RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT

2021 Update

Bluff Creek

Bluff Creek is about seven miles long. Unlike Purgatory and Riley creeks, it does not connect any lakes on its way to the Minnesota River. However, it does connect many wetlands, and you can explore almost its entire length on trails.

Keeping Bluff Creek healthy requires several tools and strategies. Conducting projects to stabilize streambanks and restore stretches of stream is one strategy. Cleaning and slowing rainwater runoff before it reaches the creek is another. Before either of these can be done, we need to understand how the creek is doing and where it needs the most help.

District staff have monitored Bluff Creek since the 1980s. The District developed a tool to assess the creek: the Creek Restoration Action Strategy (CRAS). The CRAS uses water quality data, as well as information on erosion and habitat, to rank which creek stretches (sections) are doing the best and which are doing the poorest. CRAS scores for each stretch of stream are located on the next page.

The three major types of data used in creek monitoring

Water quality

District staff take samples at five sites during the summer. They gather information about nutrient levels (phosphorus), sediment, pH, and dissolved oxygen. This data lets us know how clean the water is and if it's healthy for plants, animals, and people.

Erosion

Every three years, staff walk sections of the creek. They note sites with erosion, its severity, and whether any structures like houses or bridges are at risk. Erosion is also a problem because any soil that erodes into the creek is a pollutant.

Habitat

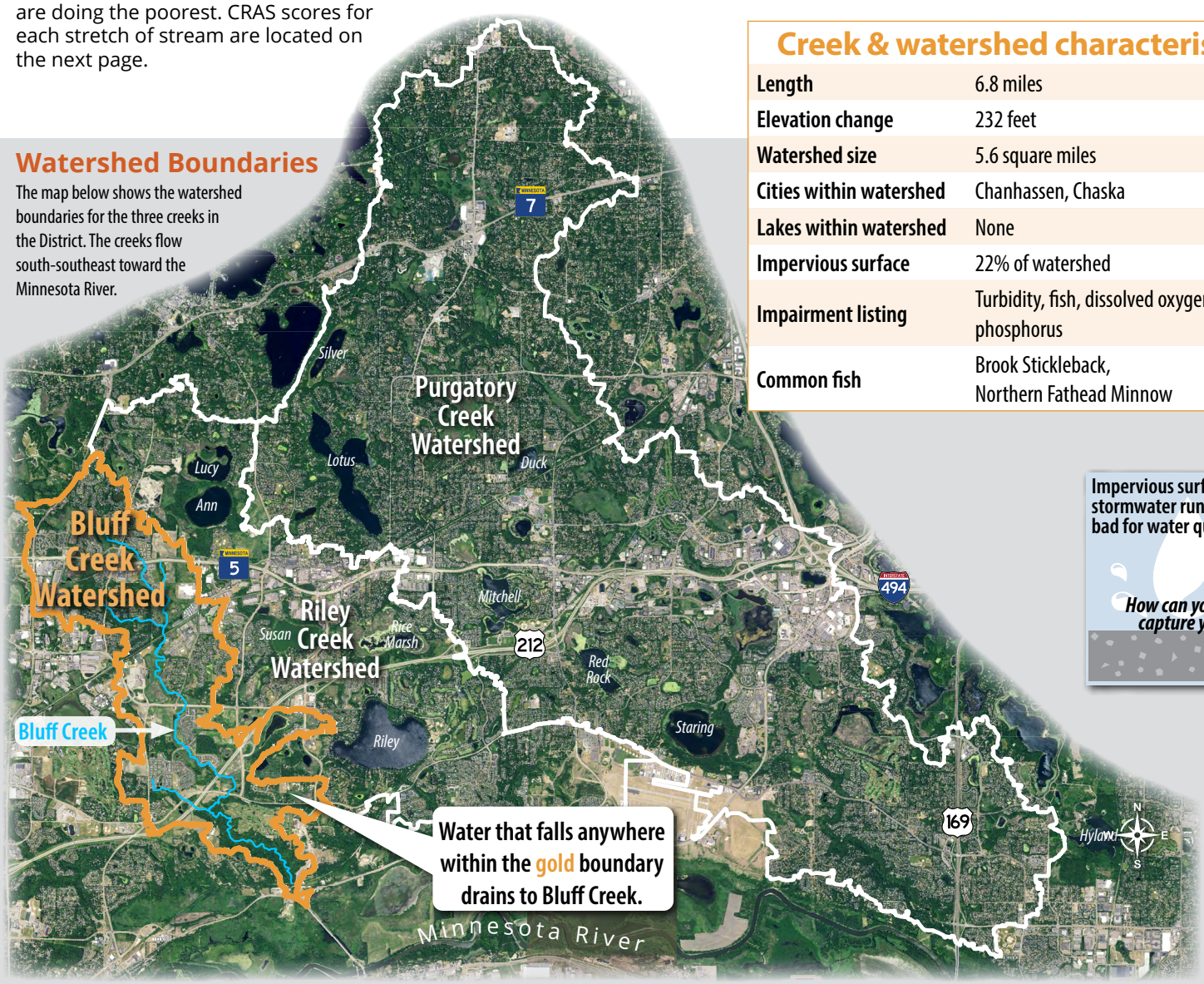
Creeks are important habitat for insects, plants, fish, birds, and other animals. When staff check for erosion, they also assess the habitat. Reaches receive a score based on the quality of habitat they provide and whether it needs to be restored.

