

Colorado Watershed Assembly Colorado Healthy Rivers Fund Grant Report- River Watch  
Macroinvertebrate Bio-Indicator Assessment Project 2013 2014  
PO # 14000000113

**Final Report for HRF Project:** River Watch Macroinvertebrate Bio-Indicator Assessment Project  
(2013 2014)

**Program Summary**

River Watch is a statewide, volunteer-run water quality monitoring program that operates under the non-profit, 501(c)(3), Colorado Watershed Assembly and in conjunction with Colorado Parks & Wildlife. Since 1989, the Mission of River Watch has been to work with voluntary environmental stewards to monitor water quality and other indicators of watershed health while utilizing the high quality data that is collected to educate citizens and inform decision makers about the overall health and condition of Colorado's rivers, streams, and creeks.

River Watch is comprised of volunteers from about 130 different public, private, and charter school groups, watershed organizations, and private individuals that monitor over 300 different river sites throughout Colorado each year. Each volunteer receives in-depth training, support, and all of the water quality collection equipment they need to routinely monitor their sites in a specific and precise manner. Our strong base of volunteers allows us to produce a high quality and large quantity of data that could not otherwise be generated in such a cost effective manner.

Volunteers collect monthly metal samples and biannual nutrient samples, and most groups collect an annual macro-invertebrate sample. The metals samples are analyzed using an inductively coupled plasma spectrophotometer. The nutrient samples are analyzed using a Lachat auto-analyzer. The macroinvertebrate samples are analyzed by a state approved taxonomist. Additionally, River Watch volunteers perform pH, alkalinity, hardness, dissolved oxygen, temperature, stream discharge, and physical habitat analyses for all of their respective sites. The data collected by our volunteers is stored electronically on a River Watch database server and can be accessed by any public or private entity.

Our dedicated, passionate, and skilled volunteers have been key in providing high quality data that is used in the formulation of water management plans at the local and state levels. Through their participation with River Watch, our volunteers are actively involved in the decisions that will shape the future of their watersheds.

**River Watch does not provide any data interpretation.** We are a data collection entity. The Colorado Department of Public Health and Environment (CDPHE), the Water Quality Control Commission (WQCC), Colorado Parks & Wildlife (CPW), and other grassroots watershed groups currently utilize River Watch data to manage and protect Colorado's waters. However, we have asked CPW biologist Barb Horn to give an assessment of this collection cycle. See below for details.

Finally, quality assurance and quality control are essential in the success of the River Watch program. Each volunteer group samples and analyzes their data according to River Watch's very specific, uniform set of guidelines and protocols set forth by CPW, CDPHE and the U.S. Environmental Protection Agency. River Watch staff perform quality assurance checks regularly throughout the year, including annual site visits to each volunteer group. This ensures that volunteers and the River Watch laboratory accurately conform to the established methods and collection of blank and duplicate samples.

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**Project Summary**

River Watch applied for and received funding to allow our volunteers to collect macroinvertebrate samples in 2013-2014. This funding was crucial to the efforts of monitoring and protecting Colorado's waters. Monitoring macroinvertebrates is particularly beneficial to a comprehensive watershed monitoring program because it can help characterize ecosystems and identify actual aquatic life impairments that chemistry alone cannot. Macroinvertebrates are a key indicator of watershed health. The WQCC is looking at the macroinvertebrate community structure and function indicators such as diversity of species, number of individuals and pollution tolerant species to determine if a river segment is healthy or impaired. River Watch bug data was used for this effort. River Watch remains the largest collective water quality data generating network in Colorado thanks to our volunteers and support teams.

The River Watch goal with regards to the macroinvertebrate portion of the program is to collect a list of species over space and time. With the grant money from the Healthy Rivers Fund, we were able to have 40 of our macroinvertebrate collection sites analyzed.

**River Watch received \$10000 in funds to use for analysis of macroinvertebrate samples at 40 sites.**

**1. Analysis of Samples(\$10000 CHRF)**

River Watch was able to have 40 samples analyzed using funds from the Healthy River grant. A list of these sites and the raw data have been submitted with each invoice. **River Watch does not do any data interpretation of the samples collected. We validate the data and store it on our website.** The data is available publically for anyone to view.

While River Watch does not provide any data interpretation, we asked Barb Horn from Colorado Parks and Wildlife to give a brief assessment of how this data is important. This is her response:

"CPW believes in a balance between targeted sample sites (those known for a problem or focused on measuring results from remediation, for example) and random sites or those that are sampled simply due to safe access. About 66% of River Watch bug sites are non targeted and the remaining 33% targeted by needs of the Colorado Department of Public Health and Environment's Water Quality Control Division. Random or non targeted sites may tell a different more baseline long term trend health story. This is the biggest contribution River Watch macroinvertebrate program is providing because no other entity is conducting baseline macroinvertebrate monitoring statewide every year. Based on the results processed through the WQCD's Regulation 93 thus far, Impaired Stream List, it would appear that biologically speaking, the health of the macroinvertebrate community structure and function is primarily intact. The listing cycle occurs every two years, so data from this grant is still being processed through that regulation. However, due to climate change, growth, increased pressure of water supply to meet demand, this data should be continuously collected in order to protect the Colorado's fragile water ecosystems."

**Additional Information:**

We used an outside lab to provide us macroinvertebrate analysis and have received the data back. Colorado Parks and Wildlife has validated and uploaded all 40 samples. Once this data is validated, it will be uploaded and available on our website. The data was also uploaded to the Colorado Data Sharing Network as well as USA EPA STORET. This data was also submitted to CDPHE for 303d water body assessment first time use of biological impairment criteria.