

APPENDIX D

LOGGED BY David Castro	BEGIN DATE 7-1-13	COMPLETION DATE 7-2-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13 84525 01B
DRILLING CONTRACTOR Geo-Ex, Driller Name: Tom Scott			BOREHOLE LOCATION (Offset, Station, Line) 0.00' Rt Sta 845+25 Reach 13	SURFACE ELEVATION 82.0 ft
DRILLING METHOD Rotary Wash			DRILL RIG CME 75	BOREHOLE DIAMETER 5 in
SAMPLER TYPE(S) AND SIZE(S) (ID) HQ Core			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING AFTER DRILLING (DATE) READINGS N/A N/A	TOTAL DEPTH OF BORING 105.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
1	1														9:30am start drilling
80.00	2														
78.00	4														
76.00	6														10:30am casing split
74.00	8														
72.00	10														
70.00	12														
68.00	14														
66.00	16														
64.00	18														
	19														
	20														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13 84525 01B
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	DATE 03-13-120.1
PROJECT OR BRIDGE NAME SBFCA				
BRIDGE NUMBER	PREPARED BY John Wright	DATE	SHEET 1 of 5	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
60.00	20														
58.00	21														
56.00	22														
54.00	23														
52.00	24														
50.00	25														
48.00	26														
46.00	27														
44.00	28														
42.00	29														
40.00	30														
	31														
	32														
	33														
	34														
	35														
	36														
	37														
	38														
	39														
	40														Lost fluid pressure and mud circulation. no cuttings coming to surface.
	41														
	42														
	43														
	44														

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_84525_01B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 2 of 5

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
44															
45															
36.00	46														
47															
34.00	48														HQ pipe fell to bottom of casing at roughly 10' below ground surface
49															
32.00	50														
51															
30.00	52														
53															
28.00	54														Resistance on drilling due to dense layer
55															
26.00	56														
57															
24.00	58														
59															
22.00	60														
61															
20.00	62														
63															
18.00	64														
65															
16.00	66														
67															
68															

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_84525_01B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 3 of 5

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
12.00	68														
	69														
	70														
	71														
10.00	72														
	73														
	74														
8.00	75														
	76														Drill rig rattling
	77														
4.00	78														
	79														
2.00	80		SANDY SILT (ML); stiff; dark gray; dry; about 20% fine SAND; about 80% low plasticity fines.		1			60				PP = 1.5			
	81														
0.00	82														
	83														
-2.00	84														
	85		Very soft; dark gray; wet; about 40% fine SAND; about 60% low plasticity fines.		2			40							
	86														
	87		Poorly graded SAND with SILT (SP-SM); loose; dark bluish gray; wet; about 90% coarse SAND; about 10% nonplastic fines.												
-6.00	88														
	89														
-8.00	90		SILTY SAND (SM); loose; bluish gray; wet; about 75% fine SAND; about 25% nonplastic fines.		3			40				PP = 1.5			
	91														
	92														

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_84525_01B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 4 of 5

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	92		SILTY SAND (SM) (continued).		3			40				PP = 1.5			
	93		SILT (ML); stiff; dark gray; moist; about 5% fine SAND; about 95% low plasticity fines.		4			80				PP = 4.5			
-12.00	94														
	95		SILT with SAND (ML); hard; dark gray; moist; about 15% fine SAND; about 85% low plasticity fines.												
	96		Poorly graded SAND with SILT (SP-SM); medium dense; dark gray; moist; about 85% medium to fine SAND; about 15% nonplastic fines.		5			40							
-14.00	97														
	98		Poorly graded GRAVEL (GP); very dense; dark gray; moist; about 100% coarse to fine, subangular to subrounded GRAVEL.												
-16.00	99														
	100														
	101														
	102														
	103														
	104														
	105														Barrel broke. End of drilling at 3:30pm.
	106		Bottom of borehole at 105.0 ft bgs												
	107		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
	108														
	109														
	110														
	111														
	112														
	113														
	114														
	115														
	116														



REPORT TITLE BORING RECORD				HOLE ID 13_84525_01B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 5 of 5

LOGGED BY John Wright	BEGIN DATE 7-3-13	COMPLETION DATE 7-3-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13 84625 02B
DRILLING CONTRACTOR Geo-Ex, Driller Name: Tom Scott			BOREHOLE LOCATION (Offset, Station, Line) 0.00' Rt Sta 846+25 Reach 13	SURFACE ELEVATION 82.0 ft
DRILLING METHOD Rotary Wash			DRILL RIG CME 75	BOREHOLE DIAMETER 5 in
SAMPLER TYPE(S) AND SIZE(S) (ID) HQ Core			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING AFTER DRILLING (DATE) READINGS N/A N/A	TOTAL DEPTH OF BORING 105.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
1	1														7:45am start drilling
80.00	2														
78.00	3														
76.00	4														
74.00	5														
72.00	6														
70.00	7														
68.00	8														
66.00	9														
64.00	10														
	11														
	12														
	13														
	14														
	15														
	16														
	17														
	18														
	19														
	20														

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REPORT TITLE BORING RECORD				HOLE ID 13 84625 02B
DIST. 03	COUNTY YUB	ROUTE D	POSTMILE D	EA 03-13-120.1
PROJECT OR BRIDGE NAME SBFCA				
BRIDGE NUMBER	PREPARED BY John Wright	DATE	SHEET 1 of 5	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
20															
	21														
60.00	22														
	23														
58.00	24														
	25														
56.00	26														
	27														
54.00	28														
	29														
52.00	30														
	31														
50.00	32														
	33														
48.00	34														Lost fluid pressure and mud circulation
	35														
46.00	36														
	37														
44.00	38														
	39														
42.00	40														
	41														
40.00	42														
	43														
	44														

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_84625_02B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 2 of 5

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
44															
45															
36.00	46														
47															
34.00	48														
49															
32.00	50														9:10am
51															
30.00	52														
53															
28.00	54														
55															
26.00	56														
57															
24.00	58														
59															
22.00	60														
61															
20.00	62														
63															
18.00	64														
65															
16.00	66														
67															
68															

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_84625_02B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 3 of 5

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
12.00	68														
	69														
	70														
	71														
10.00	72														
	73														
	74														
	75														
	76														
	77														
	78														
	79														
	80		SILTY SAND (SM); loose to medium dense; dark gray; wet; about 75 to 80% fine SAND; about 20 to 25% nonplastic to low plasticity fines; Micaceous.		1			80				PP = 0.5			
	81														
0.00	82		CLAYEY SILT (ML/CL); soft to medium stiff; dark gray; wet; about 10 to 15% fine SAND; about 85 to 90% low to medium plasticity fines; Micaceous.												
	83														
-2.00	84		SILTY SAND (SM); loose to medium dense; dark gray; wet; about 5% fine, subangular to subrounded GRAVEL; about 55 to 60% fine SAND; about 40 to 45% low plasticity fines; Micaceous.												
	85		No sample.		2			0							
	86														
	87														
	88														
	89														
	90														
	91		SILTY SAND (SM); loose to medium dense; dark gray; wet; about 60% fine SAND; about 40% low plasticity fines; Micaceous.		3			80							
	92														

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_84625_02B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 4 of 5

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	92		SILTY SAND (SM) (continued).		3			80							
-12.00	93		SANDY SILT (ML); medium stiff; dark gray; moist; about 15 to 20% fine SAND; about 80 to 85% low plasticity fines; Micaceous.												
-14.00	94														
	95		SILTY SAND (SM); medium dense; dark gray; wet; about 60 to 70% fine SAND; about 30 to 40% low plasticity fines; Micaceous.		4			100				PP = 4.5			
-16.00	96														
	97		SILTY CLAY with SAND (CL-ML); hard; gray; moist; about 10% fine SAND; about 90% medium plasticity fines.												
-18.00	98														
	99		SILTY SAND (SM); medium dense to dense; dark gray; wet; about 60% fine SAND; about 40% low plasticity fines; Micaceous.												
	100		About 65 to 70% medium to fine SAND; about 30 to 35% low plasticity fines. No sample.		5			0							gravel/cobbles encountered below 100ft
	101														
-20.00	102														
	103														
-22.00	104														
	105		Bottom of borehole at 105.0 ft bgs												12:20PM
-24.00	106		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
	107														
-26.00	108														
	109														
-28.00	110														
	111														
-30.00	112														
	113														
-32.00	114														
	115														
	116														



REPORT TITLE BORING RECORD				HOLE ID 13_84625_02B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 5 of 5

LOGGED BY John Wright	BEGIN DATE 7-8-13	COMPLETION DATE 7-8-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13 84725 03B
DRILLING CONTRACTOR Geo-Ex, Driller Name: Tom Scott			BOREHOLE LOCATION (Offset, Station, Line) 0.00' Rt Sta 847+25 Reach 13	SURFACE ELEVATION 82.0 ft
DRILLING METHOD Rotary Wash			DRILL RIG CME 75	BOREHOLE DIAMETER 5 in
SAMPLER TYPE(S) AND SIZE(S) (ID) HQ Core			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING AFTER DRILLING (DATE) READINGS N/A N/A	TOTAL DEPTH OF BORING 124.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
1	1														6:30 am start drilling
80.00	2														
78.00	3														
76.00	4														
74.00	5														
72.00	6														
70.00	7														
68.00	8														
66.00	9														
64.00	10														
	11														
	12														
	13														
	14														
	15														
	16														
	17														
	18														
	19														
	20														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13 84725 03B
DIST. 03	COUNTY YUB	ROUTE D	POSTMILE D	EA 03-13-120.1
PROJECT OR BRIDGE NAME SBFCA				
BRIDGE NUMBER	PREPARED BY John Wright	DATE	SHEET 1 of 6	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
60.00	20														
	21														
	22														
	23														
58.00	24														
	25														
	26														
	27														
	28														
	29														
	30														
	31														
	32														
	33														
48.00	34														
	35														
	36														
	37														
	38														
	39														
	40														
	41														
40.00	42														
	43														
	44														

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_84725_03B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 2 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
44															
	45														
36.00	46														Lost fluid pressure and mud circulation
	47														
34.00	48														
	49														
32.00	50														
	51														
30.00	52														
	53														
28.00	54														
	55														
26.00	56														
	57														
24.00	58														
	59														
22.00	60														
	61														
20.00	62														
	63														
18.00	64														
	65														
16.00	66														
	67														
68															

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_84725_03B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 3 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
12.00	68														
	69														
	70														
	71														
10.00	72														
	73														
	74														
8.00	75														
	76														
	77														
4.00	78														
	79														
2.00	80		Poorly graded SAND with SILT (SP-SM); loose to medium dense; dark gray, wet; about 90% medium to fine SAND; about 10% nonplastic fines; Micaceous.	1				100				PP = 0.0			
	81														
0.00	82		SILT (ML); very soft; dark gray, wet; about 25 to 30% fine SAND; about 70 to 75% low plasticity fines; Micaceous.												
	83		Poorly graded SAND with SILT (SP-SM); medium dense to dense; dark gray, wet; about 90% medium to fine SAND; about 10% nonplastic fines; Micaceous.												
-2.00	84														
	85		No sample.	2				0							9:15am, sample stuck, driller had to flush barrel.
-4.00	86														
	87														
-6.00	88														
	89														
-8.00	90		No sample.	3				0							
	91														
	92														

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_84725_03B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 4 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
92			(continued).		3			0							
93															
-12.00	94														
95			No sample.		4			0							
-14.00	96														
97															
-16.00	98														
99															
-18.00	100														
101			SILTY SAND (SM); loose to medium dense; dark gray; wet; about 60 to 65% medium to fine SAND; about 35 to 40% nonplastic to low plasticity fines; Micaceous.		5			30				PP = 0.5			10:30am
-20.00	102		SANDY SILT (ML); soft; dark gray; wet; about 35 to 40% fine SAND; about 60 to 65% low plasticity fines; Micaceous.												Below 101.5 drill rig movement indicates gravel/cobble material
103			Well-graded GRAVEL with SILT and SAND (GW-GM); very dense; dark gray; wet; about 60% coarse to fine, subangular to subrounded GRAVEL; about 20% coarse to fine SAND; about 20% low plasticity fines; Micaceous.												
-22.00	104		No sample.												
105															
-24.00	106														
107															
-26.00	108														
109															
-28.00	110														
111															
-30.00	112														
113															
-32.00	114														
115															
116															

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_84725_03B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 5 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	116		(continued).												
-36.00	118		Poorly graded SAND with SILT (SP-SM); dense to very dense; dark gray; wet; about 10% coarse to fine, subangular to subrounded GRAVEL; about 80% medium to fine SAND; about 10% nonplastic fines; Micaceous.		6			78							
-38.00	120		Poorly graded GRAVEL with SAND (GP); very dense; gray; wet; about 80% coarse to fine, subangular to subrounded GRAVEL; about 15% medium to fine SAND; about 5% nonplastic fines; Micaceous.		7			67							
	121		No sample.												
-40.00	122														
-42.00	124		Bottom of borehole at 124.0 ft bgs											1:00pm	
	125		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
-44.00	126														
-46.00	128														
-48.00	130														
-50.00	132														
-52.00	134														
-54.00	136														
-56.00	138														
	139														
	140														



REPORT TITLE BORING RECORD				HOLE ID 13_84725_03B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 6 of 6

LOGGED BY John Wright	BEGIN DATE 7-16-13	COMPLETION DATE 7-17-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13 84925 05B
DRILLING CONTRACTOR Geo-Ex, Driller Name: Tom Scott			BOREHOLE LOCATION (Offset, Station, Line) 0.00' Rt Sta 849+25 Reach 13	SURFACE ELEVATION 81.0 ft
DRILLING METHOD Rotary Wash			DRILL RIG CME 75	BOREHOLE DIAMETER 4 in
SAMPLER TYPE(S) AND SIZE(S) (ID) Std Cal (2.5"), Mod Cal (2"), SPT (1.4")			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING AFTER DRILLING (DATE) READINGS N/A N/A	TOTAL DEPTH OF BORING 129.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
1	1														12:45pm start drilling
79.00	2														
77.00	4														
75.00	6														
73.00	8														
71.00	10														
69.00	12														
67.00	14														
65.00	16														
63.00	18														
	19														
	20														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13 84925 05B	
DIST. 03	COUNTY YUB	ROUTE D	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 1 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
20															
	21														
59.00	22														
	23														
57.00	24														
	25														
55.00	26														
	27														
53.00	28														
	29														
51.00	30														
	31														
49.00	32														
	33														
47.00	34														
	35														
45.00	36														
	37														
43.00	38														
	39														
41.00	40														
	41														
39.00	42														
	43														
	44														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_84925_05B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 2 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
44															
	45														
35.00	46														
	47														
33.00	48														
	49														
31.00	50														
	51														
29.00	52														
	53														
27.00	54														
	55														
25.00	56														
	57														
23.00	58														
	59														
21.00	60														
	61														
19.00	62														
	63														
17.00	64														
	65														
15.00	66														
	67														
	68														

(continued)



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 and Construction Services

REPORT TITLE BORING RECORD				HOLE ID 13_84925_05B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 3 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
68															
69															
11.00	70														
	71														
9.00	72														
	73														
7.00	74														
	75														
5.00	76														
	77														
3.00	78														
	79														
1.00	80														
	81														6:30am next day Drill rig rattled, suggesting a gravel layer
-1.00	82														Drill rig stopped rattling, suggesting end of the gravel layer
	83														
-3.00	84														
	85														
-5.00	86														
	87														
-7.00	88														
	89														
-9.00	90														
	91														
	92														

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_84925_05B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 4 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
92															
-13.00	94														
-15.00	96														
-17.00	98														Drill rig rattled, suggesting a gravel layer
-19.00	100														
-21.00	102														
-23.00	104														
-25.00	106														
-27.00	108														Drill rig stopped rattling, suggesting end of the gravel layer
-29.00	110														
-31.00	112		Poorly graded SAND (SP); medium dense to dense; dark gray; wet; about 95% medium to fine SAND; about 5% nonplastic fines; Slightly micaceous. A carbonite tooth found in slough of sample.	1	18	28	55	78							
	113			2	14	37	74	94							
-33.00	114		About 90 to 95% medium to fine SAND; about 5 to 10% nonplastic fines.	3	10	37	38	96				PP = 4.5		9:25am	
	115		SILTY CLAY (CL-ML); hard; dark greenish gray; moist; about 5% medium to fine SAND; about 95% low plasticity fines; Slightly micaceous.			16									
	116					22									

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_84925_05B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 5 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	116		SILTY CLAY (CL-ML) (continued).												
	117		Soft to medium stiff.		4	13	70	83							
-37.00	118		SANDY SILT (ML); dark greenish gray; moist; about 45% fine SAND; about 55% low plasticity fines; Slightly micaceous.			20									
	119		SILTY SAND (SM); medium dense; dark greenish gray; wet; about 70% fine SAND; about 30% nonplastic to low plasticity fines; Slightly micaceous.		5	9	40	100				PP = 0.5			
-39.00	120					18									
	121		Poorly graded SAND with SILT (SP-SM); dense; dark gray; wet; about 90% fine SAND; about 10% nonplastic fines; Slightly micaceous. Two inches from tip of sampler is a two inch lense of odorless very dark gray SP-SM material.		6	8	30	100							
	122					12									
-41.00	123		Poorly graded SAND (SP); medium dense; dark gray; wet; about 95% fine SAND; about 5% nonplastic fines; Slightly micaceous.		7	16	57	89							
	124					25									
-43.00	125		Dense.		8	10	39	72							
	126					19									
-45.00	127					20									
	128					8	33	63							
-47.00	129					15									
	130		SANDY SILT (ML); greenish gray; moist; about 20% fine SAND; about 80% nonplastic to low plasticity fines; Slightly micaceous.		10	10	26	38							
-49.00	131		Bottom of borehole at 129.0 ft bgs			13									
	132		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.			13									
-51.00	133														
-53.00	134														
-55.00	135														
-57.00	136														
	137														
	138														
	139														
	140														

12:30pm



REPORT TITLE BORING RECORD				HOLE ID 13_84925_05B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 6 of 6

LOGGED BY John Wright	BEGIN DATE 7-18-13	COMPLETION DATE 7-19-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13 85025 06B
DRILLING CONTRACTOR Geo-Ex, Driller Name: Tom Scott			BOREHOLE LOCATION (Offset, Station, Line) 0.00' Rt Sta 850+25 Reach 13	SURFACE ELEVATION 82.0 ft
DRILLING METHOD Rotary Wash			DRILL RIG CME 75	BOREHOLE DIAMETER 4 in
SAMPLER TYPE(S) AND SIZE(S) (ID) Std Cal (2.5"), Mod Cal (2"), Shelby (2.87"), SPT (1.4")			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING AFTER DRILLING (DATE) READINGS N/A N/A	TOTAL DEPTH OF BORING 130.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
1	1														6:20am start drilling
80.00	2														
78.00	4														
76.00	6														
74.00	8														
72.00	10														
70.00	12														
68.00	14														
66.00	16														
64.00	18														
20	20														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13 85025 06B
DIST. 03	COUNTY YUB	ROUTE D	POSTMILE D	EA 03-13-120.1
PROJECT OR BRIDGE NAME SBFCA				
BRIDGE NUMBER	PREPARED BY John Wright	DATE	SHEET 1 of 6	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
20			(continued).												
60.00	22														
58.00	24														
56.00	26														
50.00	32		SILTY SAND (SM); light brown with mottled orange; dry to moist; about 70 to 75% fine SAND; about 25 to 30% nonplastic fines; Slightly micaceous. 1: 200 psi down pressure for entire 24".		1			92							8:45am
48.00	34		About 75 to 80% fine SAND; about 20 to 25% nonplastic fines; 2: 200 psi down pressure for first 18". Gradual increase from 200 psi to 700 psi for last 6".		2			79							
46.00	36														
44.00	38														
42.00	40														
40.00	42														
	43														
	44														

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_85025_06B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 2 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
44															
45															
36.00	46														
47															
34.00	48														
49															
32.00	50														
51															
30.00	52														
53															
28.00	54														
55															
26.00	56														
57															
24.00	58														
59															drill rig rattling indicating gravel layer from 58' to 59'
22.00	60														
61															
20.00	62														
63															
18.00	64														
65															
16.00	66														
67															
68															

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_85025_06B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 3 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
68															
	69														
12.00	70														
	71														
10.00	72														
	73														
8.00	74														
	75														
6.00	76														
	77														
4.00	78														
	79														
2.00	80														
	81														
0.00	82														
	83														
-2.00	84														
	85														
-4.00	86														
	87														
-6.00	88														
	89														
-8.00	90														
	91														
	92														

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REPORT TITLE BORING RECORD				HOLE ID 13_85025_06B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 4 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
92															
-12.00	94														
-14.00	96														
-16.00	98														drill rig rattling indicating gravel layer
-18.00	100		Poorly graded GRAVEL (GP); very dense; dark gray; wet; about 75% coarse to fine, angular to subangular GRAVEL; about 15 to 20% coarse to fine SAND; about 5 to 10% nonplastic fines.	3	50/4	REF	100								11:00pm
-20.00	102														
-22.00	104														
-24.00	106														
-26.00	108														drill rig stopped rattling indicating end of gravel layer
-28.00	110		Elastic SILT (MH); hard; greenish gray; dry to moist; about 5% fine SAND; about 95% low to medium plasticity fines; Slightly micaceous.	4	12	34	100					PP = 4.0			11:15am
	111														
-30.00	112			5	13	28	100					PP = 4.25			
	113		Very stiff.		13										
	114			6	6	27	100					PP = 2.25			
	115				10										
	116			7		71	100					PP = 4.5			

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_85025_06B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 5 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
116			Elastic SILT (MH) (continued).		7	22	71	100							
	117		Medium plasticity fines.		8	33	45	100				PP = 4.25			
	118		SANDY SILT (ML); hard; greenish gray; moist; about 40 to 45% fine SAND; about 50 to 55% low plasticity fines.			15									
-36.00			Elastic SILT (MH); very stiff; greenish gray; dry to moist; about 5% fine SAND; about 95% medium plasticity fines. Very stiff; PP = 2.75.		9	18	26	100				PP = 3.25			
	119					8						PP = 2.75			
	120		SANDY SILT (ML); hard; greenish gray; moist; about 40 to 45% fine SAND; about 50 to 55% low plasticity fines. PP = <4.5.		10	16	31	83				PP = >4.5		2:45pm	
	121					8									
	122		SILTY SAND (SM); dark gray; wet; about 70% fine SAND; about 30% nonplastic to low plasticity fines; Slightly micaceous.		11	10	61	100							
	123		SANDY SILT (ML); gray; moist; about 30% fine SAND; about 70% low plasticity fines.			21									
	124		Poorly graded SAND with SILT (SP-SM); medium dense to dense; dark gray; wet; about 85% fine SAND; about 15% nonplastic fines; Micaceous.		12	19	83	100							From 123' to 123.5, grades from Elastic SILT to Sandy SILT
	125		Elastic SILT (MH); hard; greenish gray; moist; about 10% fine SAND; about 90% medium plasticity fines.			33									
	126		SILTY SAND (SM); very dense; dark gray; wet; about 80% fine SAND; about 20% nonplastic fines; Micaceous.		13	20	93	100				PP = 3.75		3:50pm	From 125.5' to 126' grades from Silty SAND to Elastic SILT
	127					38									
	128		Elastic SILT (MH); greenish gray; moist; about 10% fine SAND; about 90% medium plasticity fines.		14	29	95/10	100				PP = 3.5			
	129					45									
	130					50/4									
	131					17	52	100							
	132		SILTY SAND (SM); dark gray; moist; about 75 to 80% fine SAND; about 20 to 25% low plasticity fines; Micaceous.		15	21								4:30pm	
	133					31									
	134														
	135														
	136														
	137														
	138														
	139														
	140														
			Bottom of borehole at 130.0 ft bgs												
			FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												



REPORT TITLE BORING RECORD				HOLE ID 13_85025_06B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 6 of 6

LOGGED BY John Wright	BEGIN DATE 7-19-13	COMPLETION DATE 7-20-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13_85225_08B
DRILLING CONTRACTOR Geo-Ex, Driller Name: Tom Scott			BOREHOLE LOCATION (Offset, Station, Line) 0.00' Rt Sta 852+25 Reach 13	SURFACE ELEVATION 82.0 ft
DRILLING METHOD Rotary Wash			DRILL RIG CME 75	BOREHOLE DIAMETER 4 in
SAMPLER TYPE(S) AND SIZE(S) (ID) Std Cal (2.5"), Mod Cal (2"), SPT (1.4")			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING READINGS N/A	AFTER DRILLING (DATE) N/A
				TOTAL DEPTH OF BORING 130.5 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
80.00	2														
78.00	4														
76.00	6														
74.00	8														
72.00	10														
70.00	12														
68.00	14														
66.00	16														
64.00	18														
	19														
	20														

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REPORT TITLE BORING RECORD				HOLE ID 13_85225_08B	
DIST. 03	COUNTY YUB	ROUTE D	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 1 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
20															
	21														
60.00	22														
	23														
58.00	24														
	25														
56.00	26														
	27														
54.00	28														
	29														
52.00	30														
	31														
50.00	32														
	33														
48.00	34														
	35														
46.00	36														
	37														
44.00	38														
	39														
42.00	40														
	41														
40.00	42														
	43														
	44														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_85225_08B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 2 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
44															
	45														
36.00	46														
	47														
34.00	48														
	49														
32.00	50														
	51														
30.00	52														
	53														
28.00	54														
	55														
26.00	56														
	57														
24.00	58														
	59														
22.00	60														
	61														
20.00	62														
	63														
18.00	64														
	65														
16.00	66														
	67														
	68														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_85225_08B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 3 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
68															
69															
12.00	70														
	71														
10.00	72														
	73														
8.00	74														
	75														
6.00	76														
	77														
4.00	78														
	79														
2.00	80														Driller encountered possible gravel layer
	81														
0.00	82														
	83														
-2.00	84														
	85														
-4.00	86														
	87														
-6.00	88														
	89														
-8.00	90														
	91														
	92														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_85225_08B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 4 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
92															
	93														
-12.00	94														out of gravel layer
	95														
-14.00	96														
	97														
-16.00	98														Driller encountered possible gravel layer
	99														
-18.00	100														
	101														
-20.00	102														
	103														
-22.00	104														
	105														
-24.00	106														
	107														
-26.00	108														
	109														
-28.00	110														
	111														end gravel layer
	112	Fat CLAY (CH); stiff; greenish blue gray; moist; about 5 to 10% fine SAND.		1	7	19	100					PP = 1.5			
-30.00	113			2	6	39	100					PP = 4.25			
	114			3	17	35	100								
	115				17										
	116				18										

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_85225_08B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 5 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	116		Fat CLAY (CH) (continued).		4	17	45	100				PP = 4.5			
	117					22									
	118		CLAYEY SAND (SC); medium dense; gray; moist; fine SAND; about 20% low plasticity fines.		5	7	27	100				PP = 1.5			
-36.00	119					11									
	120					16									
	121		Lean CLAY (CL); soft to medium stiff; gray; moist; about 10% fine SAND; low to medium plasticity fines.		6	7	39	100				PP = .75			
-38.00	122					13									
	123					26									
	124		Fat CLAY (CH); very stiff to hard; greenish blue gray; moist; about 5 to 10% fine SAND.		7	8	76	100							
-40.00	125					26									
	126					50									
	127		Fat CLAY (CH); very stiff to hard; greenish blue gray; moist; about 5 to 10% fine SAND.		8	21	100/8	78				PP = 4.5			
-42.00	128					50									
	129					50/2									
	130		SILTY SAND (SM); very dense; gray; wet; fine SAND; about 15 to 20% fines; mica.		9	20	76	100				PP = 4.5			
-44.00	131					32									
	132					44									
	133		Fat CLAY (CH); very stiff to hard; greenish blue gray; moist; about 5 to 10% fine SAND.		10	14	84	100							
-46.00	134					34									
	135					50									
	136		Lean CLAY (CL); hard; gray; moist.		11	19	82	100							
-48.00	137					26									
	138					56									
	139		Fat CLAY (CH); very stiff to hard; greenish blue gray; wet; about 5 to 10% fine SAND.		12	15	37	89							
-50.00	140					16									
	141					21									
	142		Poorly graded SAND with SILT (SP-SM); dense; dark gray; moist; fine SAND; about 10 to 15% fines; mica.											4:15pm	
	143		Bottom of borehole at 130.5 ft bgs												
	144		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
-52.00	145														
	146														
-54.00	147														
	148														
-56.00	149														
	150														




REPORT TITLE BORING RECORD				HOLE ID 13_85225_08B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 6 of 6

LOGGED BY John Wright	BEGIN DATE 7-20-13	COMPLETION DATE 7-22-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13 85325 09B
DRILLING CONTRACTOR Geo-Ex, Driller Name: Tom Scott			BOREHOLE LOCATION (Offset, Station, Line) 0.00' Rt Sta 853+25 Reach 13	SURFACE ELEVATION 82.0 ft
DRILLING METHOD Rotary Wash			DRILL RIG CME 75	BOREHOLE DIAMETER 4 in
SAMPLER TYPE(S) AND SIZE(S) (ID) Std Cal (2.5"), Mod Cal (2"), SPT (1.4")			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING READINGS N/A	AFTER DRILLING (DATE) N/A
				TOTAL DEPTH OF BORING 130.5 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
80.00	2														6:30 am start drilling on 7/20/13
78.00	4														
76.00	6														
74.00	8														
72.00	10														
70.00	12														
68.00	14														
66.00	16														
64.00	18														
	19														
	20														

(continued)

 Crawford & Associates, Inc. Geotechnical Engineering, Design and Construction Services	REPORT TITLE BORING RECORD				HOLE ID 13 85325 09B	
	DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
	PROJECT OR BRIDGE NAME SBFCA					
	BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 1 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
20															
21															
60.00	22														
23															
58.00	24														
25															
56.00	26														
27															
54.00	28														
29															
52.00	30														7:00am resume drilling on 7/22/13
31															
50.00	32														
33															
48.00	34														
35															
46.00	36														
37															
44.00	38														
39															
42.00	40														
41															
40.00	42														
43															
44															

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_85325_09B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 2 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
44															
45															
36.00	46														
47															
34.00	48														
49															
32.00	50														7:45am Drill rig rattled, suggesting GP or other gravel material
51															
30.00	52														end of gravel layer
53															
28.00	54														
55															
26.00	56														
57															
24.00	58														
59															
22.00	60														
61															
20.00	62														
63															
18.00	64														
65															
16.00	66														
67															
68															

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_85325_09B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 3 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
68															
69															
12.00	70														
	71														
10.00	72														
	73														
8.00	74														Drill rig rattled, suggesting GP or other gravel material
	75														
6.00	76														
	77														
4.00	78														
	79														
2.00	80														
	81														
0.00	82														
	83														
-2.00	84														
	85														
-4.00	86														
	87														
-6.00	88														
	89														
-8.00	90														
	91														
	92														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_85325_09B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 4 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
92															
	93														8:30am
-12.00	94														mud appears to be thinning out, possible from groundwater
	95														
-14.00	96														
	97														
-16.00	98														
	99														
-18.00	100														Drill rig rattled, suggesting GP or other gravel material
	101														
-20.00	102														
	103														
-22.00	104														
	105														
-24.00	106														
	107														
-26.00	108														
	109														
-28.00	110														
	111														10:45am
	112		SILTY SAND (SM); very dense; gray; moist to wet; about 70% fine SAND; about 30% low plasticity fines; Micaceous.		1	16	54	100							
-30.00	113		Poorly graded SAND (SP); medium dense; dark gray; wet; about 95% fine SAND; about 5% nonplastic fines; Micaceous.		2	8	30	100							
	114		SILTY SAND (SM); medium dense; dark gray; wet; about 70% fine SAND; about 30% low plasticity fines; Micaceous.			14									
-32.00	115		SANDY SILT (ML); gray; moist; about 25% fine SAND; about 75% low plasticity fines; Slightly micaceous.		3	4	16	100				PP = 3.0			
	116		SILTY CLAY (CL-ML); stiff; gray; moist; about 5% fine SAND; about 95% low to medium plasticity fines; Micaceous.			5									
						11									

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_85325_09B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 5 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	116		Elastic SILT with SAND (MH); very stiff; gray; moist; about 20% fine SAND; about 80% low to medium plasticity fines; Micaceous.		4	7	19	100				PP = 2.25			
	117		Elastic SILT with SAND (MH) (continued).			7									
	118				5	8	31	100							
-36.00			SILTY SAND (SM); medium dense; gray; moist to wet; about 15 to 25% fine SAND; about 75 to 85% nonplastic to low plasticity fines; Slightly micaceous.			15									
	119		About 25% fine SAND; about 75% nonplastic to low plasticity fines.		6	8	38	100							
-38.00						17									Gradually grades from 15% to 25% fines at 119'. 1" lense of Elastic SILT
	120		SANDY SILT (ML); dense to very dense; gray; moist to wet; about 45% fine SAND; about 55% low plasticity fines.			21									
	121				7	15	72	100							
-40.00			Elastic SILT (MH); very stiff; gray; moist; about 20% fine SAND; about 80% low to medium plasticity fines; Micaceous.			22									
	122					50									
	123		SILTY SAND (SM); dense; gray; wet; about 80% medium to fine SAND; about 20% nonplastic to low plasticity fines; Slightly micaceous.		8	11	50	33							
-42.00			SILTY CLAY (CL-ML); hard; gray; moist; about 5% fine SAND; about 95% low to medium plasticity fines; Micaceous, very indurated & blocky texture..			28									
	124				9	12	71/11	100				PP = >4.5			Rock was stuck inside sample 8. Not clear whether the 6" recovered material is representative of the top or bottom of the sample interval
	125					21									
	126		SILTY SAND (SM); dense to very dense; gray; wet; about 55% fine SAND; about 45% low plasticity fines.			50/5									
-44.00					10	20	112	100				PP = >4.5			
	127		SILTY CLAY (CL-ML); hard; gray; moist; about 5 to 10% fine SAND; about 90 to 95% medium plasticity fines; Very indurated.			45									
	128				11	15	48	89				PP = >4.5			
-46.00			SILTY SAND (SM); very dense; gray; moist; about 55 to 60% fine SAND; about 40 to 45% low plasticity fines; Slightly micaceous.			20									
	129					28									
	130		SILTY CLAY (CL-ML); hard; gray; moist; about 5 to 10% fine SAND; about 90 to 95% medium plasticity fines; Very indurated.		12	12	59	94				PP = >4.5			
-48.00						22									
	131					37									2:30pm
	132		Bottom of borehole at 130.5 ft bgs												
	133		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
-50.00															
	134														
-52.00															
	135														
-54.00															
	136														
-56.00															
	137														
	138														
	139														
	140														



REPORT TITLE BORING RECORD				HOLE ID 13_85325_09B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 6 of 6

LOGGED BY John Wright	BEGIN DATE 7-23-13	COMPLETION DATE 7-24-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13 85425 10B
DRILLING CONTRACTOR Geo-Ex, Driller Name: Tom Scott			BOREHOLE LOCATION (Offset, Station, Line) 0.00' Rt Sta 854+25 Reach 13	SURFACE ELEVATION 82.0 ft
DRILLING METHOD Rotary Wash			DRILL RIG CME 75	BOREHOLE DIAMETER 4 in
SAMPLER TYPE(S) AND SIZE(S) (ID) Std Cal (2.5"), Mod Cal (2"), SPT (1.4")			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING AFTER DRILLING (DATE) READINGS N/A N/A	TOTAL DEPTH OF BORING 130.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
80.00	2														Began Drilling at 7am on 7/23/13
78.00	4														
76.00	6														
74.00	8														
72.00	10														
70.00	12														
68.00	14														
66.00	16		SILTY SAND (SM); brown; dry to moist; fine SAND; about 25 to 35% fines.												Attempted to sample clay material from auger cuttings for Raitos mix design 15' to 28'
64.00	18														
62.00	20														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13 85425 10B	
DIST. 03	COUNTY YUB	ROUTE D	POSTMILE 03-13-120.1	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 1 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
60.00	20		SILTY SAND (SM) (continued).												
60.00	21		SANDY lean CLAY (CL); brown; fine SAND; about 25 to 35% low plasticity fines.												
58.00	22		SANDY lean CLAY (CL); brown; fine SAND; about 25 to 35% low plasticity fines.												
58.00	23		SANDY lean CLAY (CL); brown; fine SAND; about 25 to 35% low plasticity fines.												
58.00	24		SILTY SAND (SM); brown; dry to moist; fine SAND; about 25 to 35% fines.												
58.00	25		SILTY SAND (SM); brown; dry to moist; fine SAND; about 25 to 35% fines.												
56.00	26														
56.00	27														
54.00	28														
54.00	29														
52.00	30														
52.00	31														
50.00	32														
50.00	33														
48.00	34														
48.00	35														
46.00	36														
46.00	37														
44.00	38														
44.00	39														
42.00	40														
42.00	41														
40.00	42														
40.00	43														
44	44														

