



STATE OF VERMONT
 AGENCY OF TRANSPORTATION
 MATERIALS & RESEARCH SECTION
 SUBSURFACE INFORMATION

BORING LOG

HARDWICK
 EAST HARDWICK SLIDE
 VT-16 DIST. #9

Boring No.: B-101
 Page No.: 1 of 1
 Pin No.: 11X511
 Checked By: CCB

Boring Crew: PORTER, SALISBURY
 Date Started: 9/22/11 Date Finished: 9/22/11
 VTSPG NAD83: N 737375.29 ft E 1693002.12 ft
 Station: _____ Offset: _____
 Ground Elevation: _____

Casing Sampler
 Type: H.S.A. SS
 I.D.: 4 in 1.5 in
 Hammer Wt: N.A. 140 lb.
 Hammer Fall: N.A. 30 in.
 Hammer/Rod Type: Auto/AWJ
 Rig: CME 45C TRACK CE = 1.34

Groundwater Observations

Date	Depth (ft)	Notes

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
0.0 - 1.3		Asphalt Pavement, 0.0 ft - 1.3 ft					
2.5		A-1-a, Gr, brn, Dry, Rec. = 1.8 ft, 1.5" stones taken from auger flights.	5-10-9-6 (19)	1.7	80.5	15.8	3.7
5.0		A-1-b, SaGr, brn, Dry, Rec. = 1.3 ft	3-7-8-8 (15)	4.6	44.3	43.1	12.6
7.5		A-1-b, SiGrSa, brn, Dry, Rec. = 1.0 ft	5-5-3-3 (8)	11.0	33.2	45.9	20.9
10.0		A-1-b, GrSa, brn, Dry, Rec. = 0.9 ft	1-2-1-2 (3)	9.4	36.8	49.0	14.2
12.5		A-1-b, GrSa, brn, Dry, Rec. = 0.4 ft	1-1-2-3 (3)	10.0	28.1	53.4	18.5
15.0		A-1-b, GrSa, brn, Dry, Rec. = 0.4 ft	1-3-50 (R)	7.6	40.5	43.5	16.0
15.0		Field Note:, Possible Boulder/Cobble					
15.0		A-1-b, SaGr, brn, Dry, Rec. = 0.4 ft	3-6-5-5 (11)	4.7	53.4	30.2	16.4
17.5 - 22.5		Hole stopped @ 16.0 ft Unable to advance auger past 16.0 feet. Possible Boulder.					

Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
 2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor.
 3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 HARDWICK (EAST) SLIDE.GPJ VERMONT AOT.GDT 3/1/13



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BORING LOG

HARDWICK
 EAST HARDWICK SLIDE
 VT-16 DIST. #9

Boring No.: B-102
 Page No.: 1 of 1
 Pin No.: 11X511
 Checked By: CCB

Boring Crew: PORTER, SALISBURY
 Date Started: 9/23/11 Date Finished: 9/23/11
 VTSPG NAD83: N 737372.19 ft E 1692998.52 ft
 Station: _____ Offset: _____
 Ground Elevation: _____

Casing: H.S.A. Sampler: SS
 I.D.: 4 in 1.5 in
 Hammer Wt: N.A. 140 lb.
 Hammer Fall: N.A. 30 in.
 Hammer/Rod Type: Auto/AWJ
 Rig: CME 45C TRACK CE = 1.34

Groundwater Observations

Date	Depth (ft)	Notes

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
0.0 - 1.3		Asphalt Pavement, 0.0 ft - 1.3 ft					
1.3 - 17.5							
17.5 - 17.6		A-1-b, GrSa, brn, Dry, Rec. = 0.1 ft	50 (R)	6.8	38.7	48.1	13.2
17.6 - 20.0		A-4, GrSiSa, brn, MTW, Rec. = 0.4 ft	4-5-5-7 (10)	17.2	21.8	39.5	38.7
20.0 - 22.5		Hole stopped @ 20.0 ft Unable to advance auger.					

