

Replacement Pumps, Motors, and Intelligent Variable Speed Control System for the Cal Poly Humboldt Fish Hatchery

Final Project Report: Fisheries Pumps

FINAL PROJECT COST: \$107,387.19

Project ID: [XHF033](#)

HEIF- Facilities Management

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Final Report for Fishery Pump Replacement

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The Cal Poly Humboldt Fish Hatchery was maintained by four electric motors and pumps, where two ran constantly and two served as back-ups. The motors for these pumps predated the energy efficiency standards and allowed no variable control- either working too hard or not hard enough. In 2018, student Michael Academia proposed implementing new pumps to reduce energy costs and improve the efficiency of the fishery. With the pumps being well over 20 years old, they were due for an upgrade. Two pumps and breakers were removed, and replaced with a single pump and a digital flow meter with variable speed control. Now, the Fish Hatchery is running at full capacity- increasing fish quality of life and instructional capacity.



“Before the pumps were replaced, we had no control over motor speed- the options were either on or off. Now, every day, we are changing the motor speed in different situations. Not only that, but our new pump is more powerful, where instead of only half of the fishery running on two pumps, the whole fishery is running on one! We have 3 operating raceways, increased learning capacity that allows students to conduct individual research projects, and, the quality of life for our fish have greatly improved. Overall, we are all incredibly happy with this upgrade.”

- Patrick Nero, Fish Hatchery Manager, Fall 2022

Project Before & Afters



Figure 1. Before and after removal of pumps 1 and 2. Breaker boxes were reduced from 4 to 2, and a digital flow meter was installed. Blue pumps were left as a backup for instances where the new, main pump needs to be shut off.



Figure 2. Before and after the installation of the new pump. The new pump allows users to control the speed of the pump, where before the only options were 'on' and 'off'. Users can measure the speed of current flow with a flow meter located inside of the fisheries building.