VIRTUAL WASTEWATER LAGOON WORKSHOP

MISSOURI RURAL WATER ASSOCIATION

H&S Environmental, LLC.

www.lagoonops.com

OBJECTIVES

- Sludge Removal
- Lagoon Optimization & Evaluations
- Troubleshooting
- Hydraulics Optimization

This workshop has the following objectives:

1) Give class members an understanding of the basic biology and chemistry of lagoon systems and to leverage that understanding to solve problems in lagoons. Assist class members in understanding that each microbe has a unique function to perform, and why water quality changes spatially throughout a lagoon system because of it.

2) Familiarize students with proper testing procedures. Discuss where to test in a lagoon system, how to properly test, and why. Covered is the meaning of each test and its value to operators when trying to understand test results. Understand the role of testing and how to use test results to diagnose lagoon problems.

3) Improve operator's skill in testing to solve BOD_5 problems, TSS problems, fecal problems and other problems common to wastewater lagoon systems.

4) Provide knowledge and skill in determining if more load can be added to a lagoon. Specific causes of BOD_5 problems and their solutions are discussed.

5) Provide in depth knowledge of the causes of TSS problems and solutions to high TSS. In-pond management strategies to control algae are discussed. Chemical and engineered solutions to TSS problems are discussed. Discussion of lagoon colors and their meaning.

6) Discuss the consequences of short-circuiting in pond systems. Explain how pond temperature affects pond mixing. Teach operators what to do about short-circuiting problems.

7) Case study and lecture on the problems associated with sludge accumulation. Class members are taught how to determine sludge volume and mass, and how to sludge judge lagoons. Calculations are given to help the student determine sludge mass and volume. Sludge removal options are presented.

8) Understanding of the role of oxygen in a lagoon system is discussed. Strategies for odor control are presented. Case studies on changes in lagoon dissolved oxygen are discussed. Causes and solutions to low dissolved oxygen are reviewed.

9) How to troubleshoot and optimize a lagoon system for nutrient removal, and pathogen removal. Lagoon maintenance and cold weather operations strategies are presented.

10) Disinfection. UV vs Chlorination. The facts. Maintenance on UV systems and chlorination systems discussed.

11) Safety. Safety all through the lagoon system. Confined spaces. Safety must first be designed into a lagoon system by engineers. Liner safety. Sampling safety. PPE discussed.

COURSE DESCRIPTION

Discussed in the class are new methods, techniques, and strategies operators can use to get more BOD reduction, better TSS removal, odor control, sludge reduction, nutrient removal, and more years of dependable service out of the lagoon systems operators already have. In this class operators discover:

- How to remove the greatest deterrent to your pond's treatment performance
- The keys to getting greater control over your lagoon system to remove more BOD, TSS, and sludge
- The 11 possible causes of high BOD and their 50 possible solutions
- The 7 possible causes of TSS problems and their 44 possible solutions
- How to troubleshoot nitrogen removal problems
- How to get 12 inches of sludge reduction without dredging…*and much more*

This wastewater lagoon troubleshooting workshop pulls together years of research and time-tested operational strategies proven to enhance a lagoon's performance. In this class hundreds of practical and effective "how to" solutions are presented to make lagoon operators more effective at their job. This workshop delivers quick, clear, step by step approaches to solving lagoon problems. Operators in this workshop learn what it takes to get the most out of their existing lagoon system without spending lots of money. Attendees will develop the skills and learn the practical techniques for realizing their lagoon's full potential.

INSTRUCTOR

The instructor for the Lagoon Troubleshooting and Optimization Workshop will be:
Steven M. Harris, President of H&S Environmental, LLC.
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Phone: 480/274-8410

Suggested study material for the course:
Wastewater Lagoon Troubleshooting: An Operators Guide to Solving Problems and Optimizing Lagoon Systems © 2003 by H&S Environmental, LLC Handouts will also be available free for download.

This manual is available for on-line purchase at

www.lagoonops.com

www.moruralwater.org

Class members are encouraged to participate during case study discussion and at any time during the class. Questions from operators about their own systems are highly encouraged. This allows members of the class to learn from experiences other operators have had in solving similar problems. Case studies developed from lagoon systems solving various problems allow the operator to use the diagnostic tools learned in earlier sessions to solve actual problems.