



# American Rare Earths Investor Presentation

ASX : ARR

OTC : ARRF

Presented by

**Keith Middleton**

Managing Director

October 2021



La Paz Project, La Paz Arizona



## Disclaimer

This presentation contains forward-looking statements that involve subjective judgement and analysis and accordingly, are subject to significant uncertainties and risks, many of which are outside the control of, and are unknown to, American Rare Earths ("ARR"). In such circumstances, the forward-looking statements can be identified by the use of forward-looking words such as "may", "will", "expect", "intend", "seek", "estimate", "believe", "continue" or other similar words.

No representation, warranty or assurance is given or made in relation to any forward-looking statement by ARR or its representatives. In addition, no representation, warranty or assurance is given in relation to any underlying assumption or that any forward-looking statements will be achieved. Actual future events may vary materially from the forward-looking statements and the assumptions on which the forward-looking statements are based. Accordingly, presentation readers are cautioned not to place undue reliance on such forward-looking statements as a result of the uncertainties.

ARR wishes to caution readers that these forward-looking statements are based on economic predictions and assumptions on reserves, mining method, production rates, metal prices and costs (both capital and operating) developed by ARR management in conjunction with consultants.

This presentation and the forward-looking statements made in this presentation, speak only as of the date of the presentation.

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## Competent Person Statement

The information in this report that relates to Exploration Results is based on information compiled by Mr. Jim Guilinger. Mr. Guilinger is a Member of a Recognised Overseas Professional Organisation included in a list promulgated by the ASX (SME Registered Member of the Society of Mining, Metallurgy and Exploration Inc). Mr. Guilinger is Principal of independent consultants World Industrial Minerals LLC. Mr. Guilinger has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which they are undertaking as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr. Guilinger consents to the inclusion in the report of the matters based on their information in the form and context in which it appears.

The information in this document that relates to Mineral Resource Estimate is based on information provided by Mr Alfred Gillman. Mr. Gillman is Principal of the independent consultant firm Odessa Resources Pty Ltd. Mr. Gillman is a Fellow and Chartered Professional of the Australian Institute of Mining and Metallurgy (AUSIMM) and has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 JORC Code. Mr. Gillman consents to the inclusion in the report of the matters based upon the information in the form and context in which it appears.

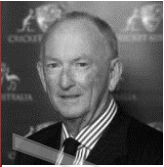
The mineral resources disclosed in this presentation are compliant with NI 43-101 standards which are close to the JORC Code in their key definitions. La Paz mineral resources can therefore be quoted as "qualifying foreign estimates" according to ASX listing rules.

ARR confirms it is not aware of any new information or data that materially affects the information included in the original market announcement, and, in the case of estimates of Mineral Resources, that all material assumptions and technical parameters underpinning the estimates in the relevant market announcements continue to apply and have not materially changed. ARR confirms that the form and context in which the Competent Person's findings presented have not been materially modified from the original market announcement.

**American Rare Earths (ARR) is an exploration company focused on the development of its Rare Earth and Scandium assets, which have the potential to be some of the largest rare earth deposits in the United States.**

**Our mission is to supply Critical Materials for Renewable Energy, Green Tech, Electric Vehicles, National Security, and a Carbon-Reduced Future**

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**CREAGH O'CONNOR** **Chairman**

Creagh has approximately 40 years experience as a chief executive and board member for public and private companies. During this time, he has been involved in managing several Australian and international oil, gas and mineral projects. He is currently a director of A G O'Connor Pty Ltd and chairman of the Maurice de Rohan International Scholarship.

**Geoff Hill** **Non-Executive Director - Vice Chairman**

Geoff is an investment banker with extensive experience in the identification and implementation of mergers and takeovers and has acted for a wide range of corporate clients in Australia and overseas. Mr. Hill also has extensive experience in giving corporate advice to mining companies. He is currently a director ASX listed Pacific American Holdings and unlisted vehicles IPS International. SOCO Ltd. He is a former director of Mount Gibson Iron Limited.

**Keith Middleton** **Managing Director**

Keith is an experienced corporate executive and director of ASX listed companies specialising in the Australian and International resources sector. He has considerable experience in advising and raising equity for companies in the form of direct investment, company loans and initial public offerings. He has direct accountability for mining operations and exploration activities coupled with strategy formulation , project evaluation and investor presentations. He is a former director of Redbank Copper

**Denis Geldard** **Non-Executive Director**

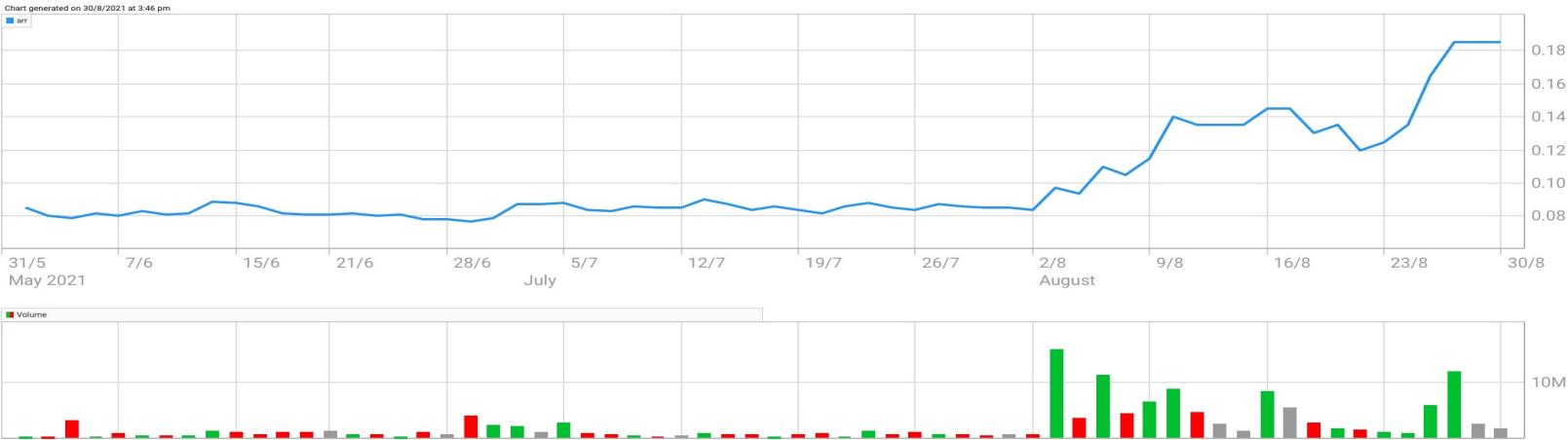
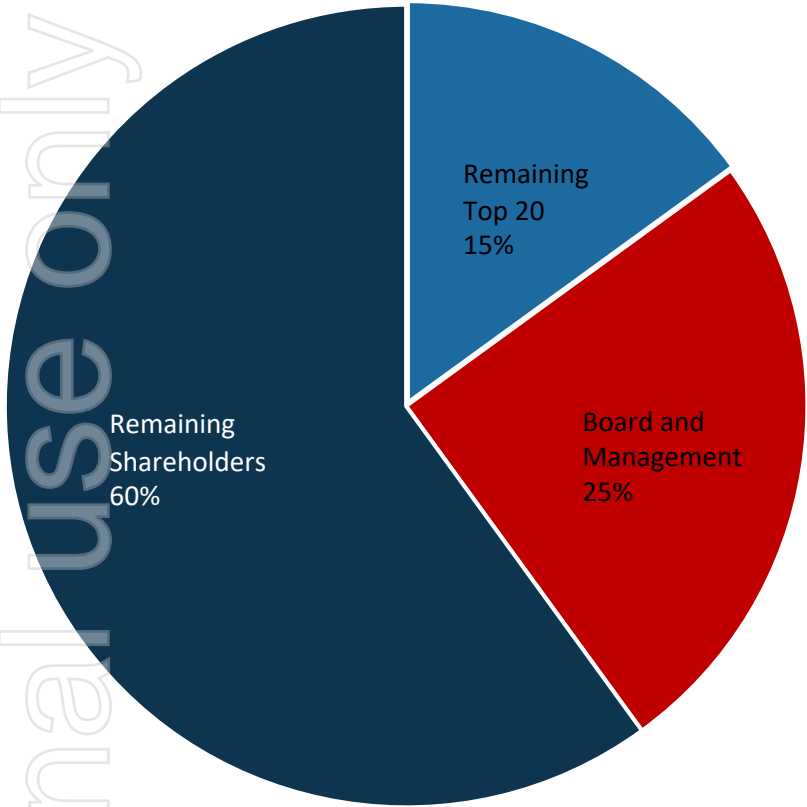
Denis is a mining engineer with over 40 years technical and operational experience in mineral exploration and project development. He has over 20 years' experience in the Heavy Mineral Sands Industry with companies such as Western Titanium Ltd, Associated Minerals Consolidated and Iluka Resources. He has managed and run several junior and mid-tier mining and exploration companies and mining projects.

