

# **High-Grade Gold Mineralization at the Fenelon Deposit, NW Abitibi Greenstone Belt, Quebec:**

CONVENTION  
QMEA

# **XPLOR**

## **A Complex Interplay Between Structural and Lithological Controls**

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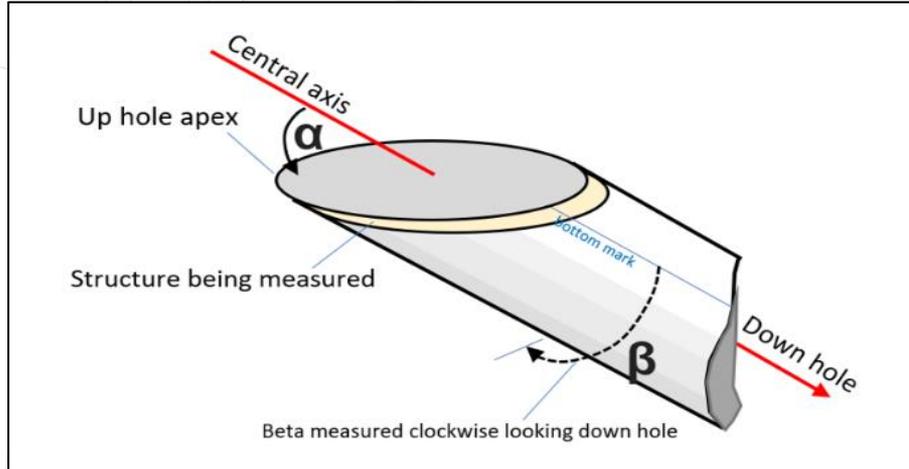
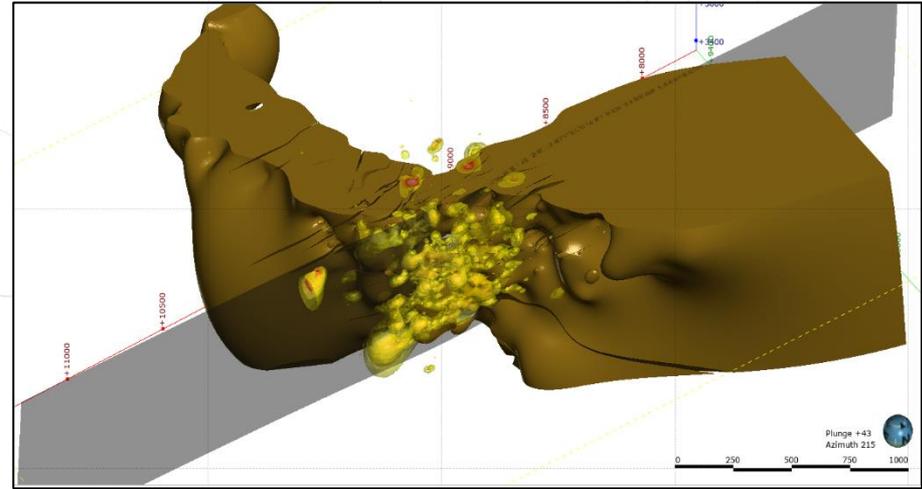
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The information in this presentation has been reviewed and approved by Marz Kord, P. Eng., M. Sc., MBA, President & CEO and Attila Péntek, P.Geo., Ph.D., Vice President Exploration who are both Qualified Persons for Wallbridge under the definitions established by National Instrument 43-101

# Introduction

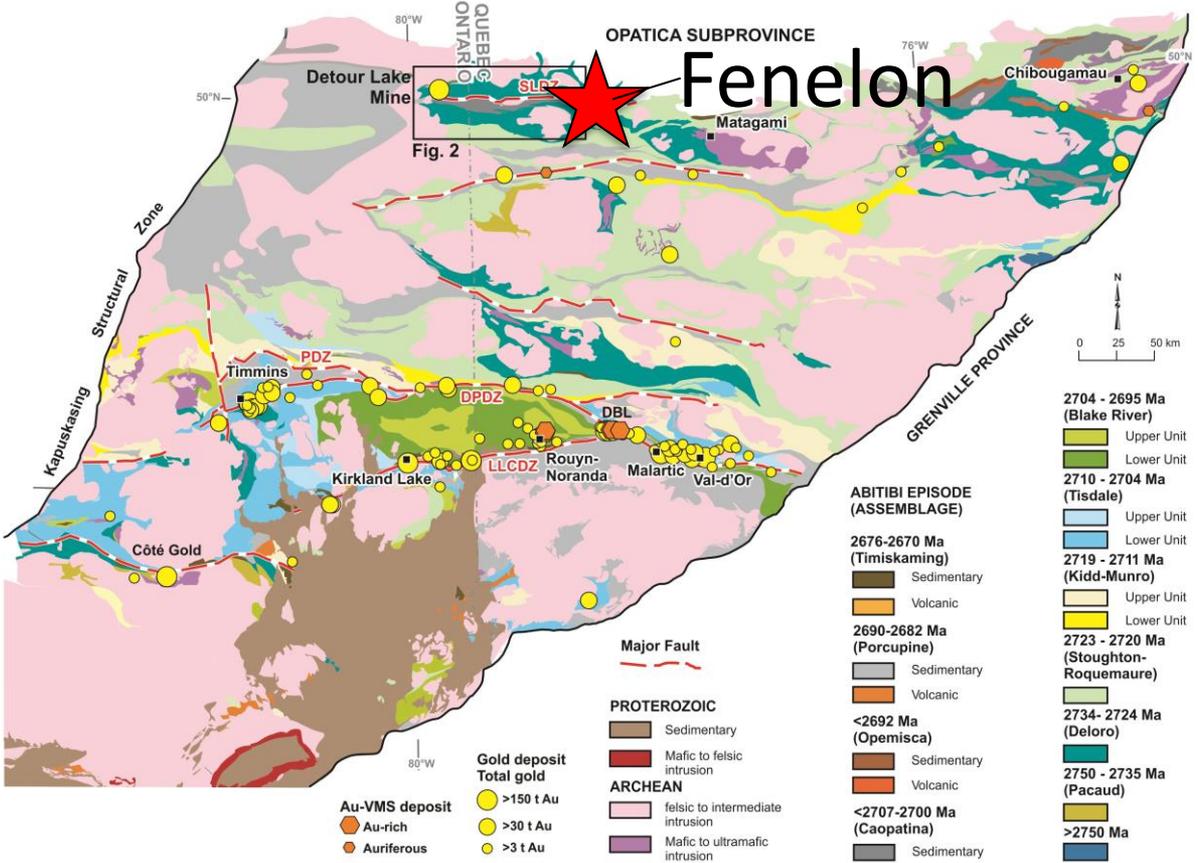
- Recent discovery in the Northern Abitibi owned and operated by **Wallbridge Mining Company**.
- 2021 **Discovery of the Year** in Quebec by QMEA
- 2021 expected **maiden resource and belt-wide exploration** underway.



## This talk:

- Introduction to the deposit and its geology
- Structural controls on mineralization
- Speculations on the genetic model for Fenelon

# Site Location: Northern Abitibi



- Most studied and explored Archean green stone belt in the world (2.79-2.64 Ga).

