



Southwest Environmental
Health Sciences Center
T32 Training Program

NNR-25.563: Socio-economic and Health Impacts of Coal Mining and Well-being of Diné Residents Living within the Peabody Coal Leasehold Area using the Diné Health Model

By Dr. Renee Tsinigine, Post-Doctoral T32 Fellow

Dr. Karletta Chief, Director and Professor of Environmental Science

Tuesday, October 21, 2025

NNHRRB New Presentation

UA eIRB was approved on August 15, 2025



Indigenous
Resilience Center

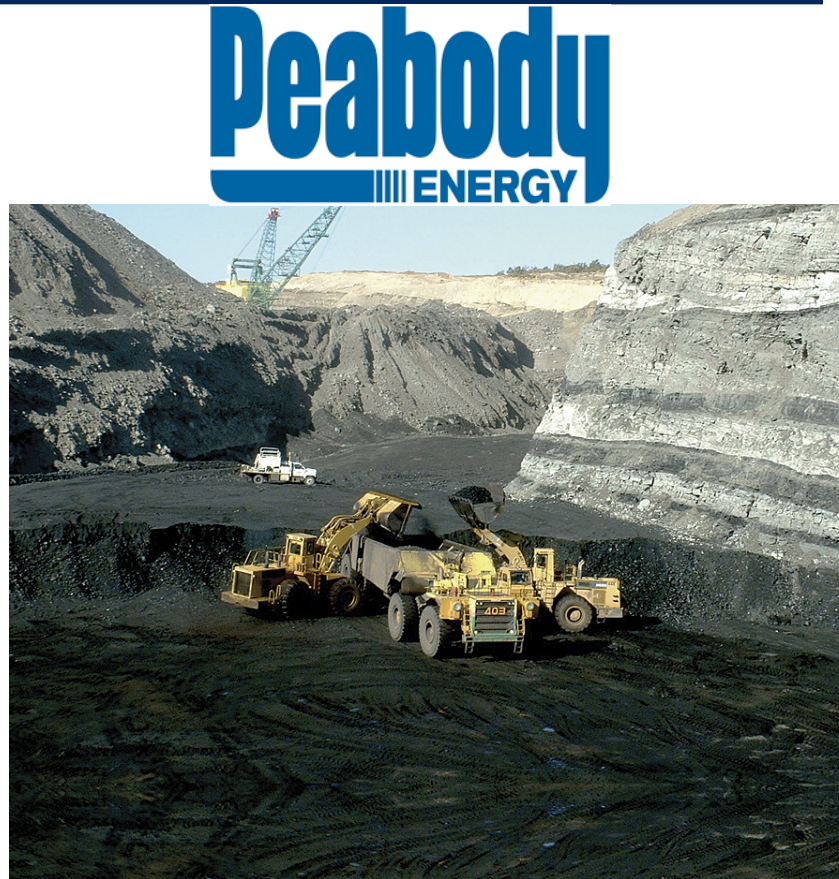
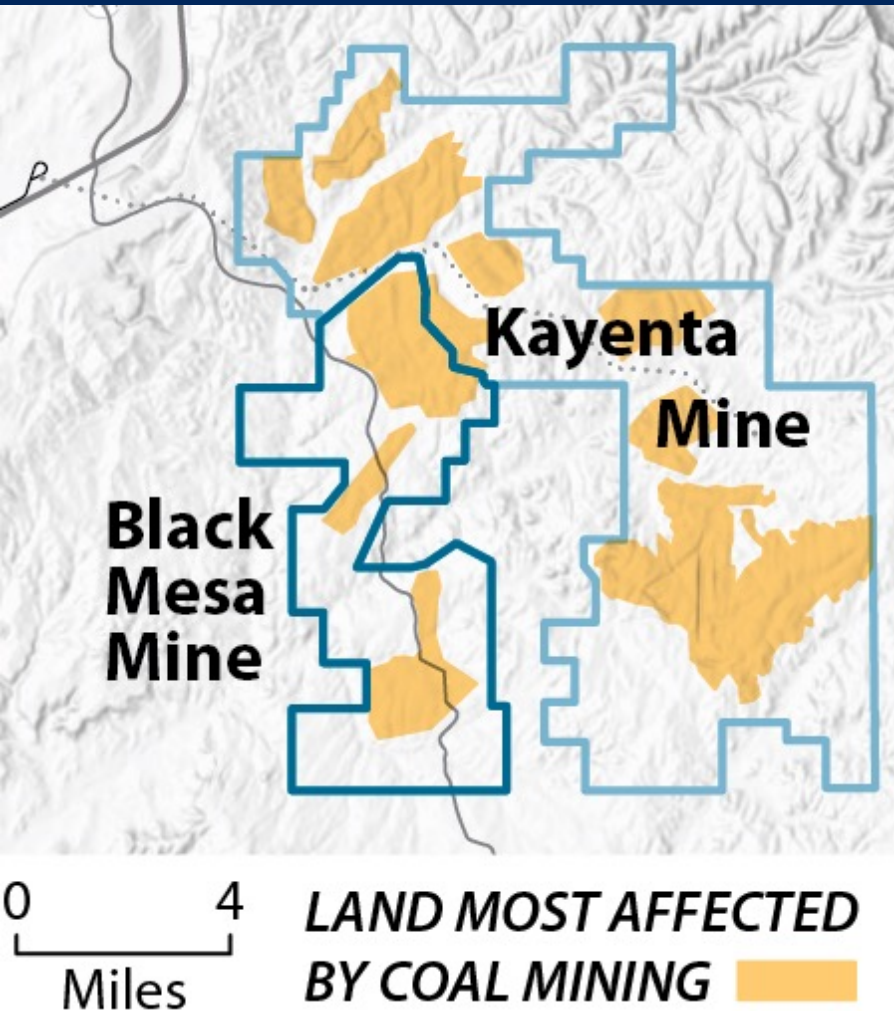




