Louhiniemi

Occurence type: occurrence

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

Easting EUREF: 601622,548
Northing EUREF: 7135896,025
Easting YKJ: 3601836
Northing YKJ: 7138884

Discovery year: 1998
Discovered by: Geological Survey of Finland
Province: Kuhmo (Ni, Ag, Au)
District: Kuhmo (Au)
Comments: Discovered by GTK: the first indications were the several auriferous glacial erratic boulders discovered in the area by amateur prospectors in 1997; ground geophysical and till geochemical surveys led diamond drilling into the deposit
References: 5, 6, 7, 8

Mineral deposit type

Group: Metallogenic deposit
Main type: Orogenic (metamorphic hydrothermal)
Comments: Clearly epigenetic, "mesothermal" mineralisation with a distinct structural control, formed during late-Archaean cratonisation.
References: 4

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
Dimension comments: Open along strike and at the depth of a few tens of metres

Holder history

Previous holders:

Company	Years	Holding type	Comments
Anglo American Exploration B.V.	2009-2010	Claim reservation (old law)	NA
Magnus Minerals Oy	2007	NA	NA
Geological Survey of Finland	1999-2002	NA	NA

EXPLORATION ACTIVITY

Geological Survey of Finland

Years	Activity type	Geologist	Exploration result	Ref
1999-1999	core drilling	Markku Tenhola	mineral occurrences	8
	Seven diamond-drill holes, total 507 m.			
	Intersections			
	HoleID	NA		
	From-To	NA		
	Length	1m		
	gold	1ppm		
	HoleID	NA		
	From-To	NA		
	Length	0,9m		
	gold	6,2ppm		

1997-1999	detailed geophysics	Markku Tenhola	geophysical anomaly	3, 8
	ground magnetic, slingram and IP survey			

1997-1999	detailed geochemistry	Markku Tenhola	geochemical anomaly	8
	The prospect is within an area covered by an extensive As anomaly in till.			

1997-1999	detailed geology	Markku Tenhola	key geological features	3, 8
	The first indications were the several auriferous glacial erratic boulders.			

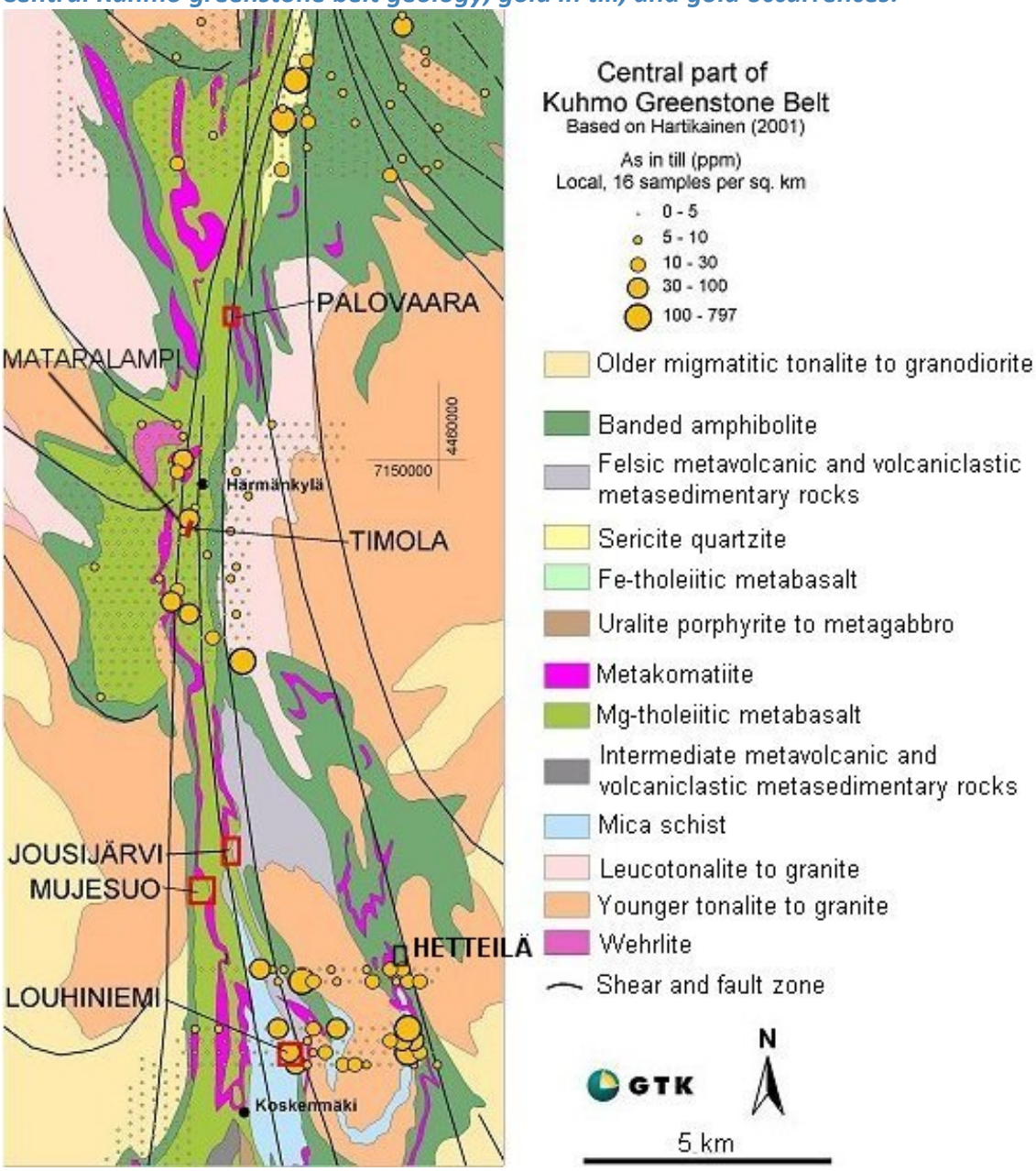
1990-2001	regional geochemistry	Markku Tenhola	geochemical anomaly	
	Greenstone belt-wide till-geochemical survey with 16 damples per one sq.km. The regional Au-As anomaly seems to evelop the Au mineralisation.			

