State of New Mexico

NONPOINT SOURCE MANAGEMENT PROGRAM

2022 Annual Report

New Mexico Environment Department
Surface Water Quality Bureau
Watershed Protection Section

State of New Mexico
Nonpoint Source Management Program

2022 Annual Report

Published By:

The New Mexico Environment Department
Surface Water Quality Bureau
Watershed Protection Section
1190 St. Francis Drive
Santa Fe, New Mexico 87505

In cooperation with:

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

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/

January 31, 2023

Charles Maguire
Water Division Director
U.S. Environmental Protection Agency, Region 6
1201 Elm Street, Suite 500
Dallas, Texas 75270

Dear Director Maguire:

I am pleased to submit New Mexico's 2022 Nonpoint Source Management Program Annual Report (Report). In this Report we document the progress made in meeting the program milestones set forth in our Nonpoint Source Management Plan.

The Nonpoint Source Management Program has six core objectives, and I would like to briefly highlight our accomplishments made during 2022 for each:

1. Under the watershed-based planning objective, EPA accepted watershed-based plans for upper Tijeras Creek, American Creek in the Cimarron watershed, and the Sapello River. EPA also accepted the American Creek WBP as a TMDL alternative. In addition, the lower Animas River WBP was updated in 2022. These plans and EPA's acceptance letters are posted at www.env.nm.gov/surface-water-quality/wbp.

2. In the area of water quality improvement, NMED submitted a NPS Success Story nomination for Cold Springs Creek in the Mimbres watershed. The nomination provided evidence that mine reclamation activities carried out by the U.S. Forest Service reduced lead and cadmium loading, and EPA has since accepted the nomination. Five new on-the-ground Section 319 projects that implement watershed-based plans, funded under Section 319, were developed and began. Twelve new River Stewardship Program (RSP) projects began in 2022. Four Section 319 projects and one RSP project were completed in 2022 and are summarized in this report.

3. To better protect water quality, a recently approved Section 319 project in the Gallinas watershed was amended to focus on reducing sediment loading following the Hermit's Peak – Calf Canyon fire. The 2022 fire season was the worst on record, and damage to numerous headwater streams including Outstanding National Resource Waters is expected. Staff reviewed seventy-one projects authorized by the U.S. Army Corps of Engineers under existing Clean Water Act Section 404 permits that had already been certified, and issued new Section 401 certifications for five projects. Staff also conducted document reviews and site visits to ensure surface water quality protection under the New Mexico Mining Act. A new *State of New Mexico CWA §303(d)/§305(b) Integrated Report and List* was completed in 2022, and the percentage of stream miles listed as impaired increased by 3% from the previous edition.

4. Related to education and outreach, NMED maintains an email list specific to surface water quality programs which had just under 2,000 subscribers at the end of the reporting period. NMED

published four issues of the newsletter *Clearing the Waters* (www.env.nm.gov/surface-water-quality/newsletters), and staff presented information on water quality at several outreach events.

5. In ground water quality protection, NMED's Ground Water Quality Bureau (GWQB) issued twenty-one New, Renewal, or Renewal and Modification Discharge Permits. GWQB also conducted eight water fairs in eight counties, where residents brought approximately 263 well water samples for analysis of common pollutants such as nitrate.

6. Finally, to better cooperate with other agencies on water quality protection and improvement, NMED and the U.S. Forest Service approved the New Mexico Watershed-Based Plan Implementation Agreement, which allows NMED to provide funds to the Forest Service for implementing WBPs, pending approval of project-specific agreements. Renewal of the main Memorandum of Understanding with the U.S. Forest Service, called the New Mexico Water Quality Protection Agreement, is postponed. Staff from NMED's Watershed Protection Section attended ten soil and water conservation district (SWCD) board meetings, with five different SWCDs. Nonpoint source program staff also continued to participate in the Climate Action Team (Natural Resource Resilience subgroup) and development of the 50-Year Water Plan. In addition, the Natural Resources Conservation Service, New Mexico Department of Game and Fish, New Mexico State Forestry Division, Bureau of Land Management, and the U.S. Forest Service provided information for the report on their activities related to NPS pollution control in 2022.

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 (505-470-5018) or Abe Franklin of my staff (505-946-8952).

Sincerely,

Shelly Lemon Digitally signed by Shelly Lemon
Date: 2023.01.31 13:19:04 -07'00'

Shelly Lemon, Bureau Chief
Surface Water Quality Bureau

Cc: Kyla Chandler, State and Tribal Grants Project Officer, US EPA Region 6
Rachel Renz, Nonpoint Source Program, US EPA Region 6
John Rhoderick, Director, NMED Water Protection Division
Abe Franklin, Program Manager, NMED Watershed Protection Section

Table of Contents

Table of Contents

Executive Summary

Polluted runoff, or nonpoint source (NPS) pollution, is defined by United States Environmental Protection Agency (EPA) as "caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural and human-made pollutants, finally depositing them into lakes, rivers, streams, wetlands, coastal waters and ground waters." 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 Clean Water Act (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, watershed-based planning, implementation of best management practices (BMPs), and monitoring to assess implementation efficacy.

This annual report to the EPA is required by Section 319(h)(11) of the Clean Water Act. It provides an overview of Nonpoint Source Management Program related activities conducted in New Mexico from October 1, 2021 through September 30, 2022.

Towards the objective of **completing watershed-based plans (WBPs)**, EPA accepted WBPs for upper Tijeras Creek, American Creek in the Cimarron watershed, and the Sapello River. EPA also accepted the American Creek WBP as a TMDL alternative. In addition, the lower Animas River WBP was updated in 2022. These plans and EPA's acceptance letters are posted at www.env.nm.gov/surface-water-quality/wbp.

Towards the objective of **water quality improvement**, NMED submitted a NPS Success Story nomination for Cold Springs Creek in the Mimbres watershed. The nomination provided evidence that mine reclamation activities carried out by the U.S. Forest Service reduced lead and cadmium loading, and the stream was removed from the impaired waters list for cadmium. EPA has since accepted the nomination. Five new on-the-ground Section 319 projects that implement watershed-based plans, funded under Section 319, were developed and began. Twelve new River Stewardship Program (RSP) projects began in 2022. Four Section 319 projects and one RSP project were completed in 2022 and are summarized in this report.

In the area of **water quality protection**, a recently approved Section 319 project in the Gallinas watershed was amended to focus on reducing sediment loading following the Hermit's Peak - Calf Canyon fire. The 2022 fire season was the worst on record, and damage to numerous headwater streams including Outstanding National Resource Waters is expected. Staff reviewed seventy-one projects authorized by the U.S. Army Corps of Engineers under existing CWA Section 404 permits that had already been certified, and issued new Section 401 certifications for five projects. Staff also conducted document reviews and site visits to ensure surface water quality protection under the New Mexico Mining Act. A new *State of New Mexico CWA §303(d)/§305(b) Integrated Report and List* was completed in 2022, and the percentage of stream miles listed as impaired increased by 3% from the previous edition.

With the objective of **sharing information on surface water quality**, NMED maintains an email list specific to surface water quality programs which had just under 2,000 subscribers at the end of the reporting period. NMED published four issues of the newsletter *Clearing the Waters*, and staff presented information on water quality at several outreach events.

Executive Summary

New Mexico's NPS Management Program also includes aspects related to **protection of ground water**. In 2022, the Ground Water Quality Bureau (GWQB) issued twenty-one New, Renewal, or Renewal and Modification Discharge Permits. GWQB also conducted eight water fairs in eight counties, where residents brought approximately 263 well water samples for analysis of common pollutants such as nitrate.

To better **cooperate with other agencies on water quality protection and improvement**, NMED and the U.S. Forest Service approved the New Mexico Watershed-Based Plan Implementation Agreement, which allows NMED to provide funds to the Forest Service for implementing WBPs, pending approval of project-specific agreements. Renewal of the main Memorandum of Understanding with the U.S. Forest Service, called the New Mexico Water Quality Protection Agreement, is postponed. Staff from NMED's Watershed Protection Section attended ten soil and water conservation district (SWCD) board meetings, with five different SWCDs. Nonpoint source program staff also continued to participate in the Climate Action Team (Natural Resource Resilience subgroup) and development of the 50-Year Water Plan. In addition, the Natural Resources Conservation Service, New Mexico Department of Game and Fish, New Mexico State Forestry Division, Bureau of Land Management, U.S. Forest Service, and Taos Soil and Water Conservation District provided information for the report on their activities related to NPS pollution control in 2022.

Introduction

This annual report to the United States Environmental Protection Agency (EPA) provides an overview of nonpoint source (NPS) management related activities conducted in New Mexico in federal fiscal year 2022 (October 1, 2021 through September 30, 2022) 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 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).

Most funding to support the New Mexico Nonpoint Source Management Program was provided through Section 319(h) grants awarded to NMED by EPA. Activities and projects reported are CWA Section 319 projects, and those implemented under the state-funded River Stewardship Program (RSP), the New Mexico Wetlands Program, CWA Section 401 activities, New Mexico Mining Act activities, and NPS projects implemented by other natural resource agencies outside of NMED.

Vehicle that had been abandoned over a cliff near Bluewater Creek.

What is Nonpoint Source Pollution?

According to information from EPA at www.epa.gov/nps,

> NPS pollution generally results from land runoff, precipitation, atmospheric deposition, drainage, seepage or hydrologic modification. NPS pollution, unlike pollution from industrial and sewage treatment plants, comes from many diffuse sources. NPS pollution is caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural and human-made pollutants, finally depositing them into lakes, rivers, wetlands, coastal waters and ground waters.

Some examples of nonpoint source pollution include:

- Excess fertilizers, herbicides and insecticides from agricultural lands and residential areas;
- Oil, grease and toxic chemicals from urban runoff and energy production;
- Sediment from improperly managed construction sites, crop and forest lands, and eroding streambanks;
- Salt from irrigation practices and acid drainage from abandoned mines;
- Bacteria and nutrients from livestock, pet waste and faulty septic systems;
- Atmospheric deposition and hydromodification.

As in most other states, NPS pollution is the leading cause of water quality problems in New Mexico.

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, watershed-based planning, 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 each state 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.

New Mexico's NPS Management Program is described in the *New Mexico Nonpoint Source Management Plan* approved by EPA on August 1, 2019. The plan is available to review at http://www.env.nm.gov/surface-water-quality/watershed-protection-section.

The NPS Management Program is supported largely by Section 319(h) grant funds. Recent years' funding awarded by EPA for New Mexico's NPS Management Program has been stable, with annual funds averaging $2.0 million in fiscal years 2017-2022, and increasing an average of 1.4% each year.

Beaver Dam Analog (BDA) built on the Philmont Boy Scout Ranch in northern NM during a workshop hosted by the Philmont Boy Scout Ranch and Anabranch Solutions.

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

Two sections of the CWA designed to help understand both point sources and nonpoint sources statewide 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 Section 303(d)/305(b) Integrated Report* (*Integrated Report*, for short). Current and past Integrated Reports are available at www.env.nm.gov/surface-water-quality/303d-305b.

In New Mexico, the most common NPS impairments in streams are caused by (in order of prevalence, based on the *2022-2024 Integrated Report*) temperature, *E. coli*, nutrients, suspended or settleable solids (including turbidity and stream bottom sediments), and aluminum. In lakes and reservoirs, the most common water quality parameters in excess of water quality standards are mercury in fish tissue, polychlorobiphenyls (PCB's) in fish tissue, temperature, eutrophication (nutrient impacts), and dichlorodiphenyl-trichloroethane (DDT) in fish tissue.

These pollutants prevent designated uses from being fully supported in many of New Mexico's waters. Designated uses not fully supported in New Mexico's assessed rivers and streams (with the percentage of assessed waters not supporting uses in parentheses) include aquatic life uses (63%), primary and secondary contact (23%), wildlife habitat (3%), livestock watering (2%), irrigation (2%), and domestic water supply (1%). Most of these impairments are primarily or entirely caused by NPS pollution.

Illegal discharge of an estimated 1.1 billion gallons of raw sewage into the Rio Grande in Sunland Park, New Mexico. June 9, 2022.

The majority of NPS pollution in New Mexico's streams is preliminarily attributed to (in order of prevalence) unidentified sources, unmanaged or improperly managed rangeland grazing, road and bridge runoff, on-site treatment systems (e.g., septic systems), streambank modifications and destabilization, waterfowl, wildlife other than waterfowl, and drought. The *2022-2024 Integrated Report* provides probable source summary information only for waters with Total Maximum Daily Loads (TMDLs). Only one lake in New Mexico (Bluewater Lake) had an approve TMDL when the *2022-2024 Integrated Report* was prepared, and the pollutant source was listed as "unknown" in that TMDL document.

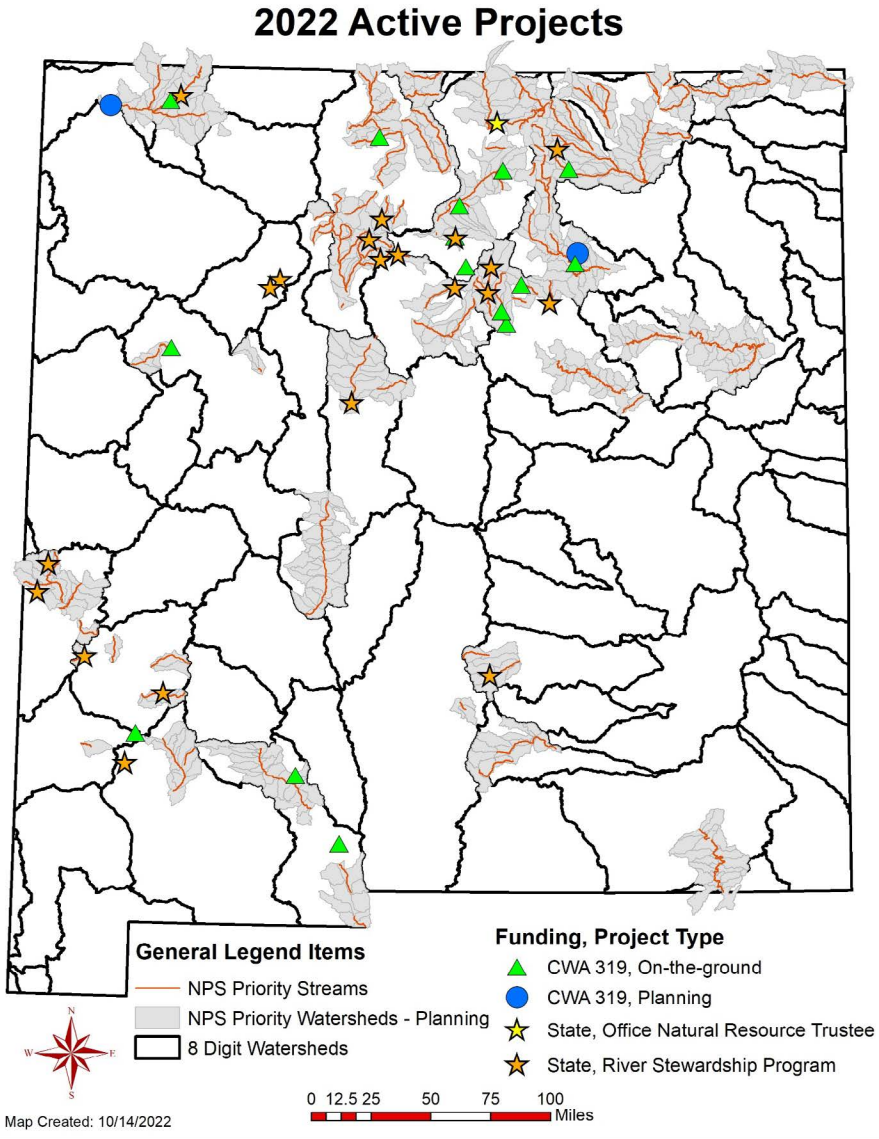
New Mexico's Nonpoint Source Management Program

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 to protect 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 by EPA in August 2019 and is available at: www.env.nm.gov/surface-water-quality/nps-plan.

The NPS Management Program includes activities carried out by NMED staff to meet the objectives of the program and directs funding to support watershed-based planning projects, watershed-implementation projects, and RSP projects. The NPS Management Program also relies on established resource protection programs, national and state NPS pollution prevention programs, and activities of other land management and resource protection agencies to address NPS pollution. New Mexico identifies programs and activities that will facilitate the achievement of surface water quality standards, using a voluntary approach to implement water quality improvements.



Section 319 and River Stewardship Program projects active in 2022.

NMED reports how CWA Section 319(h) funds and state matching funds are used, in EPA's Grants Reporting and Tracking System (GRTS). The funding is allocated to projects. Projects other than statewide projects that are in progress or completed in the reporting period (October 1, 2021 through September 30, 2022) are depicted in the "2022 Active Projets" map on page 6.

Five tables below list projects in progress or completed in 2022, including staff activities, Section 319 funded watershed-based planning projects, Section 319 funded implementation projects, and state-funded projects. The tables include links to GRTS for more detailed information for each project. The available information includes contact information for project managers, project work plans, and (for completed projects) final project reports.

Staff Activities

Activities carried out by NMED staff in SWQB and GWQB implementing the NPS Management Program statewide in 2022 are represented as projects in the following table. More information about work done under these projects is presented in sections below.

Table 1: Projects represented in GRTS describing staff activities, 10/1/2021 – 9/30/2022.

Grant Number	Project Number	Project Title	Project End Date	Section 319 Funds	State Funds	Summary Report
99610120	22-A	NEW MEXICO NON-POINT SOURCE MANAGEMENT PROGRAM FY 2022	06/30/2022	$1,027,918	$0	VIEW
99610120	22-B	GROUND WATER QUALITY BUREAU PROGRAMS FY 2022	06/30/2022	$130,632	$122,235	VIEW
99610120	23-A	NEW MEXICO NON-POINT SOURCE MANAGEMENT PROGRAM FY 2023	06/30/2023	$1,184,114	$0	VIEW
99610120	23-B	GROUND WATER QUALITY BUREAU PROGRAMS FY 2023	06/30/2023	$150,000	$150,000	VIEW

The budgets above for Projects 22-A and 22-B are actual funds spent. The budgets for Projects 23-A and 23-B are the projected expenditures (amounts in work plans approved by EPA). Actual amounts that will be spent on Projects 23-A and 23-B may be lower due to vacancy savings and other reduced costs.

Watershed-Based Planning Projects

An important component of the NPS Management Program 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* (www.epa.gov/nps/319-grant-current-guidance). 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 supports watershed-based planning through a competitive subgrant process, conducted approximately every other year, and through technical support provided to partner agencies and stakeholder groups interested in water quality. WBP projects completed or in progress in 2022 are listed in Table 2 below. Completed WBPs and more information on watershed-based planning are available at www.env.nm.gov/surface-water-quality/wbp.

Table 2: Watershed-based planning projects completed or in progress, 10/1/2021 – 9/30/2022.

Grant Number	Project Number	Project Title	Project End Date	Section 319 Funds	Local Match	Summary Report
99610118	19-C	Sapello River Watershed-Based Plan	05/31/2022	$132,646	$88,855	VIEW
99610119	20-D	Upper Tijeras Creek Watershed-Based Plan	12/31/2021	$53,369	$65,826	VIEW
99610119	20-E	Wolf Creek Update to the Watershed-Based Plan for the Mora River – Upper Canadian Plateau	12/31/2022	$75,577	$55,562	VIEW
01F98701	22-SJW	San Juan Watershed-Based Planning Project	12/31/2024	$116,056	$77,626	VIEW

Watershed Implementation Projects

Through a combination of funding programs, partnerships, and education and outreach activities, New Mexico encourages interested parties to implement WBPs to control or reduce the degree of water quality impairments. The following table lists New Mexico's current and recently completed Section 319 watershed implementation projects.

Projects denoted by "Part 1," "Part 2," or "Part 3" indicate a single project funded by more than one Section 319 grant from EPA to NMED. Projects with "Phase" in their titles were developed and funded separately (under separate sub-grant agreements) from earlier projects completed in the same area.

Table 3: Section 319 Watershed Implementation Projects completed or in progress, 10/1/2021 – 9/30/2022.

Grant Number	Project Number	Project Title	Project End Date	Section 319 Funds	Local Match	Summary Report
99610118	18-C	Temperature Reduction and Erosion Reduction in Lower Cow Creek	12/31/2021	$154,844	$104,548	VIEW
99610118	18-J	On-the-Ground Improvement Projects for the Upper Gallinas River and Porvenir Creek, Phase III	06/30/2022	$314,738	$217,768	VIEW
99610118	18-K	Lower Animas Watershed Based Plan Implementation Projects Phase 2	12/31/2021	$148,450	$103,388	VIEW
99610118	18-L	Dalton Canyon Creek Water Quality Improvement Project	06/30/2022	$195,796	$135,564	VIEW
99610118	19-I	North Ponil Restoration Project (Part 1)	06/30/2022	$176,900	$300,994	VIEW
99610118	19-M	Watershed Project Implementation for the Mora River-Upper Canadian Plateau Phase 1B (Part 2)	06/30/2022	$118,168	$69,424	VIEW
99610118	19-N	Rincon Arroyo Watershed Stabilization Project to Reduce *E. coli* loading to the Rio Grande (Part 2)	06/30/2022	$122,492	$44,715	VIEW

Table 3: continued

Grant Number	Project Number	Project Title	Project End Date	Section 319 Funds	Local Match	Summary Report
99610118	19-O	Temperature and Erosion Reduction in Lower Cow Creek – Phase II (Part 2)	06/30/2022	$21,068	$69,242	VIEW
99610119	20-C	North Ponil Restoration Project (Part 2)	09/30/2023	$4,466	$0	VIEW
99610119	20-O	Reducing Fecal Waste in the Rio Fernando de Taos	06/30/2023	$47,891	$33,262	VIEW
99610119	20-P	Post Fire rehabilitation of the Bear Creek Watershed (Part 2)	12/31/2022	$146,439	$65,042	VIEW
99610119	20-Q	Restoring the Rio Quemado Riverine Wetland on Los Potreros Open Space, in Chimayo, NM (Part 2)	12/31/2023	$143,718	$81,097	VIEW
99610119	20-R	Watershed Project Implementation for the Mora River – Upper Canadian Plateau Phase IB (Part 3)	06/30/2023	$174,859	$76,088	VIEW
99610119	21-C	Rincon Arroyo Watershed Stabilization Project to Reduce *E. coli* loading to the Rio Grande (Part 3)	06/30/2023	$256,952	$214,008	VIEW

Table 3: continued

Grant Number	Project Number	Project Title	Project End Date	Section 319 Funds	Local Match	Summary Report
99610119	21-D	Temperature and Erosion Reduction in Lower Cow Creek – Phase II (Part 3)	06/30/2023	$179,401	$44,728	VIEW
99610119	21-E	Post Fire Rehabilitation of the Rio en Medio (Part 2)	12/31/2022	$85,847	$63,473	VIEW
99610119	21-F	Bonito Meadow Stream and Wetland Restoration Project, Phase 1	06/30/2024	$227,824	$194,227	VIEW
99610119	21-G	Bluewater Creek Riparian Improvement Project	12/31/2022	$189,300	$126,200	VIEW
99610119	21-H	Rio Nutrias Watershed-Based Plan Implementation Phase II	09/30/2023	$219,377	$310,950	VIEW
01F98701	21-SJW	Lower Animas Watershed Based Plan Implementation Projects Phase 3	09/30/2024	$257,640	$172,076	VIEW
99610120	22-C	Temperature and Erosion Reduction in Lower Cow Creek – Phase III	09/30/2025	$64,343	$23,219	VIEW
99610120	22-D	Restoring Springs and Wetlands on State Trust Lands in the Lower Embudo Valley	12/31/2024	$150,510	$104,408	VIEW
99610120	22-E	Managing watershed runoff into the Mesilla Valley	06/30/2024	$443,067	$295,378	VIEW
99610120	22-F	Watershed Project Implementation for Upper Gallinas River and Porvenir Creek - Phase IV	12/31/2024	$505,074	$429,267	VIEW

River Stewardship Program

A key part of the NPS Management Program is the state-funded RSP. The goal of RSP is to fund projects that enhance the health of rivers by addressing the root causes of poor water quality and stream habitat. In most recent years the New Mexico Legislature has appropriated capital outlay funds for RSP to design and construct projects that improve surface water quality or river habitat statewide and to provide state matching funds required by the terms of any federal grant under the CWA. Annual funding has ranged from $500,000 to $12,250,000. The Legislature appropriated $1,250,000 in funds for state fiscal year 2021 and $1,500,000 for FY 2022, and reauthorized $252,613 in older unspent funds (now designated as FY 2021 funds) which are supporting current RSP projects.

For state fiscal year 2023, the Legislature allocated $10,000,000 in State and Local Fiscal Recovery Funds (SLFRF) to NMED for RSP. These funds are among those designated for New Mexico through the American Rescue Plan Act (ARPA). The Legislature also appropriated $1,500,000 in FY 2023 capital outlay funds and $750,000 in FY 2023 general funds for RSP. NMED plans to request $1,500,000 in capital outlay funds for FY 2024 and expects $750,000 in general funds per year in future years as a base funding increase specifically to support RSP. Consistent with uses of SLFRF and general fund, NMED will use some of these funds for RSP project development (including conducting Requests for Proposals), project management, technical assistance, and oversight.

NMED completed a Request for Proposals (RFP) in April 2022 resulting in twelve new RSP projects. NMED and the State Purchasing Division also released a new RFP in May 2022 and NMED received a group of RSP proposals which were being evaluated at the end of the reporting period. Table 4 below lists New Mexico's current and recently completed RSP projects.

Table 4: River Stewardship Program (RSP) projects completed or in progress, 10/1/2021 – 9/30/2022.

