



Certification Boulevard

Test Your Knowledge of Residuals Management

1. What happens to the nitrates and pH in an aerobic digester when the air is turned off for certain periods each day?
 - a. Nitrate are increased and the pH decreases
 - b. **Nitrates are decreased and the pH increases**
 - c. Air rates do not have an affect on nitrates or pH in an aerobic digester
 - d. Nitrates are increased and alkalinity is decreased

Submitted by: Brian Benjamin, Certified Operator

2. Which F.A.C. Rule provides standards for Domestic Wastewater Residuals in Florida?
 - a. **62-640**
 - b. 62-63
 - c. 62-620
 - d. 62-610
3. What are the two (2) major zones of a belt filter press?
 - a. Drainage and evaporation
 - b. **Gravity drainage and pressure filtration**
 - c. Pressure shearing and transpiration
 - d. Liquefaction and expansion
4. Which EPA rule provides rules and regulations for the disposal of wastewater residuals in the United States?
 - a. 305 rule
 - b. 640 rule
 - c. 736 rule
 - d. **503 rule**

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5. What plan must be submitted for all permitted residuals application sites in Florida?
 - a. **Agricultural use plan**
 - b. Sludge disposal plan
 - c. Residuals application plan
 - d. Land use plan

6. Given the following data, how many total gals/day of sludge are removed from a primary clarifier using a triple-piston pump?
- Piston diameter is 12 inches
 - Piston length is 15 inches
 - Piston speed is 60 spm (strokes per minute)
 - Total run time is 240 mins/day
- a. 155,995 gpd
b. 317,077 gpd
c. 284,632 gpd
d. 105,692 gpd

0.785 x diameter, feet x length, feet x 7.48 gal per cu. ft. x strokes per minute x mins per day x number of pistons

0.785 x 1 foot x 1.25 feet x 7.48 gal cu. ft. x 60 spm x 240 mins/day x 3 pistons = 317,077 gpd

7. What is one of the alternate methods for vector attraction reduction for an aerobic digestion process if the volatile solids reduction does not meet 38%?
- a. Chlorine residual
b. SOUR
c. Extended 40-day bench test
d. Alkalinity
8. What is the fecal coliform limit to meet standards for Class A biosolids?
- a. **1,000 #/gram TS**
b. 10,000 #/gram TS
c. 1,000,000 #/gram TS
d. 2,000,000 #/gram TS
9. Given the following data, how many gpd of WAS are removed from this activated sludge facility?
- Aeration system specifications:
 - Three tanks
 - Each tank is 150 feet long, 50 feet wide and 14.5 feet deep
 - MLSS is 2,250 mg/L
 - Mixed liquor is 75% volatile
 - WAS TSS is 6,250 mg/L
 - Desired SRT is 7 days
- a. 292,842 gpd
b. 94,128 gpd
c. 41,835 gpd
d. 125,506 gpd

(150 ft. x 50 ft. x 14.5 ft.) x 7.48 gal/cu. ft. x 3 tanks divided by 1,000,000 = 2.44035 mg
2.44035 mg x 2,250 mg/L x 8.34 lbs/gal = 45,793 lbs MLSS in aeration
45,793 lbs MLSS divided by 7 day SRT = 6,542 lbs/day to waste
6,542 lbs/day to waste divided by (6,250 mg/L x 8.34 lbs/gal) = 0.1255059 mgd to waste
0.1255059 mgd to waste divided by 1,000,000 = 125,506 gpd to waste

10. What is generally required when the sludge blanket is too high on the floor of a gravity thickener?
- a. **Increase the withdrawal rate of sludge from the gravity thickener**
 - b. Pump more sludge into the gravity thickener
 - c. Decrease the speed of the drive unit
 - d. Decrease the withdrawal rate of sludge from the gravity thickener

Please forward your comments and sample questions for publication to:

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