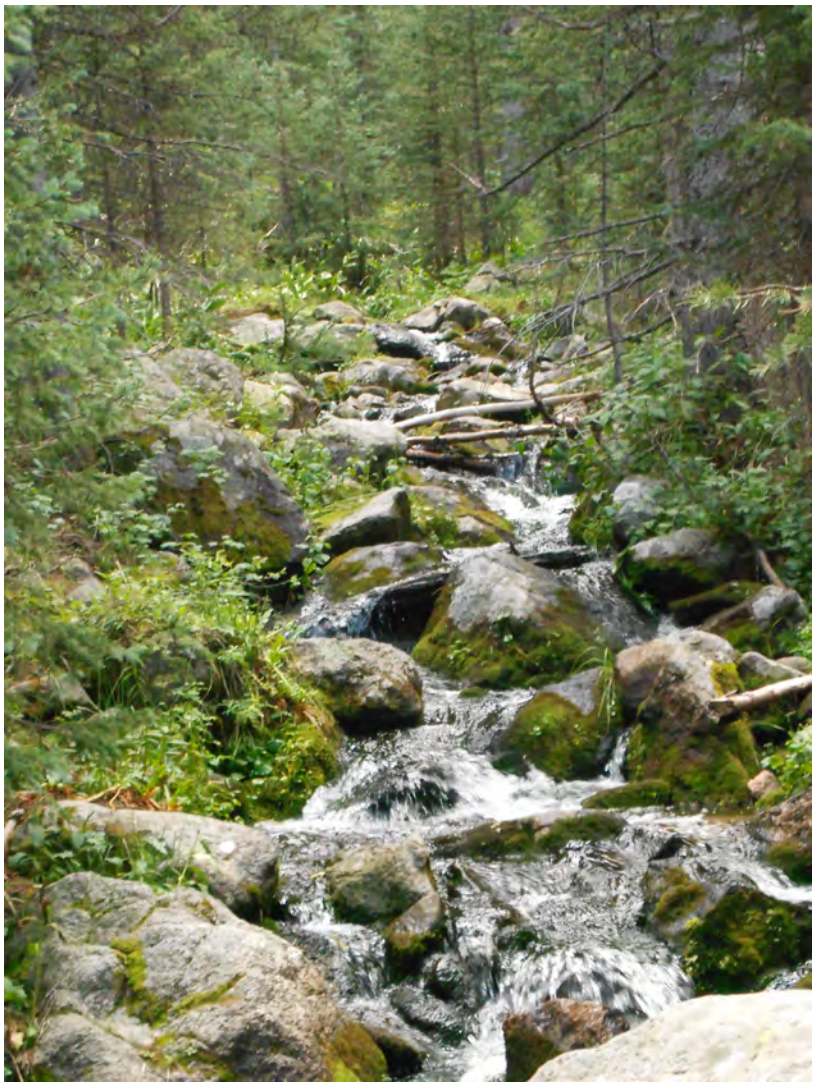
State of New Mexico Nonpoint Source Management Program



2013 Annual Report

New Mexico Environment Department
Surface Water Quality Bureau
Watershed Protection Section

State of New Mexico
Nonpoint Source Management Program

2013 Annual Report

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Table of Contents

Executive Summary 1
Introduction 2
What is Nonpoint Source Pollution? 2
Clean Water Act Section 319 3
Clean Water Act Section 303(d) and 305(b) 3
NPS Management Program 5
NPS Management Program Milestones 5
NPS Management Program Objectives Completed in 2013 8
NPS Management Program Objectives for 2014 9
NPS Management Program Problems and Concerns 11
Impacts from Drought and Wildfire 13
Effectiveness Monitoring for NPS Pollution Controls 15
New Mexico Watershed Restoration Priorities and Progress (map) 17
Summaries for 319(h) Projects Completed in 2013 18
Wetlands Program 27
Funding Awarded to the Wetlands Program 27
Wetlands Projects Completed in 2011 27
Wetlands Program Outreach 30
River Ecosystem Restoration Initiative 31
River Ecosystem Restoration Initiative 2007-2010 Projects (map) 32
Other Water Quality Protection Programs 45
Monitoring, Assessment and Standards Program 45
Clean Water Act §303(d)/§305(b) Integrated Report Update 46
Water Quality Standards Update -Triennial Review 47
Other Water Quality Standards News - Hydro Protocol / Use Attainability Analysis 47
Additional UAA Investigations 48
Outstanding National Resource Waters and Associated Antidegradation Implementation Procedures 48
TMDL Update 48
Ground Water Quality Bureau 49
Permitting and Compliance Assistance for Large Capacity Septic Tank/Leachfields 49
New Mexico Water Fair and Water-Quality Outreach Program 49
CWA Section 401 Certification Activities 51
New Mexico Mining Act Activities 52
Projects Completed by Non-NMED Agencies 53
Carson National Forest Watershed Condition Framework Watershed Restoration Action Plan(s) 53
Gila National Forest BAER & Restoration Activities Following the Whitewater-Baldy Complex and Silver Fires 55

Project Highlight: Upper Pecos Aquatic Habitat Enhancement New Mexico Department of Game and Fish 56
Additional Management Practices by Non-NMED Agencies 62
Bureau of Land Management Projects 62
NM State Forestry Division 65
US Forest Service Projects 68
Carson National Forest 68
Cibola National Forest 75
Gila National Forest 76
Santa Fe National Forest 82
Natural Resources Conservation Service 85
NM Game and Fish Department 88

Executive Summary

This annual report to the United States Environmental Protection Agency (EPA) provides an overview of Clean Water Act (CWA) Section 319(h) Nonpoint Source Management Program related activities conducted in New Mexico in 2013. Polluted runoff, or nonpoint source (NPS) pollution, is defined by the EPA as "caused by rainfall or snowmelt moving over and through the ground and carrying natural and human-made pollutants into lakes, rivers, streams, wetlands, estuaries, and other coastal waters and groundwater. Atmospheric deposition and hydrologic modification are also sources of nonpoint source pollution." Nonpoint source pollution is the leading cause of water quality degradation in the United States and poses a substantial problem for the health of New Mexico's rivers, wetlands, lakes and streams. When Congress amended the CWA in 1987, Section 319 was added to provide federal leadership to assist states, territories and tribes in developing programs that address NPS pollution. Under Section 319, states, territories and tribes receive grant funding to support activities such as: outreach and education, training, implementation of best management practices (BMPs), and monitoring to assess implementation efficacy.

Milestones are an integral part of the NPS Management Program and a requirement under Section 319(b)(2)(c) of the CWA. The 2013 milestones for which a specific schedule is provided in the Nonpoint Source Management Program are reported on pages 5-6. Significant achievements include:

- The MOU between NMED and the Southwestern Region of the United States Forest Service was implemented in 2013.
- A request for proposals (RFP) was released to fund projects with the greatest potential of success under the National Water Program Guidance for Fiscal Year 2013.
- A second RFP was released to fund watershed-based planning.
- One watershed-based planning project was completed in 2013, which produced a solid draft plan for a complex project area encompassing thirty-seven priority watersheds within the larger El Paso – Las Cruces watershed.
- Three on-the-ground projects funded under Section 319 were completed. One new Wetlands Program Development project was awarded funding by EPA Region 6 in 2013, and two projects funded under CWA Section 104(b)(3) Wetlands Program Development Grants were successfully completed this year.
- Twelve River Ecosystem Restoration Initiative projects were successfully completed.

In addition, 4 National Forests, 1 Bureau of Land Management office, the Natural Resources Conservation Service, and 1 state agency provided information for the report on their activities related to NPS pollution control in 2013. Four large wildfires affected water quality in New Mexico in 2013. These fires burned approximately 184,023 acres, and approximately 31,192 of these acres were severely burned.

Introduction

This annual report to the United States Environmental Protection Agency (EPA) provides an overview of nonpoint source management related activities conducted in New Mexico in 2013 by the Watershed Protection Section (WPS) of the New Mexico Environment Department (NMED) Surface Water Quality Bureau (SWQB). The report presents the state's progress in meeting the milestones outlined in the goals and objectives of the New Mexico Nonpoint Source Management Program, and provides information on reductions in nonpoint source (NPS) pollutant loading and improvements to water quality of New Mexico watersheds as required under Section 319(h)(11) of the Clean Water Act (CWA). The majority of funding to support the New Mexico Nonpoint Source Management Program was provided by 319(h) grants awarded to NMED by the U. S. Environmental Protection Agency (EPA). Activities and projects reported are CWA 319 projects, and those implemented by the River Ecosystem Restoration Intiative, the New Mexico Wetlands Program, CWA Section 401 activities, N.M. Mining Act activities, and NPS projects implemented by other natural resource agencies outside of NMED.

What is Nonpoint Source (NPS) Pollution?

Polluted runoff, or NPS pollution, is defined by the EPA as "caused by rainfall or snowmelt moving over and through the ground and carrying natural and human-made pollutants into lakes, rivers, streams, wetlands, estuaries, and other coastal waters and groundwater. Atmospheric deposition and hydrologic modification are also sources of nonpoint source pollution."

A few examples of NPS pollution include: bacteria and nitrates from aging or out of compliance septic systems; sediment and ash from forest and rangeland fires; oil, grease and other hydrocarbons from parking lots and roads; sediments from poorly designed unpaved roads; fertilizers, nutrients and bacteria from agricultural practices; and bacteria from pet waste. Increased water temperature resulting from degraded streambanks, loss of streambank vegetation, and hydromodification is another example of NPS pollution. New Mexico's most common causes of NPS pollution are nutrients, bacteria, and temperature.

An incised stream that has been re-located and straightened over time. It is devoid of canopy and choked with algae indicating nutrient impairment.

Cattle along the stream have de-stabilized the banks causing over-widening, and loss of riparian vegetation. Fencing has been installed to direct cattle away from sensitive banks.

Clean Water Act Section 319

NPS pollution is the leading cause of water quality degradation in the United States and poses a substantial problem for the health of New Mexico's rivers, wetlands, lakes and streams. When Congress amended the CWA in 1987, Section 319 was added to provide federal leadership to assist states, territories and tribes in developing programs that address NPS pollution. Under Section 319, states, territories and tribes receive grant funding to support the following activities: outreach and education, training, implementation of best management practices (BMPs), and monitoring to assess implementation efficacy.

Section 319 contains three main strategies for addressing NPS pollution:

- ◊ Requires states to prepare assessment reports of their NPS pollution problems.
- ◊ Requires states to develop a management program to control NPS pollution and improve water quality problems within the state.
- ◊ Creates a grant program to fund implementation of the management program for the assessment and control of NPS pollution.

Clean Water Act Sections 303(d) and 305(b)

Two sections of the CWA designed to manage both point sources and NPS are Sections 303 and 305. Under Section 303(d), states are required to list all polluted surface waters in their jurisdiction which do not meet state water quality standards (also known as the "impaired waters" list). Under Section 305(b), states must publish a biennial report on the health of all surface waters. In New Mexico, the 305(b) report includes the 303(d) list and is referred to the *State of New Mexico CWA §303(d)/§305(b) Integrated Report*.

New Mexico's Nonpoint Source Management Program

As lead agency for the management of NPS pollution, NMED coordinates activities within the state through the SWQB and the Ground Water Quality Bureau (GWQB). In accordance with the CWA, the SWQB has developed a NPS Management Program planning document (NPS Management Plan). Our ultimate goal is to manage a balanced program that addresses both existing impairments (as listed in the 303(d) list) and prevents future impairments. The focus on existing impairments is directed at those impaired waters for which a Total Maximum Daily Load (TMDL) has been calculated. The TMDL is the total amount of pollutant a waterbody can assimilate daily and still meet water quality standards. In New Mexico TMDLs are generally only calculated on impaired waterbodies. In calculating a TMDL for an impaired waterbody, a target value of pollutant reduction is also provided. The primary focus of New Mexico's Nonpoint Source Management Program is to fund and support projects which implement TMDLs to reduce the pollutant load. An important component of this process is the watershed based plan (WBP) approach as outlined in the guidance provided in the *Nonpoint Source Program and Grants Guidelines for States and Territories* (Fed Reg. Vol 68, No. 205 Sec. III, D a-i). A WBP expands on the information provided in a TMDL by identifying causes and sources of impairment, recommending management measures, estimating expected load reductions from management measures, providing methods to measure implementation success, estimating funding needs, and outlining potential education and outreach efforts.

Stakeholders discuss the implications of a bacteria TMDL as part of developing a watershed-based plan in southern New Mexico.

The goal of New Mexico's Nonpoint Source Management Program is:

> ***To implement watershed-based restoration and protection programs with the assistance of all stakeholders, for all watersheds within New Mexico, to meet and maintain water quality standards and beneficial uses of surface water and groundwater resources.***

NPS Management Program Milestones

At the core of the NPS Management Program are specific objectives aimed at reducing and preventing NPS pollution in New Mexico: Watershed-Based Planning, Addressing Water Quality Problems, Water Quality Protection, Education and Outreach, Protect Groundwater Resources, and Interagency Cooperation. Within each objective are specific activities and milestones to meet the objective. Milestones are an integral part of the NPS Management Program and a requirement under Section 319(b)(2)(c) of the Clean Water Act. The following table lists each milestone identified in the NPS Management Plan which has a specific numeric goal and an established timeframe, and its status.

Objective number	Objective Short Name	Milestone (abbreviated)	Schedule	2014 Status
1	Watershed Based Planning	All nine planning elements are addressed in watershed-based plans (WBPs).	2012: 3 plans, 49 watersheds. 2014: 2 additional plans, 20 additional watersheds.	This milestone was partially met. No new WBPs were completed in 2013. Four WBPs covering 38 priority watersheds were completed in 2010-2012.
2	Addressing Water Quality Problems	Improve water quality in priority watersheds, meeting EPA performance measures SP-12 or WQ-10.	Three watersheds by 2012 and three more by 2014.	Met milestone in 2012 with two success stories in three priority watersheds. One success story (Comanche Creek) was accepted in 2013.
2	Addressing Water Quality Problems	Wetlands Action Plans are implemented in at least one priority watershed per year.	1 watershed per year.	Milestone achieved. One Wetlands Action Plan completed by the Upper Pecos Watershed Association in June 2013.
3	Water Quality Protection	The CWA §303(d)/§305(b) Integrated Report does not indicate an increase in the percentage of assessed stream miles designated as impaired.	The Integrated Report is scheduled for completion in 2010, 2012, and 2014.	Milestone was met for the 2012-2014 CWA §303(d)/§305(b) Integrated Report with a 4% reduction in impaired stream miles.

NPS Management Program Milestones (continued)

Objective number	Objective Short Name	Milestone (abbreviated)	Schedule	2014 Status
3	Water Quality Protection	The CWA §303(d)/§305(b) Integrated Report provides summaries of water quality survey activity, analysis, and conclusions.	The Integrated Report is scheduled for completion in 2010, 2012, and 2014.	The Report is currently under revision for release in 2014.
3	Water Quality Protection	NMED proposes to WQCC adoption of water quality standards for wetlands.	2014	Nothing to report. This is a 2014 goal.
4	Education and Outreach	The Forest and Watershed Health Program Virtual Library experiences an annual increase in internet hits of at least 10% between 2009 and 2014.	Annually	Milestone was met. The Virtual Library (www.allaboutwatersheds.org) had 111,645 visits in 2013 compared with 29,674 in 2012, representing a 276% increase.
4	Education and Outreach	NM Watershed Forum is attended by more than 300 people.	2010, 2012, 2014	Milestone previously met. Watershed Forums held in 2010 and 2012.
4	Education and Outreach	Clearing the Waters is published quarterly.	Quarterly	Milestone not achieved. Two issues of *Clearing the Waters* published in 2013.
4	Education and Outreach	Clearing the Waters circulation increases to 1000 by 2014.	2014	Milestone achieved in 2011. Current circulation is estimated at 1,244.
6	Interagency Cooperation	The MOU between NMED and USFS is renewed.	2014	Milestone achieved in 2012. The MOU between the USFS and NMED was renewed in 2012.

NPS Management Program Milestones (continued)

Objective number	Objective Short Name	Milestone (abbreviated)	Schedule	2014 Status
6	Interagency Cooperation	The Agreement in Principle between NMED and USDOE will be renewed.	2010	Milestone achieved. The agreement was updated and renewed in 2013 with a set of grant conditions.
6	Interagency Cooperation	The MOU between NMED and NMDOT will be renewed.	2010	This milestone was not met. The JPA has not been renewed, mainly due to lack of funds to support a joint NMED/NMDOT position.

The WPS continues to forge and maintain relationships to promote interagency cooperation. This is critical in New Mexico where over 30% of the land is managed by the U.S. Forest Service (USFS) and the U. S. Bureau of Land Management (BLM).

In accordance with a memorandum of understanding (MOU) between the Southwestern Region of the USFS and NMED, USFS reported to NMED emergency actions taken in response to wildfires in 2012 that may negatively impact water quality in Outstanding National Resource Waters (ONRWs). NMED and USFS jointly presented this information to the N.M. Water Quality Control Commission on June 11, 2013. USFS also notified NMED of planned emergency actions with the potential to impact ONRWs carried out in response to the Jaroso and Silver Fires, which burned in the watersheds of several ONRWs. USFS then reported to NMED the actions that were taken, consistent with the MOU and the State's Antidegradation Policy.

A coordination meeting was held with the USFS on November 5, 2013 between staff from four of the five National Forests in New Mexico and several SWQB programs. One major subject of discussion was whether and how NMED should propose revisions to the Nonpoint Source Management Program so that the program may be more responsive to wildfire, and assist with post-fire planning and rehabilitation.

WPS staff explored the possible use of both Drinking Water and Clean Water State Revolving Funds for NPS pollution control projects in 2013, in discussions with three local governments and the agencies that manage the State Revolving Funds. The New Mexico Finance Authority (NMFA) was especially helpful in making contacts and encouraging possible applicants to consider projects that are different from conventional water infrastructure projects most commonly funded by the State Revolving Funds. The most promising development is with the City of Las Vegas proactive interest in submitting an application for a comprehensive watershed planning and implementation project for the Gallinas watershed. The project would implement and utilize portions of the current WBP (most concerned with temperature impairment and the cold water aquatic life designated use), but add elements related to water quality protection (including forest management) and the municipal drinking water supply. The City of Las Vegas has experienced drinking water treatment challenges related to total organic carbon and plant nutrients that could be addressed partly through improved

watershed management. WPS facilitated formation of a project development workgroup composed of NMFA, City of Las Vegas staff, Hermit's Peak Watershed Alliance, and WPS. A draft proposal is ready for review by the Las Vegas governing council.

Coordination with the Natural Resources Conservation Service (NRCS) also continued during 2013, mostly in response to the new National Water Quality Initiative (NWQI). NMED Cabinet Secretary Dave Martin requested that NRCS choose from among 33 watersheds with agricultural sources of NPS pollution and completed watershed-based plans to designate priority watersheds for NWQI. NRCS selected one of these (the Arroyo Pecos - Gallinas River watershed near Las Vegas), and selected two others (the Mossman Arroyo and Anthony Wash - Rio Grande watersheds near Las Cruces) where watershed-based planning is nearing completion. More information on NRCS activities is found in the outside agency section starting on page 81.

NPS Management Program Objectives Completed in 2013

2013 was a year of routine implementation of the NPS Management Program combined with planning and adaptation to new conditions. Most of the objectives outlined for 2013 in the 2012 NPS Annual Report were met, including:

- A Request for Proposals (RFP) was released in March 2013 to select projects that will develop or update watershed plans relative to *EPA's Nonpoint Source Program and Grants Guidelines for States and Territories*. This activity may support meeting a program objective to be identified in a revised NPS Management Program to complete WBPs.
- A second RFP was released in March 2013 to select on-the-ground projects with the greatest potential of success under PAMs WQ-10 and SP-12 (also called WQ-SP12.N11 in newer guidance) in EPA's National Water Program Guidance for FY 2013.
- A nomination for a 319 Success Story under PAM WQ-10 was accepted for Comanche Creek, based on its sediment delisting coupled with project information and statistical evidence of water quality improvement.
- Changes in the *2012-2014 State of New Mexico 303(d)/305(b) Integrated List for Assessed Surface Waters* relative to earlier versions of the List were reviewed to identify additional potential candidates for Success Story nomination, and a Success Story for Willow Creek (in the Pecos Headwaters watershed) was submitted to EPA in November.

In 2013, three on-the-ground projects funded under Section 319 were completed. Each project was implemented within one priority watershed (not considering outreach or planning elements, which often affect additional priority watersheds) resulting in pollutant load reductions reported below.

Three watershed-based planning projects were scheduled to be complete in 2013. One of the three projects was terminated before it could be completed, one was completed, and the third was extended. A watershed-based plan was the main deliverable of each project. EPA reviewed a watershed-based plan produced by one of the projects (for the Rio Grande downstream of Caballo Reservoir), and determined that it does not

yet meet all nine watershed-planning elements. More discussion of challenges faced with watershed-based planning is provided below.

Two new on-the-ground Section 319 projects were developed in 2013. These projects will be implemented within two priority watersheds. One of these, the Ponil Creek Restoration Project, Phase II, directly implements portions of a WBP. The other project was considered to have adequately addressed the watershed-based planning elements in the project workplan. These projects contribute to a goal stated in the NPS Management Program to develop and begin implementation of watershed restoration projects within twenty-eight priority watersheds by 2014. Section 319 funded implementation projects were initiated in twenty-one distinct priority watersheds in 2009 through 2013. River Ecosystem Restoration Initiative projects were initiated in seven additional priority watersheds during this period, and so the goal of twenty-eight watersheds was met at the close of 2013.

NPS Management Program Objectives for 2014

EPA released the revised *Nonpoint Source Program and Grants Guidelines for States and Territories* in April, 2013. These NPS Guidelines determine priorities and allowable costs for NMED for activities funded under Section 319. The NPS Guidelines place a stronger emphasis on implementation projects. By requiring watershed-based planning to be funded with "program" funds, the NPS Guidelines may reduce NMED's ability to support watershed-based planning in the future. This shift may be appropriate considering that several watershed-based plans are complete or nearing completion, and Section 319 funds are still often considered a primary source of funds for implementing these plans. The shift towards implementation may also ultimately mean that other activities outlined in the NPS Management Plan will receive fewer resources.

NMED partly adapted to this development in 2014 by submitting an application for a Section 319 grant to fund major aspects of the Nonpoint Source Management Program (and projects) in state fiscal years 2014 and 2015, consistent with the revised NPS Guidelines. NMED requested and was granted a waiver to allow allocation of $100,000 in project funds per year (from fiscal years 2014 and 2015) to watershed-based planning. This waiver will allow watershed-based planning to proceed in additional priority watersheds, but at a lower rate than in previous years.

NMED also began a revision of the NPS Management Program planning document in 2013, and will further adapt to new policy directives through the revision process. Input on these changes is being sought from the public and other agencies that assist in implementing the NPS Management Program during a public comment period extending from January 6 through April 7, 2014. The revision will be submitted to EPA by the Governor of New Mexico or the Governor's designee, and requires approval by EPA's Regional Administrator for New Mexico to comply with Section 319 of the Clean Water Act and continue receiving Section 319 funds. NMED plans to complete this revision in 2014.

Governor Martinez and Senator Phil Griego announced their support of a new state-funded stream restoration program, called the River Stewardship Program, in a public announcement at the Coronado State Historic Site in Bernalillo on August 15, 2013. If the Legislature supports this initiative, responsibility for the program will be assigned to the NMED, and WPS and SWQB Finance Section staff will develop and administer the program in 2014. A fact sheet describing the program proposal is available at www.nmenv.state.nm.us/swqb/Newsletters/2014/ClearingTheWaters-Winter2014.pdf.