Grant Number	Project Number	Project Title	Project End Date	State Funds	Summary Report
99610119	20-F	Adair Spring Restoration	06/30/2023	$57,848	VIEW
99610119	20-G	Riparian Restoration in Torreon Wash Watershed	06/30/2023	$174,113	VIEW
99610119	20-H	Valle de Oro National Wildlife Refuge Unit 2 Wetland Development and Water Quality Improvement Project	06/30/2023	$160,000	VIEW
99610119	20-I	Animas River Habitat Enhancement and Bank Stabilization Project	06/30/2023	$138,324	VIEW

Table 4: continued

Grant Number	Project Number	Project Title	Project End Date	State Funds	Summary Report
99610119	20-J	Wetland and Stream Restoration of Lower Jaramillo Creek	06/30/2023	$227,493	VIEW
99610119	20-K	Restoration of Trout Habitat on the Cimarron River	06/31/2023	$454,066	VIEW
99610119	20-L	Rewinding the Gallinas River in the City of Las Vegas – Phase II	06/30/2022	$457,488	VIEW
99610119	20-M	Santa Fe River – East Alameda Rain Garden and Camino Escondido Zuni Bowls	06/30/2023	$167,342	VIEW
99610119	20-N	Pecos River Cowles Restoration Project	06/30/2023	$281,119	VIEW
99610120	22-G	Restoration of Gila Trout and Ripar-ian Habitat on Black Canyon Creek, Gila National Forest	06/30/2024	$207,255	VIEW
99610120	22-H	Restoring Stream and Riparian Health along the Santa Cruz River on Los Potreros Open Space	06/30/2024	$146,371	VIEW
99610120	22-I	Reimagining San Vicente Creek	06/30/2024	$170,537	VIEW
99610120	22-J	Rewinding the Gallinas River in the City of Las Vegas - Phase III	06/30/2024	$370,905	VIEW
99610120	22-K	Centerfire Creek Headwaters Restoration Project	06/30/2024	$445,370	VIEW
99610120	22-L	Los Alamos Canyon Creek Watershed Restoration Project	06/30/2024	$291,709	VIEW

Table 4: continued

Grant Number	Project Number	Project Title	Project End Date	State Funds	Summary Report
99610120	22-M	Riparian Restoration in Torreon Wash Watershed - Phase II	06/30/2024	$208,897	VIEW
99610120	22-N	San Antonio Creek Headwaters and Erosion Control Project	06/30/2024	$259,214	VIEW
99610120	22-O	Chihuahueños Creek Headwaters Restoration Project	06/30/2024	$209,990	VIEW
99610120	22-P	Post-Wildfire Restoration of Little Turkey Creek, Willow Creek Watershed, Southwestern New Mexico	06/30/2024	$133,061	VIEW
99610120	22-Q	Dalton Fishing Area Restoration Project	06/30/2024	$243,245	VIEW
99610120	22-R	Two Rivers Park River Restoration Phase III	06/30/2024	$215,730	VIEW

Projects Funded by the Office of Natural Resources Trustee

In 2018, the New Mexico Office of Natural Resources Trustee (ONRT) and NMED signed a Memorandum of Agreement for WPS to manage an aquatic habitat restoration project on the Red River within the municipal limits of the Village of Questa. EPA and ONRT authorized the costs of this project to be reported as match to Section 319 grants. The project's basic information is represented in the following short table:

Table 5: Red River Aquatic Habitat Restoration Project.

Grant Number	Project Number	Project Title	Project End Date	State Funds	Summary Report
99610118	19-F	Red River Aquatic Habitat Restoration Project (Part 1)	06/30/2022	$208,295	VIEW
99610120	22-S	Red River Aquatic Habitat Restoration Project (Part 2)	06/30/2023	$1,003,679	VIEW

ONRT also is providing partial funding for Project 20-K in Table 4 (above). $149,784 of the $454,066 that make up the project budget were provided as a result of a Natural Resources Damage Assessment and Restoration (NRDAR) settlement between ONRT and Fronk Oil, to address natural resource damages resulting from a 2016 tanker truck accident which resulted in petroleum products entering the Cimarron River.

The Red River Aquatic Habitat Restoration Project. Pictured are two bank stabilization structures and two beaver pond levelers installed to prevent inundation of a nearby road.

A more comprehensive listing of Section 319, RSP, and other state-funded projects is available at: www.env.nm.gov/surface-water-quality/nmed_319_and_rsp_project_list.

This project list contains links to project pages with detailed information including project work plans and (for completed projects) final reports.

NPS Management Program Accomplishments in 2022

NMED seeks to meet the long-term goal of the NPS Management Program with specific actions described in the NPS Management Plan taken over approximately a five-year period. The NPS Management Plan includes at its core six objectives aimed at reducing and preventing NPS pollution in New Mexico: **1) Complete WBPs to Enable Effective Implementation, 2) Improve Water Quality, 3) Protect Water Quality, 4) Share Information on Surface Water Quality, 5) Protect Ground Water Quality, and 6) Cooperate with other Agencies on Water Quality Protection and Improvement**. With each objective is a list of activities necessary to achieve the objective and verification milestones used to evaluate whether objectives have been attained. 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 six program objectives and corresponding milestones from the NPS Management Plan are listed below, along with reports of progress made in federal fiscal year 2022 (October 1, 2021 through September 30, 2022). Use of *italics* below indicates text cited directly from the NPS Management Plan. Non-italics text is used to provide progress for 2022.

4.1 Objective 1 – Complete WBPs to Enable Effective Implementation

To produce WBPs that meet all nine elements identified in the **Nonpoint Source Program and Grants Guidelines for States and Territories*, and acceptable alternatives to WBPs, for an average of three priority watersheds per year.***

Objective 1 Verification Milestones and Reports of Progress

- *In 2019 through 2023, at least one WBP per year, covering at least one priority watershed each, will be supplemented, updated, or completed, and accepted by the EPA as meeting the nine elements of WBPs.*

  EPA accepted three WBPs as meeting the requirements of the *Nonpoint Source Program and Grants Guidelines for States and Territories* in 2022. One additional plan was updated in 2022.

  A WBP was completed for Tijeras Creek under the project "Upper Tijeras Creek Watershed-Based Plan" (Project 20-D in Table 2 above). This WBP is to address the impairment of Tijeras Creek by plant nutrients. The WBP covers all of hydrologic unit code (HUC) 130202030201 (Upper Tijeras Arroyo) and the upper (eastern) portion of HUC 130202030203 (Lower Tijeras Arroyo). Both watersheds are priority watersheds for planning. These areas were not previously covered by a WBP. This project is described in the section **Summaries of Section 319 Projects Completed in 2022** below.

  The WBP for American Creek, a tributary of Cieneguilla Creek within the larger Cimarron River watershed, was completed in-house by NMED staff in cooperation with the Cimarron Watershed Alliance and landowners, and was accepted by EPA as a WBP and as a TMDL alternative for the impairment parameters aluminum and *E. coli*. The area covered by this WBP is nested within the area covered by the Cimarron River WBP, but includes more detail for American Creek, including addressing impairment listings that post-date the Cimarron River WBP.

The Sapello River WBP was completed under the project "Sapello River Watershed Based Plan" (Project 19-C in Table 2 above). This WBP identifies methods to address a sedimentation / siltation impairment in the Sapello River, an important tributary of the Mora River. The lower Sapello River watershed is comprised of four priority watersheds for planning that were already within the area covered by the 2016 *Watershed-Based Plan for the Mora River Upper Canadian Plateau*. This earlier WBP was primarily to address nutrient impairment in the Mora River. HUCs 110800010201 through 110800010204 in the upper Sapello watershed were not previously covered by a WBP, although three of these four 12-digit watersheds that were designated as priority watersheds when the project began are not currently identified as priorities for planning because of delistings within the upper watershed. The fourth 12-digit watershed is not designated as a priority watershed (nor was it designated earlier) because it does not flow directly to an impaired stream. Nonetheless, it is appropriate that this project included the entire Sapello River watershed. This project is described in more detail in the section **Summaries of Section 319 Projects Completed in 2022** below.

The San Juan Soil and Water Conservation District (San Juan SWCD) completed an update of the Lower Animas Watershed-Based Plan in the reporting period. This update was funded by NMED with Section 319 funds through a project completed in December 2020, and then by the New Mexico Energy, Minerals, and Natural Resources Department (EMNRD). Non-federal match was provided by BHP Billiton and PNM Resources. San Juan SWCD coordinates the San Juan Watershed Group (SJWG), and maintains a full-time watershed coordinator position to support SJWG. The update provides new impairment listing information, describes projects completed over the previous five years, and updates management measure descriptions and the implementation schedule.

The Solicitation for Applications (SFA) for new WBP projects that began in 2021 was completed in 2022, with the approval and start of one new planning project (Project 22-SJW listed in Table 2 above). That only one application was received is discussed further in the **NPS Management Program Problems and Concerns** section below.

Accepted WBPs are available at www.env.nm.gov/surface-water-quality/wbp, via a "list of EPA-Accepted WBP, Draft WBP, and Watershed Restoration Action Strategies" near the bottom of that page.

- *Development of an index to use Recovery Potential Screening (RPS) to prioritize watershed-based planning projects will be reported in the NPS Annual Report for 2020. (Recovery Potential Screening is described in depth at www.epa.gov/rps.)*

  A report of NMED's use of RPS was provided in the earlier NPS Annual Report for 2020.

- *One or more streams are included within assessment category 5-alternative, as a result of cooperative WBP completion by WPS, MASS, and stakeholders, by 2022.*

  As noted above, the WBP for American Creek, a tributary of Cieneguilla Creek within the larger Cimarron River watershed, was accepted during this reporting period by EPA as a WBP and as a TMDL alternative for the impairment parameters aluminum and *E. coli*. American Creek

is in reporting category 5-alternative for both of these parameters, in the *2022-2024 Integrated Report* approved by EPA on April 26, 2022.

- *An inventory of watersheds covered by WAPs and an associated GIS coverage (posted on the SWQB mapper web site at https://gis.web.env.nm.gov/oem/?map=swqb) is completed, to update the list of priority watersheds for implementation, in 2019.*

  This work was completed in an earlier reporting period. The result is available to review in the Surface Water Quality Bureau mapper linked above, in a group called "Wetland Action Plans."

- *A post-fire response plan or project work plan that qualifies as a WBP alternative will be submitted to EPA within two years of any major wildfire occurring in the watershed of one or more streams with a coldwater or cool water aquatic life designated use and a fire severity that falls outside the natural range of variability for the affected forest types.*

  The fire season in 2022 was the most severe on record. An existing project called Watershed Project Implementation for Upper Gallinas River and Porvenir Creek - Phase IV (Project 22-F in Table 3 above) had been approved and was just beginning when the Hermit's Peak Fire (now known as the Hermit's Peak - Calf Canyon Fire) started in early April. The fire burned much of the upper Gallinas River watershed where the project is located. The project work plan and sub-grant agreement with Hermit's Peak Watershed Alliance were amended (with approvals completed in June), and post-fire restoration work began in July. Preliminary planning information such as debris flow modeling results were included in the work plan to address elements required of WBP alternatives.

- *Watershed plans include information from major land owners and land management agencies, and all states, Indian nations, pueblos, and tribes, within their planning areas.*

  The WBPs completed or updated in 2022 were completed through processes that involved the main public lands management agencies, area residents, and user groups. The Lower Animas WBP covers a set of 12-digit sub-watersheds of the Animas River, comprising all of the Animas River watershed in New Mexico. The northern portions of the upper two watersheds are within Southern Ute Indian Tribe lands. WPS reached out to both the San Juan SWCD (which managed the plan revision) and the Southern Ute Indian Tribe water quality program to inquire for this report about tribal program participation in the plan revision, but staff turnover in both organizations may have made it difficult for them to respond with accurate information. The area covered by the Upper Tijeras Creek WBP is upstream of Isleta Pueblo, but no official tribal lands exist within the watershed. The remaining two WBPs completed in 2022 are wholly within New Mexico and not near official tribal lands.

  The new WBP project that began in 2022 is the San Juan Watershed-Based Planning Project (Project 22-SJW in Table 2 above). The project area includes portions of Navajo Nation and Ute Mountain Ute lands. The work plan for this project describes how the sub-grantee (San Juan SWCD) will work with the Navajo Nation Environmental Protection Agency, chapter houses, and Diné College.

4.2 Objective 2 – Improve Water Quality

Effective watershed-based NPS restoration programs are implemented, using multiple funding sources, in identified priority watersheds at an average of three new watersheds per year.

Objective 2 Verification Milestones and Reports of Progress

- *Water quality conditions are improved in one priority watershed annually in 2019 through 2023 because of projects or improvements in land management funded or encouraged by New Mexico's NPS Management Program. Some actions leading to this water quality improvement likely will have been initiated before 2019.*

NMED's Effectiveness Monitoring coordinator compiled water quality data and information on projects implemented at Cold Springs Creek, in the Mimbres watershed, and concluded that cadmium and lead concentrations decreased as a result of a major mine reclamation project implemented there by the United States Forest Service (USFS). NMED also removed cadmium as an impairment parameter for Cold Springs Creek, in the 2022-2024 *Integrated Report*. WPS staff provided some coordination and water quality monitoring to facilitate the project. The Effectiveness Monitoring coordinator drafted a NPS Success Story nomination and submitted it to EPA on September 30, and it may soon be published on EPA's NPS Success Stories web page.

Cold Springs Creek after removal of the Lower Tailings Pile. The creek had been buried in 15 feet of mill tailings which leached high levels of metals.

Type 1 NPS Success Stories require an official impairment delisting associated with NPS projects or improved watershed management, and Type 2 Success Stories are for "waters that show progress toward achieving water quality goals," and can be based on evidence of water quality improvement without a de-listing. The Cold Springs Creek Success Story is a Type 1 Success Story.

More information about NPS Success Stories, including New Mexico's past NPS Success Stories, is available at www.epa.gov/nps/success-stories-about-restoring-water-bodies-impaired-nonpoint-source-pollution.

Table 6: continued

Highlights of WPS effectivess monitoring in 2022 are summarized in the following table.

Table 6: Stream assessment units and notes summarizing WPS effectiveness monitoring in 2022. These streams were monitored to determine the effects of restoration projects on water quality. The water quality parameter that was monitored is stream temperature unless otherwise indicated.

Assessment Unit	Notes
Bluewater Creek (Perennial prt R San Jose to Bluewater Rsvr)	Monitoring was postponed on this reach due to lack of flow in the project reach on the Bluewater Heritage ranch downstream of Bluewater Reservoir. Additional monitoring will be reconsidered in Spring 2023.
Comanche Creek (Costilla Creek to headwaters)	Rio Grande Cutthroat trout re-introduction area. Monitoring continued at eight previous sites following the recent deepening of pools which is expected to have significant effects.
Holman Creek (Comanche Creek to headwaters)	Monitoring the effects of the Keyline design Wetlands project on two subwatersheds.
Jaramillo Creek (East Fork Jemez to headwaters)	Follow up on potential temperature improvements after good vegetation growth, to follow up on trend of improvement identified in Success Story.
La Jara Creek (East Fork Jemez to headwaters)	Post-implementation monitoring at three sites: above, middle, and below restoration reach.
Rio de los Pinos (New Mexico reaches)	Post-implementation monitoring after more recent installation of rock structures in the state land.
Redondo Creek (Sulphur Creek to VCNP bnd)	Post-implementation monitoring following refurbishing and expansion of exclosures.
San Antonio Creek (East Fork Jemez to VCNP bnd)	Post-implementation stream temperature monitoring following construction of beaver dam analogs (BDAs).
Willow Creek (Gilita Creek to headwaters)	Baseline monitoring of stream temperature and Aluminum prior to restoration activities.

- *Begin implementation of watershed restoration projects described in WBPs or WBP alternatives to reduce NPS pollutant loads within two priority watersheds per year in 2019-2023.*

This milestone was met again in 2022. A Solicitation for Applications (SFA) for projects that implement WBPs, funded with Section 319 watershed project funds, was released in November 2020. Eight new projects were developed under this SFA. Three began in the previous reporting period, and five (Projects 21-SJW, 22-C, 22-D, 22-E, and 22-F in Table 3 above) began in this reporting period.

Twelve River Stewardship Program (RSP) projects began in 2022.

- *Report on the use of RPS to prioritize watershed implementation projects in the NPS Annual Report for 2020.*

  WPS used RPS in the SFA that was conducted in 2020, and reported on this in the NPS Annual Report for 2020.

- *Water quality improvements are documented in each NPS Management Program Annual Report.*

  Water quality improvements are documented in the sections **NPS Pollutant Load Reduction Reporting**, **Summaries of Section 319 Projects Completed in 2022**, and **Summaries of River Stewardship Program Projects Completed in 2022**, below.

- *The NMED Construction Programs Bureau provides a summary of activities related to use of the Clean Water SRF to protect or improve water quality for each NPS Management Program Annual Report.*

  The Construction Programs Bureau prepared and submitted an annual report for state fiscal year 2022 (July 1, 2021 – June 30, 2022) that features a large project on the Santa Fe River that reduces the impacts of stormwater on the Santa Fe River.

  The Clean Water State Revolving Fund (SRF) FY 2023 Intended Use Plan (IUP) lists one project that is relatively well-aligned with nonpoint source pollution management. Located in Socorro and described as "6th Street Stormwater Holding Pond," the project is located about two miles from the Rio Grande, which is impaired by *E. coli*. Socorro is small enough that it is not in a Phase I or II NPDES urbanized area where stormwater is regulated.

  The Project Priority List updated in the second quarter of state FY 2023 lists some additional projects with NPS components. The Flora Vista Sanitary Sewer Collection System helps implement the Lower Animas River WBP. The WBP describes the problem of liquid waste treatment in the Flora Vista area and recommends a Flora Vista sewer extension among management measures to reduce nutrient and *E. coli* loading to the Animas River. Similarly, the Carnuel Collection project partially implements the Upper Tijeras Creek WBP, which states that "septic systems in the Carnuel area are likely to be in hydrologic connection with Tijeras Creek, and are thus more likely to affect nutrient concentrations in surface water."

  The 2022 SRF annual report, IUP, and recent Project Priority List are available at www.env.nm.gov/funding-opportunities.

4.3 Objective 3 – Protect Water Quality

The quality of surface water resources is maintained through coordinated activities, permitting programs, and technical assistance provided to assist cooperating agencies and landowners with efforts to understand water quality and protect surface waters from NPS pollution.

Objective 3 Verification Milestones and Reports of Progress

- *NMED will document procedures for SWQB to enforce regulations at 20.6.2 NMAC pertaining to refuse in a watercourse in 2019.*

  In a previous reporting period (2020), NMED staff developed a draft Standard Operating Procedure (SOP) for responding to complaints related to surface water quality, including complaints of refuse disposed in watercourses. The SOP is rather complex, in part because relevant regulations are not limited to those at 20.6.2 NMAC. Also, several situations occur where state regulations not specific to surface water quality, or local regulations, apply and other parts of NMED or local agencies often should be consulted in developing appropriate responses to complaints. The SOP includes multiple processes that would be better addressed in separate dedicated SOPs. The effort to complete this SOP was not continued in 2022.

- *The NPS Annual Report will include a summary of actions taken to prevent and abate disposal of refuse in watercourses.*

  On June 9, 2022, NMED issued Administrative Compliance Orders (ACOs) and associated fines of $1.2 million to El Paso Water for illegally discharging an estimated 1.1 billion gallons of raw sewage into the Rio Grande in Sunland Park, New Mexico. The ACOs also require that El Paso Water fix the problems that caused the illegal diversion and clean up the impacted areas. WPS staff inspected the site of the discharge and contributed to drafting the ACOs, which cited 20.6.2.2201 NMAC pertaining to refuse in a watercourse, among other regulations. El Paso Water disputed the ACOs, and the matter was not resolved in the reporting period.

  SWQB was contacted by a Santa Fe County resident that was concerned about a neighbor dumping horse manure in an arroyo adjacent to their property and State land. WPS staff visited the site and determined that there was no evidence of manure in the arroyo. Staff recommended that the concerned property owner contact Santa Fe County that has an ordinance that pertains to manure.

  SWQB received a call from a San Miguel County resident who saw evidence that a neighbor had been dumping waste from a house demolition on the banks of the Sapello River. The complainant noted that the dumping had been occurring for some time and that the cement and other debris was being covered with dirt in the channel. WPS coordinated with the Solid Waste Bureau, who agreed to take the lead on the complaint. WPS also relayed the complaint to the U.S. Army Corps of Engineers, who planned to review the complaint to determine if a CWA 404 violation occurred.

  In December 2021 SWQB's Monitoring Team observed two vehicles that had been abandoned over a cliff near Bluewater Creek. The vehicles were abandoned on Bureau of Land Management (BLM) land. SWQB staff contacted the BLM's Rio Puerco Field Office which was already aware of the vehicles and was in the process of removing the vehicles which may have required a crane.

  In February 2022, the SWQB Silver City field office was contacted about refuse dumping in Duck Creek, an intermittent tributary to the Gila River in Grant County. A follow-up inspection verified that various household and yard materials had been dumped onto the streambank. Materials included leaves and yard trimmings, wood ash, construction waste and motor oil. The

complainant had footage of a nearby neighbor using a small skid steer to dump the materials. The complaint was referred to the Point Source Regulation Section which issued a Notice of Violation (NOV) to both the responsible party and the owner of the land where the material was dumped. The NOV resulted in voluntary compliance by the responsible parties and a follow-up inspection by the Silver City NMED field office confirmed that the material had been removed and disposed of at an approved landfill.

The U.S. Bureau of Reclamation contacted SWQB regarding an uncontrolled landfill including white goods, household trash, soil, and asphalt near a dry wash upstream of the San Juan Generating Station. The SWQB notified Solid Waste Bureau's Enforcement Team to ensure the property of concern is in compliance with the New Mexico Solid Waste Act. SWQB sends out a big thanks to Solid Waste Bureau for helping to protect New Mexico's water quality.

The SWQB received a phone call regarding trash being dumped illegally in the Pojoaque riverbed. The person(s) responsible for dumping trash have not been identified. Santa Fe County Code Enforcement was notified by the concerned caller. The concerned caller has been taking responsibility for their affected property and has been cleaning up trash when they are able to.

The SWQB was contacted regarding an oil or soap like film that was present in an irrigation ditch in Chimayo during an irrigation event in April of 2022. SWQB recommended notifying the mayordomo to help identify the source during the next irrigation event. SWQB requested additional information regarding the source and asked to be contacted again if the water quality concern continued. SWQB did not receive any additional information or follow-up reports.

SWQB was contacted in spring of 2022 regarding an RV that may have dumped black water into the Red River. SWQB was not contacted until three weeks after the incident allegedly occurred, and the reporter did not have any information about the responsible party such as a license plate number. In this situation SWQB was unable to identify the alleged polluter. SWQB has funded Clean Water Act Section 319 projects in the past that have paid for the installation of roadside signs for RV dump stations to help increase education and awareness and reduce illegal dumping. An online directory for sanitary dump stations is available at at www.sanidumps.com which indicates three RV dump station locations in Red River, NM. Illegal dumping can be reported to NMED online at www.env.nm.gov/general/report-an-environmental-issue-or-incident or by calling 505-827-9329.

SWQB received information about a loader that was burying construction debris in an arroyo and modifying the arroyo. SWQB notified the U.S. Army Corps of Engineers (Corps) and Bernalillo County and accompanied both agencies on a site visit with the responsible party. The Corps issued a Cease and Desist Order and a Notice of Violation for the unauthorized discharge under Clean Water Act Section 404. The corrective activity, including debris removal and restoring the arroyo, also required a grading permit and a floodplain permit from the County.

SWQB provided guidance on refuse entering water courses from burned structures and natural materials entering water courses from landscapes following multiple large wildfires in the spring and summer of 2022. This was a complex problem since natural debris, or structural debris entering watercourses through natural processes, may not qualify as "disposal of re-

fuse." Natural and structural debris from the fires was partially addressed by multiple bureaus' regulations and federal programs that paid for removal of burned structures from some of the burned areas. Some fire debris such as excessive sediment degrades water quality while other types of debris such as large woody debris could positively contribute to stream complexity. The scale of the fires and quantity of debris exceeded all agency ability to prevent it from entering waterways, and fire-related debris will continue to be deposited in water courses for many years after these fires.

- *Within two years of any major wildfire occurring in the watershed of one or more streams with a coldwater or cool water aquatic life designated use, with severity outside the natural range of variability for the affected forest types, NMED will fund post-fire actions that reduce sedimentation and protect aquatic habitat, with support of Section 319 watershed project funds.*

  This milestone was initially met in 2021. NMED developed projects to address the Medio Fire (in the Rio en Medio watershed in Santa Fe County) and the Tadpole Fire (in the Bear Creek watershed in Grant County). These fires occurred in 2020, and the projects began in March 2021. More information is available on each project through the summary links provided for Projects 20-P and 21-E in Table 3 above.

  New Mexico experienced its largest fires on record in 2022, with over 800,000 acres burned statewide. The largest fire in 2022 (and the largest in New Mexico's recorded history) was the Hermit's Peak – Calf Canyon Fire, at 341,424 acres. The project "Watershed Project Implementation for Upper Gallinas River and Porvenir Creek - Phase IV" (Project 22-F in Table 3 above) is in this area and had recently been approved when the fire started. Originally geared towards addressing the temperature impairment in the upper Gallinas River, NMED and the Hermit's Peak Watershed Alliance amended and expanded the project to reduce post-fire sediment loading.

  The second largest fire in 2022 (and the second largest in New Mexico's recorded history) was the Black Fire, at 325,133 acres. The project "Restoration of Gila Trout and Riparian Habitat on Black Canyon Creek, Gila National Forest" (Project 22-G in Table 4 above) was in the design and permitting phase when this fire started. Project proponents are planning to assess conditions in 2023 and may propose an amendment to better adapt to the new conditions.

  The 2022 fires are discussed more in the **NPS Management Program Problems and Concerns** section below.

- *A summary of CWA Section 401 certification activity will be reported annually in the NPS Management Program Annual Report.*

  The purpose of CWA Section 401 is to ensure that federally issued permits and licenses, including CWA Section 404 permits authorized by the Corps for the discharge of dredged or fill material into waters of the United States, comply with State water quality standards. The Corps generally issues three kinds of permits in New Mexico: Standard Individual Permits (IPs), Nationwide Permits (NWPs), and Regional General Permits (RGPs). The most commonly used permit is the NWP which covers a wide range of activities that generally have no more

than minimal individual and cumulative adverse environmental effects. SWQB ensures that these permits comply with State water quality standards by either granting certification with or without conditions, denying certification which prohibits the federal permit or license from being issued, or waiving certification which allows the permit or license to be issued without comment. The NWPs and RGPs must be re-issued every 5 years along with re-issued 401 certifications.

In 2022, SWQB staff reviewed fifty-seven projects covered by NWPs, fourteen projects covered by RGP 16-01 (utility line construction, maintenance, repair or removal), and three projects covered by RGP 17-01 (emergency repair and protection activities). Among other things, SWQB's review evaluates the Best Management Practices that have been selected for each project and ensures that each project is consistent with the CWA Section 401 Water Quality Certification (WQC). On May 23, 2022 SWQB issued a template for future expedited individual WQC for thirteen NWPs, and five projects were certified in 2022 using this WQC template. More information about New Mexico's CWA Section 401 program is available at SWQB's website: www.env.nm.gov/surface-water-quality/dredgeandfillactivities/.

On November 18, 2021, the U.S. Environmental Protection Agency and the Department of the Army ("the agencies") announced the signing of a proposed rule to revise the definition of "waters of the United States" (WOTUS). On February 7, 2022, NMED provided comments to the agencies in support of the proposed rulemaking that would codify policies and court precedent in place prior to the 2015 Clean Water Rule defining WOTUS. More information about this rulemaking is available here: www.epa.gov/wotus/revising-definition-waters-united-states.

On April 6, 2022, the U.S. Supreme Court issued a stay of the October 2021 order by the U.S. District Court for the Northern District of California that vacated EPA's 2020 Clean Water Act Section 401 Certification Rule. Therefore, the CWA section 401 certification process is once again governed by the CWA section 401 certification regulations promulgated by the EPA in 2020, codified at 40 CFR 121. On June 1, 2022, the EPA Administrator signed a proposed rule to improve the CWA section 401 certification process. The proposed rule would replace and update the existing regulations at 40 CFR 121, to be more consistent with the statutory text of the 1972 CWA and clarify elements of section 401 certification practice that has evolved over the 50 years since the 1971 regulation was promulgated. NMED submitted comments on the Proposed CWA Section 401 WQC Improvement Rule on August 4, 2022. More information about this rulemaking can be found here: www.epa.gov/cwa-401/proposed-clean-water-act-section-401-water-quality-certification-improvement-rule.

