



In This Issue: pg

| | |
|----------------------------------|----|
| Redondo Creek a Success Story | 1 |
| 319 Project Highlight | 5 |
| RSP Project Highlight | 6 |
| Staff Updates | 7 |
| Funding Opportunity | 10 |

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Success Story for the State of New Mexico



Redondo Creek, after being restored to its original channel and flowing through a Zuni Bowl filled to capacity with captured post-fire sediment.

follow up monitoring, the project was shown to be successful. Due to successful management efforts, Redondo Creek was removed from the 2024-2026 list of impaired waters for turbidity. Additionally, stream temperature measurements from 2019 show marked improvement, only exceeding the state criteria by the smallest of margins.

Redondo Creek Success Story

By Daniel Guevara,
NMED SWQB - Water Resources
Professional

Water quality surveys of Redondo Creek in the Valles Caldera National Preserve in north-central New Mexico showed high turbidity and temperature prior to 2010. The NM Environment Department funded the local environmental group Wild Earth Guardians to restore and protect native riparian vegetation along the creek, as well as restore flow to the original channel which had been diverted for livestock in the 1800's. The project encountered obstacles, namely two large wildfires, but with subsequent maintenance and

continued on page 2



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Water Quality Challenge

Redondo Creek is a tributary to Sulphur Creek (HUC 130202020202) and has been included on the Clean Water Act Section 303(d) list of impaired waters for multiple years. Turbidity has been an issue in the creek dating back to 2008. Other water quality parameters of concern include temperature, phosphorus, pH, dissolved oxygen, and aluminum. The state of New Mexico has identified the probable sources of these impairments as road runoff, loss of riparian habitat, rangeland grazing, and natural background sources. To address these water quality problems, the Surface Water Quality Bureau (SWQB) of the New Mexico Environment Department (NMED) has developed Total Maximum Daily Loads (TMDLs) for temperature, turbidity, and total phosphorus.

Excess sediment and silt derived from erosion associated with recreational use, road drainage, and grazing can clog fish habitats and cause streams to become too wide and shallow, thereby increasing temperature and causing further stream bank erosion. A lack of riparian vegetation and the resultant absence of shade to cover the stream is the primary cause of these impairments. Increased riparian vegetation can reduce erosion and provide shade for the stream, lowering water temperatures during the warmer months when temperature exceedances are most severe and have the most impact on aquatic species.

Story Highlights

Following the guidelines of the Jemez Watershed Restoration Action Strategy 2005 (WRAS), The Wild Earth Guardians set out to restore the lower 2.1 miles of Redondo Creek and its floodplains, along with approximately 60 acres of riparian habitat, by planting native vegetation and constructing large fenced exclosures to protect these areas from elk browsing, cattle grazing, and motorized vehicles. The goals were to reduce stream temperature, enhance water retention, decrease soil erosion, repair and prevent channel incision, and increase biodiversity.

To this end, the restoration crews planted over 20,000 stems of willow (coyote, strapleaf, Bebb's, and bluestem), and over 400 stems each of narrowleaf cottonwood, aspen, and riparian shrubs (alder, serviceberry, woods rose and chokecherry). Additionally, the Wild Earth Guardians restored Redondo Creek to its historic channel from which it had been diverted in the 1800's for livestock paddocks. This action restored flow to around 40 acres of a historic wetland which had been impacted by the diversion, and in turn the wetland is expected to sustain more perennial flows in Redondo Creek. The plantings and exclosure construction were completed in 2011, then rehabilitated in 2015-2016 after flood damage following the Thompson Ridge Fire of 2013. Another element of the original project was to remove fences upstream of the riparian planting areas to shift grazing further away from sensitive headwaters areas.



One of many fenced riparian exclosures built on Redondo Creek and planted with native willows.

continued on page 3



Native riparian vegetation successfully planted, protected, and established midway up the project reach.

Results

The SWQB monitored water quality in Redondo Creek in recent years, both during the regular Jemez Mountains rotational survey by the Monitoring and Assessment Section (MASS), and additionally by the Effectiveness Monitoring program within the Watershed Protection Section (WPS). Turbidity measurements from the MASS 2021-2022 survey showed that turbidity duration thresholds were not exceeded, as only two of five consecutive values exceeded 7 NTU in grab samples found in *Figure 1*. Therefore, the turbidity impairment was removed from the Clean Water Act Section 303(d) list in the 2024-2026 listing cycle.

