



Colorado Department  
of Public Health  
and Environment

COLORADO

NONPOINT SOURCE MANAGEMENT AREA

FY 2007 ANNUAL REPORT

WATER QUALITY CONTROL DIVISION  
COLORADO DEPARTMENT OF  
PUBLIC HEALTH AND ENVIRONMENT



**LOWER RIO BLANCO HABITAT RESTORATION NPS PROJECT  
– SOUTHWESTERN COLORADO**

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## I. Introduction

This report fulfills the requirements of Section 319(m)(1) of the federal Clean Water Act of 1987. The Colorado Department of Public Health and Environment's Water Quality Control Division annually prepares this report to inform the public, the U.S. Congress and the U.S. Environmental Protection Agency (EPA) on the state's progress in the area of nonpoint source water pollution abatement. Although this report should not be considered a complete enumeration of all nonpoint source activities, it describes the most important features of Colorado's nonpoint source program.

The twofold goal of Colorado's nonpoint source program is to *restore* to full designated use those waters impaired by nonpoint sources of pollution and to *protect* existing water quality from future impairments by using an open process that fully involves the public.

Through Fiscal Year 2007, the division continued to administer the *Colorado Nonpoint Source Management Program*, which EPA approved in January 2000. The Colorado Water Quality Control Commission adopted the Supplement to the Colorado Nonpoint Source Management Program in January 2005. The document is available upon request or online at: <http://www.npscolorado.com/2005MgtProgFinal.pdf>. In addition, Regulation № 93 – Section 303(d) List of Water Quality Limited Segments Requiring TMDLs and the *2006 Status of Water Quality in Colorado* 305(b) report were also used for program implementation activities. Nonpoint source assessment is integrated in the Water Quality Status 305(b) report and is periodically updated.

Any comments or questions on this report or on Colorado's nonpoint source program may be directed via e-mail to [nps@state.co.us](mailto:nps@state.co.us).

### Colorado Nonpoint Source Alliance

In 2007, the Colorado Nonpoint Source Council reorganized to form the Colorado Nonpoint Source Alliance. Although with the same general membership, this voluntary assembly of government agencies and public interest groups continues its role of providing advice to Nonpoint Source



Management Area staff in the technical aspects of implementing the nonpoint source management area. The Alliance provides advice to the Nonpoint Source Management Area staff in preparing and maintaining the state's Nonpoint Management Area programmatic documents and in encouraging the public to become involved in nonpoint source activities. Members of the Alliance, in coordination with the Nonpoint Source Management Area staff, also work with interested project sponsors to help prepare projects for funding consideration under Section 319(h) of the Clean Water Act. The goal of the Nonpoint Source Alliance is to provide support and technical advice in nonpoint source activities designed to preserve and restore water quality in Colorado. Each Alliance representative's primary duties and responsibilities include the following:

1. provide technical and area-of-expertise ~~advise~~ advice on nonpoint source issues and activities
2. serve as a liaison from member organization/agency to the Alliance;
3. serve as a liaison from the Alliance to member organization/agency;
4. actively represent nonpoint source water quality issues and provide input from member organization/agency for the benefit of Colorado water quality;
5. promote the nonpoint source program ~~management area~~ within the member organization/agency;
6. participate in the technical evaluation of nonpoint source project proposals submitted each year;
7. participate in ~~the~~ NPS Alliance policy development;
8. work with a multitude of agencies and organizations to build cooperation and collaboration;
9. approach resolution of challenges through teamwork;
10. stay informed and inform others about nonpoint issues and water quality concerns; and
11. participate in statewide meetings and seminars on nonpoint source.

### **2007 Member Organizations of the Nonpoint Source Alliance**

U.S. Bureau of Land Management  
Colorado Association Stormwater and Flood Plain Managers  
Colorado Department of Transportation  
Chatfield Watershed Authority  
Colorado Cattlemen's Association  
Colorado Livestock Association  
Colorado Farm Bureau  
Colorado Lake & Reservoir Management Association  
Colorado Mining Association  
Colorado River Water Conservation District  
Colorado Division of Wildlife  
Colorado Division of Reclamation, Mining and Safety ~~Minerals and Geology~~  
Colorado State Conservation Board/Colorado Department of Agriculture  
Colorado State University Cooperative Extension  
Colorado Water Quality Control Division  
U.S. Department of Agriculture (USDA) Natural Resources Conservation Service  
U.S. Geological Survey  
Northern Colorado Water Conservancy District  
North Front Range Water Quality Planning Association  
Pikes Peak Area Council of Governments

Denver Regional Council of Governments  
Sierra Club  
League of Women Voters  
USDA Forest Service  
Lefthand Watershed Oversight Group  
Colorado Water Quality Control Commission  
*(ex officio)*  
U.S. Environmental Protection Agency, Region VIII  
*(ex officio)*  
**Colorado Watershed Assembly**  
**Colorado Watershed Network**

## II. Nonpoint Source Implementation Activities

Congress began appropriating funds for Section 319 implementation activities in 1990. Prior to and including 1990, states had the option of redirecting some of their construction grant funding for nonpoint source activity. These funds support a wide variety of activities that are implemented to prevent or reduce nonpoint source pollution loading to Colorado waters. Below is a list of open grants from the congressional appropriations that Colorado is using for nonpoint source implementation.

### Current Section 319(h) Nonpoint Source Funding:

FY 02 \$2,382,200  
 FY 03 \$2,369,400  
 FY 04 \$2,339,700  
 FY 05 \$1,962,700  
 FY 06 \$1,929,334

At the time of this report's release, Colorado has not received the FY07 award, but it is anticipated that that grant amount will be approximately \$1,860,800.00.

Tables 1 and 2 summarize funded projects by pollutant category and activity. In a few instances, the numbers may differ from previous years due to changes in the definitions of some of the categories and activities.

**TABLE 1. PROJECTS BY POLLUTANT CATEGORY, 1990-2007**

| Category  | Number of Projects |
|---|--------------------|
| Agriculture                                     | 68                 |
| Silviculture                                    | 3                  |
| Urban/Construction/Roads/Highways/Septics       | 41                 |
| Mining  | 74                 |
| Hydrologic Modification                         | 4                  |
| Crosscutting - addresses more than one category | 70                 |

**TABLE 2. PROJECTS BY ACTIVITY, 1990-2007**

|   |     |
|---|-----|
| Watershed, including planning and restoration | 129 |
| Information and Education                     | 75  |
| Assessment, including groundwater             | 37  |
| Demonstration                                 | 16  |
| Technical Assistance/Staffing and Support     | 9   |

### Staffing and Support

Funding for staffing and support is administered through the annual Performance Partnership Agreement and Grant. The 2007 staffing and support grant is estimated to be \$575,000, which funds 4.5 full-time equivalents (FTEs). The FTEs include a full-time NPS coordinator, 75% of

the time of the division's four watershed coordinators and support from other units, such as contracting and fiscal.

## **2007 Nonpoint Source Strategic Approach**

In 2007, the Nonpoint Source Management Area formalized a new approach to implementing nonpoint source activities. Section 319 funding sources continue to be allocated under two categories: activities that address impaired waters requiring TMDL development (incremental allocation) and all other activities (base allocation). The first category, nonpoint source activities addressing impaired waters requiring a TMDL, is now being implemented in tandem with the Triennial Review Regulatory Basin rotation, as adopted by the Water Quality Control Commission. For the 2007 funding cycle, the South Platte River, Republican River, Laramie River and Smoky Hill River Basins were the *Target Basins* for project funding under the incremental allocation. A complete schedule of the Target Basins cycle can be found in Appendix A.

Starting in 2006, U.S. EPA requires that nonpoint source programs report on ~~the~~ progress toward water quality attainment achieved through the implementation of nonpoint source projects in the form of NPS success stories. Colorado has committed to complete one success story for EPA consideration in 2008 and at least 4 by 2012. In addition, EPA requires reports on the overall success of the Clean Water Act Programs on a watershed basis, ~~The report is due in 2011 and progress is to be~~ captured at the 12-digit Hydrologic Unit Code level. ~~basins, as defined by the U.S. Geologic Service and certified by U.S. EPA and other federal agencies.~~ The state of Colorado does not have, at this time, a fully certified 12-digit Hydrologic Unit Code basin map, but this is expected to be completed by the United States Geological Survey in 2008. CDPHE intends, whenever feasible, to fulfill these reporting requirements at the same time.

In preparation for this reporting effort, the Nonpoint Source Management Area prioritized watersheds in the state using the regulatory segmentation of surface waters as approved by the Water Quality Control Commission. The criteria for selecting *Priority Watersheds* were: 1) identify segments listed in Regulation № 93 – Section 303(d) List of Water Quality Limited Segments Requiring TMDLs and 2) identify watersheds containing those segments that are or have in the past used 319 funds for nonpoint source activities. Priority Watersheds are defined at the 8 or 10-digit Hydrologic Unit Code, at this time; once the State of Colorado receives the 12-digit Hydrologic Unit Code basin map, Priority Watersheds will have to be further defined. A map of the current Priority Watersheds can be found in Appendix B.

