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Figure R-4 AVB69-02 6-Month Drawdown Analysis

GEOLOGIC LOGS

AVB69-01
AVB69-02
RID-104

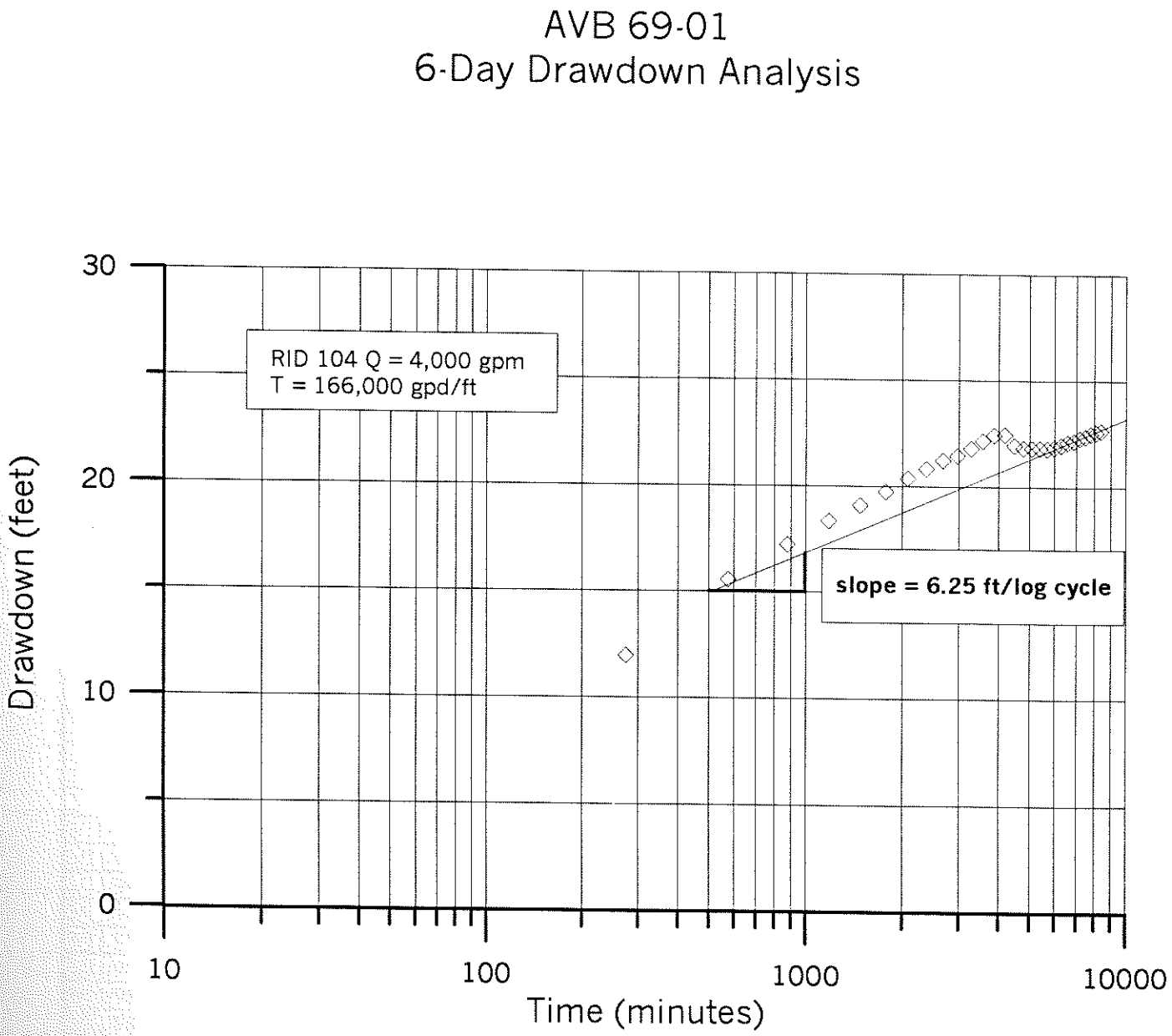
AVB 69-01
6-Day Drawdown Analysis
RID 104 Q = 4,000 gpm
T = 166,000 gpd/ft
slope = 6.25 ft/log cycle
Drawdown (feet)
30
20
10
0
10
100
1000
10000
Time (minutes)