The WPS has identified the following activities from the current 2009 NPS Management Program to meet program objectives for 2014:

- Release a RFP in March 2014 to select projects that will develop or update watershed plans that include the nine elements in *EPA's Nonpoint Source Program and Grants Guidelines for States and Territories*. This activity will not meet the program objective identified in the current NPS Management Program, but may support meeting a program objective to be identified in a revised NPS Management Program.
- Release a second RFP in March 2014 to select on-the-ground projects with the greatest potential of success under PAMs WQ-10 and WQ-SP12.N11 (called SP-12 in earlier guidance) in EPA's National Water Program Guidance for FY 2014.
- Complete a nomination for a 319 Success Story under PAM WQ-10 for Willow Creek, based on its delisting for zinc and cadmium, coupled with information on the Terrero Mine reclamation and evidence of water quality improvement.
- Review changes in the *2014-2016 State of New Mexico 303(d)/305(b) Integrated List for Assessed Surface Waters* relative to earlier versions of the List to identify additional potential candidates for Success Story nomination.
- Four watershed-based planning projects are scheduled to be complete in 2014. An additional project completed in 2013 produced a plan which EPA reviewed, found did not meet the nine elements of a watershed-based plan, and is being revised in 2014. A watershed-based plan is the main deliverable of each project. Each plan, if accepted by EPA, will help meet a significant NPS Management Program milestone of sixty-nine priority watersheds with watershed-based planning completed by the end of 2014. At the close of 2013, thirty-one watersheds remain to meet this goal. The five watershed-based plans which are scheduled for completion in 2014 are summarized below

Project Number	Project Title	Project completion date	Streams included	Number of priority watersheds
09-B	Paso del Norte Watershed-Based Plan	June 30, 2013 (revision in 2014)	Rio Grande in New Mexico downstream of Elephant Butte Reservoir	37
11-F	Mogollon Creek Watershed-Based Plan	June 30, 2014	Mogollon Creek	3
12-C	Black Canyon Watershed-Based Plan	December 31, 2014	Black Canyon Creek	2
12-H	An Updated Watershed-Based Plan for the Lower Embudo Watershed	December 31, 2014	Embudo Creek	3
12-I	Nutrias Watershed Based Plan	December 31, 2014	Rio Nutrias (in the Rio Chama watershed)	4

- Seven Section 319 implementation projects scheduled to be complete in 2014 are listed in the following table. The numbers of priority watersheds below do not include watersheds affected only by outreach or planning elements.

Project Number	Project Title	Project completion date	Streams included	Number of priority watersheds
10-D	Respect the Rio: Managing Uplands to Improve Water Quality	6/30/2014	Rio de las Vacas, Clear Creek, Rio Cebolla (above Fenton Lake), San Antonio Creek	4
10-E	Respect the Rio: Managing Recreation to Improve Water Quality	12/31/2014	Rio Guadalupe, Jemez River, East Fork Jemez River, San Antonio Creek, Rito Peñas Negras, Rio de las Vacas, Pecos River, Dalton Creek	6
11-C	Phase III, Collaborative Project for the San Juan Watershed	12/31/2014	La Plata River, San Juan River, Animas River	3
11-D	Redondo Creek and San Antonio Creek Riparian Restoration and Temperature Reduction Project	12/31/2014	Redondo Creek, San Antonio Creek	2
11-I	Riparian Restoration along the Rio de las Vacas	12/31/2014	Rio de las Vacas	1
11-G	Restoring Jaramillo Creek	9/30/2014	Jaramillo Creek	1
13-C	Upper Rito Peñas Negras Woody Riparian and Temperature Reduction Project	12/31/2014	Rito Peñas Negras	1

NPS Management Program Problems and Concerns

Four watershed-based planning projects were scheduled to be complete in 2013, and their completion was identified among activities planned for 2013 in the 2012 NPS Annual Report. A watershed-based plan is the main deliverable of each project. One of these projects ("Development of an Upper Rio Grande Basin Plan for Ecological Restoration", for the Rio Grande upstream of the Red River) was terminated prior to completion, because it fell behind schedule and could not be extended due to administrative constraints. A second project (Río Pueblo de Taos Watershed Comprehensive Planning) was completed and produced a watershed-based plan that was not accepted as such by EPA. No immediate plans are in place to address EPA's concerns for that watershed-based plan, but proposed revisions to the NPS Management Program would facilitate smaller watershed-planning projects to address specific technical deficiencies in existing watershed-based plans. The Río Pueblo de Taos Watershed-Based Plan is available on line at http://amigosbravos.org/on-the-ground-restoration. A third project (Paso del Norte Watershed Based Plan, for the Rio Grande downstream of

Caballo Reservoir) was completed and produced a plan which EPA reviewed and did not accept as meeting the elements of watershed-based plans. The WPS is working with the Paso del Norte Watershed Council to address EPA's concerns on this plan in 2014. The fourth project (Mogollon Creek Watershed Based Plan) was extended and is now scheduled to be complete on June 30, 2014.

The 2013 Legislature did not fund Healthy Rivers New Mexico in FY 2014 (July 1, 2013 – June 30, 2014). NMED further developed the initiative in 2013, working with the Office of the Governor and key legislators to strengthen elements related to fire, flooding, and the economic importance of river-based recreation such as fishing and boating. Governor Martinez and Senator Phil Griego rebranded the initiative as the River Stewardship Program in a public announcement on August 15. The value of the River Stewardship Program as match for future federal grants is included in brief fact sheets intended for decision makers. The earlier River Ecosystem Restoration Initiative (RERI) has remained a critical component of match for Section 319 funds for FY 2013 and 2014, but the remaining RERI projects will be complete at the end of FY 2014.

Fiscal year 2013 was the first year in which NMED experienced a significant decrease in Federal Section 319 funding. The final award for FY 2013 was $1.9 million, relative to $2.3 million per year for several previous years. A project officer position vacated through promotion in October 2012 and an administrative assistant position vacated through retirement in May 2013 have both been permanently moved from the Watershed Protection Section. According to the terms of NMED's grant for FY 2014 and 2015, a position being vacated through retirement in early 2014 may only be filled if state funds are located to support the position.

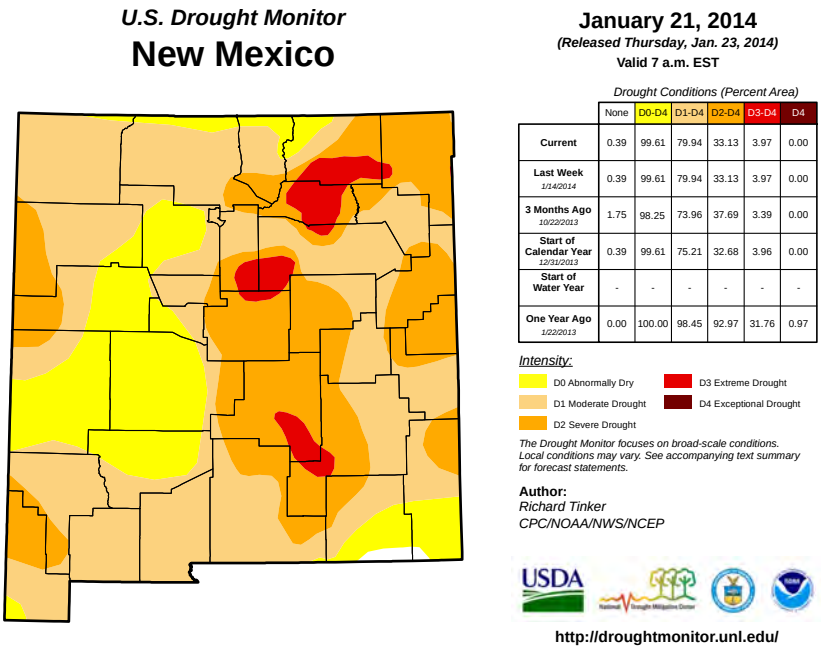
The NPS Management Program was further impacted in 2013 by two vacancies (for a project officer and a contract specialist) for which sufficient funds do exist to fill the positions, but the process for filling positions requires approximately five to seven months. The net result is that NPS Program staff have absorbed responsibilities of their former coworkers, including administrative responsibilities, and have had less time for project development, project management, and program coordination activities. In anticipation of a permanent reduction in Section 319 funding, the draft NPS Management Plan reduces emphasis on program coordination and watershed-based planning activities somewhat and concentrates more on development, oversight, and implementation of watershed projects.

Experience with NWQI in 2013 further highlighted obstacles that may prevent NWQI from quickly having its desired effect. NRCS is limited by their applicant pool, and also has limited ability to conduct targeted outreach to develop projects that address specific resource concerns. NRCS is unable to fund the specific management measures recommended in a watershed-based plan if an applicant doesn't request funds for those management measures. NRCS has indicated that a small pool of interested applicants in two NWQI watersheds in Doña Ana County will only apply for NWQI funding if they can piece together financing for other parts of a manure management system. The expected NRCS support is significant enough that NRCS is not actively developing other possibilities for NWQI in this area, so if the manure management project does not fall into place, then NWQI will have made little progress towards water quality improvement in those watersheds. An institutional obstacle encountered in 2013 is related to the list of eligible practices. An applicant interested in a cross vane to reduce entrenchment (which would in theory result in a more stable bank and enable more riparian vegetation to grow to help implement a temperature TMDL), and who had the support of an NRCS engineer in developing a design, was not able to find a similar NRCS-approved practice that could be funded under NWQI.

Impacts from Drought and Wildfire

Drought conditions have persisted throughout the west for much of the last 10 years. New Mexico is no exception, and in four of the last five years the state has experienced extremely dry conditions. As the U.S. Drought Monitor map shows, New Mexico started 2013 with 93% of the state in severe drought conditions, and 32% in extreme drought conditions. These conditions improved somewhat over 2013, but 33% of the state remained in severe drought conditions by year's end.

This has led to reduced stream flow and record low reservoir levels. As discussed in several places in this report, some streams have ceased to flow altogether for at least some part of the year. These drought conditions have also led to extremely volatile conditions in New Mexico's forests and rangeland, which have led to numerous high intensity wildfires.



	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.39	99.61	79.94	33.13	3.97	0.00
Last Week 1/14/2014	0.39	99.61	79.94	33.13	3.97	0.00
3 Months Ago 10/22/2013	1.75	98.25	73.96	37.69	3.39	0.00
Start of Calendar Year 12/31/2013	0.39	99.61	75.21	32.68	3.96	0.00
Start of Water Year	-	-	-	-	-	-
One Year Ago 1/22/2013	0.00	100.00	98.45	92.97	31.76	0.97

U.S. Drought Monitor Map for the state of New Mexico from January 21, 2014. Map courtesy of the National Drought Mitigation Center, Lincoln, Nebraska.

Four large wildfires burned approximately 184,023 acres in New Mexico in 2013, and approximately 31,192 of these acres were severely burned. The largest of the fires in 2013 was the Silver Fire, which burned 138,698 acres in parts of the Mimbres, Gila, and Rio Grande watersheds. The most severe water quality impacts are expected in the approximately 35 miles of ONRW streams and 56 acres of ONRW wetlands within the burn area. The Thompson Ridge fire in the Jemez Mountains burned 23,965 acres, with fewer than 1,000 acres classed as severe. Post-fire flooding damaged riparian exclosures on Redondo Creek, constructed as part of a 319 project. The Jaroso Fire burned 11,141 acres within the Pecos Wilderness. Eight miles of streams within the fire perimeter and their associated wetlands are designated as ONRWs, and a 20.5 mile segment of the Pecos River downstream of the burned area is a Wild and Scenic River. Although 6,173 of the burned acres were classed as severe, the fire behavior was

Burned hillside in the Pecos Wilderness following the Jaroso Fire. Photo courtesy of the Santa Fe National Forest.

Rio Puerco at Bernardo, New Mexico flowing approximately 8,000 cfs on September 16, 2013. Average discharge in September for the period of record is 5 cfs. Photo courtesy of the U.S. Army Corps of Engineers.

considered for the most part consistent with management objectives and with normal fire behavior for the affected forest types. The 10,219 acre Tres Lagunas Fire burned closer to the Pecos River, downstream of the Jaroso Fire area, and quickly resulted in obvious negative impacts to this popular fishing stream, in the form of increased sediment loading from steep tributary canyons. 1,533 acres within the Tres Lagunas Fire burn area were classed as severe. The Tres Lagunas Fire and the Pecos River were subjects of a site visit on August 6 by EPA's Assistant Administrator for Water, Nancy Stoner, who was attending the national Association of Clean Water Administrators conference in Santa Fe.

Some of this fire has occurred in higher elevation forests where stand-replacement fire naturally occurs. Stand-replacement fire is generally composed of small patch sizes within a larger mosaic of several thousand acres. Wildfire in 2011-2013 has been unusual in sheer size and intensity of the fires at medium altitudes. In the Gila National Forest alone, a large portion of the mixed-conifer forest is gone for a generation. This has left many New Mexico watersheds in a highly erosive condition with some sediment yields approaching 400% - 500% post fire conditions. The loss of vegetation has also increased the risk of post fire peak flow flooding up to 200% in some instances.

Floodwatersin Mogollon, New Mexico on September 15, 2013. Photo courtesy of the Gila National Forest.

On the weekend of September 14, 3013 heavy late monsoon rains blanketed the state with record rainfalls. The gage on the Gila River at the top of the Cliff-Gila Valley recorded a peak discharge of over 28,000 cfs the night of September 15, 2013. Average discharge at the Gila gage in September for the period of record is approximately 75 cfs. Towns and communities from Glenwood and Mogollon in the southwest to Bernardo in the central part of the state and the upper Pecos and Gallinas in the north experienced extreme flooding clogging culverts, overtopping bridges, damaging roads, and destroying homes.

These events have also had an impact on water quality. In the short term, ash flows off the burned areas have eliminated both native and sport fish in some waters. The native Gila trout population in Black Canyon described on page 32 appears to have again suffered a setback, with loss of much of the aquatic habitat. In the longer term, the increased sediment yield will take longer to work through many of the river systems. This has also led to increased bank instability and in-channel erosion. These will most highly impact streams in the affected areas that were already impacted with temperature and sediment deposit impairments.

Effectiveness Monitoring of NPS Pollution Controls

2013 was the fifth year of WPS Effectiveness Monitoring to document the effects of NPS pollution control projects on water quality. These projects are primarily funded under Section 319, but also include projects funded by RERI and the New Mexico Wetlands Program.

A Success Story nomination for Comanche Creek was submitted to EPA during 2013, and following review by EPA staff, it was accepted and published in the national Nonpoint Source Success Story webpage. The basis for the success story was the sedimentation delisting and an analysis of cross section survey data that showed decreases in bankfull width and width to depth ratio. Additional nominations were submitted for Willow Creek and Sitting Bull Creek, which are currently in review.

Thermographs were deployed in nine streams in 2013 to record hourly temperature upstream and downstream of project reaches and additional sites where tributary inputs could have significant effects (see table below). Results from the data analysis indicate that peak summer temperatures in many streams have improved but still exceed the standard of 20°C for coldwater aquatic life in many cases. However the projects are expected to have beneficial effects which will continue to increase as vegetation continues to grow. Further data collection and analysis will be conducted to account for the lag time.

Waterbody	Start Date	2013 Comments
Comanche Creek	2009	Geomorphic analysis of changes in bankfull width was completed, and the success story for sedimentation was published on the EPA Success Story website. Temperature monitoring will continue. Maximum temp has decreased although it still exceeds the standard.
Rio de los Pinos	2009	2013 temperature data collected. Statistical analysis scheduled for first quarter 2014.
Middle Ponil Creek	2009	Temperature monitoring continued through 2013. First project completed and new project set to begin. Statistical analysis conducted and monitoring to continue.
Bluewater Creek	2009	2013 temperature data collected and statistical analysis underway.
San Antonio Creek	2009	2013 temperature data collected and statistical analysis scheduled for first quarter 2014.
Redondo Creek	2010	The project area was heavily impacted by the Thompson Ridge Fire. Temperature monitoring continued in 2013, although only at the downstream site as upstream access was restricted due to wildfire.
Rito Penas Negras	2010	Temperature data was collected on the lower reach by SWQB staff, while the upper reach was monitored by the project cooperators.
Jaramillo Creek	2012	Data was not collected in 2013 due to the Thompson Ridge fire. The project reach was heavily impacted by post-fire flooding. Primary responsibility for monitoring will be shifted to project cooperators.
Rio de las Vacas	2012	Temperature data was collected at five locations in the project reach.

Thermograph deployed in Middle Ponil Creek by securing to rebar with zip ties.

Another initiative undertaken in 2013 was a review of the *2012-2014 State of New Mexico 303(d)/305(b) Integrated List for Assessed Surface Waters*, with an emphasis on delistings associated with NPS pollution control projects. A table of delistings was compiled from a query of the SWQB SQUID database. Willow Creek was identified as a candidate for official success story recognition, and additional candidates are under review.

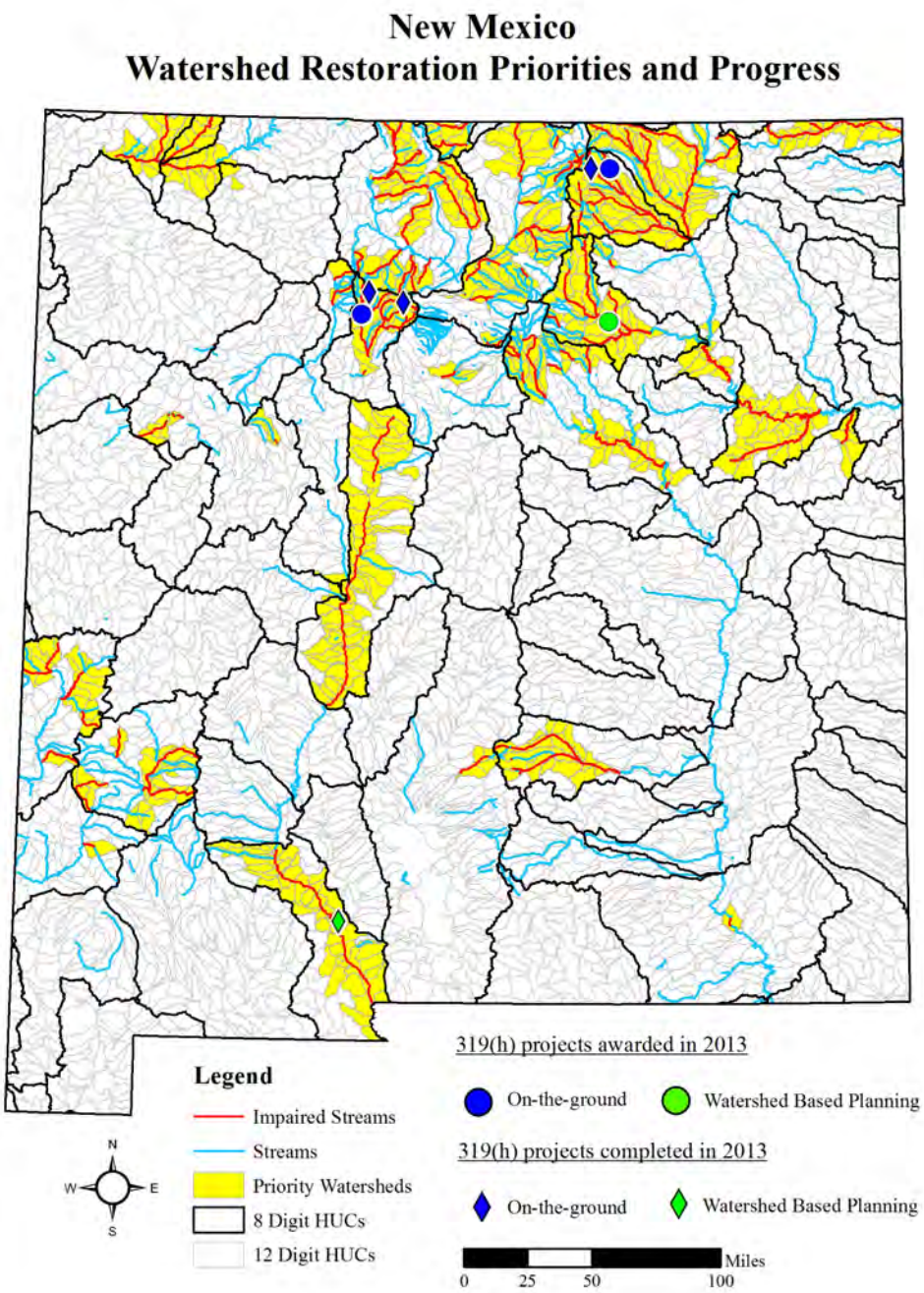
A highlight for the program in 2013 was participating in the EPA Region 6 regional meeting and workshop during June in Dallas, Texas. This meeting covered effectiveness monitoring and emphasized coordination with the NRCS NWQI program. The effectiveness monitoring coordinator for SWQB delivered a presentation on effectiveness monitoring and NWQI projects in New Mexico. This presentation was well received and it was a good opportunity for learning and networking with other states and EPA staff, including key staff from the Washington D.C. headquarters.

Other activities for the Effectiveness Monitoring Program this year included assisting with NMED water quality surveys in the Jemez River Watershed, and participating in the 2013 WRRI NM Water Conference, at which the effectiveness monitoring coordinator gave a presentation. The effectiveness monitoring coordinator also participated again this year on the RFP Committee to select projects for 319 funding, including both on-the-ground projects and watershed-based planning projects. We look forward to more effectiveness monitoring results and success stories in 2014.

Crew installing a thermograph on Middle Ponil Creek.

The summary report for effectiveness monitoring for 2008-2011 which contains the results of the statistical analysis for temperature and turbidity on multiple streams is available online at

http://www.nmenv.state.nm.us/swqb/wps/Effectiveness/


New Mexico
Watershed Restoration Priorities and Progress
Legend
Impaired Streams
Streams
Priority Watersheds
8 Digit HUCs
12 Digit HUCs
N
W
E
S
319(h) projects awarded in 2013
On-the-ground
Watershed Based Planning
319(h) projects completed in 2013
On-the-ground
Watershed Based Planning
0
25
50
100
Miles

Summaries for 319(h) Projects Completed in 2013

Ponil Creek Riparian Restoration Project (08-13/ULO)

Project Budget:	Federal 319(h): $87,129.00 Match: $40,183.70 Project Total: $127,312.70
Watershed:	Cimarron (HUC 11080002)
Sub-watersheds:	Middle Ponil Creek (110800020202), South Ponil Creek (110800020204)
Impairments:	TMDLs for temperature and turbidity

Project Summary:

Ponil Creek is located in northeastern New Mexico within the Canadian River drainage. The creek is formed by three main tributaries which are the North Ponil, Middle Ponil, and South Ponil Creeks. Each main tributary starts at an elevation above 11,000 feet and Ponil Creek ends at an elevation of 6,200 feet at its confluence with the Cimarron River. The aquatic habitat ranges from high mountain plunge pools with extremely high gradient to large meandering pools with gradient less than 1%. Land owners in the project area include Vermejo Park Ranch, Philmont Scout Ranch, and New Mexico Game and Fish (Elliot Barker Wildlife Area). The Valle Vidal Unit of the Carson National Forest is adjacent to parts of the project area.

The primary purpose of the project was to address temperature impairment in Middle Ponil Creek from North Ponil Creek upstream to Greenwood Creek. Middle Ponil Creek was delisted for turbidity during the project term due mainly to a change in how turbidity is assessed, but turbidity and plant nutrients are still listed impairments downstream on Ponil Creek, and the project was also intended to reduce loading of these pollutants.

Over-grazing and over-browsing, in conjunction with impacts from the 2002 Ponil Complex fire, reduced riparian tree canopy cover, and the reduced shade led to increased stream temperatures. Stream bank modification and destabilization also increased the temperature by reducing sinuosity which allowed a wider and shallower channel to develop. Additionally, road crossings and upland sites with erosion problems have increased the sediment loading within the creek which further destabilized the stream banks and produced further temperature increases. These impacts prevent Middle Ponil Creek from supporting its high quality aquatic life designated use.

