

A series of light blue and white squares of varying sizes arranged in a stepped, staircase-like pattern on the left side of the slide.

Uranium Recovery Program Update June 12, 2023

Bill von Till, Branch Chief

Division of Decommissioning, Uranium
Recovery, and Waste Programs



Presentation Outline

- Staff changes
- Continued Agreement State focus
- in situ recovery (ISR) rulemaking
- Rare Earth pilot project application
- Wyoming application to supplement their Agreement to add Source Material (Rare Earth)
- SA-900 Revisions Inspections
- Evapotranspiration Guidance
- Disa application and SECY
- NuFuels licensed ISR site in NM
- Specific Uranium Recovery Decommissioning sites

Staff Changes

- Division Director Jane Marshall
 - Deputy Division Director Jeremy Groom acting
 - Ashely Roberts left the NRC
 - Jeremy Groom from Region IV has been acting Deputy
- Uranium Recovery and Materials Decommissioning Branch
 - Ron Burrows – retired March 2023
 - John Saxton– retired April 2023 – replaced by Lifeng Guo June 2023
 - Brittany Bolz – left the NRC May 2023
 - Kevin Hayes – new Hydrogeologist (came from the U.S ACE)
- Region IV
 - Geoffrey B. Miller (Acting) Director Division of Radiological Safety and Security
 - Aida Rivera-Varona (Acting) Deputy Director
 - Greg Warnick Chief of the Decommissioning, ISFSI, and Operator Reactor Branch
 - Uranium Recovery inspectors: Stephanie Anderson, Linda Gersey, Michael LaFranzo (on rotation)



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
- In person/hybrid workshop with Agreement States in October 2022
- Virtual Roundtable on Groundwater in May 2023
- In person/hybrid workshop with Agreement States scheduled for November 2023
- Assistance to Agreement States
- Review of Completion Review Reports (CRR's)
- Linking in DOE early on mill tailings sites

ISR Rulemaking

- SECY 19-0123, “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 within 9 months
- SECY 21-0067. dated July 23, 2021
 - Provided proposed rule language to the Commission, see [ML21067A112](#)
 - Draft Supplemental Guidance (NUREG 1569) available at [ML21111A368](#)
 - Awaiting Commission direction on next steps

Rare earth extraction pilot project application

- 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
- Congressional interest – January 2023 letter from Senators Barrosso and Lummis of WY
- Scheduled for a licensing decision in July 2023
- Wyoming is not an Agreement State for source material, so the NRC is lead for the review. Wyoming has submitted a supplement to their agreement to include these types of licenses – see next slide.
- This is an emerging area. Where the uranium or thorium is at source material concentrations, the NRC or Agreement State would license a part of the processing.



Wyoming Amendment to Agreement – Source Material

- Letter of Intent from Governor Gordon dated February 21, 2023, requested to amend Wyoming's Agreement to regulate source material recovered from any mineral resource processed primarily for purposes other than obtaining source material
- NRC has reviewed and had no comments on Wyoming's enabling legislation to support an amended Agreement.
- NRC staff will seek Commission approval later this year to proceed with the amendment of the Wyoming Agreement by adding a specific subsection of the source material category – also done for 2018 Agreement.
- When the Agreement goes into effect, the NRC will transfer the Rare Earth Resources license to the State of Wyoming.
- Amended Agreement should go into effect late 2025 or early 2026.

SA-900 Revisions

- SA-900 "Termination of Uranium Milling Licenses in Agreement States" revision issued April 19, 2023 (ML23019A059)
- Draft Revision issued for Public Comment in October 2022
 - Comments received from two Agreement States and DOE-LM
- Changes to SA-900
 - Incorporate lessons learned since the 2010 revision
 - Incorporate the principles of NRC's Tribal Policy Statement adopted in 2017 to guide NRC engagement and consultation with Federally Recognized Tribes
 - Enhance early communication between the NRC and Agreement States

Inspections

- UR inspection program resides in Region IV's Division of Radiological Safety and Security (DRSS), Decommissioning, ISFSI, and Operating Reactor (DIOR) Branch
 - Greg Warnick, Branch Chief
- Operating Uranium Recovery Inspections
 - IMC 2801 - issued October 2021
 - Crow Butte (standy-by), inspected annually
- Decommissioning Uranium Recovery Inspections
 - IMC 2602 - issued December 2022
 - Homestake Mining, inspected semi-annually
 - Rio Algom Mining and UNC Church Rock, inspected annually
 - ANC Gas Hills, inspected biennial

