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PLANNING GUIDANCE
15 June 2018

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LOG OF AUGER HA12

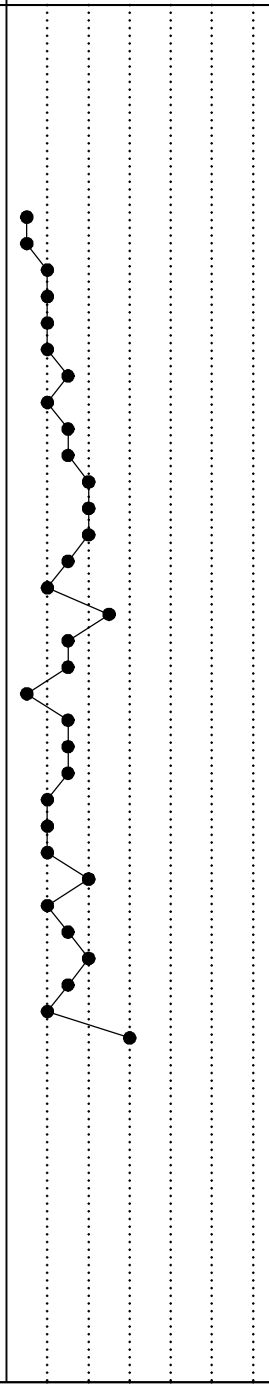
Geotechnical Investigation
Amberfield Development
Peacockes Road, Hamilton East
14280.000.000

Client : Weston Lea Ltd
Client Ref. : 14280
Date : 29/08/17
Hole Depth : 5 m
Hole Diameter : 50 mm

Shear Vane No : 1858
Logged By : AK
Reviewed By : KJL
Latitude : -37.8203
Longitude : 175.3243

Depth (m)	Material	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength (kPa) Peak/Remolded
	TS	ML	TOPSOIL				NA	
0.5	HOLOCENE DEPOSITS	ML	Sandy SILT; brown. Low plasticity. Sand, fine to medium.				F	45/23
			Becomes light brown at 0.6 m depth.				St	75/21
1.0		SW	Fine to coarse SAND; light greyish brown with occasional dark grey and orange mottles. Well graded. Becomes grey at 1.0 m depth.			W	L - MD	
1.5								
2.0								
2.5								
3.0								
3.5								
4.0			Becomes brown at 4.2 m depth.					
4.5			Becomes grey at 4.4 m depth.					
5.0			End of Hole Depth: 5 m Termination Condition: Target depth					

Scala Penetrometer
Blows per 100mm



Hand auger met target depth at 5 m.
Scala Penetrometer met target depth at 3.9 m depth
Standing groundwater was not encountered
TS = TOPSOIL

NA = NOT ASSESSED

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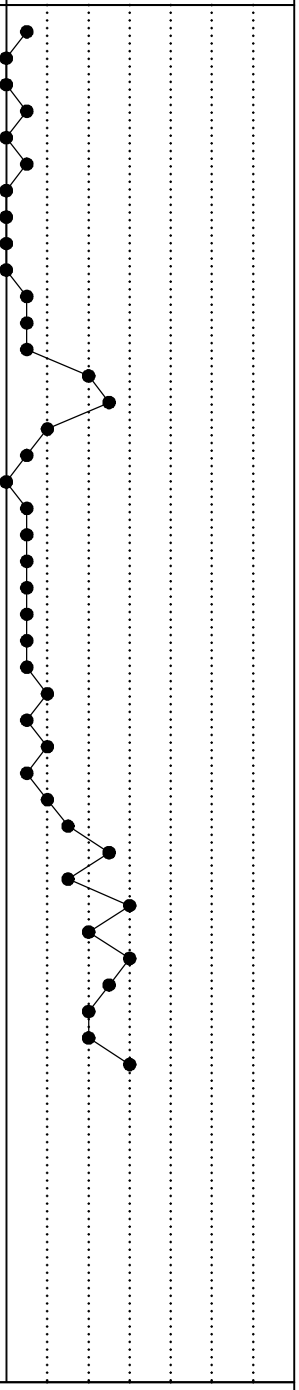
LOG OF AUGER HA13

Geotechnical Investigation
Amberfield Development
Peacockes Road, Hamilton East
14280.000.000

