



CT DEEP

Riffle Bioassessment by Volunteers *Volunteer Water Monitoring Program*



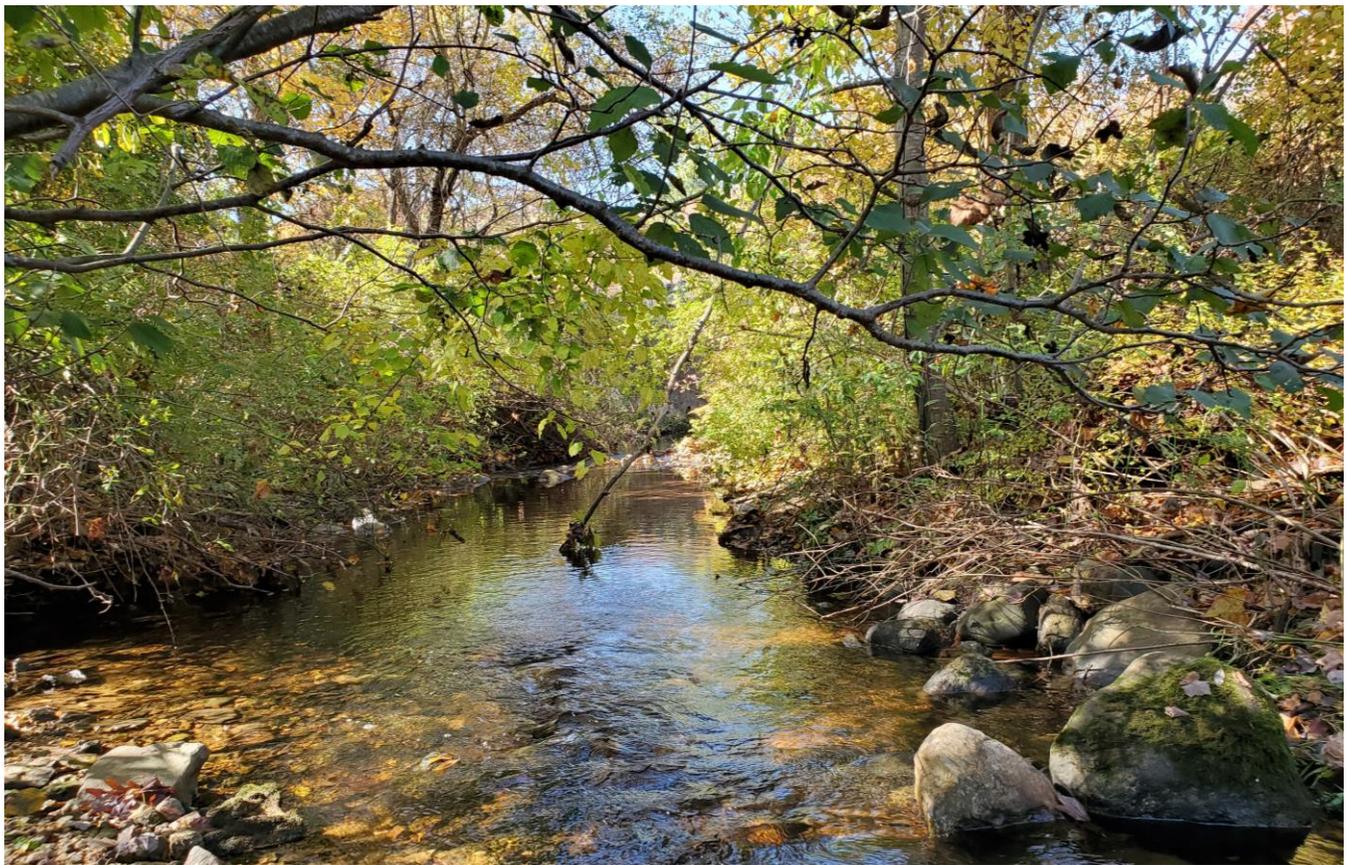
2022 Annual Program Report (Report #24)

To learn more about RBV, visit:
<https://portal.ct.gov/DEEP-RBVProgram>



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Above: Lewis Atwood Brook, Woodbury CT. Photo courtesy of the Pomperaug River Watershed Coalition.

