

THE BLUE RIVER CONNECTS US

WHERE IS THE BLUE RIVER? The Blue River is Kansas City's river. It flows 41 miles across Kansas and Missouri, through five counties and 20 municipalities. The River begins in a relatively rural and undeveloped area, where Coffee Creek and Wolf Creek meet in southern Johnson County near the Overland Park Arboretum. The river then journeys north through Overland Park, crossing into Missouri south of Martin City, travels through Minor Park, along the Blue River Greenway, through Swope Park and the Kansas City Zoo, past Arrowhead and Kauffman Stadiums, through Blue Valley Park, and finally flowing into the Missouri River.

The Blue River has three main tributaries, or creeks, flowing into it: Indian Creek, Brush Creek and Tomahawk Creek. The area of land that directs water to flow into the Blue River is called the Blue River Watershed. Two thirds of the rain that falls in the southern Kansas City metropolitan area drains into the Blue River.

WHAT IS THE HISTORY OF THE BLUE RIVER? The Blue River has a rich history. Native Americans lived along its banks for hundreds of years, before settlers arrived. Daniel Morgan Boone came to the area in 1787 and trapped beaver on the "Big Blue" for many years. The Santa Fe, Oregon, and California trails crossed the river just north of Red Bridge Road and Minor Park. During the Civil War, the Blue River was the site of the Battle of Byram's Ford, which was part of the larger Battle of Westport, which resulted in a key Union victory.



Blue River historic postcard

In the late 1800s and early 1900s, the Blue River was a social and cultural meeting place for some members of the Kansas City community. Cottages and watercraft rental outfitters lined the river banks during the busy summer recreation season. Houseboats were used as art studios, weekend picnic retreats, summer cottages and, for many, year-round homes. The deep, clear water made for good swimming and fishing.

WHY IS THE BLUE RIVER UNIQUE? The Blue River is a river of extremes. The headwaters, where the river begins, are a mixture of natural wetlands, forests, and grasslands, as well as pasture and cropland. This part of the watershed provides habitat for many species, although development is expanding quickly.

Further downstream, much of the land is publicly-owned, with many city and county parks and trails along the stream corridor. The middle area of the Blue River is mostly urban; however, the Blue River Greenway, Blue River Glades



OVERALL BLUE RIVER SCORE







THE BLUE RIVER IS AN ASSET

Natural Area, and Swope Park offer natural areas, trails, and open space for recreation along the river, including fishing, hiking, and nature interpretation.

Downstream from Brush Creek, the Blue River flows through a concrete channel, through dense development and once-heavy industrial areas. Water quality is poor in this stretch of the river and there are few recreational areas. However, some restoration efforts are underway, including revitalization of Kansas City's Municipal Farm.

WHAT ARE THE CHALLENGES FACING THE BLUE RIVER? While the upper area of the river is relatively healthy and supports diverse wildlife, aquatic life has declined in the middle and lower areas due to urbanization. Stormwater runoff is a major concern because it causes soil erosion and pollutes the river with fertilizers, road treatments, and pet waste.

As more of the river and its tributaries are converted to concrete channels and natural areas are paved over, the landscape is less able to absorb heavy rains, leading to frequent floods which damage homes and businesses and endanger people. During storm events, combined sewer systems can overflow and release untreated wastewater into the river.

Overall, physical access to the river is limited and many people are unaware the river flows through their community. Many are unaware of the important benefits the river provides.

Partnership



Blue River Report Card team

WHO IS WORKING TO RENEW THE BLUE RIVER? Many organizations protect and restore the Blue River and its surrounding watershed. From tree planting programs, trash clean-ups, and stewardship education to land conservation in the headwaters, communities are coming together to "Renew the Blue" and improve the quality of life for residents of the Kansas City metropolitan area.

In November of 2018, Heartland Conservation Alliance, The Nature Conservancy, and the Missouri Department of Conservation co-hosted a two-day stakeholder workshop facilitated by the University of Maryland Center for Environmental Science. Stakeholders throughout the Kansas City metropolitan area worked to create this Report Card with the goal of improving the health of the Blue River Watershed and the quality of life for its residents and communities.

