



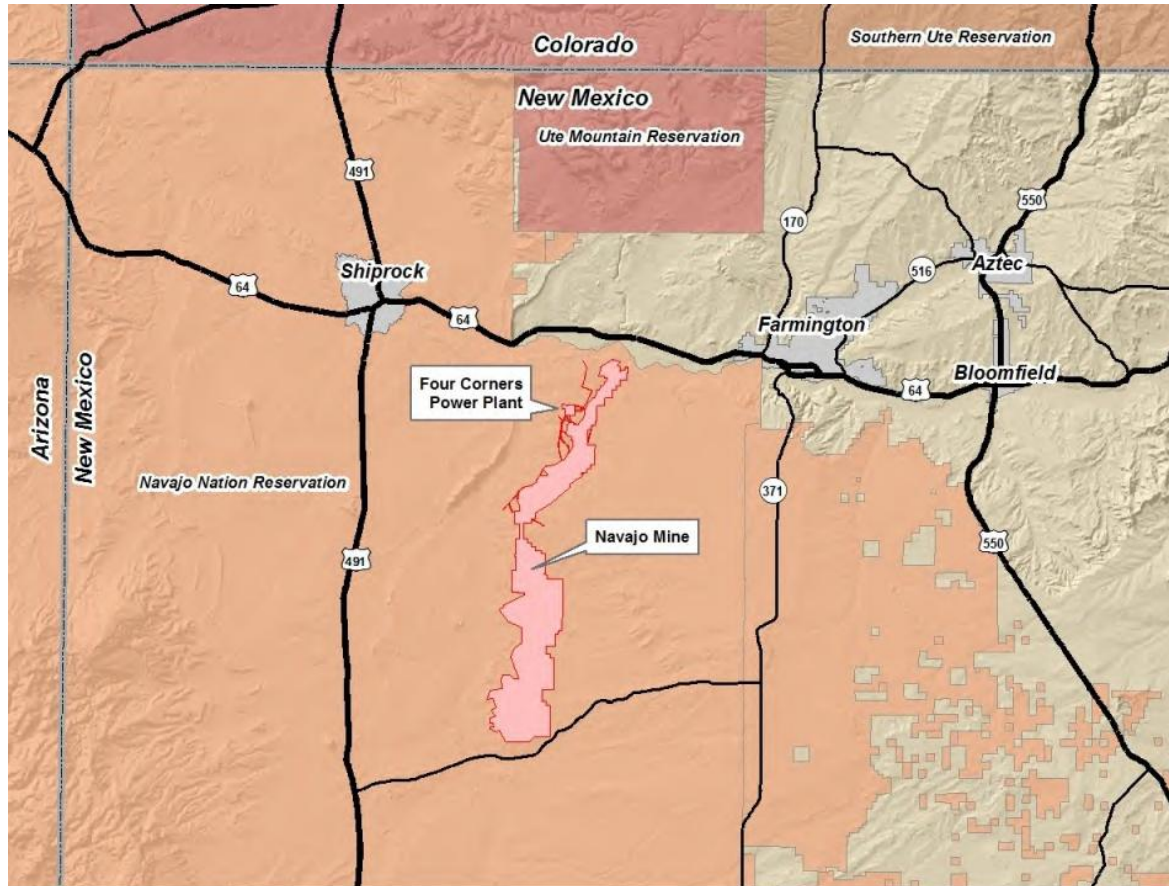
Restoring Hozho on the Navajo Nation with Geomorphic Reclamation

Dacia Jacquez, EIT, Reclamation Engineer

2026 ASRS Annual Meeting



Background



- Navajo Mine is located on the Navajo reservation in Fruitland, New Mexico
- Open-pit coal mine feeds the Four Corners Plant
- Produce 5 million tons/year
- Navajo-owned
 - 348 total employees
 - 310 employees have tribal affiliation
 - 254 employees are Navajo

