Deep Boring Availability

Summary of Available Data

MEMORANDUM **RB&G ENGINEERING, INC.**

To: Andy Spencer, P.E., American Fork City

From: Brandon Horrocks, P.E. / Brad Price, P.E., RB&G Engineering, Inc.

Date: April 1, 2015

At your request, we have compiled available borings in the American Fork area which extended to a depth of at least 70 feet. Figures 1 through 5, which are attached to this memorandum, indicate the approximate location of each of the borings. The borings included in the compilation are summarized below:

2008 I-15 CORE Borings – RB&G Engineering

Borings were completed at I-15 over 200 South, I-15 over American Fork River, I-15 over 100 East, 500 East over I-15, and 1100 South over I-15. Two deep borings were completed by RB&G at each of these locations.

2006 American Fork Sensitive Lands Study Borings – RB&G Engineering

The 2006 study included four borings which extended at least 70 feet below the ground surface.

Timpanogos Waste Water Treatment Plant Borings (1996, 1994, 1977) – RB&G Engineering

RB&G Engineering has completed 8 borings at this site which extend to depths of at least 70 feet.

1996 Timpanogos Lift Station Borings – RB&G Engineering

One boring was drilled to a depth of at least 70 feet at this site.

2008-2009 I-15 Pioneer Crossing Interchange Borings – Terracon Consultants, Inc.

Four borings which extended at least 70 feet were completed at this site.

2008-2009 Pioneer Crossing / Mill Pond Road over UPRR Borings – Terracon Consultants, Inc.

Four borings which extended at least 70 feet were completed at this site.

2000 I-15 Pleasant Grove Blvd. Interchange Borings – Kleinfelder.

Seven borings which extended at least 70 feet were completed at this site.

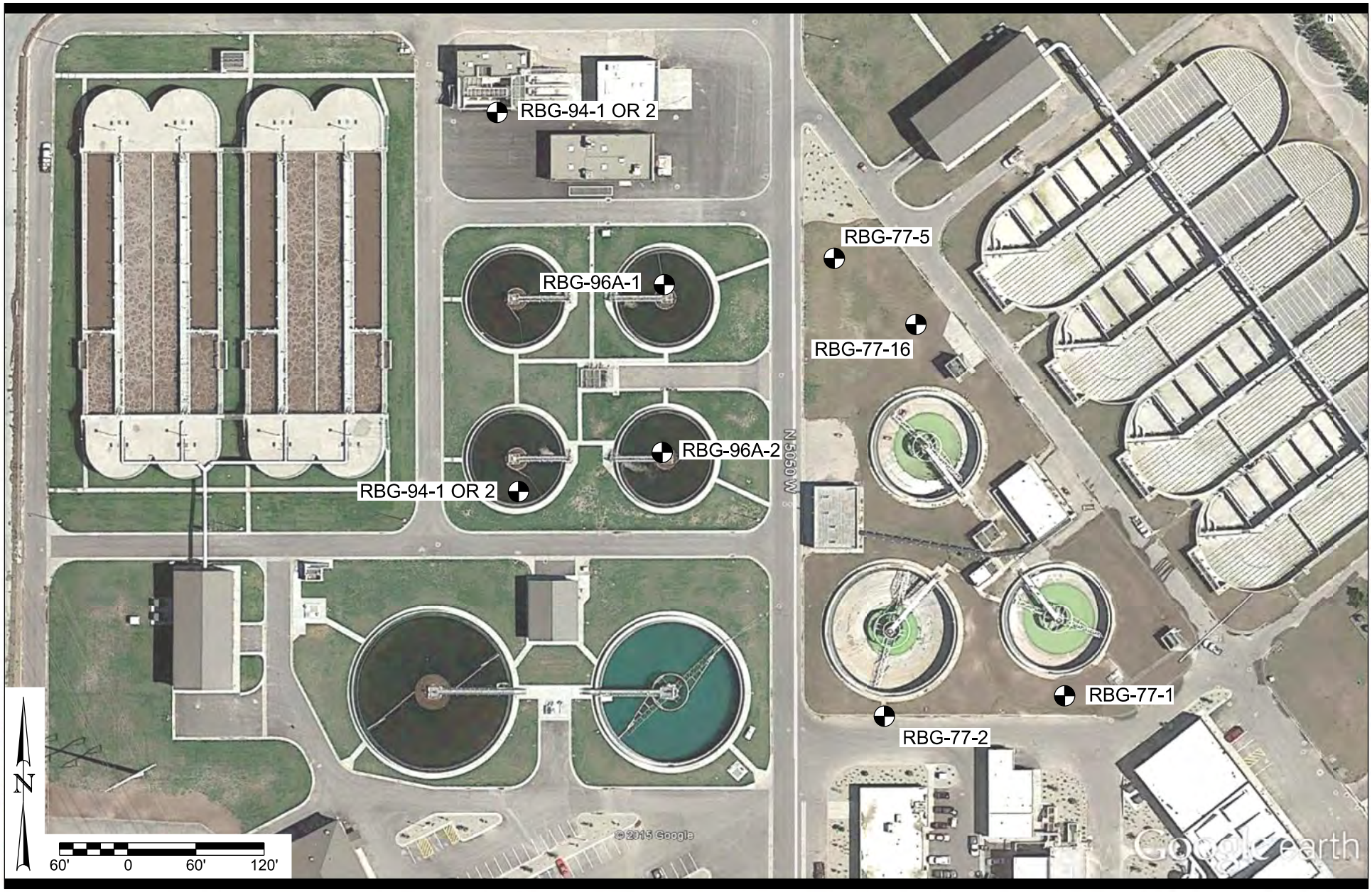
It should be noted that we have not arranged permission from owners or other consulting engineers to distribute the information contained herein. We recommend that American Fork City contact the owners of these projects (UDOT and Timpanogos Special Service District) as well as the other consulting engineers (Terracon Consultants and Kleinfelder) regarding the use and distribution of the information contained herein. RB&G Engineering, Inc. has no objections to American Fork City distributing our information for purposes of site class determination at projects within the city boundaries. Any party using information provided by RB&G Engineering must take full liability for its use.

RB&G ENGINEERING, INC.

Figure 1 DRILL HOLE LOCATIONS

American Fork City Sensitive Land Ordinance Review - Deep Boring Availability

American Fork, Utah County, Utah

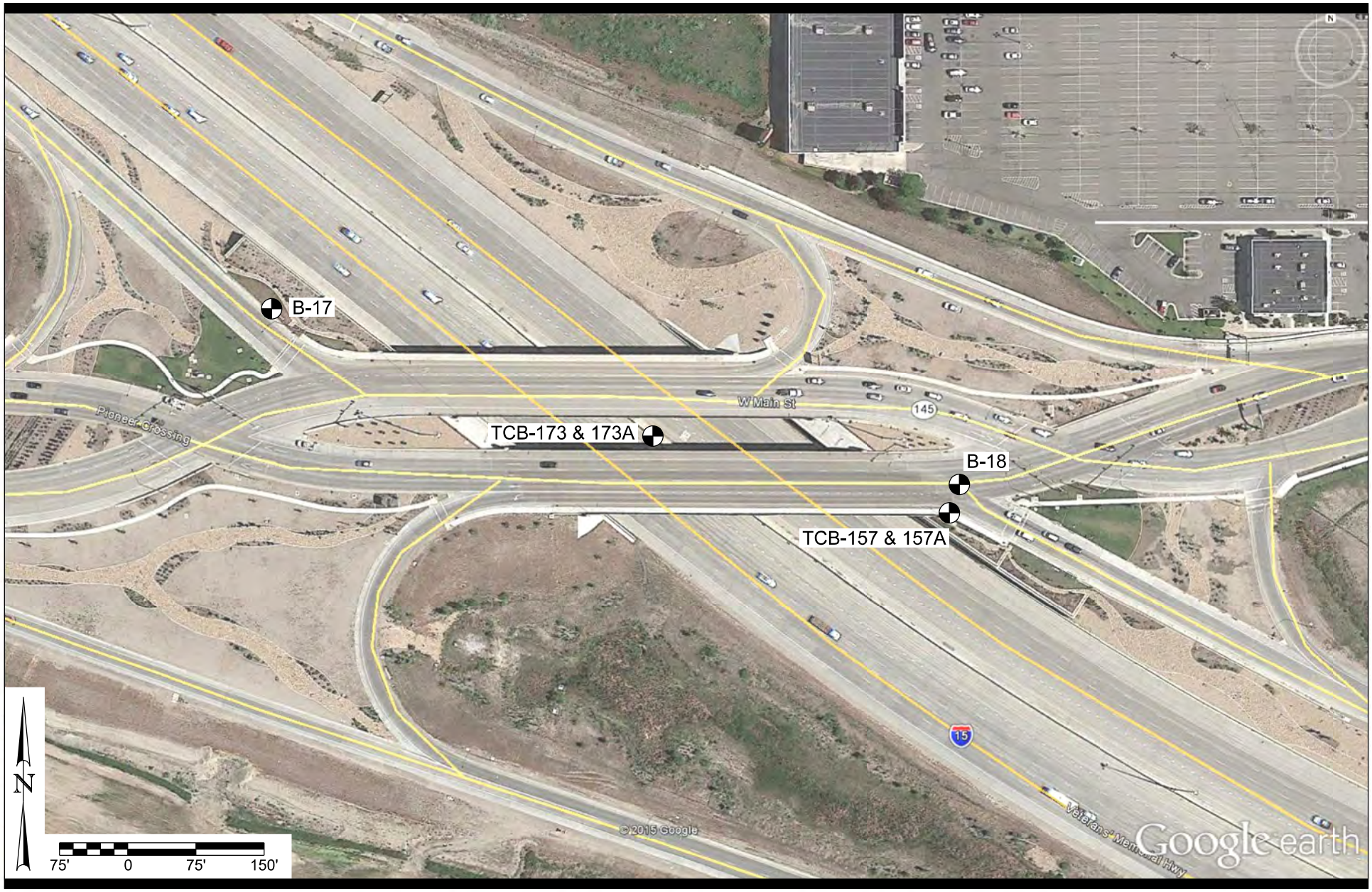


RB&G ENGINEERING, INC.

Figure 2 TIMPANOGOS WASTE TREATMENT PLANT DRILL HOLE LOCATIONS

American Fork City Sensitive Land Ordinance Review - Deep Boring Availability

American Fork, Utah County, Utah

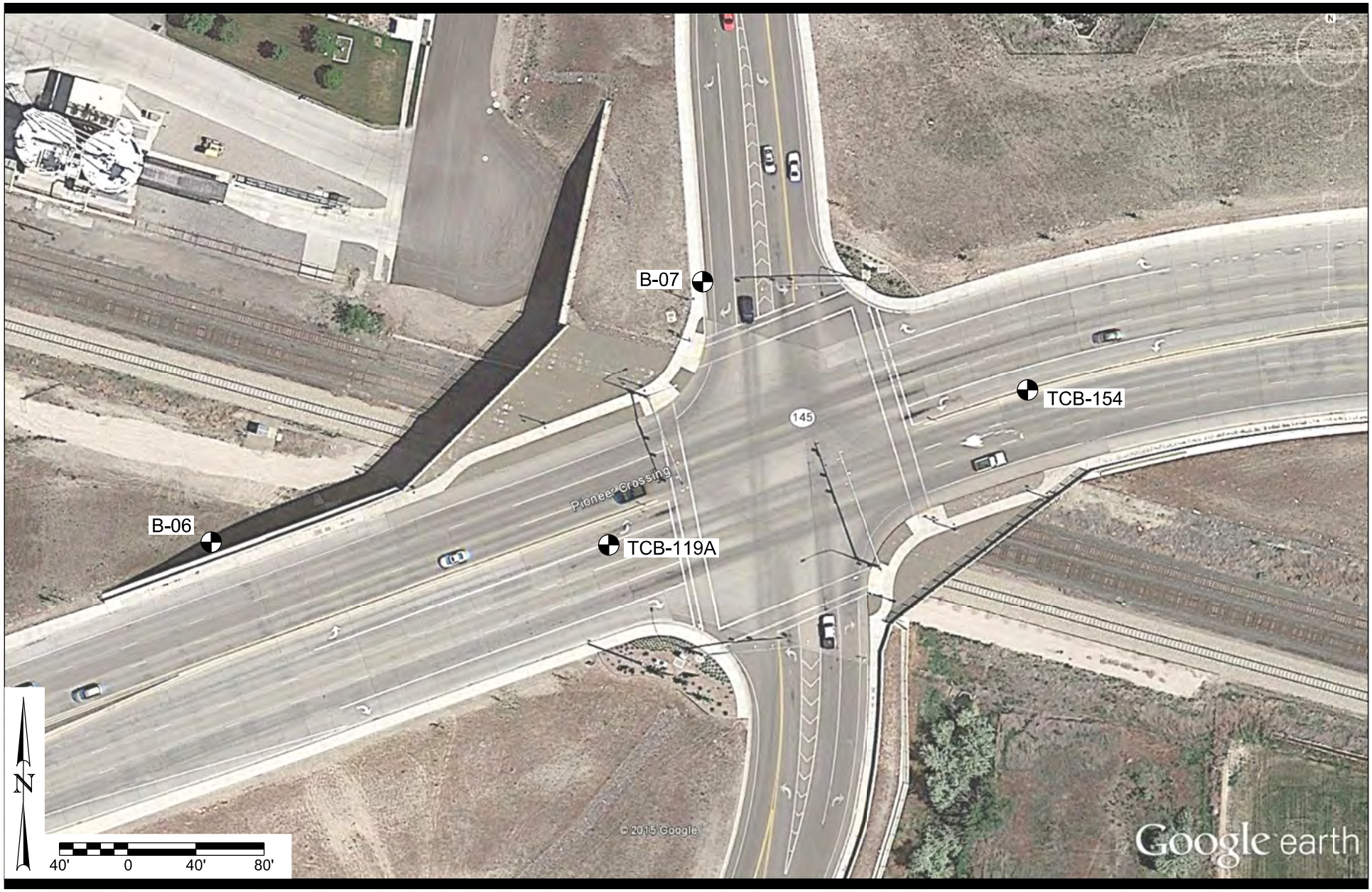


RB&G ENGINEERING, INC.

Figure 3 I-15 PIONEER CROSSING INTERCHANGE DRILL HOLE LOCATIONS (TERRACON)

American Fork City Sensitive Land Ordinance Review - Deep Boring Availability

American Fork, Utah County, Utah



RB&G ENGINEERING, INC.

Figure 4 PIONEER CROSSING / MILL POND ROAD OVER UPRR BRIDGE DRILL HOLE LOCATIONS (TERRACON)

American Fork City Sensitive Land Ordinance Review - Deep Boring Availability

American Fork, Utah County, Utah

RB&G ENGINEERING, INC.

Figure 5 I-15 PLEASANT GROVE BOULEVARD INTERCHANGE DRILL HOLE LOCATIONS (KLEINFELDER)

American Fork City Sensitive Land Ordinance Review - Deep Boring Availability

American Fork, Utah County, Utah

2008 I-15 CORE BORINGS

08-AF2-B1 (I-15 over American Fork 200 South)
08-AF2-B2 (I-15 over American Fork 200 South)
08-AF3-B1 (I-15 over American Fork River)
08-AF3-B2 (I-15 over American Fork River)
08-AF4-B1 (I-15 over American Fork 100 East)
08-AF4-B2 (I-15 over American Fork 100 East)
08-AF5-B1 (American Fork 500 East over I-15)
08-AF5-B2 (American Fork 500 East over I-15)
08-AF5-B1 (American Fork 1100 South over I-15)
08-AF5-B2 (American Fork 1100 South over I-15)

See Figure 1 for Boring Locations

DRILL HOLE LOG

BORING NO. 08-AF2-B1

PROJECT: I-15 UTAH COUNTY CORRIDOR - AF2, I-15 OVER AM. FORK 200 SOUTH

CLIENT: UTAH DEPARTMENT OF TRANSPORTATION

LOCATION: N:306,840 E:555,094

DRILLING METHOD: 96-CME-55 / N.W. CASING TO 45'

DRILLER: L. HILER

DEPTH TO WATER - INITIAL: N.M. **AFTER 24 HOURS:** 20.0'

PROJECT NUMBER: 200801.200

DATE STARTED: 9/4/08

DATE COMPLETED: 9/5/08

GROUND ELEVATION: 4566.7'

LOGGED BY: G. PEASLEE, J. BOONE

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	Sample USCS (AASHTO)	Material Description		Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
4565				0	0,8,6,(29)	-	no recovery	4" CONCRETE SIDEWALK CLAY (driller's observation)								
4560	5			11	5,14,23,(83)	GP-GM (*A-1-a*)	dk. brown, moist, dense			7.4		NP	57	33	10	
4555	10			11	17,25,25,(80)	GP-GM (*A-1-a*)	dk. brown, wet, dense			5.9		NP	60	32	8	
4550	15			0	8,4,5,(12)	-	no recovery									
								GRAVEL W/SILT & SAND possible cobbles, some loose layers								
4545	20			10	14,18,20,(44)	GP-GM (*A-1-a*)	lt. brown, wet, med. dense			5.6		NP	61	32	7	
4540	25			0	9,10,7,(26)	-	no recovery									
4535	30			1	9,13,10,(20)	GP-GM	lt. brown, wet, loose to med. dense									
4530	35			14	11,21,19,(40)	SM (*A-4(0)*)	brown, wet, dense	SILTY SAND		20.3		NP	0	57	43	
4525	40			18	Pushed *0.34*	CL-ML (*A-4(4)*)	brown, moist, firm	SILTY CLAY	95.1	26.4	26	5	0	7	93	CT UU
4520	45			16	1,2,2,(4) *0.24*	CH	brown, moist, soft	FAT CLAY								

DH_LOGV1 08-AF2.GPJ US EVAL.GDT 4/14/09

RB&G ENGINEERING, INC.

LEGEND:

DISTURBED SAMPLE — 2,3,2,(6) — Blow Count per 6"; $(N_1)_{60}$ Value; *0.45* — Torvane (tsf)

UNDISTURBED SAMPLE — PUSHED *0.45* — Torvane (tsf)

OTHER TESTS

UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
UU = Unconsolidated, Undrained
CU = Consolidated, Undrained
HYD = Hydrometer
SS = Soluble Salt
DC = Dispersive Clay

DRILL HOLE LOG

BORING NO. 08-AF2-B1

PROJECT: I-15 UTAH COUNTY CORRIDOR - AF2, I-15 OVER AM. FORK 200 SOUTH
CLIENT: UTAH DEPARTMENT OF TRANSPORTATION
LOCATION: N:306,840 E:555,094
DRILLING METHOD: 96-CME-55 / N.W. CASING TO 45'
DRILLER: L. HILER
DEPTH TO WATER - INITIAL: N.M. **AFTER 24 HOURS:** 20.0'

PROJECT NUMBER: 200801.200
DATE STARTED: 9/4/08
DATE COMPLETED: 9/5/08
GROUND ELEVATION: 4566.7'
LOGGED BY: G. PEASLEE, J. BOONE

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	USCS (AASHTO)	Material Description		Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
4515				16	Pushed 0.55	CH (A-7-6(35))	brown, moist, stiff	FAT CLAY	66.7	50.7	57	29	0	0	100	CT UC
4510	55			16	8,9,9,(17) 0.27	CL-ML	gray-brown, moist, firm	SILTY CLAY silty sand layers to 4" thick								
4505	60			17	Pushed 0.52	CL (A-7-6(20))	dk. gray, moist, stiff		82.0	38.0	42	18	0	2	98	CT UU
4500	65			24	0/24",(0) 0.24	CL	dk. gray, moist, soft									
4495	70			14	Pushed 0.60	CL (A-7-6(23))	dk. gray, moist, stiff	LEAN CLAY occasional silt lenses & layers to 1" thick	86.4	34.6	43	21	0	2	98	CT UC
4490	75			23	0,3,1,(3) 0.48	CL (A-7-6(23))	dk. gray, moist, firm			30.1	45	24	0	10	90	
4485	80			9	Pushed	GM	gray, wet	SILTY GRAVEL W/SAND								
						SC	dk. gray, wet	CLAYEY SAND W/GRAVEL								
				19	10,12,11,(17) 0.43	CL (A-6(13))	brown, moist, firm	LEAN CLAY bedding at ~45° angle		28.8	35	16	0	13	87	
4480	85			9	32,62/5"	GM (A-1-a)	lt. brown, wet, very dense			7.6		NP	51	35	14	
4475	90			2	30,60,53,(81)	GM	lt. brown, wet, very dense	SILTY GRAVEL W/SAND possible cobbles								
4470	95			7	29,62/3.5"	GM	lt. brown, wet, very dense									

DH_LOGV1 08-AF2.GPJ US EVAL.GDT 4/14/09

RB&G ENGINEERING, INC.

LEGEND:

DISTURBED SAMPLE: 2,3,2,(6) — Blow Count per 6"; $(N_1)_{60}$ Value; 0.45 — Torvane (tsf)

UNDISTURBED SAMPLE: PUSHED 0.45 — Torvane (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
UU = Unconsolidated, Undrained
CU = Consolidated, Undrained
HYD = Hydrometer
SS = Soluble Salt
DC = Dispersive Clay

DRILL HOLE LOG

BORING NO. 08-AF2-B1

PROJECT: I-15 UTAH COUNTY CORRIDOR - AF2, I-15 OVER AM. FORK 200 SOUTH

CLIENT: UTAH DEPARTMENT OF TRANSPORTATION

LOCATION: N:306,840 E:555,094

DRILLING METHOD: 96-CME-55 / N.W. CASING TO 45'

DRILLER: L. HILER

DEPTH TO WATER - INITIAL: ▽ N.M. **AFTER 24 HOURS:** ▼ 20.0'

PROJECT NUMBER: 200801.200

DATE STARTED: 9/4/08

DATE COMPLETED: 9/5/08

GROUND ELEVATION: 4566.7'

LOGGED BY: G. PEASLEE, J. BOONE

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	Sample USCS (AASHTO)	Material Description	Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
			■	4	19,28,49,(53)	GM	lt. brown, wet, dense								
4465															
	105														
4460															
	110														
4455															
	115														
4450															
	120														
4445															
	125														
4440															
	130														
4435															
	135														
4430															
	140														
4425															
	145														
4420															

DH_LOGV1 08-AF2.GPJ US EVAL.GDT 4/14/09

RB&G ENGINEERING, INC.

LEGEND:

DISTURBED SAMPLE ■ 2,3,2,(6) ← Blow Count per 6" / $(N_1)_{60}$ Value; 0.45 ← Torvane (tsf)

UNDISTURBED SAMPLE ☒ PUSHED; 0.45 ← Torvane (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
UU = Unconsolidated, Undrained
CU = Consolidated, Undrained
HYD = Hydrometer
SS = Soluble Salt
DC = Dispersive Clay

DRILL HOLE LOG

BORING NO. 08-AF2-B2

PROJECT: I-15 UTAH COUNTY CORRIDOR - AF2, I-15 OVER AM. FORK 200 SOUTH
CLIENT: UTAH DEPARTMENT OF TRANSPORTATION
LOCATION: N:306,995 E:555,448
DRILLING METHOD: 08-CME-55 / N.W. CASING TO 50'
DRILLER: D. SAMPSON
DEPTH TO WATER - INITIAL: ▽ 21.0' **AFTER 24 HOURS:** ▼ N.M.

PROJECT NUMBER: 200801.200
DATE STARTED: 12/16/08
DATE COMPLETED: 12/17/08
GROUND ELEVATION: 4572.2'
LOGGED BY: M. HANSEN, J. BOONE

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	USCS (AASHTO)	Material Description		Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
4570				10	39,15,10,(53)	SM	brown, slightly moist, very dense	SILTY SAND W/GRAVEL oil stained (fill)								
4565	5			11	4,3,4,(16)	CL-ML (A-4(1))	brown, moist, stiff	SANDY SILTY CLAY		15.7	24	7	5	37	58	
4560	10			12	3,3,4,(12)	SM (A-4(0))	brown, very moist, med. dense	SILTY SAND		18.3		NP	4	56	40	DS
				10	7,7,7,(22)	GM	brown, very moist, loose									
4555	15			10	12,23,22,(64)	GM (A-1-a)	brown, wet, dense	SILTY GRAVEL W/SAND possible cobbles		6.6		NP	54	33	13	
4550	20		▽	10	18,14,32,(57)	GM	brown, wet, dense									
4545	25			9	8,9,10,(22)	GP-GM	brown, wet, med. dense	GRAVEL W/SILT & SAND possible cobbles								
4540	30			13	6,7,6,(15)	SM (A-2-4(0))	brown, wet, med. dense	SILTY SAND		24.4		NP	0	85	15	4% -0.005 mm
				8	5,11,11,(24)	SM	brown, wet, med. dense									
	35			16	4,3,6,(10)	SM (A-4(0))	brown, wet, med. dense			31.8		NP	0	61	39	6% -0.005 mm
4535				16	4,4,8,(13)	ML (A-4(0))	brown, wet, med. dense			28.0		NP	0	50	50	8% -0.005 mm
	40			17	6,7,10,(25)	ML (A-4(0))	gray-brown, wet, med. dense	SANDY SILT silty sand layers to 10" thick		26.7		NP	0	40	60	
4530				16	5,6,11,(17)	ML	gray, wet, med. dense									
	45			8	3,4,5,(9) 0.30	CL-ML (A-4(4))	gray, moist, firm	SILTY CLAY		27.7	28	6	0	14	86	19% -0.005 mm
4525				17	0.29 3,4,4,(8) 0.20	CL-ML ML	gray, moist, firm / gray-brown, very moist, soft	SILT plastic								

DH_LOGV1 08-AF2.GPJ US EVAL.GDT 4/14/09

RB&G ENGINEERING, INC.

LEGEND:

DISTURBED SAMPLE — 2,3,2,(6) Blow Count per 6"; $(N_1)_{60}$ Value; 0.45 Torvane (tsf)

UNDISTURBED SAMPLE — PUSHED; 0.45 Torvane (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
UU = Unconsolidated, Undrained
CU = Consolidated, Undrained
HYD = Hydrometer
SS = Soluble Salt
DC = Dispersive Clay

DRILL HOLE LOG

BORING NO. 08-AF2-B2

PROJECT: I-15 UTAH COUNTY CORRIDOR - AF2, I-15 OVER AM. FORK 200 SOUTH
CLIENT: UTAH DEPARTMENT OF TRANSPORTATION
LOCATION: N:306,995 E:555,448
DRILLING METHOD: 08-CME-55 / N.W. CASING TO 50'
DRILLER: D. SAMPSON
DEPTH TO WATER - INITIAL: ▽ 21.0' **AFTER 24 HOURS:** ▼ N.M.

