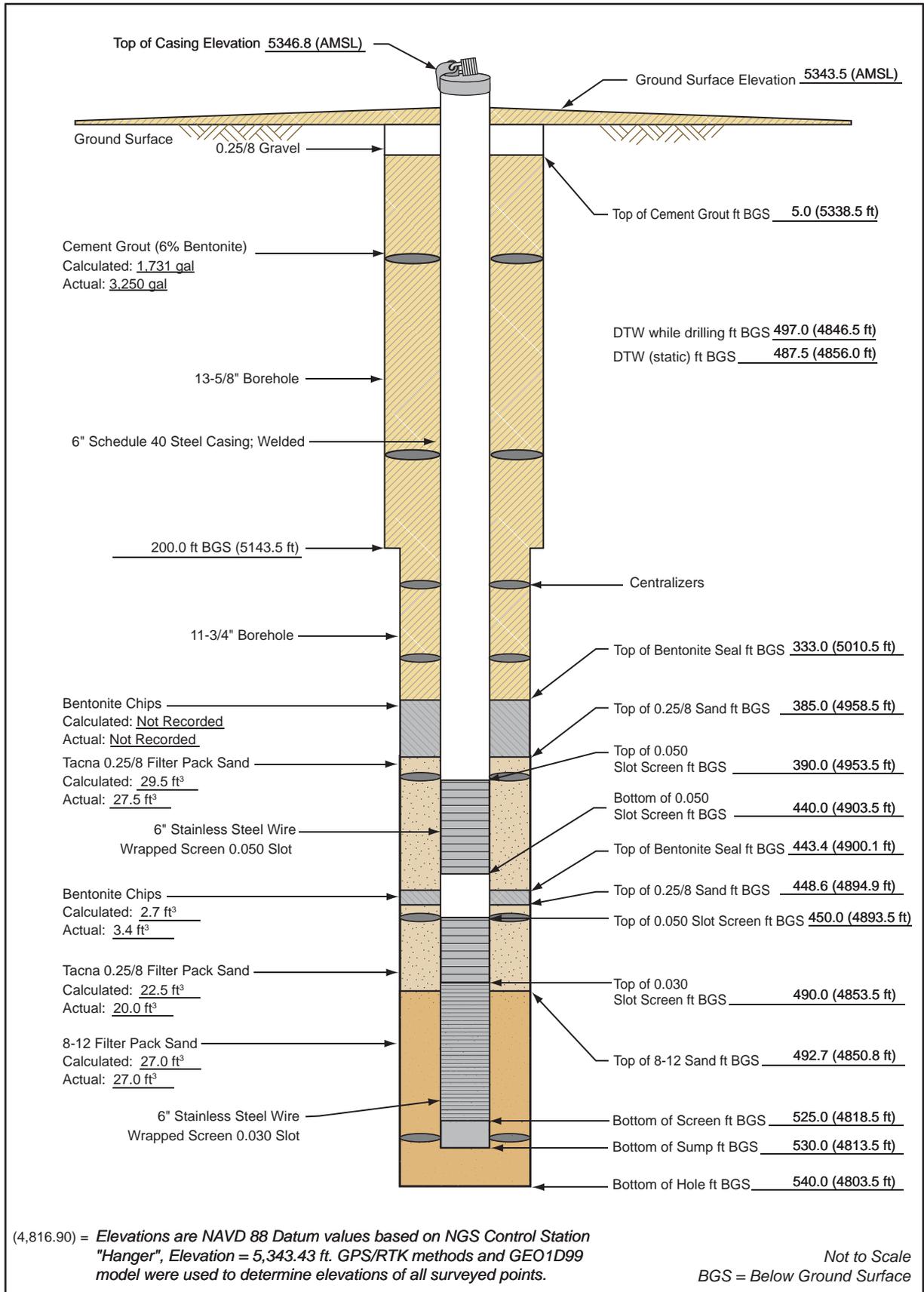


Soil Vapor Extraction Well KAFB-106160

Installation Start Date/Time: 2/29/2012 @ 0930

Installation End Date/Time: 3/5/2012 @ 1700





Borehole ID: KAFB-106160

Client: US Army Corps of Engineers
Project Location: KAFB, Albuquerque, NM
Project Name: KAFB BFF SWMU ST-106 and SS-111
Project Number: 140705