## **2007 Targeted Priorities**

The following priority project categories were identified for 2007 funding, within the context of the 2005 Supplement to the Colorado Nonpoint Source Management Program:

- 1. Nonpoint source activities in watersheds impacted by Clean Water Act Section 303(d)-listed waters.** Approximately \$1,100,000 was targeted for this category;
- 2. Watershed planning in 303(d) impacted watersheds.** \$100,000 was targeted for watershed planning in impacted watersheds.

- 3. Other proposals.** Projects that address *specific action items* in any of the NPS Action Plan items of the *Supplement to the Colorado Nonpoint Source Management Program (January 2005)* also were eligible. These proposals could include prevention projects or other watershed efforts where the target water body is not identified on the “303(d) List of Waters Still Requiring TMDLs”; they could address information/education needs of the program, as related to the action items; and they could be for the development of watershed plans in any area of the state. The amount targeted for the “Other Proposals” was approximately ~~\$680,000~~ 800,000.

### **Projects Approved for Funding in 2007**

The proposal process for 2007 (Appendix C) generated 18 proposals which totaled more than \$1.8 million requested. Individual proposals ranged in value from \$13,800 to nearly \$400,000. Fourteen new projects were approved for funding. See Appendix D for the list of projects approved in the 2007 process.

### **III. Program Milestones**

#### **Use of NPS funds on private land**

One requirement for NPS grant funding is long-term operation and maintenance of any best management practice implemented with NPS funds. Long-term operation and maintenance is best assured when the landowners and/or operators (for instance, lessees) in a watershed are active participants both in the stakeholder organization and in voluntarily implementing best management practices.

Landowners and/or operators are required to commit to a minimum period of operation and maintenance, which is determined on a project-by-project basis, and is based on the expected life of the best management practices installed. Several organizations, including USDA, have developed best management practice life-span guidelines, which are used, in part, to determine an appropriate project life span.

Landowners and/or operators are also required to participate financially in implementing best management practices on their land. The expected contribution is at least 25 percent of the cost of best management practice implementation on their properties. Their contribution can either be by direct cost contributions, i.e., cash, or through in-kind services, e.g., labor.

In appropriate circumstances, the program will require affected landowners to execute an environmental covenant in exchange for the use of nonpoint source grant funds on their properties. An environmental covenant is a mechanism by which current and future owners of a property agree to maintain and/or not interfere with any institutional controls (such as a cap, fencing, access requirements, diversion ditches, water well prohibitions, etc.) that are part of an approved remedy and are necessary to protect public health, safety and the environment. An environmental covenant is appropriate where nonpoint source grant funds are used on a project that results in residual contamination at levels that have been determined to be safe for one or more specific uses, but not all uses, or that include the incorporation of an engineered feature or



structure that requires monitoring, maintenance or operation or that will not function as intended if it is disturbed and where disturbance may result in environmental or public health hazards.

**Public access to lands restored/improved with NPS grant funds**

There is precedent in the Clean Lakes Program to require public access to those water bodies improved or restored with the use of public funds:

*The Clean Lakes Program will only address publicly owned lakes with public access to the lake through publicly owned contiguous land so that any person has the same opportunity to enjoy non-consumptive privileges and benefits of the lake as any other person. If user fees are charged for public use and access through State or sub-state operated facilities, the fees must be used for maintaining the public access and recreational facilities of this lake or other publicly owned freshwater lakes in the State, or for improving the quality of these lakes (40 CFR 35.1605-3).*

When nonpoint source grant funds are used for stream restoration/improvement projects, the watershed plan that prioritized the stream project also must describe how public access will be provided to the improvements gained by the project. Proposals for nonpoint source grant funding that provide public access will be given priority for funding, assuming all other criteria are met. NPS funds will not be used on projects that could improve a fishery used for private or exclusive purposes, private or personal gain or benefit.

**Total Maximum Daily Loads**

Section 303(d) of the federal Clean Water Act requires states to identify water bodies or stream segments that are water quality-limited. In Colorado, water quality-limited segments are identified on the 303(d) lists for 1998, 2002, 2004 and 2006. Water quality-limited segments are those water bodies or stream segments for which one or more assigned use classifications or standards are not fully achieved.

To date, seven of the 10 TMDLs identified as priorities in the 2000 *Colorado Nonpoint Source Management Program* have been addressed. Colorado’s TMDL program, including links to all TMDLs completed to date and the delisting rationale, may be viewed online at <http://www.cdphe.state.co.us/wq/Assessment/TMDL/tmdlmain.html>.

**Other Milestones**

As the requirements to measure results of financial investment become more important to the nonpoint source management area, both in Colorado and nationally, the annual report will include more information related to the program activity measures identified in the EPA’s National Water Program Strategic Plan for 2006-2011 ~~2004-2008~~.

**TABLE 3. PROGRAM ACTIVITY MEASURES**

| <b>Watershed plans being developed</b>  | <b>Watershed plans being implemented</b>   |
|---|--|
| <ul style="list-style-type: none"> <li>- Animas River above Silverton</li> <li>- Lake Fork of the Gunnison, Palmetto Gulch</li> <li>- Snake River</li> <li>- Slate River</li> </ul> | <ul style="list-style-type: none"> <li>- Animas River, San Juan River Basin</li> <li>- Cherry Creek, South Platte River Basin</li> <li>- Straight Creek, Upper Colorado River Basin</li> </ul> |

|   |  |
|---|--|
| <ul style="list-style-type: none"> <li>- Coal Creek and tributaries from Crested Butte water supply intake to Slate River</li> <li>- Upper Rio Grande to Alamosa County line</li> <li>- Straight Creek</li> <li>- Cherry Creek</li> <li>- Grand Valley Tributaries</li> <li>- North Fork of the Gunnison</li> <li>- Clear Creek, above the mouth of the canyon</li> <li>- Big Thompson River, Rocky Mountain National Park to Home Supply Canal</li> <li>- Lefthand Creek, including James Creek and Little James Creek</li> <li>- Eagle River, including Black Gore Creek</li> <li>- North Fork of the Republican River</li> <li>- Big Thompson River</li> <li>- Fountain Creek</li> <li>- Bear Creek</li> <li>- Willow Creek</li> <li>- Uncompahgre Valley</li> </ul> | <ul style="list-style-type: none"> <li>- Black Gore Creek, Upper Colorado River Basin</li> </ul> |
|---|--|

**Projects Completed in 2007**

| Award Fiscal Year  | Project Title   |
|--|---|
| <p><b>2001</b><br/>Total Budget: \$499,540<br/>NPS Funds: \$237,500.</p> | <p><i>Water and Nutrient Management in Western Yuma County.</i> This project was a longitudinal effort to study the effect of implementing BMPs on large areas of farmland on nutrient, pest and irrigation management on area water quality. 45,000 acres were involved in the project and 30 fields were selected for deep soil and water tests for nitrogen content. A total of 28 irrigated farm operations made up of at least 60 individual producers were involved. These producers demonstrated that BMPs are effective in reducing the cost of inputs while protecting groundwater and their activities highlighted the value of conservation activities. Producers enrolled in the project want to do more root studies and conduct leaf and tissue studies for nitrogen content. These activities can be coordinated with NRCS, CSU, and Irrigation Research Farm studies.</p> |
| <p><b>2006</b><br/>Total Budget \$83,300<br/>NPS Funds: \$50,000</p>     | <p><i>Assessment of Toxicity of Streambed Sediments.</i> This project had three objectives: 1) Evaluate the impact of abandoned mine sites that have an intermittent hydrologic connection to the streams in the Lefthand Creek watershed by measuring streambed metal concentrations in the Lefthand Creek; 2) Identify the colloidal species that influence the transport and attenuation of metals from acid mine drainage; and 3) Determine the metal and acid potential of abandoned mine waste piles. Conclusions: no new sources of metal loading were identified within the watershed from the project study, previous recommendations were confirmed and a few potential remediation sites were reprioritized based on this assessment. A few sites investigated during this assessment are now being remediated.</p>  |

