

Project Summary

Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Watershed Attributes and their Influences on Impaired Waters in the National Park System

Discipline: Natural
Type of Project: Technical Assistance
Funding Agency: National Park Service
Other Partners/Cooperators: Colorado State University
Effective Dates: August 1, 2009 - September 30, 2012
Funding Amount: \$40,000

Investigators and Agency Representative:

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Project Abstract: This research effort builds upon previous joint cooperative efforts between Colorado State University (CSU) and the National Park Service Water Resources Division (WRD) that determined the frequency, spatial, and temporal distributions of water resource impairments across the National Park System in order to quantify the number of miles of streams/rivers and acres of lakes, reservoirs, and oceans that are impaired under section 303(d) of the Clean Water Act. The current research encompassed by this project will investigate, synthesize, and assess the influence of watershed attributes and processes affecting impaired waters in the National Park System using a variety of spatial datasets and tools within a GIS framework.

A number of products will be generated by this effort including but not limited to an Internet/Intranet website; publications, reports, and/or theses; and GIS datasets. The project will produce descriptive, graphical, and tabular summaries of: (1) park hydrographic statistics; (2) park waterbodies that are currently listed on state 303(d) Clean Water Act water-quality impaired lists; (3) causes of park water quality impairments; (4) watershed factors influencing park impairments; and (5) parks that have designated Outstanding National or State Resource Waters by state water quality regulations.

The reach catchment/watershed of each impaired water resource in the National Park System will be delineated and its watershed characteristics and attributes quantified and evaluated. A comparison of the characteristics and attributes of impaired watersheds will be made against a representative sample of unimpaired watersheds. The project will produce descriptive, graphical, and tabular summaries of impaired watersheds and their characteristics and attributes. Close interaction will be required between NPS and CSU staff during the project to ensure an appropriate suite of watershed indicators has been identified. It is anticipated that this will be an iterative process involving extensive consultation, testing, and revision.

The project will extract and reformat on a park-specific basis data from existing databases, including individual state and Environmental Protection Agency (EPA) Water Quality Standards systems and several databases maintained or being developed by the EPA, U.S. Geological Survey (USGS), and others (e.g. National Hydrography Dataset, NHDPlus, Watershed Boundary Dataset, EDNA, etc.). Other datasets will be accessed as necessary based on the determination of NPS and CSU staff as the research proceeds.

List of Products: Reports, GIS databases/coverages, and website

Keywords: water resource impairments, section 303(d) of the Clean Water Act, National Park Service Water Resources Division (WRD); Colorado State University