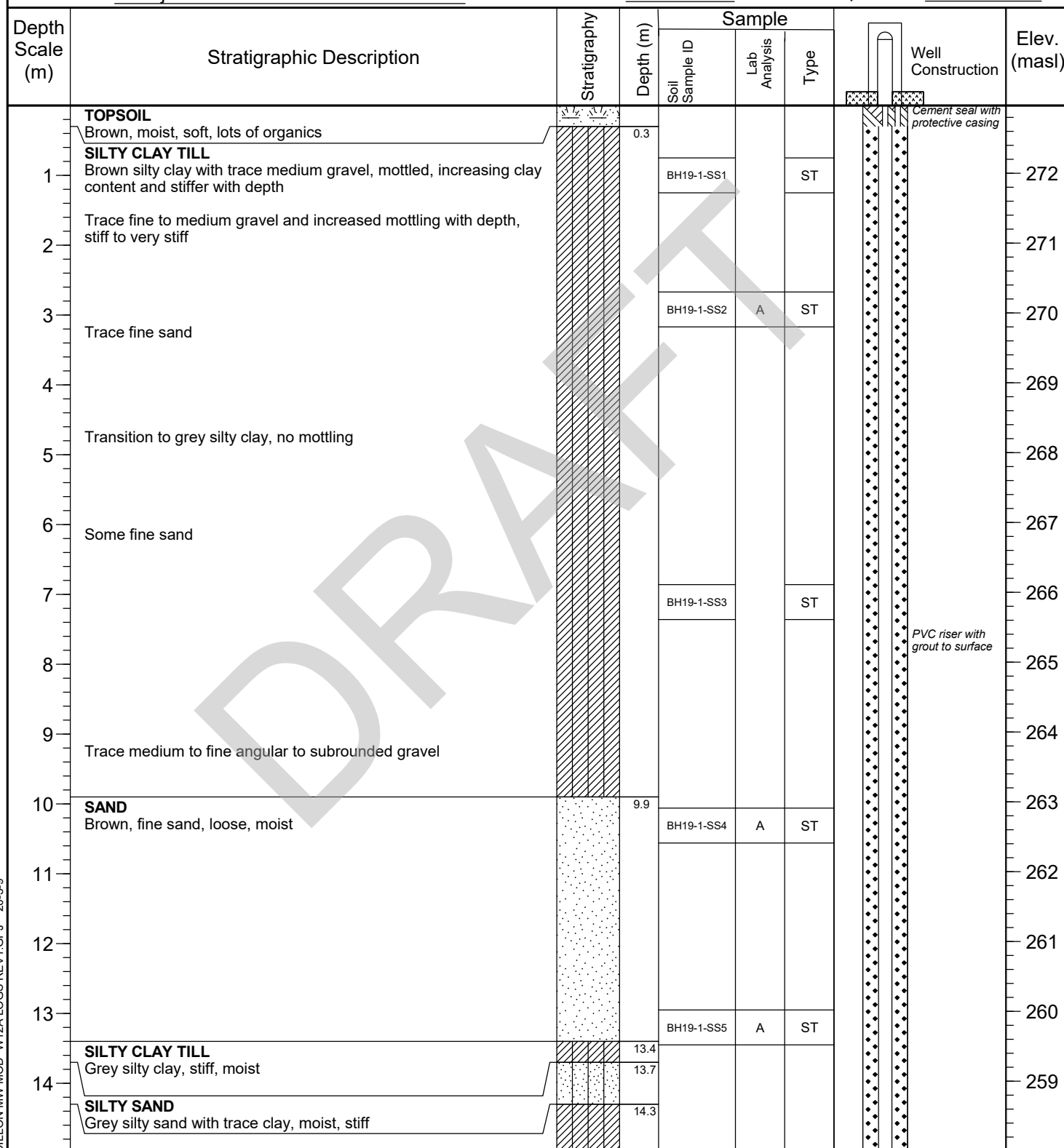


Appendix A

Borehole Logs

Borehole ID: BH19-1
Monitoring Well ID: 19-1

Client: City of London Project: W12A Landfill Site Drilling Program
Project No.: 19-1230 Location: W12A Landfill, London, Ontario
Drilling Co.: Aardvark Drilling Drilling Method: PQ
Observer: D. Orjuela Date Started: 09/04/2019 Date Completed: 09/09/2019



DILLON MW MOD W12A LOGS REV1.GPJ 20-3-9

LITHOLOGY SYMBOLS

 Organics	 Sand	 Clay
 Silt / Clay	 Silty Sand	 Sandy Clay

Northing (m) : 482562
Easting (m) : 4747433

Casing: 2"
Grade Elevation (m asl) : 272.97
Top of Casing Elevation (m asl) : 273.74
ST - Split Tube

Borehole ID: BH19-1
Monitoring Well ID: 19-1

Client: City of London Project: W12A Landfill Site Drilling Program
Project No.: 19-1230 Location: W12A Landfill, London, Ontario
Drilling Co.: Aardvark Drilling Drilling Method: PQ
Observer: D. Orjuela Date Started: 09/04/2019 Date Completed: 09/09/2019

Depth Scale (m)	Stratigraphic Description	Stratigraphy	Depth (m)	Sample			Well Construction	Elev. (masl)
				Soil Sample ID	Lab Analysis	Type		
16	SILTY CLAY Grey silty clay, stiff, moist(<i>continued</i>) CLAYEY SILT Grey clayey silt, stiff, moist		15.2					257
				BH19-1-SS6		ST		
17	SILTY SAND Grey silty sand with some fine sand, stiff, moist		16.8					256
18								255
19				BH19-1-SS7		ST		254
20	CLAY Grey clay, stiff, moist		19.8					253
21								252
22	SILTY CLAY TILL Grey silty clay with trace fine to medium gravel, very stiff, moist		21.3					251
23				BH19-1-SS8		ST		250
24				BH19-1-SS9	A	ST		249
25	Trace fine sand and fine gravel							248
26								247
27								246
28	Some fine to medium gravel							245
29	SANDY CLAY Brown sandy clay with trace fine gravel, stiff, moist		28.4					244
	SILTY CLAY		29.6					

DILLON MW MOD W12A LOGS REV1.GPJ 20-3-9

LITHOLOGY SYMBOLS

Organics Sand Clay
Silt / Clay Silty Sand Sandy Clay

Northing (m) : 482562
Easting (m) : 4747433

Casing: 2"
Grade Elevation (m asl) : 272.97
Top of Casing Elevation (m asl) : 273.74
ST - Split Tube

Borehole ID: BH19-1
Monitoring Well ID: 19-1

Client: City of London Project: W12A Landfill Site Drilling Program
Project No.: 19-1230 Location: W12A Landfill, London, Ontario
Drilling Co.: Aardvark Drilling Drilling Method: PQ
Observer: D. Orjuela Date Started: 09/04/2019 Date Completed: 09/09/2019

Depth Scale (m)	Stratigraphic Description	Stratigraphy	Depth (m)	Sample			Well Construction	Elev. (masl)
				Soil Sample ID	Lab Analysis	Type		
31	Grey silty clay with trace medium to fine gravel, stiff, moist GRAVELLY SAND Brown medium to fine gravelly sand, loose, moist(continued) Transition to grey medium to fine gravelly sand with clay, stiff		29.9					242
32	SILTY CLAY Grey silty clay with trace fine gravel, stiff, moist Very stiff		31.1					241
33								240
34	Trace fine sand						PVC riser with grout to surface	239
35								238
36	GRAVELLY CLAY Grey coarse to fine gravelly clay with silt and trace fine sand, stiff, moist		35.1	BH19-1-SS10		ST		237
37							PVC riser with bentonite	236
38	GRAVELLY SAND Grey to brown fine to medium gravelly sand with silt, firm, moist		37.5	BH19-1-SS11		ST	#1 silica sand pack	235
39								234
40	SANDY CLAY Grey fine sandy clay with silt and trace medium to fine gravel, stiff, moist		39.3					233
41	GRAVELLY SAND Grey fine to medium gravelly sand, stiff, moist		39.6	BH19-1-SS12	A	ST	PVC screen with #1 silica sand pack	232
	End of borehole at 41.2 m bgs		41.2				End cap	

NOTES:

- 1) m bgs = metres below ground surface
- 2) 0.15 m (6") diameter advanced through overburden using PQ technology
- 3) Completed with a monument casing and secured with a lock

Analysis A:

Grain Size and Moisture Content

Analysis B:

Grain Size, Moisture Content, Fraction of Organic Carbon, Cation Exchange Capacity

LITHOLOGY SYMBOLS

	Organics		Sand		Clay
	Silt / Clay		Silty Sand		Sandy Clay

Northing (m) : 482562
Easting (m) : 4747433

Casing: 2"
Grade Elevation (m asl) : 272.97
Top of Casing Elevation (m asl) : 273.74
ST - Split Tube

Borehole ID: BH19-2
Monitoring Well ID: 19-2

Client: City of London Project: W12A Landfill Site Drilling Program
Project No.: 19-1230 Location: W12A Landfill, London, Ontario
Drilling Co.: Aardvark Drilling Drilling Method: PQ
Observer: D. Orjuela Date Started: 09/10/2019 Date Completed: 09/12/2019

Depth Scale (m)	Stratigraphic Description	Stratigraphy	Depth (m)	Sample			Well Construction	Elev. (masl)
				Soil Sample ID	Lab Analysis	Type		
	TOPSOIL Brown topsoil with organics, soft, moist						Cement seal with protective casing	272
1	SILTY CLAY TILL Brown weathered silty clay with trace fine to medium gravel and grey mottling, soft to stiff		0.6					271
2	Loose							270
3	Stiff							269
4				BH19-2-SS1	B	ST		268
5	Slight grey mottling, moist							267
6	Transition to grey							266
7								265
8	Trace medium sand						PVC riser with grout to surface	264
9								263
10				BH19-2-SS2	B	ST		262
11								261
12								260
13	SAND Grey fine to medium sand sand, soft		12.2					259
14	Moist			BH19-2-SS3	A	ST		258
	Gray silty clay seam, stiff, moist		14.6					

DILLON MW MOD W12A LOGS REV1.GPJ 20-3-9

LITHOLOGY SYMBOLS

Organics Sand Sandy Gravel
Silt / Clay Clayey Sand

Northing (m) : 482505
Easting (m) : 4747770

Casing: 2"
Grade Elevation (m asl) : 272.29
Top of Casing Elevation (m asl) : 273.01
ST - Split Tube

Borehole ID: BH19-2
Monitoring Well ID: 19-2

Client: City of London Project: W12A Landfill Site Drilling Program
Project No.: 19-1230 Location: W12A Landfill, London, Ontario
Drilling Co.: Aardvark Drilling Drilling Method: PQ
Observer: D. Orjuela Date Started: 09/10/2019 Date Completed: 09/12/2019

Depth Scale (m)	Stratigraphic Description	Stratigraphy	Depth (m)	Sample			Well Construction	Elev. (masl)
				Soil Sample ID	Lab Analysis	Type		
	Gray silty clay seam, stiff, moist(<i>continued</i>)							
	CLAYEY SAND		15.4					257
16	grey clayey sand, stiff, moist		15.7					
	SILTY CLAY							
	Grey silty clay, stiff, moist							256
	Intermix of above silty clay and clayey sand							
17	SAND		16.8					
	Grey fine to medium sand, stiff, moist							255
	Grey silty clay seam with trace fine sand, stiff, moist							
18								254
	Trace silt							
19								253
20								252
21	Grey clayey sand seam, soft, wet,		21					
	SILTY CLAY TILL		21.2					251
	Grey silty clay, stiff, moist							
22								250
	Grey sandy clay seam, soft, wet							
23	Trace fine to medium gravel							249
24	SAND		23.6					248
	Fine to medium sand with trace medium gravel, stiff, moist							
	Transition to gravelly sand		24.5					
25	SILTY CLAY			BH19-2-SS4	A	ST		247
	Grey silty clay with trace fine to medium gravel, stiff, moist							
26								246
	Trace coarse gravel							
27								245
	Trace fine to medium sand							
28								244
29								243

PVC riser with grout to surface

DILLON MW MOD W12A LOGS REV1.GPJ 20-3-9

LITHOLOGY SYMBOLS

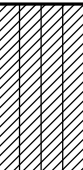
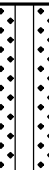
 Organics
 Sand
 Sandy Gravel
 Silt / Clay
 Clayey Sand

Northing (m) : 482505
 Easting (m) : 4747770

Casing: 2"
 Grade Elevation (m asl) : 272.29
 Top of Casing Elevation (m asl) : 273.01
 ST - Split Tube

Borehole ID: BH19-2
Monitoring Well ID: 19-2

Client: <u>City of London</u>	Project: <u>W12A Landfill Site Drilling Program</u>
Project No.: <u>19-1230</u>	Location: <u>W12A Landfill, London, Ontario</u>
Drilling Co.: <u>Aardvark Drilling</u>	Drilling Method: <u>PQ</u>
Observer: <u>D. Orjuela</u>	Date Started: <u>09/10/2019</u> Date Completed: <u>09/12/2019</u>

Depth Scale (m)	Stratigraphic Description	Stratigraphy	Depth (m)	Sample			Well Construction	Elev. (masl)
				Soil Sample ID	Lab Analysis	Type		
31	SILTY CLAY TILL Grey silty clay with trace fine to medium gravel, stiff, moist(<i>continued</i>) Trace to fine to medium gravel and fine to medium sand			BH19-2-SS5	A	ST		242
32								241
33								240
34								239
35	Trace coarse gravel and fine to medium sand							238
36								237
37								236
38								235
39								234
40								233
41	Trace fine to medium sand							232
42								231
43	GRAVELLY SAND Fine to medium gravelly sand with trace silt and clay, soft, moist		42.7					230
44	Trace clay							229
	Grey silty clay seam, soft, moist							228

DILLON MW MOD W12A LOGS REV1.GPJ 20-3-9

LITHOLOGY SYMBOLS

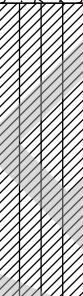
 Organics	 Sand	 Sandy Gravel
 Silt / Clay	 Clayey Sand	

Northing (m) : 482505
Easting (m) : 4747770

Casing: 2"
Grade Elevation (m asl) : 272.29
Top of Casing Elevation (m asl) : 273.01
ST - Split Tube

Borehole ID: BH19-2
Monitoring Well ID: 19-2

Client: City of London Project: W12A Landfill Site Drilling Program
Project No.: 19-1230 Location: W12A Landfill, London, Ontario
Drilling Co.: Aardvark Drilling Drilling Method: PQ
Observer: D. Orjuela Date Started: 09/10/2019 Date Completed: 09/12/2019

Depth Scale (m)	Stratigraphic Description	Stratigraphy	Depth (m)	Sample			Well Construction	Elev. (masl)
				Soil Sample ID	Lab Analysis	Type		
46	GRAVELLY SAND Fine to medium gravelly sand with trace silt and clay, soft, moist(continued)		47.2	BH19-2-SS6	A	ST	 PVC screen with #1 silica sand pack End cap	227
47	SILTY CLAY TILL Silty clay with trace fine to medium gravel and fine to medium sand, stiff, moist							226
48			50.3					225
49								224
50								223
	End of borehole at 50.3 m bgs		50.3					222

NOTES:

- 1) m bgs = metres below ground surface
- 2) 0.15 m (6") diameter advanced through overburden using PQ technology
- 3) Completed with a monument casing and secured with a lock

Analysis A:

Grain Size and Moisture Content

Analysis B:

Grain Size, Moisture Content, Fraction of Organic Carbon, Cation Exchange Capacity

DILLON MW MOD W12A LOGS REV1.GPJ 20-3-9

LITHOLOGY SYMBOLS

 Organics
 Sand
 Silty / Clay
 Sandy Gravel
 Clayey Sand

Northing (m) : 482505
Easting (m) : 4747770

Casing: 2"
Grade Elevation (m asl) : 272.29
Top of Casing Elevation (m asl) : 273.01
ST - Split Tube

Borehole ID: BH19-2-2
Monitoring Well ID: 92-7a

Client: City of London Project: W12A Landfill Site Drilling Program
Project No.: 19-1230 Location: W12A Landfill, London, Ontario
Drilling Co.: Aardvark Drilling Drilling Method: Split Spoon
Observer: D. Orjuela Date Started: 09/19/2019 Date Completed: 09/23/2019

Depth Scale (m)	Stratigraphic Description	Stratigraphy	Depth (m)	Sample			Well Construction	Elev. (masl)
				Soil Sample ID	Lab Analysis	Blows/6"		
	TOPSOIL Brown topsoil with organics and trace fine to med gravel, stiff, moist						Cement seal with protective casing	272
1	SILTY CLAY TILL Brown silty clay with grey mottling and trace weathered fine sand, stiff, moist		0.8			4,5,6,6		271
2	Less grey mottling					3,4,3,6		270
3						3,4,5,12		269
4	Trace fine to medium gravel					4,10-20,23		268
5				BH19-2-2-SS1		15,19-20,23		267
6							PVC riser with bentonite	266
7				BH19-2-2-SS2				265
8	Grey, soft							264
9						4,4,8,8		263
10						6,10-13,15		262
11	SAND Brown to grey fine to medium sand, firm, moist		10.7			13,32-45,50	#1 silica sand pack	261
12	Stiff							260
13	Augered to depth					28,39-50,50	PVC screen with #1 silica sand pack	259
14	End of borehole at 14 m bgs		14				End cap	

NOTES:

- 1) m bgs = metres below ground surface
- 2) 0.15 m (6") diameter advanced through overburden using SPT technology
- 3) Completed with a monument casing and secured with a lock

LITHOLOGY SYMBOLS

 Organics
 Silt / Clay

 Sand

Northing (m) : 482507
Easting (m) : 4747769

Casing: 2"
Grade Elevation (m asl) : 272.20
Top of Casing Elevation (m asl) : 272.99

Borehole ID: BH19-3
Monitoring Well ID: 19-3

Client: City of London Project: W12A Landfill Site Drilling Program
Project No.: 19-1230 Location: W12A Landfill, London, Ontario
Drilling Co.: Aardvark Drilling Drilling Method: PQ
Observer: D. Orjuela Date Started: 09/24/2019 Date Completed: 09/25/2019

Depth Scale (m)	Stratigraphic Description	Stratigraphy	Depth (m)	Sample			Well Construction	Elev. (masl)
				Soil Sample ID	Lab Analysis	Type		
	TOPSOIL Brown topsoil with organics and trace fine to med gravel, stiff, moist						Cement seal with protective casing	274
1	SILTY CLAY TILL Brown weathered silty clay with trace fine gravel, stiff, moist		0.8					273
2								272
3	Grey with brown mottling			BH19-3-SS1		ST		271
4								270
5	Brown with trace fine to medium gravel, soft to stiff			BH19-3-SS2	B + X-Ray	ST		269
6								268
7	Trace fine gravel			BH19-3-SS3		ST		267
8								266
9	Brown to grey with trace fine gravel			BH19-3-SS4		ST	PVC riser with grout to surface	265
10								264
11	Grey			BH19-3-SS5	B	ST		263
12								262
13	Occasional sand pockets			BH19-3-SS6		ST		261
14	SAND Fine brown sand with trace medium sand, firm, moist		13.7					260
				BH19-3-SS7		ST		
				BH19-3-SS8	B	ST		

DILLON MW MOD W12A LOGS REV1.GPJ 20-3-9

LITHOLOGY SYMBOLS

Organics Sand
Silt / Clay

Northing (m) : 482425
Easting (m) : 4748008

Casing: 2"
Grade Elevation (m asl) : 274.34
Top of Casing Elevation (m asl) : 275.15
ST - Split Tube

Borehole ID: BH19-3
Monitoring Well ID: 19-3

Client: City of London Project: W12A Landfill Site Drilling Program
Project No.: 19-1230 Location: W12A Landfill, London, Ontario
Drilling Co.: Aardvark Drilling Drilling Method: PQ
Observer: D. Orjuela Date Started: 09/24/2019 Date Completed: 09/25/2019

Depth Scale (m)	Stratigraphic Description	Stratigraphy	Depth (m)	Sample			Well Construction	Elev. (masl)
				Soil Sample ID	Lab Analysis	Type		
16	SAND Fine brown sand with trace medium sand, firm, moist(continued) Silty clay pocket							259
17	Intermixed sand and silty clay							258
18	Brown to grey, moist Brown, moist, soft							257
19	SILTY CLAY Silty clay, soft, moist		18.7 18.9					256
20	SAND Brown to grey fine sand with trace medium sand, soft, moist							255
21	Intermixed sand and silty clay							254
22	SILTY CLAY Grey silty clay, stiff, moist Brown to grey with trace fine to medium sand, soft Some grey mottling, stiff, moist		21.1					253
23	No mottling with trace fine gravel							252
24								251
25				BH19-3-SS9		ST		250
26								249
27								248
28	Stiff to very stiff below 27.4 mbgs							247
29	Some fine to medium gravel							246
								245

DILLON MW MOD W12A LOGS REV1.GPJ 20-3-9

LITHOLOGY SYMBOLS

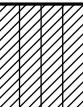
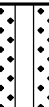
Organics Sand
Silt / Clay

Northing (m) : 482425
Easting (m) : 4748008

Casing: 2"
Grade Elevation (m asl) : 274.34
Top of Casing Elevation (m asl) : 275.15
ST - Split Tube

Borehole ID: BH19-3
Monitoring Well ID: 19-3

Client: <u>City of London</u>	Project: <u>W12A Landfill Site Drilling Program</u>
Project No.: <u>19-1230</u>	Location : <u>W12A Landfill, London, Ontario</u>
Drilling Co.: <u>Aardvark Drilling</u>	Drilling Method: <u>PQ</u>
Observer: <u>D. Orjuela</u>	Date Started: <u>09/24/2019</u> Date Completed: <u>09/25/2019</u>

Depth Scale (m)	Stratigraphic Description	Stratigraphy	Depth (m)	Sample			Well Construction	Elev. (masl)
				Soil Sample ID	Lab Analysis	Type		
31	SILTY CLAY Grey silty clay, stiff, moist(<i>continued</i>)							244
				BH19-3-SS10		ST		243
32								242
33								241
34								240
35								239
36								238
37								237
38								236
39								235
40								234
41								233
42								232
43								231
44	Pocket of brown to grey medium to fine sand, compact, moist		44.6					230

DILLON MW MOD W12A LOGS REV1.GPJ 20-3-9

LITHOLOGY SYMBOLS

 Organics
 Sand
 Silt / Clay

Northing (m) : 482425
Easting (m) : 4748008

Casing: 2"
Grade Elevation (m asl) : 274.34
Top of Casing Elevation (m asl) : 275.15
ST - Split Tube

Borehole ID: BH19-3
Monitoring Well ID: 19-3

Client: <u>City of London</u>	Project: <u>W12A Landfill Site Drilling Program</u>
Project No.: <u>19-1230</u>	Location: <u>W12A Landfill, London, Ontario</u>
Drilling Co.: <u>Aardvark Drilling</u>	Drilling Method: <u>PQ</u>
Observer: <u>D. Orjuela</u>	Date Started: <u>09/24/2019</u> Date Completed: <u>09/25/2019</u>

Depth Scale (m)	Stratigraphic Description	Stratigraphy	Depth (m)	Sample			Well Construction	Elev. (masl)
				Soil Sample ID	Lab Analysis	Type		
46	SAND Grey to brown fine sand with trace medium gravel, moist, firm(<i>continued</i>) Trace fine to medium gravel and clay						PVC riser with bentonite	229
47							#1 silica sand pack	228
48	Some fine to medium gravel with trace silty clay			BH19-3-SS11		ST	PVC screen with #1 silica sand pack	227
			48.8				End cap	226

End of borehole at 48.8 m bgs

NOTES:

- 1) m bgs = metres below ground surface
- 2) 0.15 m (6") diameter advanced through overburden using PQ technology
- 3) Completed with a monument casing and secured with a lock

Analysis A:

Grain Size and Moisture Content

Analysis B:

Grain Size, Moisture Content, Fraction of Organic Carbon, Cation Exchange Capacity

DILLON MW MOD W12A LOGS REV1.GPJ 20-3-9

LITHOLOGY SYMBOLS

 Organics
 Sand
 Silt / Clay

Northing (m) : 482425
Easting (m) : 4748008

Casing: 2"
Grade Elevation (m asl) : 274.34
Top of Casing Elevation (m asl) : 275.15
ST - Split Tube

Borehole ID: BH19-4
Monitoring Well ID: 19-4a

Client: City of London Project: W12A Landfill Site Drilling Program
Project No.: 19-1230 Location: W12A Landfill, London, Ontario
Drilling Co.: Aardvark Drilling Drilling Method: PQ
Observer: D. Orjuela Date Started: 09/27/2019 Date Completed: 09/30/2019

Depth Scale (m)	Stratigraphic Description	Stratigraphy	Depth (m)	Sample			Well Construction	Elev. (masl)
				Soil Sample ID	Lab Analysis	Type		
	TOPSOIL Organics		0.3				Cement seal with protective casing	280
1	SILTY CLAY TILL Brown silty clay with trace fine to medium gravel and organics, weathered, stiff Grey mottling, moist							279
2								278
3	Some brown to light brown mottling							277
4								276
5	No mottling			BH19-4-SS1	A	ST		275
6	Less stiff							274
7								273
8	Grey						PVC riser with grout to surface	272
9	Trace fine sand			BH19-4-SS2	A	ST		271
10								270
11								269
12								268
13	Lens of fine, brown sand with trace medium sand, firm moist							267
14	Trace fine to medium gravel							266

DILLON MW MOD W12A LOGS REV1.GPJ 20-3-9

LITHOLOGY SYMBOLS

 Organics
 Gravel
 Sand
 Silt / Clay
 Sandy Gravel
 Silty Sand

Northing (m) : 480896
 Easting (m) : 4748251

Casing: 2"
 Grade Elevation (m asl) : 280.34
 Top of Casing Elevation (m asl) : 281.09
 ST - Split Tube

Borehole ID: BH19-4

Monitoring Well ID: 19-4a

Client: City of London Project: W12A Landfill Site Drilling Program
 Project No.: 19-1230 Location: W12A Landfill, London, Ontario
 Drilling Co.: Aardvark Drilling Drilling Method: PQ
 Observer: D. Orjuela Date Started: 09/27/2019 Date Completed: 09/30/2019

Depth Scale (m)	Stratigraphic Description	Stratigraphy	Depth (m)	Sample			Well Construction	Elev. (masl)
				Soil Sample ID	Lab Analysis	Type		
16	SILTY CLAY TILL Brown silty clay with trace fine to medium gravel and organics, weathered, stiff(<i>continued</i>) Lens of fine to coarse sand, loose, moist Grey to brown with some fine sand and brown mottling, soft							265
17	Lens of brown fine to medium sand, loose, moist							264
18	Grey		18					263
	GRAVEL Cobbles		18.3					262
	GRAVELLY SAND Brown fine to medium gravelly sand, stiff, moist		18.4					
19	SAND Brown fine to medium sand, firm, moist		19.1					261
20	SILTY SAND Grey silty sand, stiff, moist		19.4	BH19-4-SS3		ST		260
	SAND Brown fine to medium sand, stiff, moist							259
21	Medium grained sand							258
22	Fine grained sand							257
23	Coarse grained with fine gravel, loose, moist							256
24	Trace fine gravel							255
25								254
26	Grey coarse to medium sand, firm, moist							253
27								252
28	GRAVEL Cobbles, loose		28					251
29	SAND Fine to medium grain sand, firm, moist		29					