Project Outcome:

To address these problems, the Cimarron Watershed Alliance, in cooperation with Philmont Scout Ranch, Vermejo Park Ranch, and the New Mexico Department of Game and Fish, built nine small elk exclosures, planted and protected twenty-one cottonwood poles, stabilized five road crossings, restored flow to a meander (which arrested upstream movement of a head cut), and stabilized two cut banks with log vanes and post vanes. The cooperators also developed more detailed designs for three potential future project areas, and conducted a monitoring workshop in 2011 to teach the basics of monitoring for eighteen stakeholders interested in stream restoration. These activities were distributed throughout eleven miles of Middle Ponil Creek.

Middle Ponil Creek before meander restoration and headcut treatment.

Middle Ponil Creek after meander restoration and headcut treatment.

Load Reductions:

Load reductions were calculated with the WEPP Roads Model (for improved low water crossings), the R5 Model (for bank stabilization work), and SSTEMP (for the aggregate effect of shading by riparian vegetation). The total load reduction for sediment was estimated at 39 tons per year. The total load reductions for nitrogen and phosphorus were estimated at 65.2 and 31.5 pounds per year respectively.

Monitoring conducted in 2009 and 2012 at 30 randomly selected stations did not indicate a clear increase in canopy coverage over the project term. The canopy cover assessment conducted as part of this project was more thorough than the assessment conducted in support of the TMDL, and indicates that the target shade values published with the TMDL had already been achieved early in the project term.

Like the region as a whole, the project area entered a prolonged drought during the project term which complicated some of the monitoring and interpretation of results.

Paso del Norte Watershed Based Plan (FY09-B)

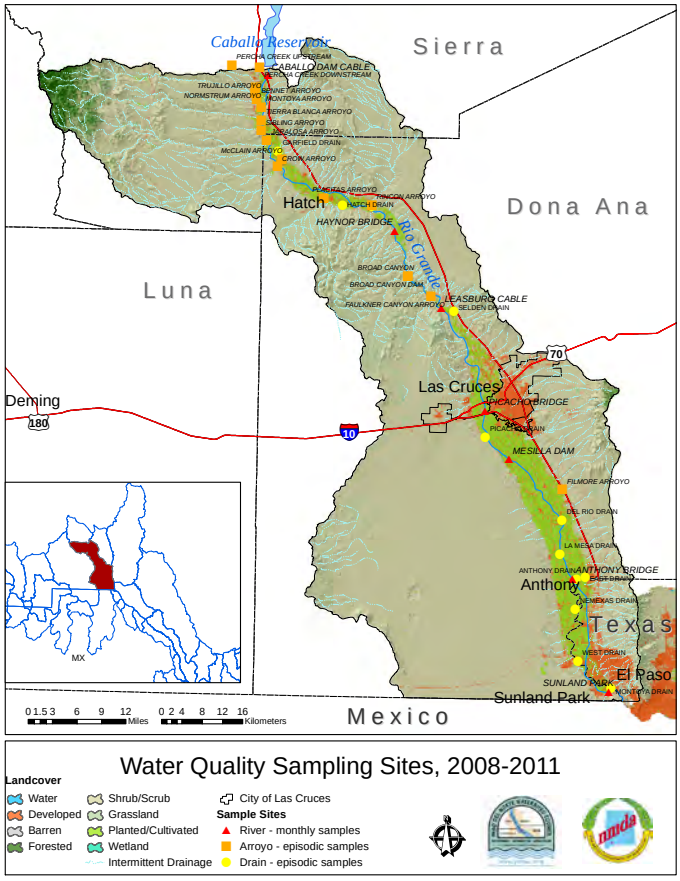
Project Budget:	Federal 319(h): $160,000 Match: $120,570 Project Total: $280,570
Watershed:	El Paso-Las Cruces Watershed (HUC 13030102)
Sub-watersheds:	Comprised of 64 12 digit HUCs (37 12 digit HUC priority watersheds)
Impairments:	TMDL *E. coli* bacteria

Project Summary:

The project area is the El Paso-Las Cruces Watershed (USGS HUC unit 13030102) of the northern Chihuahuan Desert and is located in Sierra and Doña Ana counties of south-central New Mexico. The wa-

tershed encompasses approximately 1.53 million acres and starts at the dam at Caballo Reservoir, a main stem impoundment of the Rio Grande, and extends south to the Texas-New Mexico border and the International boundary with Mexico.

In 2004, NMED conducted an intensive water quality survey in the watershed which documented an exceedance of the New Mexico Water Quality Standards for *Escherichia coli* (*E. coli*). As a result of this and prior data collected by other entities, a TMDL was calculated for the main stem of the Rio Grande in New Mexico below Elephant Butte Dam. The resulting document, *Total Maximum Daily Load (TMDL) for the Main Stem of the Lower Rio Grande (from The International Boundary with Mexico to Elephant Butte Dam)* was completed in 2007.



The El Paso-Las Cruces Watershed (HUC 13030102) with locations of sampling sites.

In July 2006, the Paso del Norte Watershed Council (Council) received a CWA 319(h) grant to develop a WBP for the Paso del Norte watershed. The accomplishments of this planning effort included a surface water quality data review, an extensive analysis of existing biological data and stakeholder outreach. The stakeholders determined the available information was insufficient to identify the sources of the *E. coli* impairment and complete a WBP. A second 319(h) grant was awarded in 2009 to determine the sources of impairment and complete the WBP. One of the primary components of the project was a multi-year *E. coli* monitoring program. The goal of the monitoring effort was to identify the primary sources of *E. coli* impairment and estimate the associated pollutant loading so that a WBP to mitigate *E. coli* could be developed. There were five primary objectives:

- Determine the primary sub-watersheds where *E. coli* loading is likely to originate (spatial).
- Determine the seasonal conditions when increased *E. coli* loading occurs (temporal).
- Determine the percent contribution of *E. coli* loading from both spatial and temporal sources.
- Identify the host sources of *E. coli* from the spatial and temporal sources.
- Write a WBP addressing the *E. coli* impairment that includes management measures to mitigate *E. coli* pollution within the watershed.

Project Outcome:

The monitoring effort determined that the *E. coli* exceedences in the upper watershed above Mesilla primarily correlate with stormwater runoff, while exceedences in the lower watershed may occur from stormwater runoff, but primarily correlate with non-stormwater flows. The data clearly identified a trend of exceedence of the 410 cfu/100mL criterion for *E. coli* at the bottom of the watershed. A microbial source tracking study further identified specific areas of concern, and the percent attributable to anthropogenic activities. An intensive water quality survey conducted by NMED from 2010-2012 identified problems at two WWTFs at the bottom of the watershed. As a result, the following conclusions were made:

- The *E. coli* exceedence in the reach above Mesilla is primarily related to stormwater runoff.
- The *E. coli* exceedence in the reach from Anthony to the international boundary with Mexico is primarily related to non-stormwater flows.
- Mesquite Drain and East Drain contain high levels of *E. coli* and may be a significant source of *E. coli* to the lower watershed.
- Two WTTFs in the lower watershed may be a significant source of *E. coli* to the bottom of the watershed.

Targeted management measures to mitigate *E. coli* pollution were developed for the "hotspots" that were identified in the area from the Anthony 225 Bridge in New Mexico to Courchesne Bridge in El Paso, Texas. Management measures were chosen to target specific areas of concern that were identified as chronic sources of *E. coli* loading. These include recommendations for facility upgrades at the Sunland Park and South Central Regional WWTFs, constructed wetlands, and dairy waste management. General management measures are also recommended and include: detention basins; mainstem restoration projects; sub-watershed restoration projects; domestic pet waste management; liquid waste management, Green Infrastructure/Low Impact Development; and continued development of a regional strategy.

The primary tools for producing the WBP were developing a geographic focus, building stakeholder partnerships, and conducting sound science. *The Paso del Norte Watershed Based Plan – Mitigation Measures to Reduce Bacterial Pollution in the Rio Grande* also includes an outreach program; a discussion of technical and financial assistance needs; an implementation schedule that includes measurable milestones; a set of evaluation criteria to determine if the plan is working, and a monitoring plan to determine if mitigation measures are effective. *The Paso del Norte Watershed Based Plan – Mitigation Measures to Reduce Bacterial Pollution in the Rio Grande"* was submitted to NMED on June 28, 2013, and to EPA for review on September 20, 2013. Subsequent to review, EPA requested several clarifications to the plan and it is currently in revision with expected re-submittal to EPA in spring 2014. The draft plan can be found at:

"Promoting ecosystem health and economic sustainability in the Paso del Norte Watershed"

http://smiley.nmsu.edu/pdnwc/docs/2013/pasodelnorte_watershed%20based%20plan.pdf.

Restoring San Antonio Creek (FY10-C)

Project Budget:	Federal 319(h): $167,466.54 Match: $147,635.76 Project Total: $315,102.30
Watershed:	Jemez River Watershed (HUC 13020202)
Sub-watersheds:	Headwaters San Antonio Creek (HUC 13202020201)
Impairments:	TMDLs for temperature and turbidity

Project Summary:

San Antonio Creek originates as a spring in the east end of the Valles Caldera National Preserve (VCNP), and flows east to west across the north half of the preserve. The VCNP is in Sandoval County in north-central New Mexico within the Jemez Mountains. Prior to the inception of the preserve, the area was heavily grazed and logged using a dense network of roads that have contributed to erosion and sediment in the stream. Single-aged stand forests contribute to fire vulnerability. During the project, the Las Conchas Fire decimated 2/3 of the watershed in VCNP.

The project focused on the 15 mile section within the VCNP to the headwaters. This segment of San Antonio Creek flows through three long, gently sloping, broad riverine valleys separated by relatively short narrow canyon reaches, created by geologically recent volcanic activity. The project reach is fed by numerous springs and an artesian well, which provide a constant water source. Peak flows are governed by spring snowmelt, typically spiking between late May and early June. Smaller increases in flow occur after heavy precipitation events associated with the summer monsoon weather pattern, July through September. Stream banks are composed of sandy soils densely rooted with sedges and other wetland herbaceous plants, with no woody riparian component. The upper 5 miles of the stream are narrow Rosgen E channels with slopes of less than 2%, width/depth ratio of 2.5, entrenchment ratio of more than 2.2 and sinuosity of more than 1.5. Above the Rito de los Indios confluence, the stream is largely functional supporting healthy fish populations. Downstream from the confluence with the Rito de los Indios, the stream widens (width/depth ratio =12), the banks have a tendency to collapse, algae is apparent in the summer months, and the geomorphology changes from a Rosgen E to a C. This condition is believed to be caused by elk and livestock, and legacy impacts from much heavier grazing prior to 2000. The combined effect is the primary source of the temperature impairment.

NMED, Los Amigos de Valles Caldera (contractor), the Valles Caldera Trust and the Albuquerque Wildlife Federation partnered to restore San Antonio Creek with the goal of delisting San Antonio Creek for temperature from the CWA 303(d) list of impaired waters. Valle Caldera Trust staff assisted in the success of the project, providing NEPA and cultural permit clearances. They have also changed their grazing management by removing cattle from the valley. There is currently a large population of elk, and these herds move more frequently through the stream corridor than do the cattle.

Project Outcome:

The project workplan described tasks to address three evolving meander cut-offs. Only one of these meanders was treated as described in the workplan. To address the other two, the mouth of the Rito de los Indios was treated to restore floodwater access to the historic alluvial fan and improve drainage across a road.

Another change to the workplan involved a degraded wetland that had been drained due to roads. Two machine-built plug and ponds were constructed to re-direct the flow onto the terrace, slowing both snowmelt and sheetflow and providing seasonal water for migrating birds. Data collection in 2013 showed a doubling of the wetlands area to 2.8 acres and a 50% increase in wetland species.

This project used innovative geomorphic stream restoration techniques to restore functioning condition. The table below describes the treatments and outcomes:

Treatment	Number	Problems Solved
Plug and pond (machine built)	13	Re-creation of wetland, water and sediment retention, raising water table.
Plug and pond (hand built)	25	Repair of small gullies, raising of water table in wetland, re-creation of fen conditions.
One rock dams, Zuni bowls, baffles (hand built)	130	Erosion control and prevention, sediment capture, raising local water table, repair of wetland gullies. Has resulted in perennial flow on the Valle Santa Rosa.
Machine-built Zuni bowls and filter dams	15	Prevention of further erosion, filter dams captured as much as 2 feet of sediment resulting from the Las Conchas wildfire.
Bank erosion, treatment with sod	25	Prevention of bank erosion and sedimentation. Reduce width/depth ratio.
Rolling dip trail drains	5	Trail along a fence had incised 3-5 feet and runoff that was directed to the river is now diverted to the adjacent meadow.

Eroding meander bend before treatment in May 2013

Eroding Meander bend after treatment in June 2013.

Los Amigos de Valle Caldera produced a brochure on the project and the project has been highlighted in the fall edition of their newsletter which can be found at

http://www.losamigosdevallescaldera.org/wordpress/wp-content/uploads/laVentanaenlosValles-2013fall-web.pdf

Six work weekends were held on the VCNP and attended by over 150 individuals. Much of the match was derived from these volunteers, however, the project also received a New Mexico River Ecosystem Restoration Initiative grant, leveraging state funds and providing an opportunity to increase the value of the project.

Load Reduction:

The Spreadsheet Tool for Estimating Pollutant Loads was used to estimate an annual reduction in sediment loading to San Antonio Creek of 48 tons per year as a result of the project (relative to the TMDL of 3,551.8 lbs per day for San Antonio Creek below VCNP).

Analysis of thermograph data collected above and below the project area, in 2009 and 2011, indicated a statistically significant decrease in temperature of 1.4ºC at the lower station relative to the upper station. While temperatures still commonly exceed the 20º C criterion for high quality aquatic life, additional improvement is expected as vegetation fostered by the project continues to grow and banks continue to stabilize.

Lower Rito Peñas Negras Riparian Restoration and Temperature Reduction Project (FY11-E)

Project Budget:	Federal 319(h): $207,805.17 Match: $211,374.12 Project Total: $419,179.29
Watershed:	Jemez (HUC 13020202)
Sub-watersheds:	Rito Peñas Negras (HUC 130202020101)
Impairments:	TMDL for nutrients, sedimentation and temperature

Project Summary:

The Rito Peñas Negras is a perennial tributary to the Rio de las Vacas within the Jemez watershed, and is 11.78 miles in length flowing through a series of meadows in an otherwise forested landscape. Although it is classified as a Rosgen C5 stream, it is incised, and the channel has developed a narrower floodplain within the incision. Heavy grazing by ungulates, especially cattle, has prevented many of the stream banks from stabilizing within the incised channel. The primary objective of the project involved construction of USFS approved exclosures, and planting them with native riparian species. The project also included educational workshops and monitoring of the implementation area.

The project implemented parts of the Jemez Watershed Restoration Action Strategy and was a collaboration between WildEarth Guardians and the Cuba Ranger District of the Santa Fe National Forest. During the life of the project other entities provided match leverage including the National Forest Foundation, American

Forests, and the state-funded RERI. The Rito Peñas Negras flows within an active grazing allotment, and one grazing permittee interested in improving management of this and adjacent grazing allotments interacted with project partners over the course of the project.

NOAA reported that 2011 had the driest first few months of any year on record in New Mexico, and in July 2011, the Rito Peñas Negras went dry within several of the downstream exclosures. Forest Service and WildEarth Guardians staff attempted to supplement water, but the plants suffered during that period. Plants that died were replaced in 2012, but some plants that died back showed new growth from roots. Final exclosures and plantings were completed in Spring 2013.

Project Outcome:

The WildEarth Guardians have a consistently successful formula for treating streams with temperature impairments, especially where woody riparian vegetation can grow but is essentially missing from the system. This three-year project treated approximately 2.52 miles of stream, including unfenced areas between exclosures. The linear distance of fenced area is 1.34 miles (with 43 acres in exclosures). Project partners have observed less grazing by elk and cattle occurring between the exclosures as well. A total of 18 exclosures were built. These exclosures are elk proof, have entry corridors for fish enthusiasts, and are high enough from the ground level to allow smaller animal species access. Some vandalism of exclosures occurred, but has been repaired and occurred less often as the project progressed. Growth of sedges, rushes, and forbs within exclosures has been vigorous, providing an improved filter for storm event sheet flow and providing seed.

After the exclosures were built, at least 2,000 cottonwood, aspen and alders were planted, along with 20,000 willows (mostly Bebb's, Coyote, strapleaf, and bluestem) and other native woody riparian species, including chokecherry, Redosier dogwood, Wood's rose, and native plum. A new planting technique was developed during this project using a "Waterjet stinger" – which provides a jet of water under pressure. The jet of water produces a deep hole, minimizing soil disturbance that occurs when using augurs or other digging machines, and provides water to increase survival rates of the planted vegetation.

Six workshops occurred during the project. Volunteers included members of the WildEarth Guardians and students. This provided an opportunity to share the project, pass along information on riparian habitat and ecology, and get plants planted.

The project had some impediments, including less than average precipitation, forest closures and drought conditions. However, in 10 vegetative monitoring plots, 100% of alders and Wood's rose survived, 98% of Bebb's and strapleaf willow survived, and 81% of bluestem willow survived. Only 60% of coyote willow and narrowleaf cottonwood survived in three growing seasons. Chokecherry and aspen were at 51-53% successful at surviving, and Redosier dogwood did poorly. All of these species are adventitious rooters, meaning that once established they self-propagate from planted individuals' root systems, and this was evident with more individual stems counted in the second year after planting. These results are very encouraging given the severe drought conditions that plagued the southwest the previous three years. Stream cross section data were collected, and minor changes in stream morphology have already been detected, most notably in Cross Section 2 where the width to depth ratio of the stream decreased from 8.4 in 2012 to 7.1 in 2013. A reduced width to depth ratio equates to less surface area exposed to solar radiation and evaporation, and is expected to reduce stream temperature. No discernible differences in channel slope or sinuosity were observed in the

longitudinal profiles between 2012 and 2013. Photopoints were consistently taken during the growing season, between May and October each year. Temperature data were collected by NMED.

Load Reduction:

At ten locations on the stream within exclosures percent shade measured with a canopy densiometer increased by an average of 32%. Using the SSTEMP configuration from the temperature TMDL, this increase equates to an estimated reduction of heat loading of 115 joules per square meter per second, which meets the shade goal provided with the TMDL for those stream miles. Additional load reductions are expected in future years, due to lag time in vegetative growth.

Using STEPL, a nitrogen reduction of 155.9 lb/year, and a sediment reduction of 28.5 tons/year (a reduction of 34.7% from before project implementation) was estimated.

For Additional 319 Project Information

More complete descriptions of completed and in-progress Section 319 projects are available on the Grants Reporting and Tracking System (GRTS) at:

www.nmenv.state.nm.us/swqb/wps/GRTS

Surface Water Quality Bureau
Watershed Protection
GRTS - US EPA's Grants Reporting and Tracking System

All states, including New Mexico, are required to report to EPA the details of projects funded under Section 319 of the Clean Water Act. One of the main tools for this reporting is EPA's Grants Reporting and Tracking System (GRTS) database. In recent years, GRTS has reached a point where it may be useful and interesting to the public. Anyone can access much of the information in GRTS without a user name or password at the following web address: http://iaspub.epa.gov/apex/grts/f?p=110:199

All of New Mexico's current 319 projects appear under grants awarded in 2010, 2011, 2012 and 2014.

Wetlands Program

Funding Awarded to the Wetlands Program

One new Wetlands Program Development project was awarded funding by EPA Region 6 in 2013. The federal grant for this project totals $437,847 in federal assistance awarded through the FY13-14 EPA Wetlands Program Development Grant Program authorized by CWA Section 104(b)(3).

NMRAM for Lowland Riverine Wetlands, Rio Grande/Lower Pecos and Regulatory Module for USACE

This is a 4-year project to further develop and validate our rapid assessment of New Mexico wetlands to increase the applicability to the types of wetlands covered and regions where the New Mexico Rapid Assessment (NMRAM) process can be used. This project will target riverine wetlands in the Rio Grande and Lower Pecos watersheds in central and SE New Mexico, and will advance the development of our statewide wetlands program and is consistent with our approved 10-year wetlands Assessment and Monitoring Strategy and 2012 Wetlands Program Plan.

Data collection and analysis will be completed to refine NM's state-sponsored Lowland Riverine Rapid Assessment User's Manual and Field Guide for a combined function and condition assessment that is focused on "big" river floodplain wetlands in arid regions such as the Rio Grande and Lower Pecos watersheds. Subclass descriptions and regional models will be refined by developing vegetation community maps of selected wetlands of interest. In addition, an NMRAM Regulatory Module based on the needs of the U.S. Army Corps of Engineers (USACE) for CWA 404 will be developed. Coordination of Wetlands Program and this project's activities will be maintained principally by the NM Wetlands Agency and NGO Roundtables through meetings focused on the objectives established by the group, and by the establishment of project specific advisory committees. NMRAM trainings and outreach will be conducted in conjunction with NMRAM development and target specific groups that can implement NMRAM data collection and use NMRAM data, and finally, we will continue development of our web-based database that incorporates and/or links to other relevant data sets incorporating GIS mapping capabilities.

Wetland Projects Completed in 2013

Two projects were successfully completed this year. Both projects were implemented with partial funding from CWA Section 104(b)(3) Wetlands Program Development Grants

Comprehensive Wetland Restoration and Protection in Santa Fe County

This project was designed to engage a diversity of partnerships and strategies to improve wetland protection and demonstrate wetland restoration in Santa Fe County. The project established meaningful partnerships with Santa Fe County, state government, city government, research institutions, local groups, contractors and landowners for the planning and coordination of the project, the continued integration of wetland restoration and protection in county policies and programs, and the support of public education, outreach to decision makers, and project monitoring. Project products include a Wetlands Action Plan for Santa Fe County. The Wetlands Action Plan "Keeping Santa Fe County Wetlands Viable and Functioning" brings together available information about the wetlands and riparian resources of Santa Fe County, and also identifies significant data

gaps and data needs. The available information indicates that ongoing urbanization coupled with the impacts of climate change and cumulative historical land use impacts continue to stress wetland ecosystems in the county. Additionally, the present enabling environment for wetland protection consisting of local regulations, local institutional capacity, available funding sources, public involvement and water quality standards for wetlands appears to be inadequate to counter the threats and stressors on wetlands. The Wetlands Action Plan for Santa Fe County was timely because it coincided with the development of the Santa Fe County Sustainable Land Development Code and other supporting initiatives under way in the City of Santa Fe and in state and federal agencies.

Stacy Timmons and Peggy Johnson (NMBGMR) collecting groundwater data at La Cienega wetland.

The research and report *Exploring Springs and Wetlands and their Relationship with Surface Flows, Geology and Groundwater in the La Cienega Area, Santa Fe County, New Mexico* was also completed. The La Cienega Area in southern Santa Fe County is characterized by the confluence of surface and groundwater flows that have supported extensive wetland areas in an arid landscape. This study includes wetland mapping and historical evidence, evaluation of stream flow contributions by springs, local geological investigations, and chemical characterization and age-dating of groundwater that shows groundwater pathways and sources that sustain the wetlands in La Cienega. The study is being used by the city, county and local groups to consider ways to protect the groundwater resources that sustain these rare and important wetlands. This report can be accessed at-
http://www.nmenv.state.nm.us/swqb/Wetlands/projects/LaCienega/index.html

Conducting public education, community outreach, and public discourse events with local and state government decision makers regarding the importance of regulating Santa Fe County land and water use to benefit the restoration and protection of springs, seeps, wetlands and riparian habitats was a project priority. Through our contractor Earth Works (and later Ecotone) continuous communication was organized and generated through community meetings, landuse planning initiatives, discussions with County Commissioners, and outreach activities with the public.

A significant contribution was made to this project by Santa Fe County. County staff contributed by conducting meetings that included planning and open space staff on a variety of topics including potential changes in county ordinances to improve wetland, riparian and buffer protection, and changes to county floodplain codes that were making it difficult to implement wetland restoration. The county contributed more

Youth volunteer, a 4C member, helps with native plantings at Arroyo Hondo.

than $173,000 in-kind match through outreach activities, contributions to the geohydrology study and the restoration of wetlands at Arroyo Hondo Open Space. The County will continue to monitor and maintain wetlands at Arroyo Hondo into the future.

