



Radioactive & Hazardous Materials Committee Meeting

Uranium Mine Legacy Cleanup Activity

Grants, New Mexico
September 6, 2022

Jerry Schoeppner
Director, Mining and Minerals Division
Energy, Minerals, and Natural Resources Department

Grants Mining District



- **History**
- **Overview**
- **Plan to Address Legacy Sites**
- **Activity Completed to Date**
- **Future Activity**

08.04.2005 10:55

Grants Mining District



- **History**
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History of the GMD

1940's-2002's: GMD was the major uranium producing region in the US

- Most activity between 1950's through 1980's
- 300 million+ pounds of uranium produced – mostly from McKinley/Cibola counties (152)
- Mostly underground operations, few open pit (St. Anthony, Jackpile)
- Mostly dry mines (210 dry, 49 wet)

Most activity occurred prior to any environmental regulations

1972: Clean Water Act

1974: NM Water Quality Act

1978: NM WQCC Regulations

1993: NM Mining Act

Legend

x

MAS/MILS Uranium Mines

Source of Mine Information:
EPA Uranium Location Database

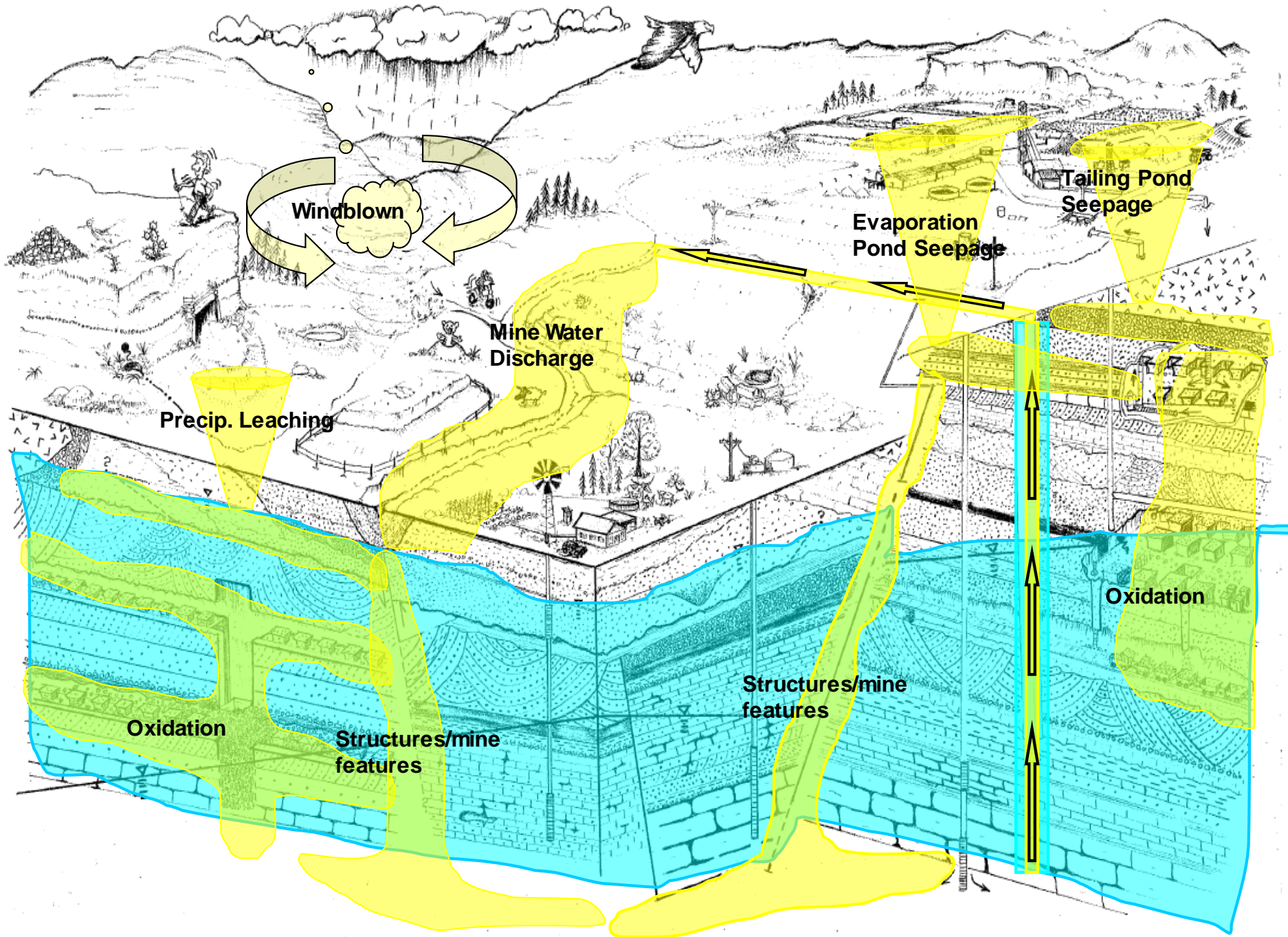
Km
500



Grants Uranium District Contaminant Sources

- Mine dewatering with surface discharge of raw mine water
- Seepage from evaporation and mill tailing ponds
- Underground mine disturbance, causing hydrochemical Δ
- Mine stope leaching
- Heap leaching
- Rainfall leaching of waste and abandoned ore stockpiles
- Windblown contamination

