Vermont House Committee on Environment
Tuesday April 1, 2025
H. 86 An act relating to establishing the Chloride Contamination Reduction Program at the Agency of Natural Resources
Prepared by: Dr. Kent E Henderson
Federation of Vermont Lakes and Ponds

My name is Kent Henderson, I am a retired dairy-exclusive veterinarian who resides in the Town of Georgia. I serve on the Board of Directors of the Federation of Vermont Lakes and Ponds and am the long-time chair of the Friends of Northern Lake Champlain (FNLC).

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The Federation of Vermont Lakes and Ponds is a statewide coalition of some 50 volunteer lake associations plus many individual lake stewards dedicated to fostering environmental quality standards and to the protection and preservation of Vermont's lakes, ponds, watersheds, and aquatic ecosystems. My testimony follows the FOVLAP Communication policy which guides my comments that have been approved and supported by the FOVLAP Chair and Executive Committee.

Today, I would like to testify that the Federation of Vermont Lakes and Ponds (FOVLAP) approves and supports the passage of S. 29 and H. 86, Acts relating to the establishment of the Chloride Contamination Reduction Program at the Agency of Natural Resources.

With the passage of the Clean Water Acts in 2015 and 2019, the Vermont legislature has supported watershed organizations and lake associations in reducing phosphorus pollution from non-point source land usage. Our focus has been drawn to Chloride pollution which has been receiving more attention from DEC recently, with added sampling and tracking.

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A strong feature of the FOVLAP outreach and education effort is our Clean Water Projects webinar series. Several webinars in the series have already been offered and the recordings of those can be found on our website: https://vermontlakes.org/

On January 23, 2025, our second webinar "How to Assess Your Lake's Water Quality Data." was presented by Mark Mitchell, Vermont DEC's Lay Monitoring Program Lead, Lake Assessment Coordinator, and Limnologist. Mark provided a series of tables and graphs which show a growing trend of Chloride accumulation in Vermont lakes and ponds that has sparked FOVLAP interest and concern. The other message that we received is that this state collected data set is extremely limited. But given the data that we have to date and what we are learning from our neighbors in New Hampshire, it makes sense to act now to prevent the need for later costly remediation.

Another source of information in my testimony was obtained from Kellie Merrell, DEC, who has been collecting chloride samples during spring monitoring for the past twenty years. Trend analysis is provided at https://vermont-lakes-and-ponds.shinyapps.io/vt-lake-data/has

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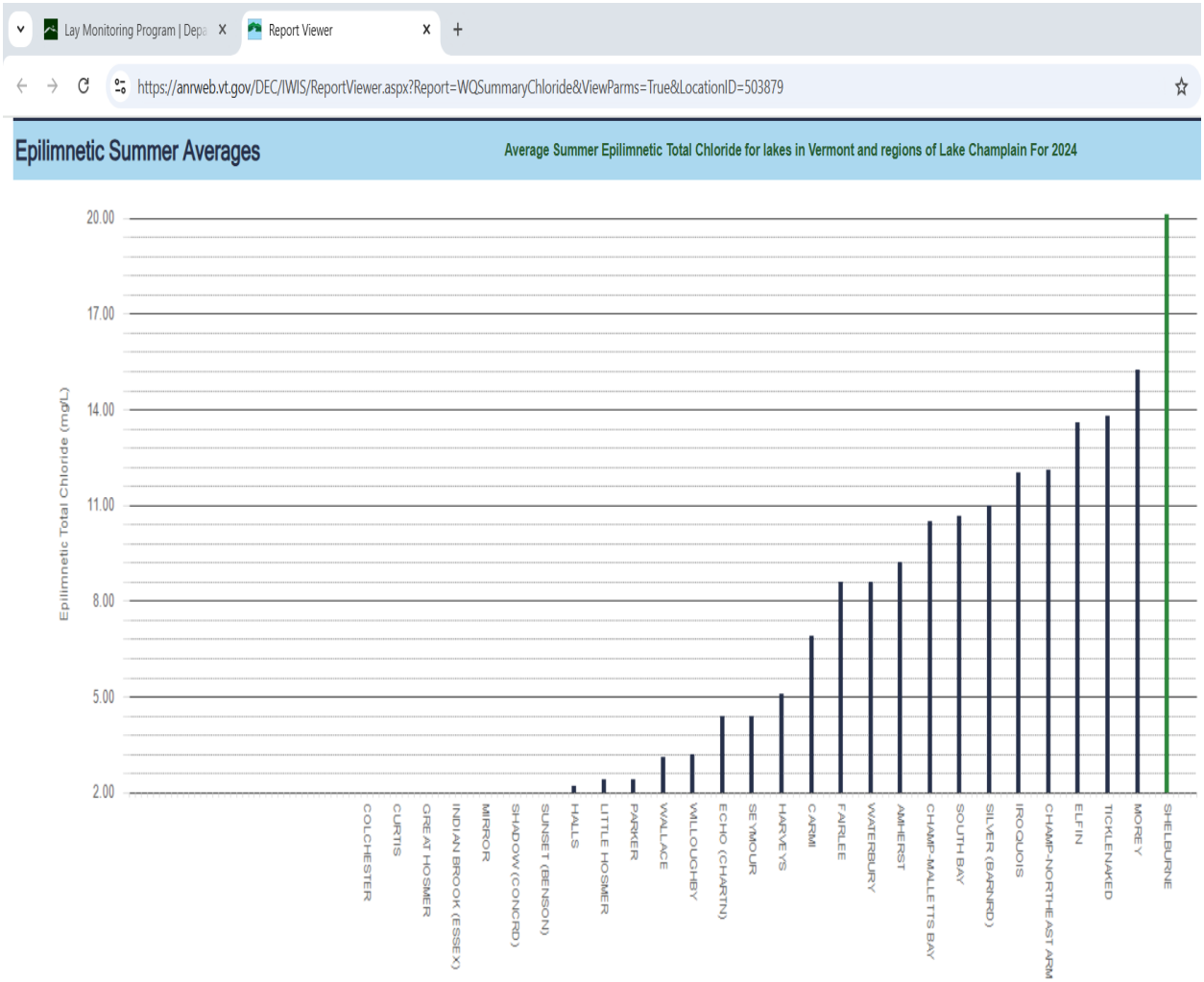

VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION
LAKES & PONDS PROGRAM

This data is from last summer. Mark Mitchell indicated to me that the 2.0 Mg/L baseline is the amount of Chloride which is expected from normal sources. From this graph you will recognize several popular Vermont lakes that carry Chloride levels that contain added chloride from road salt, dust suppression, water softeners, and other sources.

The drinking water standard for chloride is 250 mg/L, as established by the US Environmental Protection Agency (EPA) in 1988, so these data are not necessarily indicative of any health implications of Chloride pollution**, but there are health implications for consuming sodium**. Sodium and chloride concentrations in water are often related since sodium chloride (NaCl) is the most common type of road salt being applied in the winter. The EPA recommends sodium in drinking water be less than 20 mg/L for individuals on severely restricted sodium diets. The green line on the right side of the graph indicates that Shelburne Pond is at that 20 mg/L level.

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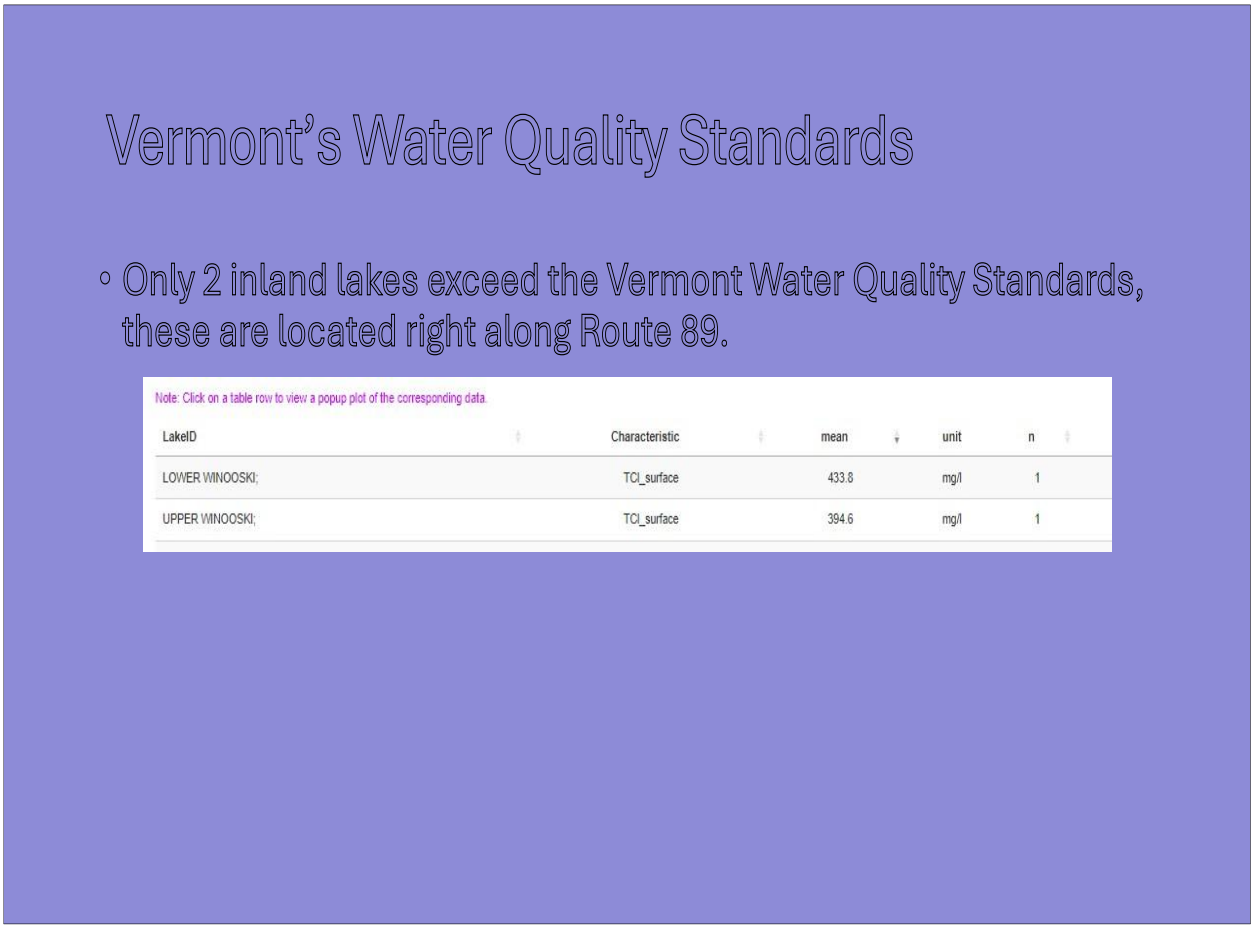

The drinking water standard for chloride is 250 mg/L, as established by the US Environmental Protection Agency (EPA) in 1988. From DEC's Total Chloride Concentrations on Vermont's Inland Lakes 2024 report there are only two VT water body collections that exceed the 250 mg/L EPA guidance limit. DEC has raised concerns that this is not an appropriate level of Chloride to explain its effect on aquatic species, corrosive effect on highway structures and private and public drinking water infrastructure. So FOVLAP hopes that this level can be better defined in the future.

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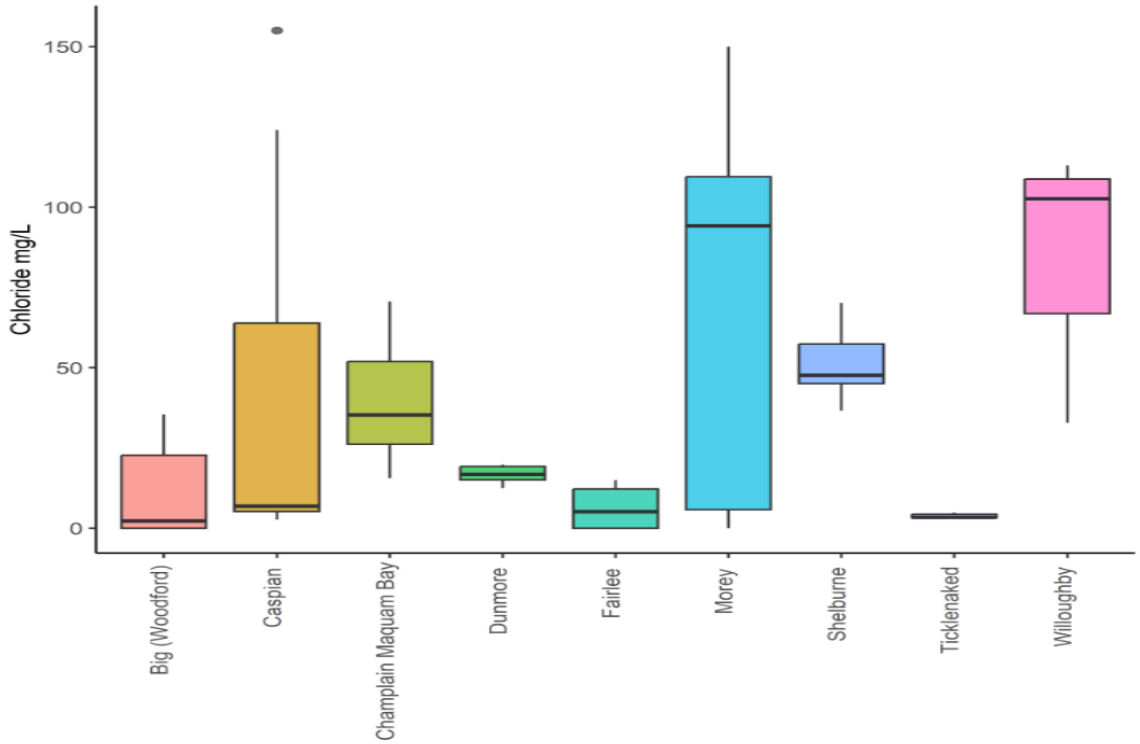

