KEY TO BORING LOGS

SUBSURFACE MATERIAL LEGEND

	Graphic Symbol	Description	USCS Classification
SAND		SAND with little or no fines	SP
		Silty SAND	SM
		Clayey SAND	SC
LOW PLASTIC SILTS AND CLAYS		Low plastic SILT	ML
		Low plastic CLAY Medium plastic CLAY Silty CLAY or Sandy CLAY	CL
SURFACE MATERIALS		FILL	

SAMPLER LEGEND

 Air Knife / Hand Auger Sampler

 Split Spoon Sampler

 Geoprobe - Soil sampling not performed

 Geoprobe Dual-Tube Sampler

▼ Depth Groundwater enters at time of drilling.

NOTES:

Boring log details shown on the following logs are based upon ground surface and field conditions at the time of drilling and well installation.

LOG OF BORING
B-1

Start Date: 5/14/08 Completion Date: 5/21/08
Coordinates: Northing:792528.13 Easting:2321982.84
Boring Location: Village of Roxana
Ground Elevation: 443.24

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
						FILL	Gravel base coarse, gravel asphalt, and gravel FILL (FILL)	Boring advanced to a depth of 8' via hand auger, then continued with geoprobe
			0.0				Soft to medium stiff, moist, brown and gray, medium plastic CLAY (CL), trace gravel	Slight tar odor
			0.0			CL		(05/14/08) Sample B-1-03 collected for VOCs
5			0.0				Becomes reddish brown	
			0.0			CL	Soft, moist, brown, low plastic silty CLAY (CL)	
							Medium dense, moist to wet, brown, fine grained clayey SAND (SC)	Air knife completed deeper than hand auger. Soil contact not observed.
			2.1					
10	48	32				SC	Dark and light brown banding	
			3.7					
	48	20	3.0				Loose, dry, tan, fine grained SAND (SP)	
15								
			0.9					
	48	32						
			1.4			SP		
20							Becomes medium dense, fine to medium grained	
			2.1					
	48	32						
			1.8					

Completion Depth: 60.00 ft bgs
Project No.: 21561979
Project Name: Route 111 and Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT
Drilled by: J. Cox
Logged by: W. Pennington / M. Miller

Water Depth: 49 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

- Water level ATD
- Water level after drilling
- Air Knife / Hand Auger Sampler

Unified Soil Classification based on field visual observations.

ATD - At time of drilling

- Hollow Stem Auger - Soil sampling not performed
- Split Spoon Sampler
- Geoprobe - Soil sampling not performed
- Geoprobe Dual-Tube Sampler

URS

URS (ENVIRON) LOG RAND 2008 21561979 ROXANA WELLS.GPJ URSSTLEV.GDT 8/5/08

LOG OF BORING
B-1

Start Date: 5/14/08 Completion Date: 5/21/08
Coordinates: Northing:792528.13 Easting:2321982.84
Boring Location: Village of Roxana
Ground Elevation: 443.24

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
	48	32	0.2				SAME: Medium dense, dry, tan, fine to medium grained SAND (SP)	
			4.1					1445 (05/20/08) Samples B-1-27, B-1-27-MS, and B-1-27-MSD collected for VOCs.
30	48	32	1.8					
			1.1					
	48	32	1.7					
35			2.0					
	48	32	1.8			SP	With interbedded clay seams	Black staining (8 inches)
			1.4				Clay grades out	Slight black staining
40	48	32	1.8				Becomes medium grained	
			0.4				Becomes dense, fine grained, trace silt	
45	48	30	0.3				Becomes medium grained	
			1.3					
	48	30	0.4				Becomes wet ▽	

Completion Depth: 60.00 ft bgs
Project No.: 21561979
Project Name: Route 111 and Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT
Drilled by: J. Cox
Logged by: W. Pennington / M. Miller

Water Depth: 49 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▼ Water level ATD
▽ Water level after drilling
▨ Air Knife / Hand Auger Sampler
Unified Soil Classification based on field visual observations.

ATD - At time of drilling
☐ Hollow Stem Auger - Soil sampling not performed
■ Split Spoon Sampler
◧ Geoprobe - Soil sampling not performed
⊠ Geoprobe Dual-Tube Sampler

URS

URS (ENVIRON) LOG RAND 2008 21561979 ROXANA WELLS.GPJ URSSTLEV.GDT 8/5/08

LOG OF BORING
B-1

Start Date: 5/14/08 Completion Date: 5/21/08
Coordinates: Northing:792528.13 Easting:2321982.84
Boring Location: Village of Roxana
Ground Elevation: 443.24

Depth in feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
			1.8				SAME: Dense, wet, tan, medium grained, SAND (SP)	
	48	0						Bottom of liner from 48 - 52 ft crushed. Liner from 42 - 56 ft crushed at end; no recovery
55								
	48	0						Liner from 56 - 60 ft stuck in rods; no recovery
60							Bottom of boring at 60 ft bgs	
65								
70								

Completion Depth: 60.00 ft bgs
Project No.: 21561979
Project Name: Route 111 and Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT
Drilled by: J. Cox
Logged by: W. Pennington / M. Miller

URS

Water Depth: 49 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

- Water level ATD
- Water level after drilling
- Air Knife / Hand Auger Sampler

Unified Soil Classification based on field visual observations.

ATD - At time of drilling

- Hollow Stem Auger - Soil sampling not performed
- Split Spoon Sampler
- Geoprobe - Soil sampling not performed
- Geoprobe Dual-Tube Sampler

URS (ENVIRON) LOG RAND 2008 21561979 ROXANA WELLS.GPJ URSSTLEV.GDT 8/5/08

LOG OF BORING
B-2

Start Date: 5/14/08 Completion Date: 5/20/08
Coordinates: Northing:792541.10 Easting:2322245.99
Boring Location: Village of Roxana
Ground Elevation: 444.21

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
0						TOPSOIL	TOPSOIL	Boring advanced to a depth of 8' via hand auger, then continued with geoprobe
						CL	Soft, moist, brown, low plastic, silty CLAY (CL)	
							Loose to medium dense, moist, brown, fine grained, SAND (SP)	(05/14/08) Sample B-2-04 collected for VOCs
5								
	48	24	2.7				Becomes loose, tan, trace silt	
10			11.0				Silt grades out	
	48	30	3.1			SP	Becomes medium dense, dry	
15			31.4					
	48	30	5.9				Becomes fine to medium grained	
			6.1					
20	48	30	2.4					
			4.5					

Completion Depth: 64.00 ft bgs
Project No.: 21561979
Project Name: Route 111 and Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT
Drilled by: J. Cox
Logged by: W. Pennington / M. Miller

Water Depth: 53 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

- Water level ATD
- Water level after drilling
- Air Knife / Hand Auger Sampler

Unified Soil Classification based on field visual observations.

ATD - At time of drilling

- Hollow Stem Auger - Soil sampling not performed
- Split Spoon Sampler
- Geoprobe - Soil sampling not performed
- Geoprobe Dual-Tube Sampler

URS

URS (ENVIRON) LOG RAND 2008 21561979 ROXANA WELLS.GPJ URSSTILEV.GDT 8/5/08

LOG OF BORING
B-2

Start Date: 5/14/08 Completion Date: 5/20/08
Coordinates: Northing:792541.10 Easting:2322245.99
Boring Location: Village of Roxana
Ground Elevation: 444.21

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
	48	30	10.1 18.5				SAME: Medium dense, dry, tan, fine to medium grained, SAND (SP)	
30	36	24	5.5 7.3					
	36	24	16.5					
35	48	30	9.5 10.3			SP		
40	48	30	39.9 192				Becomes fine grained	1000 (05/20/08) Sample B-2-41 collected for VOCs
	48	30	167				Black and gray banding	
45			20.7				Becomes gray, fine to medium grained	
	48	36	11.1 69.0					Slight hydrocarbon odor

Completion Depth: 64.00 ft bgs
Project No.: 21561979
Project Name: Route 111 and Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT
Drilled by: J. Cox
Logged by: W. Pennington / M. Miller

Water Depth: 53 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

▼ Water level ATD
▽ Water level after drilling
Air Knife / Hand Auger Sampler
Unified Soil Classification based on field visual observations.

ATD - At time of drilling
☐ Hollow Stem Auger - Soil sampling not performed
■ Split Spoon Sampler
◧ Geoprobe - Soil sampling not performed
☒ Geoprobe Dual-Tube Sampler

URS

LOG OF BORING
B-2

Start Date: 5/14/08 Completion Date: 5/20/08
Coordinates: Northing:792541.10 Easting:2322245.99
Boring Location: Village of Roxana
Ground Elevation: 444.21

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
	48	34	530 597				SAME: Medium dense, gray, dry, fine to medium grained, SAND (SP) Becomes moist Becomes wet ▽	
55	48	42	1134 1122					
	24	2						Sample liner broke off within rods. Pull rods to collect sample. Blind drill to 64' bgs
60	48	0						
							Bottom of boring at 64 ft bgs	
65								
70								

Completion Depth: 64.00 ft bgs
Project No.: 21561979
Project Name: Route 111 and Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT
Drilled by: J. Cox
Logged by: W. Pennington / M. Miller

URS

Water Depth: 53 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

▼ Water level ATD
▽ Water level after drilling
▨ Air Knife / Hand Auger Sampler
Unified Soil Classification based on field visual observations.

ATD - At time of drilling
☐ Hollow Stem Auger - Soil sampling not performed
■ Split Spoon Sampler
◧ Geoprobe - Soil sampling not performed
☒ Geoprobe Dual-Tube Sampler

URS (ENVIRON) LOG RAND 2008 21561979 ROXANA WELLS.GPJ URSSTLEV.GDT 8/5/08

LOG OF BORING
B-3

Start Date: 5/14/08 Completion Date: 5/21/08
Coordinates: Northing:792218.77 Easting:2321690.48
Boring Location: Village of Roxana
Ground Elevation: 430.69

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	USCS	DESCRIPTION	NOTES
				TOPSOIL	TOPSOIL	Boring advanced to a depth of 8' via hand auger, then continued with geoprobe
			0.0	FILL	Clayey FILL (FILL) with gravel and asphalt	
					Medium stiff, moist, brown, medium plastic CLAY (CL)	
			0.0		With sand	
				CL		
5					Becomes gray and brown mottled, sandy	
					Loose to medium dense, moist, brown, fine to medium grained SAND (SP)	(05/14/08) Sample B-3-06 collected for VOCs
					Becomes loose, tan, trace silt	
			0.9			
10	48	24				
			0.2			
					Silt grades out	
			1.3			
	48	32				
15			1.8	SP		
					Becomes medium dense	
			1.6			
	48	32			Becomes reddish brown	
			1.4			
20					Becomes tan	
			2.4			
	48	32				
			1.5			

Completion Depth: 48.00 ft bgs
Project No.: 21561979
Project Name: Route 111 and Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT
Drilled by: J. Cox
Logged by: W. Pennington / M. Miller

Water Depth: 35.5 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

▼ Water level ATD
▽ Water level after drilling
Air Knife / Hand Auger Sampler
Unified Soil Classification based on field visual observations.

ATD - At time of drilling
☐ Hollow Stem Auger - Soil sampling not performed
■ Split Spoon Sampler
◧ Geoprobe - Soil sampling not performed
⊠ Geoprobe Dual-Tube Sampler

URS

URS (ENVIRON) LOG RAND 2008 21561979 ROXANA WELLS.GPJ URSSTLEV.GDT 8/5/08

LOG OF BORING
B-3

Start Date: 5/14/08 Completion Date: 5/21/08
Coordinates: Northing:792218.77 Easting:2321690.48
Boring Location: Village of Roxana
Ground Elevation: 430.69

Depth in feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
	48	32	0.8 0.7				SAME: Medium dense, moist, tan, fine to medium grained SAND (SP)	
30	48	30	1.3 1.8					
35	48	34	2.7 1.6					1100 (05/21/08) Sample B-3-33 collected for VOCs
							▽ Becomes wet	
	48	36	1.8 2.3			SP	Becomes gray, medium grained Becomes dense, fine to medium grained	
40	48	36	2.7 1.5					
45	48	40	12.1 13.6					
							Bottom of boring at 48 ft bgs	

Completion Depth: 48.00 ft bgs
Project No.: 21561979
Project Name: Route 111 and Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT
Drilled by: J. Cox
Logged by: W. Pennington / M. Miller

URS

Water Depth: 35.5 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

▼ Water level ATD
▽ Water level after drilling
▨ Air Knife / Hand Auger Sampler
Unified Soil Classification based on field visual observations.

ATD - At time of drilling
☐ Hollow Stem Auger - Soil sampling not performed
■ Split Spoon Sampler
◧ Geoprobe - Soil sampling not performed
☒ Geoprobe Dual-Tube Sampler

URS (ENVIRON) LOG RAND 2008 21561979 ROXANA WELLS.GPJ URSSTLEV.GDT 8/5/08

LOG OF BORING
B-4

Start Date: 5/15/08 Completion Date: 5/22/08
Coordinates: Northing:792229.68 Easting:2321998.37
Boring Location: Village of Roxana
Ground Elevation: 441.86

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	USCS	DESCRIPTION	NOTES
				FILL	Asphalt, gravel base coarse FILL (FILL)	Boring advanced to a depth of 8' via hand auger, then continued with geoprobe
			0.0	CL	Medium stiff, moist, brownish gray, silty CLAY (CL)	
			0.0		Becomes brown, sandy, with small sand zones	
5			0.0	CH	Stiff, moist, brown and red, mottled, medium to high plastic CLAY (CH)	
					with sand	
				CL	Medium stiff, moist, brown with red mottled, low to medium plastic CLAY (CL)	0945 (05/15/08) Sample B-4-06 collected for VOCs
			0.0	SC	Loose to medium dense, moist, brown, clayey SAND (SC)	
					Loose, moist, orangish brown, fine to medium grained, SAND (SP)	
10	48	16	0.3			
					Becomes medium dense	
			1.2			
	48	30				
15			0.8			
				SP		
			0.8			
	48	32				
			1.2			
20					Becomes tan	
			1.2			
	48	32			Becomes dry	
			0.0			

Completion Depth: 58.00 ft bgs
Project No.: 21561979
Project Name: Route 111 and Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT
Drilled by: J. Cox
Logged by: W. Pennington / M. Miller

Water Depth: 48.5 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

- Water level ATD
- Water level after drilling
- Air Knife / Hand Auger Sampler

Unified Soil Classification based on field visual observations.

ATD - At time of drilling

- Hollow Stem Auger - Soil sampling not performed
- Split Spoon Sampler
- Geoprobe - Soil sampling not performed
- Geoprobe Dual-Tube Sampler

URS (ENVIRON) LOG RAND 2008 21561979 ROXANA WELLS.GPJ URSSTLEV.GDT 8/5/08

LOG OF BORING
B-4

Start Date: 5/15/08 Completion Date: 5/22/08
Coordinates: Northing:792229.68 Easting:2321998.37
Boring Location: Village of Roxana
Ground Elevation: 441.86

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
	48	32	1.2 1.6				SAME: Medium dense, dry, tan, fine to medium grained, SAND (SP)	
30	48	32	0.8 1.7					Dark gray staining (4 inches)
	48	36	1.4 2.1				Becomes orangish brown	0935 (05/22/08) Sample B-4-35 collected for VOCs
35	48	4				SP	Becomes tan	
40	48	32	1.5 0.8 0.2				Becomes dense Trace silt (4 inches)	Trace dark brown staining (varved layers)
45	48	4	0.9					
	48	48	9.5				Becomes moist ▽ Becomes silty Becomes wet, gray, medium grained	

Completion Depth: 58.00 ft bgs
Project No.: 21561979
Project Name: Route 111 and Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT
Drilled by: J. Cox
Logged by: W. Pennington / M. Miller

URS

Water Depth: 48.5 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

▼ Water level ATD
▽ Water level after drilling
▨ Air Knife / Hand Auger Sampler
Unified Soil Classification based on field visual observations.

ATD - At time of drilling
☐ Hollow Stem Auger - Soil sampling not performed
■ Split Spoon Sampler
▮ Geoprobe - Soil sampling not performed
▣ Geoprobe Dual-Tube Sampler

URS (ENVIRON) LOG RAND 2008 21561979 ROXANA WELLS.GPJ URSSTLEV.GDT 8/5/08

LOG OF BORING
B-4

Start Date: 5/15/08 Completion Date: 5/22/08
Coordinates: Northing:792229.68 Easting:2321998.37
Boring Location: Village of Roxana
Ground Elevation: 441.86

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
			18.7			SP	SAME: Dense, wet, gray, medium grained, SAND (SP)	
						SC	Medium dense, wet, gray, fine grained, clayey SAND (SC)	
			28.4				Dense, wet, gray, medium to fine grained SAND (SP)	
	48	48						
55						SP		
	24	0						Solid tip driven to 58' bgs due to recovery issues
							Bottom of boring at 58 ft bgs	
60								
65								
70								

Completion Depth: 58.00 ft bgs
Project No.: 21561979
Project Name: Route 111 and Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT
Drilled by: J. Cox
Logged by: W. Pennington / M. Miller

Water Depth: 48.5 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▼ Water level ATD
▽ Water level after drilling
Air Knife / Hand Auger Sampler
Unified Soil Classification based on field visual observations.

ATD - At time of drilling
☐ Hollow Stem Auger - Soil sampling not performed
■ Split Spoon Sampler
◧ Geoprobe - Soil sampling not performed
☒ Geoprobe Dual-Tube Sampler

URS

URS (ENVIRON) LOG RAND 2008 21561979 ROXANA WELLS.GPJ URSSTLEV.GDT 8/5/08

LOG OF BORING
B-5

Start Date: 5/15/08 Completion Date: 5/21/08
Coordinates: Northing:792023.99 Easting:2321801.86
Boring Location: Village of Roxana
Ground Elevation: 429.98

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
			0.0			FILL	Gravel and asphalt FILL (FILL)	Boring advanced to a depth of 6' via hand auger, then continued with geoprobe
			0.0				Gray, silty CLAY (FILL) Dark gray clayey GRAVEL (FILL)	
			0.0				Brown, silty CLAY (FILL) Dark gray to black, clayey GRAVEL (FILL)	
5							Soft, wet, grayish brown, low plastic, silty CLAY (CL)	1345 (05/15/08) Sample B-5-04.5 collected for VOCs
	24	18	3.6				Becomes medium stiff, dark brown	
			2.6					
10	48	48				CL		
			1.8				Trace fine grained sand	
			2.3					
	48	48						
15			2.6				Becomes soft, grayish brown	
							Becomes sandy	
			1.8					
	48	48						
			2.3					
20							Medium dense, wet, brown, fine grained, clayey SAND (SC)	
			0.6			SC		
	48	48						
			1.8					
						SP	Medium dense, moist, tan, fine to medium grained, SAND (SP)	

Completion Depth: 48.00 ft bgs
Project No.: 21561979
Project Name: Route 111 and Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT
Drilled by: J. Cox
Logged by: W. Pennington / M. Miller

Water Depth: 35.5 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

- Water level ATD
- Water level after drilling
- Air Knife / Hand Auger Sampler

Unified Soil Classification based on field visual observations.

ATD - At time of drilling

- Hollow Stem Auger - Soil sampling not performed
- Split Spoon Sampler
- Geoprobe - Soil sampling not performed
- Geoprobe Dual-Tube Sampler

URS

URS (ENVIRON) LOG RAND 2008 21561979 ROXANA WELLS.GPJ URSSTLEV.GDT 8/5/08

LOG OF BORING
B-5

Start Date: 5/15/08 Completion Date: 5/21/08
Coordinates: Northing:792023.99 Easting:2321801.86
Boring Location: Village of Roxana
Ground Elevation: 429.98

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
	48	30	2.8 4.7				SAME: Medium dense, moist, tan, fine to medium grained, SAND (SP) Becomes dry to moist	0935 (05/21/08) Sample B-5-27 collected for VOCs
30	48	32	2.2 2.5				Becomes moist	
35	48	36	3.3 4.2				Becomes wet	
	48	36	3.1 2.8			SP	Becomes dense, gray	
40	48	48	4.3 6.5					
45	48	42	14.5 19.2					
							Bottom of boring at 48 ft bgs	

Completion Depth: 48.00 ft bgs
Project No.: 21561979
Project Name: Route 111 and Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT
Drilled by: J. Cox
Logged by: W. Pennington / M. Miller

Water Depth: 35.5 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.

- Water level ATD
- Water level after drilling
- Air Knife / Hand Auger Sampler

Unified Soil Classification based on field visual observations.

ATD - At time of drilling

- Hollow Stem Auger - Soil sampling not performed
- Split Spoon Sampler
- Geoprobe - Soil sampling not performed
- Geoprobe Dual-Tube Sampler

URS

URS (ENVIRON) LOG RAND 2008 21561979 ROXANA WELLS.GPJ URSSTLEV.GDT 8/5/08

LOG OF BORING
B-6

Start Date: 5/15/08 Completion Date: 5/19/08
Coordinates: Northing:791610.47 Easting:2322074.96
Boring Location: Village of Roxana
Ground Elevation: 432.75

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
			0.0			FILL	Gravel (FILL) Dark gray and black, mottled, silty CLAY (FILL)	Boring advanced to a depth of 6' via hand auger, then continued with geoprobe
			0.0				Becomes soft, moist, gray and brown	
5			0.0				Becomes gray, with brown Black cinders and gravel (FILL), trace clay	1250 (05/15/08) Sample B-6-04 collected for VOCs
	24	24	0.5 1.4			CL	Soft, moist, dark gray, low plastic, silty CLAY (CL) Becomes medium stiff, dark brown Becomes soft, brown	
10	48	30	2.3 2.2				Becomes dark brown Becomes medium stiff	
15	48	30	3.9 4.3				Becomes medium stiff to stiff, brown, with orange mottling	
	48	30	3.9 3.4			SC	Dense, moist, brown, fine grained clayey SAND (SC)	
20	48	36	4.2 4.7			SP	Loose, moist, brownish gray, fine to medium grained SAND (SP), trace silt Silt grades out Becomes moist to dry	1205 (05/19/08) Sample B-6-23 collected for VOCs

Completion Depth: 50.00 ft bgs
Project No.: 21561979
Project Name: Route 111 and Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT
Drilled by: J. Cox
Logged by: W. Pennington / M. Miller

Water Depth: 38 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▼ Water level ATD
▽ Water level after drilling
▨ Air Knife / Hand Auger Sampler
Unified Soil Classification based on field visual observations.

ATD - At time of drilling
☐ Hollow Stem Auger - Soil sampling not performed
■ Split Spoon Sampler
◧ Geoprobe - Soil sampling not performed
⊠ Geoprobe Dual-Tube Sampler

URS

URS (ENVIRON) LOG RAND 2008 21561979 ROXANA WELLS.GPJ URSSTLEV.GDT 8/5/08

LOG OF BORING
B-6

Start Date: 5/15/08 Completion Date: 5/19/08
Coordinates: Northing:791610.47 Easting:2322074.96
Boring Location: Village of Roxana
Ground Elevation: 432.75

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
	48	36	3.2 2.3				SAME: Loose, moist to dry, brownish gray, fine to medium grained SAND (SP)	
30	48	30	2.3 2.0					
	48	30	2.2 2.3				Becomes tan	
35								
	48	36	2.2 1.8			SP	Becomes medium dense, moist Becomes wet ▽	
40	48	36	0.0 0.0					
45	48	30	0.0 0.0					
	24	0					Bottom of boring at 50 ft bgs	Solid tip driven to 50' bgs due to recovery issues

Completion Depth: 50.00 ft bgs
Project No.: 21561979
Project Name: Route 111 and Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT
Drilled by: J. Cox
Logged by: W. Pennington / M. Miller

URS

Water Depth: 38 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▼ Water level ATD
▽ Water level after drilling
Air Knife / Hand Auger Sampler
Unified Soil Classification based on field visual observations.

ATD - At time of drilling
☐ Hollow Stem Auger - Soil sampling not performed
■ Split Spoon Sampler
◧ Geoprobe - Soil sampling not performed
⧓ Geoprobe Dual-Tube Sampler

URS (ENVIRON) LOG RAND 2008 21561979 ROXANA WELLS.GPJ URSSTLEV.GDT 8/5/08

LOG OF BORING
GP-12(II)

Start Date: 5/15/08 Completion Date: 5/22/08
Coordinates: Northing: N/A Easting: N/A
Boring Location: Village of Roxana
Ground Elevation: N/A

Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	USCS	DESCRIPTION	NOTES
				TOPSOIL	TOPSOIL	Boring advanced to a depth of 5' via hand auger, then continued with geoprobe
				CL	Soft, moist, brown, low plastic, silty CLAY (CL)	
					Medium stiff, moist, brown, low to medium plastic CLAY (CL)	
5					Trace small roots	1025 (05/15/08) Sample GP-12(II)-04 collected for VOCs
					Medium stiff, moist, red brown, low plastic, silty CLAY (CL)	
	36	24	0.8	SC/CL	Soft, wet, brown, sandy CLAY to clayey SAND (CL/SC)	
					Trace silt	
			1.2	SP	Loose, moist to dry, tan, fine grained SAND (SP), trace silt	
10	48	24				
			0.7		Silt grades out	
			1.8			
	48	32				
15			1.5			
			2.3			1425 (05/22/08) Sample GP-12(II)-17 and GP-12(II)-17-DUP collected for VOCs
	48	32				
			1.9			
20					Bottom of boring at 20 ft bgs	

Completion Depth: 20.00 ft bgs
Project No.: 21561979
Project Name: Route 111 and Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT
Drilled by: J. Cox
Logged by: W. Pennington / M. Miller

URS

Water Depth: _____ ft., After _____ hrs.
Water Depth: _____ ft., After _____ hrs.
▼ Water level ATD
▽ Water level after drilling
Air Knife / Hand Auger Sampler
Unified Soil Classification based on field visual observations.

ATD - At time of drilling
☐ Hollow Stem Auger - Soil sampling not performed
■ Split Spoon Sampler
◧ Geoprobe - Soil sampling not performed
☒ Geoprobe Dual-Tube Sampler

URS (ENVIRON) LOG RAND 2008 21561979 ROXANA WELLS.GPJ URSSTLEV.GDT 8/5/08

LOG OF BORING
GP-7(II)

Start Date: 5/15/08 Completion Date: 5/19/08
Coordinates: Northing: N/A Easting: N/A
Boring Location: Village of Roxana
Ground Elevation: N/A

Depth in feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
0			0.0			FILL	Gravel with sand FILL (FILL) (2 inches) Asphalt with base coarse (FILL) (4 inches) Black gravel and cinders FILL (FILL) with clay	Boring advanced to a depth of 8' via hand auger, then continued with geoprobe
			0.0			SP	Loose, moist, brown, fine to medium grained SAND (SP)	
5			0.0					1115 (05/15/08) Sample GP-7(II)-03 collected for VOCs
	48	30	0.7				Becomes tan, trace clay	
10			118					
	48	36	537				Becomes gray	
15			293					
	48	36	403				Becomes dry, tan	
			541					1635 (05/19/08) Sample GP-7(II)-19 and GP-12(II)-19-DUP collected for VOCs
20							Bottom of boring at 20 ft bgs	

Completion Depth: 20.00 ft bgs
Project No.: 21561979
Project Name: Route 111 and Rand Avenue Vicinity
Drilling Contractor: Roberts Environmental Drilling, Inc.
Drilling method: Hand Auger / Dual-Tube Geoprobe Rig Type: 6610DT
Drilled by: J. Cox
Logged by: W. Pennington / M. Miller

URS

Water Depth: _____ ft., After _____ hrs.
Water Depth: _____ ft., After _____ hrs.
▼ Water level ATD
▽ Water level after drilling
Air Knife / Hand Auger Sampler
Unified Soil Classification based on field visual observations.

ATD - At time of drilling
☐ Hollow Stem Auger - Soil sampling not performed
■ Split Spoon Sampler
◧ Geoprobe - Soil sampling not performed
☒ Geoprobe Dual-Tube Sampler

URS (ENVIRON) LOG RAND 2008 21561979 ROXANA WELLS.GPJ URSSTLEV.GDT 8/5/08

2008 WELLS

B-1

B-2

B-3

B-4

B-5

B-6

ConocoPhillips WELLS

P-54

P-56

P-57

P-58

P-66

P-73

P-75

P-93

FLUSH MOUNT MONITORING WELL CONSTRUCTION DIAGRAM

GROUND SURFACE ELEVATION 443.24

TOP OF INNER WELL CASING ELEVATION 442.86

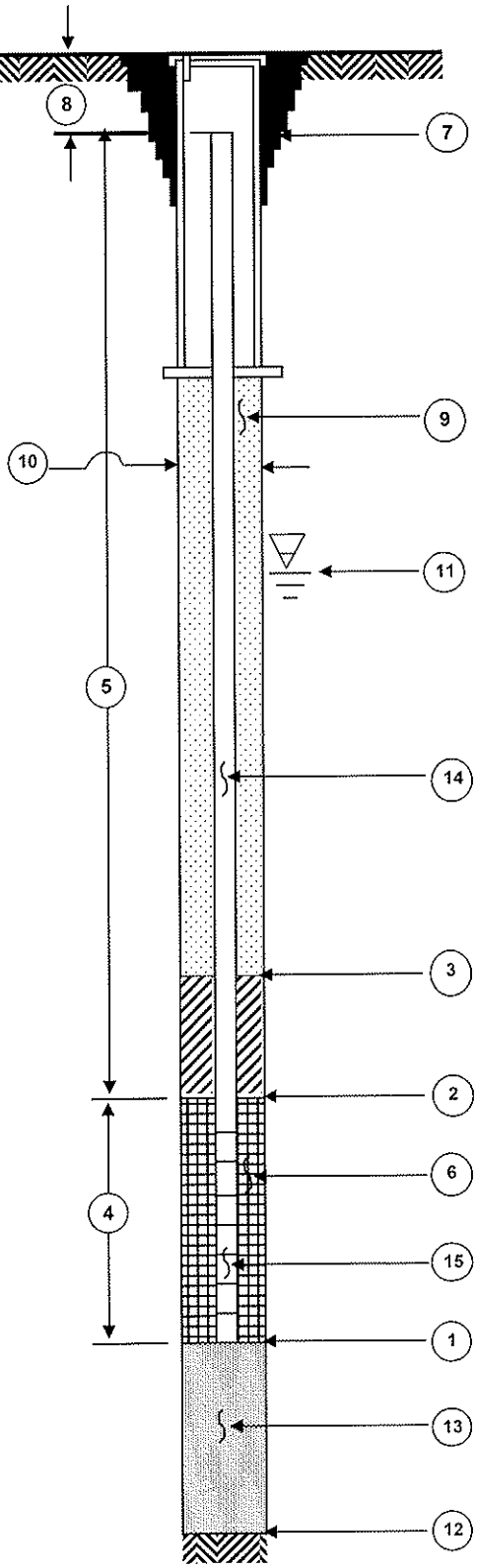
DATUM NAVD 88 - 1988 USGS Datum

JOB NUMBER 21561979

BORING NUMBER B-1

INSTALLATION DATE 21-May-08

LOCATION Roxana, Illinois



(1) DEPTH TO BOTTOM OF WELL POINT OR SLOTTED PIPE 58.56 FEET.*

(2) DEPTH TO BOTTOM OF SEAL (IF INSTALLED) N/A FEET.*

(3) DEPTH TO TOP OF SEAL (IF INSTALLED) N/A FEET.*

(4) LENGTH OF WELL SCREEN 15 FEET.
SLOT SIZE 0.010 INCHES.

