

New Mexico Environment Department
Surface Water Quality Bureau

Watershed Protection Section
Clean Water Act
§319(h) Projects

1998 – 2008

Watershed Protection Section Projects 1998 - 2008

Watershed Protection Section Projects 1998

98-B Federal Consistency: Southern Forests

\$311,583 (Federal) \$215,177 (Match) \$526,760 (Total)

Project status: Completed

OBJECTIVE(S): To ensure federal projects are consistent with New Mexico water quality goals and standards. Proactive participation within the Integrated Resource Management process facilitates interagency communication/cooperation, promotes use of Best Management Practices (BMPs), and ensures that water quality issues receive a comprehensive evaluation. Confirmation activities include reviewing National Environmental Policy Act documents such as scoping letters, environmental assessments, and environmental impact statements to see that BMPs and/or mitigation measures are included, adequate, and applied appropriately. Field inspections serve as a visual confirmation for BMP implementation, support technology transfer, and promote interagency communication. National Forests represent a relatively small percentage of total land area in New Mexico. However these holdings include the headwaters of intrastate streams, many interstate streams, and a disproportionate number of New Mexico's highest quality waters.

98-C Naschitti NPS Range Project

\$36,000 (Federal) \$14,400 (Match In-Kind \$14,400) \$50,400 (Total)

Project status: Completed

OBJECTIVE(S): The objectives of the project are to reduce NPS erosion at the headwaters of Coyote Wash from 62.5 tons/acre/yr to 1.7 tons/acre/yr to reduce silt and salinity discharges into the Chaco River.

Objective 1: Establish 47 miles of fence around 5 Range Management Units (RMUs) of 30, 353 acres to control livestock trespass problems and facilitate proper management of the rangeland.

Objective 2: Develop range management conservation plans with five families involved in this project to educate them about proper range management techniques.

Objective 3: Increase range cover from the current 5-10% or more through implementation of the range management conservation plans.

Objective 4: Establish information and Education Program through outreach efforts to schools and Reservation Chapters by conducting field tours and begin the filming of a documentary chronicling the range improvement over time.

The NRCS will do the range monitoring and documentation of vegetative improvement on a semi-annual basis through photos and video. This photographic documentation of vegetative establishment and improvement will be the measure of water quality improvement. The Fort Defiance SWCD and the Navajo RC&D will be conducting annual range tours of the project area for Navajo community leaders, Council Delegates, Ranchers, and School Children. The level of participation in the tours would also be a measure of the projects success.

98-D Rio Ruidoso Watershed Restoration Project

\$198,058 (Federal) \$240,423 (Match) \$438,481 (Total)

Project status: Completed

OBJECTIVE(S): Restore the Rio Ruidoso watershed to a properly functioning condition and to generate widespread public awareness, support, and participation in the project. The project began with a once healthy, pristine, and vibrant river flowing through a picturesque mountain village that had found its way onto the State of New Mexico's 303(d) list of degraded waterways due, technically speaking, to turbidity and nuisance algae, but in reality due to apathy, neglect, and abuse. The project ends in a complete turnabout, with inhabitants of the whole village and surrounding watershed enthusiastically rallying around the project, endorsing the river as the area's irreplaceable golden goose, and eagerly looking forward to achieving and maintaining its restoration. In fact, the project's program manager was named Ruidoso's "Citizen of the Year" in 2000 solely for his efforts with this project.

98-E Bonito Lake Critical Area Treatment

\$ 47,500 (Federal) \$ 27,750 (Match) \$ 75,250 (Total)

Project status: Cancelled by applicant; \$4,790 federal dollars spent.

OBJECTIVE(S): Reduce soil erosion & vegetation degradation & subsequent water quality problems along 700 feet of shore line of Bonito Lake by 1) installing 10 major bank stabilization structures in severely eroded drainage and 2) by installing 4 sets of metal stairs & 700 feet of trails to provide safe egress & ingress to the lake.

This project was terminated in 2002 after \$4,790 of federal funds was spent in 1998 by the City of Alamogordo for supplies for revetments. The City of Alamogordo lost interest and did not support staff with time and in-kind funding for labor and equipment to complete the project.

98-F Southern New Mexico Agri-Chemical Handling Facility

\$25,000 (Federal) \$ 16,667 (Match: In-Kind) \$ 41,667 (Total)

Project status: \Completed

OBJECTIVE(S): This project addressed one of our water quality concerns through the dissemination of information about Agrichemical Handling Facilities (ACHFs) to agricultural chemical users. This demonstration project showed off the amenities of an AHF and how it minimizes the potential for a chemical spill or accident. The ACHF primarily consisted of the following 5 goals and objectives: 1. Develop an information packet for the Ag-Chemical Handling Facility, 2. Select two cooperators and design facilities to meet their needs, 3. Accomplish an ACHF survey, 4. Design an Information Program and provide field trips for promotion, 5. Build the facilities and write the final report.

The ACHF has been a tremendous success as it has met or exceeded all set goals. The concept has proven to be affective and practical. The facilities have been accepted as a best management practice by all who have seen them. The original survey that was planned was accomplished by means of our numerous presentations with more to come in 2003. We are reaching many more people through the avenue of personal displays going to where our prospective cooperators are and bringing the information to them. Both ACHF's built have been put to use continually since their inception and both are being upgraded as time goes by to adjust to any unforeseen problems or circumstances. As our promotion continues, we have utmost confidence this new farming tool will be a common practice in the Mesilla Valley in the future.

98-G Jarosa/Rio Puerco Riparian-Rangeland Improvement Project

\$129,645 (Federal) \$61,680 (Match In-Kind \$61,680) \$191,325 (Total)

Project status: Closed

OBJECTIVE(S): The objectives are to improve water quality in the Ro Puerco de Chama, Jarosa Creek, and the Rito Redondo; restore naturally stable hydrologic functions in these streams by improving riparian vegetative cover; reduce the amount of sediment entering the Rio Puerco de Chama, Jarosa Creek, and Rito Redondo by improving livestock management on the Jarosa Grazing Allotment (23,102 acres of National Forest); improve livestock management by developing a deferred rotation system; manage fenced riparian areas by grazing in a more intensive, shorter duration manner than currently occurs. Improved livestock management will increase herbaceous cover over the entire allotment and especially in riparian areas.

98-H Upper Pecos Watershed Restoration and Stewardship Project

\$ 143,609 (Federal) \$ 93,724.27 (Match) \$ 237,333.27 (Total)

This project was successfully completed in December 2003.

OBJECTIVE(S): To reduce erosion and siltation in the Upper Pecos River and its tributaries through the use of Best Management Practices (BMPs). To improve wetland, riparian and fisheries habitat through the exclusion of cattle and planting of riparian vegetation. To provide outreach on watershed management through demonstration projects, publications, presentations, educational workshops, field day and tours.

The project's objectives include teaching the landowners how to prevent erosion, and stabilize river banks on private property. This included survey of the riparian populations and historic channelization in the river or tributaries. Project manager, Tierra Y Montes Soil and Water Conservation District were able to contact several landowners, who in turn talked with their neighbors, who participated in the project. During the life of this proposal, a wildfire started in the Santa Fe National Forest, and through timely assistance working with private landowners severe erosion was lessened on the Cow and Bull Creek areas. A brochure was produced in response to the work done post-fire.

This project included an upland watershed demonstration of different types of structures to slow runoff during storm events in a drought situation. The District involved students from the local public schools to help construct the structures and to observe the results, (where sediment was held back) and to use them at their own property. This resulted in further upland watershed work in the public school property including water conservation techniques.

The Pecos National Historic Park Service was a part of this project. The Glorieta Creek runs through the Park area and had been severely impacted by gravel operations during the construction of Interstate 25. The creek was rehabilitated, reshaping the site to create a native wetland-riparian system.

98-I Rio Puerco Riparian Demonstration Project

\$20,000 (federal) \$ 17,000 Match Total: \$ 37,000

OBJECTIVE(S): The Forest Guardians, in cooperation with Southwest Environmental Center, targeted this reach of the Rio Puerco (where they control State Land Office leases) for reduction of sediment as a result of improved riparian habitat, through livestock exclusion and planting native riparian plants. They will implement public education through school contact and news media stories addressing the importance of healthy functioning riparian areas

**98-J Establishing Empirical Tools for Assessment of Natural Channels in New Mexico,
Northern Arizona University**

\$60,000 (federal)

Project status: Completed

OBJECTIVE(S): The objectives of this project are to develop empirical tools to aid managers, landowners and technicians in the field assessment of stream channel function and bank stability. There are two distinct components. First, defining regional relationships for bankfull discharge for the State of New Mexico. The second component is the establishment of an empirical, predictive model for stream bank erosion.

98-K Upper Gila River Fluvial Geomorphology Study

\$ 500,000 (Federal) \$333,333 (Match: In-Kind NMED) \$833,333 (Total)

Project status: Completed

OBJECTIVE(S): The goal of this study was to diagnose the fluvial geomorphologic attributes of the Upper Gila River. These attributes are a function of the physical processes at work in the stream corridor. The stream corridor includes the mainstem of the Gila River at flood stage and the associated riparian area, as well as tributaries within the valley of the mainstem. The purpose of the study was to increase the awareness of these processes enabling improved local, state, and federal management of the stream corridor. The study included background information gathering, field data collection, photographic analyses, and a variety of topographic, geomorphic, hydraulic, and hydrologic analyses.

The study recommended four management goals relevant to fluvial geomorphologic processes:

1. Do not overly constrain the river width for flood control purposes
2. Modify flood control practices to insure that the river is re-attached to its floodplain
3. Do not interfere with the direction of flows in the flood channel and,
4. Continue to inform the public on the fluvial processes that drive the river form.

98-L Gila Forum

\$33,000 (Federal) \$13,200 (Match) \$46,200 (Total)

Project status: Completed

OBJECTIVE(S): The project was interested in developing local partnerships and sharing knowledge that would lead to collaborative efforts to maintain and enhance the physical, chemical and biological integrity of the Gila River watershed. The project sought to assist a locally led holistic watershed management group as a non-profit entity with 501-c3 status. This entity would develop partnerships with local businesses, private landowners, universities, local industries, federal, state and local governments. Specific to the objective, the tasks included-

1. Conduct seminars and workshops,
2. Establish 501c (3) status,
3. Develop partnerships and diversification of membership,
4. Secure funding sources for future projects,
5. Develop at least one research project sponsored and funded in part by a university,
6. Web page development for Upper Gila Watershed Alliance (UGWA),
7. Develop revenue sources for the forum,
8. Secure 3 grants during the contract term.

Watershed Protection Section Projects 1999

99-A West Fork Natural Revetment and Bioengineering Demonstration Project

\$ 94,700 (Federal) \$90,000 (Match: In-Kind NMDOT) \$184,700 (Total)

Project status: Withdrawn or cancelled

OBJECTIVE(S): This Project is intended to address non-point source pollution derived from channel instability, accelerated erosion of cutbanks, and reduced filtering capacity due to lack of riparian/wetland vegetation. This project will also address loss of habitat, lack of habitat diversity, and reduce the threat of flooding and erosion along State Highway 15, which is adjacent to the river. The objectives for this project as expressed by stakeholders are for 1) improved highway safety and lower maintenance costs, 2) reliable motorized access to the Gila Cliff Dwellings National Monument, 3) habitat maintenance and improvement for aquatic and terrestrial riparian species, 4) water quality improvements, and 5) protection of scenic and recreational resources. The purpose of the West Fork project is to address stakeholder needs with a hydro-modification and erosion control project founded in natural stability concepts.

99-B Picacho Bosque Wetland Restoration

\$7,500.00 (Federal) \$14,000 (Match) \$21,500 (Total)

Project status: Completed

OBJECTIVE(S): The Picacho Bosque Wetland Project was intended to reduce sediment loading, salinity, sulfates, chlorides, total dissolved solids, phosphorous, nitrogen and organic pollutants in a drain return flow to the Rio Grande. A series of wetland ponds were constructed as a filtering structure where salt cedar was eradicated, native vegetation was reestablished, and cottonwoods/willow poles were introduced. Providing wetlands will assist in buffering damaging flood events by storing over bank flows, control erosion by reducing water velocities and dispersing wave energy and increasing groundwater recharge. By utilizing these techniques they expect to reduce flood costs, clean downstream waters and improve water quality for recreation. The project encompasses approximately 55 acres near the Rio Grande.

The Picacho Bosque Wetlands Project directly contributes to the reduction of an existing pollution problem by use of best management practices (BMPs) addressing multiple environmental concerns including non-point source pollution of sediment and organic pollutants, saline waters, vegetation and wildlife management and advance the understanding of a critical riparian systems in the southwest.

Cooperators included but were not limited to: Southwest Environmental Center (SWEC), Environmental Protection Agency (EPA), Elephant Butte Irrigation District (EBID), Bureau of Reclamation (BOR), New Mexico Game and Fish (NMGF), Natural Resource Conservation Service (USDA/NRCS), International Border and Water Commission (IBWC), New Mexico State University (NMSU), Surface Water Quality Bureau (MMED/SWQB) and others such as- Dona Ana Community College, Las Cruces Public School System, Mesilla Valley Economic Development Alliance and Southwest Consolidated Sportsmen's Club.

99-C Lower Rio Grande Precision Farming

\$100,000 (Federal) \$166,500 (Match: In-Kind) \$266,500 (Total)

Project status: completed

OBJECTIVE(S): The project will integrate a geographic information system (GIS), the global positioning system (GPS), farm management computer software, electronic irrigation water measurement devices, in-field soil moisture measurement devices with radio telemetry, weekly color infrared aerial photography, both historic

and current Thematic Mapper (TM) satellite images, and the Natural Resources Conservation Service's Holistic Irrigation Technology program

99-D Gallinas Watershed Stewardship Enhancement Project

\$90,000 (Federal) \$60,634 (Match) \$150,634 (Total)

Project was completed in October 2004.

OBJECTIVE(S): To improve water quality by reducing erosion and siltation through the use of Best Management Practices (BMPs). To improve wetland, riparian and fisheries habitat through the exclusion of cattle and planting of riparian vegetation. To provide educational outreach on watershed management through demonstration projects, publications, presentations, educational workshops and tours. To work with local governments, upgrading regulations.

This project worked with private landowners, city and county properties. Most of the project used BMPs to reduce bank instability, and increase riparian habitat, which resulted in improved water quality and fisheries.

A demonstration project that was successful involved returning the existing channel of the Gallinas River to the valley bottom. The river had been incising and eroding, and through consultation has resulted in an improved habitat. Another demonstration project involving the City of Las Vegas was in a very heavily used section of the river near the "skating pond". Vehicular access to the bank of the creek was removed, riparian habitat recovered, and structures were added to encourage meander and ponds, to slow the velocity in this section. Many landowners participated in this project, and numerous presentations involved school age and adult groups.

99-E Rio Vallecitos Watershed Project

\$47,775 (Federal) \$19,110 (Match: In-Kind \$19,110) \$66,885 (Total)

Project status: Completed

OBJECTIVE(S): The objectives of the project are to:

- a. Reduce the heavy metals associated with local abandoned mines in the area.
- b. Increase canopy cover and decrease water temperature for high water quality fisheries.
- c. Increase riparian canopy cover and vegetative cover while reducing silt and turbidity from bank destabilization practices.
- d. Write a Range Management Plan for reducing grazing activities along riparian environments.

Completed Best Management Practices included:
Six spring re-habilitated sites on 3 allotment units
500 acres of sage removal
500 acres reseeding

The six spring improvements will prevent surface water contamination by fencing off the spring sites and pumping water by gravity flow to trough systems. Furthermore, by improving spring systems wildlife and livestock will refrain from congregating in the Rio Vallecitos riparian zones, this will help in reducing water temperature with an increase in foliage cover in the riparian zones. Wildlife and livestock will have

The Alamosa allotment was improved by eradicating 500 acres of sage, by using a brush hog unit with a tractor pull system. The area was re-seeded with native grass seed using a broadcast system. This will help in stabilizing soil and sediment on site and will reduce the amount of sediment entering the Rio Vallecitos watershed. The grass will act as a filtering system and will hold soils in place by root introduction.

99-F Taylor & Beaver Creek Riparian Restoration Project

\$36,000 (Federal) \$ 0 (Match) \$ 36,000 (Total)

Project status: **cancelled**

OBJECTIVE(S): This project is designed to exclude livestock along 8.5 miles of riparian area thus allowing this area to recover from past overuse.

99-G Tularosa Creek Watershed Restoration Project

\$146,056.98 (Federal) \$ 114,150.16 (Match) \$ 260,207.14 (Total)

Project status: **Completed**

OBJECTIVE(S): Reduce erosion and sediment loads entering Tularosa Creek (upland watershed), remove noxious vegetation in riparian areas and promote recovery of native riparian species, improve surface water quality and quantity, which will be monitored during the course of the grant and Establish an Information & Education Program through outreach efforts to schools, youth organizations, landowners, and citizens.

Approximately 183 acres of pinion/juniper were flat cut on the Mescalero Reservation along with 45 acres of Siberian elm using cut stump treatment with Garlon 4. The pinion/juniper treatment area will be rested from livestock indefinitely, while the elm treatment will be protected in perpetuity since this area is a special reserve along the school property. Willow, common reed and cottonwood trees were planted in place of the elms. On April 16, 2004 the project hosted a children's water festival at the Mescalero public schools with over 200 in attendance.

Approximately 2480 acres of state trust land was treated with tebuthiuron for the control of Creosote bush. A baseline transect with photo points was established prior to treatment. The treatment area was rested from grazing one year prior to treatment and two years following treatment. A 95% control rate has been reported on state lands.

Approximately 54 acres of private land was treated with tebuthiuron for the control of Creosote bush in conjunction with state trust land. Downstream from the bush control, 665 feet of riparian corridor on private land was treated for salt cedar using a cut stump treatment with Garlon 4. Willows and cottonwoods were planted as replacement vegetation for bank stability. An additional 444 acres were treated for mesquite control with the assistance of the USDA/NRCS, Alamogordo District office. Velpar L herbicide was applied using an exact delivery handgun. Two monitoring plots using the NRCS rangeland health surveys were established with photo points.

The USDI/Bureau of Land Management, Las Cruces District treated approximately 206 acres with tebuthiuron for Creosote bush control in conjunction with state trust land and private land. The BLM also treated approximately 250 acres of state, private and federal land riparian corridor with Arsenal for the control of salt cedar. In addition, another 3.1 miles of riparian corridor was treated with Arsenal on BLM land to protect the vegetative integrity of Coyote Canyon. The project hosted another children's water festival for the Tularosa School District, approximately 437 were in attendance

99-H Upper San Francisco Riparian Enhancement Project

Federal Funds: (\$78,000) Match (\$52,000) Total (\$130,000)

Project status: **Completed**

OBJECTIVE(S): Establish approximately 8 miles of fence taking advantage of terrain, contours, and topography to create discrete riparian pastures for improved grazing management as well as placing trick tanks for better

utilization of forage. By utilizing this technique, erosion may be reduced simply by effective management of the livestock movements. Various analyses, studies, and experiments have been designed and implemented historically based on forest protocol as well as overall management of discrete grazing plans for wildlife and domesticated animals. The goal is to establish a certain stubble height, density, vigor and health compatible with range conditions for this ecosystem and manage accordingly. This will reduce quantities of sediment being transported into the San Francisco River from erosion. The fences will take advantage of terrain such as steep ridges and deep valleys as well as topography. Allowable use guidelines will take into consideration riparian areas and wildlife utilization levels. Hunting permits for wildlife are issued accordingly along with and taking into consideration range condition. The project is complimenting a watershed project that includes management of approximately 1850 square miles.

Cooperators included the Gila National Forest, New Mexico Environment Department/Surface Water Quality Bureau, Rocky Mountain Elk Foundation, Grazing Permittees, Wild Turkey Foundation, New Mexico Game and Fish Department and the Environment Protection Agency.

99-I Rio Puerco Channel Reintroduction and Enhancement Project

\$52,700 (federal) \$7,500 (Match) Total: \$60,200

OBJECTIVE(S): To provide technical and remediation assistance design and implement BMPs for stabilizing approximately 10,000 feet of bed and banks of the reintroduced reach of the Rio Puerco. Upon completion of the construction phase of the project, this funding will help NMED-SWQB partner up with the USGS or NM Tech to develop and implement monitoring procedures to characterize the river's flow, and assess all of the previous geomorphology, engineering design and construction efforts.

99-J School Canyon Riparian Project

\$4,843.59 (Federal) \$3,229.06 (Match) \$8,072.65 (Total)

Project status: Completed

OBJECTIVE(S): The project objective was to reduce sediment transport, siltation, high nutrient/phosphate loads, and stream bank destabilization by the establishment of a functional floodplain, higher local groundwater levels, and a robust riparian buffer. Additional objectives included establishment of more upland vegetative cover and diversity by altering the long-term grazing allotment management plans for livestock and wildlife.

Snow Lake's designated uses are marginal cold-water fishery and secondary contact recreation, with probable sources of non-support listed as natural, silviculture and agriculture rangeland. Probable causes of non-support are listed as nutrients, nuisance algae, and siltation.

The School Canyon Riparian Restoration Project is located directly upstream of Snow Lake in the Gila National Forest (GNF) Reserve Ranger District. In 1994, the GNF issued the decision memo for the Snow Lake Watershed Improvement Project to commence design and dirt work. It included a variety of activities to mitigate a sedimentation problem in and around Snow Lake. The work included obliteration and relocation of "old road" vegetation planting, gully plugging, raised culvert placement, fencing, and included an area approximating 15 acres above the Lake. A pond was also built in snow creek that is also an entrapment for sedimentation.

The School Canyon Riparian Restoration Project directly contributed to reduction of an existing pollutant problem by implementation of on the ground best management practices (BMPs) designed to address non-point source pollution consisting of sediment and organic/nutrient pollutants. The BMPs implemented under this project are the establishment of a robust riparian buffer with erosion control structures to re-wet a

valley/meadow drained by gully formation. Gully formation was initiated many years ago when a two-track trail was established to access a watering source at the top of the meadow. A similar situation occurred in Snow Creek and T-bar Canyon, which are both in close proximity. They all come together to flow into Snow Lake. Gully formation led to dewatering and lowering of the local water table, which directly affected the riparian zone of this tributary, although the lake does raise the water table. Re-wetting the meadow increased vegetative ground cover and riparian vegetation. This increased the filtering capacity reduces the sediment load into the lake along with the associated nutrients and pollutants that cling to the soil particles. We built five 'in channel' erosion control/sediment retention structures, one culvert skirt for redevelopment of meadow, repaired and or rebuilt 1.5 miles of fence and cut logs and peeled for travel barrier. A local sand and gravel company was contracted to do much of the work.

99-L Nonpoint Source Pollution Prevention Project on the Santa Fe River

\$143,840 (Federal) \$ 106,628 (Match) \$ 250,468 (Total)

The project was completed in December 2003.

OBJECTIVE(S): This project is proposed as a demonstration project to improve channel stability and reduce bank erosion on the Santa Fe River. The project will lead to improvements in water quality conditions in the Santa Fe River in stream segment 2-110 as designated by the NMWQCC.

This section of the Santa Fe River is ephemeral, however, an underground stream was discovered through the use of monitoring wells and piezometers. Using this information, native riparian vegetation was planted at depths between 5 and 15 feet.

This stretch of the river had been used in gravel excavation. A specific example of the problems included sheer walls 20-30 feet deep below a low water crossing. After consultation, the project managers at the State Land Office determined that increasing the meander (river length) would reduce the velocity from flashy storm events hitting impervious surface in the city. The section mentioned above now is only 3 – 5 feet below the terrace and the stream has access to its floodplain.

This project brought many school children to work on this project on-site and adult groups participated in "clean-up" days. A neighborhood community has succeeded in taking responsibility of the project.

Included in this project was a demonstration with the City of Santa Fe at Frenchy's Park, where structures and riparian vegetation were put in to help control/reduce erosion and bank instability.