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BORING LOG 2 HARDWICK (EAST) SLIDE.GPJ VERMONT AOT.GDT 3/1/13



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BORING LOG

HARDWICK
 EAST HARDWICK SLIDE
 VT-16 DIST. #9

Boring No.: B-103
 Page No.: 1 of 1
 Pin No.: 11X511
 Checked By: CCB

Boring Crew: PORTER, GARROW, SALISBURY
 Date Started: 10/06/11 Date Finished: 10/07/11
 VTSPG NAD83: N 737368.88 ft E 1692994.09 ft
 Station: _____ Offset: _____
 Ground Elevation: _____

Casing: WB
 Sampler: SS
 I.D.: 4 in 1.5 in
 Hammer Wt: N.A. 140 lb.
 Hammer Fall: N.A. 30 in.
 Hammer/Rod Type: Auto/AWJ
 Rig: CME 45C TRACK CE = 1.34

Groundwater Observations

Date	Depth (ft)	Notes
		None Taken.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/c" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
0.0 - 1.3		Asphalt Pavement, 0.0 ft - 1.3 ft							
10.0		Field Note:, Lost water return at 10.0 ft.							
20.0		A-4, Si, brn, MTW, Rec. = 0.9 ft	4-6-2-3 (8)	22.5	2.7	13.0	84.3		
		Field Note:, No Recovery	5-3-2-2 (5)						
		A-4, SaSi, brn, MTW, Rec. = 1.1 ft	6-8-13-22 (21)	19.9	18.0	33.2	48.8		
		A-4, SaSi, brn, MTW, Rec. = 1.3 ft, Lab Note: Lots of Mica was within sample.	16-14-15-14 (29)	24.0	16.8	35.6	47.6		
30.0		Field Note:, No Recovery. Stone in end of sampler.	10-9-7-8 (16)	19.6	22.4	34.5	43.1		
		A-4, GrSaSi, brn, MTW, Rec. = 1.0 ft, Lab Note: Some Mica was within sample.	8-4-4-8 (8)						
		A-4, SaSi, brn, MTW, Rec. = 0.3 ft, Lab Note: Lots of Mica was within sample.	R@6.0"	24.1	11.6	30.9	57.5		
		Field Note:, Water Returned at 38.0 ft.							
40.0		A-2-4, SiSa, gry, Moist, Rec. = 0.3 ft, Lab Note: Some Mica was within sample.	R@3.5"	15.2	10.1	62.0	27.9		
		Field Note:, Cleaned out casing. Roller Coned ahead							
		A-4, Si, gry, MTD, Rec. = 1.7 ft, Roller Coned ahead.	11-16-25-35 (41)	26.0	0.7	2.0	97.3	32	2
50.0		A-4, Si, gry, MTD, Rec. = 2.0 ft, Roller Coned ahead.	15-24-33-33 (57)	27.2		1.4	98.6	35	6
		A-4, Si, gry, MTD, Rec. = 1.9 ft, Roller Coned ahead.	15-21-31-34 (52)	28.8		1.2	98.8	32	6
60.0		A-4, ClSi, gry, Moist, Rec. = 2.0 ft	15-23-41-48 (64)	25.1		0.9	99.1	35	8
		Hole stopped @ 60.0 ft NLTD							

Notes:
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BORING LOG 2 HARDWICK (EAST) SLIDE.GPJ VERMONT AOT.GDT 3/1/13



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BORING LOG

HARDWICK
EAST HARDWICK SLIDE
VT-16 DIST. #9

Boring No.: B-104
Page No.: 1 of 1
Pin No.: 11X511
Checked By: CCB

Boring Crew: PORTER, GARROW, SALISBURY
Date Started: 10/10/11 Date Finished: 10/11/11
VTSPG NAD83: N 737476.14 ft E 1693121.77 ft
Station: _____ Offset: _____
Ground Elevation: _____

Casing: WB
Sampler: SS
I.D.: 4 in 1.5 in
Hammer Wt: N.A. 140 lb.
Hammer Fall: N.A. 30 in.
Hammer/Rod Type: Auto/AWJ
Rig: CME 45C TRACK CE = 1.34

