

Recirculation webinar CEU submittal

Course title: **Lagoon Recirculation: Benefits, Design & Implementation**

Course location: **Online webinar**

Start date: **Wednesday, November 17, 1 pm CST**

End date: **Ongoing (on demand) through lagooniversity.com**

Total classroom hours: **1**

CEUs requested: **0.1**

Abstract:

BOD, Algae, nitrogen problems? Consult your lagoon doctor to see if recirculation is right for you! Recirculation of flow from within a wastewater treatment system has been utilized as a tool for decades. This one-hour class will look at the benefits of recirculating water from the back of your lagoon system to the front, including how and why it can improve BOD removal, reduce algae, lower nitrogen levels, increase alkalinity and improve nitrification. We will then investigate the theoretical design from a biological process point of view; how much to recirculate, the benefits/cost of creating a pre-anoxic zone, adding mixing, covers, cycling air and blending influent flow with recirculated flow prior to putting back into the lagoon. Finally, we will look at how to implement recirculation, from the quick and dirty methodologies to the more sophisticated setups.

[Explain how this course meets the professional growth criteria to operate and maintain a domestic wastewater treatment plant or to manage the operation and maintenance of a domestic wastewater treatment plant.]

Attendees will learn how to use this simple and cost-effective way to better manage their lagoon system and improve treatment.

[How will attendance be monitored/verified?]

Attendance is verified through Go To Webinar, which maintains records of the time and duration of registrants' participation. On-demand webinar attendees (through lagooniversity.com) must also get a passing grade on a subject quiz to receive a certificate of completion.

[Course summary]

Recirculation of flow from within a wastewater treatment system has been utilized as a tool for decades. This one-hour class will look at the benefits of recirculating water from the back of your lagoon system to the front, including how and why it can improve BOD removal, reduce algae, lower

nitrogen levels, increase alkalinity, and improve nitrification. We will then investigate the theoretical design from a biological process point of view: how much to recirculate, the benefits/cost of creating a pre-anoxic zone, adding mixing, covers, cycling air and blending influent flow with recirculated flow prior to putting back into the lagoon. Finally, we will look at how to implement recirculation, from the quick and dirty methodologies to the more sophisticated setups.

[Course agenda with timeline: start and end times]

- 0:00 Introduction**
- 5:00 Introduction to recirculation**
- 7:30 Benefits of recirculation**
- 9:00 How recirculation improves DO and removes BOD**
- 12:00 How recirculation reduces algae**
- 15:00 How recirculation increases alkalinity**
- 18:00 How recirculation promotes denitrification and lower nitrate levels**
- 20:00 Recirculation system design: the biological process**
- 22:00 How much flow should be recirculated?**
- 25:00 Benefits and costs of adding a pre-anoxic zone**
- 28:00 Adding mixing**
- 31:00 Lagoon covers**
- 34:00 Air cycling**
- 37:00 Blending influent flow with recirculated flow**
- 40:00 How to implement recirculation: an overview of low cost methods and permanent solutions**
- 55:00 Questions and Answers**
- 1:00:00 End**

[Instructor bio]

Patrick Hill is a lagoon specialist for Triplepoint Environmental, a company dedicated to providing cutting edge and cost-effective solutions for wastewater lagoons across North America. After graduating from the University of Notre Dame, Patrick began his career working for the reputable civil engineering firm, Sheaffer & Roland, Inc., which focuses on the design, build and operation of wastewater treatment lagoon systems. He co-founded Triplepoint, based in Centennial, Colorado, in 2007, and has since worked with

hundreds of lagoon owners to help extend the life of lagoon systems, improve efficiency, expand capacity and meet new effluent requirements. Patrick has presented on lagoon topics at dozens of conferences across the country and at the Water Environment Federation's annual conference (WEFTEC).