Client : Weston Lea Ltd
Client Ref. : 14280
Date : 29/08/17
Hole Depth : 3.6 m
Hole Diameter : 50 mm

Shear Vane No : 1858
Logged By : BF/AK
Reviewed By : KJL
Latitude : -37.8189
Longitude : 175.3244

Depth (m)	Material	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength (kPa) Peak/Remolded
	T	ML	TOPSOIL				NA	
	COLLUVIUM	SM	Silty fine to coarse SAND; brown. Well graded. [COLLUVIUM].				VL	
0.5	COLLUVIUM	ML	Sandy SILT; dark brown. Low plasticity. Sand, fine to coarse. [COLLUVIUM].			W	S - F	
1.0	HOLOCENE DEPOSITS	SW	Fine to coarse SAND; brownish grey. Well graded. Minor fine gravel encountered at 1.4 m depth. Gravel, angular to sub angular. Becomes brownish grey with light grey and orange mottles at 1.5 m depth.				VL - MD	
2.0	HOLOCENE DEPOSITS	SW	Fine to coarse SAND; grey. Well graded.			S	VL	
3.0	HOLOCENE DEPOSITS	SW	Minor fine gravel encountered at 3.0 m depth. Gravel, angular to sub angular. Occasional dark grey mottles encountered at 3.4 m depth.				L - MD	
3.5			End of Hole Depth: 3.6 m Termination Condition: Practical refusal					
4.0								
4.5								
5.0								



Hand auger met practical refusal at 3.6 m depth due to poor recovery.
Scala Penetrometer met target depth at 4.0 m depth
Dip test showed standing water at 2.3 m depth.
T = TOPSOIL

NA = NOT ASSESSED

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LOG OF AUGER HA14

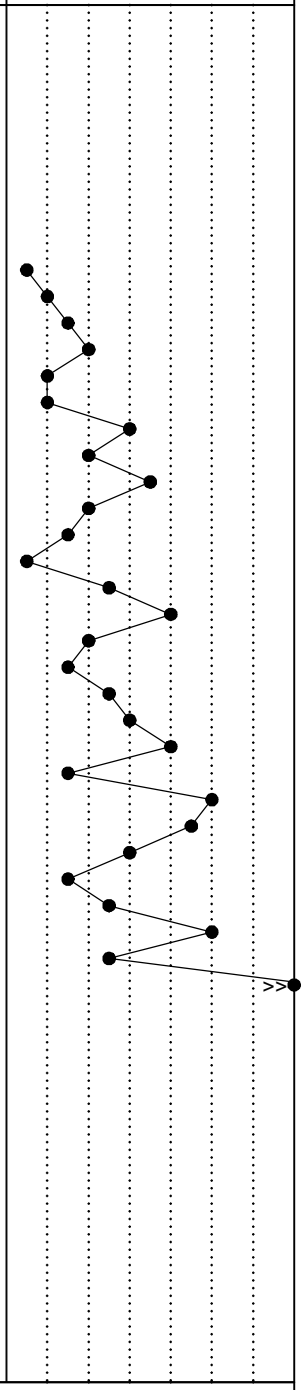
Geotechnical Investigation
Amberfield Development
Peacockes Road, Hamilton East
14280.000.000

Client : Weston Lea Ltd
Client Ref. : 14280
Date : 29/08/17
Hole Depth : 3.7 m
Hole Diameter : 50 mm

Shear Vane No : 1858
Logged By : BF
Reviewed By : KJL
Latitude : -37.8189
Longitude : 175.3225

Depth (m)	Material	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength (kPa) Peak/Remolded
	TS	ML	TOPSOIL				VSt	123/31
0.5	PIAKO SUBGROUP	ML	Sandy SILT with minor fine to medium gravel; brown. Low plasticity. Sand, fine to coarse. Gravel, sub rounded.				St	65/31
1.0		SW	Fine to coarse SAND with minor fine to medium gravel; brown. Well graded. Gravel, sub angular.				L	
1.5		SW	Fine to coarse SAND with minor fine to coarse gravel; light brown. Well graded. Gravel, angular. Becomes dark brown for 50 mm from 2.6 m depth. 50 mm band of clayey SILT encountered at 1.7 m depth. orange brown. Low plasticity. Becomes light grey from 2.2 m depth.			W	L - D	
2.0								
2.5		SW	Medium to coarse SAND with minor gravel; light orange brown. Well graded. Gravel, fine to coarse, sub angular. Becomes light greyish white at 3.1 m depth.				MD - D	
3.0								
3.5								
4.0			End of Hole Depth: 3.7 m Termination Condition: Practical refusal					
4.5								
5.0								