DILLON MW MOD W12A LOGS REV1.GPJ 20-3-9

LITHOLOGY SYMBOLS

	Organics		Gravel		Sand
	Silt / Clay		Sandy Gravel		Silty Sand

Northing (m) : 480896
 Easting (m) : 4748251

Casing: 2"
 Grade Elevation (m asl) : 280.34
 Top of Casing Elevation (m asl) : 281.09
 ST - Split Tube

Borehole ID: BH19-4
Monitoring Well ID: 19-4a

Client: City of London Project: W12A Landfill Site Drilling Program
Project No.: 19-1230 Location: W12A Landfill, London, Ontario
Drilling Co.: Aardvark Drilling Drilling Method: PQ
Observer: D. Orjuela Date Started: 09/27/2019 Date Completed: 09/30/2019

Depth Scale (m)	Stratigraphic Description	Stratigraphy	Depth (m)	Sample			Well Construction	Elev. (masl)
				Soil Sample ID	Lab Analysis	Type		
31	SAND Fine to medium grain sand, firm, moist(<i>continued</i>) Trace fine to medium gravel							250
32	Little fine to medium gravel							249
33								248
34	SILTY CLAY Grey silty clay with coarse gravel, soft, moist		33.5					247
35								246
36								245
37	SAND Dark brown medium to coarse sand with trace fine gravel, firm, moist to wet		36.6					244
38	Wet							243
39								242
				BH19-4-SS4		ST		241

End of borehole at 39.6 m bgs

39.6

End cap

NOTES:

- 1) m bgs = metres below ground surface
- 2) 0.15 m (6") diameter advanced through overburden using PQ technology
- 3) Completed with a monument casing and secured with a lock

Analysis A:

Grain Size and Moisture Content

Analysis B:

Grain Size, Moisture Content, Fraction of Organic Carbon, Cation Exchange Capacity

LITHOLOGY SYMBOLS

	Organics		Gravel		Sand
	Silt / Clay		Sandy Gravel		Silty Sand

Northing (m) : 480896
Easting (m) : 4748251

Casing: 2"
Grade Elevation (m asl) : 280.34
Top of Casing Elevation (m asl) : 281.09
ST - Split Tube

Borehole ID: BH19-4-2

Monitoring Well ID: 19-4b

Client: <u>City of London</u>	Project: <u>W12A Landfill Site Drilling Program</u>
Project No.: <u>19-1230</u>	Location: <u>W12A Landfill, London, Ontario</u>
Drilling Co.: <u>Aardvark Drilling</u>	Drilling Method: <u>Split Spoon</u>
Observer: <u>D. Orjuela</u>	Date Started: <u>10/02/2019</u> Date Completed: <u>10/02/2019</u>

Depth Scale (m)	Stratigraphic Description	Stratigraphy	Depth (m)	Sample			Well Construction	Elev. (masl)
				Soil Sample ID	Lab Analysis	Blows/6"		
	TOPSOIL Organics		0.3				Cement seal with protective casing	280
1	SILTY CLAY TILL Brown silty clay with trace fine to medium gravel, stiff, brown							279
2								278
3								277
4						4,12-16,16		276
5	Grey			BH19-4-2-SS1		4,5,6,7		275
6				BH19-4-2-SS2				274
7								273
8						9,13		272
9	Trace fine gravel					9,12-15,20	PVC riser with grout to surface	271
10						1,6-11,16		270
11								269
12						3,6-7,11		268
13								267
14						5,9-15,18		266
15						7,9-14,12		265
16						6,10-16,30		264

DILLON MW MOD W12A LOGS REV1.GPJ 20-3-9

LITHOLOGY SYMBOLS
 Organics
 Silt / Clay

 Sand
 Sandy Gravel

 Gravel

Northing (m) : 480898

Easting (m) : 4748253

Casing: 2"

Grade Elevation (m asl) : 280.44

Top of Casing Elevation (m asl) : 281.12

Borehole ID: BH19-4-2
Monitoring Well ID: 19-4b

Client: City of London Project: W12A Landfill Site Drilling Program
Project No.: 19-1230 Location: W12A Landfill, London, Ontario
Drilling Co.: Aardvark Drilling Drilling Method: Split Spoon
Observer: D. Orjuela Date Started: 10/02/2019 Date Completed: 10/02/2019

Depth Scale (m)	Stratigraphic Description	Stratigraphy	Depth (m)	Sample			Well Construction	Elev. (masl)
				Soil Sample ID	Lab Analysis	Blows/6"		
18	Trace fine to medium sand SAND Brown fine to medium sand, firm, moist		17.6				PVC riser with grout to surface	263
19	GRAVELLY SAND Brown fine to medium gravelly sand, moist		18.9			7,11-34,31	PVC riser with bentonite	262
20						52,70	#1 silica sand pack	261
21						6,50,50		260
22	GRAVEL Fine to medium gravel		21.9				PVC screen with #1 silica sand pack	259
	SAND Brown fine to medium sand, firm, moist		22.1					258
	End of the borehole at 22.9 m bgs		22.9			20,45-53,53	End cap	

NOTES:

- 1) m bgs = metres below ground surface
- 2) 0.15 m (6") diameter advanced through overburden using SPT technology
- 3) Completed with a monument casing and secured with a lock

DILLON MW MOD W12A LOGS REV1.GPJ 20-3-9

LITHOLOGY SYMBOLS

 Organics
 Silt / Clay

 Sand
 Sandy Gravel

 Gravel

Northing (m) : 480898
Easting (m) : 4748253

Casing: 2"
Grade Elevation (m asl) : 280.44
Top of Casing Elevation (m asl) : 281.12

Borehole ID: **BH19-5**

Monitoring Well ID: **19-5a**

Client: <u>City of London</u>	Project: <u>W12A Landfill Site Drilling Program</u>
Project No.: <u>19-1230</u>	Location : <u>W12A Landfill, London, Ontario</u>
Drilling Co.: <u>Aardvark Drilling</u>	Drilling Method: <u>PQ</u>
Observer: <u>D. Orjuela</u>	Date Started: <u>10/04/2019</u> Date Completed: <u>10/04/2019</u>

Depth Scale (m)	Stratigraphic Description	Stratigraphy	Depth (m)	Sample			Well Construction	Elev. (masl)
				Soil Sample ID	Lab Analysis	Type		
	TOPSOIL Organics		0.2				Cement seal with protective casing	282
1	SILTY CLAY TILL Light brown silty clay with grey mottling and trace fine medium gravel, stiff, moist							281
2	Trace grey mottling							280
3	Grey							279
4	No mottling							278
5				BH19-5-SS1	B + X-Ray	ST		277
6				BH19-5-SS2		ST		276
7				BH19-5-SS3		ST		275
8							PVC riser with grout to surface	274
9				BH19-5-SS4	B	ST		273
10	Some cobbles							272
11				BH19-5-SS5		ST		271
12	Some cobbles			BH19-5-SS6		ST		270
13								269
14				BH19-5-SS7	B	ST		268

DILLON MW MOD W12A LOGS REV1.GPJ 20-3-9

LITHOLOGY SYMBOLS

 Organics	 Sandy Clay
 Silt / Clay	 Sand

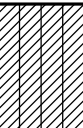
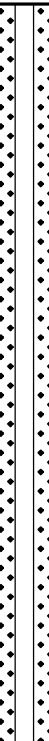
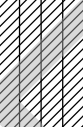
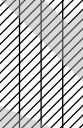
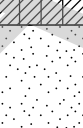
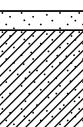
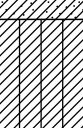
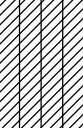
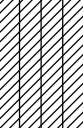
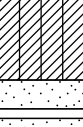
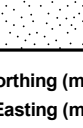
Northing (m) : 481335
 Easting (m) : 4748299

Casing: 2"
 Grade Elevation (m asl) : 282.58
 Top of Casing Elevation (m asl) : 283.28
 ST - Split Tube

Borehole ID: **BH19-5**

Monitoring Well ID: **19-5a**

Client: City of London Project: W12A Landfill Site Drilling Program
 Project No.: 19-1230 Location: W12A Landfill, London, Ontario
 Drilling Co.: Aardvark Drilling Drilling Method: PQ
 Observer: D. Orjuela Date Started: 10/04/2019 Date Completed: 10/04/2019

Depth Scale (m)	Stratigraphic Description	Stratigraphy	Depth (m)	Sample			Well Construction	Elev. (masl)
				Soil Sample ID	Lab Analysis	Type		
16	SILTY CLAY TILL Light brown silty clay with grey mottling and trace fine medium gravel, stiff, moist(<i>continued</i>) Occasional medium sand pockets			BH19-5-SS8		ST		267
				BH19-5-SS9		ST		266
17	SANDY CLAY Brown medium to coarse sandy clay with fine to medium gravel, stiff, moist		16.3					266
			16.8	BH19-5-SS10	B	ST		265
18	SILTY CLAY TILL Grey silty clay with trace fine sand and fine gravel, stiff							265
								264
19								263
				BH19-5-SS11		ST		263
20								262
				BH19-5-SS12		ST		262
21	SAND Brown fine to medium sand, firm, moist		20.5					261
								261
22	SILTY CLAY Grey silty clay with trace fine sand, stiff, moist		21.7					260
								260
23	SAND Brown fine to medium sand, firm, moist		23					259
			23.2					259
24	SANDY CLAY Brown fine to medium sandy clay with fine gravel, firm, moist							258
								258
25	SILTY CLAY TILL Grey silty clay with trace sand and fine to medium gravel, very stiff, moist		24.4	BH19-5-SS13	A	ST		258
								257
26								256
								255
27								254
								254
28								253
								253
29	SAND Fine to medium sand with trace fine gravel, firm, moist		29					253
			29.3					253
	SILTY CLAY Grey silty clay with sand and trace gravel, stiff		29.4					253

DILLON MW MOD W12A LOGS REV1.GPJ 20-3-9

LITHOLOGY SYMBOLS

 Organics
 Sandy Clay
 Silt / Clay
 Sand

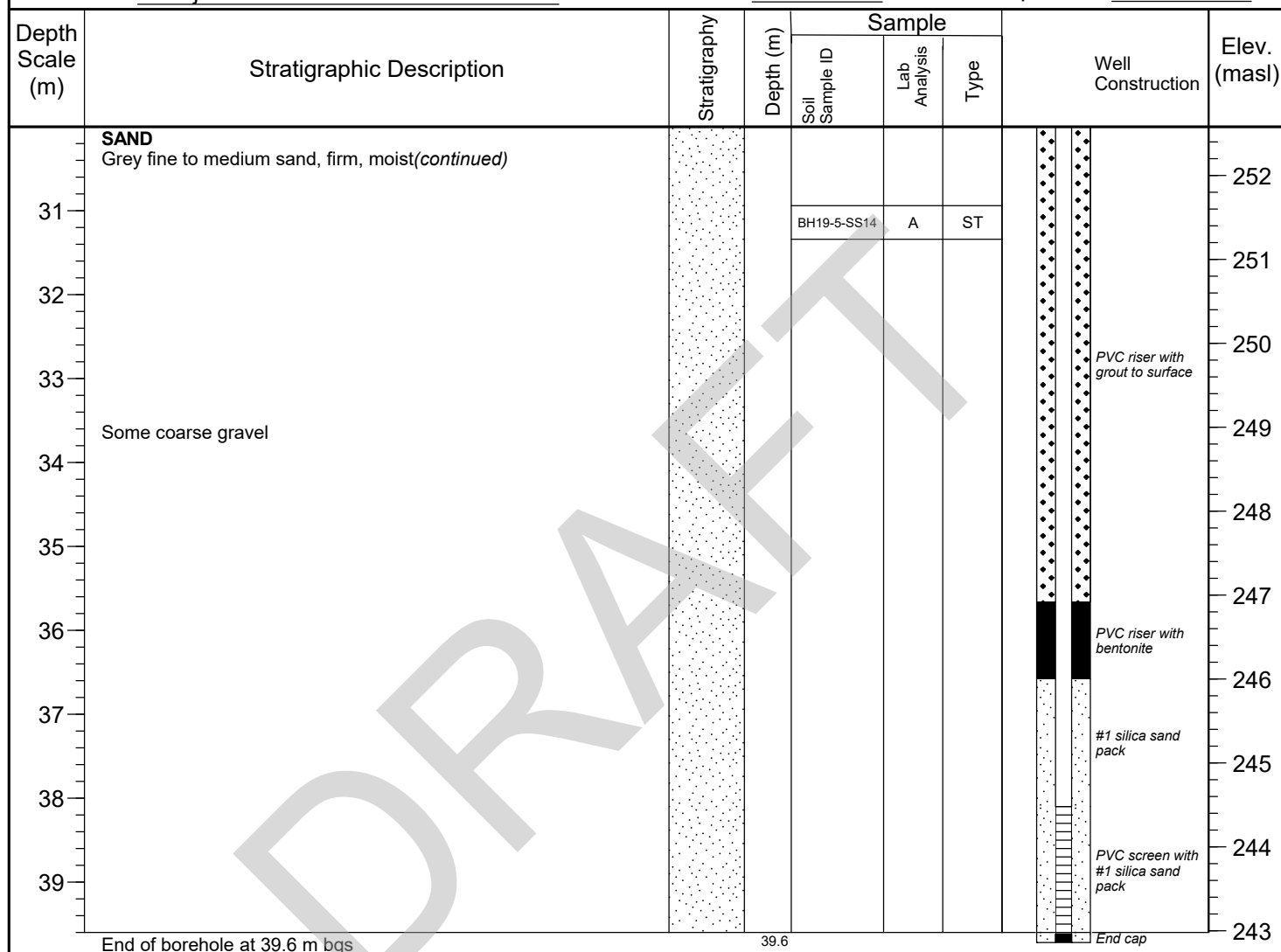
Northing (m) : 481335
 Easting (m) : 4748299

Casing: 2"
 Grade Elevation (m asl) : 282.58
 Top of Casing Elevation (m asl) : 283.28
 ST - Split Tube

Borehole ID: BH19-5

Monitoring Well ID: 19-5a

Client: City of London Project: W12A Landfill Site Drilling Program
 Project No.: 19-1230 Location: W12A Landfill, London, Ontario
 Drilling Co.: Aardvark Drilling Drilling Method: PQ
 Observer: D. Orjuela Date Started: 10/04/2019 Date Completed: 10/04/2019



NOTES:

- 1) m bgs = metres below ground surface
- 2) 0.15 m (6") diameter advanced through overburden using PQ technology
- 3) Completed with a monument casing and secured with a lock

Analysis A:

Grain Size and Moisture Content

Analysis B:

Grain Size, Moisture Content, Fraction of Organic Carbon, Cation Exchange Capacity

DILLON MW MOD W12A LOGS REV1.GPJ 20-3-9

LITHOLOGY SYMBOLS

Organics Sandy Clay
 Silt / Clay Sand

Northing (m) : 481335
 Easting (m) : 4748299

Casing: 2"
 Grade Elevation (m asl) : 282.58
 Top of Casing Elevation (m asl) : 283.28
 ST - Split Tube

Borehole ID: BH19-5-2

Monitoring Well ID: 19-5b

Client: City of London Project: W12A Landfill Site Drilling Program
 Project No.: 19-1230 Location: W12A Landfill, London, Ontario
 Drilling Co.: Aardvark Drilling Drilling Method: Split Spoon
 Observer: D. Orjuela Date Started: 10/09/2019 Date Completed: 10/09/2019

Depth Scale (m)	Stratigraphic Description	Stratigraphy	Depth (m)	Sample			Well Construction	Elev. (masl)
				Soil Sample ID	Lab Analysis	Blows/6"		
	TOPSOIL Brown top soil with organics, moist, stiff		0.1				Cement seal with protective casing	282
1	SILTY CLAY TILL Light brown weather silty clay with grey mottling, stiff, dry to moist Brown with trace fine sand					5,12-16,16		281
2						7,12-16,16		280
3						5,10-14,15		279
4						5,10-14,18		278
5				BH19-5-2-SS1				277
6	No mottling, trace fine sand							276
7				BH19-5-2-SS2		5,9-15,17		275
8	Trace fine to medium gravel						PVC riser with grout to surface	274
9						4,9-13,16		273
10	Grey					5,10-12,18		272
11						6,8-12,14		271
12						7,9-13,15		270
13						5,4-12,15		269
14								268

DILLON MW MOD W12A LOGS REV1.GPJ 20-3-9

LITHOLOGY SYMBOLS

 Organics
 Silt / Clay

 Sand

Northing (m) : 481336

Easting (m) : 4748300

Casing: 2"

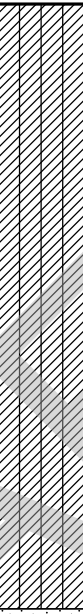
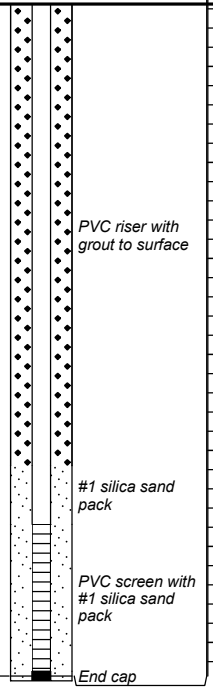
Grade Elevation (m asl) : 282.65

Top of Casing Elevation (m asl) : 283.44

Borehole ID: BH19-5-2

Monitoring Well ID: 19-5b

Client: City of London Project: W12A Landfill Site Drilling Program
 Project No.: 19-1230 Location: W12A Landfill, London, Ontario
 Drilling Co.: Aardvark Drilling Drilling Method: Split Spoon
 Observer: D. Orjuela Date Started: 10/09/2019 Date Completed: 10/09/2019

Depth Scale (m)	Stratigraphic Description	Stratigraphy	Depth (m)	Sample			Well Construction	Elev. (masl)
				Soil Sample ID	Lab Analysis	Blows/6"		
16	SILTY CLAY TILL Light brown weather silty clay with grey mottling, stiff, dry to moist(<i>continued</i>)					8,11-14,16		267
17						8,11-14,13		266
18						5,9-8,12		265
19						6,10-16,18		264
20								263
21	SAND Brown to grey fine to medium sand, firm, moist		21.3					262
22						20,24-44,28		261
	End of borehole at 22 m bgs		22					

NOTES:

- 1) m bgs = metres below ground surface
- 2) 0.15 m (6") diameter advanced through overburden using PQ technology
- 3) Completed with a monument casing and secured with a lock

DILLON MW MOD W12A LOGS REV1.GPJ 20-3-9

LITHOLOGY SYMBOLS
 Organics
 Silt / Clay

 Sand

Northing (m) : 481336
 Easting (m) : 4748300

Casing: 2"
 Grade Elevation (m asl) : 282.65
 Top of Casing Elevation (m asl) : 283.44

Borehole ID: BH19-6

Monitoring Well ID: 19-6a

Client: City of London Project: W12A Landfill Site Drilling Program
 Project No.: 19-1230 Location: W12A Landfill, London, Ontario
 Drilling Co.: Aardvark Drilling Drilling Method: PQ
 Observer: D. Orjuela Date Started: 10/11/2019 Date Completed: 10/11/2019

Depth Scale (m)	Stratigraphic Description	Stratigraphy	Depth (m)	Sample			Well Construction	Elev. (masl)
				Soil Sample ID	Lab Analysis	Type		
	TOPSOIL Brown top soil with organics, stiff, moist		0.1				Cement seal with protective casing	
1	SILTY CLAY TILL Brown weathered silty clay with grey mottling and trace fine gravel, stiff, dry to moist							280
2								279
3	Trace fine to medium gravel							278
4								277
5	No mottling with trace to coarse gravel			BH19-6-SS1	A	ST		276
6								275
7	Grey with trace fine gravel							274
8								273
9								272
10								271
11	Little gravel							270
12	SAND Grey fine sand, firm, moist Grey sand intermixed with grey silty clay, trace fine to medium gravel, firm, moist		10.7					269
13	GRAVELLY SAND Fine to medium gravelly sand with trace clay, firm, moist		12.2	BH19-6-SS3		ST		268
14								267

DILLON MW MOD W12A LOGS REV1.GPJ 20-3-9

LITHOLOGY SYMBOLS

	Organics		Sand		Sandy Clay
	Silt / Clay		Sandy Gravel		Silty Sand and Gravel

Northing (m) : 481678
 Easting (m) : 4748289

Casing: 2"
 Grade Elevation (m asl) : 280.91
 Top of Casing Elevation (m asl) : 281.65
 ST - Split Tube

Borehole ID: BH19-6

Monitoring Well ID: 19-6a

Client: City of London Project: W12A Landfill Site Drilling Program
 Project No.: 19-1230 Location: W12A Landfill, London, Ontario
 Drilling Co.: Aardvark Drilling Drilling Method: PQ
 Observer: D. Orjuela Date Started: 10/11/2019 Date Completed: 10/11/2019

Depth Scale (m)	Stratigraphic Description	Stratigraphy	Depth (m)	Sample			Well Construction	Elev. (masl)
				Soil Sample ID	Lab Analysis	Type		
16	GRAVELLY SAND Fine to medium gravelly sand with trace clay, firm, moist(continued)							265
17								264
18								263
19	SAND Grey to brown fine to medium sand, firm, moist to wet		18.3	BH19-6-SS4		ST		262
20				BH19-6-SS5		ST		261
21	SANDY CLAY Grey fine sandy clay, stiff, moist		20.5					260
22	SANDY GRAVEL Brown coarse sandy gravel		21.5					259
	Brown sandy gravel intermixed with brown silty clay, stiff, moist		21.6					
23				BH19-6-SS7		ST		258
24								257
25	GRAVEL Cobbles		24.7					256
	SILTY CLAY Grey silty clay with trace fine to medium gravel, stiff, moist		24.8					
26	SAND Grey sand with trace fine to medium gravel, firm, moist		25.9	BH19-6-SS8	A	ST		255
27								254
28	GRAVEL Coarse gravel with trace sand		27.4					253
	GRAVELLY SAND Grey fine to medium gravelly sand, firm, moist		28.2					252
29	SAND Grey sand with trace fine to medium gravel, firm moist to wet		29					

PVC riser with grout to surface

DILLON MW MOD W12A LOGS REV1.GPJ 20-3-9

LITHOLOGY SYMBOLS

	Organics		Sand		Sandy Clay
	Silt / Clay		Sandy Gravel		Silty Sand and Gravel

Northing (m) : 481678

Easting (m) : 4748289

Casing: 2"

Grade Elevation (m asl) : 280.91

Top of Casing Elevation (m asl) : 281.65

ST - Split Tube

Borehole ID: BH19-6

Monitoring Well ID: 19-6a

Client: City of London Project: W12A Landfill Site Drilling Program
 Project No.: 19-1230 Location: W12A Landfill, London, Ontario
 Drilling Co.: Aardvark Drilling Drilling Method: PQ
 Observer: D. Orjuela Date Started: 10/11/2019 Date Completed: 10/11/2019

Depth Scale (m)	Stratigraphic Description	Stratigraphy	Depth (m)	Sample			Well Construction	Elev. (masl)
				Soil Sample ID	Lab Analysis	Type		
31	SAND Grey sand with trace fine to medium gravel, firm moist to wet(continued)							250
32	SANDY GRAVEL Fine to medium sandy gravel, loose, moist to wet		31.2					249
33	GRAVELLY SAND Grey fine to medium gravelly sand, firm, moist to wet		32					248
34								247
35								246
36								245
37	SANDY GRAVEL Fine to medium sandy gravel, moist to wet		36.6					244
38								243
39								242

End of borehole at 39.6 m bgs

39.6

End cap

NOTES:

- 1) m bgs = metres below ground surface
- 2) 0.15 m (6") diameter advanced through overburden using PQ technology
- 3) Completed with a monument casing and secured with a lock

Analysis A:

Grain Size and Moisture Content

Analysis B:

Grain Size, Moisture Content, Fraction of Organic Carbon, Cation Exchange Capacity

LITHOLOGY SYMBOLS

	Organics		Sand		Sandy Clay
	Silt / Clay		Sandy Gravel		Silty Sand and Gravel

Northing (m) : 481678

Easting (m) : 4748289

Casing: 2"

Grade Elevation (m asl) : 280.91

Top of Casing Elevation (m asl) : 281.65

ST - Split Tube

Borehole ID: BH19-6-2
Monitoring Well ID: 19-6b

Client: City of London Project: W12A Landfill Site Drilling Program
Project No.: 19-1230 Location: W12A Landfill, London, Ontario
Drilling Co.: Aardvark Drilling Drilling Method: Split Spoon
Observer: D. Orjuela Date Started: 10/17/2019 Date Completed: 10/18/2019

Depth Scale (m)	Stratigraphic Description	Stratigraphy	Depth (m)	Sample			Well Construction	Elev. (masl)
				Soil Sample ID	Lab Analysis	Blows/6"		
	TOPSOIL Brown top soil with organics, stiff, moist		0.1				Cement seal with protective casing	
1	SILTY CLAY TILL Brown weathered silty clay with grey mottling and trace fine gravel, stiff, dry to moist							280
2						2,8-12,16		279
3	Trace fine to medium gravel					4,9-14,16		278
4						3,10-14,11		277
5	Trace fine sand					8,12-20,18		276
6				BH19-6-2-SS1			PVC riser with grout to surface	275
7								274
8								273
9	Grey with no mottling					9,10-16,25		272
10							PVC riser with bentonite	271
11	SAND Grey fine sand, firm, moist		10.7			5,7-12,8	#1 silica sand pack	270
12						5,19-13,20	PVC screen with #1 silica sand pack	269
	GRAVELLY SAND Grey fine to medium gravelly sand with trace clay, firm					7,10-13,8	End cap	
	End of borehole at 12.8 m bgs		12.8					

NOTES:

- 1) m bgs = metres below ground surface
- 2) 0.15 m (6") diameter advanced through overburden using SPT technology
- 3) Completed with a monument casing and secured with a lock

