

Uranium Recovery Program Update

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Presentation Outline

- Current activities
- Staff changes
- Agreement State focus
- in situ recovery (ISR) rulemaking and guidance
- Environmental Justice
- Rare Earth pilot project application
- New applications process
- Commission briefing on April 22, 2022
- Uranium recovery Decommissioning sites
- License termination process
- Department of Energy (DOE) uranium recovery sites

Current Activities

- Enhanced collaboration with Agreement States
- Decommissioning sites
- No new applications for new uranium recovery facilities, one source material application and one more just submitted
- Preparing for multiple Alternate Concentration Limit applications
 - Sequoyah Fuels
 - Homestake
 - Crow Butte
- Revising Inspection Procedures
 - IMC2801 - revised
 - IMC 2802 – in progress
- Oversight of uranium recovery decommissioning sites and DOE long term care sites

Current Activities (continued)

- Decommissioning sites
 - Licensees in various stages of decommissioning at 5 sites
 - Staff involved in oversight of ongoing activities and review of license amendment requests
- Completion Review Reports – Agreement State Support
 - 17 uranium mill tailings sites – 1 operational, 1 in standby, 14 in decommissioning
 - Staff supporting two reviews currently, anticipate 1-2 per year for the next several years.
 - Review of Rare Earth license application for a pilot facility in Wyoming

Staff Changes

- Division Director Jane Marshall
 - Deputy Division Director Ashley Roberts
- Bill von Till – Chief of the Uranium Recovery and Materials Decommissioning Branch
 - Nick Orlando – retired
 - Sarah Tabatabai on detail to assist with Evapotranspiration Covers
- Region IV restructuring
 - Mary C. Muessle Director Division of Radiological Safety and Security
 - Geoffrey B. Miller Deputy Director
 - Greg Warnick Chief of the Decommissioning, ISFSI, and Operator Reactor Branch
 - Uranium Recovery inspectors: Stephanie Anderson, Robert Evans, Linda Gersey



Agreement State Focus

- Agreement States have the bulk of the licensed uranium recovery facilities
- Monthly discussions with Wyoming on sites near to transfer to the DOE
- Workshop with Agreement States in October 2022
- Assistance to Agreement States
- Review of Completion Review Reports (CRR's)
- Inspection Manual Chapter (IMC) revisions 2801 and 2602
 - Discussion and training

ISR Rulemaking

- SECY19-0123, “Regulatory Options for In-Situ Recovery Facilities”
 - The staff provided SECY 19-0123 to the Commission on Dec 16, 2019, to provide options on how to proceed on ISR regulation.
 - The paper provided the following alternatives
 - No Action
 - Update ISR regulatory guidance only
 - Proceed with limited scope ISR rulemaking (recommended approach)
- SRM 19-0123, dated October 22, 2020
 - Directed staff to proceed with limited scope ISR rulemaking
 - Provide proposed rule to Commission
 - Maintain consistency with July 2020 MOU with EPA



Environmental Justice

- Environmental justice involves identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of an agency's programs, policies, and activities on minority and low-income populations
- Federal policy established in 1994 by Executive Order, directed federal agencies make achieving EJ a part of its mission
- NRC currently implements EJ under 10 CFR Part 51, as part of certain licensing actions
- In response to direction from the NRC's Commission on April 23, 2021 (Staff Requirements Memorandum, M210218B, ADAMS Accession No. ML21113A070), the NRC staff has created an Environmental Justice Review Team to systematically review how the agency's programs, policies, and activities address environmental justice
- On March 29, 2022, the staff submitted a paper to Commission (SECY-22-0025)



Rare earth extraction pilot project application

- Wyoming is not an Agreement State for source material, so the NRC is lead for the review
- Pilot-scale project in Upton, Wyoming to test a new process for extracting rare earth elements
- Rare earth elements of interest include Neodymium, Praseodymium, and several others
- Ore contains levels of Thorium that require licensing