99-M Gallinas Watershed Riparian Enhancement Project

\$79,800 (Federal) \$53,200 (Match) \$133,000 (Total)

This project was completed in December 2003.

OBJECTIVE(S): The objective is to implement measures identified in the 1994 Gallinas River Watershed Plan as necessary to maintain and improve the waters quality and quantity for the municipality of Las Vegas. This mostly includes reducing an overstocked forest to prevent the occurrence of wildfire in the Gallinas Watershed. The Gallinas watershed is the main source of drinking water for the town of Las Vegas and a catastrophic wildfire would devastate this resource.

The project goals were as follows:

- treat 300 acres of overstocked forest with a prescription thinning and burn.
- remove access to vehicles at stream banks and improve riparian habitat at forest camp sites
- improve and protect springs used in cattle allotments

This main obstacle for this project was the drought. Due to the lack of snow, the burn was finally allowed to take place during January; the cold temperatures kept the fires from getting out of control.

99-N Caja del Rio/Santa Fe River Watershed Improvement project

\$190,894 (Federal) \$ 128,055 (Match) \$ 318,949 (Total)

This project was completed in June 2004.

OBJECTIVE(S): This project is intended to address non-point source pollution derived from poor livestock distribution due to lack of livestock drinking water; poor riparian vegetation on the La Bajada Mine reclamation area on the Santa Fe River; soil erosion in the upland portion of the allotment; and the treatment of sagebrush into grasslands. This project will improve both the number and location of livestock watering sources to better utilize the forage over the entire allotment.

This project was granted to the US Forest Service, and they partnered with the cattle permittees, the City of Santa Fe and Santa Fe County. Twenty-seven miles of pipeline and spurs were installed to improve the grazing management of cattle and to provide water for wildlife. The source of the water was from the Santa Fe Wastewater Treatment Plant. Mechanical equipment was used to thin and mulch the monotype vegetation, followed with some burning practices to increase vegetative diversity.

Water gap structures were installed in the Santa Fe River to discourage cattle access into the river.

99-P Bosque Tierra Mojada Wetlands on the Rio Grande

\$15,450 (Federal) \$6,180.00 (Match) \$21,630(Total)

Project status: Completed

OBJECTIVE(S): The project was intended to demonstrate the need for wetlands and wildlife habitat restoration. It involves public elementary and high school teachers that utilized the resource for environmental education with an emphasis on water quality issues. Phase one was completed under a Wildlife Habitat Incentive Program with the La Union Soil and Water Conservation District. In that phase historic wetlands pond at the end of an irrigation system next to the Rio Grande were developed, salt cedar was cleared and native vegetation was reestablished. Spoil from the ponds excavation was placed on the area around the revitalized wetlands. This buried the previously saline surface with a shallow layer of less saline soil. A significant number of native plants and shrubs were found within the salt cedar monoculture and were preserved. The Gadsden School District participated with outreach for environmental education. The educational goals were to provide teachers with on-site hands on experience about wetlands utilizing a heuristic approach. Improvement of aquatic habitat and water quality is the long-range goal. There was involvement with NMSU, USDA/La Union Soil and Water Conservation District, Gadsden School District, U.S. Corps of Engineers, USDA/Natural Resources Conservation Service, International Boundary and Water Commission, EPA and the SWQB.

99-Q Erosion Control Project Angel Fire Ski Area -Angel Fire, NM

\$81,385 (federal) \$55,665 (Match) \$137,050 (total)

Project status:

OBJECTIVE(S): To reduce erosion, turbidity, and sedimentation of Agua Fria and Cieneguilla Creeks by increasing organic content of soil and increasing vegetative cover utilizing grazing as the tool on selected ski runs at Angel Fire Ski Area which are a source of sediment.

99-R Rio Cebolla

\$108,300 (federal) \$72,200 (Match) \$180,500 (total)

Project status: Completed 2004

OBJECTIVE(S): To construct and reconstruct barbed wire fencing to facilitate control of cattle access to riparian areas and increase riparian vegetation abundance and density. To construct upland water developments for cattle and wildlife to reduce riparian attraction and encourage better upland distribution. To construct barriers (rail fence, natural materials) to restrict motor vehicles to designated roads and parking area. To provide designated parking areas at various contact points to discourage creation of undesigned roads and riparian damage. To close, reclaim and camouflage undesigned roads to reduce erosion and discourage vehicle traffic. Sign areas accordingly to inform and education public about sensitive riparian zones and discourage vehicle travel. To provide proper drainage on FR 376 to disperse water on a wet meadow. To replace a FR 376 culvert to reduce erosion and downcutting. To eradicate noxious weeds at a popular parking site and eliminate potential for spread along the entire riparian zone. To eliminate a dumpsite to eliminate potential leaching and runoff into stream and discourage future dumping. To promote partnerships, public involvement, and education.

99-S Esperanza Grazing Association

\$122,000 (federal) \$81,400 (Match) \$203,400 (total)

Project status: Completed 2005

OBJECTIVE(S): To improve water quality in the Rio Chama watershed and it's tributaries including the Rio Nutrias and Lobo Canyon. The project will use a livestock and wildlife water distribution system, riparian protection and enhancement, brush control to enhance grasses ability to hold soil, road improvements to reduce erosion, and soil erosion control structures. An educational effort will be completed involving the regions ranching communities and youth.

99-T Spur Ranch Centerfire Creek Restoration Project

\$105,000 (Federal) \$70,250 (Match) \$175,250 (Total)

Project status: Completed

OBJECTIVE(S): Stage 1 was a design and development of a wetlands/riparian improvement that began in 1997. The riparian project involves constructing two soil cement dams, the second of which was constructed under 01-F. The treatment site is near the base of the Centerfire Creek watershed, which is approximately 125 square miles and where a 25-foot incised Centerfire Creek channel exist. The objectives included improving water quality by reducing sediment load and entrainment into the San Francisco River. Recreate the degraded meadow to approximate historic level utilizing a two-stage construction. Stage 1 was the first soil cement structure, approximately 9.5 feet high, 120 feet across and 68 feet from upstream toe to downstream toe. Retain soil on the upper watershed thereby reducing sediment entrainment. Increase forage and herbaceous production while improving watershed functionality.

Stage 2 increased the capacity for entrapment and further raised the water table and in the process created a substantial wet meadow. This will lesson the intensity of downstream flooding. Sloping the banks upstream to 30 percent made it possible to drill native seeds and reestablish a riparian corridor. Seeding and pole planting below the structure has progressed to further reduce sediment transport into the San Francisco River system. Burns, thinning and grazing management changes for livestock and wildlife have improved the uplands reducing erosion into the creek, as well.

99-U Pleasanton Community/San Francisco River Restoration and Outreach Project

\$205,000 (Federal) \$243,000 (Match: \$223,000 In-Kind, \$20,000 Cash) \$448,000 (Total)

Project status: Completed

OBJECTIVE(S): The Pleasanton/San Francisco River Restoration and Outreach Project addressed sources of nonpoint source pollution for this reach of the San Francisco River as identified by the NMED Surface Water Quality Bureau: incompatible agricultural practices, removal of riparian vegetation, and stream bank modification/destabilization. Native perennials were returned to the system in groupings of natural community types. Riparian vegetation: cottonwoods, willows, sycamores, and riparian-obligate shrubs-grasses – were restored to the riparian zone through pole, tree, grass plug and seed planting. Stream banks were stabilized in sustainable fashion through a bioengineering approach that emphasizes establishment of native trees and shrubs and grasses. The floodplains behind the existing berms and dikes were re-vegetated with native plantings as well, understanding that floodwaters and sedimentation are separate issues. This project was aimed at improving watershed condition, water quality, and wildlife habitat. A strong component of this project was outreach and education regarding nonpoint source pollution and watershed health. The community of Pleasanton along the river, the businesses on the river, including the farms, ranches and Sundial Springs participated in the project. More than 90% of the inhabitants in this subwatershed were partners in this project. Volunteer helped to restore the health and vitality to the river and the wildlife, included use of member equipment and supplies: including pole plantings, trees, grass wads and seed, and labor. This project used the voluntary expertise of students and faculty of the Arizona and New Mexico university systems and other scientists connected to New Mexico state and private agencies involved in water and resource projects. We hope our project will expand over time to help promote other projects for the health of the rivers, the land and the education of the public. Showing that an entire community as well as people outside of the project area can work together to improve the environment and the habitat for all.

Watershed Protection Section Projects 2000

00-A Garcia Canyon Watershed Project - cancelled due to Cerro Grande Fire

00-B Soil Stabilization Project - Angel Fire, NM - Terminated

\$69,725 (federal), \$47,425 (match) \$117,150 (total)

OBJECTIVE(S): The purpose of this project is to decrease the amount of sediment being transported from the Angel Fire Resort Ski Area into stream courses.

00-C Valle Grande Grassbank Water Quality Improvement Project: a Composite of Projects in the Valle Grande Grassbank Program

\$324,850 (federal), \$216,567(match), \$541,417 (total)

Project status: Completed

The Valle Grande Grassbank is currently operated by the Quivira Coalition, a non-profit organization which fosters ecological, economic and social health on western landscapes through education, innovation, collaboration, and progressive public and private land stewardship. The Grassbank serves grazing allotment permittees and Forest Service resource managers on the Santa Fe and Carson National Forests. Six allotments in five watersheds have been served under this project. Under this project, 2791 acres of piñon-juniper and ponderosa pine forest were thinned, 2130 acres were burned, six miles of fencing were constructed, and tens of thousands of rangeland acres were rested from grazing. An active program is in place for both local and west-wide outreach. A Watershed Restoration Action Strategy (WRAS) was completed for Rowe Mesa, a large landscape area encompassing parts of two watersheds. A new state-of-the-art monitoring program is in place that is designed to monitor and validate treatment types over a seven-year time frame.

00-D Upper Santa Fe Watershed Restoration Project

\$419,248 (federal), \$367,200(match), \$786,448 (total)

Project status: Completed

The project, implemented by the Santa Fe National Forest, City of Santa Fe, and Santa Fe Watershed Association was designed to protect water quality for forty percent of the water supply of the City of Santa Fe from the results of a large, intense wildfire. The primary objective of the project was to reduce fuel loading in critical areas of the upper Santa Fe River watershed through carefully implemented and monitored thinning and prescribed burning. Without the project, a large, intense wildfire was expected to occur in the unnaturally dense forest that developed under past Forest Service and City management. Of the 17,000 acres in the upper Santa Fe River watershed, 10,000 are not in designated Wilderness and are considered the project area. As of July 2004, 3058 acres (of 4000-6000 acres planned) were thinned, and over 800 acres were burned. This project, now primarily funded through Congressional earmarks, gathered momentum with support of the Section 319 program (which funded some thinning and burning), and is probably the largest and best-monitored forest restoration project in New Mexico. Also through this project, the Santa Fe Watershed Association developed a Watershed Restoration Action Strategy for the greater Santa Fe River Watershed (from Lake Peak to the Rio Grande) with input from a Watershed Advisory Group representing many organizations and interests.

00-E Implementation of NPS Pollution Control in the Santa Fe River

\$144,650 (federal), \$155,750 (match), \$300,400 (total)

Project was completed in October 2004

OBJECTIVE(S): To reduce nonpoint source pollution on the Santa Fe River. This project proposes to increase streamside vegetation, re-establish floodplain to include wetlands and to promote educational opportunities.

NMED Surface Water Quality Bureau had identified stream bottom deposits, dissolved oxygen exceedence and temperature among other problems as impacting the Santa Fe River below the Wastewater Treatment Plant. To correct these problems the Forest Guardian's staff identified increasing riparian habitat as a corrective measure that would improve water quality, fisheries and become a more natural ecosystem.

The first measures included fencing out cattle, collecting native riparian vegetation and inviting the community and school groups to do "planting days". The bare root striplings successfully took root and the riparian habitat was established. Photo monitoring points were identified, and pictures were taken as the vegetation continued to grow.

The benefits were as follows:

- the shade from the canopy decreased temperature which stabilized the dissolved oxygen and reduced the algae growth.
 - lengthened the stream, so that it has an increased depth to width ratio which benefits fisheries.
 - provides stability to the banks, and slows the velocity during storm events which encourages infiltration to the aquifer.
 - has provided the community with a natural looking ecosystem although the source of the water is from a pipe.
- The vegetation has also reduced odors that accompany effluent.

This project has had difficulties, however. Some downstream users contend that riparian vegetation should have a permit for water use. When faced with the issue the Office of the State Engineer determined that riparian is a natural system.

00-F Galisteo Watershed Restoration

\$119,102 (federal) \$121,332 (match), Total: \$240,434

Project status: Completed 2002

OBJECTIVE(S): The rapid expansion of Santa Fe to the south and into the Galisteo watershed coupled with the interest of a growing number of landowners, schools and institutions to participate in a watershed restoration effort form the underlying impetus for this project. The project focuses specifically on the problem of streambottom deposits in the Galisteo Creek indicated in the 303-(d) list as a measurable expression of the deteriorated conditions of the watershed.

The scale of the watershed, the diversity of interests and ownerships, and the multitude of stressors that cause the "partial support" of the designated use of the stream beg for a practical approach. Theoretically, i.e. in terms of an efficient and rational methodology, treatment of upstream areas that contribute to the NPS pollution should receive priority in a watershed-wide restoration plan. However, such an approach meets with lengthy federal government procedures of analysis, planning and impact assessments. Forest Service representative have indicated that the agency does not have sufficient capacity to address these issues on the watershed's national forest lands in the next few years. As a result, this project focuses on three areas where landowners are interested in a collaborative restoration project that will have a demonstration value for other landowners throughout the watershed. Therefore, outreach and education as well as monitoring and dissemination of "lessons learned" will be essential to bring the effects of restoration on the three selected sites to a larger

audience throughout the watershed. At the same time, restoration of the sites will reduce localized NPS source pollution that leads to streambottom deposits.

00-G Gila National Forest Watershed Projects

\$157,000 (Federal) \$105,000 (Match \$30,000 In-Kind, \$75,000 Cash) \$262,000 (Total)

Project status: Completed

OBJECTIVE(S): This project is comprised of multiple projects submitted by individual ranger districts within the Gila National Forest. All projects are prescribed burns, water source protection, and fencing of recreational areas. Objectives as stated in the approved work plan are 1) restoring fire under controlled parameters to improve the quality of water coming derived from the project area, 2) recycling of nutrients by fire, 3) lowering of tree densities to improve growing conditions for herbaceous ground cover, and 4) reducing the risk of catastrophic wildfire. This increase in herbaceous vegetation will add ground cover to the project area by increasing rainfall infiltration rates thereby reducing sediment laden rainfall runoff. This reduction of nonpoint sources of water pollution results in an improvement of water quality for downstream users in the Gila Valley.

Best Management Practices (BMPs) for Control of Major NPS Pollution Categories and Subcategories Identified in the New Mexico NPS Pollution Water Quality Assessment (2002) and implemented under this project follow:

Silviculture

Fire suppression and fuels management

- fire and fuel management activities to reduce frequency, intensity and destructiveness of wildfires
- consideration of water quality in formulating fire prescriptions
- protection of water quality from prescribed burning effects
- minimizing watershed damage from fire suppression efforts
- repair or stabilization of fire suppression activities related to watershed damage
- emergency rehabilitation of watershed following fires

Rangeland

Watershed Management

- watershed restoration to reduce potential for NPS pollution
- tree density reduction combined with increase in native herbaceous ground cover

00-H Red River-Enhanced Local Involvement for Addressing Water Quality in the Red River Watershed

\$10,210 (federal), \$7,860 (match, In-Kind), \$18,070 (total)

Project status: Cancelled on 2/1/02

OBJECTIVE(S): The purpose of this project was to gain broader and more effective local participation from throughout the Red River watershed in working with the State to address significant watershed water quality issues, develop a watershed restoration strategy (WRAS), and identify and prioritize cost-effective areas and sites for cleanup. Because the Watershed Group is composed of key stakeholders, it is critical that its work be conducted concurrent with TMDL process (scheduled for completion in 2001) so that the strategy developed will provide a framework for accomplishing loss reductions.

00-I Meridian Institute / The Collaborative Watershed Project-Supporting TMDL Implementation in Northern New Mexico

\$ 218,370 (federal) \$145,580(Match: In-Kind \$81,245, Cash \$64,339) \$363,950(total)

Project status: Completed

OBJECTIVE(S): Facilitation and coordination services will be provided for collaborative watershed projects for the Cimarron River in north central New Mexico, the San Juan and Animas Rivers in northwest New Mexico. In addition, facilitation and coordination services will continue for the Red River watershed group.

The objective of each of these watershed initiatives will be to establish a collaborative watershed process involving all key interests and affected parties. That process will help achieve local understanding of the State's water quality management system (including TMDLs and load allocations), identification of contributing sources of those pollutants to be controlled under the TMDLs, development of a locally acceptable watershed restoration action strategy (WRAS) for efficiently achieving those load reductions, and remedial activities at priority sites.

Once the group has been convened, the process managers will work with the group to develop ground rules, a decision-making process, and goals. Once these foundational elements are in place, the group will work to accomplish the following:

- Gain an understanding of prevailing water quality standards and implications, TMDLs and the group's role in influencing the TMDLs;
- Develop an educational program to build the capacity of the participants to make informed decisions;
- Develop a public outreach strategy that ensures that information about the watershed initiative is flowing from and to the stakeholder group;
- Identify available information and data needs;
- Quantify problems, identify sources, and prioritize them;
- Identify broader issues and concerns; define viable remedial options;
- Develop a Watershed Restoration Action Strategy that includes well-defined and achievable goals as well as an effective implementation plan;
- Select sites for early remediation actions; define an ongoing monitoring plan for tracking improvements;

00-J Maudes Canyon SLO

\$30,315 (Federal) \$33,332 (Match In-Kind) \$63,647 (Total)

Project status: Completed

OBJECTIVE(S): This project is proposed to improve channel stability, decrease sediment loading and improve water quality along a reach of Maudes Canyon, a tributary of the Mimbres River. The project will be aimed at reducing non-point source pollution loading into the Mimbres River watershed. The principal pollutants contributed from the subject source area are sediments and any associated bonded contaminants. Accordingly, the methodology of the project will center on the control of sediment transport from the point of detachment. The project will be led and administered by the New Mexico State Land Office in close cooperation with the Department of Biology at Western New Mexico University and the Gila Chapter of the Native Plant Society of New Mexico.

The approach for site treatment and management will be centered on controlling sediment at the point of detachment. Accordingly, emphasis will be given to the re-establishment of a climax plant community. Grasses not only hinder the detachment of sediment, but they also act as sediment filters, slowing and impeding the transport of sediments to the stream channel from upland zones. We propose to initiate a brush control strategy along with planting of native grasses to combat this process, re-establish under story species and raise the water

table along the floodplain. State land Office employees will selectively cut junipers trees in both the riparian and upland zones. The juniper thinning will be conducted to maximize habitat edge and create sufficient turf to reduce sediment detachment and transport. Brush piles will be erected with a portion of the downed slash to create habitat for small mammals and birds. Seed for grass plantings will be selected to mimic the potential natural climax community as indicated in the NRCS Range Site Descriptions. Seed listings are provided along with estimated costs in the following section. Plantings of appropriate cottonwood and willow species will also be an aspect of our program. These native species are essential to restoring the riparian area to a properly functioning condition. Post materials from juniper cuttings may also be used for the control of critical areas such as gullies. Gully formation and propagation is a significant contributor to non-point source pollution; as such, control of these areas is necessary for the reduction of sediment loading. Several gullies currently exist within the project area and development of commercial areas along the western fringe could lead to their propagation. The NRCS has developed a method that creates sediment fences in erodible gullies followed by planting of grasses along the ensuing formed terraces; our methodology will follow the NRCS' Standards and Specifications. Other material besides juniper cuttings may be required for this process. Invasive weed management will also be included in our site treatment. The principal problem species at the site are salt cedar and Russian olive. We propose a one-time, initial herbicide treatment to help eradicate the salt cedar population, utilizing the recommended herbicide and application rate for the region along with the most ecologically sensitive application method. Follow-up treatment will consist of identifying and digging up seedlings at least four (4) times annually. Eliminating salt cedar and other invasive weeds will aid in the establishment of native grasses, which over time will colonize the site and help to keep out undesirable species.

Another source of sediment loading on the site is an unpaved road along the northern section boundary. The road, on both the east and west sides of the west fork channel, requires treatment to reduce the sediment flow into the stream. We propose a road erosion control strategy to manage this contributor to non-point source pollution: rock mulching a 1000 ft. section of the road around the channel should significantly reduce the sheet flow and rill erosion which transport large quantities of sediment to the stream bed. In order to delineate the boundaries of any future commercial development along the western boundary of the study area, we propose to fence of the area at approximately the 500 ft. contour line. This will define and establish the riparian buffer along the most threatened border. A survey will be necessary to establish the limits of the riparian buffer. Other fencing will be constructed to address illegal entry and trespassing on the property. We propose installing 12 ft. aluminum gates at the two road entries into the site with locks to deter entry from the 32nd St. bypass. We would also install breakaway fencing at two locations in the channel to act as a barrier to all-terrain vehicles (ATV's) which frequently enter the site. These off-road vehicles pose a serious threat to the future success of any non-point source pollution control program and their access to the site must be controlled.

00-L RIO PUECO PHASE I (PROJECT AND FUNDING MOVED FORWARD TO FY02-B)

FY00-Z: REVEGETATION OF THE LA VENTANA PROJECT

Initial Joint Powers Agreement Date: Project work has been enabled by inserting additional Workplan tasks into the FY02-B Rio Puerco Implementation Project, utilizing its existing JPA with the BLM, which dates to May 19, 2003

Total JPA Award: \$45,000 (federal) with \$30,000 (non-federal in-kind match) utilizing remnant and last-stage FY00 319 Grant funding from the EPA

OBJECTIVE(S): This project is aimed at accomplishing two separate actions for the SWQB-WPS: 1) gainfully utilizing late-stage project funding that enables the Watershed Protection Section (WPS) and EPA Region 6 to close out the FY00 319 Grant; and 2) provide funding to accomplish post-construction restoration project revegetation work for the Rio Puerco Implementation Project, Sandoval County, NM.

NMED-SWQB-WPS, in cooperation with the Rio Puerco Management Committee (RPMC), developed a large river restoration project on Bureau of Land Management (BLM) lands to negate the effects of a mid-1960's NMSHTD river channelization project on the Rio Puerco, nine miles south of Cuba.

In 2000 the NMSHTD (now NM Department of Transportation – DOT) completed the final phase of their large State and Federal Highway 550 widening project between Bernalillo and Bloomfield. Following road widening and construction of two new bridges over the Rio Puerco, the SWQB initiated geomorphic mapping and engineering design/specifications and feasibility studies via the FY97-Q 319 project, to develop plans and designs for the river restoration phase of the comprehensive roadway and river channel project.

Earth moving for the construction and river restoration phase began in October 2004 and was largely completed by the spring of 2006, leaving behind a sizable cumulative acreage of disturbed ground in need of revegetation to prevent erosion and provide habitat. The RPMC offered the task to Tree New Mexico, Inc. (TNM) a long time member and significant participant in the RPMC's watershed restoration and education/outreach efforts. TNM in turn partnered with the NRCS Plant Materials Center in Los Lunas. Along with knowledgeable input from NMED and BLM scientists, an appropriate plant palette was identified and secured.

Installation of the plants has been accomplished by several volunteer and involved agency groups, as well as contracted NRCS-PMC crews and equipment, during a series of field workdays between April 2006 and January 2007. A target of approximately 2,500 poles and containerized plants will be planted during this first of several planting phases that the three construction sites will eventually require.

Watershed Protection Section Projects 2001

01-B Tijeras Creek Urban Runoff Education and Demo Project

\$72,150 (Base) \$48,100 (Match) Total: \$120,250

OBJECTIVE(S): The water harvesting and drainage development demonstration site is located along south bank of Tijeras Creek just west of its confluence with Cedro Creek, in the Village of Tijeras, New Mexico. The site is on the edge of the Albuquerque Public School campus shared by A. Montoya Elementary and Roosevelt Middle Schools. Los Vecinos Community Center and other Bernalillo County Parks and Recreation facilities are adjacent to the north.

