

Bishop Creek Watershed Based Plan

Community-Driven Restoration and Protection

Katrina Boteler & Michelle Chao

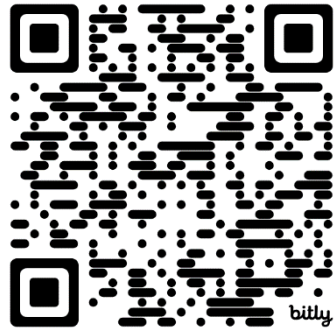
City of Norman



Bishop Creek Watershed-Based Plan (WBP)

- Background
 - Community involvement
 - WQ status

- Plan
 - Goals & BMPs
 - Accomplishments so far



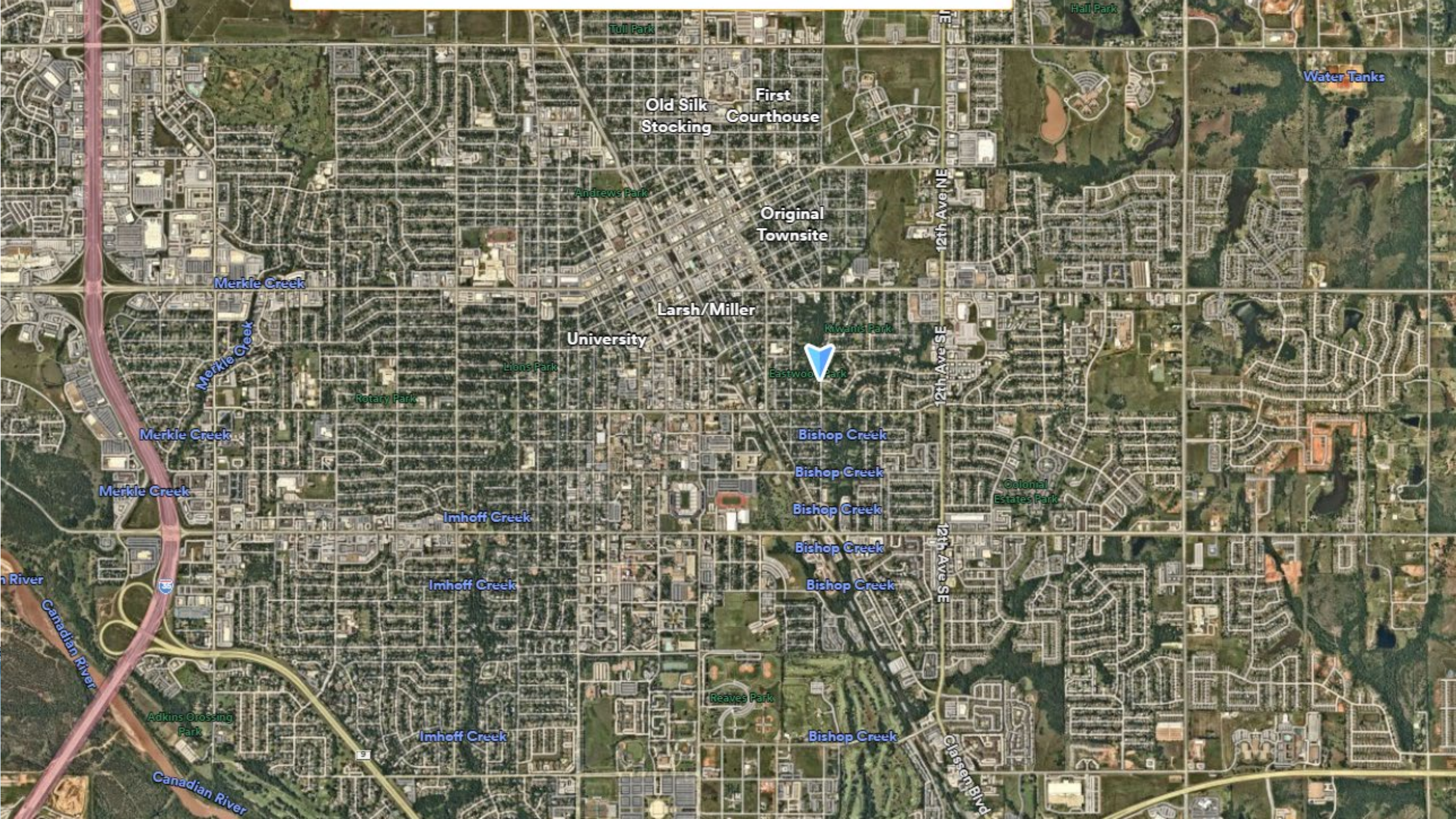
bit.ly/BishopCreek





photography
k.chapman

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Tull Park

Hall Park

Water Tanks

Old Silk Stocking

First Courthouse

Andrew's Park

Original Townsite

12th Ave NE

Merkle Creek

Larsh/Miller

University

Kiwanis Park

Merkle Creek

Lions Park

Eastwood Park

