

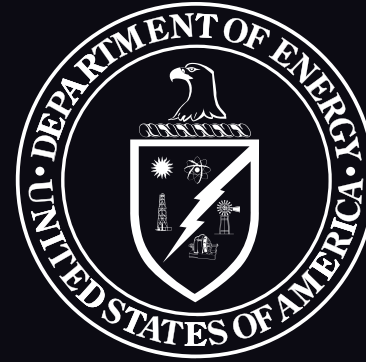
Shiprock, New Mexico, Disposal Site

Water Treatment Unit Project

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Tuesday, June 16, 2026



U.S. DEPARTMENT *of* ENERGY

Office of Legacy Management

Presentation Outline

- Office of Legacy Management Mission
- Site History
- Site Elements and Design
- Groundwater Status
- Current Site Conditions
- Water Treatment Unit Project
- Evaporation Pond Stabilization Project
- Public Resources
- Contact Info



Shiprock disposal cell



Since 2003, the U.S. Department of Energy (DOE) Office of Legacy Management (LM) has been conducting long-term surveillance and maintenance at sites where nuclear waste has been disposed, where residual contamination remains, and where passive or active treatment of groundwater contaminated by radionuclides or other contaminants of concern is being conducted.

Anticipated Sites in LM Through FY 2031 Requiring LTS&M

Site Category

Category 1 activities typically include records-related activities and stakeholder support.

Category 2 activities typically include routine inspections (site visits are conducted to verify the integrity of engineered or institutional barriers, monitoring/maintenance, records-related activities, and stakeholder support).

Category 3 activities typically include operation and maintenance of active remedial action systems, routine inspections (site visits are conducted to verify the integrity of engineered or institutional barriers), monitoring/maintenance, records-related activities, and stakeholder support.

DIP = Disposal/Processing DR = Decommissioned Reactor

LM Authority – defined by U.S. Congress

LM Has Authority To:

- Manage and maintain properties where remediation has been completed
- Address responsibilities associated with former uranium processing sites
- Monitor groundwater and maintain barriers and containment systems
- Preserve and provide access to vast collection of records
- Work with local communities, states, federal agencies, and Tribes



LM Does Not Have Authority To:

- Mine or process uranium (private companies)
- Transport uranium (private companies)
- Remediate, address, or close abandoned uranium mines (EPA)
- Address health-related issues associated with former uranium mining (Indian Health Services and Agency for Toxic Substances and Disease Registry)
- Relocate disposal cells (U.S. Congress)



Site History: Historic Lease Approval and Mill Operation

Navajo Mill Operation

- Lease approval;
BIA/NN approved
- 1954-1963: Kerr-McGee
- 1963-1968: Vanadium Corp
of America
- 1973: Lease expiration



VCA Mill, Shiprock, New Mexico — July 1965

Site History: Site Surface Remediation & Access

- 1978: Uranium Mill Tailings Radiation Control Act (UMTRCA)
- 1978-1986: DOE and EPA cleanup activities
- 1983: DOE entered Cooperative Agreement with NN
- 1996: LM received Transfer of Custody and Custodial Access Agreement
- 2005: Site Right of Way (ROW) issued
- 2026: Updated ROW application with NN Council and RDC

