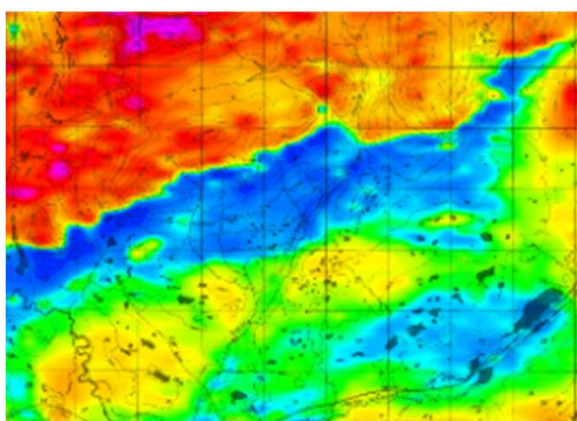




Department of Natural Resources Mineral Industry Update

Presentation by Corri Feige, Commissioner, and
Steven Masterman, State Geologist

February 5, 2021



2020 COVID-19 CHALLENGES

COVID-19 presented significant operational challenges but well defined protocols kept mines in production and workers and the environment safe.

Companies reduced or deferred exploration work to prevent spread:

- **Ambler Metals** cancelled a \$23 million field program to protect local workforce
- **Peak Gold's Tetlin Project** cancelled their field program, but saw **Kinross** invest over \$93 million to acquire a 70 percent share of the project.
- **Donlin** stopped exploration in early summer, but later completed +23,000m of exploration drilling program without COVID-19 cases or loss time injuries.
- **Kensington** doubled shift lengths but met expected production targets for 2020 and completed a multi-million dollar exploration drilling program.

COVID-19 mitigation efforts have yielded both safety and operational results.

- **Red Dog** is managing for regional safety:
 - ~ 1 month without an active case at the mine site; and
 - Still requiring multiple negative tests to travel to and from the site.

2019 INDUSTRY SUMMARY

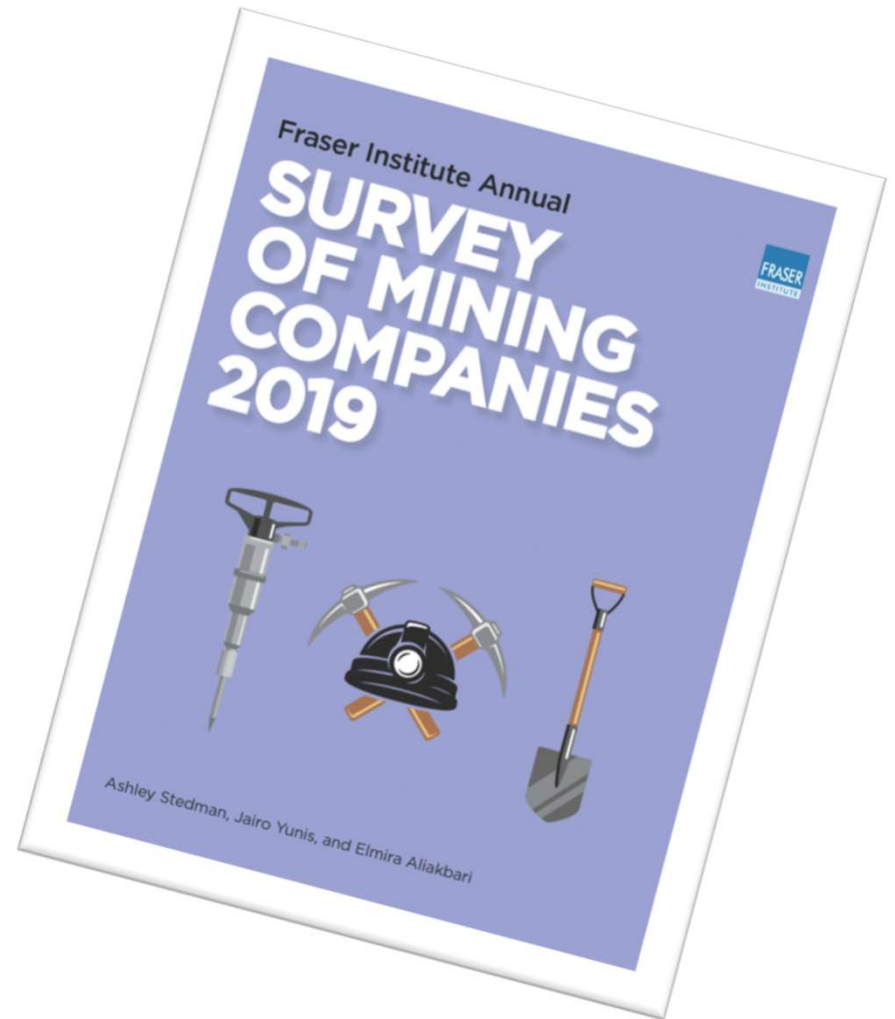
	2018	2019	% change
Area covered by mining claims (million acres)	3.8	3.5	-8%
Exploration expenditures (million US\$)	140.1	171	22%
Development expenditures (million US\$)	334.1	347.8	4%
Value of Alaska's Mineral Industry (billion US\$)	2.9	3.05	5%
Employment (FTE)	3469	3474	0%
Estimated Revenue to Industry (billion US\$)	2.43	2.53	4%

	2019 Production	12/31/19	12/31/20	Change
Zn	665,721 tonnes	\$1.05/lb	\$1.24/lb	+18%
Pb	133,429 tonnes	\$0.87/lb	\$0.89/lb	+2%
Au	636,573 oz	\$1516.80/oz	1898.00/oz	+25%
Ag	16,244,735 oz	\$17.82/oz	\$28.39/oz	+59%
Cu	-	\$2.65/lb	\$3.51/lb	+32%

