

# **The Long Way Home: From Soils to Mineral Resources**

By Dan Oancea

*Are you investing in Golden Triangle's soils? And/or Drill Results? Then this article might be of interest to you.*

We are experiencing a junior miners market that is relatively indifferent at development and production stories but which hefty rewards discovery and exploration success.

It might be that many of the lay investors are here to make a quick buck (the bucket list's ten bagger) as they realize that they are playing an uneven field because they are playing against algos, against large players e.g. institutional investors, and at times even against the management, which might be more concerned with defending their position than promoting the shareholders interest.

Grassroots discoveries are going the Dodo way. Most of the time we would see companies playing it safe and doing business in the shadow of an old headframe, or in well established mining camps drilling around recycled prospects that have been dust off. Nothing wrong with playing it safe but we have to tip our hat to those that dare to dream and explore new frontiers.

Well endowed regions, like the famed British Columbian Golden Triangle region, experience a resurgence in interest and many times exploration dollars would go to pristine regions that have been recently freed by glaciers. It is in these kind of environments that companies that hit pay dirt get instant market recognition in the form of 5x - 10x share price appreciation.

The story usually starts with some exquisite soil results (e.g. gold-in-soil anomalies). And here I would briefly discuss the Golden Triangle companies GT Gold (GTT), Colorado Resources (CXO), and Skeena Resources (SKE). Neighbors.

The first question that I will try to answer is should an investor hit the buy button immediately after the soil sampling news hit the market? Then I will answer a few more questions like what to expect after you have been treated with these super-rich gold-in-soil anomalies. And when is the proper moment to sell? In other words entry point, expectations, and exit point.

To answer this we would have to understand the soils and the harsh environment where some of the Golden Triangle companies work.

But why would an investor care about soils? Because it is the norm to collect soil samples during the initial phases of mineral exploration. That allow the explorers to find anomalous chemical elements/metals present in bedrock if any, and help delineating geochemical anomalies that represent nothing but a geochemical image of a masked bedrock.

There would be no life on Earth, at least as we know it, if it were not for the soils to exist. They support plants, animals and humans alike.

Soil is the end result of chemical and physical weathering of rocks. Chemical weathering (promoted by water laden with oxygen, CO<sub>2</sub>, humic acids, etc) is prevalent in tropical regions where thick layers of soils form.

In temperate regions both types of weathering exist and work together in destroying the parent rocks.

In Arctic or at high elevations physical weathering processes are prevalent i.e. due to significant variations of temperature and because of freezing/melting processes that promote the physical disintegration of the rock's constituents (quartz, feldspar, etc).

Of course that microorganisms are plenty at Tropics but few exist in Arctic soils or in the high mountains soils. Same is valid for vegetation. Generally speaking a healthy biota promotes the genesis of soils.

Topography also influences the formation of soils. Soils are thicker in topographic lows, thin to inexistent on steep slopes (eroded by water, and ending up down in depressions), and less developed on the northern slopes.

Another obvious factor that influences the formation of soils is time. The Golden Triangle high elevation rocks have been recently (hundreds of years to 10,000 years) freed from ice.

The conclusion of all this talk is that soils formed in the Golden Triangle especially at high elevations are poorly developed. That means that soils up there are no more than disintegrated rock and contain very little clay due to reduced chemical and biological weathering processes.

But why do we need the clay to exist in soils? Because this is what we are usually sampling in order to delineate a correct geochemical anomaly.

If we were to dig a hole in a region that has a well developed soil profile we would first encounter an organic layer featuring plant roots (A Horizon). Below this layer is our target the B Horizon, which is made of clays. If we would dig even deeper we would see nothing but disintegrated rock and very little clay (C Horizon).

We usually want to sample the clays because this is where the metallic ions would be concentrated. We do not want to sample the C Horizon where we would find pieces of rock and broken mineralization that would definitely skew our assays. And it looks like many of the Golden Triangle soil samples are nothing but C Horizon samples.

I had a look at a technical report produced on GT Gold's Saddle property. The authors are saying that soils are 'very poorly developed and were frequently very rocky'. Samplers used augers and

even 'geological tools' (hammer & chisels?) to be able to collect the rocky material. This does not bode well for a correct assessment of the underlying hardrock mineralization. It could actually make us have unrealistic expectations grade wise.