Hole Diameter Upper (in.): 13-5/8
 Hole Diameter Lower (in.): 11-3/4
 Surface Completion Type: Stick-up

Date Started: 2/23/2012
Date TD Reached: 2/27/2012
Date Completed: 3/5/2012

Groundwater Levels BGS (ft):
 ▽ At Time of Drilling: 497.00
 ▼ At End of Drilling: Not Recorded
 ▽ After Drilling: 487.50

Ground Elevation AMSL (ft): 5343.5
Y Coordinate: 1473283.34
X Coordinate: 1541593.17

Drilling Contractor: WDC Drilling
Drilling Method: Air Rotary Casing Hammer
Logged By: Patrick Ostrye

KAFB_BOREHOLE_LOG - SHAW_DRILLING.GDT - 4/30/12 13:38 - Z:\KAFB BFF\GINT\KAFB_PROJECT\KAFB_BFF.GPJ

Depth (ft)	Sample Type	Number	Headspace PID	Lithologic Log	Material Description	U.S.C.S.	Well Diagram	Remarks
60								
65					Silty SAND (SM); red (2.5YR 4/6); moist; loose; 73% very fine to medium sand; 1% coarse to very coarse sand; 1% gravel to 10mm; subangular to subrounded; 25% silt.			
70					Silty SAND (SM); red (2.5YR 4/6); moist; loose; 70% very fine to medium sand; 5% coarse to very coarse sand; 25% silt.			
75					Silty SAND (SM); red (2.5YR 4/8); moist; loose; 62% very fine to medium sand; 3% gravel to 20mm; angular to subangular; 25% silt; 10% clay; nonplastic.			
80					Silty SAND (SM); red (2.5YR 4/6); moist; loose; 60% very fine to medium sand; 40% silt.	SM	- Cement Grout	New 20' connection @ 1530. Resumed drilling @ 1540.
85					Silty SAND (SM); red (2.5YR 4/6); moist; loose; 62% very fine to medium sand; 3% coarse sand; 35% silt.			
90					Silty SAND (SM); red (2.5YR 4/6); moist; loose; 65% very fine to medium sand; 5% coarse sand; 25% silt; 5% clay.			



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 Hole Diameter Lower (in.): 11-3/4
 Surface Completion Type: Stick-up

Date Started: 2/23/2012
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Date Completed: 3/5/2012

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Drilling Method: Air Rotary Casing Hammer
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KAFB_BOREHOLE_LOG - SHAW_DRILLING.GDT - 4/30/12 13:38 - Z:\KAFB BFF\GINT\KAFB_PROJECT\KAFB_BFF.GPJ

Depth (ft)	Sample Type	Number	Headspace PID	Lithologic Log	Material Description	U.S.C.S.	Well Diagram	Remarks
90								
95					Silty SAND (SM); reddish brown (2.5YR 4/4); moist; loose; 60% very fine to medium sand; 40% silt.	SM		
100					Poorly graded SAND (SP); reddish brown (5YR 5/4); moist; loose; 95% very fine to medium sand; 5% silt.	SP		New 20' connection @ 1600. Resumed drilling @ 1610.
105					Silty SAND (SM); red (2.5YR 4/6); moist; loose; 62% very fine to medium sand; 3% coarse to very coarse sand; 35% silt.			
110					Silty SAND (SM); red (2.5YR 4/8); moist; loose; 64% very fine to medium sand; 1% coarse sand; 25% silt; 10% clay; nonplastic.			
115					Silty SAND (SM); red (2.5YR 4/6); moist; loose; 65% very fine to medium sand; 5% coarse to very coarse sand; 30% silt.	SM		
120					Silty SAND (SM); red (2.5YR 4/6); moist; loose; 55% very fine to medium sand; 35% silt; 10% clay; nonplastic.			New 20' connection @ 1623. Cleaned out cyclone. Resumed drilling @ 1645.

