



FISHING FOR SOLUTIONS

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LEAD INSTRUCTOR: TAO XING

PROBLEM

- Fish Feces Collecting On Bottom Of Raceways
 - Increase in Phosphorous Levels
 - Decrease in dissolved oxygen levels
 - Re-suspension of feces in water
 - Less productive farming of fish
 - Decreased quality of life for fish

CURRENT METHOD

- Method:
 - Manual push screen
 - Quiescent Zone
 - Pump
- Problems:
 - More hired hands
 - Large consumption of time
 - Inefficient (i.e. re-suspension)



SPECIFICATIONS/NEEDS

- Remove feces from bottom of raceway without re-suspension
- Minimize phosphorous levels in water
- Maximize oxygen levels in water
- Design product to be:
 - Durable
 - Easy To Use
 - Cost Effective
 - Simple

OBJECTIVE

- Our design group has been given the task of finding a solution to clean fish feces out of the bottom of raceways without stirring the particles back into the water.



APPROACH

- We will use the following tools to determine which design alternative is the most effective:
 - Theoretical Analysis
 - Computational Fluid Dynamics
 - Flume
- Upon determination of the best design alternative, we will use the following to create our design:
 - Solidworks
 - 3D Printer
 - Machine shop

DESIGN IDEAS

- Pump Filtration
- Siphon Filtration
- Baffle
- “Feces Sweeper”
- Brine
 - Using Salt Water

GOAL

- Deliver a prototype to our client that:
 - Is effective, durable, and easy to use
 - Increases dissolved oxygen levels
 - Requires less work than the current method
 - Is automated
 - Increases overall productivity and health of fish

SCHEDULE

- October 31st- Finalize design alternatives
- November 5th- Cost Benefit Analysis
- November 14th- CFD Model Of Ideas
- November 28th- System Model Validation/ Assembly Of Model
- December 12th- Update Client on progress
- April 3rd- Wikki Page Development
- April 24th- Optimized System Design
- May 2nd- Design Expo
- May 9th- Final Report