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For more information on activities discussed in this report, visit our website: www.conservation.ok.gov

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Cover photo: George's Fork of Dirty Creek, Muskogee County, Oklahoma 2018

Back photo: Manard Bayou, Muskogee County, Oklahoma 2018

# Oklahoma's Nonpoint Source Management Program

## Overview:

Oklahoma's Nonpoint Source (NPS) Pollution Management Program is a combination of federal, state, and local agency programs. The NPS Program is supported federally by Section 319(h) of the Clean Water Act (CWA), which requires states to 1) assess and report on NPS issues in OK waters and 2) develop a Management Program that creates and implements objectives for addressing the problems. These core program elements are described in the **Oklahoma NPS Management Plan**.

By state statute, the Oklahoma Conservation Commission (OCC) serves as the technical lead agency of Oklahoma's NPS Program. This responsibility means monitoring and assessing waterbodies for NPS impacts and implementing programs to reduce these NPS issues, with the ultimate goal of restoring full support of the designated beneficial uses of all waterbodies. With input from the NPS Working Group, comprised of more than 30 agencies, tribes, organizations, and universities, the state follows an organized process to identify NPS threats and impairments to water resources, determine causes, extent, and sources of the problems, and prioritize the watersheds needing improvement. Solutions to the NPS problems are then planned and addressed, primarily through projects in priority watersheds to provide implementation and education.



Oklahoma's NPS Management Program is *non-regulatory*. On-the-ground conservation is the primary focus, and less than 10% of OCC funds support administrative duties. *Planning* and *educating* to address NPS problems are the backbone of OCC's program and are critical to its success. Long-term water quality *monitoring* and *assessment* are essential to help prioritize areas to target through the program and evaluate its effectiveness. *Implementation* of Conservation Practices (CPs) through cooperative, targeted, voluntary efforts allows improvement and protection of water quality and other resources while maintaining agricultural production goals.

Oklahoma's NPS program is largely funded through the Environmental Protection Agency (EPA) Clean Water Act Section 319(h) NPS Management Program. The Oklahoma Secretary of Energy and Environment (OSEE) is the state administrative lead and recipient of CWA program funds, disbursing Section 319 dollars to OCC and partners, insuring that all NPS activities meet appropriate state and federal guidance and priorities. Federal funds are matched by monies from the State's Conservation Infrastructure Revolving Fund, state and local partners, and most importantly, local landowners who voluntarily participate in cost-share programs to install conservation practices which facilitate agricultural production goals while protecting soil and water resources. In recent years, Oklahoma has formed strong partnerships, networking with multiple agencies to secure matching funds to increase the total amount of funding available to address NPS issues.

## In 2018:

The OCC implemented its 2018 NPS Management Program efforts with \$2.4 million in U.S. Environmental Protection Agency (USEPA) Clean Water Act Section 319(h) funding, and \$1.6 million in state funds. The monitoring program is allotted 24% of the budget, the Blue Thumb education program receives 13%, and the remainder is used for technical support and implementation. Major accomplishments for the NPS Management Program in 2018 include 1) progress in partnerships and projects in watersheds including Little Beaver Creek, New Spiro Lake, Grand Lake, Elk City Lake, and Wister Lake, 2) completion of several Clean Water State Revolving Fund Projects in the Stillwater Creek and Grand Lake Watersheds, 3) expansion of the soil health education program focusing on the nexus between healthy soils and water quality protection, 4) expansion of education programs in support of partners including the Grand River Dam Authority, Oklahoma tribes, USDA NRCS, and others, and 5) continued water quality monitoring of streams across the state continuing the fourth cycle of the Rotating Basin Monitoring Program. In addition, the Oklahoma partnership among landowners, conservation districts, NRCS, EPA, and the OCC published twelve new NPS success stories and updated an additional four stories with additionally delisted parameters.

Highlights of Oklahoma's progress in implementing the NPS Management Program during FY2018 are included in the following pages. While efforts funded through Section 319 are emphasized, projects conducted by NPS Program partners are also included. Readers are encouraged to access more details on project and program efforts via web links where provided.

# Oklahoma's NPS Management Program

## Planning:

The long- and short-term goals of Oklahoma's NPS Management Program Plan set the course for addressing NPS pollution throughout the state and comprise the vehicle to its mission, "To conserve and improve water resources through assessment, planning, education, and implementation."

OK's NPS Program areas: Planning, Implementation, Education, and Assessment.

