

6544 Fremont Road - East Syracuse, New York 13057

Office 315.437.1420 ~ Fax 315.503-3058 ~ pwlabsinc@hotmail.com

March 28, 2017

Ms. Mary Kay Genthner, P.E. PASSERO ASSOCIATES 242 West Main Street, Suite 100 Rochester, NY 14614

Re: L-16205

William H. Morse State Airport

Apron Investigation Bennington, Vermont

Passero Project #20120400.0009

Dear Ms. Genthner [mkgenthner@passero.com]:

Enclosed are the results of field and laboratory testing performed at your request for the above referenced project. Results include:

1.	Mechanical Analysis (on Table)	1 Each
2.	Natural Moisture Content [Oven Dry] (ASTM D2216)	1 Each
3.	Laboratory Compaction Test (ASTM D1557)	1 Each
4.	Specific Gravity of Soils (ASTM D854 & C127)	1 Each
5.	Atterberg Limits (ASTM D4318)	1 Each
6.	Unified Soil Classification System (ASTM D2487)	1 Each
7.	CBR – 3 Point (ASTM D1883)	1 Each

(The reports listed below were previously sent to you under cover letter dated 3/14/2017)

1.	Pavement Section Thickness Measurement	9 Each
2.	Digital Photographs of Cores	1 Set
3.	Test Boring using 2-inch O.D. Split Spoon Sampler Advanced by Hollow Stem Augers (ASTM D1586)	8 Each
4.	Test Pit Log	1 Each

All requested tests have been completed on the previously received sample(s) for the above project. All sample remains are scheduled to be disposed of on 3/28/2018. Please notify PW Laboratories, Inc. by letter or telephone prior to 3/28/2018 if you would prefer to pick up the sample(s) or that the sample(s) be retained by PW Laboratories, Inc. for an additional period periodk you for this opportunity to work with you.

Respectfully,

PW LABORATORIES, INC.

Donald P. Blasland, SET

President DPB/bll



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Sieve Analysis of Soil / Aggregate

Project #: Test Method:	L-16205 ASTM D422 & I	D1140	-	Proje	ct Title:		A ₂ Be	pron Inv	estigati n, Verm						eport #: rt Date:	1 March 2	28, 2017		
									Sieve	Size - P	ercent	Passing	Sieve						
Lab I.D. #	Sample I.D.	Depth (Feet)	1 1/2"	1"	3/4"	1/2"	3/8"	1/4"	#4	#10	#30	#40	#60	#100	#200				
34199	TP #1	2.6 - 3.0	100	98.8	97.1	96.2	95.6	93.8	92.0	85.4	75.2	72.2	67.5	62.7	53.3				
Sample mass, a	s received, meet	s minimum mas	s require	ements o	of test m	ethod:			Yes	Х	No		_				P	rewashe	ed.
Performed By:	M.S.		_	Check	ced By:		Patrick	Edmisto	n				_		Entire	Sample _		Х	
Remarks:													<u>.</u>	Mass Reta	iined on #	200 Only			
													<u>-</u>		Not Pre	washed:			



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March 28, 2017

L-16205
William H. Morse State Airport
Apron Investigation
Bennington, Vermont
Passero Project #20120400.0009

Natural Moisture Content ASTM D2216

Lab I.D. #	Sample I.D.	Depth (Feet)	Moisture Content as a Percent of Dry Weight
34199	TP #1	2.6 - 3.0	20.2

