Putaala

Alternative Names: Hietaperä
Occurence type: occurrence

Commodity	Rank	Total measure	Total production	Total resource	Importance
gold	1	NA	NA	NA	NA

Easting EUREF: 605775,929
Northing EUREF: 7119978,453
Easting YKJ: 3605991
Northing YKJ: 7122960

Discovery year: 2003
Discovered by: Geological Survey of Finland
Province: Kuhmo (Ni, Ag, Au)
District: Kuhmo (Au)
Comments: The first indication was the discovery of several auriferous quartz vein glacial erratics near the Putaala farm house; this led to local bedrock mapping, ground geopysical surveys, and the occurrence wa hit by diamond drilling into positive gound magnetic anomalies and supposed fault zones in the till-covered bedrock.
References: 1, 3

Mineral deposit type

Group: Metallogenic deposit
Main type: Orogenic (metamorphic hydrothermal)
References: 2

Dimension

Expression: NA
Form: NA
Shape: NA
Length (m): NA
Width (m): NA
Thickness (m): NA
Depth (m): NA
Area (ha): NA
Dip azim: NA
Dip: NA
Plunge azim: NA
Plunge dip: NA
Orientation method: NA

Holder history

Previous holders:

Company	Years	Holding type	Comments
Sotkamo Silver Oy	2020	Reservation	NA
Mineral Exploration Network (Finland) Limited	2013-2015	Reservation	NA
Magnus Minerals Oy	2007	NA	NA
Geological Survey of Finland	2002	NA	NA

EXPLORATION ACTIVITY

Geological Survey of Finland

Years	Activity type	Geologist	Exploration result	Ref
2003-2004	core drilling	Kimmo Pietikäinen	NA	2
	Core drilling (reconnaissance drilling): 12 diamond-drill holes, total 1234 m; Occurrence was hit by diamond drilling into positive gound magnetic anomalies and supposed fault zones in the till-covered bedrock.			
	Intersections			
	HoleID	NA		
	From-To	NA		
	Length	1m		
	gold	0,6ppm		
	HoleID	NA		
	From-To	NA		
	Length	1m		
	gold	11,8ppm		

2002-2002	detailed geology	Kimmo Pietikäinen	key geological features	2

2002-2002	detailed geophysics	Kimmo Pietikäinen	geophysical anomaly	2
	ground magnetic, electromagnetic and IP survey			

2002-2002	detailed geochemistry	Kimmo Pietikäinen	geochemical anomaly	2

1990-2001	regional geochemistry	Markku Tenhola	geochemical anomaly	
	Greenstone belt-wide till-geochemical survey with 16 damples per one sq.km			

1988-1988	regional geochemistry	Markku Tenhola	geochemical anomaly	1, 2
	Country-wide till-geochemical survey			

1987-1987	regional geophysics	NA	key geological features	2
	Low-altitude airborne magnetic, electromagnetic and radiometric survey			

Malmikaivos Oy

Years	Activity type	Geologist	Exploration result	Ref
1960-1960	core drilling	NA	NA	2
	Core drilling (reconnaissance drilling): several diamond-drill holes. Relogging and reanalysis by GTK of the holes drilled by Malmikaivos.			

1960-1960	detailed geology	NA	key geological features	2

GEOLOGY

Host rock: Meta-ultramafic-rock, Quartz vein, Dolerite

Meta-ultramafic-rock (Host rock)

Rock type: Host rock
Proportion: major
Grain size: NA
Color: NA
References: 2
Comments: The occurrence is characterised by auriferous quartz veins in chlorite schist (mafic or ultramafic volcanic rock). The controlling structure is the main shear zone of the greenstone belt or a NW-trending branch of the main shear zone.

Ore minerals:

Mineral	Proportion	Mineral texture
Chalcopyrite	minor	
Pyrite	major	
Pyrrhotite	major	

Other minerals:

Mineral	Proportion	Mineral texture
Chlorite	present	
Quartz	present	

Alteration:	Distribution:	Degree:	Relation to mineralization:
sericitic alteration	NA	NA	NA

Geological age:

Geological era:	Max age - Minage (Ma):	Inferred age (Ma):	Age of mineralization:
Archean (4000-2500 Ma)	2500-4000		N

Quartz vein (Host rock)

Rock type: Host rock
Proportion: minor
Grain size: NA
Color: NA
References: 2
Comments: Auriferous and barren quartz veins

Dolerite (Host rock)

