

## CSU/NPS Project Final Report – 5341050

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| <b>Project Title:</b><br><b>WATER QUALITY AND QUANTITY IN SELECTED NATIONAL PARKS</b>  | <b>NPS Task Order #:</b><br><b>H2370094000, J2380110001</b><br><b>CSU project # 5341050</b>   |
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| <b>Project Objectives:</b>   |   |
| -- Short-term studies of water quality and quantity in national parks,<br>-- Nurture and Sustain Partnership Programs, and<br>-- Water-related Outreach.   |   |
| <b>Project Activities and Accomplishments:</b>   |   |
| Accomplishments for 2010-11 <ol style="list-style-type: none"> <li>1. Aquatic Invasive Species project—completed assessment of extent of aquatic invasive species in waters of the National Park Service, completed report on the assessment, and loaded the geographic data into the CSU-USGS Integrated Biological Information System for viewing by field experts in NPS, and by the public. Report submitted to Jim Loftis and John Wullschlegler.</li> <li>2. Technical Assistance to National Parks:             <ol style="list-style-type: none"> <li>A. Fort Union Trading Post National Historic Site, ND: Evaluated streambank erosion in relation to existing reports on the situation, and concurred with the conclusions and recommendations in the reports.</li> <li>B. Chesapeake and Ohio Canal National Park, MD: Conferred with park staff regarding development of a water-quality monitoring strategy, and framed suggestions to the Park for identifying goals and objectives of the monitoring strategy.</li> <li>C. Sleeping Bear Dunes National Park, MI: Together with Pete Penoyer, conducted site visit that included ground-water monitoring to determine source of elevated nitrate concentrations. Concluded that a neighboring pig farm that had been suspected as the source was not the primary source, and that nitrate concentrations in the park had diminished to non-threatening levels during the last few years.</li> <li>D. Indiana Dunes National Lakeshore: Together with Pete Penoyer, conducted a site visit to</li> </ol> </li> </ol> |   |

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examine wetland vegetation management, hydrologic management, and impacts of fly-ash storage on groundwater quality. Also made a separate trip to participate in development of shoreline management plan, and participated in numerous conference calls to continue review of the shoreline management plan.

*E. Chaco Culture National Historic Park, NM:* Developed a flood hazard mitigation plan for Gallo Wash Campground. Work included a 3-day site visit during which plans were developed to mitigate flood hazards, remove vegetation from drainage ways, make adjustments to the campground to minimize the risk of campers, especially handicapped campers, being flooded in low-lying campsites, make connections with the National Weather Service for severe weather warnings, implement a possible early-warning system for floods, evacuate campers to safe areas during floods, and improve flood hazard communications.

*F. Provided advice to Rocky Mountain National Park on construction of an elk enclosure fence that crosses the Colorado River, regarding frequency and height of high flows.*

3. **Earth-Science Education:** Together with Sharla Stevenson, developed a one-day training session on water for Denver-area middle-school science teachers, as part of an NPS two-week training session on earth science. Delivered the content with Sharla, and participated in earth-science field trips to Rocky Mountain National Park. This activity was done in both July 2010 and July 2011.
4. **Interpretive materials on water:** Completed segment for the NPS web site, Views of the National Parks, on “Waters of Rocky Mountain National Park”. The segment has been completed, and is now viewable on the popular public web site.
5. **Planning for Fourth Interagency Conference on Research in the Watersheds:** Served on the planning committee for the upcoming conference in Fairbanks in September 2011. Co-chaired the Agenda Committee, and Co-chaired the Proceedings Committee. Reviewed abstracts, helped plan the technical session agenda, communicated with authors, and submitted an abstract.
6. **George Wright Society Conference on Science for Protected Areas:** Submitted two abstracts, of which one was selected for a presentation at the meeting in New Orleans in March 2011. Attended the meeting and made the presentation.
7. **USGS-NPS Water Quality Partnership Program:** Became the NPS contact for the program for 2011; planned for and co-led the national review panel in June 2011, which selected 8 proposals for funding during 2012.