Evapotranspiration Guidance

- Applicability:
 - New ET covers (or conversion) at uranium mill tailings and low-level waste sites
- Key focus areas:
 - Site characterization (incl. testing), design (incl. modelling), construction and revegetation, monitoring and maintenance (short- and long-term)
- Key issues:
 - Site suitability, vegetation establishment/long-term sustainability, erosion, changing climate, radon flux issues (e.g., plant roots), monitoring strategies
- Recently published: Basis for Technical Guidance to Evaluate Evapotranspiration Covers (NUREG/CR-7297) Sep 27, 2022
- Schedule:
 - Issue draft for public Comment (late CY 2023) > Final Report (~mid CY 2024)

Key Issues with Evapotranspiration Covers

- ET covers are site specific – what works one place may not work somewhere else. For example, the amount of precipitation.
- A variety of factors can influence ET cover success. A range of uncertainties need to be considered in the design.
- May take several attempts to successfully establish vegetation on an ET cover.
- NRC staff remains concerned about erosion resistance of ET covers.
 - Particularly if vegetation is not established (or if it dies later)
 - NUREG 1623 – Design of Erosion Protection for Long-Term Stabilization design methodologies largely based on rock-to-rock contact.

Disa application and SECY

- In August 2022, Disa Technologies, Inc. submitted a license application to the NRC to utilize the high-pressure slurry ablation technology to remediate contaminated sites.
- NRC staff had not previously licensed the high-pressure slurry ablation technology.
 - NRC staff conducted a regulatory review to identify the appropriate framework
 - NRC staff also performed an acceptance review of the application
- NRC staff did not accept the application for review, uranium milling is the required framework
- Given the interest in and questions about NRC's regulation of mine waste remediation technologies, the Commission issued the following direction in SRM M230126 (dated 2/16/23):
 - Within 120 days of the issuance of this SRM, the staff should provide a notation vote paper to the Commission evaluating the advantages and disadvantages of different options for the licensing of emerging technologies used for remediation of mine waste. The paper should analyze any legal constraints on the options and discuss the viability of alternative statutory and regulatory interpretations.
- NRC staff is on track to provide its paper to the Commission in late June.
- May 15, 2023, letter to the Commission from Senators Lummis and Kelly

NuFuels licensed ISR Site

- Licensed in 1998, in timely renewal. Delayed due to access issues.
- Recent drilling - *In accordance with the recommendation of the 2017 RPA 43-101 Technical Report, after satisfying Navajo Nation information requests, NuFuels initiated a core drilling campaign on December 1, 2022 at the Church Rock Section 17 property. The scope of this campaign was limited to obtaining core material from the Church Rock uranium deposit to be removed from the property, and then chemically assaying that core at a commercial laboratory for uranium to verify historical data used in the RPA 43-101 Technical Report.*
- High Navajo interest – I attended a Red Water Pond Navajo Community meeting on April 12.
- License renewal.