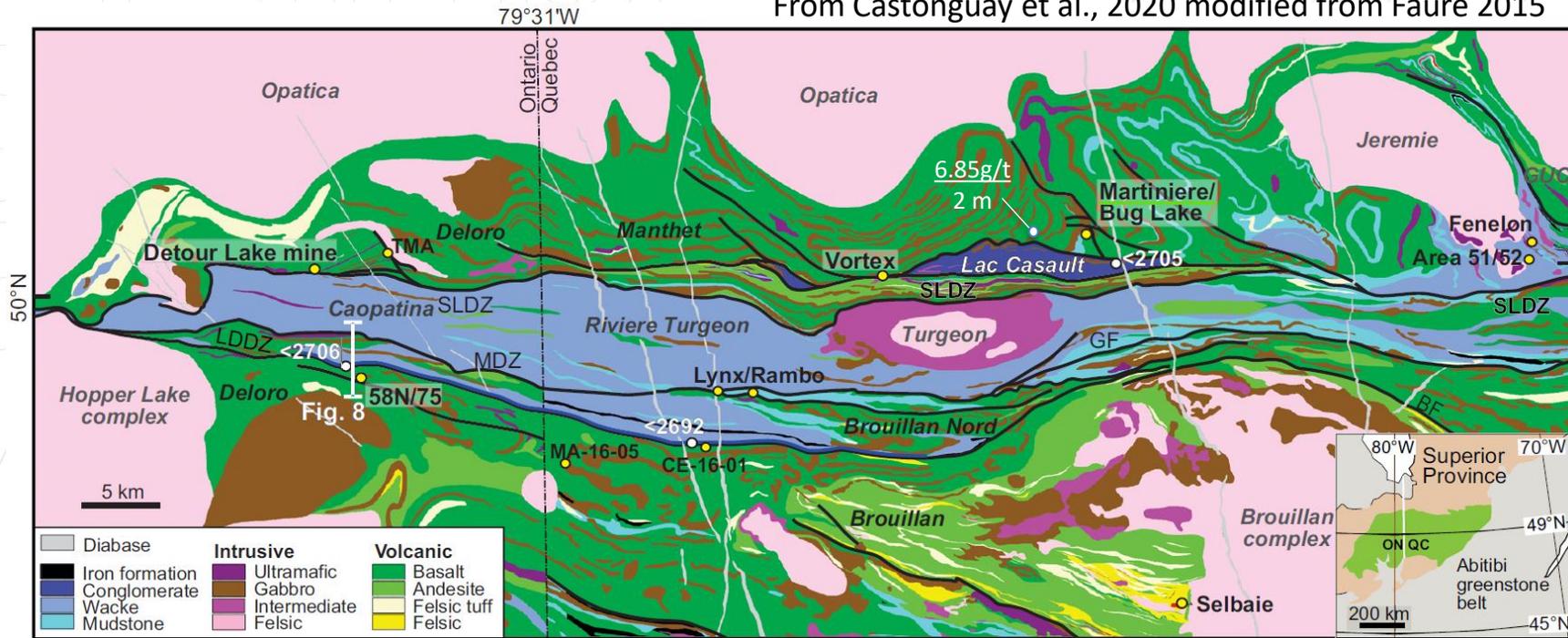
- Majority of known deposits occur proximal to two major E-W faults:
  - Porcupine-Destor
  - Cadillac-Larder

- North vs. South
  - Differential endowment or data bias?

Modified from Ayer et al. 2010

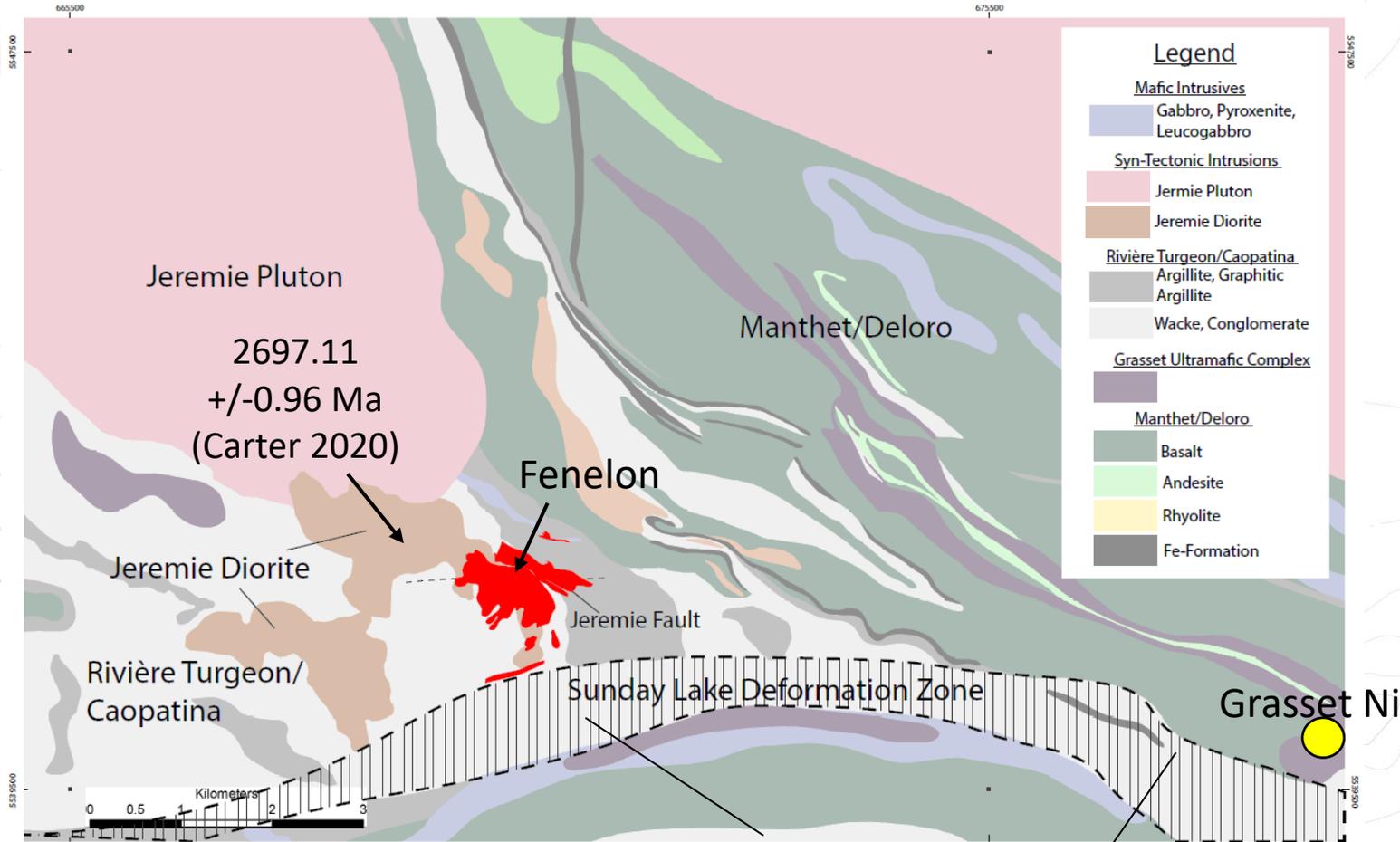
# Harricana-Turgeon Belt

From Castonguay et al., 2020 modified from Faure 2015



- Harricana-Turgeon volcano-sedimentary belt is the most northerly belt in the Abitibi where it contacts the gneisses of the Opatica subprovince.
- Rocks (and mineralization?) ~10-30 Ma older than those in the Southern Abitibi.
- The SLDZ controlled the emplacement of the giant Detour lake deposit (~25 Moz + recent discoveries)
- Other gold occurrences such as the 645K Oz Martiniere deposit (Historic Resource), Vortex zone, recent discoveries.

