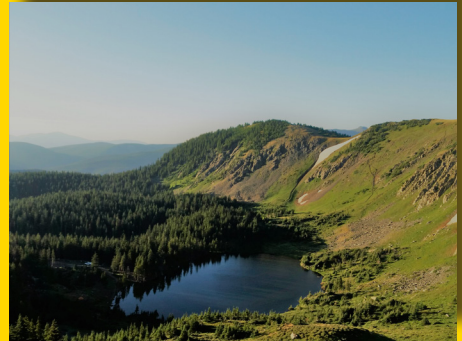


State of New Mexico
NONPOINT SOURCE
MANAGEMENT PROGRAM



2017 Annual Report

*New Mexico Environment Department
Surface Water Quality Bureau
Watershed Protection Section*



State of New Mexico Nonpoint Source Management Program 2017 Annual Report

Published By:

The New Mexico Environment Department
Surface Water Quality Bureau
Watershed Protection Section
1190 St. Francis Drive
Santa Fe, New Mexico 87502

In cooperation with:

The Bureau of Land Management, New Mexico State Forestry Division, United States Forest Service, and the Natural Resources Conservation Service.

Copies of this report and other reports are available on the Surface Water Quality Bureau website:

www.env.nm.gov/surface-water-quality/watershed-protection-section/





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BUTCH TONGATE
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Deputy Secretary

January 31, 2018

David Garcia
Acting Water Division Director
U.S. Environmental Protection Agency, Region 6
1445 Ross Ave., Suite 1200
Dallas, Texas 75202

Dear Mr. Garcia,

I am pleased to submit New Mexico's 2017 Nonpoint Source Management Program Annual Report. In this report we document the progress made in meeting the program milestones set forth in our Nonpoint Source Management Program.

The Nonpoint Source Management Program has six core objectives and I would like to briefly highlight our accomplishments made during 2017 for each:

1. Under the **watershed-based planning** objective, the Black Canyon Watershed-Based Plan (WBP) was completed and accepted by EPA in May 2017. A WBP for portions of the large Rio Puerco basin was submitted for final review in 2017. Both plans were reviewed by Region 6, and meet the planning elements in the *Nonpoint Source Program and Grants Guidelines for States and Territories*.
2. We report the successful completion of two projects funded under Section 319 that **address water quality problems**. We are also glad to report that NMED is supporting five new projects that implement WBPs beginning in 2017, also funded under Section 319.
3. To better **protect water quality**, The Surface Water Quality Bureau issued conditional certification for 52 Nationwide Section 404 permits, and reviewed 62 projects covered by existing Section 404 permits for consistency with their certifications. Nonpoint Source Program staff also carried out their responsibilities related to surface water quality protection under the New Mexico Mining Act.
4. Related to **education and outreach**, four issues of the newsletter *Clearing the Waters* were published in 2017. Additional publications, workshops, and field tours were included in projects completed in 2017. Of special note, the technical guide titled *The Plug and Pond*

Treatment: Restoring Sheetflow to High Elevation Slope Wetlands in New Mexico documents innovative restoration techniques developed under a completed Wetland Program project.

5. In **groundwater quality protection**, the New Mexico Environment Department's Groundwater Quality Bureau conducted ten water fairs where local residents could have well water tested, and issued twelve permits for large septic tank leachfield systems and surface disposal sites.
6. Finally, we report promising developments related to **interagency cooperation** and coordination. The Natural Resources Conservation Service (NRCS) reported significant implementation now underway under the National Water Quality Initiative (NWQI). NMED also formed a Nonpoint Source Advisory Committee and conducted two public workshops to collect early input from the committee for the next revision of New Mexico's NPS Management Program Plan.

We thank you for your support of these efforts and look forward to working together to improve water quality and reduce nonpoint source pollution in New Mexico in the future. Should you have any questions about New Mexico's Nonpoint Source Management Program Annual Report please feel free to contact me (505-827-2819) or Abe Franklin of my staff (505-827-2793).

Sincerely,



Shelly Lemon

Bureau Chief
Surface Water Quality Bureau



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Executive Summary

This annual report to the United States Environmental Protection Agency (EPA) provides an overview of Clean Water Act (CWA) Section 319 Nonpoint Source Management Program related activities conducted in New Mexico in 2017. Polluted runoff, or nonpoint source (NPS) pollution, is defined by 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 ground water. Atmospheric deposition and hydrologic modification are also sources of nonpoint source pollution.” 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 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 milestones for which a specific schedule is provided in the Nonpoint Source Management Program are reported on pages 6-9. Significant achievements include:

- A request for grant applications (RFGA) to develop comprehensive projects that will revise existing Watershed-Based Plans (WBP) or develop new WBPs was released in November 2017, with applications due in January 2018.
- The Black Canyon Watershed-Based Plan was completed and accepted by EPA in May 2017. A WBP for portions of the large Rio Puerco basin was submitted for final review in 2017.
- The Cimarron WBP was revised in 2017 to include detailed reach assessments, and the Moreno Valley Wetlands Action Plan was also included as an appendix.
- A Request for Proposals (RFP) for Section 319 funded projects which implement WBPs was completed in 2017 resulting in five new projects which are in progress.
- Two implementation projects scheduled to be complete in 2017 were completed as planned.
- State-funded watershed and riparian restoration projects were developed and managed in 2017. Fifteen projects were in progress at the beginning of the year, two were completed and several were nearing completion at the end of 2017. An RFP for new River Stewardship Program projects was completed in 2017, and fourteen new projects began in the spring.
- A Success Story nomination for Bluewater Creek was accepted in December 2017.
- The Surface Water Quality Bureau newsletter *Clearing the Waters*, was published four times.
- The US Army Corps of Engineers developed new Nationwide Permits under Section 404 in 2016, and NMED certified them on March 1, 2017.



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- The New Mexico Wetlands Program Plan 2017 update was approved on March 14, 2017.
- Two new Wetlands Program Development projects and one new partial project have been awarded. One project funded under CWA Section 104(b)(3) Wetlands Program Development Grants was completed this year.
- *The Plug and Pond Treatment: Restoring Sheetflow to High Elevation Slope Wetlands in New Mexico* technical guide was completed in 2017 with funds from CWA Section 104(b)(3).

In addition, five National Forests, the Bureau of Land Management, the Natural Resources Conservation Service, and the New Mexico State Forestry Division provided information for the report on their activities related to NPS pollution control in 2017.





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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 2017 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 EPA. Activities and projects reported are CWA Section 319 projects, and those implemented by the state-funded River Stewardship Program, 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 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 ground water. 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
- ◇ 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 kinds of NPS pollution are temperature, nutrients, and bacteria.



Debris and runoff flowing into the Galinas River in the City of Las Vegas, New Mexico.



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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. At the heart of the Section 319 program in New Mexico is working with stakeholders to seek solutions through collaboration in developing and implementing watershed-based plans that mitigate NPS pollution.

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.



Stakeholders participate in a field tour of Holy Ghost Creek to discuss potential project locations.

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 as the *State of New Mexico CWA §303(d)/§305(b) Integrated Report*.



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New Mexico's Nonpoint Source Management Program

The overall, long-term goal of New Mexico's NPS Management Program is:

To implement an adaptive watershed-based restoration and protection program with the active assistance of stakeholders, for all watersheds within New Mexico, to meet and maintain water quality standards and designated uses of surface water and ground water resources.

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 Nonpoint Source Management Program planning document (NPS Management Plan). The current NPS Management Plan was approved in early 2015 and is available at: www.env.nm.gov/swqb/wps/Plan.

Our goal is to manage a balanced program that addresses both existing impairments (as listed in the 303(d)/305(b) *Integrated Report*) and prevents future impairments. The focus on existing impairments is directed at impaired waters in three different impairment categories. The large majority of these waters have one or more approved Total Maximum Daily Loads (TMDLs) that set quantitative goals for impairment parameters. The TMDL is the total amount of pollutant a waterbody can assimilate daily and still meet water quality standards. In calculating a TMDL for an impaired waterbody, a target value of pollutant load reduction is also provided. Most of these streams are within Category 4A in the 303(d)/305(b) *Integrated Report*. A smaller number of priority streams are thought to be impaired by low flow conditions rather than excessive pollutants. Thirteen such streams are listed in the 2016-2018 303(d)/305(b) *Integrated Report* under Category 4C. The remaining category (Category 4B) is for streams with sufficient planning completed that a TMDL is not required. Sandia Canyon, an ephemeral drainage on the Pajarito Plateau, is New Mexico's only stream with an approved Category 4B demonstration.

An important component of this process is the watershed-based plan (WBP) approach as outlined in the guidance provided in EPA's *Nonpoint Source Program and Grants Guidelines for States and Territories* (<http://www.epa.gov/sites/production/files/2015-09/documents/319-guidelines-fy14.pdf>). 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. NMED intends to support watershed-based planning through a competitive statewide request for grant applications (RFGA), conducted approximately annually, and through technical support provided to partner agencies and stakeholder groups interested in water quality. The first such RFGA was released in November 2017, and is similar to past requests for proposals (RFPs) for watershed-based planning projects. More information on watershed-based planning is available at www.env.nm.gov/surface-water-quality/wbp.



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NPS Management Program Milestones

NMED seeks to meet the long-term goal of the NPS Management Program by taking specific actions described in the NPS Management Plan taken over approximately a five-year period. The NPS Management Plan includes at its core 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 Ground Water 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 time frame, and its status.

Objective number	Objective Short Name	Milestone (abbreviated)	Schedule	Status
1	Watershed Based Planning	WBPs and related documents are available in an organized web page, which will also provide a WBP submittal process.	2014	This milestone was met in 2015 (www.env.nm.gov/surface-water-quality/wbp/).
1	Watershed Based Planning	A small procurement process is developed to update existing watershed plans.	2015	Milestone not met.
1	Watershed Based Planning	New watershed plans meet all nine planning elements, or are accepted by EPA as alternative plans.	2014: 1 plan, 3 watersheds. 2015: 3 additional plans, 9 additional watersheds. 2016: 2 additional plans, 13 additional watersheds. 2018: 1 additional plan, 1 additional watershed.	Not applicable to 2017. One WBP covering 2 priority watersheds (in the Black Canyon Creek watershed) was completed in 2017. In 2014 through 2017, six WBPs covering 62 priority watersheds have been completed.



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Objective number	Objective Short Name	Milestone (abbreviated)	Schedule	Status
1	Watershed Based Planning	Existing watershed-based plans are updated.	2016, 2017, and 2018: 2 plans each year are updated, one plan each year is accepted by EPA.	Milestone not met, although the Cimarron WBP was revised in December 2017 (www.env.nm.gov/surface-water-quality/accepted-wbp/) and two other projects in progress include tasks for WBP revision.
2	Addressing Water Quality Problems	Watershed restoration projects described in watershed-based plans or accepted alternative plans are initiated in two priority watersheds per year.	2 watersheds per year, 2014 through 2018.	This milestone was met. Five Section 319 projects that implement WBPs were initiated in 2017, with planned activities in 11 priority watersheds.
2	Addressing Water Quality Problems	Wetlands Action Plans (WAPs) are implemented in at least one priority watershed per year.	1 watershed per year, 2014 through 2018.	Milestone met. Two River Stewardship Program projects that began in 2017 are in priority watersheds and implement WAPs. These are in the Gallinas River and Comanche Creek watersheds.
2	Addressing Water Quality Problems	Improve water quality in priority watersheds, meeting EPA performance measures (Success Stories).	2 watersheds annually, 2014 through 2018.	This milestone was met with EPA approval of the Nonpoint Source Success Story for Bluewater Creek (www.epa.gov/nps/nonpoint-source-success-stories), which includes three priority watersheds.
3	Water Quality Protection	NMED will fund post-fire actions that reduce sedimentation and protect aquatic habitat.	Any year in which a major and unnaturally intense wildfire occurs in the watershed of a cold or cool water stream.	No major wildfires occurred in 2017.



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Objective number	Objective Short Name	Milestone (abbreviated)	Schedule	Status
3	Water Quality Protection	The CWA §303(d)/§305(b) <i>Integrated Report</i> does not indicate an increase in the percentage of assessed stream miles designated as impaired.	The next Integrated Report is scheduled for completion in 2018.	This milestone is not scheduled for 2017.
4	Education and Outreach	<i>Clearing the Waters</i> is published quarterly.	Quarterly	This milestone was met for 2017 with publication of four issues of <i>Clearing the Waters</i> (www.env.nm.gov/surface-water-quality/news-letters/)
4	Education and Outreach	<i>Clearing the Waters</i> circulation increases to 2000 by 2018.	2018	This milestone is scheduled for 2018. <i>Clearing the Waters</i> circulation was 1,608 at the end of 2017, up from 1,321 at the end of 2016.
4	Education and Outreach	The Forest and Watershed Health Program Virtual Library experiences an annual increase in internet hits of at least 10% between 2014 and 2018.	Annually	Milestone was not met. The Virtual Library (www.allaboutwatersheds.org) had 168,046 hits in 2016 and 169,521 hits in 2017 for a 0.9% increase in traffic.
6	Interagency Cooperation	NRCS reports that agricultural BMPs funded under NWQI or other conservation programs have been implemented, with sufficient details to enable WPS to estimate pollutant load reductions.	Annually	Milestone met. WPS staff estimated that one reported NWQI practice, cover cropping of 74.2 acres, might meet approximately 1% of the <i>E. coli</i> load reduction goal in an approved TMDL.



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Objective number	Objective Short Name	Milestone (abbreviated)	Schedule	Status
6	Interagency Cooperation	The NPS Management Program Annual Report is submitted to EPA by January 31 and made available to the public in February.	Annually	Milestone met. The NPS Annual Report was submitted in January 2017.
6	Interagency Cooperation	USACE approves a programmatic agreement with NMDOT to establish the framework for an APRM program.	2015	This milestone was met in 2014.
6	Interagency Cooperation	The MOU between NMED and USFS is renewed.	2017	This milestone was met in 2017, with approval of a new MOU in June.
6	Interagency Cooperation	The grant from DOE that supports the work of the DOE Oversight Bureau is re-issued.	2018	Not scheduled for 2017.
6	Interagency Cooperation	A revised NPS Management Plan is submitted to the EPA Regional Administrator.	2018	Not scheduled for 2017.

The following sections mention groups of approved projects and several individual projects by their titles and project numbers. For a full list of projects and details such as project work plans, see www.env.nm.gov/nmed_319_and_rsp_project_list.

NPS Management Program Objectives Completed in 2017

- A Request for Grant Applications (RFGA) to develop comprehensive projects that will revise existing WBPs or develop new WBPs was released in November 2017, with applications due in January 2018.



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- WPS provided contract oversight and technical assistance for ongoing watershed-based planning projects. No watershed-based planning projects were completed in 2017 (and none were scheduled to be complete). One project completed at the end of 2015 (The Black Canyon Watershed-Based Plan, project 12-C) provided material for WPS staff to complete a new watershed-based plan that was accepted by EPA in May 2017. WPS staff working with the Rio Puerco Management Committee developed a WBP for portions of the large Rio Puerco basin and submitted it to EPA for review in 2017.
- The Cimarron WBP was revised in 2017 to include detailed reach assessments conducted as part of the completed Ponil Creek Restoration Project, Phase II on-the-ground project (Project 14-D). The Moreno Valley WAP was also included as an appendix in the revised Cimarron WBP.
- A Request for Proposals (RFP) for projects that implement WBPs was completed in 2017. Five new projects began in 2017 under this RFP. These projects are funded with Section 319 watershed project funds.
- WPS continued to provide contract oversight and technical assistance for ongoing implementation projects. Two implementation projects scheduled to be complete in 2017 were completed as planned.
- State-funded watershed and riparian restoration projects were developed and managed in 2017. Fifteen projects were already in progress at the beginning of the year, and several were nearing completion at the end of 2017. An RFP for new River Stewardship Program projects was completed in 2017, and fourteen new projects began in the spring. The legislative process for new projects to be supported with state fiscal year 2019 funding appears favorable.
- A Success Story nomination for Bluewater Creek was accepted in December 2017. Bluewater Creek upstream of Bluewater Reservoir was delisted for turbidity in 2010 and nutrients in 2014. The Success Story nomination describes a Section 319 project implemented by the WildEarth Guardians and management of feral horses by the Cibola National Forest along with statistical evidence that water quality improved. New Mexico's Nonpoint Source Success Stories are summarized at <https://www.epa.gov/nps/nonpoint-source-success-stories>.
- NMED carried out its responsibilities under Section 401 of the Clean Water Act, regarding dredge and fill permits. The US Army Corps of Engineers developed new Nationwide Permits (NWPs) under Section 404 in 2016, and NMED certified them on March 1, 2017 (www.env.nm.gov/swqb/404/2017NWPcert.pdf).
- NMED carried out its duties under the New Mexico Mining Act. Surface Water Quality Bureau staff conducted water quality reviews at active and proposed mining sites, reviewed Mining Act permit applications, inspected mine sites, and ensured that mining activities will not violate surface water quality standards. Twenty-four reviews were conducted in total, as detailed in a section below.
- The SWQB part of the NMED web site and several main sub-pages were reformatted into WordPress in 2017. The web site's main content was reformatted and updated to provide more intuitive access to key information.



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- NMED staff presented information on the NPS Management Program, including priorities for Section 319 and River Stewardship funding, to Soil and Water Conservation Districts (SWCDs) at three regional meetings of the New Mexico Association of Conservation Districts (NMACD) in June. These meetings were held in Truth or Consequences, Belen, and Las Vegas.

No activities related to fire outlined in the NPS Management Program were carried out in 2017. New Mexico received moderate precipitation in 2017, and experienced few fires of significant size or intensity. The Bonita Fire near Cañon Plaza received relatively high public interest because of its potential impacts to the Vallecitos public water supply (which uses the Rio Vallecitos). With only 170 acres in the high severity category, it was not deemed “major” per the NPS Management Program, however. The winter of 2017-2018 has seen below average precipitation, and current predictions suggest that precipitation in New Mexico during the first three months of 2018 may be well below average. With abundant fine fuels present after several wetter years, fire behavior may be significantly greater in 2018 than in 2017 as a result.

Interagency Cooperation Highlights

NMED continues to forge and maintain relationships to promote interagency cooperation. This is critical in New Mexico where over 30% of the land and more than 50% of perennial stream miles are managed by the U.S. Forest Service (USFS) and the Bureau of Land Management (BLM). The New Mexico Water Quality Protection Agreement, a Memorandum of Understanding (MOU) between the USFS Southwest Region and NMED, was approved in June 2017. The agreement encourages collaborative implementation of watershed approaches to restore watersheds not meeting clean water, natural resource, and public health goals and to sustain healthy conditions in other watersheds.

A coordination meeting was held with the USFS on November 8, 2017 between staff from three of the five National Forests in New Mexico, the USFS Regional Office, and SWQB programs. Staff from the national forests provided updates on status of land and resource management planning (also known as forest planning) now underway in New Mexico. Forest plans set major goals for each national forest over an expected time frame of fifteen or more years. The current forest plans were all developed in the 1980s. The Cibola, Santa Fe, and Carson National Forests are now all at approximately the same stage of forest plan development. They are each making final edits to their forest plans based on comments received on preliminary draft plans during public comment periods conducted in 2016 and 2017. In 2018, these three Forests plan to release final forest plans along with draft Environmental Impact Statements that analyze the impacts expected from implementing the plans and several alternatives. The Gila National Forest plans to collect public comments on draft plan components in spring 2018, and the Lincoln National Forest is completing their assessment of current conditions and resources on the Forest.