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Grants Mining District

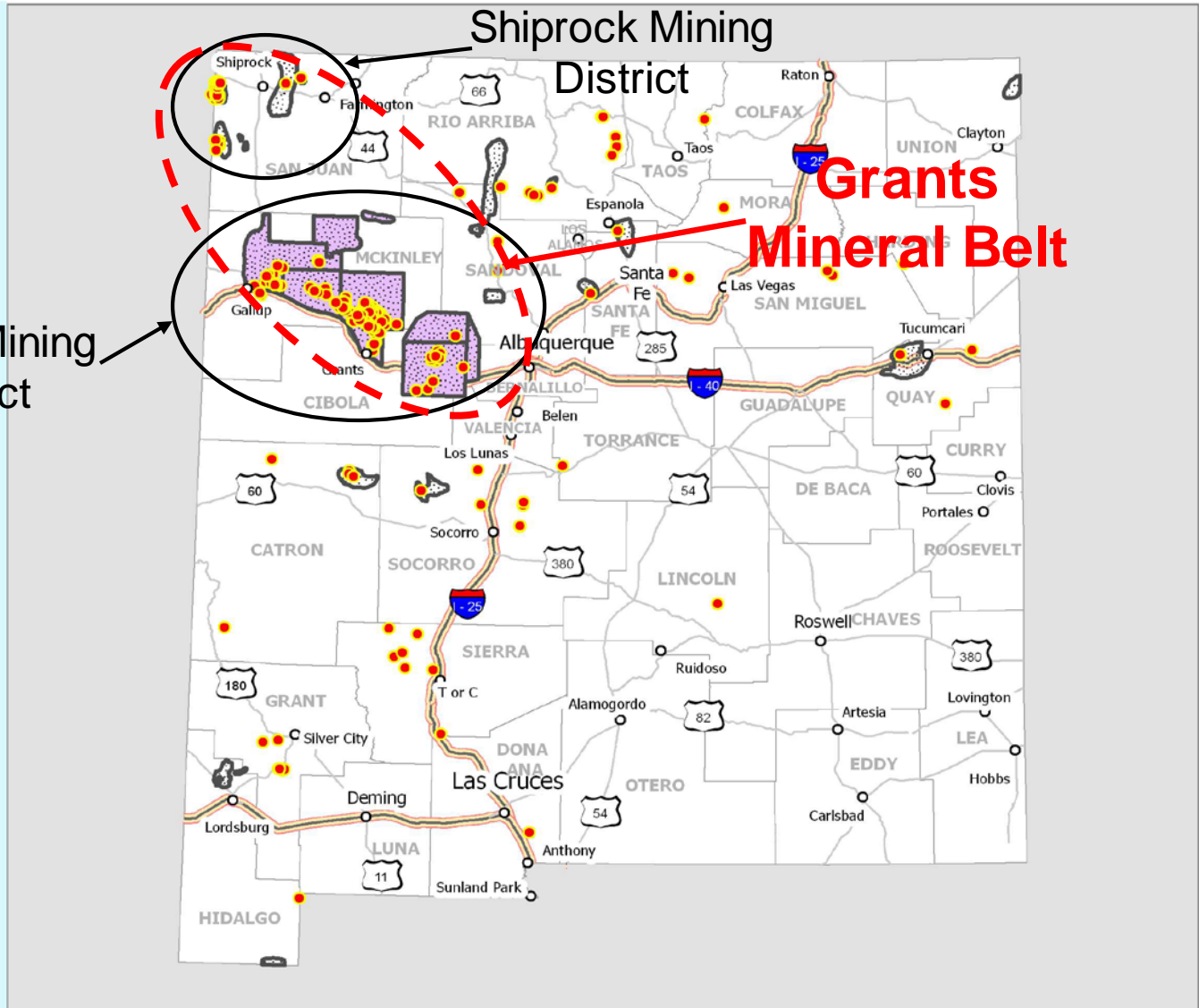


- History
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New Mexico
Grants Uranium
Belt and State-wide
Distribution of
Abandoned
Uranium Mines
(AUM)

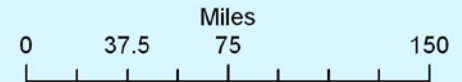
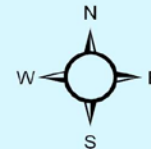
Grants Mining
District



Created by New Mexico
Mining & Minerals Division
for NM Environment Dept,
January 2009