But what kind of grades did the Golden Triangle explorers find in their soils up in the mountains?

Colorado found from 0.66 g/t to 2.91 g/t gold in soil at Inel. Skeena found up to 8.83 g/t gold in their soils at Spectrum. GT Gold, the new kid on the block, found 27.3 g/t gold in their soils at Saddle (over 14 g/t as an average grade).

So what was the field procedure at Saddle? The company did a 10 mm field sieving and tried to collect enough material so the lab would have at least 40 g of clay in order to be able to perform the test. The lab further sieved the material at -200 mesh. This is how GT Gold obtained the up to 27.3 g/t gold in their soils.

I did the calculation and in order to get that 27 g/t gold grade the GT Gold's rocky soil sample (C Horizon) probably contained only one very tiny little fragment of gold weighing no more than 0.001 grams or 1 milligram. That's nothing but a speck of gold that came from the bedrock because there is free gold in those quartz veins/sulphide zones that get disintegrated through physical weathering. But this makes us unable to compare the grades of these C Horizon 'soil' samples with the grades of B Horizon soil samples of similar deposits located at lower elevations i.e. where a B Horizon is well developed.

The point here is that these kind of soil results are potentially misleading the investors because they will go 'whoa, almost one ounce of gold in GT soils' vs. the 'modest' soil sampling results of a company that samples the B Horizon at a the lower location and which gets 'only' 0.2 g/t gold-in-soil anomaly over the same type of bedrock and mineralization. Rule of thumb here: Divide those high grade rocky soil sample results by 10 or 15 to get normalized results that could be used when comparing those with the grades of another geochemical anomaly developed on the same bedrock and mineralization but located at a lower elevation.

So should an investor buy the stock based on these kind of soil sample results? Yes. Absolutely. Especially if the mineral property is located in the Golden Triangle where we pretty much understand the types of mineralization present.

In the kind of market that we are right now sooner or later these soil sampling results are going to be validated by shallow drilling that is going to intersect high grade (maybe even visible) gold mineralization. And the share price would skyrocket.

The GT Gold share price went up more than 2x on the announcement of the first drill results from the Saddle project. Over a 4 month period it was an almost seven-bagger.

As for Skeena their large float prevented them from benefiting from their good drill results at Spectrum.

Colorado Resources' share price also benefited from announcing maiden drill results at Inel but the share price did not react as powerful as in the GT Gold case. Part of the problem could have been the fact that the market has already seen them drilling long good intervals at another Golden Triangle property, the North Rok (in which case the market positively reacted), but then they 'let the investors down' by releasing a low grade mineral resource (0.37% copper equivalent grade at an unrealistic cut-off grade of 0.20% copper equivalent).

Same can be said for Skeena which had good soil results followed by good drill results. At Spectrum they came up with a decent grade for a possible future open pit mining operation but the mineral resource proved to be small (61 Mt at 0.83 g/t gold equivalent). This low tonnage prevents it from becoming a standalone mining operation. Realizing this they had to include another local project in their initial economic assessment i.e. a large but lower grade porphyry copper-gold deposit. Enter the GJ (243.5Mt at 0.72 g/t gold equivalent).

If investors are to compare drill intercepts/results for the three aforementioned companies they will soon find out that they had pretty much the same range bound drill results e.g. over 10 m in length intercepts grading 6 g/t to 17 g/t (gold is nuggetty hence the variation). This tells us that because they are all enjoying the same geological setting and types of mineralization the GT Gold's Saddle deposit should not be significantly different from the other two companies' deposits i.e. about the same grade and tonnage. This is a simplistic approach but the only one available to a lay investor.

Now, here's another logical conclusion - Saddle's higher than usual soil grades might not be heralding a deposit that enjoys gold grades that are significantly higher than those at Inel or Spectrum (which had lower gold-in-soil grades). For the aforementioned reasons - they sampled 'clay' mixed with fragments of gold derived from the bedrock (broken rock and mineralization fragments) instead of clays enriched in metallic ions.

I am always suggesting that you look at the project's GE location. There are many things that you can glean from studying the project's location.

