

Appendix C

Boring Logs



RUBICON
Engineering Corporation

Logged By: D. Robinson

Start Date: 4/3/14

SOIL LOG: RM-1

Checked by: D. Robinson

End Date: 4/7/14

Excavation Depth: 91 Feet

C-57 Co.: J&H

Equipment: CME 85 Rig

Excav. Dimension: 8 Inch O.D.

Depth Feet	PID (ppm)	Blow Counts	Sample	Lithology	USCS	Description	Completion
5						Moist, brown 10YR5/3, fine grain silty sand, trace clay, trace gravels to 0.5 inches, non-plastic, odorless	
10		50			SM	As above, no gravels	
15						As above, becomes brownish-yellow 10 YR 6/8	
20		20,50				As above	
25						As above	
30		20,50			CL	Moist, greenish-grey 5G6/1, very fine grain silty clay, moderate plasticity, odorless	
35							
40		50				Moist, light grey N7, fine grain sand, trace clay, non-plastic, odorless	
45							

Completion Notes:

Boring was drilled using hollow stem auger to 91 feet; Schedule 40 2 inch PVC pipe, Screened from 91 ft bgs to 71 ft bgs, #3 sand from 91 ft to 69 ft bgs, Bentonite from 69 to 66 ft bgs, Bentone cement grout from 66 ft bgs to surface. Traffic rated vault box at surface

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RUBICON
Engineering Corporation

Logged By: D. Robinson

Start Date: 4/3/14

SOIL LOG: RM-1

Checked by: D. Robinson

End Date: 4/7/14

Excavation Depth: 91 Feet

C-57 Co.: J&H

Equipment: CME 85 Rig

Excav. Dimension: 8 Inch O.D.

Depth Feet	PID (ppm)	Blow Counts	Sample	Lithology	USCS	Description	Completion
50		50					
55					SP	As above, with silt	
60		50					
65						As above	
70		50					
75		17,50					
80		50			SM	As above, slightly courser grain	
85		27,50				Moist, reddish-brown 10R3/6, fine grain silty sand, non-plastic, odorless	
						Water at 76.5 ft bgs 4/7/14	
90		50				As above	
95						As above, becomes mottled with greensih-grey streaking 5G6/1, very dense	

Completion Notes:

Boring was drilled using hollow stem auger to 91 feet; Schedule 40 2 inch PVC pipe, Screened from 91 ft bgs to 71 ft bgs, #3 sand from 91 ft to 69 ft bgs, Bentonite from 69 to 66 ft bgs, Bentone cement grout from 66 ft bgs to surface. Traffic rated vault box at surface

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RUBICON
Engineering Corporation

Logged By: D. Robinson

Start Date: 3/31/14

SOIL LOG: RM-2

Checked by: D. Robinson

End Date: 4/1/14

Excavation Depth: 115 Feet

C-57 Co.: J&H

Equipment: CME 85 Rig

Excav. Dimension: 8 Inch O.D.

Depth Feet	PID (ppm)	Blow Counts	Sample	Lithology	USCS	Description	Completion
5					SC	Moist, light brown 10YR8/3, fine grain clayey sand, moderate plasticity, odorless	
5					SM	Moist, light brown 10YR8/3, fine grain silty sand, trace clay, slightly plastic, odorless	
10		30,50			SP	Moist, light brown 10YR8/3, medium grain sand, non-plastic, odorless	
15							
20		20,30,30			SM	Moist, light brown 10YR8/3, fine grain silty sand, trace medium sand, slightly plastic, odorless	
25							
30		50			CL	Moist, brown 10YR5/3, fine grain silty clay, moderate plasticity, odorless	
35							
40		10,25,50				Moist, light brown 10YR5/3, medium grain sand, non-plastic, odorless	
45					SP		

Completion Notes:

Boring was drilled using hollow stem auger to 115 feet; Schedule 40 2 inch PVC pipe, Screened from 115 ft bgs to 95 ft bgs, #3 sand from 115 ft to 93 ft bgs, Bentonite from 93 to 90 ft bgs, Bentonite cement grout from 90 ft bgs to surface. Traffic rated vault box at surface

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RUBICON
Engineering Corporation

Logged By: D. Robinson

Start Date: 3/31/14

SOIL LOG: RM-2

Checked by: D. Robinson

End Date: 4/1/14

Excavation Depth: 115 Feet

C-57 Co.: J&H

Equipment: CME 85 Rig

Excav. Dimension: 8 Inch O.D.