Front Cover Photos: Top left: volunteers with the Salmon River Watershed Partnership. Top right: The Last Green Valley crew sampling English Neighborhood Brook in Woodstock, CT. Middle left: a mayfly found at Lewis Atwood Brook in Woodbury, CT. Photo courtesy of the Pomperaug River Watershed Coalition. Bottom left: a volunteer (Jan Dommel) sampling Moosehorn Brook in Granby, CT. Photo courtesy of the Farmington River Watershed Association. Bottom right: volunteers sampling Sprain Brook in Woodbury, CT. Photo courtesy of the Pomperaug River Watershed Coalition.

Introduction

RBV: A Treasure Hunt for CT's Healthiest Streams!

The CT DEEP Riffle Bioassessment by Volunteers or “RBV” Program is an annual fall ‘treasure hunt’ for Connecticut’s healthiest streams. CT DEEP uses the data collected by RBV volunteers to expand its inventory of excellent small, high gradient Connecticut streams that have excellent water quality – our “Healthy Streams” list.

To learn more, contact:

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DEEP-RBVProgram](https://portal.ct.gov/DEEP-RBVProgram)

RBV volunteers examine the water quality of local stream segments by studying the aquatic benthic macroinvertebrate community present in rocky or ‘riffle’ areas of these streams. If volunteers can find four or more pollution sensitive or ‘most wanted’ macroinvertebrates, CT DEEP can use this data to assess that stream as fully supporting water quality standards for aquatic life use – documenting it as one of CT’s healthiest streams! (Because it is a screening approach and not a more in-depth assessment methodology, RBV cannot provide a detailed water quality assessment, nor can it be used to identify low or impaired water quality.)



Above: Volunteers sorting and identifying RBV samples. Photo courtesy of The Last Green Valley.

2022 Local RBV Programs & Leaders

Local RBV Programs ensure that the statewide RBV program is a success each year. Local RBV Coordinators put countless hours into organizing their programs, communicating with DEEP, recruiting and training volunteers, and more.

Local RBV Program	Coordinator(s)
Bolton Conservation Commission	Rod Parlee & Peter Van Dine
Candlewood Valley Chapter of Trout Unlimited / Pootatuck River Watershed Association	Joe Hovious & Paul Shafer
Eightmile River Wild & Scenic Watershed	Patricia Young & Riley Doherty
Farmington River Watershed Association	Heather Geist
Greenwich Conservation Commission	Doreen Carroll-Andrews
Niantic River Watershed Committee / Town of East Lyme Commission for the Conservation of Natural Resources	Penny Howell & Don Danila
Pomperaug River Watershed Coalition	Carol Haskins
Ridgefield Conservation Commission	Roberta Barbieri
Salmon River Watershed Partnership	Patricia Young
The Last Green Valley	Jean Pillo
Three Rivers Community College	Diba Khan-Bureau
Vernon Conservation Commission	Tom Ouellette
Washington Montessori School	Tom Fahsbender

Additional program partners include the **Ripley Waterfowl Conservancy, Lewis Mills High School Environmental Science Class, Farmington Valley Chapter of Trout Unlimited, RHAM High School, Coventry High School, Hartland Land Trust,** and the **Pequabuck River Watershed Association.**

Finally, the RBV Program would not be possible without the volunteers that head out into the streams each year to collect RBV samples – thank you to each of you!



Thank You Riley!

Congratulations to Riley Dougherty on her new position! As the Eightmile River Wild & Scenic Watershed's Environmental Program Manager, Riley Doherty participated in the RBV program for four years. Among many other duties, she assisted with the training of new community members, organized and led a series of "Work with a Scientist" RBV events with a grant from the National Park Foundation, and designed an on-line interactive water quality data map for the Eightmile River Watershed. Thank you for all your hard work!