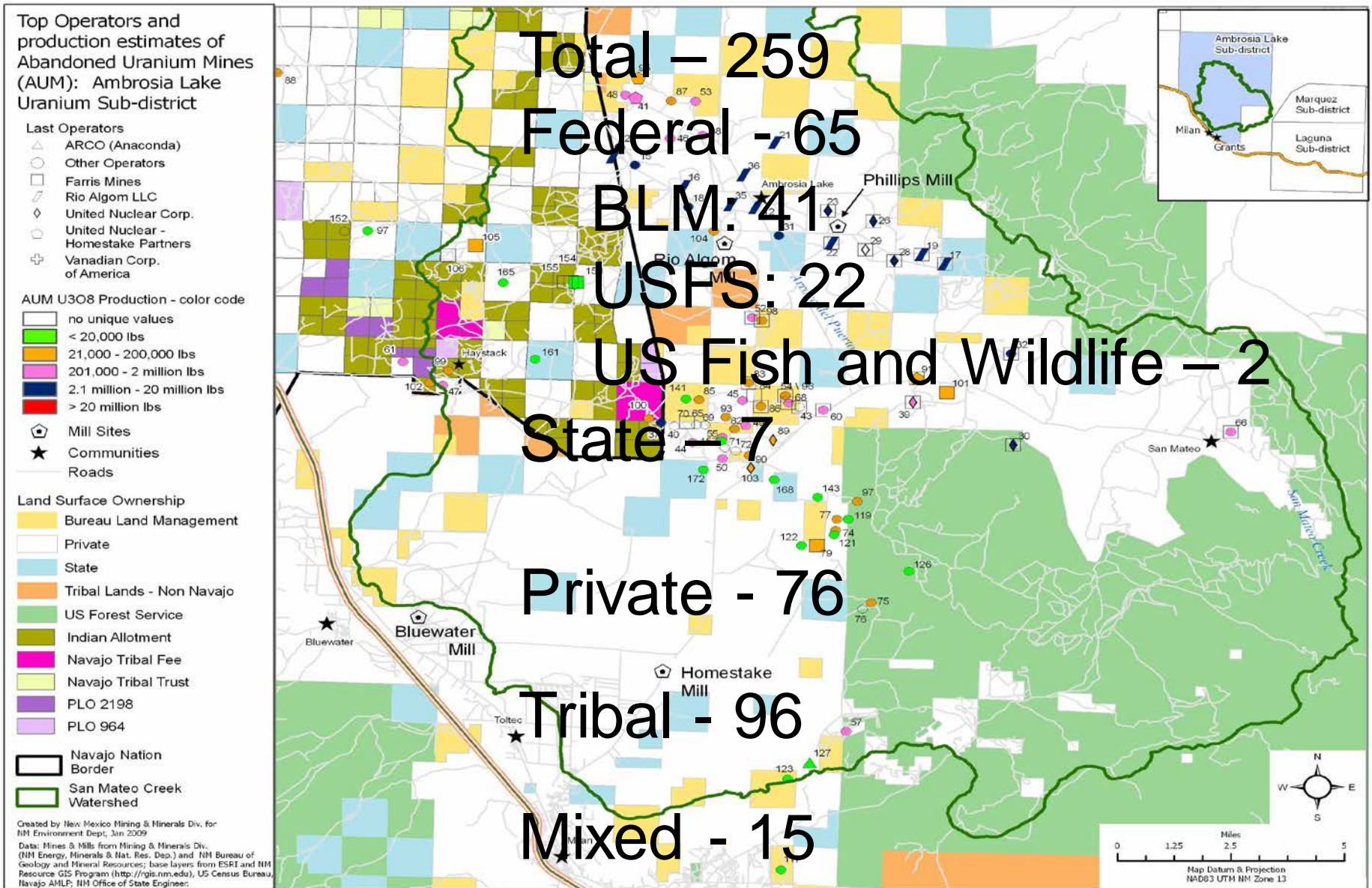
North American Datum 83
Universal Transverse Mercator
NM Zone 13

Data:
Mining & Minerals Div. (NM Energy, Minerals & Nat. Res. Dep.),
New Mexico Bureau of Geology and Mineral Resources;
New Mexico Resource GIS Program (<http://rgis.nm.edu>)



1:4,113,602

Surface Ownership – Grants Mining District



Grants Mining District



- History
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EPA Five-Year Plan

Grants Mining District, New Mexico

2015-2020 Five-Year Plan

To

Assess and Address Health and Environmental Impacts of Uranium Mining and Milling

2006: LA Times published series on legacy uranium mines

2007: House Committee on Oversight and Government Reform held hearings

2008: EPA Region 9, Five-Year Plan (Tribal lands)

2009: EPA Region 6, Five-Year Plan (non-Tribal lands)

2022: Update to plan for 2021 - 2025



EPA Five-Year Plan Partners

- **Federal: EPA, DOE, NRC, BLM, BIA, ATSDR, USGS, USFS (US COE)**
- **Tribal Nations: Navajo Nation, Acoma, Laguna**
- **State: NMED, EMNRD-MMD, OSE, DOH, BGMR, ONRT, State Universities**
- **Local communities, organizations, residents**



Regulatory Regime

- State of New Mexico
 - ▣ *New Mexico Water Quality Act* (NMED Ground Water Quality Bureau)
 - ▣ *New Mexico Mining Act* (EMNRD Mining and Minerals Division)
- Federal Government
 - ▣ U.S. Environmental Protection Agency (EPA)
 - *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)*, aka the Superfund law
 - Tronox Mines
 - Listed Superfund Sites
 - Other CERCLA actions
 - ▣ U.S. Nuclear Regulatory Commission (NRC)
 - *Licenses* for Uranium Mill Sites
 - ▣ Bureau of Land Management (BLM) and U.S. Forest Service (USFS) Actions
- Tribes, Nations, Pueblos
 - ▣ Sites on Navajo Nation
 - ▣ Jackpile-Paguate Superfund Site, Laguna Pueblo

EPA Five-Year Plan Objectives

1. Assessment of Water Supplies;
2. Assessment and Cleanup of Legacy Uranium Mines;
3. Assessment, Cleanup and Long-term Management of Former Uranium Milling Sites;
4. Assessment and Cleanup of Contaminated Structures;
5. Communicate and coordinate with communities