Long-Term Goals	Progress Toward Attaining
By 2020establish a Watershed Based Plan (WBP), Total Maximum Daily Load (TMDL), implementation plan, or achieve full or partial delisting based on water quality success to restore or maintain beneficial uses in all watersheds identified as impacted by NPS pollution on the 2016 303(d) list, unless the original basis for listing is no longer valid.	Oklahoma currently has:  • 723 TMDLs for waterbodies impaired by bacteria, turbidity, low dissolved oxygen, and nutrients. Work to address additional impairments is ongoing.  • Eleven WBPs, and implementation of CPs to improve water quality is ongoing in five of these.  • 72 published success stories on the EPA's §319 website, indicating delisting of impaired waterbodies due to CP implementation and education.
By 2040attain and maintain beneficial uses in waterbodies listed on the 2002 303(d) list as threatened or impaired solely by NPS pollution.	Oklahoma has delisted more NPS impaired streams than any other state with a total of 72. Strong partnerships with other agencies, particularly the NRCS, are resulting in additional funding for implementation of practices focused on water quality improvement.
Short-Term Goals	Progress Toward Attaining
Monitor at least 250 streams, rivers, and other waterbodies every five years to determine causes and sources of NPS impairments.	The water quality of more than 14,156 stream miles has been assessed and presented in the State's biennial Integrated Report. Summary reports are written for each basin at the end of each two-year monitoring cycle.
Prioritize watersheds using the process described in the NPS Management Plan, then draft and update WBPs or similar planning documents for top priority watersheds.	Eleven WBPs are currently approved. All watersheds in the state were assessed with the new prioritization scheme, and the OCC is working with partners to develop at least three additional plans.
Provide educational information through the statewide Blue Thumb Program. Blue Thumb staff will work with Conservation Districts as requested to develop and maintain education programs.	Oklahoma's Blue Thumb Education Program currently has active volunteers in 27 of the 77 counties of the State, with 91 active monitoring sites. Forty-seven Conservation Districts have joined the nonprofit Oklahoma Blue Thumb Association.
Reduce NPS loading in priority watersheds with accepted WBPs through implementation of conservation practices. Implement water quality restoration and protection efforts in additional priority watersheds annually, as identified by the Unified Watershed Assessment (UWA) in the updated NPS Management Plan.	Oklahoma's NPS program has been successful at partnering with various agencies to secure funding and match federal funds to increase the total amount of funding available to address NPS issues, including EPA's Clean Water State Revolving Fund (CW-SRF), NRCS, public companies, and private landowners. Work continues that will advance NPS related programs in watersheds prioritized in the Unified Watershed Assessment. This includes support for education and training, water quality monitoring, and partnering with USDA to focus conservation dollars in high priority UWA

## **Oklahoma's NPS Management Program**

## Implementation:

Current OCC priority watershed implementation projects are located in two general parts of the state: the east and the west-central. The predominant agricultural practices vary between these two general areas, so the implementation focus is slightly different in each area. In the east, extensive poultry production and related land application of waste as fertilizer has contributed to the build-up of high levels of nutrients, particularly phosphorus, in the soils. Consequently, CPs focus on riparian buffers and animal waste management. In the west-central part of the state, wheat and cattle production dominate agricultural activity, often contributing to water- and wind-driven soil erosion in conventional tillage operations in the sandy soils. No-till and field conversion CPs are the focus of implementation efforts in this area. Establishing riparian buffers is an important component of all projects, as these vegetated regions act as filters to take up nutrients, and roots help stabilize streambanks to reduce erosion. Fencing livestock out of riparian areas also reduces the amount of fecal bacteria in the stream.

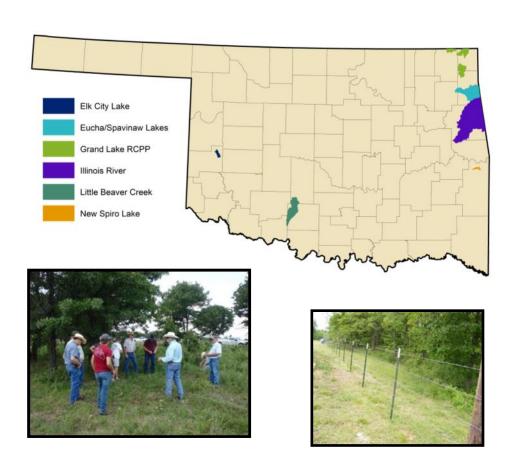
Despite some differences in CP focus, all OCC priority watershed implementation projects share a common design which has resulted in success both in number of participants who are implementing CPs in each area and in actual, measurable water quality improvement:

- Planning: have data/information that indicates NPS problems that can be addressed with a project
- <u>Local leadership and buy-in</u>: get support of local Conservation District and hire local coordinator; establish a Watershed Advisory Group (WAG) that includes all interests to drive implementation planning
- <u>Targeting</u>: use an effective model (e.g., SWAT) to locate pollution hotspots to target for implementation
- <u>Effective monitoring</u>: use a proven study design (e.g., EPA's Paired Watershed Method) and sampling method (e.g., continuous, flow-weighted sampling) to obtain sufficient data to evaluate impacts on water quality
- <u>Demonstration/Education</u>: establish a demo farm where landowners can see a suite of CPs in action
- Partnerships: look for creative ways to engage other agencies, leveraging hard dollars and matching funds
- <u>Long-term commitment</u>: commit to have multiple phases in the project (i.e., be in watershed for more than 5 years) to allow project concepts to take hold and prove their way from producer to producer

## **Implementation Projects:**

During FY2018, approximately \$943,081 dollars in federal §319 funds, federal Clean Water State Revolving funds, Oklahoma state funds, and private landowner funds were expended for implementation of CPs in six priority watersheds (see map). Cost-share funds from participating landowners comprised a significant portion of these monies.

A brief update of implementation in each of the OCC priority watershed projects is given in the following pages. Details of each project, including reports and Watershed Based Plans, can be accessed via the OCC Water Quality Division website under *Priority Watershed Projects*.



## **Water Quality Monitoring**



The Oklahoma Conservation Commission (OCC) has an extensive and unique monitoring program assessing essential components of water quality, biology, and habitat in streams across the state. Effective monitoring and assessment are essential to determine the extent, nature, and probable sources of NPS pollution and show improvement due to conservation programs across the state.

## **Implementation Monitoring Program:**

Implementation monitoring is performed to determine the effects of conservation practices (CPs) on water quality in high priority watersheds. Implementation monitoring usually involves sampling streams during defined periods before and after CPs are installed in a watershed.

Due to budget cuts, OCC and its partners are turning to collaborative projects such as the Regional Conservation Partnership Program (RCPP) and the National Water Quality Initiative Program (NWQI) to fund implementation in priority watersheds. With these, OCC continues assistance in the technical delivery and the critical monitoring efforts needed to determine changes brought about by the prescription of CPs. OCC will remain flexible in the monitoring approach so that appropriate monitoring can determine changes in water quality in these watersheds with available funding and time constraints.

