“Pogo Project” – Geology & Mineral Deposits

Nov. 2024

NORTHERN STAR
RESOURCES LIMITED

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Forward Looking Statements

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ASX Listing Rules Disclosures

The information in this announcement that relates to the current Ore Reserves and Mineral Resources of Northern Star has been extracted from the ASX release by Northern Star entitled "Resources, Reserves and Exploration Update" dated 4 May 2023 available at www.nsrltd.com and www.asx.com ("Northern Star Announcement").

Northern Star confirms that it is not aware of any new information or data that materially affects the information included in the Northern Star Announcement other than changes due to normal mining depletion during the eleven month period to 23 February 2024, and, in relation to the estimates of Northern Star's Ore Reserves and Mineral Resources, that all material assumptions and technical parameters underpinning the estimates in the Northern Star Announcement continue to apply and have not materially changed. Northern Star confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from that announcement.

Financial Notes

Underlying EBITDA and Cash Earnings are non-GAAP measures.

Note 1: Underlying EBITDA is Revenue ($2,248M); less cost of sales excluding D&A ($1,311M), less corporate overheads excluding D&A ($58M), plus other income ($3M), plus foreign exchange gains ($11M), plus Merger and Acquisition related costs ($4M), less Insurance proceeds received ($5M), less foreign exchange on net unhedged USD Senior Unsecured Notes ($3M).
Cash Earnings is defined as Underlying EBITDA ($889M) less sustaining capital ($164M from AISC tables in December 2023 Quarter Report, which includes $59M of lease repayments) less net interest paid ($9M), less corporate tax paid ($14M; which excludes $11M tax refund received during FY24).
Underlying Free Cash Flow is a non-GAAP measure defined as operating cashflow ($840M) less capital expenditure ($614M) less equipment finance and leases ($79M), less exploration expenditure ($59M), plus payment for merger and acquisition related costs (landholder duty, $7M), plus movement in bullion ($36M). HY24 Dividend - Interim 15cps (HY23 – 11cps).

Note 2: Net cash is defined as cash and bullion ($939M cash plus $150M bullion) less unsecured loans (A$860 million = US$600 million at AUD:USD rate of 0.68, less capitalised transaction costs).

Rounding is applied in this presentation.

Authorised to release to the ASX by Stuart Tonkin, Managing Director & CEO.

About Northern Star Resources Ltd

Northern Star _

1 commodity, 2 jurisdictions, 3 production centres

100%
GOLD

Tier-1
MINING JURISDICTIONS

ASX 50
MARKET INDEX

Our purpose is to generate superior returns for shareholders

Summary Slide

This talk will give an overview of the Regional and District geology at the Pogo Project.

- A brief look at District geology, geophysics and geochemistry will be shown.
- A detailed discussion of “What is a Pogo-type gold deposit” is presented. **Pogo Mine is a high-grade, UG gold deposit, 8 gpt average RoM grade, with a very small surface footprint!**
    - An example of a different “Fort Knox-type” gold deposit at Pogo Project follows.
- New findings from USGS/ NSR cooperative programs and joint research will be presented.
- Detailed discussions of Pogo Project recent exploration discoveries are given towards the end of the talk.
- As promised, photos of drill core from our newest discoveries are “on tap”. And at right!

Pogo Project in the Tintina Belt Location

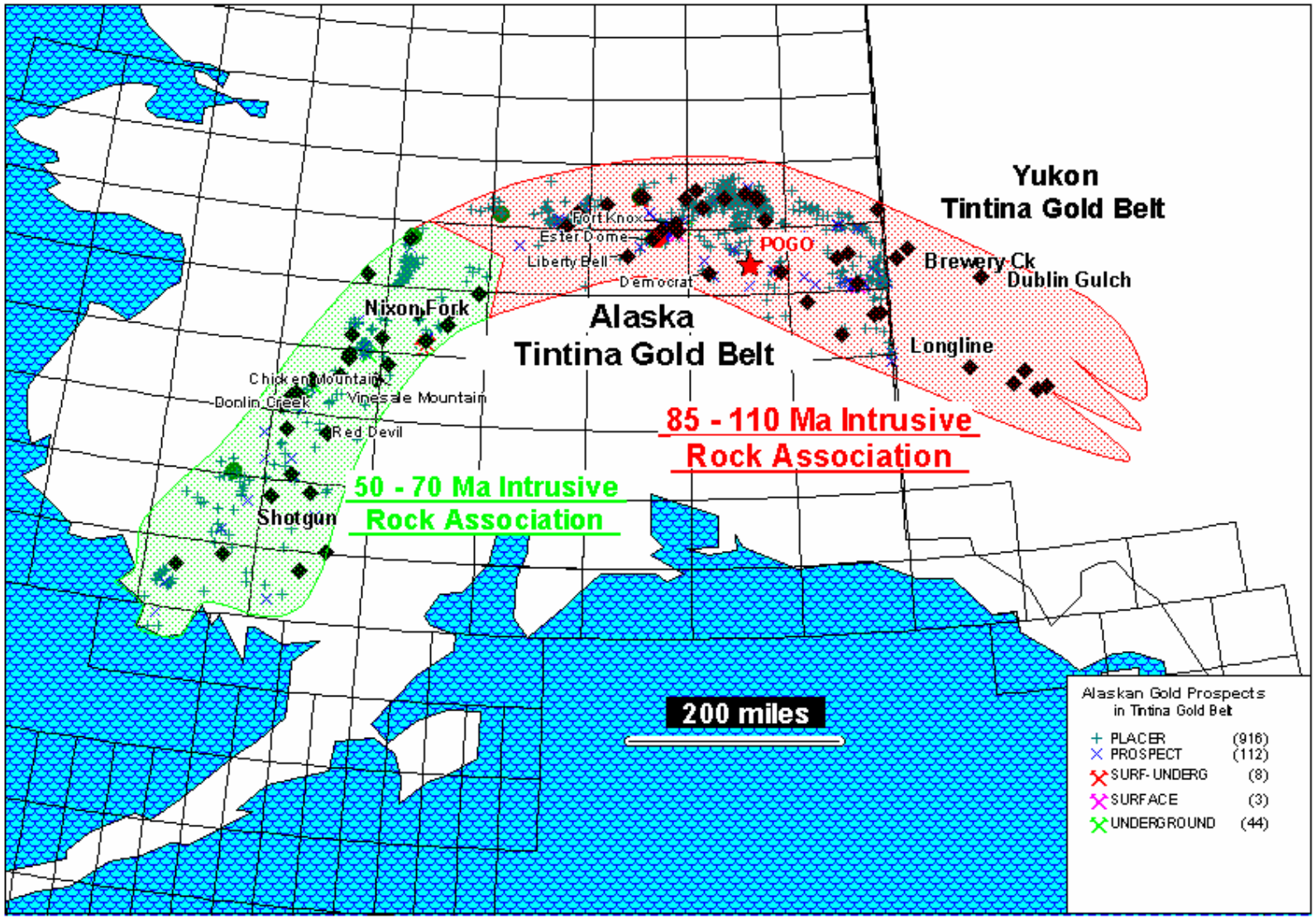
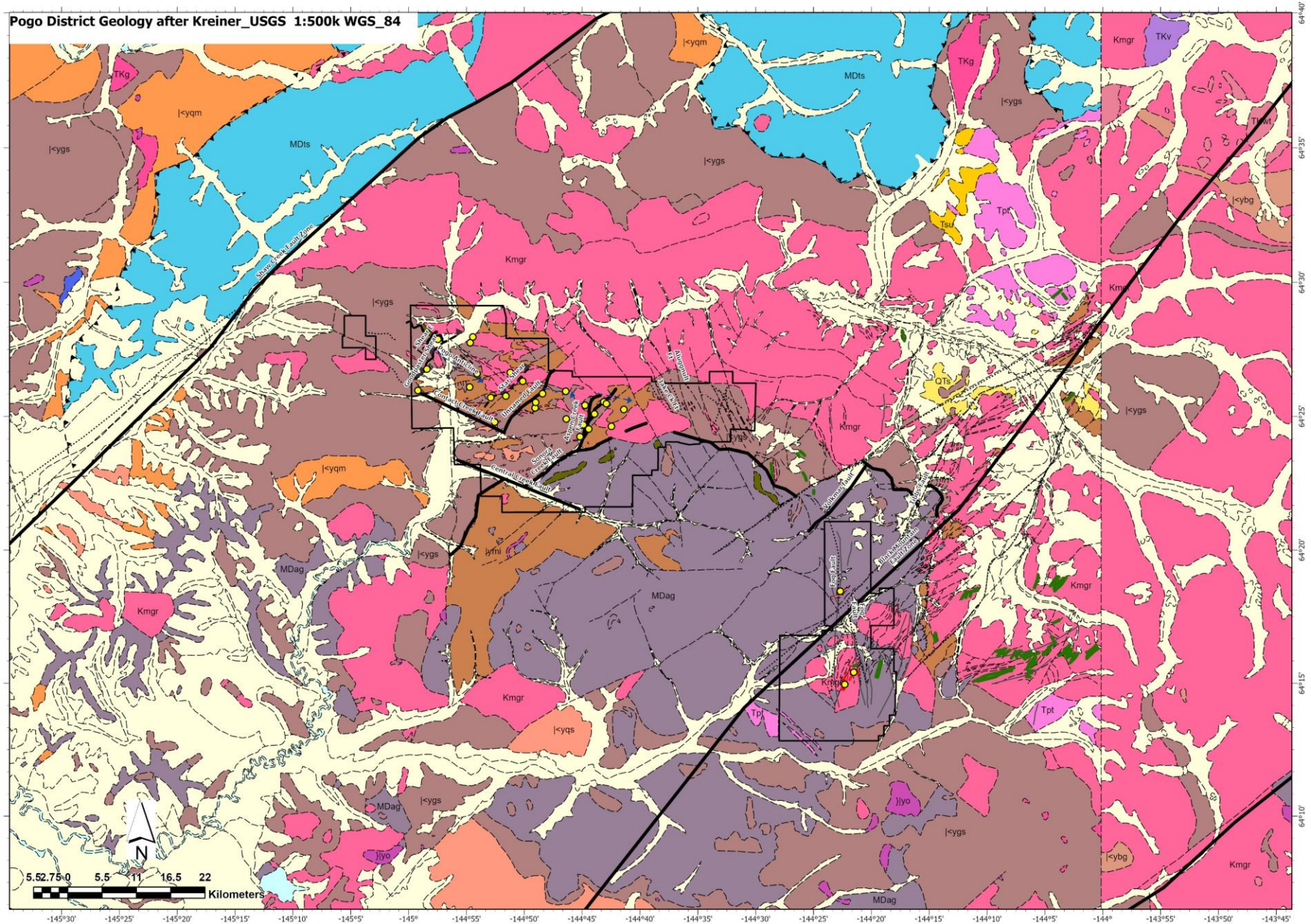
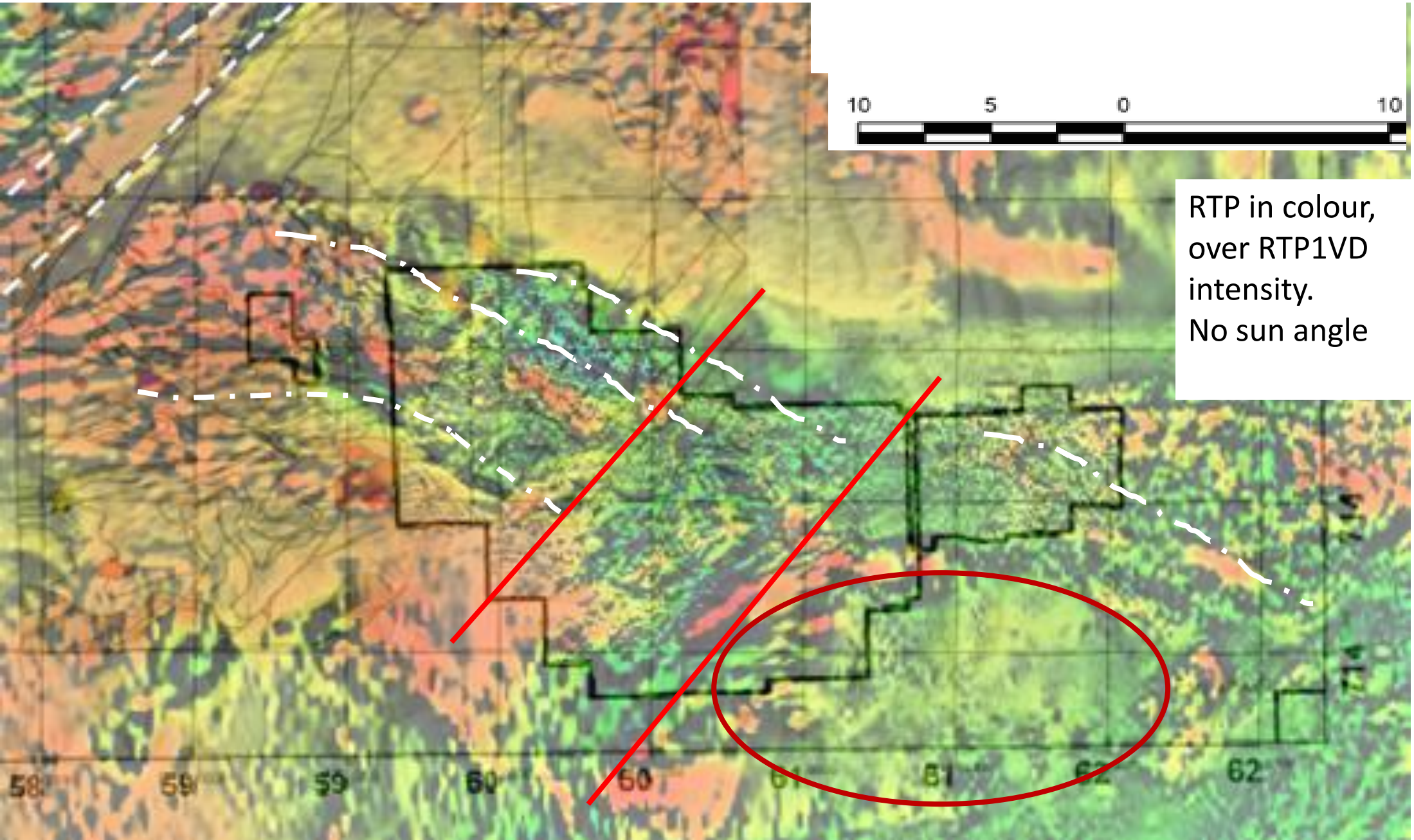


Figure 7.2 Major Gold Deposits and occurrences of the Tintina Gold Belt, Alaska.

