize the rivers' connections to its people. Each grant recipient receives one of the 150 numbered and signed pieces of sculpture.*



Duke Energy has been an essential sponsor of the BETC program this year. Two separate Duke Energy grants totaling \$61,500 were awarded to the District and Durham Public Schools for the 2018 City/County Summer Youth Work Program (BETC Summer Program's) teacher and student stipends as well as materials for the installation of 15 to 20 community water quality projects during the summer and following school year.



# FARMLAND PROTECTION ADVISORY BOARD (FPAB) RETREAT



The FPAB met with community partners from Durham Public Schools, the Durham Farm & Food Network and the Durham Cooperative Extension Service on November 14<sup>th</sup> from 12:00 to 4:pm at the Kings Daughter's Inn Conference center. The purpose of this meeting was to review the farmland plan goals and determine the priorities for fiscal year 2019. The top four interest of the board are people, profits, policy and preservation.

# CELEBRATING MINORITIES IN THE LOCAL FOOD SYSTEM

On Monday, September 25<sup>th</sup> from 9am to 11am 80 people met at the Pavilion at 501 Foster Street in Durham to hear from minority



farmers, restaurant owners, students, retailers, community gardeners discuss ways to increase opportunities for minorities to participate in the local food system. This event is sponsored by the Durham County Farmland Preservation Advisory Board and the Land Loss Prevention Project.

# PRESENTATIONS AT NATIONAL CONFERENCES



The Durham County Board of County Commissioners approved an Agricultural Economic Development Grant Pilot Program with \$25,000 for this fiscal year. The program purpose is to offer cost share grants to assist farmers and promote Agriculture Development in schools.



Eleven farmers submitted request for a total of \$48,957.64. Five farmers received financial assistance. Two farmers are socially disadvantaged, two are new and beginning and one is a traditional farmer.

# Education

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## JENNIFER BROOKS RECEIVED THE 2017 OUTSTANDING EARTH SCIENCE EDUCATOR AWARD

The Department of Environmental Quality honored Jennifer Brooks with the State's 2017 Outstanding Earth Science Educator Award for her innovative approaches at teaching earth science. She coordinates environmental education for students and adults as part of her work with the Durham County Soil and Water Conservation. Brooks is a certified North Carolina environmental educator and can be found teaching students from kindergarten through adulthood. She also puts her skills to work helping students better understand environmental subjects during Envirothon events. Congratulations Jennifer on receiving this distinguished award!



## COUNTY AWARDED FOR OUTSTANDING ACHIEVEMENT IN LOCAL GOVERNMENT INNOVATION"

Durham County Soil and Water Conservation District's Heather Dutra and Mike Dupree (pictured to right) recently accepted an "Outstanding Achievement in Local Government Innovation" award from the Alliance for Innovation for the Bionomic Education Training Center (BETC) initiative. BETC is a partnership between Durham County and Durham Public Schools that teaches and applies environmental practices and entrepreneurship to DPS students. Learn more about BETC [here](#).

Dutra and Dupree received the award on April 16, 2018 at the Alliance's Transforming Local Government conference in Tacoma, Washington. The pair also presented a case study on BETC during the conference.



## PRESENTATIONS AT NATIONAL CONFERENCES

Mike Dupree & Dr. Kevin Curry presented the research findings of the BETC curriculum research project to members of the American Association of Teaching & Curriculum (AATC) at their 2017 Annual Conference in Denver, Colorado. The conference theme was Ecology, Sustainability, Creativity & Well-Being and highlighted environmental education curriculum from the US and Canada.



# 2 0 1 7 B I G S W E E P

Throughout the months of September and October of 2017, over 500 volunteers from across the Triangle came out to help clean up the Durham area. 2017 was a recording breaking year with over 30,000 pounds of litter cleaned up, surpassing the 2012 record by 10,000 pounds. Cleanup sites varied from busy intersections to parks and streams.

Durham Big Sweep is an annual environmental service event targeting litter and improperly disposed of trash. The Durham SWCD has been sponsoring the event for over 18 years now. The event's "official" day is the 1st Saturday of October, but groups can participate in the day of their choice throughout the months of September and October to allow for more flexibility with scheduling.