DILLON MW MOD W12A LOGS REV1.GPJ 20-3-9

LITHOLOGY SYMBOLS

 Organics
 Silt / Clay

 Sandy Gravel

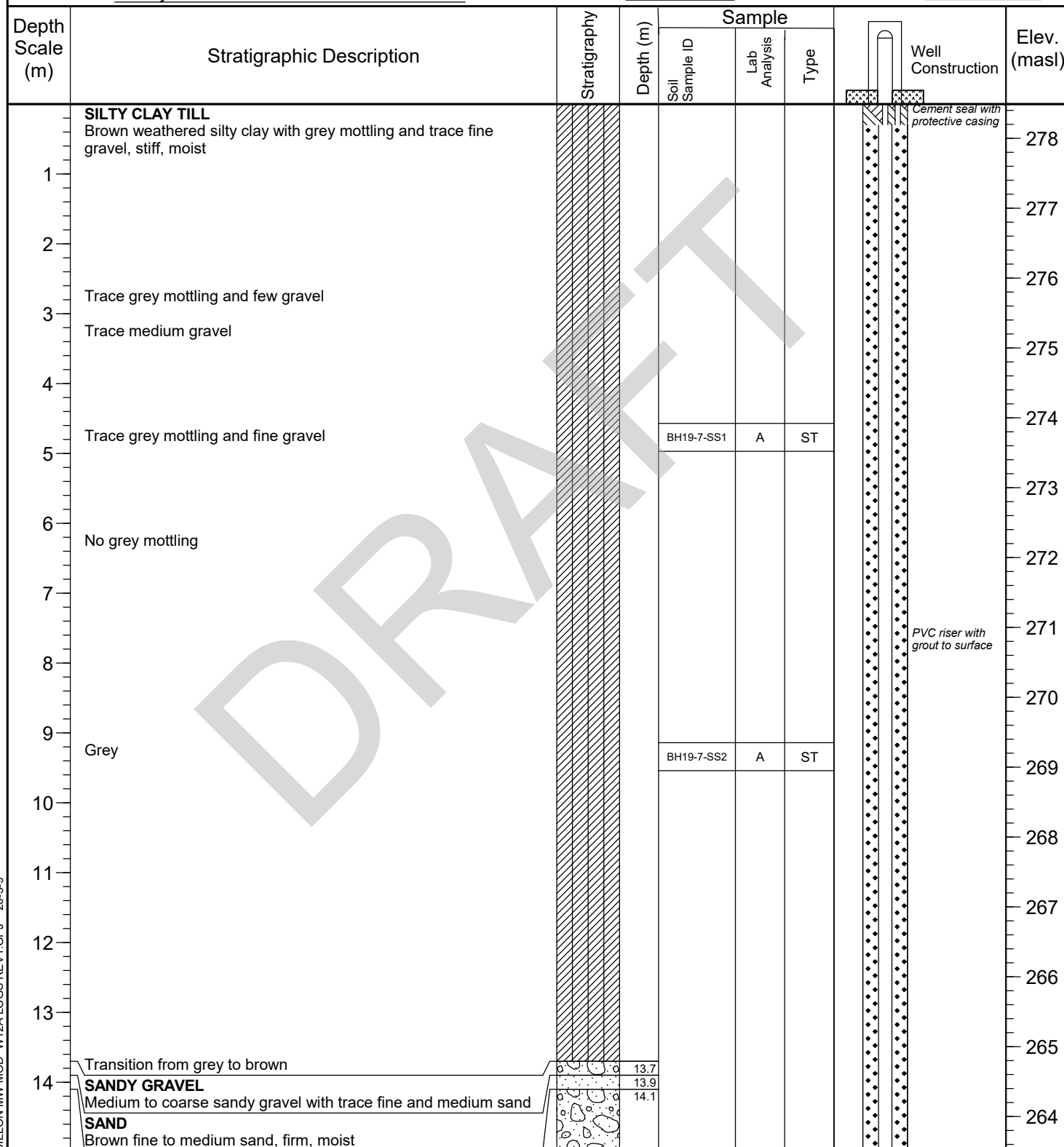
Northing (m) : 481679
Easting (m) : 4748289

Casing: 2"
Grade Elevation (m asl) : 280.92
Top of Casing Elevation (m asl) : 281.69

Borehole ID: **BH19-7**

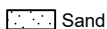
Monitoring Well ID: **19-7a**

Client: City of London Project: W12A Landfill Site Drilling Program
 Project No.: 19-1230 Location: W12A Landfill, London, Ontario
 Drilling Co.: Aardvark Drilling Drilling Method: PQ
 Observer: D. Orjuela Date Started: 10/23/2019 Date Completed: 10/29/2019



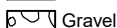
DILLON MW MOD W12A LOGS REV1.GPJ 20-3-9

LITHOLOGY SYMBOLS
 Silt / Clay

 Sand

 Sandy Silt

 Sandy Gravel

 Gravel

Northing (m) : 480718
 Easting (m) : 4748242

Casing: 2"
 Grade Elevation (m asl) : 278.49
 Top of Casing Elevation (m asl) : 279.29
 ST - Split Tube

Borehole ID: BH19-7

Monitoring Well ID: 19-7a

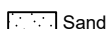
Client: City of London Project: W12A Landfill Site Drilling Program
 Project No.: 19-1230 Location: W12A Landfill, London, Ontario
 Drilling Co.: Aardvark Drilling Drilling Method: PQ
 Observer: D. Orjuela Date Started: 10/23/2019 Date Completed: 10/29/2019

Depth Scale (m)	Stratigraphic Description	Stratigraphy	Depth (m)	Sample			Well Construction	Elev. (masl)
				Soil Sample ID	Lab Analysis	Type		
15.2	SANDY GRAVEL Brown fine to medium sandy gravel, loose, moist(continued)		15.2	BH19-7-SS3	A	ST		263
16	SAND Brown to light brown fine to medium sand, firm, moist							262
17								261
18	Light brown with trace fine gravel							260
19								259
20	Brown							258
21								257
22	Grey							256
23	Fine sand with no gravel							255
24								254
25	GRAVELLY SAND Medium to coarse gravelly sand, moist, loose		24.4					253
26	SAND Grey coarse sand with trace fine gravel, firm, moist		25.9					252
27	Some gravel							251
28								250
29	GRAVEL Coarse gravel to cobbles with trace sand, moist		29					249

DILLON MW MOD W12A LOGS REV1.GPJ 20-3-9

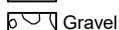
LITHOLOGY SYMBOLS

 Silt / Clay

 Sand

 Sandy Silt

 Sandy Gravel

 Gravel

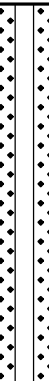
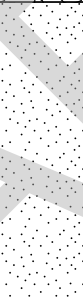
Northing (m) : 480718
 Easting (m) : 4748242

Casing: 2"
 Grade Elevation (m asl) : 278.49
 Top of Casing Elevation (m asl) : 279.29
 ST - Split Tube

Borehole ID: BH19-7

Monitoring Well ID: 19-7a

Client: City of London Project: W12A Landfill Site Drilling Program
 Project No.: 19-1230 Location: W12A Landfill, London, Ontario
 Drilling Co.: Aardvark Drilling Drilling Method: PQ
 Observer: D. Orjuela Date Started: 10/23/2019 Date Completed: 10/29/2019

Depth Scale (m)	Stratigraphic Description	Stratigraphy	Depth (m)	Sample			Well Construction	Elev. (masl)
				Soil Sample ID	Lab Analysis	Type		
31	GRAVELLY SAND Grey medium to coarse gravelly sand, firm, moist(continued)		29.9					248
31	GRAVEL Coarse gravel with trace sand, loose		30.5					247
32								246
33								245
34	SAND Grey coarse sand with trace fine gravel, firm, moist		33.5					244
35	Some fine sand							243
36								242
37	Coarse sand							241
38								240
39								239
40								238
41	SILTY SAND Grey silty sand, firm, moist		40.5					237
41	SAND Grey coarse sand, firm, moist		40.8					237
	End of borehole at 41.5 m bgs		41.5					237

NOTES:

- 1) m bgs = metres below ground surface
- 2) 0.15 m (6") diameter advanced through overburden using PQ technology
- 3) Completed with a monument casing and secured with a lock

Analysis A:

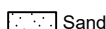
Grain Size and Moisture Content

Analysis B:

Grain Size, Moisture Content, Fraction of Organic Carbon, Cation Exchange Capacity

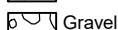
LITHOLOGY SYMBOLS

 Silt / Clay

 Sand

 Sandy Silt

 Sandy Gravel

 Gravel

Northing (m) : 480718

Easting (m) : 4748242

Casing: 2"

Grade Elevation (m asl) : 278.49

Top of Casing Elevation (m asl) : 279.29

ST - Split Tube

Borehole ID: BH19-7-2

Monitoring Well ID: 19-7b

Client: City of London Project: W12A Landfill Site Drilling Program
 Project No.: 19-1230 Location: W12A Landfill, London, Ontario
 Drilling Co.: Aardvark Drilling Drilling Method: Split Spoon
 Observer: D. Orjuela Date Started: 10/30/2019 Date Completed: 10/30/2019

Depth Scale (m)	Stratigraphic Description	Stratigraphy	Depth (m)	Sample			Well Construction	Elev. (masl)
				Soil Sample ID	Lab Analysis	Blows/6"		
	TOPSOIL Top soil with organics						Cement seal with protective casing	278
1						2,1,2,2		
2	SILTY CLAY TILL Brown weathered silty clay, stiff, moist		1.5			2,1,3,4		277
	Trace medium gravel		2.5			2,3,7,12		276
3	SILTY CLAY					3,4-14,14		275
4						7,12-14,11		274
5						4,6-10,11		273
6				BH19-7-2-SS1				272
7								
8	Trace fine gravel					2,2,4,4	PVC riser with grout to surface	271
9						3,4,7,6		270
10						5,6,7,8		269
11						4,8-11,10		268
12						7,12-14,16		267
13								266
14	Brown							265
								264

DILLON MW MOD W12A LOGS REV1.GPJ 20-3-9

LITHOLOGY SYMBOLS

 Organics
 Silt / Clay

 Sand

Northing (m) : 480721

Easting (m) : 4748242

Casing: 2"

Grade Elevation (m asl) : 278.61

Top of Casing Elevation (m asl) : 279.37

Borehole ID: BH19-7-2
Monitoring Well ID: 19-7b

Client: City of London Project: W12A Landfill Site Drilling Program
Project No.: 19-1230 Location : W12A Landfill, London, Ontario
Drilling Co.: Aardvark Drilling Drilling Method: Split Spoon
Observer: D. Orjuela Date Started: 10/30/2019 Date Completed: 10/30/2019

Depth Scale (m)	Stratigraphic Description	Stratigraphy	Depth (m)	Sample			Well Construction	Elev. (masl)
				Soil Sample ID	Lab Analysis	Blows/6"		
16	SAND Brown to light brown fine to medium sand, firm, moist		15.2			5,43,50	PVC riser with grout to surface	263
17						27,50	PVC riser with bentonite	262
18	Light gravel with trace fine gravel						#1 silica sand pack	261
19						20,40-42,40	PVC screen with #1 silica sand pack	260
20	Few rounded gravel					18,32,50	End cap	259
End of the borehole at 20.4 m bgs			20.4					

NOTES:

- 1) m bgs = metres below ground surface
- 2) 0.15 m (6") diameter advanced through overburden using SPT technology
- 3) Completed with a monument casing and secured with a lock

DILLON MW MOD W12A LOGS REV1.GPJ 20-3-9

LITHOLOGY SYMBOLS

 Organics
 Silt / Clay

 Sand

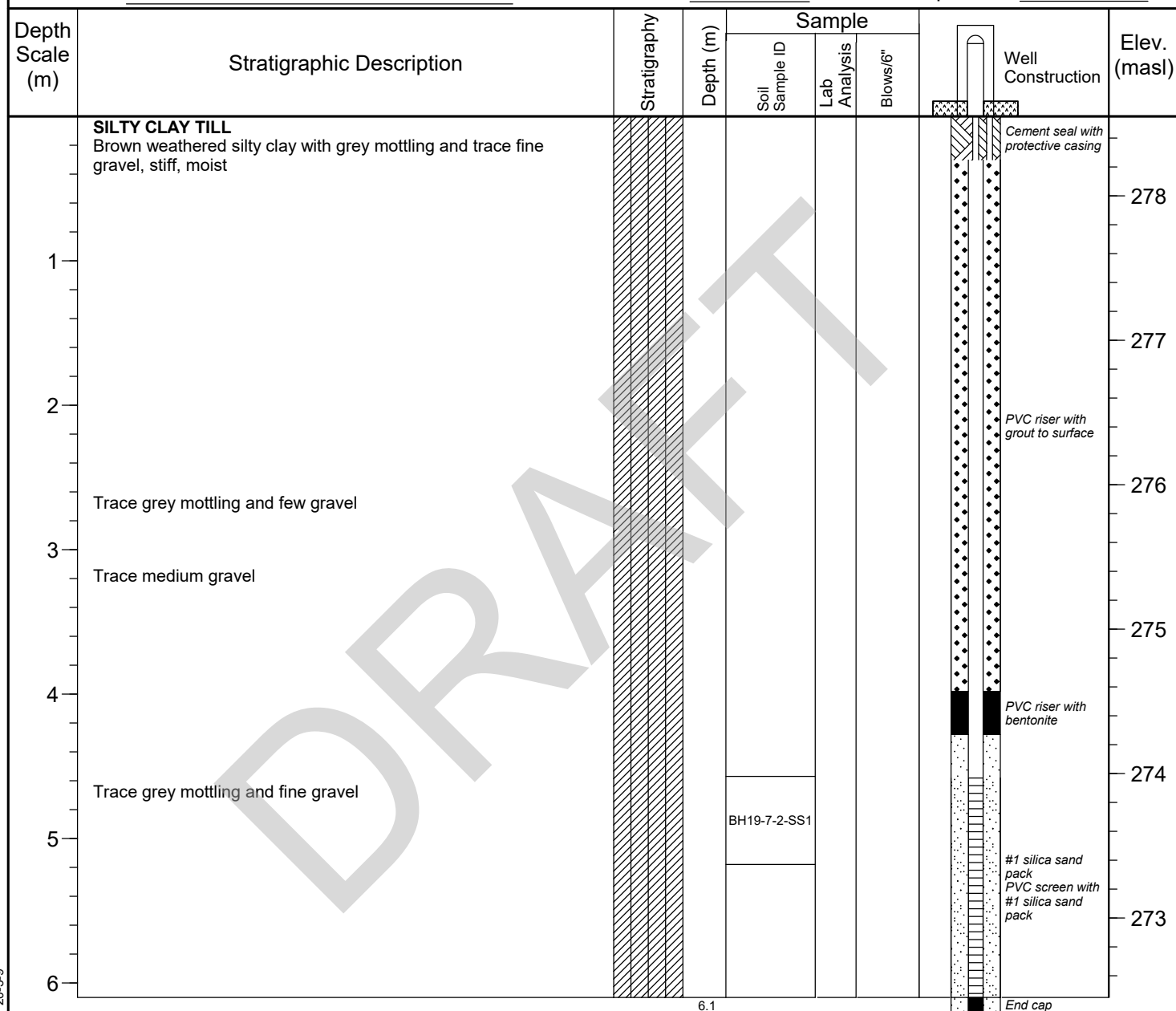
Northing (m) : 480721
Easting (m) : 4748242

Casing: 2"
Grade Elevation (m asl) : 278.61
Top of Casing Elevation (m asl) : 279.37

Borehole ID: BH19-7-3

Monitoring Well ID: 19-7c

Client: City of London Project: W12A Landfill Site Drilling Program
 Project No.: 19-1230 Location: W12A Landfill, London, Ontario
 Drilling Co.: Aardvark Drilling Drilling Method: Solid Stem Auger
 Observer: M. Al-Sheikh Date Started: 10/31/2019 Date Completed: 10/31/2019



NOTES:

- 1) m bgs = metres below ground surface
- 2) 0.15 m (6") diameter advanced through overburden using solid stem auger technology, no samples recovered
- 3) Completed with a monument casing and secured with a lock

Lithology same as BH19-7

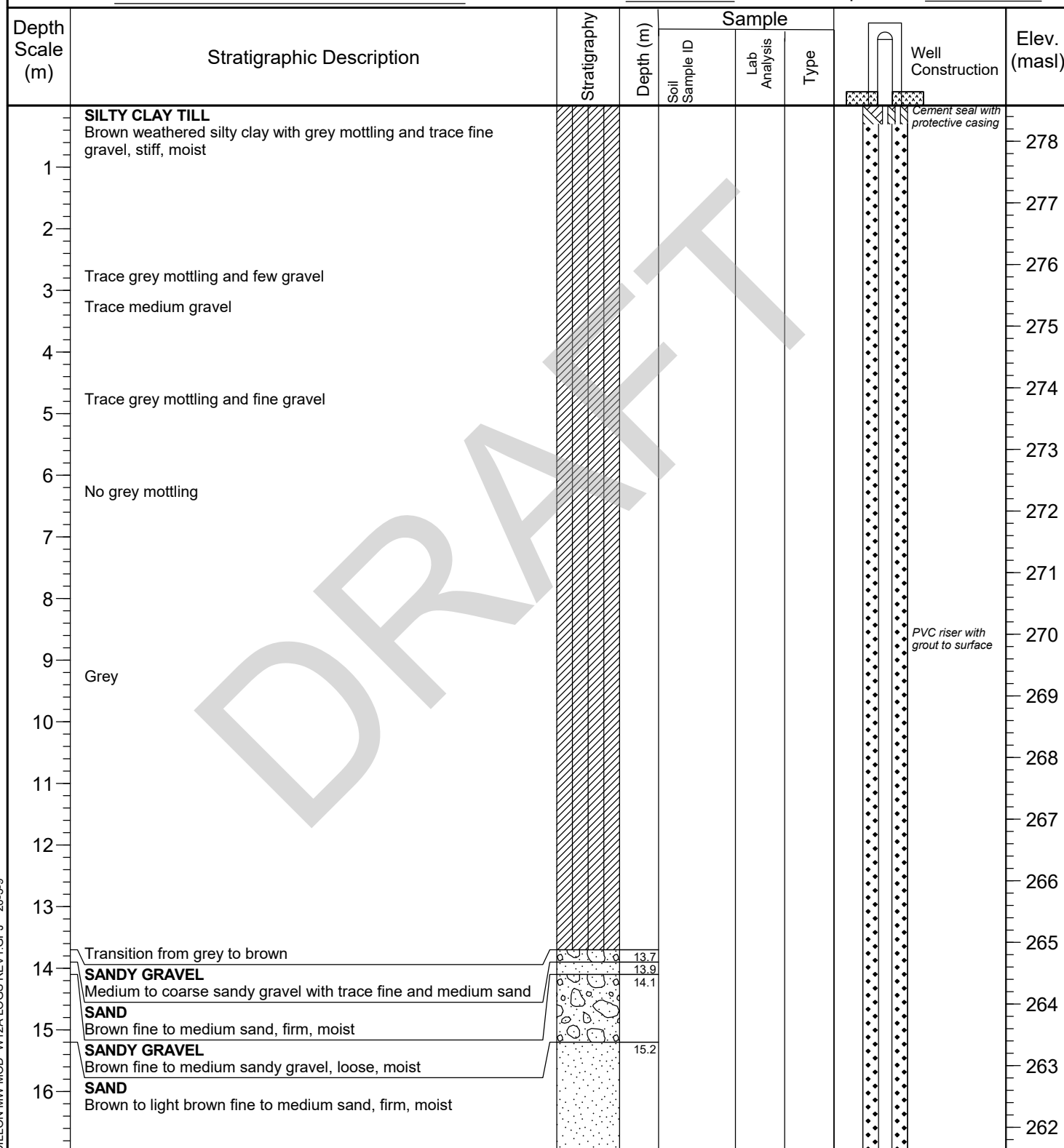
LITHOLOGY SYMBOLS
 Silt / Clay

Northing (m) : 480715
 Easting (m) : 4748242

Casing: 2"
 Grade Elevation (m asl) : 278.55
 Top of Casing Elevation (m asl) : 279.33

Borehole ID: BH19-8
Monitoring Well ID: 92-10a

Client: City of London Project: W12A Landfill Site Drilling Program
Project No.: 19-1230 Location: W12A Landfill, London, Ontario
Drilling Co.: Aardvark Drilling Drilling Method: Solid Stem Auger
Observer: M. Al-Sheikh Date Started: 10/21/2019 Date Completed: 10/22/2019



DILLON MW MOD W12A LOGS REV1.GPJ 20-3-9

LITHOLOGY SYMBOLS

	Silt / Clay		Sand
	Sandy Gravel		

Northing (m) : 480712
Easting (m) : 4748241

Casing: 2"
Grade Elevation (m asl) : 278.58
Top of Casing Elevation (m asl) : 279.29
ST - Split Tube

Borehole ID: BH19-8

Monitoring Well ID: 92-10a

Client: City of London Project: W12A Landfill Site Drilling Program
 Project No.: 19-1230 Location : W12A Landfill, London, Ontario
 Drilling Co.: Aardvark Drilling Drilling Method: Solid Stem Auger
 Observer: M. Al-Sheikh Date Started: 10/21/2019 Date Completed: 10/22/2019

Depth Scale (m)	Stratigraphic Description	Stratigraphy	Depth (m)	Sample			Well Construction	Elev. (masl)
				Soil Sample ID	Lab Analysis	Type		
18	SAND Brown to light brown fine to medium sand, firm, moist(continued)							261
19	Light brown with trace fine gravel							260
20	Brown							259
21	Grey							258
22								257
23	Fine sand with no gravel							256
24								255
25	GRAVELLY SAND Medium to coarse gravelly sand, moist, loose		24.4				PVC riser with bentonite	254
26	SAND Grey coarse sand with trace fine gravel, firm, moist		25.9				#1 silica sand pack PVC screen with #1 silica sand pack	253
			26.3				End cap	

NOTES:

- 1) m bgs = metres below ground surface
- 2) 0.15 m (6") diameter advanced through overburden using solid stem auger technology, no samples recovered
- 3) Completed with a monument casing and secured with a lock

Lithology same as BH19-7

DILLON MW MOD W12A LOGS REV1.GPJ 20-3-9

LITHOLOGY SYMBOLS



Northing (m) : 480712
Easting (m) : 4748241

Casing: 2"
Grade Elevation (m asl) : 278.58
Top of Casing Elevation (m asl) : 279.29
ST - Split Tube

Appendix B

Test Pit Summary



THE CORPORATION OF THE CITY OF LONDON

W12A London Landfill

Benchd Test Pit Report





Introduction

The presence of fractures within the upper portion of the Surficial Aquitard is a well known phenomenon. To evaluate the nature of the fractures and their potential to create a preferred pathway for leachate migration from the landfill expansion, a benched test pit measuring approximately 12 m x 12 m in plan and 5.4 m in depth was completed. The location of the test pit was between the landfill and the Material Recovery Facility. The test pit allowed the fracture characteristics and fracture frequency to be assessed with depth. The fracture network was logged and photographs taken.

Benched Test Pit Program

Physical and chemical stress in the environment result in fracturing and weathering of the earth's surface. Although clay till is considered ductile, weathering and brittle deformation may still occur in clays. Fracturing and weathering of a geological unit may increase the potential to create a preferred pathway for leachate migration. As such, an evaluation of the fractures and weathering of the Surficial Aquitard was undertaken.

On November 6, 2019, a benched test pit measuring approximately 12 m x 12 m in plan was excavated to a depth of approximately 5.4 m below ground surface (mbgs) resulting in a total of four benches of approximately 1.4 m. Mechanical excavation was completed using a Cat 336D Excavator equipped with a 1.5 m Straight Edge Bucket for Benches 1 through 3 and a 1.1 m General Duty Bucket for Bench 4. A Dillon geologist and engineer were present to log the excavation. The benched test pit was completed to a depth of 5.4 mbgs and required the construction of a series of benches approximately 1.5 m wide and 1.4 m deep. The benched test pit was orientated to give west, north, and east faces with a sloped south ramp.

The overall slope of the test pit faces was approximately 1:1. Excavated soils from each bench were stockpiled separately and the test pit was backfilled using corresponding stockpiled soils. Excavation and backfill were completed on the same day.

Following each bench excavation, a relative survey of the depth was taken prior to the mapping exercise and a 1 m x 1 m section of each wall was cleaned with a trowel/shovel/pickaxe to expose fractures that may have been smeared by the excavation process.

The description of the fractures included notes of the following:

- Fracture Frequency (number of fractures per metre)
- Fracture Spacing (distance between fractures)
- Orientation (Strike/Dip)

- Aperture
- Degree of Weathering
- Colour
- Presence of iron oxidation
- Presence and nature of infilling
- Presence of groundwater
- Rate of groundwater flow (if measurable)
- Displacement (if identifiable)

The description of the soils included observations of the following:

- Lateral and vertical extent
- Depth
- Degree of weathering
- Presence of iron oxidation
- Presence of cementation
- Presence of groundwater
- Rate of groundwater flow (if measurable)

A Silva compass was used to measure the strike and dip of dominant fracture sets. Fractures from ground surface to a depth of approximately 3.0 mbgs (Benches 1 and 2, and part of 3) were described qualitatively. Fractures from 3.0 mbgs to 5.4 mbgs were mapped individually. Composite photographs of each bench wall are presented in Photographs.

2.1.1 Benched Test Pit Evaluation

Below the topsoil, fractures in the first 1.0 mbgs had sub-millimetre (mm) spacing (>100 fractures/m) and appeared vertical and ubiquitous with no defined orientation; fractures were stained grey. The soils consisted predominantly of brown weathered clay to clayey silt till with minor cobbles and sparse sand. Pervasive oxidation and high weathering of the soil were evident.

Between 1.0 mbgs and 3.2 mbgs the soil consisted predominantly of mottled brown clay with minor (<10%) round to sub-round pebbles and cobbles (5mm-80mm). The fracture spacing between 1.0 mbgs and 2.3 mbgs continued in the sub-mm range. Below approximately 2.3 mbgs, distinct fractures were observed with an orientation of 140/80 (strike/dip) and orthogonal 030/80 with aperture ranging from 1 mm - 4 mm with a grey staining/infill and with fracture spacing ranging from 60-80 mm.

A slow trickle of water was observed at the base of Bench 2 on the west wall (note: excavation stockpiles were placed to the west). The inflow was not significant to the test pitting operation.

Between 3.2 and 3.9 mbgs the soil transitioned from mottled brown to mostly grey clay. This oxidation horizon was slightly deeper in the east (approximately 3.2 mbgs), and shallower in the west

(approximately 3.0 mbgs). Fracture frequency below 3.2 m reduced to 1-2 joints per metre with orientations of 140/80 and 110/85. Aperture of the fractures was between 0 mm and 2mm; however, distinct back-wall-alteration causing a colour change of red at the surface of the fracture penetrating 2-5mm into the back-wall, transitioning to brown until faded to grey.

Soils below 3.9 m were solely clay that was grey in colour. A total of two fractures with similar orientations of 110/85 were identified beyond 3.8 mbgs with one fracture terminating at 4 mbgs and the other fracture terminating at 4.7 mbgs. Fractures were not observed at the base of the test pit (area of 1.2 m x 2.0 m).

3.0 Summary of Findings

In summary, the examination of the benched test pit showed the following:

- Distinct fractures with orientations of 140/80, 030/80 were orthogonal to each other;
- Fractures were almost all near vertical and fracture frequency dissipated with depth;
- The fracture frequency declined from >100 fractures per metre at approximately 1.0 mbgs to approximately 12 fractures per metre at approximately 2.1 mbgs to 1 to 2 fractures per metre at 3.2 mbgs;
- Fracture spacing increased with depth;
- Fractures were not observed below 4.7 mbgs;
- Oxidation and alteration decreased with depth;
- The till was oxidized to a depth of 3.2 mbgs where the colour of the clay till changed from brown to grey over a transition zone from 3.2 mbgs to 3.9 mbgs;
- Below 4.7 mbgs, the till was unweathered and contained no fractures.