Regional Geological Setting USGS mapping



Geophysical Surveys Magnetics



RTP in colour, over RTP1VD intensity.
No sun angle

Elements of a Pogo-type, IRGS Gold Deposit

Oldest Events

A. Host units with strong rheology contrasts are deposited in E-W patterns;

- Sediments are metamorphosed to para-gneisses up to 115Ma (# 3 on the map).
- Early granite to granodiorite intrusions are metamorphosed to orthogneisses.

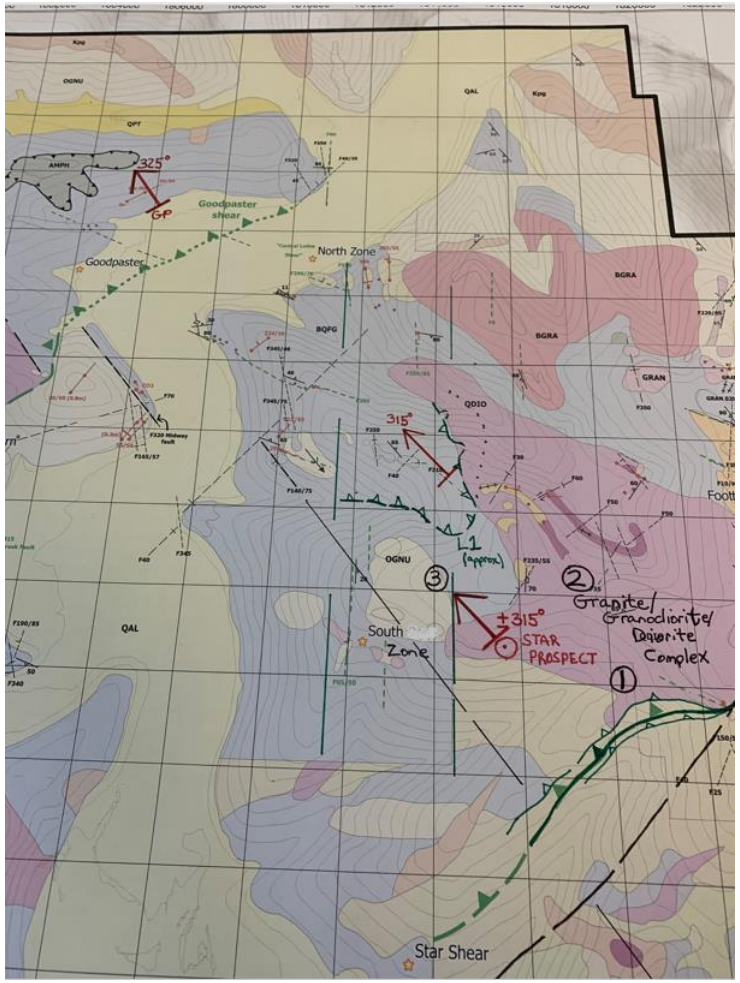
B. Next Events

- **Thrust Faults** - Occur in (up to) 300m thick stacks above basal thrusts (map green at right) and form **Orthogonal to metamorphic foliations**. All major rock units are planar with NW dips.
- **Steeply-dipping WNW shears** formed next(?). WNW Shears control **Intrusion Emplacements** (115 to 95Ma) related to pre-syn and post-mineralization.

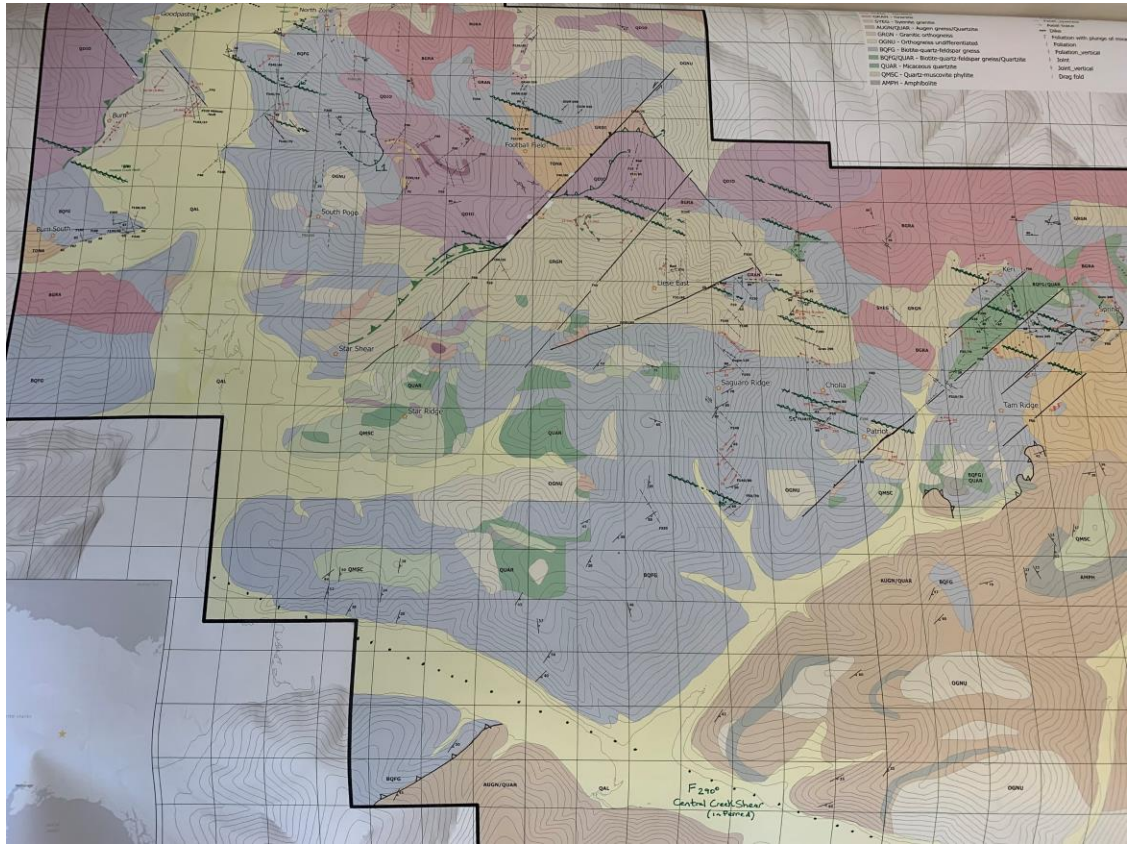
C. Gold Emplacement

- **Au-Bi-Te mineralization** emanates from intrusion areas along WNW corridors.
- **Repeated** compressional/extensional phases create shallow-steep lodes.
  - **Deposits** form in multiple phases (4 or more - USGS). A later phase of lower temperature gold re-distribution is indicated (USGS in progress).
  - **Narrow** alteration selvedges are typical.

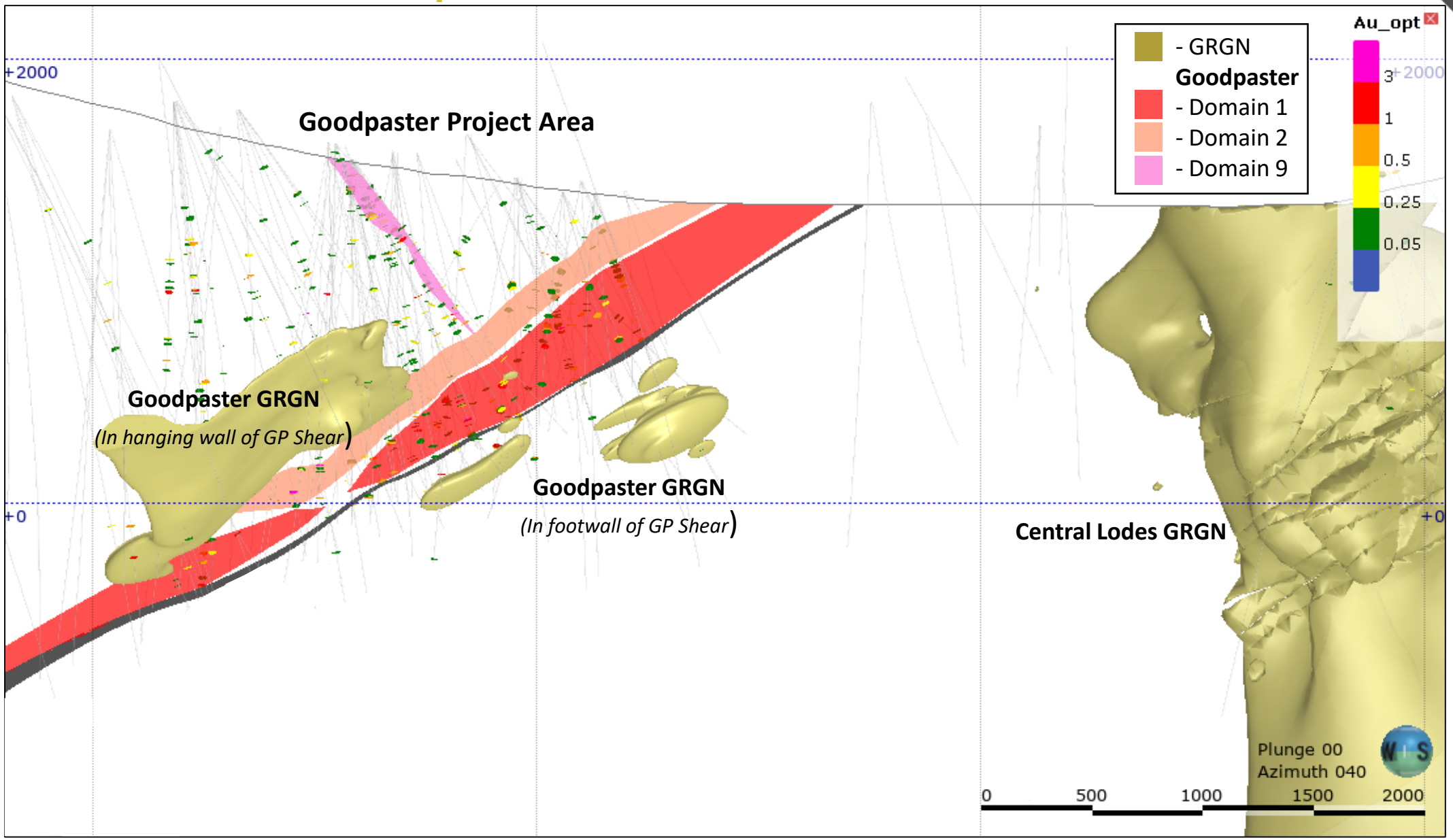
  - **Detailed Mapping is Important!**



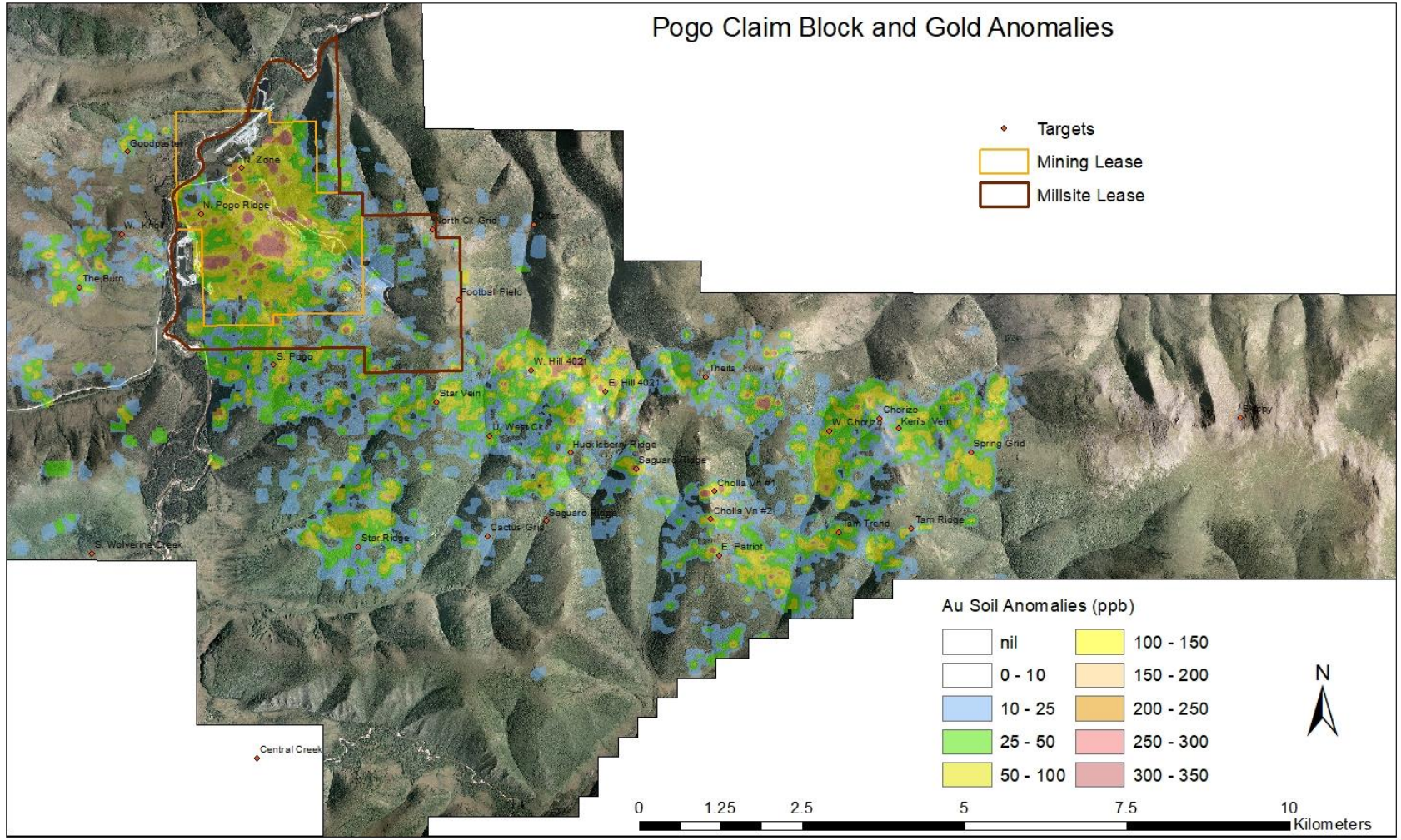
- **Post-Pogo** gold deposit Diorite intrusions 93 to 96 Ma are emplaced; accompanied by NW high-angle, post-mineral faults.
  - **Later,** numerous, post-mineral fault offsets dissect deposit terrains.



