



Synergy after BIL: The Implementation of §40704, the National Programmatic Strategy and Management of the National Abandoned Mine Lands Program Across National Forest Systems Lands

Sarah Elizabeth Martínez

National Abandoned Mine Lands Program Manager

Lands, Minerals, and Geology, National Forest Systems – Washington Office

Mining and Metallurgical Society of America 2023 Abandoned Mine Lands

Symposium

July 25, 2023



OUTLINE

- ✓ Thank you
- ✓ Brief overview of the Forest Service's Mission
- ✓ Brief description of the Office of Locatable Minerals, Salable Minerals and Abandoned Mine Lands
- ✓ Bipartisan Infrastructure Law
 - Section 40704 – Abandoned Mine Lands
 - Section 40206
 - Section 40804(b)8
- ✓ Forest Service's Abandoned Mine Lands Program Summary
- ✓ Summary
 - Call for partnerships with State agencies, Universities and Non-Governmental Organizations [NGOs]





THANK YOU!

- ✓ Mining and Metallurgical Society of America [MMSA]
- ✓ Colorado School of Mines [CSM], University of Nevada, Reno [UNR], Trout Unlimited
- ✓ Department of Energy, Office of Legacy Management, Defense Related Uranium Mining [DRUM]
- ✓ Department of Interior, Office of Environmental Policy and Compliance [OEPC]
 - ✓ Bureau of Land Management, National Park Service
- ✓ Tennessee Valley Authority [TVA]
- ✓ Arizona State Mine Inspector [ASMI], Arizona Department of Environmental Quality [ADEQ]
- ✓ California Department of Reclamation
- ✓ Colorado Department of Reclamation and Mine Safety [DRMS]
- ✓ Kentucky Department of Mining, Kentucky Department of Reclamation
- ✓ Nevada Bureau of Mines [NDOM]
- ✓ New Mexico Department of Energy and Mineral Resources [NMEMR]
- ✓ Oregon Department of Geology and Minerals [DOGOMI]
- ✓ Bat Conservation International [BCI]
- ✓ Cave Research Foundation [CRF]
- ✓ Montana Tech
- ✓ University of Arizona





Forest Service

U.S. DEPARTMENT OF AGRICULTURE

Go

[Visit Us](#)

[Managing the Land](#)


[Learn](#)

[Science and Technology](#)

[Working with Us](#)

[About the Agency](#)

[Inside the FS](#)



Caring for the Land and Serving People

What We Do

The Forest Service is vital in the management of over 193 million acres of the nation's forests and grasslands. We work for nature because we believe in caring for the land and serving people. This means advocating for conservation and rural development; providing assistance to forests, cities, and communities working to improve their natural environment; and developing the scientific and technical knowledge to achieve our goals. Check out our [Forest Service YouTube channel](#) to watch videos on current agency projects across the world or visit our [About page](#) to learn more.



MINERALS AND GEOLOGY MANAGEMENT



Minerals & Geology Management

The Forest Service Minerals and Geology Management (MGM) program promotes the sustainable use and enjoyment of mineral and geologic resources on USDA National Forests and Grasslands.

Abandoned Mine Lands

Caves & Karst

Groundwater Program

Paleontology

Reclamation Policy

Minerals Management

Minerals Management

Leasable & Energy Minerals

Critical Minerals Projects

Coal Resource Management

Geothermal Resource Management

Oil & Gas Resource Management

Solid Leasable Minerals

Locatable Minerals

Mineral Materials/Salable Minerals

Reserved & Outstanding Minerals



ABANDONED MINE LANDS PROGRAM

Infrastructure Investment and Jobs Act (IIJA) [aka Bipartisan Infrastructure Law (BIL) (Public Law 117-58)] requires the Forest Service (FS) to take action to address Abandoned Mine Lands (AML) throughout National Forest System (NFS) beyond our policy requirements outlined in the Forest Service Manual under “FSM 2800 – Minerals and Geology” as well as all other applicable environmental, health, and safety regulations

- Section 40704 requires: “inventory, assess, decommission, reclaim, respond to hazardous substance releases on, and remediate AML based on conditions including need, public health and safety, potential environmental harm, and other land use priorities”
- Section 40804(b)(8) provides Agency with \$100M over FY22 to FY26 to restore native vegetation and mitigate environmental hazards on mined Federal and non-Federal land

Plan Purpose: Develop a national strategic programmatic approach to secure all known AML features on NFS

Intent: Initiate FS-wide conversation to necessitate coordination and action across multiple FS offices and program areas to meet specific BIL requirements 6



PROGRAM STRATEGY

LOE 1: IDENTIFY		NOTIONAL TIMELINE	OFFICES INVOLVED
OBJECTIVE 1.1 Verify existing AML information at all FS Regions (ROs)	Action: Conduct desktop review and coordinate with internal and external stakeholders to survey existing internal/external hard copy and digital information	Initiated immediately; completed NLT end of FY26	Internal Offices: Office of AML [MGM WO]
OBJECTIVE 1.2 Verify that AML feature information is available in digital format and accessible service-wide	Action: Conduct data entry of written information and digitize hard copy maps	Initiated immediately with programming for FY23; Completed NLT end of FY26, subject to funding availability	FS Engineering All FS ROs/Forests External Partners:
OBJECTIVE 1.3 Verify AML locations that may result in a significant impact to communities or environment when closing	Action: Conduct desktop review of existing information related to specially designated or protected areas	Program for FY23; Completed NLT end of FY26, subject to funding availability	<u>Federal</u> [DOE, DOI, EPA]
OBJECTIVE 1.4 Verify compliance with FS NEPA Compliance (36 CFR § 220) for AML site closures	Action: Apply Categorical Exclusion; conduct Environmental Assessment and/or Environmental Impact Statement at AML locations, where warranted	Program for FY23; Completed NLT end of FY26, subject to funding availability	<u>State</u> [State Geological Surveys, State Mine Inspectors, Regulators]
	Action: Apply Programmatic EA to streamline NEPA		<u>Tribal</u>
	Action: Assess where to leverage previous NEPA actions and/ or documents to streamline NEPA, where applicable	Initiated immediately with programming for FY23; Completed NLT end of FY26, subject to funding availability	<u>Academia</u> <u>Private Sector</u> [Energy, Environmental, Minerals, Technology]
			<u>NGOs</u>



