



**Department of Environmental Protection  
Bureau of Land & Water Quality  
O&M Newsletter  
July 2005**

**A monthly newsletter for wastewater discharge licensees, treatment facility operators, and associated persons**

## **BOD<sub>5</sub> Holding Time Criteria**

The following is a clarification of the DEP's position on BOD<sub>5</sub> holding time criteria.

Last June in the O&M newsletter, we published an article on BOD<sub>5</sub> holding time and temperature. The article summarized what BOD<sub>5</sub> is and the fact that decomposition begins immediately after the sample is collected and that decomposition is a function of temperature. The article further explained that for a grab sample, if analysis is begun within 2 hours of the sample collection, cold storage is unnecessary. If analysis is not started within 2 hours, keep the sample at or below 4°C from the time of collection. Begin analysis within 6 hours of collection. When this is not possible, store at or below 4°C and report length and temperature of storage with the results. In no case start analysis more than 24 hours after grab sample collection. For composite samples, keep samples at or below 4°C during compositing. Limit composite period to 24 hours. Use the same criteria as for storage of grab samples, starting the measurement of holding time from the end of the compositing period.

There are two sets of standards that regulate BOD<sub>5</sub> holding time. Standard Methods and the Code of Federal Regulations (CFR). Standard Methods states that the maximum holding time is 24 hours. 40 CFR Part 136 states that the maximum holding time is 48 hours. The DEP has accepted the Standard Methods holding time because it limits the time of decomposition to an acceptable level and is achievable by most facilities.

For all analysis of BOD<sub>5</sub> done in a wastewater treatment plant's own laboratory, analysis must be conducted within 6 hours of collecting the last sample aliquot.

For commercial laboratory analysis of BOD<sub>5</sub>, every effort must be made to meet the 24-hour holding time that begins immediately after collecting the last sample aliquot. If this is not possible, then the facility must submit a written justification to the Department explaining why this criterion can not be met. If the Department supports this justification, applying the criteria listed below, then the facility must ship the sample the same day that the last sample aliquot is collected and analysis must be conducted by a laboratory as soon as possible on the next day.

Standard Methods 18<sup>th</sup> Edition, Method 5210 B, (1.b.1) clearly states that analysis of BOD<sub>5</sub> samples for regulatory purposes must be done within 6 hours of collection, if possible. There is no reason why samples analyzed on-site cannot meet this criterion.

Standard Methods 18<sup>th</sup> Edition, Method 5210 B., (1.b. 1,2) clearly states that analysis for grab and composite samples should start no more than 24 hours after sample collection. The chart in 40 CFR Part 136 indicates that the holding time for BOD samples is 48 hours. However, this column is footnoted with additional information. The footnote indicates that the samples should be analyzed as soon as possible after collection. In addition, there is a statement indicating that these holding times are maximums and should not be applied to samples that will not be stable for that entire period. So, whenever possible, it is expected that a facility will make every effort to meet the 24-hour holding time.

In cases where logistics make this extremely difficult or impossible, the Department will consider requests for a variance that will cover problems such as long distances to laboratories, delays in delivery services pick-up, laboratory processing time delays or extenuating circumstances such as dependence on ferry schedules.

*Don Albert*

### **For Practice**

1. The unit of electrical potential is
  - a. The coulomb
  - b. The volt
  - c. The amp
  - d. The watt
2. The aeration basins of a conventional activated sludge treatment system have a

total volume of 500,000 gallons and the MLSS concentration in that tank is 2,700 mg/L. The secondary clarifiers have a total volume of 255,000 gallons and an average sludge concentration of 5,300 mg/L. The return sludge concentration is 8,750 mg/L. If the operator wants to maintain a 12-day MCRT, approximately how many gallons of sludge should be wasted?

- a. 44,200 gallons
  - b. 39,700 gallons
  - c. 30,900 gallons
  - d. 25,700 gallons
3. Which of the following should always contain a hazard and operability study?
    - a. An emergency plan.
    - b. The annual budget
    - c. A DEP inspector's report
    - d. The O&M Manual
  4. The most difficult type of solids to remove in a conventional secondary treatment plant are:
    - a. Inorganic suspended solids
    - b. Organic suspended solids
    - c. Inorganic dissolved solids
    - d. Organic dissolved solids

### **2005 Wastewater Exams**

The Spring Wastewater Exam results have all been sent out. Congratulations to those of you who passed this time. Applications for the Fall exam, which will be given on November 9, 2005 must be postmarked on or before September 23, 2005 or hand delivered to the DEP Augusta Office on September 26, 2005. If you need an application please call Leslie Rucker at 287-9031.