2022 Monitoring Results

The 2022 RBV monitoring program faced numerous challenges including the ongoing COVID-19 pandemic and considerably low flows during most of the sampling season. **Despite the pandemic and less than ideal sampling conditions, the program continued to have a positive impact and contributed meaningful data to the Department of Energy and Environmental Protection.**

RBV volunteers collected 66 vouchers from 59 unique locations on 52 different waterbodies. **28 (43%) of the 2022 monitoring vouchers had 4 or more taxa types in the 'Most Wanted' category, indicating that these stream segments are among Connecticut's healthiest streams.**

In addition, the RBV Program is excited to welcome several new partners: the **Ripley Waterfowl Conservancy**, the **Hartland Land Trust**, and the **Pequabuck River Watershed Association**.

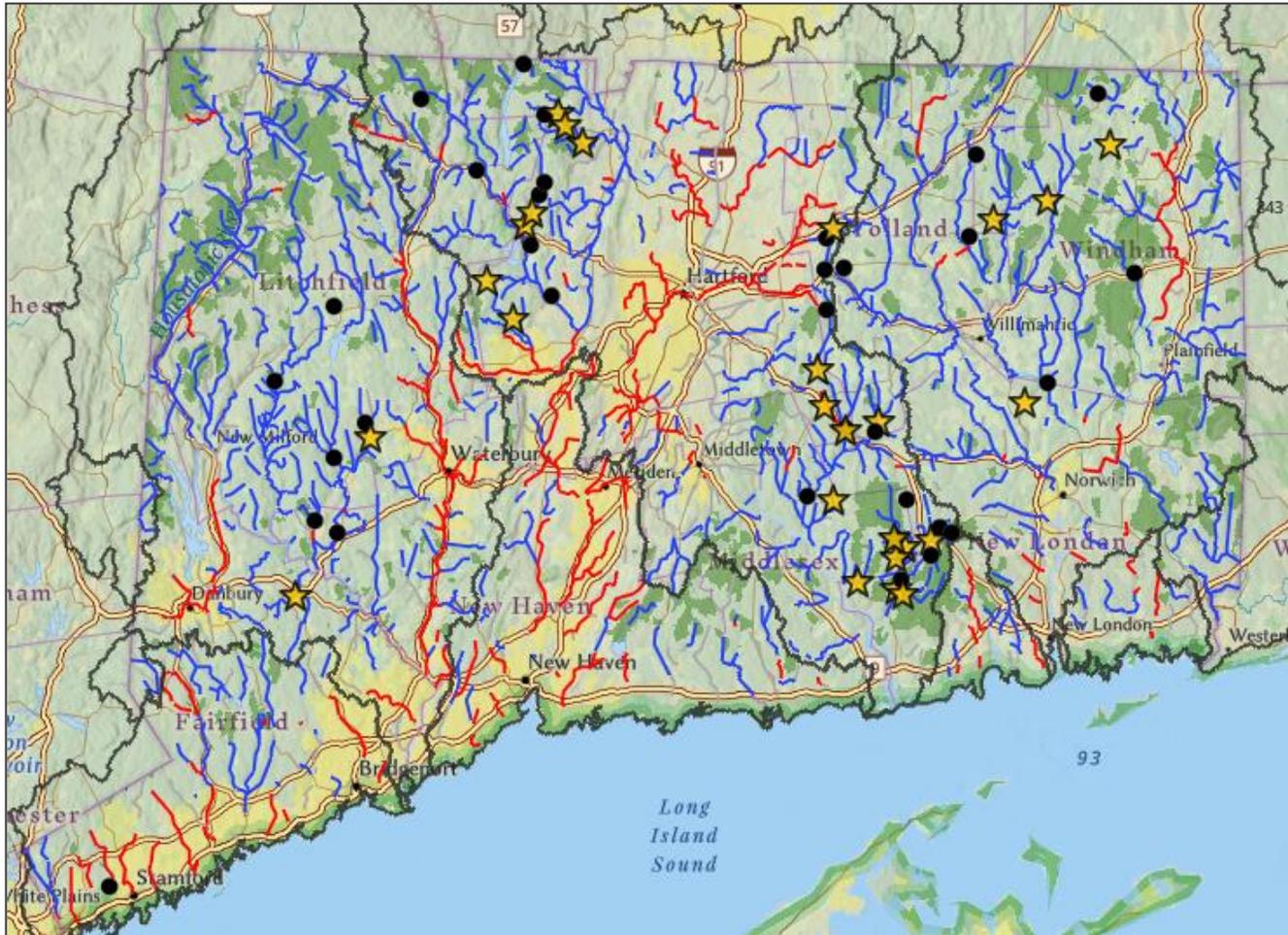
	2015	2016	2017	2018	2019	2020	2021	2022
RBV Samples Submitted	68	70	78	55	118	47	80	66
# Monitoring Stations	68	61	74	45	102	41	73	59
# Streams Monitored	54	55	61	43	89	36	65	52
# Samples w/ 4+ "Most Wanted" Types	21 (31%)	21 (30%)	43 (55%)	23 (42%)	62 (53%)	16 (34%)	52 (65%)	28 (43%)

