

WELL SUMMARY

Location ID: PL-5 Field Representative(s): J. Rodgers, S. DUBYK, C. WERDEN

Date Started: 10/02/90 Date Completed: 11/07/90

Northing: 226966.72 Easting: 401507.49

Brass Cap: 4512.60 Outer Casing: 4513.08 Inner Casing: 4513.08

Drilling Method: Mud Rotary Drilling Contractor: Beylik Drilling Co.

Driller: R. Vanucci, R. Bailey

Total Depth Borehole: 1023.0' Total Depth Well Casing: 1010.0'

Total Depth Surface Casing: 24.2'

Diameter Well Casing: 4.0"(outer) 3"(inner) Diameter Surface Casing: 14" O.D.

Length of Bottom Blank: 20.0'

Type of Screen: extra strength 0.02 slot

Screen Intervals: 489.7' to 499.7'
589.8' to 599.8'
709.9' to 719.9'
790.0' to 800.0'
890.1' to 900.0'
980.1' to 990.1'

Water First Detected: not detected Water Level Open Borehole: --

Water Level Cased Borehole: 442'

Estimated Water Use: 7,000 gallons (see water budget sheet)

Well Casing:

4in x 3ft SCD 40 PVC:	stock SS centralizers: 22
4in x 5ft SCD 40 PVC:	custom SS centralizers:
4in x 10ft SCD 40 PVC:	4"x2' SS locking riser:
4in x 20ft SCD 40 PVC:	4" SS locking cap:
Total SCD 40 PVC pipe: ft	4" SS female cap:
4in x 3ft SCD 5 SS pipe:	Extra strength screen SS: 60 ft
4in x 5ft SCD 5 SS pipe:	4in x 5ft SCD 10 SS pipe:
4in x 10ft SCD 5 SS pipe:	4in x 10ft SCD 10 SS pipe:
4in x 20ft SCD 5 SS pipe:	4in x 20ft SCD 10 SS pipe: 48
Total SCD 5 SS pipe: ft	Total SCD 10 SS pipe: 960 ft

Well Completion:

100# bags 16/40 sand:		bags
100# bags 10/20 sand:		bags
100# bags 8/14 sand:		bags
100# bags 8/20 sand:	179	bags
94# bags cement:	123	bags*
5 gal. buckets bentonite:		buckets
50# bentonite powder:	12	bags
Benseal:	89	bags

*Beylik ordered cement through Valley Transit Mix (mixture totaled 4 5/8 cu. yd.)

Surface Casing:

94# bags cement:	16	bags
50# bags bentonite powder:	1	bags
Grout:		bags

Pertinent Field Notes:

10/02/90	Pad graded and compacted after rain. Begin decon and mob equipment to PL-5 site. - Contaldo
10/03/90	Set-up and begin filling baker tank. Several set-up logistical problems delayed start of drilling. - Contaldo
10/04/90	Drilled to 25' using mud rotary with 20" tricone bit; set surface casing (14" dia.) to ~25'.
10/05/90	Grouted surface casing to ground surface, drilled to 185' using 12 1/4" tricone bit. - Menzie
10/07/90	Continued drilling to 603'. Night shift driller does not show. Shut down rig. - Menzie
10/08/90	Begin drilling at 7:37. Drill 603'-720' by midnight. - Contaldo
10/09/90	Continue drilling 720'-1020'. TD hole at 1020'. - Contaldo
10/10/90	Tripped out. Completed geophysical logging. Steam clean and install casing and screen. - Contaldo