| Award Fiscal Year  | Project Title   |
|--|---|
| <b>2003 &amp; 2004</b><br>Total Budget:<br>\$617,407<br>NPS Grants:<br>\$316,200 | <i>I-70 Structural BMPs and Snow Slide BMP above Straight Creek</i><br>The goals of these projects located along Interstate I-70 near the continental divide were to restore the aquatic life and habitat of Straight Creek by decreasing sediment loads to the stream and stream ecosystem. In 2006, a concrete snow slide and the sediment pond were completed along with the reseeding and mulching of all disturbed earth areas. The new concrete barrier that forces all plowed snow to the snow slide as well as the concrete barrier, trench drain and gravel backfill between the cut slope and the new concrete barrier for the I-70 cut slope structural BMP have also been completed. The Town spent the summer of 2007 monitoring the successful sediment trapping and collection capabilities of the installed BMP project. Colorado Department of Transportation (CDOT) will continue to maintain the new BMPs and remove sediment from both facilities. On going monitoring by CDOT staff and consultants will continue over the next several years to verify that the BMPs continue to operate as designed. |
| <b>2005</b><br>Total Budget:<br>\$82,920<br>NPS Grant:<br>\$40,500               | <i>Coordinated TMDL Development in the Snake River Watershed</i><br>The goals of the project were three-fold: 1) Develop realistic goals for a TMDL; 2) Implement several recommendations of the Snake River Water Quality Assessment in order to understand potential for and implications of metals load reductions; and 3) Coordinate with the Water Quality Control Division to incorporate findings from previous goals into a locally supported TMDL proposal. The Snake River Task Force participated in the development of the draft TMDL and proposed to change stream segments and water quality standards based on technologically feasible load reductions, rather than Table Value Standards. Physical habitat was evaluated to help confirm that the limiting factor for aquatic life survival is water quality. Significant data and feedback was provided to the WQCD in development of the TMDL. The TMDL that went to public notice is based on attaining current water quality standards and will be considered in the Upper Colorado Standards and Classifications Rulemaking in June 2008.             |
| <b>2001</b><br>Total Budget:<br>\$225,000<br>NPS Grant:<br>\$135,000             | <i>Handies Peak Project</i><br>The project goal was to improve water quality and aquatic habitat in the Animas Watershed by reducing chemical and physical impacts from metals-laden mill tailings and mine waste within the watershed. A number of high ranking contributors of metals and acidity were considered for remediation. After evaluating these sites and contacting the owners, the Lucky Jack Mine was selected as the target site. The remedial work consisted of several mine waste piles that were consolidated, neutralized, top-soiled, and re-vegetated. The project has been completed and presently a good cover of native grasses and forbs has been established on the site. Monitoring of vegetation coverage indicates an estimated average ground cover of 40 to 50%. This new vegetation is doing well and is expected to continue to increase in coverage.   |
| <b>2002</b><br>Total Budget:   | <i>Red Mountain Project</i><br>Project goal was to reduce metals loading to Mineral Creek and the Upper   |

| Award Fiscal Year   | Project Title  |
|---|--|
| \$359,879<br>NPS Grant:<br>\$214,467                                | <p>Animas River from several abandoned mine sites and to determine effectiveness of remediation. Several mine sites were addressed in this multi-year project. The Congress mine site was machine-cleaned and all mine wastes were removed thus preventing further leaching of metals and acidity. The ditch conveying water past and leaching into the San Antonio mine was closed down after a water rights purchase. The water was re-diverted into its natural drainage and the ditch restored. At the San Antonio and Upper Browns sites, mine wastes were removed, consolidated, neutralized with limestone, top-soiled, seeded, and mulched. Hydrological run-on and run-off controls were constructed and historic structures were left intact. A comparison of pre-remediation to post-remediation water quality at the San Antonio/Congress/Carbon Lakes complex shows significant acid and metals reduction in the receiving stream. The Upper Browns site has no surface runoff in which to measure water quality improvements. Vegetation cover at the San Antonio already exceeds the intended 60% minimum ground cover.</p>   |
| <b>1998</b><br>Total Budget:<br>\$139,355<br>NPS Grant:<br>\$90,022 | <p><i>Surface Water Infiltration Control Project Phase I &amp; II</i></p> <p>This project was designed to remediate impacts to water quality on the Upper Animas River from one or more draining mines. A number of high ranking mine site contributors of metals and acidity were considered for remediation. After evaluating several sites and contacting the owners the Pride of the West Mine was selected as the target site for implementation of infiltration controls. The site consisted of a draining adit below two large 700' tall vertical stopes that collected water from two intermittent streams and two large avalanches. Steel beam and plate structures were constructed to slide the avalanches and stream water over the openings so that this large of amount of water would not infiltrate and leach metals from the underground workings of the mine. The structures also serve as safety closures so that hikers and/or skiers would not fall into this deep feature.</p>   |
| <b>2003</b><br>Total Budget:<br>\$224,391<br>NPS Grant:<br>\$25,000 | <p><i>Watershed Stewardship Process Plan</i></p> <p>This planning project was designed to address a number of start-up issues faced by the Lake Fork (of the Gunnison) Watershed Stakeholders Group (LFWS) as it began its work. Three principal areas of interest were addressed by this grant: 1) a survey of the upper Lake Fork (above the confluence of Henson Creek) and Henson Creek for potential stream contamination and identification of abandoned mines and mine sites; 2) a process plan by which the group agreed to operate; and 3) a watershed plan. An additional area of interest to the LFWS was public education. All objectives set forth were achieved. A SAPP and QAPP were written and used extensively in water sampling and analyses in a subsequent NPS grant. Second, sources inventory was begun and was instrumental in the design of the synoptic sampling programs on the upper Lake Fork and Henson Creek in LFWS' second NPS grant. Third, public education programs and workshops were conducted to build public awareness of the importance of water quality and it relationship to a healthy environment This led to the drafting a Watershed Plan for the Lake Fork of the Gunnison</p> |

| Award Fiscal Year  | Project Title  |
|--|--|
|  | and incorporating LFWS' operating guidelines into the Watershed Plan.  |
| <b>2004</b><br>Total Budget:<br>\$376,621<br>NPS Grant:<br>\$97,542    | <i>Lake Fork of the Gunnison - Henson Creek Synoptic Sampling</i><br>This sampling project was focused on: 1) a synoptic water quality sampling of Henson Creek, its tributaries and adits; 2) collecting and analyzing composite samples of mine/mill dumps which will provide data for future TMDL development for cadmium and zinc in the 303(d) listed segment-Palmetto Gulch; and 3) identifying other reaches with metals levels that are elevated or exceed state standards. The LFWS conducted a synoptic water quality sampling of Henson Creek and the upper Lake Fork of the Gunnison (above the confluence with Henson Creek) in the summers of 2005 and 2006. Stream, draining adits, and composite mine/mill dumps samples were collected and analyzed for future TMDL development. Of specific interest are cadmium and zinc in the 303(d) listed segment-Palmetto Gulch. Other reaches were examined for elevated metals levels that may exceed state standards. Future work efforts will be structured to more closely examine any reaches that appear to be potential 303(d) listings. |
| <b>2004</b><br>Total Budget:<br>\$216,500<br>NPS Grant:<br>\$97,200    | <i>Grand Valley Selenium Assessment</i><br>The goals of this assessment project were to gain a better understanding of selenium sources to assist in the development of a TMDL for selenium in the Grand Valley tributaries and aid in selenium remediation planning. This was to be accomplished by conducting water-quality sampling and tracer studies to better characterize the selenium-related impairments in the Grand Valley tributaries. The USGS performed tracer studies to assess the sources of selenium impairing two tributaries in the Grand Valley. In general, the concentrations of selenium increased as the tributary progressed from the Highline Canal to the Colorado River. The tributary flowing through the more urbanized area had lower concentrations than the tributary flowing through a more rural area of the valley. Concentrations in both tributaries exceeded the state's chronic standard for selenium.  |
| <b>2002</b><br>Total Budget:<br>\$1,645,000<br>NPS Grant:<br>\$175,000 | <i>Town of Alma Storm Water Project</i><br>Goal: Decrease sediment loading to the Middle fork of the South Platte River with the construction of a new storm water system<br>Achieved: Installation of two storm water detention ponds, properly rip-rapped and connected. This project was part of a larger project that involved improvements to the roadway and street gutters along Highway 9 through the Town of Alma. The NPS grant allowed the Town to address the sediment loading problem that was not covered by the road improvements funded through CDOT.  |
| <b>2005</b><br>Total Budget:<br>\$558,000<br>NPS Grant:<br>\$200,000   | <i>Coyote Gulch Restoration (City of Lakewood)</i><br>Goals: To implement the Bear Creek Reservoir TMDL by reducing phosphorus loading from bank erosion and storm water runoff into Bear Creek Reservoir, improve wetlands habitat, provide information and educational opportunities, and measure the post-construction phosphorus reduction   |