PROJECT NUMBER: 200801.200
DATE STARTED: 12/16/08
DATE COMPLETED: 12/17/08
GROUND ELEVATION: 4572.2'
LOGGED BY: M. HANSEN, J. BOONE

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Rec. (in)	See Legend	USCS (AASHTO)	Material Description		Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
			☒	16	Pushed *0.45* *0.22*	ML	gray-brown, wet, soft to firm	SILT plastic	81.0	36.6	34	8	0	0	100	CT UU
4520																
	55		■	0	2,2,3,(5)	-	no recovery									
4515			■	18	2,5,5,(9) *0.32*	CL (*A-4(6)*)	dk. gray, moist, firm			25.5	28	9	0	19	81	
	60		☒	5	Pushed *0.30*	CL	dk. gray, moist, firm									
4510								LEAN CLAY silt lenses								
	65		☒	18	Pushed *0.40*	CL	dk. gray, moist, firm									
4505																
	70		■	18	5,7,9,(14) *0.60*	CL	dk. gray, moist, stiff									
4500																
	75		■	16	21,24,26,(41)	SM (*A-2-4(0)*)	dk. gray, wet, dense	SILTY SAND		20.3		NP	0	75	25	
4495																
	80		■	18	0,5,10,(12) *0.43*	CL	gray, moist, firm	LEAN CLAY								
4490						ML	gray-brown, wet	SILT W/SAND plastic, many sand & clay lenses & layers to 0.25" thick								
	85		☒	9	Pushed *0.31*	ML (*A-4(5)*)	gray-brown, wet, firm			20.4	34	7	0	24	76	
4485																
	90		■	14	31,31,40,(55)	GM	gray-brown, wet, dense									
4480								SILTY GRAVEL W/SAND possible cobbles								
	95		■	14	32,61,45,(80)	GM (*A-1-b*)	gray-brown, wet, very dense			9.0		NP	45	39	16	
4475																

DH_LOGV1 08-AF2.GPJ US EVAL.GDT 4/14/09

RB&G ENGINEERING, INC.

LEGEND:

DISTURBED SAMPLE ■ 2,3,2,(6) ← Blow Count per 6"; $(N_1)_{60}$ Value; *0.45* ← Torvane (tsf)

UNDISTURBED SAMPLE ☒ PUSHED *0.45* ← Torvane (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
UU = Unconsolidated, Undrained
CU = Consolidated, Undrained
HYD = Hydrometer
SS = Soluble Salt
DC = Dispersive Clay

DRILL HOLE LOG

BORING NO. 08-AF2-B2

PROJECT: I-15 UTAH COUNTY CORRIDOR - AF2, I-15 OVER AM. FORK 200 SOUTH

CLIENT: UTAH DEPARTMENT OF TRANSPORTATION

LOCATION: N:306,995 E:555,448

DRILLING METHOD: 08-CME-55 / N.W. CASING TO 50'

DRILLER: D. SAMPSON

DEPTH TO WATER - INITIAL: ▽ 21.0' **AFTER 24 HOURS:** ▼ N.M.

PROJECT NUMBER: 200801.200

DATE STARTED: 12/16/08

DATE COMPLETED: 12/17/08

GROUND ELEVATION: 4572.2'

LOGGED BY: M. HANSEN, J. BOONE

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	Sample USCS (AASHTO)	Material Description	Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
			■	6	71/6",(REF)	GM	gray-brown, wet, very dense								
4470															
	105														
4465															
	110														
4460															
	115														
4455															
	120														
4450															
	125														
4445															
	130														
4440															
	135														
4435															
	140														
4430															
	145														
4425															

DH_LOGV1 08-AF2.GPJ US EVAL.GDT 4/14/09

RB&G ENGINEERING, INC.

LEGEND:

DISTURBED SAMPLE ■ 2,3,2,(6) ← Blow Count per 6" / $(N_1)_{60}$ Value; *0.45* ← Torvane (tsf)

UNDISTURBED SAMPLE ▨ PUSHED; *0.45* ← Torvane (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
UU = Unconsolidated, Undrained
CU = Consolidated, Undrained
HYD = Hydrometer
SS = Soluble Salt
DC = Dispersive Clay

DRILL HOLE LOG

BORING NO. 08-AF3-B1

PROJECT: I-15 UTAH COUNTY CORRIDOR - AF3, I-15 OVER AM. FORK CREEK
CLIENT: UTAH DEPARTMENT OF TRANSPORTATION
LOCATION: N:305,270 E:558,006
DRILLING METHOD: 96-CME-55 / N.W. CASING TO 45'
DRILLER: L. HILER, D. SAMPSON
DEPTH TO WATER - INITIAL: N.M. **AFTER 24 HOURS:** 18.7'

PROJECT NUMBER: 200801.200
DATE STARTED: 9/24/08
DATE COMPLETED: 9/29/08
GROUND ELEVATION: 4574.1'
LOGGED BY: J.P., C.S., J.B.

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	USCS (AASHTO)	Material Description		Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
				14	3,7,7,(29)	GP (*A-1-a*)	brown-gray, moist, med. dense, angular	GRAVEL W/SAND possible cobbles (fill)		2.5		NP	69	27	4	
4570	5			12	8,11,9,(42)	GP	gray, moist, med. dense, angular	GRAVEL W/SAND slag, possible cobbles (fill)								
4565	10			9	11,20,13,(53)	GP-GM (*A-1-a*)	brown, moist, dense, angular			6.4		NP	65	24	11	
4560	15			0	16,25,26,(68)	-	no recovery	GRAVEL W/SILT & SAND possible cobbles								
4555	20			15	3,0,2,(2) *0.35*	GP-GM CL-ML (*A-4(2)*)	brown, wet brown, wet, firm	SILTY CLAY W/SAND sand lenses & layers to 3" thick		30.0	25	5	0	20	80	
4550	25			4	12,13,10,(26)	GP-GM	gray, wet, loose	GRAVEL W/SILT & SAND possible cobbles								
4545	30			17	3,3,2,(5) *0.20* *0.39*	ML (*A-4(2)*)	brown, wet, soft to firm	SILT W/SAND plastic, sandy silt layers		28.0	26	4	0	20	80	
4540	35			13	13,2,2,(4)	GP-GM SM	gray, wet, med. dense brown, wet, very loose	GRAVEL W/SILT & SAND SILTY SAND								
4535	40			14	5,5,2,(7)	SM (*A-1-b*) SP-SM GM	brown-gray, wet, loose red-brown, wet, loose dk. gray, wet, very loose	SILTY SAND W/GRAVEL SAND W/SILT SILTY GRAVEL W/SAND clay lenses		14.2		NP	19	66	15	
4530	45			18	Pushed *0.56*	CL	gray, moist, stiff	LEAN CLAY sand lenses								
4525																

DH_LOGV1 08-AF3.GPJ US EVAL.GDT 2/21/09

RB&G ENGINEERING, INC.

LEGEND:

DISTURBED SAMPLE — 2,3,2,(6) — Blow Count per 6"; *0.45* — Torvane (tsf); $(N_1)_{60}$ Value

UNDISTURBED SAMPLE — PUSHED *0.45* — Torvane (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
UU = Unconsolidated, Undrained
CU = Consolidated, Undrained
HYD = Hydrometer

DRILL HOLE LOG

BORING NO. 08-AF3-B1

PROJECT: I-15 UTAH COUNTY CORRIDOR - AF3, I-15 OVER AM. FORK CREEK
CLIENT: UTAH DEPARTMENT OF TRANSPORTATION
LOCATION: N:305,270 E:558,006
DRILLING METHOD: 96-CME-55 / N.W. CASING TO 45'
DRILLER: L. HILER, D. SAMPSON
DEPTH TO WATER - INITIAL: N.M. **AFTER 24 HOURS:** 18.7'

PROJECT NUMBER: 200801.200
DATE STARTED: 9/24/08
DATE COMPLETED: 9/29/08
GROUND ELEVATION: 4574.1'
LOGGED BY: J.P., C.S., J.B.

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	USCS (AASHTO)	Material Description	Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
			■	18	1,0,1,(1) *0.26*	CL	gray, moist, firm — LEAN CLAY sand lenses								
4520	55		☒	18	Pushed *0.21*	CH (*A-7-6(38)*)	gray, wet, soft — FAT CLAY	67.3	55.0	57	33	0	0	100	CT UU
4515	60		■	18	0,2,4,(5) *0.39*	CL	gray, moist, firm — LEAN CLAY								
4510	65		■	18	1,2,3 *0.54*	CL (*A-4(7)*)	gray, moist, stiff, attempted shelby first (disturbed blow count)		22.3	29	9	0	9	91	
4505	70		☒	18	Pushed	CL (*A-4(4)*) SM	gray, moist; gray, wet		20.2	26	6	0	11	89	
			■	18	1,2,10,(10)	SM	gray, wet, loose — SILTY SAND vertical clay layers								
4500	75														
4495	80		■	11	4,10,13,(19)	ML (*A-4(0)*)	gray, wet, med. dense — SANDY SILT clay lenses & layers		21.3		NP	0	32	68	
4490	85						LEAN CLAY sand lenses								
4485	90		■	18	*0.42* 1,3,20,(18)	CL (*A-6(20)*) GP-GM	dk. gray, moist, firm; gray, wet		29.7	39	20	0	4	96	
4480	95						GRAVEL W/SILT & SAND (dense gravel to 100' - driller's observation)								
4475															

LEGEND:

DISTURBED SAMPLE ■ 2,3,2,(6) — Blow Count per 6"; $(N_1)_{60}$ Value
0.45 — Torvane (tsf)

UNDISTURBED SAMPLE ☒ PUSHED
0.45 — Torvane (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
UU = Unconsolidated, Undrained
CU = Consolidated, Undrained
HYD = Hydrometer

RB&G ENGINEERING, INC.

DRILL HOLE LOG

BORING NO. 08-AF3-B2

PROJECT: I-15 UTAH COUNTY CORRIDOR - AF3, I-15 OVER AM. FORK CREEK
CLIENT: UTAH DEPARTMENT OF TRANSPORTATION
LOCATION: N:305,171 E:557,891
DRILLING METHOD: CME-75 / N.W. CASING TO 48'
DRILLER: M.W. (BEDKE)
DEPTH TO WATER - INITIAL: ▽ N.M. **AFTER 24 HOURS:** ▼ 17.5'

PROJECT NUMBER: 200801.200
DATE STARTED: 9/24/08
DATE COMPLETED: 9/25/08
GROUND ELEVATION: 4574.8'
LOGGED BY: M. HANSEN, J. BOONE

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	Sample USCS (AASHTO)	Material Description		Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
				12	8,10,9,(44)	GP-GM	gray, slightly moist, med. dense									
4570	5			12	5,10,18,(65)	GP-GM (*A-1-a*)	gray, moist, dense	GRAVEL W/SILT & SAND slag (fill)		8.0		NP	56	37	7	
4565	10			7	7,7,3,(19)	GP-GM	gray, moist, loose									
4560	15			2	3,2,3,(8)	GM	brown, very moist, very loose									
4555	20			11	7,19,20,(52)	GM (*A-1-a*)	brown, wet, dense	SILTY GRAVEL W/SAND possible cobbles, very loose layers		6.6		NP	47	40	13	
				1	14,1/12",(1)	GM	brown, wet, very loose									
4550	25			10	7,7,10,(21)	GM	brown, wet, loose									
4545	30			9	5,5,4,(11)	SM (*A-1-b*)	brown, wet, med. dense	SILTY SAND W/GRAVEL		10.8		NP	43	43	14	3% -0.005 mm
				12	14,15,19,(40)	GP-GM (*A-1-a*)	brown, wet, med. dense	GRAVEL W/SILT & SAND possible cobbles		6.2		NP	46	42	12	
4540	35			5	7,3,7,(11)	GP-GM	brown, wet, very loose									
				14	1,2,7,(10) *0.30*	ML (*A-4(10)*)	lt. brown, moist, firm	SILT plastic, sandy silt layers		21.5	35	10	0	6	94	
4535	40			15	*0.36* 1,8,5,(14)	ML GM SM	brown, moist, firm ~~brown, wet~~ brown, wet, med. dense	SILTY GRAVEL W/SAND SILTY SAND								
4530	45			17	10,15,16,(32)	ML (*A-4(0)*)	gray, wet, dense	SANDY SILT		22.3		NP	2	42	56	11% -0.005 mm
				18	1,4,8,(12) *0.61*	ML	gray, moist, stiff	SILT plastic, sandy silt layers								

DH_LOGV1 08-AF3.GPJ US EVAL.GDT 2/21/09

RB&G ENGINEERING, INC.

LEGEND:

DISTURBED SAMPLE: 2,3,2,(6) — Blow Count per 6"; $(N_1)_{60}$ Value; *0.45* — Torvane (tsf)

UNDISTURBED SAMPLE: PUSHED; *0.45* — Torvane (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
UU = Unconsolidated, Undrained
CU = Consolidated, Undrained
HYD = Hydrometer

DRILL HOLE LOG

BORING NO. 08-AF3-B2

PROJECT: I-15 UTAH COUNTY CORRIDOR - AF3, I-15 OVER AM. FORK CREEK
CLIENT: UTAH DEPARTMENT OF TRANSPORTATION
LOCATION: N:305,171 E:557,891
DRILLING METHOD: CME-75 / N.W. CASING TO 48'
DRILLER: M.W. (BEDKE)
DEPTH TO WATER - INITIAL: ▽ N.M. **AFTER 24 HOURS:** ▼ 17.5'

PROJECT NUMBER: 200801.200
DATE STARTED: 9/24/08
DATE COMPLETED: 9/25/08
GROUND ELEVATION: 4574.8'
LOGGED BY: M. HANSEN, J. BOONE

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	Sample USCS (AASHTO)	Material Description	Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
4520	55		⊠	18	Pushed *0.81*	CL (*A-7-6(24)*)	gray, moist, stiff LEAN CLAY	74.8	45.0	46	21	0	0	100	CT UU
4515	60		■	18	0/17",1/1",(1) *0.33*	CL	gray, moist, firm								
4510	65		⊠	18	Pushed *0.31*	CL (*A-6(21)*)	gray, moist, firm	94.2	32.8	40	21	0	5	95	UC UU
4505	70		■	18	0/13",4/5",(4) *0.42*	CL	gray-brown, moist, firm LEAN CLAY silt lenses								
4500	75		⊠	8	Pushed *0.41*	CL (*A-7-6(30)*)	lt. gray, moist, firm	80.1	39.9	49	26	0	0	100	CT
4495	80														
4490	85														
4485	90														
4480	95														

DH_LOGV1 08-AF3.GPJ US EVAL.GDT 2/21/09

RB&G ENGINEERING, INC.

LEGEND:

DISTURBED SAMPLE ■ 2,3,2,(6) ← Blow Count per 6"; $(N_1)_{60}$ Value
0.45 ← Torvane (tsf)

UNDISTURBED SAMPLE ⊠ PUSHED
0.45 ← Torvane (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
UU = Unconsolidated, Undrained
CU = Consolidated, Undrained
HYD = Hydrometer

DRILL HOLE LOG

BORING NO. 08-AF4-B1

PROJECT: I-15 UTAH COUNTY CORRIDOR - AF4, I-15 OVER AM. FORK 100 EAST
CLIENT: UTAH DEPARTMENT OF TRANSPORTATION
LOCATION: N:304,504 E:558,636
DRILLING METHOD: CME-75 / N.W. CASING TO 82'
DRILLER: M. WAYMENT
DEPTH TO WATER - INITIAL: ▽ 4.0' **AFTER 24 HOURS:** ▼ N.M.

PROJECT NUMBER: 200801.200
DATE STARTED: 9/4/08
DATE COMPLETED: 9/8/08
GROUND ELEVATION: 4561.7'
LOGGED BY: M. HANSEN, J. BOONE

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	USCS (AASHTO)	Material Description	Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
4560				0.5	5,12,9,(49)	GM	brown, slightly moist, med. dense								
							SILTY GRAVEL W/SAND possible cobbles								
4555	5			16	5,2,0,(5)	GM (A-1-b)	brown to gray, slightly moist, very loose		5.6		NP	41	39	20	
							SILTY CLAY (driller's observation) very soft								
4550	10			14	2,2,2,(7) 0.15	GC-GM CL-ML (A-4(3))	brown, wet								
							SILTY CLAYEY GRAVEL W/SAND								
							gray-brown, moist, soft		19.6	24	5	0	8	92	
							SILTY CLAY organics								
4545	15			15	Pushed	CL-ML ML	gray-brown, moist; brown, wet								
				18	3,3,4,(11)	ML (A-4(0))	brown, wet, med. dense		26.6		NP	0	31	69	17% -0.005 mm
							SANDY SILT								
4540	20			17	0,1,2,(5) 0.55	CL (A-6(12))	brown, moist, stiff		30.7	34	13	0	8	92	48% -0.005 mm
							LEAN CLAY silty sand lenses & layers to 2" thick								
4535	25			10	4,18,17,(50)	GP-GM	gray, wet, dense								
							GRAVEL W/SILT & SAND possible cobbles								
4530	30			10	4,9,20,(39)	GP-GM (A-1-a)	gray, wet, med. dense		7.2		NP	65	26	9	
4525	35			14	39,25,17,(53)	SM	brown, wet, very dense								
							SILTY SAND W/GRAVEL								
							CLAY (driller's observation)								
							GRAVELS (driller's observation)								
4520	40			18	3,4,5,(11) 0.51	CL	gray-brown, moist, stiff								
							LEAN CLAY few silt lenses, angled bedding in 50' sample								
4515	45			16	Pushed 0.96	CL (A-7-6(23))	gray-brown, moist, stiff	94.3	21.8	42	21	0	1	99	CT UC UU

DH_LOGV1 08-AF4.GPJ US EVAL.GDT 2/21/09

RB&G ENGINEERING, INC.

LEGEND:

DISTURBED SAMPLE ■ 2,3,2,(6) ← Blow Count per 6"; ← $(N_1)_{60}$ Value; 0.45 ← Torvane (tsf)

UNDISTURBED SAMPLE ☒ PUSHED; 0.45 ← Torvane (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
UU = Unconsolidated, Undrained
CU = Consolidated, Undrained
HYD = Hydrometer

DRILL HOLE LOG

BORING NO. 08-AF4-B1

PROJECT: I-15 UTAH COUNTY CORRIDOR - AF4, I-15 OVER AM. FORK 100 EAST

CLIENT: UTAH DEPARTMENT OF TRANSPORTATION

LOCATION: N:304,504 E:558,636

DRILLING METHOD: CME-75 / N.W. CASING TO 82'

DRILLER: M. WAYMENT

DEPTH TO WATER - INITIAL: ▽ 4.0' **AFTER 24 HOURS:** ▼ N.M.

PROJECT NUMBER: 200801.200

DATE STARTED: 9/4/08

DATE COMPLETED: 9/8/08

GROUND ELEVATION: 4561.7'

LOGGED BY: M. HANSEN, J. BOONE

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	Sample USCS (AASHTO)	Material Description		Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
4510				18	1,5,5,(11) 0.75	CL (A-6(19))	gray-brown, very moist, stiff			40.3	39	18	0	3	97	
4505	55			17	Pushed 0.81	CL (A-7-6(26))	gray-brown, moist, stiff	LEAN CLAY few silt lenses, angled bedding in 50' sample	93.3	31.8	46	23	0	0	100	CT UC UU
4500	60			18	5,4,6,(10) 0.70	CL	mottled lt. & dk. gray, moist, stiff	LEAN CLAY sand lenses at ~75° angle								
4495	65			6	Pushed	SM	dk. gray, wet									
				18	12,16,21,(36)	SM (A-2-4(0))	dk. gray, wet, dense			17.6		NP	0	84	16	
4490	70			10	19,24,30,(51)	SM	dk. gray, wet, dense	SILTY SAND few thin clay layers (driller's observation)								
4485	75			14	8,4,15,(17) 0.25	SM CL (A-7-6(13))	dk. gray, wet; mottled brown & dk. gray, moist, soft	LEAN CLAY		27.5	41	21	0	30	70	
4480	80			18	9,13,31,(39) 0.82	SM	dk. gray, wet, dense	SILTY SAND possible thin clay layers (driller's observation)								
4475	85			16	6,16,21,(32) 0.66	SM ML (A-4(0))	dk. gray, wet; gray, wet, dense	SANDY SILT		17.7	21	2	0	21	79	
4470	90			15	38,46,39,(72)	SM (A-1-b)	gray & brown, wet, dense			9.1		NP	40	43	17	
4465	95			6	35,50/5"	SM	gray & brown, wet, very dense	SILTY SAND W/GRAVEL possible cobbles, drilled like granular to 101'								

DH_LOGV1 08-AF4.GPJ US EVAL.GDT 2/21/09

RB&G ENGINEERING, INC.

LEGEND:

DISTURBED SAMPLE — 2,3,2,(6) — Blow Count per 6"; $(N_1)_{60}$ Value; 0.45 — Torvane (tsf)

UNDISTURBED SAMPLE — PUSHED 0.45 — Torvane (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
UU = Unconsolidated, Undrained
CU = Consolidated, Undrained
HYD = Hydrometer

DRILL HOLE LOG

BORING NO. 08-AF4-B1

PROJECT: I-15 UTAH COUNTY CORRIDOR - AF4, I-15 OVER AM. FORK 100 EAST

CLIENT: UTAH DEPARTMENT OF TRANSPORTATION

LOCATION: N:304,504 E:558,636

DRILLING METHOD: CME-75 / N.W. CASING TO 82'

DRILLER: M. WAYMENT

DEPTH TO WATER - INITIAL: ▽ 4.0' **AFTER 24 HOURS:** ▼ N.M.

PROJECT NUMBER: 200801.200

DATE STARTED: 9/4/08

DATE COMPLETED: 9/8/08

GROUND ELEVATION: 4561.7'

LOGGED BY: M. HANSEN, J. BOONE

Elev. (ft)	Depth (ft)	Lithology	Sample: Type	Sample: Rec. (in)	Sample: See Legend	Sample: USCS (AASHTO)	Material Description	Dry Density (pcf)	Moisture Content (%)	Atter.: Liquid Limit	Atter.: Plast. Index	Gradation: Gravel (%)	Gradation: Sand (%)	Gradation: Silt/Clay (%)	Other Tests
4460															
	105														
4455															
	110														
4450															
	115														
4445															
	120														
4440															
	125														
4435															
	130														
4430															
	135														
4425															
	140														
4420															
	145														
4415															

DH_LOGV1 08-AF4.GPJ US EVAL.GDT 2/21/09

RB&G ENGINEERING, INC.

LEGEND:

DISTURBED SAMPLE — 2,3,2,(6) ← Blow Count per 6"; ← $(N_1)_{60}$ Value; 0.45 ← Torvane (tsf)

UNDISTURBED SAMPLE — PUSHED; 0.45 ← Torvane (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
UU = Unconsolidated, Undrained
CU = Consolidated, Undrained
HYD = Hydrometer

DRILL HOLE LOG

BORING NO. 08-AF4-B2

PROJECT: I-15 UTAH COUNTY CORRIDOR - AF4, I-15 OVER AM. FORK 100 EAST
CLIENT: UTAH DEPARTMENT OF TRANSPORTATION
LOCATION: N:304,795 E:558,595
DRILLING METHOD: 08-CME 55 / N.W. CASING TO 65'
DRILLER: D. SAMPSON
DEPTH TO WATER - INITIAL: ▽ 6.1' **AFTER 24 HOURS:** ▼ N.M.

PROJECT NUMBER: 200801.200
DATE STARTED: 12/11/08
DATE COMPLETED: 12/15/08
GROUND ELEVATION: 4565.9'
LOGGED BY: M. HANSEN, J. BOONE

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	Sample USCS (AASHTO)	Material Description		Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
4565			■	12	32,21,41,(99+)	SC	dk. gray-brown, dry, very dense	CLAYEY SAND W/GRAVEL gravel is slag								
4560 ▽	5		■	9	4,4,10,(32)	GP-GM (A-1-a)	brown, moist, med. dense	GRAVEL W/SILT & SAND		8.3		NP	61	28	11	
			■	2	3,2,1,(6)	GP-GM	brown, wet, very loose									
4555	10		■	15	3,3,1,(8) 0.20	GP-GM CL (A-4(4))	brown, wet / brown, moist, soft	SANDY LEAN CLAY		29.1	31	10	0	38	62	25% -0.005 mm
			⊠	18	Pushed 0.32	ML (A-4(2))	brown, moist	SILT W/SAND		25.3	26	4	0	26	74	CT
4550	15		■	11	1,2,2,(7) 0.30	CL (A-6(14))	brown, moist, firm / brown, moist, firm	LEAN CLAY W/SAND	94.5	27.1	37	18	0	19	81	UC
			■	18	1,1,2,(5)	ML (A-4(0))	brown, wet, loose	SANDY SILT		28.4		NP	0	46	54	14% -0.005 mm
4545	20		■	16	2,2,3,(8) 0.15	CL	lt. brown, moist, soft	LEAN CLAY sand lenses & layers to 1" thick								
			■	17	2,3,3,(9) 0.35	CL	lt. brown, moist, firm									
4540	25		■	12	1,4,5,(13)	SM (A-4(0))	brown, wet, med. dense	SILTY SAND W/GRAVEL		19.1		NP	21	37	42	14% -0.005 mm
4535	30		■	10	10,10,14,(32)	GP-GM	gray-brown, wet, med. dense	GRAVEL W/SILT & SAND possible cobbles								
4530	35		■	12	20,17,25,(53)	GP-GM (A-1-a)	gray-brown, wet, dense			7.1		NP	62	30	8	
4525	40		⊠	18	Pushed 0.49	CL (A-6(12))	lt. brown, moist, firm		99.8	16.0	35	12	3	4	93	CT UU
4520	45		■	18	3,4,5,(10) 0.40	CL	gray-brown, moist, firm	LEAN CLAY silt lenses								

DH_LOGV1 08-AF4.GPJ US EVAL.GDT 2/21/09

RB&G ENGINEERING, INC.

LEGEND:

DISTURBED SAMPLE ■ 2,3,2,(6) ← Blow Count per 6"; $(N_1)_{60}$ Value
0.45 ← Torvane (tsf)

UNDISTURBED SAMPLE ⊠ PUSHED
0.45 ← Torvane (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
UU = Unconsolidated, Undrained
CU = Consolidated, Undrained
HYD = Hydrometer

DRILL HOLE LOG

BORING NO. 08-AF4-B2

PROJECT: I-15 UTAH COUNTY CORRIDOR - AF4, I-15 OVER AM. FORK 100 EAST
CLIENT: UTAH DEPARTMENT OF TRANSPORTATION
LOCATION: N:304,795 E:558,595
DRILLING METHOD: 08-CME 55 / N.W. CASING TO 65'
DRILLER: D. SAMPSON
DEPTH TO WATER - INITIAL: ▽ 6.1' **AFTER 24 HOURS:** ▼ N.M.