(5) TOTAL LENGTH OF RISER PIPE 43.18 FEET AT 1 INCH DIAMETER.

(6) TYPE OF PACK AROUND WELL POINT OR SLOTTED PIPE Native Sand.

(7) CONCRETE CAP? (YES) NO (CIRCLE ONE)

(8) DEPTH TO TOP OF INNER CASING BELOW GROUND SURFACE 0.38 FEET.

(9) TYPE OF UPPER BACKFILL High solids bentonite grout.

(10) BOREHOLD DIAMETER 2.125 INCHES.

(11) DEPTH TO GROUNDWATER 48.00 FEET BTOC ON 5/22/08.

(12) TOTAL DEPTH OF BOREHOLE 60 FEET.*

(13) TYPE OF LOWER BACKFILL Native soil (cave in).

(14) PIPE MATERIAL Schedule 40 PVC.

(15) SCREEN MATERIAL Schedule 40 PVC.

* (DEPTH FROM GROUND SURFACE)

MONITOR WELL INSTALLATION DETAILS

URS Corporation

FLUSH MOUNT MONITORING WELL CONSTRUCTION DIAGRAM

GROUND SURFACE ELEVATION 444.21

TOP OF INNER WELL CASING ELEVATION 443.93

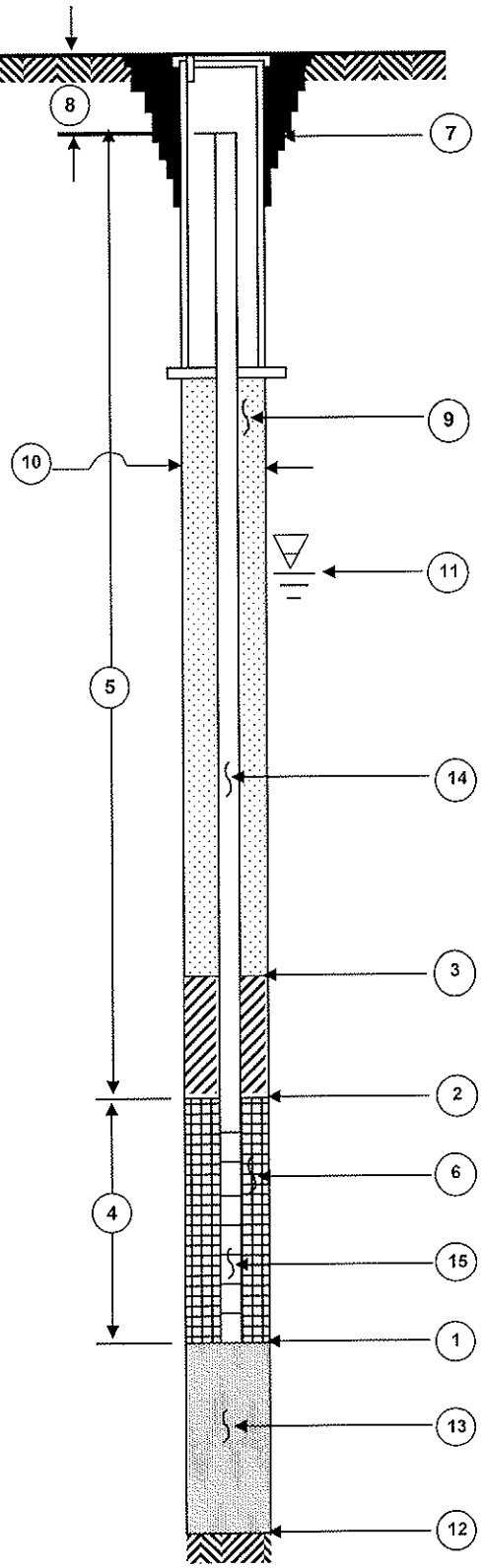
DATUM NAVD 88 - 1988 USGS Datum

JOB NUMBER 21561979

BORING NUMBER B-2

INSTALLATION DATE 20-May-08

LOCATION Roxana, Illinois



(1) DEPTH TO BOTTOM OF WELL POINT OR SLOTTED PIPE 63.74 FEET.*

(2) DEPTH TO BOTTOM OF SEAL (IF INSTALLED) N/A FEET.*

(3) DEPTH TO TOP OF SEAL (IF INSTALLED) N/A FEET.*

(4) LENGTH OF WELL SCREEN 15 FEET.
SLOT SIZE 0.010 INCHES.

(5) TOTAL LENGTH OF RISER PIPE 48.46 FEET AT 1 INCH DIAMETER.

(6) TYPE OF PACK AROUND WELL POINT OR SLOTTED PIPE Native Sand.

(7) CONCRETE CAP? (YES) NO (CIRCLE ONE)

(8) DEPTH TO TOP OF INNER CASING BELOW GROUND SURFACE 0.28 FEET.

(9) TYPE OF UPPER BACKFILL High solids bentonite grout.

(10) BOREHOLD DIAMETER 2.125 INCHES.

(11) DEPTH TO GROUNDWATER 49.67 FEET BTOC ON 5/22/08.

(12) TOTAL DEPTH OF BOREHOLE 64 FEET.*

(13) TYPE OF LOWER BACKFILL Native soil (cave in).

(14) PIPE MATERIAL Schedule 40 PVC.

(15) SCREEN MATERIAL Schedule 40 PVC.

* (DEPTH FROM GROUND SURFACE)

MONITOR WELL INSTALLATION DETAILS

URS Corporation

FLUSH MOUNT MONITORING WELL CONSTRUCTION DIAGRAM

GROUND SURFACE ELEVATION 430.69

TOP OF INNER WELL CASING ELEVATION 430.36

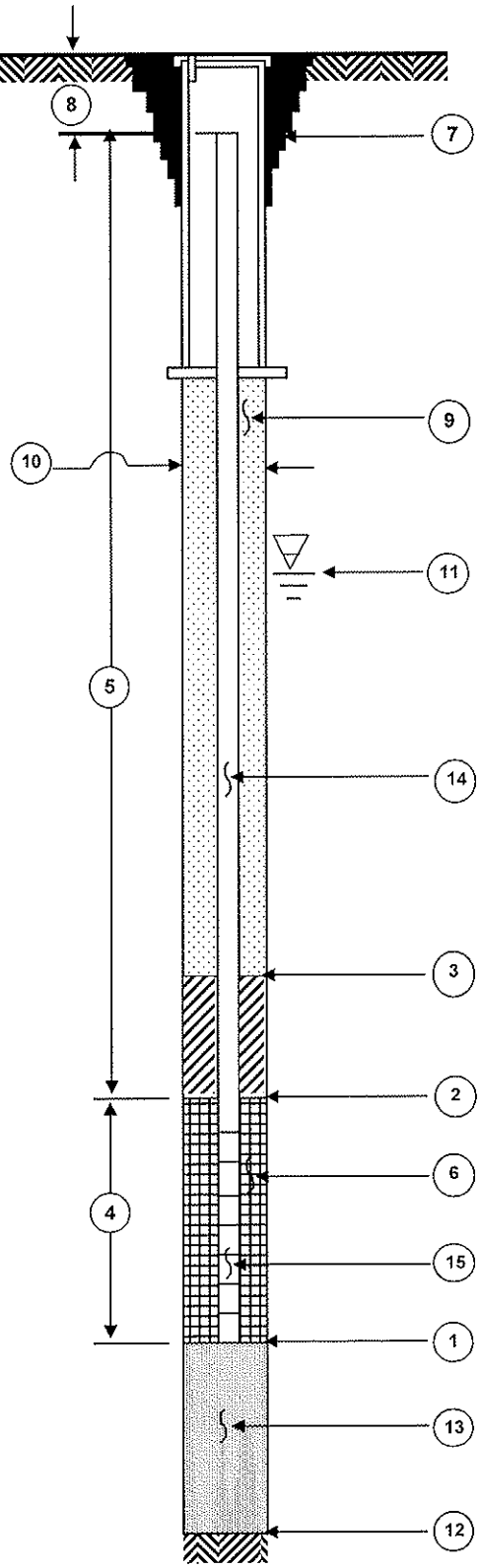
DATUM NAVD 88 - 1988 USGS Datum

JOB NUMBER 21561979

BORING NUMBER B-3

INSTALLATION DATE 21-May-08

LOCATION Roxana, Illinois



(1) DEPTH TO BOTTOM OF WELL POINT OR SLOTTED PIPE 46.32 FEET.*

(2) DEPTH TO BOTTOM OF SEAL (IF INSTALLED) N/A FEET.*

(3) DEPTH TO TOP OF SEAL (IF INSTALLED) N/A FEET.*

(4) LENGTH OF WELL SCREEN 15 FEET.
SLOT SIZE 0.010 INCHES.

(5) TOTAL LENGTH OF RISER PIPE 30.99 FEET AT 1 INCH DIAMETER.

(6) TYPE OF PACK AROUND WELL POINT OR SLOTTED PIPE Native Sand.

(7) CONCRETE CAP? (YES) NO (CIRCLE ONE)

(8) DEPTH TO TOP OF INNER CASING BELOW GROUND SURFACE 0.33 FEET.

(9) TYPE OF UPPER BACKFILL High solids bentonite grout.

(10) BOREHOLD DIAMETER 2.125 INCHES.

(11) DEPTH TO GROUNDWATER 34.47 FEET BTOC ON 5/22/08.

(12) TOTAL DEPTH OF BOREHOLE 48 FEET.*

(13) TYPE OF LOWER BACKFILL Native soil (cave in).

(14) PIPE MATERIAL Schedule 40 PVC.

(15) SCREEN MATERIAL Schedule 40 PVC.

* (DEPTH FROM GROUND SURFACE)

MONITOR WELL INSTALLATION DETAILS

URS Corporation

FLUSH MOUNT MONITORING WELL CONSTRUCTION DIAGRAM

GROUND SURFACE ELEVATION 441.86

TOP OF INNER WELL CASING ELEVATION 441.58

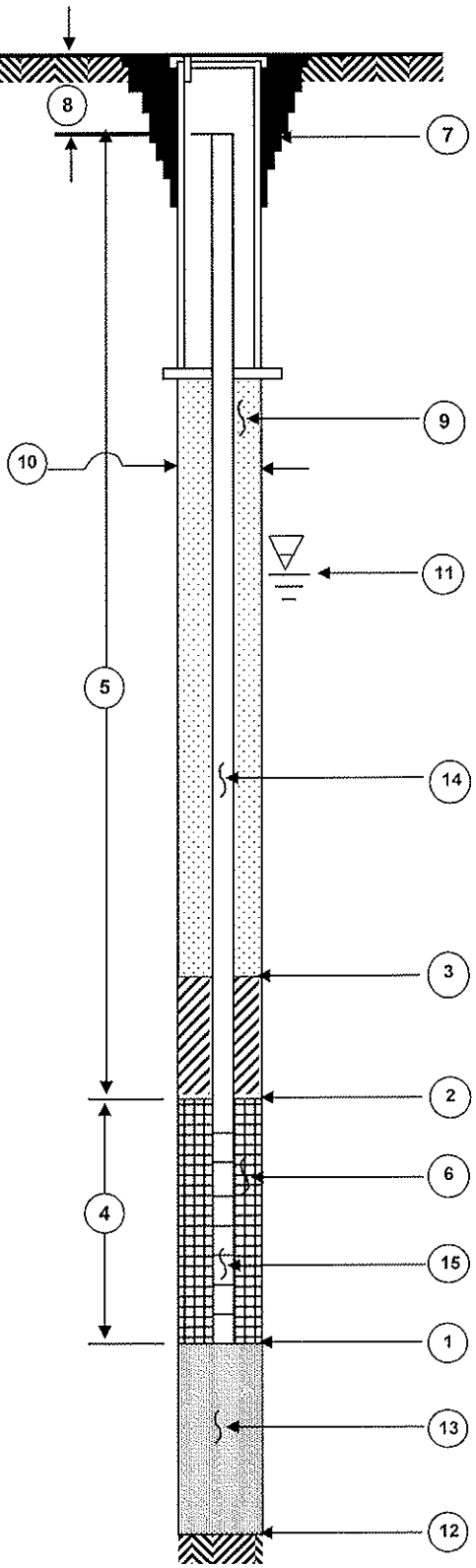
DATUM NAVD 88 - 1988 USGS Datum

JOB NUMBER 21561979

BORING NUMBER B-4

INSTALLATION DATE 22-May-08

LOCATION Roxana, Illinois



(1) DEPTH TO BOTTOM OF WELL POINT OR SLOTTED PIPE 57.98 FEET.*

(2) DEPTH TO BOTTOM OF SEAL (IF INSTALLED) N/A FEET.*

(3) DEPTH TO TOP OF SEAL (IF INSTALLED) N/A FEET.*

(4) LENGTH OF WELL SCREEN 15 FEET.
SLOT SIZE 0.010 INCHES.

(5) TOTAL LENGTH OF RISER PIPE 42.70 FEET AT 1 INCH DIAMETER.

(6) TYPE OF PACK AROUND WELL POINT OR SLOTTED PIPE Native Sand.

(7) CONCRETE CAP? (YES) NO (CIRCLE ONE)

(8) DEPTH TO TOP OF INNER CASING BELOW GROUND SURFACE 0.28 FEET.

(9) TYPE OF UPPER BACKFILL High solids bentonite grout.

(10) BOREHOLD DIAMETER 2.125 INCHES.

(11) DEPTH TO GROUNDWATER 46.45 FEET BTOC ON 5/22/08.

(12) TOTAL DEPTH OF BOREHOLE 58 FEET.*

(13) TYPE OF LOWER BACKFILL Native soil (cave in).

(14) PIPE MATERIAL Schedule 40 PVC.

(15) SCREEN MATERIAL Schedule 40 PVC.

* (DEPTH FROM GROUND SURFACE)

MONITOR WELL INSTALLATION DETAILS

URS Corporation

FLUSH MOUNT MONITORING WELL CONSTRUCTION DIAGRAM

GROUND SURFACE ELEVATION 429.98

TOP OF INNER WELL CASING ELEVATION 429.73

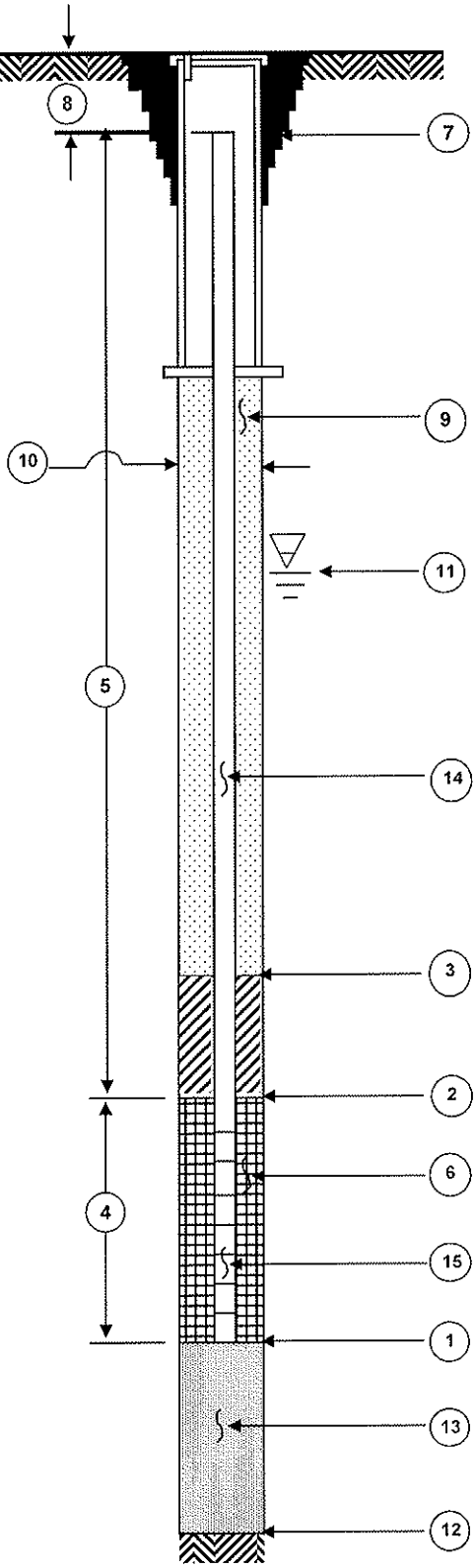
DATUM NAVD 88 - 1988 USGS Datum

JOB NUMBER 21561979

BORING NUMBER B-5

INSTALLATION DATE 21-May-08

LOCATION Roxana, Illinois



(1) DEPTH TO BOTTOM OF WELL POINT OR SLOTTED PIPE 46.45 FEET.*

(2) DEPTH TO BOTTOM OF SEAL (IF INSTALLED) N/A FEET.*

(3) DEPTH TO TOP OF SEAL (IF INSTALLED) N/A FEET.*

(4) LENGTH OF WELL SCREEN 15 FEET.
SLOT SIZE 0.010 INCHES.

(5) TOTAL LENGTH OF RISER PIPE 31.20 FEET AT 1 INCH DIAMETER.

(6) TYPE OF PACK AROUND WELL POINT OR SLOTTED PIPE Native Sand.

(7) CONCRETE CAP? (YES) NO (CIRCLE ONE)

(8) DEPTH TO TOP OF INNER CASING BELOW GROUND SURFACE 0.25 FEET.

(9) TYPE OF UPPER BACKFILL High solids bentonite grout.

(10) BOREHOLD DIAMETER 2.125 INCHES.

(11) DEPTH TO GROUNDWATER 33.88 FEET BTOC ON 5/22/08.

(12) TOTAL DEPTH OF BOREHOLE 48 FEET.*

(13) TYPE OF LOWER BACKFILL Native soil (cave in).

(14) PIPE MATERIAL Schedule 40 PVC.

(15) SCREEN MATERIAL Schedule 40 PVC.

* (DEPTH FROM GROUND SURFACE)

MONITOR WELL INSTALLATION DETAILS

URS Corporation

FLUSH MOUNT MONITORING WELL CONSTRUCTION DIAGRAM

GROUND SURFACE ELEVATION 432.75

TOP OF INNER WELL CASING ELEVATION 432.42

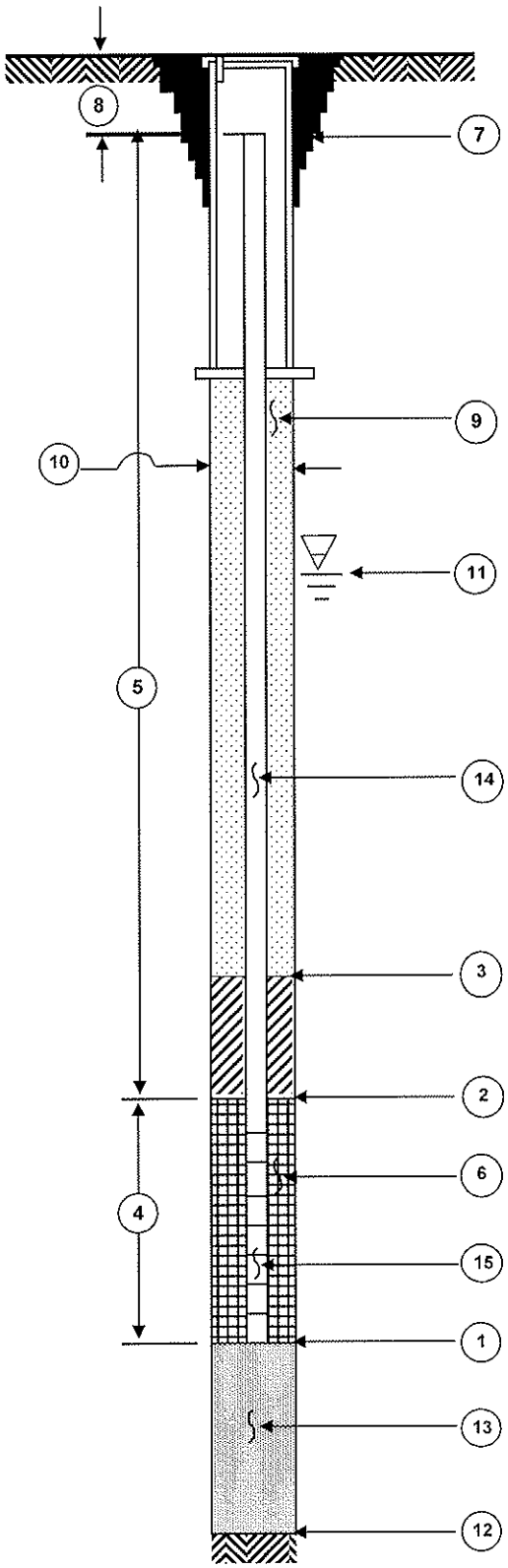
DATUM NAVD 88 - 1988 USGS Datum

JOB NUMBER 21561979

BORING NUMBER B-6

INSTALLATION DATE 19-May-08

LOCATION Roxana, Illinois



(1) DEPTH TO BOTTOM OF WELL POINT OR SLOTTED PIPE 49.75 FEET.*

(2) DEPTH TO BOTTOM OF SEAL (IF INSTALLED) N/A FEET.*

(3) DEPTH TO TOP OF SEAL (IF INSTALLED) N/A FEET.*

(4) LENGTH OF WELL SCREEN 15 FEET.
SLOT SIZE 0.010 INCHES.

(5) TOTAL LENGTH OF RISER PIPE 34.42 FEET AT 1 INCH DIAMETER.

(6) TYPE OF PACK AROUND WELL POINT OR SLOTTED PIPE Native Sand.

(7) CONCRETE CAP? (YES) NO (CIRCLE ONE)

(8) DEPTH TO TOP OF INNER CASING BELOW GROUND SURFACE 0.33 FEET.

(9) TYPE OF UPPER BACKFILL High solids bentonite grout.

(10) BOREHOLD DIAMETER 2.125 INCHES.

(11) DEPTH TO GROUNDWATER 36.60 FEET BTOC ON 5/22/08.

(12) TOTAL DEPTH OF BOREHOLE 50 FEET.*

(13) TYPE OF LOWER BACKFILL Native soil (cave in).

(14) PIPE MATERIAL Schedule 40 PVC.

(15) SCREEN MATERIAL Schedule 40 PVC.

* (DEPTH FROM GROUND SURFACE)

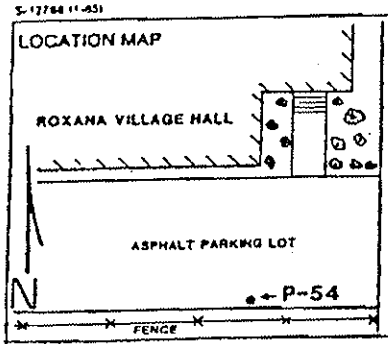
MONITOR WELL INSTALLATION DETAILS

URS Corporation

S-12764 (1-85)

SHELL OIL COMPANY — WELL LOG

PAGE 1 OF 2



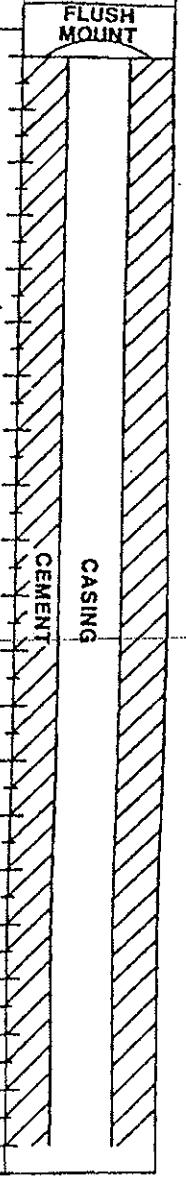
WELL NUMBER: P-54	LOCATION: Roxana Village Hall Southern Parking Lot
DATE: 03-29-89	WEATHER: Cloudy, low 70s
LOGGED BY: R. Chapin & J. Pawlik	DRILLED BY: Mathes Drilling
DRILLING METHOD: 4 1/4" Hollow-Stem Auger	SAMPLING METHOD: 1 1/2" split spoon
GRAVEL PACK: 63' to 36' (27') MB40 Sand	SEAL: 36' to 34' (2') Bentonite; 34' to surface (34') cement

CASING: TYPE Schedule 40 PVC — DIAMETER 2" — LENGTH 38' — HOLE DIA 8 1/4"

SCREEN: TYPE Schedule 40 PVC — SLOT 0.01" — DIAMETER 2" — LENGTH 2.5' — TOTAL DEPTH 63'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
dry	poor	loose				0			0.00'-0.06' FILL, crush lime rock and asphalt.
damp		soft	sl. plas	1	0.8	4	1.11	2, 3	0.06'-0.58' CLAY, mottled dark brown and gray, silty.
damp		soft	sl. plas			5		5	0.58-1.11' CLAY, mottled dark brown and red brown, silty.
damp	mod.	loose		2	1.0	9	0.51	3, 5, 4	0.00'-0.51' SAND, dark brown, very fine-to fine-grained.
damp		soft	sl. plas.			0			0.00'-0.18' CLAY, light brown to tan, some orange layers, silty, and sandy.
damp	mod.	loose		3	0.4	4	1.18	2, 5, 7	0.18'-0.70' SAND, tan, fine-to very fine-grained, slightly silty.
damp	mod.	loose							0.70'-0.74' CLAY, light brown to tan, sandy.
damp	mod.	loose				5			0.74'-1.18' SAND, light tan to tan, fine-to very fine-grained.
damp	mod.	loose				7			0.00'-0.18' SAND, tan to brown, fine-grained, silty.
damp	mod.	loose							0.18'-0.45' SAND, dirty white to tan, fine-grained.
damp	mod.	loose				8			0.45'-0.65' SAND, layered tan and orange, fine-to very fine-grained, slightly silty.
damp		soft	sl. plas.	4	0.4	9	0.85	4, 4, 4	0.65'-0.85' CLAY, light tan, silty, sandy.