## DMR-QA Study 25 Data Reporting Procedures

Those wastewater treatment facility laboratories that routinely participate in the annual quality assurance studies required by EPA received their DMR-QA booklets in mid-May. The receipt of the booklets was preferably verified by email. Many labs have a preferred provider and a routine order for test samples. Test samples should have been ordered by June 2 this year.

Laboratories are in the process of receiving their test samples and doing the analysis of provider samples during July. The samples are to be analyzed in the same way that routine effluent samples are done. The intent of this program is to ensure that the lab's normal compliance monitoring data is reliable.

You must report test results on the forms sent with the samples from the provider. You may use either copies of the EPA Data Report Form from the DMR-QA booklet or similar provider-supplied forms to complete the data package. You will need to prepare a separate data package for each provider lab that is used. Each provider can only evaluate test results from their own test samples.

Report the test results to your provider(s) via mail by August 12, 2005. It must arrive by August 20, 2005 in order to be valid. Online submission of data should still be done early, if possible. Mark your calendars so that you don't forget. This needs to be done before the provider's reporting deadline if earlier than August 20, 2005.

Please do not send copies of your data packages to either DEP or EPA. We don't need them anymore. You should always keep copies of your data packages for your own records, of course. Also, the provider labs will send both DEP and EPA copies of each permittee's evaluations by October 29, 2005. You don't

need to copy the results sent directly to your lab earlier in October. Let's simplify this program a little by not sending unnecessary copies of data packages or provider evaluations to DEP or EPA this year.

Good luck with all of your laboratory analyses, whether routine or quality assurance samples. If you have any general laboratory questions, please contact your assigned DEP inspector. If you have specific concerns about the DMR-QA program, please call me at 287-4869.

*Ken Jones*

### Answers to For Practice:

- b. The unit used to designate electrical potential is the Volt.
- d.  $MCRT = \text{Total Sludge (in pounds)} / \text{Total sludge removed from the system (wasted + effluent TSS)}$   
For this example, assume the effluent TSS is negligible compared to the amount of sludge wasted so:  
 $MCRT = \text{Total Sludge (lbs.)} / \text{Wasted Sludge (lbs.)}$ . Manipulating the equation to get the unknown (Sludge wasted) as the answer, we get  $\text{Sludge Wasted (lbs.)} = \text{Total Sludge (lbs.)} / MCRT$ .  
Plugging in the numbers we get:  
 $\text{Sludge Wasted (lbs.)} = (0.5 \text{ MG} \times 2,700 \text{ mg/L} \times 8.34 + 0.255 \text{ MG} \times 5,300 \text{ mg/L} \times 8.34) / 12 \text{ days}$   
 $\text{Sludge Wasted (lbs.)} = 1878 \text{ lbs./day}$   
If the concentration of the waste sludge is 8,750 mg/L, the total gallons of sludge wasted is:  
 $\text{Sludge Wasted (gal)} = 2,189 \text{ lbs./day} / (8,500 \text{ mg/L} \times 8.34) = 0.0257 \text{ MG} = 25,700 \text{ gallons/day}$ .

3. a. the hazards and operability study determines which units in the plant are susceptible to different hazards (such as flooding, earthquake, hurricanes, etc.) And how the loss of those units will affect the operability of the facility as a whole. This study is an important part of any emergency plan.
4. c. Organic dissolved solids and organic suspended solids are adsorbed and adsorbed by the microbes in a secondary treatment system and removed when those microbes settle out of the effluent. Suspended inorganic solids usually settle very quickly and are also removed from the effluent. Inorganic dissolved solids are not readily taken up by microbes and do not settle out of the effluent and, therefore, are more likely to pass through a conventional biological treatment system without being removed.

*(Dick is out so this is a repeat from last summer in case it sounds familiar).*