Thank you to everyone who participated in the 2022 effort!



Above left: Sorted RBV samples from East Spring Brook in Bethlehem, CT; above right: a dragonfly nymph from Bullet Hill Brook in Southbury, CT. Photos courtesy of the Pomperaug River Watershed Coalition.

2022 Results Map. This map depicts the number of ‘Most Wanted’ macroinvertebrate types present in RBV voucher samples from **only** 2022 samples. Sites are assessed to be ‘healthy’ if 4 or more ‘Most Wanted’ macroinvertebrate taxa were present. The full Volunteer Monitoring Mapping Application with results from each sampling year can be viewed [here](#). Clicking on a site pin will now give you the option to download historical RBV most wanted counts from the [Water Quality Portal](#).



Legend	
2022 RBV Results	
★	4 or more most wanted taxa
●	3 or less most wanted taxa
2022 Assessed Rivers (Aquatic Life Use)	
— (Blue)	Fully Supporting
— (Grey)	Not Assessed
— (Red)	Not Supporting
High Priority Watershed for RBV	
■ (Green)	High Priority Watershed for RBV

Waterbody	Site ID	Date	Group	"Body Builder" Mayfly	"Brush Legged" Mayfly	Two-Tailed Flatheaded Mayfly	Roach-Like Stonefly	Common Stonefly	Giant Stonefly	Misc. Small Stoneflies	Saddle Casemaker Caddisfly	Cornucopia Casemaker Caddisfly	Free-Living Caddisfly	Humpless Casemaker Caddisfly	Bizarre Caddisfly ("Plant Casemaker")	TOTAL Most Sensitive Taxa Count	Common Net Spinner Caddisfly	Fingernet Caddisfly	Flathead Mayfly	Water Penny	Dobsonfly/Fishfly	Dragonfly	Damselfly	Amphipod ("Scud")	Aquatic Sowbug	Leech	Non-Biting Midge	Black Fly	Freshwater Snail	Aquatic Worm	Crayfish	Crane Fly	Riffle Beetle	Small Minnow Mayfly	Aquatic Snipe Fly	Flatworm					
				1	2	3	4	5A	5B	5C	6A	6B	7	8A	8B	9	10	11	12	13	14A	14B	15	16	17	18	19	20	21	22	23	24	25	26	27						
Harris Brook (Salem)	19214	10/15/2022	TRCC		X			X								2		X			X	X											X								
Harris Brook (Salem)	15313	10/22/2022	TRCC		X			X					X			3	X	X	X		X																				
Hedge Brook (East Haddam)	18818	5/14/2022	TRCC			X	X	X		X			X			7	X				X	X					X							X							
Hurricane Brook (Hartland)	20804	11/28/2022	FRWA													0			X		X																				
Judd Brook (Hebron)	15045	9/17/2022	SRWP		X			X						X		3	X	X			X	X										X				X					
Knowlton Brook (Ashford)	20809	11/19/2022	TLGV				X	X		X						4	X				X							X		X		X									
Lake Hayward Unnamed tributary to (East Haddam)	20389	10/22/2022	TRCC					X				X				2	X	X	X	X	X	X										X									
Lewis Atwood Brook (Woodbury)	20794	10/15/2022	PRWC		X	X		X		X	X		X			7	X	X	X	X	X	X								X		X	X	X	X	X					
Lyman Brook (Marlborough)	18981	10/2/2022	SRWP				X	X		X			X			4	X	X			X	X										X	X			X					
Mianus River (Greenwich)	20805	12/1/2022	GIWWA							X						2	X	X									X		X												
Moosehorn Brook (Granby)	16861	10/27/2022	FRWA		X	X	X	X	X	X	X		X			8	X	X	X	X	X	X										X	X								
Morgan Brook (Barkhamsted)	16089	11/27/2022	FRWA							X						1			X		X																				
Muddy Brook (East Haddam)	16123	5/14/2022	TRCC			X	X	X		X						4	X				X	X											X								
Muddy Brook (East Haddam)	16123	9/10/2022	8MILE		X	X	X			X	X			X		6	X	X	X	X	X	X											X								
Muddy Brook (East Haddam)	16123	10/15/2022	TRCC				X	X					X	X		4	X	X	X	X	X	X					X					X									
Railroad Brook (Bolton)	17971	10/23/2022	BCC					X								1	X	X		X	X	X							X		X										
Rattlesnake Brook (Canton)	20798	9/24/2022	FRWA					X			X		X			3	X	X	X	X		X			X					X		X	X								
Raymond Brook (Hebron)	17978	10/25/2022	SRWP		X			X		X	X					5	X	X	X		X										X		X	X							
Roaring Brook #2 (Lyme)	19458	10/22/2022	TRCC		X		X	X		X				X		5	X	X	X			X									X		X								
Roaring Brook (Burlington)	20799	9/17/2022	FRWA					X								1	X	X		X	X									X				X							
Safstrom Brook (East Hampton)	18838	9/25/2022	SRWP		X			X		X						3	X	X	X	X	X	X												X	X						