Photo 1: Air pollution consisting of particulates stemming from mining activities are visibly seen on a daily basis within the Black Mesa leasehold areas (Credit: Norman Benally).



Current OSMRE standards are insufficient to ensure coal communities are properly compensated for environmental impacts of coal mining



Purpose

- Examine how coal mining has impacted the health, well-being, and daily lives of Diné (Navajo) residents living on Black Mesa, especially those in Forest Lake and Kayenta Chapters.



Research Questions



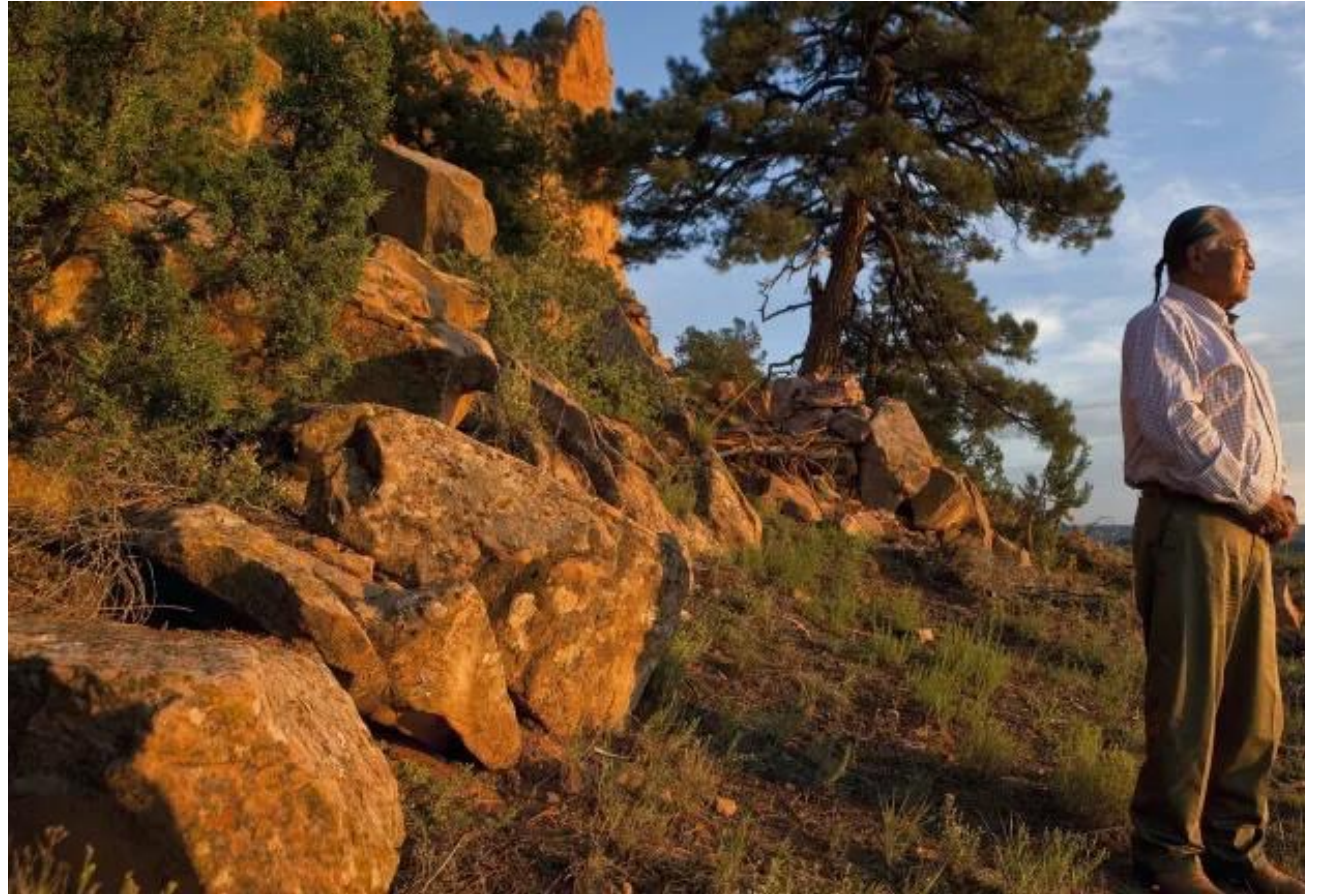
- What are the perceived health and socio-economic impacts of coal mining on Diné residents living within the leasehold area?
- How have mining-related changes to land, water, and air impacted community well-being and cultural traditions?
- What traditional and community-based coping strategies have residents used to address these impacts?



Aims of the Study

Aim 1: Assess health and socio-economic harms experienced by residents

Aim 2: Identify traditional and community-led coping and healing strategies



- Document the lived experiences of community members affected by environmental issues and degradation.
- Analyze community responses to identify common health concerns and socioeconomic challenges.
- Understand and support community-identified pathways for resilience, healing, and advocacy rooted in Diné cultural values.



Approach	Instrument	Recruitment	Transmission	Inclusion Criteria	Participants	Compensation