- *A summary of activities related to the New Mexico Mining Act will be reported annually in the NPS Management Program Annual Report.*

  A separate section below summarizes the Mining Act activities carried out under the NPS Management Program in 2022.

- *A summary of significant developments related to ONRWs will be provided in the NPS Management Program Annual Report.*

Several new Outstanding National Resource Waters (ONRWs) were approved by the New Mexico Water Quality Control Commission (WQCC) in 2022. In the Pecos Headwaters watershed, these include the Pecos River from Dalton Canyon to the Pecos Wilderness boundary, and most significant tributaries including Dalton Canyon Creek and tributaries upstream from Dalton Canyon Creek, excluding portions within the Pecos Wilderness that were already protected as ONRWs. Some unnamed wetlands adjacent to the new ONRW streams were also designated as new ONRWs. In the Jemez watershed, WQCC approved the East Fork Jemez River, San Antonio Creek, and Redondo Creek as new ONRWs. The Rio Grande from the Rio Pueblo de Taos to the New Mexico – Colorado border is another new ONRW, as is the Rio Hondo in Taos County from the Carson National Forest boundary near Valdez to its headwaters, and its tributary Lake Fork Creek from the Rio Hondo to its headwaters.

These are the first ONRWs in New Mexico not on designated wilderness or the Valle Vidal Special Management Unit, and the first in New Mexico not entirely on land managed by the United States Forest Service (USFS). Some of these ONRWs include private land, and some are partly on land managed by the National Park Service and BLM. The Rio Grande for several miles upstream of the Rio Pueblo de Taos forms the boundary with Taos Pueblo and is under the jurisdiction of both the State of New Mexico and Taos Pueblo for water quality program purposes. All of these new ONRWs were proposed to WQCC by third-party (i.e., not NMED) petitioners. NMED submitted the new ONRWs to EPA near the end of the reporting period for their review and consideration of approval. More information about New Mexico's ONRWs is available at www.env.nm.gov/surface-water-quality/onrws.

Two major wildfires burned in watersheds with ONRWs in 2022, primarily on lands managed by USFS. The Hermits Peak - Calf Canyon Fire was large enough and burned for long enough that USFS divided it into three areas for Burned Area Emergency Response (BAER) planning. The Hermits Peak – Calf Canyon Phase 3 BAER report covers the burn area within the Pecos Wilderness, and includes a section on ONRWs. The report identifies nine potentially affected ONRWs, and estimates high or very high risk that Bear Creek, the Pecos River, the Rio Valdez, and the Rio Mora will exceed state water quality standards as a result of the fire.

High burn severity in the watershed of McKnight Canyon, an ONRW within the Black Fire burn area.

The Gila National Forest reported that the Black Fire may have impacted twenty-two different ONRWs, and

noted that Diamond Creek, South Diamond Creek, Black Canyon, and the Mimbres River experienced extreme to significant post fire degradation not related to fire suppression activities.

These fires and others that burned in 2022 have had additional impacts downstream of the burn areas (and downstream of the ONRWs), discussed in the **NPS Management Program Problems and Concerns** section below.

USFS often considers some aspect of a larger fire event to constitute an emergency (e.g. when human life or infrastructure are threatened) and initiates suppression activity. The Antidegradation Policy in New Mexico's water quality standards at 20.6.4.8 NMAC allows for short term water quality degradation in ONWRs "[w]here an emergency response action that may result in temporary and short-term degradation to an ONRW is necessary to mitigate an immediate threat to public health or safety…" In these situations, 20.6.4.8 NMAC requires "the discharger [to] notify the department of the emergency response action in writing within seven days of initiation of the action" and "within 30 days of initiation of the emergency response action, the discharger shall provide a summary of the action taken."

On April 8, the Santa Fe National Forest provided a notification of actions planned to suppress the Hermits Peak Fire, which had not yet merged with the Calf Canyon Fire and at that time only four ONRWs (all in the upper Gallinas River watershed) were identified as potentially threatened. On April 24, the Santa Fe National Forest provided an additional notification for the Calf Canyon Fire, which had recently merged with the Hermits Peak Fire and which threatened three additional ONRWs on the east side of the Sangre de Cristo Mountains north of the Gallinas watershed. The notifications from the Santa Fe National Forest stated that ONRWs could be impacted by water and fire retardant drops and construction of fire line. On May 29, the Gila National Forest provided a notification that thirty ONRWs would be potentially impacted by the Black Fire and fire suppression activities including construction of hand lines, water drops, and retardant drops. These notifications noted the use of avoidance zones as a best management practice to prevent retardant from being dropped directly onto streams, and stated that Minimum Impact Suppression Tactics Guidelines would be followed.

On July 21, the Gila National Forest provided a summary of actions taken in suppressing the Black Fire. The summary included a list of thirty ONRWs that could be impacted, described the fire retardant drops and handline construction that may have impacted them, and listed the BMPs used to address water quality impacts from the suppression activities. The Santa Fe National Forest did not provide such a report for the Hermits Peak Calf Canyon Fire. This may have been because Forest staff were occupied with other aspects of post-fire recovery, or because few suppression activities were implemented in the watersheds of ONRWs. The large impact of the fire itself relative to the impacts of fire suppression may have been a factor as well.

In December 2021, NMED reviewed a project on Willow Creek, a short distance upstream of the Gilita Creek ONRW, for consistency with New Mexico's Section 401 certification of Nationwide Permit (NWP) 27. NWP 27 is for aquatic habitat restoration, and this project involved erosion control structures, a low-water vehicle crossing, and channel realignment practices intended to reduce erosion and sedimentation in Willow and Gilita Creeks. The U.S. Army

Corps of Engineers had the authority to approve or not approve this project, but NMED review determined the project was consistent with the Section 401 certification and the Corps acted consistently with 20.6.4.8.(4) NMAC in authorizing the project. In April 2022, NMED reviewed another project under NWP 27, that was implemented in Comanche Creek. The purpose of this project was to preform wetland and stream restoration in Upper Comanche Creek via treatments such as constructing log and rock step downs, installing sod plugs, excavating lead out channels, constructing riffles, and placing large woody debris. NMED confirmed that the project is consistent with the state Section 401 water quality certification of NWP 27. The project was funded by the New Mexico Department of Game and Fish and is described in greater detail below in the section, **Additional Management Practices by Non-NMED Agencies**, below. In June 2022, NMED reviewed a project on a portion of Black Canyon Creek that is between two sections of Black Canyon Creek designated as ONRWs, and confirmed the project is consistent with the state's Section 401 certification of NWP 3. NWP 3 is for maintenance of any previously authorized, currently serviceable structure or fill. The purpose of this project was to protect the Black Canyon bridge and nearby fish barrier (installed earlier to prevent non-native fish from entering a water occupied by Gila trout) which are at risk of flood damage following the Black Fire (photo below). In July 2022, NMED reviewed another project under NWP 27, planned for the upper ONRW section of Black Canyon Creek. NMED confirmed that the project is consistent with the state Section 401 water quality certification of NWP 27. This is a planned restoration project funded under NMED's River Stewardship Program, which has not been implemented yet and may be revised, following the Black Fire.

Removal of a beaver dam just upstream of Forest Road 150 bridge over Black Canyon Creek. This project was authorized under Section 404 Nationwide Permit 3 for maintenance activities.

- *A summary of federal consistency review under NEPA will be reported annually in the NPS Management Program Annual Report.*

  NMED's environmental review coordinator in the Office of the Secretary receives most requests for comments on National Environmental Policy Act (NEPA) documents, forwards them to the NMED bureaus, and applicable bureaus usually prepare comments. The coordinator compiles the comments and submits them to the requesting agency. Agencies that would like NMED to review a project or NEPA document should submit their documents via email to env.review@state.nm.us.

  In federal fiscal year 2022, NMED reviewed at least twenty-five projects and submitted comments on them. SWQB contributed to approximately twenty-one of these comment letters. Most of the SWQB comments were standard statements informing project proponents of the need to comply with Sections 402 and 404 of the Clean Water Act, and providing more background to assist them in doing so. WPS contributed project-specific recommendations relevant to nonpoint source pollution control used in three of the SWQB comments. Apparently no NEPA documents were developed for permitted grazing in the watersheds of high quality coldwater, coldwater, and coolwater streams in the reporting period.

  WPS also provided substantial early input to one project, not counted above. The Federal Emergency Management Agency designated NMED a Participating Agency for developing a Programmatic Environmental Assessment (PEA) for Watershed Resiliency and Post-Wildfire Treatment Projects in New Mexico. WPS helped select and describe appropriate watershed restoration and stabilization practices for inclusion in the PEA. The PEA is expected to reduce the amount of project-specific environmental clearance work required for post-fire watershed restoration implemented by federal agencies such as the Forest Service and Natural Resources Conservation Service (NRCS). The PEA is available at www.fema.gov/emergency-managers/practitioners/environmental-historic/nepa/programmatic-environmental-20.

  The Bureau of Reclamation Albuquerque Area Office announced that they began preparation of an Environmental Assessment for the City of Santa Fe's and Santa Fe County's proposed San Juan-Chama Return Flow Project. The project as proposed entails running an effluent pipeline to the Rio Grande, roughly parallel with the existing pipeline that brings water up to the Santa Fe area from the Rio Grande. This project could result in reduced flow in the Santa Fe River downstream of Santa Fe's wastewater treatment plant. The scoping period was held in late calendar year 2021, during which the City of Santa Fe requested information on the value of the Santa Fe River and past projects on the Santa Fe River. WPS and the City met on this topic, and WPS provided detailed information to assist the City and a contractor with developing alternatives for the EA. The draft EA apparently was not released during this reporting period.

- *A summary of activities related to forest restoration will be reported annually in the NPS Management Program Annual Report.*

  NMED continued to participate in the state Forest and Watershed Restoration Act (FAWRA) program managed by New Mexico State Forestry. No new projects with a riparian or wet-

land focus were developed in 2022, but several projects which may prevent water quality degradation were authorized. More information about FAWRA, including a list of projects selected for FY 2022 funding, is available at www.emnrd.nm.gov/sfd/forest-and-watershed-restoration-act-fawra. Additional effort by the Forestry Division in the area of forest restoration is summarized below in the section, **Additional Management Measures Implemented by Non-NMED Agencies**.

- *The biennial* State of New Mexico CWA §303(d)/§305(b) Integrated Report and List *will provide summaries of water quality survey activity, analysis, and conclusions in 2020 and 2022. The NPS Annual Report for these years will provide the percentage of assessed stream miles or watersheds designated as impaired, for comparison with previous years.*

  The 2022-2024 *Integrated Report* was completed in the reporting period. Appendix A of the Integrated Report is the combined Sections 303(d) and 305(b) list, and was approved by the New Mexico Water Quality Control Commission (WQCC) on March 16, 2022 and by EPA on April 26, 2022.

  Of 8,657 miles of streams with assessment status provided in the 2020-2022 *Integrated Report*, 4,525 (52%) were classified as impaired (Category 4 and 5 waters). Of 8,664 miles of streams with assessment status provided in the 2022-2024 *Integrated Report*, 4,801 (55%) are classified as impaired.

  Many of the new impairment listings were based on data indicating impaired benthic macroinvertebrate communities, and most of those were identified in newly implemented probabilistic monitoring. This was the first time in many years that SWQB collected and assessed benthic macroinvertebrates, and many streams were found to be impaired for this cause. Though not as numerous, many new impairment listings were temperature impairments, identified through relatively intensive deployment of temperature loggers in the 2019-2020 water quality survey, mainly in the Gila, Mimbres, and San Francisco watersheds. Several of these streams are in Category 5B, indicating that review and revision of the standards may be appropriate. A smaller number of the new listings were *E. coli* impairments. Several lakes were also newly listed as impaired, with new fish consumption advisories and/or nutrient impairments.

  Current and previous versions of the *Integrated Report* are available at www.env.nm.gov/surface-water-quality/303d-305b/.

- *A summary of activities and accomplishments under the Wetlands Program will be provided in each NPS Management Program Annual Report.*

  This summary is within the Wetlands Program section below.

- *At least one project outlined in a WAP supported with Section 319 watershed project funds will begin by 2021.*

  This milestone was met in 2020, and again in 2021. All five new Section 319 implementation projects that began in 2022 were intended to primarily implement WBPs, but three of them

(Projects 22-C, 22-E, and 22-F in Table 3, above) are within areas also covered by WAPs. Their focus however is on implementation of WBPs or (in the case of the amended Project 22-F) post-fire restoration plans, rather than WAPs.

WAPs were an eligible type of plan (a WBP alternative) in the SFA that was completed in 2022.

- *The NMED Construction Programs Bureau will provide a summary of activities related to the use of the Clean Water SRF to protect or improve water quality for each NPS Management Program Annual Report.*

  This information is reported above under **Objective 2 (Improve Water Quality)**.

4.4 Objective 4 – Share Information on Surface Water Quality

General public awareness of NPS pollution and water quality is increased and maintained through an effective education and outreach program using strategically selected educational resources available throughout the State.

Objective 4 Verification Milestones and Reports of Progress

- *SWQB will organize a data sharing network to solicit external data, meeting data quality standards, that will be assessed in the State of New Mexico CWA §303(d)/§305(b) Integrated Report and List for 2022-2024. The data collected by non-NMED partners will be submitted in 2021.*

  This milestone was met in 2020 and 2021. Data Sharing Network resources such as presentations and guidance documents are still available, at https://cloud.env.nm.gov/water/?r=7549&k=98cfe2b2a2.

  Ten external (non-NMED) organizations submitted data for the 2022-2024 *Integrated Report*. Seven of these had participated in the Data Sharing Network. Three of the seven were used in the 2022-2024 *Integrated Report*. Several remaining submittals may be used in the 2024-2026 *Integrated Report*, pending resolution of details in the submittals.

- *Watershed groups will address water quality problems as indicated by verification items listed above [related to WBP completion and implementation], accurately drawing on information resources for which the SWQB is responsible.*

  Milestone was met. The three WBPs completed in 2022 and the one WBP that was updated in 2022 all accurately summarize the listing status, TMDLs, and water quality data available for their covered watersheds. Also, the five new watershed implementation projects that began in 2022 were based on applications submitted by various stakeholders including watershed groups, in which the applicants correctly cited the current *Integrated Report*, TMDLs, WBPs, and other program information resources maintained by SWQB.

- *The SWQB email list, used for various surface water quality informational purposes (including distribution of Clearing the Waters), is maintained above 2,000.*

Milestone not met. At the beginning of the reporting period, the list had 1,897 addresses. Near the end of the reporting period, the list had increased to 1,928 addresses. Although this email list still falls short of the goal of 2,000 addresses, it has shown slight increases each year since 2014. People can add themselves to the list by clicking a button at the bottom of the main bureau web page, which links to https://public.govdelivery.com/accounts/NMED/subscriber/new?topic_id=NMED_4.

- *Clearing the Waters will be published quarterly with an email circulation of at least 2,000.*

Clearing the Waters (www.env.nm.gov/surface-water-quality/newsletters) was published on January 27 2022, March 21 2022, August 17 2022, and September 30 2022. The anchor articles for each issue were:

- 1) Green Gabions, and 2) Carbon Sequestration in Montane Wetlands - A Review for New Mexico
- Improving Stream Temperature in the Headwaters of San Antonio Creek on the Valles Caldera
- Applying for Section 319 Funds in Multi-jurisdictional Waters: New Mexico's NPS Management Program
- American Creek SWQB's First Alternative Restoration Plan

Each issue was distributed to approximately 1,900 people on the SWQB email list.

- *Educational opportunities provided for the public and private sector, and completed small publication projects, will be reported in the NPS Management Program Annual Report.*

A WPS staff member attended a "STEM Showdown" event on September 12, 2022 for high school students, in the field at Storrie Lake State Park, to teach students about river restoration and hydrology and discuss her Science, Technology, Engineering, and Mathematics (STEM) career path and careers like hers at NMED for watershed protection. The goal of the STEM Showdown is to increase interest in STEM fields of study or careers in northern New Mexico middle and high school students, and to demonstrate other New Mexicans in STEM fields. In 2022, there were a total of 11 STEM Showdown events that hosted a total of 297 students.

STEM Showdown event. WPS staff and high school students observing river restoration and hydrology at the Gallinas River diversion that feeds Storrie Lake.

A staff member of the Monitoring, Assessment, and Standards Section (MASS) assisted at the 2022 STEM Pathways for Girls Conference in Santa Fe, New Mexico on November 5, 2022, hosted by STEM Santa Fe. The annual day-long conference provides hands-on workshops to about 150 girls from 5th to 8th grade, led by women professionals in science, technology, engineering, and math. The girls get a chance to meet STEM role models, and like-minded peers, while expanding their knowledge of STEM careers.

The WPS Effectiveness Monitoring Coordinator conducted an outreach event for high school students to learn about water quality monitoring and water issues on the Rio Grande. On the banks of the river at Taos Junction Bridge, several groups of juniors from Santa Fe Prep saw how to sample benthic macroinvertebrates as indicators of water quality, while Cisco Guevara of the nonprofit group Amigos Bravos and Los Rios River Runners told tales of river history about 40 students in two groups over two hours. The students were engaged in the discussion and asked insightful questions, and most left the event feeling inspired to preserve the precious waters of New Mexico.

High school students attend an outreach event led by the WPS Effectiveness Monitoring Coordinator at Taos Junction Bridge.

SWQB sponsored and helped plan the June 8-9, 2022 Animas and San Juan Watersheds Conference that was hosted by the New Mexico Water Resources Research Institute. This year's conference was held virtually and in-person at the San Juan College Henderson Fine Arts Center in Farmington, NM. The conference included poster presentations, oral presentations, and tours of the Navajo Agricultural Products Industry, NMSU Agricultural Science Center, and the San Juan County Extension Office's Growing Forward Farm. The full conference program and recorded presentations are available online (https://web.cvent.com/event/2716fa3f-b7cc-4765-aa75-c3cac302da3f/summary). Funding for the conference was provided by EPA via a grant awarded under the Water Infrastructure Improvements for the Nation (WIIN) Act following the 2015 Gold King Mine Spill.

As part of the project "On-the-Ground Improvement Projects for the Upper Gallinas River and Porvenir Creek, Phase III" (Project 18-J in Table 3 above), the Hermit's Peak Watershed Al-

liance completed a story map and driving tour for the upper Gallinas watershed. Hard copies of the driving tour guidebook were produced and distributed. The driving tour guide is also available online at https://hermitspeakwatersheds.org/3566-2, and the story map is at https://storymaps.arcgis.com/stories/8e196c690bac43ba96992b50cc71bd18.

No additional small publication projects were completed during the year. Existing literature (brochures, etc.) was typically provided via email or other electronic means rather than in a printed format.

4.5 Objective 5 – Protect Ground Water Quality

The quality of ground water resources is maintained through the water fair and water-quality outreach program along with permitting and compliance assistance for large capacity septic tank leachfields with efforts to understand water quality and protect ground water from NPS pollution.

Objective 5 Verification Milestones and Reports of Progress

- *The GWQB will report to EPA-Region 6 in the Semi-Annual Report summarizing GWQB activities conducted under the CWA Section 319 grant for the New Mexico Water Fair and Water Quality Outreach Program and Permitting and Compliance for Large-capacity Septic Tank Leachfields.*

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 land farms (surface disposal facilities). Technical personnel in GWQB review state Discharge Permit applications, prepare and issue Discharge Permits, perform compliance assistance activities for permittees, and enforce Discharge Permit requirements for septic systems and surface disposal facilities. From October 1, 2021 through September, 30, 2022, GWQB issued twenty-one New, Renewal, or Renewal and Modification Discharge Permits.

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. To identify possible NPS water quality problems in rural New Mexico communities, GWQB conducts free testing of domestic wells ("Water Fairs") throughout the state. In 2022, GWQB conducted eight water fairs, receiving approximately 263 water samples. The Water fairs were conducted in Sandoval, Bernalillo, Taos, Dona Ana, Mora, Catron, Lincoln and Quay Counties.

The GWQB is up-to-date in semi-annual reporting to EPA in GRTS.

4.6 Objective 6 – Cooperate with other Agencies on Water Quality Protection and Improvement

With assistance provided by the WPS and other SWQB programs, federal and State agencies in New Mexico actively manage a variety of natural resources to protect and restore water quality.

Objective 6 Verification Milestones and Reports of Progress

- *A Memorandum of Agreement (MOA) to allow NMED to fund on-the-ground restoration projects on United States Forest Service (USFS) managed land will be drafted and under review by NMED and USFS by December 2019. The MOA will be signed and effective by December 2020.*

  This milestone was met, albeit a year later than planned, when the New Mexico Watershed-Based Plan Implementation Agreement was approved on December 9, 2021. No projects were developed or funded under the agreement in 2022, however. The agreement allows NMED to fund USFS to implement WBPs. USFS continued to support several WBP implementation projects in 2022 carried out by other organizations.

- *The Memorandum of Understanding (MOU) between NMED and the Southwestern Region of the USFS, scheduled to expire in 2022, will be renewed.*

  This milestone was not met in 2022. NMED provided a draft updated MOU to USFS in January, 2022. USFS attention was largely drawn by the 2022 fires starting in April. The MOU expired in June. USFS efforts to route the MOU for review did not resume until July, after the existing agreement had terminated. USFS does not process new agreements in the final quarter of the federal fiscal year, so this effort was delayed again until after the period covered by this report.

- *The MOU between NMED and the BLM New Mexico State Office, which does not have a termination date, will be reviewed and revised if appropriate, and implemented. The resulting activities will be reported in the NPS Annual Report.*

  The BLM submitted summaries of activities related to water quality management and nonpoint source pollution control in the section **Additional Management Practices by Non-NMED Agencies** below.

- *The grant from the DOE that currently supports the work of the DOE Oversight Bureau will be re-issued in 2023.*

  This milestone is scheduled after the reporting period for this report.

- *The summary of activities and accomplishments under the Wetlands Program provided in each NPS Management Program Annual Report will include a description of the Wetlands Roundtable meetings.*

  See the **Wetlands Program** section below for a description of the Wetlands Roundtable meetings.

- *For each year starting in 2019 and through 2023, NRCS will report that agricultural BMPs funded under NWQI or other conservation programs have been implemented during the calendar year and will provide sufficient details to enable WPS staff to estimate pollutant load reductions for water quality impairments identified by the State.*

NRCS staff reported during a State Technical Committee meeting on August 23, 2022 that $34,831 in NWQI funds were obligated in federal fiscal year 2022. This amount compares with $157,649 obligated in 2021, $989,346 obligated in 2020, and $398,382 in 2019. Typically, contracts obligated in prior fiscal years may have practices planned and implemented in the current fiscal year.

NRCS currently identifies two types of NWQI watersheds: implementation watersheds and planning watersheds. Three watersheds draining to the Animas River were classified as implementation watersheds in federal FY 2022. These are Tucker Canyon – Animas River (140801041003), Estes Arroyo – Animas River (140801041004), and Flora Vista – Animas River (140801041005). Two watersheds draining to the Rio Grande in Doña Ana County were classified as planning watersheds in federal FY 2022. These are the Picacho Drian – Rio Grande (130301020608) and Vado Arroyo – Rio Grande (130301020803) watersheds.

NRCS provided a description of recent work implemented under NWQI, in the section Additional Management Practices by Non-NMED Agencies below. The work was implemented in the Vado Arroyo watershed noted above. Their report lists nutrient management, no till residue and tillage management, installation of a variable frequency drive pumping plant, concrete ditch lining, and structures for water control as practices installed to reduce nutrient, sediment, and pathogen loading to surface water and ground water.

Most of the work reported by NRCS reduces pollutant loading to surface water by reducing runoff and erosion. WPS staff used the Revised Universal Soil Loss Equation (within the EPA Region 5 model spreadsheet) to estimate pollutant load reductions for a set of practices implemented in 12.8 acres where no-till residue and tillage management was adopted in the Vado Arroyo – Rio Grande watershed. The cover crop and its residue and attendant benefits were assumed to be present in twelve months per year when the acres were previously relatively barren and susceptible to erosion from flood irrigation, overwatering, and precipitation. The practices were assumed to be implemented on a 0.5% slope 400 feet long. The practices reduced sediment loading by approximately 1.0 ton per year, phosphorus by 2 lb/yr, and nitrogen by 4 lb/yr. Soil is typically made up of about 1% viable bacteria. If 0.1% 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 9.4×10^{12} colony forming units (CFU) per year of *E. coli* load reduction. This result averages about 2.6×10^{10} CFU per day, about 0.1% of the load reduction goal in the TMDL of 2.5×10^{13} CFU per day at moderately high flows (around 534 cubic feet per second, based on data from 1966-2006). Additional coordination would result in more accurate estimates of pollutant load reductions, for additional practices.

- *The NPS Annual Reports for 2019 through 2023 will include information about the Farm Service Agency's (FSA's) riparian buffer sub-program within the Conservation Reserve Program (CRP) and report on any efforts to coordinate on future projects.*

  In December 2021 FSA clarified that the "sub-program" is actually a Conservation Practice, CP-22, Riparian Buffers, under Continuous CRP. A fact sheet for CP-22 is available at www.fsa.usda.gov/Assets/USDA-FSA-Public/usdafiles/FactSheets/2015/CRPProgramsandInitiatives/Practice_CP22_Riparian_Buffer.pdf. CP-22 entails payment to participants for not har-

vesting or grazing within the practice area (among other requirements), and payments covering part of the eligible costs of establishing the practice, such as installation of fencing and alternative watering facilities.

In March, the manager of the CRP for FSA in New Mexico provided the 12-digit hydrologic unit codes (HUCs) and number of acres enrolled in CRP with the CP-22 practice. 262 acres were enrolled in HUC 130201021401 (Jaroso Creek in the headwaters of the Rio Vallecitos in Rio Arriba County) and 159 acres were enrolled in HUC 110800030508 (Cañon Alamita which drains to the Canadian River in Harding County). The WPS program manager and CRP manager met to discuss the state's water quality program priorities. The enrolled acres in the Vallecitos watershed are within an area where NMED cooperators may be developing a watershed-based planning project. The presence of enrolled acres might demonstrate the CRP as an option for landowners there in the future, and a planning project might help recruit additional participation in CRP.

The WPS program manager, FSA's CRP manager for New Mexico, and FSA's CRP specialist for the western states met in June to discuss an option for expanding adoption of CP-22 in New Mexico. FSA has a mechanism to establish a Conservation Reserve Enhancement Program (CREP) with a non-federal partner (an NGO, tribe, or state agency), in which the non-federal partner manages recruitment and enrollments in CRP according to parameters established in a formal agreement. The non-federal entity also provides some of the program costs. In September, FSA provided an agreement template for further consideration. While potentially promising as a means of increasing water quality protection in New Mexico (e.g., through more widespread establishment of riparian buffers), the program and the agreement language are complex, and would require the attention of assigned staff with few other duties. Such an assignment and focus are not currently within the scope of New Mexico's approved NPS Management Program, but the program could be revised to include this element.