New Applications

- We currently have no letters of intent or indication of new applications for new uranium recovery facilities. We do have the Rare Earth source material license application and another source material application for mine waste remediation just received
- We request a letter of intent for any new applications so that we can resource for the review
- We suggest meetings in advance
- We suggest a pre-application audit

Commission Briefing April 22

- First remote Commission briefing in decades held at Gallup, NM with a Community Meeting at a Navajo Shade House near the Churchrock site
- Discussion of the Ten-Year Plan to Address Impacts of Uranium Contamination on The Navajo Nation and Lessons Learned from the Remediation of Former Uranium Mill Sites
- Slides – <https://www.nrc.gov/reading-rm/doc-collections/commission/slides/2022/20220422/index.html>
- Navajo Nation and Navajo community presentations
- Utah presentation on Rio Algom Lisbon Valley site
- Spokane Tribe of Indians presentation

■ Commission Navajo Shade House Community Meeting



Source - Navajo Daily Times

Alternate Concentration Limits

- Alternate concentration limits for conventional and ISR sites
- Allowed by regulation
- Risk based approach allowing for a concentrations of hazardous constituents above background
- Licensee must demonstrate levels are protective after considering practicable corrective actions
- Utah's presentation on lessons learned for an ACL site
 - <https://www.nrc.gov/reading-rm/doc-collections/commission/slides/2022/20220422/index.html>
 - *Groundwater modeling and actual measurements go hand in hand. Models should be revised and reviewed as additional, empirical data is obtained.*
 - *ACLs must be established based on site-specific information. Established limits must be conservative in order to protect groundwater.*
 - *Wells necessary to continue monitoring and ensure groundwater protection should be maintained. Do not abandon wells that may be useful for future work.*
- Sites with ACLs long term groundwater contamination can expect to have long term groundwater monitoring and may have an increased long term care fee as a result

