The Rio Grande is a western icon and the lifeblood of the desert Southwest. It’s the third longest river in the United States and fifth largest watershed in North America covering 336,000 square miles (an area larger than the state of Texas). It arises in the snow-capped peaks of the San Juan Mountains in Colorado as the collection of several tiny creeks. The river builds force and is enveloped in a deep and vast canyon—the Rio Grande Gorge—that its flows carved centuries ago from southern Colorado through northern New Mexico. As more sediment laden tributaries contribute and turn its color brown, the river slows and widens into a seemingly endless floodplain (historically between one to three miles wide) that bisects central and southern New Mexico along the central flyway. Incredibly, the Rio Grande’s journey through the desert Southwest really only begins as it becomes the border between the United States and Mexico for the remaining 1300 miles of its total 1900-mile course to the sea.
Principal Tributaries. The principal tributaries contributing flow to the Rio Grande include the Conejos River (Colorado); the Rio Chama, Rio Puerco and Rio Salado (New Mexico); the Pecos and Devils River (Texas); and the Rio Conchos, Salado and San Juan Rivers (Mexico). What makes this watershed so unique is its circulatory system of streams, creeks, arroyos, washes, and wetlands that contribute flows to these major tributaries and ultimately the Rio Grande. These diffuse sources make up over 68 percent of waterways in Colorado and 88 percent of waterways in New Mexico, which largely serve as the source of water for flows in the Rio Grande.

Central Closed Basin. The Rio Grande Watershed surrounds the Central Closed Basin a group of drainage systems in south-central New Mexico—that are isolated from the Rio Grande hydrologically. These sub-basins cover 14,605 square miles (or portion of the 11 counties) with few perennial waterways. While some perennial streams exist, ephemeral waterways are the predominant source of surface water along with playa lakes and other fresh water formations.

Biodiversity. While the Rio Grande corridor makes up only one percent of the landscape, this riparian habitat is home to more species than any other ecological community in the region. Over 400 species of native fish, wildlife, and plants have inhabited the watershed for centuries. Tens of thousands of sandhill cranes overwinter each year in the central Rio Grande valley and are concentrated just south of Socorro, New Mexico in the Bosque del Apache National Wildlife Refuge. The largest contiguous cottonwood forest (“Bosque”) in the world is found along the Rio Grande’s banks. A growing list of imperiled species—Rio Grande chub, Rio Grande cutthroat trout, Rio Grande sucker, Rio Grande silvery minnow, Southwestern willow flycatcher, yellow-billed cuckoo, New Mexico meadow jumping mouse, and Pecos sunflower—depend on the Rio Grande, its tributary streams, and supporting wetlands for survival.
Culture. In these unforgiving landscapes, the Rio Grande and its tributaries serve as the primary source of water for diverse communities of people and wildlife. The river historically supported over 100 pueblos in the Rio Grande valley. Today, the Rio Grande sustains at least 19 pueblos and five tribes. A network of irrigation canals (acequias) were formed—from southern Colorado to northern and central New Mexico—to serve the irrigation needs of the communities adjacent to the Rio Grande. This community irrigation system persists today.

Drinking Water. Drinking water for the communities in the watershed is a combination of groundwater and surface water. Colorado’s San Luis Valley (about 46,400 people) relies almost exclusively on groundwater for its municipal needs. In New Mexico and Texas, groundwater serves the municipal needs of about half the population. Increasingly surface water is preferred where it is available. For example, the City and County of Santa Fe and the Albuquerque Bernalillo County Water Utility Authority directly divert water from the Rio Grande for municipal use.

Agricultural Economy. The Rio Grande is the heart of the economy in the watershed. The Basin is home to six million people and two million acres of land. The three largest metropolitan areas include Albuquerque, New Mexico (1.2 million people); El Paso, Texas (900,000 people); and Ciudad Juarez, Mexico (1.4 million people). Despite the growing cities and the general movement away from the traditional agricultural economy,
agriculture persists as the vast majority of surface water use (87%) and 2 million acres in the Basin.