Rock type: Host rock
Proportion: minor
Grain size: NA

Color: NA
References: 2

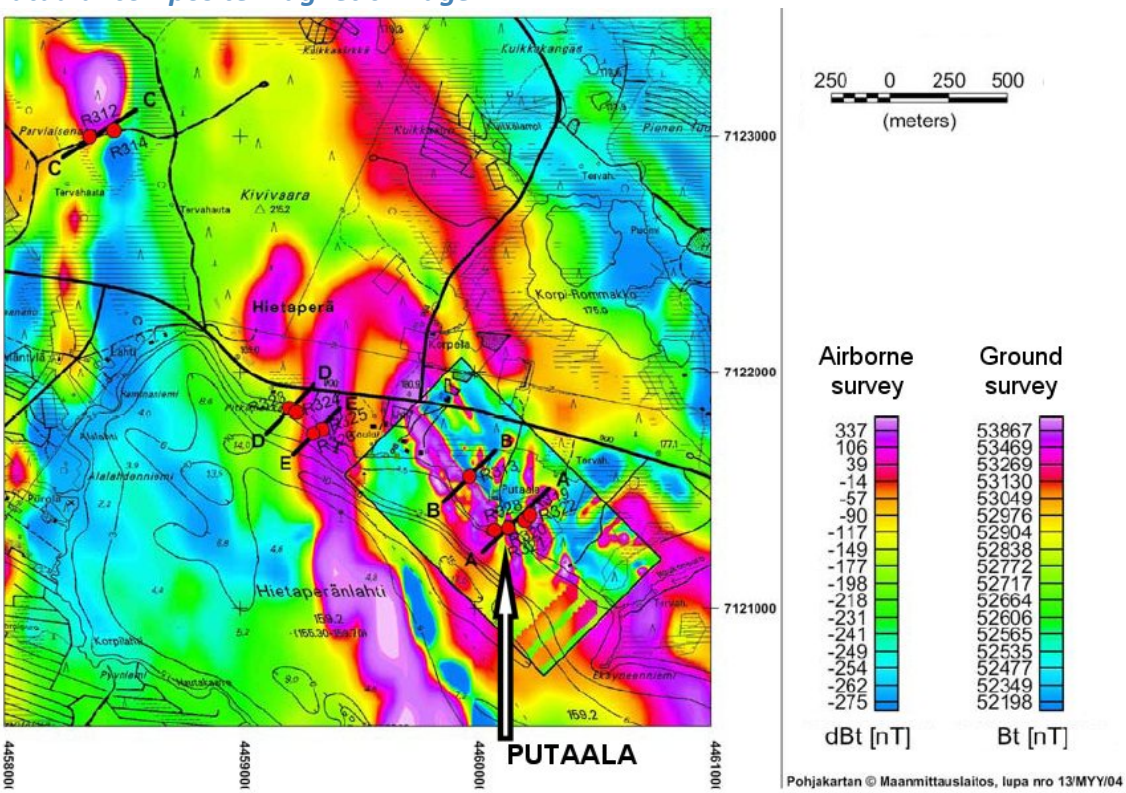
Alteration:	Distribution:	Degree:	Relation to mineralization:
chloritic alteration	NA	NA	NA
epidote alteration	NA	NA	NA
biotite alteration	NA	NA	NA

Geological age:

Geological era:	Max age - Minage (Ma):	Inferred age (Ma):	Age of mineralization:
Archean (4000-2500 Ma)	2500-4000		N