Creek & watershed characteristics

Length	6.8 miles
Elevation change	232 feet
Watershed size	5.6 square miles
Cities within watershed	Chanhassen, Chaska
Lakes within watershed	None
Impervious surface	22% of watershed
Impairment listing	Turbidity, fish, dissolved oxygen, phosphorus
Common fish	Brook Stickleback, Northern Fathead Minnow

Watershed Boundaries

The map below shows the watershed boundaries for the three creeks in the District. The creeks flow south-southeast toward the Minnesota River.



Impervious surfaces create stormwater runoff, which is bad for water quality.

How can you reduce or capture your runoff?

2021 Stream Monitoring Results

Stream Water Quality Monitoring

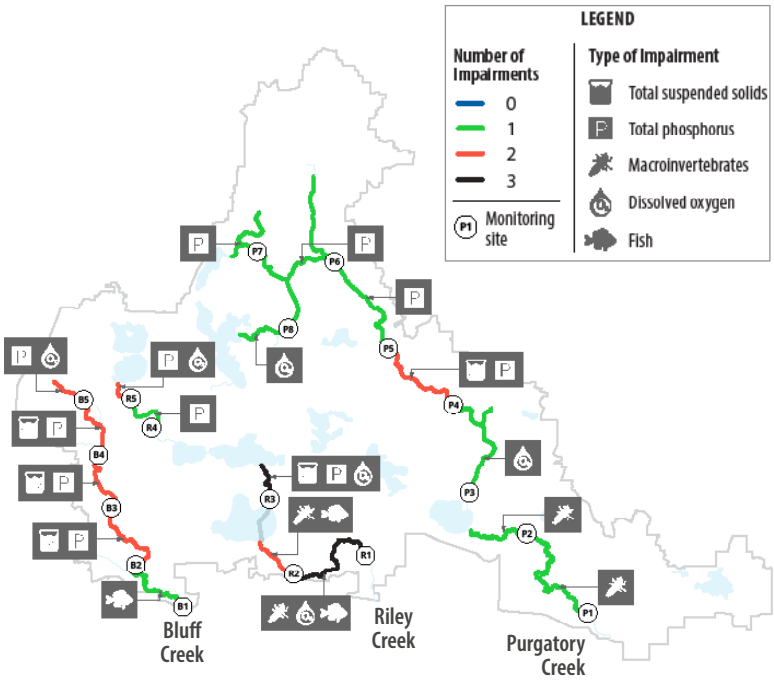
In 2021, District staff collected and analyzed water samples every two weeks — April through September — to determine the average water quality of Bluff Creek, Riley Creek, and Purgatory Creek.