Depth Feet	PID (ppm)	Blow Counts	Sample	Lithology	USCS	Description	Completion
50		50				As above, trace gravel to 1-inch	
55							
60		50			SM	Moist, brown 10YR5/3, very fine grain silty sand with fine to medium grain sand lenses, non-plastic, odorless	
65							
70		50			GW	Moist, light brown 10YR5/3, sand, silt and gravel mix, gravels to 0.5-inches, non-plastic, odorless	
75							
80		25,50				Moist, dark brown 10YR3/3, very fine grain silt, non-plastic, odorless	
85					ML		
90		20,50					
95		11,30,50				As above, siltstone fragments in split spoon	

Completion Notes:

Boring was drilled using hollow stem auger to 115 feet; Schedule 40 2 inch PVC pipe, Screened from 115 ft bgs to 95 ft bgs, #3 sand from 115 ft to 93 ft bgs, Bentonite from 93 to 90 ft bgs, Bentone cement grout from 90 ft bgs to surface. Traffic rated vault box at surface

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RUBICON
Engineering Corporation

Logged By: D. Robinson

Start Date: 3/31/14

SOIL LOG: RM-2

Checked by: D. Robinson

End Date: 4/1/14

Excavation Depth: 115 Feet

C-57 Co.: J&H

Equipment: CME 85 Rig

Excav. Dimension: 8 Inch O.D.

Depth Feet	PID (ppm)	Blow Counts	Sample	Lithology	USCS	Description	Completion
50		50			SC	As above	
105						Wet, dark brown 10YR3/3, fine to coarse grain clayey sand, slightly plastic, odorless	
110		12,50			SP		
115		50				Wet, dark brown 10YR3/3, coarse grain angular sand, non-plastic, odorless	
120						As above	
125							
130							
135							
140							
145							

Completion Notes:

Boring was drilled using hollow stem auger to 115 feet; Schedule 40 2 inch PVC pipe, Screened from 115 ft bgs to 95 ft bgs, #3 sand from 115 ft to 93 ft bgs, Bentonite from 93 to 90 ft bgs, Bentone cement grout from 90 ft bgs to surface. Traffic rated vault box at surface

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RUBICON
Engineering Corporation

Logged By: D. Robinson

Start Date: 4/1/14

SOIL LOG: RM-3

Checked by: D. Robinson

End Date: 4/3/14

Excavation Depth: 155 Feet

C-57 Co.: J&H

Equipment: CME 85 Rig

Excav. Dimension: 8 Inch O.D.

Depth Feet	PID (ppm)	Blow Counts	Sample	Lithology	USCS	Description	Completion
5						Moist, brown, 10YR5/3, fine grain silty sand, trace gravels to 0.5-inches, non-plastic, odorless	
10		50			SM	As above, no gravels	
20		17,30,30					
25						As above	
30		21,35,50				Moist, brown, 10YR5/3, medium grain sand, trace gravels to 0.5-inches, non-plastic, odorless	
40		50			SP	As above	
45							

Completion Notes:

Boring was drilled using hollow stem auger to 155 feet; Schedule 40 2 inch PVC pipe, Screened from 155 ft bgs to 125 ft bgs, #3 sand from 155 ft to 100 ft bgs, Bentonite from 100 to 97 ft bgs, Bentone cement grout from 97 ft bgs to surface. Traffic rated vault box at surface

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RUBICON
Engineering Corporation

Logged By: D. Robinson

Start Date: 4/1/14

SOIL LOG: RM-3

Checked by: D. Robinson

End Date: 4/3/14

Excavation Depth: 155 Feet

C-57 Co.: J&H

Equipment: CME 85 Rig

Excav. Dimension: 8 Inch O.D.

Depth Feet	PID (ppm)	Blow Counts	Sample	Lithology	USCS	Description	Completion
50		50					
55						As above	
60		50					
65							
70		50				As above, becomes light brown 10YR8/3	
75					Silts tone	Moist, dark brown 10YR3/3, very fine grain silt (siltstone), non-plastic, odorless	
80		50					
85							
90		50			SM	As above, slightly siltier, less siltstone	
95						Moist, dark brown 10YR3/3, fine grain silty sand, trace clay, slightly plastic, odorless	

Completion Notes:

Boring was drilled using hollow stem auger to 155 feet; Schedule 40 2 inch PVC pipe, Screened from 155 ft bgs to 125 ft bgs, #3 sand from 155 ft to 100 ft bgs, Bentonite from 100 to 97 ft bgs, Bentone cement grout from 97 ft bgs to surface. Traffic rated vault box at surface

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RUBICON
Engineering Corporation

Logged By: D. Robinson

Start Date: 4/1/14

SOIL LOG: RM-3

Checked by: D. Robinson

End Date: 4/3/14

Excavation Depth: 155 Feet

C-57 Co.: J&H

Equipment: CME 85 Rig

Excav. Dimension: 8 Inch O.D.

