Regional Drinking Water Provider Automates and Digitizes Algae Enumeration

FlowCam® digitizes the tedious process of manual microscopy for enumerating algae populations. Creates a permanent record of images for trend analysis.

"I knew I didn't want to hire somebody to sit down at a microscope and relay information to them that I had learned through my research. I wanted to speed up the process and get accurate and representative algae data for our system"

-Quality Assurance Officer

THE CLIENT

This facility operates 3 recreational reservoirs in Southeastern US, providing drinking water supplies to the region. The Quality Assurance Officer oversees 4 certified laboratories and is responsible for ensuring that training and data are compliant with all applicable federal, state and local regulations. Her goal is the continuous improvement of processes, and the ongoing integration of new technologies.

MANUAL MICROSCOPY: A TEDIOUS PROCESS

As a laboratory technician, she manually enumerated algae populations in the drinking water reservoir via means of a standard microscope and Whipple grid. During this period, she processed roughly 8 samples per week, with each sample taking 2 hours to complete.

After her promotion to Quality Assurance Officer, she began searching for an alternative to using a standard microscope. She learned about the FlowCam® at an AWWA meeting and realized it would be the perfect instrument for someone monitoring and counting algae. By providing automated counts and concentrations, it eliminated all the manual aspects of the former tedious and time-consuming process.

FlowCam®

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TASTE & ODOR EPISODE REQUIRES COSTLY ANALYSIS

Coincidentally while she was researching alternative instruments for algae analysis, her facility experienced a taste and odor episode when the Methyl-Isoborneol (MIB) in their reservoir skyrocketed. Since this was the first instance of this kind of episode, they began an extensive monitoring strategy which included more than 648 additional analyses per week for her facility's lab.

She knew algae were important indicators of water quality and ecosystem conditions, and that certain algal taxa may result in taste and odor problems in the drinking water supply (image of Algae culprit) . For this reason, her facility began collecting additional samples for algae analysis and sent them to a particle analysis lab in California, certified for algae classification and enumeration.

> "These image profiles look familiar. That's when I realized the lab was using a FlowCam"
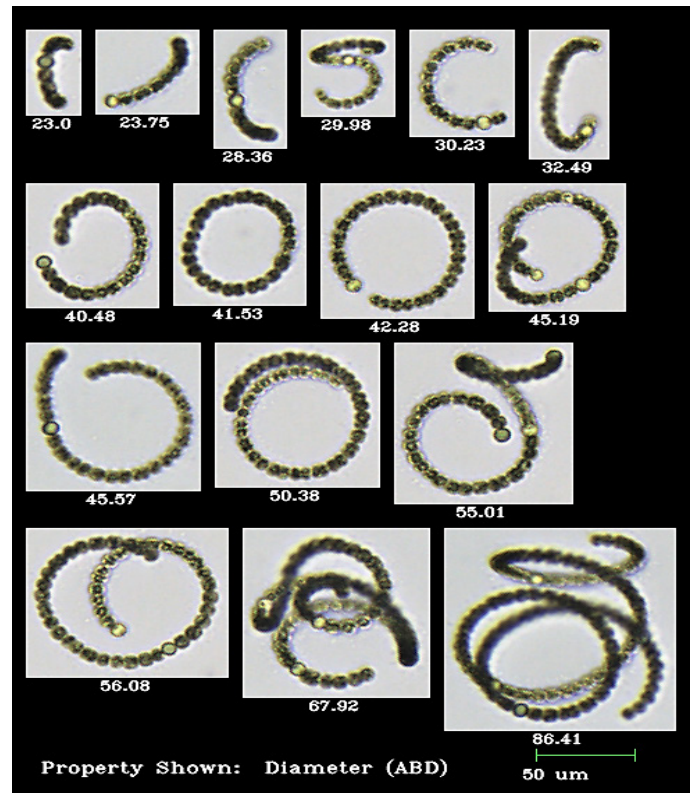> —Water Quality Manager

Her facility was sending 36 samples per week to the lab in California costing thousands of dollars for shipping and analysis. Not to mention the delay in getting results.

"When the vendor lab sent our first sample results back, I looked at them and I thought, 'These image profiles look familiar.' That's when I realized the lab was using a FlowCam." "I recognized the data spreadsheets from materials I reviewed when I was researching the instrument and its VisualSpreadsheet® software."

Since she already researched the FlowCam, she decided to strike while the iron was hot, and immediately wrote a proposal to purchase a FlowCam for the facility's Water Laboratory. "I was excited to bring this instrument into our lab because it would not only save us tens of thousands of dollars, but we could analyze the samples quickly and deliver important information to our public." (We would no longer be reliant on the outsourced lab in California).

RESULTS AND FUTURE OUTLOOK

By using a multi-tiered application of an environmentally friendly algaecide, the taste and odor problems were resolved. She has since been able to run samples and build image libraries with the FlowCam to determine a base line of what's in the water reservoirs. She can then use that information to learn how to predict future MIB episodes.

ABOVE: Anabaena Cells as imaged by FlowCam.

"Episodes like the one we experienced this summer may not be prevented, but they can be predicted with the FlowCam technology. For example, if certain algal species are found in a sample, I can place a preventive call to our water treatment operators to warn about a possible shift in water quality. The operators may then decide to start feeding powder-activated carbon which absorbs natural organics that can cause water to taste or smell funny."

> "The FlowCam has been an extremely helpful monitoring tool for our water system. It helps us react proactively and better serve our customers."
> —Water Quality Manager

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