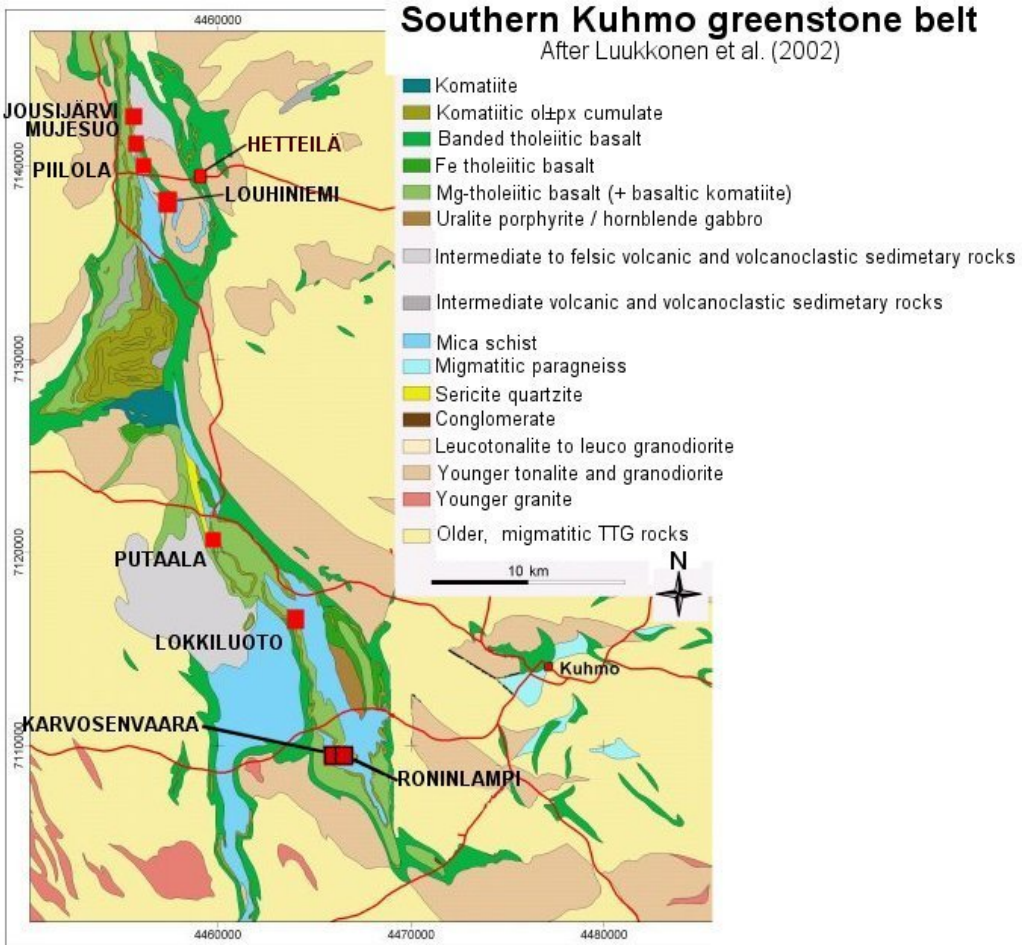
Figures

Putaala: composite magnetic image:

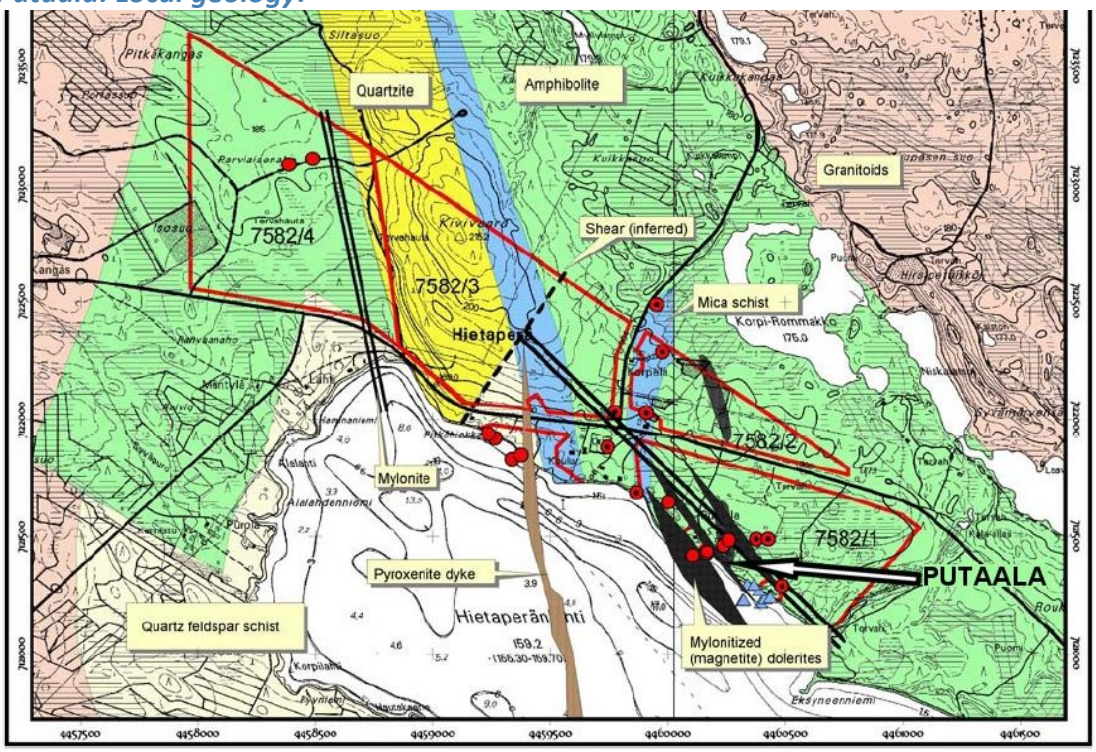


Airbourne and ground magnetic total intensity map of the Hietaperä area. Ground measurement area is outlined on the map. Pietikäinen et al. (2005)