Goodpaster - Section North 040°

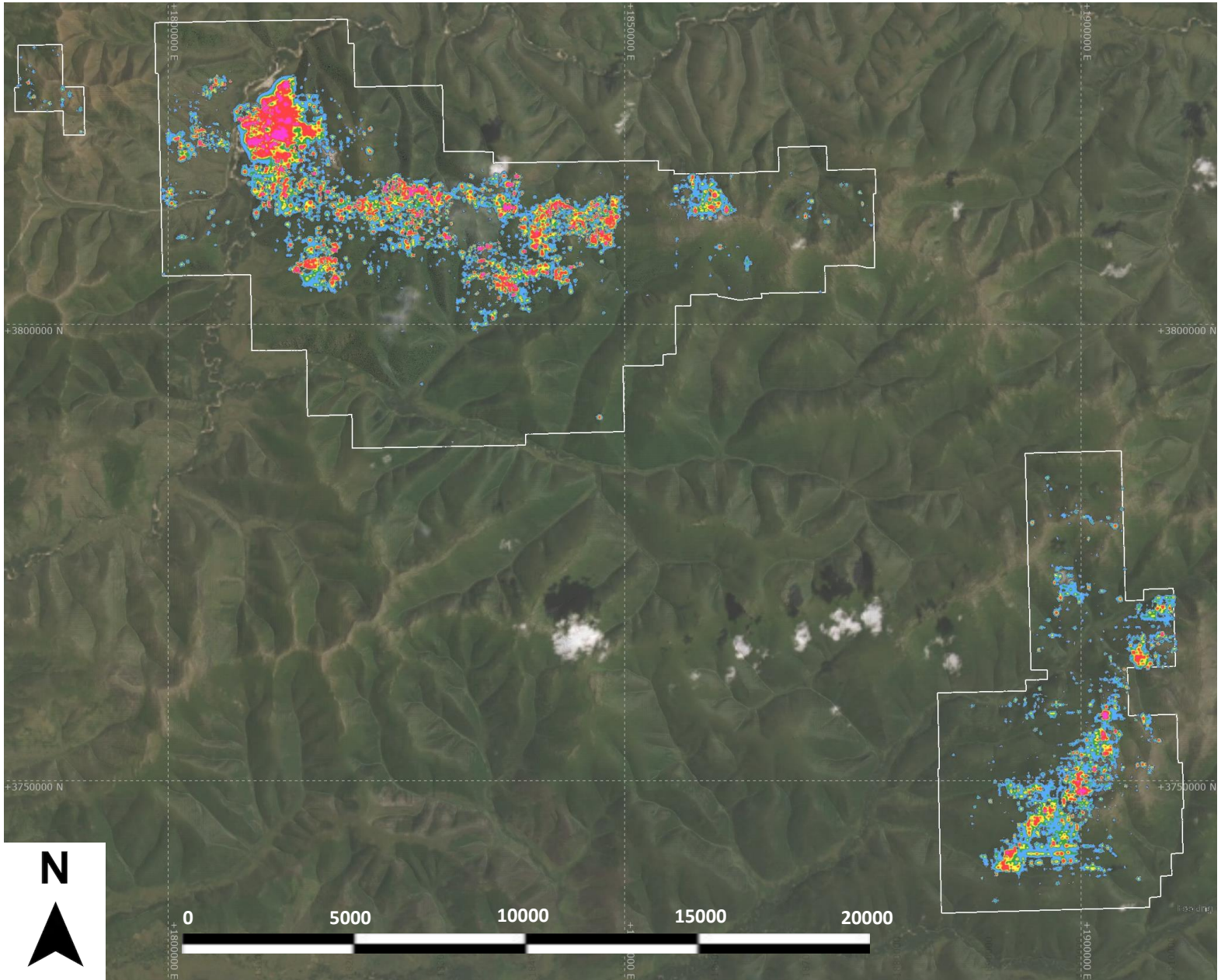


Gold Geochemistry in Rocks and Soils at Pogo



- These assay patterns were generated by ppb magnitude gold in soil assays and ppm magnitude gold in rock assays.
- Patterns of Au / As for rock and soil grid assays are quite similar.
- Bismuth assay patterns match the gold patterns but these grids were not as extensively sampled.
- Note the very strong WNW pattern to the assays that matches the intrusion complex margin on the northeast and mapped WNW shear structures and intrusion corridor to the SW.
- One anomalous area of Au/ Sb remains to be investigated.

District-wide Gold in Soil Grids – Different Systems



Au (ppb)

150
50
40
30
20

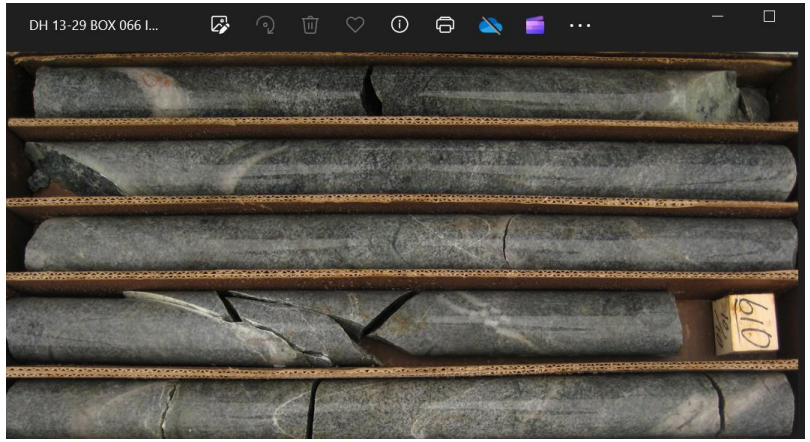
Note the pattern differences:

- the Pogo claim block at left.
- the Brink claims at lower right.

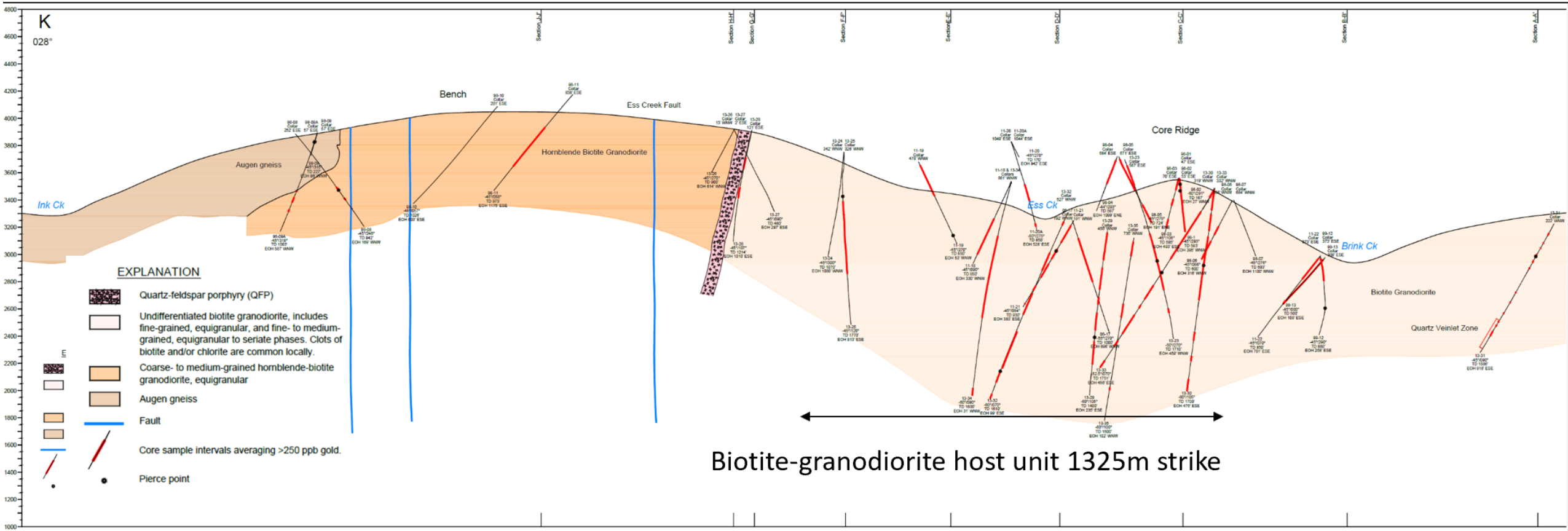
Brink Deposit -– A Fort Knox-type Occurrence

- Gold is distributed throughout the host, no fault breccia or thick quartz veins were cut.

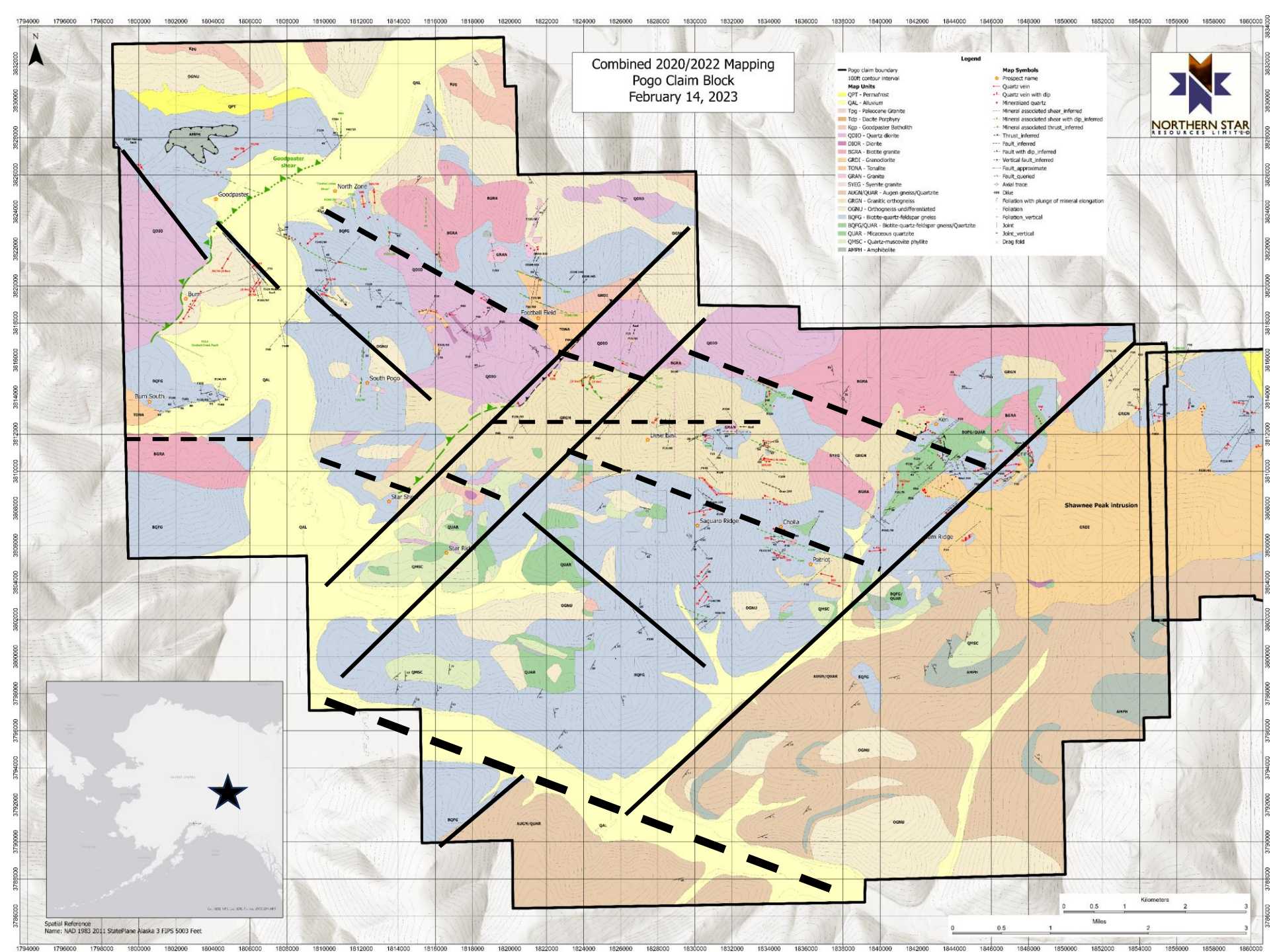
- Gold grades also occur in Hb granodiorite (in orange, at left)
- See the core photo at right in DDH 11-29 / 603 – 612’



Long Section NNE looking eastwards



Biotite-granodiorite host unit 1325m strike



Pogo "Pre-Post" Mineral Fault Examples

- Early to late E-W normal Faults noted in host units.
- WNW orientation to the batholith and intrusion complex margins; then post-mineral right-lateral movements(note Central Creek).
- Period of NW high-angle normal faults with CO3 veins.
- Major offsets of rock units along thrust Faults (green – early and late); Goodpaster.
- NE left-lateral post-mineral offsets (Paleocene age?)at Shaw Creek, Liese East.
- Numerous (un-shown) faults of smaller magnitude e.g. N-S, NNW.