**Clarence McAllister** **Non-Executive Director**

Clarence is a multicultural, multilingual business leader with vast experience in technology, engineering and construction. He is CEO and founder of Fortis Engineers, a world-class electrical and mechanical engineering firm in Phoenix, Arizona. Serves on the Arizona Board of Technical Registration, the Arizona Supreme Court Alternative Business Structure Board and Chairs Dreamspring and Western Rare Earths. He is a licensed Professional Engineer and Commercial Pilot.



## SHAREHOLDER BREAKDOWN



Share Information			
Capital Structure: Ordinary Fully Paid Shares	347,008,326	Average volume:	1,535,059
Market Cap:	AUD \$60 Million	Share description:	Ordinary Fully Paid
52 week range:	0.069 - 0.235	ARBN:	003 453 503





**Pure play** Rare Earths Exploration company



High value **Magnetic Metals** and **Scandium**



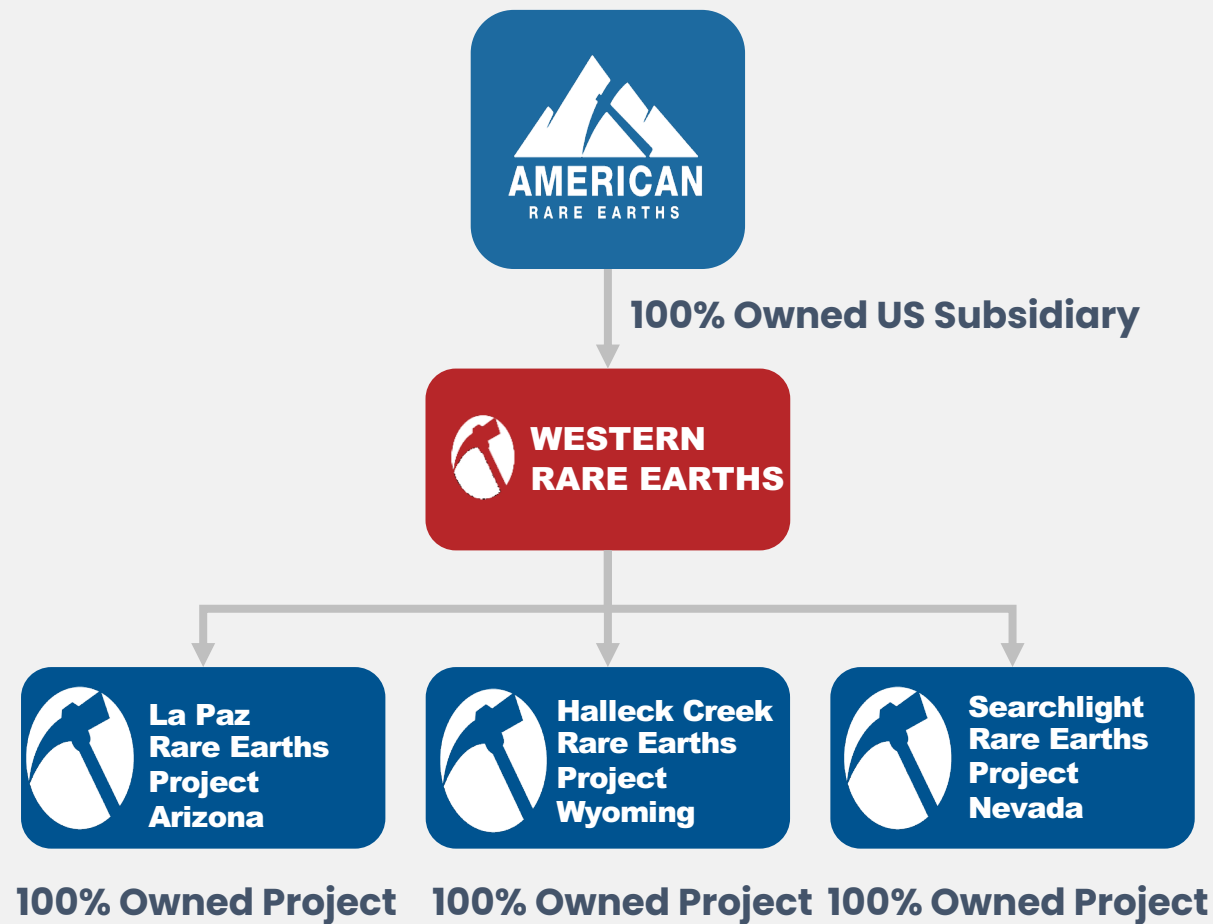
**US leadership & technical** team with **International** board of directors



**Portfolio of projects** at different stages of development



**Disruptive R&D Collaborations** with US partners



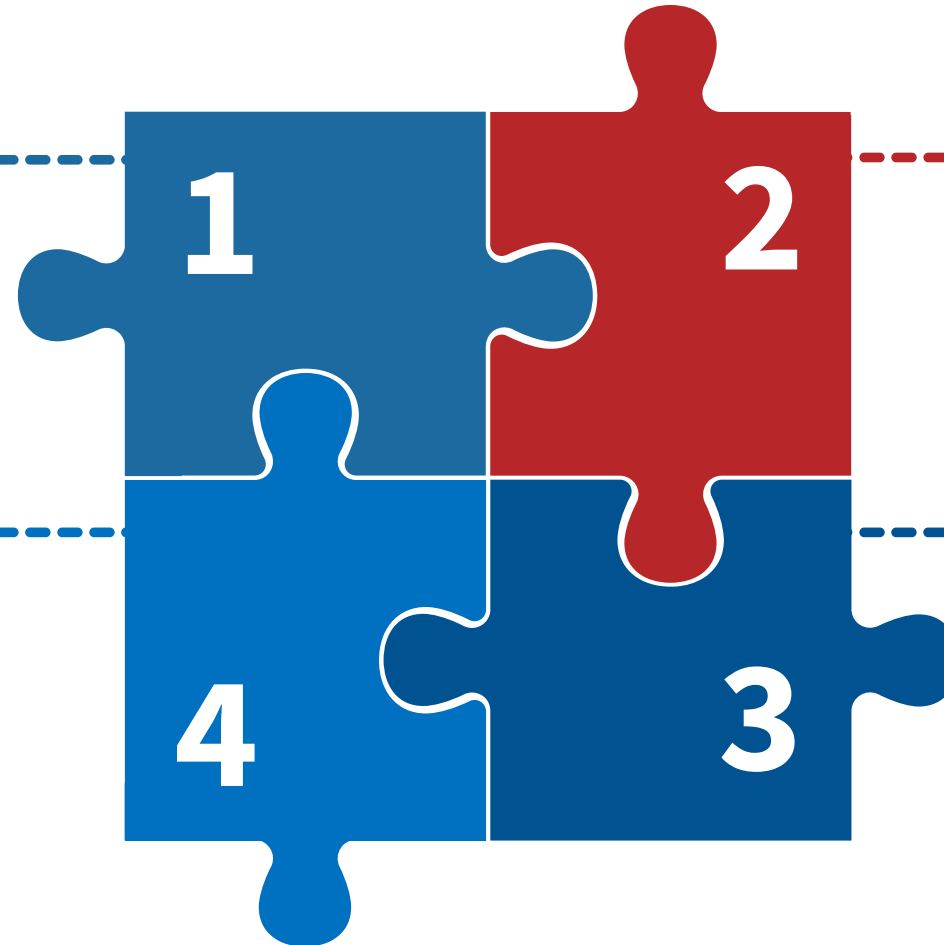
American Rare Earths has been built on four pillars to deliver shareholder value.

## Identification

ARR has a track record of identifying undervalued assets and delivering value to shareholders.

## Delivery

ARR's success is based on delivering projects on time and within budget.