COMMUNITY CONNECTIONS



DEVELOPMENT



GOVERNANCE



MAKING THE GRADE

Indicators of Blue River health

Six categories were selected to best represent the overall health of the Blue River.

COMMUNITY CONNECTIONS How do communities relate to the Blue River?

- *Indicator 1:* Awareness—How knowledgeable are communities about the Blue River?
- *Indicator 2:* Behaviors—How many people participate in activities that improve the Blue River?

DEVELOPMENT How do development practices impact the Blue River?

- *Indicator 1:* Impervious Surface—How much impervious surface (roads, rooftops, etc.) surrounds the Blue River?
- *Indicator 2:* Protected Open Space—How much land is protected from development and left open for people to enjoy?
- *Indicator 3*: Urban Tree Canopy—How expansive is the tree cover in our communities?

GOVERNANCE How are local government actions and policies affecting the Blue River?

- *Indicator 1:* Local Ordinances—How many environmentally friendly local ordinances are in place to protect the Blue River?
- *Indicator 2:* Collaborative Governance—How connected are local governments in planning and protecting the Blue River?

HABITAT How much natural habitat exists along the Blue River to maintain a healthy ecosystem?

- *Indicator 1:* Riparian Cover—How extensive is the natural forest vegetation along the Blue River?
- *Indicator 2:* Native Habitat—How much natural vegetation exists and is managed in the Blue River?

RECREATION How does the community interact with and seek enjoyment from the Blue River?

- *Indicator 1:* Trails—How many trails exist that connect communities with the Blue River?
- *Indicator 2:* Parks—How many parks provide recreation near the Blue River?

WATER QUALITY How clean is the water in the Blue River to provide for aquatic life and community recreation?

- *Indicator 1:* Water Quality Index—How does pollution affect the water quality of the Blue River?
- *Indicator 2:* Macroinvertebrates—How many different invertebrate organisms can survive in the Blue River?
- *Indicator 3:* Stream Visual Assessment—How impacted are the habitats, riparian areas, banks and stream beds of the Blue River?

Report card grades

The scoring and grading system used for the Blue River Report Card is a simple ranking, where the one-hundred-point scale is divided into five equal sections:

A	B	C	D	F	NA
80-100	60-79	40-59	20-39	0-19	

This grading system does not correspond to the academic grading scale, where 90% or greater is required for an A and less than 60% is an F. The broader spectrum scale used in the report card provides more sensitivity to changes in conditions. Grades that were assigned a "+" or "-" (e.g. C+ or C-) were scores within 5 points of the cutoff between the next grade. For example, an 84% would equal an "A-", whereas 75% would equal a "B+". This allows for more responsive scoring to detect varying change across all categories.

Indicators for which consistent and reliable watershed-wide data was not currently available, are represented on the score wheels in gray and marked N/A.