12th Ave SE

Rotary Park

Merkle Creek

Bishop Creek

Colonial Estates Park

Merkle Creek

Imhoff Creek

Bishop Creek

Bishop Creek

12th Ave SE

h River

Canadian River

Bishop Creek

Bishop Creek

Imhoff Creek

Adkins Crossing Park

Reaves Park

Bishop Creek

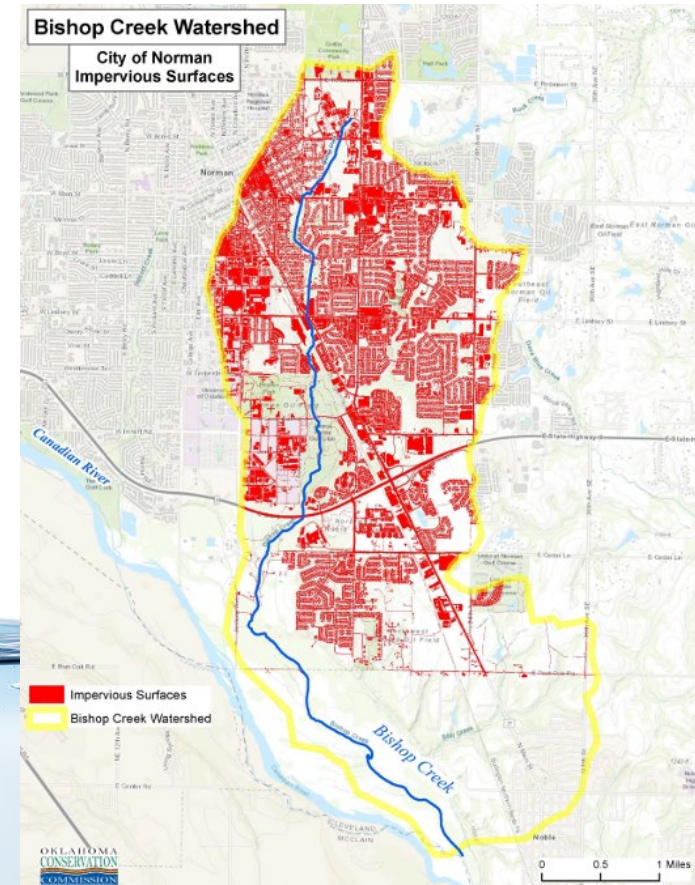
Imhoff Creek

Classen Blvd

Canadian River

About Bishop Creek

- Watershed is 14 square miles (City is roughly 190 square miles)
- Runs 8 miles through central/urbanized Norman
- Over 61% of the watershed has been developed
 - Just under 40% impervious
- History of impairments for fish bioassessment and benthic macroinvertebrate assessments back to 2014