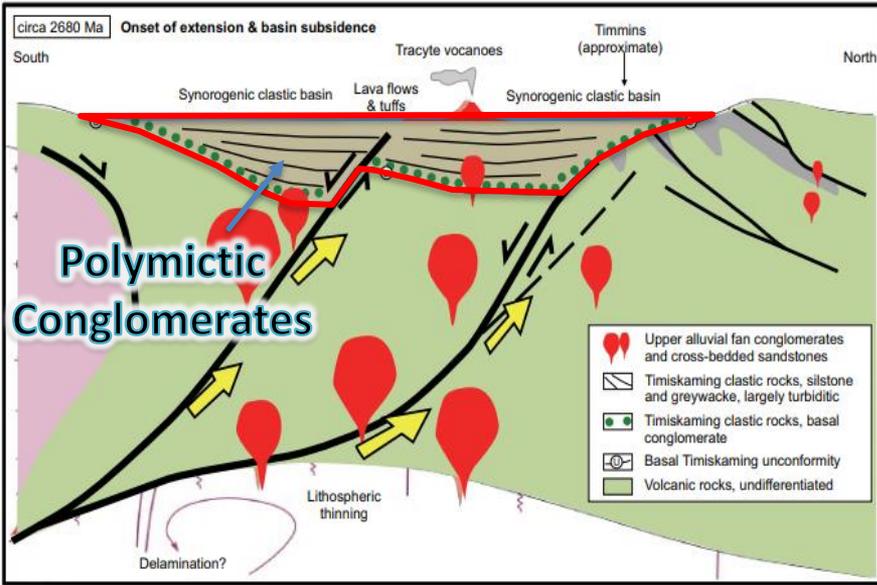
# Local Geology



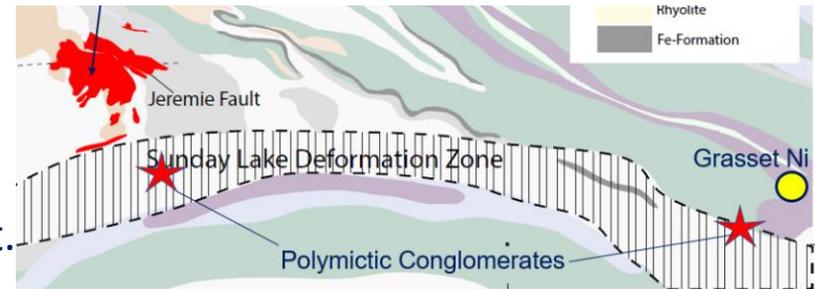
Polymictic Conglomerates

# Local Geology

Mod from Thurston 2008 after Bleeker 2012

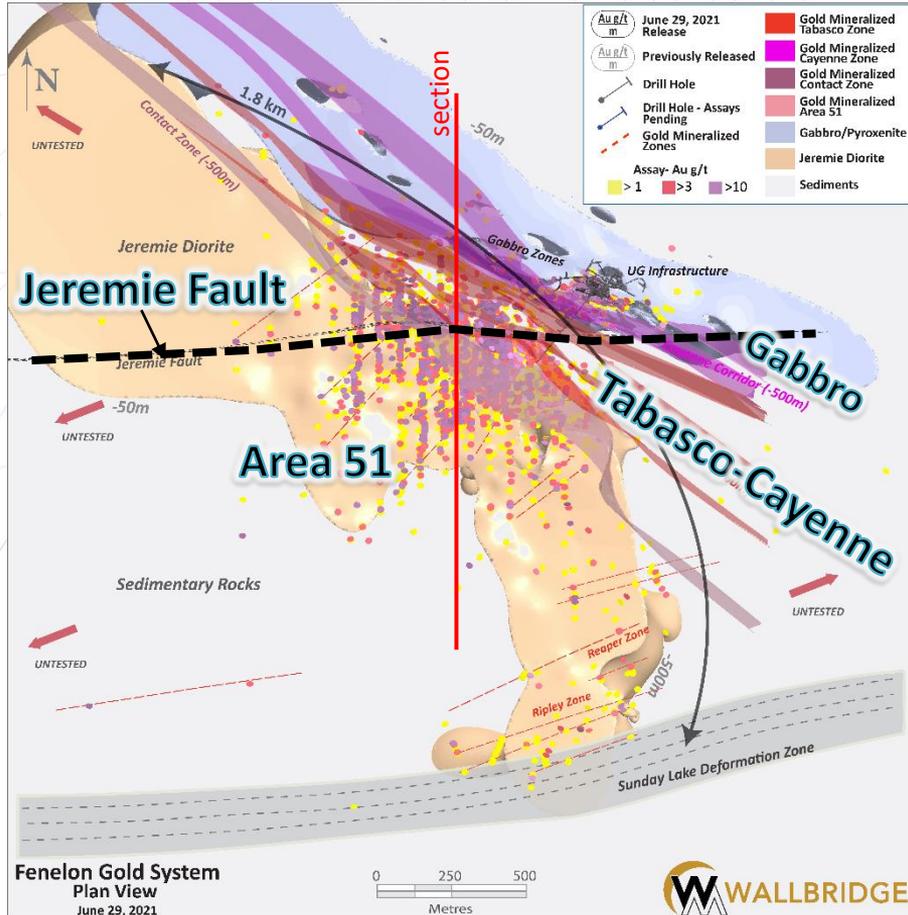


- Fenelon polymictic conglomerates suggest the presence of major basin-bounding faults.
- High-level preservation (gold zone).
- Moderately strained with a stretching component.