Each of these forest plan revisions will comply with the 2012 Planning Rule, which requires components for the maintenance and restoration of the ecological integrity of aquatic ecosystems and watersheds, water quality, and water resources in the plan area, including lakes, streams, wetlands, and sources of drinking water.

SWQB Monitoring and Assessment Section staff provided updates on the *2018-2019 Clean Water Act Sections 303(d)/305(b) Integrated Report*, and on the Upper Rio Grande and San Juan Basin water quality surveys.



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Each National Forest also presented their progress implementing Watershed Restoration Action Plans, and NMED and USFS staff discussed options for selecting priority watersheds for the upcoming nonpoint source management plan revision. USFS staff presented information on a developing Regional Riparian & Aquatic Ecosystem Strategy that promises to renew Forest Service emphasis on careful management of riparian areas.

The National Water Quality Initiative (NWQI) evolved somewhat in New Mexico in 2017. Natural Resources Conservation Service (NRCS) staff engaged NMED staff in a discussion about priority watersheds. NMED and NRCS agreed to recommend changes to the priority watersheds for federal fiscal year 2018, and their changes were accepted by the NRCS Regional Conservationist. The result is that three new NWQI watersheds have been added in the Animas River watershed in San Juan County, and three watersheds have been removed from the list of priority watersheds. The newly added watersheds are the Tucker Canyon-Animas River watershed (hydrologic unit code, or HUC, 140801041003), Estes Arroyo-Animas River (HUC 140801041004), and Flora Vista-Animas River (HUC 140801041005). These three watersheds are in part of the Animas valley in New Mexico with the most agriculture, and are within the area covered by the 2016 Lower Animas Watershed Based Plan (available at www.env.nm.gov/surface-water-quality/accepted-wbp). Four other lower Rio Grande watersheds south of Las Cruces continue to be designated NWQI priority watersheds. These are the Alameda Arroyo-Rio Grande (HUC 130301020608), Achenback Canyon-Rio Grande (HUC 130301020704), Mossman Arroyo (HUC 130301020801), and Anthony Wash-Rio Grande (HUC 130301020803) watersheds. The Arroyo Pecos-Gallinas River (HUC 130600010805), Rincon Arroyo-Rio Grande (HUC 130301020404), and Tonuco Draw-Rio Grande (HUC 130301020502) watersheds were removed as priority watersheds for NWQI. These watersheds were removed because there are relatively few qualified and interested applicants for NRCS programs in those areas.

Relative to plans for 2017 described in the 2016 NPS Annual Report, NRCS provided a table of practices implemented under NWQI in 2017, on page 79 in the section below, **Additional Management Practices by Non-NMED Agencies**. Several of these practices relate directly to water quality improvement, and some are supporting practices that are part of larger integrated systems that are expected to improve surface water quality. For example, the 74.2 acres of cover crop reported are on fields near dairies where manure is spread as both a disposal method and to increase the amount of feed produced in these fields. Cover cropping helps manage and retain soils in between feed crops, and also reduces runoff. Reduced runoff decreases the amount of sediment and nutrients leaving the fields, and hypothetically reduces loading of bacteria to the nearby Rio Grande (which is listed as impaired by bacteria).

WPS staff used the Revised Universal Soil Loss Equation (within the EPA Region 5 model spreadsheet) to estimate pollutant load reductions for establishment of 74.2 acres of cover crop under NWQI. The cover crop was assumed to be present in four months per year when the acres would otherwise be fallow. Cover cropping reduced sediment loading by approximately 1.6 tons per year, phosphorus by 3 lb/yr, and nitrogen by 5.7 lb/yr. Soil is typically made up of about 1% viable bacteria. If 1% of those bacteria are *E. coli* (which have a mass of about 1×10^{-12} gram each), then the sediment load reduction equates to approximately 1.45×10^{14} colony forming units (CFU) per year of *E. coli* load reduction. This result averages about 4.0×10^{11} CFU per day, compared with a load reduction goal in the TMDL of 2.5×10^{13} CFU per day at moderately high flows (around 826 cubic feet per second).



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Related to the possible role of NWQI in the Mossman Arroyo and Anthony Wash watersheds, the manure digester project reported in NPS Annual Reports for 2014 and 2015 is still moving forward, albeit slowly. Souder Miller and Associates (SMA), on behalf of their client R-Qubed Energy, Inc. requested NMED comments on a scoping letter for an Environmental Assessment required because of the federal funding source (USDA Rural Development funds). USDA Rural Development had issued a similar scoping letter in 2015, indicating project development is delayed approximately two years.

The New Mexico Department of Transportation (NMDOT) completed an agreement with the Federal Highways Administration and the U.S. Army Corps of Engineers to implement an Advance Permittee-Responsible Mitigation (APRM) Program in 2014. The APRM program requires mitigation sites to be protected in perpetuity through one of several protective measures. Currently, the New Mexico Land Conservancy (NMLC) is overseeing a partnership to complete conservation easements to protect the properties in perpetuity as follows. The Taos Land Trust is completing the easement for the NM 434 Coyote Creek site, the Rio Grande Agricultural Land Trust is completing the easement for the Middle Rio Grande Site near Belen, and the NMLC will work on the Gila River site near Cliff. Due to reluctance by the private land owner at the Gila River site to place the parcel in a conservation easement, NMDOT may elect to move the easement to another prospective wetland location near Ruidoso.

The NMED Construction Programs Bureau (CPB) completed an annual report for 2017, available at www.env.nm.gov/construction-programs/reports. The report includes a tabular list of projects in progress, some of which may address NPS pollution through centralization of wastewater treatment. For example, although it is not classified as an NPS project, the Village of Tijeras project “CWSRF 063” has as its goal “to install a community-wide collection system that serves all residents and provides services to outlying county residents. Phase II will provide service to approximately 35 residents in 11 households.” This project is located in the watershed of Tijeras Creek, a stream with recently completed nutrient TMDLs. The Clean Water State Revolving Fund (CWSRF) program accepts funding applications annually. Eligible projects include publicly or privately-owned projects that implement NPS management programs. CPB encourages entities to apply for NPS projects.

NMED conducted two day-long workshops in fall 2017, to solicit early input on the 2019 NPS Management Plan revision. Dubbed the Nonpoint Source Advisory Committee, over 50 participants converged at Ghost Ranch near Abiquiu (on October 18) and Elephant Butte Lake State Park near Truth or Consequences (on November 15), to share opinions and ideas on watershed prioritization, alternatives to watershed-based plans, key elements of successful projects, water quality monitoring by partner organizations, and other topics. A combined report on these workshops prepared by facilitator Rosemary Romero will be posted at: www.env.nm.gov/surface-water-quality/nps-plan.

NPS Management Program Objectives for 2018

The WPS has identified the following activities from the 2014 NPS Management Plan to meet program objectives in 2018.

- The RFGA for comprehensive projects to revise existing watershed-based plans or develop new watershed-based plans released in November 2017 will be completed in 2018, with new projects planned to start



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in late spring, 2018.

- WPS will continue to provide contract oversight and technical assistance for ongoing watershed-based planning projects. Six watershed-based planning projects in progress are listed in the following table.

Project Number(s)	Project Title	Project completion date	Streams included	Number of priority watersheds in project area
14-I	Ute Reservoir Watershed-Based Plan for Water Quality Restoration (Ute Reservoir WBP)	January 31, 2018	Canadian River, Pajarito Creek, Ute Creek	22
15-S, 16-F	Rio Fernando de Taos Watershed Based Plan	April 1, 2019	Rio Fernando de Taos	2
16-G	Watershed-Based Planning within the Upper Agua Chiquita Drainage Basin	June 30, 2019	Agua Chiquita Creek	2
16-H	Upper Pecos Watershed-Based Plan Update and Revision	December 31, 2018	Pecos River, Holy Ghost Creek, Soldier Creek, Cow Creek	5
16-I	Watershed-Based Plan for the Upper Rio Grande Watershed, Comanche Creek Sub-watershed	June 30, 2019	Comanche Creek	1
16-J	Rio de las Vacas Watershed-Based Plan	May 31, 2020	Rio de las Vacas	3

- The Rio Puerco WBP is in review by EPA and may be accepted in early 2018. WPS will submit a revised Ute Reservoir Watershed-Based Plan for EPA review by June 30, 2018. WPS also plans to submit a draft WBP for Embudo Creek, by September 30, 2018.
- A new RFGA for projects that will implement WBPs, to be funded with Section 319 watershed project funds, will be released in the first quarter of 2018. The resulting new projects are scheduled to begin in summer August 2018.
- WPS will continue to provide contract oversight and technical assistance for ongoing implementation



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projects. Three Section 319 implementation projects are scheduled to be complete in 2018. These are “On-The-Ground Improvement Projects for the Upper Gallinas River and Porvenir Creek Phase II” (Project 14-J), “Upper Gallinas River Monitoring” (Project 15-E), and “Jemez National Recreation Area Riparian Protection Project” (Project 15-T).

- WPS will seek and attend training in project management in 2018, to improve oversight and management of projects.
- State-funded watershed and riparian restoration projects will be developed and managed in 2018. Eleven River Stewardship Program projects will be complete by June 30, and fourteen newer projects are scheduled to be completed after 2018. If the New Mexico Legislature passes funding for the River Stewardship Program during the 2018 legislative session, an RFP to select projects will be developed soon thereafter.
- At least one Success Story nomination will be submitted before September 1, 2018.
- NMED will continue to carry out its responsibilities under Section 401 of the Clean Water Act, regarding dredge and fill permits.
- NMED will continue to carry out its duties under the New Mexico Mining Act. Surface Water Quality Bureau staff will conduct water quality reviews at active and proposed mining sites, review Mining Act permit applications, inspect mine sites, and ensure that mining activities will not violate surface water quality standards.
- Additional sub-pages within the SWQB part of the NMED web site will be reformatted and updated in 2018 to provide more intuitive access to key information by users. SWQB staff will also continue to encourage stakeholders to sign up for the SWQB mailing list (managed with the GovDelivery email delivery system) via the link on the bottom of most SWQB webpages.
- NMED staff will present information on the NPS Management Program, including priorities for Section 319 and River Stewardship funding, to SWCDs at regional meetings of the NMACD.
- The New Mexico Nonpoint Source Management Program is scheduled to be revised in 2019. In 2018, a draft NPS Management Plan will be submitted to EPA for technical review prior to a public comment period.

NPS Management Program Problems and Concerns

The NPS Annual Reports for 2015 and 2016 described internal challenges with procurement. Contract development through RFPs, small procurements, and contract amendments continued to be challenging in 2017. For example, the most recent RFP for watershed implementation projects (supported with Section 319 funds) was first submitted for internal review on July 8, 2016. After internal review, a substantively identical RFP was released on October 27, 2016. Proposals were due by December 22, 2016, and following evaluation (including



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lengthy review and approval of an Evaluation Committee Report by the State Purchasing Division) contracts were first submitted for review on May 24, 2017. The final contract in the group was approved on December 27, 2017. In general, the increased time requirement is caused by stricter adherence to existing rules and laws such as requirements that vendors be properly registered in several state and federal databases, compounded by an absence of stable procedures (within NMED and the State Purchasing Division), and workloads that prevent responsible staff from completing timely reviews and re-reviews when problems are addressed.

A new process is underway for the next round of watershed-based planning projects. Rather than an RFP used to select vendors, a Request for Grant Applications (RFGA) is being used to select agency partners and community-based private organizations who will be subgrantees, following examples of many other states for their NPS Management Programs. The new process is expected to eliminate the need for some of the procedural steps and requirements for RFPs and contracts, and may be significantly more efficient. A similar process is in development for the next round of watershed implementation projects.

The budget proposed by the Office of Management and Budget (also known as the President's Budget Request) would eliminate Section 319 funds for states in federal fiscal year 2018. As of January 2018 both houses of Congress are proposing funding levels similar to the amounts appropriated for federal FY 2017 (www.acwa-us.org/documents/house-appropriations-fy18-updated-funding-chart/ is a good source of information on this). The delay in Congress finalizing the federal budget combined with the zero funding in the President's Budget have resulted in a more conservative approach by senior financial managers at NMED, in which (for example) the NPS Management Program has been prevented from routing for approval the new RFGA for watershed implementation projects mentioned above. This conservative approach may result in a lag in spending that could increase New Mexico's unliquidated obligations, if funding levels remain relatively stable. The increased uncertainty complicates NMED's planning to use federal grants.

One watershed-based planning projects completed in 2016, for Embudo Creek (Project 12-H), still has not resulted in an EPA-accepted watershed-based plan. Another project, for the Ute Reservoir Watershed-Based Plan being completed in January 2018 (Project 14-I), may require in-house effort by NMED, working with local cooperators, to produce a WBP that can be accepted by EPA. Project officers for several other WBP projects report that their projects are behind schedule, often citing the longer than anticipated period required for quality assurance project plan (QAPP) development and approval. More time is needed to determine if adjustments made in 2016 (stating clearer deliverables and stricter terms of payment in agreements with cooperators) will actually result in a higher success rate of WBP projects, but SWQB staff are beginning to contemplate other approaches to completing WBPs that may be described in a revised NPS Management Plan.

No Section 319 projects (planning or on-the-ground) and no River Stewardship Program projects were terminated prematurely in 2018. Projects terminated early as described in the 2016 NPS Annual Report were affected by lack of detailed planning or full commitment by stakeholders. Approaches to reduce the failure rate of projects were summarized in the 2016 NPS Annual Report. In the new RFGA for watershed-implementation projects drafted in 2017, a new evaluation criterion was included that explicitly considers past performance



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by cooperators. In 2018, WPS will seek project management training to improve oversight and management approaches of projects.

Pollutant Load Reduction Reporting

Section 319(h)(11) of the Clean Water Act requires each state to report to EPA on an annual basis “reductions in nonpoint source pollutant loading,” as a component of the Nonpoint Source Management Program Annual Report. EPA and NMED use the Grants Reporting and Tracking System (GRTS) to implement this reporting requirement. EPA set a deadline of February 23, 2018 for reporting 2017 load reductions. Information reported by NMED for calendar year 2017 is available on line at <https://tinyurl.com/NM-2017-Load-Reductions>, and will be complete after February 23.

Effectiveness Monitoring of NPS Pollution Controls

The primary Effectiveness Monitoring activities for 2017 included stream temperature monitoring, sonde deployments, and statistical analyses to determine the effects of restoration projects on water quality. Additional activities included outreach presentations, RFP Evaluations, and training.

A highlight of 2017 was the completion of the Bluewater Creek Success Story. Although we submitted a draft at the end of 2016, review and publication was delayed by EPA due to the implementation of a new database system for success stories. However, the Success Story was eventually accepted and published in December 2017, and it documented and celebrated the highly successful fencing and planting 319 project by WildEarth Guardians that transformed the highly impacted and denuded channel into a lush riparian forest. Densimeter readings at 12 transects showed a significant increase in canopy cover from 4 to 57 percent, nutrients were delisted, and the ANCOVA showed a decrease in stream temperature across the entire range, with a mean reduction of 1.6°C due to the project. Although stream temperatures decreased as a result of the project, Bluewater Creek still exceeded the maximum threshold of 23 degrees Celcius, and further monitoring will be required for compliance with water quality standards.

Unfortunately the results of the ANCOVA completed this year on Middle Ponil Creek were a little different. The analysis showed no significant difference between the before and after regression lines relating the upstream and downstream stations. Therefore, we could not claim that the project decreased weekly maximum temperatures.

Stream temperature monitoring was conducted on eleven other project reaches to support using the upstream/downstream before/after study design, with intermediate stations to bracket tributaries and better isolate the effects of restoration work (see table below). The Onset Hobo Water Temp Pro V2 loggers recorded stream temperatures at 15 minute intervals at 58 stations. The deployment period to capture the summer temperature regime starts in late May and early June, and extends to late October and early November. An intermediate visit to most sites during July and August allowed for an upload with the waterproof shuttle, and inspection of the loggers, which is important to prevent data loss due to burial in sediment or exposure to air. Additionally during the mid-summer visits, many of the older temperature loggers were replaced with brand new loggers



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to prevent battery failure. Fortunately the older loggers did not fail even though they are now beyond the average battery life expectancy of six years. Another order of new loggers to replace the old ones will be a priority for 2018.

New stream temperature stations provided baseline data this year on Holman Creek, which is a tributary to Comanche Creek. This effort was in conjunction with the SWQB WPS Wetlands program, which is planning restoration activities in the Holman watershed. New stations also provided baseline data on Chamita Creek near Chama, to assist the NM Department of Game and Fish, in advance of potential restoration work.

Sonde deployments added to the post-implementation data set on the Rio de las Vacas, but these deployments were problematic as the Hydrolab MS-5 sondes are reaching the end of their lifespan and were subject to frequent malfunctions. A top priority for 2018 will be to replace these units with new and improved models.



Bluewater Creek above Bluewater Reservoir before (2009) and after (2016) restoration. Note rocks in the foreground and cliffs in the background that indicate same photo point location.

As in previous years, the SWQB continued to collect Effectiveness Monitoring data on multiple streams in 2017 to determine the effects of restoration projects on water quality. This monitoring provided baseline data for a new project on Cow Creek, and additional post-implementation data for existing projects to strengthen the statistical analysis.



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Waterbody	2017 Comments
Comanche Creek	2 new sites added on Holman tributary to collect baseline data for wetlands Keyline design project
Rio de los Pinos	Temperature monitoring continued for analysis in 2017
Middle Ponil Creek	Temperature and canopy monitoring conducted by the Cimarron Watershed Alliance. ANCOVA showed no significant difference before and after the project.
Bluewater Creek	Success Story completed and published.
San Antonio Creek	Post-implementation temperature monitoring continued at all locations in 2017.
Redondo Creek	Post-implementation temperature monitoring continued at all locations in 2017.
Rito Penas Negras	Temperature monitoring continued on the upper and lower reaches by SWQB staff in conjunction with cooperator WildEarth Guardians, who also continued geomorphic and vegetation monitoring.
Jaramillo Creek	Post-implementation temperature monitoring continued at all locations in 2017. Projects are in the final stages.
Cow Creek	Collected additional baseline temperature data at 4 sites: upstream, downstream, and bracketing Bull Creek tributary.
Rio de las Vacas	Monitoring continued on the Lower Vacas, observed flow cutting into the bank around the 'Digger Log' structure. Deployed sondes to measure field parameters (temperature, turbidity, dissolved oxygen and pH) during the fall index period for nutrient assessment on the Middle Vacas.
Chamita Creek	Baseline temperature data collected in five locations in conjunction with NMG&F in anticipation of future restoration projects.

Streams Selected for Effectiveness Monitoring in 2017.

Results from preliminary data analysis are consistent with the general trend observed in past years, where 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 grows. Data collection and analysis will continue to account for the lag time.

The Effectiveness Monitoring Coordinator also participated again this year on the RFP Committee to select projects for 319 funding for watershed planning projects. The coordinator is the only member that participates each year. This will be the case again in 2018 for the 319 watershed-based planning application reviews currently underway.

