

FRANKLIN WATERSHED COMMITTEE

2015 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. The algae blooms 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 2015 a total of eighteen 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. Lastly, a drain tile was also monitored to determine its impact on the Marsh Brook.

All of the samples taken in 2015 were tested for phosphorous. Turbidity was also measured at the mouth of each tributary. Sampling was generally conducted every other Wednesday from May 13th thru September 16, 2015. Sampling of specific sites at the mouths of the tributaries was also conducted on April 14 (spring run-off).

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

2015 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)
- LC14. Little Pond Rd. Culvert
- LC16. Westcott Brook (Near Mouth)

LC17. Hammonds Brook North (Near Mouth)
LC20. Wagner Drain Tile
LC21. Sandy Bay Brook 2
LC22. Sandy Bay Brook 3
LC23. Sandy Bay Brook 4

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 2015 results for phosphorous.

Attachment 4 is a spreadsheet listing all 2015 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 six field duplicates and six 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.

Flow Levels. Flow levels were noted on the water sampling log at the sample site for each sample collected. The flow levels ranged from high to low depending on the weather conditions. All sampling logs were submitted to the Lab.

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 2016 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 Lake Carmi TMDL.

In 2015 several Lake Carmi sampling sites were the subject of a study conducted by noted Conservation Scientist Fritz Gerhardt who made recommendations for future sampling activity. The sampling results were also made available to the Lake Carmi TMDL Implementation Team which was organized in 2015 by VT DEC to identify projects in the watershed to reduce phosphorous loads to the lake.

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. Due to the blue green algae blooms in Lake Carmi numerous meetings with lake partners are conducted throughout the year to address water quality. The water sampling results are a focus of discussion to identify areas in the Lake Carmi watershed where phosphorous loads to the lake must be reduced.

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