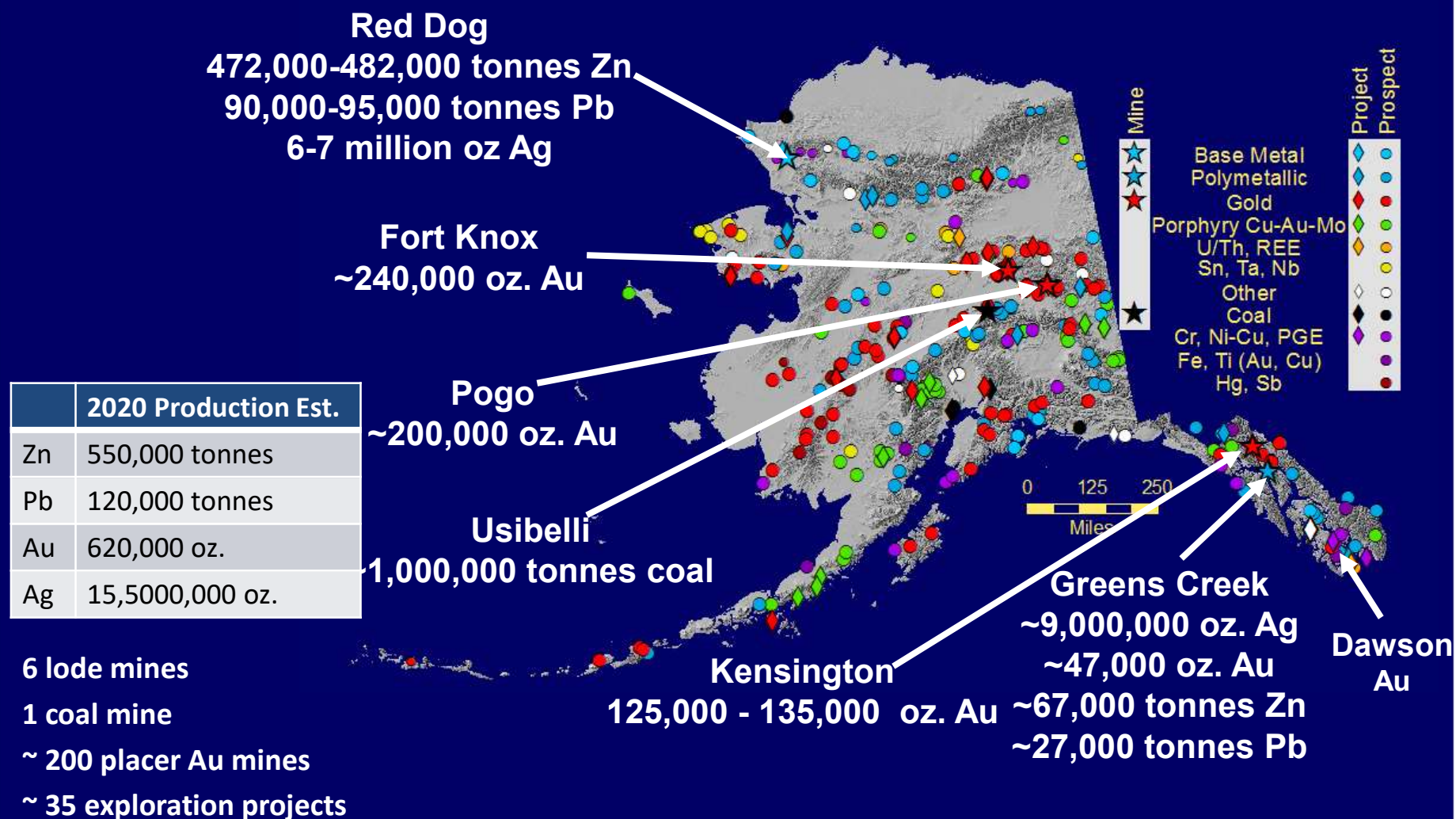
2020 exploration and development spending was impacted by COVID-19

2019 FRASER INSTITUTE REPORT

- World's 4th most attractive development area.
- Top U.S. state for mineral potential.
- Top U.S. state for mining-friendly regulatory & fiscal policies.
- U.S. state best able to meet its own permit timelines.



2020 PRODUCTION FORECAST



PEAK (KINROSS)

Open-pit Au-Ag-Cu skarn near Tok

Purchased 70% interest for \$93.7 million

Contango ORE retains 30% interest

- Ore trucked to Fort Knox mill
- Will add ~220,000 oz/yr to Fort Knox Production
- One-year construction
- Kinross to receive management and toll milling fees for Contango ORE's share of milling
- Expect feasibility and initial permitting EOY 2022
- Production 2024 - 2029

Dec. 31, 2019	Million Tonnes	Au g/T	Ounces (million)	Ag g/T	Ounces (million)
Measured	0.473	6.4	0.097	17	0.254
Indicated	8.73	4.0	1.111	14	3.945
Inferred	1.34	2.7	0.116	16	0.694
Total	10.55	3.9	1.324	14.4	4.893

