Analysis of Concentrate Sample from Fundacion Amigos del Choco

By David Plath
Cleangold LLC
3443 NW Port Ct.
Lincoln Ctiy, Oregon
97367
USA
Cleangold LLC

Introduction:

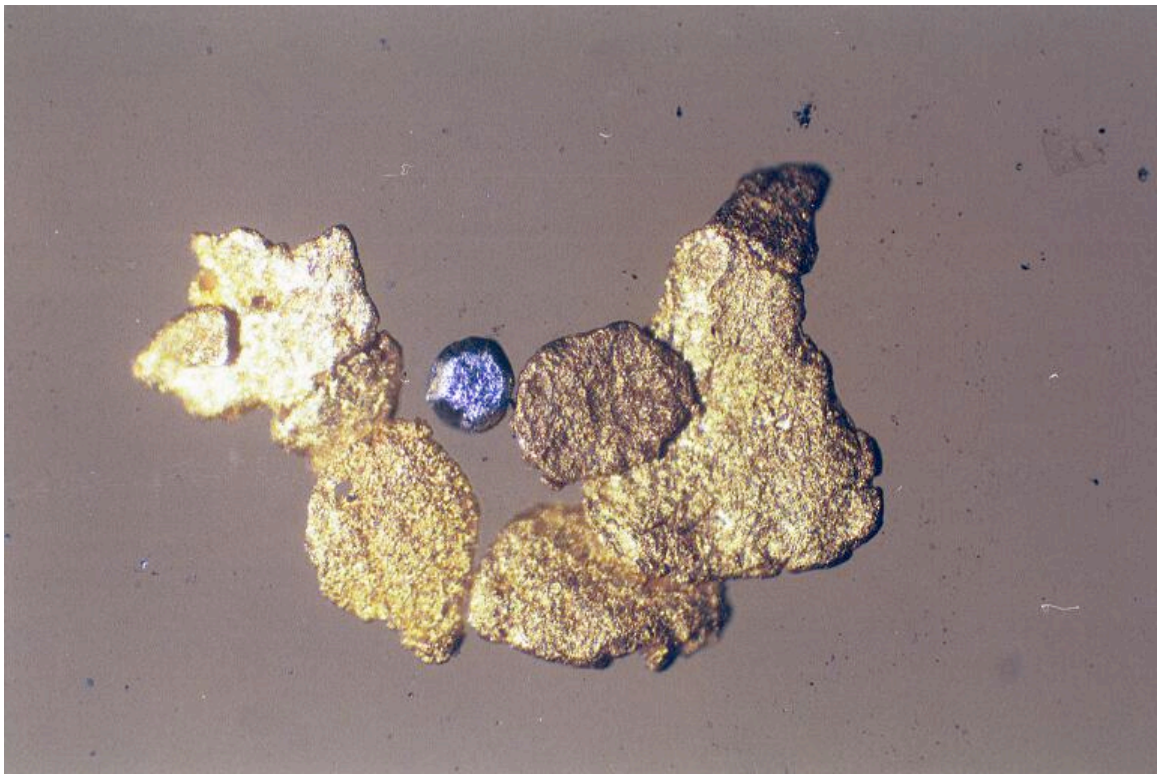
This sample was provided by Catalina Cock-Duque of Fundacion Amigos del Choco of Colombia. It was a sample of concentrates weighing about two pounds (1 Kg) consisting of predominately magnetic and other high density minerals. It was reported that the sample was prepanned to remove any large gold.

