

White River Partnership 2018 Water Quality Report

The White River Partnership (WRP) is a grassroots, nonprofit organization bringing people and communities together to improve the long-term health of the White River and its watershed in east-central Vermont. A watershed is an area of land that drains to a common waterway – in our case, the White River.

This report summarizes water quality data collected by WRP staff and volunteers at 23 sites along the White River and its tributaries during summer 2018.

Why Do We Monitor Water Quality?

In 2001 the WRP launched the first citizen-based, water quality monitoring program in the White River watershed in response to concerns that bacteria and other pollution might be making the White River unsafe for recreation. To address these concerns about the safety of the river for swimming, tubing, and paddling, the WRP Water Quality Monitoring Program goals are:

- To identify and address water quality problems;
- To raise awareness about water quality in the White River watershed; and
- To promote long-term stewardship.



The White River is a popular recreational destination.

What Do We Monitor?

Every other Wednesday from June through September, WRP staff and trained volunteers monitor bacteria, conductivity, and turbidity at 23 swimming holes and recreational access sites along the White River (see map on page 2).

Bacteria

Monitoring bacteria is a practical way to identify potential water quality problems. Bacteria are microscopic, single-celled organisms that can be found in virtually any environment. One type of bacteria, *Escherichia coli* (*E. coli*), is commonly found in water. *E. coli* is a rod-shaped bacterium that lives in the intestines of all warm-blooded animals. There are many different strains of *E. coli* and most are harmless to humans.

E. coli bacteria found in the river come from many sources, including animal droppings, faulty or leaking sewage systems, stormwater runoff, and disturbed soil. The presence of *E. coli* in the river does not necessarily mean that the river is unsafe for swimming and tubing, just that there is an increased risk of exposure to pathogens.

Conductivity and Turbidity

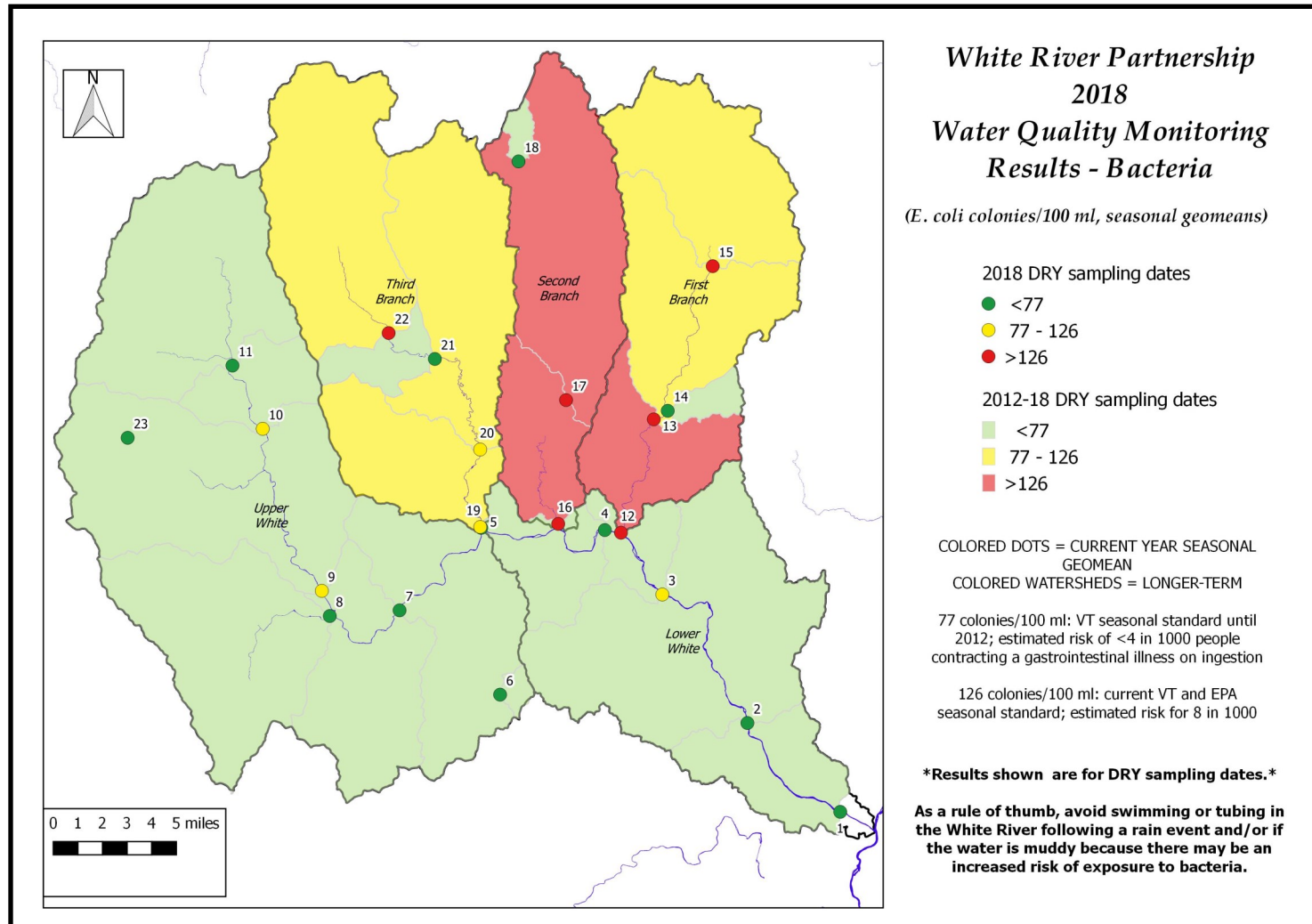
Conductivity and turbidity are also important indicators of water quality. Conductivity indicates the presence of dissolved salts and other compounds in the water. High conductivity readings may indicate increased runoff from roads and other sources. Turbidity indicates how clear or cloudy the water is. A high turbidity reading means that a high number of suspended solids are in the water, likely from erosion.