Data from Kinross, 2020

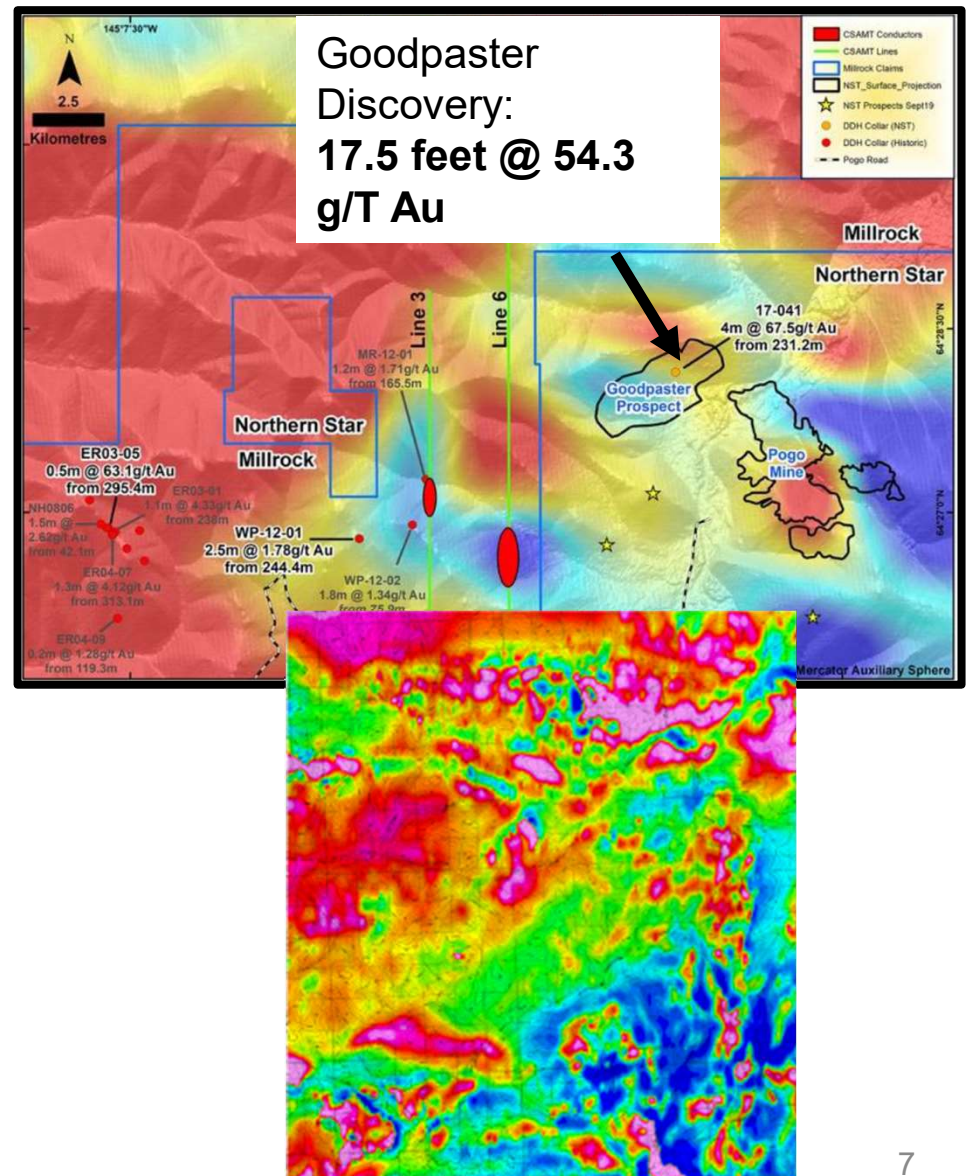
Metric	Kinross Estimate (100% basis)
First production	2024
Life of mine	4.5 years
Total production (Au eq. oz.)	~1 million
Average AISC (Au eq. oz.)	~\$750/oz
Mined gold grade	~6 gpt
Initial capital expenditures	~\$110 million



POGO - EXPLORATION

2020 Goodpaster Exploration:

- Drilling commenced in Q3 surface exploration
- Drilling focused on southeast portion for conversion to resources.
- SOA land
- Select exploration drilling results:
 - 4.0 m at 67.5 g/T Au;
 - 5.2 m at 15.7 g/T Au;
 - 8.9 m at 5.0 g/T Au
- 2.3 km strike, 500 m depth, flat-lying veins, open in all directions