Waterbody	Site ID	Date	Group	"Body Builder" Mayfly	"Brush Legged" Mayfly	Two-Tailed Flatheaded Mayfly	Roach-Like Stonefly	Common Stonefly	Giant Stonefly	Misc. Small Stoneflies	Saddle Casemaker Caddisfly	Cornucopia Casemaker Caddisfly	Free-Living Caddisfly	Humpless Casemaker Caddisfly	Bizarre Caddisfly ("Plant Casemaker")	TOTAL Most Sensitive Taxa Count	Common Net Spinner Caddisfly	Fingernet Caddisfly	Flathead Mayfly	Water Penny	Dobsonfly/Fishfly	Dragonfly	Damselfly	Amphipod ("Scud")	Aquatic Sowbug	Leech	Non-Biting Midge	Black Fly	Freshwater Snail	Aquatic Worm	Crayfish	Crane Fly	Riffle Beetle	Small Minnow Mayfly	Aquatic Snipe Fly	Flatworm
				1	2	3	4	5A	5B	5C	6A	6B	7	8A	8B	9	10	11	12	13	14A	14B	15	16	17	18	19	20	21	22	23	24	25	26	27	
Sprain Brook (Woodbury)	16431	10/2/2022	PRWC		X			X								2	X	X	X		X	X	X					X						X	X	
Stones Brook (Eastford)	20810	10/14/2022	TLGV					X		X				X	X	5	X	X	X	X	X	X							X			X		X		
Tankerhoosen River (Vernon)	18780	10/22/2022	VCC				X	X	X		X		X			5	X	X		X	X	X							X		X	X	X			
Tankerhoosen River (Vernon)	15205	10/22/2022	VCC					X	X							2	X	X	X		X	X		X	X				X			X	X	X	X	
Taylor Brook (Woodstock)	17108	10/22/2022	TLGV			X		X		X		X		X		8	X	X	X	X	X	X			X	X				X		X	X	X	X	
Tinkerville Brook (Ashford)	20811	11/5/2022	TLGV					X								1	X	X	X		X				X						X					
Transylvania Brook (Southbury)	17125	10/2/2022	PRWC					X		X						2	X	X	X			X							X		X	X	X			
Waldo Brook (Scotland)	20812	10/28/2022	TLGV				X	X		X						3	X	X	X	X	X	X	X						X		X	X			X	
West Branch Butternut Brook (Litchfield)	20795	10/24/2022	WMS					X			X					2	X			X										X						
West Branch Salmon Brook (Granby)	15499	9/30/2022	FRWA		X		X	X	X		X		X			6	X	X	X	X	X	X							X		X		X	X		
West Branch Salmon Brook (Hartland)	18850	9/20/2022	FRWA					X								1			X	X	X	X						X		X						
West Branch Salmon Brook, Unnamed tributary to (Granby)	20806	11/7/2022	FRWA		X			X	X	X	X	X	X		X	9	X	X		X	X										X					
Whigville Brook (Burlington)	20800	10/6/2022	FRWA				X	X		X	X				X	5	X	X	X	X	X								X		X		X			