Background



1963

Operation of Navajo Mine
Began

1977

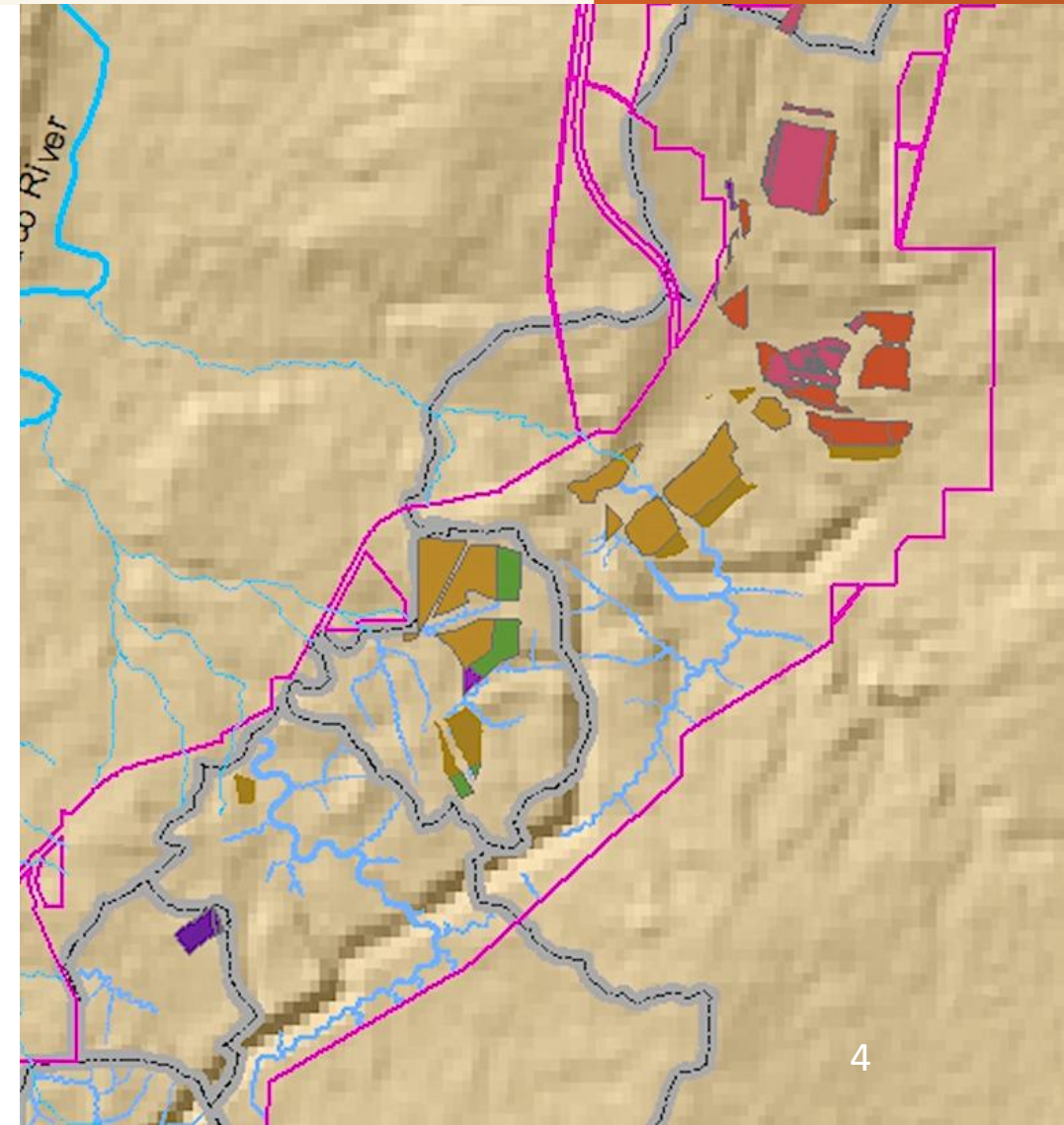
SMCRA established

2013

Navajo Transitional Energy
Company Gained
Ownership of Navajo Mine

Historical Reclamation Methods

- Terraces designed for runoff, not sediment control
 - Frequent maintenance
- Incremental Reclamation
- NTEC wanted to do the right thing and fix old terrace reclamation, along with permanent lands, before returning the land back to the Navajo Nation



What are we trying to accomplish?

