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**Agency of Agriculture Food & Markets**

ARM Division – Water Quality  
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[www.Agriculture.Vermont.gov](http://www.Agriculture.Vermont.gov)

**Memorandum**

**TO:** DAVID HUBER & WENDY HOUSTON-ANDERSON  
**FROM:** JOHN D. E. ROBERTS  
**SUBJECT:** LAKE CARMİ SEDIMENT RUNOFF ON 1-12-2018  
**DATE:** JANUARY 29, 2018

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On January 12, 2018, I received a text message accompanied by a series of photos showing sediment covering a portion of ice on Lake Carmi adjacent to the outflow points of Dewing and Kane Brooks. The text, sent from Lake Carmi year-round resident Richard (Dick) Benton, expressed concern that this sediment runoff might have been caused by the activities of a farmer in the area. I did not perceive this text message to be a formal complaint. Even though it was not filed with the Agency's Enforcement section, I decided to see if I could determine what had taken place.

Between the 11<sup>th</sup>-13<sup>th</sup> of January there had been a substantial rise in the temperature from below freezing up into the mid-50's. This temperature change was accompanied by rain. This weather event caused a substantial runoff from the land as the snow pack, which averaged 12-18" in depth, almost completely melted. On January 13, the weather reversed and turned very cold again, and there was a slight snowfall over the next few days.

On January 16, accompanied by Rob Achilles, I stopped on Dewing Road to see if I could verify the representations in the pictures that I received on January 12. The weather was very cold, all the streams were frozen, and any signs of silt having flowed into Lake Carmi were hidden by a coating of snow. Dick Benton met us on the road side and expressed his concern that the silt flow was the result of erosion on fields where tile drainage had been

installed in fall 2017. No signs of any water flowing could be seen due to the cold weather.

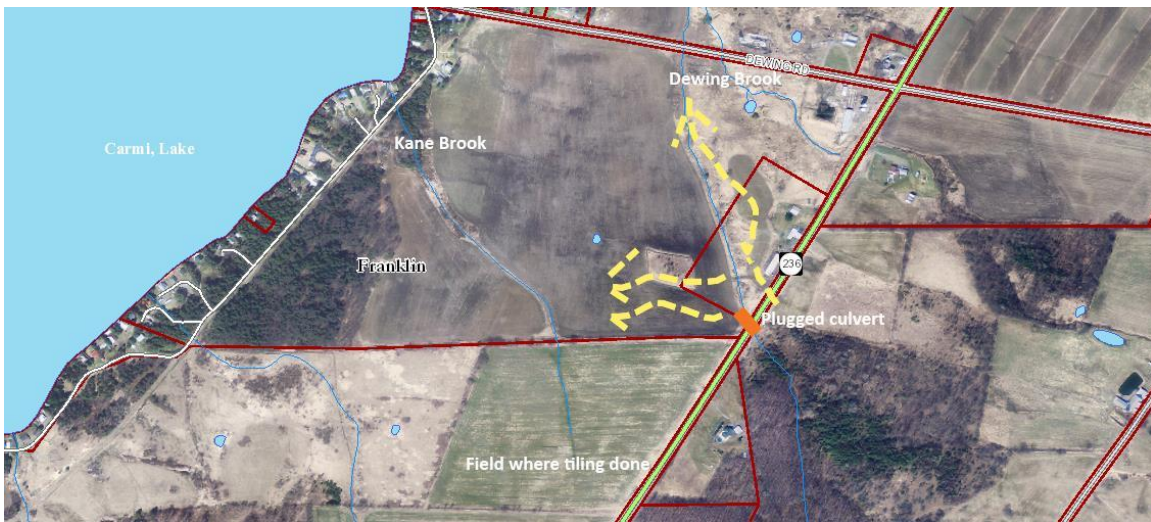
The temperature was predicted to climb back into the 40's within the week, so I stated that I would come back as soon as the ice melted, and water could flow again.

I learned that a culvert passing under State Route 236, State Park Road, was plugged with ice during the big melt on January 12. This caused a tremendous amount of water to flow up and over Route 236, then down the highway for approximately 200 feet before spilling to the west side of the highway near an equipment yard. The flow caused a large amount of erosion and undermined the edge of the highway, stirring up a lot of sediment. I was able to get in touch with Mr. Tim Wilson, Agency of Transportation superintendent of the state highway garage in Enosburg Falls. Route 236 resides within Mr. Wilson's jurisdiction. Mr. Wilson confirmed that a 30" culvert was plugged with ice and that the highway crew tried de-icing the culvert with very limited success. Mr. Wilson said the volume of water was tremendous and the velocity of flow was stirring up a lot of silt and sediment from around the road and cutting through the equipment yard on the west side of Route 236.

On January 23, the temperature rose back up over 40 degrees and it was raining. I went back up to Lake Carmi and met with the farmer who was the landowner of the land that the water flow had crossed from Route 236. This farmer had also done some tile drain work in the fall of 2017 on one of these fields identified on the map. In the initial email that drew my attention to this runoff situation, these were the fields owned by the farmer, that the complainant assumed the sediment had come from. The farmer and I walked up from Hammond Shore Road to the field that was tiled and followed a brook known locally as Kane Brook. There was a considerable flow of water coming down the brook. Most of the way the water flowed in a grassed waterway over a 6" tile drain. The water had some sediment in it but not heavy, a camel color. When we reached the field that had been tiled in the fall, there was water flowing out of the tile which appeared to be very light brown. This flow was joined by water that was flowing on the surface along the edge of the soil ridges left by the tile installation. This water was also very lightly colored with sediment. The tiled field was a grass field and no erosion was observed at the time of the investigation.

Based on what I observed on the two different days I went up to this area, coupled with talking to the landowner and most specifically the highway engineer, Mr. Tim Wilson, I believe that the source for most of the silt that washed into Lake Carmi on January 12 was due to the very large volume of water that flowed up and over Route 236 because the culvert under the highway was plugged.

### **FIELD MAP**



**PHOTOS**



*IMG\_1732, Taken on 1-23-2018 by John D. E. Roberts . View of the 30” culvert under Route 236 that is frozen, except for two small holes*



*IMG\_1731, Taken on 1-23-1028 by John D. E. Roberts. The view from the point where the frozen culvert passes under Route 236 looking north in the direction that the large amount of water flowed, then crossed 236 where the garage and red pick-up truck are on the left of the photo.*



*IMG\_1719, Taken on 1-23-2018 by John D. E. Roberts. Showing the water flowing off the field where the tiling was done in the fall of 2017 with some mild sediment in the water on this day.*



*IMG\_1722, Taken on 1-23-2018 by John D. E. Roberts. The photo depicts where the tile under the grassed waterway leading from the tiled field comes out by the cedar woods down near Lake Carmi. The water coming out of the tile has some mild sediment in it on this day.*