Additional highlights in 2017 include:

- Presenting at the Wetlands Roundtables in Las Cruces, NM in May;
- Touring project areas in southern New Mexico with visiting EPA staff;
- US Army Corps of Engineers Geomorphology training by Natural Channel Design; and
- Participating in a two-day Advanced Excel training.



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Summaries for 319(h) Projects Completed in 2017

PONIL CREEK RESTORATION PROJECT, PHASE II (14-D)

Project Budget: CWA 319(h): \$118,517 Match: \$104,150 Project Total: \$222,667
 Watershed: Cimarron (HUC 11080002)
 Sub-watersheds: Middle Ponil Creek (HUC 110800020202)
 South Ponil Creek (HUC 110800020204)

Impairments TMDLs for temperature, in Middle Ponil Creek and South Ponil Creek.

Project Overview

Middle Ponil Creek (from South Ponil Creek upstream to Greenwood Creek) has a long-standing temperature impairment and corresponding TMDL. It was first listed as impaired by temperature in 2000, and a temperature TMDL was approved in 2001. Downstream of there, South Ponil Creek (Ponil Creek to Middle Ponil Creek) was listed as impaired by temperature in 2008, and a temperature TMDL was approved in 2010.

As described in the Cimarron WBP (www.env.nm.gov/surface-water-quality/accepted-wbp), the primary pollutant sources affecting these streams are loss of riparian habitat following the 2002 Ponil Complex Fire, rangeland grazing (primarily burros within a small pasture on Philmont Scout Ranch), wildlife (primarily elk), and roads (including the impacts of low-water crossings).

This project included components on property owned or managed by all four land management entities in the watershed – Philmont Scout Ranch (owned by Boy Scouts of America), the Elliot Barker State Wildlife Area (managed by New Mexico Department of Game and Fish), Vermejo Park Ranch (owned by Turner Enterprises, Inc.), and the Carson National Forest. Representatives from each organization are active participants in the Cimarron Watershed Alliance, which implemented the project.

The goals of the project were to increase canopy coverage along Middle Ponil Creek within the project area by 8% (and thus to decrease the solar loading within the project area by an estimated 6.00 joules/m²/s), to reduce bank full width-to-depth ratios at instream restoration and low water crossing treatments by 15% and at exclosure locations by 5%, and to decrease daily maximum stream temperatures at the downstream end of the project area by 0.25°C.

Project Activities

This project expanded on the Phase I Ponil Creek Restoration Project (completed in 2013) through construction of five additional elk exclosures, replacement of a boundary fence, installation of four reinforced low-water crossings (to reduce stream width at road crossings and reduce runoff from roads as they approach these crossings), pole planting of 114 cottonwoods to replace large trees killed by the fire, channel realignment in one reach (including construction of a bank full bench and installation of two rock vanes for bank stabiliza-



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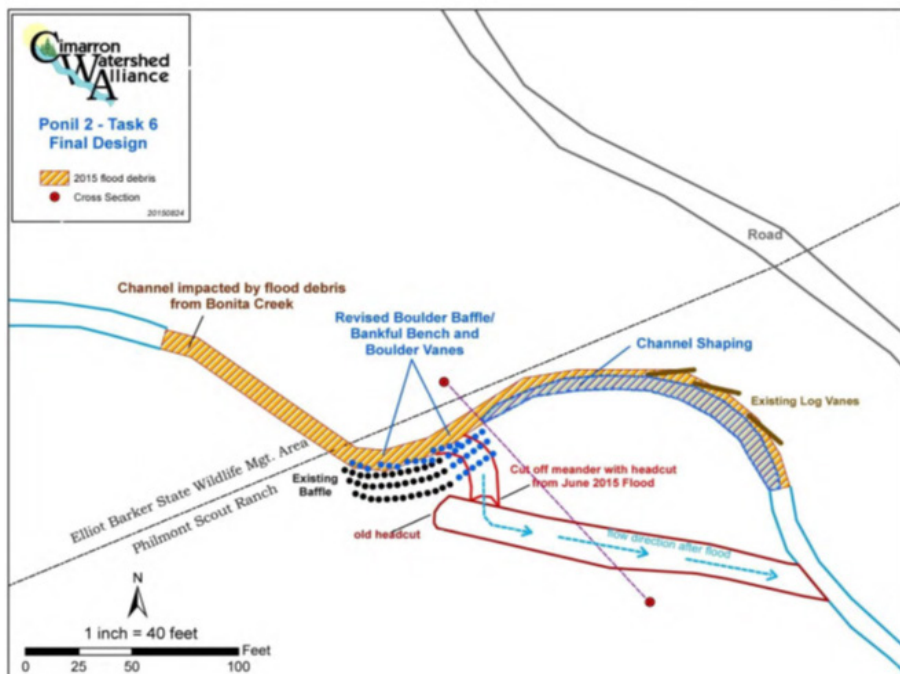
tion), drainage improvements along 1.9 miles of an old road now used mainly as a hiking trail, and installation of interpretive signage. Also, detailed assessments of three stream segments in the Ponil Creek watershed were conducted, and this information along with information from the Moreno Valley Wetlands Action Plan were incorporated into an updated Cimarron WBP.



*Task 7, Low Water Crossing Stabilization
Pre-Project Photo, View from Up-Valley, June 2014*

Post-Project Photo, View from Up-Valley, July 2017

This project was relatively well monitored, with a set of canopy cover monitoring sites (visited before, during,



and after project implementation), thermograph deployment (used for statistical analysis of temperature changes), channel morphology monitoring, and photo monitoring. Each of these were used to evaluate the project relative to its goals. The final report for this project, available from www.env.nm.gov/nmed_319_and_rsp_project_list, provides a thorough discussion of monitoring results.

Final Design Drawing that was submitted in 404/401 Permit for Task 6



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UPPER JARAMILLO CREEK WATER QUALITY IMPROVEMENT PROJECT
 (FY15-C)

Project Budget: CWA 319(h): \$223,110 Match: \$172,802 Project Total: \$395,912
 Watershed: Jaramillo Creek (HUC 13020101)
 Sub-watersheds: East Fork Jemez River (HUC 130202020203)

Impairments TMDLs for temperature and turbidity.

Project Overview

Jaramillo Creek is located in the Valles Caldera National Preserve, and is a tributary to the East Fork of the Jemez River of the Rio Grande Basin. In 2014 The creek was not meeting the water quality criteria for the designated use of high quality cold water aquatic life due to impairments including high temperature and turbidity. The probable sources of impairment are road runoff, rangeland grazing, streambank destabilization, and elk herds. The WildEarth Guardians set out to address these issues by planting and protecting riparian vegetation to increase stream shade and improve channel morphology.

Project Activities

The primary goals of the project were to reduce the solar energy loading, re-establish and protect riparian vegetation, and reduce access of livestock and grazing ungulates on 2.36 miles of the Jaramillo Creek. This was accomplished by increasing midstory and overstory riparian canopy cover throughout the project area floodplain and subsequently reducing the width to depth ratio of the stream. Native woody riparian vegetation



May 2015



September 2017

Upper Jaramillo Photo Point 15-08 - Cross Section



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was planted throughout the project corridor to provide direct shade over the stream surface, including more than 32,000 willow, 400 narrowleaf cottonwoods, 400 aspen, 400 alder, and 200 riparian forage shrubs. The increase in riparian vegetation shading helped alleviate solar loading, thereby moderating and reducing water temperatures. Additionally, six cattle/elk exclosures were constructed to protect approximately 43 acres of riparian habitat from livestock and elk. The planted woody vegetation, as well as herbaceous streambank vegetation, and the exclosures also reduced grazing impacts to the riparian ecosystem resulting in increased bank and ground cover, width to depth ratios, streambank integrity, soil surface roughness, and infiltration.



Brown trout from Jaramillo Creek, August 2016. Jaramillo Creek was open to the public for fishing for the first time in 2016.





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The New Mexico River Stewardship Program

The goal of the River Stewardship Program is to fund projects that enhance the health of rivers by addressing the root causes of poor water quality and stream habitat. The River Stewardship Program builds on the success of past efforts with 319 CWA funding and prior state funding for watersheds, rivers and wetlands.

The objectives of the River Stewardship Program include:

- Enhancing the economic benefits of healthy river systems, such as improved opportunities to hunt, fish, float and view wildlife;
- Restoring or maintaining the hydrology of streams and rivers to better handle overbank flows and reduce flooding downstream;
- Providing match required to leverage federal Clean Water Act grants, ensuring that New Mexico continues to receive these funds.

Projects are selected through a Request for Proposals (RFP) process that complies with state procurement rules. The RFP evaluation criteria ensure that projects are technically sound, community-based and stakeholder driven. The RFP evaluation criteria favor projects that improve water quality, enhance fish and wildlife habitat, support local economies, and that reduce downstream flood hazard. The RFP also identified statewide priority areas for the River Stewardship Program to include:

1. Projects that address water quality and stream habitat impacts associated with fires in 2011, 2012, or 2013;
2. Projects that advance source water protection of public drinking water supplies that utilize surface water;
3. Projects that improve urban water quality and stream habitat.

To date, the New Mexico Legislature has appropriated a total of \$4.8 million to fund restoration projects through the River Stewardship Program. The table below provides a summary of funding by year. No River Stewardship Program funding was appropriated during the 2017 legislature.

Appropriation Year	Amount (in millions)	Use of funds
2014	\$2.3	12 restoration projects were funded. The projects were summarized in the 2015 NPS Annual Report and full descriptions will be provided in the annual report of the year of project completion (2018 or earlier).
2015	\$1.0	6 restoration projects were funded. The projects are summarized below and full descriptions will be provided in the annual report of the year of project completion (2019 or earlier).
2016	\$1.5	8 restoration projects were funded. The projects are summarized below and full descriptions will be provided in the annual report of the year of project completion (2020 or earlier).



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The following summaries describe the fourteen new projects that began in 2017 using state funding from the 2015 and 2016 appropriations.

Upper Rio San Antonio Watershed Restoration to Improve Water Quality (17-C)



Project Budget: \$246,606

Chimayo Conservation Corps, in partnership with Rocky Mountain Ecology, will reduce temperature and sedimentation within the Upper Rio San Antonio Watershed, north of Tres Piedras. The project includes upland and in-stream erosion/grade control structures, riparian plantings, small fence enclosures, and supplemental upland ungulate/ livestock watering sources to reduce grazing of riparian areas.

The Upper Rio San Antonio is wide, shallow, and exposed to the sun. The Upper Rio San Antonio Watershed Restoration project will increase shade and reduce temperature along this reach.

Animas River Restoration Project (17-D)



Project Budget: \$237,000

The City of Farmington will improve and restore river and riparian habitat in the Animas River. Design solutions include instream structures such as habitat rocks, cross vanes, rock deflectors, and native riparian vegetation planting to promote aquatic life, increase bank stability, and encourage public engagement with the river.

The Animas River at Farmington. This restoration work will modify the existing overwide channel form to address the water temperature impairment.



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Enhancing Aquatic Habitat Conditions in the Galisteo Creek in Galisteo, New Mexico (17-E)

Project Budget: \$169,942



Ecotone is improving aquatic habitat conditions and channel geometry across approximately ten acres of the Galisteo Creek bosque in the Village of Galisteo by increasing stream access across the flood-prone area, reducing excessive streambank erosion, removing invasive, exotic trees, and planting willows and cottonwood seedlings.

This segment of Galisteo Creek is incised and a component of this project aims to reconnect the stream to the floodplain.

Gila River Floodplain Restoration (17-F)

Project Budget: \$149,000



Due to a nearly intact natural flow regime, the Gila River in the Cliff-Gila Valley provides high-quality habitat for several rare and declining riparian obligate and aquatic species. Grant County Soil and Water Conservation District will remove and treat Russian olive within the 53-acre area it occupies between Duck Creek and the Gila River, remove and treat salt cedar in eight acres along a one-mile reach of Duck Creek, and identify and treat scattered salt cedar through a ten-mile reach of the Gila River.

This project will contain and prevent additional establishment of exotic species on the floodplain to protect and enhance existing native plant communities and the stream corridor ecosystem.

Rewinding the Gallinas River in the City of Las Vegas (17-G)

Project Budget: \$315,166



Hermit's Peak Watershed Alliance will restore ½ mile of the Gallinas River within the City of Las Vegas. As the first phase of a larger effort to create a 20 mile Gallinas River Park and trail, this project will improve urban water quality and stream habitat. It also sets the tone and demonstrates river restoration for the larger area. The project reach is currently straight, ditch-like, and lacks riparian vegetation. It neither functions as a healthy river nor carries the image of one to residents. This highly visible location will yield enormous gains for river restoration.

The project area consists of an urban stretch of the Gallinas River that is the most degraded section of the river as it flows through the nearby rural and urban areas from Montezuma to the Las Vegas National Wildlife Refuge.



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Restoring La Jara Creek from Damage from the Thompson Ridge Fire, Valles Caldera National Preserve (17-H)



Project Budget: \$132,000

La Jara Creek is a major tributary to the East Fork Jemez River in the Valles Caldera National Preserve. It flows through the Historic Ranch Headquarters area and was severely damaged by the 2013 Thompson Ridge Fire. Los Amigos de Valles Caldera will restore channel and wetland form and function to help protect visitors to the Preserve, restore at least 65 acres of wetland, and reduce loading of nutrients and sediment to the East Fork.

The main course of La Jara Creek, approximately $\frac{3}{4}$ of a mile, which is severely gullied, will be treated with a variety of grade control and Induced Meandering treatments such as one-rock dams and baffles to capture sediment and re-create a meandering channel approaching its original grade.

Constructing Diverse Native Bosque Habitat on Two River Bars at the Pueblo of Santa Ana (17-I)



Project Budget: \$133,873

The Pueblo of Santa Ana will restore 27 acres of river bar by removing exotic trees and shrubs, creating low flow channels through high and dry areas, and planting native trees and shrubs. The objectives of the project are to increase wetted habitat and increase and diversify native vegetation cover and structure in this highly modified bosque ecosystem.

High and dry portions of the river bar such as this area of the project will rely on creative earthwork to cut high flow channels into the dry river bar in specific areas to increase wetted habitat.

Restoration of Sawmill and Foreman Creeks, Comanche Creek Watershed (17-J)



Project Budget: \$195,535

The Quivira Coalition will restore three creek miles and 72 acres of riparian and slope wetlands in the Foreman and Sawmill Creek sub-watersheds to rewet former wetland areas and increase base flow of cool water entering Comanche Creek. Stabilization and restoration will be completed using techniques from *Technical Guide 2: Characterization and Restoration of Slope Wetlands in New Mexico: A Guide for Understanding Slope Wetlands, Causes of Degradation and Treatment Options*.

Downcutting channel below headcut in Sawmill Creek resulting in a loss of acres of floodplain access and with it the inherent capacity of wetland soils to store water.



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Valle de Oro National Urban Wildlife Refuge Riparian, Wetland, and Water Quality Improvement (17-K)



Project Budget: \$114,000

Rio Grande Return will assist in the construction and implementation of riparian and wetland habitat within the newly designated Valle de Oro National Wildlife Refuge. Wetland and riparian vegetation will be planted and seeded to stabilize soils, provide wildlife habitat, and improve water quality in storm water runoff events. Other funding is being used to recontour portions of the project area to restore wetland hydrology.

Site plan outlined of Valle del Oro restoration areas. Drainage meadow in blue, current project area in green and future sites in light green. The Rio Grande is located to the west.

Two Rivers Park Restoration Project (17-L)



Project Budget: \$235,621

Rocky Mountain Ecology (RME), in partnership with the Village of Ruidoso, will implement measures at Two Rivers Park to reduce temperature and turbidity within the Rio Ruidoso. RME will plant herbaceous species along banks, direct public access to specific areas to allow plants to grow, construct pool habitat in key locations, and remove and replace non-native species such as Siberian elm.

Trampling and extensive use by recreationists has resulted in adjacent banklines and high-use areas devoid of vegetation. This project will address this issue with creative restoration methods.

Bosque del Bernalillo Storm Water Quality and Habitat Enhancement to the Rio Grande Project (17-M)



Project Budget: \$139,867

The Southern Sandoval County Arroyo Flood Control Authority (SS-CAFCA) will construct a meander within an existing arroyo to remove the “first flush” storm flows from the arroyo for treatment, and reintroduce cleaner flows back into the arroyo. This project is a compliance strategy for the watershed-based Municipal Separate Storm Sewer System (MS4) permit for the middle Rio Grande that will also stabilize the arroyo and improve the arroyo habitat.

Project artist’s rendering illustrating improved wildlife corridor with storm water fed wildlife drinking station and pedestrian trail separated by vegetation.



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Post-Tres Lagunas Fire and Flooding Restoration Project for Holy Ghost Canyon, Creek and Tributaries (17-N)



Project Budget: \$144,465

The Upper Pecos Watershed Association will address erosion and sedimentation from the post-fire flooding in Holy Ghost Creek and in the four major tributary channels contributing the most sediment and water. This will be accomplished using innovative hand-built erosion control structures (including restoration of each tributary alluvial fan as an appropriate landform for sediment deposition) and riparian vegetation planting.

Three of the four burned tributary channels with 100 to 200 acre watersheds contributed most of the water and sediment to post-fire flooding in Holy Ghost Creek, and are continuing to erode. This project will address erosion and downcutting in tributary channels.

Village of Questa Fishing Park (Reach A) Stream Restoration Project (17-O)



Project Budget: \$157,550

The Village of Questa will implement stream restoration work within a reach referred to as “Reach A,” located between Eagle Rock Lake and Cabresto Creek. This project seeks to construct fisheries habitat on a reach that is accessible to the public and improve riparian conditions along the banks.

Stream segments such as this in Reach A where historic channel straightening occurred and where the stream has poor access to the floodplain will be target areas for this project.

Upper San Antonio Canyon Water Quality Improvement Project (17-P)



Project Budget: \$137,100

This project is located on San Antonio Creek in the Jemez Mountains, on the Santa Fe National Forest. WildEarth Guardians will remove and replace degraded fish habitat structures, increase canopy cover via native plant re-establishment, and protect portions of the stream from grazing by elk and livestock. The goal of this project is to increase vegetative shade in the project area to at least 30.1% cover from the existing 13.4%, to help the creek meet its standards for temperature and turbidity.

The lack of riparian vegetation and the resultant absence of shade contribute to the temperature impairment and will be addressed by the project.



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COMPLETED RSP PROJECT RED RIVER TOWN PARK RESTORATION PROJECT

Project Budget: \$319,722 in state funds
Watershed: Upper Rio Grande - (13020101)
Sub-watersheds: Middle Red River (130201010303)

Project Overview

The Red River flows through the Town of Red River, and the project area is in the center of town at Toni Woerndle Town Park. The Red River has been negatively impacted by historic land uses, including: mining activities, draining of large wetlands, filling and developing the floodplain, removal of riparian vegetation, straightening of the river channel, and infrastructure encroachments on the active channel. In the project area, the river was shallow, wide, and contained minimal fish habitat.