## Innovation

ARR uses innovative strategies and collaborative partnerships to unlock value.

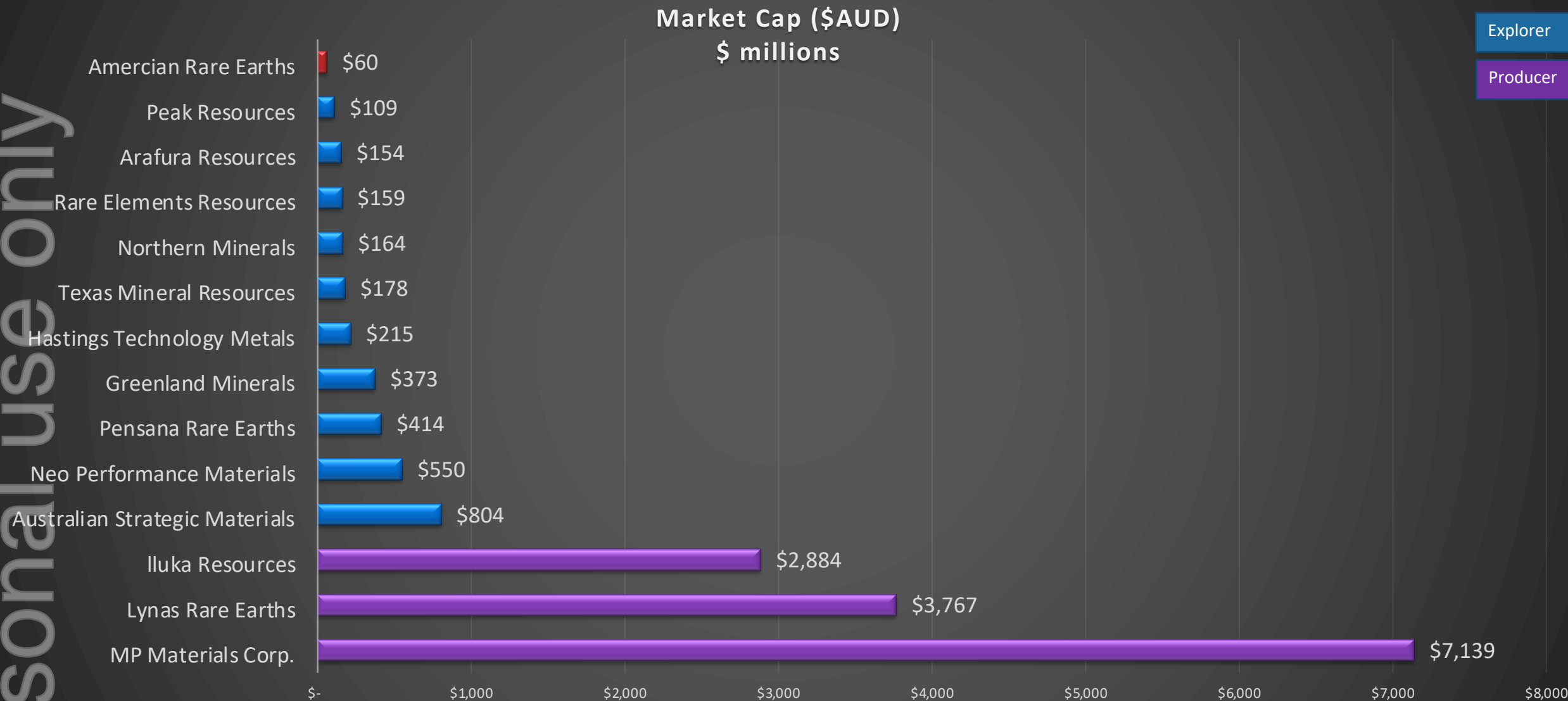
## Management

ARR employs experts across the globe to develop projects from the ground up and create enterprise value.

# Peer Group Analysis

ASX:ARR

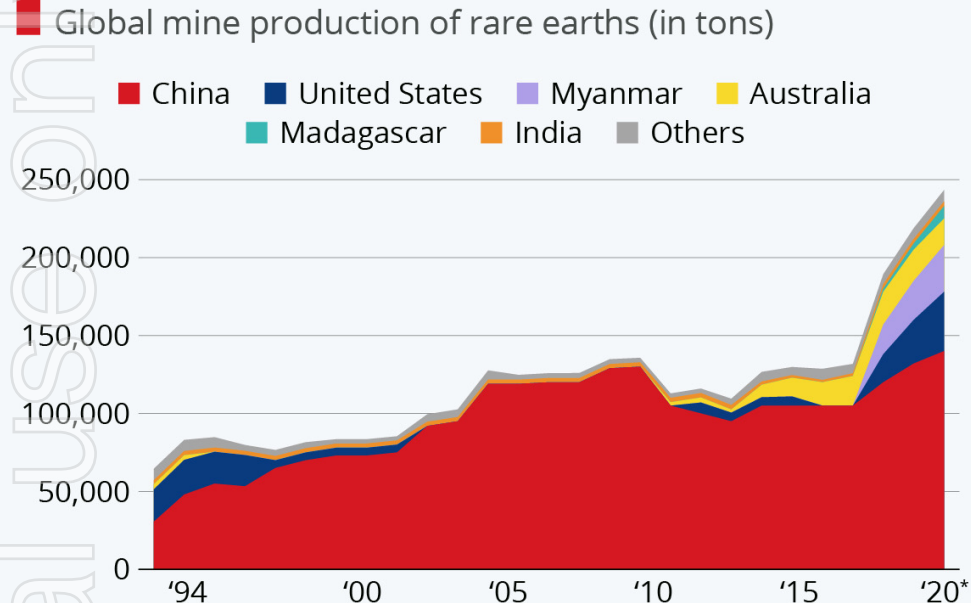
Personal use only



Source: <https://investorintel.com/markets/technology-metals/technology-metals-intel/kozaks-top-5-rare-earth-companies-for-2021/>



## China's Rare Earth Monopoly is Diminishing



Documented production only, some estimations

\* estimated

Source: United States Geological Survey



statista

<https://www.statista.com/chart/18278/global-rare-earth-production/>

### ➤ Climate Action requires Critical Minerals

- An estimated USD \$30 trillion is required to decarbonize the planet
- New REE Mines and Processing plants are being developed
- Government regulation in place to help secure rare earths

### ➤ America is looking to find

- Alternative supplies to China
- Secure supplies that limit any impact from trade wars
- Socially sustainable sources to Chinese supply

### ➤ “Green” Bio-Engineered extraction and purification of REE

- Environmental , Social and Governance (ESG) criteria being applied to support sustainable investing and enhance long term value creation
- Engaged with leading researchers of renewable, non-toxic, bio-engineered technologies in extraction and purification of REEs
- Collaborative supporter of work by members of the Department of Energy (DOE) Critical Materials Institute
- We remain focused on providing a mixed Rare Earth Concentrate for processing, separation and purification
- Refining capability is advancing as our projects develop

## 1 Scale:

JORC Resource @ La Paz  
– 170m tonnes  
Exploration target of  
700m to 900m tonnes in  
S/W mineralized zone

## 2 Quality:

High volumes in  
Magnet Metals and  
Scandium  
Negligible Thorium

## 3 Diversity:

Portfolio of Rare  
Earth Projects  
Arizona Wyoming  
Nevada

## 4 Timing:

Soaring demand  
outstripping  
supply

## 5 Momentum:

Disruptive R&D  
Collaborations with  
dozens of researchers  
as La Paz moves to PEA

## 6 Value:

Modest market  
capitalization &  
strong cash position

## 7 Location:

Mining friendly jurisdictions  
with workforce expertise in  
high efficiency open-cut  
mining