Where Do We Monitor?

The White River is the longest, undammed tributary to the Connecticut River. The entire watershed covers 711 square miles and is generally divided into five subwatersheds:

1. Lower White River; 2. Upper White River; 3. First Branch; 4. Second Branch; 5. Third Branch

In 2018 WRP staff and volunteers collected water quality samples from the 23 locations depicted below.



Lower White River	First Branch
1. Old River Rd Ledges–Hartford	12. Mouth of 1st Branch–Royalton
2. West Hartford Bridge–Hartford	13. Tunbridge Fairgrounds
3. The Sharon Academy–Sharon	14. Tunbridge Town Pool Tributary
4. Pinch Rock–Royalton	15. Chelsea Recreation Park
	Second Branch
Upper White River	16. Mouth of 2nd Branch–Royalton
5. Peavine Park–Bethel	17. Dugout Road–Randolph
6. Silver Lake–Barnard	18. Sunset Lake–Brookfield
7. Gaysville Bridge–Stockbridge	Third Branch
8. Mouth of Tweed–Stockbridge	19. Mouth of 3rd Branch–Bethel
9. Peavine Park–Stockbridge	20. Stock Farm Road–Bethel
10. Lion’s Club Park–Rochester	21. Randolph Recreation Park
11. Taylor Meadow Road–Hancock	22. Riford Brook Road–Braintree
23. Bingo Brook–Rochester	

How Do We Analyze Our Data?