Data from Northern Star Resources, 2020

RED DOG EXPLORATION

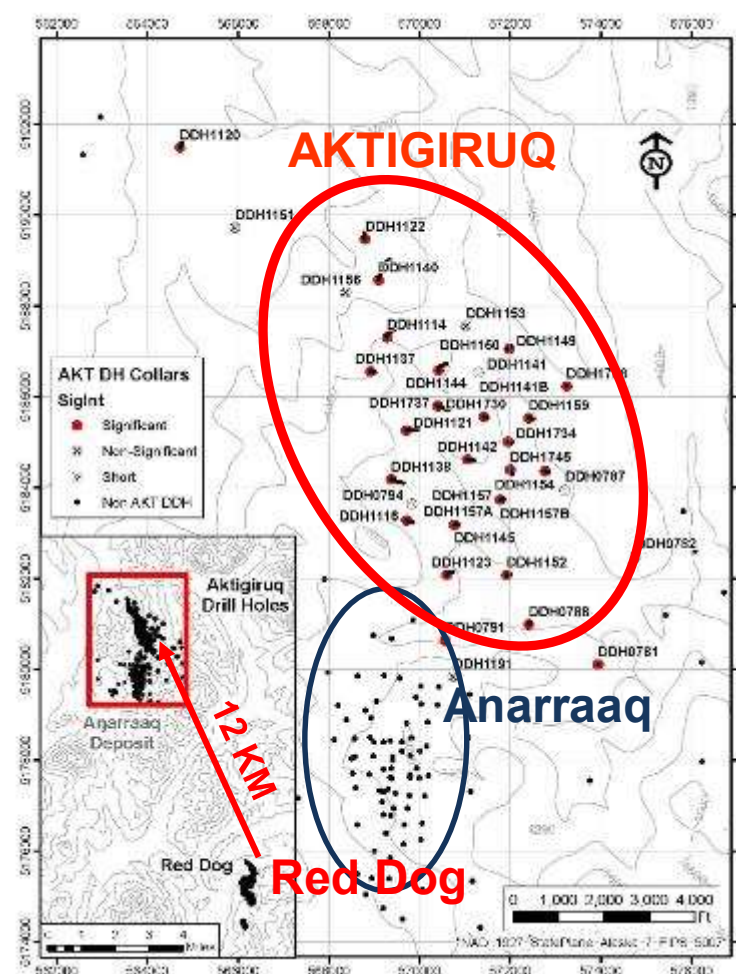
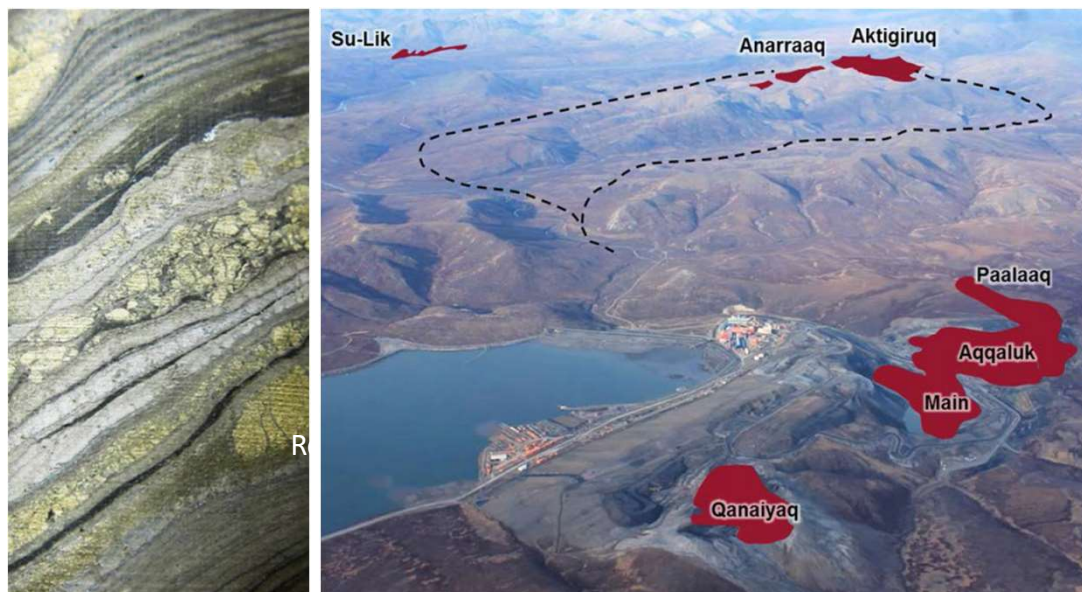
Aktigiruaq/Anarraaq/Lik

Sediment-hosted massive sulfide deposits

Anarraaq inferred resource (Dec 2016): 19.44 M T @ 14.4% Zn, 4.2% Pb, 73 g/T Ag

Aktigiruaq target: 80-150 M tonnes @ 16-18% Zn+Pb
2017-2019 program:

- Applied for a permit to build road
- Underground mines on SOA lands
- 2016 drilling - 54.6 m @ 16.8% Zn, 3.63% Pb (DDH1737)