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_85425_10B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 2 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
44															
	45														
36.00	46														
	47														
34.00	48														
	49														
32.00	50														
	51														
30.00	52														
	53														
28.00	54														
	55														
26.00	56														
	57														
24.00	58														
	59														
22.00	60														
	61														
20.00	62														
	63														
18.00	64														
	65														
16.00	66														
	67														
68															Fine gravel. 9:40am

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_85425_10B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 3 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
68															
	69														
12.00	70														Course gravel.
	71														
10.00	72														
	73														
8.00	74														
	75														
6.00	76														
	77														
4.00	78														
	79														
2.00	80														
	81														
0.00	82														
	83														
-2.00	84														
	85														stopped drilling. driller mix more mud. starting to lose circulation.
-4.00	86														
	87														
-6.00	88														
	89														
-8.00	90														drill rig chattering. possible large cobbles. 10:20am.
	91														
	92														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_85425_10B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 4 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
-12.00	94														drilled through cobble layer. still in gravel. lost fluid. driller mixed more mud. used 220 gallons of water so far.
-14.00	96														through gravel layer. 10:45am.
-18.00	100		Poorly graded GRAVEL with CLAY and SAND (GP-GC); very dense; dark gray; wet; about 55 to 60% coarse to fine GRAVEL; about 25 to 30% medium to fine SAND; about 15% low plasticity fines.	▲	1	43	50/3	56							tried to use drag bit but couldn't get through gravel. switched back to roller bit.
				▲	2	40	50/3	33							
-20.00	102			▲	3	23		75							
				▲	4	17	81	56							
-22.00	104					39									
						42									
-24.00	106		No sample.	▲	5	40	50/3	33							mixed more mud. out of water. 300 gallons of water used so far. recovered 3 x 1.5 inch cobble fragment with some poorly graded gravels
						50/3									
-30.00	112		SILTY CLAY (CL-ML); hard; greenish gray; moist; fine SAND; about 5% medium plasticity fines.	▲	6	16	42	100				PP = >4.5			approximately end of gravel layer
				▲	7	9	34	100					PP = 1.75		
-32.00	114		SANDY SILTY CLAY to CLAYEY SILT (CL/ML); stiff; gray; moist; about 40% fine SAND; low plasticity fines; mica.	▲	7	12									
				▲	8	22									
			Grades into fine grained sand.				26	92				PP = 2.0			
			SILTY CLAY (CL-ML); stiff to very stiff; greenish gray; moist; about 5 to 10% fine SAND; low to medium												

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_85425_10B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 5 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	116		plasticity fines; slighty mica. SILTY CLAY (CL-ML) (continued).		8	10	26	92				PP = 2.0			
	117				9	14	51	100				PP = 2.25			
	118		Poorly graded SAND (SP); medium dense; dark gray; wet; about 5% medium to fine SAND; nonplastic fines; slighty mica.			10									
-36.00	118					16									
	119		SANDY SILTY CLAY to CLAYEY SILT (CL/ML); hard; gray; moist; low plasticity fines; interbedded lenses of SP.		10	35	76	100				PP = >4.5			
	120					15									
-38.00	120					36									
	121		CLAYEY SAND (SC); very dense; dark gray; wet; medium to fine SAND; about 15% low plasticity fines; slighty mica, interbedded layers of sandy silt.		11	40	76	83							
	122					22									
-40.00	122					31									
	123		Poorly graded SAND with SILT (SP-SM); dense to very dense; dark gray; about 10% medium to fine SAND.		12	18	53	78							
	124					22									
-42.00	124					31									
	125					8	44	94							
	126		SANDY SILT (ML); very stiff; greenish gray; moist to wet; about 45 to 50% fine SAND; low plasticity fines; slighty mica.		13	17									
-44.00	126					27									
	127					19	62	50							
	128					22									
-46.00	128					40						PP = 3.5			
	129		Lean CLAY (CL); stiff to very stiff; greenish gray; moist; about 10% fine SAND; low plasticity fines; slighty mica.		14	20	62	100							
	130					22									
-48.00	130					9	33	100						10:30am	
	131		Bottom of borehole at 130.0 ft bgs			12									
	132		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.			21									
	133														
-50.00	132														
	133														
-52.00	134														
	135														
-54.00	136														
	137														
-56.00	138														
	139														
	140														




REPORT TITLE BORING RECORD				HOLE ID 13_85425_10B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 6 of 6

LOGGED BY John Wright	BEGIN DATE 7-9-13	COMPLETION DATE 7-10-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13 86125 17B
DRILLING CONTRACTOR Geo-Ex, Driller Name: Tom Scott			BOREHOLE LOCATION (Offset, Station, Line) 0.00' Rt Sta 861+25 Reach 13	SURFACE ELEVATION 81.0 ft
DRILLING METHOD Rotary Wash			DRILL RIG CME 75	BOREHOLE DIAMETER 5 in
SAMPLER TYPE(S) AND SIZE(S) (ID) Mod Cal (2"), HQ Core, SPT (1.4")			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING AFTER DRILLING (DATE) READINGS N/A N/A	TOTAL DEPTH OF BORING 132.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
1	1														7:00am start drilling
79.00	2														
77.00	4														
75.00	6														
73.00	8														
71.00	10														
69.00	12														
67.00	14														
65.00	16														
63.00	18														
	19														
	20														

(continued)

 Crawford & Associates, Inc. Geotechnical Engineering, Design and Construction Services	REPORT TITLE BORING RECORD				HOLE ID 13 86125 17B	
	DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
	PROJECT OR BRIDGE NAME SBFCA					
	BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 1 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
20															
	21														
59.00	22														
	23														
57.00	24														
	25														
55.00	26														
	27														
53.00	28														
	29														
51.00	30														
	31														
49.00	32														
	33														
47.00	34														
	35														
45.00	36														
	37														
43.00	38														
	39														
41.00	40														
	41														
39.00	42														
	43														
	44														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_86125_17B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 2 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
44															
45															
35.00	46														
47															
33.00	48														
49															
31.00	50														
51															
29.00	52														
53															
27.00	54														
55															
25.00	56														
57															
23.00	58														
59															
21.00	60														
61															
19.00	62														
63															
17.00	64														
65															
15.00	66														
67															
68															Drill rig rattled, suggesting a gravel layer

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_86125_17B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 3 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
11.00	68														
	69														
	70														
	71														
9.00	72														
	73														
7.00	74														
	75														
5.00	76														9:25am. Temporarily lost mud circulation
	77														
3.00	78														Pipe temporarily plugged
	79														
1.00	80														
	81														
-1.00	82														
	83														
-3.00	84														
	85														
-5.00	86														
	87														
-7.00	88														
	89														
-9.00	90														
	91														
	92														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_86125_17B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 4 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
92															
-13.00	94														
-15.00	96														
-17.00	98														
-19.00	100														
-21.00	102		No sample.		1			0							10:45am Drill rig rattled at ~102', suggesting a gravel layer. Tried to punch and drive a sample, both of which had no recovery (1 & 2). Continued to drill until drill rig stopped rattling at 107'
-23.00	104				2			0							
-25.00	106														
-27.00	108		No sample.		3			0							12:45pm
-29.00	109		Fat CLAY (CH); very soft to soft; dark greenish gray; moist; about 5% fine SAND; about 95% medium to high plasticity fines.		4			100				PP = 0.25			Tried to get a punch sample from 109' to 111', but sample remained attached to insitu soil at 111' depth. Continued to drive a cal sampler, from 109' to 110.5', to retrieve sample
-31.00	112				5			0							Driller left sampler in hole overnight, resting at ~112' (7/9/13). Retrieved sampler next morning (7/10/13) at ~115', suggesting sampler sunk into soil overnight. Soil sample most likely disturbed, and exact location of depth is questionable.
-33.00	114				6			0				PP = 0.50			
116															

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_86125_17B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 5 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
-37.00	116		Fat CLAY (CH); very soft to soft; dark greenish gray; moist; about 5% fine SAND; about 95% medium to high plasticity fines.		7			6							
-43.00	124		No sample.		8	28	85	0							After sample 7, driller flushed out inside drill rod to clear soil. After flushed out, depth of drill bit was 124'. Driller suggested that with previous punch samples did not latch on properly to the drill rod, thus pushing soil inside the drill rod and not the sampler
-45.00	126		SILTY SAND (SM); medium dense; dark gray; wet; about 80 to 85% fine SAND; about 15 to 20% fines. Poorly graded GRAVEL (GP).		9	31	58	17							Trace shell-like fragments
-47.00	128		Poorly graded SAND with SILT (SP-SM); dense to very dense; dark gray; wet; about 5% fine GRAVEL; about 85% coarse to fine SAND; about 10% fines.		10	6	27	94							Drill rig rattled for about 8" between 127' and 128', suggesting a gravel lense 6:30am 7/10/13
-51.00	131		About 15% fines.		11	7	17	89							10:30am
-51.00	132		Bottom of borehole at 132.0 ft bgs												
-53.00	133		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												



REPORT TITLE BORING RECORD				HOLE ID 13_86125_17B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 6 of 6

LOGGED BY John Wright	BEGIN DATE 7-10-13	COMPLETION DATE 7-12-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13 86225 18B
DRILLING CONTRACTOR Geo-Ex, Driller Name: Tom Scott			BOREHOLE LOCATION (Offset, Station, Line) 0.00' Rt Sta 862+25 Reach 13	SURFACE ELEVATION 81.0 ft
DRILLING METHOD Rotary Wash			DRILL RIG CME 75	BOREHOLE DIAMETER 5 in
SAMPLER TYPE(S) AND SIZE(S) (ID) HQ Core, SPT (1.4")			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING AFTER DRILLING (DATE) READINGS N/A N/A	TOTAL DEPTH OF BORING 124.5 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0		SILTY SAND (SM); yellowish brown; dry; about 5% fine, angular to subangular GRAVEL; about 70% fine SAND; about 25% nonplastic to low plasticity fines.												12:45pm start drilling
79.00	2														
77.00	4														
75.00	6														
73.00	8		About 20% nonplastic to low plasticity fines.												
71.00	10														
69.00	12														
67.00	14														
65.00	16														
63.00	18														
	19														
	20														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13 86225 18B	
DIST. 03	COUNTY YUB	ROUTE D	POSTMILE 03-13-120.1	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 1 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
20			(continued).												
21															
59.00	22														
23															
57.00	24														
25															
55.00	26														
27															
53.00	28														
29															
51.00	30														
31															
49.00	32														
33															
47.00	34														
35															
45.00	36														
37															
43.00	38														
39															
41.00	40														
41															
39.00	42														
43															
44															

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_86225_18B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 2 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
44															
45															
35.00	46														
47															
33.00	48														
49															
31.00	50														
51															
29.00	52														
53															
27.00	54														
55															
25.00	56														
57															
23.00	58														
59															
21.00	60														
61															
19.00	62														
63															
17.00	64														
65															
15.00	66														Drill rig rattled, suggesting a gravel layer
67															
68															

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_86225_18B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 3 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
11.00	68														
	69														
	70														
	71														
9.00	72														
	73														
	74														
	75														
5.00	76														
	77														
3.00	78														
	79														
1.00	80														Drill rig stopped rattling, suggesting end of the gravel layer.
	81														
-1.00	82														
	83														
-3.00	84														
	85														3:00pm Drill rig rattled, suggesting a gravel layer Lost mud circulation. Truck went to get more water
-5.00	86														
	87														
-7.00	88														
	89														
-9.00	90														
	91														
	92														3:30pm Drill rig stopped rattling, suggesting end of the gravel layer

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_86225_18B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 4 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
-13.00	94														Stopped drilling for the day at 94' on 7/10/13. Resumed drilling at 6:30am on 7/11/13. Still having mud loss. Driller stated they used ~150 gal of water
-21.00	102		SILTY GRAVEL with SAND (GM); very dense; dark gray; wet; about 65% coarse to fine, subangular GRAVEL; about 20% coarse to fine SAND; about 15% fines.		1	21	108	58							6:50am 7/11/12
	103					58									
	104					50									
-23.00	104														
	105		About 55 to 60% coarse to fine, subangular GRAVEL; about 25 to 30% coarse to fine SAND; about 15% fines.		2	18	123	50							
	106					51									
	107					72									
-27.00	107		Lean CLAY (CL); stiff; dark greenish gray; moist; about 20% fine SAND; about 80% medium plasticity fines.		3			100				PP = 1.5			At 107' (8AM on 7/11/13) a piece from the gimble on the driller's rig fell. Driller temporarily stopped drilling to assess situation and fix the equipment. Resumed drilling at 11:20AM
	108											PP = 3			Sample has trace subangular fine gravel, but most likely gravel that fell from a shallower section.
	109		About 5% fine SAND; medium to high plasticity fines.									PP = 1.5			
	110		Very stiff.									PP = 4.5			
	111														
	112		Stiff. Hard.												Driller stated he has used 1200 gallons of water so far on this hole.
	113														
-33.00	114		Lean CLAY (CL); stiff; dark greenish gray; moist; about 20% fine SAND; about 80% medium plasticity fines.		4			100							Upper 22" of sample had some fine subangular gravel, but most likely gravel that fell from a shallower section.
	115		Stiff.									PP = 1.5			
	116														

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_86225_18B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 5 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
116			Lean CLAY (CL) <i>(continued)</i> .		4			100							
	117		Stiff; about 5 to 10% medium to fine SAND.									PP = 1.5			
-37.00	118		Medium stiff to stiff.									PP = 1.0			
	119		Soft to medium stiff.									PP = 0.5			
	120		No sample.		5			0							3:45pm stopped drilling for day. Driller felt change in soil matrix ~119' to 120' and sample 5 resulted in no recovery. 7:10am Resumed drilling
-39.00	121														
	122														
-41.00	123														
	124		SANDY SILT (ML); medium stiff to stiff; dark gray; moist to wet; about 35% medium to fine SAND; about 65% nonplastic to low plasticity fines.		6	6	30	100				PP = 1.0			
-43.00	124		Poorly graded SAND with SILT (SP-SM); loose to medium dense; dark gray; wet; about 85 to 90% coarse to fine SAND; about 10 to 15% fines.			12									
	125		Bottom of borehole at 124.5 ft bgs			18									9:45am
	126		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
-45.00	127														
	128														
-47.00	129														
	130														
-49.00	131														
	132														
-51.00	133														
	134														
-53.00	135														
	136														
-55.00	137														
	138														
-57.00	139														
	140														




REPORT TITLE BORING RECORD				HOLE ID 13_86225_18B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 6 of 6

LOGGED BY John Wright	BEGIN DATE 7-15-13	COMPLETION DATE 7-16-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13 86325 19B
DRILLING CONTRACTOR Geo-Ex, Driller Name: Tom Scott			BOREHOLE LOCATION (Offset, Station, Line) 0.00' Rt Sta 863+25 Reach 13	SURFACE ELEVATION 82.0 ft
DRILLING METHOD Rotary Wash			DRILL RIG CME 75	BOREHOLE DIAMETER 5 in
SAMPLER TYPE(S) AND SIZE(S) (ID) Std Cal (2.5"), SPT (1.4")			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING AFTER DRILLING (DATE) READINGS N/A N/A	TOTAL DEPTH OF BORING 104.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
80.00	2														Start drilling at 7:00am
78.00	4		SILTY SAND (SM); yellowish brown; dry; about 5% fine, subangular GRAVEL; about 65% medium to fine SAND; about 30% nonplastic fines.												
76.00	6														
74.00	8														
72.00	10														
70.00	12														
68.00	14														
66.00	16														
64.00	18														
	19														
	20														

(continued)

 Crawford & Associates, Inc. Geotechnical Engineering, Design and Construction Services	REPORT TITLE BORING RECORD				HOLE ID 13 86325 19B	
	DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
	PROJECT OR BRIDGE NAME SBFCA					
	BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 1 of 5

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
60.00	22														
58.00	24														
56.00	26														
54.00	28														
52.00	30														
50.00	32														
48.00	34														Drill rig hit a thin (<1') rough layer of material
46.00	36														
44.00	38														
42.00	40														
40.00	42														
	43														
	44														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_86325_19B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 2 of 5

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
44															
	45														
36.00	46														
	47														
34.00	48														
	49														
32.00	50														
	51														
30.00	52														
	53														
28.00	54														
	55														
26.00	56														
	57														
24.00	58														
	59														
22.00	60														
	61														
20.00	62														
	63														
18.00	64														
	65														
16.00	66														
	67														
68															

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_86325_19B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 3 of 5

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
68															Drill rig rattled, suggesting a gravel layer
69															
12.00	70														
	71														
10.00	72														
	73														
8.00	74														
	75														
6.00	76														
	77														
4.00	78														
	79														
2.00	80														
	81														
0.00	82														
	83														
-2.00	84														
	85														
-4.00	86														
	87														
-6.00	88														
	89														
-8.00	90														
	91														
	92														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_86325_19B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 4 of 5

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
92															
	93														
-12.00	94														
	95														
-14.00	96														
	97														
-16.00	98														
	99														
-18.00	100														
	101														
-20.00	102														Drill rig rattled, suggesting a gravel layer
	103				1			0							11:15am
-22.00	104		SILTY SAND (SM); very dense; dark gray; wet; about 5% fine, subangular GRAVEL; about 80% coarse to fine SAND; about 15% fines.	2				50							12:45pm driller couldn't advance boring
	105		SILTY SAND with GRAVEL (SM); very dense; dark gray; wet; about 35% fine, subangular GRAVEL; about 55% coarse to fine SAND; about 10% fines. Bottom of borehole at 104.0 ft bgs	3				50							
-24.00	106		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
	107														
-26.00	108														
	109														
-28.00	110														
	111														
-30.00	112														
	113														
-32.00	114														
	115														
	116														




REPORT TITLE BORING RECORD				HOLE ID 13_86325_19B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 5 of 5

LOGGED BY John Wright	BEGIN DATE 7-30-13	COMPLETION DATE 7-31-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13 89025 46B
DRILLING CONTRACTOR Geo-Ex, Driller Name: Tom Scott			BOREHOLE LOCATION (Offset, Station, Line) 0.00' Rt Sta 890+25 Reach 13	SURFACE ELEVATION 82.0 ft
DRILLING METHOD Rotary Wash			DRILL RIG CME 75	BOREHOLE DIAMETER 4 in
SAMPLER TYPE(S) AND SIZE(S) (ID) Std Cal (2.5"), Mod Cal (2"), SPT (1.4")			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING AFTER DRILLING (DATE) READINGS N/A N/A	TOTAL DEPTH OF BORING 130.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
1	1														12:10 pm start drilling
80.00	2														
78.00	4														
76.00	6														
74.00	8														
72.00	10														
70.00	12														
68.00	14														
66.00	16														
64.00	18														
	19														
	20														

(continued)

 Crawford & Associates, Inc. Geotechnical Engineering, Design and Construction Services	REPORT TITLE BORING RECORD				HOLE ID 13 89025 46B	
	DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
	PROJECT OR BRIDGE NAME SBFCA					
	BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 1 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
20			(continued).												
21															
60.00	22														
23															
58.00	24														
25															
56.00	26														
27															
54.00	28														
29															
52.00	30														
31															
50.00	32														
33															
48.00	34														driller encounterd gravel layer
35															
46.00	36														
37															
44.00	38														end gravel layer
39															
42.00	40														
41															
40.00	42														
43															
44															

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_89025_46B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 2 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
44															
	45														
36.00	46														
	47														
34.00	48														
	49														
32.00	50														added more mud (+100 gallons of water)
	51														
30.00	52														
	53														
28.00	54														
	55														
26.00	56														
	57														encountered gravel layer
24.00	58														
	59														end of gravel layer
22.00	60														
	61														
20.00	62														
	63														
18.00	64														
	65														
16.00	66														
	67														
68															

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_89025_46B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 3 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
68															encountered gravel layer
69															
12.00	70														
	71														
10.00	72														
	73														
8.00	74														
	75														
6.00	76														
	77														
4.00	78														
	79														
2.00	80														
	81														
0.00	82														
	83														
-2.00	84														
	85														
-4.00	86														
	87														
-6.00	88														end of gravel layer
	89														
-8.00	90														
	91														
	92														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_89025_46B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 4 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
92															
-12.00	94														
-14.00	96														
-16.00	98														
-18.00	100														encountered gravel layer
-20.00	102														
-22.00	104														
-24.00	106														
-26.00	108														
-28.00	110														end of gravel layer
	111		CLAYEY SILT with SAND (ML/CL); hard; greenish blue gray; moist; about 15 to 20% fine SAND; about 80 to 85% low plasticity fines; Slightly micaceous.	1	15	22	51	96				PP = 4.5			
	112		Lean CLAY (CL); very stiff to hard; greenish blue gray; moist; about 5% fine SAND; about 95% medium plasticity fines; Slightly micaceous.	2	13	16	38	79				PP = 4.0			
	113		SILTY CLAY with SAND (CL-ML); hard; greenish blue gray; moist; about 15 to 20% fine SAND; about 80 to 85% low to medium plasticity fines; Slightly micaceous.	3			46	100				PP = >4.5			
	114														
	115														
	116														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_89025_46B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 5 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	116		SILTY CLAY with SAND (CL-ML) (continued).		3	18 21 25	46	100				PP = >4.5			
-36.00	118		SILTY SAND (SM); dense; dark gray; wet; about 75% fine SAND; about 25% nonplastic fines; Micaceous. Approximately 2" from tip is a 3" lense of Poorly Graded SAND (SP), dark gray (10YR 4/1), wet, 95% fine to coarse grained sand.		4	12 22 24	46	79							
-38.00	120		Lean CLAY with SAND (CL); very stiff; greenish blue gray; moist; about 15% medium to fine SAND; about 85% medium plasticity fines; Slightly micaceous.		5	9 11 13	24	100				PP = 3.0			
	123		Blocky/indurated.		6	18 40 50/5"	90/11	94				PP = >4.5			
-42.00	124		SILTY SAND (SM); very dense; gray; moist to wet; about 80% fine SAND; about 20% nonplastic to low plasticity fines.		7	12 18 29	47	100				PP = >4.5			
	125		Lean CLAY with SAND (CL); very stiff; greenish blue gray; moist; about 15% medium to fine SAND; about 85% medium plasticity fines.												
	125		Lean CLAY (CL); hard; greenish blue gray; moist; about 5% fine SAND; about 95% medium plasticity fines; Micaceous, blocky/indurated.		8	16 33 50/4"	83/10	58							
-44.00	126														
	128		SANDY SILT (ML); dark gray; moist; about 30% fine SAND; about 70% low plasticity fines; Micaceous.		9	23 29 31	60	100							
-46.00	129														
	130		SILTY SAND (SM); dark gray; moist to wet; about 80% fine SAND; about 20% nonplastic to low plasticity fines; Micaceous.												
-48.00	130		Bottom of borehole at 130.0 ft bgs												
	131		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
-50.00	132														
	133														
-52.00	134														
	135														
-54.00	136														
	137														
-56.00	138														
	139														
	140														



REPORT TITLE BORING RECORD				HOLE ID 13_89025_46B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 6 of 6

LOGGED BY John Wright	BEGIN DATE 7-29-13	COMPLETION DATE 7-30-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13 89125 47B
DRILLING CONTRACTOR Geo-Ex, Driller Name: Ryan			BOREHOLE LOCATION (Offset, Station, Line) 0.00' Rt Sta 891+25 Reach 13	SURFACE ELEVATION 85.0 ft
DRILLING METHOD Rotary Wash			DRILL RIG CME 75	BOREHOLE DIAMETER 4 in
SAMPLER TYPE(S) AND SIZE(S) (ID) Mod Cal (2"), SPT (1.4")			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING AFTER DRILLING (DATE) READINGS N/A N/A	TOTAL DEPTH OF BORING 130.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
82.98	2														Ben on-site at 10:30am CME 55 track rig on-site. not drilling yet. setup at 13_889+25_45B
80.98	4														
78.98	6														
76.98	8														
74.98	10														700 gallons
72.98	12														
70.98	14														
68.98	16														
66.98	18														
	19														
	20														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13 89125 47B
DIST. 03	COUNTY YUB	ROUTE D	POSTMILE D	EA 03-13-120.1
PROJECT OR BRIDGE NAME SBFCA				
BRIDGE NUMBER	PREPARED BY David Castro	DATE	SHEET 1 of 6	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
20	20														
21	21														
62.98	22														
23	23														
60.98	24														
25	25														
58.98	26														
27	27														
56.98	28														
29	29														
54.98	30														
31	31														
52.98	32														
33	33														
50.98	34														
35	35														
48.98	36														12:42pm installed tricone bit to begin drilling to sample depth
37	37														
46.98	38														
39	39														
44.98	40														
41	41														
42.98	42														
43	43														
44	44														Lost circulation, driller thinks the casing is leaking. observed liquid coming up around casing. adding 5 ft

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_89125_47B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 2 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
44															of casing.
	45														Lost circulation again due to soil layer @ 45'. lost 300 to 250 gallons.
38.98	46														
	47														
36.98	48														
	49														
34.98	50														
	51														
32.98	52														
	53														
30.98	54														
	55														
28.98	56														
	57														
26.98	58														
	59														
24.98	60														circulation corrected @ 60'. likely in the silt layer shown on sonic boring
	61														
22.98	62														driller indicated gravel layer at 63'. matches well with nearby sonic boring. started to lose fluid.
	63														
20.98	64														
	65														
18.98	66														
	67														
	68														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_89125_47B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 3 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
68															
69															
14.98	70														
71															
12.98	72														
73															
10.98	74														
75															
8.98	76														
77															
6.98	78														still losing fluid. about 400 gallons so far.
79															1:12pm
4.98	80														
81															
2.98	82														
83															500 gallons used
0.98	84														
85															
-1.02	86														1:52pm
87															
-3.02	88														end gravel layer. matches with nearby sonic boring
89															
-5.02	90														
91															
92															2:00pm JW on-site

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_89125_47B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 4 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
92															
-9.02	94														
-11.02	96														
-13.02	98														
-15.02	100														600 gallons. gravels at 101'
-17.02	102														
-19.02	104														
-21.02	106														still losing fluid
-23.02	108														
-25.02	110														2:39pm. end gravel layer
-27.02	112		SILTY CLAY (CL-ML); medium stiff to stiff; gray; moist; about 3 to 5% fine SAND; low to medium plasticity fines; coarse gravel in sample tip (2" x 1", flat, subangular).	1	7	17	35	29				PP = 1.0			
-29.02	114		Lean to fat CLAY (CL/CH); stiff to very stiff; gray; moist; about 5% fine SAND; medium to high plasticity fines; slightly mica.	2	17	16	32	100				PP = 2.75			
	115		Lean CLAY (CL); stiff to very stiff; gray; moist; about 15% fine SAND; medium plasticity fines; slightly mica.			16									
	116		SILTY SAND (SM); medium dense; gray; wet; about	3			31	100							5:00 pm. 7/29/13. JW off-site 6:05am. 7/30/13. JW on-site mixed more mud. 850 gallons used

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_89125_47B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 5 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	116		15% nonplastic to low plasticity fines; slightly mica. Lean CLAY (CL); stiff to very stiff; gray; moist; about 15% fine SAND; medium plasticity fines; slightly mica.		3	11 15 16	31	100				PP = 2.75			so far.
-33.02	118				4	26 28 45	73	100				PP = 1.25			
	119		SILTY CLAY (CL-ML); stiff; gray; moist; about 10% fine SAND; medium plasticity fines; slightly mica, blocky/indurated.		5	13 14 21	35	100							
-35.02	120				6	14 23 36	59	100							
	121				7	11 18 32	50	100							
-37.02	122				8	12 24 33	57	100							
	123		SANDY SILT (ML); stiff; gray; moist; about 45% medium to fine SAND; nonplastic to low plasticity fines; slightly mica.		9	6 15 19	34	100				PP = 1.0			
-39.02	124		Poorly graded SAND with SILT (SP-SM); dense. SILT with SAND (ML); medium stiff to stiff; dark gray; moist; about 15% fine SAND; low plasticity fines; mica, blocky/indurated.												
	125		SILTY SAND (SM); dense; dark gray; moist to wet; about 60% fine SAND; nonplastic fines; mica.												
-41.02	126		SANDY SILTY CLAY (CL-ML); stiff; dark gray; moist; about 35% fine SAND; low to medium plasticity fines; mica.												
	127		SILTY SAND (SM); dense to very dense; dark gray; wet; fine SAND; about 15% nonplastic fines; mica.												
-43.02	128		SANDY lean CLAY (CL); medium stiff to stiff; gray; moist; about 45% fine SAND; low plasticity fines; slightly mica.												
	129		SANDY SILT (ML); medium stiff to stiff; dark gray; moist; about 45% fine SAND; about 55% nonplastic to low plasticity fines; mica.												
-45.02	130		SANDY lean CLAY (CL); medium stiff to stiff; gray; moist; about 45% fine SAND; medium plasticity fines; blocky/indurated.												
	131		Bottom of borehole at 130.0 ft bgs												
-47.02	132		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
	133														
-49.02	134														
	135														
-51.02	136														
	137														
-53.02	138														
	139														
	140														



REPORT TITLE BORING RECORD				HOLE ID 13_89125_47B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 6 of 6

LOGGED BY David Castro	BEGIN DATE 7-27-13	COMPLETION DATE 7-27-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13 89225 48B
DRILLING CONTRACTOR Geo-Ex, Driller Name: Ryan			BOREHOLE LOCATION (Offset, Station, Line) 0.00' Rt Sta 892+25 Reach 13	SURFACE ELEVATION 82.0 ft
DRILLING METHOD Rotary Wash			DRILL RIG CME 75	BOREHOLE DIAMETER 4 in
SAMPLER TYPE(S) AND SIZE(S) (ID) Mod Cal (2"), SPT (1.4")			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING AFTER DRILLING (DATE) READINGS N/A N/A	TOTAL DEPTH OF BORING 130.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
1	1														drilling began at 7:00am
80.00	2														
78.00	4														
76.00	6														
74.00	8														
72.00	10														
70.00	12														
68.00	14														
66.00	16														
64.00	18														
	19														
	20														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13 89225 48B
DIST. 03	COUNTY YUB	ROUTE D	POSTMILE D	EA 03-13-120.1
PROJECT OR BRIDGE NAME SBFCA				
BRIDGE NUMBER	PREPARED BY David Castro	DATE	SHEET 1 of 6	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
20															
	21														
60.00	22														
	23														
58.00	24														
	25														
56.00	26														
	27														
54.00	28														
	29														
52.00	30														
	31														
50.00	32														
	33														
48.00	34														
	35														
46.00	36														
	37														
44.00	38														
	39														
42.00	40														
	41														
40.00	42														
	43														
	44														

(continued)



Crawford
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REPORT TITLE BORING RECORD				HOLE ID 13_89225_48B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 2 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
44															
45															
36.00	46														
47															
34.00	48														
49															
32.00	50														
51															
30.00	52														
53															
28.00	54														
55															
26.00	56														
57															
24.00	58														
59															
22.00	60														
61															
20.00	62														driller encountered gravel layer
63															
18.00	64														
65															
16.00	66														
67															
68															

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_89225_48B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 3 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
68															
69															
12.00	70														
	71														
10.00	72														
	73														
8.00	74														
	75														
6.00	76														
	77														
4.00	78														
	79														
2.00	80														
	81														
0.00	82														
	83														
-2.00	84														
	85														
-4.00	86														
	87														
-6.00	88														
	89														
-8.00	90														end gravel layer
	91														
	92														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_89225_48B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 4 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
92															
	93														
-12.00	94														
	95														
-14.00	96														encountered gravel layer
	97														
-16.00	98														
	99														
-18.00	100														
	101														
-20.00	102														
	103														
-22.00	104														
	105														
-24.00	106														
	107														
-26.00	108														
	109														10:50am rig burning oil, stop rig to refill with oil. start again at 11:15am.
-28.00	110														end gravel layer
	111		CLAYEY SILT with SAND (ML/CL); stiff; greenish blue gray; moist; about 15% medium to fine SAND; low plasticity fines.	1	16	29	54								
	112				15										
	113				14										
	114		SANDY SILT (ML); stiff; greenish blue gray; moist; about 20 to 50% medium to fine SAND; blocky texture in upper 9".	2	10	29	100								
	115				12										
	116				17										
			SILTY SAND (SM); dense to very dense; greenish gray; moist; about 35% medium to fine SAND.	3		50	96								

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_89225_48B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 5 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	116		SILTY SAND (SM) (continued).		3	16 20 30	50	96							
	117														
	118		Poorly graded SAND (SP); dense; dark greenish gray; moist; medium SAND; about 8% fines.												
-36.00	118		SILTY SAND (SM); dense; greenish gray; moist; about 30% fines.		4	20 24 25	49	83							
	119		Poorly graded SAND (SP); dense; greenish gray; moist; coarse to medium SAND; about 7% fines.												
	120		SANDY SILT (ML); stiff to very stiff; greenish gray; moist; about 40% fine SAND.												
-38.00	120														
	121				5	11 13 22	35	100							
	122		SILTY SAND (SM); medium dense to dense; greenish gray; moist; about 35% fine SAND.												
-40.00	122														
	123														
	124		SANDY SILTY CLAY (CL-ML/CL/ML); hard; greenish gray; moist; about 15% fine SAND; about 15% low plasticity fines.		6	24 60 75/5	135/1196								
-42.00	124														
	125		SILTY SAND (SM); very dense; greenish gray; moist; about 20% fine SAND.												
	126		Lean CLAY with SAND (CL); hard; dark greenish gray; moist; about 20% fine SAND; medium plasticity fines; blocky and indurated.		7	33 60 150	210	100							
-44.00	126														
	127														
	128				8	19 27 50	77	100							
-46.00	128														driller noted density change, became easier to drill
	129		SILTY SAND (SM); very dense; greenish gray; moist; about 25 to 35% fines.												
-48.00	129														
	130		Bottom of borehole at 130.0 ft bgs												
	131		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
-50.00	132														
	133														
	134														
-52.00	134														
	135														
	136														
-54.00	136														
	137														
	138														
-56.00	138														
	139														
	140														




REPORT TITLE BORING RECORD				HOLE ID 13_89225_48B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 6 of 6

LOGGED BY John Wright	BEGIN DATE 7-26-13	COMPLETION DATE 7-26-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13_89525_51B
DRILLING CONTRACTOR Geo-Ex, Driller Name: Ryan			BOREHOLE LOCATION (Offset, Station, Line) 0.00' Rt Sta 895+25 Reach 13	SURFACE ELEVATION 82.0 ft
DRILLING METHOD Rotary Wash			DRILL RIG CME 75	BOREHOLE DIAMETER 4 in
SAMPLER TYPE(S) AND SIZE(S) (ID) Mod Cal (2"), SPT (1.4")			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING READINGS N/A	AFTER DRILLING (DATE) N/A
				TOTAL DEPTH OF BORING 130.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
80.00	2														
78.00	4														
76.00	6														
74.00	8														
72.00	10														
70.00	12														
68.00	14														
66.00	16														
64.00	18														
	19														
	20														

(continued)

 Crawford & Associates, Inc. Geotechnical Engineering, Design and Construction Services	REPORT TITLE BORING RECORD				HOLE ID 13_89525_51B	
	DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
	PROJECT OR BRIDGE NAME SBFCA					
	BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 1 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
60.00	20														
	21														
	22														
	23														
58.00	24														
	25														
	26														
	27														
	28														
	29														
	30														upper 30' hard material to drill
	31														
	32														
	33														
	34														
48.00	35														
	36														
	37														
	38														
	39														
	40														
	41														
40.00	42														
	43														
	44														

(continued)



Crawford & Associates, Inc.
 Geotechnical Engineering, Design and Construction Services