Figure R-1

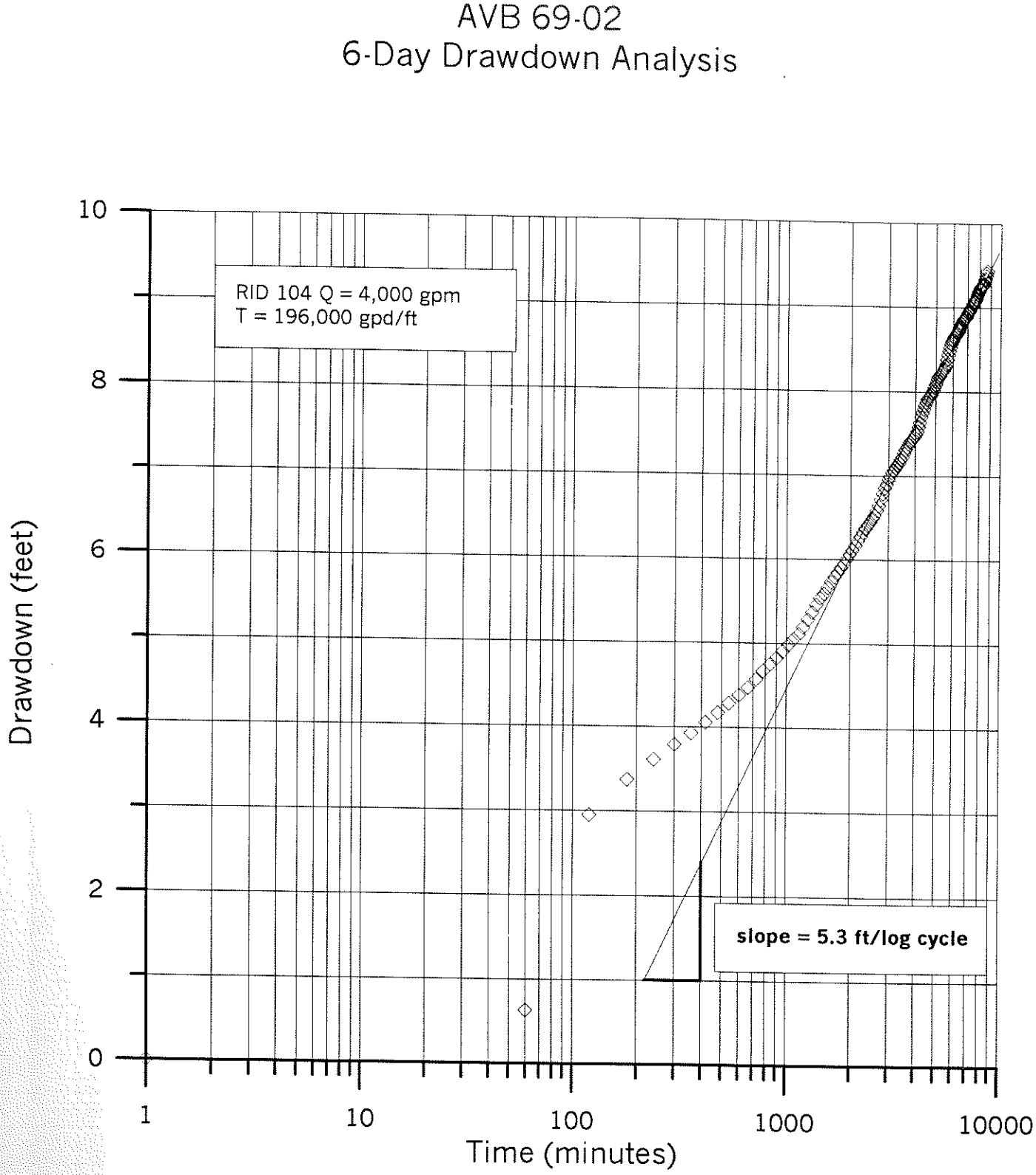
AVB 69-02
6-Day Drawdown Analysis
RID 104 Q = 4,000 gpm
T = 196,000 gpd/ft
slope = 5.3 ft/log cycle
Drawdown (feet)
Time (minutes)
0
2
4
6
8
10
1
10
100
1000
10000