1989-1989	regional geochemistry	Markku Tenhola	geochemical anomaly	3
	Country-wide till-geochemical survey			

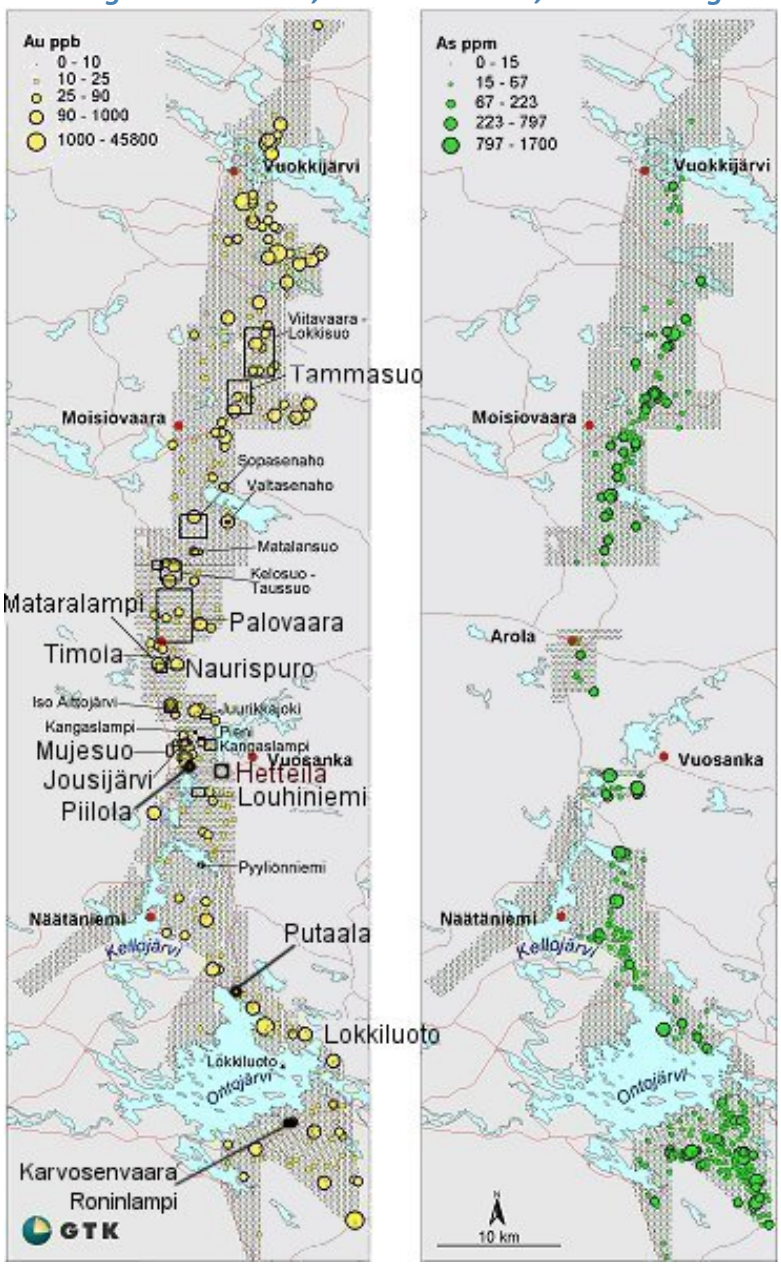
1979-1979	regional geophysics	NA	key geological features	
	Low-altitude airborne magnetic, electromagnetic and radiometric survey			

Figures

Central Kuhmo greenstone belt geology, gold in till, and gold occurrences:



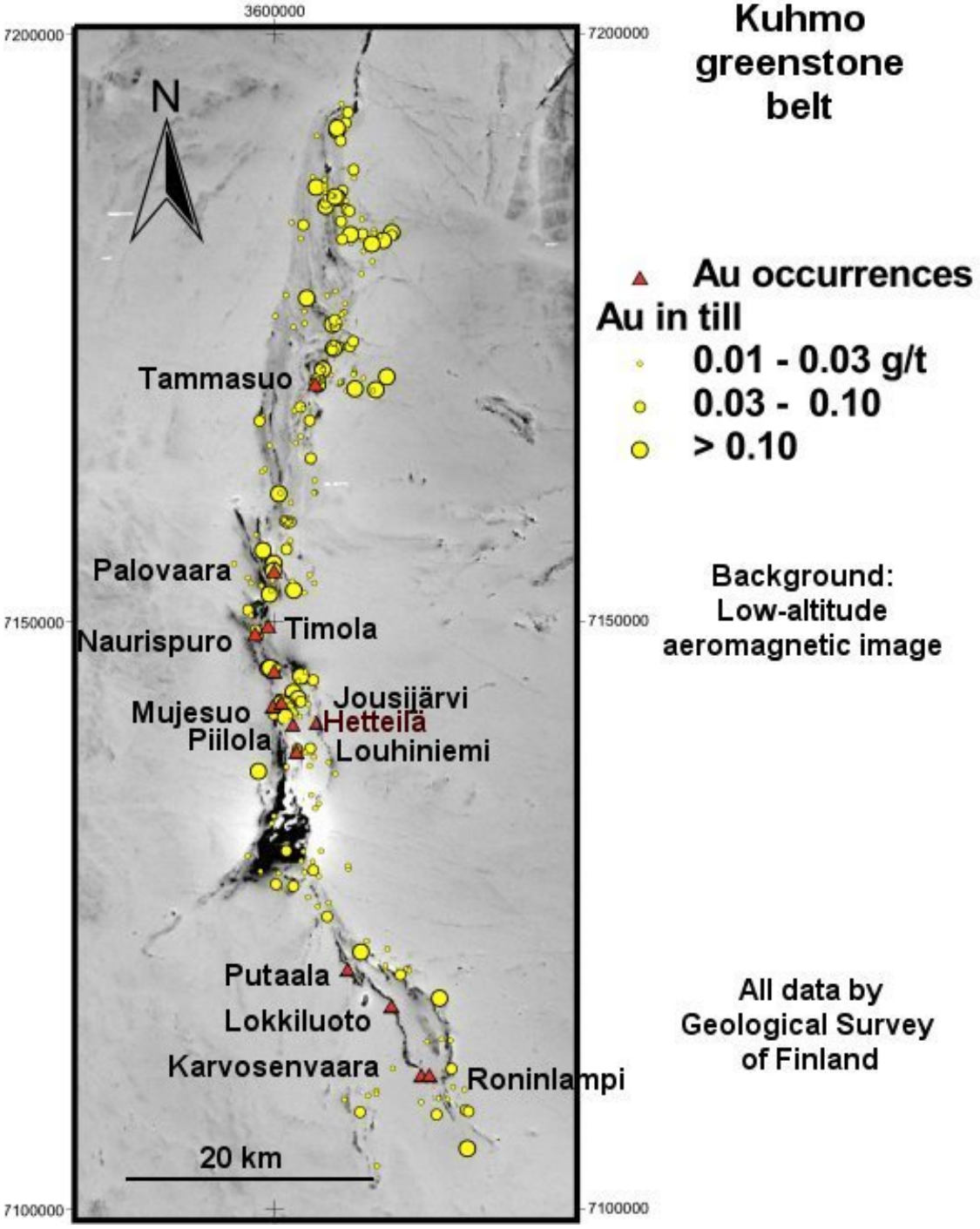
Kuhmo greenstone belt, As and Au in till, and known gold occurrences:



Kuhmo greenstone belt

As (ppm) and Au (ppb) in till
(Luukkonen et al. 2002)

Kuhmo greenstone belt aeromagnetic image, Au in till, and known gold occurrences:



GEOLOGY

Host rock: Tholeiitic basalt, Quartz porphyry
Wall rock: Paraschist

Tholeiitic basalt (Host rock)

Rock type: Host rock
Proportion: major
Grain size: NA
Color: NA
References: 1, 3, 8
Comments: The deposit is in a sequence dominated by mica schists and mafic tholeiitic metavolcanic rocks with thin ultramafic (komatiitic?) interlayers

Metamorphic description:
Ore minerals:

Mineral	Proportion	Mineral texture
Arsenopyrite	minor	
Chalcopyrite	minor	
Pyrite	minor	
Pyrrhotite	major	

Type:	Facies:	Degree:	Relation to mineralization:	Min P- Max P (kbar)	MIn T- Max T (°C)
Regional	greenschist metamorphic facies	medium metamorphic grade	NA		
Comments: Upper-greenschist facies peak metamorphic conditions. A very weak, unevenly distributed Palaeoproterozoic overprint.					

