

Statewide Blue Thumb Water Pollution Education Program Final
Report: January 1, 2017 – December 31, 2017

FY 2016-2017 §319(h)

EPA Grant #C9-996100-19 – Project 4

Submitted by: Oklahoma Conservation Commission ~
Water Quality Division

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**Pontotoc County Conservation District
Blue Thumb Volunteer Training in Ada
at Little Sandy Creek
March 25, 2017**



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The Blue Thumb Water Quality Education Program offers this final report of activities to the US Environmental Protection Agency, Region 6, as evidence of work completed in the calendar year of 2017.

Blue Thumb Program Description

Blue Thumb 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.

Program Tasks

1. General Program Maintenance and Promotion
2. Statewide Watershed Education Events
3. Groundwater Education and Screening for Western Oklahoma
4. Support to Oklahoma's Conservation Districts

Task 1. General Program Maintenance and Promotion

2017 – Change and Growth Continue

Picking up right where 2016 left off, 2017 continued the trend of change and growth for the Blue Thumb program. Staff changes began almost immediately after the calendar turned to the new year, with the arrival of new Blue Thumb Educator Rob Barossi, who came to the team after serving in an outreach and education role for a watershed association in Massachusetts. Robert spent his first weeks attending a number of events, including the Water Quality Staff



1. Rob participates in a winter bug collection with volunteers at Crutcho Creek.

Retreat, the Oklahoma Association of Conservation Districts State Meeting and the Biodiversity Forum. These events gave him the opportunity to immediately begin networking and making connections across the state. At the same time, Robert was travelling across the state with the Blue Thumb staff, Kim Shaw, Candice Miller and Jeri Fleming. Along with the veteran staff, Robert took part in winter bug collections, which gave him the chance to visit numerous creeks around the state and meet many of Blue Thumb's statewide army of local volunteers.



Changes within the Blue Thumb team did not stop with Robert's arrival. Late in 2016, Jean Lemmon had taken over as Blue Thumb Director. During 2017, even though she worked primarily from Tulsa, Jean continued to lead the Blue Thumb team, including holding monthly staff meetings, joining the Blue Thumb team in the Oklahoma City office at least one day per week, attending Blue Thumb trainings, joining the team in the field for fish and bug collections, and representing Blue Thumb at numerous educational events throughout the year. Another staff change occurred when Jeri Fleming, Blue Thumb Communications Director, transitioned away from work in the field and focused on outreach/promotion/P.R. duties, leaving behind the work of bug collections with volunteers. Her efforts promoting the Blue Thumb program achieved a number of successes, including articles in small and large newspapers publicizing Blue Thumb events and a semi-regular appearance on a local television news broadcast.

Jeri's transition away from field work gave the rest of the Blue Thumb team an opportunity to change their areas of responsibility, which also allowed Robert to take on the management of volunteers and monitoring in his own parts of the state. In addition to her role as Blue Thumb Quality Assurance Officer, Kim Shaw continued to manage volunteer sites, monitoring and events in the Oklahoma City metro area, the nearby cities of Edmond and Norman, and the southwestern part of the state. Candice Miller retained all sites in the City of Tulsa as well as sites in the southeastern region of the state, while picking up the city of Stillwater and the surrounding area. Robert was given responsibility for the northeastern part of the state, including the cities of Tahlequah and Muskogee, the south-central part of the state, primarily the city of Ada and surrounding area, and the few sites to the far northwest, in the panhandle region.



2. Blue Thumb Staff 2017

A final change concerning the staff came late in the year when Jeri Fleming left the program for a position at the University of Oklahoma. This opened the door for an examination of the program among the other staff members and deeper discussions about the program's future direction and focus. As of the writing of this report, decisions are being made as to what kind of staff person should be hired and how the program might again change with the arrival of this new member of the team. Another injection of new energy, enthusiasm and ideas is an



3. Blue Thumb staff pause for a selfie during a fish collection.



exciting opportunity to continue the maturation and growth of Blue Thumb.

There have been other important steps in that maturation and growth over 2017, beyond just the changes in team members and their roles. At the end of 2016, Candice Miller took over the position of statewide Project WET Coordinator. As this report will detail in a later section, there have been successes in both the spread of Project WET programs and curriculum across the state and the integration of Project WET into the Blue Thumb program. Another accomplishment during 2017 which will be detailed later in this report was the unprecedented number of Blue Thumb volunteer trainings. Not only were there more trainings in one year than ever before, but this year's trainings show an important increase in collaborations between Blue Thumb and other organizations/professionals and the demand for trainings from those organizations and people. All of the trainings held in 2017 have led to a large number of new volunteers joining the Blue Thumb ranks and a number of new volunteer monitoring sites around the state. As you will see in the following pages of this report, those are not the only areas where there has been continued growth and strength in the Blue Thumb program. Our summer camp and teacher workshop programs, educational events, both statewide and local, and numbers of people educated by Blue Thumb have remained very strong during 2017.



4. Oklahoma Conservation Commission staff take part in Project WET facilitator training.



5. Blue Thumb volunteers attend a volunteer training in Oklahoma City, the first of a record 9 trainings in 2017.

Summary Information for Blue Thumb, 2017: Blue Thumb Monitoring

Blue Thumb could not possibly achieve its goals and continued success without the dedication, enthusiasm and passion of our volunteers. We ask a lot of our volunteers and they give of their time freely, without asking for anything in return other than the knowledge that their hard work is going towards protecting creeks and streams in their local area and across the state. One of the major components of Blue Thumb is our volunteer monitoring program. This includes monthly chemical monitoring, participation in quality assurance sessions, and assisting Blue Thumb staff with habitat assessment, fish and benthic macroinvertebrate collections and macroinvertebrate subsampling.



Monthly Monitoring

Every month, Blue Thumb volunteers visit a local creek or stream to conduct streamside observations and testing, followed by chemical tests performed at home using a sample of water taken from the stream during their site visit. In 2017, Blue Thumb volunteers conducted chemical monitoring at 73 sites in 24 counties in Oklahoma.

Site visits for monthly monitoring begin with a basic site assessment where volunteers note:

- ◆ Air temperature
- ◆ Water temperature
- ◆ Water turbidity using a secchi disk
- ◆ Wind speed and direction
- ◆ Weather conditions
- ◆ Other site observations, including the presence of trash, floating detritus, habitat alteration, flow alteration, iron precipitates, foam or scum, oil or grease, trash, dead animals, significant algae

After making note of those conditions on their data sheet, volunteers take a sample of the stream's water, collected in a run upstream of a riffle, rinsing their sample bottle and its lid three times before filling with water for testing. Also at the stream, volunteers fill two BOD bottles with stream water which will be used to complete a dissolved oxygen test at a later time. Reagents are added to the bottles on site to fix the dissolved oxygen content so that it will not change as the bottles are transported to an indoor location for further testing.



6. Volunteers monitor their creek monthly, including filling out data sheets (left) and completing the first half of a dissolved oxygen test (right) while on site.

Volunteers are asked to complete the dissolved oxygen and pH tests as soon as possible after leaving the stream site. They are encouraged to also complete other chemical tests as soon as they can, but are advised that sample water may remain in refrigeration for twenty-four hours if testing can't be completed immediately. Once they are able to begin testing, volunteers use their sample water bottle to test for:



- ◆ Ammonia
- ◆ Nitrate
- ◆ Nitrite
- ◆ Orthophosphate phosphorus
- ◆ Chloride

Test results are submitted to Kim Shaw, Blue Thumb Quality Assurance Officer, who then turns in the data to the database administrator for the Oklahoma Conservation Commission. Results are primarily submitted through an online pdf form that is emailed to Kim but are occasionally scanned and emailed, faxed, sent by mail or delivered by hand. A database is kept detailing all result submissions so that volunteers can be contacted if they have not submitted data in some time. They are also contacted if there are any omissions, mistakes or abnormal results in their submitted data.

Volunteers also have the option of conducting bacteria testing from May through September. For this, Blue Thumb provides volunteers with Coliscan Easygel and the necessary supplies and instructions to perform the tests. Included with those supplies is a card with a color photo of bacteria growth, including E. coli, so that volunteers may more easily and confidently identify it. There is a page for bacteria testing results included in the data sheet with the other chemical test results.

Quality Assurance Sessions for Ensuring Credible Monitoring Results

Throughout the Blue Thumb monitoring program, there are a number of built-in practices designed to ensure the credibility of monitoring results. Quality assurance is an integral part of what Blue Thumb volunteers do and is taken seriously as to maintain the necessary high standards in our data so that it may be utilized by the State of Oklahoma and other parties with confidence that it is reliable and of high quality. The Blue Thumb Quality Assurance Officer updates and submits to EPA for approval a quality assurance plan, the most recent version of which is on file at the Conservation Commission's office.



7. Volunteers at a training in Pawhuska learn the proper procedure for their monthly chemical tests.

The quality assurance process begins at volunteer trainings, where all volunteers are required to learn the proper techniques for streamside monitoring and all chemical tests, both at the stream and at home. Volunteers are carefully led through these procedures and given all necessary instruction and assistance to ensure that they are confident in their understanding of how to complete the test, why they are conducting the tests, how or why they achieve their results and what to do after they have collected all of their data.



After trainings, volunteers are often placed on an existing team or put together into new teams at a new site. Forming teams is beneficial from a safety standpoint but also helps to maintain quality assurance standards. While these teams monitor on their own monthly, they do not conduct biological collections on their own. A Blue Thumb staff person is always present for benthic macroinvertebrate collections, ensuring that standard operating procedures and quality assurance measures are followed during those collections. Fish collections and extended habitat assessments are also always led by Blue Thumb staff members, with volunteers assisting.

The first time a volunteer (or team of volunteers) visits their site for a monitoring session, they are joined by a Blue Thumb staff member. This provides an opportunity for the staff person to review all of the streamside procedures that the volunteer learned during the training. It allows the volunteer to ask questions and provides another opportunity for quality assurance, as the staff person observes the volunteer's techniques. At the request of the volunteer, the staff person will also join the volunteer for the indoor chemical tests, allowing the volunteer to go through the tests with someone who can answer questions and provide guidance along the way. Even if the volunteer does not request a staff person be present for their first round of chemical testing, they are given printed test procedures to follow as needed and can visit the Blue Thumb website at any time to watch videos of the test being performed by the Quality Assurance Officer. These measures ensure that the volunteers always have support while doing the chemical tests and always know they are doing them correctly.



8. Candice assists a volunteer with his data sheet during his first visit to a new monitoring site.

Quality Assurance (QA) sessions are held four times per year with every monitoring volunteer. These mandatory sessions are held in conjunction with benthic macroinvertebrate collections in the winter and summer and with macroinvertebrate subsampling (bug "picking") in the spring and fall. Even if volunteers are unable to collect bugs at their site (no flow or drought conditions, for example), they will still be required to complete a QA session. Similarly, if they have no bugs to be "picked," they will still be asked to come to a bug subsampling event to complete a QA session along with the other volunteers who are picking bugs. Blue Thumb staff members work hard to ensure that every volunteer goes through a QA session each quarter. Results for fall and spring QA sessions in 2017 are located in Appendix A of this report.

In the winter and summer, QA sessions are held at the same time as benthic macroinvertebrate collections, allowing the QA to occur outside, at the stream site. This provides an opportunity for the volunteers to demonstrate that they know how to complete certain procedures at the

stream, including, but not limited to, taking water or air temperature, using their secchi disk to measure stream turbidity, filling their sample water bottle, filling their dissolved oxygen bottles, or using reagents to fix their dissolved oxygen sample water. Requiring volunteers to perform these tasks at the stream, under the watchful eye of the Blue Thumb staff, allows the staff person to determine whether or not volunteers are:



- ◆ Filling sample water bottle and dissolved oxygen bottles at the correct location in the stream
- ◆ Rinsing sample water bottle correctly before filling
- ◆ Filling dissolved oxygen bottles using the correct technique
- ◆ Using their reagents to fix the oxygen bottle samples using the correct technique
- ◆ Bringing all necessary equipment and supplies to the stream with them
- ◆ Using their secchi disk correctly to measure turbidity (for example, taken at deepest point)
- ◆ Taking the air and water temperature correctly (for example, air always before water)

9. Candice watches a volunteer fill his sample water bottle as part of a winter quality assurance session.

During fall and spring macroinvertebrate subsampling sessions, there

is a similar opportunity to check a volunteer’s ability to complete the chemical tests which are done indoors. Blue Thumb staff prepares a known standard solution which is used for these tests, so that a target answer or range can be compared with the results volunteers achieve with their own testing equipment. Observing the volunteers complete these tests allows Blue Thumb staff to determine:

- ◆ The volunteer’s level of skill or knowledge related to the tests
- ◆ The volunteer’s ability to complete the tests correctly
- ◆ The quality of the volunteer’s de-ionized water
- ◆ The quality of the volunteer’s reagents



10. Volunteers perform a chloride test as part of a fall quality assurance session.

At the same time, volunteers are also asked to calibrate their thermometers to ensure they are working properly and also take a short “quiz” consisting of a few multiple choice and/or short answer questions. These questions are designed to gauge the volunteer’s level of understanding about certain concepts and procedures, to ensure that they know what they are doing and why they are doing it. Example questions may be:

- ◆ What is the stirring rod in your test kit used for?



- ◆ What do you do if your blank test results in a number other than zero (or 5 for Chloride)?
- ◆ Where should you stand to get a proper reading for your Orthophosphate Phosphorus test?
- ◆ Why do you complete every test twice?

These kinds of questions may arise from persistent problems volunteers report having or mistakes that are being made on a consistent basis that need correcting. The Quality Assurance Officer may also determine that there is an area of weakness or a knowledge gap among volunteers and may include certain questions to correct that issue. During these short quizzes, Blue Thumb staff are present to answer any questions, offer some guidance, go over the answers whether correct or incorrect, fill in any gaps in the volunteer's knowledge and make sure that the volunteer has the correct information moving forward.

The one-on-one, in-person time afforded by these QA sessions is an invaluable part of the QA process and the volunteer monitoring program as a whole. It allows the volunteers and Blue Thumb staff time to get to know each other better and develop a sense of mutual trust and respect. While the QA sessions are taken seriously, they are held in an informal and relaxed manner and an effort is made to make them enjoyable and even fun for the volunteers. The goal is not to make the volunteers feel pressured or nervous during these sessions, but rather to make them feel supported, encouraged and empowered through their work. QA sessions, while keeping the data at the necessary high standards, also serve to increase the volunteer's level of confidence in their work and their results. At the same time, they increase the connection and bond between volunteers and Blue Thumb staff, and between the volunteers themselves, making the volunteers more likely to stay connected to and engaged in the program.



11. Jeri (top) and Kim (bottom) spend valuable time with volunteers during bug collections and quality assurance sessions.

Additionally, QA sessions are invaluable for other reasons, including:

- ◆ Replenishing volunteer test kit reagents
- ◆ Replenishing other test kit supplies such as de-ionized water, sample water bottles, stir rods, etc.
- ◆ Providing volunteers with important announcements about the program
- ◆ Teaching volunteers new techniques or procedures
- ◆ Providing an opportunity for volunteers to meet and get to know each other
- ◆ Encouraging volunteers to assist with upcoming educational events



- ◆ Allowing volunteers the chance to provide feedback, suggestions and ideas about the program

Quality assurance is incorporated into the monitoring program in other ways, including:

- ◆ Chemical tests are run twice to ensure repeatability
- ◆ Volunteers are asked to run the test again if the two results are significantly different
- ◆ If widely different results continue, volunteers are asked to return to the creek and obtain a new bottle of sample water to test
- ◆ Blanks are used in a number of tests, which should always result in a zero (or 5 for Chloride)
- ◆ Volunteers are instructed to contact the Quality Assurance Officer if a different number is reached for their blank test
- ◆ If repeated errors occur with their blank tests, volunteers are given new de-ionized water and/or reagents
- ◆ Data sheets used by volunteers to record and submit their data incorporate QA measures which help to address and avoid common issues

Macroinvertebrate Collections

Along with chemical monitoring and physical habitat assessments, Blue Thumb monitoring also includes biological monitoring through collections of fish and benthic macroinvertebrates (“bugs”). Bug collections are performed twice per year, in the winter (Jan. 1-March 15) and the summer (July 1-Sept. 15). All collections follow the strict guidelines of the Oklahoma Conservation Commission’s Standard Operating Procedure, which includes factors such as, but not limited to:

- ◆ Collecting in a riffle or, if no riffle is available, using woody debris or streamside vegetation
- ◆ Utilizing a one meter by one meter kick net to collect bugs
- ◆ Collecting in three square meters of stream, preferably in three different riffle areas
- ◆ Collecting in riffle areas that have varying velocities and types of substrate

While Blue Thumb staff may, and occasionally do, collect bugs on their own, our preference is that volunteers are present for the bug collections and are involved in the process as much as possible. Winter and summer quality assurance sessions are typically held at the same time as bug collections, so it’s important for the volunteer to be present for that reason as well.

Bug collections provide an invaluable opportunity for volunteers to gain a better understanding of the life in their stream and see firsthand what kinds of organisms live among the rocky riffles where they collect their sample water and do their streamside monitoring. For many volunteers, participating in a bug collection is a unique and highly educational experience. It is also fun and often exciting, for both the volunteer and the Blue Thumb staff person.



Volunteers who participate in bug collections also gain invaluable education which they can then use in their own educational efforts in their community, including topics such as:

- ◆ The life of the stream beyond fish and land animals
- ◆ Aquatic insects and their life cycles
- ◆ Aquatic ecology or food web and the role played by aquatic insects
- ◆ What we can learn from aquatic insects in terms of water quality and stream health
- ◆ The interconnectedness of all aquatic life with the chemical and physical makeup of the stream



12. Volunteers participate in bug collections with Blue Thumb staff in the winter and summer. In 2017, 132 collections took place at 80 sites around the state.

In 2017, Blue Thumb staff conducted the following benthic macroinvertebrate collections:

Crutch Creek: I-40	macro	12-Jan-17
Crutch Creek: First Baptist Church	macro	25-Jan-17
Wolf Creek: McMahon Soccer Park	macro	26-Jan-17
East Cache Creek: Big Green	macro	30-Jan-17
East Cache Creek: Rodgers Lane	macro	30-Jan-17
Wolf Creek: Gore Blvd.	macro	30-Jan-17
Bishop Creek: Constitution Street	macro	01-Feb-17
Elm Creek: Indian Hills Road	macro	01-Feb-17
Northeast Creek: MetroTech	macro	01-Feb-17
Sharp Creek: Smith Grove	macro	04-Feb-17
Sharp Creek: Smith Silo	macro	04-Feb-17



Deer Creek: Meridian Avenue	macro	06-Feb-17
Little River: SW 34th St.	macro	06-Feb-17
Cedar Hollow Creek: Nickel Preserve	Macro	08-Feb-17
Spring Creek: Fram	Macro	08-Feb-17
Baron Fork River: Welling Road	Macro	09-Feb-17
Park Hill Branch Creek: Murrell Home	Macro	09-Feb-17
Tahlequah Ross Branch: Town Confluence	Macro	09-Feb-17
Tahlequah Town Branch: Basin Street	Macro	09-Feb-17
Tahlequah Town Branch: Spring Street	Macro	09-Feb-17
Turkey Creek	macro	09-Feb-17
Twin Hills Creek: E 121st St. S.	macro	09-Feb-17
Bird Creek: Rustic Lounge	macro	10-Feb-17
Coal Creek: Hwy 11	macro	10-Feb-17
Coal Creek: Morris Park	macro	10-Feb-17
Merkle Creek: Brooks Street	macro	10-Feb-17
Mooser Creek: Pepsi	macro	10-Feb-17
Spunky Creek: Hwy 412	macro	10-Feb-17
Crow Creek: Zink Park	macro	11-Feb-17
Flat Rock Creek: Hwy 75	macro	11-Feb-17
Fred Creek: Evanston	macro	11-Feb-17
Harlow Creek: Edison	macro	11-Feb-17
Elm Creek: 66th Street North	macro	13-Feb-17
Mingo Creek: 46th Street North	macro	13-Feb-17
Nickel Creek: 91st Street	macro	13-Feb-17
Owasso Creek	macro	13-Feb-17
Rock Creek: Hwy 33	macro	13-Feb-17



Deep Fork River: Hwy 56 Bridge	macro	16-Feb-17
Deep Fork River: Rocky Shoals	macro	16-Feb-17
Deep Fork River: Rocky Shoals	macro	16-Feb-17
Unnamed Trib to Arkansas River	macro	16-Feb-17
Sand Creek: Osage Hills State Park	macro	17-Feb-17
Spring Creek: Martin Park	macro	01-Mar-17
Little Sandy Creek: Chamber Loop	macro	02-Mar-17
Pennington Creek: Turnaround	macro	02-Mar-17
Rock Creek: Oklahoma Street	macro	02-Mar-17
Bluff Creek: NW 150th	macro	03-Mar-17
Chisholm Creek: 33rd & Western	macro	03-Mar-17
Guy Sandy Creek	macro	03-Mar-17
West Elm Creek: S. Douglas	macro	03-Mar-17
Bishop Creek: Eastwoods Park	macro	06-Mar-17
Deep Fork Tributary: Classen	macro	06-Mar-17
Mustang Creek: Morgan Road	macro	06-Mar-17
Cloudy Creek: Glass	macro	07-Mar-17
Little Deep Creek: Weatherford, Upstream of Treat	macro	07-Mar-17
Tenmile Creek: Davis	macro	07-Mar-17
Brookhaven Creek: North of Main	macro	08-Mar-17
Cow Creek: Hwy 51	macro	08-Mar-17
Feather Creek: Old Hwy 51	macro	08-Mar-17
Cotton Creek	macro	09-Mar-17
Fourmile Creek: Adams Park	macro	09-Mar-17
Little Wewoka Creek	macro	09-Mar-17
Soldier Creek: Hwy 66	macro	09-Mar-17