MINING CLAIMS



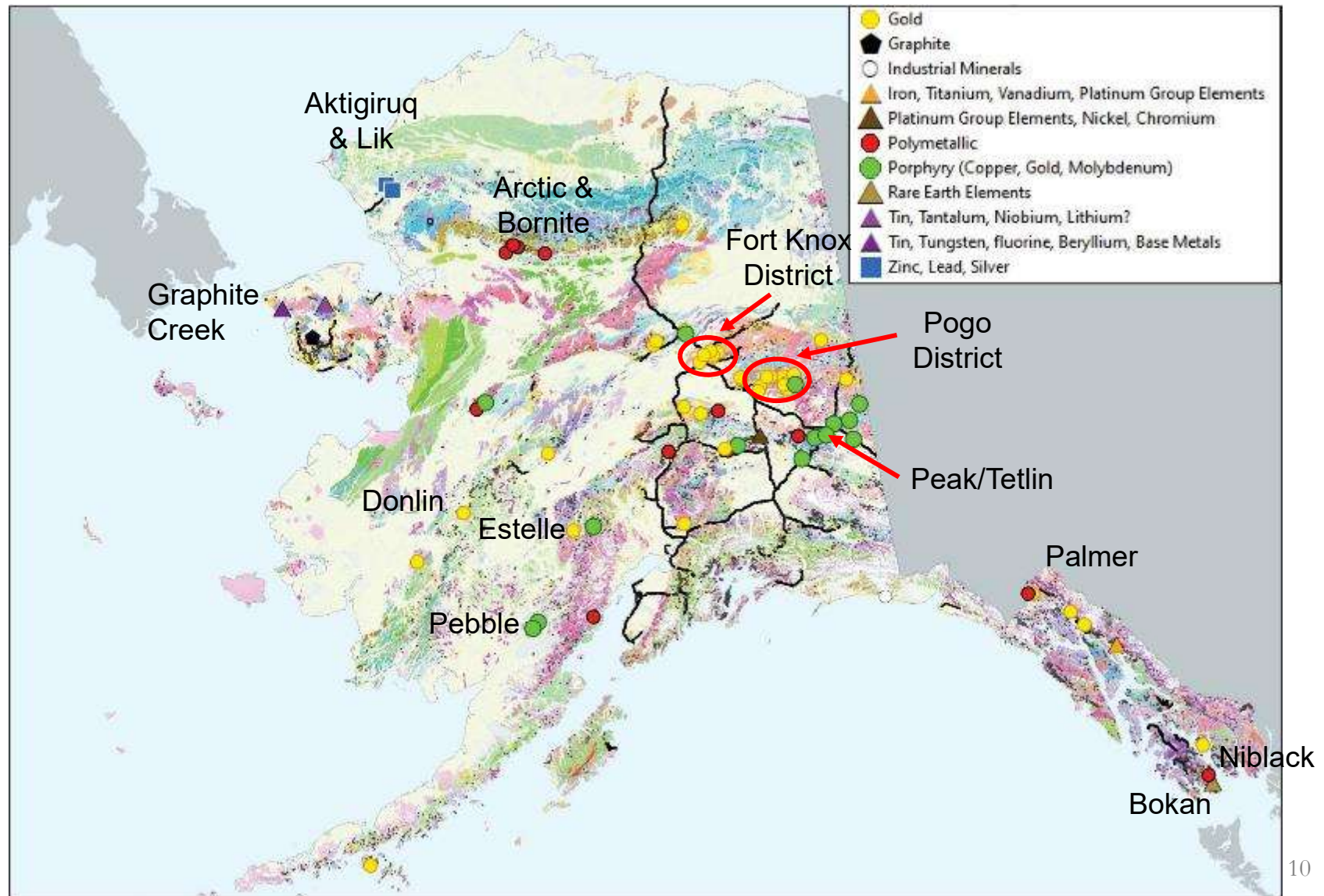
**State claims
~ 3,400,000 acres**

**Federal claims
~ 125,000 acres**

96% on state lands

Claims as of 2/1/2021

ACTIVE EXPLORATION



EXECUTIVE ORDER 13817

(DECEMBER 2017)

- Identify new sources of critical minerals
- Increase activity at all levels of the supply chain, including exploration, mining, concentration, separation, alloying, recycling, and reprocessing critical minerals
- Ensure that our miners and producers have electronic access to the most advanced topographic, geologic, and geophysical data
- Streamline leasing and permitting processes to expedite exploration, production, processing, reprocessing, recycling, and domestic refining of critical minerals
- Critical minerals list released in concert with EO

CRITICAL MINERALS

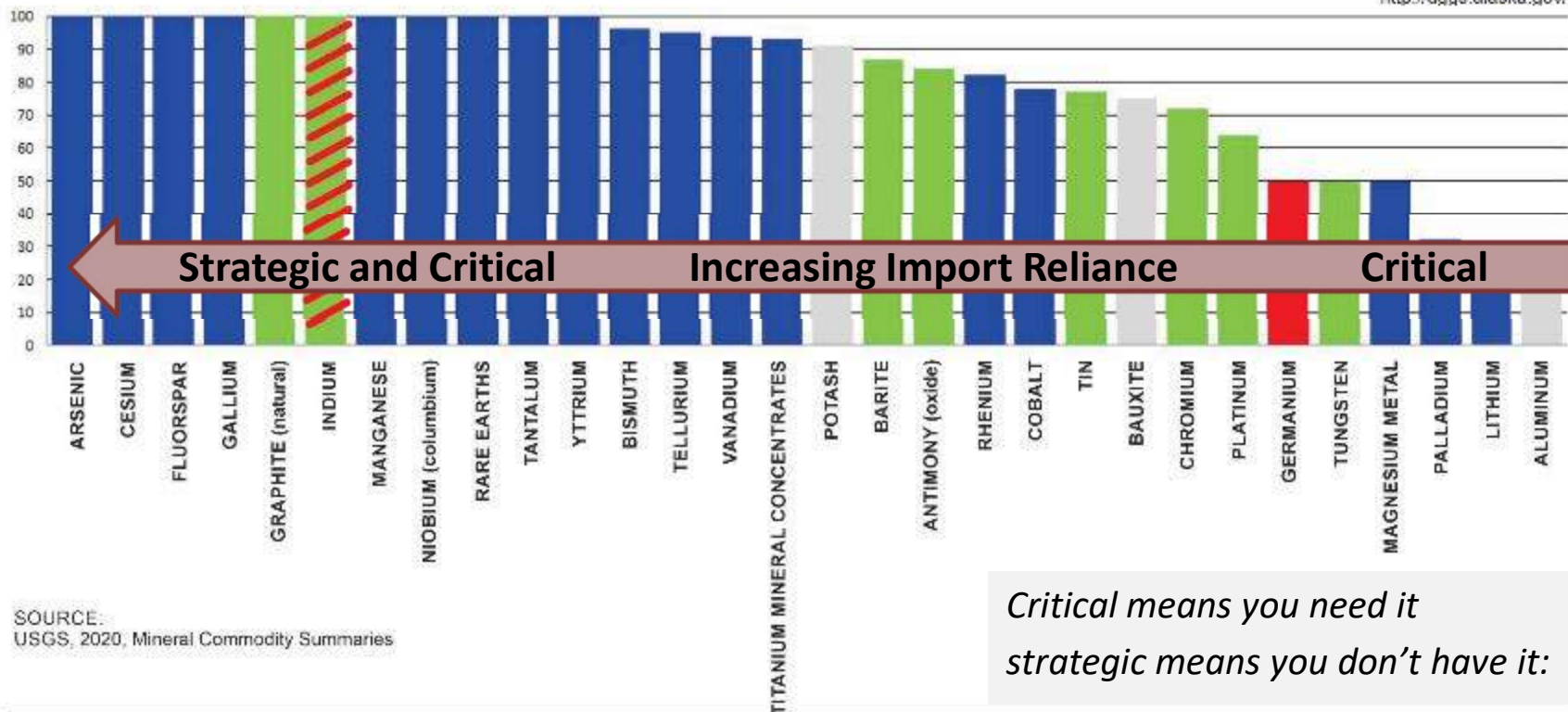
2019 U.S. Critical Minerals Import Reliance

NOTE:

Does not include beryllium, selenium, zirconium, and hafnium, as these commodity data are not available.