Photos



Photograph 1

Bench 1, facing northwest



Photograph 2

Bench 1, facing southwest



Photograph 3

Bench 2, facing north



Photograph 4

Bench 2, facing north



Photograph 5

Bench 3, facing south



Photograph 7

Bench 4, facing northwest



Photograph 6

Bench 3, facing west



Photograph 8

Bench 4, facing south



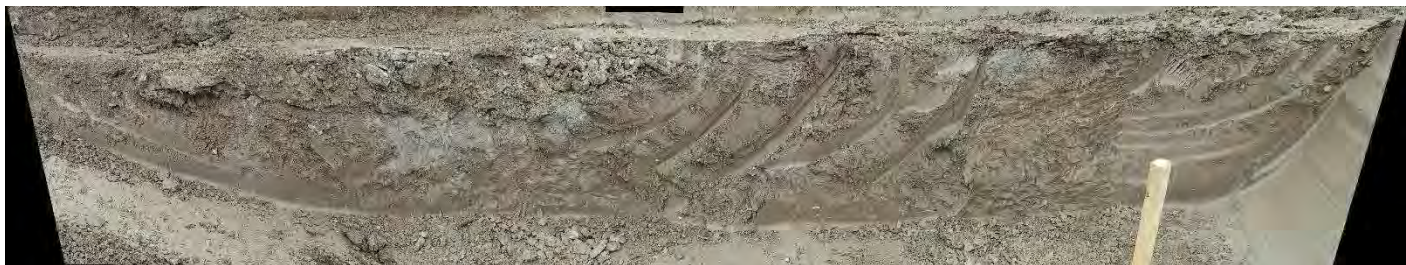
Photograph 9
Bench 1, facing west



Photograph 10
Bench 1, facing north

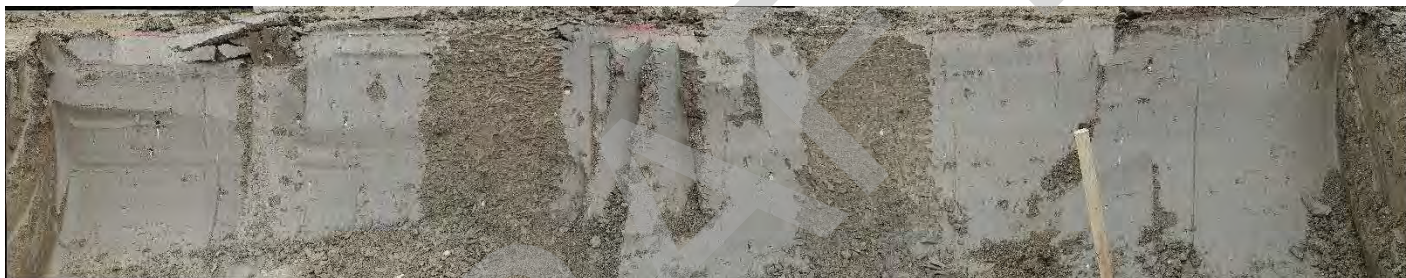


Photograph 11
Bench 1, facing east



Photograph 12

Bench 2, facing west



Photograph 13

Bench 2, facing north



Photograph 14

Bench 2, facing east



Photograph 15
Bench 3, facing west



Photograph 16
Bench 3, facing north



Photograph 17
Bench 3, facing east



Photograph 18

Bench 4, facing west



Photograph 19

Bench 4, facing east

Appendix C

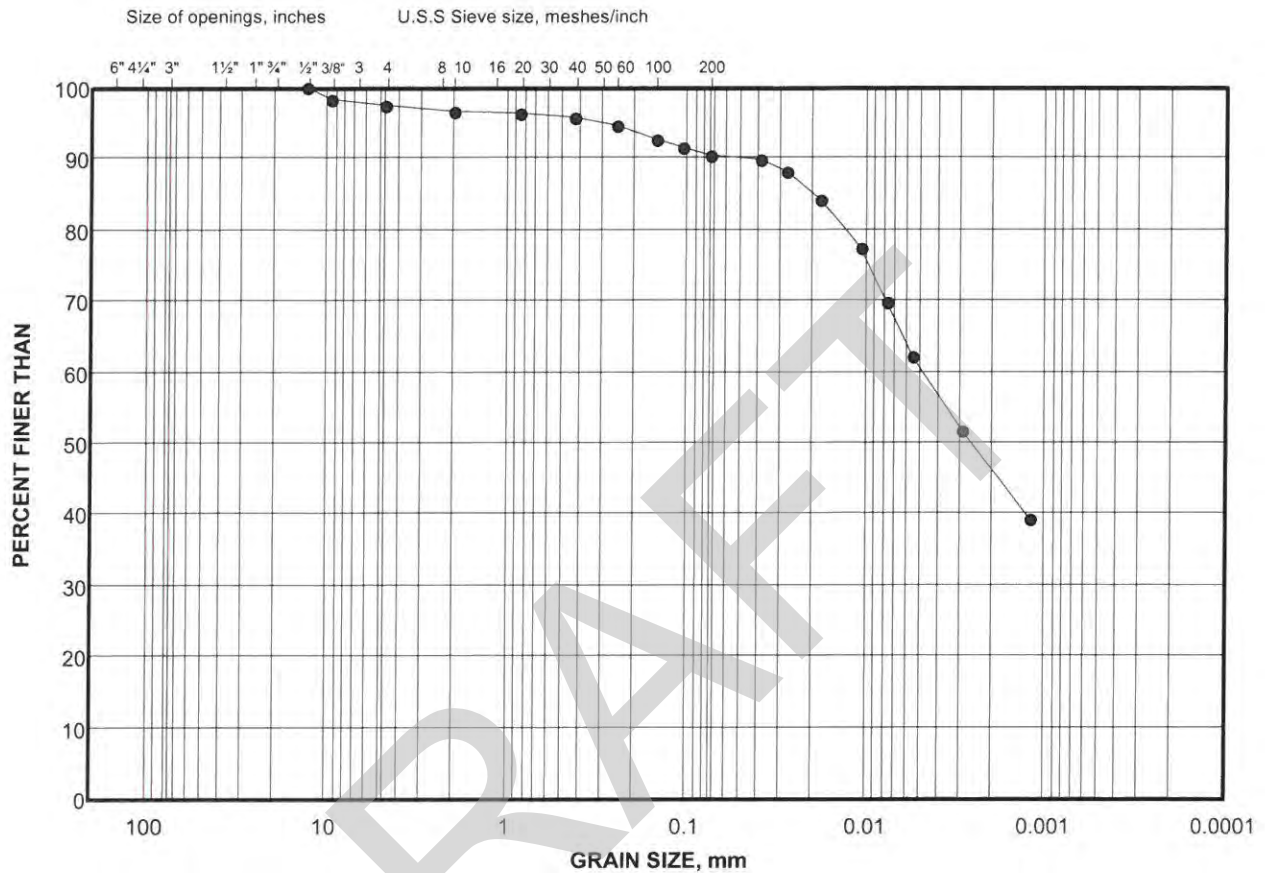
Soil Analysis Results

Summary of Soil Tests

Borehole No.	Sample No.	Depth		Layer	Grain Size Analysis (%)				Water Content %	Cation Exchange Capacity (meq/100 g)	Total Organic Carbon (%)	
		mbgs	masl		Clay	Silt	Sand	Gravel			<0.6mm	Whole Soil
BH19-1	2	3.0	270.7	SA	46	44	7	3	15.2			
	4	10.3	263.4	UA	5	9	86	0	20.4			
	5	13.1	260.6	UA	5	23	72	0	20.3			
	9	24.2	249.5	LA	48	43	9	0	18.3			
	12	40.6	233.1	WOA	26	24	47	3	13.1			
BH19-2	1	3.6	269.4	SA	42	52	6	0	18.6			
	2	9.3	263.7	SA	39	41	10	10	20.0			
	3	13.2	259.8	UA	5	25	70	0	18.4			
	4	24.9	248.1	LA	41	44	14	1	16.4			
	5	30.6	242.4	LA	22	60	18	0	11.0			
	6	46.9	226.1	WOA	10	36	53	1	9.0			
BH19-3	2	4.7	270.5	SA	46	46	8	0	23.5	118.3	0.28	0.27
	5	9.2	266.0	SA	45	49	6	0	20.2	112.4	0.19	0.18
	8	14.4	260.8	UA	1	97	2	0	19.1	16.5	0.08	0.08
BH19-4	1	4.4	276.7	SA	42	48	9	1	20.5			
	2	9.2	271.9	SA	43	48	9	0	21.2			
BH19-5	1	4.4	278.3	SA	41	49	10	0	20.9	112.8	0.16	0.15
	4	9.2	273.5	SA	43	47	9	1	20.1	100.8	0.19	0.19
	7	13.7	269.0	SA	44	46	10	0	20.4	108.0	0.23	0.21
	10	17.0	265.7	SA	48	45	7	0	20.3	107.2	0.23	0.22
	13	24.5	258.2	LA	44	43	12	1	16.9			
	14	31.2	251.5	WOA	7	21	72	0	18.4			
BH19-6	1	4.6	276.3	SA	49	43	8	0	21.1			
	2	9.3	271.6	SA	45	43	9	3	20.1			
	8	26.1	254.8	WOA	16	30	54	0	16.7			