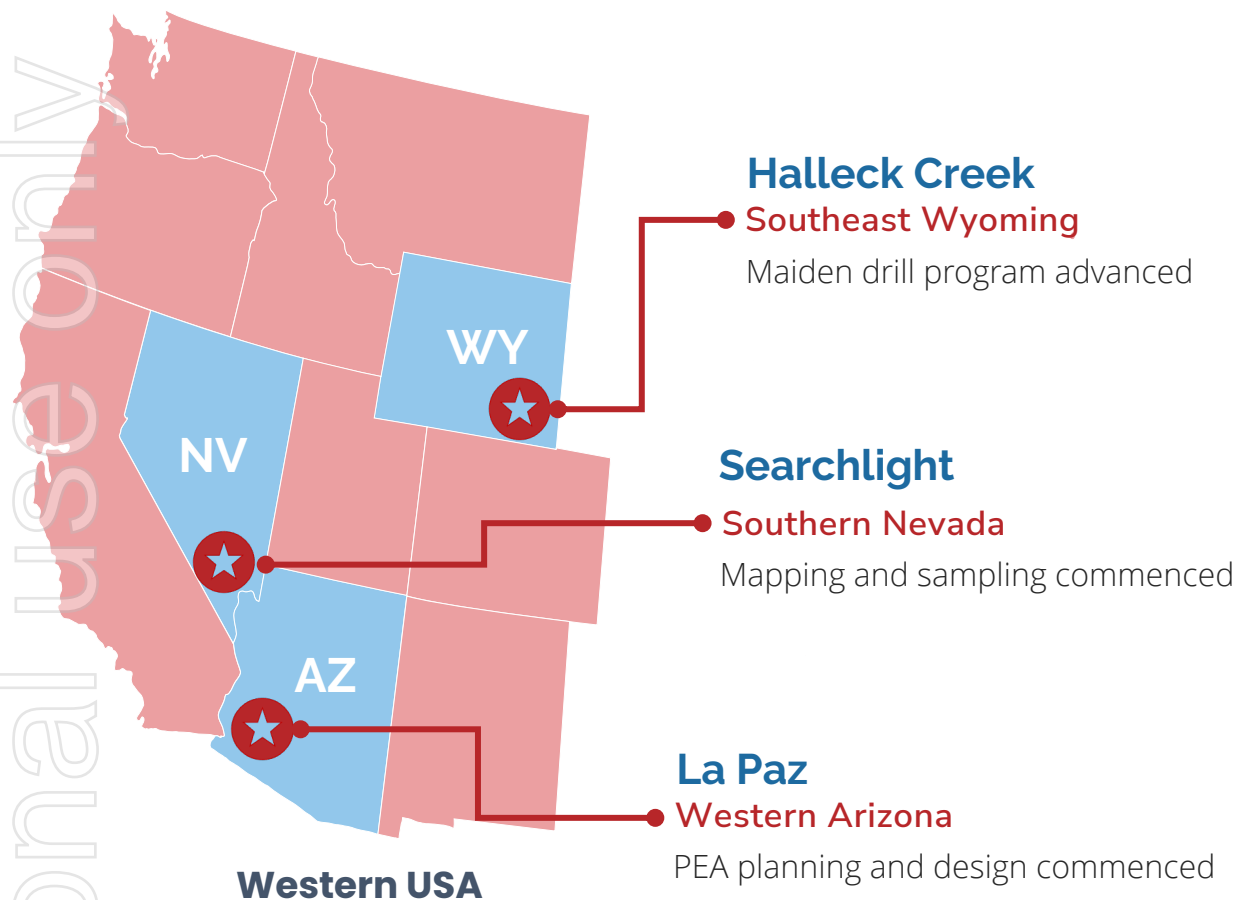
## 8 US Gov Engagement:

DOD and DOE  
R&D projects that support  
the domestic REE supply  
chain

## 9 Leadership:

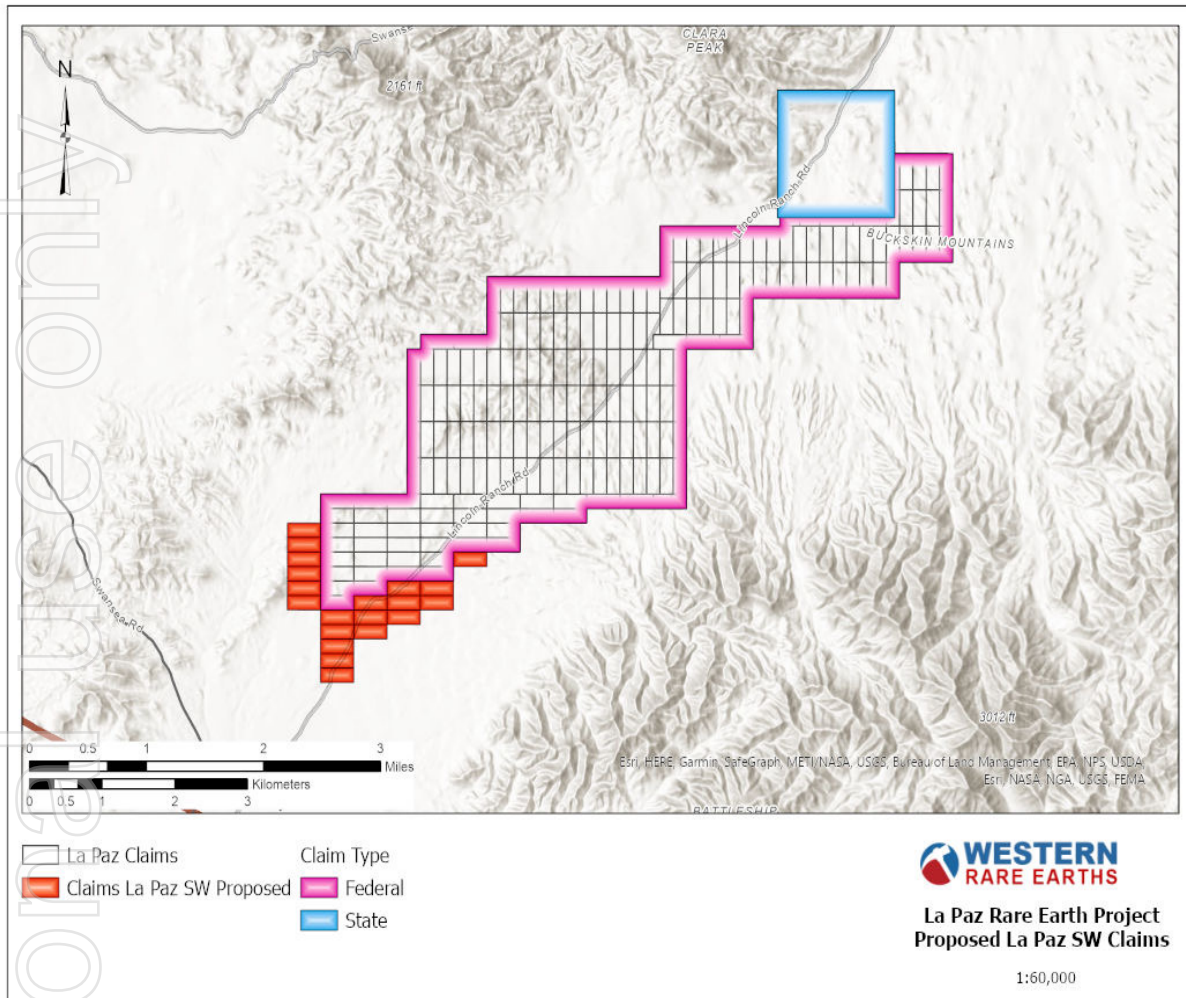
Established US based  
leadership & technical  
team

Exploration assets at different stages of development



- **La Paz, Arizona**
  - Claim control of 5,540 acres
  - JORC defined resource estimation 170M tonnes
  - 80M kg Total Rare Earth Oxide (TREO)
  - 4.4M of Scandium Oxide
  - Relative environmental purity of the deposit
- **Halleck Creek, Wyoming**
  - Claim control of 3,109 acres
  - Consistently high-grade mineralisation identified from surface sampling
- **Searchlight, Nevada**
  - Claim control of 1,618 acres
  - Well-endowed with Critical mineral resources
  - Proximity to Mountain Pass, North America's major REE operating mine





