



**CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY**

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Project Title Water Wizardry	
Abstract Objectives/Goals If you apply two thermal desalination methods to a sample of water each from a creek, lagoon, sound, ocean, and river, which method produces the most mineral-free water? Methods/Materials Large samples of water from Beith Creek, Big Lagoon, Puget Sound, Clam Beach (Pacific Ocean), and Mad River were collected. I used thermal desalination methods of distillation and freezing, and then tested the results for salinity, carbonate hardness (KH), general hardness (GH), and acidity (pH). Results <ul style="list-style-type: none">· When I tested the salinity of my processed water, the distillation method produced the most drinkable water for 3 out of 5 samples.· When I tested the acidity, again distillation was most effective. It improved the samples 5 out of 5 times, making every sample acidic, 6.0, if it wasn't already. Freezing only made 2 out of 5 samples acidic.· When I tested for the carbonate hardness, the distillation method was at least as effective or more so than the freezing method. Distillation was more effective for 2 out of 5 samples, and as effective as freezing for 2 out of the 5 samples. Freezing was more effective than distilling for only one.· When I tested for the general hardness, distillation worked best overall. 2 out of 5 times it was more effective than freezing, twice it tied with freezing, and for 1 sample out of 5 freezing was more effective. Conclusions/Discussion The distillation method overall was the most effective method of purifying water.	
Summary Statement Using two desalination methods, distillation and freezing, which method will produce the most mineral-free water when applied to water from five different water sources?	
Help Received Mother helped me get my materials and provided transportation; my school loaned me a graduated cylinder.	