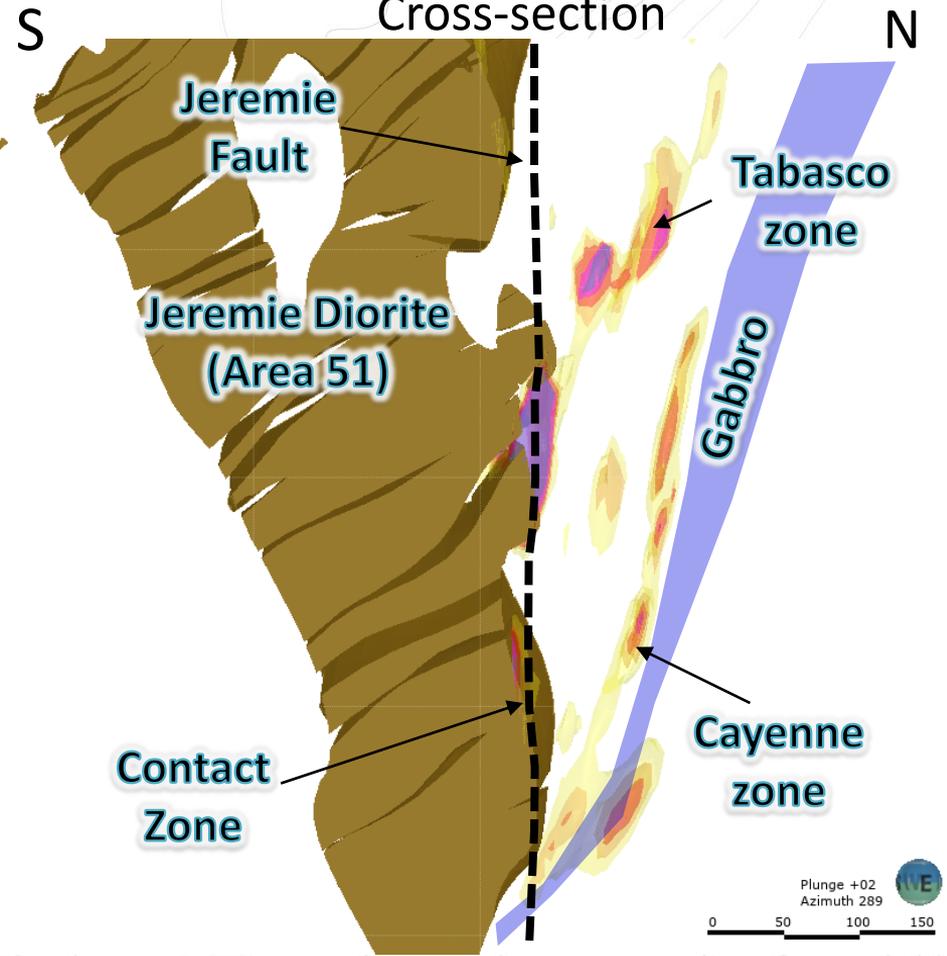


# The Fenelon Deposit

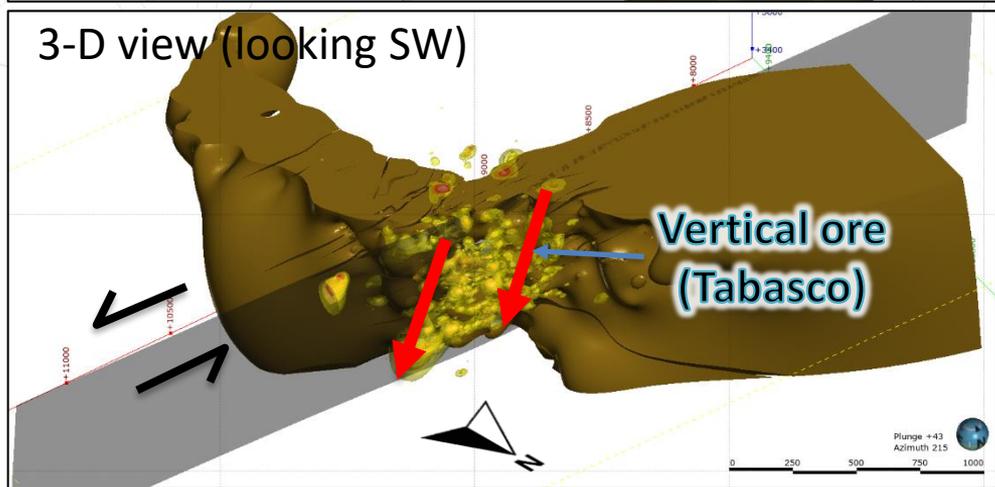
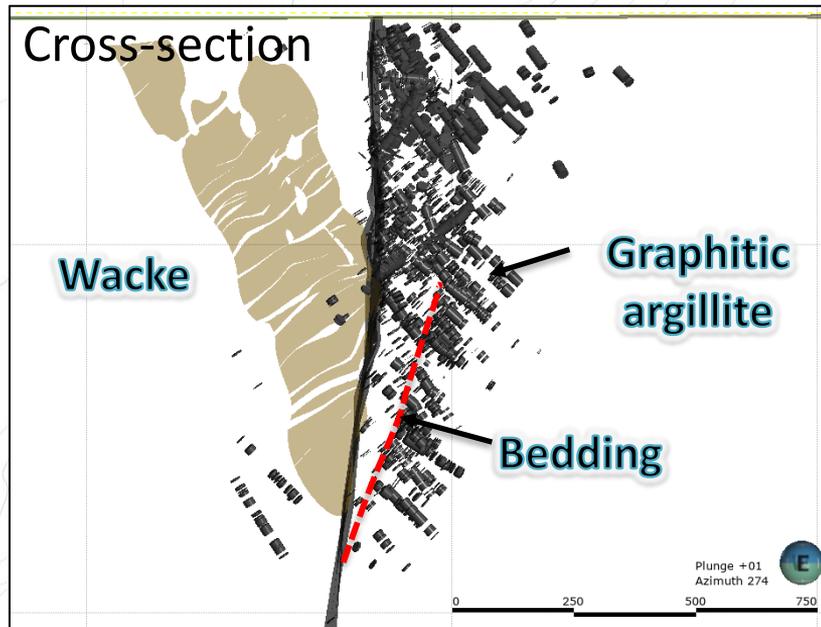
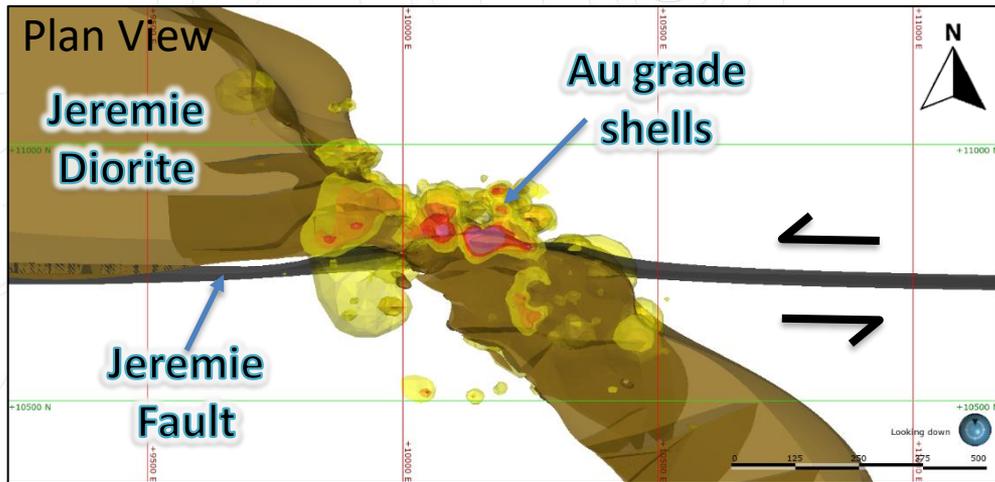
Plan View