PROJECT NUMBER: 200801.200
DATE STARTED: 12/11/08
DATE COMPLETED: 12/15/08
GROUND ELEVATION: 4565.9'
LOGGED BY: M. HANSEN, J. BOONE

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	Sample USCS (AASHTO)	Material Description		Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
4515			☒	18	Pushed *0.42*	CL (*A-7-6(20)*)	gray, moist, firm		86.9	36.5	41	18	0	0	100	UU
	55							LEAN CLAY silt lenses & layers to 0.5" thick								
4510			■	18	3,3,5,(8) *0.75*	CL	brown & gray, moist, stiff									
	60															
4505			☒	17	Pushed *0.63*	CL (*A-7-6(22)*)	gray, moist, stiff	LEAN CLAY sand layers to 6" thick	80.5	39.6	45	22	0	9	91	CT UC
	65															
4500			⊠	4	Pushed	CL	gray, moist									
			■	16	11,12,19,(30)	ML (*A-4(0)*)	dk. gray, wet, med. dense	SANDY SILT		18.8		NP	1	48	51	
	70															
4495			■	16	13,16,17,(31)	ML (*A-4(0)*)	dk. gray, wet, dense			22.6	22	3	0	20	80	
	75							SILT W/SAND plastic, few sand lenses								
4490			■	16	7,10,16,(24) *0.35*	ML	dk. gray, wet, med. dense									
	80							SILTY SAND								
4485						SM	dk. gray, wet									
			■	18	7,11,26,(32) *0.52*	CL (*A-4(5)*)	dk. gray, moist, stiff	LEAN CLAY		21.1	27	7	0	7	93	
						SM	dk. gray, wet, dense									
	85															
4480			■	16	24,37,37,(63)	SM (*A-1-b*)	dk. gray, wet, very dense	SILTY SAND		14.8		NP	11	72	17	
	90							SILTY CLAY W/SAND								
4475			■	17	20,23,40,(52)	CL-ML (*A-4(1)*)	gray-brown, moist, very stiff			21.8	25	4	0	29	71	
						GM	brown, wet	SILTY GRAVEL W/SAND								
	95							SILTY SAND silt lenses & layers								
4470			■	16	15,20,21,(33)	SM	brown, wet, dense									
								SILTY GRAVEL W/SAND possible cobbles								

DH_LOGV1 08-AF4.GPJ US EVAL.GDT 2/21/09

RB&G ENGINEERING, INC.

LEGEND:

DISTURBED SAMPLE ■ 2,3,2,(6) ← Blow Count per 6"; ← $(N_1)_{60}$ Value; *0.45* ← Torvane (tsf)

UNDISTURBED SAMPLE ⊠ PUSHED *0.45* ← Torvane (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
UU = Unconsolidated, Undrained
CU = Consolidated, Undrained
HYD = Hydrometer

DRILL HOLE LOG

BORING NO. 08-AF4-B2

PROJECT: I-15 UTAH COUNTY CORRIDOR - AF4, I-15 OVER AM. FORK 100 EAST

CLIENT: UTAH DEPARTMENT OF TRANSPORTATION

LOCATION: N:304,795 E:558,595

DRILLING METHOD: 08-CME 55 / N.W. CASING TO 65'

DRILLER: D. SAMPSON

DEPTH TO WATER - INITIAL: ▽ 6.1' **AFTER 24 HOURS:** ▼ N.M.

PROJECT NUMBER: 200801.200

DATE STARTED: 12/11/08

DATE COMPLETED: 12/15/08

GROUND ELEVATION: 4565.9'

LOGGED BY: M. HANSEN, J. BOONE

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	Sample USCS (AASHTO)	Material Description	Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
4465				11	53,58/6",(REF)	GM	gray-brown, wet, v. dense								
4460	105														
4455	110														
4450	115														
4445	120														
4440	125														
4435	130														
4430	135														
4425	140														
4420	145														

DH_LOGV1 08-AF4.GPJ US EVAL.GDT 2/21/09

RB&G ENGINEERING, INC.

LEGEND:

DISTURBED SAMPLE: 2,3,2,(6) — Blow Count per 6"; $(N_1)_{60}$ Value; 0.45 — Torvane (tsf)

UNDISTURBED SAMPLE: PUSHED; 0.45 — Torvane (tsf)

OTHER TESTS

UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
UU = Unconsolidated, Undrained
CU = Consolidated, Undrained
HYD = Hydrometer

DRILL HOLE LOG

BORING NO. 08-AF5-B1

PROJECT: I-15 UTAH COUNTY CORRIDOR - AF5, A. FORK 500 E (SR-180) OVER I-15

CLIENT: UTAH DEPARTMENT OF TRANSPORTATION

LOCATION: N:302,445 E:561,407

DRILLING METHOD: 96-CME 55 / N.W. CASING TO 15'

DRILLER: L. HILER

DEPTH TO WATER - INITIAL: ▽ 4.0' **AFTER 24 HOURS:** ▼ 4.2'

PROJECT NUMBER: 200801.200

DATE STARTED: 8/19/08

DATE COMPLETED: 8/21/08

GROUND ELEVATION: 4546.9'

LOGGED BY: J. PRICE, J. BOONE

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	Sample USCS (AASHTO)	Material Description		Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
4545			■	15	6,7,12,(40)	CL-ML	brown, slightly moist, stiff	SILTY CLAY W/SAND & GRAVEL								
	5		■	20	0/20",(0) *0.45*	MH (*A-7-5(19)*)	brown, moist, firm	ELASTIC SILT organics, shells		40.6	51	19	0	16	84	
4540	10		■	21	0/21",(0) *0.15*	CL-ML (*A-4(1)*)	brown, wet, soft	SILTY CLAY W/SAND organics, 1" sand layer in sample		30.4	24	5	7	23	70	
4535	15		■	20	*0.45* 1,0,1/8",(2)	CL (*A-4(3)*) ML	brown to gray, very moist, firm; brown, wet	SANDY LEAN CLAY; SANDY SILT		25.2	24	8	0	35	65	24% -0.005 mm
4530	20		⊠ ■	16 18	Pushed *0.39* 2,4,5,(14) *0.35*	CL (*A-4(6)*) CL	gray, moist, firm; gray, moist, firm	LEAN CLAY W/SAND silt lenses & layers to 3" thick	79.7	31.6	31	8	0	17	83	CU
4525	25		■	18	2,2,4,(9) *0.30*	CL-ML (*A-4(1)*)	gray, very moist to wet, firm, 2" sand layer	SANDY SILTY CLAY 2" sand layer in sample		28.8	23	5	0	30	70	22% -0.005 mm
4520	30		■	18	4,2,5,(10) *0.40*	SM,ML, CL-ML	brown, moist/wet, firm/loose	INTERBEDDED SILTY SAND, SILT & SANDY SILTY CLAY W/SAND LAYERS 1" TO 8" THICK								
4515	35		■	18	4,3,9,(15) *0.70*	SM (*A-2-4(0)*) SM (*A-4(0)*) CL-ML (*A-4(3)*)	brown, moist/wet, stiff/med. dense			16.7		NP	0	87	13	
										18.2	18	3	0	58	42	
4510										21.3	25	7	3	27	70	
4505	40		■	18	13,9,8,(20)	SM	brown, wet, med. dense	SILTY SAND few 1" clay layers								
								GRAVELS (driller's observation)								
4500	45		■	18	4,7,7,(16)	ML (*A-4(2)*)	gray, wet, med. dense	SANDY SILT plastic, occasional clay lenses & layers		23.4	31	6	1	43	56	
								LEAN CLAY								

LEGEND:

DISTURBED SAMPLE ■ 2,3,2,(6) ← Blow Count per 6"; $(N_1)_{60}$ Value
0.45 ← Torvane (tsf)

UNDISTURBED SAMPLE ⊠ PUSHED
0.45 ← Torvane (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
UU = Unconsolidated, Undrained
CU = Consolidated, Undrained
HYD = Hydrometer

RB&G ENGINEERING, INC.

DRILL HOLE LOG

BORING NO. 08-AF5-B1

PROJECT: I-15 UTAH COUNTY CORRIDOR - AF5, A. FORK 500 E (SR-180) OVER I-15
CLIENT: UTAH DEPARTMENT OF TRANSPORTATION
LOCATION: N:302,445 E:561,407
DRILLING METHOD: 96-CME 55 / N.W. CASING TO 15'
DRILLER: L. HILER
DEPTH TO WATER - INITIAL: ▽ 4.0' **AFTER 24 HOURS:** ▼ 4.2'

PROJECT NUMBER: 200801.200
DATE STARTED: 8/19/08
DATE COMPLETED: 8/21/08
GROUND ELEVATION: 4546.9'
LOGGED BY: J. PRICE, J. BOONE

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	Sample USCS (AASHTO)	Material Description	Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
			■	5	4,6,8,(15) *0.52*	CL	gray, moist, stiff LEAN CLAY								
4495															
	55		⊠	14	Pushed *1.13*	CL (*A-7-6(23)*)	gray, moist, very stiff	95.0	27.9	44	21	0	0	100	CT UU
4490															
	60		■	18	3,4,5,(9) *1.25*	CL	gray, moist, very stiff LEAN CLAY few silt lenses at ~45° angle								
4485															
	65		⊠	16	Pushed *0.55*	CL-ML (*A-4(5)*)	gray, moist, stiff SILTY CLAY many silt lenses at ~45° angle	104.6	21.2	25	7	2	4	94	CT
4480															
	70		■	14	1,3,5,(7) *0.50*	CL	gray, moist, firm to stiff LEAN CLAY angled silt lenses								
4475															
	75		⊠	17	Pushed *0.70*	CL (*A-7-6(24)*)	gray, moist, stiff	86.6	31.9	45	21	0	0	100	CT UU
4470															
	80		■	18	0,5,9,(12) *0.75*	CL	LEAN CLAY occasional silt lenses gray, moist, stiff								
4465															
	85		■	17	10,12,17,(25) *0.65*	CL	GRAVELS (driller's observation) gray, moist, stiff LEAN CLAY silt lenses & layers to 0.5" thick								
4460															
	90		⊠	16	Pushed *0.80*	CL (*A-6(19)*)	gray to black, moist, stiff LEAN CLAY	99.3	22.6	36	19	0	3	97	CT UC
4455															
	95		■	16	*0.50* 8,10,12,(18)	CL ML	gray, moist, stiff gray, wet, med. dense SANDY SILT								
4450															

DH_LOGV1 08-AF5.GPJ US EVAL.GDT 2/21/09

RB&G ENGINEERING, INC.

LEGEND:

DISTURBED SAMPLE ■ 2,3,2,(6) ← Blow Count per 6"; ← $(N_1)_{60}$ Value; *0.45* ← Torvane (tsf)

UNDISTURBED SAMPLE ⊠ PUSHED *0.45* ← Torvane (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
UU = Unconsolidated, Undrained
CU = Consolidated, Undrained
HYD = Hydrometer

DRILL HOLE LOG

BORING NO. 08-AF5-B1

PROJECT: I-15 UTAH COUNTY CORRIDOR - AF5, A. FORK 500 E (SR-180) OVER I-15

CLIENT: UTAH DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 200801.200

LOCATION: N:302,445 E:561,407

DATE STARTED: 8/19/08

DRILLING METHOD: 96-CME 55 / N.W. CASING TO 15'

DATE COMPLETED: 8/21/08

DRILLER: L. HILER

GROUND ELEVATION: 4546.9'

DEPTH TO WATER - INITIAL: ▽ 4.0' **AFTER 24 HOURS:** ▼ 4.2'

LOGGED BY: J. PRICE, J. BOONE

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	Sample USCS (AASHTO)	Material Description	Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
4445				18	7,10,19,(23)	ML (A-4(0))	gray, wet, med. dense SANDY SILT		25.5		NP	1	30	69	
4440	105			6	80/6",(REF)	GM	gray, wet, very dense SILTY GRAVEL W/SAND possible cobbles								
4435	110			11	36,100/6", (REF)	SM (A-1-a)	gray, wet, very dense SILTY SAND W/GRAVEL possible cobbles		10.2		NP	36	50	14	
4430	115			16	44,65,62,(88)	GM	gray, wet, very dense SILTY GRAVEL W/SAND possible cobbles								
4425	120			14	31,37,46,(56)	GM	gray, wet, dense								
4420	125														
4415	130														
4410	135														
4405	140														
4400	145														

DH_LOGV1 08-AF5.GPJ US EVAL.GDT 2/21/09

RB&G ENGINEERING, INC.

LEGEND:

DISTURBED SAMPLE ■ 2,3,2,(6) ← Blow Count per 6" / $(N_1)_{60}$ Value; 0.45 ← Torvane (tsf)

UNDISTURBED SAMPLE ☒ PUSHED; 0.45 ← Torvane (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
UU = Unconsolidated, Undrained
CU = Consolidated, Undrained
HYD = Hydrometer

DRILL HOLE LOG

BORING NO. 08-AF5-B2

PROJECT: I-15 UTAH COUNTY CORRIDOR - AF5, A. FORK 500 E (SR-180) OVER I-15

CLIENT: UTAH DEPARTMENT OF TRANSPORTATION

LOCATION: N:302,279 E:561,229

DRILLING METHOD: CME-75 / N.W. CASING TO 49.5'

DRILLER: D. BEDKE

DEPTH TO WATER - INITIAL: ▽ 3.2' **AFTER 24 HOURS:** ▼ 3.7' 8/20/08

PROJECT NUMBER: 200801.200

DATE STARTED: 8/18/08

DATE COMPLETED: 8/19/08

GROUND ELEVATION: 4544.4'

LOGGED BY: M. HANSEN, J. BOONE

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	Sample USCS (AASHTO)	Material Description		Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
4540	5		■	8	1/18",(2) *0.10*	CL-ML	lt. gray, very moist to wet, very soft	SANDY SILTY CLAY								
4535	10		■	8	9,10,15,(55)	GP-GM (*A-1-a*)	gray, wet, med. dense	GRAVEL W/SILT & SAND possible cobbles		7.4		NP	55	36	9	
4530	15		■	5	3,1,1,(4) *0.12*	ML (*A-4(0)*)	gray, wet, very soft	SILT W/SAND plastic, sand layers to 3" thick			25	3	3	31	66	
4525	20		■	11	1/18" *0.50*	ML (*A-4(3)*)	gray, wet, firm to stiff (attempted shelby first, disturbed blow count)			28.5	29	4	0	15	85	
4520	25		⊠	18	Pushed	CL	gray, moist	LEAN CLAY	98.5	26.5						DS
			■	16	1,4,7,(17) *0.32*	SM (*A-4(0)*) SM (*A-2-4(0)*)	gray, wet gray, wet, med. dense	SILTY SAND clay layers to 3" thick		17.7 21.9		NP NP	0 0	50 78	50 22	5% -0.005 mm
4515	30		■	10	12,12,13,(36)	GW-GM (*A-1-a*)	gray, wet, med. dense	GRAVEL W/SILT & SAND silt layers		7.8		NP	47	42	11	
4510	35		■	7	11,7,9,(21)	GW-GM ML	gray, wet, med. dense dk. gray, wet, med. dense									
4505	40		■	17	5,6,9,(19)	ML (*A-4(0)*)	dk. gray, wet, med. dense	SILT W/SAND silty clay layers to 2" thick		29.2		NP	0	20	80	13% -0.005 mm
4500	45		■	18	5,6,6,(15) *0.30*	SM,ML, CL-ML	dk. gray, moist/wet, firm/med. dense	INTERBEDDED SILTY SAND, SILTY CLAY & SANDY SILT LAYERS 1" TO 7" THICK								
			■	17	5,12,11,(27) *0.51*	SM,ML, CL-ML	dk. gray, moist/wet, stiff/med. dense									
4495								LEAN CLAY								

DH_LOGV1 08-AF5.GPJ US EVAL.GDT 2/21/09

RB&G ENGINEERING, INC.

LEGEND:

DISTURBED SAMPLE ■ 2,3,2,(6) ← Blow Count per 6"; ← $(N_1)_{60}$ Value; *0.45* ← Torvane (tsf)

UNDISTURBED SAMPLE ⊠ PUSHED *0.45* ← Torvane (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
UU = Unconsolidated, Undrained
CU = Consolidated, Undrained
HYD = Hydrometer

DRILL HOLE LOG

BORING NO. 08-AF5-B2

PROJECT: I-15 UTAH COUNTY CORRIDOR - AF5, A. FORK 500 E (SR-180) OVER I-15
CLIENT: UTAH DEPARTMENT OF TRANSPORTATION
LOCATION: N:302,279 E:561,229
DRILLING METHOD: CME-75 / N.W. CASING TO 49.5'
DRILLER: D. BEDKE
DEPTH TO WATER - INITIAL: ▽ 3.2' **AFTER 24 HOURS:** ▼ 3.7' 8/20/08

PROJECT NUMBER: 200801.200
DATE STARTED: 8/18/08
DATE COMPLETED: 8/19/08
GROUND ELEVATION: 4544.4'
LOGGED BY: M. HANSEN, J. BOONE

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	Sample USCS (AASHTO)	Material Description	Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
			Pushed	12	Pushed 1.03	CL (A-7-6(22))	gray, moist, very stiff	99.0	25.5	43	20	0	0	100	CT UU
4490	55			18	3,3,6,(10) 0.70	CL	LEAN CLAY gray, moist, stiff								
4485	60		Pushed	18	Pushed 0.79	CH (A-7-6(34))	gray, moist, stiff	86.4	35.1	50	31	0	0	100	UU
4480	65			18	0/18",(0) 0.85	CH	gray & dk. gray, moist, stiff								
4475	70		Pushed	18	Pushed 0.65	CH (A-7-6(32))	FAT CLAY few silt lenses, slight organic odor dk. gray, moist, stiff	79.3	42.4	52	28	0	0	100	CT UC
4470	75			18	0,5,7,(11) 0.66	CH	dk. gray, moist, stiff								
4465	80		Pushed	14	Pushed 0.60	CL (A-6(10))	dk. gray, moist, stiff	105.9	16.0	29	12	0	9	91	UC
4460	85			18	15,15,18,(29) 0.65	CL	dk. gray, moist, stiff LEAN CLAY silt lenses & layers to 0.25" thick, occasional silty clay layers to 2" thick								
4455	90		Pushed	18	Pushed 0.75	CL (A-6(19))	dk. gray, moist, stiff	92.8	30.7	39	17	0	0	100	CT UU
4450	95			18	0.30 8,10,18,(22)	CL-ML SM	SILTY CLAY dk. gray, very moist, firm dk. gray, wet, med. dense SILTY SAND								
4445															

DH_LOGV1 08-AF5.GPJ US EVAL.GDT 2/21/09

LEGEND:

DISTURBED SAMPLE — 2,3,2,(6) — Blow Count per 6" / $(N_1)_{60}$ Value; 0.45 — Torvane (tsf)

UNDISTURBED SAMPLE — PUSHED 0.45 — Torvane (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
UU = Unconsolidated, Undrained
CU = Consolidated, Undrained
HYD = Hydrometer

RB&G ENGINEERING, INC.

DRILL HOLE LOG

BORING NO. 08-AF5-B2

PROJECT: I-15 UTAH COUNTY CORRIDOR - AF5, A. FORK 500 E (SR-180) OVER I-15

CLIENT: UTAH DEPARTMENT OF TRANSPORTATION

LOCATION: N:302,279 E:561,229

DRILLING METHOD: CME-75 / N.W. CASING TO 49.5'

DRILLER: D. BEDKE

DEPTH TO WATER - INITIAL: ▽ 3.2' **AFTER 24 HOURS:** ▼ 3.7' 8/20/08

PROJECT NUMBER: 200801.200

DATE STARTED: 8/18/08

DATE COMPLETED: 8/19/08

GROUND ELEVATION: 4544.4'

LOGGED BY: M. HANSEN, J. BOONE

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	USCS (AASHTO)	Material Description		Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
			☒	10	Pushed	SM	dk. gray, wet									
			■	8	10,15,19,(28)	SM	dk. gray, wet, med. dense	SILTY SAND								
4440	105		■	8	47,25,9,(27)	GP-GM	dk. gray, wet, dense	GRAVEL W/SILT & SAND								
						CL	gray, moist	LEAN CLAY								
4435	110		■	15	29,28,49,(61)	SM (*A-1-b*)	dk. gray, wet, very dense	SILTY SAND W/GRAVEL		11.8		NP	31	52	17	
4430	115		■	11	57,59,(REF)	GM	dk. gray, wet, dense	SILTY GRAVEL W/SAND possible cobbles								
4425	120		■	8	54,73,(REF)	GM	dk. gray, wet, dense									
4420	125															
4415	130															
4410	135															
4405	140															
4400	145															
4395																

DH_LOGV1 08-AF5.GPJ US EVAL.GDT 2/21/09

RB&G ENGINEERING, INC.

LEGEND:

DISTURBED SAMPLE ■ 2,3,2,(6) ← Blow Count per 6"; ← $(N_1)_{60}$ Value; 0.45 ← Torvane (tsf)

UNDISTURBED SAMPLE ☒ PUSHED; 0.45 ← Torvane (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
UU = Unconsolidated, Undrained
CU = Consolidated, Undrained
HYD = Hydrometer

DRILL HOLE LOG

BORING NO. 08-AF6-B1

PROJECT: I-15 UTAH COUNTY CORRIDOR - AF6, AM. FORK 1100 SOUTH OVER I-15

CLIENT: UTAH DEPARTMENT OF TRANSPORTATION

LOCATION: N:300,397 E:563,823

DRILLING METHOD: 96-CME-55 / N.W. CASING TO 45'

DRILLER: L. HILER

DEPTH TO WATER - INITIAL: ▽ 8.8' **AFTER 24 HOURS:** ▼ N.M.

PROJECT NUMBER: 200801.200

DATE STARTED: 8/14/08

DATE COMPLETED: 8/15/08

GROUND ELEVATION: 4529.1'

LOGGED BY: J.P., M.H., J.B.

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	Sample USCS (AASHTO)	Material Description	Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
				15	5,18,7,(52)	GP-GM	brown, moist, dense GRAVEL W/SILT & SAND								
4525	5			0	1,1,1,(4)	-	no recovery								
4520				14	2,1,1,(4) *0.20*	CL (*A-6(7)*)	gray, moist, soft SANDY LEAN CLAY		29.5	35	13	14	19	67	
	10			1	3,2,2,(7)	CL	brown, wet								
4515				18	1,2,1,(5) *0.25*	ML (*A-7-5(13)*)	gray, moist, soft SILT plastic, organics		35.3	44	11	0	9	91	
	15			18	Pushed *0.10*	CL (*A-7-6(22)*)	gray, moist, very soft	91.0	33.7	46	20	0	3	97	CT UC CU
4510	20			18	0,2,2,(6) *0.30*	CL	gray, moist, firm LEAN CLAY organics								
4505	25			15	0/18" *0.20*	CL (*A-7-6(16)*)	gray, moist, soft, attempted shelby first (disturbed blow count)		48.6	42	17	0	12	88	
4500	30			14	14,16,20,(43)	SP-SM (*A-1-a*)	brown, wet, dense SAND W/SILT & GRAVEL		8.6		NP	32	61	7	
4495	35			18	20,29,23,(63)	SP-SM	brown, wet, very dense								
4490	40			11	Pushed *0.70*	CL (*A-7-6(23)*)	gray-brown, moist, stiff	96.3	27.3	41	22	0	2	98	CT UU
4485	45			18	5,7,6,(14) *1.55*	CL	gray-brown, moist, very stiff LEAN CLAY								
4480															

DH_LOGV1 08-AF6.GPJ US EVAL.GDT 2/21/09

RB&G ENGINEERING, INC.

LEGEND:

DISTURBED SAMPLE — 2,3,2,(6) = Blow Count per 6"; *0.45* = Torvane (tsf); $(N_1)_{60}$ Value

UNDISTURBED SAMPLE — PUSHED; *0.45* = Torvane (tsf)

OTHER TESTS

UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
UU = Unconsolidated, Undrained
CU = Consolidated, Undrained
HYD = Hydrometer

DRILL HOLE LOG

BORING NO. 08-AF6-B1

PROJECT: I-15 UTAH COUNTY CORRIDOR - AF6, AM. FORK 1100 SOUTH OVER I-15
CLIENT: UTAH DEPARTMENT OF TRANSPORTATION
LOCATION: N:300,397 E:563,823
DRILLING METHOD: 96-CME-55 / N.W. CASING TO 45'
DRILLER: L. HILER
DEPTH TO WATER - INITIAL: ▽ 8.8' **AFTER 24 HOURS:** ▼ N.M.

PROJECT NUMBER: 200801.200
DATE STARTED: 8/14/08
DATE COMPLETED: 8/15/08
GROUND ELEVATION: 4529.1'
LOGGED BY: J.P., M.H., J.B.

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	Sample USCS (AASHTO)	Material Description	Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
			☒	18	Pushed *0.75*	CL (*A-6(16)*)	gray-brown, moist, stiff	102.3	26.1	37	15	0	1	99	UC
							LEAN CLAY								
4475	55		■	18	*0.64* 3,6,6,(12)	CL SM CL	gray-brown, moist, stiff; gray, moist; SILTY SAND								
4470	60		☒	18	Pushed *0.36*	CL (*A-7-6(27)*)	gray, moist, firm; LEAN CLAY	84.7	33.6	45	24	0	0	100	CT UU
4465	65		■	18	0/18",(0) *0.41*	CH	lt. brown-gray, moist, firm								
4460	70		☒	18	Pushed *0.42*	CH (*A-7-6(35)*)	lt. brown-gray, moist, firm	81.6	38.1	54	31	0	0	100	UC
							FAT CLAY stratified								
4455	75		■	18	0/18",(0) *0.43*	CH	lt. brown-gray, moist, firm								
4450	80		☒	18	Pushed *0.67*	CH (*A-7-6(34)*)	lt. brown-gray, moist, stiff	85.9	37.5	53	30	0	0	100	CT UU
4445	85		■	18	0/18",(0) *0.76*	CL-ML	brown-gray, moist, stiff								
							SILTY CLAY silt & silty sand lenses								
4440	90		☒	11	Pushed *0.57*	CL-ML (*A-4(5)*)	brown-gray, moist, stiff	96.0	28.1	26	6	0	2	98	UC
4435	95		■	5	51/6"	GP-GM	gray, wet, very dense; GRAVEL W/SILT & SAND								
							Artesian at 95', rose 13' above ground surface in casing								
4430															

DH_LOGV1 08-AF6.GPJ US EVAL.GDT 2/21/09

RB&G ENGINEERING, INC.

LEGEND:

DISTURBED SAMPLE ■ 2,3,2,(6) ← Blow Count per 6"; $(N_1)_{60}$ Value
0.45 ← Torvane (tsf)

UNDISTURBED SAMPLE ☒ PUSHED *0.45* ← Torvane (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
UU = Unconsolidated, Undrained
CU = Consolidated, Undrained
HYD = Hydrometer

DRILL HOLE LOG

BORING NO. 08-AF6-B2

PROJECT: I-15 UTAH COUNTY CORRIDOR - AF6, AM. FORK 1100 SOUTH OVER I-15

CLIENT: UTAH DEPARTMENT OF TRANSPORTATION

LOCATION: N:300,486 E:563,445

DRILLING METHOD: 08-CME-55 / N.W. CASING TO 55'

DRILLER: D. SAMPSON

DEPTH TO WATER - INITIAL: ▽ 10.3' **AFTER 24 HOURS:** ▼ 10.2'

PROJECT NUMBER: 200801.200

DATE STARTED: 8/12/08

DATE COMPLETED: 8/14/08

GROUND ELEVATION: 4533.4'

LOGGED BY: M. HANSEN, J. BOONE

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	USCS (AASHTO)	Material Description		Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
				12	6,10,13,(49)	GP-GM	gray-brown, slightly moist, med. dense	SLAG (GRAVEL W/SILT & SAND) possible cobbles								
4530	5			14	14,53,(REF)	GP-GM (*A-1-a*)	gray, slightly moist, very dense			4.7		NP	51	38	11	
4525						CL	brown, moist	LEAN CLAY								
	▽▼10			6	Pushed	SM	brown, wet	SILTY SAND W/GRAVEL								
4520				15	2,1,2,(5) *0.50*	CL (*A-6(9)*)	brown to gray, moist, firm to stiff	SANDY LEAN CLAY		30.1	38	20	10	30	60	
	15					SC	brown, wet	CLAYEY SAND W/GRAVEL								
				15	2,2,1,(4) *0.34*	ML (*A-6(10)*)	lt. gray, moist, firm	SILT plastic, organics		32.7	36	11	0	14	86	
4515	20			18	Pushed	ML (*A-4(0)*)	gray-brown, wet	SILT organics, sand & clay lenses & layers	97.3	28.9		NP	0	13	87	CU 20% -0.005 mm
4510	25					CL-ML	gray-brown, very moist	SILTY CLAY								
				18	2,2,3,(7)	ML (*A-4(0)*)	gray-brown, wet	SANDY SILT clay layers to 1" thick		29.4		NP	0	48	52	10% -0.005 mm
4505	30			7	Pushed	CL-ML	gray, wet									
				11	0/18",(0)	CL-ML (*A-4(1)*)	gray, wet, soft	SANDY SILTY CLAY silt & silty sand layers to 3" thick		30.5	24	5	0	34	66	
4500	35				*0.20*	CL-ML	gray-brown, v. moist, soft									
				15	3,3,2,(6) *0.40*	SM CL	~~brown, wet~~ gray-brown, moist, firm	SILTY SAND								
4495	40			17	Pushed *0.20*	CL (*A-4(8)*)	gray-brown, moist, soft	LEAN CLAY silt lenses & layers to 2" thick	91.8	32.0	31	8	0	0	100	CT UU
4490	45			18	3,5,8,(14) *0.70*	CL-ML CL	dk. gray, very moist / lt. brown, moist, stiff	SILTY CLAY slight organic odor								
4485								LEAN CLAY								

DH_LOGV1 08-AF6.GPJ US EVAL.GDT 2/21/09

RB&G ENGINEERING, INC.