Sample Preparation:

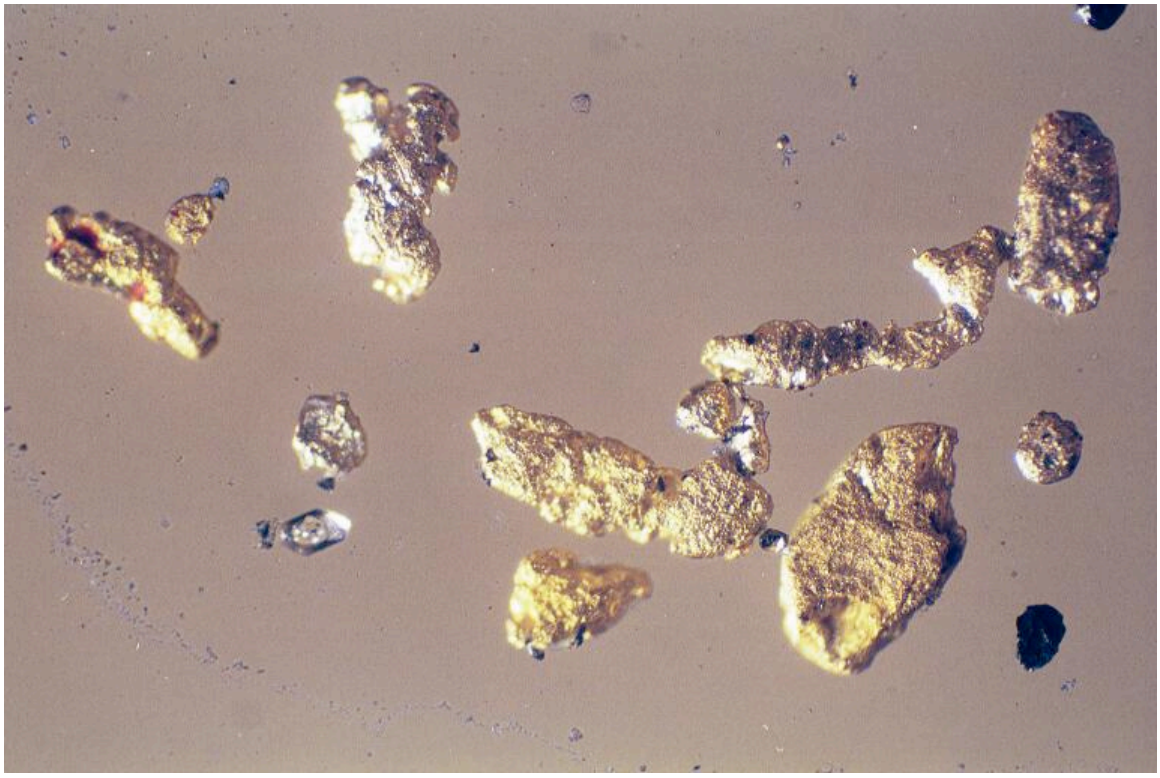
The sample was prepared by processing using a Cleangold ® Prospector's Sluice. The ore was placed across the mid point of the sluice and shaken flat while submerged in water with a trace of detergent added to prevent flotation of the fine gold. The magnetic component of the concentrates formed a porous mat on the bottom of the sluice which acts as a trap for fine gold. The sluice will only trap a portion of the magnetic material in the ore while passing the bulk of the concentrates and magnetic ore to waste. Once the ore was processed, the magnetic mat was reduced in volume on the surface of the sluice while more of the magnetite was removed to waste. Finally, the remainder of the new Prospector Sluice concentrate (about a teaspoon of material containing about 50% of the gold from the entire sample) was transferred to a gold pan and the final reduction to the gold was effected. The total time to process this sample to the point of preparing the microscope slide was about five minutes. A second complete processing of the sample yielded a similar amount of gold minus the finest gold (sub 150 micron gold) that was mostly recovered during the first processing.

