

Progress towards water quality improvement: Macrophytes. AMP 2009 Annual Report.
(Assessment Measure)

AMENDED CONSENT JUDGMENT GOAL

Expansion of the areal coverage and increase in diversity of macrophyte community, where number of species and biomass in the littoral zone (6m water depth) are comparable to other regional lakes. Increase percent cover of littoral zone to optimal levels (40% – 60%) for largemouth bass habitat, to achieve desired use of the lake for warmwater fish reproduction.

Hypotheses to be tested:	Status:
Metro improvements and watershed phosphorus load reductions indirectly result in increased areal coverage of macrophytes in littoral zone of Onondaga Lake.	<ul style="list-style-type: none"> Metro improvements to reduce nutrient loading were implemented in 2004 (BAF) and 2005 (HRFS) Areal coverage in the littoral zone has increased between 2000 and 2005
Metro improvements and watershed phosphorus load reductions indirectly result in increased number of macrophyte species in Onondaga Lake.	<ul style="list-style-type: none"> The number of macrophyte species has increased from 5 in 1991 to 17 in 2005; the next survey will be conducted in 2010.

Current Conditions with Historical Comparison

	<u>Number of</u>		<u>Dominant species by</u>
	<u>Year</u>	<u>species present</u>	
Community Composition (Lakewide)	1991:	5	<i>no data</i>
	2000:	10	Sago pondweed (52%) Common waterweed (26%)
	2005:	17	Common waterweed (62%) Coontail (19%)
	<i>1991 data from John Madsen, Army Corps of Engineers, 1996</i>		
Biomass (Lakewide average)	1991:	<i>no data</i>	
	2000:	16 g/m ² dry weight	
	2005:	51 g/m ² dry weight	
Species Richness (Transect average)	1991:	1.3 species per transect (Madsen et al 1996)	
	2000:	3.6 species per transect	
	2005:	6.0 species per transect	
Percent of Subplots with Macrophytes	1991:	13% (Madsen et al 1996)	
	2000:	28%	
	2005:	62%	
Percent Cover in littoral zone (Lakewide average)	1991:	<i>no data</i>	
	2000:	18%	
	2005:	26%	
Aerial Photographs	2000:	85 acres (11%)	2005: 378 acres (49%)
	2001:	134 acres (17%)	2006: 183 acres (24%)*
	2002:	142 acres (18%)	2007: 210 acres (27%)*
	2003:	267 acres (34%)	2008: 314 acres (40%)*
	2004:	No data	2009: 382 acres (50%)*
	<i>Percent indicates percent coverage of littoral zone. Aerial photographs were obtained in June prior to 2006, and in August since 2006.</i>		
Factors affecting macrophyte community	<ul style="list-style-type: none"> Sediment texture (oncolites are nutrient-poor and unstable), light penetration, salinity, zebra mussels 		

Library Reference 2.7.4

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(Assessment Measure) *(continued)*.

Monitoring and Assessment Program

Lake Monitoring

- Survey species composition, percent cover, and biomass every 5 years, from 2000 to 2010.
- Annual aerial photographs of littoral zone to estimate acres of macrophytes.

Metrics to track over time

- Number of species (richness)
- Percent cover
- Biomass

Tools for Decision Making

Qualitative and Quantitative Analysis

Compare to baseline survey in 2000