Ongoing projects include: Middle and Lower Neosho River Basin/Grand Lake RCPP Project; Elk City Lake RCPP Project; Little Beaver Creek NWQI Project; and the New Spiro Lake/Holi-Tuska Creek NWQI Project.





NRCS provides technical and financial assistance to landowners to plan and apply land treatment and structural practices on a voluntary basis to improve water quality while maintaining the essential production of food and fiber in Oklahoma's agricultural areas. NRCS has been engaged with landowners and partners on two ongoing water quality projects targeting assistance. The National Water Quality Initiative (NWQI) completed its third year of implementation in 5 watersheds located in eastern and SW Oklahoma. NWQI utilizes Farm Bill funding through the Environmental Quality Incentives Program (EQIP).

In FY 18, NRCS continued to assist landowners with the installation of key conservation practices addressing gully erosion and grazing management. Key practices included grade stabilization structures, watering systems and prescribed grazing. NRCS and OCC have partnered on a pilot project through NWQI to conduct watershed assessments in two HUC 12 watersheds in SW Oklahoma. The outcome of these assessments is being used to develop a watershed based plan to address water quality needs and critical acres contributing to identified impairments. This will support funding opportunities, new partnerships and implementation of needed conservation practices.





# **Water Quality Monitoring**



## **Rotating Basin Monitoring Program:**

The Rotating Basin (RB) Monitoring Program has allowed for the identification of impaired streams to target for implementation projects, the determination of high quality streams used as reference sites to gauge the health of other streams, the detection of changes in NPS pollutants following implementation of CPs by project partners, and the use of data by Oklahoma Department of Environmental Quality (ODEQ) to create total maximum daily loads for impaired streams.

For the RB program, a total of 250 fixed sites are monitored on a rotational schedule by basin (see map). Sites within a basin are sampled every five weeks for two consecutive years to gather water quality data. In addition, a fish collection and habitat assessment is performed. Benthic macroinvertebrates are collected twice a year. Each year a new basin is sampled,

meaning all sites are sampled within a 5 year period. This frequency of sampling allows for both broad coverage of streams across Oklahoma and the assessment of streams for attainment of beneficial uses. Approximately 100 sites are assessed each year.

In 2018, OCC finished the fourth cycle of monitoring in Basin Group 1, continued the second year of the fourth cycle of Basin Group 2 and began the fourth cycle of Basin Group 3.

Oklahoma continues to experience climatic variations which present a challenge in ambient monitoring of small and medium sized streams. OCC has revisited planning efforts and made some revisions to the RB Program site list. OCC has dropped some sites which have stopped flowing or dried during previous monitoring cycles and added some sites deemed significant and important to the determination of the effects of NPS pollution.

## Water quality parameters assessed:

Lab:

In field:
dissolved oxygen
water temperature
pH
turbidity
conductivity
alkalinity
hardness
instantaneous discharge

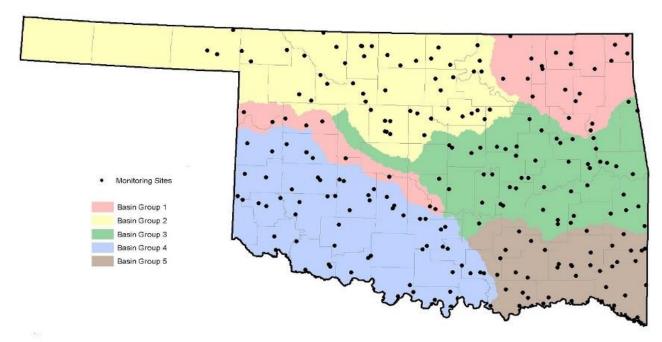
ammonia nitrite nitrate total Kjeldahl nitrogen ortho-phosphate total phosphorus chloride sulfate

total dissolved solids total suspended solids











## **Estimating Load Reductions**

The OCC conducts intensive monitoring and assessment efforts to determine the impacts of CP implementation in all watershed implementation projects. Automated water samplers are installed in either an upstream/downstream design, with CP implementation occurring in the area between the samplers, or in a control/treatment design, where an adjacent watershed is used as a control for the implementation watershed. Load reductions have been calculated for several of the implementation projects based on this continuous flow-weighted sampling, and ongoing monitoring will allow further assessment in the future. In addition, load reductions are estimated for each project annually using the EPA's Spreadsheet Tool for Estimating Pollutant Loads (STEPL) and submitted through EPA's Grants Reporting and Tracking System (GRTS). Estimates of statewide load reductions as a result of CP implementation through the statewide Locally-Led Cost-Share Program (discussed later in this report) are also calculated.



Material / Borrows	2018 Load Reduction Estimates*			
Watershed / Program	Nitrogen	Phosphorus	Sediment	
Illinois River and Eucha/Spavinaw and RCPP Projects	323,616 lbs/yr	27,970 lbs/yr	3,735 tons/yr	
Statewide Locally-Led Cost-Share and Soil Health Program	451,570 lbs/yr	454,484 lbs/yr	1,498 tons/yr	

<sup>\*</sup>Estimates rendered using EPA's Spreadsheet Tool for Estimating Pollutant Loads (STEPL) Model. Totals recorded in GRTS may include additional data not available during preparation of this report.