The Town of Red River subcontracted with Riverbend Engineering to design the project based on natural channel design principles. Andamo Sanchez Excavation and Construction constructed the project. The overall goal of the project was to stabilize banks and to enhance fish habitat for recreational fishing. Specific objectives included:

- To re-establish the dynamic equilibrium form of the river, by modifying the dimension, pattern and profile as needed.
- To improve terrestrial and avian habitat while providing shade, stabilizing the banks, and controlling erosion.
- To improve aquatic habitat and biomass holding capacity.
- To provide increased recreational opportunities for people along the river, including fishing, walking, wildlife viewing, river aesthetics, and safe access to the river for all ages.



Photo pair of the Red River Town Park project taken from the center of the footbridge looking upstream, before and during construction in September 2016.



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Project Outcome

The project treated 2,600 linear feet of river with an engineered design that included: construction of five rock deflectors, two rock cross vanes and two rock flow convergence structures; and placement of three wood lunker boxes, bank fill for low flow sidebars, and several habitat boulders. Mature willows and cottonwoods were transplanted to bare areas from areas of dense vegetation. Disturbed areas were seeded and mulched. The park is easily accessible and open to the public for recreation.

COMPLETED RSP PROJECT RIO GRANDE CORRIDOR AT BUCKMAN – PHASE II

Project Budget: \$149,019 in state funds
Watershed: Rio Grande- Santa Fe (13020201)
Sub-watersheds: Cañada Ancha- Rio Grande (130202010203)

Project Overview

The eight-acre project area is located along the Rio Grande upstream of 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 with public access to the river. The area had great potential for wildlife habitat, recreation and outdoor education but was in a degraded condition. Non-native vegetation (Russian olive, salt cedar and Siberian elm) had choked the historic willow and cottonwood bosque and the area was strewn with garbage from years of human use. Rio Grande Return recognized the area's potential and worked diligently to obtain funds and partner with several organizations to implement this project: BDD; US Forest Service; US Bureau of Land Management; 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 involve the local community and youth in environmental education and outreach programs related to riparian ecology, hydrology and natural history.

Project Outcome

In Phase II, eight acres of riparian area were treated by removing non-native vegetation. WildEarth Guardians performed the work. The woody debris was burned and remaining stumps were brushed with herbicide to inhibit re-sprouting. Native vegetation was planted, including 300 cottonwood poles, 5,000 willow poles, and 100 riparian shrubs. Individual cottonwoods were fenced to protect them from beaver while they mature. Monitoring by River Source, Inc. showed a 90% vegetation survival rate one year after planting. Phase I of the project had included similar treatment of 8.5 acres downstream of the Phase II area. Rio Grande Return will continue monitoring, maintenance and treatment of non-native plant re-sprouts using other grant funding, volunteers, and their partners: WildEarth Guardians, River Source, Inc., and Youth Conservation Corps. The US Forest Service and US Bureau of Land Management are pleased with the enhancement of these unique and important riparian wetlands on their properties. Both agencies are committed to the protection of Buckman area and have increased security, provided trash cans and trash removal, and even constructed a vault toilet last year. There are plans for a kiosk with a trail map and interpretative signs. The area is no longer being



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trashed and over-run by off-road vehicles. Hikers, mountain bikers, fisherman and birdwatchers are enjoying the area.



Before and after photo pair of the backwater channel showing vegetation at the Buckman Phase II project on the Rio Grande.



Top photo taken September 2016, photo on bottom taken July 2017.



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Wetlands Program

Wetlands Program Plan Update

The Environmental Protection Agency approved the 2017 update of the New Mexico Wetlands Program Plan on March 14, 2017. The SWQB Wetlands Program and its partners have made substantial progress in the development of a robust program that focuses on measures that will restore and protect New Mexico wetlands. This updated Wetlands Program Plan describes the long-term goals and achievements made since this Plan was approved by EPA in 2010, and previously updated in 2012 and 2015. The lays out a pathway to continue program development for the next five years. Through this updated Wetlands Program Plan we hope to continue progress towards a comprehensive and sustainable Wetlands Program for New Mexico (www.epa.gov/wetlands/state-and-tribal-wetland-program-plans#r6).

Funding Awarded to the Wetlands Program 2017

Two new Wetlands Program Development projects and one new partial project were awarded funding by EPA Region 6 in 2017. The federal grants for these projects total \$639,558.00 in federal assistance awarded through the FY17-18 EPA Wetlands Program Development Grant Program authorized by CWA Section 104(b)(3). These projects advance the development of our statewide wetlands program and is consistent with our approved 10-year Wetlands Assessment and Monitoring Strategy and 2017 Wetlands Program Plan.

1) “Mapping and Classification of Wetlands in the San Juan River and Estancia Closed Basins, New Mexico” is a 4-year project to map and classify wetlands in northwestern and north-central New Mexico extending our current mapping efforts to the San Juan River and Estancia Closed Basins. Project tasks include conducting a literature search, acquiring imagery, assembling a geodatabase, pre- and post-mapping field reviews, performing cowardin classification (NWI) wetland mapping as well as applying the landscape position, landform, waterflow path and waterbody type (LLWW) classification for the project area, assigning wetland functions (proposed designated uses) to different wetland types, assigning hydrogeomorphic (HGM) wetland subclasses, and developing wetlands classified segments for water quality standards. Outreach and technical transfer of results and products to agencies and other user groups will be conducted throughout the project. A Technical Advisory Committee will be established to provide guidance and expertise. Transfer of mapping products and technology will include presentations to watershed groups, agencies, Tribes and consortiums, and the creation of a story map and seven map books. Copies of project map products and reports will be available on the NMED Wetlands and ESRI Story Map websites. Products will include wetlands mapping and classification covering approximately 10,000 square miles, (~170 quadrangles), preparation of reference materials, basemaps, functional correlation, HGM subclass assignments, classified segments, and information for two areas of New Mexico where little wetlands information or mapping was previously available. This project will make previous and ongoing mapping efforts contiguous.



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2) ***“East Fork Jemez River Innovative Wetland Restoration Using Contour Swales, Sod Bowls and Sod Berms.”*** This project will demonstrate new water flow restoration structures for headwater slope wetlands, and will restore at least 30 acres of wetlands within a 1,200-acre area at the headwaters of the East Fork Jemez River in the Valles Caldera National Preserve. The main objective of the project is to develop the innovative contour swale, sod bowl and sod berm restoration methods to stabilize and re-wet former wetlands where gullies have developed. These methods will be shared through volunteer workshops, field trips for agency staff, watershed groups, conservation organizations and the public, and through a technical guide describing the design and use of the methods. A Wetland Action Plan (WAP) will be developed for the entire 38,134-acre watershed to assist with future planning as well as prioritizing sites for design and implementation of the project area. Project products will include the East Fork Jemez River WAP, 30+ acres restored wetlands, the development of new techniques for restoring slope wetlands (culminating in a technical guide and fact sheet that describe and provide details of the restoration techniques), and trained volunteers, team leaders and restoration professionals.

3) ***“Mapping and Classification of Wetlands in the Lower Rio Grande Basin, New Mexico” (This project is currently only partially funded).*** Project tasks include conducting a literature search, acquiring imagery, assembling a geodatabase, pre- and post-mapping field reviews, performing cowardin classification (NWI) wetland mapping and applying the landscape position, landform, water flow path and waterbody type (LLWW) classification for the project area, assigning wetland functions to different wetland types, assigning hydrogeomorphic (HGM) wetland subclasses, and developing wetlands classified segments for water quality standards. Outreach and technical transfer of results and products to agencies and other user groups will be conducted throughout the project. A Technical Advisory Committee will be established to provide guidance and expertise. Transfer of mapping products and technology will include presentations to watershed groups, agencies, Tribes and consortiums, and the creation of a story map and six map books, and copies of the final report and interactive maps posted on the NMED Wetlands website. This project will designate classified wetland segments and identify wetland functions (proposed designated uses) for developing wetland water quality standards. This project will map and classify wetlands in south central New Mexico as part of our efforts to update mapping of all New Mexico’s wetlands. The project area includes the Lower Rio Grande Basin, the San Andres and Organ Mountains and contiguous areas. This project is very similar to project 1 on page 33. Products will include wetlands mapping and classification covering 13,500 square miles (~225 quadrangles) for areas of southern New Mexico where little wetlands information or mapping is currently available, and adjoining previous and ongoing mapping efforts. Functional correlation, HGM subclass assignments, classified segments, presentations and interactive mapping resources are additional products.

Wetlands Roundtables

The SWQB Wetlands Program conducted 2 successful Wetlands Roundtables in the Spring, 2017. The North-



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ern Wetlands Roundtable was held on April 27, 2017 in Santa Fe and was co-sponsored by the Rocky Mountain Chapter of the Society of Wetland Scientist and by Mike and Julie Bain. Presentations included “USFS Southwestern Regional Riparian Strategy,” “Arizona Wetlands Restoration Projects,” “USGS Wetlands Characterization,” “Valle de Oro National Wildlife Refuge,” “NMED Wetlands Program Wetlands Mapper and Database,” Wetlands Reserve Enhancement Partnership,” Post-Fire Restoration at Santa Clara Pueblo,” and an update by the Corps of Engineers as well as lively discussions among the 50 attendees.



Post-fire Flooding and Debris Flow Hazards at Santa Clara Pueblo (left), and (right) channel restoration treatments at Santa Clara Pueblo, from presentation given by Reid Whittlesey “Post-Fire Restoration at Santa Clara Pueblo,” at Northern Wetlands Roundtable on April 27, 2017.

The Southern Wetlands Roundtable was co-sponsored by the Rocky Mountain Chapter of the Society of Wetland Scientist and by Stream Dynamics and was held in Las Cruces on May 16, 2017. EPA Region 6 Water Program representatives were in attendance and Sharon Daugherty gave an EPA Wetlands Program update. Other presentation topics included an update by the Corps of Engineers and presentations on “Sacramento Mountains Mapping and Classification,” “New Mexico Wetlands Mapper,” “San Vicente Creek Urban Storm Water Harvesting,” “History and Status of Wetlands at Holloman Air Force Base,” “USFS Southwest Regional Riparian Strategy,” “Wetlands Reserve Enhancement Partnerships,” and roundtable discussions among the 30+ participants.

Wetlands Across Borders Workshop

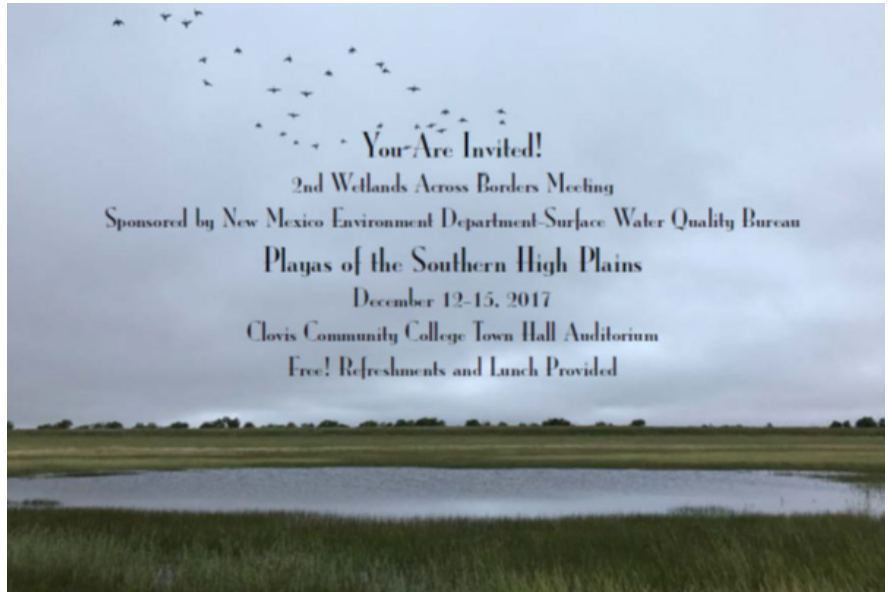
The SWQB Wetlands Program conducted a four-day “Wetlands Across Borders Workshop: Playas of the Southern High Plains” meeting December 12-15, 2017. The Wetlands Across Borders Workshop was co-sponsored by the Rocky Mountain Chapter of the Society of Wetland Scientists, Playa Lakes Joint Venture and the Rio Puerco Alliance. The meeting was held in Clovis, New Mexico at the Clovis Community College. The morning of the first day included presentations and panel discussions about playa ecology, conservation,



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and restoration, and the hydrogeology and projected usable lifetime of the High Plains Aquifer in Curry and Roosevelt Counties, New Mexico for which playas are the principal pathway for aquifer recharge. The afternoon session provided panel discussions on issues and solutions for water resources in eastern New Mexico. The results indicate that very little recharge is occurring and water usage is principally fossil water. The City of Clovis Master Water Assurance Plan was presented as a model plan for preserving and restoring playas, for sustainably using aquifer water, and water conservation practices for the future. The meeting was facilitated to discuss issues in an informal roundtable format. The first day was followed by three track options – New Mexico Rapid Assessment Method Training for Playa Wetlands, a Playas and Roads workshop, and a half-day field trip to look at local playas. Several participants attended from neighboring Colorado, Texas and Oklahoma.



Wetlands Across Borders Meeting Invitation.

New Wetlands Program Publications

The Wetlands Program completed a new Technical Guide, *The Plug and Pond Treatment: Restoring Sheet Flow to High Elevation Slope Wetlands in New Mexico*, by Bill Zeedyk and Steve Vrooman, using funds from



Key features of a typical plug and pond structure (From: Zeedyk and Vrooman 2017)



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EPA Wetlands Program Development Grant CD #00F585-01-0. The “plug and pond” treatment restores wet meadow landforms damaged by channel incision, and benefits adjacent former wetlands by raising the water table to pre-disturbance levels. The plug and pond treatment reconnects seasonal flows to wetland and formerly wetland surfaces, can control advancing headcuts, can reconnect existing channels to abandoned channels no longer accessible due to channel incision, and move flood flows back and forth on previously gullied landforms. The Technical Guide can be found at www.env.nm.gov/surface-water-quality/wetlands/technical-guides/.

Wetland Projects Completed in 2017

Two Wetlands Program projects funded under CWA Section 104(b)(3) Wetlands Program Development Grants were completed this year.

1) Innovative Restoration of Historic Wetlands along Sulphur Creek, Valles Caldera National Preserve

The project area is located on the west side of the Valles Caldera National Preserve. The Sulphur Creek Watershed is typical of many areas that have experienced intensive historical use of the landscape, including clear-cut timber harvesting, heavy livestock grazing (sheep, then cattle) and hydrothermal exploration. These activities resulted in the creation of numerous inadequately constructed and maintained roads, overgrazed grasslands, depleted vegetation in wetland and riparian zones, eroding stream banks and advancing headcuts throughout the watershed. These land use practices led to an increased erosive tendency of the land. Many slope wetlands have become channelized with numerous gullies that lower the water table and desiccate the wetlands.

The SWQB Wetlands Program worked with Los Amigos de Valles Caldera, three subcontractors and numerous volunteers to design, construct and describe new techniques for restoring high elevation slope wetlands. A successful restoration project was completed that rewetted 41.6 acres of historic wetlands in the Sulphur Creek Watershed of the Valles Caldera National Preserve. The project focused on developing the Plug and Pond Treatment Method. Twenty-six plug and pond structures were built. Fifty-two ancillary structures were also built, including: plug and spread structures, rock or sod zuni bowls, one rock dams, rock rundowns, rock laybacks, media lunas, contour swales, rolling dips, bypass channels, tree felling, and elk enclosure fencing. The project repaired incised channels and numerous headcuts to slow the flow of water, spread the water, raise the water table to re-hydrate historic wetlands, and increase water storage in the wetlands. Pre- and post-implementation monitoring was conducted between 2013-2017, including: 1) vegetation transects; 2) thermographs installed downstream of the plug and pond structures to measure the presence or absence of water; 3) wetland delineation; and 4) repeat photopoints. Key cooperators on the project were subcontractors Zeedyk Ecological Consulting, Keystone Restoration Ecology, Stream Dynamics, Inc. and many volunteers affiliated with Albuquerque Wildlife Federation and Los Amigos de Valles Caldera.

In addition to on-the-ground restoration, several documents were completed.

The Sulphur Creek Watershed Wetlands Action Plan (WAP) was written to identify wetland resources and plan for their protection and restoration. The WAP describes the resources and includes maps of existing wetlands for the watershed, describes stressors, describes restoration/protection efforts, identifies restoration sites, and lists potential funding sources.



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Photo pair showing before and after of a plug and pond structure looking upstream in Valle Seco. Left: Channelized flow in Tributary 1 of Valle Seco had desiccated historic wetlands (Fall 2014). Right: A plug and pond structure at the same location spread water across the valley and rewetted the wetlands in the foreground (Fall 2017).

The Plug and Pond Treatment: Restoring Sheetflow to High Elevation Slope Wetlands in New Mexico, by Bill Zeedyk, Steve Vrooman and Tamara Gadzia, is a wetlands technical guide that was developed through the project. This guide describes and illustrates the plug and pond treatment method, including design and construction techniques, anticipated results and actual results. The guide highlights the project work performed in Valle Seco as well as prior wetlands plug and pond projects along San Antonio Creek in the Valles Caldera National Preserve. It is available at www.env.nm.gov/surface-water-quality/wetlands/technical-guides/.

Results of project effectiveness monitoring were compiled in a Sulphur Creek Monitoring Report and the information was condensed into a scientific article titled "Vegetation and Hydrology Response to the Restoration of Tributary Wetlands in the Valles Caldera National Preserve Using the Plug and Pond Method."

The Project resulted in the design of restoration techniques and the installation of restoration structures that were either new and innovative designs specifically for slope wetlands, or designs that were successful elsewhere and modified for slope wetland restoration.

The plug and pond technical restoration techniques and monitoring results were shared through five volunteer restoration work weekends between 2013-2017, through four Albuquerque Wildlife Federation newslet-



Machine construction of a plug and pond structure along Sulphur Creek.



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ters, a field trip, presentations at two Jemez CFLRP Annual All-Hands meetings, and a presentation at one New Mexico Wetlands Roundtable. Two hundred forty-five copies of The plug and pond technical guide were printed and are being distributed to landowners, land managers, watershed groups, and restoration practitioners.

2) Rapid Assessment for New Mexico's Playa Region, Southern High Plains

This is a continuation of the development of rapid assessment methods for New Mexico's wetlands and the first New Mexico Rapid Assessment Method (NMRAM) for conducting a rapid ecological assessment of playa wetlands (depressional wetlands) in the Southern High Plains (SHP) of eastern New Mexico. Specific protocols for evaluating ten playa wetland ecological condition metrics using a combination of GIS-based measurements and field surveys were developed resulting in a chapter in the NMRAM Manual, a field guide, and interactive data collection PDFs. In addition to details on metric measurements, appendices are provided in the field guide that include the data collection worksheets, a plant species list with wetland indicator status, soil sampling guidelines, and a glossary of terms.