Gold Mineralization Events

Gold Mineralization – many assemblages / generations

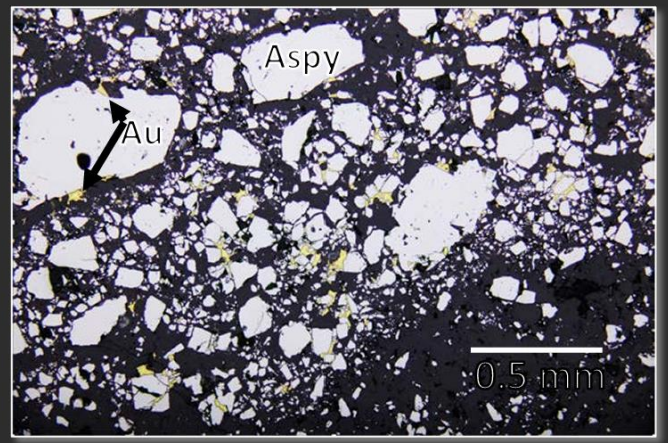
1 Milled Qtz clasts with gold ± Aspy

2 Gold-Aspy rock flour matrix cataclasite cement

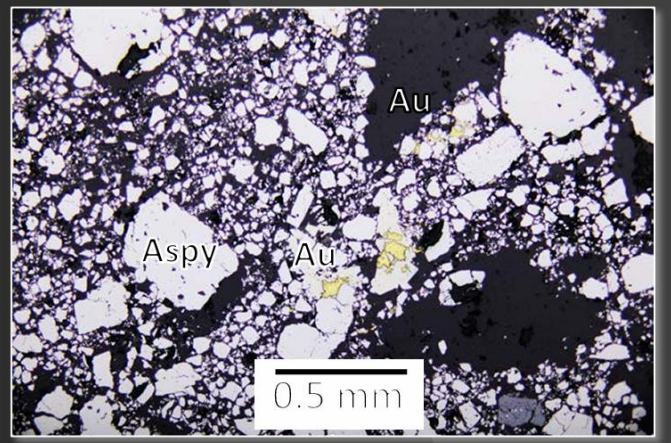
3 Gold-bearing rock-flour matrix cataclasite cementing earlier Qtz-Aspy clasts and truncating bladed calcite veinlet

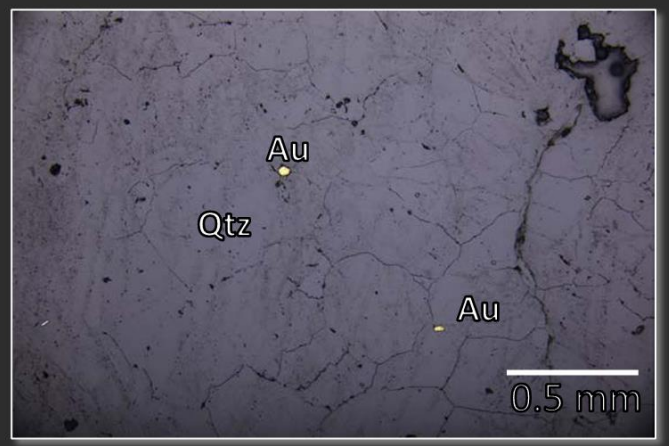
3/4 Aspy-Gold vein cutting complex, multiply re-opened milky Qtz-grey Qtz vein

Au rims and cements Aspy fragments

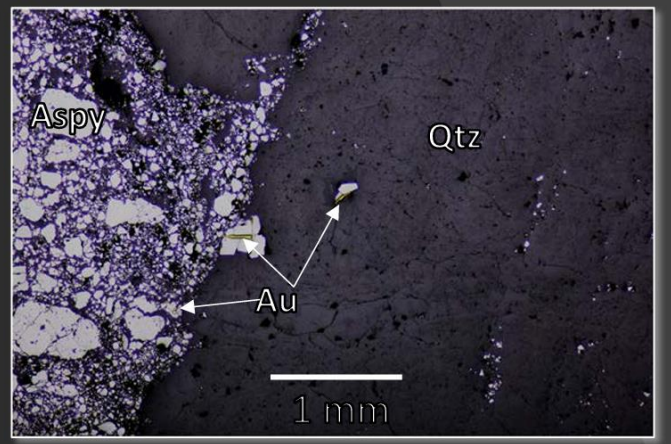


Early Au within Aspy and late gold cemented Aspy





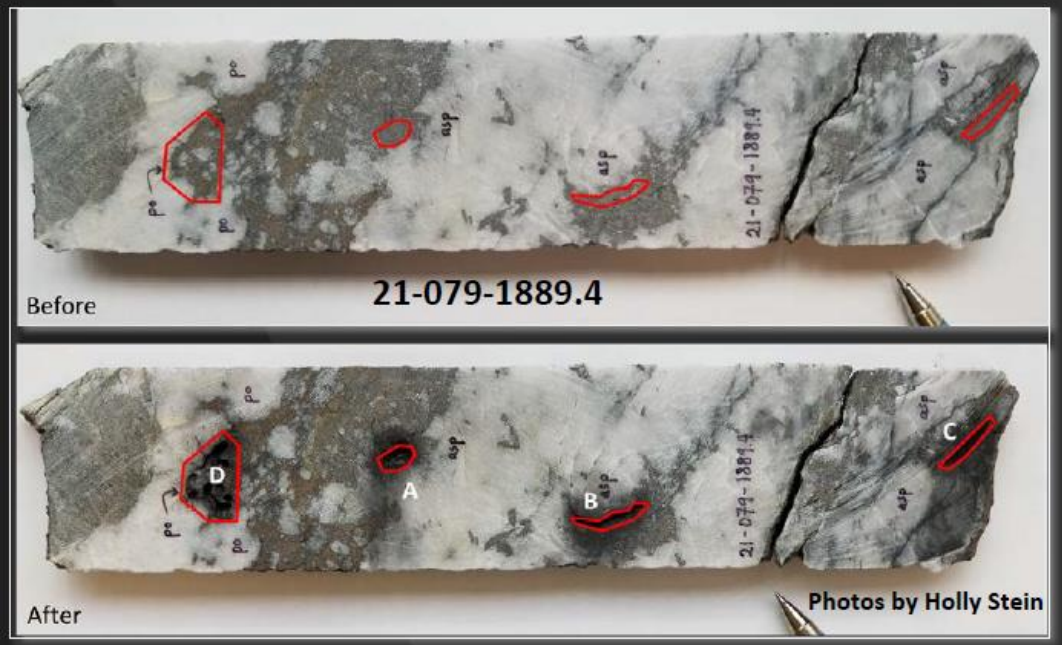
Sugary Qtz vein with Au interstitial to grains



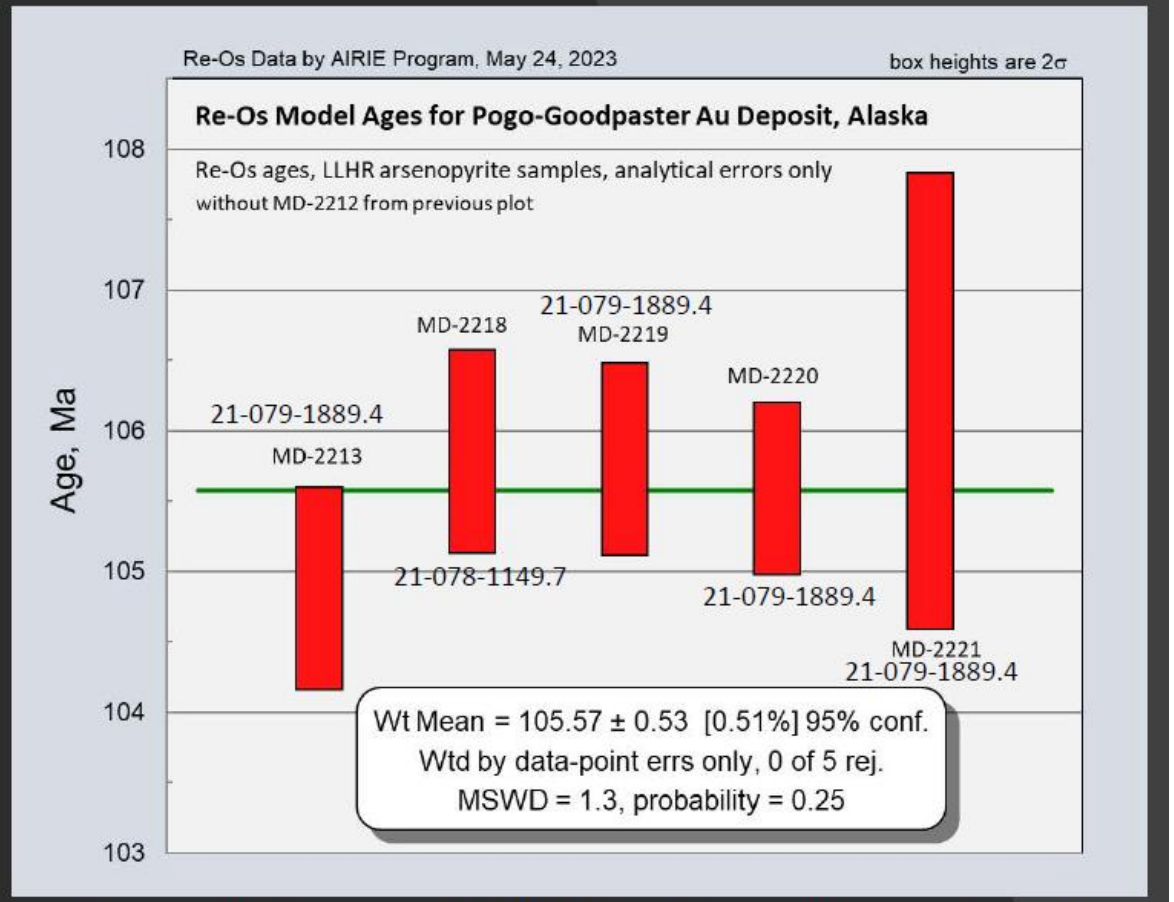
Qtz-Aspy-Au vein cut by Aspy, breccia and late Au infill in breccia

Sulphides and Age Dates

Geochronology of Sulfides: LLHR



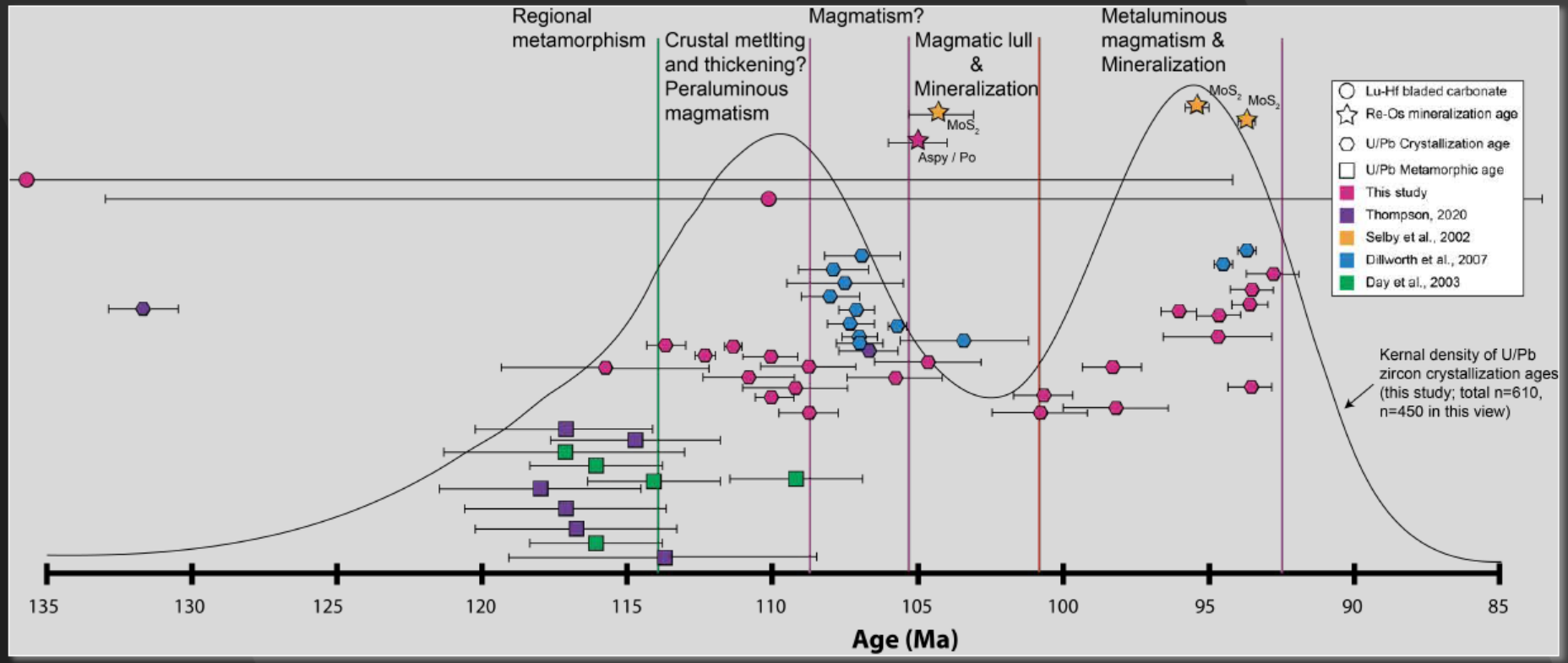
- Most Aspy, Po, Pyr coeval with Au has common Os
  - Requires isochrons – still in progress
- Some have low-level, highly radiogenic characteristics – like molybdenite
- These provide ***preliminary*** mineralization *age of* ***~105 Ma***
- They represent multiple paragenetic stages on this diagram