NMED and FSA also discussed Conservation Priority Areas (CPAs), used by FSA to assign points to program applications based on resource concerns. FSA is open to establishing new CPAs. CPAs must be based on county or watershed boundaries, in various combinations. Riparian areas or priority streams thus could not be designated as CPAs, but nonpoint source program priority watersheds could be. CP-22 is necessarily implemented in riparian areas.

- *SWQB attendance at SWCD meetings will increase, and each year starting in 2019 the NPS Annual Report will include at least one profile of a project intended to protect or improve water quality implemented by an SWCD or SWCD clients.*

SWQB attended ten SWCD board meetings, with five different SWCDs, in 2022. This compares with nine meetings with two SWCDs in 2021, and six meetings of three SWCDs in 2020. Four of the five SWCDs with which SWQB staff attended meetings in 2022 are among the eight whose jurisdictions, because they contain most of New Mexico's assessed stream miles, are identified as priorities in the NPS Management Plan.

The Taos SWCD provided a summary of a project intended to protect or improve water quality, for the section **Additional Management Practices by Non-NMED Agencies**, below.

- *By 2022, NMED will fund at least one competitively awarded water quality or aquatic habitat improvement project with an SWCD with which NMED has not had an agreement within the previous ten years.*

  This milestone was met in 2019, with the approval of a project with Cuba SWCD (see the 2019 NPS Annual Report for details). However, as described in the 2021 NPS Annual Report, Cuba SWCD did not implement the project, so this milestone has effectively *not* been met.

  A project with Ciudad SWCD approved in January 2020 did not qualify for meeting this milestone because NMED had funded an earlier project with Ciudad SWCD in 2013-2016. One of the eight SWCDs listed as a priority in the NPS Management Plan submitted an application for funding in 2021, for a project that wasn't funded. WPS will continue to reach out to SWCDs to help them develop water quality protection and improvement projects and encourage them to apply for funding where needed for such projects in the future.

- *Statewide planning efforts related to water resources will give serious consideration to water quality protection and restoration and convey accurate summaries of information generated by SWQB programs.*

  SWQB-Watershed Protection Section staff continue to contribute to New Mexico's Climate Change Task Force as part of the Natural Resource Resilience subgroup to the Emergency Management, Health, and Resilience interagency Climate Action Team. The Climate Change Task Force was initiated by Gov. Michelle Lujan Grisham's 2019 Executive Order and has nine interagency Climate Action Teams responsible for proposing, planning, and implementing strategies to reduce greenhouse gas emissions and enhance New Mexico's ability to adapt to climate change (www.climateaction.nm.gov/). In 2022, Climate Action Teams worked together to update goals and milestones. Goals involving SWQB include establishing baseline information about groundwater and surface water supplies and quality, and using the CWA Section 303(d) list of impaired waters to prioritize surface water planning, protection, and restoration efforts to improve watershed condition and watershed resiliency. An important milestone achieved in 2022 was the launching of a new Climate Change Bureau within NMED. The Climate Change Bureau identifies, implements, and monitors New Mexico's efforts to reduce greenhouse gas emissions by at least 45% by 2030 as compared to 2005 levels (www.env.nm.gov/climate-change-bureau).

  WPS staff members participated in a collaborative process to develop a 50-year State Water Plan for the state of New Mexico. A WPS staff member participated in the 28th Annual New Mexico Water Dialogue meeting to facilitate a discussion about the ecological impacts to New Mexico's water resources and strategies to adapt to a warming climate to support strategy development for the 50-year State Water Plan. A draft of the plan was delivered to NMED in June and WPS staff provided comments on the draft plan. The 50-year State Water Plan is currently undergoing internal reviews by state agencies and a public draft of the plan is anticipated to be released in 2023.

- *The NPS Management Program Annual Report will be submitted to EPA by January 31 and will be made available to the public by early February, each year.*

The 2021 NPS Annual Report was submitted to EPA on January 31, 2022. It is available to the public at https://www.env.nm.gov/surface-water-quality/nps-annual-reports/.

- *A revised plan describing the New Mexico NPS Management Program will be submitted by the Governor of New Mexico, or by the Governor's designee, to the EPA Regional Administrator, in 2024. The plan will reflect input and review by implementing agencies and organizations.*

  In 2022, NMED developed a schedule and a plan to involve the public for revising the NPS Management Program Plan. NMED requested and was granted time on the agenda of the October 11, 2022 WQCC meeting to provide a presentation on the revision process. NMED intends to conduct an early input workshop for the NPS plan revision on January 18, 2023, in partnership with the New Mexico Water Resources Research Institute (WRRI), a division of New Mexico State University (NMSU). NMED began developing a Memorandum of Agreement with NMSU in 2022 to fund WRRI to handle planning, facilitation, virtual hosting, some coordination, and reporting for the workshop. The MOA was approved after this reporting period. The revision itself will occur over the course of 2023 and part of 2024. Here is the schedule that was presented to WQCC:

  - Virtual workshop for early public and inter-agency input to plan development: December 2022 [subsequently scheduled for January 18, 2023]
  - Drafting: January, 2023 – June, 2023
  - EPA Technical Review: June, 2023 – August, 2023
  - Public Comment Period: October, 2023 – December, 2023
  - WQCC Submittal, Review & Approval: January, 2024 – March, 2024
  - EPA Submittal: April, 2024
  - EPA Approval: June, 2024

NPS 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 GRTS to implement this reporting requirement. Pollutant load reduction estimates reported by NMED for January 1, 2022 through December 31, 2022 are available on line at https://tinyurl.com/NM-2022-Load-Reductions. This reporting will be complete by March 31, 2023, the deadline set by EPA.

Summaries of Section 319 Projects Completed in 2022

Temperature Reduction and Erosion Reduction in Lower Cow Creek (18-C)

Project Cost $154,844 (Section 319 funds) and $104,548 (matching funds and in-kind)

The Lower Cow Creek phase I project is one of three 319 funded projects that seek to address excess stream temperature and sediment loading along the lower portion of Cow Creek approximately 30 miles southeast of Santa Fe. Cow Creek joins the flow of the Pecos River about twelve miles below the project area to begin the long journey out of the Sangre de Cristo mountains, cutting through eastern New Mexico, to eventually join the Rio Grande near Del Rio, Texas.

Cow Creek phase I included 0.75 miles of privately accessed stream and the adjacent riparian buffer. Land uses in this area are primarily small-scale agricultural with small farms and fields obtaining surface water from Cow Creek for numerous acequias. The lower Cow Creek assessment unit is 16.1 miles long and includes stream impairments for temperature and benthic macroinvertebrates. The Upper Pecos Watershed Association worked with their contractors Pathfinder Environmental and Riverbend Engineering to engage land owners in the restoration process and identify several BMPs that would reduce stream temperature and stabilize eroding banks. Construction and planting was completed in November 2018, and included four cross vanes (grade control structures), bank stabilization totalling 325 linear feet at 3 locations, and numerous transplanted willow clumps and cottonwood trees in seven locations. With construction completed by late 2018, there were several years of post-construction monitoring and minor repair work.

Monitoring data collected in 2020 and 2021 showed an average decrease of 0.609 degrees Celsius between the furthest upstream and furthest downstream temperature dataloggers for the 100 hottest stream temperature data points. Streamside canopy coverage did not show any improvement during the project term and the stream temperature reduction can be attributed to geomorphic changes including accessing cooler groundwater through deep pool creation and floodplain reconnection. As the vegetation matures and further shades the stream, it is anticipated that the cooling effect will increase.

Photo of streambank protection using large root wads and boulders interplanted with cottonwood and willow. Photo is 3 years post construction.

On-The-Ground Improvement Projects for the Upper Gallinas River and Porvenir Creek Phase III (Gallinas Phase III) (18-J)

Project Cost $314,738 (Section 319 funds) and $217,768 (matching funds and in-kind)

Hermit's Peak Watershed Alliance (HPWA) completed the On-The-Ground Improvement Projects Phase II (Project 14-J) in the Upper Gallinas Watershed that included an addendum to the WBP addressing National Forest lands. The addendum presents impairment parameters and load reduction goals that were not available in the 2012 WBP. Phase III project plans included 32.5 stream miles within 48,968 project acres. The project's purpose was to reduce temperature in the Gallinas River and Porvenir Creek in furtherance of the *Watershed Based Plan for the Upper Gallinas River*. This was accomplished by improving 6.25 miles of trail conditions, repair or reroutes, at or near stream crossings that had created over-wide channel conditions and streambank erosion, along with the repair or removal of eleven dysfunctional man-made log dams that had widened the channel. Instream restoration was completed at El Porvenir Christian Camp and included deepening of pools and streambanks were anchored. Instream work also occurred on two private properties and included stream channel restoration and wetland creation. Additionally, native woody riparian vegetation was planted to improve stream shade and enhance riparian habitat conditions for beaver and other wildlife. During Phase II it was determined that the reintroduction of beaver into the Beaver Creek area in the Pecos Wilderness would significantly improve stream, floodplain and wetland conditions and be cost-effective. Preliminary habitat assessment and negotiation with both NM Game and Fish Dept. and the US Forest Service also occurred with both parties interested in pursuing this further.

Volunteer planting willows and other native woody riparian vegetation along Beaver Creek.

HPWA had many education and outreach activities which included *Gallinas Watershed Tour Guide* (aka Story Map and Driving Guide), a *Landowner Guide to Supporting Watershed Health*, and a series of workshops, lectures, and tours. These can be found on their website at https://hermitspeakwatersheds.org/.

At the end of the project, most of the upper Gallinas Watershed was subject to the 2022 Hermit's Peak and Calf Canyon Fire. This event did reset how HPWA will approach on-the-ground implementation in the future. They identified that an updated WBP is likely necessary to address significantly altered conditions and expect that new water quality and land health conditions will persist in the watershed for many years. New management and restoration measures will be needed, new priorities established, and new information will need to be added to adjust planned work to these drastically new conditions.

Lower Animas Watershed Based Plan Implementation Projects Phase 2 (18-K)

Project cost: $148,450 (Section 319 funds) and $103,388 (matching funds and in-kind)

The Animas River flows south into New Mexico from Colorado and meets its confluence with the San Juan River at Farmington, NM. The Animas River is the primary source of drinking water for the communities of Farmington, Aztec, and Flora Vista, as well as outlying rural communities. The Animas River is an important resource for agriculture which makes up 26% of the area within one mile of the Animas River. The Animas River is also an important resource for wildlife and recreation. The Animas River (San Juan River to Estes Arroyo) is currently impaired for temperature and does not fully support water quality standards for aquatic life use, and the Animas River (Estes Arroyo to Southern Ute Indian Tribe boundary) is currently impaired due to lead, nutrients, temperature and turbidity and does not fully support water quality standards for aquatic life use.

The San Juan Soil and Water Conservation District lead this effort to reduce *E. coli* (a recent impairment listing), nutrients (nitrogen and phosphorus), and sediment by integrating education, outreach and implementing a wide range of best management practices (BMPs). Education and outreach efforts included: (1) a Riparian Health Workshop titled "Water, Weeds, and Wildlife" for 29 people, (2) Riparian Pasture Health Assessments for 23 property owners which were used to identify BMP implementation projects with the assistance of RiversEdge West and the NRCS Aztec Field Office, (3) a Septic Care and Management Outreach Campaign that mailed septic care flyers to 46,000 households as part of Farmington Electrical Utility Service regular utility billing mailing, (4) organizing a San Juan Watershed Group Liquid Waste Subcommittee and partnering with NMED's Liquid Waste Program to host a Septic Training, (5) installing 16 RV Dump Station signs with NMDOT and San Juan County, and (6) monthly San Juan Watershed Group meetings. Riparian and agricultural BMPs were installed at 10 properties and included pasture and crop management plans, seeding, livestock exclusion fencing (the most commonly implemented BMP for this project), developing a groundwater well at one property to provide an alternative watering source for livestock, and the removal of invasive vegetation coupled with willow and cottonwood plantings.

Flora Vista Riparian Restoration Project- from March 2021 shows the crew seeding and spreading mulch after approximately 4 acres of invasive Russian Olive and salt cedar was removed.

continued

(continued)

Lower Animas Watershed Based Plan Implementation Projects Phase 2 (18-K)

Lastly, the San Juan SWCD worked with Source Molecular to further assess and quantify human fecal bacteria markers from data collected at five sites in 2013 and 2014. Source Molecular used three methods with varying sensitivity to re-analyze data. The site averages at the Animas River sites were below the human health risk threshold of 3,400 copies of human fecal marker per 100ml. The site average concentration of human fecal markers was the highest at the San Juan-Hogback site. Based on the high human fecal marker concentrations along the San Juan River, additional microbial sampling along the San Juan River was conducted using alternate funding. This will help further delineate bacterial sources and plan future projects.

Flora Vista Riparian Restoration Project: October 2021 shows t-posts and wire cages around planted trees and willows.

Dalton Canyon Creek Water Quality Improvement Project (18-L)

Project cost: $195,796 (Section 319 funds) and $135,564 (matching funds and in-kind)

The Dalton Canyon Creek project sought to address a specific conductance impairment on Dalton Creek, a tributary to the upper Pecos River approximately 15 miles due east of Santa Fe in the Santa Fe National Forest. Dalton Canyon is one of the first dispersed camping areas in the Pecos Canyon and receives relatively high visitor use during the summer months. This recreational over-use of the area has created numerous denuded camping areas adjacent to the creek which are a source of sediment loading and may also contribute to the specific conductance impairment. Historically, beaver were common in the watershed but were extirpated in the mid 2000s and what were once open water and wet meadows were becoming incised as headcuts moved through the former beaver ponds. The project's objectives were to reduce the impacts from dispersed camping and restore the functionality of the beaver dam complex and stream.

Restoration covered nearly 1 mile of stream and included ten plug-and-ponds and 2 wicker weirs (Beaver dam analogues) in the abandoned beaver dam complex to address severe gullying and erosion that dropped the water table over six feet. Downstream from this site, the creek was realigned to a historic channel to raise the water table, lengthen the channel and promote wetland creation. A second channel realignment was implemented downstream to return the creek to a historic channel and raise the water table across the entire valley bottom. Along the length of the creek, six J-hook vanes and six one rock dams were installed to create pool habitat, raise the grade of the creek and reconnect the water table. At dispersed camping areas erosion control treatments such as water harvesting ponds, berm creation, vegetation planting and road closures were implemented to protect Dalton Canyon Creek from runoff and sedimentation from heavy recreational usage.

Monitoring data collected during the project term included specific conductance at 4 locations (1 above the project, 2 within and 1 below), vegetation canopy coverage, and geomorphic parameters to fulfill the terms of the USACE 404 permit. Results for the specific conductance monitoring were inconclusive, due mostly to low and no-flow conditions at the lower-most monitoring station. The project term coincided with several years of below average snowpack and summer rainfall, and its possible that in a normal to wet year stream conductance could have been monitored throughout the season and the impact of the project better elucidated.

Heavily used dispersed camping area that is now blocked by boulder bollards and regraded and planted.

Sapello River Watershed Based Plan (19-C)

Project cost: $132,642 (Section 319 funds), $93,655 (matching funds and in-kind)

This project developed a WBP for the Sapello River watershed by the Hermit's Peak Watershed Alliance (HPWA). The Sapello River Watershed covers approximately 293 square miles (187,764 acres) mostly in San Miguel County and in a small part of Mora County.

The main objectives of this project were to meet all nine elements of WBPs in EPA's *Nonpoint Source Program and Grants Guidelines for States and Territories*. The specific water quality impairments of concern at the beginning of this project were sedimentation/siltation in the Sapello River and low flow alterations in its tributary the Rito San Jose. During the project term SWQB interpreted new data and recognized additional impairments of dissolved oxygen, and temperature. The project identified pollutant sources and management measures to reduce pollutant loading in a technically and scientifically sound manner, with participation from watershed residents and cooperating agencies.

The WBP was developed before the Hermit's Peak/Calf Canyon Fire, which was the largest wildlife recorded in New Mexico's history. The wildfire burned from April until June of 2022. During that period, the WBP was already in review. While the identified management measures are still relevant for long-term water quality improvement, the plan does not specifically address impacts of the wildfire.

Along with the required elements of a WBP, HPWA engaged with several key stakeholders including the Tierra y Montes Soil and Water Conservation District, NM Office of the State Engineer, NRCS, USFWS, and the USFS. Educational components included a ranch road workshop and creation of a land stewardship video series with information on stormwater treatment systems, green infrastructure, and partnering with beavers. The videos were particularly helpful due to the COVID pandemic, which occurred during two of the most active years of this project. The educational videos were an excellent addition to HPWA's and NMED's educational toolbox.

The management measures proposed in the WBP are specific to the Sapello Watershed. These management measures included Livestock Management with Planned Grazing Systems and Agricultural Management which are the primary activities occurring in this watershed. The development and implementation of planned grazing systems that maintain the integrity and function of vegetation and soils in riparian areas and in uplands is paramount in the Sapello Watershed. Agriculture and watershed health can be compatible and complementary if potential farming impacts to water quality and watershed health are understood, and techniques are modified to eliminate impacts.

Sapello River, immediately east of Highway 519, August 2020.

Upper Tijeras Creek Watershed-Based Plan (20-D)

Project cost: $52,867 (Section 319 funds), $64,157 (matching funds and in-kind)

The Upper Tijeras Creek Watershed, east of Albuquerque, New Mexico, includes all drainages flowing into Tijeras Creek upstream of the Four Hills area in east Albuquerque. Tijeras Creek originates from springs and seeps in the Sandia and Manzanita Mountains and Tijeras Canyon, which separates the two mountain ranges. Some springs and reaches of Tijeras Creek flow year-round, while others are intermittent. Downstream of the Four Hills area, Tijeras Creek flows intermittently west to its convergence with the Rio Grande. There are a variety of public and private landowners in the watershed, which includes the Village of Tijeras.

The Assessment Unit Tijeras Arroyo (Four Hills Bridge to headwaters) was found by NMED to be impaired for plant nutrients (nitrogen and phosphorus) and a TMDL was developed in 2017. Additionally, Bernalillo County has been monitoring for nutrients in Tijeras Creek since 2015. As in many parts of the Southwest, wildfire suppression has led to increased fuel loads and an increased potential for catastrophic wildfires. Other probable sources include channelization, septic systems, rangeland grazing and roads and outfalls. While upland watershed conditions are a primary focus of addressing sediment and nutrient contributions to Tijeras Creek, potential bank instability was also evaluated to determine if there are locations that can benefit from instream or bank restoration projects. Field conditions were observed and documented based on a modified Bank Erosion Hazard Index (BEHI).

Ciudad SWCD, in cooperation with Bernalillo County and the City of Albuquerque, hired a suite of consultants to complete a WBP in accordance with EPA guidance. The WBP is an update of a Watershed Restoration Action Strategy published in 2004. On-the-ground actions taken to date include channel restoration of Cedro Creek, the largest tributary, and a demonstration called the Tijeras Creek Restoration Project, at the A. Montoya-Roosevelt School. The WBP outlines future restoration work in the watershed that will lead to water quality improvements. There has been active public involvement throughout the development of this WBP, and the Tijeras Creek Watershed Collaborative (TCWC) has guided and reviewed all phases of the planning effort. The TCWC is a consortium of government agencies, non-profits, and residents focused on improving the Tijeras Creek Watershed ecological and cultural landscapes through public education and on-the-ground restoration.

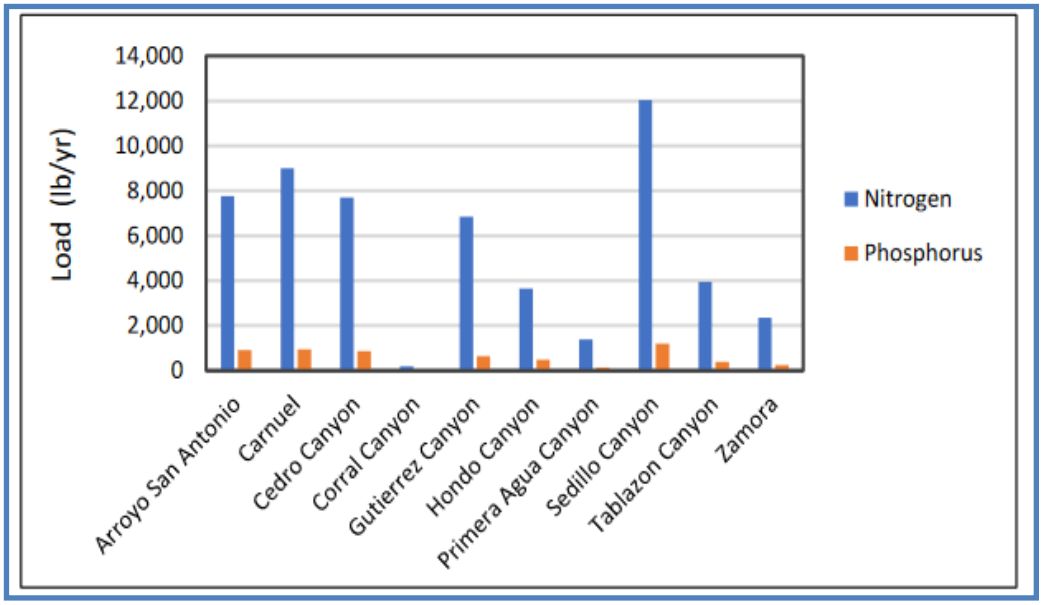


Figure above from the WBP, summarizing loading estimates from different part of the upper Tijeras Creek watershed.

Summaries for the New Mexico River Stewardship Program Projects Completed in 2022

Rewinding the Gallinas River in the City of Las Vegas – Phase II (20-L)

Project cost: $457,488 (River Stewardship Program funds) and $105,448 (local match)

Photos show pre and postconstruction restoration of an existing riverine wetland which will restore and maintain long term wetland services that offer water purification, water storage and wildlife habitat.

This project area is immediately downstream of a 0.33 mile stretch of the Gallinas River that was restored during a completed RSP grant called Rewinding the Gallinas River in the City of Las Vegas (Phase I) (17-G). The project area is owned and managed by the City of Las Vegas and the West Las Vegas School District and was developed in partnership with Tierra y Montes SWCD. The project area is within the Gallinas River Park, a popular city park. This project included an ~ 0.5-acre wetland restoration, 0.25 mile of stream channel, and 2 acres of floodplain and riparian area.

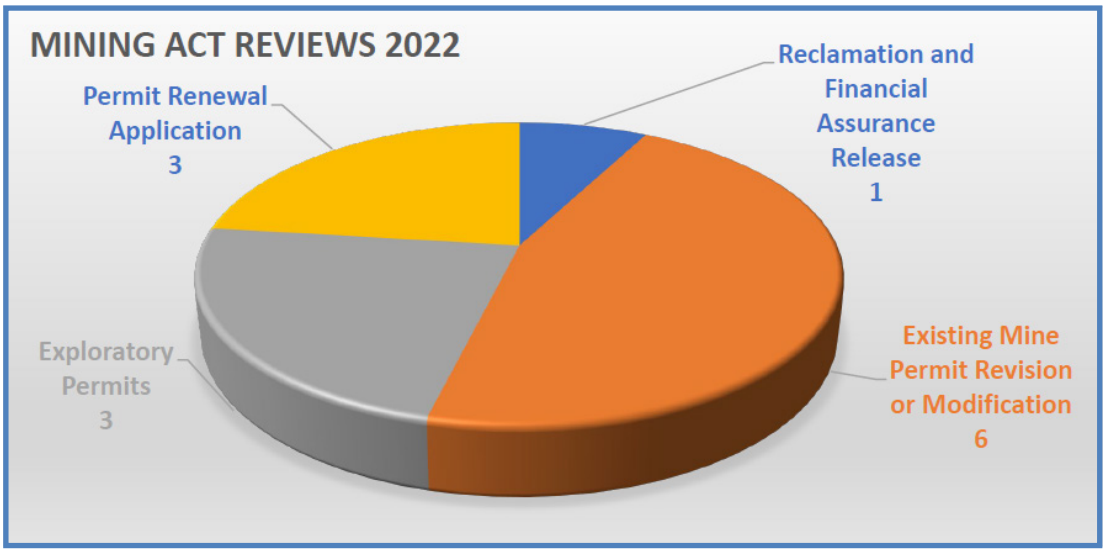
The goals of this project were to restore and demonstrate a healthy, functioning river, floodplain, riparian area and riverine wetland within the practical constraints of an urban river reach. It was to improve urban water quality, enhance fish and wildlife habitat, and attenuate floods and drought. Instream and streambank river restoration techniques consisted of installing more than 15 rock structures which included cross vanes and rock clusters in appropriate locations to anchor streambanks, prevent future channel incision, restore appropriate stream geomorphology and recreate or enhance instream structural diversity, especially pool/riffle complexes. Stream channel sinuosity was improved by reinstating a meander pattern appropriate for this stream type and valley bottom characteristics. This project also utilized step-down bioretention basins between culverts and the river channel and wetland as a best management practice for stormwater treatment. Riparian vegetation restoration focused on native species of woody and herbaceous vegetation planted following construction to repair damaged soil and other areas to enhance riparian areas. Native flowering plants were added to support pollinators and for aesthetic purposes. Some mechanical removal of Siberian elm occurred to restore more riparian appropriate species.

New Mexico Mining Act

The New Mexico Mining Act 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 applications 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.

NMED has a Mining-Act team that includes representatives from SWQB, 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 the Energy, Minerals, and Natural Resources Department (EMNRD). This work involves reviewing applications, site inspections, hydrologic interpretations, and evaluating water quality standards against proposed mining activities. 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, New Mexico Department of Game and Fish (NMDGF), USFS, New Mexico State Land Office (SLO), the Corps, EPA, and others.

During the October 1, 2021 to September 30, 2022 reporting period, SWQB staff reviewed and submitted comments on thirteen Mining Act submissions from MMD. Like 2021, the majority of mining permit activity this year was for revisions or modifications to existing permits.



In Northern New Mexico, SWQB staff reviewed mining permits related to Minimal Impact Exploration Operations, Updated Closure/Closeout Plan, Financial Assurance, Regular Existing Mine Modification, and Mini-

mal Impact New Mining Operation Renewal Application. These mines include the Saint Anthony Uranium Mine, Mount Taylor Uranium Mine and Mill, Cunningham Hill Mine, Brie Mine, Section 12 Uranium Mine, Tijeras Mine, U-Mate Mine, and McKinley Mine. The mineral extracted from these operations was either Humate or Uranium. Humate is a highly organic substance from which humic acids can be extracted and used as a soil amendment in agriculture. Uranium is a compound that is used to power nuclear power plants that generate electricity. The SWQB has been involved in reclamation of the Section 12 Mine, owned by Southwest Resources, Inc. The owner submitted construction designs and additional information including excavation details and radiation surveys for the hoist house and an associated building for the Section 12 Mine. The original application recommended borrow pits from Ambrosia Lake. The updated Excavation Plan "eliminates excavation and truck haulage .of clay from the lake basin, replacing that with dozer and loader excavation and short-haul of both radwaste and clay for cover from within and close to the repository." SWQB supports the updated design plan that locates borrow pits outside of Ambrosia Lake. SWQB also reviewed mining permits for the Saint Anthony Uranium Mine. The Saint Anthony Uranium Mine was operated by United Nuclear Corporation between 1975 and 1981 and is currently owned by General Electric. SWQB intends on conducting a site visit to Saint Anthony Uranium Mine with EMNRD on January 10th, 2023.