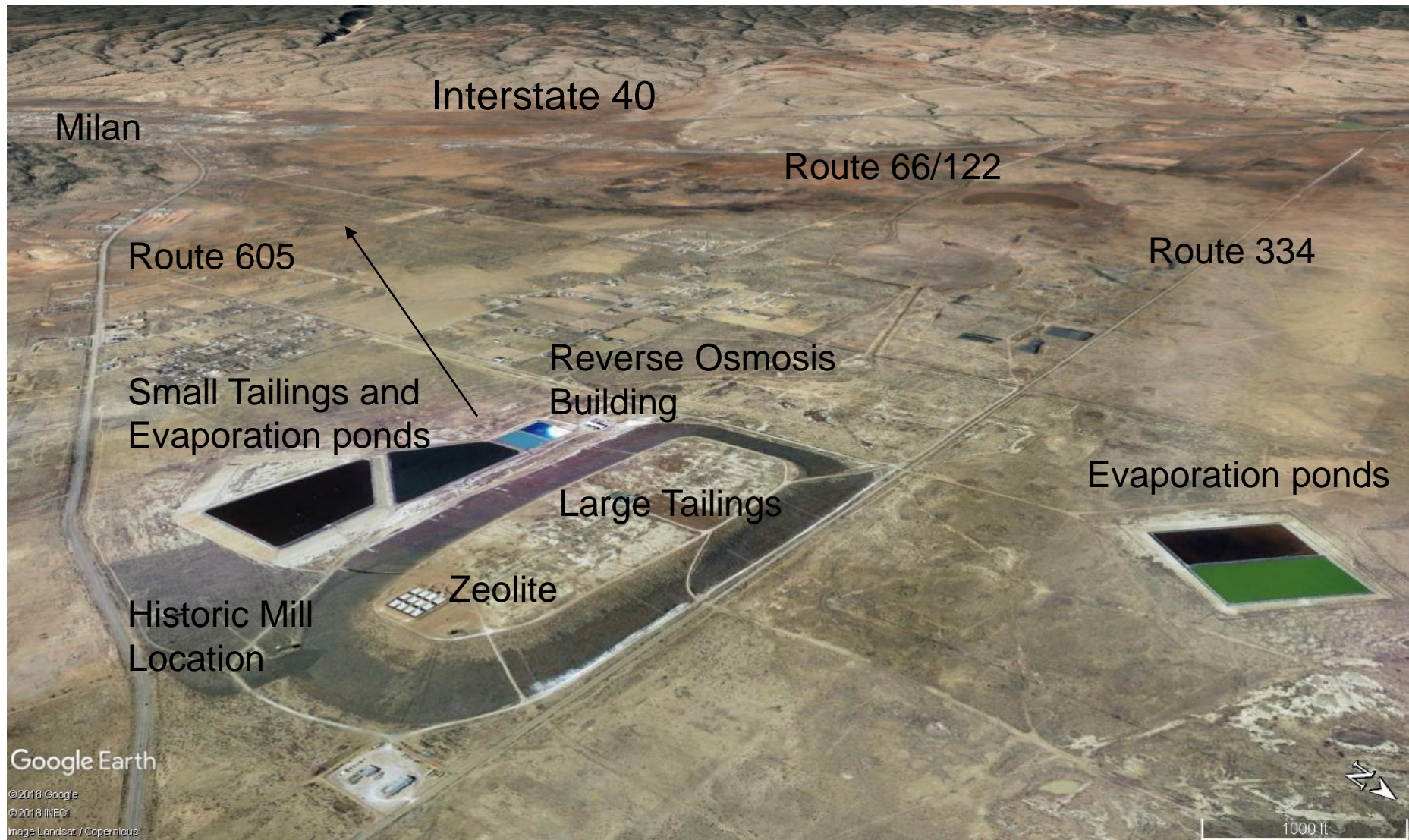


SPECIFIC URANIUM RECOVERY DECOMMISSIONING SITES

Homestake site

- Conventional mill tailings site located in Grants/Milan, NM
- Active groundwater corrective action program
- Upcoming ACL application scheduled for August 2022
 - Performed pre-application audit
- Cover design change to evapotranspiration submitted
- EPA superfund site – coordination with EPA Region 6
- Coordination with the State of NM and DOE
- Community outreach meetings monthly