Standard	Modified	Х			Compaction	Test Report	æ - ',
Procedure A	В		. (
C Preperation Me	D ethod:	X					
Moist	X Dry						
Rammer Used: Manual	Mechanical	X	118				
MAXIM	MUM DRY DENSITY (P.C.F.)		TY, P.C.F.		Ø.		
OPTIMU	M MOISTURE CONTENT (%	5)	DRY DENSITY, P.C.F.				
	13.2		106				
ASTM D1557-78							
2.9% retained or	n the 3/4"sieve.						
			-				
Bulk Specific G	ravity:	2.31	,	8	12 WATER CONTENT,	16	20
Bulk Specific G		2.31 2.70			12	16	
Apparent Speci	ific Gravity:		2		12	16	
Apparent Speci SAMPLE NO. MOLD + SAMPLI	ific Gravity:	2.70 1 23.12	23.50	3 23.79	12 WATER CONTENT, 4 23.65	16	
Apparent Speci SAMPLE NO. MOLD + SAMPLI MOLD WEIGHT	E WT.	2.70 1 23.12 13.92	23.50 13.92	3 23.79 13.92	12 WATER CONTENT, 4 23.65 13.92	16	
Apparent Speci SAMPLE NO. MOLD + SAMPLI MOLD WEIGHT WET SAMPLE W	E WT.	2.70 1 23.12 13.92 9.20	23.50 13.92 9.58	3 23.79 13.92 9.87	12 WATER CONTENT, 4 23.65 13.92 9.73	16	
Apparent Speci SAMPLE NO. MOLD + SAMPLI MOLD WEIGHT WET SAMPLE W WET DENSITY, I	E WT. VT. P.C.F.	2.70 1 23.12 13.92 9.20 124.3	23.50 13.92 9.58 129.4	3 23.79 13.92 9.87 133.3	12 WATER CONTENT, 4 23.65 13.92 9.73 131.5	16	
Apparent Speci SAMPLE NO. MOLD + SAMPLI MOLD WEIGHT WET SAMPLE W WET DENSITY, I MOISTURE CON	E WT. VT. P.C.F.	2.70 1 23.12 13.92 9.20 124.3 10.0	23.50 13.92 9.58 129.4 11.7	3 23.79 13.92 9.87 133.3 14.9	12 WATER CONTENT, 4 23.65 13.92 9.73 131.5 17.4	16	
Apparent Speci SAMPLE NO. MOLD + SAMPLI MOLD WEIGHT WET SAMPLE W WET DENSITY, I MOISTURE CON DRY DENSITY, I Material Color:	E WT. VT. P.C.F. ITENT P.C.F.	2.70 1 23.12 13.92 9.20 124.3	23.50 13.92 9.58 129.4	3 23.79 13.92 9.87 133.3	12 WATER CONTENT, 4 23.65 13.92 9.73 131.5 17.4 112.0	16 % OF DRY WEIGHT	20
Apparent Speci SAMPLE NO. MOLD + SAMPLI MOLD WEIGHT WET SAMPLE W WET DENSITY, I MOISTURE CON DRY DENSITY, F Material Color: Classification:	E WT. VT. P.C.F. ITENT P.C.F. Brown CL	2.70 1 23.12 13.92 9.20 124.3 10.0	23.50 13.92 9.58 129.4 11.7	3 23.79 13.92 9.87 133.3 14.9	12 WATER CONTENT, 4 23.65 13.92 9.73 131.5 17.4 112.0 Test Date:	March 17, 20	20
Apparent Speci SAMPLE NO. MOLD + SAMPLI MOLD WEIGHT WET SAMPLE W WET DENSITY, I MOISTURE CON DRY DENSITY, I Material Color: Classification: Type:	E WT. VT. P.C.F. ITENT P.C.F. Brown CL In Situ	2.70 1 23.12 13.92 9.20 124.3 10.0	23.50 13.92 9.58 129.4 11.7	3 23.79 13.92 9.87 133.3 14.9	12 WATER CONTENT, 4 23.65 13.92 9.73 131.5 17.4 112.0 Test Date: Tested By:	March 17, 20 M.S.	17
Apparent Speci SAMPLE NO. MOLD + SAMPLI MOLD WEIGHT WET SAMPLE W WET DENSITY, I MOISTURE CON DRY DENSITY, I Material Color: Classification: Type: Location:	E WT. VT. P.C.F. ITENT P.C.F. Brown CL In Situ TP #1 2.6'-3.0'	2.70 1 23.12 13.92 9.20 124.3 10.0	23.50 13.92 9.58 129.4 11.7	3 23.79 13.92 9.87 133.3 14.9	12 WATER CONTENT, 4 23.65 13.92 9.73 131.5 17.4 112.0 Test Date: Tested By: Checked By:	March 17, 20 M.S. Patrick J. Edn	17
Apparent Speci SAMPLE NO. MOLD + SAMPLI MOLD WEIGHT WET SAMPLE W WET DENSITY, I MOISTURE CON DRY DENSITY, I Material Color: Classification: Type:	E WT. VT. P.C.F. ITENT P.C.F. Brown CL In Situ	2.70 1 23.12 13.92 9.20 124.3 10.0	23.50 13.92 9.58 129.4 11.7	3 23.79 13.92 9.87 133.3 14.9	12 WATER CONTENT, 4 23.65 13.92 9.73 131.5 17.4 112.0 Test Date: Tested By: Checked By: Project #:	March 17, 20 M.S. Patrick J. Edn	17
Apparent Speci SAMPLE NO. MOLD + SAMPLI MOLD WEIGHT WET SAMPLE W WET DENSITY, I MOISTURE CON DRY DENSITY, I Material Color: Classification: Type: Location:	E WT. VT. P.C.F. ITENT P.C.F. Brown CL In Situ TP #1 2.6'-3.0'	2.70 1 23.12 13.92 9.20 124.3 10.0	23.50 13.92 9.58 129.4 11.7	3 23.79 13.92 9.87 133.3 14.9	12 WATER CONTENT, 4 23.65 13.92 9.73 131.5 17.4 112.0 Test Date: Tested By: Checked By:	March 17, 20 M.S. Patrick J. Edn	17
Apparent Speci SAMPLE NO. MOLD + SAMPLI MOLD WEIGHT WET SAMPLE W WET DENSITY, I MOISTURE CON DRY DENSITY, I Material Color: Classification: Type: Location: Lab I.D. #:	FEWT. WT. P.C.F. WTENT P.C.F. Brown CL In Situ TP #1 2.6'-3.0' 34199	2.70 1 23.12 13.92 9.20 124.3 10.0 113.0	23.50 13.92 9.58 129.4 11.7	3 23.79 13.92 9.87 133.3 14.9	12 WATER CONTENT, 4 23.65 13.92 9.73 131.5 17.4 112.0 Test Date: Tested By: Checked By: Project #: Report #:	March 17, 20 M.S. Patrick J. Edn L-16205	17
Apparent Speci SAMPLE NO. MOLD + SAMPLI MOLD WEIGHT WET SAMPLE W WET DENSITY, I MOISTURE CON DRY DENSITY, I Material Color: Classification: Type: Location: Lab I.D. #: Client:	E WT. P.C.F. ITENT P.C.F. Brown CL In Situ TP #1 2.6'-3.0' 34199 Passero Associates	2.70 1 23.12 13.92 9.20 124.3 10.0 113.0	23.50 13.92 9.58 129.4 11.7	3 23.79 13.92 9.87 133.3 14.9	12 WATER CONTENT, 4 23.65 13.92 9.73 131.5 17.4 112.0 Test Date: Tested By: Checked By: Project #: Report #:	March 17, 20 M.S. Patrick J. Edn L-16205 1	17
Apparent Speci SAMPLE NO. MOLD + SAMPLI MOLD WEIGHT WET SAMPLE W WET DENSITY, I MOISTURE CON DRY DENSITY, I Material Color: Classification: Type: Location: Lab I.D. #: Client:	E WT. VT. P.C.F. ITENT P.C.F. Brown CL In Situ TP #1 2.6'-3.0' 34199 Passero Associates William H. Morse State Air	2.70 1 23.12 13.92 9.20 124.3 10.0 113.0	23.50 13.92 9.58 129.4 11.7	3 23.79 13.92 9.87 133.3 14.9	12 WATER CONTENT, 4 23.65 13.92 9.73 131.5 17.4 112.0 Test Date: Tested By: Checked By: Project #: Report #:	March 17, 20 M.S. Patrick J. Edn L-16205 1	17
Apparent Speci SAMPLE NO. MOLD + SAMPLI MOLD WEIGHT WET SAMPLE W WET DENSITY, I MOISTURE CON DRY DENSITY, I Material Color: Classification: Type: Location: Lab I.D. #: Client:	E WT. VT. P.C.F. ITENT P.C.F. Brown CL In Situ TP #1 2.6'-3.0' 34199 Passero Associates William H. Morse State Air Apron Investigation	2.70 1 23.12 13.92 9.20 124.3 10.0 113.0	23.50 13.92 9.58 129.4 11.7	3 23.79 13.92 9.87 133.3 14.9	12 WATER CONTENT, 4 23.65 13.92 9.73 131.5 17.4 112.0 Test Date: Tested By: Checked By: Project #: Report #: PW Laboratories	March 17, 20 M.S. Patrick J. Edn L-16205 1	17 miston