Geological age:

Geological era:	Max age - Minage (Ma):	Inferred age (Ma):	Age of mineralization:
Archean (4000-2500 Ma)	2500-4000		N
Comments: Mineralisation during ca. 2700-2650 Ma.			

Quartz porphyry (Host rock)

Rock type: Host rock
Proportion: minor
Grain size: NA
Color: NA
References: 1, 8
Comments: A few m wide quartz porphyry dykes cut across the supracrustal sequence

Metamorphic description:

Other minerals:

Mineral	Proportion	Mineral texture

Quartz	present

Type:	Facies:	Degree:	Relation to mineralization:	Min P- Max P (kbar)	MIn T- Max T (°C)
Regional	greenschist metamorphic facies	medium metamorphic grade	NA		
Comments: Upper-greenschist facies peak metamorphic conditions. A very weak, unevenly distributed Palaeoproterozoic overprint.					

Geological age:

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

Paraschist (Wall rock)

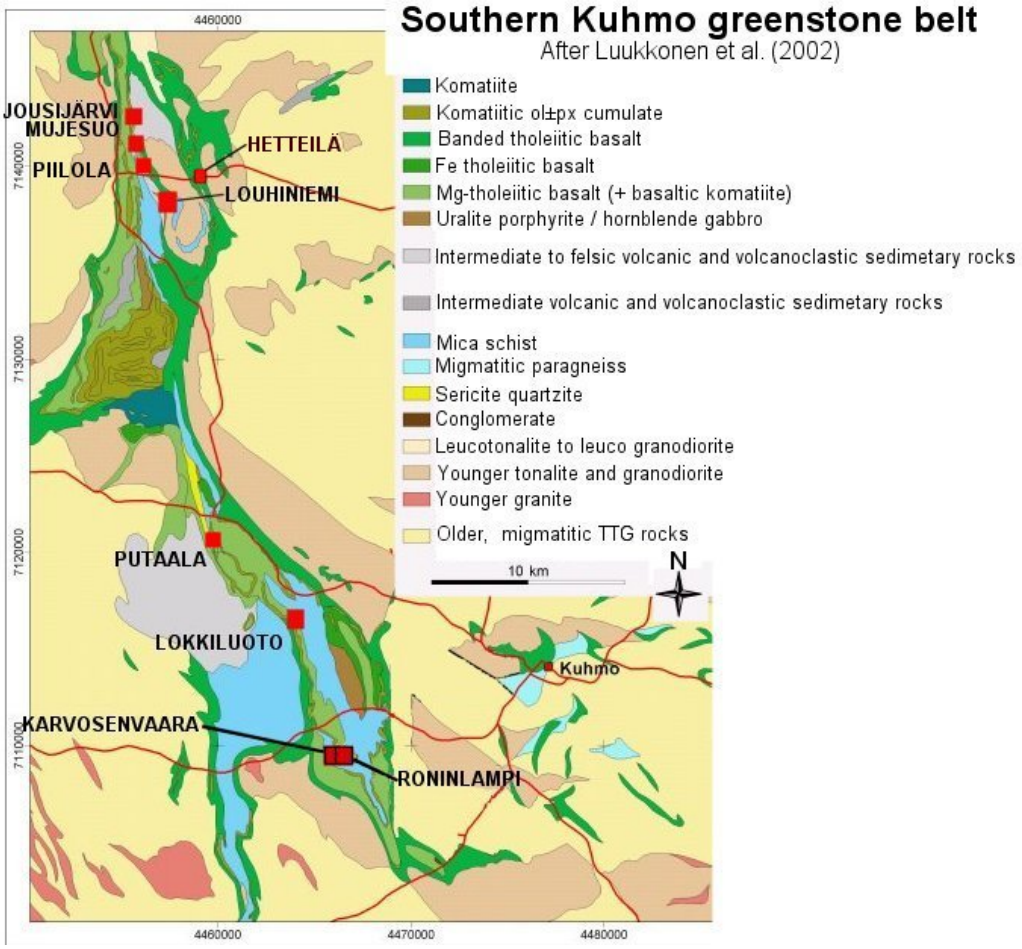
Rock type: Wall rock
Proportion: minor
References: 3, 8

Metamorphic description:

