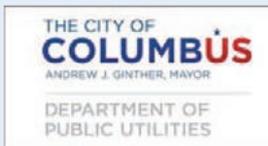




## Columbus, Ohio prevents public health concern with the use of online instrumentation

### Municipal Drinking Water

s::can's spectro::lyser monitors raw surface water quality for the City of Columbus, Ohio. This allows the Utility to be proactive regarding water quality issues.



### Columbus, Ohio (USA)

#### Parameters monitored:

- NO<sub>3</sub>-N
- TOC
- DOC
- Turbidity
- UV254
- UV436
- Fingerprint

#### Facts & Figures

**Company/Institution:**  
Dublin Road

**Location:**  
Columbus, Ohio

**Application:**  
Municipal Drinking Water

**Key Products installed:**  
spectro::lyser and moni::tool

### Background

The Columbus Division of Water delivers clean drinking water to 1.1 million people daily and delivers over 50 billion gallons of water every year. The Dublin Road Water Plant (DRWP) is one of three treatment plants that the Utility operates. The DWRP treats surface water from the Scioto River.

This surface water can become compromised during storm events. Stormwater runoff from rural and urban sources contributes to elevated levels of nutrients in the surface water. High levels of nutrients especially Nitrates (NO<sub>3</sub>-N) can be a major concern for infants and pregnant women. Consumption of drinking water that contains high levels of Nitrates can be linked to birth defects and a medical condition known as methemoglobinemia "blue baby syndrome". This syndrome can be fatal for infants 6 months old and younger.

Federal Drinking Water Standards require that the maximum contaminant level (MCL) for Nitrates in drinking water should not exceed 10 mg/l. During June 2015, the staff in The Water Quality Assurance Lab (WQAL) noticed high levels of Nitrates up stream of Columbus' source water reservoirs. As a result of the high Nitrate concentrations, a public health advisory was issued for the DRWP service area.

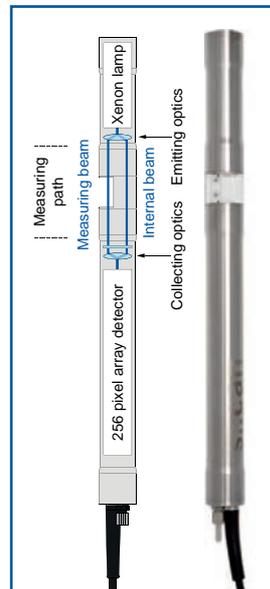
### s::can's solution

To ensure accurate predictive modeling, the WQAL installed s::can's spectro::lyser at three surface water locations, one each in Griggs and O'Shaughnessy Reservoirs, as well as one in the Scioto River at the Upground Pump Station. The s::can spectro::lyser probes monitor NO<sub>3</sub>-N, Total Organic Carbon (TOC),

Dissolved Organic Carbon (DOC), Turbidity, UV254 and UV436. The spectro::lyser is a submersible UV-Vis spectrophotometer that can convert the raw absorption "fingerprint" of the surface water into valuable water quality parameters. The spectro::lyser was combined with s::can's moni::tool, an advanced event detection system that can alert the user to abnormal changes in the surface water.