Boomer Creek: 3rd Ave	macro	10-Mar-17
Stillwater Creek: Babcock Park	macro	10-Mar-17
Stillwater Creek: Brush Creek Road	macro	10-Mar-17
Stillwater Creek: Brush Creek Road	macro	10-Mar-17
Chisholm Creek: Sorghum Mill Rd.	macro	13-Mar-17
Haikey Creek: 121st Street	macro	14-Mar-17
Horse Creek: S 540 Road	macro	15-Mar-17
Guy James Creek: NW Eubanks St.	macro	21-Jun-17
Fourmile Creek: Adams Park	macro	22-Jun-17
Bishop Creek: Eastwoods Park	macro	23-Jun-17
Little Wewoka Creek	macro	23-Jun-17
Spring Creek: I-35	macro	13-Jul-17
Merkle Creek: Brooks Street	macro	14-Jul-17
Cow Creek: Hwy 51	Macro	20-Jul-17
Stillwater Creek: Babcock Park	Macro	20-Jul-17
Stillwater Creek: Brush Creek Road	Macro	20-Jul-17
Elm Creek: Indian Hills Road	macro	25-Jul-17
Elm Creek: 66th Street North	Macro	27-Jul-17
Mingo Creek: 46th Street North	Macro	27-Jul-17
Nickel Creek: 91st Street	Macro	27-Jul-17
Nickel Creek: 91st Street	Macro-REP	27-Jul-17
Bird Creek: Rustic Lounge	Macro	28-Jul-17
Fred Creek: Evanston	Macro	28-Jul-17
Owasso Creek	Macro	28-Jul-17
Spunky Creek: Hwy 412	Macro	28-Jul-17
Spring Creek: Fram	macro	31-Jul-17
Tar Creek: H Street N.E.	macro	03-Aug-17



Clear Boggy Creek: Hwy 377	macro	11-Aug-17
Guy Sandy Creek	macro	21-Aug-17
Little Sandy Creek: Chamber Loop	macro	21-Aug-17
Pennington Creek: Turnaround	macro	21-Aug-17
Flat Rock Creek: Hwy 75	Macro	27-Aug-17
Sand Creek: Osage Hills State Park	Macro	27-Aug-17
Turkey Creek	Macro	27-Aug-17
Coal Creek: Morris Park	Macro	28-Aug-17
Mooser Creek: Pepsi	Macro	28-Aug-17
Twin Hills Creek: E 121st St. S.	Macro	28-Aug-17
Lukfata Creek	Macro	29-Aug-17
Mud Creek: E 2170 Road	Macro	29-Aug-17
Cedar Hollow Creek: Nickel Preserve	macro	30-Aug-17
Cloudy Creek: Glass	Macro	30-Aug-17
Tahlequah Town Branch: Spring Street	macro	30-Aug-17
Deer Creek: Meridian Avenue	macro	05-Sep-17
Sycamore Creek: D 4685	macro	06-Sep-17
Sycamore Creek: D 4685	macro-REP	06-Sep-17
Little Deep Creek: Weatherford, Upstream of Treat	macro	07-Sep-17
Boomer Creek: S. Perkins	Macro	08-Sep-17
Crutcho Creek: I-40	macro	08-Sep-17
Beaver Creek: N 4370 Rd.	Macro	11-Sep-17
Bishop Creek: Constitution Street	macro	11-Sep-17
Crow Creek: Zink Park	Macro	11-Sep-17
Deep Fork Tributary: Classen	macro	11-Sep-17
Mustang Creek: Morgan Road	macro	11-Sep-17



Rock Creek: Hwy 33	Macro	11-Sep-17
Rock Creek: Hwy 33	Macro - REP	11-Sep-17
Rock Creek: Oklahoma Street	macro	11-Sep-17
Little Sandy Creek: Hwy 99	macro	12-Sep-17
Brookhaven Creek: North of Main	macro	13-Sep-17
Chisholm Creek: 33rd & Western	macro	13-Sep-17
Crutcho Creek: First Baptist Church	macro	13-Sep-17
Little River: SW 34th St.	macro	13-Sep-17
Soldier Creek: Hwy 66	macro	13-Sep-17
West Elm Creek: S. Douglas	macro	13-Sep-17
Feather Creek: Old Hwy 51	Macro	14-Sep-17
Lightning Creek: SE 35th St.	macro	14-Sep-17
Northeast Creek: MetroTech	macro	14-Sep-17
Baron Fork River: Welling Road	macro	15-Sep-17
Black Fork of Poteau River: CR D1513	Macro	15-Sep-17
Coal Creek: Hwy 11	Macro	15-Sep-17

Figure 1: 2017 Benthic Macroinvertebrate Collections

Macroinvertebrate Subsampling

Similar to the winter and summer QA sessions, the QA sessions in the spring and fall are planned in conjunction with macroinvertebrate subsampling, what we commonly call “bug picking.” These events are held indoors, usually in a location secured by a volunteer in a particular region of the state. For example, a volunteer in Ada might reserve a location where all of the volunteers from the south-central part of the state can come together and pick their bugs at one place, at the same time.

Bug picking sessions also follow Oklahoma Conservation Commission’s Standard Operating Procedures. A staff person begins the process by removing the collected stream sample from a mason jar and putting it into a tray where it can be divided. Volunteers help in this process, usually by flipping a coin to determine which half of the sample will be put back into the jar and which will be used moving forward. Volunteers also help with removing large debris from the sample while “washing” the debris to make sure all bugs are retained.

Once the sample is divided to an appropriate amount (1/4 for example, though it may go as far as 1/32), it is spread out into a tray which is divided into squares using a numbered metal grid. Volunteers then begin the process of picking through each randomly selected numbered square, picking at least five squares, and working towards the goal of at least 100 bugs. Blue Thumb staff carefully observe this process and maintain quality control by:

- ◆ Checking the squares to make sure every bug was picked out of each square
- ◆ Checking what was picked to make sure they are actually bugs and are identifiable (i.e. not missing essential body parts)
- ◆ Transferring the bugs into a vial of ethanol while counting to make sure the number of bugs picked is accurate



13. Candice checks a bug sample during a bug picking event in Ada.

Once the bugs have all been transferred to the vial, they are sent to a taxonomist for identification. Volunteers are provided with materials that will help them identify and learn about the bugs, if they want to, but they are not expected to be able to identify bugs on their own. On the other hand, these bug picking sessions are an invaluable educational opportunity and many volunteers do develop the knowledge and ability to identify bugs. It's also a chance to explore their stream in a way most people never do and get an in-depth and firsthand experience with their stream's ecology and biology.



14. Volunteers gather at Oklahoma City University for bug picking.

Participating in bug picking sessions provides volunteers with a deeper connection to their creek and an all-encompassing way of looking at it, from observing the natural habitat surrounding the stream to getting up close and personal with the tiniest aquatic insects that live at the very bottom. It also provides them with more information and experiences to utilize in their own educational efforts.

Fish Collections

Another way that volunteers get more exposure to and education about their creek is through participating in summer fish collections. Blue Thumb staff do perform fish collections on their own at times, but the preference is for volunteers to be involved in the process.



Collection sites are selected on a rotating basis, primarily by ecoregion. For example, in 2017, most sites were in the northeast part of the state and will be visited again in four or five years. Other sites may be added, such as a site that was planned the previous year but could not be completed. This year, for example, collections in Lawton had to be cancelled and will be attempted next year.

The first part of every collection is a habitat assessment performed along a 400 meter stretch of the stream, stopping every 20 meters to record observations. This provides the volunteer with an excellent opportunity to really observe, examine and explore their creek in great detail. It gives them a chance to get to know aspects of their creek they may overlook or not even be aware of. Factors which are observed and noted by the Blue Thumb staff leading the assessment include, but are not limited to:

- ◆ Water depth
- ◆ Water width
- ◆ Width of riparian area on both sides
- ◆ Type of substrate at each 20 meter stopping point
- ◆ Types of habitat along each 20 meter stretch of water
- ◆ Angle of bank on each side
- ◆ Bank erosion
- ◆ Vegetation on bank on each side



15. Volunteers and Blue Thumb staff conduct an extended habitat assessment at Tributary to Arkansas River in Muskogee County.

After the habitat assessment, the fish collection team seines the entire 400 meter stretch of water, stopping as many times as necessary to check the net and seining each portion of the stream until no new species are collected. The lead collector will check the fish in the net, identifying and counting them, with the help of others on the team. At least one representative sample of each species must be kept in a jug of 10% formalin or be photographed. All species not able to be identified positively in the field are preserved. All fish able to be released are counted and registered on the field sheet.

Volunteers get involved in a few ways, including pulling the seine or recording the numbers of each fish species. They have the chance to learn even more about their creek, including:

- ◆ The different kinds of fish living there
- ◆ Where those types of fish are found, such as their preferred habitat
- ◆ Different types, sizes, or appearances of each fish species



- Other types of life in their creek, such as bugs, snakes, turtles, etc.



16. Volunteers assist Blue Thumb staff with fish collections every summer. In 2017, 9 official Blue Thumb fish collections were completed, mostly in the northeast part of the state.

In 2017, Blue Thumb staff conducted the following fish collections:

Unnamed Trib to Arkansas River	Fish	19-Jun-17
Cedar Hollow Creek: Nickel Preserve	Fish	26-Jun-17
Spring Creek: Fram	Fish	31-Jul-17
Tahlequah Town Branch: Spring Street	Fish	01-Aug-17
Tahlequah Town Branch: Basin Street	Fish	02-Aug-17
Tahlequah Ross Branch: Town Confluence	Fish	09-Aug-17
Rock Creek: Oklahoma Street	Fish	22-Aug-17
Park Hill Branch Creek: Murrell Home	Fish	30-Aug-17
Baron Fork River: Welling Road	Fish	16-Oct-17

Figure 2: 2017 Fish Collections



Volunteer Training Sessions

Blue Thumb Volunteer Trainings are an integral part of what this program accomplishes. Our volunteers are the eyes and ears of creeks and streams across the state, expanding our reach much farther than we could by utilizing staff alone. It is at the trainings where we first meet them and introduce them to the important work we do and the different ways they can become involved. Trainings allow us the opportunity to immerse them in the monitoring process and train them to be a monitor of their local creek. At the same time, we introduce them to educational tools they can use as a Blue Thumb volunteer to spread knowledge of water quality throughout their community.



17. Volunteers learn how to conduct their streamside monitoring during a training in Tahlequah.

In the past, trainings have been organized by the Blue Thumb staff according to population centers or areas of interest. Every year, there are usually trainings in the Oklahoma City, Tulsa and Stillwater areas. Other training locations were picked by the staff, who then promoted and marketed the training to attract participants. For a number of trainings in 2017, it was the opposite, with community groups or organizations approaching us and requesting a training.

Just one example was our training in Pawhuska, where a representative of the Osage Nation worked with Jeri to set up the training and had a number of people already set to attend, making further promotion of the training unnecessary. Jeri later worked with Karl Jett, Oklahoma Conservation

Commissioner, who requested a training in Beaver County, specifically for his Conservation District Youth Council. This summer, we received requests for a training in Ada from two different groups, Chickasaw Nation and the Institute for Math and Science Education at East Central University. Along with Blue Thumb staff members, they worked together to plan, organize and promote that training. A request from Blue Thumb volunteer Jahna Hill, who is also the Tahlequah Stormwater Manager and head of the Friends of Town Branch Creek, resulted in the training in Tahlequah. Similarly, Blue Thumb staff worked with the stormwater department in Broken Arrow to plan and organize the training there.



During 2017, all trainings followed a two-day format, four hours on the first evening and then eight hours over the second day. This has typically been a Friday/Saturday combination, but two of our trainings this year occurred on a Monday/Tuesday. Typically, the first day included an introduction to Blue Thumb, a number of Blue Thumb/Project WET activities (EnviroScape, Sum of the Parts, etc.), a review of the volunteer data sheet and a review of Blue Thumb volunteer responsibilities. On the second day, after a safety review, participants were taken to a nearby creek to perform all streamside monitoring activities and take part in bug and fish collection demonstrations. After a break for lunch, the volunteers used their samples from the creek to learn all of the indoor chemical tests, with instruction and guidance from Blue Thumb staff members.



18. Volunteers at a training in Oklahoma City learn how to conduct chemical water quality tests.

Flyers for 2017's Blue Thumb volunteer trainings are located in Appendix E of this report, along with other Blue Thumb publications. Note: The training in Beaver County that is listed below did not have a flyer so it's not represented in the appendix.

2017 set a record for the most trainings ever held in one year, with 9 trainings, attended by 117 people who are now active Blue Thumb volunteers:

- ◆ Oklahoma City, 1/27 – 1/28, 19 volunteers
- ◆ Pawhuska, 2/17 – 2/18, 13 volunteers
- ◆ Beaver County, 3/3 – 13 volunteers
- ◆ Ada, 3/24 – 3/25, 9 volunteers
- ◆ Idabel, 7/24 – 7/25, 5 volunteers
- ◆ Stillwater, 9/8 – 9/9, 21 volunteers
- ◆ Ada, 9/18 – 9/19, 11 volunteers
- ◆ Tahlequah, 9/29 – 9/30, 15 volunteers
- ◆ Broken Arrow, 11/3 – 11/4, 11 volunteers

Blue Thumb staff put a lot of emphasis on fostering and maintaining relationships with volunteers after trainings. At the end of a training, we speak individually with volunteers about the next step they would like to take, especially regarding a monitoring site. Post-training activities may include, but are not limited to:

- ◆ Following up with the volunteer via email, phone or in person
- ◆ Selecting a site for the volunteer, if they requested we do so
- ◆ Giving the volunteer time to search out and find a site on their own
- ◆ Visiting potential sites with the volunteer to review the site's appropriateness



- ◆ Meeting with the volunteer at their chosen site at the first time they monitor, to go through the streamside monitoring process with them
- ◆ Also going through the indoor chemical tests with the volunteers, if they request that we be there

Mini-Academies for Middle School, High School and College Students

Blue Thumb mini-academies are offered to the students of teachers/professors who have completed Blue Thumb training. This provides students the opportunity to be taught by Blue Thumb staff and see the monitoring procedures their teacher goes through each month. It can serve as a monitoring refresher for the teacher as well. Mini-academies are an excellent way to deliver Blue Thumb's message of water quality and stream protection from teacher to students in a more in-depth way than the teacher may be able to do on his or her own.

These events have also been an excellent way to increase student interest and improve the quality of data received. Each mini-academy has a personality of its own, but essentially the students learn the procedures for monthly chemical monitoring. When enough time can be scheduled, students also go to the stream to gather sample water, make observations, and look for benthic macroinvertebrates and/or fish. This provides an even more exciting and in-depth educational experience, providing young students with an invaluable connection to the natural world that may stay with them for a lifetime.



19. Students at Southwestern Oklahoma State University attend a Blue Thumb Mini-Academy.

While the number of mini-academies decreased from the previous year, these programs continue to be an important part of the Blue Thumb program. In 2017, they were:

- ◆ Jan. 10th - Southwestern Oklahoma State University in Weatherford with 5 students
- ◆ Aug 23rd - Southwestern Oklahoma State University in Weatherford with 12 students
- ◆ Nov. 16th – Howe Public Schools with 9 students

Task 2. Statewide Watershed Education Events

Appendix C of this report is comprised of Blue Thumb monthly reports, which include more detailed information on all the educational events Blue Thumb organized and/or participated in. In Appendix D are the monthly pictorial reports which detail many of these events in a



photo-centric format. The following section of this report will highlight some of the major events staff and volunteers participated in during 2017.

Two Educational Summer Kids' Camps

Blue Thumb partnered with Grand River Dam Authority (GRDA) and Oklahoma State University (OSU) Extension 4-H to provide two multi-day educational camps for kids. A total of forty-two kids, ranging in ages from 6 to 13, attended the camps, held in Tahlequah and Langley.



20. Kim shows campers the bugs living under rocks in the river during A Journey to the Bottom of the Creek summer camp.

The first camp, held over three days in Tahlequah, was titled Journey to the Bottom of the Creek and featured a wide variety of educational activities. On the first day, Blue Thumb staff and staff from OSU Extension provided indoor activities related to watersheds, nonpoint source pollution, benthic macroinvertebrates, the water cycle, water conservation and aquifers. These included, but were not limited to, use of an EnviroScape and various Project WET activities such as H2Olympics, Sum of the Parts and Macroinvertebrate Mayhem. On the second day, campers were taken to Town Branch Creek nearby, where they had the chance to take that journey to the bottom of the creek. Blue Thumb staff led them as they seined for fish and collected benthic macroinvertebrates using a kick net and their own handheld nets. Day three of the camp gave the kids a chance to take a float trip down the Illinois River,

where they continued to apply concepts they learned over the first two days. They also got to stop at various points to look for bugs and fish or just enjoy the crystal clear waters of the river during a perfect summer day.

For the second camp, titled A Grand Adventure, participants met at GRDA's Ecosystems and Education Center on the shore of Grand Lake at Pensacola Dam. The kids took part in many of the same activities as the Tahlequah camp, such as EnviroScape, H2Olympics, and Sum of the Parts, and learned about watersheds, nonpoint source pollution, water conservation, aquifers, the water cycle, and other water-related topics.



Proximity to the lake allowed them a chance to take a boat journey across the lake, during which they learned about GRDA's water monitoring program and got to use some of the monitoring equipment. They got an in-depth tour of the Grand Lake Pensacola Dam and had a chance to meet with the GRDA police officers who patrol the lake. Like the kids from the other camp, these campers also got to visit a local creek and spend some time in the water. Led by Blue Thumb staff, they seined for fish, finding a number of species, and searched for macroinvertebrates using a kick net and their own handheld nets. They also got free time to spend swimming and having fun in the creek.



21. Kids board a boat for a ride across Grand Lake during A Grand Adventure summer camp.

Educator's Workshop: Riverology 101

Blue Thumb also partnered with GRDA and OSU Extension on a three-day teacher's workshop titled Riverology 101. Twelve teachers, including elementary, middle and high school, came from a variety of school systems to participate in the workshop, held at GRDA's Education and Ecosystems Center. Teachers received housing, paid for by Blue Thumb, and meals provided by



22. Educators learn how to use the EnviroScape watershed model at Riverology 101 Educator's Workshop.

GRDA, over the course of the three days. During the first day of the workshop, they took part in many Project WET curriculum activities, including Sum of the Parts, H2Olympics, Color Me a Watershed, Pass the Jug, and High Water History. At the completion of the workshop and these activities, all participants received a Project WET Curriculum and Activity Guide and Project WET certificate of completion. There were additional activities provided by OSU Extension, focused on water conservation, water cycle and aquifers.

For most of the second day, participants took part in activities focused on Grand Lake. This included an in-depth tour of the Grand Lake Pensacola Dam and a tour of the lake itself. The tour was provided by GRDA and gave teachers the chance to explore the lake on the GRDA Police boats, stopping frequently for educational opportunities. They seined for fish, looked for benthic macroinvertebrates and took part in a Project WET activity at various points around the lake. On the final day of the workshop, teachers were taken to the Illinois River where they took a float trip in rafts, enjoying the river and applying some of the concepts that had been covered. They also stopped multiple times to look for macroinvertebrates and seine for fish, finding a number of species. At the end of the workshop,



teachers received a t-shirt and field journal in addition to their own Project WET book. Teachers were given information on how they can bring Blue Thumb or OSU Extension into their classroom and what tools and resources are available to them through those organizations.

Project WET Workshops

This year marked the beginning of a new integration of Project WET into the Blue Thumb program. Project WET is Water Education for Teachers and is designed to train all types of educators to teach about water in either traditional or nontraditional classrooms. Project WET is a national program and participating states have a statewide coordinator who, in our case, is Blue Thumb's Education Coordinator Candice Miller.

In her first year as Oklahoma's Project WET Coordinator, Candice worked hard to promote Project WET across the state and planned, promoted and executed a number of WET workshops while also attending regional and national WET conferences and meetings. Project WET workshops are an invaluable opportunity to provide educators with lessons, curriculum, activities and tools they can use to teach about water. Each workshop participant gets a curriculum and activity guide filled with activities that can be adapted to many grades, age levels and subject areas. They are also given instruction in how to lead the activities and incorporate them into their classrooms or other educational programs.



23. Teachers participate in a Project WET workshop in Howe.

Flyers for this year's Project WET events are included in Appendix E of this report, along with the other Blue Thumb publications. Note: Not all WET events listed below had flyers, so they are not represented in the appendix.

This year, Project WET workshops were attended by 90 total participants. These included 10 educator workshops and one facilitator training. They were held throughout the state in:

- ◆ Shawnee at Oklahoma Baptist University (WET)
- ◆ Idabel (WET)
- ◆ Langley (WET)
- ◆ Stillwater (WET)
- ◆ Grove (WET)
- ◆ Oklahoma City at Oklahoma City University (WET)
- ◆ Oklahoma City at Oklahoma City University (Wonders Of Wetlands)
- ◆ Tishomingo (WET)
- ◆ Tulsa (WET)
- ◆ Howe (WET)



Other Statewide Watershed Education Events

Throughout 2017, Blue Thumb staff and volunteers conducted educational programming across the state. This includes programs where Blue Thumb took a leading role in organizing, promoting, planning and executing events. It also includes programs where Blue Thumb was asked by other organizations or agencies to take part in one of their events. Many of these programs were visits to schools to present to a single classroom, a grade level, or perhaps an entire school.

A chronological sampling of these events includes:

- ◆ Locust Grove Middle School 7th grade visit, live creek bugs and stream trailer, 141 students
- ◆ Cleveland County Master Gardeners Demonstration Garden in Norman, rainfall simulator, 50 people
- ◆ ScienceFest in Oklahoma City, stream trailer, EnviroScape and rainfall simulator, 3000 students, teachers and others
- ◆ Arbuckle Simpson Nature Festival in Tishomingo, EnviroScape, 200 students
- ◆ Oklahoma Green Schools Summit in Oklahoma City, educational booth reaching approximately 40 people
- ◆ Fifth grade water education day in Poteau, EnviroScape, Project WET activities, 160 students
- ◆ Water Camp in Sulphur, various Project WET activities, 15 campers
- ◆ Nature Camp in Stillwater, Project WET activity, 50 people
- ◆ Broken Bow Teacher Workshop, Blue Thumb and WET mini-workshop, 12 teachers
- ◆ Dripping Springs Boy Scout Camp near Clinton, live creek bugs, 55 kids
- ◆ Stream Sleuths Camp at Sam Noble Museum in Norman, live creek bugs, 6 kids
- ◆ Fit-N-Fun Camp in Tishomingo, Project WET activities, 32 students



24. Rob uses the stream trailer to talk about erosion with kids at Locust Grove Middle School.



- ◆ 4H Volunteer Conference at Oklahoma State University in Stillwater, Blue Thumb and WET mini-workshops
- ◆ Steed Elementary Creek Walk, Midwest City, fish and bug collection Project WET activities, 52 students
- ◆ Kingston Elementary Creek Walk, fish and bug collection, 110 students
- ◆ Education Day in Broken Arrow, fish and bug collection, 40 students plus city officials, school system officials, and news outlets
- ◆ H2Oklahoma Water Festival, Great Plains State Park, EnviroScape, 174 4-6th graders and teachers
- ◆ OKC Water and Landscape Festival in Oklahoma City, EnviroScape, 30 people
- ◆ Pontotoc Technology Center Class Visit in Ada, 24 students, EnviroScape, Project WET, bug and fish collection at creek



25. Kim identifies live creek bugs with kids at Dripping Springs Boy Scout Camp.

Task 3. Groundwater Education and Screening Events for Western Oklahoma

Blue Thumb led four groundwater screenings this year as requested by conservation districts (CDs):

- ◆ Oklahoma County CD on 3/24/17, with 48 samples and 8 volunteer participants
- ◆ Harper County CD on 4/26/17, with 43 samples and 20 high school student participants
- ◆ North Caddo CD on 9/21/2017, with 49 samples and 5 volunteer participants
- ◆ Creek County CD on 9/26/17, with 40 samples and 9 volunteer participants

These are important opportunities for landowners to better understand the health of their drinking water and provide conservation districts information about the area's water supplies. If abnormal results are found, landowners are referred to the Oklahoma Department of Environmental Quality.



