

## Water Sources and Treatment

Customers of the Onondaga County Water Authority receive water that originates from Otisco Lake, Lake Ontario, or Skaneateles Lake. Customers located in certain areas may get a mixture of these waters or their source water may vary with changes in seasonal demand. In 2013 OCWA supplied approximately 36.13 million gallons per day to its 340,000 residential customers located in suburban Onondaga County, and parts of Madison, Oneida, and Oswego counties. OCWA also supplies water daily to thirty large industrial customers and two municipal wholesale water customers. OCWA can also supply water on an intermittent or emergency basis to seven additional municipal water systems.

OCWA treats and delivers water from Otisco Lake; the easternmost and smallest finger lake. In 2013, approximately 16.95 million gallons per day or 46.9 % of OCWA's water came from Otisco Lake. The customers receiving water originating from Otisco Lake are mostly located in the southern and western half of Onondaga County.

OCWA buys water wholesale from the Metropolitan Water Board at a number of different supply connections. MWB treats water originating from Lake Ontario near the City of Oswego. In 2013, approximately 18.17 million gallons per day or 50.3% of OCWA's water came from Lake Ontario. The customers receiving water originating from Lake Ontario are mostly located in the northern and eastern half of Onondaga County. OCWA customers in Madison, Oneida, and Oswego counties receive all their water from Lake Ontario.

The City of Syracuse Water Department has the responsibility of treating and delivering water originating from Skaneateles Lake. In 2013, approximately 1.0 million gallons per day or 2.8 % of OCWA's water came from Skaneateles Lake water purchased from the City of Syracuse Water Department through various supply connections. OCWA uses this water to supplement areas close to the city boundary when needed. OCWA customers living in Nedrow, Southwood, and the Jamesville area, get water from Skaneateles Lake exclusively.

The first step in water treatment is to protect the source. OCWA and the City of Syracuse have been conducting ongoing watershed inspection, monitoring, and educational programs for a number of years. These programs are in conjunction with the State and Onondaga County Departments of Health. OCWA, MWB, and the City of Syracuse all monitor lake conditions on regular intervals prior to treatment.

The New York State Department of Health has completed a Source Water Assessment Program in order to better recognize potential sources of contaminants in every water source used throughout the State. This assessment can be found in this report under the heading **SWAP Summary for OCWA.**

OCWA has 2 intake pipes located in Otisco Lake. The water entering these pipes is immediately disinfected with either Sodium hypochlorite or Chlorine dioxide to discourage the growth of zebra mussels. The water then travels, by gravity, approximately 5 miles to OCWA's Water Treatment Plant located in Marcellus, NY. Water first enters the Rapid Mix tank where a coagulant (polyaluminum chloride) and a taste and odor control chemical (powdered activated carbon) is added. After 30 seconds of mixing, the water enters the Contact Basins where the calm conditions allow the coagulant to make the small particles adhere together forming larger particles. Some of these particles settle and are cleaned out later. The contact time in these basins also allows the powdered activated carbon (used only when needed) to adsorb organic taste and odor causing chemicals.

After about 1 hour of contact time the water enters the filters. Particles are removed as the water passes through one of six multimedia filters. These filters consist of granular activated carbon, silica-sand, and hi-density sand. The filters are washed periodically and the water used to do this is collected in lagoons and allowed to settle. It is then recycled back to the start of the treatment plant to be treated again. After filtration, the water is again disinfected with Sodium Hypochlorite and fluoride is added. The water is stored in large tanks located at the treatment plant to provide adequate contact time for the chlorine to work. Once the water leaves the tanks orthophosphate is added to provide a coating for the pipes in the distribution system and in your home. This is done in order to prevent the leaching of lead and copper from your pipes and into your water.

The Metropolitan Water Board pumps water from Lake Ontario through an 8 foot diameter intake it shares with the City of Oswego. Upon entering the Raw Water Pumping Station, lake water is treated with carbon dioxide to suppress pH thereby increasing the effectiveness of chemical coagulation. Potassium permanganate is applied seasonally to raw water for taste and odor control and to discourage the growth of zebra mussels. The water is pumped approximately 2 miles to MWB's treatment plant. Water entering the plant is treated with sodium hypochlorite (disinfectant) and polyaluminum chloride (coagulant) and is flash mixed. The water then enters three contact basins where slow mixing allows small particles to accumulate and form larger, more readily filtered particles. After about 2 hours of contact time, the water flows into dual media filters consisting of granular activated carbon and filter sand whereby particulate contaminants are removed. After filtration three treatments are applied: fluoride to reduce tooth decay, sodium hypochlorite to disinfect and sodium hydroxide for corrosion control.

The City of Syracuse does not filter the water that enters their intakes located in Skaneateles Lake. The city has been granted a waiver to provide its customers with unfiltered water subject to strict conditions set by the New York State Department of Health. These conditions include water quality monitoring, backup disinfection, and watershed protection. The City of Syracuse Water Plant is located in the Village of Skaneateles. There they provide disinfection by the addition of chlorine, and fluoridation. Water then flows by gravity into the City's storage reservoirs. Orthophosphate is added to the water (for lead and copper control) as it leaves these reservoirs and it is disinfected again by the addition of sodium hypochlorite. In 2013 an Ultraviolet Light Treatment Facility was put into operation at Westcott Reservoir. A UV Light Treatment Facility at Woodland Reservoir is scheduled for completion by April 2014. Ultraviolet disinfection will allow the City to strengthen protection against microbial contaminants, especially targeting cryptosporidium.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activities. Contaminants that may be present in source water include: microbial contaminants; inorganic contaminants; pesticides and herbicides; organic chemical contaminants; and radioactive contaminants.