Figure R-2

AVB 69-01
6-Month Drawdown Analysis

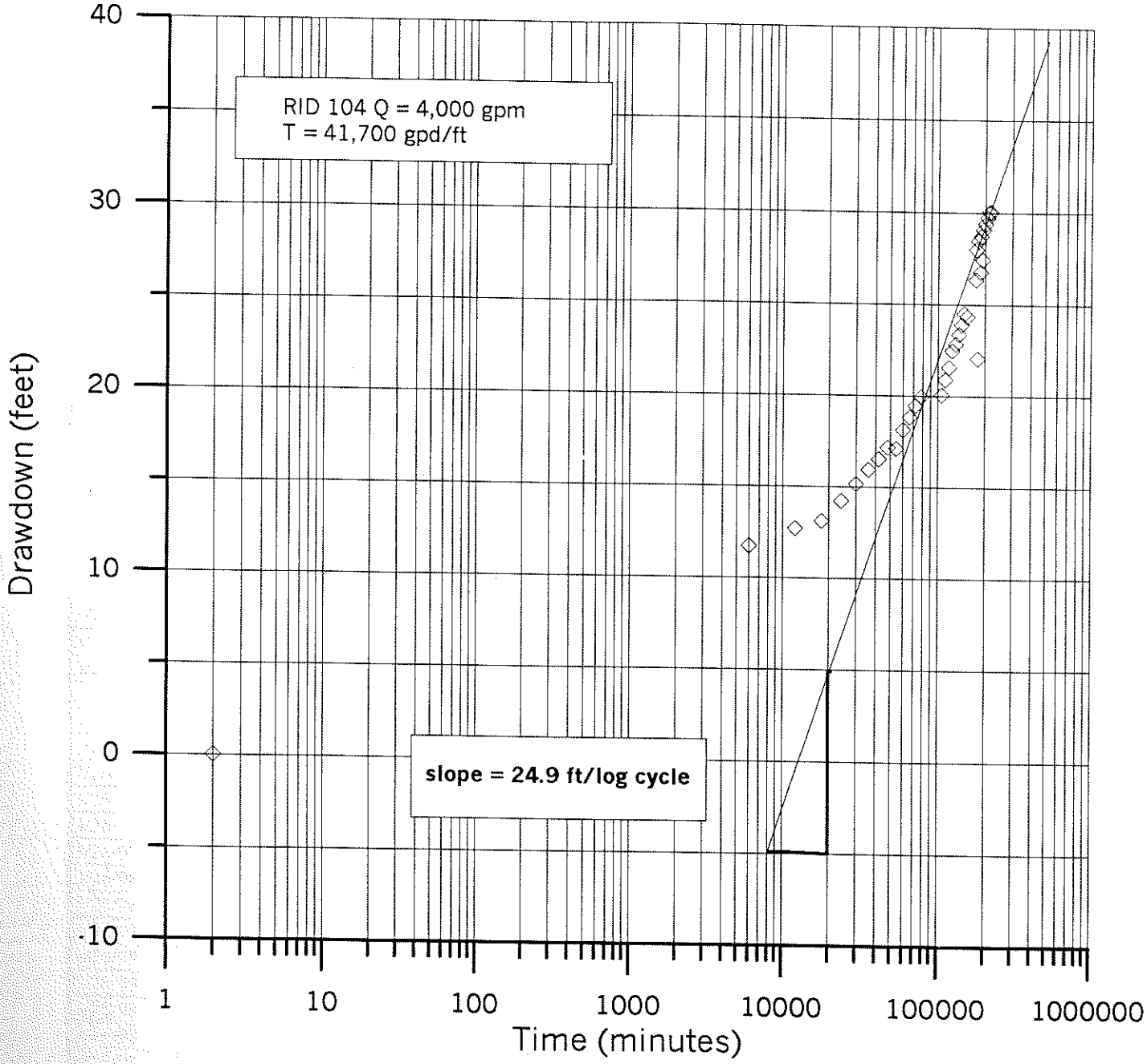

Figure R-3

AVB 69-02
6-Month Drawdown Analysis

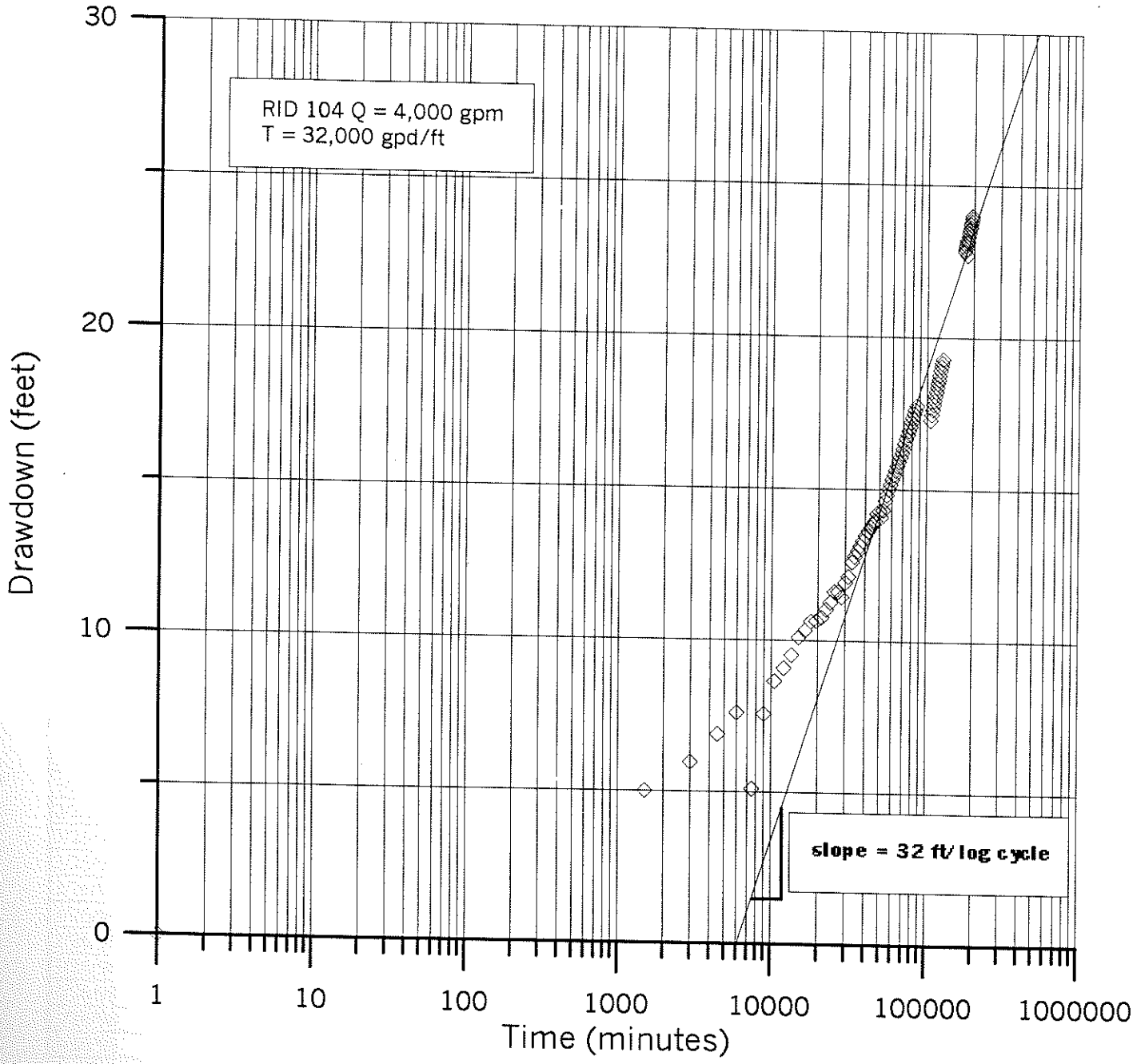

Figure R-4

FLUOR DANIEL GTI

Drilling Log AVB69-01

Monitoring Well MAU

Project Central Phx Groundwater Plume Area Owner ADEQ
Location 19th Avenue and Pima St., Phoenix, Arizona Proj. No. 023300586
Surface Elev. _____ Total Hole Depth 305 ft. Diameter 9 3/4 in.
Top of Casing _____ Water Level Initial 93 ft. Static _____
Screen: Dia 4 in. Length 50 ft. Type/Size 0.020 in.
Casing: Dia 4 in. Length 253/2 ft. Type Low Carbon Steel
Fill Material Colorado Sand 10/20 Rig/Core AP-1000
Drill Co. Layne Christensen Method AP-1000 Dual-wall percussion drill
Driller B. Morris Log By T. Busby Date 5/12-17/97 Permit # 55-562052
Checked By [signature] License No. AZ 21616

See Site Map For Boring Location

COMMENTS:

All USCS soil type boundaries are gradational. All percentages are approximate.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2							
0							0 – 12 Feet: Clayey Silty Sand Brown, dry to damp, very poorly sorted, soft. Sand is fine to coarse grained, subrounded to subangular. Trace gravel. Sand 60%, silt 30%, clay 10%.
2							
4		0	grab				
6						SM	
8							
10		0	grab				
12							12 – 22 Feet: Sand Brown, damp, very poorly sorted, soft. Sand is fine to coarse grained, subrounded. Sand 90%, silt 10%.
14							
16		0	grab			SW	
18							
20		0	grab				
22							22 – 27 Feet: Gravelly Silty Sand Brown, dry, poorly to very poorly sorted. Sand is fine to coarse grained, subrounded. Gravel is fine to coarse, subrounded. Sand 60%, silt 20%, gravel 20%.
24						SM	

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **MAU**

Project *Central Phx Groundwater Plume Area* Owner *ADEQ*
Location *19th Avenue and Pima St., Phoenix, Arizona* Proj. No. *023300586*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
24							Gravelly Silty Sand (continued)
		0	grab				
26							
28							27 – 37 Feet: Silty Sand Dark brown, dry to damp, very poorly sorted. Sand is fine to coarse grained, subrounded. Sand 70%, silt 30%.
30		0	grab			SM	
32							32 – 37 Feet: Some gravel present.
34							
		0	grab				
36							
38							37 – 42 Feet: Sandy Gravel Brown, dry, very poorly sorted, semi-hard. Gravel is fine to coarse, subrounded to subangular. Sand is fine to coarse grained, subrounded to subangular. Gravel 60%, sand 30%, silt 10%.
40		0	grab			GW	
42							42 – 47 Feet: Sand Dark brown, damp, poorly sorted, semi-hard. Sand is fine to coarse grained, subrounded to subangular. Gravel is fine to coarse, subrounded. Sand 80%, clay 10%, gravel 10%.
44						SW	
		0	grab				
46							
48							47 – 87 Feet: Gravelly Silty Sand Dark brown, damp, very poorly sorted. Sand is fine to coarse grained, subrounded. Gravel is fine to coarse, rounded to subrounded. Sand 70%, silt 20%, gravel 10%.
50		0	grab				
52						SM	
54							
		0	grab				
56							

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **MAU**

Project *Central Phx Groundwater Plume Area* Owner *ADEQ*
Location *19th Avenue and Pima St., Phoenix, Arizona* Proj. No. *023300586*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / Blow Count / % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
56						Gravelly Silty Sand (continued)
58						
60		0	grab			
62						
64		0	grab			Sand is fine to medium grained.
66						
68						
70		0	grab			
72					SM	
74		0	grab			
76						77 – 87 Feet: Cuttings are moist.
78						
80		0	grab			
82						
84		0	grab			Sand is fine to medium grained. Color changes to light brown.
86						
88					SP	87 – 92 Feet: Sand

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **MAU**

Project *Central Phx Groundwater Plume Area* Owner *ADEQ*
Location *19th Avenue and Pima St., Phoenix, Arizona* Proj. No. *023300586*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
88							Sand (continued) Brown, moist, very well sorted. Sand is medium grained. Sand 100%.
90		0	grab			SP	
92							92 – 103 Feet: Silty Clay Brown, moist to wet, moderate to poorly sorted. Sand is fine grained. Clay 70%, silt 25%, sand 5%.
94							Initial water level.
		0	grab				Very moist to wet.
96							
98							
100		0	grab			CH	Fine to coarse gravel.
102							
104							103 – 107 Feet: Gravelly Sandy Clay Brown, saturated, very poorly sorted. Sand is fine to coarse grained, subrounded to subangular. Gravel is fine, subrounded to subangular. Clay 70%, sand 20%, gravel 10%.
		0	grab				
106							
108							107 – 127 Feet: Gravelly Silty Sand Brown, saturated, very poorly sorted. Sand is fine to coarse grained, subrounded to subangular. Gravel is fine to coarse, rounded to subrounded. Sand 50%, silt 30%, gravel 20%.
110		0	grab				
112							
114						SM	
		0	grab				
116							
118							
120							

