

LESSONS FROM THE SAN MATEO CREEK BASIN

The San Mateo Creek Basin is a wetland ecosystem connected to Mt Taylor and the Rio San Jose stream system. It is situated in the heart of the historic Grants Uranium Mining District of north central New Mexico.

History of Uranium Mining in the Basin

EPA has targeted the San Mateo Creek (SMC) basin for special emphasis due to widespread legacy groundwater contamination from past uranium development. Fifty years after uranium extraction ended, legacy waste still poisons the watershed and groundwater basin. Past uranium mining from the 1950s – 1980s led to large-scale dewatering that created a regional cone of depression covering more than 1,000 square miles which could take several hundred to several thousand years to recover. Onsite storage of radioactive waste rock piles and mill tailings have released radon into the air and leached contaminants into our groundwater, sickening multiple generations of our community members.

We continue to lack adequate hydrogeologic characterization of the entire SMC basin, with comprehensive inventories on the total number wells drilled, how many are active, inactive, and how many meet NM standards for plugging and abandonment. The regulators need to understand the big picture - groundwater flow directions that have changed due to the massive cone of depression created by dewatering, a vast network of connected mine workings, and the SMC fault network around Mt. Taylor.

Water rights have been over-appropriated in this basin. Large new industrial developments that further deplete groundwater in the SMC basin will push this fragile wetland ecosystem into total collapse.

Regional water balances must account for historic water drawdowns, along with the projected cumulative impacts from new mining. Past mine dewatering resulted in a permanent loss of 125 B gallons of groundwater, with 80 B gallons of untreated mine water discharged into surface drainages which contaminated sediments, the alluvial aquifer, and deeper aquifers through faults and fractures. Groundwater modeling indicates that recovery of ground water levels will take several hundred years, as will treatment of contaminated groundwater plumes.

The proposed Roca Honda Resources mine alone will require over two decades of groundwater pumping in this water-stressed basin, lowering the Westwater aquifer by an additional 1,806 feet, with the discharge of treated mine water into the Rio San Jose.

Homestake Mining Company (Barrick) relied on the region's only freshwater aquifer, the San Andres-Glorieta, to maintain hydraulic control of its off-site groundwater plumes and to flush its mill tailings for 15 years, putting this prime New Mexico drinking water source at risk. The San Andres-Glorieta aquifer also recharges the San Mateo Creek and Rio San Jose.

Overview of the Regulatory Landscape

Both federal and state regulatory agencies are tasked with protecting our public health, safety, and environment.

The Nuclear Regulatory Commission (NRC), which regulates uranium mills and in situ leach mining (ISL), is proposing a new rule for new ISR projects that will approve alternative groundwater standards (ACLs) that do not meet state or federal drinking water standards, without the need for a license amendment. The new rule would also shorten the post-mining monitoring period from 3 years to 1 year.

The industry has not been able to demonstrate the feasibility of aquifer restoration at two ISR sites after 30 years of reclamation. Bill Von Till, former head of the Uranium Recovery Branch of the NRC said, “What the groundwater community has found over the years is that trying to achieve cleanup to background is virtually impossible.”

Twenty-two million tons of unlined mill tailings remain on Homestake Mining Company’s old mill site in the Grants Mining District. The tailings which leached contaminants into 4 groundwater aquifers, contaminating nearby private domestic and irrigation wells. Groundwater contamination plumes have moved off-site and now threaten Milan’s municipal water supply wells.

The global conglomerate claims that its groundwater remediation efforts over the last four decades is long enough, despite past violations of its NRC license and the use of untested technologies for groundwater remediation.

Efforts by Rio Grande Resources to close the old Mt. Taylor uranium mine continue after nearly two decades of standby from 1999-2017 and a brief return to active status. In 2019, RGR decided to close the mine and pursue in situ recovery (ISR).

Until the mining industry can successfully demonstrate the feasibility of groundwater restoration in affected aquifers, New Mexico will be unable to keep our nearby municipal groundwater supplies safe for present and future use.

