

WELL SUMMARY

Location ID: BLM-23-431 Field Representative(s): Jack Kirby, GCL

Date Started: 06/04/90 Date Complete: 06/25/90

Northing: 227100.37 Easting: 405946.17

Brass Cap: 4588.96 Outer Casing: 4589.81 Inner Casing: 4590.49

Drilling Method: Mud/Air-foam Rotary Drilling Contractor: Larjon Drilling Co.

Driller: Jim Gower

Total Depth Borehole: 505.5 ft. Total Depth Well Casing: 446.83 ft.

Total Depth Surface Casing: 80 ft.

Diameter Well Casing: 4 inches. Diameter Surface Casing: 10 inches

Length of Bottom Blank: 5.58 ft.

Type of Screen: Ex. str. S.S. wire-wrap 0.02 slot

Screen Interval: 430.82' to 441.25'

Water First Detected: None detected while drilling Water Level Open Borehole: 315.00(6-20-90)
(from G.L., 6-20)

Water Level Cased Borehole: 316.65 (from T.O.C., 06/21/90)

Quik-Foam Use: 2.5 gallons

Estimated Water Use: 9400 gallons

Well Casing:

4in x 3ft SCD 40 PVC:
4in x 5ft SCD 40 PVC:
4in x 10ft SCD 40 PVC:
4in x 20ft SCD 40 PVC:
Total SCD 40 PVC pipe: 0 ft

stock SS centralizers:
custom SS centralizers: 1 set
4"x 3' SS locking riser: 1
4" SS locking cap: 1
4" SS female cap: 1
Total: 3

4in x 3ft SCD 5 SS pipe:
 4in x 5ft SCD 5 SS pipe:
 4in x 10ft SCD 5 SS pipe: 2
 4in x 20ft SCD 5 SS pipe: 16
 Total SCD 5 SS pipe: 340 ft

10ft Extra Strength Screen
 (0.020 in., stainless steel)
 4in x 5ft SCD 10 SS pipe: 1
 4in x 10ft SCD 10 SS pipe: 1
 4in x 20ft SCD 10 SS pipe: 4
 Total SCD 10 SS pipe: 95 ft

Well Completion:

100# bags 16/40 sand: 10 bags
 100# bags 10/20 sand: 0 bags
 100# bags 8/14 sand: 0 bags
 100# bags 8/20 sand: 21 bags

 94# bags cement: 120 bags

 5 gal. buckets bentonite: 0 buckets

 50# bentonite powder: 13 bags

 Benseal: 1 bag

Surface Casing:

94# bags cement: 40 bags
 50# bags bentonite powder: 4 bags
 Grout: 0 bags

Pertinent Field Notes:

06/04/90 to 06/08/90 Drill 12 3/4" pilot hole using mud rotary to 80'. Ream to 16" borehole using mud rotary. Install 10" x 80' surface casing and grout in place. Larjon worked unsupervised during this period due to GCL Pump Test (i.e., limited staff availability). - Kirby

06/11/90 Drill 80' to 215' via Air/Foam Rotary using a 9 7/8" tri-cone bit. - Kirby

06/12/90 Drill 215' to 285' via Air/Foam Rotary using a 9 7/8" tri-cone bit. Drilling rates decrease to ≈10 min/ft. - Kirby

06/13/90 Switch to 9" air-hammer bit. Drill 285' to 373'. Encounter andesite-rich alluvium at 361' (possibly Orejon Andesite bedrock). No noticeable formation water after blowing hole at 373'. - Kirby

- 06/14/90 Drill 373' to 455' using a "air-hammer bit". Slightly slower drilling due to difficulty in lifting cuttings out of borehole. It was necessary to blow/clean borehole more than usual when adding drill pipe. At 402' to 455' cuttings are $\approx 90\%$ andesite and exhibit minor weathering. No noticeable formation water. - Kirby
- 06/15/90 Measure water at 315' (at 9:00 a.m.) prior to drilling. Drill 455' to 500' using 9" air-hammer bit. - Kirby
- 06/18/90 Run standard suite of geophysical logs. Results show a distinct lithologic change at 352', uppermost water bearing zone at 437'. Set rig up over borehole and prepare to take a core sample (at 500') to determine whether we are in bedrock or alluvium. - Kirby
- 06/19/90 Core from 500'-505'. Retrieve 500' to 503' (60%). Examination of core proves we are in fractured Orejon Andesite. Begin completion of borehole up to 453' (top of bottom plug). - Kirby
- 06/20/90 Hang casing in borehole and complete well up to 411.33' (top of top plug). - Kirby
- 06/21/90 Complete BLM-23-431 to 10' above static water level (~305'). - Kirby
- 06/22/90 Pour one truck load of grout (90 bags cement, 10 bags bentonite gel) into well annulus up to 73'. - Kirby
- 06/25/90 Grout BLM-23-431 from 73' to surface using 30 bags cement, 3 bags bentonite gel. Install protective casing. - Kirby
- 06/26/90 to 07/09/90 Develop well via surging and bailing (~230 gallons). Install submersible pump at ~420' and pump approximately 500 gallons from well. Parameters have stabilized: NTU's in the 5 to 20 range; conductivity stable at 1200 μ mhos; temperature at 23.5° C; pH meter inoperable. - Kirby