Progress toward water quality improvement: Phytoplankton. AMP 2013 Annual Report.
(Assessment Measure)

AMENDED CONSENT JUDGMENT GOAL

Reduce the frequency, magnitude and duration of elevated chlorophyll-a- concentrations in Onondaga Lake during the recreational period. Reduce the abundance of cyanobacteria (blue-green algae) in phytoplankton biomass

Hypotheses to be tested:	Status:
Metro improvements and watershed phosphorus load reductions result in lower biomass of phytoplankton in Onondaga Lake.	• Since Metro improvements have reduced phosphorus loading to the lake, the biomass of phytoplankton in the lake has also declined.
Metro improvements and watershed phosphorus load reductions, reflected in a higher N:P ratio, result in reduced importance of cyanobacteria to the lake's phytoplankton biomass.	• Since Metro improvements have reduced phosphorus loading to the lake, the proportion of cyanobacteria in the phytoplankton community has also declined.

Current Conditions with Historical Comparison

Biomass *(Annual average January-December (standard deviation))*	1998-2004: 4.1 mg/L (1.9 mg/L) 2005-2009: 1.2 mg/L (0.48 mg/L) 2010: 1.25 mg/L 2011: 1.27 mg/L 2012: 1.46 mg/L 2013: 1.77 mg/L
Community Composition *(Jun-Sept average biomass (standard deviation))*	<u>Cyanobacteria</u> 1998-2004: 29% (10%) 2005-2009: 1.6% (1.1%) 2010: 0.6% 2011: 2.5% 2012 3.0% 2013 5.7%
Factors affecting algal community	Nutrients, light, temperature, grazing pressure from *Daphnia*

Monitoring and Assessment Program

Lake Monitoring *(Annual County monitoring program)*	Biweekly sampling events: • Phytoplankton abundance (number per liter) • Biomass (mg/l) • Composition of the algal community (7 major groups) • Cell size divisions (nanoplankton and netplankton) Metrics to track over time: • Percent of major taxa • Cyanobacteria relative importance • Shifts in N:P ratio of lake water • Biomass trend

Tools for Decision Making

Model	Onondaga Lake Water Quality Model
TMDL Allocations	Phosphorus - NYSDEC Phase II TMDL, June 29, 2012