HABITAT



RECREATION



WATER QUALITY

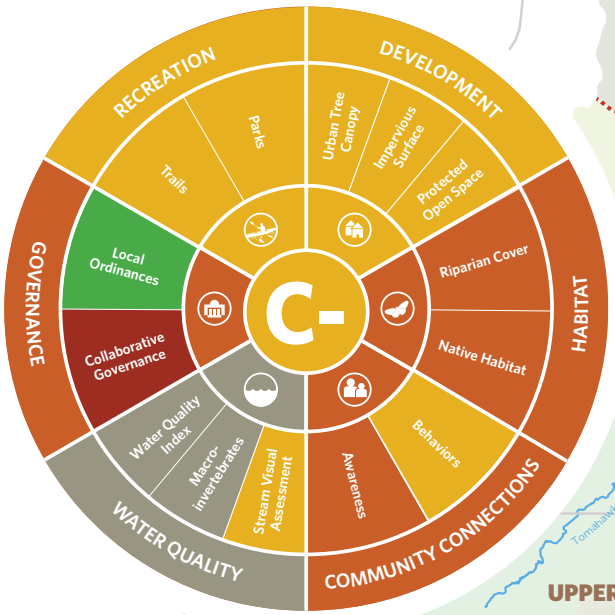


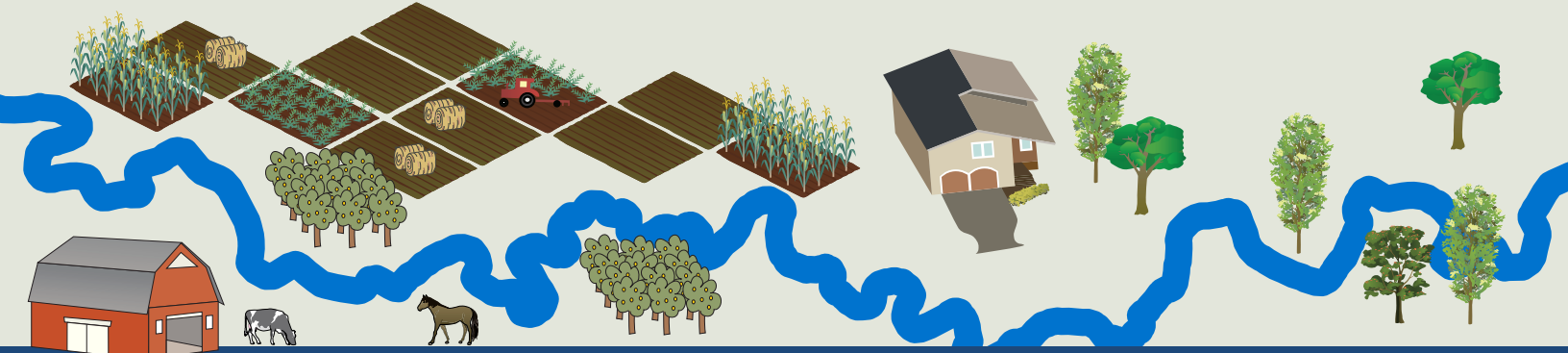
OVERALL REPORT CARD GRADE

How healthy is your Blue River?

SUMMARY

This year, the Blue River Watershed received a "C-" letter grade with an overall score of 40%. The grade reflects the combined scores from five of the six categories. Two categories (Development and Recreation) received "C" letter grades; three categories (Community Connections, Governance, and Habitat) received "D" letter grades; and one category (Water Quality) did not have complete enough data to score and grade. To create the Report Card, the Blue River Watershed was divided into three sections: the Upper, Middle, and Lower Watersheds. Each section was scored separately. Improvements to the health of the watershed will be reflected in the scores for all six categories and in each section of the watershed. As these scores are raised, the overall grade for the Blue River will be raised.



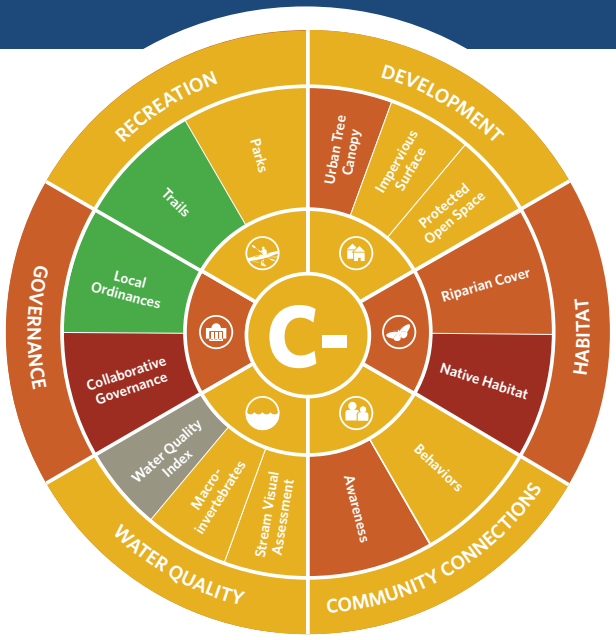


UPPER BLUE RIVER

Wolf Creek to Indian Creek

SUMMARY The Upper Blue River encompasses 120,000 acres of land in both Kansas and Missouri, and is the largest of the three watersheds. The Upper Blue River received a "C-". This watershed area has the best water quality in the Blue River, resulting from also having the most riparian cover along the river and the most acres of undeveloped land.

However, this area received an "F" in Native Habitat because it has the lowest amount of tree cover overall, which shows the impacts of both development and agriculture on native habitat. The greatest concerns for the Upper Blue River are the protection of undeveloped land, management of natural areas, and protection of good water quality. The areas in greatest need of improvement are collaborative governance between municipalities, improving tree cover, and enhancing the community's connection to the Blue River. Building on the already strong trail system and increasing parkland will be important.