Legend

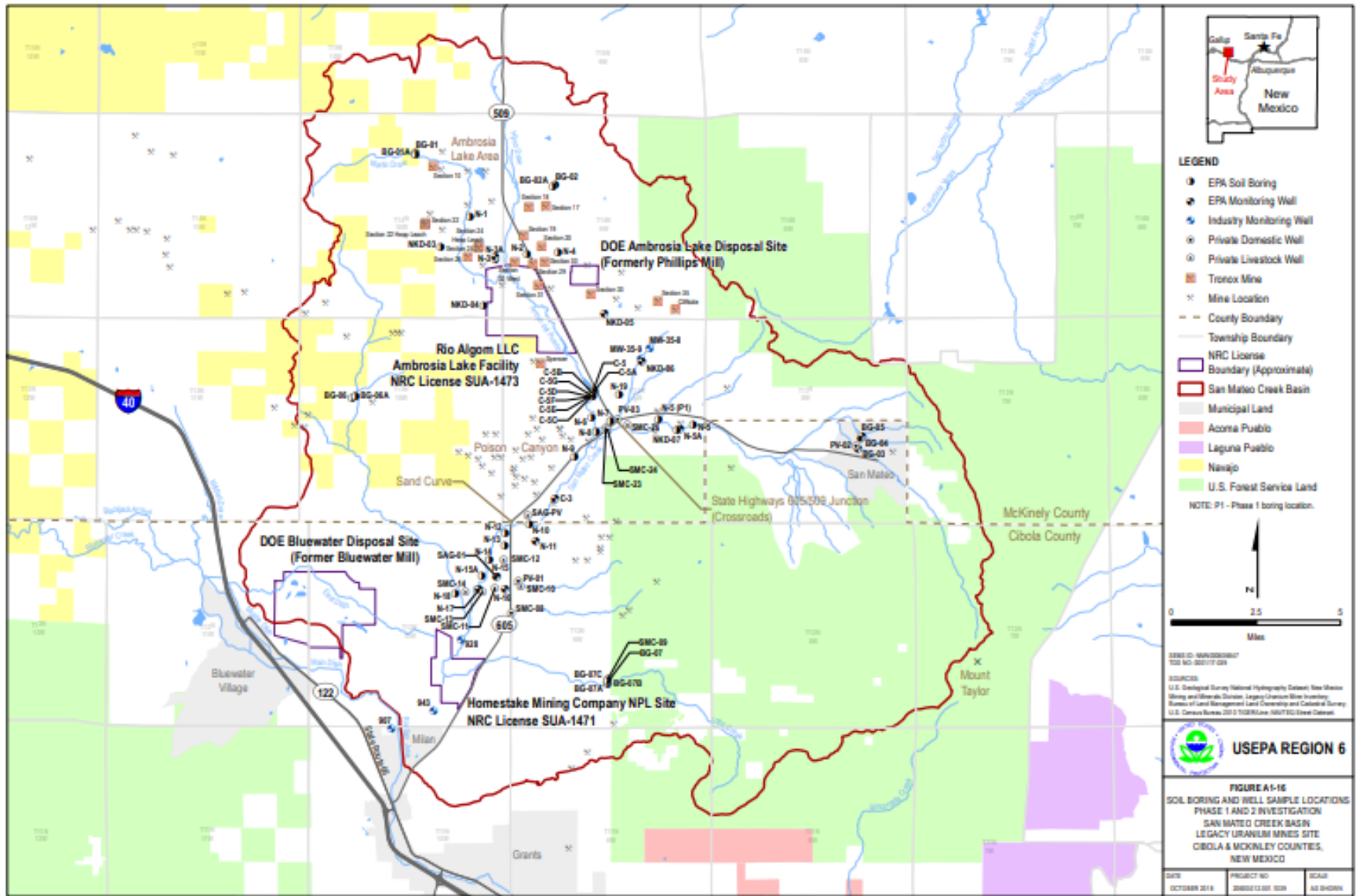
x MAS/MILS Uranium Mines

Source of Mine Information:
EPA Uranium Location Database

Km
500



Assessment of Water Supplies



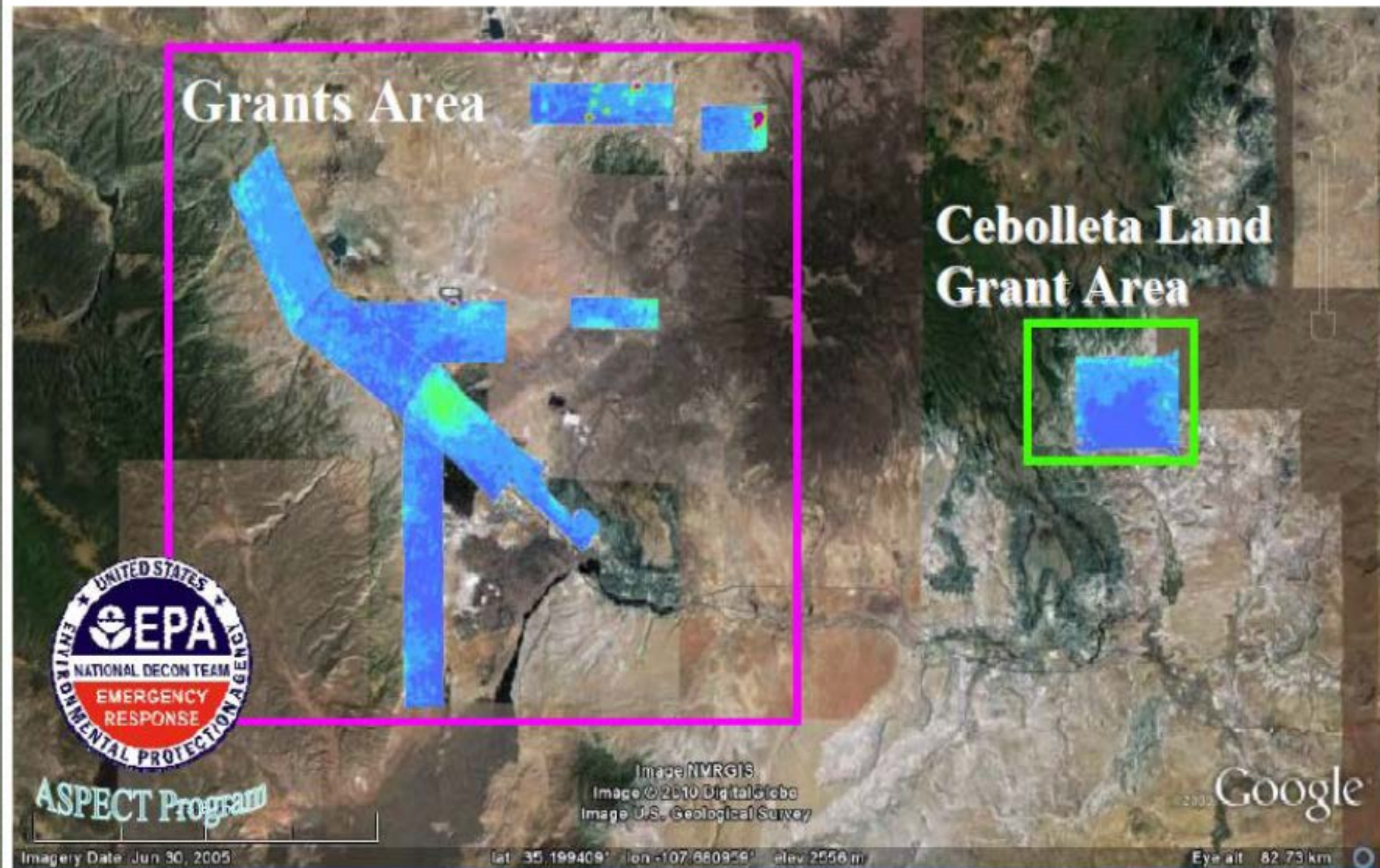
Summary of Work Completed/Planned Assessment, Cleanup of Legacy Mines

2010 – 2015 Plan		2015 – 2020 Plan
<u>Legacy Uranium Mines</u> <ul style="list-style-type: none"> - Compile existing information - Assess mine impact areas - Evaluate Jackpile for NPL 	<ul style="list-style-type: none"> - 97 mines assessed <ul style="list-style-type: none"> • aerial gamma survey • screening assessments • 10 investigations – Dysart #2, John Bully, Johnny M, Marquez, Mary #1, Sandstone, Sections 10,12,15,30 • 1 cleanup – San Mateo Mine - Jackpile on National Priorities List December 2013 	<ul style="list-style-type: none"> - In 2016, engage potential responsible parties - In 2016, BLM complete cleanup at four mines (Spencer and Barbara J Complex) - In 2016, USFS complete cleanup at four mines (Old La Jara, Taffy, Vallejo, Zia) - In 2016, EPA complete assessment on two mines and begin cleanup (Sections 35, 36); initiate assessment on four mines (Sections 10, 22, 24, 30W) - In 2017, complete assessment on four mines and begin cleanup (Sections 10, 22, 24, 30W); initiate assessment on four mines (Sections 17, 19, 30, 33) - In 2019, complete cleanup of three mines (Sections 35, 36, Johnny M) - In 2020, begin cleanup of four mines (Sections 17, 19, 30, 33) - Conduct remedial investigation/feasibility study at Jackpile