Scala Penetrometer
Blows per 100mm



Hand auger met practical refusal at 3.7 m depth on inferred gravel.
Scala Penetrometer met practical refusal at 3.7 m depth.
Standing groundwater was not encountered
TS = TOPSOIL

NA = NOT ASSESSED

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LOG OF AUGER HA15

Geotechnical Investigation
Amberfield Development
Peacockes Road, Hamilton East
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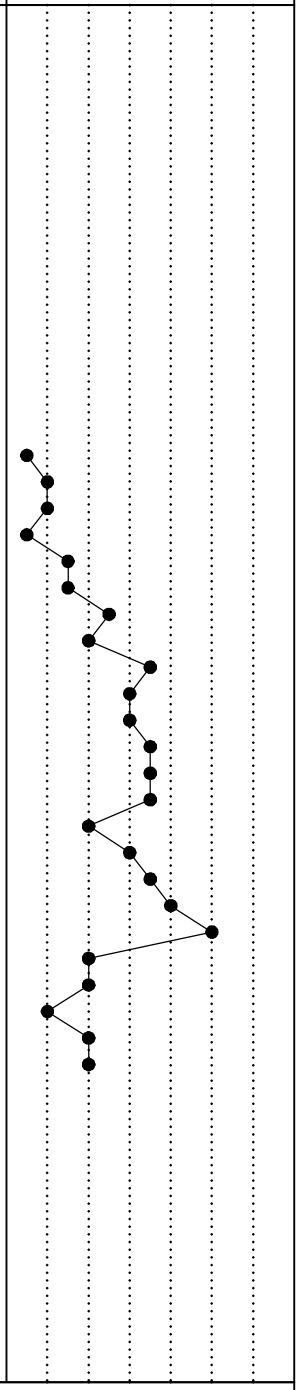
Client : Weston Lea Ltd
Client Ref. : 14280
Date : 28/08/17
Hole Depth : 3.2 m
Hole Diameter : 50 mm

Shear Vane No : 1858
Logged By : AK
Reviewed By : KJL
Latitude : -37.8178
Longitude : 175.3208

Depth (m)	Material	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength (kPa) Peak/Remolded
	TS	ML	TOPSOIL				NA	
0.5	PIAKO SUBGROUP	ML	Clayey SILT with minor fine to coarse sand; light brown. Low plasticity.				VSt	109/28
							St	89/25
1.0		ML	Sandy SILT; light brown. Low plasticity. Sand, fine to coarse.				VSt	133/24
							St	82/25
1.5		SM	Silty fine to coarse SAND; light grey with light brown streaks. Well graded.				VL	64/23
2.0			Becomes saturated at 2.0 m depth.					
		ML	Clayey SILT; light grey with light brown streaks. Low plasticity.				F - St	
2.5		SW	Fine to coarse SAND; grey. Well graded.		▼		MD	
3.0								
			End of Hole Depth: 3.2 m Termination Condition: Practical refusal					
3.5								
4.0								
4.5								
5.0								

Scala Penetrometer
Blows per 100mm



Hand auger met practical refusal at 3.2 m depth due to poor recovery and hole collapse.
Scala Penetrometer met target depth at 4.0 m depth
Dip test showed standing water at 2.5 m depth.
TS = TOPSOIL