FLUOR DANIEL GTI

Drilling Log

Monitoring Well **MAU**

Project *Central Phx Groundwater Plume Area* Owner *ADEQ*
Location *19th Avenue and Pima St., Phoenix, Arizona* Proj. No. *023300586*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / Blow Count / % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
120		0	grab			Gravelly Silty Sand (continued)
122						
124					SM	
		0	grab			
126						
128						127 – 157 Feet: Gravelly Sand Sand is fine to coarse grained, subrounded to subangular. Gravel is fine to coarse, well rounded to subrounded. Sand 80%, gravel 15%, silt 5%.
130		0	grab			
132						
134						
		0	grab			
136						
138						
140		0	grab		SW	
142						
144						
			grab			
146						
148						
150		0	grab			
152						

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **MAU**

Project *Central Phx Groundwater Plume Area* Owner *ADEQ*
Location *19th Avenue and Pima St., Phoenix, Arizona* Proj. No. *023300586*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
152							Gravelly Sand (continued)
154		0	grab			SW	
156							
158							157 – 163 Feet: Silty Gravelly Clay Brown, saturated, poorly sorted. Gravel is fine to coarse, rounded to subrounded. Clay 60%, gravel 25%, silt 15%.
160		0	grab			CH	
162							
164							163 – 178 Feet: Gravelly Sand Brown, saturated, very poorly sorted. Sand is fine to coarse grained, subrounded to subangular. Gravel is fine to coarse, rounded to subrounded. Sand 80%, gravel 20%.
166		0	grab				
168							
170		0	grab			SW	
172							
174							
176		0	grab				
178							178 – 188 Feet: Silty Clay Brown, damp to wet, moderate to poorly sorted. Trace of gravel. Clay 60%, silt 40%.
180		0	grab			CH	
182							
184							

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **MAU**

Project *Central Phx Groundwater Plume Area* Owner *ADEQ*
Location *19th Avenue and Pima St., Phoenix, Arizona* Proj. No. *023300586*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
184							
		0	grab			CH	No gravel.
186							
188							188 – 202 Feet: Sandy Gravel Brown, saturated, very poorly sorted. Gravel is fine to coarse, well rounded to subangular. Sand is fine to coarse grained, subrounded to subangular. Gravel 50%, sand 40%, silt 10%.
190		0	grab				
192							
194							
		0	grab			GW	
196							
198							
200		0	grab				
202							202 – 218 Feet: Silty Sand Brown, saturated, very poorly sorted. Sand is fine to coarse grained, subrounded to subangular. Sand 80%, silt 20%.
204							
		0	grab				Some gravel at 205 feet.
206							
208							
						SM	
210		0	grab				No gravel.
212							
214							
		0	grab				No gravel.
216							

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **MAU**

Project *Central Phx Groundwater Plume Area* Owner *ADEQ*
Location *19th Avenue and Pima St., Phoenix, Arizona* Proj. No. *023300586*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
216							Silty Sand (continued)
						SM	Middle Aquifer Unit (MAU) encountered at 218 feet.
218							218 – 252 Feet: Silty Clay Brown, moist, hard to very hard. Sand is fine grained. Clay 75%, silt 20%, sand 5%.
220		0	grab				
222							
224							
		0	grab				More clay content.
226							
228							
230		0	grab				
232							
						CH	
234							
		0	grab				
236							
238							
240		0	grab				
242							
244							
		0	grab				
246							
248							

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **MAU**

Project *Central Phx Groundwater Plume Area* Owner *ADEQ*
Location *19th Avenue and Pima St., Phoenix, Arizona* Proj. No. *023300586*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
248						
250		0	grab		CH	Producing a lot of water.
252						252 – 277 Feet: Gravelly Coarse Sand Brown, saturated, poorly sorted. Sand is fine to coarse grained. Gravel is fine, subrounded. Sand 80%, silt 10%, gravel 10%.
254		0	grab			Producing lots of water.
256						
258						
260		0	grab			
262					SW	
264						
266		0	grab			
268						
270		0	grab			
272						272 – 277 Feet: Sandy Clay Brown, saturated, well to very well sorted. Sand is fine grained. Clay 60%, sand 35%, gravel 5%.
274						
276					CH	
278						277 – 293 Feet: Silty Clay Brown, damp to moist, well sorted. Clay 80%, silt 20%.
280		0	grab			Dried out between 280–285 feet.