26. Oklahoma Conservation Commission staff and volunteers conduct a groundwater screening in Creek County.

Quality control is built into the groundwater screenings through intense training efforts and oversight by Blue Thumb staff during testing. Washing of testing equipment is done after every 10th sample for the Nitrate test to ensure buildup does not affect the results. Districts request screening from us, so the



amount of screenings done each year varies. Results for each of the groundwater screenings in 2017 are included in Appendix B.

Task 4. Provide Support to Oklahoma's Conservation Districts

The Blue Thumb program provides support to Conservation Districts primarily through participation in Natural Resource Days and other events organized by Conservation District staff, such as Earth Day events and outdoor classroom days. Blue Thumb staff prioritize these events and do everything possible to make sure that we are providing an educational program at these events, whether the program is led by a Blue Thumb staff person, another staff person from the Oklahoma Conservation Commission, or one of our Blue Thumb volunteers.

We provided educational programming at 17 Natural Resource Days during 2017. These events afforded us the chance to educate a combined total of over 1,900 students. This included the following Natural Resource Day events (some counties had more than one day):

- ◆ Garvin County, 3/30 and 11/2, 520 students total
- ◆ Dewey County, 4/25, 87 students
- ◆ Kingfisher County, 4/26-4/27, 220 students total
- ◆ Lincoln County, 4/28, 60 students
- ◆ Cotton County, 5/1, 88 students
- ◆ Okmulgee County, 4/25 and 5/2, 110 students (second date only)
- ◆ Caney Valley, 5/3-5/4
- ◆ Stephens County, 5/4, 240 students
- ◆ Murray County, 5/8, 110 students
- ◆ Haskell County, 5/10, 209 students
- ◆ Ottawa County, 5/15, 114 students
- ◆ Craig County, 9/26, 150 people
- ◆ Oklahoma County, 10/9, 10/11 and 10/18, 237 students total



27. Local students investigate the life in a wetland during a Natural Resource Day in Oklahoma County.

The Blue Thumb staff make every effort to also appear at Conservation District meetings throughout the year. In 2017, at the Oklahoma Association of Conservation Districts state meeting, Blue Thumb had an educational table set up and also led a workshop for conservation district staff. The workshop gave District employees from around the state a chance to learn about and participate in educational tools and activities available to them through Blue Thumb. At the conservation district area meetings, Blue Thumb staff were present to make important announcements to district staff members and distribute the Blue Thumb 2018 calendar to districts.



Blue Thumb Measures of Success

A. Continuation of at least 75% of existing Blue Thumb programs with active monitoring or other Blue Thumb events

Blue Thumb has met this measure of success. During 2017, monitoring took place in the following counties:

Beaver	Nowata
Canadian	Oklahoma
Cherokee	Okmulgee
Cleveland	Osage
Comanche	Ottawa
Custer	Payne
Haskell	Pontotoc
Hughes	Pushmataha
Johnston	Rogers
Latimer	Tulsa
LeFlore	Washington
Murray	
Muskogee	

Other Blue Thumb events, including educational programming and groundwater screenings occurred in the following additional counties:

Caddo	Harper
Carter	Mayes
Cotton	McClain
Creek	McCurtain
Delaware	Stephens
Garvin	

Monthly reports included in the appendix to this report provide further details regarding these events.



B. Friends of Blue Thumb

In 2017, Friends of Blue Thumb (formerly the Oklahoma Blue Thumb Association), continued to work in support of Blue Thumb's volunteers. Through a grant-awarding program, Friends of Blue Thumb (FBT) supports volunteer efforts including educational exhibits, supplies and advertising for creek cleanups, water quality education camps, printed materials for distribution, volunteer costs for continuing water quality education and conservation district education initiatives.



28. Supported by Friends of Blue Thumb, students from Oklahoma School of Innovation and Experiential Learning educate local students.

For example, Friends of Blue Thumb provided funding to Logan County Conservation District which was used to hold a youth speech, essay and poster contest. Funds were also given to Blue Thumb volunteers who are students at the Oklahoma School of Innovation and Experiential Learning. The OSIEL students used that funding to bring water education to Bixby North second grade classes.

C. Blue Thumb Data Reports

2017 was a banner year for volunteer written data reports as there were a total of 16 reports completed:

- ◆ Little River: SW 34th Street
- ◆ Crutcho Creek: I-40
- ◆ Wolf Creek: McMahan
- ◆ Feather Creek: Old Hwy 51
- ◆ Bishop Creek: Constitution
- ◆ Tar Creek: H Street Northeast
- ◆ Little Deep Creek: Weatherford
- ◆ Boomer Creek: S. Perkins Rd.
- ◆ Crutcho Creek: First Southern Baptist Church
- ◆ Sand Creek: Osage Hills
- ◆ Deer Creek: Meridian Ave.
- ◆ Spring Creek: I-35
- ◆ Crow Creek: Zink Park
- ◆ Fourmile Creek: Adams Park
- ◆ Stillwater Creek: Babcock park
- ◆ Pennington Creek: W Road Trail



29. Bishop Creek (top) and Pennington Creek (bottom) are just two of the 16 creeks that had data reports written about them in 2017.



The majority of these reports were from the Central Great Plains ecoregion with a couple from other ecoregions. All new data reports, as well as fish results from 2015 and 2016, have been added to our interactive map on our website. Preparation for 2018 reports has already begun; most of the data has been gathered by the QA Officer and there is a plan to have group volunteer meetings in Oklahoma City and Tulsa to speak with the majority of the groups that will be preparing data reports in 2018.

D. Volunteers will Make Blue Thumb Presentations – Two Annually

Blue Thumb volunteer Jason Arant is also the Director of the Oklahoma School of Innovation & Experiential Learning. His students assist him with monitoring Twin Hills Creek and are responsible for collecting and testing the water, then giving him their results. According to Arant, his students “were inspired by the work we do with Blue Thumb. Last year, these students decided to enter a national competition (eCYBERMISSION) sponsored by the US Army. They designed a floatation device that emitted UVC light capable of killing e-Coli in pond water.” Jason and his students presented their results at the 2017 Oklahoma Clean Lakes and Watersheds Association (OCLWA) annual conference.



30. Oklahoma School of Innovation and Experiential Learning students, and Blue Thumb volunteers, present at Oklahoma Clean Lakes and Watersheds Association’s conference.



31. Blue Thumb volunteer Jahna Hill makes a presentation at Oklahoma Clean Lakes and Watersheds Association’s conference.

At the same OCLWA conference, another Blue Thumb volunteer, Jahna Hill, gave a presentation titled *Addressing Water Quality Issues through a Watershed Association Approach: Friends of Town Branch Creek*. Along with being one of our superstar volunteers, Jahna has become Tahlequah’s Stormwater Manager and is the head of Friends of Town Branch Creek. Her presentation focused on the process by which that organization is fulfilling its mission to “educate citizens about water quality issues, preserve the biological integrity of the natural resource, and promote the aesthetic value of the creek,” while providing an “outlet for concerned citizens to express their concerns and opinions regarding issues they feel are important.”

E. Volunteers Using Data for Watershed Education

Along with informing her presentation at OCLWA, Jahna Hill has used her data as part of a number of Friends of Town Branch Creek activities. The organization held a booth at the Red



Fern Festival in Tahlequah, TahlequaH2O Celebration, and GRDA Indian Summer Festival on the Illinois River, all of which provided the opportunity to educate using collected data. Her monitoring data has also been utilized as part of the organization's new newsletter and their website has all E. coli and monthly monitoring data available at friendsoftownbranchcreek.weebly.com. Blue Thumb volunteer Kurtis Koll planned and organized an event similar to TahlequaH2O. For his Water Festival in Medicine Park, he used his data, along with activities such as fish printing, to educate event visitors.

Other volunteers across the state have used their monitoring data as part of educational programming or events. In Stillwater, volunteers Abu Mansaray, Josephus Borsuah and Keima Kamara borrowed one of our EnviroScape models and set up a table outside of Wal-Mart, where they were able to educate the store's customers. Volunteers frequently borrow our educational tools, such as EnviroScape or the Incredible Journey water cycle activity, to use in their own community or classrooms. Examples of this include:

- ◆ Cheryl Cheadle at Camp Loughridge throughout the year
- ◆ Elle Fowler in Jenks with her Jenks West Intermediate students on 2/17
- ◆ Cheryl Cheadle and Walt Cotner in Sapulpa at the Sapulpa Fishing Derby on 6/3
- ◆ Lucinda Shipley in Kingston with her 5-6th grade students on 10/17
- ◆ Jesse Dorsch in Tulsa with his Nathan Hale High School students on 10/17



32. Volunteer Jahna Hill and her organization, Friends of Town Branch, hold the first ever TahlequaH2O Celebration event in Tahlequah.



33. Blue Thumb volunteers educate Stillwater residents outside of the local Wal-Mart.

In Comanche County, volunteers Cynthia Williams, Mike Hawkins and George Farris educated at a local home and garden show, a Girl Scout day camp and at various educational events at area schools through their jobs with the city of Lawton. Volunteer Susan Henning assisted us this year by providing education at a Natural Resource Day in Caney Valley and other events in Tulsa. Some volunteers have even used their Blue Thumb experience to lead a creek experience, such as Brian Cross in Tulsa, who took his Tulsa Community College students to Spunky Creek to look for bugs. There have

also been events where volunteers joined Blue Thumb staff to assist in education, such as ScienceFest in Oklahoma City, where volunteers Jim Leach and Ben Pollard helped us out with the EnviroScape and stream trailer, respectively.



There are also a number of organizations formed or headed by Blue Thumb volunteers doing excellent work in various parts of the state. In Tulsa, Crow Creek Community has been very active, holding cleanup events and work days. Blue Thumb volunteers, like Graham Branin, use their monitoring experience to inform the group's educational opportunities. In Norman, a number of volunteers are doing similar work and have the chance to use Blue Thumb monitoring experiences as part of their community involvement and education. Led by volunteer Karen Chapman, this group has had a busy year, including acting as a partner in the Bishop Creek Restoration Project, presenting information about Blue Thumb and Bishop Creek at various community events, holding creek cleanup events and providing updates and information about the creek through social media and other methods. Blue Thumb volunteers in the Tishomingo area also work together as the Friends of Pennington Creek, a group which holds a number of events including cleanup events and an annual regatta on Pennington Creek.



34. Crow Creek Community members hold a successful cleanup event in Tulsa.

Lessons Learned/Obstacles Overcome

One of the biggest and most important lessons learned this year is that Greek philosopher Heraclitus was right when he said that change is the only constant in life. From the first week of 2017, when Rob arrived to start his new role as Blue Thumb Educator, right up until the very end of the year, change has been a seemingly constant presence. It has also been a frequent obstacle to overcome. Just a few of those changes-as-obstacles included most of the team moving into a new office building together, reassigning and reshuffling areas of the state so that Rob could take over certain places, and dealing with the departure of our primary communications and outreach person when Jeri left. There was also an undercurrent of change running throughout the year as we reevaluated the Blue Thumb program as a whole. Discussions occurred on a regular basis as we tried to figure out where Blue Thumb is headed, what it's going to look like, what it should focus on, what aspects to keep and what parts to discontinue. All of this taught us lessons in how to deal with change, how to remain flexible and adaptable, how to be open to planned changes as they happen and how to roll with the unexpected ones when they occur.

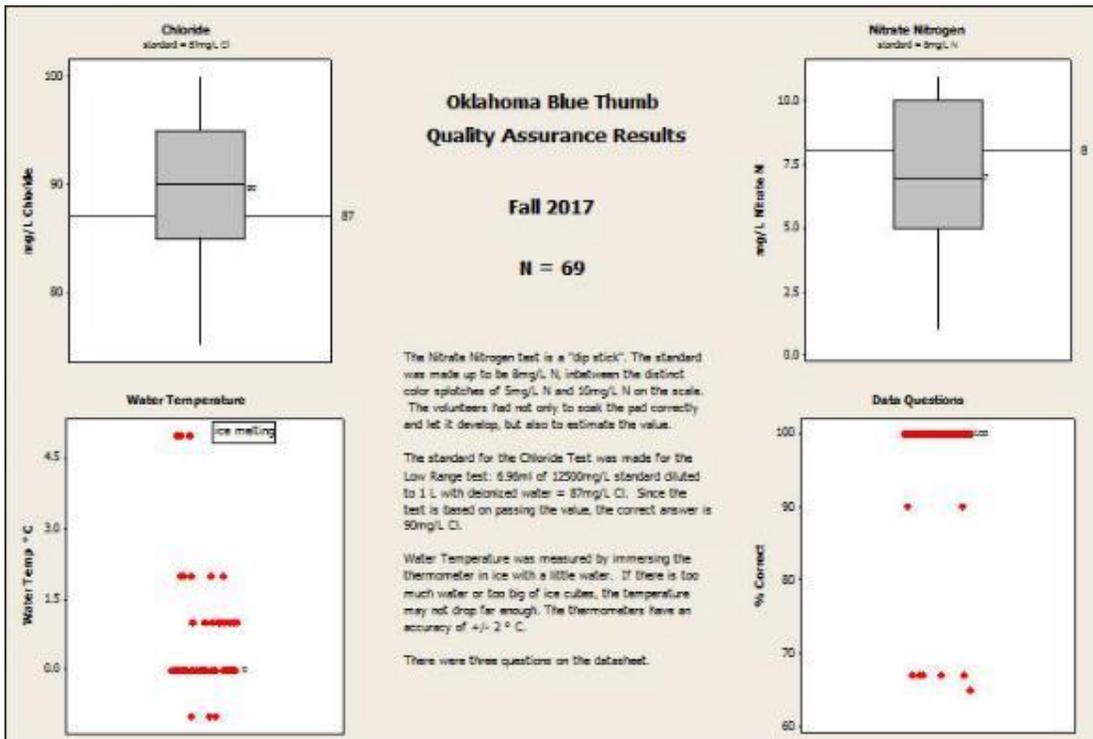
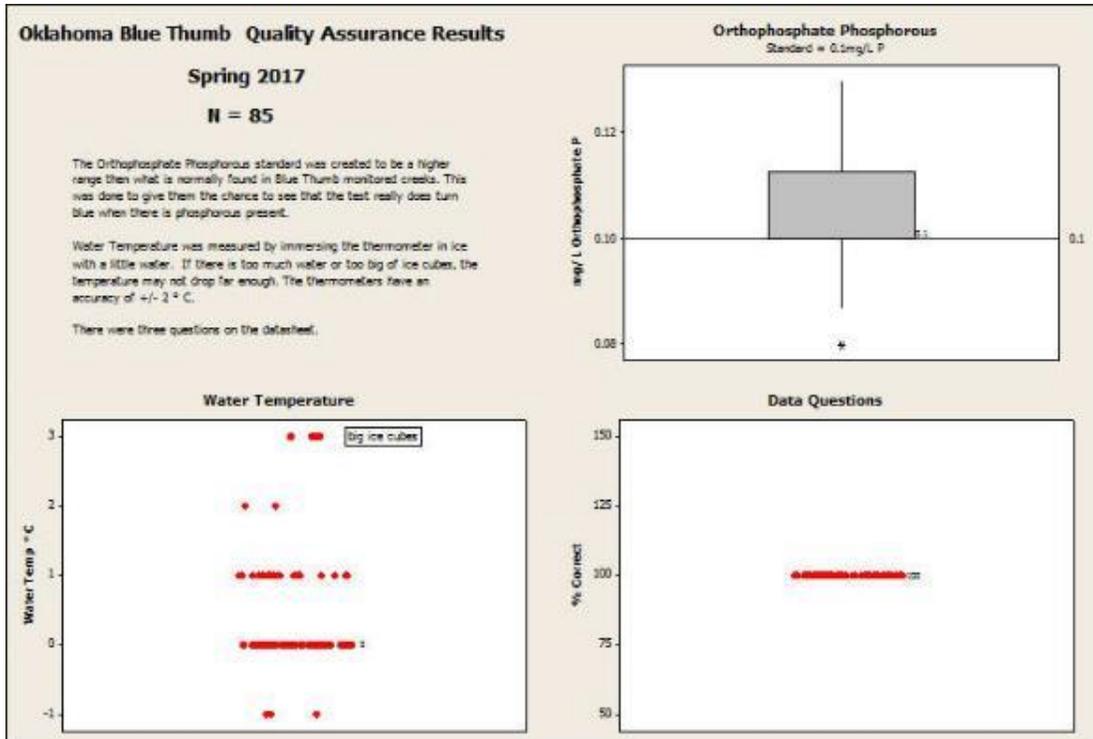
Along with the lessons related to change, there have also been lessons of communication, which is absolutely necessary as changes are being made. Challenges in the best practices of communication, how and when to communicate and how to keep everyone involved in the discussion were overcome and continue to be learning opportunities. Those opportunities and lessons will be even more important moving forward, as we continue to embrace more change and welcome in a new team member in the near future.



There have also been lessons learned regarding specific aspects of Blue Thumb, some of which will be changing soon. For example, we have continually evaluated our volunteer trainings and learned over time what works and what does not work. Those lessons are now being put into practice as we change the format for our trainings starting in early 2018. We have also learned more about ourselves as a team and as individuals, specifically concerning what part of the job we each enjoy the most and want to focus on the most. These lessons, too, will be put to use soon as we reconfigure the roles we each play, allowing each of us to use our talents, skills and passions to the fullest. Hopefully, as we learn these lessons and apply them to the day-to-day operations of Blue Thumb, it will make the program stronger than ever.