## Cross-section

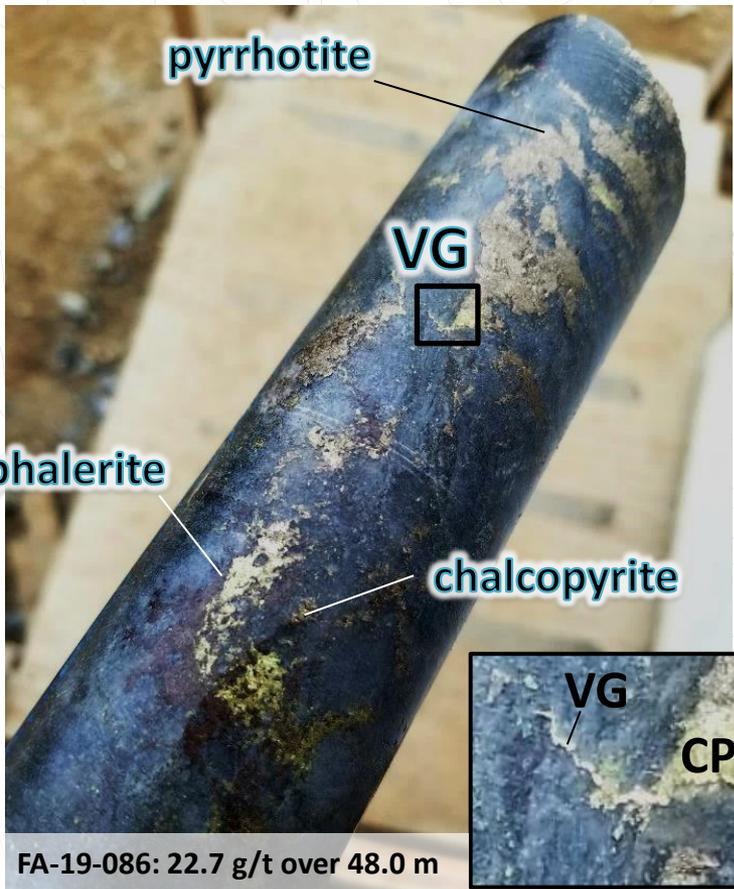


# The Jeremie Fault

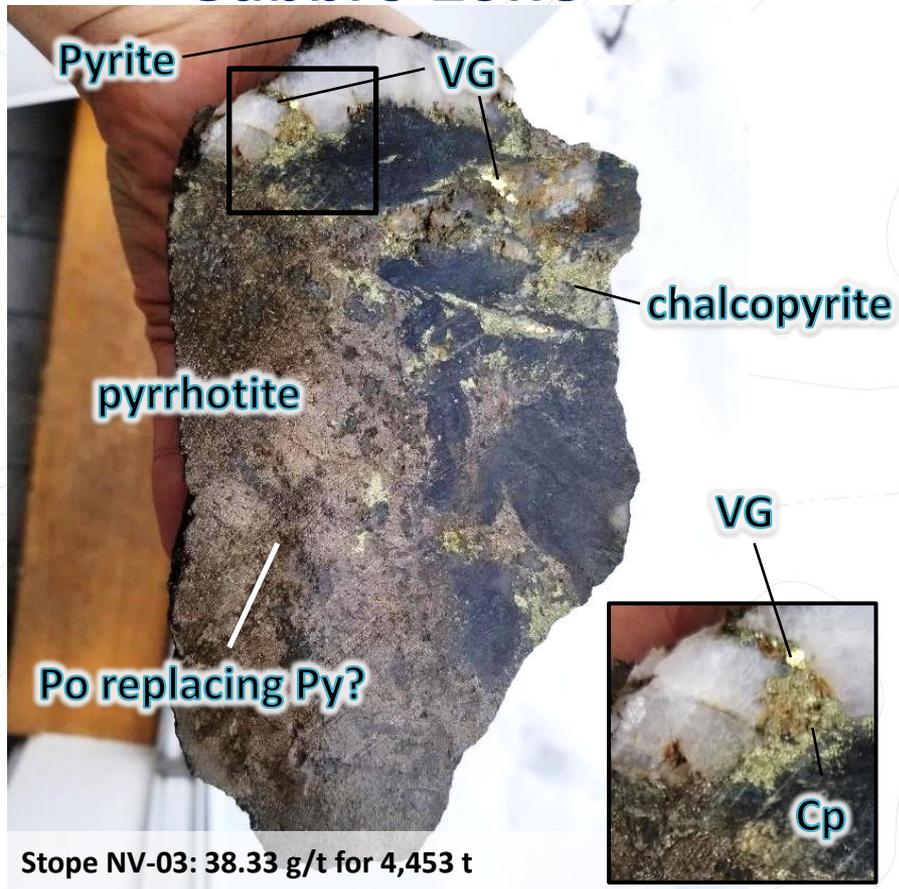


# The Fenelon Deposit

## Tabasco Zone



## Gabbro Zone



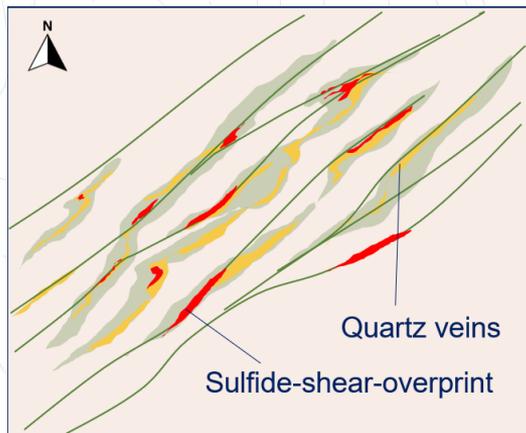
# The Fenelon Deposit (Area 51)



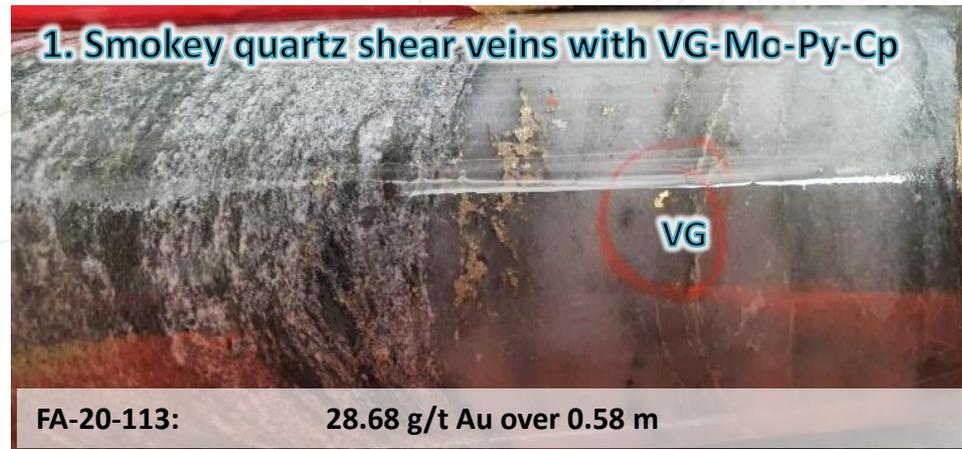
WALLBRIDGE



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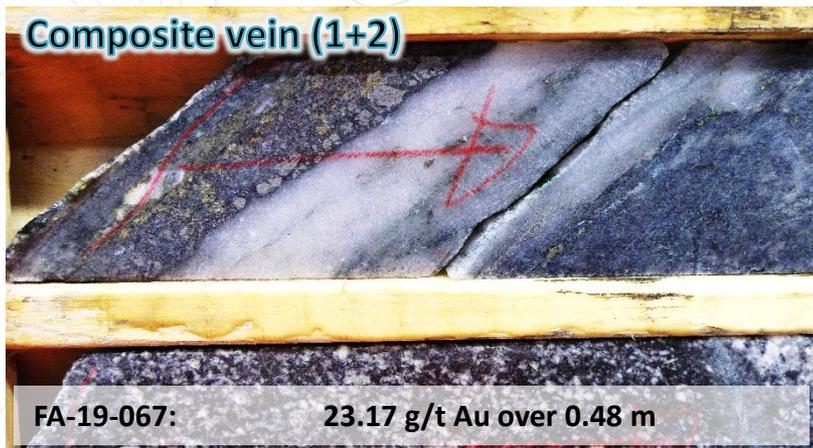
1. Smokey quartz shear veins with VG-Mo-Py-Cp



