

# Hagerman NFH RAS System Update

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Partial Recirculating Aquaculture System

# Hagerman NFH RAS Overview

- New Additions to the RAS Project
- Problems we Have and Overcome
- Components Helpful in Designing a RAS System
- Observe Fish in the System



# Installing Early Rearing Tanks



# Loading Fish for Distribution

## Purse Seine

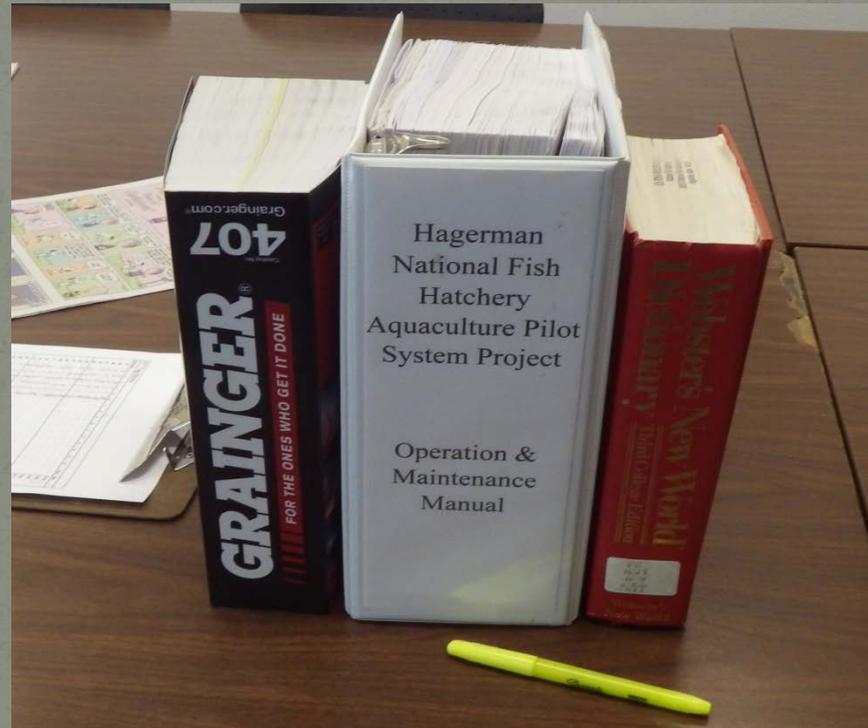


# Installation of the FOURTH WALL



## Overcoming Problems Per Owner's Manual:

“Don't wait until all else has failed! Read this manual first!”

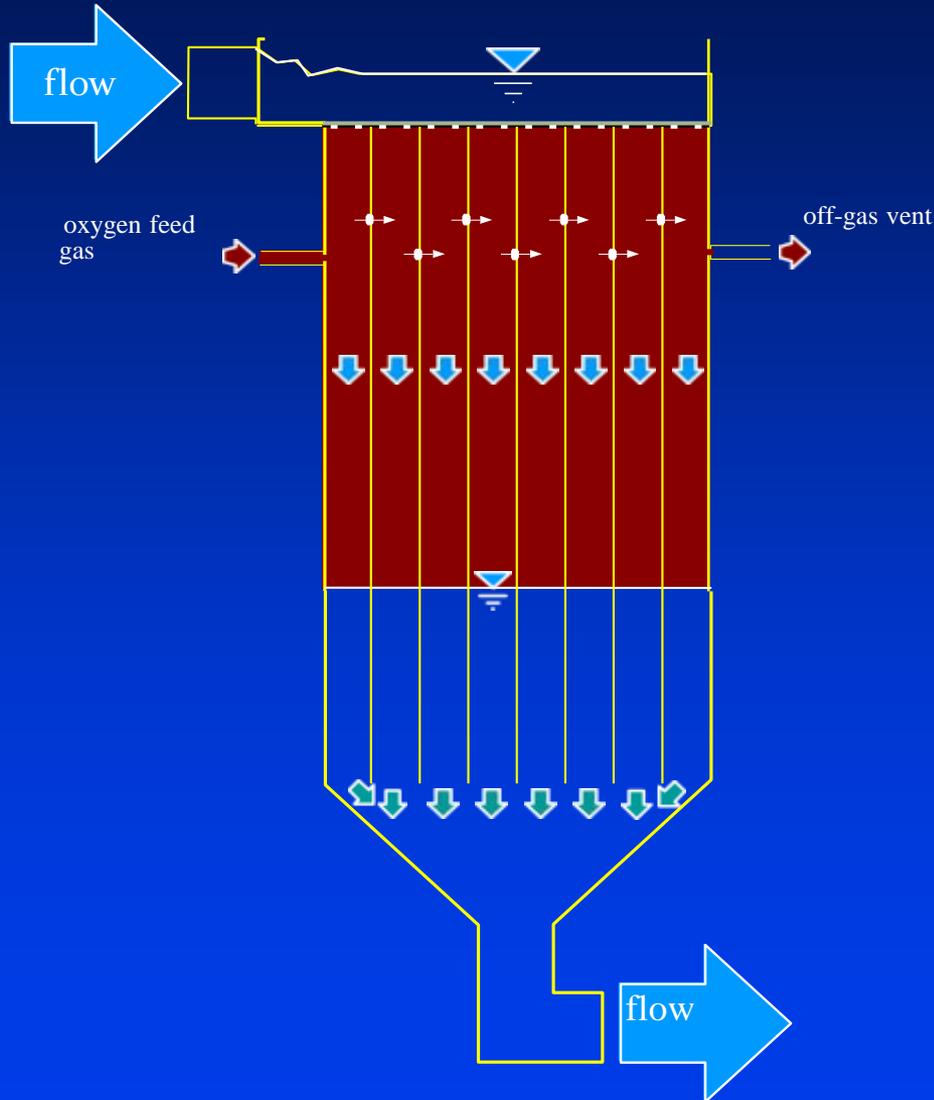


Some problems are just not in the manual!