NA = NOT ASSESSED

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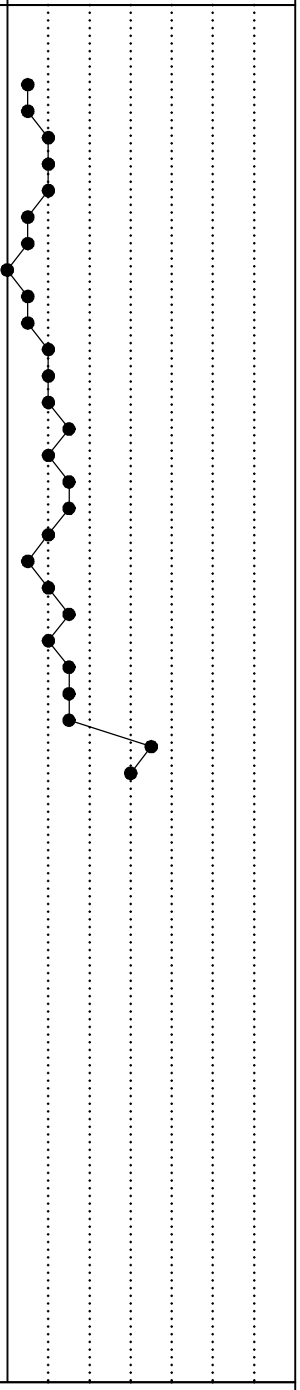
LOG OF AUGER HA16

Geotechnical Investigation
Amberfield Development
Peacockes Road, Hamilton East
14280.000.000

Client : Weston Lea Ltd
Client Ref. : 14280
Date : 29/08/17
Hole Depth : 2.7 m
Hole Diameter : 50 mm

Shear Vane No : 2093
Logged By : AK
Reviewed By : KJL
Latitude : -37.8164
Longitude : 175.3237

Depth (m)	Material	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength (kPa) Peak/Remolded
	TS	ML	TOPSOIL				NA	
0.5	HOLOCENE DEPOSITS	SW	Silty fine to medium SAND; greyish brown. Well graded. Becomes saturated at 0.5 m depth.		▼	W	VL	
1.0								
1.5	PIAKO SUBGROUP	ML	Clayey SILT with minor fine to medium sand and trace gravel; light grey with light green streaks. Low plasticity.			S	S - F	
		OL	Orangic clayey SILT; dark brown. Low plasticity. Organics, amorphous.				S - F	
2.0		CH	Silty CLAY; brown. High plasticity.				F - St	
2.5								
			End of Hole Depth: 2.7 m Termination Condition: Practical refusal					
3.0								
3.5								
4.0								
4.5								
5.0								



Hand auger met practical refusal at 2.7 m depth due to poor recovery.
Scala Penetrometer met target depth at 2.9 m depth
Dip test showed standing water at 0.4 m depth.
TS = TOPSOIL

NA = NOT ASSESSED

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LOG OF AUGER HA17

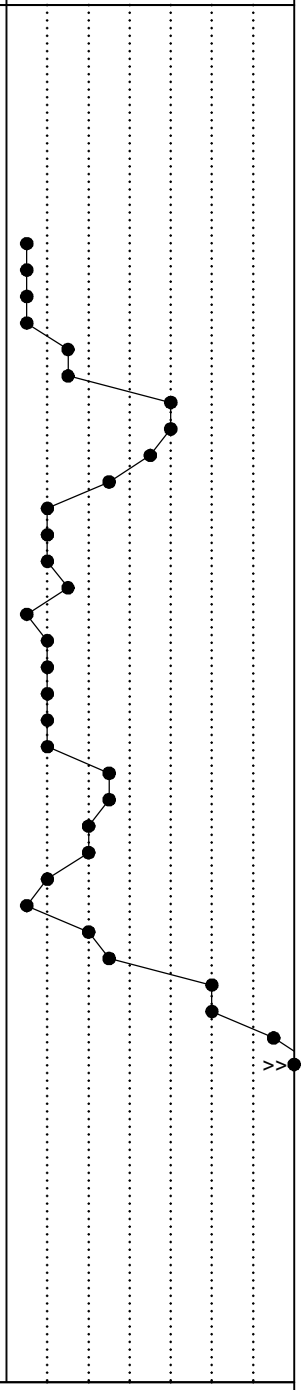
Geotechnical Investigation
Amberfield Development
Peacockes Road, Hamilton East
14280.000.000

Client : Weston Lea Ltd
Client Ref. : 14280
Date : 29/08/17
Hole Depth : 4 m
Hole Diameter : 50 mm

Shear Vane No : 2093
Logged By : AK
Reviewed By : KJL
Latitude : -37.8153
Longitude : 175.3209