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March 28, 2017

L-16205
William H. Morse State Airport
Apron Investigation
Bennington, Vermont
Passero Project #20120400.0009

Specific Gravity of Soils ASTM D854 Specific Gravity and Absorption of Coarse Aggregate ASTM C127

Lab I.D. #	Sample I.D.	Depth (Feet)	Apparent Specific Gravity	Specific Gravity of Solids (G)	Weighted Average Specific Gravity	Bulk Specific Gravity
34199	TP #1	2.6 - 3.0	2.69	2.70	2.70	2.31



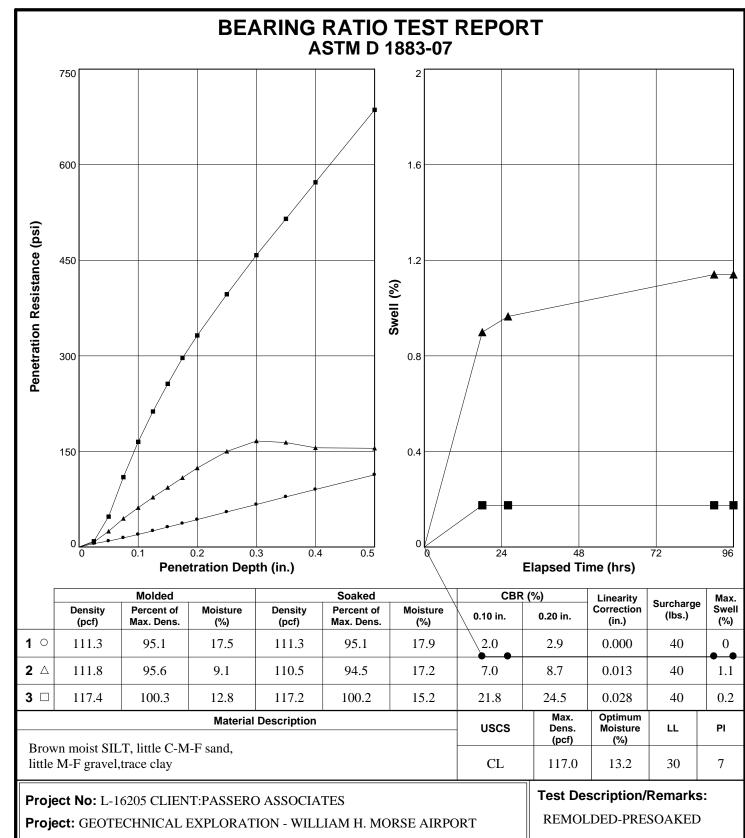
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March 28, 2017

L-16205
William H. Morse State Airport
Apron Investigation
Bennington, Vermont
Passero Project #20120400.0009

Atterberg Limits ASTM D4318 & Unified Soil Classification ASTM D2487

Lab I.D. #	Sample I.D.	Depth (Feet)	Plastic Limit	Liquid Limit	Plasticity Index	Classification
34199	TP #1	2.6 - 3.0	23	30	7	CL



Location: BENNINGTON, VERMONT

Sample Number: TP-1 ID# 34199 Depth: 2.6 TO 3.0 FEET

Date: SAMPLED: 3/6/2017

BEARING RATIO TEST REPORT

PW Laboratories, Inc.

COMPACTION METHOD:

ASTM D1557

Figure ONE

BEARING RATIO TESTING RESULTS (ASTM D 1883-07)

Date: SAMPLED: 3/6/2017

Project No.: L-16205 CLIENT:PASSERO ASSOCIATES

Project: GEOTECHNICAL EXPLORATION - WILLIAM H. MORSE AIRPORT

Location: BENNINGTON, VERMONT

Depth: 2.6 TO 3.0 FEET **Sample Number:** TP-1 ID# 34199

Material Description: Brown moist SILT, little C-M-F sand,

little M-F gravel,trace clay

USCS Classification: CL

Liquid Limit: 30 Plasticity Index: 7

Test Description: REMOLDED-PRESOAKED

Maximum Dry Density, pcf: 117.0 Optimum Moisture Content, %: 13.2

Testing Remarks: COMPACTION METHOD:

ASTM D1557

Sample 1 (PER LAYER 56 Blows; Surcharge: 40 lbs.)

Water Content

Wt. Wet Soil+Tare, gms. 4454.4 Wt. Soil+Tare, gms. 3792.1 Wt. Tare, gms. 0 Moisture, % 17.5

Unit Weight

Wt. Mold+Soil, lbs. 28.11 Wt. Mold, lbs. 18.29 Ht. Soil, in. 4.59 Density, pcf 111.3

Swell Data

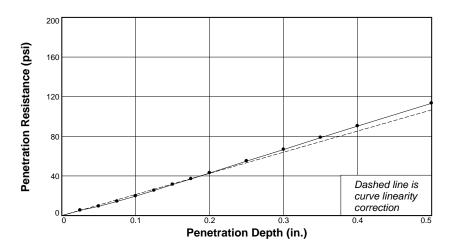
Elapsed	Dial Reading	Swell
Time, hrs.	in. x 1,000	%
0	562	0.0
18	541	-0.5
26	541	-0.5
90	541	-0.5
96	541	-0.5

Final Water Content

	Wt. Wet			
	Soil+Tare, gms.	Dry Soil+Tare	Tare	Moisture, %
1)	4851.6	4178.6	419.4	17.9

Penetration Test Data

Pen. in.	Dial Reading	Stress psi	CBR %
0.0	0	0.0	
0.025	16	5.3	
0.05	28	9.3	
0.075	43	14.3	
0.1	59	19.7	2.0
0.125	76	25.3	
0.15	94	31.3	
0.175	111	37.0	
0.2	129	43.0	2.9
0.25	165	55.0	
0.3	200	66.7	
0.35	236	78.7	
0.4	271	90.3	
0.5	340	113.3	



PW Laboratories, Inc.

Sample 2

(PER LAYER 56 Blows; Surcharge: 40 lbs.)