REPORT TITLE BORING RECORD				HOLE ID 13_89525_51B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 2 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
44															
	45														
36.00	46														
	47														
34.00	48														
	49														
32.00	50														
	51														
30.00	52														
	53														
28.00	54														
	55														
26.00	56														
	57														
24.00	58														
	59														
22.00	60														
	61														
20.00	62														
	63														
18.00	64														
	65														
16.00	66														
	67														possible gravel layer
	68														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_89525_51B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 3 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
68															
69															
12.00	70														
	71														
10.00	72														
	73														
8.00	74														
	75														
6.00	76														
	77														
4.00	78														
	79														
2.00	80														
	81														
0.00	82														
	83														
-2.00	84														
	85														9:45am lost fluid. mixed more mud. used about 200 gallons of water so far.
-4.00	86														
	87														
-6.00	88														
	89														
-8.00	90														
	91														end gravel layer
	92														

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_89525_51B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 4 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
92															
	93														encountered gravel layer
-12.00	94														
	95														
-14.00	96														
	97														
-16.00	98														
	99														
-18.00	100														drill rig rattling heavily. possible cobbles
	101														
-20.00	102														
	103														
-22.00	104														
	105														
-24.00	106														
	107		SILTY CLAY (CL-ML); stiff to very stiff; greenish gray; moist; about 5% fine SAND; medium plasticity fines; indurated/blocky texture, slightly mica.	1	16	38	88								
	108														
	109				2	12	28	100				PP = 3.0			
	110					13						PP = 2.5			
	111					15									
-28.00	112				3	21	53	100				PP = 1.5			
	113					22									
	114					31									
-32.00	114														
	115		SANDY lean CLAY (CL/CL/ML); medium stiff to stiff; greenish gray; moist; about 35 to 40% fine SAND; low to medium plasticity fines; slightly mica.	4	8	28	0								
	116					14									
						14									

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_89525_51B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 5 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	116		SANDY lean CLAY (CL/CL/ML) (continued).												
	117				5	13	49	100							
	118		Elastic SILT (MH); medium stiff; greenish gray; moist; fine SAND; about 25% nonplastic to low plasticity fines; mica.			20									
	119				6	14	43	100							
	120		SILTY SAND (SM); dense; gray; moist; fine SAND; about 10% fines; mica.			20									
	121		Poorly graded SAND with SILT (SP-SM); dense; gray; wet; medium to fine SAND; about 15% nonplastic fines.			23									
	122		SILTY SAND (SM); dense; dark gray; wet. Elastic SILT (MH); medium stiff to stiff; gray; moist; about 15% fine SAND; low plasticity fines; mica.		7	28	60	100							
	123					30									
	124				8	21	68	100							
	125					30									
	126					38									
	127				9	10	43	100							
	128		SANDY SILT (ML); stiff to very stiff; gray; moist; about 40% fine SAND; nonplastic to low plasticity fines; mica.			17									
	129		SILTY SAND (SM); very dense; gray; moist; about 50% fine SAND; low plasticity fines; mica.		10	24	74	100							
	130		SILT with SAND (ML); very dense; gray; moist; about 15 to 20% fine SAND; low plasticity fines; mica, indurated.			28									
	131					46									
	132		Bottom of borehole at 130.0 ft bgs												
	133		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
	134														
	135														
	136														
	137														
	138														
	139														
	140														



REPORT TITLE BORING RECORD				HOLE ID 13_89525_51B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 6 of 6

LOGGED BY John Wright	BEGIN DATE 7-8-13	COMPLETION DATE 8-12-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13_84725_3B_R
DRILLING CONTRACTOR Geo-Ex, Driller Name: Tom Scott			BOREHOLE LOCATION (Offset, Station, Line) 0.00' Rt Sta 847+25 Reach 13	SURFACE ELEVATION 82.0 ft
DRILLING METHOD Rotary Wash			DRILL RIG CME 75	BOREHOLE DIAMETER 5 in
SAMPLER TYPE(S) AND SIZE(S) (ID) Mod Cal (2"), HQ Core, SPT (1.4")			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING AFTER DRILLING (DATE) READINGS N/A N/A	TOTAL DEPTH OF BORING 124.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
1	1														6:30 am start drilling
80.00	2														
78.00	4														
76.00	6														
74.00	8														
72.00	10														
70.00	12														
68.00	14														
66.00	16														
64.00	18														
	19														
	20														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_84725_3B_R
DIST. 03	COUNTY YUB	ROUTE D	POSTMILE D	EA 03-13-120.1
PROJECT OR BRIDGE NAME SBFCA				
BRIDGE NUMBER	PREPARED BY John Wright	DATE	SHEET 1 of 6	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
20															
	21														
60.00	22														
	23														
58.00	24														
	25														
56.00	26														
	27														
54.00	28														
	29														
52.00	30														
	31														
50.00	32														
	33														
48.00	34														
	35														
46.00	36														
	37														
44.00	38														
	39														
42.00	40														
	41														
40.00	42														
	43														
	44														

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REPORT TITLE BORING RECORD				HOLE ID 13_84725_3B_R	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 2 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
44	44														
	45														Lost fluid pressure and mud circulation
36.00	46														
	47														
34.00	48														
	49														
32.00	50														
	51														
30.00	52														
	53														
28.00	54														
	55														
26.00	56														
	57														
24.00	58														
	59														
22.00	60														
	61														gravel layer encountered
20.00	62														
	63														
18.00	64														
	65														
16.00	66														end gravel layer
	67														
	68														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_84725_3B_R	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 3 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
12.00	68														
	69														
	70														
	71														
10.00	72														
	73														
	74														
8.00	75														
	76														
	77														
6.00	78														
	79														
2.00	80		Poorly graded SAND with SILT (SP-SM); loose to medium dense; dark gray; wet; about 90% medium to fine SAND; about 10% nonplastic fines.		1			100							
	81														
0.00	82		SILT (ML); very soft; dark gray; wet; about 25 to 30% fine SAND; about 70 to 75% low plasticity fines.												
	83		Poorly graded SAND with SILT (SP-SM); medium dense to dense; dark gray; wet; about 90% medium to fine SAND; about 10% nonplastic fines.												
-2.00	84				2	23 55/6	55/6	17							9:15am, sample stuck, driller had to flush barrel.
	85				3	12 23	51 28								8-12-13 re-sample from 85 to 100 ft to complete 3B (samples 2 thru 9)
-4.00	86		SILTY SAND (SM); very dense; dark gray; moist to wet; fine SAND; about 20 to 25% nonplastic fines.												
	87				4	17 28 38	66	83							
-6.00	88														
	89				5	16 15 14	29	94							
-8.00	90														
	91		SILT (ML); hard; dark gray; moist; about 5 to 10% fine SAND; nonplastic fines.		6	16 25 29	54	79							
	92														

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_84725_3B_R	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 4 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	92		SILT (ML) (continued).		6		54	79							
	93		SILTY SAND (SM); medium dense; dark gray; moist; about 20% nonplastic fines.		7	9	27	89							
-12.00	94		SILT with SAND (ML); medium dense; gray; moist; about 15% fine SAND.			12									
	95		SILTY SAND (SM); medium dense; dark gray; wet; medium to fine SAND; about 20% nonplastic to low plasticity fines.		8	8	23	89							
-14.00	96		SANDY SILT (ML); stiff; gray; moist; medium to fine SAND; low to medium plasticity fines.			9									
	97														
-16.00	98		Poorly graded SAND with SILT (SP-SM); very dense; dark gray; moist; medium to fine SAND; about 10% nonplastic fines.		9	47	50/5	67							
	99		Poorly graded GRAVEL with SILT and SAND (GP-GM); very dense; dark gray to black; moist; coarse to fine GRAVEL; about 15% medium to fine SAND; about 10% nonplastic fines.			50/5									
-18.00	100		SILTY SAND (SM); loose to medium dense; dark gray; wet; about 60 to 65% medium to fine SAND; about 35 to 40% nonplastic to low plasticity fines.		10			30							10:30am
	101		SANDY SILT (ML); soft; dark gray; wet; about 35 to 40% fine SAND; about 60 to 65% low plasticity fines.												
-20.00	102		Well-graded GRAVEL with SILT and SAND (GW-GM); very dense; dark gray; wet; about 60% coarse to fine GRAVEL; about 20% coarse to fine SAND; about 20% low plasticity fines.												Below 101.5 drill rig movement indicates gravel/cobble material
	103														
-22.00	104														
	105														
-24.00	106														
	107														
-26.00	108														
	109														
-28.00	110														
	111														
-30.00	112														
	113														
-32.00	114														
	115														
	116														

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_84725_3B_R	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 5 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
-36.00	118		Poorly graded SAND with SILT (SP-SM); dense to very dense; dark gray; wet; about 10% coarse to fine GRAVEL; about 80% medium to fine SAND; about 10% nonplastic fines.		11			78							
-38.00	120		Poorly graded GRAVEL with SAND (GP); very dense; gray; wet; about 80% coarse to fine GRAVEL; about 15% medium to fine SAND; about 5% nonplastic fines.		12			67							
-42.00	124		Bottom of borehole at 124.0 ft bgs											1:00pm	
	125		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												



REPORT TITLE BORING RECORD				HOLE ID 13_84725_3B_R	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 6 of 6

LOGGED BY John Wright	BEGIN DATE 8-17-13	COMPLETION DATE 8-19-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13_85525_11B
DRILLING CONTRACTOR Geo-Ex, Driller Name: Ryan			BOREHOLE LOCATION (Offset, Station, Line) 0.00' Rt Sta 855+25 Reach 13	SURFACE ELEVATION 69.0 ft
DRILLING METHOD Rotary Wash			DRILL RIG CME 850	BOREHOLE DIAMETER 4 in
SAMPLER TYPE(S) AND SIZE(S) (ID) Std Cal (2.5"), HQ Core, SPT (1.4")			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING READINGS N/A	AFTER DRILLING (DATE) N/A
				TOTAL DEPTH OF BORING 117.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
1	1														
67.00	2														
3	3														
65.00	4														
5	5														
63.00	6														
7	7														
61.00	8														
9	9														
59.00	10														
11	11														
57.00	12														
13	13														
55.00	14														
15	15														
53.00	16														
17	17														
51.00	18														
19	19														
20	20														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_85525_11B
DIST. 03	COUNTY YUB	ROUTE D	POSTMILE D	EA 03-13-120.1
PROJECT OR BRIDGE NAME SBFCA				
BRIDGE NUMBER	PREPARED BY David Castro	DATE	SHEET 1 of 6	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
20															
21															
47.00	22														
23															
45.00	24														
25															
43.00	26														
27															
41.00	28														
29															
39.00	30														
31															
37.00	32														
33															
35.00	34														
35															
33.00	36														
37															
31.00	38														
39															
29.00	40														
41															
27.00	42														
43															
44															

11am

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_85525_11B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 2 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
44															
	45														
23.00	46														
	47														
21.00	48														
	49														
19.00	50														
	51														
17.00	52														
	53														
15.00	54														
	55														
13.00	56														gravel layer
	57														
11.00	58														
	59														
9.00	60														
	61														
7.00	62														
	63														
5.00	64														
	65														
3.00	66														
	67														
	68														

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_85525_11B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 3 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
68															
	69														
-1.00	70														
	71														
-3.00	72														
	73														
-5.00	74														
	75														
-7.00	76														
	77														
-9.00	78														
	79														
-11.00	80														
	81														
-13.00	82														
	83														
-15.00	84														
	85														
-17.00	86														
	87														
-19.00	88														lost circulation, 300 gal of water used so far
	89														
-21.00	90														
	91														
	92														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_85525_11B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 4 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
-25.00	94														
-27.00	96														
-29.00	98														
-31.00	100				1	20 25 30	55	0							
-33.00	102				2	10 12 12	24	0							
-35.00	104				3	30 34		0							
-37.00	106														
-39.00	108		Lean to fat CLAY (CL/CH); very stiff; greenish gray; moist; about 5 to 20% fine SAND; about 95 to 80% medium to high plasticity fines.		4			98				PP = 2.5			
-41.00	110		SANDY SILT (ML); hard; greenish gray; moist; about 40% fine SAND; about 60% nonplastic to low plasticity fines.									PP = >4.5			
-43.00	112		SILTY SAND (SM); dense; dark gray; moist; about 65 to 70% fine SAND; about 30 to 35% nonplastic fines; Interbedded layers of silt.		5			78				PP = >4.5			
-45.00	114														
	115		Lean CLAY (CL); hard; greenish gray; moist; about 10% fine SAND; about 90% medium plasticity fines.		6			87				PP = >4.5			filled mud tank with 100 gal of water

8/17/13
1:46pm end gravel layer

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_85525_11B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 5 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
116			Lean CLAY (CL) (continued).		6			87				PP = >4.5 PP = >4.5			
	117		Bottom of borehole at 117.0 ft bgs												
-49.00	118		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
-51.00	120														
-53.00	122														
-55.00	124														
-57.00	126														
-59.00	128														
-61.00	130														
-63.00	132														
-65.00	134														
-67.00	136														
-69.00	138														
	139														
	140														



REPORT TITLE BORING RECORD				HOLE ID 13_85525_11B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 6 of 6

LOGGED BY John Wright	BEGIN DATE 9-4-13	COMPLETION DATE 9-4-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13_85625_12B
DRILLING CONTRACTOR Geo-Ex, Driller Name: Ryan			BOREHOLE LOCATION (Offset, Station, Line) 12.00' Rt Sta 856+25 Reach 13	SURFACE ELEVATION 69.0 ft
DRILLING METHOD Rotary Wash			DRILL RIG CME 850	BOREHOLE DIAMETER 4 in
SAMPLER TYPE(S) AND SIZE(S) (ID) HQ Core, SPT (1.4")			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING READINGS N/A	AFTER DRILLING (DATE) N/A
				TOTAL DEPTH OF BORING 120.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
1	1														
67.00	2														
3	3														
65.00	4														
5	5														
63.00	6														
7	7														
61.00	8														
9	9														
59.00	10														
11	11														
57.00	12														
13	13														
55.00	14														
15	15														
53.00	16														
17	17														
51.00	18														
19	19														
20	20														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_85625_12B
DIST. 03	COUNTY YUB	ROUTE D	POSTMILE D	EA 03-13-120.1
PROJECT OR BRIDGE NAME SBFCA				
BRIDGE NUMBER	PREPARED BY John Wright	DATE	SHEET 1 of 6	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
20															
	21														
47.00	22														
	23														
45.00	24														
	25														
43.00	26														
	27														
41.00	28														
	29														
39.00	30														
	31														
37.00	32														
	33														
35.00	34														
	35														
33.00	36														
	37														
31.00	38														
	39														
29.00	40														
	41														
27.00	42														
	43														
	44														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_85625_12B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 2 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
44															
	45														
23.00	46														
	47														
21.00	48														
	49														
19.00	50														
	51														
17.00	52														
	53														gravel layer
15.00	54														
	55														
13.00	56														
	57														
11.00	58														
	59														
9.00	60														
	61														
7.00	62														
	63														
5.00	64														
	65														
3.00	66														
	67														
	68														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_85625_12B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 3 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
68															
-1.00	69														
	70														
	71														
-3.00	72														
	73														
-5.00	74														
	75														
-7.00	76														
	77														
-9.00	78														
	79														
-11.00	80														
	81														
-13.00	82														end gravel layer
	83														
-15.00	84														
	85														
-17.00	86														gravel layer
	87														
-19.00	88														
	89														
-21.00	90														
	91														
	92														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_85625_12B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 4 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
-25.00	94														
-27.00	96														end gravel layer
-29.00	98		CLAYEY SAND (SC); dense; gray; moist to wet; about 5% fine GRAVEL; about 45% fine SAND; about 50% low to medium plasticity fines.		1	10	33	61							
-31.00	99		Poorly graded SAND with SILT (SP-SM); medium dense; dark gray; wet; about 90% fine SAND; about 10% nonplastic fines; interbedded layers of silty SAND.			16									
-31.00	100		SANDY SILT (ML); dark greenish gray; moist; about 30% fine SAND; low plasticity fines.		2	17		98				PP = 3.5			
-31.00	101		SILT (ML); very stiff; dark greenish gray; moist; about 10 to 15% fine SAND; low plasticity fines.									PP = 3			
-33.00	102											PP = 1.75			
-33.00	103		Lean CLAY (CL); stiff to very stiff; dark greenish gray; moist; about 5% fine SAND; about 95% medium plasticity fines; slightly blocky.									PP = 3			
-35.00	104		Hard; blocky.												
-35.00	105				3			83				PP = >4.5			
-37.00	106														
-37.00	107											PP = >4.5			
-39.00	108											PP = >4.5			
-39.00	109		Low to medium plasticity fines.												
-41.00	110		SILTY SAND (SM); dark gray; wet; about 80% medium to fine SAND; about 20% nonplastic fines.		4			40							
-41.00	111		Poorly graded SAND (SP); dark gray; wet; about 95% medium to fine SAND; about 5% nonplastic fines.												
-43.00	112														
-45.00	114														
-45.00	115		Poorly graded SAND with SILT (SP-SM); about 90% medium to fine SAND; about 10% nonplastic fines.		5			90							
-45.00	116		SANDY SILT (ML); about 50% medium to fine SAND; about 50% low plasticity fines.												

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_85625_12B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 5 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	116		Poorly graded SAND with SILT (SP-SM); about 90% medium to fine SAND; about 10% nonplastic fines.		5			90							
	117				6			100							
-49.00	118		SILTY SAND (SM); about 85% medium to fine SAND; about 15% nonplastic fines.												
	119		Poorly graded SAND with SILT (SP-SM); about 90% medium to fine SAND; about 10% nonplastic fines.												
-51.00	120		Bottom of borehole at 120.0 ft bgs												
	121		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
-53.00	122														
	123														
-55.00	124														
	125														
-57.00	126														
	127														
-59.00	128														
	129														
-61.00	130														
	131														
-63.00	132														
	133														
-65.00	134														
	135														
-67.00	136														
	137														
-69.00	138														
	139														
	140														



REPORT TITLE BORING RECORD				HOLE ID 13_85625_12B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 6 of 6

LOGGED BY David Castro	BEGIN DATE 8-17-13	COMPLETION DATE 8-19-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13_85725_13B
DRILLING CONTRACTOR Gulf Shore, Driller Name: Carlos			BOREHOLE LOCATION (Offset, Station, Line) 0.00' Rt Sta 857+25 Reach 13	SURFACE ELEVATION 68.5 ft
DRILLING METHOD Rotary Wash			DRILL RIG CME 75	BOREHOLE DIAMETER 4 in
SAMPLER TYPE(S) AND SIZE(S) (ID) Mod Cal (2"), SPT (1.4")			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING READINGS N/A	AFTER DRILLING (DATE) N/A
				TOTAL DEPTH OF BORING 118.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
1	1														
66.50	2														
3	3														
64.50	4														
5	5														
62.50	6														
7	7														
60.50	8														
9	9														
58.50	10														
11	11														
56.50	12														
13	13														
54.50	14														
15	15														
52.50	16														
17	17														
50.50	18														
19	19														
20	20														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_85725_13B
DIST. 03	COUNTY YUB	ROUTE D	POSTMILE D	EA 03-13-120.1
PROJECT OR BRIDGE NAME SBFCA				
BRIDGE NUMBER	PREPARED BY David Castro	DATE	SHEET 1 of 6	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
20															
	21														
46.50	22														
	23														
44.50	24														
	25														
42.50	26														
	27														
40.50	28														
	29														
38.50	30														
	31														
36.50	32														
	33														
34.50	34														
	35														
32.50	36														
	37														
30.50	38														
	39														
28.50	40														
	41														
26.50	42														
	43														
	44														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_85725_13B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 2 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
44															
45															
22.50	46														
47															
20.50	48														
49															
18.50	50														
51															
16.50	52														
53															
14.50	54														
55															
12.50	56														gravel layer
57															
10.50	58														
59															
8.50	60														
61															
6.50	62														
63															
4.50	64														
65															
2.50	66														
67															
68															

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_85725_13B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 3 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
68															
	69														
-1.50	70														
	71														
-3.50	72														
	73														
-5.50	74														
	75														
-7.50	76														
	77														
-9.50	78														
	79														
-11.50	80														
	81														
-13.50	82														
	83														
-15.50	84														
	85														
-17.50	86														
	87														
-19.50	88														
	89														
-21.50	90														lost 800 gal of water so far
	91														
	92														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_85725_13B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 4 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
92															
-25.50	94														lost 1000 gal of water so far
-27.50	96														
-29.50	98														
-31.50	99				1	13	43	67							Drillers augered to 99 ft to stop circulation loss.
	100		CLAYEY SAND (SC); dense; greenish gray; moist; about 65 to 50% fine SAND; about 35 to 50% medium plasticity fines.		2	9	38	100							
	101					15									
-33.50	102		SILTY CLAY (CL-ML); stiff; greenish gray; moist; trace fine GRAVEL.			23									
	103		Lean to fat CLAY (CL/CH); very stiff; greenish gray; moist; trace fine GRAVEL; blocky.		3	10	48	89							
	104					21									
-35.50	105				4	14	62	89							
	106					23									
	107				5	14	72	100							
	108		CLAYEY SAND (SC); very dense; greenish gray; moist; about 70% medium to fine SAND; about 30% fines.			27									
-39.50	109				6	9	43	89							
	110					17									
	111				7	12	48	89							
-41.50	112		SILTY SAND (SM); dense; greenish gray; moist; about 75% fine SAND; about 25% nonplastic fines.			22									
	113				8	8	43	67							
	114		Coarse to fine SAND.			15									
-43.50	115		Trace GRAVEL; fine SAND.		9	11	47	67							
	116					17									
					10	13	51	72							
						18									
						33									

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_85725_13B
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1
PROJECT OR BRIDGE NAME SBFCA				
BRIDGE NUMBER	PREPARED BY David Castro	DATE	SHEET 5 of 6	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks	
	116		SILTY SAND (SM) (continued).													
	117		Lean CLAY with SAND (CL); hard; greenish gray; moist; about 15% fine SAND; about 85% medium plasticity fines; blocky.	11	9	62	100									
		22														
		40														
-49.50	118		Bottom of borehole at 118.0 ft bgs													
	119		<p>FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.</p>													
-51.50	120															
	121															
-53.50	122															
	123															
-55.50	124															
	125															
-57.50	126															
	127															
-59.50	128															
	129															
-61.50	130															
	131															
-63.50	132															
	133															
-65.50	134															
	135															
-67.50	136															
	137															
-69.50	138															
	139															
	140															



REPORT TITLE BORING RECORD				HOLE ID 13_85725_13B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 6 of 6

LOGGED BY John Wright	BEGIN DATE 8-19-13	COMPLETION DATE 8-20-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13_85825_14B
DRILLING CONTRACTOR Geo-Ex, Driller Name: Tom Scott			BOREHOLE LOCATION (Offset, Station, Line) 0.00' Rt Sta 858+25 Reach 13	SURFACE ELEVATION 69.0 ft
DRILLING METHOD Rotary Wash			DRILL RIG CME 75	BOREHOLE DIAMETER 4 in
SAMPLER TYPE(S) AND SIZE(S) (ID) Mod Cal (2"), SPT (1.4")			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING READINGS N/A	AFTER DRILLING (DATE) N/A
				TOTAL DEPTH OF BORING 116.5 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
1	1														
67.00	2														
65.00	4														
63.00	6														
61.00	8														
59.00	10														
57.00	12														
55.00	14														
53.00	16														
51.00	18														
	19														
	20														

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_85825_14B
DIST. 03	COUNTY YUB	ROUTE D	POSTMILE D	EA 03-13-120.1
PROJECT OR BRIDGE NAME SBFCA				
BRIDGE NUMBER	PREPARED BY David Castro	DATE	SHEET 1 of 6	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
20															
	21														
47.00	22														
	23														
45.00	24														
	25														
43.00	26														
	27														
41.00	28														
	29														
39.00	30														
	31														
37.00	32														
	33														
35.00	34														
	35														
33.00	36														
	37														
31.00	38														
	39														
29.00	40														
	41														
27.00	42														
	43														
	44														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_85825_14B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 2 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
44															
45															
23.00	46														
47															
21.00	48														
49															
19.00	50														
51															
17.00	52														
53															
15.00	54														
55															
13.00	56														
57															gravel layer
11.00	58														
59															
9.00	60														
61															
7.00	62														
63															
5.00	64														
65															
3.00	66														
67															
68															

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_85825_14B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 3 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
68															
-1.00	69														
	70														
	71														
-3.00	72														
	73														
-5.00	74														
	75														
-7.00	76														
	77														
-9.00	78														
	79														
-11.00	80														
	81														
-13.00	82														
	83														
-15.00	84														
	85														
-17.00	86														
	87														
-19.00	88														gravel layer
	89														
-21.00	90														
	91														
	92														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_85825_14B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 4 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
-25.00	94														end gravel layer
-29.00	98		Lean to fat CLAY (CL/CH); very stiff; greenish gray; moist; about 5% fine SAND; about 95% medium to high plasticity fines; blocky.		1	12	32	100				PP = 3.0			
	99					15									
	100					17									
-31.00	100														
	101					15	40	100				PP = 2.75			
	101					18									
	102					22									
-33.00	102														
	103														
-35.00	104					18	42	100				PP = 2.5			
	104					19									
	105					23									
-37.00	106														
	106					14	42	100				PP = 2.0			
	107					17									
	107		SILT with SAND (ML); stiff to very stiff; greenish gray; moist; about 25% fine SAND; about 75% nonplastic fines.			25									
-39.00	108														
	109					14	38	100				PP = 2.75			
	109		SILTY SAND (SM); dense; dark gray; wet; about 85% medium to fine SAND; about 15% nonplastic fines.			18									
	110					20									
-41.00	110		Lean CLAY (CL); very stiff; greenish gray; moist; about 10% fine SAND; about 90% low to medium plasticity fines; blocky.												
	111					20	62	100							
	111		SILTY SAND (SM); very dense; dark greenish gray; wet; about 65% medium to fine SAND; about 35% nonplastic to low plasticity fines.			30									
	112					32									
-43.00	112		Poorly graded SAND (SP); very dense; dark gray; wet; about 95% SAND; about 5% nonplastic fines.												
	113														
-45.00	114		Lean CLAY (CL); very stiff; greenish gray; moist; about 5% fine SAND; about 95% medium plasticity fines; blocky.			15	59	100				PP = 3.25			
	114					24									
	115					35									
	115					16	34	88				PP = 3.75			
	115					16									
	116					18									

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REPORT TITLE BORING RECORD				HOLE ID 13_85825_14B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 5 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
116			Lean CLAY (CL) (continued).	X	8		34	88					X		
	117		Bottom of borehole at 116.5 ft bgs												
-49.00	118		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
-51.00	120														
-53.00	122														
-55.00	124														
-57.00	126														
-59.00	128														
-61.00	130														
-63.00	132														
-65.00	134														
-67.00	136														
-69.00	138														
	139														
	140														



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REPORT TITLE BORING RECORD				HOLE ID 13_85825_14B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 6 of 6

LOGGED BY John Wright	BEGIN DATE 8-19-13	COMPLETION DATE 8-20-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13_85925_15B
DRILLING CONTRACTOR Geo-Ex, Driller Name: Ryan			BOREHOLE LOCATION (Offset, Station, Line) 0.00' Rt Sta 859+25 Reach 13	SURFACE ELEVATION 69.0 ft
DRILLING METHOD Rotary Wash			DRILL RIG CME 850	BOREHOLE DIAMETER 4 in
SAMPLER TYPE(S) AND SIZE(S) (ID) Mod Cal (2"), SPT (1.4")			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING AFTER DRILLING (DATE) READINGS N/A N/A	TOTAL DEPTH OF BORING 117.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
67.00	2														
65.00	4														
63.00	6														
61.00	8														
59.00	10														
57.00	12														
55.00	14														
53.00	16														
51.00	18														
	19														
	20														

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REPORT TITLE BORING RECORD				HOLE ID 13_85925_15B	
DIST. 03	COUNTY YUB	ROUTE D	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 1 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
20															
	21														
47.00	22														
	23														
45.00	24														
	25														
43.00	26														
	27														
41.00	28														
	29														
39.00	30														
	31														
37.00	32														
	33														
35.00	34														
	35														
33.00	36														
	37														
31.00	38														
	39														
29.00	40														
	41														
27.00	42														
	43														
	44														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_85925_15B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 2 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
44															
45															
23.00	46														
47															
21.00	48														
49															
19.00	50														
51															
17.00	52														
53															
15.00	54														
55															
13.00	56														
57															gravel layer
11.00	58														
59															
9.00	60														
61															
7.00	62														
63															
5.00	64														
65															
3.00	66														
67															
68															

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_85925_15B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 3 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
68															
-1.00	70														add 50 gal of water
-3.00	72														
-5.00	74														
-7.00	76														
-9.00	78														
-11.00	80														
-13.00	82														
-15.00	84														
-17.00	86														add 50 gal of water
-19.00	88														
-21.00	90														
	91														
	92														

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REPORT TITLE BORING RECORD				HOLE ID 13_85925_15B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 4 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
-25.00	94														
-27.00	96														
-29.00	98														
-31.00	100		Lean CLAY (CL); hard; greenish gray; moist; about 5% fine SAND; about 95% medium plasticity fines; blocky.		1	18 19 16	35	100				PP = 4.25 PP = >4.5			
-33.00	102				2	16 16 18	34	100				PP = 2.25 PP = >4.5 PP = >4.5 PP = 2.5			
-35.00	104		SILTY CLAY with SAND (CL-ML); very stiff; moist; about 20% fine SAND; about 80% low to medium plasticity fines.		3	12 15 21	36	100				PP = 2.25			
-37.00	106		Lean CLAY (CL); very stiff; greenish gray; moist; about 5% fine SAND; about 95% medium plasticity fines; blocky.		4	14 20 22	42	88							
-39.00	108		SILTY SAND (SM); dense; dark gray; wet; about 80% medium to fine SAND; about 20% nonplastic fines.												
-39.00	108		Lean CLAY with SAND (CL); stiff to very stiff; greenish gray; moist; about 15% fine SAND; about 85% medium plasticity fines.												
-41.00	110		SILTY SAND (SM); very dense; dark gray; moist; about 55% fine SAND; about 45% nonplastic to low plasticity fines.		5	21 26 38	64	100							
-43.00	112		Poorly graded SAND (SP); dense to very dense; dark gray; moist; about 95% medium to fine SAND; about 5% nonplastic fines; Interbedded layer of silt.		6	14 26 28	54	75							
-45.00	114		Lean CLAY (CL); very stiff to hard; greenish gray; moist; about 5% medium to fine SAND; about 95% medium plasticity fines; blocky.		7	34 37 50/4"	87/10	68				PP = 3.0 PP = 3.5 PP = >4.5			
-45.00	114		Poorly graded SAND (SP); very dense; greenish gray; wet; about 95% medium to fine SAND; about 5% fines.		8		45	71							

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_85925_15B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 5 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
116			Dark gray. Poorly graded SAND (SP) (continued).	X	8	14	45	71							
117			Bottom of borehole at 117.0 ft bgs			18									
-49.00	118		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.			27									
-51.00	120														
-53.00	122														
-55.00	124														
-57.00	126														
-59.00	128														
-61.00	130														
-63.00	132														
-65.00	134														
-67.00	136														
-69.00	138														
	139														
	140														



REPORT TITLE BORING RECORD				HOLE ID 13_85925_15B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 6 of 6

LOGGED BY John Wright	BEGIN DATE 8-23-13	COMPLETION DATE 8-23-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13_86325_19BR
DRILLING CONTRACTOR Geo-Ex, Driller Name: Ryan			BOREHOLE LOCATION (Offset, Station, Line) 0.00' Rt Sta 863+25 Reach 13	SURFACE ELEVATION 69.0 ft
DRILLING METHOD Rotary Wash			DRILL RIG CME 850	BOREHOLE DIAMETER 4 in
SAMPLER TYPE(S) AND SIZE(S) (ID) HQ Core, SPT (1.4")			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING READINGS N/A	AFTER DRILLING (DATE) N/A
				TOTAL DEPTH OF BORING 117.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
1	1														
67.00	2														
3	3														
65.00	4														
5	5														
63.00	6														
7	7														
61.00	8														
9	9														
59.00	10														
11	11														
57.00	12														
13	13														
55.00	14														
15	15														
53.00	16														
17	17														
51.00	18														
19	19														
20	20														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_86325_19BR
DIST. 03	COUNTY YUB	ROUTE D	POSTMILE D	EA 03-13-120.1
PROJECT OR BRIDGE NAME SBFCA				
BRIDGE NUMBER	PREPARED BY John Wright	DATE	SHEET 1 of 6	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
20															
	21														
47.00	22														
	23														
45.00	24														
	25														
43.00	26														
	27														
41.00	28														
	29														
39.00	30														
	31														
37.00	32														
	33														
35.00	34														
	35														
33.00	36														
	37														
31.00	38														
	39														
29.00	40														
	41														
27.00	42														
	43														
	44														

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REPORT TITLE BORING RECORD				HOLE ID 13_86325_19BR	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 2 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
44															
	45														
23.00	46														
	47														
21.00	48														
	49														
19.00	50														
	51														
17.00	52														
	53														
15.00	54														
	55														
13.00	56														gravel layer
	57														
11.00	58														
	59														
9.00	60														
	61														
7.00	62														
	63														
5.00	64														
	65														
3.00	66														
	67														
	68														

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_86325_19BR	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 3 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
68															
	69														
-1.00	70														
	71														
-3.00	72														
	73														
-5.00	74														end of gravel layer
	75														
-7.00	76														
	77														
-9.00	78														
	79														
-11.00	80														
	81														
-13.00	82														
	83														
-15.00	84														
	85														
-17.00	86														
	87														
-19.00	88														
	89														
-21.00	90														
	91														gravel layer
	92														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_86325_19BR	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 4 of 6



ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
-25.00	94														end of gravel layer
-27.00	95				1	15	48	0							
	96					23									
	97					25									
-29.00	98														
	99		Poorly graded SAND (SP); dark gray; wet; about 95% medium to fine SAND; about 5% nonplastic fines.		2			100							
-31.00	100		SILTY SAND (SM); dark greenish gray; wet; about 80% fine SAND; about 20% nonplastic fines.												
	101		Poorly graded SAND (SP); dark gray; wet; about 95% medium to fine SAND; about 5% nonplastic fines; 4" interbedded layer of SILT.		3			94							
-33.00	102														
	103		SILT (ML); very stiff; dark greenish gray; moist; about 5% fine SAND; about 95% low plasticity fines.												
-35.00	104											PP = 3.75			
	105		Lean CLAY (CL); hard; greenish gray; moist; about 5% fine SAND; about 95% medium plasticity fines.		4			65				PP = 3.0			
-37.00	106											PP = >4.5			
	107		SILTY SAND (SM); dark gray; wet; about 75% fine SAND; about 25% nonplastic fines.												
-39.00	108														
	109														
-41.00	110		About 80% SAND; about 20% nonplastic fines.		5			94							
	111		Poorly graded SAND with SILT (SP-SM); dark gray; wet; about 90% fine SAND; about 10% nonplastic fines.												
-43.00	112														
	113		SANDY SILT (ML); dark gray; moist; about 45% fine SAND; about 55% nonplastic to low plasticity fines.												
-45.00	114		Lean CLAY (CL); hard; greenish gray; moist; about 5% fine SAND; about 95% medium plasticity fines.		6			100				PP = >4.5			
	115											PP = >4.5			
	116														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_86325_19BR	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 5 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
116			Lean CLAY (CL) (continued).		6			100				PP = >4.5 PP = >4.5 PP = >4.5			
	117		Bottom of borehole at 117.0 ft bgs												
-49.00	118		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
-51.00	120														
-53.00	122														
-55.00	124														
-57.00	126														
-59.00	128														
-61.00	130														
-63.00	132														
-65.00	134														
-67.00	136														
-69.00	138														
	139														
	140														



REPORT TITLE BORING RECORD				HOLE ID 13_86325_19BR	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 6 of 6