WELL COMPLETION



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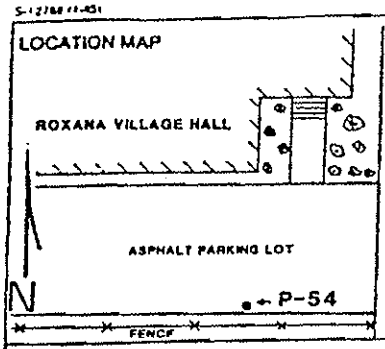
SHELL OIL COMPANY — WELL LOG

PAGE 2 OF 4



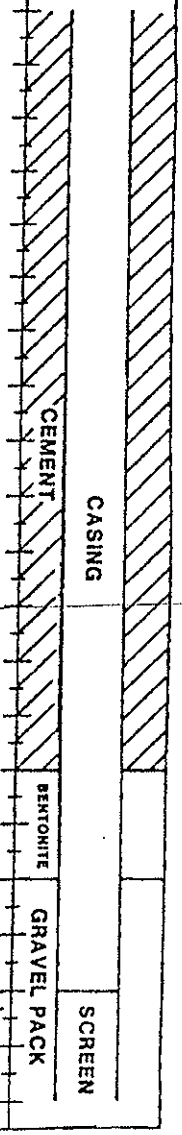
WELL NUMBER: P-54	LOCATION: Roxana Village Hall Southern Parking Lot
DATE: 03-29-89	WEATHER: Cloudy, low 70s
LOGGED BY: R. Chapin & J. Paulik	DRILLED BY: Mathes Drilling
DRILLING METHOD: 4 1/4" Hollow-Stem Auger	SAMPLING METHOD: 18" split spoon
GRAVEL PACK: 63' to 36' (27') MB40 sand	SEAL: 36' to 34' (2') Bentonite; 34' to surface (34') Cement

CASING: TYPE Schedule 40 PVC — DIAMETER 2" — LENGTH 38' — HOLE DIA 8 1/4"

SCREEN: TYPE Schedule 40 PVC — SLOT 0.01" — DIAMETER 2" — LENGTH 25' — TOTAL DEPTH 63'

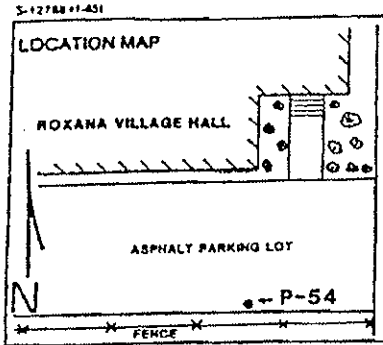
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
damp	mod.	loose		5	0.2	4	1.5'	4 5 8	0.00'-1.50' SAND, light tan, fine-to medium-grained, rounded to subround grains.
damp	mod. well	loose		6	0.6	9	1.26	5 8 10	0.00'-0.80' SAND, yellow to tan, fine-to medium-grained composed of clear, white, black, red and orange, rounded grains, possible yellow staining.
damp	mod. well	loose				30 1			0.80-1.22' SAND, light tan to white, medium-grained, increase in white and clear grains.
damp	mod. well	loose				2 3			0.00'-0.45' SAND, light gray to white, medium-to coarse-grained.
damp	mod. well	loose		7	0.4	4	1.26	5 8 11	0.45'-1.14' SAND, light tan to light gray, orange and tan grains increasing percentages, which gives sand a tan color.
damp	mod. well	loose				5			1.14'-1.26' SAND, tan, medium-grained, orange and tan grains becoming dominate.
moist	mod.	loose				6 7			0.00'-0.15' SAND, tan to orange, medium-grained.
moist	mod.	loose							0.15'-0.23' SAND, light gray, medium-grained, white and clear grains predominate.
moist	mod.	loose				8			0.23'-0.26' SAND, dark gray to black, composed of 45% black organic material, appears to be natural.
moist	mod.	loose				9		8	0.26'-0.76' SAND, light gray, medium-to coarse-grained.
moist	mod.	loose		8	0.4		1.35	10	0.76'-1.35' SAND, light tan to white, coarse-grained.
						40		10	

WELL COMPLETION



S-12788-1-451

LOCATION MAP



SHELL OIL COMPANY — WELL LOG

PAGE 1 OF 4

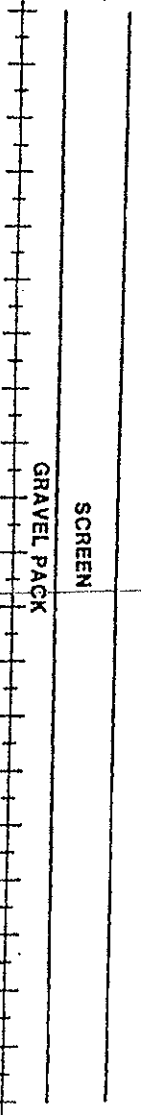
WELL NUMBER ▶ P-64	LOCATION ▶ Roxana Village Hall Southern Parking Lot
DATE ▶ 03-29-89	WEATHER ▶ Cloudy, low 70's
LOGGED BY ▶ R. Chapin & J. Pavlik	DRILLED BY ▶ Mathes Drilling
DRILLING METHOD ▶ 4 1/4" Hollow-Stem Auger	SAMPLING METHOD ▶ 18" Split Spoon
GRAVEL PACK ▶ 63' to 36' (27') MB40 sand	SEAL ▶ 36' to 34' (2') Bentonite 34' to surface (34') cement

CASING ▶ TYPE Schedule 40 PVC DIAMETER 2" LENGTH 38' HOLE DIA 8 1/4"

SCREEN ▶ TYPE Schedule 40 PVC SLOT 0.01" DIAMETER 2" LENGTH 25' TOTAL DEPTH 63'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
moist	mod. well	loose to med. dense		9	0.8	4	1.29'	6 12 15	0.00-1.29' SAND, light gray, medium-to coarse-grained, composed of clear, white, black, red, and orange, rounded grains.
sat.	well	med. dense		10	1.0	9	1.19'	10 21 29	0.00'-1.19' SAND, light gray, coarse-grained.
sat.	well	loose to med. dense		11	0.3	4	1.50'	6 13 22	0.00'-1.50' SAND, gray, coarse-grained, rounded grains.
sat.	well	loose		12	1.1	9	1.50'	6 11 17	0.00'-1.50' SAND, light to medium gray, coarse-to medium-grained.

WELL COMPLETION

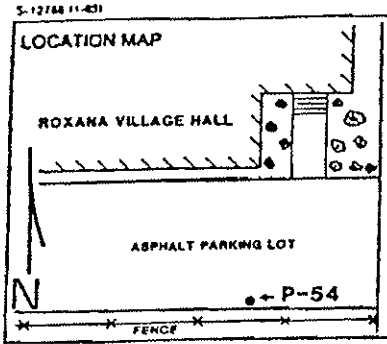


S-12788 11-85)

SHELL OIL COMPANY — WELL LOG

PAGE 1 OF 4

LOCATION MAP



WELL NUMBER: P-54	LOCATION: Roxana Village Hall Southern Parking Lot
DATE: 03-29-89	WEATHER: Cloudy, low 70s
LOGGED BY: R. Chapin & J. Paulik	DRILLED BY: Mathes Drilling
DRILLING METHOD: 4 1/4" Hollow-Stem Auger	SAMPLING METHOD: 18" Split Spoon
GRAVEL PACK: 63' to 36' (27') MB40 sand	SEAL: 36' to 34' (2') Bentonite; 34' to surface (34') cement

CASING: TYPE Schedule 40 PVC — DIAMETER 2" — LENGTH 38' — HOLE DIA 8 1/4"

SCREEN: TYPE Schedule 40 PVC — SLOT 0.01" — DIAMETER 2" — LENGTH 25' — TOTAL DEPTH 63'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS	WELL COMPLETION
						60				GRAVEL PACK / SCREEN
						1				
						2				
						3			NO SAMPLE TAKEN 63.5' - 65'	
						4				
						5				
						6				
						7				
						8				
						9				
						70				TD
						1				
						2				
						3				
						4				
						5				
						6				
						7				
						8				
						9				
						80				

SHELL OIL COMPANY — WELL LOG

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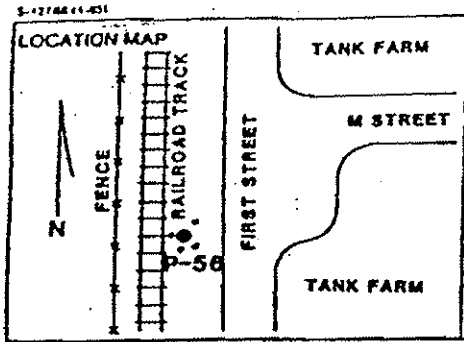


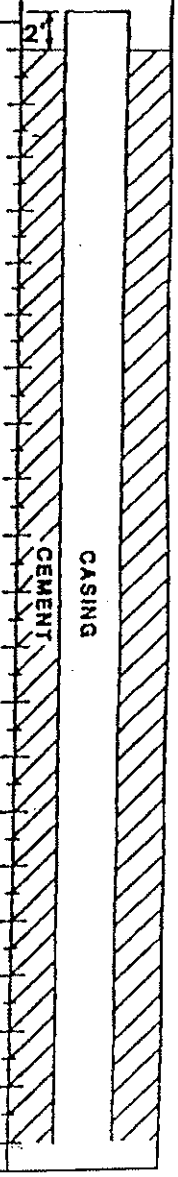
WELL NUMBER	F-56	LOCATION	North Property West Fence Line
DATE	4-2-89	WEATHER	Raining, 50's
LOGGED BY	J. Pavlik	DRILLED BY	Mathes Drilling
DRILLING METHOD	4 1/4" Hollow-Stem Auger	SAMPLING METHOD	18" Split Spoon
GRAVEL PACK	63.5' to 36.5' (27') #840 sand	SEAL	36.5' to 34.5' (2') Bentonite 34.5' to 0' (34.5') cement
CASING TYPE	Schedule 40 PVC	DIAMETER 2"	LENGTH 38.5'
SCREEN TYPE	Schedule 40 PVC	SLOT 0.01"	DIAMETER 2" LENGTH 25'

HOLE DIA 8 1/4"

TOTAL DEPTH 63.5'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
moist		v soft	plas.	1	704	0–4	1.50'	0 1 2	0.00' – 1.50' CLAY, dark black, some very fine-grained sand, strong hydrocarbon odor.
moist	v well	v loose		2	647	8–10	0.95'	1 2 3	0.00' – 0.95' SAND, dark brown, very fine-grained.
moist	v well	loose		3	109	4–5	1.30'	5 9 7	0.00'– 1.30' SAND, tan, fine-grained.
moist		v sofc	plas.	4	782	5–20	0.75'	2 1 2	0.00' – 0.75' CLAY, gray with thin laminations of brown, fine-grained sand.

WELL COMPLETION



SHELL OIL COMPANY — WELL LOG

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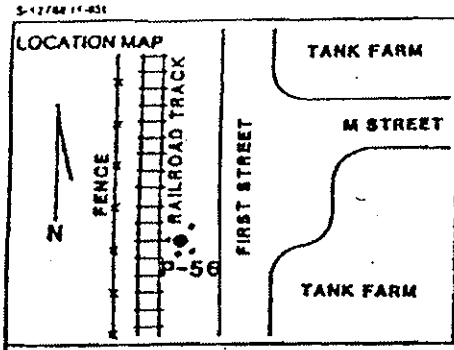
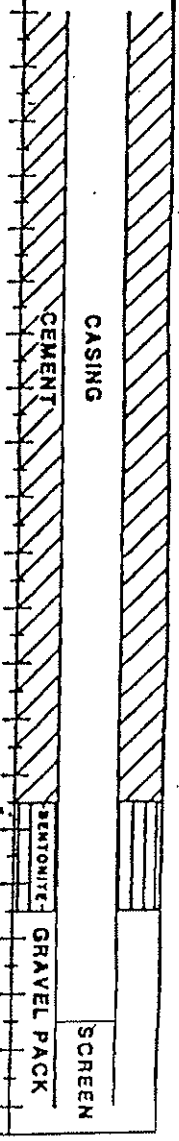


WELL NUMBER: P-56	LOCATION: North Property West Fence Line
DATE: 4-2-89	WEATHER: Raining, 50's
LOGGED BY: J. Paulik	DRILLED BY: Maches Drilling
DRILLING METHOD: 4 1/4" Hollow Stem Auger	SAMPLING METHOD: 18" Split Spoon
GRAVEL PACK: 63.5' to 36.5' (27') #3640 sand	SEAL: 36.5' to 34.5' (2') Bentonite; 34.5' to 0' (34.5') cement
CASING: TYPE Schedule 40 PVC	DIAMETER 2" LENGTH 38.5' HOLE DIA 8 1/4"
SCREEN: TYPE Schedule 40 PVC	SLOT 0.01" DIAMETER 2" LENGTH 25' TOTAL DEPTH 63.5'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
moist	mod.	loose		5	565	4	1.50'	4 6 8	0.00' - 1.50' SAND, tan, fine- to medium-grained, subangular to angular grains.
moist	mod.	loose		6	775	9	1.50'	6 9 12	0.00' - 1.50' SAND, tan, fine- to medium-grained, black laminations, subrounded grains, hydrocarbon ordor.
moist	mod.	loose		7	290	4	1.50'	1 5 7	0.00' - 1.50' SAND, tan, medium-grained, trace of fine gravel, subrounded grains, black laminations, hydrocarbon odor.
moist	mod.	loose		8	811	8	1.50'	3 3 1	0.00' - 1.50' SAND, tan, medium-grained, trace of coarse-grained sand and fine-gravel, subrounded to rounded grains, black vertical streaking, hydrocarbon odors.

WELL COMPLETION



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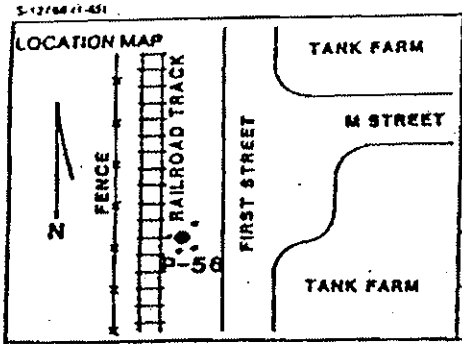
SHELL OIL COMPANY — WELL LOG

PAGE 1 OF 4



WELL NUMBER ▶ P-56	LOCATION ▶ North Property West Fence Line
DATE ▶ 4-2-89	WEATHER ▶ Raining, 50's
LOGGED BY ▶ J. Pawlik	DRILLED BY ▶ Hathes Drilling
DRILLING METHOD ▶ 4 1/4" Hollow-Stem Auger	SAMPLING METHOD ▶ 18" Split Spoon
GRAVEL PACK ▶ 63.5' to 36.5' (27') MR40 sand	SEAL ▶ 36.5' to 34.5' (2') Bentonite; 34.5' to 0' (34.5') cement

CASING ▶ TYPE Schedule 40 PVC — DIAMETER 2" — LENGTH 38.5' — HOLE DIA 8 1/4"

SCREEN ▶ TYPE Schedule 40 PVC — SLOT 0.01" — DIAMETER 2" — LENGTH 25' — TOTAL DEPTH 63.5'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
moist	mod.	med. dense		9	627	4	1.50'	6 11 17	0.00' - 1.50' SAND, gray, medium-grained, subrounded grains, black laminations, hydrocarbon odors.
wet	mod.	med. dense		10	685	9	1.50'	18 27 33	0.00' - 1.50' SAND, gray, medium-grained, trace of coarse-grained, subrounded grains, black lamination hydrocarbon odor and hydrocarbon sheen.
sat.	poor	med. dense		11	300	4	1.50'	8 13 29	0.00' - 1.50' SAND, gray, medium- and coarse-grained, trace of fine gravel, subrounded to rounded grains, hydrocarbon odor and hydrocarbon sheen.
sat.	poor	med. dense		12	749	9	1.50'	6 14 23	0.00' - 1.50' SAND, gray, medium- to coarse-grained, trace of fine-gravel, hydrocarbon odor, and hydrocarbon sheen.

WELL COMPLETION

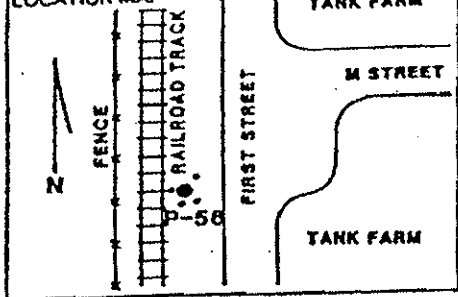
GRAVEL PACK

SCREEN

SHELL OIL COMPANY — WELL LOG

PAGE 1 OF 4

LOCATION MAP



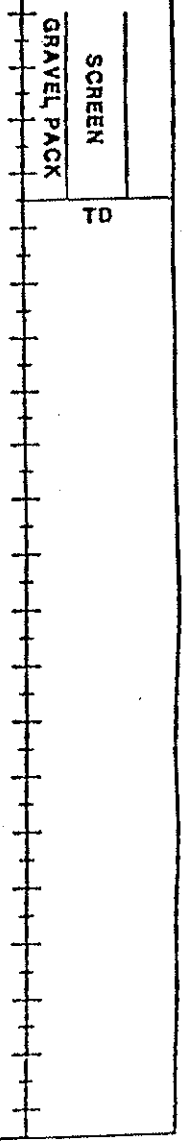
WELL NUMBER ▶ P-56	LOCATION ▶ North Property West Fence Line
DATE ▶ 4-2-89	WEATHER ▶ Raining, 50's
LOGGED BY ▶ J. Pavlik	DRILLED BY ▶ Haches Drilling
DRILLING METHOD ▶ 4 1/4" Hollow-Stem Auger	SAMPLING METHOD ▶ 18" Split Spoon
GRAVEL PACK ▶ 63.5' to 36.5' (27') MB40 sand	SEAL ▶ 36.5' to 34.5' (2') Bentonite 34.5' to 0' (34.5') cement

CASING ▶ TYPE Schedule 40 PVC DIAMETER 2" LENGTH 38.5' HOLE DIA 8 1/4"

SCREEN ▶ TYPE Schedule 40 PVC SLOT 0.01" DIAMETER 2" LENGTH 25' TOTAL DEPTH 63.5'

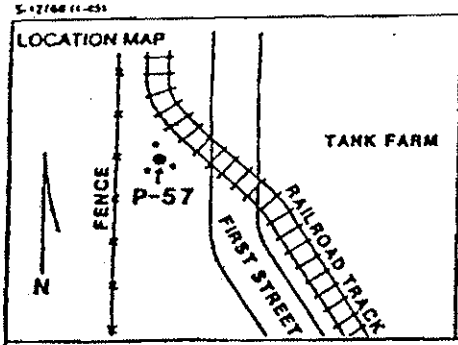
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
wet	poor	mod.		13	749	4	1.50'	8 19 26	0.00' - 1.50' SAND, medium- to coarse-grained, trace of fine-gravel, rounded to subrounded grains, hydrocarbon sheen.

WELL COMPLETION



SHELL OIL COMPANY — WELL LOG

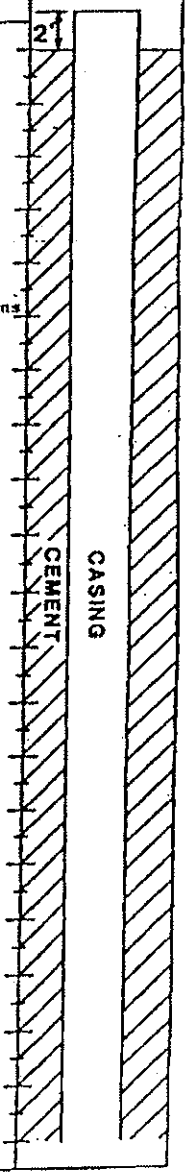
LOCATION MAP



WELL NUMBER: P-57	LOCATION: North Property West Fence Line
DATE: 4-1-89	WEATHER: Sunny, 40's
LOGGED BY: J. Pawlik	DRILLED BY: Mathes Drilling
DRILLING METHOD: 4 1/4" Hollow-Stem Auger	SAMPLING METHOD: 18" Split Spoon
GRAVEL PACK: 63.5' to 36.5' (27') NB40 sand	SEAL: 36.5' to 34.5' (2') Bentonite; 34.5' to 0' (34.5') cement
CASING: TYPE Schedule 40 PVC	DIAMETER 2" LENGTH 38.5'
SCREEN: TYPE Schedule 40 PVC	SLOT 0.01" DIAMETER 2" LENGTH 25'
HOLE DIA 8 1/4"	TOTAL DEPTH 63.5'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
moist		soft	plas	1	1.5	4	1.00'	1 3	0.00'-0.85' CLAY,brown-orange,black streaks.
moist	v. well		v. loose			5		5	0.00'-1.00' SAND,tan,very fine-grained,subangular grains, silty.
moist		soft	plas	2	399	8	1.40'	2 2 2	0.00'-0.20' CLAY,dark gray. 0.20'-1.40' SAND,tan,fine grained.
moist	well	loose		3	588	4	2.20'	1 2 3	0.00'-1.20' SAND,tan to light brown,fine-grained, subangular to subrounded grains, slight hydrocarbon odor.
moist	well	loose		4	635	8	1.04'	3 4	0.00'-0.85' SAND,tan,fine-grained,subangular to subrounded grains.
moist		soft	plas			20		3	

WELL COMPLETION



SHELL OIL COMPANY — WELL LOG

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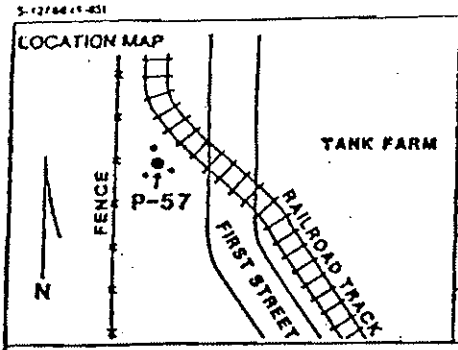


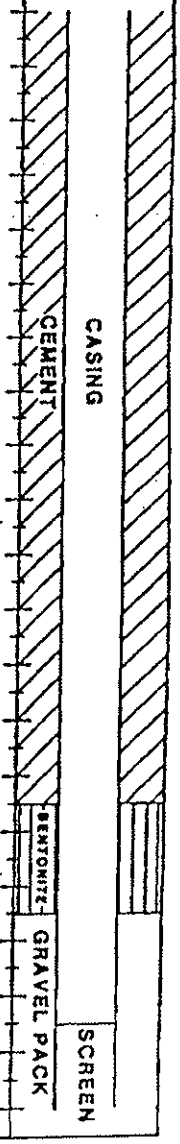
WELL NUMBER	P-57	LOCATION	North Property West Fence Line
DATE	4-1-89	WEATHER	Sunny, 40's
LOGGED BY	J. Pavlik	DRILLED BY	Mathes Drilling
DRILLING METHOD	4 1/4" Hollow-Stem Auger	SAMPLING METHOD	18" Split Spoon
GRAVEL PACK	63.5' to 36.5' (27') MB40 sand	SEAL	36.5' to 34.5' (2') Bentonite; 34.5' to 0' (34.5') cement
CASING TYPE	Schedule 40 PVC	DIAMETER 2"	LENGTH 38.5'
SCREEN TYPE	Schedule 40 PVC	SLOT 0.01" DIAMETER 2"	LENGTH 25'

HOLE DIA 8 1/4"

TOTAL DEPTH 63.5'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
moist	well	loose		5	174	4	1.25'	2 3 4	0.00'-1.25' SAND,tan,fine-grained,subrounded grains, black laminations throughout.
moist		soft	plas	6	367	9	1.50'	1	0.00'-1.08' CLAY,mottled olive green & orange.
moist	well	loose						5	1.08'-1.34' SAND,brown,medium grained,subrounded grains.
moist		soft	plas					3	1.34'-1.50' CLAY,brown.
moist	poor	loose		7	441	4	1.25'	3 8 9	0.00'-1.25' SAND,tan,fine-to medium grained,subrounded grains.
wet	poor	loose		8	681	9	1.50'	1	0.00'-0.45' SAND,brown to olive green,medium-to fine-grained,subrounded grains,hyrdocarbon odor.
moist		soft	plas					9	0.45'-0.60' CLAY,dark olive.
damp	well	loose				40		10	0.60'-1.50' SAND,orange-brown,fine-grained,subrounded grains.

WELL COMPLETION



SHELL OIL COMPANY — WELL LOG

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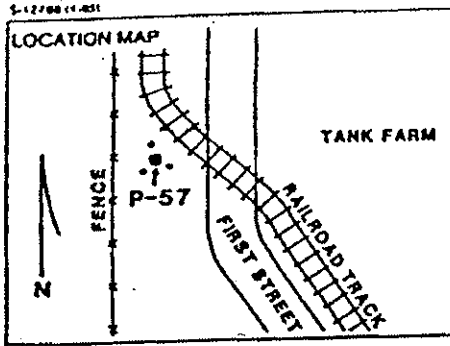


WELL NUMBER: P-57	LOCATION: North Property West Fence Line
DATE: 4-1-89	WEATHER: Sunny, 40's
LOGGED BY: J. Pavlik	DRILLED BY: Mathes Drilling
DRILLING METHOD: 4 1/4" Hollow-Stem Auger	SAMPLING METHOD: 18" Split Spoon
GRAVEL PACK: 63.5' to 36.5' (27') #840 sand	SEAL: 36.5' to 34.5' (2') Bentonite; 34.5' to 0' (34.5') cement

CASING: TYPE Schedule 40 PVC; DIAMETER 2"; LENGTH 38.5'; HOLE DIA 8 1/4"

SCREEN: TYPE Schedule 40 PVC; SLOT 0.01"; DIAMETER 2"; LENGTH 25'; TOTAL DEPTH 63.5'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
						40			
						1			
						2			
						3			
moist	mod.	loose				4		3	0.00'-0.70' SAND,gray,fine-grained,subangular grains, hydrocarbon odor.
moist	mod.	loose	9	1041			1.50'	7	
						5		8	0.70'-1.50' SAND,brown,medium-grained,trace fine-gravel, subangular to subrounded grains,hydrcarbon odor.
						6			
						7			
						8			
						9		8	
moist	mod.	med.	10	828			1.50'	10	0.00'-1.50' SAND,brown,fine-to medium-grained,trace of fine-gravel,subangular to subrounded grains, hydrocarbon odor.
						60		24	
						1			
						2			
						3			
						4		7	0.00'-1.40' SAND,dark brown,medium-grained,subrounded grains,hydrocarbon odor.
sat.	mod.	med.	11	630			1.50'	15	
sat.	mod.	med.				5		26	1.40'-1.50' SAND,black,medium-grained,trace of fine-gravel,subrounded grains,hydrocarbon odor.
						6			
						7			
						8			
						9		3	
sat.	poor	loose	12	729			1.50'	9	0.00'-1.50' SAND,brown,medium-grained,trace fine-gravel, subrounded to rounded grains,hydrocarbon odor.
						60		13	

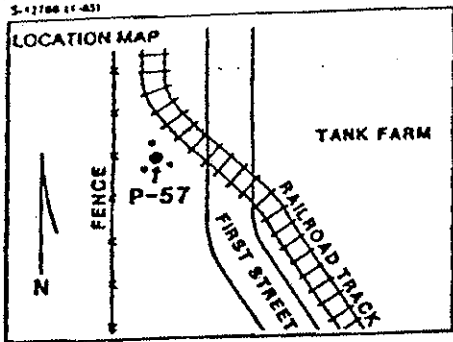
WELL COMPLETION

GRAVEL PACK

SCREEN

SHELL OIL COMPANY — WELL LOG

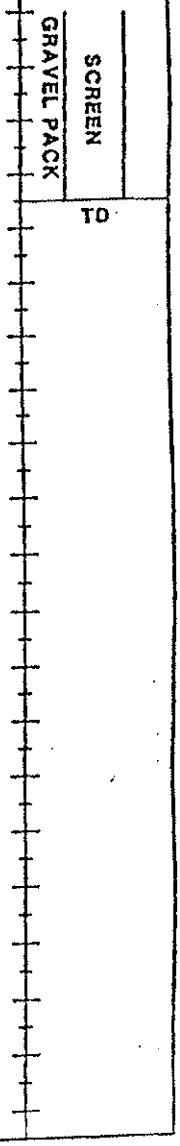
LOCATION MAP



WELL NUMBER: P-57	LOCATION: North Property West Fence
DATE: 4-1-89	WEATHER: Sunny, 40's
LOGGED BY: J. Pavlik	DRILLED BY: Mathes Drilling
DRILLING METHOD: 4 1/4" Hollow Stem Auger	SAMPLING METHOD: 18" Split Spoon
GRAVEL PACK: 63.5' to 36.5' (27') M840 sand	SEAL: 36.5' to 34.5' (2') Bentonite; 34.5' to 0' (34.5') cement
CASING: TYPE Schedule 40 PVC	DIAMETER 2" LENGTH 38.5'
SCREEN: TYPE Schedule 40 PVC	SLOT 0.01" DIAMETER 2" LENGTH 25'
HOLE DIA: 8 1/4"	TOTAL DEPTH: 63.5'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
sat.	poor	v. loose		13	695	4	1.50'	2 1 2	0.00'-1.50' SAND, dark gray, medium-to coarse-grained, rounded to subrounded grains, traces of angular fine-gravel, hydrocarbon odor.

WELL COMPLETION



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SHELL OIL COMPANY — WELL LOG

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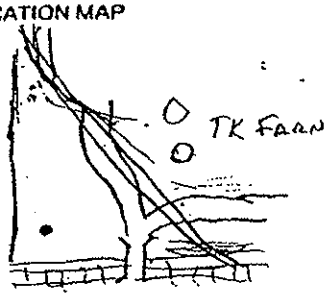
LOCATION MAP



ELEVATION ▶

WELL NUMBER ▶ ES P-58 4	LOCATION ▶ NORTH PROP., SO. CORNER
DATE ▶ 3-30-89	WEATHER ▶ CLOUDY, RAINING, 50s
LOGGED BY ▶ JP	DRILLED BY ▶ MATHES
DRILLING METHOD ▶ 8" Hollow Stem Auger	SAMPLING METHOD ▶ 18" SPLIT SPOON
GRAVEL PACK ▶ 63.5'-36.5' = 27'	SEAL ▶ 36.5-34.5 = 2' 34.5-0 = 34.5'

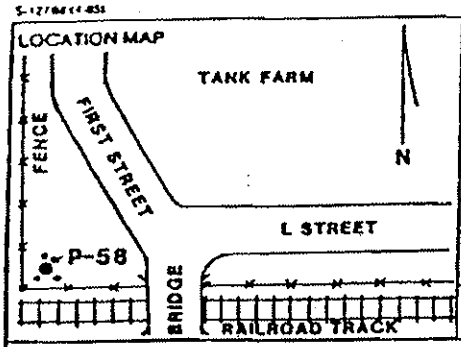
CASING ▶ TYPE S-40 PVC DIAMETER 2" LENGTH 38.5' HOLE DIA 8"

SCREEN ▶ TYPE S-40 PVC SLOT 0.01" DIAMETER 2" LENGTH 25' TOTAL DEPTH 63.5'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS	WELL COMPLETION
moist		soft	plastic	1	4	1.5	1	0 → 0.6 – Light brown clay	
moist		soft	plastic	15.3			3	0.6 → 1.5 – Olive green clay, black streaking	
					5		3		
moist	very well	loose		2	9	1.0	3	0 – 0.4 – brown vFg sd. slightly silty	
moist		med.	plastic	10.8			4	0.4 – 0.6 – Olive clay, silty	
moist	very well	loose			10		4	0.6 – 1.0 – tan, vFg sd	
moist	very well	loose		3	4	0.97	5	0 – 0.7 – Tan sand, vFg, black streaking throughout	
moist	very well	loose		50.4			5	0.7 – 0.97 – tan sand, vFg, some streaking	
					5		7		
moist	well	loose		4	9	1.15	5	0 – 1.15 – tan sand, medium grain, subangular → subrounded	
				9.1			7		

SHELL OIL COMPANY — WELL LOG

PAGE 1 OF 4



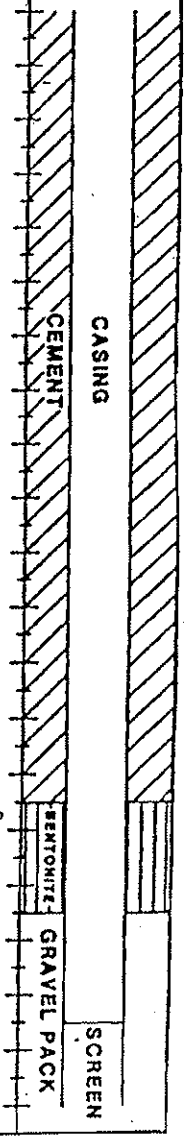
WELL NUMBER	P-58	LOCATION	North Property Southwest Corner
DATE	3-30-89	WEATHER	Cloudy, Raining 50's
LOGGED BY	J. Pawlik	DRILLED BY	Mathes Drilling
DRILLING METHOD	4 1/4" Hollow-Stem Auger	SAMPLING METHOD	18" Split Spoon
GRAVEL PACK	61.5' to 36.5' (27') MB40 sand	SEAL	36.5' to 34.5' (2') Benconite; 34.5' to 0' (34.5') cement

CASING ▶ TYPE Schedule 40 PVC DIAMETER 2" LENGTH 38.5' HOLE DIA 8 1/4"

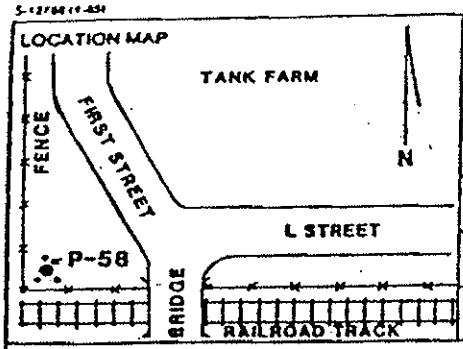
SCREEN ▶ TYPE Schedule 40 PVC SLOT 0.01" DIAMETER 2" LENGTH 25' TOTAL DEPTH 63.5'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
moist	well	loose		5	24.8	4	1.50'	7 11	0.00'-0.30' SAND,tan,medium-grained,subangular to subrounded grains,contains black streaks.
moist	well	med.				5		11	0.30'-1.50' SAND,tan,medium-grained,subangular to subrounded grains.
moist	v. well	v. soft med.	sl plas	6	71.1	9	1.25'	1 11 11	0.00'-0.80' CLAY,mottled light brown & olive. 0.80'-1.25' SAND,tan,very fine-grained,organic material showing bedding plane laminations.
moist	v. well	med.		7	18.6	4	1.50'	4 9 12	0.00'-0.50' SAND,dark brown,very fine-grained. 0.50'-1.50' SAND,dark brown,medium-grained,subangular to grains.
moist	well	loose		8	232	9	1.00'	5 11	0.00'-0.20' SAND,olive,medium-grained,subangular to subrounded grains.
moist	well	med.				40		11	0.20'-1.00' SAND,dark brown,medium-grained,subangular to subrounded grains.

