

SECTION 319 NONPOINT SOURCE POLLUTION CONTROL
PROGRAM

WATERSHED PROJECT FINAL REPORT

COAL CREEK WATERSHED WATER QUALITY MONITORING

By

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Town of Crested Butte and the
Coal Creek Watershed Coalition

June 30, 2008

This project was conducted in cooperation with the State of Colorado and the United States
Environmental Protection Agency, Region 8.

Grant # OE FAA WQC06000024

EXECUTIVE SUMMARY

PROJECT TITLE Coal Creek Watershed Water Quality Monitoring Project

PROJECT START DATE September 23, 2005 PROJECT COMPLETION DATE June 30, 2008

FUNDING: TOTAL BUDGET \$81,033.00
TOTAL EPA GRANT \$45,693.00
TOTAL EXPENDITURES
OF EPA FUNDS \$45,693.00
TOTAL SECTION 319
MATCH ACCRUED \$44,824.36
BUDGET REVISIONS 9/7/07 total budget revised to \$82,808
TOTAL EXPENDITURES \$90,517.36

SUMMARY ACCOMPLISHMENTS

The Town of Crested Butte, with the assistance of the Coal Creek Watershed Coalition, (CCWC) coordinated water quality sampling, public outreach and the other efforts of the CCWC regarding this grant. The overall purpose of the project was to restore the health of aquatic life and habitat, and protect other water uses in the Coal Creek watershed which have been impaired due to heavy metals and other pollutant loading from nonpoint sources. The specific purpose of this project, and the use of the funds, was to implement the Coal Creek Watershed Plan which was developed during the previous 319h grant, while securing on-going support and participation by local stakeholders and the local community to restore and maintain the Coal Creek Watershed.

A CCWC steering committee made up of representatives of the Town, the High Country Citizens Alliance, the Gunnison National Forest, the Upper Gunnison River Water Conservancy District, the Rocky Mountain Biological Laboratory, and individual citizens directed the project and sponsored public meetings to share information with the public.

Public meetings were conducted on Monthly from September 2005 through June, 2008. Additional public meetings occurred during the project about the Standard Mine Superfund site, but they are not a part of activities funded by this grant. The Standard Mine is located within the watershed and was believed to be the primary source of water quality degradation in the watershed.

During this project the CCWC and the Town monitored water quality at up to 23 sites to determine the source(s) of contamination and whether they need to be addressed.

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INTRODUCTION

The Coal Creek Watershed is located in Gunnison County Colorado and is tributary to the Slate, East, and Gunnison Rivers. The headwaters of the watershed lie in a remote and rugged mountain area which provides some of the richest recreational opportunities in the state. The area is prized for its water-based recreation, including fishing, boating, and camping and recreation is a major contributor to the local economy. The drinking water supply for the Town of Crested Butte is obtained from Coal Creek.

In 2002 the Final Engineering/Cost Analysis Report for the Standard Mine was issued by the Grand Mesa, Uncompahgre, and Gunnison National Forest, Gunnison, Colorado. This document summarized the results of a U.S. EPA site investigation (SI) of the Standard Mine. "The SI concluded that cadmium, copper, lead, and zinc were at elevated levels in Elk Creek, immediately below the Standard Mine and continued to be present at elevated levels at the Crested Butte Municipal Intake, throughout the town of Crested Butte, up to the last sampling station on Coal Creek immediately before the confluence with the Slate River, for a total distance of approximately 7.5 miles."