LEGEND:

DISTURBED SAMPLE — 2,3,2,(6) Blow Count per 6"; $(N_1)_{60}$ Value; *0.45* Torvane (tsf)

UNDISTURBED SAMPLE — PUSHED; *0.45* Torvane (tsf)

OTHER TESTS

UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
UU = Unconsolidated, Undrained
CU = Consolidated, Undrained
HYD = Hydrometer

DRILL HOLE LOG

BORING NO. 08-AF6-B2

PROJECT: I-15 UTAH COUNTY CORRIDOR - AF6, AM. FORK 1100 SOUTH OVER I-15
CLIENT: UTAH DEPARTMENT OF TRANSPORTATION
LOCATION: N:300,486 E:563,445
DRILLING METHOD: 08-CME-55 / N.W. CASING TO 55'
DRILLER: D. SAMPSON
DEPTH TO WATER - INITIAL: ▽ 10.3' **AFTER 24 HOURS:** ▼ 10.2'

PROJECT NUMBER: 200801.200
DATE STARTED: 8/12/08
DATE COMPLETED: 8/14/08
GROUND ELEVATION: 4533.4'
LOGGED BY: M. HANSEN, J. BOONE

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	Sample USCS (AASHTO)	Material Description		Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
			☒	13	Pushed 0.56	CL (A-7-6(30))	gray-brown, moist, stiff		90.9	31.7	48	27	0	0	100	CT UC
4480																
	55		■	12	0,4,4,(8) 0.78	CL	gray-brown, moist, stiff	LEAN CLAY								
4475																
	60		☒	17	Pushed 0.80	CL (A-7-6(26))	gray, moist, stiff		96.5	25.1	45	23	0	0	100	UU
4470																
	65		■	17	2,3,5,(8) 0.81	CH	gray-brown, moist, stiff									
4465																
	70		☒	18	Pushed 0.60	CH (A-7-6(34))	gray-brown, moist, stiff		84.3	39.7	53	30	0	0	100	CT UC
4460								FAT CLAY bedding at 45° angle								
	75		■	18	0/18",(0) 0.51	CH	gray-brown, moist, stiff									
4455																
	80		☒	18	Pushed 0.60	CH (A-7-6(41))	gray-brown, moist, stiff		81.6	39.1	61	35	0	0	100	UU
4450																
	85		■	18	1,3,4,(6) 0.65	CH	gray-brown, moist, stiff									
4445								FAT CLAY silt lenses to 6" apart								
	90		☒	18	Pushed 0.90	CH (A-7-6(32))	mottled gray & black, moist, stiff		81.3	38.4	52	28	0	0	100	CT UC
4440																
	95		■	15	2,5,8,(10) 0.65	CL	dk. gray, moist, stiff	LEAN CLAY								
4435																

DH_LOGV1 08-AF6.GPJ US EVAL.GDT 2/21/09

RB&G ENGINEERING, INC.

LEGEND:

DISTURBED SAMPLE ■ 2,3,2,(6) ← Blow Count per 6"; $(N_1)_{60}$ Value
0.45 ← Torvane (tsf)

UNDISTURBED SAMPLE ☒ PUSHED
0.45 ← Torvane (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
UU = Unconsolidated, Undrained
CU = Consolidated, Undrained
HYD = Hydrometer

DRILL HOLE LOG

BORING NO. 08-AF6-B2

PROJECT: I-15 UTAH COUNTY CORRIDOR - AF6, AM. FORK 1100 SOUTH OVER I-15

CLIENT: UTAH DEPARTMENT OF TRANSPORTATION

LOCATION: N:300,486 E:563,445

DRILLING METHOD: 08-CME-55 / N.W. CASING TO 55'

DRILLER: D. SAMPSON

DEPTH TO WATER - INITIAL: ▽ 10.3' **AFTER 24 HOURS:** ▼ 10.2'

PROJECT NUMBER: 200801.200

DATE STARTED: 8/12/08

DATE COMPLETED: 8/14/08

GROUND ELEVATION: 4533.4'

LOGGED BY: M. HANSEN, J. BOONE

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	Sample USCS (AASHTO)	Material Description		Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
				18	7,6,18,(19) *0.53*	SM	gray to dk. gray, wet/moist, med. dense/stiff	SILTY SAND silt & clay layers to 3" thick								
4430	105			13	40,39,36,(52)	GM (*A-1-a*)	gray-brown, wet, dense	SILTY GRAVEL W/SAND possible cobbles		6.6		NP	46	39	15	
4425	110			13	5,6,9,(11) *0.29*	ML (*A-4(7)*)	gray-brown, moist, firm	SILT plastic		26.0	30	7	0	3	97	
4420	115			15	7,11,14,(18) *0.39*	ML,SM,CL,SC	gray-brown, wet/moist, med. dense/firm	INTERBEDDED SANDY SILT, SILTY SAND, LEAN CLAY & CLAYEY SAND LAYERS								
4415	120			4	70/4"	GM	gray, wet, dense									
4410	125							SILTY GRAVEL W/SAND possible cobbles								
4405	130			13	34,39,31,(45)	GM (*A-1-a*)	gray & brown, wet, med. dense			7.3		NP	51	35	14	
4400	135															
4395	140															
4390	145															
4385																

DH_LOGV1 08-AF6.GPJ US EVAL.GDT 2/21/09

RB&G ENGINEERING, INC.

LEGEND:

DISTURBED SAMPLE: 2,3,2,(6) — Blow Count per 6"; $(N_1)_{60}$ Value; *0.45* — Torvane (tsf)

UNDISTURBED SAMPLE: PUSHED; *0.45* — Torvane (tsf)

OTHER TESTS

UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
UU = Unconsolidated, Undrained
CU = Consolidated, Undrained
HYD = Hydrometer

2006 American Fork Sensitive Lands Study Borings

AF-06-3
AF-06-4
AF-06-13
AF-06-14

See Figure 1 for Boring Locations

DRILL HOLE LOG

BORING NO. 06-03

PROJECT: AMERICAN FORK SENSITIVE LAND STUDY
CLIENT: HORROCKS ENGINEERS
LOCATION: SOUTH END OF 6650 WEST
DRILLING METHOD: CME-55 NO. 1 / N.W. CASING
DRILLER: T. KERN
DEPTH TO WATER - INITIAL: ▽ N.M. **AFTER 24 HOURS:** ▼ N.M.

PROJECT NUMBER: 200601.022
DATE STARTED: 8/16/06
DATE COMPLETED: 8/17/06
GROUND ELEVATION: NOT MEASURED
LOGGED BY: M. HANSEN, J.H.B.

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	USCS (AASHTO)	Material Description	Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
				9	3,11,14,(51)	CL	gray-brown, dry, stiff								
	5			12	0,1/12",(2) 0.03	CL	brown, moist, very soft								
	10			12	Pushed 0.16	CL	lt. brown, moist, soft — LEAN CLAY W/SAND & SILTY SAND LENSES & LAYERS TO 3" THICK								
	15			18	3,2,3,(8) 0.60	CL	gray, moist, stiff								
	20			12	Pushed 0.56	CL-1	gray, moist, stiff		19.1	31	12	0	17	83	UC
	25			18	6,4,6,(13) 0.56	SM	gray, wet, loose — SILTY SAND								
						CL-ML	brown-gray, moist, stiff — SILTY CLAY								
	30			15	Pushed 0.56	CL-ML	gray, moist, stiff								
	35			18	0/18",(0) 0.55	CL	gray, moist, stiff								
	40			18	Pushed 0.61	CL-2	gray, moist, stiff — LEAN CLAY distorted bedding		32.8	42	12	0	1	99	UC
	45			18	0/18",(0) 0.38 0.21	CL	gray, moist, soft to firm								
				14	Pushed 0.32	CL	gray, moist, firm								

...1_LOGV1_COLOR_AFSENSLAND_COLOR.GPJ US EVAL.GDT 12/11/06

RB&G ENGINEERING INC.
PROVO, UTAH

LEGEND:

DISTURBED SAMPLE: 2,3,2,(6) ← Blow Count per 6"; $(N_1)_{60}$ Value; 0.45 ← Torvane (tsf)

UNDISTURBED SAMPLE: PUSHED 0.45 ← Torvane (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
TS = Triaxial Shear

= Potential Liquefaction
= Potential Liquefaction & Lateral Spread

DRILL HOLE LOG

BORING NO. 06-03

SHEET 2 OF 2

PROJECT: AMERICAN FORK SENSITIVE LAND STUDY
CLIENT: HORROCKS ENGINEERS
LOCATION: SOUTH END OF 6650 WEST
DRILLING METHOD: CME-55 NO. 1 / N.W. CASING
DRILLER: T. KERN
DEPTH TO WATER - INITIAL: ∇ N.M. **AFTER 24 HOURS:** ▼ N.M.

PROJECT NUMBER: 200601.022
DATE STARTED: 8/16/06
DATE COMPLETED: 8/17/06
GROUND ELEVATION: NOT MEASURED
LOGGED BY: M. HANSEN, J.H.B.

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	USCS (AASHTO)	Material Description	Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
	55			18	1,3,5,(8) *0.24* *0.49*	CL	gray, moist, soft to firm LEAN CLAY								
	60			10	Pushed *0.48*	CL-1	gray, moist, firm		22.1	32	14	0	2	98	UC
	65			13	3,7,9,(14) *0.30*	CL-ML	gray, moist, firm SANDY SILTY CLAY		23.5	25	6	0	20	80	
	70			16	34,38,33,(61)	GP-GM	dk. gray, wet, dense GRAVEL W/SILT & SAND								
	75			14	7,5,6,(9) *0.56*	CL	gray, moist, stiff LEAN CLAY W/SILTY SAND LENSES & LAYERS TO 5" THICK								
	80			17	Pushed *0.45*	CL-2	gray, moist, stiff		23.4	39	17	0	16	84	UC
	85			8	45,26,48,(58)	GP-GM	gray, wet, dense GRAVEL W/SILT & SAND								
	90			12	Pushed *0.89*	CL	brown-gray, moist, stiff LEAN CLAY								
	95			18	30,11,2,(10) *0.40*	GC CL	gray, wet, med. dense CLAYEY GRAVEL gray, moist, firm SANDY LEAN CLAY								
				12	Pushed	CL-2	gray, moist		22.6	35	17	0	18	82	UC

LEGEND:

DISTURBED SAMPLE — 2,3,2,(6) ← Blow Count per 6"; $(N_1)_{60}$ Value; *0.45* ← Torvane (tsf)

UNDISTURBED SAMPLE — PUSHED *0.45* ← Torvane (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
TS = Triaxial Shear

= Potential Liquefaction
= Potential Liquefaction & Lateral Spread

RB&G ENGINEERING INC.
PROVO, UTAH

..\LOGV1_COLOR AFSENSLAND_COLOR.GPJ US EVAL.GDT 12/11/06

DRILL HOLE LOG

BORING NO. 06-04

SHEET 1 OF 2

PROJECT: AMERICAN FORK SENSITIVE LAND STUDY
CLIENT: HORROCKS ENGINEERS
LOCATION: SOUTH END OF 6500 WEST
DRILLING METHOD: CME-55 NO. 1 / N.W. CASING
DRILLER: T. KERN
DEPTH TO WATER - INITIAL: ▽ ARTESIAN' **AFTER 24 HOURS:** ▼ N.M.

PROJECT NUMBER: 200601.022
DATE STARTED: 8/22/06
DATE COMPLETED: 8/23/06
GROUND ELEVATION: NOT MEASURED
LOGGED BY: M.H., D.S., J.H.B.

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	USCS (AASHTO)	Material Description	Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
				12	9,16,20,(73)	SM	2.5" ASPHALT; 8" ROAD BASE; brown, moist, very dense SILTY SAND								
	5			8	0,1/12",(2) *0.15*	CL	dk. gray, very moist, soft								
	10			10	Pushed *0.31*	CL-1	gray to black, moist, firm		37.7	32	13	0	2	98	UC
	15			18	3,4,8,(22) *0.68*	CL	lt. brown, moist, stiff								
	20			16	Pushed *0.70*	CL	gray-brown, moist, stiff LEAN CLAY								
	25			18	0,2,1,(4) *0.60*	CL	gray-brown, moist, stiff								
	30			12	Pushed *0.39*	CL-2	gray-brown, moist, firm		41.8	48	27	0	0	100	UC
	35			18	0/18",(0) *0.26*	CL	gray-brown, moist, soft								
	40			18	Pushed *0.36*	CL	gray-brown, moist, firm								
	45			18	0/18",(0) *0.28*	CH	gray-brown, moist, soft FAT CLAY								

LEGEND:

DISTURBED SAMPLE — 2,3,2,(6) ← Blow Count per 6"; ← $(N_1)_{60}$ Value; 0.45 ← Torvane (tsf)

UNDISTURBED SAMPLE — PUSHED; 0.45 ← Torvane (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
TS = Triaxial Shear

= Potential Liquefaction
= Potential Liquefaction & Lateral Spread

RB&G ENGINEERING INC.
PROVO, UTAH

JT_LOGV1_COLOR AFSENSLAND_COLOR.GPJ US EVAL.GDT 12/11/06

DRILL HOLE LOG

BORING NO. 06-04

PROJECT: AMERICAN FORK SENSITIVE LAND STUDY
CLIENT: HORROCKS ENGINEERS
LOCATION: SOUTH END OF 6500 WEST
DRILLING METHOD: CME-55 NO. 1 / N.W. CASING
DRILLER: T. KERN
DEPTH TO WATER - INITIAL: ▽ ARTESIAN' **AFTER 24 HOURS:** ▼ N.M.

PROJECT NUMBER: 200601.022
DATE STARTED: 8/22/06
DATE COMPLETED: 8/23/06
GROUND ELEVATION: NOT MEASURED
LOGGED BY: M.H., D.S., J.H.B.

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	USCS (AASHTO)	Material Description	Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
				18	0/18",(0) *0.25*	CH	gray-brown, moist, soft								
	55			18	Pushed *0.29*	CH	gray-brown, moist, soft to firm		51.5	61	40	0	0	100	UC
							FAT CLAY								
	60			18	0/18",(0) *0.38*	CH	gray, moist, firm								
	65			18	Pushed *0.45*	CH	black, moist, firm								
	70			18	1,6,6,(11)	ML	black, wet, med. dense — SANDY SILT W/CLAY LAYERS TO 4" THICK		26.2		NP	0	18	82	
	75			18	2,8,6,(12)	SM	gray, wet, med. dense		27.8		NP	0	60	40	
							SILTY SAND								
	80			8	-	SM	gray, wet								
						SM	gray, wet								
	85			18	6,7,20,(22)	ML	gray, wet, med. dense — SANDY SILT W/SAND & CLAY LENSES & LAYERS		24.9		NP	0	19	81	
	90			13	Pushed *0.54*	CL	gray, moist, stiff — LEAN CLAY W/SAND LAYERS								
	95			18	4,6,11,(13)	SM	gray, wet, med. dense — SILTY SAND		19.9		NP	0	63	37	
				12	12,37,38,(56)	GP-GM	gray, wet, dense — GRAVEL W/SAND & SILT								

LEGEND:

DISTURBED SAMPLE — 2,3,2,(6) ← Blow Count per 6" / $(N_1)_{60}$ Value; *0.45* ← Torvane (tsf)

UNDISTURBED SAMPLE — PUSHED *0.45* ← Torvane (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
TS = Triaxial Shear

= Potential Liquefaction
= Potential Liquefaction & Lateral Spread

RB&G ENGINEERING INC.
PROVO, UTAH

_LOGV1_COLOR_AFSENSLAND_COLOR.GPJ US EVAL.GDT 12/11/06

DRILL HOLE LOG

BORING NO. 06-13

PROJECT: AMERICAN FORK SENSITIVE LAND STUDY
CLIENT: HORROCKS ENGINEERS
LOCATION: ~200' EAST OF EAST END OF 620 SOUTH
DRILLING METHOD: CME-55 NO. 1 / N.W. CASING
DRILLER: T. KERN
DEPTH TO WATER - INITIAL: ∇ 4.5' **AFTER 24 HOURS:** ▼ N.M.

PROJECT NUMBER: 200601.022
DATE STARTED: 10/4/06
DATE COMPLETED: 10/5/06
GROUND ELEVATION: NOT MEASURED
LOGGED BY: B. HORROCKS, J.H.B.

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	USCS (AASHTO)	Material Description		Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
				12	0/12",1,(2) 0.17	CL	dk. brown, moist, soft									
∇	5			18	0/18",(0) 0.25	CL-2	dk. brown, moist, soft	LEAN CLAY W/ORGANICS		39.7	44	22				
				18	0/18",(0) 0.45	CL	brown & black, moist, firm									
	10			16	0/14",1,(2) 0.40	CL CL	brown, moist, firm red-brown, very moist, firm									
				18	1/18",(2) 0.15	CL	brown, very moist, soft	SANDY LEAN CLAY								
	15			18	0/4",1/8",2,(5) 0.40	CL-1 ML	brown, moist, firm brown, wet, loose	LEAN CLAY SANDY SILT		28.2 25.8	36	13 NP	0	12	88	
				7	7,12,11,(35)	GM	brown, wet, med. dense	SILTY GRAVEL W/SAND		10.2		NP	55	29	16	
	20			3	11,15,16,(45)	GM	brown, wet, med. dense									
				8	8,7,5,(17)	GP-GM SM	brown, wet, very loose brown, wet, med. dense	GRAVEL W/SILT & SAND SILTY SAND		15.9		NP	58	34	8	
	25			17	1,5,4,(12)	SM ML	brown, wet, loose gray, wet									
				18	1,1,3,(5)	ML	greenish-brown, wet, loose	SANDY SILT		34.9		NP	0	11	89	
	30			18	1/12",1,(2) 0.49	CL	brown to gray, moist, firm	LEAN CLAY								
	35			8	21,28,10,(45)	GM CL	brown, wet, med. dense brown, moist	SILTY GRAVEL W/SAND LEAN CLAY								
	40			11	16,20,16,(40)	GM	brown, wet, med. dense	SILTY GRAVEL W/SAND								
								CLAY (DRILLER'S OBSERVATION)								
	45			12	20,31,34,(69)	GM	brown, wet, dense	SILTY GRAVEL W/SAND								
				4	15,22,26,(48)	GM	brown, wet, med. dense									

.1_LOGV1_COLOR_AFSENSLAND_COLOR.GPJ US EVAL.GDT 12/11/06

RB&G ENGINEERING INC.
PROVO, UTAH

LEGEND:

DISTURBED SAMPLE: 2,3,2,(6) ← Blow Count per 6"; $(N_1)_{60}$ Value; 0.45 ← Torvane (tsf)

UNDISTURBED SAMPLE: PUSHED; 0.45 ← Torvane (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
TS = Triaxial Shear

= Potential Liquefaction
= Potential Liquefaction & Lateral Spread

DRILL HOLE LOG

BORING NO. 06-13

SHEET 2 OF 2

PROJECT: AMERICAN FORK SENSITIVE LAND STUDY
CLIENT: HORROCKS ENGINEERS
LOCATION: ~200' EAST OF EAST END OF 620 SOUTH
DRILLING METHOD: CME-55 NO. 1 / N.W. CASING
DRILLER: T. KERN
DEPTH TO WATER - INITIAL: ∇ 4.5' **AFTER 24 HOURS:** ▼ N.M.

PROJECT NUMBER: 200601.022
DATE STARTED: 10/4/06
DATE COMPLETED: 10/5/06
GROUND ELEVATION: NOT MEASURED
LOGGED BY: B. HORROCKS, J.H.B.

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	USCS (AASHTO)	Material Description	Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
	55			3	25,50/5",(48)	GM	brown, wet, dense								
							SILTY GRAVEL W/SAND								
	60			9	35,34,22,(52)	GM	brown, wet, dense								
	65			18	3,2,4,(5) *0.27*	CL	gray, moist, firm								
	70			18	1,3,4,(6) *0.30*	CL	gray, moist, firm								
	75			18	1/12",1,(2) *0.56*	CL	gray, moist, stiff								
							LEAN CLAY								
	80			18	0/12",2,(2) *0.64*	CL	gray, moist, stiff								
	85			18	0/15",2,(2) *0.75*	CL	gray, moist, stiff								
	90			18	6,8,13,(16) *1.05*	CL	gray, moist, stiff, 2" sandy layer, 3" organic layer								
							SANDY SILT								
	95			18	4,13,21,(25)	ML	gray-brown, wet, dense								

RB&G ENGINEERING INC.
PROVO, UTAH

LEGEND:

DISTURBED SAMPLE: 2,3,2,(6) ← Blow Count per 6"; $(N_1)_{60}$ Value; *0.45* ← Torvane (tsf)

UNDISTURBED SAMPLE: PUSHED; *0.45* ← Torvane (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
TS = Triaxial Shear

= Potential Liquefaction
= Potential Liquefaction & Lateral Spread

.rt LOGV1 COLOR AFSENSLAND_COLOR.GPJ US EVAL.GDT 12/11/06

DRILL HOLE LOG

BORING NO. 06-14

PROJECT: AMERICAN FORK SENSITIVE LAND STUDY
CLIENT: HORROCKS ENGINEERS
LOCATION: 500 EAST AT 1180 SOUTH. EAST SIDE OF ROAD
DRILLING METHOD: CME-55 NO. 2 / N.W. CASING
DRILLER: D. SAMPSON
DEPTH TO WATER - INITIAL: ▽ ARTESIAN' **AFTER 24 HOURS:** ▼ N.M.

PROJECT NUMBER: 200601.022
DATE STARTED: 10/10/06
DATE COMPLETED: 10/11/06
GROUND ELEVATION: NOT MEASURED
LOGGED BY: K. BRADFORD, J.H.B.

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	USCS (AASHTO)	Material Description		Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
				15	17,30,35,(101)	GM	brown, dry, dense	SILTY GRAVEL W/SAND								
						CL	brown, dry, firm	SANDY LEAN CLAY								
				4	2,2,2,(6) 0.50	SM	brown, slightly moist, loose	SILTY SAND W/GRAVEL								
	5			9	0,1,1,(3)	CL	brown to dk. brown, slightly moist, firm	LEAN CLAY W/GRAVEL								
	10			16	2,1,3,(6) 0.30	SM	brown, wet, loose	SILTY SAND		24.8		NP	14	61	25	
						CL	brown, moist, firm	LEAN CLAY W/SAND LENSES & LAYERS TO 2" THICK								
				17	Pushed 0.22	CL	brown, moist, soft									
	15			14	Pushed 0.15	SM	brown, wet, loose	SILTY SAND		27.6		NP	0	68	32	
						CL	brown, very moist, soft									
				15	Pushed 0.25	CL	brown, moist, soft									
	20			15	1,2,3,(6) 0.16	CL	brown, moist, soft	LEAN CLAY W/SAND LENSES & LAYERS TO 4" THICK								
	25			15	3,4,4,(9) 0.30	CL-1	brown, very moist, firm			38.3	36	12				
	30			15	3,3,4,(7) 0.40	CL	brown, moist, firm									
	35			16	6,9,13,(21) 1.17	CL	brown, moist, very stiff									
								LEAN CLAY W/OCCASIONAL SILT & SAND LAYERS TO 1" THICK								
	40			18	5,6,6,(11) 0.68	CL	brown, moist, stiff									
	45			18	5,8,11,(16) 0.35	CL	brown, moist, firm									

_rt_LOGV1_COLOR AFSENSLAND_COLOR.GPJ US EVAL.GDT 12/11/06

RB&G ENGINEERING INC.
PROVO, UTAH

LEGEND:

DISTURBED SAMPLE: 2,3,2,(6) — Blow Count per 6"; $(N_1)_{60}$ Value; 0.45 — Torvane (tsf)

UNDISTURBED SAMPLE: PUSHED; 0.45 — Torvane (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
TS = Triaxial Shear

= Potential Liquefaction
= Potential Liquefaction & Lateral Spread

DRILL HOLE LOG

BORING NO. 06-14

PROJECT: AMERICAN FORK SENSITIVE LAND STUDY
CLIENT: HORROCKS ENGINEERS
LOCATION: 500 EAST AT 1180 SOUTH, EAST SIDE OF ROAD
DRILLING METHOD: CME-55 NO. 2 / N.W. CASING
DRILLER: D. SAMPSON
DEPTH TO WATER - INITIAL: ▽ ARTESIAN' **AFTER 24 HOURS:** ▼ N.M.

PROJECT NUMBER: 200601.022
DATE STARTED: 10/10/06
DATE COMPLETED: 10/11/06
GROUND ELEVATION: NOT MEASURED
LOGGED BY: K. BRADFORD, J.H.B.