Successful establishment of grasses, forbs, and shrubs at the Copar South Pit Pumice Mine in Sandoval County near Jemez Springs, New Mexico. Photo by Emily Toczek, SWQB Implementation Team.

It was an unusually quiet year in southern New Mexico this year. Staff at the Silver City field office wrote 3 Mining Act comment letters, all of them for small mining operations. In the very southwest part of the state the American Magnesium Corporation submitted a minimal impact exploration permit to drill bore holes in a large dolomite deposit. They seek to better characterize the horizontal and vertical extent of mineral body before expanding into a large scale mine that would extract magnesium from the dolomite. Another minimum impact mine in Otero County near Las Cruces submitted a request to resume placer mine operations for gold and other precious metals. The mine, like most placer operations, is located in the bottom of a drainage and the SWQB made several recommendations to ensure that the post-mining condition would be stable and not generate excess sediment. Finally, the placer mine operation north of Silver City on Bear Creek was reauthorized for another year. This small hobby operation mines for gold and is regulated closely to allow only 100 cubic yards of material to be processed per year.

Photo above; DJ Ennis from the Mining and Minerals Division inspects a proposed drill site at American Magnesium's proposed dolomite exploration project in Luna County. Photo by John Moeny, SWQB Silver City field office.

Photo right; Site of W. W. Mining's proposed placer mine operation in Otero County. The area had been mined at several times in the past 100 years and one of the new permit conditions is to reclaim existing spoil piles before advancing operations into new, undisturbed ground. Photo by John Moeny, SWQB Silver City field office.

Wetlands Program

Funding Awarded to the Wetlands Program in 2022

Two new Wetlands Program Development projects were awarded funding by EPA Region 6 in 2022, and one project received additional funding. The **two new** federal grants total $762,615.00 in federal assistance awarded through the FY21-22 EPA Wetlands Program Development Grant Program authorized by CWA Section 104(b)(3). Additional funding ($17,998) was awarded to "**Integrating Linear Features and Mapping and Classification Data Gaps in New Mexico Wilderness ONRWs**," a project that received the bulk of its federal funding last year. These projects advance the development of our statewide wetlands program and are consistent with the 2021 Wetlands Program Plan for New Mexico (available at www.env.nm.gov/surface-water-quality/wetlands)."Understanding Depressional Wetlands and Mineral Soil Flats Wetlands in New Mexico."

"**Restoring Degraded Fen Wetlands on US National Forest Lands**" The goal of this project is to develop and demonstrate new methods for restoring fen wetlands and to restore at least 70 acres of wetlands on the Carson and Cibola National Forests (NF) in New Mexico. This project will develop innovative methods that restore hydrology and re-wet former fen wetlands where trampling, trailing and erosion gullies removed soils and wetland vegetation, and reduced the water-holding capacity of the fen. Fen wetlands in northern (Carson NF) and central (Cibola NF) NM will be targeted to test and refine restoration methods in regions and various scenarios where fen wetlands exist. Methods will be shared through 4 volunteer workshops, 4 field trips for interested groups and the public, and a technical guide. Two Wetland Action Plans (WAPs) will be developed, one for the Carson and one for the Cibola NF in select watersheds with fens.

"**Integrating Linear Features and Mapping and Classification Data Gaps in Northern New Mexico**" The goal of this project is to map and classify wetlands in the northern portion of New Mexico along Native Nation and Tribal boundaries, as part of our efforts to update mapping of all New Mexico's wetlands. This effort will complete mapping and classification of an additional 119 USGS Quadrangles along Tribal boundaries in northwestern and north central New Mexico and an area in the Canadian Basin, with the full suite of four wetlands classification systems, functional analysis and naming classified segments for wetlands narrative water quality standards. In addition, 366 USGS Quadrangles will be reviewed and updated to comply with the most recent NWI guidance for linear features that will ensure that all New Mexico NWI data are consistent statewide, including updating functional analysis and classified segments for these areas for Surface Water Quality Bureau uses. A Technical Advisory Committee (TAC) will be created to provide local and technical expertise, and pre- and post-mapping field reviews will verify wetland mapping units and designations. The interactive maps and metadata will be available on the SWQB Wetlands website, as well as a story map, and the project final report. Transfer of mapping products and technology will include on-line mapping workshops and presentations to stakeholders and at New Mexico Wetlands Roundtables.

Wetlands Roundtables

The SWQB Wetlands Roundtables continued in Fall 2021 and Spring 2022 remotely as Webex Webinars. The SWQB Wetlands Program conducted two very successful Wetlands Roundtables in the Fall of 2021 and two

more in the Spring of 2022 and both the Northern and Southern Wetlands Roundtables exceeded expectations in remote participant attendance. The New Mexico Wetlands Roundtables are conducted four times each year, twice as the Northern Wetlands Roundtables and twice as the Southern Wetlands Roundtables, as part of a Wetlands Program Development Grant from EPA Region 6 to foster partnerships and collaboration for the restoration and protection of wetlands and riparian resources in New Mexico. The Roundtables promote networking and information exchange among water and natural resources professionals and interested groups.

The SWQB Wetlands Program conducted two very successful virtual Wetlands Roundtables in the Fall 2021. The Southern Wetlands Roundtable was conducted November 17, 2021, with more than 130 attendees participating in the meeting. Kerry Jones (USFS) provided an explanation of the double-dip La Niña we are currently experiencing and climate trends in New Mexico, followed by a presentation by David Bustos of White Sands National Park providing an outlook for the dunes affected by drought. Harris Klein, Director of Trout Unlimited, provided an overview of the many monitoring and restoration projects that the non-profit is involved with in New Mexico. Also, US Army Corps of Engineers gave an update on Waters of the United States (WOTUS). Other presentations included, "*Restoring Playa Wetlands: Relevance is Paramount*" by Christopher Rustay of the Playa Lakes Joint Venture, and "*The New Mexico Wetlands Registry: NMRAM All Hands Campaign Revisited*" by Esteban Muldavin of UNM Natural Heritage. "*Wetlands Restoration on the Vado West Floodplain, Doña Ana County, New Mexico*" was presented by Todd Huslig of Hydra Aquatic.

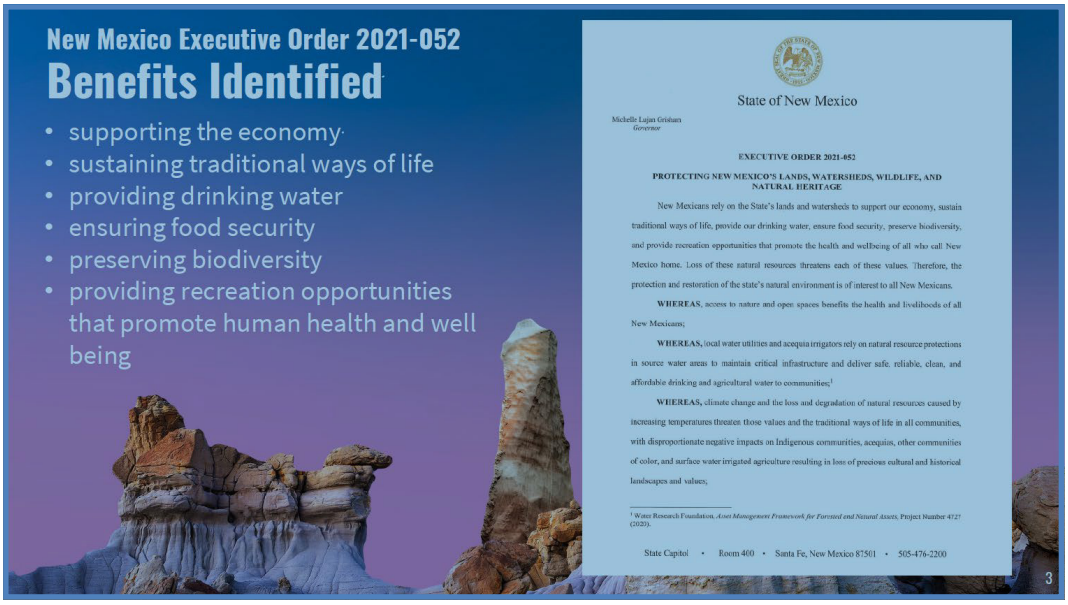
From Northern Wetlands Roundtable presentation by Christopher Rustay, Playa Lakes Joint Venture

The Northern Wetlands Roundtable webinar was conducted on December 7, 2021. Over 107 participants attended the virtual meeting. Three presentations focused on wetland restoration in the Middle Rio Grande Bosque: Chuck Schultz of NMDGF presented "*Wetland and Riparian Efforts on the Ladd S Gordon Waterfowl Complex*," and Colleen Langan-McRoberts, City of Albuquerque, and Paul Cassidy, Aquatic Consultants, presented their efforts to restore wetlands and habitat at the Candelaria Nature Preserve. Cameron Weber provided a summary of projects in the Middle Rio Grande conducted by Rio Grande Return. Two presentations highlighted the use of LiDAR and other available imagery as well as historic images in determining restoration goals and land management. Steve Vrooman explained his use of imagery in "*Using LIDAR and Historic Orthophotos*

to Guide Wetland Restoration in the Headwaters of the East Fork Jemez River," and Katherine Ottmers, graduate student at New Mexico Highlands University, presented her work at the Fort Union Ranch in "*Grazing Suitability and Phenology in High Plains Grasslands for Adaptive Management Decision Makers.*" Matthew Monajaras from Impact Outdoors New Mexico presented his work with students, community members, and veterans to appreciate and restore wetlands. Once again the US Army Corps of Engineers gave an update on the important and ever evolving status of WOTUS.

Conservation requires involvement to appreciate the resource was a message from Matthew Monajaras during his Roundtable presentation.

The SWQB Wetlands Program conducted more very successful virtual Wetlands Roundtables in the Spring of 2022. The Northern Wetlands Roundtable was conducted March 30, 2022 with 140 attendees participating in the meeting. Brianna Wadley (EPA Region 6) provided an informative update on the "*Status of Waters of the United States (WOTUS*)," and Forrest Luna (USACE) presented the regulatory update for New Mexico. To complement these presentations, Alan Klatt (SWQB) explained the CWA Section 401 Certification process and provided current updates. Kate Lacey (SWQB) gave an overview of the River Stewardship Program and upcoming opportunities to apply for funding which was enhanced through the appropriation of State and Local Fiscal Recovery Funding (SLFRF). "A "*Uniquely New Mexico' 30 x 30*" presented by Jacob Pederson of the Energy, Minerals, and Natural Resources Department explained



30 x 30 Executive Order for New Mexico

NM Executive Order 2021-052 that protects NM's Lands, Watershed, Wildlife and Natural Heritage. Dara Saville, Director of the Yerba Mansa Project presented "*Community-Driven Native Plant Restoration and Education",* and Brian Hanson, Rio Grande Nature Center Volunteer, presented "*Six Seasons of Restoration at the Rio Grande Nature Center State Park*."

On April 19, 2022, the New Mexico Southern Wetlands Roundtable was conducted remotely by Webex webinar with over 119 participants in attendance. The Southern Wetland Roundtable covered a variety of topics relevant to Southern New Mexico as well as the entire state. The meeting started with an excellent presentation by Kate Lacey about the River Stewardship Program and the upcoming Request for Proposals for $10 million in surface water quality restoration funds that will be available on a competitive basis. The Status of WOTUS and Clean Water Act Section 404 regulatory efforts by EPA in New Mexico was presented by Loribeth Tanner, EPA Region 6. The US Army Corps of Engineers Project Manager, Reid Riley, summarized the latest changes to Nationwide Permits. A second focus of the meeting was on wetland restoration and natural resources protection. A summary of off-river wetland restoration activities and techniques by the Elephant Butte Irrigation District and partners was presented by Gary Esslinger, EBID. Michael Robinson from the Center for Biological Diversity presented the importance of wolves in the landscape and the significant changes to wetland ecology brought about by the loss of wolves. Connie Maxwell, New Mexico Water Resources Research Institute and Craig Fenske, NMSU, co-presented the Master Watershed Conservationist Program concept and its application to planning and restoration in two watersheds in Southern New Mexico. Cole Smith, Elevate UAS, presented remote sensing techniques and the use of drones to collect various types of data for river corridors, wetlands, and surface water. Joni Cockman, BLM, has collected data from 100s of spring ecosystems in the southwest, and provided useful restoration and protection techniques for springs. Recordings of all Roundtable presentations are available from the Wetlands Program.

Photo of the Federally Endangered Mexican Grey Wolf from presentation about Mexican Grey wolves and Wetlands by Michael Robinson.

Wetland Projects Completed in 2022

Several projects were ongoing in 2022, but no Wetlands Program projects were completed this year.

Equity and Environmental Justice

President Biden signed Executive Order (EO) 14008, "Tackling the Climate Crisis at Home and Abroad," in January 2021. Section 223 of EO 14008 outlines next steps for the Justice40 Initiative, including establishing a goal that 40 percent of the overall benefits of certain federal investments flow to disadvantaged communities that are marginalized, underserved, and overburdened by pollution.

The CWA §319 grant program is considered a covered program by the Justice40 Initiative. In 2022, EPA established a web page with resources on Equity and Environmental Justice in the Nonpoint Source Program at www.epa.gov/nps/equity-resources, and conducted several listening sessions and quarterly updates as they began developing guidance or requirements for states that receive Section 319 grants to implement the Justice40 Initiative. NMED staff attended several of the listening sessions and quarterly updates and included the topic "engaging communities and improving environmental justice" in the scope of work for a planned workshop for agencies and other interested people to provide early input to the next revision of New Mexico's NPS Management Program. The anticipated result of this discussion topic is a set of options for revising the New Mexico NPS Management Program to be more inclusive of and better serve disadvantaged communities, and increase equity and environmental justice.

In 2018, NMED adopted two new policies that SWQB and WPS began following and continued to follow in 2022, related to equity and environmental justice. First, Policy 07-11 ("Limited English Proficiency (LEP) Accessibility & Outreach") requires programs to conduct limited English proficiency analyses for activities or proceedings that require public participation. Clean Water Act Section 401 certifications are included in this requirement, as will be the public comment period for the NPS Management Plan revision in 2023. LEP analyses typically use the American Communities Survey data from the U.S. Census Bureau accessed within EPA's Environmental Justice Screening and Mapping Tool (www.epa.gov/ejscreen) to determine the number or percentage of linguistically isolated households, and the languages spoken in those households, within the area affected by the NMED activity or proceeding. Appropriate methods are then selected to increase the likelihood that LEP individuals and households will receive information on public participation opportunities. For the NPS program, a typical conclusion has been that public participation opportunities need to be published or otherwise disseminated in Spanish as well as English. For actions affecting the whole state such as Section 401 certification of a statewide Section 404 Reginal General Permit, the 2016-2020 ACS Report indicates that approximately 9% of New Mexico's population age five and older speak English "less than very well." Approximately 81% of these LEP individuals speak Spanish. Statewide analysis also shows that 5.1% of households in New Mexico are linguistically isolated. For a project with more limited geographic scope, a buffer is typically used, such as a radius of five miles from a project requiring a Section 404 permit. In these smaller areas, Spanish has so far been the main language of linguistically isolated individuals, followed by smaller numbers of many other languages including Native American languages. Native American languages have less prominence in LEP analyses for Clean Water Act programs than in some other programs because the State of New Mexico does not have jurisdiction on lands of Indian Tribes, Pueblos and Nations for CWA programs.

The second policy related to equity and environmental justice adopted by NMED in 2018 is policy 07-13, "Public Participation." A key aspect of this policy is to support involvement of all people in NMED's ac-

tivities and proceedings by further educating NMED staff on the topics of federal civil rights requirements, environmental justice, and public participation. The policy also supports providing opportunities for public participation above and beyond NMED's statutorily mandated public participation requirements. In addition to limited English proficiency, the policy requires NMED staff to consider how best to reach minority communities and people with low income. The policy requires development of a Public Involvement Plan (PIP) for any activity or proceeding requiring public participation. Example PIPs are available on NMED's public notices web page (www.env.nm.gov/public-notices/). To better comply with this policy, WPS began providing all announcements made to subscribers of the SWQB email list in English and Spanish (with translations provided by a certified translator) in 2022.

Organizationally, NMED has encouraged greater transparency in recent years by making information on public processes available more directly from the main NMED web page in a uniform format, rather than from the pages for various bureaus and programs with different formats or styles. In addition to the public notices web page mentioned above, in 2021 NMED began posting events, meeting notices, public comment deadlines, funding opportunity deadlines, etc. on a department calendar (www.env.nm.gov/events-calendar/). In 2022, NMED established and began using a public comment portal at https://nmed.commentinput.com.

NPS Management Program Problems and Concerns

New Mexico experienced its largest fires on record in 2022, with over 800,000 acres burned statewide. The largest fire in 2022 (and the largest in New Mexico's recorded history) was the Hermit's Peak – Calf Canyon Fire, at 341,424 acres. The second largest fire in 2022 (and the second largest in New Mexico's recorded history) was the Black Fire, at 325,133 acres. Though quite a bit smaller, the McBride Fire near (and in) Ruidoso burned structures and triggered erosional processes that are impacting the Rio Ruidoso. The Cerro Pelado Fire in the Jemez Mountains impacted several streams there. The Cook's Peak Fire was the only major fire that did not burn on Forest Service land, and impacted streams in the Cimarron watershed.

A debris flow on the upper Gallinas River, within the Hermit's Peak – Calf Canyon fire area, after the July 26, 2022 major precipitation event. Photo courtesy Foster Kurumata, Los Padres National Forest, USFS.

The damage and degradation brought by these fires to water quality is considered to be widespread and relatively severe as post-fire storm runoff increased due to loss of soil cover and cre-

ation of hydrophobic soils. The unusually intense and long-duration precipitation events experienced in 2022 have exacerbated these effects.

The 2022 fires only impacted two ongoing NMED projects directly, one of which (Project 22-F in Table 3 above) was modified to help address post-fire impacts and the other (Project 22-G in Table 4 above) now being on hold and considered for revision.

Two projects largely implemented in 2021 to address impacts of fires that occurred in 2020 were damaged by unusually high flows (combined with continuing impacts from the 2020 fires) in 2022.

On Cherry Creek (Project 20-P in Table 3 above), grade control structures built directly on the channel were damaged when flood flows undermined the structures and moved some of the boulder.

(Photo above):
Cherry Creek in July 2022 (view upstream). Grade control structures were intact early in the monsoon season.

(Photo right):
Cherry Creek in August 2022 after high flow events (view downstream). Several boulders in this example grade control structure have moved downstream. This structure is visible from a different angle in Photo above.

On the Rio en Medio (Project 21-E), several structures built in ephemeral tributaries were damaged or completely removed by flood flows, see photos below. Some nearby grade control structures directly on the Rio en Medio were still largely intact after these floods, but structures intended to prevent downcutting in a downstream lower-gradient reach were completely buried in sediment from the upper watershed.

(Photos above):
(left) An ephemeral tributary to the Rio en Medio in September 2021. This example check dam was intended to prevent further downcutting of the channel and reduce sediment loading to the Rio en Medio. (right) The same tributary featured above, in August 2022. The check dam was removed by flood flows.

(Photo right):
Post-fire aggradation in the lower reach of the Rio en Medio project area buried several grade control structures.

We are considering adopting a policy to avoid in-stream or in-channel structural work after wildfires because of the challenges in designing the structures to withstand increased flows and sediment loading, in favor of more conventional slope treatments. Another project that may inform us in this regard is the Gallinas River project (Project 22-F in Table 3 above). Although it includes channel structures, it may fare better than the Cherry Creek or Rio en Medio projects because the structures on the main Gallinas River channel are in a valley type which permits flood flows to spread out over the floodplain, and the work done there augments that tendency. When flow reaches the banks and begins to spread out on larger floodplains, depth increases very slightly with additional increases in flow and the water on the floodplain is typically not erosive. The erosive force in the channel does not continue to increase significantly with increasing flow that spreads out on the floodplain. Cherry Creek and the Rio en Medio are both in more naturally confined valley types where flood flows remain concentrated. The Gallinas River project includes additional channel treatments in tributaries including in the bottoms of v-shaped canyons that may provide more examples of success or failure for different kinds of structures.

NMED attended various post-fire coordination meetings in May through September within the reporting period (and continues to participate), though the range of resource concerns is much broader than surface water quality protection. Irrigators concerned about safety of post-fire runoff for irrigation, for example, have asked NMED for guidance and for additional water quality monitoring. WPS updated some of the information at www.env.nm.gov/surface-water-quality/wildfire-impacts-on-surface-water-quality (particularly the FAQ), and SWQB's Monitoring, Assessment, and Standards Section (MASS) sampled five streams in or near the Hermit's Peak – Calf Canyon burn area on July 26, 2022. NMED has observed after past fires, and observed in the July 2022 data, that gross alpha sometimes exceeds the criterion for the livestock watering designated use. The same criterion applies to the domestic water supply use, although none of the five streams sampled in 2022 have that designated use.

The greatest amount of damage is expected to aquatic life uses. Anecdotal observations of high, turbid flows and increased bank erosion and sediment loading support that concern, but MASS might not collect new data to assess potentially impacted waters for designated uses until a few years after the fires, and plans to conduct water quality surveys in the Sacramento Mountains (location of the McBride Fire) and the Rio Chama watershed (not impacted by fires in 2022) in 2023 and 2024. The current listing methodology (www.env.nm.gov/surface-water-quality/calm) used by MASS includes the following statement:

> Data collected during or immediately after temporary catastrophic events influencing a waterbody that are not representative of normal conditions are typically not used to make CWA §303(d) listing decisions. For example, biological or habitat data collected soon after scouring storm flows which indicate the temporary diminished presence of aquatic life, or chemical data collected immediately after accidental spills would not be a basis upon which to list a water body as impaired.

That SWQB is not planning to collect post-fire water quality data to answer questions about safety of water used for irrigation or livestock watering is considered a problem or concern by some water users.

WPS includes post-fire response plans among eligible plans that can be implemented with Section 319 funds, and informed potential applicants of that through various outreach efforts in 2022. Post-fire response plans to be implemented with support from Section 319 funds need to meet basic elements in EPA's *Nonpoint Source Program and Grants Guidelines for States and Territories*. EPA considers "Alternatives to Nine-Element Wa-

tershed-based Plans" to be appropriate for planning efforts to control erosion and re-establish vegetation in the immediate aftermath of a forest fire. The elements required for these WBP alternatives are:

- Identification of the causes or sources of NPS impairment, water quality problem, or threat to unimpaired/high quality waters;
- Watershed project goal(s) and explanation of how the proposed project(s) will achieve or make advancements towards achieving water quality goals;
- Schedule and milestones to guide project implementation;
- Proposed management measures (including a description of operation and maintenance requirements) and explanation of how these measures will effectively address the NPS impairment identified above; and
- Water quality results monitoring component, including description of process and measures (e.g., water quality parameters, stream flow metrics, biological indicators) to gauge project success.

USFS developed Burned Area Emergency Response (BAER) plans for most of the 2022 fires. These plans typically provide useful hydrologic analysis, they may use debris flow modeling prepared by the USGS, and they typically outline actions to be taken under the BAER program (and usually with expected BAER funding), but they do not fully address the elements above for longer term recovery efforts in entire watersheds. For that reason, NMED intends to work with applicants as necessary to develop post-fire plans to accompany work plans submitted to EPA during the Solicitation for Applications being conducted in 2023. USFS BAER plans and USGS debris flow modeling are likely to be key resources for completing these plans. NMED does not have the resources to prepare detailed plans, and will only prepare basic plans for specific watersheds where 319-funded post-fire projects are being developed. The lack of program specific, water quality oriented planning (per EPA guidelines) is a problem which has emerged along with the direct impacts of the fires themselves.

One item related to watershed-based planning listed in the section **NPS Management Program Objectives for 2023** (below) was carried over from a similar section in the 2021 NPS Annual Report. The Escudilla Landscape Watershed Restoration Action Plan (Escudilla WRAP) is still not accepted as a WBP because staff have prioritized other work. The WRAP and EPA's comments are available at www.env.nm.gov/surface-water-quality/wbp.

Another problem or concern emerged related to watershed-based planning in the Rio Ruidoso watershed. Several key stakeholders working for the Village of Ruidoso and Lincoln National Forest have left their positions, setting the in-house effort to develop a WBP back significantly. It will not be practical to resume that effort until basic outreach about the water quality program and nonpoint source management program has been completed.

A more general problem relating to watershed-based planning is that only one application was received in the SFA for watershed-based planning projects that was completed in 2022. WPS staff made more effort to reach out to interested potential applicants for the next SFA, and we will know soon whether this problem persists in 2023.

Though apparently less pronounced in 2022 than in some previous years with large wildfires, some post-fire response actions carried out were destructive to water quality. Two examples from 2022 are construction of a large gabion check dam across the Gallinas River to protect the City of Las Vegas drinking water diversion,

and location of prefabricated homes or other structures in the floodplain of a tributary of the Rio Ruidoso. Impacts from both situations could have been reduced or prevented through Section 404 permitting and Section 401 certification. In the first example, the project was built by the U.S. Army Corps of Engineers Civil Works Program, apparently without Section 404 permit coverage (or a Section 404(b) analysis sometimes used for Corps-sponsored projects), and without Section 401 certification or review. In the second case, the property owner graded the canyon bottom to eliminate an ephemeral channel where the Corps determined a jurisdictional water is not present.

NPS Management Program Objectives for 2023

The WPS has identified the following activities from the 2019 NPS Management Plan to meet program objectives in 2023.