Depth (m)	Material	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength (kPa) Peak/Remolded
	TS	ML	TOPSOIL				NA	
0.5	PIAKO SUBGROUP	ML	Sandy SILT; brown. Low plasticity.				F - St	32/8 90/61
1.0		SM	Silty fine to medium SAND; brown. Well graded.			W	VL	
1.5		SP	Coarse SAND with trace gravel; orange brown. Poorly graded.				MD - D	
2.0			Becomes grey at 1.8 m depth.				VL - L	
			Becomes saturated from 2.1 m to 2.2 m depth.			S		
2.5		CH	Silty CLAY; light brownish grey with orange streaks. High plasticity. 100 mm band of limonite stained SILT with minor gravel. Gravel, fine, sub rounded to sub angular from 2.5 m depth.			W	L - MD	
3.0		SP	Silty fine SAND with trace gravel; light grey with light brown streaks. Poorly graded.		▼		VL - MD	
3.5		ML	Clayey SILT; light grey. Low plasticity. Limonite staining and trace fine limonite gravel encountered at 3.7 m depth.			S	MD - D	
		ML	Clayey SILT; light grey. Low plasticity.				D	
4.0			End of Hole Depth: 4 m Termination Condition: Practical refusal					
4.5								
5.0								

Scala Penetrometer
Blows per 100mm



Hand auger met practical refusal at 4 m depth on hard material.
Scala Penetrometer met practical refusal at 4.0 m depth.
Dip test showed standing water at 3.3 m depth.
TS = TOPSOIL

NA = NOT ASSESSED

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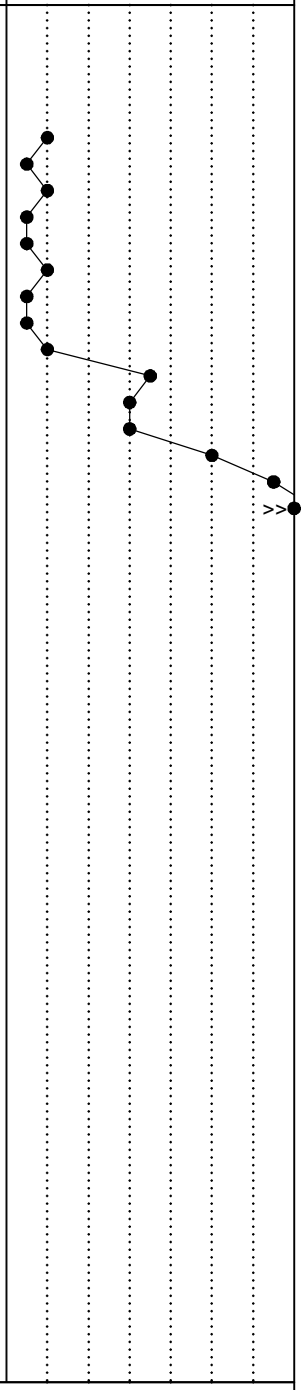
LOG OF AUGER HA18

Geotechnical Investigation
Amberfield Development
Peacockes Road, Hamilton East
14280.000.000

Client : Weston Lea Ltd
Client Ref. : 14280
Date : 29/08/17
Hole Depth : 2 m
Hole Diameter : 50 mm

Shear Vane No : 2093
Logged By : AK
Reviewed By : KJL
Latitude : -37.811
Longitude : 175.3222

Depth (m)	Material	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength (kPa) Peak/Remolded
	TS	ML	TOPSOIL				NA	
	HOLOCENE DEPOSITS	SW	Silty fine to medium SAND; light brown. Well graded.			W	VL	
0.5		SP	Fine to medium SAND; brownish grey with orange mottles. Poorly graded. Becomes saturated at 0.8 m depth.		▼	S	VL	
1.0		ML	Clayey SILT; orange brown. Low plasticity. Becomes light grey and minor fine sand encountered at 1.5 m depth.			W	St - VSt	
1.5		SP	Silty fine SAND; light grey with light green mottles. Poorly graded.				MD - D	
2.0			End of Hole Depth: 2 m Termination Condition: Practical refusal					
2.5								
3.0								
3.5								
4.0								
4.5								
5.0								



Hand auger met practical refusal at 2 m depth on hard material.
Scala Penetrometer met practical refusal at 2.0 m depth.
Dip test showed standing water at 1.0 m depth.
TS = TOPSOIL