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	USCS (AASHTO)	Material Description	Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
					0.30	CL	brown, moist, firm								
				18	4,14,16,(24)	ML	black, wet, dense — SANDY SILT		27		NP	0	44	56	
	55			15	9,7,8,(11) 0.20	CL	black, moist, soft to firm — SANDY LEAN CLAY W/SAND LENSES								
	60			18	3,5,11,(12) 0.20	CL	green, moist, soft to firm — LEAN CLAY INTERBEDDED W/SAND LENSES								
	65			18	7,7,8,(10) 0.13	CL-2	green, moist, soft		29.4	44	21				
	70			16	6,14,15,(19) 0.15	ML	green to black, moist, stiff — SANDY SILT		29.3		NP	0	23	77	
	75			18	4,5,7,(8) 0.62	CL	gray, moist, stiff								
	80			18	5,6,9,(10) 0.82	CL	gray, moist, stiff — LEAN CLAY								
	85			18	8,15,16,(19) 1.35	CL	gray, moist, very stiff								
	90			18	5,7,10,(10) 0.71	CL	gray, moist, stiff								
	95			15	10,22,31,(31)	ML,SM	gray, wet, dense — SANDY SILT W/SAND LENSES TO 3" THICK								

LEGEND:

DISTURBED SAMPLE — 2,3,2,(6) ← Blow Count per 6"; $(N_1)_{60}$ Value; 0.45 ← Torvane (tsf)

UNDISTURBED SAMPLE — PUSHED; 0.45 ← Torvane (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
TS = Triaxial Shear

= Potential Liquefaction
= Potential Liquefaction & Lateral Spread

RB&G ENGINEERING INC.
PROVO, UTAH

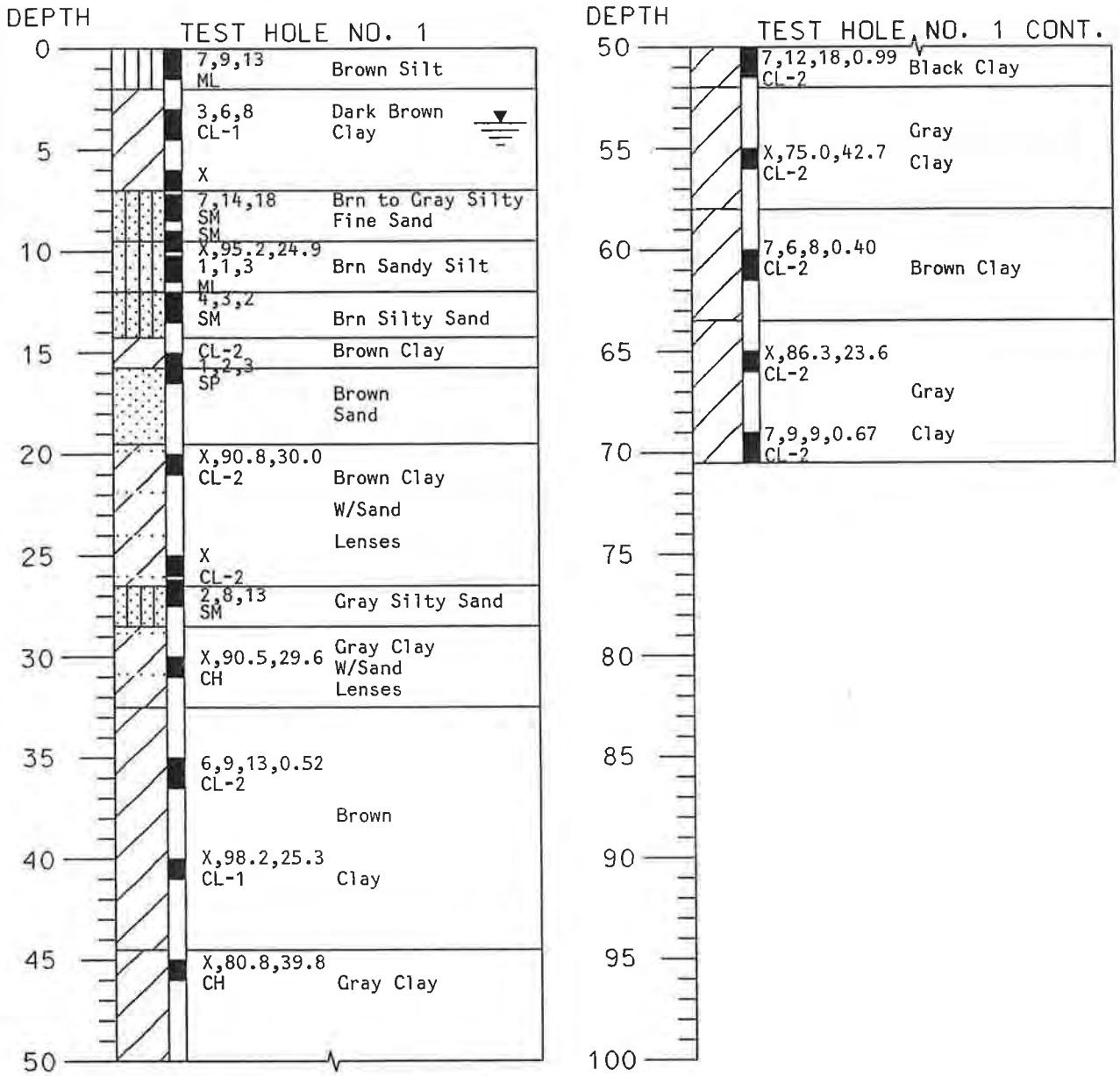
-1_LOGV1_COLOR AFSENSLAND_COLOR.GPJ US EVAL.GDT 12/11/06

Timpanogos Waste Water Treatment Plant Borings (1996, 1994, 1977)

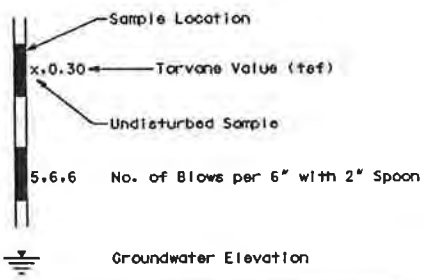
RBG-96A-1
RBG-96A-2
RBG-94-1
RBG-94-2
RBG-77-1
RBG-77-2
RBG-77-5
RBG-77-16

See Figure 2 for Boring Locations

RBG-96A-1



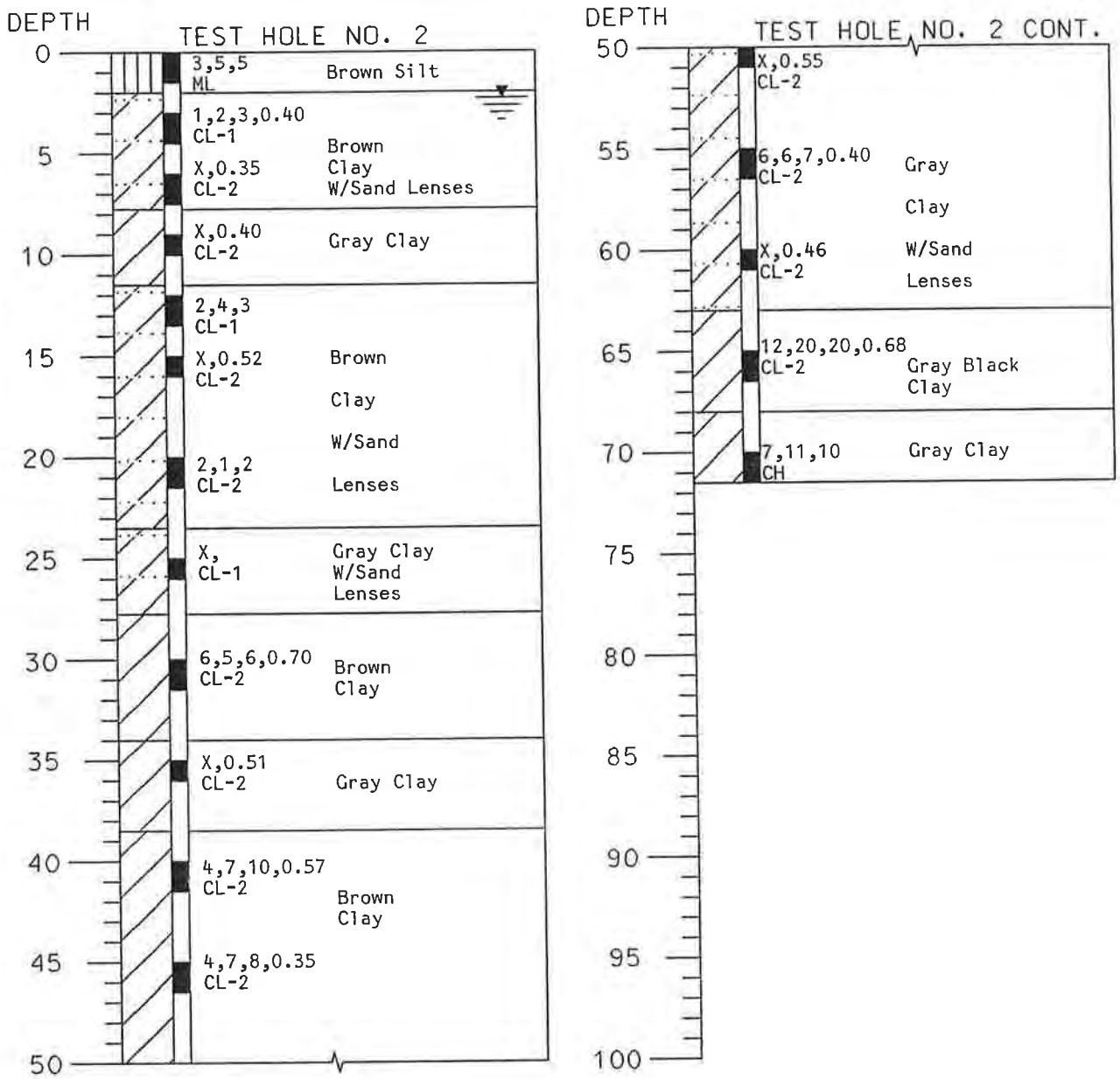
LEGEND



RB&G ENGINEERING INC.
Provo, Utah

Figure 3 **TEST HOLE LOGS**
Timpanogos Wastewater Treatment Plant
American Fork, Utah

RBG-96A-2



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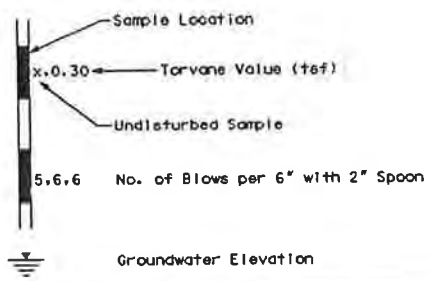
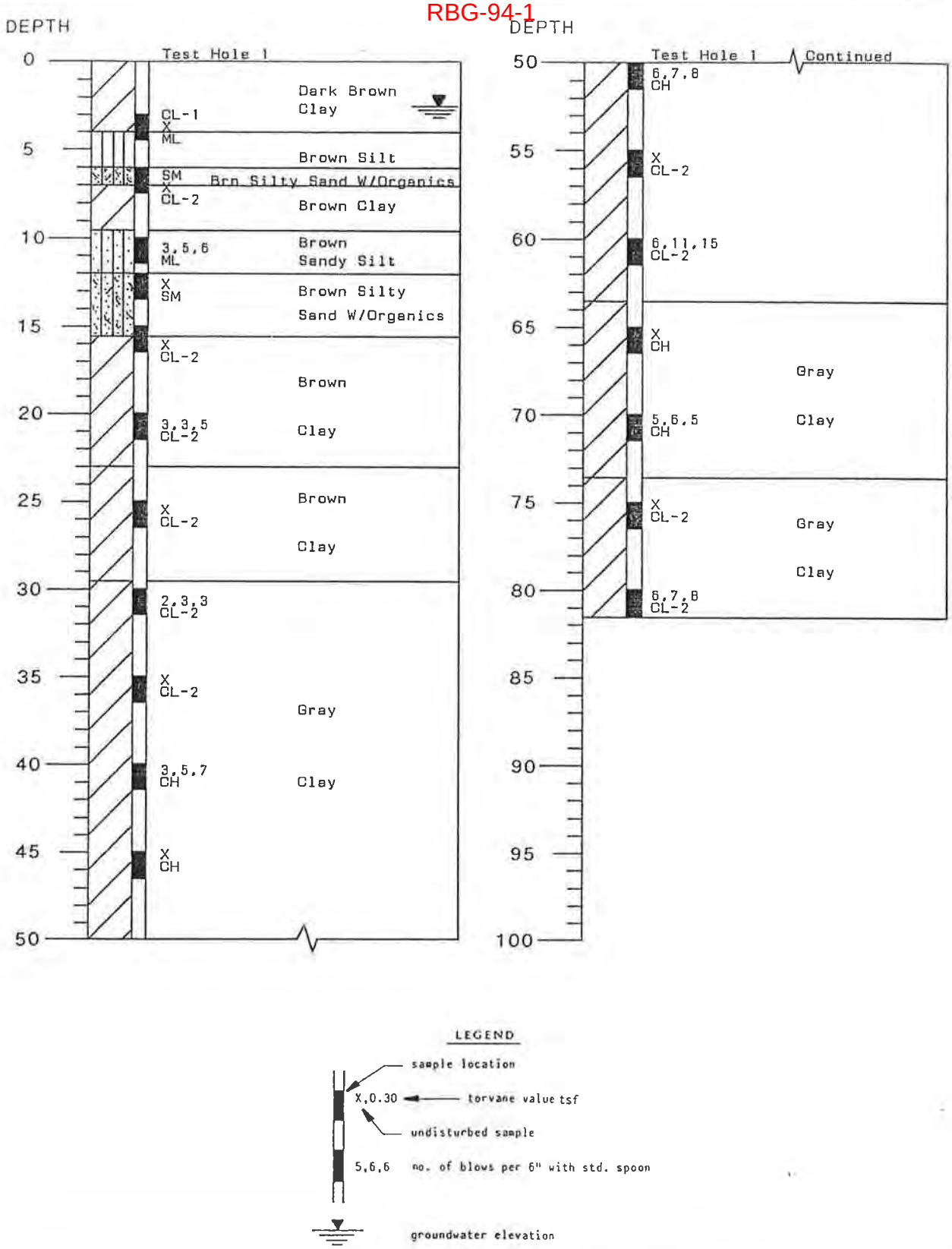


RB&G ENGINEERING INC.
Provo, Utah

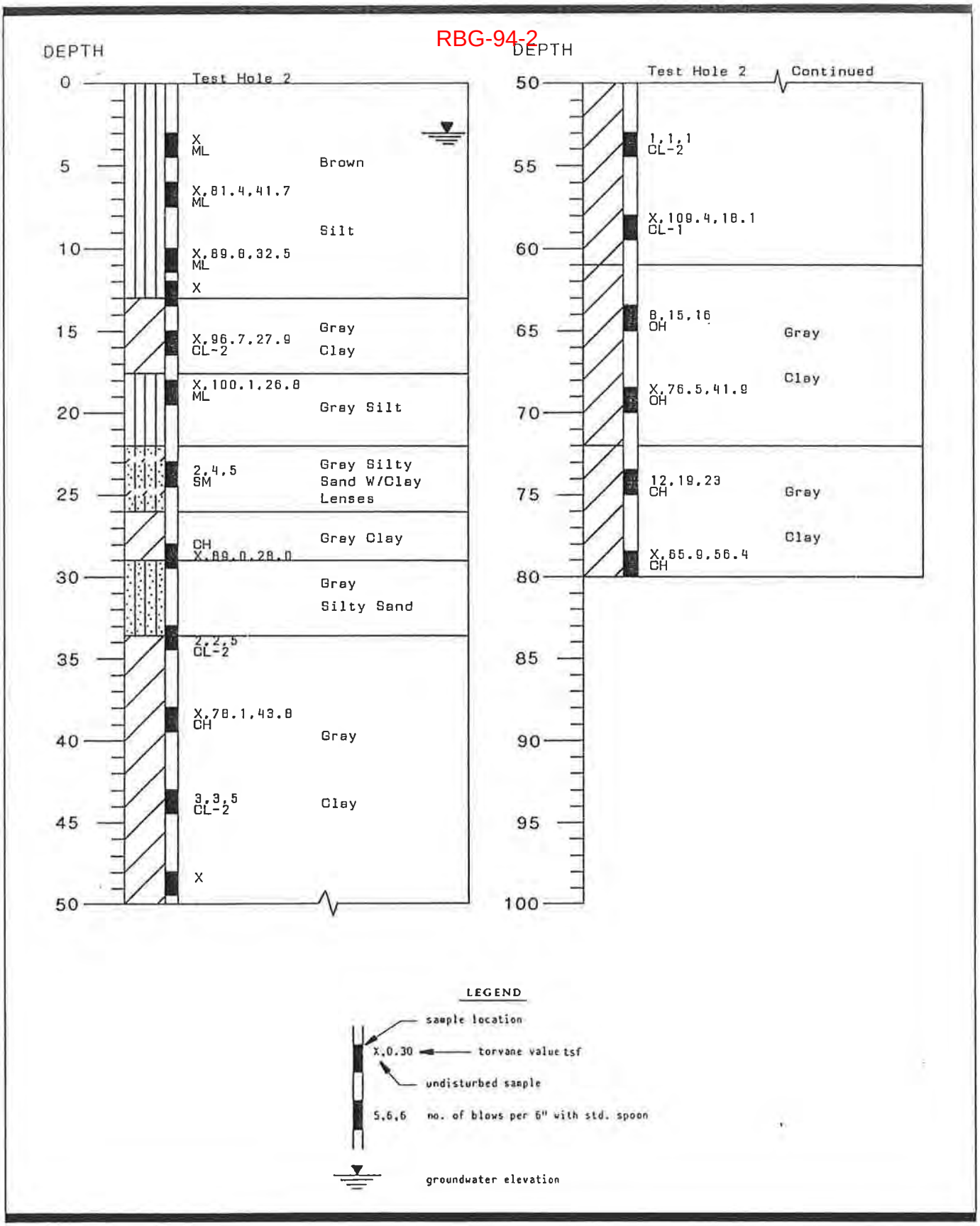
Figure 4 **TEST HOLE LOGS**
Timpanogos Wastewater Treatment Plant
American Fork, Utah

RBG-94-1



RB&G ENGINEERING INC.
Provo, Utah

Figure 4 **TEST HOLE LOGS**
Timpanogos Special Service District
Wastewater Treatment Facility
American Fork, Utah



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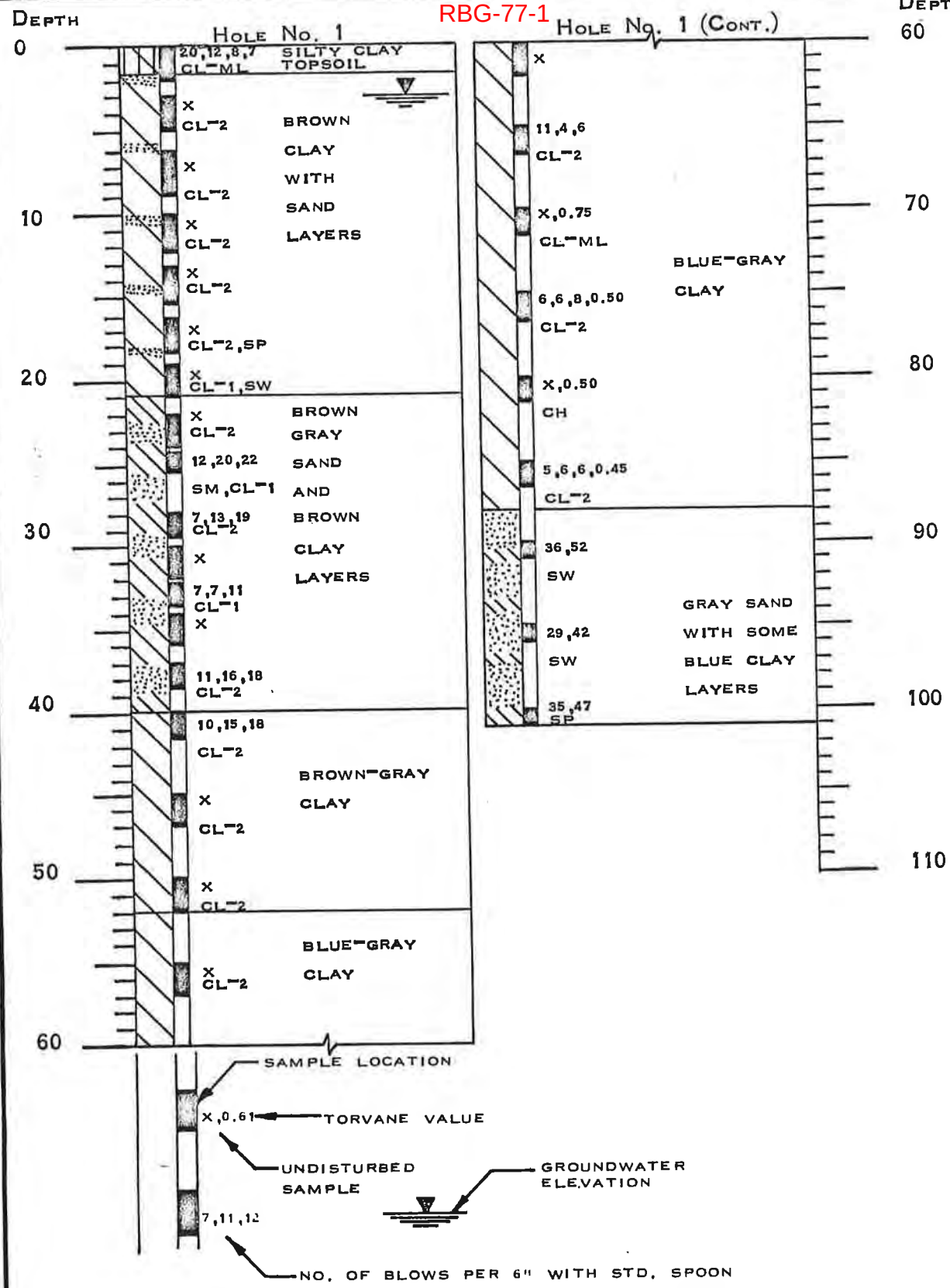
Provo, Utah

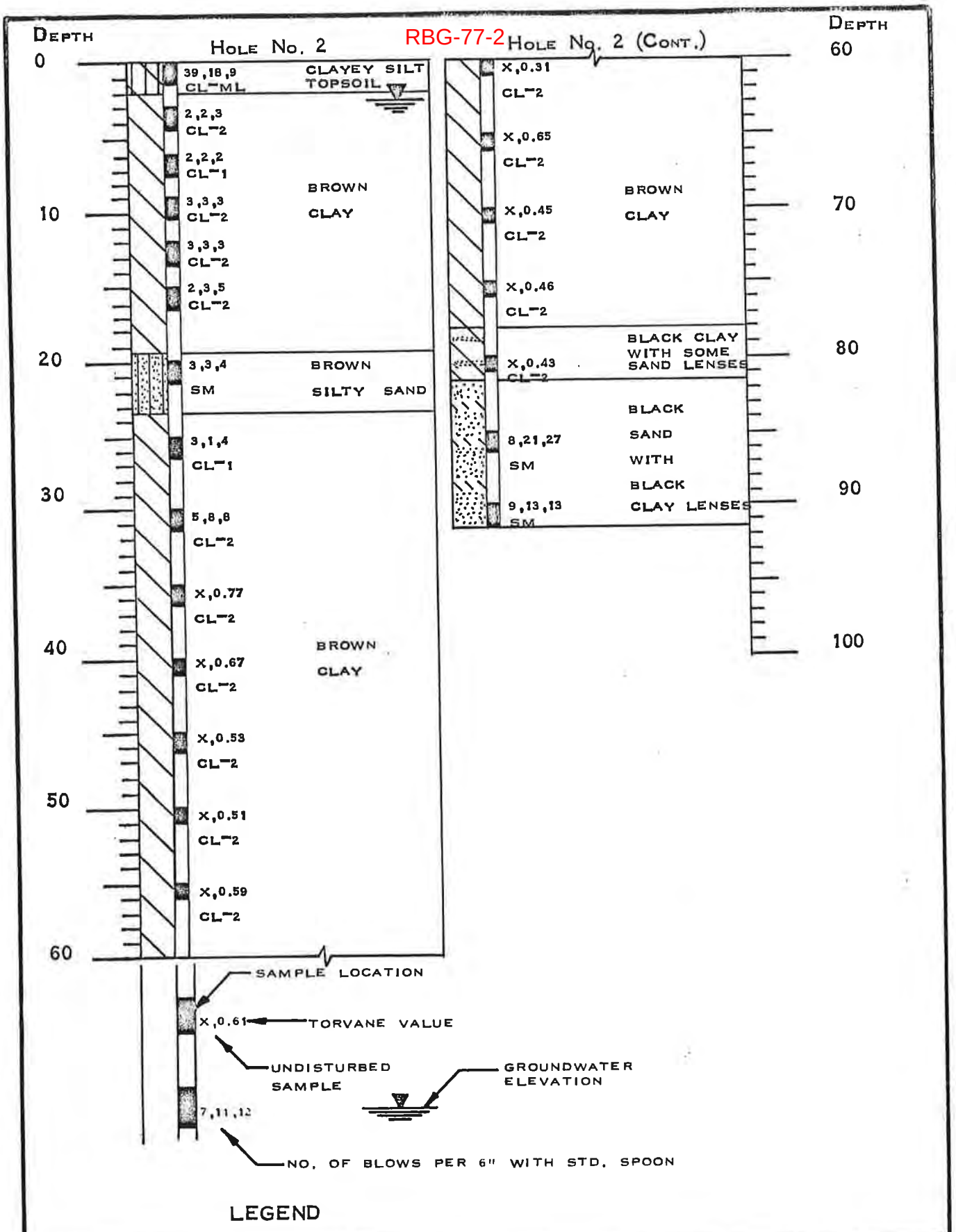
Figure 5 **TEST HOLE LOGS**
Timpanogos Special Service District
Wastewater Treatment Facility
American Fork, Utah

