

WHAT CAN NEW MEXICO'S LEGISLATURE DO TO SAVE SAN MATEO CREEK BASIN FROM ECOSYSTEM COLLAPSE?

Uranium mining in New Mexico is a water-intensive and water-polluting industry.

This has not changed since the last mining boom occurred. Additional groundwater depletions and water quality impacts will adversely affect our water supplies, cultural resources, vegetation, and wildlife habitat.

Water Supplies are Scarce in the Grants Uranium District

In the Grants Mining District (GMD), uranium is extracted from the Westwater Formation, a significant regional aquifer. Past uranium mining in the GMD from the 1950s – 1980s led to large-scale dewatering that created a regional cone of depression covering more than 1,000 square miles. Dewatering caused drawdowns from 500 ft to 100 ft. The regional cone of depression that formed has changed groundwater flow directions, with gradients in all directions due to the complex geology of the basin. Recovery to pre-mining groundwater levels could take several hundred to several thousand years. A USFS 2013 DEIS for Roca Honda Mine found significant adverse cumulative impacts from total groundwater pumping, past and present, on Crownpoint, Gallup and Ambrosia Lake Area near potential mining areas based on hydrologic modeling.

A new Roca Honda mine will create new cones of depression with total Westwater drawdowns of 1,806' in a water-short basin.

Water Quality – Uranium Mining Contaminates Groundwater

Mine dewatering exposes uranium and other constituents in the groundwater to oxygen, causing uranium, sulfates and TDS concentrations to increase. Lack of pre-mine data and mine regulations until the mid-1970s compounds the challenge of establishing criteria for new post-mine remediation.

In-Situ Recovery is not the answer

A saturated confined aquifer is needed for ISR, but containment of uranium-bearing fluids cannot be guaranteed in the San Mateo Creek Basin due to a network of faults around Mt. Taylor and the potential for undetected excursions outside the mined zone as uranium is liberated for extraction. On-site ion exchange will produce uranium loaded resins that must be separated and trucked off-site. Post-recovery treatment of might use RO, generating about 25-35% concentrated brine in need of disposal. ISR of uranium could lead to regional groundwater contamination.

ISR separates uranium ore from the ore body by injecting a lixiviant, using extraction wells to bring the uranium-loaded solution to surface for separation and processing. The remaining water could be re-injected after RO treatment or disposed of in deep waste injection wells

Questionable Economics

Most uranium mining in NM ended by 1989 due to economic factors – can the current market price of uranium be sustained over the next 2 decades to cover reclamation costs for groundwater treatment, continuing data collection, and new permitting requirements at the end of the production phase? Boom and bust economic cycles lead to zombie mines, dormant operations.

Economics will continue to limit production, as it did during the last mining boom, but economic valuations should be extended to cover the final reclamation phase, with adequate **Financial Assurances by the parent company from a third-party guarantor.**

Boom and bust economic cycles in NM have led to zombie mines with dormant operations and stalled reclamation.

The Threat and the Players:

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)

Industry Conferences have been held in New Mexico to boost community support for new uranium mining projects in New Mexico.

- *Energy Fuels* – owns RHM on Mt. Taylor; Pinyon Plain Mine near Grand Canyon, uranium and rare earth metals mill near White Mesa, UT. Energy Fuels just announced the expansion of its uranium mill in UT to process rare earth minerals on a commercial scale.
- *Laramide* – La Jara Mesa, owns NuFuels
- *NuFuels* Crownpoint & Churchrock ISR on NN. Previous Section 8 uranium mine with legacy contamination issues.
- *Grants Energy* – Grants Precision ISR. No previous experience. Transfer of Rio Grande Resources water rights from old Mt. Taylor Mine
- Stream-lining federal review processes like NEPA will lead to the loss of health and safety protections for our communities and the environment.
- **Title 41** of Fixing America's Surface Transportation Act (**FAST 41**) by federal Improvement Steering Council potentially streamlining federal review process for these projects:

Roca Honda Mine Project

La Jara Mesa Mine Project

Churchrock Project is an undeveloped ISR project since 1999

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Why action by the NM Legislature is needed:

Mining uranium ore leaves waste rock piles on land surface forever.

New mining developments in the Grants Mining District will add to existing pollution sources before the old ones have been remediated, further clouding the issue of natural background and cleanup criteria.

New mining in the San Mateo Creek Basin will thwart New Mexico's efforts to conserve our scarce surface water and groundwater sources over the next 50 years.

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

1979 UNC Churchrock mill tailings spill into Puerco River released 1,100 tons of radioactive tailings and 94 M gallons of toxic wastewater from the milling process. Does NM have a unified regulatory framework and crisis management capability to address a catastrophic disaster of this magnitude?

Dewatering wells and mine shafts oxygenate the groundwater, catalyzing chemical reactions that release uranium and other metals throughout the groundwater system.

Water treatment systems, that use injection wells, ion exchange and reverse osmosis, create new waste streams in need of disposal.

Our Tools:

Federal **Clean Water Act** passed in 1972, **NM Water Quality Act** enacted in 1967; and NM regulations promulgated in 1977. **New Mexico passed its Mining Act** in 1993.

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 Supply Program (water conservation; new water supplies; watershed protection)

NM 2023 Water Security Planning Act (regional planning)

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

In-Situ Recovery of Uranium, Mark S, Pelizza, URI, 7 Southwest Hydrology 22-24 (Nov./Dec. 2008)

Well-Field Mechanics for In-Situ Uranium Mining, Shao-Chih (Ted) Way, In Situ Inc., 7 Southwest Hydrology 22-24 (Nov./Dec. 2008)

swuraniumimpacts.org (MASE website with core group fact sheets)

Attachment: GMD map: 97 legacy uranium mines, 5 former mills.