LOGGED BY John Wright	BEGIN DATE 8-19-13	COMPLETION DATE 8-20-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13_86425_20B
DRILLING CONTRACTOR Geo-Ex, Driller Name: Ryan			BOREHOLE LOCATION (Offset, Station, Line) 0.00' Rt Sta 864+25 Reach 13	SURFACE ELEVATION 69.0 ft
DRILLING METHOD Rotary Wash			DRILL RIG CME 850	BOREHOLE DIAMETER 4 in
SAMPLER TYPE(S) AND SIZE(S) (ID) Mod Cal (2"), HQ Core, SPT (1.4")			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING READINGS N/A	AFTER DRILLING (DATE) N/A
				TOTAL DEPTH OF BORING 117.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
67.00	2														
65.00	4														
63.00	6														
61.00	8														
59.00	10														
57.00	12														
55.00	14														
53.00	16														
51.00	18														
	19														
	20														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_86425_20B	
DIST. 03	COUNTY YUB	ROUTE D	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 1 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
20															
	21														
47.00	22														
	23														
45.00	24														
	25														
43.00	26														
	27														
41.00	28														
	29														
39.00	30														
	31														
37.00	32														
	33														
35.00	34														
	35														
33.00	36														
	37														
31.00	38														
	39														
29.00	40														
	41														
27.00	42														
	43														
	44														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_86425_20B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 2 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
44															
45															
23.00	46														
47															
21.00	48														
49															
19.00	50														
51															gravel layer
17.00	52														
53															
15.00	54														
55															
13.00	56														
57															
11.00	58														
59															gravel layer
9.00	60														
61															
7.00	62														
63															
5.00	64														
65															
3.00	66														
67															
68															

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_86425_20B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 3 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
68															
-1.00	70														
-3.00	72														
-5.00	74														
-7.00	76														
-9.00	78														end gravel layer
-11.00	80														
-13.00	82														
-15.00	84														
-17.00	86														fluid loss, add 100 gal of water
-19.00	88														
-21.00	90														gravel layer
	91														
	92														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_86425_20B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 4 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
-25.00	92														
-27.00	96		Lean CLAY (CL); stiff to very stiff; greenish gray; moist; trace fine GRAVEL; medium plasticity fines.		1	14	30	100							end gravel layer
	97					14									
	98		SANDY SILT (ML); stiff; greenish gray; moist; about 45% fine SAND; about 55% low plasticity fines.		2	16	24	100							
	99					11									
	100		SILTY SAND (SM); medium dense to dense; dark gray; about 80% fine SAND; about 20% nonplastic fines.		3			81							
	101														
	102		Poorly graded SAND (SP); medium dense to dense; dark gray; about 95% medium to fine SAND; about 5% nonplastic fines.												
	103		SILTY SAND (SM); medium dense to dense; dark gray; about 85 to 80% medium to fine SAND; about 15 to 20% nonplastic fines; Interbedded layers of silt.												
	104				4			80							
	105														
	106														
	107		Lean CLAY (CL); hard; greenish gray; moist; about 5% fine SAND; about 95% low to medium plasticity fines.		5			100				PP = 2.5			
	108		CLAYEY SAND (SC); medium dense to dense; dark greenish gray; moist; about 60% fine SAND; about 40% low plasticity fines.									PP = 2.25			
	109		Lean CLAY (CL); hard; greenish gray; moist; about 5% fine SAND; about 95% medium plasticity fines.									PP = >4.5			
	110		Lean CLAY with SAND (CL); hard; greenish gray; moist; about 15% fine SAND; about 85% medium plasticity fines.		6			98				PP = >4.5			
	111											PP = >4.5			
	112		CLAYEY SAND (SC); dense; dark greenish gray; moist; about 60% fine SAND; about 40% low plasticity fines.									PP = >4.5			
	113		Lean CLAY with SAND (CL); hard; greenish gray; moist; about 5 to 10% fine SAND; about 95% medium plasticity fines; blocky.									PP = >4.5			
	114				7			100				PP = >4.5			
	115		CLAYEY SILT with SAND (ML/CL); hard; greenish gray; moist; about 20% fine SAND; about 80% low plasticity fines.									PP = >4.5			
	116														

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_86425_20B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 5 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
116			CLAYEY SILT with SAND (ML/CL) (continued).		7			100				PP = >4.5 PP = >4.5			
117			Lean CLAY (CL); hard; greenish gray; moist; about 5% fine SAND; about 95% medium plasticity fines; blocky.												
			Bottom of borehole at 117.0 ft bgs												
-49.00	118		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
-51.00	120														
-53.00	122														
-55.00	124														
-57.00	126														
-59.00	128														
-61.00	130														
-63.00	132														
-65.00	134														
-67.00	136														
-69.00	138														
	139														
	140														



REPORT TITLE BORING RECORD				HOLE ID 13_86425_20B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 6 of 6

LOGGED BY John Wright	BEGIN DATE 8-20-13	COMPLETION DATE 8-21-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13_86525_21B
DRILLING CONTRACTOR Geo-Ex, Driller Name: Ryan			BOREHOLE LOCATION (Offset, Station, Line) 0.00' Rt Sta 865+25 Reach 13	SURFACE ELEVATION 69.0 ft
DRILLING METHOD Rotary Wash			DRILL RIG CME 850	BOREHOLE DIAMETER 4 in
SAMPLER TYPE(S) AND SIZE(S) (ID) Mod Cal (2"), HQ Core, SPT (1.4")			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING READINGS N/A	AFTER DRILLING (DATE) N/A
				TOTAL DEPTH OF BORING 117.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
67.00	2														
65.00	4														
63.00	6														
61.00	8														
59.00	10														
57.00	12														
55.00	14														
53.00	16														
51.00	18														
	19														
	20														

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REPORT TITLE BORING RECORD				HOLE ID 13_86525_21B
DIST. 03	COUNTY YUB	ROUTE D	POSTMILE D	EA 03-13-120.1
PROJECT OR BRIDGE NAME SBFCA				
BRIDGE NUMBER	PREPARED BY David Castro	DATE	SHEET 1 of 6	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
20															
	21														
47.00	22														
	23														
45.00	24														
	25														
43.00	26														
	27														
41.00	28														
	29														
39.00	30														
	31														
37.00	32														
	33														
35.00	34														
	35														
33.00	36														
	37														
31.00	38														
	39														
29.00	40														
	41														
27.00	42														
	43														
	44														

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REPORT TITLE BORING RECORD				HOLE ID 13_86525_21B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 2 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
44															
45															
23.00	46														
47															
21.00	48														
49															
19.00	50														
51															gravel layer
17.00	52														
53															
15.00	54														
55															gravel layer
13.00	56														
57															
11.00	58														
59															
9.00	60														
61															
7.00	62														
63															
5.00	64														
65															
3.00	66														
67															
68															

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_86525_21B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 3 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
68															
	69														
-1.00	70														
	71														
-3.00	72														end gravel layer
	73														
-5.00	74														
	75														
-7.00	76														
	77														
-9.00	78														
	79														
-11.00	80														
	81														
-13.00	82														
	83														
-15.00	84														
	85														
-17.00	86														
	87														
-19.00	88														
	89														
-21.00	90														
	91														gravel layer
	92														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_86525_21B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 4 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
92															
-25.00	94														end gravel layer
-27.00	96		Lean CLAY (CL); stiff; greenish gray; moist; about 5 to 10% fine SAND; about 95% medium plasticity fines.		1	25 28 37	65	13							
-29.00	98				2	10 11 15	26	67							
-31.00	100		SILTY SAND (SM); medium dense; greenish gray; moist; about 40% fine SAND; about 60% low plasticity fines.		3			100				PP = 2.75			
-33.00	102											PP = 2.75			
-35.00	104		Poorly graded SAND with SILT (SP-SM); medium dense; greenish gray; moist; about 90 to 85% SAND; about 10 to 15% nonplastic to low plasticity fines.		4			100				PP = 2.5 PP = 1.5			
-37.00	105		SILTY SAND (SM); medium dense; dark gray; wet; about 80 to 75% fine SAND; about 20 to 25% nonplastic fines.												
-39.00	108		Poorly graded SAND (SP); medium dense; dark gray; wet; about 95% SAND; about 5% fines.												
-41.00	110				6			64							
-43.00	112		Lean CLAY (CL); hard; greenish gray; moist; about 5% fine SAND; about 95% medium plasticity fines; blocky.		7			100				PP = >4.5			
-45.00	113				8			100				PP = 2.5			
	114											PP = >4.5			
	115											PP = >4.5			
	116														

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_86525_21B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 5 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	116		Poorly graded SAND (SP); medium dense to dense; dark gray; wet; about 95% SAND; about 5% nonplastic fines.		8			100				PP = >4.5			
	117		SANDY SILT (ML); hard; gray; moist; about 45% fine SAND; about 55% nonplastic to low plasticity fines.									PP = 2.0			
-49.00	118		Bottom of borehole at 117.0 ft bgs												
	119		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
-51.00	120														
	121														
-53.00	122														
	123														
-55.00	124														
	125														
-57.00	126														
	127														
-59.00	128														
	129														
-61.00	130														
	131														
-63.00	132														
	133														
-65.00	134														
	135														
-67.00	136														
	137														
-69.00	138														
	139														
	140														



REPORT TITLE BORING RECORD				HOLE ID 13_86525_21B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 6 of 6

LOGGED BY John Wright	BEGIN DATE 8-21-13	COMPLETION DATE 8-22-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13_86725_23B
DRILLING CONTRACTOR Geo-Ex, Driller Name: Ryan			BOREHOLE LOCATION (Offset, Station, Line) 0.00' Rt Sta 867+25 Reach 13	SURFACE ELEVATION 69.0 ft
DRILLING METHOD Rotary Wash			DRILL RIG CME 850	BOREHOLE DIAMETER 4 in
SAMPLER TYPE(S) AND SIZE(S) (ID) Mod Cal (2"), HQ Core			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING READINGS N/A	AFTER DRILLING (DATE) N/A
				TOTAL DEPTH OF BORING 116.5 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
67.00	2														
65.00	4														
63.00	6														
61.00	8														
59.00	10														
57.00	12														
55.00	14														
53.00	16														
51.00	18														
	19														
	20														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_86725_23B
DIST. 03	COUNTY YUB	ROUTE D	POSTMILE D	EA 03-13-120.1
PROJECT OR BRIDGE NAME SBFCA				
BRIDGE NUMBER	PREPARED BY David Castro	DATE	SHEET 1 of 6	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
20															
	21														
47.00	22														
	23														
45.00	24														
	25														
43.00	26														
	27														
41.00	28														
	29														
39.00	30														
	31														
37.00	32														
	33														
35.00	34														
	35														
33.00	36														
	37														
31.00	38														
	39														
29.00	40														
	41														
27.00	42														
	43														
	44														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_86725_23B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 2 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
44															
45															
23.00	46														
47															
21.00	48														
49															
19.00	50														
51															
17.00	52														
53															
15.00	54														gravel layer
55															
13.00	56														
57															
11.00	58														
59															
9.00	60														
61															
7.00	62														
63															
5.00	64														
65															
3.00	66														
67															
68															

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_86725_23B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 3 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
68															
-1.00	70														end gravel layer
-3.00	72														
-5.00	74														
-7.00	76														
-9.00	78														
-11.00	80														
-13.00	82														
-15.00	84														
-17.00	86														
-19.00	88														
-21.00	90														
	91														
	92														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_86725_23B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 4 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
-25.00	94														gravel layer
-27.00	96														end gravel layer
-29.00	98		Lean CLAY (CL); hard; greenish gray; moist; about 5% fine SAND; about 95% medium plasticity fines.		1	25	57	33							
	99					28									
	100					29									
-31.00	100		Poorly graded SAND (SP); dense; dark gray; wet; about 95% medium to fine SAND; about 5% nonplastic fines.		2			100				PP = >4.5			
	101		SILT (ML); hard; greenish gray; moist; about 10% fine SAND; about 90% low plasticity fines.									PP = >4.5			
-33.00	102											PP = 4.0			
	103											PP = 3.75			
-35.00	104		Lean CLAY (CL); hard; greenish gray; moist; about 5% fine SAND; about 95% medium plasticity fines; blocky.		3			100				PP = 4.0			
	105											PP = 3.5			
-37.00	106											PP = 4.5			
	107											PP = 4.5			
-39.00	108		SANDY SILT (ML); hard; greenish gray; moist; about 30 to 45% fine SAND; about 70 to 65% low plasticity fines.		4			100							
	109														
-41.00	110		SILTY SAND (SM); medium dense to dense; dark gray; wet; about 65% fine SAND; about 35% nonplastic to low plasticity fines.												
	111		Poorly graded SAND (SP); medium dense; dark gray; wet; about 95% coarse to fine SAND; about 5% nonplastic fines.		5			85							
-43.00	112														
	113														
-45.00	114														
	115														
	116														

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_86725_23B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 5 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
116			Poorly graded SAND (SP) (continued).		5			85							
	116.5		Bottom of borehole at 116.5 ft bgs												
			<p>FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.</p>												
-49.00	118														
-51.00	120														
-53.00	122														
-55.00	124														
-57.00	126														
-59.00	128														
-61.00	130														
-63.00	132														
-65.00	134														
-67.00	136														
-69.00	138														
	139														
	140														



REPORT TITLE BORING RECORD				HOLE ID 13_86725_23B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 6 of 6

LOGGED BY John Wright	BEGIN DATE 8-21-13	COMPLETION DATE 8-22-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13_86825_24B
DRILLING CONTRACTOR Geo-Ex, Driller Name: Tom Scott			BOREHOLE LOCATION (Offset, Station, Line) 0.00' Rt Sta 868+25 Reach 13	SURFACE ELEVATION 69.0 ft
DRILLING METHOD Rotary Wash			DRILL RIG CME 75	BOREHOLE DIAMETER 4 in
SAMPLER TYPE(S) AND SIZE(S) (ID) Std Cal (2.5"), Mod Cal (2"), SPT (1.4")			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING READINGS N/A	AFTER DRILLING (DATE) N/A
				TOTAL DEPTH OF BORING 116.5 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
1	1														
67.00	2														
3	3														
65.00	4														
5	5														
63.00	6														
7	7														
61.00	8														
9	9														
59.00	10														
11	11														
57.00	12														
13	13														
55.00	14														
15	15														
53.00	16														
17	17														
51.00	18														
19	19														
20	20														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_86825_24B
DIST. 03	COUNTY YUB	ROUTE D	POSTMILE D	EA 03-13-120.1
PROJECT OR BRIDGE NAME SBFCA				
BRIDGE NUMBER	PREPARED BY David Castro	DATE	SHEET 1 of 6	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
20															
	21														
47.00	22														
	23														
45.00	24														
	25														
43.00	26														
	27														
41.00	28														
	29														
39.00	30														
	31														
37.00	32														
	33														
35.00	34														
	35														
33.00	36														
	37														
31.00	38														
	39														
29.00	40														
	41														
27.00	42														
	43														
	44														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_86825_24B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 2 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
44															
	45														
23.00	46														
	47														
21.00	48														
	49														
19.00	50														
	51														
17.00	52														
	53														
15.00	54														gravel layer
	55														
13.00	56														
	57														
11.00	58														
	59														
9.00	60														
	61														
7.00	62														
	63														
5.00	64														
	65														
3.00	66														
	67														
	68														

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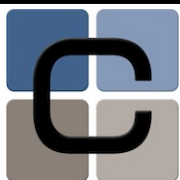


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REPORT TITLE BORING RECORD				HOLE ID 13_86825_24B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 3 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
68															
-1.00	70														
-3.00	72														
-5.00	74														
-7.00	76														end gravel
-9.00	78														
-11.00	80														
-13.00	82														
-15.00	84														
-17.00	86														
-19.00	88														
-21.00	90														gravel layer
	91														
	92														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_86825_24B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 4 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
-25.00	94														
-27.00	96														
-29.00	98														
-31.00	100		Poorly graded SAND with SILT (SP-SM); dense; dark gray; wet; about 90% medium to fine SAND; about 10% nonplastic fines.		1	14 18 27	45	50				PP = >4.5			
-33.00	102		Lean CLAY (CL); hard; greenish gray; moist; about 5% fine SAND; about 95% medium plasticity fines.		2	21 22 23	45	67							
-35.00	104		Poorly graded SAND (SP); dense; dark gray; moist; about 95% medium to fine SAND; about 5% nonplastic fines.												
-37.00	106		Lean CLAY (CL); very stiff; greenish gray; moist; about 5% fine SAND; about 95% medium plasticity fines.		3	13 15 18	33	100				PP = 3.0			
-39.00	108		SILTY SAND (SM); dense; dark gray; wet; about 85% fine SAND; about 15% fines.		4	14 21 21	42	83				PP = 1.25			
-41.00	110		Lean CLAY (CL); stiff; dark greenish gray; moist; about 5% fine SAND; about 95% low plasticity fines; blocky.		5	12 18 22	40	100				PP = 4.0			
-43.00	112		SANDY SILT (ML); soft to medium stiff; dark gray; moist; about 45% fine SAND; about 55% nonplastic to low plasticity fines; Interbedded layer of silty sand.		6	13 27 41	68	100				PP = >4.5 PP = >4.5 PP = 0.5			
-45.00	114		Lean CLAY (CL); hard; greenish gray; moist; about 5% fine SAND; about 95% medium plasticity fines.		8	34 38 42	80	83				PP = 1.0			

end gravel layer

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_86825_24B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 5 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
116			Lean CLAY (CL) (continued).	X	8		80	83				PP = >4.5			
	117		Bottom of borehole at 116.5 ft bgs												
	118		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
-49.00	119														
-51.00	120														
	121														
-53.00	122														
	123														
-55.00	124														
	125														
-57.00	126														
	127														
-59.00	128														
	129														
-61.00	130														
	131														
-63.00	132														
	133														
-65.00	134														
	135														
-67.00	136														
	137														
-69.00	138														
	139														
	140														



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REPORT TITLE BORING RECORD				HOLE ID 13_86825_24B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 6 of 6

LOGGED BY John Wright	BEGIN DATE 8-22-13	COMPLETION DATE 8-22-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13_86925_25B
DRILLING CONTRACTOR Geo-Ex, Driller Name: Ryan			BOREHOLE LOCATION (Offset, Station, Line) 0.00' Rt Sta 869+25 Reach 13	SURFACE ELEVATION 69.0 ft
DRILLING METHOD Rotary Wash			DRILL RIG CME 850	BOREHOLE DIAMETER 4 in
SAMPLER TYPE(S) AND SIZE(S) (ID) Mod Cal (2"), HQ Core			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING READINGS N/A	AFTER DRILLING (DATE) N/A
				TOTAL DEPTH OF BORING 117.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
1	1														
67.00	2														
3	3														
65.00	4														
5	5														
63.00	6														
7	7														
61.00	8														
9	9														
59.00	10														
11	11														
57.00	12														
13	13														
55.00	14														
15	15														
53.00	16														
17	17														
51.00	18														
19	19														
20	20														

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_86925_25B
DIST. 03	COUNTY YUB	ROUTE D	POSTMILE D	EA 03-13-120.1
PROJECT OR BRIDGE NAME SBFCA				
BRIDGE NUMBER	PREPARED BY David Castro	DATE	SHEET 1 of 6	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
20															
	21														
47.00	22														
	23														
45.00	24														
	25														
43.00	26														
	27														
41.00	28														
	29														
39.00	30														
	31														
37.00	32														
	33														
35.00	34														
	35														
33.00	36														
	37														
31.00	38														
	39														
29.00	40														
	41														
27.00	42														
	43														
	44														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_86925_25B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 2 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
44															
	45														
23.00	46														
	47														
21.00	48														
	49														
19.00	50														
	51														gravel layer
17.00	52														
	53														
15.00	54														
	55														
13.00	56														
	57														
11.00	58														
	59														
9.00	60														
	61														
7.00	62														
	63														
5.00	64														
	65														
3.00	66														
	67														
	68														

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_86925_25B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 3 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
68															end gravel layer
-1.00	69														
	70														
	71														
-3.00	72														
	73														
-5.00	74														
	75														
-7.00	76														
	77														
-9.00	78														
	79														
-11.00	80														
	81														
-13.00	82														
	83														
-15.00	84														
	85														
-17.00	86														gravel layer
	87														
-19.00	88														
	89														
-21.00	90														
	91														
	92														

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_86925_25B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 4 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
-25.00	94														
-27.00	96														
-29.00	98		SILTY SAND (SM); dense; gray; wet; about 85% fine SAND; about 15% nonplastic fines.		1	26	46	63							
	99		Poorly graded SAND (SP); medium dense; dark gray; wet; about 95% medium to fine SAND; about 5% nonplastic fines.			23									
	100				2	23									
-31.00	101							100							
-33.00	102		Lean CLAY (CL); stiff; greenish gray; moist; about 5 to 10% fine SAND; about 95 to 90% medium to high plasticity fines; blocky.									PP = 3.5			
	103											PP = 3.75			
	104											PP = 1.5			
-35.00	105				3			100				PP = 1.5			
	106											PP = >4.5			
	107											PP = >4.5			
-37.00	108											PP = >4.5			
	109											PP = >4.5			
-39.00	110											PP = >4.5			
	111											PP = >4.5			
-43.00	112											PP = >4.5			
	113		Poorly graded SAND with SILT (SP-SM); dense; dark gray; wet; about 90% medium to fine SAND; about 10% nonplastic fines.		5			93				PP = >4.5			
	114		Lean CLAY (CL); hard; greenish gray; moist; about 5% fine SAND; about 95% medium plasticity fines; blocky.									PP = >4.5			
-45.00	115											PP = >4.5			
	116		SANDY SILT (ML); hard; dark gray; wet; about 45%									PP = >4.5			

end gravel layer

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_86925_25B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 5 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	116		fine SAND; about 55% low plasticity fines.		5			93				PP = >4.5 PP = >4.5			
	117		Lean CLAY (CL); hard; greenish gray; moist; about 5% fine SAND; about 95% medium plasticity fines; blocky.												
			Bottom of borehole at 117.0 ft bgs												
-49.00	118		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
	119														
-51.00	120														
	121														
-53.00	122														
	123														
-55.00	124														
	125														
-57.00	126														
	127														
-59.00	128														
	129														
-61.00	130														
	131														
-63.00	132														
	133														
-65.00	134														
	135														
-67.00	136														
	137														
-69.00	138														
	139														
	140														



REPORT TITLE BORING RECORD				HOLE ID 13_86925_25B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY David Castro		DATE	SHEET 6 of 6

LOGGED BY John Wright	BEGIN DATE 8-22-13	COMPLETION DATE 8-24-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13_87025_26B
DRILLING CONTRACTOR Geo-Ex, Driller Name: Tom Scott			BOREHOLE LOCATION (Offset, Station, Line) 0.00' Rt Sta 870+25 Reach 13	SURFACE ELEVATION 69.0 ft
DRILLING METHOD Rotary Wash			DRILL RIG CME 850	BOREHOLE DIAMETER 4 in
SAMPLER TYPE(S) AND SIZE(S) (ID) Std Cal (2.5"), Mod Cal (2"), SPT (1.4")			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING READINGS N/A	AFTER DRILLING (DATE) N/A
				TOTAL DEPTH OF BORING 116.5 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
1	1														
67.00	2														
3	3														
65.00	4														
5	5														
63.00	6														
7	7														
61.00	8														
9	9														
59.00	10														
11	11														
57.00	12														
13	13														
55.00	14														
15	15														
53.00	16														
17	17														
51.00	18														
19	19														
20	20														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_87025_26B
DIST. 03	COUNTY YUB	ROUTE D	POSTMILE D	EA 03-13-120.1
PROJECT OR BRIDGE NAME SBFCA				
BRIDGE NUMBER	PREPARED BY John Wright	DATE	SHEET 1 of 6	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
20															
	21														
47.00	22														
	23														
45.00	24														
	25														
43.00	26														
	27														
41.00	28														
	29														
39.00	30														
	31														
37.00	32														
	33														
35.00	34														
	35														
33.00	36														
	37														
31.00	38														
	39														
29.00	40														
	41														
27.00	42														
	43														
	44														

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REPORT TITLE BORING RECORD				HOLE ID 13_87025_26B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 2 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
44															
	45														
23.00	46														
	47														
21.00	48														
	49														
19.00	50														
	51														
17.00	52														
	53														
15.00	54														
	55														
13.00	56														gravel layer
	57														
11.00	58														
	59														
9.00	60														
	61														
7.00	62														
	63														
5.00	64														
	65														
3.00	66														
	67														
	68														

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_87025_26B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 3 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
68															
-1.00	69														
-3.00	70														
	71														
	72														end gravel
	73														
-5.00	74														
	75														
-7.00	76														
	77														
-9.00	78														
	79														
-11.00	80														
	81														
-13.00	82														
	83														
-15.00	84														
	85														
-17.00	86														gravel layer
	87														
-19.00	88														
	89														
-21.00	90														
	91														
	92														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_87025_26B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 4 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
92															
-25.00	94														
-27.00	96														end gravel layer
-29.00	97		Poorly graded SAND (SP); medium dense; dark gray; wet; about 95% medium to fine SAND; about 5% nonplastic fines; Poorly graded coarse to fine gravel in slough.		1	17 28 37	65	22							
	98		Interbedded layers of silt.		2	13 21 36	57	33							
-31.00	100														driller had problems with hole caving in from 100' to 104'
-35.00	104		Lean CLAY (CL); hard; greenish gray; moist; about 5% fine SAND; about 95% medium plasticity fines; slightly blocky.		3	16 18 25	43	50				PP = 4.5 PP = 3.25			
-37.00	106		Blocky.		4	16 18 27	45	58				PP = 4.0 PP = >4.5			
-39.00	108		About 5 to 10% SAND; about 95 to 90% fines.		5	23 26 32	58	83				PP = 4.5 PP = >4.5			
-41.00	110				6	24 45 50/3"	95/9	76				PP = >4.5 PP = >4.5			
-43.00	112				7	18 24 29	53	92				PP = >4.5 PP = >4.5			
-45.00	114				8	21 30 50/4"	80/10	92				PP = >4.5			
	115														
	116														

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_87025_26B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 5 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	116		Lean CLAY (CL) (continued).	X	8		80/10	92					X		
	117		Silty sand at tip. Bottom of borehole at 116.5 ft bgs												
-49.00	118		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
-51.00	120														
-53.00	122														
-55.00	124														
-57.00	126														
-59.00	128														
-61.00	130														
-63.00	132														
-65.00	134														
-67.00	136														
-69.00	138														
	139														
	140														



REPORT TITLE BORING RECORD				HOLE ID 13_87025_26B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 6 of 6

LOGGED BY John Wright	BEGIN DATE 8-23-13	COMPLETION DATE 8-24-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13_87225_28B
DRILLING CONTRACTOR Gulf Shore, Driller Name: Carlos			BOREHOLE LOCATION (Offset, Station, Line) 0.00' Rt Sta 872+25 Reach 13	SURFACE ELEVATION 69.0 ft
DRILLING METHOD Hollow-Stem Auger			DRILL RIG CME 75	BOREHOLE DIAMETER 8 in
SAMPLER TYPE(S) AND SIZE(S) (ID) Mod Cal (2"), SPT (1.4")			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING READINGS N/A	AFTER DRILLING (DATE) N/A
				TOTAL DEPTH OF BORING 117.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
1	1														
67.00	2														
3	3														
65.00	4														
5	5														
63.00	6														
7	7														
61.00	8														
9	9														
59.00	10														
11	11														
57.00	12														
13	13														
55.00	14														
15	15														
53.00	16														
17	17														
51.00	18														
19	19														
20	20														

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_87225_28B
DIST. 03	COUNTY YUB	ROUTE D	POSTMILE D	EA 03-13-120.1
PROJECT OR BRIDGE NAME SBFCA				
BRIDGE NUMBER	PREPARED BY John Wright	DATE	SHEET 1 of 6	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
20															
	21														
47.00	22														
	23														
45.00	24														
	25														
43.00	26														
	27														
41.00	28														
	29														
39.00	30														
	31														
37.00	32														
	33														
35.00	34														
	35														
33.00	36														
	37														
31.00	38														
	39														
29.00	40														
	41														
27.00	42														
	43														
	44														

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REPORT TITLE BORING RECORD				HOLE ID 13_87225_28B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 2 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
44															
45															
23.00	46														
47															
21.00	48														
49															
19.00	50														
51															
17.00	52														
53															
15.00	54														
55															
13.00	56														
57															
11.00	58														start of gravel layer with interbedded sections of non gravel material
59															
9.00	60														
61															
7.00	62														
63															
5.00	64														
65															
3.00	66														
67															
68															

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REPORT TITLE BORING RECORD				HOLE ID 13_87225_28B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 3 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
68															
	69														
-1.00	70														
	71														
-3.00	72														
	73														
-5.00	74														
	75														
-7.00	76														
	77														
-9.00	78														
	79														
-11.00	80														
	81														
-13.00	82														
	83														
-15.00	84														
	85														
-17.00	86														
	87														
-19.00	88														
	89														
-21.00	90														
	91														
	92														

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REPORT TITLE BORING RECORD				HOLE ID 13_87225_28B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 4 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
92															
-25.00	94														
-27.00	96														
-29.00	98														
-31.00	99		Lean CLAY (CL); hard; greenish gray; moist; about 5% fine SAND; about 95% medium plasticity fines.		1	7	21	33				PP = >4.5			
	100		Blocky.		2	5	46	56				PP = 4.0			
	101					17	29								
-33.00	102														
	103				3	9	64	100				PP = >4.5			
	104				4	12	52	89				PP = 4.0			
	105					20	32								
-35.00	106				5	12	56	100				PP = 4.5			
	107					22	34					PP = >4.5			
	108				6	16	57	72				PP = 4.0			
	109					25	32					PP = 3.5			
-39.00	110		Poorly graded SAND with SILT (SP-SM); dense; dark greenish gray; wet; about 90% medium to fine SAND; about 10% nonplastic fines; Interbedded layer of silt.		7	16	66	100							
	111		Poorly graded SAND (SP); dense to very dense; dark gray; wet; about 95% medium to fine SAND; about 5% nonplastic fines.		8	10	56	100							
	112		Poorly graded SAND with SILT (SP-SM); very dense; dark gray; wet; about 90% medium to fine SAND; about 10% nonplastic fines; Oxidation lense 2" from tip.		9	24	71	100							
	113					30	41								
-43.00	114		Dense; Interbedded layers of sandy silt and silt.		10	23	67	100							
	115		Very dense; Interbedded layers of poorly graded sand and clayey sand.			29	38								
	116														

end of gravel

driller only had 109' of hollow stem auger. After driving sample 8 to 112.5', driller cleaned out hole with a California Sampler (2.5" I.D.) to 113'.

(continued)



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Geotechnical Engineering, Design and Construction Services

REPORT TITLE BORING RECORD				HOLE ID 13_87225_28B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 5 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
116			Poorly graded SAND (SP); very dense; dark gray; wet; about 95% medium to fine SAND; about 5% nonplastic fines.	X	11	35	52/8	100							driller cleaned out hole to 116' multiple times due to hole caving in
	117		Bottom of borehole at 117.0 ft bgs			32									
			FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.			20/2"									
-49.00	118														
	119														
-51.00	120														
	121														
-53.00	122														
	123														
-55.00	124														
	125														
-57.00	126														
	127														
-59.00	128														
	129														
-61.00	130														
	131														
-63.00	132														
	133														
-65.00	134														
	135														
-67.00	136														
	137														
-69.00	138														
	139														
	140														



REPORT TITLE BORING RECORD				HOLE ID 13_87225_28B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 6 of 6

LOGGED BY Rick Sowers	BEGIN DATE 8-23-13	COMPLETION DATE 8-24-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13_87325_29B
DRILLING CONTRACTOR Geo-Ex, Driller Name: Ryan			BOREHOLE LOCATION (Offset, Station, Line) 0.00' Rt Sta 873+25 Reach 13	SURFACE ELEVATION 69.0 ft
DRILLING METHOD Rotary Wash			DRILL RIG CME 850	BOREHOLE DIAMETER 4 in
SAMPLER TYPE(S) AND SIZE(S) (ID) Mod Cal (2"), HQ Core, SPT (1.4")			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING READINGS N/A	AFTER DRILLING (DATE) N/A
				TOTAL DEPTH OF BORING 116.8 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
1	1														
67.00	2														
3	3														
65.00	4														
5	5														
63.00	6														
7	7														
61.00	8														
9	9														
59.00	10														
11	11														
57.00	12														
13	13														
55.00	14														
15	15														
53.00	16														
17	17														
51.00	18														
19	19														
20	20														

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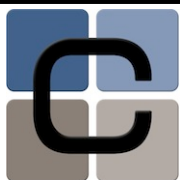


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REPORT TITLE BORING RECORD				HOLE ID 13_87325_29B
DIST. 03	COUNTY YUB	ROUTE D	POSTMILE D	EA 03-13-120.1
PROJECT OR BRIDGE NAME SBFCA				
BRIDGE NUMBER	PREPARED BY John Wright	DATE	SHEET 1 of 6	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
20															
	21														
47.00	22														
	23														
45.00	24														
	25														
43.00	26														
	27														
41.00	28														
	29														
39.00	30														
	31														
37.00	32														
	33														
35.00	34														
	35														
33.00	36														
	37														
31.00	38														
	39														
29.00	40														
	41														
27.00	42														
	43														
	44														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_87325_29B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 2 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
44															
45															
23.00	46														
47															
21.00	48														
49															
19.00	50														
51															
17.00	52														
53															
15.00	54														
55															
13.00	56														
57															
11.00	58														
59															
9.00	60														
61															
7.00	62														
63															
5.00	64														
65															
3.00	66														
67															
68															

gravel layer

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_87325_29B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 3 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
68															
-1.00	70														end gravel
-3.00	72														
-5.00	74														
-7.00	76														
-9.00	78														
-11.00	80														
-13.00	82														
-15.00	84														
-17.00	86														
-19.00	88														
-21.00	90														gravel layer
	91														
	92														

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_87325_29B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 4 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
-25.00	94														
-27.00	96														
-29.00	98														end gravel layer
-31.00	100				1	25	80	0							no recovery, but sampler had blue sandy clay on outside of barrel
-33.00	102														
-35.00	104		Lean CLAY (CL); dense; stiff; blue; moist; about 5 to 10% fine SAND; about 95 to 90% medium plasticity fines.		2	14	37	100				PP = 1.5-2.0			
	103					17									
	104		Hard; greenish blue gray.		3			100				PP = 4.5			
-37.00	106														
-39.00	108		Bluish gray.		4			80				PP = 4.0			
-41.00	110		Poorly graded SAND with CLAY (SP-SC); bluish gray; wet; about 90% SAND; about 10% medium plasticity fines.												
-43.00	112		SILTY SAND (SM); bluish gray; wet; Interbedded lense of sandy clay.		5			60							
-45.00	114														
	115		Poorly graded SAND (SP); bluish gray; wet; about 95% SAND; about 5% nonplastic fines.												