Southern Kuhmo greenstone belt geology and gold occurrernces:

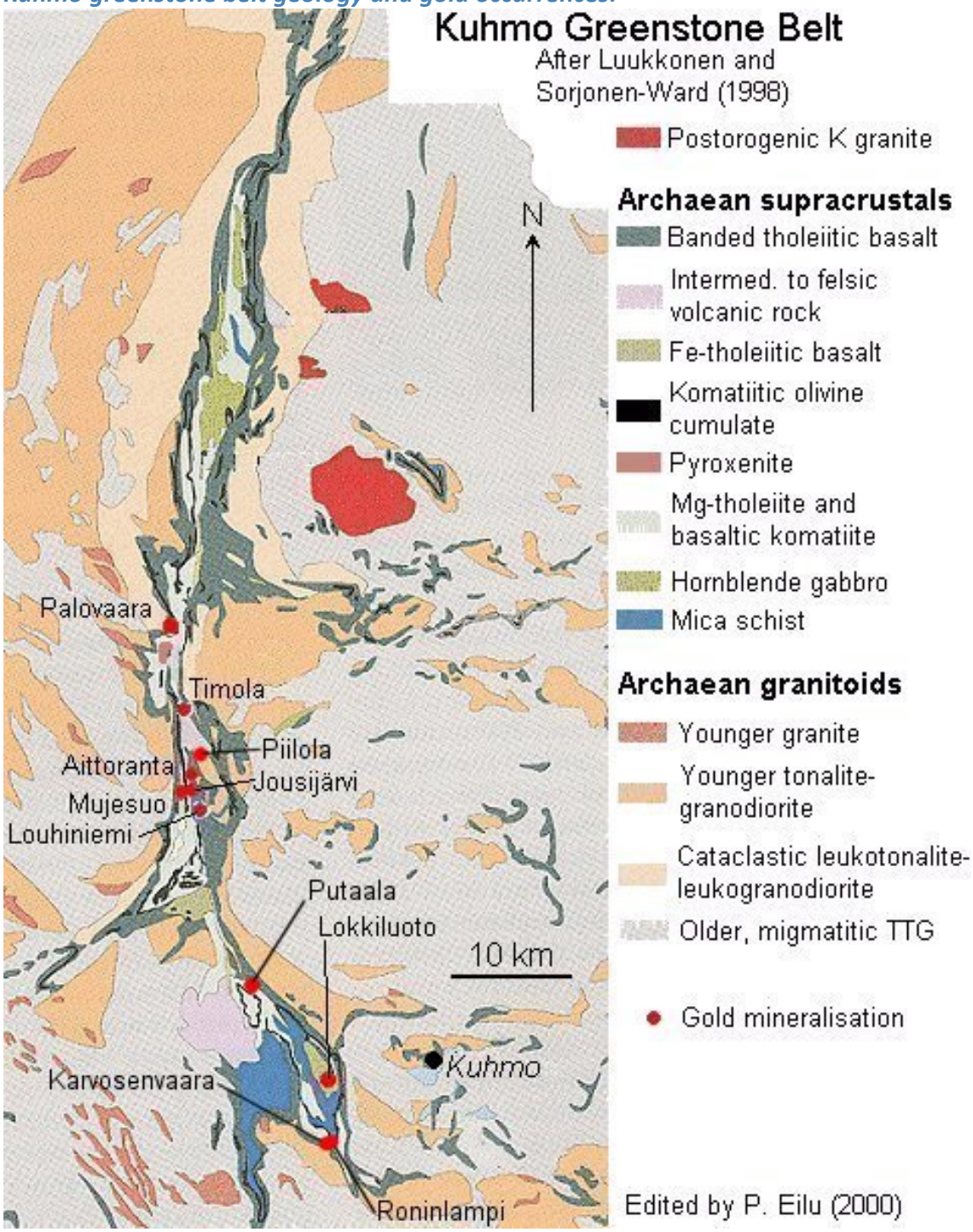


Putaala: Local geology:

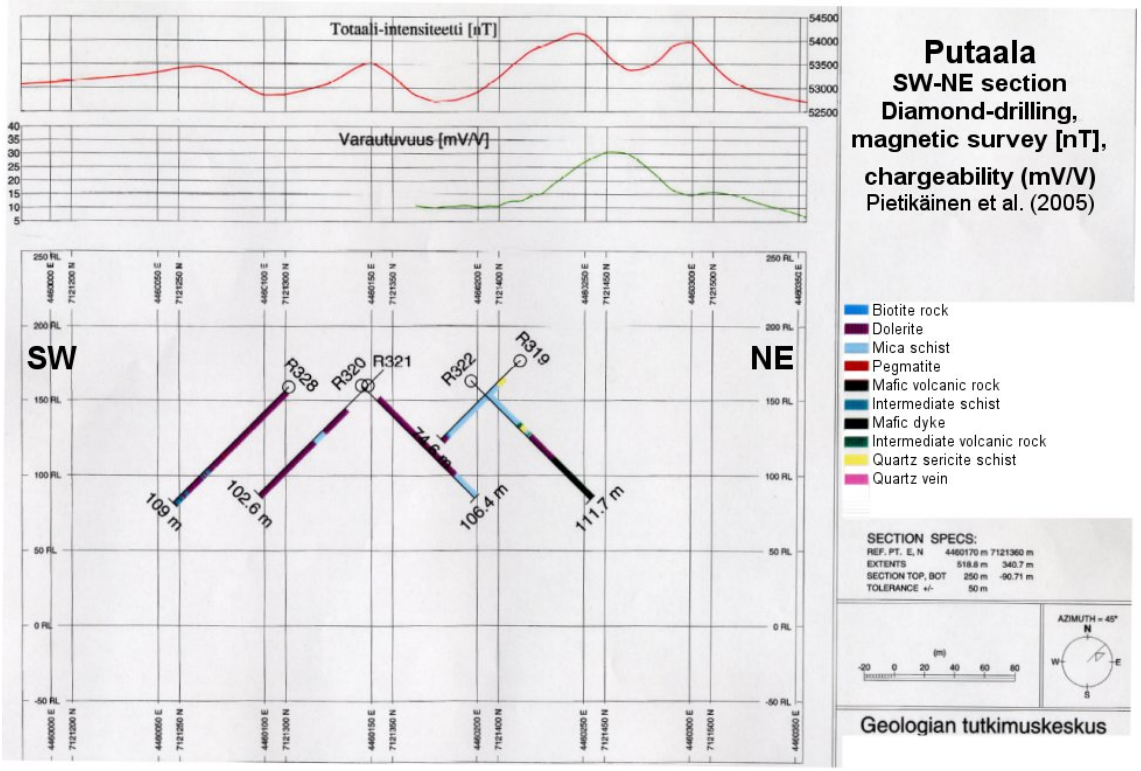


Modified map of the bedrock of Hietaperä area based on Hyppönen (1976,1978, 1983) and locations of claims of GTK (red lines), drill holes of GTK (red dots), drill holes of Malmikaivos Oy (red dots with black center), and boulders containing >100 ppb gold (blue triangles, Table 7) in the northern part of Ontojärvi, 20 km northwest of Kuhmo. Pietikäinen et al. (2005)

Kuhmo greenstone belt geology and gold occurrences:



Putaala: drilled section:



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1. Luukkonen, E., Halkoaho, T., Hartikainen, A., Heino, T., Niskanen, M., Pietikäinen, K. & Tenhola, M. 2002. Itä-Suomen arkeeiset alueet -hankkeen (12201 ja 210 5000) toiminta vuosina 1992-2001 Suomussalmen, Hyrynsalmen, Kuhmon, Nurmeksen, Rautavaaran, Valtimon, Lieksan, Ilomantsin, Kiihtelysvaaran, Enon, Kontiolahden, Tohmajärven ja Tuupovaaran alueella. Geological Survey of Finland, Report M19/4513/2002/1. 265 p. (in Finnish)
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2. Pietikäinen, K., Halkoaho, T., Hartikainen, A., Niskanen, M. & Tenhola, M. 2005. Itä-Suomen arkeeiset alueet II-hankkeen (2105000) toiminta vuosina 2001-2004 Kuhmon, Nurmeksen, Lieksan ja Hyrynsalmen alueilla. Geological Survey of Finland, Report M 19/4411/2005/1. 84 p. (in Finnish)
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3. Sorjonen-Ward, P. & Luukkonen, E.J. 2005. Archean rocks. In: Precambrian Geology of Finland - Key to the Evolution of The Fennoscandian Shield. Elsevier Science B.V., Amsterdam, 19-99.