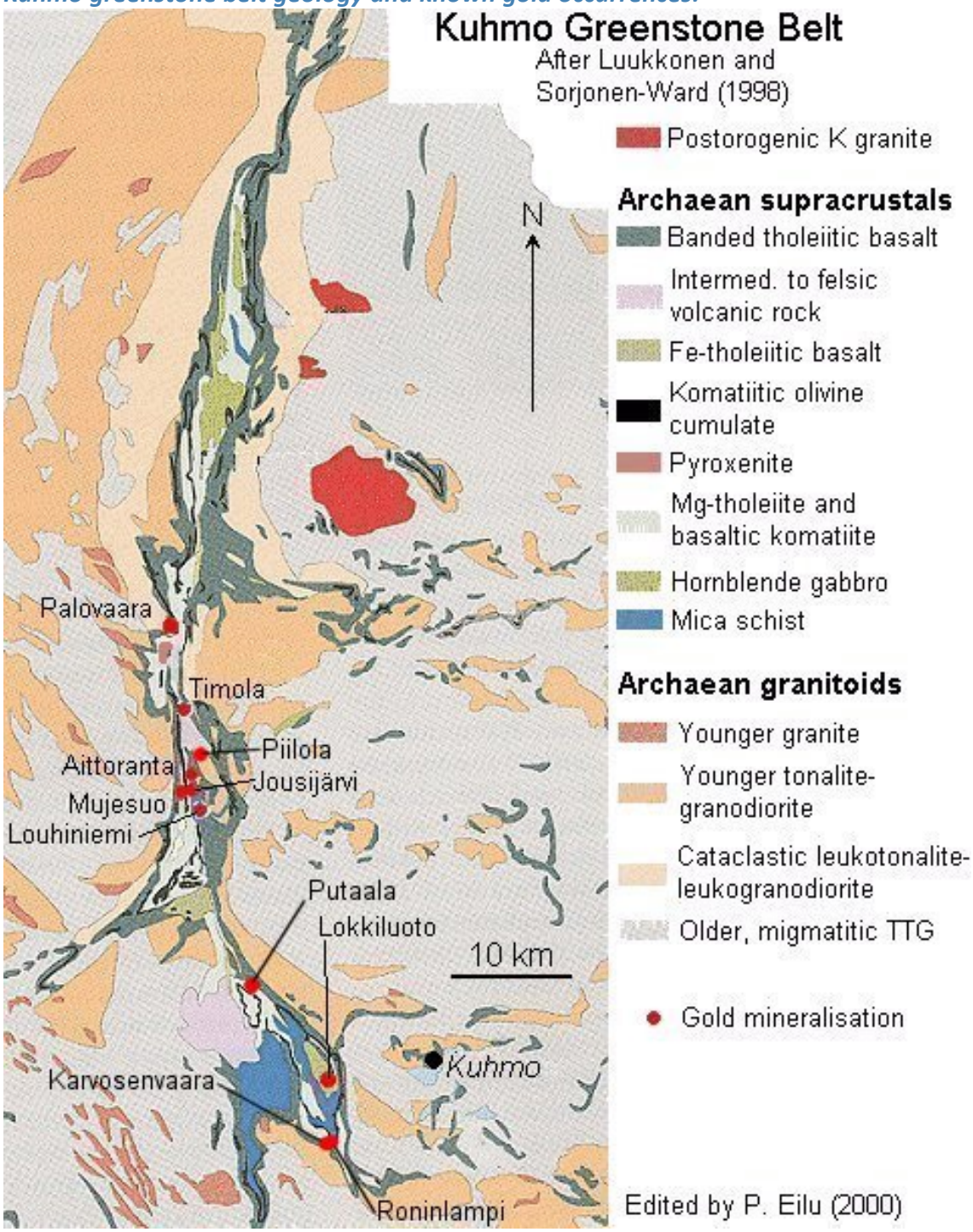
Type:	Facies:	Degree:	Relation to mineralization:	Min P- Max P (kbar)	MIn T- Max T (°C)
Regional	greenschist metamorphic facies	medium metamorphic grade			
Comments: Upper-greenschist facies peak metamorphic conditions. A very weak, unevenly distributed Palaeoproterozoic overprint.					

