

Soil & Water

ANNUAL REPORT Durham Soil and Water FY2015

50 Years of Conservation

On February 2, 2015 the Durham Soil and Water Conservation District hit a milestone. It was the District's 50th anniversary. Coincidentally this year also happens to be the "International Year of Soil", a year to celebrate and learn more about the importance of soils. So it only seems appropriate to look at the history of soil conservation and the Durham SWCD.

Soil Conservation can be traced back to one man, the "Father of Soil Conservation", Dr. Hugh Hammond Bennett. Dr. Bennett grew up on a farm in Anson County, NC. He graduated from the University of North Carolina in 1903 and went to work for the US government making soil survey maps. His work in the field began to open his eyes to the plight of soil erosion and its devastating potential on US crops. His research and advocacy quickly attracted notice and led to more government support for soil conservation. When the Dust Bowl hit in the 1930's the movement gained even more ground and led to the formation of the Soil Erosion Service in September 1933. In 1935 a national policy on soil erosion control, U.S. Public Law 46, was passed establishing the Soil Conservation Service (today known as the Natural Resource Conservation Service).

However, in order to deliver technical assistance to local landowners who were distrustful of the federal government in the 1930's, Soil and Water Conservation Districts were formed. The North Carolina General Assembly passed Chapter 139 of the NC General Statutes which allowed for the formation of Soil and Water Conservation Districts. These District's promoted the idea of "locally led conservation" and soil conservation was able to take off. Today there are nearly 3,000 locally organized conservation districts across the US, 96 of which are here in NC.

Durham County was first a part of the Neuse River Soil Conservation District established on March 22, 1939. Districts back then followed watershed boundaries and the Upper Neuse covered five counties; Durham, Granville, Orange, Person and Wake. It wasn't until February 2, 1965 that the Durham District became independent. Thus the Durham Soil and Water Conservation District was born.

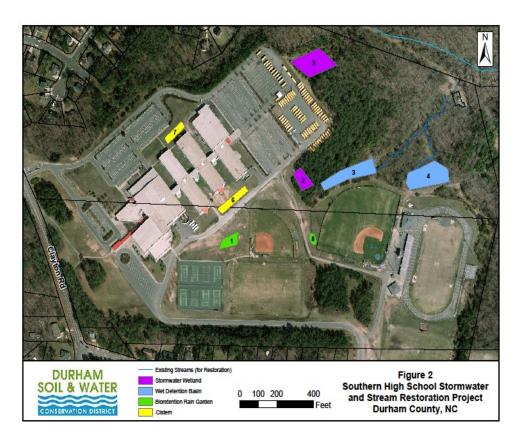
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Southern School of Energy and Sustainability Stormwater/Restoration Project

The Durham Soil and Water Conservation District (DSWCD) received two grants in the fall of 2014 to conduct a major stormwater/stream restoration project on the campus of Southern High School. The DSWCD had requested funding from the North Carolina Department of Justice - Environmental Enhancement Grants (EEG) to develop stormwater BMP retrofit designs and construction. On August 15, 2014 the department was awarded \$325,000 to install a stormwater wetland cell, a reuse storage pond and a rain garden all leading up to the defending 3A state champion's football field. The reuse pond will work with the Davis Weather Station that the department obtained through an earlier National Institute of Food and Agriculture (NIFA) grant. This project will save the Durham Public School System \$15,000 annually on potable water cost and create nutrient reductions within the watershed. In addition to the grant above, DSWCD applied for a Clean Water Management Trust Fund (CWMTF) grant to fund the installation of 950 feet of stream restoration. On October 2, 2014 the department received official notice that the restoration project was funded by a \$176,000 grant for restoring the two stream channels. By retrofitting the BMPs on site it will not only provide water quality improvements, but also provide water quantity benefits. At the beginning of this year a third grant was applied for through EEG in the amount of \$435,000 for additional water quality Best Management Practices (BMP's) which, if funded, will treat the entire campus watershed. The DSWCD's overall goal is to treat and control the campus' impervious surface through stream restoration and stormwater BMP retrofits.

This project was identified due to the fact that Southern High School has several acres of untreated impervious surface within Falls Lake watershed; has a high potential for stream restoration below the proposed stormwater BMPs; and the school has transitioned to specifically focus on Science, Technology, Engineering, and Math (STEM). The project lies within the Chunky Pipe Creek watershed and flows into Little Lick Creek, which has been included on the 2012 North Carolina 303(d) list of impacted streams. The municipalities of Raleigh and Wake County depend on the Falls Lake Reservoir as their source of drinking water supply and this watershed has been identified by the State as Nutrient Sensitive Waters.



In addition to the BMP's benefits to the project, it would also supply unique educational opportunities for Durham County schools. This project is intended to function as an outdoor classroom for students, allowing them to further their understanding of water quality, agricultural engineering, landscape architecture, water quality monitoring, and environmental science. Teachers at the facility have expressed substantial interest in developing the educational aspects of the project as an ongoing part of the school's curriculum. River Works, Inc., the Engineering Firm contracted to do the work, is expected to start construction in the summer of 2015.

County Tours

The Soil and Water Department conducted three separate tours during FY 2015. On September 11, 2014 a tour was provided to our Durham County Manager, Wendell Davis. During this tour we visited several of the department's projects: the stream restoration project on Sandy Creek, Community Conservation Assistance Program projects (CCAP), North Carolina Agricultural Cost Share Program projects and USDA Environmental Quality Incentive Program projects. A crucial amount of time was spent discussing the watershed rules and how they will affect the agricultural community and current staffing that's needed to comply.







On October 10, 2014 a tour was organized in conjunction with the Durham County Farmland Board for elected officials and interested citizens. During this tour we addressed three topics; 1) the need to continue receiving county funding for soliciting federal and state farmland preservation funds, 2) the watershed rules and how they affect farmers and their operations and 3) how to better engage



our youth in agricultural activities. A couple of the highlighted stops were the hub farm located at Eno Valley elementary school and the BETC/Stormwater program in operation at Southern High School.

Our third tour was presented to the County's Budget Department on November 11, 2014 to help them better understand what programs we provide to the citizens and how they contributed to improving the water quality/quantity. This tour paid dividends during the budget season because it helped educate their staff to understand the issues facing the Soil and Water Department.

It took a team effort to organize the transportation, the project stops, the food, the agendas, etc. These three tours required additional work on behalf of the staff but, we felt the participants were better informed about the department and the issues it's facing in addition to better understand the roll we play in county government.