Additional wetlands demonstration design and restoration under this project includes wetlands at San Marcos and Escalante Springs, all totaling approximately 35 acres of restoration. Another site, La Canada de los Alamos was designed but not implemented at this time.

Headcut restoration structure constructed at San Marcos by Rangeland Hands, Inc.

Integrating Stream Restoration Principles and Transportation Maintenance

Past land management activities have impacted the riparian corridor of the West Fork of the Gila in the vicinity of the Gila Cliff Dwellings National Monument. These impacts include cattle grazing and flood irrigation farming which were discontinued in the early 1960s. This reach has also been impacted by more recent management activities related to the construction and maintenance of NM Highway 15 and the bridge spanning the river. Flooding has damaged the West Fork Gila River Bridge in the project area numerous times over the last few decades and most pre-project discussion with agencies regarding this project centered on what the project could do to help stabilize the erosion problems associated with the design and location of the bridge.

The original goal of this project was to demonstrate innovative methods and comprehensive approaches to restore approximately 30 acres of wetland and riparian areas in and adjacent to the West Fork of the Gila River. This project brought together new partnerships in the southeastern part of the State to demonstrate bioengineereing techniques that could be used by road and maintenance engineers that actually improve stream, wetlands and riparian areas that are in the vicinity of road projects, bridges and other transportation

infrastructure. The objectives of the project were to demonstrate to partners geomorphic characterization of the stream segment, design of appropriate in-stream structures that improve degrading stream conditions, and plan riparian planting techniques to achieve a net increase of wetlands to 30 acres by effectively stabilizing stream banks adjacent to New Mexico State Highway 15; restoring approximately 30 acres of riparian habitat; and to provide training and outreach for NM Department of Transportation (NMDOT) staff on project principles.

However the demonstration implementation portion of the project was cancelled due to the 2012 Whitewater Baldy Complex Fire and its significant changes to the watershed that would affect the current project design. In order to achieve some of the original goals of this task it was determined that a training principally for NMDOT personnel that would demonstrate new techniques for road work in the river environment would provide some outcomes that were expected from the project.

Discussing problems associated with improper culvert design and proposing alternatives to reduce erosion.

The scope for this workshop addressed the need for information regarding environmental stewardship practices in highway construction and maintenance in order to increase environmental sensitivities and help avoid unnecessary impacts to wetlands and riparian environments. To this end, the workshop described sample practices and then linked the practices to pertinent examples, design drawings, or more detailed technical guidance or procedures. Workshop materials illustrated many common problems that highway engineers have to contend with when maintaining a highway within the flood prone area of a watercourse. The workshop included a section on how fire affects the hydrology of the watershed, changes in flooding characteristics, stream bank/channel stability, and highway infrastructure. Specific field sites provided examples of projects which address stream restoration principles including hydrologic and fluvial geomorphological analysis, design, environmental permitting, construction and implementation of best management practices, and post construction monitoring and maintenance.

Wetlands Program Outreach

The Wetlands program has developed “Roundtable Meetings” as a critical outreach acitivty to disseminate information to both governmental agencies and NGOs. The Wetlands Program hosted two Roundtable Meetings for agencies and two for NGOs in 2013. The Wetlands Program also conducted two workshops. One was on playa science, while the other addressed beaver management. At each of these meetings, speakers from NMED and other organizations provided updates on their programs and projects related to wetlands restoration and management. Approximately fifty people attended each meeting.

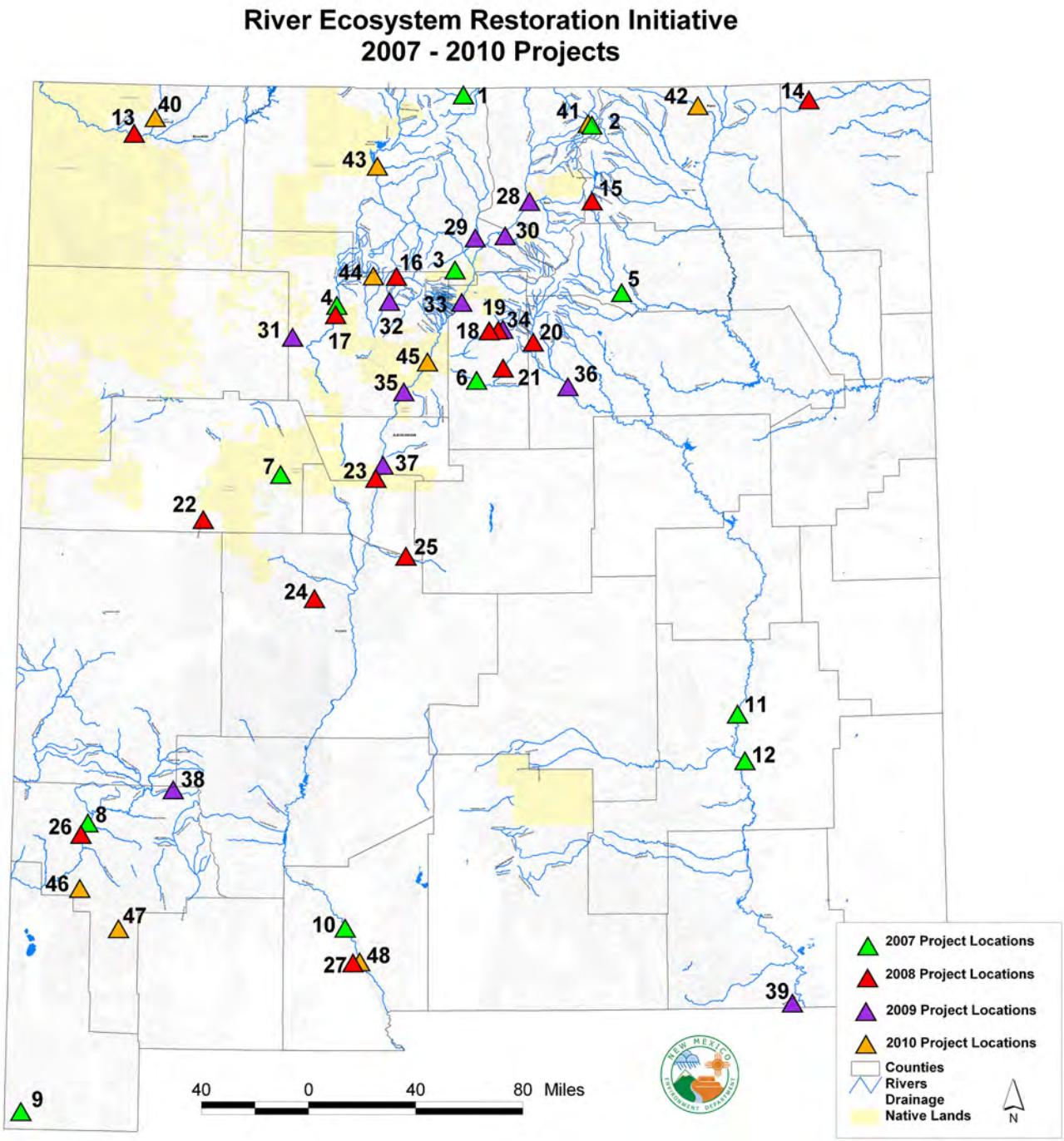
River Ecosystem Restoration Initiative (RERI)

The RERI is a multi-agency state effort to restore in-stream ecosystem and watershed health to major New Mexico river basins. RERI is restoring approximately 95 river miles and 3,345 acres of riparian area in 48 projects throughout the state (see map next page). Projects have been implemented along the Rio Puerco, Rio Chama, the upper, middle and lower Rio Grande, and the San Juan, Gila, Canadian, Pecos, and Santa Fe rivers, as well as numerous tributaries. A total of $8.2 million in capital outlay funding was appropriated for RERI by the state legislature over a four year period from 2007-2010. RERI complements both NMED's CWA 319(h) Program and the Wetlands Program that have the goals of improving surface water quality and restoring wetlands respectively. Many of these projects address primary causes of NPS pollution in New Mexico: sediment and temperature. Several RERI projects are co-located in the vicinity of a 319(h) or a 104(b)(3) restoration project serving to leverage funds and increase project success. RERI has engaged a diverse group of stakeholders, including; Tribes and Pueblos; federal and state agencies; local government; soil and water conservation districts; elementary and secondary schools; universities; community groups and organizations; private entities and citizen volunteers. These stakeholders bring to these projects not only a diverse set of skills, but diverse sources of private and public funding as well.

Two of the hand constructed rock weirs in Black Canyon that focus streamflow to encourage scour pool development, enhance fine sediment deposition and riparian vegetation recruitment.

RERI projects have created hundreds of full-time, part-time, or temporary restoration related jobs in the private sector and have leveraged greater than 1:1 match in in-kind contributions and other funding. The map and summaries on the following pages provide specific information on the RERI projects that were funded beginning in FY2009 and completed in FY2013.

Volunteers planting vegetation at San Antonio Creek in May 2013.


River Ecosystem Restoration Initiative
2007 - 2010 Projects
2007 Project Locations
2008 Project Locations
2009 Project Locations
2010 Project Locations
Counties
Rivers
Drainage
Native Lands
N
40
0
40
80 Miles

Black Canyon Creek River Habitat Restoration

Project Budget:	$58,608 RERI funds
Watershed:	Outlet East Fork Gila River (1504000107)
Sub-watersheds:	Headwaters Black Canyon (150400010704)
	Outlet Black Canyo (150400010702)

Project Summary:

Black Canyon is a major tributary to the Gila River and is surrounded by national forest and wilderness. Parts of the Black Canyon burned at high intensity during wildfires in 1995 and 1996, and subsequent runoff had significant geomorphological impacts to the creek, widening the stream channel and filling in deeper pools. Post fire runoff sent heavy ash flows into the creek, killing all non-native fish species. The N.M. Game and Fish then reintroduced the endemic Gila trout and constructed a fish barrier just downstream of the project area to prevent the upstream migration of non-native trout. Black Canyon Creek is one of only three streams open to limited angling for the federally endangered Gila trout. The trout require cold temperatures and deep pools. However, the aquatic habitat had been degraded by the ash flows and by overgrazing so the creek in the project area was wide and shallow and had low vegetation cover. Black Canyon Creek was identified in the *2008-2010 State of New Mexico 303(d)/305(b) Integrated List for Assessed Surface Waters* as being impaired for its designated use of high quality coldwater fishery, with the probable cause of impairment as temperature. Possible mechanisms leading to impairment were stream widening and loss of riparian vegetative cover which allows sunlight to penetrate a greater percentage of the water column.

Educational signs at the fish barrier on Black Canyon Creek that were jointly funded by CWA Section 319(h) and RERI.

This RERI project was an extension of a CWA Section 319(h) project that was completed in 2010 on a downstream reach. The goals of the RERI project were to return natural hydroecological resiliency to Black Canyon by restoring channel configurations, increasing pool habitat and other aquatic habitat diversity, reestablishing riparian vegetation, re-establishing beaver habitat, and protecting wetland habitats by implementing a number of best management practices BMPs.

Project Outcome:

Grant SWCD and Gila Watershed Partnership implemented the following BMPs: hand-constructed 24 rock barbs to capture sediment, narrow the stream, and stabilize cut-banks; planted willow and cottonwood

whips harvested from downstream riparian vegetation to shade the stream; planted local sedge and rush species to capture fine sediments; added large woody debris to encourage pool habitat; installed fencing to manage livestock grazing; installed an alternate drinking water source; removed 2,000 feet of decrepit and obsolete barbed-wire fencing; and installed signs to inform the public and protect the project. Post-construction monitoring was conducted to measure improvements in stream morphology, water quality, canopy cover and bankside vegetation.

A total of 43 rock structures were constructed from rock collected on site. Volunteers from Mesilla Valley Fly Fishers and the New Mexico Wilderness Alliance contributed 98 hours and 1580 vehicle miles to plant approximately 1,000 willow and cottonwood cuttings at the site. The owners of the private inholding Diamond Bar Ranch contributed time, heavy equipment, lodging, logistical support, and constructed the alternate watering and pasture fencing.

Pecos River Restoration at El Valle

Project Budget:	$100,000 RERI funds
Watershed:	Tecolote Creek-Pecos River (1306000104)
Sub-watersheds:	Arroyo del Vegoso-Pecos River (130600010403)

Project Summary:

The project area is downstream of the village of San Miguel, and immediately downstream of the Los Trigos Acequia diversion dam. The river in the project area is incised and has abandoned the old flood plain. The entrenched river cannot spread out during large flood events, so flow velocity is increased and the shear stress on the banks is magnified, causing further bank erosion and downcutting, greater NPS pollution in the form of sediment, and diminshed riparian habitat. The goals of the project focus on improving trout habitat by decreasing river width/depth ratio, increasing dissolved oxygen, decreasing water temperature, increasing entrenchment ratio, increasing pool depth and frequency, decreasing bank erosion, increasing native riparian vegetation, and creating fishery habitat for spawning, rearing, adult and overwintering sites.

Project Outcome:

Food and Shelter, Inc oversaw the planting of 1,100 riparian trees, shrubs and forbs. Nineteen instream and bank structures were built using heavy machinery, including two rock cross vanes, two J-hooks, and several root wad and rock bank protection structures. The result is that the geomorphology, plant diversity and abundance, and fish habitat have improved. Fish monitoring showed that native fish abundance has increased. Although results did not show an increase in trout abundance, this may be due to increased fishing. Approximately 100 people have visited the project to learn about river restoration and many of them fished or swam in the new pools.

Riparian Restoration of Critical Tributaries in the Lower Rio Embudo Valley

Project Budget: $185,493.60 RERI funds
Watershed: Embudo Creek (1302010109)
Sub-watersheds: Cañada del Oso Sarco (130201010907) and Cañada del Oso Sarco-Embudo Creek (130201010908) and Arroyo de la Mina-Embudo Creek (130201010909)

Project Summary:

The project area is located in the Embudo Valley along the Rio Embudo in an area where erosion is a serious problem. The goals of the project were to increase ecological resiliency and stabilize the hydrological and ecological functions of five tributaries that contribute flash floods and large volumes of sediment to the Rio Embudo and several small arroyos that carry sediment to the river and acequias. Restoration work in these drainages is increasing the capacity for storm water and snow melt infiltration, and is protecting and restoring small wetland areas.

Project Outcome:

The Santa Fe Watershed Association and subcontractor Ecotone oversaw construction work at three sites on BLM and State Trust properties: 1) Arroyo de Lorenzo; 2) Cañada de los Pinos Reales; and 3) three drainages flowing into the Rio Embudo and the Acequia de la Junta y Cienega. At Site 1, a rock cross vane was built to replace and protect the intake for the acequia, and a new acequia diversion structure was built with a return flow/sediment sluice to reduce the amount of sediment entering the acequia. At Site 2, three machine built and several hand-build rock structures including rock mulch run-downs, wicker weirs, plug and pond structures and Zuni bowls were constructed to reconnect abandoned side channels, slow the flow of water, retain sediment, stabilize headcuts and increase ecological resilience. In addition, motorized vehicle access to the the arroyos has now been restricted in order to minimize illegal dumping and protect the wetlands. At Site 3, 12 rock structures including media lunas, one-rock dams and weirs were hand built to catch sediment and slow flood waters. Native grasses and forbs were planted to create a mat of vegetation that will help filter sediment and anchor the structures. The structures were tested by very large flood flows in the fall of 2013 and the majority of the structures held

An outreach flyer created for the Embudo RERI project showing workers from the Chimayo Conservation Corps and comunity volunteers.

in place and served their purposes. The project also met community involvement goals, including several tours, outreach flyers, and development of a community clean-up program to pick up trash and reduce illegal dumping. The funding obtained for the RERI project helped leverage a $25,000 EPA Environmental Justice Small Grant and a $245,000 federal CWA Section 319 Watershed Based Plan grant.

Rio Grande Corridor at Buckman

Project Budget:	$189,572 in RERI funds; $61,000 from private foundations
Watershed:	Cañada Ancha-Rio Grande (1302020102)
Sub-watersheds:	Cañada Ancha-Rio Grande (130202010203)

Project Summary:

The project area is located along the Rio Grande adjacent to the City of Santa Fe Buckman Direct Diversion (BDD), which diverts water from the river for municipal use. This is the only location in Santa Fe County where there is public access to the river. The area has great potential for wildlife habitat, recreation and outdoor education but has been in a degraded condition. Non-native vegetation (Russian olive, Salt cedar and Siberian elm) had choked the historic bosque and the area was strewn with garbage from years of over use and neglect. The New Mexico Wildlife Federation recognized the area's potential and worked diligently to obtain RERI and other funds and partner with several organizations to implement this project: BDD; USFS; BLM; Santa Fe County and several private foundations and non-profit organizations. The project goals are to enhance and restore riparian wetlands to create representative historic riparian communities typical of the Rio Grande corridor, and to engage the local community and youth in environmental education and outreach programs related to riparian ecology, hydrology and natural history.

Holes were augered eight feet to groundwater to plant cottonwood poles.

Project Outcome:

Work on the project area began with the removal of approximately four tons of garbage by volunteers during two separate clean up days organized by the New Mexico Wildlife Federation, Audubon New Mexico, Sierra Club and BDD staff. Non-native vegetation was selectively removed, followed by the planting of 600 cottonwood poles, 2,000 willow poles, and many native shrubs including New Mexico olive and chokecherry. Additional restoration work is scheduled to be completed in the area of the project, including: BDD will remove non-native vegetation and plant native vegetation planting on additional acreage; high school students will build raptor platforms and design educational

kiosks; non-native re-sprouts will be removed; and vegetation monitoring will be conducted.

Restoring Torreon Wash

Project Budget: $116,884 RERI funds
Watershed: Arroyo Chico-Rio Puerco (13020205)

Project Summary:

The project area is located on Navajo Nation land in Torreon Wash, an ephemeral tributary to the Rio Puerco. Historically there was a cottonwood/willow bosque along the wash but riparian vegetation is severely degraded. The goals of the project were to increase riparian vegetation, increase soil moisture, increase sinuosity in the stream channel, and decrease bank erosion. The project is an extension of a Targeted Watershed Grant that the Rio Puerco Alliance received from the EPA in 2007

Project Outcome:

Rio Puerco Alliance and local community coordinators worked with volunteers who cut willows off site and planted 2,000 willow poles, 1,700 cottonwoods, and 500 riparian shrubs in Penistaja Arroyo, San Isidro Arroyo and Torreon Wash. Fencing was installed around the plants to prevent disturbance by livestock and wildlife. Subcontractors utilized equipment to address headcuts at two sites. At the first site three rows of vertical wooden post vanes were installed to slow water down and reduce bank erosion. At the second site, a plug and pond structure was built to pond water and return it to a higher elevation historic channel without risking downstream erosion. Volunteers on the project included Sierra Club members, Ojo Encino Day School students and community members.

Volunteers who assisted in the community planting event in Torreon Wash in June 2013.

Pueblo of Santa Ana Bosque Restoration Planting Using Small Diameter Woody Biomass

Project Budget: $96,817 RERI funds;
$92,000 USFS CFRP funds;
$49,176 additional funds from BOR, BIA, Pueblo of Santa Ana and the NM State Forestry Division

Watershed: Arroyo de Las Calabacillas- Rio Grande (1302020301)
Sub-watersheds: Arroyo Venado- Rio Grande (130202030101)

Project Summary:

The Pueblo of Santa Ana had previously been successful in restoring a portion of their bosque area along the Rio Grande. Within this riparian ecosystem, natural seed sources have been reduced through loss of overbank flooding, habitat degradation, and fragmentation, often preventing natural vegetation establishment without human intervention. Additionally, natural resource management decisions have led to two extreme conditions: barren areas devoid of vegetation where exotic species were removed, and areas of accumulated biomass created from the mastication of the removed vegetation. These conditions have led to natural seed establishment barriers, either due to soil moisture reduction and increased temperature, or through the prevention of seed to soil contact. The project goals include: reduce woody and leafy biomass within the bosque; evaluate planting techniques for difficult conditions; and increase species richness and diversity

Project Outcome:

Through this project the Pueblo developed a local landscape level strategy for using small diameter by products from forestry operations to assist in establishing native vegetation in these difficult areas. With RERI funds, twenty planting units were constructed and planted with trees, shrubs, grasses and forbs, then mulched, and watered for two years. Vegetative cover, diversity, growth rate, soil characteristics and arthropod diversity were monitored.

Flyer created for the Pueblo of Santa Ana annual environmental fair provides information about the restoration project to the community and offers free mulch.

The following project lessons learned will inform future bosque restoration decisions: species selection should focus trees and shrubs that can withstand drought; planting of woody species should be done at a different time from planting herbaceous material in order to reduce competition during establishment; a nitrogen source should be added to the composted wood mulch; and soil testing should be performed prior to planting. Project results have been shared through presentations by Pueblo staff at the NM Wetlands Roundtable, a CRFP workshop, and at the annual Pueblo of Santa Ana environmental fair.

Habitat Restoration in the Upper Santa Fe River- Phase 2

Project Budget:	$67,474 RERI funds
Watershed:	Santa Fe River (1302020101)
Sub-watersheds:	Headwaters Santa Fe River (130202010102)

Project Summary:

This project was the second of two RERI projects to address restoration on the Santa Fe River below Nichols Reservoir on City of Santa Fe, Audubon Society, and Nature Conservancy properties. The goals of the project were to assess restoration needs and implement priority improvements along the Santa Fe River and along the tributary canyon of Aztec Springs Creek. Addressing sediment loads emanating from Aztec Springs Creek helps protect the RERI Phase 1 construction project that re-routed the river back to its historic channel.

Project Outcome:

The Santa Fe Watershed Association (SFWA) assessed riparian and forest needs in the project areas. The City of Santa Fe Fire Department's Youth Conservation Corps crew, with oversight from SFWA, The Nature Conservancy, and Bosque Consulting, treated 29 acres of vegetation within Santa Fe River and Aztec Springs canyons with thinning and lop and scatter methods to help stabilize soils, reduce erosion and reduce fire hazard. Non-native species (Salt cedar and Siberian elm) were removed and Juniper and Piñon trees were thinned to improve the health of a stand of Ponderosa pines. A total of 57 one rock dams, 16 water bars, and three drainage nicks were built in Aztec springs canyon using hand labor and onsite material in order to reconnect the arroyo bed to its floodplain, reduce bank erosion, and increase water infiltration into shallow groundwater. In addition, a biological assessment was performed to assess water quality and aquatic macroinvertebrate health as a baseline for future restoration activities.

State Trust Land Bosque Riparian Restoration

Project Budget:	$119,639 RERI funds;
	$300,000 US BOR funds will continue the next phase of restoration process
Watershed:	City of Albuquerque-Rio Grande (1302020303)
Sub-watersheds:	Isleta Lakes-Rio Grande (130202030306)

Project Summary:

Located along the Rio Grande in the Albuquerque South Valley, the bosque area was in a degraded condition due to the lack of natural dynamic fluvial processes such as flooding and meandering. Historically, these fluvial processes resulted in self-sustaining cottonwood forests with a mid-canopy layer of smaller trees and shrubs that hosted numerous arthropod, reptilian, amphibian, mammal and bird species. Intensive agricultural uses began affecting the Rio Grande, and beginning in the 20th century, the river was channelized and dammed, levees were constructed, jetty jacks were installed to stabilize banks, and urban development increased. These actions had negative effects on the riparian ecosystem with resulting decline in habitat quality and decline in the now endangered Rio Grande silvery minnow and southwest willow flycatcher. Catastrophic fires have increased due to higher fuel loads. Biodiversity has declined. To reverse these negative trends, efforts are underway along the middle Rio Grande to promote natural fluvial processes to occur within the confines of an urban area, to restore the dynamic exchange of surface water and groundwater, to promote the establishment of wetlands, contain the expansion of exotic vegetation, and to protect and expand native vegetation communities.