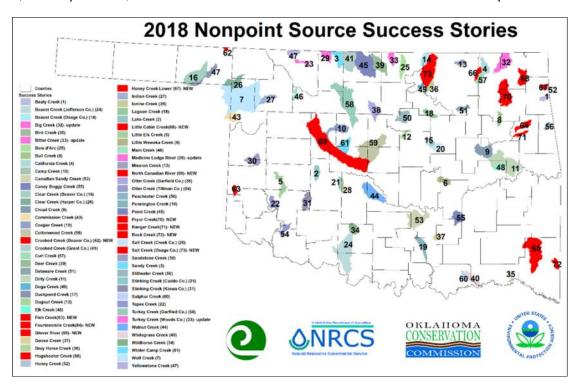




## **Documenting Success**



EPA approved 12 new Oklahoma NPS Success Stories in 2018, as well as updates to 4 stories. These stories detail the results of cooperative efforts among the NRCS, OCC, conservation districts, and landowners to implement voluntary, cost-shared conservation practices (CPs) to improve water quality and result in delisting of at least one parameter from the 303(d) impaired waters list. These practices reduced the runoff of soils, waste products, and associated nutrients and bacteria and resulted in improved turbidity.



Stream	Impairment	Map Num- ber	Stream	Impairment	Map Number
Fourteenmile Creek	E. coli	64	Hogshooter Creek	Fish communi- ty	66
Ranger Creek	Dissolved oxygen, <i>E.</i>	71	Salt Creek	Turbidity	73
Pryor Creek	E. coli	70	Glover River	Turbidity	65
Little Cabin Creek	E. coli	68	Rock Creek	Turbidity	72
Lower Honey Creek	E. coli	67	Crooked Creek	E. coli	62
North Canadian River	E. coli	69	Fish Creek	Dissolved oxy- gen	63
Big Creek	Dissolved oxygen	32	Bitter Creek	Turbidity	33
Medicine Lodge River	Turbidity	29	Turkey Creek (Woods Co.)	Turbidity	23

Oklahoma's 2018 Success Stories: With the submission of the 2018 stories, Oklahoma has 72 streams that are recognized as EPA NPS Success Stories. Oklahoma is now second in the nation for documenting NPS pollution reduction, and the lead in the nation in the number of independent watersheds where our program has documented successful water quality restoration through voluntary NPS programs.

## **Regional Conservation Partnership Program Project**





# Middle and Lower Neosho River Basin/Grand Lake



Grand Lake is an important water supply, flood water retention, electrical power generation, and recreation source for the region.

Eutrophication in the lake led to severe blue-green algae blooms in 2011 and bacteria outbreaks at beaches in 2014.



- The Neosho River Watershed is a high priority for both Kansas and Oklahoma and each state has devoted significant effort towards diagnosing and solving water quality degradation in the watershed.
- The Regional Conservation Partnership Program (RCPP), created by the farm bill of 2014, promotes coordination between NRCS and its partners to deliver conservation assistance to producers and landowners.



• Many of the streams, rivers, and reservoirs in the watershed have water quality problems and impairments related to excess nutrients, sedimentation, and bacteria. Of particular concern to both states are watersheds in the Middle and Lower Neosho Basin, because of concerns raised by stakeholders in the watershed and, in part, because these watersheds contribute directly to water quality degradation in Grand Lake.

# Middle and Lower Neosho River Basin Regional Conservation Partnership Program (RCPP) Falsin Creek Laberto Creek States Creek Laberto Creek States Creek Funtsy Creek Lates Creek Funtsy Creek Lates C

- Water monitoring continues in five streams on a monthly basis.
- Continued education and outreach.
- 10 field visits for conservation planning.
- Four active federal contracts obligated for \$391,835.
- State contract agreements for \$66,058, which included 149 acres of riparian area exclusion.



Cover crop planted in Ottawa Co. to improve soil health and water quality.

## **Regional Conservation Partnership Program Project**





# Elk City Lake

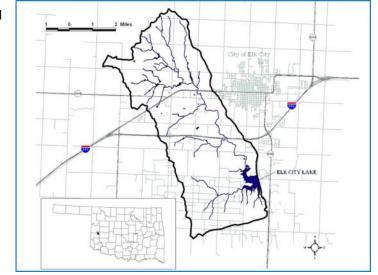




Partners in the Elk City Lake Watershed RCPP will work cooperatively with landowners to install conservation practices on cropland and rangeland in the watershed that contribute to nutrient and sediment related water quality impairments in downstream waterbodies.

- The Elk City Lake was constructed in 1970 primarily for flood control but is now operated by the City of Elk City for recreation.
- Elk City Lake has had both water quantity and quality problems related to excess nutrients, sediment, and bacteria.
- The primary purpose for the project is to restore water quality and protect West Elk Creek, and downstream Elk City Lake from future degradation.
- Land use in the watershed is primarily range, pasture, and cropland with little to no riparian buffer along much of the stream courses and direct access by livestock.

- Monitoring continued on West Elk Creek with monthly grab samples and additional runoff samples after rain events.
- Conservation Practices installed:
  - Cover Crops (587.6 acres planted)
  - Riparian Fence (3,140 ft.)
  - Riparian Livestock Exclusion (21.6 acres excluded)
  - Water well drilled, Solar pump, tank installed (1) with 650 square feet of Heavy Use Protection
  - Nutrient Management (546 acres)
  - Producer Information meeting held at Elk City in April with 75 people attending
- Conservation practices planned:
  - 3 riparian fences, 190 acres of grass planting, and 5 grade stabilization structures.







