

Prepared in cooperation with the  
New York State Department of Environmental Conservation

## Organic Wastewater and Pesticide Monitoring at Key Points in the New York City Reservoir System

*The presence of a long-term data base for emerging contaminants is established and maintained in one of the largest drinking water sources in the United States.*

### Problem

Samples were collected from 10 Key Point sites in the New York City Reservoir system between 1999-2000 as part of the cooperative USGS-New York State Department of Environmental Conservation (NYSDEC) statewide pesticide monitoring project (Phillips and others, 2000). Ten pesticides were detected in the key-point samples collected between January 1999 and September 2000 - the herbicides

atrazine, metolachlor, simazine and prometon, the herbicide degradates deethylatrazine, hydroxyatrazine, alachlor ethanesulfonic acid (ESA), metolachlor ESA, and metolachlor oxanilic acid (OA), and the insecticide diazinon. Concentrations for most of these detections were generally low (between 0.001 and 0.05 ug/L), with the exception of concentrations of alachlor and metolachlor degradates, which frequently exceeded 0.1 ug/L.

### Approach

The objective of this project is to continue ongoing monitoring to establish a long-term trends network for pesticides at key points within the New York City reservoir system. This project will use a large number of analytes, all of which will be analyzed at the trace level (sub-microgram per liter) detection limits. Some of the analytes are degradates of commonly used herbicides, which until recently were widely analyzed. Samples will be collected three times during the year at each of 10 key-point sites within the NYC reservoir system. The ten sites are:

### New Croton Dam



### Sand Filtration of Wastewater



### Delaware System:

- Cannonsville Reservoir, USGS Station ID 01423900
- Pepacton Reservoir, USGS Station ID 01415200
- Neversink Reservoir, USGS Station ID 01435800
- Rondout Reservoir, USGS Station ID 01366399

### Catskill System:

- Schoharie Reservoir, USGS Station ID 01362230
- Ashokan Reservoir, USGS Station ID 01363400

### Receiving Reservoirs

- West Branch Reservoir, USGS Station ID 01374620
- New Croton Reservoir, USGS Station ID 01374995
- Kensico-Delaware Aqueduct, USGS Station ID 01301900A
- Kensico-Catskill Aqueduct, USGS Station ID 01301900B

Since 2009, This project has been expanded to include monitoring of organic wastewater contaminants, including personal care products, pharmaceuticals, and hormones. These additions will insure the presence of a long-term data base for emerging contaminants is established and maintained in one of the largest drinking water sources in the United States.

### Related Publications

Heisig, P.M. and Phillips, P.J., 2004, Hydrogeology and Water Quality of the Pepacton Reservoir Watershed in Southeastern New York. Part 3. Responses of Stream Base-Flow Chemistry to Hydrogeologic Factors and Nonpoint-Sources of Contamination: U.S. Geological Survey Scientific Investigations Report 2004-5008, 31 p.

McHale, M.R., and Phillips, P.J., 2001, Streamwater Chemistry, Nutrients, and Pesticides in Town Brook, a Headwater Stream of the Cannonsville Reservoir Watershed, Delaware County, New York, 1999: U.S. Geological Survey Water-Resources Investigations Report 01-4050, 19 p. Programs with Abstracts, State University of New York at Stony Brook, NY, April 23, 1994, p. 130-136.

Phillips, P.J., and Bode, R.W., 2002, Concentrations of Pesticides and Pesticide Degradates in the Croton River Watershed in Southeastern New York, July-September 2000: U.S. Geological Survey Water-Resources Investigations Report 02-4063, 20 p.

Phillips, P.J. and Bode, R.W., 2004, Seasonal Variability and Effects of Stormflow on Concentrations of Pesticides and their Degradates in Kisco River and Middle Branch Croton River Surface Water, Croton Reservoir System, New York, May 2000-February 2001: U.S. Geological Survey Water-Resources Investigations Report 03-4151, 16 p.

Phillips, P.J. and Heisig, P.M., 2004, Hydrogeology and Water Quality of the Pepacton Reservoir Watershed in Southeastern New York. Part 1. Concentrations of pesticides and their degradates in stream baseflow, 2000-2001: U.S. Geological Survey Water-Resources Investigations Report 03-4137, 13 p.

Riva-Murray, Karen, Phillips, P.J., and Bode, R.W., 2004, Pesticides in streams of the Croton River basin (southeastern New York): use of a pesticide toxicity index to evaluate relative toxicity of stream water to aquatic organisms [abs.] Compendium of Abstracts, 2d Annual New York City Watershed Science and Technical Conference, Sept. 21-22, 2004, Fishkill, New York, p. 29

## Secondary Settling Tank



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