FA-20-113:

28.68 g/t Au over 0.58 m

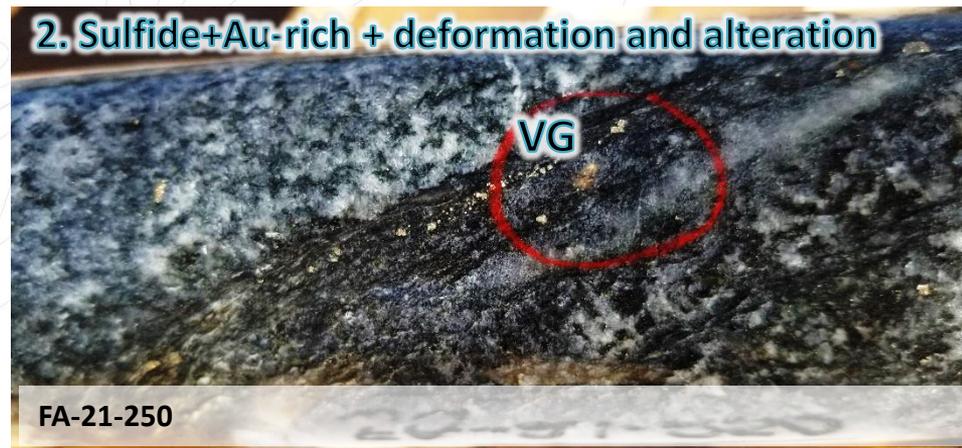
Composite vein (1+2)



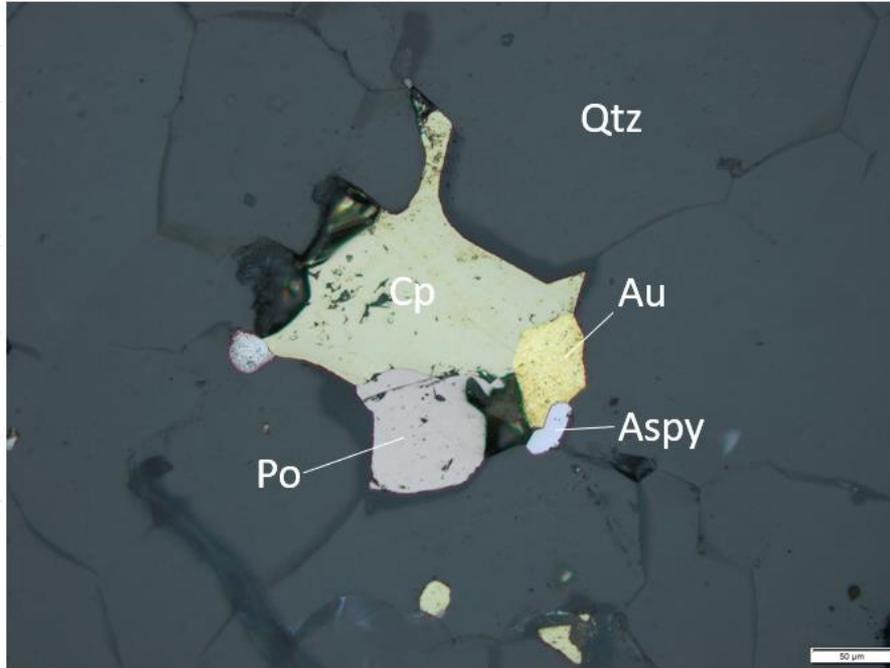
FA-19-067:

23.17 g/t Au over 0.48 m

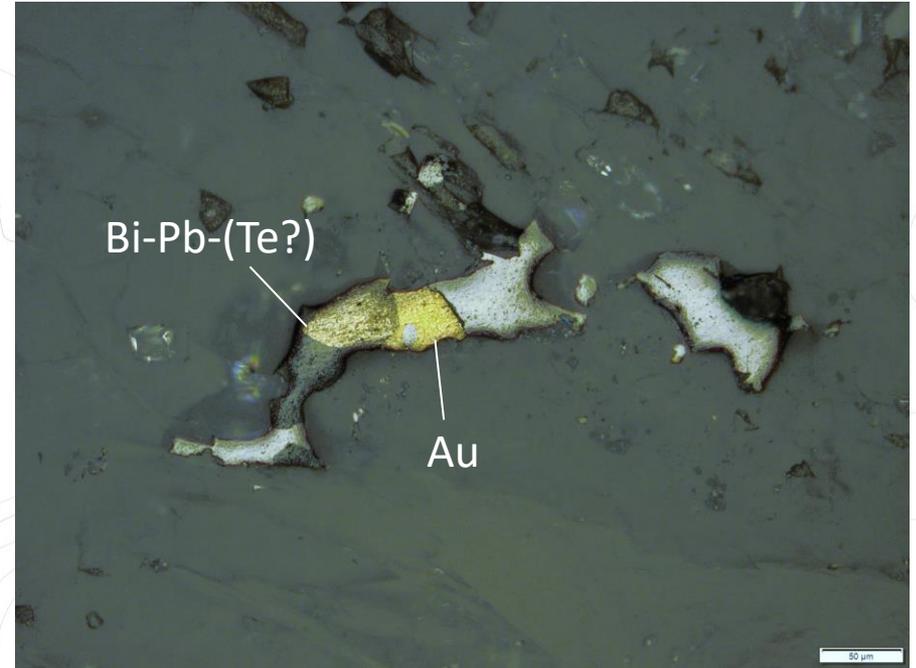
2. Sulfide+Au-rich + deformation and alteration



