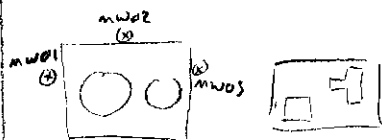


Well Location Sketch:



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Arvada, Colorado 80003

## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number:

MW02

Project:

Fritzler UPR 31-31

Date:

5-9-07

Project Number:

KMG06247

Logged By:

RY/AD

Drilled By:

RY/AD

Elevation:

Detector:

Drilling Method:

Direct push

Sampling Method:

Continuous

Gravel Pack:

10-20 silica sand

Seal:

Benbrite chips

Grout:

Casing Type:

PVC

Diameter:

1"

Length:

26"

Hole Diameter:

2.5"

Depth to Liquid:

Screen Type:

PVC

Slot:

0.010

Diameter:

1"

Length:

10"

Total Depth:

26"

Depth to Water:

21'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
					0					
	moist	-	none	-	2			SP	Brown, poorly graded sand, moist, no PH staining or odor.	
	moist	-	none	-	4					
	moist	-	none	-	6				Brown, poorly graded sand with clay intervals. No PH staining or odor.	
	moist	-	none	-	8					
	moist	-	none	-	10			sandy clay	Brown, sandy clay, moist. No PH staining or odor.	
	moist	-	none	-	12					
	moist	-	none	-	14			SP	Brown, poorly graded sand, moist. No PH staining or odor.	
	moist	-	PH stained	-	16				Grey, well graded sand, moist, PH staining and odor.	
	moist	-	PH stained	-	18				Grey, well graded sand, moist, PH staining and odor.	
	moist	-	PH stained	-	20			SW	Grey, well graded sand, moist, PH staining and odor.	
	wet	-	PH stained	-	22				Grey, well graded sand, wet, strong PH staining and odor.	
	wet	-	PH stained	-	24				Groundwater at 21'	
	wet	-	PH stained	-	26				Grey, well graded sand, wet, PH staining and odor.	
					28					
					30					
					32					
					34				MW01 and MW03 - Similar log	
					36				Screen set at 16'-26' in all 3 wells	
					38					
					40					

Well Location Sketch:



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## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number:

AS01

Project:

Fritzer 31-31

Date:

5-4-10

Project Number:

KMA06247

Logged By:

MD

Drilled By:

SITE SERVICES

Elevation:

Detector:

mhlRae 2000

Drilling Method:

Direct push

Sampling Method:

Continuous

Gravel Pack:

10-20 Silica sand

21.5-24' bgs

Seal:

Bentonite chips

19.5-21.5' bgs

Grout:

1-19.5' bgs

Portland Cement

Casing Type:

PVC

Diameter:

1"

Length:

6-22.5' bgs

Hole Diameter:

2.5"

Depth to Liquid:

Screen Type:

PVC

Slot:

0.040 0.020

Diameter:

1"

Length:

22.5-24' bgs

Total Depth:

24

Depth to Water:

16

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
					0					
					2				0-5' No Recovery	
		1.2			4		0'			
Low	moist				6				5-7 Sand, f-m, moist, dk brown, no odor	
		27.2			8		4'		7-14 Sand, m-c, w/ gravel, moist, lt brown, no odor	
					10				14-16 AA, very moist	
					12		4		16-25 Sand, m-c, w/ gravel, saturated tan & orange, no odor	
	very moist				14				22.5-23.5 AA, black staining, odd	
Med	sat	67.2			16		5		23.5-24 AA, no staining, no odor	
					18					
					20					
		8.0			22		4		TD = 24	
					24				Screen = 22.5-24'	
					26					
					28					
					30					
					32					
					34					
					36					
					38					
					40					

Well Location Sketch:



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## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number:

AS02

Project:

Fitzler 31-31

Date:

5-4-00

Project Number:

KMG 09947

Logged By:

MO

Drilled By:

Site Services

Drilling Method:

Direct push

Sampling Method:

Continuous - NA

Elevation:

Detector:

NA

Gravel Pack:

10-20 Silica sand

21.5-24' bgs.

Seal:

Bentonite chips

19.5'-21.5' bgs.

Grout:

1-19.5' bgs.

Portland Cement  
water/water

Casing Type:

PVC

Diameter:

1"

Length:

0-22.5' bgs.

Hole Diameter:

2.5"

Depth to Liquid:

Screen Type:

PVC

Slot:

0.010 0.020

Diameter:

1"

Length:

22.5-24' bgs.