01-C Cedar Breaks Upland Watershed Project

\$16,410 (Federal) \$10,940 (Match) \$27,350 (Total)

Project status: Completed

OBJECTIVE(S): The targeted problem of the project is to mitigate excessive soil erosion and gully formation, increase grass cover by reducing pinion/juniper canopy, thus increasing rainfall infiltration and reducing the soil detachment and sediment loading into the San Francisco River. Slopes ranged from 5 to 35 percent resulting in excessive sheet erosion and evolving into rill and gully erosion. The location of the Cedar Breaks project is within sections 22, 23, 26 and 27 of Township 10 South, Range 20 West on the Glenwood Ranger District of the Gila National Forest. It is approximately 27 miles northwest of Silver City, New Mexico and can be accessed from US Highway 180 West.

The Environmental Analysis for the Cedar Breaks Upland Watershed Project, dated September 26, 2000 proposes to rehabilitate those areas within the analysis area showing detrimental effects of historical use and practices. This includes a seasonal/continuous grazing system not allowing for sufficient deferments, fire suppression and past logging practices that were detrimental to a fragile environment.

Project best management practices include pinion/juniper brush removal and thinning, yearlong grazing deferments on treated lands following brush removal. Native grasses were broadcast seeded in the highly disturbed areas where gully shaping took place and brush removal areas where the soil resource was reduced to a point that the expected native seed source would not be sufficient to allow suitable recovery. Pinion/juniper slash was also used in the shaped gullies to reduce runoff velocities and aid in healing the critical eroding areas.

Principal funding for this proposal came from EPA/Section 319 with in-kind match from Hugh B. McKeen and Catron County Citizens Group. The San Francisco Soil and Water Conservation District disbursed \$5220 towards match and with additional match of \$6155 from the Habitat Stamp Program. Further acknowledgements are appreciated for field information/monitoring to the Catron County Extension Agent, Jornada Experiment Station and New Mexico State University.

01-D Respect the Rio

\$255,500 (federal) Total \$255,500

Project status:

OBJECTIVE(S): The project is a combination of environmental education, watershed restoration, public involvement and empowerment. The project will: 1.) Develop educational strategies that encourage public understanding of NPS pollution and how to reduce recreational impacts, 2.) Deter or exclude livestock from riparian areas, and develop permittee support and education on proper rangeland management, 3.) Improve riparian health and function with willow plantings, 4.) Allow the water to remain in the channel during high

flows by replacing existing culverts with larger fish-friendly culverts, 5.) Promote riparian health and function with willow plantings, 6.) Reduce sedimentation in streams by upgrading road base, 7.) Establish for forage to hold soil in place in PJ thinned areas.

This project was granted to the Jemez National Forest District Office. Through the outreach part of the project, information important to the management of users has been identified. This forest is heavily used from the community in Albuquerque, the largest city in our state. Many users have, in the past, driven to the river banks and parked, thereby destroying the riparian habitat and increasing the instability of the stream banks. The staff has utilized education during peak usage to change behavior and to teach appropriate “camp etiquette”. Articles have been written in Albuquerque newspapers, and structures have been built to prevent vehicular access (but not camping access).

Work had been done with roads to maintain hydrologic connectivity between the uplands and marshlands and with installing appropriate size and shape bridges and culverts. Sections of impacted stream areas have been fenced from unmanaged cattle grazing. Thinning and burning of areas that are identified as overstocked is planned. Beaver communities are encouraged, resulting in wet meadows and wetlands. Structures were placed in the Rio de Las Vacas River, to increase pond development and meandering, which will improve fisheries habitat and reduce erosion.

01-E Community-based Watershed Protection in the Mora River Valley

\$132,700 (federal) \$88,467 (Match) Total: \$221,167

Project status:

OBJECTIVE(S): The Western Mora County - Unified Source Water Protection Council will employ a Watershed Coordinator to support the work of the Council and promote community-based approaches to watershed protection. This includes environmental education, monitoring, and demonstration projects.

01-F Spur Ranch Centerfire Creek

\$132,000 (Federal) \$52,800 (Match) \$184,800 (Total)

Project status: Completed

Stage 2 of the Centerfire Creek project was the final addition to the sediment retention structure started with project 99-T, Spur Ranch Centerfire Creek Restoration Project. Stage 2 included the addition of an 8-foot soil cement structure attached to the stage 1 structure. Completion of both structures will be an attempt to return Centerfire Creek to its historic elevation. This project successfully reduced erosion and collected sediment in order to raise the gradient within the Centerfire Creek while enhancing perennial flow, restoring degraded wet meadows by raising the water table. As the sediments build up upstream of the structure eventually it will fill in to the point that the structure will be completely covered and the stream will be at an historic elevation with reduced slope. Stage 2 also incorporated into the overall plan, forest thinning in the watershed above the structure with prescribed burning and installation of gully plugs to increase watershed infiltration rates while reducing runoff.

Cooperators included: Ducks Unlimited (DU), National Wild Turkey Foundation (NWTf), National Resource Conservation Service (NRCS), New Mexico Game and Fish (NMGF), New Mexico Forestry (NMFd), Rocky Mountain Elk Foundation (RMEF), San Francisco Soil and Water Conservation District (SFSWCD), United States Forest Service/Gila National Forest (USFS/GNF), Landowner/Rancher, United States Fish and Wildlife Service (USFWS), New Mexico Environment Department/Surface Water Quality Bureau.

01-G Gila Riparian BMP Project/The Nature Conservancy (TNC)

(Federal: \$88,313) (Match: In kind-\$13,700 – Cash-\$22,640) (Total: \$124,653)

Project status: *Completed*

OBJECTIVE(S): The Nature Conservancy's Gila River Floodplain Restoration Project will directly address all three sources of non point source pollution identified for this reach of the Gila River by the NMED Surface Water Quality Bureau: incompatible agricultural practices, removal of riparian vegetation, and stream bank modification/destabilization. Incompatible agricultural practices- (e.g. field abandonment without conservation tillage on formerly alfalfa improved pasture has converted to weeds, leading to poor cover and excessive erosion) replace with a more conservative form of land use by planting to improved pasture using native grasses and forbs. This was completed during the summer of 2003. Riparian vegetation – cottonwoods, willows, sycamores, and riparian-obligate shrubs will be restored to the riparian zone via pole planting and irrigation. Stream banks-Stream banks will be stabilized in sustainable fashion through a bioengineering approach that emphasizes establishment of native trees and shrubs, development of stable floodplain soils, improvement of floodplain functionality and elevation of the alluvial aquifer leading to reestablishment of historic wetlands, wet meadows and ponds. While the ponds in part catch return flows and trap sediment, more importantly they provide seasonal wetlands that were identified in the planning process as important but missing elements in today's Gila River system. The creation of ponds integral to a designated wildlife/wetland irrigation system will reduce loading sediment, salinity, sulfates, chlorides, total dissolved solids (TDS), nutrients, phosphorous, nitrogen and organic pollutants in return flow to the Gila River.

The augmentation with an educational component has involved a large number of parties including students and teachers have helped to diversify the projects conceptuality. This has included many scientific endeavors by University of New Mexico, New Mexico State University, University of Arizona, Northern Arizona University, local resident population, public and private schools and others to better understand the ramifications of the efforts by TNC to preserve a section of the Gila River riparian zone for wildlife habitat and fluvial functionality.

The Gila Riparian BMP Project lies within a subwatershed of the Gila River that is extremely important to attainment of the State of New Mexico's water quality goals. The statewide Nonpoint Source Task Force/Unified Watershed Assessment Work Group, a stakeholder group, identified the upper Gila watershed as a Category I watershed in New Mexico's 1998 Clean Water Action Plan.

01-H Restoration of Cordova Creek to a High Quality Coldwater Fishery at Ski Rio

Federal: \$124,200 Total: \$124,200

Project status: Terminated

Ski Rio Went bankrupt before the project started and is still in litigation.

OBJECTIVE(S): Ski Rio is a four-season recreational facility and alpine ski area that was established in 1982. Capital improvements include a day lodge, 3 hotels, 3 ski lifts, about 900 acres of ski-able terrain, and snowmaking capabilities. A developing subdivision is located next to the Ski Resort.

01-I Mangas Water Quality Project

Federal: \$116,991.26 Match: \$229,812.16 Total: \$346,803.42

Project status: *Completed*

OBJECTIVE(S): Mangas Creek is within segment no.2502. The stream is identified on the CWA §303d list as partially supported for plant nutrients and stream bottom deposits. Impairments of Mangas Creek are the result

of an unhealthy watershed. Health problems of the Mangas watershed have a 100-year history of land managers and property owners doing what was thought to be correct at the time but now understood to be short sighted.

The Mangas Water Quality Project will return fire to the ecosystem of the Burro Mountains. As a result, over time, the tree and shrub component of the plant community will be reduced and herbaceous vegetation will increase. Sheet type soil erosion will be reduced. Six areas are identified to stop gully and head-cut erosion. This project will be conducted preliminary to the construction of erosion control structures planned for the deeply incised channel of Mangas Creek.

More than just stopping and storing soil currently transported down erosion gullies, the erosion structures are intended to stop the head-cut itself. These structures will be built in the upper most reaches of the gully. The middle and lower reaches of these erosion channels will require different approaches and should not be attempted until the health of the watershed improves. An average structure will be built in a gully of about 4% slope. Over 100 gully plugs were installed during the length of this project.

01-J Upper Cow Creek/Bull Creek Watershed Restoration (Viveash Fire Area)-- Withdrawn

01-K Valle Grande Grass Bank Water Quality Improvement Project: Operation and Experimental Treatments within the Valle Grande Grass Bank Program

\$192,000 (federal), \$132,485.63 (match), \$324,485.63 (total)

Project status: Completed

This project assisted federal land managers and public lands grazing permittees with restoration and recovery of their lands from the effects of grazing, by providing additional flexibility regarding livestock numbers and grazing duration. Selected participating allotments were allotments with need for restoration and with merit for a combination of successful treatments on National Forest lands. Individual participating allotments rotated into and out of the grass bank program (temporarily grazing their animals on the Valle Grande Grass Bank near Rowe, NM) through the lifetime of this work plan. The Grass Bank can accommodate 300+ head of cattle year-long. This capacity allowed up to six allotments to participate each year.

01-L Upper Rio Hondo Watershed Restoration Project-Phase I

Base: \$100,000 Match: \$78,180 Total: \$178,180

Project status: Completed 2005

OBJECTIVE(S): The primary long run objective of this project (located in the Rio Hondo that is a tributary of the Pecos in Lincoln County) was to improve water quality in the Rio Hondo Watershed to remove it from its listing as a UWA/Category I watershed and to safeguard it under those conditions for future generations. A secondary and requisite objective to that end will be to grow and amalgamate an already established inclusive watershed-wide coalition (the applicant) that has widespread public awareness, support, and participation and the authority and respect to develop a comprehensive long-term Watershed Restoration Action Strategy for the watershed.

01-M Santa Fe River Restoration Project-- Phase II

Federal: \$89,000 Match: \$90,995 \$Total: \$79,995

Project status: Completed 2006

OBJECTIVE(S): The Santa Fe River through State Trust Land was a severely impacted stretch of an ephemeral stream system. The goal was to restore the site to properly functioning condition by removing lateral borders

formed by streamside berms, re-creating historical meanders, promoting overbank flows leading to floodplain formation and re-establishing the native riparian flora community.

This project was built on the success and lessons learned from the FY 99-L project. Extending the length of BMPs meant more saturation and increased vegetative growth. A leasor who had incurred an air quality fine participated in this project, using their heavy equipment to reduce the angle of the steep side walls (banks) on the river. Approximately .5 mile of both sides of riverbanks was treated. This was followed with mulch and grass/forbe seeds. Woody riparian vegetation was also strategically planted. As in the earlier project, the community and public schools were participants.

This project also continued work in the Frenchy's Park area as well.

01-N Santa Fe Botanical Garden & Las Golondrinas

Federal (\$100,000.00) Match (\$76,473.25) Total (\$176,473.25)

Project status: Completed

OBJECTIVE(S): The Santa Fe Botanical Gardens put in place best management practices to significantly reduce sedimentation and nutrients in a tributary to Cienega Creek, control invasive and noxious plant species, and manage and monitor water resources to improve water quality and increase habitat protection.

01-P Upper Puerco Watershed Education & Outreach (CANCELLED)

***01-Q Comanche and Cordova Creeks Watershed Restoration Action Strategy, Education
Restoration Project***

Base: \$219,000 Match \$183,421.67 Total: \$402,421.67

Project status: Completed 2005

OBJECTIVE(S): This project produced Watershed Restoration Action Strategies for Comanche and Cordova Creeks. And implemented streambank restoration to reduce water temperatures in Comanche Creek and to improve habitat for the Rio Grande cutthroat trout.

Water quality degradation within the Cordova Creek subwatershed is the result of a number of factors. NM 196 was originally constructed in the Cordova Creek channel. In order to build the road, extensive cuts and fills were constructed. These cuts and fills remain unvegetated and therefore highly susceptible to erosion during rain events. Cattle grazing and the development of runs at Ski Rio are two land uses in the area that also contribute to water quality degradation. Relocating NM 196 out of the creek channel and restoration of the creek channel will be a significant element in improving water quality in Cordova Creek. Revegetation of ski runs and implementation of sediment Control measures on the Ski Rio property will also reduce the amount of sediment entering the Creek.

Sediment in Comanche Creek comes from open and closed Forest Service roads and from eroding stream banks, as well as from grazing practices. Streambank stability and cover problems relate to both wildlife use (elk) and livestock grazing issues. The Valle Vidal Grazing Association has gone to a herding operation that has dramatically improved the area under an allotment management plan in place since 1984. But the herding plan may need to be "tweaked" to maximize riparian recovery. The heavy sediment loads into Comanche Creek are the most likely cause of the metals exceedences as well.

01-R Pajarito Plateau Watershed Restoration Including Burned Areas of the Cerro Grande Fire

Base: \$50,000 Match \$77,000 Total: \$127,000

Project status: Completed 2005

OBJECTIVE(S): The Pajarito Plateau Watershed is located in north central New Mexico approximately 48 miles northwest of Santa Fe. The watershed covers the Pajarito Plateau, an area of volcanic rock on the eastern slope of the Jemez Mountains, and drains into the Rio Grande. Elevations range from above 10,000 feet at the Sierra de Los Valles in the Jemez Mountains to 5,400 feet at the Rio Grande. The Pajarito Plateau contributes numerous perennial and ephemeral tributaries to the Rio Grande. There is an urgent need for an outreach/education program focused on the communities within the Pajarito Plateau watershed. We will design outreach and involvement efforts that will capitalize on the interest in watershed health that has been prompted by the Cerro Grande fire, and relate it to our WRAS and future projects. Part of the WRAS will be to develop demonstration projects that will show the types of restoration activities the Partnership will be using in the watershed. The demonstration projects will be located near trails in the Los Alamos area so they are easily accessible to the public. They will have interpretive displays to educate the public about our goals and objectives. The demonstration areas will be constructed, monitored and interpreted by volunteers from the community. These activities will help to promote constructive involvement by community groups and individuals.

01-S Dos Rios Ranch

\$12,855 (Federal) \$8,890(Match: In-Kind) \$21,745(Total)

Project status: Closed

OBJECTIVE(S): The Dos Rios Ranch Drainage Improvement Project in Northeast New Mexico utilized a series of check dams constructed of used tires within a 1-¼ mile stretch of an unnamed arroyo that runs through rangeland and drains to the Cimarron River. This stretch of the drainage is intermittent in nature. The drainage is incised and carries runoff from a watershed of approximately 30,000 acres, mostly rangeland. The drainage on Dos Rios Ranch contains saline soils, lacks riparian vegetation and has some destabilized stream banks that result in large volumes of sediments to the Cimarron River. The project would reduce the non-point source pollution (NPS) of sediments carried from the intermittent drainage that impacts the Cimarron River with stream bottom deposits. The Cimarron River TMDL Implementation Plan states the primary focus in this watershed should be with sediment controls.

The Dos Rios Ranch Drainage Improvement Project is a demonstration project to reduce sediments loads to the Cimarron River and eventually improve riparian and rangeland conditions along the drainage. Dos Rios Ranch currently has a rotational grazing system and along with fencing provides alternative water sources to keep cattle out of riparian areas. Due to the extreme drought conditions that have occurred in this area since 2001 when the project was begun the check dams have not been tested or there effects on the stability of the drainage or there ability to reduce sediment to the Cimarron River. NMED will continue to monitor this project.

01-T Children's Water Festival 2001

Total 319H: 13,918

Project status: Completed

The third Children's Water Festival for the Middle Río Grande (MRG) area was held in November, 2001. Approximately 1000 students in the 4th grade in schools in Los Lunas, Albuquerque, Rio Rancho, and nearby unincorporated areas participated. The 4th grade students created a mini-river, purified water from the Río Grande and built aquifers from edible ingredients. They also used a computer model to make projections of water use into the future, a groundwater model to "see" how water moves underground, and relief maps to map

their watersheds. They made pizzas from garbage and analyzed water samples; they pretended to be algae, fish and raptors to understand how toxins can travel through the food chain. They conversed with the Water Wizard, Dorothy and the Xeric City Scarecrow about saving water and tested their water knowledge in lively games of Water Jeopardy and Dripial Pursuit.

01-U --Continental Divide National Scenic Trail/Aldo Leopold Wilderness

\$123,000 (Federal) (Match: In-Kind \$127,040) \$250,040 (Total)

Project status: Completed

OBJECTIVE(S): Reconstruct the Continental Divide Trail adhering to accepted trail practices taking advantage of topography, contours and other techniques while the forest regenerates from past burns.

Congress designated the Continental Divide Scenic Trail in 1978. It is a unique recreational opportunity along the divide as a long distance primitive hiking and equestrian experience. The Gila National Forest has only recently addressed this long-term project in the last 10 to 15 years. It has become more of a priority in recent years and received increased funding and attention.

Water is the foremost cause of trail problems. The movement of water causes erosion and deep trenches. It also exposes tripping hazards such as previously buried obstructions. Poor initial trail design can rarely be overcome, even by regular maintenance. Inadequate or inappropriate maintenance wastes valuable crew time and can sometimes increase trail problems. Ultimately, the most influential component of trail maintenance is the original trail design/alignment. A well-designed trail will be easier to maintain, will deteriorate more slowly and will be more pleasurable to utilize. New trail construction and reconstruction is occurring not only at grades less than 10%, but also with the implementation of a variety of Best Management Practices (BMPs) that are designed to protect and improve water quality. These include water bars, check dams, grade dips, lead out drains, terracing, switch backing, among others. All of these practices, combined with lower gradients, will allow the trail to successfully slow down surface runoff, trap sediment, and maintain the integrity of soil. These effects will ultimately lead to a reduction in onsite soil loss, thus reducing the amount of non-point source negative effects to drainage bottoms. The most permanent water bars are made from native rock obtained on-site. When rock of a suitable size is not available, water bars can be made from 4 x 6 redwood timber, or native logs. There are many options about the proper installation of water bars. Rock or crib retaining walls are used when a sturdy wall is needed to contain compacted fill or to hold an excavation wall in place. Rock retaining walls are also called dry masonry because no mortar is used between the stones. Rock, when available on site, is preferred over logs. Approximately 12.5 miles of trail has been reconstructed or improved during the length of this project.

Watershed Protection Section Projects 2002

02-B Rio Puerco Implementation Project

Initial Joint Powers Agreement Date: May 19, 2003

\$353,700 (federal) \$235,800 (match) \$25,000 (non-matching federal contributions) \$614,500 (total)
(*note: project combines funding with the FY00-Z project, for a combined total investment of 933,333.33)

Project status: Completed 2008

OBJECTIVE(S): NMED-SWQB's Watershed Protection Section, in cooperation with the Rio Puerco Management Committee (RPMC), developed a large river restoration project on Bureau of Land Management (BLM) lands, to negate the effects of a mid-1960's NMSHTD river channelization project on the Rio Puerco, south of Cuba, in Sandoval County.

In 2000 the NMSH&TD (now DOT) completed the final phases of their large State and Federal Highway 550 widening project between Bernalillo and Bloomfield. The NMED-SWQB 319 program waited for two new bridges to be constructed before river restoration project design work could be completed via the in-house FY97-Q project. This 02-B project follows completion of all road and bridgework, and implements the feasibility / engineering / geomorphology design/ and specifications work developed under a previous JPA agreement with the Bureau of Reclamation's Denver Technical Center. Plans and specifications were reviewed and approved by BLM, NMED, the RPMC, and NMSH&TD. The engineering approach was deemed to be safe, feasible, and environmentally sound, providing a suitable cost benefit for the stream diversion / construction phase.

The objective of this FY 02-B project has been to proceed with the on-the-ground implementation of construction designs and specifications. Beginning in October 2004, the project is employing proper stream morphology, engineering, and construction principals, in activating the technical arm of the BLM (Work Force Crews based in Cuba, NM) to reconstruct the channel, remove berms, plug off and armor the current entrance into the river's channelized segment, and complete other restoration and revegetation elements. The project will close the erosion-prone channelized reach of the river, turn water back into the more stable historic meandering channel, construct local in-channel revetments to manage flows and prevent a reactivation of bank erosion, and supplement riparian vegetation in the once-again flowing channel segment. The BLM has observed how the subwatershed surrounding this project site provides an excellent opportunity to develop a managed subwatershed where conservation practices can be demonstrated. This expanded project scope (named the "Twin Bridges Riparian Enclosure") will be highly complimentary to the stream reintroduction effort, and having BLM and the RPMC as partners represents an additional source of support and potential funding for completing all future aspects of this project. The project has seized the opportunity to establish local wetlands and groundwater-interception ponds for the benefit of wildlife habitat, following BLM's locally established model.

This project's planning, construction, and implementation elements, and the reintroduction of flow to the historic channel have taken approximately 8 years to complete. A "grand re-opening of the new river channel" is projected to be a major public outreach event for BLM, RPMC, and NMED-SWQB, targeted for latest 2005 - early 2006, once channel flows have resumed.

02-C Mangas Water Quality Project: Phase II

Budget: \$467,000 Match: \$311,333.00 Total: \$778,333

Project status: Completed

Problem/Need Statement:

The water quality problem of Mangas Creek can be traced to an unhealthy watershed. Soon after the turn of the century it was proposed that the Burro Mountains be included in the Gila Forest Reserve. A botanist by the name of E.O. Wooton wrote, "*Rafael Canyon leads through pretty heavy Pinion and Cedar. Probably as much as 75 to 100 trees per acre in thickest part, shading from this down to practically nothing on the southern exposure.*"

Today this area may have up to 1200 trees per acre. Because of competition for light and water, woody vegetation has proliferated at the expense of herbaceous ground cover. It is the herbaceous plants that slow the rate of water flowing over the surface of the ground, reducing sheet erosion and providing a mechanism to allow surface water to penetrate the surface of the soil reaching deeper roots and eventually the water table. From numerous forest service reports, it has been documented that this vegetation shift has occurred over much of the 250 square mile area of the Mangas watershed. Head cutting and sheet erosion has occurred in the uplands causing much sedimentation and turbidity in downstream waterways. The main channel of Mangas Creek was a broad grassy wetland when E.O. Wooton first saw it in 1902. Today this channel is deeply incised and the valley bottom is dry. In his journal entry of August 7th 1902 Mr. Wooton writes, "*the area shows evidence of prolonged overstocking with cattle.*"

Overstocking was common at this time and the practice continued until after the First World War. Beginning as early as the 1920's cattle numbers began to decline and today a combination of management practices, fencing and water development, as well as dramatically reduced cattle numbers considerably reduces the impact cattle have on the watershed. Natural fire, however, has been effectively removed from this ecosystem since about the time of E.O. Wooton's survey. Fire is thought to have had a far greater impact on the ecological shifts seen in the Mangas watershed than any other.