To assess stream temperature data, the 4-hour maximum temperature that occurs for three consecutive days (4T3) and the maximum temperature observed were used to determine if stream temperatures were meeting standards for the marginal cold water aquatic life designated use in Redondo Creek. In 2019, stream temperature data loggers measured stream temperature every 15 minutes (*Figure 2*) and they showed that Redondo Creek was very close to meeting standards, but still exceeded by a very small margin (maximum temperature value of 22.97 °C vs the water quality standard target of 23.00°C and 4T3 value of 20.17°C vs the water quality standard target of 20.0°C). If the trend in decreasing maximum temperature and 4T3 value holds, Redondo Creek could meet temperature standards in the next assessment cycle. The SWQB will continue to monitor the remaining impairments: since there was not an assessable dataset in 2021, the pH impairment listing remains. Also, dissolved oxygen and specific conductance impairments were added but the nutrients thresholds were not exceeded.

continued on page 4

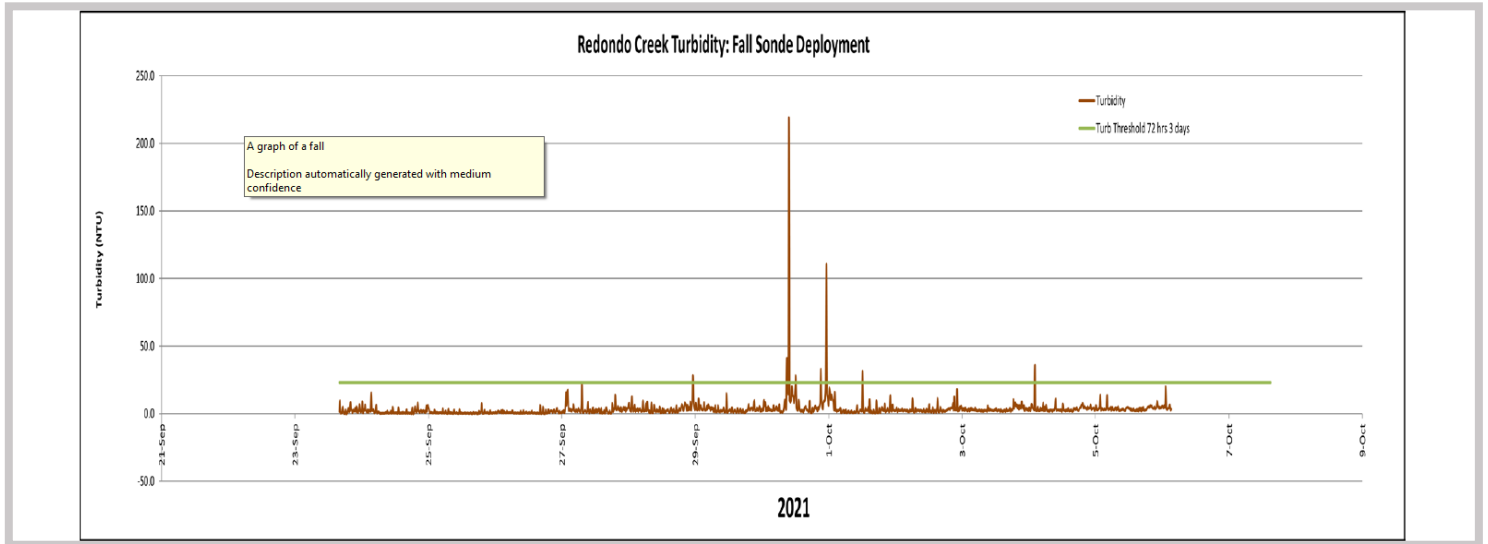
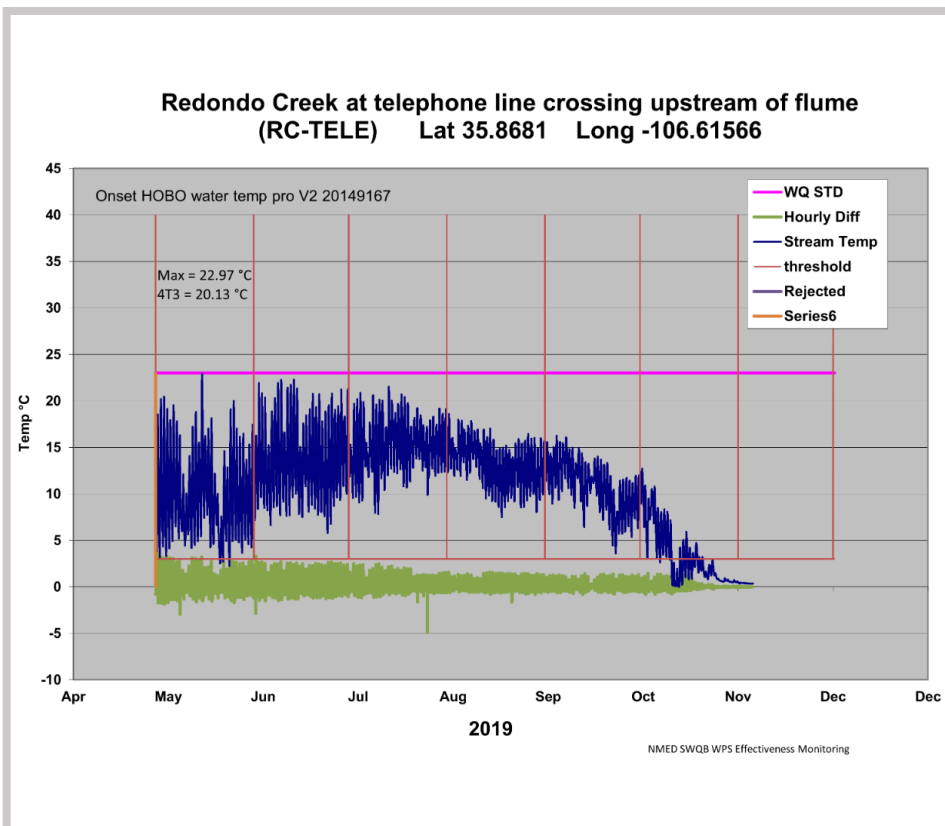


