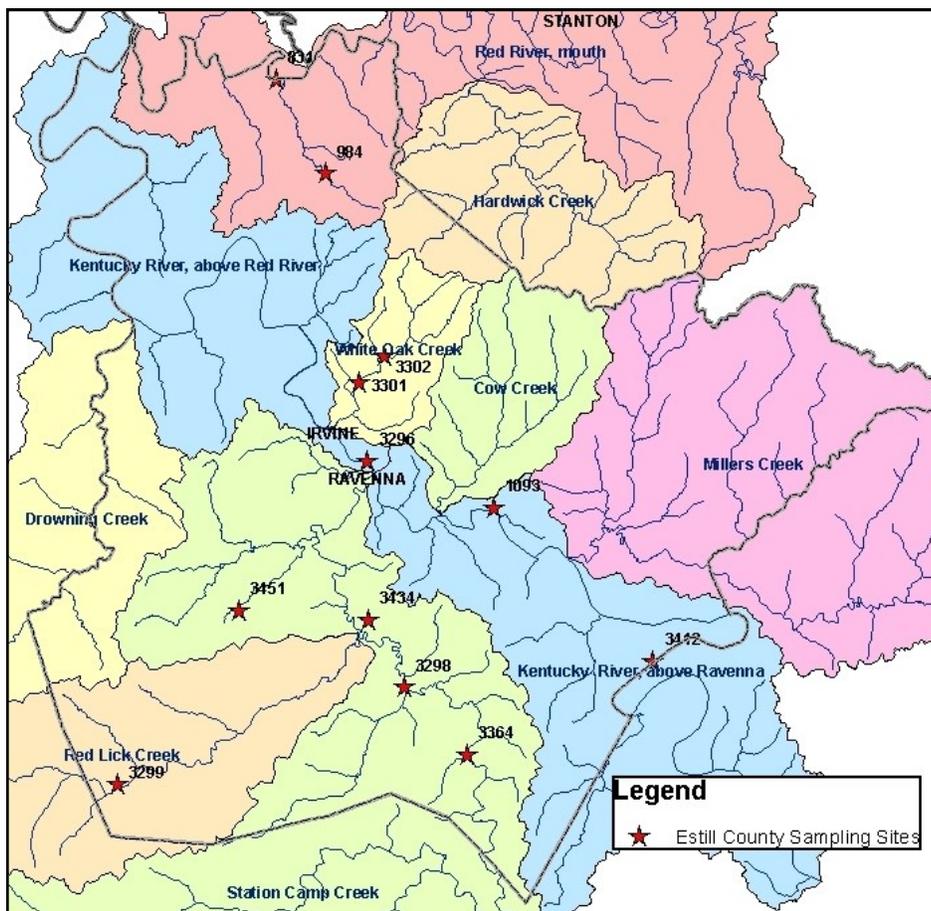


Watershed Watch in Estill County

Prepared by Kentucky River Watershed Watch, December 2015

Volunteer Monitoring of Streams

Since 2000, Kentucky River Watershed Watch volunteers have been sampling Estill County streams and rivers, in order to learn more about water quality in the area. There are currently 12 active sampling sites in Estill County. These 12 sites are located on Calloway Creek, Crooked Creek, the Kentucky River, Locust Branch, Red Lick Creek, Red River, Station Camp Creek, Twin Creek and White Oak Creek. Creek.



What is Watershed Watch?

Kentucky River Watershed Watch is part of a statewide organization, Watershed Watch in Kentucky. The goal of the organization is to coordinate a citizen monitoring effort to improve and protect water quality by raising community awareness and supporting implementation of the goals of the Clean Water Act. The organization hopes to encourage people to venture out into the Kentucky River Basin to see, first-hand, the condition of their local streams and rivers.

More information about Kentucky River Watershed Watch is available at www.krww.org.

This report provides general water quality observations and is a working document, open for discussion and further interpretation. This is not a legal document.

Results of Estill County Sampling Efforts

Since 1998, samplers have tested for various indicators to determine the quality of the water in Estill streams. These results have allowed assessments of pesticides, pathogens, nutrients, metals and aquatic chemistry in the water. Issues have been found with pathogens at some of the sites in Estill County streams. Nutrients (nitrogen and phosphorus) have not been at levels of concern until recent sampling in 2014 and 2015 showed some high levels in Twin Creek and at its confluence with the Red River.

Pathogens levels are measured by testing for an indicator bacterium, E. coli. E. coli is commonly found in the intestines of humans and animals. The presence of this bacterium indicates fecal contamination and the potential for waterborne disease.

Sources may include failing septic systems, leaking sewer lines, livestock manure, and pet and wildlife wastes.

High pathogen levels can cause excessive nutrients in the stream and human health issues.

The regulated limit of E. coli levels for safe swimming and wading is 240 cfu/100m.

Nitrogen and phosphorus are major nutrients used by plants. However, when they are overly abundant, they can lead to increased algae growth. As the algae dies off, crucial oxygen supplies are consumed, making it difficult for fish and other aquatic animals to survive. Possible sources of nitrogen and phosphorus in streams include sewage, feed lot runoff, animal wastes (manure), runoff from fertilized agricultural fields and lawns, and discharges from car exhausts.

The recommended nitrogen limit for healthy aquatic life is 3.0 mg/L. The recommended phosphorus limit for aquatic life is 0.3 mg/L.