Mangas Creek is within segment 20.6.4.502 of *Standards for Interstate & Intrastate Surface Waters, New Mexico Water Quality Control Commission*. The stream is identified on the CWA §303d list as partially supported for plant nutrients and stream bottom deposits. Impairments of Mangas Creek are the result of an unhealthy watershed. Water quality problems in the Mangas watershed have a 100-year history of land managers and property owners doing what was thought to be correct at the time but now understood to be short sighted. The Mangas Water Quality Project Phase II will return fire to the ecosystem of the Burro Mountains. As a result, over time, the tree and shrub component of the plant community will be reduced and herbaceous vegetation will increase. Sheet type soil erosion will be reduced. Because of variable conditions the prescribed burns will be conducted in the spring or the fall months of the year. Pinion-juniper woodlands burned during spring months historically. The lack of fine fuels, characteristic of this forest type, requires dry conditions and light winds to carry the fire across the landscape. However, many practical matters must be considered when planning a burn. Availability of fire fighting equipment, manpower to conduct the work as well as contain the fire within the predetermined boundaries, fuel moisture, wind speed and many others. Roads and natural barriers will determine the perimeter of the fire. Grant SWCD supervisors along with Natural Resources Conservation Service will serve as labor during the burns and facilitators of the planning, funding and reporting process. The US Forest Service fire staff will write the prescriptions and conduct the burns.

Public involvement is a substantial portion of the Mangas Water Quality Project Phase II. The Gila Forest and the Grant SWCD combined forces on two small, prescribed fires in the Mangas drainage in 1997. These burns involved private, State and National Forest land, about 700 acres all together. Today, these burns are used as demonstration to illustrate the effect fire has on noxious weeds, reduction of woody vegetation, stimulation of growth of native grasses and the diversity of herbaceous plant species. Conducting prescribed burns in New

Mexico requires an exhaustive burn plan. Public involvement is a significant portion of a burn plan development process. The public is informed of the plan through public meetings and local newspapers. The Grant SWCD will write news stories and editorials in local newspapers explaining the goals and objectives of the Mangas Water Quality Project Phase II. Grant SWCD has produced a brochure as part of Phase I of the project explaining the project. The brochure is available to the public at large and is being used as part of a handout package notifying local residence of an impending burn.

A forest fuels reduction program, known as the 20 Communities project, targets areas near the Mangas watershed. Grant SWCD serves on the steering committee and is the fiscal agent for the Wildland Urban Interface Grant for this initiative. The 20 Communities project will create fire-lines, defensible space and thin dense vegetation near the populated areas of Grant County, NM. The focus of the 20 Communities project has begun to be introduced to the scattered residences of the Mangas watershed. An example of how 20 Communities and the Mangas Water Quality Project Phase II intend to collaborate is by jointly producing a public education brochure explaining the risk of wild fire and the need for fuel reduction through mechanical thinning and prescribed fire.

02-D -- Moved to FY99

02-E The San Pablo Subwatershed Collaborative Restoration Project

*319 Budget: \$179,500 \$119,667 Match (with a projected \$53,000 non-matching Federal contribution)
\$352,167 total*

Project status: Completed 2007

OBJECTIVE(S): The San Pablo Project is awarded to the Rio Puerco Management Committee (RPMC). The Cuba SWCD is acting as fiscal agent for the three-year project which will work towards addressing the area's identified sources of nonpoint source pollution: soil erosion, road maintenance and road runoff, rangeland impacts, as well as focus project efforts on riparian restoration, brush management, education, outreach, and documentation of results. The main components of the project will be education, riparian restoration, road inventory, and the implementation of erosion control measures.

At a December 2001 meeting of twenty San Pablo residents and land users, the top three priorities for on-the-ground projects implementation were erosion control including road maintenance, livestock grazing management, and control of undesirable vegetation including sagebrush, rabbit brush, salt cedar, piñon-juniper, and noxious weeds. Addressing or stabilizing these recognized impacts is seen by the residents and the RPMC as a method whereby watershed conditions, including water quality, can be improved.

The RPMC intends to focus the erosion control efforts on roads. At a presentation on her Masters research in the upper Rio Puerco basin (supported in part by funding from the BLM), Stephanie Phippen of Colorado State University convincingly demonstrated that sediment yields are more sensitive to the density of dirt roads than to any other factor. We will inventory the roads within the watershed and determine the effectiveness of in-place BMPs, develop criteria to match BMPs with specific problems, and implement measures as indicated in high priority areas. In addition, streambanks that need to be stabilized to reduce erosion will be assessed and willows and cottonwoods will be planted.

RPMC intends to sponsor several workshops on grazing management, riparian restoration, water harvesting techniques, and on roads. Tours of the restoration work will be scheduled when projects reach the stage that inspecting them can be informative to the viewer. These outreach efforts will be supplemented by the development and construction of a mobile rangeland health assessment kiosk to provide hands-on education experiences at community events and public schools. The Project Coordinator will make frequent informal contacts with land users to provide information and offer assistance for specific resource problems.

The RPMC has contacted most of the potential stakeholders in the area and many are already on board as partners in the project. Through educational events they hope to bring in any other interested parties. Partners in this project will include RPMC members, all the agencies overseeing land management in the area, as well as other local watershed groups, private landowners, Tribes, and environmental groups. Overall, project tasks are complimentary of, and intimately tied to, all other ongoing project efforts in this upper perennial reach of the watershed (involving a wide range of State, Federal and private cooperators) that can result in stream channel improvements, water quality protection, and pollution prevention measures.

02-F Galisteo Watershed Restoration Project - Phase II

Budget: \$267,966 \$185,780 Match \$453,746 total

Project status: Completed 2005

OBJECTIVE(S): This project represents the continuation of a project that received support from the NMED (under CWA Section 319(h)) in 2000. The project focused on education and outreach, the development of demonstration restoration areas, and technical assistance to landowners and land managers in order to promote land stewardship practices that will contribute to the eventual declassification of the Galisteo Creek as an impaired water body. In this second phase, the GWRP will capitalize on its achievements in the previous phase. The second phase will focus on increased education and outreach activities and the expansion of demonstration areas to enlarge the project's impact on the land and the stream system. Anticipated outcomes are the planting of at least 500 trees and restoration of 1 mile (25 acres) of riparian areas and 200 acres of grasslands. The combination of education and hands-on restoration work will help diversify and integrate different restoration techniques, reach more people, and generate greater spin-off effects. The project will also pursue a higher level of integration of learning, outreach, and hands-on rehabilitation activities, while developing services that are intended to strengthen the dwindling ranching industry.

02-G Red River Park Stream Rehabilitation

\$69,450 (Federal) \$54,250 (Match: \$40,800 Cash, \$13,450 In-Kind \$123,700 (Total)

Project status: Completed 2006

OBJECTIVE(S): This project will rehabilitate a segment of the Red River from approximately 150 ft. south east of the confluence of the Red River and Mallette streams, traveling in an upstream direction south to the confluence with Bitter Creek. The majority of the project is located on Kit Carson National Forest land under Special Use Permit to the Red River Ski Area and a second Special Use Permit to the Town of Red River.

The Town has contracted a fluvial geomorphologist to study similar stream reaches and determine types of management practices that may improve sediment transport and promote rejuvenation of fish and wildlife habitat through this segment of the river. With a contracted fluvial geomorphologist the Town will set study parameters to identify potential best geomorphology to be applied. The Town and contracted fluvial geomorphologist will then review and analyze the collected data and determine types and appropriate application of Best Management Practices. The study period shall extend through an entire year of flow characterization with documentation provided through the use of camera and computer aided drafting / illustration capabilities.

The initial phase of the project is confined to determining when and how the construction of stream improvements will be implemented. The Town of Red River will rely on its partners and contracted experts to work towards agreement of work and scheduling. The Town shall provide equipment, labor and supplies to perform the required construction. The project will be allowed a partial season of rest during the construction phase to determine if the applied BMPs are working as anticipated. If needed, changes or additions will be implemented through processes of public/partner input and agreement.

The planned outcome of this project is to improve fish and wildlife habitat, improve water quality and increase the sediment transport capability of this segment of the Red River. This is also to be a demonstration project for other parts of the river where sediment loading is high and natural fish populations are low.

02-H Middle Rio Grande Children's Water Festival 2002 and Santa Fe Children's Water Festival 2003

\$37,170.00 (federal), \$37,784.11(match), \$74,954.13 (total)

Project status: Completed

This project repeated the Middle Rio Grande Children's Water Festival in 2002, but also expanded to include new festivals in Santa Fe (spring 2003) and Silver City (spring 2004). The Santa Fe festival was attended by approximately 500 fourth graders and their teachers from the Santa Fe area, and had many of the same activities as the Middle Rio Grande festival, plus several new activities, taught by local professionals who work with water resources. The project also produced a CD ROM toolkit for aspiring water festival coordinators.

02-I Using the New Ranch: Riparian Education and Restoration

\$320,617.63 (federal), \$ 938,470.01 (match), \$706,228 (total)

Project status: Completed 2006

This three-year project was implemented by the Quivira Coalition and had three parts: education and outreach, riparian restoration, and educational materials. Each project area complemented the others. The education and outreach component constituted approximately ten outdoor workshops, hands-on restoration workshops, and conferences per year, in many watersheds of New Mexico. The riparian restoration component focused on a two-mile reach of the Dry Cimarron River in Colfax County, New Mexico. Some of the restoration work (construction of bank stabilization structures, gully stabilization, and willow planting) was conducted by volunteers working at hands-on restoration workshops. Other work (construction of boulder vanes to arrest headcut advancement) was funded with Section 319 funds. Still more work (fencing cattle out of the riparian area, heavy construction to restore flow to three river meanders that had been straightened a generation ago) was implemented by the ranch owner with private funds. The educational materials component included production of a series of user-friendly best management practice manuals relevant to grazing management and erosion prevention in New Mexico (which are used in workshops and distributed statewide), publication of a newsletter highlighting the Dry Cimarron River work and other restoration work in New Mexico, and publication of a manual by Bill Zeedyk on rural road maintenance and construction methods that reduce impacts to water quality while also reducing road maintenance costs.

02 - J Sapello Watershed Restoration Project

\$124,228 \$80,000 \$204,228

Project status: Completed 2007

Problem/Need Statement:

The catastrophic wildfires of 2000 have severely affected the water quality in the Sapello River from Manuelitas Creek to its headwaters. As a result of vegetation loss, large amount of ash and soils highly vulnerable to erosion, severe runoff and turbidity have become major problems. This watershed condition has caused increased siltation in the river and placed fisheries in danger and increased erosion on the land. Data to support these problems include assessments on the burn area including the watershed by NM State Forestry and USDA-Natural Resource Conservation Service.

This project will address the problems by developing and implementing Best Management Practices (BMPs) including riparian and fisheries habitat restoration through bioengineering and fencing; educational outreach on watershed management; grass seeding and seedling plantings will also be completed. Sedimentation and turbidity will be reduced in local streams, fisheries and riparian areas will be improved and a healthier watershed will result with the successful implementation of this project.

General Project Description

This project will implement the use of Best Management Practices (BMPs) to address the problems, improve, protect and restore the watershed. The BMPs are as follows:

-Provide plantings with native species on approximately 500 acres of burned and critically eroding areas on private lands. These plantings will occur throughout the three year period of the project. This task will be completed by Tierra y Montes SWCD staff, City School MESA (Math, Engineering, Science Achievement program) and 4-H Clubs (agricultural, natural resource awareness program), and landowners. This will be completed by April 2005.

-1,000 feet of streambank will be stabilized through riparian restoration methods (i.e. willow facines) on private lands over three years. Landowners and Tierra Y Montes staff will complete the task with the technical assistance of USDA-NRCS. This task will be completed by April 2005.

-Installation of 5,000 feet of fencing to reduce grazing around riparian restoration areas and browsing of critical areas on private land will be completed by the end of the project (April 2005). This work will be accomplished by the Tierra y Montes SWCD staff, and landowners along with the technical assistance of USDA-NRCS.

-6,400 feet of diversion structures (rock structures, log structures, straw wattles, brush bundle facines) to control runoff and filter sediment from floodwaters before they reach the river will be installed. This will be completed within three years by technical assistance from USDA-NRCS, Tierra y Montes SWCD and the landowners.

-Two of these BMPs will be used as highly visible demonstration areas during the first two years and one during the third year.

-Additionally, Tierra y Montes SWCD will publish three informational articles per year in two newspapers and district newsletter over a three year period; a minimum of ten presentations will be made at the elementary school per year for three years. This will include classroom presentations, Rolling Rivers Trailer presentation (river simulation trailer), Project Wet hands-on activities (environmental education program that emphasizes water quality and publishes and disseminates environmental education materials), field days in which we will use classroom river water kits to test water quality, soil stewardship activities in which we will hold poster contests and provide information on natural resource stewardship. Students will also be involved in any planting projects we may have. This will provide information to them on the proper way to plant seedlings and distribute seed to restore burned areas. Two informational and educational workshops will be held within three years for landowners and the general public on management practices related to project objectives. Workshops presenters will provide landowners with hands-on information focusing on affordable and effective erosion control methods and recommendations on restoration of burned areas. An educational tour on the "Pool & Stomp" project in Angel Fire is planned and will provide landowners with information on the technology for rehabilitation of steep slope vegetation. Educational booklets or brochures related to project objectives will be developed, published and distributed. These educational and informational items will provide awareness of watershed health and protection issues.

02-K Development of a Wastewater Training Curriculum -- Cancelled

02-L Gallinas Municipal Watershed Fuels Reduction - Las Vegas, NM

\$93,228 \$59,363 \$152,591

Project status: Completed 2006

Problem/Need Statement:

The purpose of the Gallinas Municipal Watershed Fuels Reduction Project (“Project”) is to lessen the chance that a catastrophic, stand-replacing fire will occur in the watershed, thereby protecting water quality. The portion of the Gallinas Municipal Watershed (“Watershed”) on National Forest System land is the headwaters of the water supply for the city of Las Vegas, which has a population of about 14,500.

The Viveash fire started in the Cow Creek watershed located just west of the Gallinas and exemplifies the type of fire we wish to avoid. The fire scorched approximately 2,000 acres of the Gallinas Watershed. As a result of the burn, the Las Vegas treatment plant located 20 miles downstream was inundated with ash and sediment. Should a larger fire occur in the heart of the Watershed, the water supply for the city of Las Vegas could be threatened. Rains ensuing the fire would transport runoff, ash, and sediment and could impair the treatment plant and conceivably fill the water supply reservoirs. In the worst scenario, this sedimentation could cause downstream floods and eliminate the water supply for the city.

By reducing the amount of forest fuels (such as small trees, shrubs, forest litter, and slash) and re-instating the natural fire regime in the Project area, we will reduce the chance that a stand-replacing fire will occur. The smaller trees and shrubs act as “ladder fuels” that allow fire to climb to treetops, where it can spread quickly and easily. By removing the ladder, a fire stays on the ground, where it moves more slowly, is less dangerous, and is more easily extinguished. Smaller, cooler fires would actually benefit the ecology of the area by encouraging nutrient cycling, stimulating the growth of grass, and preventing a build-up of forest fuels. A smaller, cooler fire should not cause significant sedimentation, especially when coupled with Best Management Practices.

General Project Description

The Gallinas Municipal Watershed in its entirety totals about 81 square miles. Of this, approximately 33,000 acres is located on National Forest System land; about 16,000 acres are part of the Pecos Wilderness. The Pecos/Las Vegas Ranger District (“District”) of the Santa Fe National Forest is proposing to reduce the amount of forest fuels on about 13,000 acres of the Watershed. The Project for which the District is requesting a 319(h) grant will cover 300 acres.

The objective of the Project is to improve the resiliency of the Gallinas Municipal Watershed by lessening the risk that a catastrophic wildfire will occur. The District proposes to reduce the amount of forest fuels on the 300 acres by doing the following:

- Thin the smaller trees and remove most of the understory;
- Open the area to the public to collect fuel wood, latillas, and vigas;
- Perform a broadcast burn to “clean up” the remaining slash;
- Re-introduce fire on a regular basis in the future; and
- Evaluate the effectiveness of the treatment.

The acres to be treated are primarily ponderosa pine. Ponderosa pine relies on regular fires every 15 years or so to remain healthy. Regular, cool under burns (fires that burn mostly on the ground) will keep the stands healthy, allow existing trees to grow larger by preventing competition from smaller trees, and stimulate the growth of grasses that keep watershed soils intact.

02-M Rio Gallina Riparian (Chama) Watershed Project

\$153,665 (Federal) \$205,200 (Match In-Kind \$205,200) \$358,865 (Total)

Project status: Completed

OBJECTIVE(S): The project is designed to assist the USDA Forest Service and local grazing permittees in reducing negative influence on water quality associated with livestock grazing along the Rio Gallinas and its tributaries. The project area includes 31% of the 180,000 acre Rio Gallina watershed within the Rio Chama watershed. It includes approximately 19 miles of perennial streams and 500 acres of riparian area. Eighteen percent of the project area has conditions that support soil loss in excess of tolerance, but less than potential levels. The project will be implemented as part of three individual Allotment Management Plans. The Allotments are the French Mesa Allotment, the La Presa Allotment, and the Rio Gallina Allotment.

Water Quality BMP Improvements by Allotment are:

French Mesa Allotment- Rotational Grazing Fence

Trick Tank (1)
Stock Pond (1)
Sediment Dam (1)

La Presa Allotment

Trick Tanks (3)
Stock Tank (earthen dam) 1
Corral
Cattleguard (1)

Rio Gallina Allotment

Trick Tank (3)
Fencing (riparian enclosure on Gallinas River)

BMPs at the Rio Gallinas project have been implemented and the workplan outline regarding BMPs has been fulfilled. The monitoring guidelines are photo documentation procedures as stated by Surface Water Quality Bureau policy. The policy is to photo document the project site before, during, and after. This enables staff to view changes long term of project improvements from project activity. These types of projects are long term meaning 10-20 year periods in which full results will and can be capitalized on. However, we are always at the discretion of Mother Nature and that has to be factored in as well.

02-N Animas River Channel Restoration Project

\$136,161.12 (federal), \$132,420.80 (match), \$268,581.92 (total)

Project status: Completed

This project stabilized a 1900-foot reach of the Animas River in San Juan County with an aggressive engineering approach utilizing methods developed by Dave Rosgen. The main steps were realigning a portion of the channel to achieve a radius of curvature for a meander more in line with what is typically observed with stable channels of this size (approximately 4600 cfs at bankfull), protecting the bank and controlling the grade with four boulder vanes, and constructing a wetland that high flows can enter without substantially increasing the erosive force of the river. The project has largely accomplished its aims and continues to be a useful example of this approach used in New Mexico.

02 -P Plugging of Abandoned Ground Water Monitoring Wells in the “Dairy Row” Area of Mesilla and Rincon Valleys, Lower Rio Grande.

\$90,011 (federal)

Project status: Completed: 2003

Problem Need Statement

The purpose of this project is to properly plug and abandon ground water monitoring wells in the “Dairy Row” area of Mesilla and Rincon Valleys, located along the lower Rio Grande in Doña Ana County. In the early 1980’s, EPA funded the New Mexico Environmental Improvement Division, predecessor agency to the New Mexico Environment Department (NMED), to conduct a study entitled *Seepage Rates and Ground Water Quality Impacts from Manure-Lined Dairy Waste Lagoons*. As part of that study, 35 ground water monitoring wells were completed near lagoons at selected dairies in the Mesilla and Rincon Valleys where a high concentration of dairies are cited, hence the name “Dairy Row”. The 35 wells are constructed from either PVC or steel casing and are completed to depths as shallow as 7 feet and as deep as 90 feet. Since the conclusion of the study, the wells have remained in place and have not yet been properly plugged and abandoned. These improperly abandoned wells may act as non-point source conduits for water contaminants to directly enter ground water and then surface water in this corridor of the lower Rio Grande. As such, the NMED Ground Water Quality Bureau (GWQB) proposes to properly plug and abandon the 35 wells to prevent the wells from resulting in ground water and surface water contamination.

General Project Description

The goal of this proposed project is to properly plug and abandon 35 ground water monitoring wells to prevent the wells from acting as conduits for water contaminants to migrate into ground water. In all, there are 420 linear feet of steel casing and 740 linear feet of PVC casing that require abandonment. Various closure methods may be employed due to the different well materials including perforating the casing and pressure-cementing in place, and over-drilling or pulling the casing followed by grouting the open hole. The specific closure method for each well will be determined by NMED staff in consultation with drilling company staff and based on the well completion logs. The following general tasks will be undertaken by NMED staff to complete this project:

- Perform field reconnaissance to locate and identify each of the 35 monitoring wells and document well conditions;
- Properly purge and sample each of the wells to obtain current ground water quality;
- Create a spreadsheet that summarizes well completion details and current well conditions;
- Implement the procurement process to contract with a drilling company for well plugging and abandonment services. This includes issuing a Request for Proposals, evaluating bids, selecting a contractor, and entering into a contract.
- Meet with the contracted drilling company to schedule the project and to determine the specific well abandonment method for each well;
- Provide field oversight to the drilling contractor during the well abandonment effort; and,
- Write a final report describing abandonment methods used and completion of project.

02-Q New Mexico Water Fair and Water-Quality Outreach Program

Federal \$60,883 State \$40,497 Total \$101,380

Project status: Completed

General Project Description

The purpose of this 319(h) project is to:

- develop and carry out an extensive Water Fair program of free testing of private domestic wells in rural communities throughout the state in order to identify possible non-point source water quality problems, and

- conduct educational outreach activities targeted at domestic well owners in order to enable them to make informed decisions regarding water quality issues in their communities.

The project will consist of approximately 20 Water Fair events conducted in rural communities throughout New Mexico. The events will be evenly distributed between 4 NMED Districts (see attached map of the districts), with 5 events taking place in each district. Each Water Fair event will include the following:

- free testing of water samples from private domestic wells and community wells for nitrate, iron, sulfate, conductivity, pH, and organic vapor using portable analytical equipment, and
- educational outreach activities on water quality issues that will be carried out through informative brochures, displays, interactive models, and individual contact with NMED staff.

Preference in scheduling Water Fairs will be given to communities that are located in Category 1 priority watersheds and have known or suspected ground water contamination. Approximately 6 Water Fairs will be conducted in conjunction with public meetings and hearings where there is already a concern about water quality. A notice about free water testing will be included in the advertised public notice for the meeting/hearing. The additional benefit of conducting Water Fairs at the public meetings will be an anticipated increase in attendance at the meetings. Whenever possible, water testing will be conducted in a separate room than the meeting room in order to avoid interference with the meeting. Approximately 7 Water Fairs will be conducted in response to requests from citizens concerned about water quality in their community, and the remaining 7 Water Fairs will be carried out to target communities that, based on NMED data, have existing or suspected ground water contamination. When advertising each event, local newspapers, radio stations, watershed groups, and other community organizations will be contacted about the upcoming Water Fair. In addition, notices about the event will be posted at local post offices, churches, grocery stores, and other public places by NMED staff from the nearest NMED field office.

During each Water Fair, NMED staff will make available to the participants educational materials on ground water quality, contaminants in drinking water, pollution prevention, septic system maintenance, well protection, watershed protection, and other topics related to water quality (see attached examples of educational materials). Whenever possible, Spanish language versions of the educational materials will be provided. A ground-water model and, when possible, an interactive 3-dimensional watershed model will be available. Each person who brings a water sample for testing will be asked to fill out a sample information form and to identify the sample location on an aerial photo of the community. Results of sample analysis will be given back to the sample owner by NMED staff who will explain the results, point out problems with water quality and potential health threats, list likely sources of contamination, and suggest steps that the homeowner can take to reduce health risks. Together with the printout, the sample owner will receive a customized information package that will include fact sheets on the analyzed constituents, possible health risks, likely sources of contamination of domestic wells, pollution prevention practices (including well protection and septic system maintenance tips), and a list of phone numbers of NMED staff who can answer future questions about water quality and pollution prevention.