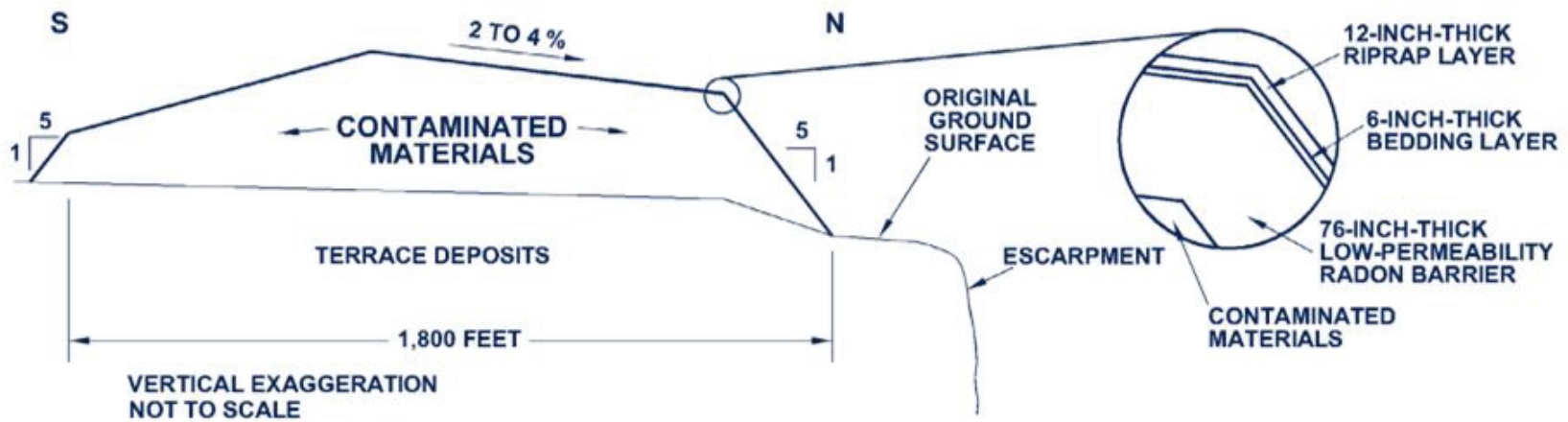


Shiprock disposal cell construction, 1986



Site Elements and Design: Disposal Cell

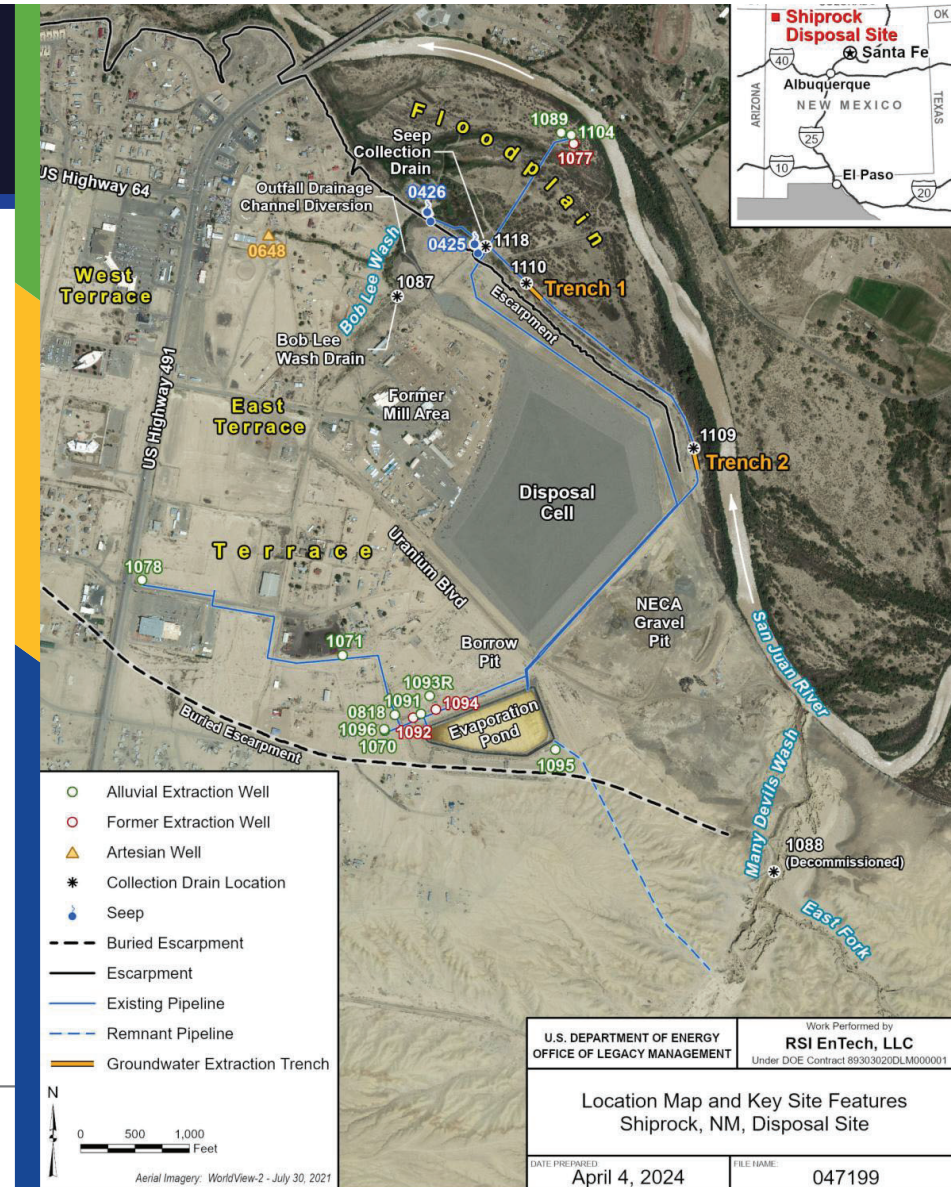
- Disposal cell for mill waste containment
 - Built in 1986
 - 77 acres
 - 2.5 million tons of material inside the cell
 - 200–1,000-year design life
 - Annual inspections of cell integrity