Groundwater restoration at former mine, mill, and ISR sites will outlast production periods by multiple decades - a case of diminishing returns - from industry’s point of view. New Mexico, however, sees things differently. Diminishing clean water sources are more than a commodity – they are essential to maintain our vital ecosystems, flora, fauna, and our rich multicultural heritage.

Protecting the Mt. Taylor TCP

The designation of 400,000 acres of public and private land on Mt. Taylor as Traditional Cultural Property (TCP) was motivated in part to mitigate the cultural and ecological disruption caused by historic uranium extraction and development. Thousands of mining drill holes, shafts, injection lines and dewatering wells that blanket the mountain amount to an act of violence against our Earth Mother, a desecration of her sacred landscape, which pollutes the sacred water, springs and groundwater flowing off the mountain, as well as our traditional cultural practices. Past uranium extraction has already burdened

the wetland ecosystem of the San Mateo Creek Basin, our wildlife, and future generations.

NM cannot afford to offer this mountainous landscape up as a sacrifice zone a second time, nor can the San Mateo Creek Basin survive another violent onslaught,

New Mining Proposals

New uranium mining developments, such as the Roca Honda mine, La Jara Mesa mine, the Crownpoint and Clean Energy ISR projects, will add new sources of groundwater pollution to the mix before the old ones have been resolved, further clouding the issue of natural background and cleanup criteria.

In situ leach mining (ISL) or uranium recovery (ISR) is untested in NM's regulatory regime. No ISR mining operation in the US has ever returned impacted groundwater to background or explained how that can be accomplished without relaxing the applicable standards, monitoring period, and shortening the time required to achieve reclamation goals. *See attached In situ leach uranium mining booklet*

NRC licenses and related state permits for new and untested forms of in situ leach mining, or in situ uranium recovery (ISR) in New Mexico will greatly increase the risk to regional drinking water sources already impacted by legacy waste and prolonged drought.

- NuFuels (Laramide) plans to utilize the Crownpoint municipal wellfield
- Clean Energy (Rio Grande Resources) plans 2 primary production areas in the Westwater aquifer and Dakota sandstone, with 2,000 vertical wells, 100 horizontal wells, and perimeter monitoring wells 3,000 ft below land surface
- Both ISR facilities plan to construct onsite central processing plants to extract, dry, and process U3O8

New well drilling to collect water quality baseline data for these projects will not represent true background conditions because the hundreds of exploration drill holes which have already been drilled have oxygenated the host aquifer and adjacent aquifers.

We must acknowledge that groundwater, once damaged with radioactive byproduct material and other chemical and hazardous materials, cannot be returned to its natural background state and will require expensive long-term restoration and monitoring that the mining industry wants to avoid.

- NuFuels has not developed a complete aquifer restoration cost estimate for its proposed ISR project in Crownpoint. In 2023, NuFuels admitted to NRC regulators that ISR has been unable to restore groundwater to background quality.
- Mountains of unlined mine and mill waste left on the ground surface in the Grants Mining District will continue leaching into groundwater. Ventilation and mine shafts will continue to introduce oxygen and facilitate aquifer mixing, contributing to persistent surface and groundwater pollution for future generations of New Mexicans.

- Groundwater treatment processes create more concentrated brine waste streams in need of disposal.
- ISR facilities propose to keep re-injecting chemical solutions back into the targeted aquifer after uranium is removed.

Outstanding Multi-Agency Issues

More than 12,000 mining claims have been staked in NM under the 1872 Mining Act in anticipation of rising prices for valuable minerals, the highest in over a century (since 1912).

New Mexico regulators need time to work on a multi-agency approach to assess the cumulative impacts that multiple uranium extraction projects in the San Mateo Creek basin pose to the sustainability of regional water sources, cultural resources, and to the public welfare.

- Grants Energy is working with EPA Region 6 and NMED to determine the applicability of EPA groundwater authorizations.
- Clean Energy will request New Mexico Environment Department (NMED) Radiation Control Bureau (RCB) to authorize use of Prompt Fission Neutron (PFN) logging technology to assay uranium mineralization around a borehole, which needs further study.
- Clean Energy plans to inject its liquid waste into deeper lying aquifers below the Westwater in Class I UIC wells. This approach was tried unsuccessfully at the former Anaconda Bluewater mill site but ended up spreading contamination.
- NMED needs more technical assistance to conduct oversight of UIC wells under its Discharge Permitting program.