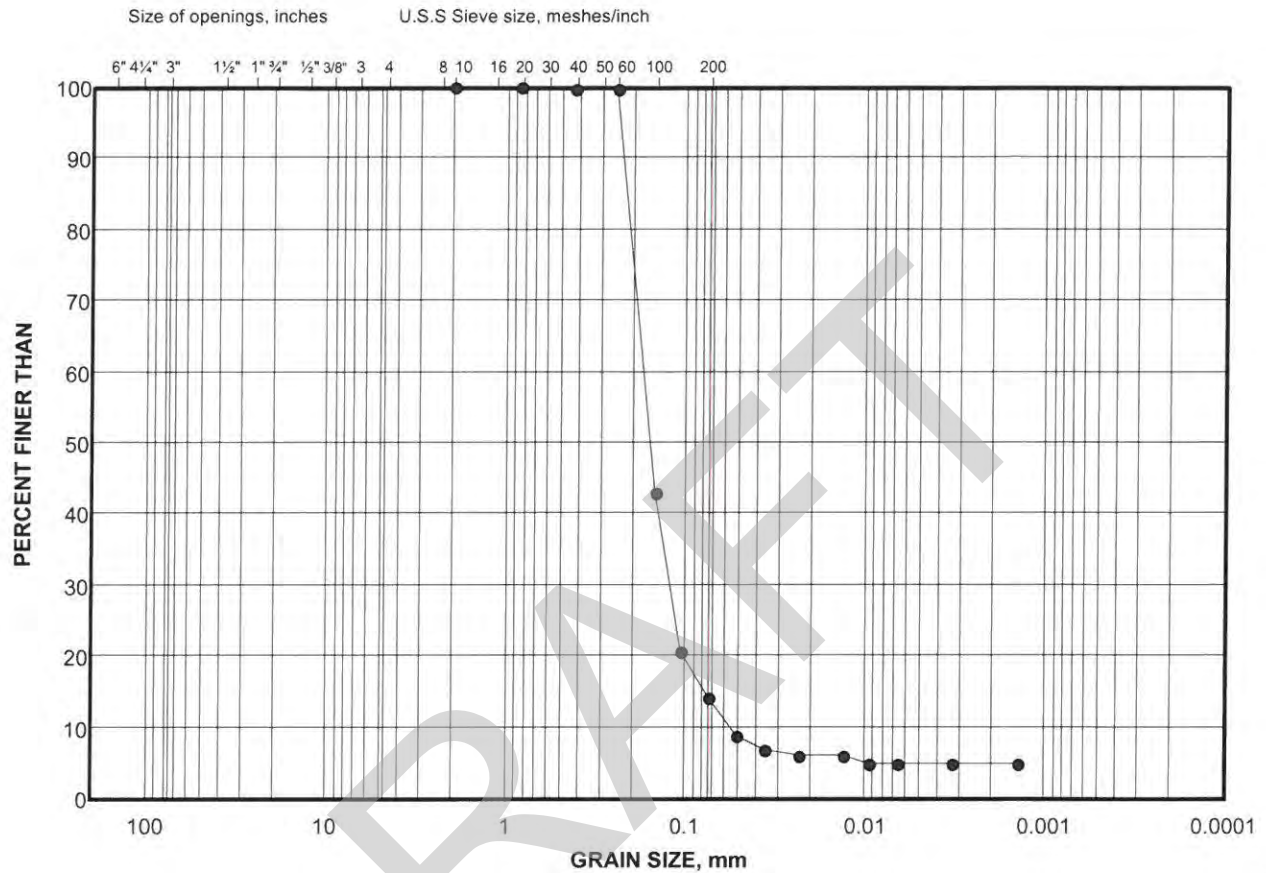
GRAIN SIZE DISTRIBUTION

FIGURE 1



GRAIN SIZE DISTRIBUTION

FIGURE 2



COBBLE	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY SIZES
SIZE	GRAVEL SIZE		SAND SIZE			FINE GRAINED

LEGEND

SYMBOL	BOREHOLE	SAMPLE	DEPTH(m)
•	19-1	SS4	10.3 Upper Aquifer

REMARKS

Water Content (LS 701)- 20.4%

Project Number: 19131594

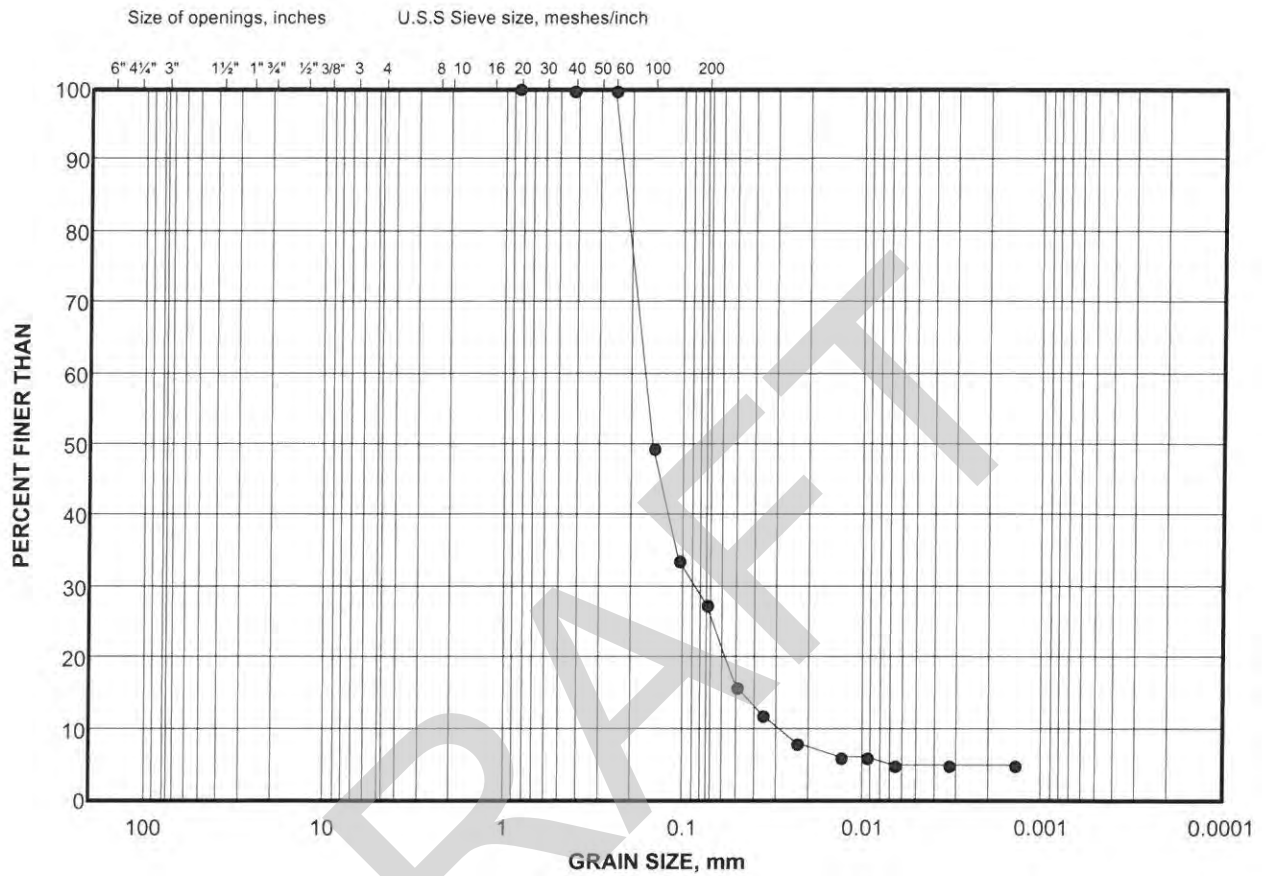
Checked By: _____

Golder Associates

Date: 16-Oct-19

GRAIN SIZE DISTRIBUTION

FIGURE 3



COBBLE	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY SIZES
SIZE	GRAVEL SIZE		SAND SIZE			FINE GRAINED

LEGEND

SYMBOL	BOREHOLE	SAMPLE	DEPTH(m)
•	19-1	SS5	13.1 Upper Aquifer

REMARKS

Water Content (LS 701)- 20.3%

Project Number: 19131594

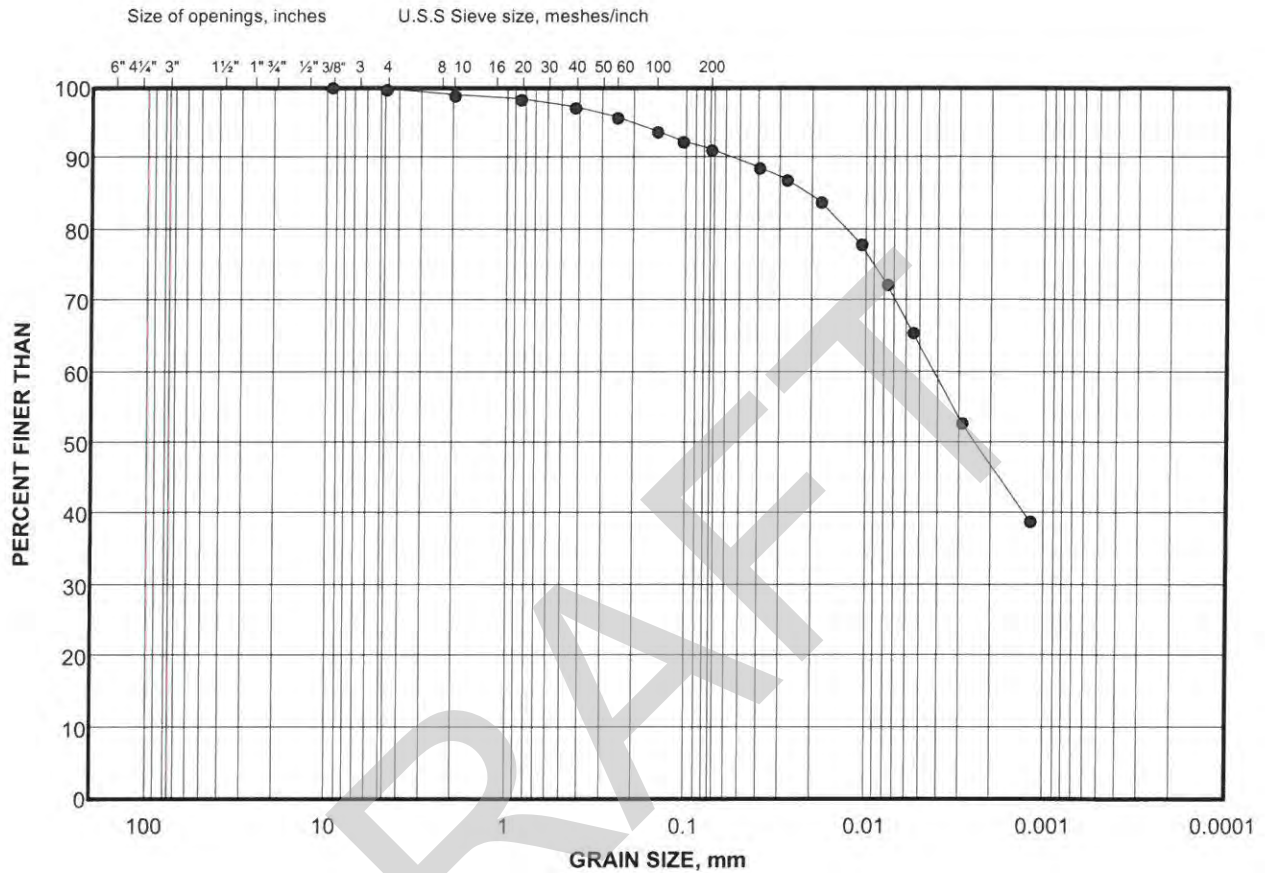
Checked By: *DAK*

Golder Associates

Date: 16-Oct-19

GRAIN SIZE DISTRIBUTION

FIGURE 4



LEGEND

SYMBOL	BOREHOLE	SAMPLE	DEPTH(m)
•	19-1	SS9	24.2 Lower Aquitard

REMARKS

Water Content (LS 701)- 18.3%

Project Number: 19131594

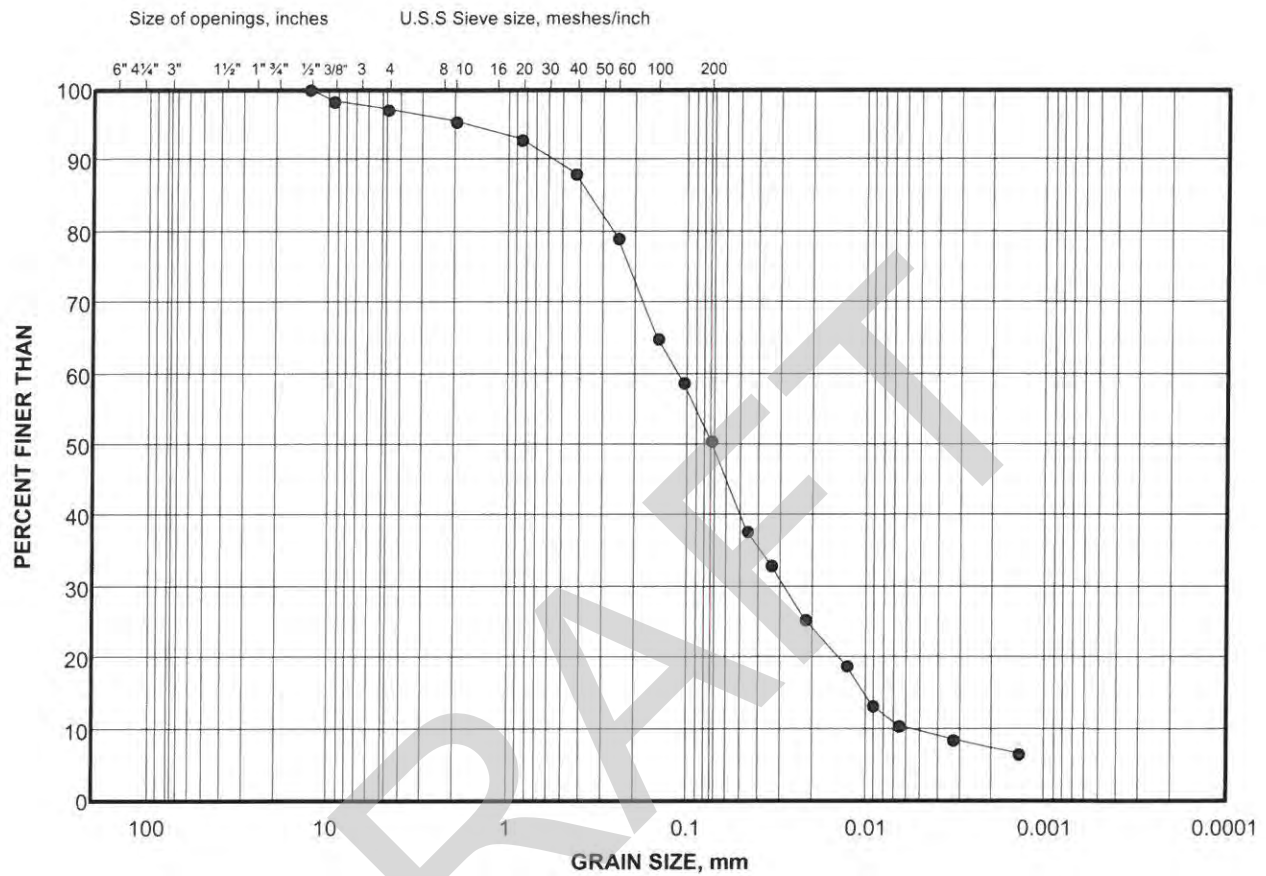
Checked By: _____

Golder Associates

Date: 16-Oct-19

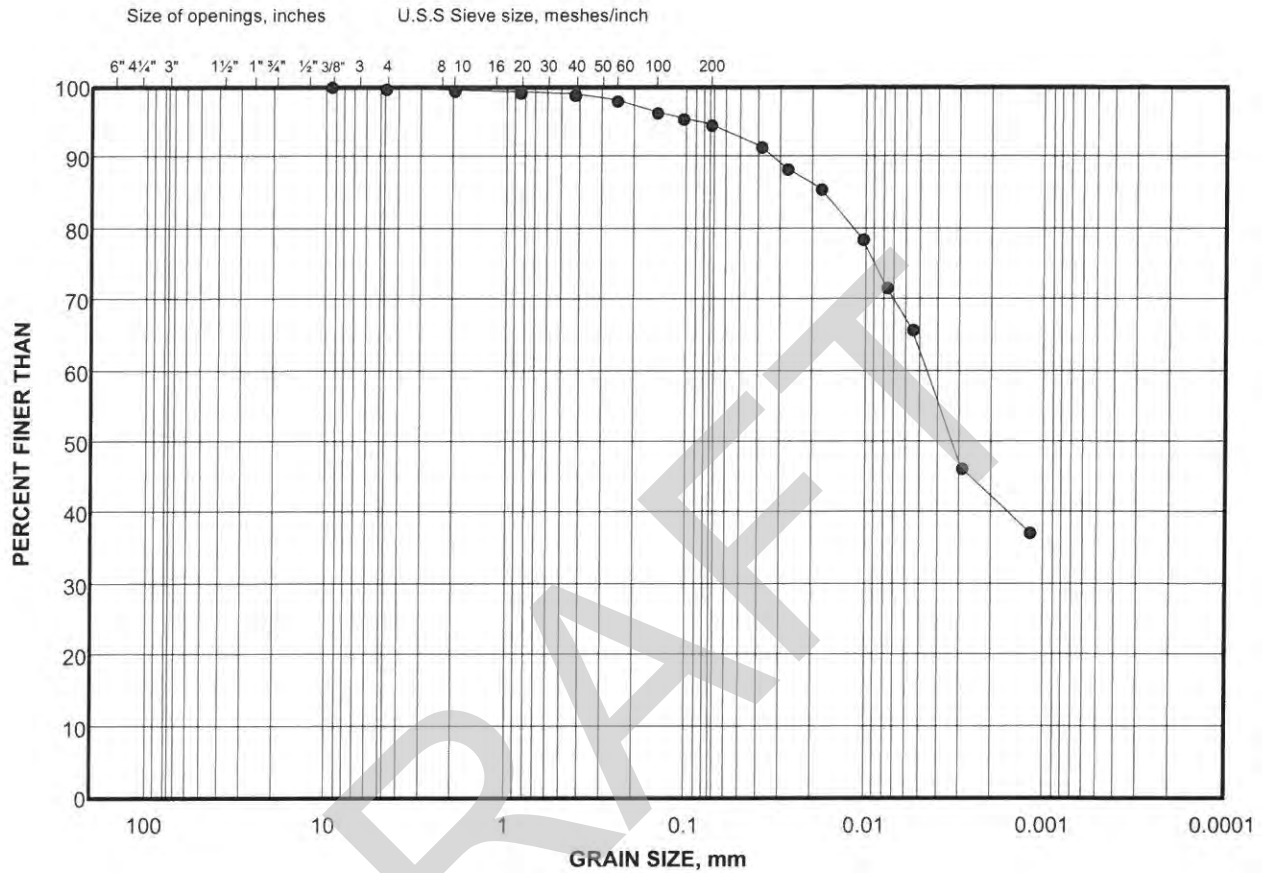
GRAIN SIZE DISTRIBUTION

FIGURE 5



GRAIN SIZE DISTRIBUTION

FIGURE 6



COBBLE	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY SIZES
SIZE	GRAVEL SIZE		SAND SIZE			FINE GRAINED

LEGEND

SYMBOL	BOREHOLE	SAMPLE	DEPTH(m)
•	19-2	SS1	3.6 Surficial Aquitard

REMARKS

Water Content (LS 701)- 18.6%

Project Number: 19131594

Checked By: _____

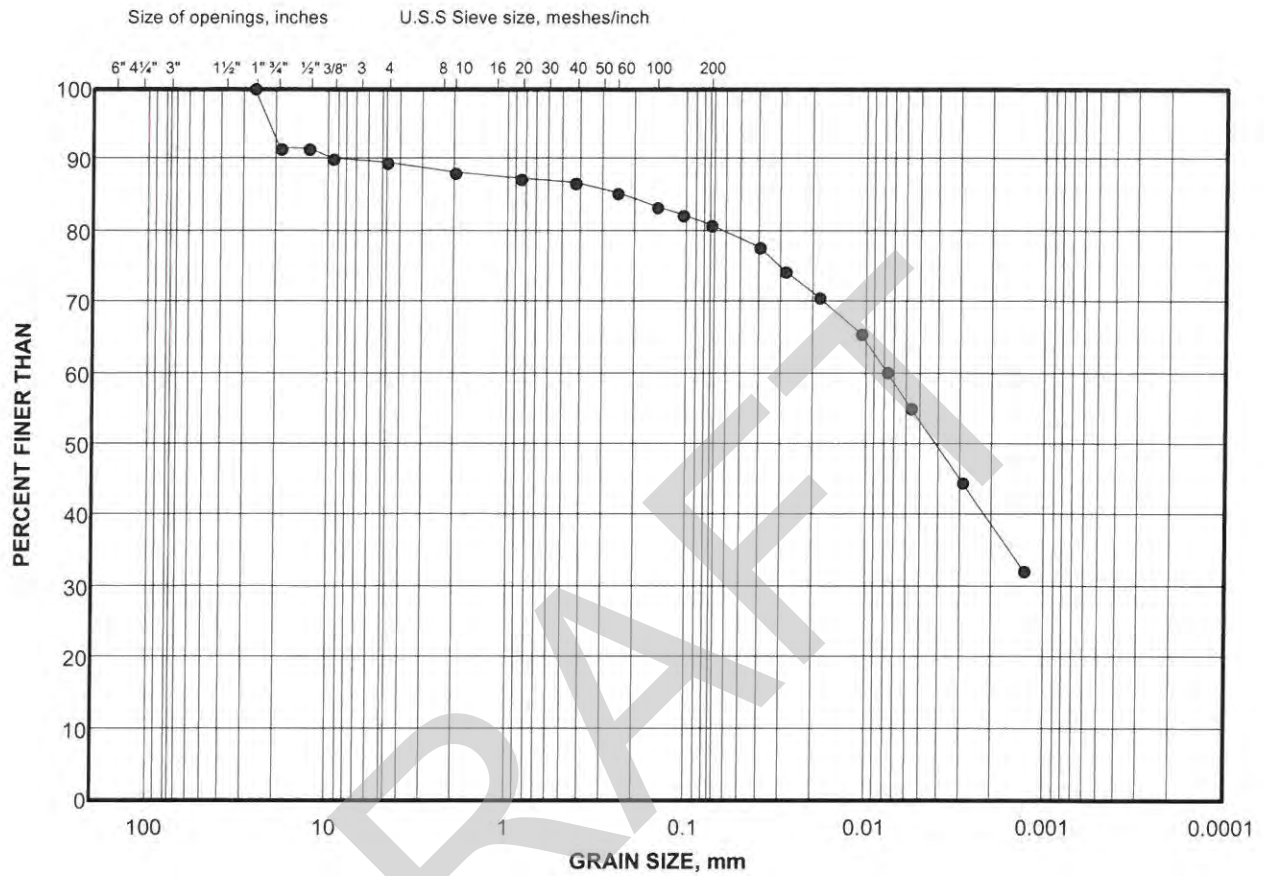
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Golder Associates

Date: 16-Oct-19

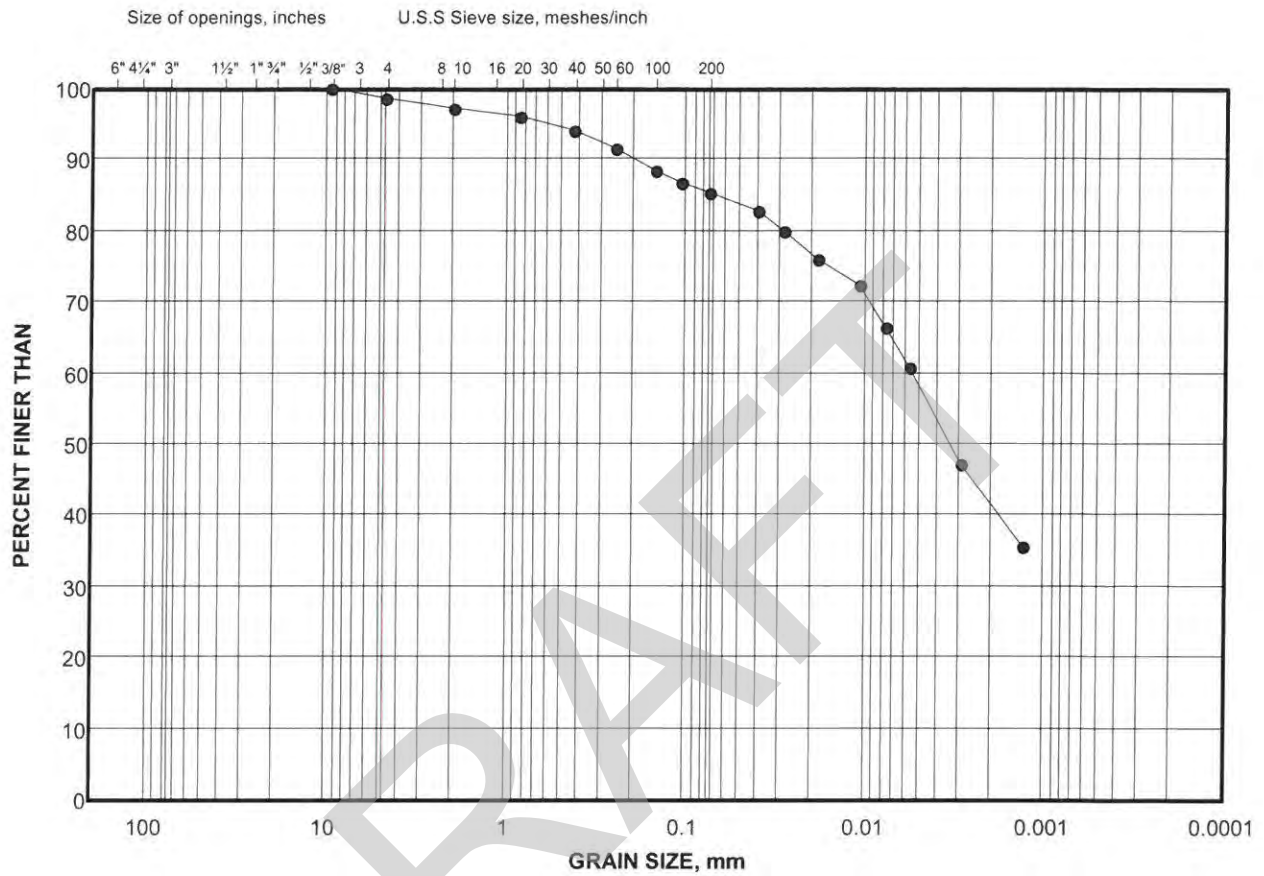
GRAIN SIZE DISTRIBUTION

FIGURE 7



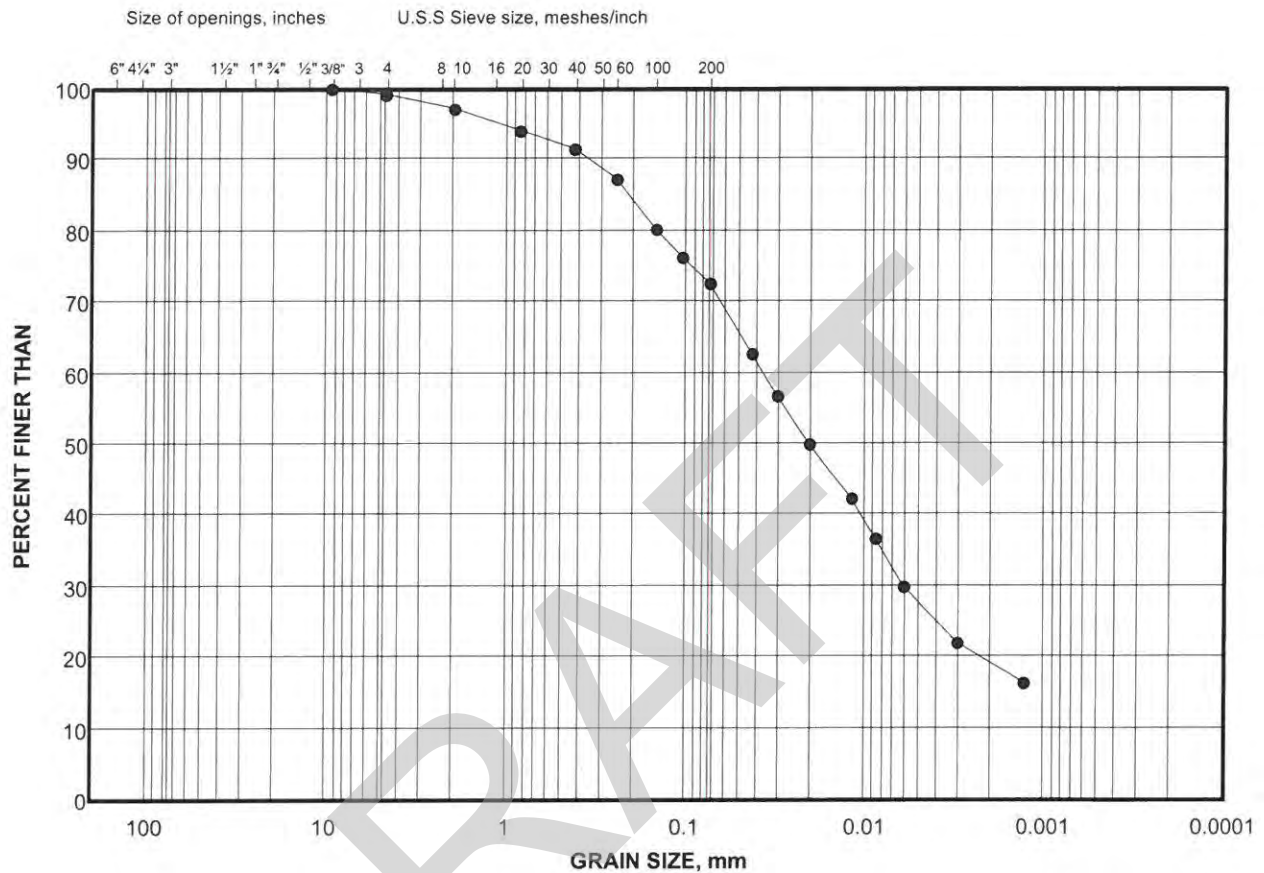
GRAIN SIZE DISTRIBUTION

FIGURE 9



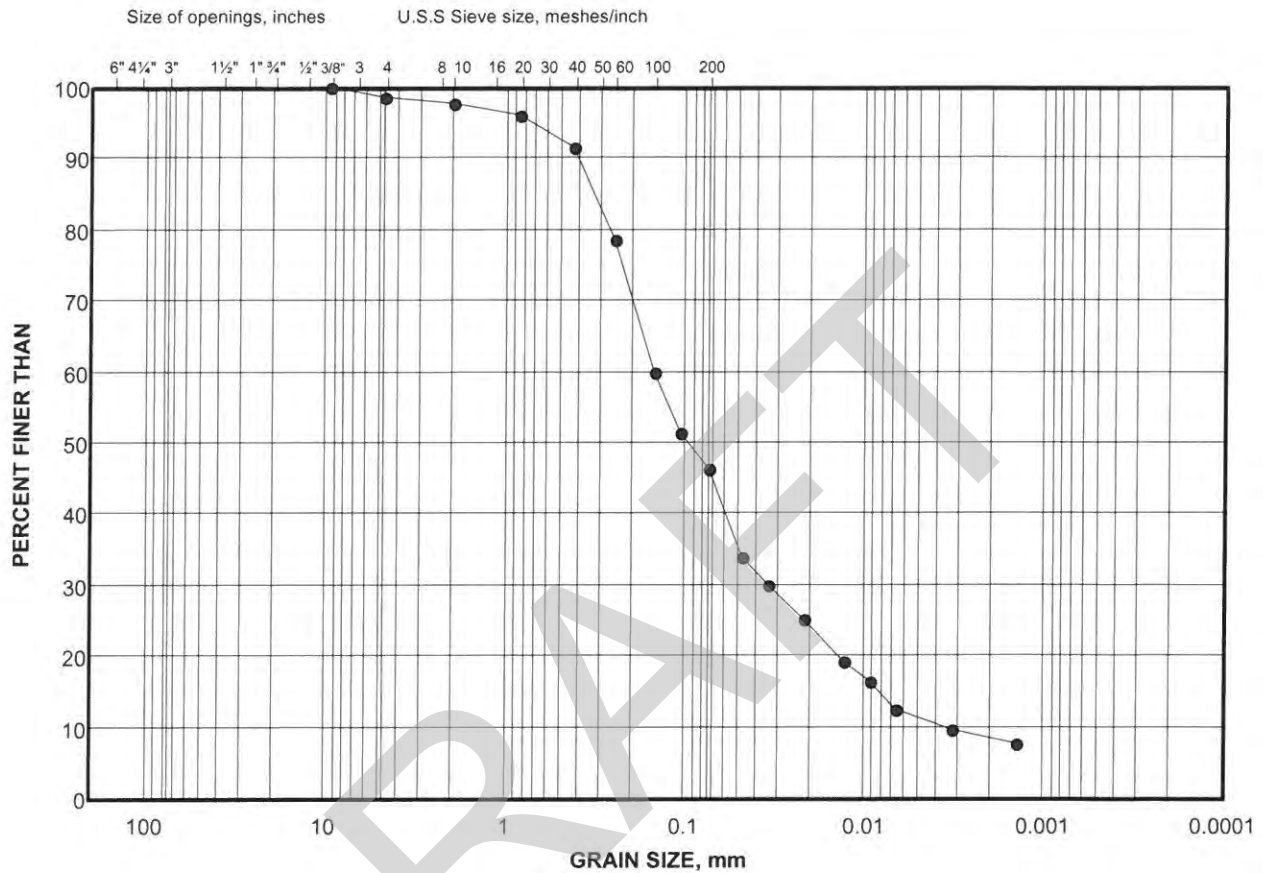
GRAIN SIZE DISTRIBUTION

FIGURE 10



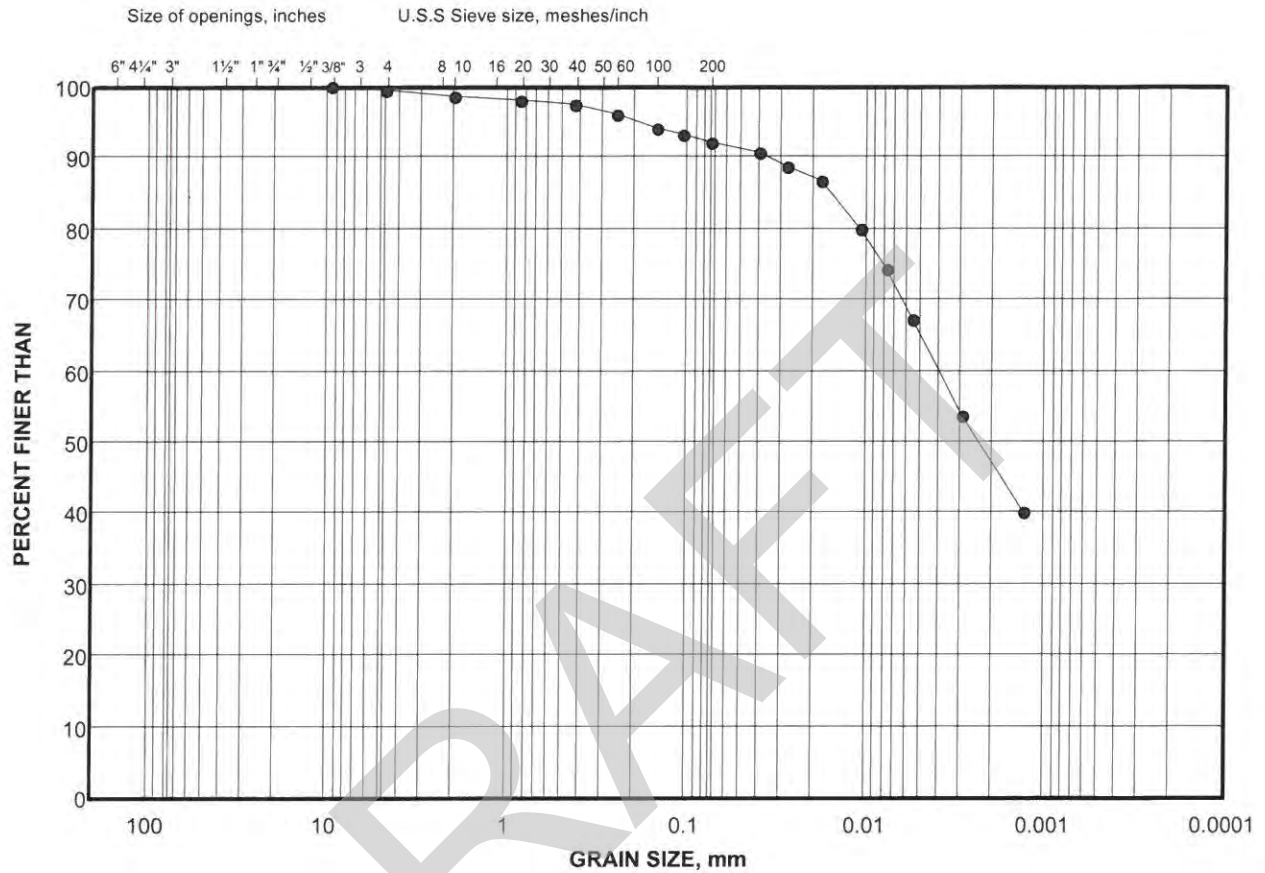
GRAIN SIZE DISTRIBUTION

FIGURE 11



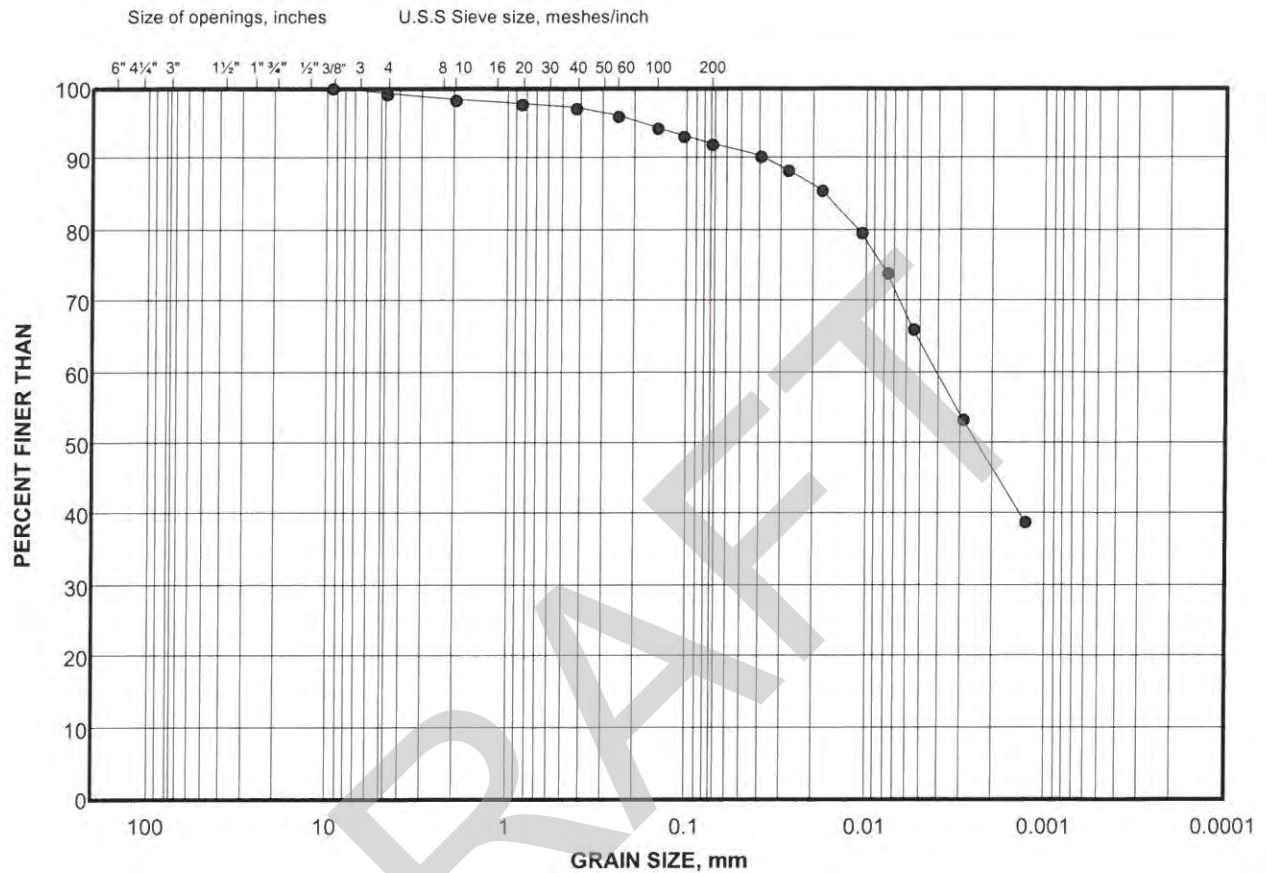
GRAIN SIZE DISTRIBUTION

FIGURE 12



GRAIN SIZE DISTRIBUTION

FIGURE 13



COBBLE	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY SIZES
SIZE	GRAVEL SIZE		SAND SIZE			FINE GRAINED

LEGEND

SYMBOL	BOREHOLE	SAMPLE	DEPTH(m)
•	19-3	SS5	9.2 Surficial Aquitard

REMARKS

Water Content= 20.2%

Project Number: 19131594

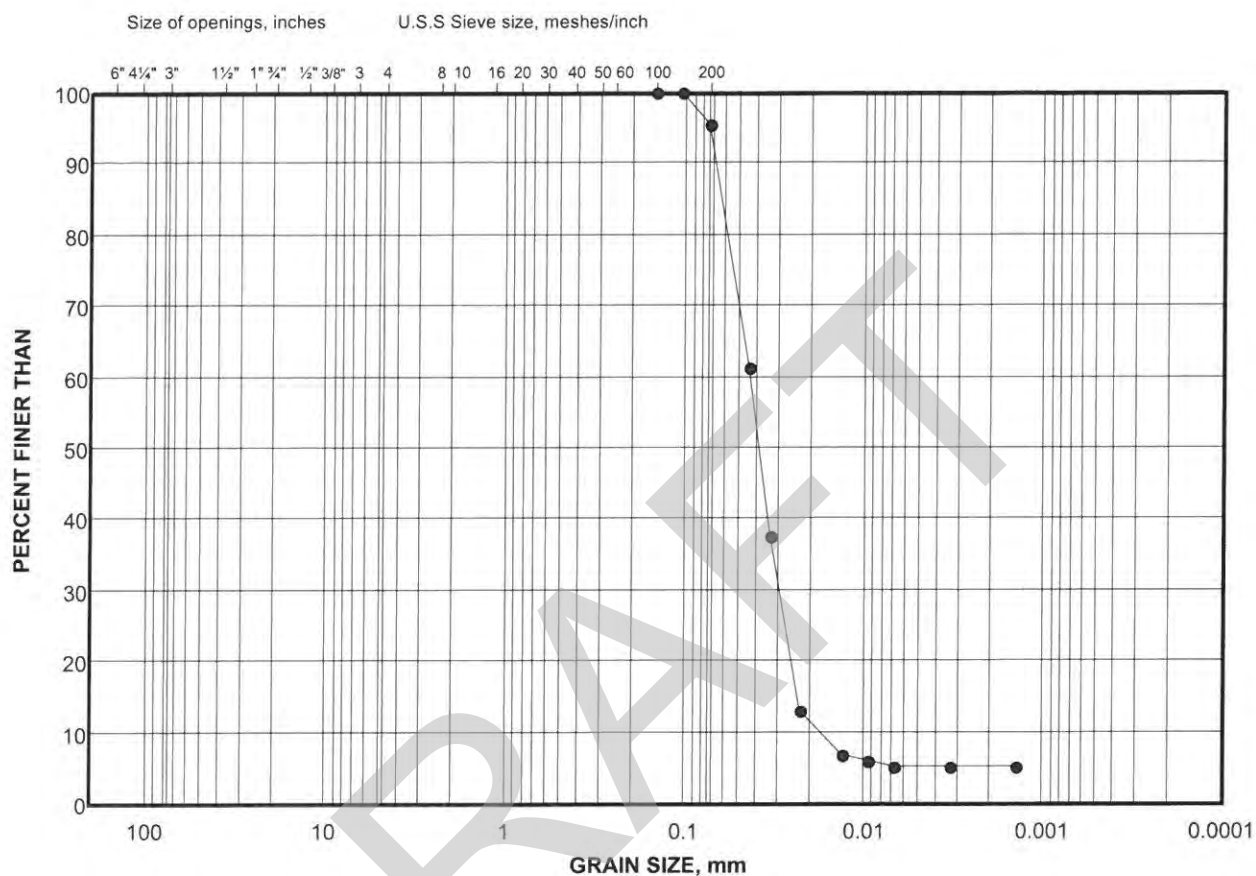
Checked By: *Chris Pash*

Golder Associates

Date: 12-Nov-19

GRAIN SIZE DISTRIBUTION

FIGURE 14



COBBLE SIZE	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY SIZES
	GRAVEL SIZE		SAND SIZE			