AML INVENTORY ASSISTS IN SURFACE RESOURCE MANAGEMENT

Program Areas with shared equity:

- Engineering [FSM 2160.41c-d]
- Archaeology & Heritage
- Natural Resources [Wildlife]
- Watershed [Clean Water Act]

Notify and inform Lands Program that a proposed acquisition with an AML site and/or feature may encumber the Agency with huge liability risk due to environmental contamination present on proposed "Acquired" lands

GOAL = Assist Line Officers to make informed decision on the following actions:

- Purchases
- Land Exchanges
- Improved land management and decision making
 - Timber
 - Fire



AML INVENTORY: IMPACTS & IMPLICATIONS

Quantifying the Role of National Forest System and Other Forested Lands in Providing Surface Drinking Water Supply for the Conterminous United States

Ning Liu
G. Rebecca Dobbs
Peter V. Caldwell
Chelcy F. Miniati
Ge Sun
Kai Duan
Stacy A.C. Nelson
Paul V. Bolstad
Christopher P. Carlson

Implications regarding impacts to surface resources due to AML inventory:

Watershed – 60% of the potable fresh drinking water originates from NFS lands

Surface water, Groundwater, and/or baseflow interaction with potential deleterious elements and/or contaminants of concern may lead to the Agency identified in a Compliance Action as a “Responsible Party” in lieu / in absence of the original property owner



INVENTORY OF RECORD

"vetted AML Geospatial Database"

U.S. Forest Service Abandoned Mine Lands Web Viewer

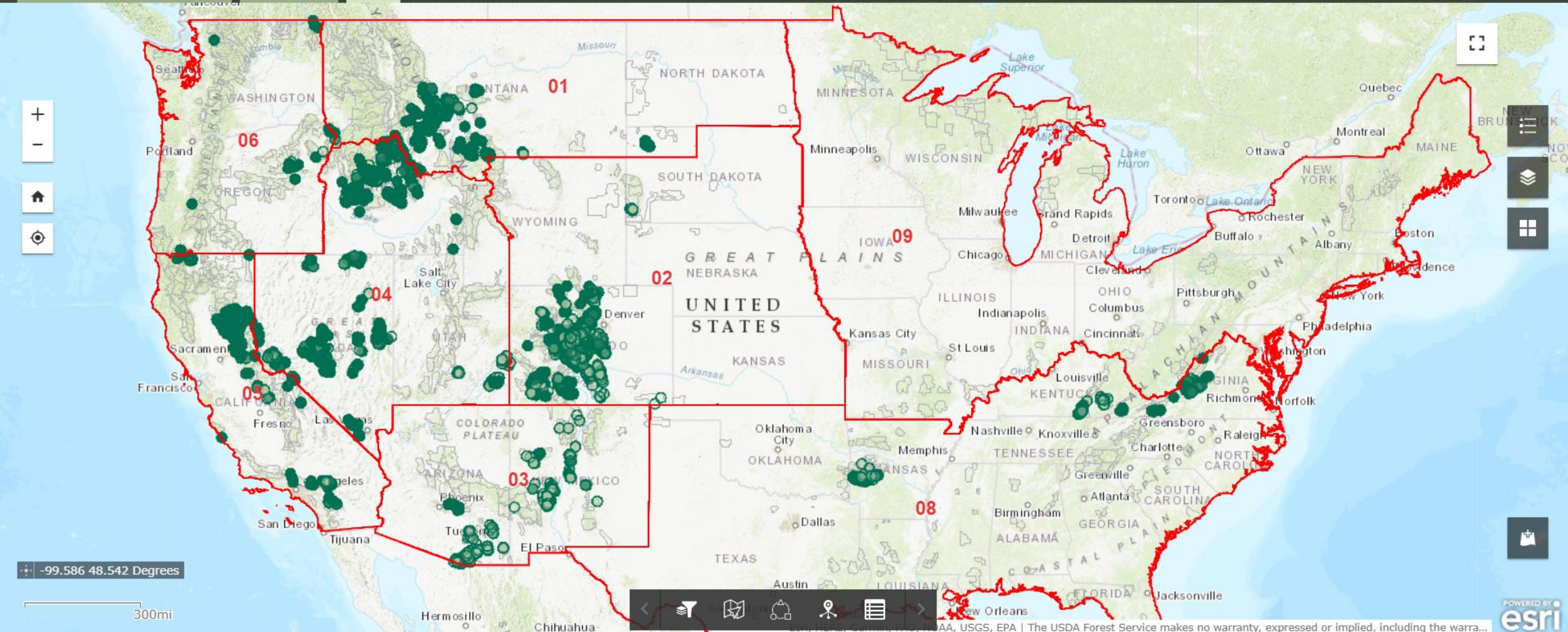
[Learn More About the Abandoned Mine Lands Program](#)



[How to Use This Web Viewer](#)

[Dashboard](#)

[Map](#)





INVENTORY OF RECORD

"vetted AML Geospatial Database"