FA-21-250



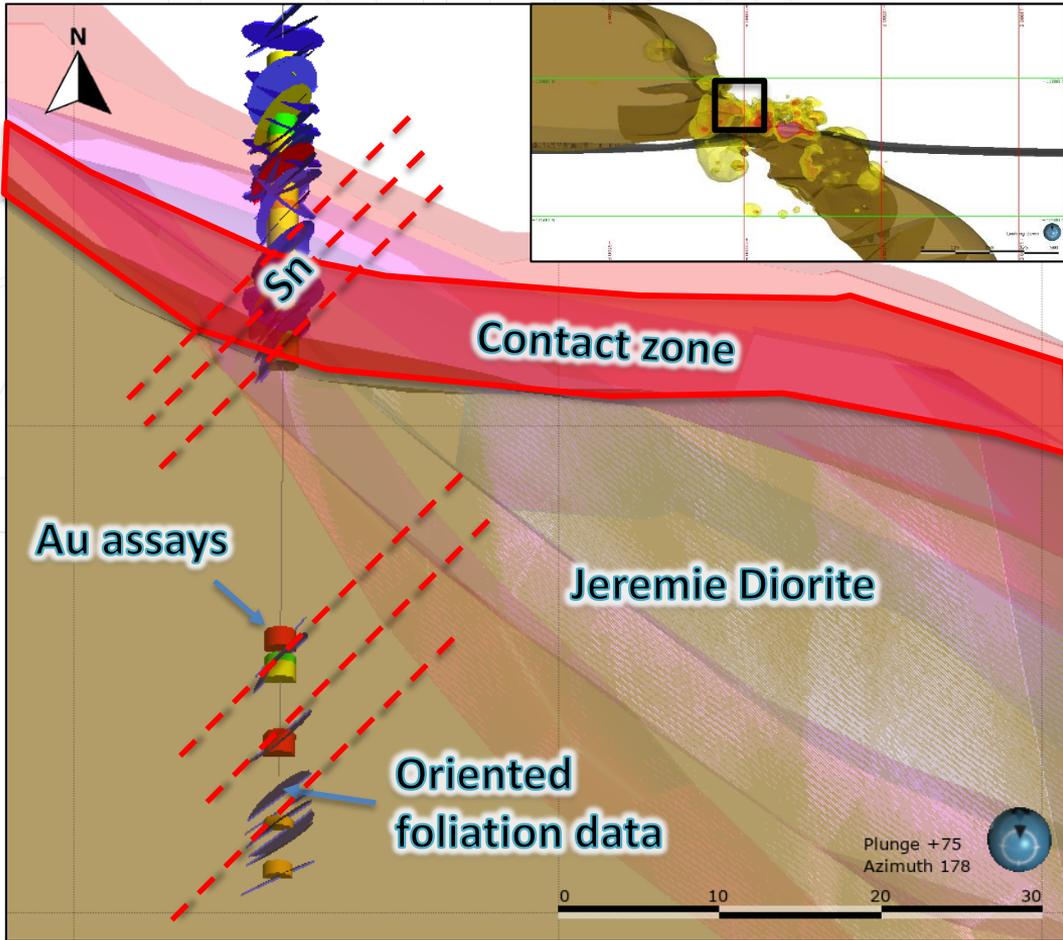
- Co-genetic Gold + Chalcopyrite + Pyrrhotite + Arsenopyrite + Bi
- Bi soluble > 400 °C



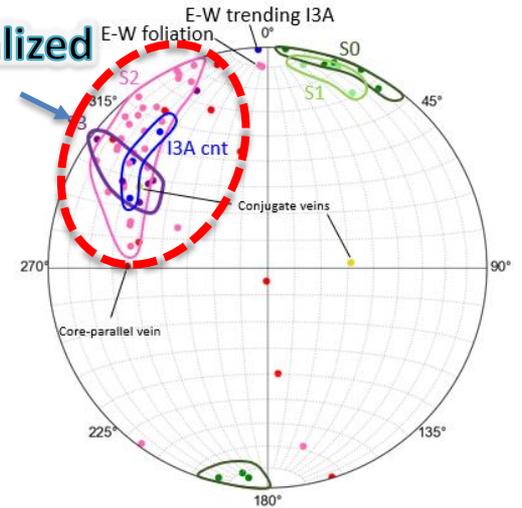
- Late poly-phase Au grains - Bi-melts?
- Bi-Au system has eutectic at 241 °C
- Liquid Bismuth Collector (e.g., Tooth et al., 2008)

# Shear Orientation

Plan view



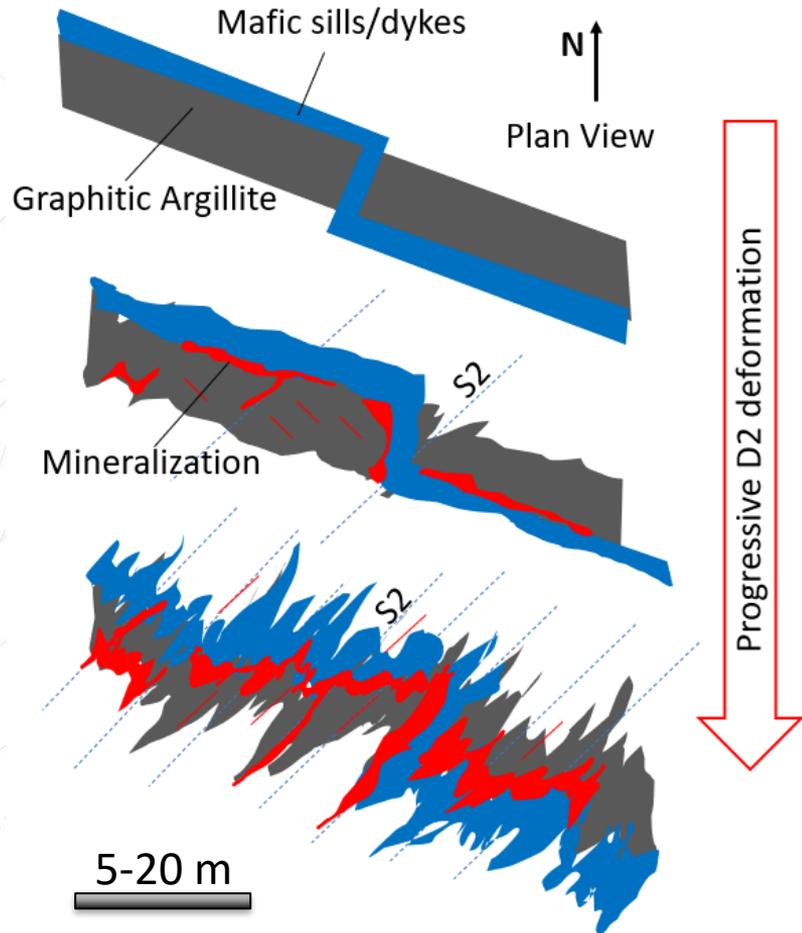
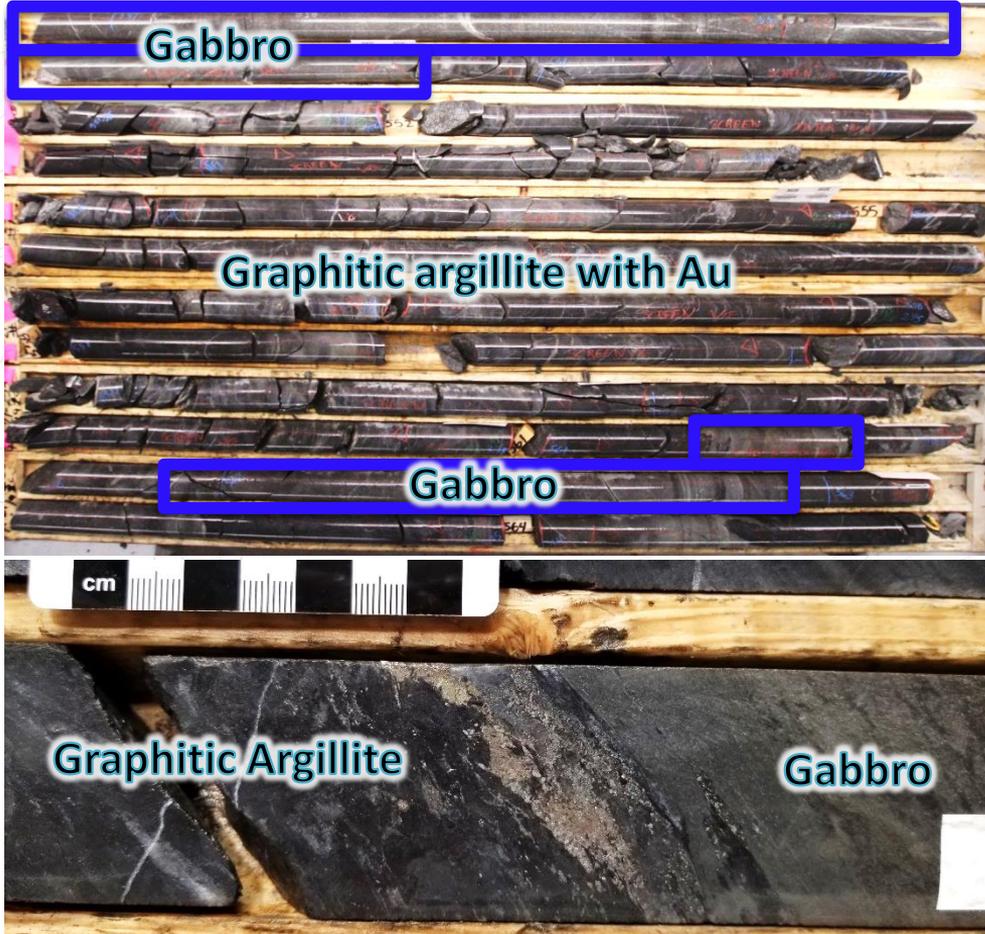
## Mineralized Areas