## **National Water Quality Initiative Program Project**





# **Little Beaver Creek**

- In 2015, four sub-watersheds of the Little Beaver Watershed were chosen as NRCS National Water Quality Initiative (NWQI) watersheds. Through NWQI, NRCS provides technical and financial assistance to help farmers and ranchers install conservation practices that will improve downstream water quality.
- Little Beaver Creek was listed as impaired on Oklahoma's 2012 Integrated Report for high levels of E. coli bacteria. Waurika Lake is listed as impaired for chlorophyll-a and turbidity.
- The Little Beaver NWQI project builds on a 2011 local emphasis area (LEA) project in Cotton, Stephens and Jefferson counties that includes the lower half of the Little Beaver Creek watershed. This program provided extra funding to install practices which protect water quality and quantity. Emphasis was given to adoption of renewable energy resources, exclusion of livestock from streams, and cedar removal.
- The OCC began collecting water quality data on Little Beaver Creek in 2015, sampling at three locations (as shown on map) approximately once per month.
- The project received additional funding in 2016 through the NWQI Pilot Program to develop a watershed plan that would eventually allow implementation to spread into the two remaining HUCs in the Little Beaver watershed.

- Water monitoring continued on Little Beaver Creek.
- Conservation practice implementation continued to be strong in 2018 with the majority of contracts including some component of reducing livestock access to streams.
- Multiple water quality models were evaluated to determine best fit for watershed characteristics and available data. Model outputs were completed and have been used to develop a watershed based plan and outreach plan which will begin implementation in 2019.











## **National Water Quality Initiative Program Project**



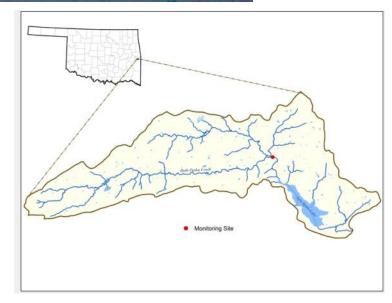


# New Spiro Lake/Holi-Tuska Creek

- The water quality of New Spiro Lake has deteriorated over recent decades. The lake has excessive chlorophyll-a, too little dissolved oxygen, and high turbidity impairing its beneficial uses as a public water supply and warm water aquatic community.
- In 2015, through the collaboration of NRCS, the OCC, the Oklahoma Department of Environmental Quality and local input, Holi-Tuska Creek was selected for the National Water Quality Initiative (NWQI) Program. NRCS is providing financial and technical assistance to the landowners and farmers to work the land in a sustainable way which provides cleaner water.
- The New Spiro Lake Monitoring Program has three components: watershed load monitoring, volunteer creek monitoring, and lake monitoring. Monitoring is being conducted by the private consulting firm Bio x Design, with the assistance of the Town of Spiro and the Oklahoma Conservation Commission.







- Water quality monitoring on Holi-Tuska Creek began in 2015 and continues through 2019. Water quality monitoring has been maintained in New Spiro Lake for more than a decade.
- Installation of conservation practices has been slow to begin in the watershed. Many producers were interested in conservation practices that weren't appropriate for their natural resource concerns. As a result, OCC, the Choctaw Nation, and the City of Spiro are beginning work on eroding, unpaved roads in the watershed to address an additional source of NPS pollution. This will involve a watershed survey and prioritization of eroding roads, as well as at least one restoration site in partnership with the Oklahoma Department of Transportation and LeFlore County Commissioners.



## **Blue Thumb Education Program**





The Blue Thumb Program is the education arm of the Oklahoma Conservation Commission's Water Quality Division. Blue Thumb is a statewide citizen science effort focused on training volunteers to share their knowledge of water quality with others, with the goal of stream protection through education. Blue Thumb aims to inspire and empower people across the state to use education and monitoring to protect water in their region from nonpoint source pollution.

In 2018, the Blue Thumb program achieved the following:

- ♦ Worked with over 890 volunteers, logging over 6,600 volunteer hours!
- Monitored 91 streams across Oklahoma
- ♦ Reached nearly 10,000 people with education events and outreach
- Held 9 training events



Blue Thumb Trainings changed in 2018 with the addition of Project WET! With the goal of "stream protection through education" in mind, a Project WET workshop was added to every Blue Thumb Volunteer Training. Each new volunteer not only receives increased education training, they also receive a Project WET Guide 2.0 book filled with 64 water-based activities and access to additional content and activities through the Project WET online portal. This increased emphasis on education in training has encouraged more volunteers to participate in and lead education across Oklahoma, allowing us to experience a 150% increase in the number of volunteer education hours. Several examples of volunteer led education include volunteer organized summer camps in Bartlesville, Sulphur, and Tulsa, presentations at natural resource days, exhibits at local festivals, and organizing outdoor classrooms for students. This increase in education hours does not reflect our strengthened partnerships with conservation districts and their increased use of our education models and tools.







Blue Thumb continued to collaborate with Grand River Dam Authority, Oklahoma State University Extension, and 4H to provide two multi-day educational camps for kids and a three-day teacher's workshop. Kids' camps were held in Langley and Tahlequah with both groups participating in watershed activities, water conservation games, and a water experience! Tahlequah campers visited a local creek to search for bugs and fish and floated the Scenic Illinois River, while Langley campers had an educational experience on Grand Lake and a tour of the Grand Lake Pensacola Dam. Over the course of three days, teachers learned about watersheds, non-point source pollution, groundwater, aquifers, and much more while participating in many Project WET activities and taking home a Project WET 2.0 Guide! They were also able to experience the Scenic Illinois River on a float trip with stops to explore for bugs and fish!



Blue Thumb welcomed two new staff members in 2018. Becky Zawalski, an Ohio native with a background in benthic macroinvertebrates, joined the team as a field educator. We also welcomed the return of an old friend in former director, Cheryl Cheadle. She joined the team in a new capacity as volunteer coordinator, responsible for coordinating volunteer education efforts around the state. We will be adding to the team soon as Blue Thumb director Jean Lemmon announced her retirement in early 2019.