- Cement Grout



Borehole ID: KAFB-106160

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Project Number: 140705

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 Hole Diameter Lower (in.): 11-3/4
 Surface Completion Type: Stick-up

Date Started: 2/23/2012
Date TD Reached: 2/27/2012
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Drilling Contractor: WDC Drilling
Drilling Method: Air Rotary Casing Hammer
Logged By: Patrick Ostrye

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Depth (ft)	Sample Type	Number	Headspace PID	Lithologic Log	Material Description	U.S.C.S.	Well Diagram	Remarks
120					Silty SAND (SM); red (2.5YR 4/6); moist; loose; 55% very fine to medium sand; 35% silt; 10% clay; nonplastic.	SM		Clay clogged discharge hose. Cuttings stuck in hose. End of 2/23/12. Resumed drilling @ 0745 on 2/24/12. Possible perched water table. No odor.
125				No cuttings returned.				
130				Clayey SAND (SC); reddish brown (5YR 4/4); moist; loose; 50% very fine to fine sand; 10% medium sand; 30% clay; 10% silt; nonplastic.	SC			
135				Silty SAND (SM); yellowish red (5YR 4/6); damp; loose; 70% very fine to medium sand; 30% silt.				
140				Same as above (130 ft).	SM			
145				Poorly graded SAND (SP); reddish brown (5YR 4/4); damp to wet; loose; 95% fine to medium sand; 5% coarse sand; pumice.	SP			
150				No cuttings returned.				



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Project Number: 140705

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 Hole Diameter Lower (in.): 11-3/4
 Surface Completion Type: Stick-up

Date Started: 2/23/2012
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Date Completed: 3/5/2012

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Drilling Method: Air Rotary Casing Hammer
Logged By: Patrick Ostrye

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Depth (ft)	Sample Type	Number	Headspace PID	Lithologic Log	Material Description	U.S.C.S.	Well Diagram	Remarks
150								
155					Poorly graded SAND with Silt (SP-SM); reddish brown (5YR 4/4); damp; loose; 84% fine to medium sand; 5% coarse sand; 1% gravel to 10mm; subangular to rounded; 10% silt; no odor. Note: pumice.	SP-SM		
160					Poorly graded SAND (SP); reddish brown (5YR 4/4); damp; loose; 100% fine to medium sand; no odor.			New 20' connection @ 0817. Cleaned out cyclone. Resumed drilling @ 0850.
165				Poorly graded SAND (SP); reddish brown (5YR 4/4); damp; loose; 99% fine to very coarse sand; 1% gravel to 5mm; angular to subrounded. Note: gravel is composed of pumice.				
170					Poorly graded SAND (SP); reddish brown (5YR 4/4); damp; loose; 85% fine to coarse sand; 10% very coarse sand; 5% gravel to 8mm; subrounded to rounded.	SP	- Cement Grout	
175					Poorly graded SAND (SP); reddish brown (5YR 4/4); damp; loose; 100% fine to coarse sand.			
180					Poorly graded SAND (SP); reddish brown (5YR 4/4); moist; loose; 95% fine to coarse sand; 5% very coarse sand.			New 20' connection @ 0920. Resumed drilling @ 0932.



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Project Number: 140705

Hole Diameter Upper (in.): 13-5/8
 Hole Diameter Lower (in.): 11-3/4
 Surface Completion Type: Stick-up

Date Started: 2/23/2012
Date TD Reached: 2/27/2012
Date Completed: 3/5/2012

Groundwater Levels BGS (ft):
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 ▼ At End of Drilling: Not Recorded
 ▽ After Drilling: 487.50