Schematic of Shiprock disposal cell construction

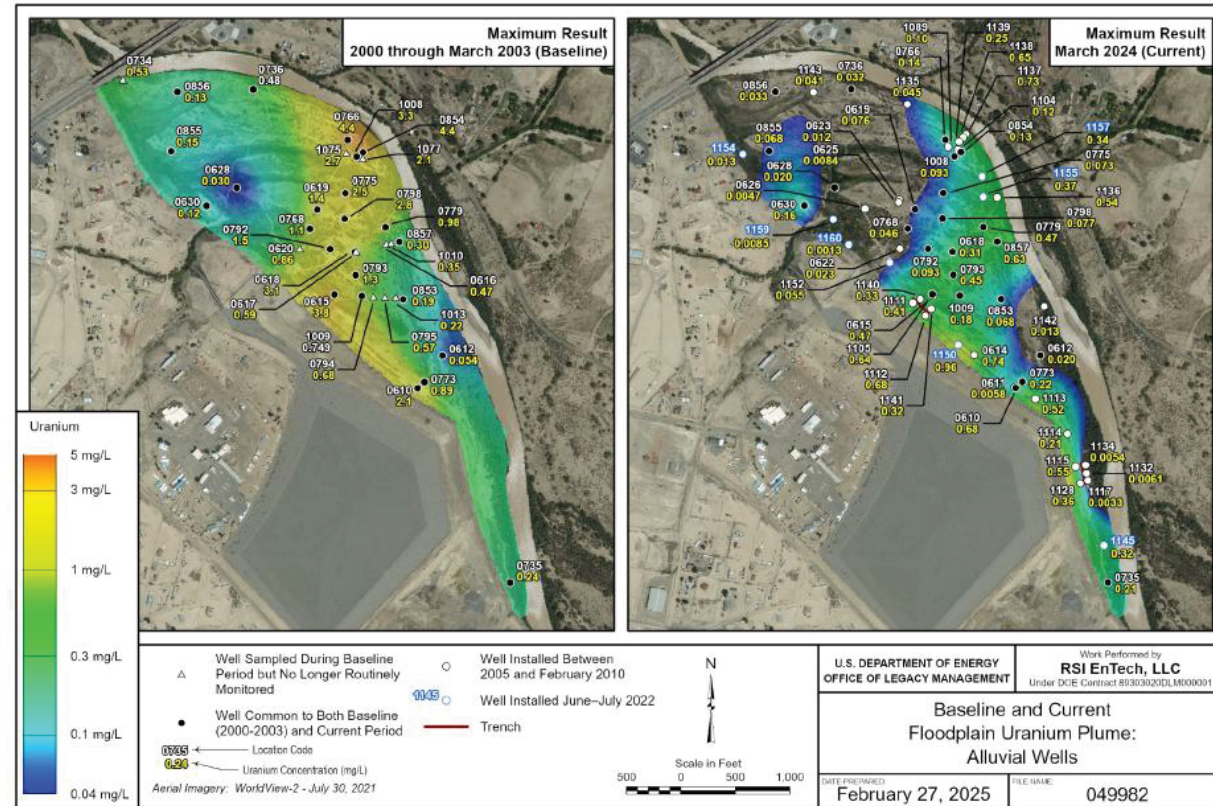
Site Elements and Design: Groundwater Extraction System

