Location ID: 100-E-261 Field Representative(s): G. Contaldo

Northing: 221627.40 Easting: 417825.78

Date Started: 06/21/89 Date Completed: 07/07/89

Drilling Method: Mud/Air-Foam Rotary Drilling Contractor: Larjon

Driller: Jim Gower

Total Depth Borehole: 283.6' Total Depth Well Casing: 276.6'

Total Depth Surface Casing: 60.0'

Diameter Well Casing: 4" Diameter Surface Casing: 10"

Length of Bottom Blank: 5.30'

Type of Screen: 10' Reg. Strength 0.02 slot

Screen Interval: ~~261'~~ 260.9' to ~~271'~~ 271.3'

Water First Detected: 262.0' Water Level Open Borehole: 214.10' (ground level)

Water Level Cased Borehole: 217.19' (T.O.C.)

Quik-Foam Use: 5 gallons, 10 bags economy gel for mud drilling

Estimated Water Use:

8,900	gallons	used during drilling
-5,984	gallons	recovered in pit
2,916	gallons	lost to formation

Well Casing: No casing installed.

4in x 3ft SCD 40 PVC:	0	stock SS centralizers:	0
4in x 5ft SCD 40 PVC:	0	custom SS centralizers:	1
4in x 10ft SCD 40 PVC:	19	4"x2' SS locking riser:	1
4in x 20ft SCD 40 PVC:	0	4" SS locking cap:	1
Total SCD 40 PVC pipe:	0 ft	4" SS female cap:	1
4in x 3ft SCD 5 SS pipe:	0	4in x 5ft SCD 10 SS pipe:	0
4in x 5ft SCD 5 SS pipe:	1	4in x 10ft SCD 10 SS pipe:	0
4in x 10ft SCD 5 SS pipe:	1	4in x 20ft SCD 10 SS pipe:	0
4in x 20ft SCD 5 SS pipe:	3	Total SCD 10 SS pipe:	0 ft
Total SCD 5 SS pipe:	75 ft		

Well Completion:

100# bags 16/40 sand:	15	bags
100# bags 10/20 sand:	0	bags
100# bags 8/14 sand:	0	bags
100# bags 8/20 sand:	22	bags
94# bags cement:	105	bags
5 gal. buckets bentonite:	2	buckets
50# bentonite powder:	12	bags

Surface Casing:

94# bags cement:	30	bags
50# bags bentonite powder:	3	bags
Grout:	0	bags

Pertinent Field Notes:

06/21/89 Drilled from 0'-46' with Franks rig using mud rotary with 12 ¼" bit. Used 1800 gallons of water. - Contaldo

06/22/89 Drilled from 46'-61' with Franks rig using mud rotary with 12 ¼" bit. Reamed borehole to 60' using 15" bit. Installed 10" surface casing to 60' and grouted to 15' below ground surface. Used 600 gallons of water. - Contaldo

06/23/89 Set up BE rig over borehole and ran 55' of drill pipe into borehole (into surface casing). - Contaldo

06/26/89 Drilled from 60'-161.5' with BE rig using air-foam rotary with 9 7/8" bit. Encountered bedrock at 145' (laminated or bedded micritic limestone - Panther Seep Formation). No visible indications of groundwater. Used 1600 gallons of water.- Contaldo

06/27/89 Drilled from 161.5'-185.0' with BE rig using air-foam rotary with 9 7/8" bit . This interval is within laminated or bedded micritic limestone (Panther Seep Formation). No visible indications of groundwater. Used 1200 gallons of water. - Contaldo

06/28/89 Drilled from 185.0'-213.0' with BE rig using air-foam rotary with 9 7/8" bit. This interval is within laminated or bedded micritic limestone (Panther Seep Formation). No visible indications of groundwater. Used 800 gallons of water. - Contaldo

06/29/89 Drilled from 213.0′-240′ with BE rig using air-foam rotary with 9 7/8" bit. This interval is within the Panther Seep Formation. Blew borehole for 35 minutes and tripped completely out of borehole to inspect bit and take W.L. on 6/30/89. No visible indications of groundwater. Used 1000 gallons of water.- Contaldo

06/30/89 Drilled from 240′-260′ using air-foam rotary with 9 7/8" bit. This interval is within the Panther Seep Formation. No visible indications of groundwater to 260′. Blew borehole for 25 minutes and no groundwater observed. Used 800 gallons of water.- Contaldo

07/05/89 Drilled from 260′-276′ using air-foam rotary with 9 7/8" bit. This interval is within the Panther Seep Formation. First visible signs of water at 262′. Borehole produced small quantities of water (approx. 1 gpm) to 276′. Tripped out of borehole and measured water level at 213.05′ (ground surface). Rotary head leaked significant quantities of hydraulic oil on rig and drill stems. Used 700 gallons of water. - Contaldo

07/06/89 Fixed rotary head and steam-cleaned rig, drill stem, and tools. Loaded well materials on flat bed. Drilled from 276′-283′ using air-foam rotary with 9 7/8" bit. This interval is within the Panther Seep Formation. Blew borehole for 73 minutes, borehole produced ample quantities of groundwater. Measured water level at 212.15′ (ground surface). Used 400 gallons of water.- Contaldo

07/07/89 Completed installing monitoring well. Screened interval from 260.91′ to 271.26′. Installed plug (Bentonite pellets) to 247.86′ and filler sand (8/20 & 16/40) to 198.46′. Measured static water level in cased borehole at 217.19′ (T.O.C.).- Contaldo

07/10/89 Installed first load of grout between well casing and surface casing. Used 42 bags cement and 5 gel. - Contaldo

07/11/89 Sounded top of first load of grout at 116.0′. Installed second load of grout. Used 43 bags cement and 5 gel. - Contaldo

07/12/89 Sounded top of second load of grout at 37.5′. Installed third load of grout to ground surface. Used part of a cement load (≈ 10% (?)) from 100-B. - Contaldo

07/13/89 Began well development. Conducted two bail/surge cycles and installed submersible pump. Discharged a total of 153.5 gallons of groundwater. - Contaldo

07/14/89 Continued well development using pump. Discharged a total of 337.9 gallons of groundwater. - Contaldo

07/18/89 Continued well development using pump. Discharged a total of 412.5 gallons of groundwater, turbidity is still too high.- Contaldo

07/19/89 Completed well development. Discharged a cumulative total of 1124 gallons of groundwater. Conductivity, pH, temperature, and turbidity (≤ 5 NTUs) stabilized. - Contaldo