After each Water Fair, the sample location information and the analytical data will be entered into a database for archiving and for identifying non-point source water-quality problems in affected communities. In addition, approximately two weeks after each Water Fair, NMED will either call each sample owner (if phone number has been provided) or send a follow-up survey to seek comments on the Water Fair program and suggestions for improvement.

02-R Ponil Complex Fire Rehabilitation Project

Federal \$ 270,635 State \$350,000 Total \$ 620,635

Project status: Closed

General Project Description:

The purpose of this 319(h) project is to address water quality impacts caused by the Ponil Complex Fire of 2002. A total of 92,124 acres burned making this one of the largest wildfires in New Mexico's history. The majority of this burn occurred in the Ponil drainage, a major tributary of the Cimarron River. More than 28,000 acres on the Philmont Scout Ranch – Cimarron, NM were affected. Of these, approximately 20,000 acres burned with light to moderate intensity while the remaining 8,000 acres experienced high intensity tree stand replacement disturbance. The most severely burned areas were aerial seeded immediately after the fire was contained. Philmont work crews also installed straw bail sediment retention dams, grade control structures, and employed extensive use of another proven post-fire BMP, contour log felling. Since the initial treatments were implemented, the Philmont Scout Ranch has kept a watershed rehabilitation crew working continuously during favorable weather conditions. This crew is responsible for the labor-intensive task of hand raking, seeding, and mulching. Primary focus is on ridge tops and those areas that did not respond well to initial soil stabilization treatments. This project has been extended through March 2005. However, the crew's efficient use of 319 (h) will likely allow them to work through the entire 2005 field season. Sediment/turbidity-related TMDLs exist for several tributaries of the Cimarron River including Middle and North Ponil Creeks, Moreno Creek, and Cieneguilla Creek.

02-S Watershed Group Formation and Preparation of a Watershed Restoration Action Strategy for the Las Huertas Creek Watershed, Sandoval County, New Mexico

Base: \$36,385 Match \$29,655 Total: \$66,040

Project status: Completed 2006

OBJECTIVE(S): The Las Huertas Watershed Project (LHWP) began as a group of concerned citizens working as part of the Las Placitas Association (LPA), a Placitas, New Mexico based 501 (c)(3) non-profit corporation dedicated to protecting and preserving the quality of life in the Placitas area. Working as a volunteer effort under LPA, the LHWP has already conducted essential research and public outreach that will serve as a strong basis for completing watershed group formation according to EPA and NMED guidelines.

Under the recently awarded Clean Water Act Section 319(h) grant, the LHWP proposes to complete the watershed group formation process and to complete a draft Watershed Restoration Action Strategy (WRAS) by June 30, 2005. During the period July 1, 2005 through June 30, 2006, the LHWP will finalize the WRAS, maintain public outreach and stakeholder engagement activities, and plan and pursue funding for on-the-ground watershed restoration projects. The objective of the watershed group formation is to establish a collaborative community-based process involving all key interests and affected parties. The process will engage watershed stakeholders and facilitate participation to complete the organization of a local watershed group according to EPA and NMED guidelines.

Watershed Protection Section Projects 2003

03-B Children's Water Festival Program

\$55,781.31 (federal), \$93,800.22 (match), \$149,581.53 (total)

Project status: Completed

The entire Water Festival experience and learning activities were intended to help students and their teachers in the Middle Rio Grande, Santa Fe, and other New Mexico communities, understand that water is an essential and limited resource and what each of us can do to protect and conserve our water. The Water Festival Program has brought children's water festivals for 1000 fourth graders per year to the Middle Rio Grande Valley from 2003 through 2005, and for 500 fourth graders in Santa Fe from 2004 through 2006. The project also helped develop and financially supported children's water festivals in Silver City, Socorro, and Grants. At its completion, this project together with similar projects in recent fiscal years delivered teacher workshops and a day of water education to approximately 10,000 New Mexico fourth graders and hundreds of parents and teachers.

03-C Rio Costilla Tributary Watershed Improvement Project

\$200,000 (Federal) \$133,000 (Match In-Kind \$133,000) \$333,000 (Total)

Project status: Completed 2007

OBJECTIVE(S): The objective is to substantially increase under story ground cover. We need to reduce the smaller diameter timber populations and deadwood debris. Along with the thinning process we need to increase the amount of grass and forbs growing in the new tree-shaded barren and highly eroded soil surface. By doing this we simply increase the amount of sunlight hitting the ground and release a significant volume of water currently being consumed by the trees which can alternatively be used to encourage 'a natural grass infiltration system', in and around these tributaries and riparian areas within the watersheds.

BMP Project Improvements are:

Sage Brush Removal/Re-Seeding

Woodlands Thinning

Wetlands Rehabilitation

Monitoring will consist of photo documentation. For photo documentation we will be identifying the GPS location of each site and points within each site from which we can document the changes of the project landscape over time. A protocol to be followed will be provided by the New Mexico Environment Department. These digital images will also be used to communicate our efforts as part of the outreach communication media to owners of the RCCLA, students and for the project documentation.

03-D Rio Ruidoso Watershed Restoration Project: Phase II

\$146,190 (Federal) \$715,182 (Match) \$ 861,372 (Total)

Project status: Contract expired

OBJECTIVE(S): The Rio Hondo watershed is located in south-central New Mexico and encompasses 1,076,480 acres extending from the crest of the Sacramento Mountains at an altitude of 12,003 ft to the Pecos River at an altitude of 3,445 ft. The major streams in the watershed are the Rio Ruidoso and the Rio Bonito which flow through the upper watershed until they join to form the Rio Hondo. Major water quality issues facing the watershed are; rapidly increasing population growth (urban development), changes in vegetation patterns, loss of riparian habitat, increased tree density, and increasing loss of upland stability leading to

increased runoff and erosion. The Rio Hondo watershed is listed with four TMDLs: bacteria, nutrients, temperature, and turbidity.

The primary goal of the project was to reduce erosion at two points along the Rio Ruidoso, and consisted of two separate components that are a part of the Rio Hondo Watershed Restoration Action Strategy. The objective of the first component of the project was to remove a road and reconstruct the channel away from badly sloughing banks in the headwaters of the Rio Ruidoso to reduce sediment loading to the river. The objective of the second component was also to reduce the sediment loading by stabilizing the bank and installing rock structures in the Rio Ruidoso at Two Rivers Park in the Village of Ruidoso. A secondary goal was to provide fish habitat in the Rio Ruidoso and develop an interpretive trail at Two Rivers Park.

03-E Collaborative Watershed Project: Supporting TMDL Implementation in (Chama & Jemez Group Formation)

\$184,000 (Federal) \$122,667 (Match) \$306,667 (Total)

Project status: Completed 2007

OBJECTIVE(S): The objective of this project is to develop Watershed groups (Chama and Jemez Watersheds) through establish a collaborative community-based process that builds the capacity of the participants to make informed decisions that will lead to water quality improvements. The process will help achieve local understanding of the State's water quality management system, identifying contributing sources of those pollutants to be controlled under the TMDLs, develop a local remediation plan, implement remedial activities at priority sites, and identify ways in which individuals and organization can otherwise contribute or improving water quality. Through the collaborative process, individuals and organizations will be asked to reevaluate the way they perceive and live in their watershed.

Once the group has been convened, the process managers will work with the group to develop ground rules, a decision-making process, and goals. Once these foundational elements are in place, the group will work to accomplish the following:

- Gain an understanding of prevailing water quality standards and implications, TMDLs and the group's role in influencing the TMDLs;
- Develop an educational program to build the capacity of the participants to make informed decisions;
- Develop a public outreach strategy that ensures that information about the watershed initiative is flowing from and to the stakeholder group;
- Identify available information and data needs;
- Quantify problems, identify sources, and prioritize them;
- Identify broader issues and concerns; define viable remedial options;
- Develop a Watershed Restoration Action Strategy that includes well-defined and achievable goals as well as an effective implementation plan;
- Select sites for early remediation actions; define an ongoing monitoring plan for tracking improvements;

03-F San Pedro Creek Watershed Outreach, Education & Action Projects, NM

\$20,000 (Federal) \$32,620 (State) \$52,620 (Total)

Project status: Closed 2006

OBJECTIVE(S): This project targets local stakeholders for participation in an overall watershed action strategy. It includes 1) identifying and documenting baseline conditions including non-point source pollution in the watershed; 2) writing a riparian restoration plan for the upper reaches of San Pedro Creek; 3) creating and distributing outreach and educational materials for targeted watershed stakeholders; 4) fostering stakeholder

collaboration for implementing and revision of the WRAS; and, 5) implementing environmental education programs in the schools and the community.

03-G Santa Fe Neighborhood Watershed Initiative (Cancelled)

\$126,617 (Federal) \$123,990 (State) \$250,607 (Total)

03-H Respect the La Jicarita Watershed

\$39,371.98 (federal) \$16,727.98 (match) \$56,099.96 (total)

Project status: Canceled due to contractor non-performance

03-I Rio Puerco Grade Stabilization & Streambank Stabilization Project

319 Budget: \$ 20,000) \$29,000 (State Agency Match) \$15,000 non-matching RPMC (Federal) contribution

Total: \$64,000

Project status: Completed 2007

OBJECTIVE(S): The project will serve to reduce erosion of the Rio Puerco channel within the Village of Cuba by restoring a locally impaired stream reach to an improved functioning condition. Riparian vegetation enhancements will assist erosion control and streambank stabilization efforts, as well as enhance the aesthetic appeal of this area.

The current project will remove urban debris, loose tires and displaced tire bales currently diverting the stream from its normal channel, establish stable stream banks, and reestablish a proper functioning flow-through channel. The approach will incorporate stream morphology, hydraulic geometry, and reference reach methodologies to direct the construction efforts. High vertical bank segments will be graded to a natural slope and protected from further erosion.

03-J Rio Quemado Watershed Project

\$83,240 (Federal) \$33,296 (Match In-Kind \$33,296) \$116,536 (Total)

Project status: Completed 2006

OBJECTIVE(S): The performance target for this project is the improved water quality in the Rio Quemado. In particular, the project will reduce turbidity and sediment load in the water by removing cattle and their impacts from the riparian areas (through fencing and location of salt blocks out side these areas) and rotational grazing through grazing units, and by replanting areas deforested during the Borrego Mesa fire. The project will protect 10 miles of the upper Rio Quemado and will remove the project area from the list of contributors to water quality impairments in the watershed.

Project BMP improvements include:

- Trick Tanks (3)
- Earthen Dams (2)
- Cattleguards (3)
- Troughs (2)
- Fencing (3.15 miles)

The final outcome of the Rio Quemado Project will be the reduction of NPS pollutants from logging, road building, stream crossings, grazing, and deforestation caused by the Borrego Mesa forest fire will reduce the stream bottom deposits caused by soil erosion. Photo documentation will be in accordance to Surface Water

Quality Bureau standards and policy. The policy is to photo document events before, during, and after final project completion.

03-K Cimarron Watershed Alliance (formerly the “*Pilot Project in the Cimarron Watershed with The Nature Conservancy*”)

\$ 648,843 (Federal) \$462,475 (State) \$1,111,318 (Total)

Project status: Completed September 2008

OBJECTIVE(S): The Cimarron Watershed Alliance (CWA) includes interests from incorporated and unincorporated areas of Colfax County. Members of this nonprofit organization include a diverse group of local ranchers, landowners, elected officials, business owners, state/federal agency representatives, civic groups, and private citizens. Their common interest is in maintaining and/or improving water quality and quantity within the Cimarron Watershed with the ultimate goal of full support for all designated uses. The Alliance’s Mission Statement is “to strive for and maintain a healthy watershed for all residents through collaborative community activities involving all stakeholders with an interest in water.” BMPs for this project will primarily focus on upland and/or streambank erosion. Although some structural BMPs such as fencing, water developments, and/or gully plugs are to be implemented, the major focus will be on land management practices-most notably riparian grazing management. Currently livestock have unrestricted access to all of the Cimarron’s major tributaries the impacts of which are most evident in the montane grasslands of the Moreno Valley. 9 TMDLs have been approved for this watershed. Several of these combine multiple streams and include listings for chronic aluminum, turbidity, stream bottom deposits, temperature, and fecal coliform.

This project was completed in September of 2008. Accomplishments included a reduction in sediment loading of 28.2 tons per year. In addition phosphorous loads were reduced by 21.8 tons per year and nitrogen was reduced by 41.6 tons per year. In treated uplands, the reduction in catastrophic fire risk cut the upland erosion/sediment yield potential by 2268 tons.

03-L Sharing the Power of Partnerships-Watershed Alliances (Lower Pecos)

\$49,744 (Federal) \$33,163 (Match: \$1,500 Cash, \$31,663 In-Kind) \$82,907 (Total)

Project status: Closed

OBJECTIVE(S): Through this proposed project, local watershed partnerships - or Alliances - will be formed. These Alliances are voluntary groups of landowners, producers, educators, advisors and others interested in addressing conservation and economic needs of a community. By helping these Alliances become strong, effective and action-oriented groups, this project will ensure that environmental, economic, social and cultural objectives of the watershed are integrated into Alliance action plans for water quality improvement. This will help to enhance local and regional economic viability in ways that are environmentally sound and consistent with defined watershed objectives. In addition, viable Alliances with diverse stakeholders will become a sustainable entity in watersheds, providing long-term efforts for water quality improvement.

Through a series of four workshops, two targeted New Mexico watersheds (to be identified) will assemble a public/private partnership to form Watershed Alliances to promote water quality improvement. These workshops will form a common vision for that partnership; develop a mission statement; create a business plan, including prioritized NPS issues; and outline action steps for the next 12-24 months.

While the Alliances may envision long-term (5+ years) goals, the workshop will focus the Alliance on setting short-term goals and emphasizing attainable objectives and realistic milestones. It is important to have short-term successes to maintain the vitality of the Alliances. The Alliance business plan becomes a living document, an organizational guidance tool reviewed and revised annually. The business plan also serves as an external

outreach tool – helping to promote Alliance efforts, obtain funding and communicate the Alliance message about water quality improvement.

CTIC will encourage the Alliances to hold regularly scheduled meetings to revisit their 12-24 month work plan and complete the items listed. In addition, CTIC will encourage the Alliances to document work completed in meeting notes.

CTIC proposes a Train-the-Trainer workshop that will follow the Healthy Watersheds training and expand the skills of the New Mexico participants and help them to implement what they've learned in their home watersheds. This two-day training will teach participants how to facilitate alliance-building workshops and strengthen leadership skills. The skills will be used to organize an effective watershed process in specific areas of concern, as proposed in the 604(b) work plan. Participants who complete this training then become a network of qualified, objective facilitators who can help neighboring watersheds build collaborative efforts through the alliance-building process. These trained facilitators will use knowledge from Healthy Watersheds and skills obtained through Train-the-Trainer to perpetuate Watershed Alliance successes and water quality improvement throughout the state. For all Alliances, CTIC will provide organizational assistance after workshop completion, in the form of other training, such as membership development, fund raising, etc.

The number of Train-the-Trainer participants is dependent upon the number of people who attend New Mexico's Healthy Watershed Training. The number of Alliances formed as a result of the Train-the-Trainer workshop is wholly dependent upon the enthusiasm of the participants and their effectiveness in sparking interested landowners to join together to form new alliances.

Watershed Protection Section Projects 2004

04- A Development of a Stormwater Management Plan for Los Alamos County, NM, and Implementation Measures in the Pueblo Watershed

\$ 148,000 (Federal) \$ 208,500 (Match) \$ 356,500 (Total)

Project status: Terminated – Contract not extended

OBJECTIVE(S): This project focuses on actions to reduce total alpha and selenium nonpoint source (NPS) pollution in Pueblo Canyon, a ten-mile tributary of Los Alamos Canyon, which drains to the upper Rio Grande. This project will develop a comprehensive stormwater management plan for Los Alamos County with a focus on the Pueblo Watershed. Components of the plan will include general stormwater management objectives, a proposed ordinance and possible changes to the County development code, and construction standards and methods to meet the TMDLs. Characterization of current conditions, prioritization of areas where effective treatments are critical, and implementation of control measures and appropriate runoff management will decrease peak flows and reduce sediment transport throughout the Pueblo Watershed.

04-B Watershed Group Formation in Upper Rio Grande, Mimbres and Conejos Watersheds, New Mexico - Conejos Watershed Project

\$177,600 (Federal) \$118,400 (In-Kind Match) \$296,000 (Total)

Project status: *Completed – WRAS Group Formation*

OBJECTIVE(S): The objective of this watershed project is to establish a collaborative community based process involving all key interests and affected parties. The process will help develop local understanding of the State's water quality management system (including TMDLs and load allocations), identify contributing sources of those pollutants to be controlled under the TMDLs, develop a locally acceptable remediation plan for efficiently achieving the load reductions, develop work plans for future funding of on-the-ground watershed rehabilitation projects, and identify ways in which individuals and organizations can otherwise contribute to improving water quality.

Meridian institute and SWQB believe that this watershed would benefit from a collaborative approach to identifying and reducing the impact of priority of non-point sources of pollution by building local interest and increasing local involvement in defining the problems and implementing the solutions.

04-C Taylor Creek, Upper Gila Watershed Restoration Project

\$31,728 (Federal) \$24,830 (Match In-Kind) \$56,558 (Total)

Project status: *Completed*

OBJECTIVE(S): Nonpoint source pollution problems within the Taylor Creek watershed include temperature, turbidity, and chronic aluminum. Sources of these impairments include problems associated with grazing, fire suppression, and loss of riparian habitat. The objective of this project was to form a watershed group of local stakeholders, and develop a holistic watershed management plan to improve watershed health and water quality based upon best management practices, by identifying objectives and goals that are feasible, attainable, and beneficial to the stakeholders. The result was the development of a Watershed Restoration Action Strategy (WRAS) that further identified causes and sources of impairment, provided a description of best management practices to address problem areas, and a description of potential projects.

04-D Comanche Creek Watershed Restoration Project -Restoring Habitat for the Rio Grande Cutthroat Trout, Part 2

\$143,510 (Federal) \$75,760 (State) Cash-Match \$21,400 \$240,670 (Total)

Project status: Completed 2008

This project was implemented by several organizations working together as the Comanche Creek Working Group. Their efforts were directed towards reducing temperatures and sediment loading in Comanche Creek, in the Valle Vidal Unit of the Carson National Forest, in northern Taos County. Temperature is recognized by the New Mexico Environment Department (on the 2004-2006 303(d) List) as the main water quality problem in this stream, with sedimentation also posing a threat to fisheries. The Comanche Creek Working Group addressed these problems with construction of strategically placed mini enclosures to permit colonization of willows and cottonwoods, construction of post vanes and baffles to encourage colonization of vegetation on eroding banks, drainage improvements on the main road through the area, and construction of low-tech rock structures to stabilize gullies and halt headcut progression. Much of the work was done by volunteers during erosion control and riparian restoration workshops, and many of the participants will use their experience gained in this project to benefit water quality elsewhere in New Mexico. Work on Comanche Creek continues with support of the River Ecosystem Restoration Initiative. More information is available at www.comanchecreek.org.

FY04-E Rio Puerco De Chama

Budget: (Federal) \$158,170.00 Match: \$181,251 Total: 339,421.00

Project status: Completed 2008

OBJECTIVE(S): The Rio Puerco De Chama Watershed is an arterial of the Rio Chama Watershed. The watershed is located at the north end of the Jemez Mountain Range in the Coyote Ranger District. The project area includes 65% of the 131,000 acre Rio Puerco De Chama Watershed; it includes approximately 42 miles of perennial streams and 198 acres of riparian zones.

The specific pollutants identified in the State of New Mexico 303(d) list are turbidity and stream bottom deposits. Probable sources are rangeland grazing and/or upland grazing related practices, silviculture, road maintenance/runoff, and stream bank destabilization.

The goal of the Rio Puerco De Chama Watershed project was to address the impacts of rangeland grazing on surface water resources, through a series of range improvements and BMP implementation of new allotment management plan. A Range Management Plan (RMP) will be a priority. The RMP will include rotational grazing practices that will help reduce the grazing stress in the allotment. The implementation of BMPs such as cattleguards, Fencing, Corral, Sage Mowing and Trick Tank installation will help ensure that the RMP works for the Rio Puerco De Chama. Significant sediment reduction will occur from BMP implementation.

The project was successful upon JPA completion on December 2008. The Coyote Ranger District of the Santa Fe National Forest was instrumental in implementing the project workplan.

04-F Cordova Creek In The Rio Costilla Watershed Project

\$153,950 (Federal) \$202,182 (Match In-Kind \$202,182) \$356,132 (Total)

Project status: Terminated Contract

OBJECTIVES(S) are:

Objective 1: Improve water quality and remove sources of impairment so that water quality standards can be met.

- Objective 2: Update and refine the Watershed Restoration Action Strategy (WRAS) for Cordova Creek.
- Objective 3: Design and install Best Management Practices (BMPs) to improve the stability of the slopes along Cordova Creek.
- Objective 4: Identify and evaluate potential new roadway alignment for NM 196 that will relocate it away from the (Cordova Creek) stream channel.
- Objective 5: Improve habitat for the Rio Grande Cutthroat Trout in Cordova Creek.
- Objective 6: Evaluate and document the effectiveness of these activities.

Furthermore, the project is to improve the condition of the Rio Costilla watershed to meet current water quality standards and to restore normal hydrologic function to the Rio Costilla and its tributaries (especially Cordova Creek). Completely achieving this goal will likely take decades. Over the next three years, however, we hope to address a critical source of sediment to the Rio Costilla watershed. This sediment originates in Cordova Creek, a major tributary to the Rio Costilla. The portion of Cordova Creek to be addressed by the is project is adjacent to NM 196 which provides access to the Ski Rio Resort.

BMP project improvements are:

- Stormwater management
- Terracing and revegetating slopes
- Installing vortex weirs, replacing culverts
- Installing retaining walls and concrete barriers along erosive slopes
- Recreating meanders or step-pool and morphology ultimately restoring the characteristics of the creek to improve its stability and provide coldwater fishery habitat.

Monitoring will consist of collecting baseline data on geomorphology, riparian conditions within this reach of Cordova Creek. This data will provide foundation of the Drainage Report and the subsequent recommendations for measures to control erosion in the stream channel. To the extent possible existing studies on stream morphology, riparian habitat conditions, temperature, and water quality will be used to assess existing conditions.

04-G Rio Grande—Albuquerque Watershed Group Formation Project

\$80,000 (Federal) \$60,400 (Match) Total: \$ 140,000

Project status: Completed 2006

OBJECTIVE(S): The objective of this watershed group formation project is to establish a collaborative community-based process that builds the capacity and attracts participants to make informed decisions that will lead to water quality improvements in the Rio Grande-Albuquerque reach. The process will help advance local understanding of the State water quality management system (including stream standards, the Nonpoint Source Management Plan and TMDLs); identify contributing sources of pollutants to be controlled in accordance with the TMDL for fecal coliform bacteria; develop and implement locally acceptable remediation plans using recognized best management practices at priority locations within the watershed; and identify and advertise ways in which individuals and organizations can contribute to improved water quality through behavioral changes.

Through the collaborative process, individuals and organizations will be asked to reevaluate the way they perceive and live in their watershed. The process is expected to span a two-year period, during which a full-time Watershed Coordinator, hired by the Ciudad Soil and Water Conservation District, will work with a contract facilitator (CTIC), and coordinate the efforts of stakeholders to form a local Watershed Group. They will produce a Watershed Restoration Action Strategy (WRAS) and list of potential future projects for the Rio Grande-Albuquerque. The WRAS will guide future efforts by the Watershed Group to seek grant funds with

which to install BMPs that can improve water quality by reducing discharges of fecal coliform bacteria to the Rio Grande.

Capacity building, including education, will be an important aspect of the work. This may include a variety of tasks, such as working with the Watershed Group to develop an organizational structure and initial goals, devising mechanisms for involving the public in decision making, identifying and evaluating training needs and opportunities, and organizing these concepts into a formal WRAS.