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_87325_29B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 5 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	116		Poorly graded SAND (SP) (continued).		5			60							
	117		Bottom of borehole at 116.8 ft bgs												
	118		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
-49.00	119														
-51.00	120														
	121														
-53.00	122														
	123														
-55.00	124														
	125														
-57.00	126														
	127														
-59.00	128														
	129														
-61.00	130														
	131														
-63.00	132														
	133														
-65.00	134														
	135														
-67.00	136														
	137														
-69.00	138														
	139														
	140														



REPORT TITLE BORING RECORD				HOLE ID 13_87325_29B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 6 of 6

LOGGED BY John Wright	BEGIN DATE 8-24-13	COMPLETION DATE 8-26-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13_87425_30B
DRILLING CONTRACTOR Geo-Ex, Driller Name: Ryan			BOREHOLE LOCATION (Offset, Station, Line) 0.00' Rt Sta 874+25 Reach 13	SURFACE ELEVATION 69.0 ft
DRILLING METHOD Rotary Wash			DRILL RIG CME 850	BOREHOLE DIAMETER 4 in
SAMPLER TYPE(S) AND SIZE(S) (ID) HQ Core, SPT (1.4")			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING READINGS N/A	AFTER DRILLING (DATE) N/A
				TOTAL DEPTH OF BORING 116.5 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
1	1														
67.00	2														
3	3														
65.00	4														
5	5														
63.00	6														
7	7														
61.00	8														
9	9														
59.00	10														
11	11														
57.00	12														
13	13														
55.00	14														
15	15														
53.00	16														
17	17														
51.00	18														
19	19														
20	20														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_87425_30B	
DIST. 03	COUNTY YUB	ROUTE D	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 1 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
20															
	21														
47.00	22														
	23														
45.00	24														
	25														
43.00	26														
	27														
41.00	28														
	29														
39.00	30														
	31														
37.00	32														
	33														
35.00	34														
	35														
33.00	36														
	37														
31.00	38														
	39														
29.00	40														
	41														
27.00	42														
	43														
	44														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_87425_30B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 2 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
44															
	45														
23.00	46														
	47														
21.00	48														
	49														
19.00	50														
	51														
17.00	52														
	53														
15.00	54														
	55														
13.00	56														gravel layer
	57														
11.00	58														
	59														
9.00	60														
	61														
7.00	62														
	63														
5.00	64														
	65														
3.00	66														
	67														
	68														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_87425_30B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 3 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
68															
-1.00	70														end gravel
-3.00	72														
-5.00	74														
-7.00	76														
-9.00	78														
-11.00	80														
-13.00	82														
-15.00	84														
-17.00	86														
-19.00	88														
-21.00	90														gravel layer
	91														
	92														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_87425_30B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 4 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
116			Lean CLAY (CL) (continued).		4			100				PP = >4.5			
	117		Bottom of borehole at 116.5 ft bgs												
	118		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
-49.00	119														
-51.00	120														
	121														
-53.00	122														
	123														
-55.00	124														
	125														
-57.00	126														
	127														
-59.00	128														
	129														
-61.00	130														
	131														
-63.00	132														
	133														
-65.00	134														
	135														
-67.00	136														
	137														
-69.00	138														
	139														
	140														



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REPORT TITLE BORING RECORD				HOLE ID 13_87425_30B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 6 of 6

LOGGED BY John Wright	BEGIN DATE 8-29-13	COMPLETION DATE 8-29-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13_87525_31B
DRILLING CONTRACTOR Geo-Ex, Driller Name: Ryan			BOREHOLE LOCATION (Offset, Station, Line) 0.00' Rt Sta 875+25 Reach 13	SURFACE ELEVATION 68.0 ft
DRILLING METHOD Rotary Wash			DRILL RIG CME 850	BOREHOLE DIAMETER 4 in
SAMPLER TYPE(S) AND SIZE(S) (ID) HQ Core, SPT (1.4")			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING READINGS N/A	AFTER DRILLING (DATE) N/A
				TOTAL DEPTH OF BORING 116.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
66.00	2														
64.00	4														
62.00	6														
60.00	8														
58.00	10														
56.00	12														
54.00	14														
52.00	16														
50.00	18														
48.00	20														
46.00	22														
44.00	24														
	25														

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REPORT TITLE BORING RECORD				HOLE ID 13_87525_31B
DIST. 03	COUNTY YUB	ROUTE D	POSTMILE D	EA 03-13-120.1
PROJECT OR BRIDGE NAME SBFCA				
BRIDGE NUMBER	PREPARED BY John Wright	DATE	SHEET 1 of 5	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
42.00	26														
40.00	28														
38.00	30														
36.00	32														
34.00	34														
32.00	36														
30.00	38														
28.00	40														
26.00	42														
24.00	44														
22.00	46														
20.00	48														
18.00	50														
16.00	52														
14.00	54														gravel layer

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_87525_31B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 2 of 5

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
12.00	55														
	56														
	57														
10.00	58														
	59														
8.00	60														
	61														
6.00	62														
	63														
4.00	64														
	65														
2.00	66														
	67														
0.00	68														
	69														
-2.00	70														
	71														
-4.00	72														end gravel
	73														
-6.00	74														
	75														
-8.00	76														
	77														
-10.00	78														
	79														
-12.00	80														
	81														
-14.00	82														
	83														
-16.00	84														
	85														

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REPORT TITLE BORING RECORD				HOLE ID 13_87525_31B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 3 of 5

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
-18.00	86														
-20.00	88														
-22.00	90														
-24.00	92														gravel layer
-26.00	94														
-28.00	96														end gravel layer
-30.00	98														
-32.00	100		Poorly graded SAND (SP); medium dense; dark gray; wet; about 95% medium to fine SAND; about 5% nonplastic fines.	1	5	11	29	94							
-34.00	101		CLAYEY SAND (SC); dark gray; wet; about 80% medium to fine SAND; about 20% low to medium plasticity fines.	2		18		90							
-36.00	102		Poorly graded SAND with CLAY (SP-SC); dark gray; wet; about 90% medium to fine SAND; about 10% low to medium plasticity fines; trace coarse sand.												
-38.00	106		CLAYEY SAND (SC); gray; moist to wet; about 85% coarse to fine SAND; about 15% low to medium plasticity fines.	3				87							
-40.00	108		Lean CLAY (CL); greenish gray; moist; about 5% fine SAND; about 95% medium plasticity fines; blocky.												
-42.00	111		SANDY SILT (ML); hard; greenish gray; moist; about 30% fine SAND; about 70% low plasticity fines.	4				100				PP = 4.0			
-44.00	112		SILTY CLAY (CL-ML); hard; greenish gray; moist; about 5 to 10% fine SAND; about 90 to 95% low to medium plasticity fines.									PP = >4.5			
-46.00	113		Lean CLAY (CL); hard; greenish gray; moist; about 5% fine SAND; about 95% medium plasticity fines; blocky.									PP = >4.5			
-46.00	114		SILT with SAND (ML); hard; dark gray; moist; about									PP = >4.5			
	115														

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REPORT TITLE BORING RECORD				HOLE ID 13_87525_31B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 4 of 5

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
115			15% fine SAND; about 85% low plasticity fines; slightly blocky.		4			100				PP = 4.0 PP = >4.5			
-48.00	116		Bottom of borehole at 116.0 ft bgs												
	117		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
-50.00	118														
	119														
-52.00	120														
	121														
-54.00	122														
	123														
-56.00	124														
	125														
-58.00	126														
	127														
-60.00	128														
	129														
-62.00	130														
	131														
-64.00	132														
	133														
-66.00	134														
	135														
-68.00	136														
	137														
-70.00	138														
	139														
-72.00	140														
	141														
-74.00	142														
	143														
-76.00	144														
	145														



REPORT TITLE BORING RECORD				HOLE ID 13_87525_31B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 5 of 5

LOGGED BY John Wright	BEGIN DATE 8-29-13	COMPLETION DATE 8-30-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13_87625_32B
DRILLING CONTRACTOR Geo-Ex, Driller Name: Ryan			BOREHOLE LOCATION (Offset, Station, Line) 0.00' Rt Sta 876+25 Reach 13	SURFACE ELEVATION 67.0 ft
DRILLING METHOD Rotary Wash			DRILL RIG CME 850	BOREHOLE DIAMETER 4 in
SAMPLER TYPE(S) AND SIZE(S) (ID) HQ Core, SPT (1.4")			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING READINGS N/A	AFTER DRILLING (DATE) N/A
				TOTAL DEPTH OF BORING 115.5 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
65.00	1														
63.00	2														
	3														
	4														
	5														
61.00	6														
	7														
	8														
59.00	9														
	10														
	11														
57.00	12														
	13														
	14														
55.00	15														
	16														
	17														
53.00	18														
	19														
	20														
51.00	21														
	22														
	23														
49.00	24														
	25														

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REPORT TITLE BORING RECORD				HOLE ID 13_87625_32B
DIST. 03	COUNTY YUB	ROUTE D	POSTMILE D	EA 03-13-120.1
PROJECT OR BRIDGE NAME SBFCA				
BRIDGE NUMBER	PREPARED BY John Wright	DATE	SHEET 1 of 5	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
41.00	26														
39.00	28														
37.00	30														
35.00	32														
33.00	34														
31.00	36														
29.00	38														
27.00	40														
25.00	42														
23.00	44														
21.00	46														
19.00	48														
17.00	50														
15.00	52														gravel layer
13.00	54														
	55														

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REPORT TITLE BORING RECORD				HOLE ID 13_87625_32B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 2 of 5

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
11.00	55														
	56														
	57														
9.00	58														
	59														
7.00	60														
	61														
5.00	62														
	63														
3.00	64														
	65														
1.00	66														
	67														
-1.00	68														
	69														
-3.00	70														
	71														
-5.00	72														
	73														
-7.00	74														
	75														
-9.00	76														end gravel
	77														
-11.00	78														
	79														
-13.00	80														
	81														
-15.00	82														
	83														
-17.00	84														
	85														

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REPORT TITLE BORING RECORD				HOLE ID 13_87625_32B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 3 of 5

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
-19.00	86														
-21.00	88														
-23.00	90														
-25.00	92														gravel layer
-27.00	94														end gravel layer
-29.00	96														
-29.00	97		Poorly graded SAND (SP); medium dense; dark gray; wet; about 95% medium to fine SAND; about 5% nonplastic fines.	1	5	10	21	94							
-31.00	98		CLAYEY SAND (SC); gray; wet; about 65% medium to fine SAND; about 35% low to medium plasticity fines.	2				100							
-33.00	100		Poorly graded SAND (SP); dark gray; wet; about 95% medium to fine SAND; about 5% nonplastic fines; interbedded layers of clayey SAND.												
-35.00	102		CLAYEY SAND (SC); gray; wet; about 65% medium to fine SAND; about 35% low to medium plasticity fines.	3				78							
-35.00	103		Poorly graded SAND (SP); dark gray; wet; about 95% medium to fine SAND; about 5% nonplastic fines.												
-37.00	104		CLAYEY SAND (SC); gray; wet; about 65% medium to fine SAND; about 35% low to medium plasticity fines; trace coarse SAND, interbedded layers of poorly graded SAND.												
-39.00	106														
-41.00	107		SILTY CLAY (CL-ML); hard; dark greenish gray; moist; about 10% fine SAND; about 90% low to medium plasticity fines; slightly blocky.	4				100				PP = >4.5			
-41.00	108		Lean CLAY (CL); hard; greenish gray; moist; about 5% fine SAND; about 95% medium plasticity fines; blocky.									PP = >4.5			
-43.00	110											PP = >4.5			
-45.00	112											PP = >4.5			
-47.00	114		SILT (ML); hard; dark greenish gray; moist; low plasticity fines; grades from 10% to 30% fine sand.	5				100				PP = >4.5			
-47.00	115											PP = >4.5			

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REPORT TITLE BORING RECORD				HOLE ID 13_87625_32B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 4 of 5

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
-49.00	115		SILTY SAND (SM); dark gray; moist to wet; about 80 to 85% medium to fine SAND; about 15 to 20% nonplastic fines. Bottom of borehole at 115.5 ft bgs												
-51.00	116														
-53.00	117														
-55.00	118														
-57.00	119														
-59.00	120														
-61.00	121														
-63.00	122														
-65.00	123														
-67.00	124														
-69.00	125														
-71.00	126														
-73.00	127														
-75.00	128														
-77.00	129														
	130														
	131														
	132														
	133														
	134														
	135														
	136														
	137														
	138														
	139														
	140														
	141														
	142														
	143														
	144														
	145														

FINAL LOG:
The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.



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REPORT TITLE BORING RECORD				HOLE ID 13_87625_32B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 5 of 5

LOGGED BY John Wright	BEGIN DATE 9-3-13	COMPLETION DATE 9-3-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13 88930 45B
DRILLING CONTRACTOR Geo-Ex, Driller Name: Ryan			BOREHOLE LOCATION (Offset, Station, Line) 0.00' Rt Sta 889+30 Reach 13	SURFACE ELEVATION 69.0 ft
DRILLING METHOD Rotary Wash			DRILL RIG CME 850	BOREHOLE DIAMETER 4 in
SAMPLER TYPE(S) AND SIZE(S) (ID) HQ Core, SPT (1.4")			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING READINGS N/A	AFTER DRILLING (DATE) N/A
				TOTAL DEPTH OF BORING 117.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
1	1														
67.00	2														
3	3														
65.00	4														
5	5														
63.00	6														
7	7														
61.00	8														
9	9														
59.00	10														
11	11														
57.00	12														
13	13														
55.00	14														
15	15														
53.00	16														
17	17														
51.00	18														
19	19														
20	20														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13 88930 45B
DIST. 03	COUNTY YUB	ROUTE D	POSTMILE D	EA 03-13-120.1
PROJECT OR BRIDGE NAME SBFCA				
BRIDGE NUMBER	PREPARED BY John Wright	DATE	SHEET 1 of 6	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
20															
	21														
47.00	22														
	23														
45.00	24														
	25														
43.00	26														
	27														
41.00	28														
	29														
39.00	30														gravel layer
	31														
37.00	32														end gravel
	33														
35.00	34														
	35														
33.00	36														
	37														
31.00	38														
	39														
29.00	40														
	41														
27.00	42														
	43														
	44														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_88930_45B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 2 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
44															
45															
23.00	46														gravel layer
47															
21.00	48														
49															
19.00	50														
51															
17.00	52														
53															
15.00	54														
55															
13.00	56														
57															
11.00	58														
59															
9.00	60														Very dense/coarse gravel
61															
7.00	62														
63															
5.00	64														
65															
3.00	66														
67															
68															

(continued)



Crawford
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 Geotechnical Engineering, Design
 and Construction Services

REPORT TITLE BORING RECORD				HOLE ID 13_88930_45B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 3 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
68															
-1.00	69														
-3.00	70														
	71														
	72														end gravel
	73														
-5.00	74														
	75														
-7.00	76														
	77														
-9.00	78														
	79														
-11.00	80														
	81														
-13.00	82														
	83														
-15.00	84														
	85														
-17.00	86														
	87														gravel layer
-19.00	88														
	89														end gravel gravel layer
-21.00	90														
	91														
	92														

(continued)



Crawford
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Geotechnical Engineering, Design
and Construction Services

REPORT TITLE BORING RECORD				HOLE ID 13_88930_45B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 4 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
-25.00	94														end gravel
-29.00	98		Lean CLAY (CL); hard; greenish gray; moist; about 5% fine SAND; about 95% medium plasticity fines.		1	8	16	100				PP = 3.75			
	99				2	8		100				PP = >4.5			
	100											PP = 3.75			
	101		SANDY SILT (ML); hard; dark greenish gray; moist; about 35% fine SAND; about 65% low plasticity fines.									PP = >4.5			
	102											PP = >4.5			
-33.00	102		SANDY lean CLAY (CL); dark greenish gray; moist; about 35% fine SAND; about 65% low to medium plasticity fines.		3			90							
	103														
-35.00	104		Poorly graded SAND with SILT (SP-SM); dark gray; wet; about 85 to 90% coarse to fine SAND; about 10 to 15% nonplastic fines.												
	105														
-37.00	106		SILTY SAND (SM); dark gray; moist to wet; about 50% fine SAND; about 50% nonplastic to low plasticity fines.												
	107		Lean CLAY (CL); very stiff; greenish gray; moist; about 5 to 10% fine SAND; about 90 to 95% medium plasticity fines.		4			100				PP = 3.25			
	108											PP = >4.5			
	109		Hard; blocky.									PP = >4.5			
	110											PP = >4.5			
	111											PP = >4.5			
-43.00	112		SILTY SAND (SM); dark gray; wet; about 60% fine SAND; about 40% nonplastic to low plasticity fines.		5			100							
	113														
-45.00	114		Lean CLAY (CL); hard; dark greenish gray; moist; about 5 to 10% fine SAND; about 95% medium plasticity fines.									PP = >4.5			
	115											PP = >4.5			
	116		SILTY SAND (SM); dark gray; moist to wet; about 50%									PP = >4.5			

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Geotechnical Engineering, Design
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REPORT TITLE BORING RECORD				HOLE ID 13_88930_45B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 5 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
116			fine SAND; about 50% nonplastic to low plasticity fines.		5			100							
117			Bottom of borehole at 117.0 ft bgs												
-49.00	118		<p>FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.</p>												
-51.00	120														
-53.00	122														
-55.00	124														
-57.00	126														
-59.00	128														
-61.00	130														
-63.00	132														
-65.00	134														
-67.00	136														
-69.00	138														
	139														
	140														



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REPORT TITLE BORING RECORD				HOLE ID 13_88930_45B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 6 of 6

LOGGED BY John Wright	BEGIN DATE 8-30-13	COMPLETION DATE 8-30-13	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID 13_89450_50B
DRILLING CONTRACTOR Geo-Ex, Driller Name: Ryan			BOREHOLE LOCATION (Offset, Station, Line) 0.00' Rt Sta 894+50 Reach 13	SURFACE ELEVATION 69.0 ft
DRILLING METHOD Rotary Wash			DRILL RIG CME 850	BOREHOLE DIAMETER 4 in
SAMPLER TYPE(S) AND SIZE(S) (ID) HQ Core, SPT (1.4")			SPT HAMMER TYPE Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Cement Grout			GROUNDWATER DURING DRILLING READINGS N/A	AFTER DRILLING (DATE) N/A
				TOTAL DEPTH OF BORING 117.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
67.00	2														
65.00	4														
63.00	6														
61.00	8														
59.00	10														
57.00	12														
55.00	14														
53.00	16														
51.00	18														
	19														
	20														

(continued)



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Geotechnical Engineering, Design
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REPORT TITLE BORING RECORD				HOLE ID 13_89450_50B	
DIST. 03	COUNTY YUB	ROUTE D	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 1 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
20															
	21														
47.00	22														
	23														
45.00	24														
	25														
43.00	26														
	27														
41.00	28														
	29														
39.00	30														
	31														
37.00	32														
	33														
35.00	34														
	35														
33.00	36														
	37														
31.00	38														
	39														
29.00	40														
	41														
27.00	42														
	43														
	44														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_89450_50B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 2 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
44															
45															
23.00	46														
47															
21.00	48														
49															
19.00	50														
51															gravel layer
17.00	52														
53															
15.00	54														
55															
13.00	56														
57															
11.00	58														
59															
9.00	60														
61															
7.00	62														
63															
5.00	64														
65															
3.00	66														
67															
68															

(continued)



REPORT TITLE BORING RECORD				HOLE ID 13_89450_50B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 3 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
68															
	69														
-1.00	70														
	71														
-3.00	72														
	73														
-5.00	74														
	75														end gravel
-7.00	76														
	77														
-9.00	78														
	79														
-11.00	80														
	81														
-13.00	82														
	83														
-15.00	84														
	85														
-17.00	86														
	87														
-19.00	88														gravel layer
	89														
-21.00	90														
	91														
	92														

(continued)



Crawford & Associates, Inc.
 Geotechnical Engineering, Design and Construction Services

REPORT TITLE BORING RECORD				HOLE ID 13_89450_50B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 4 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
-25.00	92														
	93														end gravel
	94														
	95														
	96		Lean CLAY (CL); very stiff; greenish blue gray; moist; about 5% fine SAND; about 95% medium plasticity fines.	1	5	15	100					PP = 3			
	97				7							PP = 1			
	98			2			100					PP = 1.25			
	99											PP = 1			
	100											PP = 2.25			
	101											PP = 3.75			
	102		SILTY CLAY (CL-ML); hard; dark greenish gray; moist; about 5% fine SAND; about 95% low to medium plasticity fines.	3				100				PP = 4.25			
	103		CLAYEY SILT (ML/CL); stiff; dark greenish gray; moist to wet; about 5 to 10% fine SAND; about 90 to 95% low plasticity fines.									PP = >4.5			
	104		Low to medium plasticity fines.									PP = 1.75			
	105		Low plasticity fines.									PP = 3.25			
	106		Lean CLAY (CL); medium stiff; greenish gray; moist; about 5% fine SAND; about 95% medium plasticity fines; blocky.									PP = 0.25			
	107		CLAYEY SILT (ML/CL); hard; greenish gray; moist; about 20% fine SAND; about 80% low plasticity fines.									PP = >4.5			
	108		About 30% fine SAND; about 70% fines.	4			100					PP = 2.5			
	109		SILTY SAND (SM); dark gray; wet; about 60 to 70% fine SAND; about 30 to 40% nonplastic to low plasticity fines.									PP = 3			
	110		Lean CLAY (CL); very stiff to hard; greenish gray; moist; about 5% fine SAND; about 95% medium plasticity fines; blocky.									PP = 4.25			
	111											PP = >4.5			
	112			5			100					PP = >4.5			
	113											PP = >4.5			
	114		SILTY SAND (SM); dark gray; wet; about 60% medium to fine SAND; about 40% low plasticity fines.									PP = >4.5			
	115		Lean CLAY (CL); hard; greenish gray; moist; about 5% fine SAND; about 95% medium plasticity fines; blocky.									PP = >4.5			
	116											PP = >4.5			

(continued)



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REPORT TITLE BORING RECORD				HOLE ID 13_89450_50B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 5 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
116			Lean CLAY (CL) (continued).		5			100				PP = >4.5 PP = >4.5			
	117		Bottom of borehole at 117.0 ft bgs												
-49.00	118		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
-51.00	120														
-53.00	122														
-55.00	124														
-57.00	126														
-59.00	128														
-61.00	130														
-63.00	132														
-65.00	134														
-67.00	136														
-69.00	138														
	139														
	140														



REPORT TITLE BORING RECORD				HOLE ID 13_89450_50B	
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1	
PROJECT OR BRIDGE NAME SBFCA					
BRIDGE NUMBER		PREPARED BY John Wright		DATE	SHEET 6 of 6

LOG OF BORING 01B_1224+25

PROJECT NO: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 LOCATION: N. of Yuba City
 CLIENT: Raito, Inc.
 LOGGED BY: JJW
 DEPTH OF BORING: 132(ft)

BEGIN DATE: 4/7/2014
 COMPLETION DATE: 4/8/2014
 SURFACE ELEVATION: 87(ft)
 WATER DEPTH: N/A
 READING TAKEN: N/A
 HAMMER EFFICIENCY:

DRILLING CONTRACTOR: GeoEx Subsurface, Driller: Tom S.
 DRILLING METHOD: Solid-Stem Auger & Rotary Wash
 DRILL RIG: CME 75
 HAMMER TYPE: Auto: 140lb, 30"
 SAMPLER TYPE & SIZE: HQ Core
 BOREHOLE DIAMETER: 6"
 BACKFILL METHOD: Cement grout

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
85	1														
	2														
	3														
83	4														
	5														
81	6														
	7														
79	8														
	9														
77	10														
	11														
75	12														
	13														
73	14														
	15														
71	16														
	17														
69	18														
	19														
67	20														
	21														
65	22														
	23														
63	24														



Crawford & Associates, Inc.
 4030 S Land Park Drive, Ste. C
 Sacramento, CA 95822
 (916) 455 4225

PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 01B_1224+25
 ENTRY BY: JJW
 CHECKED BY: AJK SHEET 1 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
61	26						(continued).								
	27														
59	28														
	29														
57	30														
	31														
55	32														
	33														
53	34														
	35														
51	36														
	37														
49	38														
	39														
47	40														
	41														
45	42														
	43														
43	44														
	45														
41	46														
	47														
39	48														
	49														
37	50														
	51														
35	52														
	53														
33	54														
	55														



Crawford & Associates, Inc.
 4030 S Land Park Drive, Ste. C
 Sacramento, CA 95822
 (916) 455 4225

PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 01B_1224+25
 ENTRY BY: JJW
 CHECKED BY: AJK SHEET 2 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					RECOVERY (%)	LABORATORY					REMARKS											
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)		GRAPHIC LOG	DESCRIPTION	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)		DRY DENSITY (PCF)	% PASSING 200 SIEVE									
31	56																							
	57																							
29	58																							
	59																							
27	60																							
	61																							
25	62																							
	63																							
23	64																							
	65																							
21	66																							
	67																							
19	68																							
	69																							
17	70																							
	71																							
15	72																							
	73																							
13	74																							
	75																							
11	76																							
	77																							
9	78																							
	79																							
7	80																							
	81																							
5	82																							
	83																							
3	84																							
	85																							

Raito Field Rep (J. Miller) stated
gravel layer encountered

Raito Field Rep (J. Miller) stated
gravel layer ended



**Crawford
& Associates, Inc.**
Geotechnical Engineering, Design
and Construction Services

Crawford & Associates, Inc.
4030 S Land Park Drive, Ste. C
Sacramento, CA 95822
(916) 455 4225

PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 01B_1224+25
ENTRY BY: JJW
CHECKED BY: AJK SHEET 3 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS		
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE			
1	86																
	87																
-1	88																
	89																
-3	90																
	91																
-5	92																
	93																
-7	94																
	95																
-9	96																
	97																
-11	98																
	99																
-13	100																
	101																
-15	102																
	103																
-17	104																
	105																
-19	106																
	107																
-21	108																
	109																
-23	110																
	111																
	111	1					SANDY SILT (ML); dark bluish gray; moist to wet; about 35% fine SAND; nonplastic to low plasticity fines.	100									
-25	112																
	113																
-27	114						SILTY SAND (SM); dark bluish gray; moist; fine SAND; about 40% fines.										
	115	2					About 30% fines. SILTY SAND (SM) (continued).	100									
-29	116																

JJW onsite at 110'. Did not observe drilling in upper 110'



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ELEVATION (ft)	DEPTH (ft)	FIELD				GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS	
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT				POCKET PEN. (TSF)	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)		% PASSING 200 SIEVE
117			2				Dark gray; about 5% fine GRAVEL; coarse to fine SAND; about 15% nonplastic fines.	100							
-31	118		3					0							No recovery. Possibly flushed out soil sample, suggesting a loose coarse grained soil layer
	119														
-33	120		4					0							
	121														
-35	122														
	123		5					73							
-37	124						SANDY SILT (ML); dark gray; moist; about 40% fine SAND; nonplastic to low plasticity fines; SP lense (1") at ~124.8'								
	125		6				Poorly graded SAND (SP); dark gray; wet; medium to fine SAND; about 5% nonplastic fines.	20							Poor recovery. Possibly flushed out most of soil sample, suggesting a loose coarse grained soil layer
-39	126														
	127														
-41	128		7				SANDY SILT (ML); dark gray; moist; about 30 to 35% medium to fine SAND; low plasticity fines.	80							
	129														
-43	130		8				Lean CLAY with SAND (CL); gray; moist; about 20 to 25% fine SAND; medium plasticity fines.								
	131						SILTY SAND (SM); dark gray; moist to wet; medium to fine SAND; about 40% low plasticity fines.								
-45	132						Poorly graded SAND with SILT (SP-SM); dark gray; wet; medium to fine SAND; about 10% nonplastic fines.	63							
	133						Bottom of borehole at 132.0 ft bgs								
	134						FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.								
-47	135														
	136														
-49	137														
	138														
-51	139														
	140														
-53	141														
	142														
-55	143														
	144														
-57	145														
	146														

LOG OF BORING 02B_1225+25

PROJECT NO: 14-148.1	BEGIN DATE: 4/9/2014	DRILLING CONTRACTOR: GeoEx Subsurface, Driller: Tom S.
PROJECT: SBFCA-C Verif. Borings	COMPLETION DATE: 4/10/2014	DRILLING METHOD: Solid-Stem Auger & Rotary Wash
LOCATION: N. of Yuba City	SURFACE ELEVATION: 87.3 (ft)	DRILL RIG: CME 75
CLIENT: Raito, Inc.	SURFACE CONDITION: Gravel	HAMMER TYPE: Auto: 140lb, 30"
LOGGED BY: JJW	WATER DEPTH: N/A	SAMPLER TYPE & SIZE: HQ Core
DEPTH OF BORING: 127.5 (ft)	READING TAKEN: N/A	BOREHOLE DIAMETER: 6"
	HAMMER EFFICIENCY:	BACKFILL METHOD: Cement grout

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
85	1														
83	2														
81	3														
79	4														
77	5														
75	6														
73	7														
71	8														
69	9														
67	10														
65	11														
63	12														
	13														
	14														
	15														
	16														
	17														
	18														
	19														
	20														
	21														
	22														
	23														
	24														



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 CHECKED BY: BDC SHEET 1 of 5

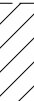
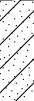






ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
61	26						(continued).								
	27														
59	28														
	29														
57	30														
	31														
55	32														
	33														
53	34														
	35														
51	36														
	37														
49	38														
	39														
47	40														
	41														
45	42														
	43														
43	44														
	45														
41	46														
	47														
39	48														
	49														
37	50														
	51														
35	52														
	53														
33	54														
	55														

ELEVATION (ft)	DEPTH (ft)	FIELD					RECOVERY (%)	LABORATORY					REMARKS					
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)		GRAPHIC LOG	DESCRIPTION	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)		DRY DENSITY (PCF)	% PASSING 200 SIEVE			
31	56																	
	57																	
29	58																	
	59																	
27	60																	
	61																	
25	62																	Raito Field Rep (J. Miller) stated hit a soft layer
	63																	
23	64																	
	65																	
21	66																	
	67																	
19	68																	Raito Field Rep (J. Miller) stated gravel layer encountered
	69																	
17	70																	
	71																	
15	72																	
	73																	
13	74																	
	75																	
11	76																	
	77																	
9	78																	
	79																	
7	80																	
	81																	
5	82																	Raito Field Rep (J. Miller) stated gravel layer ended
	83																	
3	84																	
	85																	



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CHECKED BY: BDC SHEET 3 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS		
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE			
-1	86																
	87																
-1	88																
	89																
-3	90																
	91																
-5	92																
	93																
-7	94		1					Lean CLAY (CL); hard; blue gray; moist; about 10% fine SAND; medium plasticity fines.	100								
	95																
-9	96		2					SANDY lean CLAY (CL); hard; blue gray; moist; about 40 to 45% medium to fine SAND; medium plasticity fines.	83								
	97																
-11	98																
	99		3					SILTY SAND (SM); dark gray; wet; fine SAND; about 25% nonplastic fines. Poorly graded SAND with SILT (SP-SM); dark gray; wet; medium to fine SAND; about 10% nonplastic fines.	90								
-13	100																
	101																
-15	102							SILTY SAND (SM); dark gray; wet; medium to fine SAND; about 20% nonplastic to low plasticity fines. Coarse to fine SAND; about 30% nonplastic to low plasticity fines.									
	103																
-17	104		4						90								
	105																
-19	106							Poorly graded SAND with SILT (SP-SM); dark gray; wet; medium to fine SAND; about 10% nonplastic fines.									
	107							Poorly graded SAND (SP); dark gray; wet; coarse to fine SAND; about 5% nonplastic fines.									
-21	108																
	109		5						100								
-23	110																
	111							Lean CLAY (CL); hard; dark bluish gray; moist; about 10% fine SAND; medium plasticity fines; blocky.									
-25	112																
	113																
-27	114		6					SANDY SILT (ML); hard; dark gray; moist; about 45 to 50% fine SAND; nonplastic to low plasticity fines.	85								
	115							SANDY SILT (ML) (continued).									
-29	116																



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ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
117			6					85							
-31 118															
119			7				Poorly graded SAND with SILT (SP-SM); dark gray; wet; about 5% fine GRAVEL; coarse to fine SAND; about 10% nonplastic fines. No fine gravel.	70							
-33 120															
121															
-35 122															
123															
-37 124			8				Medium to fine SAND.	94							
125															
-39 126															
127															
-41 128							Bottom of borehole at 127.5 ft bgs								
129							FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.								
-43 130															
131															
-45 132															
133															
-47 134															
135															
-49 136															
137															
-51 138															
139															
-53 140															
141															
-55 142															
143															
-57 144															
145															
-59 146															



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BORING: 02B_1225+25
ENTRY BY: JJW
CHECKED BY: BDC SHEET 5 of 5

LOG OF BORING 03B_1226+25

PROJECT NO: 14-148.1	BEGIN DATE: 4/10/2014	DRILLING CONTRACTOR: GeoEx Subsurface, Driller: Tom S.
PROJECT: SBFCA-C Verif. Borings	COMPLETION DATE: 4/11/2014	DRILLING METHOD: Solid-Stem Auger & Rotary Wash
LOCATION: N. of Yuba City	SURFACE ELEVATION: 87.2(ft)	DRILL RIG: CME 75
CLIENT: Raito, Inc.	WATER DEPTH: N/A	HAMMER TYPE: Auto: 140lb, 30"
LOGGED BY: AJK	READING TAKEN: N/A	SAMPLER TYPE & SIZE: HQ Core, SPT (1.4"ID)
DEPTH OF BORING: 118.5(ft)	HAMMER EFFICIENCY:	BOREHOLE DIAMETER: 6"
		BACKFILL METHOD: Cement grout

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
85	1														Driller augered to 19' below crest of levee. Driller set casing (5") to 23.5' below crest of levee.
	2														
	3														
83	4														
	5														
81	6														
	7														
79	8														
	9														
77	10														
	11														
75	12														
	13														
73	14														
	15														
71	16														
	17														
69	18														
	19														
67	20														
	21														
65	22														
	23														
63	24														



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BORING: 03B_1226+25
ENTRY BY: JJW
CHECKED BY: JJW SHEET 1 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS			
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE				
31	56																	
	57																	
29	58																	
	59																	
27	60																	
	61																	
25	62																	
	63																	
23	64																	
	65																	
21	66																	
	67																	
19	68																	Raito Field Rep (J. Miller) stated soft layer ended and gravel layer encountered
	69																	
17	70																	
	71																	
15	72																	
	73																	
13	74																	
	75																	
11	76																	
	77																	
9	78																	Raito Field Rep (J. Miller) gravel layer ended
	79																	
7	80																	
	81																	
5	82																	
	83																	
3	84																	
	85																	




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PROJECT NUMBER: 14-148.1
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BORING: 03B_1226+25
ENTRY BY: JJW
CHECKED BY: JJW SHEET 3 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD				GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS			
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT				POCKET PEN. (TSF)	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)		% PASSING 200 SIEVE		
86																	
87																	
-1	88																
	89																
-3	90																
	91																
-5	92																
	93		1	9	14			0									
-7	94			8													
	95			6													
	96		2	8	20		CLAYEY SAND (SC); gray; wet; medium to fine SAND; about 30% fines.	92									
-9	97			6			Poorly graded SAND with SILT (SP-SM); gray; wet; medium to fine SAND; about 10% fines.										
	98			14			Poorly graded SAND (SP); gray; wet; medium to fine SAND; about 5% fines.										
-11	99																
	100																
-13	101		3	9	13			75									
	102			7													
-15	103			6				0									
	104																
-17	105		5	16	46			67									
	106			20													
	107			26													
-19	108		6				SILTY SAND (SM); gray; moist; medium to fine SAND; about 30% low plasticity fines; trace organics.	75									
	109						About 40% fines.										
-21	110						SANDY lean CLAY (CL); gray; moist; about 30% fine SAND; medium plasticity fines; blocky.										
	111		7				SILTY SAND (SM); gray; moist; fine SAND; about 30 to 35% low plasticity fines.	43									
-23	112						Poorly graded SAND (SP); black; wet; coarse to fine SAND; about 5% fines.										
	113																
-25	114		8					93									
	115																
-27	116						Poorly graded SAND (SP) (continued).										

Punch core from 94' to 96' slipped out of sampler. Chased with SPT, however sample retrieved and possibly not representative.