But first we would have to discuss another problem that sometimes plagues the results of soil sampling i.e. if samples were collected from mountainous terrains. If the terrain is steep and the vein or the mineralized zone occurs somewhere up slope then due to its disintegration you'd notice (in soil samples as well as in talus material) a dispersal train of small particles of mineralization coming down slope from that location. Even a small vein or a few well mineralized stringers would be able to create a significant anomalous fan /curtain/ dispersal train that is located down slope from their outcrops.

If we are to have a look at Saddle we would see that this happens in at least a few locations.

E.g. the geochemically anomalous 'finger' that goes down slope from the Saddle North is actually following the topographic low marked by a creek. A clear dispersal train.

Then most of the Saddle North zone is covering a steep rocky zone therefore neither the (soil sample) assays nor the interpretation of the geochemical anomaly are accurate because of the aforementioned reasons. At about 250 m in length the surface expression of the north anomaly is to be considered small.

At 500 m to 800 m in length the Saddle South anomaly is better represented. There is a part of the anomaly that is located on flattish land and that is alright. But much of the other sides of the southern anomaly are actually presented as covering steep rocky slopes therefore even though featured as displaying high gold grades much of these zones would probably represent nothing but barren rock covered by talus sprinkled with 'debris' from an upslope small mineralized zone.

What is the drilling revealing? It is quite early for interpretations but cross sections indicate that Saddle is no different from Inel or Spectrum. There are numerous mineralized zones of different thicknesses and lengths that are probably not continuous. If they are ever going to be mined they will be mined through surface mining methods (open pit). The corollary is that the resource will have open pit grades. I mean way lower than what you see right now reported in company news.

Also from the Saddle South cross sections we can see that mineralization is hosted by a steeply dipping zone that is 100 m thick and continues 150 m down dip. It doesn't seem to be open at depth. Its length could be estimated at 500 m. Unfortunately it appears that there is not much room for extending its strike length as it looks like the Saddle South mineralization is hosted by a top of the mountain which is bordered by steep slopes.

If we take into consideration all these measurements the future Saddle mineral resource would be small and (most likely) won't reach the critical mass necessary for building a standalone mining operation at that remote location. It could be even smaller than Skeena's Spectrum resource, which is also not to be mined as a standalone mining operation but would be mined as a satellite deposit to the GJ deposit.

Now, if you are a lay investor facing an uphill battle for how long should you be hanging around?

If you are not comfortable then you should exit before they will drop the hammer, that's for sure. I.E.. before they will publish their mineral resource estimate which based on Golden Triangle projects recent history could be of low grade and/or tonnage. Or at least featuring grades that do not match investors' expectations as the market was previously regaled with the best of the high grade drill intercepts.

Generally speaking the Golden Triangle's plays that I have already mentioned work two genetically related types of mineral deposits. A porphyry copper-gold type (low grade but provides most of the resource and it is bulk mineable). And a set of relatively high grade veins or tabular mineralized zones (plus sometime stockwork and breccia) - they are prominently featured in their news releases (high grade, that's why).

The problem with some of these deposits is represented by the lack of geological and grade continuity of the high grade veins / mineralized zones, which prevent them from being individually mined through underground mining methods. A high grade underground mining operation would be low capex and easy to permit.

It takes a large capex operation to mine large low grade mineral deposits. They are mostly envisioned as open pit mines. In the Golden Triangle they are located in difficult to reach places and at high elevation. Climate is harsh and it is difficult to work on winter time. You would also have to spend on mitigating different risks from avalanche risks to rock falls / slope movement.

These are the part of the reasons that some of these small open pitable resources will never be mined - no economic standalone mining operation possible. Unless someone buys or discovers two or three small adjacent deposits and processes their ore at a central location.

The stakes are raised high by the publishing of consistent high grade drill results (which do not mean much from an economic point of view if they are not continuous) but then the reality sets in and you would see subsequent drill holes missing mineralization, finding only shorter mineralized intervals, or intersecting only the lower grade bulk mineralization (porphyry).

Sometimes the third or the fourth batch of drill results would be worse/bad and that will definitely be a signal for investors to take action and derisk their position by selling at least part of it.

Recent Golden Triangle market developments indicate that the initial euphoria usually lasts from the confirmation of good soil sample results with drill results until ... the next 2-3 press releases which present successive batches of drill results.

Be careful out there.

Dan

*Disclaimer: This is not investment advice but an article having educational purposes.*