

Addison County Riverwatch Collaborative Lewis Creek - 2011 Water Quality Summary

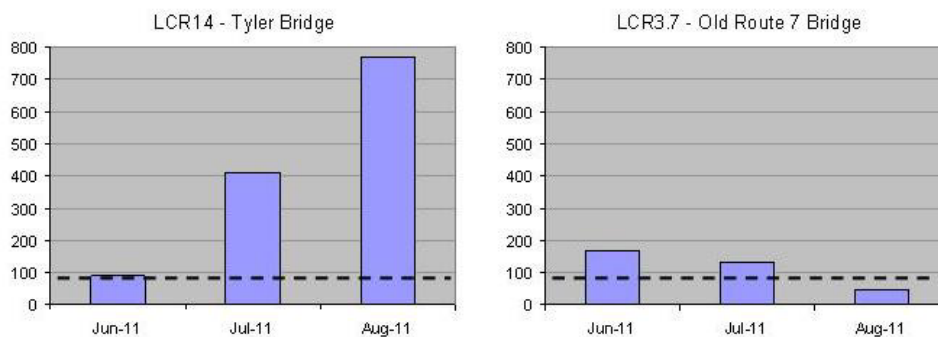
The Addison County Riverwatch Collaborative has been monitoring water quality in the Lewis Creek since 1992. In a non-focus year, two sentinel stations are monitored in this watershed, LCR3.7 and LCR14. During 2011, these sites were tested for phosphorus and turbidity on the first Wednesday in April and May (Spring sampling dates) and in June, July, and August (Summer sampling dates). E.coli was tested only on the Summer dates.

Site	Location	Town
LCR3.7	Old Route 7 Bridge	Ferrisburgh
LCR14	Tyler Bridge	Monkton

A scheduled September event was cancelled due to damages sustained at the LaRosa Analytical Laboratory during Tropical Storm Irene. Flow in the river during the July and August sample dates represented low to baseflow conditions (based on records for the USGS gage which operates just upstream of the Route 7 crossing). Flows on the April, May and June dates were moderate to high, due to snow melt and spring rains.

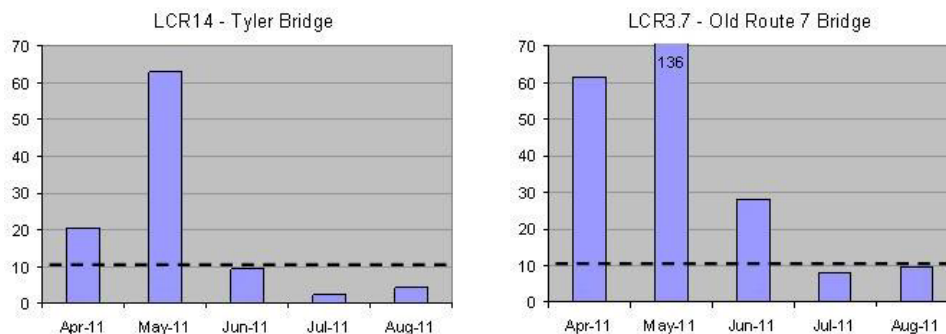
E.coli counts in the Lewis Creek at both sites exceeded the state standard of 77 organisms/100 mL on all three Summer sampling dates: June 1, July 6, and August 3, except for the August sample collected at LCR3.7. E.coli levels at the upstream site, Tyler Bridge (LCR14), were significantly higher than the downstream site, Old Route 7 Bridge (LCR3.7). Detected E.coli counts at these sentinel sites in the 2011 season were largely consistent with historic monitoring results.

