

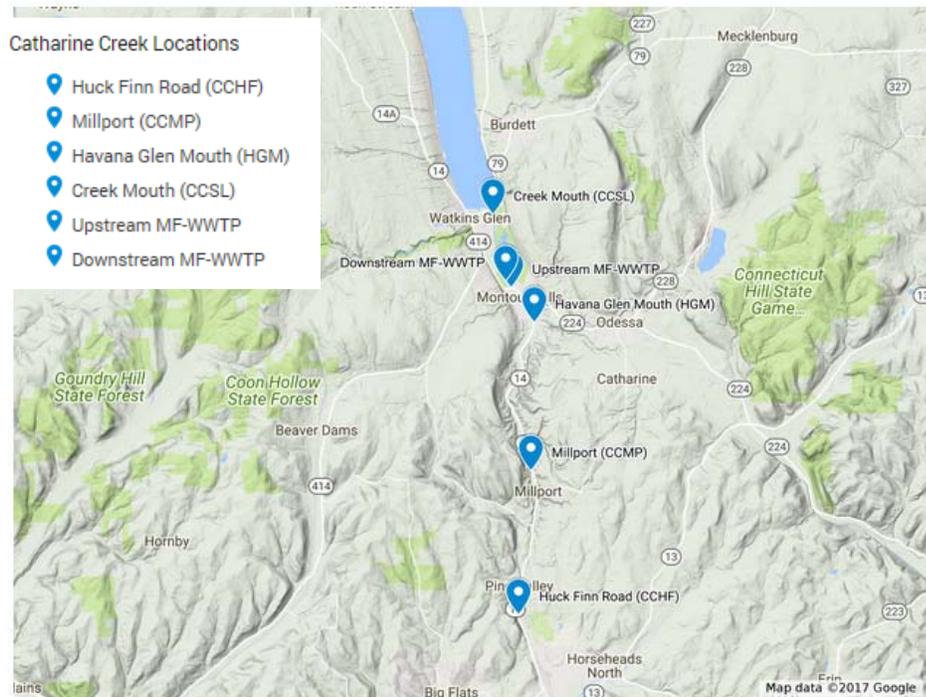
Watershed Region of Catharine Creek

Description of Catharine Creek

Catharine Creek is one of the major tributaries to Seneca Lake, encompassing approximately 31% of the total Seneca Lake watershed area. It originates in the Horseheads, NY area and flows north, into the southern tip of the Lake. It is by far the longest Seneca Lake tributary, with this watershed consisting of 49% agriculture and 45% forested areas.

SPWA Water Sampling Locations

SLPWA, with laboratory assistance from its partner CSI, sampled and tested Catharine Creek at locations shown on the map (CCHF, CCMP, HGM, AND CCSL). One of the sites (HGM) includes McClure Creek, a tributary to Catharine Creek. McClure drains a large agricultural area near Odessa. Two investigative sampling locations were recently added upstream and downstream of the Montour Falls Wastewater Treatment Plant (WWTP).

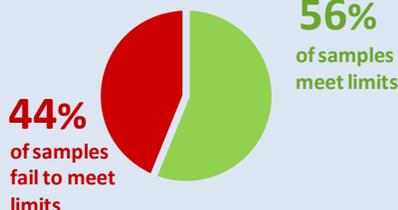
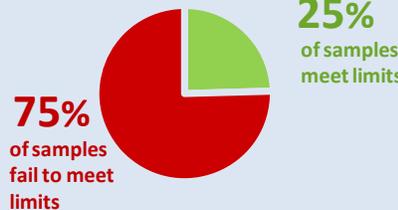
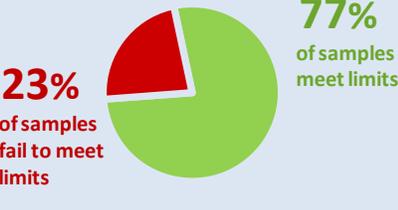


Waterbody Classification and Contamination Sources

Catharine Creek is designated as a DEC Class C stream and receives effluent from the Montour Falls WWTP. The Watkins Glen WWTP also discharges effluent into Seneca Lake near the confluence with Catharine Creek. A major project is ongoing to consolidate these WWTP's flows into a new facility with much improved capabilities.

Water Quality Summary

SLPWA conducts water quality testing at six creek locations, sampling approximately five times every summer. Tests include bacteria (*E. Coli* and total coliform), nutrients (phosphorus and nitrogen), dissolved oxygen, and total suspended solids—a measure of water clarity. These tests provide information on the water quality status of the creek and how Seneca Lake might be affected. The table below provides parameters of particular concern and the compliance with established guidance or DEC limits.