This box graph shows the range of Chloride that was detected by LaRosa Partnership volunteer collections in 2023. It is my understanding that the collection sites varied in proximity to the water bodies. This can give the committee an idea about the magnitude of chloride from the tributaries in the watersheds that are contributing to the various lakes and ponds.

Four years ago, acting upon the DEC Tactical Basin planner's request, my local non-profit, the Friends of Northern Lake Champlain added Chloride testing to our regular LaRosa Partnership sampling for TP and N. Like other LaRosa participants our collection data has been added to the growing body of evidence that Chloride levels are trending upward in Vermont lakes and tributaries. In the case of the Maquam Shore collection site, FNLC collects from a municipal road bridge that drains a 2800-acre agricultural land usage dominant site.

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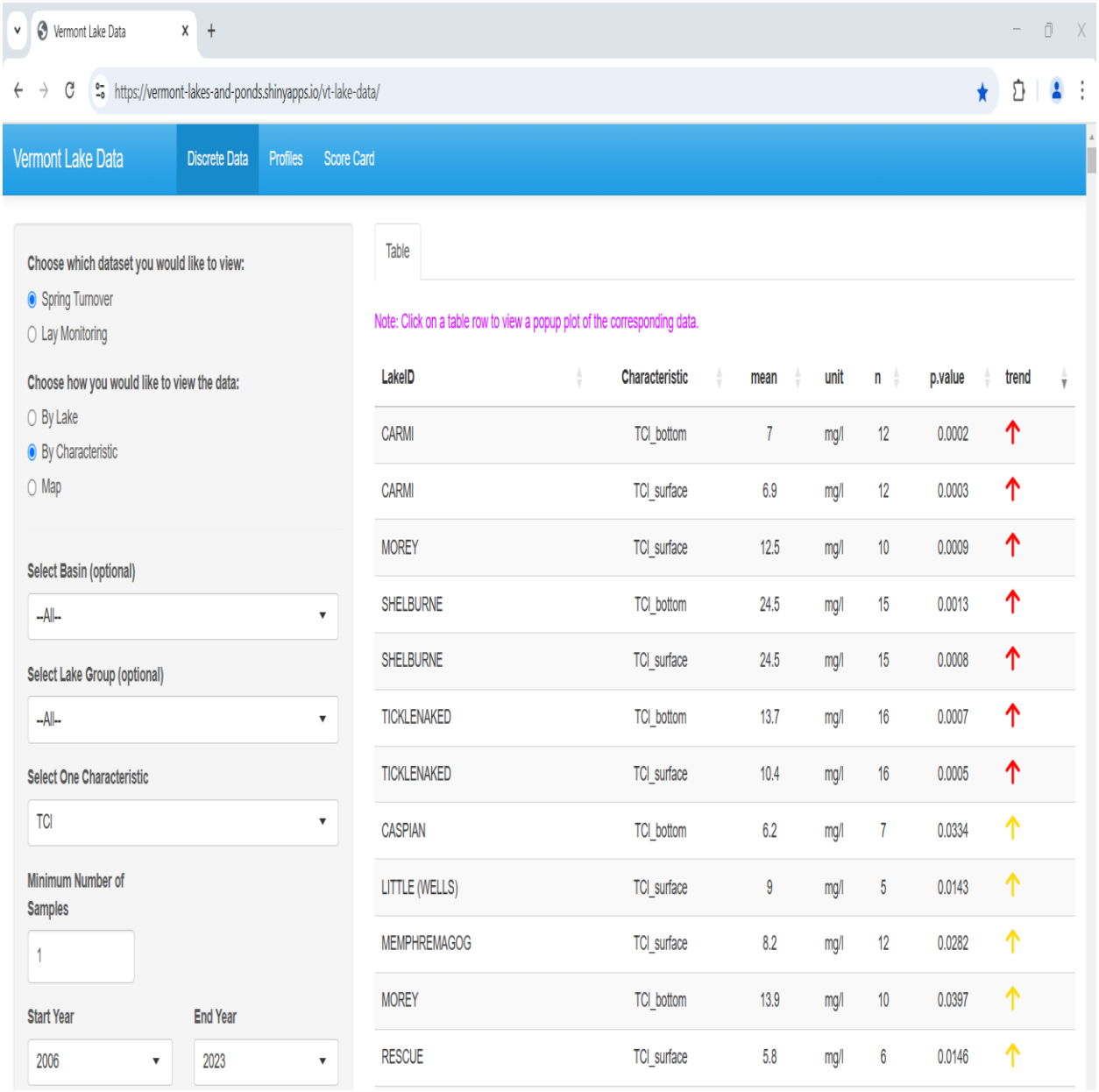