Project Outcome:

Non-native vegetation (Russian olive, Salt cedar and Siberian elm) was removed using large track hoes, bulldozers and masticators. State Land Office staff conducted two floodplain vegetative treatment events in which foliar applications of herbicide were applied to non-native resprouts. Staff and adult and student volunteers planted 110 longstem NM olive, 10 cottonwood poles, 35 Gooding's willow poles, 100 Coyote willow whips, 130 Peachleaf willow whips, 250 Gooding's willow whips, 70 longstem wolfberry, 3 longstem sumac, and 50 longstem golden current. 52 pounds of native seed mix were used to reseed areas that were disturbed during bankline and sidechannel excavation. Longstems were planted in clusters in the floodplain, whereas whips and poles were planted along the excavated bankline and sidechannel areas. The river bankline was lowered using excavation with heavy machinery so that overbank flooding would occur at the upstream end at a river flow of greater than or equal to 1,500 cubic feet per second (cfs) flow and at greater than 2,000 cfs at the downstream end. Some of the jetty jacks running perpendicular to the river were also removed. A side channel was constructed and will receive flow during high flow periods.

Participants at a planting workshop using a rotary air hammer to drill holes for planting willows on State Trust Land bosque.

As the USFWS proceeds in developing the Valle del Oro urban wildlife refuge, collaboration with USFWS, Trust for Public Lands, City of Albuquerque Open Space, Middle Rio Grande Conservancy District and Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA) has led to large scale habitat restoration plans on the SLO-owned bosque parcel. AMAFCA has been tasked with the man-

agement of the water that will be discharged from the refuge, and approached the SLO about possible use of this water to enhance the habitat of the bosque. Thus, the efforts expended in the RERI and BOR grants for the area have merged into a large scale project with national interest. Funds being used to pay for this will come from AMAFCA as part of their commitment to the Valle De Oro Wildlife Refuge.

Rio Pueblo de Taos Riparian Ecosystem Restoration Initiative

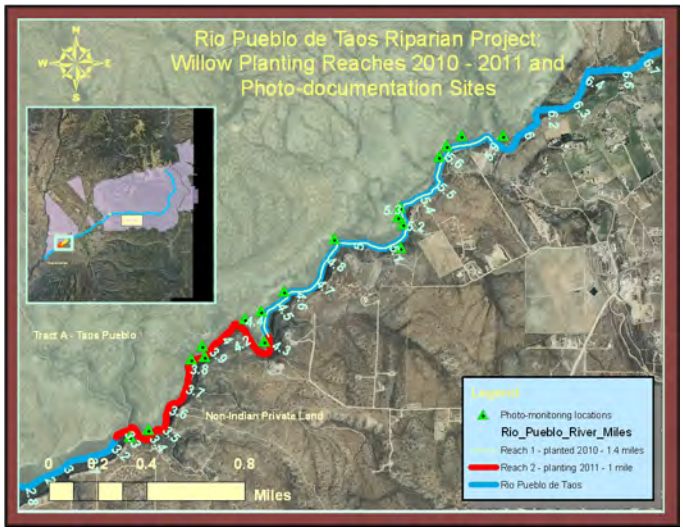
Project Budget:	$54,268 RERI funds; matched Taos Pueblo CWA 319 funds
Watershed:	Rio Pueblo de Taos (1302010107)
Sub-watersheds:	Arroyo del Alameda (130201010709)

Project Summary:

Located southwest of Taos, the project area lies in a canyon where the land on the north side belongs to Taos Pueblo and the land on the south side is privately owned. The RERI portion of the project covers one river-mile and the tribal 319 funds cover one river-mile upstream. Cattle were removed from the project area in 2005, which removed livestock grazing pressure that had been ongoing for centuries. The riparian area was nearly devoid of woody vegetation except for non-native Russian olive and Salt cedar. Taos Pueblo designed the project to re-establish willows along the two mile reach with the goals of: bank stability, shading for water temperature reduction, creation of fish habitat and restoration of riparian functioning condition (including filtration of debris and sediment during high flows, increased water storage, increased summertime base flows due to wetland storage, groundwater recharge, natural flood attenuation, and wildlife habitat).

Project Outcome:

Invasive tree species were cut down and the stumps and re-sprouts treated with herbicide and cutting. During 2011 approximately 80,400 willows were harvested from different areas on Taos Pueblo and planted by Taos Pueblo staff and volunteers along the banks of the one mile reach. Taos Pueblo also planted 100 potted native plants including: bluestem willow, chokecherry, Rio Grande cottonwood, thin leaf alder, and cuttings of dogwood. In 2012 crews returned to plant willow clumps on the floodplain terraces. A total of 379 willow clumps, each containing 20-80 stems, were planted using augers and fencepost hole diggers. In addition, 219 Cottonwood poles were planted in the reach and protected from beavers with fencing. Taos Pueblo hosted field trips to highlight the project to sev-



Map of the Rio Pueblo de Taos showing photodocumentation locations.

eral groups: multiple schools (5th grade through high school), Amigos Bravos, Rocky Mountain Youth Corps, and the National Tribal Clean Water Act Conference. Completion of this project has complemented Taos Pueblo's larger restoration goals in the lower Rio Pueblo de Taos, including reintroduction of river otter and bighorn sheep.

Rio Ojo Caliente Riparian Restoration

Project Budget:	$143,600 RERI funds
Watershed:	Rio Ojo Caliente (1302010215)
Sub-watersheds:	Lower Rio Ojo Caliente (130201021506)

Project Summary:

The project is located on the main stem of the Rio Ojo Caliente approximately 3.5 miles south of Ojo Caliente, NM and is approximately two miles in length. The project area encompasses 73 acres of riparian area along 1.5 miles of river. Project goals include: 1) Re-establishment of a viable and self-sustaining native riparian/wetland community along a highly visible portion of the Rio Ojo Caliente; and 2) community engagement, education and outreach, and dissemination of information regarding the efficacy of the project. Attaining these goals is allowing for the re-establishment of natural processes that facilitate and promote proper riparian ecological functionality of the Rio Ojo Caliente, including native riparian vegetation recruitment, natural flooding, sediment retention, wetland creation, and wildlife habitat creation and corridor reconnection.

Project Outcome:

Contractor WildEarth Guardians' project activities began with mechanical removal of non-native Russian olive, Salt cedar and Siberian elm trees and followup treatment by cutting the re-sprouts. Native riparian vegetation was harvested and planted, including 2,500 cottonwood, 25,000 willow and 400 native riparian shrubs (New Mexico olive, chokecherry, Skunkbush sumac, golden currant and false indigo), and native grasses. The project area was fenced to reduce livestock access to the new plants. WildEarth Guardians organized approximately 100 volunteers to plant native vegetation, including students from the Santa Fe Indian School, and also partnered in a workshop with local nonprofit education organizations and landowners to provide information about riparian ecosystems.

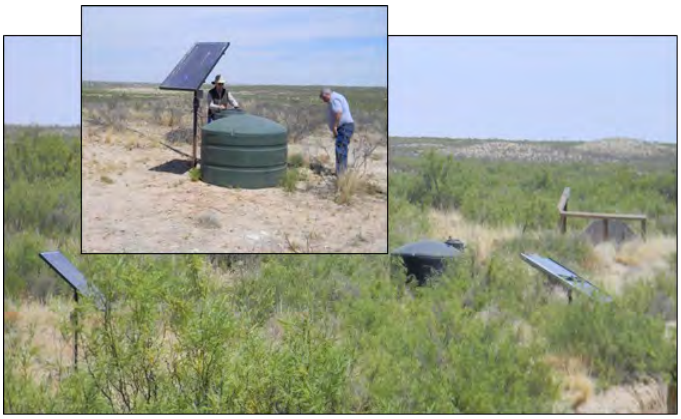
Work crew planting cottonwoods and willows in March 2011.

Delaware River Riparian Enhancement

Project Budget: $149,064 RERI funds
Watershed: Delaware River (1307000203)
Sub-watersheds: Owl Draw-Delaware River (130700020309)

Project Summary:

The project was located along nine miles of Delaware River from the New Mexico-Texas state line to the confluence with the Pecos River. In September 2006, the Carlsbad SWCD and the BLM worked together to extract Salt cedar from the project area. The goals of the project were to build on the earlier efforts to enhance watershed and rangeland health, protect riparian habitat and associated terrestrial and aquatic species, promote stream bank stability, and improve water quality.



Solar panels and pumps provide alternative water sources for livestock and wildlife along the Delaware River.

Project Outcome:

The Carlsbad SWCD implemented several BMPS along the Delaware River. Twelve straw bale and mulch-filled burlap structures were installed to reduce erosion in shallow tributary gullies. 2,553 acres of acacia and creosote bush were treated with herbicide to help establish native grasses on uplands surrounding the riparian area; native grasses were planted in the uplands. Salt cedar re-sprouts were treated with herbicide within the riparian area. The project area was fenced with livestock fencing to restrict grazing from the riparian area, and in key areas with pipe fencing to restrict ORV recreational use. Two sets of solar pumps, solar panels, cattle drinkers and shade structures were installed to provide watering areas outside the riparian area; and interpretive signs were placed to re-route traffic away from the restored area.

Valles Caldera Riparian Restoration and Beaver Habitat Restoration Project

Project Budget: $137,700 RERI funds
Watershed: Jemez River (13020202)
Sub-watersheds: Outlet San Antonio Creek ((130202020204), Headwaters San Antonio Creek (130202020201), Sulphur Creek (130202020202)

Project Summary:

The project was located on three tributary streams to the Jemez River within the Valles Caldera: Rito

de Los Indios, San Antonio Creek, and Redondo Creek. The combined project area was along five river miles that have very little woody vegetation. The project goal was to restore stream and river functionality and expedite the return and recovery of beaver and the enhancement of wetland habitat created by beaver dams and ponds. The approach to meeting the goal included planting native riparian vegetation, constructing riparian elk and cattle exclosures around planted areas, and involving volunteers in tree planting activities.

Project Outcome:

WildEarth Guardians constructed six elk exclosures along Rito de Los Indios and planted more than 10,000 willows, 100 cottonwoods, and 50 thinleaf alders. The alders were propagated at the NRCS Los Lunas Plant Materials Center from alder seed collected onsite. Although the work along Rito de Los Indios was negatively affected by the Los Conchas fire and post-fire flooding, the fencing was repaired and the area was replanted in 2012 and 2013.

On San Antonio Creek, four elk exclosures were constructed and 7,500 willows, 250 narrowleaf cottonwoods and 400 aspens were planted. While planting, it was observed that beavers were active in the area and had begun to utilize some of the newly planted vegetation. The aspens and cottonwoods were wrapped in hardware cloth but there were enough willows planted that they could be left available for the beavers.

On Redondo Creek, fifteen large exclosures and a dozen small exclosures were constructed, and 15,000 willows, 600 cottonwoods, and 500 riparian forage plants were planted along two miles of the creek. This portion of the project was severely affected by three years of drought followed by the Thompson Ridge fire and then post-fire flooding. Many of the plants were damaged or removed by flooding but are scheduled to be re-planted using Collaborative Forest Landscape Restoration Program (CFLRP) funding.

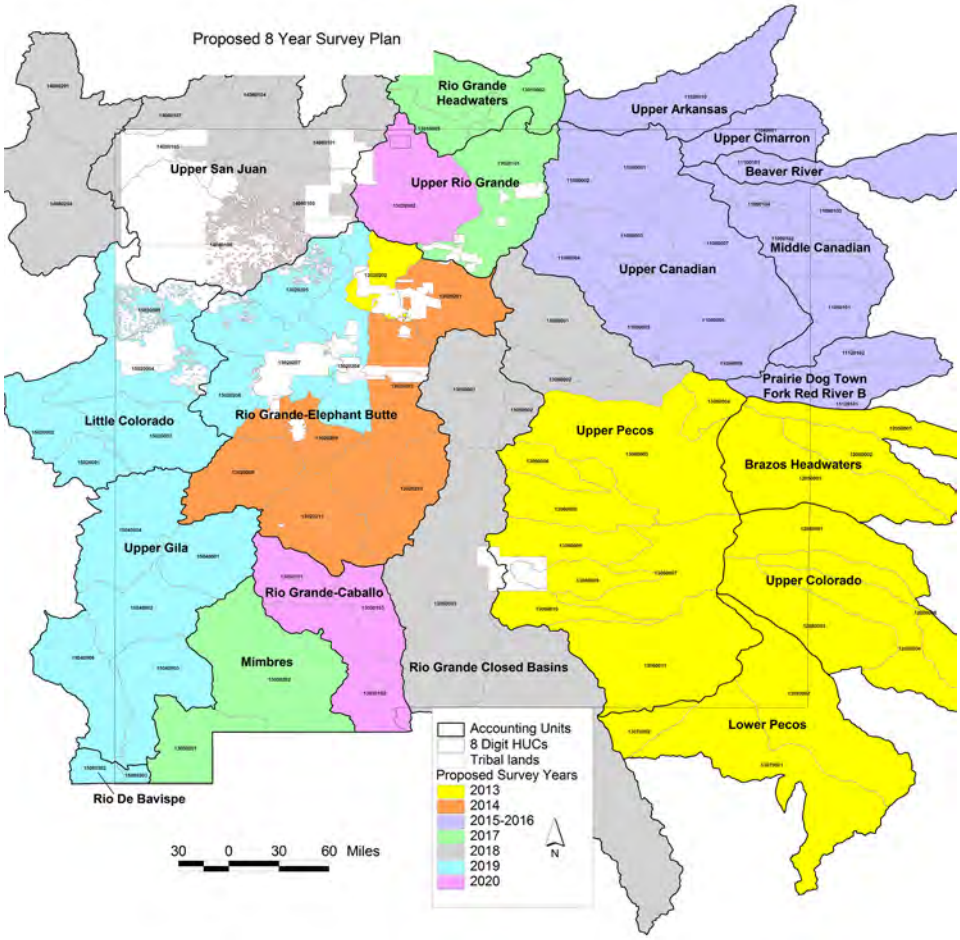
WildEarth Guardians crew and Youth Conservation Corps planting at Rito de Los Indios, May 2013.

Other Water Quality Protection Programs

Monitoring, Assessment and Standards Program

Water Quality Surveys

The Monitoring, Assessment and Standards Section conducted two primary water quality surveys in 2013, collecting water quality data from 92 monitoring locations within 44 stream assessment units and 9 lake assessment units covering 427 stream miles and 3,394 lake acres. The watersheds surveyed included the Jemez (213 stream miles, 60 lake acres) and the Pecos Mainstem (214 stream miles, 3,334 lake acres). These surveys are part of an eight year rotation throughout the state. In 2014, the SWQB will focus on the Middle Rio Grande Basin.

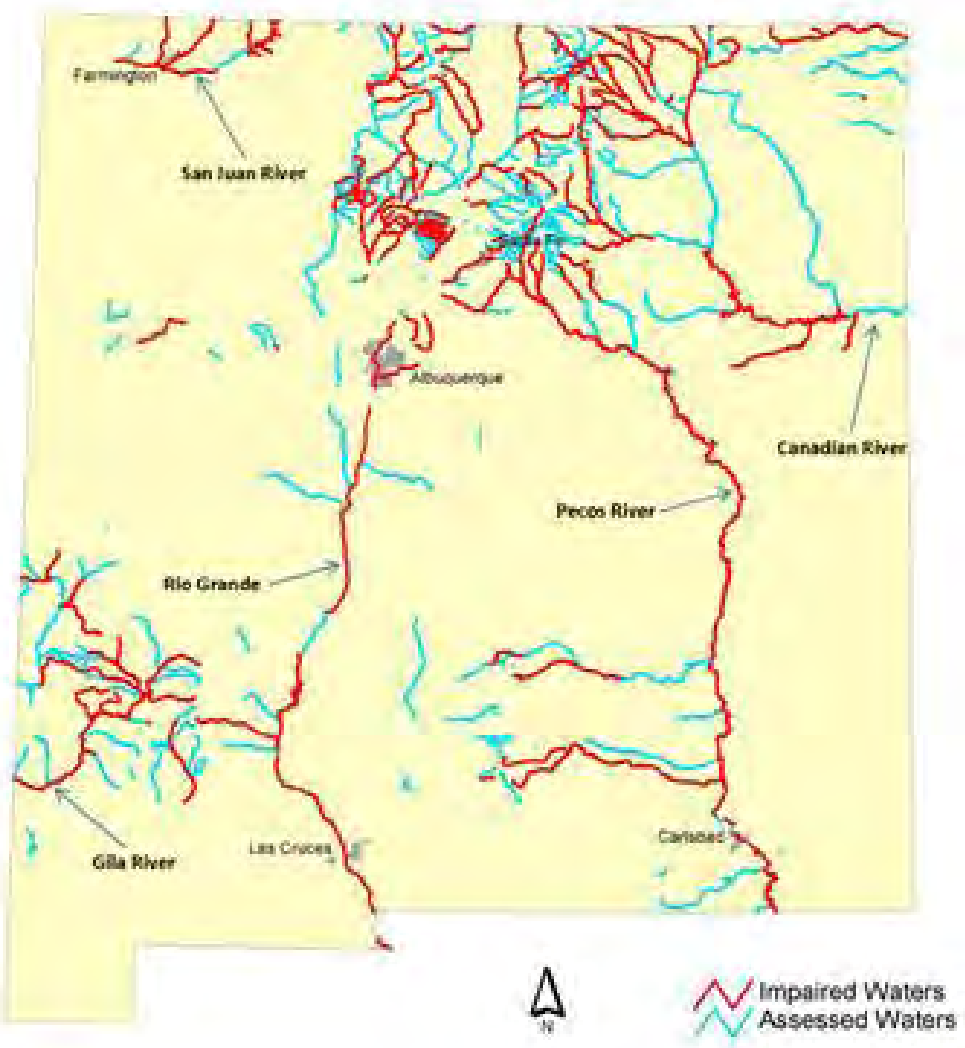


Clean Water Act §303(d)/§305(b) Integrated Report Update

As required by the Clean Water Act (CWA), every two years the State evaluates, through application of the State's Assessment Protocols, the data it has collected as well as all readily available water quality data to determine if the water quality standards are met and the uses achieved. Similar to most states, New Mexico has utilized a targeted, rotational watershed approach to ambient water quality monitoring since 1998 to achieve comprehensive coverage of waters of the state. Those waters which exceed water quality standards are "impaired" for the associated use and are identified in the Section §303(d) List of Impaired Waters (see map).

Of the approximately 7,000 assessed perennial stream miles in New Mexico, nearly 2,500 miles, or 35%, have identified impaired designated uses while approximately 60,833 out of 94,310, or 65%, categorized publically-owned lake, reservoir, or playa acres do not fully support designated uses. Temperature, nutrient/eutrophication, and *E. coli* are the top three causes of river and stream water quality impairments in New Mexico. Mercury in fish tissue, PCBs in fish tissue, and temperature are the top three causes of water quality impairments in lakes and reservoirs.

The State is beginning the development of the 2014-2016 §303(d) List of Impaired Waters, starting with the revision of SWQB's assessment protocols, as needed, to enhance designated use impairment determinations. Updates for this list will focus on data collected during the 2011 Gila, San Francisco, Rio Puerco, Little Colorado, and Lower Rio Grande Water Quality Surveys and during the 2012 Rio Chama and Sacramento Mountain Water Quality Surveys.



Water Quality Standards Update -Triennial Review

The NMED Surface Water Quality Bureau (SWQB) announced a 30-day scoping period for the Triennial Review during this past spring which ended on May 15, 2013. A public discussion draft is expected to be posted on the website early this year (January 2014) to be followed by opportunities for the public and interested parties to provide comments. The hearing schedule for the Triennial Review is expected to be announced during the spring of 2014, with hearings tentatively scheduled for the end of summer in 2014 (August/September). This schedule is subject to change, so please refer to the Surface Water Quality Bureau's 2013 Triennial Review webpage for updates at
http://www.nmenv.state.nm.us/swqb/Standards/TR2013/

You may also register to subscribe to the NMED SWQB Updates & Notices Newsletter; the web address is: http://nmenv-it.nmenv.state.nm.us/Listserv/RPD/?p=subscribe&id=4

Other Water Quality Standards News - Hydro Protocol / Use Attainability Analysis

The Hydrology Protocol (HP) is a technical document that was developed to distinguish between ephemeral, intermittent and perennial streams and rivers in New Mexico. It also generates documentation of the uses supported by those waters as a result of the flow regime. The ability to make such determinations is often key to assuring that the appropriate water quality standards are applied to a waterbody.

A use attainability analysis (UAA) is a scientific assessment of the factors affecting the attainment of a designated use. Designated aquatic life or contact uses in the water quality standards may not be removed or made less stringent unless a UAA demonstrates that attaining the assigned designated use is not feasible due to one of the factors listed in 40 CFR 131.10(g). An "existing use" may not be removed at all unless a use requiring more stringent criteria is added.

On January 30, 2013, EPA granted technical approval of UAAs for 18 non-perennial stream segments associated with 13 NPDES permitted facilities in New Mexico based on application of the EPA-approved HP as described in Subsection C of §20.6.4.15 NMAC and in the New Mexico Water Quality Management Plan (WQMP). The UAAs and responses to public comments were submitted to EPA on October 11, 2012. In addition, the SWQB is awaiting EPA's technical approval of the HP application to five drainages on Chino Mines property in the final HP UAA report forwarded to EPA on June 30, 2013.

UAAs prepared by SWQB's Assessment and TMDL Team included HP UAAs applied to four ephemeral streams in southern New Mexico (Aqua Chiquita from Rio Peñasco to McEwan Canyon, Grindstone Canyon from Grindstone Reservoir to its headwaters, San Andres Canyon and San Vicente Arroyo from Mimbres River to Maude's Canyon), and a UAA evaluating temperature criteria and associated aquatic life uses in two segments on the Animas River (San Juan River Basin). The HP UAAs were submitted to EPA for technical approval on October 18, 2013. EPA technical approval was provided on December 19, 2013. A public discussion draft of the Animas River UAA was noticed for review and comment (November 18, 2013 – December 20, 2013), and a public meeting held in Farmington on December 17, 2013. The Animas River UAA report will be finalized after consideration of all comments, and submitted to EPA for technical approval.

Once HP UAAs are technically approved by EPA, identified waters are subject to uses and criteria

as ephemeral under Subsection C of §20.6.4.97 NMAC and are listed on SWQB's Water Quality Standards website at:
http://www.nmenv.state.nm.us/swqb/UAA/HP/index.html

All UAAs technically approved by EPA will be proposed to the WQCC for inclusion into the water quality standards. HP UAAs will be petitioned for adoption under Subsection C of §20.6.4.97 NMAC, other UAAs will be proposed for adoption into the appropriate classified segment (i.e., §20.6.4.100-899 NMAC). Depending on the timing, these actions may be accomplished in conjunction with the Triennial Review, or as separate interim revisions.

Additional UAA Investigations

During the summer of 2013, SWQB initiated preliminary investigations of aquatic life uses and temperature criteria for UAAs in the Gila River and Mimbres closed basins. Historical datasets have been compiled for use in statistical summaries (for between-year and within year comparisons); summary analyses (i.e. box and whisker plots of thermograph data, etc.) have been completed. Landscape, hydrology, climate, and fisheries data will be evaluated to determine attainable aquatic life uses and temperature criteria within an ecoregion framework. A discussion draft UAA is planned for early 2014.

Outstanding National Resource Waters and Associated Antidegradation Implementation Procedures

EPA approved the designation of perennial streams and lakes, and identified wetlands on U.S. Forest Service wilderness areas in New Mexico as Outstanding National Resource Waters (ONRW) under §20.6.4.9 NMAC. The latest ONRW designation includes 700 miles of perennial streams, 29 lakes and 4,930 acres of 1,405 individual wetlands, and came with significant revisions to the Antidegradation Policy and Plan (§20.6.4.8 NMAC), and new Antidegradation Implementation Procedures in the WQMP. The revisions to the water quality standards and to the WQMP were adopted by the WQCC on November 30, 2010, and approved by EPA on April 11, 2013. For or more information about ONRWs. please see
http://www.nmenv.state.nm.us/swqb/ONRW/.

