

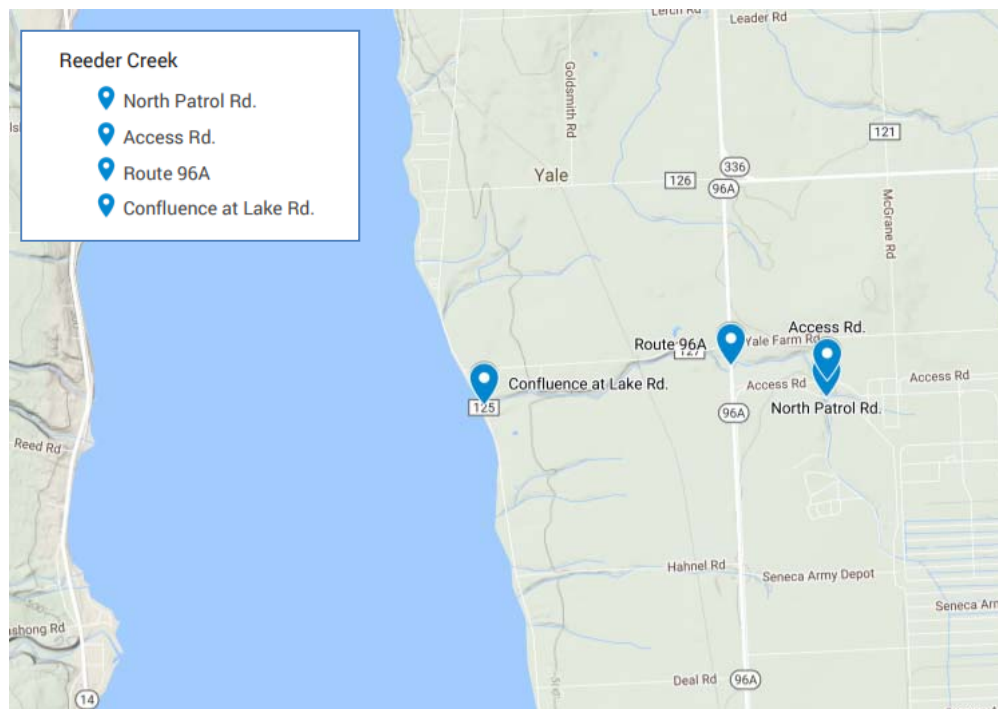
Watershed region of Reeder Creek shown with orange arrow.

Description of Reeder Creek

Reeder Creek has its origins in the former Seneca Army Depot and flows north then west into Seneca Lake just north of Sampson State Park. The Seneca Lake Pure Waters Association (SLPWA) sampled the water quality at three locations in 2016. Reeder Creek watershed is made up of 60% forest and 31% agriculture, with a wetland area at its source.

SPWA Water Sampling Locations

SLPWA, with laboratory assistance from its partner CSI, sampled and tested Reeder Creek at four locations shown on the map in 2015, though reduced this to three sites in 2016. Sampling locations are severely limited by the lack of accessibility to the depot area.

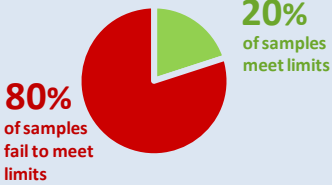




Waterbody Classification and Contamination Sources

Reeder Creek is designated as a DEC Class C stream and receives effluent from the Five Points Correction Facility and Hillside Children's Center wastewater treatment plants. The creek flows through an area of the former Seneca Army Depot where munitions were detonated or burned. Reeder Creek was added to EPA's "New York Impaired Waters List" for 2016 due to its extremely high phosphorous levels, following a petition by SLPWA and recommendation by the New York State Dept. of Environmental Conservation (DEC). This listing will result in more research by DEC to account for the sources of extremely high levels of phosphorus in Reeder Creek, and eventually lead to remediation efforts.

Water Quality Summary

SLPWA currently conducts water quality testing at three 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 it may affect Seneca Lake. The table below provides parameters of particular concern and the percent of samples meeting established guidance or DEC limits.

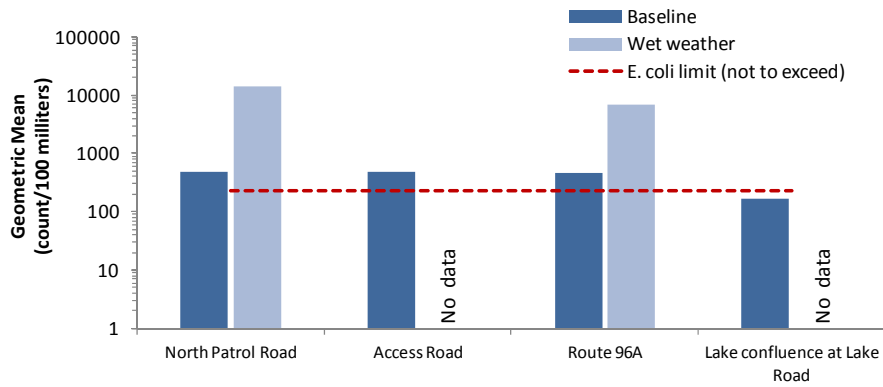
Parameter tested	Why is it measured?	% of water samples meeting guidelines in Reeder Creek	Is there a potential concern for Seneca Lake water quality?
Bacteria - <i>E. Coli</i>	To evaluate bacterial water quality impact of septic systems, wastewater treatment plants, and animal waste entering the creek	 <p>80% of samples fail to meet limits</p> <p>20% of samples meet limits</p>	Yes. Only 20% of bacteria samples meet DEC limits for swimming.
Total Phosphorus	To evaluate the impact of agricultural and residential phosphorus runoff that can cause excessive algae growth.	 <p>100% of samples fail to meet limits</p> <p>0% of samples meet limits</p>	Yes. All phosphorus samples fail to meet 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>100% of samples meet limits</p>	No. Dissolved oxygen values meet limits at all locations in the creek.