- Maintenance free regrade landforms
- Vegetation composition and diversity
- Stable against erosion
- Promote post-mine land use
- Bond release
- **Restore Hózhó**



Cottonwood Wash North Fork Restoration



Shiprock, New Mexico, Navajo Sacred Mountain

Hózhó

- Foundational concept within the Navajo culture
 - Beauty
 - Harmony
 - Balance
- All aspects of life are interconnected
- To live in Hózhó is to be in a state of harmony with oneself, others and the natural world
- **How does Navajo Mine implement Hózhó in our reclamation?**

Restoring Hózhó with Geomorphic Reclamation

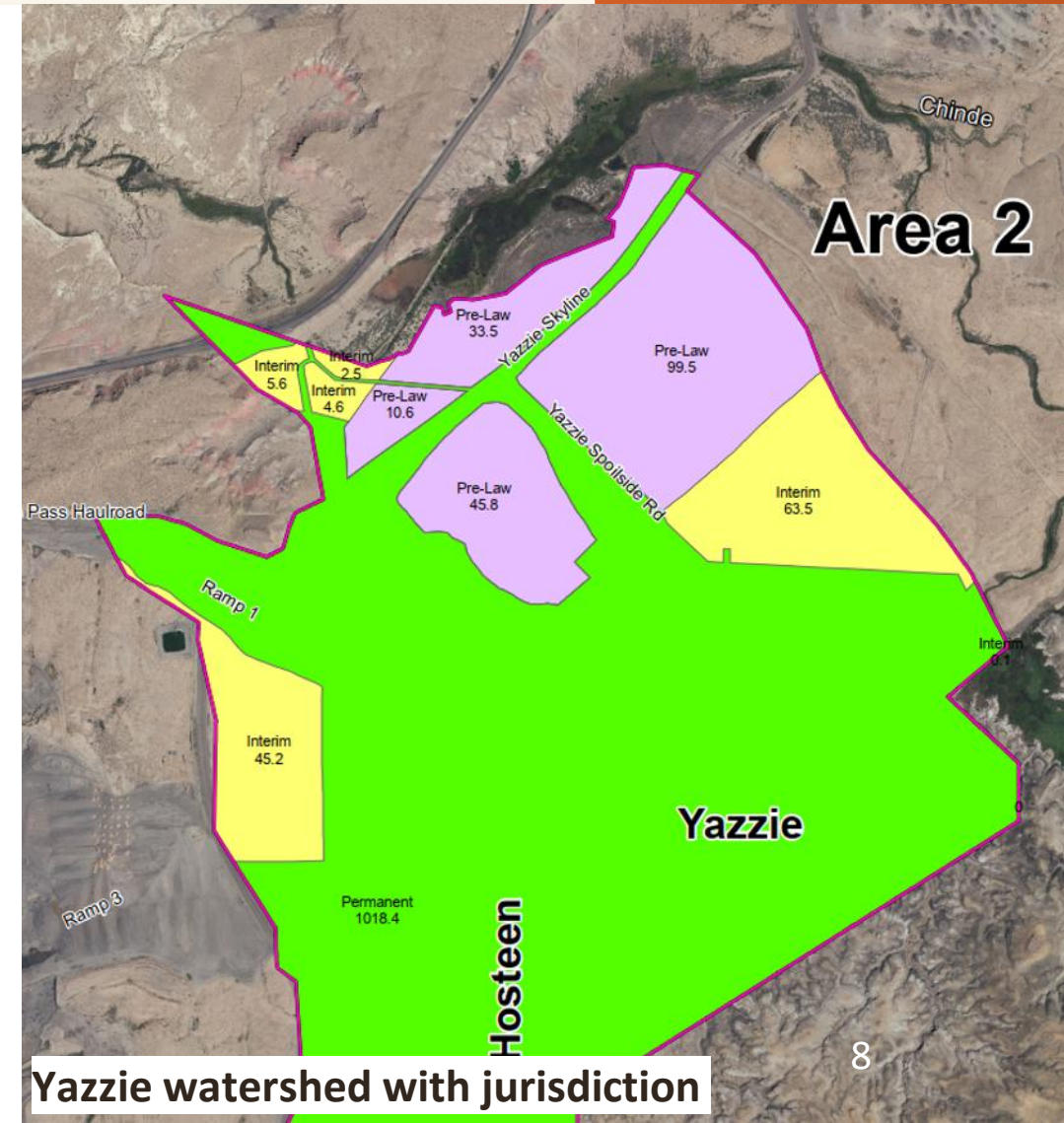
- Achieve regulatory compliance
- Create sustainable habitat for wildlife
 - Golden eagles, ferruginous hawks, bobcats, beavers
- Support grazing and future land use for Navajo Nation
- Restore long-term environmental function