Water Content

Wt. Wet Soil+Tare, gms. 4127.8 Wt. Soil+Tare, gms. 3783.0

Wt. Tare, gms. 0

Moisture, % 9.1

Unit Weight

Wt. Mold+Soil, lbs. 24.83

Wt. Mold, lbs. 15.73

Ht. Soil, in. 4.56

Density, pcf 111.8

Swell Data

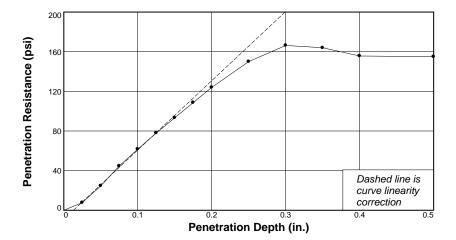
Elapsed	Dial Reading	Swell
Time, hrs.	in. x 1,000	%
0	652	0.0
18	693	0.9
26	696	1.0
90	704	1.1
96	704	1.1

Final Water Content

	Wt. Wet			
	Soil+Tare, gms.	Dry Soil+Tare	Tare	Moisture, %
1)	4831.1	4183.0	419.1	17.2

Penetration Test Data

· ononano	oot Data		
Pen. in.	Dial Reading	Stress psi	CBR %
0.0	0	0.0	
0.025	23	7.7	
0.05	74	24.7	
0.075	134	44.7	
0.1	185	61.7	7.0
0.125	234	78.0	
0.15	280	93.3	
0.175	326	108.7	
0.2	372	124.0	8.7
0.25	450	150.0	
0.3	499	166.3	
0.35	492	164.0	
0.4	467	155.7	
0.5	465	155.0	



Sample 3

(PER LAYER 56 Blows; Surcharge: 40 lbs.)

Water Content

Wt. Wet Soil+Tare, gms. 4504.2 Wt. Soil+Tare, gms. 3991.7

Wt. Tare, gms. 0

Moisture, % 12.8

Unit Weight

Wt. Mold+Soil, lbs. 28.22

Wt. Mold, lbs. 18.29

Ht. Soil, in. 4.58

Density, pcf 117.4

Swell Data

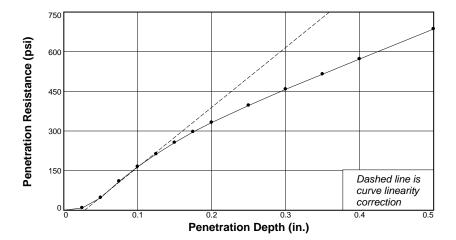
Elapsed	Dial Reading	Swell
Time, hrs.	in. x 1,000	%
0	670	0.0
18	678	0.2
26	678	0.2
90	678	0.2
96	678	0.2

Final Water Content

	Wt. Wet			
	Soil+Tare, gms.	Dry Soil+Tare	Tare	Moisture, %
1)	4968.4	4368.9	420.7	15.2

Penetration Test Data

i chettatio	ii icsi Data		
Pen. in.	Dial Reading	Stress psi	CBR %
0.0	0	0.0	
0.025	27	9.0	
0.05	143	47.7	
0.075	329	109.7	
0.1	495	165.0	21.8
0.125	638	212.7	
0.15	768	256.0	
0.175	890	296.7	
0.2	996	332.0	24.5
0.25	1190	396.7	
0.3	1374	458.0	
0.35	1545	515.0	
0.4	1717	572.3	
0.5	2058	686.0	





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Date of Report: March 14, 2017

Date Cored: March 13, 2017

L-16205
William H. Morse Airport
Apron Investigation
Bennington, Vermont

Pavement Section Thickness (ASTM D3549)

			Asphalt Pavement I	Estimated Thickness	
			1st	2nd	
			(UPPER)		
			COURSE	COURSE	Asphalt Pavement Total Thickness
Lab I.D.	Core I.D.	Core Location	(Inches)	(Inches)	(Inches)
34190	C-1	See Engineer's Drawing	2 1/8 CT	2 1/2 BI	4 5/8
34191	C-2	See Engineer's Drawing	1 3/4 CT	2 1/8 BI	3 7/8
34192	C-3	See Engineer's Drawing	1 1/4 CT	1 3/4 BI	3
34193	C-4	See Engineer's Drawing	1 5/8 CT	1 1/8 BI	2 3/4
34194	C-5	See Engineer's Drawing	1 5/8 CT	1 5/8 BI	3 1/4
34195	C-6	See Engineer's Drawing	1 1/4 CT	1 7/8 BI	3 1/8
34196	C-7	See Engineer's Drawing	1 5/8 CT	1 3/4 BI	3 3/8
34197	C-8	See Engineer's Drawing	1 5/8 CT	1 3/8 BI	3
34198	C-9	See Engineer's Drawing	1 1/4 CT	2 1/4 BI	3 1/2

Note: (1) Description of course type derived from estimate of nominal maximum aggregate size