Ongoing collaboration with AIRIE to continue sulfide geochronology

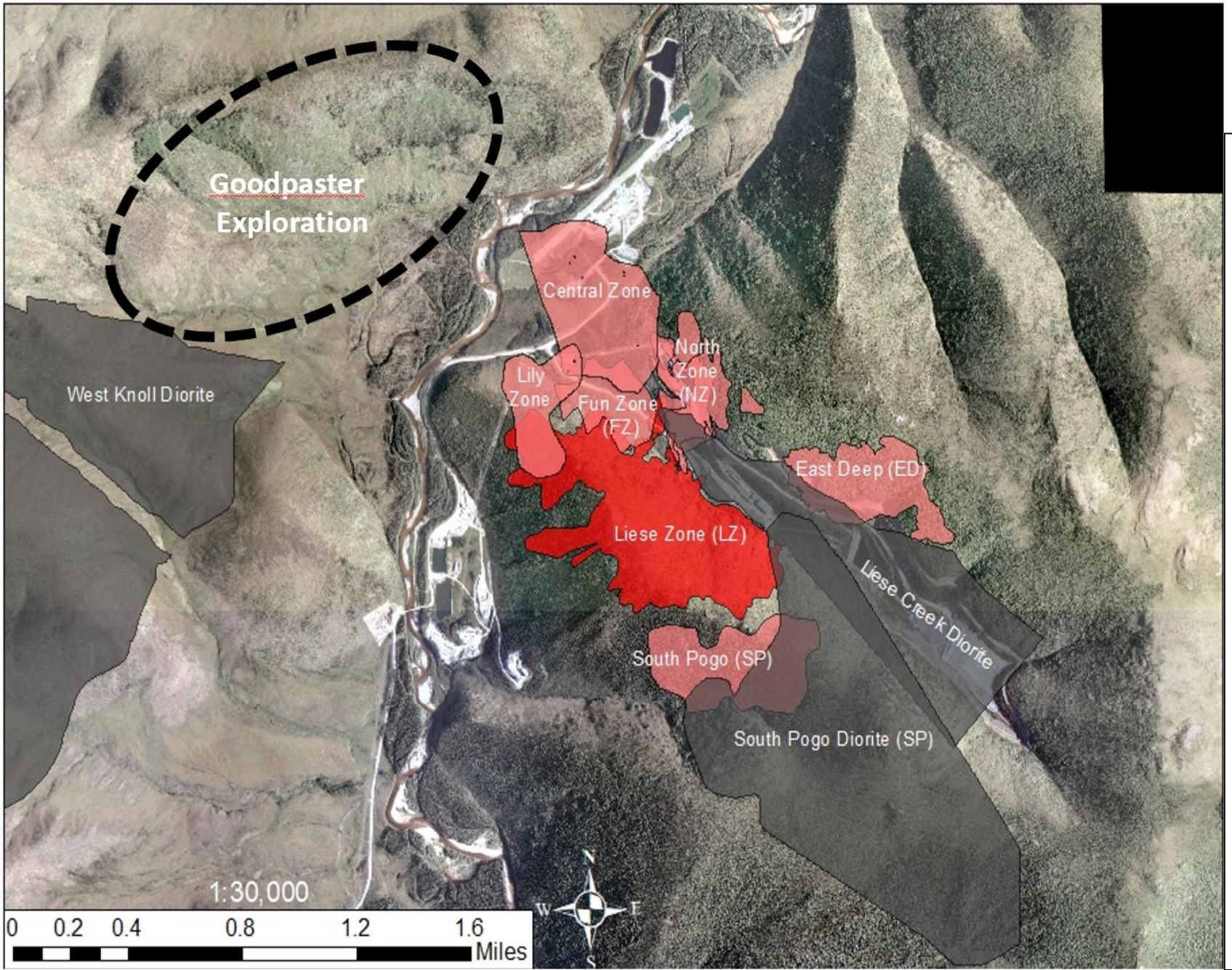
USGS Work – Intrusion Sequences & Geochronology

District Composite Geochronology



- Regional amphibolite facies metamorphism ceased by ~115 Ma: Metamorphic Zrc rims, monazite, corroborated by Ar-Ar cooling ages
- Peraluminous magmatism: Indicative of melting of over thickened crust from 114-109 Ma
  - Dillworth et al. (2007) uncorroborated ***monazite*** ages interpreted as ~107-105 Ma tonalite suite (new ages pending from resampled Dillworth outcrops)
- New 106-105 Ma Re-Os arsenopyrite and pyrrhotite ages cogenetic with gold corroborate Selby et al. moly Re-Os date during magmatic lull
- Post-mineral intermediate to mafic metaluminous magmatism from 101-93 Ma
  - Moly Re-Os date suggests mineralization during late metaluminous magmatism – quartz-base metal, distinct from Pogo

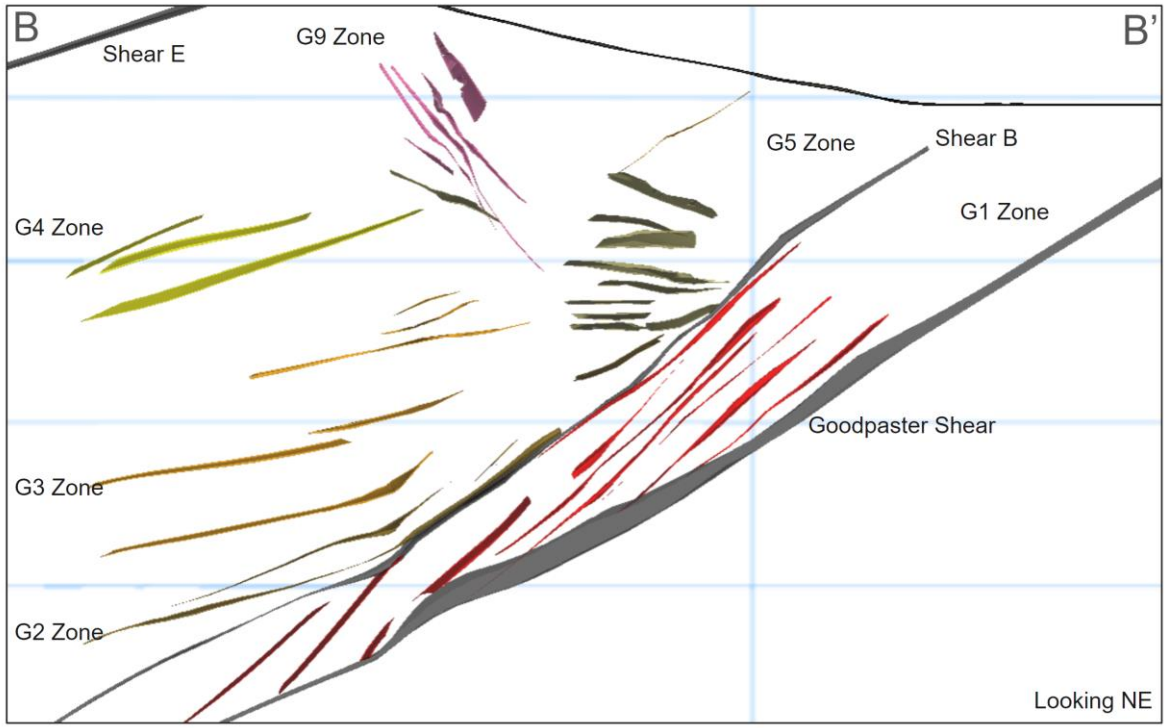
Current Pogo Mine & “Near Mine” Deposits

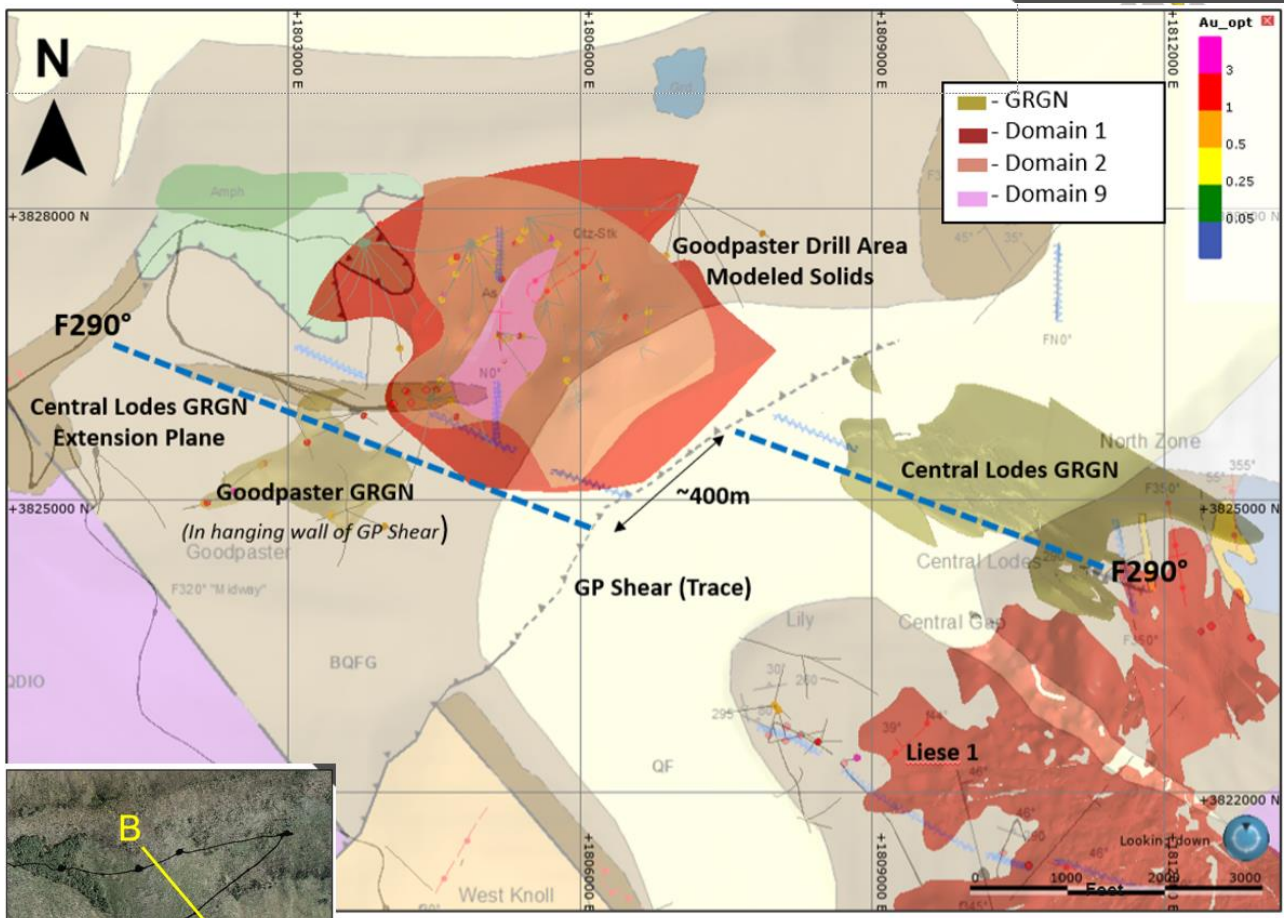


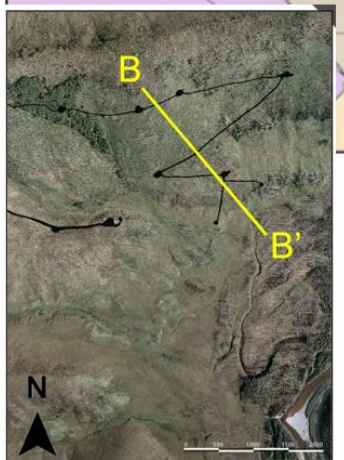
- Liese Zone
  -Production
- East Deep
  -New Exploration
- North Zone
  -Production
- South Pogo
  -Production
- Fun Zone
  -Production
- Central Zone
  - Under Development
- Lily Zone
  -Under Development
- Goodpaster Deposit
  -Exploration

Goodpaster – Geology & Gold Deposits

- Host rock is primarily BQFG / paragneiss.
- Gold mineralisation is located in the hanging wall of the basal Goodpaster Shear
- Lodes sit directly on the Goodpaster and B Shears in selected areas. The best gold grades occur above rheology differences between host rock above and below the main Shear(slide 9).
- Interpreted lodes can vary slightly in strike and dip between (and within) domains but overall remain in planar alignments.
- Lodes are still open for exploration to the NE along strike and directly down dip to the Northwest.





