WATER QUALITY MONITORING TO EMPOWER WANAQUE SUPPLY SYSTEM MANAGEMENT

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ABSTRACT

The Wanaque Reservoir System provides potable water supply to 4 million residents in the most densely populated of urban and suburban areas in northern New Jersey. The North Jersey District Water Supply Commission (NJDWSC) is the custodian of the Wanaque Reservoir System.

In the dawn of the 21st century, the State of New Jersey launched "Smart Growth" initiatives and created the Highlands Council to preserve the water quality and quantity of the region so well known for its water resources. As a result, significant population increase and economic growth outside the Highlands and within the Wanaque water system's service area is expected and water demand increases are predicted to accelerate. To support this growth in the urban areas NJDWSC supplies, it has embarked upon a number of proactive and innovative measures to monitor and enhance its source water supply. These programs optimize the management of the Wanaque Reservoir System's source water to aid the Commission in satisfying the projected accelerated increase in demand.

To satisfy the region's water demand, significant off-stream diversions to the Wanaque Reservoir are necessary during prolonged dry climatic periods. An unavoidable consequence of such river water diversions is the high nutrient loads introduced into the Wanaque Reservoir. While the obvious benefit of additional water supply is of foremost importance, the nutrient loading in the water creates unnatural water quality conditions. Extra nutrient loading, such as the increased phosphorus, creates conditions conducive to algae blooms and other types of nuisance aquatic plant growth that would not occur naturally and which effect water quality, treatment costs, and create public health concern with regard to disinfectant byproducts.

A comprehensive reservoir water quality management action plan has been developed and implemented by NJDWSC to address the current and future needs for managing the Wanaque Reservoir. This paper will discuss the details of the following monitoring programs and the resulting applications:

- Headwaters Quality Monitoring Program
- Real Time Water Quality Monitoring Program
- Passaic River Basin Water quality Information System

KEYWORDS

Wanaque Reservoir, Nutrient Loading, Algae Blooms, Passaic River, Datasonde, Stormwater