(2) Thickness measurements were obtained to the nearest 1/8 Inch

Pavement Description

CT = Coarse Top

BI = Binder



None Noted A.0 A.0	<u> </u>								Page 1 of 1	
According Bennington, Vermont BORING NUMBER: B-1					BC	DRING LO	G	T		
CLIENT: PW Laboratories, Inc. SURFACE ELEVATION: As Obtained by Client	PROJI	ECT:	William H. Morse State	Aiprort			JOB NUMBER:	G011-17		
CASING TYPE: BLOW COUNTS OF SAMPLER DRIVE CASING REMOVED: CASING REMOVED: None Noted A.0"	LOCA	TION:	Bennington, Vermont				BORING NUMBER:	B-1		
DATE STARTED: 03/07/17 DATE COMPLETED: 03/07/17 WHILE DRILLING: None Noted 4.0" A 0 03/07/17 WHILE DRILLING: None Noted 4.0" A 0 0 0 0 0 0 0 0 0	CLIEN	NT:	PW Laboratories, Inc.						nt	
STARTED: 03:01/17 COMPLETED: 03:01/17 WHILE DRILLING: None Noted 4.0"							GROUND W		•	
DRILLER: Marc Cheney HELPER: Zack Cheney REFORE CASING None Noted 6.0°	DATE							_		
Marc Cheney HELPER: Zack Cheney REMOVED: None Noted 6.0°	START	TED:	03/07/17	COMPL	ETED:	03/07/17		None Noted	4.0'	
AFTER CASING None Noted None Noted None Noted	DDII I	FD.	Marc Changy	HEI DEI	D .	Zack Chanay		None Noted	6.0'	
CASING TYPE: 3 14" Hollow Stem Augers	DKILL	ZEK.	Marc Chency	HELI E	.	Zack Chelley		None Noted	0.0	
DRILL RIG: Truck Mounted Central Mine Equipment Model 55 CAVED AT DEPTH: 3.1	CASIN	G TYPE:	3 1/4" Hollow Stem Aug	ers				None Not	ed	
DEPTH OF SAMPLE SAMPLER DRIVE (per 6")					ipment M	odel 55	CAVED AT DEPTH:			
Brown cmf SAND, little cmf GRAVEL, trace SILT (moist, compact) 2 2,0° 2,0° 100@0° N/100+ 0 No Sample Recovery - Cobbles Noted to 4.0° 4.0 4.0 3 4.0°-6.0° 18-33-21-18 N/43 5 Brown SILT and cmf GRAVEL, trace cmf SAND (moist, hard) 4 6.0°-8.0° 17-17-9-17 N/26 6 Similar Soil (moist, hard) Bottom of Boring @ 8.0°	SAMPLE NUMBER		BLOW COUNTS OF SAMPLER DRIVE							
Compact Comp	1a	0.0'-0.2'	9-13-22-20	N/35	14	2" Topsoil (mois	st)		0.2	
Compact Comp	1b	0.2'-2.0'						SILT (moist,		
2 2.0°-2.0° 100@0° N/100+ 0 No Sample Recovery - Cobbles Noted to 4.0° 4.0 4.0 3 4.0°-6.0° 18-33-21-18 N/43 5 Brown SILT and cmf GRAVEL, trace cmf SAND (moist, hard) 4 6.0°-8.0° 17-17-9-17 N/26 6 Similar Soil (moist, hard) Bottom of Boring @ 8.0° Bottom of Boring @ 8.0° No Sample Recovery - Cobbles Noted to 4.0° 4.0° 4.0 Bottom of Boring @ 8.0° Notes:										
3 4.0-6.0' 18-33-21-18 N/43 5 Brown SILT and cmf GRAVEL, trace cmf SAND (moist, hard) 4 6.0-8.0' 17-17-9-17 N/26 6 Similar Soil (moist, hard) Bottom of Boring @ 8.0'	2	2.0'-2.0'	100@0"	N/100+	0		overy - Cobbles Noted to 4.0'		4.0	
4 6.0°-8.0° 17-17-9-17 N/26 6 Similar Soil (moist, hard)			 			1				
		4.0-0.0	16-33-21-16	11/43		BIOWII SILT and	tenn OKA VEL, trace enn SA	(moist, nard)	+	
	4	C 01 0 01	17 17 0 17	N/26		C:11 C11 (Set feed)			
Notes:	4	6.0-8.0	1/-1/-9-1/	N/26	0	Similar Soil (mo	oist, nard)			
Notes:						D	0.00		1	
						Bottom of Borin	g @ 8.0'			
									1	
									1	
									1	
									†	
									+	
									+	
									1	
									1	
									<u> </u>	
Key to Drilling Terms: N - No. of blows to drive sampler 12" w/ 140 lb. hammer falling / 30"; C - % of Bedrock Core Recovery	Notes:									
	Key to	Drilling Term	s: N - No. of blows to driv	e samplei	12" w/ 1	40 lb. hammer fa	lling / 30"; C - % of Bedrock (Core Recovery		



				T	D IN 10 T 0			Page 1 of 1
<u></u>		T		<u>B(</u>	ORING LO	G	ı	
PROJI	ECT:	William H. Morse State	Aiprort			JOB NUMBER:	G011-17	
LOCA	TION:	Bennington, Vermont				BORING NUMBER:	B-2	
CLIEN	NT:	PW Laboratories, Inc.				SURFACE ELEVATION:		nt
						GROUND W	ATER READINGS	
DATE			DATE				Depth to Water:	Casing At:
STAR	TED:	03/07/17	COMPL	ETED:	03/07/17	WHILE DRILLING:	None Noted	4.0'
DRILI	ED.	Marc Cheney	HELPE	D.	Zack Cheney	BEFORE CASING REMOVED:	None Noted	6.0'
DKILI	ZEK.	Marc Chelley	HELF E	Ν.	Zack Chelley	AFTER CASING	None Noted	0.0
CASIN	G TYPE:	3 1/4" Hollow Stem Aug	ers			REMOVED:	None Not	ed
DRILI		Truck Mountedl Central		ipment M	odel 55	CAVED AT DEPTH:	3.9'	
SAMPLE NUMBER	DEPTH OF SAMPLE	BLOW COUNTS OF SAMPLER DRIVE (per 6")	C/N	RECOVERY (Inches)	(Color,	DESCRIPTION OF SOI Primary Matrix, Compleme		DEPTH OF STRATA CHANGE
1a	0.0'-0.3'	4-5-5-5	N/10	10	3" Topsoil (mois	st)		0.3
1b	0.3'-2.0'					tle cmf SAND (moist, medium	n compact)	
2	2.0'-4.0'	5-7-6-6	N/13	12	1	me cmf SAND, little mf GRA	-	
					stiff)		(1 1 1 1)	
3	4.01.6.01	5.5.6.5	NI/1.1	17		:-1.11:60		
3	4.0'-6.0'	5-5-6-5	N/11	17	Similar Soil (mo	oist to wet, stiff)		
4	6.0'-8.0'	17-6-7-55	N/13	12	Similar Soil (mo	pist to wet, stiff)		
					Bottom of Borin	g @ 8.0'		
<u> </u>								
Notes:								
Key to	Drilling Term	s: N - No. of blows to driv	e sample	r 12" w/ 1	40 lb. hammer fa	lling / 30"; C - % of Bedrock (Core Recovery	



