DESCRIPTIVE MODEL OF DISTAL DISSEMINATED Ag-Au

By Dennis P. Cox

BRIEF DESCRIPTION

SYNONYM: Sediment-hosted Ag-Au, disseminated Ag

DESCRIPTION: Disseminated Ag and Au mainly in sedimentary rocks distal to porphyry Cu, skarns, and polymetallic veins (Graybeal, 1981).

TYPICAL DEPOSITS: Taylor, Candelaria, Star Pointer, Cove deposits, White Pine district, Nevada; Tecoma, Utah; Vekol, Tombstone, and Hardshell, Arizona.

DISTINGUISHING FEATURES: This model is similar to sediment-hosted Au but has significantly higher Ag grades than that model (see Ag grades in grade and tonnage models for both). It also is characterized by higher geochemical background values

COMMODITIES: Ag, Au

OTHER COMMODITIES: Locally, Sb

ASSOCIATED DEPOSIT TYPES: Porphyry Cu, Cu skarn, Pb-Zn skarn, Au skarn, polymetallic veins, polymetallic replacement and replacement Mn deposits.

REGIONAL GEOLOGIC ATTRIBUTES

TECTONOSTRATIGRAPHIC SETTING: Continental margins.

REGIONAL DEPOSITIONAL ENVIRONMENT: Shelf and basinal sedimentary rocks are folded and faulted and intruded by I-type granitic rocks.

AGE RANGE: Mesozoic-Tertiary in Western United States; may be any age.

LOCAL GEOLOGIC ATTRIBUTES

HOST ROCKS: Carbonate and clastic sedimentary rocks.

ASSOCIATED ROCKS: Felsic hypabyssal or subvolcanic intrusions.

ORE MINERALOGY: Native Au, native Ag, electrum, argentite, Ag sulfosalts, tetrahedrite, stibnite, galena, sphalerite, chalcopyrite, pyrite, marcasite, arsenopyrite; at Cove deposits, stannite and canfieldite.

GANGUE MINERALS: Quartz, rhodochrosite, Ag-rich manganocalcite.

STRUCTURE AND ZONING: Ore minerals sparsely disseminated or in stockwork of thin quartz-sulfide veins.

ORE CONTROLS: Deposits commonly occur in skarn and polymetallic vein and replacement districts outboard of all other types of mineralization. Fracture permeability is the most important ore control. Primary rock permeability may be important locally

STRUCTURAL SETTING: Shear zones, axial plane fractures in folded rocks

ORE DEPOSIT GEOMETRY: Irregular bodies, locally conformable to bedding

ALTERATION: Silicification (Taylor, Star Pointer, Cove) and decalcification (Star Pointer) of carbonate rocks; sericite-clay in clastic rocks (Candelaria).

EFFECT OF WEATHERING: Leaching and redeposition of Ag as cerargyrite forms bonanza deposits (White Pine district, Nevada; Vekol, Arizona).

GEOCHEMICAL SIGNATURES: Ag±Au±Pb±Mn±Zn±Cu±Sb±As±Hg±Te; Mn introduced at Cove, Candelaria, and Star Pointer. Ag:Au ratios are highly variable: Candelaria 400:1; Taylor, 143:1; Tecoma, 60:1; Purísima Concepión, 51:1; Hilltop, <2:1.

GRADE AND TONNAGE MODEL OF DISTAL DISSEMINATED Ag-Au

By Dennis P. Cox and Donald A. Singer

COMMENTS Estimated premining tonnages and grades from the deposits listed in table 5 were used to construct the model. Where several different estimates were available for a deposit, the estimated tonnage associated with lowest cutoff grades was used.

No significant correlations between grades and tonnages were observed. See appendix B for locality abbreviations. See introduction for explanation of the grade and tonnage model as shown in figures 5–7.

Table 5. Grades and tonnages of distal disseminated Ag-Au deposits

[Tonnages in million metric tons; silver (Ag) and gold (Au) grades in grams per metric ton. Country and state abbreviations explained in app. B]

Deposit	Country	Tonnage	Au grade	Ag grade
Candelaria	USNV	27	0.19	50
Cove	USNV	81	1.8	92.5
Fresnillo	MXCO	19	.22	141.6
Hardshell	USAZ	6	0	245
Hilltop	USNV	10.35	2.5	2
Purísima Concepción	PERU	.2	3.1	7.5
Real de Angeles	MXCO	66	0	66.6
Star Pointer	USNV	1.36	4.8	10.3
Taylor	USNV	7	0	103
Tecoma	USUT	1.5	1.56	93.3