- A Solicitation for Applications (SFA) for projects to revise existing WBPs or develop new WBPs was released on October 31, 2022 and will be completed in 2023, with one to three new planning projects expected to begin in approximately July 2023.
- WPS will continue to provide oversight and technical assistance for two ongoing watershed planning projects listed in Table 2 above. One of the two (Project 20-E for Wolf Creek) will be completed in 2023. Because this plan will identify strategies to address hydrologic impairment (rather than excessive pollutant loading), it will be a WBP alternative rather than a WBP.
- WPS staff will adapt the Escudilla WRAP, a Forest Service document, into a WBP in 2023. The WRAP and EPA's comments are available at www.env.nm.gov/surface-water-quality/wbp.
- WPS will develop additional projects that implement WBPs, funded with Section 319 watershed project funds, under a new SFA that was released on October 31, 2022. Pending adequate funding and approvals, these projects will begin in July 2023.
- WPS will continue to provide oversight and technical assistance for ongoing implementation projects. Eight Section 319 implementation projects are scheduled to be complete in 2023. These are "Reducing Fecal Waste in the Rio Fernando de Taos" (Project 20-O), "Post Fire rehabilitation of the Bear Creek Watershed" (Project 20-P), "Watershed Project Implementation for the Mora River – Upper Canadian Plateau Phase 1B" (20-R), "Rincon Arroyo Watershed Stabilization Project to Reduce *E. coli* loading to the Rio Grande" (21-C), "Temperature and Erosion Reduction in Lower Cow Creek – Phase II" (21-D), "Post Fire Rehabilitation of the Rio en Medio" (21-E), "Bluewater Creek Riparian Improvement Project" (21-G), and "Rio Nutrias Watershed-Based Plan Implementation Phase II" (21-H). NMED plans to request to extend the term of Project 21-C to accommodate delays that occurred before and after the subgrant agreement was approved.
- State-funded watershed and riparian restoration projects will be developed and managed in 2023. Eight RSP projects are scheduled to be completed in 2023, all listed in Table 4 above with Project End Dates of June 30, 2023. Twelve RSP projects listed in Table 4 above will continue into 2024. An

RFP underway will be completed in 2023, in which evaluation will be completed for approximately twenty-five proposals and an undetermined number of contracts for new projects will be approved. A new RFP will also be developed and released in 2023, to identify and develop projects for funding with additional expected RSP funds.

- At least one NPS Success Story nomination will be submitted by August 31, 2023.
- 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 follow the development of regulations defining Waters of the United States and regulations for CWA Section 401. The Supreme Court's decision on Sackett v. Environmental Protection Agency will likely shape rulemaking and the authority of EPA and the Corps under the CWA.
- 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.
- NMED will continue to work with USFS to develop a Memorandum of Understanding called the New Mexico Water Quality Protection Agreement. The MOU will include additional language outlining how NMED and USFS will work together to implement ONRW protections.
- WPS staff will attend SWCD meetings, with a focus on the priority SWCDs listed in the NPS Management Plan (Colfax, Tierra y Montes, Taos, East Rio Arriba, Cuba, Santa Fe – Pojoaque, Grant, and San Francisco), with the purpose of informing SWCD staff and cooperators of NPS program goals and opportunities, and to seek opportunities to collaborate on water quality projects.
- Towards the end of the reporting period, the Federal Emergency Management Agency (FEMA) began engaging state and federal agencies in a cross-cutting Post Fire Recovery Action Strategy (PFRAS) with several Lines of Effort being formed to work on specific areas such as drinking water infrastructure, housing, economic recovery, etc. WPS will participate in the Watershed Line of Effort in 2023 to help support a better coordinated response to large wildfires in future years, including efforts to reduce impacts to water quality.
- The WPS program manager will invite one or more SWCDs to submit summaries of projects intended to protect or improve water quality to be included in the NPS Annual Report for 2023.
- NMED will work with the Water Resources Research Institute (WRRI) to conduct a virtual workshop on January 18, 2023 to collect input from the public and other agencies on the upcoming NPS Management Program Plan revision.
- NMED will draft the revised NPS Management Program Plan and submit it to EPA for technical review by approximately June 30, 2023. NMED will further revise the Plan based on EPA technical review towards the end of the reporting period.

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 instability, excessive nutrients, and excessive water temperature. The following summaries were submitted by the agencies and included here with minimal editing.

The Natural Resources Conservation Service

The Natural Resources Conservation Service (NRCS) provided the following summary of projects implemented in federal fiscal year 2022. Several watersheds highlighted below are priority watersheds under the National Water Quality Initiative (NWQI). More information on NWQI is provided above under, **Objective 6, Cooperate with other Agencies on Water Quality Protection and Improvement,** on page 34.

NWQI – Estes Arroyo – Animas River (NRCS NM Team 1)

In program year 2022, under the National Water Quality Initiative watershed, the Aztec Field Office Staff worked with Mr. Phillip Carrillo to implement a management activity on his leased acres in Aztec, NM. The producer's goal was to improve the agriculture production on the farm by implementing soil health techniques and efficient irrigation application system. Mr. Carrillo is a local farmer that understands the importance of soil health and a healthy watershed. His farm is adjacent to the Animas River and his goal is to improve the water quality for the public, wildlife and for recreation. Phillip collected soils on his farm to see what's going on below the soil surface. He collected soils for the soil health and routine soil nutrient testing. Mr. Carrillo will use these results to compare the implementation of soil health practices on the farm to meet his farming objectives. The soil testing as allowed him to apply fertilizer rates at the appropriate amounts of the test results, rather than what the local COOP says is generally needed every year. This has helped in saving dollars for the farm and reduce the dependence on fertilizer needs due to the rising costs. Philip's knowledge and experience will greatly improve the Animas Watershed in San Juan County in doing what he can for a healthy watershed. He is not done yet with improving the watershed, he is planning on installing a sprinkler system that will improve the application of water on his farm and reduce the current flooding method which will increase water savings and reduce the amount of surface runoff and leaching as well.

Mr. Carrillo's fields in Spring Cover Crop to improve the soil health of the farm.

NWQI – Vado Arroyo – Rio Grande (NRCS NM Team 9)

In program year 2022 under the NWQI watershed, NRCS worked with a producer to complete nutrient management, no till residue and tillage management and a variable frequency drive pumping plant to address: soil quality; water quality - field sediment, nutrient, and pathogen loss; and source water depletion. The pumping plant works in conjunction with last year's installed sprinkler system that helped to control the amount of water applied which improved the efficiency of water application. Nutrient management and no till positively affected soil organic matter and reduced the likelihood of nutrients being transported to groundwater through sediment runoff. The producer installed one variable frequency drive and completed 12.8 acres of nutrient management and no till. The NRCS NWQI Watershed funding, allowed NRCS to assist the producer financially with $10,368.18 to better manage water application and soil organic matter and to reduce sediment and nutrient runoff.

NWQI – Vado Arroyo – Rio Grande (NRCS NM Team 9)

Also in program year 2022 under the NWQI watershed, NRCS worked with a producer on the installation of a concrete ditch lining and structures for water control to address water quality degradation. The 1996 feet of lined ditch in conjunction with two high flow turnouts and one slide gate decreased the likelihood of excessive sediment in surface water by controlling the stage, discharge, distribution, and delivery of the irrigation and drainage system. The NRCS NWQI Watershed funding, allowed NRCS to assist the producer financially with $47,709.86 to better manage water application which reduced sediment in surface water.

Constructed concrete lined irrigation ditches installed with slide gates to reduce sediment in nearby surface water.

Taos Soil and Water Conservation District

Taos SWCD Investigates Aquatic Weeds Obstructing Acequia Channel

In the summer of 2022 a parciante (member with irrigating water rights) from an acequia in Taos County reported a severe blockage in their ditch due to "moss" growth. Mr. Floyd Archuleta, the parciante and member of family that has farmed the land for generations, said this growth only appeared in recent years. On behalf of his acequia, he submitted a request to Taos SWCD to help him investigate the situation. He also shared a concern questioning whether water quality factors may be stimulating growth of this plant.

Taos SWCD regularly receives landowner requests for information on water quality in private wells. This unique request for support on irrigation water quality allowed Peter Vigil, the Taos SWCD district manager, to train acequia program field staff in basic water quality concepts and sampling methods. In August of 2022, Taos SWCD technicians visited this acequia to investigate the situation. Along a portion of the acequia's concrete-lined channel, the matted clumps of this plant had captured silt that obstructed the flow of water. Preliminary assessments by NMSU aquatic weed specialists indicated that this new growth appeared to be a combination of filamentous algae and an aquatic plant, possibly a type of pondweed.

Taos SWCD also addressed Mr. Archuleta's concern of decreasing water quality by conducting some basic tests of total dissolved solids, nitrate, and *E. coli* fecal bacteria. In the case of eutrophication, heavy nutrient loading, then further investigation would be recommended to identify point or nonpoint pollution sources that may be influencing the acequia system. The field team chose three sample points - the Rio Hondo stream channel upstream from the acequia diversion and two sites along the acequia, up and downstream from obstructed portion of the lined ditch. Total dissolved solids were consistent and ranged between 120 and 130 ppm, normal background levels for the regional geology. Nitrate levels ranged from 2- 3 ppm (mg/L) in water samples no longitudinal trend. Not surprisingly, *E. coli* bacteria were present in all samples, but at low levels considered safe and normal for surface waters: 1.0 MPN/100 mL in the main stream water and 2.0 MPN/100 mL in both ditch samples.

These preliminary water quality tests did not highlight any abnormal or impaired conditions. Measuring water nutrient levels over the course of the season and along a larger spatial transect would be valuable to identify patterns that might guide best practices for land and water users. Taos SWCD staff reflected that climate anomalies, such as warmer winter periods or lower overall streamflow, may result in new and unique challenges for regional watersheds. The most recent NMED impairment reported for this stream was, in fact, temperature.

This technical assistance request was a valuable chance for a Soil and Water Conservation District to build its capacity to address new water resource challenges. Since its inception in 1941, Taos SWCD has cooperated with landowners and resource users to increase irrigation water-use efficiency, reduce erosion using natural and sustainable stream bank stabilizing methods, and to better understand our groundwater levels and quality through mapping projects. The streams are the lifeblood of Taos' acequia-irrigated valleys and the interconnect groundwaters provide 95% of county residents with water for domestic needs. Taos SWCD strives to better understand our water resources, both surface and groundwater, as well as their spatial and temporal variability, to be able to continue serving the residents of Taos County and supporting their stewardship efforts.

Clockwise from upper left: (1) A ditch diversion gate off of the Rio Hondo. (2) Mr. Floyd Archuleta describing the challenge of the clogged ditch. (3) Close up the aquatic macrophyte and the silt it traps. (4) Ribalse ditch (acequia in Taos County's Arroyo Hondo watershed) clogged with aquatic macrophyte in area of concrete liner.

New Mexico Department of Game and Fish

Comanche Creek Watershed Improvements

The New Mexico Department of Game and Fish (Department) continued collaborating with Carson National Forest hydrology and watershed staff to improve wetland habitat as part of a large-scale watershed restoration effort. The Department installed hundreds of wetland structures (e.g., log jams, rock erosion control structures, sod plugs, and floodplain benches) and excavated flood channels within upper Vidal Creek to stabilize banks and slope wetlands and encourage floodplain connectivity. These structures improve wetland habitat condition, increase soil water storage, and decrease erosion, thereby reducing non-point source pollution. This project served as the final stage of ongoing Comanche Creek watershed improvements. Valle Vidal restoration efforts being undertaken by the Department are nearing completion.

(Photo left) Comanche Creek.

San Antonio Creek Riparian Restoration

The Department collaborated with the Santa Fe National Forest to contract the installation of several BDAs, in conjunction with willow pole plantings and enclosure fences to protect areas on San Antonio Creek from impacts from grazing and non-point source pollution.

(Photo right) San Antonio Creek, plantings within enclosed area.

Stewart Meadows Riparian Assessment

The Department collaborated with the Carson National Forest Tres Piedras Ranger District to contract the development of a riparian assessment that will serve as a template from which future restoration activities will be drawn. This assessment was limited to the area within the newly constructed six miles of pipe fence around Stewart Meadows. This fence will provide significant protection to the Rio San Antonio, which runs down through the middle of the area, and is expected to greatly reduce non-point source pollution to that system.

Cimarron River - Fisheries Project

The Department partnered with the Cimarron Watershed Alliance, Trout Unlimited, NM Environment Department, and NM State Parks to continue instream improvements along the Cimarron River in the lower reaches of the Colin Neblett State Wildlife Area. Activities included reshaping the channel to reduce width-to-depth ratios and provide a low-flow channel, installing several rock structures to increase habitat complexity, and excavating pools to increase resting areas for trout. Activities focused on increasing over-wintering habitat for resident Brown trout, holding areas for stocked Rainbow trout, and improving water quality and river function. This project continued work completed in 2021, extending the original project by about 1 mile. In addition, Department partners identified a reach in the upper canyon as a candidate for a future project, and planning is ongoing for this reach.

Fawn Lake-planning

The Department partnered with the Carson National Forest and Trout Unlimited to plan restoration efforts for the Fawn Lakes recreation area near Red River, NM. Fawn Lakes and the adjacent campground are highly utilized recreational areas. In 2019, a significant flood event breached the dams and caused excessive damage to the site. The Department and partners have begun planning efforts to restore the Red River to a functioning condition and mitigate damages caused by flooding. The project will likely include instream habitat improvement, off-channel wetlands, and angler access trails.

Rio Bonito-planning

The Department has partnered with the BLM Roswell Field Office on developing plans to improve the Rio Bonito near Lincoln, NM. The planning continues habitat improvement efforts completed along the lower Rio Bonito in 2018. Project activities will improve habitat conditions for resident Brown trout, Rio Grande chub, Rio Grande sucker, and stocked Rainbow trout. Construction will likely occur in 2023.

Rio Costilla-planning

The Department has developed plans to continue habitat improvements along the Rio Costilla within the Valle Vidal. Planned work will continue habitat improvement efforts completed in 2017 and include the Rio Costilla from Comanche Point downstream to the terminal fish migration barrier. The project will focus on improving overwinter fish habitat to mitigate low flows associated with dam operations. Activities will include reshaping the channel to form a low-flow channel and increase habitat connectivity, installing large woody debris to increase habitat complexity, and installing rock structures to mitigate erosion and stabilize stream banks. The project dovetails with an ongoing restoration project for Rio Grande cutthroat trout, Rio Grande sucker, and Rio Grande chub. Construction is scheduled for fall 2023.

Willow Creek – planning

The Department partnered with the Gila National Forest and the San Francisco Soil and Water Conservation District to develop engineering plans for instream restoration work in Willow Creek, near Mogollon, NM. Willow Creek is an important Gila trout recovery stream and also provides a unique angling opportunity for a native trout. The 2012 Whitewater-Baldy Fire impacted the creek, and a watershed plan was developed by the Gila National Forest and the NM Environment Department to address water temperature impairment. This project will include instream habitat improvements to provide improved Gila trout habitat and mitigate the temperature impairment.

Bernardo Wildlife Management Area (WMA) - Wildlife Project

The Department is currently implementing efforts to improve and enhance 800 acres of riparian habitat and wetland/moist-soil habitat on the WMA through the implementation of a Ducks Unlimited engineered plan. Department staff also continued riparian restoration efforts by planting 161 trees/shrubs of 11 different species, including NM olive, NM locust, sumac, milkweed, Baccharis spp., box elder, Woods' rose, Apache plume, currant, and Gooding's willow. Staff maintained 200 acres of wetland habitat on the WMA during the winter. Habitat restoration and wetland improvement activities are all expected to help reduce non-point source pollution, benefitting the nearby Rio Grande.

Department staff planting trees at Bernardo WMA.

Edward Sargent WMA - Wildlife Project

The Department maintained five exclosure fences around approximately 30 acres of riparian habitat along the Rio Chamita on the Edward Sargent WMA to decrease browsing pressure and increase herbaceous ground cover and regrowth of riparian vegetation. Department staff observed natural recruitment of native woody vegetation (hawthorn, willow, alder, and Woods' rose). The Department also maintained the existing Beaver Dam Analog (BDA) within the Rio Chamita and installed more than 70 in-stream structures on Nabor Creek. In-stream and riparian improvements are expected to help reduce non-point source pollution in the nearby Rio Chama and its tributaries.

(Photo left) Natural recruitment of woody vegetation within an elk exclosure. (Photo right) Beaver Dam Analog maintenance.

Fenton Lake WMA - Wildlife Project

The Department contracted the replacement and repair of the WMA's entire boundary fence to prevent livestock trespass from adjacent U.S. Forest Service and private lands. This new fence has prevented livestock trespass into critical habitat for the Mexican spotted owl, Jemez Mountains salamander, and NM meadow jumping mouse on the WMA. Livestock exclusion efforts are expected to help reduce non-point source pollution by reducing erosion and associated pollution of Fenton Lake and the Rio Cebolla.

Boundary pipe fence to prevent livestock trespass into critical habitat.

William S. Huey WMA - Wildlife Project

The Department planted, via seed drilling and hydroseeding, approximately 130 acres following the completion of the wetland enhancement construction project that was implemented in Fiscal Year 2021. Reseeding disturbed ground is beneficial in reducing the recruitment of undesirable vegetation and reducing erosion and runoff. These actions will help reduce non-point source pollution into the nearby Pecos River.

Black Mesa Ponderosa Pine Forest Restoration

The Department collaborated with the Cibola National Forest to continue efforts to restore ponderosa pine forests to a stage where prescribed fire can be used as a management tool. Species not characteristic of these forest types have encroached into these fire-adapted forests, and these forests now have overall tree densities that are much higher than what was historically present. If left untreated, these forests would be at risk of experiencing catastrophic wildfires. The thinning of targeted trees within these forests allows for improved forest health and resilience and enhances the probability of any future fires being low to moderate intensity. Retaining these forests is important to reducing erosion and non-point source pollution.

Ponderosa forest post- mechanical thinning.

Share with Wildlife Projects

Identifying habitat usage by New Mexico populations of Rio Grande chub (Gila pandora) and Rio Grande sucker (Panosteus plebeius) and its effect on the presence and relative abundance of both species

This 2022 project is focused on assessing the habitat associations of two Species of Greatest Conservation Need (SGCN), the Rio Grande chub and the Rio Grande sucker, in various streams within the jurisdictions of the Santa Fe and Carson National Forests and Taos Field Office of the Bureau of Land Management. Researchers with American Southwest Ichthyological Researchers, LLC have been conducting electrofishing surveys and gathering water quality and other aquatic and riparian habitat data to characterize the needs of these two species, which are currently under review for listing as threatened or endangered under the Endangered Species Act. This much-needed information on their ecology will help to inform not only the listing process but future conservation and management actions for these species.

Researchers electrofishing for Rio Grande chubs and suckers on the Rio Cebolla.

Bosque Education Guide and New Mexico STEM Ready! Science Standards

In 2021 this project updated six natural history-related lessons from the extant Bosque Education Guide to better align with the New Mexico STEM Ready! Science Standards. The guide, which has been presented to approximately 2,200 teachers since its creation, provides an extensive environmental education curriculum regarding NM's riparian and aquatic habitats. The natural history activities focused on in 2021 help students learn about: adaptations and anatomical structures of arthropods; crane migrations and threats sandhill cranes face from loss of wetland habitats; mapping patterns of bird biodiversity and the importance of riparian areas for these species; the web of life in the bosque; the impacts of invasive species and process for developing a management plan to address one of several invasive riparian plants; and collecting data on what others know (and testing what they know) about the bosque through the development of, and analysis of data from, a survey. In 2022, this project continued work on updating field activities that include nature journaling and scavenger hunts in the Bosque. Updating the guide will help keep these well-designed, hands-on activities relevant and as helpful as possible for New Mexico educators.

Additional information on Share with Wildlife Projects is available at http://www.wildlife.state.nm.us/conservation/share-with-wildlife/.

New Mexico Forestry Division

New Mexico's forests need proper forest management to help improve overall health, reduce insect and disease risk, reduce the impact of fires, and improve watershed and habitat health. Through careful resource management, community engagement, and productive collaborations, New Mexico Forestry Division is able to promote healthy, sustainable forests and watersheds. The primary activities undertaken by the Forestry Division to achieve these goals are watershed restoration projects, forest thinning, prescribed burning, and permitting of commercial timber sales. In Federal Fiscal Year 2022, the Forestry Division accomplished 3,352 acres of watershed restoration / thinning projects in NPS Priority Watersheds (see Table 1).

Using BMP's to address NPS pollution

The New Mexico Forestry Division's forest resource management programs involve the application of both regulatory and voluntary silvicultural BMPs on State and private forest lands in New Mexico. Through the federally supported Cooperative Forestry Assistance Program, the New Mexico Forestry Division provides technical forest resource management assistance to landowners and recommends application of NPS pollution BMPs in all silvicultural activities. Types of technical assistance range from reforestation to harvesting of mature timber. This assistance is designed to meet a wide range of landowner management objectives. In conjunction with these programs, the New Mexico Forestry Division has technical responsibility for application of forestry practices in federally funded landowner cost share programs that includes the Forest Health Improvement Program (FHI), which specifically addresses forest health issues and forest management planning, as well as various thinning programs that address wildfire threats to communities and watersheds.

The Forestry Division provides technical assistance to partner agencies and organizations on matters related to forestry, wildland fire and watershed health. Some partnerships are formalized through legal agreements. A Cooperative Agreement between the Division and the Natural Resources Conservation Service (NRCS) provides for a shared staff position to serve as the New Mexico NRCS' State Forester, and the Division's District staff serve as Technical Service Providers to NRCS Field Offices, Area Offices, and cooperators. Agreements with the Bureau of Land Management (BLM) and the Southwestern Region of the USDA Forest Service enables the Division and BLM and USFS to collaboratively develop cross-jurisdictional, landscape scale forest and woodland restoration treatments for improving forest health and resilience and decreasing wildland fire threat to forests, woodlands and watersheds. In other cases, partnerships are formed to implement grant funded activities that promote watershed health and water quality. The Division also partners with other state agencies to support common state objectives, such as managing the New Mexico Forest and Watershed Management Coordinating Group (Coordinating Group).

Forest and Watershed Health Office

The Forestry Division established the Forest and Watershed Health Office (FWHO) to facilitate and coordinate implementation of the New Mexico Forest and Watershed Health Plan. The Plan contains twenty recommendations for state-level actions needed to achieve ecological restoration across New Mexico's landscapes. FWHO coordinates with other entities to improve the efficiency and effectiveness of mutual efforts to protect and restore New Mexico's landscapes. The Forest and Watershed Health Coordinator chairs the Coordinating Group, whose members represent 20 agencies and organizations and the private sector. The Coordinating Group informs and advises the FWHO and makes recommendations to the State Forester in its role as the Watershed

Management Subcommittee. The FWHO, together with other Division staff, the Coordinating Group and its task teams, implement action items recommended in the Plan. FWHO contributes to watershed health and water quality directly through collaborative project planning, oversight, and implementation and through grant writing to fund such projects. FWHO participates in state and regional groups and advisory bodies involved in natural resource policy, legislative analysis, grant development and proposal evaluation, outreach and education, and strategic planning, which pave the way to more and better work getting done on the ground.

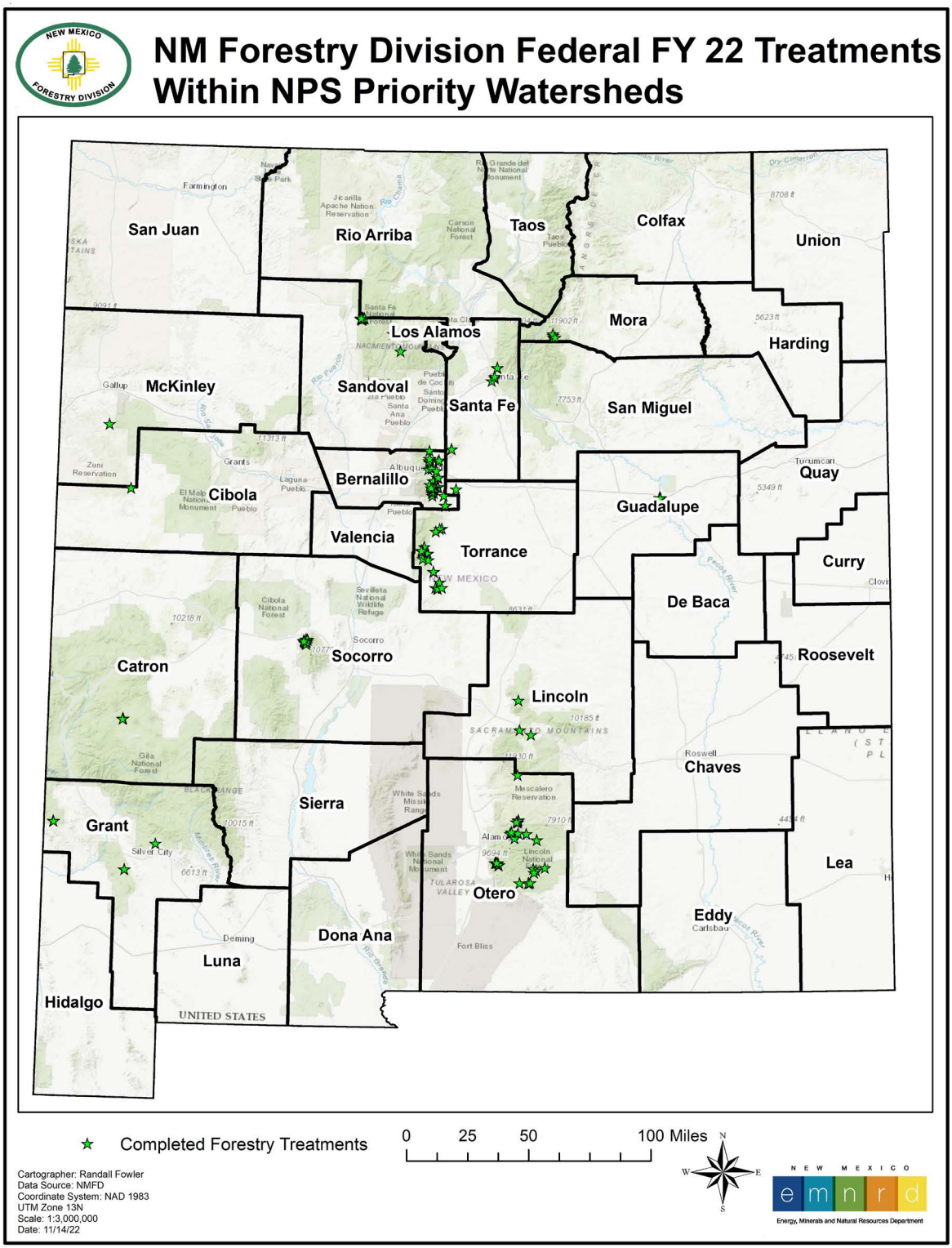
Forest and Watershed Restoration Act

The Forest and Watershed Restoration Act (FAWRA) was created by House Bill 266 and signed into law by Governor Michelle Lujan Grisham on March 15, 2019. FAWRA allocates $2 million annually to the Energy, Minerals and Natural Resources Department, Forestry Division with the purpose of restoring forests and watersheds in the state of New Mexico and establishes a Forest and Watershed Advisory Board to evaluate and recommend projects. The objectives of FAWRA are to prioritize and fund large-scale forest and watershed restoration projects on any lands in the state that:

- increase the adaptability and resilience to recurring drought and extreme weather events of the State's forests and watersheds;
- protect above and below ground water sources;
- reduce the risk of wildfire, including plans for watershed conservation;
- restore burned areas and thin forests;
- include related economic or workforce development projects or a wildlife conservation or a habitat improvement project.

The recurring funding provided by FAWRA gives the State the opportunity to better manage its forests and watersheds, and better protect its water resources.