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
117			8					93							
-31	118							About 5% fine GRAVEL.							
119							Bottom of borehole at 118.5 ft bgs								
-33	120						FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.								
121															
-35	122														
123															
-37	124														
125															
-39	126														
127															
-41	128														
129															
-43	130														
131															
-45	132														
133															
-47	134														
135															
-49	136														
137															
-51	138														
139															
-53	140														
141															
-55	142														
143															
-57	144														
145															
-59	146														

LOG OF BORING 04B_1227+25

PROJECT NO: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 LOCATION: N. of Yuba City
 CLIENT: Raito, Inc.
 LOGGED BY: AJK/JJW
 DEPTH OF BORING: 126(ft)

BEGIN DATE: 4/11/2014
 COMPLETION DATE: 4/14/2014
 SURFACE ELEVATION: 87.4(ft)
 WATER DEPTH: N/A
 READING TAKEN: N/A
 HAMMER EFFICIENCY:

DRILLING CONTRACTOR: GeoEx Subsurface, Driller: Tom S.
 DRILLING METHOD: Solid-Stem Auger & Rotary Wash
 DRILL RIG: CME 75
 HAMMER TYPE: Auto: 140lb, 30"
 SAMPLER TYPE & SIZE: HQ Core
 BOREHOLE DIAMETER: 6"
 BACKFILL METHOD: Cement grout

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
85	1														Driller augered to 19' below crest of levee. Driller set casing (5") to 23.5' below crest of levee.
	2														
	3														
83	4														
	5														
81	6														
	7														
79	8														
	9														
77	10														
	11														
75	12														
	13														
73	14														
	15														
71	16														
	17														
69	18														
	19														
67	20														
	21														
65	22														
	23														
63	24														



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 BORING: 04B_1227+25
 ENTRY BY: JJW
 CHECKED BY: JJW/AJK SHEET 1 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					RECOVERY (%)	LABORATORY					REMARKS							
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)		GRAPHIC LOG	DESCRIPTION	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)		DRY DENSITY (PCF)	% PASSING 200 SIEVE					
61	26																			
	27																			
59	28																			
	29																			
57	30																			
	31																			
55	32																			
	33																			
53	34																			
	35																			
51	36																			
	37																			
49	38																			Encountered soft layer
	39																			
47	40																			
	41																			
45	42																			
	43																			
43	44																			
	45																			
41	46																			
	47																			
39	48																			
	49																			
37	50																			Encountered soft layer ended
	51																			
35	52																			
	53																			
33	54																			
	55																			



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 CHECKED BY: JJW/AJK SHEET 2 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					RECOVERY (%)	LABORATORY					REMARKS							
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)		GRAPHIC LOG	DESCRIPTION	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)		DRY DENSITY (PCF)	% PASSING 200 SIEVE					
31	56																			
	57																			
29	58																			
	59																			
27	60																			
	61																			
25	62																			
	63																			
23	64																			
	65																			
21	66																			Encountered gravel layer
	67																			
19	68																			
	69																			
17	70																			
	71																			
15	72																			
	73																			
13	74																			
	75																			Gravel layer ended
11	76																			
	77																			
9	78																			
	79																			
7	80																			
	81																			
5	82																			
	83																			
3	84																			
	85																			



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 (916) 455 4225

PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 04B_1227+25
 ENTRY BY: JJW
 CHECKED BY: JJW/AJK SHEET 3 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS		
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE			
86																	
87																	
-1 88																	
89			1				Lean CLAY (CL); gray; moist; about 10% fine SAND; medium plasticity fines.	100									
-3 90							CLAYEY SAND (SC); gray; moist; about 50% fine SAND; about 50% low to medium plasticity fines.										
91																	
-5 92																	
93							SILTY SAND (SM); gray; wet; fine SAND; about 30% fines.										
-7 94			2					100									
95							SANDY lean CLAY (CL); gray; moist; about 35% fine SAND; medium plasticity fines.										
-9 96																	
97																	
-11 98																	
99			3				SILTY SAND (SM); gray; wet; medium to fine SAND; about 25% low plasticity fines.	87									
-13 100																	
101																	
-15 102							About 20% fines.										
103																	
-17 104			4					100									
105																	
-19 106							CLAYEY SAND (SC); gray; wet; medium to fine SAND; about 25% low to medium plasticity fines.										
107							At 107", encountered a 4" lense of Poorly Graded Sand (SP).										
-21 108							Lean CLAY (CL); bluish gray; moist; about 10% fine SAND; medium plasticity fines; blocky texture.										
109			5					93									Switched CAInc loggers from AJK (4/11/14) to JJW (4/14/14)
-23 110							CLAYEY SAND (SC); dark bluish gray; moist; medium to fine SAND; about 40% low to medium plasticity fines.										
111																	
-25 112							SILTY SAND (SM); dark bluish gray; moist; medium to fine SAND; about 35% nonplastic to low plasticity fines.										
113																	
-27 114			6				Lean CLAY with SAND (CL); dark bluish gray; moist; about 15 to 20% fine SAND; medium plasticity fines.										
115							About 15% fine SAND; blocky texture.										
-29 116							SANDY SILT (ML); dark gray; moist; about 40% fine SAND; low plasticity fines.	88									
							SILTY SAND (SM); dark gray; moist; about 40%										



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 04B_1227+25
 ENTRY BY: JJW
 CHECKED BY: JJW/AJK SHEET 4 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD				GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT				POCKET PEN. (TSF)	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	
	117		7				nonplastic to low plasticity fines. About 50% fine SAND; about 50% nonplastic to low plasticity fines; slightly blocky.	92						
	118		8				SILTY SAND (SM/ML); dark gray; moist to wet; about 50% fine SAND; about 50% nonplastic to low plasticity fines.	100						
-31	119		9				SILTY SAND (SM); dark gray; moist; fine SAND; about 35 to 40% fines. About 15% nonplastic to low plasticity fines.	100						
	120		10				SILTY SAND (SM); dark gray; moist to wet; fine SAND; about 40% nonplastic to low plasticity fines. Coarse to fine SAND; about 25% nonplastic fines. About 5% fine GRAVEL; about 30% nonplastic fines.	75						
-33	121		11				Medium to fine SAND.	75						
	122		12					83						
-35	123		13					61						
	124		14				Poorly graded SAND (SP); black; wet; coarse to fine SAND; about 5% nonplastic fines.	100						
	125						SILTY SAND (SM); dark gray; wet; fine SAND; nonplastic to low plasticity fines.							
-37	126						Poorly graded SAND (SP); dark gray; wet; coarse to fine SAND; about 5% nonplastic fines. Bottom of borehole at 126.0 ft bgs							
	127						FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.							
-41	128													
	129													
-43	130													
	131													
-45	132													
	133													
-47	134													
	135													
-49	136													
	137													
-51	138													
	139													
-53	140													
	141													
-55	142													
	143													
-57	144													
	145													
-59	146													



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 04B_1227+25
ENTRY BY: JJW
CHECKED BY: JJW/AJK SHEET 5 of 5

LOG OF BORING 05B_1228+25

PROJECT NO: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 LOCATION: N. of Yuba City
 CLIENT: Raito, Inc.
 LOGGED BY: JJW
 DEPTH OF BORING: 125.5(ft)

BEGIN DATE: 4/14/2014
 COMPLETION DATE: 4/15/2014
 SURFACE ELEVATION: 87.5(ft)
 SURFACE CONDITION: Gravel
 WATER DEPTH: N/A
 READING TAKEN: N/A
 HAMMER EFFICIENCY:

DRILLING CONTRACTOR: GeoEx Subsurface, Driller: Tom S.
 DRILLING METHOD: Solid-Stem Auger & Rotary Wash
 DRILL RIG: CME 75
 HAMMER TYPE: Auto: 140lb, 30"
 SAMPLER TYPE & SIZE: HQ Core
 BOREHOLE DIAMETER: 6"
 BACKFILL METHOD: Cement grout

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
86	1														Driller augered to 19' below crest of levee. Driller set casing (5") to 23.5' below crest of levee.
	2														
	3														
84	4														
	5														
82	6														
	7														
80	8														
	9														
78	10														
	11														
76	12														
	13														
74	14														
	15														
72	16														
	17														
70	18														
	19														
68	20														
	21														
66	22														
	23														
64	24														



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 05B_1228+25
 ENTRY BY: JJW
 CHECKED BY: BDC SHEET 1 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					RECOVERY (%)	LABORATORY					REMARKS		
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)		GRAPHIC LOG	DESCRIPTION	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)		DRY DENSITY (PCF)	% PASSING 200 SIEVE
62	26														
	27														
60	28														
	29														
58	30														
	31														
56	32														
	33														
54	34														
	35														
52	36														
	37														
50	38														
	39														
48	40														
	41														
46	42														
	43														
44	44														
	45														
42	46														
	47														
40	48														
	49														
38	50														
	51														
36	52														
	53														
34	54														
	55														



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 05B_1228+25
ENTRY BY: JJW
CHECKED BY: BDC SHEET 2 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					RECOVERY (%)	LABORATORY					REMARKS							
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)		GRAPHIC LOG	DESCRIPTION	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)		DRY DENSITY (PCF)	% PASSING 200 SIEVE					
32	56																			
	57																			
30	58																			
	59																			
28	60																			
	61																			
26	62																			
	63																			
24	64																			
	65																			
22	66																			
	67																			
20	68																			Raito Field Rep (J. Miller) stated gravel layer encountered
	69																			
18	70																			
	71																			
16	72																			
	73																			
14	74																			
	75																			
12	76																			
	77																			
10	78																			
	79																			
8	80																			
	81																			
6	82																			
	83																			
4	84																			
	85																			

Raito Field Rep (J. Miller) stated
gravel layer encountered

Raito Field Rep (J. Miller) gravel
layer ended



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 05B_1228+25
ENTRY BY: JJW
CHECKED BY: BDC SHEET 3 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD				GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS				
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT				POCKET PEN. (TSF)	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)		% PASSING 200 SIEVE			
86																		
87																		
-1	88																	
	89		1				SANDY lean CLAY (CL); hard; dark bluish gray; moist; about 40 to 45% fine SAND; low to medium plasticity fines.	100										
-3	90																	
	91																	
-5	92						CLAYEY SAND (SC); dark bluish gray; moist; medium to fine SAND; about 35% low to medium plasticity fines.											
	93																	
-7	94		2					68										
	95																	
-9	96						Lean CLAY (CL); hard; dark bluish gray; moist; about 5 to 10% fine SAND; medium plasticity fines; blocky texture.											
	97																	
-11	98						Lean CLAY with SAND (CL); hard; dark bluish gray; moist; about 20% fine SAND; medium plasticity fines.											
	99		3					43										
-13	100																	
	101						CLAYEY SAND (SC); dark bluish gray; moist; about 50% medium to fine SAND; about 50% low to medium plasticity fines.											
-15	102																	
	103																	
-17	104		4				About 40% low to medium plasticity fines.	87										
	105																	
-19	106																	
	107																	
-21	108						SILTY SAND (SM); dark bluish gray; moist; medium to fine SAND; about 25% low plasticity fines.											
	109		5				About 20% low plasticity fines.	94										
-23	110						SANDY SILT (ML); hard; dark gray; moist; about 40% fine SAND; low plasticity fines.											
	111																	
-25	112																	
	113		6				Lean CLAY (CL); hard; dark bluish gray; moist; about 10% fine SAND; medium plasticity fines; blocky texture.	90										
-27	114																	
	115						Lean CLAY (CL) (continued).											
-29	116		7				SILT (ML); hard; dark bluish gray; moist; about 10%	50										



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 05B_1228+25
 ENTRY BY: JJW
 CHECKED BY: BDC SHEET 4 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
117			7					fine SAND; low plasticity fines.	50						
-31 118															
119			8					SANDY SILT (ML); hard; dark gray; moist; about 30% fine SAND.	92						
-33 120			9					Gray.	100						
121			10						90						
-35 122															
123															
-37 124			11						100						
125								SILTY SAND (SM); dark gray; wet; coarse to fine SAND; about 20 to 25% nonplastic to low plasticity fines.							
-39 126								Bottom of borehole at 125.5 ft bgs							
127								FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.							
-41 128															
129															
-43 130															
131															
-45 132															
133															
-47 134															
135															
-49 136															
137															
-51 138															
139															
-53 140															
141															
-55 142															
143															
-57 144															
145															
-59 146															

LOG OF BORING 06B_1229+25

PROJECT NO: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 LOCATION: N. of Yuba City
 CLIENT: Raito, Inc.
 LOGGED BY: PBM
 DEPTH OF BORING: 125.5(ft)

BEGIN DATE: 4/16/2014
 COMPLETION DATE: 4/16/2014
 SURFACE ELEVATION: 87.4(ft)
 SURFACE CONDITION: Gravel
 WATER DEPTH: N/A
 READING TAKEN: N/A
 HAMMER EFFICIENCY:

DRILLING CONTRACTOR: GeoEx Subsurface, Driller: Tom S.
 DRILLING METHOD: Solid-Stem Auger & Rotary Wash
 DRILL RIG: CME 75
 HAMMER TYPE: Auto: 140lb, 30"
 SAMPLER TYPE & SIZE: HQ Core
 BOREHOLE DIAMETER: 6"
 BACKFILL METHOD: Cement grout

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
85	1														Driller augered to 19' below crest of levee. Driller set casing (5") to 23.5' below crest of levee.
	2														
	3														
83	4														
	5														
81	6														
	7														
79	8														
	9														
77	10														
	11														
75	12														
	13														
73	14														
	15														
71	16														
	17														
69	18														
	19														
67	20														
	21														
65	22														
	23														
63	24														



Crawford & Associates, Inc.
 Geotechnical Engineering, Design
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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 06B_1229+25
 ENTRY BY: JJW
 CHECKED BY: BDC SHEET 1 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					RECOVERY (%)	LABORATORY					REMARKS					
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)		GRAPHIC LOG	DESCRIPTION	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)		DRY DENSITY (PCF)	% PASSING 200 SIEVE			
61	26																	
	27																	
59	28																	
	29																	
57	30																	
	31																	
55	32																	
	33																	
53	34																	
	35																	
51	36																	
	37																	
49	38																	
	39																	
47	40																	
	41																	
45	42																	
	43																	
43	44																	
	45																	
41	46																	
	47																	
39	48																	
	49																	
37	50																	Encountered gravel layer
	51																	
35	52																	
	53																	
33	54																	
	55																	Gravel layer ended and encountered



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 06B_1229+25
 ENTRY BY: JJW
 CHECKED BY: BDC SHEET 2 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					RECOVERY (%)	LABORATORY					REMARKS	
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)		GRAPHIC LOG	DESCRIPTION	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)		DRY DENSITY (PCF)
31	56													soft layer
	57													
29	58													
	59													
27	60													
	61													
25	62													Soft layer ended
	63													Gravel layer encountered
23	64													
	65													
21	66													
	67													
19	68													
	69													
17	70													
	71													
15	72													
	73													
13	74													
	75													
11	76													Gravel layer ended
	77													
9	78													
	79													
7	80													
	81													
5	82													
	83													
3	84													
	85													



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 06B_1229+25
ENTRY BY: JJW
CHECKED BY: BDC SHEET 3 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS				
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE					
-1	86																		
	87																		
-1	88																		
	89																		
-3	90																		Encountered soft sand layer
	91																		
-5	92																		
	93																		
-7	94		1					SILTY SAND (SM); dark brown; medium to fine SAND; about 30% nonplastic fines. 2" lense of Poorly Graded Sand.	67										
	95																		
-9	96																		
	97																		
-11	98																		
	99																		
-13	100		2					Poorly graded SAND (SP); gray; coarse to medium SAND; about 5% fines.	90										
	101							SILTY SAND (SM); dark brown; medium to fine SAND; about 35% nonplastic fines; wood fragments and roots.											
-15	102		3					Poorly graded SAND (SP); gray; coarse to medium SAND; about 5% fines.	100										
	103							Poorly graded GRAVEL with SILT (GP-GM); gray; coarse to fine GRAVEL; about 40% coarse to fine SAND; about 15% nonplastic fines.											Gravel layer encountered
-17	104																		
	105																		
-19	106																		
	107																		
-21	108																		
	109																		Gravel layer ended. Driller cleaned out the hole to 109' in attempt to clear out remaining gravels
-23	110		4					SILTY SAND (SM); dark bluish gray; medium to fine SAND; about 15% nonplastic fines.	94										
	111							SILT (ML); hard; bluish gray; about 10% fine SAND; low plasticity fines.											
-25	112		5					SILT with SAND (ML); hard; bluish gray; about 20 to 30% fine SAND; nonplastic fines.	77										
	113																		
-27	114																		
	115							SILT with SAND (ML) (continued).											
-29	116																		



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 06B_1229+25
 ENTRY BY: JJW
 CHECKED BY: BDC SHEET 4 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
117			6					92							
-31	118						SANDY SILT (ML); brownish gray; about 40% fine SAND; nonplastic fines.								
	119		7				SANDY SILT (ML); stiff to very stiff; bluish gray; about 30 to 40% fine SAND; nonplastic fines; 4" lenses of Sandy Silt.	60							
-33	120														
	121														
-35	122		8				SILTY SAND (SM); brownish gray; fine SAND; about 45% nonplastic fines. Poorly graded SAND (SP); dark gray; coarse to fine SAND; about 5% fines.	92							
	123						SANDY SILT (ML); hard; brownish gray; about 30 to 45% medium to fine SAND; nonplastic fines.								
-37	124														
	125														
-39	126						Bottom of borehole at 125.5 ft bgs								
	127						FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.								
-41	128														
	129														
-43	130														
	131														
-45	132														
	133														
-47	134														
	135														
-49	136														
	137														
-51	138														
	139														
-53	140														
	141														
-55	142														
	143														
-57	144														
	145														
-59	146														



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 06B_1229+25
ENTRY BY: JJW
CHECKED BY: BDC SHEET 5 of 5

LOG OF BORING 07B_1230+25

PROJECT NO: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 LOCATION: N. of Yuba City
 CLIENT: Raito, Inc.
 LOGGED BY: PBM
 DEPTH OF BORING: 125.5(ft)

BEGIN DATE: 4/16/2014
 COMPLETION DATE: 4/17/2014
 SURFACE ELEVATION: 87.4(ft)
 WATER DEPTH: N/A
 READING TAKEN: N/A
 HAMMER EFFICIENCY:

DRILLING CONTRACTOR: GeoEx Subsurface, Driller: Tom S.
 DRILLING METHOD: Solid-Stem Auger & Rotary Wash
 DRILL RIG: CME 75
 HAMMER TYPE: Auto: 140lb, 30"
 SAMPLER TYPE & SIZE: HQ Core
 BOREHOLE DIAMETER: 6"
 BACKFILL METHOD: Cement grout

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
85	1														Driller augered to 19' below crest of levee. Driller set casing (5") to 23.5' below crest of levee.
	2														
	3														
83	4														
	5														
81	6														
	7														
79	8														
	9														
77	10														
	11														
75	12														
	13														
73	14														
	15														
71	16														
	17														
69	18														
	19														
67	20														
	21														
65	22														
	23														
63	24														



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 (916) 455 4225

PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 07B_1230+25
 ENTRY BY: JJW
 CHECKED BY: BDC SHEET 1 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					RECOVERY (%)	LABORATORY					REMARKS					
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)		GRAPHIC LOG	DESCRIPTION	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)		DRY DENSITY (PCF)	% PASSING 200 SIEVE			
61	26																	
	27																	
59	28																	
	29																	
57	30																	
	31																	
55	32																	
	33																	
53	34																	
	35																	
51	36																	
	37																	
49	38																	
	39																	
47	40																	
	41																	
45	42																	
	43																	
43	44																	
	45																	
41	46																	
	47																	
39	48																	
	49																	
37	50																	
	51																	
35	52																	
	53																	
33	54																	
	55																	

Raito Field Rep (J. Miller) stated



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 07B_1230+25
ENTRY BY: JJW
CHECKED BY: BDC SHEET 2 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
31	56														soft layer encountered
	57														
29	58														Raito Field Rep (J. Miller) stated gravel layer encountered
	59														
27	60														Raito Field Rep (J. Miller) gravel layer ended
	61														
25	62														
	63														
23	64														
	65														
21	66														Raito Field Rep (J. Miller) stated gravel layer encountered
	67														
19	68														
	69														
17	70														
	71														
15	72														
	73														
13	74														
	75														
11	76														
	77														
9	78														
	79														
7	80														Raito Field Rep (J. Miller) gravel layer ended
	81														
5	82														
	83														
3	84														
	85														



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 07B_1230+25
ENTRY BY: JJW
CHECKED BY: BDC SHEET 3 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
86															
87															
-1 88															
89		1					Poorly graded SAND (SP); gray; medium to fine SAND; about 5% nonplastic fines.	83							
-3 90															
91															Encountered interbedded gravel and sand layer
-5 92															
93															
-7 94															
95															
-9 96															
97															
-11 98															
99															
-13 100															
101															
-15 102															
103															
-17 104															
105															
-19 106															
107															
-21 108															
109															
-23 110															
111		2						0							Interbedded gravel and sand layer ended
-25 112															
113		3						0							No recovery due to rock
-27 114		4					Poorly graded SAND (SP); gray; medium to fine SAND; about 5% nonplastic fines; 1" beds of Silt (ML) & Sandy Silt (ML).	100							
115							Lean CLAY (CL); very stiff to hard; bluish gray; about 5% fine SAND; medium plasticity fines; blocky texture.								
-29 116															



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 07B_1230+25
 ENTRY BY: JJW
 CHECKED BY: BDC SHEET 4 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
117			5					100							
-31	118		6				SANDY SILT (ML); hard; brownish gray; about 30% fine SAND; low plasticity fines. 2" layers of Sandy Silt (ML).	50							
-33	120		7				4" layers of Silty Sand (SM).	50							
-35	122														
-37	124		8				2" layers of Poorly Graded Sand (SP).	46							
-39	126						Bottom of borehole at 125.5 ft bgs								
-41	128						FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.								
-43	130														
-45	132														
-47	134														
-49	136														
-51	138														
-53	140														
-55	142														
-57	144														
-59	146														

LOG OF BORING 08B_1231+25

PROJECT NO: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 LOCATION: N. of Yuba City
 CLIENT: Raito, Inc.
 LOGGED BY: PBM
 DEPTH OF BORING: 128.5(ft)

BEGIN DATE: 4/17/2014
 COMPLETION DATE: 4/18/2014
 SURFACE ELEVATION: 87.4(ft)
 WATER DEPTH: N/A
 READING TAKEN: N/A
 HAMMER EFFICIENCY:

DRILLING CONTRACTOR: GeoEx Subsurface, Driller: Tom S.
 DRILLING METHOD: Solid-Stem Auger & Rotary Wash
 DRILL RIG: CME 75
 HAMMER TYPE: Auto: 140lb, 30"
 SAMPLER TYPE & SIZE: HQ Core
 BOREHOLE DIAMETER: 6"
 BACKFILL METHOD: Cement grout

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
85	1														Driller augered to 19' below crest of levee. Driller set casing (5") to 23.5' below crest of levee.
	2														
	3														
83	4														
	5														
81	6														
	7														
79	8														
	9														
77	10														
	11														
75	12														
	13														
73	14														
	15														
71	16														
	17														
69	18														
	19														
67	20														
	21														
65	22														
	23														
63	24														



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 08B_1231+25
 ENTRY BY: JJW
 CHECKED BY: AJK SHEET 1 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					RECOVERY (%)	LABORATORY					REMARKS							
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)		GRAPHIC LOG	DESCRIPTION	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)		DRY DENSITY (PCF)	% PASSING 200 SIEVE					
61	26																			
	27																			
59	28																			
	29																			
57	30																			
	31																			
55	32																			
	33																			
53	34																			Very dense soil layer encountered
	35																			
51	36																			
	37																			
49	38																			
	39																			
47	40																			
	41																			
45	42																			
	43																			
43	44																			
	45																			
41	46																			
	47																			
39	48																			
	49																			
37	50																			
	51																			
35	52																			
	53																			
33	54																			
	55																			



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 08B_1231+25
 ENTRY BY: JJW
 CHECKED BY: AJK SHEET 2 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
31	56														Intermittent layers of gravel and sand encountered
	57														
29	58														Gravel and sand layer ended
	59														
27	60														
	61														
25	62														
	63														
23	64														
	65														
21	66														
	67														
19	68														
	69														
17	70														
	71														
15	72														
	73														
13	74														
	75														
11	76														
	77														
9	78														
	79														Intermittent layers of gravel and sand encountered
7	80														
	81														
5	82														
	83														
3	84														
	85														



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 08B_1231+25
ENTRY BY: JJW
CHECKED BY: AJK SHEET 3 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS				
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE					
-1	86																		
-1	87																		
-1	88																		
-1	89																		
-3	90																		
-3	91																		
-5	92																		
-5	93																		
-7	94																		
-7	95																		
-9	96																		
-9	97																		
-11	98																		
-11	99																		
-13	100																		
-13	101																		
-15	102																		
-15	103																		
-17	104																		
-17	105																		
-19	106																		
-19	107																		
-21	108																		
-21	109																		
-23	110																		
-23	111		1						0										
-25	112																		
-25	113																		
-27	114		2						100										
-27	115																		
-29	116																		

Lean CLAY (CL); bluish gray; moist; about 5% fine SAND; medium plasticity fines; blocky texture.
Lean CLAY (CL) (continued).



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 08B_1231+25
ENTRY BY: JJW
CHECKED BY: AJK SHEET 4 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD				GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS	
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT				POCKET PEN. (TSF)	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)		% PASSING 200 SIEVE
117			3					86							
-31 118															
119			4				SILTY CLAY with SAND (CL-ML); bluish gray; moist; about 15% fine SAND; low plasticity fines.	57							
-33 120							Poorly graded SAND with SILT (SP-SM); brownish gray; moist; about 10% nonplastic fines.								
121							SILTY SAND (SM); brownish gray; moist; about 20% nonplastic fines.								
-35 122			5				Lean CLAY with SAND (CL); bluish gray; moist; about 20% fine SAND; medium plasticity fines; blocky texture.	100							
123															
-37 124			6				About 10% fine SAND; no blocky texture.								
125							SILT with SAND (ML); bluish gray; moist; about 15% fine SAND; low plasticity fines.	85							
-39 126							Lean CLAY (CL); brownish gray; moist; about 5% fine SAND; medium plasticity fines; blocky texture.								
127															
-41 128							1" lenses of Poorly Graded Sand (SP) and Sandy Silt (ML).								
129							Bottom of borehole at 128.5 ft bgs								
-43 130							FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.								
131															
-45 132															
133															
-47 134															
135															
-49 136															
137															
-51 138															
139															
-53 140															
141															
-55 142															
143															
-57 144															
145															
-59 146															

LOG OF BORING 09B_1232+25

PROJECT NO: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 LOCATION: N. of Yuba City
 CLIENT: Raito, Inc.
 LOGGED BY: JJW
 DEPTH OF BORING: 126.5(ft)

BEGIN DATE: 4/15/2014
 COMPLETION DATE: 4/15/2014
 SURFACE ELEVATION: 87.5(ft)
 SURFACE CONDITION: Gravel
 WATER DEPTH: N/A
 READING TAKEN: N/A
 HAMMER EFFICIENCY:

DRILLING CONTRACTOR: GeoEx Subsurface, Driller: Tom S.
 DRILLING METHOD: Solid-Stem Auger & Rotary Wash
 DRILL RIG: CME 75
 HAMMER TYPE: Auto: 140lb, 30"
 SAMPLER TYPE & SIZE: HQ Core
 BOREHOLE DIAMETER: 6"
 BACKFILL METHOD: Cement grout

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
86	1														Driller augered to 19' below crest of levee. Driller set casing (5") to 23.5' below crest of levee.
	2														
	3														
84	4														
	5														
82	6														
	7														
80	8														
	9														
78	10														
	11														
76	12														
	13														
74	14														
	15														
72	16														
	17														
70	18														
	19														
68	20														
	21														
66	22														
	23														
64	24														



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
PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 09B_1232+25
 ENTRY BY: JJW
 CHECKED BY: AJK SHEET 1 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					RECOVERY (%)	LABORATORY					REMARKS	
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)		GRAPHIC LOG	DESCRIPTION	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)		DRY DENSITY (PCF)
62	26													
	27													
60	28													
	29													
58	30													
	31													
56	32													
	33													
54	34													
	35													
52	36													
	37													
50	38													
	39													
48	40													
	41													
46	42													
	43													
44	44													
	45													
42	46													
	47													
40	48													
	49													
38	50													
	51													
36	52													
	53													
34	54													
	55													



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 09B_1232+25
ENTRY BY: JJW
CHECKED BY: AJK SHEET 2 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS		
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE			
2	86																
	87																
-1	88																
	89																
-3	90																
	91																
-5	92																
	93																
-7	94																Sampling to begin at 94', but still in gravels. Driller continued drilling
	95																
-9	96																
	97																
-11	98																
	99																
-13	100																
	101																
-15	102																
	103																
-17	104																
	105																
-19	106																
	107																
-21	108																
	109																
-23	110																
	111																
-25	112																
	113	1					 Lean CLAY with SAND (CL); dark bluish gray; moist; about 15% fine SAND; medium plasticity fines.	75									
-27	114	2					SILTY SAND (SM); dark bluish gray; moist; medium to fine SAND; about 30% low plasticity fines.	97									
	115						SILTY SAND (SM) (continued).										
-29	116																

Sampling to begin at 94', but still
in gravels. Driller continued drilling

Raito Field Rep (J. Miller) stated
gravel layer ended



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 09B_1232+25
ENTRY BY: JJW
CHECKED BY: AJK SHEET 4 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS	
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE		
117			2					Lean CLAY (CL); bluish gray; moist; about 10% fine SAND; medium plasticity fines; blocky texture.	97							
118																
119			3							100						
120																
121																
122																
123																
124			4					97								
125																
126							SILTY SAND (SM); dark bluish gray; moist to wet; medium to fine SAND; about 25 to 30% fines. Sample begins grading to Poorly Graded Sand with Silt. Bottom of borehole at 126.5 ft bgs									
127																
128							FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.									
129																
130																
131																
132																
133																
134																
135																
136																
137																
138																
139																
140																
141																
142																
143																
144																
145																
146																

LOG OF BORING 10B_1233+25

PROJECT NO: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 LOCATION: N. of Yuba City
 CLIENT: Raito, Inc.
 LOGGED BY: JJW
 DEPTH OF BORING: 127(ft)

BEGIN DATE: 4/21/2014
 COMPLETION DATE: 4/21/2014
 SURFACE ELEVATION: 87.2(ft)
 WATER DEPTH: N/A
 READING TAKEN: N/A
 HAMMER EFFICIENCY:

DRILLING CONTRACTOR: GeoEx Subsurface, Driller: Tom S.
 DRILLING METHOD: Solid-Stem Auger & Rotary Wash
 DRILL RIG: CME 75
 HAMMER TYPE: Auto: 140lb, 30"
 SAMPLER TYPE & SIZE: HQ Core
 BOREHOLE DIAMETER: 6"
 BACKFILL METHOD: Cement grout

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
85	1														Driller augered to 19' below crest of levee. Driller set casing (5") to 23.5' below crest of levee.
	2														
	3														
83	4														
	5														
81	6														
	7														
79	8														
	9														
77	10														
	11														
75	12														
	13														
73	14														
	15														
71	16														
	17														
69	18														
	19														
67	20														
	21														
65	22														
	23														
63	24														



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 10B_1233+25
 ENTRY BY: JJW
 CHECKED BY: AJK SHEET 1 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					RECOVERY (%)	LABORATORY					REMARKS		
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)		GRAPHIC LOG	DESCRIPTION	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)		DRY DENSITY (PCF)	% PASSING 200 SIEVE
61	26														
	27														
59	28														
	29														
57	30														
	31														
55	32														
	33														
53	34														
	35														
51	36														
	37														
49	38														
	39														
47	40														
	41														
45	42														
	43														
43	44														
	45														
41	46														
	47														
39	48														
	49														
37	50														
	51														
35	52														
	53														
33	54														
	55														



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 10B_1233+25
ENTRY BY: JJW
CHECKED BY: AJK SHEET 2 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS		
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE			
1	86																
	87																
-1	88																
	89																
-3	90																
	91																
-5	92																
	93																
-7	94																
	95																
-9	96																
	97																
-11	98																
	99																
-13	100																
	101																
-15	102																
	103																
-17	104																
	105																
-19	106																
	107																
-21	108																
	109																
-23	110																Gravel layer ended
	111	1					SILTY CLAY with SAND (CL-ML); bluish gray; moist; about 15% medium to fine SAND; low to medium plasticity fines.	81									
-25	112						2" lense of clayey sand.										
	113																
-27	114	2						73									
	115																
-29	116						SANDY SILTY CLAY (CL-ML); bluish gray; moist to wet; about 30% medium to fine SAND; low to medium plasticity fines; blocky structure.										