Antidegradation procedures, including those for ONRWs, are outlined in Appendix A of the WQMP and are available at:
http://www.nmenv.state.nm.us/swqb/Planning/WQMP-CPP/

Visit the NMED Surface Water Quality Bureau Water Quality Standards website for updates (including recent EPA approvals) at: http://www.nmenv.state.nm.us/swqb/Standards/

TMDL Update

In 2013, the SWQB developed four TMDLs for the Animas River and seven TMDLs for the Upper Pecos River watershed. The SWQB received approval for the TMDLs from the WQCC and EPA Region 6 in September 2013. The SWQB is planning TMDL development for the Gila and Sacramento Mountain watersheds in 2014.

Ground Water Quality Bureau

Permitting and Compliance Assistance for Large Capacity Septic Tank/Leachfields

Facilities throughout New Mexico that discharge greater than 2,000 gallons per day of domestic wastewater to septic tank/leachfield systems are required to obtain a Ground Water Discharge Permit with the Ground Water Quality Bureau (GWQB). The GWQB's initiative is to protect ground water quality from non-point source pollution attributed to large capacity septic tank/leachfield systems. Technical personnel of the GWQB review Discharge Permit applications, develop Ground Water Discharge Permits, perform compliance assistance activities, and enforce Discharge Permit requirements for large capacity septic tank/leachfield systems.

GWQB staff inspecting a septic tank at the Santa Fe Equestrian Center.

Throughout the permitting and compliance assistance activities, GWQB staff provides outreach material, assistance forms and spreadsheets along with the Discharge Permits that are helpful to permitees who are required to complete and submit monitoring reports. In addition GWQB staff performs routine site inspections to inspect the septic tank/leachfield system(s) and offer face-to-face communication with the permittee. It is critical to make sure that the sites are discharging pursuant to their Discharge Permits and in some incidences ground water quality is monitored and, if contamination is detected, corrective action will be required. The permitting and compliance activities for large capacity septic systems also improve protection of groundwater from these non-point sources that discharge nitrogen compounds.

Socorro Water Fair, July 25, 2013.

New Mexico Water Fair and Water-Quality Outreach Program

Residents of New Mexico primarily rely on ground water as its drinking water supply and in some locations ground water is the only available source of drinking water. Since many communities are concentrated in river valleys where ground water is shallow, their drinking water supplies are susceptible to contamination from non-point source pollution, predominantly household septic tank/leachfield systems, cesspools and inappropriate agricultural practices. However, the extent and severity of potential contamination of drinking water supplies in rural communities of New Mexico is largely unknown. Most homeowners do not test their domestic well water for contaminants, because they

Ohkay Owingeh Water Fair, October 30, 2013, in collaboration with the Ohkay Owingeh Wellness Center in celebration of tribal health week.

are unaware of potential contamination or find the cost associated with water testing unmanageable.

To identify possible non-point source water quality problems in rural New Mexico communities, the GWQB conducts free testing of domestic wells ("water fairs") throughout the state. The Water Fair Program reaches domestic well owners and educates them about water quality issues and how they can help preserve or improve water quality in their communities. These activities have been carried out as an EPA-funded Water Fair Program. This program has proven to be very popular with the general public, providing a visible and highly appreciated service with valuable information on ground water quality in rural communities. NMED continues to receive numerous requests for water fairs from community organizations, NMED Field Offices, other State, County and City agencies, and private citizens. The Water Fair Program continues to be an important tool for identifying possible non-point source water quality problems.

Water quality outreach events include the demonstration of a ground water model/stimulator (ant farm). The model is a hands-on visual aid that takes difficult ground water concepts and makes them understandable for all ages. Ground water demonstrations are often conducted in schools, community centers or state fair exhibits.

Many families in rural New Mexico have become more knowledgeable about water quality, potential for contamination, and pollution prevention. In 2013, the GWQB conducted 10 water fairs, receiving a total of 768 water samples. The GWQB is proud to announce the highest water fair attendance to date; we received and analyzed 188 water samples during the Taos Water Fair on July 2, 2013. Overall, the amount of water fairs conducted and the level of public participation in 2013 proved to be a success.

Mimbres Water Fair at the Mimbres Harvest Festival in collaboration with Grant County Community Health Council, October 2013.

CWA Section 401 Certification Activities

Staff continue to process water quality certifications under Section 401 of the federal Clean Water Act. The purpose of the Section 401 water quality certification is to ensure that Section 404 "Discharge of Dredge or Fill" permits issued or authorized by the U.S. Army Corps of Engineers (the Corps) comply with state water quality standards.

In late 2012, the Corps released for public notice a new Section 404 Regional General Permit for Activities in Emergency Situations (Emergency RGP), with accompanying conditions. After public notice NMED certified this RGP on January 7, 2013. The Corps subsequently exercised this Emergency RGP eight times. At these emergencies, staff also worked with the USFS (including BAER Teams), New Mexico Department of Homeland Security and Emergency Management, NRCS, County Emergency Managers, and others as technical advisers and to facilitate permitting.

Since April 2012, the SWQB has issued informal confirmation of NWP activities, and formal 401 certification is generally required only for 404 individual permits. SWQB issued one certification of an individual permit in 2013, after requesting and considering public comments.

Stream restoration structure addressing a headcut in Grassy Creek requiring a NWP 27 for Aquatic Habitat Restoration, Establishment, and Enhancement Activities.

CWA Section 401 Water Quality Certification Activites	
Confirmations	
NWP Certifications Confirmed	69
NWP Expedited (emergency) Confirmations	9
Actions in Progress	7
Total	85
Other Actions	
No Permit Necessary	12
Individual Permits Certified	1
Enforcement Actions	3
Regional General Permit Certified	1
Total	17

New Mexico Mining Act Activities

The New Mexico Mining Act (19 NMAC 1 0) obligates NMED to review and comment on various applications associated with non-coal mining in New Mexico. Proposed actions range from recreational mining (such as panning for gold) to large mine and mill operations. For exploration applications or modification of existing exploration permits, NMED is provided an opportunity for formal comment. For new mining operations, NMED is responsible to "certify that water quality standards are expected to be met" and to determine that the proposed closeout plan will "achieve compliance with all applicable air, water quality and other environmental standards if carried out as described". For modification of existing operations, NMED has an opportunity to concur with proposed permit changes. In general, NMED has 20 days from receipt of an application to respond.

NMED has an informal team that includes representatives from SWQB, GWQB, and the Air Quality Bureau to review mining applications and otherwise support the work of the New Mexico Mining and Minerals Division. This work involves review of applications, local site conditions (often including site visits), hydrologic interpretations, and applicable water quality standards. SWQB discusses BMPs and other activities with the applicant in an effort to negotiate mining plans that prevent or minimize environmental risks. NMED's written responses often include conditions necessary to ensure compliance with environmental standards. Beyond permitting actions, this NMED team also participates in meetings and reviews documents in support of the work of the EMNRD, the USACE, federal land managers, and others. SWQB sometimes provides technical assistance to other agencies, such as identifying restoration technologies at mine lands.

In 2013, SWQB reviewed numerous mining notices, applications, restoration plans, hydrologic reports, monitoring plans, and activity reports. SWQB reviewed permit applications and associated documents for exploratory drilling programs, proposed new mining activities, and modification of existing mining activities. Most of these permitting actions required site visits, consultations with the applicants, coordination with land-management and regulatory agencies (federal and state), and written comment. The following is a summary of some of the most recet mining permit activities:

- Large scale copper mining operations continue at Freeport McMoRan's Chino and Tyrone Mines with reclamation of the Tyrone tailings complete and reclamation of tailings at Chino well underway.
- The Copper Flat Mine in Sierra County continued to work its way through the regulatory process in 2013.
- Several smaller mines in operation include the Saint Cloud Zeolite Mine in the Black Range of Sierra County and the Summit Gold Mine in Grant County.
- The Billali Mine in the Steeplerock Mining District of Grant County required several site visits in 2013 to work out regulatory issues and inspections by NMED Surface and Groundwater Bureaus and by the NM State Engineers Office.

Projects Completed by Non-NMED Agencies

Carson National Forest
Watershed Condition Framework
Watershed Restoration Action Plan(s)

Affected Watersheds

Ciruelas Canyon – Arroyo Companero (HUC 140801030403)
Martinez Canyon – Carrizo Canyon (HUC 140801030405)
Munoz Creek (HUC 140801030404)
Wild Horse Canyon – Tapicito Creek (HUC 140801030303)

These four watershed areas are within the southern portion of the Jicarilla Ranger District of the Carson National Forest, approximately 40 miles east of Bloomfield, New Mexico. They were selected as one of the Carson National Forest's highest priority watershed areas for treatment due to:

- Ongoing partnerships and collaboration opportunities,
- Current large scale watershed improvement and restoration planning and implementation on adjacent BLM, State of New Mexico, and private lands and
- Potential to leverage funding from numerous sources (NRCS, BLM, San Juan Water Conservation District, and oil and gas lessees, and grazing permittee).

All of the watersheds were rated as Functioning at Risk due to fair to poor ratings for Key Indicators such as water quality, roads and trails, soils, and terrestrial invasive species. Ongoing oil and gas development activities have contributed to the overall ratings for these watersheds.

Projects implemented in 2013:

- Monitoring – Vegetation monitoring transects were established prior to implementation.
- Cultural Inventory and Clearance – Cultural clearance of land areas planned for brush management continued. Cultural inventory has been completed on approximately 1,000 acres.
- Vegetation treatment - Mowed and seeded approximately 350 acres of big and hoary sagebrush. The areas were seeded with two different seed mixes and hand seeded with winterfat. Areas treated are within the Ciruelas, Ahogadero and Ciruelas canyons.
- Road Improvements – in cooperation with Oil and Gas operators on the district, road improvements such as road crossings, road drainage structural improvements, and sediment retention basins were initiated in FY 2013. This work is yet to be completed, but represents a significant investment in transportation infrastructure by partners on the Jicarilla Ranger District.

Ciruelas Canyon prior to treatment in summer 2012.

Ciruelas Canyon immediately after brush-hogging in summer 2012.

Ciruelas Canyon in summer 2013.

Gila National Forest
BAER & Restoration Activities Following the Whitewater-Baldy Complex and Silver Fires

Whitewater Baldy Complex Fire

BAER:

- 2013 Aerial Seeding (Morris Ag Air)
- 1,290 acres were reseeded that did not take well in 2012
- 5,110 acres were seeded that were not originally seeded in 2012
- $517,120 spent on seeding @ $80.80/acre

Road maintenance (storm patrol) – Construction and Maintenance (C&M) personnel and equipment were utilized extensively throughout the summer and early fall of 2013 to respond to vulnerable road areas in the Reserve Ranger District due to the increased run off associated with Whitewater Baldy Complex burn areas. Many of the comprised watersheds experienced significant soil movement in response to medium to high intensity precipitation events that required direct intervention to keep motorized travel ways open throughout the monsoon season. A total of approximately $57,674 was spent on C&M crew personnel and equipment (including rental equipment). Approximately $128,000 is planned for FY 14 to accomplish several residual projects including culvert repair at Gilita Creek crossing, NFSR 153N culvert repair, Hail Canyon Crossing culvert repair and NFSR 141 reconstruction.

Trail Maintenance

- Glenwood Ranger District - Improved/maintained 11.9 miles of Crest Trail #182 for 11.9 miles. Contract cost was $120,000, administrative costs were $10,000.
- Wilderness Ranger District - Improved/maintained 30 miles of trail using Forest Service personnel and seasonal trail crew at a cost of $22,000. Forest Service personnel charge some trail work against P-code for Whitewater Baldy Complex as some of the trails were utilized for fireline during suppression activities.

Native Fish:

In 2012 evacuations occurred of three different lineages of Gila trout from Whiskey Creek, Spruce Creek, and Iron Creek.

- Lost population of Gila trout in 21 miles of upper West Fork Gila River
- Lost population of Gila trout in Iron Creek
- Fire severely impacted three other populations of Gila trout

In 2013 restocked 9 miles upper West Fork Gila River with 5,500 Gila trout. Several non-recovery streams were surveyed to determine status of fish communities. These streams may provide opportunities for estab-

lishment of Gila trout.

Restoration – Funding provided in Project Funds - Restoration ($192,000) and Range ($185,000):

- Hazard tree removal – 200 acres with volume of ≈1,150 ccf
- Fence replacement :
- Reserve Ranger District – Negrito/Yeguas Allotment fence replacement (3,307 acres)
- Reserve Ranger District – Corner Mountain Allotment fence replacement (14,081 acres)
- Reserve Ranger District – T-Bar Allotment fence replacement (11,523 acres)
- Glenwood Ranger District – 2 miles fence replacement
- Quemado Ranger District – 3.75 miles fence replacement within Wallow Fire boundary
- Black Range Ranger District – 0.25 miles fence replacement

Silver Fire

- 12,924 acres seeded (Sarita Aerial)
- Phase 1: $944,786 spent on 11,477 acres @$82.32/acre
- Phase 2: $137,305 spent on 1,447 acres @ $94.89/acre
- 2,838 acres mulched (Rampart Helicopters/Reveg Services)
- $1,617,887 spent on 2,838 acres @ $570.08/acre
- Hazard/Closure and Warning signs installed
- Hazard tree felling along roads, trails and recreation sites
- Native Fish:
- South Diamond Creek – Gila trout evacuated (50 fish). These fish were returned in November 2013
- Lost population of Gila trout in McKnight Creek
- Lost population of Gila trout in Black Canyon Creek
- Black Canyon Creek was restocked in November 2013 with 1,000 fish

Road work - The Region 03 Road Maintenance contract was utilized to perform road reconstruction and heavy maintenance along forest service roads (4088N network) in the Kingston area to ensure travel way integrity associated with increased runoff due to compromised watersheds above those road areas. A total of $51,281 was spent to accomplish this work. The Gila National Forest's C&M crew focused on severely damaged roads (Royal John Mine Road and adjacent areas – on the south end of the fire area) to ensure travel way integrity throughout the monsoon season. Silver Creek Canyon Road was severely damaged prior to engaging in road construction activities and had to be shuttered until after the rainy season. Reconstruction work with the C&M crew is anticipated to begin in early 2014. Total money spent to date is approximately $153,000 on C&M crew personnel and equipment (including rental equipment), signage, and administrative oversight of road reconstruction activities. A total of approximately $510,000 is planned for FY 14 to reconstruct several damaged roads and trails, repair damaged campground entrances and to clear debris laden channels.

Gate installation - Several gates have been designed, contracted and recently fabricated and delivered to

the forest. The gates are scheduled for installation to manage access in a variety of compromised recreation and road areas in early 2014. Costs to purchase gates - $32,321 with another $32,000 contemplated for materials and labor to install.

In Addition:

- Point protection – All point protection devices remain in place and will be re-evaluated in early spring 2014 to determine effectiveness. Some point protection devices are also being used to manage access to certain areas and will be replaced with a vehicle gate.
- Channel clearing – Minor channel clearing has taken place on the 4088N road and the Royal John Mine Road. More extensive channel work still remains for Silver Creek Canyon Road and the Royal John Mine Road. This work is scheduled to begin in early 2014.
- Monitoring – Monitoring for seeding and mulching effectiveness began on the Silver Fire in the fall of 2013. This monitoring is continuing for this past year's growing season and will also take place following next summer's growing season.

Project Highlight: Upper Pecos Aquatic Habitat Enhancement New Mexico Department of Game and Fish

NMED note: the following is a summary of a monitoring report dated November 2013 provided by the New Mexico Department of Game and Fish on the Upper Pecos Aquatic Habitat Enhancement Project. The full report is available upon request from NMED or the Wildlife Management Division of NMDGF.

Project Area:

Project activities occurred on the Rio Mora (aka Mora Creek) and Pecos River within the Mora Campground, about fifteen miles north of Pecos. The project encompassed about 420 feet of the Rio Mora (which joins the Pecos River within the project area), and 790 feet of the Pecos River.

Project Description:

There was an overabundance of riffle habitat in the project area. This condition developed primarily as a result of heavy recreational use from the nearby campground. The project installed rock structures to develop pools, existing pools were deepened, and fill from these excavations were used to create bank-full benches that were planted with willows, cottonwoods, or other native shrubs/trees.

These areas are stocked with catchable rainbow trout. Creating more pool habitat helps retain stocked fish in the project area so they would be more readily available to anglers. The increased pool habitat will also improve the resident trout population quality and quantity.

This project had the following objectives:

1. Maintain optimal levels of percent sediment fines (< 16%).
2. Increase average residual pool depth by 20%.
3. Increase percent pool habitat to 30% or more within stream lengths.
4. Maintain optimal levels of percent unstable bank (< 10%).
5. Increase the structural diversity of stream cross-sections.

These objectives were developed based on stream habitat standards for trout streams in New Mexico (New Mexico Department of Game and Fish 2011).

The project was funded by the Habitat Stamp Program managed by NMDGF, managed by NMDGF staff, and implemented by private contractors and volunteers from the Upper Pecos Watershed Association and Trout Unlimited.

Rio Mora Results:

Most pool habitat in the Rio Mora was constructed by installing rock weirs. Example pre-construction and post-construction photos are presented below.

Figure 1. Pre-construction (upper) taken in August 2012 and post-construction (lower) taken in October 2013 at photo point MM1 looking upstream.

Percent sediment fines decreased from 10% to 6% post-construction but this could be related to variability in measuring this parameter. It is still considered optimal for trout habitat. Average residual pool depth increased to 1.0 feet, which bumped this from an inadequate to adequate trout habitat rating. Percent pool habitat only increased from 0 to 9%, which is still considered inadequate for trout habitat. Some of the pools constructed in this project area were created by J-hook or rock deflector structures, which create pools that

encompass the side of the channel and do not span the full channel width. These types of pools increase habitat available to trout, but were not reflected in the quantitative measurements. Percent unstable bank was reduced from 12% to 0% changing the trout habitat rating from adequate to optimal. The cross-sectional area post-construction is more complex in structure and narrower.

Pecos River Results:

Most pool habitat in the Pecos River was constructed using J-hook or rock deflector structures. Example pre-construction and post-construction photos are presented below.

Figure 2. Pre-construction (upper) taken in August 2012 and post-construction (lower) taken in October 2013 at photo point MP2 looking upstream. Even though flow was lower in October 2013, deeper pool habitat is present in the lower left of the photo.

Measured percent sediment fines increased slightly (from 2% to 8%) post-construction, but this habitat parameter is still considered optimal for trout habitat. Average residual pool depth remained the same at 1.2 feet, which is also considered an optimal trout habitat rating. Percent pool habitat decreased from 25 to 22%, which reduced the trout habitat rating from adequate to inadequate. Different Department personnel performed post-construction measurements; so, pool habitat may have been interpreted differently by this crew. This part of the project area was downstream of the Jaroso Fire area, which may have also affected measured project outcomes. Additionally, pool habitat was defined as at least the width of the stream and at least the width of the channel long. As with the Rio Mora, many of the pools constructed were created along the side of the channel and do not span the full channel width. Percent unstable bank was reduced from 10% to 0% changing the trout habitat rating from adequate to optimal. The cross-sectional area post-construction is more complex in structure and narrower.

Reference:

New Mexico Department of Game and Fish. 2011. Habitat Assessment Protocol for Lotic and Lentic Environments. Fisheries Management Division, Santa Fe, New Mexico. 31 pg.

Additional Management Practices by Non-NMED Agencies

The following land management agencies implemented various projects and best managment practices in New Mexico that ultimately contribute to the reduction of NPS pollutants in surface waters. The most common NPS issues being addressed are excessive erosion, sedimentation, encroachment of exotic vegetation, streambank stability, excessive nutrients, and excessive water temperature.

Bureau of Land Management Projects

Las Cruces Field Office

Watershed	Project Description	Watershed Benefits
Salt Basin, NM-TX #13050004	Brush control treatments for 9,085 acres Riparian condition assessments (several areas)	• Decrease runoff and erosion • Reduce over story • Increase herbaceous ground cover • Increase infiltration, water holding capacity • Reduce invasive brush species, increase herbaceous ground cover, reduce surface runoff, erosion and sedimentation, and improve infiltration.
Tularosa Valley #13050003	860 acres were treated with fire on the coyote canyon Riparian condition assessments (several areas) Illegal dumpsite cleanup efforts on approximately 10 acres south of Alamogordo, NM. Removed approximately 15 tons of trash. Abandoned mines: 719 inventoried; 153 remediated.	• Decrease risk of extreme wildfire and associated erosion. • Increase water yield • Increase desirable herbaceous cover in riparian zones and ephemeral drainages. • Decrease salinity • Improve PFC • Reduce invasive brush species, increase herbaceous ground cover, reduce surface runoff, erosion and sedimentation, and improve infiltration. • Improve water quality • Removing trash within or along waterways to prevent potential ground and surface water contamination. • Improve wildlife and aquatic habitats • Removal of indirect exposure to chemicals/hazardous wastes • Improvement of waterway aesthetics on public lands.