Depth Feet	PID (ppm)	Blow Counts	Sample	Lithology	USCS	Description	Completion
50		50					
105						Moist, dark brown 10YR3/3, silty sand, silt, and siltstone, non-plastic, odorless	
						Water at 102.65 4/3/14	
110		50					
115						As above, less siltstone	
120		50			ML		
125		50				As above	
130		50				As above	
135		50				As above	
140		30,50				As above	
145					CL	As above	

Completion Notes:

Boring was drilled using hollow stem auger to 155 feet; Schedule 40 2 inch PVC pipe, Screened from 155 ft bgs to 125 ft bgs, #3 sand from 155 ft to 100 ft bgs, Bentonite from 100 to 97 ft bgs, Bentone cement grout from 97 ft bgs to surface. Traffic rated vault box at surface

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RUBICON
Engineering Corporation

Logged By: D. Robinson

Start Date: 4/1/14

SOIL LOG: RM-3

Checked by: D. Robinson

End Date: 4/3/14

Excavation Depth: 155 Feet

C-57 Co.: J&H

Equipment: CME 85 Rig

Excav. Dimension: 8 Inch O.D.

Depth Feet	PID (ppm)	Blow Counts	Sample	Lithology	USCS	Description	Completion
		35,50					
155		50			ML	As above, angular clasts of siltstone in a fine grain silty matrix	
160						No recovery	
165							
170						Moist, dark brown 10YR3/3, fine grain sandy clay, roots and grass in clay, moderate plasticity, odorless	
175						Moist, dark brown 10YR3/3, very fine grain silt and siltstone fragments, non-plastic, odorless	
180							
185							
190							
195							

Completion Notes:

Boring was drilled using hollow stem auger to 155 feet; Schedule 40 2 inch PVC pipe, Screened from 155 ft bgs to 125 ft bgs, #3 sand from 155 ft to 100 ft bgs, Bentonite from 100 to 97 ft bgs, Bentone cement grout from 97 ft bgs to surface. Traffic rated vault box at surface

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RUBICON
Engineering Corporation

Logged By: D. Robinson

Start Date: 4/7/14

BORING LOG RM-4

Checked by: D. Robinson

End Date: 4/9/14

Boring Depth: 146 Feet

Drilling Co.: J&H

Drill Rig: CME 85 Rig

Boring Diameter: 8 Inch O.D.

Depth Feet	PID (ppm)	Blow Counts	Sample	Lithology	USCS	Description	Completion
5					SM	Moist, brown 10YR5/3, fine grain silty sand, non-plastic, loose, odorless As above, becomes brownish-yellow 10YR6/8	
10		25,50				Moist, brownish-yellow 10YR6/8, medium grain sand, trace fines, non-plastic, medium dense, odorless	
20		50				As above, some reddish-brown 10R3/6 sandstone clasts to 1 inch	
30		28,28,50			SP	As above, trace clay, trace crystal fragments to 0.5-inches	

Completion Notes:

Boring was drilled using hollow stem auger to 145 feet; Schedule 40 2 inch PVC pipe, Screened from 144 ft bgs to 124 ft bgs, #3 sand from 144 ft to 122 ft bgs, Bentonite from 122 to 120 ft bgs, Bentone cement grout from 120 ft bgs to surface. Traffic rated vault box at surface

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RUBICON
Engineering Corporation

Logged By: D. Robinson

Start Date: 4/7/14

BORING LOG RM-4

Checked by: D. Robinson

End Date: 4/9/14

Boring Depth: 146 Feet

Drilling Co.: J&H

Drill Rig: CME 85 Rig

Boring Diameter: 8 Inch O.D.

