New Mexico Tech

November 21, 1991

Don Earnest
Sunshine Mining Co.
815 Park Blvd., Suite 100
Boise, ID 83712

Dear Don:

Enclosed are some statistics on the Rosedale geochemical data. It bears out that As shows no relationship to Au.

Silver alone appears to correlate with Au in the stream sediments. Most other variations can be explained by general chemistry of the elements. Higher values of zinc correlate with higher values of elements with similar chemistry such as Pb, Cd, and Ga. Likewise Sb-As-Mo, appear to move together, but their variation is not related to Au.

Gold, Ag, Mo, and Cu values correlate in the rock chips samples with weaker correlations to Sb and Tl. Contour maps of these elements show the same zones, and Au/Ag ratios vector to gold highs.

I'm still not sure what the district represents. Basement rocks contain little or no shales - a good source rock for As. There appears to be little correlation of Au with alteration per se, but there is a good correlation with silica which occurs as narrow stringers. In many respects Rosedale is similar to the Ortiz district, which I am going to visit next week (baring another snow storm.)

Sincerely,

Dave

David I. Norman
Associate Professor of Geology
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DIN/nw

P.S. We analysed fluid inclusion gases last night from a Rosedale sample, a sample from Signal Peak w 7ppm Ag, and Gonanza Au-Ag from Gold Fields new discovery near Cortez NV. - They all yield anomalous, but similar results. All formed in a vapor ~~[illegible]~~ dominated zone - Rosedale had the highest H_2S which looks good for mineralization at depth.

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Correlations Streeem

	AG	AU	AS	BI	CD	HG
AG	1.0000	0.8519	-.0418	-.1015	0.1281	0.0173
AU	0.8519	1.0000	-.1764	-.1047	-.2434	-.2546
AS	-.0418	-.1764	1.0000	-.1478	0.4498	0.4117
BI	-.1015	-.1047	-.1478	1.0000	0.0171	0.1613
CD	0.1281	-.2434	0.4498	0.0171	1.0000	0.5769
HG	0.0173	-.2546	0.4117	0.1613	0.5769	1.0000
SB	0.1925	0.0359	0.6350	-.1022	0.5179	0.4858
SE	-.0804	-.0525	0.0015	-.0572	-.1187	-.0283
TE	-.0006	0.0691	-.2769	0.1570	-.0544	0.0747
CU	0.1010	-.1694	0.0471	0.0367	0.6030	0.2378
MO	0.0857	0.0445	0.7340	-.0866	0.1813	0.1441
PB	0.0685	-.2017	0.2252	0.5623	0.6013	0.6241
ZN	0.0891	-.1033	0.2316	0.0320	0.4129	0.6542
GA	0.2656	-.0244	0.2409	0.1089	0.4328	0.6894
TL	-.0583	-.0113	-.0678	0.2066	-.0647	-.0867

Correlations

	SB	SE	TE	CU	MO	PB
AG	0.1925	-.0804	-.0006	0.1010	0.0857	0.0685
AU	0.0359	-.0525	0.0691	-.1694	0.0445	-.2017
AS	0.6350	0.0015	-.2769	0.0471	0.7340	0.2252
BI	-.1022	-.0572	0.1570	0.0367	-.0866	0.5623
CD	0.5179	-.1187	-.0544	0.6030	0.1813	0.6013
HG	0.4858	-.0283	0.0747	0.2378	0.1441	0.6241
SB	1.0000	-.0812	-.1437	-.0390	0.3908	0.3669
SE	-.0812	1.0000	0.0793	-.1453	-.0655	-.2022
TE	-.1437	0.0793	1.0000	0.1241	-.0789	-.0240
CU	-.0390	-.1453	0.1241	1.0000	0.0777	0.3684
MO	0.3908	-.0655	-.0789	0.0777	1.0000	0.0732
PB	0.3669	-.2022	-.0240	0.3684	0.0732	1.0000
ZN	0.3637	-.1047	0.2511	0.2538	-.0781	0.4151
GA	0.5476	-.1161	0.2657	0.2747	0.0756	0.5764
TL	-.0617	-.0323	-.1954	-.1054	-.0867	0.2270