WELL COMPLETION



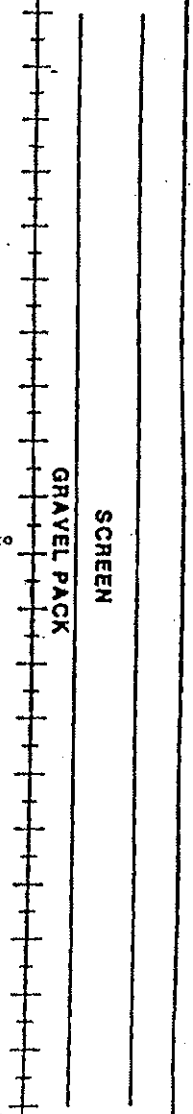
SHELL OIL COMPANY — WELL LOG



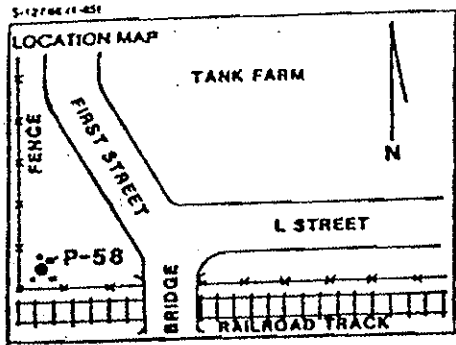
WELL NUMBER	P-58	LOCATION	North Property Southwest Corner
DATE	1-30-89	WEATHER	Cloudy, Raining, 50's
LOGGED BY	J. Paulik	DRILLED BY	Mathes Drilling
DRILLING METHOD	4 1/4" Hollow-Stem Auger	SAMPLING METHOD	18" Split Spoon
GRAVEL PACK	60' to 36.5' (27') NH40 sand	SEAL	36.5' to 34.5' (2') Bentonite; 34.5' to 0' (34.5') cement
CASING TYPE	Schedule 40 PVC	DIAMETER 2"	LENGTH 38.5'
SCREEN TYPE	Schedule 40 PVC	SLOT 0.01"	DIAMETER 2" LENGTH 25'
HOLE DIA	8 1/4"	TOTAL DEPTH	63.5'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
moist	poor	med.		9	725	4	1.50'	5 16 18	0.00'-1.50' SAND,dark brown,medium-to coarse-grained, subangular to subrounded grains,trace of fine-gravel,hydrocarbon odor.
wet	poor	med.		10	989	9	1.25'	12 21	0.00'-0.20' SAND,dark brown,medium-to coarse-grained, subangular to subrounded grains,trace of fine-gravel,gas odor.
wet	well	med.				60		25	0.20'-1.25' SAND,dark brown,medium-grained,subangular to subrounded grains,gas odor.
sat.	poor	loose		11	120	4	1.5'	6 3	0.00'-1.25' SAND,dark brown,medium-to coarse grained, subrounded grains,trace of angular,fine-gravel,gas odor.
wet		med.	plas			5		5	1.25'-1.50' CLAY,dark green.
sat.	poor	loose		12	45.7	9	1.5'	4 6	0.00'-0.55' SAND,dark brown,medium-to fine-grained, subrounded grains. 0.55'-1.00' SAND,dark brown,very fine-grained,silty.
sat.	well	loose				60		10	1.00'-1.50' SAND,dark brown,very fine-grained, silty, laminated with thin beds of organic materials

WELL COMPLETION



SHELL OIL COMPANY — WELL LOG



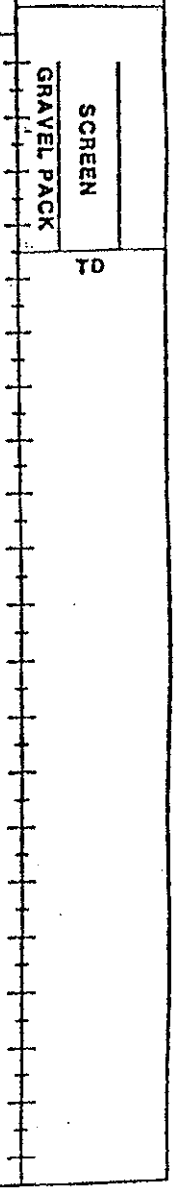
WELL NUMBER ▶ P-58	LOCATION ▶ North Property Southwest Corner
DATE ▶ 3-30-89	WEATHER ▶ Cloudy, Raining. 50's
LOGGED BY ▶ J. Pavlik	DRILLED BY ▶ Maches Drilling
DRILLING METHOD ▶ 4 1/4" Hollow-Stem Auger	SAMPLING METHOD ▶ 18" Split Spoon
GRAVEL PACK ▶ 63.5 to 36.5 (27') M840 sand	SEAL ▶ 36.5' to 34.5' (2') Bentonite 34.5' to 0' (34.5') cement

CASING ▶ TYPE Schedule 40 PVC DIAMETER 2" LENGTH 38.5' HOLE DIA 8 1/4"

SCREEN ▶ TYPE Schedule 40 PVC SLOT 0.01" DIAMETER 2" LENGTH 25' TOTAL DEPTH 63.5'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
sat.	poor	med.		13	51.3	4	1.5'	5 13 18	0.00'-1.50' SAND,dark brown,medium-to coarse-grained, subrounded grains.

WELL COMPLETION



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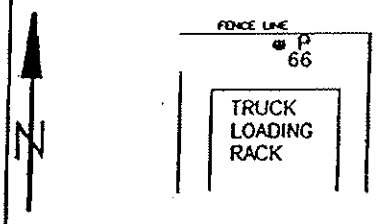
37746-402.46

LOCATION MAP



SHELL OIL COMPANY-WELL LOG

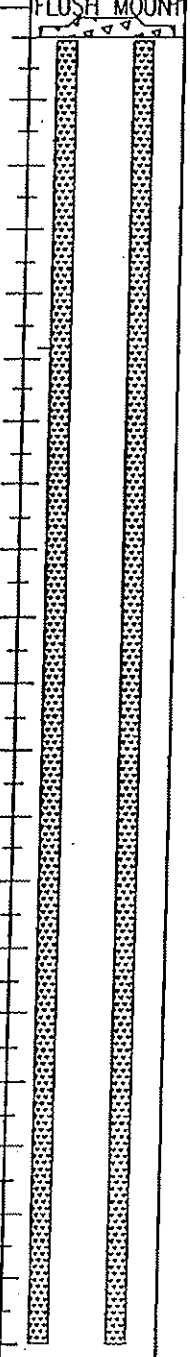
WELL NUMBER ▶ P-66	LOCATION ▶ LOADING RACK
DATE ▶ 9-27-89	WEATHER ▶ CLEAR, LIGHT WIND TEMP.60'S
LOGGED BY ▶ J.PAWLIK	DRILLED BY ▶ MATHES
DRILLING METHOD ▶ 6.25" HSA	SAMPLING METHOD ▶ 2.0' SPLIT-SPOON
GRAVEL PACK ▶ 60'-33'(27') WB-40 Sd	SEAL ▶ 33'-31' BENTONITE 31'-0' GROUT

CASING ▶ TYPE SCHEDULE-40 PVC DIAMETER 2" LENGTH 35' HOLE DIA. 8"

SCREEN ▶ TYPE S-40 PVC SLOT 0.02" DIAMETER 2" LENGTH 25' TOTAL DEPTH 60'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
moist	mod	vloose		1	7.6	0-4	1.50	0 0 0 0	0.0'-1.50' Sand, very fine-grained, gray, very silty. * Split-spoon pushed for 3'-5' sample.
moist	mod	vloose		2	7.3	8-9	1.55	1 1 1 1	0.0'-1.02' Sand, very fine-grained, gray, very silty.
moist	mod	vloose							1.02'-1.55' Sand, fine-grained, tan, black laminations.
wet	mod	loose		3	3.6	13-14	0.75	4 8 10 11	0.0'-0.25' Sand, very fine-grained, tan, very silty.
moist	mod	loose							0.25'-0.75' Sand, very fine-grained, gray, black laminations.
moist	mod	loose		4	2.1	18-19	1.40	3 6 6 10	0.0'-1.40' Sand, fine and medium-grained, tan.

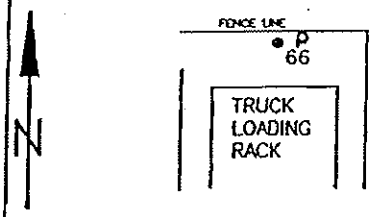
WELL COMPLETION



35-60'

EXPLANATION GROUT SAND SCREEN

LOCATION MAP



SHELL OIL COMPANY-WELL LOG

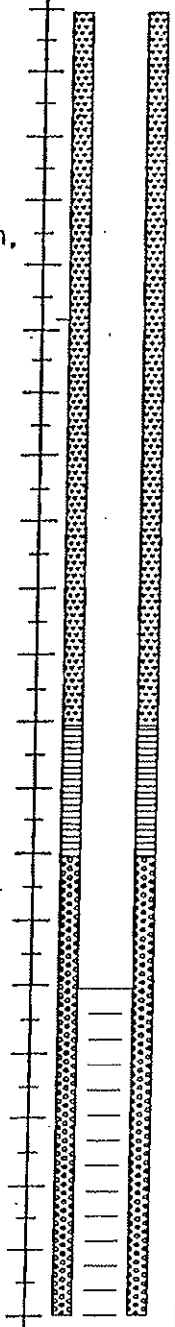
WELL NUMBER ▶ P-66	LOCATION ▶ LOADING RACK
DATE ▶ 9-27-89	WEATHER ▶ CLEAR, LIGHT WIND TEMP.60'S
LOGGED BY ▶ J.PAWLIK	DRILLED BY ▶ MATHES
DRILLING METHOD ▶ 6.25" HSA	SAMPLING METHOD ▶ 2.0' SPLIT-SPOON
GRAVEL PACK ▶ 60'-33'(27') WB-40 Sd	SEAL ▶ 33'-31' BENTONITE 31'-0' GROUT

CASING ▶ TYPE SCHEDULE-40 PVC DIAMETER 2" LENGTH 35' HOLE DIA. 8"

SCREEN ▶ TYPE S-40 PVC SLOT 0.02" DIAMETER 2" LENGTH 25' TOTAL DEPTH 60'

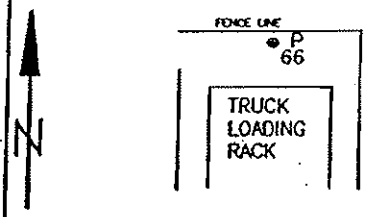
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
moist	well	loose		5	21.3	23-28	1.54	2, 4, 8, 9	0.0'-1.54' Sand, medium-grained, tan, hydrocarbon odor.
moist	mod	loose		6	38.9	28-33	1.45	4, 8, 10, 12	0.0'-1.45' Sand, fine and medium-grained, tan, hydrocarbon odor.
moist	mod	mdense		7	350	33-38	1.75	6, 16, 25, 33	0.0'-1.75' Sand, medium and coarse-grained, tan, trace of fine gravel, hydrocarbon odor.
moist	mod	mdense		8	335	38-40	1.21	5, 10, 12, 14	0.0'-1.21' Sand, fine and medium-grained, tan, hydrocarbon odor.

WELL COMPLETION



EXPLANATION GROUT SAND SCREEN

LOCATION MAP



SHELL OIL COMPANY-WELL LOG

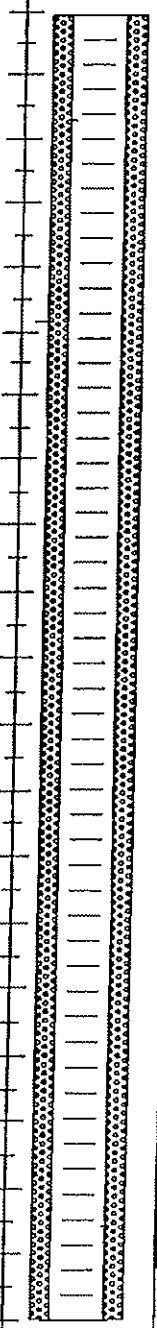
WELL NUMBER ▶ P-66	LOCATION ▶ LOADING RACK
DATE ▶ 9-27-89	WEATHER ▶ CLEAR, LIGHT WIND TEMP.60'S
LOGGED BY ▶ J.PAWLIK	DRILLED BY ▶ MATHES
DRILLING METHOD ▶ 6.25" HSA	SAMPLING METHOD ▶ 2.0' SPLIT-SPOON
GRAVEL PACK ▶ 60'-33'(27') WB-40 Sd	SEAL ▶ 33'-31' BENTONITE 31'-0' GROUT

CASING ▶ TYPE SCHEDULE-40 PVC DIAMETER 2" LENGTH 35' HOLE DIA. 8"

SCREEN ▶ TYPE S-40 PVC SLOT 0.02" DIAMETER 2" LENGTH 25' TOTAL DEPTH 60'

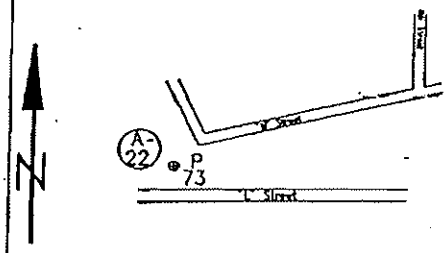
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
wet	mod	mdense		9	141	44	1.81'	5 13 18 24	0.0'-1.81' Sand, medium and coarse-grained, tan, trace of fine gravel, hydrocarbon odor.
sat	mod	mdense		10	233	49	1.78'	6 12 18 24	0.0'-1.78' Sand, fine and medium-grained, tan, some coarse-grained, trace of fine gravel, hydrocarbon odor.
sat	mod	mdense		11	107	54	2.0'	3 9 12 17	0.0'-2.0' Sand, medium and coarse-grained, tan, hydrocarbon odor.
									0.0'-0.10' Coal, black.
sat	mod	mdense		12	112	59	0.70'	6 9 12 17	0.10'-0.25' Sand, medium and coarse-grained, tan.
sat	mod	mdense							0.25'-0.70' Sand, coarse-grained, tan, some fine and coarse gravel

WELL COMPLETION



EXPLANATION GROUT SAND SCREEN

LOCATION MAP



SHELL OIL COMPANY-WELL LOG

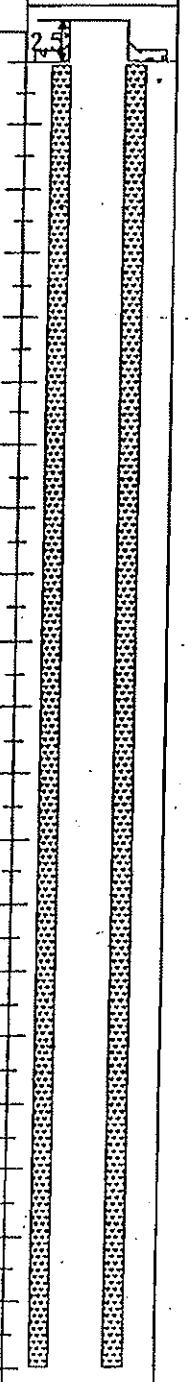
WELL NUMBER ▶ P-73	LOCATION ▶ TANK A-22
DATE ▶ 10-7-89	WEATHER ▶ CLEAR, WINDY TEMP. 50'S
LOGGED BY ▶ J.PAWLIK	DRILLED BY ▶ MATHES
DRILLING METHOD ▶ 8.25" HSA	SAMPLING METHOD ▶ 2.0' SPLIT-SPOON
GRAVEL PACK ▶ 65'-38'(27') WB-40 Sd	SEAL ▶ 38'-36' BENTONITE 36'-0' GROUT

CASING ▶ TYPE SCHEDULE 40 PVC DIAMETER 4" LENGTH 40' HOLE DIA. 10"

SCREEN ▶ TYPE S-40 PVC SLOT 0.02" DIAMETER 4" LENGTH 25' TOTAL DEPTH 65'

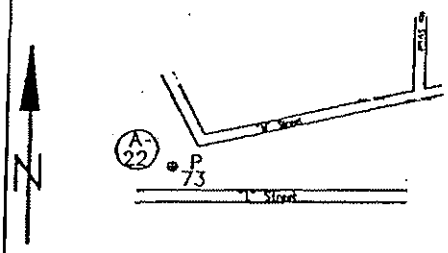
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
moist		soft	plastic	1	4.2	0-3	1.30	0 0 0 0	0.0'-1.30' Clay, green, very silty. * Split-spoon pushed for 3'-5' sample.
wet	well	loose		2	4.2	8-10	1.80	3 3 3 5	0.0'-1.80' Sand, very fine-grained, dark brown grading to black, very silty, hydrocarbon odor.
moist	well	loose		3	2.5	13-15	1.80'	3 5 5 6	0.0'-1.80' Sand, very fine-grained, tan, black mottled, very silty, hydrocarbon odor.
moist	mod	loose		4	3.1	18-20	1.42	4 4 6 7	0.0'-1.42' Sand, very fine-grained, some fine-grained, tan, hydrocarbon odor.

WELL COMPLETION



EXPLANATION: GROUT, SAND, SCREEN, BENTONITE, CASING, WATER LEVEL

LOCATION MAP



SHELL OIL COMPANY-WELL LOG

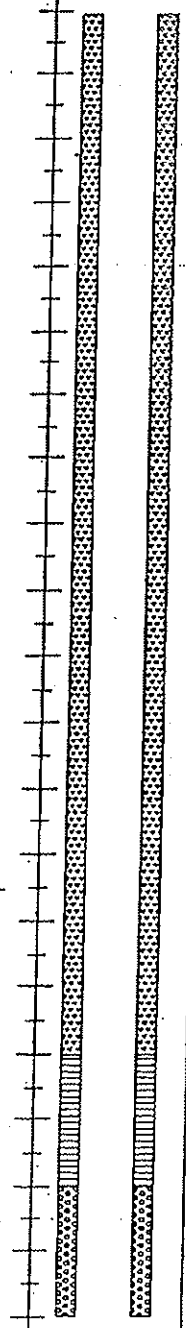
WELL NUMBER ▶ P-73	LOCATION ▶ TANK A-22
DATE ▶ 10-7-89	WEATHER ▶ CLEAR, WINDY TEMP. 50'S
LOGGED BY ▶ J.PAWLIK	DRILLED BY ▶ MATHES
DRILLING METHOD ▶ 8.25" HSA	SAMPLING METHOD ▶ 2.0' SPLIT-SPOON
GRAVEL PACK ▶ 65'-38'(27') WB-40 Sd	SEAL ▶ 38'-36' BENTONITE 36'-0' GROUT

CASING ▶ TYPE SCHEDULE 40 PVC DIAMETER 4" LENGTH 40' HOLE DIA. 10"

SCREEN ▶ TYPE S-40 PVC SLOT 0.02" DIAMETER 4" LENGTH 25' TOTAL DEPTH 65'

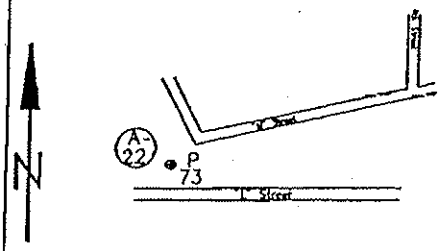
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
moist	mod	loose		5	7.0	23-24	1.69	4, 4, 3, 3	0.0'-1.69' Sand, very fine and fine-grained, tan, trace of medium-grained.
moist	mod	loose		6	8.4	28-29	1.37	3, 6, 7, 9	0.0'-1.37' Sand, fine and medium-grained, tan.
moist	mod	loose		7	1.5	33-34	1.39	3, 7, 9, 10	0.0'-1.39' Sand, medium and coarse-grained, tan.
moist	mod	mdense		8	310	38-39	1.55	4, 8, 12, 17	0.0'-1.55' Sand, medium and coarse-grained, tan, hydrocarbon odor.

WELL COMPLETION



EXPLANATION: GROUT, BENTONITE, SAND, CASING, SCREEN, WATER LEVEL

LOCATION MAP



SHELL OIL COMPANY-WELL LOG

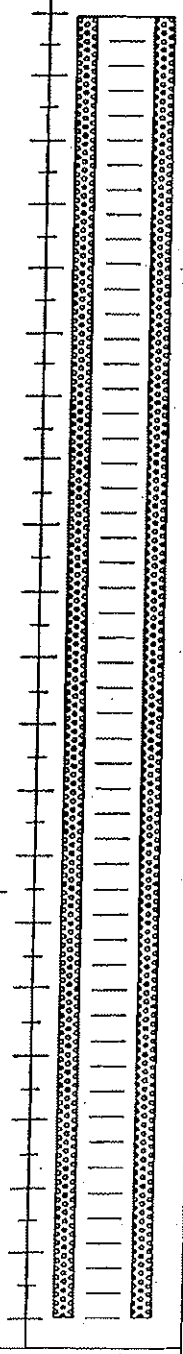
WELL NUMBER ▶ P-73	LOCATION ▶ TANK A-22
DATE ▶ 10-7-89	WEATHER ▶ CLEAR, WINDY TEMP. 50'S
LOGGED BY ▶ J.PAWLIK	DRILLED BY ▶ MATHES
DRILLING METHOD ▶ 8.25" HSA	SAMPLING METHOD ▶ 2.0' SPLIT-SPOON
GRAVEL PACK ▶ 65'-38'(27') WB-40 Sd	SEAL ▶ 38'-36' BENTONITE 36'-0' GROUT

CASING ▶ TYPE SCHEDULE 40 PVC DIAMETER 4" LENGTH 40' HOLE DIA. 10"

SCREEN ▶ TYPE S-40 PVC SLOT 0.02" DIAMETER 4" LENGTH 25' TOTAL DEPTH 65'

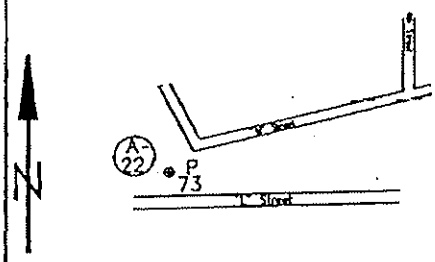
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
moist	mod	mdense		9	364	44	1.31	6, 16, 20, 22	0.0'-1.31' Sand, fine and medium-grained, tan, hydrocarbon odor.
wet	mod	mdense		10	317	49	2.0'	4, 10, 17, 19	0.0'-2.0' Sand, fine and medium-grained, some coarse-grained, tan, hydrocarbon odor.
sat	mod	mdense		11	238	54	2.0'	1, 6, 16, 27	0.0'-2.0' Sand, medium and coarse-grained, trace of fine-grained, tan, hydrocarbon odor.
sat	mod	loose		12	221	59	2.0	1, 1, 7, 9	0.0'-2.0' Sand, medium and coarse-grained, tan, trace of fine gravel.

WELL COMPLETION



EXPLANATION: GROUT, SAND, SCREEN, BENTONITE, CASING, WATER LEVEL

LOCATION MAP



SHELL OIL COMPANY-WELL LOG

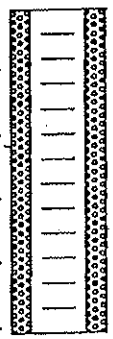
WELL NUMBER ▶ P-73	LOCATION ▶ TANK A-22
DATE ▶ 10-7-89	WEATHER ▶ CLEAR, WINDY TEMP. 50'S
LOGGED BY ▶ J.PAWLIK	DRILLED BY ▶ MATHES
DRILLING METHOD ▶ 8.25" HSA	SAMPLING METHOD ▶ 2.0' SPLIT-SPOON
GRAVEL PACK ▶ 65'-38'(27') WB-40 Sd	SEAL ▶ 38'-36' BENTONITE 36'-0' GROUT

CASING ▶ TYPE SCHEDULE 40 PVC DIAMETER 4" LENGTH 40' HOLE DIA. 10"

SCREEN ▶ TYPE S-40 PVC SLOT 0.02" DIAMETER 4" LENGTH 25' TOTAL DEPTH 65'

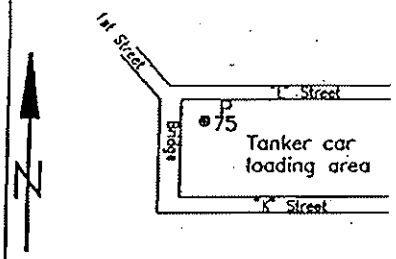
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
						60			
						61			
						62			
						63			
sat	mod	loose		13	296	64	2.0'	1 6 17 27	0.0'-1.90' Sand, medium and coarse-grained, tan, hydrocarbon odor.
sat	poor	mdense				65			1.90'-2.0' Sand, coarse-grained, tan, and fine gravel, some coarse gravel.
						66			
						67			
						68			
						69			
						70			
						71			
						72			
						73			
						74			
						75			
						76			
						77			
						78			
						79			
						80			

WELL COMPLETION



EXPLANATION: GROUT, BENTONITE, SAND, CASING, SCREEN, WATER LEVEL

LOCATION MAP



SHELL OIL COMPANY-WELL LOG

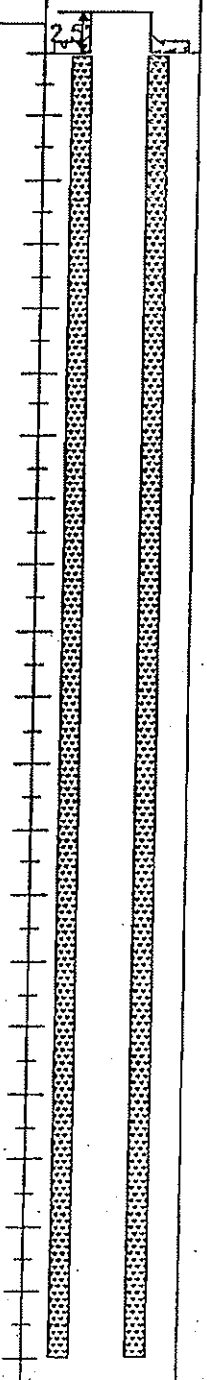
WELL NUMBER ▶ P-75	LOCATION ▶ TK CAR LOADING RACK
DATE ▶ 10-10-89	WEATHER ▶ CLEAR, LIGHT WIND TEMP. 60'S
LOGGED BY ▶ J.PAWLIK	DRILLED BY ▶ MATHES
DRILLING METHOD ▶ 8.25'	SAMPLING METHOD ▶ 1.50" SPLIT-SPOON
GRAVEL PACK ▶ 66'-39'(27') WB-40 Sd	SEAL ▶ 39'-37' BENTONITE 37'-0' GROUT

CASING ▶ TYPE SCHEDULE-40 PVC DIAMETER 4" LENGTH 41' HOLE DIA. 10"

SCREEN ▶ TYPE S-40 PVC SLOT 0.02" DIAMETER 4" LENGTH 25' TOTAL DEPTH 66'

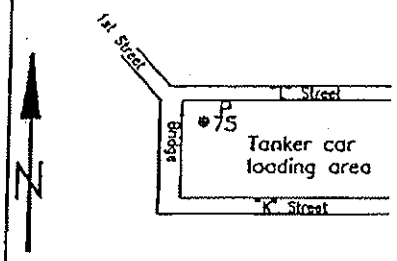
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
moist		soft	plastic	1	124	5	0.95'	2 3 4	0.0'-0.95' Clay, green, black laminations, very silty.
moist	well	loose		2	523	10	0.73'	3 9 3	0.0'-0.73' Sand, very fine-grained, tan, slightly silty, hydrocarbon odor.
moist	mod	loose		3	705	14	0.88'	3 5 9	0.0'-0.88' Sand, very fine-grained, little fine-grained, tan, hydrocarbon odor.
wet	mod	loose		4	517	19	0.88'	2 7 12	0.0'-0.88' Sand, very fine and fine-grained, tan, hydrocarbon odor.