Further evidence of an emerging chloride pollution problem is provided in this table from the publicly accessible Lay monitoring part of the DEC website that Mark Mitchell presented to FOVLAP webinar participants. From this limited size of collections from popular VT lakes, an increasing amount of Chloride is being detected in Lakes Carmi, Morey, Shelburne, and Tickle-Naked.

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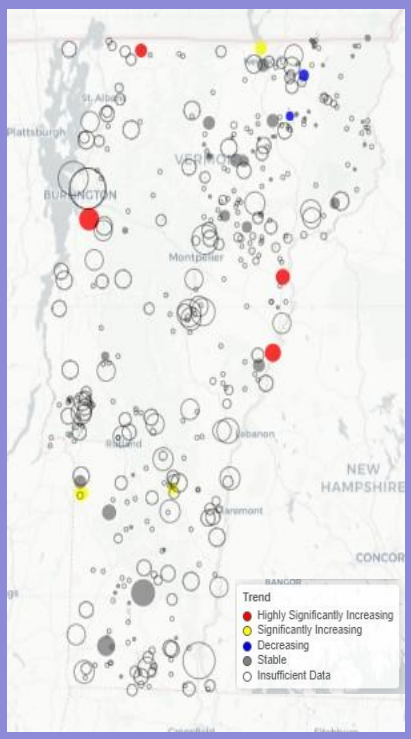
Spring Surface TCL

- This map shows the extent of TCL samples we have from spring on Vermont's inland lakes. Empty circles mean we have less than 5 yrs of data. The size of the circle equates to concentration, but even the big circles have relatively low concentrations as measured during spring turnover and at 1 m below the surface. If a lake is between 2 & 4 m deep, we take the sample mid depth, if it is less than 2 m deep we take a grab sample from 0.2m.
- 8 lakes have significantly increasing TCL: Carmi, Caspian, Little, Memphremagog, Morey, Rescue, Shelburne, and Ticklenaked. These are sampled more frequently than most lakes. I suspect once we get more years of data on more lakes we will see more lakes are increasing in TCL.



- This map was provided by Kellie Merrell, DEC and shows the extent of TCL samples from spring on Vermont's inland lakes. Empty circles indicate less than 5 yrs of data.
- 8 lakes marked in red and yellow, have significantly increased TCL: Carmi, Caspian, Little, Memphremagog, Morey, Rescue, Shelburne, and Tickle Naked. These are sampled more frequently than most lakes. Kellie suspects that once we get more years of data on more lakes, we will see more lakes increase in TCL.

