NEW YORK STATE WATER UTILITY

Case Study

COMPLIANCE ASSURANCE

WITH ACCURATE & RELIABLE NITRATE MONITORING

REAL NITRATE

REAL CONTROLLER

LOCATION:
New York, USA

SOURCE TYPE:
Groundwater

PARAMETER:
Nitrate (NO₃)

APPLICATIONS:
Well Bblending Optimization

SYSTEM:
Real Nitrate Sensor,
Real Controller Pro,
Real Clean System

REAL-TIME NITRATE MONITORING HELPS WITH DECISION MAKING TO OPTIMIZE WELL BLENDING

A water utility in New York State that provides groundwater to residents from hundreds of wells in a rural area required real-time monitoring to ensure that nitrate levels are maintained in compliance with the drinking water regulations. Some of the wells in the region have high nitrate concentrations while others do not. The water utility manages this situation by blending waters from clean wells with nitrate contaminated wells to ensure that the finished product water has nitrate levels well below the regulatory limit of 10 mg/L NO₃ as N.

Background

Before the treated water is pumped into the distribution network, it is monitored for pH, residual chlorine and nitrates (Figure 1). Real-time monitoring is a much-needed decision-making tool for this utility as it provides the required water quality information within a minute and allows the utility to blend water from different wells efficiently without compromising the quality of the final product. In comparison, sending samples for nitrate analysis to a third-party laboratory would return results within days, which would curtail the flexibility the utility exercises in blending wells containing various concentrations of nitrates.
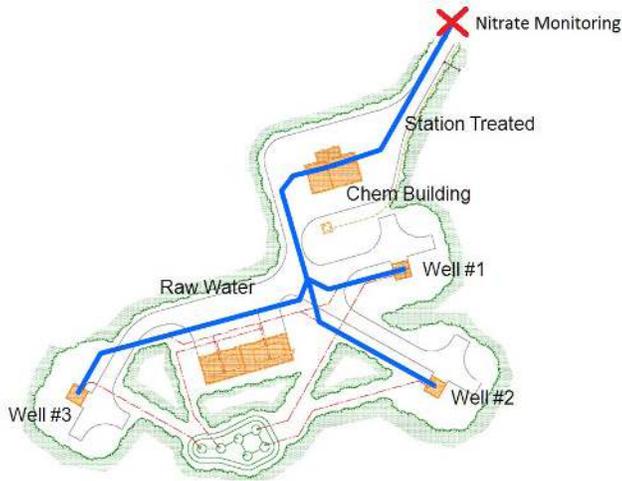
Figure 1: One of the many sites the utility extracts groundwater from. At this site, the water is drawn from three wells, one of which has a high concentration of nitrates, blended, chlorinated in Chem Building, and monitored for pH, residual chlorine and nitrates before being pumped to the consumers.

Low maintenance system with accurate and reliable measurements

Optical sensors are susceptible to fouling from minerals such as iron and manganese, which may be present in sufficiently high concentrations in the groundwater. Over time, the accuracy of the instrument is compromised unless there is regular cleaning. Real Tech's sensors are complemented by an automatic cleaning system that takes care of mineral fouling without the need for manual work.

As shown in Figure 2, Real Tech's nitrate sensor maintained a steady baseline close to 0 mg/L and was able to accurately report nitrate events. Minimizing the need for labour and time intensive equipment maintenance provides significant cost savings in rural areas where groundwater pumping sites can be located up to a hundred miles apart.

Competitor Nitrate Measurement
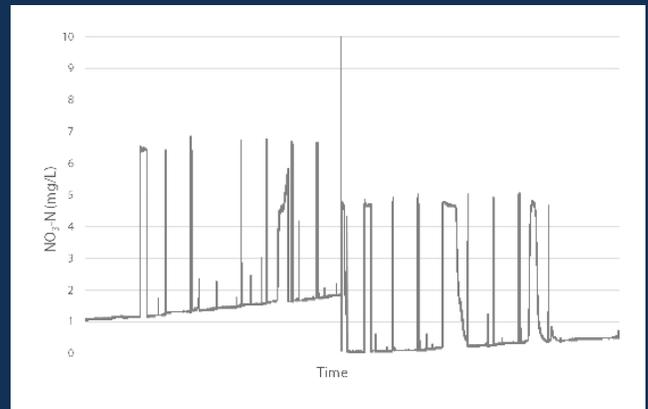
Real Tech Nitrate Measurement
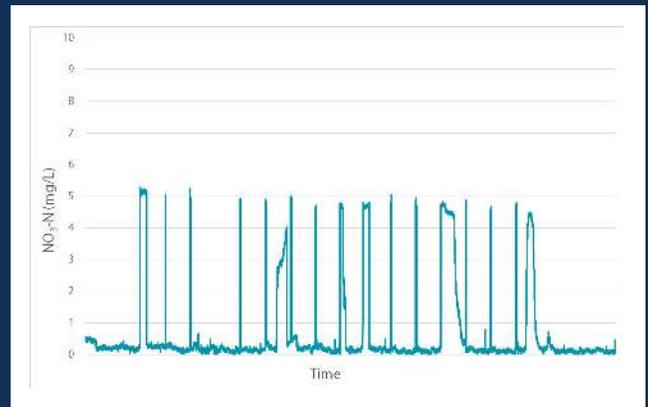
Figure 2: Online data provided by Real Tech's nitrate sensor showing a steady baseline (free of fouling) while accurately detecting nitrate concentrations when the contaminated well is turned on.