New Mexico Rapid Assessment Method (NMRAM) data were collected from 40 SHP playa wetland sites to design and test a number of new rapid assessment metrics. Some of the unique challenges included designing metrics for depressional ephemeral wetlands that accurately reflect wetland conditions that vary from year to year depending on precipitation and variable inundation. This Project included the continued enhancements of the SWQB SQUID database to accept and store NMRAM data. A Playas NMRAM Training was held in September 2017 in the Clovis, NM area. The project culminated in the Wetlands Across Borders Workshop in Clovis described above. This meeting included a one and half day plenary session with discussions about SHP playas, the underlying aquifer, and the water challenges associated with the Region; a Playas and Roads two and one-half day workshop; a half day bus trip to visit local playas and the second two and one-half day Playas NMRAM Training.

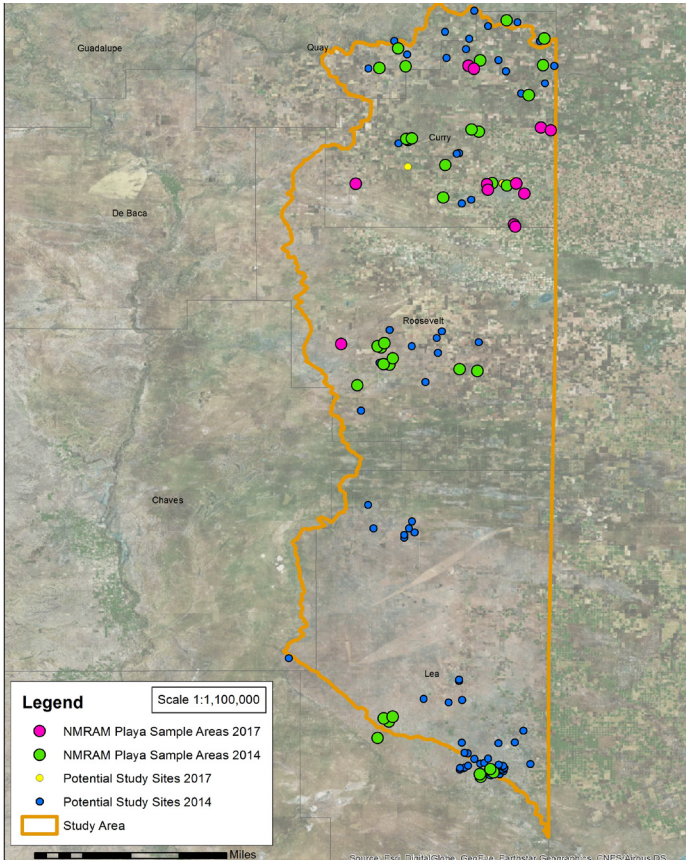


West side of New Pond Playa, Clovis NM.

Through this project six major objectives were accomplished. 1) Data collection, analysis, and validation for NM's first Depressional Wetlands NMRAM including the development of NMRAM Playa Wetlands Field Guide 1.2 and electronic data collection worksheets, 2) Validation and expanded utility of NMRAM to the southeastern part of New Mexico, 3) Formation of a Technical Advisory Committee which met 3 times to provide input to NMRAM development, with two trainings for potential end users, 4) The New Mexico Wetlands Roundtable meetings, 5) expansion of the SQUID database to accept Playa Wetlands NMRAM data, and 6) the Wetlands Across Borders workshop. The development of NMRAM has been shared locally and nationally through presentations and public events.



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Study location and Sampling sites for Playas NMRAM development.

Project Outcomes

- The SWQB Wetlands Program and partners are provided wetland assessment capability to require better wetlands protection, restoration and mitigation.
- This project creates a tool for evaluating the condition of New Mexico’s playa wetlands in comparison to a level of human disturbance and that is relevant to New Mexico.
- NMRAM is filling a critical piece of an integrated and comprehensive approach to wetlands protection by SWQB and its partners.
- NMRAM will provide the supporting data and information needed to develop water quality standards for subclasses of New Mexico’s wetlands resources.
- The NMRAM can be used to identify reference standard wetlands in need of special protection, and to identify those that are particularly impacted and those that can be restored.

water quality assessments by watershed will continue to be developed, and will increase the capacity and understanding of ecological linkages, natural variability and changes that result from human activities.

- Through our development of an integrated SQUID database at SWQB, wetlands assessment data will be available for inclusion in CWA Section 305(b) reports, increasing access to stakeholders and decision makers to improve their knowledge and understanding of wetland issues.
- The oversight of NMRAM wetland data at NMED will provide the capability to combine wetland data and results with other SWQB water quality programs that will result in overall improvement to water resources of the State.
- Expanding the Wetlands Roundtable to include meetings especially designed and planned for Southern New Mexico, establishes and solidifies new partnerships, increases the capacity of the Wetlands Program to reach a variety of stakeholders with relevant and up-to-date information and data-sharing regarding wetlands in New Mexico.

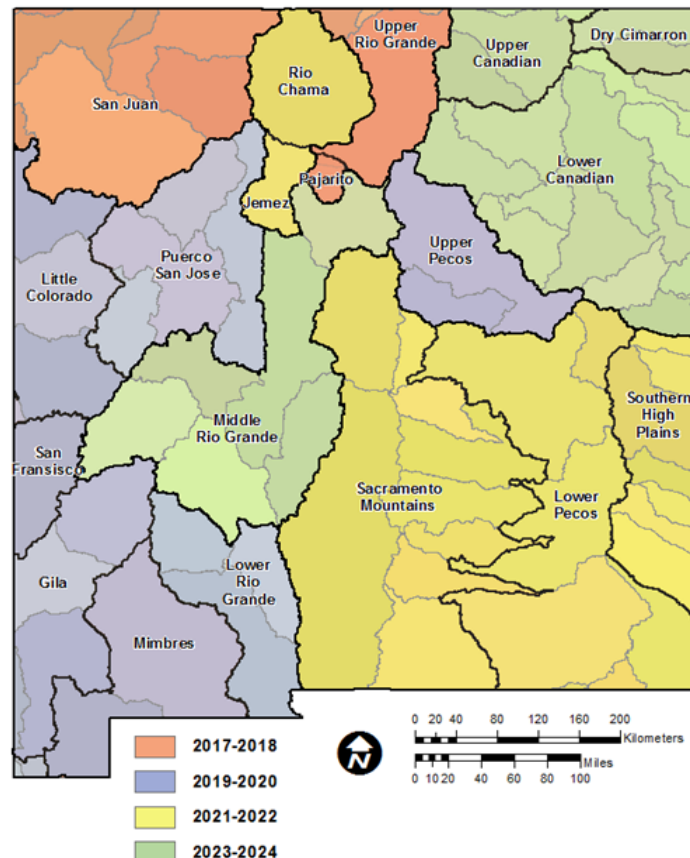


Other Water Quality Protection Programs

Monitoring, Assessment and Standards Program

Water Quality Surveys

Similar to many states, the SWQB utilizes a targeted, rotational watershed approach to ambient water quality monitoring. Beginning in 2015, the SWQB began implementing two-year monitoring surveys. The multi-year approach allows for additional sampling events and long-term instrument data collection and provides an opportunity for a mid-survey assessment to tailor data collection in the second year of monitoring. In addition, the survey can more effectively capture seasonal and annual variability in water quality and mitigate the influence of extreme hydrologic events, such as drought or flood, occurring in one year of the survey. The 2017-2018 water quality survey focuses on the Upper Rio Grande and San Juan River watersheds. The survey includes sampling at 137 monitoring locations within 101 stream assessment units and 5 lake assessment units covering 790 stream miles and 13,115 lake acres. A field sampling plan describing the survey design is available from the SWQB website at www.env.nm.gov/surface-water-quality/water-quality-monitoring/. Following completion of the survey, a report summarizing the data collected will be available from the SWQB website (Spring 2019).



Eight Year Survey Plan



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

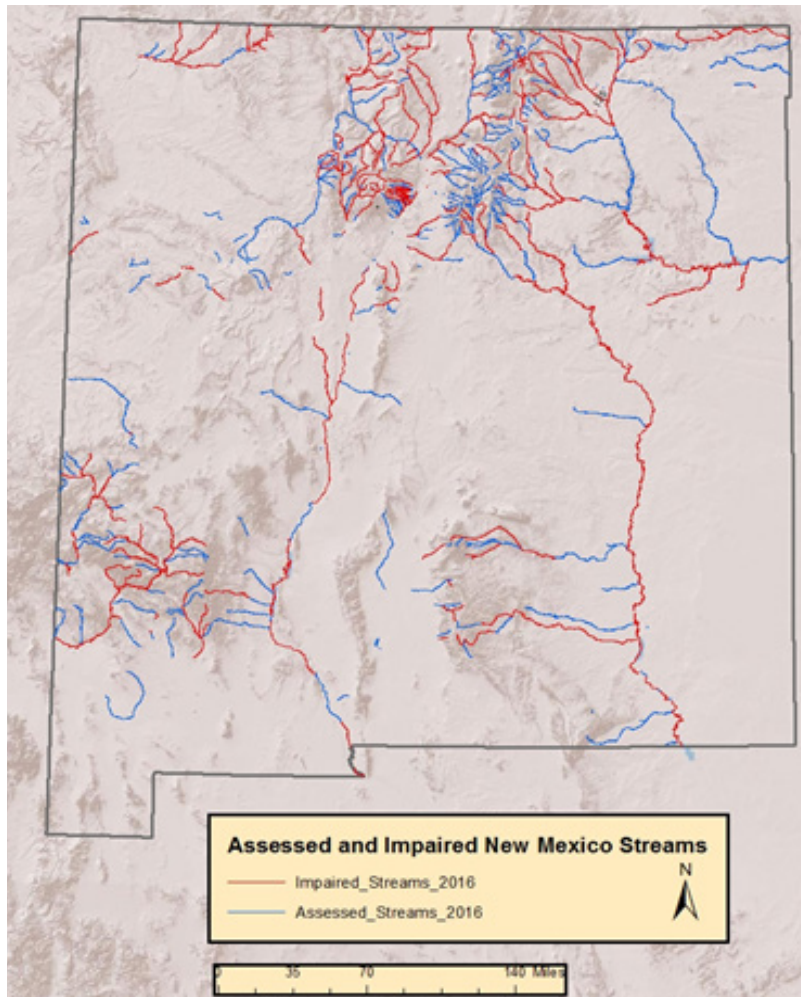
As required by the CWA, every two years the state evaluates the data it has collected, as well as readily available water quality data, to determine if state water quality standards are met and associated designated uses are achieved. Those waters which exceed water quality standards are “impaired” for the associated use and are identified in the *State of New Mexico CWA §303(d)/§305(b) Integrated Report (IR)*.

According to the 2016-2018 IR, nearly 4,070 out of 7,734 stream miles (53%) have identified impairments where water quality does not support applicable designated uses. Approximately 58,408 out of 89,073 (66%), categorized publicly-owned lake, reservoir, or playa acres do not fully support applicable designated uses. Using available data assessed against current designated, existing, or attainable uses utilizing established assessment protocols, the department has found that temperature, nutrient-eutrophication, and *E. coli* are the three most common causes of river and stream water quality impairments based on stream mileage in New Mexico. NPS pollution such as rangeland grazing, on-site treatment systems and loss of riparian habitat are the leading probable sources of impairment in New Mexico’s rivers and streams. The three most common causes of water quality impairments in lakes and reservoirs based on acreage are mercury in fish tissue, PCBs in fish tissue, and temperature. The State has issued fish consumption advisories for several fish species in 26 lakes and reservoirs and three (3) rivers due to elevated concentrations of various contaminants, including mercury, dichlorodiphenyltrichloroethane (DDT), and polychlorinated biphenyls (PCBs).

The 2016-2018 IR and supporting documents are available at: www.env.nm.gov/swqb/303d-305b/.

The state is currently preparing the draft 2018-2020 IR. SWQB’s assessment protocol was revised spring 2017 to improve designated use impairment determinations (especially with respect to nutrient and temperature determinations), and was renamed the Comprehensive Assessment and Listing Methodology (CALM).

Assessed Streams, 2016-2018 IR





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Water Quality Standards Update-Triennial Review

The federal Clean Water Act (CWA) related regulations in 40 C.F.R. Part 131 and the provisions in the New Mexico Water Quality Act (Chapter 74, Article 6 NMSA 1978) require the State to develop, review, revise and adopt water quality standards (WQS) that protect public health or welfare, enhance the quality of water, and serve the purposes of the CWA. New Mexico's Standards for Interstate and Intrastate Surface Waters (20.6.4 NMAC) establish WQS that consist of designated uses for surface waters of the State, the water quality criteria necessary to protect the uses, and an antidegradation policy to protect the water quality.

While the WQS may be revised as needed, the CWA at 33 U.S.C. §1313(c)(1), and the water quality standards rules at 20.6.4.1 O(A) NMAC also require the State to initiate a comprehensive review and consequential update of the WQS rules from time to time, or at least every three years, in a process known as the Triennial Review.

The SWQB began identifying priorities for the most-recent Triennial Review in 2012 and initiated the 2013 Triennial Review with an informal scoping phase for public feedback during April and May of 2013 to identify priorities for potential changes to the WQS. Proposals for changes were developed into a discussion draft which was noticed for public review and comment during April and May of 2014.

Throughout the 2013 Triennial Review process, SWQB met and worked with groups when requested to discuss their concerns. The SWQB presented its 2013 Triennial Review proposals to the Water Quality Control Commission (WQCC) in public hearings held on October 13-16, 2015. The WQCC granted approval of the proposals at the September 13, 2016 Commission meeting and issued a Statement of Reasons and Final Order for the proposed amendments to the Standards for Interstate and Intrastate Waters, 20.6.4 NMAC on January 10, 2017. The Standards, as approved, were published and became effective for State purposes on March 2, 2017. Subsequently, the SWQB submitted the WQCC-approved standards to the EPA on March 14, 2017 for final approval under CWA Section 303(c). EPA issued a Technical Support Document (TSD) on August 11, 2017 providing support and comment on the proposed changes and approved most provisions for CWA purposes. The next Triennial Review is scheduled to begin January 2019.

The standards proposals approved by the WQCC and the EPA include:

- Changes to definitions in 20.6.4.7 NMAC to include definitions for Most Probable Number (MPN), pH, closed basin, and irrigation storage.
- Segment-specific standards for aquatic life protections in the Mimbres and Animas River basins.
- A new temporary standard procedure in 20.6.4.10.F NMAC to allow time-limited designated uses and criteria for specific pollutants or water quality parameters that reflect the highest attainable condition during the term of the temporary standard.
- Listing of 24 ephemeral waters under Section 20.6.4.97 NMAC pursuant to Subsection C of 20.6.4.15 NMAC.

The EPA did not take action on the following WQCC-approved proposals:

- Updates to the piscicide provision in 20.6.4.16 NMAC to distinguish the procedures for applications



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that are covered and that are not covered under an EPA National Pollutant Discharge Elimination System (NPDES) permit.

- In accordance with 20.6.4.10.D NMAC as well as Subsections C and D of 20.6.4.15 NMAC, creation of two new standards segments for waters located within the Smelter Tailings Soil Investigation Unit (STSIU) on Chino Mines property to distinguish perennial and intermittent drainages from ephemeral drainages, to establish segment-specific copper criteria for acute and chronic aquatic life protections, and to identify existing and attainable designated uses and the criteria to protect those uses.

Use Attainability Analyses and Aquatic Life Use Changes

A Use Attainability Analysis (UAA) is a regulatory tool established in the water quality standards (20.6.4.15 NMAC) in which a multi-faceted approach is used to evaluate the environmental and/or economic factors affecting the attainment of a use for a waterbody. The application of the UAA process is allowed under certain conditions as stipulated in the state's standards and in federal regulations (40 CFR 131.10(g)). SWQB has subsequently developed another tool, the Hydrology Protocol (HP), a technical procedure in the Water Quality Management Plan (WQMP) which is a required Clean Water Act document approved by WQCC and EPA. The HP may be used to distinguish between ephemeral, intermittent and perennial streams and rivers in New Mexico. It also generates documentation of the attainable aquatic life uses supported by those waters as a result of the flow regime. The UAA process alone or in combination with the HP has been applied to support aquatic life use refinements and revisions to the WQS. Such refinements as allowed under the CWA and the WQS are important because they help assure that appropriate water quality standards are applied to a waterbody.

Several HP UAA proposals to classify ephemeral waterbodies and several other UAA proposals to support changes to aquatic life uses and segment-specific temperature criteria were developed during the 2013 Triennial Review and approved by the WQCC at the September 13, 2016 Commission meeting. These have now been codified under NMAC as of March 2, 2017 and have been reviewed and approved by the EPA. All information about the Triennial Review including these UAA proposals and associated pleading log filings and exhibits are available online at: www.env.nm.gov/swqb/Standards/TR2013/index.html.

The SWQB has been working on several new UAAs, some are being proposed by the Bureau while a few are being proposed by outside entities or in collaboration with the SWQB. The SWQB has concluded its investigations for portions of Tecolote Creek in San Miguel County and Dog Canyon Creek in Otero County. The UAAs demonstrate that a coolwater aquatic life use is the most protective aquatic life use that is naturally attainable in these waters. The SWQB is scheduled to present findings before the WQCC on January 9, 2018. The Bureau has also approved a UAA workplan for the Village of Ruidoso/City of Ruidoso Downs Joint Use Board (JUB) to conduct a UAA assessing dissolved oxygen and temperature criteria for the Rio Ruidoso and Rio Hondo. The SWQB has participated in public discussions and meetings with the JUB and will continue assisting with the technical and administrative requirements as the UAA development progresses. Other analyses of portions of Tijeras Arroyo, various stream reaches and subwatersheds on Lee Ranch Mine property, and various stream reaches in and around Los Alamos National Laboratory on the Pajarito Plateau are using



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the HP to determine natural flow regimes and evaluate the attainable uses supported by these waters.

Other Standards Updates

The SWQB Monitoring, Assessment and Standards Section records potential water quality standards issues in a tracking spreadsheet. This information is considered and updated during every CWA Section 305(b)/303(d) listing cycle and during survey planning. Data needs for standards changes and the availability of critical data are evaluated and additional data collections are scheduled, as identified. The data for candidate standards changes are compiled and used in the development of documents to support recommended revisions. Depending on the timing, petitions for standards revisions can be incorporated as part of a Triennial Review or be presented at hearings before the WQCC as an independent standards revision (i.e., revisions between Triennial Reviews).

In addition, SWQB has been working closely with EPA to develop a temporary standard implementation plan. The focus of this project is to develop nutrient temporary standard proposals for five demonstration facilities in New Mexico that are discharging into nutrient-impaired waters. This is a collaborative effort with the affected NPDES permittees, EPA Region 6, EPA Headquarters and a contractor, TetraTech. A goal of this effort is to develop a guidance document that describes a stepwise approach for developing a temporary water quality standard and associated milestones, including: (1) determining eligibility for a temporary standard; (2) if eligible, justifying the temporary standard based on 40 CFR 131.10(g) – for example, in the demonstration projects, by evaluating whether the cost to implement the technology that could meet standards would cause substantial and widespread economic and social impact to the community; and (3) determining the highest attainable condition and term of the temporary standard. The project was initiated in June 2016, a conceptual model was completed in February 2017, and, after evaluating the data and information requirements for a temporary standard in New Mexico, TetraTech has been working on the substantial and widespread analysis for the first demonstration facility. A final draft report of this analysis is expected in January 2018. TetraTech will then focus on the other four demonstration facilities, which are expected to be completed by January 2019. The temporary standard proposals for the five demonstration projects will likely coincide with the next Triennial Review, but may be presented to the WQCC earlier depending on the complexity and progress of the Review. Visit the SWQB Standards web page for updates, at www.env.nm.gov/surface-water-quality/wqs/.