| Award Fiscal Year  | Project Title  |
|--|--|
|  | <p>efficiency of the channel improvements. Achieved: Design and construction of bank and channel stabilization features; Monitoring to establish pre and post construction trends for wet and dry weather events to determine phosphorus removal efficiencies (ongoing); Education - the design and installation of interpretive signage along the trail adjacent to the construction. The project was a collaborative effort by the City of Lakewood, UDFCD, Jefferson County. The work performed is visually and structurally very appealing as are the interpretive signs. Information for the monitoring component is still being collected. The final report on the project has not been submitted yet, so the figures on the effectiveness of the project at reducing phosphorus are still unknown. NOTE: The final report has not been received yet; final 5% is being withheld</p>   |
| <p><b>2005</b><br/>Total Budget:<br/>\$41,666<br/>NPS Grant:<br/>\$25,000</p>  | <p><i>Rio Grande Watershed Plan</i><br/>The goals for this project were to complete a strategic plan that would incorporate on-site river-related activities of the larger watershed from the headwaters of the Rio Grande to the Colorado/ New Mexico border; incorporate the recommendations of the 2001 Rio Grande Headwaters Restoration Study of the 91 mile target reach that has been significantly affected by anthropogenic activities; identify and prioritize mitigation projects to address actual and potential sources of degradation; recommend and plan for the implementation of BMPs and develop a schedule for implementation; establish and implement a monitoring plan to evaluate the effectiveness of the BMPs; develop an outreach and education program focused on BMPs; determine the cost of implementation; prepare a strategy for long-term funding sources. Achievements: Completed the plan which addressed important long-term priorities. Strategies were developed for key areas of concern, i.e., water quality, stream flow, diversion structures, flood plain, recreation synergy - community involvement, and funding. Examples included a management program to document baseline water quality conditions for the mainstem and the south fork of the Rio Grande; support for implementation of in-mine remediation and/or a water treatment plan to reduce metal loads from the Nelson Tunnel on Willow Creek.</p> |
| <p><b>2002</b><br/>Total Budget:<br/>\$160,415<br/>NPS Grant:<br/>\$50,100</p> | <p><i>Assessment of Remediation of Fluvial Tailings Deposits in the Upper Arkansas River Basin, Lake County, Colorado</i><br/>The goal for this project was to assess the effect of in-situ remediation of fluvial tailings on water quality in the underlying vadose and saturated zones. The Arkansas River gains flow along the reach that contains the fluvial tailings deposits. Water-quality improvement to the vadose and unsaturated zones should precede water quality improvements in the river. The effectiveness of the BMPs in improving water quality is being considered before additional land is treated using the BMP. Monitoring was completed to show limited water-quality improvement due to the treatment, differences among sites related to treatment, and evidence of moisture and dissolved constituent infiltration to depths below the treatment depth at some sites. The monitoring addressed two</p>   |



| Award Fiscal Year | Project Title   |
|-------------------|---|
|                   | water-quality priorities identified in the Mining Non-point Source Management Program: 1. prevent significant future threats to water quality from abandoned mine sites, and 2. develop and implement new and existing technologies for water-quality restoration. Item 1 was addressed when the monitoring identified elevated concentrations of arsenic at one of the monitoring sites. The EPA was notified, responded, and concluded that the elevated arsenic concentrations were limited to a small area and had not spread beyond that area. Item 2 was addressed when monitoring in the early stages of the project indicated that water having alkalinity was not percolating to depth at one of the study sites. The EPA responded by adding more alkalinity-generating soil amendments to the site |

#### **IV. Water Quality Information**

##### **Sampling and Assessment Activities**

Part of the update to the NPS Management Program was to reaffirm Colorado guidance on funding monitoring and assessment projects. U.S. EPA limits the amount of grant funds that may be used for monitoring and assessment, which includes the development of total maximum daily loads (TMDLs) and watershed plans. NPS funds may be used only to:

- collect data in direct support of the development and implementation of a total maximum daily load;
- determine measurable results from on-the-ground NPS projects;
- develop watershed plans identified as priorities in the annual proposal guidance.

NPS funds may not be used to determine “baseline” conditions. For example, they cannot be used to capture current conditions outside the development of a TMDL. Collecting data to evaluate current water quality classifications and standards or to conduct a use attainability analysis also are not eligible for NPS funding.

Any proposal to fund assessment in watersheds where water bodies are identified as impaired must be coordinated through the TMDL program at the Water Quality Control Division prior to submittal of the proposal.

##### **SB90-126 Agricultural Chemicals and Groundwater Protection**

The Agricultural Chemicals and Groundwater Protection Program is administered as a joint effort between the Colorado Department of Agriculture, the Colorado Department of Public Health and Environment, and Colorado State University Cooperative Extension. Due to a difference in annual reporting, the following reflects activities in 2006.

##### **Groundwater Monitoring**

- ◆ In 2006, the Program completed the twelfth year of a long-term monitoring effort initiated in the South Platte alluvial aquifer from Brighton to Greeley. Nitrogen analysis indicates that 80% of the irrigation wells and 70% of the monitoring wells tested above the nitrate drinking water standard of 10.0 mg L (ppm). Pesticide analysis returned 24 detections spread out in 13 of 17 monitoring wells. The most commonly detected pesticide was de-ethyl Atrazine (DEA).
- ◆ The Program initiated a reconnaissance sampling of El Paso County to determine groundwater quality with respect to agricultural chemicals. This low-density sampling project resulted in 49 wells being sampled between September and November, 2006. Of the 49 wells sampled, only one sample had a nitrate concentration above the drinking water standard of 10 ppm. No pesticides were detectable by the CDA laboratory in any well sample.
- ◆ In 2006, Program personnel continued refining a long-term monitoring plan for the Program. This document will be used to drive program monitoring efforts for the next 5-10 years and will also help determine where new well networks should be installed. This plan should be finished in early 2007 to begin aiding the Program's monitoring efforts.
- ◆ Program personnel, in conjunction with the Integrated Decision Support Group in the Civil Engineering Department at CSU, are constructing a web-based tool that will interactively query the groundwater quality information associated with the Program. The data will be searchable by an array of parameters, such as water quality constituent, geographic location, and year detected. Public release of this database is expected in the spring of 2007.
- ◆ Established and sampled an urban monitoring well network along the Front Range urban corridor utilizing existing monitoring wells.
- ◆ In 2006, Clean Harbors, Inc. took responsibility of the Waste Pesticide Disposal program from MSE. The CDA will work with Clean Harbors to make sure this program continues in an efficient manner.
- ◆ Section 25-8-205.5 (3)(b) of the Agricultural Chemicals and Groundwater Protection Act requires the Commissioner of Agriculture to develop rules where pesticides and fertilizers are stored or handled in quantities that exceed the established thresholds. Pesticide and fertilizer facility inspections continued in 2006.
- ◆ Program personnel, in conjunction with the Integrated Decision Support Group in the Civil Engineering Department at CSU, are constructing a web-based tool that will interactively query the groundwater quality information associated with the Program. The data will be searchable by an array of parameters, such as water quality constituent, geographic location, and year detected. Public release of this database is expected in the spring of 2007.
- ◆ The Advisory Committee continues to be an integral part of the implementation of this program by providing input from the many facets of the agricultural community and the general public that they represent (Appendix V). The committee met once during 2006.
- ◆ Addressed groups on SB 90-126 and issues related to agricultural chemicals and ground water quality. Groups addressed include chemical dealers, ground water management districts, crop and livestock producers, and agency personnel.
- ◆ Distributed fact sheets and reports on Colorado ground water quality to interested parties and fielded questions by phone and e-mail to Colorado citizens.
- ◆ Cooperated with county Extension agents on disseminating information about Colorado ground water quality.

- ◆ Worked to coordinate efforts of the Agricultural Chemicals and Ground Water Protection program with other state and federal programs in Colorado.
- ◆ Colorado State University Cooperative Extension has worked with the Colorado Department of Agriculture to continue developing Best Management Practices (BMPs) for Colorado farmers, landowners, and commercial agricultural chemical applicators. Because of the site-specific nature of groundwater protection, the chemical user must ultimately determine the BMPs adopted for use at the local level. The local perspective is also needed to evaluate the feasibility and economic impact of these practices. The Program Advisory Committee has recommended that a significant level of input be received at the local level prior to adoption of recommended BMPs.
- ◆ The Groundwater Program at CSUCE works with crop producers, their advisors, fertilizer dealers, USDA NRCS, commodity groups, and local County Extension faculty, to demonstrate and evaluate new and existing production tools that may improve producer profitability and help protect groundwater. Field demonstration work in 2006 focused on helping growers improve water and nutrient management. One significant project is a limited irrigation trial in Weld County where we demonstrated limited versus full irrigation on grain corn using three different plant populations (~20, 25, and 32 thousand plants per acre).

The 2006 annual report for the Agricultural Chemicals and Groundwater Protection Program may be obtained by contacting the program at (303) 239 -5704.

## **V. Outreach Activities**

### **Keep It Clean Neighborhood Stewardship Program**

The Keep it Clean Partnership (formerly know as the Watershed Approach to Stream Health or WASH Project) is comprised of the following: Boulder County; the cities of Boulder, Longmont, and Louisville; and the towns of Erie and Superior. Individually, they are referred to as “Partners.” These Partners have contracted with the City of Boulder’s Stormwater Education Program to support and expand delivery of stormwater education to the public and school-aged children in Keep it Clean Partnership communities. The Keep it Clean Partnership Education Program provides school-based education and community based outreach programs that meet state requirements for Minimum Control Measures (MCM) 1 and 2. The Keep it Clean Partnership contract was signed in May 2003, at which time services began. In total, the Keep it Clean Partnership distributed **78,036** brochures and flyers in 2007. In addition to brochures, stormwater and water protection information is also distributed via email list serves. For example, in partnership with the Partners for a Clean Environment (PACE) Program, stormwater and water pollution prevention information was sent via email to all Boulder County and City of Boulder employees in September 2007.

### **Colorado Foundation for Agriculture**

The Colorado Foundation for Agriculture continues its outreach efforts to reach Colorado school children through a multifaceted approach. Key to the program is the Colorado Reader that reaches over 1,500 schools in the state. An electronic newsletter exists and an online watershed game. In 2007, a baseline survey of water knowledge in the state was conducted.