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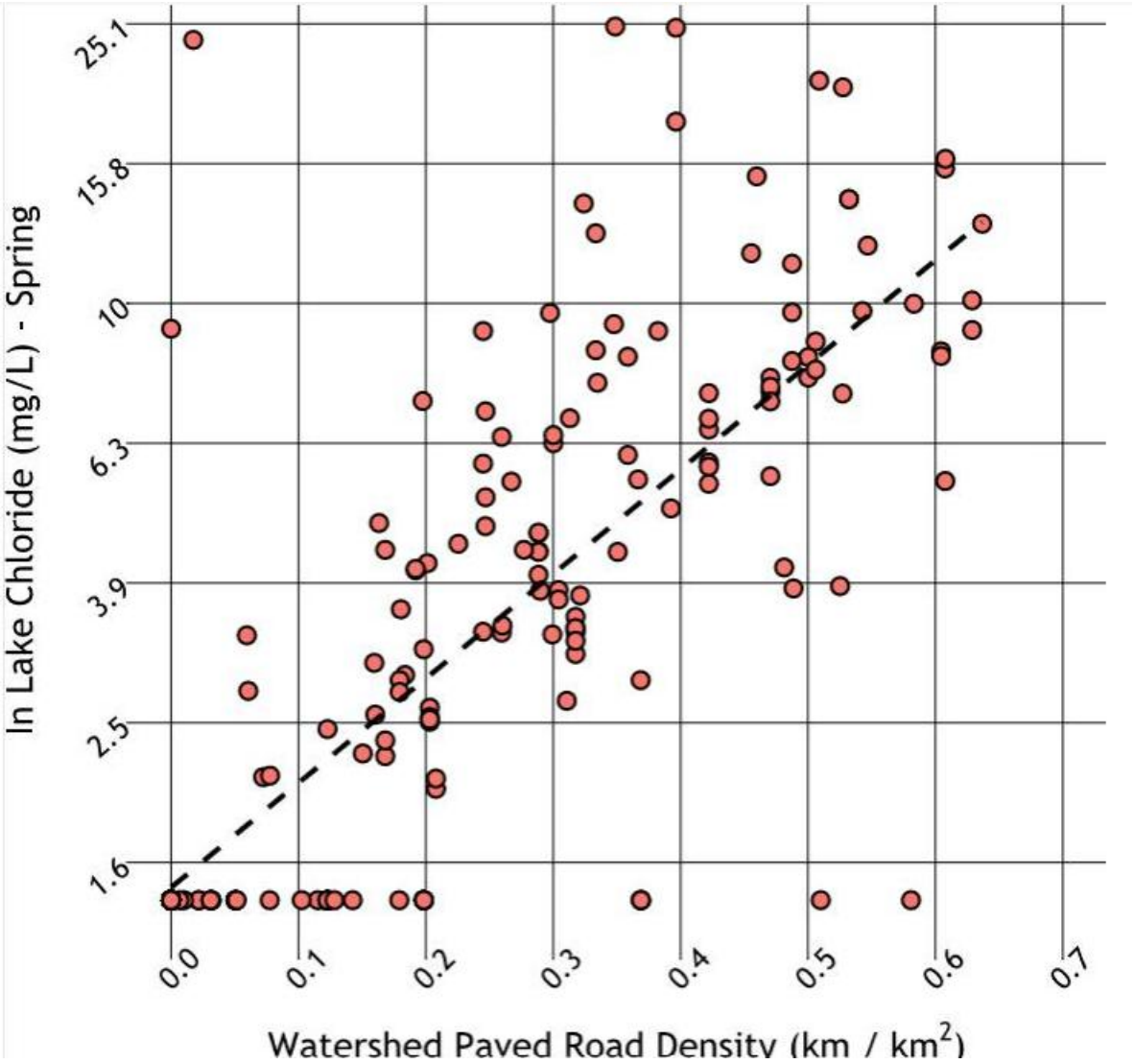

Mark Mitchell shared this final graph. It shows the density of paved roads in the watershed plotted against the inland lake chloride levels (correlating to road salt). The chloride level measured in adjacent water bodies on the Y axis is plotted against the concentration of paved roads on the X axis. A steep relationship is demonstrated to show the strong contribution of road salt on paved roads to the adjacent water bodies.

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Chloride contamination in Vermont water bodies is an emerging problem. At its present stage, it could be managed with preventative measures like this voluntary certification program to avoid progressing to more expensive Chloride removal efforts that have been experienced in Adirondack lakes. From my years of veterinarian clinical experience working with Vermont farm clients, they always subscribed to the theory that “an ounce of prevention was more effective than a pound of cure.” Considering the investment that the state has made in “curing” the non-point source Phosphorus problem, adoption of this voluntary certification program before Chloride reaches the expensive removal phases would seem to be the preferred approach.

In closing, I would like to reiterate that FOVLAP approves and supports the passages of H. 86 and S. 26. Without compromising public safety, this bill addresses the impacts of sodium chloride (road salt) on infrastructure and water quality through reduced road salt application. In this bill, chloride accumulation in Vermont’s lakes and ponds will be reduced through the development of best management practices for municipal and commercial applicators, certification for liability protection, and expanded monitoring of water salinity levels.

Respectfully submitted,

Kent E Henderson, FOVLAP Legislative Committee member