TMDL Update

Under §303(d)(1) of the Clean Water Act, states are required to identify waters of the state that are not meeting their designated uses as established in 20.6.4 NMAC. A Total Maximum Daily Load (TMDL) is required for each pollutant identified in an impaired water body. The TMDL is designed to establish the assimilative capacity of a water body to a pollutant and still support its designated uses. The TMDL document also serves as an implementation plan to reduce the pollutant loading and restore the water body to its designated uses.

In 2017, the SWQB developed TMDLs for Santa Fe River, Galisteo Creek, and Tijeras Arroyo. The SWQB received WQCC approval of the Santa Fe River *E.coli* TMDLs in April and EPA Region 6 approval in May, WQCC



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approval of the Galisteo Creek temperature TMDLs in July and EPA Region 6 approval in August, and WQCC approval of the Tijeras Arroyo plant nutrient TMDL in September and EPA Region 6 approval in October. The SWQB received approval of the dissolved aluminum TMDL withdrawal action for Cieneguilla Creek from WQCC in April and from EPA Region 6 in May. TMDL staff hosted public meetings in November and December for dissolved aluminum TMDL withdrawal actions for Whitewater Creek, the Rio Puerco, and the Rio Chamita. Likewise, TMDL staff will host public meetings in January for aluminum TMDL updates for the Jemez River and Middle Rio Grande. Both aluminum TMDL withdrawals and aluminum TMDL updates will be presented to the WQCC in March 2018. The SWQB plans to develop additional TMDL documents for Tecolote Creek and the Canadian River watershed including the Mora and Cimarron watersheds in 2018.



Galisteo River at Cerrillos, New Mexico.

Updates to the List of TMDLs and links to approved and pending TMDLs are available from the NMED Surface Water Quality Bureau TMDL web pages at: www.env.nm.gov/swqb/TMDL/List.

Outreach

For the first time, SWQB presented the Incredible Journey activity to fourth and fifth graders at the McKinley County Water & Energy Awareness Days in Gallup on March 14, 2017. The goals of the event were to provide awareness and education that would lead to water wise lifestyles, an understanding of surface and ground water, and an involvement in community water and energy conservation and pollution prevention programs. SWQB presented the Incredible Journey activity to fourth graders again at the Santa Fe Children's Water Fiesta (September 19-20) and the Rio Rancho Children's Water Festival (October 23-24). SWQB staff also served on the planning committee for the Rio Rancho Children's Water Festival. During the Incredible Journey activity, students role-play as water molecules that travel through different phases of the water cycle and also learn about daily water usage, water conservation, and how pollution can travel throughout the water cycle.



SWQB staff presenting the Incredible Journey.



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Ground Water Quality Bureau

Permitting and Compliance Assistance for Large Capacity Septic Tank Leachfields and Surface Disposal Facilities

Under Objective 5 of New Mexico's NPS Management Plan, the Ground Water Quality Bureau (GWQB) works to protect ground water quality from NPS pollution attributed to large capacity septic tank and leachfield systems (septic systems) and septage disposal facilities, sludge disposal facilities, and landfarms (surface disposal facilities). All surface disposal facilities and facilities discharging greater than 5,000 gallons per day of domestic wastewater to septic systems are required to obtain and maintain individual Discharge Permits through GWQB. Each Discharge Permit includes conditions and requirements intended to preserve, protect, and improve New Mexico's ground water quality for present and future generations.

Technical personnel in GWQB review Discharge Permit application, prepare and issue Discharge Permits, perform compliance assistance activities for permittees, and enforce Discharge Permit requirements for septic systems and surface disposal facilities. Throughout the permitting and compliance assistance process, GWQB staff provide outreach materials, assistance forms, and direct communication with permittees to aid them in meeting the requirements of their Discharge Permits. In addition, technical personnel perform routine site inspections to ensure that septic systems and surface disposal facilities are discharging pursuant to their Discharge Permits. Through these activities, GWQB can monitor discharges to ground water and require corrective action if contamination is detected. GWQB permitting and compliance activities for septic systems and surface disposal facilities support the goal of this project by aiding in the protection of ground water from these sources that have potential to discharge nitrogen compounds, metals, and organic compounds. In 2017, GWQB Issued twelve New, Renewal, or Renewal and Modification Discharge Permits.

New Mexico Water Fair and Water-Quality Outreach Program

Residents of New Mexico primarily rely on ground water for drinking water, 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 NPS 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 are unaware of potential contamination or find the cost associated with water testing prohibitive.

To identify possible NPS water quality problems in rural New Mexico communities, GWQB has conducted free testing of domestic wells ("Water Fairs") throughout the state for over 10 years. The Water Fair Program reaches out to domestic well owners to help educate them about water quality issues and how they can help preserve or improve water quality in their communities. During the last several years, these activities have been carried out through EPA funding. The Water Fair 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



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in rural communities. NMED receives numerous request for water fairs from community organizations, NMED Field Offices, and other State, County, and City agencies, and private citizens. The Water Fair Program continues to be an important tool for identifying possible NPS water quality problems.

The Water Fair Program is also a great outreach tool. Water quality outreach events include the demonstration of a ground water simulation model (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. Through the Water Fair Program, many families in rural New Mexico have become more knowledgeable about water quality, potential for contamination, and pollution prevention. In 2017, GWQB conducted 10 water fairs, receiving approximately 500 water samples. Overall, the amount of water fairs conducted and the level of public participation in 2017 proved to be a success.

To learn more about the Water Fair Program, visit www.env.nm.gov/gwb/NMED-GWQB-WaterFairs.htm.

FREE WELL WATER TESTING

PRIVATE WELL WATER QUALITY TESTING

NMED and NM-DOH will be offering up to 200 free water tests for private wells serving homes not connected to a public water utility to residents of Deming and surrounding communities in Luna County

<p>WHEN Saturday, September 30, 2017, 8:30 am - 12:30 pm</p> <p>WHERE Luna County Extension Service Office, 210 B Poplar Street, Deming, NM 88030</p>	<p>TESTS INCLUDE</p> <table style="width: 100%; border: none;"> <tr><td>Electrical Conductivity</td><td></td></tr> <tr><td>Sulfate</td><td>pH</td></tr> <tr><td>Nitrate</td><td>Fluoride</td></tr> <tr><td>Arsenic</td><td>Iron</td></tr> </table>	Electrical Conductivity		Sulfate	pH	Nitrate	Fluoride	Arsenic	Iron
Electrical Conductivity									
Sulfate	pH								
Nitrate	Fluoride								
Arsenic	Iron								

HOW TO COLLECT WATER SAMPLE

- Fill a clean glass or plastic container, without any strong odors, with at least a quart or liter of your well water.
- Collect the water before it runs through any water treatment/ filters such as an R.O., a carbon filter, or a water softener. If the home has a whole house filtration system, collect the water at the well head.
- Let the water run 2-3 minutes before collecting the sample.
- Fill the container with the water as close to the time of testing as possible.

At the event, we will be collecting information about your well including well coordinates, well depth, depth to water, well casing material (i.e., steel or pvc), and distance from well to the nearest septic tank/leachfield system.

All Information is Voluntary

<http://nmtracking.org/water>

(505) 827-1046

SPONSORED BY

Flyer announcing the Deming Water Fair held September 30, 2017.



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CWA Section 401 Certification Activities

NMED staff continue to process water quality certifications under Section 401 of the federal CWA. 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. Since April 2012, the SWQB has issued informal confirmation of NWP activities, and formal 401 Certification is generally required only for 404 individual permits or when new permits are developed.

As part of the 401 certification process, NMED consults with the Corps in development of permits and processing procedures for situations specific to New Mexico. On March 28, 2017 the Village of Ruidoso requested to be added to the list of permittees authorized to conduct work utilizing LOP NM-1 (Maintenance Activities at Certain Existing Structures/Facilities Constructed by Government Agencies). On April 5, 2017 NMED released a notice for public comment to amend 401 Certification of LOP NM-1. No comments were received. On May 12, 2017 NMED reissued 401 Certification of LOP NM-1 adding the Village of Ruidoso to the list of authorized permittees.

In the fall of 2017, NMED in conference with the Corps and the US Bureau of Reclamation began discussions to develop a Regional General Permit for the annual maintenance of the Rio Grande Channel between Elephant Butte and Caballo reservoirs to maintain a 5,000 cfs capacity as authorized under the federal Flood Control Acts of 1948 and 1950 and to provide erosion/bank stabilization work to protect riverside properties. A draft 401 Certification was prepared in December 2017. The final certification is anticipated to be released in early 2018.

On January 6, 2017, the U.S. Army Corps of Engineers published the notice in the Federal Register announcing the reissuance of all 50 existing nationwide permits (NWPs), general conditions and definitions with some modifications. The Corps also issued two new NWPs, one new general condition and five new definitions.

The SWQB reviewed the Final Notice for reissuance of Nationwide Permits and held meetings with USACE to discuss specific elements of the CWA §401 certification. Pursuant to State regulations (NMAC 20.6.2.2002), the NMED issued public notice and initiated a 30-day public comment period on January 10, 2017. No comments were received. The NMED subsequently issued conditional §401 certification of Nationwide Permits on March 1, 2017. The 2017 NWPs officially went into effect on March 19, 2017, and will expire on March 18, 2022.

CWA Section 401 Water Quality Certification Activities 2017	
Confirmations	
Corps Authorizations under NWPs	56
Corps Authorizations under LOP NM-1	4
Corps Authorizations under LOP NM-2	1
Corps Authorizations under Emergency RGP	1
Total	62
Other Actions	
Enforcement	2
Individual Permits Certified	2
Total	4



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New Mexico Mining Act Activities

The New Mexico Mining Act (19 NMAC 10) obligates the New Mexico Environment Department (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 minimum-impact exploration application or modifications 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 post-mining 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 the opportunity to concur with proposed permit changes. Comment periods are typically twenty days from receipt of an application.

NMED has an informal Mining-Act team that includes representatives from the Surface Water Quality Bureau (SWQB), Ground Water Quality Bureau (GWQB), and the Air Quality Bureau (AQB) to review mining applications and otherwise support the work of the New Mexico Mining and Minerals Division (MMD) of Energy, Mining and Natural Resources Department (EMNRD). This work involves reviewing applications, site inspections, hydrologic interpretations, and evaluating water quality standards against proposed mining activities. The SWQB discusses Best Management Practices (BMPs) and other mitigation measures with MMD in an effort to implement mining plans that prevent or minimize environmental risks. The team’s written comments often include conditions necessary to ensure compliance with both state and federal environmental standards. The team also participates in meetings and reviews documents in collaboration with EMNRD, United States Forest Service (USFS), New Mexico State Lands Office (SLO), United States Army Corps of Engineers (USACE), United States Environment Protection Agency (USEPA), and others.

In 2017, staff from SWQB reviewed numerous mining notices, applications, close-out plans, operations plans, monitoring plans, reclamation plans and requests for release of financial assurance or bonding money held by the state as a guarantee for mine-site reclamation. The SWQB also reviewed permit applications and associated documents for exploratory drilling programs, proposed new mining activities, and modification of existing mining activities. Twenty-four reviews were conducted in total.

The following is a summary example of mining permit activities that occurred in 2017:

- A permit renewal application for the Ancho/Gachupin-Brackett Coal Mine and the York Canyon Coal Mine was reviewed by SWQB. Active coal mining has ended, reclamation has been completed, and monitoring and maintenance is ongoing. SWQB recommended continued monitoring, maintenance, and repairs which may include filling, grading, reseeding, or other best management practices designed to protect water quality.
- SWQB reviewed an application requesting partial release of financial assurance for reclamation work completed at the Cunningham Hill Mine Reclamation Project in Santa Fe County and a modification to the approved closeout plan. Ground cover and woody plant density was used as an indicator to measure revegetation



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and evaluate reclamation success. SWQB recommended additional soil stability factors such as characterization of rills, litter movement, and annual production for evaluating reclamation success.

- SWQB recommended a number of best management practices (BMPs) designed to minimize potential water quality impacts to be included as part of a new permit for the Fruitland Humate Mine and three permits submitted by Mesa Verde Resources in McKinley County. Some of the BMPs included minimum setbacks (100 feet) from watercourses, proper road construction, and that maintenance, inspection, and cleaning schedules be kept on-site for all mobile equipment.



A rock-lined drainage network at the base of a hill, terracing on the hillslope, and successful revegetation efforts promote soil stability at the Cunningham Hill Mine.

- The Lee Ranch Coal Mine submitted a permit revision application with a new final contour design that reduced the required performance bond amount. SWQB recommended that the designed channel network consider channel sinuosity, sediment size, and the most up-to-date rainfall data for modeling the stability of the designed channels.
- An update of a closeout plan and financial assurance for the No Agua Perlite Mine in Taos County was submitted to MMD. SWQB recommended updating applicable environmental permits and water quality criteria provided in the application.
- SWQB discussed reclamation goals with an applicant for the partial release of financial assurance for eight acres of earthwork completed at the Ojo Encino Humate Mine in McKinley County. Some of the successful reclamation techniques included the proper stockpiling and replacement of topsoil and perpendicular furrows on reclaimed slopes of nearly flat terrain. The furrows inhibit surface runoff from accumulating and also function to trap wind-blown seed.
- The Tijeras Mine and Mill in Bernalillo County submitted a permit modification to MMD requesting the expansion of three new units totaling 86 acres. SWQB recommended updating applicable environmental permits and maximizing the holding capacity of quarry ponds that are designed and managed to control storm-water runoff generated from the site.
- SWQB worked closely with the MMO to identify potential water quality issues that may arise as a result of a proposed new mining operation in Luna County near the city of Deming. The mine, if approved,



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would be the first new mine in several decades in New Mexico. The mine would quarry dolomite near the Florida Mountains and process the ore to extract magnesium in a facility near the Mimbres River. Impacts at the mine site are considered minimal, but the processing facility has a greater potential affect on water quality.

- Several permit modifications for the Chino copper mine were reviewed and received formal comment from SWQB. These included expanding the existing mine boundary to create a new waste rock pile at the Chino Mine, and the construction of the Cobre haul road which will move gold and copper ore from the Cobre Mine eight miles south to the processing facility at Chino. SWQB has taken part in multi-agency field inspections of the under-construction haul road.
- The SWQB reviewed a corrective action plan for the Deming Jigging Plant. The plant processed manganese during World War II and for several decades afterwards. The site was closed and reclaimed in 2005, but the reclamation has not been fully successful, due to wind erosion blowing off the thin cover materials that were placed over the tailings. Tailings are currently eroding into the Mimbres River. The corrective action plan will stabilize the site using thicker, more armored cover material and use a more site-adapted seed mix to promote vegetative cover as well.
- The Copper Flat copper mine in Sierra County continues to get closer to operational status. A new survey of the mine facility determined that the pit lake in both the current and expanded configuration will remain wholly on private lands, thus eliminating the possibility that the pit lake could be considered a water of the state and subject to state water quality standards. The US Army Corps of Engineers had previously issued a jurisdictional determination that removed the lake from waters of the United States status.



The recently reclaimed Center Mine in the Steeple Rock Mining District in Grant County. The operator removed acid-generating waste rock piles and applied three feet of clean cover material and reseeded the 3 acre mine site in 2016 and SWQB inspected the site in July 2017.



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Additional Management Practices by Non-NMED Agencies

The following land management agencies implemented various projects and best management 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 (BLM)

Watershed	Project Description	Water Quality Benefits
Rio Hondo 13060008 (Rio Bonito 130600080207)	Prescribed burn on 1,447 acres pinyon/ juniper	<ul style="list-style-type: none"> • Decrease risk of extreme wildfire and associated erosion.
Rio Hondo 13060008 (Rio Bonito 130600080208)	Chemical treatment on 382 acres of Salt Cedar, Russian Olive, Siberian Elm, and noxious weeds	<ul style="list-style-type: none"> • Decrease sheet flow and erosion. • Increase water yield. • Increase herbaceous ground cover. • Improve aquatic and riparian habitat.
Upper Pecos – Long Arroyo 13060007 (Antelope Tank 130600070701 , Long Arroyo 130600071004)	Prescribed burn on 13,500 acres of grass and shrubs	<ul style="list-style-type: none"> • Decrease risk of extreme wildfire and associated erosion.
Upper Pecos 13060003 (Salt Creek - Pecos River 130600031807)	Prescribed burn on 183 acres of grass and shrubs	<ul style="list-style-type: none"> • Decrease risk of extreme wildfire and associated erosion.
Jemez 13020202 (Querencia Arroyo 130202020306)	Reconstruct a breached earthen detention dam, 8 AF-capacity	<ul style="list-style-type: none"> • Catch and store sediment. • Moderate peak flows. • Restore/Improve wetland habitat. • Decrease erosion.



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BLM (continued)

Watershed	Project Description	Water Quality Benefits
Rio Puerco 13020204 (Outlet Arroyo Chijuilla 130202040104)	Mechanical stabilization of a 20-ft deep headcut	<ul style="list-style-type: none"> • Prevent upstream expansion of gully erosion. • Reduce downstream sedimentation.
North Plains 13020206 (Headwaters Cebolla Creek 130202060501)	Ponderosa / juniper prescribed burning (1200 acres) Rock check dam maintenance (10 check dams)	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease erosion. • Increase bank storage. • Stabilize stream banks to reduce erosion.
13020101 Rio Grande from CO to Red River	150 acres thinned in piñon-juniper woodland (Guadalupe Mtn.)	<ul style="list-style-type: none"> • Reduce flooding. • Decrease erosion. • Increase herbaceous ground cover.
Upper San Juan (La Manga Watershed)	Drill pad reclamation Road maintenance (215 miles) Road closure (78 miles)	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Improve forest health and Community protection (WUI). • Increase water infiltration. • Decrease erosion. • Improve road drainage.
Upper San Juan 14080101 Blanco Canyon 14080103	Seed and lop/scatter 290 acres of pinyon/juniper encroachment	<ul style="list-style-type: none"> • Increase understory. • Decrease erosion. • Increase soil stability.



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BLM (continued)

Watershed	Project Description	Water Quality Benefits
Upper San Juan 14080101 Animas 14080104	4000 acres of invasive weed treatment	<ul style="list-style-type: none"> • Decrease invasives. • Increase soil stability. • Decrease erosion.
Upper San Juan, 14080101 Blanco Canyon 14080103	13,270 acres of aerial sagebrush treatment	<ul style="list-style-type: none"> • Promotes native perennial grasses. • Decrease erosion. • Increase soil stability.
Upper San Juan, 14080101 Blanco Canyon 14080103	Reservoir/silt trap construction/ maintenance (8 structures)	<ul style="list-style-type: none"> • Reduce Flooding. • Increase water yield. • Decrease erosion.
Upper San Juan, 14080101 Blanco Canyon 14080103 Chaco 14080106	Well Pad Final Reclamation ~ 240ac Well Pad interim Reclamation ~45ac Road Improvement ~ 100 miles Road Closure ~ 3 miles	<ul style="list-style-type: none"> • Decrease Erosion. • Improve Road Drainage. • Promote native perennial grasses.