Correlations

	ZN	GA	TL
AG	0.0891	0.2656	-.0583
AU	-.1033	-.0244	-.0113
AS	0.2316	0.2409	-.0678
BI	0.0320	0.1089	0.2066
CD	0.4129	0.4328	-.0647
HG	0.6542	0.6894	-.0867
SB	0.3637	0.5476	-.0617
SE	-.1047	-.1161	-.0323
TE	0.2511	0.2657	-.1954
CU	0.2538	0.2747	-.1054
MO	-.0781	0.0756	-.0867
PB	0.4151	0.5764	0.2270
ZN	1.0000	0.7905	-.1047
GA	0.7905	1.0000	-.0897
TL	-.1047	-.0897	1.0000

Stream

Initial Factor Loadings

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Communality
AG	-.1377	0.4481	0.8000	-.2382	0.9165
AU	0.2042	0.4781	0.7865	-.2387	0.9458
AS	-.5805	0.5703	-.4645	-.0006	0.8781
BI	-.1592	-.3652	0.0295	-.4840	0.5799
CD	-.7918	0.0050	-.0962	-.0210	0.6366
HG	-.8386	-.1346	-.0307	0.1050	0.7334
SB	-.6910	0.4641	-.0625	-.0508	0.6994
SE	0.1761	0.0129	-.3479	0.3255	0.1510
TE	-.0539	-.3639	0.4159	0.4644	0.5239
CU	-.4464	-.2407	0.0062	0.0860	0.2720
MO	-.3193	0.6289	-.2962	-.0692	0.5904
PB	-.7533	-.3543	0.0062	-.4413	0.8878
ZN	-.7188	-.2054	0.2556	0.2916	0.7093
GA	-.8114	-.1077	0.3405	0.1411	0.8058
TL	0.0710	-.1911	-.1258	-.6971	0.5433

Rotated Factor Loadings

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Communality
AG	-.1249	0.0598	0.9467	-.0341	0.9165
AU	0.1927	-.0553	0.9512	0.0282	0.9458
AS	-.2408	0.8938	-.1235	0.0771	0.8781
BI	-.1962	-.2856	-.1295	-.6657	0.5799
CD	-.6777	0.3868	-.0776	-.1472	0.6366
HG	-.8068	0.2480	-.1192	-.0825	0.7334
SB	-.4543	0.6794	0.1775	0.0026	0.6994
SE	0.1097	-.0671	-.1706	0.3246	0.1510
TE	-.3672	-.5310	0.0669	0.3204	0.5239
CU	-.5107	-.0491	-.0645	-.0682	0.2720
MO	-.0136	0.7607	0.0640	0.0857	0.5904
PB	-.6702	0.1271	-.0617	-.6471	0.8878
ZN	-.8344	-.0246	0.0451	0.1022	0.7093
GA	-.8720	0.0748	0.1991	-.0118	0.8058
TL	0.2079	0.0106	-.0304	-.7065	0.5433

RCCK

Initial Factor Loadings

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Communality
FE	0.4763	-.7746	-.1137	-.1720	0.8693
CS	0.5094	0.1263	0.1025	0.6506	0.7092
AU	0.6132	-.6669	-.1095	-.0797	0.8392
[illegible]	0.6116	-.1190	0.2496	-.5423	0.7447
MO	0.5930	-.4879	0.0546	0.1727	0.6225
PB	0.4331	0.4507	0.2074	-.2519	0.4988
SB	0.2450	-.2859	0.4852	0.5055	0.6327
TL	0.8006	0.2799	-.3006	0.0635	0.8137
ZN	0.5916	0.5915	-.1224	-.1335	0.7327
BI	0.1246	-.0544	0.6210	-.2724	0.4783
CD	0.7759	0.4756	-.1597	0.0963	0.8629
GA	0.0488	0.2747	0.7059	0.0359	0.5774

Rotated Factor Loadings

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Communality
FE	-.0811	-.9282	-.0360	-.0009	0.8693
CS	0.3769	-.0536 Strong	-.0779	0.7472	0.7092
AU	0.0786	-.9049	-.0400	0.1123	0.8392
[illegible]	0.3847	-.3362	0.5105	-.2204	0.7447
MO	0.1154	-.6842	0.0236	0.3749	0.6225
PB	0.5857	0.0656	0.3830	-.0689	0.4988
SB	-.1435	-.2093 weak	0.2551	0.7094	0.6327
TL	0.8316	-.2687	-.1643	0.1513	0.8137
ZN	0.8487	0.0734	0.0710	-.0451	0.7327
BI	-.0451	-.1062	0.6819	0.0100	0.4783
CD	0.9012	-.0806	-.0361	0.2071	0.8629
GA	0.0543	0.2669	0.6568	0.2680	0.5774