Depth Feet	PID (ppm)	Blow Counts	Sample	Lithology	USCS	Description	Completion
45		50				As above, no clay, trace silt	
50		50				As above	
60		30,50				As above, slightly finer grain sand	
70		32,50			SP	Moist, brown 10YR5/3, fine grain sand with silt and trace clay (SP/SM), slightly plastic in the clay-silt portions of the core, medium dense, odorless	
75							

Completion Notes:

Boring was drilled using hollow stem auger to 145 feet; Schedule 40 2 inch PVC pipe, Screened from 144 ft bgs to 124 ft bgs, #3 sand from 144 ft to 122 ft bgs, Bentonite from 122 to 120 ft bgs, Bentone cement grout from 120 ft bgs to surface. Traffic rated vault box at surface

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RUBICON
Engineering Corporation

Logged By: D. Robinson

Start Date: 4/7/14

BORING LOG RM-4

Checked by: D. Robinson

End Date: 4/9/14

Boring Depth: 146 Feet

Drilling Co.: J&H

Drill Rig: CME 85 Rig

Boring Diameter: 8 Inch O.D.

Depth Feet	PID (ppm)	Blow Counts	Sample	Lithology	USCS	Description	Completion
85		28,50			SP	Moist, light brown 10 YR8/3, medium grain sand, medium dense, non-plastic, odorless	
90		25,50		As above, with clay			
95							
100		50		As above, continuous sampling starting at 100			
		26,50		As above			
		26,50		As above			
105		50		As above			
				As above, with grey N5 angular sandstone clasts			
		50					
		26,50		CL		Moist, dark grey N3, fine grain clay, moderate plasticity, odorless	
110		27,50		SC	Moist, brown 10YR5/3, fine grain clayey sand, slightly plastic, odorless		
		24,50		CL	Moist, dark grey N3, fine grain clay, moderate plasticity, odorless		
		26,50			As above		
115		50			As above		
		22,50			As above		
		29,50			Moist, dark grey N3, fine grain silty sand, trace clay, slightly plastic, odorless		

Completion Notes:

Boring was drilled using hollow stem auger to 145 feet; Schedule 40 2 inch PVC pipe, Screened from 144 ft bgs to 124 ft bgs, #3 sand from 144 ft to 122 ft bgs, Bentonite from 122 to 120 ft bgs, Bentone cement grout from 120 ft bgs to surface. Traffic rated vault box at surface

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RUBICON
Engineering Corporation

Logged By: D. Robinson

Start Date: 4/7/14

BORING LOG RM-4

Checked by: D. Robinson

End Date: 4/9/14

Boring Depth: 146 Feet

Drilling Co.: J&H

Drill Rig: CME 85 Rig

Boring Diameter: 8 Inch O.D.

Depth Feet	PID (ppm)	Blow Counts	Sample	Lithology	USCS	Description	Completion
125		26,50 27,50 29,50 28,50			SM	As above As above As above	
		27,50 26,50 21,50			SP	Very moist, light grey N7, medium grain sand with silt and clay, slightly plastic, odorless As above As above, feels wet at 128	
130					SC	Wet, greenish grey 5G6/1, fine grain clayey sand, moderate plasticity, odorless	
135		50			GW	Wet, grey N5, fine to coarse grain gravels to 1-inch, non-plastic, odorless	
140		29,50			ML	Moist, grey N5 with white quartz viens, very fine grain silt, very dense, non-plastic, odorless	
145		26,50			SM	Moist, dark grey N3, very fine grain silty sand, slightly plastic, odorless	
150							
155							

Completion Notes:

Boring was drilled using hollow stem auger to 145 feet; Schedule 40 2 inch PVC pipe, Screened from 144 ft bgs to 124 ft bgs, #3 sand from 144 ft to 122 ft bgs, Bentonite from 122 to 120 ft bgs, Bentone cement grout from 120 ft bgs to surface. Traffic rated vault box at surface

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RUBICON
Engineering Corporation

Logged By: D. Robinson

Start Date: 4/9/14

BORING LOG RM-5

Checked by: D. Robinson

End Date: 4/11/14

Boring Depth: 140 Feet

Drilling Co.: J&H

Drill Rig: CME 85 Rig

Boring Diameter: 8 Inch O.D.