Total Depth:

24

Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
					0				No log, well was bored w/ expendable point.	
					2					
					4					
					6					
					8					
					10					
					12					
					14					
					16					
					18					
					20					
					22					
					24					
					26					
					28					
					30					
					32					
					34					
					36					
					38					
					40					

Well Location Sketch:

see figure



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## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number:

AS03

Project:

Fritzier 31-31

Date:

5-4-10

Project Number:

KMG 06247

Logged By:

MO

Drilled By:

Site Services

Elevation:

Detector:

mini Rasc 2000

Drilling Method:

Direct push

Sampling Method:

Continuous

Gravel Pack:

10-20 Silica sand

21.5'-24' bgs

Seal:

Bentonite chips

19.5'-21.5' bgs

Grout: Portland cement

w/ crumbles

8-19.5' bgs

Casing Type:

PVC

Diameter:

1"

Length:

0-22.5' bgs

Hole Diameter:

2.5"

Depth to Liquid:

Screen Type:

PVC

Slot:

0.010-0.020

Diameter:

1"

Length:

22.5'-24' bgs

Total Depth:

24'

Depth to Water:

16

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
Low	moist	22.2			0				0-4 silty clay w/ sand, moist, dark brown, no odor	
					2		4			
					4				4-6 Sand, fine, moist, dark brown, no odor	
					6					
		116.1			8		3'		6-16 Sand, fine, some gravel, tan, moist, no odor	
					10					
		1.8			12		3.5'		16-22 AA, Saturated	
					14				22-24 AA, staining, odor	
med	sat.	4.2			16				TD = 24'	
					18		4'		Screen = 22.5'-24' bgs	
					20					
		5.3			22		4			
					24					
					26					
					28					
					30					
					32					
					34					
					36					
					38					
					40					

Well Location Sketch:

See Figure

4th L. E. 2501



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## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number:

A504

Project:

Fritzer 31-31

Date:

5-4-10

Project Number:

LME 06247

Logged By:

M.O

Drilled By:

Site Services

Elevation:

Detector:

Mini Rac 2000

Drilling Method:

Direct push

Sampling Method:

Continuous

Gravel Pack:

10-20 Silica sand

21.5-24' bgs

Seal:

Bentonite chips

19.5-21.5' bgs

Grout:

1' bgs - 19.5' bgs

Port 1 and 2 w/ c/s

Casing Type:

PVC

Diameter:

1"

Length:

0-22.5'

Hole Diameter:

2.5"

Depth to Liquid:

16'

Screen Type:

PVC

Slot:

0.010 0.020

Diameter:

1"

Length:

22.5-24'

Total Depth:

24'

Depth to Water:

16'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
Low	moist	0.0			0				0'-2.5' Sand w/ silt & gravel, moist, dk brown, no odor	
					2		3'			
					4				2.5-8' Clayey sand, moist, dk brown, no odor	
					6					
		0.0			8		4.5		8-9' Sand m-c, w/ gravel, moist, no odor	
		1.0			10				9-13' AA, black staining	
					12					
MED	b. n. sign				14		4		13-16' AA, no staining, tan, very moist	
					16				16-22' Sand, m-c, w/ gravel, lt brown, sat, no odor	
SAT		0.0			18		4			
					20					
					22		3		22'-24' AA, black streaked, odor	
		1.33			24					
					26				TD = 24'	
					28				Screen = 22.5-24'	
					30					
					32					
					34					
					36					
					38					
					40					

Well Location Sketch:



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## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number:

A505

Project:

Fritaler WPRR 3-77

Date:

5-4-10

Project Number:

KMG06247

Logged By:

AAD

Drilled By:

Site services

Elevation:

Detector:

NA

Drilling Method:

Direct push

Sampling Method:

Continuous

Gravel Pack:

10-20 Silica sand

21.5-24' bgs

Seal:

Bentonite chips

17.5'-21.5' bgs

Grout: Portland cement

w/ coarse

Casing Type:

PVC

Diameter:

1"

Length:

0-22.5' bgs

Hole Diameter:

2.5"

Depth to Liquid:

-

Screen Type:

PVC

Slot:

0.020 0.020

Diameter:

1"

Length:

22.5-24' bgs

Total Depth:

24'

Depth to Water:

-

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
					0				Well was installed w/ an expendable point  TD=24'	
					2					
					4					
					6					
					8					
					10					
					12					
					14					
					16					
					18					
					20					
					22					
					24					
					26					
					28					
					30					
					32					
					34					
					36					
					38					
					40					

Well Location Sketch:

See Figure



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## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number:

AS 06

Project:

Fitzler UPRR 31-31

Date:

5-5-10

Project Number:

KMG 06242

Logged By:

MO

Drilled By:

Site Services

Elevation:

Detector:

Drilling Method:

Direct push

Sampling Method:

Continuous NA

Gravel Pack:

10-20 Silica sand

21.5'-24' bgs

Seal:

Bentonite chips

19.5'-21.5' bgs

Grout:

3-79.5' bgs

Casing Type:

PVC

Diameter:

1"

Length:

0-22.5' bgs

Hole Diameter:

2.5"

Depth to Liquid:

Screen Type:

PVC

Slot:

0.010-0.020

Diameter:

1"

Length:

22.5'-24' bgs

Total Depth:

24

Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
					0				No boring log, well was installed with an expendable point	
					2					
					4					
					6					
					8					
					10					
					12					
					14					
					16					
					18					
					20					
					22					
					24					
					26					
					28					
					30					
					32					
					34					
					36					
					38					
					40					

Well Location Sketch:

See Figure



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## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: <b>AS07</b>	Project: <b>Fitzler 31-31</b>
Date: <b>5-4-10</b>	Project Number: <b>KMG09247</b>
Logged By: <b>MO</b>	Drilled By: <b>Site Services</b>
Elevation:	Drilling Method: <b>Direct push</b>
Detector: <b>MhiRac 2000</b>	Sampling Method: <b>Continuous</b>
Gravel Pack: <b>10-20 Silica sand</b>	Seal: <b>Bentonite chips</b>
<b>26.5-24' bgs</b>	<b>19.5-21.5' bgs</b>
Casing Type: <b>PVC</b>	Diameter: <b>1"</b>
Screen Type: <b>PVC</b>	Length: <b>0-32.5' bgs</b>
Slot: <b>0.010 0.020</b>	Diameter: <b>1"</b>
	Length: <b>22.5-24' bgs</b>
	Hole Diameter: <b>2.5"</b>
	Grout: <b>Portland cement w/ crumbles 3-19.5'</b>
	Total Depth: <b>24'</b>
	Depth to Liquid: <b>15.5'</b>
	Depth to Water: <b>15.5'</b>

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
Low	Moist	8.8			0				0-8 sand w/ silt & clay, moist, dk brown, no odor	
					2		4			
					4				3-5 sand, f-m, moist, lt brown, no odor	
					6					
		4.8			8		4		5-15.5 sand, m-e, w/ gravel, moist, lt brown, no odor	
					10					
		14.3			12				15.5-17 AA, saturated	
					14		4		17-22' AA, black staining, odor	
MED					16				22-24' AA, with clay	
	SAT				18		35"			
		53.6			20				TD = 24'	
					22		4		Screen = 22.5-24' bgs	
					24					
					26					
					28					
					30					
					32					
					34					
					36					
					38					
					40					



Well Location Sketch:

See Figure



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## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: AS-08	Project: Fritzler WRR 31-31
Date: 5-5-10	Project Number: KMG06247
Logged By: MO	Drilled By: Site Services
Elevation: —	Detector: MiniRac 2000
Gravel Pack: 10-20 Silica sand	Drilling Method: Direct push
Casing Type: PVC	Seal: Bentonite chips
Screen Type: PVC	Grout: Portland cement w/ crumbles
Slot: 0.010 0.020	Length: 0-22.5' bgs
Diameter: 1"	Hole Diameter: 2.5"
Length: 22.5-24' bgs	Total Depth: 24'
Depth to Liquid: —	Depth to Water: 16'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
LOW	moist	6.5			0				0-2 Siltty clay w/ sand, moist, dk brown, no odor	
					2		3		2-3 Blazey sand, moist, dk brown, no odor	
					4					
					6				3-6 Sand, f-fine, tan, moist, no odor	
		0.6			8		4		6-16 Sand, A-C, w/ gravels, moist, orange-brown, no odor	
					10					
		1.9			12		4		16-17 AA, saturated	
					14				17-22 AA, black & gray staining, odor	
MED					16				22-28 AA, some clay	
	SAT.	14.4			18		4		23-24 M, no clay	
		20.5			20					
		24.7			22		4			
					24					
					26					
					28					
					30					
					32					
					34					
					36					
					38					
					40					

TD = 24

Screen = 22.5-24' bgs

Well Location Sketch:

See Figure



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## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number:

AS-09

Project:

Fritzel UPRR 31-31

Date:

5-5-10

Project Number:

KMG06247

Logged By:

MD

Drilled By:

Site Services

Elevation:

Detector:

Drilling Method:

Direct push

Sampling Method:

Continuous NA

Gravel Pack:

10-20 Silica sand

21.5-24' bgs

Seal:

Bentonite chips

Grout:

3-19.5' bgs

Casing Type:

PVC

Diameter:

1"

Length:

0-22.5' bgs

Hole Diameter:

2.5"

Depth to Liquid:

Screen Type:

PVC

Slot:

0.010 0.020

Diameter:

1"

Length:

22.5'-24' bgs

Total Depth:

24'

Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
Low					0				No boring log, well was installed with an expendable point	
					2					
					4					
					6					
					8					
					10					
					12					
					14					
					16					
					18					
					20					
					22					
					24					
					26					
					28					
					30					
					32					
					34					
					36					
					38					
					40					

Well Location Sketch:



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## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number:

AS-10

Project:

Fritzel UPRR 31-31

Date:

5-5-10

Project Number:

KMG06247

Logged By:

NO

Drilled By:

Site Services

Elevation:

Detector:

Drilling Method:

Direct push

Sampling Method:

Continuous NA

Gravel Pack:

10-20 Silica sand

Seal:

Bentonite chips

Grout:

3-19.5' bgs

Casing Type:

PVC

Diameter:

1"

Length:

6-22.5' bgs

Hole Diameter:

2.5"

Depth to Liquid:

Screen Type:

PVC

Slot:

0.010 0.020

Diameter:

1"

Length:

22.5-24' bgs

Total Depth:

24'

Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
					0				No boring log, well was installed with an expendable point	
					2					
					4					
					6					
					8					
					10					
					12					
					14					
					16					
					18					
					20					
					22					
					24					
					26					
					28					
					30					
					32					
					34					
					36					
					38					
					40					