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Agricultural Cost Share Program

July 1, 2014 to June 30, 2015 was a busy and productive year for the Durham SWCD's NC Agriculture Cost Share Assistance Program (ACSP) with \$104,817 in financial assistance funds allocated to Durham County agricultural producers to address water quality issues on their farms. The District received an initial county fund from the NC Soil and Water Conservation Commission in August 2014 of

\$50,000 for ACSP fiscal year 15 (FY15). The District allocated 100% of this funding and requested additional funding from a special spring fund, receiving \$4,228, which was quickly earmarked to local Durham County farmers. The District also received \$50,654 from a 319 Federal Grant targeting horse farms in the Falls Lake watershed. This funding was in turn allocated to two different horse operations in Durham County.

The NC Agricultural Cost-Share Program (NC ACSP) is a voluntary assistance program to provide technical, educational and financial assistance to agricultural producers to address natural resource concerns on their land, particularly water quality issues. A wide variety of best management practices (BMPs) are offered through the NC ACSP to address Sediment/Nutrient Delivery Reduction from fields, Erosion Reduction/Nutrient Loss Reduction in fields, Agricultural Chemical Pollution Prevention, Animal Waste Management and Stream Protection from Animals. Funding for the ACSP is allocated to NC counties from the NC General Assembly in the state budget and is used for (BMP) installation to address soil erosion and water quality issues on farms.

Projects funded during the 2014-2015 program year

• 3.29 acres in Cropland Conversion to native warm season grass, saving an estimated 11.31 tons per year of soil if the land was left in row crop production

• 7.39 aces in Cropland Conversion to grass, saving an estimated 15.7 tons per year of soil if the land was left in row crop production

• 2 Livestock Exclusion Systems to permanently keep livestock out of surface waters on the farm, thereby preventing soil erosion, sedimentation, pathogen contamination, and pollution from dissolved, particulate and sediment-attached substances entering the waters and impacting water quality downstream. Both systems including fencing and alternate watering sources



Long term no-till

(wells, automatic water tanks, pipeline and heavy use areas around waters).

• 2.9 acres in Grassed Waterways to prevent soil erosion and downstream sedimentation, saving an estimated 84 tons of soil per year from leaving the farm

• 33.05 acres in Long Term No-Till incentive payment, saving an estimated 35.2 tons per year of soil loss and thereby reducing 8,419 pounds of nitrogen per year and 41.17 pounds of phosphorous from leaving the field in soil. This involves planting all crops for five consecutive years with at least 80% of the soil surface covered by plant residue from prior crops to improve water quality.

• 1 Forced Air Compost-Manure System for the biological treatment, stabilization and environmentally safe storage of organic waste material to minimize water quality impacts and to produce a material that can be recycled as a soil amendment and fertilizer substitute

• 1 Horse Farm Heavy Use Area System for multiple paddocks, which will provide a stable surface with suitable materials to improve water quality. Benefits include reduced erosion, sedimentation and pollution from dissolved, particulate, and sediment-attached substances, thereby improving downstream water quality.

Annual spot checks

In May of 2015, the Durham District staff, with assistance from the USDA NRCS Soil Conservationist, 3 Supervisors; Ray Eurquhart, Katie Locklier and Danielle Adams, and 2 Associate Supervisors; Mark Dewitt and David Harris, conducted its annual review of NC ACSP and NC AgWRAP projects. Through a random selection process, 15% of all completed ACSP/AgWRAP projects still under maintenance by the participating applicants or landowners were visited and evaluated. During the spot checks it was determined that all sites were in compliance with the NC ACSP/AgWRAP standards.



If you have any NC ACSP questions or needs, please feel free to contact staff at 919-560-0558.



Agricultural Water Resources Assistance Program

The newest financial assistance program offered by the Durham SWCD to assist the Durham agricultural community is NC Agricultural Water Resources Assistance Program (AgWRAP). Similar in design to the NC Agricultural Cost-Share Program, AgWRAP is a voluntary program for farmers and agricultural landowners to help address water quantity 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 resources; Increase water use efficiency; and Increase water storage and availability for agricultural purposes.

In FY 15, NC AgWRAP received slightly over \$1.5M in funds from the NC General Assembly. The NC Soil and Water Conservation Commission decided to designate 55% of FY 15 funds towards a competitive regional application process for new pond construction and pond repair/retrofits. The remaining 45% of funds were allocated to individual Districts for use within their Counties. Of this, the Durham District received \$12,475.

The Durham District submitted 1 application for the Competitive Regional Application process on behalf of a local farmer lacking an adequate water source for irrigation and the project was approved for cost share assistance of \$32,999 to build a new Ag. pond. The District allocated \$10,000 in District funds towards the Sediment Removal from 2 Ag Ponds to increase water storage capacity. Other benefits from this particular practice include erosion control, flood control, and sediment and nutrient reductions from farm fields.

For more information, please contact the Durham Soil and Water Conservation District at (919) 560-0558



Community Conservation Assistance Program



The CCAP program is a voluntary state-funded program intended to assist landowners with best management practices in order to improve water quality on urban lands. The Durham staff designed 34 BMP's on 23 sites and the District Board allocated \$74,937 in cost share assistance to homeowners for the installation in fiscal year 2015. The funding sources for these projects include; the district allocation of \$11,731 for fiscal year 2015 by the Division of Soil and Water, \$25,631 in grant funds from an EPA 319

Grant, \$13,805 from the Environmental Enhancement Grant, \$23,770 from a Clean Water Management Trust Fund Grant.

The BMP's for these sites include rain gardens, cisterns, streambank stabilization, impervious conversion to grass and critical-area riparian buffer plantings. This voluntary incentive-based cost share program is administered by the Soil and Water Conservation District Board of Supervisors, who rank the applications for assistance by the water quality benefit to be attained.





Annual Spot Check

District Board Supervisors, Ray Eurquhart, Danielle Adams & David Harris conducted its annual spot check on CCAP sites on April 30, 2015. Each year, District staff randomly selects 5% for spot checks of cost share contracts. Eight sites were selected in 2015 and visited to confirm that the BMP's that were cost shared are in place, functioning as designed, and meet the NC CCAP standards. All three sites were in compliance and one site required maintenance.