Volunteers that participated in the 2017 event included local citizens, Boy Scout troops, churches, neighborhood groups, and students. This year's Big Sweep targeted old and current dump sites, which helped contribute to the impressive total weight. A group of 9 volunteers from the Durham CrossFit Gym picked up over 9,000 pounds of trash illegally dumped on Todd Street in north Durham, and a group of Robertson Scholars from Duke University and UNC collected over 480 tires from an abandoned road in south Durham. Oftentimes residents have household trash and recycling picked up at their doorstep, but don't know where to deliver bulkier items, such as furniture and tires, or seek to avoid the city processing fee. Instead, they illegally discard their larger items in remote areas of the city and county. Over time these areas can turn into dumps themselves.

The 2017 Durham Big Sweep was coordinated by the Durham County Soil and Water Conservation District, Keep Durham Beautiful, Inc and the City of Durham Public Works Department Stormwater and GIS Services Division. The Durham County Department of General Services and the City of Durham Neighborhood Improvement Services Team provided support in choosing sites and picking up trash and recyclables at each cleanup site.

Learn more about Durham Big Sweep at [www.DurhamBigSweep.org](http://www.DurhamBigSweep.org)

## Annual Durham Big Sweep Awards:

Each year the Durham SWCD honors a volunteer or team with a Big Sweep Special Achievement Award to recognize outstanding service, commitment and participation in Big Sweep, showing their dedication to the beauty and health of our environment. The 2017 recipient of this honor was the Duke Physician Assistant program for their dedication to the environment and participation in Durham Big Sweep. The Duke PA program has participated every year since 2014 as part of the Duke PA Day of Service event. Some of their clean up results from their 2017 include:

- ◆ 11 volunteers
- ◆ 30 bags recyclables, 45 bags of trash, 90 tires, 3 tractor tires, 30 five-gallon buckets, 4 sofas, 1 box spring, 400 lbs of building material, 1 car battery, 1 shopping cart
- ◆ Over 4,500 lbs of trash cleaned up

The Durham SWCD thanks them for their continued dedication and commitment to our world.



# ENVIROTHON

The Envirothon is a hands-on, natural science academic event that challenges and engages middle and high school students on natural resources categories of soils/land use, wildlife, forestry, aquatics, and current environmental issues. Teams come from public, private or home school groups. The Durham Soil & Water Conservation District is very active in the Envirothon program at the local, regional, state, and national levels.

During FY 18, Durham staff worked with local teams during the school year training the students. Hands-on skills the students learned, such as tree height measurements, NC wildlife identification and macroinvertebrate sampling to determine water quality, are all skills that resource professionals use in the field each day to perform their jobs.



*Commissioner, Heidi Carter welcomes the Area IV Envirothon guests to Durham Co.*

On March 22, 2018, the District hosted the 2018 Area IV Envirothon competition at the NCSU Butner Beef Research Farm in eastern Durham County. Seventy-six teams of students from across the Piedmont attended. Approximately 525 students, teachers, parents and volunteers were in attendance on March 22<sup>nd</sup> to participate in the event, a record number for the Area IV program.

Durham was represented by 10 teams of high and middle school students at the event. Of the 10 teams, 4 placed in the top seven (earning them a spot at the statewide competition in April). The Killer Kudzus team from the NC School of Science and Mathematics placed 2<sup>nd</sup> overall. The other 3 teams were the Hellgramites and Cypress Knees, also from the NC School of Science and Mathematics, and the Creek Squad, a homeschool middle school team.



*Killer Kudzu High School team from Durham placed 2nd at the Area IV Envirothon*

Major sponsors for the March 22<sup>nd</sup> event included Smithfield Foods, Bridgestone, the Butner Beef Unit, Ag Carolina Farm Credit, Durham County Farm Bureau, Riverworks, Inc. and Civil Environmental Consultants, Inc., and Land Mechanic Designs, Inc. Thank you to County Commissioner Heidi Carter for attending and speaking at the event, as well as the Durham County General Services for set-up and the Northern High School Culinary Arts Program for grilling hamburgers and hotdogs for lunch.