Highlights of Monitoring Results

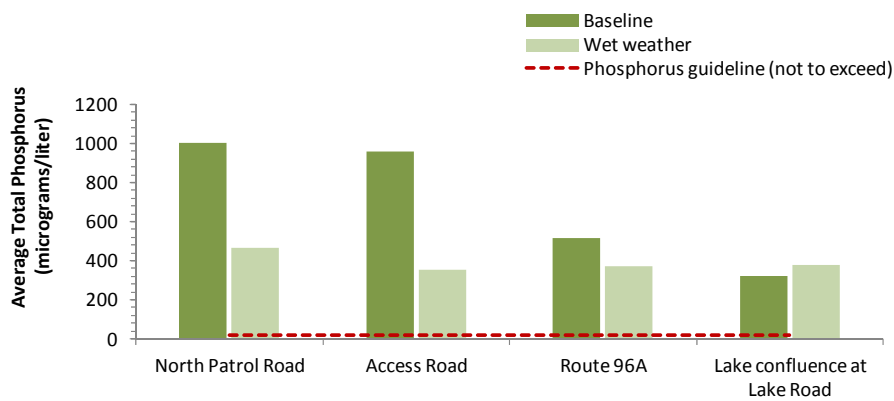
- Phosphorus concentrations are extremely high, suggesting that creek discharges are adversely affecting Seneca Lake weed and algae growth. Ground water contamination is indicated by SPLWA's monitoring results, since concentrations decline during storm events, which may dilute the effects of ground water contamination. This is unlike other Seneca Lake tributaries where wet weather concentrations are typically higher. Experts knowledgeable about Reeder Creek suspect that groundwater is contaminated due to burning of old ammunition when the Seneca Army Depot was closed. Disposal sites were located very close to the creek and potential phosphorous contamination was not a consideration at that time.
- Except for phosphorus, water quality declines after heavy rains, with more elevated levels of bacteria, nitrogen, and suspended solids.

Reeder Creek Water Quality by Location, 2014 - 2016

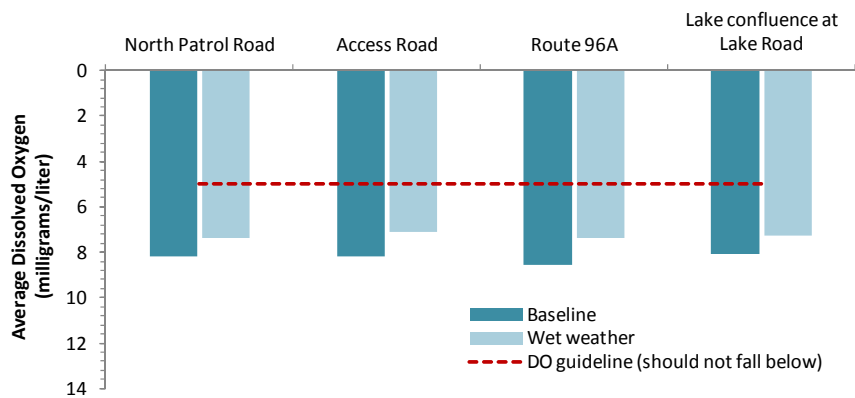
E. COLI BACTERIA (note log scale)



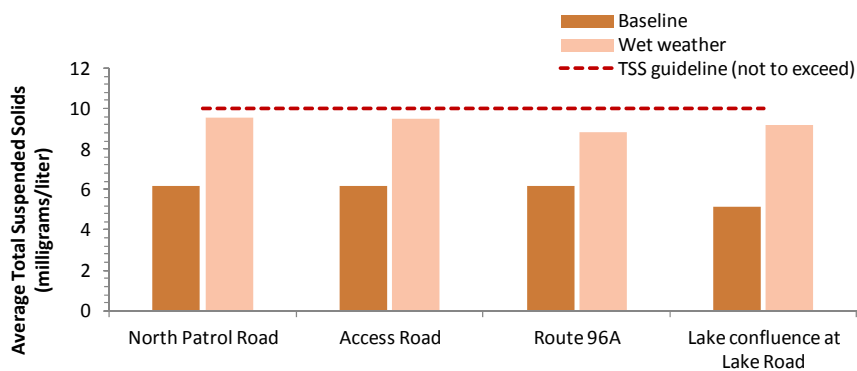
PHOSPHORUS



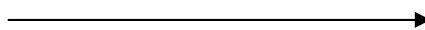
DISSOLVED OXYGEN



TOTAL SUSPENDED SOLIDS



Upstream



Downstream (near lake confluence)