Voluntary Nutrient Reduction Program

The VNRP is a Goal 4 Strategic plan initiative designed to educate and encourage homeowners to reduce fertilizer applications to their property by 40%. The program focus is to teach homeowners how to implement Best Management Practices and how to properly apply fertilizer to their home lawn. This education

and outreach program strives to reduce nutrient loading from misapplication of nonfarm fertilizer into the Jordan and Falls reservoirs. Research conducted in Durham County in 2013 by a Duke University Graduate student indicated that the misapplication of fertilizer by homeowners could be contributing to excess nutrients being delivered to Jordan and Falls Lake. Reductions in fertilize applications and implementation of BMP's is the most cost effective method of reducing nutrients in Durham's waterways.

In fiscal year 2015 Durham SWCD staff met with 11 Home Owners Associations and community organizations on evenings and weekends to discuss the VNRP and CCAP Program. As a result the staff made 206 individual site visits, developed 57 conservation plans, and served 1020 Durham County residents.



Jordan Management Rules

The Durham District has been educating landowners and lawn care professionals of the state law requiring that all landowners in the Jordan Watershed either have a nutrient management plan or hire a certified fertilizer applicator. This law was not widely published by the state and has been misinterpreted to be a local ordinance. Members of the Turf Council of North Carolina and several landscaping firms operating in the Jordan watershed have contacted the District unaware of the requirement set forth by the General Assembly. The District staff has been in contact with Green Industry leaders to make them aware of the state law and are meeting with HOA's in the Jordan Watershed to explain the law and state mandate.

<u>The rule requires</u> "landowner who hires an applicator to apply nutrients to the land that they own or manage in the Jordan watershed shall ensure either that the applicator that they hire has attended and completed nutrient management training or that the applicator they hire follows a nutrient management plan that has been developed for the land they own or manage". This rule applies to properties of at least five acres including cropland for commercial purposes, commercial ornamental and floriculture production, golf courses, public recreation lands, road or utility rights-of-ways or any other commercial or institutional lands or combination of lands under common management that totals at least five acres.

Watershed Rules

Durham County has an important part in improving the water quality of two reservoirs serving triangle residents. The NC legislature passed nutrient management strategies for the two lakes, Jordan Water Supply Nutrient Strategy (August 11, 2009) and the Falls Reservoir Water Supply Nutrient Strategy (January 15, 2011). These nutrient reduction strategies have specific requirements for local governments and landowners to implement in order to improve water quality.

The Falls Rules and Local Advisory Committees (LAC)

The Durham Soil and Water Conservation District staff and the LAC are required to complete the following tasks: Register all agriculture operations in the watershed The registration forms are available at the Durham district office or online. To date, 57 agriculture operations have registered in Durham County, which is approximately 23% of the estimated total of operations according to the agricultural statistics. The DSWCD staff will continue to contact landowners and register local agriculture operations.

Develop a Local Nutrient Control Strategy (LNCS) The local nutrient control strategy that is to be developed must specify the numbers, acres, and types of agriculture operations in the area; numbers of BMP's that will be implemented by enrolled operations; estimated nitrogen and phosphorus loading reductions; schedule for BMP implementation and operation and maintenance requirements.

In FY2015, DSWCD staff managed three contractors who assisted with the initial screening of PUV Ag parcels. During site visits the contractors conducted interviews with landowners and completed buffer evaluations. This process is necessary in order to complete the nutrient control strategy, specifically the BMP design, estimated reductions, the schedule of BMP's implementation and the operation and maintenance requirements. All of this data will be compiled and tracked in the Practice Keeper software package. The work completed to date indicated:

The LNCS requires an inventory of all agriculture operations in the county and once this is completed the DSWCD staff and District Board would be able to complete a ranking of water quality projects and tracking of the nutrient reductions required for the annual reporting.

Annual reports The Durham LAC met on April 16, 2015 to compile the Neuse report as required. In crop year 2014 there were 8,015 acres of crop land reported and an estimated 35.5% edge of field reduction in Nitrogen according to the Nutrient Loss Estimation Worksheet (NLEW). The table below illustrates the losses reported in FY2015. These figures were submitted to the Division of Soil & Water in June 2015 and will be reported to the Watershed Oversight Committee in the fall of 2015.

County	Baseline Acres 2006	Baseline N Losses in Ibs. 2006	2014 Crop Year Acres	2014 Crop Year N Losses in lbs.	Reduction from Baseline
Durham	10,834	135,902	8015	87,650	35.5%

BETC– Bionomic Educational Training Center

The Durham Soil and Water staff received a grant from the National Institute for Agriculture (NIFA) for the creation of a Bio-nomic Educational Training Center (BETC, pronounced "Betsy") on the Southern High School campus. BETC provides funding, work experience and practical math and science lessons for Southern High School students.

Southern School of Energy & Sustainability **BETC Program**

On January 26, 2015 the Durham County BOCC recognizes the BETC program for their outstanding achievement in providing environmental services in the County. The Commissioners commended the teachers and administrators for their efforts and congratulated them for receiving the state and national recognition.

NC Association of Soil and Water Conservation District's Urban Conservation Award is given to Southern **High OCS Program**

Nominated by the District, the Southern High Occupational Course of Study (OCS) program received the North Carolina Urban Conservation of the Year Award January 6, 2015 during the North Carolina Association of Soil and Water Conservation Districts Annual meeting. Thirty students and six teachers received a plague and a standing ovation by the 400 members for their outstanding contributions for improving water quality in Durham.

Southern High's BETC Program receives National Attention

The Southern High BETC was toured on October 16, 2014 by the Alliance for Innovation East Regional Director, Sallie Ann Burnett. The Alliance for Innovation selected the BETC program to be featured in the national guarterly newsletter. The BETC Program was developed in 2010, and was conceived by a small group of local business owners and educators who wanted to produce job-ready applicants for the Green Industry and improve the way science is taught in secondary schools; BETC is a workforcedevelopment training program whose mission is to teach high school students environmentally sustainable horticulture and landscaping practices.

Southern High BETC Program Progress in 2015

Having been trained by District Staff, the Occupational Course of Study (OCS) students of Southern High were hired by the landowners involved

with the ISIP project (page 10) to install 6 rain gardens that were designed by the students from the NC School of Science & Math, under supervision from District staff. The rain garden installations. The BETC Agribusiness program earned

approximately \$2400 on the installation of these rain gardens. Twenty six students and four teachers worked1080 hours to build the rain gardens. These hours are critical to the OCS students who need the hours of community service in order to graduate with a high school diploma.