Homestake Site Grants, NM



Homestake Site 2022 Evaporation Ponds

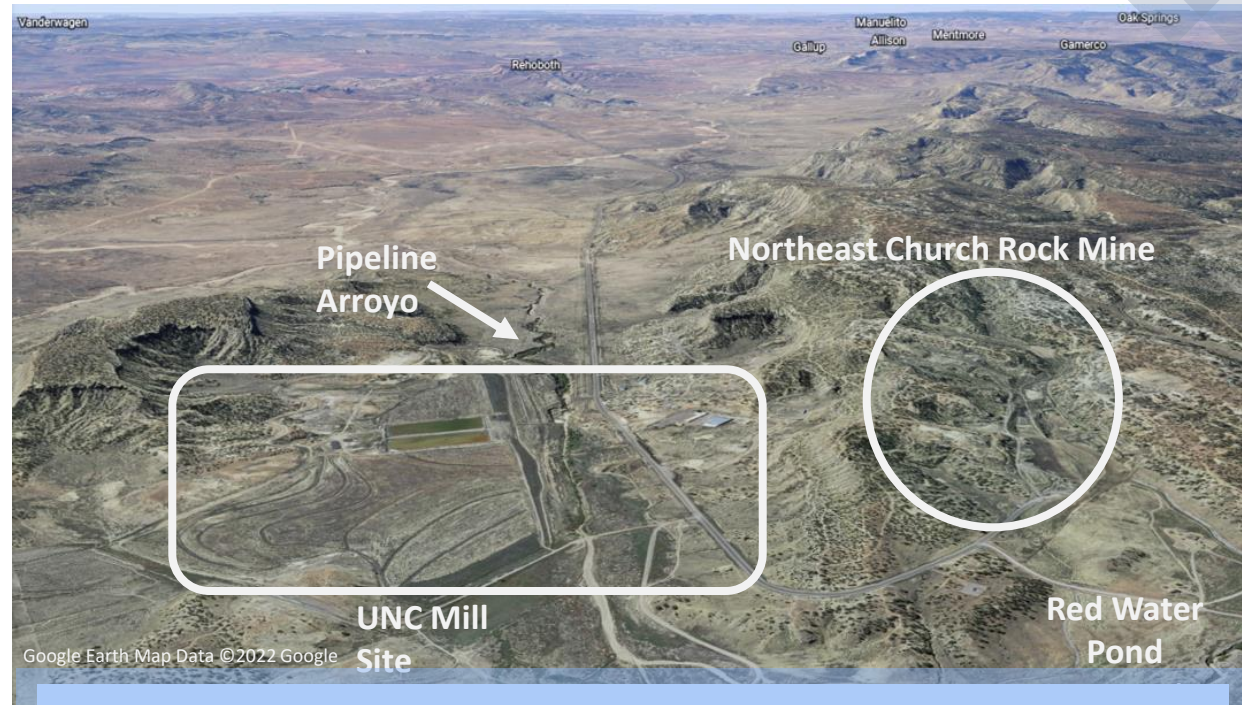


UNC Churchrock site

- Conventional mill tailings site located in Churchrock, NM
- Adjacent Northeast Churchrock uranium mine site – Number 1 Navajo priority site out of over 500 abandoned uranium mines
 - EPA led cleanup
- License amendment request to bring mine waste onto the NRC mill site
 - EIS with consultation with Navajo Nation and coordination with the EPA, DOE, and State
 - Revised schedule due to extension of draft EIS comment period and additional outreach with Navajo Nation
 - Revised SER – on hold per Commission direction
 - Final Environmental Impact Statement – on hold per Commission direction
 - License Amendment Decision – on hold per Commission direction

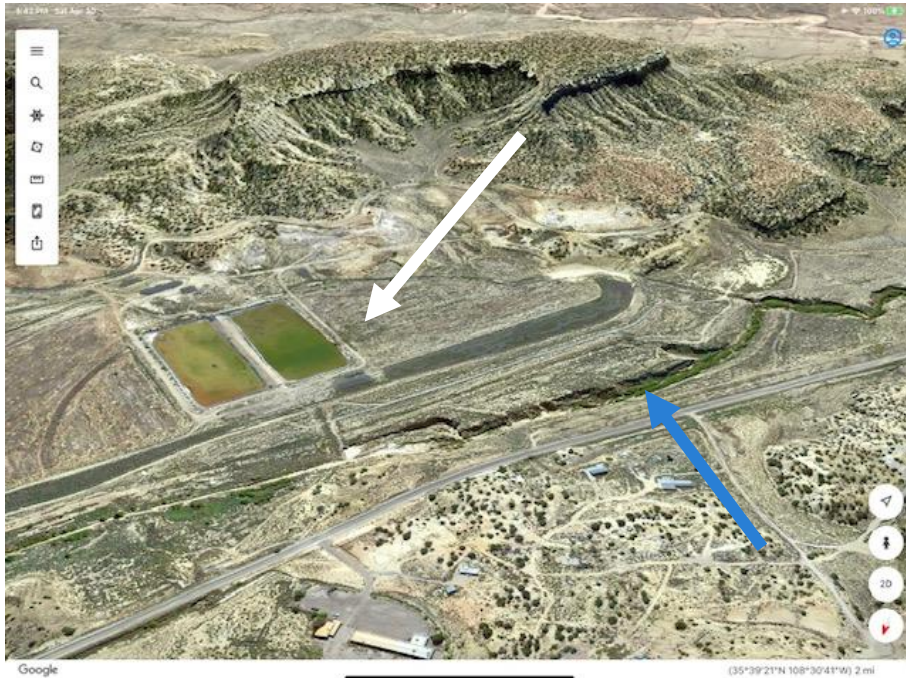
UNC Churchrock uranium mill site

- UNC Church Rock mill tailings site
- Gallup, New Mexico
- Groundwater remediation
- License amendment in progress
 - Mine waste relocation
 - Improved surface water hydrology in the Pipeline Arroyo
- licensing decision on hold