Interpreting Your Results

Refer to Table 3 for guidance on how to interpret your monitoring results.

Table 3. Interpretation of RBV Results by Most Wanted Taxa Type Count.

# 'Most Wanted' Taxa	What Does it Tell Us?
4+	<p><i>Excellent!! Lots of very sensitive macroinvertebrate types were present – <u>you found a healthy stream segment!</u></i></p> <p>This is a very clear signal of excellent water quality as the 'Most Wanted' types cannot survive in degraded streams or otherwise low water quality conditions.</p> <p>DEEP Assessment Decision: The stream containing the monitoring location will be considered for 'Fully Supporting' State aquatic life use standards. Fully supporting streams or stream segments will be listed in the next Integrated Water Quality Report (IWQR) and added to the DEEP's running list of miles of Healthy Waters assessed.</p> <p>Recommended Volunteer Follow-Up Action: Revisit every 2 to 5 years to continue documenting the excellent health of this stream.</p>
3	<p><i>A Very <u>Good Sign</u> – Keep this Site on Your Radar!</i></p> <p>Three Most Wanted or very sensitive macroinvertebrate types in a sample is a strong signal of good to excellent water quality. Although three most wanted is not statistically enough data for DEEP to list the site as a healthy stream segment this time, this is a great find!</p> <p>DEEP Assessment Decision: No Assessment Made... but consider trying again!</p> <p>Recommended Volunteer Follow-Up Action: If this was the first time the site was monitored with RBV, this site should be a high priority candidate for next season.</p>
0-2	<p><i>Double check whether this is a good spot to be using the RBV method...</i></p> <p>More information is needed to determine the water quality at this site. Reasons for few most wanted could include poor water quality; <i>however</i>, few most wanted types should not be interpreted as a proof of degraded conditions. Other factors such as unusual flow conditions and lack of adequate habitat can also result in few most wanted types despite overall good water quality.</p> <p>DEEP Assessment Decision: No Assessment Made</p> <p>Recommended Volunteer Follow-Up Action: Discuss with the State RBV Coordinator whether you should revisit this site in future monitoring seasons.</p>

2022 RBV Data Impact

The 2022 RBV results will be integrated into the 2024 Integrated Water Quality Report. A 'healthy' river or stream is one that fully supports a variety of uses, including aquatic life use.

2022 RBV volunteers monitored 52 waterbodies in Connecticut. Based on the results reported in the previous section, RBV data is likely to generate **6 new listings of Connecticut waterbodies that fully supporting aquatic life use:**

1. Bailey Brook (Franklin)
2. Bunnell Brook, Unnamed tributary to (Burlington)
3. Lewis Atwood Brook (Woodbury)
4. Stones Brook (Eastford)
5. Taylor Brook (Woodstock)
6. West Branch Salmon Brook, Unnamed tributary to (Granby)

In addition, the 2022 RBV data will allow DEEP to propose **maintaining 18 existing 'fully supporting ALUS' listings on the following waterbodies:**