New Mexico regulatory agencies lack sufficient staff, time, and financial resources to collect baseline data; to adequately oversee and regulate new mining, well drilling, and ISR mining discharge permits; and to assess the adequacy of the mining industry's reclamation plans.

Water rights and well drilling in NM need to be actively managed by the Office of the State Engineer using an independent hydrologic model, alongside mining company models. An enormous number of exploratory drilling wells could become preferential pathways for groundwater contamination if they are not actively managed. Procedures for plugging abandoned wells and for assessing and reclaiming abandoned water rights need to be updated and strictly enforced.

- New Mexico's Strategic Water Reserve can be used to buy or lease inactive mining company water rights to restore the San Mateo Creek Basin.

Mining projects, like the old Mt. Taylor Mine and never-built Crownpoint ISR Project often sit idle for decades when facing an economic downturn. MMD's standby regulations for active mines need to be actively enforced.

As Homestake-Barrick and the regulators evaluate the most protective cleanup options for the San Mateo Creek Basin and the Grants Mining District, public health and safety must be prioritized over corporate profits. *Note: HB's ACL application was accepted for review by the NRC on Sept 24, 2026.*

Existing databases for the region, such as the former NMEID and New Mexico Bureau of Geology and Mineral Resources, should be consulted to obtain pre-mining background values.

Recommendations

Let's press the "**Pause**" button to build NM's regulatory capacity to protect our scarce water supplies, natural resources, and healthy ecosystems. Industry must provide the latest research, studies, and reclamation demonstrations to demonstrate they also possess the ability, resources, and time required to reclaim the water and to mitigate the natural resource damages that will inevitably result from a new era of uranium recovery.

Persistent groundwater contamination plumes and degradation throughout the San Mateo Creek Basin provide clear examples of the overriding need to **conserve and restore** our state's shrinking water supplies. New Mexico is becoming hotter and drier, making every groundwater resource in this region increasingly important. Our communities deserve reassurance that the significant impacts of new mining proposals will be carefully evaluated alongside the damages inflicted by past uranium extraction projects.

New Mexico regulators must require the mining industry to detail its reclamation plans for groundwater contamination and depletion and to provide adequate **financial assurances** for long-term reclamation and monitoring.

Federal regulators need to conduct a full-blown comprehensive EIS carried out by independent NEPA contractors for new mining projects on USFS lands and extremely risky ISR projects on state lands.

State Land Commissioner Stephanie Garcia Richards recently issued an Executive Order banning new mining on state trust land.

While this Order won't affect existing permits, it opens the door to a larger statewide effort to pause further uranium mine development until safeguards are in place for water and human health.

Clean water and healthy ecosystems form the basis for sustainable economic development that will support our most important cultural traditions while safeguarding our sacred landscapes and natural spaces so that they can be enjoyed for generations to come. The outdoor recreation economy creates nearly 30,000 jobs and brings billions of dollars to NM.

I leave you with the words of Wallace Stegner, conservationist and defender of public lands in their natural state, "We are not responsible for the sins of our fathers, but we must accept responsibility if we repeat them."

References:

NM's 2024 50-Year Water Action Plan recommends planning for 25-40% decrease in available water sources (conservation; infrastructure upgrades; climate adaptation)

NM 2025 Strategic Water Reserve Program (water conservation; new water supplies; watershed protection)

NM 2023 Water Security Planning Act (regional planning)

NM 2019 Water Data Act (New Mexico does not have characterization of groundwater resources)

EPA 2024-2028 Five-Year Plan for Grants Uranium Mining District (97 legacy uranium mines, 5 former millsites)

Groundwater Remediation from Uranium Mining in New Mexico, Jerry Schoeppner, NMED, 7 Southwest Hydrology 22-24 (Nov./Dec. 2008)

Attachments:

ISR Extraction Slide

In situ leach uranium mining booklet