Initially, the Watershed Coordinator and the contract facilitator will help existing stakeholders scope preliminary issues and concerns, help identify other stakeholder groups that may wish to be involved, and seek other local complementary or overlapping efforts. Based on the results of this scoping assessment and discussions with SWQB staff, the Watershed Coordinator will contact key stakeholders to further clarify and focus on substantive issues and concerns, and identify the stakeholders that will form the Watershed Group. They hope to accomplish:

- Gain an understanding of water quality standards, TMDLs, and the Group's role in achieving TMDL objectives;
- Develop an educational program to build the capacity of the participants to make informed decisions;
- Develop a public outreach strategy that enhances the flow of information to and from the Watershed Group;
- Identify data needs and available information;
- Identify broader issues and concerns and define potential options for remediation;
- Select priority sites for installation of BMPs;
- Work with the SWQB to develop a WRAS that includes well-defined and achievable goals and an effective implementation plan.

04-H Collaborative Red River Restoration ORV Impact Remediation

\$ 75,000 (Federal) \$50,796 (Match: \$5,700 Cash) \$ 125,796 (Total)

Project status: Completed June 2008

OBJECTIVE(S): The goal of this project is to reduce sediment and turbidity due to illegal ORV use by implementing the following best management policies (BMPs):

- Obliteration of temporary roads
- Surface erosion control of recreation sites
- Management of off-road vehicle (ORV) use
- Public information on water quality protection at recreation areas
- Revegetation of surface disturbed areas.

A load reduction of 50.6 lb/day Al in Bitter Creek and 350.4 lb/day Al in Upper Red River is called for in the draft TMDL. To control for stream bottom deposit in Bitter Creek, a load reduction of 72% fines is required. A load reduction in turbidity of 390.5 lb/day is called for in Pioneer Creek. The BMPs listed above will be implemented to help meet these load reductions by helping to control for erosion and stormwater runoff from illegal, steep, and poorly maintained roads that are a major contributor to turbidity, stream bottom deposits, and aluminum in the Red River.

There are three main components of this project – reclamation of illegal roads, public outreach and education, and enforcement of recreational regulations.

Reclamation of Illegal Roads:

The first step will be to identify and map illegal roads in the project area. This will be done in the Fall of 2004 and the Spring of 2005. During each field season during the grant period three work sessions will be organized and implemented. These work sessions will utilize volunteers to reclaim illegal roads by re-grading, seeding, installing proper signage, and creating barriers to deter future use. Before and after photos will be taken to document the progress of illegal road reclamation. Amigos Bravos, with assistance from the Forest Service, will organize volunteers, order reclamation supplies, and supervise the work sessions. Amigos Bravos will document the progress of road reclamation.

Public Outreach and Education:

Two public meetings will be organized for each field season. The purpose of these meetings is to educate the public, including ORV users, about where it is legal to recreate in ORVs and about the impacts illegal ORV use is having on the Red River ecosystem. Press releases and fact sheets will also be implemented to educate the public about the project and where it is legal to drive ORVs. Amigos Bravos and the Red River Watershed Group will work together on education and outreach tasks.

Enforcement of Recreational Regulations:

During each field season an enforcement officer will be hired to patrol the project area and to educate about and enforce legal ORV use. The enforcement officer will report enforcement actions to the project manager and will help disseminate educational materials. It is expected that after the first season the enforcement officer will serve a deterrent agent and less enforcement actions will be necessary. The presence of the enforcement officer will help the reclaimed roads revegetate by keeping vehicles off fragile new growth areas. Amigos Bravos and the Forest Service will work to implement the enforcement component of the project.

Start and End Dates: 11/1/04-10/31/07 -- This project contract is ending October 31, 2007. This is an Amigos Bravos project, run by Rachel Conn. They have partnered with the Questa Ranger District to develop an ORV plan for Red River Watershed, provide money for a seasonal recreation specialist to patrol the Red River Watershed to enforce the ORV plan along with three volunteer weekends to perform road abandonments, build or repair fence and repair drainage crossings. The Wilderness Society makes up the bulk of volunteers. Volunteer weekends are well attended.

This project was completed in June of 2008. Thirteen miles of road and adjacent riparian wetland resources were ultimately affected by this project. Load reductions were accomplished as a result of converting high-use areas/roads to low or no use. A significant decrease in sediment loading was also achieved by increasing the minimum stream buffer width. Sediment load reduction for this project total 4735.12 lb/yr.

04-I Rio Pueblo de Taos Watershed Stakeholders Action Initiative

\$17,800 (Federal) \$12,680 (State) \$ 30,480 (Total)

Project status: Completed – WRAS Group Formation

OBJECTIVE(S): The project's initial stage will be the development a Watershed Group. Stakeholders will be identified first by locating the major landowners along the Rio Pueblo de Taos. Once these landowners are identified, the Watershed Coordinator will conduct outreach activities to these landowners as well as to the general community of Taos. Outreach will consist of arranging meetings with, for example, members of neighborhood associations, business leaders, the director of the Taos Pueblo Environmental Office, US Bureau of Land Management (BLM) representatives, the manager of the Wastewater Treatment Facility, and a representative from the Taos Country Club.

A Clean Water Act (CWA) workshop covering water quality standards, the 303d list, and Total Maximum Daily Loads (TMDLs) will be advertised and all identified stakeholders will be invited to attend. This training will

provide knowledge of the pertinent policy issues surrounding the impairment of the Río Pueblo de Taos, and also serve as a forum for stakeholders to identify some of the sources of pollution they believe are impacting the river. It will also provide an opportunity for stakeholders to discuss what an Río Pueblo de Taos Watershed Group would look like and how it would function. A watershed group formation meeting will be planned at the end of the workshop.

To encourage participation by all residents and businesses in the Taos area, articles and announcements about the CWA workshop and the formation of a watershed group will be published in *Taos News*. At the watershed group meeting, the notes from the workshop will be passed out to stimulate discussion. At this meeting and subsequent meetings the name, structure, mission, and communication strategy of the watershed group will be discussed and decided upon. This process will take approximately six months.

The Watershed Restoration Action Strategy (WRAS) scoping process will begin during the third month of the project. This process will include working with stakeholders to identify the causes and sources of pollution, pollution control measures, and measurable milestones for determining whether pollution controls are working. Consultants will be hired as necessary to compile public input, research, and write sections of the WRAS. A draft WRAS will be disseminated to the public in September of 2005. After public comments are addressed and incorporated, a final working document will be distributed.

While developing the WRAS, the watershed group will identify – and draft workplans for – at least two projects eligible for future Section 319 funding. If potential projects for the group are identified and investigated early on, the group can work out the details and smooth out any potential roadblocks before submitting an on-the-ground 319(h) application for a future funding period. A number of key stakeholders could potentially serve as fiscal agent for future projects. These include the BLM, Taos Pueblo, the Town of Taos, and Amigos Bravos. Amigos Bravos has a working relationship with many of the potential fiscal agents and is willing to help facilitate relationship building between the watershed group and the potential fiscal agent.

Start and End Dates: 11/1/04-10/31/05

Watershed Protection Section Projects 2005

05-B Watershed Group for the Upper Pecos River

\$27,700 (Federal) \$18,800 (State) \$ 46,500 (Total)

Project status: Completed: June 2007

OBJECTIVE(S): Watershed group formation and outreach education in the Pecos Headwaters concentrating on the area from San Ysidro to Villanueva. The project will commence summer of 2005 and end in the summer of 2006. Measures of success will be the completion of a WRAS, and attendance at meetings.

In order to facilitate broad stakeholder participation, demonstration BMPs and outreach activities will be implemented. These include an upland erosion control treatment in pinion/juniper woodlands, implementation of an alternative grazing rotation strategy on a local ranch, and subsequent public tours of these areas. Highly visible *road-side* locations are targeted for demonstration BMPs in order to maximize the public's exposure to them. Throughout the process, all stakeholders are invited to actively participate or otherwise contribute. This strategy is designed to expanded community awareness of nonpoint source pollution issues, provide preliminary education/outreach opportunities, unify stakeholders around a common cause, and garner broad local support. The ultimate goal being a WRAS that has strong local support, includes all pertinent issues/concerns, contains an operative level of specificity, and offers realistic and thus sustainable solutions.

This project was completed in June of 2007. To date the group has not applied for additional (implementation) funding.

05-C Collaborative Watershed Project for Supporting TMDL implementation in the San Juan Basin

\$246,078 (Federal) \$91,050 (Cash Match) \$73,107 (In-kind) \$410,235 (Total)

Project status: Completed 2008

The purposes of this project were to develop a comprehensive database for determining the location and origin of bacteria and nutrients within the San Juan and Animas Rivers in support of enhanced technical decisions for source remedial action, and to conduct specific projects for reducing bacteria and nutrients loadings from priority source areas. The two project actions are in concert with the San Juan Basin Watershed Management Plan that details the overall needs and problems of the watershed. The project includes a coordinated set of investigative actions and field subprojects as follows:

Subproject A: Identification of bacteria and nutrient sources and BMP recommendations

A single incorporated GIS database of the San Juan Watershed from the state line to the Hogback (where the San Juan River fully enters Navajo Nation lands) was created that contains layers of existing water quality information and land-use data in an interactive map format to identify actual and potential areas of significant loadings (hotspots) of pollution. The products include a database, maps, a list of identified pollutant sources prioritized based on established and estimated pollutant loading, recommended BMPs for each identified pollutant source, and a prioritized list of sites where more information is needed to locate the pollutant source.

Subproject B: Correction of septic system problems at Flora Vista – Phase 1

This subproject included investigative work needed to support the selection and construction of improvements to replace the malfunctioning septic systems in the Flora Vista area, an unincorporated community of several hundred dwellings located along the Animas River between Farmington and Aztec.

Subproject C: Improved operation of septic systems in Farmington and Bloomfield

The Cities of Farmington and Bloomfield combined efforts to locate, identify, and inspect existing individual sewage treatment systems (septic systems) located within their respective City limits. This subproject helped septic system owners use their systems more efficiently, by recommending upgrades or replacement when warranted, improving operational performance, and encouraging routine preventative maintenance measures.

Subproject D: Project coordination, collaboration, and continuation

This subproject entailed continuation of the ongoing collaborative process by the SJWG involving approximately 25 participating entities and interests who will serve in an oversight role for this and subsequent projects, overall coordination and administrative support for this project, and pursuit of follow-up activities and funding opportunities as needed to attain and maintain water quality standards.

05-D Respect the Rio – Phase II - Terminated 2008

\$240,534.00 (Federal) \$200,940.00 (Match) \$441,474.00 (Total)

OBJECTIVE(S): This proposal requests federal funding to match private, non-profit and state funding to support continued efforts by the Santa Fe National Forest to implement BMPs in this high-use watershed. The overall intent of Respect the Rio is to improve watershed conditions so as to decrease stream temperatures and sediment delivery (turbidity and stream bottom deposits). The approach is through the development of long-term stewardship while implementing mechanical changes.

Due to its extremely high use, and multiple land uses it is important to have a holistic management strategy when addressing the water quality impacts in the Jemez Watershed. The Phase 2 tasks cover the management disciplines of Education; Recreation; Fish, Wildlife, and Watershed; Range; and Roads.

The initial proposal was for \$481,068.00, which was then reduced to \$240,534.00 by NMED when EPA's funding was reduced. This reduced budget will result in limited accomplishments in the specific tasks that had to be reduced in funding. These tasks were the Education Coordinator, Contact Ranger, Multi-Media, East Fork Trail, Respect the Rio Law Enforcement, Noxious Weed Control and the Penas Negras Road Obliteration project. The reduced budget also eliminated other tasks including the San Antonio Hot Springs Recreation Area Restoration, Buck-n-Pole Fencing, San Diego/Buchanan Rx Burn, and the Blue Bird Fence projects.

05-E La Cieneguilla Open Spaces/ Santa Fe River Restoration

\$101,425 (Federal) \$86,400 (State) \$187,825 (Total)

Project status: Completed 2008

OBJECTIVE(S): The Santa Fe River has been on the New Mexico list of impaired waters for at least two decades, indicating that the river has been degraded for quite some time. Like many river systems in the Southwest, the Santa Fe River has been modified by numerous activities, all of which have both individually and synergistically severely modified the river's functioning. According to the New Mexico Environment Department's most recent 303d list, which identifies the state's polluted waters, sediment and widely varying dissolved oxygen and pH levels impact the stream.

Road building and maintenance, levee construction, sand and gravel mining, livestock grazing, off-road vehicles and polluted runoff from urban areas as well as discharges from the municipal wastewater facility each negatively impact the Santa Fe River. Some of these factors are more significant than others but each collectively prevents attainment of water quality standards along the Santa Fe River.

In large part, as a result of these damaging activities non-native trees have proliferated on the site and in some cases are causing additional ecological and hydrological changes that exacerbate the degradation. In addition, high nutrient levels in the wastewater discharge from the City of Santa Fe's treatment plant in conjunction with poor habitat conditions have resulted in excessive growth of algae, thereby affecting dissolved oxygen and pH, further degrading aquatic habitat for fish and amphibians.

In addition, off-road vehicle use appears to be increasing in the unfenced and unmanaged riparian area, potentially creating a whole new non-point source pollution problem.

Furthermore, because it is severely degraded, the communities of La Cieneguilla and Santa Fe have become disconnected from our namesake river. Opportunities to reconnect with the river corridor, though significantly improved over the last few years, could be further enhanced in a way that engages the local community.

With the success of Forest Guardians first restoration project along the Santa Fe River, and the improvement of water quality and stabilization of water temperatures along that section of river, we are confident that the continuation of restoration efforts along the Santa Fe River will further improve water quality and the ecology of this riparian system.

05-F Collaborative Restoration Forestry

\$252,140 (Federal) \$184,844 (Match) \$1,000 (non-matching federal contribution) \$433,884 (Total)

Project status: Completed 2008

OBJECTIVE(S): The proposed initiative is designed to have long-term effects on reducing and preventing turbidity levels in Sapillo Creek through tree density reduction combined with increases in native herbaceous ground cover. By using small diameter wood removal through on-the-ground implementation of a combination of BMPs, this project proposes to mitigate the watershed damage from fire suppression efforts. As a result, over time, the tree component of the plant community will be reduced and herbaceous vegetation will increase. By restoring herbaceous coverage and by reducing the risk of a stand replacing fire in the project area, UGWA proposes that project activities will reduce or prevent non-point source water quality problems in Cow Creek and Sapillo Creek. Restoring herbaceous coverage will reduce soil erosion, increase water absorption rates, and supply more water and nutrients to the vegetation. Reducing the risk of a stand replacing fire will also prevent large increases in sheet-type, gully and head-cut erosion that is associated with a highly destructive fire and prevent the subsequent increases in TOC and turbidity levels in Sapillo Creek.

One of the ways CFR seeks to continue to reduce the costs of forest restoration is by developing methods to completely utilize the byproducts from thinning. Most of the grant funding that has been received by Gila Wood Net (GWN) in the past has been focused on the development of products and the creation of a small log processing complex. The timeframe for completion of the processing complex is June of 2005. At that time GWN will have the capacity to thin and process the byproducts from more than 200 acres of forest per year. The bulk of the material will be used by Fort Bayard as fuel for its steam plant.

This proposal will serve as an investment in the reduction of future forest restoration costs by supporting GWN's forest treatment program during the completion of its development phase.

The primary goals of the proposal are to restore herbaceous ground cover and reduce the risk of a stand replacing fire in order to reduce and prevent soil erosion in the Cow Creek watershed while supporting and creating sustainable local livelihoods in Grant County, New Mexico. Ecological objectives will be obtained by improving forest function, composition and structure by reducing tree density and enhancing horizontal and vertical diversity. Economic objectives will be obtained by implementation of forest restoration projects, small diameter wood removal, processing, utilization and marketing. Additional objectives to help reach these goals

include monitoring of restoration efforts, community education / outreach, and community development. The NMED has informed us that a new updated WRAS will be completed in 2005 for the Upper Gila Watershed and this partnership and project will be used to help complete the new, updated WRAS. The new WRAS will be used to improve this project's ability to restore health to the Upper Gila Watershed and reduce TMDLs on Sapillo Creek.

The proposed project is grounded in the principles of Natural Processes Restoration. This model works with positive aspects of the existing forest structure to move toward natural structure and function by using the largest trees to create groups that will develop more quickly toward old growth condition. The standard forest products industry prescription applied to timber harvesting is high-grading the biggest trees and leaving the little ones. This proposal seeks to replace this practice with a restoration prescription in order to bring the forested watershed back to good health. Logging equipment specialized for small diameter tree removal with emphasis on minimizing environmental impacts and reducing operating costs is used. The Yarder/Forwarder is essentially a scaled down off-road, self-loading, winching log truck. The platform is a small (8000#) articulated off-road tractor and trailer with high floatation tires to minimize soil disturbance. On the platform are mounted a small knuckleboom grapple loader and a winch.

The benefits of using this equipment include:

- ❖ Substantial reduction of ground impacts compared to conventional tractor skidding
- ❖ Fewer trips
- ❖ Efficient collection of small diameter timber
- ❖ Mobility
- ❖ Low cost of equipment
- ❖ Low cost of operation.

Ability to make several entries over time with minimal ground disturbance and bringing forest structure to a desired condition in stages may be better than single drastic manipulation methods.

- ◆ Reduced shock to plant and animal communities.
- ◆ Retention of the potential to modify the applied restoration prescriptions based on the assessment and experience.

BMPs that will be used to protect soil cover include:

- Forwarding of restoration byproducts to staging area will not occur on any steep slope or erodible soil portions of the area
- No new roads will be constructed, only existing roads and skid trails will be used
- Existing roads used would receive routine maintenance such as blading, covering rock outcrops with native material, culvert and ditch cleaning
- Activity slash will be lopped and scattered to provide ground cover until herbaceous ground cover is restored
- Designated equipment crossings when water is present in riparian areas
- When necessary to provide ground cover, forwarding trails and landings, and other disturbed areas would be scarified and seeded with native grasses and forbs at the conclusion of thinning activities
- Waterbars and small check dams may be placed as needed to mitigate erosion problems or improve watershed conditions.

05-G Gila Watershed Partnership of NM

\$53,207 (Federal) \$50,989 (In-kind) \$104,196 (Total)

Project status: Completed 2006

OBJECTIVE(S): The goal of this proposal is to establish an assisted community-based infrastructure and process that builds the capacity of its partners to make informed decisions that will lead to water quality improvements. A major objective is completion of a WRAS for the Gila-San Francisco watershed of New Mexico, an information tool for stakeholders in cooperative efforts to address water quality impairments and achieve long-term improvements in general watershed condition. Expected time of delivery of a final implementation plan is one year after funding commences, June 2005 to July 31, 2006.

Achieving this goal will:

Improve local understanding of the state's water quality management system (including TMDLs and load allocations),

Identify contributing sources of those pollutants to be controlled under the TMDLs,

Assist local groups in developing acceptable remediation/management plans for efficiently achieving the load reductions

Provide support for cooperative efforts to implement remedial/management activities at priority sites, and

Identify ways in which individuals and organizations in our communities can otherwise contribute to improving water quality.

Currently, many existing groups are working to improve watershed health and the Gila Watershed Partnership can serve as central voice in surface water quality issues. Once stakeholders have been identified and briefed, the coordinator will work to ensure that important interest, individuals, and perspectives are represented during WRAS development. The WRAS will be developed by the coordinator and SWQB through attendance at local meetings of SWCDs, nonprofit groups, and discussions with agency staff, landowners, and other watershed stakeholders. The initial draft will be made available to all stakeholders for comment and input and this information will be incorporated into the final draft. The final WRAS will provide stakeholders with an easily usable tool for identifying water-quality impaired subwatersheds, developing cooperative projects and proposals for watershed improvements, locating the resources to implement improvements. Their efforts will be documented in future revisions of the WRAS. Capacity building, especially education, will be an important aspect, and may entail a variety of tasks--from helping groups and others to identify and evaluate opportunities and resources, to assisting in project/proposal development.

Once these foundational elements are in place, the partnership anticipates accomplishing the following:

- Work with the SWQB to develop a WRAS that includes well-defined and achievable goals as well as effective implementation plans;
- Develop an educational program to build the capacity of partners to make informed decisions;
- Gain an understanding of prevailing water quality standards, TMDLs and the WRASs potential for influencing the TMDLs;
- Develop Youth component to GWP, joining with our local teachers and school science clubs
- Develop a public outreach strategy that enables information about the watershed effort to flow from and to the Partnership;
- Identify available information and data needs;
- Research problems, identify sources, and prioritize them;
- Identify broader issues and concerns and suggest viable remedial options;
- Select sites for early remediation actions and work with SWQB and others to create an ongoing monitoring plan to track water quality improvements
- Report quarterly the progress defined in our proposal and implementation plan.

Coordination, Roles and Responsibilities: The coordinator will be responsible for organizing and coordinating the processes for gaining involvement of diverse interests during WRAS development, in conjunction with SWQB. The coordinator will assist in the administration of the Partnership and provide professional scientific

advice, and will seek opportunities for additional funding support for the program and other projects that evolve through cooperative efforts in the watershed.

The Customers will include the interests of ranchers, farmers, miners, land managers, local governments, state and federal agencies, environmental Non Governmental Organizations (NGOs), citizens, and other interested parties. Members will draw from all key stakeholder organizations and communities including Silver City, Virden, Cliff/Gila, Pleasanton, Glenwood, and Reserve; Catron, Grant and Hidalgo Counties, The Southwest Council of Governments, The Black Range Resource, Conservation and Development (RC&D) Council, Soil Water Conservation Districts (SWCD), local School Districts, Natural Resource Conservation Service, Gila National Forest, Bureau of Land Management-Las Cruces Office, The New Mexico State Land Office, The Nature Conservancy, The Upper Gila Watershed Alliance, The US Fish and Wildlife Service, The Quivira Coalition, The Southwest Region Water Plan Steering Committee, the Arizona Gila Watershed Partnership, and many others.

Public Participation: The efforts described in this proposal represent public participation efforts designed to secure broad input and ownership in the cleanup of the Gila Watershed, consistent with completed TMDLs. The coordinator will not only serve as administrator, but also oversee development of the public outreach activities. She be will responsible for assuring that all key interests are involved in the decision making process. Core Group members include: Grant SWCD; Grant County; Town of Silver City; San Francisco SWCD; Catron County; Hidalgo County; Town of Duncan Az; Gila WoodNet; GWP-AZ; Black Range RC&D; The Nature Conservancy; Upper Gila Watershed Alliance; Silver City Daily Press; Sherry Tippett; Vance Lee; and the Silver City Office of SWQB.

It is essential that attention be given to identifying and engaging existing groups to adopt and implement the WRAS or its components. Communication tools to be used may include:

- Information mailings,
- Meeting minutes,
- Facility tours, and
- Education presentations.
- Open group meetings, workshops, community forums, etc
- Email and Internet based web sites, list serves and discussion groups,
- Other organizational meetings,
- Surveys,
- Newsletters,
- Interviews, and
- Public comment and reviews.

05-H El Restauero- Phase II - Upper Rio Grande Collaborative Watershed Group Formation

\$80,200 (Federal) \$53,467 (State) \$133,667 (Total)

Project status: Completed: 6/30/07

OBJECTIVE(S): Watershed group formation and outreach education within the Upper Rio Grande Watershed and includes the Rio Embudo (Rio Grande to Canada de Ojo Sarco) and the Rio Grande (non-pueblo Santa Clara to Embudo Creek).

05-I Upper Rio Vallecitos Watershed Project

Budget: \$125,280.00 Match: \$83,520 Total: \$208,800.00

Project status: Project Terminated due to Project In-Action

OBJECTIVE(S): The Rio Vallecitos is part of the Rio Chama/Tusas Watershed. The Rio Vallecitos is located in North Central New Mexico and is a tributary of the Rio Chama Watershed. The headwaters are located on the Carson National Forest and flows along into private lands.