1. Beaver Brook (Lyme)
2. Blackledge River (Marlborough)
3. Buell Brook (East Haddam)
4. Burnham Brook (East Haddam)
5. Cherry Brook (Canton)
6. Deep Brook (Newtown)
7. Eightmile River, Unnamed tributary to (PV Brook) (Lyme)
8. Flat Brook (Marlborough)
9. Harris Brook (Salem)
10. Hedge Brook (East Haddam)
11. Knowlton Brook (Ashford)
12. Moosehorn Brook (Granby)
13. Muddy Brook (East Haddam)
14. Raymond Brook (Hebron)
15. Roaring Brook #2 (Lyme)
16. Tankerhoosen River (Vernon)
17. West Branch Salmon Brook (Granby)
18. Whigville Brook (Burlington)

These results indicate that 24 out of every 52 waterbodies monitored by RBV volunteers will be assessed as fully supporting aquatic life use in the next Integrated Water Quality Report!

Appendix A: 2022 RBV Monitoring Station Description & Details

Locations are sorted by DEEP Station ID number (Site # column). Note that the actual RBV monitoring location may be slightly upstream or downstream of the official DEEP station.

Site #	Waterbody	Location Description	Town	Latitude	Longitude
15045	Judd Brook	upstream old road crossing	Hebron	41.6005	-72.373
15205	Tankerhoosen River	DS Bolton Road	Vernon	41.8294	-72.4482
15312	Beaver Brook	Downstream of the bridge at 55-123 Beaver Brook Road	Lyme	41.40995	-72.3291
15313	Harris Brook	At the mouth	Salem	41.4733	-72.2851
15314	Eightmile River, Unnamed tributary to ("PV Brook")	At the trail crossing off MacIntosh Road (within the Pleasant Valley Preserve)	Lyme	41.4155	-72.3396
15499	West Branch Salmon Brook	at Simsbury Road	Granby	41.94096	-72.8343
15592	French Brook	At French Road	Bolton	41.7442	-72.4485
15764	Deep Brook	100 meters below tributary called "oil creek"	Newtown	41.4082	-73.2867
16089	Morgan Brook	upstream Route 318	Barkhamsted	41.9086	-73.0007
16123	Muddy Brook	at Hopyard Road	East Haddam	41.4756	-72.342
16333	Bullet Hill Brook	Adjacent to Heritage Rd Downstream Old Field Road ("Ewald Park")	Southbury	41.4826	-73.2205
16431	Sprain Brook	downstream Route 47 adjacent to Papermill Road	Woodbury	41.5696	-73.2259
16861	MOOSEHORN BROOK	at Moosehorn Road	Granby	41.97486	-72.8722
17108	TAYLOR BROOK	DS of rte 171	Woodstock	41.9386	-72.0003
17125	TRANSYLVANIA BROOK	DS of Upper Rte ## at Southbury Training School	Southbury	41.4956	-73.2575
17270	Cherry Brook	at Barbourtown Rd at Route 179	Canton	41.8588	-72.9132
17273	Cherry Brook	at Shagbark Lane Br	Canton	41.8938	-72.8946
17321	East Spring Brook	DS Nonewaug Road and Porter Hill road	Bethlehem	41.6121	-73.1761
17867	ENGLISH NEIGHBORHOOD BROOK	PARALLEL TO LYONS RD, 100M BELOW POND	Woodstock	41.998	-72.0201
17971	Railroad Brook	At the railroad trail crossing in Freja Park, downstream of Bolton Notch Pond	Bolton	41.7922	-72.453
17978	Raymond Brook	Within Grayville Park	Hebron	41.6142	-72.3678
18390	East Branch Eightmile River	at Ed Bills spillway	Lyme	41.42682	-72.3319
18409	Fawn Brook	Downstream of Old Hartford Road/South Main Street (at mouth)	Marlborough	41.60458	-72.4188
18780	Tankerhoosen River	above Reservoir Road	Vernon	41.84049	-72.4395
18818	Hedge Brook	below Hopyard Rd	East Haddam	41.45324	-72.3387
18838	Safstrom Brook	Downstream of Gorge	East Hampton	41.52521	-72.4786
18850	West Branch Salmon Brook	Downstream of Pederson Rd.	Hartland	41.97406	-72.895
18889	Bee Brook	500 m upstream of Shepaug River	Washington	41.66014	-73.3199
18961	Fraser Brook	at Salem Community Park	Salem	41.48108	-72.2528