Two impaired stream segments in the Coal Creek Watershed are listed on Colorado's Section 303(d) List which was adopted by the Colorado Water Quality Control Commission at Rulemaking Hearings on March 9, 2004. The segments are both listed as high priority segments:

- 1) Coal Creek from Elk Creek to Crested Butte water supply intake, plus Elk Creek (COGUUG11) which is listed for cadmium, lead, and zinc. The use classifications for this segment are Aquatic Life Cold 1, Recreation 1a, Water Supply, and Agriculture.
- 2) Coal Creek and tributaries from Crested Butte water supply intake to Slate River (COGUUG12) which is listed for zinc. The use classifications for this segment are Aquatic Life Cold 1, Recreation 1a, and Agriculture

The Coal Creek watershed has a long history of mining. Successive periods of mining activity have occurred in the area including precious metals extraction, coal mining, and the mining of heavy-metals. In recent decades, changing market forces brought an end to active mining. Efforts to clean up the watershed followed. Water treatment facilities at the inactive Keystone Mine have significantly reduced pollution in Coal Creek. The Town of Crested Butte implemented its own monitoring program to insure compliance with drinking water standards, and passed a Watershed Protection Ordinance. However, the watershed has yet to completely recover from the impacts of mining. Significant aquatic life has yet to return.

The Coal Creek Watershed Water Quality Monitoring Project was initiated by the High Country Citizens Alliance (HCCA) at the end of 2003. HCCA staff members had obtained a copy of the Final Engineering/Cost Analysis Report for the Standard Mine and had brought it to the attention of the Crested Butte Town Council. As a result, the Town applied for 319h funding to help create a watershed management plan to address the Standard Mine and other water quality issues in the watershed.

In 2005 Stantec Corporation was subcontracted to help the Town and CCWC create a watershed plan. They also created a Sampling and Analysis Plan describing how water samples should be taken and the protocols for determining the quality of the water in the samples.

PROJECT GOALS, OBJECTIVES, AND ACTIVITIES

The **Environmental Goal** for the project was to: Restore the health of aquatic life and habitat, and protect other water uses in the Coal Creek watershed which have been impaired due to heavy metals and other pollutant loading from nonpoint sources.

The **Programmatic Goals, Objectives and Activities (tasks)** were to:

Goal 1: Implementation of the watershed plan for Coal Creek.

Goal 2: Secure on-going support and participation by local stakeholders and the local community to restore and maintain the Coal Creek Watershed.

Objective 1: Implementation of the water quality monitoring portion of the Coal Creek Watershed Plan.

Task 1: Sample water quality in the Coal Creek watershed during two annual cycles. Samples will be taken from a total of 93 stations throughout the monitoring program. Samples will be taken for the following at the following frequencies:

Metals, Nutrients, Physical Parameters

23 sites initially, 10 sites thereafter over two full annual cycles, twice in the spring, once in summer and once in the fall (total 93 stations).

Oil and Grease and E Coli

7 sites, once per year, once in 2005 and once in 2006.

Task 2: Analyze water samples for Cd, Cu, Pb and Zn; oil and grease; nutrients; and E. Coli.

Task 3: Collect samples for Bio-monitoring at eight sites in the Coal Creek watershed, once in 2005 and once in 2006.

Task 4: Analyze Bio-monitoring samples.

Objective 2: Maintain community awareness and support for restoring the Coal Creek Watershed.

Task 5: Communicate with the public and media.

Task 6: Coordinate the project, hire contractors, coordinate volunteers, analyze data as it is collected.

Objective 3: Fulfill project reporting requirements to CDPHE watershed coordinator and attend the annual Nonpoint Source Forum and the Annual Watershed Assembly.

Task 7: Prepare quarterly budget and reimbursement reports.

Task 8: Prepare semi-annual reports

Task 9: Prepare final report

Task 10: Attend the annual Nonpoint Source Forum and the Annual Watershed Assembly.

PLANNED AND ACTUAL MILESTONES, PRODUCTS AND COMPLETION DATES

The milestones and products were all met on time for the watershed plan. We selected a sub-contractor and were under contract by April, 2006. We projected that the water quality monitoring would be completed by the end of 2007 but requested, and were granted, an extension of time to monitor water quality in the spring of 2008 because the U.S. Environmental Protection Agency (EPA) had discovered high levels of heavy metals as the snow began melting in the spring of 2006 and we tried to confirm those high levels in 2007 and 2008. We also projected that we would sample water at 93 sites. Instead we actually took water samples at 147 sites through March, 2008.