We analyze water samples for bacteria using the Idexx QuantiTray 2000 system. We then compare our results to two different EPA standards for recreational waters:

1. The “single sample” or “daily” standard looks at one sample from one site on one particular day. The EPA daily standard is 235 colonies/100 mL for contact recreation, which means that roughly 8 in every 1,000 people in that water may have an increased risk of getting sick.
2. Because bacteria levels are constantly changing, the EPA “geometric mean” or “seasonal” standard looks at bacteria levels over the course of a whole season for one site. The EPA seasonal standard is 126 colonies/100 mL. By calculating the seasonal standard, we can identify trends occurring at each sampling site over time. At the suggestion of state scientists, we also calculate the seasonal standard for each location based on “wet” (recent significant rain) and “dry” weather conditions.

Conductivity and turbidity results are recorded and used to identify relationships between these data and bacteria levels.

2018 Bacteria Summary (complete bacteria data online: <http://whiteriverpartnership.org/reports/>)

- **The 2018 sampling season featured abnormally dry to moderate drought conditions in much of the region.** Even on wet dates, water levels on the White River were lower than average.
- **The number of sites exceeding the daily standard were the lowest in recent years.** Of the 202 total samples collected in 2018, only 23 samples (11%) exceeded the EPA daily standard.
- **2018 results were not consistent with our general conclusion that bacteria levels are often high immediately after rain and generally low during dry weather.** In 2018 more sites exceeded the daily standard on dry dates (13 sites) than on wet dates (10 sites).
- **Only 7 sites exceeded the seasonal standard, continuing a trend of lower levels since post-Irene 2012 results.** See the table below for more information.
- **Long-term trend data indicates bacteria levels are decreasing along the Third Branch, especially at sites below Randolph village.** 2018 daily and seasonal standards at the "Stock Farm Road" and "Mouth of Third Branch" sites were the lowest recorded since Tropical Storm Irene.

	2013	2014	2015	2016	2017	2018
# of samples exceeding the daily standard	44 of 191 = 23%	45 of 195 = 23%	51 of 197 = 26%	41 of 195 = 21%	34 of 203 = 17%	23 of 202 = 11%
# of samples exceeding the chart maximum: >2419 colonies <i>E. coli</i> /100mL sample	4	2	8	5	5	1
# of sites exceeding the seasonal standard	9 of 22	7 of 22	10 of 22	6 of 22	8 of 23	7 of 23

What Do The Monitoring Results Mean?

Because of the relationship between rainfall and bacteria levels, the WRP recommends taking precautions when deciding to swim or tube in the White River and its tributaries. We continue additional “adaptive” monitoring to help understand these trends and develop projects toward mitigation.

As a rule of thumb, avoid swimming or tubing in the White River following a rain event and/or if the water is muddy because there may be an increased risk of exposure to bacteria.

How Do We Improve Water Quality?

Plant a Tree

Native trees growing along riverbanks provide many benefits, including improving water quality by filtering pollutants out of surface runoff; improving habitat by providing food and cover for fish and wildlife; and reducing flood impacts by stabilizing riverbanks and slowing flood waters. Help us provide these benefits by protecting existing trees on your riverbank or having **FREE TREES** planted along your riverbank through the **WRP's Trees for Streams Program**.

Cleanup the River

Trash in the river can make water quality and recreational access unsafe. Help us keep the White River clean and accessible by removing trash along the river when you see it or by volunteering with the **WRP's River Cleanup Program**.



585 volunteers planted 3,300 trees and removed over 2,500 pounds of trash along the White River in 2018.

Upcoming Events

In 2019 WRP staff and volunteers will monitor water quality on May 29; June 12 and 26; July 10 and 24; August 7 and 21; and September 4 and 18. Bacteria data will be posted online at www.whiteriverpartnership.org/water-quality-results and www.facebook.com/WhiteRiverPartnership.

Special Thanks

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THANK YOU to the businesses and partners that stored water samples in 2018: Corner Stop-South Royalton, Champlain Farms-Randolph, Floyd's General Store-Randolph Center, Green Mountain National Forest -Rochester Ranger Station, Locust Creek Outfitter's-Bethel, Irving-Royalton, Sharon Trading Post, and Will's Store-Chelsea.

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For More Information

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