



THE PETROLEUM RECOVERY RESEARCH CENTER

NEW MEXICO INSTITUTE OF MINING AND TECHNOLOGY

JENNIFER RANEY – DEPUTY DIRECTOR

ROBERT BALCH - DIRECTOR

Water and Natural Resources Committee

September 1, 2026

What Is the Impact of the PRRC?

Created by New Mexico Statute: NMSA 1978, Article 9 as a division of New Mexico Tech: Primary Duty: “to engage in theoretical and practical research into the recovery of petroleum and other energy resources”

Primary Focus today is:

Produced Water and Sustainability

Traditional hydrocarbon research

Other Energy – Geothermal and Nuclear

Carbon Management and Critical Minerals

PRRC Impact

Jobs

PRRC currently contributes to 106 jobs in NM, including 35 staff and 13 supported Faculty at NMT

State

Research supports entities across the state: partner universities, national labs, and public-private partnerships.

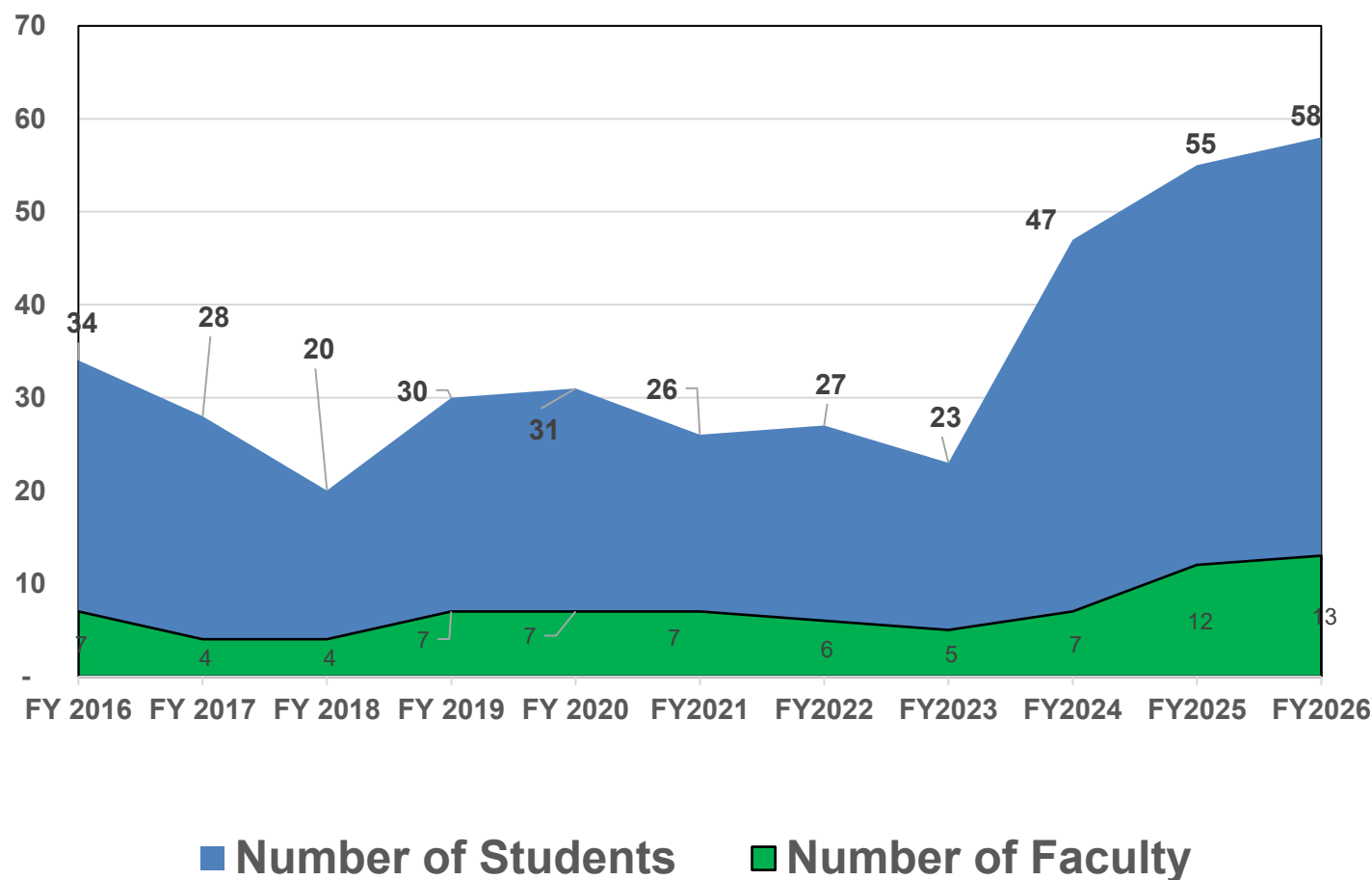
University

We actively train students for careers in sustainable energy development

58 Students funded on research projects in FY26

Multidisciplinary Student and Faculty support

PRRC Students and Faculty



- Support an average of **42** students per year over last five years
- Provide summer salary to an average of **9** faculty per year over last five years
- Students and faculty from many departments/Divisions on campus, including:
 - Petroleum Engineering
 - Chemical Engineering
 - Materials Engineering
 - Electrical Engineering
 - Civil and Environmental Engineering
 - Earth and Environmental Science