Results from this survey will serve the Nonpoint Source Program outreach efforts as well as local information and education efforts in succeeding years. More information can be found at <http://www.growingyourfuture.com/>.

**AWARE Colorado**

The League of Women Voters of Colorado Education Fund continues an outreach effort based on the University of Connecticut’s Nonpoint Education for Municipal Officials program. Addressing **Water And natural Resource Education** (AWARE) is a statewide program designed to educate local decision makers about the impacts of land use choices on water quality. AWARE will provide research-based, non-advocacy material so decision makers can better consider water quality impacts when making land use decisions. The program is guided by an advisory group of more than 30 stakeholders. More information can be found at <http://www.awarecolorado.org>.

**Colorado NPS Connection**

The nonpoint source newsletter, *Colorado NPS Connection*, now publishes as an electronic-only newsletter. Past issues of the newsletter are available on the Colorado Water Protection Project Web site at <http://www.ourwater.org>.

**Information and Education Outreach Grant Program**

For several years, the nonpoint source program has set aside \$10,000 from the regular Section 319(h) allocation for small, highly focused educational efforts. In 2001, with the concurrence of the EPA regional office, the amount available was increased to \$30,000, with the intent of expanding the area of influence into the other categories of the program. These small-scale projects typically leverage the modest amounts of money into major community-outreach efforts with statewide transferability. Fund availability is marketed to schools, nonprofit organizations and local watershed groups. A total of \$21,198 was awarded in 2007.

**TABLE 4: OUTREACH GRANTS AWARDED IN 2007**

| <b>Name</b>  | <b>Sponsor</b>                                       | <b>\$ Request</b> |
|--|--|-------------------|
| Supporting the Sustaining Colorado Watersheds Conference | Colorado Lakes and Reservoirs Management Association | \$4,160           |
| Printing the State of the Watershed Report               | Colorado Watershed Assembly                          | \$5,000           |
| Supporting the AWARE Colorado Program                    | Colorado League of Women Voters                      | \$4,850           |
| Achieving Behavior Change to Increase Water Quality      | Town of Crested Butte                                | \$4,933           |
| Purchase of a H <sub>2</sub> O Jo Balloon                | Aurora Water Department                              | \$1,584           |
| Purchase of a H <sub>2</sub> O Jo Balloon                | City of Northglenn                                   | \$1,636           |
| Printing Final Documents and Fact Sheets                 | Rio Grande Conservation District                     | \$3,400           |

**Nonpoint Source Forum 2007**

The Nonpoint Source Forum 2007 “More than Brochures—Real Change” was held on September 6 and 7, 2006. The Forum was a one-day workshop presented by Doug McKenzie-

Mohr on community based social marketing. Because of demand, the workshop was repeated a second day.

**Watershed Conference: *Sustaining Colorado’s Watersheds: Making the Water Quality Connections***

About 300 people from all parts of Colorado, representing many different interests attended this conference. Attendance included individuals representing local watershed groups, scientist from many fields, federal, state and local agencies, several water conservation districts, water users associations, private industry, and environment groups. Several state representatives and Water Quality Control Commissioners also attended. Topics included *Balancing Water Quality, Quantity and Energy Development, Water Resources Challenges, Wildlife and Habitat, Understanding the Health of Colorado’s Water, Multi-System Impacts to water Resources, Protecting and Restoring Our Watersheds in a Changing West and Linking Land-Use and Water Quality.*

**VI. Federal Consistency**

Federal agencies manage or otherwise influence a significant portion of Colorado’s land area. In fact, nearly 37 percent of the surface land and water in the state is federally owned, largely in headwaters areas. Consequently, federal consistency with state water quality standards and programs is critical to achieving water quality goals in all river basins in the state.

The division periodically conducts federal lands management reviews to determine the following:

1. Is water quality addressed in the planning stage?
2. What best management practices were to be implemented?
3. Were they implemented properly?
4. Were the best management practices effective in reducing erosion or protecting the stream from nonpoint source pollution?
5. If not, what changes can be made to protect water quality?

Reviews of the U.S. Forest Service and the Bureau of Land Management offices originally scheduled for 2004 were rescheduled to federal fiscal year 2005, as noted below. 2005 completes a five-year cycle and the Division’s approach is under review to best utilize limited resources for both the state and the federal land management agencies.

**TABLE 5. FEDERAL CONSISTENCY REVIEW SCHEDULE**

| <b>Year</b> | <b>Forest Service/Bureau of Land Management Office</b>  | <b>Schedule</b>                    |
|-------------|---|------------------------------------|
| 2000        | Routt National Forest<br>San Juan Field Office  | Sept 25 – 26, 2000<br>June 6, 2001 |
| 2001        | Grand Mesa, Uncompahgre, and Gunnison National Forest<br>Grand Junction Field Office<br>Uncompahgre Field Office<br>Gunnison Field Office | July 24 – 25, 2001                 |

| <b>Year</b> | <b>Forest Service/Bureau of Land Management Office</b>   | <b>Schedule</b>  |
|-------------|--|--|
| 2002        | Arapaho-Roosevelt National Forest<br>Pawnee National Grasslands<br>Little Snake Field Office<br>White River Field Office<br>Kremmling Field Office               | August 12 – 15, 2002<br>August 12 – 15, 2002<br>August 5 – 8, 2002<br>August 5 – 8, 2002<br>August 5 – 8, 2002 |
| 2003        | Rio Grande National Forests<br>San Juan National Forests<br>La Jara Field Office<br>Saguache Field Office  | July 7 – 10, 2003<br>July 7 – 10, 2003<br>August 4 – 6, 2003<br>August 4 – 6, 2003                             |
| 2004        | White River National Forest<br>Pike and San Isabel National Forests<br>Comanche National Grasslands<br>Royal Gorge Field Office<br>Glenwood Springs Field Office | Spring 2005<br>November 8, 2004<br>November 9 – 10, 2005<br>November 9, 2004<br>July 12 – 13, 2005             |
| 2005        | Comanche National Grasslands   | 2005   |
| 2007        | Rocky Mountain National Park<br>Roan Plateau   | September 2007<br>September 2007   |

## **VII. Federal Agency Contributions to NPS Management in Colorado**

### **U.S. Bureau of Land Management**

#### **Water Resources Inventory and Monitoring (Sites)**

Approximately 880 units of inventory and 920 units of monitoring work were completed. These numbers appear high, but each water quality parameter (e.g. pH, specific conductance, metals, etc.) measured counts as one unit. At abandoned mine land sites, a whole suite of parameters is analyzed, but typically only a few parameters are collected at each site. Water resources inventory and monitoring occurs while staff is conducting proper functioning condition surveys or conducting watershed based land health assessments. A comprehensive seeps and springs inventory is occurring out of the San Juan Public Lands Center to ultimately determine if coal-bed methane development is de-watering seeps, springs or streams. The USGS is assisting with synoptic sampling.

Sixteen acres of soil survey work occurred in the Gunnison Gorge National Conservation Area (NCA).

#### **Lake/Wetland Inventory (acres) and Stream/Riparian Inventory (miles)**

The purpose of the inventory work is to determine aquatic system and/or fisheries habitat conditions and/or functionality. Field Offices utilize the *Proper Functioning Condition* guidance, and to a lesser degree, the Rosgen and Pfancuck guidance. Approximately 7,200 acres of wetland area inventories were completed. The purpose of the stream/riparian inventory is to collect data water quality, aquatic, fisheries or riparian habitat information to better understand these areas. Approximately 595 acres of riparian habitat were monitored.



### **Watershed-based Land Health Assessments**

Approximately 1.04 million acres were assessed for the five public land health standards: soils, water quality, riparian, plant and animal communities, and special status/threatened and endangered species. This is typically done by an interdisciplinary team of specialists. Most offices have analyzed at least half of their acreage and several are nearly done.

### **On-the-Ground Projects**

Approximately 1,000 feet of the San Miguel River near Placerville, CO was stabilized by installing Rosgen “J-hooks, armoring streambanks with a combination of rock, mulch and willow plugs. The river was cutting into the scenic highway.

Cooperative research efforts with the USGS are continuing in the Gunnison Gorge NCA and the Badger Wash watershed (near Mack, CO) to analyze vegetation, rainfall – runoff, erosion and the interactions of these processes on Mancos Shale landscapes. The focus in Badger Wash is grazing impacts and OHV use in the Gunnison Gorge NCA.

Soap Creek restoration project is continuing with Rosgen channel surveys, removal of grazing in the area and work with the local water users. Increases in water releases from upstream have affected channel stability.

Approximately 75 wetland/stream/riparian projects were completed. Activities include riparian exclosures, plantings, weed eradication, and reservoir improvements etc. Focus areas are: Government Creek, West Badger Creek, Rio Grande River (San Luis Valley), and the “6&50” reservoir in the Colorado Canyons NCA. Russian knapweed, tamarisk and houndstongue are problematic along some stream reaches and approximately 85 miles were treated for control and eradication.

Abandoned mine land clean up and monitoring efforts are focused in the Lake Fork of the Gunnison, Lake Fork of the Arkansas and upper Animas watersheds.