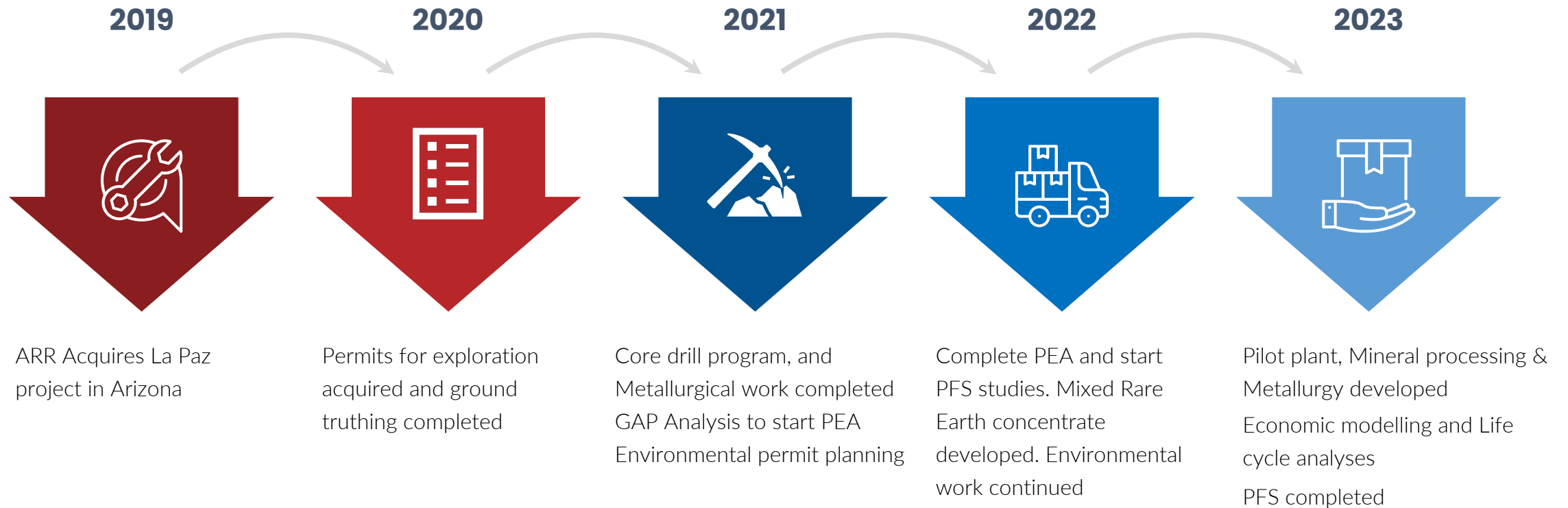
- **Scale and grade consistency support the project economics**
  - **Mineral control** covers 5,540 acres, 4,900 acres on Federal Claims , 640 acres on State Exploration License
  - Current **defined resource** sits on 10.2% of total area
  - **New Southwest area** was drilled in March 2021 and shows rare earth elements
- **Metallurgy supports high-value rare earth elements**
  - **Magnetic** elements constitute approximately 27% of the TREE
  - **Heavy** REEs constitute near 22% of the TREE
  - Market optimal Nd:Pr ratio of 4:1 , constitutes near 23% of the TREE.
- **Magnetic separation and direct flotation supports mine economics**
  - TREE **concentrated** from 552 ppm to 1744 ppm (+ 216%)
  - Recovering 74.7% of available TREE and **reducing** the ore mass by 76%
  - Scandium concentrated from 16 ppm to 30.4 ppm (+90%) recovering 43.8% of available Scandium
  - **Extraordinarily low radioactive materials**

## Estimated Total Rare Earth Element Oxide (TREO) Resources

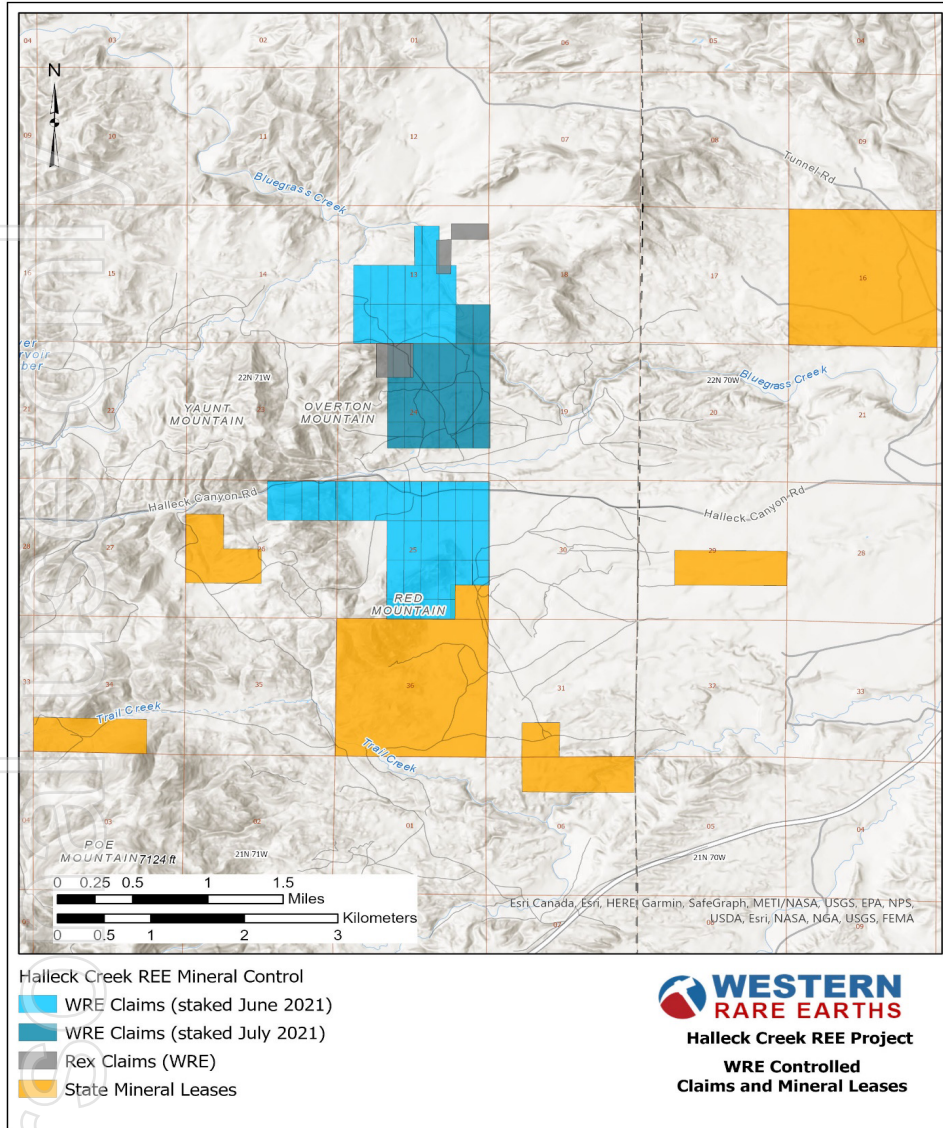
Classification	Tonnage (tonnes)	TREE (ppm)	TREE (kg)	TREO Factor	TREO (ppm)	TREO (kg)
Indicated	35,161,600	382	13,448,019	1.2005	<b>459</b>	16,144,347
Inferred	135,433,800	393	53,198,803	1.2005	<b>472</b>	63,865,163
<b>Total</b>	<b>170,595,400</b>	391	66,646,822	1.2005	<b>469</b>	80,009,510