Site #	Waterbody	Location Description	Town	Latitude	Longitude
18981	Lyman Brook	125m downstream of Glenwood Drive culdesac	Marlborough	41.63271	-72.4523
19214	Harris Brook	0.25 miles upstream of Music Vale Rd	Salem	41.48739	-72.2704
19215	East Branch Eightmile River, Unnamed tributary to ("Ransom Brook")	30 meters downstream of Darling Road	Salem	41.45494	-72.2836
19455	Blackledge River	30m upstream Fawn Brook, near Kellogg Rd/South Main St	Marlborough	41.60413	-72.4197
19458	Roaring Brook #2	Upstream Route 82, behind Hadlyme Post Office	Lyme	41.42348	-72.3991
20251	Buell Brook	Behind the Nathan Hale-Ray Middle School, adjacent blue trail picnic tables	East Haddam	41.5213	-72.4386
20389	Lake Hayward, Unnamed tributary to	At the East Shore Drive right-of-way	East Haddam	41.52014	-72.3242
20492	Burnham Brook	Adjacent to the trail within Burnam Brook Preserve	East Haddam	41.4653	-72.3245
20642	Blackwell Brook	Behind 139 Wolf Den Road, located on ECCD land	Brooklyn	41.78678	-71.9645
20666	Bunnell Brook, Unnamed tributary to	Behind Lewis Mill High School and Hal-Bur Middle School, 500m upstream Upson Road	Burlington	41.78036	-72.9837
20761	Cherry Brook	Behind 84 Cherry Brook Road (RT179); "Pratt Place" site	Canton	41.84543	-72.9251
20793	Bolton Pond Brook	In the backyard of 29 Fernwood Drive	Bolton	41.79461	-72.4217
20794	Lewis Atwood Brook	200 ft upstream of Route 6 at intersection with Route 61 and Quassapaug Road	Woodbury	41.5952	-73.1686
20795	West Branch Butternut Brook	at the Ripley Waterfowl Conservancy, between Brush Hill Road No. 1 and Duck Pond Road.	Litchfield	41.74806	-73.2261
20796	Flat Brook	50 feet upstream of Standish Drive	Marlborough	41.67589	-72.464
20797	Eightmile River	200 feet upstream of the confluence with Muddy Brook	East Haddam	41.47647	-72.34
20798	Rattlesnake Brook	100 feet downstream Maple Ave., between the road and the Collinsville Pollen Trail	Canton	41.81993	-72.9153
20799	Roaring Brook	50 meters upstream of Rt. 167, along the 'brook trail'	Burlington	41.76049	-72.882
20800	Whigville Brook	100 feet upstream of the Reservoir Rd. crossing (near Stone Rd)	Burlington	41.73375	-72.944
20802	Center Brook	Downstream of Pisgah Mountain Road, upstream of an unnamed tributary from the town pond	Colebrook	41.99222	-73.0906
20803	Cherry Brook	Within the CLCT Goedecke Humphrey Preserve, upstream of West Road	Canton	41.87972	-72.9022
20804	Hurricane Brook	At the Route 20 crossing	Hartland	42.03291	-72.926
20805	Mianus River	Within the Mianus River Natural Park	Greenwich	41.06271	-73.5798
20806	West Branch Salmon Brook, Unnamed tributary to	Downstream of Fox Road, within Enders State Forest	Granby	41.96216	-72.8619
20807	Bailey Brook	100 ft. upstream of Ayer Rd, with the TNC Ayers Gap Preserve	Franklin	41.63512	-72.1362
20809	Knowlton Brook	500 ft. downstream of Route 44, on Coruscant Farm property	Ashford	41.85155	-72.1852
20810	Stones Brook	At the Natchaug Trail bridge crossing	Eastford	41.87397	-72.0992
20811	Tinkerville Brook	500m upstream of the mouth, within the Joshua Trust Tinkerbille Brook Preserve	Ashford	41.92627	-72.2119
20812	Waldo Brook	450 ft. upstream of Waldo Road	Scotland	41.65877	-72.0999



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