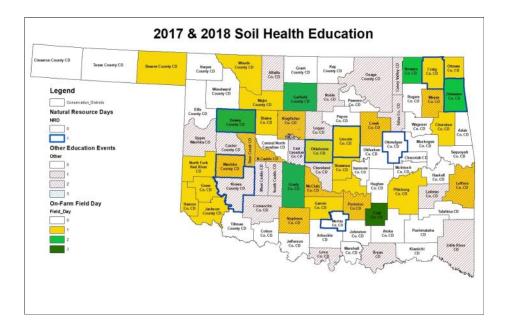


## **Soil Health Education Program**



The OCC Soil Health Education Program is a statewide initiative that teaches about the relationship between soil health, air and water quality. This Water Quality Division program uses hands-on learning to delve into soil health principles by teaching easy-to-use techniques for understanding, assessing, and restoring soil health. 2017 activities included trainings, demonstration farm support, educational field days, and exhibiting at conferences and other events.

**Trainings.** The program held 26 Soil Health, Cover Crop, and Plant ID trainings across the state in partnership with Oklahoma NRCS and conservation districts. There were 484 attendees, including agriculture producers, district directors, college and HS students, and staff from partner agencies. Feedback was excellent, with many participants suggesting additional trainings in the future. Trainings provided an overview of using cover crops to increase soil quality, function, and water infiltration, examining for grazing and residue management, weed suppression, discussing challenges with no-till agriculture, and plant identification. Understanding soil and plant dynamics encourages producers to implement practices that reduce soil erosion and NPS runoff from land into waterways.



**On-Farm Demonstration Education.** The program partnered with OSU, the Oklahoma Association of Conservation Districts, and local conservation districts to provide financial, administrative, and educational support to four On-Farm Soil Health Demonstrations. The producer-led projects provide opportunities for local producers in the areas to learn that demonstrated practices increase yields and improve soil health. Practices underway include cover crop mixes on cropland, pasture, and no-till fields.

**Event Education & Exhibits.** Program staff provided soil health education at over 51 events with more than 5,200 attendees, including Natural Resource Days and Soil Health Field Days held by conservation districts, OACD Meetings, Conservation Day at the Capitol, Farm Shows, Elementary School classroom demos, and Conservation conferences. Staff also provided educational support to the National Land and Range Judging Contest and Envirothon Teams.







## **Other OCC Programs**



Oklahoma's NPS Management Program is a cooperative effort, blending partners from multiple state and federal programs to accomplish water quality protection and improvements. Each of the programs described here is coordinated by the OCC and works to complement NPS efforts of the agency. With support from EPA §319 funds, OCC staff have been able to engage relevant partners, generate interest, and obtain grants to leverage additional match for non-EPA grants.

## **Wetlands Program**

Wetland activities initiated by the OCC provide demonstration, restoration, and protection of wetland resources. Every wetland project the OCC pursues has the potential to improve water quality, particularly with regard to NPS pollution. The program is primarily funded through EPA §104(b)(3) Wetlands Program Development Grants (WPDG) with matching funds from state and local sources.

In 2018, approximately \$25,681 in non-§319 EPA funds were used to accomplish the activities below:



- Continued to manage and further develop the Oklahoma Wetland Website, which hosts information on wetland
  activities and programs from government agencies (all levels), academia, tribes, and non-governmental organizations.
- Participated on the US Army Corps of Engineers Interagency Review Team to approve activities of an in-lieu fee mitigation program and consider a proposed mitigation bank.
- Continued development of the Oklahoma Rapid Assessment Method (OKRAM) in collaboration with Oklahoma State University. OKRAM was applied at 30 riverine wetlands between June and October, along with the collection of vegetation and soil data. Biological data will be used to evaluate OKRAM's ability to determine the condition of riverine wetlands.
- Continued project planning for statewide application of the Restorable Wetlands Identification Protocol (RWIP), a screening tool designed to identify wetland restoration opportunities.
- Completed data analysis comparing vegetation metrics with OKRAM condition assessment scores, for wetland sites assessed during the 2017 National Wetlands Condition Assessment intensification project.
- Attended a one-week R training workshop in Corvallis, Oregon.
- Attended a three-day EPA Region 6 Quality Assurance Training in Oklahoma City.
- Completed desktop wetland determinations on projects that utilize state and/or federal monies.
- Met with numerous potential future partners in efforts to build collaborations to serve the needs of Oklahoma in the conservation of wetland and stream resources.



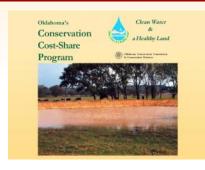


## **Other OCC Programs**



## Oklahoma Locally-Led Cost-Share Program

OCC's Locally-Led Cost-Share Program (LLCP) is a state-funded program providing technical and financial assistance to landowners and producers to install conservation practices to protect soil and water resources and reduce NPS pollution. The program is administered by OCC personnel and is implemented locally through the conservation districts who interact directly with landowners, NRCS, and other entities to draft the necessary conservation plans.



Landowners and producers participate voluntarily and contribute a minimum of 40% match based on pre-established cost-share rates by practice. OCC's LLCP is a critical mechanism to promote voluntary implementation of NPS controls statewide and serves as primary match for federal §319 funds.

Contracts for FY2018 totaled \$1.92 million and were completed in 75 conservation districts. Conservation practices installed are shown in the table on the right.