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **MAU**

Project *Central Phx Groundwater Plume Area* Owner *ADEQ*
Location *19th Avenue and Pima St., Phoenix, Arizona* Proj. No. *023300586*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / Blow Count / % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
280		0	grab			Silty Clay (continued)
282						
284						
		0	grab			Wet.
286					CH	
288						
290		0	grab			Indurated.
292						
294						293 – 303 Feet: Sand Brown, saturated, very poorly sorted. Sand is fine to coarse grained. Gravel is fine, subrounded. Sand 80%, silt 10%, gravel 10%.
		0	grab			Increase in water.
296						
298					SW	
300		0	grab			
302						
304					CH	303 – 305 Feet: Silty Clay Brown, damp to moist, well sorted. Clay 80%, silt 20%. Begins to dry out and loses gravel.
306						305 Feet: Total Depth of Monitoring Well MAU
308						
310						
312						

Drilling Log

AVB69-02

FLUOR DANIEL GTI

Monitoring Well **UAU**

Project *Central Phx Plume Area* Owner *ADEQ*
Location *19th Avenue and Pima St., Phoenix, Arizona* Proj. No. *023300586*
Surface Elev. _____ Total Hole Depth *127 ft.* Diameter *9 3/4 in.*
Top of Casing _____ Water Level Initial *93 ft.* Static _____
Screen: Dia *4 in.* Length *50 ft.* Type/Size *0.020 in.*
Casing: Dia *4 in.* Length *76 ft.* Type *Low Carbon Steel*
Fill Material *Colorado Sand 10/20* Rig/Core *AP-1000*
Drill Co. *Layne Christensen* Method *AP-1000 Dual-wall percussion hammer drill*
Driller *Perry* Log By *T. Busby* Date *5/14-15/97* Permit # *55-562053*
Checked By *Terry L. Busby* License No. *AZ 21616*

See Site Map For Boring Location

COMMENTS:

All USCS soil type boundaries are gradational. All percentages are approximate.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2							
0							0 - 12 Feet: Silty Clay Brown, damp, moderately sorted, soft to semi-hard. Sand is fine grained. Clay 65%, silt 30%, sand 5%.
2							
4							
6			grab				
8						CH	
10			grab				
12							12 - 17 Feet: Gravelly Sandy Clay Brown, damp, very poorly sorted, semi-hard. Sand is fine to coarse grained, subrounded to subangular. Gravel is fine to coarse, rounded to subrounded. Clay 60%, sand 30%, gravel 10%.
14							
16			grab				
18							17 - 27 Feet: Gravelly Sand Brown, damp, very poorly sorted, semi-hard. Sand is fine to medium grained, subrounded to subangular. Gravel is fine to coarse, rounded to subrounded. Sand 85%, gravel 15%.
20		0	grab			SW	
22							
24							

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **UAU**

Project *Central Phx Plume Area* Owner *ADEQ*
Location *19th Avenue and Pima St., Phoenix, Arizona* Proj. No. *023300586*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / Blow Count / % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
24						Gravelly Sand (continued)
		0	grab		SW	
26						
28						27 – 37 Feet: Gravelly Silty Sand Brown, damp, very poorly sorted, hard. Sand is fine to medium grained, subrounded to subangular. Gravel is fine to coarse, rounded to subrounded. Sand 65%, silt 20%, gravel 15%.
30		3	grab			
32					SM	
34						
		2	grab			
36						
38						37 – 47 Feet: Gravelly Sand Brown, damp, very poorly sorted. Sand is fine to coarse grained, subrounded to subangular. Gravel is fine to coarse, rounded to subrounded. Sand 50%, gravel 40%, silt 10%.
40		0	grab			
42					SW	
44						
		0	grab			
46						
48						47 – 57 Feet: Gravelly Clayey Sand Brown, damp, very poorly sorted, semi-hard. Sand is fine to coarse grained, subrounded to subangular. Gravel is fine to coarse, rounded to subrounded. Sand 70%, clay 20%, gravel 10%.
50		0	grab			
52					SC	
54						
			grab			
56						

