

FRANKLIN WATERSHED COMMITTEE

2014 LaRosa Partnership Final Report for Lake Carmi

Program Overview

The state of Vermont has designated Lake Carmi as an impaired body of water because of nuisance algae blooms that are fueled by excessive amounts of phosphorous in the lake. The watershed to the lake is mainly agricultural. More than 80% of the phosphorous load to the lake from nonpoint sources emanates from agricultural lands.

In 2008 the Franklin Watershed Committee (FWC) expanded the Lake Carmi water sampling program and joined the LaRosa Partnership. The objective of the augmented program was to sample major tributaries to the lake for phosphorous. Initially in 2008 ten sampling sites were tested. In 2014 a total of nineteen sites were tested. Sampling was conducted at the mouths of all the lake tributaries. In some cases multiple points along a tributary were sampled. Dicky's Brook was sampled at three points while the Marsh Brook, the largest tributary to the lake, was sampled at four sites. In addition Little Pond Culvert, a very significant contributor to the Marsh Brook, was sampled at multiple points as well. Lastly, a drain tile was also monitored to determine its impact on the Marsh Brook.

All of the samples taken in 2014 were tested for phosphorous. Turbidity was also measured at the mouth of each tributary. Sampling was generally conducted every other Wednesday from May 28th thru October 1, 2014. Sampling of specific sites at the mouths of the tributaries was also conducted on April 14 (spring run-off) and at the end of the season on October 17 and 31.

Efforts to collect samples at the designated sites were generally successful. In instances where samples were not taken, either the tributary was dry / inaccessible or the land owner did not give permission to conduct the sampling.

2014 LaRosa Partnership Sampling Sites

- LC 1. Sandy Bay @ Black Woods Rd. (Near Mouth)
- LC3. Dicky's Brook @ Middle Rd.
- LC4. Dicky's Brook @ Rainville Field
- LC5. Dicky's Brook @ Lake Rd. (Near Mouth)
- LC6. Dewing Brook @ Dewing Rd.
- LC7. Marsh Brook @ Towle Neighborhood Rd. North
- LC8. Marsh Brook @ Towle Neighborhood Rd. South
- LC9. Marsh Brook @ State Park Rd.
- LC10. Marsh Brook @ Lake Carmi State Park (Near Mouth)
- LC11. Alder Run @ Middle Rd.
- LC12. Kane's Brook (Near Mouth)
- LC13. Hammond's Brook South (Near Mouth)
- LC14. Little Pond Rd. Culvert

LC15. Prouty Brook (Near Mouth)
LC16. Westcott Brook (Near Mouth)
LC17. Hammonds Brook North (Near Mouth)
LC18. Little Pond Rd. Culvert North
LC19. Little Pond Rd. Culvert West
LC20. Wagner Drain Tile
LC21. Sandy Bay Brook 2
LC22. Sandy Bay Brook 3
LC23. Sandy Bay Brook 4

Please Note: LC2, Alder Run @ Lake Rd., was removed from the list of sampling sites when landowner permission was withdrawn.

Attachment 3 is a map identifying the locations of the sampling sites.

Test Descriptions

Phosphorous & Turbidity

Excessive amounts of phosphorous have been determined to be the major cause of algae blooms on Lake Carmi. The algae blooms render the lake not suitable for recreational activities. The majority of the phosphorous entering Lake Carmi comes from agricultural activity and lakeside residences. Lake Carmi is a eutropic lake. In 2008 the EPA approved a TMDL for Lake Carmi. The primary objective of the TMDL is to significantly reduce the phosphorous levels in the lake.

LaRosa Partnership Sampling Results

Attachment 1 is a spreadsheet listing all 2014 results for phosphorous.

Attachment 4 is a spreadsheet listing all 2014 results for turbidity.

Quality Assurance Results

For quality assurance a field duplicate and a field blank were collected during each sampling event. A total of eleven field duplicates and eleven field blanks were taken for phosphorous. A total of four field duplicates and four field blanks were taken for turbidity.

Field Blanks. All field blanks collected for phosphorous had a ug P/L of <5. All field blanks collected for turbidity had a value of <0.2.

Field Duplicates. Attachment 2 is a table listing the mean difference for Field Duplicates.

Conclusions

The LaRosa partnership is a vital tool in determining the source of phosphorous loads to Lake Carmi. The Franklin Watershed Committee intends to continue participating in the partnership well into the

future. The FWC would like to continue to collect water samples in 2015 to ensure all major loads of phosphorous to the lake are identified. Such information is essential to developing projects and other action items to reduce the phosphorous loads to the lake and to achieve the goals outlined in the TMDL. In November and December 2014 meetings with active lake partners including the Agency of Ag. and VT-DEC was held to review the 2014 water sampling results and identify origins of significant phosphorous loads to the lake. Plans are being formulated to reduce the phosphorous loads in those areas.

It must also be noted that the sampling results are an essential means to communicate with the Lake Carmi community, the Franklin Selectboard, elected legislators and other government officials about the negative impact of high phosphorous loads to the lake. A community meeting conducted in the Spring focuses exclusively on the sampling results from the prior year. Due to unprecedented blue green algae blooms in Lake Carmi during the summer of 2014, numerous meetings with lake partners were conducted in 2014. Similar meetings are anticipated for 2015. The water sampling results will be the focus of discussion to identify areas in the Lake Carmi watershed where phosphorous loads to the lake must be reduced.