Figures

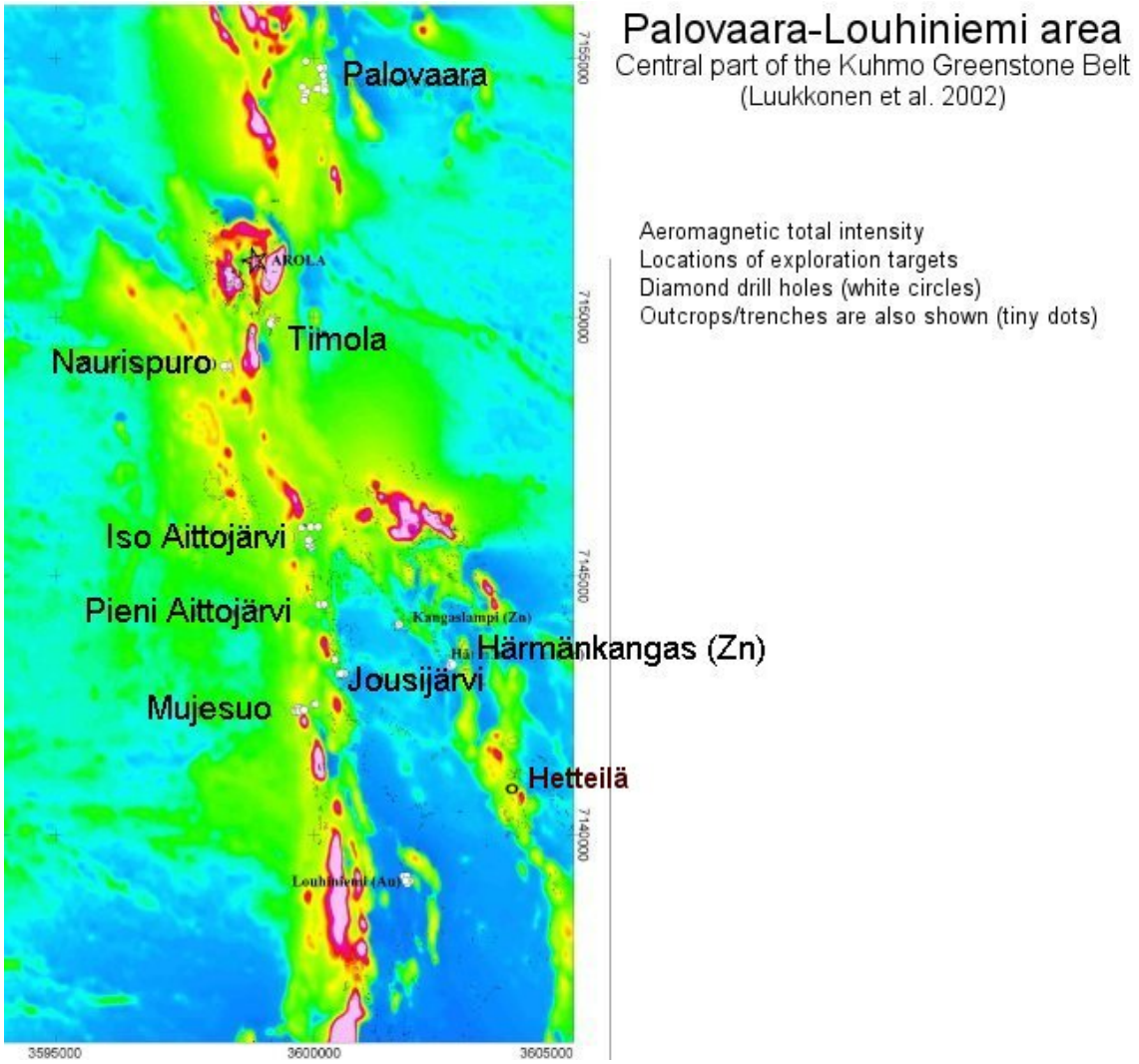
Southern part of the Kuhmo greenstone belt geology and gold occurrences:



Kuhmo greenstone belt geology and known gold occurrences:

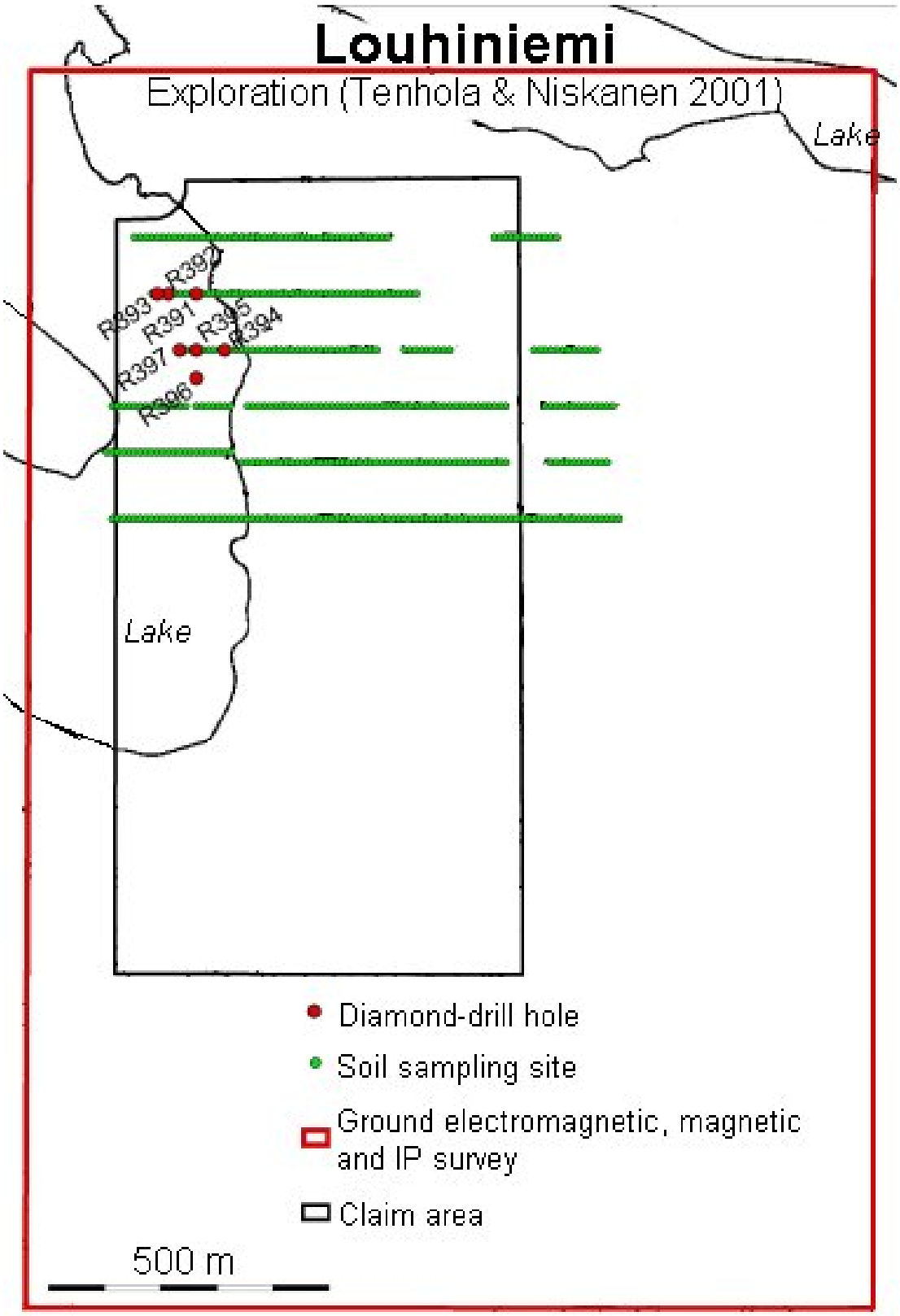


Palovaara-Louhiniemi area aeromagnetic image and gold occurrences:

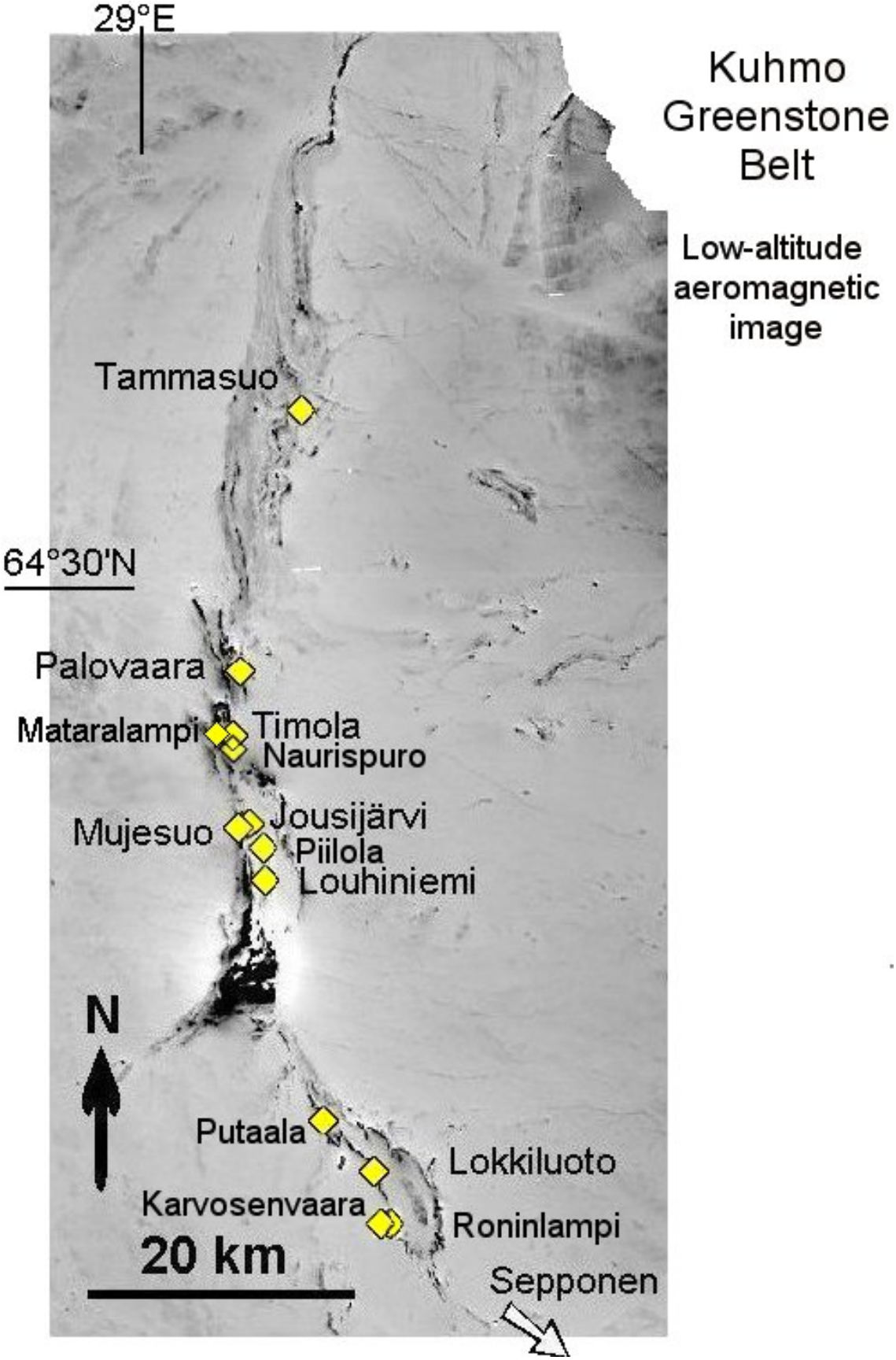


Louhiniemi tenement ground geophysical survey area, detailed till-sampling sites, and drill