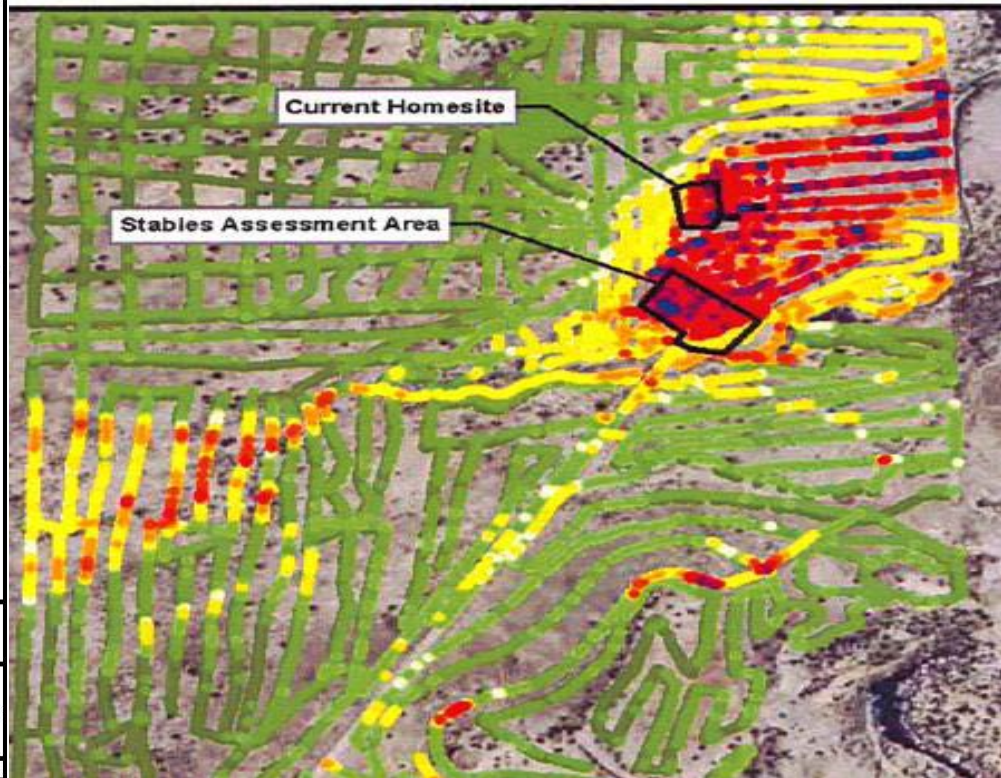
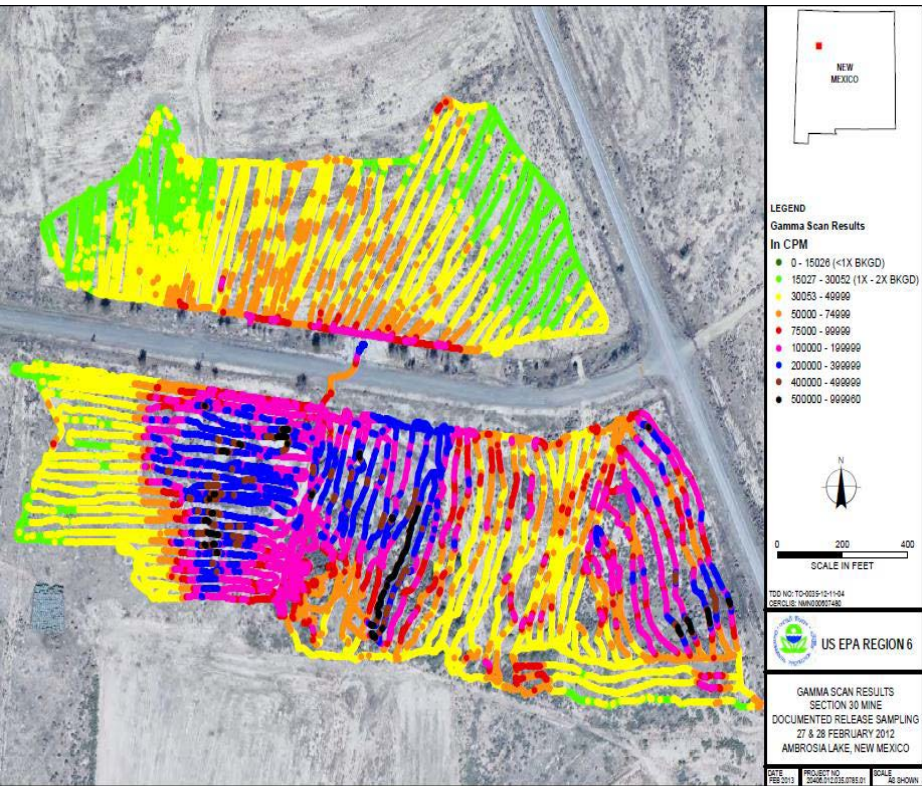
Aerial Radiological Surveys

New Mexico Uranium Survey

January 2010



Aerial Radiological Surveys



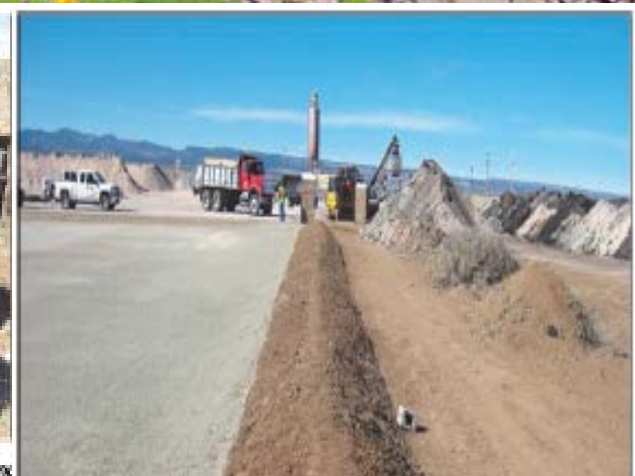
Radiological Survey Buggy



Sun Clan Road Radiation Site—building with foundation rocks from Jack Pile Mine was demolished and replaced



Hogan Mine Area—contaminated parking rocks at residence were removed



Waste Staging Area and Berm for Mormon Farms Removal Action

Mine Screen Assessments (Pre-CERCLIS Screen)

Prioritized based on

- Physical hazards: open shafts, vent holes, adits, declines, high walls in pits
- Environmental hazards: potential contamination of soil or surface/ground water