Blue Water Day

RBC Bank & the Durham SWCD celebrated Blue Water Day in Durham by supporting the Bionomic Educational Training Center (BETC) at Southern High School. The District & RBC staff and volunteers did a stream cleanup and installation of a rain garden at Southern High School. Employees volunteered their time to participate in the "Little Sweep," on Saturday June 6, 2015 in honor of Blue Water Day. Volunteers collected 40 bags of trash, 53 bags of recycling, thirty tires and one truck fender during a cleanup event at Durham's Chunky Pipe Creek.





RBC gave the Durham Conservation District and the Southern BETC program a \$2,000 grant. The activities are part of RBC Royal Bank's Blue Water Project, a program dedicated to protecting the world's most precious natural resource: fresh water. RBC Bank is proud to support initiatives that help protect water in Durham and other growing towns and cities.

The donation to the Southern School of Energy and Sustainability will support the BETC program, which provides funding to grow native wet-

land plants that will be installed into rain gardens throughout the Durham community. BETC was chosen by RBC from hundreds of applicants from around the world, based on its commitment to addressing water issues and protecting water in urbanized areas.



The RBC Blue Water Project is a historic, wide-ranging, 10-year global commitment to protect fresh water. Since 2007, RBC has pledged nearly \$41 million to more than 700 charitable organizations worldwide that protect water with an additional \$8.8 million pledged to universities for water programs.



Jennifer Brooks named Environmental Educator of the Year



Jennifer Brooks received the 2014 Environmental Educator of the Year award on September 12, 2014 from The Environmental Educators of NC organization. The award was presented during the Southeastern Environmental Educators Conference Banquet held in Asheboro, NC.

Jennifer received this distinguished award because of all the environmental education work she does in Durham and across the State. Jennifer was also recognized for receiving this award during the 2015 NC Association of Soil & Water Conservation Districts Annual Conference in Greensboro on January 5, 2015. Congratulations Jennifer and thank you for all you do!



The Impaired Stream Improvement Program (ISIP) pilot seeks to implement conservation best management practices (BMP's) on streams identified as impaired in low income neighborhoods. The projects target streams with low performance scores on the DCo Water Quality Measurement Tool (Strategic Plan Goal 4 Measurement tool). The Durham Soil and Water Department received \$20,000 in funds for FY2015 from Durham County Government for this pilot project. Several different BMP's can be utilized in Durham County to improve the health of these urban streams: streambank stabilization projects; critical area plantings; rain gardens and riparian buffers are the BMP's proposed for this program. This program is primarily



aligned with Durham Counties Strategic Plan Goal 4 Environmental Stewardship through Objectives 4.1 4.3 (Improve Water Quality), 4.4 (Change behaviors to achieve environmental quality) and 4.5 (Protect Open spaces and preserve rural character). Landowners with impaired streams, who self-certify as low income, are eligible for 100% cost share assistance in installation of BMPs through this program. A 'Limited Resource Self-Certification' form has been drafted for use with this program based on the '2014 Income Limits for Durham-Chapel Hill, NC HUD Metro FMR Area' according to the U.S. Department of Housing and Urban Development'.

In FY 2015, the Durham SWCD entered into four contracts with qualifying landowners allowing the conservation BMPs to be installed on their property. The contracts specified the maintenance requirements of the practice once construction was completed and also specified a 5 year lifespan of the BMP that the landowner is contractually responsible to maintain. The \$20,000 of Durham County Strategic funds were used in conjunction with \$13,478 of EPA 319 grant funds and \$3720 of individual funds for two other adjacent landowners who did not qualify for ISIP but had the impaired stream on their property and were willing to treat it, thus increasing the impact of the project.

The four landowners receiving the 100% funding from ISIP include:

- 1. Three landowners living in the Hope Valley North subdivision on Stonehedge Ave., Third Fork Creek-Jordan watershed.
- 2. One landowner living on Amberley Drive; Goose Creek Falls watershed.

The two landowners receiving the 75% funding from EPA 319 Grant include:

1. Two landowners living in the Hope Valley North subdivision on Stonehedge Ave., Third Fork Creek - Jordan watershed.

In total the project cost is \$37,198 on these 6 parcels



Best Management Practices

The four ISIP funded contracts stabilized 480 feet of streambank and included installing 6 rain gardens. These BMP's will reduce the nutrients and sediment delivery to two impaired waterways. The quantities of the reductions are estimated below:

Category	Reductions
Total Soil Loss	51.85
Lbs. of Nitrogen	12.4
Lbs. of Phosphorus	3.4
Acres Impervious Treated	1.3

Ag Development

Farmland Protection

The Durham County Board of County Commissioners adopted the Agriculture Development & Farmland Preservation Plan on December 14, 2009. The plan was developed as a proactive effort to protect the county's best agricultural land in a way that also accommodates growth and development. There are 32 goals listed within the plan that will enhance, promote and keep agriculture viable. Additionally, Durham County established the following goals within the Farmland Protection Ordinance:

- (1) To protect and conserve those soils in the county best suited to agricultural uses;
- (2) To identify and harmonize policies of government at all levels which may conflict

with the goal of protection of farmland;

- (3) To reduce land use conflicts between agricultural and other land uses; and
- (4) To promote agriculture as an integral part of the county economy.

Strategic Plan Alignment:

The Durham County Agriculture Development Farmland Preservation Plan:

Goal I. Community and Family Prosperity and Enrichment: provides educational, vocational, economic and cultural opportunities, empowers citizens to select strategies that improve quality of life; provides instructional support for educational opportunities that ensure high academic achievement and facilitates development of a skilled workforce aligned with current and future business needs.

Goal 2. Safe and Secure Community: improves outcomes for vulnerable youth, improving employment opportunities.

Goal 4. Environmental Stewardship: improves water quality and changes behaviors to further improvement and protect open space and preserve rural character.

Goal 5. Accountable, Efficient and Visionary Government: strengthens leadership and fosters informed public engagement through collaboration, innovation, and harnessing community resources, expertise and intellectual capital.