Conductivity is a water quality measurement that helps assess the amount of dissolved material in water, as shown by its ability to carry an electrical current. High conductivity values can indicate problematic levels of a variety of pollutants from a variety of sources, including sewage, oil and gas wells and mining. High conductivity levels can make it very difficult for aquatic plants and animals to survive, and can affect the suitability of water for industrial, agricultural and domestic uses. **Conductivity levels between 300 and 800 have been shown to have negative impacts, but there is no official water quality standard for the state of Kentucky.**

Summary of Estill County KRWV Sampling Results Past Ten Years (2006-2015)

Sample size in parentheses next to result.

Site ID#	Stream Name	Total Nitrogen (Avg mg/L)	Phosphorus (Avg mg/L)	E coli (Geometric mean of cfu/100 ml)	Conductivity (Average uS/cm)
	Water Quality Benchmarks:	3.0 for Aquatic Life Protection	0.3 for Aquatic Life Protection	240 for Safe Swimming	500 for Aquatic Life Protection
831	Lower Red River	1.1 (6)	0.13 (6)	581 (14)	235 (6)
984	Twin Creek	0.66 (6)	0.08 (6)	222 (11)	416 (6)
3296	Kentucky River	no data	no data	749 (1)	no data
3298	Red Lick Creek	0.82 (2)	0.1 (2)	235 (2)	304 (2)
3299	Locust Branch	0.6 (2)	0.03 (2)	455 (2)	338 (2)
3364	Station Camp Creek	0.6 (1)	0.03 (1)	240 (2)	281 (1)
3434	Unnamed tributary	no data	no data	327 (1)	no data

* Data for some historic Estill County sampling sites was insufficient for analysis.

Water Quality Ratings:

Good

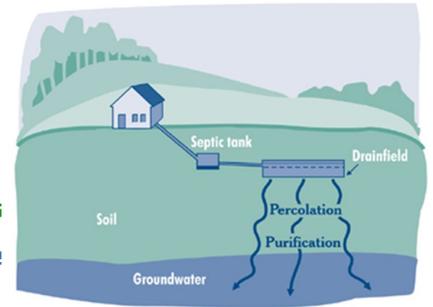
Fair

Poor

GENERAL

Next Steps and/or Recommendations for Improving Water Quality:

- Focused Sampling Effort to sample water quality at additional sites in areas of high readings.
- Present results to local officials and community groups.
- Submit article or findings to local paper or radio station.
- Discuss any concerns with relevant local agencies, such as health department, sewer agency, or Natural Resources Conservation Service (NRCS).



PATHOGENS

Possible Actions to Reduce Pathogen Levels:

- Conduct outreach/education campaign about proper septic system care.
- Check for sewer system leaks and repair where possible.
- Reduce livestock access to waterways.
- Eliminate straight piping of sewage to waterways.
- Encourage residents to pick up pet waste.



NUTRIENTS

Possible Actions to Reduce Nitrogen and Phosphorus Levels:

- Reduce sewage and other animal waste contribution to waterways.
- Educate residents about responsible fertilizer usage, prevent over-application of fertilizers.



Contact Kentucky River Watershed Watch for more information.

www.krww.org

Phone: 800-928-0045

**KENTUCKY
RIVER
WATERSHED
WATCH**

Helpful Contacts in Estill County:

Conservation District Office (agricultural assistance)

1505 Richmond Road

Phone/E-mail: (606)723-5104

Each county in Kentucky is represented by a local conservation district, consisting of seven elected supervisors. These conservation districts assist the landowners in each county with creating and implementing practices to protect the soil and water quality. The conservation districts help conserve Kentucky's resources by helping local people match their needs with technical and financial resources.

Estill County Health Department (septic system assistance)

365 River Drive, Irvine, KY 40336

Phone/E-mail: (606)723-5181 or kennyw.cole@ky.gov

Each county has a health department with a dedicated "Environmentalist" staff member to oversee septic system permitting and installation, as well as follow up on citizen complaints related to septic system issues. These individuals are also knowledgeable about septic system function and maintenance and can help ensure that a system is working properly.

Estill County 21st Century, Inc./Estill Development Alliance

P.O. Box 421, Irvine, KY

Website: www.estillcountyky.net/about-eda.html

This nonprofit organization was founded in 1995 as a community and economic development organization serving Irvine, Ravenna & Estill County, Kentucky. EDA is the preeminent development entity in the community and is responsible for aiding and nurturing worthwhile projects and programs to improve the quality of life for Estill County's rural population.

Kentucky Division of Water

Website: www.water.ky.gov

For environmental emergencies such as spills of gas, oil or other substances, contact the **Environmental Response Team** at 502-564-2380 or 1-800-928-2380. You may also contact the **Division of Water** (DOW) at 502-564-3410, or the **Frankfort Regional Office** at 502-564-3358, and inform the operator that you wish to report a concern or complaint. Please be prepared to explain the nature of the problem and give the location of the problem, including directions to the site. You do not have to give your name; however, if you wish DOW to either contact you during the investigation or provide you with the results of the investigation, you must leave your name and contact information.

The Division of Water's **Water Health Portal** (watermaps.ky.gov/WaterHealthPortal) is a helpful online resource for learning more about the water quality status of local waterways and learning more about what is being done to protect Kentucky's waters.