Although we planned to take samples four times per year, taking samples during winter months proved to be difficult and dangerous at over 9,000 feet elevation due to avalanche dangers. Eventually, we did take samples at 10 sites in February, 2008 with the help of U.S. Forest Service personnel.

EVALUATION OF GOAL ACHIEVEMENT

All goals and objectives were met.

1. We sampled water quality at 147 sites over a two year period.
2. We analyzed the results of the water quality samples and published a 2006 annual monitoring report and a Coal Creek Water Quality Report 2007.
3. We took samples for biomonitoring.
4. We analyzed the results of the biomonitoring.
5. We worked to keep the public informed by publishing regular meeting dates and times, and publishing 5 issues of a newsletter named Friends of Coal Creek.
6. Our subcontractor:
 - a. coordinated the water sampling events,
 - b. coordinated volunteers to who helped with the sampling events,
 - c. analyzed the results of the water samples,
 - d. produced the water quality annual reports, and
 - e. produced the Friends of Coal Creek.
7. We produced nine quarterly reports and five semiannual reports and this final report.

RELATIONSHIP TO THE STATE NPS MANAGEMENT PLAN

The Colorado Nonpoint Source Management Plan identifies mining as a nonpoint source issue needing to be addressed. Our watershed management plan is for a watershed that is riddled with mines. At the time we began our water quality monitoring, we thought the number one source of water contamination was the Standard Mine. This project confirmed that theory, but it also identified the Iron Fen as a major contributor along with the first big pulse of snow melt on Mt. Emmons in the spring which seems to pick up high levels of heavy metals. Our next grant will further evaluate potential loading from storm drainage, and road sediment.

SUPPLEMENTAL INFORMATION

Supplemental information created during the project included:

1. ~~5~~ issues of a newsletter named Friends of Coal Creek
2. Coal Creek Watershed Water Quality Report 2006
3. Coal Creek Watershed Water Quality Report 2007
4. Coal Creek Macroinvertebrate Data 2006 and 2007
5. Coal Creek watershed Coalition website at www.coalcreek.org
- 6.

BEST MANAGEMENT PRACTICES DEVELOPED AND/OR REVISED

Since this project monitored water quality, no best management practices were developed.

MONITORING RESULTS

Monitoring results can be found in the attached

1. Coal Creek Watershed Water Quality Report 2006
2. Coal Creek Watershed Water Quality Report 2007
3. Coal Creek Macroinvertebrate Data 2006 and 2007

COORDINATION EFFORTS

COORDINATION FROM OTHER STATE AGENCIES

The Colorado Department of Natural Resources participated in the activities of the Steering Committee through Steve Renner, Reclamation Specialist, who is employed by the Division of Minerals and Geology. Steve offered recommendations and on the ground practicality throughout the water quality monitoring project.

OTHER STATE ENVIRONMENTAL PROGRAM COORDINATION

Mark Walker of the Colorado Brownfields Program participated in initial meetings of the steering Committee, helping to get the Coal Creek Watershed Coalition off the ground and often lending legitimacy to the process.

FEDERAL COORDINATION

Federal coordination occurred with the EPA and with the Grand Mesa, Uncompahgre and Gunnison National Forest. EPA coordination occurred primarily because the U.S. EPA was simultaneously deciding how to reclaim Standard Mine and began reclamation activities in 2007. Many small group and large group meetings were held with the public and with CCWC members. EPA also attended CCWC monthly meetings to update the steering committee and the steering committee provided valuable advice and history to the EPA during its deliberations. No time working with EPA was included as in-kind match for this project because the EPA was focused on one part of the watershed, while the focus of the CCWC and the Town was on the entire watershed.

National Forest coordination occurred primarily through the efforts of Mark Hatcher, District Watershed Staff of the Gunnison District Forest Service office in Gunnison. Mark attended steering committee meetings, provided much needed detailed information about on the ground issues in the watershed and provided snowmobiles and assistance during the winter sampling event.

