



Certification Boulevard

Test Your Knowledge of Wastewater Treatment Topics

1. What are the closest loading equivalents in typical domestic wastewater?
(select the closest answer for each)
 - TSS, lbs per capita per day
 - a. 1.0 to 2.0
 - b. 0.01 to 0.02
 - c. 5.0 to 10.0
 - d. 0.1 to 0.2
 - CBOD₅, lbs per capita per day
 - a. 0.017 to .025
 - b. 0.15 to 0.2
 - c. 1.0 to 2.0
 - d. 20 to 30
 - Hydraulic Capacity, gals per capita per day
 - a. 100 to 150
 - b. 250 to 350
 - c. 500 to 1,000
 - d. 10 to 50
2. Given the following data, what is the solids loading rate on the secondary clarifiers?
 - Plant Influent Flow is 15 mgd
 - RAS Rate is 85% of Q
 - Two (2) 120 ft Diameter Secondary Clarifiers
 - Aeration MLSS is 2,500 mg/L
 - a. 13.8 lbs/day/ft²
 - b. 17.5 lbs/day/ft²
 - c. 25.6 lbs/day/ft²
 - d. 51.2 lbs/day/ft²
3. What is the best adjustment to make (from the list of possible answers) if solids are rising in the secondary clarifier accompanied by small gas bubbles and solids that break apart when they surface?
 - a. Increase aeration D.O.
 - b. Decrease the RAS rate
 - c. Decrease the WAS rate
 - d. Decrease aeration D.O.

4. Given the following data, what is the required WAS pumping rate (gpm) from this activated sludge process?
- Aeration capacity is 6.4 mg
 - MLSS Concentration is 2,500 mg/L
 - Mixed Liquor is 79% Volatile
 - Desired MLSS Inventory is 120,000 Lbs
 - WAS Concentration is 7,500 mg/L
 - WAS Removal to be Completed in 16 Hours per Day
- a. 2,222 gpm
b. 224 gpm
c. 559 gpm
d. 185 gpm
5. Is a high-rate aeration process typically overloaded or underloaded by design?
- a. Overloaded
b. Underloaded
c. High MLSS
d. Low F/M Ratio
6. Given the following data, and using the data provided in question 2, what is the F/M ratio of this activated sludge process?
- Influent CBOD₅ is 205 mg/L
 - Primary Clarifier Removes 28% of the Influent CBOD₅
 - MLVSS is 75% of MLSS
 - Three (3) Aeration Tanks Each 220 Feet Long, 45 Feet Wide and 15 Feet Deep
- a. 0.23
b. 0.53
c. 0.35
d. 0.11
7. Given the following data, calculate the OUR?
- Beginning D.O. is 7.1 mg/L
 - Ending D.O. is 1.9 mg/L
 - Test Time is 4.2 Minutes
- a. 74.3 mg/L/hr
b. 192.7 mg/L/hr
c. 24.5 mg/L/hr
d. 58.4 mg/L/hr

8. Given your answer in question No.7 is correct, and given this is a healthy and properly operated activated sludge process, which location of the aeration tank did this sample come from?
- End of the aeration tank
 - Entering the secondary clarifier
 - Beginning of the aeration tank
 - Not enough data to identify the location
9. Match the closest oxygen demand values, in lbs of O₂ for each pound oxidized or converted, for the following compounds:
- CBOD₅
 - 0.1 to 0.5
 - 0.8 to 1.4
 - 4.0 to 5.0
 - 5.0 to 10.0
 - NH₃
 - 0.1 to 0.5
 - 0.8 to 1.4
 - 4.0 to 5.0
 - 5.0 to 10.0
10. Given the following data, calculate the SRT of this activated sludge facility.
- Plant Flow is 15.5 mgd
 - Aeration capacity is 6.4 mg
 - MLSS Concentration is 2,500 mg/L
 - Mixed Liquor is 76% Volatile
 - WAS Concentration is 7,500 mg/L
 - QWAS is 249,750 gpd
 - Final Effluent TSS is 1.5 mg/L
- 12.6 days
 - 4.8 days
 - 6.2 days
 - 8.4 days

Please forward your comments and sample questions for publication to:

Roy A. Pelletier, Assistant Division Manager
City of Orlando Public Works Department
Environmental Services Wastewater Division
5100 L.B. McLeod Road
Orlando, Florida 32811
Phone: 407-246-2213
Fax: 407-246-2886
Cell: 407-716-2971
email: roy.pelletier@cityoforlando.net