The Construction of a Price Reduced 3D Printed Turbidity Meter

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Turbidity is an underestimated concern when it comes to water quality. Turbidity, how much sedimentation is in water(measured in NTU), is a severe problem when it comes to killing of plants, illness in wildlife, and potential illness to humans. The sedimentation in water can be from a variety of different sources: clay, silt, algae, organic material, inorganic material, and other microscopic organisms. Turbidity is most harmful due to its link of over nitrification of aquatic plants, most commonly algae. When water has high turbidity, sunlight is blocked from reaching plants under the water. This causes plants to die over time from lack of sunlight, which causes the dissolved oxygen level of the surrounding area to decrease drastically. The engineering goal of the project is to code a fully functioning 3D turbidity meter using C++ that gives plus or minus five NTU readings. This means the meter's goal is to be able to read samples accurately, reliably function, and run without any bugs in the code. The researcher believes he will be able to reach his engineering goal.The turbidity meter, electrical board, and casing is already built. Then code is built, then tested on the meter. If the readings are what are expected from a commercial meter, then the engineering goal is supported. As the results show, the turbidity meter was successful. The range was about plus or minus three NTU. The code was successful after two prototype versions of it. The code also left opportunity for consumers to make their own versions and add things to the board. Arduino is an open environment and all parts used are unlocked so all individuals can make their own modifications. There is also code made for SMS messaging, that was unable to be finished but will be worked on and tested.

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