 - Chemistry
 - Computer Science
 - Engineering Management
 - Math
 - Physics
 - Mineral Engineering

FY 2026 Successful Proposals

16 Successful Proposals and Acquired Funding FY 2026 (\$3.3 million)

Agency	Program	Project Title	PI	Funding Request	Acquired Date
Arpa-E	Federal	Adsorptive Vacuum Membrane Distillation for Simultaneous Extraction of Magnesium, Lithium and Ammonia from Produced Water	Jianjia Yu	\$ -	2025/07
Arpa-E	Federal	Selective Extraction of Magnesium, Ammonia and Lithium from Produced Water (SE-MALi)	Jianjia Yu	\$ -	2025/07
TEF Engine development funds	State	NSF Engines: San Juan-Rio Grande Energized Watershed Engine	Lique Coolen/Jianjia Yu	\$ 52,937	2025/07
SNL	Federal	Leaching while fracking for ore bodies using supercritical CO2 foam with chelator functionalized nanoparticles	Robert Balch	\$ 189,000	2025/07
EMNRD	State	Data for the Energy Transition, Economy, Climate Change, and Technologies (DETECT)/Comprehensive Energy Transition Strategy (CETS) Phases II and III	Jean-Lucien Fonquergne	\$ 499,999	2025/12
NMED	State	Extraction of high-purity water and lithium from brackish water via integrated membrane processes	Jianjia Yu	\$ 1,580,762	2025/12

- NM water projects reflect national priorities
- New market opportunities and diversification of applications
- Coupled pathways with CO₂

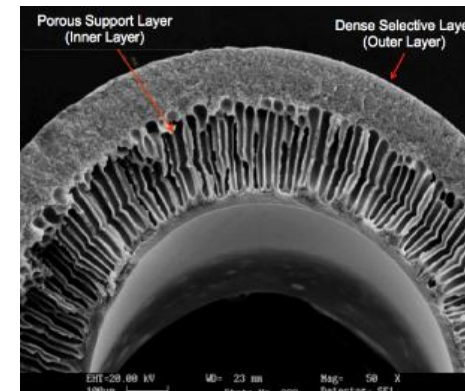
Strategic Water Supply & Industry Projects

Legacy **O&G tech, data and skills** to address New Mexico's Strategic Water Supply