- 1950s & 60s mill activities contaminated groundwater at the site
- To address groundwater contamination, LM:
 - Groundwater Compliance Action Plan (GCAP)
 - Active remediation
 - Pump from site extraction locations and treat the groundwater
 - 2003 – 2026: Evaporation Pond
 - 2026 – forward: New Water Treatment Unit
- The town of Shiprock receives its drinking water from Farmington, NM



Current Site Conditions - Uranium

- Uranium plume size and concentrations have decreased at site with active remediation (2003 – current).
- Groundwater is sampled twice a year; data is publicly available.
 - gems.lm.doe.gov
- LM is currently working to better understand time required to reach cleanup concentration goals of site contaminants, including uranium.



Current uranium plume conditions; cleanup goal: 0.044 mg/L



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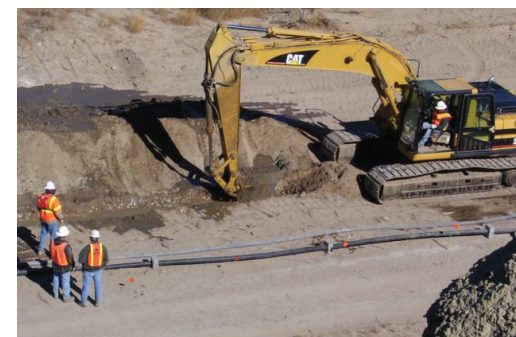
Operations and Maintenance Work



Site visit with Tribal partners, 2000



First discharges to pond, 2003



Extraction system expansion, 2006



Collecting seep sample, 2010



Public meeting, 2019



Pond maintenance, 2025

Regulatory and Environmental Compliance

Regulatory Compliance

- U.S. Nuclear Regulatory Commission (NRC)
- Code of Federal Regulations
 - 10 CFR Part 40.27
 - 40 CFR Part 192
- Long-Term Surveillance Plan (LTSP)
- Groundwater Compliance Action Plan (GCAP)



US Army Corps
of Engineers®



Environmental Compliance

- National Environmental Policy Act (NEPA) requirements
- Interagency consultations
- Tribal agency engagements
- Project or field action specific