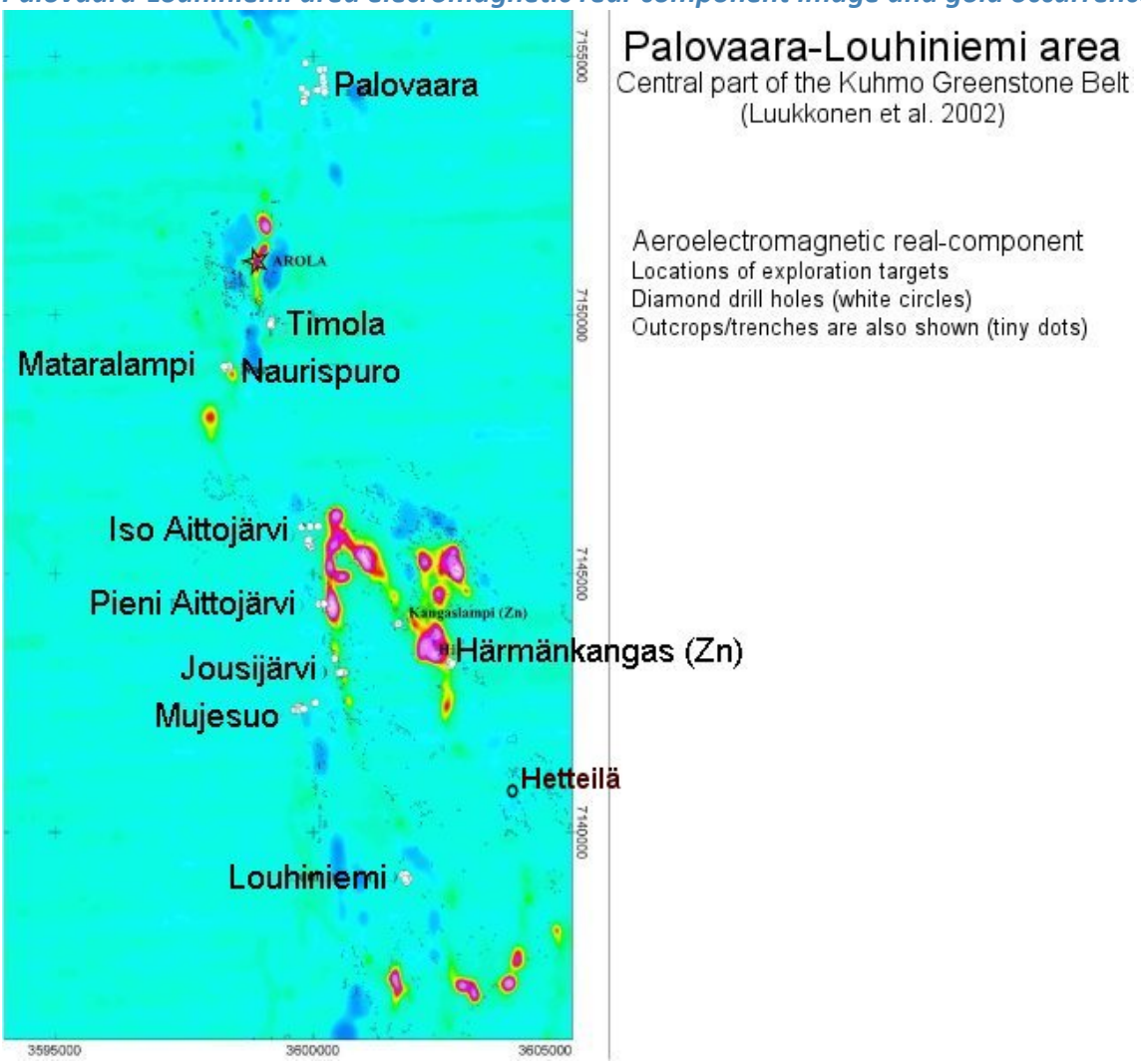
hole sites:


Louhiniemi
Exploration (Tenhola & Niskanen 2001)
Lake
R392
R393
R391
R395
R394
R397
R396
Lake
Diamond-drill hole
Soil sampling site
Ground electromagnetic, magnetic and IP survey
Claim area
500 m

Kuhmo greenstone belt aeromagnetic image and known gold occurrences:



Palovaara-Louhiniemi area elecromagnetic real-component image and gold occurrences:



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