Analysis:

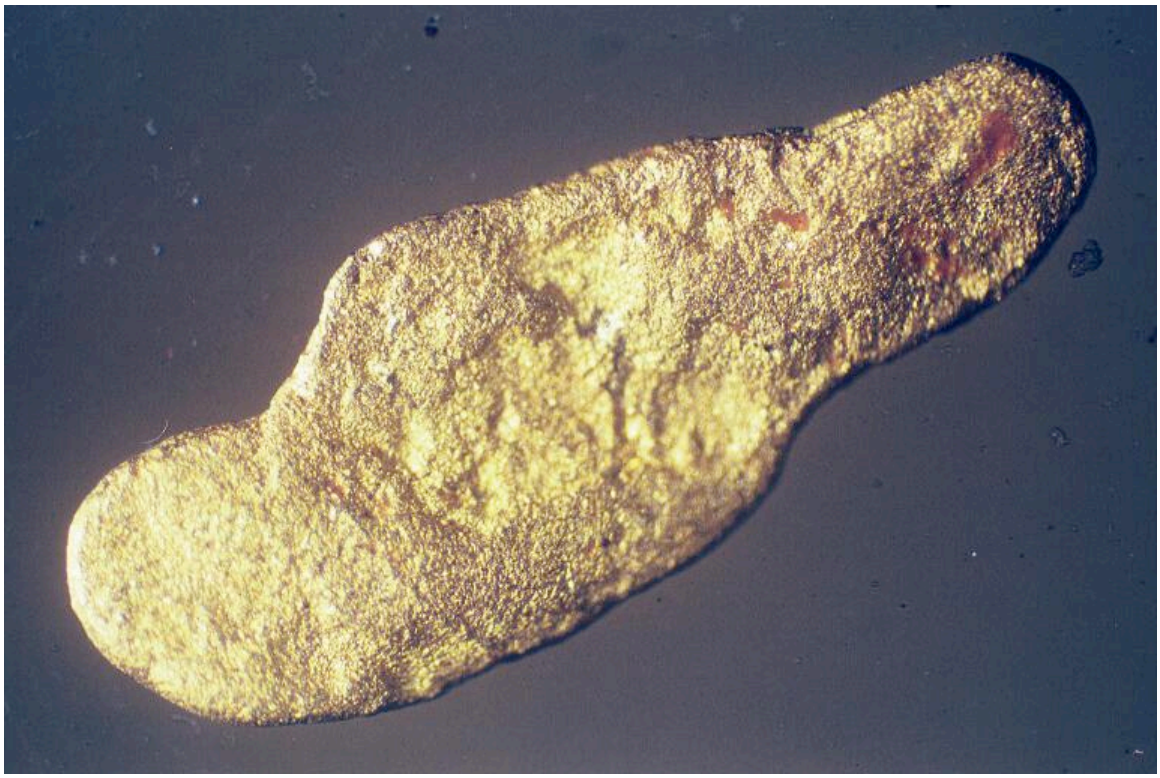
Gold from the sample ranged in size from 20 microns in diameter to over 1400 microns in diameter with the majority of the gold falling in the range of 100-500 microns in diameter. The average size was about 250 microns for the first pass recovery and about 400 microns in the second recovery. The appearance of the gold was consistent with that of river gold showing characteristic rounding and folding. A trace of platinum was also noted, probably amounting to less than 1% of the gold present. There was not mercury noted in the sample. The gold was very consistent in color with only a trace of the particles showing any staining or attached ore.



Photomicrograph 1- magnification 40X
This shows gold particles surrounding a particle of platinum.