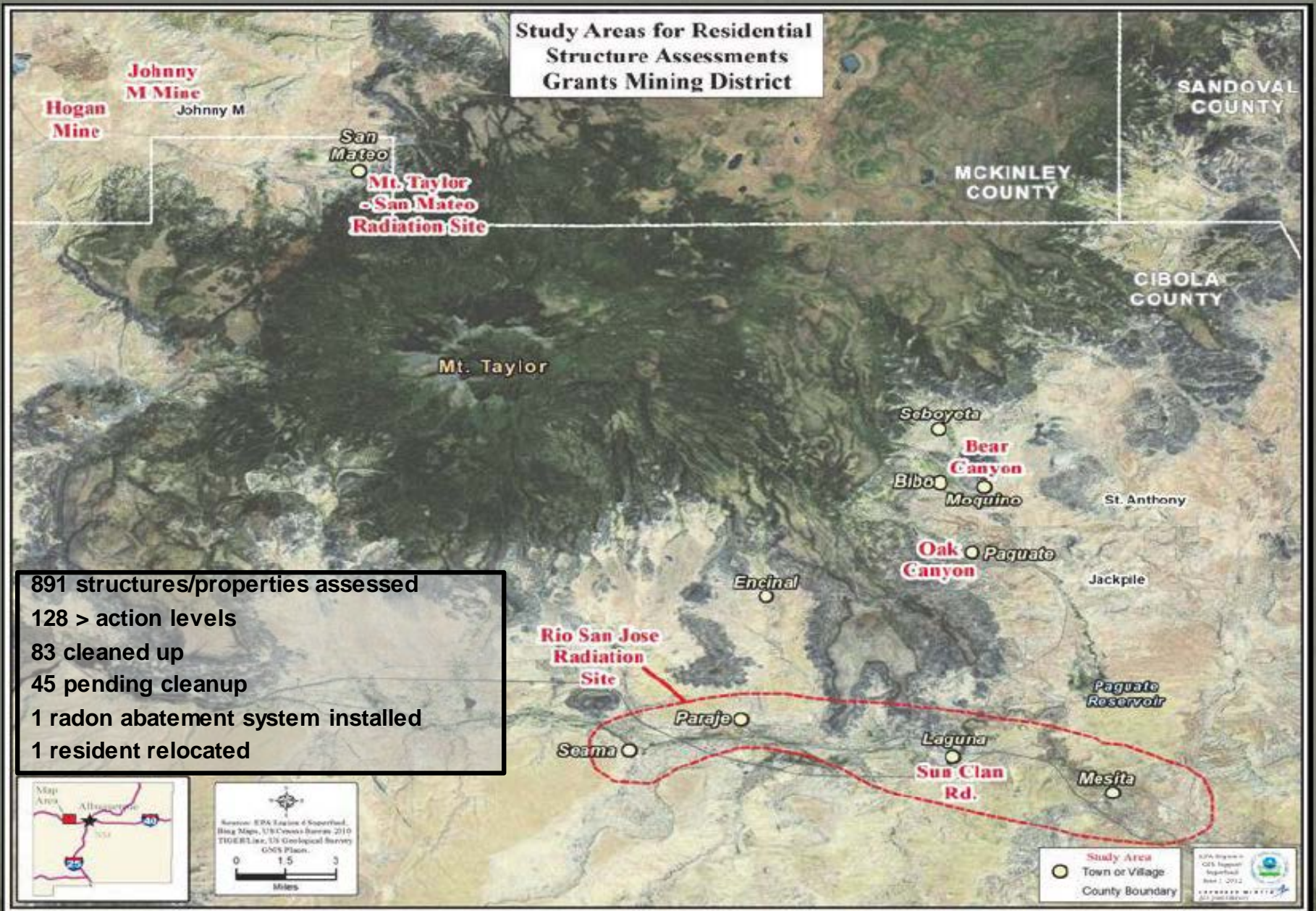
Summary of Work Completed/Planned Assessment, Cleanup Mills

2010 – 2015 Plan		2015 – 2020 Plan
Goals	Accomplished	Goals
<u>Former Uranium Mills</u> <ul style="list-style-type: none"> – Surveillance and maintenance – Additional groundwater studies 	<ul style="list-style-type: none"> – Inspected and maintained disposal cells (Phillips Mill, Bluewater Mill, L-Bar Mill) – Demolished all remaining structures at the Rio Algom Mill site – Installed 10 new monitoring wells at the Bluewater Mill; additional constituents/more frequently sampling of wells at the Bluewater and Rio Algom Mill sites <ul style="list-style-type: none"> • better understanding of hydrology 	<ul style="list-style-type: none"> – Maintain disposal cells (Phillips Mill, Bluewater Mill, L-Bar Mill) – In 2017, complete groundwater feasibility study for United Nuclear Corporation – Northeast Church Rock site and update the Record of Decision to account for current site conditions – In 2017, complete investigation at Homestake Mill site and issue final groundwater and tailings pile Record of Decision – 2020 NRC license termination at Rio Algom site; handoff to DOE for surveillance and maintenance – 2020 NRC begins handoff transition to DOE

Summary of Work Completed/Planned Assessment, Cleanup Structures Communication

2010 – 2015 Plan		2015 – 2020 Plan
<u>Residential Areas</u> <ul style="list-style-type: none"> - Identify contaminated structures - Identify contaminated properties 	<ul style="list-style-type: none"> - Initial mission completed with 900 structures and properties assessed <ul style="list-style-type: none"> • 772 found below action levels, owners informed • 128 found above action levels and cleaned up 	
<u>Communication</u>	<ul style="list-style-type: none"> - Four Community meetings held - Five -Year Plan updated twice 	<ul style="list-style-type: none"> - Clearly communicate ongoing and planned actions/activities - Provide information the community needs

Residential Structure Assessments



Grants Mining District

- **History and Overview of GMD**
- **Plan to Address Legacy Sites**
 - **Assessment of Water Supplies**
 - **Assessment of Legacy Mines**
 - **Assessment of Residential Structures**
 - **Aerial and Ground Radiological Surveys**
 - **Assessment of Mills**
 - **Jackpile Mine/Public Health Surveillance**
- **Future Activity**