Ground Elevation AMSL (ft): 5343.5
Y Coordinate: 1473283.34
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Drilling Contractor: WDC Drilling
Drilling Method: Air Rotary Casing Hammer
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Depth (ft)	Sample Type	Number	Headspace PID	Lithologic Log	Material Description	U.S.C.S.	Well Diagram	Remarks
210								
215					Poorly graded GRAVEL with Sand (GP); reddish brown (5YR 4/4); moist; loose; 60% gravel to 20mm; subangular to rounded; 40% fine to very coarse sand. Note: gravel is composed of limestone, quartz, chert, and granite.	GP		
220					Poorly graded SAND with Gravel (SP); reddish brown (5YR 4/4); moist; loose; 75% fine to coarse sand; 10% very coarse sand; 15% gravel to 20mm; subangular to subrounded.	SP		New 20' connection @ 1411. Resumed drilling @ 1419.
225					Well graded SAND with Gravel (SW); reddish brown (5YR 4/4); moist; loose; 80% sand; 20% gravel to 10mm; angular to subrounded.	SW		Cement Grout
230					Well graded SAND with Gravel (SW); reddish brown (5YR 5/4); moist; loose; 70% sand; 30% gravel to 15mm; subangular to rounded.	SW		
235					Poorly graded SAND (SP); reddish brown (5YR 4/3); moist; loose; 85% fine to coarse sand; 5% very coarse sand; 10% gravel to 10mm; subrounded to rounded.	SP		
240					Poorly graded SAND with Gravel (SP); reddish brown (5YR 4/3); moist; loose; 75% fine to coarse sand; 10% very coarse sand; 15% gravel to 20mm; subangular to rounded.	SP		New 20' connection @ 1436. Resumed drilling @ 1449.



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Project Number: 140705

Hole Diameter Upper (in.): 13-5/8
 Hole Diameter Lower (in.): 11-3/4
 Surface Completion Type: Stick-up

Date Started: 2/23/2012
Date TD Reached: 2/27/2012
Date Completed: 3/5/2012

Groundwater Levels BGS (ft):
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Drilling Contractor: WDC Drilling
Drilling Method: Air Rotary Casing Hammer
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Depth (ft)	Sample Type	Number	Headspace PID	Lithologic Log	Material Description	U.S.C.S.	Well Diagram	Remarks
270								
275					Poorly graded SAND (SP); brown (7.5YR 4/4); damp; loose; 100% fine to coarse sand; strong odor.	SP		
280					Silty SAND (SM); brown (7.5YR 4/4); moist; loose; 70% very fine to fine sand; 20% silt; 10% clay; strong odor.	SM		New 20' connection @ 1525. Resumed drilling @ 1535. Breeze at drillers back.
285					Same as above (275 ft).			
290					Well graded SAND (SW); brown (7.5YR 5/4); moist; loose; 95% sand; 5% silt and clay; slight odor.	SW		
295					Same as above (285 ft); odor.			
300					Same as above (285 ft); odor			New 20' connection @ 1557 Resumed drilling @ 1605.

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Client: US Army Corps of Engineers
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Project Number: 140705

Hole Diameter Upper (in.): 13-5/8
 Hole Diameter Lower (in.): 11-3/4
 Surface Completion Type: Stick-up

Date Started: 2/23/2012
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Date Completed: 3/5/2012

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Depth (ft)	Sample Type	Number	Headspace PID	Lithologic Log	Material Description	U.S.C.S.	Well Diagram	Remarks
300								
305					Well graded SAND (SW); brown (7.5YR 5/4); dry; loose; 100% sand.	SW		Gravel lense.
310					Poorly graded SAND with Gravel (SP); brown (7.5YR 4/4); dry; medium dense; 75% fine to medium sand; 10% coarse to very coarse sand; 15% gravel to 10mm; angular to subrounded.	SP		
315					Well graded GRAVEL with Sand (GW); dry; medium dense; 70% gravel to 25mm; angular; 30% sand; well graded sand.	GW		
320					Poorly graded SAND (SP); brown (7.5YR 5/3); dry; medium dense; 97% very fine to coarse sand; 3% very coarse sand.			
325					Poorly graded SAND (SP); brown (7.5YR 5/2); dry; medium dense; 100% fine to medium sand.	SP		
330					Poorly graded SAND (SP); brown (7.5YR 5/2); dry; medium dense; 90% fine to medium sand; 10% coarse to very coarse sand.			New 20' connection and resumed drilling @ 1644.