## Estimated In-Place Scandium Oxide Resources

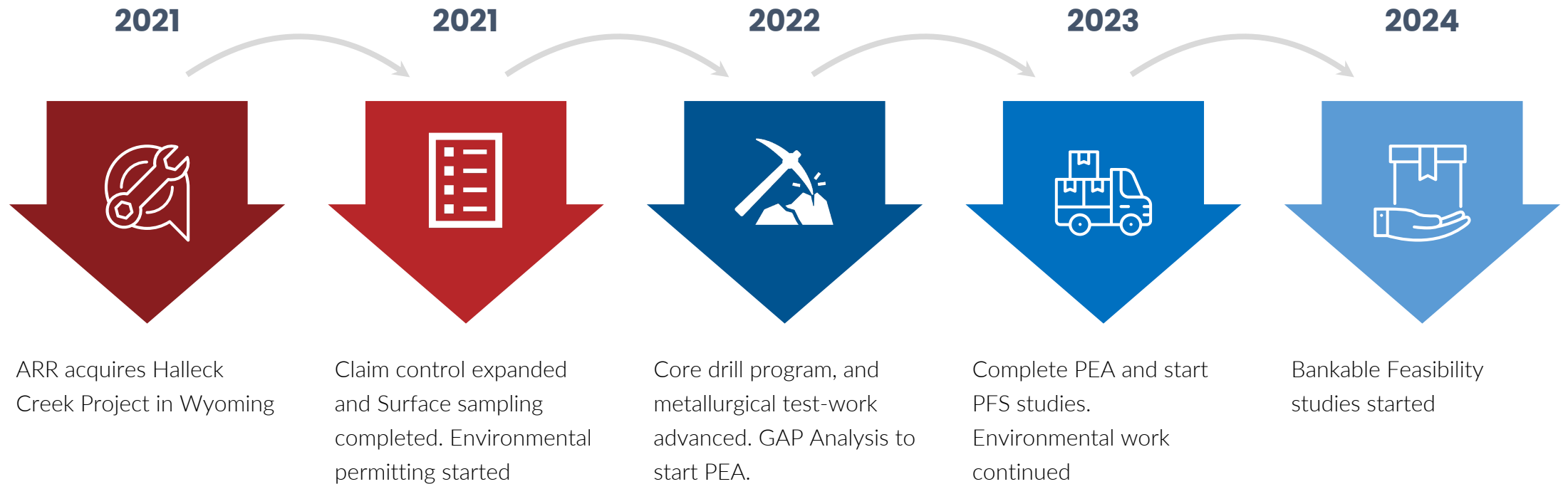
Classification	Tonnage (tonnes)	Sc (ppm)	Sc (kg)	Sc Oxide Factor	Sc Oxide (ppm)	Sc Oxide (kg)
Indicated	35,161,600	17	592,653	1.5334	26	908,770
Inferred	135,433,800	17	2,280,914	1.5334	26	3,497,537
<b>Total</b>	<b>170,595,400</b>	17	2,873,567	1.5334	26	<b>4,406,306</b>

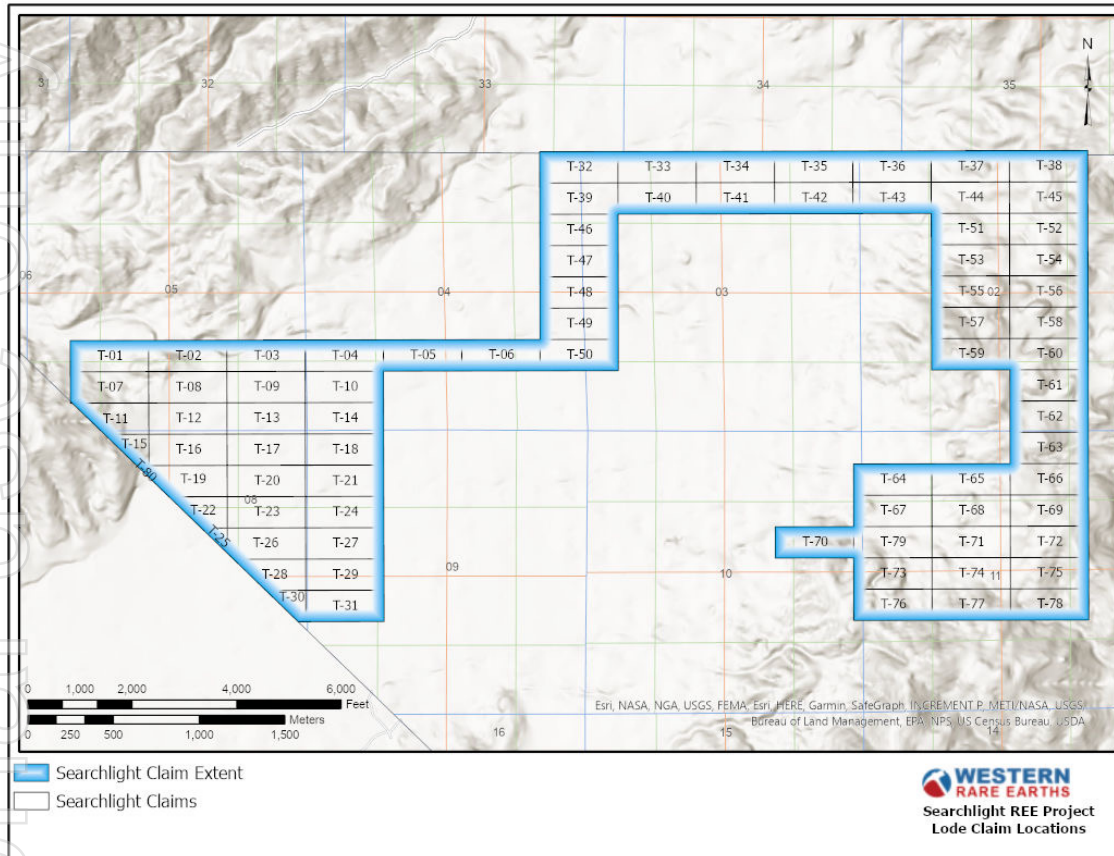






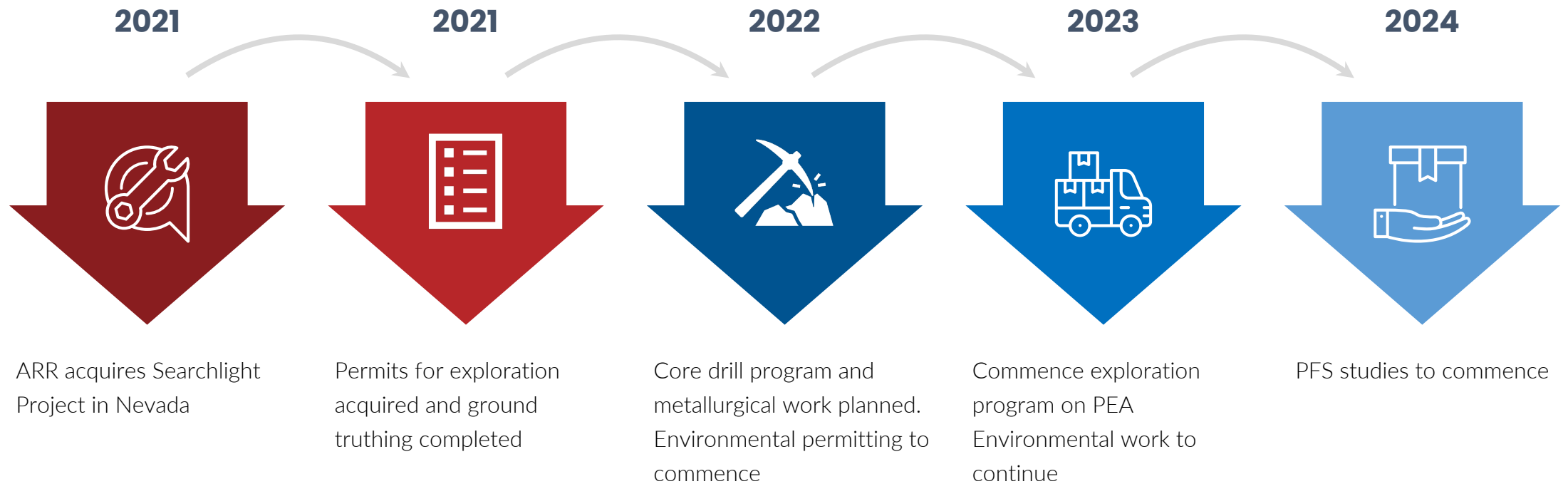
- Total area under mineral **claim control** (Tenement area) is **3,109** acres
  - BLM surface and mineral claims totaling 1265 acres
  - Wyoming State lease area totaling 1841 acres
- Consistently **high-grade** surface sampling from expanded project area
  - Continuous trend of high-grade mineralisation identified
  - **3,349** ppm average Total Rare Earth Oxides (TREO) in the Overton Mountain area
  - **3,002** ppm average Total Rare earth Oxides (TREO) in the Red Mountain area
  - Highest grade observed in samples collected in 2021 are :
    - TREO: **5,756 ppm**
    - HREO: **552 ppm**
    - Magnetic Minerals Oxide: **1,433 ppm**
- JORC 2012 Maiden **mineral resource estimate** program commenced
  - Exploration drilling targets identified
  - Permitting underway

