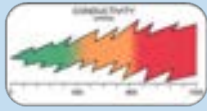


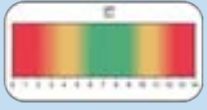
## What We Measure



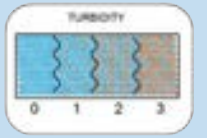
Conductivity is a measure of the dissolved solids in the water.



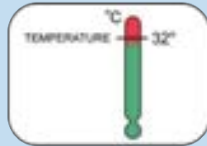
Aquatic animals need DO levels above 4ppm to survive.



Normal pH is between 6-9. Low pH means conditions are acidic, which can be harmful.



Turbidity is a measure of water clarity. High turbidity can be harmful to aquatic life.



Temperatures above 32 degrees C are stressful for aquatic life.



*E. coli* levels above 240 MPL/100 may cause health issues in humans.

## Basin Health Scores

This Report Card looks at Volunteer Data and breaks it into two scores.

***E. coli* Score:** Looks at bacteria (*E. coli*) in the stream and indicates how safe the levels are relative to swimming safety standards.

**Field Chemistry Score:** Looks at the water chemistry data and tells you how many times a problem was found during sampling for the year.

## Next Steps

In general, *E. coli* and field chemistry scores were good in the Four Rivers Basin. There are always things communities and individuals can do to help water quality, though!

Communities can do a lot to influence water quality by using Best Management Practices (BMPs) that help to minimize Runoff Pollution entering the streams.

**Rain Gardens:** Rain gardens add beauty to your yard and the native plants soak up rain water, filtering pollutants like bacteria, sediment, and chemicals

**Permeable Pavers/Concrete:** This type of green infrastructure allows water to soak into the ground, preventing it from running across a parking lot where it can pick up pollutants.

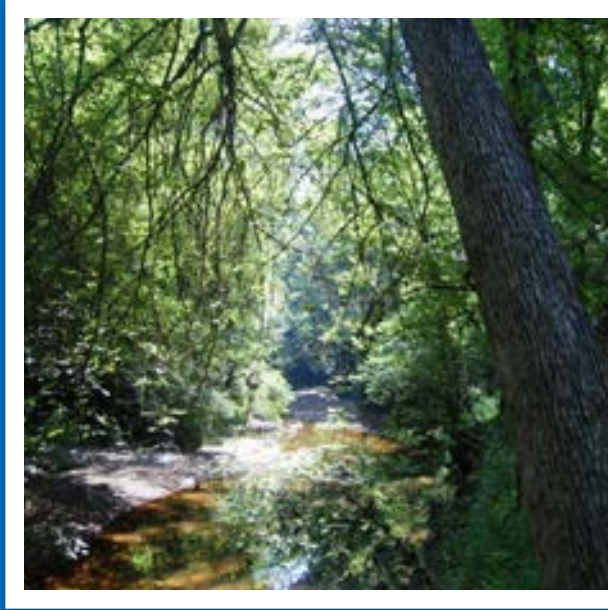
**Rain Barrels:** Capture rain water from your roof to prevent runoff pollution and get a cheap source of water for your yard.

**Riparian Buffers:** Riparian Buffers are an area of plants along a creek side that help filter pollutants out of storm water runoff.



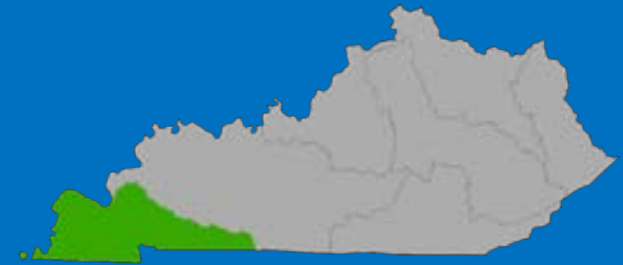
Visit us at [www.4rww.jpj.org](http://www.4rww.jpj.org) for more information!

# FOUR RIVERS BASIN Report Card 2018



**WATERSHED  
WATCH  
IN KENTUCKY**  
*Explore. Connect. Protect.*

## What's Your Basin Score?



### The Four Rivers

Located in far western Kentucky, this region is identified by the four major rivers that flow through or adjacent to this region, the Cumberland, Tennessee, Ohio and Mississippi Rivers. This region drains approximately 4,700 square miles across parts of 17 counties. Water is abundant in this area, with more than 10,000 miles of stream and plentiful groundwater resources.