Aerial Photo of UNC Church Rock Site

Pipeline Arroyo



White arrow - evaporation ponds

Blue arrow - Pipeline Arroyo

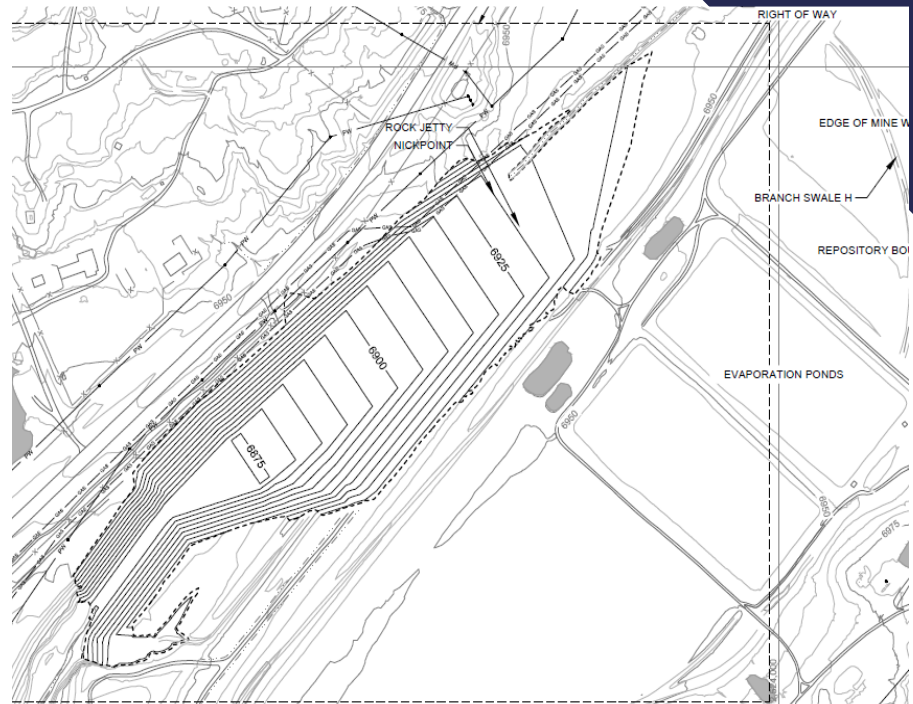
Pipeline Arroyo – looking downstream



Pipeline Arroyo Improvements

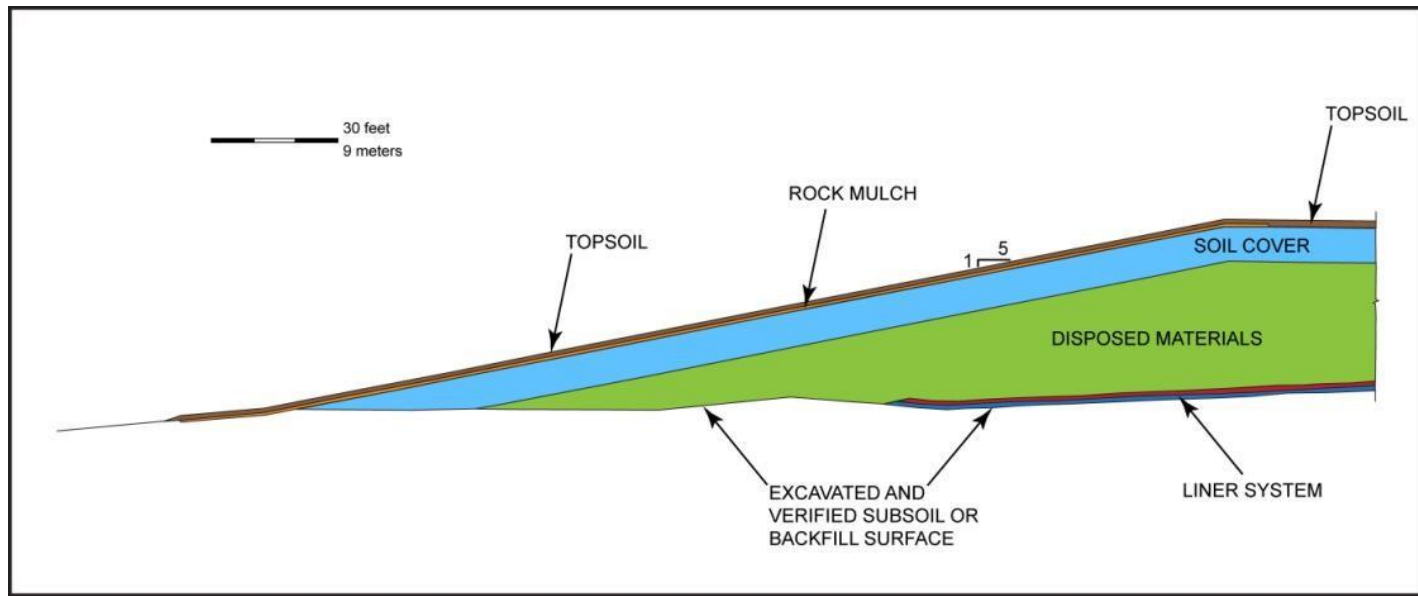
Riprap Chute to Convey flow past rock outcrop