DSWCD & Reinvestment Partners receive \$100,000 from the USDA Local Foods Promotion Program Grant

The DSWCD, in collaboration with Reinvestment Partners Inc., received \$100,000 of funding for equipment, specialized consulting services and personnel to establish Bull City Cool, a Durham food hub . Food hubs are emerging as a service industry that delivers safe and reliable quantities of product from small and medium sized producers to large volume wholesale channels. This is achieved by providing access to processing of products, which is a critical component for small and medium sized farmers to enter into institutional markets. The food hub is important to any farmer that is interested in selling to local institutional markets such as the Durham County Detention facility or Durham Public Schools.

Ag Development – continued

USDA Outreach to Disadvantaged Farmers \$237,000

The Durham Soil and Water Conservation District requested funding to conduct a new education and outreach inventory effort. This project, if funded, will employ five military veterans as enumerators who will organize and conduct eighteen outreach and training events in the community. Using "smart" devices that capture GIS data, they will locate and interview landowners and complete an inventory of all farmland in the county. The geographic and demographic information collected will be used to create a "New and Existing Farmers' Guide" that will assist in linking landowners with new farmers; help land-owning families transition; coordinate small farmers with local market opportunities; and provide business development assistance. During interviews, enumerators will inform landowners about USDA programs, encourage participation in those programs and advise them of local marketing and training opportunities.

USDA Farm to School Program \$98,800

This project, if funded, will expand Farm-to-School initiatives in Durham, improving local food access and education for the entire Durham Public School system, while expanding a market for local farmers. In North Carolina farmers can produce a majority of the necessary produce to meet the needs of DPS Child Nutrition Services. However, many farmers lack the food safety certifications required to sell to the school system. This initiative will broaden community partnerships that have been developed over the past three years between institutional, non-profit, and governmental entities in Durham. These organizations include Farmer Foodshare, Inc., DPS Child Nutritional Services, the DPS Hub Farm, the Bull City Cool Food Hub and the Durham County SWCD. Each organization has a defined role in the initiative that as a whole will strengthen the Farm-to-School movement.

Farmland Breakfast

The Durham Farmland Protection Advisory Board (FPAB) developed a series of informal community breakfasts' to show their appreciation for Durham farmers and offer them opportunity to learn more about topics that are having an impact on their operations. Guest speakers and topics were selected by the FPAB and one breakfast was held this year.

On January 15, 2015 Don Hopkins - Apiary Inspection Supervisor with the North Carolina Department of Agriculture and Consumer Services led a presentation with eleven farmers and three guests on the current problems with honey bees and the impact on the farming community. Farmers had a chance to ask questions and view slides of current pest affecting colonies in NC.



Durham farmers receive GAP certification training

Good Agricultural Practices (GAP) certification is a USDA program that insures that products meet all sanitary food handling requirements from the time seed is planted until the food is consumed. GAP training and certification is a program developed by the USDA in order to decrease the 47 million cases of food borne illness reported each year in the United States. This process is currently voluntary but has been required by institutional purchasers for all farmers selling fruits, nuts and produce.

Two training sessions were held on Wednesday November 19, 2014 and Wednesday December 3, 2014. The first day covered food safety and agriculture production. The second day, farmers completed a GAP plan outlining the food safety procedures for their individual farm. There were 9 farmers that participated in the first day of training and 9 developed their GAP plan on the second day.

Ag Development

State and Local officials dedicate a raised garden at Northern High School

State and Local officials dedicated a raised garden at Northern High School on April 28, 2015. The materials for the garden were purchased with a grant from the NC Soil & Water Foundation and the raised bed was installed by students at the school. The Occupational Course of Study, Agriscience and the ROTC program students and staff worked for 7 months logging more than 900 hours to build the garden beds. The courtyard was once an overgrown area that was not utilized. The classes created a Pizza Garden, Bramble Garden, Tea Garden and raised garden beds that are handicap accessible. The courtyard provides an opportunity for students to gain work experience in horticulture and help them connect with the natural world.





Ag Commissioner Steve Troxler with NHS students and advisor

PLT facilitator on staff with District

District staff, Jennifer Brooks, became a Project Learning Tree facilitator on August 22, 2014. Project Learning Tree is an interdisciplinary environmental education program designed for educators of ANY background. The program encompasses a K - 12 grade curriculum of hands-on activities that facilitate the exploration of topics including communication, economics, energy and fuels, geology, government, history, recycling, transportation, watersheds, wildlife, and much more! Jennifer will now be able to lead PLT curriculum workshops for Durham County teachers and educators in addition to the other two curriculum programs she already facilitates (Project WOW! and FLP)

Durham Soil & Water Receives Award

Durham Soil and Water received the NC Source Water Protection "Excellence Award" from the NC Water

Resources Research Institute/N.C Source Water Collaborative. It was presented for the for the upper Sandy Creek Watershed & Stream Restoration Project at the Water Resources Research Institute annual conference on March 18th that Ray Eurquhart, Curtis Richardson, Eddie Culberson and Jennifer Brooks attended.



The project includes a unique partnership with Duke University in an effort to improve water quality in Durham County and study the effectiveness of innovative approaches to watershed restorations. The Upper



Sandy Creek Watershed and Stream Restoration is a multi-year, multi-phased project that is a first of its kind in Durham and in North Carolina in that an entire watershed was restored and enhanced with innovative best management practices in order to study their effectiveness on water quality improvement.

Staff and Supervisor Recognitions



Culberson Recognized for 30 Years of Service

On January 6, 2015 Director, Eddie Culberson received his 30 years of Service plaque from the North Carolina Association of Soil and Water Conservation Districts. Congratulations Eddie on your achievement as you celebrate a significant anniversary with the NCASWCD. Reaching this milestone was a very special occasion for you. It was also a very special occasion for Durham Soil and Water since it is a testimony of your loyalty to conserving, enhancing and promoting our natural resources over the years.



Eurquhart and Brooks Recognized for Their Years of Service

On November 20, 2014 Supervisor, Ray Eurquhart received his 20 years of Service plaque from the North Carolina Association of Soil and Water Conservation Districts. We would like to thank Eurquhart for 20 years of service to the Durham County SWCD Board of Supervisors!

Jennifer Brooks also, received her 10 years of Service Award from the North Carolina Association of Soil and Water Conservation Districts.

Thank you Ray and Jennifer, for you dedication and support over the years!

NC Certified Environmental Educators Recognized



On November 22, 2014 Jennifer Brooks and Lisa Marochak were recognized for receiving their NC Environmental Education certification from the NC Department of Environmental Education. They were recognized during a dinner at the Embassy Suites in Cary. Jennifer Brooks received her certification November 2012 and Lisa Marochak received her certification February 2012.