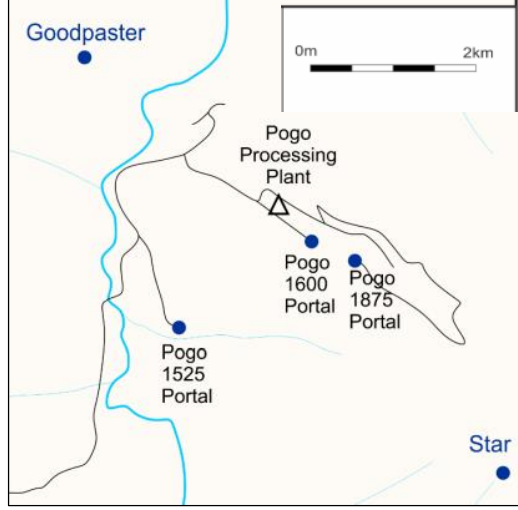


Goodpaster Maiden INF Resource
3.2Mt @ 10.3 gpt for 1.1Moz Au

Star Discovery Cross-sections

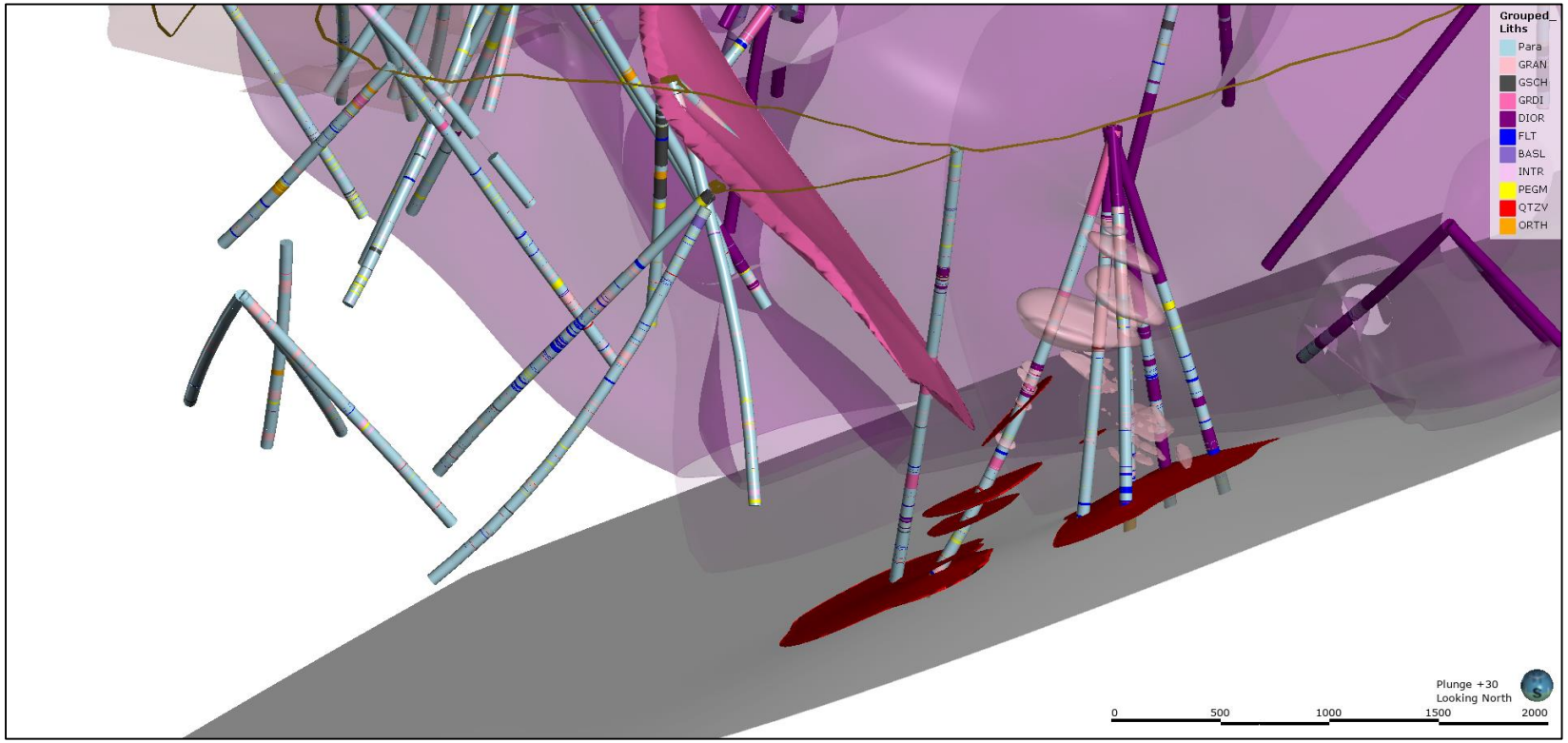
Star Shear – Gold in silicified, sheared paragneiss with arsenopyrite, pyrite, V.G. **Discovery hole 22-036** etw 9.7m at 52.9 gpt Au

Star Shear – Gold in silicified, sheared paragneiss with arsenopyrite, pyrite, Bi and Te minerals, V.G. Sericite alteration haloes < 1-2m wide.



Star Cross-section looking North

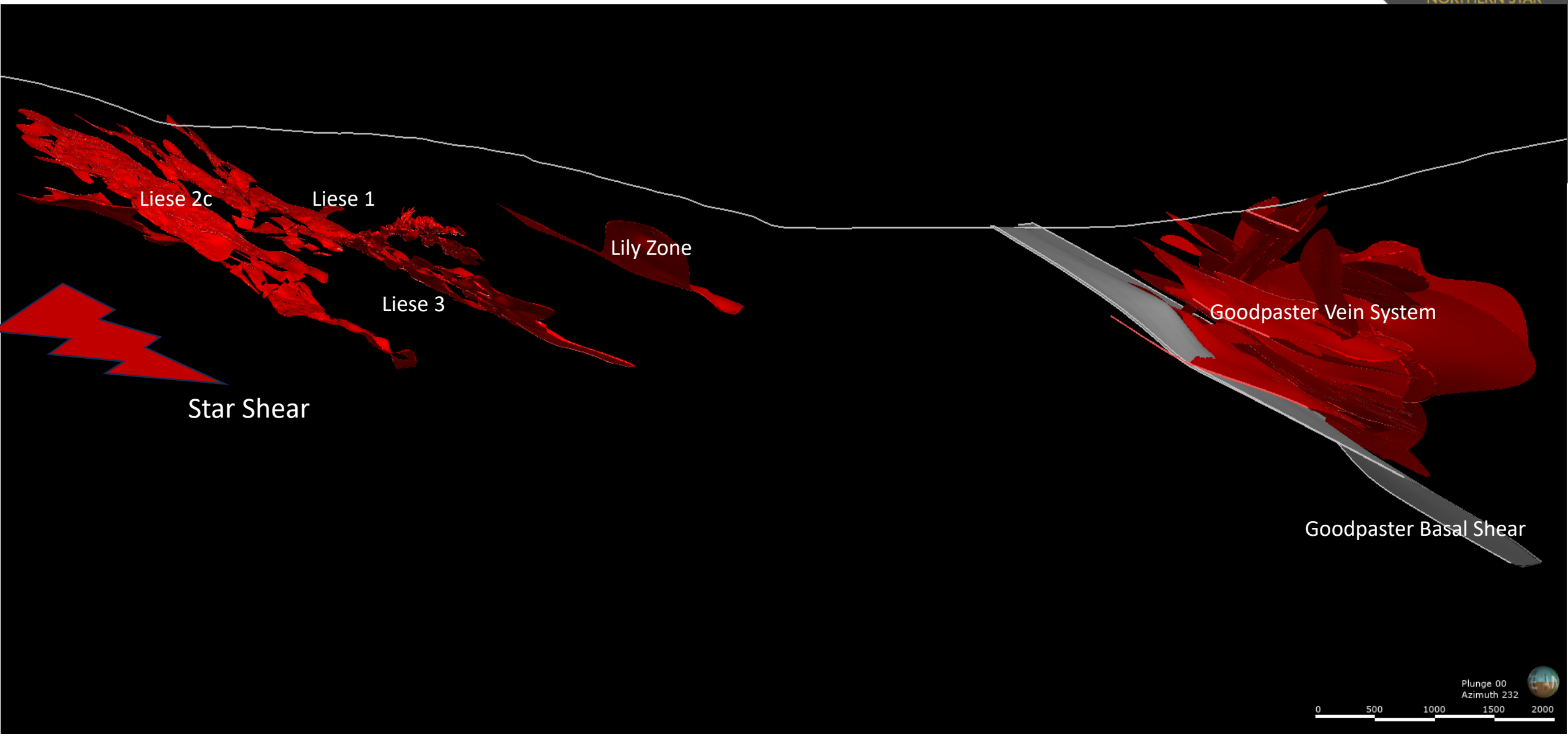
Cross-section with the Intrusive Complex in purple color; granite bodies in pink; (basal) Star Shear in grey.



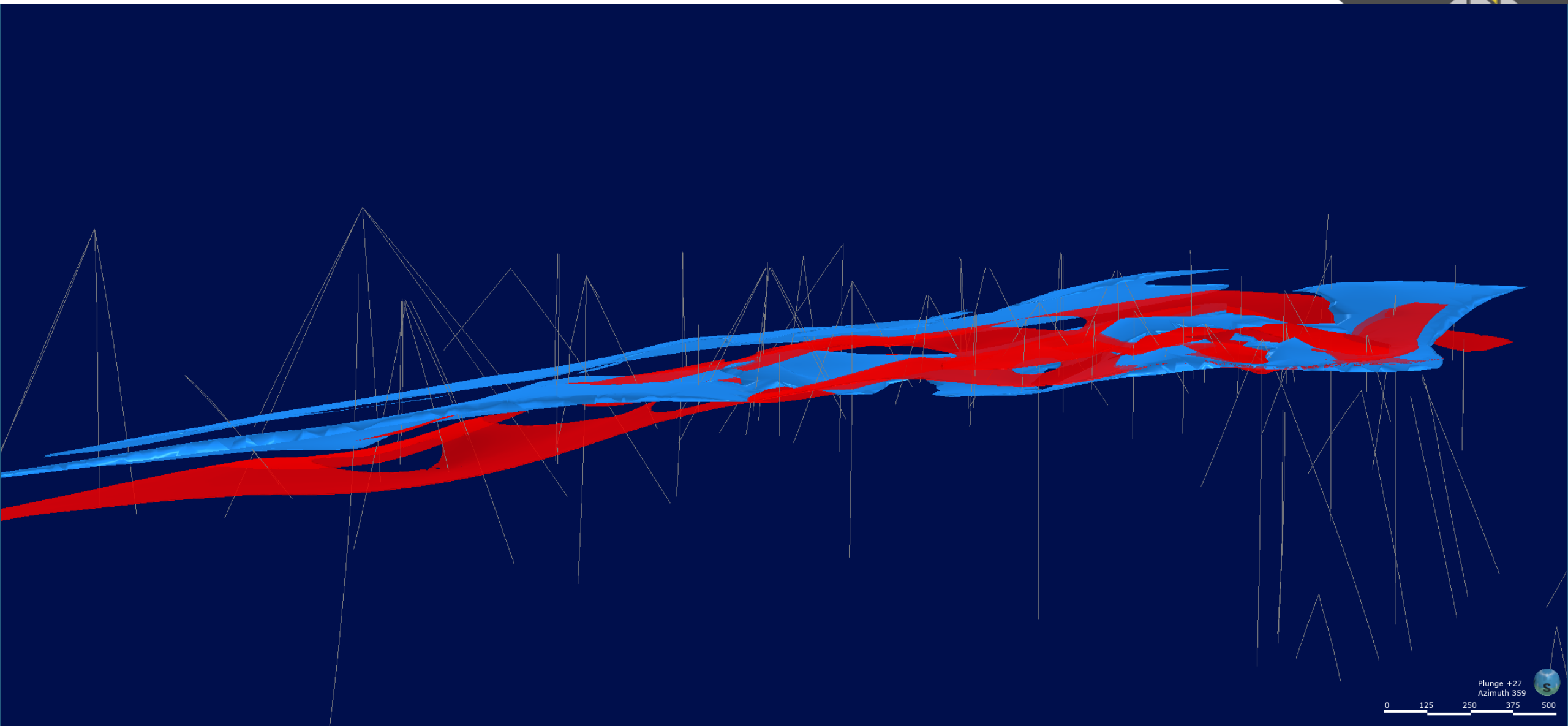
DDH 22-044 Shear – “The Christmas Lode” in the Star Shear System

DDH 22-044 716.9 – 725.4m 12.4m etw at 10.5 gpt (0.31opt) Au Fracture-fill pyrite, pyrrhotite, and arsenopyrite in reticulating fractures and silicified, sheared paragneiss host.

How Many Cards were Pushed Up, then Slid Down the Hill?