Depth Feet	PID (ppm)	Blow Counts	Sample	Lithology	USCS	Description	Completion
5					SM	Moist, brown 10YR5/3, fine grain silty sand, non-plastic, odorless As above	
10		25,50				Moist, brown 10YR5/3, fine to medium grain sand, trace silt, non-plastic, odorless	
20		27,50				As above	
25					SP		
30		20,50				As above, becomes light brown 10YR8/3	
35						As above, large rock in borehole, drilled through rock to 41 ft bgs	

Completion Notes:

Boring was drilled using hollow stem auger to 140 feet; Schedule 40 2 inch PVC pipe, Screened from 140 ft bgs to 120 ft bgs, #3 sand from 140 ft to 118 ft bgs, Bentonite from 118 to 115 ft bgs, Bentone cement grout from 115 ft bgs to surface. Traffic rated vault box at surface

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RUBICON
Engineering Corporation

Logged By: D. Robinson

Start Date: 4/9/14

BORING LOG RM-5

Checked by: D. Robinson

End Date: 4/11/14

Boring Depth: 140 Feet

Drilling Co.: J&H

Drill Rig: CME 85 Rig

Boring Diameter: 8 Inch O.D.

Depth Feet	PID (ppm)	Blow Counts	Sample	Lithology	USCS	Description	Completion
45		19,50			ML	Moist, brown 10YR5/3, very fine grain silt, slightly plastic, odorless	
50		50			Siltstone	Moist, dark brown 10YR3/3, very fine grain siltstone, non-plastic, odorless	
60		50			Siltstone	As above, more friable	
70		50			Siltstone	As above	
75		50			Siltstone	Moist, dark brown 10YR3/3, very fine grain silt, small siltstone fragments, non-plastic, odorless	
		50			Siltstone	As above	
		50			Siltstone	As above	
		50			Siltstone	As above	

Completion Notes:

Boring was drilled using hollow stem auger to 140 feet; Schedule 40 2 inch PVC pipe, Screened from 140 ft bgs to 120 ft bgs, #3 sand from 140 ft to 118 ft bgs, Bentonite from 118 to 115 ft bgs, Bentone cement grout from 115 ft bgs to surface. Traffic rated vault box at surface

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RUBICON
Engineering Corporation

Logged By: D. Robinson

Start Date: 4/9/14

BORING LOG RM-5

Checked by: D. Robinson

End Date: 4/11/14

Boring Depth: 140 Feet

Drilling Co.: J&H

Drill Rig: CME 85 Rig

Boring Diameter: 8 Inch O.D.

Depth Feet	PID (ppm)	Blow Counts	Sample	Lithology	USCS	Description	Completion
85		50				As above	
		50				As above	
		50				As above	
		50				As above	
		50				As above	
		50				As above	
90		50				As above	
		50				As above	
		50				As above	
		50				As above	
95		50				As above	
		50				As above	
		28,50			ML	As above	
		50				As above	
100		50				As above	
		50				As above	
		50				As above	
		50				As above	
105		50				As above	
		50				As above	
		50				As above	
		50				As above	
110		50				As above	
		50				As above	
		50				As above	
		50				As above	
115		50				As above	
		50				As above	
		50				As above	
		50				As above	

Completion Notes:

Boring was drilled using hollow stem auger to 140 feet; Schedule 40 2 inch PVC pipe, Screened from 140 ft bgs to 120 ft bgs, #3 sand from 140 ft to 118 ft bgs, Bentonite from 118 to 115 ft bgs, Bentone cement grout from 115 ft bgs to surface. Traffic rated vault box at surface

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RUBICON
Engineering Corporation

Logged By: D. Robinson

Start Date: 4/9/14

BORING LOG RM-5

Checked by: D. Robinson

End Date: 4/11/14

Boring Depth: 140 Feet

Drilling Co.: J&H

Drill Rig: CME 85 Rig

Boring Diameter: 8 Inch O.D.

Depth Feet	PID (ppm)	Blow Counts	Sample	Lithology	USCS	Description	Completion
50						As above	
50						As above, with clay slightly plastic	
125						Moist, dark brown 10YR3/3, very fine grain siltstone, nonplastic, odorless	
50						As above	
50						As above, appears wet	
130						As above, no longer wet, only moist	
50						As above	
50						As above	
135						As above	
50						As above	
50						As above	
140						As above	
145							
150							
155							

Completion Notes:

Boring was drilled using hollow stem auger to 140 feet; Schedule 40 2 inch PVC pipe, Screened from 140 ft bgs to 120 ft bgs, #3 sand from 140 ft to 118 ft bgs, Bentonite from 118 to 115 ft bgs, Bentone cement grout from 115 ft bgs to surface. Traffic rated vault box at surface

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