RBG-77-1



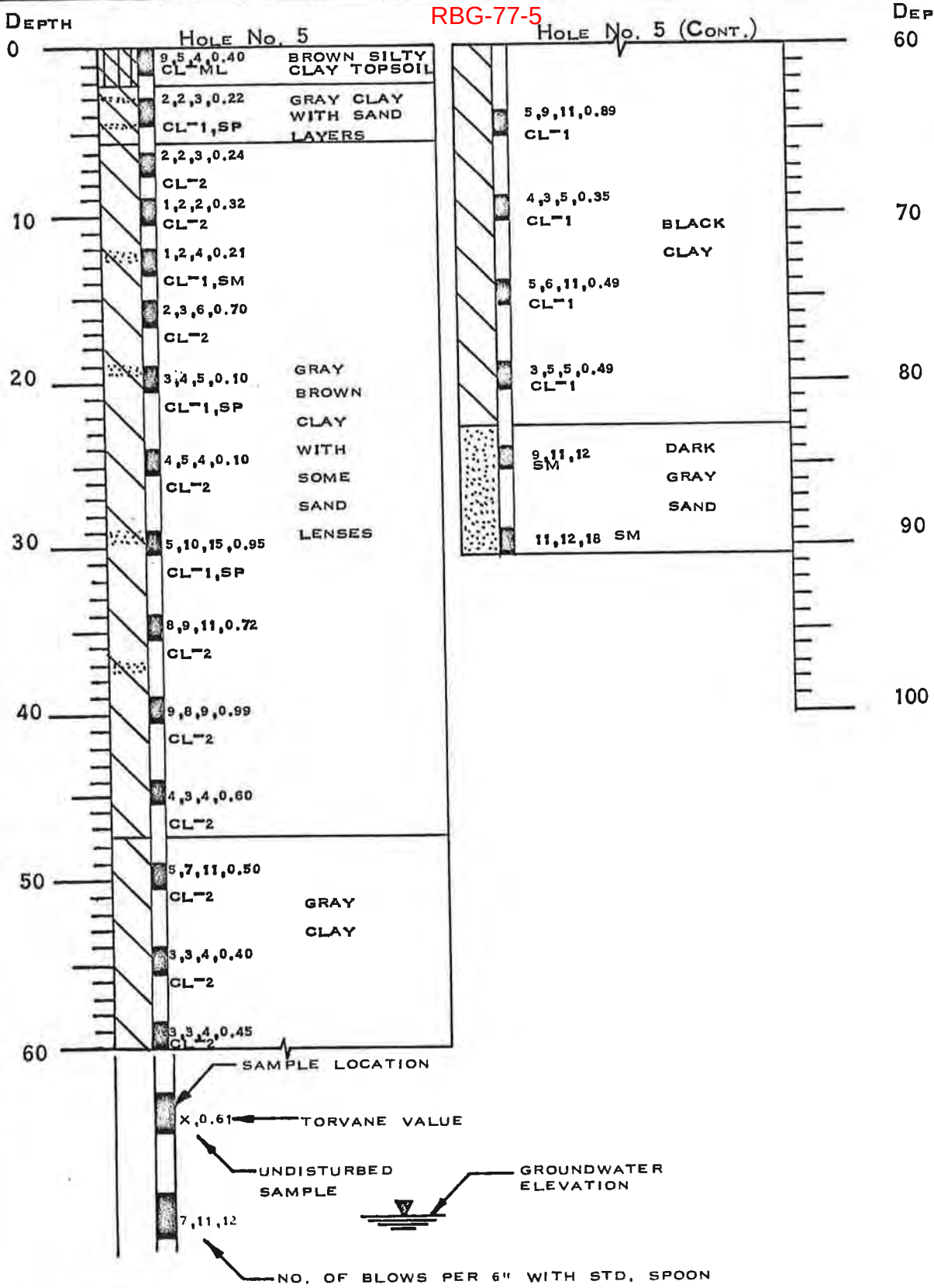
LEGEND

LOG OF BORINGS FOR: TIMPANOGOS SEWAGE PLANT	ROLLINS, BROWN AND GUNNELL, INC. CONSULTING ENGINEERS	FIGURE No. 2



LOG OF BORINGS FOR: TIMPANOGOS SEWAGE PLANT	ROLLINS, BROWN AND GUNNELL, INC. CONSULTING ENGINEERS	FIGURE No. 3

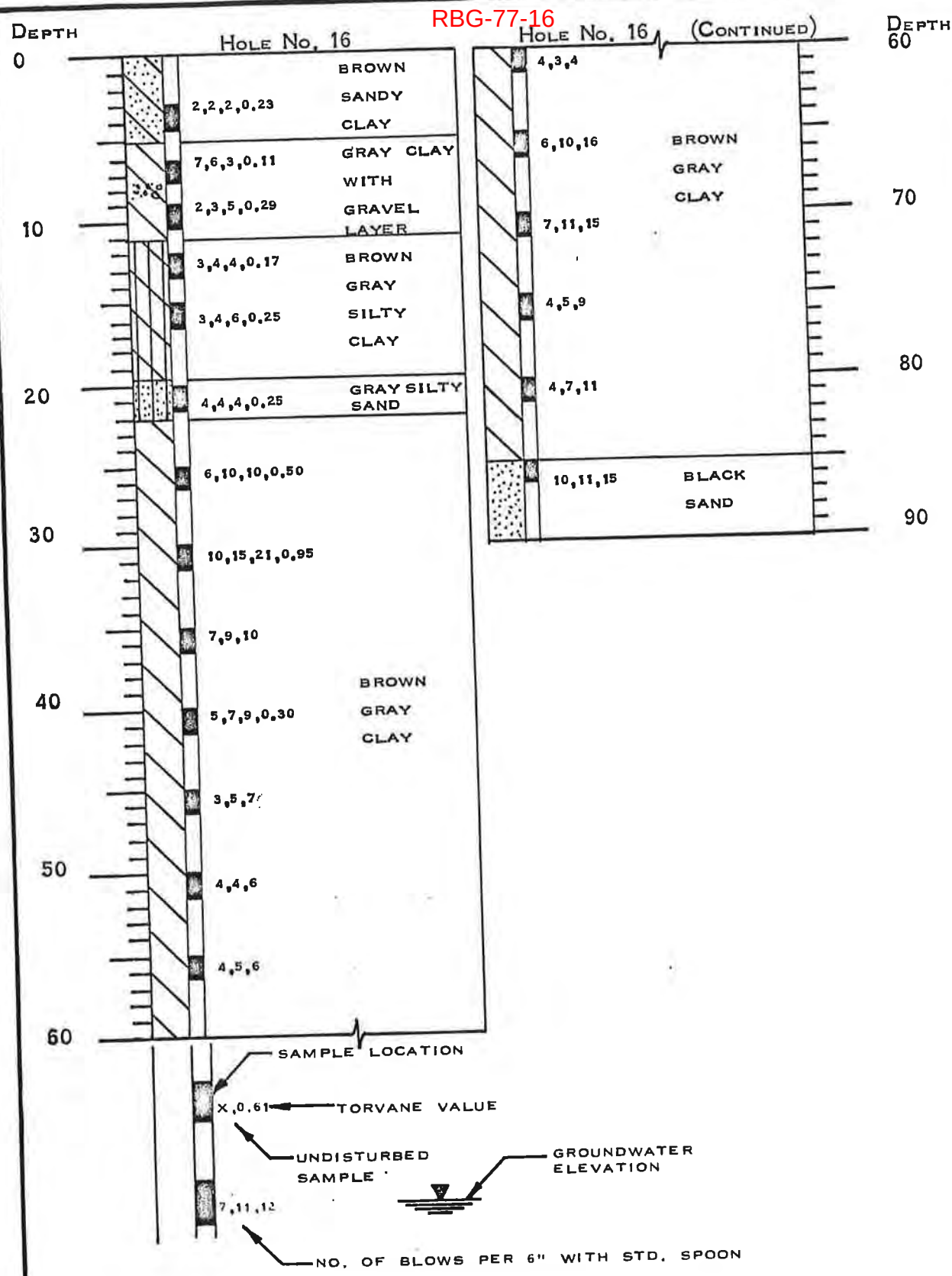
RBG-77-5



LEGEND

LOG OF BORINGS FOR: TIMPANOGOS SEWAGE PLANT	ROLLINS, BROWN AND GUNNELL, INC. CONSULTING ENGINEERS	FIGURE No. 5A

RBG-77-16



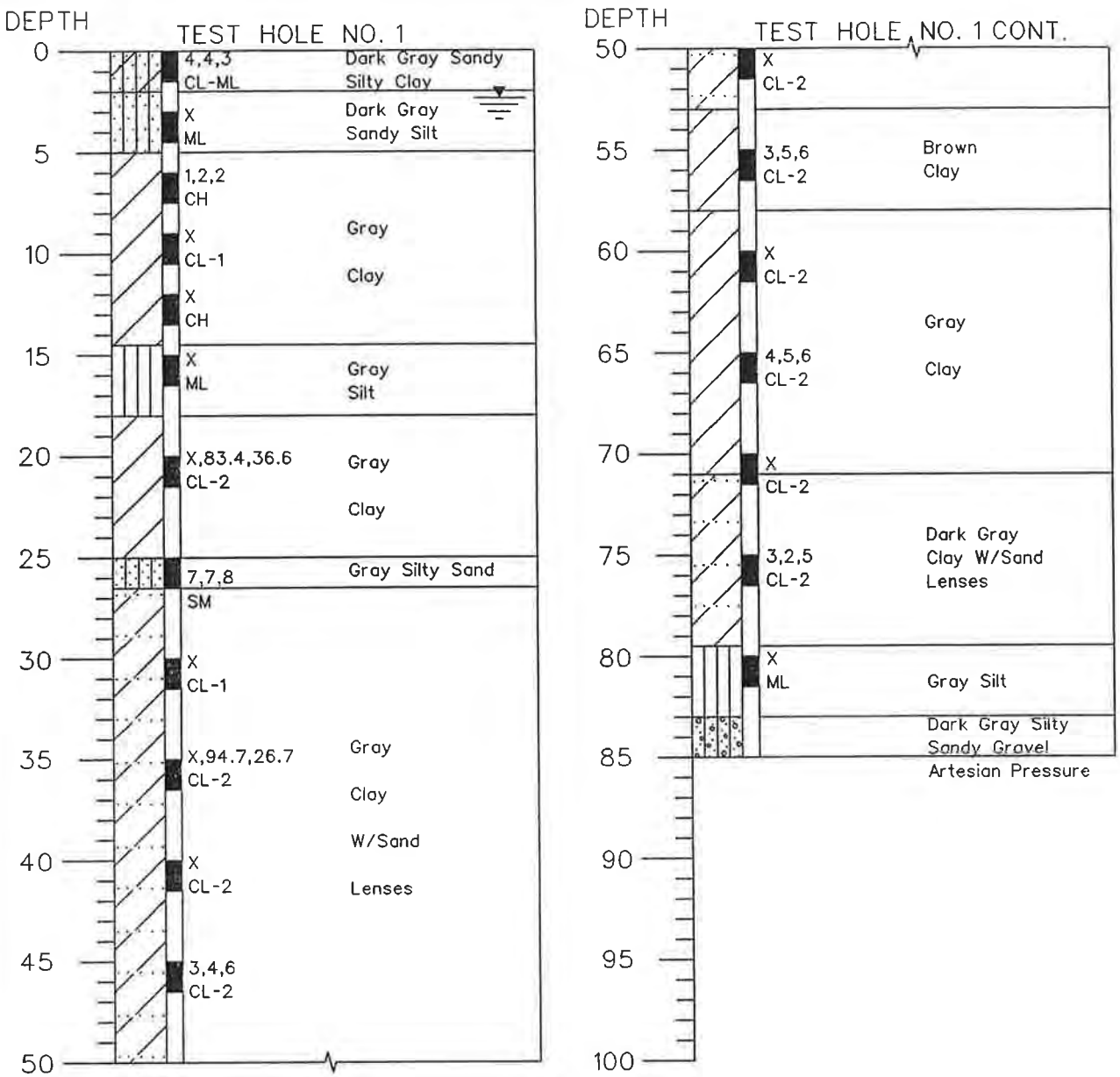
LOG OF BORINGS FOR: TIMPANOGOS SEWAGE PLANT	ROLLINS, BROWN AND GUNNELL, INC. CONSULTING ENGINEERS	FIGURE NO. 10

1996 Timpanogos Lift Station Borings

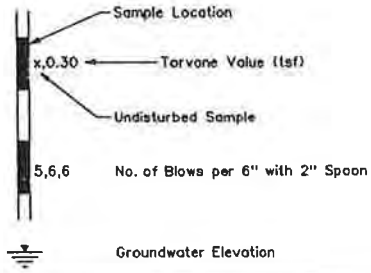
RBG-96B-1

See Figure 1 for Boring Location

RBG-96B-1



LEGEND



RB&G ENGINEERING INC.
Provo, Utah

Figure 1 **TEST HOLE LOGS**
Timpanogos Sewer Lift Station
American Fork, Utah

2008-2009 I-15 Pioneer Crossing Interchange Borings (Terracon)

B-17
B-18
TCB-157
TCB-157A
TCB-173
TCB-173A

See Figure 3 for Boring Locations

LOG OF BORING NO. B-17

CLIENT
HDR Inc

SITE **I-15 to Redwood Road**
American Fork, Lehi, Saratoga Springs, UT

PROJECT
East to West Connector; I-15 to Redwood Road

Boring Location: **I-15 SPUI Interchange, West Abutment, North Side**

Approx. Surface Elev.: 4546.9 ft

GRAPHIC LOG

0.5 **TOPSOIL:**
silty clay, brown

SANDY LEAN CLAY (CL):
soft, gray to brown, trace gravel

19 **SAND (SP-SM):**
medium dense, gray, with clay

25 **LEAN CLAY (CL):**
soft, gray to brown, trace sand

32.5 **SAND (SP-SM):**
medium dense to very dense, gray to brown, trace clay

Continued Next Page

DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	TYPE	RECOVERY, in.	PENETRATION RESISTANCE BLOWS / ft.	TESTS WATER CONTENT, %	DRY UNIT WEIGHT, PCF	LIQUID LIMIT	PLASTICITY INDEX	% PASSING NO. 200 SIEVE	PID
3		1	SS	6	9						
6		2	SS	8	3	27				56	
8		3	SS	10	3						
11		4	ST	24	--	32	92	38	18		Consol uu triax
13		5	SS	7	3						
16		6	SS	12	17	27				80	
21		7	SS	9	13						
26		8	SS	16	3						
31		9	ST	24	--	52	71	32	13		Consol uu triax
36		10	SS	14	18						

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft			
WL	▽ 3	WD	▼
WL	▼		▼
WL			

Terracon

BORING STARTED	3-27-08		
BORING COMPLETED	3-28-08		
RIG	B-80	FOREMAN	DAF
LOGGED	DAF	JOB #	61085026

LOG OF BORING NO. B-17

CLIENT
HDR Inc

SITE **I-15 to Redwood Road**
American Fork, Lehi, Saratoga Springs, UT

PROJECT
East to West Connector; I-15 to Redwood Road

GRAPHIC LOG		DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	TYPE	RECOVERY, in.	PENETRATION RESISTANCE BLOWS / ft.	TESTS WATER CONTENT, %	DRY UNIT WEIGHT, PCF	LIQUID LIMIT	PLASTICITY INDEX	% PASSING NO. 200 SIEVE	PID
	SAND (SP-SM): medium dense to very dense, gray to brown, trace clay	41		11	SS	12	50	24				17	
		46		12	SS	12	28						
48	**CLAY (CL):** very stiff, dark gray	51		13	SS	4	18						
54.5	**SANDY LEAN CLAY (CL):** very stiff, brown	56		14	ST	16	--			27	10		Consol
60	**SILTY SAND (SM):** very dense, brown-gray	61		15	SS	18	50/5	16				20	
65	**CLAYEY SAND (SC):** medium dense to dense, brown, trace gravel	66		16	SS	4	32						
		71		17	SS	0	24						
75	**GRAVEL (GP-GM):** very dense, gray, trace sand and clay	75		18	SS	3	50/3						

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft			
WL	▽ 3	WD	▼
WL	▼		▼
WL			

Terracon

BORING STARTED	3-27-08		
BORING COMPLETED	3-28-08		
RIG	B-80	FOREMAN	DAF
LOGGED	DAF	JOB #	61085026

LOG OF BORING NO. B-17

CLIENT
HDR Inc

SITE **I-15 to Redwood Road**
American Fork, Lehi, Saratoga Springs, UT

PROJECT
East to West Connector; I-15 to Redwood Road

GRAPHIC LOG		DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	TYPE	RECOVERY, in.	PENETRATION RESISTANCE BLOWS / ft.	TESTS WATER CONTENT, %	DRY UNIT WEIGHT, PCF	LIQUID LIMIT	PLASTICITY INDEX	% PASSING NO. 200 SIEVE	PID
	GRAVEL (GP-GM): very dense, gray, trace sand and clay	81		19	SS	0	50/5						
	84	82											
	LEAN CLAY (CL): soft to stiff, gray to light brown, trace gravel	83											
		84											
		85											
		86		20	SS	12	12	23		37	21		
		87											
		88											
		89											
		90											
		91		21	SS	1	2						
		92											
		93											
		94											
	95	95											
	SANDY CLAY (CL): hard, brown	96		22	SS	0	45						
	98	97											
	LEAN CLAY (CL): hard, orange-brown	98											
		99											
		100											
		101		23	SS	12	50/6	24		26	8		
	103	102											
	AUGER REFUSAL AT APPROXIMATELY 103 FEET	103											

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft			
WL	▽ 3	WD	▼
WL	▼		▼
WL			

Terracon

BORING STARTED	3-27-08		
BORING COMPLETED	3-28-08		
RIG	B-80	FOREMAN	DAF
LOGGED	DAF	JOB #	61085026

LOG OF BORING NO. B-18

CLIENT
HDR Inc

SITE **I-15 to Redwood Road**
American Fork, Lehi, Saratoga Springs, UT

PROJECT
East to West Connector; I-15 to Redwood Road

Boring Location: I-15 SPUI Interchange East Abutment

Approx. Surface Elev.: 4543.5 ft

Depth, ft.	USCS Symbol	Description	Number	Type	Recovery, in.	Penetration Resistance Blows / ft.	Water Content, %	Dry Unit Weight, PCF	Liquid Limit	Plasticity Index	% Passing No. 200 Sieve	PID
		CLAY (CL): soft to medium stiff, dark brown										
3			1	SS	0	3						
6			2	SS	0	4						
7.5		**SANDY GRAVEL (GP-GM):** dark gray										
9			3	ST	3	---			23	5		
10		**SANDY CLAY (CL):** soft to medium stiff, dark brown, with gravel										
11			4	SS	8	2						
13			5	SS	10	5	29		36	12		
16			6	SS	10	6						
16		**CLAYEY SAND (SC):** loose, dark brown, with gravel										
19		**SANDY SILT (ML):** very stiff, dark brown										
21			7	SS	8	15	21				24	
21		**SILTY SAND (SM):** medium dense, brown										
23		**CLAY (CL):** very stiff, gray										
26			8	SS	10	17						
31			9	ST	24	---						
31		**SILTY SAND (SM):** medium dense, gray										
32		**CLAY (CL):** medium stiff, gray										
36			10	SS	18	21	24		26	7		
36		**SILTY SAND (SM):** medium dense, gray										
38		**SAND (SP-SM):** medium dense to very dense, gray										

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft			
WL	▽ 5	WD	▼
WL	▼		▼
WL			

Terracon

BORING STARTED	4-17-08		
BORING COMPLETED	4-17-08		
RIG	B-80	FOREMAN	JWG
LOGGED	JWG	JOB #	61085026

LOG OF BORING NO. B-18

CLIENT
HDR Inc

SITE **I-15 to Redwood Road**
American Fork, Lehi, Saratoga Springs, UT

PROJECT
East to West Connector; I-15 to Redwood Road

GRAPHIC LOG		DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	TYPE	RECOVERY, in.	PENETRATION RESISTANCE BLOWS / ft.	TESTS WATER CONTENT, %	DRY UNIT WEIGHT, PCF	LIQUID LIMIT	PLASTICITY INDEX	% PASSING NO. 200 SIEVE	PID
	SAND (SP-SM): medium dense to very dense, gray	41		11	SS	12	11						
		42											
		43											
		44											
		45											
		46		12	SS	18	74						
		47											
		48											
	CLAY (CL): medium stiff, gray to black	49											
		50											
		51		13	SS	18	6						
		52											
		53											
	SANDY CLAY (CL): stiff, brown	54											
		55											
		56		14	ST	24	---	27	99				uu triax
	SANDY GRAVEL (GP-GM): very dense, gray to brown, trace clay	57											
		58											
		59											
		60											
		61		15	SS	14	78						
		62											
		63											
		64											
	SILTY SAND (SM): very dense, brown, trace gravel	65											
		66		16	SS	6	51	12				21	
		67											
		68											
		69											
	CLAYEY GRAVEL (GP-GM): very dense, brown, with sand	70											
		71		17	SS	3	50/4						
		72											
		73											
		74											
	CLAYEY SAND (SC): very dense, brown, with gravel	75											
		76		18	SS	8	50						
		77											
		78											
		79											
		80											

48 53 57 64 69 74

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft			
WL	▽ 5	WD	▼
WL	▼		▼
WL			

Terracon

BORING STARTED	4-17-08		
BORING COMPLETED	4-17-08		
RIG	B-80	FOREMAN	JWG
LOGGED	JWG	JOB #	61085026

LOG OF BORING NO. B-18

CLIENT
HDR Inc

SITE **I-15 to Redwood Road**
American Fork, Lehi, Saratoga Springs, UT

PROJECT
East to West Connector; I-15 to Redwood Road

GRAPHIC LOG		DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES RECOVERY, in.	SAMPLES PENETRATION RESISTANCE BLOWS / ft.	TESTS WATER CONTENT, %	TESTS DRY UNIT WEIGHT, PCF	TESTS LIQUID LIMIT	TESTS PLASTICITY INDEX	TESTS % PASSING NO. 200 SIEVE	PID
	81												
	SANDY CLAY (CL): hard, brown with red mottling, trace gravel	81		19	SS	12	34	19		25	7		
	84	82											
	SAND (SP): very dense, brown, with gravel and trace clay	83											
		84											
		85											
	86.5	86		20	SS	8	75	9				17	
	BOTTOM OF BORING AT APPROXIMATELY 86.5 FEET												

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft			
WL	▽ 5	WD	▼
WL	▼		▼
WL			

Terracon

BORING STARTED	4-17-08		
BORING COMPLETED	4-17-08		
RIG	B-80	FOREMAN	JWG
LOGGED	JWG	JOB #	61085026

LOG OF BORING NO. TCB-157

OWNER
UDOT

SITE **Roadway/Pipeline**
Saratoga Springs, Lehi, and American Fork, Utah

PROJECT
Pioneer Crossing/American Fork Interchange

Boring Location: Station 886+70 (65 RT)

Approximate Surface Elevation: 4544.5 ft

GRAPHIC LOG

DESCRIPTION

SILTY SAND (SM):
very loose, gray, trace gravel and organics
(AASHTO Classification: A-4)

9 — 4535.5

POORLY GRADED SAND with SILT and GRAVEL (SP-SM):
medium dense, gray
(AASHTO Classification: A-1-a)

18.5 — 4526

POORLY GRADED GRAVEL (GP):
medium dense, brown, with sand
(ASSHTO Classification: A-1-b)

21 — 4523.5

FAT CLAY (CH):
soft, gray
(AASHTO Classification: A-7-5)

30 — 4514.5

SILTY CLAY (CL-ML):
stiff, gray, with sand seams
(AASHTO Classification: A-4)

Continued Next Page

DEPTH, ft.	USCS SYMBOL	SAMPLES: NUMBER	TYPE	RECOVERY, in.	N1 (60) BLOWS / ft.	TESTS: WATER CONTENT, %	DRY UNIT WEIGHT, PCF	LIQUID LIMIT	PLASTICITY INDEX	% PASSING NO. 200 SIEVE	OTHER
5–6	SM	1	SS	16	2	22		NP	NP	37	
10–11	SP SM	2	SS	8	19	20					
15–16	SP SM	3	SS	8	24	13		NP	NP	11	
20–21	GP	4	SS	15	23	32					
25–26	CH	5	SS	14	3	44					
28–29	CH	6	ST	24	--	53	70	55	35	100	CUPP
30–31	CL ML	7	SS	7	14	23		22	4	76	

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft		
WL	▽	▼
WL	▼	▼
WL	Rotary Wash Boring	

Terracon

BORING STARTED	11-13-08		
BORING COMPLETED	11-14-08		
RIG	CME-75	FOREMAN	ABD
APPROVED	KJS	JOB #	61089090

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LOG OF BORING NO. TCB-157

OWNER
UDOT

SITE **Roadway/Pipeline**
Saratoga Springs, Lehi, and American Fork, Utah

PROJECT
Pioneer Crossing/American Fork Interchange

GRAPHIC LOG		DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	TYPE	RECOVERY, in.	N1 (60) BLOWS / ft.	TESTS WATER CONTENT, %	DRY UNIT WEIGHT, PCF	LIQUID LIMIT	PLASTICITY INDEX	% PASSING NO. 200 SIEVE	OTHER
	SILTY CLAY (CL-ML): stiff, gray, with sand seams (AASHTO Classification: A-4)	33	CL ML	8	ST	18	--	21	108	25	7	91	Consol.
		34–35	CL ML	9	ST	20	--	27					
		36–37											
	38 4506.5	38–39											
	SILTY SAND (SM): dense, gray (AASHTO Classification: A-2-4)	40–41	SM	10	SS	12	37	20		NP	NP	25	
		42–43											
	44 4500.5	44											
	SANDY LEAN CLAY (CL): medium stiff, gray (AASHTO Classification: A-6)	45–46	CL	11	ST	24	--	18	111	26	11	61	Consol.
	48 4496.5	47											
	LEAN CLAY (CL): hard, gray (AASHTO Classification: A-6)	48–49											
	51 4493.5	50–51	CL	12	SS	16	50/0.4	33		33	14	94	
	51.5 4493 **POORLY GRADED GRAVEL (GP):** very dense, black, tan, and gray, with clay												
	BOTTOM OF BORING AT APPROXIMATELY 51.5 FEET												

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft		
WL	▽	▼
WL	▼	▽
WL	Rotary Wash Boring	

Terracon

BORING STARTED	11-13-08		
BORING COMPLETED	11-14-08		
RIG	CME-75	FOREMAN	ABD
APPROVED	KJS	JOB #	61089090

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LOG OF BORING NO. TCB-157A

OWNER
UDOT

SITE **Roadway/Pipeline**
Saratoga Springs, Lehi, and American Fork, Utah

PROJECT
Pioneer Crossing/American Fork Interchange

Boring Location: Station 886+70 (65 RT)

Approximate Surface Elevation: 4544.5 ft

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES: NUMBER	TYPE	RECOVERY, in.	N1 (60) BLOWS / ft.	TESTS: WATER CONTENT, %	DRY UNIT WEIGHT, PCF	LIQUID LIMIT	PLASTICITY INDEX	% PASSING NO. 200 SIEVE	OTHER
	Sampling starts at a depth of 50 feet	1											
		2											
		3											
		4											
		5											
		6											
		7											
		8											
		9											
		10											
		11											
		12											
		13											
		14											
		15											
		16											
		17											
		18											
		19											
		20											
		21											
		22											
		23											
		24											
		25											
		26											
		27											
		28											
		29											
		30											
		31											
		32											

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft		
WL	▽	▼
WL	▼	▼
WL	Rotary Wash Boring	

Terracon

BORING STARTED			11-14-08
BORING COMPLETED			11-17-08
RIG	CME-75	FOREMAN	ABD/MJD
APPROVED	KJS	JOB #	61089090

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LOG OF BORING NO. TCB-157A

OWNER
UDOT

SITE **Roadway/Pipeline**
Saratoga Springs, Lehi, and American Fork, Utah

PROJECT
Pioneer Crossing/American Fork Interchange

GRAPHIC LOG		DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	TYPE	RECOVERY, in.	N1 (60) BLOWS / ft.	TESTS WATER CONTENT, %	DRY UNIT WEIGHT, PCF	LIQUID LIMIT	PLASTICITY INDEX	% PASSING NO. 200 SIEVE	OTHER
	Sampling starts at a depth of 50 feet	33											
		34											
		35											
		36											
		37											
		38											
		39											
		40											
		41											
		42											
		43											
		44											
		45											
		46											
		47											
		48											
		49											
	50 4494.5	50											
	LEAN CLAY (CL): very stiff, gray (AASHTO Classification: A-6)	51	CL	1	ST	20	--	31	92	40	21	98	Consol.
		52											
	53 4491.5	53											
	SILTY SAND with GRAVEL (SM): medium dense to dense, gray (AASHTO Classification: A-1-a)	54											
		55											
		56	SM	2	SS	5	42	9					
		57											
		58											
		59											
		60											
		61	SM	3	SS	5	20	20		NP	NP	13	
		62											
	63 4481.5	63											
		64											
		65											

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft		
WL	▽	▼
WL	▼	▽
WL	Rotary Wash Boring	