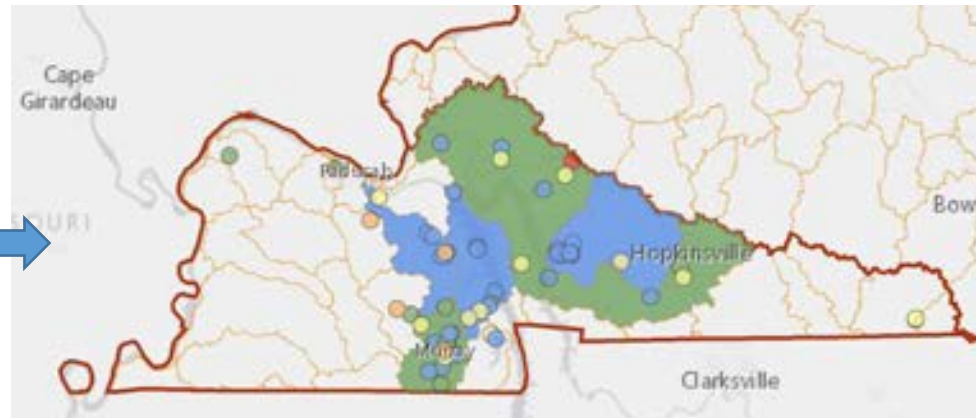
### Measuring Your Watershed

Watershed Watch in Kentucky (WWKY) is a state-wide citizen science program. It's mission is to teach volunteers to measure water health indicators that tell us how well a given stream meets state water quality standards for human health and safety, as well as for supporting healthy ecosystems. In this report we present the basic sampling results from your WWKY basin team, and talk about where the program has detected issues.

## **E.coli Score**

Each site receives a score based on the amount of bacteria (MPN/100mL) detected.

When there are at least 3 sites in a subwatershed, they receive a score based on the geomean of bacteria concentrations measured throughout the year.



**E.coli:** Graded Sites (Geomean per year)

● F (>2400) ● D (700.1-2400) ● C (240.01-700) ● B (130.01-240) ● A (0-130)

**E.coli:** Graded Local Basins/HUC10 (Geomean)

■ F (>2400) ■ D (700.1-2400) ■ C (240.01-700) ■ B (130.01-240) ■ A (0-130) □ Not Graded (less than 3 sites for analyses)

## **Field Chemistry Score**

The Field Chemistry Score tells us how healthy the water is for the fish and bugs in the stream. When we find that a parameter is out of the healthy range, the site receives a “flag”. The icons on the map show the number of flags that each site received for the year.

When a sub-watershed has 3 or more sampling sites, we are able to calculate a Field Chemistry Score for that area.

$$\frac{\text{Total \# Flags in the Watershed}}{\text{Total \# Sample Events in Watershed}} \times 100\% = \text{FC \%}$$



**Field Chem:** Sites (# of Water Quality Exceedances per year)

● 5+ Exceedances ● 4 Exceedances ● 3 Exceedances ● 2 Exceedances ● 1 Exceedance ● 0 Exceedances

**Field Chem:** Graded Local Basins/HUC10 (% Exceedances)

■ F (>60% Exceedance) ■ D (41-60% Exceedance) ■ C (26-40% Exceedance) ■ B (11-25% Exceedance) ■ A (<10% Exceedance) □ Not Graded (less than 3 sites for analyses)

### But wait, there's more...

These scores only take into account the basic WWKY water chemistry and bacteria samples that were collected. Check out the WWKY Data Portal to download all the data from this area at: <http://kgs.uky.edu/wwky/main.htm>

## How do we calculate the scores?

Volunteers collect water samples 3 times a year, in Spring, Summer and Fall. In order to generate a score for a subwatershed, there must be at least 3 sampling sites in that area. Where there is not enough data to generate a score, the map icons show individual site results.



## How Healthy is My Basin?

Seven of the thirty four subwatersheds in the Four Rivers Basin had enough sampling sites to generate *E. coli* and field chemistry scores. In general, *E. coli* observations were lower than in years past, resulting in all seven subwatersheds receiving As or Bs, indicating these regions are probably safe for human recreation. Field chemistry scores were also good, with all seven of the subwatersheds receiving As or Bs, indicating that streams in these regions should support healthy aquatic communities.

Additional sampling sites and volunteers are needed throughout the region to give a better picture of water quality.



Join us to monitor streams and lakes in the Four Rivers Region by visiting [www.4rww.jp.org](http://www.4rww.jp.org)!