SPECIFIC URANIUM RECOVERY DECOMMISSIONING SITES

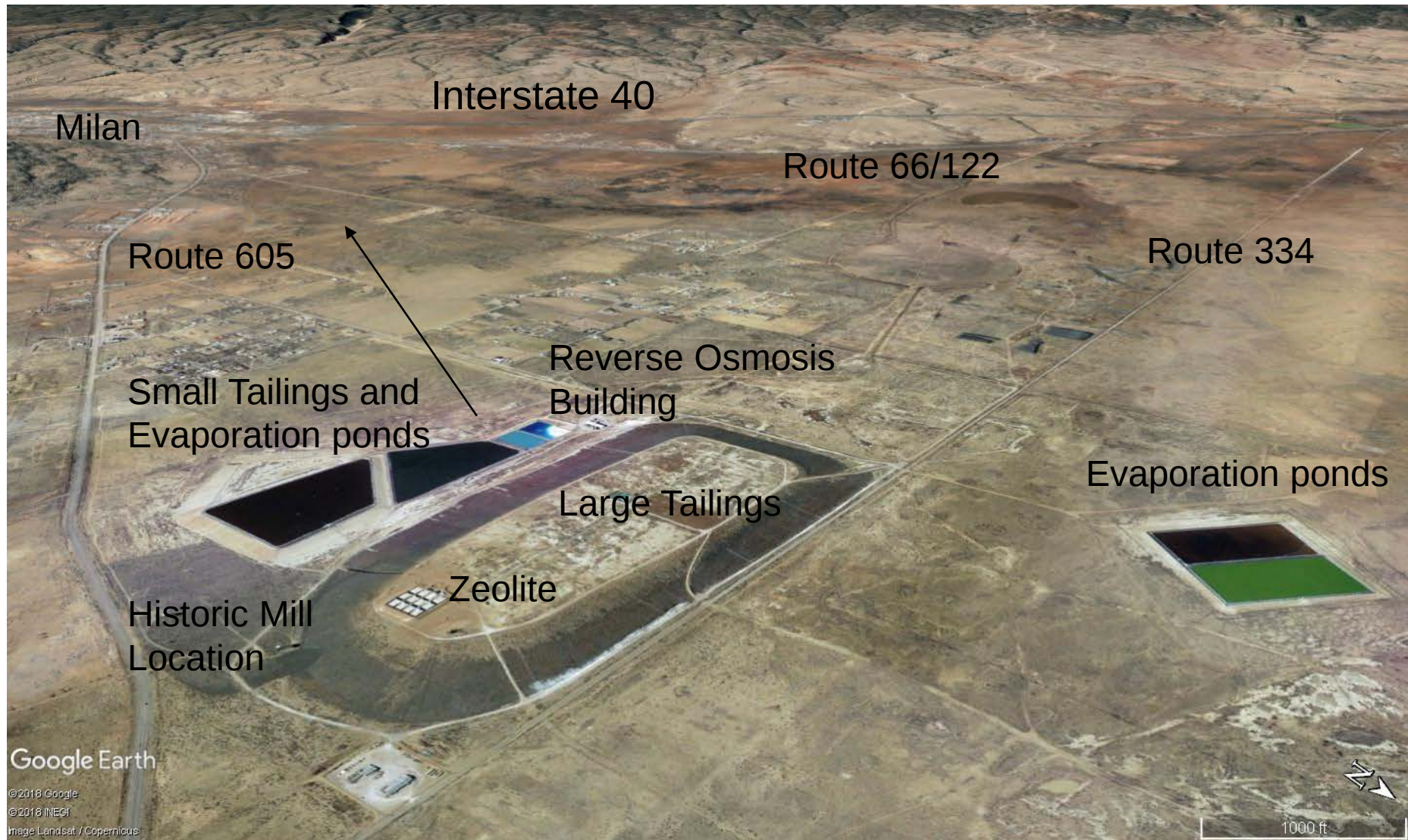
Homestake site

- Conventional mill tailings site located in Grants/Milan, NM
- Active groundwater corrective action program
- ACL application submitted on August 8, 2022
 - Very complex geology and large plume under many private properties
 - Need ownership or institutional controls
 - Not acceptable for full review – see next slide
 - May 17, 2023, letter ML23119A006
 - May 19, 2023, letter from Dave Pelton ML23136B197
 - *“we will be resuming review of information related to the revised GCAP proposal required by Condition 6 of the confirmatory order”*
- Cover design change to evapotranspiration to be resubmitted in July
- EPA superfund site – coordination with EPA Region 6
- Coordination with the State of NM and DOE

Homestake ACL Application

- Principal reasons for non-acceptance of the LAR for review are:
 - The LAR has not detailed whether the pertinent estates within the proposed control boundary have been acquired and does not describe the efforts and timelines for these acquisitions. With these uncertainties, the NRC staff is unable to undertake a detailed review of the LAR.
 - While the application addressed several of the NRC staff comments from the presubmission audit and summary dated May 17, 2022, several significant comments previously discussed with the applicant were either not fully addressed or the assumptions made were not supported.
 - Information from the ongoing groundwater pumping indicates that the GCAP continues to remove site contaminants from the groundwater notwithstanding claims that contaminants have been removed to a level that is as low as is reasonably achievable. Without explanation of how these data are consistent with HMC's claims, the NRC staff is unable to undertake a detailed review of the LAR.
- Public meeting between HMC and NRC on June 15 to provide more detail. See detailed talking points.