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Uranium Geospatial Database



New Mexico Uranium Mines Dashboard

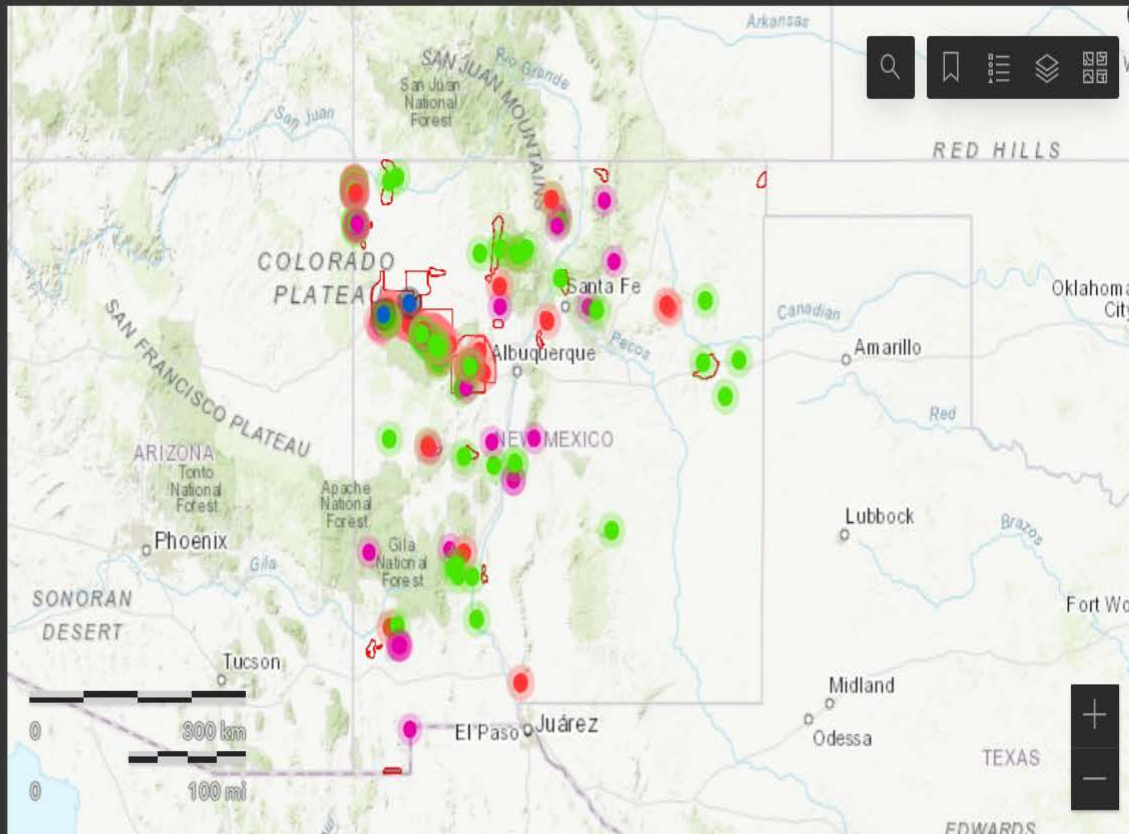
Mining & Minerals Division, compiled 2006- 2010

Locate a selected mine on the...

State Extent

Uranium Mines
viewed in Map Extent

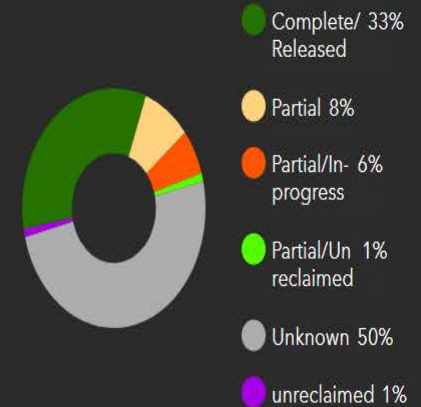
- Abo
MARP
Permit: NA
- Agua Torres
MARP
Permit: NA
- Alongo
MARP
Permit: NA
- Alpine
MARP
Permit: NA
- Alta
MARP
Permit: NA
- Ann Lee
MARP
Permit: MK027PR



Esri, HERE, Garmin, FAO, NOAA, USGS, EPA, NPS | New Mexico Bureau of Geology and Mineral Resources; New Mex... Powered by Esri

Click on pie chart slice for the list of mines in left panel. Click off to de-select.

% Mines by 2020 Reclamation Status (260 total)



Reclm Status

Mining Method

List of Mines

260

based on map extent

Dashboard [Link to User Guide](#)

Location accuracy disclaimer- not all spatial locations have been validated.

New Mexico uranium mine and legacy uranium mine (LUM) inventories were

Download NM Uranium Mine Data (KMZ) from link:

https://gis.emnrd.state.nm.us/content/MMD/geofile/NM_Umin

Mines Reclaimed or Released



Uranium Coordinator Position – EMNRD/MMD

- Uranium Coordinator Position for EMNRD/MMD created by 2022 Legislation
- Currently being advertised by SPO
- Anticipated Responsibilities:
 - Assist Mining Act Reclamation Program with new exploration and new mine permitting actions
 - Site reconnaissance and update of AUM Database
 - Database and updates on any planned, proposed, or on-going uranium reclamation projects. Coordination of activities with:
 - Federal Agencies: NRC, DOE, USFS, BLM, EPA Regions 6 and 9
 - State Agencies: NMED, NMSLO
 - NGOs
- Report to State Legislative Committees

An aerial photograph of a large, multi-lobed water reservoir in a dry, brown landscape. The reservoir is the central focus, with several smaller ponds and structures nearby. The surrounding terrain is flat and arid, with some sparse vegetation and a few buildings visible in the distance. The overall scene suggests a water management or conservation project in a semi-arid region.

Challenges

FUNDING

Questions

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<https://www.emnrd.nm.gov/>

06.24.2008 05:57