WELL COMPLETION



EXPLANATION: GROUT, SAND, SCREEN, BENTONITE, CASING, WATER LEVEL

LOCATION MAP



SHELL OIL COMPANY-WELL LOG

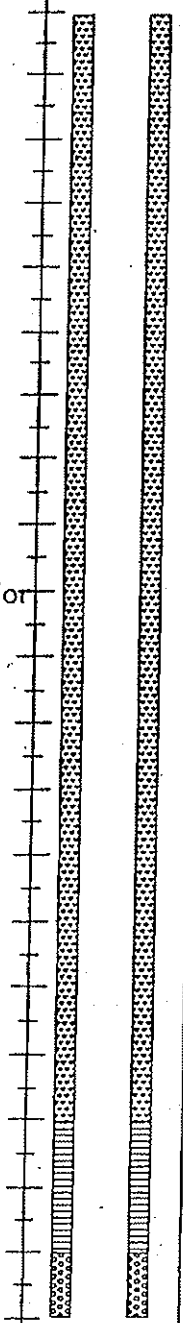
WELL NUMBER ▶ P-75	LOCATION ▶ TANK CAR LOADING RACK
DATE ▶ 10-10-89	WEATHER ▶ CLEAR, LIGHT WIND TEMP. 60'S
LOGGED BY ▶ J.PAWLIK.	DRILLED BY ▶ MATHES
DRILLING METHOD ▶ 8.25'	SAMPLING METHOD ▶ 1.50" SPLIT-SPOON
GRAVEL PACK ▶ 66'-39'(27') WB-40 Sd	SEAL ▶ 39'-37' BENTONITE 37'-0' GROUT

CASING ▶ TYPE SCHEDULE-40 PVC DIAMETER 4" LENGTH 41' HOLE DIA. 10"

SCREEN ▶ TYPE S-40 PVC SLOT 0.02" DIAMETER 4" LENGTH 25' TOTAL DEPTH 66'

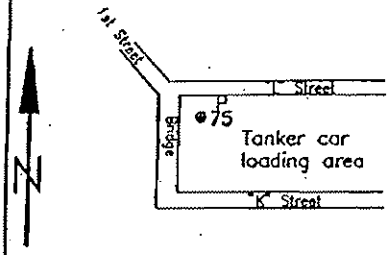
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
						20			
						21			
						22			
moist	mod	mdense		5	612	23	0.91	3 15 19	0.0'-0.91' Sand, very fine and fine-grained, tan, trace of medium- grained.
						24			
						25			
						26			
moist	mod	loose		6	624	27	1.11	5 9 17	0.0'-1.11' Sand, very fine and fine-grained, trace of medium-grained, black laminations throughout, hydrocarbon odor
						28			
						29			
						30			
						31			
moist	well	loose		7	913	32	1.12	7 12 16	0.0'-0.20' Sand, very fine and fine-grained, tan. 0.20'-1.12' Sand, fine and medium-grained, some coarse, tan, trace of fine gravel, hydrocarbon odor.
moist	mod	mdense				33			
						34			
						35			
moist	mod	mdense		8	989	36	1.18	9 19 26	0.0'-1.18' Sand, medium and coarse-grained, trace of fine and coarse gravel, hydrocarbon odor.
						37			
						38			
						39			
						40			

WELL COMPLETION



EXPLANATION: GROUT, SAND, SCREEN, BENTONITE, CASING, WATER LEVEL

LOCATION MAP



SHELL OIL COMPANY-WELL LOG

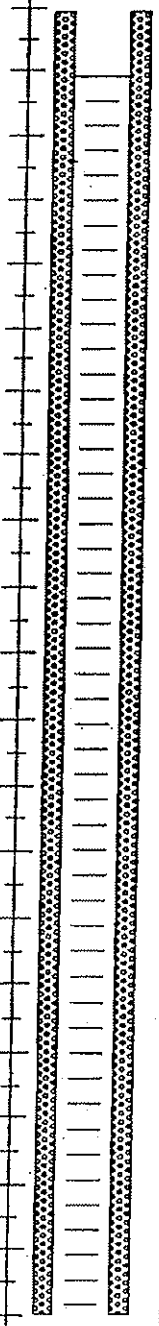
WELL NUMBER ▶ P-75	LOCATION ▶ TANK CAR LOADING RACK
DATE ▶ 10-10-89	WEATHER ▶ CLEAR, LIGHT WIND TEMP. 60'S
LOGGED BY ▶ J.PAWLIK	DRILLED BY ▶ MATHES
DRILLING METHOD ▶ 8.25'	SAMPLING METHOD ▶ 1.50' SPLIT-SPOON
GRAVEL PACK ▶ 66'-39'(27') WB-40 Sd	SEAL ▶ 39'-37' BENTONITE 37'-0' GROUT

CASING ▶ TYPE SCHEDULE-40 PVC DIAMETER 4" LENGTH 41' HOLE DIA. 10"

SCREEN ▶ TYPE S-40 PVC SLOT 0.02" DIAMETER 4" LENGTH 25' TOTAL DEPTH 66'

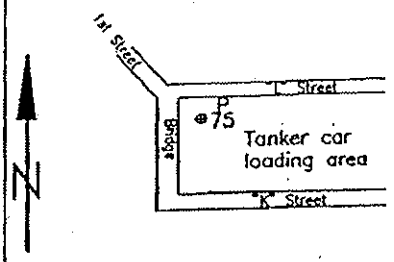
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
moist	mod	mdense		9	1079	40-42	1.31	7, 19, 34	0.0'-1.31' Sand, medium and coarse-grained, tan, trace of fine and coarse gravel, hydrocarbon odor.
wet	mod	mdense		10	416	45-47	1.11	5, 15, 36	0.0.'-1.11' Sand, medium and coarse-grained, tan, trace of fine and coarse gravel, hydrocarbon odor.
sat	mod	mdense		11	613	50-51	1.5'	9, 19, 27	0.0'-1.50' Sand, medium and coarse-grained, tan, hydrocarbon odor.
sat	mod	mdense		12	775	54-55	1.18	3, 19, 25	0.0'-1.18' Sand, medium and coarse-grained, tan, trace of fine-gravel, hydrocarbon odor.
sat	mod	mdense		13	465	59-60	1.5'	5, 15, 27	0.0'-1.50' Sand, medium and coarse-grained, tan, trace of fine and coarse gravel, hydrocarbon odor.

WELL COMPLETION



EXPLANATION: GROUT, SAND, SCREEN, BENTONITE, CASING, WATER LEVEL

LOCATION MAP



SHELL OIL COMPANY-WELL LOG

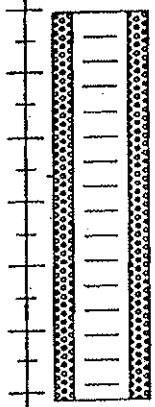
WELL NUMBER ▶ P-75	LOCATION ▶ TANK CAR LOADING RACK
DATE ▶ 10-10-89	WEATHER ▶ CLEAR, LIGHT WIND TEMP. 60'S
LOGGED BY ▶ J.PAWLIK	DRILLED BY ▶ MATHES
DRILLING METHOD ▶ 8.25'	SAMPLING METHOD ▶ 1.50" SPLIT-SPOON
GRAVEL PACK ▶ 66'-39'(27') WB-40 Sd	SEAL ▶ 39'-37' BENTONITE 37'-0' GROUT

CASING ▶ TYPE SCHEDULE-40 PVC DIAMETER 4" LENGTH 41' HOLE DIA. 10"

SCREEN ▶ TYPE S-40 PVC SLOT 0.02" DIAMETER 4" LENGTH 25' TOTAL DEPTH 66'

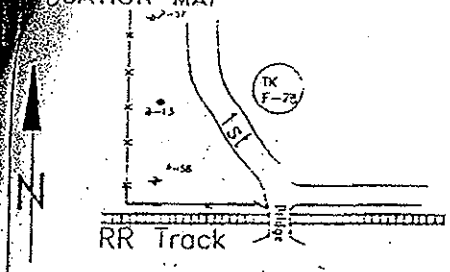
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
sat	mod	mdense		14	-	60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80	0.0'	3 5 4	0.0'-1.5' No recovery. Well was overdrilled to 70', sample was not taken due to heaving sands, final depth of well was 66 feet.

WELL COMPLETION



EXPLANATION: GROUT, SAND, SCREEN, BENTONITE, CASING, WATER LEVEL

LOCATION MAP



SHELL OIL COMPANY

WELL NUMBER ▶ WELL P-93	LOCATION ▶ 1st STREET, NO. PROPERTY
DATE ▶ 3-11-91-3-22-91	WEATHER ▶ CLOUDY, WINDY TEMP. 50'S
LOGGED BY ▶ J. PAWLIK	DRILLED BY ▶ MATHES
DRILLING METHOD ▶ MUD ROTARY 7 7/8" TRI-CONE	SAMPLING METHOD ▶ 2.0' SPLIT-SPOON ON JARS
GRAVEL PACK ▶ NONE	SEAL ▶ GROUT TO SURFACE

CASING ▶ TYPE SCHEDULE 40 PVC DIAMETER 8" LENGTH 60'

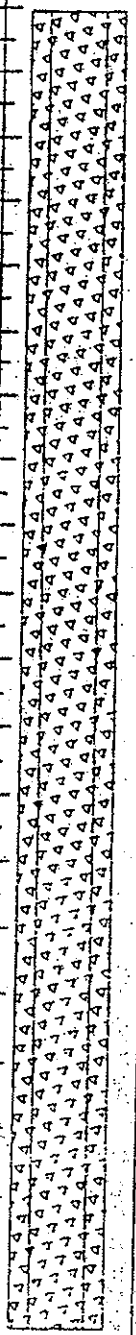
HOLE DIA. 12" TO 60' - 60'-TO-77/8"

SCREEN ▶ TYPE NA SLOT NA DIAMETER NA LENGTH NA

TOTAL DEPTH 136'

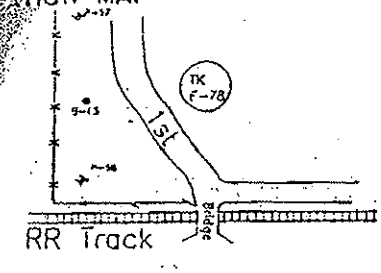
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
						0			*Lithology descriptions from 0'-6' are from spud auger cuttings.
moist		soft	plas	1	-	1	2.0'		0.00'-2.00' Limestone gravel and clay.
moist		soft	plas	2	5.3	2			2.00'-4.00' CLAY, black, some very fine-grained sand and silt.
damp	well	loose		3	8.6	3	2.0'		
moist	well	loose		4	3.0	4			4.00'-6.00' SAND, tan, very fine-grained and silt.
moist	well	loose		5	3.0	5	2.0'		0.00'-2.00' SILT, tan to brown, some clay.
moist	well	loose		6	9.1	6			
moist	well	loose		7	11	7	2.0'		0.00'-1.03' SAND, black to gray to tan, very fine-grained and fine-grained, little silt.
moist	well	loose		8	7	8			
moist	vwell	loose		9	16	9	1.03		
moist	well	loose		10	12	10			
						11	1.0'		0.00'-1.00' SAND, gray to tan, very fine-grained and fine-grained, little silt.
						12			
						13	0.99		0.00'-0.99' SAND, tan, fine-grained, some very fine-grained, trace of silt.
						14			
						15	1.12		0.00'-1.12' SAND, tan, fine-grained, some very fine-grained, trace of silt.
						16			
						17	1.14		0.00'-1.14' SAND, tan, fine-grained, little very fine-grained, trace of silt.
						18			
moist	well	loose				19	1.21		0.00'-1.21' SAND, tan to black, fine-grained, some very fine-grained, little silt.
						20			

WELL COMPLETION



EXPLANATION: GROUT, SAND, SCREEN, BENTONITE, CASING, WATER LEVEL

LOCATION MAP



SHELL OIL COMPANY — PAGE 2 OF 2

WELL NUMBER ▶ WELL P-93	LOCATION ▶ 1st STREET, NO. PROPERTY
DATE ▶ 3-11-91-3-22-91	WEATHER ▶ CLOUDY, WINDY TEMP. 50'S
LOGGED BY ▶ J. PAWLIK	DRILLED BY ▶ MATHES
DRILLING METHOD ▶ MUD ROTARY 7 7/8" TRI-CONE	SAMPLING METHOD ▶ 2.0" SPLIT-SPOON ON JARS
GRAVEL PACK ▶ NONE	SEAL ▶ GROUT TO SURFACE

CASING ▶ TYPE SCHEDULE 40 PVC DIAMETER 8" LENGTH 60'

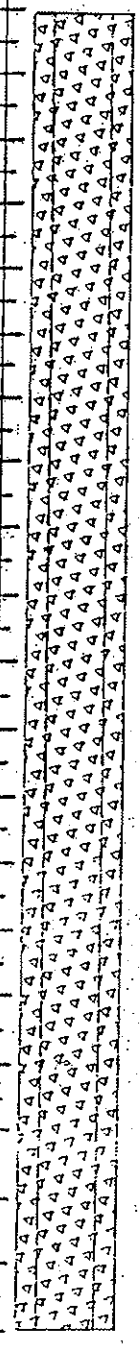
HOLE DIA. 12" TO 60' 60'-10.77/8"

SCREEN ▶ TYPE NA SLOT NA DIAMETER NA LENGTH NA

TOTAL DEPTH 136'

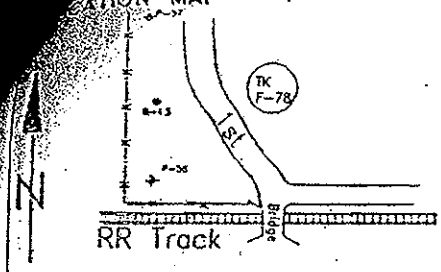
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
moist	well	loose		11	2	20-21	1.30		0.00'-1.30' SAND, tan, fine-grained, some very fine-grained, little silt.
moist	well	loose		12	28	22-23	0.93		0.00'-0.93' SAND, tan, black laminated, fine-grained, some very fine-grained, little silt.
moist	mod	loose		13	9	24-25	0.92		0.00'-0.92' SAND, tan, fine-grained, little very fine-grained, trace of medium-grained and silt.
moist	mod	loose		14	27	26-27	0.87		0.00'-0.87' SAND, tan, fine-grained, some medium-grained, little very fine-grained.
moist	mod	loose		15	2	28-29	0.92		0.00'-0.92' SAND, tan, fine-grained, some medium-grained, little very fine-grained.
moist	mod	loose		16	30	30-31	1.13		0.00'-1.13' SAND, tan, fine and medium-grained, little very fine-grained.
moist	mod	loose				32			0.00'-0.15' SAND, tan, fine and medium-grained, little very fine-grained.
moist	mod	loose		17	9	33	1.12		0.15'-1.12' SAND, tan, medium-grained, some fine-grained, trace of coarse-grained.
moist	mod	loose		18	19	34-35	0.92		0.00'-0.92' SAND, tan, medium and fine-grained, little very fine-grained.
moist	mod	loose		19	4	36-37	0.91		0.00'-0.91' SAND, tan, medium-grained, some coarse-grained, trace of fine-grained.
moist	mod	loose		20	30	38-39	0.95		0.00'-0.95' SAND, tan, medium-grained, some fine-grained, little coarse-grained.
						40			

WELL COMPLETION



EXPLANATION: GROUT, SAND, SCREEN, BENTONITE, CASING, WATER LEVEL

LOCATION MAP



SHELL OIL COMPANY | PAGE 1 OF 1

WELL NUMBER ▶ WELL P-93		LOCATION ▶ 1st STREET, NO. PROPERTY	
DATE ▶ 3-11-91-3-22-91		WEATHER ▶ CLOUDY, WINDY TEMP. 50'S	
LOGGED BY ▶ J. PAWLIK		DRILLED BY ▶ MATHES	
DRILLING METHOD ▶ MUD ROTARY 7 7/8" TRI-CONE		SAMPLING METHOD ▶ 2.0" SPLIT-SPOON 2" JARS	
GRAVEL PACK ▶ NONE		SEAL ▶ GROUT TO SURFACE	

CASING ▶ TYPE SCHEDULE 40 PVC | DIAMETER 8" | LENGTH 60' | HOLE DIA. 30'-70': 7 7/8"

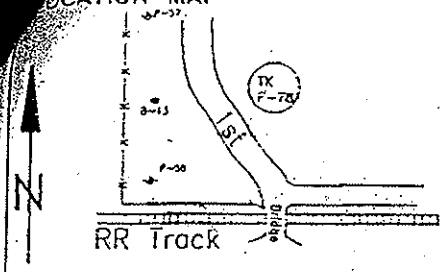
SCREEN ▶ TYPE NA | SLOT NA | DIAMETER NA | LENGTH NA | TOTAL DEPTH: 36'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
moist	mod	loose		21	26	40-41	0.85		0.00'-0.85' SAND, tan, medium and coarse-grained, little fine-grained, trace of fine-gravel.
moist	mod	loose		22	19	42-43	0.72		0.00'-0.72' SAND, tan, coarse-grained, some medium-grained, little fine-grained, trace of fine-gravel.
moist	mod	loose		23	271	44-45	0.95		0.00'-0.95' SAND, tan, coarse-grained, some medium-grained, little fine-grained, trace of fine and coarse-gravel.
moist	mod	loose		24	538	46-47	0.83		0.00'-0.83' SAND, tan, coarse-grained, some medium-grained, little fine-grained, trace of fine-gravel.
moist	mod	loose		25	631	48-49	0.91		0.00'-0.91' SAND, tan, coarse-grained, some medium-grained., little fine-grained
sat	mod	loose		26	165	50-51	0.97		0.00'-0.97' SAND, tan, coarse-grained, some medium-grained, little fine-grained, trace of fine-gravel.
sat	mod	loose		27	398	52-53	0.85		0.00'-0.85' SAND, tan, medium and coarse-grained, little fine-grained.
sat	mod	loose		28	634	54-55	0.74		0.00'-0.74' SAND, tan, medium and coarse-grained, little fine-grained.
sat	mod	loose		29	315	56-57	0.76		0.00'-0.76' SAND, tan, medium and coarse-grained, little fine-grained.
sat	mod	loose		30	332	58-59	0.81		0.00'-0.81' SAND, tan, coarse-grained, some medium-grained, little fine-grained, trace of silt.
						60			

WELL COMPLETION

EXPLANATION: GROUT, SAND, SCREEN, BENTONITE, CASING, WATER LEVEL

LOCATION MAP



SHELL OIL COMPANY | PAGE 1 OF 1

WELL NUMBER ▶ WELL P-93 | LOCATION ▶ 1st STREET, NO. PROPERTY

DATE ▶ 3-11-91-3-22-91 | WEATHER ▶ CLOUDY, WINDY TEMP 50'S

LOGGED BY ▶ J. PAWLIK | DRILLED BY ▶ MATHES

DRILLING METHOD ▶ MUD ROTARY 7 7/8" TRI-CONE | SAMPLING METHOD ▶ 2.0" SPLIT-SPOON ON AUGERS

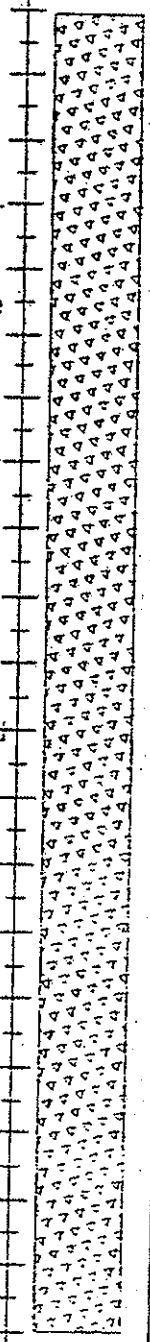
GRAVEL PACK ▶ NONE | SEAL ▶ GROUT TO SURFACE

CASING ▶ TYPE SCHEDULE 40 PVC | DIAMETER 8" | LENGTH 60' | HOLE: 0' TO 60' DIA. 60'-0.77/8"

SCREEN ▶ TYPE NA | SLOT NA | DIAMETER NA | LENGTH NA | TOTAL DEPTH 36'

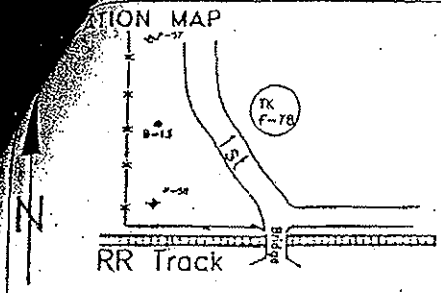
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
-	-	-	-	31	-	60-61	-		No sample, grout only.
sat	mod	loose		32	7.1	62-63	0.72		0.00'-0.72' SAND, tan, medium-grained, some coarse-grained, little fine-grained.
sat	mod	loose		33	53	64-65	0.90		0.00'-0.90' SAND, tan, coarse-grained, some medium-grained, little fine-grained, trace of coal.
sat	mod	loose		34	15	66-67	0.59		0.00'-0.59' SAND, tan, medium-grained, some coarse-grained, little fine-grained.
sat	mod	loose		35	15	68-69	1.0'		0.00'-1.00' SAND, tan, medium-grained, some coarse-grained, little fine-grained.
sat	mod	loose		36	707	70-71	0.85'		0.00'-0.85' SAND, tan, medium-grained, some very fine-grained, scattered coal.
sat	well	loose		37	42	72-73	0.77'		0.00'-0.77' SAND, tan, fine-grained, some very fine-grained, trace of silt.
sat	well	loose		38	78	74-75	0.76		0.00'-0.76' SAND, tan, fine-grained, some very fine-grained, trace of silt.
sat	mod	loose		39	35	76-77	0.90		0.00'-0.90' SAND, tan, coarse-grained, some medium-grained, little fine-gravel, chert.
sat	mod	loose		40	2.2	78-79	0.90		0.00'-0.90' SAND, tan, coarse-grained, some medium-grained, little fine-grained and fine-gravel, chert.
						80			

WELL COMPLETION



EXPLANATION: GROUT, BENTONITE, SAND, CASING, SCREEN, WATER LEVEL

ATION MAP



SHELL OIL COMPANY | PAGE 3 OF 7

WELL NUMBER ▶ WELL P-93		LOCATION ▶ 1st STREET, NO. PROPERTY	
DATE ▶ 3-11-91-3-22-91		WEATHER ▶ CLOUDY, WINDY TEMP 50'S	
LOGGED BY ▶ J. PAWLIK		DRILLED BY ▶ MATHES	
DRILLING METHOD ▶ MUD ROTARY 7 7/8" TRI-CONE		SAMPLING METHOD ▶ 2.5" SPLIT-SPOON ON JARS	
GRAVEL PACK ▶ NONE		SEAL ▶ GROUT TO SURFACE	

CASING ▶ TYPE SCHEDULE 40 PVC ~ DIAMETER 8" LENGTH 60' | HOLE: 2' TO 60' DIA. 7 7/8"

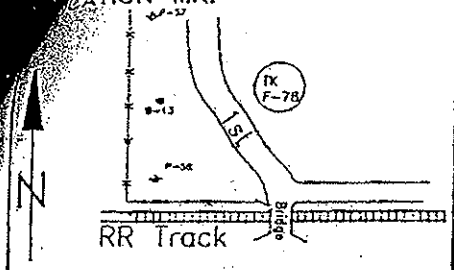
SCREEN ▶ TYPE NA SLOT NA DIAMETER NA LENGTH NA | TOTAL DEPTH 136'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
sat	mod	loose		41	12	80-81	0.91		0.00'-0.91' SAND, tan, coarse-grained, little medium-grained, some fine-gravel (chert,quartz,rhyolite).
wet		soft	plas			82			0.00'-0.28' CLAY, tan.
sat	mod	loose		42	9.7	83	0.97		0.28'-0.97' SAND, tan, coarse-grained, little medium-grained, some fine-gravel (chert,quartz,rhyolite).
sat	mod	loose		43	3.4	84-85	0.76		0.28'-0.76' SAND, tan, coarse-grained, little medium-grained, some fine-gravel (chert,quartz,rhyolite).
sat	mod	loose		44	6.0	86-87	0.98		0.00'-0.98' SAND, tan, coarse-grained, little fine-gravel and medium-grained sand.
sat	mod	loose		45	3.4	88-89	0.81		0.00'-0.81' SAND, tan, coarse-grained, little fine-gravel and medium-grained sand.
sat	mod	loose		46	6.0	90-91	0.83		0.00'-0.83' SAND, tan, medium-grained, little fine-grained, trace of fine-gravel and very fine-grained sand.
sat	well	loose		47	4.1	92-93	1.02		0.00'-1.02' SAND, tan, coarse-grained, little medium-grained, trace of fine-gravel (quartz and limestone).
sat	mod	loose		48	4.3	94-95	0.55		0.00'-0.55' SAND, tan, coarse-grained, some medium-grained, little fine-grained, trace of fine-gravel.
sat	mod	loose		49	5.3	96-97	0.93		0.00'-0.93' SAND, tan, coarse-grained, little medium-grained, trace of fine-grained and fine-grave.
sat	mod	loose		50	12	98-99	0.94		0.00'-0.94' SAND, tan, coarse-grained, little medium-grained, trace of fine-grained and fine-grave.
						100			

WELL COMPLETION

EXPLANATION: GROUT, SAND, SCREEN, BENTONITE, CASING, WATER LEVEL

CATION MAP



SHELL OIL COMPANY | PAGE 3 OF 7

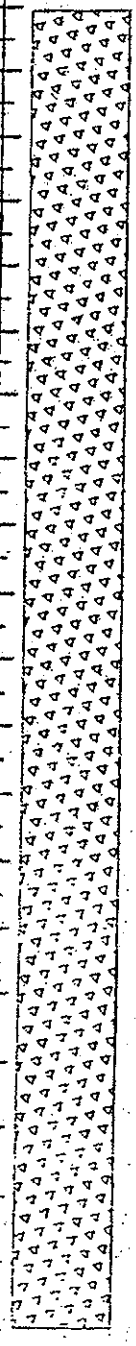
WELL NUMBER ▶ WELL P-93		LOCATION ▶ 1st STREET, NO. PROPERTY	
DATE ▶ 3-11-91-3-22-91		WEATHER ▶ CLOUDY, WINDY TEMP 50'S	
LOGGED BY ▶ J. PAWLIK		DRILLED BY ▶ MATHES	
DRILLING METHOD ▶ MUD ROTARY 7 7/8" TRI-CONE		SAMPLING METHOD ▶ 2.0' SPLIT-SPOON ON JARS	
GRAVEL PACK ▶ NONE		SEAL ▶ GROUT TO SURFACE	

CASING ▶ TYPE SCHEDULE 40 PVC DIAMETER 8" LENGTH 60' | HOLE DIA. 0' TO 60' 10 7/8

SCREEN ▶ TYPE NA SLOT NA DIAMETER NA LENGTH NA | TOTAL DEPTH 136'

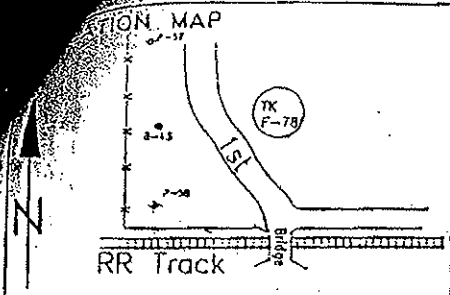
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
sat	mod	loose		51	14	100 101	0.80		0.00'-0.80' SAND, tan, coarse-grained, some medium-grained, little fine-grained.
sat	poor	loose		52	14	102 103	0.87		0.00'-0.87' SAND, tan, coarse-grained, little medium-grained, little fine-gravel, trace of coarse-gravel (chert,quartz,limestone).
sat	poor	loose		53	9	104 105	0.62'		0.00'-0.62' SAND, tan, coarse-grained, little medium-grained, little fine-gravel, trace of coarse-gravel (chert,quartz,).
sat	poor	loose		54	12	106 107	0.83		0.00'-0.83' SAND, tan, coarse-grained, little medium-grained, little fine-gravel, trace of coarse-gravel (chert,quartz,).
sat	poor	loose		55	8	108 109	0.88		0.00'-0.88' SAND, tan, coarse-grained, little medium-grained, little fine-gravel, trace of coarse-gravel (chert,quartz,limestone).
sat	poor	loose		56	9.7	110 111	0.83		0.00'-0.83' SAND, tan, coarse-grained, little medium-grained, little fine-gravel, trace of coarse-gravel (chert,quartz,limestone).
sat	poor	loose		57	7.2	112 113	0.63'		0.00'-0.25' SAND, tan, coarse-grained, little medium-grained, little fine-gravel, trace of coarse-gravel (chert,quartz,limestone).
sat	mod	loose				114			0.25'-0.63' SAND, tan, coarse-grained, some medium-grained, little fine-grained.
sat	poor	loose		58	9.7	115	0.81'		0.00'-0.81' SAND, tan, coarse-grained and fine-gravel, little medium-grained, trace of coarse-gravel.
sat	mod	loose		59	4.1	116 117	0.83		0.00'-0.83' SAND, tan, coarse-grained, some medium-grained, trace of fine-gravel(quartz,chert,mafic igneous).
sat	mod	loose		60	6.6	118 119	0.90		0.00'-0.90' SAND, tan, coarse-grained, some medium-grained, trace of fine-gravel(quartz, chert, mafic igneous).
						120			

WELL COMPLETION



EXPLANATION: GROUT, SAND, SCREEN, BENTONITE, CASING, WATER LEVEL

LOCATION MAP



SHELL OIL COMPANY | PAGE 1 OF 1

WELL NUMBER ▶ WELL P-93	LOCATION ▶ 1st STREET, NO. PROPERTY
DATE ▶ 11-91-3-22-91	WEATHER ▶ CLOUDY, WINDY TEMP 50'S
LOGGED BY ▶ J. PAWLIK	DRILLED BY ▶ MATHES
DRILLING METHOD ▶ MUD ROTARY 7 7/8" TRI-CONE	SAMPLING METHOD ▶ 2.0" SPLIT-SPOON ON TAPS
GRAVEL PACK ▶ NONE	SEAL ▶ GROUT TO SURFACE