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 10B_1233+25
 ENTRY BY: JJW
 CHECKED BY: AJK SHEET 4 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
117			2					73							
-31 118															
119			3						100						
-33 120															
121															
-35 122															
123															
-37 124			4					83							
125															
-39 126							<p>SANDY SILT (ML); dark gray; moist; about 45% fine SAND; nonplastic to low plasticity fines.</p> <p>Poorly graded SAND with SILT (SP-SM); dark gray; wet; medium to fine SAND; about 10% nonplastic fines; 1/4" lenses of Silt.</p> <p>Bottom of borehole at 127.0 ft bgs</p>								
127															
-41 128							<p>FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.</p>								
129															
-43 130															
131															
-45 132															
133															
-47 134															
135															
-49 136															
137															
-51 138															
139															
-53 140															
141															
-55 142															
143															
-57 144															
145															
-59 146															



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 10B_1233+25
 ENTRY BY: JJW
 CHECKED BY: AJK SHEET 5 of 5

LOG OF BORING 11B_1234+25

PROJECT NO: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 LOCATION: N. of Yuba City
 CLIENT: Raito, Inc.
 LOGGED BY: JJW
 DEPTH OF BORING: 125.5(ft)

BEGIN DATE: 4/21/2014
 COMPLETION DATE: 4/22/2014
 SURFACE ELEVATION: 87.2(ft)
 SURFACE CONDITION: Gravel
 WATER DEPTH: N/A
 READING TAKEN: N/A
 HAMMER EFFICIENCY:

DRILLING CONTRACTOR: GeoEx Subsurface, Driller: Tom S.
 DRILLING METHOD: Solid-Stem Auger & Rotary Wash
 DRILL RIG: CME 75
 HAMMER TYPE: Auto: 140lb, 30"
 SAMPLER TYPE & SIZE: HQ Core
 BOREHOLE DIAMETER: 6"
 BACKFILL METHOD: Cement grout

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
85	1														Driller augered to 19' below crest of levee. Driller set casing (5") to 23.5' below crest of levee.
	2														
	3														
83	4														
	5														
81	6														
	7														
79	8														
	9														
77	10														
	11														
75	12														
	13														
73	14														
	15														
71	16														
	17														
69	18														
	19														
67	20														
	21														
65	22														
	23														
63	24														



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 11B_1234+25
 ENTRY BY: JJW
 CHECKED BY: AJK SHEET 1 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS						
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)			GRAPHIC LOG	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)		% PASSING 200 SIEVE					
61	26																			
	27																			
59	28																			
	29																			
57	30																			
	31																			
55	32																			
	33																			
53	34																			
	35																			
51	36																			
	37																			
49	38																			
	39																			
47	40																			
	41																			
45	42																			
	43																			
43	44																			
	45																			
41	46																			
	47																			
39	48																			
	49																			
37	50																			
	51																			
35	52																			
	53																			
33	54																			
	55																			

circulation loss, driller filled up
mudtank ~75 gal water

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS		
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE			
-1	86																
	87																
-1	88																
	89																
-3	90																
	91																
-5	92																
	93																
-7	94																
	95																
-9	96																
	97																
-11	98																
	99																
-13	100																
	101																
-15	102																
	103																
-17	104																
	105																
-19	106																
	107																
-21	108																
	109																
-23	110																
	111		1				Lean CLAY (CL); bluish gray; moist; about 5% fine SAND; medium plasticity fines.	93									Gravel layer ended
-25	112						SILTY CLAY (CL-ML); dark bluish gray; moist; about 10 to 15% fine SAND; medium plasticity fines.										
	113																
-27	114		2				SILTY CLAY with SAND (CL-ML); dark bluish gray; moist; about 15 to 20% medium to fine SAND; medium plasticity fines.	90									
	115						SILTY SAND (SM); dark gray; moist; medium to fine SAND; about 25 to 30% nonplastic to low plasticity										
-29	116																

ELEVATION (ft)	DEPTH (ft)	FIELD				GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT				POCKET PEN. (TSF)	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	
	117		2				fines. Lean CLAY (CL); dark bluish gray; moist; about 5 to 10% fine SAND; medium plasticity fines.	90						
-31	118						SILTY SAND (SM); dark gray; moist; fine SAND; about 40% nonplastic to low plasticity fines.							
	119		3				SANDY SILT (ML); dark gray; moist; about 30% fine SAND; low to medium plasticity fines.	88						
-33	120						Lean CLAY (CL); bluish gray; moist; about 10% fine SAND; medium plasticity fines.							
	121						SANDY SILT (ML); dark gray; moist; fine SAND; about 45% nonplastic to low plasticity fines.							
-35	122						SILTY CLAY (CL-ML); dark gray; moist; about 20% fine SAND; low to medium plasticity fines.							
	123						Lean CLAY (CL); dark bluish gray; moist; about 10% fine SAND; medium plasticity fines.							
-37	124		4					33						
	125						SANDY SILT (ML); dark gray; moist; about 40% medium to fine SAND; nonplastic to low plasticity fines.							
-39	126						Bottom of borehole at 125.5 ft bgs							
	127						FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.							
-41	128													
	129													
-43	130													
	131													
-45	132													
	133													
-47	134													
	135													
-49	136													
	137													
-51	138													
	139													
-53	140													
	141													
-55	142													
	143													
-57	144													
	145													
-59	146													



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 11B_1234+25
ENTRY BY: JJW
CHECKED BY: AJK SHEET 5 of 5

LOG OF BORING 12B_1235+25

PROJECT NO: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 LOCATION: N. of Yuba City
 CLIENT: Raito, Inc.
 LOGGED BY: JJW
 DEPTH OF BORING: 128.5(ft)

BEGIN DATE: 4/22/2014
 COMPLETION DATE: 4/23/2014
 SURFACE ELEVATION: 87.2(ft)
 SURFACE CONDITION: Gravel
 WATER DEPTH: N/A
 READING TAKEN: N/A
 HAMMER EFFICIENCY:

DRILLING CONTRACTOR: GeoEx Subsurface, Driller: Tom S.
 DRILLING METHOD: Solid-Stem Auger & Rotary Wash
 DRILL RIG: CME 75
 HAMMER TYPE: Auto: 140lb, 30"
 SAMPLER TYPE & SIZE: HQ Core
 BOREHOLE DIAMETER: 6"
 BACKFILL METHOD: Cement grout

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
85	1														Driller augered to 19' below crest of levee. Driller set casing (5") to 23.5' below crest of levee.
	2														
	3														
83	4														
	5														
81	6														
	7														
79	8														
	9														
77	10														
	11														
75	12														
	13														
73	14														
	15														
71	16														
	17														
69	18														
	19														
67	20														
	21														
65	22														
	23														
63	24														



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 12B_1235+25
 ENTRY BY: JJW
 CHECKED BY: AJK SHEET 1 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					RECOVERY (%)	LABORATORY					REMARKS		
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)		GRAPHIC LOG	DESCRIPTION	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)		DRY DENSITY (PCF)	% PASSING 200 SIEVE
61	26														
	27														
59	28														
	29														
57	30														
	31														
55	32														
	33														
53	34														
	35														
51	36														
	37														
49	38														
	39														
47	40														
	41														
45	42														
	43														
43	44														
	45														
41	46														
	47														
39	48														
	49														
37	50														
	51														
35	52														
	53														
33	54														
	55														



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 12B_1235+25
ENTRY BY: JJW
CHECKED BY: AJK SHEET 2 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					RECOVERY (%)	LABORATORY					REMARKS							
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)		GRAPHIC LOG	DESCRIPTION	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)		DRY DENSITY (PCF)	% PASSING 200 SIEVE					
31	56																			
	57																			
29	58																			Gravel layer encountered
	59																			
27	60																			Encountered gravel layer ended
	61																			
25	62																			
	63																			
23	64																			
	65																			
21	66																			
	67																			
19	68																			Gravel layer encountered
	69																			
17	70																			
	71																			
15	72																			
	73																			
13	74																			
	75																			
11	76																			
	77																			
9	78																			
	79																			>1' sand lense encountered
7	80																			
	81																			
5	82																			
	83																			
3	84																			
	85																			



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 12B_1235+25
ENTRY BY: JJW
CHECKED BY: AJK SHEET 3 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS		
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE			
-1	86																
	87																
-1	88																
	89																
-3	90																
	91																
-5	92																
	93																
-7	94																
	95																
-9	96																
	97																
-11	98																
	99																
-13	100																
	101																
-15	102																
	103																
-17	104																
	105																
-19	106																
	107																
-21	108																
	109																
-23	110																
	111																
-25	112																
	113	1					Lean CLAY (CL); bluish gray; moist; about 5% fine SAND; medium plasticity fines; 3" coarse gravel in tip of sampler.	17									
-27	114	2						0									
	115	3					SILTY CLAY (CL-ML); dark bluish gray; moist; about 10% fine SAND; low to medium plasticity fines.	100									
-29	116																

Sampling to begin at 95', but still in gravels. Driller continued drilling

Encountered gravel layer ended. Sampler could not latch properly, so cleaned out hole to 113'. Little recovery due to 3" coarse gravel jammed into tip of sampler



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 12B_1235+25
 ENTRY BY: JJW
 CHECKED BY: AJK SHEET 4 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD				GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY				REMARKS	
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT				POCKET PEN. (TSF)	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)		DRY DENSITY (PCF)
117			3				CLAYEY SAND (SC); dark bluish gray; moist; medium to fine SAND; about 45% low to medium plasticity fines.	100						
-31 118							SANDY SILT (ML); dark gray; moist; about 40% fine SAND.							
119			4				Lean CLAY (CL); bluish gray; moist; about 5 to 10% fine SAND; medium plasticity fines; slightly blocky.	89						
-33 120							Lean CLAY with SAND (CL); dark bluish gray; moist; about 15 to 20% medium to fine SAND; medium plasticity fines.							
121							About 25% medium to fine SAND.							
-35 122							SANDY SILT (ML); dark gray; moist; about 45% fine SAND; low plasticity fines; 1/2" lenses of Silt.							
123														
-37 124			5				SILTY SAND (SM); dark gray; moist; about 45% nonplastic fines; 1/2" lenses of Silt.	87						
125							Lean CLAY (CL); bluish gray; moist; about 5 to 10% fine SAND; medium plasticity fines; blocky structure.							
-39 126							SILT with SAND (ML); dark bluish gray; moist; about 20% fine SAND; low to medium plasticity fines; blocky structure.							
127							Poorly graded SAND with SILT (SP-SM); dark gray; moist to wet; medium to fine SAND; about 10% nonplastic fines.							
-41 128							SANDY SILT (ML); dark gray; moist; about 40% fine SAND; nonplastic to low plasticity fines.							
129							Bottom of borehole at 128.5 ft bgs							
-43 130							FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.							
131														
-45 132														
133														
-47 134														
135														
-49 136														
137														
-51 138														
139														
-53 140														
141														
-55 142														
143														
-57 144														
145														
-59 146														



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 12B_1235+25
ENTRY BY: JJW
CHECKED BY: AJK SHEET 5 of 5

LOG OF BORING 13B_1236+25

PROJECT NO: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 LOCATION: N. of Yuba City
 CLIENT: Raito, Inc.
 LOGGED BY: JJW
 DEPTH OF BORING: 104 (ft)

BEGIN DATE: 4/23/2014
 COMPLETION DATE: 4/24/2014
 SURFACE ELEVATION: 87.7 (ft)
 WATER DEPTH: N/A
 READING TAKEN: N/A
 HAMMER EFFICIENCY:

DRILLING CONTRACTOR: GeoEx Subsurface, Driller: Tom S.
 DRILLING METHOD: Solid-Stem Auger & Rotary Wash
 DRILL RIG: CME 75
 HAMMER TYPE: Auto: 140lb, 30"
 SAMPLER TYPE & SIZE: HQ Core
 BOREHOLE DIAMETER: 6"
 BACKFILL METHOD: Cement grout

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
86	1														Driller augered to 19' below crest of levee. Driller set casing (5") to 23.5' below crest of levee.
	2														
	3														
84	4														
	5														
82	6														
	7														
80	8														
	9														
78	10														
	11														
76	12														
	13														
74	14														
	15														
72	16														
	17														
70	18														
	19														
68	20														
	21														
66	22														
	23														
64	24														



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 13B_1236+25
 ENTRY BY: JJW
 CHECKED BY: BDC SHEET 1 of 4

ELEVATION (ft)	DEPTH (ft)	FIELD					RECOVERY (%)	LABORATORY					REMARKS		
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)		GRAPHIC LOG	DESCRIPTION	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)		DRY DENSITY (PCF)	% PASSING 200 SIEVE
62	26														
	27														
60	28														
	29														
58	30														
	31														
56	32														
	33														
54	34														
	35														
52	36														
	37														
50	38														
	39														
48	40														
	41														
46	42														
	43														
44	44														
	45														
42	46														
	47														
40	48														
	49														
38	50														
	51														
36	52														
	53														
34	54														
	55														



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 13B_1236+25
ENTRY BY: JJW
CHECKED BY: BDC SHEET 2 of 4

LOG OF BORING 14B_1237+25

PROJECT NO: 14-148.1	BEGIN DATE: 4/8/2014	DRILLING CONTRACTOR: GeoEx Subsurface, Driller: Tom S.
PROJECT: SBFCA-C Verif. Borings	COMPLETION DATE: 4/9/2014	DRILLING METHOD: Solid-Stem Auger & Rotary Wash
LOCATION: N. of Yuba City	SURFACE ELEVATION: 87.5 (ft)	DRILL RIG: CME 75
CLIENT: Raito, Inc.	SURFACE CONDITION: Gravel	HAMMER TYPE: Auto: 140lb, 30"
LOGGED BY: JJW	WATER DEPTH: N/A	SAMPLER TYPE & SIZE: HQ Core
DEPTH OF BORING: 126 (ft)	READING TAKEN: N/A	BOREHOLE DIAMETER: 6"
	HAMMER EFFICIENCY:	BACKFILL METHOD: Cement grout

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
86	1														
	2														
	3														
84	4														
	5														
82	6														
	7														
80	8														
	9														
78	10														
	11														
76	12														
	13														
74	14														
	15														
72	16														
	17														
70	18														
	19														
68	20														
	21														
66	22														
	23														
64	24														



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 14B_1237+25
 ENTRY BY: JJW
 CHECKED BY: BDC SHEET 1 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
							(continued).								
62	26														
	27														
60	28														
	29														
58	30														
	31														
56	32														
	33														
54	34														
	35														
52	36														
	37														
50	38														
	39														
48	40														
	41														
46	42														
	43														
44	44														
	45														
42	46														
	47														
40	48														
	49														
38	50														
	51														
36	52														
	53														
34	54														
	55														



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(916) 455 4225

PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 14B_1237+25
ENTRY BY: JJW
CHECKED BY: BDC SHEET 2 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					RECOVERY (%)	LABORATORY					REMARKS					
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)		GRAPHIC LOG	DESCRIPTION	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)		DRY DENSITY (PCF)	% PASSING 200 SIEVE			
32	56																	
	57																	
30	58																	
	59																	
28	60																	
	61																	
26	62																	
	63																	
24	64																	
	65																	
22	66																	
	67																	
20	68																	
	69																	
18	70																	
	71																	
16	72																	
	73																	
14	74																	
	75																	
12	76																	
	77																	
10	78																	
	79																	
8	80																	
	81																	
6	82																	
	83																	
4	84																	
	85																	

Driller stated approximate gravel layer @ ~60'

JJW onsite at 82'. Did not observe drilling in upper 82'



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 14B_1237+25
ENTRY BY: JJW
CHECKED BY: BDC SHEET 3 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS	
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE		
	117		1						0							
	118		2	17 19 22	41				0							
	119															
	120		3				Lean CLAY (CL); very stiff to hard; dark bluish gray; moist; about 5 to 10% fine SAND; medium plasticity fines; blocky.	78								
	121															
	122															
	123						SILTY SAND (SM); dark gray; moist to wet; medium to fine SAND; about 35 to 40% nonplastic to low plasticity fines.									
	124		4				SANDY SILT (ML); hard; dark gray; moist; about 30% fine SAND; low plasticity fines.	88								
	125						Lean CLAY (CL); hard; dark bluish gray; moist; about 5 to 10% fine SAND; medium plasticity fines; blocky.									
	126						Bottom of borehole at 126.0 ft bgs									
	127						FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.									
	128															
	129															
	130															
	131															
	132															
	133															
	134															
	135															
	136															
	137															
	138															
	139															
	140															
	141															
	142															
	143															
	144															
	145															
	146															



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 14B_1237+25
 ENTRY BY: JJW
 CHECKED BY: BDC SHEET 5 of 5

LOG OF BORING 15B_1238+25

PROJECT NO: 14-148.1	BEGIN DATE: 5/8/2014	DRILLING CONTRACTOR: GeoEx Subsurface, Driller: Rian H.
PROJECT: SBFCA-C Verif. Borings	COMPLETION DATE: 5/9/2014	DRILLING METHOD: Solid-Stem Auger & Rotary Wash
LOCATION: N. of Yuba City	SURFACE ELEVATION: 87.1(ft)	DRILL RIG: CME 75
CLIENT: Raito, Inc.	SURFACE CONDITION: Gravel	HAMMER TYPE: Auto: 140lb, 30"
LOGGED BY: JRO	WATER DEPTH: N/A	SAMPLER TYPE & SIZE: HQ Core, SPT (1.4"ID)
DEPTH OF BORING: 140(ft)	READING TAKEN: N/A	BOREHOLE DIAMETER: 6"
	HAMMER EFFICIENCY:	BACKFILL METHOD: Cement grout

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
85	1														Driller augered to 19' below crest of levee. Driller set casing (5") to 23.5' below crest of levee.
	2														
	3														
83	4														
	5														
81	6														
	7														
79	8														
	9														
77	10														
	11														
75	12														
	13														
73	14														
	15														
71	16														
	17														
69	18														
	19														
67	20														
	21														
65	22														
	23														
63	24														



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 15B_1238+25
 ENTRY BY: JJW
 CHECKED BY: AJK SHEET 1 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					RECOVERY (%)	LABORATORY					REMARKS		
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)		GRAPHIC LOG	DESCRIPTION	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)		DRY DENSITY (PCF)	% PASSING 200 SIEVE
61	26														
	27														
59	28														
	29														
57	30														
	31														
55	32														
	33														
53	34														
	35														
51	36														
	37														
49	38														
	39														
47	40														
	41														
45	42														
	43														
43	44														
	45														
41	46														
	47														
39	48														
	49														
37	50														
	51														
35	52														
	53														
33	54														
	55														



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 15B_1238+25
ENTRY BY: JJW
CHECKED BY: AJK SHEET 2 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					RECOVERY (%)	LABORATORY					REMARKS							
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)		GRAPHIC LOG	DESCRIPTION	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)		DRY DENSITY (PCF)	% PASSING 200 SIEVE					
31	56																			
	57																			
29	58																			
	59																			
27	60																			
	61																			
25	62																			
	63																			
23	64																			Gravel layer encountered
	65																			
21	66																			Gravel, sand and wood fragments in mud cuttings
	67																			
19	68																			
	69																			
17	70																			Heavier drill chatter, possibly coarser gravels and cobbles
	71																			
15	72																			
	73																			
13	74																			Moderate drill chatter
	75																			
11	76																			
	77																			
9	78																			
	79																			
7	80																			
	81																			
5	82																			
	83																			
3	84																			
	85																			



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 15B_1238+25
 ENTRY BY: JJW
 CHECKED BY: AJK SHEET 3 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS		
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE			
-1	86																
-1	87																
-1	88																
-1	89																
-3	90																Gravel layer ended
-3	91																Gravel layer encountered
-5	92																
-5	93																
-7	94																
-7	95																
-9	96																
-9	97																
-11	98																
-11	99																
-13	100																
-13	101																
-15	102																
-15	103																
-17	104																
-17	105																
-19	106																
-19	107																
-21	108																
-21	109																Gravel layer ended
-23	110		1					25									
-23	111		2					0									Cobble sized clast stuck in shoe; recovery not a representative sample
-25	112		3	14 16 22	38			8									
-25	113																
-27	114		4					89									
-27	115																
-29	116																



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 15B_1238+25
 ENTRY BY: JJW
 CHECKED BY: AJK SHEET 4 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD				GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS	
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT				POCKET PEN. (TSF)	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)		% PASSING 200 SIEVE
117	-31		4			>4.5	Hard; greenish gray; low to medium plasticity fines; non blocky structure.	89							
118						>4.5									
119	-33		5			>4.5	SANDY lean CLAY (CL); hard; greenish gray; moist; about 30% fine SAND; low to medium plasticity fines.	100							
120						4.0	Lean CLAY (CL); hard; greenish gray; moist; about 5 to 10% fine SAND; medium plasticity fines; slightly blocky.								
121															
122	-35					>4.5	Lean CLAY with SAND (CL); hard; dark greenish gray; moist; about 20% fine SAND; medium plasticity fines; minor Poorly Graded Sand with Clay (SP-SC) lense.								
123			6			4.0	SILTY CLAY (CL-ML); greenish black; moist; about 5% fine SAND; low plasticity fines.	81							
124							Lean CLAY (CL); hard; greenish gray; moist; about 5% fine SAND; medium plasticity fines.								
125						>4.5	SANDY elastic SILT (MH); hard; greenish gray; moist; about 30% fine SAND; low plasticity fines.								
126	-37		7			4.0		97							
127															
128	-41						SILTY CLAY with SAND (CL-ML); hard; greenish black; moist; about 20% fine SAND; low plasticity fines.	100							
129			8			>4.5									
130	-43		9				SILTY SAND (SM); greenish black; moist; about 15% fine SAND; nonplastic fines.	54							
131															
132	-45						SILTY CLAY (CL-ML); dark greenish gray; moist; about 10% fine SAND; low plasticity fines.								
133							~6" lense of Silty Sand (SM).								
134	-47		10				Elastic SILT with SAND (MH); dark greenish gray; moist; about 15 to 20% fine SAND; low plasticity fines.	67							
135						3.25									
136	-49						Greenish black.								
137						2.5									
138	-51		11				SILTY SAND (SM); black; moist; about 5% coarse to fine GRAVEL; medium to fine SAND; about 15% nonplastic fines.	53							
139															
140	-53						Bottom of borehole at 140.0 ft bgs								
141							FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.								
142	-55														
143															
144	-57														
145															
146	-59														



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 15B_1238+25
ENTRY BY: JJW
CHECKED BY: AJK SHEET 5 of 5

LOG OF BORING 16B_1239+25

PROJECT NO: 14-148.1	BEGIN DATE: 5/7/2014	DRILLING CONTRACTOR: GeoEx Subsurface, Driller: Rian H.
PROJECT: SBFCA-C Verif. Borings	COMPLETION DATE: 5/8/2014	DRILLING METHOD: Solid-Stem Auger & Rotary Wash
LOCATION: N. of Yuba City	SURFACE ELEVATION: 87.1(ft)	DRILL RIG: CME 75
CLIENT: Raito, Inc.	SURFACE CONDITION: Gravel	HAMMER TYPE: Auto: 140lb, 30"
LOGGED BY: JRO	WATER DEPTH: N/A	SAMPLER TYPE & SIZE: HQ Core, SPT (1.4"ID)
DEPTH OF BORING: 140(ft)	READING TAKEN: N/A	BOREHOLE DIAMETER: 6"
	HAMMER EFFICIENCY:	BACKFILL METHOD: Cement grout

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
85	1														Driller augered to 19' below crest of levee. Driller set casing (5") to 23.5' below crest of levee.
	2														
	3														
83	4														
	5														
81	6														
	7														
79	8														
	9														
77	10														
	11														
75	12														
	13														
73	14														
	15														
71	16														
	17														
69	18														
	19														
67	20														
	21														
65	22														
	23														
63	24														



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 16B_1239+25
 ENTRY BY: JJW
 CHECKED BY: BDC SHEET 1 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					RECOVERY (%)	LABORATORY					REMARKS		
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)		GRAPHIC LOG	DESCRIPTION	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)		DRY DENSITY (PCF)	% PASSING 200 SIEVE
61	26														
	27														
59	28														
	29														
57	30														
	31														
55	32														
	33														
53	34														
	35														
51	36														
	37														
49	38														
	39														
47	40														
	41														
45	42														
	43														
43	44														
	45														
41	46														
	47														
39	48														
	49														
37	50														
	51														
35	52														
	53														
33	54														
	55														



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 16B_1239+25
ENTRY BY: JJW
CHECKED BY: BDC SHEET 2 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS					
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE						
1	86																			
	87																			
-1	88																			
	89																			
-3	90																			
	91																			
-5	92																			
	93																			
-7	94																			
	95																			
-9	96																			
	97																			
-11	98																			
	99																			
-13	100																			
	101																			
-15	102																			
	103																			
-17	104																			
	105																			
-19	106																			
	107																			
-21	108																			
	109																			
-23	110																			
	111																			
-25	112		1	19 23 23	46			Lean CLAY (CL); medium stiff; greenish gray; moist; about 5% fine SAND; low to medium plasticity fines.	100											
	113					2.5														
-27	114		2					Lean CLAY with SAND (CL); blue gray; moist; about 15 to 25% fine SAND; low to medium plasticity fines.	80											
	115							Lean CLAY with SAND (CL) (continued).												
-29	116																			

Raito Field Rep (J. Miller) stated gravel layer encountered

Heavier drill chatter, possibly coarser gravels and cobbles

Gravel layer ended



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 16B_1239+25
 ENTRY BY: JJW
 CHECKED BY: BDC SHEET 4 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD				GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS	
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT				POCKET PEN. (TSF)	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)		% PASSING 200 SIEVE
117			3			3.75	Lean CLAY (CL); very stiff; greenish gray; moist; about 5% fine SAND; medium plasticity fines.	100							
-31	118		4			2.5	SANDY SILTY CLAY (CL-ML); very stiff; dark greenish gray; moist; about 20 to 30% fine SAND; low plasticity fines.	93							
	119					3.0									
						3.5	SILTY, CLAYEY SAND (SC-SM); very dark greenish gray; moist; fine SAND; about 40% low plasticity fines.								
-33	120														
	121		5			>4.5	Lean CLAY (CL); hard; greenish gray; moist; about 5 to 10% fine SAND; medium plasticity fines.	100							
-35	122					>4.5	Lean CLAY with SAND (CL); hard; greenish gray; moist; about 30% fine SAND; medium plasticity fines.								
	123					>4.5									
-37	124		6			>4.5	SILTY CLAY (CL-ML); very dark greenish gray; moist; about 5% fine SAND; low to medium plasticity fines.	97							
	125					>4.5									
-39	126					>4.5	SILTY SAND (SM); black to greenish black; moist; fine SAND; about 25 to 35% low plasticity fines.	77							
	127		7			>4.5	Stratified with thinly interbedded lenses of Silty Lean Clay.								
-41	128					>4.5	SILT with SAND (ML); greenish black; moist; about 15 to 25% fine SAND; low plasticity fines.								
	129					>4.5	Lean CLAY (CL); hard; greenish black; moist; about 5 to 10% fine SAND; medium plasticity fines.								
-43	130		8			>4.5	SILTY SAND (SM); greenish black; moist; about 35 to 45% fine SAND; low plasticity fines.	67							
	131					>4.5	About 40 to 45% fine SAND.								
-45	132					>4.5									
	133					>4.5									
-47	134		9			>4.5	SILTY SAND (SM); greenish black to black; moist; about 20 to 25% medium to fine SAND; nonplastic fines.	62							
	135					>4.5									
-49	136					>4.5									
	137					>4.5									
-51	138		10			>4.5	Poorly graded SAND (SP); greenish black to black; moist; medium to fine SAND; about 5% nonplastic fines.	67							
	139					>4.5									
-53	140					>4.5	Bottom of borehole at 140.0 ft bgs								
	141					>4.5	FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.								
-55	142					>4.5									
	143					>4.5									
-57	144					>4.5									
	145					>4.5									
-59	146					>4.5									



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 16B_1239+25
 ENTRY BY: JJW
 CHECKED BY: BDC SHEET 5 of 5

LOG OF BORING 17B_1240+25

PROJECT NO: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 LOCATION: N. of Yuba City
 CLIENT: Raito, Inc.
 LOGGED BY: JRO
 DEPTH OF BORING: 140(ft)

BEGIN DATE: 5/6/2014
 COMPLETION DATE: 5/7/2014
 SURFACE ELEVATION: 87.3(ft)
 SURFACE CONDITION: Gravel
 WATER DEPTH: N/A
 READING TAKEN: N/A
 HAMMER EFFICIENCY:

DRILLING CONTRACTOR: GeoEx Subsurface, Driller: Rian H.
 DRILLING METHOD: Solid-Stem Auger & Rotary Wash
 DRILL RIG: CME 75
 HAMMER TYPE: Auto: 140lb, 30"
 SAMPLER TYPE & SIZE: HQ Core, SPT (1.4"ID)
 BOREHOLE DIAMETER: 6"
 BACKFILL METHOD: Cement grout

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
85	1														Driller augered to 19' below crest of levee. Driller set casing (5") to 23.5' below crest of levee.
	2														
	3														
83	4														
	5														
81	6														
	7														
79	8														
	9														
77	10														
	11														
75	12														
	13														
73	14														
	15														
71	16														
	17														
69	18														
	19														
67	20														
	21														
65	22														
	23														
63	24														



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 17B_1240+25
 ENTRY BY: JJW
 CHECKED BY: JJW SHEET 1 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					RECOVERY (%)	LABORATORY					REMARKS		
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)		GRAPHIC LOG	DESCRIPTION	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)		DRY DENSITY (PCF)	% PASSING 200 SIEVE
61	26														
	27														
59	28														
	29														
57	30														
	31														
55	32														
	33														
53	34														
	35														
51	36														
	37														
49	38														
	39														
47	40														
	41														
45	42														
	43														
43	44														
	45														
41	46														
	47														
39	48														
	49														
37	50														
	51														
35	52														
	53														
33	54														
	55														



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 17B_1240+25
 ENTRY BY: JJW
 CHECKED BY: JJW SHEET 2 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS		
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE			
-1	86																
	87																
-1	88																
	89																
-3	90																
	91																
-5	92																Raito Field Rep (J. Miller) stated gravel layer encountered
	93																
-7	94																
	95																
-9	96																
	97																
-11	98																
	99																
-13	100																
	101																
-15	102																
	103																
-17	104																
	105																
-19	106																
	107																
-21	108																
	109																
-23	110																
	111																
-25	112																
	113	1	19	45			SANDY SILT (ML); medium stiff; dark greenish gray; moist; about 30% fine SAND; low plasticity fines.	100									
	114	2	18				SILTY SAND (SM); medium dense; greenish black; moist; about 30% fine SAND; nonplastic to low plasticity fines; Stratified with minor lenses (<1/4") of Poorly Graded Sand (SP).	60									
	115		27				SILTY SAND (SM) (continued).										
-29	116																Gravel layer ended



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 17B_1240+25
 ENTRY BY: JJW
 CHECKED BY: JJW SHEET 4 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD				GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS	
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT				POCKET PEN. (TSF)	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)		% PASSING 200 SIEVE
117			3			>4.5	Lean CLAY (CL); hard; very dark greenish gray; moist; about 5 to 10% fine SAND; low to medium plasticity fines; blocky structure.	80							
-31	118						Poorly graded SAND with SILT (SP-SM); greenish black; moist; medium to fine SAND; about 10% nonplastic fines.								
119			4				SILTY, CLAYEY SAND (SC-SM); very dark greenish gray; moist; fine SAND; about 35 to 40% low plasticity fines.	73							
-33	120														
121															
-35	122		5				Lean CLAY (CL); hard; very dark greenish gray; moist; trace fine SAND; medium plasticity fines; blocky structure.	83							
123						>4.5									
-37	124		6				Poorly graded SAND (SP); greenish black; moist; medium to fine SAND; trace nonplastic fines.	17							
125															
-39	126						Poorly graded SAND with SILT (SP-SM); greenish black; moist; fine SAND; nonplastic fines; stratified with minor lenses (<1/8").	70							
127			7												
-41	128						Medium to fine SAND.								
129			8												
-43	130						Lean CLAY (CL); hard; very dark greenish gray; moist; about 5% fine SAND; low to medium plasticity fines; blocky structure.	100							
131						>4.5									
-45	132		9												
133							SILTY CLAY (CL-ML); very dark greenish gray; moist; about 10% fine SAND; low to medium plasticity fines; blocky structure.	75							
-47	134		10			2.75									
135							SILTY SAND (SM); greenish black; moist; about 15 to 20% medium to fine SAND; low plasticity fines.	57							
-49	136						Stratified with 1" to 1.5" lenses of Sandy Silt (ML).								
137			11												
-51	138						Few fine GRAVEL; about 15% fines.	58							
139			12												
-53	140						Bottom of borehole at 140.0 ft bgs	63							
141							FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.								
-55	142														
143															
-57	144														
145															
-59	146														



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 17B_1240+25
ENTRY BY: JJW
CHECKED BY: JJW SHEET 5 of 5

LOG OF BORING 18B_1241+25

PROJECT NO: 14-148.1	BEGIN DATE: 5/5/2014	DRILLING CONTRACTOR: GeoEx Subsurface, Driller: Rian H.
PROJECT: SBFCA-C Verif. Borings	COMPLETION DATE: 5/6/2014	DRILLING METHOD: Solid-Stem Auger & Rotary Wash
LOCATION: N. of Yuba City	SURFACE ELEVATION: 86.8(ft)	DRILL RIG: CME 75
CLIENT: Raito, Inc.	SURFACE CONDITION: Gravel	HAMMER TYPE: Auto: 140lb, 30"
LOGGED BY: JJW	WATER DEPTH: N/A	SAMPLER TYPE & SIZE: HQ Core, SPT (1.4"ID)
DEPTH OF BORING: 140(ft)	READING TAKEN: N/A	BOREHOLE DIAMETER: 6"
	HAMMER EFFICIENCY:	BACKFILL METHOD: Cement grout

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
85	1														Driller augered to 19' below crest of levee. Driller set casing (5") to 23.5' below crest of levee.
	2														
	3														
83	4														
	5														
81	6														
	7														
79	8														
	9														
77	10														
	11														
75	12														
	13														
73	14														
	15														
71	16														
	17														
69	18														
	19														
67	20														
	21														
65	22														
	23														
63	24														



Crawford & Associates, Inc.
 Geotechnical Engineering, Design and Construction Services

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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 18B_1241+25
 ENTRY BY: JJW
 CHECKED BY: AJK SHEET 1 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS	
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)			GRAPHIC LOG	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)		% PASSING 200 SIEVE
61	26														
	27														
59	28														
	29														
57	30														
	31														
55	32														
	33														
53	34														
	35														
51	36														
	37														
49	38														
	39														
47	40														
	41														
45	42														
	43														
43	44														
	45														
41	46														
	47														
39	48														
	49														
37	50														
	51														
35	52														
	53														
33	54														
	55														



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 18B_1241+25
ENTRY BY: JJW
CHECKED BY: AJK SHEET 2 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS		
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE			
-1	86																
	87																
-1	88																
	89																
-3	90																
	91																
-5	92																
	93																
-7	94																
	95																
-9	96																
	97																
-11	98																
	99																
-13	100																
	101																
-15	102																
	103																
-17	104																
	105																
-19	106																
	107																
-21	108																
	109																
-23	110																
	111																
-25	112																
	113																
-27	114		1	14	72		Lean CLAY (CL); bluish gray; moist; about 5% fine SAND; medium plasticity fines.	11									Gravel layer ended
	115			42			Lean CLAY (CL) (continued).										
				30													
-29	116																Driller overdrilled from 115.5' to 116' in attempt to remove any remaining gravels

ELEVATION (ft)	DEPTH (ft)	FIELD				GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS	
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT				POCKET PEN. (TSF)	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)		% PASSING 200 SIEVE
-31	117		2				Hard.	61							
	118														
	119		3				SILTY SAND (SM); dark bluish gray; moist; medium to fine SAND; about 25% nonplastic fines; stratified with 1/8" to 1/2" layers of Silt. Wet.	80							
-33	120						SILT with SAND (ML); dark bluish gray to bluish gray; moist; about 10 to 20% fine SAND; low to medium plasticity fines. Blocky structure.								
	121														
	122		4				Lean CLAY (CL); bluish gray; moist; about 5% fine SAND; medium plasticity fines; blocky structure.	93							
	123														
-35	124		5				SILT with SAND (ML); dark bluish gray; moist; about 20 to 25% fine SAND; low plasticity fines. Blocky texture. Stratified with 1/4" to 2" layers of Poorly Graded Sand with Silt.	77							
	125														
	126														
	127		6					100							
	128						SILTY SAND (SM); dark gray; wet; coarse to fine SAND; about 15% nonplastic fines.								
-41	129		7					100							
	130						Lean CLAY (CL); dark bluish gray; moist; about 5% fine SAND; medium plasticity fines; blocky structure.								
	131														
	132		8				SILTY SAND (SM); dark gray; moist; fine SAND; about 40 to 50% nonplastic to low plasticity fines.	60							
	133						Poorly graded SAND (SP); dark gray; wet; fine SAND; about 5% nonplastic fines.								
-45	134		9					63							
	135														
	136						SANDY SILT (ML); dark gray; moist; about 40% fine SAND; nonplastic to low plasticity fines; stratified with 1/8" to 1/2" layers of Silty Sand.								
	137		10				SILTY SAND (SM); dark gray; moist; fine SAND; about 40% nonplastic fines; stratified with 1/8" to 1/2" layers of Sandy Silt.	71							
	138						No interbeds of Silt.								
	139						Poorly graded SAND with SILT (SP-SM); dark gray; wet; coarse to fine SAND; about 10% nonplastic fines.								
-51	140						Bottom of borehole at 140.0 ft bgs								
	141														
	142						FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.								
	143														
	144														
	145														
-53	146														



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 18B_1241+25
ENTRY BY: JJW
CHECKED BY: AJK SHEET 5 of 5

LOG OF BORING 19B_1242+25

PROJECT NO: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 LOCATION: N. of Yuba City
 CLIENT: Raito, Inc.
 LOGGED BY: JJW
 DEPTH OF BORING: 140(ft)

BEGIN DATE: 5/5/2014
 COMPLETION DATE: 5/5/2014
 SURFACE ELEVATION: 86.9(ft)
 WATER DEPTH: N/A
 READING TAKEN: N/A
 HAMMER EFFICIENCY:

DRILLING CONTRACTOR: GeoEx Subsurface, Driller: Rian H.
 DRILLING METHOD: Solid-Stem Auger & Rotary Wash
 DRILL RIG: CME 75
 HAMMER TYPE: Auto: 140lb, 30"
 SAMPLER TYPE & SIZE: HQ Core, SPT (1.4"ID)
 BOREHOLE DIAMETER: 6"
 BACKFILL METHOD: Cement grout

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
85	1														Driller augered to 19' below crest of levee. Driller set casing (5") to 23.5' below crest of levee.
	2														
	3														
83	4														
	5														
81	6														
	7														
79	8														
	9														
77	10														
	11														
75	12														
	13														
73	14														
	15														
71	16														
	17														
69	18														
	19														
67	20														
	21														
65	22														
	23														
63	24														



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 19B_1242+25
 ENTRY BY: JJW
 CHECKED BY: AJK SHEET 1 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					RECOVERY (%)	LABORATORY					REMARKS	
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)		GRAPHIC LOG	DESCRIPTION	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)		DRY DENSITY (PCF)
61	26													
	27													
59	28													
	29													
57	30													
	31													
55	32													
	33													
53	34													
	35													
51	36													
	37													
49	38													
	39													
47	40													
	41													
45	42													
	43													
43	44													
	45													
41	46													
	47													
39	48													
	49													
37	50													
	51													
35	52													
	53													
33	54													
	55													



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 19B_1242+25
ENTRY BY: JJW
CHECKED BY: AJK SHEET 2 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS				
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE					
31	56																		
	57																		
29	58																		
	59																		
27	60																		
	61																		
25	62																		
	63																		
23	64																		
	65																		
21	66																		
	67																		
19	68																		
	69																		
17	70																		
	71																		
15	72																		
	73																		
13	74																		
	75																		
11	76																		
	77																		
9	78																		
	79																		
7	80																		
	81																		
5	82																		
	83																		
3	84																		
	85																		

Raito Field Rep (J. Miller) stated gravel layer encountered

Raito Field Rep (J. Miller) stated gravel layer ended



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 19B_1242+25
 ENTRY BY: JJW
 CHECKED BY: AJK SHEET 3 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS		
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE			
-1	86																
	87																
-1	88																
	89																
-3	90																
	91																
-5	92																Raito Field Rep (J. Miller) stated gravel layer encountered
	93																
-7	94																
	95																
-9	96																
	97																
-11	98																
	99																
-13	100																
	101																
-15	102																
	103																
-17	104																
	105																
-19	106																
	107																
-21	108																
	109																
-23	110																
	111																
-25	112																
	113																
-27	114		1	17	29			Lean CLAY (CL); bluish gray; moist; about 5% medium to fine SAND; low plasticity fines.	22								Gravel layer ended
	115			12		1.5		Lean CLAY (CL) <i>(continued)</i> .									
				17													
-29	116		2					SANDY lean CLAY (CL); dark bluish gray; moist; about	89								Driller switched from bentonite mix mud to polymer mix mud