Figure 1 (above). Turbidity on Redondo Creek remains below the SWQB assessment thresholds in 2021, in spite of a few spikes due to rainstorms.

Figure 2 (below). Thermograph for Redondo Creek from 2019, showing that temperatures are very close to meeting the criteria in the NM Water Quality Standards: 4T3 temperature 20°C, maximum temperature 23°C.



Partners and Funding

- Wild Earth Guardians
- North American Wetlands Conservation Act
- Valles Caldera National Preserve
- Santa Fe National Forest, Jemez District
- New Mexico Environment Department
- Environmental Protection Agency

After the final invoice was processed, the project officer reported that a total of \$240,310.00 in Section 319 funding was spent on this project, and \$278,335.89 in local match (both in kind and cash match) was reported. The original budgeted amounts were \$240,310 in Section 319 funds, and \$264,810 in non-federal match.

For any question related to this article please contact:

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319 Project Highlight

Bonito Meadow Stream and Wetland Restoration Project, Phase I

By Eliza Martinez, NMED SWQB Water Resources Professional

Project Cost \$227,824 (Section 319 funds) and \$363,606 (In-Kind Match)

This project was managed by Philmont Scout Ranch, BSA. The project started in July 2021 and ended in June 2024. The goal of this project was to increase base flow, reduce sedimentation, reduce nutrient loading, monitor *E. coli*, and reduce stream temperature in Bonito Creek using low-tech processes such as one rock dams (ORDs) and Beaver Analog Dams (BDAs). Bonito Creek is a tributary to Rayado Creek. Bonito Creek has not been assessed by NMED.

Based on preliminary data from 2023, there is evidence that indicates Bonito Creek exceeds thresholds for temperature, nutrients, dissolved oxygen, *E. coli*. Water quality samples were collected at three monitoring locations on Bonito Creek. A multi-parameter sonde was deployed from June through September in 2023. Long-term temperature data collected in 2022 and 2023 showed that the max temperature slightly decreased from pre to post-construction. Water quality samples and long-term sonde data will continue to be collected during the 2024 season.

If further analysis by NMED indicates exceedances, Bonito Meadow would not support all its designated uses listed in NMAC 20.6.4.308. The designated uses include domestic water supply, irrigation, high quality cold-water aquatic life, livestock watering, wildlife habit, and primary contact.

Seasonal work crews, scouting participants, and volunteers were used to install the restoration structures. Two volunteers BDA workshops were hosted in 2022 and 2023.

At the end of the project period:

- 9 Zuni bowls were constructed.
- 127 posted Beaver Dam Analogs (BDAs) and 28 post-less BDAs were installed.
- 55 Board Assisted Riffles (BARs) were installed.
- 5 exclosures were constructed around stream and riparian areas (42.1 acres).
- 98 bluestem willow and 294 alder seedlings were planted.
- 14 acres of seeding was completed using native grass and forb mix.
- 4.1 miles of channel length was treated.