Various Mica mines are located in the Rio Vallecito watershed, which contribute to the accumulation of metals into the river. The Upper Rio Vallecitos project encompasses three grazing allotments; the Alamosa, Jarita, and Mesa Escondido allotments, which comprise of 125,596 acres on the Carson National Forest. The range of elevation is between 8,000 feet at its lowest to 11,000 feet at its highest.

The proposed BMPs include 5 miles of fence, 4 earthen dams, 1 guzzler (trick tank), 1 spring development, 3 corrals, 1 cattleguard, 300 acres brush hogging/seeding, and solid waste clean up.

The Upper Rio Vallecitos Project never developed because of project and workplan in action. There was no initiative by the cooperator to initiate the workplan and the project was subsequently dissolved according to JPA requirements.

Watershed Protection Section Projects 2006

06-B Upper Hondo Restoration Project

\$368,480 (Federal) In-Kind Match: \$426,700 (State) \$795,180 (Total)

Status: Ongoing

OBJECTIVE(S): This project will continue the restoration work that has been on-going in the Upper Hondo Watershed since 1998. The first phase of the restoration amalgamated a diverse group of stakeholders, identified and isolated the most significant NPS sources of water quality problems in the watershed, and developed a watershed restoration for the ski resort that heads the watershed. The second phase wrote a Watershed Restoration Action Strategy (WRAS), significantly reduced the threat of catastrophic wildfire by partnering on projects that thinned a total of 1550 acres throughout the watershed, improved wildlife habitat and water quality in the watershed by completing 3 watershed enhancement projects that treated 1038 acres, and improved streambank conditions by cutting and treating 120 acres of invasive thickets of salt cedar and replacing them with native species. The third phase began to implement BMPs that were developed in the first phase, particularly on the Ski Apache Resort. This phase is ongoing and will be completed by December, 2006.

The present project will be conducted on the north fork of the Rio Ruidoso from the eastern boundary of the Mescalero Apache boundary upstream to just below the headwaters. The impaired reach of the Rio Ruidoso to benefit from the project is just downstream of the Mescalero Apache boundary and runs through the community of Ruidoso. According to the 2004-2006 New Mexico CWA 303(d) / 305(b) List, this segment of the Rio Ruidoso is not supporting its designated use as a High Quality Cold Water Fishery, and lists the probable sources of impairment as stream bottom deposits, plant nutrients, turbidity, and temperature.

There are two components to the project. The first will be to relocate a road from a floodplain to uplands. The road is presently located in a narrow incised channel that carries the headwaters of the Rio Ruidoso and runs along the center of the valley bottom. This forces the channel up against the toe of badly eroding slopes and transports excess sediments downstream. The channel will then be restored to its original channel away from the eroding slopes. The second phase of the project involves thinning a 550 acre stand of dense mixed conifer tucked up directly adjacent to and upwind from the Ruidoso Wildland Urban Interface. These dense stands are located on tribal lands along the North Fork of the Rio Ruidoso just before it enters the Village of Ruidoso. According to the New Mexico State Forestry Division, Ruidoso remains the number one community in the state potentially at risk to catastrophic wildfire. This area, in turn, is Ruidoso's number one potentially "hot" spot. The *North Fork Fuels Reduction Project* will support recently-written TMDLs by creating conditions conducive to a restoration of native ground cover vegetation which will, in turn, stabilize the soil, minimize surface erosion, improve infiltration, and reduce the potential of catastrophic wildfire and the subsequent degradation of water quality. One dimension of this thinning project will be a pilot project to open up two 4 acres sites within the treatment area suitable for the reintroduction of beaver to further improve water quality by improving infiltration and trapping sediment.

06-C Three Rivers/Tularosa Watershed Restoration - Watershed Group Formation

\$42,900 (Federal) \$28,600 (State) \$71,500 (Total)

Project status: Completed 2007

OBJECTIVE(S): The Tularosa Watershed serves multiple communities and multiple purposes for the citizens of Otero County. Agricultural irrigation, cattle ranching and domestic water resources provided by Tularosa Creek, Three Rivers and adjacent drainages form the basis of public uses of this watershed with ancillary activities including recreation and urban development. The growth of surrounding communities and

development of business and industry in adjacent municipalities has both direct and indirect potential to strain and degrade the limited resources found within the Tularosa Watershed.

According to the 2004-2006 New Mexico CWA 303(d) / 305(b) List, Three Rivers is not supporting its designation as a High Quality Cold Water Fishery. Probable causes of impairment are temperature and conductivity. Tularosa Creek is listed as not supporting its designation as a Cold Water Fishery. Although the impairment is unknown, the 2004 Record of Decision indicates the loss of riparian habitat as a cause for non-support. Three Rivers and Tularosa Creek are both scheduled to be monitored for Total Maximum Daily Loads (TMDLs) in 2006 and may yield further information regarding causes and sources of impairment.

The Tularosa Watershed Restoration project consists of a single year program to develop a watershed group comprised of landowners, concerned citizens, and other interested stakeholders within the project area. This will be accomplished through public meetings, contacting potential stakeholders identified by state and local agencies, and through advertising in the local media. The public meeting format will be utilized throughout the process to provide an open forum to discuss stakeholder concerns, and identify Best Management Practices (BMPs) to improve the watershed health. Successful formation of the watershed group will ultimately lead to development of a Watershed Restoration Action Strategy (WRAS). The WRAS will be developed by members of the watershed committee and include nine key elements as follows:

- Identification of causes and sources of impairment
- Estimate of load reductions expected
- Description of Best Management Practices (BMPs)
- An estimate of needed resources
- An outreach component
- Schedule for implementation
- Description of measurable milestones
- Criteria to determine if load reductions are being achieved
- Monitoring component for above criteria

Upon completion of the project, the WRAS will be submitted to the Watershed Protection Section of the Surface Water Quality Bureau and serve as a guiding document for future on the ground restoration work within the watershed by interested stakeholders and resource managers.

06-D Penasco River Improvement Project (Carlsbad & Otero) - Terminated 2008

Carlsbad Total Contract Award:

\$366,250 (federal) \$244,167 (match) \$610,417 (total)

Otero Total Contract Award

\$40,000 (federal) \$26,666 (match) \$66,666 (total)

The Rio Peñasco watershed encompasses approximately 721,280 acres and extends from the Pecos River to the crest of the Sacramento Mountains in southeastern New Mexico. The Rio Peñasco begins high in the Sacramento Mountains at Bluff Springs, and is the major surface water feature in the project area. The Rio Peñasco is also ephemeral for much of the lower elevation while it ranges from perennial to intermittent in the upper reaches. It has only one major tributary, Agua Chiquita Creek. Although there are numerous springs in the watershed, the remaining tributaries are ephemeral.

OBJECTIVE(S): Once primarily a rural setting with dispersed ranches and small farms, the watershed has undergone significant land use changes stemming from considerable growth of vacation cabins, and retirement homes. The watershed has also undergone significant hydrologic changes in the past several decades, including an increase in tree density, changes in vegetation patterns, variable climatic conditions, localized and severe fire impacts, and new groundwater and surface water diversions. The Rio Peñasco is listed for sedimentation and siltation. Probable sources of impairment are listed as highway/road/bridge runoff, loss of riparian habitat, rangeland grazing, streambank modifications/destabilization, and runoff following forest fire.

This project involved the thinning of approximately 300 acres of densely wooded juniper-ponderosa pine forest. The primary goal was to reduce the potential of catastrophic wildfire which was indentified as a source of impairment in this watershed by causing the release of fine soils resulting from the severe erosion following the loss of vegetation. A secondary goal was to reduce erosion by opening the forest canopy to increase light infiltration in an effort to improve understory growth, especially grasses and forbes.

The cooperators included the Otero Soil and Water Conservation District, the Carlsbad Soil and Water Conservation District, and the Coleman Ranch. The New Mexico Environment Department acted as the grant coordinator and technical consultant.

06-E Upper Pecos Watershed Association — Group Formation I

\$33,700 (Federal) \$28,400 (Match) \$62,100 (Total)

Project status: Completed in June 2007

OBJECTIVE(S): Watershed group formation, Pecos River above I-25

This project formed a new watershed group to address relevant concerns in the Pecos River watershed above I-25 (over 400 square miles).

This project was funded in June 2006. Within nine months, the UPWA identified stakeholders, conducted four well-attended public meetings, organized a Board of Directors (monthly meetings), incorporated under 501.C.3, filed IRS 1023 to accept tax-exempt donations, procured office space, hired administrative staff, formed a WRAS steering committee, and wrote an acceptable WRAS that was presented to the community. The UPWA purchased nephelometers for volunteer monitoring and formed a Technical Committee, which identified data gaps toward understanding the condition of their river and watershed. The UPWA has identified and applied for funding to implement three restoration projects (one was successfully funded). The UPWA has hosted several community field trips, pursued outreach with local schools, partnered with New Mexico Game and Fish and Trout Unlimited for community outreach (including hosting yearly trash cleanup with 200 participants), and partnered with local political concerns regarding regulation of camping along the river. The group has begun photo-documentation of existing conditions that contribute pollutants to the river. Finally, this group successfully applied for \$101,000 in additional 319 funding to continue operations into next year (see project 07-I).

06-F Management Plan for the El Paso-Las Cruces Watershed

\$145,130 (Federal) In-Kind Match: \$146,010 (State) \$ 291,140 (Total)

Project status: Completed in June 2007

OBJECTIVE(S): The Lower Rio Grande Watershed in New Mexico encompasses an area of approximately 5,000 square miles in southern New Mexico, including parts of four counties: Catron, Socorro, Sierra, and Doña Ana. The Rio Grande flows through the watershed from the headwaters of Elephant Butte Reservoir to the International Boundary and Water Commission's sampling station above the American Dam in El Paso, Texas.

The target area for the project is the lower portion of the Rio Grande Watershed in New Mexico from Percha Dam to the NM-TX state line. The project area includes a mix of desert uplands, farmland and urbanized areas in the Rincon and Mesilla Valleys located in Sierra and Doña Ana counties. The largest city in the area is Las Cruces with a number of smaller communities located upstream and downstream including Hatch, Doña Ana, Mesilla, Anthony, Anthony (TX), Canutillo (TX), Sunland Park, and Santa Teresa. The region's population is growing rapidly (2.9% average annual growth rate for Doña Ana County between 1990 and 2000, versus 1.31% for the U.S.), resulting in rapid conversion of farmland and open space to urban/suburban development.

According to the 2004-2006 New Mexico CWA 303(d) / 305(b) List, the segment of the Rio Grande defined by the project area is not supporting its designated use for Secondary Contact. The probable cause of impairment has been identified as fecal coliform. Probable sources of impairment include impervious surface runoff, high density municipal areas, municipal point source discharges, septic systems, permitted runoff from CAFOs, wastes from pets, grazing, waterfowl, and other wildlife.

The project applicant is the Paso del Norte Watershed Council (PdNWC) which was established in 2000 to improve the Rio Grande ecosystem and water quality in the sub-basin between Elephant Butte Dam and Fort Quitman TX. To address the complex issue of fecal coliform impairment the PdNWC recognizes the need to involve a wide spectrum of the New Mexico community within the watershed. The PdNWC plans to utilize its present contacts and resources to develop a watershed group of local stakeholders comprised from such diverse groups as the farming and ranching community, the Elephant Butte Irrigation District, conservation interests, environmental groups, and city, county, flood control commission and other government entities.

The watershed group will identify the priorities for potential Best Management Practices (BMPs) for fecal coliform abatement in order to meet New Mexico water quality standards for Secondary Contact. This work will result in a Watershed Restoration Action Strategy (WRAS), expanded stakeholder involvement and participation in decision making, and a possible platform from which the PdNWC could seek future funding for the implementation of BMPs through 319(h) sources. Upon completion of the project, the WRAS will be submitted to the Watershed Protection Section of the Surface Water Quality Bureau and serve as a guiding document for future on the ground restoration work within the watershed by interested stakeholders and resource managers.

06-G Rio Grande-ABQ watershed Group Formation-Phase II

\$110,600 (Federal) \$78,250 (Match) Total: \$ 188,850

Project status: Completed in 2008

OBJECTIVE(S): The objective of the continuation of this watershed group formation project is to complete the work needed to establish a collaborative community-based process that builds capacity and attracts participants in making informed decisions that lead to water quality improvements in the Rio Grande-Albuquerque reach. A primary effort of Phase II is to finish the group's comprehensive Watershed Restoration Action Strategy (WRAS), which was developed to Draft form during the previous project.

As background, the New Mexico Environment Department Surface Water Quality Bureau (SWQB), with concurrence from the New Mexico Water Quality Control Commission, established a Total Maximum Daily Load (TMDL) in 2000 for fecal coliform bacteria within the Albuquerque reach of the Rio Grande. The US Environmental Protection Agency (USEPA) Region 6 has issued a Municipal Separate Storm Sewer System Permit to address control of fecal coliform discharges and other pollutants into the middle Rio Grande.

Phase II of the MRG-A is necessary because funding was exhausted before the initial project could complete all Tasks and Deliverables. The second phase of this project will complete work that was planned but not fully

accomplished with funding made available under the area's first 319 project (FY04-G). An additional element related to water quality data base management is introduced in the new project workplan.

The process will continue to advance local understanding of the state water quality management system (including stream standards, the Non-Point Source Management Plan and TMDLs); mitigate significant sources of fecal coliform pollution via implementation of best management practices (BMPs); develop and implement locally acceptable remediation plans using BMPs at priority locations within the watershed; identify and advertise ways in which individuals and organizations can contribute to improved water quality through behavioral changes; and evaluate the feasibility of a shared database to track water quality information in the Albuquerque reach.

Through the collaborative process, individuals and organizations will be asked to reevaluate the way they perceive and live in their watershed. A full-time Watershed Coordinator, hired by the Ciudad SWCD, will work with a contract facilitator and coordinate efforts of stakeholders to form the local Watershed Group. They will produce the WRAS and a list of potential future projects for the Rio Grande-Albuquerque. The WRAS will guide future efforts by the Watershed Group to seek grant funds with which to install BMPs that can improve water quality by reducing discharges of fecal coliform bacteria to the Rio Grande.

New for this second round is evaluation of feasibility of a '*Shared Regional Water Quality Database*'. Access to watershed-wide water quality data for the Rio Grande is essential to understanding sources of fecal coliform pollution and measuring the success of BMPs. The County of Bernalillo has advocated with the Middle Rio Grande Water Quality Workgroup for the creation of a database tool through which agencies that collect and maintain water quality data can share data without compromising the security of confidential information stored in their databases. Preliminary work has been completed and one task in Phase II will comprise an effort by a qualified contractor to determine the feasibility of implementing such a shared regional water quality database. We will outline appropriate software, security measures that meet partners' requirements, estimated cost to build the database, and a list of consultants with the capability to produce it. It is anticipated that the outcome of this evaluation effort will enable interested agencies to take concrete steps toward sharing watershed-wide water quality data.

06-H Conejos Watershed: Rio De Los Pinos River Restoration Pilot Project

Budget: (Federal) \$56,100.00 Match: Match \$37,960.00 Total: \$94,024.00

Project status: Completed December 2008

OBJECTIVE(S): The Rio De Los Pinos Project is located on the Conejos Watershed in North Central New Mexico. The Los Pinos River was listed for not meeting High Quality Cold Water Fishery (HQCWF) Standards. The potential for stream impairment are thought to result from a variety of natural and other activities such as grazing, stream bank modification/erosion, and removal of riparian vegetation, silviculture, and other unknown causes. During NMED Surface Water Quality Bureau sampling in 2002, 2003, and 2004 thermograph readings indicated that temperature in the Rio Los Pinos exceeds the HQCWF criterion with temperatures measured between 23 and 27.7 C at various locations. Plant introduction will reduce water temperature in the Rio Los Pinos.

The project was located on two parcels of private land ¼ to ½ mile in length. The land owners are Mr. & Mrs. Marcel Reynolds and Mr. & Mrs. Robert Perry. According to the workplan rock barbs and large boulders were implemented inside the stream. This activity mitigated bank stabilization during high runoff flow and created fishery habitat. Furthermore, re-vegetation of willows, riparian fencing, and stream bank logs were implemented to secure water quality of the Los Pinos River.

The project was successful upon completion because of the appropriate weather conditions that existed during project construction and the interest that the Fiscal agent,

06-I Watershed Group Formation-Canadian and Dry Cimarron Headwaters (Withdrawn)

\$159,100 (Federal) \$ (State) \$ (Total)

06-J Whitewater Creek Trail Reconstruction

\$43,200 (Federal) \$57,600 (Match) \$100,800 (Total)

Project status: Ongoing

OBJECTIVE(S): Reconstruction and Stabilization of Whitewater Creek Trails #212 and #207 Project

This project will address specific erosion, trail stabilization and nonpoint source pollution sources along Whitewater Creek trails and riparian corridor as identified by the local Gila National Forest, Glenwood Ranger District staff.

There will be 10 check dams constructed along the trail at the most eroded drainages. The check dams will vary in size as they relate to the drainages. All will be built in drainages above the trail to slow runoff and trap sediment before reaching the trail. Additionally there will be 10 check dams, wattles (slope interruption devices) with erosion cloth located as sediment traps in the drainages below the trail as needed.

Water bars, French Drains, and timber culverts will be constructed. The French Drains or rock under drains will be a minimum of 3 feet in width with geotextile fabric wrapped around the top sides and bottom of the structure. Culverts of natural and synthetic material with settlement basins above and spillways below culverts will divert runoff. The timber culverts will vary in size but will be constructed with 4x6 timbers with 3x6 planks cut and notched on site. Settlement basins above and spillways below culverts will be built. Rock spillways with erosion cloth will be constructed above and below the culverts to slow water flow during runoff events and trap sediment.

Stream fords will be built when the water is low and will be no more than 16 to 24 inches deep during peak seasonal use. A level riprap of rocks or an anchoring log will be placed between 3 and 6 feet downstream from the centerline of the stream ford to evenly slow the water as it reaches the ford. The ford itself will be made of medium size gravel with larger stepping-stones so that material is not washed away.

Native vegetation species will be planted where needed.

Monitoring will be conducted on a regular and consistent basis for turbidity. Pre and post project photo monitoring will be taken to assess effectiveness of the BMP implementation process. T-Walk monitoring method will also be utilized. Monitoring results will be provided to the NMED.

The local communities as well as the general visiting public will be involved and kept apprised of the project by way of the “Ranger’s Open House”, news releases, New Mexico Volunteers for the Outdoors Newsletter and project information at the Catwalk itself. Catwalk interpretive tours and presentations at the Catwalk Amphitheater will also be used to educate the public about the necessity of the project and the serious effects of non-point pollution on fragile southwest riparian areas. A workshop will be held for teachers, naturalists and park rangers through professional development with advanced project WILD natural history and Gila ecosystems that will enable the participants to relay project information to their students and interested members of the public.

06-K Centerfire/Black Bob - Phase I

\$41,000 (Federal) \$27,006 (Match) \$68,006 (Total)

Project status: Terminated 2008

OBJECTIVE(S): Watershed Restoration in the San Francisco River Basin Centerfire/Black Bob Project

This project proposes to initiate riparian woody vegetation planting at Centerfire Creek and Cienega Creek, and restore watershed condition in the Black Bob allotment area.

The Forest plans to purchase propagated Forest cuttings from the Los Lunas Plant Materials Center. This stock will then be planted along Centerfire Creek and Cienega Creek, in the areas that are currently undergoing restoration work, to jumpstart the process of reestablishment of riparian woody vegetation.

In the uplands of the Black Bob allotment area, the Forest proposes to do gully stabilization work using a series of solutions including some or all of the following proposed remedies:

- Soil erosion control structures such as earthen dams, drop structures, grade control structures, grassed waterways, gully control structures, and rock, brush and log barriers.
- Thinning of upland pinion-juniper woodlands.
- Restoration of vegetative resources via seeding efforts, planting, and enforcement of proper grazing use.

Construction of erosion control structures may include any of the following BMPs designed in accordance with comprehensive specifications found in technical references provided by the NRCS, EPA, USDA Forest Service, and/or private organizations:

Rock aprons – reshaping of banks and headcuts using a bulldozer or backhoe, line headcuts with filter cloth, then overlay and contour with a rock apron using a backhoe or excavator, cover aprons with the displaced topsoil acquired during bank shaping, then seed, fertilize and mulch to promote revegetation.

Check dams – building of check dams in actively eroding gullies to trap sediment; these structures include digging of an 18-24 inch trench perpendicular to the channel, lining the trench with filter cloth, filling in the trench with rock to an effective height of 1 to 2 feet above ground level, cover the rock with excess topsoil, then seed, fertilize and mulch to promote revegetation. *Headcut or channel widening* – using an excavator, backhoe or bulldozer to widen channels in order to reestablish a width that can effectively transport runoff volumes; rock aprons will be placed on the reshaped cuts as energy dissipaters.

Drop structure – to trap sediment, this structure includes a spillway, anchors at the bottom and sides of the gully, and a splash pad apron that absorbs the impact of water from the spillway.

Step down terraces – terraces to slow water velocities in a gully, they include gabion (wire) baskets laid perpendicular to the flow path, filled with rocks, and tied into each bank; baskets will be placed as a series of steps down the channel.

Large woody debris – place large wood in channels to build up sediment deposits and aid in reducing flow velocities.

Earthen dams - building of native material dams in actively eroding channels to trap sediment and build up the channel bottom.

Monitoring will be conducted on a regular and consistent basis for sediment retention. Pre and post project photo monitoring will be taken to assess effectiveness of the BMPs.

Project outreach will be performed through the use of tours, flyers, workshops, and/or news releases.

06-L Las Huertas Watershed

\$254,034 (federal) \$185,563 (match) \$439,597 (total)

Project status: Ongoing

OBJECTIVE(S): Las Huertas Watershed Project for On-the-Ground Surface Water Quality Improvements (Las Placitas Association)

Las Huertas Creek is on the currently impaired for sedimentation/siltation. A TMDL addressing sedimentation/siltation is scheduled to be drafted by NMED in 2007. This project will address the causes of this impairment by implementing restoration. This project includes wet meadow infiltration, vegetation restoration, hillslope stabilization, stormwater and erosion control, in-stream flow control, and monitoring and assessment activities. The project will affect approximately 11 miles of the 16 mile total length of Las Huertas Creek. Project goals are to employ appropriate Best Management Practices to measurably reduce sedimentation/siltation in Las Huertas Creek and its major tributaries.

06-M A Watershed Planning Approach to Overcome Political Barriers on the Animas River

\$90,912 (federal), \$60,620 (match), \$46,455 (other funds), \$197,987 (total)

Project status: Ongoing

OBJECTIVE(S): This project will assess, protect and improve water quality in the entire Animas River watershed across the political landscape. The Animas River Nutrient Workgroup will expand into a watershed-wide planning group that will identify and prioritize water quality issues and create a basin-wide EPA 9 point watershed plan that spans all the political entities on the Animas River. The group will also develop a common sampling and analysis plan to gather consistent and comparable data across political boundaries and complete a basin-wide GIS database and repository for data collected in the Animas River Watershed by combining existing data bases. The new watershed group will also seek to achieve measurable success on the ground and financial independence, through implementation of a demonstration project to improve water quality of the Animas River in New Mexico, and through identification and application for appropriate funding, both within the term of this project.

