



**CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY**

Name(s) Nathan C. Le	Project Number 31942
Project Title Which Aquatic Plant Will Reduce the Most Amount of Nitrate?	
Abstract Objectives/Goals The purpose of this experiment was to see which aquatic plant would absorb the most Nitrate in a one-day cycle. This would help to find out which water plant would be best to put in ponds to purify and absorb pollutants such as fertilizer runoffs from farms and houses. My hypothesis was that Vallisneria would absorb the most Nitrate. Methods/Materials I used four 7.2 liter glass containers with an under-gravel filter system to provide oxygen for the bacteria to convert the ammonia to nitrite, and nitrite to nitrate. Then I used one container for the control which had no added Ammonium Nitrate. In the other three I put three different plants: Hornwort, Anacharis, and Vallisneria. Two Vernier probes (Ammonium and Nitrate Ion-Selective Electrodes) were used to collect and graph the data. Results Hornwort was the plant that absorbed the most nitrates in 50 mg/L of nitrate concentration, while Anacharis was the one that absorbed the most nitrates in the 2.5 mg/L concentration. There were some rainy days that did not have any sunlight, so the data were not used for those days. Conclusions/Discussion Based on the results, my hypothesis was not supported. I forgot to consider that Hornwort and Anacharis (the plants that absorbed the most Nitrate) had many small, spiky leaves, while Vallisneria had few long bladed leaves. The small leaves had more surface area, and would absorb more Nitrate. Hornwort was the plant that absorbed the most Nitrate in 50 mg/L of Nitrate concentration (18.72 mg/L in a day), while Anacharis was the one that absorbed the most Nitrate in 2.5 mg/L of Nitrate (1.32 mg/L in a day). In this experiment, I found out what pollution can do to a plant. At first, I tried to weigh the Ammonium Nitrate with the Pelouze RCX 5 scale, and there was too much Nitrate, so some plants died because they were dehydrated, even though they were in water.	
Summary Statement To see which aquatic plant would reduce the most amount of nitrate contamination from bodies of water.	
Help Received Science teacher ordered Ammonium Nitrate; brother showed me Vernier and how to use sensors and the software; and dad ordered necessary materials.	