At the 2018 NC Envirothon statewide competition, April 27-28<sup>th</sup>, Durham's 4 competed against 48 other teams from across NC. The Killer Kudzu team placed 7<sup>th</sup> overall in the high school division and received the 1<sup>st</sup> place medal in the Oral Presentation category. The Hellgramites placed 6<sup>th</sup> and the



Cypress Knees placed 17<sup>th</sup> overall in the high school division. The middle school team, the Creek Squad, placed 12<sup>th</sup> overall in their division.



Durham District staff and Supervisors were on hand at the NC Envirothon event to lend support to Durham's teams. Durham staff and Supervisors volunteered as test graders, team chaperons, photographers and more,

helping to coordinate and run the two-day event.



# 2018 AWARDS CELEBRATION



The 2018 Annual Awards Celebration was held on May 31, 2018 at the Agriculture Building. We honored educators, students, and landowners who promoted conservation education in the classroom and landowners who put conservation on the ground. This year's theme for the poster, essay, slideshow and computer designed poster was "WATER...THE CYCLE OF Life". The theme for the bookmark contest was "THINGS FOUND IN THE NC FOREST". Below is a list of the awards presented by the Durham Soil and Water Conservation District Board Supervisors.

<u>4th Grade Poster</u>	<u>5th Grade Poster</u>	<u>6th Grade Poster</u>	<u>6th Grade Essay</u>
1st place- <b>Isabella Clayton</b> , Mangum Elementary 2nd place- <b>Iris Layne</b> , Mangum Elementary	1st place- <b>Jackson Burley</b> , Mangum Elementary 2nd place- <b>Jahir Castellanos</b> , WG Pearson Elementary	1st place- <b>Merinda Jane Harry</b> , Triangle Day School 2nd place- <b>Asha Mankad</b> , Triangle Day School	1st place- <b>Lulu Burnside</b> , Triangle Day School 2nd place- <b>Kate Norry</b> , Triangle Day School
<u>9th grade Computer Designed Poster</u>	<u>Kindergarten Bookmark</u>	<u>First Grade Bookmark</u>	<u>Second Grade Bookmark</u>
1st place- <b>Maxwell Stecher</b> , Durham School of the Arts	1st place- <b>Julian Mejia</b> , Holt Elementary 2nd place- <b>Eliza Stroud</b> , E.K. Powe Elementary	1st place- <b>Avery Cox</b> , Bethesda Christian Academy 2nd place- <b>Julia Robert</b> , Morehead Montessori	1st place- <b>Alyssa Moore</b> , Southwest Elem. 2nd place- <b>Ryan Holt</b> , Easley Elementary

The 1st place winners received a trophy and \$50. 2nd place winners received a certificate and \$25. Teachers of 1st place winners also received a cash reward for their participation. These contests are part of a statewide event sponsored by the NC Association of Soil and Water Conservation Districts. 1st place winners from Durham advanced to an area-level contest, where we had a number of Durham entries place and take prizes.



1st Place-1st grade bookmark



1st Place-2nd grade bookmark



1st Place-4th grade poster

Durham Soil & Water Conservation District would like to thank all the schools, teachers and students who participated in all of our education programs!



1st Place-5th grade poster

# F A R M F A M I L Y



The Durham Soil and Water Conservation District's Outstanding Conservation Farm Family award recognizes farmers and/or farm families who are taking the initiative to implement sound, innovative and cost-effective conservation techniques, and are actively involved in conservation education. A farm's conservation activities, stewardship, community leadership and education are considerations when candidates are selected.

This year's recipient is Page Farms, a 100 acre family farm located on the border of Durham and Wake Counties. Danny Page is the 3<sup>rd</sup> generation to make his living on the farm, along with his wife Bonnie and their 2 children, son Justine and daughter Lynn.

The farm was purchased in 1922 and raised tobacco for several decades until the Tobacco Buyout Program. Instead of selling the land and retiring from farming as many former tobacco farmers did, the Page's decided to try their luck with a Pick-Your-Own Strawberry operation. Fast forward to 2018 and the experiment has turned into the destination for thousands of Triangle residents with 3 Pick-Your-Own seasons; strawberries in the spring, blackberries in the summer and pumpkins in the fall. In addition, the farm operation includes cattle, hay production, corn and vegetables they sell in the road-side stand.