<http://dgggs.alaska.gov/>



SOURCE:

USGS, 2020, Mineral Commodity Summaries

*Critical means you need it
strategic means you don't have it:*

ALASKA



Current
Production



Past & Potential
Production



Potential Future
Production



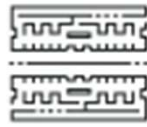
Low to Very Low
Potential Production

CRITICAL MINERALS LIST



Energy

HAFNIUM
RHENIUM
TANTALUM
URANIUM



Technology

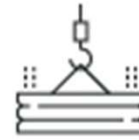
GERMANIUM
INDIUM
GALLIUM
RARE EARTHS



Industrial

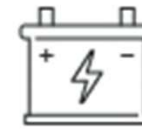
BERYLLIUM
ZIRCONIUM
TUNGSTEN
ALUMINUM

PGMs
BARITE
FLUORSPAR
ARSENIC
SCANDIUM
STRONTIUM
TITANIUM
POTASH



Steel

MAGNESIUM
CHROMIUM
TIN
TELLURIUM
MANGANESE
VANADIUM
NIOBIUM



Batteries

LITHIUM
COBALT
ANTIMONY
GRAPHITE



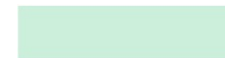
Research

HELIUM
RUBIDIUM
CESIUM
BISMUTH

Of the 35
China is
either the top
producer or
supplier for 22



Potential Alaska production



Major commodity

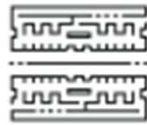
USGS OFR 2018-1021 describes uses and methods

SOLAR, WIND, BATTERIES & EV's



Energy

HAFNIUM
RHENIUM
TANTALUM
URANIUM



Technology

GERMANIUM
INDIUM
GALLIUM
RARE EARTHS



Industrial

BERYLLIUM
ZIRCONIUM
TUNGSTEN
ALUMINUM
PGMs
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Batteries