NA = NOT ASSESSED

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LOG OF AUGER HA19

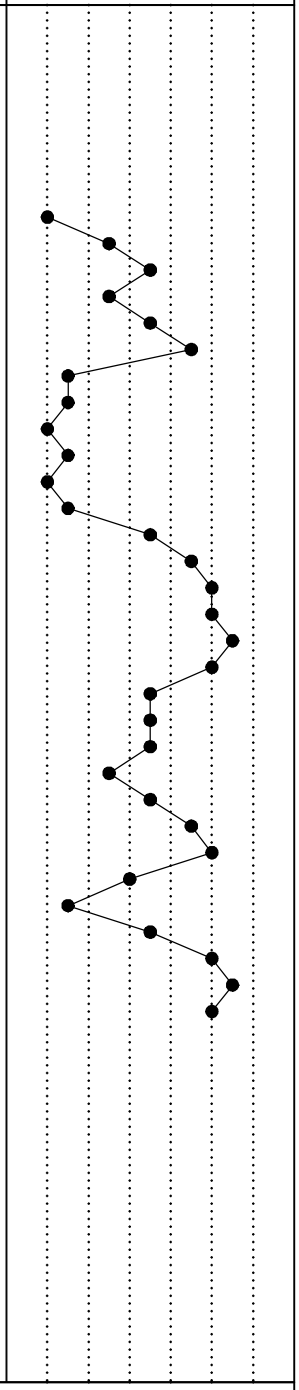
Geotechnical Investigation
Amberfield Development
Peacockes Road, Hamilton East
14280.000.000

Client : Weston Lea Ltd
Client Ref. : 14280
Date : 30/08/17
Hole Depth : 2.7 m
Hole Diameter : 50 mm

Shear Vane No : 2093
Logged By : RHB
Reviewed By : KJL
Latitude : -37.8111
Longitude : 175.3186

Depth (m)	Material	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength (kPa) Peak/Remolded
	TS	ML	TOPSOIL				St	97/24
0.5	PIAKO SUBGROUP	ML	SILT with some fine to medium sand; brownish orange. Low plasticity.				VSt	129/32
1.0		SW	Fine to coarse SAND with some silt; brown, white and black. Well graded. 200 mm band of fine to medium gravel encountered from 1.2 m. Gravel, sub angular to angular.			W	L-D	
1.5		SW	Gravelly fine to coarse SAND; brown, white and black. Well graded. Gravel, fine to medium, sub angular to angular. Poor recovery from 2.3 m depth.				L-D	
2.0								
2.5			End of Hole Depth: 2.7 m Termination Condition: Practical refusal					
3.0								
3.5								
4.0								
4.5								
5.0								

Scala Penetrometer
Blows per 100mm



Hand auger met practical refusal at 2.7 m depth due to hole collapse.
Standing groundwater was not encountered
TS = TOPSOIL
NA = NOT ASSESSED

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LOG OF AUGER HA20

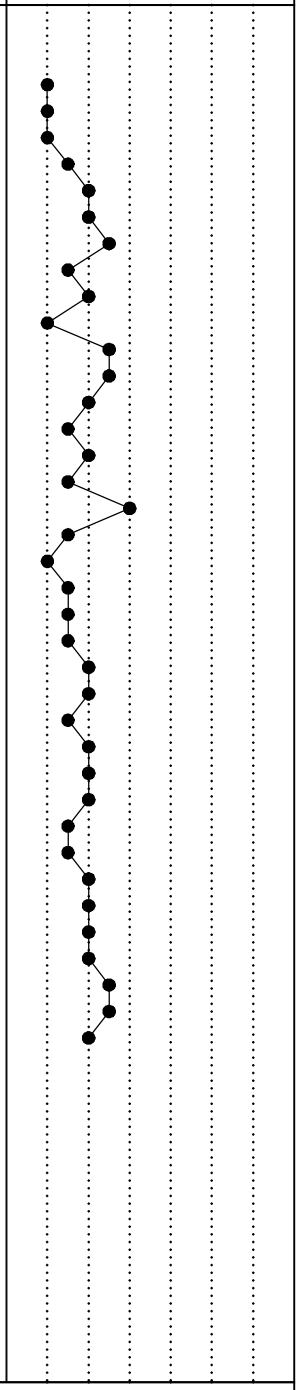
Geotechnical Investigation
Amberfield Development
Peacockes Road, Hamilton East
14280.000.000