				D (<u> </u>		Page 1 of 1	
		Т		B(ORING LO		т		
PROJE	ECT:	William H. Morse State	Aiprort			JOB NUMBER:	G011-17		
LOCA'	TION:	Bennington, Vermont				BORING NUMBER:	B-3/C-1		
CLIEN	VT:	PW Laboratories, Inc.				SURFACE ELEVATION:		nt	
		T	1		1	GROUND W	ATER READINGS	1	
DATE			DATE				Depth to Water:	Casing At:	
START	TED:	03/07/17	COMPL	ETED:	03/07/17	WHILE DRILLING:	None Noted	4.4'	
DRILL	.FR·	Marc Cheney	HELPE	R•	Zack Cheney	BEFORE CASING REMOVED:	None Noted	6.4'	
DKILL	2127K.	Wate Chency			Zack Chency	AFTER CASING	Trone Troted	0.4	
CASIN	G TYPE:	3 1/4" Hollow Stem Aug	ers			REMOVED:	None Not	ed	
DRILL	RIG:	Truck Mountedl Central		ipment M	odel 55	CAVED AT DEPTH:	3.9'		
SAMPLE NUMBER	DEPTH OF SAMPLE	BLOW COUNTS OF SAMPLER DRIVE (per 6")	C/N	RECOVERY (Inches)	(Color,	DESCRIPTION OF SOIL (Color, Primary Matrix, Complementary Matrix)			
					5" Asphalt Pave	ment		0.4	
1a	0.4'-1.9'	13-9-8-3	N/17	17	Grey Run-of-Cr	ush Limestone (moist) 18" Su	bbase Course	1.9	
1b	1.9'-2.4'				Brown SILT, lit	tle cmf SAND, trace CLAY (r	noist, very stiff)		
					,	Geotechnical Fabric Noted			
2	2.4'-4.4'	4-19-33-12	N/52	10	Drown SH T on	Brown SILT and cmf GRAVEL, little cmf SAND, trace CLAY			
	2.4-4.4	4-19-33-12	14/32	10					
		0 = 0.10		_	(moist, hard)				
3	4.4'-6.4'	9-7-9-12	N/16	7	Similar Soil (mo				
4	6.4'-8.4'	19-18-18-14	N/36	8	Similar Soil (mo	oist, hard)			
					Bottom of Borin	ıg @ 8.4'			
<u> </u>									
Notes:									
Key to	Drilling Term	s: N - No. of blows to driv	e sample	r 12" w/ 1	40 lb. hammer fa	lling / 30"; C - % of Bedrock of	Core Recovery		



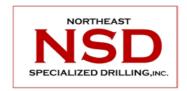
				BO	ORING LO	G		Page 1 of 1	
PROJE	ECT:	William H. Morse State	Aiprort		, 3 20	JOB NUMBER:	G011-17		
LOCA		Bennington, Vermont				BORING NUMBER:	B-4/C-2		
CLIEN		PW Laboratories, Inc.					As Obtained by Clier	nt	
						GROUND W	ATER READINGS	•	
DATE			DATE				Depth to Water:	Casing At:	
START	TED:	03/06/17	COMPI	ETED:	03/06/17	WHILE DRILLING: BEFORE CASING	None Noted	4.3'	
DRILI	LER:	Marc Cheney	HELPE	R:	Zack Cheney	REMOVED:	None Noted	6.3'	
			I.	-		AFTER CASING			
		3 1/4" Hollow Stem Augo				REMOVED:	None Not	ed	
DRILI	RIG:	Truck Mountedl Central	Mine Equ		odel 55	CAVED AT DEPTH:	4.1'	DEDETT	
SAMPLE NUMBER	DEPTH OF SAMPLE	BLOW COUNTS OF SAMPLER DRIVE (per 6")	C/N	RECOVERY (Inches)	(Color,	DESCRIPTION OF SOI Primary Matrix, Complemen		DEPTH OF STRATA CHANGE	
					4" Asphalt Pave	ment		0.3	
1	0.3'-2.3'	22-18-15-12	N/3	12	Brown cmf SAN	ND, little mf GRAVEL, trace S	SILT (moist,		
					loose) 28" Sub	base Course			
2a	2.3'-2.9'	12-10-15-29	N/25	14	Similar Soil (mo	Similar Soil (moist, medium compact)			
2b	2.9'-4.3'			·	,	Brown SILT and cmf GRAVEL, trace cmf SAND, trace CLAY			
					(moist, very stif		,		
3	4.3'-6.3'	26-29-22-35	N/51	16	Similar Soil (mo				
4	6.3'-8.3'	27-48-63-77	N/111	16	Similar Soil (mo				
4	0.3 -0.3	27-46-03-77	IN/111	10	Sillinai Soli (ilio	oist, nard)			
					Bottom of Borir	g @ 8.3'			
Notes: Key to	Drilling Term	s: N - No. of blows to driv	ve sample	r 12" w/ 1	40 lb. hammer fa	lling / 30"; C - % of Bedrock (Core Recovery		