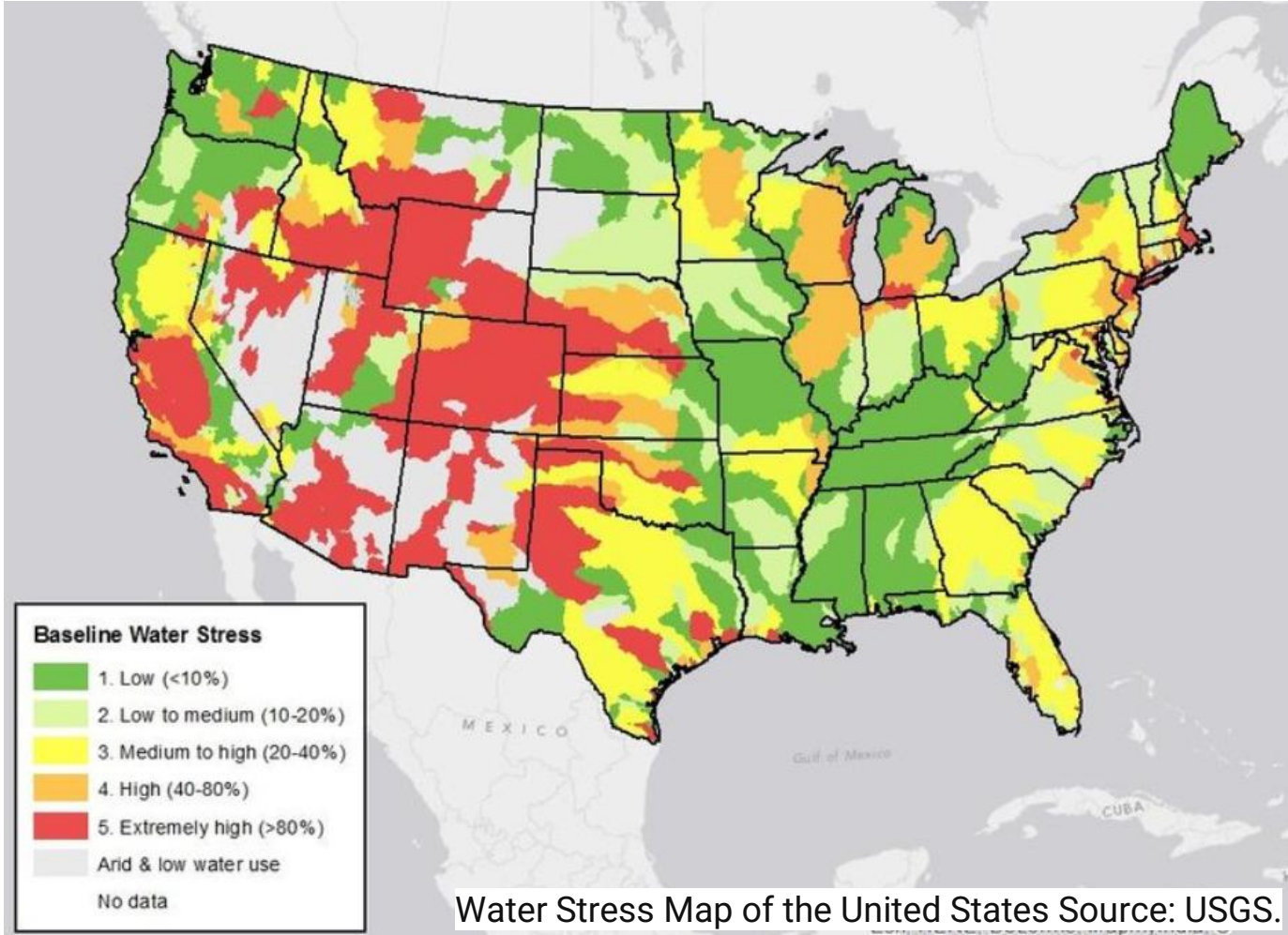
“The purpose of the SWS Program is to provide financial assistance for eligible projects that advance the planning, research, development, demonstration, design, permitting, and construction of strategic water supply projects involving treated brackish water to enhance New Mexico's freshwater resources.”

PRRC laboratory, technology, and skill capabilities address brackish water treatment, both directly and indirectly:

- **Petrophysics and Surface Chemistry**
 - Water chemistry and monitoring
 - Regular work with Chevron, ongoing projects last 17 years
 - In situ reactive transport
 - Water Analyses - pH, conductivity, alkalinity, major ions, TOC
- **Produced Water and Petroleum Engineering**
 - Nano Technology and Water management
 - Seven projects on nano filters (hollow fiber membranes)
 - Inexpensive produced water cleanup
 - Mining of critical minerals from produced brine



Water Scarcity in New Mexico



Water shortage and security is a global AND local challenge

- New Mexico is an arid state, **1.1 million** people are affected by the long periods of drought and inconsistent precipitation.
- **87%** of public water supply comes from groundwater in NM.
- The remaining water (13%) comes from rivers

Rapidly depleting aquifers requires exploration of new sustainable water resources...

Does New Mexico have enough water?

Not for everything we want to do...

- Farming is already limited by available water
- New Industries need more water
 - Chip fabrication (ultrapure)
 - Data farms (cooling)
 - Grid-scale batteries (cooling, pump hydro)
 - Hydrogen needs 4-8 gallons of water per kg of hydrogen