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 19B_1242+25
 ENTRY BY: JJW
 CHECKED BY: AJK SHEET 4 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD				GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS	
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT				POCKET PEN. (TSF)	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)		% PASSING 200 SIEVE
117			2				50% fine SAND; low to medium plasticity fines. SANDY SILT (ML); brown; moist; about 35% fine SAND; low plasticity fines.	89							
-31	118					>4.5	Lean CLAY (CL); dark bluish gray; moist; about 10 to 15% fine SAND; low to medium plasticity fines; blocky structure.								
	119		3					57							
-33	120						SILTY SAND (SM); dark bluish gray; moist; fine SAND; about 30% low plasticity fines.								
	121						CLAYEY SAND (SC); dark bluish gray; moist; fine SAND; about 30% low to medium plasticity fines.								
-35	122		4				SILTY SAND (SM); dark bluish gray; moist; fine SAND; about 20% nonplastic fines.	83							
	123						Stratified with 1/8" layers of Silt (ML).								
-37	124		5				Poorly graded SAND with SILT (SP-SM); dark gray; wet; medium to fine SAND; about 10% nonplastic fines.	67							
	125						SILTY SAND (SM); dark gray; moist; medium to fine SAND; about 15% nonplastic to low plasticity fines.								
-39	126						Elastic SILT with SAND (MH); dark bluish gray; moist; about 20% fine SAND; low plasticity fines.								
	127		6				Lean CLAY (CL); bluish gray; moist; about 5% fine SAND; low to medium plasticity fines; blocky structure.	88							
-41	128						3" layer of Silty Sand (SM).								
	129		7					80							
-43	130						SANDY SILT (ML); dark bluish gray; moist; about 35 to 40% medium to fine SAND; low plasticity fines.								
	131		8				SILTY SAND (SM); dark bluish gray; moist; medium to fine SAND; about 20% nonplastic to low plasticity fines.	53							
-45	132						Poorly graded SAND with SILT (SP-SM); dark gray; wet; medium to fine SAND; about 10% nonplastic fines.								
	133		9					73							
-47	134														
	135														
-49	136		10				About 5 to 10% nonplastic fines.	50							
	137														
-51	138														
	139		11				Poorly graded SAND (SP); dark gray; wet; coarse to fine SAND; about 5% nonplastic fines.	100							
-53	140						Bottom of borehole at 140.0 ft bgs								
	141						FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.								
-55	142														
	143														
-57	144														
	145														
-59	146														



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 19B_1242+25
ENTRY BY: JJW
CHECKED BY: AJK SHEET 5 of 5

LOG OF BORING 20B_1243+25

PROJECT NO: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 LOCATION: N. of Yuba City
 CLIENT: Raito, Inc.
 LOGGED BY: JRO
 DEPTH OF BORING: 140(ft)

BEGIN DATE: 5/1/2014
 COMPLETION DATE: 5/2/2014
 SURFACE ELEVATION: 87.1(ft)
 WATER DEPTH: N/A
 READING TAKEN: N/A
 HAMMER EFFICIENCY:

DRILLING CONTRACTOR: GeoEx Subsurface, Driller: Tom S.
 DRILLING METHOD: Solid-Stem Auger & Rotary Wash
 DRILL RIG: CME 75
 HAMMER TYPE: Auto: 140lb, 30"
 SAMPLER TYPE & SIZE: HQ Core
 BOREHOLE DIAMETER: 6"
 BACKFILL METHOD: Cement grout

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
85	1														Driller augered to 19' below crest of levee. Driller set casing (5") to 23.5' below crest of levee.
	2														
	3														
83	4														
	5														
81	6														
	7														
79	8														
	9														
77	10														
	11														
75	12														
	13														
73	14														
	15														
71	16														
	17														
69	18														
	19														
67	20														
	21														
65	22														
	23														
63	24														



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 20B_1243+25
 ENTRY BY: JJW
 CHECKED BY: AJK SHEET 1 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					RECOVERY (%)	LABORATORY					REMARKS		
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)		GRAPHIC LOG	DESCRIPTION	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)		DRY DENSITY (PCF)	% PASSING 200 SIEVE
61	26														
	27														
59	28														
	29														
57	30														
	31														
55	32														
	33														
53	34														
	35														
51	36														
	37														
49	38														
	39														
47	40														
	41														
45	42														
	43														
43	44														
	45														
41	46														
	47														
39	48														
	49														
37	50														
	51														
35	52														
	53														
33	54														
	55														



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(916) 455 4225

PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 20B_1243+25
ENTRY BY: JJW
CHECKED BY: AJK SHEET 2 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD				GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS	
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT				POCKET PEN. (TSF)	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)		% PASSING 200 SIEVE
117	-31		3				CLAYEY SAND (SC); dark bluish gray; moist; fine SAND; some medium plasticity fines.	90							
118						2.5	SILTY SAND (SM); very stiff; dark bluish gray; moist; fine SAND; some low plasticity fines; stratified with minor Lean Clay layers.								
119	-33		4				Low to medium plasticity fines.	60							
120							Lean CLAY (CL); dark greenish gray; moist; little fine SAND; low to medium plasticity fines.								
121							Very stiff.								
122	-35					3.5	Medium plasticity fines.								
123							Hard; greenish black; low plasticity fines.								
124	-37		5				Very dark greenish gray; lense of Silty Sand (SM).	83							
125							Lean CLAY (CL); hard; dark greenish gray; moist; trace fine SAND; medium plasticity fines.								
126	-39					>4.5									
127			6				SILTY CLAY (CL-ML); dark greenish gray; moist; trace fine SAND; low to medium plasticity fines.	80							
128	-41						SANDY CLAYEY SILT (ML/CL); greenish black; moist; some fine SAND; low plasticity fines.								
129			7				SILTY, CLAYEY SAND (SC-SM); greenish black; moist; fine SAND; some low plasticity fines.	97							
130	-43						SILTY SAND (SM); greenish black; moist; medium to fine SAND; about 30% nonplastic to low plasticity fines; moderate cementation.								
131															
132	-45		8					50							
133															
134	-47		9												
135															
136	-49														
137			10					39							
138	-51														
139															
140	-53						Bottom of borehole at 140.0 ft bgs								
141							FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.								
142	-55														
143															
144	-57														
145															
146	-59														



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 20B_1243+25
ENTRY BY: JJW
CHECKED BY: AJK SHEET 5 of 5

LOG OF BORING 21B_1244+25

PROJECT NO: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 LOCATION: N. of Yuba City
 CLIENT: Raito, Inc.
 LOGGED BY: JRO
 DEPTH OF BORING: 141(ft)

BEGIN DATE: 4/30/2014
 COMPLETION DATE: 5/1/2014
 SURFACE ELEVATION: 87.1(ft)
 WATER DEPTH: N/A
 READING TAKEN: N/A
 HAMMER EFFICIENCY:

DRILLING CONTRACTOR: GeoEx Subsurface, Driller: Tom S.
 DRILLING METHOD: Solid-Stem Auger & Rotary Wash
 DRILL RIG: CME 75
 HAMMER TYPE: Auto: 140lb, 30"
 SAMPLER TYPE & SIZE: HQ Core
 BOREHOLE DIAMETER: 6"
 BACKFILL METHOD: Cement grout

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
85	1														Driller augered to 19' below crest of levee. Driller set casing (5") to 23.5' below crest of levee.
	2														
	3														
83	4														
	5														
81	6														
	7														
79	8														
	9														
77	10														
	11														
75	12														
	13														
73	14														
	15														
71	16														
	17														
69	18														
	19														
67	20														
	21														
65	22														
	23														
63	24														



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 21B_1244+25
 ENTRY BY: JJW
 CHECKED BY: AJK SHEET 1 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					RECOVERY (%)	LABORATORY					REMARKS		
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)		GRAPHIC LOG	DESCRIPTION	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)		DRY DENSITY (PCF)	% PASSING 200 SIEVE
61	26														
	27														
59	28														
	29														
57	30														
	31														
55	32														
	33														
53	34														
	35														
51	36														
	37														
49	38														
	39														
47	40														
	41														
45	42														
	43														
43	44														
	45														
41	46														
	47														
39	48														
	49														
37	50														
	51														
35	52														
	53														
33	54														
	55														

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS	
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE		
1	86															Raito Field Rep (J. Miller) stated gravel layer ended
-1	87															Raito Field Rep (J. Miller) stated gravel layer encountered
-3	88															Raito Field Rep (J. Miller) stated gravel layer ended
-5	89															
-7	90															
-9	91															
-11	92															
-13	93															
-15	94															
-17	95															
-19	96															
-21	97															
-23	98															
-25	99															
-27	100															
-29	101															
	102															
	103															
	104															
	105															
	106															Gravel layer encountered
	107															
	108															
	109															
	110															
	111															
	112															Gravel layer ended
	113															
	114	1						0								Gravel layer encountered
	115															
	116															



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 21B_1244+25
ENTRY BY: JJW
CHECKED BY: AJK SHEET 4 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD				GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY				REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT				POCKET PEN. (TSF)	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	
117													Drove an NWJ rod (with a carbide tooth welded in the center) in attempt to clear any remaining gravel
-31 118													
119		2				Poorly graded SAND with SILT (SP-SM); greenish black; moist to wet; medium to fine SAND; about 10% nonplastic fines.	60						
-33 120						SANDY SILT (ML); greenish black; moist; about 35% fine SAND; low to medium plasticity fines.							
121													
-35 122					>4.5	Lean CLAY with SAND (CL); hard; greenish black; moist; about 15% fine SAND; medium plasticity fines.							
123					>4.5	Hard; greenish gray.							
-37 124		3					78						
125					>4.5	SANDY lean CLAY (CL); greenish gray; moist; about 30% fine SAND; medium plasticity fines.							
-39 126													
127		4			>4.5	Hard.	60						
-41 128						SANDY SILT (ML); greenish black; moist; about 35% fine SAND; low plasticity fines.							
129		5				Stratified with minor Silty Clayey Sand (SC-SM) layers.	50						
-43 130		6					98						
131													
-45 132						Lean CLAY with SAND (CL); dark greenish gray; moist; about 25% fine SAND.							
133					>4.5	Hard.							
-47 134		7				SILTY SAND (SM); greenish black; moist; about 25% fine SAND; low plasticity fines.	92						
135		8					60						
-49 136													
137													
-51 138		9					52						
139													
-53 140						Poorly graded SAND with SILT (SP-SM); greenish black; moist to wet; coarse to fine SAND; about 10% nonplastic fines; 140.5 ft 3 inch lens of Silty Sand (SM).							
141						Bottom of borehole at 141.0 ft bgs							
-55 142						FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.							
143													
-57 144													
145													
-59 146													



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 21B_1244+25
ENTRY BY: JJW
CHECKED BY: AJK SHEET 5 of 5

LOG OF BORING 22B_1245+25

PROJECT NO: 14-148.1	BEGIN DATE: 4/29/2014	DRILLING CONTRACTOR: GeoEx Subsurface, Driller: Tom S.
PROJECT: SBFCA-C Verif. Borings	COMPLETION DATE: 4/30/2014	DRILLING METHOD: Solid-Stem Auger & Rotary Wash
LOCATION: N. of Yuba City	SURFACE ELEVATION: 87.9(ft)	DRILL RIG: CME 75
CLIENT: Raito, Inc.	SURFACE CONDITION: Gravel	HAMMER TYPE: Auto: 140lb, 30"
LOGGED BY: JRO	WATER DEPTH: N/A	SAMPLER TYPE & SIZE: HQ Core
DEPTH OF BORING: 140(ft)	READING TAKEN: N/A	BOREHOLE DIAMETER: 6"
	HAMMER EFFICIENCY:	BACKFILL METHOD: Cement grout

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
86	1														Driller augered to 19' below crest of levee. Driller set casing (5") to 23.5' below crest of levee.
	2														
	3														
84	4														
	5														
82	6														
	7														
80	8														
	9														
78	10														
	11														
76	12														
	13														
74	14														
	15														
72	16														
	17														
70	18														
	19														
68	20														
	21														
66	22														
	23														
64	24														



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 Geotechnical Engineering, Design
 and Construction Services

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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 22B_1245+25
 ENTRY BY: JJW
 CHECKED BY: AJK SHEET 1 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					RECOVERY (%)	LABORATORY					REMARKS		
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)		GRAPHIC LOG	DESCRIPTION	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)		DRY DENSITY (PCF)	% PASSING 200 SIEVE
62	26														
	27														
60	28														
	29														
58	30														
	31														
56	32														
	33														
54	34														
	35														
52	36														
	37														
50	38														
	39														
48	40														
	41														
46	42														
	43														
44	44														
	45														
42	46														
	47														
40	48														
	49														
38	50														
	51														
36	52														
	53														
34	54														
	55														



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 22B_1245+25
ENTRY BY: JJW
CHECKED BY: AJK SHEET 2 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS					
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE						
2	86																			
	87																			
0	88																			
	89																			
-2	90																			
	91																			
-4	92																			
	93																			
-6	94																			
	95																			
-8	96																			
	97																			
-10	98																			
	99																			
-12	100																			
	101																			
-14	102																			
	103																			
-16	104																			
	105																			
-18	106																			
	107																			
-20	108																			
	109																			
-22	110																			
	111																			
-24	112																			
	113																			
-26	114		1						0											
	115																			
-28	116																			

Raito Field Rep (J. Miller) stated gravel layer ended

Raito Field Rep (J. Miller) stated gravel layer encountered

Gravel layer ended



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 22B_1245+25
ENTRY BY: JJW
CHECKED BY: AJK SHEET 4 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD				GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT				POCKET PEN. (TSF)	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	
117														Gravel layer encountered
-30	118		2					0						Gravel layer ended
119														
-32	120													
121			3					56						
-34	122						SILTY SAND (SM); very dark greenish gray; moist; about 20% medium to fine SAND; nonplastic fines. Lean CLAY with SAND (CL); very dark greenish gray; moist; about 15% fine SAND; low plasticity fines.							
123						>4.5	Hard.							
-36	124		4				Little medium to fine SAND; low to medium plasticity fines; blocky structure.	88						
125							SANDY lean CLAY (CL); very dark greenish gray; moist; about 30% fine SAND; low to medium plasticity fines.							
-38	126					4.25	Very stiff to hard.							
127							SANDY SILT (ML); hard; very dark greenish gray; moist; about 35% fine SAND; low plasticity fines.							
-40	128		5			>4.5		54						
129							Poorly graded SAND (SP); very dark greenish gray; wet; about 10% medium to fine SAND; few nonplastic fines.							
-42	130		6				Stratified with minor Sandy Silt layers.	78						
131														
-44	132		7				Trace fine GRAVEL.	100						
133			8					100						
-46	134		9			>4.5	SANDY SILT (ML); hard; very dark greenish gray; moist; about 30% fine SAND; low to medium plasticity fines.	85						
135														
-48	136					>4.5	Stratified with Sandy Silt and Silty Sand layers.							
137														
-50	138													
139			10				SILTY SAND (SM); very dark greenish gray; moist; about 25% fine SAND; some low plasticity fines.	83						
-52	140						Increase in fines.							
							Bottom of borehole at 140.0 ft bgs							
141							FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.							
-54	142													
143														
-56	144													
145														
-58	146													



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 22B_1245+25
ENTRY BY: JJW
CHECKED BY: AJK SHEET 5 of 5

LOG OF BORING 23B_1246+25

PROJECT NO: 14-148.1	BEGIN DATE: 4/28/2014	DRILLING CONTRACTOR: GeoEx Subsurface, Driller: Tom S.
PROJECT: SBFCA-C Verif. Borings	COMPLETION DATE: 4/29/2014	DRILLING METHOD: Solid-Stem Auger & Rotary Wash
LOCATION: N. of Yuba City	SURFACE ELEVATION: 88.6(ft)	DRILL RIG: CME 75
CLIENT: Raito, Inc.	SURFACE CONDITION: Gravel	HAMMER TYPE: Auto: 140lb, 30"
LOGGED BY: JRO	WATER DEPTH: N/A	SAMPLER TYPE & SIZE: HQ Core
DEPTH OF BORING: 140(ft)	READING TAKEN: N/A	BOREHOLE DIAMETER: 6"
	HAMMER EFFICIENCY:	BACKFILL METHOD: Cement grout

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
87	1														Driller augered to 19' below crest of levee. Driller set casing (5") to 23.5' below crest of levee.
	2														
	3														
85	4														
	5														
83	6														
	7														
81	8														
	9														
79	10														
	11														
77	12														
	13														
75	14														
	15														
73	16														
	17														
71	18														
	19														
69	20														
	21														
67	22														
	23														
65	24														



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 23B_1246+25
 ENTRY BY: JJW
 CHECKED BY: AJK SHEET 1 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					RECOVERY (%)	LABORATORY					REMARKS		
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)		GRAPHIC LOG	DESCRIPTION	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)		DRY DENSITY (PCF)	% PASSING 200 SIEVE
63	26														
	27														
61	28														
	29														
59	30														
	31														
57	32														
	33														
55	34														
	35														
53	36														
	37														
51	38														
	39														
49	40														
	41														
47	42														
	43														
45	44														
	45														
43	46														
	47														
41	48														
	49														
39	50														
	51														
37	52														
	53														
35	54														
	55														



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 23B_1246+25
ENTRY BY: JJW
CHECKED BY: AJK SHEET 2 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD				GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS		
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT				POCKET PEN. (TSF)	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)		% PASSING 200 SIEVE	
117			1					30								
-29	118															
	119															
	120		2				Poorly graded SAND with SILT (SP-SM); dark gray; wet; about 5% fine GRAVEL; medium to fine SAND; about 10% nonplastic fines.	70								
	121															
	122		3				Lean CLAY with SAND (CL); hard; greenish gray; moist; about 15% fine SAND; medium plasticity fines.	78								
	123															
	124		4			>4.5	SANDY SILT (ML); greenish gray; moist; about 35% fine SAND; low plasticity fines; moderate cementation.	70								
	125															
	126															
	127															
	128						Lean CLAY (CL); very stiff; greenish gray; moist; about 5% fine SAND; medium plasticity fines.									
	129		5			2.25										
	130		6			>4.5	CLAYEY SAND (SC); greenish black; moist; fine SAND; about 40% medium plasticity fines.	100								
	131															
	132						SANDY lean CLAY (CL); greenish gray; moist; about 30% fine SAND; medium plasticity fines; stratified with minor lense of Poorly Graded Sand.									
	133															
	134		7			3.5	About 35% fine SAND; blocky structure.	100								
	135															
	136															
	137															
	138		8				Poorly graded SAND (SP); greenish black; moist; medium to fine SAND; about 5% nonplastic fines.	0								
	139															
	140						Bottom of borehole at 140.0 ft bgs									
	141						FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.									
	142															
	143															
	144															
	145															
	146															



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 23B_1246+25
ENTRY BY: JJW
CHECKED BY: AJK SHEET 5 of 5

LOG OF BORING 24B_1247+25

PROJECT NO: 14-148.1	BEGIN DATE: 4/24/2014	DRILLING CONTRACTOR: GeoEx Subsurface, Driller: Tom S.
PROJECT: SBFCA-C Verif. Borings	COMPLETION DATE: 4/24/2014	DRILLING METHOD: Solid-Stem Auger & Rotary Wash
LOCATION: N. of Yuba City	SURFACE ELEVATION: 89.4 (ft)	DRILL RIG: CME 75
CLIENT: Raito, Inc.	SURFACE CONDITION: Gravel	HAMMER TYPE: Auto: 140lb, 30"
LOGGED BY: PBM	WATER DEPTH: N/A	SAMPLER TYPE & SIZE: HQ Core
DEPTH OF BORING: 140 (ft)	READING TAKEN: N/A	BOREHOLE DIAMETER: 6"
	HAMMER EFFICIENCY:	BACKFILL METHOD: Cement grout

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
87	1														Driller augered to 19' below crest of levee. Driller set casing (5") to 23.5' below crest of levee.
	2														
	3														
85	4														
	5														
83	6														
	7														
81	8														
	9														
79	10														
	11														
77	12														
	13														
75	14														
	15														
73	16														
	17														
71	18														
	19														
69	20														
	21														
67	22														
	23														
65	24														



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 24B_1247+25
 ENTRY BY: JJW
 CHECKED BY: AJK SHEET 1 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					RECOVERY (%)	LABORATORY					REMARKS		
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)		GRAPHIC LOG	DESCRIPTION	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)		DRY DENSITY (PCF)	% PASSING 200 SIEVE
63	26														
	27														
61	28														
	29														
59	30														
	31														
57	32														
	33														
55	34														
	35														
53	36														
	37														
51	38														
	39														
49	40														
	41														
47	42														
	43														
45	44														
	45														
43	46														
	47														
41	48														
	49														
39	50														
	51														
37	52														
	53														
35	54														
	55														

ELEVATION (ft)	DEPTH (ft)	FIELD					RECOVERY (%)	LABORATORY					REMARKS							
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)		GRAPHIC LOG	DESCRIPTION	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)		DRY DENSITY (PCF)	% PASSING 200 SIEVE					
33	56																			
	57																			
31	58																			
	59																			
29	60																			Gravel layer encountered
	61																			
27	62																			
	63																			
25	64																			
	65																			
23	66																			
	67																			
21	68																			
	69																			
19	70																			
	71																			
17	72																			
	73																			
15	74																			
	75																			Gravel layer ended
13	76																			Gravel layer encountered
	77																			
11	78																			
	79																			
9	80																			Gravel layer ended. Smooth drilling, possible Clay layer encountered
	81																			
7	82																			
	83																			
5	84																			
	85																			



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 24B_1247+25
ENTRY BY: JJW
CHECKED BY: AJK SHEET 3 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
3	86														Interbedded Sand & Clay layers encountered
	87														
1	88														
	89														
-1	90														
	91														
-3	92														
	93														
-5	94														Smooth drilling, possible Clay/Silt layer encountered
	95														
-7	96														
	97														
-9	98														
	99														
-11	100														Gravel layer encountered
	101														
-13	102														
	103														
-15	104														
	105														
-17	106														
	107														
-19	108														
	109														
-21	110														Rock clogged pump
	111														
-23	112														
	113						Lean CLAY (CL); hard; bluish gray; moist; about 5% fine SAND; medium to high plasticity fines.								Gravel layer ended. 1 ft cleanout run from 113' to 114' to make sure driller is out of gravel layer
-25	114	1						100							Coarse gravel stuck in barrel, disturbed sample
	115						Lean CLAY (CL) (continued).								
-27	116														



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 24B_1247+25
 ENTRY BY: JJW
 CHECKED BY: AJK SHEET 4 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD				GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS	
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT				POCKET PEN. (TSF)	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)		% PASSING 200 SIEVE
117			1					100							
-29	118		2					96							
					1.25										
	119		3				SANDY lean CLAY (CL); hard; bluish gray; moist; about 40% medium to fine SAND; low to medium plasticity fines.	43							
-31	120						SILTY SAND (SM); bluish gray; moist; medium to fine SAND; about 30% nonplastic to low plasticity fines. About 15% nonplastic fines.								
	121														
-33	122														
	123														
-35	124		4				Lean CLAY (CL); hard; bluish gray; moist; about 10% fine SAND; medium plasticity fines; blocky texture.	71							
	125						SANDY SILT (ML); brownish gray; moist; about 45% medium to fine SAND; nonplastic fines.								
-37	126		5				Lean CLAY with SAND (CL); hard; bluish gray; moist; about 15% fine SAND; medium plasticity fines.	97							
	127														
-39	128														
	129		6				SILT with SAND (ML); brownish gray; moist; about 20% fine SAND; low plasticity fines.	79							
-41	130						Lean CLAY with SAND (CL); hard; bluish gray; moist; about 15% fine SAND; medium plasticity fines.								
	131		7				SILT with SAND (ML); brownish gray; moist; about 20% fine SAND; low plasticity fines. About 50% fine SAND.	75							
-43	132		8				SILTY SAND (SM); dark gray; moist; medium to fine SAND; about 40% nonplastic fines.	88							
	133						SILT (ML); bluish gray; moist; about 10% fine SAND; low plasticity fines.								
-45	134		9				Lean CLAY (CL); hard; bluish gray; moist; about 10% fine SAND; medium plasticity fines; blocky texture.	100							
	135														
-47	136														
	137						SILT with SAND (ML); brownish gray; moist; about 20% fine SAND; nonplastic fines; stratified with 1" to 4" layers of Silty Sand (SM).								
-49	138														
	139		10				3" lense of Silty Sand (SM). SANDY SILT (ML); hard; brownish gray; moist; about 25 to 30% medium to fine SAND; low plasticity fines; stratified with 2" to 4" layers of Poorly Graded Sand with Silt (SP-SM).	83							
-51	140														
	141						Bottom of borehole at 140.0 ft bgs								
-53	142						FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.								
	143														
-55	144														
	145														
-57	146														



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PROJECT NUMBER: 14-148.1
PROJECT: SBFCA-C Verif. Borings
BORING: 24B_1247+25
ENTRY BY: JJW
CHECKED BY: AJK SHEET 5 of 5

LOG OF BORING 01BR_1223+63

PROJECT NO: 14-148.1	BEGIN DATE: 5/12/2014	DRILLING CONTRACTOR: GeoEx Subsurface, Driller: Rian H.
PROJECT: SBFCA-C Verif. Borings	COMPLETION DATE: 5/13/2014	DRILLING METHOD: Solid-Stem Auger & Rotary Wash
LOCATION: N. of Yuba City	SURFACE ELEVATION: 86.7 (ft)	DRILL RIG: CME 75
CLIENT: Raito, Inc.	SURFACE CONDITION: Gravel	HAMMER TYPE: Auto: 140lb, 30"
LOGGED BY: JRO	WATER DEPTH: N/A	SAMPLER TYPE & SIZE: HQ Core, SPT (1.4"ID)
DEPTH OF BORING: 125 (ft)	READING TAKEN: N/A	BOREHOLE DIAMETER: 6"
	HAMMER EFFICIENCY:	BACKFILL METHOD: Cement grout

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
85	1														Driller augered to 19' below crest of levee. Driller set casing (5") to 23.5' below crest of levee.
	2														
	3														
83	4														
	5														
81	6														
	7														
79	8														
	9														
77	10														
	11														
75	12														
	13														
73	14														
	15														
71	16														
	17														
69	18														
	19														
67	20														
	21														
65	22														
	23														
63	24														



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 01BR_1223+63
 ENTRY BY: JJW
 CHECKED BY: JJW SHEET 1 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					RECOVERY (%)	LABORATORY					REMARKS		
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)		GRAPHIC LOG	DESCRIPTION	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)		DRY DENSITY (PCF)	% PASSING 200 SIEVE
61	26														
	27														
59	28														
	29														
57	30														
	31														
55	32														
	33														
53	34														
	35														
51	36														
	37														
49	38														
	39														
47	40														
	41														
45	42														
	43														
43	44														
	45														
41	46														
	47														
39	48														
	49														
37	50														
	51														
35	52														
	53														
33	54														
	55														

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS	
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE		
31	56															
	57															
29	58															
	59															
27	60															
	61		1													
25	62						SANDY SILT (ML); very dark greenish gray; moist; about 30% fine SAND; low plasticity fines.	50								
	63						Poorly graded SAND with SILT (SP-SM); greenish black; moist; medium to fine SAND; about 10% nonplastic fines.									
23	64															
	65		2													
21	66						Poorly graded GRAVEL with SAND (GP); black; moist; coarse to fine GRAVEL; about 40% coarse to fine SAND; about 5% nonplastic fines.	0								
	67		3					0								
19	68		4	60	235			61								Switched to drive sample in attempt to retrieve better recovery
	69			114												
	70			121												Drill chatter suggest still in gravel layer
17	71															
	72															
15	73		5	42	121		Poorly graded GRAVEL with SILT and SAND (GP-GM); black; moist; coarse to fine GRAVEL; about 35% coarse to fine SAND; about 10% nonplastic fines.	50								
	74			62												Drill chatter suggest still in gravel layer
13	75			59												
	76		6	54	65		Lean CLAY (CL); hard; very dark greenish gray; moist; about 5% fine SAND; medium plasticity fines.	46								Driller states gravel layer ended
11	77			27												
	78			38												
9	79		7			>4.5	Blocky structure.	100								
	80		8				SILTY CLAY (CL-ML); dark bluish gray; moist; about 5 to 10% fine SAND; low plasticity fines; blocky structure.	100								
7	81															
	82		9				Lean CLAY (CL); dark bluish gray; moist; about 5% fine SAND; medium plasticity fines.	44								
5	83						CLAYEY SAND (SC); greenish black; moist; fine SAND; about 25% low to medium plasticity fines; stratified with minor interbeds of Lean Clay (CL).									
3	84															
	85						CLAYEY SAND (SC) (continued).									



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 01BR_1223+63
 ENTRY BY: JJW
 CHECKED BY: JJW SHEET 3 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD				GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS	
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT				POCKET PEN. (TSF)	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)		% PASSING 200 SIEVE
-1	86		10				Lean CLAY (CL); very dark greenish gray; moist; about 10% fine SAND; medium plasticity fines; slightly blocky structure.	97							
-1	87						SILTY CLAY (CL-ML); greenish black; moist; about 10% fine SAND; low plasticity fines; slightly blocky structure.								
-1	88														
-3	89		11					83							
-5	90														
-5	91														
-5	92		12				SANDY SILT (ML); very dark greenish gray; moist; about 35% fine SAND; nonplastic to low plasticity fines.	81							
-7	93					4.0									
-7	94						SILTY SAND (SM); very dark greenish gray; moist; fine SAND; about 40% nonplastic to low plasticity fines.								
-9	95		13				Greenish black; about 20% nonplastic fines.								
-9	96														
-9	97		14				Poorly graded SAND with SILT (SP-SM); greenish black; moist; medium to fine SAND; about 10% nonplastic fines.	90							
-11	98						SILTY, CLAYEY SAND (SC-SM); very dark greenish gray; moist; fine SAND; about 30% low plasticity fines.								
-11	99		15					69							
-13	100						About 25% low plasticity fines.								
-15	101														
-15	102														
-15	103		16					67							
-17	104						Poorly graded SAND with SILT (SP-SM); very dark greenish gray; moist; medium to fine SAND; about 10% nonplastic fines.								
-19	105														
-19	106		17					72							
-21	107														
-21	108		18					72							
-23	109						SILTY CLAY (CL-ML); very dark greenish gray; moist; about 5% fine SAND; low plasticity fines.								
-23	110		19				SANDY SILT (ML); very dark greenish gray; moist; about 40% fine SAND; low plasticity fines.	79							
-25	111					>4.5									
-25	112					>4.5									
-27	113		20				SILTY SAND (SM); greenish black; moist; medium to fine SAND; about 25% nonplastic to low plasticity fines; stratified with ~1" interbeds of Silt (ML).	63							
-27	114														
-29	115		21				Poorly graded SAND with SILT (SP-SM); greenish black; moist; medium to fine SAND; about 10% nonplastic fines.	57							
-29	116														



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 01BR_1223+63
 ENTRY BY: JJW
 CHECKED BY: JJW SHEET 4 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD				GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS	
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT				POCKET PEN. (TSF)	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)		% PASSING 200 SIEVE
117			21				Very dark greenish gray; stratified with <1/4" lenses of Silty Sand (SM).	57							
-31	118		22					90							
	119														
-33	120		23				SANDY SILTY CLAY (CL-ML); greenish gray; moist; fine SAND; about 40% low plasticity fines.	90							
	121					>4.5	Lean CLAY (CL); greenish gray; moist; about 10% fine SAND; medium plasticity fines.								
-35	122					>4.5	Blocky structure.								
	123		24			>4.5	Low to medium plasticity fines; no blocky structure.	93							
-37	124					>4.5									
	125					>4.5	SILTY CLAY with SAND (CL-ML); greenish gray; moist; about 15 to 20% fine SAND; low plasticity fines; blocky structure.								
-39	126						Bottom of borehole at 125.0 ft bgs								
	127						FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.								
-41	128														
	129														
-43	130														
	131														
-45	132														
	133														
-47	134														
	135														
-49	136														
	137														
-51	138														
	139														
-53	140														
	141														
-55	142														
	143														
-57	144														
	145														
-59	146														

LOG OF BORING 13BR_1236+75

PROJECT NO: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 LOCATION: N. of Yuba City
 CLIENT: Raito, Inc.
 LOGGED BY: JJW
 DEPTH OF BORING: 125(ft)

BEGIN DATE: 5/13/2014
 COMPLETION DATE: 5/14/2014
 SURFACE ELEVATION: 87.1(ft)
 WATER DEPTH: N/A
 READING TAKEN: N/A
 HAMMER EFFICIENCY:

DRILLING CONTRACTOR: GeoEx Subsurface, Driller: Rian H.
 DRILLING METHOD: Solid-Stem Auger & Rotary Wash
 DRILL RIG: CME 75
 HAMMER TYPE: Auto: 140lb, 30"
 SAMPLER TYPE & SIZE: HQ Core
 BOREHOLE DIAMETER: 6"
 BACKFILL METHOD: Cement grout

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY(%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
85	1														Driller augered to 19' below crest of levee. Driller set casing (5") to 23.5' below crest of levee.
	2														
	3														
83	4														
	5														
81	6														
	7														
79	8														
	9														
77	10														
	11														
75	12														
	13														
73	14														
	15														
71	16														
	17														
69	18														
	19														
67	20														
	21														
65	22														
	23														
63	24														



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 and Construction Services

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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 13BR_1236+75
 ENTRY BY: JJW
 CHECKED BY: AJK SHEET 1 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					RECOVERY (%)	LABORATORY					REMARKS		
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)		GRAPHIC LOG	DESCRIPTION	PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)		DRY DENSITY (PCF)	% PASSING 200 SIEVE
61	26														
	27														
59	28														
	29														
57	30														
	31														
55	32														
	33														
53	34														
	35														
51	36														
	37														
49	38														
	39														
47	40														
	41														
45	42														
	43														
43	44														
	45														
41	46														
	47														
39	48														
	49														
37	50														
	51														
35	52														
	53														
33	54														
	55														

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE	
-1	86														
	87														
-1	88														
	89														
-3	90														
	91														
-5	92														
	93														
-7	94														
	95														
-9	96		1	37	103		Poorly graded GRAVEL with CLAY and SAND (GP-GC); greenish black; moist; coarse to fine GRAVEL; about 40% coarse to fine SAND; about 10% low plasticity fines.	63							
	97			50											
	98			53											
-11	98														Drill chatter suggest still in gravel layer
	99														
	100														
-13	101														
	102														
-15	103														
	104														
-17	105														
	106														
-19	107														
	108														
-21	109														
	110		2	11	27		Lean CLAY (CL); dark bluish gray; moist; about 5% fine SAND; low to medium plasticity fines.	100							Driller states gravel layer ended
	111			13											
	112			14											
-25	112		3				Blocky structure.	100							
	113					3.0	Very stiff.								
	114					>4.5									
-27	114						Lean CLAY with SAND (CL); hard; dark bluish gray; moist; about 15% fine SAND; medium plasticity fines.								
	115		4			>4.5	SILTY SAND (SM); dark gray; wet; fine SAND; about 40% nonplastic fines. Partially cemented.	100							
-29	116														



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PROJECT NUMBER: 14-148.1
 PROJECT: SBFCA-C Verif. Borings
 BORING: 13BR_1236+75
 ENTRY BY: JJW
 CHECKED BY: AJK SHEET 4 of 5

ELEVATION (ft)	DEPTH (ft)	FIELD					GRAPHIC LOG	DESCRIPTION	RECOVERY (%)	LABORATORY					REMARKS			
		SAMPLE	SAMPLE NO	BLOWS PER 6 IN.	BLOWS PER FOOT	POCKET PEN. (TSF)				PLASTIC LIMIT	LIQUID LIMIT	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200 SIEVE				
117			4			>4.5			100									
-31	118							SANDY SILT (ML); dark gray; wet; about 40% fine SAND; low plasticity fines; stratified with 1" to 3" layers of Poorly Graded Sand (SP).										
	119																	
-33	120		5					Lean CLAY (CL); dark bluish gray; moist; about 5% fine SAND; medium plasticity fines.	100									
	121																	
-35	122		6					SILT with SAND (ML); dark gray; moist to wet; about 20 to 25% fine SAND; nonplastic to low plasticity fines.	100									
	123							Lean to fat CLAY (CL/CH); bluish gray; moist; about 5% fine SAND; medium plasticity fines.										
-37	124							CLAYEY SILT (ML/CL); dark bluish gray; moist; about 5 to 10% fine SAND; low plasticity fines. Slightly blocky structure.										
	125							Bottom of borehole at 125.0 ft bgs										
-39	126							FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.										
	127																	
-41	128																	
	129																	
-43	130																	
	131																	
-45	132																	
	133																	
-47	134																	
	135																	
-49	136																	
	137																	
-51	138																	
	139																	
-53	140																	
	141																	
-55	142																	
	143																	
-57	144																	
	145																	
-59	146																	