- 10/11/90 Plug and sand pack to ~835' at midnight. - Contaldo
- 10/12/90 Finish pumping benseal plugs and sand packs. Top of last benseal plug at 386.3'. Start grouting (1st stage). - Egan
- 10/13/90 Pump 2nd stage of grout. Start air-jetting. Equipment (pump) problems while jetting second screen (890'-900'). Stop for the night. - Egan
- 10/14/90 Fix pump and continue air-jetting, starting with bottom screen. Finish jetting all screens. De-mobilize and mobilize to PL-6. - Egan
- 10/15/90 Beylik development crew ready to start. Begin by bailing sediment out of bottom of well casing then swabing each screened interval. Bail muck from bottom of casing again after swabing. - Egan
- 10/16/90 Finish bailing sediments from bottom of casing and set up equipment for air-lifting. 1¼" drop pipe installed to 634', 3/8" air line installed to 600'. Discharging ≈1½ gpm and water is very muddy.
- 10/17/90 Continue development. Add more drop pipe to a total depth of 1008.7' (bottom of casing at 1010'). Add 50 more feet of airline for a total of 650'. This system is not working too well - lifting power is very small and discharge is very low. Remove air-lifting system from well and install a 1.5 Hp submersible pump to 486' to remove gross sediments. Beylik developers are going to try to get a larger diameter air line and a larger (capacity) compressor. - Egan
- 10/18/90 Continue development using submersible pump. Discharge is very muddy and rate is ≈3.5 gpm. Beylik developers still trying to locate air line and compressor. - Egan
- 10/19/90 Continue development using submersible pump. Pull pump to check wires (pump drawing too many amps). Reset pump to 570'. Discharging ≈ 3.3 gpm, water is cloudy. New development equipment still not on site. - Egan
- 10/20/90 Continue development using submersible pump. Discharge rate is 3.3 gpm and discharge is cloudy, but clearing. - Egan
- 10/21/90 New (larger diameter) air hose on site. Pull submersible pump from well. Set up air-lifting system again. One packer inflated immediately above second screen (top of second screen at 589.82', static water level in tremie at 445.68'). 3/4" air line installed inside tremie to ≈560'. Results from air-lifting very disappointing (<< 0.5 gpm). Beylik thinks the 3/4" air line doesn't leave enough room inside 1¼" drop pipe for adequate air-lifting. Pull air line and tremie and reinstall with air line secured to the outside of the drop pipe. This method works much better. - Egan
- 10/22/90 Continue development by air-lifting in the top-most screen. Discharge rate ≈ 1½ gpm. Start sampling discharge for Ph, conductivity, temperature, and turbidity. Surge screen to aid in cleaning screen. - Egan
- 10/23/90 Continue surging/air-lifting in screen #1. (See devel. records for details). - Egan

- 10/24/90 Continue development of screen #1. Turbidity reading reaches 8 NTU's. Stop air-lifting screen #1.
- 10/25/90 Move to screen #2. Air chamber centered within second screen at 592.15' with packers above and below. Start surging and air-lifting in screen #2. (see development records for details). - Egan
- 10/26/90 Continue development of screen #2 by surging and air-lifting.
- 10/27/90 Continue developing screen #2 until turbidity reaches 7 NTU's. Move to screen #3 and start air lifting and surging. (see development sheets). - Egan
- 10/28/90 Continue developing screen #3.
- 10/29/90 Continue developing screen #3. Allow pump to run overnight to expedite development.
- 10/30/90 Continue development of screen #3. Turbidity value reaches 5.0 NTU's. Move to screen #4 and start air-lifting and surging. Let pump run overnight. - Egan
- 10/31/90 Continue development of screen #4. Let pump run overnight. - Egan
- 11/01/90 Continue development of screen #4. Turbidity value reaches 6 NTU's. Move to screen #5 and start air-lifting and surging. Let pump run overnight.
- 11/02/90 Continue development of screen #5. Let pump run overnight. - Egan
- 11/03/90 Continue development of screen #5. Let pump run overnight. - Egan
- 11/04/90 Continue development of screen #5. Turbidity level reaches 8 NTU's. Move to screen #6 - the last screen.
- 11/05/90 Start developing screen #6. Let pump run overnight. - Egan
- 11/06/90 Continue development of screen #6. Turbidity reaches 5.5 NTU's. Deflate packer and add 1 joint of drop pipe to clean out sump. Let pump run overnight. - Egan
- 11/07/90 Stop pumping. Well is developed. Remove air-lift assembly from well and set up for Westbay casing installation. (Casing layout, numbering casing, attach couples).
- 11/08/90 Install Westbay casing in PL-5.
- 11/09/90 Begin inflating packers on Westbay casing. Inflated 9 of 12 packers.
- 11/10/90 Inflated remaining 3 packers.
- 11/11/90 Beylik finishes well head (concrete pad, protective casing with lock, guard posts). Well is ready to be handed over to Lockheed for pressure profile then sampling.