

Paul,

As per your request, we have quickly and briefly reviewed the proposal by Primary Water Technology (PWT) for the exploration of new groundwater resources in the Cedar Valley. As scientists, we really try to keep open minds about things, but our first reaction to the proposal is one of skepticism for the following reasons:

- Their proposal is based on the premise that new “primary” or “juvenile” water created in the interior of the earth by the chemical reaction between oxygen and hydrogen generated in the mantle migrates to the surface of the earth through centrifugal force by the rotation of the earth and that this water is pure and needs no filtration or treatment (of course, your “other” groundwater also doesn’t require filtration or treatment). They claim they have developed exploration methods to locate and develop this new “primary” or “juvenile” water. Yes, there is such a thing as primary or juvenile waters which originate from chemical reactions deep the mantle of the earth. However, to our knowledge this has only been identified in deep boreholes several miles deep and not in large volumes (we don’t know about its quality). Their concept that these primary waters rise under pressure and centrifugal forces to the high mountains and discharge as pure mountain spring water is a sales job. This just doesn’t happen. As you well know, mountain springs originate from the infiltration and discharge of precipitation and flow downward via gravitational forces. We can’t have one set of water molecules acted on by gravity and flowing downward and another set flowing upward through centrifugal forces and waving to each other as they pass by. If these centrifugal forces were so strong, why do we have water down at 700 feet in Wah Wah Valley? Why isn’t it flung to the surface?*
- Though they may have assembled experts in geophysical methods, in general the methods in their proposal seem to be generally no different than other methods commonly used in the exploration and development of groundwater using geologic mapping, developing cross-sections from existing well data, geophysical methods (seismic, gravity and electromagnetic). Pretty much the same methods as we would use. We don’t see anything new or innovative in their approach except that they use new buzz words. We are not and do not claim to be geophysicists and may not be up to speed with all of the new technologies that are out there, but we have never heard of the bio-electromagnetic (bio-EM) and seismo-electric methods, and we are leery as to what they are. “Passive seismic” is just seismic methods using seismic waves to detect subsurface anomalies. There are electromagnetic survey methods but the “bio” term isn’t familiar to us and may be a buzz word and not be any different than commonly used exploration methods using resistivity and spontaneous potential. Now, it is true that geophysical methods historically developed for oil and gas exploration are being used more and more in water exploration and new techniques are being developed, however, that doesn’t in and of itself validate their assertions that there large volumes of “primary” water below Cedar Valley.*
- The proposal claims their methods can explore to depths of 2,000 m, “but of course” they will focus on a depth of +/- 250 m (820 ft) in the CICWCD study. This is not deep exploration where “juvenile” water would be located. If their target is new “primary” or “juvenile” water, their described methods of shallow exploration and drilling at high elevations to “allow for gravity flow to area of use” are not logical and make no sense. **If** primary or juvenile water migrates to the depths they are targeting in their proposal, how does it not mix with groundwater originating from precipitation? Most importantly, even if there were such waters arising in the Cedar Valley and mixing with the “other” groundwater, we are quite sure*

Thursday May 16, 2019

that the State Engineer would view such water as part of the valley's water supply and not grant new water rights independent of the existing priority system.

- *While there may be merit in their methods for locating anomalies and new targets for developing groundwater sources, this is not new water. At the depths they propose to explore, this is not isolated, renewable groundwater that does not have a connection to currently known and developed groundwater resources. At these depths it is the same groundwater that originates through the natural hydrologic cycle of evaporation of surface water, precipitation, infiltration to the groundwater system and discharge.*
- *Credentials. I'm not trying to be critical but what does "USC geologist" Mike Page mean? Are they referring to the University of Southern California? Mike was a farm manager for 25 years. Not that he doesn't have experience drilling wells, but if he worked as a farm manager for 25 years, it is hard to imagine he is a technical expert in geophysics, groundwater geology and exploration.*
- *Without detailed explanation of their bio-EM, passive seismic and seismo-electric methods, their diagrams are just pictures to us. There is nothing we recognize as new, sound methods, nor, more importantly, proof that there is this vast amount of new water below the Cedar Valley.*
- *If we were trying to sell a project or proposal like this, we would provide examples of where we have successfully found new undeveloped "primary or juvenile" water and provided it to customers. Have they provided any references or examples of where they have been successful at actually developing new water?*

Our impression is that this proposal has more salesmanship than technical merit. As highlighted above, their methods may have merit in identifying targets for groundwater exploration, but it is doubtful that the groundwater to potentially be developed is new, primary water.

Again, we want to keep an open mind, but we are struggling with this one. If you would like, we are happy to explore this a little further. We could reach out to USGS, contact these people and ask for references, etc. Let us know.

Thanks,

Scott and Don

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