QUALITY ENVIRONMENTAL PROFESSIONALS, INC.
1611 South Franklin Road
Indianapolis, Indiana

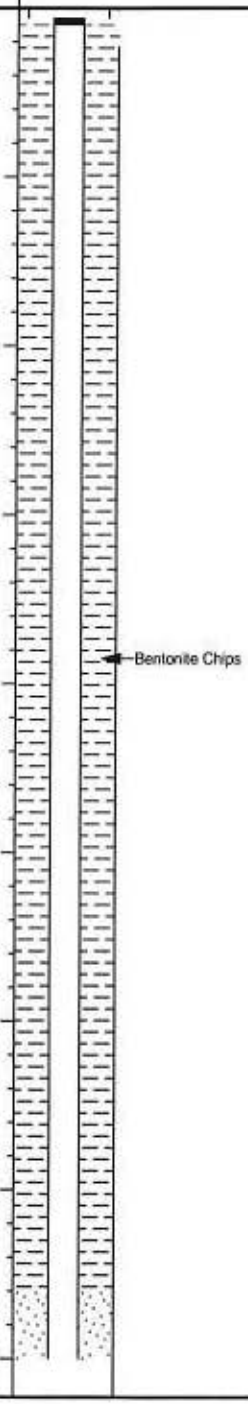
LOG OF: **WVS-10**
(1 of 2)

Project Number: **1404-009**

Client: **EPA**		Drilling Method: **Rota Sonic**	
Project: **West Vermont**		Sampling Method:	
Location: **Indianapolis, IN**		Elevation:	
Logged By: **QEPI**		Time Terminated: **-**	Weather:
Drilling Company: **Layne-Christanson**	Drillers: **Mark Backhaus**	Completion Date: **November 18, 2014**	

Depth (feet)	SOIL DESCRIPTION	Sample	REMARKS	PID (ppm)
	Topsoil - organics, brown, SANDY CLAY, damp	1		0
	SANDY CLAY - brown, medium, fine sand, trace gravel float, damp, slightly plastic	2		0
5	CLAY - brown, hard, dry, fine sand, fine-medium gravel, plastic	3		0
	SANDY CLAY - dark brown, medium, fine sand, gravel medium-coarse, slightly plastic	4		0.1
		5		1.4
10	CLAYEY SAND - brown, dry, fine sand, trace gravel float fine-medium, slightly plastic	6		12.2
	SANDY CLAY - dark brown, medium, dry, gravel fine to medium, gray mottling	7		0.9
15	GRAVELLY SAND - brown, dry, sand fine to medium, gravel medium-coarse	8		0.3
	CLAYEY SAND - brown, dry, fine sand, trace gravel float fine-medium, slightly plastic	9		0
20	SAND - w/ clay, saturated for 4" then grades moist, brown, trace gravel fine to medium, fine sand	10		0.1
		11		0.3
	SAND - brown, moist, sand medium to coarse, trace gravel medium grades saturated @ 20'	12		0
25	GRAVELLY SAND - light brown, saturated, sand and gravel fine to coarse grades w/ very large gravel 2-3"	13		0.3
		14		0.2
		15		0.6
30		16		0.7
		17		0.1
35		18		0.3
	SAND - brown, saturated, sand fine	19		0.6
		20		0.4
40	*(Continued)*			

WELL DIAGRAM



QUALITY ENVIRONMENTAL PROFESSIONALS, INC.
1611 South Franklin Road
Indianapolis, Indiana

LOG OF: **WVS-10**
(2 of 2)

Project Number: **1404-009**

Client: **EPA**		Drilling Method: **Rota Sonic**	
Project: **West Vermont**		Sampling Method:	
Location: **Indianapolis, IN**		Elevation:	
Logged By: **QEPI**		Time Terminated: **-**	Weather:
Drilling Company: **Layne-Christanson**	Drillers: **Mark Backhaus**	Completion Date: **November 18, 2014**	

Depth (feet)	SOIL DESCRIPTION	Sample	REMARKS	PID (ppm)	Depth (feet)	WELL DIAGRAM
	SAND - brown, saturated, sand fine *(Continued)*	21		0.4		Sand Pack; 10 Slot
		22		0.5		
45	grades w/ trace gravel fine-medium	23		0.4	45	
		24		0.5		
		25		0		
50	Boring terminated at 50 ft				50	
55					55	
60					60	
65					65	
70					70	
75					75	
80					80	

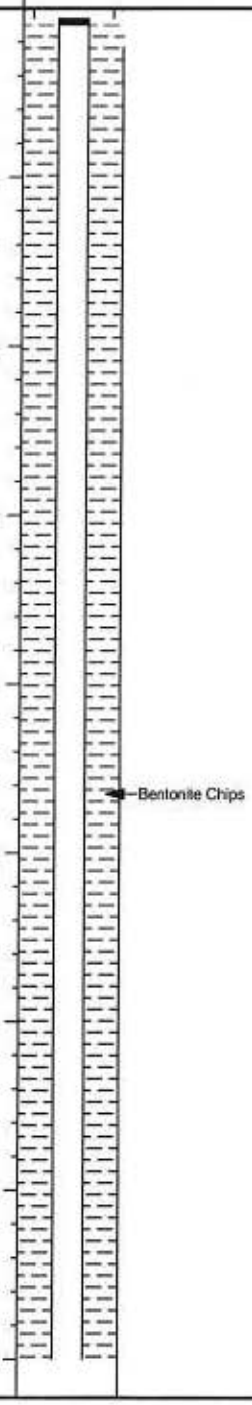
QUALITY ENVIRONMENTAL PROFESSIONALS, INC.
1611 South Franklin Road
Indianapolis, Indiana