PROJECT: William H. Morse State Aiprort JOB NUMBER: G011-17 LOCATION: Bennington, Vermont BORING NUMBER: B-5/C-7 CLIENT: PW Laboratories, Inc. SURFACE ELEVATION: As Obtained by Client GROUND WATER READINGS					BC	ORING LO	G		Page 1 of 1	
DOCATION: Bennington, Vermont BORING NUMBER: B-5/C-7	PROJI	ECT:	William H. Morse State	Aiprort				G011-17		
DATE DATE DATE COMPLETED: 03/07/17 WILLE DRILLING: Depth to Water CASING TYPE: 3.14" Hollow Stem Augers CASING TYPE: SAMPLE Deep to Work Depth to Work Depth to Work CASING TYPE: 3.14" Hollow Stem Augers CASING TYPE: CASING TYPE: SAMPLE DRIVE CASING TYPE:										
CASING TYPE:			-						nt	
CASING TYPE: A A A A A A A A A						•		_		
DRILLER: Marc Cheney HELPER: Zack Cheney REFORE CASING None Noted 6.3"	DATE							•		
DRILLER: Marc Cheney HELPER: Zack Cheney REMOVED: None Noted 6.3'	START	TED:	03/07/17	COMPL	ETED:	03/07/17		None Noted	4.3'	
AFTER CASING None Noted	DRILI	LER:	Marc Cheney	HELPE	R:	Zack Cheney		None Noted	6.3'	
Truck Mounted! Central Mine Equipment Model 55					-		AFTER CASING			
DEPTH OF SAMPLE SAMPLER DRIVE (per 6")									ted	
DEPTH OF SAMPLE SAMPLE SAMPLER DRIVE (per 6")	DRILI	RIG:	Truck Mountedl Central	Mine Equ		odel 55	CAVED AT DEPTH:	5.1'	DEDENT	
1 0.3'-2.3' 22-21-14-19 N/35 18 Brown cmf SAND and cmf GRAVEL, trace SILT (moist, compact) 24" Subbase Course 2a 2.3'-3.0' 11-10-6-8 N/16 10 Similar Soil (moist, medium compact) 3.0 2b 3.0'-4.3' Brown Mottled SILT, little CLAY, trace cmf SAND (moist, very stiff) 3 4.3'-6.3' 11-6-10-15 N/14 18 Brown Similar Soil (moist, stiff) 4 6.3'-8.3' 11-11-10-15 N/21 11 Similar Soil (moist to wet, very stiff) Bottom of Boring @ 8.3' Notes:	SAMPLE NUMBER		SAMPLER DRIVE	C/N	RECOVERY (Inches)	(Color,				
Compact) 24" Subbase Course 3.0						3 1/2" Asphalt I	Pavement		0.3	
2a 2.3°-3.0° 11-10-6-8 N/16 10 Similar Soil (moist, medium compact) 3.0 2b 3.0°-4.3° Brown Mottled SILT, little CLAY, trace cmf SAND (moist, very stiff) 4.3°-6.3° 11-6-10-15 N/14 18 Brown Similar Soil (moist, stiff) 4 6.3°-8.3° 11-11-10-15 N/21 11 Similar Soil (moist to wet, very stiff) Bottom of Boring @ 8.3° Bottom of Boring @ 8.3° 9.3° Bottom of Boring @ 8.3° 9.3°	1	0.3'-2.3'	22-21-14-19	N/35	18	Brown cmf SAN	ND and cmf GRAVEL, trace S	ILT (moist,		
2a 2.3°-3.0° 11-10-6-8 N/16 10 Similar Soil (moist, medium compact) 3.0 2b 3.0°-4.3° Brown Mottled SILT, little CLAY, trace cmf SAND (moist, very stiff) 4.3°-6.3° 11-6-10-15 N/14 18 Brown Similar Soil (moist, stiff) 4 6.3°-8.3° 11-11-10-15 N/21 11 Similar Soil (moist to wet, very stiff) Bottom of Boring @ 8.3° Bottom of Boring @ 8.3° 9.3° Bottom of Boring @ 8.3° 9.3°						compact) 24" S				
2b 3.0°-4.3°	2a	2.3'-3.0'	11-10-6-8	N/16	10		•			
						,				
3 4.3'-6.3' 11-610-15 N/14 18 Brown Similar Soil (moist, stiff) 4 6.3'-8.3' 11-11-10-15 N/21 11 Similar Soil (moist to wet, very stiff) Bottom of Boring @ 8.3' Bottom of Boring @ 18.3'		2.0					~	(,		
4 6.3'-8.3' 11-11-10-15 N/21 11 Similar Soil (moist to wet, very stiff) Bottom of Boring @ 8.3' Bottom of Boring @ 1.3' Bottom of Boring @ 1.3'	3	13'63'	11.6.10.15	N/14	10		Soil (moist_stiff)			
Bottom of Boring @ 8.3' Bottom of Boring @ 8.										
Notes:	4	0.5-6.5	11-11-10-13	11/21	11	Sililiai Soli (ilio	oist to wet, very stirr)			
Notes:						Bottom of Borir	ng @ 8.3'			
							-5			
									<u> </u>	
	Notes	1			<u> </u>	1			1	
		Drilling Term	s: N - No. of blows to driv	e sample	r 12" w/ 1.	40 lb. hammer fa	lling / 30": C - % of Redrock (Core Recovery		



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<u> </u>		T		<u>B(</u>	ORING LO	G	T		
PROJE	ECT:	William H. Morse State	Aiprort			JOB NUMBER:	G011-17		
LOCA'	TION:	Bennington, Vermont				BORING NUMBER:	B-6/C-8		
CLIEN	NT:	PW Laboratories, Inc.				SURFACE ELEVATION:		nt	
					_	GROUND W	ATER READINGS		
DATE			DATE				Depth to Water:	Casing At:	
START	ΓED:	03/07/17	COMPL	ETED:	03/07/17	WHILE DRILLING:	None Noted	4.3'	
DRILL	ED.	Marc Cheney	HELPE	D.	Zook Chonov	BEFORE CASING	None Noted	5.2'	
DKILL	ZEK:	Marc Cheney	nelfe	<u>K:</u>	Zack Cheney	REMOVED: AFTER CASING	None Noted	3.2	
CASIN	G TYPE:	3 1/4" Hollow Stem Aug	ers			REMOVED:	None Note	ed	
DRILL		Truck Mountedl Central		ipment M	odel 55	CAVED AT DEPTH:	3.4'		
SAMPLE NUMBER	DEPTH OF SAMPLE	BLOW COUNTS OF SAMPLER DRIVE (per 6")	C/N	RECOVERY (Inches)		DESCRIPTION OF SOI Primary Matrix, Compleme		DEPTH OF STRATA CHANGE	
					3 1/2" Asphalt F	Pavement		0.3	
1	0.3'-2.3'	11-21-16-13	N/37	17		ND and cmf GRAVEL, trace S	ILT (moist,		
						compact) 30" Subbase Course			
2a	2.3'-2.8'	8-6-7-6	N/13	7	Similar Soil (mo	2.8'			
2b	2.8'-4.3'				,	Brown SILT, some cmf SAND, little mf GRAVEL (moist,			
	2.0 1.3				very stiff)		, 22 (moist,		
3	4.3'-5.2'	9-100@4"	N/100+	6	Similar Soil w/i	very compact)			
		, , , , ,			1	er Refusal @ 5.2'	,		
					Bottom of Borin	**			
Notes:									
Key to	Drilling Term	s: N - No. of blows to driv	e sample	r 12" w/ 1	40 lb. hammer fa	lling / 30"; C - % of Bedrock of	Core Recovery		