Abandoned Mine Lands Features within U.S. Forest Service Lands

Region
01

Forest
All

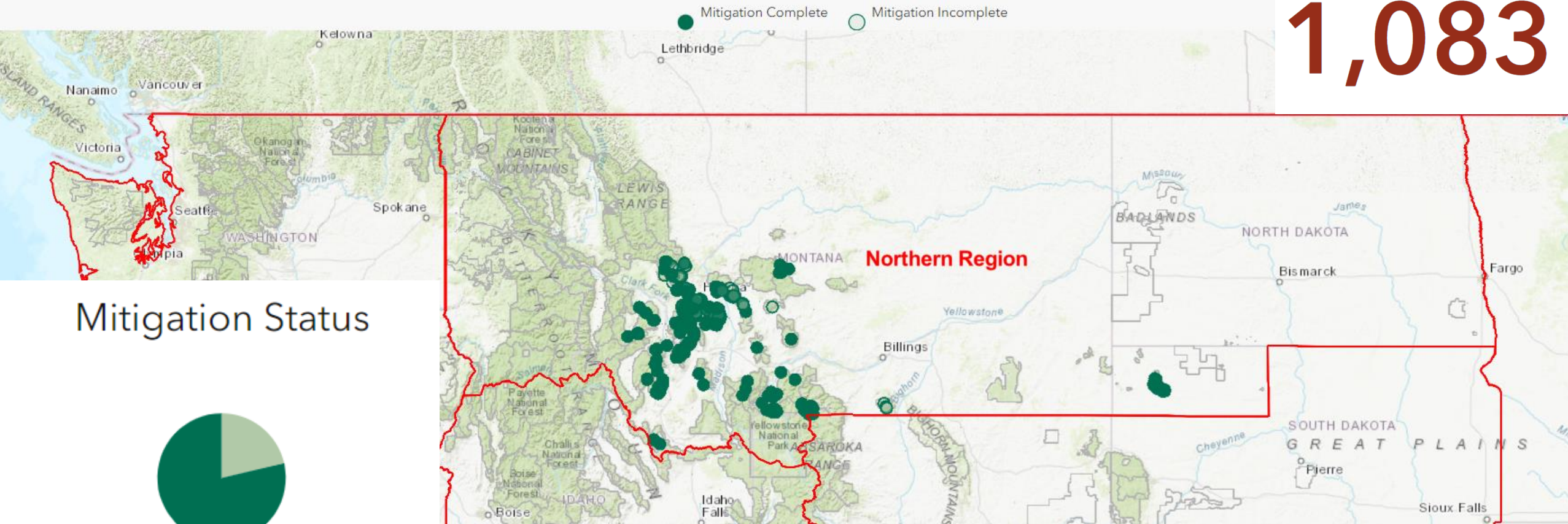
District
All

Mitigation Date Range
No date selected

Abandoned Mine Lands Features

Total Number of Features

1,083



Mitigation Status



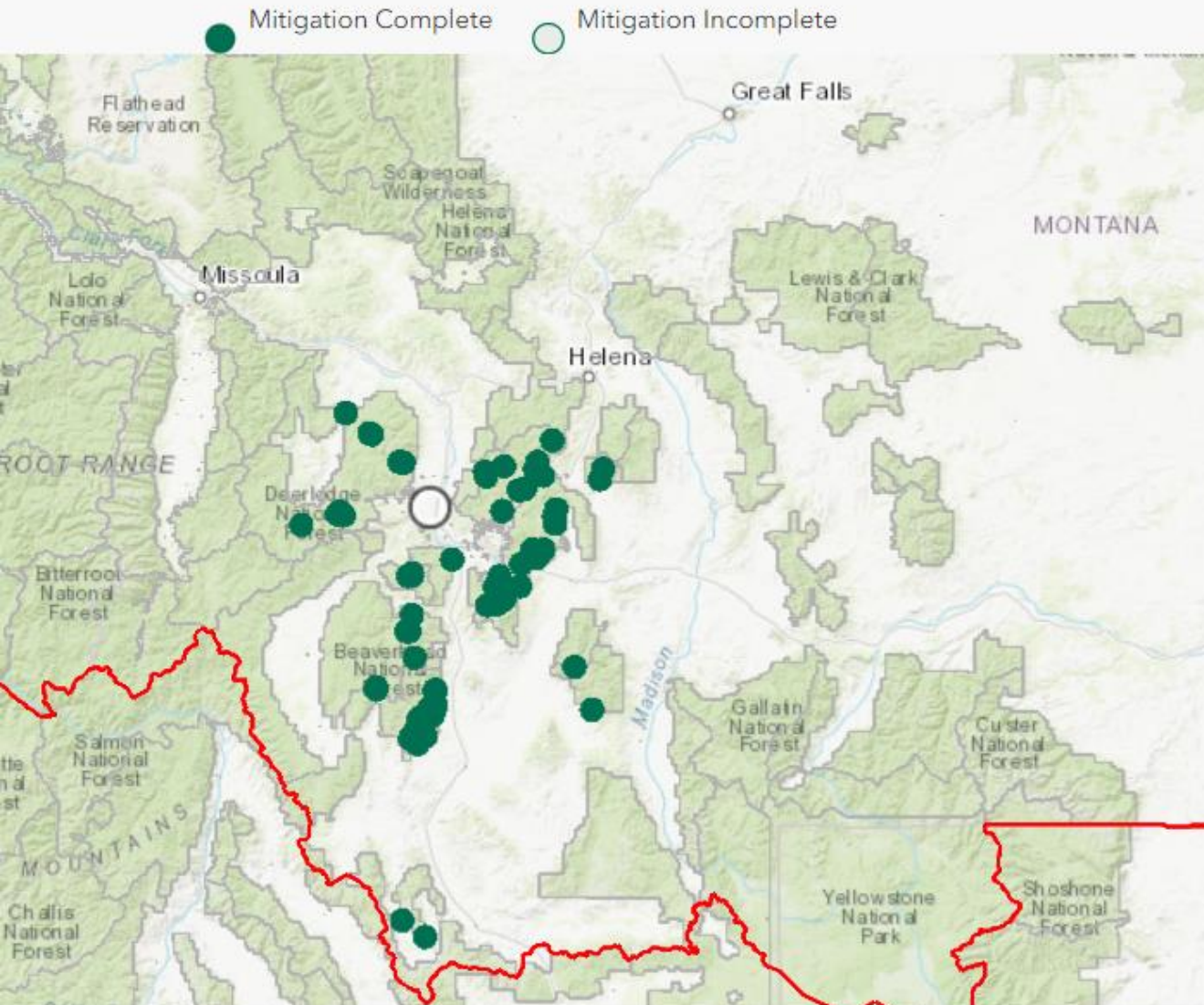
Incomplete 232 Complete 851



INVENTORY OF RECORD

"vetted AML Geospatial Database"