Recreational Economy. The Rio Grande also supports a robust tourism and recreation economies. The Rio Grande watershed is home to a number of crown jewel protected landscapes including: the Rio Grande del Norte National Monument and Bosque del Apache National Wildlife Refuge in New Mexico; Great Sand Dunes National Park in Colorado; and Big Bend National Park and the Santa Ana, Laguna Acosta, and Lower Rio Grande National Wildlife Refuges in Texas. In addition, Congress designated two reaches of the Rio Grande totaling 270 miles as wild and scenic rivers including the Rio Grande from the Colorado-New Mexico state line to Velarde, New Mexico (1968) and the Rio Grande through Big Bend National Park (1978). As a result of these recreational opportunities, northern New Mexico experienced a 40 percent increase in visitors, 21 percent rise in tax revenue, and 8 percent jump in gross receipts revenue in the first year after the Rio Grande del Norte National Monument was designated. Further, tourism in the Big Bend area is estimated to bring in $23.5 million a year. By comparison, agriculture in the Big Bend region provides an economic benefit of $5 million a year.
**Rio Grande: Importance of Protecting Ephemeral and Intermittent Streams**

“[E]phemeral and intermittent stream systems comprise a large portion of southwestern watersheds, and contribute to the hydrological, biogeochemical, and ecological health of a watershed. Given their importance and vast extent, consideration of the cumulative impacts from anthropogenic uses on these streams is critical in watershed based assessments and land management decisions to maintain overall watershed health and water quality.”

Ephemeral and intermittent streams make up at least 88 percent of waterways in New Mexico and 68 percent in Colorado. Many of these waterways are found in the Rio Grande watershed. While these estimates are significant, the National Hydrography Dataset (“NHD”) actually is thought to underestimate the total extent of such ephemeral or intermittent streams in the region. The NHD data “does not include stream segments less than one mile in length, combines intermittent and ephemeral stream, and is based on 1:100,000 scale topographic maps.” USGS has, however, produced a database of streams and rivers entitled Elevation Derivatives for National Applications (“EDNA”) that uses the NHD, National Elevation Dataset (“NED”), and other information to hydrologically condition the data for “improved hydrologic flow representation.” An analysis of EDNA and NHD data indicates that at least 64,741 miles of 71,854 total streams miles, or 90%, of the rivers and streams in the Rio Grande watershed outside the Central Closed Basin, and even more within the Closed Basin, could lose protection under the proposed rule.

**Endangered Rivers and Streams in the Rio Grande Basin**

Credit Waterkeeper Alliance (2019).
The New Mexico Environment Department estimates 6,362 miles of perennial non-tribal rivers and streams; 88,810 miles of non-perennial (intermittent or ephemeral) non-tribal rivers and streams; 196 significant public lakes and reservoirs (equaling 89,042 total acres); and 845,213 acres of wetlands in New Mexico. The Proposed Rule could strip clean water protections from intermittent or ephemeral streams leaving tens of thousands of miles of streams, creeks, arroyos, and washes in New Mexico—the majority of our waterways—without their existing protections under the Clean Water Act. Many important rivers and streams would be impacted in the Rio Grande Basin including the Rio Puerco and the Santa Fe River, among many others.

**RIO PUERCO: Ephemeral streams contribute significant flows to Rio Grande**

![Rio Puerco east from Rio Puerco Bridge, New Mexico (2017 left, 2019 right) Credit Jen Pelz](image)

Some of the principal tributaries contributing flow to the Rio Grande are not perennial, but remain vital to the quantity and quality of water that ultimately reaches the Rio Grande. For example, the Rio Puerco is one of the largest tributaries to the middle Rio Grande in New Mexico. The Rio Puerco flows 140 miles from its headwaters at an elevation of 10,500 feet in Sandoval County to where it meets the Rio Grande near Bernardo, New Mexico at an elevation of less than 5,000 feet. The Rio Puerco watershed drains 7,000 square miles (only slightly smaller than the state of New Jersey) in seven counties. The watershed is home to a handful of threatened and endangered species protected under state and federal law including the Rio Grande cutthroat trout, Jemez Mountains salamander, Mexican spotted owl, gray vireo, and Parish’s alkali grass.

The waterway remains dry most of each year (approximately 264 days per year from 1941-1959), but still contributes roughly 30,000 acre-feet of water to the Rio Grande annually. Most of the flows in the Rio Puerco originate from monsoonal rainstorms. The Rio Puerco contributes 10 percent or more of the total water flow to the Rio Grande and contributes a large percentage of sediment, up to 80 percent.
Water quality in the sub-basin is a continuing challenge.\textsuperscript{19} This historical agriculture, grazing, logging, mining in this vulnerable landscape has led to a decline in the health of the sub-watershed.\textsuperscript{20} A federal, state, tribal, and local effort to restore the water quality and health of the Rio Puerco watershed are over four decades old and ongoing based at least in part on the funding and mandates of the Clean Water Act including development of total maximum daily load for the watershed’s rivers, implementation of best management practices, restoration (riparian fencing and planting).\textsuperscript{21} Existing clean water protections for this watershed could be removed under the proposed rule.