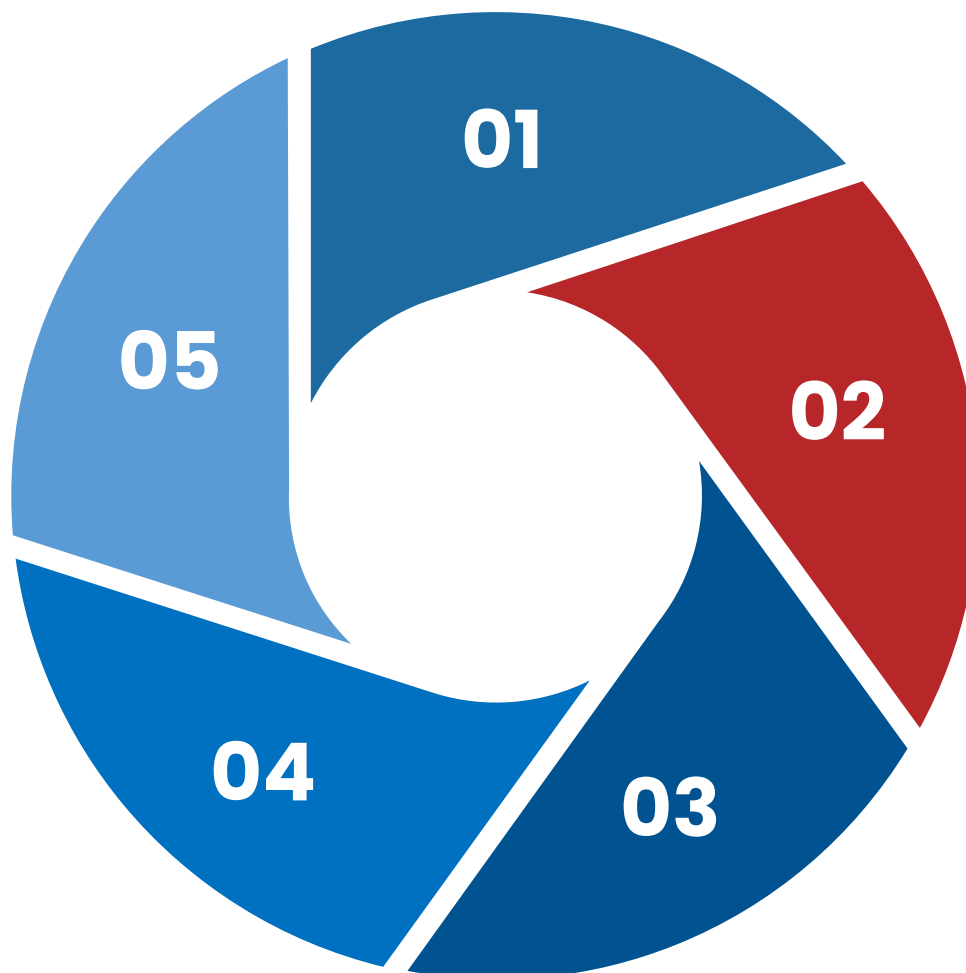




- 80 unpatented mining claims on 1,618 acres
- Located 30 km west of the **Mountain Pass** rare earths mine
- Geological mapping and sampling indicates the presence of structurally controlled REE- bearing monazite-apatite vein deposit of potentially significant size and tenor
- The best sample assay on the project is summarised as follows:
  - TREE: 14,800 ppm
  - HREE: 940 ppm
  - Magnet Minerals: 3,320 ppm
- The project appears to be a unique REE property unusually endowed with heavy RRE's that warrants further study and exploration
- Phased exploration plans including structural mapping, geochemical sampling, areal geophysics, trenching underway







## Exploration

Define resources and reserves

## Development

Develop mining asset

## Production

Produce Rare Earths

## Finished Products

Use rare earths in finished products

## Sales

Sell rare earths into the market

- With a diverse portfolio of rare earths assets, ARR is anticipating a high tempo of activity in the coming 18 months and beyond
- Key focus is producing a scoping study and PEA for La Paz while completing initial drill program at Halleck Creek to identify maiden JORC Resource

Operational Activity	Sept	Oct	Nov	Dec	Q1 CY22	Q2 CY22	Q3 CY22	Q4 CY22	Q1 CY23
<b>La Paz</b>									
Commence Nagrom met testing									
Commence Scoping study									
New ore body drilling (SW area)									
Resource expansion drilling (depth & lateral) expansion, Geotech, H2O investigation									
Commence PEA									
<b>Searchlight</b>									
Secure drilling permits									
Maiden drill program									
Metallurgical study									
Resource drill program									
Maiden JORC Resource									
<b>Halleck Creek</b>									
Surface mapping and sampling									
Secure drilling permits									
Maiden drill program									
Metallurgical study									



**The Stone Age didn't end because they ran out of Stones  
It ended because better technologies were developed to meet humanity's changing needs**



# APPENDIX

- [High-Grade Surface Sampling - Halleck Creek Project](#)
- [Magnetic separation increases TREE grade by 216% at La Paz](#)
- [Drilling at La Paz delivers Indicated resource estimate increase of 117% to 35.2 million tonnes \(MT\)](#)
- [June 2021 Quarterly Activities Report](#)
- [La Paz Drilling produces significant results](#)
- [La Paz Drilling Results Technical Report](#)
- [Acquisition of High-grade Rare Earths Element \(REE\) Project in Nevada, near Mountain Pass](#)
- [March 2021 Quarterly Activities Report](#)
- [Half Year Accounts](#)
- [Executive Order on America's Supply Chains](#)
- [Exploration Drilling planned for La Paz Southwest](#)
- [Feedstock supplied to researchers REE bioengineering program](#)

## Halleck Creek Exploration Plan

Developing drilling plan and exploration plan for Halleck Creek Asset for JORC Maiden Resource

## Environmental

Starting environmental work and analysis for all three projects in North America.

01

02

03

04

05

## La Paz Pre Economic Assessment

Developing plan for PEA to be completed for La Paz.

## Searchlight Exploration Plan

Developing drilling plan and exploration plan for Searchlight Asset for JORC Maiden Resource

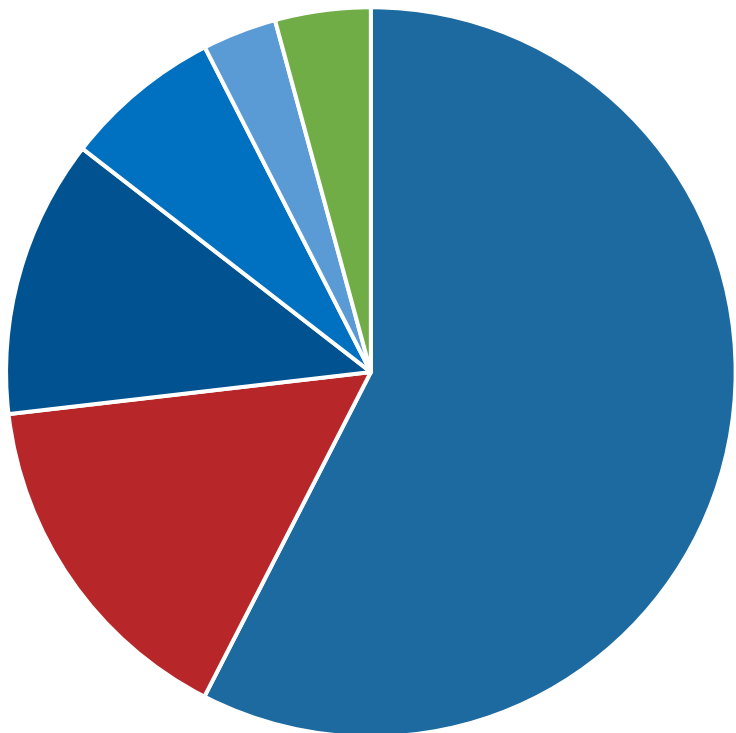
## GAP Analysis

Developing GAP Analysis for all three projects.