E.Coli Vermont State Standard = 77 MPN / 100 mL



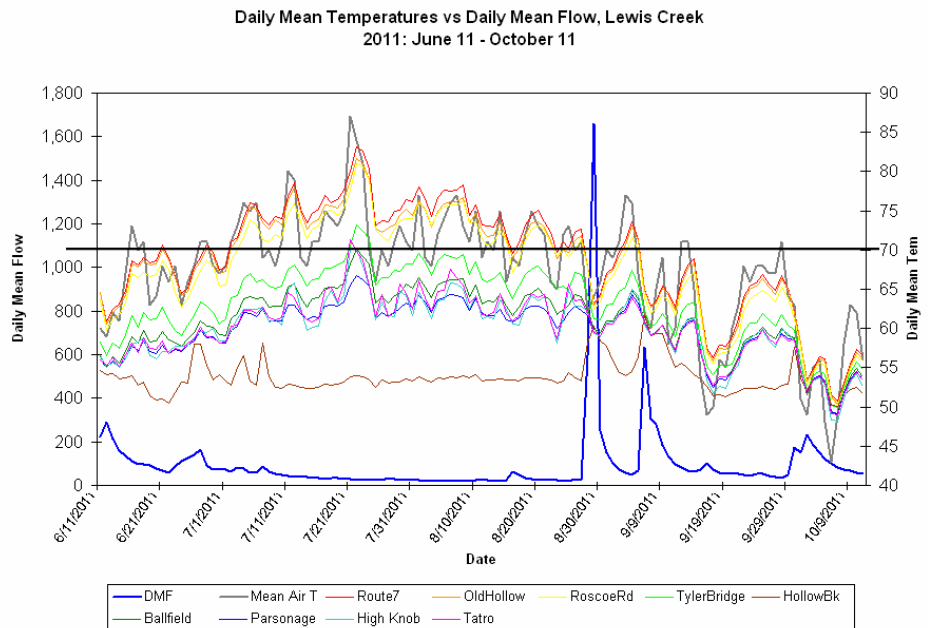
Turbidity levels in the Lewis Creek at the sampled stations ranged from 2.4 to 136 NTUs, with a mean level of 34 NTUs for the five sample dates, including two spring dates, April 6 and May 4. Turbidity levels exceeded the Vermont state standard of 10 NTUs (for Class B cold-water fisheries) at both sites during the spring sample dates; the result for station LCR3.7 also exceeded the standard on June 1. Flows on the Lewis Creek on April 6, May 4 and June 1 were moderate to high as a consequence of spring rains and snow melt (April). The May 4 samples were collected within days after an April 27-28 storm event. More than three inches of rain fell in northern Addison County, combined with meltwaters from a greater-than-normal snowpack. Flash flooding and road washouts were documented in Starksboro in the upper Lewis Creek. Peak flow recorded on April 27 at the gaging station near Route 7 indicated a 100-year flood magnitude.

Turbidity Vermont State Standard = 10 NTUs



Phosphorus was detected at low to moderate concentrations during the five Spring and Summer sampling dates, ranging from 20 to 368 ug/L, with an average of 131 ug/L. The mean concentration of Total Phosphorus for the two available low-flow Summer sample dates (July 6, August 3) at either sentinel site did not exceed the proposed criteria of 44 ug/L for the warm-water medium gradient (WWMG) Wadeable stream ecotype in Class B waters.

Temperature was monitored at nine stations on the Lewis Creek main stem and major tributaries during the summer of 2011 as part of a separate study funded by a Vermont Watershed Grant from the VT Department of Fish & Wildlife. Data loggers were deployed at these sites by Lewis Creek Association, VT Fish & Wildlife, and VT Department of Environmental Conservation. Temperatures in the lower main stem exceeded 70°F for several days during the mid-Summer. Generally, the mean daily water temperature increased with distance downstream, corresponding to a decrease in forest cover of the upstream watershed, and increased clearing of the landscape and riparian buffers for residential, commercial and agricultural land uses.



2012: A more intensive monitoring focus rotates back to the Lewis Creek for a two-year period beginning in the year 2012. The Addison County Riverwatch Collaborative will sample for additional parameters (including dissolved phosphorus and total suspended solids), and six rotational monitoring sites will be added to the two sentinel stations to complete the sampling schedule in 2012 and 2013.