LITHIUM
COBALT
ANTIMONY
GRAPHITE



Research

HELIUM
RUBIDIUM
CESIUM
BISMUTH



Potentially mineable



Potentially significant



Solar/Wind



Batteries/EV's



Solar/Wind/Batteries/EV

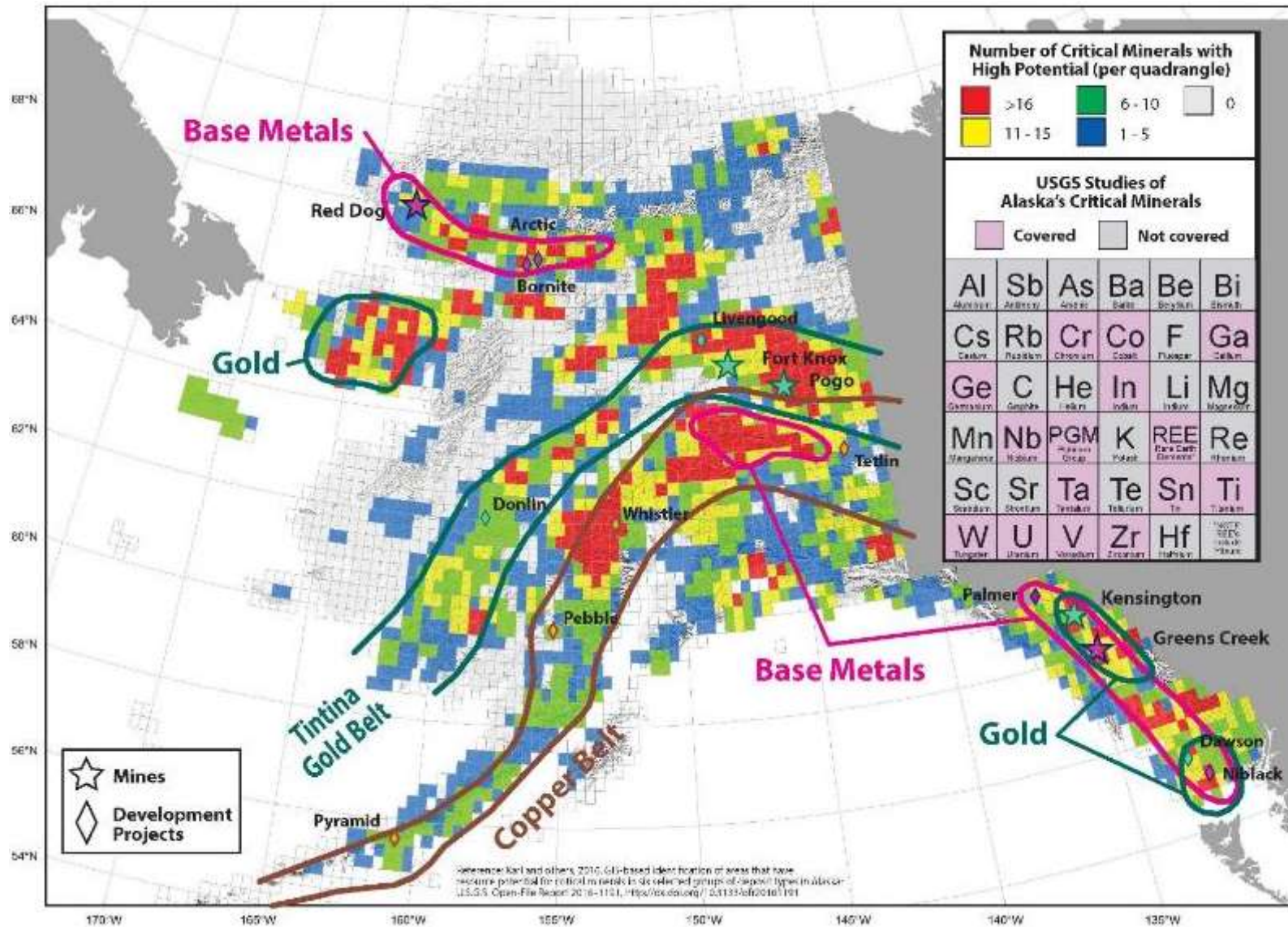
Non-Critical mineral components

Solar/wind – Steel, Cu, Ag, Si, Zn, Cd, plastics

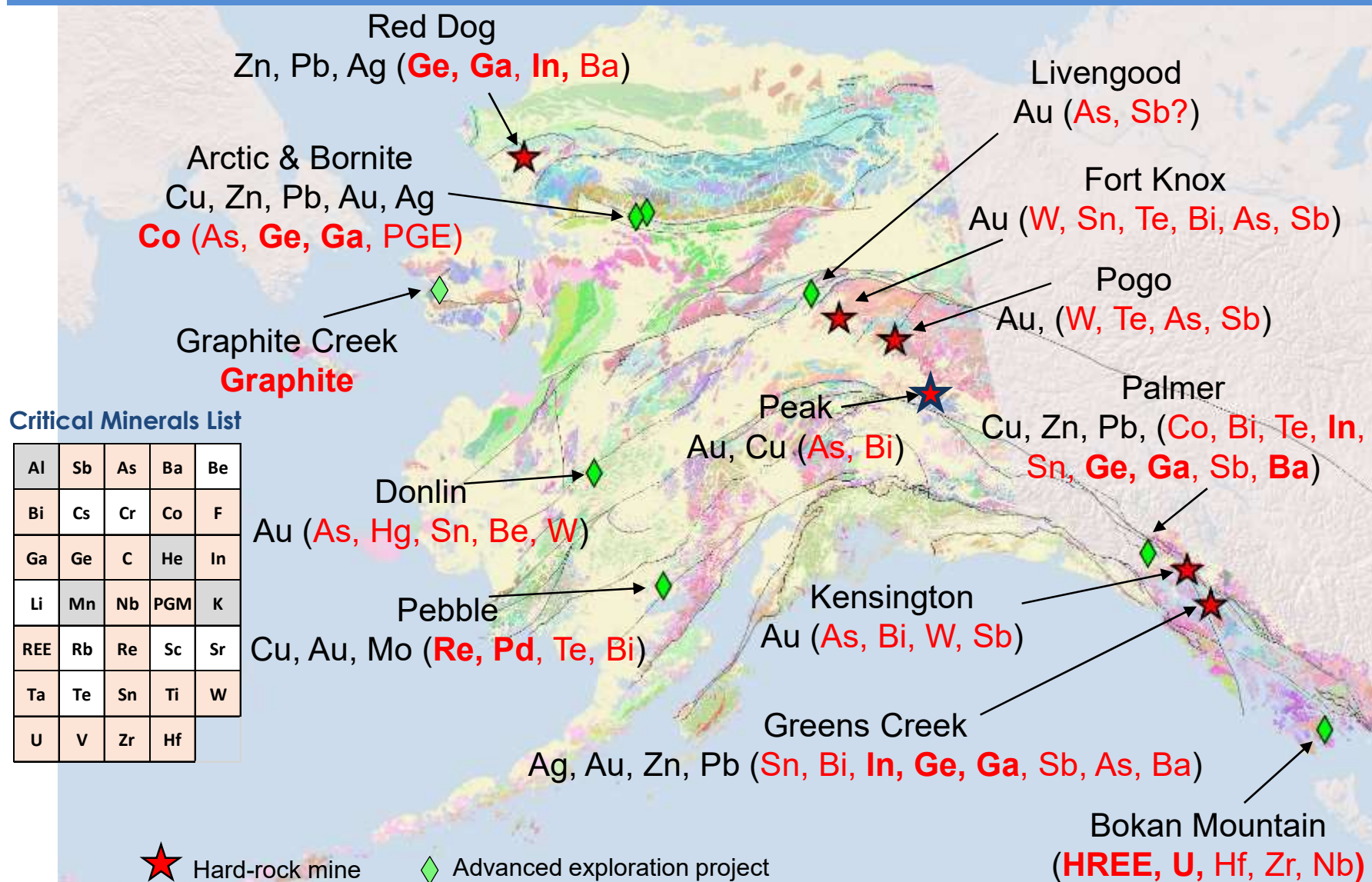
Batteries/EV's – Steel, Cu, Ni, Zn, Mn, plastics