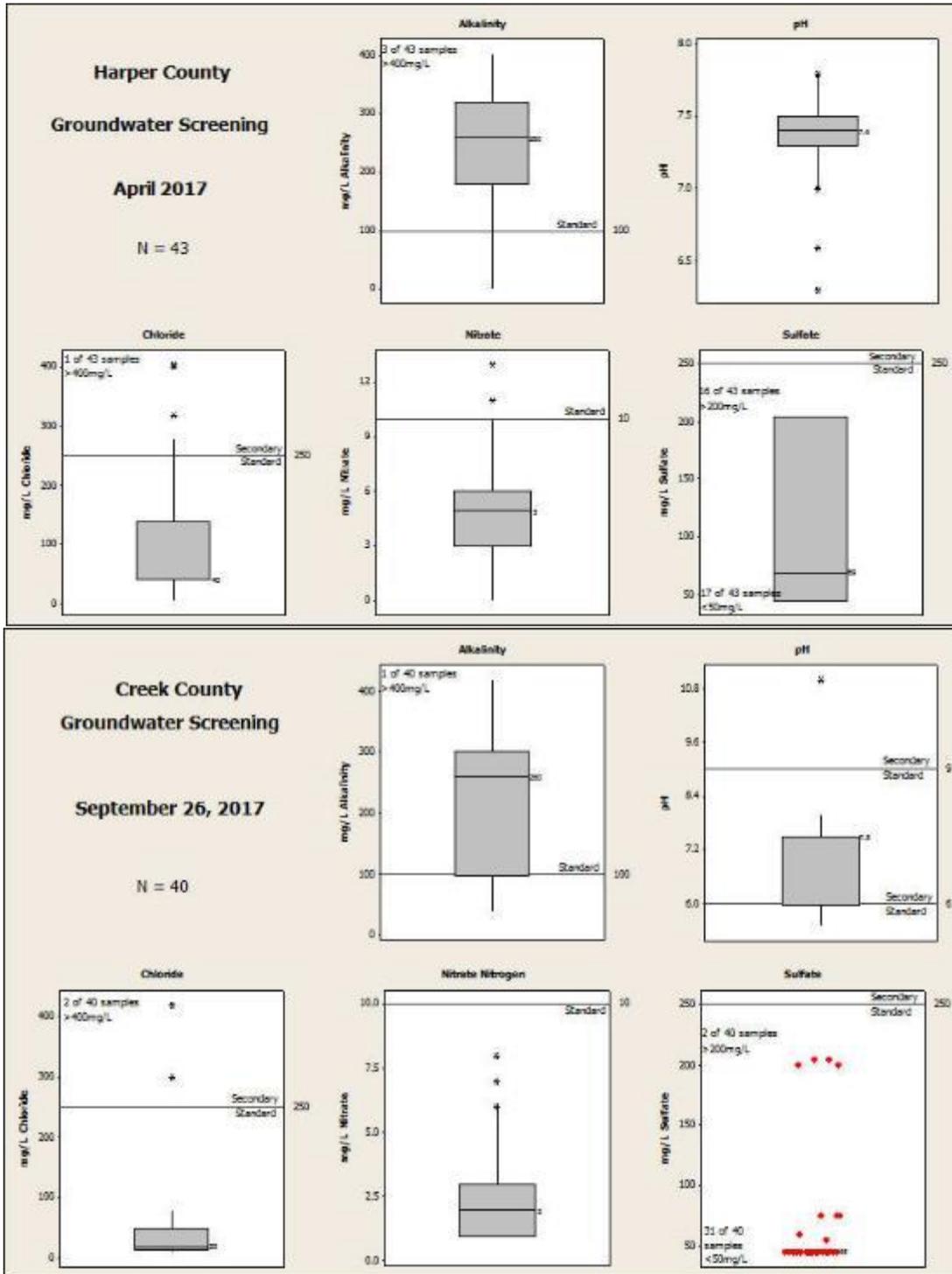


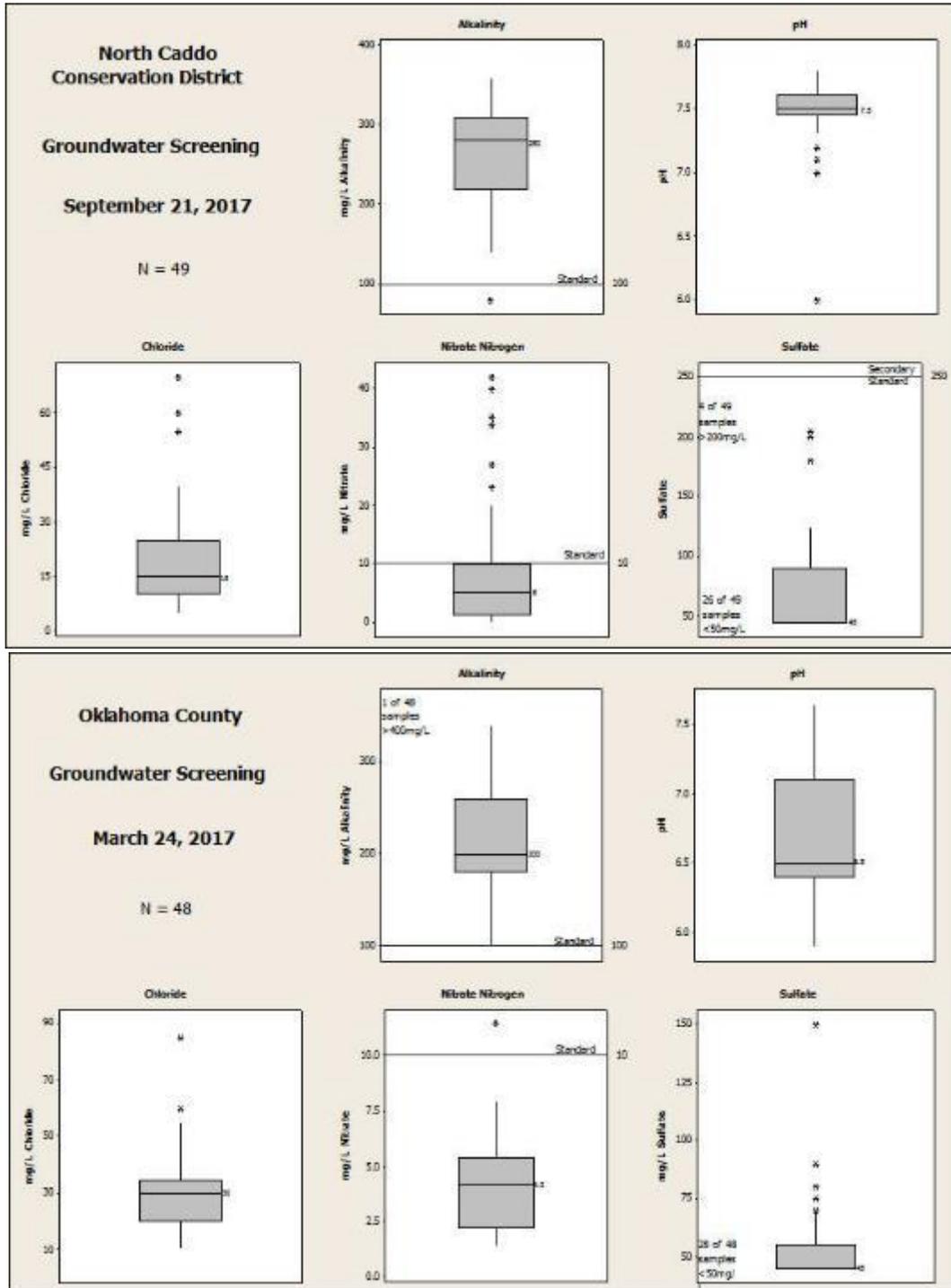
Appendix A: Quality Assurance





Appendix B: Groundwater Screening Results







Appendix C: Monthly Reports

Blue Thumb January Report (December Monthly Results ~ 2016)

Blue Thumb ~ Water Quality Education Program:

Water Quality Division ~ Oklahoma Conservation Commission

Report for: Rob Barossi; Jeri Fleming; Candice Miller; Kim Shaw; Jean Lemmon

Completed Blue Thumb Annual Report

Number of people reached in education efforts (December): 50 total

December activities

- 12/1: Quality Assurance meeting, Bug Picking, Wilburton (Candice) 3 volunteers
- 12/2: New Volunteer site visit, Tulsa (Candice) 2 volunteers
- 12/3: Friends of Blue Thumb meeting, OKC (Jeri) 6 volunteers
- 12/5: Bug Picking, QA, Ardmore (Candice) 12 students, 1 teacher
- 12/6: New volunteer site visits, Tulsa (Candice) 2 volunteers
- 12/6: Quality Assurance meeting, Stillwater (Jeri) 8 volunteers
- 12/7: Oklahoma Environmental Education Committee, OKC (Candice)
- 12/8: Full Staff Meeting, Lake Arcadia
- 12/8: Quality Assurance meeting, Bug Picking, Liberal, KS (Kim) students, 1 teacher
- 12/9: Quality Assurance meeting, Bug Picking, Tulsa (Candice) 7 students, 1 teacher
- 12/9: New volunteer site visit, Tulsa (Candice) 2 volunteers
- 12/12: Quality Assurance meeting, Bug Picking, Hugo (Candice) 3 volunteers
- 12/14: Quality Assurance meeting, Bug Picking, Okmulgee (Candice) 1 volunteer
- 12/19: New volunteer site visit, Headquarters Creek (Jeri) 1 volunteer

January activities

- 1/9: Rob Barossi started work!
- 1/10: Blue Thumb staff meeting
- 1/10: SWOSU mini-academy, Weatherford (Kim)
- 1/11: ECU Water Resources Association, Ada (Candice)
- 1/12: Friends of Pennington Creek, Tishomingo (Candice)
- 1/12: Tulsa Young Professionals Roundtable, Tulsa (Jean)
- 1/13-14: Enid Farm Show (Rob)
- 1/19-20: Project WET Facilitator Training, OKC, (All BT Staff)
- 1/20: Crooked Creek Cleanup (Jeri & Kim)
- 1/21: Friends of Blue Thumb meeting, OKC, (Jeri)
- 1/25: Crutcho Creek Bugs (Kim and Rob)
- 1/25-26: WQ Staff Retreat, Medicine Park, (All BT Staff)
- 1/26: Wolf Creek Bugs (Kim and Rob)
- 1/27-28: BT Volunteer Training, OKC
- 1/30: Lawton bug collections and QA, (Kim)



- 1/31: Bristow work day to prepare for move

February activities (Scheduled events)

- 2/1: OKC/Norman area bug collections (Kim)
- 2/3: EE Expo
- 2/3: Crow Creek wild flower collection, Tulsa (Jean)
- 2/4: Biodiversity Forum, Arcadia
- 2/4: Crow Creek wild flower planting, Tulsa (Jean)
- 2/4: Sharp Creek bugs/QA, Beaver (Kim)
- 2/6: Little River bugs (Kim)
- 2/10: Merkle Creek bugs (Kim)
- 2/13: Mustang Creek bugs (Kim)
- 2/14: Soldier Creek bugs and QA (Kim)
- 2/15: Shawnee Middle School (Kim and Rob)
- 2/17-18: BT Volunteer Training, Osage Nation, Pawhuska
- 2/21: Guest Lecture, EOSC, Wilburton (Candice)
- 2/21: Little Deep Creek bugs, Weatherford (Kim)
- 2/22: Chisholm Creek bugs, OKC (Kim)
- 2/26-28: OACD

Additional work taking place:

- Recruiting for new volunteer training in Oklahoma City end of January
- Contacts with Volunteers
- Organizational efforts on computer and within office
- Gathering data to create data packets for volunteers to write reports
- Preparation for office move
- Looking critically at publications for revision and updating addresses and personnel



Blue Thumb February Report (January Monthly Results)

Blue Thumb ~ Water Quality Education Program:

Water Quality Division ~ Oklahoma Conservation Commission

Report for: Rob Barossi; Jeri Fleming; Candice Miller; Kim Shaw; Jean Lemmon

Number of people reached in education efforts (January): 176 total

January activities

- 1/9: Rob Barossi started work!
- 1/10: Blue Thumb staff meeting
- 1/10: SWOSU mini-academy, Weatherford (Kim) 5 students, 1 professor
- 1/11: ECU Water Resources Association, Ada (Candice)
- 1/12: Friends of Pennington Creek, Tishomingo (Candice) 6 adults
- 1/12: Tulsa Young Professionals Roundtable, Tulsa (Jean) 30 attendees
- 1/13-14: Enid Farm Show (Rob) 60 people
- 1/19-20: Project WET Facilitator Training, OKC, (All BT Staff) 12 people
- 1/20: Crooked Creek Cleanup (Jeri & Kim) 8 adults 15 students
- 1/21: Friends of Blue Thumb meeting, OKC, (Jeri) 8 volunteers
- 1/25: Crutcho Creek Bugs (Kim and Rob) 3 volunteers
- 1/25-26: WQ Staff Retreat, Medicine Park, (All BT Staff)
- 1/26: Wolf Creek Bugs (Kim and Rob) 1 volunteer
- 1/27-28: BT Volunteer Training, OKC 21 attendees
- 1/30: Lawton bug collections and QA, (Kim) 6 volunteers
- 1/31: Bristow work day to prepare for move (All BT Staff)

February activities

- 2/1: OKC/Norman area bug collections (Kim and Rob)
- 2/1: Cashion School (Jeri and Rob)
- 2/2: OKC QA (Kim and Rob)
- 2/3: EE Expo (Candice and Rob)
- 2/3: Crow Creek wild flower collection, Tulsa (Jean)
- 2/4: Biodiversity Forum, Arcadia (Candice and Rob)
- 2/4: Crow Creek wild flower planting, Tulsa (Jean)
- 2/4: Sharp Creek bugs/QA, Beaver (Kim)
- 2/6: Deer Creek, Lightning Creek & Little River bugs (Kim & Rob)
- 2/7: Tahlequah Town Branch meeting (Jeri and Rob)
- 2/8-9: Tahlequah area bugs/QA (Jeri and Rob)
- 2/8: Initiate site for Chesapeake volunteers (Kim)
- 2/9-11: Tulsa area bugs/QA (Candice and Rob)
- 2/9: Norman bugs/QA (Kim)
- 2/13: Tulsa area bugs/QA (Candice and Rob)
- 2/14: Soldier Creek bugs and QA (Kim and Rob)
- 2/14: Norman area site selection (Jeri)



- 2/15: Shawnee Middle School (Kim and Rob)
- 2/15: H2Oklahoma meeting (Candice)
- 2/16: Okmulgee/Muscogee area bugs/QA (Candice)
- 2/16: Guest Lecturer at ECU (Jeri and Rob)
- 2/17-18: BT Volunteer Training, Osage Nation, Pawhuska
- 2/19: Central Tech Open House, Drumright (Candice)
- 2/21: Guest Lecture, EOSC, Wilburton (Candice)
- 2/21: Little Deep Creek bugs, Weatherford (Kim)
- 2/22: Chisholm Creek bugs, OKC (Kim)
- 2/22: Kinta bugs/QA (Candice)
- 2/23: OKC area bugs/QA (Kim)
- 2/23: Oklahoma Invasive Plant Council board meeting, Tulsa (Candice)
- 2/25: OKC area bugs/QA (Kim)
- 2/26-28: OACD (including education workshop)
- 2/27: OKC area bugs/QA (Kim)

March activities (Scheduled events)

- 3/1: Summer Camp planning meeting, Tulsa (Jeri and Rob)
- 3/1: OKC area bugs/QA (Kim)
- 3/2: Bugs/QA and Friends of Pennington Creek meeting, Tishomingo (Candice)
- 3/3-4: Beaver BT Training (Jeri and Rob)
- 3/3: OKC area bugs/QA (Kim)
- 3/4: BT Data Workshop, OKC (Kim and Jean)
- 3/4: Pennington Creek Cleanup, Tishomingo (Candice)
- 3/6: Test kit pick-up, McCurtain County (Candice)
- 3/7: Bugs/QA (Kim)
- 3/7: Bugs/QA, SE OK, (Candice)
- 3/7: Stream Trailer to Locust Elementary 7th Graders (Jeri/Rob)
- 3/7: Friends of Town Branch Creek meeting, Tahlequah, (Jeri/Rob)
- 3/8: Oklahoma Environmental Education Meeting (Candice)
- 3/13: Stream Trainer/Rainfall Simulator, Noble Museum of Natural History, Norman (Jeri)
- 3/15: Grove area Bugs/QA (Candice)
- 3/21: Water Appreciation Day at the Capitol (BT Staff)
- 3/24-25: BT Training, Ada
- 3/25: Crow Creek work day, Tulsa (Jean)
- 3/28: Feather Creek data meeting, Stillwater (Kim)

Additional work taking place:

- Recruiting for new volunteer training in Ada in March
- Contacts with Volunteers
- Organizational efforts on computer and within office
- Gathering data to create data packets for volunteers to write reports
- Preparation for office move



Blue Thumb March Report

Blue Thumb ~ Water Quality Education Program:

Water Quality Division ~ Oklahoma Conservation Commission

Report for: Rob Barossi; Jeri Fleming; Candice Miller; Kim Shaw; Jean Lemmon

Compiled activity summary for February: 640 total people reached

Ongoing activities:

- Recruiting for new volunteer training in Ada in March
- Contacts with Volunteers
- Organizational efforts on computer and within office
- Gathering data to create data packets for volunteers to write reports
- Looking critically at publications for revision and updating addresses and personnel

March activities

- 3/1: Summer Camp planning meeting, Tulsa
- 3/1: Spring Creek, OKC bugs/QA
- 3/2: Deer Creek data discussion with volunteer
- 3/2: Bugs/QA and Friends of Pennington Creek meeting, Tishomingo
- 3/3: Bugs/QA, Ada and Sulphur
- 3/3-4: Beaver BT Training
- 3/3: OKC/Norman area bugs/QA
- 3/4: Blue Thumb Data Workshop, OKC
- 3/4: Pennington Creek Cleanup, Tishomingo
- 3/6: Test kit pick-up, McCurtain County
- 3/6: Bugs/QA, OKC/Norman area
- 3/7: Bugs/QA, Dustin/Weatherford
- 3/7: Bugs/QA, Hugo
- 3/7: Stream Trailer to Locust Elementary 7th Graders
- 3/7: Friends of Town Branch Creek meeting, Tahlequah
- 3/8: Oklahoma Environmental Education Meeting
- 3/8: Bugs/QA, Norman
- 3/8: Bugs/QA, Stillwater
- 3/9: Bugs/QA, Wetumka/OKC/EI Reno
- 3/9: New site location, Nowata
- 3/10: Bugs/QA, Stillwater
- 3/10: Bugs/QA, Hodgen
- 3/13: Stream Trailer/Rainfall Simulator, Noble Museum of Natural History, Norman
- 3/13: Bugs/QA, OKC
- 3/15: Bugs/QA, Grove
- 3/17-18: Friends of Blue Thumb board retreat, Idabel
- 3/21: Water Appreciation Day at the Capitol
- 3/22: Bugs/QA, Kinta



- 3/24: OKC Groundwater Screening
- 3/24-25: Blue Thumb Training, Ada
- 3/25: Channel 9 morning show
- 3/25: Stream Trailer, Lake McMurry, Stillwater
- 3/27: Crutcho Creek data meeting, OKC
- 3/28: Feather Creek data meeting, Stillwater
- 3/29: Project WET workshop, OBU, Shawnee
- 3/30: Pauls Valley Natural Resource Day

April activities (scheduled public events)

- 4/5-6: Oklahoma Clean Lakes and Watersheds Association meeting, Stillwater
- 4/8: "April Showers" soil health presentation, Tulsa
- 4/19: Conservation Fair, Pawnee
- 4/21: Tulsa Public Schools Earth Day Celebration, Tulsa
- 4/22: Earth Day Celebration, Ardmore
- 4/22: Pennington Creek Regatta, Tishomingo
- 4/23: Earth Day, Norman
- 4/25: Dewey County Natural Resource Day
- 4/26: Harper County Groundwater Screening
- 4/26-27: Kingfisher County Natural Resource Day
- 4/28: Lincoln County Natural Resource Day
- 4/29: Martin Park EarthFest, OKC



Blue Thumb April Report

Blue Thumb ~ Water Quality Education Program:

Water Quality Division ~ Oklahoma Conservation Commission

Report for: Rob Barossi; Jeri Fleming; Candice Miller; Kim Shaw; Jean Lemmon

Compiled activity summary for March: 443+ total people reached

Ongoing activities:

- Contacts with Volunteers (Quality Assurance and Bug Picking)
- Looking critically at publications for revision and updating addresses and personnel
- 2018 Blue Thumb Calendar preparation

March activities

- 3/1: Summer Camp planning meeting, Tulsa
- 3/1: Spring Creek, OKC bugs/QA (2)
- 3/2: Deer Creek data discussion with volunteer (1)
- 3/2: Bugs/QA and Friends of Pennington Creek meeting, Tishomingo (1+6 +News on 10 Interview Sherman/Denison)
- 3/3: Bugs/QA, Ada and Sulphur (2+2)
- 3/3-4: Beaver BT Training (14)
- 3/3: OKC/Norman area bugs/QA (6)
- 3/4: Blue Thumb Data Workshop, OKC (15)
- 3/4: Pennington Creek Cleanup, Tishomingo (20)
- 3/6: Test kit pick-up, McCurtain County
- 3/6: Bugs/QA, OKC/Norman area (9)
- 3/7: Bugs/QA, Dustin/Weatherford (7)
- 3/7: Bugs/QA, Hugo (1)
- 3/7: Stream Trailer to Locust Elementary 7th Graders (141)
- 3/7: Friends of Town Branch Creek meeting, Tahlequah
- 3/8: Oklahoma Environmental Education Meeting (7)
- 3/8: Bugs/QA, Norman (4)
- 3/8: Bugs/QA, Stillwater
- 3/9: Bugs/QA, Wetumka/OKC/EI Reno (11)
- 3/9: New site location, Nowata (2)
- 3/10: Bugs/QA, Stillwater (3)
- 3/13: Stream Trailer/Rainfall Simulator, Noble Museum of Natural History, Norman
- 3/13: Bugs/QA, OKC (1)
- 3/14: Haikey Creek, Tulsa (1)
- 3/15: Bugs/QA, Grove (1)
- 3/17-18: Friends of Blue Thumb board retreat, Idabel
- 3/20: Tar Creek Data Report (1)
- 3/21: Water Appreciation Day at the Capitol
- 3/22: Bugs/QA, Kinta (31)



- 3/24: OKC Groundwater Screening (48 Samples; 8 people working)
- 3/24-25: Blue Thumb Training, Ada (10)
- 3/25: Channel 9 morning show
- 3/25: Stream Trailer, Lake McMurry, Stillwater
- 3/27: Crutcho Creek data meeting, OKC (1)
- 3/28: Feather Creek data meeting, Stillwater (3)
- 3/29: Project WET workshop, OBU, Shawnee (12)
- 3/30: Pauls Valley Natural Resource Day (120)

April activities (scheduled public events)

- 4/5-6: Oklahoma Clean Lakes and Watersheds Association meeting, Stillwater
- 4/6: Volunteer Gathering, Stillwater
- 4/8: "April Showers" soil health presentation, Tulsa
- 4/13: OU Fair, Norman
- 4/15: Master Gardeners, Norman
- 4/19: Conservation Fair, Pawnee
- 4/20: Water Festival, Ada
- 4/21: Cherokee Nation Earthfest, Tahlequah
- 4/21: Tulsa Public Schools Earth Day Celebration, Tulsa
- 4/22: Earth Day Celebration, Ardmore
- 4/22: Pennington Creek Regatta, Tishomingo
- 4/22: Earth Day, Tulsa
- 4/23: Earth Day, Norman
- 4/25: Dewey County Natural Resource Day
- 4/25: Okmulgee County Natural Resource Day
- 4/26: Harper County Groundwater Screening
- 4/26-27: Kingfisher County Natural Resource Day
- 4/28: Lincoln County Natural Resource Day
- 4/29: Martin Park EarthFest, OKC

May activities (scheduled public events)

- 5/2: Okmulgee County Natural Resource Day
- 5/3-4: Caney Valley Natural Resource Day
- 5/3: Pawnee Outdoor Classroom
- 5/4: Arbuckle Simpson Nature Festival, Tishomingo
- 5/4: Science Fest
- 5/6: Dirty Butter Creek Clean-up, Tulsa
- 5/9: Kerr Lab Citizen Science Talk, Ada
- 5/13: Illinois River Kick-off, Tahlequah
- 5/17-19: Citizen Science Conference, Minneapolis/St. Paul
- 5/23: Brownfields Workshop with DEQ
- 5/25: Water Camp, Sulphur
- 5/31: Native Plant Conference, Stillwater



Blue Thumb May Report

Blue Thumb – Water Quality Education Program:

Water Quality Division – Oklahoma Conservation Commission
Report for Rob Barossi, Jeri Fleming, Candice Miller, Kim Shaw, Jean Lemmon

Compiled activity summary for April: 5081+ total people reached

Ongoing activities:

- Contacts with Volunteers (Quality Assurance and Bug Picking)
- 2018 Blue Thumb Calendar preparation

May activities (scheduled public events)

- 5/1: Native plant transplanting, Crow Creek Meadow 5
- 5/1: Cotton County Natural Resource Day
- 5/2: Okmulgee County Natural Resource Day 110
- 5/3-4: Caney Valley Natural Resource Day
- 5/3: Pawnee Outdoor Classroom
- 5/4: Arbuckle Simpson Nature Festival, Tishomingo 200
- 5/4: Science Fest, Oklahoma City 3000
- 5/4: Stephens County Natural Resource Day 240 4th graders
- 5/6: Dirty Butter Creek Clean-up, Tulsa 100
- 5/8: Murray County Natural Resource Day 118
- 5/9: Kerr Lab Citizen Science Talk, Ada
- 5/10: Haskell County Natural Resource Day 209
- 5/15: Ottawa County Natural Resource Day 114 4th graders
- 5/15: Oklahoma Green Schools Summit 30 students, 10 teachers
- 5/17-19: Citizen Science Conference, Minneapolis/St. Paul
- 5/18: 5th Grade Water Education Day, Poteau 160 students, 2 adults
- 5/20: National Wild Turkey Foundation JAKES Outdoor Event, (cancelled RAIN)
- 5/23: Brownfields Workshop with DEQ
- 5/25: Water Camp, Sulphur 15 campers
- 5/31: Native Plant Conference, Stillwater

June activities (scheduled public events)

- 6/5: Nature Camp, Stillwater
- 6/6: Teacher Education, Broken Bow
- 6/7: Full Staff Meeting, Pontotoc Ridge Preserve
- 6/8: Oklahoma Science Teachers Association, Rose State
- 6/9: Natural History Museum, Norman
- 6/9: Eastern Shawnee Fishing Derby, Wyandotte