New Mexico State Forestry Division

Watershed	Project Description	Water Quality Benefits
Upper Rio Grande (Rio Chama-Rio Grande)	Ponderosa, pinon and juniper thinning, piling (92 acres)	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.



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New Mexico State Forestry Division (continued)

Watershed	Project Description	Water Quality Benefits
Rio Grande-Albuquerque (Arroyo de las Calabacillas-Rio Grande)	Removal on 30.1 acres of Salt Cedar and Russian Olive.	<ul style="list-style-type: none"> • Decrease sheet flow and erosion. • Increase water yield. • Increase herbaceous ground cover. • Improve aquatic and riparian habitat.
Rio Grande-Santa Fe (Santa Fe River)	Ponderosa, pinon and juniper thinning, piling (40 acres)	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.
Pecos Headwaters (Lake Sumner-Pecos River)	Prescribed fire, broadcast burn (116 acres)	<ul style="list-style-type: none"> • Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.
San Francisco (Deep Creek-San Francisco River)	Ponderosa pine thinning, mastication (900 acres)	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.
Rio Grande-Albuquerque (Arroyo de la Parida-Rio Grande)	Salt Cedar and Russian Olive removal (536 acres)	<ul style="list-style-type: none"> • Decrease sheet flow and erosion. • Increase water yield. • Increase herbaceous ground cover. • Improve aquatic and riparian habitat.
Rio Chama (Arroyo Seco)	Ponderosa pine thinning, mastication	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.
Rio Chama (Rio Puerco)	570 acres thinned in Ponderosa, pinon and juniper, piling and mastication	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.



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New Mexico State Forestry Division (continued)

Watershed	Project Description	Water Quality Benefits
Pecos Headwaters (Headwaters Gallinas River)	Ponderosa pine thinning, chipping, piling (101 acres)	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.
Pecos Headwaters (Cow Creek-Pecos River)14080103	Ponderosa, pinon and juniper thinning, chipping (44.5 acres)	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.
Rio Penasco (Upper Rio Penasco)	Ponderosa pine thinning, mastication (1119 acres)	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.
Mimbres (Gallinas Canyon-Mimbres River)	Ponderosa pine thinning, mastication (445 acres)	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.
Rio Chama (Rio Puerco)	Ponderosa pine thinning, mastication (195.1 acres)	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.
Rio Penasco (Upper Rio Penasco)	Ponderosa pine thinning, mastication (52.8 acres)	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.



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New Mexico State Forestry Division (continued)

Watershed	Project Description	Water Quality Benefits
Animas (City of Farmington)	Salt Cedar and Russian Olive removal (25 acres)	<ul style="list-style-type: none"> • Decrease sheet flow and erosion. • Increase water yield. • Increase herbaceous ground cover. • Improve aquatic and riparian habitat.
Rio Hondo (Rio Ruidoso)	Ponderosa, pinon and juniper thinning, piling and mastication (183.4 acres)	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.
Jornada del Muerto (Headwaters Chupadera Arroyo)	Pinon and juniper thinning, piling and mastication (16 acres)	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.
Rio San Jose (Bluewater Creek)	Ponderosa, pinon and juniper thinning, piling and mastication (443 acres)	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease erosion. • Decrease risk of high intensity wildfire. • Increase forest health and resiliency. • Increase water infiltration.
Middle San Juan (Ojo Amarillo Canyon)	Salt Cedar and Russian Olive removal (327 acres)	<ul style="list-style-type: none"> • Decrease sheet flow and erosion. • Increase water yield. • Increase herbaceous ground cover. • Improve aquatic and riparian habitat.
Rio Grande- Albuquerque (Arroyo de la Matanza-Rio Grande)	Salt Cedar and Russian Olive removal (87 acres)	<ul style="list-style-type: none"> • Decrease sheet flow and erosion. • Increase water yield. • Increase herbaceous ground cover. • Improve aquatic and riparian habitat.
Rio Grande- Albuquerque (Canon Monte Largo-Rio Grande)	Salt Cedar and Russian Olive removal (6 acres)	<ul style="list-style-type: none"> • Decrease sheet flow and erosion • Increase water yield • Increase herbaceous ground cover • Improve aquatic and riparian habitat.



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U.S. Forest Service Projects

Carson National Forest

Watershed	Project Description	Water Quality Benefits
Upper Rio Grande 13020101 Canada del Ojo Sarco 130201010504	Tier 3 Ojo Sarco Thinning Contract -Thinning and lop & scatter/piling of slash in piñon-juniper and ponderosa pine forest types (275 acres)	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease risk of extreme wildfire and associated erosion.
Upper Rio Grande 13020101 Rio Santa Barbara – Rio Pueblo Watershed 130201010906	Amole Green Fuelwood -Commercial thinning in ponderosa pine forest type (115 acres)	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease erosion.
Upper Rio Grande 13020101 Headwaters Rio Fernando del Taos Watershed 130201010601	North Shady Brook Piles RX FY 17 - Pile burning of activity created fuels (70 acres)	<ul style="list-style-type: none"> • Disruption of fuel continuity. • Decrease fuel load and fire behavior. • Mitigate threat of high intensity and high severity wildfires and associated negative impacts to watershed health and function.
Cimarron 1108000201 Headwaters Cieneguilla Creek 110800020103	East La Jara Pile Burn FY 17 RX FY 17 - Pile burning of activity created fuels (50 acres)	<ul style="list-style-type: none"> • Disruption of fuel continuity. • Decrease fuel load and fire behavior. • Mitigate threat of high intensity and high severity wildfires and associated negative impacts to watershed health and function.
Upper Rio Grande 13020101 La Junta Creek 130201010901	Road Decommissioning -Reslope natural contours and build tank traps at pinch-points to restrict illegal vehicle and off-road access on non-system and user-created routes. Remove non-functioning culverts on routes. (39 miles) -Improved 3,426 acres	<ul style="list-style-type: none"> • Reduce sedimentation in streams by preventing vehicle trespass in wet meadows, riparian areas, and across streams. • Decrease erosional damage caused by route creation and soil compaction. • Improve water drainage and filtration.



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Watershed	Project Description	Water Quality Benefits
Black Copper Creek 130201010301	Black Copper/Red River Grazing Allotment - Rested Allotment: 10,418 acres rested in watershed from grazing impacts	<ul style="list-style-type: none"> • Increase in herbaceous ground cover. • Decreased erosion and improved ground cover. • Riparian forage along Black Copper Creek improved.
Bobcat Creek 130201010301	Bobcat Grazing Allotment - Rested Allotment: 6,284 acres rested in watershed from grazing impacts	<ul style="list-style-type: none"> • Increase in herbaceous ground cover. • Decreased erosion and improved ground cover.
Columbine Creek 130201010303	Columbine Grazing Allotment - Rested Allotment: 9,016 acres rested in watershed from grazing impacts	<ul style="list-style-type: none"> • Increase in herbaceous ground cover • Decreased erosion and improved ground cover. • 1.0 mile of riparian forage along Black Copper Creek improved.
Bull Creek, Lake Fork Creek, Lagunitas Creek and adjacent Hart Lake. 130201010302	Lake Fork/Baldy Grazing Allotment - Rested Allotment: 8,271 acres rested in watershed from grazing impacts	<ul style="list-style-type: none"> • Increase in herbaceous ground cover. • Decreased erosion and improved ground cover. • 3.0 mile of riparian forage along the headwaters of Bull Creek, Lake Fork Creek, Lagunitas Creek and adjacent Hart Lake improved.
Sawmill Creek 130201010301	Sawmill Grazing Allotment - Rested Allotment: 2,055 acres rested in watershed from grazing impacts	<ul style="list-style-type: none"> • Decreased erosion and improved ground cover. • Increase in herbaceous ground cover. • Improve riparian veg. to reduce erosion.
Middle Red River 130201010303	La Lama Grazing Allotment – 2000 acres <ul style="list-style-type: none"> • Improve livestock grazing distribution with installation of two stock tank drinkers 	<ul style="list-style-type: none"> • Improve riparian veg. to reduce erosion.



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Carson National Forest (continued)

Watershed	Project Description	Water Quality Benefits
Middle Red River 130201010303	San Cristobal Grazing Allotment – 640 acres <ul style="list-style-type: none"> • Improve livestock grazing distribution by rejuvenation of dirt water tank to improve water holding capacity 	<ul style="list-style-type: none"> • Improve riparian veg. to reduce erosion.
Middle Red River 130201010303	Forest Trail Maintenance <ul style="list-style-type: none"> • Yerba Trail #61 – 3.9 miles • Deer Creek Trail #69 – 5.6 miles 	<ul style="list-style-type: none"> • Decrease erosion from trail prism. • Improve trail drainage.
Headwaters N. Ponil Ck 110800020203	Noxious weed removal on 218.1 acres Specifically targeting musk thistle, bull thistle and hounds tongue	<ul style="list-style-type: none"> • Improve riparian vegetation.
Red River 130201010304	Questa Lama WUI – El Medio CFRP 67 acres of thinning.	<ul style="list-style-type: none"> • Improve watershed condition. • Improve forest health of Ponderosa Pine forest type.
Red River 130201010304	<ul style="list-style-type: none"> • Forest Road FR 132A1 stabilization/restoration of drainage and road prism -3.4 miles 	<ul style="list-style-type: none"> • Decrease erosion. • Improve road drainage.
Middle Red River 130201010303	Pioneer Cy <ul style="list-style-type: none"> • Forest Road FR 485 stabilization/restoration of drainage and road prism - 3.3 miles • FR 54K, 54H, 54, 54D – 5.5 miles 	<ul style="list-style-type: none"> • Decrease erosion. • Improve road drainage.
Cabresto Creek 130201010302	<ul style="list-style-type: none"> • Re-establish road prism and road drainage on 19.1 miles of level 2 road with severe erosion rutting of road surface 	<ul style="list-style-type: none"> • Decrease erosion. • Improve road drainage.
Cabresto Creek 130201010302	Forest Trail Maintenance <ul style="list-style-type: none"> • Heart Lake Trail #115 – 0.45 miles • Lake Fork Trail #82 – 4.7 miles 	<ul style="list-style-type: none"> • Decrease erosion. • Improve trail drainage.



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Watershed	Project Description	Water Quality Benefits
Upper Red River 130201010301	<ul style="list-style-type: none"> • FR 54, 134, 54C, UD7_191 – 5.4 miles • Re-establish road prism and road drainage on level 2 road with severe erosion rutting of road surface 	<ul style="list-style-type: none"> • Decrease erosion. • Improve trail drainage.
Upper Red River 130201010301	Forest Trail Maintenance <ul style="list-style-type: none"> • East Fork Trail #56 – 1.3 miles • Lost Lake Trail #91 – 7.1 miles • Goose Creek Trail #65 – 2.6 miles 	<ul style="list-style-type: none"> • Decrease erosion. • Improve trail drainage.
Arroyo Hondo/Rio Grande 130201010703	<ul style="list-style-type: none"> • FR 9 – 3.4 miles 	<ul style="list-style-type: none"> • Decrease erosion. • Improve road drainage.
Arroyo Hondo/Rio Grande 130201010703	Forest Trail Maintenance <ul style="list-style-type: none"> • Cebolla Mesa Trail #102 – 1.3 miles • San Cristobal Trail #78 – 3.8 miles 	<ul style="list-style-type: none"> • Decrease erosion. • Improve road drainage.
Headwaters Arroyo Hondo - 130201010701	<ul style="list-style-type: none"> • Bull of Woods ROW thru pvt. – 1.4 miles • Arroyo Hondo stream restoration – 1.0 mile • Upland/Riparian Forest thinning – 3 acres 	<ul style="list-style-type: none"> • Decrease erosion. • Improve road drainage. • Improve riparian veg. to reduce erosion. • Increase shade to reduce stream temperature. • Stabilize stream banks to reduce erosion. • Increase bank storage.
Headwaters Arroyo Hondo - 130201010701	Forest Trail Maintenance <ul style="list-style-type: none"> • Yerba Trail #61 – 3.9 miles • Wheeler Peak Trail #90 – 2.8 miles 	<ul style="list-style-type: none"> • Decrease erosion • Improve road drainage.
Comanche Creek 130201010102	<ul style="list-style-type: none"> • FR1905, 1950 – 13.2 miles 	<ul style="list-style-type: none"> • Decrease erosion. • Improve road drainage. • Hardening of Vidal Ck stream crossing and improvement of road across wetland area. • Decrease sediment.



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Watershed	Project Description	Water Quality Benefits
Comanche Ck/Costilla Ck 130201010103	<ul style="list-style-type: none"> • FR1900 – 2.6 miles 	<ul style="list-style-type: none"> • Decrease erosion. • Improve road drainage.
Latir Ck/Costilla Ck 130201010104	<ul style="list-style-type: none"> • FR1950 -5.9 miles 	<ul style="list-style-type: none"> • Decrease erosion.. • Improve road drainage.
Middle Ponil Ck 110800020202	<ul style="list-style-type: none"> • FR 1910, 1914, 1950 – Level 3 = 10.6 miles • FR 1913 – Level 2 = 5.7 miles 	<ul style="list-style-type: none"> • Decrease erosion. • Improve road drainage.
Outlet North Ponil Ck 110800020205	<ul style="list-style-type: none"> • FR 1914, 1950 – 3.9 miles 	<ul style="list-style-type: none"> • Decrease erosion. • Improve road drainage.
Headwaters North Ponil Ck - 110800020203	<ul style="list-style-type: none"> • FR 1914, 1950 – 10.9 miles • Valle Vidal NE <p>(Whitman Vega) Rx fire – 1,694 acres</p> <ul style="list-style-type: none"> • Whitman Wildfire – 334 acres 	<ul style="list-style-type: none"> • Decrease erosion. • Improve road drainage. • Increase herbaceous ground cover.
Greenwood Cy 110800020201	<ul style="list-style-type: none"> • FR 1913 – 3.1 miles 	<ul style="list-style-type: none"> • Decrease erosion. • Improve road drainage.
Headwaters Cerrososo Ck 110800020207	<ul style="list-style-type: none"> • FR 1950 on NF lands – 4.6 miles • FR 1950 ROW thru pvt. – 11.8 miles 	<ul style="list-style-type: none"> • Decrease erosion. • Improve road drainage.
Outlet Cerrososo Ck 110800020208	<ul style="list-style-type: none"> • FR 1950 ROW thru pvt. – 7.8 miles 	<ul style="list-style-type: none"> • Decrease erosion. • Improve road drainage.



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Watershed	Project Description	Water Quality Benefits
Alamosa- Trinchera 13010002 Punche Arroyo 130100021806	Watershed planning on 384 acres	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease erosion. • Decrease fire hazard. • Interagency cooperation.
Alamosa- Trinchera 13010002 Alta Lake 130100021805	Watershed planning on 1,978 acres	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease erosion. • Decrease fire hazard. • Interagency cooperation.
Conejos 13010005 Big Horn Creek 130100050403	Thinning in dry mixed conifer on 142 acres	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease erosion.
Conejos 13010005 Rio de Los Pines- Rio San Antonio 130100050202	Watershed planning on 32,559 acres Fence ex-closure on 3 miles	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease erosion. • Decrease fire hazard. • Interagency cooperation. • Improvement of water gap on main stem in order to restrict cows to a limited area.
Rio Chama 13020102 Arroyo Seco 130201021101	Thinning in dry mixed conifer on 18 acres	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease erosion. • Decrease fire hazard.
Rio Chama 13020102 Canada Biscara- Rio Tusas 130201021301	Watershed planning on 32,453 acres Thinning in dry mixed conifer on 25 acres	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease erosion. • Decrease fire hazard and associated erosion. • Interagency cooperation.



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Carson National Forest (continued)

Watershed	Project Description	Water Quality Benefits
Rio Chama 13020102 Canada Alamosa- Rio Vallecitos 130201021402	Managed wildfire in ponderosa pine on 5,692 acres Watershed planning on 4,055 acres	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease fire hazard and associated erosion. • Interagency cooperation.
Rio Chama 13020102 Canada de Agua- Rio Vallecitos 130201021403	Managed wildfire in ponderosa pine on 1,201 acres	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease fire hazard and associated erosion. • Interagency cooperation.
Rio Chama 13020102 Canada de los Comanches- Rio Tusas 130201021304	Thinning in ponderosa pine on 129 acres Managed wildfire in ponderosa pine on 89 acres	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease fire hazard and associated erosion. • Interagency cooperation.
Rio Chama 13020102 Canada del Agua- Rio Tusas 130201021304	Managed wildfire in ponderosa pine on 5,925 acres Thinning in dry mixed conifer on 83 acres Thinning in ponderosa pine on 81 acres Watershed planning on 29,295 acres	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease fire hazard and associated erosion. • Interagency cooperation.
Rio Chama 13020102 Cedar Grove Cemetery- Arroyo Blanco 130201020501	Prescribed burn in ponderosa pine on 38 acres Thinning in piñon and ponderosa pine on 110 acres	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease fire hazard and associated erosion. • Interagency cooperation.



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Watershed	Project Description	Water Quality Benefits
Rio Chama 13020102 Gavilan Creek 130201020103	Watershed planning on 3,382 acres	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease erosion. • Decrease fire hazard. • Interagency cooperation.
Rio Chama 13020102 Headwaters Rio Cebolla 130201020502	Installation of new road closure gates for Travel Management Seasonal Closure	<ul style="list-style-type: none"> • Reduces road damage and associated erosion by closing roads during muddy conditions during winter.
Rio Chama 13020102 Jarosa Creek- Rio Vallecitos 130201020902	Watershed planning on 10,934 acres	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease erosion. • Decrease fire hazard.
Rio Chama 13020102 Lopez Canyon-Canjilon Creek 130201020902	Managed wildfire on 37 acres Prescribed burn in ponderosa pine on 98 acres Thinning in piñon and ponderosa pine on 415 acres	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease fire hazard and associated erosion.
Rio Chama 13020102 Martinez Canyon 130201020903	Managed wildfire in ponderosa pine on 43 acres Thinning in piñon-juniper and ponderosa pine on 487 acres	<ul style="list-style-type: none"> • Decrease fire hazard and associated erosion. • Reduces road damage and associated erosion by closing roads during muddy conditions during winter.
Rio Chama 13020102 Martinez Canyon-Canjilon Creek 130201020904	Thinning in piñon-juniper and ponderosa pine on 487 acres Prescribed burn in ponderosa pine on 2 acres	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease fire hazard and associated erosion.



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Carson National Forest (continued)

Watershed	Project Description	Water Quality Benefits
Rio Chama 13020102 Montoya Canyon- Canjilon Creek 130201020901	Skidding and decking of felled trees on 80 acres Thinning in piñon-juniper and ponderosa pine on 623 acres Installation of new road closure gates for Travel Management Seasonal Closure	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease erosion. • Decrease fire hazard. • Reduces road damage and associated erosion by closing roads during muddy conditions during winter.
Rio Chama 13020102 Outlet El Rito 130201021103	Thinning in piñon-juniper and ponderosa pine on 496 acres	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease erosion. • Interagency cooperation.
Upper Rio Grande 13020101 130201010202	Watershed planning on 391 acres	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease erosion. • Decrease fire hazard. • Interagency cooperation.
Upper Rio Grande 13020101 Arroyo Punche 130201010401	Watershed planning on 1,518 acres	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease erosion. • Decrease fire hazard. • Interagency cooperation.
Upper Rio Grande 13020101 Canon de Tio Gordito- Arroyo Aguaje de la Petaca 130201010803	Thinning in ponderosa pine on 165 acres Managed wildfire in ponderosa pine on 2,764 acres Prescribed burn in ponderosa pine on 1,150 acres Watershed planning on 20,233 acres	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease fire hazard and associated erosion. • Interagency cooperation.



