

Lagoons: Sampling

Part Three of a Three Part Series

Your goal, when collecting your sample, is to acquire the most accurate sample possible. Which has me recall one of my vacation experiences. As many of you know, I took a little time off during the month of July. My wife had many projects lined up for US to accomplish during this time, one of which was a quite large concrete patio. I share this with you because the experience was much like collecting sampling. Give me a minute and you will see the correlation. To save money, we (including myself, Deb, her father and sisters) were doing to complete the project. The only one with actual concrete experience was Deb's dad, of course the ladies had seen several landscape shows and thought they could do it. Everyone works another job, so the cement was delivered at 4:30 pm on one of the hottest days in July. Beginning the see the picture? The sun was very hot, we had to work more quickly, the concrete had to be watered down and all of this because the time of day was not taken into account for the task—very large task!

As I reflect, sitting out on our new patio, enjoying a glass of tea, much of the additional agony could have been eliminated if we/SHE had done a little more preplanning!

I think the three areas I suggest for improving your sampling techniques are much easier than giving my wife suggestions on how to landscape the back yard!

There are three things to consider when collecting samples to be reported to DEQ:

- 1) Collecting
- 2) Pre-testing
- 3) Holding Time

1) Collecting

Where and when you collect samples in your lagoon may skew your results.

Try to collect your sample about a foot below surface. The lagoon tends to be somewhat clearer and most times you can obtain better results.

Another technique would be to simply take your samples early in the morning. Photosynthesis tends to create more algae.

Factor in the wind. Winds tends to stirs up the lagoon, especially when wind in coming toward your discharge point.

2) Pre-testing

As a part of the permit you are allowed to *sample inside* your lagoons for meeting the permit conditions before you discharge.

Process control samples – help you pre-determine if you are meeting permit discharge limits and these samples do not need to be reported (if taken inside the lagoon).

3) Holding Time

When doing all lab tests and sampling you must follow the procedure to the letter.

NDEQ and EPA refer to “Standard Method for the Examination of Water and Wastewater.” or what I call the “owner’s manual” of water and wastewater for sampling and testing. The following are a few of the parameters some the most common tests a plant might need to implement.

- pH has no holding time. pH samples must be done *on-site*. Make sure the pH meter is calibrated correctly and calibration records kept. If you do not have a pH meter, you may want to think about purchasing one. I would highly recommend purchasing a meter, which has automatic temperature compensation (ATC). This eliminates the need to adjust the temperature of the sample. Ph meters range in cost of \$80 (pencil style) to \$500 for a high-end pH meter.
- Dissolved oxygen (DO) also has no holding time and must be done *on-site*, IF you have this requirement. D.O. can be done chemically (by a Hach kit) or similar and a meter. Make sure you have it on your permit before purchasing.
- Ammonia has a holding ONLY IF it is preserved by sulfuric acid (H₂SO₄) to lower the pH to < 2.0. This stabilizes sample at the time of collection. Make sure your ammonia samples are in a separate bottle because of the acid. Ice down or refrigerate sample.
- CBOD make sure sample is “iced down” or refrigerate when sending to laboratory. CBOD’ s recommended holding time is 48 hours so make sure it is receive by the lab in that time frame.
- Total Suspended Solids (TSS) has a 7-day recommended holding time and also needs to be refrigerated.
- Fecal Coliform has a holding time of 6 hours. The sample must be in a properly sanitized container and be at the lab in this time frame or the sample is invalid.

Use this as a guide, when taking your samples. Again, I would strongly recommend that villages and cities budget and purchase a pH meter in the near future. Remember, the better the sample the more accurate the results. I hope this helps when you are sampling your wastewater facility. If you have any questions, as always, give me a call at (402) 443-5216.