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Hole Diameter Upper (in.): 13-5/8
 Hole Diameter Lower (in.): 11-3/4
 Surface Completion Type: Stick-up

Date Started: 2/23/2012
Date TD Reached: 2/27/2012
Date Completed: 3/5/2012

Groundwater Levels BGS (ft):
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Depth (ft)	Sample Type	Number	Headspace PID	Lithologic Log	Material Description	U.S.C.S.	Well Diagram	Remarks
390					Well graded SAND (SW); brown (7.5YR 4/4); dry; medium dense; 90% sand; 5% gravel to 5mm; angular to subrounded; 5% silt and clay.	SW	Top of 0.050 Slot Screen	New 20' connection @ 1032. Resumed drilling @ 1043.
395				Silty SAND (SM); yellowish red (5YR 4/6); moist; medium dense; 70% very fine to medium sand; 10% coarse to very coarse sand; 20% silt.	SM			
400					Poorly graded SAND (SP); light brown (7.5YR 6/4); moist; medium dense; 95% very fine to medium sand; 5% silt and clay.	SP		
405					Poorly graded SAND (SP); light brown (7.5YR 6/4); moist; medium dense; 95% very fine to fine sand; 5% silt and clay.			
410					Poorly graded SAND (SP); brown (7.5YR 5/3); dry; medium dense; 95% fine to coarse sand; 5% very coarse sand.			
415					Same as above (410 ft).			New 20' connection @ 1107. Resumed drilling @ 1120.
420								

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Depth (ft)	Sample Type	Number	Headspace PID	Lithologic Log	Material Description	U.S.C.S.	Well Diagram	Remarks
420					Poorly graded SAND (SP); brown (7.5YR 5/3); dry; medium dense; 100% fine to coarse sand.			
425					Poorly graded SAND (SP); brown (7.5YR 5/3); dry; medium dense; 100% fine to medium sand.			
430					Poorly graded SAND (SP); brown (7.5YR 4/3); dry; medium dense; 80% very fine to medium sand; 10% coarse to very coarse sand; 5% gravel to 5mm; angular; 5% silt and clay.			
435					Poorly graded SAND with Gravel (SP); brown (7.5YR 4/4); moist; medium dense; 75% very fine to medium sand; 5% coarse to very coarse sand; 15% gravel to 12mm; angular to rounded; 5% silt and clay.	SP		
440					Poorly graded SAND (SP); brown (7.5YR 5/4); moist; medium dense; 90% fine to medium sand; 10% coarse sand; slight odor.			
445					Same as above (440 ft); 15% coarse sand; slight odor.			
450								

-0.050 Slot Screen

-Bottom of Screen

-Top of Bentonite Seal

-Top of 0.25/8 Sand

New 20' connection @ 1145. Resumed drilling @ 1245.



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Depth (ft)	Sample Type	Number	Headspace PID	Lithologic Log	Material Description	U.S.C.S.	Well Diagram	Remarks
510								
515					Poorly graded SAND (SP); brown (7.5YR 4/4); damp; dense; 99% medium to very coarse sand; 1% gravel to 8mm; angular to subangular.	SP	<p> - Bottom of Slot Screen - Sump - Bottom of Sump - Filter Pack </p>	Heavy bit chatter. Drive casing locked @ 1510. Unlocked @ 1525.
520				Silty SAND with Gravel (SM); brown (7.5YR 4/3); saturated; dense; 65% very fine to very coarse sand; 15% gravel to 10mm; subangular to subrounded; 20% silt.	SM	New 20' connection @ 1531. Resumed drilling @ 1540.		
525				No cuttings returned.				
530				No cuttings returned.				
535				No cuttings returned.				
540								New connection @ 1630. Resumed drilling @ 1636.



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Depth (ft)	Sample Type	Number	Headspace PID	Lithologic Log	Material Description	U.S.C.S.	Well Diagram	Remarks
540					No description recorded; cuttings saturated.		 Bottom of Filter Pack Native Backfill	Total Depth = 544. Reached @ 1650 on 2/27/12. Water added after drilling = 700 gallons.
545								
550								
555								
560								
565								
570								