The farm is located in one of the fastest developing areas in the Triangle, around the corner from Briar Creek, the RDU airport and the RTP. The increased traffic and development surrounding the farm has been a blessing in disguise for Page Farms, since increased traffic has meant increased business for the farm. In an increasingly urbanized area, Page Farms is possibly the only chance for some residents of NC to experience farm life. Hundreds of school children are introduced to where their food comes from on class field trips to the farm each year. The kids can visit with farm animals, take a hay ride, try the corn maze and pick strawberries or their pumpkin to take home. Between fall of 2017 and this spring they reached close to 4,000 students from 105 schools across Durham, Wake and Granville Counties.



To protect the farms natural resources, Danny and his late father William, installed several conservation practices. To achieve this result, they have used a variety of government cost-share, or technical assistance programs, such as the North Carolina Agriculture Cost Share Program, the NC Agricultural Water Resources Assistance Program and the USDA/NRCS Environmental Quality Incentives Program to help put these practices in place to protect soil and water resources while improving the productivity of their farm. Most recently Page Farm has installed a new micro-irrigation system on over 10 acres. The new irrigation system will allow for the efficient & uniform application of irrigation water to maintain soil moisture for plant growth. A micro-irrigation system is for frequent application of small quantities of water on or below the soil surface: as drops, tiny streams or miniature spray through emitters or applicators placed along a water delivery line. The new system will save an estimated 6.3 million gallons of water annually. The Durham Soil and Water Conservation District is proud to recognize Page Farms for their many years of dedication to their community and to sound soil and water conservation. Congratulations for being selected as the 2018 Durham County Outstanding Conservation Farm Family of the Year.





# F A R M H E R I T A G E

Sponsored by the Durham [County Farm Bureau](#) and the [Durham Soil and Water Conservation District](#)



The Durham County Farm Heritage Hall of Fame Award recognizes those individuals of the past and present who through agriculture have made and continue to make our county and state a better place to live and work. Annual awards will honor men or women who have been instrumental to the success and excellence of agriculture, either as a farmer or in an agriculturally related field. We desire to honor and give public recognition to those who have brought distinction to themselves, have made outstanding contributions to their professions, and whose community involvement has served as stimulus to others.

Durham County residents who have exemplary records for superior contributions and outstanding leadership in promoting agriculture and natural resource conservation in our community may be nominated by their peers or themselves. Farmers, growers, ranchers, and owners/employees of agribusiness firms are all eligible for nomination as either individuals and/or families. Persons selected for recognition will be honored and formally inducted into the Durham County Farm Heritage Hall of Fame during the Durham SWCD's Annual Awards Banquet.

The 2018 recipient for this honor is Mr. Carl Dubois Hodges, Sr for his support and dedication to agriculture in Durham County with nearly 35 years of service, first as an Agricultural Agent, then as the Cooperative Extension Director.



Mr. Hodges was born on Aug. 20, 1921 in Hope Mills, NC. He was married to Mrs. Christine Hose Hodges for 35 years. Mr. Hodges grew up in rural NC, enrolled in NC A&T College (now A&T University) in 1939, but had to leave after 1 year to get a job at Fort Bragg. After serving in the Army during the Second World War and receiving an honorable discharge, Carl re-entered NC A&T College and graduated with honors in 1954 with a Bachelor of Science degree in Agricultural Education. Mr. Hodges began his career as the county cooperative extension Ag Agent in Williamston, NC in 1954. He moved to Durham County in 1959 where



*Pictured left to right: Chairman, Talmage Layton; Carl Hodges Jr. (received the award on behalf of his father); and Supervisor Ray Eurquhart*

he became the first black extension agent in Durham to have regular radio program and weekly article in the local newspaper. In 1971, Mr. Hodges was named the Director for the Durham County Cooperative Extension, making him the first black extension director in Durham County's history, as well as the state of NC and the nation. Mr. Hodges retired from public service in 1988.

Mr. Hodges' service to Durham County's agricultural community is still remembered fondly by many farmers today and led to his nomination for this award. The Durham Soil and Water Conservation District, as well as the County Farm Bureau, thank Mr. Hodges for his service to Durham County, our agriculture and our history.