				BO	ORING LO	\mathbf{G}			
PROJI	ECT:	William H. Morse State	Aiprort			JOB NUMBER:	G011-17		
LOCA	TION:	Bennington, Vermont	•			BORING NUMBER:	B-7/C-9		
CLIEN	NT:	PW Laboratories, Inc.				SURFACE ELEVATION:	As Obtained by Clie	nt	
						GROUND W	VATER READINGS	_	
DATE			DATE				Depth to Water:	Casing At:	
STAR	TED:	03/07/17	COMPI	LETED:	03/07/17	WHILE DRILLING: BEFORE CASING	None Noted	4.3'	
DRILI	LER:	Marc Cheney	HELPE	R:	Zack Cheney	REMOVED:	None Noted	6.3'	
		·				AFTER CASING			
	IG TYPE:	3 1/4" Hollow Stem Aug				REMOVED:	None No	ted	
DRILI	∠ RIG:	Truck Mountedl Central	Mine Equ		lodel 55	CAVED AT DEPTH:	3.7'	DEPTH	
SAMPLE NUMBER	DEPTH OF SAMPLE	BLOW COUNTS OF SAMPLER DRIVE (per 6")	C/N	RECOVERY (Inches)	(Color,	DESCRIPTION OF SO Primary Matrix, Compleme		OF STRATA CHANGE	
					3 1/2" Asphalt	Pavement		0.3	
1	0.3'-2.3'	12-22-20-6	N/42	7	Brown cmf SAl	ND, trace mf GRAVEL, trace	SILT (wet,		
					compact) 12" S	Subbase Course		2.3'	
1b	1.3'-2.3'				Brown SILT, li				
2	2.3'-4.3'	4-5-5-26	N/10	10	Brown SILT an	Brown SILT and cmf GRAVEL, little cmf SAND, trace CLAY			
					(moist, stiff)				
3	4.3'-6.3'	15-11-10-10	N/21	10	Similar Soil (moist, very stiff)				
4	6.3-'8.3'	10-12-9-11	N/21	17	, , , ,				
					Bottom of Boria	ng @ 8.3'			
					1			1	
Notes:						alling / 30"; C - % of Bedrock			



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		T		BO	ORING LO		1	
PROJECT:		William H. Morse State	Aiprort			JOB NUMBER:	G011-17	
LOCATION:		Bennington, Vermont				BORING NUMBER:	B-8	
CLIENT:		PW Laboratories, Inc.				SURFACE ELEVATION:		nt
		T	I		T	GROUND W	ATER READINGS	Carina At
DATE		02/07/17	DATE	EBED	02/07/17		Depth to Water: None Noted	Casing At:
STARTED: DRILLER:		03/07/17 COMPLETED:			WHILE DRILLING: BEFORE CASING	None Noted	4.0'	
		Marc Cheney	HELPER:		Zack Cheney	REMOVED:	5.0'	6.0'
				AFTER CASING				
	IG TYPE:	3 1/4" Hollow Stem Augers			REMOVED: CAVED AT DEPTH:	None Noted		
SAMPLE NUMBER ITING	DEPTH OF SAMPLE	EPTH OF SAMPLED DRIVE CON SAMP			DEPTH OF STRATA CHANGE			
1a	0.0'-0.3'	3-3-5-6	N/8	12	4" Topsoil (moi	st)		0.3
1b	0.3'-2.0'					tle cmf SAND, trace mf GRA	VEL (moist, stiff)	
2	2.0'-4.0'	6-6-7-8	N/13	14	Similar Soil (me		(, , , , , , , , , , , , , , , , , , ,	
<u> </u>	2.0 1.0	00,0	11/13	* (ZIIII DON (IIII	,		
3	4.0'-6.0'	3-4-6-5	N/10	9	Similar Soil (mo	pist, stiff)		
4	6.0'-8.0'	4-5-6-11	N/11	8	Similar Soil (mo	pist to wet, stiff)		
					Bottom of Borin	ng @ 8.0'		
Notes: Key to	Drilling Term	s: N - No. of blows to driv	ve sample	r 12" w/ 1	40 lb. hammer fa	llling / 30"; C - % of Bedrock	Core Recovery	



Key to Boring Logs

Burmister Classification of Soils					
Soil Description: Color, principal soil type and remaining soil types in decreasing					
pre-dominancy.					
Percentages B	Percentages By Weight:				
35-50%	and				
20-35%	some				
10-20%	little				
0-10%	trace				

Description of Soil Compactness (Based on SPT "N" Value)						
Primary Soil Type	Term of Compactness	Range of "N" Values				
	Very Loose	N Value: < 4				
Coarse Grained	Loose	N Value: 4 to 9				
Soils (Gravels and	Medium Compact	N Value: 10 to 29				
Sands)	Compact	N Value: 30 to 49				
	Very Compact	N Value: ≥ 50				
	Very Soft	N Value: < 2				
	Soft	N Value: 2 to 3				
Fine Grained Soils	Medium Stiff	N Value: 4 to 7				
(Silts and Clays)	Stiff	N Value: 8 to 14				
	Very Stiff	N Value: 15 to 29				
	Hard	N Value: ≥ 30				

Sample Number:

Soil - The number of the sample obtained (S-#).

Bedrock – The number of the bedrock sample obtained, referred to as a Run (R-#).

SPT "N" Value:

The number of blows of a 140 lb. weight hammer, falling 30", driving a 2" split spoon.

Recovery: Soil – Inches of soil recovered in the 2" split spoon.

Bedrock - Inches of Bedrock recovered during the core run, reported in inches

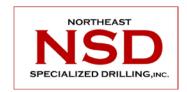
and as percentage of core run.

<u>RQD</u>: Bedrock – Portions of the Bedrock core, full diameter and ≥ 4 " in length.

Reported in inches and as percentage of core run.

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meneilly@nsdrill.com (315) 491-9385



TEST PIT LOG

PROJECT:	William H. Morse State Aiprort			JOB NUMBER:	G011-17	
LOCATION: Bennington, Vermont			TEST PIT NUMBER:	TP-1		
CLIENT:	PW Laboratories, Inc.		SURFACE ELEVATION:	As Obtained by Client		
•			GROUND WATER READINGS			
DATE		DATE		DEPTH FIRST	Depth to Water:	Time:
STARTED:	03/07/17	COMPLETED:	03/07/17	ENCOUNTERED	None Noted	
FIELD				DEPTH PRIOR TO		
REPRESENTATIVE:		Marc Cheney		BACKFILL	None Noted	
				NOTES:	•	
EXCAVATOR TYPE:	Rubber Track 25 Series New Holland					
BUCKET SIZE/TYPE: 18" General Pur		pose				
	•			•		

DEPTH	SAMPLE NUMBER	SAMPLE DEPTH	DESCRIPTION OF SOIL (Color, Primary Matrix, Complementary Matrix)	STRATA CHANGE DEPTH
0	0.0'-0.3'		3" Topsoil (moist)	0.3
	0.3'-2.0'		Brown SILT and c-m-f GRAVEL, some Cobbles, some c-m-f SAND (moist)	2.0
	2.0'-2.6'		Topsoil/Organics, trace Wood, trace Roots (moist)	2.6
	2.6'-3.0'	2.6'-3.0'	Brown SILT, little c-m-f SAND, little m-f GRAVEL, trace CLAY (moist) Bottom of Test Pit @ 3.0'	
5				
10				
15 Notes:				