Cottonwood Wash North Fork
Restoration with Irrigation

Geomorphic Reclamation Approach

- Regardless of jurisdiction, Navajo Mine implements geomorphic reclamation
- Watershed-focused design
- Focus on long-term landform stability
- Navajo Mine has over 41 million CYDs of experience in moving material for completing a watershed



Watershed Challenges

- Arid Southwest
- 60% Navajo Mine is badlands
- 5 inches of rain per year

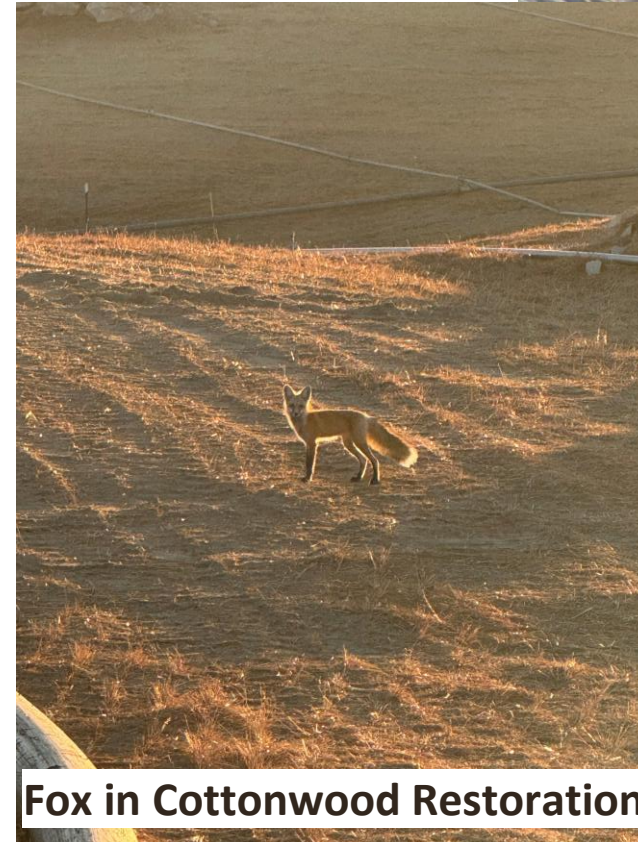


Solutions

- Geomorphic design coupled with irrigation

Outcomes and Environmental Benefits

- Improved watershed performance
- Sustainable post-mining landscape
- Benefits for wildlife habitat
- Benefits for grazing use



Recognition and Awards

- OSMRE National Award for Excellence in Surface Coal Mining Reclamation
 - 2020, 2022, and 2024
- New Mexico Energy, Minerals and Natural Resources Department Excellence in Reclamation Award
 - 2019, 2021, 2022, and 2023



Lessons Learned

- Role of ownership vision and stewardship
 - Navajo restoring Navajo
- Importance of designing beyond minimum compliance
- Value of geomorphic reclamation in long-term watershed restoration



Kirtland Elementary Students Visiting Yazzie Wildlife Bluff

Restoring Hózhó with Geomorphic Reclamation

- No longer perform reclamation piece by piece
- Regardless of jurisdiction, Navajo Mine implements geomorphic reclamation, thus providing a lasting impact on the environment and the indigenous community surrounding the mine site
- Legacy mine sites can be transformed into sustainable landscapes through geomorphic design and a commitment to stewardship beyond compliance



Questions?