- 6/12: Nature Camp, Stillwater
- 6/13-15: Educator Workshop, Tahlequah
- 6/16: Fit-N-Fun Camp, Tishomingo
- 6/24: 4-H Volunteer Conference, Stillwater
- 6/27-29: Blue Thumb Day Camp, Tahlequah



Blue Thumb June Report

Blue Thumb Water Quality Education Program

Water Quality Division, Oklahoma Conservation Commission

Report for Rob Barossi, Jeri Fleming, Candice Miller, Kim Shaw, Jean Lemmon

Compiled activity summary for May: 4643 total people reached

Ongoing activities:

- Contacts with Volunteers (Quality Assurance, Bug Picking, fish and bug collections)
- 2018 Blue Thumb Calendar preparation

June activities (scheduled public events)

- 6/1: CPR/First Aid training (staff)
- 6/1: Dripping Springs Boy Scout Camp (55 boys, adult leaders)
- 6/5: Nature Camp, Stillwater (40 youth, 10 adults)
- 6/6: Teacher Education, Broken Bow (12 teachers from across the state)
- 6/6: Friends of Tahlequah Town Branch Meeting (7 adults)
- 6/7: Full Staff Meeting, Pontotoc Ridge Preserve
- 6/8: Oklahoma Science Teachers Association, Rose State (40 teachers)
- 6/8: "Stream Sleuths Camp", Sam Noble Natural History Museum, Norman (6 students)
- 6/8: Summer School Classes, Poteau (170 students)
- 6/9: Natural History Museum, Norman
- 6/9: Eastern Shawnee Fishing Derby, Wyandotte (40 students)
- 6/12: Sierra Club Nature Camp, Stillwater (50 students, 10 adults)
- 6/14: Bridgestone Intermediate Center 4H Camp (10 students, 3 adults)
- 6/16: Fit-N-Fun Camp, Tishomingo (32 students)
- 6/19: Sam Noble Museum, Norman (6 students)
- 6/19: Fish collection, Muscogee (5 volunteers)
- 6/24: 4-H Volunteer Conference, Stillwater
- 6/27-29: Blue Thumb Day Camp, Tahlequah

July activities (scheduled public events)

- 7/13: Friends of Blue Thumb Meeting
- 7/13: Library presentation, Purcell (12 people)
- 7/18: SWOSU Tech Trek, Weatherford
- 7/20-21: Blue Thumb Summer Camp, Grand Lake
- 7/24-25: Blue Thumb Training, Idabel



- 7/26: Project WET workshop, Idabel
- 7/26-28: Blue Thumb Teacher Workshop, Grand Lake
- 7/31-8/2: Fish collections, Tahlequah

August activities (scheduled public events)

- 8/1-8/2: Fish collections, Tahlequah
- 8/2: Stream Experience, Carl Albert State College, Poteau
- 8/3: Groundwater screening, Creek County Conservation District, Bristow
- 8/3: Norman home schoolers Back to School Night
- 8/4: Project WET workshop, Tishomingo
- 8/7-10: Fish collections, Tahlequah
- 8/14-17: Institute for Tribal Environmental Professionals (ITEP) demonstration, Pawhuska
- 8/16-17: Fish collections, Lawton
- 8/19: Water Festival, Tahlequah
- 8/22: Fish collection, Sulphur
- 8/23: SWOSU mini-academy, Weatherford

Upcoming events

- 9/1: Project WET workshop, Grove
- 9/8: Lost Creek Water Festival, Wyandotte
- 9/8-9: Blue Thumb Training, Stillwater
- 9/10: Project WET workshop, Stillwater
- 9/12-14: EPA Quality Assurance Training, OKC for RB
- 9/16: Crow Creek Community Cleanup, Tulsa
- 9/16: Water Festival, Medicine Park
- 9/21: Groundwater screening, North Caddo Conservation District, Hinton
- 9/23: Monarchs on the Mountain 2017, Tulsa
- 9/29-30: Blue Thumb Training, Tahlequah
- 10/1: Project WET workshop, Tahlequah
- 10/2-6: National Project WET Conference, Michigan
- 10/12: H2Oklahoma, Great Plains State Park
- 10/27-29: Project WET/WILD/Learning Tree Tri-State Conference, Quapaw
- 11/3-4: Blue Thumb Training, Broken Arrow



Blue Thumb July Report

Blue Thumb Water Quality Education Program

Water Quality Division, Oklahoma Conservation Commission

Report for Rob Barossi, Jeri Fleming, Candice Miller, Kim Shaw, Jean Lemmon

Compiled activity summary for June: 500 total people reached

Ongoing activities:

- Contacts with Volunteers (Quality Assurance and fish and bug collections)
- 2018 Blue Thumb Calendar preparation
- Updated Material Safety Data Sheets (MSDS) for chemicals used in test kits

July activities (scheduled public events)

- 7/13: Friends of Blue Thumb Meeting
- 7/13: Library presentation, Purcell
- 7/16: SWOSU Tech Trek, Weatherford
- 7/20-21: Blue Thumb Summer Camp, Grand Lake
- 7/23-24: Blue Thumb Training, Idabel
- 7/26: Project WET workshop, Idabel
- 7/26-28: Blue Thumb Teacher Workshop, Grand Lake
- 7/31-8/2: Fish collections, Tahlequah

August activities (scheduled public events)

- 8/1-8/2: Fish collections, Tahlequah
- 8/2 Stream Experience, Carl Albert State College, Poteau
- 8/3: Groundwater screening, Creek County Conservation District, Bristow
- 8/3: Norman home schoolers Back to School Night
- 8/4: Project WET workshop, Tishomingo
- 8/7-10: Fish collections, Tahlequah
- 8/14-17: Institute for Tribal Environmental Professionals (ITEP) demonstration, Pawhuska
- 8/16-17: Fish collections, Lawton
- 8/19: Water Festival, Tahlequah
- 8/22: Fish collection, Sulphur
- 8/23: SWOSU mini-academy, Weatherford

Upcoming events

- 9/1: Project WET workshop, Grove
- 9/8: Lost Creek Water Festival, Wyandotte



- 9/8-9: Blue Thumb Training, Stillwater
- 9/10: Project WET workshop, Stillwater
- 9/16: Crow Creek Community Cleanup, Tulsa
- 9/16: Water Festival, Medicine Park
- 9/21: Groundwater screening, North Caddo Conservation District, Hinton
- 9/23: Monarchs on the Mountain 2017, Tulsa
- 9/29-30: Blue Thumb Training, Tahlequah
- 10/1: Project WET workshop, Tahlequah
- 10/2-6: National Project WET Conference, Michigan
- 10/12: H2Oklahoma, Great Plains State Park
- 10/27-29: Project WET/WILD/Learning Tree Tri-State Conference, Quapaw
- 11/3-4: Blue Thumb Training, Broken Arrow



Blue Thumb August Report

Blue Thumb Water Quality Education Program

Water Quality Division, Oklahoma Conservation Commission

Report for Rob Barossi, Jeri Fleming, Candice Miller, Kim Shaw, Jean Lemmon

Compiled activity summary for July: 150 total people reached

Ongoing activities:

- Contacts with Volunteers (Quality Assurance and fish and bug collections)
- 2018 Blue Thumb Calendar preparation

August activities (scheduled public events)

- 8/1-8/2: Fish collections, Tahlequah
- 8/2 Stream Experience, Carl Albert State College, Poteau
- 8/3: Norman home schoolers Back to School Night
- 8/4: Project WET workshop, Tishomingo
- 8/7-10: Fish collections, Tahlequah
- 8/14-17: Institute for Tribal Environmental Professionals (ITEP) demonstration, Pawhuska
- 8/19: Water Festival, Tahlequah
- 8/22: Fish collection, Sulphur
- 8/23: SWOSU mini-academy, Weatherford

September activities (scheduled public events)

- 9/1: Project WET workshop, Grove
- 9/8: Lost Creek Water Festival, Wyandotte
- 9/8-9: Blue Thumb Training, Stillwater
- 9/10: Project WET workshop, Stillwater
- 9/12-14: EPA QAPP Training, OKC
- 9/16: Crow Creek Community Cleanup, Tulsa
- 9/16: Water Festival, Medicine Park
- 9/18-19: Blue Thumb Training, Ada
- 9/21: Groundwater screening, North Caddo Conservation District, Hinton
- 9/23: Monarchs on the Mountain 2017, Tulsa
- 9/26: Groundwater screening, Creek County Conservation District, Bristow
- 9/29-30: Blue Thumb Training, Tahlequah

Upcoming events

- 10/1: Project WET workshop, Tahlequah



- 10/2-6: National Project WET Conference, Michigan
- 10/12: H2Oklahoma, Great Plains State Park
- 10/27-29: Project WET/WILD/Learning Tree Tri-State Conference, Quapaw
- 11/3-4: Blue Thumb Training, Broken Arrow



Blue Thumb September Report

Blue Thumb Water Quality Education Program

Water Quality Division, Oklahoma Conservation Commission

Report for Rob Barossi, Jeri Fleming, Candice Miller, Kim Shaw, Jean Lemmon

Compiled activity summary for August: 243 total people reached

Ongoing activities:

- Contacts with Volunteers (Quality Assurance and fish and bug collections)
- 3 Blue Thumb trainings

September activities (scheduled public events)

- 9/1: Project WET workshop, Grove 14
- 9/8: Lost Creek Water Festival, Wyandotte
- 9/8-9: Blue Thumb Training, Stillwater 21
- 9/10: Project WET workshop, Stillwater 4
- 9/12: Creek Walk, Midwest City 52
- 9/12-14: EPA QAPP Training, OKC
- 9/16: Crow Creek Community Cleanup, Tulsa 25
- 9/16: Water Festival, Medicine Park
- 9/18-19: Blue Thumb Training, Ada 11
- 9/21: Groundwater screening, North Caddo Conservation District, Hinton 49 samples, 5 volunteers
- 9/23: Monarchs on the Mountain 2017, Tulsa 1500
- 9/26: Groundwater screening, Creek County Conservation District, Bristow 40 samples, 9 volunteers
- 9/26: Creek Walk, Kingston 110
- 9/26: Craig County CD Environmental Education Day
- 9/27: Martin Nature Park Education Event
- 9/28: Latimer County Natural Resource Day
- 9/29-30: Blue Thumb Training, Tahlequah

October events

- QA/Bug Picking
- 10/1: Project WET workshop, Tahlequah
- 10/2-6: National Project WET Conference, Michigan
- 10/3: Blue Thumb Staff Meeting
- 10/7: OKC Water and Landscape Festival
- 10/11: Oklahoma County Natural Resource Day
- 10/12: H2Oklahoma, Great Plains State Park
- 10/13: Project WET, Tishomingo
- 10/18: Oklahoma County Natural Resource Day
- 10/27-29: Project WET/WILD/Learning Tree Tri-State Conference, Quapaw



- 10/28: BooHaHa, Tulsa

Upcoming events

- 11/3-4: Blue Thumb Training, Broken Arrow
- 11/5: Project WET, Broken Arrow/Tulsa



Blue Thumb October Report

Blue Thumb Water Quality Education Program

Water Quality Division, Oklahoma Conservation Commission

Report for Rob Barossi, Candice Miller, Kim Shaw, Jean Lemmon

Compiled activity summary for September: 1855+ total people reached

Ongoing activities:

- Contacts with volunteers
- Evaluating program before hiring replacement for Jeri Fleming

October activities (scheduled public events)

- QA/Bug Picking
- 10/2-6: National Project WET Conference, Michigan
- 10/6: Spring Creek Class Visit, Locust Grove
- 10/7: OKC Water and Landscape Festival
- 10/9: Oklahoma County Natural Resource Day
- 10/10-11: Oklahoma Institute Sustainability Conference
- 10/11: Oklahoma County Natural Resource Day
- 10/12: H2Oklahoma, Great Plains State Park
- 10/13: Project WET, Tishomingo
- 10/14: EarthRebirth, Norman
- 10/16: Baron Fork Fish Collection, Tahlequah
- 10/18: Oklahoma County Natural Resource Day
- 10/25: Education Day, Tulsa
- 10/26: Education Day, Broken Arrow
- 10/27: Pontotoc Tech Class Creek Walk, Ada
- 10/27-29: Project WET/WILD/Learning Tree Tri-State Conference, Quapaw
- 10/28: BooHaHa, Tulsa

November events

- 11/2: Area IV Meeting, Chickasha
- 11/2: Garvin County Natural Resource Day
- 11/3-4: Blue Thumb Training, Broken Arrow
- 11/5: Project WET, Broken Arrow/Tulsa
- 11/7: Area III Meeting, Bartlesville
- 11/9: Area V Meeting, Wilburton
- 11/14: Area II Meeting, Wayne
- 11/16: Area I Meeting, Cherokee
- 11/16: Creek Walk, Howe



- 11/17: Project WET Workshop, Howe
- 11/17: Friends of Blue Thumb Meeting
- 11/18: Crow Creek Meadow Work Day, Tulsa
- 11/18: KOB Awards, Norman
- 11/20: Fish Talk, OCU



Blue Thumb November Report

Blue Thumb Water Quality Education Program

Water Quality Division, Oklahoma Conservation Commission

Report for Rob Barossi, Candice Miller, Kim Shaw, Jean Lemmon

Compiled activity summary for October: 1327 total people reached

Ongoing activities:

- Contacts with volunteers (Bug picking and Quality Assurance sessions)
- Evaluating program before hiring replacement for Jeri Fleming

November activities (scheduled public events)

- 11/2: Area IV Meeting, Chickasha
- 11/2: Garvin County Natural Resource Day
- 11/3-4: Blue Thumb Training, Broken Arrow
- 11/5: Project WET, Broken Arrow/Tulsa
- 11/6: Education Day, Tulsa
- 11/7: Area III Meeting, Bartlesville
- 11/9: Area V Meeting, Wilburton
- 11/14: Area II Meeting, Wayne
- 11/14: Oka Institute Advisory Council Meeting, Ada
- 11/16: Area I Meeting, Cherokee
- 11/16: Creek Walk, Howe
- 11/16: Mini Academy, Howe
- 11/17: Project WET Workshop, Howe
- 11/17: Girl Scouts, Moore
- 11/18: KOB Awards, Norman
- 11/20: Fish Talk, OCU

December Activities

- 12/1: Friends of Blue Thumb Meeting
- 12/2: Crow Creek Meadow work day
- 12/4: OACD Christmas Luncheon
- 12/19: Full Staff Meeting, Lake Arcadia



Blue Thumb December Report

Blue Thumb Water Quality Education Program

Water Quality Division, Oklahoma Conservation Commission

Report for Rob Barossi, Candice Miller, Kim Shaw, Jean Lemmon

Compiled activity summary for November: 479 total people reached

Ongoing activities:

- Contacts with volunteers (Bug picking and Quality Assurance sessions)
- Preparing documentation for hiring new Blue Thumb Field Educator

December activities (scheduled public events): December is typically a very slow month for Blue Thumb because many citizens are already busy between Thanksgiving and Christmas.

- 12/1: Friends of Blue Thumb Meeting
- 12/2: Crow Creek Meadow work day
- 12/4: OACD Christmas Luncheon
- 12/19: Full Staff Meeting, Lake Arcadia

January activities

- 1/18: Grand Adventure/Riverology 101 planning meeting, Tulsa
- 1/27-28: Blue Thumb Training, Norman Appendix D: Monthly Pictorial Reports



Appendix D: Monthly Pictorial Reports



Blue Thumb—In Pictures January 2017



Welcome Rob—Farm Show, Ice Storm and Rodeo. All in the first week!



Rob had an exciting first week of work!

Robert Barossi got introduced at the Jan. Commission meeting on a Monday. Then on Friday we sent him to work with Greg Scott at the Enid Farm Show (top right). Which was also the weekend of the ice storm. Welcome to Oklahoma!



Rob also went to his first rodeo to watch co-worker Blane Stacy ride in the saddle bronc event at the IFR.

Blue Thumb Welcomes Project WET!



Above—OCC and district staff introduce themselves using a Project WET activity as they work to become trained facilitators.



Left—Karla Spinner and Stacy Hanson try to float paper clips on water to explore the cohesive property of water. Above—teams work out an agenda for leading Project WET workshops.

Mini-Academy



Top—Kim worked with students at Southwestern Oklahoma State University teaching them how to perform Blue Thumb chemical testing so they can monitor with their professors.

Trash and Lawyers?



Jeri and Kim worked with attorneys from the Environmental Law Section and students from Crooked Oak School to help clean up the site the students will begin monitoring in Feb.



Some of the more interesting items drug out of the creek were a mattress and an old television set.

Thanks to DEQ and OWRB for sending your attorneys to help!





Blue Thumb—In Pictures

February 2017



Recognizing Volunteers!



Blue Thumb has begun recognizing our volunteers. first in our end of the year newsletter and now monthly on our Facebook page. We want you to know them too; Darlene Shaw was highlighted for January. and we thought we would share a little about her. You might have guessed from her last name that she is related to our Quality Assurance Officer, Kim Shaw. Darlene is Kim's mom and she went beyond just asking what her daughter does for a living, she experiences it every month.

Kim invited her mom to a Blue Thumb training several years ago, so she could better understand what Kim does on a day-to-day basis, and then she claims she got tricked. Kim told her mom that since she had all this training, she might as well put it to use so; she began monitoring with a high school teacher and her students. She did this for

about five years and then the teacher moved on and Darlene needed a new partner. In stepped Kim, and both she and Darlene enjoy the quiet time spent together in the outdoors and making discoveries together.

"Monitoring just reinforces the idea that everything influences something else; the ripple effect. In winter the chlorides are high because roads are salted. Likewise, in spring and summer other chemicals show up because of lawn treatments. We have been "tree huggers" from way back; recyclers, buying biodegradable products, composting," Darlene said. "Our creek site is Crutcho Creek under I-40. Sadly we have witnessed a lot of erosion around the bridge pylons. That is scary!!! We have a golfer in the area because we find lots of golf balls!!! And odd bits of clothing and beer cans (which we recycle). It is under a bridge so it is a party area."

Darlene is very proud of her daughter and loves their adventures, which for Christmas included a sky-diving lesson! Kim is committed to keeping her mother monitoring, for her mom's birthday this year Kim gave her a new pair of her very own waders! Thank you, Darlene for your commitment to Blue Thumb and for all you do for clean water in Oklahoma!

The Blue Thumb Blog!



Rob has started blogging about his adventures as a new Blue Thumb educator! He has written two so far and we post them on our webpage at <http://www.bluethumbok.com/the-blue-thumb-blog> and then share it on Facebook. Here's a short excerpt—As an adult, the first day at a new job isn't much different than the first day of school when we are kids. The day is filled with excitement, nervousness and the unexpected. Most importantly, it's a new beginning, the first step of an exciting new journey. My first day, and first two weeks, as the Conservation's Commission's new Blue Thumb Educator have been no different. It has been a whirlwind two weeks that included an ice storm, a farm show and the warmest of welcomes from everyone here at the Conservation Commission.

Spreading the Word!



Top left—Jeri and Rob attended a Friends of Town Branch Creek meeting where volunteer Jahna Hill shared a year's worth of monitoring data with interested citizens. Top right—Candice Miller stands at the display for both Project WET and Blue Thumb at the Environmental Expo.

Bug Collections!



Top left—Jahna and Rob doing the Macro Shuffle in Town Branch Creek! Top right—Nick uses a dip net to get bugs out of the vegetation in Sharp Creek. Bottom left and right—Yes, both of the pictures were taken in February!





Blue Thumb—In Pictures

March 2017



Recognizing Volunteers!

March Volunteer spotlight - Noreen Casey & Holland Hall students (including her daughter Casey Ferguson).

Noreen and her daughter Casey, along with three other Holland Students, began monitoring Fred Creek in Tulsa about four years ago. Noreen decided to become a Blue Thumb volunteer because she loves the idea of citizen scientists working with a government program to expand its reach in protecting stream quality. (We do too, Noreen!)

By collecting the chemical, physical and biological data, the Holland Hall team is now more aware of how people's habits affect the stream's quality.

One of the most surprising things they have seen is how a very urban stream that once looked like a concrete drainage ditch is actually teeming with macroinvertebrates and small fish. Riparian plants are beginning to establish themselves, and the once seemingly lifeless stream is looking like a real creek.

Thank you, Noreen and girls, for all you do to help Fred Creek show that even in the most urban setting, streams have life and are worth taking care of!



Yes, there is water in Beaver County!



Jeri and Rob went to Kiowa Creek in Beaver County to work with Karl Jett and the Beaver County Conservation District Youth Board. They are now Blue Thumb volunteers!



Education!



Jeri and Rob spent an afternoon at the Sam Noble Natural History Museum in Norman with the stream trailer and rainfall simulator. They also spent a day with Locust Grove 8th Grade science classes with live macroinvertebrates gathered from a local stream and the stream trailer. As an added bonus, Jeri got to have lunch with her granddaughter!

Bug Collections and Quality Assurance!



Top left—Candice works with a Pennington Creek volunteer on his QA. Top right—Kim shows Wewoka students what they found in the creek. Bottom left—Even Shanon Phillips and her son aren't immune from participating in a bug collection on their creek! Bottom right—Kim has the right idea—let the volunteers do the work in Bishop Creek!





Blue Thumb—In Pictures



April 2017

Recognizing Volunteers!

April Volunteers spotlight - Jason Arant and students from the Oklahoma School of Innovation & Experiential Learning and Jahna Hill, City of Tahlequah stormwater manager.

Jason and his students took information they learned on a field trip and worked to fix a problem near their school. They worked with Candice Miller to get bacteria supplies to determine if their pond had E.coli in it and then they conducted experiments with ultra violet light to see if that would help kill the bacteria. They recently presented their results at the Oklahoma Clean Lakes and Watershed Conference and proved that when put under ultra violet light, E.coli bacteria counts will decrease greatly.

Jahna took the idea of forming a watershed coalition to a whole new level when she incorporated her work in forming Friends of Town Branch Creek into a Master's project. With encouragement from Cheryl and Jeri, Jahna formed the group to bring awareness to water quality issues in Town Branch Creek in Tahlequah, and then she literally wrote the book on how to effectively form a watershed group. She developed a how-to book that will be available on the Friends of Town Branch Creek in the near future. She discussed her work and her experience with Blue Thumb at the Oklahoma Clean Lakes and Watershed Conference.

Great volunteers going above and beyond!



Stillwater volunteer thank you cookout!



Candice, Jeri and Rob joined about 8 Stillwater volunteers to enjoy some hot dogs and s'mores as a thank you! Food provided by Friends of Blue Thumb.