The CCWC also discussed watershed protection in the Forest Service management plan revision for the Grand Mesa, Uncompahgre and Gunnison National Forest.

USDA PROGRAMS (E.G. ENVIRONMENTAL QUALITY INCENTIVES PROGRAM (EQIP), HYDROLOGIC UNIT FUNDING, BUFFER INITIATIVE, CONSERVATION RESERVE PROGRAM

Since this project monitored water quality, there has been no contact with USDA concerning how USDA might help address water quality issues in the watershed.

ACCOMPLISHMENTS OF AGENCY COORDINATION MEETINGS

Agency coordination meetings occurred primarily during steering committee meetings. As stated above, Mark Hatcher was a regular member of the steering committee. The major accomplishments were that we sampled water at 2147 sites over a two year period.

Meetings between the Forest Service and the National Resource Conservation Service (NRCS) resulted in a Stream Visual Assessment Protocol in the Fall of 2005.

RESOURCES/COORDINATION FROM FEDERAL LAND MANAGEMENT AGENCIES

As discussed above, the resources/coordination from federal land management agencies was accomplished primarily via the participation of Mark Hatcher on the steering committee. Mark was on the steering committee and coordinated the NRCS Stream Visual Assessment Protocol in the fall of 2005. Mark was also very involved in the EPA assessment of the Standard Mine, as was Linda Lanham of the Forest Supervisor's Office in Delta, Colorado.

OTHER SOURCES OF FUNDS

The EPA provided all funds for their analysis and reclamation of the Standard Mine. The information collected by EPA will be available to the CCWC but was not the primary purpose of this grant. Sources of funds for the project were the 319h Nonpoint Source Program, the Town of Crested Butte, Gunnison County, the Upper Gunnison River Water Conservancy District and the Colorado Department of Natural Resources, Division of Reclamation Mining and Safety.

SUMMARY OF PUBLIC PARTICIPATION

We had 25 opportunities for formal public ~~to~~ participation in the project and we also met with the EPA. The first opportunity for public participation was on when ~~??????~~ people attended the meeting. Water sampling began in earnest in the spring of 2006. Since then 12 different sampling events have taken place and 23 people volunteered to help take water samples when the time came to do that during these events.

~~We conducted a second public meeting on to present the . people attended that meeting.~~

On May 5, 2008 a presentation was made to the Crested Butte Town Council to update the council on activities in the watershed and some of the findings from the water quality sampling.

Commented [ACP1]: This does not include any meetings prior to April of 2006 when I was hired. It also does not include any meetings in 2005.

Commented [ACP2]: I don't know this since there were public meetings after the start date of 9.23.2005 when I wasn't around.

The public was always welcome at the monthly steering committee meetings and was invited through press releases public announcements and direct contact.

ASPECTS OF THE PROJECT THAT DID NOT WORK WELL

1. Sampling water quality during winter months can be dangerous when the people sampling have to pas through avalanche zones. We also found that water can be very cold when the snow fails under foot whileand over the creek.
2. ~~Anthony fill in anything else you think of ???~~ Access to sites is limited in the winter and requires snowmobiles and snowshoes.
3. Providing adequate training for all volunteers can be time consuming as volunteers come and go throughout the project.

2:

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FUTURE ACTIVITY RECOMMENDATIONS

Next steps include the following:

1. The Town was awarded a new 319h contact to monitor water quality of the watershed over the next two years. Our focus will shift from only taking water samples by hand to using an automatic sampler that will remain in the creek. We will also analyze the water quality samples over the last two years to determine which best management practices should be attempted to improve water quality. Last, we will begin pilot programs for the BMPs.
2. The CCWC will continue to work with the EPA concerning the Standard Mine.

ATTACHMENTS

1. Coal Creek Watershed Water Quality Report 2006
2. Coal Creek Watershed Water Quality Report 2007
3. Coal Creek Macroinvertebrate Data 2006 and 2007