Prepared in cooperation with the

U.S. Environmental Protection Agency

Water Quality Data for Tributaries to Lake Ontario in New York--Great Lakes Restoration Initiative, Lakewide Impairment Study

USGS and EPA have a cooperative effort to improve water quality through lake monitoring to establish a baseline for total-suspended solids and phosphorus loading from targeted tributaries to Lake Ontario.

The U.S. Geological Survey (USGS) in cooperation with the U.S. Environmental Protection Agency (EPA) Region 2, in FY-12 and 13 is conducting an ongoing program to sample nine tributaries to Lake Ontario, (fig. 1), to help determine phosphorous loading from major watersheds as a part of the Great Lakes Restoration Initiative (GLRI) in support of a Lakewide Management Plan (LaMP). The program began the previous year at six sites and was expanded in FY-13 to include an additional three sites. At each tributary site, the collection of water temperature, specific conductance, total phosphorus, orthophosphate or soluble reactive phosphorus (SRP), total dissolved solids (TDS) and total suspended solids (TSS) began on a seven-week interval. An additional three sites were added in October 2012, with collection of the

Locations of nine major tributary sampling sites on Lake Ontario, New York

Figure 1.

1. 04219768 EIGHTEENMILE CREEK AT BURT, NEW YORK
2. 04220045 OAK ORCHARD CREEK NEAR SHELBY, NEW YORK
3. 04231600 GENESEE RIVER AT FORD STREET, AT ROCHESTER, NEW YORK
4. 04249000 OSWEGO RIVER AT LOCK 7, AT OSWEGO, NEW YORK
5. 04250200 SALMON RIVER AT PINEVILLE, NEW YORK
6. 04260500 BLACK RIVER AT WATERTOWN, NEW YORK

Additional Tributary Sites Added October 2012

7. 04229500 HONEOYE CREEK NEAR HONEOYE FALLS, NY
8. 04232050 ALLEN CREEK NEAR ROCHESTER, NY
9. 0422016550 OAK ORCHARD CREEK NEAR KENYONVILLE, NY

U.S. Department of the Interior
U.S. Geological Survey

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same constituents as the original six sites. As of October 2012 the tributary sites are sampled the first Monday of each month. During the agricultural growing season samples are collected on the first and third Monday of each month, April to October. Samples are collected using an 8-point equal-width-increment sampling protocol across the stream and are composited to provide estimations of loading into Lake Ontario. Instantaneous discharge data is taken from real-time USGS water-monitoring gages on each tributary to provide flow, measured in cubic feet per second.

In addition to the interval sampling at each site, the Genesee River at Ford Street Bridge and Oswego River at Lock 7, at Oswego have secondary sampling schedules which occur monthly at selected intervals, and also include storm-event sampling.

Constituents that are collected include: (1) dissolved solids also termed total-dissolved solids (TDS) which is a measure of combined inorganic and organic substances in a dissolved state, (2) total-suspended solids (TSS) which includes inorganic and organic particulate not in solution, (3) suspended-sediment also termed total concentration (TC) which is the abundance of inorganic and organic constituents and includes suspended sands and silts of the total volume, (4) Total phosphorus (P), unfiltered, which represents the sum of all the phosphorus components, and (5) Orthophosphate, also termed soluble reactive phosphorus (SRP).

For the entire period of data (2011 through January 2013), Oak Orchard Creek near Shelby had the highest concentration of dissolved solids at 1870 mg/L. Honeoye Creek at Honeoye Falls had the highest concentration of suspended solids at 363 mg/L. Eighteenmile Creek at Burt had the highest concentrations of orthophosphate (SRP) at 0.191 mg/L. Genesee River at Ford Street Bridge had the highest concentration of Total Phosphorus at 0.697 mg/L. Both Salmon River at Pineville and Black Creek at Watertown had the lowest concentrations with the greatest number of non-detects for suspended solids, orthophosphate, and total phosphorus.

Primary sources for dissolved and particulate solids are normally erodible soils; agriculture, residential runoff, and discharge from industry or sewage treatment. The contribution of phosphorus is often from fertilizer and manure runoff or discharged from industry and sewage treatment.

USGS water-quality data for New York can be accessed from the U.S. Geological Survey's National Water Information System or NWIS. Data from field sites and laboratory analysis can be retrieved for current and historical data, and for real-time and discrete water-quality measurements.

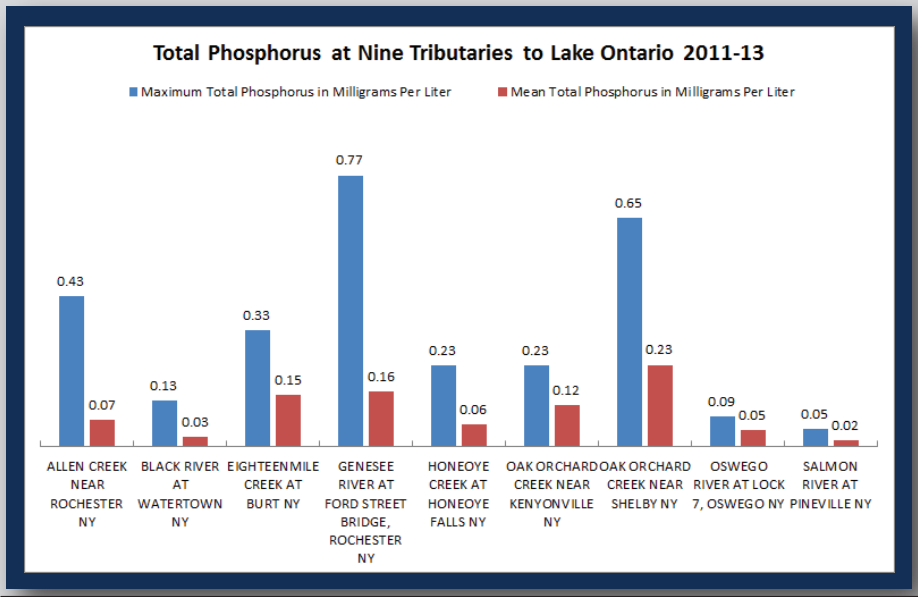
- Data can be accessed at http://waterdata.usgs.gov/ny/nwis/qw

EPA data can be downloaded at the STORET Data Warehouse which features Watershed summaries and the MyWATERS Mapper for water quality assessments.

- Data can be accessed at http://www.epa.gov/STORET/dbtop.html

This work is essential for lake restoration Action Plan objectives:

~a baseline for total-suspended solids loading for targeted tributaries.
~measurable phosphorus loading characteristics for future phosphorus reductions.
~a near-shore assessment of nutrient related fate and transport mechanism.



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