LEGEND

SYMBOL	BOREHOLE	SAMPLE	DEPTH(m)
•	19-3	SS8	14.4 Upper Aquifer

REMARKS

Water Content= 19.1%

Project Number: 19131594

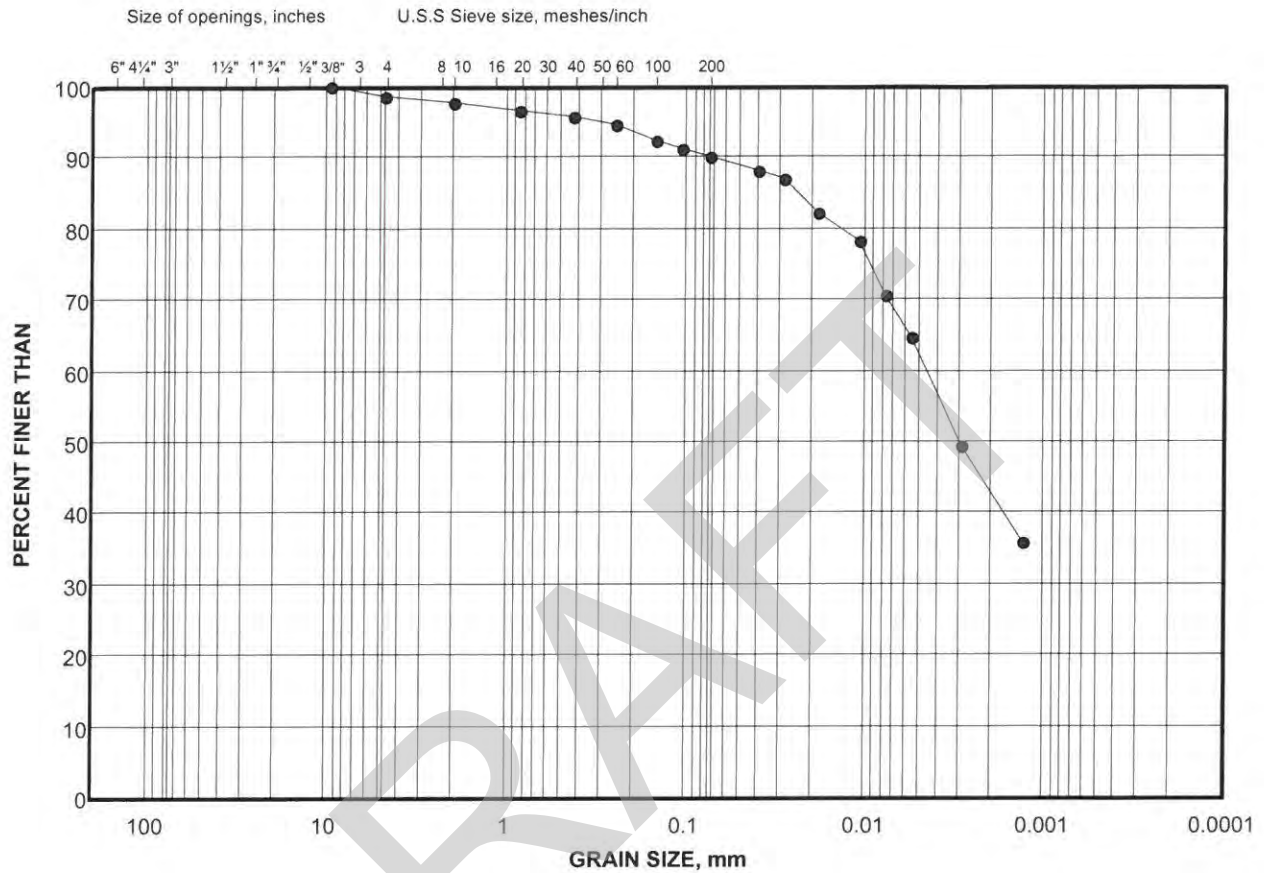
Checked By: *Chris Prober*

Golder Associates

Date: 12-Nov-19

GRAIN SIZE DISTRIBUTION

FIGURE 15



LEGEND

SYMBOL	BOREHOLE	SAMPLE	DEPTH(m)
•	19-4	SS1	4.4
			Surficial Aquitard

REMARKS

Water Content= 20.5%

Project Number: 19131594

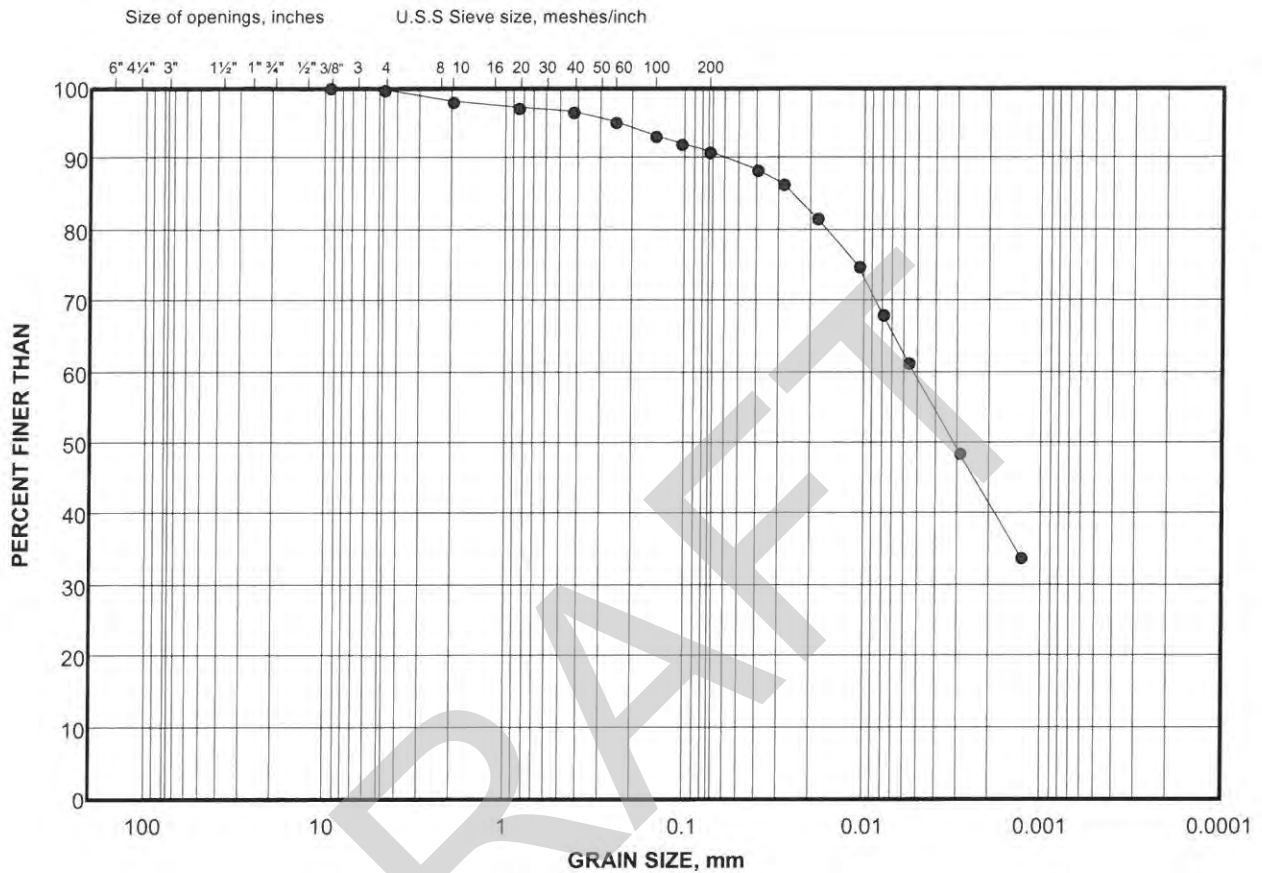
Checked By: *Chris Parker*

Golder Associates

Date: 12-Nov-19

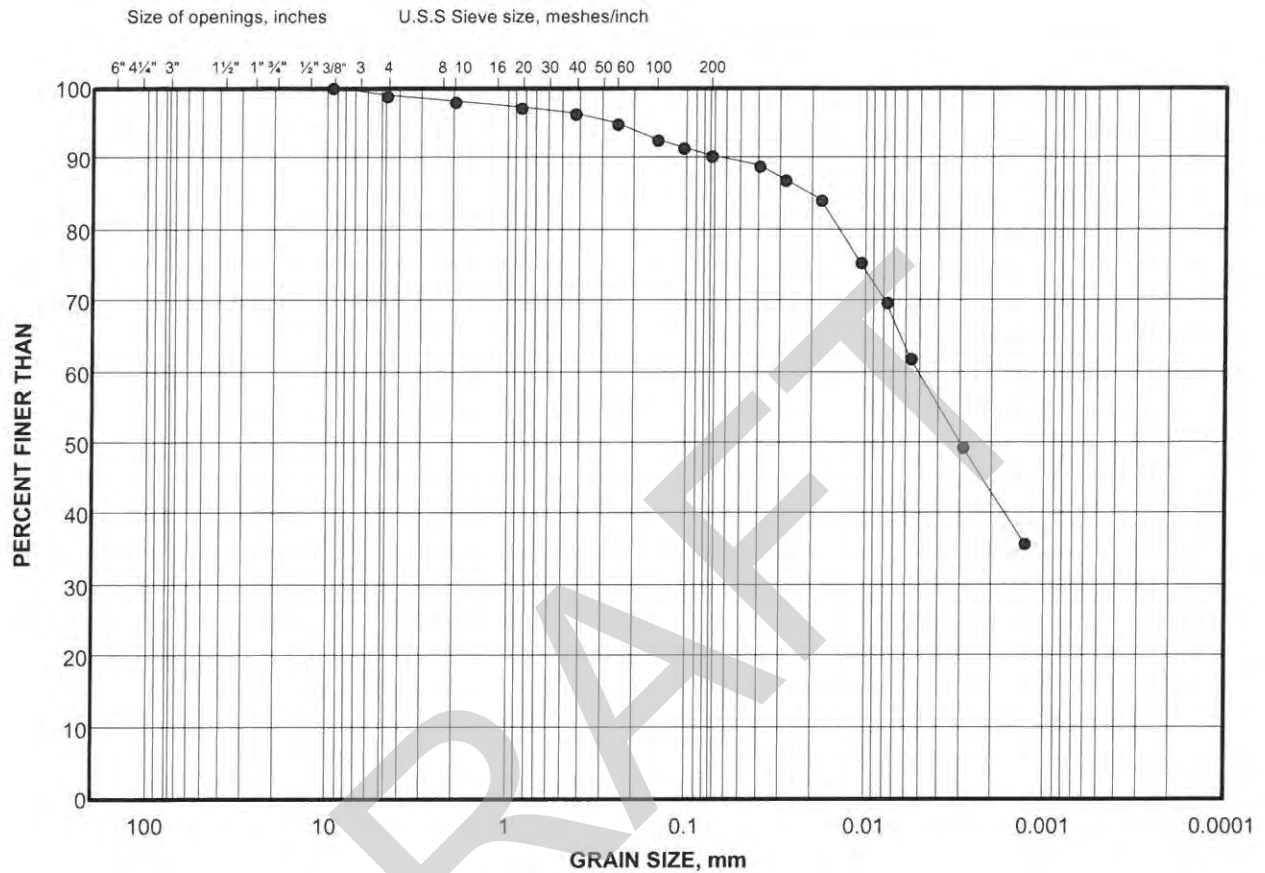
GRAIN SIZE DISTRIBUTION

FIGURE 17



GRAIN SIZE DISTRIBUTION

FIGURE 18



COBBLE	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY SIZES
SIZE	GRAVEL SIZE		SAND SIZE			FINE GRAINED

LEGEND

SYMBOL	BOREHOLE	SAMPLE	DEPTH(m)
•	19-5	SS4	9.2 Surficial Aquitard

REMARKS

Water Content= 20.1%

Project Number: 19131594

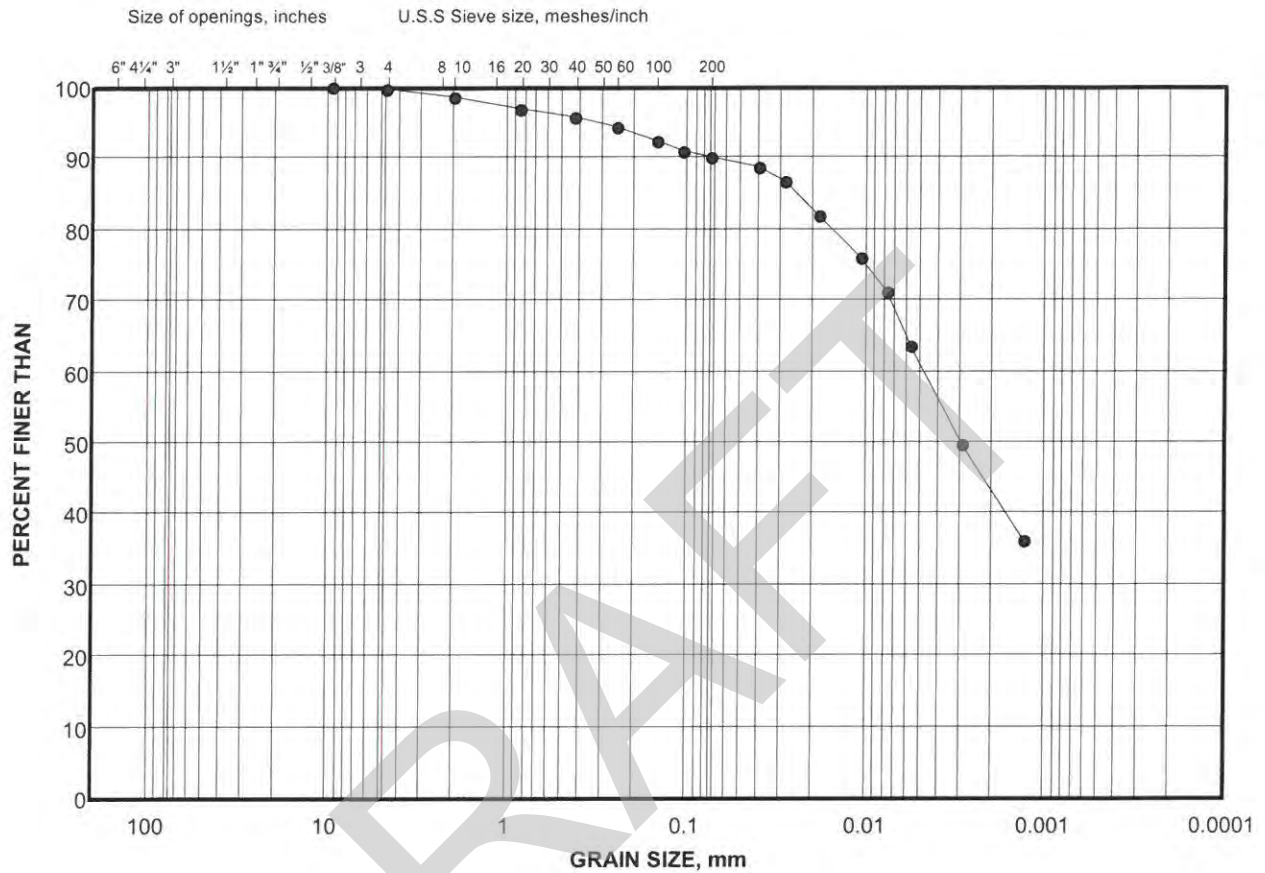
Checked By: *Chris Parker*

Golder Associates

Date: 12-Nov-19

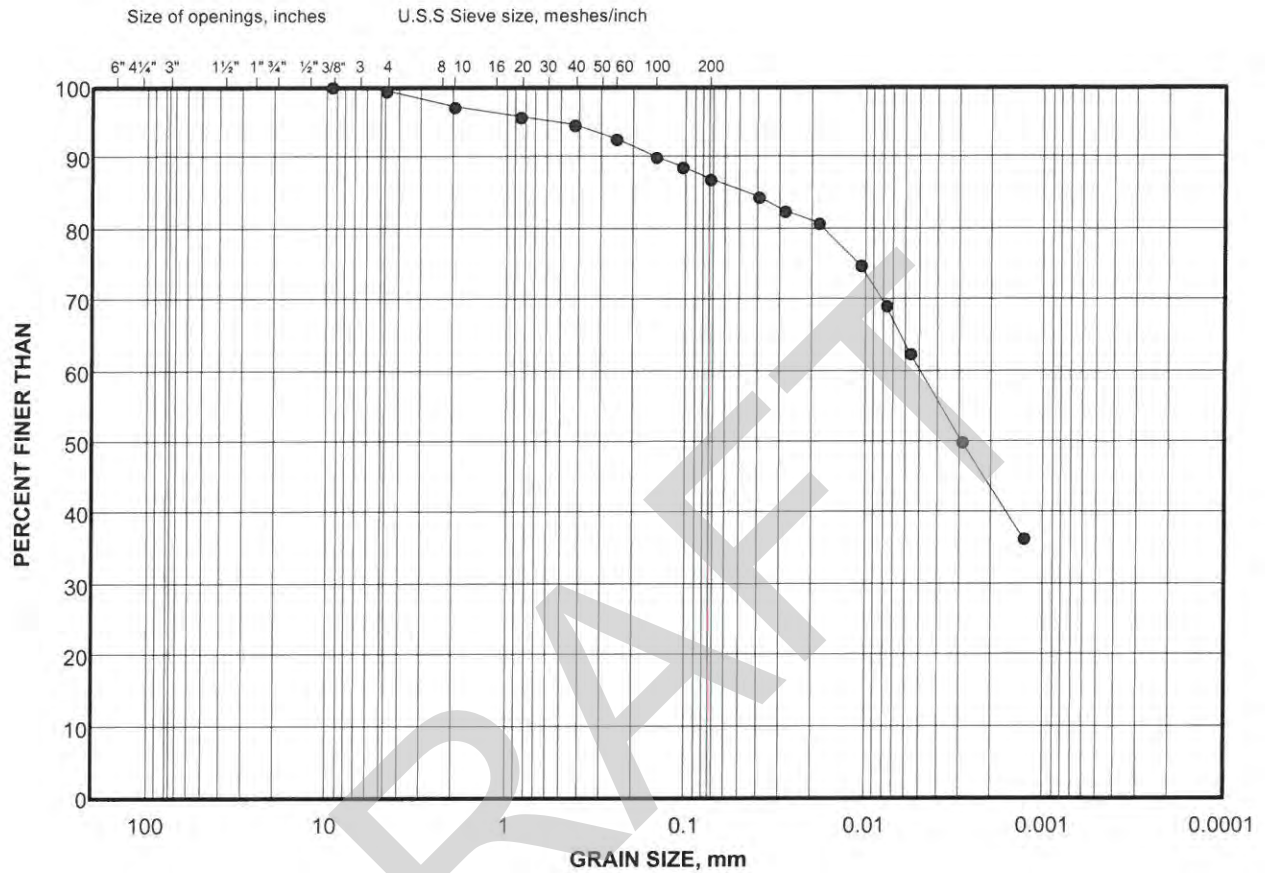
GRAIN SIZE DISTRIBUTION

FIGURE 19



GRAIN SIZE DISTRIBUTION

FIGURE 21



COBBLE	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY SIZES
SIZE	GRAVEL SIZE		SAND SIZE			FINE GRAINED

LEGEND

SYMBOL	BOREHOLE	SAMPLE	DEPTH(m)
•	19-5	SS13	24.5 Lower Aquitard

REMARKS

Water Content= 16.9

Project Number: 19131594

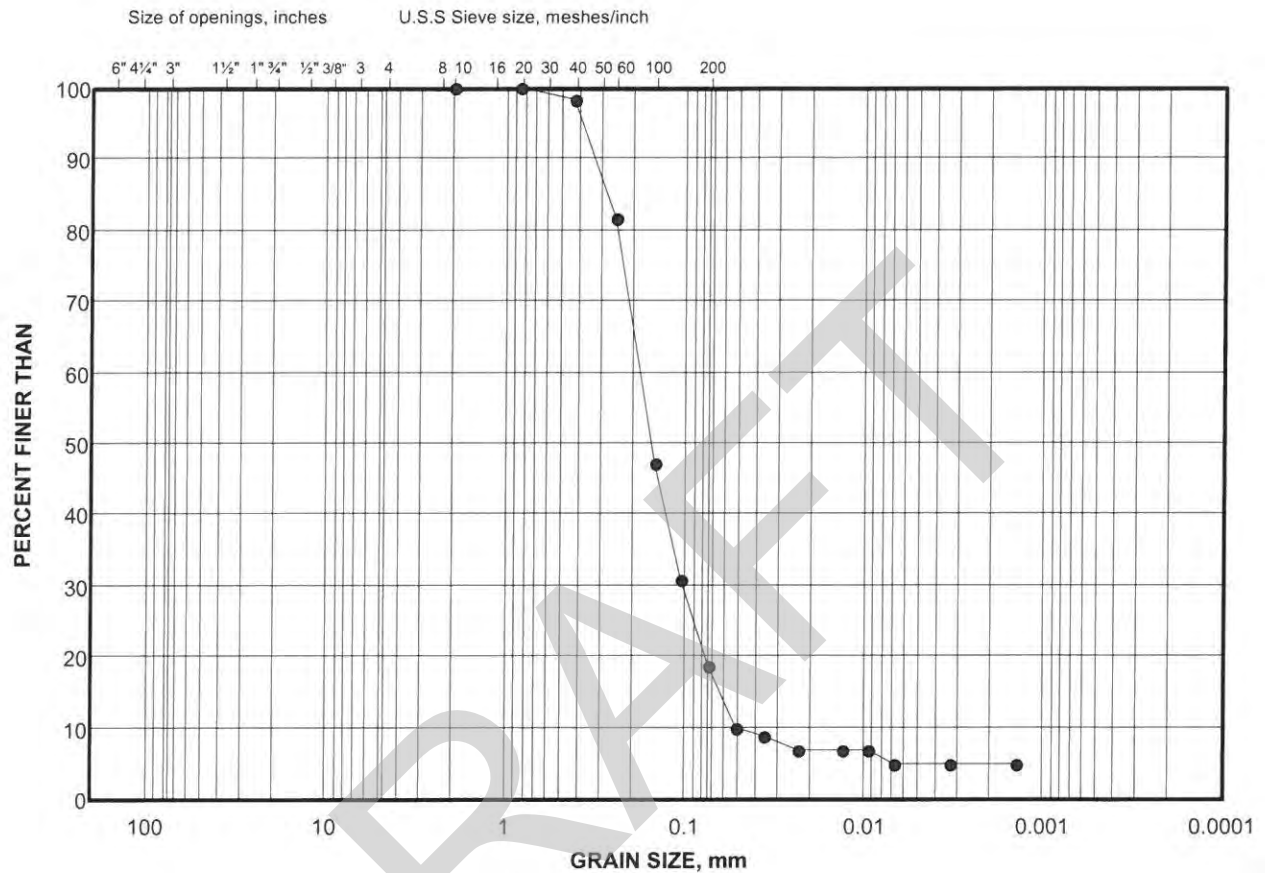
Checked By: *Chris Parker*

Golder Associates

Date: 12-Nov-19

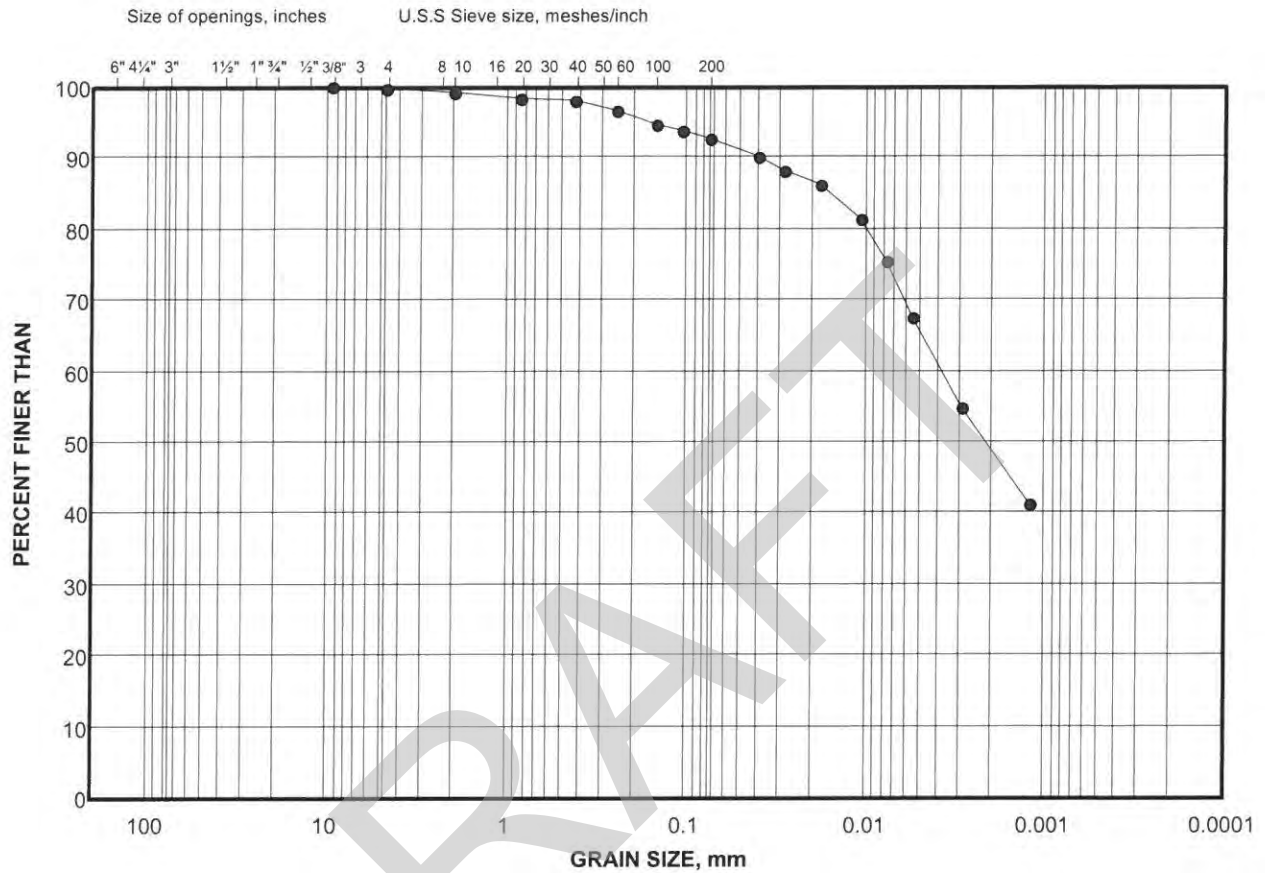
GRAIN SIZE DISTRIBUTION

FIGURE 22



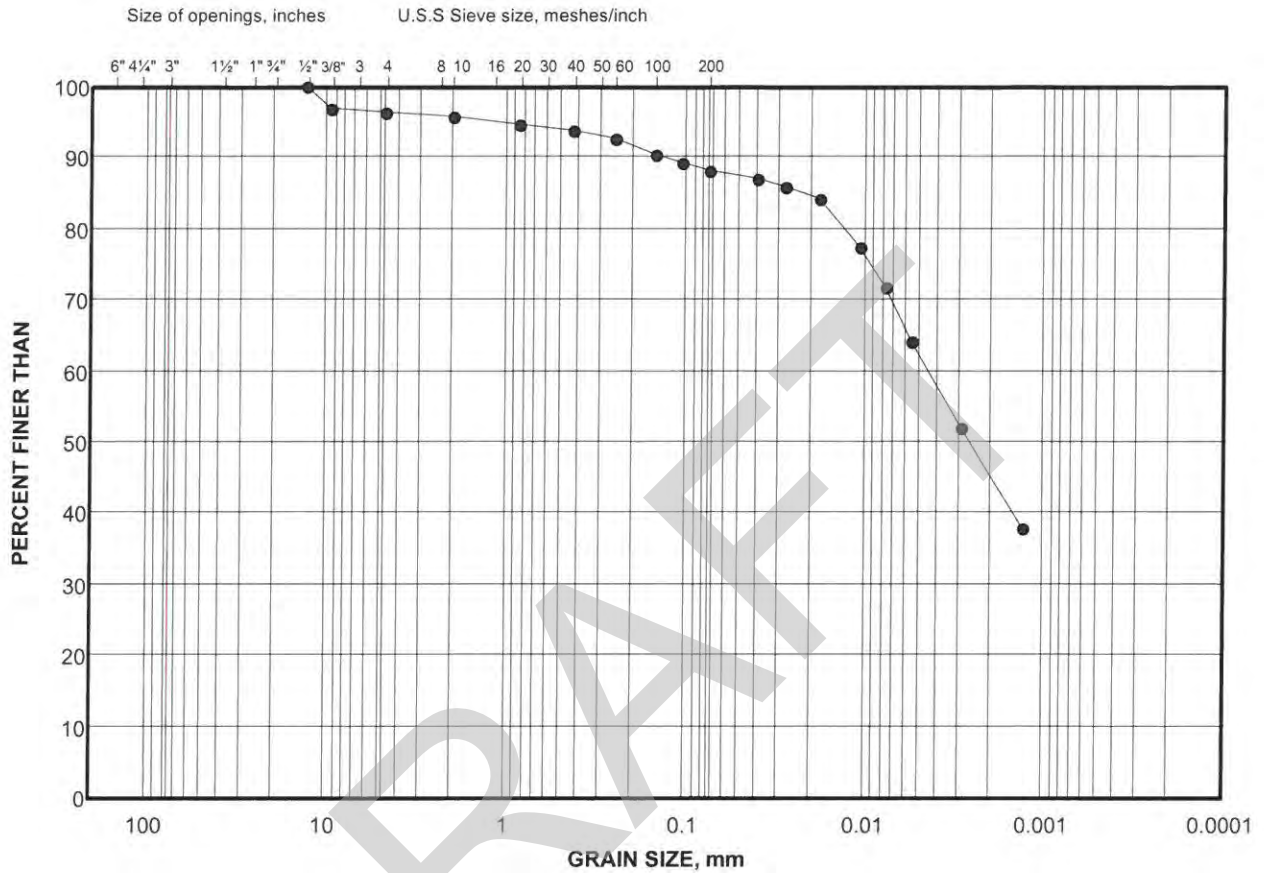
GRAIN SIZE DISTRIBUTION

FIGURE 23



GRAIN SIZE DISTRIBUTION

FIGURE 24



COBBLE	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY SIZES
SIZE	GRAVEL SIZE		SAND SIZE			FINE GRAINED

LEGEND

SYMBOL	BOREHOLE	SAMPLE	DEPTH(m)
•	19-6	SS2	9.3 Surficial Aquitard

REMARKS

Water Content= 20.1%

Project Number: 19131594

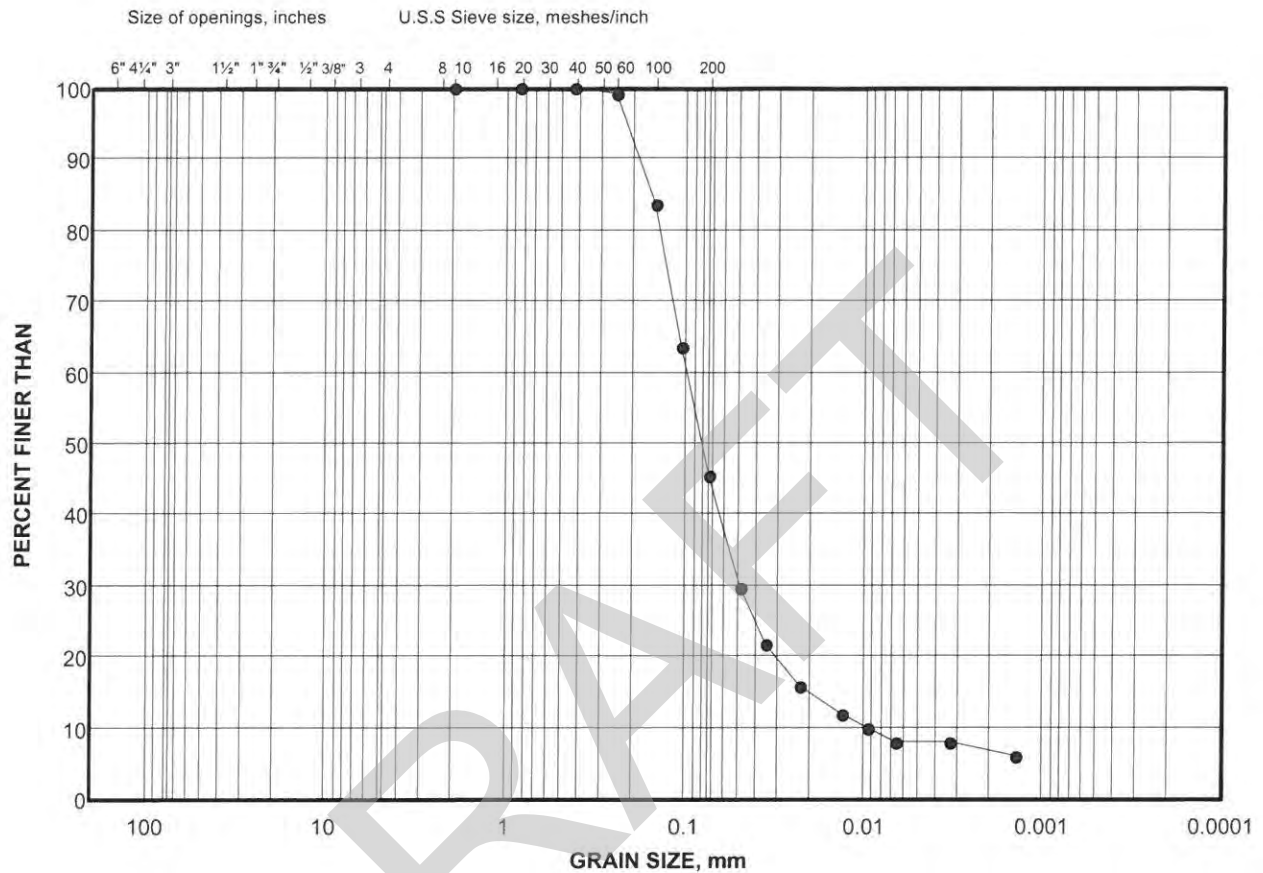
Checked By: *[Signature]*

Golder Associates

Date: 12-Nov-19

GRAIN SIZE DISTRIBUTION

FIGURE 25



COBBLE	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY SIZES
SIZE	GRAVEL SIZE		SAND SIZE			FINE GRAINED

LEGEND

SYMBOL	BOREHOLE	SAMPLE	DEPTH(m)
•	19-6	SS8	26.1 White Oaks Aquifer

REMARKS

Water Content= 16.8%

Project Number: 19131594

Checked By: *[Signature]*

Golder Associates

Date: 12-Nov-19

TOTAL ORGANIC CARBON CONTENT (TOC)

PROJECT NUMBER		1648176 (6000)						
PROJECT NAME		CityLondon/EOI LongTermSolidWaste						
DATE TESTED		November 15, 2019						
Borehole No.	Sample No.	Soil Grain Size Distribution					TOC	TOC*
		Passing 0.6mm (%)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	<0.6mm (%)	Whole Soil (%)
19-3	SS2	97.0	1.6	6.4	50.0	42.0	0.28	0.27
19-3	SS5	99.0	0.0	6.0	49.0	45.0	0.19	0.18
19-3	SS8	100.0	0.0	2.0	97.5	0.5	0.09	0.09
19-3	SS8	Repeat	100.0	0.0	2.0	97.5	0.07	0.07
19-5	SS1	94.0	1.6	10.4	52.0	36.0	0.16	0.15
19-5	SS4	97.0	1.1	6.8	51.0	41.1	0.17	0.17
19-5	SS4	Repeat	97.0	1.1	6.8	51.0	0.21	0.21
19-5	SS7	91.0	7.6	8.4	47.0	37.0	0.23	0.21
19-5	SS10	98.0	0.0	7.0	50.0	43.0	0.23	0.22

Notes:

1. Samples dried at 110 degree centigrade prior to testing.
2. Test performed on minus 600 micron soil fraction, using the method of Walkley and Black (Walkley, 1946)
3. Grain size distribution of sand, silt and clay based on Unified Soil Classification.

* Corrected TOC for whole (ie. unfractionated) soil assuming negligible organic carbon content associated with the plus 600 micron soil.



Report # 558561

Analytical Report

Page 1 of 2

Email

GOLDER ASSOCIATES - Marijana - BH193 SS2-
SS10 CEC
6925 Century Avenue
Suite 100
Mississauga, ON L5N 7K2

Fax: 905-567-6561

Email: mmanojlovic@golder.com

Date Received: Nov-13-2019

Date Reported: Nov-27-2019

Laboratory Number:	31930701	31930702	31930703	31930704
Sample ID:	BH19-3 SS2	BH19-3 SS5	BH19-3 SS8	BH19-5-SS1
Sample Description:	Clay		Silt	Clay
CEC - Actual (MEQ/100g)	118.30	112.40	16.50	112.80

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Authorized By: Jack Legg
CCA-ON, 4R NMS

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Report # 558561

Analytical Report

Page 2 of 2

Email

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SS10 CEC
6925 Century Avenue
Suite 100
Mississauga, ON L5N 7K2

Fax: 905-567-6561

Email: mmanojlovic@golder.com

Date Received: Nov-13-2019

Date Reported: Nov-27-2019

Laboratory Number:	31930705	31930706	31930708
Sample ID:	BH19-5 SS4	BH19-5 SS7	BH19-5SS10
Sample Description:			
CEC - Actual (MEQ/100g)	100.60	108.00	107.20

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Authorized By: Jack Legg
CCA-ON, 4R NMS

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Appendix D

Hydraulic Conductivity Tests

ASTM D 5084 (CONSTANT HEAD - Method A)

SAMPLE IDENTIFICATION

PROJECT NUMBER	1648176(6000)	SAMPLE	SS1
PROJECT TITLE	CityLondon/EOI LongTermSolidWaste	SAMPLE DEPTH, m	-
BOREHOLE NUMBER	19-2-2	DATE	2/10/2020