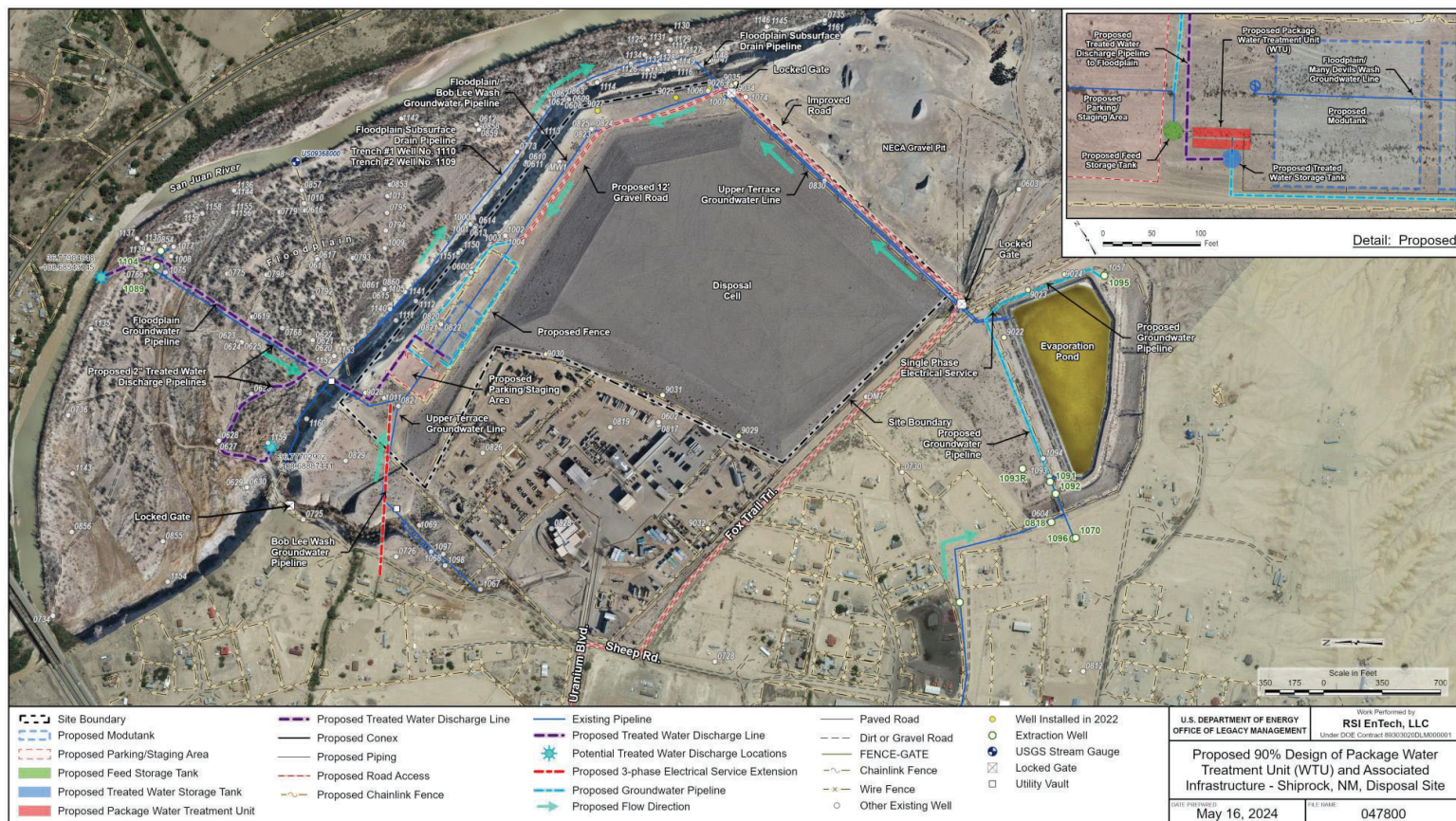
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Water Treatment Unit Project



Water Treatment Unit Project



Infrastructure map



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Water Treatment Unit Project *(continued)*



Road improvements



Bioswale (Navajo AML suggestion)



Modular evaporation pond

Water Treatment Unit

Electrocoagulation

To remove suspended solids

Reverse Osmosis

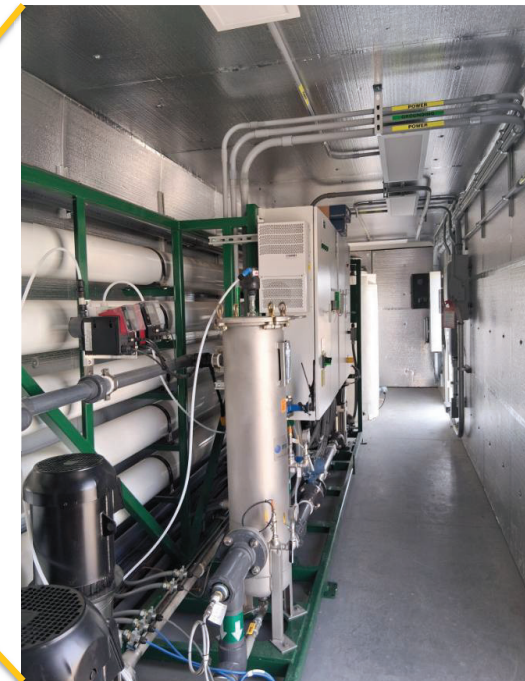
To remove dissolved solids



Electrocoagulation system interior



Water treatment unit containers



Reverse osmosis system interior

Water Treatment Unit: Compliance and Reporting

- Treated water will be discharged to the environment
- Treated effluent must meet water quality standards set by NN EPA and US EPA
- National Pollution Discharge Elimination System (NPDES) permit
- All reporting is publicly available
 - echo.epa.gov