Hand thinning in the Middle Rio Grande bosque. Removal of invasive species within riparian corridors along the bosque to reduce understory fuels and decrease catastrophic wildfire potential in populated areas with a high likelihood of wildfire transmission. Approximately 100 acres have been completed cumulatively with FAWRA, building on previous work by municipalities and tribes. Future work will benefit water systems across the Middle Rio Grande Conservancy District.



Map of Projects Conducted by New Mexico State Forestry in 2022

Table 1: New Mexico State Forestry Watershed Restoration Projects Accomplished in 2022

2022 New Mexico State Forestry Watershed Restoration Projects				
Project	**Location**	**Completed Acres**	**Watershed**	**Description**
Haz Fuel Salado SWCD Hop/Patterson Canyons	South of Magdalena	58	Outlet Arroyo Gato	Chipping, Forest Health Thinning, Forest Stand Improvement
Western LSR	Southeast of Santa Fe	15	Arroyo de los Chamisos	Chipping, Forest Health Thinning, Forest Stand Improvement
Western LSR	East of Santa Fe	12	Headwaters of Santa Fe	Chipping, Forest Health Thinning, Forest Stand Improvement
Edgewood SWCD Restoration Project	near Ponderosa Pines	110	Upper Hells Canyon Wash	Chipping, Forest Health Thinning, Forest Stand Improvement
Edgewood SWCD Restoration Project	near Manzanita Mountain	5	Arroyo de Yrisami & Upper Tijeras Arroyo	Chipping, Forest Health Thinning, Forest Stand Improvement
Edgewood SWCD Restoration Project	south of Sandias Airpark	58	Headwaters Buffalo Draw	Chipping, Forest Health Thinning, Forest Stand Improvement
Edgewood SWCD Restoration Project	near Sedillo Ridge Open Space	26	Juan Tomas Canyon	Chipping, Forest Health Thinning, Forest Stand Improvement
Claunch Pinto SWCD Barranco	near Salinas Pueblo Missions	5	Canon Barranco-Abo Arroyo	Chipping, Forest Health Thinning, Forest Stand Improvement
Claunch Pinto SWCD Barranco	Southeast of Manzanita Mountain	19	Arroyo de Chilili	Chipping, Forest Health Thinning, Forest Stand Improvement
Claunch Pinto SWCD Barranco	Southwest of Mountainair	34	Canon Barranco Abo Arroyo & Deer Canyon-Abo Arroyo	Chipping, Forest Health Thinning, Forest Stand Improvement
Claunch Pinto SWCD Barranco	North of Mountainair	42	Torrean Draw	Chipping, Forest Health Thinning, Forest Stand Improvement
Cuidad SWCD-Cedro, Sulphur, Hondo	near Ponderosa Pines	11	Upper Hells Canyon Wash	Chipping, Forest Health Thinning, Forest Stand Improvement
Cuidad SWCD-Cedro, Sulphur, Hondo	near Sandia Park	16	Headwaters San Pedro Creek & Outlet San Pedro Creek	Chipping, Forest Health Thinning, Forest Stand Improvement

Table 1: New Mexico State Forestry Watershed Restoration Projects Accomplished in 2022

2022 New Mexico State Forestry Watershed Restoration Projects				
Project	**Location**	**Completed Acres**	**Watershed**	**Description**
Ciudad SWCD Open Space Restoration	East of Manzanita Mountains	14	Arroyo de Yrisami & Canon Gallegos	Forest Health Thinning, Forest Stand Improvement
Cuidad SWCD-Cedro, Sulphur, Hondo	near Manzanita Mountain	5	Upper Tijeras Arroyo	Chipping, Forest Health Thinning, Forest Stand Improvement
Cuidad SWCD-Cedro, Sulphur, Hondo	near Cedar Crest	8	Upper Tijeras Arroyo	Chipping, Forest Health Thinning, Forest Stand Improvement
EQIP Thompson	Southwest of El Morro National Monument	10	Crockett Draw	Chipping, Forest Health Thinning, Forest Stand Improvement
Jeff Wheeler	near Sulfur Creek	1	Outlet San Antonio Creek	Chipping, Forest Health Thinning, Forest Stand Improvement
Haz Fuels/Claunch Pinto/Southern Manzanos	Southeast of Manzanita Mountain	11	Arroyo de Chilili	Chipping, Forest Health Thinning, Forest Stand Improvement
Haz Fuels/Claunch Pinto/Southern Manzanos	Mountainair Area	48	Upper Arroyo de Manzano, Canon Barranco Abo Arroyo and Arroyo de Tajique	Chipping, Forest Health Thinning, Forest Stand Improvement
Haz Fuels/Claunch Pinto/Southern Manzanos	near San Pedro	12	Hyer Draw	Chipping, Forest Health Thinning, Forest Stand Improvement
Guadalupe SWCD WUI	Santa Rosa	33	Esteros Creek-Pecos River	Chipping, Lop and Scatter, Stump and Spray
Baseball Cut, Skid, and Deck GNA	near Gila National Forest	320	South Fork Negrito Creek	Cut, Skid and Deck
Jim Lewis Watershed Restoration	northeast of Timberon	116	Perk Canyon	Cut, Skid and Deck
Claunch-Pinto Box Canyon Restoration and all lands	near Mountainair	255	Upper Arroyo de Manzano	Forest Health Thinning, Forest Stand Improvement, Mastication

Table 1: New Mexico State Forestry Watershed Restoration Projects Accomplished in 2022

2022 New Mexico State Forestry Watershed Restoration Projects				
Project	**Location**	**Completed Acres**	**Watershed**	**Description**
Cedro 3 Watershed Restoration	near Manzanita Mountains	343	Upper Tijeras Arroyo	Forest Health Thinning, Forest Stand Improvement
Santa Fe National Forest Deer Lakes Forest Restora	near Deer Lake	699	San Pablo Canyon	Forest Health Thinning, Forest Stand Improvement
Red Cabin No Name Springs	Southwest of Mescalero Reservation	182	South Fork Tularosa Creek	Chipping, Forest Health Thinning, Forest Stand Improvement, Tree Felling and Removal
Trestle Mistletoe treatment	Cloudcroft	3	Fresnal Canyon	Forest Health Thinning, Hazardous Fuel Reduction
Chiloote South	East of Timberon	92	Perk Canyon-Cuervo Creek	Forest Health Thinning, Tree Felling and Removal
Sleepy Grass	Northeast of Timberon	53	Perk Canyon	Forest Health Thinning, Tree Felling and Removal
Southern Sacramento	Cloudcroft area	24	James Canyon & Cox Canyon	Forest Stand Improvement, Lop and Scatter, Mastication
Southern Sacramento	Northeast of Timberon	9	Perk Canyon	Forest Stand Improvement, Lop and Scatter, Mastication
Coleman NFL	East of Cloudcroft	12	James Canyon	Forest Stand Improvement, Mastication, Tree Felling and Removal
White Oaks WUI	Northwest of Patos Mountain	6	Headwaters of White Oaks Draw	Fuel Break
Nogal WUI	Nogal	10	Nogal Creek	Fuel Break
Southern Sacramento WUI	Timberon	1	Arkansas Canyon-Sacramento River	Hazardous Fuel Reduction Around Community at Risk

2022 New Mexico State Forestry Watershed Restoration Project				
Project	**Location**	**Completed Acres**	**Watershed**	**Description**
FY21 Haz Fuel Salado SWCD Hop/ Patterson Canyons	South of Magdalena	106	Outlet Arroyo Gato	Thinning/Fuelwood, Lop and scatter
Mora County NFL	near Rociada	172	Rito San Jose	Lop and scatter
Turkey Mountains Watershed Restoration	Turkey Mountains	40	Outlet Wolf Creek	Lop and scatter
2021 Grant County WUI	West of Burro Mountains	5	Willow Creek-Mangas Creek	Lop and Scatter, Mastication, Tree Felling and Removal
2021 Grant County WUI	North of Silver City	5	Maudes Canyon-San Vicente Draw	Lop and Scatter, Tree Felling and Removal
Pine Haven Forest Restoration	South of Fort Wingate Military Reservation	213	Skeets Arroyo-Whitewater Arroyo	Mastication
Lincoln County	West of Capitan	4	Magado Canyon	Mastication
Joplin Ridge Phase 2	near Joplin Ridge	110	Bug Scuffle Canyon & Dog Canyon,	Mastication
2018 Otero WUI	Cloudcroft area	4	Fresnal Canyon & James Canyon	Mastication
2021 Grant County WUI	near Gila National Forest	7	Apache Creek	Mastication, Tree Felling and Removal
Bootzin FHI Thinning	near Vellecitos De Los Indios	110	Church Canyon-Jemez River	Thinning/Fuelwood
1-Claunch-Pinto All Lands	Mountainair Area	478	Arroyo de Tajique & Deer Canyon-Abo Arroyo	Thinning/Fuelwood
		Total = 3,352 acres		

United States Forest Service

Regional Office

The United States Forest Service Regional Office provided the following tables summarizing areas burned in 2022 and funding approved to implement Burned Area Emergency Response plans.

Table 1: 2022 fires on Lands partly or entirely managed by the U.S. Forest Service.

Fire Name	National Forest	Date Fire Contained	Total Acres	Forest Service Acres Burned
Bear Trap	Cibola	June 8, 2022	38,266	38,266
Black	Gila	July 17, 2022	327,263	316,065
Cerro Pelado	Santa Fe	June 15, 2022	45,605	36,981
Hermit's Peak-Calf Canyon	Santa Fe/Carson	July 18, 2022	345,718	145,418
McBride	Lincoln	May 6, 2022	6,242	4,548
Midnight	Carson	July 5, 2022	4,896	4,604
Nogal Canyon	Lincoln	April 30, 2022	419	370
TOTAL			**768,409**	**546,252**

Table 2: 2022 fires on lands partly or entirely managed by the U.S. Forest Service, acres by soil burn severity (Forest Service acres only)

Fire Name	Forest Service Acres by Soil Burn Severity				
	High	Moderate	Low	Unburned	NoData
Bear Trap	100	3,167	25,223	9,776	-
Black	18,928	55,472	177,993	56,981	6,691
Cerro Pelado	299	12,487	13,458	10,737	-
Hermit's Peak-Calf Canyon	41,232	42,243	46,158	15,785	-
McBride	14	1,060	2,829	645	-
Midnight	322	1,922	2,216	144	-
Nogal Canyon	-	28	216	126	-
TOTALS	**60,895**	**116,379**	**268,093**	**94,194**	**6,691**

Table 3: 2022 fires on lands partly or entirely managed by the U.S. Forest Service, acres by soil burn severity (non-Forest Service acres only).

Fire Name	Acres By Soil Burn Severity Non-NFS (Other Federal, Pueblo Reservations, State, Private)				
	High	Moderate	Low	Unburned	NoData
Bear Trap	-	-	-	-	-
Black	10	184	6,597	4,407	-
Cerro Pelado	82	2,250	3,054	3,238	-
Hermit's Peak-Calf Canyon	42,093	59,070	82,801	16,336	-
McBride	8	283	1,085	318	-
Midnight	7	115	151	191	-
Nogal Canyon	-	10	29	10	-
TOTALS	**42,200**	**61,912**	**93,717**	**24,500**	**-**

Table 4: Approved BAER funding by treatment category.

Fire Name	Approved Treatment By Category				
	Land	Channel	Road and Trails	Protection/ Safety	Monitoring
Bear Trap	$39,250		$56,130	$122,900	
Black	$8,000	$14,000	$308,000	$61,000	
Cerro Pelado	$13,410	$25,489	$140,642	$33,900	
Hermit's Peak-Calf Canyon	$6,012,880		$888,745	$308,053	$50,000
McBride	$383,200		$40,571		
Midnight			$20,000	$10,375	
Nogal Canyon	$3,000			$19,355	
TOTALS	**$6,459,740**	**$39,489**	**$1,454,088**	**$555,583**	**$50,000**

Carson National Forest

During fiscal year (FY) 2022, the Carson National Forest (CNF) implemented projects that made progress towards meeting and maintaining state water quality standards as well as activities that contributed to non-point source management. Some project implementation (described below) was delayed due to forest closure due to fire danger and work on one project was cancelled due to lack of resource availability to support volunteer efforts.

Vidal Creek Restoration Project

Comanche Creek Watershed (130201010102)

In cooperation with NM Department of Game and Fish restoration of stream and wetland areas of Upper Comanche Creek was implemented. Approximately 40 structures were constructed (sod plugs and benches, rock and log rundowns, earth channel plugs, constructed riffles, and contour swales) to reduce stream channel erosion, head cutting, increase floodplain access, and enhance slope wetland conditions.

Vidal Creek project - pre and post-restoration conditions.

Cabresto Creek Wetland Restoration Project

Cabresto Creek (130201010302)

Chevron Environmental Management Company, Chevron Mining, Inc. implemented restoration activities in a section of Cabresto Creek headwaters in the Midnight Meadows area of the Carson National Forest. These activities we completed as part of compensatory mitigations requirements for impacts to waters of the U. S. (WOTUS) associated with remediation activities for the CMI Questa Mine (Mine) required under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process.This year project work focused on implementing brush and slash placement to protect structures from ungulate damage and repairing structures impacted by sediment from upper watershed due to intense monsoon rains and localized flooding. Various structures comprised of natural materials (rock and log) such as log mats, log spreaders, Zuni bowls, log step falls, media luna, one rock dams, and rock plugs have been constructed and monitoring shows success in restoring stream channels and re-wetting and expansion of adjacent wetlands.

Midnight Meadows Wetland Stabilization/Bitter Creek Channel Reinstatement Project

Upper Red River (130201010301)

Midnight Meadows project - an example of the log and wattle spreaders.

In cooperation with Amigos Bravos a volunteer work weekend was held to continue restoration of the Midnight Meadows wetlands area of upper Bitter Creek. This work is part of a Participating Agreement (20-PA-11030200-068) between Amigos Bravos, NM Office of Natural Resource Trustee, and the USDA Forest Service, Carson National Forest. The construction of a plug and spread project planned for FY 2022 was deferred to 2023 due to monsoon rain and localized flooding. Work performed included repair and maintenance of existing wetland exclosures and construction of 5 hand- built log and wattle structures in Anderson Park. Approximately 25 volunteers participated in this work weekend along with 2 Forest Service staff. An example of the log and wattle spreaders is depicted in the photo below.

Planning Activities

During FY 2022 the Carson NF continued planning of collaborative restoration activities across the forest under the Northern NM Riparian, Aquatic, and Wetland Restoration Environmental Analysis signed in April 2020.

These planning efforts included:

- La Jara Canyon Restoration (project areas 5, 6, 7) on the Camino Real RD,
- Rio San Antonio & Lagunitas Creek Restoration on the Tres Piedras RD, and
- Lower Rio Costilla Habitat Improvements in the Valle Vidal Management Area of the Questa RD.

Cibola National Forest and National Grasslands

The Cibola National Forest and National Grasslands (CNFNG) implemented several projects that improved nonpoint source management during the fiscal year 2022. The fiscal year started on October 1, 2021, and ended on September 30, 2022. These projects included playa restoration, vegetation treatments including prescribed burning and thinning, reforestation, and maintenance of salt cedar removal along the Canadian River in Mills Canyon. Photos from these areas can be seen at this website, https://www.flickr.com/photos/cibola_nfg/.

In addition, the Forest has completed the Forest Plan Revision which includes additional standards and guidelines intended to meet the desired condition of healthy watersheds and clean water.

Playa Restoration

Subwatershed: Canon Mesteno-Canadian River (HUC 110800030505) – Playa restoration – 5 acres

Many playas in New Mexico have been excavated and bermed to provide water for livestock. However, this practice impacts the natural function of playas. Often the excavated playa does not hold water very well as the fine clay layer has been removed. The Kiowa Rita Blanca is working to restore playas by removing berms, replacing fine material, and restoring drainage patterns.

Pre-restoration:
Picture taken from tail end of berm on right side of picture and playa pit on left side of berm. Photo taken facing northeast. (1/11/22)

Post-restoration:
The berm has been leveled out and the pit filled. Photo taken facing northeast. (6/10/22)

Looking back up at the restored playa from the south; overview. Photo taken facing north.

Non-native Invasive Species Control

Subwatershed: Canon Vercere-Canadian River (HUC 110800030505) – Salt cedar maintenance treatments – 72 acres

Subwatershed: North Canadian River (HUC 111001010309) – Old world bluestem treatment by prescribed fire - 403 acres

Invasive non-native plants can impact water resources by changing the plant composition of riparian areas, impacting soil productivity, and increasing erosion. In addition, by reducing diversity of plant communities and other indirect effects, resiliency is reduced when disturbance such as wildfire or floods occur. The Cibola National Forest and National Grasslands is working to prevent and remove non-native invasive weeds. In 2022, these activities occurred on the Kiowa Rita Blanca Grassland.

Along the salt cedar removal In FY22, maintenance continued on salt cedar treatments occurred at Mills Canyon in partnership with the Canadian River Riparian Restoration Project. The Canadian River Riparian Restoration Project (CRRRP) is a collaboration of eight Soil and Water Conservation Districts in northeastern New Mexico (https://www.nmacd.org/programs). The CRRRP's goal is to restore the watershed of the Canadian River, both on the main stem and on its tributaries, to a healthy productive state that will provide native habitat for a variety of wildlife and improve water for communities, agriculture, and recreation throughout the course of the watershed. This activity allows for the riparian area along the Canadian River to recover. Riparian and upland plantings were also monitored to assess the success of riparian plants and additional needs.

Prescribed fire was used to reduce populations of old-world bluestem in upland areas. Old world bluestem grass forms monocultures which lack diversity and resiliency resulting in a decreased watershed condition. Prescribed fire reduces densities of this grass and is a tool to manage its invasive character.

Vegetation Treatments (prescribed fire and thinning)

Subwatersheds:

Prescribed Fire: Mesteno Draw (HUC 130500011001) 135 acres

Prescribed Fire: Upper Hells Canyon Wash (HUC 130202030401) – 156 acres

Thinning: Wolf Wells (HUC 130202080101) 134 acres

Thinning: Headwaters Cottonwood Creek (HUC 130202070202) – 103 acres

Thinning: Upper Rio Nutria (HUC 150200040201) – 360 acres

Thinning: Upper Arroyo de Manzano (HUC 130500011002) 86 acres

Thinning: Upper Tijeras Arroyo (HUC 130202030201) – 257 acres

Thinning: Milk Ranch Canyon (HUC 150200060103) – 180 acres

Vegetation treatments such as prescribed fire and thinning occurred across the Cibola NF&NG in FY22 as restoration activities continue to be planned and implemented. In areas where tree densities are out of the range of variability, these treatments reduce the risk of uncharacteristic fire with high intensity effects. High intensity fire effects include high sedimentation rates, turbidity, erosion, and streambank erosion. Vegetation treatments reduce the potential for these effects and improves overall watershed condition.

Prescribed fire was implemented to improve watershed condition, increase resiliency to wildfire, and improve ground cover. These benefits are expected to lead to improvements in water quality by reducing sediment inputs over the long term and improving riparian condition. Watershed condition in affected watersheds will be reassessed to determine the extent of improvement using the Watershed Condition Framework, a method used by the USDA Forest Service (https://arcg.is/1LKDWv).

Gila National Forest

The Gila National Forest implemented projects in fiscal year 2022 that were designed to improve water quality, water quantity, soil conditions, and reduce the risk of high intensity wildfire. The following information highlights some of these projects and provides updates on future projects.

Road Improvements and Re-route

Approximately 6 miles of roads were decommissioned within the Outlet Centerfire Creek, Trout Creek, and SA Creek 6th code watersheds. These roads are located with the Luna Restoration Project area and are essential projects listed within the Escudilla Watershed Restoration Action Plan. In addition, 25 miles for heavy road maintenance and drainage improvements were completed in watersheds within the Black Fire burn scar.

Six road crossings within Dry Blue Creek are being having approaches reinforced along with realignment, bank sloping, and rerouting of the current road. Road improvements like these reduce sediment input into the watershed's drainage network and therefore improve water quality. Additionally, reduction of sediment and a return to natural channel morphology will improve habitat for aquatic species.

Vegetation Treatments (prescribed fire)

The Forest successfully completed ignitions of 5 prescribed fires that were partially funded by the NM Department of Game and Fish. These 5 burns primarily addressed habitat enhancement and wildlife management; however secondary benefits included the reduction of hazardous fuels which reduce risk to watersheds. Resource objectives for all 5 fires included: reducing available fuel loads; reducing ladder fuels and stand density; reducing conifer encroachment of meadows and adjacent grasslands; increasing the diversity and production of herbaceous vegetation; and protection of infrastructure. Treatments within the project areas continue the Forest Service's efforts to reintroduce fire at the landscape scale to reduce stand density and reduce the probability of a large-scale stand replacing wildfire events.

Prescribed Fire at Gattons Park (top) and Georgetown in the Mimbres Watershed.

The Wilderness Ranger district conducted approximately 500 acres of WUI broadcast prescribed burns and over 100 Acres of pile burning in FY 22. These were T-bird RX, Gattons Park 1 and 2 RX, Terry RX, and District Wide Piles RX from activity fuels. The broadcast burns were primarily first entry burns in Ponderosa Pine and had previous thinning and small-scale logging operations to reduce fuel loading with fire intensities next to Wildland Urban Interfaces. These units were all directly adjacent to private property with occupied dwellings. While there were other benefits, the primary objective to these burns was for protection of private property adjacent to Forest Service Lands.

The Silver City District completed two prescribed fires in FY 2022. In December 2021, a black line operation of 300 acres occurred around the Jaybird RX which is located in the Meadow Creek drainage on the north slope of the Pinos Altos Mountain Range. Due to weather and MSO limitations, the interior of the unit was not completed but is planned for the future. The Jaybird Prescribed Fire has multiple objectives including lowering fire intensity in sensitive wildlife habitats. The 200-acre Georgetown RX was completed in March 2022. The pinyon/juniper predominant unit was mechanically thinned previously to reduce fuel loading and the prescribed fire targeted these activity fuels.

Ongoing Restoration Work

Black Canyon Stream Restoration

Black Canyon Creek supports a recovery population of Gila Trout and is listed under CWA Section 303d due to excessive temperature loading. Multiple wildfires and ungulate use within the drainage have led to channel widening and shallowing with open canopy throughout the creek. More recently, the Black Fire burned a significant composition of moderate/high severity burn within the Headwaters Black Canyon 6th code watershed. Postfire flows after the Black Fire resulted in further degradation of water quality. Widening of the stream channel and loss of riparian vegetation is likely to result in a further increase in temperature within the creek.

The objective of this project is to restore natural stream morphology in Black Canyon and reverse water quality temperature impairments. The project consists of utilizing enhancements made of native sourced materials that improve riparian and stream conditions for Gila trout by increasing riparian cover and improving the geomorphic stability of the stream. Structures proposed include: Rock Barbs, Mini rock weirs, Willow Fascines, Rock or Log deflectors, Log overhangs, Boulder Clusters, Crossover logs, and Brush Revetment. The Forest is currently working on NEPA with expected signature in 2022. NMED funded both Watershed Based Plan and conceptual design/restoration plan. Bat Conservation International is working with the Forest as a partner on a new project awarded with 2022 River Stewardship Program funds.

Cherry Creek Stream Restoration

In 2014, the Signal Fire burned the headwaters of Cherry Creek with high severity burn resulting in extensive watershed instability for 3 years following the fire. Monsoonal flows from the steep upper elevation watershed were concentrated and drained into the valley bottom wetland which initiated several headcuts and approximately 4 feet of channel incision through the wetland. The damage to Cherry Creek initiated in 2014 was accelerated following the 2020 Tadpole Fire with existing headcuts deepening, the channel widening, and additional disconnection of the channel from its natural floodplain.

Further widening of Cherry Creek after August 2022 Frontal Storm Events.

Restoration activities implemented in the fall of 2022 filled gullies with soil. One rock dams, J-

hook vanes and small sod plugs were used to fill in gullies, re-connect the channel to its natural floodplain, and reinforce existing headcuts to prevent further downcutting. These restoration measures were put in place to raise the water table and sub-irrigate deeply rooted streambank vegetation that will provide stability for the streambank and shade the stream channel. Water quality will in turn improve from reduced sediment and nutrient loading from headcuts and unstable streambanks within the Cherry Creek floodplain.

Long-duration frontal storm events in August 2022 caused many of the implemented restoration structures to become ineffective, the channel to further widen, and streambanks to become scoured. Keystone Restoration ecology is currently doing repair work in the project area. All of this work was funded and contracted by the New Mexico Environment Department through post-fire funding.

Tularosa River/National Forest System Road 233

The Tularosa River is listed under the CWA Section 303d due to excessive temperature and turbidity. The existing structure at the Tularosa River crossing has an approximate 4 ft. vertical elevation change between the low-water ford and the downstream channel bottom. This drop is preventing loach minnow and other species from accessing upstream habitat beyond NFSR 233 and has degraded critical habitat below the crossing.

The design and construction of an improved road-stream crossing structure and limited stream restoration is funded with $605,000 with Federal Lands Transportation Program funds made available to the Forest Service under the Fixing America's Surface Transportation Act. A Forest Service Enterprise Team completed the survey and conceptual design for wetland restoration Central Federal Lands Highway Division is delivering the project on behalf of the U.S. Forest Service. The structure will be replaced with an articulated concrete block structure to provide roughness on the surface. Several engineered riffles will be installed to bring the stream up to grade with the structure and provide passage below the crossing. Species benefitted include Loach Minnow, Desert Sucker, Sonora Sucker, Speckled Dace, Chiricahua Leopard frog, and Narrow-headed Gartersnake. This will provide access for approximately 15 miles of upstream habitat. Wetland/stream restoration below the crossing is planned to be completed in tandem with the crossing construction and is estimated to cost $365,000. The Forest is currently pursuing additional partners to secure this funding.

Tularosa River crossing

Willow Creek Stream Restoration

This stream supports a recovery population of Gila trout and is listed under the CWA Section 303d due to excessive temperature loading and aluminum. Multiple wildfires and ungulate use have led to head-cutting, channel widening and shallow water depths with open canopy throughout the creek. The Whitewater Baldy Complex Fire in 2012 burned at high severity across much of the watershed within and above the project area. The channel type was historically a series of riffles and pools with a cobble substrate. The objective of this project is to restore stream morphology in Willow Creek and to reverse water quality temperature impairments.

The project consists of utilizing enhancements made of native sourced materials that improve riparian and stream conditions for Gila trout by increasing riparian cover and improving the geomorphic stability of the stream. NMED funded Natural Channel Design in 2019/20 to do a Watershed Based Plan. The National Fish and Wildlife Foundation has provided initial funding and the project began in 2022. Additional funding is being sought from NM River Stewardship funding (Trout Unlimited application), Water Trust Board Funding (San Francisco Soil and Water Conservation District application), and NM Department of Game and Fish.

Zuni Bowl Built in to prevent a downcut in Little Turkey Creek.

Santa Fe National Forest

During fiscal year (FY) 2022, the Santa Fe National Forest (SFNF) implemented projects that made progress towards meeting and maintaining state water quality standards as well as activities that contributed to nonpoint source management. Projects were designed to improve water and soil quality, water quantity, riparian conditions and reduce the risk of high intensity wildfire. Some of these projects are described below.