One volunteer even invented the s'more!



Education!



Top left—Kim spent an afternoon at OU talking fish and nonpoint source pollution. Center—Candice spent some time with Sapulpa Junior High students talking about how they can protect water resources. Top right—Blue Thumb partnered with the City of Norman on their annual Water is Worth It! poster contest.

Spring Bug Picking and Quality Assurance!



Top left—Students in Lawton pick bugs under the watchful eyes of goats? Top right—In Oklahoma City, Jim Leach and Karla Spinner got in on the action Bottom left—Cooper Phillips learned that even though his mom is the boss, he still has to pick bugs. Bottom right—Rob experienced bug picking for the first time and so far, he loves it...doesn't mind it.





Blue Thumb—In Pictures



May 2017

Recognizing Volunteers!

May Volunteers spotlight - This month we wanted to highlight Susan and Bill Henning! Susan went through Blue Thumb training several years ago but it wasn't until she retired from the Kay County Conservation District that she teamed up with her husband to monitor Turkey Creek in Bartlesville. She enjoys monitoring with her husband, who is a retired chemical engineer, not just because he loves the chemistry part, but he gets her out of her comfort zone. He has her wading into the deepest pools and holding such things as frogs and fish! They report their testing results both to Blue Thumb and the City of Bartlesville. They use their past data to look for changes and with an upstream bridge replacement, they will be on the lookout for any changes.

They have been surprised but pleased with their stream's water quality considering all the lawns, a golf course, park and highway along the creek. They do notice rapid changes in water levels after a rain due to the highway, confirming that impervious surfaces increase the amount of runoff into streams. Susan and Bill are enjoying monitoring together, it gives them something to do as a couple.

Monitoring isn't all that Susan does! She loves teaching children about protecting our water with Project WET activities, taking homeschool families to the creek and giving presentations to various clubs. Thank you, Susan and Bill, for all you do to help protect Oklahoma's water resources!

Great volunteers going above and beyond!



Summer or winter, Bill and Susan are happy to go to their creek!



We are print and tv stars!



Fresh food sprouts up at the Norman Farmer's Market - Photo Gallery

Kim Shaw, Blue Thumb Water Pollution Education Program, sets up a water run off project in the demonstration garden area at the Cleveland County Fairgrounds. ...
NEWS9.COM

Left—Kim was featured in the Daily Oklahoman for talking about run off and soil health in Norman.

Right—Jeri is working with News 9 on different education segments every 6 weeks. First it was watersheds, and in May it was erosion.



m.news9.com

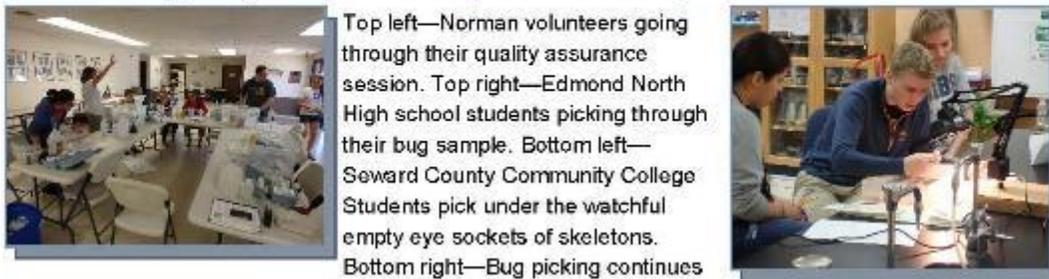
<p>Jeri Fleming with the Conservation Commission taking about erosion, and brings a demonstration </p></p></div>

Education, Education and More Education!



Top left—Wes Shockley helped Rob in Lincoln County seine for fish and bugs. Center—Jeri was in Norman for their Earthfest. Top Right—Rob was in Dewey County for a NRD. Bottom left—Jim Leach pitched in to help Rob, Jeri and Kim at ScienceFest. Bottom right—Ben Pollard helped demonstrate the stream trailer at ScienceFest. In all Blue Thumb staff reached over 5,000 people the end of April through the first of May! And yes, they all lost their voices!

Spring Bug Picking and Quality Assurance!



Top left—Norman volunteers going through their quality assurance session. Top right—Edmond North High school students picking through their bug sample. Bottom left—Seward County Community College Students pick under the watchful empty eye sockets of skeletons. Bottom right—Bug picking continues in the Commission offices.

Bug picking and quality assurance are a very important part of what our Blue Thumb volunteers do!





Blue Thumb—In Pictures



JUNE 2017

Blue Thumb Blog!

Rob has been doing an amazing job of sharing his experiences in Blue Thumb with visitors to our website with the Blue Thumb Blog.

Here is just a sample of his latest blog—*Testing the waters...literally!*

Recently, I was given the chance to begin monitoring my own creek, right here in Oklahoma City. Guy James Creek is likely very familiar to those who live around it, although it's uncertain how much they actually think of the water flowing there and its quality. While it's not very wide, it cuts a deep path through the middle of Edgemere and Guy James Parks, which are part of the Edgemere Park Historic District, listed on the National Register of Historic Places. The lovely neighborhood surrounding the parks is filled with brick houses in a number of different architectural styles, ranging in size from small homes to mansions.

Front lawns and back yards of a residential neighborhood could, we might guess, contribute to runoff getting into Guy James Creek. Another contributing factor is the streets which border the park on all sides, 32nd on the south, 36th on the north, Hudson to the west and Harvey on the east. Not helping matters is the landscape of the parks themselves, mostly small groupings of trees, scattered around the gently rolling, grassy green hills. Along the banks of the creek, there is little to no riparian area, and the grass appears to be mowed right up to the edge of the creek. The area is not what could be called heavily wooded.



Left—Rob filling out his paperwork before he begins monitoring "his" creek.

To read the rest of Rob's blog visit

<http://www.bluethumbok.com/the-blue-thumb-blog>

Fish Collections are Under Way!



Left—Rob and intern Sherry Davis had a great time on their first official fish collection! Below, Rob and volunteer Abigail hauling in their spoils.

Right—Sometimes we have interesting visitors, such as this water snake and sadly more bullfrog tadpoles than fish.



Summer Camps 2017!



Blue Thumb is once again holding teachers' workshops and summer camps! In June, we headed to Tahlequah for a Journey to the Bottom of the Creek! In July, we will have an even grander adventure in Langley and turn teachers into Riverologist! What is a riverologist—an Okie who studies rivers.

Education, Education, Education Just one of the things we do—a lot!



Top left—Jeri took the stream trailer to the Sam Noble Museum and showed kids how rivers form. Top right—Candice took kids in Stillwater on an incredible journey. Bottom left—Kim worked with boy scouts on finding and identify creek bugs. Bottom right—Rob had a great time with the Cotton County CD teaching kids about runoff.



These are just a few of the things we do each month all across Oklahoma.





Blue Thumb—In Pictures



JULY 2017

Volunteer Highlight!

When you think of the panhandle, you may think of arid land with little water. While that may be true in places, there is water to be found there, including creeks like Sharp Creek in Beaver County. Since 2011, Sharp Creek has been monitored by a dedicated team of Blue Thumb volunteers, including John Smith, John's son Bill, Nick Kroeker, and Don Hayes. This month, we recognize the Sharp Creek team and their inspiring efforts.

According to John, the team initially had concerns for the creek water due to feed lot runoff and pollution originating upstream. They were surprised to find that nitrogen levels were not as high as expected, with only a few spikes during their time as monitors, even with all the farm animals around. Other surprises include the rebounding population of large sized largemouth bass and the almost complete disappearance of the gar population, now only a few small size gar are seen where there used to be 12 to 18 inch gar in the past. John has been visiting the creek since he was growing up in the area in the 40s and 50s and his two sons and their friends have continued the practice. He sums up their personal connection to the creek by saying, "When you think of the high plains and the arid panhandle, to find and enjoy a spring fed creek that's been flowing for longer than anyone's memory, it's something to appreciate." His son, Bill, noted, "It's all the history and memories of the place that keep me coming back."

Don Hayes adds that the monitoring information collected by the team establishes a baseline for the area's waterways and lets them know that the waters are stable. Monitoring also allows him to "witness, interpret and understand" all of the changes that the creeks in the area continuously experience over the short and long term. He describes the creek and its surroundings as a place that gives him a longing to return and says that his visit to and monitoring of Sharp Creek has become a part of who he is. "We test the creek in order to witness and ensure that the natural environment continues to prosper. I find so awe in testing/seeing the consistent beauty in the creek and its inhabitants."



Commissioner Jett, This one is for you!
The Sharp Creek crew collecting bugs and performing their sampling.



It's Bug Collection Season!



The rain in central Oklahoma has made bug collecting a challenge. But, Candice got some done in Stillwater. Right and left—Stillwater Creek—two sites and below Cow Creek.



Summer Camps 2017!



The two kid's camp were a huge success! Thanks to Cheryl Cheadle, Shellie Willoughby and Kim Farber for helping us out! We had 15 kids at the Tahlequah camp and 24 kids at the Langley camp. Please check out our Facebook page for more pictures!

Education, Education, Education Just one of the things we do—a lot!



Top left—Rob was at the Purcell Library teaching kids all about watersheds. Top right—Kim took several young ladies out to learn about creeks at their STEM camp. Bottom left—Kids at the Langley summer camp made a web of conservation with OSU 4-H. Bottom right—Stillwater area volunteer Keima and two helpers educated folks in Stillwater about nonpoint source pollution.





Blue Thumb—In Pictures



August 2017

Volunteer Highlight!

Running through a heavily developed residential area of Norman is Brookhaven Creek, which was first monitored by Blue Thumb in 2010. This month, we celebrate the most recent Brookhaven team, Carrie McKenzie, Brooke Morris and Larissa Balzer.

Volunteer Carrie McKenzie is a science educator at the Sam Noble Oklahoma Museum of Natural History. She describes volunteering for Blue Thumb as a chance to fully immerse herself in the science of what we do as well as the contribution to the community it provides. It also comes in handy at her job, where she says, "I am better able to discuss and explore stream ecology and community/stream interaction with my program participants...I have even developed entire camps specifically around sciences behind water quality and ecology." Carrie notes that monitoring has also had a impact on how she lives her life and the way she now always goes the extra mile to do whatever she can to help the environment, even if it isn't easy. "I would say the most important thing to come of this experience thus far is that I now feel as though what I do can make a difference."



Brookhaven Creek monitor Brooke Morris attended a recent Blue Thumb training with the desire to spend her time volunteering for an organization dedicated to helping people understand and preserve the environment. She says the fact that Blue Thumb requires volunteers to attend formal trainings was proof that "this is a solid and strong volunteer program." While still relatively new to monitoring, Brooke looks forward to using the information and data to become more actively involved in protecting the stream and its surroundings. She has been surprised by how much life she has already seen in a small stream located in the middle of suburbia. She adds, "I was surprised at how simple tests can tell us so much about how our environment is functioning and its overall health! Super cool stuff!"



To see more visit www.facebook.com/BlueThumbOK

It's Bug Collection Season!

The rainy August has made bug collecting difficult. We have standard operating procedures that require the stream be at base flow for 10 days before we can collect. Even though we haven't been able to always do bug collections, we have been doing quality assurance sessions at the creek with our volunteers. Below left is in Ada, below center, is Kiowa Creek in Beaver County and below right is Owasso Creek.



Fish Collections 2017!



The rain has also played havoc with our fishing schedule, but we got a few sites done in August. Above left is Tynner Creek, where we had a water moccasin keep us company; below left we were in Town Branch Creek in Tahlequah; center, volunteer Jason is happy to let this little guy go; top right, volunteer Newell is letting us know Spring Creek is cold! Middle right we caught a nice largemouth bass in Ross Branch and bottom right Rob and Kim and under a bridge over troubled water...or just water.

Education, Education, Education



Top left—Rob and Jeri participated in Tahlequah2O with the stream trailer and live creek bugs; top right—Rob, Jeri and Kim organized a field trip for the Institute of Tribal Professionals where we met up with Osage Nation youth to talk about their Blue Thumb experience; bottom left—Jean took students from Carl Albert State College on creek exploring in Poteau; bottom right—Candice led a Blue Thumb training in Idabel, where we got 5 new volunteers!



Blue Thumb—In Pictures



September 2017

New Volunteer Training



Rob, Kim and Candice the Stillwater Training. On more trainings scheduled Tahlequah on Sept. 29-30. volunteers helping us



welcomed new volunteers at Sept. 8-9th. We have two in Ada on Sept. 18—19th and Exiting to see so many new protect Oklahoma streams!

It's Bug Collection Season!

The rain held off in September long enough to allow us to get a few last minute bug collections. Left, Jason kicks up some bugs in the Ada area; middle, Larissa and Gabby scrub rocks to get off the creek bugs in Norman; right, students from Undercroft Middle School collect their bugs in Coal Creek in Tulsa.



Fish Collections 2017!



Jeanette Lamb joined Kim and Rob for a fish collection in Tahlequah on a very slippery creek —Park Hill Branch. They used both the seine and electroshocking, because of the type of substrate. Bottom right—Jeanette is giving Rob and Kim encouragement for muscling through with the seine and that they stayed on their feet!

Education, Education, Education



Left—Candice spent a day with the Eastern Shawnee Tribe at their Lost Creek Water Festival. Seventh graders from both Oklahoma and Missouri had a great time exploring the creek!



Right—Kim and water quality specialist Nathan Carter spent a morning on Crutcho Creek with 52 second graders from Steed Elementary. The found bugs, fish and learned about the water cycle!





Blue Thumb—In Pictures October 2017



New Volunteer Trainings Continue!



Blue Thumb volunteer trainings have continued at a remarkable pace, with three trainings in one month. First, Kim, Candice and Rob were in Ada for the second training this year in that city, a training which was requested by members of both the Chickasaw Nation and the Institute for Math and Science Education at East Central University. Then, Kim and Rob were in Tahlequah for another great training which included a group of students from Northeastern State University. A number of people at both trainings expressed an interest in creek monitoring and it will be exciting to get them started on a creek in the very near future!

Groundwater Screening Events

Kim has been traveling the state to lead groundwater/well water screening events with local conservation districts and residents. First, she and OCC Water Monitoring Coordinator Jason Ramming were with the North Caddo Conservation District and their volunteers, testing 49 samples of local groundwater. After that, she was in Bristow with Blue Thumb Director Jean Lemmon and the Creek County Conservation District. Forty samples were tested for lead and other chemicals, with all samples showing very low lead levels.



Fall Bug Picking and QA Begins!



The rainy summer did not put a damper on bug collections, with plenty of samples now needing to be picked through by Blue Thumb volunteers and staff. Bug picking (or subsampling) will be happening through early December at many locations around the state, where volunteers will find out what is living in their creek while also taking part in their quarterly Quality Assurance session. These photos are a few of the first volunteers to pick here at our office.

Education, Education, Education



Top Left—Jeri and soil health educator Blane Stacy brought the stream trailer to Steed Elementary 2nd graders and taught them all about erosion.



Bottom Left—On her last day with the Conservation Commission, Jeri was in Locust Grove, with 7th and 8th graders from Peggs School.



The kids got to use a seine and kick net to find fish and bugs in Spring Creek.



Top and Bottom Right—The Oklahoma County Conservation District has been holding Natural Resource Days at Arcadia Lake. Kim and Rob utilized the wetland education area to teach students about watersheds, nonpoint source pollution and wetlands.



Blue Thumb—In Pictures November 2017



Fall Bug Picking/QA Season!



The fall season of benthic macroinvertebrate subsampling ("bug picking") and QA sessions is in full swing. Blue Thumb staffers have been travelling the state, including Ada (left), Tahlequah (center), and Wyandotte (right), meeting with volunteers to pick through bug samples that were collected this summer. Volunteers are also going through Quality Assurance sessions, including performing nitrate and chloride tests on a known standard solution and answering a few short questions about monitoring procedures. These events are an invaluable and exciting opportunity for staff to catch up with volunteers, get to know each other better, share questions and concerns, and talk about important information or announcements related to Blue Thumb.

Final Training of a Record Setting Year

2017 has set a new record for the number of Blue Thumb Volunteer Trainings held in on year. We have had nine trainings this year, in Oklahoma City, Pawhuska, Beaver County, Stillwater, Tahlequah, Idabel, two in Ada, and the most recent, final training in Broken Arrow. Candice and Rob led the training which was attended by eleven new volunteers, including a number of local high school students and two University of Oklahoma students who came up from Norman. The volunteers took part in a number of educational activities, learned how to conduct chemical monitoring tests and visited nearby Adams Creek to collect bugs and fish and do some streamside monitoring.



Blue Thumb at Area Meetings



Blue Thumb staff members have been in attendance at the Oklahoma Association Of Conservation Districts Area Meetings, held over the past few weeks. Supporting Conservation Districts is an important part of what Blue Thumb does and the Area Meetings help to make that happen. They are also a great opportunity to provide announcements related to Blue Thumb, as Candice is doing in the photo from the Area V meeting in Wilburton, and distribute next year's Blue Thumb calendars.

One Last Fish Collection

Kim and Rob returned to the field for a late-season final Blue Thumb fish collection, at Baron Fork in Cherokee County. They were joined by OCC Monitoring and Assessment Specialist Jeanette Lamb, OCC Environmental Scientist/Records Manager Karla Spinner, and Blue Thumb volunteer George Fulk. While Baron Fork poses some unique challenges due to it's depth and width, the team had a successful fish collection on a gorgeous, picture-perfect fall day.



Education, Education, Education



Candice and Julie Monnot from the City of Tulsa visited students at the School of St. Mary in Tulsa, where they taught students about water, nonpoint source pollution and how it impacts Crow Creek.



Kim was in Garvin County at a Natural Resource Day that included just under 400 kids from local 4th grades around Pauls Valley. She utilized the EnviroScape to teach them about watersheds and pollution.



Blue Thumb—In Pictures



December 2017

Why Do We Pick Bugs? Find Out at the Blue Thumb Blog



The past two months' reports featured some of our fall bug picking/QA sessions (with more this month!). As our volunteers pick through bug trays like the one pictured above, they find it to be a fascinating and unique activity, asking many questions along the way. Some of the questions they ask include: Why do we pick the bugs? What do the bugs tell us? Where do the bugs go after they are picked? In the most recent post on the Blue Thumb Blog, some of these questions are answered by the Water Quality Division's Monitoring Specialist Nathan Cater. Nathan will soon become our in-house certified bug taxonomist, able to identify all the bug samples we collect. Check out his blog post at <http://www.bluthumbok.com/the-blue-thumb-blog> to read his story and find out more about his work with bugs and what it means for water quality across the state.

Bug Picking Season Comes to an End

As things slow down in December, our time for fall bug picking comes to an end. Kim held a bug picking session in Norman (far left photo) with some of our most active volunteers. Candice has been very busy with these events over the past few weeks, including four full days of bug picking in Tulsa as well as bug pickings in Hogden (far right), Kinta (center), and Hugo.



Project WET



In Howe, Candice held her final Project WET (Water Education for Teachers) workshop of 2017. These workshops help teachers learn how to incorporate water education into their classrooms, across many subjects and age groups. This year, 90 educators attended WET workshops led by Candice and other facilitators.

Wrapping Up Fall Quality Assurance



Along with bug picking sessions, we have also been coming to the end of our fall QA sessions. This time around, volunteers were asked to complete a chloride test and a nitrate test, as well as answer a few short questions. These are important methods we use to ensure volunteers are following procedures correctly and their data is accurate and reliable. Rob was recently in Beaver County, where both of our volunteer groups were unable to collect bug samples this summer. We still make every effort to have QA sessions, even if there are no bugs to pick. Two of our young volunteers at Kiowa Creek are pictured here, conducting a chloride test.

Career Day in Wyandotte

Candice was in Wyandotte recently, attending a career day for Middle and High School students. This is a great way for Blue Thumb to reach young people who will soon be deciding what they might want to do for their future education and careers. Candice spoke to them about careers in science and what it means to volunteer or work for Blue Thumb.



Education, Education, Education



While Candice was in Tulsa, Camp Loughridge hosted local students like the fifth graders above and used educational tools borrowed from Blue Thumb to teach them all about watersheds, pollution, the water cycle and other topics.



In Howe, Candice visited a creek with students in a range of age groups, where they learned about water quality monitoring, including filling a sample water bottle, pictured above, and discovered the bugs and fish that live in their local creek.



Appendix E: Blue Thumb Publications

Blue Thumb Brochure: Pages 1 -2

Everyone can help keep our streams and rivers clean!

We all have an impact on our streams and rivers, whether we mean to or not. Below are ways you can help reduce yours...

- Use household and lawn chemicals cautiously—reading and following label directions, and properly dispose of containers
- Have your soil tested so you know what your fertilizer needs are, and do not apply chemicals when rain is predicted
- Pick up pet waste
- Leave a buffer along streams when performing farming and construction activities
- Practice no-till farming to reduce soil erosion and conserve soil moisture
- Keep vehicles and heavy equipment in good repair to eliminate fluid leaks

Take time to be outdoors. You will be inspired to help others protect our water resources if you stay motivated about the beauty around you.

Contact Blue Thumb about scheduling a creek walk or other outdoor event!



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Blue Thumb

Water Quality Education Program



Stream Protection Through Education

Oklahoma's Blue Thumb Program is a statewide citizen science program that trains volunteers to monitor creeks and streams and share their knowledge of water quality with others. The goal of Blue Thumb is to empower people to protect water in their region from nonpoint source pollution.



Over 75 Oklahoma streams are being monitored by Blue Thumb volunteers - citizens like you! Become part of this important network of volunteers who collect valuable data and educate in their communities about how to protect this most precious resource.



Blue Thumb is the education program of the Water Quality Division of the Oklahoma Conservation Commission.

Funding provided through the US Environmental Protection Agency Region 8 (Section 319(b) of the Clean Water Act) via the State of Oklahoma Office of the Secretary of Energy and Environment.



Blue Thumb Monitoring ~ Volunteers in Action!

Volunteers get involved in Blue Thumb to know more about a local stream and to help the public do a better job of reducing water pollution. Blue Thumb volunteers are active in all aspects of stream monitoring.



You too can become a Blue Thumb volunteer!

Biological Collections



Biological collections provide the best look at a stream. Benthic macroinvertebrates and fish live in the water. Physical changes to the stream and/or the addition of pollutants can make their stream home less hospitable, and more sensitive species are the first to disappear.



Chemical Monitoring



Chemical monitoring is a profile of the water's chemical properties at an instant in time. Blue Thumb volunteers attend a one and a half day training session that teaches them to perform tests for the following parameters:

- Dissolved oxygen
- Ammonia nitrate
- Water clarity
- Temperature
- Chloride
- Orthophosphate
- Nitrate/Nitrite
- pH



After receiving a test kit volunteers complete their chemical monitoring and submit data each month.