# TEACHER OF THE YEAR

Each year the District Board recognizes outstanding efforts in conservation education by awarding a Conservation Education Teacher of the Year award to deserving teachers in Elementary, Middle and High School. Teachers, or teams of teachers who have used a conservation education program in their class may be recognized.

At the 2018 Durham District Annual Awards Celebration, 2 local teachers were recognized for their outstanding achievement in conservation education.

## Middle School Teacher of the Year



The 2018 Durham County Outstanding Teacher of the Year Award in Elementary Education was awarded to Anna Morrison, 1st grade teacher at Central Park School. Ms. Morrison teaches 15 students a year

in various subjects such as math, science, social studies, reading writing and cooking. The following excerpt from her application speaks to why Ms. Morrison is deserving of this award:

*“Anna integrates environmental education every day with her 1st graders. For example, their projects usually involve nature (e.g., swamps, birds, rocks, farms, trees), they use their raised garden beds in the fall and spring, and they prepare fresh food from a CSA share every week. They take field trips to support their learning (e.g., NC Zoological Park, Prairie Ridge Ecostation, Eno River). Anna tries to find community partners as often as possible. Last year, for example, her students visited two local farms as well as Farmer Foodshare downtown. Anna is currently working on her environmental education certification, so she integrates lessons from Growing Up WILD, Flying WILD, etc.”*

## High School Teacher of the Year



The 2018 Durham County Outstanding Teacher of the Year Award in High School Education was awarded to Jack Brown, Agricultural Teacher at Northern High School. Mr. Brown teaches 100 students a year in the Future Farmers of America (FFA) program in the subjects of Agriscience Applications and Horticulture. The following excerpt from his application speaks to why Mr. Brown is deserving of this award: *“The NHS Agriculture program is dedicated to teach students the importance of our natural resources, this is achieved through project and service-based learning opportunities. I am consistently striving for students to identify the unique resources we have locally, particularly in Northern Durham and realize the dependence and connection that each of us have on these resources. Through this; localized connection, I encourage students to strive to appreciate and ultimately protect.”*

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# CLASSROOM TRAININGS

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## FY 18 Classroom Training

Throughout the school year, the District staff are asked to present various natural resource topics to schools, clubs and preschools from grade levels pre-K to 12<sup>th</sup> grade. Classroom presentations range from a variety of topics. Some of the more popular topics from the last school year included: soils, lightening bugs, composting, wetlands, animal identification, life cycles and NC wildlife. In FY18 staff made presentations to 2930 students.



Vermi Composting

## SAMMY SOIL

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Sammy Soil is Durham Soil and Water Conservation Districts “new” mascot. He made his first debut at the 2018 Durham Soil and Water Awards Ceremony on May 31. He has made several appearances around Durham County and one was at the 4H Clover Bug Camp. Sammy Soil has plans to visit several classrooms in FY19. Please contact staff to schedule a visit from Sammy Soil.



Sammy Soil with Associate Supervisor, Natalie Murdock

# PASTURE & LIVESTOCK MANAGEMENT FIELD DAY



Through their close work with the agricultural community, the Durham SWCD identified a growing need for more outreach and information on issues relating to livestock production and pasture management. In response, the District hosted the first annual Pasture & Livestock Management Field Day on September 14, 2017 in partnership



with the Person 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 Caywood Farm outside of Rougemont in northern Durham County. Participants heard from industry experts on numerous topics such as pasture management, animal health and handling techniques, soil health, native grasses and more. The audience also heard from a panel of local livestock producers on their challenges and successes from implementing different management practices. Over 100 interested livestock producers from Durham, Orange, Person and beyond attended the event with very positive feedback passed back on surveys taken afterwards. Plans are already in the works to repeat the event next fall. Sponsors of the event included First Hand Foods, the Durham-Orange Cattlemen's Association, NCSU, Amazing Grazing and the National Association of Conservation Districts.



## RESOURCE CONSERVATION WORKSHOP

The Resource Conservation Workshop (RCW) is a weeklong camp for students who are interested in conservation, the environment and/or our state's natural resources. Held June 24-29, 2018 at NC State University, the RCW targets hopeful future environmental professionals by giving students a first-hand look at a wide array of conservation careers that they may not know about.