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **UAU**

Project *Central Phx Plume Area* Owner *ADEQ*

Location *19th Avenue and Pima St., Phoenix, Arizona* Proj. No. *023300586*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / Blow Count / % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
56					SC	
58						57 – 72 Feet: Gravelly Silty Sand Brown, damp, very poorly sorted. Sand is fine to medium grained, subrounded to subangular. Gravel is fine to coarse, rounded to subrounded. Sand 65%, silt 25%, gravel 10%.
60			grab			
62						
64					SM	
			grab			
66						
68						
70			grab			
72						72 – 77 Feet: Silty Gravelly Sand Brown, moist, very poorly sorted, hard. Sand is fine to coarse grained, subrounded to subangular. Gravel is fine to coarse, rounded to subrounded. Sand 50%, gravel 40%, silt 10%.
74						
			grab			
76						77 – 82 Feet: Gravelly Sand Brown, damp to moist, very poorly sorted, semi-hard to hard. Sand is fine to coarse grained, rounded to subrounded. Gravel is fine to coarse, rounded to subrounded. Sand 80%, gravel 15%, silt 5%.
78						
80			grab		SW	
82						82 – 93 Feet: Clayey Gravelly Sand Brown, damp to moist, poorly sorted, semi-hard. Sand is fine to coarse grained, subrounded to subangular. Gravel is fine to coarse, rounded to subrounded. Sand 70%, gravel 20%, clay 10%.
84						
			grab			
86						
88						

FLUOR DANIEL GTI

Drilling Log

Monitoring Well **UAU**

Project *Central Phx Plume Area* Owner *ADEQ*
Location *19th Avenue and Pima St., Phoenix, Arizona* Proj. No. *023300586*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
88							Clayey Gravelly Sand (continued)
90			grab			SW	Moist.
92							Initial water level.
94							93 – 97 Feet: Gravelly Silty Sand Brown, saturated, very poorly sorted. Sand is medium to coarse grained, subrounded to subangular. Sand 50%, gravel 25%, silt 25%.
96			grab			SM	
98							97 – 103 Feet: Silty Clay Brown, moist, poorly sorted, semi-hard to hard. Sand is fine to medium grained, subrounded to subangular. Clay 60%, silt 30%, sand 10%.
100		0	grab			CH	
102							
104							103 – 127 Feet: Gravelly Sand Brown, wet, very poorly sorted. Sand is fine to medium grained, subrounded to subangular. Gravel is fine to coarse, rounded to subrounded. Sand 50%, gravel 40%, silt 10%.
106		0	grab				
108							
110			grab				
112						SW	
114							
116			grab				
118							117 – 127 Feet: Some clay present
120		0	grab				

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **UAU**

Project *Central Phx Plume Area* Owner *ADEQ*
Location *19th Avenue and Pima St., Phoenix, Arizona* Proj. No. *023300586*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / Blow Count / % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
120		0	grab			Gravelly Sand (continued)
122						
124					SW	
126						126 Feet: Total Depth of Monitoring Well UAU
128						127 Feet: Total Depth of Hole
130						
132						
134						
136						
138						
140						
142						
144						
146						
148						
150						
152						

ROOSEVELT IRRIGATION DISTRICT

WELL DATA

REDRILL

Report on Well 12-1/2-E-3-3/4-N (#104) Located, E of Ave. 19

Redrill new location

4563

(A-1-3) 18 bbc

Work started May 20, 1957
Work completed June 14, 1957
Total depth 410'
Depth of casing 390'
24" - 8 Gauge casing used and left in well

Log of Well

From (A-1-2) 13 ada

0'	- 6'	- Top soil
6'	- 20'	- Clay, caliche and boulders
20'	- 150'	- Boulders
150'	- 165'	- Hard clay and boulders
165'	- 177'	- Boulders
177'	- 184'	- Sandy clay
184'	- 197'	- Clay and boulders
197'	- 278'	- Sticky clay
278'	- 325'	- Sticky clay and stks of sand
325'	- 410'	- Sticky clay

Perforations

100' to 370' - 11 holes per 12 inches - Mills knife used
Perforations - Diameter - 1/2"; Length - 4 1/2"
Depth at which water was first found - 93'
Standing level before perforating - 93'
Standing level after perforating - 93'

Well is straight, top to bottom

Remarks

Drilled by Roscoe Moss Company
Driller - J. C. Evans
Type and Rig No. used - Cable Tool #46

Drilling, casing and perforating 24" No. 8 gauge well to a depth of 400 feet for	$11,732.00
Drilling, casing and perforating 24" No. 8 gauge well 400 to 410 feet, or 10' @ $27.80 per ft.	278.00
	$12,010.00
Less 24" No. 8 gauge casing not installed 390 to 410 feet, or 20" @ $15.80 per ft.	316.00
	$11,694.00