Mineralization follows and cross-cuts foliation

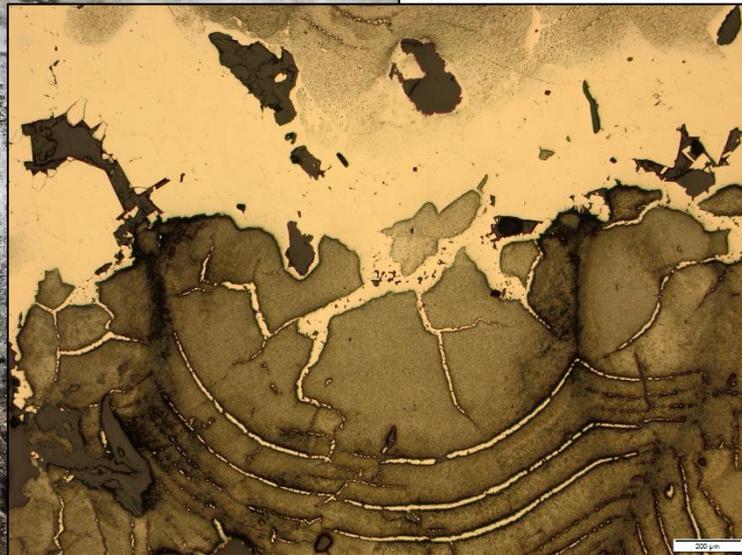
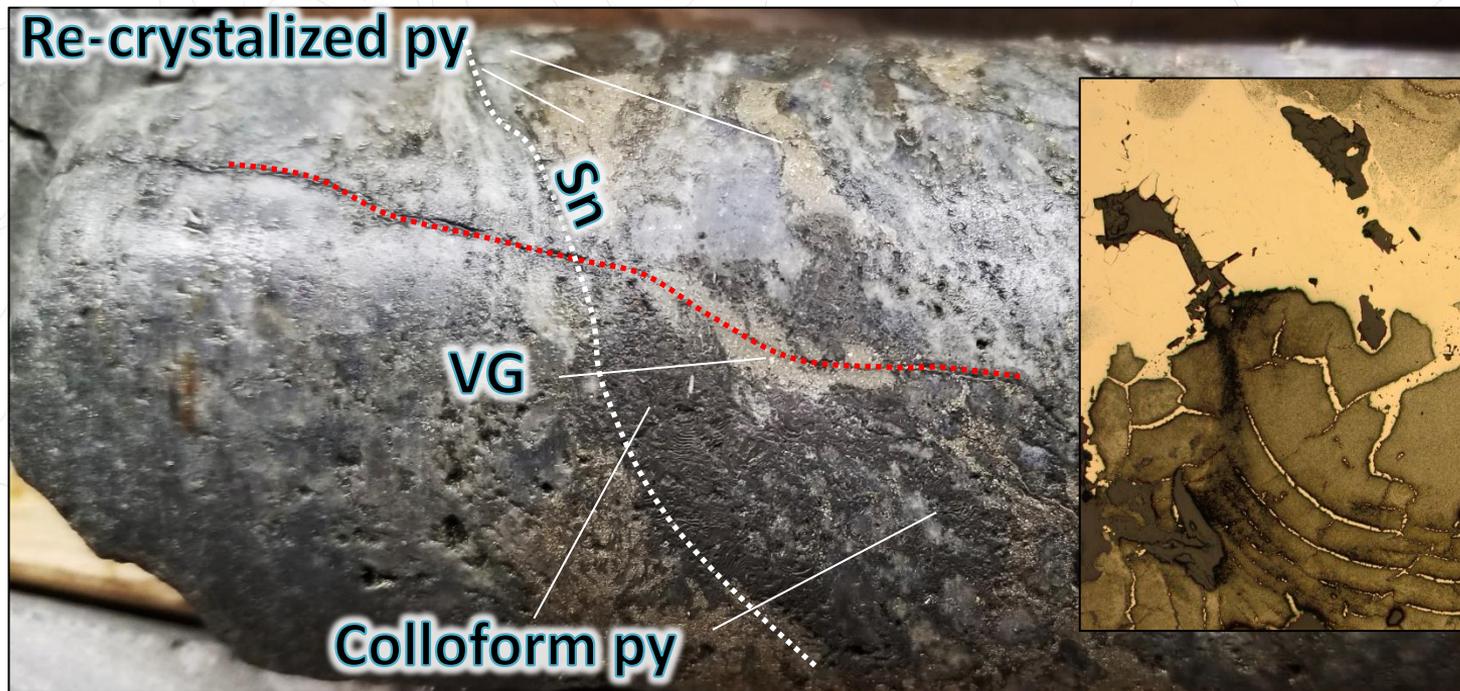
# Lithological Control (Tabasco)

Tabasco zone: FA-21-253: **15.57 g/t over 10.80m**



# Lithological Control

Gabbro zone



- Colloform-textured py(?) was seen in all ore zones
- Re-crystallized pyrite with VG – controlled by late fractures
  - Au liberated from early colloform py vs. Au brought in with re-crystallizing fluids

# Summary

- **Gold deposit elevated in base metal (Cu, Zn).**
  - Assemblage of Pyrrhotite > Chalcopyrite > Arsenopyrite > Sphalerite **co-genetic with Au.**
  - Bi-Pb-(Te) minerals associated with gold. Role of melts?
- **Two gold events (in Area 51) – Unclear if they are completely different events.**
  1. Quartz shear veins (Au-Mo-minor sulfides) ~ same age as intrusion host (Carter et al., 2021 un pub).
  2. Sulfide-rich phase associated with deformation and alteration.
- **Mineralization is associated with shearing.**
  - Mineralization is spatially associated with the main NE-SW foliation.
  - The NW-trend of the ore zones is controlled by lithological contacts
  - Graphitic argillite beds and mafic dykes likely channelled fluids.
- **Colloform textures suggest epizonal environment.**
  - Orogenic system super imposed on an older epizonal system?



# QUESTIONS

