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Re: Blue Spring

This letter is to note some of the remarkable aspects of Blue Spring, the spring located on your property at the base of Pine Mountain in Georgia. Blue Spring is a high flow spring that is named for the blue color that is evident within the depths of the spring pool. Pine Mountain is a linear ridge with a northeasterly trend and a length of approximately 35 miles. The spring pool itself is approximately 30 feet across, and its depth near the orifice is about 30 feet; however, the spring is connected into a cave system that plunges downward to a considerably greater depth.

I have been performing spring investigations for more than 30 years, and in that time I have seen springs in many different geological settings in the United States and abroad. Blue Spring is unique in several respects:

1. Most high flow bedrock springs are found in areas underlain by carbonate bedrock such as limestone or dolomite. Blue Spring is a high flow bedrock spring that emanates from non-carbonate bedrock. With a flow rate of about or in excess of 500 gallons per minute, this is the highest flow non-carbonate spring that I have directly observed.
2. The spring issues from a large cave. Caves are normally characteristic of carbonate terrain because they result from the slow dissolution of the carbonate rock. The solubility of carbonate rock is why limestone springs normally have a high dissolved solids content. The cave from which Blue Spring emanates is formed in quartzite, a highly resistant rock that is nearly insoluble. Karst Environmental Service, Inc., a company that specializes in underwater cave exploration, has explored and mapped the Blue Spring cave. The portion of the cave able to be explored consists of two rooms with a total length of 300 feet, and a maximum width of about 40 feet. There is a passageway that leads out of the lower part of this area and the total additional extend of the cave is not known. Karst Environmental Services representatives have told me that this is the only significant non-carbonate cave of which they are aware.
3. The geology of this cave is therefore quite unique. The cave is located near a major ancient fault zone, which likely has something to do with the origin of the cave. The precise mechanism by which the cave formed is not clear.

4. Carbonate springs frequently have poor quality water for bottling purposes. This is because the high dissolved solids leads to scaling in the hot side of water dispensers, and because the rapid passage of water through limestone terrain frequently (almost always, in our experience) leads to high bacterial counts.
5. The total mineral matter in Blue Spring (as indicated by the total dissolved solids analysis) is remarkably low and should not present scaling problems. In addition, US consumers generally prefer the flavor of water with low mineral content.
6. It is likely that the Blue Spring cave is directly related to the fault noted above. It is not likely that the cave trace meanders off in unpredictable directions. Diving in the cave is indicated that the cave is entirely filled with water, and that it grows progressively deeper with distance from the spring orifice. Since the cave is entirely filled with water, birds, animals and bats are excluded. It is likely that the water that flows from the spring is deep seated water that is well filtered and well protected. The testing has been done to date has not indicated significant bacterial levels, and there is no report of turbid flows during or after storms.
7. In order to extract water from this spring, we have installed a deep well that penetrates into the lower parts of the cave. This will extract water some distance from the cave orifice and at a depth where the water is well protected from surface influence. Artesian conditions at the spring prevent the entry of surface water into it.
8. We have reviewed available analytical results for the spring. We have noted no adverse parameters in the analyses, and believe that the dissolved mineral matter that is present should give the water a favorable flavor.
9. This is an exceptionally attractive spring which meets all US FDA criteria for spring water labeling. You should be able to take good advantage of this attractive site when marketing the water. You should also be able to stress the measures that you have taken to preserve the environment of this source.

In short, our current knowledge of this spring indicates that it is a well protected, high flow source with a chemistry that is suitable for bottled water production in the American market.

Sincerely,
Thomas Brewer, Ph.D.
Technical Director