Abandoned Mine Lands Features



Total Number of
Features

167

Mitigation Status



● Complete

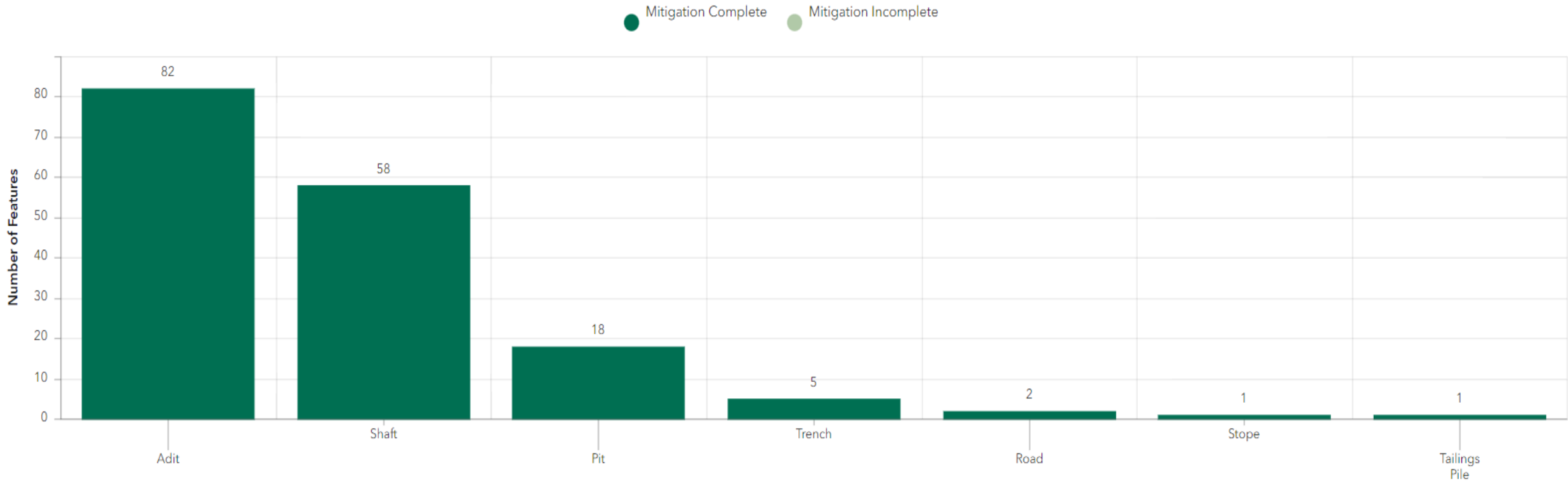
167



INVENTORY OF RECORD

"vetted AML Geospatial Database"

Number of Abandoned Mine Features by Type



Total Number of
Features

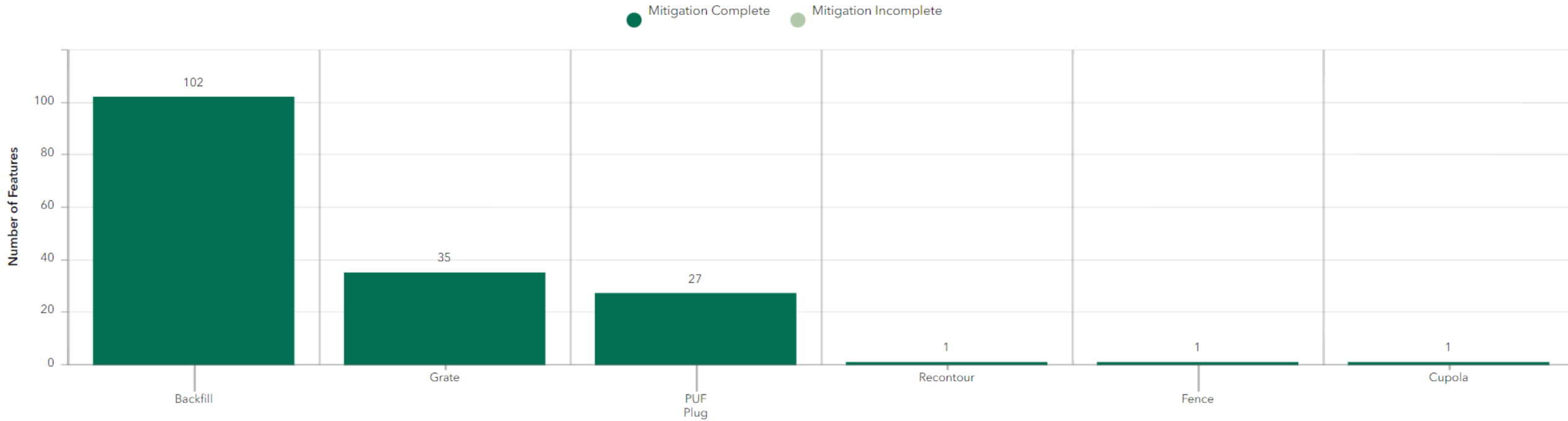
167



INVENTORY OF RECORD

"vetted AML Geospatial Database"