SPECIMEN PROPERTIES AND DIMENSIONS (INITIAL

SAMPLE HEIGHT, cm	6.26	UNIT WEIGHT, kN/m ³	20.67
SAMPLE DIAMETER, cm	7.20	DRY UNIT WEIGHT, kN/m ³	17.20
SAMPLE AREA, cm ²	40.74	SPECIFIC GRAVITY, assumed	2.70
SAMPLE VOLUME, cm ³	254.85	VOLUME OF SOLIDS, cm ³	165.51
TOTAL MASS, g	537.19	VOLUME OF VOIDS, cm ³	89.35
DRY MASS, g	446.88	VOID RATIO	0.54
WATER CONTENT, %	20.2		

SATURATION STAGE

CELL PRESSURE, kPa	420.00	EFFECTIVE CONSOLIDATION STRESS, kPa	10
HEAD PRESSURE, kPa	410.00	DURATION, min	7,086
BACK PRESSURE, kPa	410.00	B COEFFICIENT	0.96

CONSOLIDATION STAGE

CELL PRESSURE, kPa	460.00	EFFECTIVE CONSOLIDATION STRESS, kPa	50
HEAD PRESSURE, kPa	410.00	DURATION, min	1,209
BACK PRESSURE, kPa	410.00	VOLUME CHANGE, cm ³	2.30
		DRAINAGE	Top and Bottom

SPECIMEN PROPERTIES AND DIMENSIONS (AFTER CONSOLIDATION)

SAMPLE HEIGHT, cm	6.24	SAMPLE AREA, cm ²	40.49
SAMPLE DIAMETER, cm	7.18	SAMPLE VOLUME, cm ³	252.56

HYDRAULIC CONDUCTIVITY STAGE

CELL PRESSURE, kPa	472	EFFECTIVE CONSOLIDATION STRESS, kPa	50
HEAD PRESSURE, kPa	422	DURATION, min	4447
BACK PRESSURE, kPa	410	HYDRAULIC GRADIENT, i	20

SPECIMEN PROPERTIES AND DIMENSIONS (FINAL)

SAMPLE HEIGHT, cm	6.24	UNIT WEIGHT, kN/m ³	20.92
SAMPLE DIAMETER, cm	7.18	DRY UNIT WEIGHT, kN/m ³	17.35
SAMPLE AREA, cm ²	40.49	SPECIFIC GRAVITY, assumed	2.70
SAMPLE VOLUME, cm ³	252.56	VOLUME OF SOLIDS, cm ³	165.51
TOTAL MASS, g	538.87	VOLUME OF VOIDS, cm ³	87.05
DRY MASS, g	446.88	VOID RATIO	0.53
WATER CONTENT, %	20.6		

TEST RESULTS

ELAPSED TIME TO STEADY STATE FLOW (min)	0.0
DURATION OF STEADY STATE FLOW (min)	4447
INFLOW VOLUME UNDER STEADY STATE FLOW (cm ³)	2.6
OUTFLOW VOLUME UNDER STEADY STATE FLOW (cm ³)	2.0
INFLOW TO OUTFLOW RATIO	1.3
HYDRAULIC CONDUCTIVITY (INFLOW) (m/s)	1.23E-10
HYDRAULIC CONDUCTIVITY (OUTFLOW) (m/s)	9.43E-11
HYDRAULIC CONDUCTIVITY, K, m/s	1.09E-10
HYDRAULIC CONDUCTIVITY AT STANDARD TEMPERATURE, K₂₀, m/s	1.01E-10

NOTES:

Effective consolidation stress assigned, by client

PERMEANT FLUID

Deaired tap water

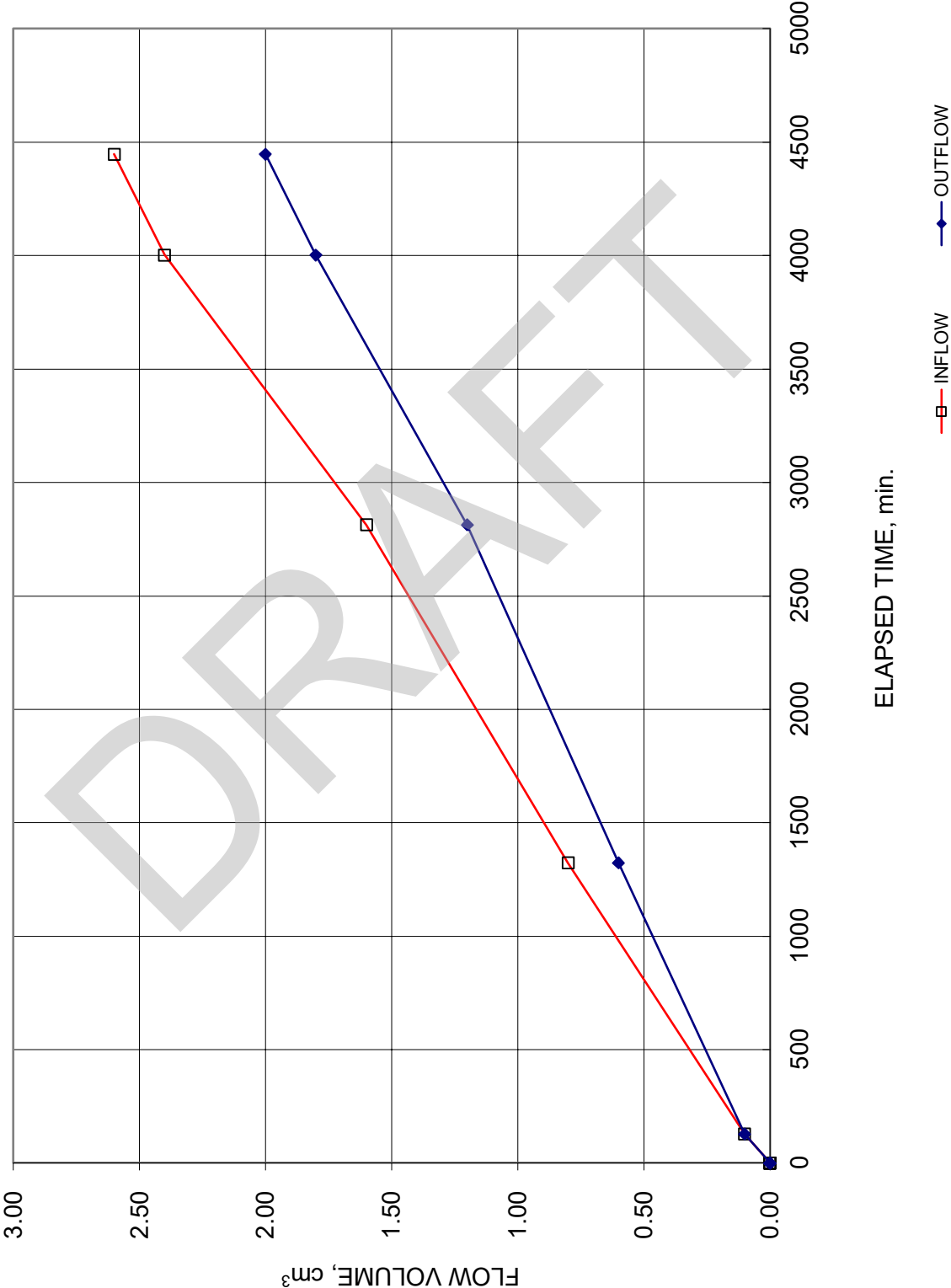
AVERAGE TEST TEMPERATURE

23.0 °C

HYDRAULIC CONDUCTIVITY TEST

Project title: CityLondon/EOI LongTermSolidWaste
Borehole number: 19-2-2
Sample depth: -

Flow volume vs. Time
BOREHOLE NUMBER - 19-2-2
SAMPLE - SS1



ASTM D 5084 (CONSTANT HEAD - Method A)

SAMPLE IDENTIFICATION

PROJECT NUMBER	1648176(6000)	SAMPLE	SS2
PROJECT TITLE	CityLondon/EOI LongTermSolidWaste	SAMPLE DEPTH, m	-
BOREHOLE NUMBER	19-2-2	DATE	2/18/2020

SPECIMEN PROPERTIES AND DIMENSIONS (INITIAL)

SAMPLE HEIGHT, cm	6.70	UNIT WEIGHT, kN/m ³	21.14
SAMPLE DIAMETER, cm	7.20	DRY UNIT WEIGHT, kN/m ³	17.81
SAMPLE AREA, cm ²	40.76	SPECIFIC GRAVITY, assumed	2.70
SAMPLE VOLUME, cm ³	273.05	VOLUME OF SOLIDS, cm ³	183.63
TOTAL MASS, g	588.70	VOLUME OF VOIDS, cm ³	89.43
DRY MASS, g	495.79	VOID RATIO	0.49
WATER CONTENT, %	18.7		

SATURATION STAGE

CELL PRESSURE, kPa	490.00	EFFECTIVE CONSOLIDATION STRESS, kPa	10
HEAD PRESSURE, kPa	480.00	DURATION, min	139,397
BACK PRESSURE, kPa	480.00	<i>B</i> COEFFICIENT	0.96

CONSOLIDATION STAGE

CELL PRESSURE, kPa	580.00	EFFECTIVE CONSOLIDATION STRESS, kPa	100
HEAD PRESSURE, kPa	480.00	DURATION, min	1,499
BACK PRESSURE, kPa	480.00	VOLUME CHANGE, cm ³	5.40
		DRAINAGE	Top and Bottom

SPECIMEN PROPERTIES AND DIMENSIONS (AFTER CONSOLIDATION)

SAMPLE HEIGHT, cm	6.65	SAMPLE AREA, cm ²	40.22
SAMPLE DIAMETER, cm	7.16	SAMPLE VOLUME, cm ³	267.68

HYDRAULIC CONDUCTIVITY STAGE

CELL PRESSURE, kPa	593	EFFECTIVE CONSOLIDATION STRESS, kPa	100
HEAD PRESSURE, kPa	493	DURATION, min	4110
BACK PRESSURE, kPa	480	HYDRAULIC GRADIENT, i	20

SPECIMEN PROPERTIES AND DIMENSIONS (FINAL)

SAMPLE HEIGHT, cm	6.65	UNIT WEIGHT, kN/m ³	21.63
SAMPLE DIAMETER, cm	7.16	DRY UNIT WEIGHT, kN/m ³	18.16
SAMPLE AREA, cm ²	40.22	SPECIFIC GRAVITY, assumed	2.70
SAMPLE VOLUME, cm ³	267.68	VOLUME OF SOLIDS, cm ³	183.63
TOTAL MASS, g	590.29	VOLUME OF VOIDS, cm ³	84.05
DRY MASS, g	495.79	VOID RATIO	0.46
WATER CONTENT, %	19.1		

TEST RESULTS

ELAPSED TIME TO STEADY STATE FLOW (min)	0.0
DURATION OF STEADY STATE FLOW (min)	4110
INFLOW VOLUME UNDER STEADY STATE FLOW (cm ³)	2.2
OUTFLOW VOLUME UNDER STEADY STATE FLOW (cm ³)	2.6
INFLOW TO OUTFLOW RATIO	0.8
HYDRAULIC CONDUCTIVITY (INFLOW) (m/s)	1.11E-10
HYDRAULIC CONDUCTIVITY (OUTFLOW) (m/s)	1.32E-10
HYDRAULIC CONDUCTIVITY, K, m/s	1.21E-10
HYDRAULIC CONDUCTIVITY AT STANDARD TEMPERATURE, K₂₀, m/s	1.13E-10

NOTES:

Effective consolidation stress assigned, by client.

PERMEANT FLUID

Deaired tap water

AVERAGE TEST TEMPERATURE

23.0 °C

HYDRAULIC CONDUCTIVITY TEST

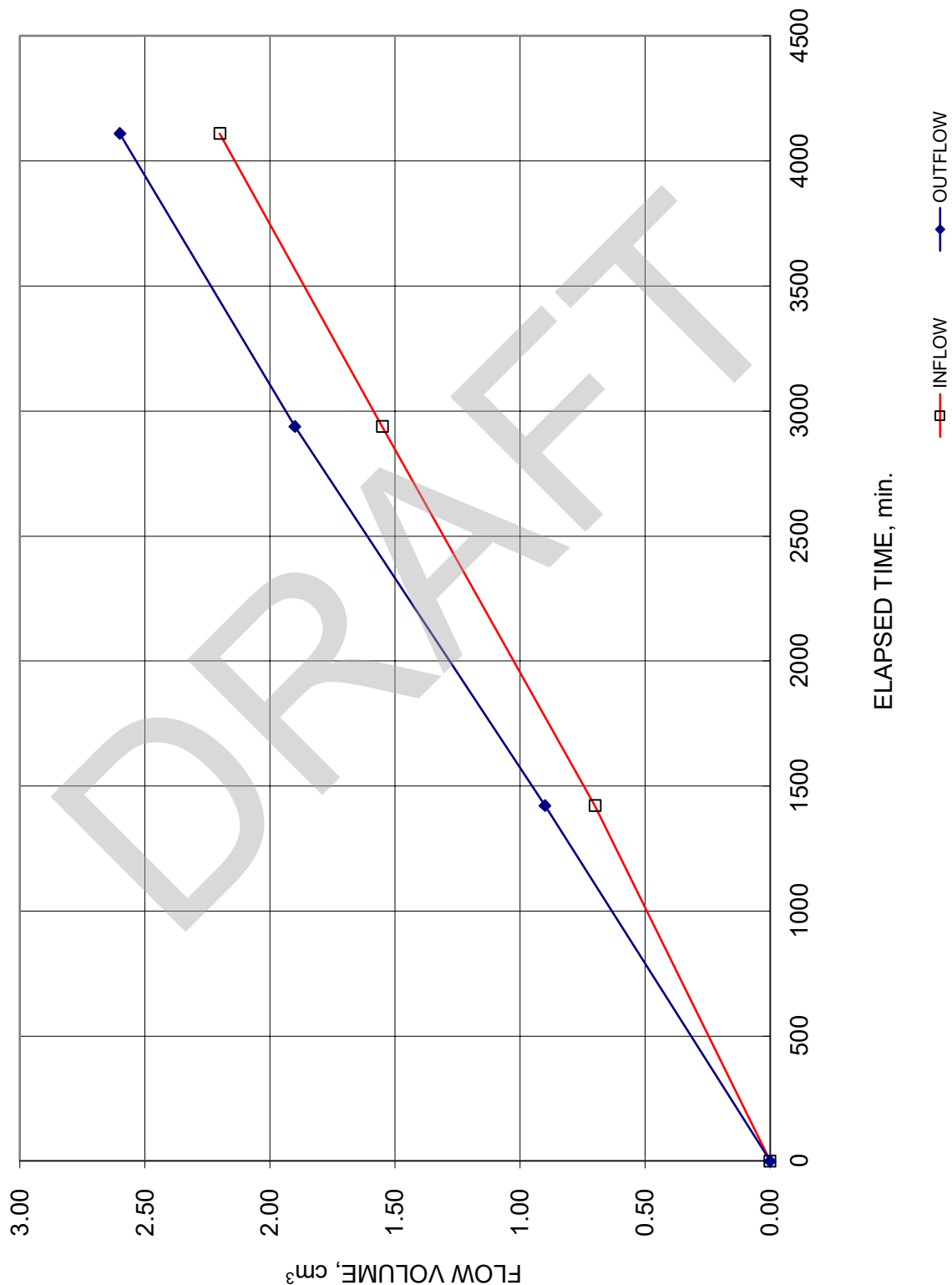
2/18/2020

Project title: CityLondon/EOI LongTermSolidWaste

Borehole number: 19-2-2

Sample depth: -

Flow volume vs. Time
BOREHOLE NUMBER - 19-2-2
SAMPLE - SS2



Project number : 1648176(6000)

Prepared by : SJ

Golder Associates

Checked by : MM

HYDRAULIC CONDUCTIVITY TEST
ASTM D 5084 (CONSTANT HEAD - Method A)