Demographic	Survey (Participant Background Information Form)	Flyer/Social Media	Electronically via email to BMU, hardcopy posted at Forest Lake & Kayenta Chapters	18; Navajo; lives on Black Mesa; impacted by coal	25 per chapter x 2 chapters = 50	None
Listening Session	Listening Sessions/Focus Groups	Flyer/Social Media	s.a.a.	s.a.a.	s.a.a.	None
Focus Group	Follow-Up Discussion Prompts	Flyer/Social Media	s.a.a.	s.a.a.	s.a.a.	\$40
Evaluation	Community Session Evaluation Tool		s.a.a.	s.a.a.	s.a.a.	None
Interviews		Flyer/Social Media	s.a.a.	s.a.a.	s.a.a.	\$40 g

- Community liaisons from Black Mesa United will assist with outreach and introductions.
- Individuals may also be recruited through word of mouth or informal gatherings and outreach through social media outreach pages by community members.

NNR-25.563 pg. 11

Community Listening Session

Coal Impacts, Health, and Healing in Black Mesa

About This Listening Session

Join us for a community dialogue as part of a University of Arizona research study to discuss the impacts of coal mining in the Peabody Leasehold Area. Your input will guide future wellness resources and community-led research.

Date & Time:
TBD

Location:
Forest Lake and Kayenta Chapter House

Agenda:

- A brief presentation from researchers
- Community Q&A and open discussion
- Feedback on healing and outreach needs

Participation Details:

This session is part of a University of Arizona study.

- Duration: 2.5 hours
- Adults 18+ only
- Consent form required
- Audio may be recorded for accuracy

IRB Approval:

This study has been reviewed and approved by the University of Arizona IRB and follows Navajo Nation research protocols.