USGS OFR 2018-1021 describes uses and methods

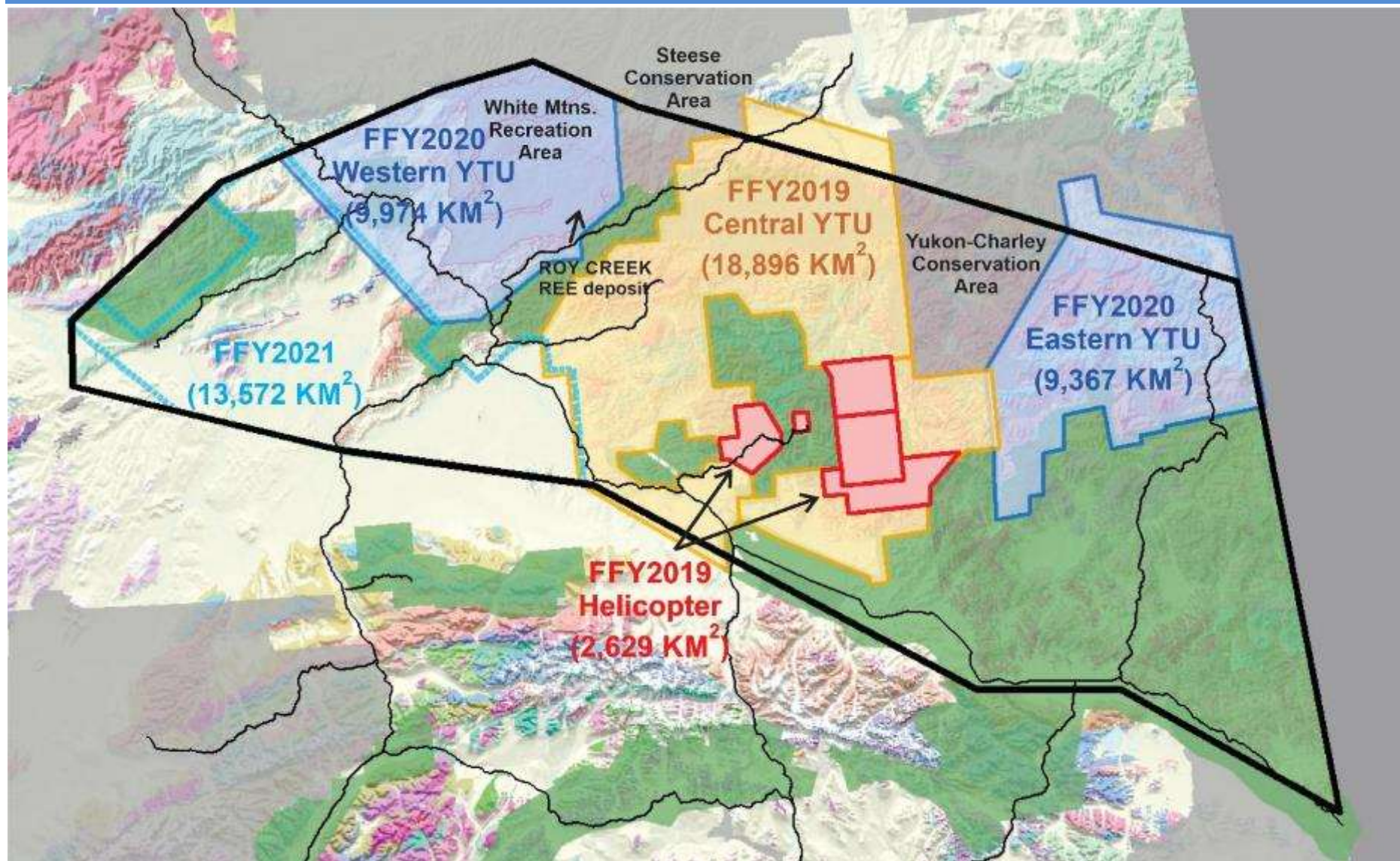
CO-LOCATION OF MINERALS



MINES AND ADVANCED PROJECTS



EARTH MRI GEOPHYSICS



E013953 (SEPTEMBER 2020)

- Develop secure critical minerals supply chains
- Establish, expand, and strengthen commercially viable critical minerals mining and minerals processing capabilities
- Develop globally competitive, substantial, and resilient domestic commercial supply chain
- Promote responsible minerals sourcing, labor, and business practices
- Reduce the dependence of the United States on minerals produced using methods that do not adhere to responsible mining standards

DEPARTMENT OF ENERGY

- DOE CORE-CM funding opportunity to assess REE & critical minerals in coal basins in Alaska and facilitate their development. UAF/DGGS application \$1.85 M phase 1
- DOE Request for Information:
 - Resource Characterization and Technology Development
 - Sustainable Resource Extraction and Beneficiation Technology Development
 - Extractive Metallurgy, Reduction and Alloying Technology Development
 - International Engagements, Standards, and Supply Chain Development
- DOE established Office of Minerals Sustainability

BIDEN ADMINISTRATION POLICY GOALS

- Renewable energy targets have massive implied advanced materials, critical mineral, and rare earth element needs:
 - U.S. net zero emissions by 2050
 - Reduce building carbon footprint 50% by 2035
 - 500,000 electric vehicle charging outlets by 2030
 - 100% electric government vehicle fleet
- Made in America/Build Back Better initiatives – while they do not single out mining, they highlight a focus on domestic industry and manufacturing.
- So far mining has *not* seen the same kind of anti-fossil fuel rhetoric and “first day” actions that directly target oil and gas.

BIDEN ADMINISTRATION CHALLENGES/UNCERTAINTY

There are a number of campaign and policy positions that could negatively impact U.S. mining:

- Resistance to National Environmental Policy Act (NEPA) and permitting reforms
- 30 by 30 Initiative – expanding conservation areas also closes them to other beneficial uses
- Support for increased corporate taxes, new federal mining royalties, and other commercial challenges
- Personnel is policy – many leaders and staff in the new administration have historically supported mining restrictions.

QUESTIONS?



THANK YOU!