CASING ▶ TYPE SCHEDULE 40 PVC DIAMETER 8" LENGTH 60' | HOLE DIA. 12" TO 60' 60'-0.77/8"

SCREEN ▶ TYPE NA SLOT NA DIAMETER NA LENGTH NA | TOTAL DEPTH 136'

MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NUMBER	TIP READING (PPM)	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS
sat	mod	loose				120			0.00'–0.05' SAND, tan, coarse-grained, some medium-grained, little fine-grained.
wet		soft	plas	61	2.2	121	0.92		0.05'–0.18' CLAY, brown, little silt.
sat	well	dense							0.18'–0.42' SAND, tan, fine-grained, some very fine-grained, little silt.
sat	mod	loose				122			0.42'–0.92' SAND, tan, coarse-grained, little medium-grained and fine-gravel.
sat	mod	loose		62	7.8	123	1.04		0.00'–1.04' SAND, tan, medium-grained, some coarse-grained, little fine-grained, trace of silt.
						124			
sat	well	loose		63	2.4	125	0.50		0.00'–0.50' SAND, tan, medium-grained, little fine-grained and coarse-grained.
						126			
damp		vplas	vstiff	64	1.5	127	1.15		0.00'–0.25' CLAY, gray to dark gray, little very fine-grained sand.
dry		hard	ehard						0.25'–1.15' SHALE, gray, trace of silt.
						128			*Hard drilling at 127.5'.
dry		hard	ehard	65	2.2	129	1.05		0.00'–1.05' SHALE, gray, trace of silt.
						130			*Hard drilling from 130'–137.75', mud returns show gray to white limestone. Gray to blue clay from 134'.
				NS		131			
						132			
				NS		133			
						134			
dry		hard	ehard	66	1.1	135	0.55		0.00'–0.55' SHALE, good fissility, gray to blue, very calcareous, trace of limestone.
						136			
dry		hard	ehard	67	0.8	137	0.45		0.00'–0.38' SHALE, good fissility, gray to blue, very calcareous, trace of limestone.
dry		hard	ehard			138			0.38'–0.45' LIMESTONE, brown.
						139			Final boring depth =136', last interval sampled = 136'–138'.
						140			

WELL COMPLETION

EXPLANATION: GROUT, SAND, SCREEN, BENTONITE, CASING, WATER LEVEL

GROUNDWATER DEVELOPMENT DATA SHEET

PROJECT NAME: RAND AVENUE PROJECT NUMBER: ~~21561294.00001~~ 21561979
DATE: 5/27/08
WEATHER: 70s, cloudy
FIELD PERSONNEL: ~~Brian Williamson Billy~~ S Moore
MONITORING WELL ID: B-1

INITIAL DATA

Well Diameter: 1 in.
Total Depth of Well: 58.41 ft
Depth to Water: 48.23 ft
Height of Water Column: 10.18 ft
1 0.163 gallons/ft for 2 inch well, 0.653 gallons/ft for 4-inch well

Gallons/Lin.Ft[1]: —
Vol. Of Water Column: 0.415 gallons
Min. Purge Volume: 2.07 gallons (5 volumes)
Depth to Top of Screen: 43.31 ft

Ambient PID/FID Reading: 0.0 ppm
Wellbore PID/FID Reading: 0.0 ppm
LNAPL / DNAPL NA ft

PURGE DATA

Purge Method: bail & check valve (Qwater)/bailer 10.18 x 0.0408 x 5 (well vols) =

Purge Volume (gals)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	mS Cond. (µmhos/cm)	Turbidity (NTUs)	DO (mg/l)	ORP (mv)
2.0	1210	NA	lt brown	NA	6.24	20.47	1.811	1068	14.6	-8.1
2.4	1218	↓	↓	↓	6.53	19.83	1.749	363	19.4	-8.3
2.8	1224	↓	tan	↓	6.59	19.54	1.765	446	2.50	-8.1
3.0	1236	↓	lt	↓	6.50	19.54	1.787	296	1.67	-1.8
3.2	1241	↓	clear	↓	6.39	19.20	1.718	282	2.42	-0.8
3.4	1247	↓	↓	↓	6.61	19.23	1.712	221	2.12	2.8
3.5	1250	↓	↓	↓	6.60	19.54	1.753	244	2.34	1.9

Start Time: ~~1133~~ 0945 Purge Stop Time: 1250 Elapsed Time: 185 min Total Volume Purged: 3.5 gallons
Average Purge Rate (gallons/min): 0.019 Well Volumes Purged: 5 Water Quality Meter ID: YSI 556 Calibrated on: 5/29/08

SAMPLING DATA

Sampling Method:

Sample Date: Sample Time: Analysis:

COMMENTS:

GROUNDWATER DEVELOPMENT DATA SHEET

PROJECT NAME: Rte 111 Rand Ave Vicinity PROJECT NUMBER: 21561979
DATE: 5/29/08
WEATHER: 70s, Sunny
FIELD PERSONNEL: S. Moore
MONITORING WELL ID: B-2

INITIAL DATA

Well Diameter: 1 in.
Total Depth of Well: 63.20 ft
Depth to Water: 49.71 ft
Height of Water Column: ~~13.49~~ ft
Depth to Top of Screen: 48.49 ft
1 0.163 gallons/ft for 2 inch well, 0.653 gallons/ft for 4-inch well

Gallons/Lin.Ft': —
Vol. Of Water Column: ~~0.195~~ 0.55 gallons
Volume Of Water Introduced From Drilling: 10 gallons
Min. Purge Volume: ~~3.97 (13.97)~~ 2.75 (12.75) gallons (5 volumes)

13.49
~~19.49~~ + 0.0408 x 5 well vols =

Ambient PID/FID Reading: 0.0 p
Wellbore PID/FID Reading: 0.0 p
LNAPL / DNAPL NA f

PURGE DATA

Purge Method: bailer

Purge Volume (gals)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	mS Cond. (µmhos/cm)	Turbidity (NTUs)	DO (mg/l)	ORP (mv)
4	1610	NA	brown	gasoline like	5.98	20.03	1.157	1552	1.08	-10.3
4.5	1618	↓	↓	↓	6.04	19.04	1.146	63.2	0.92	-29.3
4.75	1626	↓	lt ↓	↓	6.50	19.13	1.141	81.3	0.70	-29.3
5	1636	↓	↓	↓	6.41	19.16	1.145	63.0	0.83	-29.7

Start Time: 1330 Purge Stop Time: 1640 Elapsed Time: 190 min Total Volume Purged: 5 gall
Average Purge Rate (gallons/min): 0.03 Well Volumes Purged: 5 Water Quality Meter ID: YSI 556 Calibrated on: 5/29/08

SAMPLING DATA

Sampling Method:

Sample Date: Sample Time: Analysis:

COMMENTS:

~~DTW = 49.70 fm~~
~~DTB =~~

GROUNDWATER DEVELOPMENT DATA SHEET

PROJECT NAME: Rte 111 / Rand Ave Vicinity PROJECT NUMBER: 21561979
DATE: 5/30/08
WEATHER: 70s, breezy
FIELD PERSONNEL: S. Moore
MONITORING WELL ID: B-3

INITIAL DATA

Well Diameter: 1 in.
Total Depth of Well: 45.98 ft
Depth to Water: 34.52 ft
Height of Water Column: 11.46 ft
Depth to Top of Screen: 31.07 ft
1 0.163 gallons/ft for 2 inch well, 0.653 gallons/ft for 4-inch well

Gallons/Lin.Ft¹: ~~0.47~~ 0.47 5/30/2008
Vol. Of Water Column: 0.47 gallons
Volume Of Water Introduced From Drilling: 10 gallons
Min. Purge Volume: 2.39 gallons (5 volumes)
11.46 x 0.0408 x 5 =

Ambient PID/FID Reading: 0.0 p
Wellbore PID/FID Reading: 0.0 p
LNAPL / DNAPL NA f

PURGE DATA

Purge Method: bailer

Purge Volume (gals)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (µmhos/cm)	Turbidity (NTUs)	DO (mg/l)	ORP (mv)
2.5	0920	NA	brown	NA	6.64	20.40	1.347	307	1.31	65.5
3.0	0926	↓	↓	↓	6.30	19.74	1.362	281	1.33	2.1
3.25	0935	↓	lt brown	↓	6.65	19.75	1.345	765	2.22	-18.5
3.5	0944	↓	cloudy	↓	6.33	19.42	1.335	22.2	2.03	-23.6
4.0	0949	↓	↓	↓	6.60	20.16	1.310	144	2.00	-29.3
					6.54	19.49	1.274	148	2.20	-36.2
					6.64	19.83	~~1.265~~ 1.267	255	3.20	-30.9

Start Time: 0800 Purge Stop Time: 0949 Elapsed Time: 109 min Total Volume Purged: 4.0 gall
Average Purge Rate (gallons/min): 0.04 Well Volumes Purged: 5 Water Quality Meter ID: YSI 556 Calibrated on: 5-30-08

SAMPLING DATA

Sampling Method:

Sample Date: Sample Time: Analysis:

COMMENTS:

GROUNDWATER DEVELOPMENT DATA SHEET

PROJECT NAME: Rte 111 / Rand Ave Vicinity PROJECT NUMBER: 21561979
DATE: 5/30/08
WEATHER: 70s, Sunny
FIELD PERSONNEL: S. Moore
MONITORING WELL ID: B-4

INITIAL DATA

Well Diameter: 1 in.
Total Depth of Well: 57.69 ft
Depth to Water: 46.35 ft
Height of Water Column: 11.34 ft
Depth to Top of Screen: 42.73 ft
1 0.163 gallons/ft for 2 inch well, 0.653 gallons/ft for 4-inch well

Gallons/Lin.Ft[1]: —
Vol. Of Water Column: 0.44 gallons
Volume Of Water Introduced From Drilling: gallons
Min. Purge Volume: 2.31 gallons (5 volumes)

11.34 x 0.0408 x 5 =

Ambient PID/FID Reading: 0.1 P
Wellbore PID/FID Reading: 0.0 P
LNAPL / DNAPL NA f

PURGE DATA

Purge Method: bailer.

Purge Volume (gals)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (µmhos/cm)	Turbidity (NTUs)	DO (mg/l)	ORP (mv)
2.5	1330	NA	lt brown	NA	10.78	23.25	1.494	3.15	1.43	-31.7
2.75	1342	↓	↓	↓	7.04	21.80	1.530	321	1.82	-55.0
3.0	1350	↓	↓	↓	7.05	22.14	1.512	1338	2.65	-31.6
4.0	1355	↓	cloudy	↓	7.07	20.83	1.546	1135	3.36	-20.9

Start Time: 1023 Purge Stop Time: 1400 Elapsed Time: 187 Total Volume Purged: 4.6 gall
Average Purge Rate (gallons/min): 0.025 Well Volumes Purged: 5 Water Quality Meter ID: ysi 556 Calibrated on: 5-30-08

SAMPLING DATA

Sampling Method:

Sample Date: Sample Time: Analysis:

COMMENTS:
allowed for recharge time

GROUNDWATER DEVELOPMENT DATA SHEET

PROJECT NAME: Rte 111 / Rand Ave Vicinity PROJECT NUMBER: 21561979
DATE: 5/30/08
WEATHER: 80s, Sunny
FIELD PERSONNEL: S. Moore
MONITORING WELL ID: B-5

INITIAL DATA

Well Diameter: 1 in.
Total Depth of Well: 46.15 ft
Depth to Water: 33.79 ft
Height of Water Column: 12.36 ft
Depth to Top of Screen: 31.20 ft
1 0.163 gallons/ft for 2 inch well, 0.653 gallons/ft for 4-inch well

Gallons/Lin.Ft[1]: —
Vol. Of Water Column: 0.50 gallons
Volume Of Water Introduced From Drilling: gallons
Min. Purge Volume: 2.5 gallons (5 volumes)

Ambient PID/FID Reading: 0.0
Wellbore PID/FID Reading: 0.0
LNAPL / DNAPL NA

PURGE DATA

Purge Method: bailer

Purge Volume (gals)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (µmhos/cm)	Turbidity (NTUs)	DO (mg/l)	ORP (mv)
2.5	1600	NA	lt brown	NA	6.40	22.68	1.116	2292	1.30	-48.8
3.0	1604	↓	↓	↓	6.05	20.98	1.144	1189	1.36	-8.9
3.5	1609				6.14	20.45	0.978	967	1.22	-35.3
4.0/4.5	1616		cloudy		6.30	20.77	1.035	392	3.21	-38.8
4.25	1620		cloudy	↓	6.43	20.79	1.022	246	3.81	-29.4

Start Time: ~~1500~~ 1420 Purge Stop Time: 1620 Elapsed Time: 120 Total Volume Purged: 4.5 gall
Average Purge Rate (gallons/min): 0.0375 Well Volumes Purged: 5 Water Quality Meter ID: YSI 556 Calibrated on: 5-30-08

SAMPLING DATA

Sampling Method:

Sample Date: Sample Time: Analysis:

COMMENTS:

GROUNDWATER DEVELOPMENT DATA SHEET

PROJECT NAME: Rte 111 / Rand Ave Vicinity PROJECT NUMBER: 21561979
DATE: 6/2/08
WEATHER: 70s, Sunny
FIELD PERSONNEL: S. Mabra
MONITORING WELL ID: B-6

INITIAL DATA

Well Diameter: 1 in.
Total Depth of Well: 46.90 ft
Depth to Water: 36.16 ft
Height of Water Column: 10.74 ft
Depth to Top of Screen: 35.00 ft
1 0.163 gallons/ft for 2 inch well, 0.653 gallons/ft for 4-inch well

Gallons/Lin.Ft¹: ~~0.43~~ SW 6-2-08
Vol. Of Water Column: 0.43 gallons
Volume Of Water Introduced From Drilling: .20 gallons
Min. Purge Volume: 2.1 gallons (5 volumes)

Ambient PID/FID Reading: 0.0
Wellbore PID/FID Reading: 0.0
LNAPL / DNAPL NA

PURGE DATA

Purge Method: bailer

Purge Volume (gals)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (µmhos/cm)	Turbidity (NTUs)	DO (mg/l)	ORP (mv)
3.0	1013	NA	dk brown		6.27	20.47	1.712	9.55	2.21	3.6
3.25	1018	↓	↓		6.33	20.43	1.706	745	2.13	-14.8
3.5	1024				6.36	20.25	1.775	682	2.07	-5.3
4.0	1032	↓	cloudy		6.09	20.32	1.768	241	2.84	10.1

Start Time: 0810 Purge Stop Time: 1032 Elapsed Time: 142 ~~82~~ 140 min Total Volume Purged: 4 gall
Average Purge Rate (gallons/min): 0.028 Well Volumes Purged: 5 Water Quality Meter ID: YSI 556 Calibrated on: 6-2-08

SAMPLING DATA

Sampling Method:

Sample Date: Sample Time: Analysis:

COMMENTS:
bailer lost in well after last reading. Development Not Complete.
bailer retreival attempted.

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Route 111 & Rand Vicnity PROJECT NUMBER: 21561979 FIELD PERSONNEL: W. Pennington & ~~S. Moore~~ R. Wernig
DATE: 6/12/08 WEATHER: 80s, sunny
MONITORING WELL ID: B-1 SAMPLE ID: B1-061208

INITIAL DATA

Well Diameter: 1 in
Total Well Depth (btoc): 58.41 ft
Depth to Water (btoc): 47.69 ft
Depth to LNAPL/DNAPL (btoc): — ft
Depth to Top of Screen (btoc): 43.41 ft
Screen Length: 15 ft

Water Column Height (do not include LNAPL or DNAPL): 10.72 ft btoc
If Depth to Top of Screen is > Depth to Water AND Screen Lenth is ≥4 feet,
Place Pump at: Total Well Depth – 0.5 (Screen Length + DNAPL Column Height) = — ft btoc
If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are ≥ 4ft,
Place Pump at: Total Well Depth – (0.5 X Water Column Height + DNAPL Column Height) = 53.05 ft btoc
If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = — ft btoc

Volume of Flow Through Cell): 1,150 mL
Minimum Purge Volume =
(3 x Flow Through Cell Volume): 3,450 mL
Ambient PID/FID Reading: 0.0 ppm
Wellbore PID/FID Reading: 77.3 ppm

PURGE DATA

HEADSPACE PID = 0.0 ppm

Pump Type: Bladder Pump / Low Flow

Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
400	0916	47.39	lt. brn. cloudy	v. sl. petr.-like	6.41	22.41	1.839	727.4	5.50	210.5
1600	0928	47.39	"	"	6.28	22.01	1.790	286.5	6.10	221.2
2800	0940	47.39	"	"	6.16	22.17	1.720	115.7	7.41	233.4
4000	~~0950~~ 0952	47.39	clearing	"	6.09	22.48	1.706	47.3	7.57	209.5
5200	1004	"	"	"	6.02	22.62	1.700	28.0	8.24	202.4
6400	1016	"	"	"	5.92	22.52	1.644	5.7 ~~56.7~~ WMP	8.12	204.9
7600	1028	"	"	"	5.83	22.61	1.681	2.4	8.18	218.8
8800	1040	"	"	"	5.85	22.67	1.650	3.1	8.02	227.4

Start Time: 0912 Elapsed Time: 93 min Water Quality Meter ID: YSI 6820
Stop Time: 1045 Average Purge Rate (mL/min): 100 Date Calibrated: 6/12/08

SAMPLING DATA

Sample Date: 6/12/08 Sample Time: 1045 Lab Analysis: VOC 8260
Sample Method: Bladder Pump / Low Flow Sample Flow Rate (mL/min): 100 QA/QC: —

COMMENTS:

~~Sulfate: — ppm~~
~~Ferrous Iron (filtered): — ppm~~
Total Purge Volume: 9300 mL

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Route 111 & Rand Vicnity PROJECT NUMBER: 21561979 FIELD PERSONNEL: W. Pennington & ~~S. Moore~~ R. Wernig
DATE: 6/12/08 WEATHER: 80s, sunny, humid
MONITORING WELL ID: B-2 SAMPLE ID: B2-061208

INITIAL DATA

Well Diameter: 1 in
Total Well Depth (btoc): 62.19 ft
Depth to Water (btoc): 49.24 ft
Depth to LNAPL/DNAPL (btoc): — ft
Depth to Top of Screen (btoc): 47.19 ft
Screen Length: 15 ft

Water Column Height (do not include LNAPL or DNAPL): 12.95 ft btoc
If Depth to Top of Screen is > Depth to Water AND Screen Lenth is ≥4 feet,
Place Pump at: Total Well Depth – 0.5 (Screen Length + DNAPL Column Height) = — ft btoc
If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are ≥ 4ft,
Place Pump at: Total Well Depth – (0.5 X Water Column Height + DNAPL Column Height) = 55.72 ft btoc
If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = — ft btoc

Volume of Flow Through Cell): 1,150 mL
Minimum Purge Volume =
(3 x Flow Through Cell Volume): 3,450 mL
Ambient PID/FID Reading: 0.0 ppm
Wellbore PID/FID Reading: 675 ppm

PURGE DATA

Headspace PID = 1108 ppm

Pump Type: Bladder Pump / Low Flow

Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
500	1130	49.25	lt. brn.	mod. petr.	5.67	25.38	1.052	940.6	0.70	-53.1
1700	1142	49.25			5.47	24.19	1.064	793.1	0.64	-57.5
2900	1154	49.25			5.21	23.55	1.072	458.8	0.68	-51.5
4100	1206		clearing		5.06	23.67	1.074	172.1	0.73	-41.6
5300	1218				4.97	23.50	1.072	57.7	0.70	-49.4
6500	1230				4.86	23.47	1.070	26.1	0.73	-47.6
7700	1242				4.88	23.51	1.068	~~MP~~ 9.8	0.66	-48.8

Start Time: ~~MP 1130~~ 1125 Elapsed Time: ~~MP 75 min~~ 80 min Water Quality Meter ID: YSI 6820
Stop Time: 1245 Average Purge Rate (mL/min): 100 Date Calibrated: 6/12/08

SAMPLING DATA

Sample Date: 6/12/08 Sample Time: 1245 Lab Analysis: VOC 8260
Sample Method: Bladder Pump / Low Flow Sample Flow Rate (mL/min): 100 QA/QC: Dup (B2-061208D)

COMMENTS:

~~Sulfate: — ppm~~
~~Ferrous Iron (filtered): — ppm~~
Total Purge Volume: ~~7500~~ ~~MP~~ 8000 mL

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Route 111 & Rand Vicnity PROJECT NUMBER: 21561979 FIELD PERSONNEL: W. Pennington & ~~S. Moore~~ R. Wernig
DATE: 6/12/08 WEATHER: 80s, sunny, humid
MONITORING WELL ID: B-3 SAMPLE ID: B3-061208

INITIAL DATA

Well Diameter: 1 in
Total Well Depth (btoc): 45.98 ft
Depth to Water (btoc): 34.03 ft
Depth to LNAPL/DNAPL (btoc): — ft
Depth to Top of Screen (btoc): 30.98 ft
Screen Length: 15 ft

Water Column Height (do not include LNAPL or DNAPL): 11.68 ft btoc
If Depth to Top of Screen is > Depth to Water AND Screen Lenth is ≥4 feet,
Place Pump at: Total Well Depth – 0.5 (Screen Length + DNAPL Column Height) = — ft btoc
If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are ≥ 4ft,
Place Pump at: Total Well Depth – (0.5 X Water Column Height + DNAPL Column Height) = 40.14 ft btoc
If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = — ft btoc

Volume of Flow Through Cell): 1,150 mL
Minimum Purge Volume =
(3 x Flow Through Cell Volume): 3,450 mL
Ambient PID/FID Reading: 0.0 ppm
Wellbore PID/FID Reading: 22.0 ppm

PURGE DATA

Headspace PID = 10.7ppm

Pump Type: Bladder Pump / Low Flow

Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
1200	1416	34.04	fairly clear	sl. petr.-like	5.48	25.27	1.229	65.2	1.23	-102.4
2400	1424	34.04	"	"	5.27	25.12	1.225	16.4	1.07	-102.2
3600	1432	34.04	clear	"	5.13	24.72	1.227	5.4	0.90	-101.9
4800	1440	34.04	"	"	5.07	24.32	1.222	2.7	1.07	-98.3
6000	1448	"	"	"	4.96	24.32	1.221	1.2	1.07	-99.2
7200	1456	"	"	"	5.03	24.44	1.220	5.2	1.14	-97.2

Start Time: 1408 Elapsed Time: 52 min Water Quality Meter ID: YSI 6820
Stop Time: 1500 Average Purge Rate (mL/min): 150 Date Calibrated: 6/12/08

SAMPLING DATA

Sample Date: 6/12/08 Sample Time: 1500 Lab Analysis: VOC 8260
Sample Method: Bladder Pump / Low Flow Sample Flow Rate (mL/min): 150 QA/QC:

COMMENTS:

~~Sulfate: — ppm~~
~~Ferrous Iron (filtered): — ppm~~
Total Purge Volume: 7800 mL

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Route 111 & Rand Vicnity PROJECT NUMBER: 21561979 FIELD PERSONNEL: W. Pennington & ~~S. Moore~~ R. Wernig
DATE: 6/12/08 WEATHER: 80s, mostly sunny, humid
MONITORING WELL ID: B-4 SAMPLE ID: B4-061208

INITIAL DATA

Well Diameter: 1 in
Total Well Depth (btoc): 57.03 ft
Depth to Water (btoc): 45.90 ft
Depth to LNAPL/DNAPL (btoc): — ft
Depth to Top of Screen (btoc): 42.63 ft
Screen Length: 15 ft

Water Column Height (do not include LNAPL or DNAPL): 11.73 ft btoc
If Depth to Top of Screen is > Depth to Water AND Screen Lenth is ≥4 feet,
Place Pump at: Total Well Depth – 0.5 (Screen Length + DNAPL Column Height) = — ft btoc
If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are ≥ 4ft,
Place Pump at: Total Well Depth – (0.5 X Water Column Height + DNAPL Column Height) = 51.77 ft btoc
If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = — ft btoc

Volume of Flow Through Cell): 1,150 mL
Minimum Purge Volume =
(3 x Flow Through Cell Volume): 3,450 mL
Ambient PID/FID Reading: 0.0 ppm
Wellbore PID/FID Reading: 41.5 ppm

PURGE DATA

Headspace PID = 0.0

Pump Type: Bladder Pump / Low Flow

Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
1200	1538	45.90	brn	none	5.68	26.44	1.787	1253.9	8.54	422.3
2400	1546	45.90			5.92	27.19	1.824	1197.0	2.38	99.2
3600	1554	45.90			6.07	27.18	1.830	884.3	2.41	77.5
4800	1602	45.90			6.15	27.25	1.825	556.9	2.31	63.5
6000	1610	45.90	clearing		6.11	27.28	1.821	156.7	2.27	60.2
7200	1618	"			6.06	27.10	1.833	114.6	2.37	62.4
8400	1626	"			5.95	27.05	1.830	115.4	2.35	70.3

Start Time: 1530 Elapsed Time: 60 min Water Quality Meter ID: YSI 6820
Stop Time: 1630 Average Purge Rate (mL/min): 150 Date Calibrated: 6/12/08

SAMPLING DATA

Sample Date: 6/12/08 Sample Time: 1630 Lab Analysis: VOC 8260
Sample Method: Bladder Pump / Low Flow Sample Flow Rate (mL/min): 150 QA/QC: —

COMMENTS:

Water coming to the surface contained air bubbles so turbidity would not settle down completely.

~~Sulfate:~~ ~~ppm~~
~~Ferrous Iron (filtered):~~ ~~ppm~~

Total Purge Volume: 9000 mL

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Route 111 & Rand Vicnity PROJECT NUMBER: 21561979 FIELD PERSONNEL: W. Pennington & ~~S. Moore~~ R. Wernig
DATE: 6/13/08 WEATHER: 70s, cloudy, slight rain
MONITORING WELL ID: B-5 SAMPLE ID: B5-061308

INITIAL DATA

Well Diameter: 1 in
Total Well Depth (btoc): 46.13 ft
Depth to Water (btoc): 33.37 ft
Depth to LNAPL/DNAPL (btoc): — ft
Depth to Top of Screen (btoc): 31.13 ft
Screen Length: 15 ft

Water Column Height (do not include LNAPL or DNAPL): 12.76 ft btoc
If Depth to Top of Screen is > Depth to Water AND Screen Lenth is ≥4 feet,
Place Pump at: Total Well Depth – 0.5 (Screen Length + DNAPL Column Height) = — ft btoc
If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are ≥ 4ft,
Place Pump at: Total Well Depth – (0.5 X Water Column Height + DNAPL Column Height) = 39.75 ft btoc
If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = — ft btoc

Volume of Flow Through Cell): 1,150 mL
Minimum Purge Volume =
(3 x Flow Through Cell Volume): 3,450 mL
Ambient PID/FID Reading: 00 ppm
Wellbore PID/FID Reading: 85.9 ppm

PURGE DATA

headspace PID = 4.8ppm

Pump Type: Bladder Pump / Low Flow

Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
1100	0836	33.38	brn.	none	6.34	20.29	0.990	986.7	0.81	-93.8
2200	0847	33.38	"	"	6.30	19.82	0.988	813.4	0.75	-92.9
3300	0858	33.38	"	"	6.30	19.66	0.984	620.2	0.73	-92.4
4400	0909	33.38	lt. brn.	"	6.31	19.49	0.982	353.3	0.80	-92.7
5500	0920	"	"	"	6.32	19.55	0.978	185.3	0.74	-94.3
6600	0931	"	"	"	6.31	19.69	0.975	83.2	0.73	-95.9
7700	0942	"	"	"	6.30	19.70	0.973	48.0	0.72	-97.0
8800	0953	"	"	"	6.27	19.54	0.974	20.1	0.72	-97.0
9900	1004	"	"	"	6.30	19.62	0.976	10.0	0.71	-97.8

Start Time: 0825 Elapsed Time: 100 min Water Quality Meter ID: YSI 6820
Stop Time: 1005 Average Purge Rate (mL/min): 100 Date Calibrated: 6/13/08

SAMPLING DATA

Sample Date: 6/13/08 Sample Time: 1005 Lab Analysis: VOC 8260
Sample Method: Bladder Pump / Low Flow Sample Flow Rate (mL/min): 100 QA/QC: —

COMMENTS:

~~Sulfate: — ppm~~
~~Ferrous iron (filtered): — ppm~~
Total Purge Volume: 10000 mL

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Route 111 & Rand Vicnity PROJECT NUMBER: 21561979 FIELD PERSONNEL: W. Pennington & ~~S. Moore~~ R. Wernig
DATE: 6/13/08 WEATHER: 70s, overcast, intermittent rain
MONITORING WELL ID: B-6 SAMPLE ID: B6-061308

INITIAL DATA

Well Diameter: 1 in
Total Well Depth (btoc): 46.98 ft
Depth to Water (btoc): 35.81 ft
Depth to LNAPL/DNAPL (btoc): — ft
Depth to Top of Screen (btoc): 31.98 ft
Screen Length: 15 ft

Water Column Height (do not include LNAPL or DNAPL): 11.17 ft btoc
If Depth to Top of Screen is > Depth to Water AND Screen Lenth is ≥4 feet,
Place Pump at: Total Well Depth – 0.5 (Screen Length + DNAPL Column Height) = — ft btoc
If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are ≥ 4ft,
Place Pump at: Total Well Depth – (0.5 X Water Column Height + DNAPL Column Height) = 41.40 ft btoc
If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = — ft btoc

Volume of Flow Through Cell): 1,150 mL
Minimum Purge Volume =
(3 x Flow Through Cell Volume): 3,450 mL
Ambient PID/FID Reading: 0.0 ppm
Wellbore PID/FID Reading: 3.6 ppm

PURGE DATA

Headspace PID = 15.4ppm

Pump Type: Bladder Pump / Low Flow

Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
1100	1110	35.82	v. sl. cloudy	none	6.35	19.84	1.6090	93.3	4.45	-79.1
2200	1121	35.83	clearing		6.37	19.65	1.702	57.1	5.24	-83.6
3300	1132	35.82			6.38	19.53	1.752	34.4	5.09	-82.7
4400	1143	35.82			6.40	19.46	1.789	24.9	4.95	-84.7
5500	1154				6.40	19.45	1.806	5.7	4.90	-80.6
~~6600~~	~~1205~~ WMP									

Start Time: 1059 Elapsed Time: 61 min Water Quality Meter ID: YSI 6820
Stop Time: 1200 Average Purge Rate (mL/min): 1090 Date Calibrated: 6/13/08

SAMPLING DATA

Sample Date: 6/13/08 Sample Time: 1200 Lab Analysis: VOC 8260
Sample Method: Bladder Pump / Low Flow Sample Flow Rate (mL/min): 100 QA/QC: EB (B6-061308EB)

COMMENTS:

~~Sulfate: — ppm~~
~~Ferrous Iron (filtered): — ppm~~
Total Purge Volume: 6100 mL

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Route 111 & Rand Vicnity PROJECT NUMBER: 21561979 FIELD PERSONNEL: W. Pennington & ~~S. Moore~~ R. Wernig
DATE: 6/10/08 WEATHER: upper 70's, sunny
MONITORING WELL ID: P-54 SAMPLE ID: P54-061008

INITIAL DATA

Well Diameter: 2 in
Total Well Depth (btoc): 62.78 ft
Depth to Water (btoc): 47.06 ft
Depth to LNAPL/DNAPL (btoc): — ft
Depth to Top of Screen (btoc): 37.78 ft
Screen Length: 25 ft

Water Column Height (do not include LNAPL or DNAPL): ~~15.27~~ 15.72 ft btoc
If Depth to Top of Screen is > Depth to Water AND Screen Lenth is ≥4 feet,
Place Pump at: Total Well Depth – 0.5 (Screen Length + DNAPL Column Height) = — ft btoc
If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are ≥ 4ft,
Place Pump at: Total Well Depth – (0.5 X Water Column Height + DNAPL Column Height) = 54.92 ft btoc
If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = — ft btoc

Volume of Flow Through Cell): 1,150 mL
Minimum Purge Volume =
(3 x Flow Through Cell Volume): 3,450 mL
Ambient PID/FID Reading: 0.0 ppm
Wellbore PID/FID Reading: 0.2 ppm

PURGE DATA

HEADSPACE PID = 0.2 ppm

Pump Type: Monsoon Stainless Steel Submersible Pump

Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
1250	1530	47.08	grayish-brown	none	5.66	19.20	0.915	114.3	0.67	507.7
2500	1535	47.08	cloudy		5.60	19.32	0.940	78.7	0.45	513.7
3750	1540	47.08			5.55	19.18	0.957	61.7	0.43	511.7
5000	1545	47.08			5.54	19.11	0.963	52.6	0.39	508.9
6250	1550		clearing		5.52	19.03	0.966	35.2	0.33	506.2
7500	1555				5.51	19.00	0.969	27.5	0.32	504.8
8750	1600				5.51	19.00	0.972	18.9	0.31	501.6
9000	1605				5.51	19.02	0.974	14.3	0.30	498.3
10250	1610				5.52	19.07	0.978	10.4	0.30	497.0

Start Time: 1525 Elapsed Time: 47 min Water Quality Meter ID: YSI 6820
Stop Time: 1612 Average Purge Rate (mL/min): 250 Date Calibrated: 6/10/08

SAMPLING DATA

Sample Date: 6/10/08 Sample Time: 1612 Lab Analysis: VOC 8260
Sample Method: Monsoon / Low Flow Sample Flow Rate (mL/min): 250 QA/QC: MS/MSD (P54-061008MS, P54-061008MSD)

COMMENTS:

Possible problem with ORP sensor in YSI sonde.