Homestake Site Grants, NM



Homestake Site 2022 Evaporation Ponds

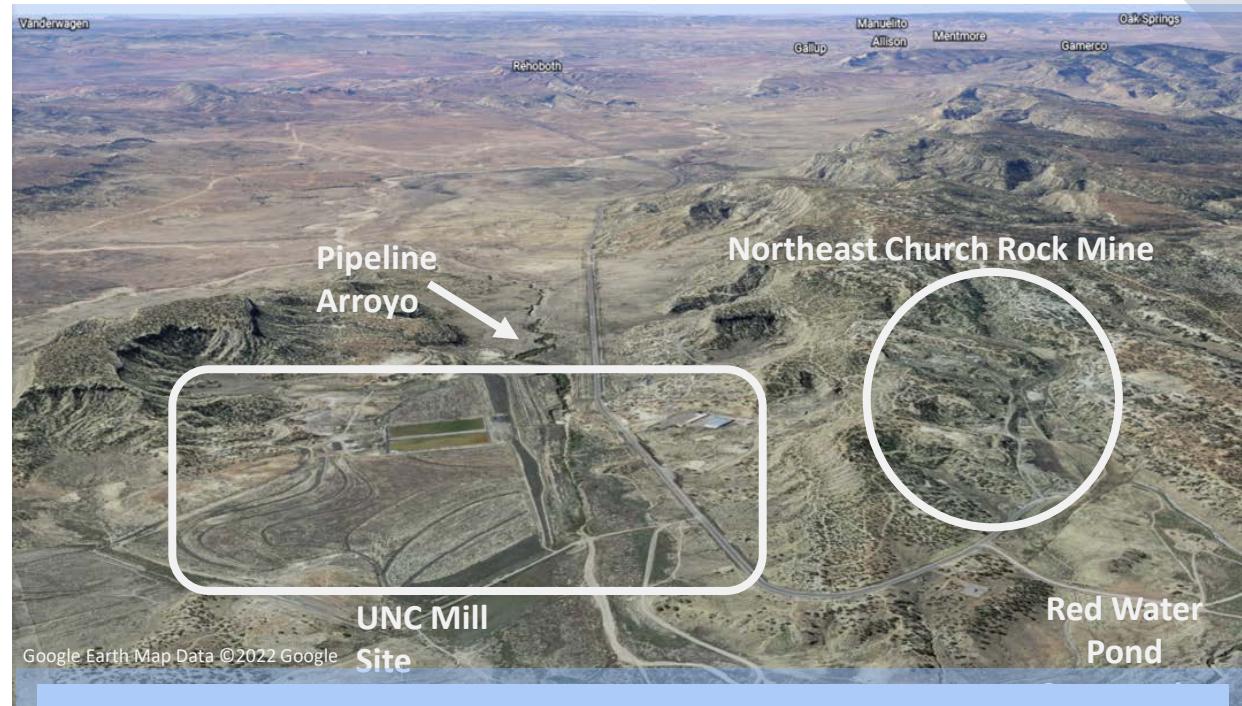


UNC Church Rock site

- 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
 - Commission involvement
 - Revised SER – Completed February 2023
 - Final Environmental Impact Statement – Completed February 2023
 - License Amendment Decision – Completed February 2023
 - Work with EPA on timing of construction activities
- Inspections – focus on erosion risk (civil engineering expert)