\textbf{SANTA FE RIVER: Ephemeral streams contribute to quality drinking water}

The Santa Fe River begins in the Santa Fe National Forest (11,600 feet in elevation) and flows into the Rio Grande southwest of Cochiti Reservoir (5,230 feet in elevation).\textsuperscript{22} The river becomes ephemeral downstream of Nichols Reservoir; primarily because of this upstream water storage.\textsuperscript{23} As a result, the river no longer flows year-round through the city of Santa Fe and only “periodic reservoir spills and storm flows provide intermittent flow in the river through the City of Santa Fe.”\textsuperscript{24}

The proposed rule could strip existing clean water protections from this ephemeral section of the Santa Fe River.\textsuperscript{25} In addition, this ephemeral section under the proposed rule could sever jurisdiction to the entire upstream watershed in the Santa Fe National Forest (17,400 acres) that serves as an important source of drinking water for the city of Santa Fe.\textsuperscript{26} The
headwater-portion of the watershed is vital to ensuring the quality of the water for this community, and every community living downstream.

To add insult to injury, the legacy pollution from the Los Alamos National Laboratory is situated upstream of the city of Santa Fe’s drinking water intake on the Rio Grande—the Buckman direct diversion.27 The 2009 New Mexico House Memorial No. 120 states “potential water contamination from migration of nuclear waste through or near canyons that feed into the Buckman diversion project site.”28 The proposed rule could strip existing protections of the Clean Water Act for the intermittent and ephemeral streams that receive these pollutants, and make vulnerable a vital source of drinking water for the city and county of Santa Fe.29

![Map showing location of Los Alamos National Labs relative to ephemeral streams and the Rio Grande Credit: Waterkeeper Alliance (2019)](image)

**Rio Grande: Importance of Protecting Closed Basins**

**THE CENTRAL CLOSED BASIN: Non-tributary streams water vital in to the desert**

In the south-central part of New Mexico and surrounded by the Rio Grande watershed are a group of four drainage basins known as the Central Closed Basin (shown as the gray region on the map, left).30 These sub-basins cover 14,605 square miles and include portions of eleven counties from Santa Fe to Dona Ana County.31 These self-contained basins do not flow into our major rivers that flow to the sea.32 Although sparse geographically, the
existing water sources in these sub-basins are critically important to the communities and wildlife encompassed in this region.\textsuperscript{33}

For example, the aquifer found near the Manzano Mountains at the northern end of the Basin “is the only source of potable water in the area.”\textsuperscript{34} Similarly, in the Estancia sub-basin is dependent on groundwater and perennial streams to provide irrigation water and support the economy of the region.\textsuperscript{35}

The waters located in these four sub-basins (that make up the Central Closed Basin) could all lose protection under the proposed definition on the basis that they are not tributaries to a traditional navigable water.\textsuperscript{36} At least some of these waters have historically been protected under the Clean Water Act.\textsuperscript{37} Based on NHD data, this means more than 33,933 miles of rivers, streams, ditches and canals could be left unprotected under the proposed definition.

Credit: Waterkeeper Alliance (2019).
**Rio Grande: Importance of Protecting Wetlands**

Extensive wetlands exist in the Rio Grande watershed in Colorado and New Mexico above Elephant Butte Reservoir. Wetlands in the Rio Grande Basin in Colorado were subject to an extensive assessment in July of 2011. New Mexico is home to about one million acres of wetlands, only a fraction of what existed in the early 1800s.