~~Sulfate:~~ — ppm
~~Ferrous Iron (filtered):~~ — ppm

Total Purge Volume: 11750 mL

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Route 111 & Rand Vicnity PROJECT NUMBER: 21561979 FIELD PERSONNEL: W. Pennington & ~~S. Moore~~ R. Wernig
DATE: 6/9/08 WEATHER: 80s, partly sunny
MONITORING WELL ID: P-56 SAMPLE ID: P56-060908

INITIAL DATA

Well Diameter: 2 in
Total Well Depth (btoc): 65.08 ft
Depth to Water (btoc): 52.08 ft
Depth to LNAPL/DNAPL (btoc): — ft
Depth to Top of Screen (btoc): 40.08 ft
Screen Length: 25 ft

Water Column Height (do not include LNAPL or DNAPL): 13.00 ft btoc
If Depth to Top of Screen is > Depth to Water AND Screen Lenth is ≥4 feet,
Place Pump at: Total Well Depth – 0.5 (Screen Length + DNAPL Column Height) = — ft btoc
If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are ≥ 4ft,
Place Pump at: Total Well Depth – (0.5 X Water Column Height + DNAPL Column Height) = 58.58 ft btoc
If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = — ft btoc

Volume of Flow Through Cell): 1,150 mL
Minimum Purge Volume =
(3 x Flow Through Cell Volume): 3,450 mL
Ambient PID/FID Reading: 0.0 ppm
Wellbore PID/FID Reading: 265 ppm

PURGE DATA

HEADSPACE PID = 80.3ppm

Pump Type: Monsoon Stainless Steel Submersible Pump

Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
1000	1546	52.07	clear	sl. petr-like	5.81	24.38	1.529	4.8	1.70	-74.0
2250 ~~1250~~	1551	52.06	"	"	5.46	24.23	1.555	1.3	0.89	-70.3
3500 ~~1500~~	1556	52.06	"	"	5.38	24.17	1.602	1.5	0.73	-70.1
4750 ~~1750~~	1601	52.06	"	"	5.38	24.28	1.612	1.4	0.69	-70.4
6000 ~~2000~~	1606	"	"	"	5.39	24.36	1.631	0.8	0.67	-75.6
7250	1611	"	"	"	5.32	24.29	1.632	1.1	0.65	-71.2

Start Time: 1542 Elapsed Time: 33 Water Quality Meter ID: YSI 6820
Stop Time: 1615 Average Purge Rate (mL/min): 250 Date Calibrated: 6/9/08

SAMPLING DATA

Sample Date: 6/9/08 Sample Time: 1615 Lab Analysis: VOC 8260
Sample Method: Monsoon / Low Flow Sample Flow Rate (mL/min): 250 QA/QC: —

COMMENTS:

~~Sulfate: — ppm~~
~~Ferrous Iron (filtered): — ppm~~

Total Purge Volume: 8250 mL

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Route 111 & Rand Vicnity PROJECT NUMBER: 21561979 FIELD PERSONNEL: W. Pennington & ~~S. Moore~~ R. Werning
DATE: 6/11/08 WEATHER: 80s, sunny
MONITORING WELL ID: P-57 SAMPLE ID: P57-061108

INITIAL DATA

Well Diameter: 2 in
Total Well Depth (btoc): 65.21 ft
Depth to Water (btoc): 51.75 ft
Depth to LNAPL/DNAPL (btoc): — ft
Depth to Top of Screen (btoc): 40.21 ft
Screen Length: 25 ft

Water Column Height (do not include LNAPL or DNAPL): 13.46 ft btoc
If Depth to Top of Screen is > Depth to Water AND Screen Lenth is ≥4 feet,
Place Pump at: Total Well Depth – 0.5 (Screen Length + DNAPL Column Height) = — ft btoc
If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are ≥ 4ft,
Place Pump at: Total Well Depth – (0.5 X Water Column Height + DNAPL Column Height) = 59.48 ft btoc
If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = — ft btoc

Volume of Flow Through Cell): 1,150 mL
Minimum Purge Volume =
(3 x Flow Through Cell Volume): 3,450 mL
Ambient PID/FID Reading: 0.2 ppm
Wellbore PID/FID Reading: 427 ppm

PURGE DATA

Headspace PID = 1946 ppm

Pump Type: Bladder Pump / Low Flow

Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
1950	1227	51.70	clear	petr.-like	5.71	28.69	1.331	7.9	1.70	-26.5
3150	1235	51.70			5.63	~~25.53~~ 27.53	1.323	8.1	1.47	-20.0
4350	1243	51.70			5.52	27.26	1.308	7.2	1.31	-11.9
5550	1251	51.72			5.59	27.08	1.345	8.3	1.17	-17.0
6750	1259	51.72			5.48	27.10	1.337	7.8	1.20	-13.0
7960	1307	51.72			5.56	27.13	1.336	7.8	1.21	-15.1

Start Time: 1214 Elapsed Time: 56 min Water Quality Meter ID: YSI 6820
Stop Time: 1310 Average Purge Rate (mL/min): 150 Date Calibrated: 6/11/08

SAMPLING DATA

Sample Date: 6/11/08 Sample Time: 1310 Lab Analysis: VOC 8260
Sample Method: Bladder Pump / Low Flow Sample Flow Rate (mL/min): 150 QA/QC: —

COMMENTS:

~~Sulfate: — ppm~~
~~Ferrous Iron (filtered): — ppm~~
Total Purge Volume: 8400 mL

m

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Route 111 & Rand Vicnity PROJECT NUMBER: 21561979 FIELD PERSONNEL: W. Pennington & ~~S. Moore~~ R. Wernig
DATE: 6/9/08 WEATHER: 80° cloudy
MONITORING WELL ID: P-58 SAMPLE ID: P58-060908

INITIAL DATA

Well Diameter: 2 in
Total Well Depth (btoc): 64.94 ft
Depth to Water (btoc): 49.93 ft
Depth to LNAPL/DNAPL (btoc): 49.59 ft
Depth to Top of Screen (btoc): 39.94 ft
Screen Length: 25 ft

Water Column Height (do not include LNAPL or DNAPL): 15.01 ft btoc
If Depth to Top of Screen is > Depth to Water AND Screen Lenth is ≥4 feet,
Place Pump at: Total Well Depth – 0.5 (Screen Length + DNAPL Column Height) = — ft btoc
If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are ≥ 4ft,
Place Pump at: Total Well Depth – (0.5 X Water Column Height + DNAPL Column Height) = 57.10 ft btoc
If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = — ft btoc

Volume of Flow Through Cell): 1,150 mL
Minimum Purge Volume =
(3 x Flow Through Cell Volume): 3,450 mL
Ambient PID/FID Reading: 0.1 ppm
Wellbore PID/FID Reading: 676 ppm

PURGE DATA

JAR PID = 9968 ppm

Pump Type: Monsoon Stainless Steel Submersible Pump

Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
4200	1356	49.74	sl. yellow	petr-like	5.78	21.39	3.136	15.5	0.62	-33.9
5600	1400	49.74	clear		5.62	21.04	3.143	4.7	0.59	-32.6
7000	1404	49.74			5.46	20.91	3.116	4.6	0.58	-28.7
8400	1408	49.74			5.24	20.83	3.082	4.3	0.57	-11.5
9800	1412				5.08	20.88	3.082	4.4	0.57	with 14.8
11200	1416				4.95	20.74	3.092	4.3	0.58	12.7
12600	1420				4.88	20.69	3.075	4.2	0.58	7.6
14000	1424				4.87	20.71	3.080	4.2	0.58	3.1

Start Time: 1344 Elapsed Time: 41 Water Quality Meter ID: YSI 6820
Stop Time: 1425 Average Purge Rate (mL/min): 350 Date Calibrated: 6/9/08

SAMPLING DATA

Sample Date: 6/9/08 Sample Time: 1425 Lab Analysis: VOC 8260
Sample Method: Monsoon / Low Flow Sample Flow Rate (mL/min): 300 QA/QC: DUP (~~P58~~-060908D)

COMMENTS:

~~Sulfate:~~ ~~ppm~~
~~Ferrous Iron (filtered):~~ ~~ppm~~

Total Purge Volume: 14350 mL

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Route 111 & Rand Vicnity PROJECT NUMBER: 21561979 FIELD PERSONNEL: W. Pennington & ~~S. Moore~~ R. Wernig
DATE: 6/10/08 WEATHER: 70s, sunny
MONITORING WELL ID: P-66 SAMPLE ID: P66-061008

INITIAL DATA

Well Diameter: 2 in
Total Well Depth (btoc): 59.67 ft
Depth to Water (btoc): 41.13 ft
Depth to LNAPL/DNAPL (btoc): 40.99 ft *
Depth to Top of Screen (btoc): 34.67 ft
Screen Length: 25 ft

Water Column Height (do not include LNAPL or DNAPL): 18.54 ft btoc
If Depth to Top of Screen is > Depth to Water AND Screen Lenth is ≥4 feet,
Place Pump at: Total Well Depth – 0.5 (Screen Length + DNAPL Column Height) = — ft btoc
If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are ≥ 4ft,
Place Pump at: Total Well Depth – (0.5 X Water Column Height + DNAPL Column Height) = 50.26 ft btoc
If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = — ft btoc

Volume of Flow Through Cell): 1,150 mL
Minimum Purge Volume =
(3 x Flow Through Cell Volume): 3,450 mL
Ambient PID/FID Reading: 0.0 ppm
Wellbore PID/FID Reading: 18.8 ppm

PURGE DATA

HEADSPACE PID = 26.1 ppm

Pump Type: Monsoon Stainless Steel Submersible Pump

Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
1200	1312	41.04	cloudy	petro.-like	5.67	21.84	1.583	68.5	0.90	-54.7
2400	1316	41.04			5.57	21.72	1.551	62.3	0.86	-48.1
3600	1320	41.04			5.50	21.69	1.536	58.6	0.84	-45.6
4800	1324	41.05			5.43	21.73	1.517	73.3	0.82	-41.6
6000	1328	41.07			5.38	21.80	1.507	69.9	0.81	-40.1
7200	1332	41.08			5.34	21.78	1.503	67.0	0.80	-37.7
8400	1336				5.27	21.76	1.502	66.7	0.79	-35.7
9600	1340				5.22	21.70	1.499	67.0	0.78	-33.4

Start Time: 1308 Elapsed Time: 32 min Water Quality Meter ID: YSI 6820
Stop Time: 1340 Average Purge Rate (mL/min): 300 Date Calibrated: 6/10/08

SAMPLING DATA

Sample Date: 6/10/08 Sample Time: 1340 Lab Analysis: VOC 8260
Sample Method: Monsoon / Low Flow Sample Flow Rate (mL/min): 300 QA/QC: —

COMMENTS:

* Product tone given by interface probe suspected to be from sediment / debris on water surface. No residue observed on interface probe. Sheen possible.

~~Sulfate: ppm~~
~~Ferrous Iron (filtered): ppm~~

Total Purge Volume: 9600 mL

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Route 111 & Rand Vicnity PROJECT NUMBER: 21561979 FIELD PERSONNEL: W. Pennington & ~~S. Moore~~ R. Werrig
DATE: 6/10/08 WEATHER: upper 70s, cloudy
MONITORING WELL ID: P-73 SAMPLE ID: P73-061008

INITIAL DATA

Well Diameter: 4 in
Total Well Depth (btoc): 66.38 ft
Depth to Water (btoc): 49.98 ft
Depth to LNAPL/DNAPL (btoc): 49.87 ft *
Depth to Top of Screen (btoc): 41.38 ft
Screen Length: 25 ft

Water Column Height (do not include LNAPL or DNAPL): 16.4 ft btoc
If Depth to Top of Screen is > Depth to Water AND Screen Lenth is ≥4 feet,
Place Pump at: Total Well Depth – 0.5 (Screen Length + DNAPL Column Height) = — ft btoc
If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are ≥ 4ft,
Place Pump at: Total Well Depth – (0.5 X Water Column Height + DNAPL Column Height) = 58.07 ft btoc
If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = — ft btoc

Volume of Flow Through Cell): 1,150 mL
Minimum Purge Volume =
(3 x Flow Through Cell Volume): 3,450 mL
Ambient PID/FID Reading: 0.0 ppm
Wellbore PID/FID Reading: 0.7 ppm

PURGE DATA

HEADSPACE PID = 216 ppm

Pump Type: Monsoon Stainless Steel Submersible Pump

Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
1500	0920	50.00	relatively clear	none	6.60	20.43	1.216	19.1	1.02	-108.4
2700	0924	50.02	"	"	6.53	20.56	1.226	19.2	0.70	-102.9
3900	0928	50.05	"	"	6.45	20.60	1.235	16.5	0.58	-98.2
5100	0932	50.05	"	"	6.35	20.65	1.243	2.5	0.56	-92.0
6300	0936	50.05	"	"	6.32	20.76	1.247	3.8	0.58	-89.0
7500	0940	"	"	"	6.28	20.69	1.256	3.9	0.56	-83.1

Start Time: 0915 Elapsed Time: 28 min Water Quality Meter ID: YSI 6820
Stop Time: 0943 Average Purge Rate (mL/min): 300 Date Calibrated: 6/10/08

SAMPLING DATA

Sample Date: 6/10/08 Sample Time: 0943 Lab Analysis: VOC 8260
Sample Method: Monsoon / Low Flow Sample Flow Rate (mL/min): 300 QA/QC: —

COMMENTS:

* Product tone given by interface probe suspected to be from sediment/debris on surface of water. No residue on interface probe. Sheen possible.

~~Sulfate:~~ ppm
~~Ferrous Iron (filtered):~~ ppm

Total Purge Volume: 8400 mL

LOW FLOW GROUNDWATER SAMPLING DATA SHEET

PROJECT NAME: Route 111 & Rand Vicnity PROJECT NUMBER: 21561979 FIELD PERSONNEL: W. Pennington & ~~S. Moore~~ R. Wernig
DATE: 6/10/08 WEATHER: 80, partly cloudy
MONITORING WELL ID: P-75 SAMPLE ID: P75-061008

INITIAL DATA

Well Diameter: 4 in
Total Well Depth (btoc): 67.08 ft
Depth to Water (btoc): 51.09 ft
Depth to LNAPL/DNAPL (btoc): 51.05 ft *
Depth to Top of Screen (btoc): 42.08 ft
Screen Length: 25 ft

Water Column Height (do not include LNAPL or DNAPL): 15.99 ft btoc
If Depth to Top of Screen is > Depth to Water AND Screen Lenth is ≥4 feet,
Place Pump at: Total Well Depth – 0.5 (Screen Length + DNAPL Column Height) = — ft btoc
If Depth to Top of Screen is < Depth to Water AND Water Column Height and Screen Length are ≥ 4ft,
Place Pump at: Total Well Depth – (0.5 X Water Column Height + DNAPL Column Height) = 59.05 ft btoc
If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = — ft btoc

Volume of Flow Through Cell): 1,150 mL
Minimum Purge Volume =
(3 x Flow Through Cell Volume): 3,450 mL
Ambient PID/FID Reading: 0.0 ppm
Wellbore PID/FID Reading: 0.00 ppm

PURGE DATA

Pump Type: Monsoon Stainless Steel Submersible Pump

HEADSPACE PID = 214 ppm

Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
1050	1020	51.14	clear	V. sl. petr.	6.10	23.28	1.972	14.9	0.73	-63.2
2450	1024	51.14	"	"	6.06	23.26	1.976	10.8	0.62	-62.2
3850	1028	"	"	"	6.02	23.31	1.965	11.8	0.56	-60.1
5250	1032	"	"	"	6.00	23.40	1.950	8.9	0.52	-58.1
6650	1036	"	"	"	5.98	23.43	1.948	6.3	0.50	-57.1

Start Time: 1017 Elapsed Time: 23 min Water Quality Meter ID: YSI 6820
Stop Time: 1040 Average Purge Rate (mL/min): 350 Date Calibrated: 6/10/08

SAMPLING DATA

Sample Date: 6/10/08 Sample Time: 1040 Lab Analysis: VOC 8260
Sample Method: Monsoon / Low Flow Sample Flow Rate (mL/min): 300 QA/QC: EB (P75-061008EB)

COMMENTS: of ~~water~~ NAPL interface probe
* Product tone suspected to be from sediment/debris on surface of water. ~~Sulfate: ppm~~
sheen possible. No residue on interface probe. ~~Ferrous Iron (filtered): ppm~~

Total Purge Volume: 8050 mL

SOIL VAPOR SAMPLING - SUMMA CANISTER

URS CORPORATION
RAND AVENUE REMEDIATION SITE
170 EAST RAND AVENUE / HARTFORD, ILLINOIS 62048

MONITORING TEAM INFORMATION

Field Personnel: M. Miller / S. Moore

Date: 6/3/08

Job Number: 21561974

FIELD CONDITIONS

Weather: Cloudy

Temperature: Low: High:

Wind Direction: North

Level of Protection: Level D

SUMMA CANISTER SAMPLE INFORMATION

Sample ID	Canister ID Number	Flow Regulater ID Number	Canister Vacuum (inches of Mercury [Hg])		Sample Time (24 hours)		Additional Comments
			Initial	Final	Start	Finish	
GP-12-A-060308	13389	FC00580	29	8	0935	0955	No
GP-12-B-060308	33406	FC00244	29	8	0939	1003	No
GP-12-C-060308	31752	FC00496	29	7	0935	1007	No
GP-12-D-060308	36564	FC00216	30	8	0940	1014	No
GP-11-A-060308	n2186	FC00490	30	9	1345	1420	No
GP-11B-060308	n2033	FC00610	29	10	1350	1428	No
GP-11-B-060308-DUP	n2170	FC00434	29	6.5	1350	1428	No
GP-11-C-060308	n2032	FC00857	30	9	1355	1432	No
GP-11-D-060308	36341	FC00505	30	9	1410	1420	No

Tedlar Bags

21.65315

CO / H2S / LEL / O2

FIELD DATA

Sample ID	Sample Time (24 hrs)	Vacuum Reading (inches of H_2O)	Calculated Purge Volume (3 well volumes)	Actual Volume Purged	Purge Method	Tedlar Bag Collection Method	PID Reading	4-Gas Meter Reading	Additional Comments (Yes / No)
GP-12-A-060308	0915	0.00	130 mL	130 mL	Syringe	Peristaltic Pump	0.1	0 / 0 / 11.6	No
GP-12-B-060308	0916	0.00	217 mL	220 mL	Syringe	Peristaltic Pump	0.0	0 / 0 / 4.5	No
GP-12-C-060308	0917	0.00	303 mL	305 mL	Syringe	Peristaltic Pump	0.1	0 / 0 / 1.6	No
GP-12-D-060308	0918	0.00	390 mL	390 mL	Syringe	Peristaltic Pump	0.2	0 / 0 / 3.0	No
GP-11-A-060308	1332	0.00	130 mL	130 mL	Syringe	Peristaltic Pump	2.4	0 / 0 / 11.2	No
GP-11-B-060308	1333	0.00	260 mL	260 mL	Syringe	Peristaltic Pump	2.6	0 / 0 / 10.3	No
GP-11-C-060308	1334	0.01	303 mL	305 mL	Syringe	Peristaltic Pump	2.7	0 / 0 / 10.0	No
GP-11-D-060308	1335	0.00	390 mL	390 mL	Syringe	Peristaltic Pump	3.1	0 / 0 / 2.8	No
GP-11-B-060308-Dup	1333	0.00	260 mL	260 mL	Syringe	Peristaltic Pump	2.6	0 / 0 / 10.3	No
					Syringe	Peristaltic Pump			
					Syringe	Peristaltic Pump			
					Syringe	Peristaltic Pump			
					Syringe	Peristaltic Pump			
					Syringe	Peristaltic Pump			
					Syringe	Peristaltic Pump			
					Syringe	Peristaltic Pump			
					Syringe	Peristaltic Pump			
					Syringe	Peristaltic Pump			
					Syringe	Peristaltic Pump			

NOTES: Abbreviations: L = liter; mL = milliliter; N/A = Not Applicable; N = No; Y = Yes

6/3/08

SOIL VAPOR SAMPLING - SUMMA CANISTER

URS CORPORATION
RAND AVENUE REMEDIATION SITE
170 EAST RAND AVENUE / HARTFORD, ILLINOIS 62048

MONITORING TEAM INFORMATION

Field Personnel: M. Miller / S. Moore

Date: 6/4/08

Job Number: 21561979

FIELD CONDITIONS

Weather:	Temperature:	Low:	High:
Wind Direction:	Level of Protection:		

SUMMA CANISTER SAMPLE INFORMATION

Sample ID	Canister ID Number	Flow Regulater ID Number	Canister Vacuum (inches of Mercury [Hg])		Sample Time (24 hours)		Additional Comments
			Initial	Final	Start	Finish	
GP-13-A-060408	(SC62)	FC00239	29	8.5	0850	0922	No
GP-13B-060408	3369 (SC749)	FC 00955	30	9	0855	0930	No
GP-13C-060408	3297 (SC64)	FC00073	30	8	0900	0935	No
GP-13D-060408	1423	FC00741	27	7	0905	0936	No
GP-9-A-060408	34153	FC00198	29	7	1045	1115	No
GP-9-B-060408	36519	FC00154	30	8.5	1050	1120	No
GP-9-C-060408	SC52	FC00381	30	9	1055	1125	No
GP-9-C-060408-Dup	SC66	FC00573	28.5	8.5	1055	1125	No
GP-9-D-060408	9358	FC00360	30	6	1115	1145	No

SOIL VAPOR SAMPLING - TEDLAR BAG

21.65315

URS CORPORATION
RAND AVENUE REMEDIATION SITE
170 EAST RAND AVENUE / HARTFORD, ILLINOIS 62048

MONITORING TEAM INFORMATION

Field Personnel: M. Miller S. Moore

Date: 6/4/08

Job Number: 21561979

FIELD CONDITIONS

Weather:

Temperature: Low: High:

Wind Direction:

Level of Protection:

EQUIPMENT & CALIBRATION INFORMATION

Meter Type:

Manufacturer:

Model No.:

CO | H_2S
LEL | O_2

FIELD DATA

Sample ID	Sample Time (24 hrs)	Vacuum Reading (inches of H_2O)	Calculated Purge Volume (3 well volumes)	Actual Volume Purged	Purge Method	Tedlar Bag Collection Method	PID Reading	4-Gas Meter Reading	Additional Comments (Yes / No)
GP-13-A-060408	0834	0.00	5 152	155	Syringe	Peristaltic Pump	1.2	0 / 0 / 0 / 7.0	No
GP-13-B-060408	0835	0.00	10 260	260	Syringe	Peristaltic Pump	0.9	0 / 0 / 0 / 2.1	No
GP-13-C-060408	0836	0.00	17 368	370	Syringe	Peristaltic Pump	0.9	0 / 0 / 0 / 2.4	No
GP-13-D-060408	0837	0.00	20 477	480	Syringe	Peristaltic Pump	1.2	0 / 0 / 0 / 0.0	No
GP-9-A-060408	1027	0.00	5 152	155	Syringe	Peristaltic Pump	1.8	0 / 0 / 0 / 5.7	No
GP-9-B-060408	1028	0.05	10 260	260	Syringe	Peristaltic Pump	1.2	0 / 0 / 0 / 2.6	No
GP-9-C-060408	1029	-0.00	15 368	370	Syringe	Peristaltic Pump	1.4	0 / 0 / 0 / 2.8	No
GP-9-D-060408	1030	-0.00	20 477	480	Syringe	Peristaltic Pump	0.9	0 / 0 / 0 / 3.8	No
GP-9-C-060408-DUP	1029	-0.00	368	370	Syringe	Peristaltic Pump	1.4	0 / 0 / 0 / 2.8	No
					Syringe	Peristaltic Pump			

Analytical Report 305128

for

URS Corporation-St. Louis

Project Manager: Wendy Pennington

900 S. Central Avenue

Route 111 & Rand Avenue Vicinity / 21561979

18-JUN-08

E84880

4143 Greenbriar Dr., Stafford, TX 77477 Ph:(281) 240-4200 Fax:(281) 240-4280

Texas certification numbers:
Houston, TX T104704215

Florida certification numbers:
Houston, TX E871002 - Miami, FL E86678 - Tampa, FL E86675
Norcross(Atlanta), GA E87429

South Carolina certification numbers:
Norcross(Atlanta), GA 98015

North Carolina certification numbers:
Norcross(Atlanta), GA 483

Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America
Midland - Corpus Christi - Atlanta

18-JUN-08

Project Manager: **Wendy Pennington**
URS Corporation-St. Louis
1001 Highlands Plaza Drive West, Suite 300
St. Louis, MO 63110

Reference: XENCO Report No: **305128**
900 S. Central Avenue
Project Address: Roxana, Illinois 62084

Wendy Pennington:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 305128. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 305128 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Carlos Castro
Managing Director, Texas

Certificate of Analysis Summary 305128
URS Corporation-St. Louis, St. Louis, MO

Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Avenue Vicinity / 2156
Contact: Wendy Pennington
Project Location: Roxana, Illinois 62084

Date Received in Lab: Jun-04-08 10:00 am
Report Date: 18-JUN-08
Project Manager: Debbie Simmons

Analysis Requested		*Lab Id:*	305128-001	305128-002	305128-003	
		Field Id:	Rt 111/Rand Ave-IDW Soil	Rt 111/Rand Ave-IDW Wate	Trip Blank	
		Depth:				
		Matrix:	SOIL	WATER	WATER	
		Sampled:	Jun-03-08 10:45	Jun-03-08 13:30	Jun-03-08 00:00	
BOD by SM5210B	*Extracted:*					
	Analyzed:			Jun-04-08 16:14		
	Units/RL:			mg/L RL		
Biochemical Oxygen Demand, 5 day				16.6 2.00		
BTEX-MTBE by SW 8260B	*Extracted:*			Jun-11-08 09:24	Jun-11-08 09:00	
	Analyzed:			Jun-11-08 13:33	Jun-11-08 09:57	
	Units/RL:			mg/L RL	mg/L RL	
MTBE				U 0.0050	U 0.0050	
Benzene				0.0307 0.0010	U 0.0010	
Toluene				0.2042 0.0010	U 0.0010	
Ethylbenzene				0.0918 0.0010	U 0.0010	
m,p-Xylene				0.1325 0.0020	U 0.0020	
o-Xylene				0.0653 0.0010	U 0.0010	
Total Xylenes				0.1978	U	
Total BTEX				0.5245	U	
COD by EPA 410.4	*Extracted:*					
	Analyzed:			Jun-05-08 17:38		
	Units/RL:			mg/L RL		
COD - Chemical Oxygen Demand				37.0 20.0		
Inorganic Anions by EPA 300	*Extracted:*					
	Analyzed:			Jun-04-08 15:04		
	Units/RL:			mg/L RL		
Nitrate as N				0.984 0.113		
Oil and Grease by EPA 1664A	*Extracted:*					
	Analyzed:			Jun-12-08 16:08		
	Units/RL:			mg/L RL		
Oil & Grease, Total Recovered				3.33 J 5.00		
TCLP Herbicides by SW8151	*Extracted:*		Jun-09-08 10:12			
	Analyzed:		Jun-11-08 22:25			
	Units/RL:		ug/L RL			
2,4,5-Tp			U 2.50			
2,4-D			U 2.50			