Terracon

BORING STARTED			11-14-08
BORING COMPLETED			11-17-08
RIG	CME-75	FOREMAN	ABD/MJD
APPROVED	KJS	JOB #	61089090

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LOG OF BORING NO. TCB-157A

OWNER
UDOT

SITE **Roadway/Pipeline**
Saratoga Springs, Lehi, and American Fork, Utah

PROJECT
Pioneer Crossing/American Fork Interchange

GRAPHIC LOG		DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	TYPE	RECOVERY, in.	N1 (60) BLOWS / ft.	TESTS WATER CONTENT, %	DRY UNIT WEIGHT, PCF	LIQUID LIMIT	PLASTICITY INDEX	% PASSING NO. 200 SIEVE	OTHER
	CLAYEY SAND (SC) medium dense, gray (AASHTO Classification: A-4)	66	SC	4	SS	6	24	24		23	9	46	
	69 4475.5	67, 68, 69											
	SILTY SAND with GRAVEL (SM): very dense, gray (AASHTO Classification: A-1-b)	70, 71	SM	5	SS	6	50/0.5	14		NP	NP	19	
	73 4471.5	72, 73, 74											
	POORLY GRADED GRAVEL (GP): very dense, gray, with sand and clay (AASHTO Classification: A-1-b to A-2-4)	75, 76	GP	6	SS	10	50	11					
		77, 78, 79, 80											
		81	GP	7	SS	3	50/0.4	15					
	83 4461.5	82, 83											
	REFUSAL AT APPROXIMATELY 83 FEET												

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft		
WL	▽	▼
WL	▼	▽
WL	Rotary Wash Boring	

Terracon

BORING STARTED			11-14-08
BORING COMPLETED			11-17-08
RIG	CME-75	FOREMAN	ABD/MJD
APPROVED	KJS	JOB #	61089090

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LOG OF BORING NO. TCB-173

OWNER
UDOT

SITE **Roadway/Pipeline**
Saratoga Springs, Lehi, and American Fork, Utah

PROJECT
Pioneer Crossing/American Fork Interchange

Boring Location: Station 883+90 (10 RT)

Approximate Surface Elevation: 4544 ft

GRAPHIC LOG

DESCRIPTION

0.9375 **ASPHALT:** approximately 11.25 inches thick — 4543.1

2.25 **FILL:** gravel — 4541.7

3.5 **SILTY SAND (SM):** trace gravel (AASHTO Classification: A-4) — 4540.5

POORLY GRADED SAND with SILT and GRAVEL (SP-SM): dense, brown (AASHTO Classification: A-1-b)

8 — 4536

SILTY SAND (SM): very loose, brown (AASHTO Classification: A-4)

13 — 4531

WELL-GRADED SAND with SILT and GRAVEL (SW-SM): dense to medium dense, brown (AASHTO Classification: A-1-b)

23 — 4521

SILT (ML): stiff, gray (AASHTO Classification: A-4 to A-6)

29 — 4515

FAT CLAY (CH): soft, gray (AASHTO Classification: A-7-5)

Continued Next Page

DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	TYPE	RECOVERY, in.	N1 (60) BLOWS / ft.	TESTS WATER CONTENT, %	DRY UNIT WEIGHT, PCF	LIQUID LIMIT	PLASTICITY INDEX	% PASSING NO. 200 SIEVE	OTHER
5–6	SP SM	1	SS	16	40	6		NP	NP	11	
10–11	SM	2	SS	18	3	25		NP	NP	42	
15–16	SW SM	3	SS	16	33	17		NP	NP	9	
20–21	SW SM	4	SS	8	19	20					
25–26	ML	5	SS	18	11	28		33	6	94	
27–28	ML	6	ST	27	--	37	87	36	11	100	Consol., DSS
30–31	CH	7	SS	15	3						
32	CH	8	ST	24	--	53	71	54	30	100	Torvane: 3.5 tsf

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft			
WL	▽ 8	WD	▼
WL	▼		▼
WL			

Terracon

BORING STARTED	11-23-08		
BORING COMPLETED	11-23-08		
RIG	CME-75	FOREMAN	MJD
APPROVED	KJS	JOB #	61089090

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LOG OF BORING NO. TCB-173

OWNER
UDOT

SITE **Roadway/Pipeline**
Saratoga Springs, Lehi, and American Fork, Utah

PROJECT
Pioneer Crossing/American Fork Interchange

GRAPHIC LOG		DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	TYPE	RECOVERY, in.	N1 (60) BLOWS / ft.	TESTS WATER CONTENT, %	DRY UNIT WEIGHT, PCF	LIQUID LIMIT	PLASTICITY INDEX	% PASSING NO. 200 SIEVE	OTHER
	34 / 4510	33											Consol.
	SILT (ML): stiff, gray (AASHTO Classification: A-4) 36.5 / 4507.5	34											
		35–36	ML	9	SS	18	11	23		NP	NP	93	
	LEAN CLAY (CL): stiff, gray (AASHTO Classification: A-7-6) 39 / 4505	37–38	CL	10	ST	24	--	30	94	46	23	99	Torvane: 3.5 tsf Consol., DSS
	POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM): very dense, gray (AASHTO Classification: A-1-b) 42 / 4502	39–40	SP SM	11	SS	18	72	26		NP	NP	12	
	SILTY SAND (SM): dense to very dense, gray (AASHTO Classification: A-2-4)	41–42											
		43–44	SM	12	SS	12	31	19		NP	NP	28	
		45–47											
		48–49	SM	13	SS	18	52	19		NP	NP	12	
	52 / 4492	50–52											
	LEAN CLAY (CL): medium stiff, dark gray to black (AASHTO Classification: A-7-6) 54.5 / 4489.5	53–54	CL	14	SS	18	8	32		46	23	97	
	SAND (SP): gray (AASHTO Classification: A-3) 57 / 4487	55–56	SP	15	ST	0	--						
	GRAVEL (GP): very dense, gray (AASHTO Classification: A-1-b) 59.5 / 4484.5	57–58											
		59	GP	16	SS	12	64						
	REFUSAL AT APPROXIMATELY 59.5 FEET												

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft			
WL	▽ 8	WD	▼
WL	▼		▼
WL			

Terracon

BORING STARTED	11-23-08		
BORING COMPLETED	11-23-08		
RIG	CME-75	FOREMAN	MJD
APPROVED	KJS	JOB #	61089090

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LOG OF BORING NO. TCB-173A

OWNER
UDOT

SITE **Roadway/Pipeline**
Saratoga Springs, Lehi, and American Fork, Utah

PROJECT
Pioneer Crossing/American Fork Interchange

Boring Location: Station 883+90 (10 RT)

Approximate Surface Elevation: 4544 ft

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES: NUMBER	TYPE	RECOVERY, in.	N1 (60) BLOWS / ft.	TESTS: WATER CONTENT, %	DRY UNIT WEIGHT, PCF	LIQUID LIMIT	PLASTICITY INDEX	% PASSING NO. 200 SIEVE	OTHER
	Sampling starts at a depth of 55 feet, refer to TCB-173 for 0 to 50 feet	1											
		2											
		3											
		4											
		5											
		6											
		7											
	∇	8											
		9											
		10											
		11											
		12											
		13											
		14											
		15											
		16											
		17											
		18											
		19											
		20											
		21											
		22											
		23											
		24											
		25											
		26											
		27											
		28											
		29											
		30											
		31											
		32											

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft			
WL	∇ 8	WD	▼
WL	▼		▼
WL			

Terracon

BORING STARTED	2-22-09		
BORING COMPLETED	2-22-09		
RIG	CME-55	FOREMAN	DAF
APPROVED	KJS	JOB #	61089090

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LOG OF BORING NO. TCB-173A

OWNER
UDOT

SITE **Roadway/Pipeline**
Saratoga Springs, Lehi, and American Fork, Utah

PROJECT
Pioneer Crossing/American Fork Interchange

GRAPHIC LOG		DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES RECOVERY, in.	SAMPLES N1 (60) BLOWS / ft.	TESTS WATER CONTENT, %	TESTS DRY UNIT WEIGHT, PCF	TESTS LIQUID LIMIT	TESTS PLASTICITY INDEX	TESTS % PASSING NO. 200 SIEVE	OTHER
	Sampling starts at a depth of 55 feet, refer to TCB-173 for 0 to 50 feet	33											
		34											
		35											
		36											
		37											
		38											
		39											
		40											
		41											
		42											
		43											
		44											
		45											
		46											
		47											
		48											
		49											
		50											
		51											
		52											
		53											
		54											
	55 4489	55											
	Flowing sands/gravels encountered, unable to obtain quality samples	56											
		57											
		58											
		59											
		60											
		61											
		62											
		63											
		64											
	65 4479	65											

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft			
WL	▽ 8	WD	▼
WL	▼		▼
WL			

Terracon

BORING STARTED			2-22-09
BORING COMPLETED			2-22-09
RIG	CME-55	FOREMAN	DAF
APPROVED	KJS	JOB #	61089090

COPY 61089090_UPDATE.GPJ ANDREWS.GDT 5/28/09

LOG OF BORING NO. TCB-173A

OWNER
UDOT

SITE **Roadway/Pipeline**
Saratoga Springs, Lehi, and American Fork, Utah

PROJECT
Pioneer Crossing/American Fork Interchange

GRAPHIC LOG		DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	TYPE	RECOVERY, in.	N1 (60) BLOWS / ft.	TESTS WATER CONTENT, %	DRY UNIT WEIGHT, PCF	LIQUID LIMIT	PLASTICITY INDEX	% PASSING NO. 200 SIEVE	OTHER
	SILTY SAND with GRAVEL (SM) to SILTY GRAVEL with SAND (GM): very dense, gray and brown (AASHTO Classification: A-1-b)	66	SM	1	SS	14	83	11		NP	NP	19	
		67–69											
		70	GM	2	SS	12	68	10		NP	NP	16	
		71–74											
	73 / 4471												
	SANDY SILT (ML): stiff, brown, orange and gray (AASHTO Classification: A-4)	75	ML	3	SS	16	14	23		28	4	65	
		76–79											
	78 / 4466												
	LEAN CLAY with SAND (CL): very stiff, brown, orange and gray (AASHTO Classification: A-6)	80	CL	4	SS	15	16	27		34	11	71	
		81–88											
	89 / 4455												
	SILTY GRAVEL with SAND (GM): very dense, gray and brown (AASHTO Classification: A-1-b)	90	GM	5	SS	12	50/0.4	13		NP	NP	18	
		91–97											

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft			
WL	▽ 8	WD	▼
WL	▼		▼
WL			

Terracon

BORING STARTED			2-22-09
BORING COMPLETED			2-22-09
RIG	CME-55	FOREMAN	DAF
APPROVED	KJS	JOB #	61089090

COPY 61089090_UPDATE.GPJ ANDREWS.GDT 5/28/09

LOG OF BORING NO. TCB-173A

OWNER
UDOT

SITE **Roadway/Pipeline**
Saratoga Springs, Lehi, and American Fork, Utah

PROJECT
Pioneer Crossing/American Fork Interchange

GRAPHIC LOG		DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	TYPE	RECOVERY, in.	N1 (60) BLOWS / ft.	TESTS WATER CONTENT, %	DRY UNIT WEIGHT, PCF	LIQUID LIMIT	PLASTICITY INDEX	% PASSING NO. 200 SIEVE	OTHER
	SILTY GRAVEL with SAND (GM): very dense, gray and brown (AASHTO Classification: A-1-b) 100 4444	98 99 100											
	BOTTOM OF BORING AT APPROXIMATELY 100 FEET												

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft			
WL	▽ 8	WD	▼
WL	▼		▼
WL			

Terracon

BORING STARTED			2-22-09
BORING COMPLETED			2-22-09
RIG	CME-55	FOREMAN	DAF
APPROVED	KJS	JOB #	61089090

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2008-2009 Pioneer Crossing / Mill Pond Rd over UPRR Borings (Terracon)

B-06
B-07
TCB-119A
TCB-154

See Figure 4 for Boring Locations

LOG OF BORING NO. B-06

CLIENT
HDR Inc

SITE **I-15 to Redwood Road**
American Fork, Lehi, Saratoga Springs, UT

PROJECT
East to West Connector; I-15 to Redwood Road

Boring Location: **Mill Pond Road and Railroad Bridge; Southwest Abutment East Side**

Approx. Surface Elev.: 4525.9 ft

GRAPHIC LOG

0.25 **GRAVEL (GP-GM):** loose, gray

SILTY SAND (SM): loose, light brown, trace gravel and organics

5 **SAND (SP-SM):** medium dense, brown, with clay

10 **CLAYEY SAND (SC):** medium dense, brown to gray

15.8 **SANDY CLAY (CL):** very stiff, gray to brown, with sand lenses

24 **LEAN CLAY (CL):** medium stiff, gray

37 **SAND (SP-SC):** dense, gray, with clay

40

Continued Next Page

DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	TYPE	RECOVERY, in.	PENETRATION RESISTANCE BLOWS / ft.	TESTS WATER CONTENT, %	DRY UNIT WEIGHT, PCF	LIQUID LIMIT	PLASTICITY INDEX	% PASSING NO. 200 SIEVE	PID
6	SW SM	1	SS	12	11						
11		2	SS	15	16						
16		3	ST	22	--						
21		4	SS	16	14						
26		5	SS	14	6						
31		6	ST	22	--	24	97	27	9		Consol uu triax
36		7	SS	3	30	22				69	

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft			
WL	▽ 15	WD	▼
WL	▼		▼
WL			

Terracon

BORING STARTED	3-26-08		
BORING COMPLETED	3-27-08		
RIG	B-80	FOREMAN	DAF
LOGGED	DAF	JOB #	61085026

LOG OF BORING NO. B-06

CLIENT
HDR Inc

SITE **I-15 to Redwood Road**
American Fork, Lehi, Saratoga Springs, UT

PROJECT
East to West Connector; I-15 to Redwood Road

GRAPHIC LOG

SILTY CLAY (CL-ML):
hard, gray, with sand lenses

44

SAND (SP-SM):
medium dense, gray

46

CLAY (CL):
very stiff, gray

50

SAND (SP-SM):
very dense, gray, with gravel

64

LEAN CLAY (CL):
very stiff, light brown

75

SAND (SP-SM):
dense, brown

79

Continued Next Page

DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	TYPE	RECOVERY, in.	PENETRATION RESISTANCE BLOWS / ft.	TESTS WATER CONTENT, %	DRY UNIT WEIGHT, PCF	LIQUID LIMIT	PLASTICITY INDEX	% PASSING NO. 200 SIEVE	PID
41		8	SS	14	30						
46		9	SS	18	16						
50		10	SS	18	50/6	15				6	
56		11	SS	18	50/5						
61		12	SS	18	50/6						
66		13	SS	18	17	27		38	21		
71		14	SS	16	22						
76		15	SS	0	37						

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft			
WL	▽ 15	WD	▼
WL	▼		▼
WL			

Terracon

BORING STARTED	3-26-08		
BORING COMPLETED	3-27-08		
RIG	B-80	FOREMAN	DAF
LOGGED	DAF	JOB #	61085026

LOG OF BORING NO. B-06

CLIENT
HDR Inc

SITE **I-15 to Redwood Road**
American Fork, Lehi, Saratoga Springs, UT

PROJECT
East to West Connector; I-15 to Redwood Road

GRAPHIC LOG		DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	TYPE	RECOVERY, in.	PENETRATION RESISTANCE BLOWS / ft.	TESTS WATER CONTENT, %	DRY UNIT WEIGHT, PCF	LIQUID LIMIT	PLASTICITY INDEX	% PASSING NO. 200 SIEVE	PID
	SILTY CLAY (CL-ML): hard, brown, with sand	81		16	SS	16	35						
	85	85											
	SAND (SP-SM): medium dense, brown to gray, trace gravel	86		17	SS	12	15	13				10	
	90	90											
	SANDY CLAY (CL): hard, brown	91		18	SS	16	36						
	95	95											
	SAND (SP-SM): dense, brown	96		19	SS	0	38						
	99	99											
	LEAN CLAY (CL): hard, gray-brown, with sand lenses	100											
	101.5	101		20	SS	15	50/6	15		35	19		
	BOTTOM OF BORING AT APPROXIMATELY 101.5 FEET												

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft			
WL	▽ 15	WD	▼
WL	▼		▼
WL			

Terracon

BORING STARTED	3-26-08		
BORING COMPLETED	3-27-08		
RIG	B-80	FOREMAN	DAF
LOGGED	DAF	JOB #	61085026

LOG OF BORING NO. B-07

CLIENT
HDR Inc

SITE **I-15 to Redwood Road**
American Fork, Lehi, Saratoga Springs, UT

PROJECT
East to West Connector; I-15 to Redwood Road

Boring Location: **Mill Pond Road and Raildroad Bridge; Northeast Abutment**

Approx. Surface Elev.: 4526.2 ft

GRAPHIC LOG	DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	TYPE	RECOVERY, in.	PENETRATION RESISTANCE BLOWS / ft.	TESTS WATER CONTENT, %	DRY UNIT WEIGHT, PCF	LIQUID LIMIT	PLASTICITY INDEX	% PASSING NO. 200 SIEVE	PID
FILL: silty sand and gravel, brown, scattered debris and vegetation at surface	5											
SILTY SAND (SM): loose, brown with orange mottling, very fine to fine grained	10		1	SS	6	8						
SANDY LEAN CLAY (CL): brown with black organics	15		2	ST	18				25	8		UU TRIAX
CLAYEY SAND (SC): medium dense, brown to gray with orange mottling and clay seams	20		3	SS	13	26						
SANDY LEAN CLAY (CL): stiff to very stiff, brown with black and orange mottling, with sand lenses	25		4	ST	18				44	21		
	30		5	SS	15	15						
	35		6	ST	18							uu triax
	40		7	SS	14	30						

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft			
WL	▽ 7	WD	▼
WL	▼		▼
WL			

Terracon

BORING STARTED	3-20-08		
BORING COMPLETED			
RIG	B-80	FOREMAN	SCD
LOGGED	SCD	JOB #	61085026

LOG OF BORING NO. B-07

CLIENT
HDR Inc

SITE **I-15 to Redwood Road**
American Fork, Lehi, Saratoga Springs, UT

PROJECT
East to West Connector; I-15 to Redwood Road

GRAPHIC LOG		DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	TYPE	RECOVERY, in.	PENETRATION RESISTANCE BLOWS / ft.	TESTS WATER CONTENT, %	DRY UNIT WEIGHT, PCF	LIQUID LIMIT	PLASTICITY INDEX	% PASSING NO. 200 SIEVE	PID
	42	41		8	SS	18	45	14				88	
	SILTY SAND (SM): dense, gray	42											
	45	43											
		44											
	SANDY CLAY (CL): stiff, dark gray	45											
		46		9	SS	14	8						
		47											
		48											
		49											
	50	50											
	CLAYEY GRAVEL (GC): very dense, brown, with sand	51		10	SS	5	50/5"						
		52											
		53											
		54											
		55											
		56		11	SS	8	71						
		57											
		58											
		59											
	60	60											
	SILTY SAND (SM): medium dense, brown	61		12	SS	12	20	22				10	
	63	62											
	SANDY CLAY (CL): stiff to very stiff, brown, with gravels	63											
		64											
		65											
		66		13	SS	6	22						
		67											
		68											
		69											
		70											
		71		14	SS	12	12	26		39	21	84	
		72											
		73											
		74											
	75	75											
	CLAYEY GRAVEL (GC): very dense, brown, fine to coarse gravel, with sand	76		15	SS	1	50/5"						
	78	77											
	SANDY CLAY (CL): very stiff, brown, with gravel	78											
		79											
		80											

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft			
WL	▽ 7	WD	▼
WL	▼		▼
WL			

Terracon

BORING STARTED	3-20-08		
BORING COMPLETED			
RIG	B-80	FOREMAN	SCD
LOGGED	SCD	JOB #	61085026

LOG OF BORING NO. B-07

CLIENT
HDR Inc

SITE **I-15 to Redwood Road**
American Fork, Lehi, Saratoga Springs, UT

PROJECT
East to West Connector; I-15 to Redwood Road

GRAPHIC LOG		DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	TYPE	RECOVERY, in.	PENETRATION RESISTANCE BLOWS / ft.	TESTS WATER CONTENT, %	DRY UNIT WEIGHT, PCF	LIQUID LIMIT	PLASTICITY INDEX	% PASSING NO. 200 SIEVE	PID
	SANDY CLAY (CL): very stiff, brown, with gravel	81		16	SS	8	21						
		82											
		83											
		84											
85		85											
	SILTY SAND (SM): very dense, brown, with sand	86		17	SS	8	50/5"	15				14	
		87											
		88											
		89											
90		90											
	CLAYEY GRAVEL (GC): very dense, brown, with sand	91		18	SS	1	50/5"						
92		92											
	BOTTOM OF BORING (AUGER REFUSAL) AT APPROXIMATELY 92 FEET												

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft			
WL	▽ 7	WD	▼
WL	▼		▼
WL			

Terracon

BORING STARTED			3-20-08
BORING COMPLETED			
RIG	B-80	FOREMAN	SCD
LOGGED	SCD	JOB #	61085026

LOG OF BORING NO. TCB-119A

OWNER
UDOT

SITE **Roadway/Pipeline**
Saratoga Springs, Lehi, and American Fork, Utah

PROJECT
Pioneer Crossing/American Fork Interchange

Boring Location: Station 843+68 (8 RT)

Approximate Surface Elevation: 4523.6 ft

DESCRIPTION	Elevation
SANDY SILT (ML): medium stiff, gray (AASHTO Classification: A-4)	8 / 4515.6
SILT WITH SAND (ML): very stiff, gray (AASHTO Classification: A-4)	11 / 4512.6
SAND (SP): medium dense, gray (AASHTO Classification: A-2-4 to A-4)	13 / 4510.6
SANDY SILT (ML): very stiff, brown (AASHTO Classification: A-4)	18 / 4505.6
SANDY LEAN CLAY (CL): medium stiff, gray (AASHTO Classification: A-4)	23 / 4500.6
LEAN CLAY (CL): hard, gray (AASHTO Classification: A-7-6)	28 / 4495.6
SILTY SAND (SM): medium dense, gray (AASHTO Classification: A-2-4)	31.5 / 4492.1
SILT (ML): gray (AASHTO Classification: A-4)	35 / 4488.6

DEPTH, ft.	USCS SYMBOL	NUMBER	TYPE	RECOVERY, in.	N1 (60) BLOWS / ft.	WATER CONTENT, %	DRY UNIT WEIGHT, PCF	LIQUID LIMIT	PLASTICITY INDEX	% PASSING NO. 200 SIEVE	OTHER
5–6	ML	1	SS	10	7	18		NP	NP	64	
10–11	ML	2	SS	14	25	25		21	3	83	Pocket Penetrometer 2.25 tsf Torvane: 4 tsf
15–16	ML	3	ST	24	--	19		NP	NP	57	
20–21	CL	4	SS	14	7	19		23	10	55	
25–26	CL	5	ST	20	--	38	83	42	21	91	Pocket Penetrometer 4 tsf Torvane: 7 tsf Consol. w/ time rates CUPP
30–31	SM	6	SS	14	27	30		NP	NP	20	

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WB; artesian pressure encountered at a depth of 54 ft

WATER LEVEL OBSERVATIONS, ft		
WL	▽	▼
WL	▼	▼
WL	Rotary Wash Boring, Well Installed	

Terracon

BORING STARTED	1-8-09		
BORING COMPLETED	1-20-09		
RIG	CME-55	FOREMAN	ABD
APPROVED	KJS	JOB #	61089090

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LOG OF BORING NO. TCB-119A

OWNER
UDOT

SITE **Roadway/Pipeline**
Saratoga Springs, Lehi, and American Fork, Utah

PROJECT
Pioneer Crossing/American Fork Interchange

Description	Elevation	DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	TYPE	RECOVERY, in.	N1 (60) BLOWS / ft.	TESTS WATER CONTENT, %	DRY UNIT WEIGHT, PCF	LIQUID LIMIT	PLASTICITY INDEX	% PASSING NO. 200 SIEVE	OTHER
SILTY SAND (SM): dense, gray (AASHTO Classification: A-2-4)	41 / 4482.6	36	SM	7	ST	20	--	17	111	NP	NP	16	Consol. w/ time rates
		40	SM	8	SS	10	41	26		NP	NP	31	
SILT (ML): very stiff, gray (AASHTO Classification: A-4)	44 / 4479.6												
LEAN CLAY (CL): very stiff, gray (AASHTO Classification: A-6)	48.5 / 4475.1	45	CL	9	SS	10	19	22		36	20	96	
SILTY GRAVEL WITH SAND (GM): very dense, tan (AASHTO Classification: A-1-b)		50	GM	10	SS	12	67	13		NP	NP	16	
At 54 feet artesian conditions encountered	57 / 4466.6												
SANDY SILT (ML): very stiff, tan (AASHTO Classification: A-4)	61 / 4462.6	60	ML	11	SS	14	17						
GRAVELLY LEAN CLAY (CL): stiff, tan (AASHTO Classification: A-7-6)	68 / 4455.6	65	CL	12	ST	7	--	31		45	30	68	

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WB; artesian pressure encountered at a depth of 54 ft

WATER LEVEL OBSERVATIONS, ft		
WL	▽	▼
WL	▼	▼
WL	Rotary Wash Boring, Well Installed	

Terracon

BORING STARTED	1-8-09		
BORING COMPLETED	1-20-09		
RIG	CME-55	FOREMAN	ABD
APPROVED	KJS	JOB #	61089090

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LOG OF BORING NO. TCB-119A

OWNER
UDOT

SITE **Roadway/Pipeline**
Saratoga Springs, Lehi, and American Fork, Utah

PROJECT
Pioneer Crossing/American Fork Interchange

GRAPHIC LOG		DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES RECOVERY, in.	SAMPLES N1 (60) BLOWS / ft.	TESTS WATER CONTENT, %	TESTS DRY UNIT WEIGHT, PCF	TESTS LIQUID LIMIT	TESTS PLASTICITY INDEX	TESTS % PASSING NO. 200 SIEVE	OTHER
	LEAN CLAY WITH SAND (CL): stiff, tan (AASHTO Classification: A-6)	71	CL	13	SS	12	9	29		37	22	78	
	73 — 4450.6	72											
	CLAYEY SAND (SC): dense, reddish-brown (AASHTO Classification: A-2-6 to A-2-7)	73											
		74											
	75.5 — 4448.1	75	SC	14	SS	14	35						
		76											
	No samples obtained from 80' to 92' due to heavy artesian pressure; soil observed to be sand and gravel from cuttings; estimated 20-25 gal/min flow	77											
		78											
		79											
		80											
		81											
		82											
		83											
		84											
		85											
		86											
		87											
		88											
		89											
		90											
		91											
	92 — 4431.6	92											
	ROTARY REFUSAL AT APPROXIMATELY 92 FEET												

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WB; artesian pressure encountered at a depth of 54 ft

WATER LEVEL OBSERVATIONS, ft		
WL	▽	▼
WL	▼	▼
WL	Rotary Wash Boring, Well Installed	

Terracon

BORING STARTED	1-8-09		
BORING COMPLETED	1-20-09		
RIG	CME-55	FOREMAN	ABD
APPROVED	KJS	JOB #	61089090

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LOG OF BORING NO. TCB-154

OWNER
UDOT

SITE **Roadway/Pipeline**
Saratoga Springs, Lehi, and American Fork, Utah

PROJECT
Pioneer Crossing/American Fork Interchange

Boring Location: Station 846+38 (5 RT)

Approximate Surface Elevation: 4519.6 ft

GRAPHIC LOG

DESCRIPTION

SILTY SAND with GRAVEL (SM):
black, with clay seams
(AASHTO Classification: A-1-b)