# Persistent Issues we Have Figured Out



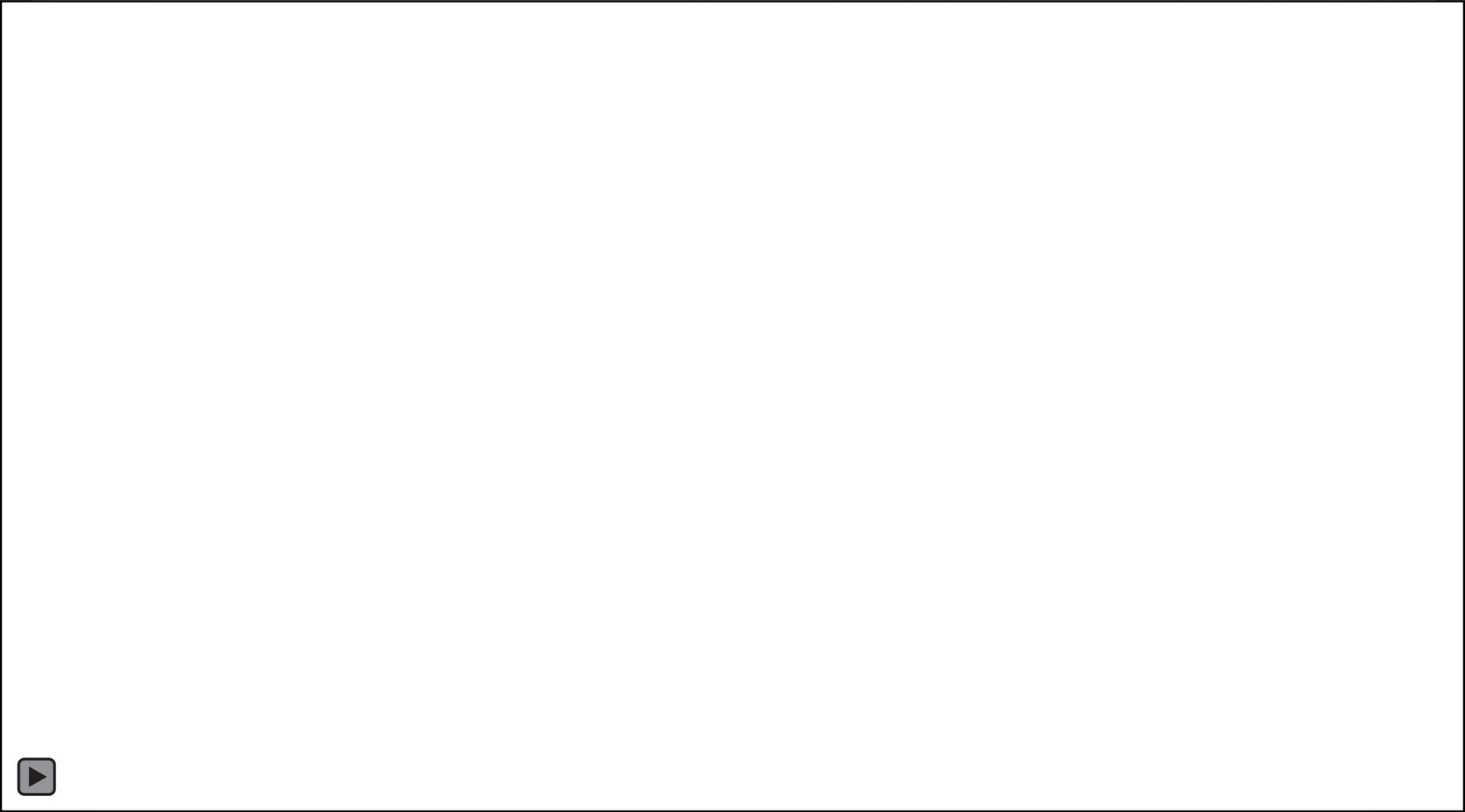
# Low Head Oxygenator



The unit consist of a perforated distribution plate positioned over rectangular chambers. Each of the rectangular chambers should be gas tight and the orifices between the chambers are properly sized and located to reduce back-mixing between chambers.

## Helpful features needed in a RAS system:

1. A flow gauge on both the incoming water and the recirculating water pipeline.
2. An Ultraviolet (UV) disinfection system in place (Costia).
3. Do not cut back on the commissioning of the system visits.
4. If an alarm is affiliated with the system, which it should, make sure it has logger capabilities.
5. Having the top of the line O<sub>2</sub> probes will save you from answering those ghost alarms.
6. If the RAS system is in an enclosed building make sure there is adequate ventilation, air movement, and possibly insulation.



# Visually Comparing Body Forms RAS vs. RW's

RAS



RW's



Questions?

