



“Lakespert” – Is continuous, in-lake monitoring a gadget or a backup camera?

When it comes to lake management and lake rehabilitation projects, we like to be in the now. We gather water quality data to see if our efforts mattered. One way to do this is with continuous, in-lake sensors. Sonde companies have been developing and selling monitoring pieces of equipment that collect real-time data and load it to “the Cloud” for a few years now. My question, besides what really is “the Cloud,” is when is it appropriate, helpful, or worth the time and money to collect minute-by-minute water quality data for a lake? Is this a form of gadgetry that most lakes don’t need, or will it be like our car’s backup camera and become essential to our daily lives?

In early March, I helped install a couple of buoyed, monitoring stations (inlet and outlet) in a reservoir that I regularly sample. These pricey devices collect 1-meter data (water temperature, pH, and dissolved oxygen) every 30 minutes and upload to the Internet every 12 hours. At first, I thought this was a

great idea and quickly found another reason to log on to a website more often than I needed to. Don’t get me wrong. The graphs are amazing. It is interesting to see the difference between the locations and the diurnal swings. But I still find myself asking the why question.

We are more than ever a technologically driven society with our updating apps on our aging smart phones from 2021, and drones that can do just about anything (even collect lake samples). As lake managers and rehabilitators, we need to make sure we are collecting the right data and the right amount of data. For my routine lake monitoring program, the data are used for lake standards assessment. Now we have data around the clock for two separate locations. I don’t think I can use 2:00 a.m. inlet pH data for assessment purposes. So, what can I use all this data for?

High frequency data does show how conditions change during the night, which is when I am typically sleeping. Remote

monitoring does cut down on driving time and emissions. I have an oxygen sensor that can now tell me exactly when the hypolimnion goes anoxic. I know weather and algae can change by the minute, and it is interesting to see how the lake responds in a prompt fashion.

I will say that continuous, in-lake data is not helpful for standards assessment. It’s data overload with plenty of room for misinterpretation. It’s like having a fancy watch on your wrist (a gadget for most) that monitors your heart all day long. That’s interesting and all, but your visits to the doctor are when they collect your important vitals.

I just don’t want to get caught up in gadgetry. Then it defeats the purpose. At the same time, I don’t want to be the old timer that doesn’t keep up with the times. My kids would laugh at me when I looked over the shoulder as I backed the new family car down the driveway. Fast forward five years, and it seems I can’t live without a backup camera. When does a gadget become a necessity and is that subjective?

To wrap up, make sure you are collecting the right data and the right amount. Do it because it helps and not because it is a novelty. Once you think it through, then you can decide just how advanced you want to get with in-lake monitoring.

Steve Lundt, Certified Lake Manager, has monitored and worked to improve water quality at Barr Lake (Denver, Colorado) for the past 19 years. Steve is active with the Colorado Lake & Reservoir Management Association and is a past Region 8 director for NALMS and an active member since 1998. 🌟



Long-term deployment buoy with telemetry. Monitoring equipment are fixed at 1-meter and about 8-meter depths to collect data every 30 minutes. The data is uploaded to a website every 12 hours.