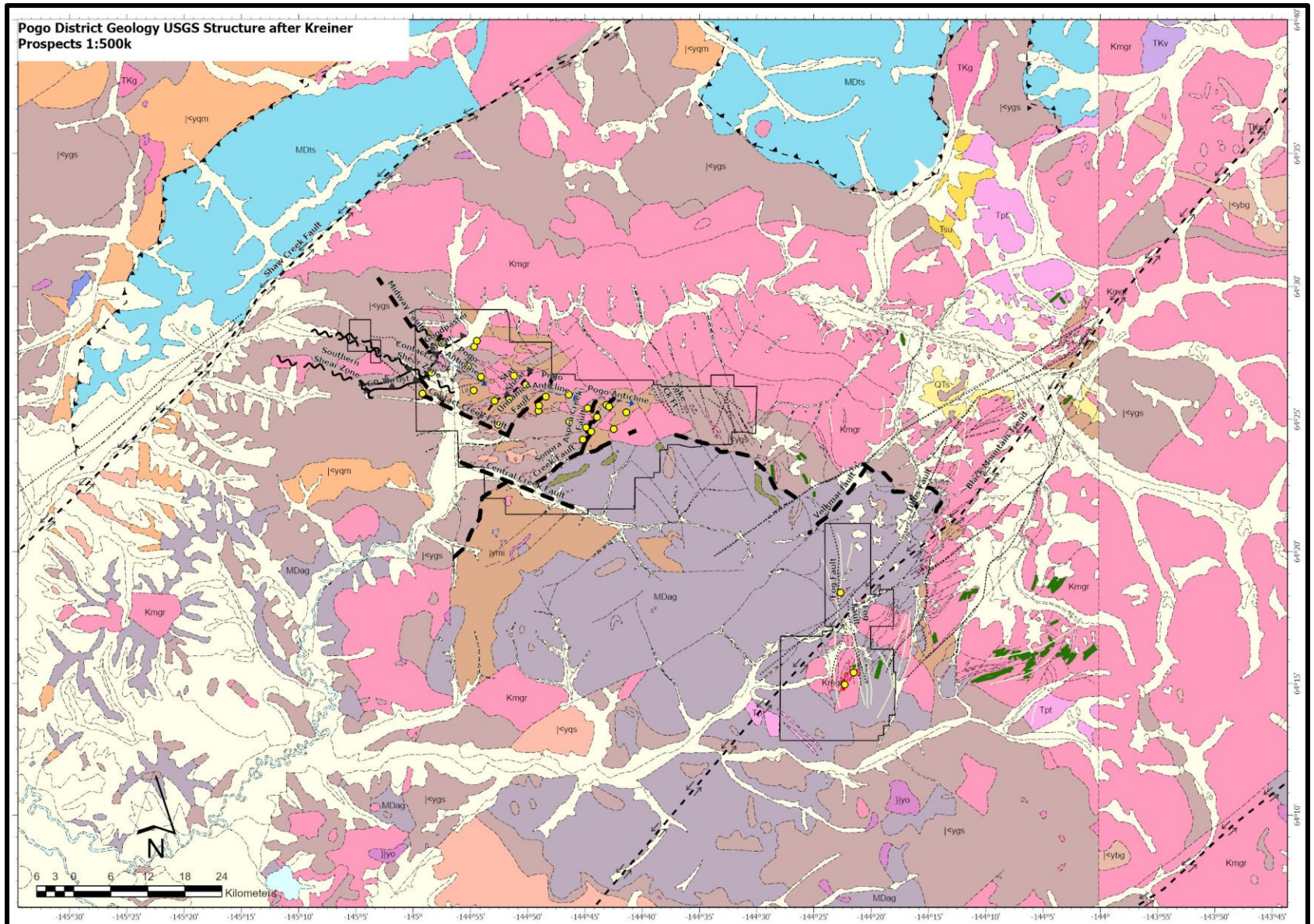


Liese East Oxide Gold Deposit – 3km. E. of Pogo Mine



The Liese East oxide Veins (in red) and 2 peraluminous Granitic sills (in blue) that roughly parallel known thrust faults; looking North.
The Granitic sill shapes are preliminary; exact cross cutting relationships are to be determined.

Reserve Slides


Pogo District Geology USGS Structure after Kreiner
Prospects 1:500k
TKg
|<yqm
MDts
|<ygs
Kmgr
TKv
|<ybg
Tpt
Tsu
QTs
|<yqs
|yml
MDag
]jyo
Shaw Creek Fault
Midway Fault
Southern Shear Zone
Contact Shear Zone
Pogo Anticline
Shear Zone
Unnamed Fault
Sonora Dome Fault
Creek Fault
Central Creek Fault
Volkmar Fault
Black Mountain Fault
Fog Fault
N
6 3 0 6 12 18 24
Kilometers

About Northern Star Resources Ltd

Northern Star _
a global gold leader

STRENGTH FROM SIMPLICITY

100% GOLD

LARGE

1.6Moz FY23 GOLD SOLD

+6,000 PEOPLE

LIQUID

ASX 50 MARKET INDEX

A$13B MARKET CAP

A$69M DAILY TURNOVER*

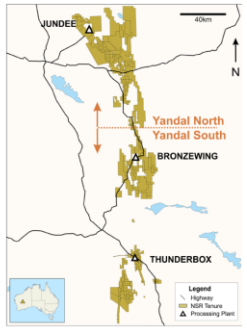
Yandal _
hub strategy

14Moz gold mined over 30 years

Yandal
- 9.8Moz Mineral Resource
- 3.8Moz Ore Reserve
- 9Mtpa MILLING CAPACITY

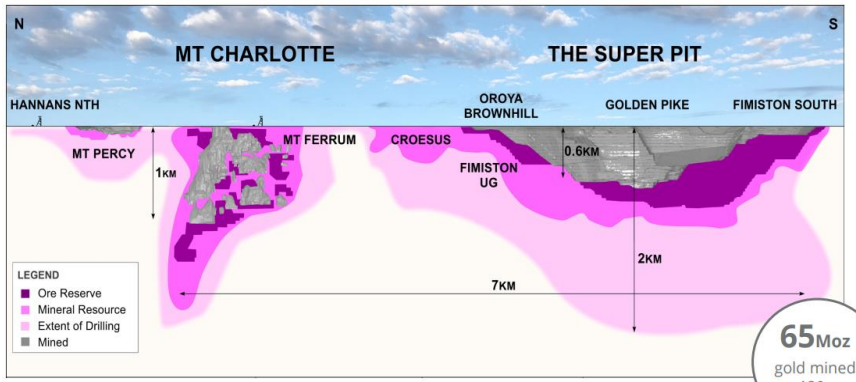
Jundee
- 5.4Moz Mineral Resource
- 1.5Moz Ore Reserve
- 3.6g/t
- 3Mtpa MILLING CAPACITY

Thunderbox
- 4.4Moz Mineral Resource
- 2.3Moz Ore Reserve
- 1.8g/t
- 6Mtpa MILLING CAPACITY