IR History

IR CYCLE	CAUSE	WATERBODY	POTENTIAL SOURCES	IMPACTED USE
2024 (draft)	Macroinvertebrate bioassessment	Bishop Creek	Unknown	WWAC
2024 (draft)	Fishes bioassessment	Unnamed tributary	Unknown	WWAC
2022	Macroinvertebrate bioassessment	Bishop Creek	Unknown	WWAC
2022	Fishes bioassessment	Unnamed tributary	Unknown	WWAC
2020	Fishes bioassessment	Bishop Creek	Unknown	WWAC
2020	Fishes bioassessment	Unnamed tributary	Unknown	WWAC
2018	Macroinvertebrate bioassessment	Bishop Creek	*	WWAC
2016	Macroinvertebrate bioassessment	Bishop Creek	*	WWAC
2014	Fishes bioassessment	Bishop Creek	*	WWAC

1. Grazing in riparian area
2. Highway/road/bridge runoff
3. Impacts from land application of wastes
4. Non-irrigated crop production
5. On-site treatment systems
6. Petroleum/ natural gas production activities (legacy)
7. Rangeland grazing
8. Residential districts
9. Wildlife other than waterfowl
10. Unknown

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BT Monitoring Data-DO

Year	Total Number of Measurements	Number of Measurements that Failed to Meet the Criterion	Percentage of Measurements that Failed to Meet the Criterion
Bishop Creek at Constitution			
2009	7	1	14
2010	7	2	29
2012	4	2	50
2013	8	1	13
2014	11	5	45
2015	3	1	33
2016	12	2	17
2017	20	0	0
2018	11	3	27
2019	10	2	20
2020	2	0	0
2021	9	4	44
2022	10	5	50



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2015	3	1	33
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2017	20	0	0
2018	11	3	27
2019	10	2	20
2020	2	0	0
2021	9	4	44
2022	10	5	50



BT Monitoring Data-DO

Year	Total Number of Measurements	Number of Measurements that Failed to Meet the Criterion	Percentage of Measurements that Failed to Meet the Criterion
Bishop Creek at Eastwood Park			
2012	11	3	27
2013	11	1	9
2014	10	6	60
2016	10	5	50
2017	11	2	18
2018	5	1	20
2019	2	0	0
2020	12	5	42
2021	12	6	50
2022	11	4	36



BT Monitoring Data-DO

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What Impacts Bishop Creek?

- Urban development
- Non-point source pollution
- Trash and debris
- Poor riparian health
- Altered flows due to climate change and additional impervious surfaces



About Bishop Creek

- Strong community involvement in watershed
 - Friends of Bishop Creek
 - Red Dirt Collective
 - Sierra Club-pollinator garden
 - Frequent watershed clean-ups
 - Upcoming nature park
 - OU ESSA



PDG
PLANNING DESIGN GROUP

NORMAN NATURE PARK MASTER PLAN
Norman, Oklahoma



Jan 31st, 2024



What is a Watershed Based Plan (WBP)?

- According to the EPA:
“Watershed-based plans (WBPs) are means to define, resolve and prevent existing or future water quality problems that result from both nonpoint source and point source pollution.”



What is a Watershed Based Plan (WBP)?

- Alternative Protection Plan (5-alt)
 1. Cause of impairment
 2. Goals
 3. Schedule and milestones
 4. BMPs
 5. Monitoring
- Required for certain federal grants (EPA Section 319)
 - <https://www.epa.gov/nps/319-grant-program-states-and-territories>



Bishop Creek WBP Background

- Rebecca Bond
 - [https://www.youtube.com/watch?v= T5g8MhqLBI](https://www.youtube.com/watch?v=T5g8MhqLBI)
- Karen Chapman
 - <https://www.youtube.com/watch?v=sG4a5RdAp40>



Bishop Creek WBP Background

- Local resident started discussion about potential TMDL for fish assessments
 - Determined impairment status is an artifact of assessment protocol rather than ecologically meaningful impairment
 - While not ecologically meaningful, creek is still impacted by urban activities (erosion, litter, limited riparian area, etc.)