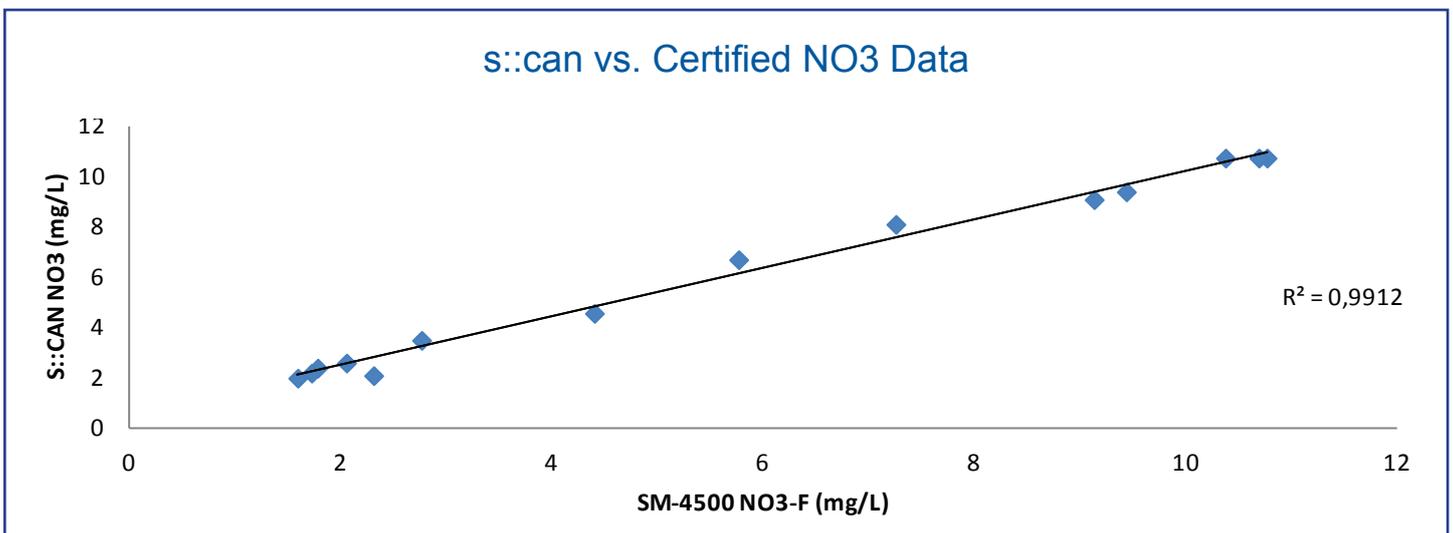
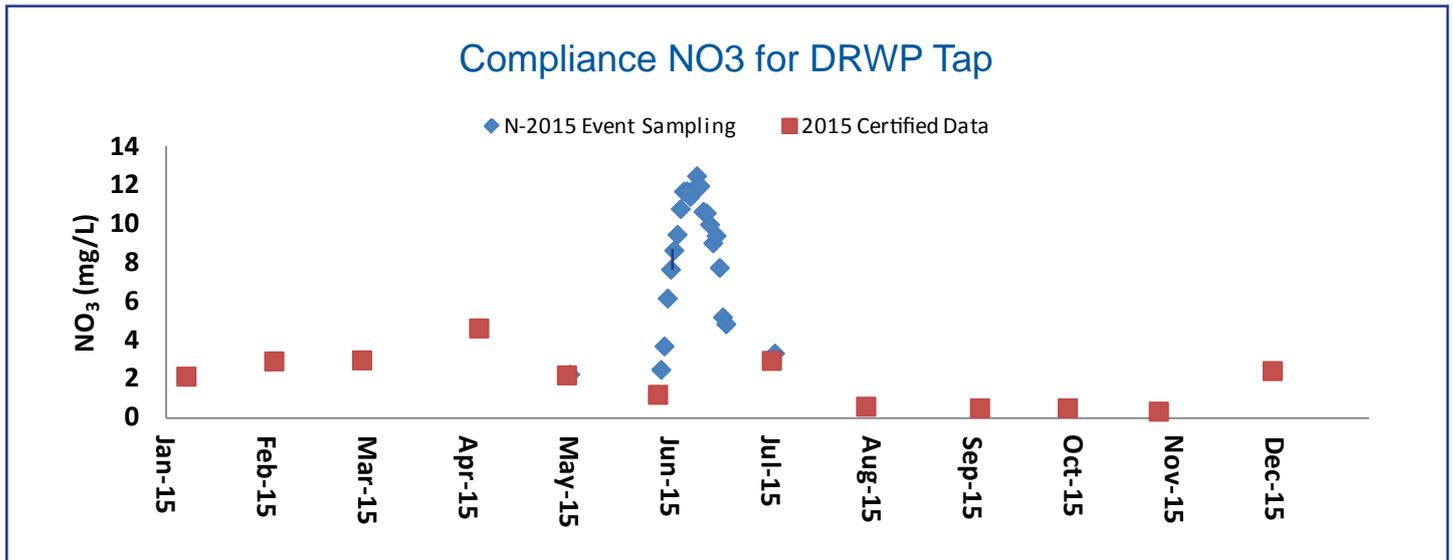
By continuously monitoring the water quality of the surface water, the WQAL was able to determine in early June 2015 that they would likely see a Nitrate event. The s::can spectro::lyser alerted the WQAL that Nitrate concentrations were as high as 18.0 to 20.0 mg/l in the Scioto River. The WQAL was able to confirm the results of the probe by performing standard lab testing. Once these results were confirmed, a public health advisory was issued. Due to the remote location of the s::can probe, the WQAL had seven days to prepare for this Nitrate event.

Public health is the main focus for the City of Columbus Department of Public Utilities. By utilizing online instrumentation this Utility was able to predict water quality issues and proactively ensure public health was protected during this event.

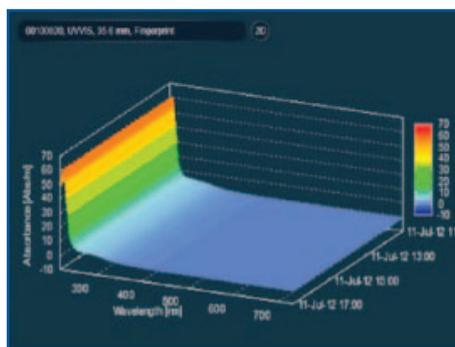


**"Our lab uses the s::can units as another tool in our toolbox to identify and forecast water quality issues in order to protect public health."**

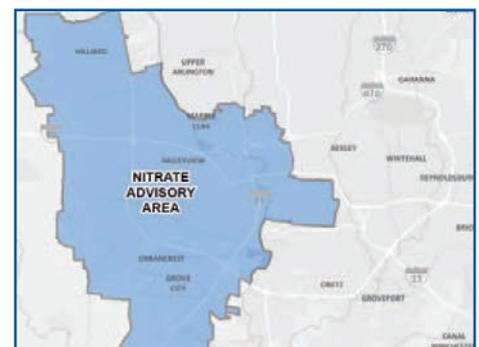
**Ben Ellsesser**  
Water Research Analyst



The s::can spectro::lyser™ is a fully submersible UV-Vis spectrometer that measures light absorbance between 190 – 750 nm. s::can's proprietary algorithms analyze and decompose the spectral data to provide measurements for many wastewater parameters including: nitrate, nitrite, COD, BOD, TSS, and dissolved H<sub>2</sub>S. There are no moving parts in contact with the water and no reagents are used, resulting in almost no operating costs.



The moni::tool software is a revolutionary platform for the management of measuring stations, online probes and analyzers. Whether it is installed in a large monitoring network or as a standalone station, moni::tool's intuitive software and state of the art features are an essential backbone for sensor and station management.



By monitoring nitrate levels in their source water, Columbus was able to predict a Nitrate event in their drinking water. s::can helps the Columbus Division of Water by providing online instrumentation. More than 7000 s::can monitoring systems are in use worldwide for drinking-, environmental-, waste-, and industrial water applications.