

# LONG VALLEY HYDROLOGIC ADVISORY COMMITTEE

## MEETING NOTES

August 5, 2015

(Adopted February 10, 2016)

**Public Comment:** None

### Review Last Meeting Notes:

Truschel - suggested changes where names were mixed up.

Wardlow - bylaws, after amended: delete everything that was a cut and paste error. Item 6 confusing, consider deleting. Use for well, insert "deep" before wells.

Yamashita - change geoelectricify to georectify.

### Subcommittee Report:

Criss - Briefly discussed production well pressure data.

~~Reinholdt~~ Reinhardt - Question regarding shut-in wells, if Ormat can make physical measurements to correct data.

### USGS monitoring data:

Howle - gave presentation. Precipitation at ~~Mammoth Ranger Station~~, in last four years only six months above normal. Drought is the underlying factor in all the other plots. Daily mean values are at historical lows. Shallow cold water well east of airport, again at historical lows. Exceeded previous lows from last big drought. In 2014 Sherwin ~~Creek~~ wells were re-instrumented, these wells are most likely not affected by activity and thus helpful for climatic variability. Fish hatchery springs, again all flows at record lows. H2-3 spring not showing much variability, AB and CD both historically low. Spring water temp slowly going up due to less cold water mixing. Thermal water discharge is historically low, yet percentage of thermal water has actually gone up during drought. Total discharge, again record low. Hot creek flume discharge, again at record low.

Questions from Yamashita, Suemnicht and ~~Reinholdt~~ Reinhardt - Would you expect to see a similar pattern to 1991 drought? Other things were going on then at Casa Diablo that resulted in a production-related response. Despite drought and geothermal development, thermal water output is essentially the same? Yes, there have been unexplained excursions as it is a complex system, but yes. Will the increase in CD affect the hatchery? I don't think so, they are affected around 19 degrees C.

Evans – Chemistry discussion. ~~NWQL~~ National Water Quality Laboratory, and Menlo Park USGS labs, data from two labs, offset in bromide data. Several sources of bromide in area, the ski hill applies salt with high chloride and bromide, they just changed salt supplier, appears to be chemically the same mix of chloride/bromide. Most of the rest of the springs appear to be precipitation related bromide. Eurofins lab is used for further analysis of the bromide. Data from

Mammoth Community Water District monitoring wells shows low bromide levels (~2%) with some variation, which makes it a good indicator.

Question from Suemnicht – Re well M26, can you explain the changes to other nearby wells? Not without complete set of chemistry data.

#### **Update on monitoring wells:**

Howle - last Friday drill crew arrived to start on well 14-25A. Yesterday, at 540 feet, warm water was hit which was unexpected. Thought it would be similar to other nearby community wells. Using ODEX drilling, does not use drilling fluids, good for monitoring wells. Below 340 stopped casing, everything above is thus meaningless for geophysics. At 400 feet, water was ejected at 100F which reflects friction of drilling. At 440 encountered water at 140F. Stopped at 540. Interpret water influx and electrical response that water table is about 380. Propose a dual completion hole with open casing at 420 to 440 for one interval, then grout as confining unit of lower interval of 590 and drill to 600 ft. Glassy densely welded unit provides good interval barrier.

Questions from Suemnicht, Reinholdt Reinhardt Criss, Truschel, Yamashita, Wardlow - Any head difference between the intervals? Every hour water level was rising 3 feet, seems to have stabilized, thus higher head in thermal level. Will a dual well still perform as we hoped to? Yes we will get data from two zones. Originally was going to be a cold well, is still going to be useful for shallow water monitoring? Yes, don't know if the upper interval is really "cold" until well is done. Suspect it might be warm, but won't know for months as drilling signature fades. Change of plans for the next well? Probably won't go to 1000 ft, maybe 600? What is the connectivity **conductance** range **on the electric log**? Don't know without looking at hard data. How does well compare to 26M? 26M does not have great data, compares well to others like **geothermal well MLGRAP-2**. Does revised sundry notice need to be submitted to permitting agency if drilling plans are changing? BLM and ORMAT will work out what will be required.

**Next meeting:** February 10, 2016

**Adjourn to drilling site 14-25A field trip**