Supervisor Election

On December 1, 2014 two elected Supervisors, Ray Eurquhart and Katie Locklier were sworn into office along with Talmage Layton, appointed Supervisor. Ray Eurquhart has been a Supervisor with Durham

Soil and Water Conservation District Board for 20 years. Ray is now serving as the Financial Officer. Katie Locklier is a newly elected Supervisor and is one of the youngest Soil and Water Supervisors in the state. Katie will serve as the Secretary/Treasurer for the next year. Talmage Layton has served as a Supervisor on the Board for 13 years. Talmage serves as the Chairman of the board. Congratulations to all of you!

Pictured right: Ray Eurquhart, Katie Locklier and Talmage Laytion



Envirothon

During the 2014-2015 school year, 7 teams of students from 5 Durham County schools or clubs participated in the NC Envirothon competition. The Envirothon program is a hands-on, natural science academic event that challenges and engages students to think critically about the natural world and their role in it. The teams, each consisting of three to five students, demonstrate their management knowledge and problem-solving skills in a competition centered on five categories: soils/land use, wildlife, forestry, aquatics, and current environmental issues. The Envirothon consists of a middle school and high school competition level.

The Durham County staff spent numerous hours during the 2014-2015 school year training teams on forestry management practices, wildlife identification skills, aquatic sampling techniques, soil texture determinations and more. Some other hands-on skills the students learned included how to measure the height of a tree using a Biltmore stick, how to identify and track NC wildlife, how to sample macroinvertebrates and determine a stream's water quality. These are all skills that resource professionals use in the field each day to perform their jobs.

After months of study, the teams competed against others from an 11 county area at the Area 4 Envirothon event in Wilson County on March 20, 2015. The teams representing Durham County at the 2015 Area 4 Envirothon were as follows:

- 'Killer Kudzu' from the NC School of Science and Math
- 'Cypress Knees' from the NC School of Science and Math
- The 'Kewl Kidz' from Northern High School
- The '(Not As) Kewl Kidz' from Northern High School
- 'Bull City Homeschoolers' middle school team from Newton Academy
- 'Sassyfrass', middle school team from Southview Academy
- 'Enviromatics' middle school team from Sherwood Githens Middle School

At this qualifying event, 4 teams from Durham placed in the top 7 of their division, thereby allowing them to participate in the state level Envirothon event, the NC Envirothon. The 'Killer Kudzu' team placed 6th and the '(Not As) Kewl Kidz' placed 7th in the high school division and the 'Bull City Homeschoolers' team placed 3rd, while the 'Sassyfrass' team placed 4th in the middle school division.

On April 24-25, 2015 these 4 teams competed in the NC Envirothon competition held annually at Cedarock Park in Burlington, NC. There they competed against teams from across North Carolina. The '(Not As) Kewl Kidz' high school team from Northern High School placed 20th out of 47 teams. The 'Bull City Homeschoolers' middle school team from Newton Academy, in their first time competing at the state-level event, placed 7th out of 43 teams. We are extremely proud of all our Durham County teams!

Please call the Durham SWCD at 919-560-0558, visit <u>www.ncarea4envirothon.org</u> and <u>www.ncenvirothon.org</u> or follow the NC Envirothon on Facebook at <u>www.facebook.com/</u><u>NCEnvirothon</u> to learn more about the Envirothon program.







2014 Durham Big Sweep Collects 13,725 Pounds of Trash

In 2014 residents participated in the annual Durham Big Sweep litter clean up event, cleaning the trash deposited in Durham's parks, streets, water bodies and shorelines. 485 volunteers cleaned 23 different sites around Durham, resulting in an estimated 13,725 pounds of trash being collected from throughout the community.



Volunteers bagged nearly 119 trash bags of litter, 18 bags of

recyclables, and over 10,265 pounds of trash too big for garbage bags. Among trash collected were items such as tires, old washing machines, various pieces of wood and fences, Styrofoam packing foam, bricks, bed frames, PVC piping, a VW Bug car, a metal frame play-ground set with slide, toys, metal sheets, an old portable TV, rusty wire, and much more. All of these items were littering our community or sitting in our drinking water sources. That's why this event is so important each year and why we appreciate our volunteers for coming out and making a real difference in the environmental health of our community.

The 2014 Durham Big Sweep was coordinated by the Durham County Soil and Water Conservation District, the City of Durham Public Works Department Stormwater and GIS Services Division, and Keep Durham Beautiful, Inc. with the support from the Durham County Department of General Services and the City of Durham Neighborhood Improvement Services Department, which picked up trash and recyclables at each cleanup site.



Durham Big Sweep is an annual environmental service event and the Durham SWCD has been the coordinating agency of the event for over 15 years now. Durham residents, organizations, and groups interested in receiving information about volunteering for the 2015 Durham Big Sweep can find out more on the Durham Big Sweep website at <u>http://Bit.ly/DurhamBigSweep</u> or by contacting the Durham SWCD.



Resource Conservation Workshop

The Durham District sponsored a local student to attend the 2015 NC Resource Conservation Workshop at NC State University in June. The Resource Conservation Workshop (RCW) is a weeklong camp for high school students who are interested in conservation, the environment, or our state's natural resources. The camp is sponsored by the NC Division of Soil and Water Conservation and the NC Association of Soil and Water Conservation Districts. The RCW targets potential future environmental professionals by giving students a first-hand look at a wide array of conservation careers that they may not have known about.

During the 2015 RCW, Durham County was represented by Makayla Butler from Kestrel Heights Charter School who hopes to pursue a career in environmental law & policy someday.

Durham County Environmental Field Days for 3rd graders

The Durham Soil and Water Conservation District hosted the annual Environmental Field Days on October 7-9, 2014 at the Dr. Roberts Environmental Education Park in Bahama, NC where over 600 third graders attended.

Students were able to meet various resource professionals, participated in hands-on activities and learned about the environment. Presenters at this year's Field Day included Durham Soil and Water Conservation District,

Durham Cooperative Extension Service, City of Durham Water Management, City of Durham Stormwater Services, Durham County Government General Services, NC Forest Service, US EPA, the Eno River Association, the Neuse Riverkeepers Foundation, the Durham County Forest Services and local environmental educators.

The event was sponsored by the Durham Soil and Water Conservation District and Durham County Government. Six Durham County Public Schools participated in the events: Eno Valley Elementary, Parkwood Elementary, Fayetteville St Elementary, Creekside Elementary, EK Powe Elementary and Bethesda Elementary.