Groundwater Observations

Date	Depth (ft)	Notes
10/11/11	20.2	

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
		Asphalt Pavement, 0.0 ft - 1.0 ft							
		Field Note:., Cleaned out casing. Appears to be Gravelly Sand.							
		A-1-b, SaGr, brn, MTW, Rec. = 1.0 ft	8-10-6-4 (16)	11.5	43.7	43.2	13.1		
		Field Note:., Lost Water at 4.0 ft.							
10		Field Note:., Cleaned out casing. Appears to be Sand.							
		Field Note:., No Recovery	2-2-1-2 (3)						
		A-1-b, SaGr, brn, MTW, Rec. = 1.0 ft, Some Mica was within sample.	3-2-2-2 (4)	15.6	45.9	43.6	10.5		
20		Field Note:., Cobbles. Cleaned out casing.							
		Field Note:., No Recovery. Rock in end of sampler.	4-3-3-6 (6)						
		Field Note:., Cobbles. Cleaned out casing.							
		A-4, GrSaSi, brn, Moist, Rec. = 1.0 ft, Some Mica was within sample.	9-6-8-8 (14)	18.0	22.8	24.1	53.1		
30		A-4, Si, gry, Moist, Rec. = 1.5 ft, Roller coned ahead.	5-11-14-14 (25)	23.5	2.9	8.0	89.1	30	5
		A-6, SiCl, gry, Moist, Rec. = 1.7 ft, Roller coned ahead.	6-8-12-15 (20)	29.5		0.9	99.1	39	12
40		A-4, ClSi, gry, Moist, Rec. = 1.7 ft, Roller coned ahead.	8-13-15-20 (28)	28.2		4.8	95.2	36	10
		A-4, ClSi, gry, Moist, Rec. = 1.7 ft, Roller coned ahead.	9-11-13-19 (24)	27.5		2.7	97.3	36	9
50		A-4, Si, gry, Moist, Rec. = 1.8 ft, Roller coned ahead.	11-21-28-40 (49)	27.8		1.0	99.0	34	6
		A-7-6, Cl, gry, Moist, Rec. = 1.0 ft	11-18-31-33 (49)	32.5		2.2	97.8	48	21
		A-7-6, Cl, brn, Moist, Rec. = 0.8 ft, Roller coned ahead.		28.5	0.6	10.6	88.8	50	24
60		A-2-4, Sa, brn, Moist, Rec. = 1.5 ft	22-36-R@6.0"	18.9	1.4	81.5	17.1		
		A-2-4, SiSa, brn, MTW, Rec. = 1.1 ft, Began Mud drilling.	26-45-R@6.0"	17.6	5.5	67.4	27.1		
70		A-2-4, SiSa, brn, MTW, Rec. = 1.2 ft	32-42-R@6.0"	19.0	5.3	67.6	27.1		
		A-2-4, SiSa, brn, Moist, Rec. = 1.5 ft	25-40-R@6.0"	19.0	1.4	78.5	20.1		
		Hole stopped @ 75.0 ft NLTD							

Notes:

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BORING LOG
 HARDWICK
 EAST HARDWICK SLIDE
 VT-16 DIST. #9

Boring No.: B-105
 Page No.: 1 of 1
 Pin No.: 11X511
 Checked By: CCB

Boring Crew: PORTER, GARROW, SALISBURY
 Date Started: 10/12/11 Date Finished: 10/12/11
 VTSPG NAD83: N 737436.24 ft E 1693066.53 ft
 Station: _____ Offset: _____
 Ground Elevation: _____

Casing: WB
 Sampler: SS
 Type: WB
 I.D.: 4 in
 Hammer Wt: N.A.
 Hammer Fall: N.A.
 Hammer/Rod Type: Auto/AWJ
 Rig: CME 45C TRACK
 CE = 1.34