PAST In recent geologic history, the upper watershed had shaded streams, rolling hills and old growth woodlands. European settlers set in motion drastic changes, and farmland dominated this area of the watershed prior to World War II, while industrial manufacturing grew up along the transportation corridors. After the war, suburban development expanded and continues to grow today.

PRESENT More than half a million people call the upper watershed home, and suburban and commercial development is expanding rapidly into existing rural and agricultural areas. However, almost a quarter of the Upper Blue River is still undeveloped, meaning many natural habitats and features of the past still exist. This presents an opportunity for the future.

FUTURE As the number of Johnson County residents increases, expanding development threatens natural landscapes and water resources. The Upper Blue River is expected to be completely built out by 2030, which will affect downstream areas of the Blue River as well. Under current policies, with rapid development and lack of public awareness, creeks and rivers will no longer support wildlife, flooding will cause significant damage, and once-pristine natural areas will be lost. This report card highlights actions needed to change the current course for the Blue River, including policy changes, increased awareness, more sustainable development, and protecting natural areas and open space.



Plains Leopard Frog

G. Kenneth (pictured center) and Ann Baum have permanently protected their beautiful land along the Blue River and Camp Branch Creek through conservation easements in partnership with The Nature Conservancy in Kansas. This area is vulnerable to rapid development. Protecting the stream corridor is essential to preserving natural areas, wildlife habitat, and water quality, while helping to reduce impacts from flooding downstream.





MIDDLE BLUE RIVER

Indian Creek to Brush Creek



SUMMARY The 40,000-acre Middle Blue River scored the highest of the three watershed areas overall, with a "C" letter grade. The Middle Blue River has the most protected open space and healthiest areas of urban tree canopy, largely due to parkland. Both of these indicators in the Development Category received an "A." Indicators that received a "D" offer insight about where improvements could be focused, including: the stream visual assessment, lack of riparian cover (particularly on Brush Creek), and lack of public awareness. Improving the "C" grades will also be imperative for preventing deterioration in this section of the watershed. These include: public behaviors that improve the watershed, impervious surfaces, trails, parks, and managed native habitat.

As with the other two sections of the watershed, local government collaboration failed ("F") and must be improved to improve the health of the Blue River.

PAST Before they were displaced by settlers, Native Americans had lived and managed the middle watershed for hundreds of years. Settlers used the middle watershed as agricultural land for much of the late 19th and early 20th centuries. The majority of the middle watershed was developed between 1920 and 1960; development traveled upstream, from Missouri into Kansas.

PRESENT Approximately 200,000 people call the middle watershed home. Most of the middle watershed is built out and developed in ways that decrease the river's water quality, increase the urban heat island effect, and increase flooding. Large percentages of the watershed are covered in impervious surface, including much of Brush Creek. However, Kansas City, Mo. and Jackson County, Mo. have preserved large tracts of forested land, providing ecosystem services and recreational opportunities along the Blue River.

FUTURE Portions of the Middle Blue River could prove highly resilient to land use and climate change, while other portions are susceptible to both. The middle watershed's population is expected to increase, but not as quickly as the upper watershed. The increase in population density will also increase impervious surfaces, urban heat, flooding, and degraded water quality. However, large habitat restoration projects are being planned, particularly along the river, which will increase climate resilience, stormwater retention, and carbon sequestration.



Prothonatary Warbler

Every spring, hundreds of volunteers pick up tons of trash from illegal dumping along the Blue River in Kansas City, Missouri and in Kansas. In 29 years, Project Blue River Rescue has removed nearly 2,000 tons of trash, including tires, appliances, and cars from this beautiful river corridor. Led by Missouri Stream Team #175 and Friends of Lakeside Nature Center, local businesses and organizations partner to educate the community about the importance of keeping trash and pollutants away from streets and out of streams.