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

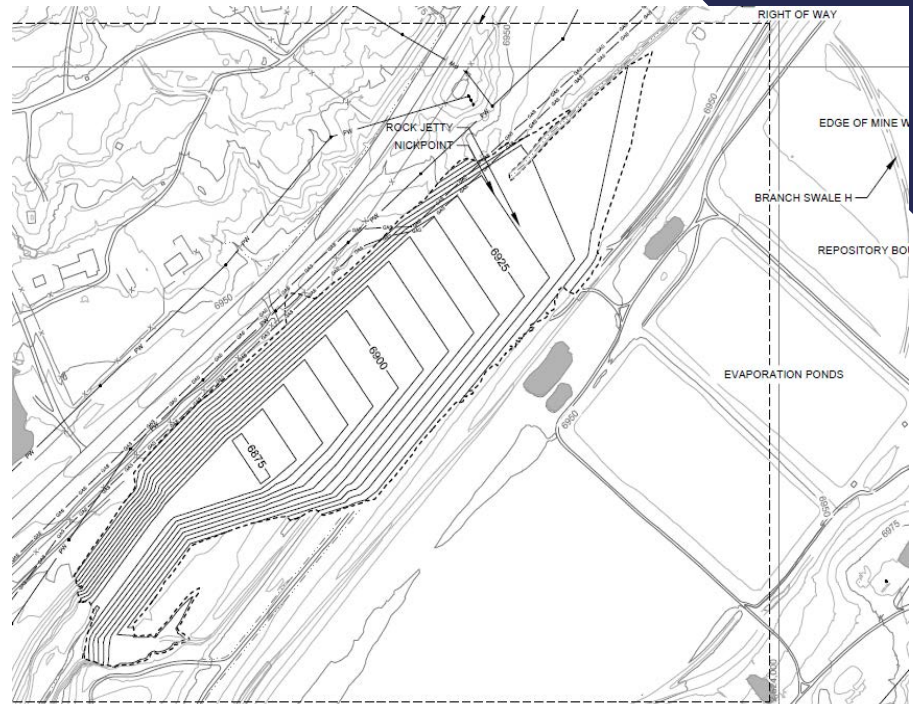
Pipeline Arroyo – looking downstream



Pipeline Arroyo Improvements

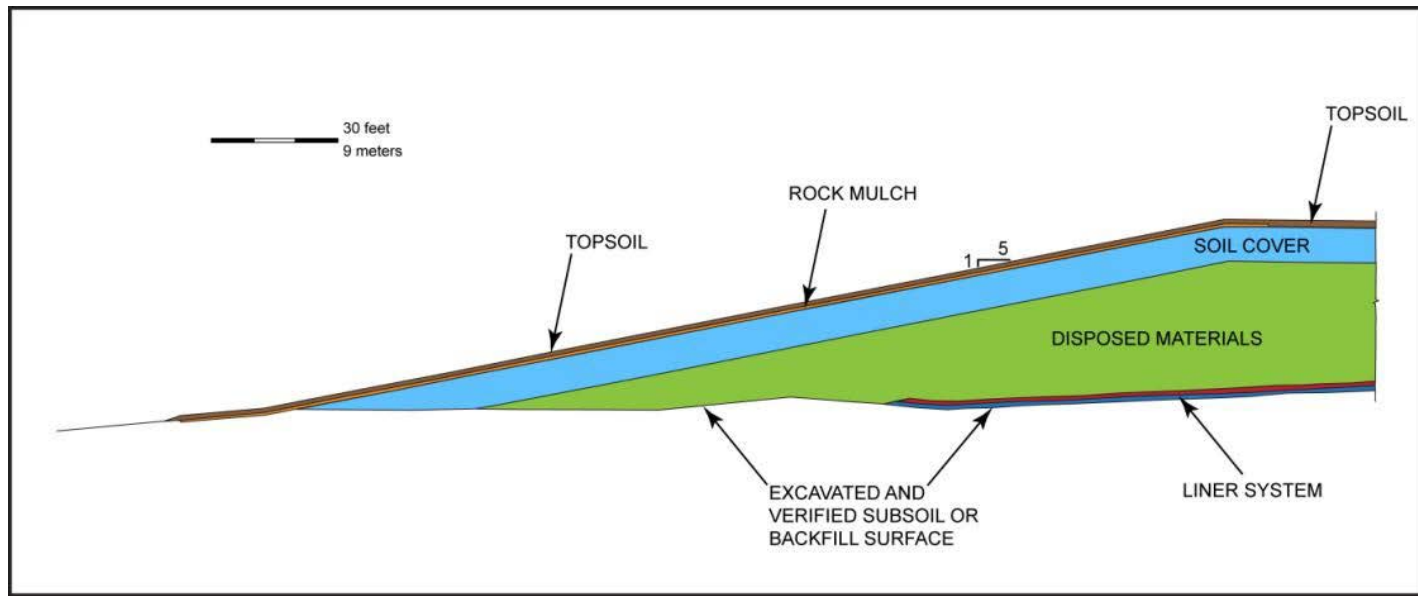
Riprap Chute to Convey flow past rock outcrop

- 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 2023



Sequoyah Fuels site (2018 photo)



Sequoyah Fuels site (2018 photo)



Sequoyah Fuels site (2018 photo)



Questions?



Photo: Church Rock, NM