LOG OF: **WVS-11**
(1 of 2)

Project Number: **1404-009**

Client: **EPA**		Drilling Method: **Rota Sonic**	
Project: **West Vermont**		Sampling Method:	
Location: **Indianapolis, IN**		Elevation:	
Logged By: **QEPI**		Time Terminated: **-**	Weather:
Drilling Company: **Layne-Christanson**	Drillers: **Mark Backhaus**	Completion Date: **November 19, 2014**	

Depth (feet)	SOIL DESCRIPTION	Sample	REMARKS	PID (ppm)
	Topsoil - Sandy Clay, brown, organics, slightly plastic, trace gravel fine, dry, medium	1		0
	SANDY CLAY - brown, dry, hard, trace gravel fine, plastic - grades dk brown @6'	2		0
5		3		3.6
		4		0
	SAND/CLAYEY SAND - poorly graded, light brown, dry, trace gravel medium - grades w/ more gravel @10.2'	5		0
10		6		0.1
		7		0.5
15	SANDY CLAY - light brown, dry, hard, non-plastic	8		0.1
	SANDY CLAY - light brown, dry, slightly plastic, sand fine, gravel medium-coarse	9		0.2
	GRAVELLY SAND - well graded, light brown, dry, sand fine, gravel medium-coarse	10		0.1
20	CLAYEY SAND - poorly graded, brown, medium, moist trace gravel fine	11		0.3
	SAND - poorly graded, brown, saturated, trace gravel fine	12		0.5
25	GRAVELLY SAND - well graded, brown, saturated, sand & gravel fine to coarse - large gravel 2-3"	13		0
	CLAY (Till) - gray, hard, dry, non-plastic, gravel float fine-coarse - moist 23.5 to 26'	14		0.6
		15		0.8
30		16		0.2
		17		0
35		18		0.1
		19		0
		20		0
40	*(Continued)*			



QUALITY ENVIRONMENTAL PROFESSIONALS, INC.
1611 South Franklin Road
Indianapolis, Indiana

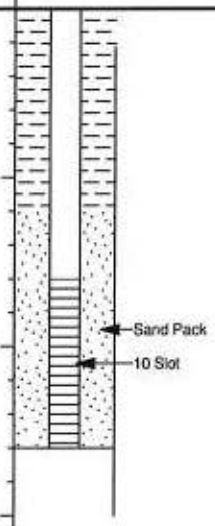
LOG OF: **WVS-11** (2 of 2)

Project Number: **1404-009**

Client: **EPA**		Drilling Method: **Rota Sonic**	
Project: **West Vermont**		Sampling Method:	
Location: **Indianapolis, IN**		Elevation:	
Logged By: **QEPI**		Time Terminated: -	Weather:
Drilling Company: **Layne-Christanson**	Drillers: **Mark Backhaus**	Completion Date: **November 19, 2014**	

Depth (feet)	SOIL DESCRIPTION	Sample	REMARKS	PID (ppm)	Depth (feet)
	CLAY (Till) - gray, hard, dry, non-plastic, gravel float fine-coarse - moist 23.5 to 26' *(Continued)*	21		0	
	GRAVELLY SAND - well graded, brown, moist, sand fine-coarse, gravel fine-medium	22		0.5	
45	CLAY (Till) - gray, hard, dry, non-plastic, gravel float fine-coarse	23		0	45
	GRAVELLY SAND - well graded, brown, saturated, sand & gravel fine-coarse	24		0.9	
50	SAND - well graded, saturated, gravel fine-medium	25		0	50
		26		0	
		27		0.4	
55	Boring terminated at 55 ft	28		0.3	55
60					60
65					65
70					70
75					75
80					80

WELL DIAGRAM



West Vermont 11/18/94

0900 START members SB + KH on site
OSC Lam USEPA; Layne
Drilling Company KH
SB gave HSO meeting
WX forecast Cold windy
Temp 19°F winds WSW
@ 15 mph windchill 1°F
mostly sunny KH.
The operations for the day
will be utilizing the Sonic Drill
to set wells. There are 2
of locations. The site geologist
will characterize the soil borings.
The locations were line
located on Friday. No utility
lines were identified in drill locations
1125 Drill started on 1st location
1230 START Hughes begins
PID the core samples
0-2 = 0ppm 10-12 = 12.2 ppm

11/18/

1325 The tubing was lost @ 20 BGS
Rig stopped crew to get
casing tool
1400 crew back on site begin rig
1500 20-30' BGS
Obtained