Road maintenance, road relocation out of Ford Creek (San Luis Valley) riparian area, 2 bridge construction projects, culvert replacements, recreation site improvements, and construction of 2 boat launches have direct water quality benefits.

### **U.S. Department of Agriculture Forest Service**

The general approach to nonpoint source pollutant management for the Rocky Mountain Region of the USDA Forest Service, which includes all National Forest System lands in Colorado, is found in Chapter 20 of the Watershed Conservation Practices Handbook (FSH 2509.25-2006-3). This chapter outlines a nonpoint source management strategy to apply Watershed Conservation Practices (i.e. Best Management Practices) when implementing all land management projects, monitor implementation and effectiveness of those practices, and adjust those practices where monitoring shows concerns about the effectiveness of the practice. National Forests in Colorado use these Watershed Conservation Practices and Forest Plan standards and guidelines to ensure that State water quality standards are met and classified uses of water are protected when projects are designed and implemented on the ground. National Forest staff conducts

formal and informal monitoring of these practices and adjust them as necessary, per the nonpoint source management strategy.

USDA Forest Service also has direction in a number of program areas to restore watersheds to reduce or prevent additional nonpoint source pollution.

### **Burned Area Emergency Rehabilitation**

The purpose of this program is to alleviate emergency conditions following wildfire to help stabilize soil; to control water, sediment and debris movement; to prevent permanent impairment of ecosystem structure and function; and to mitigate significant threats to health, safety, life, property or downstream values. In 2006, there were no fires on National Forest System (NFS) lands in Colorado that required BAER treatments. However, National Forests spent \$44,400 to continue work on fire areas that burned in the previous three years, including continued work on the Overland, Campbell, Craig Draw and McGruder Fires. Treatments include seeding, mulching, upslope treatments such as log and/or straw erosion barriers, road reconstruction, drainage structure improvements, noxious weed treatments, and emergency warning systems. A total of 5,360 acres were treated in 2006.

### **Watershed Restoration**

The purpose of this program is to improve watershed conditions using upland and instream treatments. Possible projects include road improvements such as correction of cut or fill slope failures, scarification of compaction on upland areas (old skid trails, for example), reclamation of old gravel quarries, etc. National Forests in Colorado reported accomplishments of about 5,300 acres of soil and water improvements in 2006.

### **Road Maintenance**

The regular road maintenance program includes inventory for maintenance needs, actual maintenance of roads to improve travel-ability and reduce resource damage, and road decommissioning. Road decommissioning activity encompasses a range from posting a sign or installing a gate to close a road to public use to “storm-proofing” a road by pulling drainage structures to road obliteration including scarification and seeding of the road surface or actually re-contouring the slope to eliminate the road prism. National Forests in Colorado reported accomplishments of about 5,347 miles of road maintenance and another 165 miles of road decommissioning in 2006.

### **Road and Trail Deposit Fund**

A portion of the receipts generated from activities (timber sales, special use permit fees, etc.) on National Forest lands are redistributed back to the National Forests to be used for restoration projects to reduce erosion and sediment from roads and trails, improve passage of aquatic organisms at crossings and improve forest health. In 2006, National Forests in Colorado used approximately \$814,200 in these funds, combined with \$859,100 from various partners, to repair roads and trails, recreational facilities, and stream crossings; decommission roads; and general watershed protection and restoration activities.

### **Abandoned Mine Program**

National Forests in Colorado initiated and/or completed restoration work on 7 abandoned mines projects in 2006. This work consisted primarily of work around 124 features including 35 old

mine shafts and adits and 2 structures. While much of this work was for human health and safety, some was focused on reducing acid mine drainage and sediment delivery to nearby stream channels.

**U.S. Department of Agriculture NRCS**

Most NRCS resource issues have a positive impact on water quality, directly or indirectly. For example, the grazing land improvements promote better range land health which typically reduces excess surface runoff with a potential improvement to water quality due to reduced sediments and organics carried into the surface waters. Wildlife habitat, riparian management, and forest management will often have a similar effect. Soil erosion control reduces sediments and the sediment carried nutrients, organics, etc. to surface waters. The Ground and Surface Water program focuses on reducing net water use, which can also have a positive impact to water quality due to less deep percolation.

Table 6. Environmental Quality Improvement Program

| <b>FY 07 EQIP Total Funds by resource issue for approved applications.</b> |                     |
|--|---------------------|
| Water Quality / Quantity   | \$8,433,338         |
| Grazing Land   | 6,867,064           |
| Wildlife / Riparian Corridor   | 313,935             |
| Soil Management  | 454,881             |
| CNMP   | 2,180,752           |
| Forestry   | 30,006              |
| Ground and Surface Water   | 637,353             |
| Salinity Control   | 2,672,861           |
| Invasive Species Control   | 6,112,707           |
| Waste Management   | 675,495             |
| Acequias   | 92,210              |
|  | 68,432              |
| <b>Total</b>   | <b>\$30,867,111</b> |

**U.S. Geological Survey**

The U.S. Geological Survey’s (USGS) mission is not to protect water quality; however, the USGS provides data and information that can help others protect water quality. The USGS provides reliable scientific information to describe and understand the earth, which helps others manage water, energy, mineral and biological resources. Some of the scientific information from the USGS could be used to identify impaired streams or ground-water resources. Some of the scientific information from the USGS could be used to evaluate the success of nonpoint source projects or even parts of the Colorado Nonpoint Source Program. The following are three examples of USGS work that can be used to evaluate the success of nonpoint source projects or the Colorado Nonpoint Source Program:

- 1) USGS long-term data-collection sites downstream from on-the-ground nonpoint source projects. Site locations and site data are available online from the *Directory of Project Information and Data Collection Sites* at <http://co.water.usgs.gov/>.

- 2) USGS projects designed specifically to monitor and evaluate on-the-ground nonpoint source projects, such as the USGS Grand Valley projects (described in USGS Fact Sheet FS-159-97 by Butler and USGS WRIR 01-4204 by Butler). Project areas, site locations and site data are available online from the *Directory of Project Information and Data Collection Sites* at <http://co.water.usgs.gov>
- 3) National or regional USGS projects that include water quality trend analyses, such as the USGS National Water Quality Assessment Program, South Platte Study Unit (e.g., USGS Fact Sheet FS-153-95 by Heiny).

### **USGS Activities Relevant to Nonpoint Source Pollution**

1. design water quality studies
2. develop methods for water-resources investigations
3. develop and refine analytical methods and sampling procedures
4. develop and update water quality models
5. model hydrologic and water quality responses of flow systems
6. monitor water quality and changes in water quality
7. compile and evaluate retrospective water quality data sets
8. provide water quality and hydrologic data to interested parties
9. provide water quality expertise to organizations and groups
10. characterize water quality of streams, lakes and groundwater
11. characterize hydrologic conditions, including local or statewide trends
12. determine water quantity in order to calculate constituent loads in streams
13. evaluate stream morphology and sediment transport
14. identify pollution sources
15. study fate and transport of compounds and pollutants
16. evaluate effects from events (such as wildfire) or change (such as urbanization) on water quality
17. perform research related to water quality issues

## Recent Relevant USGS References Available Online

<http://co.water.usgs.gov/Pubs/index.html>

### 1. Fact Sheets

Fact Sheet 2005-3143

Sustainability of Ground-Water Resources in the Upper Arkansas River Basin between Buena Vista and Salida, Colorado, 2000–2003

By K.R. Watts

Fact Sheet 2005-3037

The Cache la Poudre River, Colorado, as a Drinking-Water Source

By Jim A. Collins and Lori A. Sprague

Fact Sheet 2005-3031

Simulated Effects of the Proposed Sulphur Gulch Reservoir Operations on Colorado River Quantity and Quality

By M.J. Friedel

### 2. Data Series

DS152

Water-quality, streamflow, and ancillary data for nutrients in streams and rivers across the Nation, 1992-2001

By D.K. Mueller and N.E. Spahr

### 3. Investigations Series

*SIR 06-5109*

A Preliminary Evaluation of Vertical Separation between Production Intervals of Coalbed-Methane Wells and Water-Supply Wells in the Raton Basin, Huerfano and Las Animas Counties, Colorado, 1999-2004, By Kenneth R. Watts

*SIR 06-5101A*

Effects of Urbanization on Stream Ecosystems in the South Platte River Basin, Colorado and Wyoming, By Lori A. Sprague, Robert E. Zuellig, and Jean A. Dupree

*SIR 06-5050*

Vulnerability of Recently Recharged Ground Water in the High Plains Aquifer to Nitrate Contamination, By Jason J. Gurdak and Sharon L. Qi

*SIR 06-5012*

County-Level Estimates of Nutrient Inputs to the Land Surface of the Conterminous United States, 1982-2001, By Barbara C. Ruddy, David L. Lorenz, and David K. Mueller

*SIR 05-5236*

*SIR 05-5214*

Surface Water-Quality and Water-Quantity Data from Selected Urban Runoff-Monitoring Sites at the Rocky Mountain Arsenal, Commerce City, Colorado, Water Years 1988–2004, By John D. Gordon, Donald E. Schild, Joseph P. Capesius, and Cecil B. Slaughter