BLM - Las Cruces Field Office (continued)

Watershed	Project Description	Watershed Benefits
Mimbres #13030202	Pitchfork Ranch erosion control structures Palomas Dam #8, damaged in a 2006 flood, was converted into a rock gabion drop structure Riparian condition assessments (several areas) Abandoned mine: 1476 inventoried; 17 remediated.	• Reduce surface runoff, erosion and sedimentation, and improve infiltration. • Reduce flooding • Decrease erosion and sedimentation • Improve water quality
Upper Gila-Mangas #15040002	Exclusion fence structure project (maintained) to exclude livestock (Gila Lower Box) Riparian condition assessments (several areas) Collected fremont cottonwood seed, forwarded to NRCS Los Lunas Plant Materials Center to establish a cottonwood pole production field – locally adapted plant material (cottonwood poles) for riparian restoration to be available soon.	• Decrease risk of extreme wildfire and associated erosion. • Decrease runoff and erosion • Reduce over story • Increase herbaceous ground cover • Increase infiltration, water holding capacity • Improve water quality
Playas Lake #13030201	Brush control treatment for 9,701 acres Riparian condition assessments (several areas) Abandoned mine: 636 inventoried; 0 remediated.	• Improve road access across drainage without use of culverts to maintain overland flow • Reduce erosion due to vehicular use during wet conditions.
Animas Valley, Arizona #15040003	Brush control treatment for 1,534 acres Riparian condition assessments Abandoned mine: 141 inventoried; 25 remediated.	• Reduce invasive brush species, increase herbaceous ground cover, reduce surface runoff, erosion and sedimentation, and improve infiltration. • Reduce flooding • Decrease erosion and sedimentation

BLM - Las Cruces Field Office (continued)

Watershed	Project Description	Watershed Benefits
Jornada Draw #13030103	Riparian condition assessments (several areas)	• reduce surface runoff, erosion and sedimentation, and improve infiltration.
El Paso-Las Cruces #13030102	Brush control treatments for 10,913 acres Riparian condition assessments (several areas) Condition assessments were done on 4 dams in the El Paso - Las Cruces water shed. They were Apache Canyon, Alameda, Las Uvas #1, and Las Uvas #6. All dams were performing their function of retaining soil behind them. Aguirre Spring and Dripping Spring Recreation sites water quality sampling and reporting Abandoned mine: 437 inventoried; 266 remediated. Illegal dumpsite cleanup efforts on approximately 30 acres located outside Hatch and Salem.	• Reduce invasive brush species, increase herbaceous ground cover, reduce surface runoff, erosion and sedimentation, and improve infiltration. • Reduce flooding • Improve water quality • Removing trash within or along waterways to prevent potential ground and surface water contamination. • Improve wildlife and aquatic habitats • Removal of indirect exposure to chemicals/hazardous wastes • Improvement of waterway aesthetics on public lands.
Upper Gila (southern part) #15040001	Exclusion fence structure project for livestock exclusion Riparian condition assessments (several areas)	• Reduce flooding • Decrease erosion and sedimentation • Improve water quality
San Simon #1504006 (eastern portion)	Riparian condition assessments (several areas)	• Decrease erosion and sedimentation • Improve water quality
Caballo #13030101	Brush control treatment for 2,407 acres Riparian condition assessments (several areas)	• Reduce invasive brush species, increase herbaceous ground cover, and reduce surface runoff. • Decrease erosion and sedimentation • Improve water quality

NM State Forestry Division

Watershed	Project Description	Watershed Benefits
Little Colorado Headwaters. Arizona, New Mexico, (Coyote Creek)	Timber Harvests (147 ac) in Ponderosa pine forests Graded Dips, waterbarring of access roads and skid trails, lop & scattering of slash and seeding of critical areas.	• Reduce runoff, erosion, sedimentation due to increased herbaceous ground cover and waterbars. • Increase water infiltration.
Canadian Headwaters, New Mexico (Headwaters Vermejo River)	Timber Harvests (180 ac) in Mixed Conifer forests Waterbarring of access roads and skid trails, lop & scattering of slash and seeding of critical areas.	• Reduce runoff, erosion, sedimentation due to increased herbaceous ground cover and waterbars. • Increase water infiltration.
Cimarron Watershed, New Mexico (Headwaters Rayado Creek)	Timber Harvests (295 ac) in Mixed Conifer forests Waterbarring of access roads and skid trails, lop & scattering of slash and seeding of critical areas.	• Reduce runoff, erosion, sedimentation due to increased herbaceous ground cover and waterbars. • Increase water infiltration.
Canadian Headwaters, New Mexico (Headwaters Vermejo River)	Timber Harvests (134 ac) Mixed Conifer forests Waterbarring of access roads and skid trails, lop & scattering of slash and seeding of critical areas.	• Reduce runoff, erosion, sedimentation due to increased herbaceous ground cover and waterbars. • Increase water infiltration. .
Upper Rio Grande, Colorado, New Mexico (Costillo Creek)	Timber Harvests (14 ac) Mixed Conifer forests Waterbarring of access roads and skid trails, lop & scattering of slash and seeding of critical areas.	• Reduce runoff, erosion, sedimentation due to increased herbaceous ground cover and waterbars. • Increase water infiltration.
Canadian Headwaters, New Mexico (Headwaters Vermejo River)	Timber Harvests (306 ac) Mixed Conifer forests Waterbarring of access roads and skid trails, lop & scattering of slash and seeding of critical areas.	• Reduce runoff, erosion, sedimentation due to increased herbaceous ground cover and waterbars. • Increase water infiltration.
Canadian Headwaters, New Mexico (Chicorica Creek-Canadian River)	Timber Harvests (4,227 ac) Ponderosa pine and Mixed Conifer forests Waterbarring of access roads and skid trails, lop & scattering of slash and seeding of critical areas.	• Reduce runoff, erosion, sedimentation due to increased herbaceous ground cover and waterbars. • Increase water infiltration.

NM State Forestry Division (continued)

Watershed	Project Description	Watershed Benefits
Canadian Headwaters, New Mexico (Outlet Vermejo River)	Timber Harvests (48 ac) Ponderosa pine forests Waterbarring of access roads and skid trails, lop & scattering of slash and seeding of critical areas.	• Reduce runoff, erosion, sedimentation due to increased herbaceous ground cover and waterbars. • Increase water infiltration.
Rio Hondo (Rio Ruidoso)	Thinning and Forest Fuel Reduction (340 ac) Ponderosa pine forests Waterbarring of access roads and skid trails, lop & scattering, chipping and mastication of slash.	• Reduce runoff, erosion, sedimentation due to increased herbaceous ground cover and waterbars. • Increase water infiltration
Salt Basin, New Mexico, Texas (Sacramento River)	Thinning and Forest Fuel Reduction (72 ac) Ponderosa pine forests Waterbarring of access roads and skid trails, lop & scattering, chipping and mastication of slash.	• Reduce runoff, erosion, sedimentation due to increased herbaceous ground cover and waterbars. • Increase water infiltration
Tularosa Valley (Lost River)	Thinning and Forest Fuel Reduction (72 ac) Ponderosa pine and mixed conifer forests Waterbarring of access roads and skid trails, lop & scattering, chipping and mastication of slash.	• Reduce runoff, erosion, sedimentation due to increased herbaceous ground cover and waterbars. • Increase water infiltration
Mimbres (San Vicente Draw)	Thinning and Forest Fuel Reduction (72 ac) Ponderosa pine Waterbarring of access roads and skid trails, lop & scattering, chipping and mastication of slash.	• Reduce runoff, erosion, sedimentation due to increased herbaceous ground cover and waterbars. • Increase water infiltration
Plains of San Augustin (C-N Lake)	Thinning and Forest Fuel Reduction (601 ac) Ponderosa pine Waterbarring of access roads and skid trails, lop & scattering, chipping and mastication of slash.	• Reduce runoff, erosion, sedimentation due to increased herbaceous ground cover and waterbars. • Increase water infiltration
San Francisco, Arizona, New Mexico (Centerfire Creek-San Francisco River	Thinning and Forest Fuel Reduction (72 ac) Ponderosa pine forests Waterbarring of access roads and skid trails, lop & scattering, chipping and mastication of slash.	• Reduce runoff, erosion, sedimentation due to increased herbaceous ground cover and waterbars. • Increase water infiltration
Western Estancia (Torreon Draw)	Thinning and Forest Fuel Reduction (72 ac) Ponderosa pine forests Waterbarring of access roads and skid trails, lop & scattering, chipping and mastication of slash.	• Reduce runoff, erosion, sedimentation due to increased herbaceous ground cover and waterbars. • Increase water infiltration

NM State Forestry Division (continued)

Watershed	Project Description	Watershed Benefits
Rio Grande-Albuquerque (Hells Canyon Wash)	Thinning and Forest Fuel Reduction (72 ac) Ponderosa pine forests Waterbarring of access roads and skid trails, lop & scattering, chipping and mastication of slash.	• Reduce runoff, erosion, sedimentation due to increased herbaceous ground cover and waterbars. • Increase water infiltration
Pecos Headwaters (Headwaters Gallinas River)	Thinning and Forest Fuel Reduction (204 ac) Ponderosa pine forests Waterbarring of access roads and skid trails, lop & scattering, chipping and mastication of slash.	• Reduce runoff, erosion, sedimentation due to increased herbaceous ground cover and waterbars. • Increase water infiltration
Mora (Sapello River)	Thinning and Forest Fuel Reduction (130 ac) Ponderosa pine forests Waterbarring of access roads and skid trails, lop & scattering, chipping and mastication of slash.	• Reduce runoff, erosion, sedimentation due to increased herbaceous ground cover and waterbars. • Increase water infiltration
Pecos Headwaters (Tecolote Creek)	Thinning and Forest Fuel Reduction (103 ac) Ponderosa pine forests Waterbarring of access roads and skid trails, lop & scattering, chipping and mastication of slash.	• Reduce runoff, erosion, sedimentation due to increased herbaceous ground cover and waterbars. • Increase water infiltration
Mora (Upper Mora River)	Thinning and Forest Fuel Reduction (142 ac) Ponderosa pine forests Waterbarring of access roads and skid trails, lop & scattering, chipping and mastication of slash.	• Reduce runoff, erosion, sedimentation due to increased herbaceous ground cover and waterbars. • Increase water infiltration
Upper Canadian (Headwaters Ocate Creek)	Thinning and Forest Fuel Reduction (226 ac) Ponderosa pine forests Waterbarring of access roads and skid trails, lop & scattering, chipping and mastication of slash.	• Reduce runoff, erosion, sedimentation due to increased herbaceous ground cover and waterbars. • Increase water infiltration

Log Erosion Control Structure.

US Forest Service Projects

Carson National Forest

Watershed	Project Description	Watershed Benefits
Upper Rio Grande 13020101 (Red River)	D7 Hazardous Fuels Reduction. Questa/Lama WUI thinning (150 ac) partnership project w/ Rocky Mtn Youth Corps. Project provides youth oriented education of ecosystem functions and reduced hazardous fuel loads by providing fuelwood to needy citizens. Pile Rx burn (45 ac) associated with thinning slash to reduce fuel loading.	• Improves vegetative ground cover and species diversity. • Reduces potential for uncharacteristic wildfire damage to areas treated. • Protects soil resources & improves nutrient cycling. • Protects water quality • Reduces hazardous fuel loads adjacent to communities.
Upper Rio Grande 13020101 (Red River)	D7 CMI Historic Tailings Removal - removal and disposal of historic tailings spills associated with slurry pipeline located adjacent Red River (1,217 cubic yards of tailings to be removed). Removal work began in fall of 2013. Project is estimated to be 35 – 40 % complete at this time. Removal operations will continue in 2014.	• Improves water quality on the Red River. • Improves riparian vegetation and stream bank conditions. • Improves wildlife habitat.
Upper Rio Grande 13020101 (San Cristobol Creek)	San Cristobal Allotment range improvements (EQUIP grant) 4.5 mi. new pasture fencing. 357 ac sagebrush mowing 88 ac seeding to restore pasture production. 3 new water developments to improve animal distribution.	• Improve forage production and watershed protection. • Restores native plant species within pastures and improves plant species diversity. • Improves livestock distribution and forage utilization. • Improves wildlife habitats
Cimarron 11080002 (Middle Ponil Creek)	Mechanical (hand) removal of 125 acres of invasive weeds (partnership w/ Philmont Boy Scout Ranch).	• Improves vegetative ground cover and plant species diversity. • Improves wildlife habitat.
Rio Chama 13020102 (Canada Alamosa- Rio Vallecitos)	8 acres noxious weed removal Escondido Allotment	• Protect resource conditions
Rio Chama 13020102 (Rio Ojo Caliente)	Road maintenance (13 miles)	• Improve road drainage; reduce erosion

Carson National Forest (continued)

Watershed	Project Description	Water Quality Benefits
Upper Rio Grande 13020101 (Springwagon and Grassy Creeks)	D7 Comanche Creek Native Trout and Riparian Habitat Improvement - . Partnership with Quivira Coalition, NMED & USFWS 2.5 mi. Stream channel stabilized 30 - 33 ac of wetlands stabilized 30 – 33 ac of upland watershed area improved.	• Improves water quality & flow timing • Improves riparian habitat • Improves stream channel stability and aquatic species habitat
Upper Rio Grande 13020101 (Alamitos Creek)	D4 Alamitos fish barrier site construction. Project stabilizes 3.5 miles of native coldwater fish habitat	• Protects native coldwater fish habitat from non-native trout habitat impacts. • Improves native species aquatic habitat.
Upper Rio Grande 13020101 (Alamitos Creek)	D4 Road closure (10 miles) to protect watershed condition in areas not authorized for motor vehicle access.	• Decreases erosion from roads. • Improves herbaceous vegetation and ground cover to reduce erosion on legacy roads. • Improves runoff, infiltration and water distribution on slopes intersected by roads. • Protects resource conditions.
Upper Rio Grande 13020101 (Embudo Creek)	D4 Forest Health Improvement. Thinning on 58 acres of forest lands	• Improves Forest health/watershed condition by reducing overgrown tree conditions. • Reduces wildfire potential by thinning. and removing fuelwood utilizing partnership "Stewardship" fuelwood permits. • Improves understory forest herbaceous vegetation diversity and production..
Upper Rio Grande 13020101 (Canada de las Entrana)	D4 Forest Health Improvement. Thinning on 22 acres of forest lands.	• Improves Forest health/watershed condition by reducing overgrown tree conditions. • Reduces wildfire potential by thinning and removing fuelwood utilizing partnership "Stewardship" fuelwood permits.
Upper Rio Grande 13020101 (Rio Fernando De Taos)	D4 Install gate on Palo Flechado Allotment to control motorized access to collect fuelwood.	• Decreases fuel loading attributed to forest thinning activities. • Protects resource conditions by controlling motorized use in areas not normally open for motorized travel.
Rio Chama 13020102 (Montoya Canyon – Canjilon Creek)	SR 115 SRS Chimayo Conservation Corps Phase II FY 13 Precommercial thinning and piling of activity created fuels (73 acres).	• Hazardous fuels reduction thinning to mitigate the threat of high intensity and high severity wildfires and the associated negative impacts on watershed health and function.

Carson National Forest (continued)

Watershed	Project Description	Water Quality Benefits
Upper Rio Grande 13020101 (Rio Pueblo)	D4 Osha Wildfire Reforestation - 250 acre tree planting.	• Reduces soil erosion and sedimentation from wildfire impacts. • Accelerates watershed stabilization and forest recovery
Upper Rio Grande 13020101 (Rito de la Olla)	Mechanical (hand) removal of Invasive Plants - 100 acres	• Improve vegetative ground cover and species diversity. • Improves wildlife habitat
San Juan River-Navajo Reservoir 1408010107	Installed 1 culvert Repaired 100 feet of road washout	• Improve vegetation cover, reduce sediment. • Improve vegetation cover, reduce sediment
Canon Bancos 1408010108	Gathered and removed 104 Wild Horses Reclaimed 6 abandoned well locations – 8 acres	• Improve vegetation cover, reduce sediment • Improve vegetation cover, reduce sediment
La Jara Creek 1408010107	Reclaimed 2 well locations – 4 acres Reclaimed 1.04 miles of abandoned road 235 acres of Sagebrush restoration – mowing and seeding 32 acres of Sagebrush restoration – mowing and seeding	• Improve vegetation cover, reduce sediment • Improve vegetation cover, reduce sediment • Improve vegetation cover, reduce sediment • Improve vegetation cover, reduce sediment
Carrizo Creek 1408010304	Reclaimed 4 abandoned well pads – 8 acres Reclaimed 1,000 feet of abandoned road 144 acres of sagebrush restoration – mowing and seeding	• Improve vegetation cover, reduce sediment • Improve vegetation cover, reduce sediment • Improve vegetation cover, reduce sediment
Rio Chama 13020102	Brushhog 75 acres in the El Rito Lobato Allotment Seed 200 acres in the El Rito Lobato Allotment	• Reduce soil erosion and sedimentation • Increase forage capacity • Increase wildlife habitat
Rio Chama 13020102	2 acres noxious weed removal El Rito Lobato Allotment	• Protect resource conditions
Rio Chama 13020102	Agua Fria Spring maintenance Banco Aragon Spring maintenance	• Decrease sedimentation/erosion surrounding spring seep
Rio Chama 13020102 (Canada Alamosa- Rio Vallecitos)	106 Spring maintenance	• Decrease sedimentation/erosion surrounding spring seep

Carson National Forest (continued)

Watershed	Project Description	Water Quality Benefits
Upper Rio Grande 13020101 (Rio Trampas and Rio Fernando de Taos)	D4 Hazardous Fuels Reduction Francisco WUI Rx burn (581 ac) Pile Rx burn (45 ac) associated with thinning slash to reduce fuel loading.	• Improve vegetation ground cover and maintain plant species diversity. • Improves wildlife habitat. • Reduces potential for severe wildfire damage to watershed in areas treated. • Protects soil resources & improves nutrient cycling. • Protects water quality resource.
Rio Chama 13020102 (Canada Alamosa- Rio Vallecitos)	0.75 miles of new fence	• Increase forage capacity and improve pasture rotations for distribution of livestock
Upper Rio Grande 13020101 (Arroyo Aguaje de la Petaca)	Spring Creek Coyote earthen reservoir dam - sediment cleanout (4 each @ 1200 cu. yd.; total 4800 cu. yd.)	• Improve sediment retention and reduce sedimentation within channel
Upper Rio Grande 13020101 (Arroyo Aguaje de la Petaca)	Road maintenance (14 miles)	• Improve road drainage; reduce erosion
Conejos 13010005 (Rio San Antonio)	San Antone Wheatgrass earthen reservoir dam - sediment cleanout and dam reconstruction (1 each @ 1200 cu. yd.)	• Improve sediment retention and reduce sedimentation within channel
Conejos 13010005 (Rio San Antonio)	San Antone Nutritas earthen reservoir dam - sediment cleanout and dam reconstruction (1 each @ 1200 cu. yd.)	• Improve sediment retention and reduce sedimentation within channel
Conejos 13010005 (Rio San Antonio)	FR 87 Replacement of failing culvert; bank stabilization	• Improve road drainage; reduce erosion
Conejos 13010005 Rio San Antonio	Road maintenance (27 miles)	• Improve road drainage; reduce erosion
Conejos 13010005 (Rio de Los Pinos)	San Antone Chino earthen reservoir dam - sediment cleanout and dam reconstruction (2 each @ 1200 cu. yd.; total 2400 cu. yd.)	• Improve sediment retention and reduce sedimentation within channel
Conejos 13010005 (Rio de Los Pinos)	Sublette San Miguel earthen reservoir dam - sediment cleanout (3 each @ 1200 cu. yd.; total 3600 cu. yd.)	• Improve sediment retention and reduce sedimentation within channel

Carson National Forest (continued)

Watershed	Project Description	Water Quality Benefits
Rio Chama 13020102 (Martinez Canyon – Canjilon Creek)	Canjilon WUI Stewardship Blocks FY 13 Precommercial thinning and lopping and scattering of activity created fuels (12 acres).	• Hazardous fuels reduction thinning to mitigate the threat of high intensity and high severity wildfires and the associated negative impacts on watershed health and function.
Rio Chama 13020102 (Martinez Canyon – Canjilon Creek)	La Alba CFRP FY 13 Precommercial thinning and lopping and scattering of activity created fuels (60 acres).	• Hazardous fuels reduction thinning to mitigate the threat of high intensity and high severity wildfires and the associated negative impacts on watershed health and function.
Rio Chama 13020102 (Rio Tusas)	Posito Pit Tank construction (1200 cu. yd.)	• Retain sediment and reduce sedimentation within drainage channel
Rio Chama 13020102 (Rio Tusas)	Cisneros pipeline maintenance (1.4 miles)	• Improve riparian vegetation and reduce sedimentation within drainage
Rio Chama 13020102 (Rio Tusas)	Biscara spring maintenance (0.1 mile))	• Decrease sedimentation/erosion surrounding spring seep
Rio Chama 13020102 (Rio Tusas)	Road maintenance (19 miles)	• Improve road drainage; reduce erosion
Rio Chama 13020102 (Rio Vallecitos)	Road maintenance (9 miles)	• Improve road drainage; reduce erosion
Rio Chama 13020102 (Montoya Canyon – Canjilon Creek)	Highway 115 Corridor Force Account Thinning FY 13 Precommercial thinning and piling of activity created fuels (21 acres).	• Hazardous fuels reduction thinning to mitigate the threat of high intensity and high severity wildfires and the associated negative impacts on watershed health and function. Piling also improves vegetative ground cover and water holding capacity.
Rio Chama 13020102 (Martinez Canyon – Canjilon Creek)	Canjilon WUI Commercial Blocks FY 13 Precommercial thinning and lopping and scattering of activity created fuels (14 acres).	• Hazardous fuels reduction thinning to mitigate the threat of high intensity and high severity wildfires and the associated negative impacts on watershed health and function.

Carson National Forest (continued)

Watershed	Project Description	Water Quality Benefits
Rio Chama 13020102 (Arroyo Blanco)	SR 115 Piles Prescribed Burn FY 13 Pile burning of activity created fuels (97 acres)	• Prescribed burning of piles to disrupt fuel continuity, decrease fuel load and decrease fire behavior which will mitigate the threat of high intensity and high severity wildfires and the associated negative impacts on watershed health and function.
Rio Chama 13020102 (Canada del Agua-Rio Tusas)	Jaramillo & Sons CFRP FY 13 Precommercial thinning, lopping and scattering of activity created fuels and removal of small diameter materials (23 acres).	• Thinning to improve forest health and to mitigate the threat of high intensity and high severity wildfires and the associated negative impacts on watershed health and function.
Rio Chama 13020102 (Canada Alamosa-Rio Vallecitos)	Andy Chacon CFRP FY 13 Precommercial thinning, lopping and scattering of activity created fuels and removal of small diameter materials (68 acres).	• Thinning to improve forest health and to mitigate the threat of high intensity and high severity wildfires and the associated negative impacts on watershed health and function.
Rio Chama 13020102 (Canada Alamosa-Rio Vallecitos)	Alfonso Chacon CFRP 3 FY 13 Precommercial thinning, lopping and scattering of activity created fuels and removal of small diameter materials (96 acres).	• Thinning to improve forest health and to mitigate the threat of high intensity and high severity wildfires and the associated negative impacts on watershed health and function.
Rio Chama 13020102 (Rio Tusas-Rio Vallecitos)	Peak Green Fuelwood FY 13 Commercial thinning of ponderosa pine fuelwood-sized material and lopping and scattering of activity created fuels (83 acres).	• Thinning to improve forest health and to mitigate the threat of high intensity and high severity wildfires and the associated negative impacts on watershed health and function.
Rio Chama 13020102 (Canada del Agua-Rio Vallecitos)	Agua/Caballos Force Account Thinning FY 13 Precommercial thinning, lopping and scattering of activity created fuels (50 acres).	• Thinning to improve forest health and to mitigate the threat of high intensity and high severity wildfires and the associated negative impacts on watershed health and function.
Rio Chama 13020102 (Canada Biscara-Rio Tusas)	Maquinita HSP Force Account Thinning FY 13 Precommercial thinning and lopping and scattering of activity created fuels (75 acres).	• Hazardous fuels reduction thinning to mitigate the threat of high intensity and high severity wildfires and the associated negative impacts on watershed health and function. Wildlife habitat improvement.

Carson National Forest (continued)

Watershed	Project Description	Water Quality Benefits
Rio Chama 13020102 (Canada del Agua-Rio Tusas and Canada Alamosa-Rio Vallecitos)	Ensenada Piles Prescribed Burn FY 13 Prescribed Burning of Piled Material (50 acres)	• Prescribed burning of activity created hazardous fuels to disrupt fuel continuity, decrease fuel load and decrease fire behavior which will mitigate the threat of high intensity and high severity wildfires and the associated negative impacts on watershed health and function. Burning also improves vegetative ground cover and water holding capacity.
Rio Chama 13020102 (Canada Biscara-Rio Tusas)	Kuykendall CFRP FY 13 Precommercial thinning and lopping and scattering of activity created fuels (22 acres).	• Thinning to improve forest health, improve wildlife habitat and to mitigate the threat of high intensity and high severity wildfires and the associated negative impacts on watershed health and function.
Rio Chama 13020102 (Canada del Agua-Rio Tusas)	Rocky Mountain Youth Corps CFRP FY 13 Precommercial thinning and lopping and scattering of activity created fuels (53 acres).	• Thinning to improve forest health, improve wildlife habitat and to mitigate the threat of high intensity and high severity wildfires and the associated negative impacts on watershed health and function.
Upper Rio Grande 13020101 (Canon de Tio Gordito-Arroyo Aguaje de la Petaca)	Gordito Timber Sale Unit 2A Commercial Thinning of 49 acres of ponderosa pine and Group Selection Openings on 9 acres of ponderosa pine.	• Commercial thinning to improve forest health, improve wildlife habitat and to mitigate the threat of high intensity and high severity wildfires and the associated negative impacts on watershed health and function.
Upper Rio Grande 13020101 (Carson Resevoir-Arroyo Aguaje de la Petaca)	Red Mesa Prescribed Burn FY 13 Broadcast Prescribed Burning (589 acres)	• Prescribed burning of natural and activity created fuels to disrupt fuel continuity, decrease fuel load and decrease fire behavior which will mitigate the threat of high intensity and high severity wildfires and the associated negative impacts on watershed health and function. Burning also improves vegetative ground cover, wildlife habitat water holding capacity.