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Watershed	Project Description	Water Quality Benefits
Upper Rio Grande 13020101 Carson Reservoir- Arroyo Aguaje de la Petaca 130201010805	Thinning in ponderosa pine on 416 acres	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease erosion. • Decrease fire hazard.
Upper Rio Grande 13020101 Lamy Canyon- Arroyo Aguaje de la Petaca 130201010801	Watershed planning on 10,569 acres	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease erosion. • Decrease fire hazard. • Interagency cooperation.
Upper Rio Grande 13020101 Martinez Canyon- Arroyo Aguaje de la Petaca 130201020802	Watershed planning on 13,706 acres	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease erosion. • Decrease fire hazard. • Interagency cooperation.
Rio Chama 13020102 Canada de los Comanches-Rio Tusas 130201021304	Removal of Wild Horses (1,350 acres)	<ul style="list-style-type: none"> • Increase herbaceous ground cover. • Decrease erosion.
Rio Chama 13020102 Martinez Canyon- Canjilon Creek 130201020904	Sage Brush Treatment (981 acres)	<ul style="list-style-type: none"> • Decrease erosion. • Increase herbaceous ground cover. • Decrease fire hazard. • Increase water infiltration.
Rio Chama 13020102 Arroyo del Yeso- Arroyo Seco 130201020905	Sage Brush Treatment (254 acres)	<ul style="list-style-type: none"> • Decrease erosion. • Increase herbaceous ground cover. • Decrease fire hazard. • Increase water infiltration.



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Watershed	Project Description	Water Quality Benefits
Rio Chama 13020102 Ojito Canyon-Abiquiu Reservoir 130201021002	Sage Brush Treatment (751 acres)	<ul style="list-style-type: none"> • Decrease erosion. • Increase herbaceous ground cover. • Decrease fire hazard. • Increase water infiltration.
Conejos 13010005 Canada de los Ranchos-Rio San Antonio 130100050302	Stewart Meadow Watergap Fence, 0.1 mile	<ul style="list-style-type: none"> • Improve riparian vegetation. • Reduce sedimentation within channel. • Improve streambank stability and structure.

Cibola National Forest

Watershed	Project Description	Water Quality Benefits
Rio San Jose (13020207) Agua Medio - Bluewater Creek (130202070201)	Ponderosa Pine thinning (495 acres)	<ul style="list-style-type: none"> • Decrease risk of uncharacteristic wildfire. • Decrease potential erosion and sediment.
Rio San Jose (13020207) Bluewater Lake - Bluewater Creek (130202070206)	Prescribed Fire (885 acres)	<ul style="list-style-type: none"> • Decrease risk of uncharacteristic wildfire. • Improve ground cover. • Reduce sediment yield.
Rio San Jose (13020207) Bluewater Lake - Bluewater Creek (130202070206)	Ponderosa Pine thinning (247 acres)	<ul style="list-style-type: none"> • Decrease risk of uncharacteristic wildfire. • Decrease potential erosion and sediment.
Rio San Jose (13020207) Headwaters Cottonwood Creek (130202070202)	Ponderosa Pine thinning (569 acres)	<ul style="list-style-type: none"> • Decrease risk of uncharacteristic wildfire. • Decrease potential erosion and sediment.



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Cibola National Forest (continued)

Watershed	Project Description	Water Quality Benefits
Rio San Jose (13020207) Ojo Redondo - Bluewater Creek (130202070205)	Prescribed Fire (1771 acres)	<ul style="list-style-type: none"> • Decrease risk of uncharacteristic wildfire. • Improve ground cover. • Reduce sediment yield.
Rio San Jose (13020207) Upper San Mateo Creek (130202070301)	Ponderosa Pine thinning (225 acres)	<ul style="list-style-type: none"> • Decrease risk of uncharacteristic wildfire. • Decrease potential erosion and sediment.
Elephant Butte Reservoir (13020211) Limestone Canyon - Alamosa Creek (130202110601)	Stream stabilization structures (8 acres)	<ul style="list-style-type: none"> • Improve stream stabilization. • Reduce bank erosion. • Reduce sediment yields.
Rio Grande – Albuquerque (13020203) Upper Tijeras Arroyo (130202030201)	Ponderosa Pine and Pinyon-Juniper thinning (411 acres)	<ul style="list-style-type: none"> • Decrease risk of uncharacteristic wildfire. • Decrease potential erosion and sediment.
Western Estancia (13050001) Arroyo de Chilili (130500010402)	Ponderosa Pine and Pinyon-Juniper thinning (558 acres)	<ul style="list-style-type: none"> • Decrease risk of uncharacteristic wildfire. • Decrease potential erosion and sediment.
Western Estancia (13050001) Mesteno Draw (130500011001)	Prescribed Fire (277 acres)	<ul style="list-style-type: none"> • Decrease risk of uncharacteristic wildfire. • Decrease potential erosion and sediment.
Upper Canadian (11080003) Canon Hondo - Canadian River (110800030507)	Salt Cedar Removal and Retreatment (85 acres)	<ul style="list-style-type: none"> • Improve riparian condition. • Improve bank stability. • Reduce sediment yields.



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Gila National Forest

Watershed	Project Description	Water Quality Benefits
<p>Palomas Creek-Rio Grande 1303010102 (North Fork Palomas Creek-130301010206) (South Fork Palomas Creek-130301010207) (Mud Spring-130301010204) (Circle Seven Creek-130301010205)</p>	<p>Hermosa Allotment – entire allotment was kept in non-use for resource protection – approx. 44,000 acres</p>	<ul style="list-style-type: none"> • 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.
<p>Caballo Reservoir 1303010104 (Seco Creek-130301010403) (North Seco Creek-130301010401)</p>	<p>Hermosa Allotment – entire allotment was kept in non-use for resource protection – approx. 44,000 acres</p>	<ul style="list-style-type: none"> • 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.
<p>Headwaters Alamosa Creek 1302021106 (Little Pigeon Canyon-Alamosa Creek 130202110603) (Wahoo Canyon – Alamosa Creek 130202110606) (Sim Yaten Canyon – Alamosa Creek 130202110607) (Wildhorse Canyon 130202110608)</p>	<p>North Wahoo Allotment - entire allotment was kept in non-use for resource protection; South Wahoo Allotment – entire allotment was kept in non-use for resource protection</p>	<ul style="list-style-type: none"> • 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.



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Gila National Forest (continued)

Watershed	Project Description	Water Quality Benefits
Little Creek 150400010603 Outlet West Fork Gila River 150400010604	Straw Fire 9,354 acres – managed for resource benefits	<ul style="list-style-type: none"> Decrease risk of extreme wildfire and associated erosion.
Tom Moore Canyon 150400010701 Outlet Diamond Creek 150400010406 Black Canyon-East Fork Gila River 150400010705	Corral Fire 20,478 Acres – managed for resource benefits	<ul style="list-style-type: none"> Decrease risk of extreme wildfire and associated erosion.
Gallinas Canyon – Mimbres River 1303020201 (Powderhorn Canyon – Mimbres River -130302020101) (Allie Canyon – Mimbres River – 130302020102) (Sheppard Canyon – Mimbres River – 130302020103) (Noonday Canyon – 130302020104) (Noonday Canyon – Mimbres River – 130302020105)	Mimbres/Powderhorn/Sapillo Allotment rested except for Skates Pasture & Kelly Pasture- 18,673 acres were kept in non-use for resource protection	<ul style="list-style-type: none"> 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.



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Gila National Forest (continued)

Watershed	Project Description	Water Quality Benefits
Headwaters Alamosa Creek 1302021106 (Little Pigeon Canyon- Alamosa Creek 130202110603) (Wahoo Canyon- Alamosa Creek - 130202110606)	North Wahoo Allotment - entire allotment was kept in non-use for resource protection	<ul style="list-style-type: none"> • 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.
Allie Canyon-Mimbres River 130302020102	McKnight South Thinning 445 acres pinyon juniper restoration thinning 3-Circles Thinning 31 acres pinyon juniper restoration/WUI thin	<ul style="list-style-type: none"> • Decrease erosion. • Increase herbaceous ground cover. • Decrease risk of extreme wildfire.
Rocky Canyon-Sapillo Creek 150400010802	Gattons Park thinning 117 acres Thinning/pulling Grassland, PJ & Ponderosa pine North Star grassland maintenance 10 acres	<ul style="list-style-type: none"> • Decrease erosion. • Increase herbaceous ground cover. • Decrease risk of extreme wildfire.
Powderhorn Canyon-Mimbres River 130302020101	North Star grassland maintenance 10 acres Removed upland vegetation from 1.4 acres along Mimbres River Constructed bank stabilization features and wildlife habitat pools	<ul style="list-style-type: none"> • Decrease erosion. • Increase herbaceous ground cover. • Improve riparian veg. to reduce erosion. • Stabilize stream banks to reduce erosion. • Decrease risk of extreme wildfire.
Sapillo Creek-Gila River 150400010901 Copperas Creek-Sapillo Creek 150400010804	Copperas Fire 47 acres – managed for resource benefits	<ul style="list-style-type: none"> • Decrease risk of extreme wildfire and associated erosion.



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Gila National Forest (continued)

Watershed	Project Description	Water Quality Benefits
Swan Canyon 150400020602	Bar 6 thinning – 70 acres	<ul style="list-style-type: none"> • Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover. • Thin current pinion/juniper stand, improving grassland restoration. • Improve riparian function Improved watershed condition resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation and water quality benefits.
(Headwaters Thompson Canyon- 150400030403)	Jacks Peak road work – diversion of runoff	<ul style="list-style-type: none"> • Improve water quality by providing best management practices that reduce sedimentation into drainages.
(Willow Creek- Mangas 150400020301)	Willow solar well installation	<ul style="list-style-type: none"> • Improved distribution of livestock grazing.
(Allie Canyon – Mimbres River – 130302020102) / (Sheppard Canyon – Mimbres River – 130302020103) (Sheppard Canyon – Mimbres River – 130302020103)	Allie/ Avalanche Allotment – Juniper treatment – 15 acres Fence reconstruction - Reconstructed 1 ½ mile of allotment boundary fence between Allie/Avalanche and Redstone allotment	<ul style="list-style-type: none"> • Increase herbaceous ground cover by improving watershed condition and livestock/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.
(Lake Roberts –Sapillo Creek -150400010803) (Sheppard Canyon – Mimbres River – 130302020103)	Jaybird Rx – burned 2487 acres Signal Fire rehab – tree thinning on about 170 acres	<ul style="list-style-type: none"> • Improved watershed condition and herbaceous ground cover buy reducing fuel loads and minimizing the chances of a catastrophic wildfire, resulting in an increase of stabilized soils, reduction in runoff, erosion and sedimentation.



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Gila National Forest (continued)

Watershed	Project Description	Water Quality Benefits
El Caso Spring Canyon 150200030201 Middle Mangas Creek 150200030102 Upper Mangas Creek 150200030101 Sawmill Canyon- Largo Creek 150200030202	Baca Wildfire treated 11,414 acres of natural and activity slash, grasslands, ponderosa pine, and mixed conifer stands	<ul style="list-style-type: none"> • Decreased risk of extreme wildfire from project slash and hazardous fuels in adjacent areas. • Increase herbaceous ground cover.
Upper Mangas Creek 150200030101	Slaughter Mesa – 214 acres thinning and removal of encroaching pinyon/ juniper	<ul style="list-style-type: none"> • Decrease risk of extreme wildfire. • Increase herbaceous ground cover.
Alamosita Creek 130202080407	Alamosita Allotment 8,611 acres- entire allotment was kept in non-use for resource protection	<ul style="list-style-type: none"> • 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.
Apache Creek 150400040106	Allotment Apache Creek West 3,325 acres- entire allotment was kept in non-use for resource protection	<ul style="list-style-type: none"> • 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.

Lincoln National Forest

Watershed	Project Description	Water Quality Benefits
Rio Hondo	Thinning - Push (628 acres)	<ul style="list-style-type: none"> • Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.



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Lincoln National Forest (continued)

Watershed	Project Description	Water Quality Benefits
Rio Hondo	Rx (468 acres)	<ul style="list-style-type: none"> • Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.
Salt Basin Arkansas Canyon- Sacramento River Rio Penasco. Perk Canyon	Monument Fire 2017 (174 acres)	<ul style="list-style-type: none"> • Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.
Tularosa Valley. Cottonwood Creek Rio Hondo. Upper Rio Bonita	Whitehorse Fire 17 (20 acres)	<ul style="list-style-type: none"> • Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.
Rio Penasco	JIM SPRINGS UNIT 9 2017 (72 acres)	<ul style="list-style-type: none"> • Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.
Tularosa Valley	ALAMO PEAK DECK SALES (400 acres)	<ul style="list-style-type: none"> • Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover
Upper Pecos-Black Turkey Canyon-Dark Canyon Salt Basin Upper Dog Canyon	Rx (4281 acres)	<ul style="list-style-type: none"> • Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.
Rio Penasco	Rx 2017 (1326)	<ul style="list-style-type: none"> • Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.



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Lincoln National Forest (continued)

Watershed	Project Description	Water Quality Benefits
Tularosa Valley Headwaters Ancho Gulch Arroyo Del Macho. Lavade Draw Upper Reventon Draw	Thinning (20 acres)	<ul style="list-style-type: none"> • Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.
Rio Hondo	Thinning 17 (39 acres)	<ul style="list-style-type: none"> • Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.
Salt Basin Arkansas Canyon-Sacramento River Tularosa Valley Grapevine Canyon	Salvage (14 acres)	<ul style="list-style-type: none"> • Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.
Arroyo Del Macho Aragon Creek Rio Hondo Gyp Spring Canyon	Rx (1488 acres)	<ul style="list-style-type: none"> • Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.
Rio Hondo	Rx (198 acres)	<ul style="list-style-type: none"> • Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.
Rio Hondo	Rx (152 acres)	<ul style="list-style-type: none"> • Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.



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Lincoln National Forest (continued)

Watershed	Project Description	Water Quality Benefits
Upper Pecos-Black	EAST FRIJOLE 2017 (273 acres)	<ul style="list-style-type: none"> • Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.
Rio Hondo	Thinning 17 (206 acres)	<ul style="list-style-type: none"> • Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.
Rio Hondo	Mastication (465 acres)	<ul style="list-style-type: none"> • Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.
Rio Penasco	Mastication (93 acres)	<ul style="list-style-type: none"> • Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.
Rio Hondo	CORA DUTTON FW UNIT 13 2017 (19 acres)	<ul style="list-style-type: none"> • Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.
Rio Hondo	Rx (6 acres)	<ul style="list-style-type: none"> • Decrease risk of extreme wildfire and associated erosion. • Increase herbaceous ground cover.
Rio Penasco	Upper Rio Penasco Electric Fencing—temporary electric fence installed to protect riparian habitat for Endangered New Mexico Meadow Jumping Mouse	<ul style="list-style-type: none"> • Stabilize stream banks to reduce erosion and improve riparian condition.
Rio Penasco	Upper Ague Chiquita Electric Fencing—temporary electric fence installed to protect riparian habitat for Endangered New Mexico Meadow Jumping Mouse	<ul style="list-style-type: none"> • Stabilize stream banks to reduce erosion and improve riparian condition.



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Santa Fe National Forest

Watershed	Project Description	Water Quality Benefits
Jemez Watershed (Upper Guadalupe River) (Lower Rio Cebolla)	Installed 8 beaver dam analog structures Vehicle exclusion fencing	<ul style="list-style-type: none"> Improve stream floodplain connectivity. Increase floodplain and bank storage. Improved herbaceous ground cover.
Upper Pecos –Cow Creek	Dispersed recreation site improvements Streambank stabilization	<ul style="list-style-type: none"> Decrease erosion. Increase herbaceous and woody ground cover. Stabilize eroding hillslopes along creek.

The Natural Resources Conservation Service

The Natural Resources Conservation Service (NRCS) provided the following table listing practices implemented in calendar year 2017 (except for the Waste Transfers, which were started in 2017 and are scheduled for completion in 2018). Each watershed listed is a priority watershed under the National Water Quality Initiative (NWQI) in federal fiscal year 2017. More information on NWQI is provided above in the section, **Interagency Cooperation Highlights**.

Watershed	Project Description	Water Quality Benefits
Achenback – Rio Grande (130301020704)	49 Acres Micro Jets Sprinklers	<ul style="list-style-type: none"> Decreased nutrient, bacteria, and pesticide runoff.
Achenback – Rio Grande (130301020704)	74.2 Acres Cover Crop	<ul style="list-style-type: none"> Decreased nutrient, bacteria, and sediment runoff (and airborne dispersal of <i>E. coli</i>).
Arroyo Pecos - Gallinas River (130600010805)	Forest Stand Improvement-129.8 acres	<ul style="list-style-type: none"> Reduce Wildfire Hazard.
Arroyo Pecos - Gallinas River (130600010805)	Fuel Break-25 acres	<ul style="list-style-type: none"> Reduce Wildfire Hazard.



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NRCS (continued)

Watershed	Project Description	Water Quality Benefits
Anthony Wash - Rio Grande (130301020803)	5,139 feet of Irrigation Ditch Lining	<ul style="list-style-type: none"> Decreased sediment runoff.
	300 feet of Irrigation Pipeline	<ul style="list-style-type: none"> Decreased nutrient, bacteria, and pesticide runoff.
	9 Structures for Water Control	<ul style="list-style-type: none"> Decreased sediment runoff.
	2,275 feet Windbreak/Shelterbelt Establishment	<ul style="list-style-type: none"> Decreased nutrient and pesticide runoff. Decreased airborne dispersal of <i>E. coli</i>.
	37.3 Acres Micro Irrigation	<ul style="list-style-type: none"> Decreased nutrient, bacteria, and pesticide runoff.
	15 Acres Cover Crop	<ul style="list-style-type: none"> Decreased nutrient, bacteria, and sediment runoff (and airborne dispersal of <i>E. coli</i>).
	7.5 Acres Reduced Till	<ul style="list-style-type: none"> Manage amount, orientation and distribution of organic residue so maximum amounts are left on the soil surface.
Mossman Arroyo - Rio Grande (130301020801)	1 Waste Storage Facility	<ul style="list-style-type: none"> Decreased sediment runoff. Decreased airborne dispersal of <i>E. coli</i>.
	2,108 feet Windbreak/Shelterbelt Establishment	<ul style="list-style-type: none"> Decreased nutrient and pesticide runoff. Decreased airborne dispersal of <i>E. coli</i>.
	1 Pond Sealing or Lining, Flexible Membrane 975 square yards	<ul style="list-style-type: none"> Reduced leaching of nutrients to ground water.
	2 Waste Transfers	<ul style="list-style-type: none"> Decreased airborne dispersal of <i>E. coli</i>.