*SIR 05-5179*

Hydrogeology and Quality of Ground Water in the Upper Arkansas River Basin from Buena Vista to Salida, Colorado, 2000-2003, By Kenneth R. Watts

*SIR 05-5174*

Historical Perspective of Statewide Streamflows During the 2002 and 1977 Droughts in Colorado, By Gerhard Kuhn

*SIR 05-5167*

Effects of Emission Reductions at the Hayden Powerplant on Precipitation, Snowpack, and Surface-Water Chemistry in the Mount Zirkel Wilderness Area, Colorado, 1995-2003, By M. Alisa Mast, Donald H. Campbell, and George P. Ingersoll



**Appendix A:**  
**Target Basin Rotation Schedule**

# Nonpoint Source Management Area - Target Basin Rotation Schedule

Years

Legend:

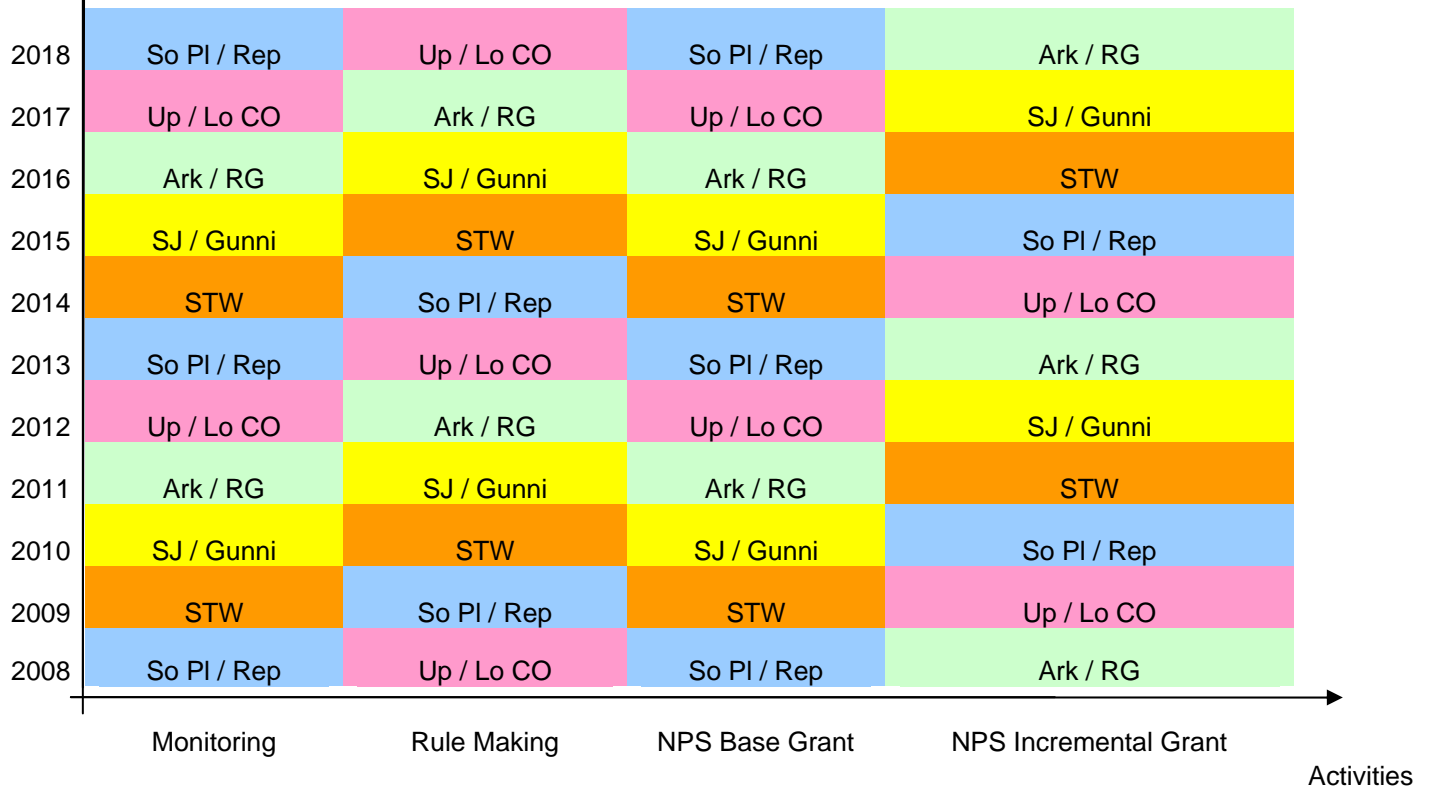
Arkansas/Rio Grande Basins =

Upper/Lower Colorado Basins =

San Juan/Gunnison Basins =

S. Platte/Republican Basins =

Statewide/Flexible =



## **Appendix B**

### **Priority Watersheds: Integrating TMDLs and NPS Activities**

## Priority Watersheds: Integrating TMDLs and NPS Activities

The following is the list of priority watersheds. They are grouped by WQCC regulation basins. Each impaired segment has been identified according to Regulation #93 impairment and there is also a short description of the Nonpoint Source Management Area potential or current contribution to the restoration of the impairment.

### Arkansas River Basin

*Upper Arkansas R.:* NPSMA contribution: there is a watershed restoration plan being developed for this area, with a potential to prioritize restoration projects. The following segments will be incorporated as priorities in the watershed plan. This could potentially result in incremental money supporting restoration work. These segments are the California Gulch to Lake Fork, Lake Fork to Lake Creek and Lake Creek to Pueblo Reservoir.

303(d) listed segments: COARUA02b (Cd and Zn), COARUA02c (Zn), COARUA03 (Zn)

*Lower Arkansas R.:* NPSMA contribution: there are several projects being implemented in this area – a watershed plan, a large source identification and quantification study and model development with the collaboration of Colorado State University and projects in conjunction with the Southeast Conservation District. This segment goes from John Martin Reservoir to the Kansas stateline.

303(d) listed segment: COARLA01c (Se)

*Purgatoire River:* NPSMA contribution: this is an area with potential for restoration projects, but there is a need to develop a watershed restoration plan. This segment is from I-25 to the Arkansas River.

303(d) listed segment: COARLA07 (Se)

### Gunnison River Basin

*Uncompahgre River:* NPSMA contribution: currently, there is a 319 restoration project that is starting to address some of the Selenium loading into the Gunnison River. Selenium loading in surface waters is of concern in some areas of the state and the solution will require coordinated efforts and a statewide strategy. These segments include the Uncompahgre Valley below Montrose.

303(d) listed segments: COGUUN04b, COGUUN04c (Se)

*Upper Gunnison River:* NPSMA contribution: there is a watershed restoration plan being developed for this area, with a potential to prioritize restoration projects. The following segment will be incorporated as priority in the watershed plan. This could potentially result in incremental money supporting restoration work. This segment is the Palmetto Gulch.

303(d) listed segment: COGUUG31 (Cd, Zn)

### Rio Grande

*Kerber Creek:* NPSMA contribution: there is a watershed restoration plan for this watershed, but it needs updating. High potential to identify and implement appropriate reclamation activities. These segments include Kerber Creek and almost all tributaries.

303(d) listed segments: CORGCB09a (Ag, Cd, Pb, pH), CORGCB09b (Cd, Cu, Zn)

### San Juan River

*Dolores River:* NPSMA contribution: this is an area with potential for restoration projects, but there is a need to develop a watershed restoration plan. This segment is the Silver Creek below the town of Rico.

303(d) listed segment: COSJDO09 (Zn)

*Mancos River:* NPSMA contribution: there is a watershed restoration plan being developed for this area, with a potential to prioritize restoration projects. The following segment will be incorporated as priority in the watershed plan. This could potentially result in incremental money supporting implementation and restoration work. This segment includes the Mancos River and tributaries above Hwy 160.

303(d) listed segment: COSJLP04 (Cu)

### South Platte River

*Boulder Creek:* NPSMA contribution: this is an area with potential for restoration projects, but there is a need to develop a watershed restoration plan. These segments are Coal Creek and Gamble Gulch.

303(d) listed segments: COSPBO07b (E. coli), COSPBO04a ((Cu, Zn, pH)

*Clear Creek:* NPSMA contribution: the watershed restoration plan has been developed. High potential to support restoration work.

303(d) listed segments: COSPCL02, COSPCL03a, COSPCL03b, COSPCL06, COSPCL09a, COSPCL09b, COSPCL11 (metals)

*Saint Vrain River:* NPSMA contribution: past work with a local entity, need to develop a watershed restoration plan. This could potentially result in incremental money supporting restoration work. This segment is the Left Hand Creek.

303(d) listed segment: COSPSV04a (metals and pH)

*Upper South Platte:* NPSMA contribution: this is an area with potential for restoration projects; existing watershed restoration plan.