Partners: University of Arizona
Black Mesa United
T32 Environmental Health Training

Contact:
rtsinigine@arizona.edu
blackmesaunited@gmail.com



UA Black Mesa Study

Coal Impacts, Health, and Healing in Black Mesa

Do you live in Forest Lake or Kayenta?

If you are interested in joining our community dialogue as part of a University of Arizona research study to discuss the impacts of coal mining in the Peabody Leasehold Area. Your input will guide wellness resources and community-led research at local and regional health facilities.

Location:
Kayent & Forest Lake Chapter House

PARTICIPATING IN THIS STUDY

- Community Q&A and open discussion
- Feedback on healing and outreach needs

IF YOU HAVE ANY QUESTIONS PLEASE CONTACT VIA EMAIL LISTED BELOW

This community listening session is part of a University of Arizona study.

IRB Approval:

This study has been reviewed and approved by the University of Arizona IRB and follows Navajo Nation research protocols and results will be shared publicly in a community outreach.

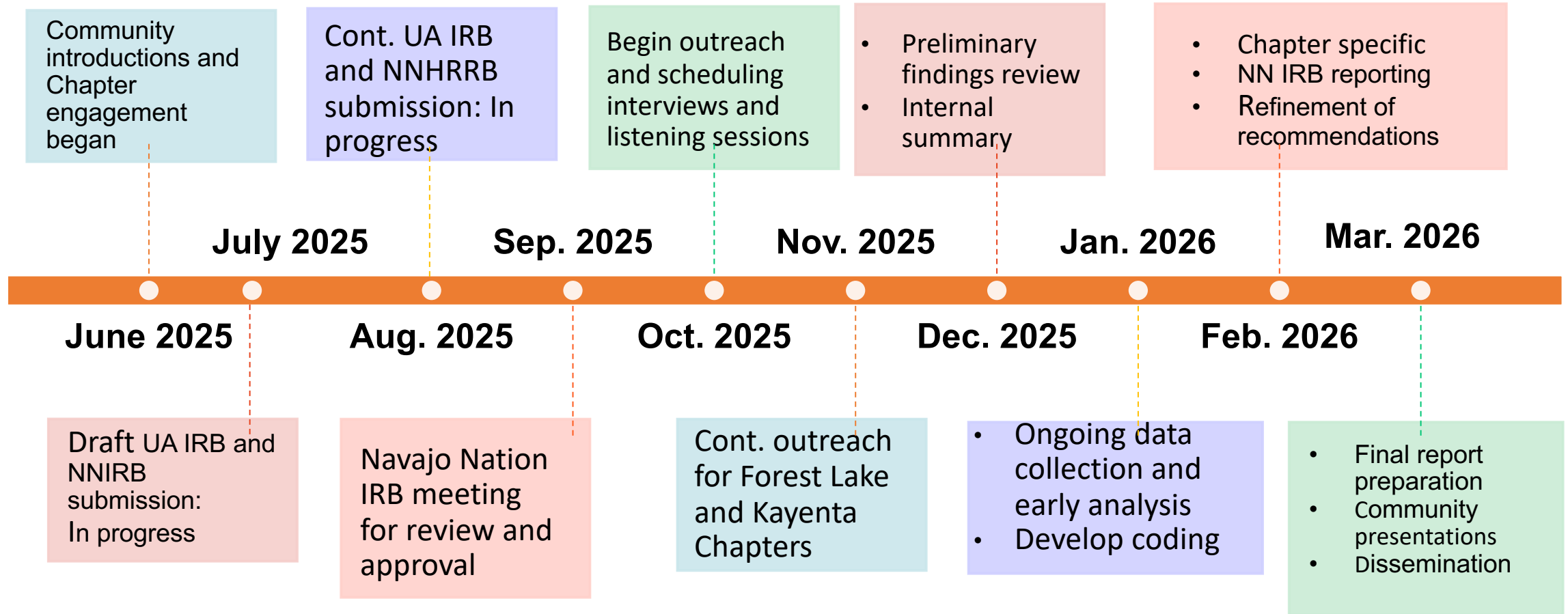
If you have any please send to email listed below

Contact:
Dr. Renée Tsinigine
rtsinigine@arizona.edu

Partners:
University of Arizona | Black Mesa United
T32 Environmental Health Training



Timeline



How Results will be shared

NNR-25.563

NNR-25.563 pg. 8



- One pager Fact sheets
- Newsletters
- Videos
- Audio files
- PowerPoint

- Results will be shared not only among academic communities via peer reviewed publication but also the communities.
- Results will also be reported back and belong to the communities
- Results will also be presented to members of selected Chapters and Agencies, Navajo community partners, and at the Navajo Nation research conference.