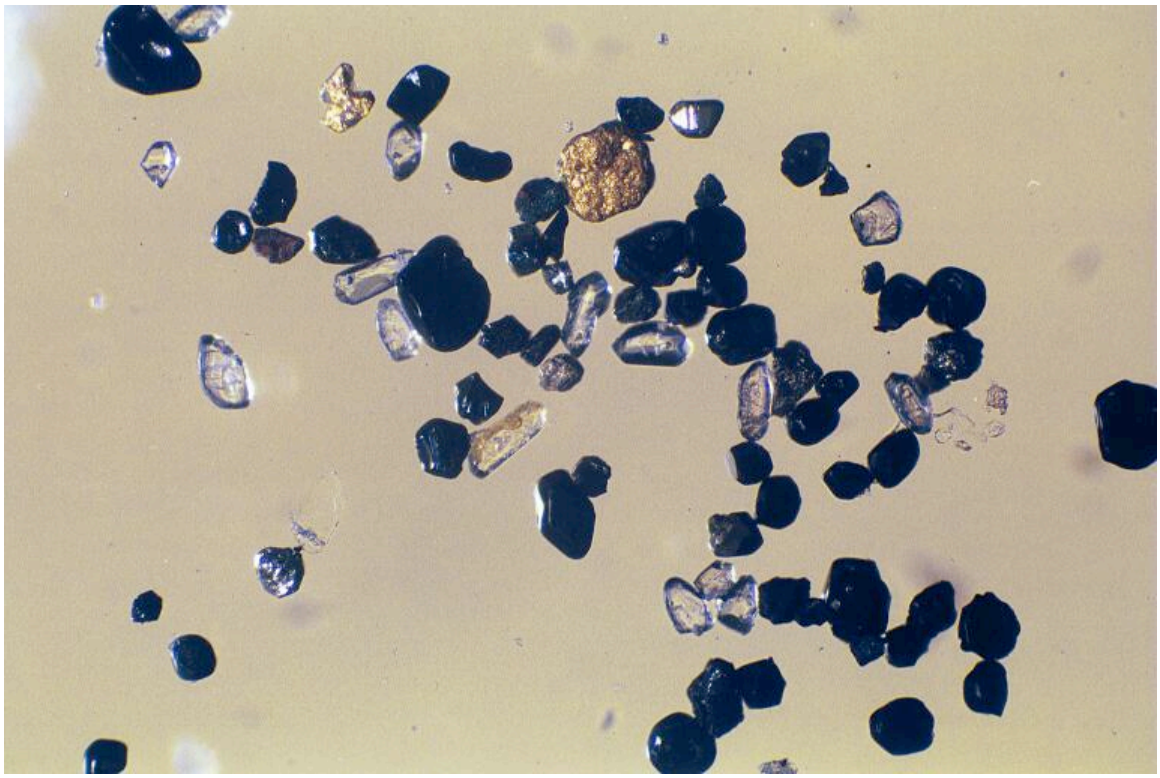


Photomicrograph 2 – magnification 100X
This photomicrograph shows some of the smaller particles present in the sample



Photomicrograph 3- magnification 100X

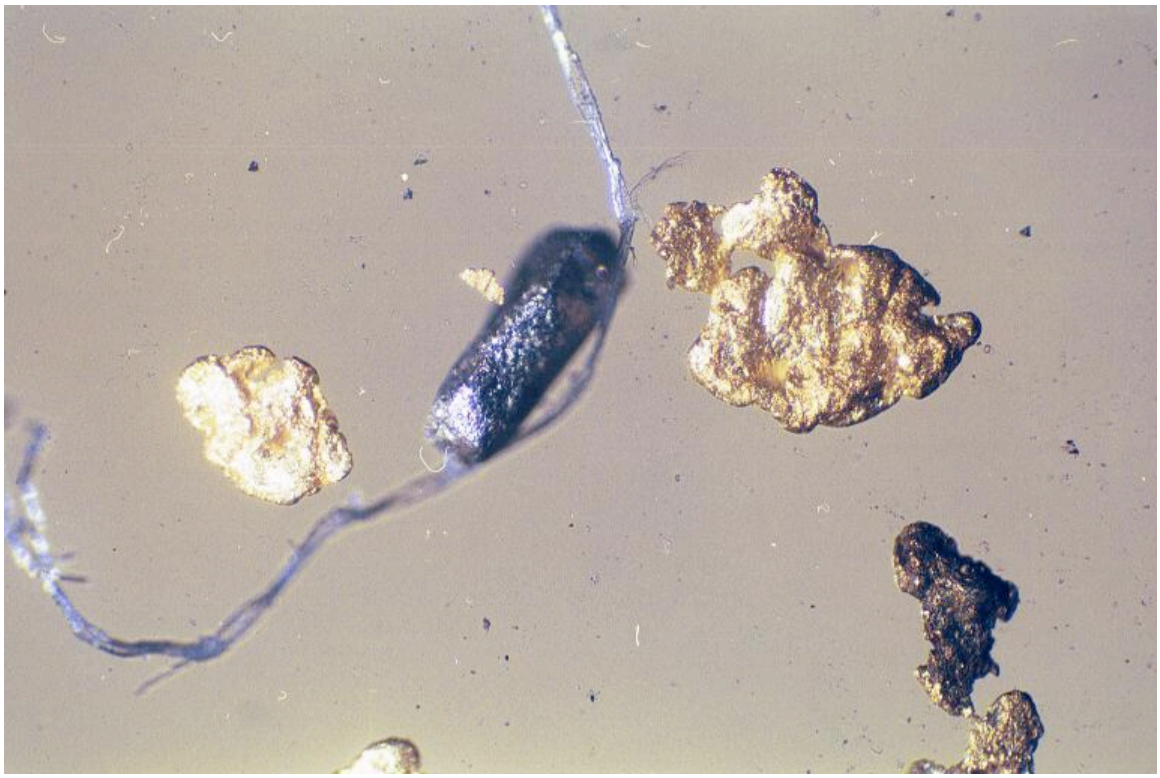
This photomicrograph shows the largest particle present in the sample. It has a length of over 1400 microns (1.4mm) and shows a trace of alluvial material (orange material in hollows on the right end).