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**Arvada, Colorado 80003**

See Figure

45-11

Fritzer 4/18/51

5-5-18

Project Number:  
KAC00247

40

5.2 Service

**Detector:**

wh: Rec 2000

### Direct push

**Continuous**

**10-20 Silica sand**

21.5'-24' by 8

## Bentonite chips

19.5-21.5' bgs

Grout: Portland cement w/ crumpled  
3-19.5' bgs

**PVC**

1<sup>st</sup>

0-22.5 lbs

2.5"

Depth to Liquid:

**PVC**

0.022

1<sup>st</sup>

22.5-24' loc

24'

**Depth to Water:**

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
					0				No boring logs because well was installed with an expendable point	
LOW					2					
					4					
					6					
					8					
					10					
MED					12					
					14					
					16					
					18					
					20					
					22					
					24					
					26					
					28					
					30					
					32					
					34					
					36					
					38					
					40					

Well Location Sketch:

See figure



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## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: AS-12	Project: Fitzler UPRR 31-81
Date: 5-5-10	Project Number: KMG 00247
Logged By: MD	Drilled By: Site Services
Elevation: _____	Drilling Method: Direct push
Detector: miniRae 2008	Sampling Method: Continuous
Gravel Pack: 10-20 Silica sand 21.5'-24' bgs	Seal: Bentonite chips 19.5'-21.5' bgs
Casing Type: PVC	Grout: Portland cement w/ coarse 3-10 1/2" bgs
Screen Type: PVC	Diameter: 1"
Slot: 0.010	Length: 0-22.5' bgs
	Hole Diameter: 2.5"
	Depth to Liquid:
	Total Depth: 24'
	Depth to Water: 16'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
LOW	moist	3.6			0				0-2.5' silty clay w/ sand, moist, dk brown, no odor	
					2					
					4		4'		2.5'-5.5' sand, f-m, moist, lt brown, no odor	
					6					
		3.1			8		4'		5.5'-16' sand, m-c, w/ gravel, tan, no odor	
					10					
		1.6			12		3'		16'-23' AA, saturated	
					14					
4.0					16				23'-24' AA, black stinky odor	
					18		4'			
	sat.	1.9			20					
					22		4'			
		7.0			24					
					26					
					28					
					30					
					32					
					34					
					36					
					38					
					40					

Well Location Sketch:



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## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number:

AS-13

Project:

Friteler UPRR 31-31

Date:

5-5-10

Project Number:

KM606247

Logged By:

MO

Drilled By:

Site Services

Elevation:

Detector:

min. RAC 2000

Drilling Method:

Direct push

Sampling Method:

Continuous - NA

Gravel Pack:

10-20 Silica sand

21.5-24' bgs

Seal:

Bentonite chips

19.5'-21.5' bgs

Grout: Portland cement w/ Greenbrier

3-19.5' bgs

Casing Type:

PVC

Diameter:

1"

Length:

0 - 22.5' bgs

Hole Diameter:

2.5"

Depth to Liquid:

—

Screen Type:

PVC

Slot:

0.010 0.020

Diameter:

1"

Length:

22.5-24' bgs

Total Depth:

24

Depth to Water:

16'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
Low					0				No boring log b/c well was installed w/ an expendable point	
					2					
					4					
					6					
					8					
					10					
					12					
					14					
					16					
					18					
					20					
					22					
					24					
					26					
					28					
					30					
					32					
					34					
					36					
					38					
					40					

Well Location Sketch:



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 Arvada, Colorado 80003

## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number:

AS-24

Project:

Fritterer (IPRR 31-3)

Date:

5-5-10

Project Number:

RM606247

Logged By:

M.O.

Drilled By:

Site Services

Elevation:

Detector:

MiniRac 2000

Drilling Method:

Direct push

Sampling Method:

Continuous

Seal:

Bentonite chips

Grout: Portland cement w/ crumb

Gravel Pack:

0-20 Silica sand

Diameter:

1"

Length:

0-22.5' bgs

Hole Diameter:

2.5"

Depth to Liquid:

~

Sealing Type:

VC

Slot:

0.010 - 0.020

Diameter:

1"

Length:

22.5-24' bgs

Total Depth:

24'

Depth to Water:

16'

Screen Type:

VC

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
LOW	moist	2.4			0				0-2.5 Silty-clay w/sand, moist, dk brown	
					2		4'		2.5-6 sand, fine, moist, lt brown, no odor	
		1.2			6		4'		6-16 sand, m-c, w/gravel, tan, no odor	
					8				16-23 AA, saturated	
MED		1.0			10		4'		23-24 AA, slight staining, odor	
					12					
					14					
	SAT	2.0			16		4'		TP = 24'	
					18				Screen = 22.5-24' bgs	
					20					
					22					
		125.3	1111		24		4'			
					26					
					28					
					30					
					32					
					34					
					36					
					38					
					40					

Well Location Sketch:

see figure



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## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number:

AS-15

Project:

Fritzel URR2 31-31

Date:

5-5-10

Project Number:

KM606247

Logged By:

ND

Drilled By:

Site Services

Elevation:

Detector:

miniRae 2000

Drilling Method:

Direct push

Sampling Method:

Continuous

Gravel Pack:

10-20 Silica sand

21.5-24' bgs

Seal:

Bentonite chips

19.5'-21.5' bgs

Grout: Portland Cement w/ drum blades

3-19.5' bgs

Casing Type:

PVC

Diameter:

Length:

22.5' bgs

Hole Diameter:

2.5"

Depth to Liquid:

Screen Type:

PVC

Slot:

0.010 0.020

Diameter:

Length:

22.5-24' bgs

Total Depth:

24'

Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
Low					0				NO boring log as well was installed with an expendable point	
					2					
					4					
					6					
					8					
					10					
					12					
					14					
					16					
					18					
					20					
					22					
					24					
					26					
					28					
					30					
					32					
					34					
					36					
					38					
					40					



Well Location Sketch:

See figure



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**BORING LOG/MONITORING WELL COMPLETION DIAGRAM**

Boring/Well Number: ASIS	Project: Fitzler URR 31-31
Date: 5-6-10	Project Number: KMG 00247
Logged By: MD	Drilled By: Site Services
Elevation: —	Drilling Method: Direct push
Detector: —	Sampling Method: Continuous NA
Gravel Pack: 10-20 Silica sand 24.5-24' bgs	Seal: Bentonite chips 19.5-21.5' bgs
Casing Type: PVC	Grout: 3-19.5' bgs
Screen Type: PVC	Diameter: 1"
Slot: 0.010	Length: 0-22.5' bgs
	Length: 22.5-24' bgs
	Hole Diameter: 2.5"
	Total Depth: 24'
	Depth to Liquid:
	Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
Low					0				No boring log because well was installed with an expendable point	
					2					
					4					
					6					
					8					
					10					
					12					
					14					
					16					
					18					
					20					
					22					
					24					
					26					
					28					
					30					
					32					
					34					
					36					
					38					
					40					

Well Location Sketch:



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## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number:

AS16

Project:

Fr. &amp; Le. LPAR 51-31

Date:

5-6-10

Project Number:

KMC06242

Logged By:

np

Drilled By:

Site Services

Elevation:

Detector:

miniRm 3000

Drilling Method:

Direct push

Sampling Method:

Continuous

Gravel Pack:

10-20 Silica sand

21.5-24' bgs

Seal:

Bentonite chips

19.5-21.5' bgs

Grout:

3-19.5' bgs

Casing Type:

PVC

Diameter:

1"

Length:

0-22.5' bgs

Hole Diameter:

2.5"

Depth to Liquid:

Screen Type:

PVC

Slot:

0.010 0.020

Diameter:

1"

Length:

22.5-24' bgs

Total Depth:

24'

Depth to Water:

16'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
100	Moist	2.7			0				0-2.5 silty clay w/ sand	
					2				2.5-5 Sand, F.M., moist, lt brown, no odor	
					4		4			
					6				5-16 Sand, a-c, w/ gravel, moist, lt brown, no odor	
		1.4			8		4			
					10				16-25 AA, saturated	
120		1.0			12		4			
					14					
					16					
		0.8			18		4			
	Sat.				20					
		2.7			22		4			
					24					
					26					
					28					
					30					
					32					
					34					
					36					
					38					
					40					

Well Location Sketch:



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**BORING LOG/MONITORING WELL COMPLETION DIAGRAM**

Boring/Well Number:

4517

Project:

Fitzler WPRR 31-31

Date:

5-6-10

Project Number:

KMG06247

Logged By:

MO

Drilled By:

Site Services

Elevation:

Detector:

Drilling Method:

Direct push

Sampling Method:

Continuous

Gravel Pack:

10-20 Silica sand

21.5'-24' bgs

Seal:

Bentonite chips

19.5'-21.5'

Grout:

3-19.5' bgs

Casing Type:

PVC

Diameter:

1"

Length:

0-22.5' bgs

Hole Diameter:

2.5"

Depth to Liquid:

Screen Type:

PVC

Slot:

0.010

Diameter:

1"

Length:

22.5'-24' bgs

Total Depth:

24'

Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
					0				No boring log because well was installed with an expendable point	
					2					
					4					
					6					
					8					
					10					
					12					
					14					
					16					
					18					
					20					
					22					
					24					
					26					
					28					
					30					
					32					
					34					
					36					
					38					
					40					

Well Location Sketch:

See figure



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## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number:

AS18

Project:

FARZEL WRR 31-31

Date:

5-6-10

Project Number:

K4606247

Logged By:

AD

Drilled By:

Site Services

Elevation:

Detector:

Drilling Method:

Direct push

Sampling Method:

Continuous

Gravel Pack:

10-20 Silica sand

21.5'-24' bss

Seal:

Bentonite chips

19-21.5'

Grout:

3-19.5' bss

Casing Type:

PVC

Diameter:

1"

Length:

0-22.5' bss

Hole Diameter:

2.5"

Depth to Liquid:

Screen Type:

PVC

Slot:

0.010 0.020

Diameter:

1"

Length:

22.5-24' bss

Total Depth:

24'

Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
					0				No boring log because well was installed w/ an expendable pointer	
					2					
					4					
					6					
					8					
					10					
					12					
					14					
					16					
					18					
					20					
					22					
					24					
					26					
					28					
					30					
					32					
					34					
					36					
					38					
					40					

Well Location Sketch:

See figure



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## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number:

AS-20

Project:

Fritter UPRR 31-31

Date:

5-6-10

Project Number:

KMG 00247

Logged By:

MO

Drilled By:

Site Services

Elevation:

Detector:

Drilling Method:

Direct push

Sampling Method:

Continuous

Gravel Pack:

10-20 Silica sand

21.5-24' bgs

Seal:

Bentonite chips

19.5-21.5'

Grout:

3-79.5' bgs

Casing Type:

PVC

Diameter:

1"

Length:

0-22.5' bgs

Hole Diameter:

2.5"

Depth to Liquid:

Screen Type:

PVC

Slot:

0.010-0.020

Diameter:

1"

Length:

22.5-24' bgs

Total Depth:

24'

Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
					0				No boring log b/c well was installed w/ an expendable point	
					2					
					4					
					6					
					8					
					10					
					12					
					14					
					16					
					18					
					20					
					22					
					24					
					26					
					28					
					30					
					32					
					34					
					36					
					38					
					40					

Well Location Sketch:

See Figure



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## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number:

A521

Project:

Fitzler APR 2003

Date:

5-6-10

Project Number:

14606243

Logged By:

NO

Drilled By:

Site Services

Elevation:

Detector:

mini-Rex 3000

Drilling Method:

Direct push

Sampling Method:

Continuous

Gravel Pack:

10-20 Silica sand

21.5-24

Seal:

Bentonite chips

14.5-21.5

Grout:

3-19.5'

Casing Type:

PVC

Diameter:

1"

Length:

0-22.5

Hole Diameter:

2.5"

Depth to Liquid:

—

Screen Type:

PVC

Slot:

0.010

Diameter:

1"

Length:

22.5-24

Total Depth:

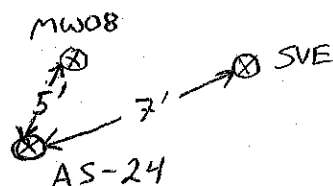
24

Depth to Water:

16

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
200	moist	15			0				0-2.5 silty clay w/ sand, moist, dk brown, no odor	
					2		4'			
					4				2.5-6 sand, fine, moist, lt brown, no odor	
					6					
		0.4			8		4'		6-16 sand, m-c, w/ gravel, moist, no odor	
100					10					
		0.0			12		3'		16-24' AA, saturated	
					14					
					16				TD = 24'	
	sat.	0.0			18		5'		Screen 22.5-24	
					20					
		0.0			22		4'			
					24					
					26					
					28					
					30					
					32					
					34					
					36					
					38					
					40					

Location Map:



Compliance | Engineering | Remediation  
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 Denver, Colorado 80212

## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: **AS-24** Project: **FRITZLER URKR 31-31**

Date: **5/2/2011** Project Number: **KMG06247**

Logged By: **Justin Solomon** Drilled By: **Site Services**

Elevation: Detector: **MiniRae 2000 PID** Drilling Method: **HSA** Sampling Method: **Continuous**

Gravel Pack: **10-20 Silica Sand** Seal: **Bentonite** Grout: **Portland Cement w/ Bentonite**

Casing Type: **Schedule 40 PVC** Diameter: **1"** Length: **22.5'** Hole Diameter: **8"** Depth to Liquid: **—**

Screen Type: **Schedule 40 PVC** Slot: **0.02** Diameter: **1"** Length: **1.5'** Total Depth: **24'** Depth to Water: **15'**

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Soil/Rock Type	Lithology/Remarks	Well Completion
					0			TOP SOIL (0-2.5')	
Low		0.1	↑	N6	2	2.5'		SILTS-SAND, SLIGHT PLAST, BROWN, MOIST, NO STAIN / ODR	
					4				
	Moist				6	2.5'		SILTS-SAND, F-M GRAIN w/ PEA GRUL, MOIST	
Low		0.0			8				
					10			SAND, M-C GRAIN w/ PEA GRUL, LTN FINES, MOIST, QUARTZ	
Low		0.1			12	2.5'			
					14				
Low	Wet	0.3	↓		16	2'		SAND / GRUL AS ABOVE, WET, NO STAIN / ODR	
					18				
					20				
					22	1'		SAND, WELL GRADED QUARTZ, NO GRUL LTN FINES, NO STAIN / ODR	
					24				
					26				
					28				
					30				

TD = 24'

SCREEN = 22.5 - 24'