The Durham Soil and Water Conservation District Board of Supervisors sponsored 2 Durham County student delegates this year: Ms. Kelsey Fletcher, a rising senior who is interested in Marine Biology & Veterinary Science and Ms. Jane Slentz-Kesler, a rising Junior from the Durham School of the Arts who is interested in wildlife conservation. Both Kelsey and Jane spent the week hearing from research scientists, foresters, biologists, wetland specialists, wildlife experts, engineers and others about their experiences in their chosen profession. They also received information and insight into college degrees and careers in natural resource management firsthand from students at NCSU. Study locations for the workshop included N.C. State University and the University's Lake Wheeler Research Farms, Clemmons Educational State Forest and Falls Lake State Recreation Area.



Each day of the camp focused on a different discipline of natural resources: 'Soil Science', 'Water, Wildlife, Recreation & Fish Management', 'Forestry & Forest management' and 'Soil and Water'. The Durham Soil & Water Conservation District participated in 'Soil and Water' day with several staff from other local Soil & Water Districts near Raleigh. Eddie Culberson and Jennifer Brooks led a surveying station to teach the kids about surveying techniques and its importance in conservation planning.



## F I E L D D A Y

The District's annual 3<sup>rd</sup> Grade Environmental Education Field Days event was held on October 3 and 5, 2017 at the District's Dr. Roberts Environmental Education Park in Bahama. Each year the Durham SWCD Board and staff sponsor the event and open it up to all 3<sup>rd</sup> grade classes in Durham County. Students spend the day learning about our natural resources from professionals through hands-on presentations.



Four schools were able to attend the 2017 event; W.G. Pearson Elementary, CC Spaulding Elementary, Burton Elementary and Bethesda Christian Academy. A total of 242 students and teachers met with presenters from the Durham Soil and Water Conservation District, the City of Durham Stormwater Services Division, the NC Forest Service, the Eno River Association and the U.S. Environmental Protection Agency. Students participated in lessons and activities ranging from soils, climate change, water quality, wildlife identification and forest management/wildfire prevention.

## Piedmont Conservation Council, Inc



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, implementing projects that further our communities' sustainability.



In 2017, PCC was awarded a \$450,000 grant from the Clean Water Management Trust Fund to complete a stream restoration project adjacent to Falls Lake on Panther Creek. Design work on this project is nearing completion, and PCC will seek an additional \$143,000 to complete the project through the Upper Neuse Clean Water Initiative.

*before picture*

PCC recently submitted an application for \$150,000 to the 'Agriculture and Food Research Initiative Education and Workforce Development' program for regional expansion of Durham's very successful Bi-nomic Educational Training Center program. Currently, PCC is also pursuing funding through the National Endowments for the Arts Our Town grant program to create a Durham County Quilt Trail to promote agritourism.

# USDA/NRCS

During Fiscal Year 2017-2018 the following practices were installed through the Environmental Quality Incentive Program (EQIP):

- Irrigation Water System, Micro-irrigation- 2 (\$9,729.09)
- Irrigation Water Management-2 (\$172.17)
- Irrigation Pipeline- 2 (\$6,936.40)

The Natural Resources Conservation Service completed another year of EQIP signup for FY 2018. One applications for a High Tunnel System (hoop houses) was funded for a total of \$9,954. This high tunnel will extend the typical growing season allowing a producer to begin planting earlier and harvesting later than what is typically feasible in a growing season. High tunnels provide excellent controlled environments that promote healthier plant growth and higher yields by regulating air and soil temperatures, maintaining soil moisture levels, reducing pests and pesticide use, and protection from extreme weather.



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## Conservation Store

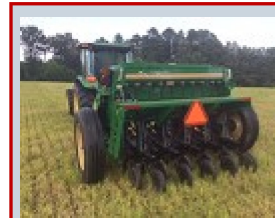
All proceeds go toward [Environmental Education](#).  
FY2017– the district sold the following items:



Moby Rain Barrel  
Sold 6



Ivy Rain Barrel  
Sold 7



**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.



Wildflower Seeds  
Sold 13



Bird Houses  
Sold 3



Tree & Shrubs  
Sold 195