	•
Alternative water (units)	100
Ponds (units)	130
Cover crop planting (ac)	398
Diversions (ft)	772
Fencing (ft)	113,326
Grade stabilization structures (units)	1
Grassed waterways (ac)	1,840
Pasture/hayland planting (ac)	2,631
Range seeding (ac)	398
Terraces (ft)	16,815

## **Crow Creek Watershed Community**

Crow Creek is a small urban stream running through one of the older parts of Tulsa. Residential properties, schools, and parks border the stream, which is enjoyed by many, primarily for its aesthetic value. The stream has been degraded over the last decade by various activities, and the biological community has almost disappeared. In addition, the stream has high bacteria, which is of concern since local children like to play in and around the water.

The Crow Creek Community was organized in spring, 2015 by Blue Thumb volunteers who have been monitoring the creek for 20 years. It is currently a collaboration of citizens living in the watershed and Federal, State, County, and City agencies working together to increase awareness and take action to save this stream.

- Planted buffalo grass sod in the Crow Creek Meadow and had volunteer help watering it during the hot part of the summer. Special thanks go out to A New Leaf and to several Boy Scout troops.
- The Crow Creek Meadow became an official Monarch Waystation.
- Hosted a creek clean-up to remove trash from the creek banks and bed. An entomologist and botanist from the Tulsa Zoo were on hand to show people what was living in the meadow and The Oklahoma Conservation Commission showed people what lives in the creek.
- Partnered with City Veterinary Clinic to pick up trash in Brookside following the annual "BooHaHa" parade.









Oklahoma's NPS Management Program is a collaborative effort of federal, state, and local agencies, as well as nonprofits and citizen groups. Here are just a few examples of partner agencies which usually do not receive federal §319 funds yet have programs that mitigate NPS pollution and improve and protect water quality in the state.

## Oklahoma Department of Agriculture, Food, and Forestry (ODAFF)



In December 2012, the Oklahoma Department of Agriculture, Food, and Forestry (ODAFF) received authorization from the U.S. Environmental Protection Agency to administer agriculture-related Clean Water Act discharge permits. This is a permitting program and under certain conditions, it authorizes discharges to Waters of the U.S. from three agriculture related programs. Upon authorization, ODAFF referred to this program as the Agriculture Pollutant Discharge Elimination System (AgPDES) program. One of those programs is the AgPDES Construction General Permit

(CGP). The CGP addresses storm water discharges associated with construction activities on some agriculture construction activities. One of the requirements is for construction operators or owners to develop a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP includes a description of the Best Management Practices (BMPs) that will be used to reduce pollutants in storm water discharges. The CGP also requires operators to conduct regular site inspections to ensure BMP are performing as designed and to monitor and maintain BMPs throughout the project. Since authorization of the program, the AEMS Division has issued 103 CGP authorizations associated with Ag related construction sites.

The AEMS Division worked with EPA this last year to produce an educational flyer to help educate the public on who may need coverage under the AgPDES CGP program. For additional information on the program, and a full glimpse at the flyer please see <a href="http://www.oda.state.ok.us/aems/agpdes.htm">http://www.oda.state.ok.us/aems/agpdes.htm</a>





## Oklahoma Department of Transportation (ODOT)



The Oklahoma Department of Transportation (ODOT) uses best management practices (BMPs) to control and manage storm water. These include structural devices, maintenance procedures, and management practices that prevent or reduce the harmful effects of storm water runoff; such as pollution, erosion and flooding.

## BMPs may include:

Pollution prevention practices on road construction projects.

Maintenance operations that keep highways clean of litter and debris that could make its way into streams and rivers.

Increasing the monitoring and maintenance frequency of structural BMPs.

A requirement of ODOT's Phase I and II storm water permits require the development and implementation of a Storm Water Management Plan (SWMP). A component of ODOT's SWMP is the Illicit Discharge Detection and Elimination (IIDE) program. The purpose of ODOT's IDDE Program is to identify and eliminate any discharge to a Municipal Separate Storm Sewer System (MS4). Our employees and consultants are the eyes of the program and yearly training is conducted with maintenance personnel to ensure we do our part to prevent the discharge of pollutants to Oklahoma rivers, streams, creeks and lakes.





## **Grand River Dam Authority Riparian Easements**

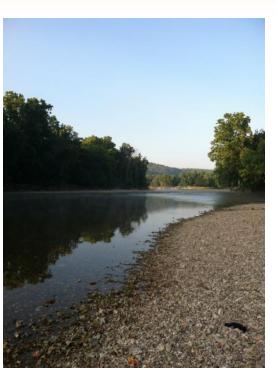


In 2016, the Grand River Dam Authority (GRDA) absorbed the mission and responsibilities of the Oklahoma Scenic Rivers Commission (OSRC). In doing so, they absorbed a program and partnership with the OCC to implement long-term riparian area agreements in the Illinois River. In 2007,

OSRC developed over 440 acres of 30 year riparian easement agreements to protect the Illinois River. These agreements were developed to protect riparian areas in the Illinois River watershed that were not eligible for the USDA Farm Services Agency Conservation Reserve Enhancement Program (CREP).

When the CREP program was discontinued in 2017, OCC and GRDA determined to develop and alternative program to CREP that would continue the mission of long-term riparian area protection. Therefore, GRDA and OCC began expanding this acreage through a new partnership, adding 269.5 acres in 2018 in new, at least 30 year easements.

In 2019, OCC and GRDA plan to expand these long-term easements into the Grand Lake and Lake Hudson watersheds in order to protect those waterbodies.



## City of Oklahoma City

The purpose of the Oklahoma City Storm Water Quality Division (SWQ) is to provide inspections, water quality assessments, household hazardous waste services, and public outreach to residents, businesses, and government agencies.