Location Map:				<b>Compliance, Engineering, Remediation</b> <b>LT Environmental, Inc.</b> <b>4400 West 46th Ave.</b> <b>Denver, Colorado 80212</b>					
				<b>BORING LOG/MONITORING WELL COMPLETION DIAGRAM</b>					
				Boring/Well Number: <b>MW20R</b>		Project: <b>Fritzier Upper 31-31</b>			
				Date: <b>4/19/12</b>		Project Number: <b>06247</b>			
Elevation:				Detector: <b>MiniRae 2000 PID</b>		Drilling Method: <b>GeoProbe Direct Push</b>		Sampling Method: <b>Continuous</b>	
Gravel Pack: <b>sand</b>				Seal:		Grout:			
Casing Type: <b>PVC</b>				Diameter: <b>1"</b>		Length: <b>13'</b>		Hole Diameter: <b>2.25"</b>	
Screen Type: <b>PVC</b>				Slot: <b>0.01</b>		Diameter: <b>1"</b>		Length: <b>15'</b>	
						Total Depth: <b>25'</b>		Depth to Water: <b>15'</b>	

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Soil/Rock Type	Lithology/Remarks	Well Completion
					0			not logged	
					2				
					4				
					6				
					8				
					10				
					12				
					14				
					16				
					18				
					20				
					22				
					24				
					26				
					28				
					30				



Location Map:

RW01  
 2' MW08  
 N ↑



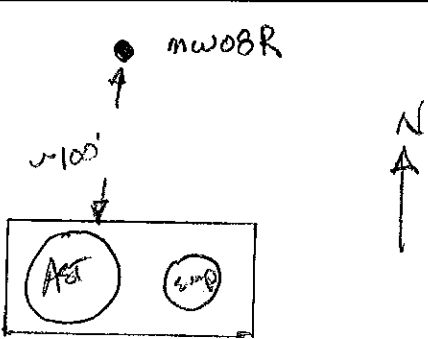

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## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number:	RW01	Project:	Fritzler UPRR 31-31
Date:	5-10-12 <del>5/9/2012</del>	Project Number:	KMG06247
Logged By:	Chris Roy	Drilled By:	DrillPro
Drilling Method:	6 1/4 ID / 10 1/4 OD 5' Hollow Stem Auger	Sampling Method:	Semi-Continuous Split Spoon
Seal:	Benjanite	Grout:	None
Casing Type:	PVC	Diameter:	4" Length: 10'
Screen Type:	PVC Slot: 0.010	Diameter:	4" Length: 10'
		Hole Diameter:	10 1/4" <del>20'</del>
		Total Depth:	20'
		Depth to Liquid:	15'
		Depth to Water:	15'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Soil/Rock Type	Lithology/Remarks	Well Completion
low	dry	0.9	None	NA	0	2'		0'-6' C-F Sand, Trace Silt, Light Brown/Tan, Dry, No stain, No odor	
		0.4			2	2'			
		0.4			4	2'			
		0.0			6	2'		6'-9' C-F Sand, Trace Gravel, Light Brown/Tan, Dry, No stain, No odor	
		0.0			8	2'			
Med	moist	0.0			10	2'		9'-14' C-F Sand, Some Gravel, Light Brown/Tan, Moist, No stain, No odor	
		0.0			12	2'			
		0.0			14	2'		14'-15' Not sampled	
	wet	0.2			16	2'		15'-17' C-F Sand, Light Brown, Wet, No stain, No odor	
		0.0			18	2'		17'-18' Not sampled	
					20	2'		18'-20' C-F Sand, Light Brown, Wet, No stain, No odor	
					22				
					24				
					26				
					28				
					30				

1345-

Location Map: 		<div style="text-align: center;">  <b>Compliance « Engineering » Remediation</b>  <b>LT Environmental, Inc.</b>  <b>4600 W. 60th Avenue</b>  <b>Arvada, Colorado 80003</b> </div>	
<b>BORING LOG/MONITORING WELL COMPLETION DIAGRAM</b>			
Boring/Well Number: <b>MW08R</b>		Project: <b>Fritzel UPRR 31-31</b>	
Date: <b>2-1-13</b>		Project Number: <b>KMG 06247</b>	
Logged By: <b>Unger</b>		Drilled By: <b>ACI</b>	
Elevation:	Detector: <b>mini-Rae 2000</b>	Drilline Method: <b>Direct Push</b>	Sampling Method: <b>Continuous</b>
Gravel Pack: <b>10-20 silica sand 6'-25'</b>		Seal: <b>benfonite crumbles 2'-6'</b>	
Grout: <b>sand/gravel 0-2'</b>			
Casing Type: <b>PVC</b>	Diameter: <b>2"</b>	Length: <b>10'</b>	Hole Diameter: <b>8"</b>
Screen Type: <b>PVC</b>	Slot: <b>0.010</b>	Diameter: <b>2"</b>	Length: <b>15'</b>
		Total Depth: <b>25'</b>	Depth to Water: <b>~18'</b>