> Since Oct 7-9, 2014 was during the intersession for Durham County's year-round public schools, three DPS schools did not have the opportunity to participate in the Environmental Field Day event. To make it up to them, the District offered to work with them individually or together to have another day. Holt Elementary School, a year-round school, took the District up on that offer and on October 29, 2014 the District arranged a mini-

Environmental Education field day event at Holt Elementary for the 3rd graders. Students were treated to presentations from the Durham SWCD, the Eno River Association, the City of Durham Water Management Department, the City of Durham Stormwater Services and the Durham County General Services.

Contractor

Jessica Pope joined Durham Soil & Water as a contractor April 2015– Present. Jessica has a BS in Natural Resources Policy and Administration, a BA in International Studies and a double minor in Forest Management and Agroecology that she completed at North Carolina State University. She is currently working on completing her Masters degree in Natural Resources Policy and Administration from North Carolina State University.

Jessica has been working on inventorying Agricultural Operations, signing landowners up for the Voluntary Nutrient Reduction Program, educating landowners on other programs provided by Durham Soil and Water and sharing watershed rule information as it stands today.









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DPS HUB Farm Teachers Workshop



On March 3, 2015 District staff Education Coordinator, Jennifer Brooks, coordinated and led a teacher's workshop for Durham Public Schools at the DPS Hub Farm. A group of 8th grade science teachers spent the day participating in Project WOW! Wonders of Wetlands & Ecosystems educators training. The teachers spent the day

learning about various wetland ecosystems and habitats, identifying basic wetland characteristics, and understand basic functions and values of ecosystems. Each participant received a copy of the WOW! The Wonders of Wetland educators guide to take back to their classroom. This guide includes over 50 hands-on multidisciplinary activities in lesson plan format, extensive background information on wetlands, ideas for student action projects, and a wetlands resource quide.





Teachers Workshop





The Durham District, along with the City of Durham (Stormwater Services Division), held a week long series of teachers workshops July 28-31, 2014. The workshops were held at the Dr. Roberts Environmental Education Park and adjacent Bahama Volunteer Fire Station in Bahama, NC. The teacher training workshops offered during the week were; Project Learning Tree (PLT), Project Food, Land and People (FLP), Project WOW! Wonders of Wetlands (WOW), and Project WET (day & a half). Facilitators for the week were: District staff, Jennifer Brooks and Lisa Marochak; City of Durham employee Laura Webb-Smith; and Eno River Association educator Liz Stabenow.

A total of 58 participants spent the week with us. The educators had varied backgrounds from across NC, but were easily on board with the hands-on activities

and training in the different curriculums. At the end of each individual workshop, participants received a copy of the corresponding educators guide to use in their classes during the school year.







Conservation Contests

Conservation Contests for kids:

During the 2014-2015 school year, the Durham District sponsored 6 different conservation education contests for students in Durham County. The contests included a Poster Contest for 3rd – 6th grade; an Essay Contest for 6th grade; a Public Speaking Contest for 7th and 8th grade; a Computer Slide Show contest for 6th grade and a Computer Designed Poster contest for 9th grade. The theme for all of the contests was 'Wetlands Are Wonderful'. 1st place winners received a plaque and \$50. 2nd place winners received a certificate and \$25. Teachers of the 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 on to an area level contest, where we had a number of Durham entries place and take prizes.

For younger students, the District again held a spring Bookmark contest for $K - 2^{nd}$ graders with the theme of 'Farming & Food'. We had a number of wonderful, creative entries from many young students in Durham County. 1st place winners in each grade level received an award certificate and laminated copies of their bookmark for their entire class.

Annual Awards Celebration

The Durham Soil and Water Conservation District (SWCD) held their 2015 Annual Conservation Awards Celebration to honor students, teachers and Durham citizens that participated in the Durham Soil and Water Conservation contests on May 20, 2015. Others honored received recognition for their contributions to further soil and water conservation efforts.

Those awarded this year included first and second place winners in the District's Poster, Essay, Public Speaking, bookmark contests; the Durham County teams who participated in the NC Envirothon event and the Big Sweep Special Achievement Award.

Poster Contest

<u>3rd Grade</u> 1st place- **Azalea Flores Bayne,** Creekside Elementary 2nd place- **Ti'erra Smith,** Creekside Elementary

<u>4th Grade</u> 1st place- **Eli Konvalinka,** Mangum Elementary 2nd place- **Owen Stirrup,** Mangum Elementary

<u>5th Grade</u> 1st place- **Diana Navarro-Gallegos,** Bethesda Elementary 2nd place- **Myana Sims,** Bethesda Elementary

<u>6th Grade</u> 1st place- **Terri Lockamy,** Durham School of the Arts

Essay Contest

6th Grade

1st place- **Nacyiah Williams,** Lowes Grove Middle 2nd place- **Wesley Cox,** Lowes Grove Middle

Envirothon

- Not As Kewl Kidz- Northern High School
- Kewl Kidz- Northern High School
- Sassyfrass- Southview Academy
- Bullcity Homeschoolers- Newton Academy

Public Speaking

7th Grade

1st place- **Kelsey Fletcher,** Southview Academy 2nd place- **Sarah Tolman,** Rogers Herr Middle

8th Grade

1st place- **Aubrey Fletcher**, Southview Academy 2nd place- **Keith Gibbs**, Lowes Grove Middle

Bookmark Contest

<u>Kindergarten</u> 1st place- **Stella North,** Easley Elementary 2nd place- **Emilie Meisner,** Creekside

<u>1st Grade</u> 1st place- Vikram Premakumar, Morehead 2nd place- Ilsa Bergman, Morehead

<u>2nd Grade</u> 1st place- **Julissa Vega,** Pearsontown 2nd place- **Macklin Paige,** Pearsontown

BIG SWEEP SPECIAL ACHIEVEMENT

NC School of Science & Mathematics





Urban Conservationist of the Year

The Hope Valley North Community Association was chosen as the 2015 Urban Conservationist of the

Year and a plaque was given to the community on June 9, 2015 by Soil and Water Supervisor Danielle Adams.