Headcut pre-treatment.



Headcut post-treatment.

River Stewardship Program Project Highlight

Adair Spring Restoration Project

By Susan Styer, NMED SWQB Water Resources Professional

Project cost: \$47,852 (River Stewardship Program funds) and \$23,760 (local match)

The Adair Spring Restoration Project was implemented by Upper Gila Watershed Alliance and the Gila National Forest. It aimed to restore a degraded wet meadow that had provided a water source for both livestock and wildlife. Severe pedestals developed throughout the site and there were cutbanks in the channel, dewatering the adjacent wetlands and meadow. Downstream of Adair Spring, a user-created road crossed Adair Canyon fourteen times as it neared the San Francisco River adding to the San Francisco River's excess sediment. By constructing perimeter fence of pipe and cable around Adair Spring in the upland areas, it will allow the wet meadow time to naturally heal itself, increase plant and animal species diversity and populations



at the spring, and eliminated unauthorized motorized vehicle access to the area. The perimeter fence measures 8 feet high, with the first cable 10-12" from the ground to allow bears, mountain lions, and other wildlife access to the spring, and is approximately 6,000 linear feet in length.

Additionally, the Forest Service developed a well and drinking system nearby for the livestock to utilize to fulfill their agreement with the grazing permittee.



Photo above, Adair Spring

Photo left, Pipe and cable fence was constructed in the uplands around Adair Spring to eliminate motorized vehicle access and decrease livestock and wildlife use.

Watershed Protection Section Staff Changes



Fare Thee Well Abraham!

tribute by Dan Guevara

Abe Franklin, former Watershed Protection Section Program Manager for the SWQB, retired in July 2023 after a successful 24-year career with NMED in Santa Fe. Abe was dedicated to reducing nonpoint source pollution and restoring rivers and surface waters in New Mexico, starting as a 319 project officer in 1999, and moving up to supervisor, and even WPS program manager around 2008.

Throughout his time at NMED Abe showed a deep commitment to the work of protecting and improving the environment, not only as program manager but also in his daily life. As an NMED employee he was a dedicated bike commuter and walker to and from the office rain or shine. You could always count on Abe to carefully consider the potential environmental impacts of any activity - Whether it be taking an airline flight or using plastic containers, he would often cause us to think about the impacts of things that would just be taken for granted by most others. He would always take the time to arrange carpooling for our many meetings and field trips for maximum efficiency which I always appreciated. I was

also impressed by Abe's capacity and endurance in navigating the seemingly endless bureaucracy of state and federal government programs, in order to keep our section strong!

Abe kept a Mystic Pyramid on his desk at the office, which he would consult at the end of each work day as he was heading out the door. Like a Magic 8 ball, the pyramid would provide answers to any questions from the user. Unlike the eight ball, after you pushed down on the top it would declare the answer in an echoing prophetic voice for all to ponder. From my office down the hall I could only hear the answers, but I could imagine what he was asking:

Q: Is tomorrow going to be a great day?

A: Embrace your bliss.

Q: Will the NPS workshop be a success?

A: Be prepared to be dazzled.

Q: Will we solve all non-point pollution problems in New Mexico?

A: More work needs to be done.

Q: Will I ever get to retire?

A: Get ready to celebrate your achievement!

Abe is now enjoying travelling, backpacking, fishing, and recreating in the clean waters he worked so hard to protect and restore over his career.

continued on page 8

Watershed Protection Section Staff Changes

Kate Lacey-Young started in the Watershed Protection Section as the River Stewardship Program Coordinator in January 2021. Kate has since taken on a new role as the Watershed Protection Section



Program Manager since Abe Franklin retired in July 2023. She's excited to take on the new challenge and looks forward to working with the public and our many collaborators on improving surface water quality in New Mexico.

Prior to her tenure with the Surface Water Quality Bureau, Kate worked with the Albuquerque Bernalillo County Water Utility Authority (ABCWUA) where she focused on water resources management and water quality protection, including the management of the Bear Canyon Aquifer Storage and Recovery Project and work with the Middle Rio Grande Endangered Species Collaborative Program. Preceding her time at ABCWUA, she worked in fire management and watershed management with the Cibola National Forest for several years working on fire crews, post-fire mitigation projects and teams, and in watershed management. Kate has a B.S. in Natural Resources with an emphasis in Watershed Management and Hydrology from the University of Arizona and a Master of Water Resources degree with a concentration in Hydrosience from the University of New Mexico.