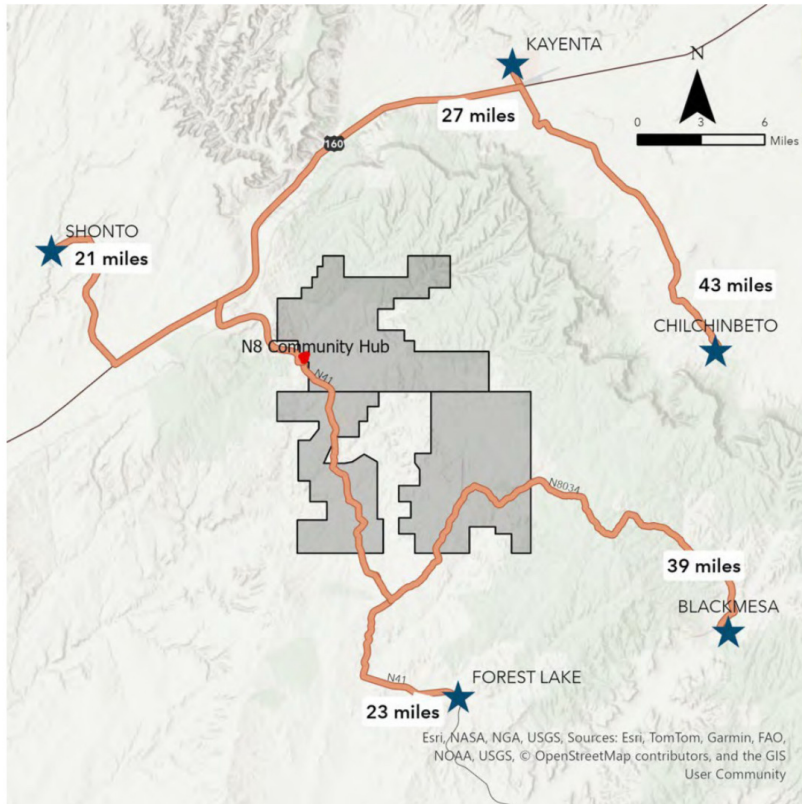


Community Collaborations

- Partnering with Black Mesa United – Dziłííjin Bee Ahóta’
- Forest Lake and Kayenta Chapter Resolutions
- Western Navajo Agency Council
- Research grounded in relationships, respect, responsibility, and reciprocity