Bishop Creek WBP

- April 2022-plan development kick off (monthly meetings)
- March 2023-plan submitted to EPA for review
- April 2023-plan accepted by EPA



Bishop Creek WBP Goals

- Improving the riparian area along Bishop Creek.
- Reducing the amount of trash that reaches Bishop Creek.
- Increasing water infiltration in the watershed.
- Reducing the amount of bacteria from domestic pets reaching the stream.
- Collect dissolved oxygen and E. coli data to determine beneficial use support status for these parameters.



Bishop Creek WBP BMPs

- Establishing no-mow zones
- Installing pet waste stations
- Watershed clean-up events
- Installing litter boom and educational signage
- Participating in educational events (Earth Day Festival and Monarchs in the Park)
- Watershed pledge
- Yard x Yard (www.okconservation.org/yard-by-yard-gounds-by-grounds)



Bishop Creek Outreach Material

HELP IMPROVE HABITAT

If you live next to the creek or a waterway, establish a “no mow” zone by not mowing all the way up to the water’s edge. This area is called the “riparian area” and provides crucial habitat to fish and bugs that live in the creek.

REDUCE RUNOFF

Allow your downspouts to flow into grass, a rain barrel, or even a rain garden! This gives water a chance to infiltrate into the soil instead of flowing directly into the creek. This reduces the pollutants that end up in the creek as well as the flow velocity.

PICK UP TRASH

Litter can block or clog small waterways causing water to stagnate. This can lead to low oxygen levels which are harmful to wildlife. Fish and bugs can also become trapped in trash or mistake it for food.

FOLLOW THE LABEL

If you apply any chemicals in your garden (fertilizers, pesticides, herbicides, etc.) be sure to follow the manufacturer’s label! Avoid applying during the rain or immediately next to the waterway. Use only what you need and don’t over apply.

BAG YOUR CLIPPINGS

Bag your grass clippings and leaves instead of blowing them into the street. Excess organic matter can clog a small creek and the nutrients can encourage algae growth.

SCOOP THE POOP

If you have pets be sure to pick up their poop from your yard and while on walks. This keeps excess nutrients and bacteria from entering our waterways.

No-Mow Zones

- Established in 2024
 - Spread seed and compost November 2023
 - Sent notice to nearby residents in May 2024
 - Re-seeded in February 2025



No-Mow Zones

Eastwood Park 2015



No-mow zone established 2016



Eastwood Park 2025



Rain Gardens & Pollinator Pockets

- Household Hazardous Waste Facility
 - April 2025
 - 2 new gardens with 706 native plants
- Red Dirt Collective-Colonial Commons Park
 - September 2024
 - New pollinator garden with 79 native plants



Pet Waste

- 3 new pet stations have been installed with 3 additional parks identified



June 2025

BACTERIA SOURCES IN STORMWATER

Sources of bacteria in stormwater and surface waters can vary widely, originating from both animal and human sources. While this list does not include every possible bacteria source, it includes some of the common sources seen in municipalities like Norman.

SOURCES

HUMAN WASTE

Waste can enter surface waters from degraded sewer infrastructure, failing septic tanks and drain fields, homeless camps, sewer overflows, and direct illicit connections from homes or businesses. Contamination commonly ends up in out stormwater systems, where it is conveyed and discharged to surface waters like Lake Thunderbird.



PET WASTE

Wastes from dogs and other domestic animals and livestock are not a natural part of the environment and, like most fecal sources, may pollute waters by increasing bacteria levels in surface waters and pose health risks to swimmers.



WHAT CAN YOU DO?

AT HOME

If your home has a on-site sewage treatment system, make sure that you are following the care and maintenance procedures. If you would like to learn more, please visit DEQ's webpage: bit.ly/43SXpOe



IN YOUR YARD

If you own pets, make sure that you collect their waste and dispose of it properly. When it comes to lawn care, make sure that you don't blow your grass clippings into the street; instead, blow them onto your lawn or collect them for compost.