The District monitors streams for six impairment categories, which are defined by the Minnesota Pollution Control Agency (MPCA). When a measured value does not meet the standard set by the MPCA, the stream is designated as "impaired" in that category.

In 2021, the number of impairments for Bluff and Purgatory creeks dropped slightly, but rose significantly for Riley Creek. In Riley Creek, stagnation of low water levels increased total phosphorus (TP) impairment and lowered dissolved oxygen (DO) levels. The table below compares streams over the last two years. On the right, a map below shows the number impairments by stream monitoring segment.

Number of impairments in each stream over the last two years.

Stream name	2020	2021
Bluff Creek	10	9
Riley Creek	6	11
Purgatory Creek	11	9



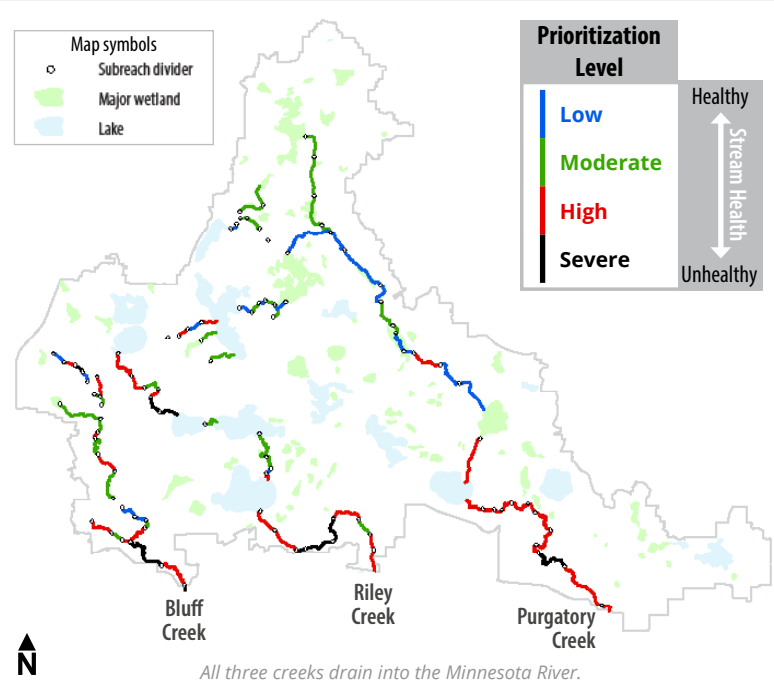
Monitoring sites are labeled with a letter and number. The letter represents the name of the creek (e. g. "P" for Purgatory). Numbering begins at the most downstream site.

CRAS Scores for Stream Restoration Planning

The District developed the Creek Restoration Action Strategy (CRAS) to prioritize creek reaches, sub-reaches, or sites, in need of stabilization and/or restoration. The District identified eight categories of importance for project prioritization:

- Infrastructure risk
- Erosion and channel stability
- Public education
- Ecological benefits
- Water quality
- Project cost
- Partnerships
- Watershed benefits

These categories were scored using methods developed for each category based on a combination of published studies and reports, erosion inventories, field visits, and scoring sheets from specific methodologies. Final tallies of scores for each category, using a two-tiered ranking system, were used to prioritize sites for restoration/remediation. More information on CRAS can be found on the District website rpbcwd.org.



All three creeks drain into the Minnesota River.

As the creeks approach the Minnesota River to the south, the land grows steeper and more vulnerable to erosion, which is why you see more red and black near the bottom of the map. The District is working with its partners to conduct restoration projects in these lower stretches of the creeks to protect water quality here and downstream.

Learn more in the *2021 Water Resources Report*

rpbcwd.org/annualreport

Grants for Streambank Restoration

The watershed district offers up to **75% cost share** assistance for restoring your streambank! Learn more:

rpbcwd.org/grants

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