Watershed Protection Section Projects 2007

07-B Black Canyon Creek – Temperature Impairment Remediation

\$ 19,191 (Federal) \$ 14,646 (Match) \$ 5,800 (Other Fed.) \$ 39,637 (Total)

Project status: Ongoing

OBJECTIVE(S): The primary objective of this project is to improve the water quality of Black Canyon Creek by lowering the water temperature. Black Canyon Creek is listed as nonsupporting for its designated use as a high-quality coldwater fishery. Possible mechanisms leading to temperature exceedences include stream widening, which increases the channel's width-to-depth ratio and allows sunlight to penetrate a greater percentage of the water column, and loss of shade provided by riparian cover. The proposed project is derived from BMPs suggested in the October 2005 Gila River WRAS. The current Gila WRAS lists the following quantifiable target criteria for BMPs implemented in the Black Canyon Creek subwatershed. Anticipated target achievements include: 1) an increase to 75% shade canopy cover; 2) a 20% increase in bankside vegetation; and 3) reduce temperature exceedences <10%. The project will be implemented within the 2.6-mile wide nonwilderness corridor near two USFS campgrounds. We propose placing 24 rock stream barbs through a ½-mile reach of Black Canyon Creek to induce a reduction in channel width and creation of pools on some outside meander bends. Willow cuttings will be collected on site and planted on streambanks where their presence will enhance the existing small pools and provide additional shade cover for the stream. Existing backwater areas will be enhanced with plantings of local rush and sedge to slow water velocities and trap sediments that might otherwise settle in the newly created pools.

07-C Canjilon Allotment: Sociedad De Los Vaqueros De Canjilon Range Restoration Project

Budget: \$159,975.00 Match: \$107,343.00 Total: \$297,318.00

Project status: Terminated due to insufficient funds

OBJECTIVE(S): Canjilon Creek is a tributary of the Rio Chama, and flows from Canjilon Lakes area to the Rio Chama, just south of the old Ghost Ranch Museum. Canjilon Creek originates in the San Juan Mountains in north central New Mexico. Canjilon Creek flows through the Carson National Forest, private lands and enters the Rio Chama 12 miles southeast of the project site

Canjilon Creek is listed for not meeting High Quality Cold Water Fishery standards, because of specific conductance, turbidity, and temperature. Potential sources of stream impairment are thought to result from a variety of natural and other activities such as agriculture, flow alterations from water diversions, loss of habitat, streambank modifications/destabilizations.

The BMPs implemented were the re-construction of one-trick tank. There was an inverted roof constructed over a 10,000 gallon water tank that was on project site. All other BMPs did not proceed because of project termination due to lack of insufficient funds.

07-D Collaborative Water Quality Improvement Project for the San Juan River Watershed, Phase II

\$199,616.97 (federal), \$141,340.00 (match), \$90,000.00 (non-matching federal EQIP funds)

\$430,956.97 (total)

Project status: Ongoing

OBJECTIVE(S): This project is being conducted by the San Juan Watershed Group through a contract between NMED and their fiscal sponsor, the Hub Resource Conservation and Development Council, Inc. The goal of the project is to accomplish load reductions of *E. coli* in the San Juan River and plant nutrients in the Animas River.

The San Juan Watershed Group is pursuing source reduction actions to enable de-listing of segments from the State's 303(d) list of impaired waters. This project consists of three coordinated subprojects within the watershed: 1) bacterial loading reduction in Stevens Arroyo watershed, 2) monitoring and data analysis, and 3) outreach and project coordination.

07-E Mimbres River Streambank Revetment & Fence Project

\$ 65,000 (Federal) \$ 43,933 (Match) \$ 100,000 (Other Fed.) \$ 208,933 (Total)

Project status: In progress

OBJECTIVE(S): This project will assist landowners through the Mimbres River valley to protect streambanks and fields with revetment fencing and plantings of native willow, shrub, and grass species. As a pilot project for leveraging 319(h) monies to EQIP grant projects, it will enable low-income agricultural producers on the Mimbres River to protect streambanks, prevent channel widening, braiding, channel instability, and subsequent increased stream water temperatures. This project's goals are 1) to help create an efficient means to leverage EPA 319(h) with USDA EQIP and help small agricultural operators protect and maintain those lands that occupy river floodplain bottoms; and 2) to restabilize channel banks by using streamside revetment fencing to create a depositional environment thus rebuilding lost bank material and providing a nursery habitat for vegetation appropriate to site conditions.

07-F Sapello Watershed Restoration Project – II

\$160,000 (federal) \$107,000 (match) \$267,000 (total)

Project status: Ongoing

OBJECTIVE(S): This project will address water quality problems by developing and implementing BMPs including riparian and fisheries habitat restoration through bioengineering and fencing, and educational outreach regarding watershed management. Since most of the work will take place on private property, the opportunity through this project to change existing practices, and through implementation of these BMPs will encourage results in economic benefits and water quality.

Includes in the tasks are to:

Update the Sapello WRAS and establish a strong citizens agency watershed group

Improve vegetation on 30 acres of private land, increase vegetation on streambanks to reduce temperature and sediments as well as stabilize banks, and protect healthy riparian with the use of fences.

Improve headcut or eroded systems

Provide outreach to the community including students.

07-G Taos County Land Project (TCLP) Initial Contract Date: July 11, 2007

\$227,986.00 (federal) \$289,584.00 (co-op/In-Kind) \$517,570.00 (total)

Project status: Ongoing

OBJECTIVE(S): Is to modify the current management plan and to develop several range improvements towards water quality and reduce the nonpoint source pollutants entering the Rio Grande. Brush control of big sagebrush and range seeding will improve ground cover, at which it will reduce sheet and rill erosion.

OUTREACH: Information about the project will be distributed to the community, through the Rio Chama and the Upper Rio Grande WRAS Group contact lists. A site visit for the ranching community, watershed groups and others will be organized during the project.

The Northern Rio Grande RC&D will conduct range monitoring training, and informational meetings to other grazing permittees and interested parties. The RC&D will discuss the key objectives of the project and will provide a good example of CWA 319(h) grants which can be used to improve water quality and bring our impaired streams within state standards.

BMPs IMPLEMENTATION: Will include pasture fencing, seven miles of pipeline, water storage and drinking troughs, pulling noxious weeds, and livestock holding facility

Federal Environmental Quality Incentives Program (EQIP) cost share administered by the Natural Resource Conservation Service (NRCS) Taos Field Office will be used to install additional BMPs on this project area.

MONITORING: The Northern Rio Grande RC&D and the permittees will be implementing a monitoring plan in collaboration with the USDA Tres Piedras Ranger District. Photo point-documentation before, during, and after shots will be taken to assess the progress of the range during and after termination of project. The project BMP process will be long term and meaningful data may take some time into the future, after project completion.

GPS will be utilized to locate all practices on the allotment established from this project. This will be done to carefully monitor the BMP sites during and after project completion.

07-H Tularosa River Watershed Improvement Project -Terminated 2008

Initial Contract Date: 07/01/07

\$36,700 (Federal) \$25,500 (Match) \$61,200 (Total)

OBJECTIVE(S): The Tularosa River Watershed Improvement Project is designed to remediate the results of historic grazing and silviculture practices through vegetative management strategies that include commercial and personal-use sales of small-diameter trees, prescribed burns, and thinning projects. Thinning of small-diameter trees in the pinion-juniper cover type using mini-loader equipment mounted with tree shears has been a successful approach. Under the proper conditions of weather and topography, relatively extensive areas can be thinned of dense, small-diameter trees in a cost-effective manner. This allows treatment of more acres with greater implications for watershed health than can be accomplished through hand cutting methods. This project proposes to thin an additional 650 acres during the next three years if this equipment becomes available. The equipment will also be available for use in thinning projects planned on other GNF Districts.

Project effectiveness monitoring will be conducted by the Gila National Forest and volunteers. Public outreach is will consist of flyers, workshops, and/or news releases.

07-I Upper Pecos Watershed Assoc. Formation - Phase II

\$101,000 (Federal) \$66,750 (Match) \$167,750 (Total)

Project status: Projected completion May 2009

OBJECTIVE(S): To fully complete UPWA formation and prepare for the large amount of work to be done.

This project continues 06-E, under which the UPWA became incorporated. UPWA has maintained an office and administrative staff (part time); and UPWA has hosted community activities like water fairs at this office. UPWA has completed several successful public outreach campaigns involving mail and email, primarily to advertise upcoming public meetings. UPWA has approached an ongoing relationship with the Pecos Schools (in cooperation with Trout Unlimited and others). Besides public meetings, UPWA has hosted/conducted several community events including river cleanups and field trips to impaired sites and to restoration sites (privately funded). UPWA has developed new information that is necessary for appropriate watershed planning,

specifically including completion of an Upper Pecos Camping Complex Study, and UPWA has approached issues associated with solid waste disposal in the Pecos Canyon. UPWA has actively pursued funding through avenues besides CWA 319, including the USFS Collaborative Forest Restoration Program (one proposal currently pending), the NMFA Water Trust Board, and the New Mexico River Ecosystem Restoration Initiative (successfully funded a new \$325K restoration project). However, UPWA's most significant achievement may be securing political support for a proposed Pecos Canyon State Park, including a local and public endorsement by Governor Bill Richardson. This effort is expected to restore and protect miles of riparian corridor that has been damaged from recreational misuse. This proposal is described in a bill currently before the State Legislature.

Tasks that remain incomplete at this time include updating the WRAS, developing a website, and finalizing an outreach program at the local schools.

07-J Westwater-Shumway Watershed Riparian and Wetland Enhancement

\$19,122.00 (federal) \$12,748.00 (match) \$31,870.00 (total)

Project status: Ongoing

OBJECTIVE(S): Five main tasks were accomplished by this project with the goal of reducing loading of bacteria to the San Juan River by increasing native wetland/riparian habitat and decreasing cattle use of these areas.

- (1) Salt Cedar was cut and stumps were treated with herbicide.
- (2) Drinkers were installed piping water from three ponds to outside of fenced areas.
- (3) The three ponds were fenced to exclude livestock.
- (4) Wetland (hydrophytic) vegetation were transplanted to each pond, and grasses were planted around ponds.
- (5) Structural BMPs -Excelsior (aspen fiber) logs were placed at critical locations such as road crossings, livestock corrals, and drinker locations, for sediment control in the project area.

07-K Rio Ruidoso Watershed Restoration Phase II

\$103,810 (Federal) \$0 (Match) \$103,810 (Total)

Project status: Completed

OBJECTIVE(S): This project continued and expanded the restoration work already underway in the watershed with Rio Ruidoso Watershed Restoration Project: Phase II (FY03-D). The primary goal of the project was to reduce erosion at two points along the Rio Ruidoso, and consisted of two separate components that are a part of the Rio Hondo Watershed Restoration Action Strategy. The objective of the first component of the project was to remove a road and reconstruct the channel away from badly sloughing banks in the headwaters of the Rio Ruidoso to reduce sediment loading to the river. The objective of the second component was also to reduce the sediment loading by stabilizing the bank and installing rock structures in the Rio Ruidoso at Two Rivers Park in the Village of Ruidoso. A secondary goal was to provide fish habitat in the Rio Ruidoso and develop an interpretive trail at Two Rivers Park.

Watershed Protection Section Projects 2008

ULO Funded

FY08-1/ ULO Upper Red River Restoration Project (Not funded)

FY08-2/ ULO Mimbres River / Cold Springs

Budget: \$5,000 (Federal) \$3,335 (Match) \$8,355 (Total)

Project status: ongoing

OBJECTIVE(S): This project's goal is to reduce temperature impairments in the Mimbres River by arresting sediment runoff to the Mimbres River from gullies throughout the watershed. This project will help to reduce the volume of sediment entering the Mimbres River from its tributaries by reducing sheet flow entering a gully on the project site. A headcut on the gully will be treated with gully remediation structures. Structures will be installed within the gully to reduce its gradient, creating a series of sediment and water-capture traps. Side slope grades will be reduced with hand tools. Treated areas in the gully will be re-seeded in a mixture of native grasses to help hold surfaces in place as they are rebuilt during runoff events. In turn, the vegetation will help capture and store more sediment. This is a small demonstration project developed to encourage Mimbres community members to apply these practices over the larger watershed scale. The long-term project goal is to educate and support the community in implementing these relatively simple techniques throughout the Mimbres River watershed.

08-3/ULO: Road Maintenance Education for Road Crews in Largo Canyon, San Juan Basin Natural Gas Field

\$81,160.00 (\$ 319), \$57,680.00 (match), \$34,625.00 (other federal), \$173,465 (total)

Project status: ongoing

The San Juan River downstream of Largo Canyon is listed by the State of New Mexico Environment Department as impaired by sediment, and the Largo Canyon watershed is thought to be a major source area for this water-quality problem. Roads in the Largo Canyon watershed probably contribute significant sediment loads to the San Juan River downstream of Largo Canyon. Proper road construction and maintenance is crucial to reduce sediment loading from this area. The objective of this project is to properly train maintenance crews in construction and maintenance of dirt roads throughout the Largo Canyon field. Proper techniques will lower cost of maintenance long-term and reduce erosion potential. Reduced erosion will help address the sedimentation problem identified by NMED and will also help reduce salt loading in support of Colorado River Basin Salinity Control Forum goals.

The goals of the project are to 1) create a stakeholders' group to identify key issues concerning dirt roads in the Largo Canyon Natural Gas Field, 2) successfully conduct two training workshops for road maintenance crews (the same workshop will be held twice to accommodate people's schedules) that emphasizes newer techniques for higher-quality road maintenance and construction that benefits water quality, and 3) establish Best Management Practices (success) criteria for assuring and monitoring proper construction and maintenance of new and existing roads, and closure of unnecessary roads. In the process, approximately two miles of road in the Largo Canyon watershed with drainage problems will be upgraded or decommissioned to meet Gold Book guidance, and workshop participants will employ techniques learned in the workshops on two new gas well access roads.

FY08-4/ ULO Respect the Rio Education/ Empowerment/Restoration

\$ 485,000 (federal) \$325,000 (match) \$810,000 (total)

Project status: ongoing

OBJECTIVE(S): The overall intent of Respect the Rio program is to preserve, protect and improve watershed conditions. We hope to decrease stream temperatures and sediment delivery (turbidity and sedimentation/siltation), the main impairments listed in the CWA 303d report through BMPs, educating the users of these public lands and management. Respect the Rio projects and initiatives are established through the development of long-term stewardship while implementing mechanical changes. Due to extremely high use and impacts from multiple land uses, it is critical to utilize a holistic management strategy when addressing the water quality impacts in the Jemez Watershed and in particular the public lands administered by the Santa Fe National Forest – Jemez Ranger District. The tasks within this proposal apply the management disciplines of Recreation, Wildlife, Environmental Education, Hydrology and Range Management and Forest Resource Protection.

The Respect the Rio (<http://www.fs.fed.us/rtr>) program links environmental education, on-the-ground projects, and public involvement to empower local communities and forest users to participate in watershed restoration. Respect the Rio initiatives address impacts to riparian habitat through three approaches: Education, Empowerment, and Restoration.

An essential component to the success of the Respect the Rio program are the numerous partnerships created between the Forest Service and organizations and volunteers who are passionate about the conditions and health of the Jemez Watershed. Without their excitement and dedication, many of the completed projects and initiatives would not have been possible.

The Respect the Rio program emphasizes overall watershed health by incorporating multiple disciplines in the protection and enhancement of riparian areas, treatment of dense forest stands, maintenance of meadow sustainability, improvement of stream health, range management, roads administration, recreation management and enforcement of federal regulations that emphasize water quality.

By incorporating education, public empowerment, and restoration activities, the Respect the Rio program continues to improve water quality and riparian conditions while still allowing for positive recreation experiences.

FY08-5/ ULO Canones Creek Watershed (Not funded)

FY08-6/ ULO Tecolote Watershed Group Formation (Not funded)

FY08-7/ULO Polvadera Creek Riparian Project

\$49,560.00 (Federal) \$33,150.00 (Match) \$82,710.00 (Total)

Project status: ongoing

OBJECTIVE(S): Polvadera Creek is designated a High Quality Cold Water Fishery (HQCWF), but is listed by the New Mexico Environment Department as not fully supporting with the probable cause of impairment due to heightened stream temperatures. Issues surrounding Polvadera Creek can largely be attributed to: Excessive Stream Temperatures, Low Stream Flow, and Catastrophic Wildfire Vulnerability.

The project goal is to reduce water temperature below 20 degrees C according to HQCWF standards. Measures to reach this goal will be: 1.) Non-Riparian woody encroachment riparian thinning and riparian vegetation, 2.) ATV closures adjacent to stream corridors, 3.) Beaver Re-introduction, 4.) Riparian Fencing, 5.) Allotment (Range) Management Plan, 6.) Educational Outreach.

FY08-8/ULO Conejos Watershed Range Improvement (Not funded)

FY08-9/ULO New Mexico Watershed Forum

\$75,000 (Federal) \$50,000(State) \$125,000(total)

Project status: Completed 2008

OBJECTIVE(S): The Watershed Forum will promote local leadership for watershed restoration throughout New Mexico by providing an opportunity for citizens to come together, share successes, challenges, and innovations, network and discuss watershed issues.

OUTCOME(S): From Mountaintop to River Bottom: Restoring New Mexico's Watersheds was the title of the first New Mexico Watershed Forum. The forum occurred during three days (September 30-October 2, 2008) in Albuquerque and in the forests, valleys and wetlands of the Jemez Mountains. The forum provided opportunities to: learn about watershed restoration techniques; increase collaboration and communication about watershed restoration; network with watershed groups across New Mexico; and share successes, challenges and innovations. The forum was attended by 300 participants representing 130 different organizations. A plenary session initiated the first day with the theme "Building Alliances Across Boundaries" and the popular keynote speaker, Brad Lancaster, an expert on water harvesting techniques. The second day consisted of workshops to share our watershed knowledge, including sessions on "How to Form and Sustain a Watershed Group," "Funding Your Watershed Project," and "Resolving Environmental Conflict in Collaborative Forestry Projects." The third day included field trips to restoration sites. Informal discussions, network connections, and information for people doing watershed restoration filled the rooms and hallways.

Pivotal discussions focused on creating a statewide alliance of watershed groups, new research and collaborative approaches in the face of climate change and shrinking funding sources, monitoring approaches for restoration project effectiveness, and service learning that engages youth with wildlife and park management objectives.

Planning for the forum began in 2006 with a multi-agency group including representatives from NMED, NM Energy, Minerals and Natural Resources Department Forestry Division, NM Forest and Watershed Health Institute, NM Department of Game and Fish, and NM Department of Agriculture. River Source, Inc. was contracted assist with planning, implementation and follow-up of the forum. According to the planning committee and comments from attendees, the forum successfully achieved its mission. NMED will use remaining funds from the watershed forum to facilitate three meetings of NM watershed groups.

FY08-10/ULO BMP Effectiveness (NPS Program Effectiveness Assessment)

\$400,000 (federal) \$267,000 (in-kind and cash match) \$667,000 (Total)

Project status: Ongoing

OBJECTIVE(S): The Surface Water Quality Bureau (SWQB) of the New Mexico Environment Department (NMED) manages projects with federal EPA funding under Section 319 of the Clean Water Act (319), with the goal of developing projects with cooperator support to reduce nonpoint source pollution and improve water quality. The goal of this program is to develop and implement a statewide monitoring of the effectiveness of 319 projects on water quality. The program has reviewed recent projects from NM fiscal years 2004 to 2008, and selected the best candidates for consideration for the EPA strategic planning goals of SP-12, and WQ-10. The program has produced a strategy and Field Sampling Plan to guide WPS staff and cooperators in selecting appropriate methods to evaluate effectiveness of future projects. The program is using monitoring and modeling approaches to track changes in physical, chemical, and biological water quality indicators associated with watershed projects. The program will also provide important feedback to develop and prioritize projects that present opportunities to document water quality improvement. (Updated 2/17/09)

FY08-11/ULO Continued Ecological Restoration in Rio de Los Pinos

\$150,000.00 (Federal) \$100,000.00 (Match) \$250,000.00 (Total)

Project Status: Ongoing

OBJECTIVE(S): The objective in the Rio Los Pinos is to reduce the maximum daily temperatures below the standards of high quality cold water fisheries (HQCWF). The Rio Los Pinos was listed as not meeting HQCWF standards. During sampling in 2002, 2003, and 2004 thermograph readings indicated that temperatures in the Rio Los Pinos exceeded the HQCWF criterion with temperatures measuring between 23 and 27.7 degrees C. "The State of New Mexico Standards for Interstate and Intrastate Surface Waters" document states "water temperature at 20 degrees C (68 degrees F) or less".

Various stretches along the Rio Los Pinos have suffered from severe soil erosion, loss of riparian vegetation, and channel widening. This project will supplement other projects such as the Rio Los Pinos Restoration Project and the Rio Los Pinos Ecosystem Restoration Project, RERI (state funded) project. Significant progress is being made by the use of rock structures to reduce stream bank erosion and fencing to control livestock to specific water access points.

The project goal is to improve the riparian community, stabilize the stream banks, restoration of fish and wildlife habitat, improve ground and surface water quality of the Rio Los Pinos and manage livestock along the riparian corridor, an to reduce water temperature below 20 degrees C.

FY08-12/ULO Bluewater Creek Temperature Reduction & Riparian Restoration Project

\$186,520 (Federal) \$141,240 (State) \$327,760 (Total)

Project status: ongoing

OBJECTIVE(S): This restoration project implements the state NPS Management plan on multiple levels. The plan includes non-structural BMPs which include planting riparian vegetation to improve water quality and structural BMPs which include fencing, which will protect riparian vegetation from grazing and off-highway vehicle degradation. Additionally, post vanes will be installed to improve sedimentation. These BMPs directly focus on improving the riparian area of Bluewater Creek. Additionally, based on past results, this project will engage over 100 volunteers who will participate in the riparian plantings and will provide an opportunity to educate the community on the importance of riparian systems in improving and maintaining water quality, benefits of self-sustaining productive riparian ecosystems, and benefits to wildlife, fish and invertebrates. Additionally, the community will be educated on the human impacts of these ecosystems.

The completion of this project will result in increased thermal cover and shading along 1.3 miles of Bluewater Creek at the lowest section and elevation of the TMDL reach and which is the most degraded and exposed to solar radiation.

FY08-13/ULO Ponil Creek Riparian Restoration

\$132,002.00 (Federal) \$88,001.33 (match) \$220,000.33 (Total)

Project status: Awaiting approval

OBJECTIVE(S): The Ponil Creek Restoration Project will work towards removal of the Ponil from the list of impaired waterways by 2011. The Cimarron Watershed Alliance will implement the three year project through a collaborative process with the Philmont Scout Ranch, Vermejo Park Ranch, the Chase Ranch, and the CS Ranch as well as the Village of Cimarron, New Mexico State Forestry, and New Mexico Department of Game and Fish. This project will be accomplished by lowering the stream temperature through restoration of riparian forests, stream bank stabilization and erosion control treatments. The four project components are:

- ◆ Increase canopy coverage on 11 miles of riparian forest by planting native cottonwood and willow trees;
- ◆ Reconstruct three low-water crossings to reduce erosion sedimentation;
- ◆ Repair two eroding stream banks adjacent to NM 204 and;
- ◆ Install grade control BMPS to address degradation of the streambed.

FY08-14/ULO Upper San Antonio Creek Restoration on the Valles Caldera National Preserve

\$73,478 (federal) \$108,161 (match) \$72,620 (federal funds) \$254,259 (total)

Project status: awaiting approvals

Project Goal: To restore the composition, structure, and function of the river ecosystem in the upper San Antonio sub-basin.

OBJECTIVE(S): reduce temperature, turbidity and suspended sediment/siltation by increasing stream bank integrity, improving stream bank vegetation, reduce width-to-depth ration and restore historic wetlands. Temperature in San Antonio Creek exceeds standards for temperature on the segment within VCNP and temperature and turbidity below Valles Caldera National Preserve (VCNP) boundary. Impairments are likely a cause of past management activities including intensive grazing and road building in the area. One clear source of impacts to the stream is the location and condition of Road VC09, VC09A and the intersection of VC09 and VC13. The VC09 and 09a were originally constructed and continues to be used to provide access to PNM for the inspection, maintenance, and repair of a natural gas pipeline. VC09 is also used by staff and for public access for fishing, hunting, and wildlife viewing.

Project Activities: include baseline monitoring, construction of low water crossing for limited use to access pipeline (perhaps once or twice/year), improve culvert placement and size, reconstruction of VC09 at critical locations, reclaim – restore – revegetate disturbed areas, plant willows on streambanks and monitor all activities.