- Licensee plans to construct riprap chute
 - More than 1,000 feet long
 - Roughly 500 feet wide at max width
 - Average slope 5.3 percent (roughly a 53 foot drop over its length)
 - Median riprap diameter – 27 inches
 - Riprap placed 54 inches thick
- Convey surface runoff in a controlled manner



Sequoyah Fuels

- Uranium conversion facility located near Gore, OK
- On-site disposal cell for 11e2 byproduct material
- Cover system construction in progress
- ACL application expected in late summer 2022



Sequoiah Fuels site (2018 photo)



Sequoiah Fuels site (2018 photo)



Sequoyah Fuels site (2018 photo)



ANC Gas Hills

- Conventional uranium mill located in Gas Hills Mining District of Wyoming
- Challenge – lack of funding for reclamation
- NRC retained oversight – site did not transfer to State of Wyoming
- NRC working with Wyoming for potential funding solutions for the site
 - Site needs further characterization and remediation and reclamation



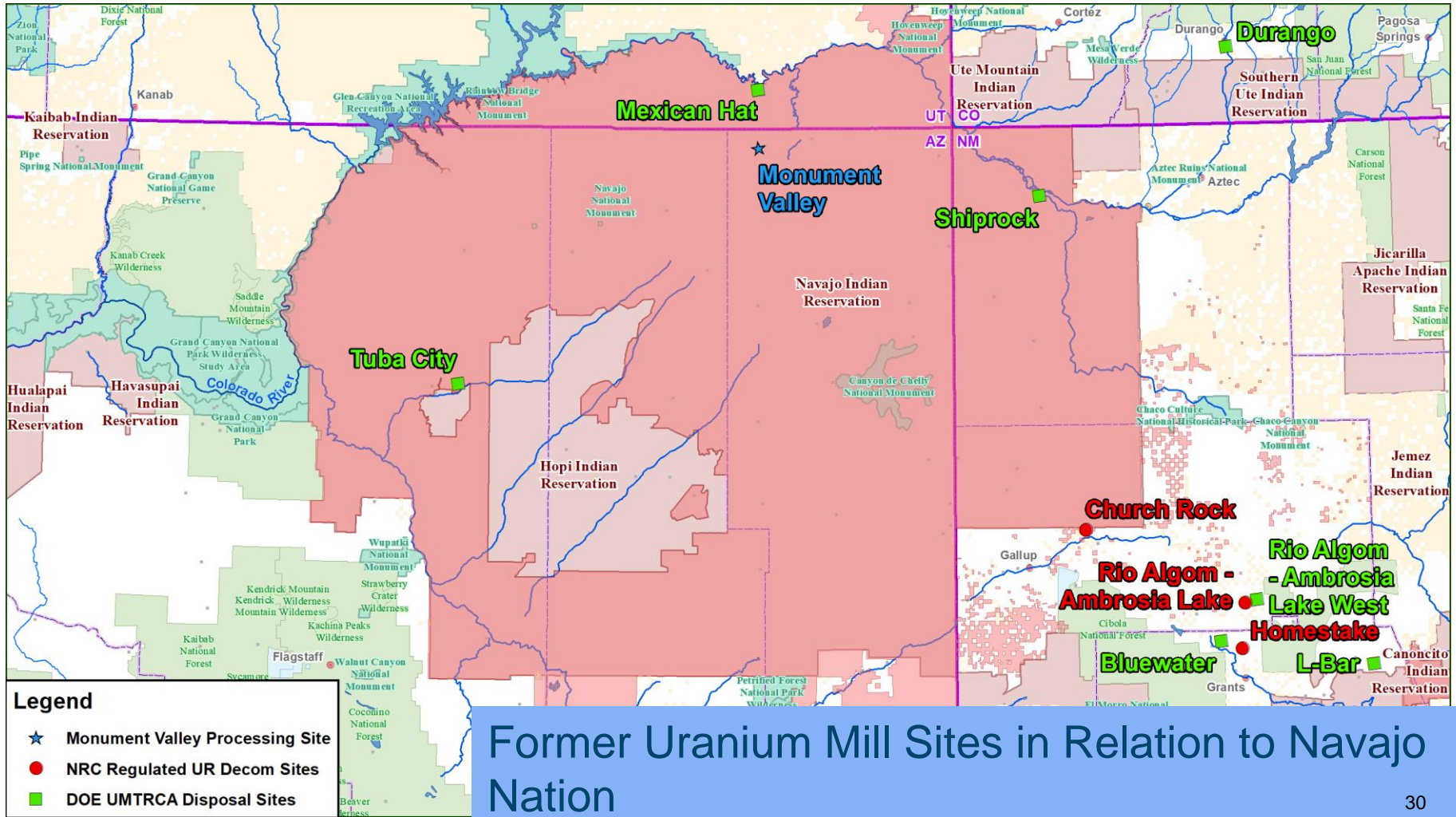
License Termination Process

- Goal to make process more efficient, consistent, and predictable
- Collaborative effort with the DOE, BLM, Agreement States, and licensees
- Most sites in Agreement States
- NRC roles
 - Review Completion Review Report from Agreement States
 - Review Completion Report for non-Agreement State sites
 - Long term surveillance plan
 - Long term care fee
 - Land ownership transfer
 - Oversight through general license of DOE after license termination
- Collaboration with DOE Legacy Management