13

KCGM _
a key global gold asset



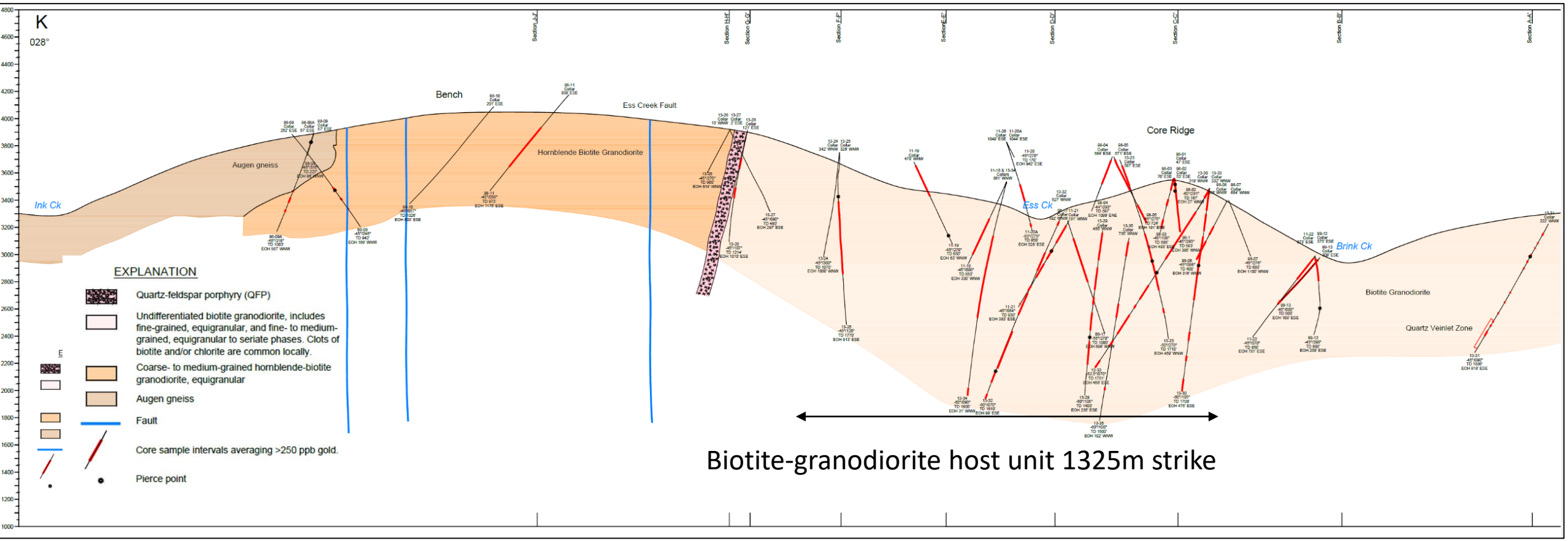
28Moz Mineral Resource

12Moz Ore Reserve

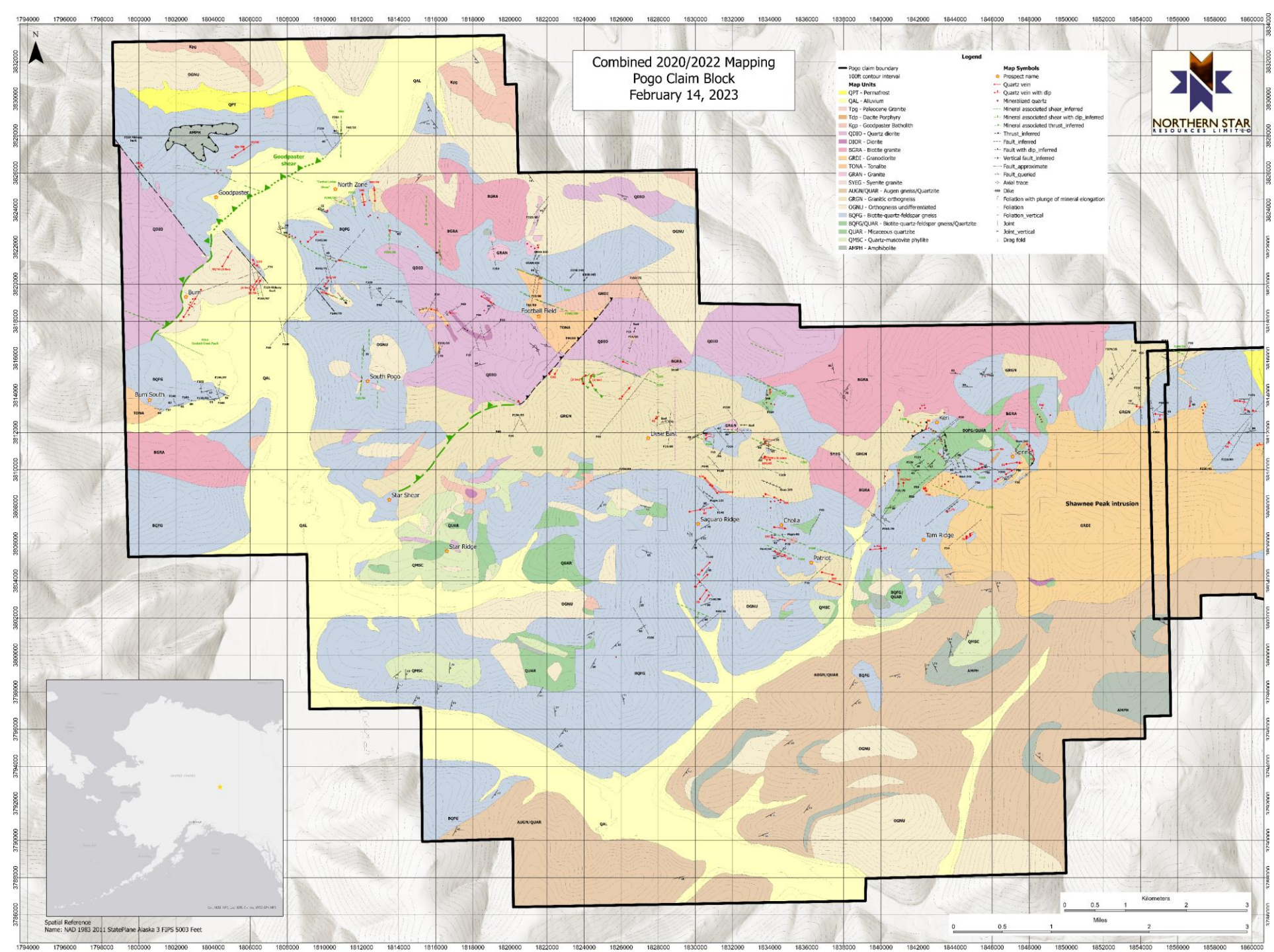
+20Years Mine Life

65Moz gold mined over 130 years

Brink Deposit -– A Fort Knox-type Occurrence



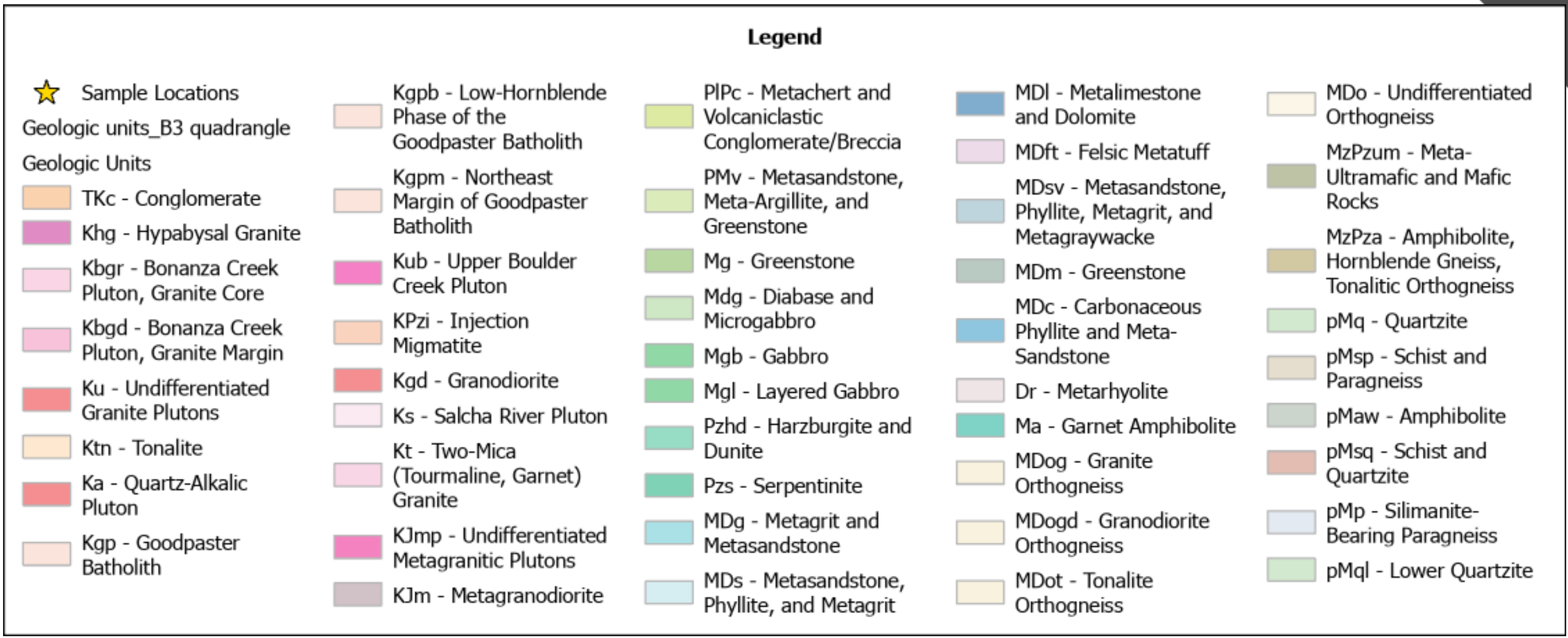
Biotite-granodiorite host unit 1325m strike



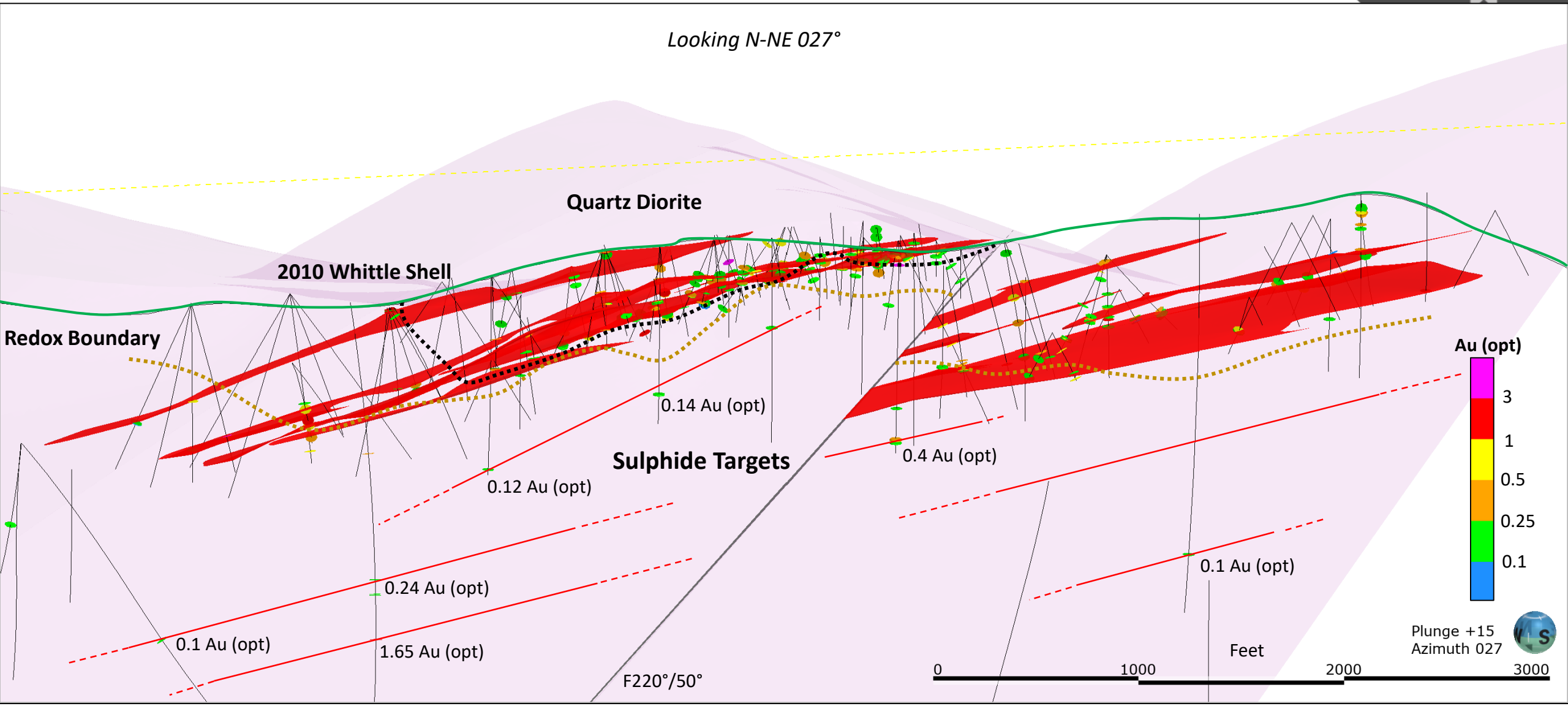
Geological Map - Pogo Exploration Project

- Augen Gneiss dome at lower right (in brown).
- Note WNW orientation to the gneiss units (yellow & grey colors).
- WNW orientation to the batholith and intrusion complexes (in pink/red).
- Orientation of major rock units along WNW high-angle shears.
- Major offsets of rock units along thrust Faults (green – early and late) and NE post-mineral offsets (Paleocene).

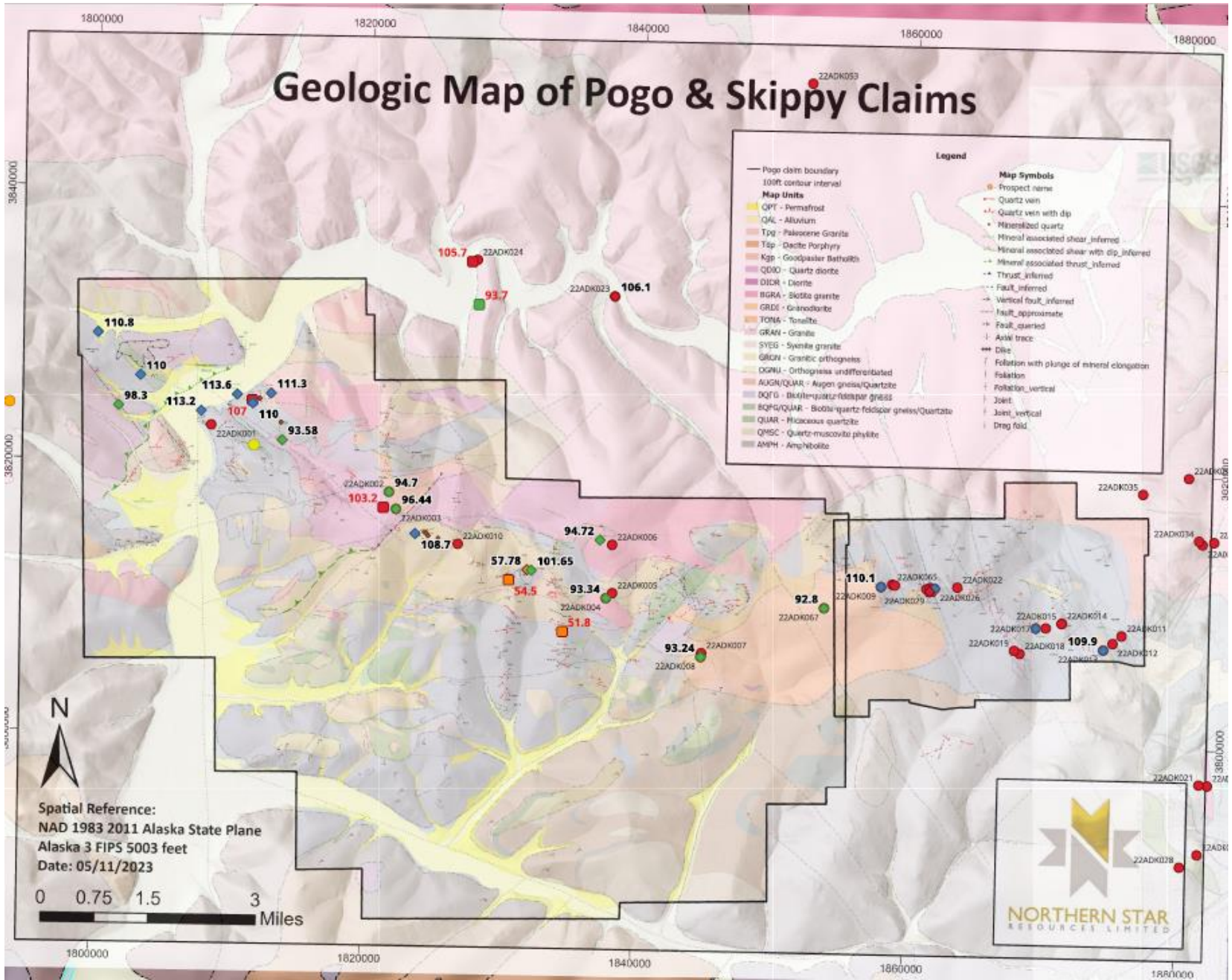
Key to Rock Unit Abbreviations



4021- Schematic Long Section



USGS Info


Geologic Map of Pogo & Skippy Claims
Legend
Pogo claim boundary
100ft contour interval
Map Units
QPT - Permafrost
QAL - Alluvium
Tpg - Paleocene Granite
Tdp - Dacite Porphyry
Kgp - Goodpaster Batholith
QDIO - Quartz diorite
DIOR - Diorite
BGRA - Biotite granite
GRDI - Granodiorite
TONA - Tonalite
GRAN - Granite
SYEG - Syenite granite
GRGN - Granitic orthogneiss
OGNU - Orthogneiss undifferentiated
AUGN/QUAR - Augen gneiss/Quartzite
BQFG - Biotite-quartz-feldspar gneiss
BQFG/QUAR - Biotite-quartz-feldspar gneiss/Quartzite
QUAR - Micaceous quartzite
QMSC - Quartz-muscovite phyllite
AMPH - Amphibolite
Map Symbols
Prospect name
Quartz vein
Quartz vein with dip
Mineralized quartz
Mineral associated shear_inferred
Mineral associated shear with dip_inferred
Mineral associated thrust_inferred
Thrust_inferred
Fault_inferred
Vertical fault_inferred
Fault_approximate
Fault_queried
Axial trace
Dike
Foliation with plunge of mineral elongation
Foliation
Foliation_vertical
Joint
Joint_vertical
Drag fold
1800000
1820000
1840000
1860000
1880000
3840000
3820000
3800000
N
Spatial Reference:
NAD 1983 2011 Alaska State Plane
Alaska 3 FIPS 5003 feet
Date: 05/11/2023
0 0.75 1.5 3
Miles
NORTHERN STAR
RESOURCES LIMITED

What is a Fort Knox-type Deposit?

- The Fort Knox deposit had pre-production reserves in 1996 of 158.3 Mt @ 0.83 g/t Au with a 0.39 g/t Au cut-off (Bakke *et al.*, 1998).

  In December 31, 2011, reserves and resources were (Kinross Gold, 2012):
  Proven + probable mineral reserves - 314.67 Mt @ 0.43 g/t Au; plus
  Measured+indicated resource - 112.10 Mt @ 0.40 g/t Au;
  Inferred resource - 22.18 Mt @ 0.41 g/t Au;

- A bulk tonnage low grade deposit style

- Gold mineralization at Fort Knox occurs in early pegmatite veins, sheeted quartz K-feldspar veins and late quartz shear veins that cut a small stock composed of three phases of porphyritic granite plus aplite/pegmatite dykes.

- The pre- dominant sheeted quartz veins are 2±15 cm thick, typically 10± 50 cm apart and reflect district-wide structural controls (Bakke). The veins have low total sulphide contents (<0.5 vol%), mainly pyrite, marcasite, pyrrhotite, arsenopyrite, bismuthinite, and molybdenite.

- Narrow alteration envelopes are dominated by K-feldspar, albite or muscovite. Quartz veins contain significant bismuth (up to 2000 ppm), tungsten (up to 600 ppm) and tellurium (up to 20 ppm) (McCoy et al. 1997).

- Gold correlates well with bismuth and tellurium, but not with tungsten, molybdenum, arsenic or antimony (Bakke 1995; McCoy et al. 1997).

- At the Pogo Project, Northern Star has a
- Fort Knox-type gold system in hosted in granodiorite at Brink (Stoneboy claims); it contains > 1Moz Au in sheeted, low-sulphide clear quartz veins accompanied by minor sericite alteration.