Depth	PID
20-22	0.3
22-24	0.0 ND
24-26	0.3
26-28	0.2
28-30	0.6
30-32	0.7
32-34	0.1
34-36	0.3
36-38	0.6
38-40	0.4
40-42	0.4
42-44	0.5

1530 START Hooks at site

FIGURE 1 - LOW-FLOW GROUNDWATER SAMPLING DATA SHEET

Date/Time of Sample Collection: 11/26/14 / 11/15 Project Site/Subsite: Old Park
Sample ID: _____
Field ID: _____ Point Name: MW-WVS-11
Depth to Well Bottom: 54.28 ft. below top of casing (PVC cap)
Depth to Water Level: 18.58 ft. below PVC cap
Depth to Water Level: 18.58 ft. below PVC cap prior to sampling
Method of Purging: Bladder Pump X Submersible Pump ____
Peristaltic Pump ____
Minimum Purge Volume: 2-inch well ____Liters / 4-inch well ____Liters
Control Box Settings: Box # _____ Refill _____ Discharge _____
Throttle _____ psi
Total Purged: 3 gallons ~~Liters~~ (Purge Rate goal = 0.5 Liters/Min.)
Actual Purge Rate: .5 Liters/Min.

Purge Calculations

PHYSIO-CHEMICAL PARAMETERS DURING PURGING

Measure in order listed**	Initial Reading									Stabilization Criteria	Final
Time	1040	1045	1050	1055	1100	1105	1110				1115
pH	5.36	5.14	5.12	5.00	5.01	5.00	5.00			+/-0.1	5.00
Temperature (°C)	10.36	11.80	12.09	12.14	12.14	12.11	12.11			NC*	12.11
Specific Conductance (µmhos/cm)	.709	.703	.919	1.03	1.07	1.11	1.11			+/-3%	1.11
Turbidity (NTU)	–	–								+/-10%	
Dissolved Oxygen (mg/L)	2.99	2.04	.84	0.67	0.21	0.21	0.21			+/-10% or +/-0.3	0.21
ORP (mV)	-38	-53	-95	-114	-120	-123	-125			+/-10	-125
Each Volume Purged (L)											
Total Liters Purged											

*NC = No Criteria. **Stabilization criteria listed should be used unless project-specific plans specify alternate stabilization criteria.

Duplicate Sample Collected? (No) Yes (Sample ID of Duplicate) _____
MS/MSD Sample Collected? (No) Yes _____
Sample Remarks (odors, colors, sediment): Clear Colorless
Comments: Could NOT get turbidity to work
Sample(s) Collected By: _____
Pump System Purge Volume Calc: Length of tubing X 9.6 (ml/ft) + 130 (bladder volume) = Total required purge (liters) before collection of parameters

FIGURE 1 - LOW-FLOW GROUNDWATER SAMPLING DATA SHEET

Date/Time of Sample Collection: 11/26/14, 1013 Project Site/Subsite: Olin Park
Sample ID: MW-WVS-10
Field ID: _____ Point Name: _____
Depth to Well Bottom: 45.35 ft. below top of casing (PVC cap)
Depth to Water Level: 13.93 ft. below PVC cap
Depth to Water Level: 13.93 ft. below PVC cap prior to sampling
Method of Purging: (Bladder Pump) X Submersible Pump ____
Peristaltic Pump ____
Minimum Purge Volume: 2-inch well ____Liters / 4-inch well ____Liters
Control Box Settings: Box # _____ Refill _____ Discharge _____
Throttle _____ psi
Total Purged: 4 gallons Liters (Purge Rate goal = 0.5 Liters/Min.)
Actual Purge Rate: .5 Liters/Min.

Purge Calculations

PHYSIO-CHEMICAL PARAMETERS DURING PURGING

Measure in order listed**	Initial Reading									Stabilization Criteria	Final
Time	945	950	955	1000	1005	1010	1015				
pH	5.60	537	528	525	5.15	5.11	5.11			+/-0.1	5.11
Temperature (°C)	1240	1247	1254	1255	12.47	12.52	1252			NC*	12.52
Specific Conductance (µmhos/cm)	0.840	0885	0900	0898	0918	0920	0920			+/-3%	0920
Turbidity (NTU)	—	-	-	—	—	—				+/-10%	
Dissolved Oxygen (mg/L)	.95	1.14	1.13	1.11	1.11	1.12	1.12			+/-10% or +/-0.3	1.12
ORP (mV)	-214	-201	-195	-193	-185	-179	-172			+/-10	172
Each Volume Purged (L)											
Total Liters Purged											

*NC = No Criteria. **Stabilization criteria listed should be used unless project-specific plans specify alternate stabilization criteria.

Duplicate Sample Collected? (No) Yes (Sample ID of Duplicate) _____
MS/MSD Sample Collected? (No) Yes _____
Sample Remarks (odors, colors, sediment): Clear Colorless
Comments: Could Not Get turbidity to work
Sample(s) Collected By: _____
Pump System Purge Volume Calc: Length of tubing X 9.6 (ml/ft) + 130 (bladder volume) = Total required purge (liters) before collection of parameters