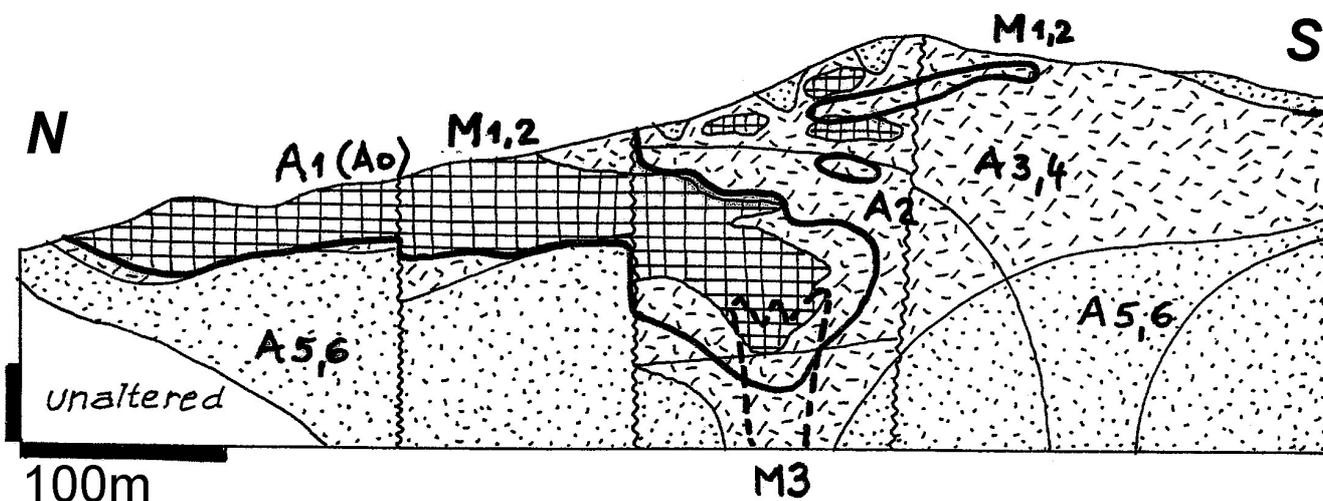


DM LITHOTHEQUE The Andes, West Cordillera., C. Peru; Cordillera Negra
2494.2 PIERINA (Huaraz) acid sulfate Au-Ag 2: ores



Pierina cross-section; Laznicka (2000) after Volkert et al. (1999)

LT 2494.2 LEGEND

Unit No	Unit Description
M1	Mi-PI dispersed (invisible) gold in Fe oxides, quartz, relict pyrite in hypogene oxidised, previously quartz-alunite altered (acid sulfate alteration) porous residual vuggy silica after rhyodacite pyroclasts >> andesite
M2	14.7 Ma; relicts of earlier mineralisation stage preserved as kernels in M1: vuggy silica with alunite, native sulfur, enargite, covellite, younger barite; variable but mainly low Au content
M3	Sulfides in presumed fluid feeder structure in the footwall: veins and mineralized fractures with pyrite, enargite, sfalerite in fractured silicified tuff
A0	Alteration assemblages (determined by PIMA in the field; not megascopically recognisable) Late steam alteration effects superimposed on earlier alterations
A1	Residual vuggy silica (principal host to Au), recrystallized from original host by magmatic steam, followed by alunite removal during hypogene leaching and silicification
A2	Quartz-alunite (dickite, pyrophyllite)
A3	Dickite (alunite, kaolinite, pyrophyllite, silica)
A4	Pyrophyllite (dickite, kaolinite, silica, sericite)
A5	Kaolinite, smectite, sericite, pyrite
A6	Propylitic + clays (chlorite, kaolinite, smectite)

LT 2494.2 SAMPLE DESCRIPTION

Unit No	Sample Description	Sample No
M1	"Standard ore" (~4g/t Au) in brecciated vuggy silica with moderate hypogene Fe hydroxides in matrix and along fractures	1
	Silica added during hypogene oxidation stage superimposed on M1	2, 3
M2	Relict kernels of earlier high sulfidation stage (grey with yellow sulfur spots) surrounded by oxidised quartz + Fe oxides produced by hypogene leaching. The kernels have erratic gold contents (but there is some Cu in covellite), but the oxidised material constitutes the "standard" ore (around 4g/t Au)	4-11 13 marco
	--late quartz, barite, acanthite fracture veinlet	12
M3	Low-grade to sub-grade fringe of the Pierina orebodies, Au dispersed in quartz-alunite altered pyroclastics	16+20