Physical Features



The physical features of a stream are as important to fish and aquatic insects as good water chemistry. Fish need structures to hide under, aquatic insects need rocks or vegetation to escape predators. While habitat assessments are done along with fish collections, additional habitat information is recorded each time a volunteer is on site.





Blue Thumb Services Catalog: Pages 1 - 8

Protect Riparian Areas!

One of the most important things Blue Thumb does is educate the public on keeping our streams healthy by protecting riparian areas. A healthy riparian area helps reduce erosion, provides essential aquatic and terrestrial habitat, filters pollution, provides travel corridors for local wildlife and provides flood protection.

A healthy riparian area looks like the top picture below. You see vegetation, trees and grasses that stabilize banks and provide shade, woody debris that provides a home to fish and aquatic insects and a good connection to the flood plain. All of these elements work together to provide a healthy ecosystem which protects your drinking water.

In the bottom photo you can see that most of the vegetation has been removed from the bank reducing the amount of shade. The lack of a stabilizing root system has also caused excessive erosion and widening of the stream.

We hope you will use the tools outlined in this catalog to educate citizens about the importance of protecting our streams and the area along the bank!



Oklahoma Blue Thumb Education Program Services Catalog



*Promoting Stream Protection
through Education*



Stream Protection through Education

Oklahoma Conservation Commission ~ Water Quality Division ~ Blue Thumb

What is the Blue Thumb Program?

The Blue Thumb Water Quality Education Program is a part of the Oklahoma Conservation Commission's Water Quality Division. Blue Thumb's mission is "stream protection through education." We work with "citizen scientist" volunteers to collect stream data and offer information to the public at large about stream and river protection.

What do Blue Thumb volunteers do?

Most of our volunteers are involved in stream monitoring. They learn to perform water chemistry tests on a stream of their choice. The volunteers also work with Blue Thumb staff in the stream to collect aquatic insects and fish, and complete other field work.

Many of our volunteers spend time on educational activities, like speaking to civic groups or setting up exhibits that help people understand how to reduce water pollution.

How can I get involved in Blue Thumb?

Typically volunteers come aboard by participating in a free one and one-half day training that introduces the Blue Thumb Program, stream ecology, and water quality monitoring. You can contact a Blue Thumb staff member to learn when there will be a training near you. Additional opportunities include working with a Blue Thumb staff member or attending a monitoring event in your area to gain knowledge about what we do and gain a better understanding of water pollution impacts. Contact us to begin your Blue Thumb experience!

What is the purpose of the catalog?

This small catalog offers a glimpse of how Blue Thumb volunteers and staff members protect Oklahoma's streams and rivers. By using a variety of educational tools and events, we find a way to meet local water quality education needs.

Whether you are interested in becoming a volunteer, or you are simply looking for a great creek adventure for your community group, let the Blue Thumb services catalog introduce you to the Blue Thumb world of water quality education!

Bring Blue Thumb Events and Tools to Your Area!

Talk to your local Conservation District ~ Blue Thumb works closely with Oklahoma's conservation districts. Let your district know you have an interest in local water quality.

Make contact with a Blue Thumb staff member ~ Consider a group to which you belong – would they enjoy a creek walk? Would your municipality benefit from the "Quality Urban Streams" Workshop? Our travel takes us all over the state.

Cost for events ~ Blue Thumb offers many events free of charge. When there are expenses, like providing a lunch, or lots of handouts, a small fee might be charged. This can be discussed during planning of activities.

For more information visit our website at

<http://bluethumbok.com>



Facebook/bluethumbok

Instagram - @bluethumbok





Exhibits and Handouts

Blue Thumb frequently makes exhibit materials available to volunteers who are working with us to get the “stream protection” message out. A variety of scenic panels work as a background. Several panels tell more about the Blue Thumb Program. Handouts are available as well, and we often work with people to tailor a handout just for their specific audience.



While the Oklahoma Blue Thumb Water Quality Education Program is a part of state government, more funds are needed to maintain a solid corps of volunteers who can help spread the word about stream and river protection.

Friends of Blue Thumb was formed as a non-profit organization with the mission to promote clean and healthy water ecosystems in Oklahoma, with an emphasis on fishable and wadeable streams and rivers, through education, stewardship and public outreach.

By partnering with the Blue Thumb program the Friends group adds a “citizen scientist” volunteer voice to the State of Oklahoma’s Blue Thumb efforts and provides additional funds to continue to build an effective stream and river protection program.

For more information about the Oklahoma Blue Thumb Association email ok.bluetthumb.association@gmail.com.

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This publication is issued by the Oklahoma Conservation Commission as authorized by Troy Lam, Executive Director. Three hundred were printed by Central Printing, Office of Management and Enterprise Services and distributed at a cost of \$1.24 each with funding from a U.S. Environmental Protection Agency grant. Copies have been deposited with the Publications Clearinghouse of the Oklahoma State Department of Libraries [74 O.S. 2001 § 3105(B)]. JF 2013



Creek Walk

- ◆ A creek walk is really a stream ecology experience
- ◆ Learn what lives in a nearby creek by setting and looking under rocks
- ◆ Healthy streams have a lively community of fish and insects and everyone should jump in and learn about stream life
- ◆ A creek walk lays the foundation for development of an environmental ethic
- ◆ Blue Thumb staff will help your group or class learn what lives in our waters and why it is important



WaterWise Gardening Workshop

Take your yard from a short green monoculture to a lively native plant sanctuary! Invite birds and butterflies to your home, and cleanse stormwater before it leaves your property. A WaterWise Workshop will cover:

- ◆ Why native plants are best
- ◆ Where water pollution comes from
- ◆ Landscape features that reduce runoff and filter water



Stream Trailer

The stream trailer uses water and plastic "sand" to demonstrate the difference in a healthy riparian area and an unhealthy riparian area, and the amount of erosion that happens with each. It can also be used to show how streams want to naturally meander and how water moves faster in a channelized stream versus a naturally meandering stream.

- ◆ Help students and city officials better understand the importance of leaving vegetation along a stream
- ◆ Watch what happens when you channelize a stream
- ◆ Contact Jeri to bring the trailer to your event



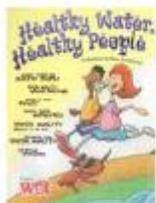
Fish Printing

- ◆ Based on ancient Japanese art called “gyotaku”
- ◆ Provides an easy-to-make item that can be taken home
- ◆ Includes water quality information on the back of the paper
- ◆ Several types of rubber fish available with a variety of colored daubers
- ◆ Available for checkout



Project WET

- ◆ Teaches the value of water through fun, interactive lessons
- ◆ Provides classroom-ready teaching aids
- ◆ Has activities for art, social studies, math or geography



For more information about Project
 WET contact
 Candice Miller
 405-521-6788
candice.miller@conservation.ok.gov



Quality Urban Streams Seminar

This six-hour seminar targets neighborhood associations, municipal and county staff members, as well as city counselors and county commissioners. This seminar promotes:

- ◆ Better understanding of the relationship that exists between land and water
- ◆ Low Impact Development strategies that improve landscapes and waterways
- ◆ Saving money through better land care practices
- ◆ Better understanding of EPA stormwater regulations



Tabletop Rainfall Simulator

- ◆ Uses six different surfaces to demonstrate how rain runoff and infiltration
- ◆ Effectively demonstrates how pollution is transported from land to water
- ◆ Effectively shows how aquifers are recharged in healthy soils and from pervious surfaces
- ◆ Helps provide a realistic visual of real world situations
- ◆ Good for use in both urban and rural areas
- ◆ Contact a Blue Thumb staff member to schedule a demonstration in your area!





Groundwater Screening and Groundwater Model

While about 75% of Oklahomans drink surface water, an important minority drink groundwater. These people are often curious to know what is in their water, so the Blue Thumb Program offers Groundwater Screenings. While bacteria is not included, several parameters, including nitrates, are tested for. Conservation districts typically sponsor these events, with local volunteers actually performing the tests.

Often at a groundwater screening, a groundwater model is used to educate volunteers and the public about this mysterious water beneath the surface of the earth.

- Shows how groundwater moves through the earth
- Helps people understand that pollution isn't limited to surface water
- Shows the interaction between ground and surface water
- Can be used in conjunction with a groundwater screening



EnviroScape

- Helps people understand they live in a watershed
- Shows how both urban and rural areas affect water quality
- Uses harmless food coloring to show how pollutants travel into streams and lakes
- Easy to use
- Available for check-out



Storm Sewer in a Suitcase

- Used to educate urban citizens about nonpoint source pollution (NPS)
- Neighborhood lawns hold pollution until it "rains"
- A good tool to help begin the dialogue on how NPS pollution can be reduced
- Actually see the subsurface drainage system
- Available for check-out





Blue Thumb Training for Outreach and Education

- Spread the word about keeping water clean! A Blue Thumb introduction to several of our special education models and tools is available.
- Learn the “buzz words” that help people stop and listen
- Find out how to check out, set up, clean up, and return Blue Thumb models
- Listen to an expert provide a demonstration
- Try your hand at water quality education in a non-threatening environment



Creek Cleanup

- Local volunteers remove litter and junk from streams
- Participants learn about nonpoint source pollution
- Motivates participants to educate others about problems caused by trash in streams
- Know of a stream that needs cleaning? Call Blue Thumb for help in planning your event!





Blue Thumb Training Session for New Volunteers

The most important aspect of the Blue Thumb Program is our volunteers. Without them, no data would exist for many of our Oklahoma streams. Volunteers begin with training.

- Held in various cities and towns across the state
- Typically held on a Friday evening and all day Saturday with a test kit being loaned to participants who agree to monitor and submit data
- Learn about watersheds, chemical monitoring and life in the water
- Prepares volunteers for data collection
- Provides real-life opportunities for data collection and field work



Blue Thumb Mini-Academies

- Designed to help teachers train their students
- Tailored to individual teacher needs
- One (or less) day training to prepare students for monitoring
- Allows students to perform real science
- Can be conducted at the beginning of each year or semester





Living in Town Educational Flyer: Page 1 - 2

Living in Town

Protecting streams and rivers

A stream reflects the activities that take place within its watershed, which is an area of land where the water under it and draining off of it goes into one stream. Everyone lives in a watershed, so what you do on the land effects a waterbody near you.

Pollutants and non-sustainable land uses can leave a stream shallow, hot, full of sediment and algae, and with eroding banks. A degraded stream does not make for good drinking water, it cannot be a home to fish, and unstable banks and flash floods can even make the stream a hazard. One landowner's actions can cause problems for both upstream and downstream neighbors.

As Blue Thumb staff members travel the state they frequently see examples of abused waterbodies. This publication was developed to help landowners better understand the impacts they have on Oklahoma's streams and rivers, and provide information on ways they can help protect water resources.

Blue Thumb is a water quality education program that supports volunteers who monitor streams and help educate the public about stream and river protection. If you find this publication helpful and you would like to know more visit www.bluethumbok.com, or contact a Blue Thumb staff member.

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Living in Town

Protecting streams and rivers

Living in an urban area has many benefits. Generally you are close to work, school, shopping and a variety of entertainment opportunities. One of those entertainment opportunities might be spending time in a park enjoying the outdoors. Maybe that park has a stream running through it and you remember playing in just such a stream as a child. The question now is, would you let your child play in that same stream?



The more urban an area the greater impact on the streams that run through it. However, there are lots of things that can be done to improve our urban streams. For example, the stream above has eroding banks and no



vegetation. In contrast the stream to the left is also in an urban park, but its banks are not eroding and vegetation is making a comeback. Look inside to discover how you can help your community improve its water quality and make your park visit more enjoyable.

www.bluethumbok.com
www.facebook.com/BlueThumbOK



Living in Town

Being a good steward

Think of all the neighborhoods that exist across our great country! Many people don't realize that what they do to their yard and what they let leak onto driveways and roads has an effect on their community's waterways. Good management of your yard makes for a healthier environment for all creatures, both terrestrial and aquatic.

How a city manages its land also has an effect on the environment. When herbicides and pesticides are sprayed, the aquatic life in nearby streams is affected. Mowing all the way to the edge of the bank reduces shade and the ability of vegetation to absorb pollutants. Plants reduce soil erosion; roots stabilize banks and stems and leaves offer relief from raindrop impact.

Some things you can do in your yard include:

- ◆ **Leave riparian zones undisturbed** (the land bordering a waterbody).
 - ◆ **Read and follow directions before applying fertilizers, pesticides or herbicides to your lawn.**
 - ◆ **Make your yard a haven for native plants, which benefits wildlife and pollinators.**
 - ◆ **Build a rain garden to help reduce runoff from your yard.**
 - ◆ **Visit your local conservation district for information on rain barrels and rain gardens.**
 - ◆ **Visit your county's OSU Extension office.**
 - ◆ **Find groups that encourage proper land management.**
- ◆ **Become a Blue Thumb volunteer!**



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www.facebook.com/BlueThumbOK

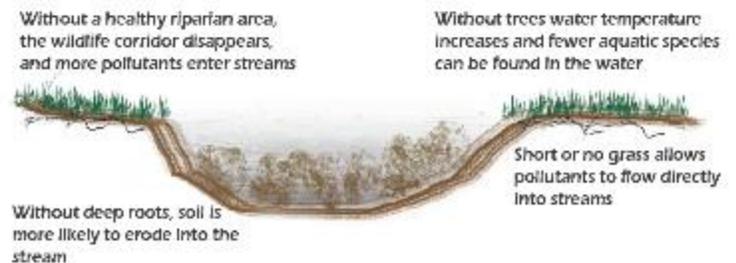
Living in Town

Why the riparian area matters

A healthy riparian area provides many benefits to both the aquatic and terrestrial areas around a stream. When you maintain a healthy riparian area you provide beneficial services to your upstream and downstream neighbors.



An unhealthy, or completely missing riparian area causes many problems in a stream. When you remove all vegetation from your bank, it can have negative effects on your upstream and downstream neighbors.





Living on the Land Educational Flyer: Page 1 – 2

Living on the Land

Protecting streams and rivers

A stream reflects the activities that take place within its watershed, which is an area of land where the water under it and draining off of it goes into one stream. Everyone lives in a watershed, so what you do on the land effects a waterbody near you.

Pollutants and non sustainable land uses can leave a stream shallow, hot, full of sediment and algae, and with eroding banks. A degraded stream does not make for good drinking water, it cannot be a home to fish, and unstable banks and flash floods can even make the stream a hazard. One landowner's actions can cause problems for both upstream and downstream neighbors.

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Blue Thumb is a water quality education program that supports volunteers who monitor streams and help educate the public about stream and river protection. If you find this publication helpful and you would like to know more visit www.bluthumbok.com, or contact a Blue Thumb staff member.

Living on the Land

Protecting streams and rivers

Living in a rural setting has many benefits; privacy, space and the chance to enjoy the natural resources on your property.

However, with these benefits comes the responsibility of being a good neighbor and a good steward of those natural resources.

One of the most important things you can do for yourself, your neighbors and everyone living

downstream of you is to *protect any streams or rivers that flow through your*

property. You have a choice, your stream or river can be raw and eroding (top picture) or it can function properly and offer habitat (left picture). Look inside to discover how you can be a good steward.



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www.bluthumbok.com
www.facebook.com/BlueThumbOK





Living on the Land

Being a good steward

Whether you are new to the country or have been here awhile, keep in mind what it means to be a steward of the land.

◆ Leave riparian zones undisturbed (the land bordering a waterbody)

- ◆ Leave at least a 30' buffer between the water's edge and your farming, grazing or other land disturbing practices
- ◆ Fence cattle and horses out of the creek and provide alternative water sources for them

◆ Do not overgraze

- ◆ Consider implementing a rotational grazing regime
- ◆ Don't exceed the land's carrying capacity

◆ Learn about no-till farming

◆ Keep ATVs in upland areas and on designated trails

◆ Leave areas in native plants for wildlife and pollinators

- ◆ Native grasses have deep fibrous roots that can help prevent erosion, both in the field and along a streambank

◆ Get involved in conservation planning

- ◆ Visit your local conservation district
- ◆ Visit your county's OSU Extension office
- ◆ Find groups that encourage proper land management

◆ Become a Blue Thumb volunteer!



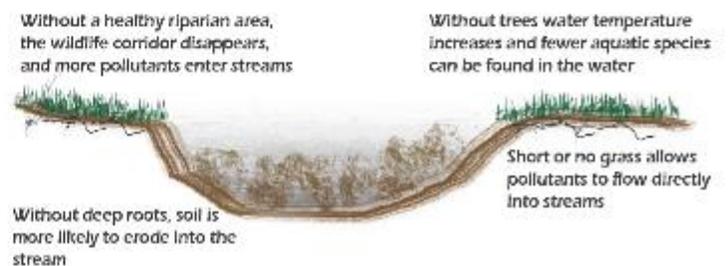
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An unhealthy, or completely missing riparian area causes many problems in a stream. When you remove all vegetation from your bank, it can have negative effects on your upstream and downstream neighbors.





Blue Thumb Volunteer Training Flyers

Do your part to protect water!



This FREE training will be held Friday and Saturday .
Participants will learn about:

- * performing water quality tests
- * stream ecology
- * field collections
- * educating the public about pollution prevention

Who can be a volunteer?
Middle and High School Students
Teachers
Farmers & Ranchers
Retired folks
Professionals
4-H Leaders & members
Anyone with an interest in clean water!

FOR MORE INFORMATION AND TO REGISTER, CONTACT:
KIM SHAW
405-522-4738
KIM.SHAW@CONSERVATION.OK.GOV

**Blue Thumb
New Volunteer
Training
FREE!!!!
January 27-28, 2017**

**Oklahoma City
University
2501 N. Blackwelder, OKC, OK
Science & Math Building
Room # (TBA)**

**Friday 6pm-930pm
Saturday 830am-430pm**

BLUE THUMB IS SPONSORED BY:
Oklahoma Conservation Commission
USDA Natural Resources Service



Blue Thumb Volunteer Training

Training is Free ~ Register in Advance

Day One

- 6:00 pm Welcome/Introductions
- 6:30 pm Blue Thumb and Streams
- 7:45 pm Watersheds/Project WET Activity
(Break during this too)
- 8:30 pm Enviroscape & Rainfall Simulator
- 9:15 pm Blue Thumb Data Sheet and Volunteer Responsibilities

Day Two Please be on time!!!!

- 8:30 am Safety
- 9 am Head to the Creek!
We will cover:
 - ✓ Macroinvertebrates
 - ✓ Fish
 - ✓ On-site monitoring activities
- 11:45 am LUNCH (on your own)
- 12:45 Monitoring Training/Test Kit Maintenance
- 3:15 pm Quality Assurance/Volunteer Responsibilities
- 3:45 pm Teams and Monitoring
- Group photo and adjourn around 4:30pm

Learn to be a Steward
of our
Streams and Rivers!



*Blue Thumb is an education program of the Water Quality
Division of the Oklahoma Conservation Commission.*

About the Blue Thumb Training.....

Blue Thumb is a nonpoint source water pollution education program that uses volunteers to:

- ✓ monitor streams
- ✓ screen groundwater
- ✓ and educate the public about pollution prevention.

Blue Thumb is sponsored by Oklahoma's Conservation Districts and the Oklahoma Conservation Commission.

Attire:

Dress for comfort. Day One has an outdoor component—please be prepared to be in a creek. If you have waders, bring them. We have some that can be loaned. It is recommended to have a change of clothes and different shoes, and to bring a towel.

Additional items you may want to bring to Blue Thumb training, especially for the field....

- ✓ Drinking water
- ✓ Hat
- ✓ Towel
- ✓ Sunscreen
- ✓ Jacket

Blue Thumb Contact information:

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Jeri Fleming, 405-334-6343
jeri.fleming@conservation.ok.gov

Candice Miller, 701-659-0008
Candice.miller@conservation.ok.gov





Blue Thumb Water Quality Education Program

Training for New Volunteers

Friday February 17, 2017 6:00—9:30 p.m.

Saturday February 18, 8:30 a.m.—4:30 p.m.

Wakon Iron Hall

181 Wakon Iron Hall

Pawhuska Indian Village

Backup location—Wahzazhe Cultural Center
1449 W. Main, Pawhuska, OK 74056

The **FREE** Blue Thumb Water Quality Education Program volunteer training will teach you about:

- ◆ Water quality testing
- ◆ Stream ecology
- ◆ Watersheds
- ◆ Field collections
- ◆ Educating the public on protecting water resources



Volunteers can be:

- ◆ Teachers
- ◆ Middle and high school students
- ◆ Landowners
- ◆ Retirees
- ◆ Professionals
- ◆ 4-H leaders and members
- ◆ Anyone with an interest in clean water!



For more information or to register contact:



Jeri Fleming
405-334-6343

jeri.fleming@conservation.ok.gov





Blue Thumb Volunteer Training

Training is Free ~ Register in Advance

Agenda

Day One

- 6:00 p.m. Welcome/Introductions
- 6:30 p.m. Blue Thumb and Streams
- 7:45 Watersheds/Project WET Activity
(Break during this)
- 8:30 EnviroScape & Rainfall Simulator
- 9:00 Blue Thumb Data Sheet and
Volunteer Responsibilities

Day Two

Please be on time!!!

- 8:30 Safety
- 9:00 Head to the Creek!
- We will :
 - ◆ Collect macroinvertebrates
 - ◆ Seine for fish
 - ◆ Learn on-site monitoring duties
- 11:45 LUNCH
- 12:45—Testing instructions and
Test kit maintenance
- 3:15 Quality Assurance
- 3:45 Teams and Monitoring
- 4:30 Group photo and adjourn

About the Blue Thumb Training.....

Attire:

Dress for comfort. Day Two has an outdoor component—please be prepared to be in a creek. If you have waders, bring them. We have some that can be loaned. It is recommended to have a change of clothes and bring a towel. Additional items you may want to bring to the training, especially for the field....

- ◆ Drinking water
- ◆ Hat
- ◆ Towel
- ◆ Jacket

Blue Thumb is a nonpoint source water quality education program that uses volunteers to:

- ◆ monitor streams
- ◆ screen groundwater
- ◆ educate the public about pollution prevention.

Blue Thumb is sponsored by the Oklahoma Conservation Commission's Water Quality Division and funded by a grant from the Environmental Protection Agency.