Number of Abandoned Mine Features by Mitigation Method



Total Number of
Features

167



AML PROGRAM IMPLEMENTATION

FY22-23

- PROGRESS MADE SINCE 4/11/2022
 - PROGRAMMATIC STRATEGY
 - Drafted Programmatic Plan of Action
 - Held several engagement meetings at Region [Regions 1, 2, 5, 6, 8, 9] and Forest Level
 - Introduced Plan of Action to IJIA / BIL Interagency Working Group to serve as a catalyst for the Interagency AML Implementation Plan
 - Expanded interagency collaboration between other Federal and State regulatory agencies
 - Plan to expand collaboration with Tribal Governments through Government-to-Government Consultation
 - Established new national partnerships
 - IMPLEMENTATION
 - Engaged in Regional Program Manager meetings in May & June 2022 to learn more about AML programs
 - AML Working Group meeting established to discuss shared concerns [First meeting: July 7, 2022]
 - Established WO Regional AML contacts
 - S. Martínez – Western US [Regions 1-6]
 - D. Osborne – Eastern and Southern US as well as Alaska [Regions 8, 9, 10]
 - INVENTORY [**40,000 features added**]
 - Several Forests in Regions 2, 3, 4, 5, 8, 9 have added to the database
 - External engagement: Region 6, 8 – increased amount of known AML features [2 orders of magnitude]



AML PROGRAM IMPLEMENTATION VERIFICATION AND VALIDATION

LOE 2: CLOSE		NOTIONAL TIMELINE	OFFICES INVOLVED
OBJECTIVE 2.1 Vet and Verify all known features in <u>National AML Geospatial Inventory Database</u>	Action: Perform a field investigation of every AML feature in the AML to record the following information: <ul style="list-style-type: none">a. Does the feature exist?b. Does the feature require mitigation (Is there evidence of a safety and/or potential environmental risk/hazard)?	Occurs locally; National programmatic process is currently under development; to begin October 1, 2026, and continue indefinitely	Internal Offices: Office of AML [MGM WO] FS Engineering All FS ROs/Forests
OBJECTIVE 2.2 Establish <u>National Strategic Programmatic Forecasting Protocol</u>	Actions: <ul style="list-style-type: none">1. Establish general national standards for estimating the cost of safety closures2. Perform a general cost assessment on NFS unmitigated AML inventory not part of the CERCLA program3. Use cost assessment in strategic programmatic 5-year forecasting for all AML projects for annual budget calls4. Develop and execute training, like <u>Locatable Minerals Administration Reclamation Bonding</u> course, to assist FS-Specialists with budget forecasting and programming of unfunded AML inventory	Under development; TBD	External Partners: <u>Federal</u> [DOE, DOI, DOL, EPA] <u>State</u> [State Geological Surveys, State Mine Inspectors, Regulators]
OBJECTIVE 2.3 Establish consistent approach to ensure AML sites closed in accordance with applicable regulatory requirements across all FS Regions	Actions: <ul style="list-style-type: none">a. Develop and establish the <u>National Forest Service Abandoned Mine Lands Program Policy Manual</u> as Interim Program Policy Guidance from other Federal [BLM, NPS, OSMRE] and State Agency Program Manuals [DRMS, DOGMI] that includes the following components:b. Develop and establish <u>AML Closure Standard Operating Procedure (SOP)</u>c. Develop and establish <u>Environmental Site Prioritization Worksheet</u>d. Develop and establish <u>Physical Safety Closure Prioritization Worksheet</u>	Under development; TBD	<u>Tribal</u> <u>Academia</u> <u>Private Sector</u> [Energy, Environmental, Minerals, Technology] <u>NGOs</u>



VERIFICATION & VALIDATION [V&V]

"unvetted AML Geospatial Database"