The community has been very active since 2012 installing Best Management Practices (BMP's).Since 2012, fourteen landowners in the neighborhood have installed 27 best management practices. These BMP's include 15 rain gardens, 4 cisterns, 670 linear feet of streambank stabilization and one impervious conversion removing 140 sq. ft. of a concrete waterway and replacing it with perennial vegetation. These BMP's are now treating 26,759 sq. ft. of impervious area, removing the following nutrients and sediment delivery from Third Fork Creek:

Category	Reductions
Total Soil Loss	141.97
Lbs. of Nitrogen	34.4
Lbs. of Phosphorus	2

The total cost of these BMP's was \$66,436 with the land owners receiving \$53,149 in cost share assistance from the Soil and Water Conservation District.

The HVN Community has also worked very closely with Soil and Water staff and have organized 5 meetings over the past two years to discuss water quality issues with the neighbors and conducted two BMP tours in the neighborhood.

The community has embraced the Southern High BETC program and the students have installed 9 rain gardens in the neighborhood. The students grow the plants at the school and then install them in the constructed rain gardens. This community service has been very important for the students and the money earned has helped support the Occupational Course of Study program.

The North Carolina School of Mathematics and Science had a group of 6 students complete a 10 day Mini-term project in the first week of March, 2015. The students interviewed 6 landowners in the North Hope Valley subdivision and produced a video discussing their participation in the ISIP and CCAP programs. They also surveyed and engineered 6 rain gardens according to state bioretention standards in the community. The student work can be viewed at: https://drive.google.com/a/ncssm.edu/file/

FY-2015 USDA-NRCS CONSERVATION PROGRAM ACTIVITIES

Agricultural Conservation Easement Program (ACEP), better known as the Farm and Ranchland Protection Program (FRPP) continues to be active in Durham County. During the past fiscal year, two additional easements, consisting of 156 acres of farmland, closed on property in Durham County. Leveraging federal funding, there are now 10 working farm properties protecting nearly 2000 acres in permanent conservation easements. The strong partnership that exists between the Durham Soil and Water Conservation District, the Durham County Open Space & Real Estate Division, and USDA Natural Resources Conservation Service has enabled the Durham SWCD to do their part to slow the conversion of agriculture land to non-agricultural uses of the land. This partnership has continued to seek out high quality agricultural land and opportunities to secure funding to purchase permanent conservation easements on these agriculture working lands. Agricultural Conservation Land Easements protect the long-term viability of the nations' food supply by preventing conversion of productive working lands to non-agricultural uses and Durham County is doing their part to protect the working lands.

NRCS's programs help people reduce soil erosion, enhance water supplies, improve water quality, increase wildlife habitat, and reduce damages caused by floods and other natural disasters. Public benefits include enhanced natural resources that help sustain agricultural productivity and environmental quality while supporting continued economic development, recreation, and scenic beauty.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audio tape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

PERFORMANCE DATA:	FY 2014 ESTIMATED	FY 2015 ESTIMATED	FY 2016 ESTIMATED	
Conservation Reserve Program (CRP) – Applications Received*	0	0	1	USDA-Natural Resources
Conservation Reserve Program (CRP) – New Contracts	0	0	1	Conservation Service (NRCS) program activities
Conservation Reserve Program (CRP) – plans maintained	16	13	8	remained steady in Durham
Conservation Reserve Program (CRP) – acres enrolled	485	246	144	County this past fiscal year.
Conservation Reserve Program (CRP) – Cost Share Expended	\$0.00	\$0.00	\$0.00	
Conservation Reserve Program (CRP) – Annual Payments	\$20,987.00	\$10,284.00	\$6,153.00	
Environmental Quality Incentives Program (EQIP) - Applications Received	3	5	5	
Environmental Quality Incentives Program (EQIP) – Contracts Developed	0	2	1	
Environmental Quality Incentives Program (EQIP) – Cost Share Obligated	\$0.00	\$9,055.00	\$ 2,272.00	
Environmental Quality Incentives Program (EQIP) – Contracts Maintained	4	5	6	
Environmental Quality Incentives Program (EQIP) – Cost Share Expended	\$27,500.00	\$1,006.00	\$25,000.00	
Environmental Quality Incentives Program (EQIP) – Contracts Completed	1	1	4	
Farmland and Ranchland Protection Program (FRPP) - Applications Submitted	2	2	2]
Farmland and Ranchland Protection Program (FRPP) - Approved for Easement Enrollment	0	0	2	
Farmland and Ranchland Protection Program (FRPP) - Closing on Easements **	2	2	2	

DURHAM SWCD SUPERVISORS	
Talmage Layton– Chairman Danielle Adams– Vice Chairman	Contact Us
Katie Locklier– Secretary/Treasurer Ray Eurquhart– Supervisor Curtis Richardson– Supervisor Kathryn Spann– Associate Supervisor David Harris– Associate Supervisor Mark Dewitt– Associate Supervisor	Durham Soil and Wate 721 Foster Street Durham NC 27701
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STAFF Eddie Culberson– Director Lisa Marochak– Senior Administrative Officer Jennifer Brooks– Soil Conservationist/ Environmental Education Coordinator Mike Dupree– Ag Development and Watershed Conservationist	Visit us on the web at: dconc.gov/swcd
Matthew Kinane– NRCS - District Conservationist Louise Hart– Regional Coordinator-Central	Find us on Facebook
	You Tube

50 Years of Conservation-continued from pg. 1

From then until the mid-1980's the main focus of the District was providing technical assistance to the agriculture community. Numerous Best Management Practices (BMP's) were installed and as a result of these efforts thousands of tons of soil have been saved. However, with the arrival of Research Triangle Park (RTP) and the increase in urbanization, the District began to notice new environmental problems on the horizon. Sediment deposits into the waterways from urbanization, atmospheric deposition, rise in downtown temperature, and litter as a result of humans all have contributed to negative effects downstream. By the late 80's the District began to see the need for diversifying its programs thus bringing the District off the farm and into a rapidly urbanizing Durham.

Today the District has a diversity of programs to meet multiple natural resource needs, from agriculture to urban issues. As it looks back this year over its last 50 years of conservation work, the District will also be looking forward to the next 50 years. What new opportunities or challenges are in store for Durham County? One thing is certain, the Durham SWCD is committed to continue to conserve, enhance and promote the natural resources of Durham County for the next 50 years.

Conservation Sales

FY2015– the district sold the following items: All proceeds go towards Environmental Education







Ivy Rain Barrels Sold– 17



Bluebird Houses

Wildflower Seeds



Compost Bins

Sold-6

