

Peppersack, Jeff

File 63-12

From: Ed Squires [ed@hydrologicinc.net]
 Sent: Thursday, September 23, 2004 11:26 AM
 To: Neely, Ken
 Cc: L. Graves; Steve Lester; John Westra ; Jeff Peppersack ; Gary Spackman; Glen Saxton ; Tom E. Terteling ; Garnette Monnie; Dave Hendrickson ; Dana Hofstetter; Charles L. Honsinger
 Subject: State Water District 63-S - TTCI Windsock Low-Temperature Geothermal Well Re-Construction September 23, 2004

Mr. Ken Neely
 Water Master District 63-S

September 23, 2004

Dear ~~Water Master~~ Ken et al:

We have just finished the reconstruction of The Terteling Company, Inc.'s (TTCI) "Windsock" low-temperature geothermal supply well and the installation of a new pumping plant in Stewart Gulch. Although I have the following technical memorandum for Ken Neely and Rob Whitney, I wanted to copy the above individuals to acknowledge their help and to express our appreciation for the permissions to use TTCI's "Pool" well for heating purposes while the unexpected work-over of this well was accomplished. TTCI's Flora Greenhouses were growing a very temperature-sensitive crop of Christmas poinsettias at the time chilly fall weather began. Without the use of the Pool geothermal well, the costs of heating with natural gas would have been prohibitively expensive.

The reconstruction of the well, and the installation of a new pumping plant, was successfully accomplished earlier this week. On behalf of the Terteling family and myself, I would like to thank everyone associated with allowing this project to proceed. The details of well construction and geothermal water use are described below as reporting requirements for the water master:

1) Well Reconstruction:

- a. A 512-foot long, 8-inch diameter, .322-inch wall, stainless steel casing was installed and sealed into the basalt volcanic (geothermal) aquifer at 512 feet below land surface using a cement grout around the base of the casing.
- b. The entire length of the new casing was grout sealed, within the annular space between the 8-inch casing and the 10-inch existing casing, using Cetco brand geothermal bentonite grout (35% solids).
- c. The annular space between the original 16-inch drilled hole and existing 10-inch casing was also grout sealed to total depth using Cetco brand geothermal bentonite grout (35% solids).
- d. We will submit the details of well construction to Ken Neely and Rob Whitney as soon as we complete the drafting.

2) Low-Temperature Geothermal Water Use:

- a. The Pool well flow meter totalizer was recorded at 3,219, 700 gallons (as reported to the Water Master) prior to diversion of Pool well geothermal water to the greenhouses.
- b. The Pool well flow meter totalizer was recorded on September 22nd, after the Windsock well was brought on line, at 7,284,490 gallons.
- c. Total water use from the Pool well during the Windsock well repair was 4,0647,790 gallons or 12.47 acre feet.
- d. Although some of the Pool well water was used to heat the Terteling residence during this period, it is expected that the 12.47 acre feet will be subtracted from TTCI's annual allotment of 400 acre feet as agreed upon as a condition of the Pool well diversion of hot water.

3) Measurement Equipment and Datum:

9/23/2004

- a. The newly reconstructed and equipped Windsock well was pump-tested on September 21st and 22nd, 2004. The well was pumped at 360 gpm (the water right) from a pumping water level depth of 355 feet bgl; water temperature was measured using a calibrated well head thermometer at 117 degrees F.
- b. A 1-inch diameter, Schedule 80, flush-jointed, PVC monitoring tube was installed to 397.5 feet bgl.
- c. The monitoring tube was equipped with a Solinst, "Levellogger" brand data-logger/pressure-transducer for continuous measurement and recording of water level data. Owing to the down hole data cable, we would like to meet the water master on site during the next round of water level monitoring to establish universal monitoring protocol to prevent damage to the same.
- d. The new measurement datum is 1.5 feet above ground level (the previous monitoring datum).
- e. During the well reconstruction, the existing Windsock well flow-meter was damaged by the drilling rig operations. A new replacement flow-meter is on order. In the interim, the flow-meter from the TTCI Motorcycle Hot well (an exact replacement) is installed on the Windsock well to record production. We recorded the totalizer reading prior to installation (and so did the water master on the last monitoring rounds) so that total production from Windsock well can be monitored until the new meter can be received and installed. We will report those data to the water master when that is accomplished.

Respectfully,

Ed Squires
Hydro Logic, Inc.
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