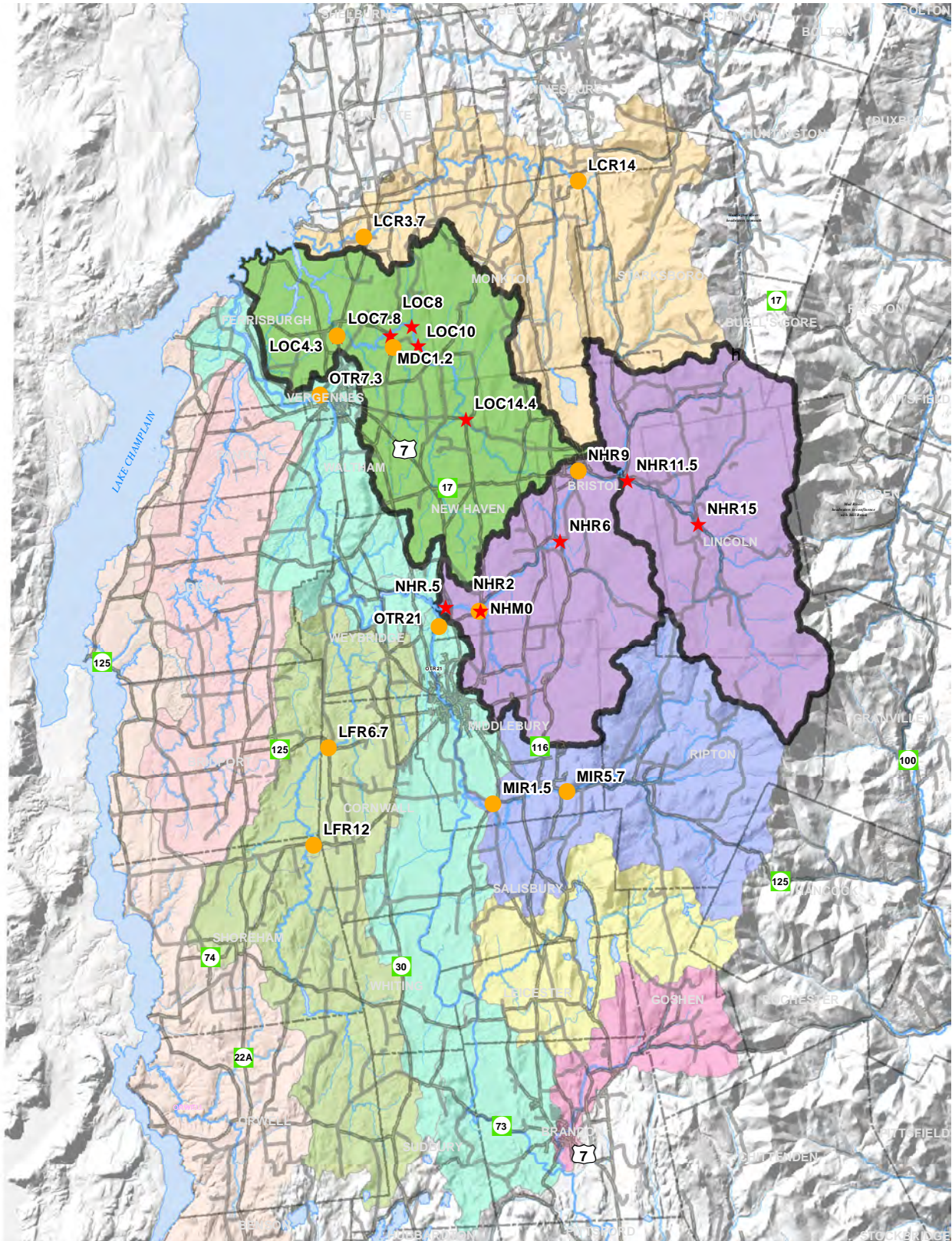
The Pond Brook subwatershed of Lewis Creek will be the focus of a separate project of the Lewis Creek Association funded by an Ecosystem Restoration Program grant from the VT Agency of Natural Resources. Pond Brook has been identified as a major sediment and phosphorus loader to the Lewis Creek watershed based on Spring / Summer water quality monitoring from 2004 to present (Hoadley, 2011; available at: <http://lewis-creek.org/lewis-creek-water-quality>). Total Phosphorus concentrations have consistently been above levels which would suggest nutrient enrichment, and have been above the proposed instream nutrient criteria (44 ug/L) for Class B “warm-water medium-gradient” Wadeable streams (VTDEC WQD, 2009).

In 2012, three additional water quality stations will be established in this subwatershed to complement the existing rotational site, which is located at the Silver Street crossing of Pond Brook. A temporary flow gaging station will also be established in Pond Brook to characterize the hydrology of this subwatershed, and to enable coarse calculations of nutrient and sediment yields in four sub-units of this watershed. Stream flow and water quality monitoring data will be used to inform and develop priority implementation projects on a sub-watershed scale. Coarse estimates of phosphorus yields from each sub-watershed will be used to communicate land use impacts on water quality and encourage landowner and municipal participation. In cooperation with local, state and federal partners, projects will be prioritized and developed to achieve reductions in phosphorus and sediment loading from this major tributary. Projects will include wetland restoration & conservation, livestock exclusion, riparian buffer plantings, alternate tillage and crop rotation practices, improved forest management techniques, and improved road maintenance practices.

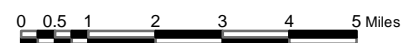
For more information, contact the Lewis Creek sampling coordinator:
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Addison County Riverwatch Collaborative

Water Quality Monitoring Sites by Watershed, 2011



- ★ Rotation Basin Site 2011
- Sentinel Site
- Little Otter Creek
- New Haven River
- Lake Champlain direct
- Lewis Creek
- Little Otter Creek
- Otter Creek
- New Haven River
- Dead Creek
- Lemon Fair River
- Leicester River
- Middlebury River
- Neshobe River
- Roads**
- Pavement
- Gravel



The Addison County Riverwatch Collaborative is a citizen organization whose mission is to collect and assess the water quality of Vermont surface waters, and to facilitate water quality and stream corridor improvement measures on a watershed scale.