Forest Service
U.S. DEPARTMENT OF AGRICULTURE

Home

Data Explorer

Critical Minerals

Heavy Metals

Coal

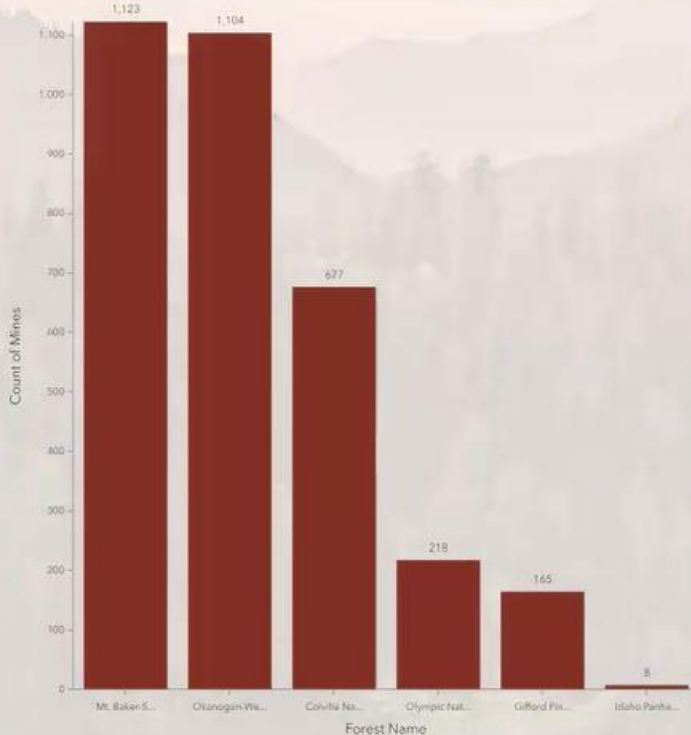
Uranium

Land and Site Access

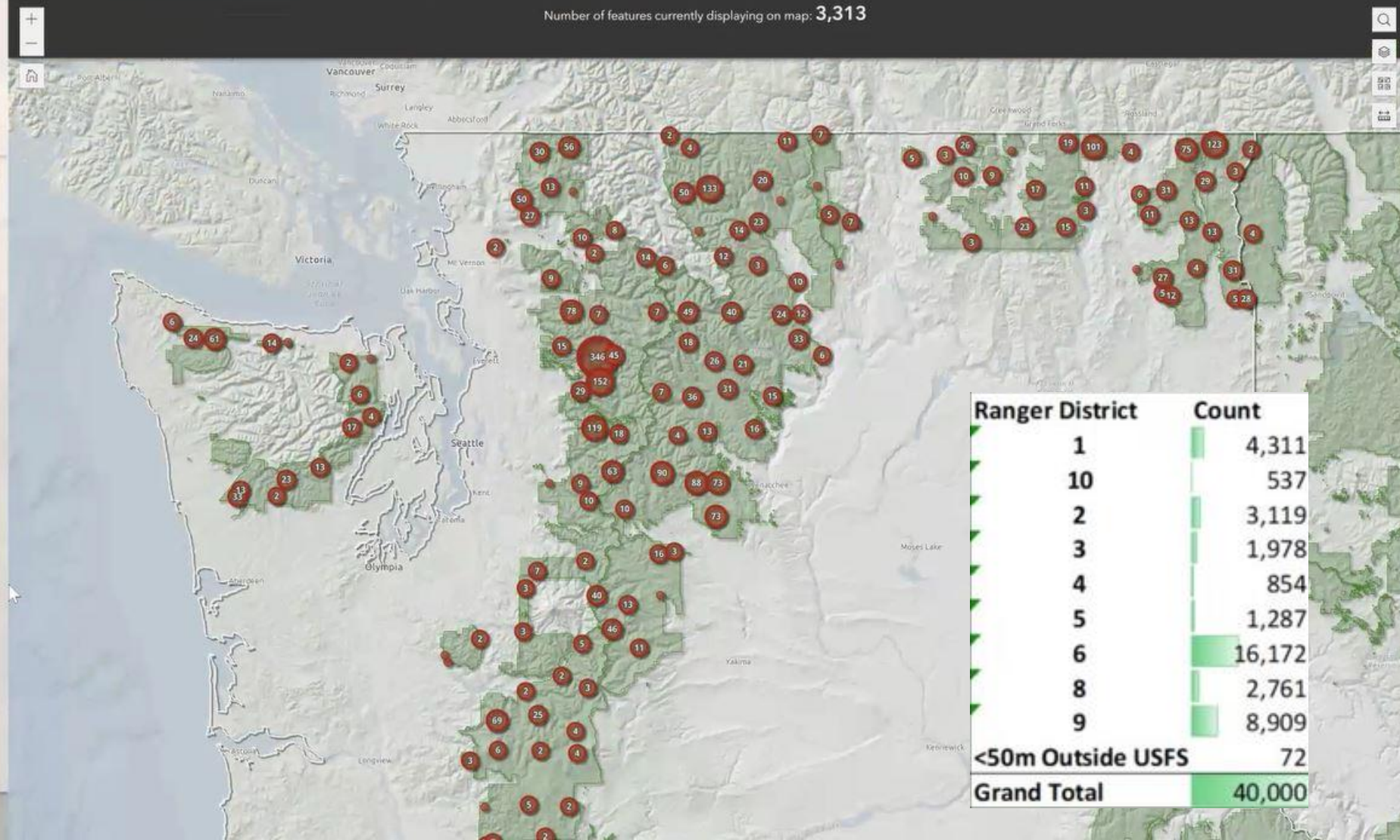
Number of Features Selected:

3,313

Count of Mines per Forest



Number of features currently displaying on map: 3,313



Ranger District	Count
1	4,311
10	537
2	3,119
3	1,978
4	854
5	1,287
6	16,172
8	2,761
9	8,909
<50m Outside USFS	72
Grand Total	40,000

Filter Stats Table



PROGRAMMATIC TIES - §40206

- Build Trust with the Public & Tribes by Performing our “Due Diligence” under ALL Regulatory Requirements
- Knowing the location of AML features on NFS lands will assist in carrying out our Program’s Mission under § 40206 of the IIJA

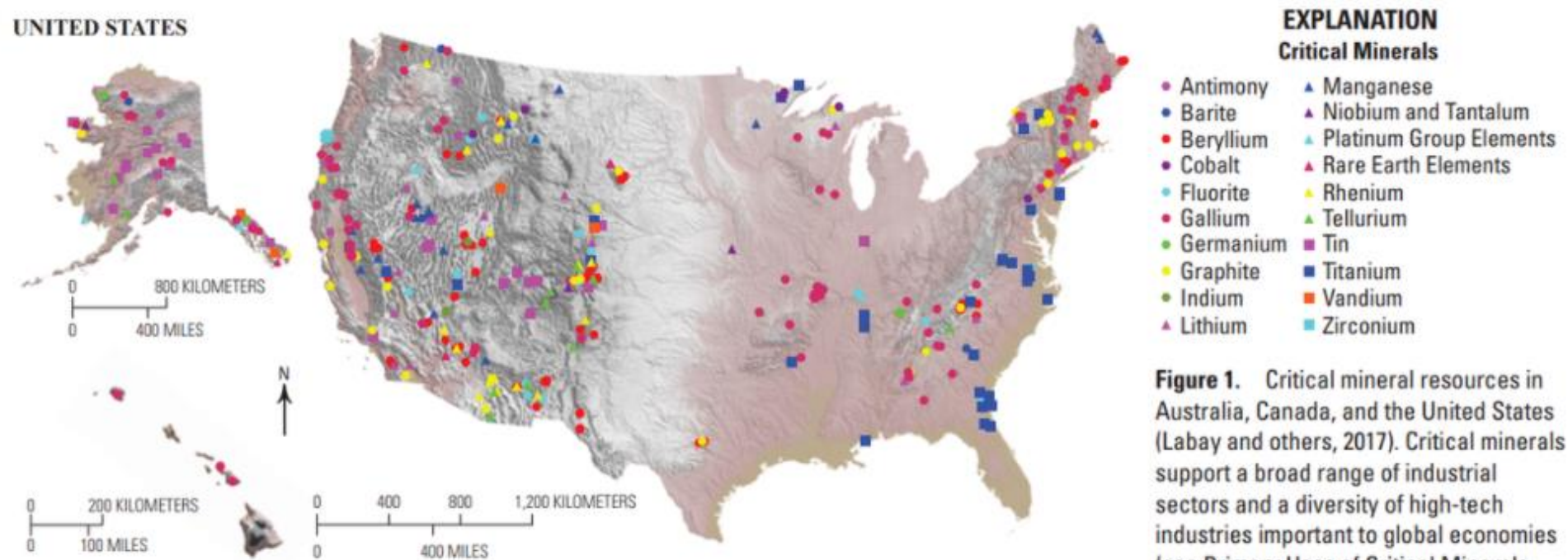


Figure 1. Critical mineral resources in Australia, Canada, and the United States (Labay and others, 2017). Critical minerals support a broad range of industrial sectors and a diversity of high-tech industries important to global economies (see Primary Uses of Critical Minerals sidebar).