hydrogeek



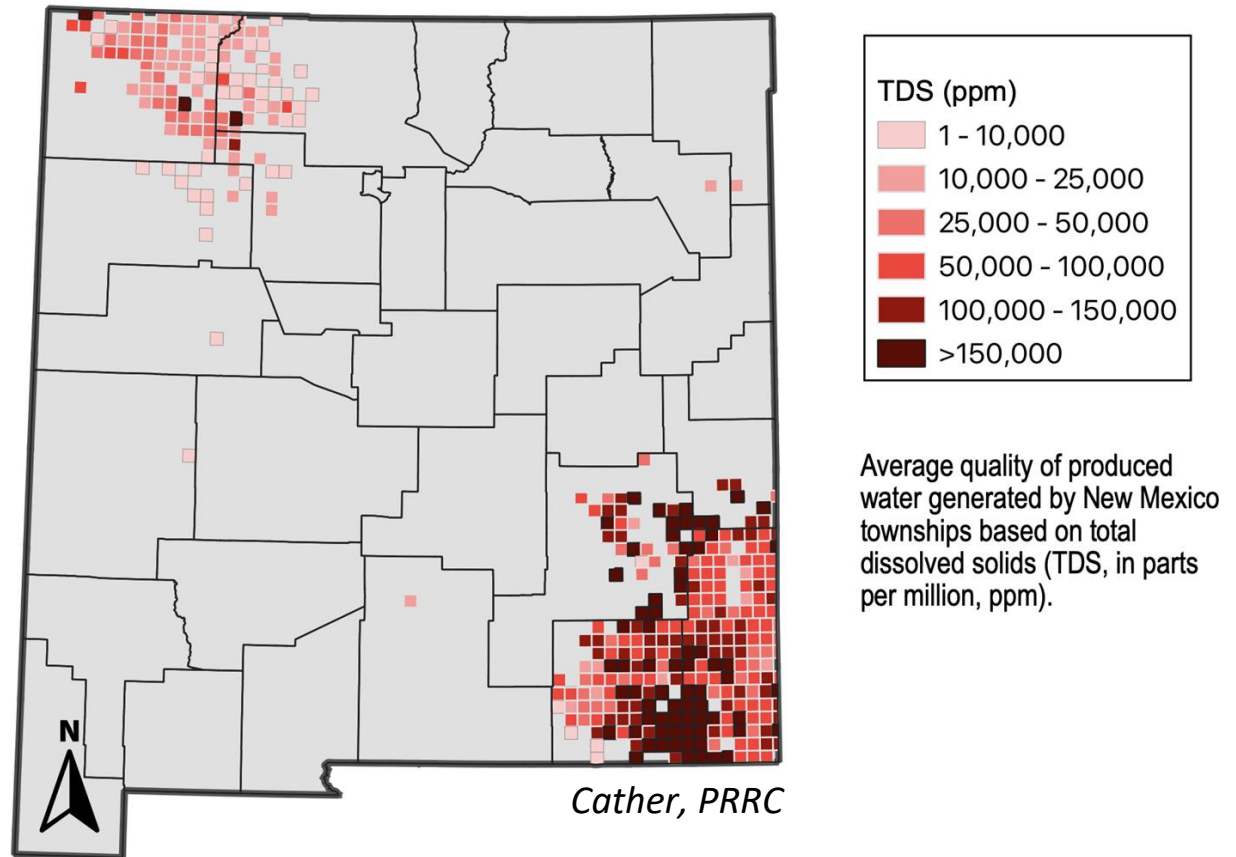
So How Do We Come Up With “New” Water?

In New Mexico, either:

- New groundwater sources
 - Resources are already strained

Or

- Improve “recycling” from non-traditional water sources
 1. Produced Water from oil and gas
 2. Reuse of wastewater



Disposal-only >>>> **fit-for-purpose treatment, recycling, and closed loop industrial water supplies**

In New Mexico:

59.9%

Deep-well disposal / SWD

40.1%

Enhanced oil recovery
injection/Pressure
maintenance injection

0%

Beneficial reuse outside oil
and gas

PRRC Research Goal: develop **affordable, portable and scalable robust membrane**-based desalination technologies to convert **produced water** as a **sustainable water resource**.

Water Treatment Research

Research Priorities:

- Affordable
- Portable
- Scalable

Technology Benefits:

- small footprint
- self supporting
- low operational maintenance
- trained workforce
- applicable to NM brackish water resources



Zongjie He, PhD student (Materials Engineering)

Workforce Development

- Hands-on experience for early career staff
- Transferable skills
- 58 students supported in PRRC in FY25
- Support for faculty and students with applicable skills
- Laboratory capabilities support water treatment technology

N⁴WPP Brackish water Desal



Navajo Tech-NMT-Navajo Nation Water Purification Project – Working to Desalinate brackish water wells on the Navajo Nation



**500 gallons per day, Pesco training unit
NTU campus (Crownpoint, NM)**

Thank you



Please come see us!



NMT Day at the Roundhouse