Figure 9: Proposed Black Mesa Community Resilience Hub

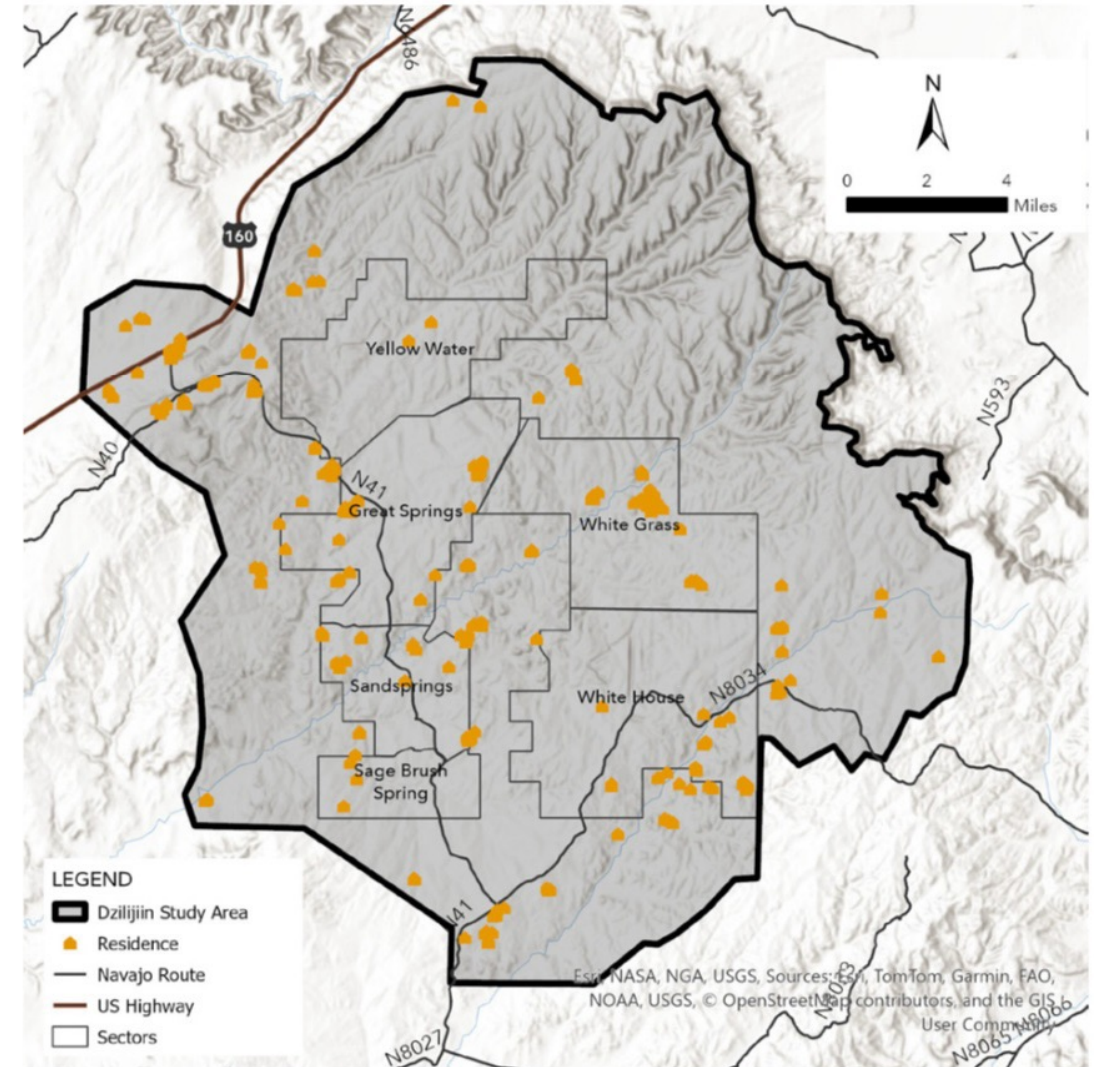


- Small grants: BMU is a recipient IRes mini grants \$50,000 to complete Land Use Plan.
- Grant writing Assistance (e.g. EPA Community Change Grant Proposal, Arizona Economic Development Proposal, Land Use Plan, BRISA Coal Health Proposal)
- Architectural Design with Dr. Laura Carr
- Community Workshop Funding for facilities, rental, and food

Benefits to the Navajo Nation

- Workshop Assistance
- Professional development
 - BMU members invited to workshops where travel is covered (EJ workshops, Food, solve two workshops, facilitation workshop, tribal, environmental health, forum)
- Environmental sampling for water and air in collaboration with Superfund Research Program

Figure 1: Dziljiin Study Area near the Peabody Leasehold Area



Why This Study Matters

- Using the Diné Wellness Model
- Generations of coal mining on Diné lands have disrupted air, water, land, and lifeways
- Limited research reflects Diné community voices or cultural frameworks



Funding

NNR-25.563



T32 Training Program



Southwest Environmental
Health Sciences Center



Agnese Nelms Haury
Program



Superfund
Research Center

#P42 ES004940



NATIVE
FEWS
ALLIANCE

Grant #HRD-2120035



Indigenous
Resilience Center

A woman with dark hair tied in a bun, wearing a green t-shirt and a multi-strand turquoise and coral necklace, stands in a desert landscape. She is looking off to the side with a slight smile. The background shows dry, hilly terrain with sparse vegetation under a clear sky.

Ahe'hee!

By Dr. Renee Tsinigine
rtsinigine@arizona.edu