



Colorado Science and Engineering Fair

2025 Individual Project Abstract Form

Please print 2 copies of the completed form. Sign both copies, keep 1 for your notebook and submit 1 copy to your Regional Fair Director with your other paperwork.

Title of Project: Sediment Signatures: Unveiling the Impact of Sedimentary Deposits on Diatoms Through Lake Bottom Sampling

Finalist's Name: Hannah Shelton

School and City: Centauri High School, La Jara

Sponsor's Name: Andrew Shelton

Category: Earth & Environmental Sciences

Division: Senior (grades 9 - 12)

Abstract (250 words or less):

The purpose of this study is to evaluate whether sediment deposition has decreased in a high-elevation reservoir and, if so, how this reduction has impacted the diatom population. To assess these changes, a core sediment sample was collected from the reservoir, split into eight sections, and analyzed for color, grain size, water content, plasticity, organic content, and the presence of pebbles. These observations helped determine any changes in sediment deposition over time. Additionally, diatom populations were estimated by taking small sediment samples from each section and separating the diatoms using 30% hydrogen peroxide and 67% nitric acid. After cleaning and separating the diatoms, five small samples from each section were evaporated onto individual microscope coverslips. Diatoms were then counted within five random areas on each coverslip, and the counts were averaged to estimate the number of diatoms per plate. Dimensional analysis was used to estimate the total number of diatoms per core section. Diatoms are essential to life on Earth, producing over 25% of the planet's oxygen and contributing to 40% of carbon fixation. Due to their sensitivity to environmental conditions and human disturbances, diatoms have long been used as ecological indicators. Studying diatoms helps scientists understand how environmental changes have impacted ecosystems in the past and can provide insights into future trends. This research will contribute to understanding the relationship between sediment deposition and diatom populations in high-elevation reservoirs, shedding light on how drought and other environmental factors influence aquatic ecosystems.

I hereby certify that the above statements are correct and the information provided in the Abstract is the result of one year's research. I also attest that the above properly reflects my own work.

Finalist's Signature:

Date:

In addition, all students must complete the ISEF Student Checklist (1A), Research Plan, Approval Form (1B), and Checklist for Adult Sponsor (1), and any other ISEF forms required for this type of project. See the International Rules and Guidelines for form requirements. Return COPIES of all of these forms to your Regional Fair Director with you Finalist Verification/Permission Form. **A signed copy of this form must be included in your notebook.**