Groundwater Observations		
Date	Depth (ft)	Notes
10/17/11	20.5	Casing in ground.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Well Diagram	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
		A-1-b, SaGr, brn, Wet, Rec. = 0.7 ft		3-3-3-5 (6)	14.7	44.9	44.7	10.4		
		Field Note:, Lost Water Return at 7.0 ft. Field Note:, Cobbles & Gravel. Cleaned out casing. Field Note:, Boulder								
10		A-2-4, GrSiSa, brn, Moist, Rec. = 1.2 ft		3-2-1-1 (3)	25.9	25.0	45.0	30.0		
		Field Note:, Cobbles & Gravel. Cleaned out casing.								
20		A-1-a, SaGr, brn, Moist, Rec. = 0.3 ft		2-3-3-2 (6)	12.4	60.5	25.0	14.5		
		Field Note:, Cobbles. Cleaned out casing. Field Note:, No Recovery.		6-5-4-4 (9)						
		A-4, GrSaSi, brn, Moist, Rec. = 1.3 ft		10-8-6-8 (14)						
30		Field Note:, Cobbles. Cleaned out casing. Field Note:, No Recovery., Roller coned ahead.		9-9-9-17 (18)	18.7	25.4	30.8	43.8		
		A-4, SaSi, brn, Moist, Rec. = 0.6 ft, Lab Note: Lots of Mica was within sample.		6-6-4-6 (10)	25.5	13.7	39.2	47.1		
		A-4, Si, gry, Moist, Rec. = 1.7 ft, Roller coned ahead.		9-8-11-20 (19)	27.2		2.7	97.3	32	5
40										
		A-4, Cisi, gry, MTD, Rec. = 1.8 ft, Roller coned ahead.		10-15-18-24 (33)	27.8		0.4	99.6	32	7
50		A-4, Cisi, gry, Moist, Rec. = 1.5 ft		11-14-18-25 (32)	28.8		0.8	99.2	34	9
		Hole stopped @ 50.0 ft NLTD								
		Remarks: 1. Installed Inclinator Well at 50.0ft. 2. Top of Well casing is 2.3 feet above ground surface.								

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BORING LOG 2 HARDWICK (EAST) SLIDE.GPJ VERMONT AOT.GDT 3/1/13



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BORING LOG

HARDWICK
EAST HARDWICK SLIDE
VT-16 DIST. #9

Boring No.: B-106
Page No.: 1 of 1
Pin No.: 11X511
Checked By: CCB

Boring Crew: PORTER, GARROW, SALISBURY
Date Started: 10/14/11 Date Finished: 10/18/11
VTSPG NAD83: N 737395.74 ft E 1693092.31 ft
Station: _____ Offset: _____
Ground Elevation: _____

Casing Type: WB
I.D.: 4 in
Hammer Wt: N.A.
Hammer Fall: N.A.
Hammer/Rod Type: Auto/AWJ
Rig: CME 45C TRACK

Sampler SS
1.5 in
140 lb.
30 in.
CE = 1.34

Groundwater Observations

Date	Depth (ft)	Notes
10/19/11	9.2	From Top of Well

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Well Diagram	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %	
5		Field Note: Cobbles. Lost Water Return at 3.0 feet., Cleaned out casing. A-1-b, SaGr, brn, Moist, Rec. = 0.5 ft		3-6-15-R@5.75" (21)	15.2	46.3	36.5	17.2			
10		Field Note: Boulder, Cleaned out casing. A-4, SaSi, brn, Moist, Rec. = 0.6 ft		2-2-1-7 (3)	21.3	11.1	25.7	63.2			
15		Field Note: Cobble, Cleaned out casing. A-4, SiSa, brn, Moist, Rec. = 1.7 ft, Lab Note: Lots of Mica was within sample.		12-23-36-45 (59)	16.4	14.4	48.8	36.8			
20		Field Note: Boulder, Cleaned out casing. A-2-4, SiSa, gry-brn, Moist, Rec. = 1.5 ft, Lab Note: Lots of Mica was within sample.		15-16-23-23 (39)	23.0	9.2	57.3	33.5			
25		Field Note: Cobble, Cleaned out casing. A-2-4, SiSaGr, brn, Moist, Rec. = 0.7 ft		22-22-29-34 (51)	15.7	44.2	28.4	27.4			
30		Field Note: Appears to be Silt., Cleaned out casing. A-4, Cisi, gry, Moist, Rec. = 1.7 ft		17-25-31-45 (56)	24.5	6.8	1.6	91.6	34	7	
30	Hole stopped @ 30.0 ft NLTD										
35	Remarks: 1. Installed one 1.5 inch Monitoring Well. 2. Well goes to 27.8 feet with 10 feet of screen from 17.8 to 27.8 feet. 3. Top of Well is 2.5 feet above ground surface.										

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