LOWER BLUE RIVER

Brush Creek to Missouri River

SUMMARY The 20,000-acre Lower Blue River Watershed scored the lowest of the three watersheds, with a "D" letter grade. Three of the four indicators that received an "F" (native habitat, riparian cover, and protected open space) are the direct result of manmade changes to the river to reduce flooding as well as past intense industrial development. Local survey results of behaviors and awareness indicate insufficient understanding of the issues facing the watershed, and Community Connections received a "D." Indicators with higher scores: urban tree canopy, protective local ordinances, and parks (all received "B.") These are important areas to focus efforts for future improvements. Areas receiving low grades ("D") point to opportunities for improvement, including high percentage of impervious surfaces, lack of trails, and lack of broader community awareness.



PAST Of the three watersheds, the lower watershed has been developed the longest. In 1912, while creating Kansas City's park system, George Kessler reported, "areas near the Blue River have great natural beauty and the River could be one of the most useful and beautiful waterways in the country." The river was a destination. But, after World War II, heavy industry took root along the Lower Blue River and degraded water quality. By the 1970s, the US Army Corps of Engineers began extensively modifying the river—channelizing it with stone and concrete—to control flooding. At about this time, the lower watershed's population began to decline. Abandoned homes created spaces for trash to be dumped, which flowed into the river's waters.

PRESENT Approximately 100,000 people call the lower watershed home. It has been developed, but thousands of abandoned houses, industrial buildings, and vacant lots have opened up spaces in the lower watershed and along the Blue River—blighting spaces, but also providing potential. Opportunity Zones have been created to invest in redeveloping the lower watershed. Several organizations see vacant lots as potential green spaces, and are creating green and social infrastructure, providing multiple benefits where they are needed most.

FUTURE We can either repeat past mistakes or learn from them and redevelop the lower watershed thoughtfully, inspiring hope for the future. The lower watershed is the most vulnerable to climate change and land use changes upstream, but these vulnerabilities point out opportunities for improvement. The Lower Blue River can be resurrected and the people who call it home will benefit.



Red-Eared Slider

Abandoned by industry in the 1980s, Blue Valley Park and the surrounding neighborhood struggle with crime and poverty. Community leader Nancy Simons (pictured left) grew up here, and remembers camping with her Girl Scout troop along the River. With determined perseverance and strong allies, neighbors are restoring the park to be safer and more accessible.





OUR PARTNERS

CREATING A REPORT CARD for a complex and large geographic region was daunting, but thanks to the wisdom, knowledge, and skill of our team, we were able to focus on categories and indicators that will: 1) be most meaningful to a broad spectrum of the community, 2) tell an accurate story of the health of the Blue River, and 3) represent factors that we can work to improve. We are thankful for the leadership and guidance provided over the past year by the University of Maryland Center for Environmental Science (UMCES), and support provided by the Missouri Department of Conservation and The Nature Conservancy in Kansas.

Heartland CONSERVATION ALLIANCE

The Nature Conservancy Kansas

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Call to Action

We were surprised that the overall grade was as high as it was, and we found positive results among indicators in each area of the watershed. This is cause for hope. However, the results tell us that the Blue River is threatened, and we must do better. Communities throughout the watershed deserve a healthier, more accessible river with stronger protections in place. If we want to see these positive changes and improve Report Card scores in future years, critical and immediate action is needed.

GOVERNANCE Collaborative Watershed Governance received an "F" in every section. We recommend that every city in the Blue River Watershed consider adopting a Healthy Watershed Resolution and work collaboratively to monitor and improve the river's health.

DEVELOPMENT We must be smarter about how we develop and re-develop land in the Kansas City metro area. Green infrastructure, strategic planning for open space, and nature-based solutions can support both development and environmental goals.

HABITAT Native habitat and riparian cover received a "D" or "F" in almost every section. We recommend that parks departments, neighborhoods, and city planners come together to evaluate our natural resources and adopt the Blue River Action Plan – a watershed-wide management plan – to identify projects and resources to improve the health of the watershed.

COMMUNITY CONNECTIONS Awareness received a "D" in every section. We recommend that increasing outreach and education be a high priority for organizations and institutions. We strongly urge more participation in the "Renew the Blue" campaign to unite local efforts and maximize limited resources. Awareness is the key to inspiring action at the grassroots level and at the policy-making level.

Renew the Blue at **joinrenewtheblue.org** or learn more at **heartlandconservationalliance.org/blueriverreportcard**.