In 2018, SWQ reached out to 5 million people through press releases, newspaper articles, interviews and presentations. Through the floatable debris program, over 894,000 pounds of debris was removed from the Oklahoma River and properly disposed. Over 9,300 residents delivered 639,717 pounds of waste to the Household Hazardous Waste Collection Facility which included paint, used oil, pesticides, pool chemicals and other types of harmful waste.

Additionally, 45,277 pounds of household hazardous waste was collected, separated and released to the public for reuse. SWQ inspectors completed 8,204 construction site and industrial facility inspections.

Environmental Technicians also responded, investigated and resolved 557 pollution and hazmat requests.



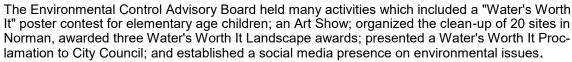


## **City of Norman**



The City of Norman's Environmental Services Division oversees many environmental programs including the Industrial Pretreatment Program; Fats, Oils and Grease (FOG) Program; the annual household hazardous waste (HHW) collection event; and Earth Day. In 2018, approximately 60,000 pounds of chemicals were collected at the HHW Event and 280,000 gallons of grease were kept out of the sanitary collection system through the FOG Program helping to prevent sanitary sewer overflows. In addition, year-round collection for oil, antifreeze, oil filters, kitchen grease and tires was provided at no charge to citizens at Norman's transfer station. The Sanitation Division provides curbside recycling and yard waste collection that helps keep our streams and creeks clean. In 2018, over 7,500 tons of recyclables were collected and 16,000 tons of yard waste

On April 22<sup>nd</sup>, the City of Norman's Environmental Services Division, Parks and Rec Department and the Cleveland County Conservation District held the annual Earth Day Festival. Thousands of attendees received educational information and participated in activities. One of the favorite activities was the Stormwater Division's Scoop the Poop game, teaching people how to properly pick up after their pets to keep this material from entering our Stormwater system.



WATER'S WORTH IT
LANDSCAPE AWARD

WISE WATER USE
CONSERVATION TECHNIQUES
OROUGHT TOLERANT PLANTS
RAIN BARRELS
RINGMARKECAR

April, or Earth Month as it is also known, was a busy month for public participation in the City of Norman's Phase II MS4 Program and TMDL Compliance Plan. The Stormwater Division organized and facilitated three clean-up events, executed the rain barrel pickup event, assisted the Environmental Control Advisory Board (ECAB) with the Big Event park blitz, and developed and carried out a new educational game at Earth Day.

On April 13<sup>th</sup> and 14<sup>th</sup>, the Stormwater Division handed out over 110 rain barrels and accessories to people who ordered them through the Central Oklahoma Stormwater Alliance (COSWA) rain barrel promotion. COSWA (of which the city of Norman is a member) is a consortium of Phase I and Phase II MS4 permittees located throughout the Oklahoma City Metropolitan Area who pool resources to meet permit requirements. In addition to handing out the barrels to purchasers, the Stormwater Division facilitated two rain barrel workshops at the Lindsey Yard presented by Amanda Nairn, ECAB Chair, with approximately 15 people in attendance.

On May 17, 2018, the Stormwater Division, in conjunction with Ideal Homes, West Franklin Sod Farm, and Triangular Silt Dike, held its biannual Builders Workshop at the West Franklin Sod Farm facility. Sixty-one (61) local builders, developers and representatives of several City departments attended. Attendees were able to view a wide range of erosion and sediment control best management practices installed both correctly and incorrectly to train them on what to look for during site inspections.

On November 3<sup>rd</sup>, 2018, the Stormwater Division held the Third Annual Lake Thunderbird Watershed Clean-up Event at the Lake Thunderbird BoatHouse. The goal of the event was to educate Norman citizens on Lake Thunderbird water quality and the role stormwater plays and to have them play an active role in removing pollution, in the form of trash, from the watershed. The event satisfies public education requirements in the City's Stormwater Management Program and Lake Thunderbird TMDL Compliance Plan.







## City of Tulsa



The City of Tulsa's Stormwater Quality Program includes monitoring, enforcement, and education programs, all aimed at keeping Tulsa's waterways pollutant free. Tulsa has continued its robust outreach program, including media such as billboards, radio, TV and mobile advertising. The goal of

our outreach is to simply make Tulsans more aware of stormwater issues and help them to realize how everyone has an impact on our watersheds and streams.

Tulsa opened a Household Pollutant Collection Facility in Jan. of 2016 which has proven very successful. Last year over 120,000 lbs. of pollutants were properly disposed of, keeping our streams and lakes cleaner and healthier.

Tulsa's Watershed Characterization Program continues rotating through all our major watersheds over our 5 year Permit cycle. Information from this program is insightful to stop illicit discharges and identify better best management practices. Tulsa is also developing a Low Impact Development Manual as a way to slow and sink stormwater runoff into the ground as opposed to running off properties carrying pollutants and eroding streams. Information on Tulsa's Stormwater Quality Program from the past fiscal year can be found at <a href="https://www.cityoftulsa.org/sos">www.cityoftulsa.org/sos</a>





## Peoria Tribe of Indians of Oklahoma

In 2018, Peoria Tribe of Indians of Oklahoma constructed a wetland/flood control area. EPA Region 6 provided \$30,000 of funding to complete the project. The project involved placing riprap where needed and planting grasses, as well as trees when necessary. These wetlands/flood control areas are designed to hold fertilizers and herbicides so that they are broken down before retuning to the watershed. The Peoria Tribe also provides outreach with Tribal members and members of the community with BMP's and using visual aids for kids to teach them the harmful effects of Non- Point source pollution.







## Responsible Care for Oklahoma's Natural Resources