Cibola National Forest

Watershed	Project Description	Water Quality Benefits
Deer Canyon – Abo Arroyo (130202030502) Canon Barranco-Abo Arroyo (130202030501)	Espinoso Barranco Project Ponderosa and Piñon/Juniper Treatments	• Increase herbaceous ground cover. • Restore downed woody material • Decrease erosion • 438 acres
Mesteno Draw (130500011001)	Ox Canyon Stream Project instream structures	• stabilize stream channels impacted by wildfire
Agua Medio-Bluewater Creek (130202070201)	Bluewater Ecosystem Restoration Project Ponderosa and Piñon/Juniper Treatment Bluewater Creek	• Increase herbaceous ground cover • Decrease erosion • Restore downed woody material • 2222 acres
Upper San Mateo Creek (130202070301)	East La Jara Ponderosa and Piñon/Juniper Treatment	• Increase ground cover • Restore woody material to sustainable levels • Decrease erosion • 65 acres
Upper Rio Nutria (150200040201)	Agua Ramora Stream Restoration	• Riparian Fence constructed • Head cut stabilization • Stream structures
Sawyer Creek (130202070203)	Rice Park Wetland Protection	• Limit motorized access to wetland
Upper Hells Canyon Wash (130202030401)	Isleta Project – Sandia Portion Ponderosa and Piñon/Juniper Treatments	• Increase herbaceous ground cover. • Restore downed woody material • Decrease erosion • 1923 acres

Gila National Forest

Watershed	Project Description	Water Quality Benefits
Cuchillo Negro Creek 1303010101 Turkey Creek 130301010101	1. Constructed range stock tank named Turkey Tank. 2. 4.6 miles of trail decommissioning	• Improve watershed condition and herbaceous ground cover due to improved livestock and wildlife distribution resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation. • Improve the management of the cattle distribution resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation • Decrease erosion from trail prism
Patterson Lake 1302020807	1. Maintenance on Campground Spring	• Improve the management of cattle/wildlife distribution resulting in an increase of stabilized soils, reduction in runoff, erosion, and sedimentation
Palomas Creek-Rio Grande 1303010102 North Fork Palomas Creek 130301010206	1. Construct range stock tank named Grapevine Tank.	• Improve watershed condition and herbaceous ground cover due to improved livestock and wildlife distribution resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation. • Improve the management of the cattle distribution resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation
Percha Creek 1303010103 (South Percha Creek) South Percha Creek 130301010301 North Percha Creek 130301010302	1. Kingston Allotment Riparian Exclosure – 5 acres 2. Percha Trick Tank and Sam Bass Spring Maintenance 3. 0.3 miles of new trail construction 1. 5 miles of trail maintenance 2. Carbonate Spring Maintenance	• Protection of riparian vegetation and water quality from ungulate grazing activities • Increase herbaceous ground cover by improving watershed condition and herbaceous ground cover due to improved livestock and wildlife distribution resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation. • Decrease erosion from trail prism
Caballo Reservoir 1303010104 (Holden Prong and Headwaters Las Animas 6th code watersheds)	1. Animas Allotment – entire allotment was kept in non-use resource protection	• Improve watershed condition and herbaceous ground cover due to resting of allotment from livestock grazing resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation.

Gila National Forest (continued)

Watershed	Project Description	Water Quality Benefits
Cuervo Arroyo-Rio Grande 1303010202 Outlet Tierra Blanca Creek 130301020204 Headwaters Tierra Blanca Creek 130301020203	1. Approx. 300 acres thinning 1. Approx. 200 acres thinning	• Improve watershed condition and herbaceous ground cover due to improved livestock and wildlife distribution resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation. • Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover. • Thinned current pinion/juniper stand improving grassland restoration.
Gallinas Canyon – Mimbres River 1303020201 (Iron Creek)	1. Iron Creek Campground -2 Acres. 2. Powderhorn – McKnight pile burning – 25 acres	• Removed recreation campsite features at one site due to extensive soil erosion and to water/soil runoff from the Silver Wildfire. • Placed jersey barriers around toilets to help redirect water runoff from the Silver Wildfire. • Built berms along two drainages within the campground to direct runoff into Iron Creek and away from campsites. • Increase herbaceous ground cover
Headwaters San Vicente Draw 1303020202 (Ft. Bayard area)	1. Dragonfly Trail -1 mile, north end of loop trail. 2. Big Tree Trailhead maintenance-2 acres	• Reduced soil erosion by building waterbars, check dams and filling in deep ruts with native material. • Decrease erosion from parking prism, enhance drainage features
Y Canyon 1302020806 La Jolla Canyon 130202080601	1. Thinned 250 acres of encroaching trees in Upper Moraga Canyon	• Improve watershed condition and herbaceous ground cover.
Upper Largo Creek 1502000302	1. 789 acres of <12' diameter thinning on Unit 10 Slaughter Mesa	• Improve watershed condition and herbaceous ground cover.
Agua Fria Creek 1502000305	1. Gap I Pile Burning 2. Gap II Timber Sale (approx. 608 acres) 3. Maintenance on Candy Well	• Increase herbaceous ground cover • Improve the management of the cattle/wildlife distribution resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation

Gila National Forest (continued)

Watershed	Project Description	Water Quality Benefits
Corduroy Draw 1504000102 Middle Corduroy Draw 150400010203	1. CDT Trail Maintenance(*also went through Headwaters Alamosa Creek, Cuchillo Negro Creek, and Headwaters East Fork Gila River watersheds*) 1. Adobe Spring Maintenance	• Increase herbaceous ground cover by improving watershed condition and herbaceous ground cover due to improved livestock and wildlife distribution resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation.
Beaver Creek 1504000103 Houghton Canyon 150400010304	1. Black Mountain Trick Tank Maintenance 2. 5 miles of trail maintenance	• Increase herbaceous ground cover by improving watershed condition and herbaceous ground cover due to improved livestock and wildlife distribution resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation. • Decrease erosion from trail prism
Headwaters East Fork Gila River 1504000104 Hoyt Creek 150400010401 Taylor Creek 150400010402 Taylor Creek-Beaver Creek 150400010403 Diamond Creek, Turkey Run drainages	1. Turkey Run Thinning 50 acres 2. 74 Draw Thinning 50 acres 3. D-Bar, Cox, and Panda Trick Tank Maintenance 1. Titanic and Lookout Trick Tank Maintenance 1. Steer Mesa and Black Mesa Trick Tank Maintenance 1. Salt Cedar Removal-9 acres 2. South Diamond Creek trail maintenance – 4 miles	• Improve watershed condition and herbaceous ground cover due to improved livestock and wildlife distribution resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation. • Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover. • Improve the management of the cattle distribution resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation • Improve riparian vegetation to reduce erosion. • Reduce the spread of noxious weeds and improve watershed condition. • Increase herbaceous ground cover • Improve drainage off of trail
West Fork Gila River 1504000106 (WF Gila River mainstem)	1. West Fork Gila River trail maintenance –2 miles (Hells Hole to White Creek)	Decrease erosion from trail, enhance drainage features
Outlet East Fork Gila River 1504000107 (mainstem East Fork Gila)	1. Salt Cedar removal: 5 acres	• Reduce the spread of noxious weeds and improve watershed condition

Gila National Forest (continued)

Watershed	Project Description	Water Quality Benefits
Middle Fork of Gila River 1504000105 Gilita Creek 150400010502 Snow Canyon 150400010503	1. Salt Cedar Removal—380 acres 2. Re-seeding of areas burned at high severity during the 2012 Whitewater Baldy Complex Fire (Gilita Creek and Snow Canyon watersheds) 1. Post-fire rehabilitation at Snow Lake campgrounds related to Whitewater Baldy Complex Fire 2. Installation of sediment control structures in tributaries of Snow Canyon, adjacent to Snow Lake	• Reduce the spread of noxious weeds and improve watershed condition • Improve watershed condition and herbaceous ground cover in areas of high severity burn resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation. • Reduce sediment delivery to Snow Lake and downstream watercourses by relocating sediment outside the ordinary high water mark, and by trapping sediment behind control structures. •
Sapillo Creek 15040001080 (Sheep Corral)	1. Farm Flat prescribed burn: 2036 acres 2. CFRP thinning 80 acres 3. North Star Mesa juniper pulling – 75 acres	• Reduce hazardous fuels to prevent future threats to watershed condition from wildfire • Improve herbaceous ground cover
Sapillo Creek – Gila River 1504000109 Middle Mogollon Creek 150400010905 and Upper Mogollon Creek 150400010904	1. Mogollon Creek trail maintenance – 1.5 mile 1. Re-seeding of areas burned at high severity during the 2012 Whitewater Baldy Complex Fire	• Decrease erosion from trail and enhance drainage features • Improve watershed condition and herbaceous ground cover in areas of high severity burn resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation.
Mangas Creek 1504000203 (Bar 6 Canyon)	1. T-T Well reconstruction 2. Bar 6 Thinning—300 acres Ranger Station Well Reconstruction	• Improve the management of the cattle distribution resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation. • Reduce hazardous fuels; improve herbaceous ground cover.
Mule Creek – San Francisco River 1504000408 Little Dry Creek 150400040801, and Big Dry Creek 150400040802	1. Re-seeding of areas burned at high severity during the 2012 Whitewater Baldy Complex Fire	Improve watershed condition and herbaceous ground cover in areas of high severity burn resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation.

Gila National Forest (continued)

Watershed	Project Description	Water Quality Benefits
Headwaters Tularosa River 1504000401 (Headwaters Tularosa River)	1. 177 acres Habitat Stamp Thinning on Slaughter Mesa 2. 105 acres Rocky Mountain Elk Foundation Thinning on Slaughter Mesa 3. 400 acres Secure Rural Schools Thinning in Unit 5 4. Broadcast Burn (Unit 14) Slaughter Mesa 5. 100 acre Secure Rural Schools Thinning Unit 12 6. Maintenance on Campground Spring	• Increase herbaceous ground cover • Improve watershed condition and herbaceous ground cover due to improved livestock and wildlife distribution resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation. • Improve the management of the cattle/wildlife distribution resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation
Outlet Tularosa River 1504000402 Headwaters North Fork Negrito Creek 150400040202 Outlet North Fork Negrito Creek 150400040204 Sign Camp Canyon 150400040205 South Fork Negrito Creek 150400040203	1. Reconstruction of allotment boundary fences in Collin's Park 1. 2.2 miles of new pipeline construction and troughs 1. Reconstruction of allotment boundary fences damaged or destroyed in the 2012 Whitewater Baldy Complex Fire 2. Re-seeding of areas burned at high severity during the 2012 Whitewater Baldy Complex Fire (Sign Camp Cyn and SF Negrito Creek Watersheds) 1. Post-fire rehabilitation at South Fork Negrito campground related to Whitewater Baldy Complex Fire	• Improve watershed condition and herbaceous ground cover due to improved livestock and wildlife distribution resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation. • Reduce sediment delivery to South Fork Negrito Creek and downstream watercourses by relocating sediment outside the ordinary high water mark.
Pueblo Creek – San Francisco River 1504000406 Vigil Canyon 150400040604 Mineral Creek 150400040605, and Whitewater Creek 150400040607, and South Dugway-San Francisco River 150400040608	1. Hand thinning of pinion-juniper and broadcast burning of approximately 100 acres on Snare Mesa 1. Re-seeding of areas burned at high severity during the 2012 Whitewater Baldy Complex Fire	• Improve watershed condition and herbaceous ground cover, particularly in areas of high severity burn resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation.

Gila National Forest (continued)

Watershed	Project Description	Water Quality Benefits
Centerfire Creek – San Francisco River 1504000403 (Centerfire Creek; San Francisco River) Starkweather Canyon 150400040309 Spur Draw 150400040304	1. Wallow Roadside Pile Burning 2. Roughly 3.75 miles of fence reconstruction/major repair as result of Wallow Fire 3. Rebuilt Centerfire Bog Water Structures. 4. Maintenance on Dry Top Trick Tank, Strawberry Guzzler #1, Malpais Trick Tank, Black Peak Trick Tank, Swapp Booth Guzzler #1, #2 and #3. 1. Removal of encroaching juniper regeneration on 163 acres 1. Maintenance on existing erosion control structures, and additional rip-rap structures installed on the forest access road to Tucson Electric Powerline.	• Improve watershed condition and herbaceous ground cover due to improved livestock and wildlife distribution resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation. • Increase herbaceous ground cover Reduce sediment movement off of fragile soils at location of new power line installations.
Deep Creek-San Francisco River 1504000404 Saliz Canyon- San Francisco River 150400040403 Deep Creek 150400040405 Devil's Creek-San Francisco River 150400040406	1. Riparian fencing of approximately 5.3 miles of the San Francisco River 1. Reconstruction of allotment boundary fences damaged or destroyed in the 2012 Whitewater Baldy Complex Fire 2. Re-seeding of areas burned at high severity during the 2012 Whitewater Baldy Complex Fire 1. Installed drainage features and hardened approximately 1 mile of road and the Dark Sky campground	• Improve woody and herbaceous cover in the riparian corridor resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation. • Improve watershed condition and herbaceous ground cover due to improved livestock and wildlife distribution resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation. • Reduce erosion and sediment delivery to downstream watercourses •
Bear Creek 15040002050 (mainstem)	1. Salt Cedar Removal—13 acres.	• Reduce the spread of noxious weeds and improve watershed condition.

Santa Fe National Forest

Watershed	Project Description	Water Quality Benefits
Rio Chama (Coyote RD)	Education outreach to 5th-grade students: hands-on shocking & water quality collection. 20 students	• Provide students an opportunity to learn about healthy rivers, increase potential stewardship qualities
Jemez [Jemez River-Church Canyon] (Jemez RD)	Conduct collaborative field visits with NM G&F, NMED, Trout Unlimited, New Mexico Trout & Contractors to discuss restoration Authorize contractor to develop restoration plans for failed public fishing structures	• Improve cooperation & find common ground in planning stream restoration
Jemez [Rio Cebolla] (Jemez RD)	Lead multiagency & public effort to remove Brown Trout from the Cebolla. 29 seniors performed outreach providing river-friendly handouts, coloring sheets, & bumper stickers	Help maintain native-trout habitat. Increase public awareness and promote stewardship
Jemez [Rio Cebolla] (Jemez RD)	Conduct collaborative field visits with NM G&F, NMED, Trout Unlimited, New Mexico Trout to discuss restoration	• Improve cooperation & find common ground in planning stream restoration
Jemez [San Antonio Creek] (Jemez RD)	Hydrologic stabilize 2.25 miles of the 376 road from VCT boundary down to the hot springs.	• This work completed in the priority watershed, will decrease sediment detachment, transport, and loading.
Jemez [San Antonio Creek] (Jemez RD)	Seed 1-acre of directly contributing vegetated bench directly above the creek near the foot-bridge	• Decreased erosion & sedimentation by promoting cover on stream bank and adjacent upland.
Clear Creek (Cuba RD)	Repair 0.5-miles of Riparian pasture fencing. 1.2-mile of perennial stream channel improvements completed	• Riparian exclosures will allow for functional channel vegetation that will reduce sediment loading & improve stream channel temperatures. Perennial stream work will improve processing of sediment.

Santa Fe National Forest (continued)

Watershed	Project Description	Water Quality Benefits
Jemez [San Antonio Creek] (Jemez RD)	Hydrologically stabilize 300-feet of trail leading from the river up to the hotsprings.	• Decrease sediment detachment, transport, & loading.
Pecos Headwaters (Pecos Las Vegas RD)	Train electroshock & water-quality data collection skill to the National Hispanic Environmental Council, Minority Youth Environmental Training 2013 on the Pecos River. 40 students moved thru 4 stations	• Active training of minority youth to acquire stream-health data that will promote future stewardship qualities.
Pecos Headwaters (Pecos Las Vegas RD)	Active participant in the: o Upper Pecos Watershed Group o Pecos Collaboration Group (community partnership) o Sapello Watershed Group o Hermit's Peak Watershed Alliance	• Contributed to development of collaboration amongst State, Federal, local units of Government, NGOs, and local businesses. • Public outreach and involvement
Pecos Headwaters (Pecos Las Vegas RD)	Educational booth at Monastery Lake, 46 individual contacts. Led participant clean-up of the lake shoreline	• Increase knowledge of healthy lake-riparian interface, promote ongoing stewardship qualities. Improve camp/leave-no-trace techniques
Pecos Headwaters (Pecos Las Vegas RD)	Thinning (fuel reduction) in the: o Gallinas 98-acres o Upper Mora 71-acres Road maintenance, improve drainage & water bars o 40 miles	• Thinning will improve understory and roughness & decease sediment detachment and transport • Road maintenance actions will slow & dissipate overland & channeled flows and thus decrease sediment detachment & transport
Santa Fe River [Santa Fe Municipal Watershed] (Espanola RD)	44 acres prepared for Rx (prescribed fire)-thin, cut, loop&scatter, pile. 7 acres mechanically thinned & pile burned	• Help create a more wildfire resilient landscape. Reduce fire severities will reduce sediment (& nutrient) detachment, mobilization, transport, & deposition.

Santa Fe National Forest (continued)

Watershed	Project Description	Water Quality Benefits
Rito Penas Negras (Cuba RD)	2 ac of riparian exclosures completed 1-mile of perennial stream channel improvements completed	• Exclosures will allow for functional channel vegetation that will reduce sediment loading & improve stream channel temperatures. Perennial stream work will improve processing of sediment.
Rio de las Vacas (Cuba RD)	200-acres of prescribed fire completed adjacent to the riparian area.	• Prescribed fire will create an improved vegetative buffer that will better process upland overland flows and sediments

National Hispanic Environmental Council, Minority Youth Environmental Training 2013 co-hosted by the Santa Fe National Forest on the Pecos River.

Electroshock netting of fish.

Water quality training.

Natural Resources Conservation Service:

The Natural Resources Conservation Service (NRCS) in New Mexico delivers voluntary programs, products and services that help local people protect and improve natural resources on non-federal lands. This includes addressing the resource concern of water quality. For more Information visit: www.nm.nrcs.usda.gov

NRCS Field Offices across New Mexico have assisted individuals and groups of land users to address water quality resource concerns in a number of ways that support the goals of the New Mexico Environment Department's NPS program goals.

Below are specific categories where NRCS Conservation practices are having positive effects on water quality within HUC 8 Priority watersheds identified by the NMED Surface Water Quality Bureau. Following that is a brief description of NRCS Programs and Partnerships that participants are using to address water quality resource concerns statewide.

Nutrients

- Nutrient Management was applied on 3583 acres of crop and pasture lands to utilize resources efficiently and reduce nutrient runoff and leaching in 13 Priority HUC 8 watersheds.
- (3) Comprehensive Nutrient Management Plan that will reduce nutrient runoff and leaching developed by the NRCS field office and Technical Service Providers in Chaves County.

Pesticides

- Integrated Pest Management was applied on 7026 acres of crop, pasture, forest and other lands to reduce pesticide runoff and leaching in 16 Priority HUC 8 watersheds.

Specific Conductance

- Nutrient Management, Comprehensive Nutrient Management Plan, Prescribed Grazing and other grazing management practices could have had positive direct and indirect effects on lowering salts in runoff water and lowering specific conductance.

Low Flow Alterations

- 250 Feet of Diversions, 6 Ponds, 3 Dams, 26 Grade Stabilization Structures, 1 Grassed Waterway and 0.5 Acres of Wetland Creation were installed in 10 Priority HUC 8 watersheds. These will decrease NPS pollution by utilizing water efficiently and trapping sediment.

Temperature

- 1,030,391 acres of Prescribed Grazing in 23 Priority HUC 8 watersheds were implemented and would have positive direct and indirect effects on water temperature especially where riparian areas were included in the grazing plans.

E. Coli

- Nutrient Management was applied on 3583 acres of crop and pasture lands in 13 Priority HUC 8 watersheds. 3 Comprehensive Nutrient Management Plans, and 1,030,391 acres of prescribed grazing in 23 Priority HUC 8 watersheds could have positive direct and indirect effects on decreasing levels of *E. Coli* in identified surface waters.

Sediment

- 1,030,391 acres of Prescribed Grazing were implemented in 23 Priority HUC 8 watersheds.
- Access Control was implemented on 6873 acres in 5 Priority HUC 8 watersheds.
- Cover Crops, Conservation Crop Rotation, Conservation Tillage and Residue Management were applied on 7177 acres of cropland in 16 Priority HUC 8 watersheds to reduce sediment.
- 27,323 acres of Conservation Cover, Range Planting, Forage/Biomass Planting and Critical Area Treatments were applied in 12 Priority HUC 8 watersheds.
- 10,587 feet of Stream Bank and Shoreline Protection were installed in 2 Priority HUC 8 watersheds.
- 6818 feet of Windbreaks/Shelterbelts, 308 feet of Herbaceous Wind Barriers and Tree/Shrubs established on 129 acres in 6 Priority HUC 8 watersheds.
- 5792 acres of Irrigation Water Management were installed in 12 Priority HUC 8 watersheds.

Arsenic

- Nutrient Management and the Comprehensive Nutrient Management Plans may have had positive direct and indirect effects on decreasing levels of arsenic in identified waters.

Turbidity

- Conservation Tillage and Residue Management, Irrigation Water Management, Conservation Buffers, Cover Crops, and Conservation Crop Rotation could have had positive direct and indirect effects on decreasing levels of turbidity.

Sulfates

- Nutrient Management the Comprehensive Nutrient Management Plans may have had positive direct and indirect effects on decreasing levels of sulfates in identified waters.

Total dissolved Solids

- Conservation Tillage and Residue Management, Irrigation Water Management, Conservation Buffers, Cover Crops, and Conservation Crop Rotation could have had positive direct and indirect effects on decreasing levels of total dissolved solids.

Selenium

- Nutrient Management may have had positive direct and indirect effects on decreasing levels of Selenium in drinking water.

Boron

- Nutrient Management may have had positive direct and indirect effects on decreasing levels of Boron in drinking water.

Aluminum

- Nutrient Management may have had positive direct and indirect effects on decreasing levels of Aluminum in drinking water.

Dissolved Oxygen

- Nutrient Management, Comprehensive Nutrient Management Plans, and Prescribed Grazing may have had positive indirect effects on maintaining levels of Dissolved Oxygen in identified surface waters.

Ammonia, (un-ionized)

- Nutrient Management and Comprehensive Nutrient Management Plans may have had positive direct and indirect effects on decreasing levels of Ammonia, (un-ionized) in identified waters

Environmental Quality Incentive Program National Water Quality Initiative

Under the 2013 National Water Quality Initiative (1) contract was written to treat 117 acres of land within the Gallinas HUC 8 watershed and (2) contracts were written to treat 241 acres of land within the Anthony Wash and the Mossman HUC 8 watersheds. Planned conservation practices that will improve water quality are Forest Stand Improvement, Prescribed Grazing and Waste Transfer

NRCS Partnerships that address water quality using innovative approaches to leverage dollars and expertise::

- Agricultural Water Enhancement Program (AWEP)
- Cooperative Conservation Partnership Initiative (CCPI)
- Conservation Innovation Grants (CIG)
- Small Watershed Program
- American Indian Nations
- NM Acequia Associations
- State and Local Governments
- Other Non-Profits and NGOs
- NM Association of Conservation Districts
- NM Coalition of Conservation Districts

New Mexico Department of Game and Fish

The New Mexico Department of Game and Fish reviewed a list of impaired streams that are the priorites for water quality improvement described in the 2009 New Mexico Nonpoint Source Management Plan, and reported the following actions taken.

Assessment Unit Name	AU_ID	Impairments	Actions Taken in 2013
Jemez Watershed (13020202)			
East Fork Jemez (VCNP to headwaters)	NM-2106.A_10	Temperature, Turbidity	Thinned 75 acres
Pecos Headwaters Watershed (13060001)			Repaired Cowles Ponds. Also see the detailed report on Rio Mora project.
Rio Hondo Watershed (13060008)			Repaired and sealed Blue Lake
Rio San Jose Watershed (13020207)			
Bluewater Creek (Bluewater Rsvr to headwaters)	NM-2107.A_01	Nutrients, Temperature	Thinned 411 acres
Tularosa Valley (13050003)			Burned 627 acres

NEW MEXICO ENVIRONMENT DEPARTMENT