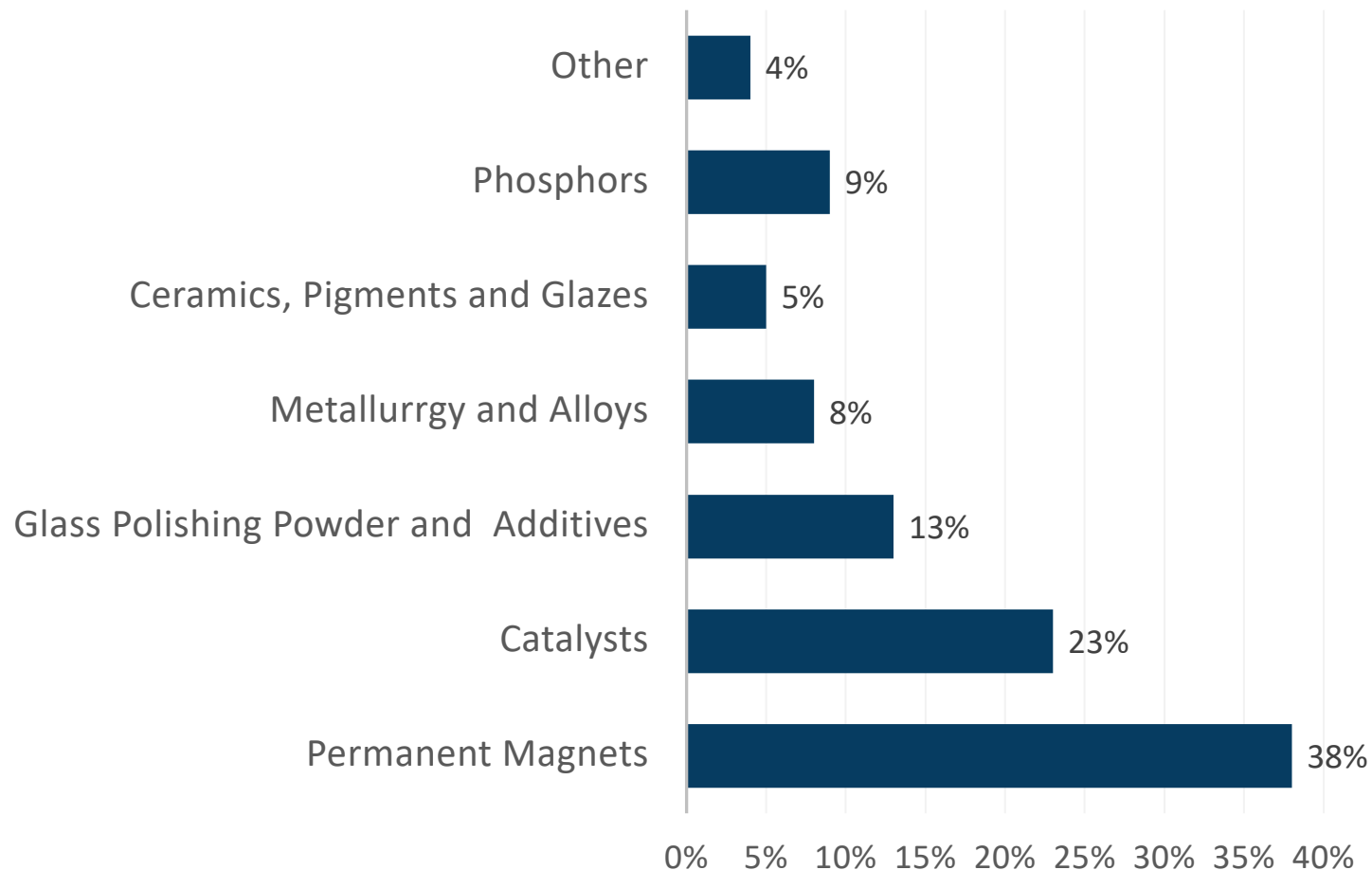
China Dominates Rare Earths Production while USA Dominates Rare Earths Consumption

2020 Global REE Mine Production



■ China ■ United States ■ Burma  
■ Australia ■ Madagascar ■ Other Countries

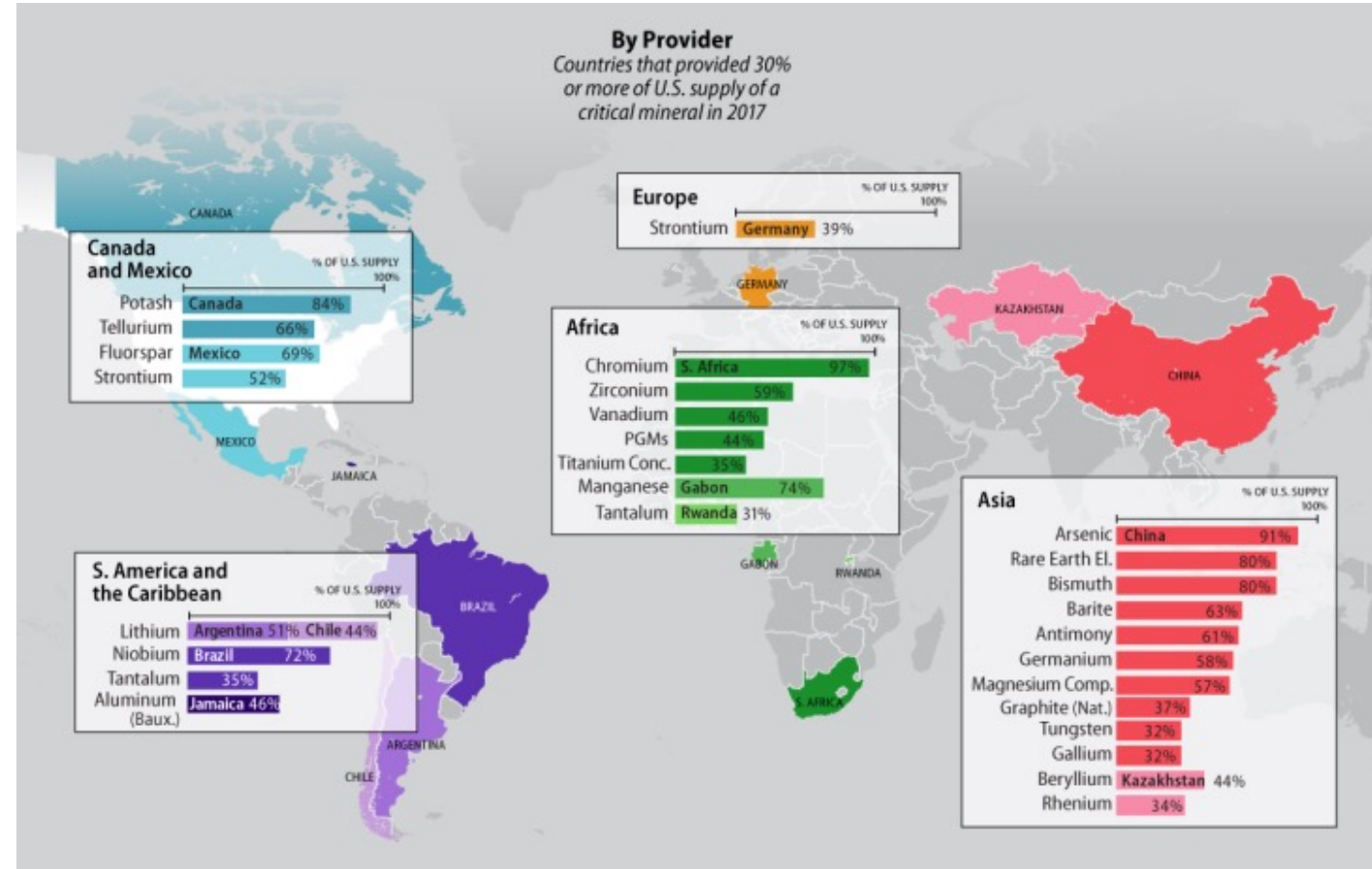
Source: <https://pubs.usgs.gov/periodicals/mcs2020/mcs2020-rare-earths.pdf>



Source: <https://www.nrcan.gc.ca/our-natural-resources/minerals-mining/minerals-metals-facts/rare-earth-elements-facts/20522#L1>

- The Annual Global Rare Earth Market was \$8 billion in 2018
- The **US imported \$2.6 trillion** worth of **finished products** in 2018
- The majority of **REE's imported** into the US come in the finished goods, and not as a raw material
- MP Materials **only operating mine** in Lower 48
- Processing plants being developed and built in Western USA
- **Exploration is limited** due to project availability

Source: [https://www.netl.doe.gov/sites/default/files/2019-05/2019 Annual Reports/Wednesday/REE/12%20-%20REE%20Review%20Presentation Summers%2020190408.pdf](https://www.netl.doe.gov/sites/default/files/2019-05/2019%20Annual%20Reports/Wednesday/REE/12%20-%20REE%20Review%20Presentation%20Summers%2020190408.pdf)



Source: <https://www.everycrsreport.com/reports/R45810.html>



American Rare Earths Limited (ASX:ARR)

**Capital Structure:** Ordinary Shares on Issue 344,808,326

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