Carlos A. Castro, ~~Ph.D.~~, MBA
Managing Director, Texas

Certificate of Analysis Summary 305128
URS Corporation-St. Louis, St. Louis, MO

Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Avenue Vicinity / 2156
Contact: Wendy Pennington
Project Location: Roxana, Illinois 62084

Date Received in Lab: Jun-04-08 10:00 am
Report Date: 18-JUN-08
Project Manager: Debbie Simmons

Analysis Requested						
	Lab Id:	305128-001		305128-002	305128-003	
	Field Id:	Rt 111/Rand Ave-IDW Soil		Rt 111/Rand Ave-IDW Wate	Trip Blank	
	Depth:					
	Matrix:	SOIL		WATER	WATER	
	Sampled:	Jun-03-08 10:45		Jun-03-08 13:30	Jun-03-08 00:00	
TCLP Metals by SW 6020A	*Extracted:*	Jun-09-08 10:05				
	Analyzed:	Jun-09-08 20:29				
	Units/RL:	mg/L	RL			
Arsenic		U	0.010			
Barium		0.831	0.025			
Cadmium		U	0.005			
Chromium		0.009 J	0.015			
Lead		U	0.010			
Mercury		U	0.0020			
Selenium		U	0.015			
Silver		U	0.010			
TCLP Pesticides by SW8081A	*Extracted:*	Jun-09-08 10:15				
	Analyzed:	Jun-09-08 20:17				
	Units/RL:	ug/L	RL			
Heptachlor Epoxide		U	0.250			
Chlordane		U	2.50			
Endrin		U	0.250			
Gamma-BHC (Lindane)		U	0.250			
Heptachlor		U	0.250			
Methoxychlor		U	0.250			
Toxaphene		U	2.50			
TCLP SVOCs by EPA 8270C	*Extracted:*	Jun-11-08 11:45				
	Analyzed:	Jun-12-08 18:08				
	Units/RL:	mg/L	RL			
1,4-Dichlorobenzene		U	0.010			
2,4-Dinitrotoluene		U	0.010			
Hexachlorobenzene		U	0.010			
Hexachlorobutadiene		U	0.010			
Hexachloroethane		U	0.010			
2-methylphenol		U	0.010			
3&4-Methylphenol		U	0.010			
Nitrobenzene		U	0.010			
Pentachlorophenol		U	0.010			
Pyridine		U	0.010			
2,4,5-Trichlorophenol		U	0.010			
2,4,6-Trichlorophenol		U	0.010			

Carlos A. Castro, ~~Ph.D.~~, MBA
Managing Director, Texas

Certificate of Analysis Summary 305128
URS Corporation-St. Louis, St. Louis, MO

Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Avenue Vicinity / 2156 **Date Received in Lab:** Jun-04-08 10:00 am
Contact: Wendy Pennington **Report Date:** 18-JUN-08
Project Location: Roxana, Illinois 62084 **Project Manager:** Debbie Simmons

Analysis Requested		*Lab Id:*	305128-001	305128-002	305128-003	
		Field Id:	Rt 111/Rand Ave-IDW Soil	Rt 111/Rand Ave-IDW Wate	Trip Blank	
		Depth:				
		Matrix:	SOIL	WATER	WATER	
		Sampled:	Jun-03-08 10:45	Jun-03-08 13:30	Jun-03-08 00:00	
TCLP VOAs by EPA 8260B	*Extracted:*		Jun-12-08 14:34			
	Analyzed:		Jun-12-08 16:34			
	Units/RL:		mg/L RL			
Benzene			U 0.025			
2-Butanone			U 0.250			
Carbon Tetrachloride			U 0.025			
Chlorobenzene			U 0.025			
Chloroform			U 0.025			
1,2-Dichloroethane			U 0.025			
1,1-Dichloroethene			U 0.025			
Tetrachloroethylene			U 0.025			
Trichloroethene			U 0.025			
Vinyl Chloride			U 0.010			
TPH DRO by SW846-8015	*Extracted:*			Jun-06-08 12:04		
	Analyzed:			Jun-09-08 13:28		
	Units/RL:			mg/L RL		
TPH-DRO (Diesel Range Organics)				1.14 0.053		
TPH GRO by EPA 8015 Mod.	*Extracted:*			Jun-13-08 12:16		
	Analyzed:			Jun-14-08 04:31		
	Units/RL:			mg/L RL		
TPH-GRO (Gasoline Range Organics)				3.30 0.050		
TSS by SM2540D	*Extracted:*					
	Analyzed:			Jun-09-08 17:14		
	Units/RL:			mg/L RL		
TSS				3090 5.00		
Total Lead by EPA 200.8	*Extracted:*			Jun-09-08 10:05		
	Analyzed:			Jun-09-08 19:03		
	Units/RL:			mg/L RL		
Lead				0.006 0.002		
pH, Electrometric by EPA 150.2	*Extracted:*					
	Analyzed:			Jun-04-08 16:02		
	Units/RL:			SU RL		
pH				7.71		

Carlos A. Castro, ~~Ph.D.~~, MBA
Managing Director, Texas

Certificate of Analysis Summary 305128
URS Corporation-St. Louis, St. Louis, MO

Project Name: 900 S. Central Avenue

Project Id: Route 111 & Rand Avenue Vicinity / 2156
Contact: Wendy Pennington
Project Location: Roxana, Illinois 62084

Date Received in Lab: Jun-04-08 10:00 am
Report Date: 18-JUN-08
Project Manager: Debbie Simmons

Analysis Requested		*Lab Id:*	305128-001	305128-002	305128-003	
		Field Id:	Rt 111/Rand Ave-IDW Soil	Rt 111/Rand Ave-IDW Wate	Trip Blank	
		Depth:				
		Matrix:	SOIL	WATER	WATER	
		Sampled:	Jun-03-08 10:45	Jun-03-08 13:30	Jun-03-08 00:00	
Flash Point (CC) SW-846 1010	*Extracted:*					
	Analyzed:		Jun-12-08 12:45			
	Units/RL:		Deg F RL			
Flash Point			> 150 50.0			
Reactive Cyanide by EPA 9010B	*Extracted:*					
	Analyzed:		Jun-09-08 23:18			
	Units/RL:		mg/kg RL			
Cyanide			U 0.200			
Reactive Sulfide by EPA 9030B	*Extracted:*					
	Analyzed:		Jun-09-08 23:52			
	Units/RL:		mg/kg RL			
Reactive Sulfide			U 50.0			
Soil pH by EPA 9045C	*Extracted:*					
	Analyzed:		Jun-12-08 10:32			
	Units/RL:		SU RL			
pH			8.67			

Carlos A. Castro, ~~Ph.D.~~, MBA
Managing Director, Texas

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the MQL(PQL) and above the SQL(MDL).

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

* Outside XENCO'S scope of NELAC Accreditation

Shell Oil Products Chain Of Custody Record

LAB (LOCATION)
11381 Meadowglen Ln; Ste L; Houston, TX
☑ XENCO (PH: 281-589-0692; FAX: 281-589-0695)
☐ CALSCIENCE ( )
☐ TEST AMERICA ( )
☐ SPL ( )
☐ OTHER ( )

Please Check Appropriate Box:
☑ ENV. SERVICES ☐ MOTIVA RETAIL ☐ SHELL RETAIL
☐ MOTIVA SD&CM ☐ CONSULTANT ☐ LUBES
☐ SHELL PIPELINE ☐ OTHER

Print Bill To Contact Name: KEVIN DYER
PO #:
INCIDENT # (ENV SERVICES): 9 7 2 1 6 6 4 0
SAP #: 3 4 0 0 6 1
☐ CHECK IF NO INCIDENT # APPLIES
DATE: 6/3/08
PAGE: 1 of 1

CONSULTANT COMPANY: URS CORPORATION
ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300
CITY: ST. LOUIS, MISSOURI 63110
TELEPHONE: OFF: 314-743-4166 CELL: 314-452-8929
FAX: OFF: 314-743-4166 CELL: 314-452-8929

URS CORPORATION - FIELD OFFICE
170 E. RAND AVENUE
HARTFORD, ILLINOIS 62048
E-MAIL: wendy_pennington@urscorp.com

SOPUS SITE ADDRESS (Street, City and State): 900 S. CENTRAL AVENUE; ROXANA, ILLINOIS 62084
CONSULTANT PROJECT CONTACT (Report to): WENDY PENNINGTON
CONSULTANT PROJECT NAME / NO.: Route 111 & Rand Ave Vicinity / 21561979
SAMPLER NAME(S) (Print): W. Pennington
LAB USE ONLY: 305128-H1

TURNAROUND TIME (CALENDAR DAYS): ☒ STANDARD (10 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND
DELIVERABLES: ☐ LEVEL 1 ☒ LEVEL 2 ☐ LEVEL 3 ☐ LEVEL 4 ☐ OTHER (SPECIFY)
TEMPERATURE ON RECEIPT C°: Cooler #1 2-0°C | Cooler #2 | Cooler #3
SPECIAL INSTRUCTIONS OR NOTES: Please provide "J" values in the Level 2 Report.
☑ SHELL CONTRACT RATE APPLIES

REQUESTED ANALYSIS

LAB USE ONLY	Field Sample Identification	SAMPLING DATE	SAMPLING TIME	MATRIX	PRESERVATIVE HCL	HNO3	H2SO4	NONE	OTHER	NO. OF CONT.	~~TCLP VOC~~	TCLP SVOC	TCLP Pesticide	TCLP Herbicide	TCLP Metal	Ignitibility	Corrosivity	Reactivity	BTEX/MTBE 8021	pH 150.2	TSS SM2540D	Nitrate E300.0	Oil/Grease 1664A	Lead 200.8	BOD SM5210B	COD 410.4	DRO/GRO 8015	PID (ppm)	Container PID Readings or Laboratory Notes
	Rt 111/Rand Ave-IDW Soil-060308	6/3/08	1045	~~WATER~~ Soil				X		15	X	X	X	X	X	X	X	X											
	Rt 111/Rand Ave-IDW Water-060308	6/3/08	1330	~~WATER~~ Water	X	X	X	X		16									X	X	X	X	X	X	X	X	X		
				~~WATER~~																									
				~~WATER~~																									
				~~WATER~~																									
				~~WATER~~																									
				~~WATER~~																									
				~~WATER~~																									

WMP

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Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Wendy Pennington	FED Ex	6/3/08	1730
FEDEX		6/4/08	1000

05/2/08 Revision

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: URS

Date/ Time: 6/4/18

Lab ID # : 305128-17

Initials: RJ

Sample Receipt Checklist

#1 Temperature of container/ cooler?	Yes	No	N/A	2.0°C
#2 Shipping container in good condition?	Yes	No	None	
#3 Samples received on ice?	Yes	No	N/A	Blue/Water
#4 Custody Seals intact on shipping container/ cooler?	Yes	No	N/A	
#5 Custody Seals intact on sample bottles/ container?	Yes	No	N/A	
#6 Chain of Custody present?	Yes	No		
#7 Sample instructions complete of Chain of Custody?	Yes	No		
#8 Any missing/extra samples?	Yes	No		
#9 Chain of Custody signed when relinquished/ received?	Yes	No		
#10 Chain of Custody agrees with sample label(s)?	Yes	No		
#11 Container label(s) legible and intact?	Yes	No		
#12 Sample matrix/ properties agree with Chain of Custody?	Yes	No		
#13 Samples in proper container/ bottle?	Yes	No		
#14 Samples properly preserved?	Yes	No	N/A	
#15 Sample container intact?	Yes	No		
#16 Sufficient sample amount for indicated test(s)?	Yes	No		
#17 All samples received within sufficient hold time?	Yes	No		
#18 Subcontract of sample(s)?	Yes	No	N/A	
#19 VOC samples have zero headspace?	Yes	No	N/A	

Nonconformance Documentation

Contact: _____ Contacted by: _____ Date/ Time: _____

Regarding: TB not on COC 003

Corrective Action Taken:

Check all that Apply:

- ☐ Client understands and would like to proceed with analysis
- ☐ Cooling process had begun shortly after sampling event

REFERENCE: ATC Associates Inc., 2007; *Subsurface Investigation Report on #1 and #4 Dock Lines Report*; Prepared for ConocoPhillips – W ood River Refinery; dated April 24, 2007.

ConocoPhillips – Wood River Refinery
Subsurface Investigation Report
On #1 and #4 Dock Lines
Illinois Route 111 and Rand Avenue
Roxana, Illinois
ATC Project Number 30.75233.0710 T-1

Prepared for:

Mr. Eric Petersen
ConocoPhillips Company
P.O. Box 76
Roxana, Illinois 62084

April 24, 2007

TABLE 1

SOIL ANALYTICAL RESULTS (ug/Kg)
CONOCOPHILLIPS
WOOD RIVER REFINERY
ILLINOIS ROUTE 111 AND RAND AVENUE
ROXANA, ILLINOIS

Sample Name	Date Sampled	Depth Interval (ft)	EPA Method 8260B (ug/Kg)					EPA Method 8270 (ug/Kg)															
			Benzene	Ethylbenzene	MTBE	Toluene	Total Xylene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
B-1	03/07/07	12'-14'	**1.7**	<6.3	<2.5	<6.3	<6.3	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
		22'-24'	<1.1	<5.4	<2.1	<5.4	<5.4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
B-3	03/01/07	14'-16'	**287**	**548**	<56.4	<141	<141	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	**9**	<4	<4
		22'-24'	**21,900**	**8,220**	<389	<972	**7,890**	**87**	**19**	**21**	<4	<4	<4	<4	<4	**<4**	<4	**4**	**74**	<4	**173**	**166**	**12**
		34'-36'	**33,700**	<138	<55.2	<138	**420**	**7**	<3	**7**	**8**	<3	**4**	<3	<3	**11**	<3	**13**	**11**	<3	**28**	**40**	**19**
B-5	02/28/07	14'-16'	**1.0**	<5.0	<2.0	<5.0	<5.0	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
		38'-40'	**165,000**	**1,500**	<64.7	**1,260**	**4,170**	**735**	**10**	**44**	**31**	**13**	**20**	**4**	**8**	**27**	<4	**202**	**317**	**5**	**11,000**	**400**	**122**
B-6	03/01/07	12'-14'	**16.8**	<4.9	<2.0	<4.9	<4.9	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
		34'-36'	**1,220**	<138	<55.2	<138	**154**	**17**	**4**	**17**	**28**	**27**	**32**	**19**	**17**	**31**	**11**	**54**	**26**	**16**	**49**	**71**	**56**
B-6 (D)	03/01/07	34'-36'	**1,400**	**821**	<51.0	**481**	**4,370**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Industrial/ Commercial	Inhalation (ug/Kg)	1,600	400,000	883,000	650,000	20,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	20,000	NS	NS	NS
	Ingestion (ug/Kg)	100,000	2.0×10^8	2.0×10^7	4.1×10^8	1.0×10^9	1.2×10^8	6.1×10^7	6.1×10^8	8,000	800	8,000	6.1×10^7	78,000	780,000	800	8.2×10^7	8.2×10^7	8,000	4.1×10^7	6.1×10^7	6.1×10^7
Construction Worker	Inhalation (ug/Kg)	2,200	5.8×10^4	1.4×10^5	4.2×10^4	3.2×10^5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	1.8×10^3	NS	NS
	Ingestion (ug/Kg)	2.3×10^6	2.0×10^7	2.0×10^6	4.1×10^8	4.1×10^8	1.2×10^8	6.1×10^7	6.1×10^8	1.7×10^5	1.7×10^4	1.7×10^5	6.1×10^7	1.7×10^6	1.7×10^7	1.7×10^4	8.2×10^7	8.2×10^7	1.7×10^5	4.1×10^6	6.1×10^7	6.1×10^7
Soil component of the Groundwater Ingestion Exposure Route	Class I (ug/Kg)	30	13,000	320	12,000	150,000	570,000	24,000	1.2×10^7	2,000	8,000	5,000	3.2×10^7	49,000	160,000	2,000	4.3×10^6	560,000	14,000	12,000	220,000	4.2×10^6
	Class II (ug/Kg)	170	19,000	320	29,000	150,000	2.9×10^6	120,000	5.9×10^7	8,000	82,000	25,000	1.6×10^8	250,000	800,000	7,600	2.1×10^7	2.8×10^6	69,000	18,000	1.1×10^6	2.1×10^7

Notes:

Results reported in ug/Kg

<: Analyte was not detected at or above the reporting limit, as shown.

NS: No standard; soil remediation objective not defined for listed compound.

NA: Not analyzed for this parameter; insufficient volume of sample recovered to collect moisture or PNA jar of duplicate sample.

Shaded values indicate exceedance of TACO Tier 1 soil remediation objective (SRO) for the inhalation pathway for the industrial/commercial worker on industrial/commercial property.

TABLE 2

GROUNDWATER ANALYTICAL RESULTS
CONOCOPHILLIPS (ug/L)
WOOD RIVER REFINERY
ILLINOIS ROUTE 111 AND RAND AVENUE
ROXANA, ILLINOIS

Well ID:	Collection Date:	VOLATILES -8260B (ug/L)					PNAs - 8270 (ug/L)														
		Benzene	Ethylbenzene	Methyl t-butyl ether (MTBE)	Toluene	Xylenes, Total	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
B-1	03/07/07	41040	<250	<100	<250	<250	**0.29**	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	**0.34**	<0.26	<0.26
B-3	03/02/07	65300	<5,000	<2,000	<5,000	**8,100**	**1.76**	**0.32**	**0.17**	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	**1.59**	<0.10	402	**0.92**	<0.10
B-3 (D)[1]	03/02/07	NA	NA	NA	NA	NA	**2.15**	**0.44**	**0.23**	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	**1.78**	<0.10	475	**1.33**	<0.10
B-5	03/01/07	27300	<1,000	<400	<1,000	<1,000	**26.8**	**0.6**	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	**3.12**	<0.10	1910	**0.2**	<0.10
B-5 (D)[1]	03/01/07	23200	<1,000	<400	<1,000	<1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TACO Tier 1 GROs	Class I	5	700	70	1,000	10,000	420	210	2,100	0.13	0.2	0.18	210	0.17	1.5	0.3	280	280	0.43	140	210	210
	Class II	25	1,000	70	2,500	10,000	2,100	1,050	10,500	0.65	2	0.9	1,050	0.85	7.5	1.5	1,400	1,400	2.15	220	1,050	1,050

Notes:
Results reported in ug/L.
<: Analyte was not detected at or above the reporting limit, as shown.
NA: Not analyzed for this parameter.
Shaded values indicate exceedance of TACO Tier 1 groundwater remediation objective (GRO) for Class I.
[1] B-5 duplicate PNA bottle broke in transit to laboratory. Therefore, Volatiles (8260B) duplicate was collected from B-5, while PNA (8270) duplicate was collected from B-3.

APPENDIX H-1
SUMMARY OF 2006 GROUNDWATER ANALYTICAL DETECTIONS AND SCREENING

EXCEEDANCES HIGHLIGHTED IN YELLOW

Analyte (Results in mg/L)			Benzene	Ethylbenzene	Toluene	Xylenes (total)	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Acetone	Bromomethane	Carbon disulfide
Ingestion Screening Values (mg/L)			0 005	0.7	1 0	10	0 35*	0.35*	0.7	130**	0.7
Location	Sample ID	Date									
COP WELLS											
P-57	P5703030601	3/3/2006	**177**	**1.12**	<1.0	<3.0	<1 0	<1.0	<50.0	<1.0	<1 0
P-58	P5803020601	3/2/2006	**409 RL5**	<5 0	<5.0	<15 0	<5 0	<5.0	<250	<5.0	<5 0
	P5803020602	3/2/2006	**464 RL5**	<5 0	<5.0	<15 0	<5 0	<5.0	<250	<5.0	<5 0
P-66	P6603020601	3/2/2006	**0.0116 U**	<0 001	**0.00199**	<0.003	**0.00125**	<0.001	<0.050	<0.001	<0 001
P-73	P7303020601	3/2/2006	**22.4**	**1.74**	**8.5**	**4.53**	**0.928**	**0.155**	<0.050	<0.001	<0 001
P-75	P7503030601	3/3/2006	**2.78**	**0.0296**	**0.0169**	**0.0393**	**0.0664**	**0.0146**	<0.050	<0.001	<0 001
P-93A	P93A03030601	3/3/2006	**506**	<5 0	<5.0	<15 0	<5 0	<5.0	<250	<5.0	<5 0
P-93B	P93B03030601	3/3/2006	**370**	<5 0	<5.0	<15 0	<5 0	<5.0	<250	<5.0	<5 0
GROUNDWATER PROFILE SAMPLING											
P-93-02	P9302GWP43	4/5/2006	**1,310 RL1**	**6.2 RL1,J**	**29.5 RL1**	**26.4 RL1,J**	**9.8 RL1,J**	<10 0	<500	<10 0	<10.0
	P9302GWP59	4/5/2006	**264 RL1**	**10.9 RL1**	**56.5 RL1**	**48.9 RL1**	**16.6 RL1**	**4.6 RL1,J**	<500	<10 0	<10.0
P-93-03	P9303GWP40	4/6/2006	**348**	**0.534**	**0.123 J**	**1.61**	**0.129 J**	<0.001	<0.050	<0.001	<0 001
	P9303GWP59	4/7/2006	**3.65**	**0.153**	**0.00463**	**0.262**	**0.167**	**0.0482**	<0.050	<0.001	**0.00108**
P-93-05	P9305GWP45	4/7/2006	**1,460**	**0.0058 J**	**0.0147 J**	**0.0147 J**	**0.00537 J**	**0.00352 J**	<0.050	<0.001	<0 001
	P9305GWP58	4/7/2006	**52.2**	**0.203**	**0.233**	**0.488 J**	**0.103 J**	**0.0408 J**	<0.050	<0.001	<0 001
P-93-06	P9306GWP50	4/7/2006	**1,310**	<1 0	<1.0	<3.0	**0.00431 J**	**0.00305 J**	<0.050	<0.001	<0 001
	P9306GWP62 5	4/10/2006	**827**	**0.401 E J**	**491 E**	**0.791 E J**	**0.164 J**	**0.0563 J**	**0.325 J**	**0.00432 J**	<0 001
P-93-09	P9309GWP52	4/11/2006	**250**	**1.26**	**0.0685**	**2.34**	**1.77**	**0.485**	<0.50	<0.010	<0 010
	P9309GWP66	4/11/2006	**629 E1**	**0.74**	**0.156 J**	**0.502 J**	**0.137 J**	**0.035 J**	<0.050	<0.001	<0 001
	P9309GWP66D	4/11/2006	**569**	**0.698**	**0.13**	**0.548**	**0.131**	**0.0342**	<0.50	<0.010	<0 010
P-93-11	P9311GWP41	4/5/2006	**1,060 RL1**	<10.0	**17.5 RL1**	**16.5 RL1,J**	**6.4 RL1,J**	<10 0	<500	<10 0	<10.0
	P9311GWP59	4/6/2006	**11.8**	**0.0926**	**0.182**	**0.295**	**0.0526**	**0.0172**	<0.050	<0.001	<0 001
	P9311GWP59D	4/6/2006	**13.1**	**0.0876**	**0.183**	**0.278**	**0.0507**	**0.0169**	<0.050	<0.001	<0 001

Analyte (Results in mg/L)			Dibromomethane	Isopropyl benzene	Methyl tert-Butyl Ether	Naphthalene	n-Butylbenzene	n-Propylbenzene	p-Isopropyltoluene	sec-Butylbenzene	tert-Butylbenzene
Ingestion Screening Values (mg/L)			0.07*	5,200**	0.07	0.14	0.24***	0 24***		0.24***	0 24***
Location	Sample ID	Date									
COP WELLS											
P-57	P5703030601	3/3/2006	<1 0	<1.0	<1.0	<5.0	<1 0	<1 0	<1.0	<1 0	<1.0
P-58	P5803020601	3/2/2006	<5 0	<5.0	<5.0	<25.0	<5 0	<5 0	<5.0	<5 0	<5.0
	P5803020602	3/2/2006	<5.0	<5 0	<5.0	<25.0	<5 0	<5 0	<5.0	<5 0	<5.0
P-66	P6603020601	3/2/2006	<0.001	**0.125**	**0.107**	<0.005	**0.0131**	**0.142**	<0.001	**0.0181**	<0.001
P-73	P7303020601	3/2/2006	<0.001	**0.088**	**0.04**	**0.25**	<0 001	**0.149**	**0.0131**	**0.0237**	**0.056**
P-75	P7503030601	3/3/2006	<0.001	**0.103**	**0.191**	**0.0286**	**0.03**	**0.156**	<0.001	<0.020	<0.020
P-93A	P93A03030601	3/3/2006	<5 0	<5 0	<5.0	<25.0	<5 0	<5 0	<5.0	<5.0	<5.0
P-93B	P93B03030601	3/3/2006	<5 0	<5 0	<5.0	<25.0	<5 0	<5 0	<5.0	<5.0	<5.0
GROUNDWATER PROFILE SAMPLING											
P-93-02	P9302GWP43	4/5/2006	<10.0	<10.0	<10 0	<50.0	<10.0	<10.0	<10 0	<10.0	<10 0
	P9302GWP59	4/5/2006	<10.0	<10.0	<10 0	<50.0	<10.0	<10.0	<10 0	<10.0	<10 0
P-93-03	P9303GWP40	4/6/2006	<0.001	**0.0154 J**	**0.036 J**	**0.0702 J**	<0 001	**0.0261 J**	<0.001	<0.001	<0.001
	P9303GWP59	4/7/2006	<0.001	**0.016**	<0.001	**0.0214**	<0 001	**0.0406**	<0.001	<0.001	**0.00621**
P-93-05	P9305GWP45	4/7/2006	<0.001	**0.00376 J**	R	**0.00489 J**	<0 001	**0.00271 J**	<0.001	<0.001	<0.001
	P9305GWP58	4/7/2006	<0.001	**0.026 J**	<0.001	**0.0242 J**	<0 001	**0.0596 J**	<0.001	**0.00587 J**	**0.00632 J**
P-93-06	P9306GWP50	4/7/2006	**0.00143 J**	<0 001	R	0.00343 J	<0 001	<0 001	<0.001	<0.001	<0.001
	P9306GWP62 5	4/10/2006	<0.001	**0.0454 J**	**18.6**	**0.104 J**	**0.00405 J**	**0.118 J**	<0.001	<0.001	<0.001
P-93-09	P9309GWP52	4/11/2006	<0.010	**0.123**	**10.1**	**0.215**	<0 010	**0.31**	**0.0696**	**0.117**	**0.0328**
	P9309GWP66	4/11/2006	<0.001	**0.0154 J**	**8.57**	**0.0531 J**	<0 001	**0.0262 J**	**0.00439 J**	**0.00454 J**	**0.00059 J**
	P9309GWP66D	4/11/2006	<0.010	<0 010	**8.73**	**0.0362**	<0 010	**0.0213**	<0.010	**0.0052**	<0.010
P-93-11	P9311GWP41	4/5/2006	<10.0	<10.0	<10.0	<50.0	<10.0	<10.0	<10 0	<10.0	<10 0
	P9311GWP59	4/6/2006	<0.001	**0.00618**	**0.00449**	**0.0208**	<0 001	**0.0116**	<0.001	<0.001	**0.00418**
	P9311GWP59D	4/6/2006	<0.001	**0.00608**	**0.00464**	**0.0214**	<0 001	**0.0112**	<0.001	<0.001	**0.0042**

NOTES

1) Screening values shown above are the Tier 1 Groundwater Remediation Objectives for the Groundwater Component of the Ingestion Route.
2) <# ## Denotes the result was not detected below the indicated reporting limit.
3) **BOLD** indicates the analytical detection of the analyte.
4) Well sample ID explanation --> PXXDDDDDD --> PXX is the well location at which the sample was collected; DDDDDD is the sample date.
5) Profile sample ID explanation --> P93XXGWPZZZ --> P93XX is the profile location at which the sample was collected; GWP stands for groundwater profiling; ZZZ is the depth at which the sample was collected.

REFERENCES

Illinois Environmental Protection Agency (IEPA); Tiered Approach to Corrective Action Objectives (TACO); Title 35 of the Illinois Administrative Code, Part 742, Appendix B, Table E.

* IEPA; Tiered Approach to Corrective Action Objectives (TACO); Groundwater Remediation Objectives for Chemicals not listed in TACO; May 1, 2007.

** U.S. Environmental Protection Agency (USEPA); Region 6 Human Health Medium-Specific Screening Levels; December 2007.

*** U.S. Environmental Protection Agency (USEPA), Region 9; Preliminary Remediation Goals (PRGs) Table; October 2004.

LAB QUALIFIERS

B = A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
D = The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
E = Concentration exceeds the calibration range and therefore result is semi-quantitative.
E1 = Concentration estimated. Analyte exceeded calibration range. Reanalysis not possible due to insufficient sample.
J = The target analyte was positively identified below the RL and above the MDL.
RL1 = Reporting limit raised due to sample matrix effects.
RL5 = Reporting limit raised due to high single peak analyte.

URS QUALIFIERS

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
R = Data rejected during validation efforts.