Base from National Oceanic and Atmospheric Administration ETOP01 1 Arc-Minute Global Relief Model, 2017

Sources/Usage: Public Domain.

Known Mineral Locations in the United States. (Public domain.)



CRITICAL MINERALS §40206



Every American Born Will Need...
3.02 MILLION POUNDS of minerals,
metals, and fuels in their lifetime

55,461 lbs.
CEMENT

10,685 lbs.
CLAYS

251,998 lbs.
COAL

1,018 lbs.
COPPER

1,832 lbs.
BAUXITE
(ALUMINUM)

1.34 Troy oz.
GOLD

18,317 lbs.
IRON ORE

814 lbs.
LEAD

1 lb.
LITHIUM

12,720 lbs.
PHOSPHATE ROCK

27,476 lbs.
SALT

4 lbs.
SILVER

1.36M lbs.
STONE, SAND
& GRAVEL

468 lbs.
ZINC

+1.03M lbs.
OTHER MINERALS,
METALS & FUELS

©2022 Minerals Education Coalition

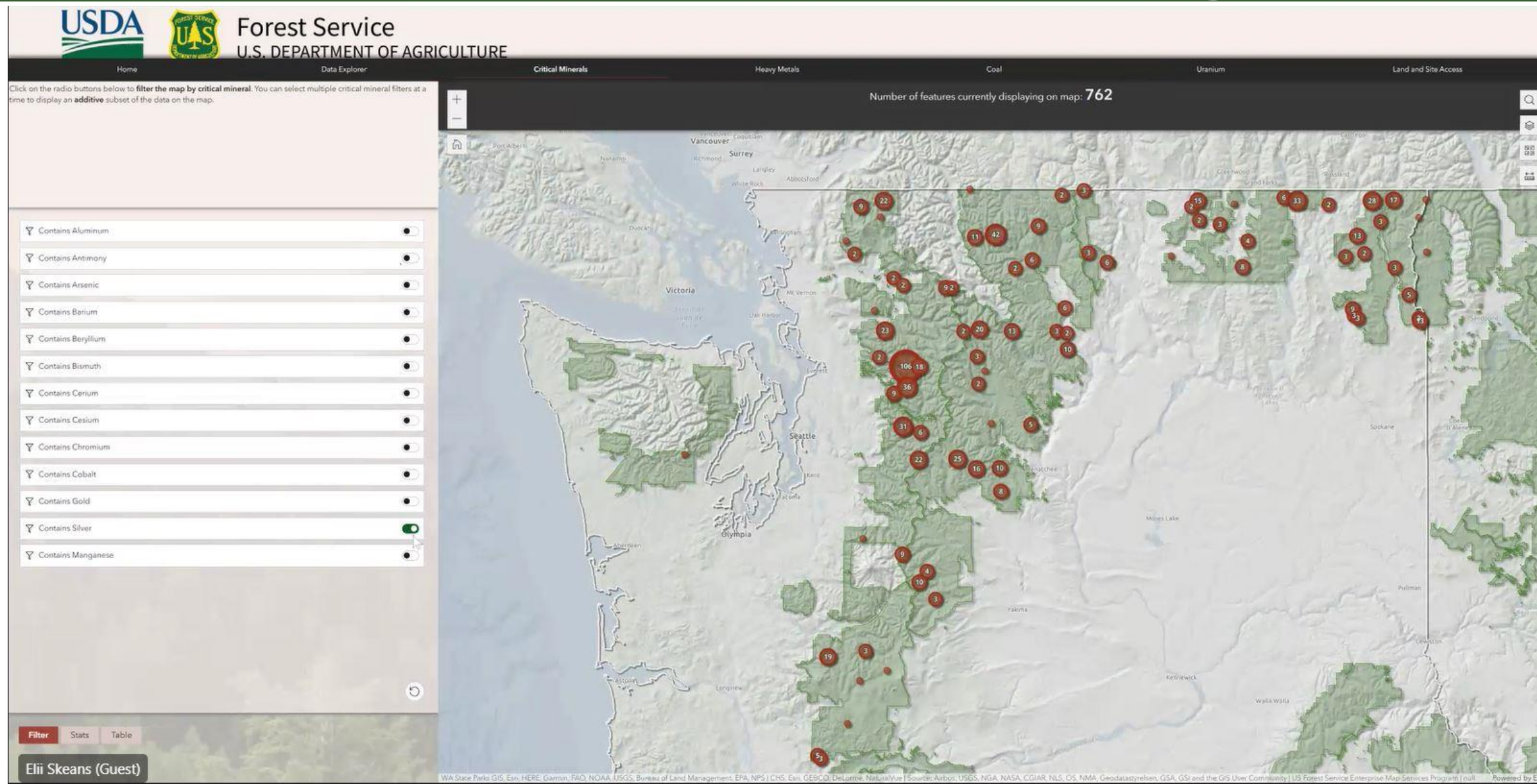


Learn more: MineralsEducationCoalition.org



VERIFICATION & VALIDATION [V&V]

"unvetted AML Geospatial Database"