IN YOUR COMMUNITY

Have you ever seen something



Watershed Clean-Ups

- Almost 4,000 lb. of trash has been removed from watershed since July 2023

FY	NO. EVENTS	VOLUNTEERS	LB. TRASH COLLECTED
2024	14	231	2,463.1
2025	13	172	1,479.9
TOTAL	27	403	3,943



Litter Boom and Educational Signage

- Litter boom was installed March 23, 2025
 - 124.49 lb. collected so far
- Educational signage approved by Parks Board on June 5, 2025



BISHOP CREEK WATERSHED

Bishop Creek and its watershed is 14 square miles and the main stem of the creek runs almost 8 miles through central Norman! Over 61% of the watershed has been developed. The increase in impervious surfaces (such as roads, driveways, roofs, and parking lots) leads to:

- decreased infiltration,
- increased runoff,
- increased flashiness (high flows), and
- impaired stream bank vegetation.

WATER QUALITY IMPAIRMENTS

Bishop Creek is impaired for benthic macroinvertebrates (bugs!) and fishes. That means there are fewer, and sometimes different, species of bugs and fish than would be observed in a healthy stream. While the causes have not been identified, this is generally a result of poor habitat conditions.



LITTER BOOM

Litter can clog waterways causing water to stagnate leading to low oxygen levels which are harmful to wildlife. Fish and bugs can also become trapped in trash or mistake it for food. A litter boom is a floating barrier designed to catch litter and prevent it from floating downstream. Our litter boom is installed near Oklahoma Ave. and Macy St.



HOW CAN YOU HELP?

Follow these simple steps to protect Bishop Creek and improve aquatic habitat.

- If you live next to the creek or waterway, establish a “no-mow” zone around the water’s edge.
- Pick up trash around your home, neighborhood, and the creek.
- Reduce runoff from your home by using a rain barrel or planting a rain garden.
- Always follow the label when applying chemicals such as pesticides, herbicides, fertilizers, etc. Only use what you need!
- Keep leaves and grass clippings out of our storm drains and creeks.
- Be sure to pick up pet waste from your yard and while on walks.



Photograph courtesy of K. Chapman Photography



Learn more about Bishop Creek at:
bit.ly/BishopCreek

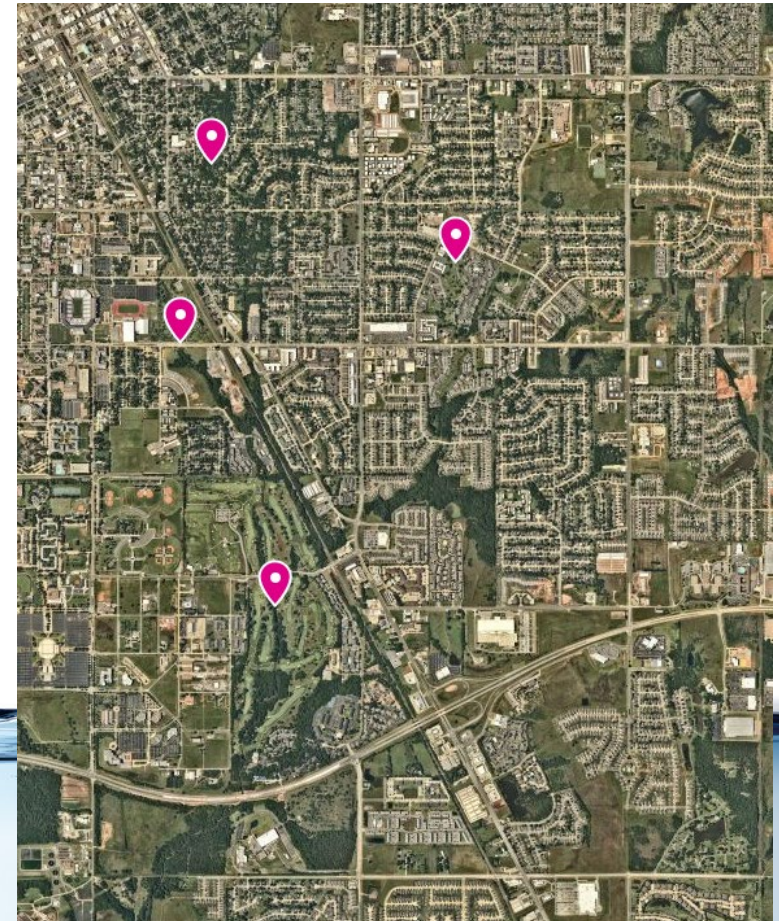


SCAN ME!



