

E. coli

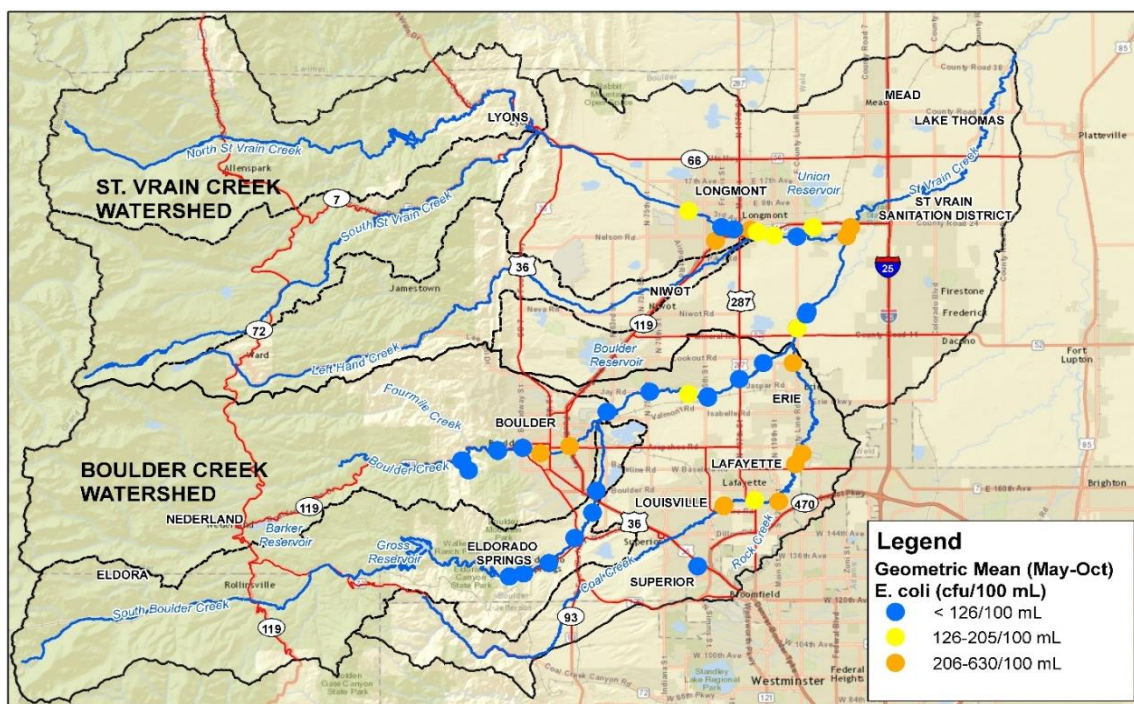
E. coli are a Water Quality Indicator for Recreational Water Use

Nationally and internationally, fecal indicator bacteria, such as *E. coli* (*Escherichia coli*), are used to determine whether streams and lakes are suitable for recreational use. Most *E. coli* bacteria are harmless, occur naturally in the environment, and naturally exist in the intestines of humans and warm-blooded animals. *E. coli* can persist and grow in the environment, even when recent fecal contamination is not present. Identifying and controlling human sources of *E. coli* is a priority to maintaining good water quality. Human sources include leaking sanitary sewers, garbage, or dumpsters; failing septic systems; dumping from RVs; or camping waste. Other sources include waste from pets, raccoons, birds, beavers, and cattle and other livestock. Typically, treated wastewater from municipal treatment plants is not a source of elevated levels of *E. coli*.

E. coli Levels are Elevated in Some Local Creeks

The local governments participating in the Keep It Clean Partnership (KICP) recently began a joint annual instream water quality analysis and reporting program, building upon the municipal monitoring programs conducted independently in the watershed. Findings from this analysis show that most mountain streams in the Boulder Creek and St. Vrain Creek watersheds meet Colorado's *E. coli* water quality standards; however, portions of some streams in the foothills and plains of the watershed do not meet these standards, including portions of Boulder Creek, Coal Creek, Rock Creek, and St. Vrain Creek. Elevated levels of *E. coli* generally occur in the urban portions of these streams and in the downstream agricultural areas. Occasionally, *E. coli* levels are elevated in natural areas as well, particularly after storms.

The geometric mean recreational season *E. coli* results are illustrated on the map below. Although individual sample dates may be higher or lower than the recreational season geometric mean, the map provides a general overview of portions of streams where *E. coli* tends to be elevated above Colorado's stream standard of 126 colony forming units per 100 milliliters (cfu/100 mL), based on U.S. Environmental Protection Agency (EPA) criteria. Local governments will continue to work in these areas to identify and control sources of *E. coli*. The City of Boulder also has an *E. coli* total maximum daily load (TMDL) implementation plan in place for a portion of the city between 13th Street and South Boulder Creek.



Note: blue sample locations attain primary contact stream standards, yellow sample locations are below "potential primary contact" criteria (126 cfu/100 mL), orange locations are between potential primary contact and "not primary contact" recreation criteria (605 cfu/100 mL). Primary contact standards (126 cfu/200 mL) apply to the streams in Boulder County.

Monitoring Program Will Identify Trends and Changes

Generally, *E. coli* concentrations are lower during winter months and more elevated during warm summer months and following storm runoff events. KICP will use the coordinated monitoring program to identify spatial trends and changes over time. Because *E. coli* sample results are highly variable, a significant amount of data is usually needed to identify trends. New advanced analysis methods may be used in the future to help identify whether elevated *E. coli* is due to human or various animal sources.

Residents Can Reduce Bacteria Loading to Streams

- **Pick Up Pet Waste:** Boulder County is home to over 90,000 dogs. When pet waste isn't picked up, it can easily enter streams and creeks after a storm.
- **Maintain Septic Systems:** Poorly functioning septic systems can leak into our creeks and streams. Homeowners with septic systems should ensure that their systems are properly functioning.
- **Secure Garbage:** Make sure trash containers are secure and don't leak into the storm drain. Unsecured trash containers can become a food source for urban wildlife, such as raccoons.
- **Reduce Runoff:** Runoff can carry bacteria. Practicing proper landscape irrigation, disconnecting downspouts, and using rain gardens and other stormwater management practices can reduce runoff to the storm drain system.

Businesses Can Reduce Bacteria Loading to Streams

Businesses also play a role in reducing *E. coli* levels in streams and creeks by ensuring that sanitary and floor drains are properly plumbed to the sanitary sewer system; properly managing garbage and grease traps; avoiding washdown practices that direct dirty water to the storm drain; and avoiding excess irrigation. Stormwater management practices that infiltrate runoff into the ground also help to reduce bacteria from entering streams.

Local Governments are Working to Reduce Bacteria Loading to Streams

To comply with Colorado water quality regulations, local governments have practices in place to identify and correct discharges from their storm drainage systems and to identify leaking sanitary sewers. Local governments also provide public education, such as pet waste signage and information about septic system maintenance, and enforcement, such as enforcing pet waste ordinances. More information about these efforts is available at www.KeepItCleanPartnership.org. Septic system information is available at www.SepticSmart.org.