Appendix A-11

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

AMENDED CONSENT JUDGMENT GOAL

Expand habitat for fish community and promote water quality conditions that support a diverse warmwater fish community. Achieve conditions to support a self-sustaining sport fishery, and achieve desired use of the lake for recreation.

Hypotheses to be tested:	**Status:**
Implementation of point and nonpoint nutrient load reductions will indirectly increase the number of fish species that are sensitive to pollution present in Onondaga Lake	• Number of fish species sensitive to pollution present in the lake (pollution tolerance guild) has remained consistent from 2000 through 2013, ranging from 0% to 8% of the population.
Implementation of nutrient load reductions at Metro and nonpoint sources including CSO remediation will indirectly increase the number of fish species present in Onondaga Lake	• Number of species captured in the lake as a whole is currently stable, but more species are being captured per year in the south end of the lake. This is likely due to improving habitat conditions there.
Implementation of point and nonpoint nutrient load reductions will increase the reproductive success of fish in Onondaga Lake	• Catch of YOY has declined for most species. Possible causes include; predation on larvae by alewives, more dispersed population due to increased habitat, and decreased sampling efficiency due to increased plant growth.
Implementation of point and nonpoint nutrient load reductions will increase the habitat available for the coolwater fish community	• Habitat available to coolwater fish appears to have shown some improvement, but is highly variable. Controlled by summer temperature and intrusion of hypoxia into metalimnion.

Current Conditions with Historical Comparison	
Number of fish species (from electrofishing) *(Average Annual Total & Standard Deviation)*	2000-2003: 24 (1.3) 2004-2012: 25 (2.1) 2013: 26
Number of fish species reproducing in the lake (larval sampling + YOY CPUE data)	2001-2003: 8-12 2004-2012: 8-14 2013: 17
Cool water habitat *(Annual Average Percent of Habitat Available and Standard Deviation)*	2000-2003: 43% (3.8%) 2004-2012: 49% (4.7) 2013: 48
Forcing Functions	Extent of aerobic habitat, water temperature, abundance of preferred food sources, habitat for spawning and juveniles, predation of larvae by alewives, abundance of macrophytes

Monitoring and Assessment Program	
Lake Monitoring *(Annual County monitoring program)*	Annual monitoring, beginning in 2000 to assess reproductive success and community structure • Number and distribution of littoral nests • ID and enumerate larval fishes • ID and enumerate juvenile and YOY stages • ID and estimate (CPUE) of adult community using electrofishing, gillnets, and angler diaries (suspended in 2012) Assess and record DELT-FM anomalies

Tools for Decision Making	
Quantitative and Qualitative Analyses	Data collection techniques and data analysis comparable to standard procedures used throughout New York.