The Hermits Peak-Calf Canyon Fires burned on the SFNF which affected approximately 341,000 acres across the fire area that included Private lands, State lands and National Forest System Lands. Emergency stabilization activities were implemented on the SFNF to mitigate erosion and sedimentation across critical high severity burn areas and are summarized below.

Dalton Canyon Creek Water Quality Improvement Project (Nonpoint Source Priority Stream)

The Dalton Canyon project on the Pecos Las Vegas Ranger District was funded through a Clean Water Act 319 grant awarded to the Upper Pecos Watershed Association. The purpose of the Dalton Canyon Restoration project was to address high rates of specific conductivity by reducing sediment runoff from road drainage, informal campsites, eroded banks and gullied portions of Dalton Creek. Objectives of the project included wetland and stream restoration and reducing bank erosion. A wetland formed by a now defunct beaver dam was enhanced and expanded by installing plug and pond techniques, wicker weirs, and Zuni bowl structures. Water will spread over a large area with the goal of raising the water table and returning water to the wetland. The channel of Dalton Creek was restored through the installation of one rock dams, J-hooks, and reconstruction of a historic channel. Two eroding banks were restored with the construction of a bank full bench and planting of native willow species. Additionally large boulders were placed at critical access points to protect the stream and riparian area from unauthorized vehicle use.

Dalton Canyon Water Quality Improvement Project – plug and pond/plug and spread treatment.

Polvadera Creek Sediment Stabilization and Restoration Project (Espanola Ranger District)

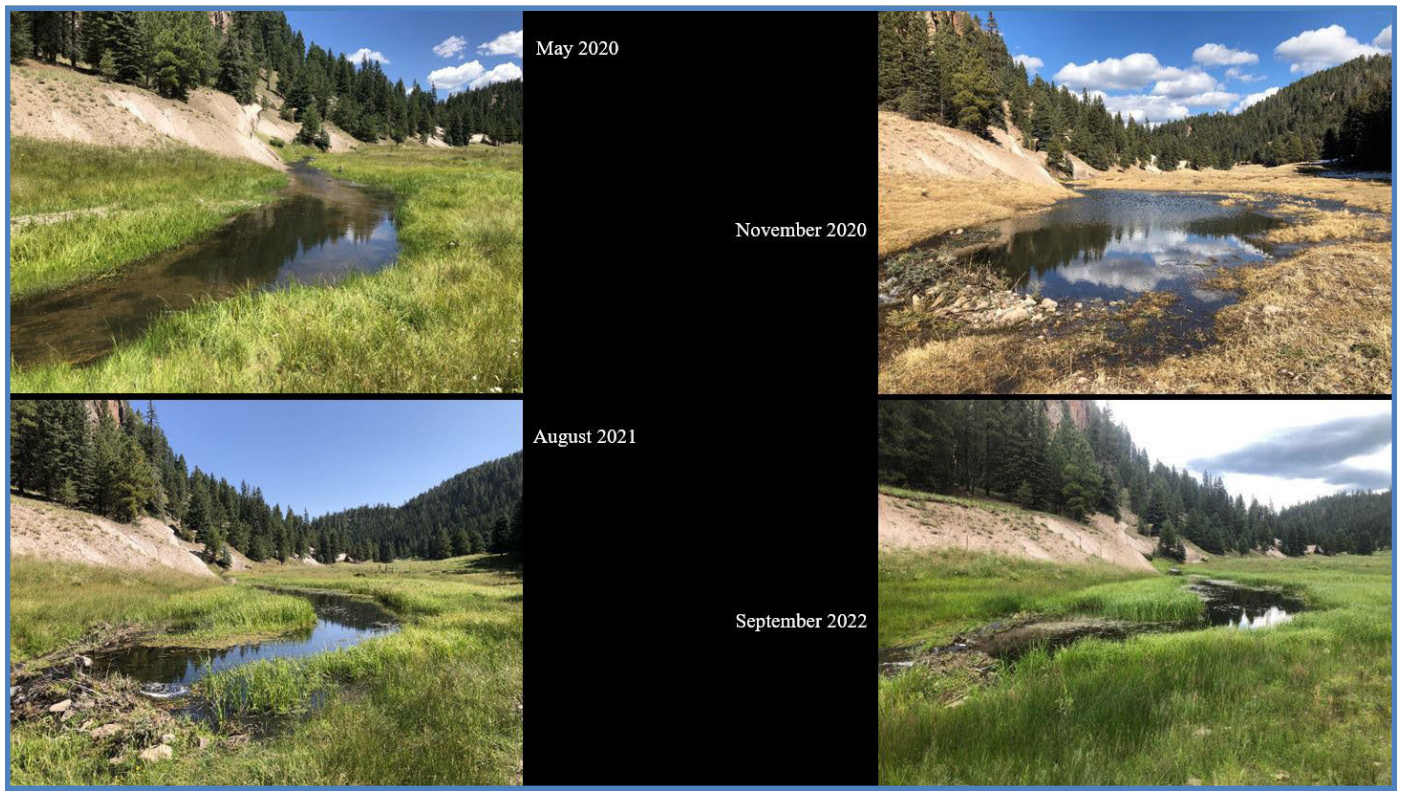
Polvadera Creek project implementation is supported by Rio Grande Return, a local nonprofit organization dedicated to the protection and restoration of streams, wetlands and associated wildlife of the Southwest. Project implementation will consist of four primary components: erosion stabilization in identified tributaries, barrier construction to limit OHV access, in-channel structure installation, and vegetation planting.

Tributary work will utilize on-site natural materials to construct a variety of structures to limit erosion, promote sheet flow, and aggrade sediment within eroding gullies and alluvial fans. In channel structures, including BDAs and Post Assisted Log Structures (PALS) will be used to promote channel complexity, fish habitat, and to restore the process and function of the riparian corridor. This will be accomplished by using structures to capture sediment, elevate the water table, increase channel complexity, and create refugia for fish and other aquatic life. Planting of native woody vegetation will also be undertaken in areas where adequate woody coverage is low or absent. Project implementation will continue in FY23.

San Antonio Creek Riparian Restoration Project (Nonpoint Source Priority Stream)

Stream restoration activities within San Antonio Creek on the Jemez Ranger District continued in FY 22

supported by Rio Grande Return and the New Mexico Department of Game and Fish. This project area and stream system continue to be restored utilizing process base restoration techniques. During FY 22 an additional 20 acres of riparian planting occurred, an additional 17 acres of riparian exclosures were installed and additional beaver dam analogues (BDA) and large woody debris structures were installed across the 3.5-mile project area.



San Antonio Creek Riparian Restoration Project. Photo depicts a post-less beaver dam analogue from pre project implementation (upper left – May 2020) to September 2022 (lower right).

Northern New Mexico Riparian, Aquatic and Wetland Restoration (NNM-RAWR) Projects

A Decision Notice and Finding of No Significant Impact for the NNM-RAWR project was completed in FY21. In FY22 three pre project implementation checklists were approved. Implementation on two projects (Polvadera Creek Stream Restoration and the Rito Penas Negras Stream Restoration and Erosion Mitigation Project) began in FY22 with project implementation on the third (Pecos River at Cowles Stream Restoration) expected to begin during the spring of FY 23.

Rito Penas Negras Stream Restoration and Erosion Mitigation Project (Nonpoint Source Priority Stream)

The Santa Fe National Forest has partnered with the National Forest Foundation and Rio Grande Return to implement restoration and stabilization actions within Rito Penas Negras and associated springs and mead-

ows. This project will build upon past actions funded through the New Mexico Environment Department and other partner organizations.

The Rito Penas Negras Stream Restoration and Erosion Mitigation Project, on the Cuba Ranger District of the Santa Fe National Forest is designed to stabilize the degrading channel and associated meadow; improve wet meadow and wetland health and riparian functionality; and re-establish and protect riparian vegetation along 6.5 miles of stream. The restoration will occur in phases over multiple years. The initial stage of the project will be the implementation of structures designed to restore the processes of wood accumulation, stream floodplain connectivity, and mimic beaver dam activity. During FY22 in-stream structures were implemented within three stream miles.

Instream structure intended to reinitiate stream floodplain connectivity by incorporating woody material within strategic locations of Rito Penas Negras.

The second phase of this project will include gully and meadow stabilization measures to address erosion issues stemming from forest service roads which directly affect stream function and water quality. A number of techniques and structures may be employed including log mattresses, Zuni bowls, log flow diversions, rock and log rundowns, one rock dams and others. Spring protection and restoration actions include repairing existing exclosure fences, installing new exclosure fences, and preventing livestock from congregating at springs by creating and/or restoring access to water away from spring sources, such as troughs. Project implementation will continue in FY23.

Hermits Peak / Calf Canyon Burned Area Emergency Response (BAER) Actions

The Hermits Peak/Calf Canyon BAER implemented aerial seeding and mulching within critical areas of high soil burn severity and major erosion potential. These treatments were recommended due to very high post fire risks to soil productivity and hydrologic function, the Gallinas Creek Municipal Watershed, Outstanding National Resource Waters, Eligible Wild and Scenic Rivers and forest service infrastructure such as roads, campgrounds and trails. Approximately 9,400 acres of aerial seeding was completed using a certified weed free quick germinating non persistent annual barley. Approximately 1,280 acres were aerially mulched utilizing certified weed free agricultural straw and wood shred. The wood shred was produced onsite from trees burned within the fire area. Additionally, within the mulched treatment units a certified weed free native species seed mix with annual barley was applied.

Mulch and seed are intended to provide cover to bare soil, reduce rainfall splash (impact), soil particle detachment, and reduce run-off. Mulch is effective for reducing soil loss and maintaining soil productivity and hydrologic function in treated areas.

Mulch will increase surface roughness and provide immediate effective ground cover and contribute to restoration of nutrient cycles. Seeding is intended to provide cover and give the burned area a jump start in natural recovery while providing for long term ground cover.

(Left) Helicopter applying agricultural straw mulch to high burn severity areas within the Hermits Peak/Calf Canyon burn area. (Below) Annual barley growth two months after application on treatment unit.

Stream Temperature Monitoring Program

During FY22 the SFNF collected stream temperature data for multiple streams to help inform current temperature trends and ongoing and future restoration projects These trends will allow the forest and partners to actively manage cold water species and take proactive action to preserve current populations and reintroduce indigenous cold water species populations where conditions allow. The SFNF currently manages 17 stream temperature data collection sites including two on Polvadera Creek, seven on Rio Cebolla, four on Rio de las Vacas and four on San Antonio Creek.

Prescribed Fire

Prescribed fires are one of the most effective tools available to resource managers for restoring fire-adapted ecosystems and reducing the risk of high-severity wildfire. Fire managers use prescribed fire to improve forest health, remove hazardous fuels, increase firefighter safety, enhance wildlife habitat, and protect communities and watersheds. The following prescribed fire broadcast treatment areas were completed in FY22.

Diego Prescribed Burn - The 374-acre treatment area located north of the community of Gilman and 1 mile east of the Rancho del Chaparral Girl Scout Camp was completed in FY22.

East Rowe Mesa Prescribed Burn – Crews used hand and aerial ignitions to treat 4,600 acres east of State Highway 34 along Rowe Mesa 10 miles south of Pecos, NM.

Mesa Potrero Prescribed Burn - Crews used hand and aerial ignitions to treat 106 acres in FY22 within the larger 492-acre treatment area approximately 7 miles north of the community of Gallina and 14 miles northwest of the Coyote District Office.

Santa Fe Watershed Prescribed Burn - The Santa Fe Watershed prescribed burn is specifically designed to improve and protect the 17,384-acre Municipal Watershed, which provides more than 40% of the water for the City of Santa Fe, by removing dead forest fuels and reducing the risk of high-intensity wildfire within the watershed and nearby neighborhoods. Crews used hand and aerial ignitions to treat 304 acres north of Nichols Reservoir in the lower portion of the Santa Fe Municipal Watershed.

Stable Canyon Prescribed Burn - The 1,600-acre treatment area is adjacent to Forest Road 604 approximately 6 miles north/northwest of the village of Jemez Springs and was completed in FY22.

Fire backing down through a ponderosa pine system on the Stable Canyon Prescribed Burn.

Bureau of Land Management (BLM)

Carlsbad Field Office (CFO)

The BLM Carlsbad Field Office completed multiple activities to reduce nonpoint source pollution including water resources, riparian, brush treatments, and fire and fuels. In addition, CFO actively worked with the oil and gas industry to incorporated BMPs to mitigate nonpoint source pollution due to industry projects completed in FY22.

Fire and Fuels Program

1,770 acres received prescribed fire treatments in six different locations, including areas around the Black River and Conoco Lake.

(Photo right) Prescribed fire treatment conducted near Conoco Lake.

(Photo below) Prescribed fire treatment conducted near the Black River.

During National Public Lands Day, the nation's largest, single day volunteer event for public lands, CFO wildland firefighters and the City of Carlsbad chemically treated 40 acres of mesquite near the Pecos River in the Six Mile Dam Recreation Area. Additional projects included 154 acres of mechanical treatment in the Three Forks Canyon Allotment and 23,302 acres of chemical treatment, using Tebuthiuron applied at a rate of three-quarters pounds per acre, within CFO.

Watershed and Riparian Habitat

During the 2022 field season, 6.15 miles of Proper Functioning Condition (PFC) surveys were conducted on five reaches of the Delaware River and Black River. These rivers are popular areas for recreation in the Carlsbad field office and provided habitat for a variety of fish and bird species including the River Cooter and, the Texas Hornshell Mussel which is listed under the Endangered Species Act.

PFC surveys conducted during the 2022 field season include Baby Cottonwood (PFC, upward trend), Rope

(Photo above) The Ladder Hole reach on the Black River rated as Proper Functioning Condition(PFC) with an upward trend.

(Photo below) The Stateline reach on the Delaware River rated as Functioning at Risk with an upward trend.

Swing (PFC, static trend), Ladder Hole (PFC, upward trend), and Cottonwood Day Use (PFC, static trend) on the Black River and Stateline (Functioning at Risk – FAR, upward trend) on the Delaware River.

In late March, the CFO Outdoor Recreation Planner organized an event with BLM employees and community volunteers which resulted in 30 cottonwood poles being planted along the Peninsula at the Six Mile Dam Area. BLM Operation's equipment operator Phillip Hogwood, cleared areas for the trees and augured the holes for the cottonwood poles to be planted in. Root stimulator was mixed with water according to directions on the label and poured into the holes. The poles were then placed in the prepared holes and covered with the extracted soil.

During National Public Lands Day, BLM and community volunteers constructed five rock dams to mitigate erosion concerns near Ladder Hole on the Black River. BLM and community volunteers constructed rock structures by hand to avoid impacts to archeology, botany, and soil resources.

Roswell Field Office (RFO)

The BLM Roswell Field Office has undertaken several activities such as water resources, riparian, fisheries and wildlife, and fire and fuels work to reduce nonpoint source pollution. The fuels treatments, watershed vegetation treatments, and riparian vegetation treatments were completed with the help of our partners Upper Hondo Soil Water Conservation District, Chaves Soil Water Conservation District, and the New Mexico Association of Conservation Districts. Funding was provided by assistance agreements.

Fuels and Fire Program

Mechanical thinning of 120 acres of Piñon and Juniper on Fort Stanton Snowy River Cave National Conservation was completed to increase of herbaceous ground cover, decrease erosion, and improve watershed health and function. The Roswell Field Office fire crew performed prescribed burns of 5,680 acres in Piñon and Juniper on Fort Stanton Snowy River Cave National Conservation area to decrease risk of extreme wildfire and associated erosion. Additionally, the fire crew conducted a burn in 700 acres of grass, brush, and salt cedar on public lands in Chaves County, NM.

Stream, Riparian, Fisheries, and Water Resources

Roswell Field Office wildlife and office staff with partner New Mexico Game and Fish, planted 70 cottonwood trees along a one-mile reach of riparian area on the Pecos River to decrease surface runoff and erosion and improve riparian and aquatic habitat.

A Bobcat drills planting holes for cottonwood tree poles on the banks of the Pecos River. BLM RFO, New Mexico Game and Fish, and USFWS staff planting cottonwood tree poles and installing game exclosure fencing for protection against deer and beaver browsing.

Watershed and Riparian Habitat

Chemical treatment of 80 acres of saltcedar, Russian Olive, Siberian Elm, and noxious weeds located along the Rio Bonito riparian area and the adjacent uplands on the Fort Stanton Snowy River Cave NCA and the Rio Bonito Acquired Lands Tracts 2, 3, and 4 to decrease erosion, increase herbaceous ground cover, and improve aquatic and riparian habitat.

Seven miles of chemical treatment of non-native phreatophytes saltcedar, Russian Olive, and Siberian Elm were completed in riparian habitat along the Rio Bonito in the Fort Stanton Snowy River Cave National Conservation and the Rio Bonito Acquired Lands tracts 2, 3, and 4 to decrease erosion, increase herbaceous ground cover, and improve aquatic and riparian habitat. 12,000 acres of chemical was completed in mesquite on BLM public lands in Chaves County to decrease erosion and increase herbaceous ground cover.

Four acres of Proper Functioning Condition (PFC) surveys were performed on South Y Canyon Spring, McCrea Spring, Lloyds Spring, and along four miles of the Pecos River. The Pecos River wetlands and springs were

(Photo above) A PFC surveyed lotic reach in the Pecos River Overflow wetlands. (Photo below) A Proper Functioning Condition (PFC) lentic reach at South Y Canyon Spring.

rated PFC. A proper functioning stream improve floodwater retention, will improve groundwater recharge, capture sediments and aid floodplain development, develop root masses that stabilize streambanks against erosion, and dissipate stream energy associated high waterflow, which reduces erosion and improves water quality.

A nonfunctioning headgate replacement and bank erosion stabilization project was completed by the Hydrology and Operations Staff on the Government Acequia located near the Rio Bonito river in the Fort Stanton Snowy River Cave National Conservation Area (NCA). The headgate replacement project included stabilizing an active head cut and bank erosion resulting in improved water quality by reducing nonpoint source pollutant sediment inputs to the Rio Bonito. The Government Spring Acequia diverts irrigation water from the Rio Bonito for BLM public and private water rights holders to water native grasses and apple trees.

The RFO BLM constructing and installing a replacement headgate on the Government Spring Acequia near the Rio Bonito River in the Fort Stanton Snowy River Cave National Conservation Area (NCA).

Farmington Field Office (FFO)

Sagebrush Treatment (Tebuthiuron pellets)

Using funding provided by the Colorado River Basin Salinity Control Act, the BLM treated approximately 9,350 acres of sagebrush with the aerial application of Tebuthiuron pellets. The purpose of this treatment is to decrease the overstory of sagebrush to increase the space for the understory grass and forb species, which naturally occur in the area but are out competed by sagebrush. By decreasing sagebrush to allow grasses and forbs to re-populate an area, the overall ground cover will increase which in turn also aids in stabilizing soil, decreasing the erosion potential. In saline soils, this reduces the salinity of streams receiving the runoff from the treated areas.

Cedar Hill Defensible Space

Seven acres of Piñon and Juniper woodlands were treated around the Cedar Hill community to decrease high intensity wildfire risk. The seven-acre treatment consisted of hand cut and pile techniques. An additional 20 acres of mastication have been completed with the same intended purpose. Work is ongoing to finish an additional 25 acres utilizing mastication.

Dead Tree Thin

The BLM removed 112 acres of dead or dying Piñon and Juniper around the Farmington District Office to decrease fuel loading and improve visual aesthetics around the building.

Tank Mountain Lop and Scatter

The BLM treated 38 acres of Piñon and Juniper woodlands. Thinning and seeding occurred within the area for wildlife and rangeland habitat improvement.

Rosa Wildlife and Rangeland Habitat Improvement Thinning Project

The BLM treated approximately 300 acres of Piñon and Juniper woodlands in the Rosa area. The purpose of this treatment was to decrease fuel load, decrease woody vegetation and increase browse and forb component for the benefit of big game wildlife species, and to increase understory growth to help with erosion.

Sediment Pond Cleaning

In the spring of 2022, 16 ponds were identified as being suitable for sediment removal for the purpose of remaining effective in collecting water and sediment. Seven of the 16 ponds were cleaned out prior to heavy August monsoon rains that prevented work on the remaining nine ponds. These seven ponds are on four different grazing allotments and retain sediment from entering the Animas and San Juan Rivers. Photos below show an example location before and after work was completed.

(Photo above)
A pond on Pump Mesa before captured sediment is removed (May 27, 2022).

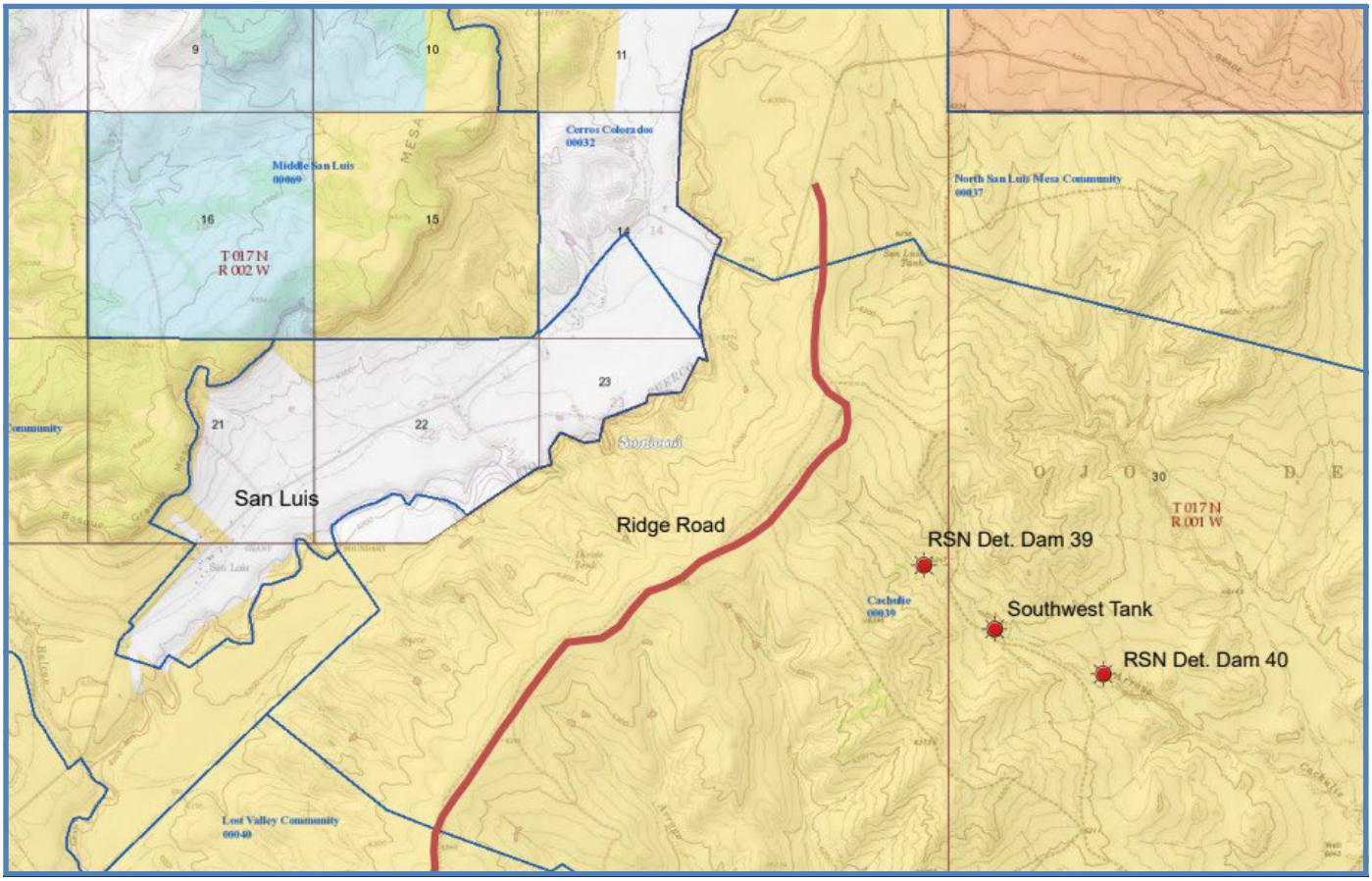
(Photo left)
The same pond after removal of sediment and following a runoff event (August 19, 2022).

Rio Puerco Field Office (RPFO)

During Fiscal Year 2022, the Rio Puerco Field Office has conducted several projects that have proved beneficial to the reduction of non-point source pollution. These actions have included maintaining sediment – retention dams, removing invasive species using chemical and physical treatments, and implementing prescribed burns to remove troublesome species that could accelerate soil erosion and increase fire risk. These actions were performed with the assistance of the fire team, the engineering department, and the rangeland management department.

Stream, Wetland Restoration, and Erosion Control

The RSN Retention Dam 40 and Southwest Tank were maintained to get them back in proper working condition. These reservoirs are located near San Luis, NM within the Upper Rio Salado watershed. The purpose of these dams is to control erosion by trapping sediment and preventing it from being washed into the Rio Grande, as well as to provide a seasonal water source for wildlife. Rodent holes that were reducing the functionality of RSN Retention Dam 40 were repaired while a breach at Southwest Tank was plugged up. A wildlife fence was also repaired around Southwest Tank and salt cedar that had established themselves within the reservoir were removed.



Map showing the location of the cleaned-out dams near San Luis, NM.

Panorama view of the Southwest Tank after removal of stored sediment (Photo courtesy of JJ. Gallegos)

In addition to dam maintenance, existing ponds within Ball Ranch were maintained to remove sediment to improve their water-holding capacity and ability to provide wildlife habitat. Cleaning out these ponds also had the added benefit of collecting runoff, resulting in reduced downslope rill erosion.

A pond maintained on Ball Ranch (Photo courtesy of JJ. Gallegos).

Vegetation Management

At Cerro Brilliante near El Malpais, the herbicide Tebuthiuron was aerially applied to Piñon and Juniper to restore historical environmental conditions and to promote herbaceous vegetation growth to protect soil integrity by preventing erosion. In the Chain of Craters Wilderness Study Area (WSA), manual tools were used to reduce the overgrowth of ponderosa pine, juniper, and Piñon to reduce the risk of severe wildfire and, like the Cerro Brilliante project, keep the region in its original state to prevent alterations to the local hydrology. The debris from the treatments was then scat-

tered throughout the area to serve as protection for the native vegetation. In all, approximately 3600 acres of rangeland was treated within the Cerro Brilliante and Chain of Craters region. The total amount of rangeland chemically treated was 4,275 acres with an additional 1,355 acres treated with by prescribed burns.

Water Quality

A workday was completed by BLM and state employees to remove brush and trash along Bluewater Creek near Grants, NM. The goal of this effort was to improve the aesthetics of the trails and to prevent litter from degrading water quality downstream and potentially harming sensitive aquatic species within the Bluewater Creek area.

An image of Bluewater Creek where the trail brush and trash removal took place.