303(d) listed segments: COSPUS02a (sediment)

### Upper Colorado River

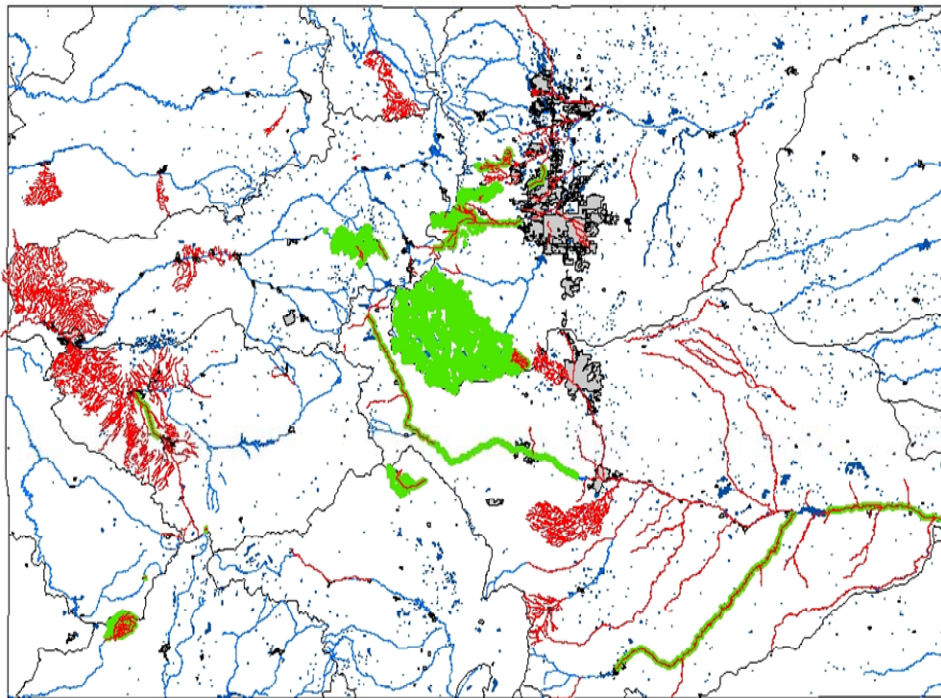
*Peru Creek:* NPSMA contribution: this is an area with potential for restoration projects, but there is a need to develop a watershed restoration plan. This segment is the Peru Creek to the Snake River.

303(d) listed segment: COUCBL07 (metals)

*Eagle River:* NPSMA contribution: this is an area with potential for restoration projects, but there is a need to develop a watershed restoration plan. This segment is from Belden to Lake Creek and some tributaries.

303(d) listed segment: COUCEA06 (sediment)

# Priority Watersheds: Integrating TMDL and NPS efforts



## **Appendix C**

### **Project Proposal Process for 2007**

FY 2007 Nonpoint Source Grant Proposal Scoring Criteria

|  | Below Expectations | Meets Expectations | Exceeds Expectations |
|--|--------------------|--------------------|----------------------|
| <p><b>1. Problem Statement:</b><br/>           What is the water quality problem? Is it a listed problem on the 303(d) list? For on-the-ground projects, the proposal should document the problem, using relevant data, both in the watershed and at the site of the proposed work.</p> <p>For information/education projects, the proposal should identify the target audience, its need for the information or education and the information or education gap or program need or requirement that will be filled by the project.</p>   |                    |                    |                      |
| <p><b>2. Meet Colorado NPS Program Goals:</b><br/>           Do the problem and the proposed project address one or more goals and objectives identified in the Colorado Nonpoint Source Management Program?</p>   |                    |                    |                      |
| <p><b>3. Conceptual Approach:</b><br/>           How is the water quality problem going to be addressed? What is the goal of the project? Is the project-approach concept in the proposal appropriate for the water quality problem, in that particular watershed, at that particular site? Will this project result in improved water quality?</p> <p>For information or education projects, define how the target audience will be reached and why this approach can succeed.</p>  |                    |                    |                      |
| <p><b>4. Technical Approach:</b><br/>           What is the technical approach that will be used? Is the technical approach sound relative to aspects of engineering, ecology, communications, etc., whichever are applicable? Are the tasks relevant? Is there an expectation the approach will result in changes to benefit water quality?</p> <p>For information or education projects, what is the approach that will be used? Is the proposed approach sound relative to aspects of communication? Are the tasks relevant? Is there an expectation the approach will result in behavior changes to benefit water quality?</p> |                    |                    |                      |



|  | <b>Below<br/>Expectations</b> | <b>Meets<br/>Expectations</b> | <b>Exceeds<br/>Expectations</b> |
|--|-------------------------------|-------------------------------|---------------------------------|
| <p><b>5. Sustainability:</b><br/>How long will the water quality improvements gained by this project last? Will this project produce lasting, positive improvements to water quality or public attitudes? Will this project be self-sustaining after this grant, i.e., is the sponsor willing to continue this effort after the end of the project? Is there recognition of life after the project?</p> <p>Can the water quality improvements or other success measures achieved by this project be sustained (10 plus years)? Is there a commitment to maintain the best management practices implemented in this project? Have long-term funding plans been developed for the operation and maintenance and monitoring of restoration activities or best management practices implementation?</p> <p>For information or education projects, what is the life expectancy of the project (how long will the information/education effect last) versus how long it is needed to last? If needed, will the outreach/education activities be continued after the funding period ends?</p> |                               |                               |                                 |
| <p><b>6. Partnerships:</b><br/>Is there evidence of appropriate partnerships and degree of commitment, both now and into the future? Are resources leveraged effectively to accomplish the project (people, money, equipment, etc.)?</p> <p>For information or education projects, identify existing efforts and how they will be leveraged or how this effort complements them.</p>   |                               |                               |                                 |
| <p><b>7. Evaluation:</b><br/>Does the proposal have measurable goals and objectives? Does the proposal include an appropriate plan or strategy for evaluating the success of the project, to determine if the project goals and objectives have been met?</p> <p><i>(Note: There can be a difference between evaluating success of the project and measuring water quality improvements; it may be appropriate for a project to do both.)</i></p>  |                               |                               |                                 |

|   | <b>Below<br/>Expectations</b> | <b>Meets<br/>Expectations</b> | <b>Exceeds<br/>Expectations</b> |
|---|-------------------------------|-------------------------------|---------------------------------|
| <p><b>8. Monitoring:</b> <i>Note: this criterion will be used as a tiebreaker, if necessary.</i></p> <p>How will the project show that it has improved or protected water quality from nonpoint sources?</p> <p>For information or education projects, how will the project demonstrate increased knowledge, skills or behavioral changes in the target audience that are connected to improving water quality?</p> |                               |                               |                                 |
| <p><b>9. Funding:</b></p> <p>Is the budget appropriate for the project? Are nonpoint source funds the best source of funding for this project?</p>  |                               |                               |                                 |
| <p><b>10. Match:</b></p> <p>Is the proper amount and type of match identified? Does the project leverage the NPS funds with matching funds? Is the project overmatched?</p>   |                               |                               |                                 |

## **Appendix D**

### **Projects Approved for Funding in 2007**

| <b>Project Title</b>                                  | <b>Sponsor/Contractor</b>                     | <b>Project Purpose</b>   | <b>Grant Awarded</b> |
|---|---|--|----------------------|
| Porphyry Mountain Mine Waste Restoration              | Lefthand watershed Oversight Group            | Restoration - TMDL implementation  | \$57,750             |
| Massey-Draw Post-Construction BMP Effectiveness       | Chatfield Watershed Authority                 | BMP implementation design, WQ assessment, restoration                    | \$15,750             |
| South Platte Habitat Restoration at Happy Meadows     | Coalition for Upper South Platte              | Restoration  | \$250,000            |
| E. coli BMPs for AFOs in the South Platte River Basin | Colorado State University                     | BMP implementation, design   | \$141,034            |
| Trail Creek Orphanage Remediation                     | Clear Creek Watershed Foundation              | BMP implementation design, WQ assessment, restoration                    | \$290,400            |
| Outreach Mini-grants                                  | CDPHE-WQCD and various entities               | Small grants (up to \$5,000) for outreach or watershed start-up projects | \$25,000             |
| Dolores River Watershed Plan                          | Dolores Water Conservancy District            | Watershed assessment   | \$25,000             |
| Mancos Valley Watershed Project                       | Mancos Conservation District                  | Watershed assessment, planning   | \$25,000             |
| Snake River Watershed Plan                            | Blue River Watershed Group                    | Watershed assessment   | \$25,000             |
| Coal Creek Watershed Plan Implementation              | Town of Crested Butte                         | Restoration, protection, assessment                                      | \$68,932             |
| Lake Fork Watershed Plan Development                  | Colorado Mountain College natural Resources   | Watershed assessment   | \$25,000             |
| AWARE Colorado (continuation)                         | League of Women Voters                        | Education / Information  | \$182,250            |
| Understanding Polluted Runoff School Program          | Colorado Foundation for Agriculture           | Education / Information  | \$202,500            |
| Alamosa River Restoration                             | San Luis Valley Resource Conservation         | Restoration / BMPs   | \$396,000            |
| Dinero Tunnel Bulkhead Project                        | Colorado Division of Reclamation, Mine Safety | BMP implementation / design  | \$96,000             |

