

## Comparing 4 Exploration Projects with the 9 large Historic gold deposits in Southern British Columbia using Median element values and Outliers, in selected Groups of public Stream Sediment (Silt) data

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### 'Too much information'

Most of B.C. south of Latitude 52° is well covered by public Regional Geochemical stream sediment (silt) Surveys 'RGS'. Re-analysis by ICP-MS of archived 0.5 g portions (e.g. Jackaman 2013) gives more accurate contents of gold and gold pathfinder elements: silver bismuth arsenic antimony cobalt copper lead zinc & tungsten.

Usually the concentrations of **many** elements in **all** the silts covering a large region are mathematically modeled. The resulting signals are then mapped to identify new exploration targets (e.g. Arne & Bluemel for Geoscience BC, 2011). This approach engenders much signal 'noise' from unmineralized lands with background element contents, those dependent on bedrock lithologies, and element scatter from numerous dispersed, small sub-economic showings. This results in signals from the 9 large past producing gold deposits present being at best diluted and subtle, or at worst confounded and uninterpretable.

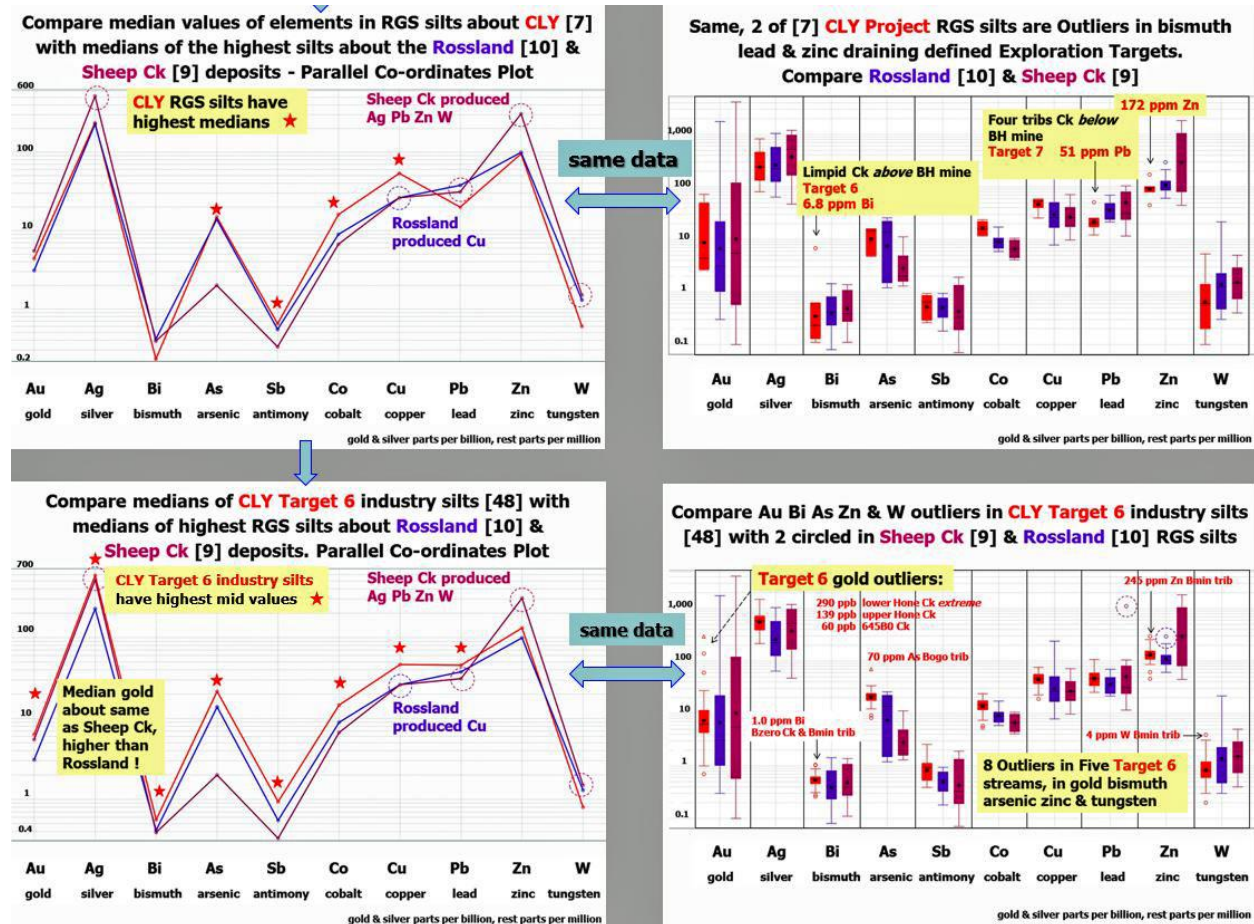
### Subsets a key to better Visual Interpretation

To avoid this, the RGS **silts with the highest gold and gold pathfinder contents in streams about the 9 largest gold deposits in south BC** (GSB Info Circular 2014-04) **are selected**. For comparison CLY Project and 3 other gold prospects are included. This subset totals 125 silts, each analyzed for over 50 elements. A premise is that this contains the little-diluted element concentrations and geochemical responses of the three general types of commercial gold deposits known in south BC.

Boxplots & parallel co-ordinate plots visualize the medians (mid-values) of 10 elements in each of these 13 groups. The uni-element data is first log transformed for better symmetry of the sample group distributions. **The medians of gold, and 9 gold pathfinder elements in the groups, are simple robust indicators of the major deposits.** Comparing 48 industry silts from CLY Project, analyzed by the same method, confirms the significance of element outliers in the 7 RGS silts. Outliers *do not influence the median value* (figure) as extreme values of a sample distribution do not affect the median value, unlike the mean (average).

### High Medians in Silts signal very high-value Deposits

Overall, silts with the highest median element contents are generally from sites with the most in-place metal (figure, top left). Silts from Type [2] moderate-depth mesothermal deposits have much more metal than those from high-level Type [1] epithermal deposits and are preferred exploration targets. Silts over 65 ppb gold (too high?) are often outliers and significant (Arne & Bluemel 2011).



## Conclusions

The medians of gold and gold pathfinder elements in groups of stream silts selected from government RGS and industry geochemical surveys signals the commercial potential of 9 known gold deposits and 4 prospects in Southern British Columbia. One can use other sample types for this practical method, e.g. regional soils, or it can prioritize targets for other commodities.

## References

- Arne, D.C., & Bluemel, E.B., 2011. Catchment Analysis and Interpretation of Stream Sediment Data from QUEST South, British Columbia. Geoscience BC Report 2011-5
- Jackaman, W., Mar. 2013. Nelson (NTS 082F) Sample Reanalysis (ICP-MS); Geoscience BC Report 2013-09
- Northcote, B., Madu, B., Schroeter, T., and Li, G. 2014. Gold production and resources in British Columbia, 1890-2013. Ministry of EMPR Information Circular 2014-04