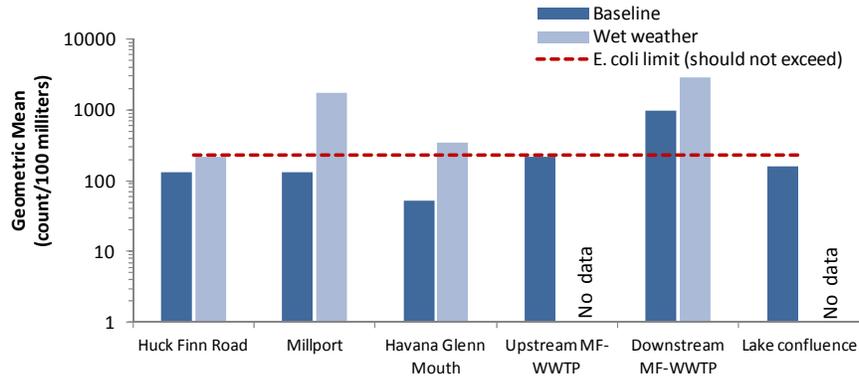
Parameter tested	Why is it measured?	% of water samples meeting guidelines in Catharine Creek	Is there a potential concern for Seneca Lake water quality?
Bacteria - <i>E. Coli</i>	To evaluate bacterial water quality impact of septic systems, wastewater treatment plants, and animal waste entering the creek	 <p>56% of samples meet limits</p> <p>44% of samples fail to meet limits</p>	Yes. Nearly half of all bacteria samples fail to meet the DEC limit for swimming.
Total Phosphorus	To evaluate the impact of agricultural and residential phosphorus runoff that can cause excessive algae growth.	 <p>25% of samples meet limits</p> <p>75% of samples fail to meet limits</p>	Yes. Only a small fraction of phosphorus samples are within the guideline.
Dissolved Oxygen (mg/L)	To evaluate the impact of erosion, agricultural or residential runoff or algal growth that can increase oxygen demand, removing oxygen needed by fish and other wildlife.	 <p>77% of samples meet limits</p> <p>23% of samples fail to meet limits</p>	No. Dissolved Oxygen values meet limits except at the most upstream location at Huck Finn Road, which accounts for all low oxygen values in the creek.

Highlights of Monitoring Results

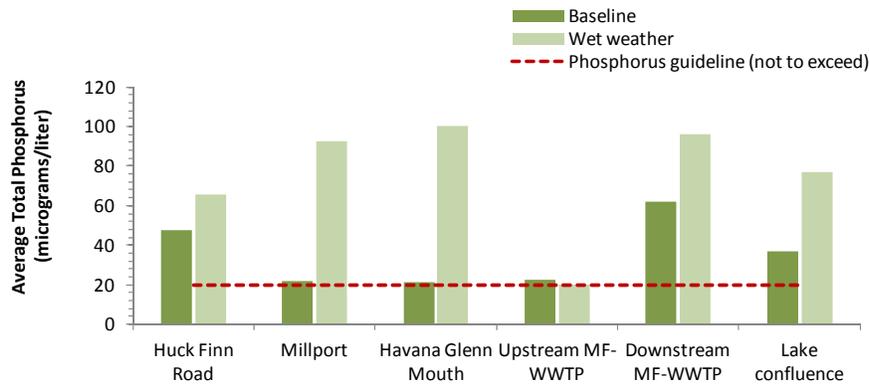
- Elevated results for phosphorus and bacteria are concerning, suggesting that creek discharges are potentially affecting Seneca Lake.
- Water quality declines after heavy rains, with more elevated phosphorus, bacteria, and suspended solids. This suggests the most detrimental impacts to the lake are episodic and tied to runoff following storm events.
- The Montour Falls WWTP has a large impact on measured phosphorus levels.

Catharine Creek Water Quality by Location, 2014 - 2016

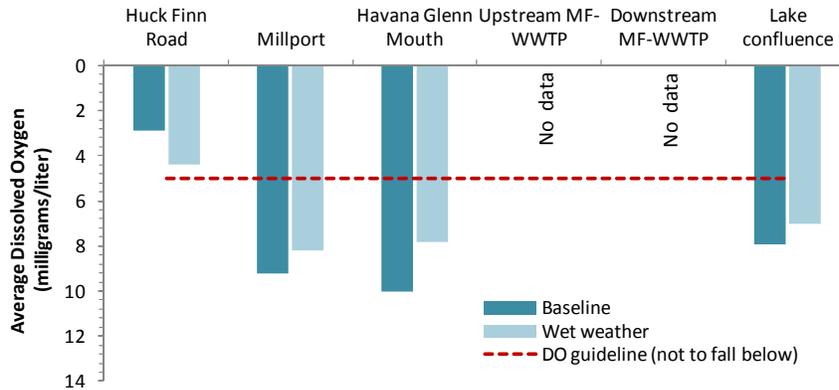
E. COLI BACTERIA (note log scale)



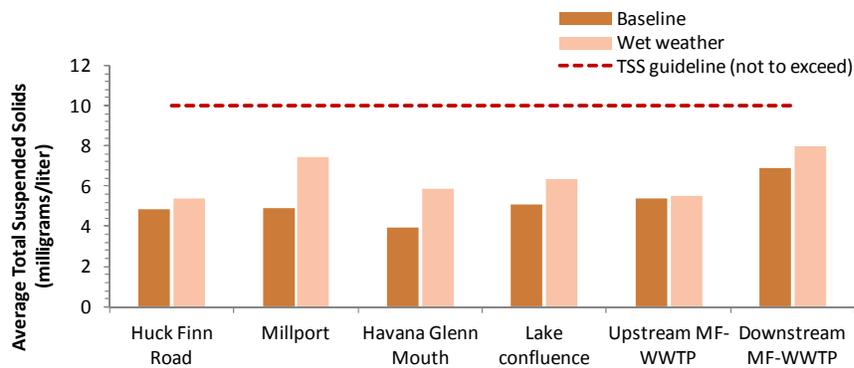
PHOSPHORUS



DISSOLVED OXYGEN



TOTAL SUSPENDED SOLIDS



Upstream → Downstream (near lake confluence)