Blue Thumb Contact information:

Kim Shaw, 405-522-4738 Candice Miller, 701-659-0008
kim.shaw@conservation.ok.gov candice.miller@conservation.ok.gov
Jeri Fleming, 405-334-6343 Robert Barossi
jeri.fleming@conservation.ok.gov robert.barossi@conservation.ok.gov

www.bluethumbok.com

**Learn to be a
Steward of our
Streams and
Rivers!**



Blue Thumb Water Quality Education Program

Training for New Volunteers

Friday, March 24 6:00—9:30 p.m.

Saturday, March 25 8:30 a.m.—4:30 p.m.

Pontotoc Technology Center

601 W 33rd St., Ada, OK

The **FREE** Blue Thumb Water Quality Education Program volunteer training will teach you about:

- ◆ Water quality testing
- ◆ Stream ecology
- ◆ Watersheds
- ◆ Field collections
- ◆ Educating the public on protecting water resources



Volunteers can be:

- ◆ Teachers
- ◆ Middle and high school students
- ◆ Landowners
- ◆ Retirees
- ◆ Professionals
- ◆ 4-H leaders and members
- ◆ Anyone with an interest in clean water!



For more information or to register contact:



Candice Miller

701-659-0008

candice.miller@conservation.ok.gov





Blue Thumb Volunteer Training

Training is Free ~ Register in Advance

Agenda

Day One

- 6:00 p.m. Welcome/Introductions
- 6:30 p.m. Blue Thumb and Streams
- 7:45 Watersheds/Project WET Activity
(Break during this)
- 8:30 EnviroScape & Rainfall Simulator
- 9:00 Blue Thumb Data Sheet and
Volunteer Responsibilities

Day Two

Please be on time!!!

- 8:30 Safety
- 9:00 Head to the Creek!
- We will :
 - ◆ Collect macroinvertebrates
 - ◆ Seine for fish
 - ◆ Learn on-site monitoring duties
- 11:45 LUNCH
- 12:45—Testing instructions and
Test kit maintenance
- 3:15 Quality Assurance
- 3:45 Teams and Monitoring
- 4:30 Group photo and adjourn

About the Blue Thumb Training.....

Attire:

Dress for comfort. Day Two has an outdoor component—please be prepared to be in a creek. If you have waders, bring them. We have some that can be loaned. It is recommended to have a change of clothes and bring a towel. Additional items you may want to bring to the training, especially for the field....

- ◆ Drinking water
- ◆ Hat
- ◆ Towel
- ◆ Jacket

Blue Thumb is a nonpoint source water quality education program that uses volunteers to:

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www.bluethumbok.com

**Learn to be a
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Blue Thumb Water Quality Education Program

Training for New Volunteers

Monday, July 24 12:30pm—4:30pm

Tuesday, July 25 8:30am—4:30pm

OSU Kiamichi Forestry Research Station
4878 E State Highway 3, Idabel, OK

The **FREE** Blue Thumb Water Quality Education Program volunteer training will teach you about:

- Water quality testing
- Stream ecology
- Watersheds
- Field collections
- Educating the public on protecting water resources



Volunteers can be:

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- Landowners
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- 4-H leaders and members
- Anyone with an interest in clean water!



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Candice Miller

701-659-0008

candice.miller@conservation.ok.gov





Blue Thumb Volunteer Training

Training is Free ~ Register in Advance

Agenda

Day One

- 12:30 Welcome/Introductions
- 1:00 Blue Thumb and Streams
- 2:15 Watersheds/Project WET Activity
(Break during this)
- 3:00 EnviroScape & Rainfall Simulator
- 3:30 Blue Thumb Data Sheet and
Volunteer Responsibilities

Day Two

Please be on time!!!

- 8:30 Safety
- 9:00 Head to the Creek!
- We will :
 - ◆ Collect macroinvertebrates
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- 11:45 LUNCH
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- 3:15 Quality Assurance
- 3:45 Teams and Monitoring
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About the Blue Thumb Training.....

Attire:

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Jeri Fleming, 405-334-6343 Robert Barossi, 918-398-1804
jeri.fleming@conservation.ok.gov robert.barossi@conservation.ok.gov

www.bluethumbok.com

**Learn to be a
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Blue Thumb Water Quality Education Program

Training for New Volunteers

Friday, September 8 5:00pm—9:00pm

Saturday, September 9 8:30am—4:30pm

Stillwater Community Center

315 W 8th Ave., Stillwater, OK

The **FREE** Blue Thumb Water Quality Education Program volunteer training will teach you about:

- Water quality testing
- Stream ecology
- Watersheds
- Field collections
- Educating the public on protecting water resources



Volunteers can be:

- Teachers
- Middle and high school students
- Landowners
- Retirees
- Professionals
- 4-H leaders and members
- Anyone with an interest in clean water!



For more information or to register contact:



Candice Miller

701-659-0008

candice.miller@conservation.ok.gov





Blue Thumb Volunteer Training

Training is Free ~ Register in Advance

Agenda

Day One

- 5:00 Welcome/Introductions
- 5:30 Blue Thumb and Streams
- 6:45 Watersheds/Project WET Activity
(Break during this)
- 7:30 EnviroScape & Rainfall Simulator
- 8:00 Blue Thumb Data Sheet and
Volunteer Responsibilities

Day Two

Please be on time!!!

- 8:30 Safety
- 9:00 Head to the Creek!
- We will :
 - ◆ Collect macroinvertebrates
 - ◆ Seine for fish
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About the Blue Thumb Training.....

Attire:

Dress for comfort. Day Two has an outdoor component—please be prepared to be in a creek. If you have waders, bring them. We have some that can be loaned. It is recommended to have a change of clothes and bring a towel. Additional items you may want to bring to the training, especially for the field....

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Blue Thumb Water Quality Education Program

Training for New Volunteers

Monday, September 18 5:30—9:30 p.m.

Tuesday, September 19 8:30 a.m.—4:30 p.m.

Chickasaw Community Center

700 N Mississippi Ave, Ada, OK 74820

The **FREE** Blue Thumb Water Quality Education Program volunteer training will teach you about:

- Water quality testing
- Stream ecology
- Watersheds
- Field collections
- Educating the public on protecting water resources



Volunteers can be:

- Teachers
- Middle and high school students
- Landowners
- Retirees
- Professionals
- Concerned citizens
- Anyone with an interest in clean water!



For more information or to register, contact:



Robert Barossi
918-398-1804

robert.barossi@conservation.ok.gov





Blue Thumb Volunteer Training

Training is Free ~ Please Register in Advance

Agenda

Day One

- 5:30 p.m. Welcome/Introductions
- 6:00 p.m. Blue Thumb and Streams
- 6:30 Watersheds/Project WET Activity
(Break during this)
- 7:30 EnviroScape & Rainfall Simulator
- 8:00 Blue Thumb Data Sheet and
Volunteer Responsibilities

Day Two

Please be on time!!!

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- 9:00 Head to the Creek!
- We will :
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- 12:45 Testing Instructions and
Test Kit Maintenance
- 3:15 Quality Assurance
- 3:45 Teams and Monitoring
- 4:30 Group Photo and Adjourn

About the Blue Thumb Training.....

Attire:

Dress for comfort. Day Two has an outdoor component—please be prepared to be in a creek, wear closed toed shoes that can get wet. Bring waders if you prefer to use them. We have some that can be loaned. It is recommended to have a change of clothes and bring a towel. Additional items you may want to bring to the training, especially for the field....

- ◆ Drinking water
- ◆ Hat
- ◆ Sunscreen/Bug spray
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Blue Thumb Water Quality Education Program

Training for New Volunteers

Friday, September 29 6:00—10:00 p.m.
Saturday, September 30 8:30 a.m.—4:30 p.m.
Tahlequah Armory Municipal Center
100 North Water Ave, Tahlequah, OK

The **FREE** Blue Thumb Water Quality Education Program volunteer training will teach you about:

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- Watersheds
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Blue Thumb Volunteer Training

Training is Free ~ Register in Advance

Agenda

Day One

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- 6:30 p.m. Blue Thumb and Streams
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www.bluethumbok.com

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Blue Thumb Water Quality Education Program

Training for New Volunteers

Friday, November 3 6:00pm–10:00pm

Saturday, November 4 8:30am–4:30pm

City of Broken Arrow

485 N. Poplar, Broken Arrow, OK

The **FREE** Blue Thumb Water Quality Education Program volunteer training will teach you about:

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- ◆ Stream ecology
- ◆ Watersheds
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- ◆ 4-H leaders and members
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For more information or to register contact:



Candice Miller
405-521-6788

candice.miller@conservation.ok.gov





Blue Thumb Volunteer Training

Training is Free ~ Register in Advance

Agenda

Day One

- 6:00 Welcome/Introductions
- 6:30 Blue Thumb and Streams
- 7:45 Watersheds/Project WET Activity
(Break during this)
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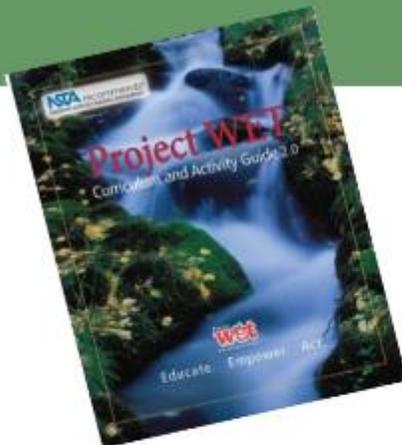
Project WET Workshop Flyers

We envision a world in which action-oriented education enables every child to understand and value water, ensuring a sustainable future.

Project WET Workshop

Project WET workshops includes: (\$20 Fee)

- ◆ Award-winning, NSTA-recommended Curriculum and Activity Guide 2.0
- ◆ Certificate for professional development or continuing education hours
- ◆ Access to Project WET education portal
- ◆ Hands on experience with WET activities
- ◆ Access to check-out materials



Contact Information

Candice Miller

405-521-6788

candice.miller@conservation.ok.gov





Registration Form

Project WET Workshop

Name: _____

Workshop Date and Location: _____

School/Organization: _____

Grade(s) and subject(s) you teach: _____

Address: _____

City: _____ State: _____ Zip: _____

Email: _____

Phone: _____

How did you find out about this workshop?

What would you like to learn from this workshop?

To register, fill out and send form to:

Candice Miller

Project WET Coordinator

Oklahoma Conservation Commission

2800 N Lincoln Blvd, Suite 200

Oklahoma City, OK 73105

candice.miller@conservation.ok.gov

**Advanced payment is encouraged, but
\$20 fee may be paid on the day of the
workshop.**

Please make checks payable to:
Oklahoma Conservation Commission





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- ◆ Hands on experience with WET activities
- ◆ Access to check-out materials



Workshop Information

Location: Idabel

Date: July 26, 2017

Time: 9:00am—3:30pm

Cost: \$20

Contact Information

Candice Miller

405-521-6788

candice.miller@conservation.ok.gov





Registration Form

Project WET Workshop

July 26, 2017

Name: _____

School/Organization: _____

Grade(s) and subject(s) you teach: _____

Address: _____

City: _____ State: _____ Zip: _____

Email: _____

Phone: _____

How did you find out about this workshop?

What would you like to learn from this workshop?

To register, fill out and send form and \$20 fee to:

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Project WET Coordinator

Oklahoma Conservation Commission

2800 N Lincoln Blvd, Suite 200

Oklahoma City, OK 73105

candice.miller@conservation.ok.gov

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- ◆ Access to check-out materials



Workshop Information

Location: Grove

Date: September 1

Time: 8:00am—2:30pm

Cost: \$20

Contact Information

Candice Miller

405-521-6788

candice.miller@conservation.ok.gov





Registration Form

Project WET Workshop

September 1, 2017

Name: _____

School/Organization: _____

Grade(s) and subject(s) you teach: _____

Address: _____

City: _____ State: _____ Zip: _____

Email: _____

Phone: _____

How did you find out about this workshop?

What would you like to learn from this workshop?

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Project WET Coordinator

Oklahoma Conservation Commission

2800 N Lincoln Blvd, Suite 200

Oklahoma City, OK 73105

candice.miller@conservation.ok.gov

Please make checks payable to: Oklahoma Conservation Commission
--



We envision a world in which action-oriented education enables every child to understand and value water, ensuring a sustainable future.

Project WET Workshop

Workshop Information

Location:

Stillwater Community Center

Room 121

315 W 8th St.

Stillwater, OK 74074

Date: September 10, 2017

Time: 12:00pm–6:00pm

Cost: \$20

Contact:

Candice Miller

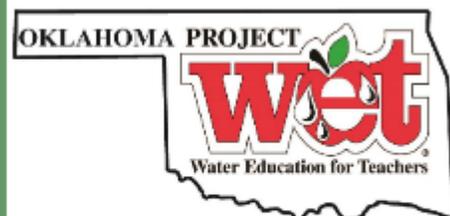
405-21-6788

candice.miller@conservation.ok.gov



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- ◆ Access to check-out materials





Agenda
September 10, 2017
Project WET Workshop - Stillwater Community Center

- | | |
|--|---|
| 12:00pm Welcome | 3:15pm Plunge Through the Portal |
| 12:15pm Activity #1 | 3:30pm Peer Teaching |
| 12:45pm Intro to Project WET | Activity #4 |
| 1:15pm Activity #2 | Activity #5 |
| Activity #3 | Activity #6 |
| 2:30pm Break | 5:30pm Wrap—Up |
| 2:45pm Splash Through the Guide | Evaluations |
| | Certificates |
| | 6:00pm Dismiss |

Registration Form

Project WET Workshop—Stillwater Community Center
September 10, 2017

Name: _____

School/Organization: _____

Grade(s) and subject(s) you teach: _____

Address: _____

City: _____ State: _____ Zip: _____

Email: _____ Phone: _____

How did you find out about this workshop?

What would you like to learn from this workshop?

To register, send form to:
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Project WET Coordinator
Oklahoma Conservation Commission
2800 N Lincoln Blvd, Suite 200
Oklahoma City, OK 73105
candice.miller@conservation.ok.gov

Advanced payment is encouraged, but \$20 fee may be paid on day of the workshop.

Please make checks payable to:
Oklahoma Conservation Commission



We envision a world in which action-oriented education enables every child to understand and value water, ensuring a sustainable future.

Project WET Workshop

Workshop Information

Location:

Tahlequah Armory Municipal Building

100 N. Water

Tahlequah, OK 74464

Date: October 1, 2017

Time: 12:00pm–6:00pm

Cost: \$20

Contact:

Candice Miller

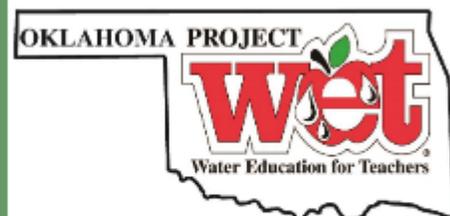
405-21-6788

candice.miller@conservation.ok.gov



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- ◆ Hands on experience with WET activities
- ◆ Access to check-out materials





Agenda

October 1, 2017

Project WET Workshop - Tahlequah Armory Municipal Building

- | | |
|--|---|
| 12:00pm Welcome | 3:15pm Plunge Through the Portal |
| 12:15pm Activity #1 | 3:30pm Peer Teaching |
| 12:45pm Intro to Project WET | Activity #4 |
| 1:15pm Activity #2 | Activity #5 |
| Activity #3 | Activity #6 |
| 2:30pm Break | 5:30pm Wrap—Up |
| 2:45pm Splash Through the Guide | Evaluations |
| | Certificates |
| | 6:00pm Dismiss |

Registration Form

Project WET Workshop—Tahlequah Armory Municipal Building
October 1, 2017

Name: _____

School/Organization: _____

Grade(s) and subject(s) you teach: _____

Address: _____

City: _____ State: _____ Zip: _____

Email: _____ Phone: _____

How did you find out about this workshop?

What would you like to learn from this workshop?

To register, send form to:
Candice Miller
Project WET Coordinator
Oklahoma Conservation Commission
2800 N Lincoln Blvd, Suite 200
Oklahoma City, OK 73105
candice.miller@conservation.ok.gov

Advanced payment is encouraged, but \$20 fee
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Oklahoma Conservation Commission



We envision a world in which action-oriented education enables every child to understand and value water, ensuring a sustainable future.

Project WET Workshop

Workshop Information

Location:

Tishomingo National Wildlife
Refuge

12000 S Refuge Rd

Tishomingo, OK

Date: October 13, 2017

Time: 8:00am–3:00pm

Cost: \$20

Contact:

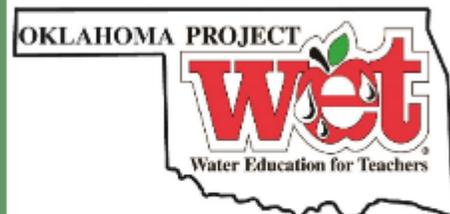
Candice Miller

405-21-6788

candice.miller@conservation.ok.gov

Project WET workshop includes:

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- ◆ Hands on experience with WET activities
- ◆ Access to check-out materials





Agenda

October 13, 2017

Project WET Workshop - Tishomingo National Wildlife Refuge

8:00am Welcome	1:15pm Plunge Through the Portal
8:15am Activity #1	1:30pm Peer Teaching
8:45am Intro to Project WET	Activity #4
9:15am Activity #2	Activity #5
Activity #3	Activity #6
10:30am Splash Through the Guide	2:30pm Wrap—Up
11:45am Lunch (on your own)	Evaluations
	Certificates
	3:00pm Dismiss

Registration Form

Project WET Workshop—Tishomingo National Wildlife Refuge

October 13, 2017

Name: _____

School/Organization: _____

Grade(s) and subject(s) you teach: _____

Address: _____

City: _____ State: _____ Zip: _____

Email: _____ Phone: _____

How did you find out about this workshop?

What would you like to learn from this workshop?

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Oklahoma City, OK 73105
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Project WET Workshop

Workshop Information

Location: Camp Loughridge
Activity Cabin
4900 W 71st St.
Tulsa, OK 74131

Date: November 5, 2017

Time: 12:00pm–6:00pm

Cost: \$20

Contact:

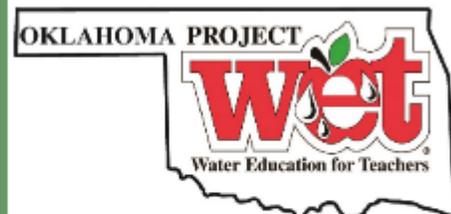
Candice Miller

405-521-6788

candice.miller@conservation.ok.gov

Project WET workshop includes:

- ◆ Award-winning, NSTA-recommended Curriculum and Activity Guide 2.0
- ◆ Certificate for professional development or continuing education hours
- ◆ Access to Project WET education portal
- ◆ Hands on experience with WET activities
- ◆ Access to check-out materials





Agenda

November 5, 2017

Project WET Workshop - Camp Loughridge, Tulsa

- | | |
|--|---|
| 12:00pm Welcome | 3:15pm Plunge Through the Portal |
| 12:15pm Activity #1 | 3:30pm Peer Teaching |
| 12:45pm Intro to Project WET | Activity #4 |
| 1:15pm Activity #2 | Activity #5 |
| Activity #3 | Activity #6 |
| 2:30pm Break | 5:30pm Wrap—Up |
| 2:45pm Splash Through the Guide | Evaluations |
| | Certificates |
| | 6:00pm Dismiss |

Registration Form

Project WET Workshop—Camp Loughridge, Tulsa

November 5, 2017

Name: _____

School/Organization: _____

Grade(s) and subject(s) you teach: _____

Address: _____

City: _____ State: _____ Zip: _____

Email: _____ Phone: _____

How did you find out about this workshop?

What would you like to learn from this workshop?

To register, send form to:
Candice Miller
Project WET Coordinator
Oklahoma Conservation Commission
2800 N Lincoln Blvd, Suite 200
Oklahoma City, OK 73105
candice.miller@conservation.ok.gov

Advanced payment is encouraged, but \$20 fee may be paid on day of the workshop.

Please make checks payable to:
Oklahoma Conservation Commission



NATIVE ROOTS

October 27-29, 2017
Grove, Oklahoma

Join us for the annual WET/WILD/PLT regional workshop as we explore the culture, history, and environment of the Ozark Highlands and Central Irregular Plains of Oklahoma!

We will tour the Quapaw Tribe's greenhouses and hear about their farm to table program at the Downstream Casino. Started in 2014, the program has grown to include a meat processing plant, herds of bison, cattle and goats, over 40 beehives and even a coffee roasting facility. The program was started with the idea of long-term sustainability and a cultural need to reconnect with agriculture. The Quapaw Tribe will also guide us on a tour of the Tar Creek Superfund Site. Know for being largest superfund site in the United States, it was once home to lead and zinc mines that supplied ammunition materials for World Wars I and II.

We will travel back in time to Har-Ber Village Museum, a pioneer-era village and history museum located on the shores of Grand Lake O'the Cherokees. Almost died out and hard to find, river cane is on the rise thanks to the Cherokee Nation River Cane Initiative. Ethnobotanist Roger Cain will share the history of river cane, it's cultural importance, and how he is working to bring it back.

Native American nations have a rich oral tradition of storytelling. We will hear stories told by local storyteller, Fran Stallings.

We will also experience early childhood education and the new Getting Little Feet WET guide from Project WET!

What: WET/WILD/PLT Regional Workshop

When: October 27-29, 2017

Where: Grove, OK **Lodging:** Stonebrook Inn
10400 US Highway 59, Grove, OK, 74344

Cost: \$120 includes lodging, most meals, and materials (make checks payable to Oklahoma Green Schools)

Registration Deadline: October 16, 2017



NATIVE ROOTS

Friday, October 27, 2017

- 1:00pm - Tour of Farm to Table Facilities at Downstream Casino
- 5:00pm - Dinner (on your own)
- 6:30pm - Begin Check-in at Stonebrook Inn
- 7:30pm - Make-N-Takes

Saturday, October 28, 2017

- 7:30am - Breakfast (included)
- 8:30am - Tar Creek Superfund Site Tour with Quapaw Tribe
- 12:00pm - Har-Ber Village Museum (lunch included)
- 4:00pm - River Cane Presentation by Cherokee Nation
- 6:00pm - Dinner (included)
- 7:30pm - Storytelling with Fran Stallings

Sunday, October 29, 2017

- 7:30am - Breakfast (included)
- 8:30am - Early Childhood Education - Getting Little Feet WET
- 12:00pm - Dismiss



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WET/WILD/PLT Workshop Registration Form

Registration Deadline: Monday, October 16, 2017

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Email: _____

Emergency contact person: _____ Phone: _____

Mail a check for \$120 made out to **Oklahoma Green Schools Program**
along with this form to:

Oklahoma Green Schools Program
Attention: Sara Ivey
707 N. Robinson Ave.
Oklahoma City, OK 73101