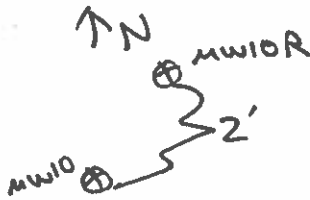
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Soil/Rock Type	Lithology/Remarks	Well Completion
					0		SC	Sand, v.f.g. - v.c.g., d. brown, moist	
			NO		2		SP		
					4				
			NO		6	1425		Sand, v.f.g. - c.g., brown, med. moist	
					8		SW		
			NO		10	1430		Sand, v.f.g. - v.c.g., same as "gravel" below, medium moist, no odor	
					12				
			NO		14	1435	SW		
					16				
			NO		18				
					20	1440			
					22		SW		
			yes		24			Sand, v.f.g. - v.c.g., gray to black stained w/ oil, moderate odor	
					26				
					28				
					30				

TD = 25' BGS

Set well @ 22.5' BGS

2 1/2' stickup

Location Map:



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**BORING LOG/MONITORING WELL COMPLETION DIAGRAM**

Boring/Well Number:	MW10R	Project:	Fritzler UPRR 31-31
Date:	8/24/2016	Project Number:	KMG06247
Logged By:	Andy Verbonitz G.I.T.	Drilled By:	Site Services
Elevation:		Drilling Method:	Hollow Stem Auger
Detector:	Lite MiniRae 3000-PID	Sampling Method:	Continuous
Gravel Pack:	10-20 Silica Sand	Seal:	Bentonite
Casing Type:	Schedule 40 PVC	Grout:	none
Screen Type:	Schedule 40 PVC	Diameter:	2"
	Slot: 0.01	Length:	12.5'
		Hole Diameter:	8"
		Depth to Liquid:	—
		Total Depth:	25'
		Depth to Water:	~14'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Recovered	Soil/Rock Type	Lithology/Remarks	Well Completion
	moist		none		0			Note 0-6' was hand augered	
					2			0-7' Sand (f-m) w/ some coarse, moist, brown, minor silt, no stain, no odor	
					4		SP		
					6			7-12' minor Sand (f-c) w/ silt + gravels, brown, moist, no stain, no odor	
					8	4/4	SW/SM		
					10				
					12	5/5		12'-14' same but w/ out silts	
					14	5/5		14-20' coarse sand + gravel, wet, no stain, no odor (partial recovery)	
					16		SP		
					18	2/5			
					20				
					22	2/5	SW	20-25' Sand (f-c) w/ gravel, no fines, wet, no stain, no odor (partial recovery)	
					24				
					26				
					28				
					30			Note: stained sands on final auger observed as augers are pulled 23-25'	

Well Location Sketch:



AS26 MW102  
 A AS25  
 AAS27  
 MW08



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Arvada, Colorado 80003

## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: AS25		Project: Fritzler UPRR 31-31	
Date: 11/16/2016		Project Number: KMG06247	
Logged By: Kris Shepherd		Drilled By: Drill Pro	
Drilling Method: Direct Push HSA		Sampling Method: SPit Spoon Continuous	
Seal: Bentonite & grout		Grout: 90% Portland - 10% bentonite	
Diameter: 1"	Length: 33.5'	Hole Diameter: 3"	Depth to Liquid: -
Diameter: 1"	Length: 1.5'	Total Depth: -35'	Depth to Water: ~15'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
					0					
					2				Hand Auger, Not Logged	
					4					
					6					
					8				0' → 20', not sampled, not logged, sandy, wet @ ~15' bgs	
					10				20' → 35' fg → v. coarse sand, trace gravel, tan, no stain, no odor, wet	
					12				→ stain @ ~24.5', odor, gray	
					14					
					16				→ note 20' → 35' no samples, logged off of cuttings on auger	
					18				lead flight, same lithology, appears stain ends @ ~30'	
					20				→ set well @ 35' w/ 1.5' of screen, sand to 31.5', coated bentonite pellets to 27.5' & grout to surface	
8, 9 11, 15	Wet	0.3	none		22	2' 2'				
5, 9, 16		48.3	stain		24	1.5 1.5				
2, 3 6		6.2			26	1.5 1.5				
8 16, 20		1034			28			SW		
		280	none		30	1.5 1.5				
		276			32					
					34					
					36					
					38					
					40					

NOTES:

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Well Location Sketch:



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## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number:

AS26, AS27

Project:

Fritzler UPRR 31-31

Date:

11/17/2016

Project Number:

KMG06247

Logged By:

Kris Shepherd

Drilled By:

Drill Pro

Elevation:

Detector:

PID

Drilling Method:

Direct Push

Sampling Method:

Continuous

Gravel Pack:

Silica Sand

Seal:

Bentonite

Grout:

-

Casing Type:

PVC

Diameter:

1"

Length:

33.5'

Hole Diameter:

3"

Depth to Liquid:

-

Screen Type:

PVC

Slot:

0.01

Diameter:

1"

Length:

1.5'

Total Depth:

Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
					0					
					2				Hand Auger, Not Logged	
					4					
					6					
					8				→ Not Sampled, not logged	
					10					
					12				AS well, set @ ~35' bgs w/ 1.5' of screen, sand to 31.5', Bentonite to 27.5, grout to surface	
					14					
					16					
					18					
					20					
					22					
					24					
					26					
					28					
					30					
					32					
					34					
					36					
					38					
					40					

NOTES:

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