 - DOE collaboration with BLM
- Collaboration with Agreement States
 - Workshops
 - Early involvement with challenging issues
- Additional 20 sites down the road



DOE long term care sites

- High priority sites include Shiprock, Tuba City, Bluewater
- Quarterly project meetings
- Review of groundwater compliance action plans – Rifle sites, Gunnison, Green river, and future sites
- Moab site – cover design change and future groundwater compliance action plan
- Collaboration and consultation with key Tribes with major reviews such as Groundwater Compliance Action Plans



Former Uranium Mill Sites in Relation to Navajo Nation

UMTRCA Title I Sites on Navajo Nation

- Shiprock Disposal Site near Shiprock, New Mexico
- Tuba City Disposal Site near Tuba City, Arizona
- Mexican Hat Disposal Site near Mexican Hat, Utah
- Monument Valley Former Processing Site near Mexican Hat, Utah



Aerial Photo of Shiprock Site

Bluewater Site



Conclusion

- Current program focus is on decommissioning and collaboration with Agreement States
- Collaborated with Agreement States on the draft ISR rule and associated guidance
- Preparing for multiple ACL applications, some with potential hearings
- Working to improve the license termination process for conventional mill tailings sites and transfer to DOE for long-term care.
 - Collaboration with DOE, BLM, licensees, and Agreement States is key for success
- Complex and challenging issues for decommissioning sites

Questions?



Photo: Glacier NP, Montana