



**WHITE RIVER PARTNERSHIP WATER QUALITY MONITORING PROGRAM
2010 *E. coli* UPDATE
Sponsored by the Vermont Watershed Grants Program**

Background

In 2001, the WRP launched a Water Quality Monitoring Program to better understand potential threats to water quality and public health. WRP staff and volunteers keep tabs at over 20 sites throughout the watershed, including popular swimming holes and locations that have the potential to become contaminated. Every other Wednesday from June through September, our volunteers measure water clarity and conductivity, and collect water samples that are tested for *E. coli*.

This document only summarizes *E. coli* data from the past ten years. If you would like more information about the other parameters, please contact us: (802) 763-7733.

***E. coli* data**

E. coli is a type of bacteria that lives in the intestines of all warm-blooded animals. A high *E. coli* count reveals that human or animal waste from a variety of sources (leaking septic systems, livestock, etc) is entering the water and could make people sick.

We monitor *E. coli* by measuring the number of bacteria colonies/100 mL of water. Single samples exceeding 235 colonies/100 mL mean that 8 in 1,000 people swimming in that water may have an increased chance of getting sick. This is the **single sample** maximum allowed by the Environmental Protection Agency (EPA) for contact recreation. The State of Vermont has adopted

a single sample maximum of 77 colonies/100mL sample, the strictest standard in the nation. This means that 0.1 in 1,000 people are at risk of getting sick in the contaminated water. Young children, the elderly, and people with suppressed immune systems are more vulnerable to contracting an illness.

E. coli counts can fluctuate dramatically depending on how much rain we've had or from the presence of dead carcasses or animal waste in the river. Because of this, the EPA recommends that a **geometric mean (an average that evens out large variations in the data)** be used instead of a simple average when considering multiple samples taken from the same site over time. At the end of each sampling season, we calculate the geometric mean of *E. coli* at each site for the year. This allows us to identify trends at sites over time. The EPA standard for the geometric mean is 126 colonies/100 mL sample. See the table on page 2 for data from 2001 through 2010.

Results

Of the 22 sites that were tested in 2010, 8 were above the EPA geometric mean of 126 colonies/100 mL sample.

For more information

Please contact us for more information or to get involved in our water quality monitoring program: (802) 763-7733.

2010 *E. coli* DATA SUMMARY

What is the geometric mean?
 The geometric mean is an average of all samples taken in a given year that evens out the impact of large variations in the data.

River	Town	Site Name	Geometric Mean									
			2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Main Stem	Hartford	Watson Park	30.4	46.1	58	70.7	77.8	100.5	29.9	71.6	104.6	84
	Hartford	West Hartford Bridge	—	—	—	92.3	11.7	—	—	62.2	101	99.3
	Hartford	Dimick Brook	34.1	89.4	96.2	99.1	107.9	46.4	39.3	—	—	—
	Pomfret	Mill Brook	8.9	37.2	65.8	—	7	19	30.5	38	45.3	27.5
	Sharon	Sharon	39.9	97.8	113.7	112.8	85.2	110.4	105.2	—	—	—
	Sharon	White Brook	—	—	—	—	—	—	—	112.2	150.2	201.5
	Royalton	Fox Stand	—	—	—	147.6	152	125.3	131.4	152.9	—	—
	Royalton	First Branch at VLS	35	108.8	70.8	107.3	86.5	—	256.9	92.4	107.6	119.9
	Royalton	Payne's Beach	—	—	—	—	—	85.9	99.4	101.1	—	—
	Royalton	Royalton	54	53.4	113.7	—	—	—	—	—	—	—
	Barnard	Silver Lake	—	—	—	2	7	4.6	3.3	6.1	3.8	8.2
	Bethel	Parker's Hole	—	—	—	43.1	35.6	—	—	—	—	—
	Bethel	Bethel – below treatment plant	99.6	109.8	109.9	102.7	159.8	71.6	89.2	87	110.3	144.1
	Bethel	Bethel – above treatment plant	42.3	58.9	50.5	52.3	70	37.1	47.2	44.8	58.7	84.3
	Bethel	Above mouth of 3 rd Branch	—	—	—	—	—	—	—	—	53	—
Bethel	Locust Creek Mouth	26.4	38.1	33.6	35.8	53	46	67.3	106.8	13.5	36	
Stockbridge	Gaysville Bridge	—	—	—	48.8	65	32.8	50.4	45.6	46.5	87.4	
Stockbridge	Stockbridge School	32.3	47.8	47.9	—	—	—	—	—	—	—	
Stockbridge	Tweed at Bartlett Brook	26	28.2	35.7	—	30.3	34.4	42.2	—	—	—	
Stockbridge	Tweed at South Hill Rd	—	—	—	—	—	—	—	40.6	43	43.9	
Stockbridge	Stony Brook	—	—	—	—	—	11.6	10.8	30.5	—	—	
Rochester	Brandon Brook	77.9	77	73.9	—	—	—	—	—	—	—	
Rochester	Lion's Club Park	102.9	58.9	57.3	94.5	88.2	51.8	50.8	47.2	33.2	56.3	
Rochester	West Branch	—	—	—	—	15.5	13.3	14.3	—	—	—	
Hancock	Hancock Branch	42.3	46.7	56.7	78.2	—	—	14.4	20.8	28.7	58.7	
Granville	Clark Brook	5.7	7.4	2.6	—	—	—	—	—	—	—	
3 rd Branch	Braintree	Thresher Road	50.5	53.3	43.1	78.1	56.5	—	40.7	58.7	65.8	32.3
	Bethel	Stock Farm Road	56	98.4	182.7	134.1	—	102.9	161.3	179.5	115.5	172
	Bethel	3 rd Branch at mouth	—	—	—	—	—	—	—	—	122.6	—
	Randolph	Golf Course Bridge	201.7	211.1	241.5	155.3	—	85.9	122.4	145.8	111.6	115.6
	Randolph	Ayers Brook	—	175.2	270.3	340.3	211	112.5	174.9	279.5	133.7	301.6
Randolph	Adam's Brook – below I-89	83.1	185.7	128.6	33	39.3	104.7	14.6	22.5	1	31.7	
2 nd Branch	E.Randolph	Dugout Road	442	314	333.4	390.1	242.5	227.2	188.1	300	144.4	228.4
	E.Randolph	Braley Bridge	—	—	—	400.7	—	—	—	—	—	—
	Brookfield	East Hill Road	246.6	200.8	324.2	316.4	188.1	—	224.8	217.4	72.2	170.8
1 st Branch	Chelsea	Chelsea Recreation Park	183.6	273.5	250.4	—	—	97.5	137.9	152.6	79.3	172.9
	Tunbridge	Cilley Bridge	126	232.1	130.5	144.4	—	116.3	142.8	247.1	82.1	193.7

Sites higher than the EPA standard for recreational contact of 126 are shaded gray.

The EPA *E. Coli* standard for geometric mean: **126 colonies/100 mL sample**. The current EPA standard corresponds to potentially **8 swimmers out of 1,000** contracting a gastrointestinal illness from the water.