Photomicrograph 4- magnification 100X

This photomicrograph shows two gold particles, some magnetite particles (the black mineral) and some non-opaque particles of high density minerals. This is of importance as it shows that the Cleangold system will capture other minerals of potential economic significance. Often these non opaque minerals have value. Additional testing would be necessary to know if this is the case. However, it does point out the possibility of saving Cleangold concentrates once the gold has been removed for possible sale at a later date. A mining community could collectively save these materials to fund community development.

Photomicrograph 5- magnification 100X
This shows another large gold particle (750 microns in diameter) which shows the rounding normally associated with river transported gold.



Photomicrograph 6- magnification 100X

This last photomicrograph shows a large platinum particle in the center of the picture (50X130 microns in dimension). On the left side of the platinum a gold particle 30X50 microns can be seen. This small gold particle is about the smallest particle noted in the sample.

Conclusions:

The gold recovered from this sample is easily captured and concentrated using Cleangold technology. It should also be possible to develop a physical method for separating the small amount of platinum present so that the miners will benefit from all of the value in their hard won gold. At present rates, platinum is selling for about twice as much as gold ($900 per ounce for platinum vs. $450 per ounce for gold). If the platinum accounted for 1% of the mass of the gold recovered, that would mean that for every 100 ounces of gold mined, the miners could get an additional $900.(US) for the platinum they have separated. I have noted disparities in the concentration of platinum along the west coast of North America and would expect the same in Colombia. I have seen placers where the values recovered were as much as half platinum. This could make a significant difference in what the miners in some regions can be paid for their product.

While the recovery of gold from this sample was performed under laboratory conditions, a method could be developed to allow most of the gold to be recovered in a single operation. The control that can be exerted over the ore will allow the miners to quickly determine if they have recovered a sufficient amount of gold from a batch of concentrate such that the remainder can be returned to be processed with subsequent batches of concentrate. This will streamline the process and increase yields for the amount of effort being exerted. The size range of gold seen in this sample will make it simple to design such a system.

There remains the question of how this sample of concentrates was generated by the miners. If it was prepared from the ore by panning alone, with no use of a sluice, we might expect that if the original ore were processed entirely using the Cleangold® method, then there might be a considerable increase in the amount of gold less than 250 microns in diameter. If any kind of sluice were used prior to the panning, then we can be assured that there will be a substantial increase in the amount of gold smaller than 500 microns in diameter. In either case, using Cleangold methods will allow the miners to process more ore, faster and their recovery of gold in the smaller size ranges will improve.

The only tools used to prepare this sample were a Cleangold® Prospector's Sluice (retail cost approximately $40.00 US) and a ten inch plastic gold pan (retail price $2.00 US).