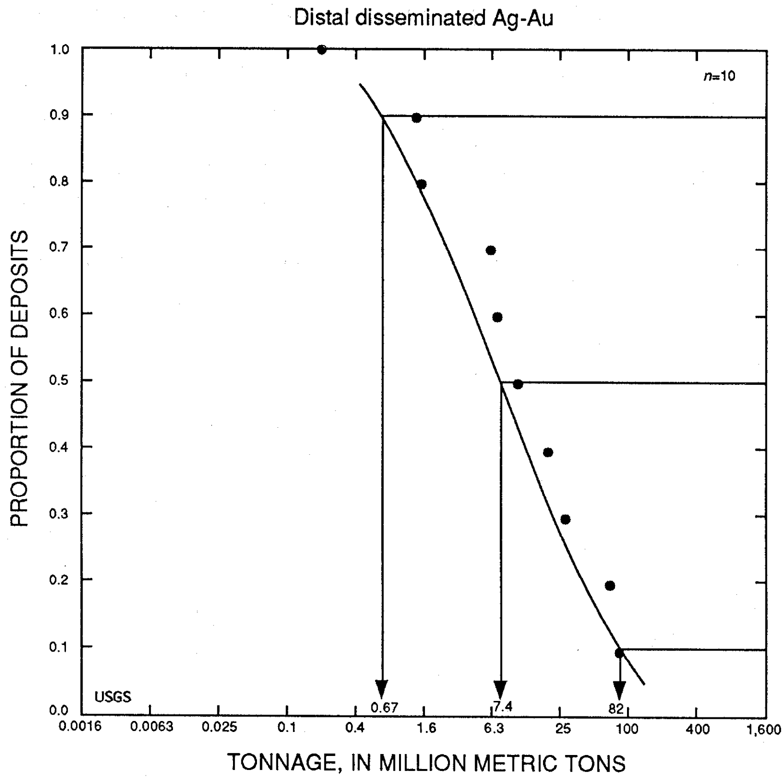

Figure 5. Tonnages of distal disseminated Ag-Au deposits.

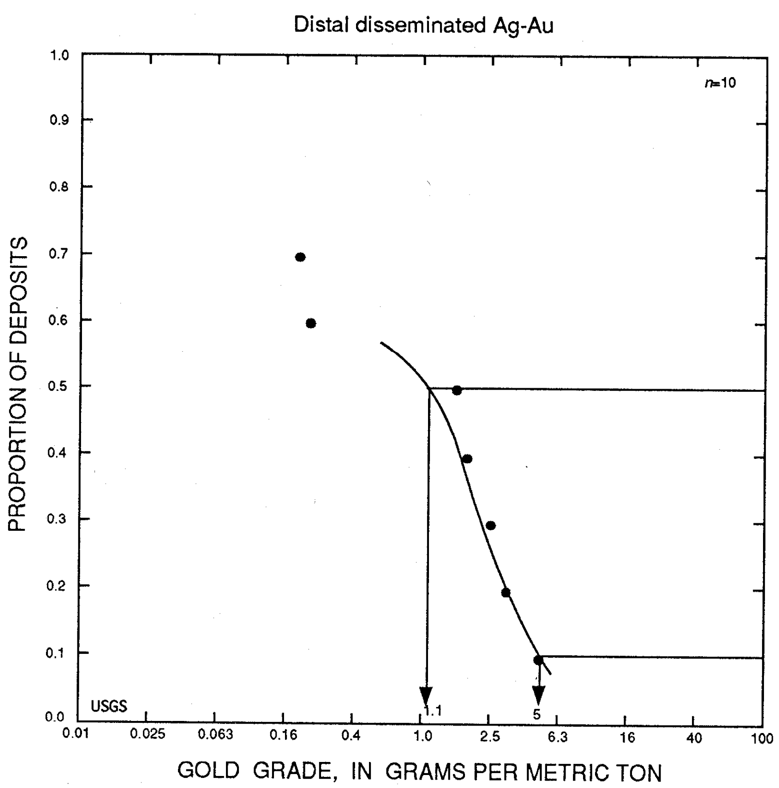

Figure 6. Gold grades of distal disseminated Ag-Au deposits.

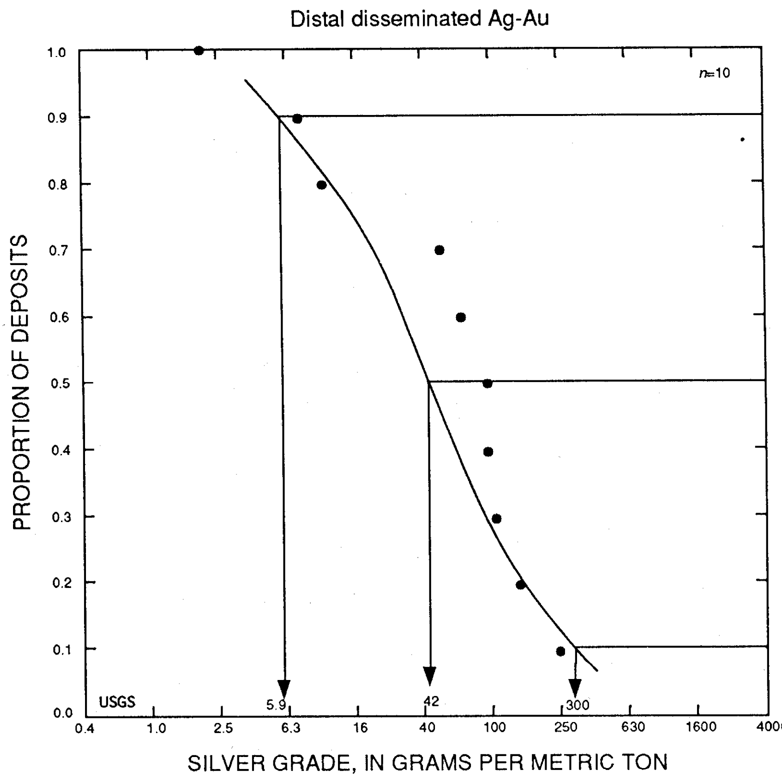

Figure 7. Silver grades of distal disseminated Ag-Au deposits.