8 — 4511.6

LEAN CLAY (CL):
medium stiff, dark brown and gray, with organics
(AASHTO Classification: A-6 to A-7-5)

20 — 4499.6

LEAN CLAY with SAND (CL):
stiff, gray
(AASHTO Classification: A-7-5)

23.5 — 4496.1

LEAN CLAY (CL):
very stiff, gray
(AASHTO Classification: A-6)

28 — 4491.6

WELL-GRADED SAND with SILT (SW-SM):
very dense, tan and gray, 2" thick gravel layer @ 35.5 ft
(AASHTO Classification: A-1-b)

Continued Next Page

DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	TYPE	RECOVERY, in.	N1 (60) BLOWS / ft.	TESTS WATER CONTENT, %	DRY UNIT WEIGHT, PCF	LIQUID LIMIT	PLASTICITY INDEX	% PASSING NO. 200 SIEVE	OTHER
5–6	SM	1	ST	8	--	62		NP	NP	25	
10–11	CL	2	SS	12	4						
15–16	CL	3	SS	16	4	29		40	23	96	
17–18	CL	4	ST	20	--	35	92	42	22	100	Torvane: 2.5 tsf Pocket Penetrometer 0.75 tsf CUPP
20–21	CL	5	SS	12	12	38		47	28	85	
25–26	CL	6	ST	18	--	25	99	34	14	97	Torvane: 3 tsf Pocket Penetrometer 4 tsf Consol. DSS
30–31	SW SM	7	SS	14	69						

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WB; artesian pressure encountered at a depth of 58 ft

WATER LEVEL OBSERVATIONS, ft		
WL	▽	▼
WL	▼	▼
WL	Rotary Wash Boring	

Terracon

BORING STARTED	1-12-09		
BORING COMPLETED	1-13-09		
RIG	CME-55	FOREMAN	ABD
APPROVED	KJS	JOB #	61089090

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LOG OF BORING NO. TCB-154

OWNER
UDOT

SITE **Roadway/Pipeline**
Saratoga Springs, Lehi, and American Fork, Utah

PROJECT
Pioneer Crossing/American Fork Interchange

Elevation	Description	Depth, ft.	USCS Symbol	Samples: Number	Type	Recovery, in.	N1 (60) Blows / ft.	Tests: Water Content, %	Dry Unit Weight, PCF	Liquid Limit	Plasticity Index	% Passing No. 200 Sieve	Other
		36	SW SM	8	SS	12	87	16		NP	NP	10	
4481.6	**POORLY GRADED SAND with GRAVEL (SP):** gray (AASHTO Classification: A-1-b)	38											
4478.6	**LEAN CLAY (CL):** very stiff, brown to gray (AASHTO Classification: A-6)	40	SP	9	ST	18	--	21		NP	NP	3	
		41	CL					31		34	17	90	Torvane: 2 tsf Pocket Penetrometer 2.75 tsf
4475.6	**CLAYEY GRAVEL (GC):** medium dense, gray (AASHTO Classification: A-1-b to A-2-7)	45	GC	10	SS	4	26						
4471.6	**LEAN CLAY (CL):** stiff, gray (AASHTO Classification: A-7-6)	50	CL	11	SS	16	10	25		41	23	87	
4465.6	**SILTY GRAVEL with SAND (GM):** very dense, yellow and gray (AASHTO Classification: A-1-b)	55	GM	12	SS	5	50/0.4	14		NP	NP	20	
	At 58 feet artesian conditions encountered												
	-no samples obtained from 60 to 65 feet due to heavy artesian pressure; soil observed to be sand and gravel from cuttings												
4452.6	**LEAN CLAY (CL):** stiff, tan and light gray (AASHTO Classification: A-4 to A-6)	70											

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WB; artesian pressure encountered at a depth of 58 ft

WATER LEVEL OBSERVATIONS, ft		
WL	▽	▼
WL	▼	▼
WL	Rotary Wash Boring	

Terracon

BORING STARTED	1-12-09		
BORING COMPLETED	1-13-09		
RIG	CME-55	FOREMAN	ABD
APPROVED	KJS	JOB #	61089090

COPY 61089090_UPDATE.GPJ ANDREWS.GDT 5/28/09

LOG OF BORING NO. TCB-154

OWNER
UDOT

SITE **Roadway/Pipeline**
Saratoga Springs, Lehi, and American Fork, Utah

PROJECT
Pioneer Crossing/American Fork Interchange

GRAPHIC LOG		DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES RECOVERY, in.	SAMPLES N1 (60) BLOWS / ft.	TESTS WATER CONTENT, %	TESTS DRY UNIT WEIGHT, PCF	TESTS LIQUID LIMIT	TESTS PLASTICITY INDEX	TESTS % PASSING NO. 200 SIEVE	OTHER
	LEAN CLAY (CL): stiff, tan and light gray (AASHTO Classification: A-4 to A-6)	71	CL	13	SS	14	10	22		27	8	88	
		72											
		73	CL	14	ST	14	--	24	103	35	13	97	Consol.
		74											
		75											
		76	SP	15	SS	12	21						
		77											
		78											
		79											
		80											
		81	SW SC	16	SS	10	69	24		33	12	7	
		82											
		83											
		84											
		85											
		86											
		87											
		88											
		89											
		90											
		91											
		92											
		93											
		94											
		95											
		96											
		97											
		98											
		99											
		100											

73 — 4446.6

74 — 4445.6

CLAYEY GRAVEL (GC): tan (AASHTO Classification: A-1-b to A-2-7)

76.5 — 4443.1

SAND (SP): medium dense, tan and reddish-brown (AASHTO Classification: A-2-4)

79.5 — 4440.1

LEAN CLAY (CL): tan (AASHTO Classification: A-6)

81.5 — 4438.1

WELL-GRADED SAND with CLAY (SW-SC): very dense, dark gray (AASHTO Classification: A-2-6)

-no samples obtained from 85-100 feet due to heavy artesian pressure; soil observed to be sand and gravel from cuttings; estimated 8 gal/min flow

100 — 4419.6

BOTTOM OF BORING AT APPROXIMATELY 100 FEET

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WB; artesian pressure encountered at a depth of 58 ft

WATER LEVEL OBSERVATIONS, ft		
WL	▽	▼
WL	▼	▽
WL	Rotary Wash Boring	

Terracon

BORING STARTED	1-12-09		
BORING COMPLETED	1-13-09		
RIG	CME-55	FOREMAN	ABD
APPROVED	KJS	JOB #	61089090

COPY 61089090_UPDATE.GPJ ANDREWS.GDT 5/28/09

2000 I-15 Pleasant Grove Interchange Borings (Kleinfelder)

BH-03
BH-06
BH-07
BH-09
BH-10
BH-11
BH-15

See Figure 5 for Boring Locations

Depth (m)	Percent Passing #200	Shear Strength (kPa)	Dry Density (kN/m^3)	Moisture Content (%)	Other Tests	Blows/ 0.3 Meters	Sample	USCS	SOIL DESCRIPTION
0						11		ML	SILT - stiff, moist, dark brown, with common roots (topsoil) to 300 mm depth
1				▼					
2									2.1
								CL	Lean CLAY - soft, moist to wet, light brown to yellow-brown, with frequent silt and sand layers 150 - 300 mm thick
3						2			3.6
4								ML	SILT - very soft, wet, light brown to yellow-brown
5	97	40	14.6	32					
6									6.1
						7		SP SM	Poorly Graded SAND with gravel - loose, wet, gray
7						42			- grades to medium dense with coarse-grained gravel, subrounded to 10 mm
8									- no recovery
									8.4
9								CL ML	Silty CLAY - hard, wet, light brown to yellowish brown
		60	15.0	30					
10									
11						37			- grades with occasional gravelly sand seams to 12 mm thick
12									- shelby tube damage on gravel
13									13.1
								CL OL	Lean CLAY/ Organic SILT - stiff, wet, gray to dark gray, with organic odor
14						15			
15									
		60	13.5	36					15.7
16								CL	Lean CLAY - medium stiff, wet, gray
17									
18									
						8			
19									

DEPTH IN METERS

DATE DRILLED: **2-8-00**
TOTAL DEPTH: **21.64 meters**
DIAMETER OF BORING: **152 mm**

LOGGED BY: **M. Hislop**
EQUIPMENT: **Diedrich D-120**
ELEVATION: **1374.95 meters**

STATION:
OFFSET:

KLEINFELDER

PROJECT NO. **35-8146-08.001**

LOG OF BORING BH- 3

Pleasant Grove Interchange

Pleasant Grove, Utah

PLATE

A-6

LOG-M-A 3510Z012.GPJ 5/31/00

Depth (m)	Percent Passing #200	Shear Strength (kPa)	Dry Density (kN/m^3)	Moisture Content (%)	Other Tests	Blows/ 0.3 Meters	Sample	USCS	SOIL DESCRIPTION
20			12.8	41		10			- stiff, with occasional silt seams to 12 mm thick
21.6									shelby tube damaged on gravel

DEPTH IN METERS: 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39

DATE DRILLED: **2-8-00**
TOTAL DEPTH: **21.64 meters**
DIAMETER OF BORING: **152 mm**

LOGGED BY: **M. Hislop**
EQUIPMENT: **Diedrich D-120**
ELEVATION: **1374.95 meters**

STATION:
OFFSET:

KLEINFELDER

PROJECT NO. **35-8146-08.001**

LOG OF BORING BH- 3

Pleasant Grove Interchange

Pleasant Grove, Utah

PLATE

A-7

LOG-M-A 3510Z012.GPJ 5/31/00

Depth (m)	Percent Passing #200	Shear Strength (kPa)	Dry Density (kN/m^3)	Moisture Content (%)	Other Tests	Blows/ 0.3 Meters	USCS	SOIL DESCRIPTION
0						14	ML	Sandy SILT - stiff, moist, dark brown, abundant roots and organics (topsoil) to 300 mm thick
1								
2				▽		3		- soft
3							SC	3.4 Clayey SAND - soft, wet, light brown to yellow-brown
4								
5						5		- grades with frequent 76 mm thick layers of loose micaceous silty sand and dark brown lean clay; medium stiff
6								
7								
8						0	CL	7.9 Lean CLAY - very soft, wet, light brown mottled yellow-brown and gray, with frequent silt layers up to 25 mm thick
9	99	120	16.2	25				- grades to hard
10								
11						20		- grades with frequent silty sand layers up to 75 mm thick, and silt seams up to 3 mm thick; very stiff
12		80	16.0	26				
13								- medium stiff to stiff; gray
14						12		- grades with light brown layers
15	100	90	14.4	32				
16								
17								
18							OL	17.7 Organic SILT - medium stiff, wet, dark gray, organic odor
19						6		

DEPTH IN METERS

DATE DRILLED: **2-9-00**
TOTAL DEPTH: **32.61 meters**
DIAMETER OF BORING: **152 mm**

LOGGED BY: **M. Hislop**
EQUIPMENT: **Diedrich D-120**
ELEVATION: **1374.50 meters**

STATION:
OFFSET:

KLEINFELDER

PROJECT NO. **35-8146-08.001**

LOG OF BORING BH- 6

Pleasant Grove Interchange

Pleasant Grove, Utah

PLATE

A-10

LOG-M-A 3510Z012 GPJ 5/31/00

Depth (m)	Percent Passing #200	Shear Strength (kPa)	Dry Density (kN/m^3)	Moisture Content (%)	Other Tests	Blows/ 0.3 Meters	Sample	USCS	SOIL DESCRIPTION
20									
21									
22	100	50	14.3 14.3	32 32					
23									
23.5								CL	Lean CLAY - stiff, wet, gray mottled dark gray
24						10			
25									
26									
26.2								SM	Silty SAND - very dense, wet, poorly graded, gray
27									
28						33			- grades gray to dark gray - frequent sandy silt layers up to 75 mm thick
29						51			
29.1								ML SM	Sandy SILT/Silty SAND - very dense, wet, gray, alternating interbedded layers throughout
30									
31	28					42			
32						35			
32.6									- grades with layers of gray Silty CLAY and angular Silty GRAVEL
33									
34									
35									
36									
37									
38									
39									

DEPTH IN METERS

DATE DRILLED: **2-9-00**
TOTAL DEPTH: **32.61 meters**
DIAMETER OF BORING: **152 mm**

LOGGED BY: **M. Hislop**
EQUIPMENT: **Diedrich D-120**
ELEVATION: **1374.50 meters**

STATION:
OFFSET:

KLEINFELDER

PROJECT NO. **35-8146-08.001**

LOG OF BORING BH- 6

Pleasant Grove Interchange

Pleasant Grove, Utah

PLATE

A-11

LOG-M-A 35102012.GPJ 5/31/00

Depth (m)	Percent Passing #200	Shear Strength (kPa)	Dry Density (kN/m^3)	Moisture Content (%)	Other Tests	Blows/ 0.3 Meters	Sample	USCS	SOIL DESCRIPTION
0						11			FILL: Silty CLAY - stiff, slightly moist to moist, light brown, with occasional silty sand, fine-grained gravel, and concrete pieces
0.9								SC	Clayey SAND - very loose, wet, gray, medium-grained
1									
2				▽		3			
2.0								ML	SILT with fine-grained sand - soft, wet, light brown to olive-brown
3									
									- no recovery
4									- no recovery
4.8								CL	Lean CLAY - soft, wet, light brown
5						3			
6	93	20	15.2	33					
			17.1	17					
7									
8						14			- grades stiff, mottled gray and rust-colored, with occasional seams of fine to medium-grained sand
9		30							
10									- shelby tube lost in boring, unsuccessfully attempted to retrieve
11									- no recovery, lost shelby tube may be interfering with sampler, angers pulled and re-drilled to displace shelby tube
12	98	20	15.2	29					- no recovery, shelby tube retrieved undamaged but empty - very stiff, light brown
13									
14		30				28			- gray, no visible sand seams
15			14.8	30					- medium stiff
16									
17						4			- soft to medium stiff
18									
19									

DEPTH IN METERS

DATE DRILLED: **2-9-00**
TOTAL DEPTH: **31.09 meters**
DIAMETER OF BORING: **203 mm**

LOGGED BY: **M. Bostrom**
EQUIPMENT: **Diedrich D-120**
ELEVATION: **1374.30 meters**

STATION:
OFFSET:

KLEINFELDER

PROJECT NO. **35-8146-08.001**

LOG OF BORING BH- 7

Pleasant Grove Interchange

Pleasant Grove, Utah

PLATE

A-12

LOG-M-A 35102012.GPJ 5/31/00

Depth (m)	Percent Passing #200	Shear Strength (kPa)	Dry Density (kN/m^3)	Moisture Content (%)	Other Tests	Blows/ 0.3 Meters	Sample	USCS	SOIL DESCRIPTION
20	99	30	14.0	36					
21									
22									
23						7			- medium stiff - grades with fine-grained gravels and occasional organics
24									
25									
26									- grades with very fine to fine-grained sand seams
26.8									
27								SM	Silty SAND - very dense, wet, fine-grained, poorly graded sand with occasional poorly graded sand and fine-grained gravel layers up to 200 mm thick, gray
28						58			
29						53			
30									
31						46			- grades with a very stiff to hard gray silty clay layer 150 mm thick
31.1									
32									
33									
34									
35									
36									
37									
38									
39									

DEPTH IN METERS

DATE DRILLED: **2-9-00**
TOTAL DEPTH: **31.09 meters**
DIAMETER OF BORING: **203 mm**

LOGGED BY: **M. Bostrom**
EQUIPMENT: **Diedrich D-120**
ELEVATION: **1374.30 meters**

STATION:
OFFSET:

KLEINFELDER

PROJECT NO. **35-8146-08.001**

LOG OF BORING BH- 7

Pleasant Grove Interchange

Pleasant Grove, Utah

PLATE

A-13

LOG-M-A 3510Z012.GPJ 5/31/00

Depth (m)	Percent Passing #200	Shear Strength (kPa)	Dry Density (kN/m^3)	Moisture Content (%)	Other Tests	Blows/ 0.3 Meters	Sample	USCS	SOIL DESCRIPTION
0						24			FILL: Silty SAND - medium dense, dry to slightly moist, gray to dark brown, fine to coarse-grained, with some fine-grained gravel
1									
2						19			- grades with coarse-grained gravels and occasional clay layer 50 to 75 mm thick, loose, moist
3						9			
3.6									FILL: Silty CLAY - stiff, wet, dark brown mottled rust-colored, some coarse-grained sand, some debris: wire, old tire pieces
4									- medium stiff to stiff, with similar debris
5									
6		50				4			
6.2								SM	Silty SAND - loose, wet, yellow-brown, fine to medium-grained
7									
7.6								CL	Lean CLAY - soft, wet, yellow-brown
8									
9						18			
9.3								SP SM	Silty SAND - medium dense, wet, yellow-brown, with occasional layers of clayey sand and poorly graded gravel and sand
10									
10.7								ML	SILT - soft to medium stiff, wet, yellow-brown mottled rust-colored
11		70	16.4	24					
12.0								CL	Lean CLAY - stiff, mottled gray, rust and white
12						12			
13									
14		80							- grades very stiff
15						16			
16									
17									
18		70	14.0	34					
19									

DEPTH IN METERS

DATE DRILLED: **2-11-00**
TOTAL DEPTH: **32.61 meters**
DIAMETER OF BORING: **203 mm**

LOGGED BY: **M. Bostrom**
EQUIPMENT: **Diedrich D-120**
ELEVATION: **1377.80 meters**

STATION:
OFFSET:

KLEINFELDER

PROJECT NO. **35-8146-08.001**

LOG OF BORING BH- 9

Pleasant Grove Interchange

Pleasant Grove, Utah

PLATE

A-14

LOG-M-A 3510Z012.GPJ 5/31/00

Depth (m)	Percent Passing #200	Shear Strength (kPa)	Dry Density (kN/m^3)	Moisture Content (%)	Other Tests	Blows/ 0.3 Meters	Sample	USCS	SOIL DESCRIPTION
20									
21									
22						2			- grades soft, gray mottled black with frequent seams of very fine-grained sand
23									
24									
25									- no recovery
26									- cuttings yield a very soft clay, wet, gray
27									
28						7			- medium stiff, wet, gray mottled black - 150 mm thick layer of silty fine-grained sand
29						46		SM	29.1 Silty SAND - dense, wet, brown-gray, fine-grained sand, occasional layers of medium-grained sand 25 to 50 mm thick, black
30									
31						53			- grades very dense, with seams of coarse-grained sand
32						62			32.6 frequent seams of medium-grained sands
33									
34									
35									
36									
37									
38									
39									

DEPTH IN METERS

DATE DRILLED: **2-11-00**
TOTAL DEPTH: **32.61 meters**
DIAMETER OF BORING: **203 mm**

LOGGED BY: **M. Bostrom**
EQUIPMENT: **Diedrich D-120**
ELEVATION: **1377.80 meters**

STATION:
OFFSET:

KLEINFELDER

PROJECT NO. **35-8146-08.001**

LOG OF BORING BH- 9

Pleasant Grove Interchange

Pleasant Grove, Utah

PLATE

A-15

LOG-M-A 3510Z012.GPJ 5/31/00

Depth (m)	Percent Passing #200	Shear Strength (kPa)	Dry Density (kN/m^3)	Moisture Content (%)	Other Tests	Blows/ 0.3 Meters	Sample	USCS	SOIL DESCRIPTION
0						12			0.5 FILL: Silty CLAY - medium stiff, wet, dark brown, with roots
1									FILL: Silty SAND and gravel - medium dense, moist, light brown to gray, coarse-grained sand, fine-grained gravel
1.5						4		CL	Lean CLAY - soft, wet, light brown to gray, with some organics
2									- grades clayey
3.4								SC	Clayey SAND - very loose, wet, brown
4									
5						2			
6.1						5		CL	Sandy Lean CLAY - medium stiff, wet, light brown, with frequent layers of fine-grained clayey sand
7									
8									
9.1						16		CL	Lean CLAY - very stiff, wet, light brown mottled gray, red and rust-colored
10									
11						11			- stiff, mottled gray, black, red and rust-colored
12		110	16.0	26					- medium stiff
13									
14						6			
15		50	12.7	41					
16									
17									
18						6			
19									

DEPTH IN METERS

DATE DRILLED: **2-2-00**
TOTAL DEPTH: **31.09 meters**
DIAMETER OF BORING: **203 mm**

LOGGED BY: **M. Bostrom**
EQUIPMENT: **Diedrich D-120**
ELEVATION: **1374.50 meters**

STATION:
OFFSET:

KLEINFELDER

PROJECT NO. **35-8146-08.001**

LOG OF BORING BH-10

Pleasant Grove Interchange

Pleasant Grove, Utah

PLATE

A-16

LOG-M-A 3510Z012.GPJ 5/31/00

Depth (m)	Percent Passing #200	Shear Strength (kPa)	Dry Density (kN/m^3)	Moisture Content (%)	Other Tests	Blows/ 0.3 Meters	Sample	USCS	SOIL DESCRIPTION
20									
21									
22		50	13.4	37					
23									
24									
25						9			- stiff, gray with black transitioning black to gray, frequent seams of very fine-grained sands
26									
27									
28						51			- very stiff - 300 mm thick layer of poorly graded SAND
29						37		SM	29.0 Silty SAND - very dense, wet, gray, fine-grained
30									
31						41			31.1 - strong artesian groundwater pressure encountered during removal of augers, boring back filled with portland cement concrete in order to stop flow
32									
33									
34									
35									
36									
37									
38									
39									

DEPTH IN METERS

DATE DRILLED: **2-2-00**
TOTAL DEPTH: **31.09 meters**
DIAMETER OF BORING: **203 mm**

LOGGED BY: **M. Bostrom**
EQUIPMENT: **Diedrich D-120**
ELEVATION: **1374.50 meters**

STATION:
OFFSET:

KLEINFELDER

PROJECT NO. **35-8146-08.001**

LOG OF BORING BH-10

Pleasant Grove Interchange

Pleasant Grove, Utah

PLATE

A-17

LOG-M-A 3510Z012.GPJ 5/31/00

Depth (m)	Percent Passing #200	Shear Strength (kPa)	Dry Density (kN/m^3)	Moisture Content (%)	Other Tests	Blows/ 0.3 Meters	Sample	USCS	SOIL DESCRIPTION
0						8		SM	0.5 Silty SAND to Sandy SILT - medium stiff, moist, light brown
1								ML OL	Organic SILT - medium stiff, wet, dark brown
2						5		SC	2.0 - grades to silty clay, light brown mottled white, gray, and rust-colored
3									Clayey SAND - loose, wet, light brown, with occasional concretions
4									
5						6		CL	4.7 Lean CLAY - medium stiff, wet, light brown
6									
7								SP	6.4 Poorly Graded SAND - wet, brown, medium-grained
8						8		CL	7.8 Lean CLAY - medium stiff to stiff, wet, light brown mottled tan, gray, and rust-colored
9						13			- stiff
10									
11	99	30	18.1	25					
12						8			- medium stiff to stiff, mottled black and tan, with frequent seams of very fine-grained sands
13									
14		70							
15						1			- medium stiff, gray-black, no visible sand seams
16									
17									
18	99	40	14.9	29					
19									

DEPTH IN METERS

DATE DRILLED: **2-7-00**
TOTAL DEPTH: **32.69 meters**
DIAMETER OF BORING: **203 mm**

LOGGED BY: **M. Bostrom**
EQUIPMENT: **Diedrich D-120**
ELEVATION: **1374.10 meters**

STATION:
OFFSET:

KLEINFELDER

PROJECT NO. **35-8146-08.001**

LOG OF BORING BH-11

Pleasant Grove Interchange

Pleasant Grove, Utah

PLATE

A-18

LOG-M-A 35102012.GPJ 5/31/00

Percent Passing #200	Shear Strength (kPa)	Dry Density (kN/m^3)	Moisture Content (%)	Other Tests	Blows/ 0.3 Meters	Sample	USCS	SOIL DESCRIPTION
					4			- soft to medium stiff
					3			- soft
					50		SC	27.4 Clayey SAND - medium dense, wet, gray
							SM	27.7 Silty SAND - dense to very dense, wet, gray, fine-grained
					50			- coarse-grained
1					51			- 300 mm thick layer of medium-grained sand with some silt
					55			32.6 thin layer of poorly graded SAND

DEPTH IN METERS: 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39

DATE DRILLED: **2-7-00**
TOTAL DEPTH: **32.69 meters**
DIAMETER OF BORING: **203 mm**

LOGGED BY: **M. Bostrom**
EQUIPMENT: **Diedrich D-120**
ELEVATION: **1374.10 meters**

STATION:
OFFSET:

KLEINFELDER

PROJECT NO. **35-8146-08.001**

LOG OF BORING BH-11

Pleasant Grove Interchange

Pleasant Grove, Utah

PLATE

A-19

LOG-M-A 35102012.GPJ 5/31/00

Depth (m)	Percent Passing #200	Shear Strength (kPa)	Dry Density (kN/m^3)	Moisture Content (%)	Other Tests	Blows/ 0.3 Meters	Sample	USCS	SOIL DESCRIPTION
0						11		ML	SILT - stiff, moist, dark brown, with occasional common roots (topsoil) to 300 mm thick
1									
2						6			- medium stiff
3		20						CL	3.0 Sandy Lean CLAY - soft to medium stiff, wet, brown
4								SC	4.2 Clayey SAND - loose, moist to wet, light brown to yellow-brown, with frequent clay layers 75 mm thick
5						6			
6		20	15.8	31				CL	6.6 Lean CLAY - medium stiff, wet, light brown to yellow-brown
7									
8						28			- very stiff, moist, light brown mottled yellow-brown to gray
9		100							
10									
11						18			
12		70							
13									- medium stiff, moist to wet, gray, slight organic odor
14						5			- trace silt seams up to 3 mm thick - gray to dark gray
15		60							
16									
17		50				9			- stiff, moist, gray to dark gray, trace silt seams 3 mm thick
18		40	13.2	38					
19									

DEPTH IN METERS

DATE DRILLED: **2-7-00**
TOTAL DEPTH: **21.64 meters**
DIAMETER OF BORING: **152 mm**

LOGGED BY: **M. Hislop**
EQUIPMENT: **Diedrich D-120**
ELEVATION: **1374.50 meters**

STATION:
OFFSET:

KLEINFELDER

LOG OF BORING BH-15

Pleasant Grove Interchange

Pleasant Grove, Utah

PROJECT NO. **35-8146-08.001**

PLATE

A-23

LOG-M-A 35102012.GPJ 5/31/00

Percent Passing #200	Shear Strength (kPa)	Dry Density (kN/m^3)	Moisture Content (%)	Other Tests	Blows/ 0.3 Meters	Sample	USCS	SOIL DESCRIPTION
	50				16			- very stiff, moist, gray mottled light brown, with occasional silt seams 3 mm to 12 mm thick
	50							21.6

DEPTH IN METERS: 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39

DATE DRILLED: **2-7-00**
TOTAL DEPTH: **21.64 meters**
DIAMETER OF BORING: **152 mm**

LOGGED BY: **M. Hislop**
EQUIPMENT: **Diedrich D-120**
ELEVATION: **1374.50 meters**

STATION:
OFFSET:

KLEINFELDER

PROJECT NO. **35-8146-08.001**

LOG OF BORING BH-15

Pleasant Grove Interchange

Pleasant Grove, Utah

PLATE

A-24

LOG-M-A 3510Z012.GPJ 5/31/00