Monitoring

- Currently Blue Thumb monitoring takes place in:
 - Eastwood Park
 - Colonial Estates Park
 - Lindsey Street
 - OU Golf Course
- Bacteria monitoring-target screening 2026
- DO monitoring-training will be scheduled for fall 2025



Educational Events

- Earth Day Festival
 - April 27, 2025
 - Approximately 1,900 visitors
- Monarchs in the Park
 - October 5, 2024
 - Approximately 853 visitors



Watershed Pledge

PROTECT BISHOP CREEK PLEDGE
- CERTIFICATE -

Bishop Creek and its tributaries are impaired for benthic macroinvertebrates (bugs!) and fishes. That means there are fewer, and sometimes different, species of bugs and fish than would normally be observed in a healthy stream. While the causes have not been identified, this is generally a result of poor habitat conditions.

Address _____

Name _____

Signature _____ Date _____

BY SIGNING ABOVE, I PLEDGE TO:

Maintain a 50 foot buffer between Bishop Creek and any tributaries that cross my property. I will not mow or use pesticides, herbicides, fertilizers, or other similar chemicals in this 50 foot buffer.

I WILL DO MY BEST TO:

- Use native plants where possible next to Bishop Creek.
- Pick up trash, litter, and other debris.
- Follow the manufacturer's label when applying chemicals outside.
- Keep grass clippings and leaves out of the street and/or our storm sewer system.
- Properly dispose of pet waste.

Visit bit.ly/BishopCreek to learn more.




Norman Community Watershed Pledge
- CERTIFICATE -

The creeks and waterways throughout Norman play a vital role in our local environment, supporting fish, wildlife, and overall ecosystem health. However, some of our streams face challenges such as poor habitat condition, which can impact water quality and aquatic life. By making small changes on properties, we can help restore and protect these vital resources for future generations.

Address _____

Name _____

Signature _____ Date _____

BY SIGNING ABOVE, I PLEDGE TO:

Commit to helping protect and improve our local waterways by implementing at least one environmental practices on my property. Additional practices are encouraged, but only one is required.

I WILL IMPLEMENT AT LEAST ONE PRACTICE:

- Use native plants where possible.
- Pick up trash, litter, and other debris.
- Follow the manufacturer's label when applying chemicals outside.
- Keep grass clippings and leaves out of the street and/or our storm sewer system.
- Properly dispose of pet waste.



CITY OF NORMAN RAIN BARREL SALE EXTENSION!

HALF OFF FOR THE FIRST 50 NORMAN HOMEOWNERS!

- Offer available to City of Norman residents only
- Limit one discounted rain barrel per household
- Delivered directly to your residence; separate shipping costs apply

Discount only applies to 55 gallon barrels

LAST DATE OF PURCHASE: JUNE 30TH, 2025

Yard X Yard

- Goal: certify 10 yards within the watershed
 - 2024: 3 yards
 - 2025: 17 yards



Moving Forward

- Continue outreach, clean-ups, watershed pledge, etc.
- Submit proposal for:
 - Rain garden in Nature Park
 - Second litter boom
- Establish additional no-mow zones
- Additional monitoring
 - DO and bacteria



But why??



- 319 Funding:

- <https://www.youtube.com/watch?v=TDqFIJHpvTA>





Acknowledgements

- Community partners
 - Karen Chapman, Friends of Bishop Creek
 - Dan Mains
- OK Conservation Commission
 - Dr. Rebecca Bond
 - Dr. Joseph Dyer



Questions?