Wetlands play an important role in filtering and trapping sediment and other pollutants (improving water quality), mitigating the impacts of extreme weather events (droughts and floods), and serve as headwater sources for perennial streams. Loss of wetlands facilitates the “loss of natural flood attenuation, nutrient cycling, habitat connectivity, particulate retention, carbon sequestration, dynamic and long-term water storage, moderation of groundwater flow discharge, and maintenance of vertebrate and invertebrate communities and habitat structure.” Wetlands also provide significant benefits to plants, birds and wildlife. The existing protections of wetlands under the Clean Water Act will be drastically reduced to include only wetlands adjacent to “waters of the United States” as defined under the proposed rule. Redefining what constitutes wetlands will leave vulnerable important wetland habitats, like ciénegas, in the Rio Grande basin and throughout the southwest.
CIÉNEGA: Seep fed wetland meadows provide habitat oasis in arid regions

Another type of wetland prevalent in the American southwest is a Ciéne, which means swamp, bog, or marsh in Spanish. A ciéne is defined “as distinct climax communities of ecological significance” found in “freshwater wetlands with permanently saturated, highly organic, reducing soils occupied by a low-growing herbaceous cover of mostly sedges and rushes.” Not all springs support ciéneas, but almost all ciéneas are supported by springs. Ciéneas are critical for plants and animals in the arid portions of the Rio Grande watershed and especially in the Closed Basins in New Mexico. Threatened or endangered species that rely on these unique habitats including frogs, pupfish, gambusia, chub, topminnow, and spring snails.

The Pecos sunflower is a casualty of disappearing wetlands from west Texas to west-central New Mexico. The U.S. Fish and Wildlife Service listed the Pecos sunflower as threatened under the Endangered Species Act on October 20, 1999 (64 FR 56582-56590) due to disappearing spring seeps and desert ciéneas, aquifer depletion, agricultural activities and encroachment by other plants. Unlike common sunflowers, the Pecos sunflower blooms in late fall and relies on alkaline soils characteristic of ciéneas.

The State of New Mexico also lists the Pecos sunflower as endangered under the New Mexico Endangered Plant Species Act (19 NMAC 21.2) and it is also listed as threatened by the State of Texas (31 TAC 2.69(A)). To protect the habitat and recover the Pecos sunflower and other species that rely on such wetlands, the protections of the Clean Water Act are essential. Ciéneas are lush “oasis in the desert” and thus by definition not typically adjacent to rivers and streams; therefore, these unique wetlands would likely not be protected under the proposed rule.
**Rio Grande: Importance of Protecting Ditches and Canals**

The Middle Rio Grande watershed through Albuquerque, New Mexico contains a series of ditches, drains and canals connected to the Rio Grande that are part of the irrigation infrastructure of the region. Under the proposed rule, these artificial but important canals could lose clean water protections. Based on the large number of dischargers identified in the map below from U.S. EPA Office of Water data, the loss of protections would mean free reign for polluters and could leave the Middle Rio Grande as a dumping ground for industry.

Map showing ephemeral streams and dischargers near Albuquerque, NM Credit Waterkeeper Alliance (2019).

**Rio Grande: Importance of Protecting Groundwater**

Groundwater is critical to life in the Rio Grande watershed. Colorado’s San Luis Valley relies almost exclusively on groundwater for its municipal needs and about half of New Mexicans depend solely on ground water as their source of drinking water. Further, “[n]early half of the total water annually withdrawn for all uses in New Mexico, including agriculture and industry, is groundwater, the only practicable source of water in many areas of the State.” The proposed rule expressly excludes “groundwater, including groundwater drained through subsurface drainage systems.”
Endnotes:


3. Id.

4. Id.


6. Id. at p. 5.

7. Id. at p. 5.

8. Id. at p. 5.


10. Id.


21. Id. at p. 56-58.


24. Id. at p. 1.


27. 2009 House Memorial 120 at 1.

28. Id.


31. Id. at p. 2-8.

32. Id. at 2-8; [Fed Reg cite].


34. Id. at p. 2-8.

35. Id. at p. 2-8.


41. Id. at p. 44.

42. Id. at p. 44.

43. Id. at p. 44.

44. 84 Fed. Reg. 4184.
45. Survey and Assessment of Aridland Spring Ciénegas in the Southwest Region. New Mexico Forestry Division and University of New Mexico. 2011.  
46. Id. at p. 1.
47. Id. at p. 1.
48. Id. at p. 1-3.
49. Id. at p. 1-3.
50. Id. at p. 25-27.
52. Id. at p. 7.
54. Id. at p. 4; 84 Fed. Reg. 4184.
55. Id.; See also EPA Office of Water Facilities that Discharge to Water, available at:  
https://edg.epa.gov/metadata/catalog/search/resource/details.page?uuid=%7B091FC504-8762-8E7F-DCD7-513F648BC5B5%7D.
57. Id. at p. 41.
58. 84 Fed. Reg. 4190.