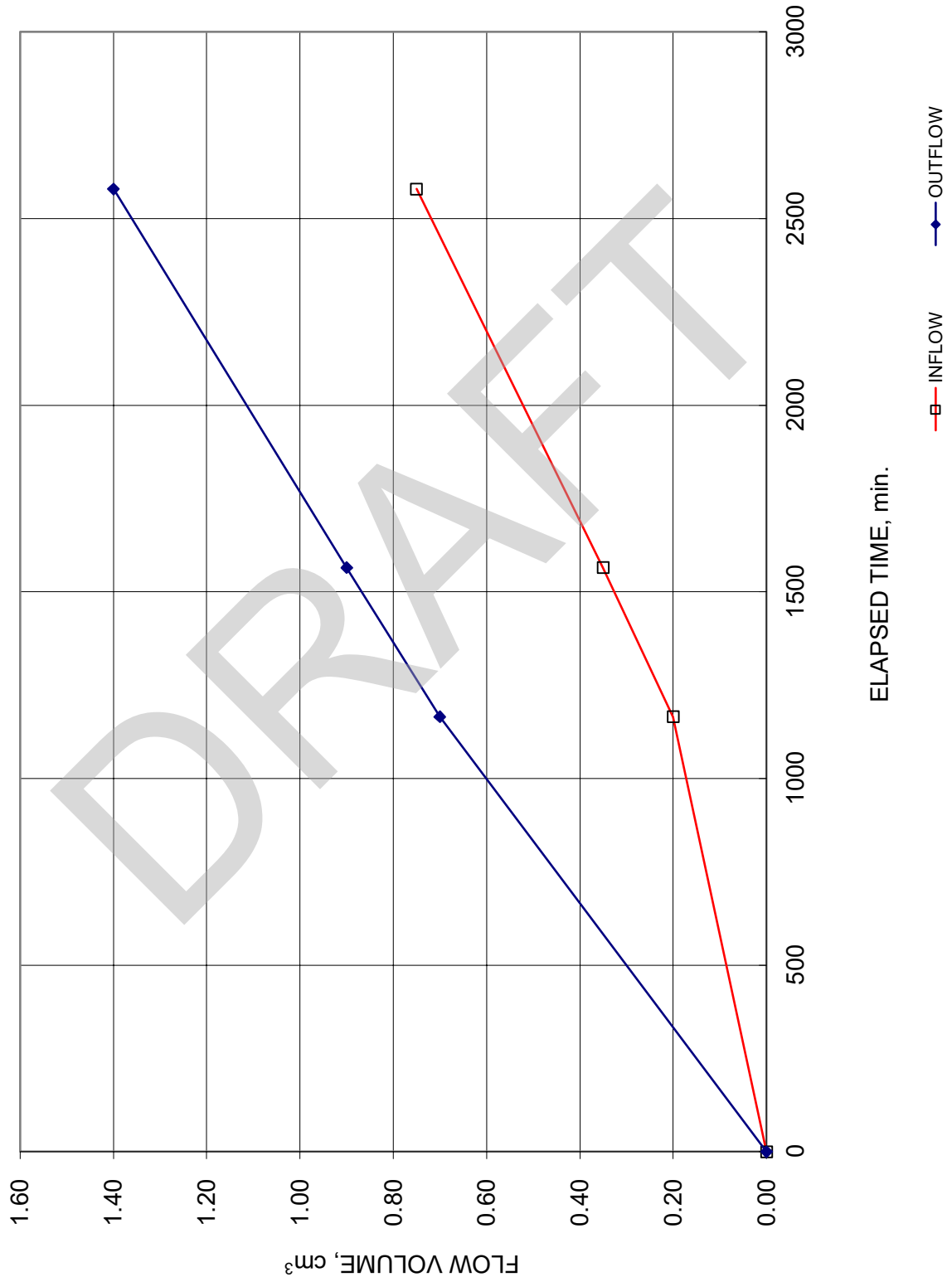
SAMPLE IDENTIFICATION				
PROJECT NUMBER	1648176(6000)	SAMPLE		SS1
PROJECT TITLE	CityLondon/EOI LongTermSolidWaste	SAMPLE DEPTH, m		-
BOREHOLE NUMBER	19-5-2	DATE		2/19/2020
SPECIMEN PROPERTIES AND DIMENSIONS (INITIAL)				
SAMPLE HEIGHT, cm	6.67	UNIT WEIGHT, kN/m ³		20.50
SAMPLE DIAMETER, cm	7.19	DRY UNIT WEIGHT, kN/m ³		16.93
SAMPLE AREA, cm ²	40.55	SPECIFIC GRAVITY, assumed		2.70
SAMPLE VOLUME, cm ³	270.48	VOLUME OF SOLIDS, cm ³		172.99
TOTAL MASS, g	565.36	VOLUME OF VOIDS, cm ³		97.48
DRY MASS, g	467.09	VOID RATIO		0.56
WATER CONTENT, %	21.0			
SATURATION STAGE				
CELL PRESSURE, kPa	350.00	EFFECTIVE CONSOLIDATION STRESS, kPa		10
HEAD PRESSURE, kPa	340.00	DURATION, min		8,421
BACK PRESSURE, kPa	340.00	B COEFFICIENT		0.96
CONSOLIDATION STAGE				
CELL PRESSURE, kPa	540.00	EFFECTIVE CONSOLIDATION STRESS, kPa		200
HEAD PRESSURE, kPa	340.00	DURATION, min		1,493
BACK PRESSURE, kPa	340.00	VOLUME CHANGE, cm ³		4.90
		DRAINAGE		Top and Bottom
SPECIMEN PROPERTIES AND DIMENSIONS (AFTER CONSOLIDATION)				
SAMPLE HEIGHT, cm	6.63	SAMPLE AREA, cm ²		40.06
SAMPLE DIAMETER, cm	7.14	SAMPLE VOLUME, cm ³		265.60
HYDRAULIC CONDUCTIVITY STAGE				
CELL PRESSURE, kPa	553	EFFECTIVE CONSOLIDATION STRESS, kPa		200
HEAD PRESSURE, kPa	353	DURATION, min		2579
BACK PRESSURE, kPa	340	HYDRAULIC GRADIENT, i		20
SPECIMEN PROPERTIES AND DIMENSIONS (FINAL)				
SAMPLE HEIGHT, cm	6.63	UNIT WEIGHT, kN/m ³		20.83
SAMPLE DIAMETER, cm	7.14	DRY UNIT WEIGHT, kN/m ³		17.25
SAMPLE AREA, cm ²	40.06	SPECIFIC GRAVITY, assumed		2.70
SAMPLE VOLUME, cm ³	265.60	VOLUME OF SOLIDS, cm ³		172.99
TOTAL MASS, g	564.14	VOLUME OF VOIDS, cm ³		92.60
DRY MASS, g	467.09	VOID RATIO		0.54
WATER CONTENT, %	20.8			
TEST RESULTS				
ELAPSED TIME TO STEADY STATE FLOW (min)				1165.0
DURATION OF STEADY STATE FLOW (min)				1414
INFLOW VOLUME UNDER STEADY STATE FLOW (cm ³)				0.6
OUTFLOW VOLUME UNDER STEADY STATE FLOW (cm ³)				0.7
INFLOW TO OUTFLOW RATIO				0.8
HYDRAULIC CONDUCTIVITY (INFLOW) (m/s)				8.09E-11
HYDRAULIC CONDUCTIVITY (OUTFLOW) (m/s)				1.03E-10
HYDRAULIC CONDUCTIVITY, K, m/s				9.20E-11
HYDRAULIC CONDUCTIVITY AT STANDARD TEMPERATURE, K ₂₀ , m/s				8.57E-11
NOTES:				
Effective consolidation stress assigned, by client.				
PERMEANT FLUID	Deaired tap water			
AVERAGE TEST TEMPERATURE	23.0 °C			

HYDRAULIC CONDUCTIVITY TEST

2/19/2020

Project title: CityLondon/EOI LongTermSolidWaste
Borehole number: 19-5-2
Sample depth: -

Flow volume vs. Time
BOREHOLE NUMBER - 19-5-2
SAMPLE - SS1



HYDRAULIC CONDUCTIVITY TEST
ASTM D 5084 (CONSTANT HEAD - Method A)

SAMPLE IDENTIFICATION				
PROJECT NUMBER	1648176(6000)	SAMPLE		SS2
PROJECT TITLE	CityLondon/EOI LongTermSolidWaste	SAMPLE DEPTH, m		-
BOREHOLE NUMBER	19-5-2	DATE		2/21/2020
SPECIMEN PROPERTIES AND DIMENSIONS (INITIAL)				
SAMPLE HEIGHT, cm	6.72	UNIT WEIGHT, kN/m ³		21.53
SAMPLE DIAMETER, cm	6.92	DRY UNIT WEIGHT, kN/m ³		18.09
SAMPLE AREA, cm ²	37.64	SPECIFIC GRAVITY, assumed		2.70
SAMPLE VOLUME, cm ³	253.00	VOLUME OF SOLIDS, cm ³		172.88
TOTAL MASS, g	555.37	VOLUME OF VOIDS, cm ³		80.12
DRY MASS, g	466.78	VOID RATIO		0.46
WATER CONTENT, %	19.0			
SATURATION STAGE				
CELL PRESSURE, kPa	350.00	EFFECTIVE CONSOLIDATION STRESS, kPa		10
HEAD PRESSURE, kPa	340.00	DURATION, min		9,982
BACK PRESSURE, kPa	340.00	B COEFFICIENT		0.96
CONSOLIDATION STAGE				
CELL PRESSURE, kPa	570.00	EFFECTIVE CONSOLIDATION STRESS, kPa		230
HEAD PRESSURE, kPa	340.00	DURATION, min		1,330
BACK PRESSURE, kPa	340.00	VOLUME CHANGE, cm ³		7.60
		DRAINAGE		Top and Bottom
SPECIMEN PROPERTIES AND DIMENSIONS (AFTER CONSOLIDATION)				
SAMPLE HEIGHT, cm	6.65	SAMPLE AREA, cm ²		36.89
SAMPLE DIAMETER, cm	6.85	SAMPLE VOLUME, cm ³		245.45
HYDRAULIC CONDUCTIVITY STAGE				
CELL PRESSURE, kPa	583	EFFECTIVE CONSOLIDATION STRESS, kPa		230
HEAD PRESSURE, kPa	353	DURATION, min		2804
BACK PRESSURE, kPa	340	HYDRAULIC GRADIENT, i		20
SPECIMEN PROPERTIES AND DIMENSIONS (FINAL)				
SAMPLE HEIGHT, cm	6.65	UNIT WEIGHT, kN/m ³		22.05
SAMPLE DIAMETER, cm	6.85	DRY UNIT WEIGHT, kN/m ³		18.65
SAMPLE AREA, cm ²	36.89	SPECIFIC GRAVITY, assumed		2.70
SAMPLE VOLUME, cm ³	245.45	VOLUME OF SOLIDS, cm ³		172.88
TOTAL MASS, g	551.89	VOLUME OF VOIDS, cm ³		72.57
DRY MASS, g	466.78	VOID RATIO		0.42
WATER CONTENT, %	18.2			
TEST RESULTS				
ELAPSED TIME TO STEADY STATE FLOW (min)				0.0
DURATION OF STEADY STATE FLOW (min)				2804
INFLOW VOLUME UNDER STEADY STATE FLOW (cm ³)				1.2
OUTFLOW VOLUME UNDER STEADY STATE FLOW (cm ³)				1.4
INFLOW TO OUTFLOW RATIO				0.9
HYDRAULIC CONDUCTIVITY (INFLOW) (m/s)				9.70E-11
HYDRAULIC CONDUCTIVITY (OUTFLOW) (m/s)				1.13E-10
HYDRAULIC CONDUCTIVITY, K, m/s				1.05E-10
HYDRAULIC CONDUCTIVITY AT STANDARD TEMPERATURE, K ₂₀ , m/s				9.79E-11

NOTES:

Effective consolidation stress assigned, by client.

PERMEANT FLUID

Deaired tap water

AVERAGE TEST TEMPERATURE

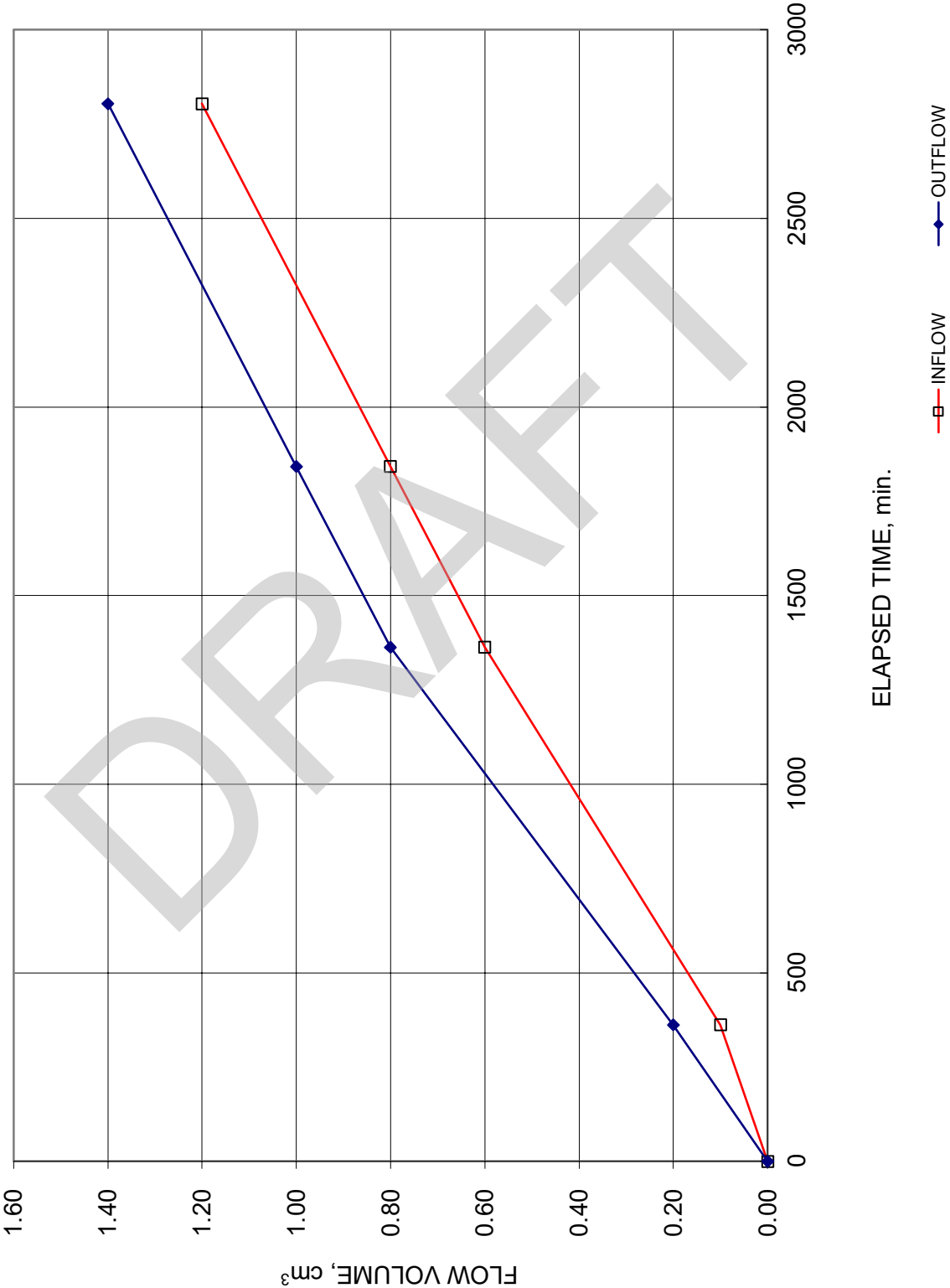
23.0 °C

HYDRAULIC CONDUCTIVITY TEST

2/21/2020

Project title: CityLondon/EOI LongTermSolidWaste
Borehole number: 19-5-2
Sample depth: -

Flow volume vs. Time
BOREHOLE NUMBER - 19-5-2
SAMPLE - SS2



ASTM D 5084 (CONSTANT HEAD - Method A)

SAMPLE IDENTIFICATION

PROJECT NUMBER	1648176(6000)	SAMPLE	SS1
PROJECT TITLE	CityLondon/EOI LongTermSolidWaste	SAMPLE DEPTH, m	-
BOREHOLE NUMBER	19-6-2	DATE	2/26/2020

SPECIMEN PROPERTIES AND DIMENSIONS (INITIAL)

SAMPLE HEIGHT, cm	6.74	UNIT WEIGHT, kN/m ³	21.23
SAMPLE DIAMETER, cm	7.18	DRY UNIT WEIGHT, kN/m ³	17.87
SAMPLE AREA, cm ²	40.43	SPECIFIC GRAVITY, assumed	2.70
SAMPLE VOLUME, cm ³	272.52	VOLUME OF SOLIDS, cm ³	183.93
TOTAL MASS, g	589.84	VOLUME OF VOIDS, cm ³	88.58
DRY MASS, g	496.62	VOID RATIO	0.48
WATER CONTENT, %	18.8		

SATURATION STAGE

CELL PRESSURE, kPa	350.00	EFFECTIVE CONSOLIDATION STRESS, kPa	10
HEAD PRESSURE, kPa	340.00	DURATION, min	7,120
BACK PRESSURE, kPa	340.00	<i>B</i> COEFFICIENT	0.96

CONSOLIDATION STAGE

CELL PRESSURE, kPa	540.00	EFFECTIVE CONSOLIDATION STRESS, kPa	200
HEAD PRESSURE, kPa	340.00	DURATION, min	1,290
BACK PRESSURE, kPa	340.00	VOLUME CHANGE, cm ³	7.50
		DRAINAGE	Top and Bottom

SPECIMEN PROPERTIES AND DIMENSIONS (AFTER CONSOLIDATION)

SAMPLE HEIGHT, cm	6.68	SAMPLE AREA, cm ²	39.69
SAMPLE DIAMETER, cm	7.11	SAMPLE VOLUME, cm ³	265.06

HYDRAULIC CONDUCTIVITY STAGE

CELL PRESSURE, kPa	553	EFFECTIVE CONSOLIDATION STRESS, kPa	200
HEAD PRESSURE, kPa	353	DURATION, min	2823
BACK PRESSURE, kPa	340	HYDRAULIC GRADIENT, i	20

SPECIMEN PROPERTIES AND DIMENSIONS (FINAL)

SAMPLE HEIGHT, cm	6.68	UNIT WEIGHT, kN/m ³	21.81
SAMPLE DIAMETER, cm	7.11	DRY UNIT WEIGHT, kN/m ³	18.37
SAMPLE AREA, cm ²	39.69	SPECIFIC GRAVITY, assumed	2.70
SAMPLE VOLUME, cm ³	265.06	VOLUME OF SOLIDS, cm ³	183.93
TOTAL MASS, g	589.43	VOLUME OF VOIDS, cm ³	81.13
DRY MASS, g	496.62	VOID RATIO	0.44
WATER CONTENT, %	18.7		

TEST RESULTS

ELAPSED TIME TO STEADY STATE FLOW (min)	0.0
DURATION OF STEADY STATE FLOW (min)	2823
INFLOW VOLUME UNDER STEADY STATE FLOW (cm ³)	1.2
OUTFLOW VOLUME UNDER STEADY STATE FLOW (cm ³)	1.4
INFLOW TO OUTFLOW RATIO	0.8
HYDRAULIC CONDUCTIVITY (INFLOW) (m/s)	8.62E-11
HYDRAULIC CONDUCTIVITY (OUTFLOW) (m/s)	1.05E-10
HYDRAULIC CONDUCTIVITY, K, m/s	9.55E-11
HYDRAULIC CONDUCTIVITY AT STANDARD TEMPERATURE, K₂₀, m/s	8.90E-11

NOTES:

Effective consolidation stress assigned, by client.

PERMEANT FLUID

Deaired tap water

AVERAGE TEST TEMPERATURE

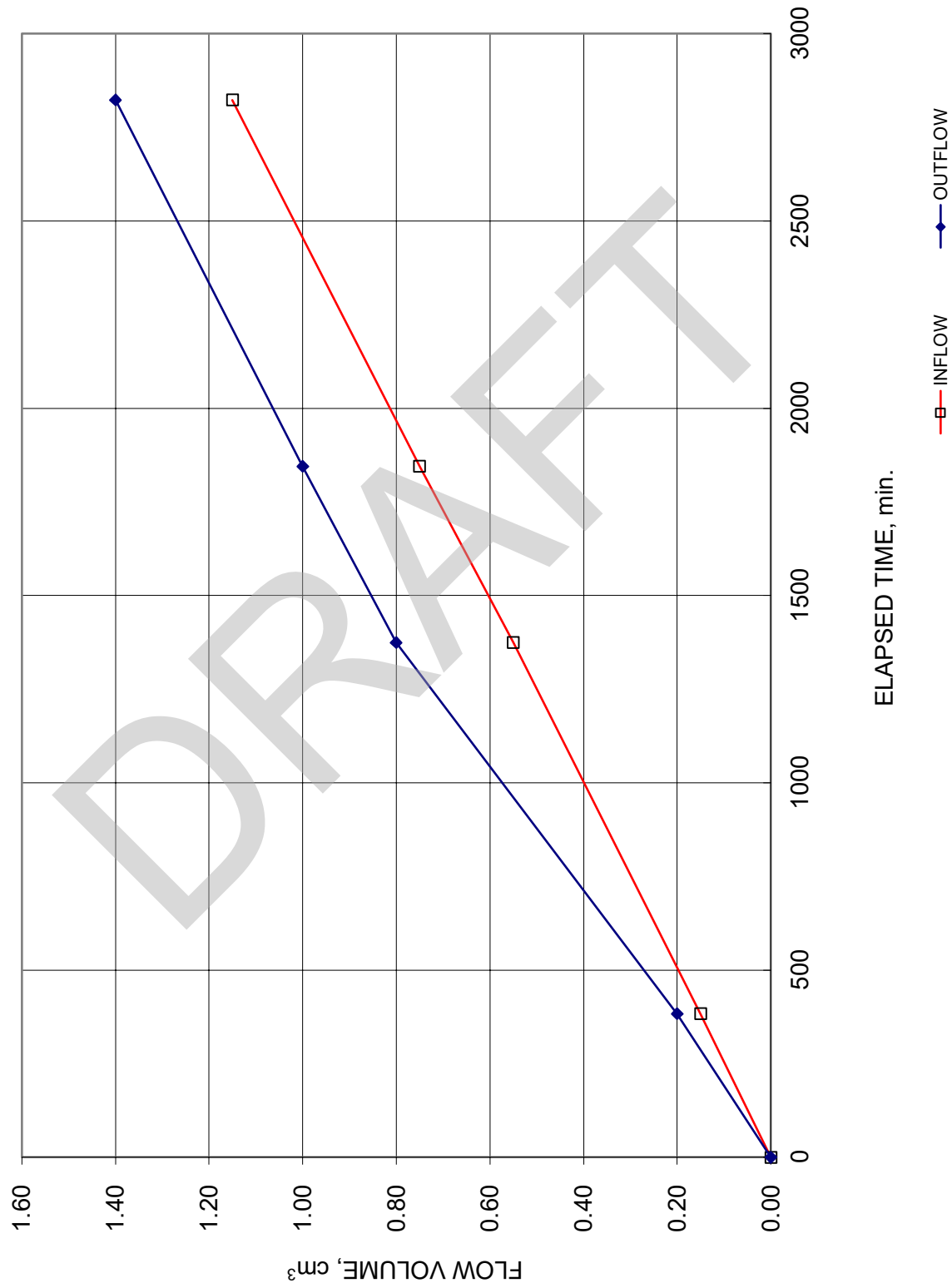
23.0 °C

HYDRAULIC CONDUCTIVITY TEST

2/26/2020

Project title: CityLondon/EOI LongTermSolidWaste
Borehole number: 19-6-2
Sample depth: -

Flow volume vs. Time
BOREHOLE NUMBER - 19-6-2
SAMPLE - SS1



HYDRAULIC CONDUCTIVITY TEST
ASTM D 5084 (CONSTANT HEAD - Method A)

SAMPLE IDENTIFICATION			
PROJECT NUMBER	1648176(6000)	SAMPLE	SS2
PROJECT TITLE	CityLondon/EOI LongTermSolidWaste	SAMPLE DEPTH, m	-
BOREHOLE NUMBER	19-6-2	DATE	2/26/2020
SPECIMEN PROPERTIES AND DIMENSIONS (INITIAL)			
SAMPLE HEIGHT, cm	6.72	UNIT WEIGHT, kN/m ³	21.06
SAMPLE DIAMETER, cm	7.17	DRY UNIT WEIGHT, kN/m ³	17.56
SAMPLE AREA, cm ²	40.34	SPECIFIC GRAVITY, assumed	2.70
SAMPLE VOLUME, cm ³	271.02	VOLUME OF SOLIDS, cm ³	179.74
TOTAL MASS, g	581.97	VOLUME OF VOIDS, cm ³	91.28
DRY MASS, g	485.30	VOID RATIO	0.51
WATER CONTENT, %	19.9		
SATURATION STAGE			
CELL PRESSURE, kPa	350.00	EFFECTIVE CONSOLIDATION STRESS, kPa	10
HEAD PRESSURE, kPa	340.00	DURATION, min	6,941
BACK PRESSURE, kPa	340.00	B COEFFICIENT	0.96
CONSOLIDATION STAGE			
CELL PRESSURE, kPa	590.00	EFFECTIVE CONSOLIDATION STRESS, kPa	250
HEAD PRESSURE, kPa	340.00	DURATION, min	1,280
BACK PRESSURE, kPa	340.00	VOLUME CHANGE, cm ³	9.65
		DRAINAGE	Top and Bottom
SPECIMEN PROPERTIES AND DIMENSIONS (AFTER CONSOLIDATION)			
SAMPLE HEIGHT, cm	6.64	SAMPLE AREA, cm ²	39.39
SAMPLE DIAMETER, cm	7.08	SAMPLE VOLUME, cm ³	261.45
HYDRAULIC CONDUCTIVITY STAGE			
CELL PRESSURE, kPa	603	EFFECTIVE CONSOLIDATION STRESS, kPa	250
HEAD PRESSURE, kPa	353	DURATION, min	2819
BACK PRESSURE, kPa	340	HYDRAULIC GRADIENT, i	20
SPECIMEN PROPERTIES AND DIMENSIONS (FINAL)			
SAMPLE HEIGHT, cm	6.64	UNIT WEIGHT, kN/m ³	21.74
SAMPLE DIAMETER, cm	7.08	DRY UNIT WEIGHT, kN/m ³	18.20
SAMPLE AREA, cm ²	39.39	SPECIFIC GRAVITY, assumed	2.70
SAMPLE VOLUME, cm ³	261.45	VOLUME OF SOLIDS, cm ³	179.74
TOTAL MASS, g	579.56	VOLUME OF VOIDS, cm ³	81.71
DRY MASS, g	485.30	VOID RATIO	0.45
WATER CONTENT, %	19.4		
TEST RESULTS			
ELAPSED TIME TO STEADY STATE FLOW (min)			0.0
DURATION OF STEADY STATE FLOW (min)			2819
INFLOW VOLUME UNDER STEADY STATE FLOW (cm ³)			1.5
OUTFLOW VOLUME UNDER STEADY STATE FLOW (cm ³)			1.4
INFLOW TO OUTFLOW RATIO			1.0
HYDRAULIC CONDUCTIVITY (INFLOW) (m/s)			1.09E-10
HYDRAULIC CONDUCTIVITY (OUTFLOW) (m/s)			1.05E-10
HYDRAULIC CONDUCTIVITY, K, m/s			1.07E-10
HYDRAULIC CONDUCTIVITY AT STANDARD TEMPERATURE, K ₂₀ , m/s			9.97E-11

NOTES:

Effective consolidation stress assigned, by client.

PERMEANT FLUID

Deaired tap water

AVERAGE TEST TEMPERATURE

23.0 °C

HYDRAULIC CONDUCTIVITY TEST

2/26/2020

Project title: CityLondon/EOI LongTermSolidWaste
Borehole number: 19-6-2
Sample depth: -

Flow volume vs. Time
BOREHOLE NUMBER - 19-6-2
SAMPLE - SS2