The screenshot shows the EPA ECHO website. At the top is the EPA logo and the text "United States Environmental Protection Agency". A search bar for "Search EPA.gov" is in the top right. Below this is a navigation bar with links: "Environmental Topics", "Laws & Regulations", "Report a Violation", and "About EPA". The main header features the "ECHO" logo and the text "Enforcement and Compliance History Online", with "Login" and "Contact Us" links. A "Quick Search" sidebar on the left contains icons and links for "Search Options", "Analyze Trends", "Find EPA Cases", "Data Services", "Help", and "News". The main content area has a "Quick Search" header and a "Search By" section with two buttons: "Location" and "Facility Name/ID". Below these is a text input field labeled "Enter city, state, and/or zip code" and a "Search" button. A link for "More Search Options" is also present. A paragraph explains the website's purpose: "Use EPA's Enforcement and Compliance History Online website to search for facilities in your community to assess their compliance with environmental regulations. You can use ECHO to:". Below this is a list of capabilities: "Search for Facilities", "Investigate Pollution Sources", "Search for EPA Enforcement Cases", "Examine and Create Enforcement-Related Maps", and "Analyze Trends in Compliance & Enforcement Data". To the right of this list are three icons with links: a book icon for "Read the Quick Start Guide", a video icon for "Watch a Video Tutorial", and a wrench icon for "Explore the Tool Guide".



Evaporation Pond



Shiprock Evaporation Pond

- 11-acre pond
- Installed in 2002
- 45-mil HPDE single liner
- Received over 270 million gallons of water since its installation
- Routine inspections



Shiprock evaporation pond, April 3, 2026

Future Pond Actions

- Planning and design work necessary for permanent closure
- Requires significant level of effort
- Interim stabilization efforts for several years
- Continue to communicate pond status with community



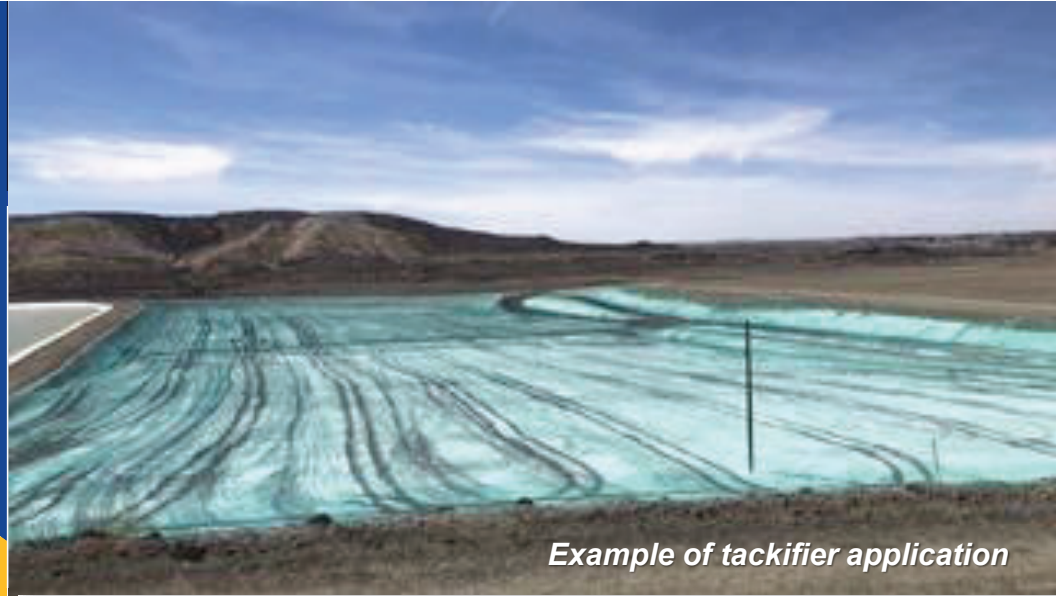
Shiprock evaporation pond, January, 2025

Interim Pond Stabilization

- Tackifier is an adhesive
- Tackifier is applied by spraying the compound to surfaces
- Proven effectiveness in other uses



Example of application process



Example of tackifier application

- Not harmful to the environment (nontoxic)
- The color is added to ensure coverage
- Reapplication every two years
- Interim state during closure planning