Jennifer Muus joined the Watershed Protection Section as a River Stewardship Program Project Officer in April 2023. She most recently worked in the NMED Ground Water Quality Bureau (GWQB) where she was a project manager in the Voluntary Remediation and Brownfields program. As a project manager in the NMED-GWQB, Jennifer was responsible for project management, technical oversight, public outreach, and grant administration.

Before starting at NMED, she received her Master's degree in Earth and Planetary Sciences from the University of New Mexico. In the last year, Jennifer has enjoyed working in the River Stewardship Program and looks forward to learning more about the variety of river restoration techniques applied across New Mexico!



continued on page 9

Watershed Protection Section Staff Changes

Eliza Martinez joined the Watershed Protection Section as a Project Officer in August 2023. She most recently worked on the Monitoring Team in the Monitoring, Assessment and Standards Section with Surface Water Quality Bureau. As a member of the Monitoring Team, Eliza was responsible for planning water quality surveys, collecting water quality samples, and verifying and validating water quality data for surface in the state. Eliza has been with NMED since April 2019. She graduated from New Mexico Highlands University.



Shinya Burck recently joined the Surface Water Quality Bureau as a program project officer in Santa Fe. Shinya brought her experience from the Bureau of Land Management (BLM) Aquatic Habitat and Monitoring program in Taos, NM. Her career has taken her across diverse landscapes and cultures. She has studied mule deer migration in Wyoming, volunteered time in small villages of Myanmar, Asia and worked wildland fire in Colorado.

Her academic journey began at Fort Lewis College in Durango, CO, where she discovered her love for river rafting and the biological sciences. Shinya is now completing a master's degree in Natural Resource Management and Fire Ecology.

Her strong roots in New Mexico have drawn her back. Born in Albuquerque and a member of the Ohkay Owingeh Tribe, she now works with the SWQB Wetlands Program providing for the beautiful land we call home.



Samantha Ferguson started in July 2024 as the new River Stewardship Program Coordinator. Samantha comes to NMED from the Department of Game and Fish where she was the Environmental Compliance Specialist for many years before moving into the Fish Habitat Coordinator position. Samantha completed ESA, NEPA, and CWA compliance for the Department as well as manage aquatic habitat projects across the state. Prior to working for the Department of Game and Fish, Samantha managed a technical assistance and grant program that supported the conservation and protection of coldwater streams in Pennsylvania.

**SWQB is very excited to welcome and work with our
NEW staff members!**

EVENTS & ANNOUNCEMENTS

Funding Opportunity

FY2025 Landscape Scale Restoration Funding Opportunities Are Open

FY2025 Landscape Scale Restoration funding opportunities are now available in Grants.gov.

The Landscape Scale Restoration Program is a competitive grant program that promotes collaborative, science-based restoration of priority forest landscapes and furthers priorities identified in State Forest Action plans or equivalent restoration strategy. Program objectives include reduced wildfire risk; improved fish and wildlife habitats; maintained or improved water quality; and mitigated invasive plants, insects, and disease.

- Grants closes on November 15, 2024 at 5:00 pm MST
- Eligible applicants:
 - o Nonprofits that do not have a 501(c)(3) status with the IRS, other than institutions of higher education
 - o Nonprofits having a 501(c)(3) status with the IRS, other than institutions of higher education
 - o Native American tribal governments (Federally recognized)
 - o Public and State controlled institutions of higher education
 - o County governments
 - o State governments
 - o Special district governments
 - o City or township governments
 - o Private institutions of higher education
- Grant requires 1:1 match
- The minimum funding request per project for all applicants is \$25,000 and the maximum is \$300,000

For more details, visit: [or Landscape Scale Restoration Competitive Grant Program | Western Forestry Leadership Coalition \(thewflc.org\)](#)

If you are interested in applying, please reach out to Melissa McLamb at melissa.mclamb@emnrd.nm.gov

The New Mexico Youth Conservation Corps Commission (YCCC)

The YCC invites tribal nations, non-profit organizations and local units of government to submit project proposals for the 2025 calendar year. The Request for Proposals (RFP) and related documents have been released as of July 16, 2024 on <https://www.emnrd.nm.gov/about-ycc/yccrfp/>.

The RFP will close at 4pm, October 8, 2024. The YCCC will hold one online and six in-person pre-proposal conferences to guide interested applicants through the process. See pages 1-2 of the RFP for links and locations.

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