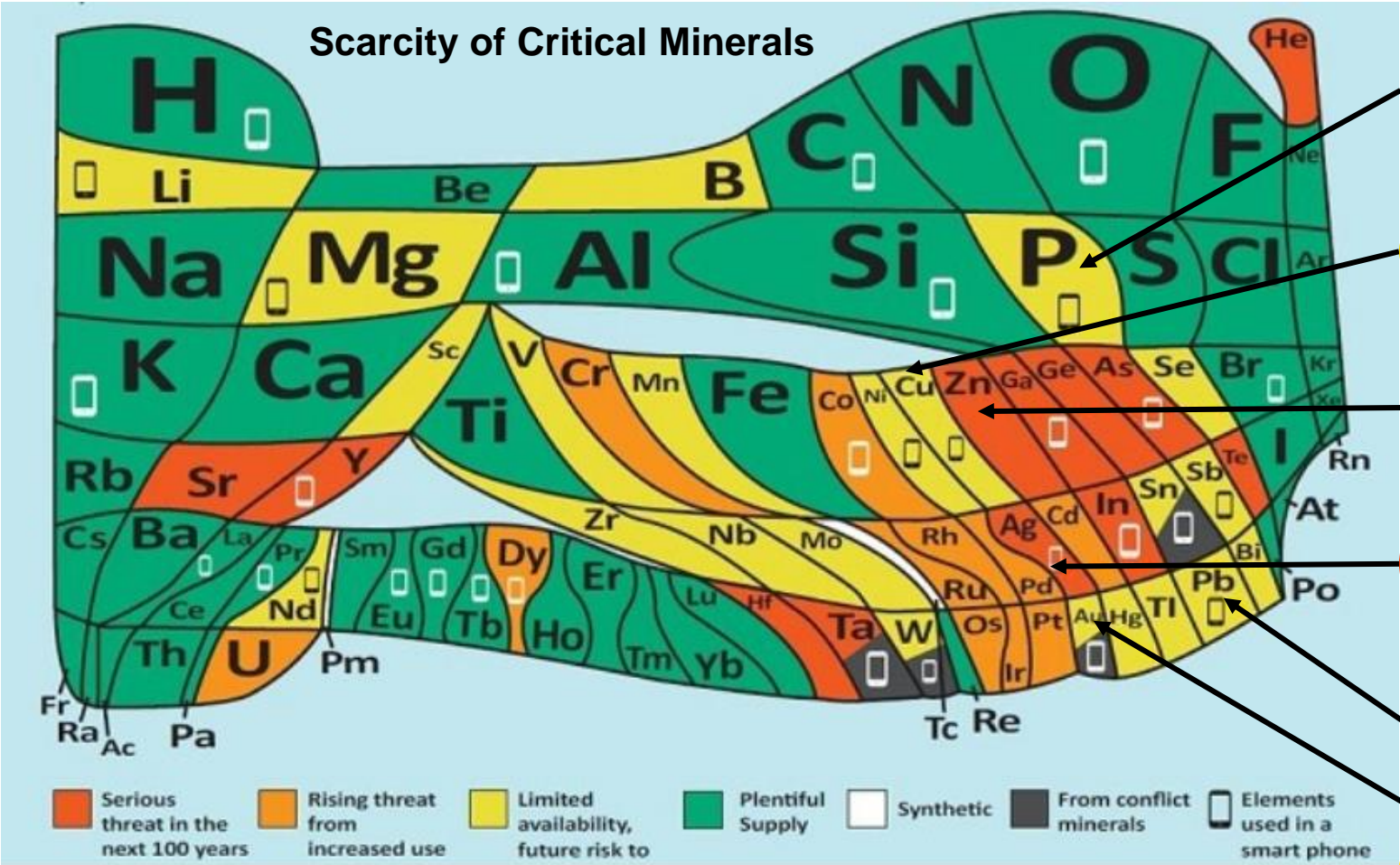
CRITICAL MINERALS USES [§40206]

Smartphone Elements

Serious	Rising	Limited
Ag	Co	Au
As	Dy	Cu
Ga		Li
In		Mg
Y		Nd
		Ni
		P
		Pb
		Sb
		Sn
		W

Conflict Minerals

Au
Sn
Ta
W



12,720 lbs.
P

1,018 lbs.
Cu

468 lbs.
Zn

4 lbs.
Ag

814 lbs.
Pb

1.34 Troy oz.
Au

UNESCO's Periodic Table of Chemical Elements offering a visual highlight of the scarcity of elements essential in everybody's daily life

April 23, 2019 <https://mining.komatsu/blog/details/endangered-elements-why-mining-matters-now-more-than-ever>



AML PROGRAM OBJECTIVES

Long Term Objectives

- **Build cohesion** within National AML Program to promote consistent and streamlined program management through policy guidance under our regulatory authority
- **Integrate** BIL into our Program Organization and Guidance 40201, 40202, 40206, 40804(b)8, 40704
- **Strengthen relationships** between Forest Service Programs to facilitate cost savings and leverage funding [Regional AML field engagements]
- **Upgrade and update** National AML Inventory Database to support project development and **promote situational awareness** of field hazards
- **Incorporate** hazard rating to employ risk-based assessment of AML projects
- **Foster strong partnerships** to assist internal FS and external stakeholders to support regulatory requirements
- **Actively participate** in IJJA/BIL - AHMR Work Groups to maximize Agency cost savings
- **Improve** our Abandoned Mine Lands Safety Training to support field operations
- **Modernize** AML Budget and improve data sharing to support building knowledge and expertise including update of the AML SharePoint Site



WAY FORWARD

Establish partnerships with BOTH internal & external stakeholders to:

1. Accomplish all actions under Section 40704 using all means necessary
2. Leverage resources
3. Maximize cost-sharing
4. Expand relationships to improve communities

Collaboration and partnership is key to success will demonstrate OUR commitment to safeguarding communities as well as human health and safety



Bat gate installed on the George Washington – Jefferson National Forest



THANK YOU!



Photo credit: SE Martínez CNF



Resolution Copper A-frame, Tonto National Forest



Drill rig at night, Tonto National Forest



Thimble Peak at sunset, Catalina Mountain Range