Public Resources

- Hard copies available for links and resources
- LM website
- Navajo Resource List
- Shiprock disposal site webpage
 - Links to site-specific public documents
 - Site Fact Sheet
- Geospatial Environmental Mapping System



Shiprock fact sheet



Contact Information

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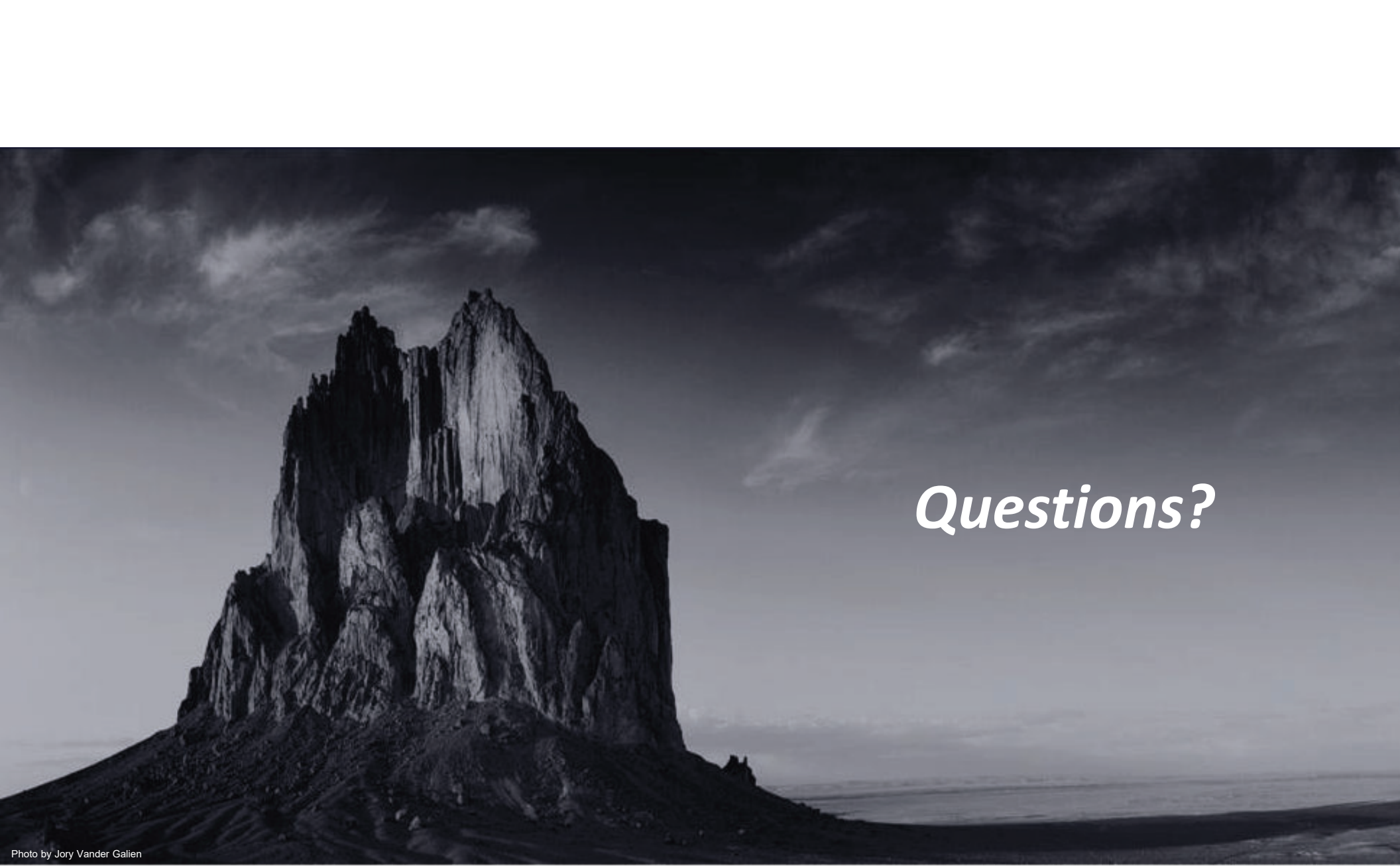
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Questions?

Photo by Jory Vander Galien



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