Client : Weston Lea Ltd
Client Ref. : 14280
Date : 29/08/17
Hole Depth : 3.2 m
Hole Diameter : 50 mm

Shear Vane No : 1858
Logged By : AK
Reviewed By : KJL
Latitude : -37.8088
Longitude : 175.3201

Depth (m)	Material	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength (kPa) Peak/Remolded
	TS	ML	TOPSOIL				NA	
0.5	PIAKO SUBGROUP	SW	Fine to medium SAND; brown. Well graded.				L	
		SW	Fine to medium SAND with minor fine to medium gravel; dark brown. Well graded. Gravel, sub angular.				MD	
1.0		SW	Medium to coarse SAND with trace gravel; orange and brown. Well graded. Becomes light grey and white at 1.1 m depth.			W	L - MD	
1.5								
2.0								
2.5								
3.0								
			End of Hole Depth: 3.2 m Termination Condition: Practical refusal					
3.5								
4.0								
4.5								
5.0								

Scala Penetrometer
Blows per 100mm



Hand auger met practical refusal at 3.2 m depth due to hole collapse.
Standing groundwater was not encountered
TS = TOPSOIL
NA = NOT ASSESSED

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LOG OF AUGER HA21

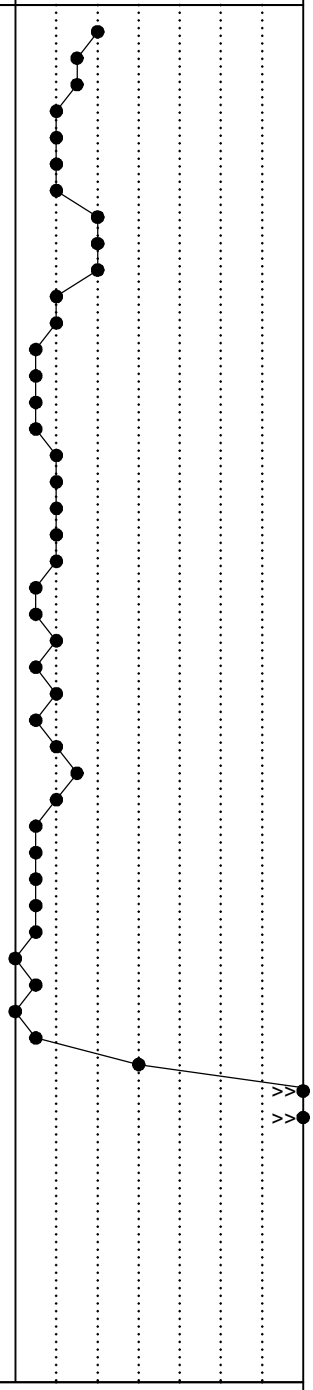
Geotechnical Investigation
Amberfield Development
Peacockes Road, Hamilton East
14280.000.000

Client : Weston Lea Ltd
Client Ref. : 14280
Date : 20/11/17
Hole Depth : 4.2 m
Hole Diameter : 50 mm

Shear Vane No : 2287
Logged By : BF
Reviewed By : HL
Latitude : -37.483411
Longitude : 175.191112

Depth (m)	Material	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength (kPa) Peak/Remolded
	TS	ML	TOPSOIL				MD	
0.5	ALLUVIUM	SP	Silty fine to medium SAND; light grey. Poorly graded.			M	L - MD	
1.0								
1.5								
2.0								
2.5								
3.0			Becomes wet at 3.0 m depth.					
		SW	Fine to coarse SAND; light grey with dark grey and orange mottles. Well graded.			W	VL	
3.5		ML	Fine to medium Sandy SILT; brown. Low plasticity.				VSt	123/36
4.0		SW	Fine to coarse SAND with trace fine gravel; light grey with dark grey and orange mottles. Well graded. Gravel, angular.				L - MD	
		SW	Gravelly medium to coarse SAND; dark brown. Well graded. Gravel, fine to medium, angular.				VD	
4.5			End of Hole Depth: 4.2 m Termination Condition: Practical refusal					
5.0								

Scala Penetrometer
Blows per 100mm



Hand auger met practical refusal at 4.2 m depth on hard material.
Scala Penetrometer met practical refusal at 4.2 m depth.
Standing groundwater was not encountered
TS = TOPSOIL

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LOG OF AUGER HA22

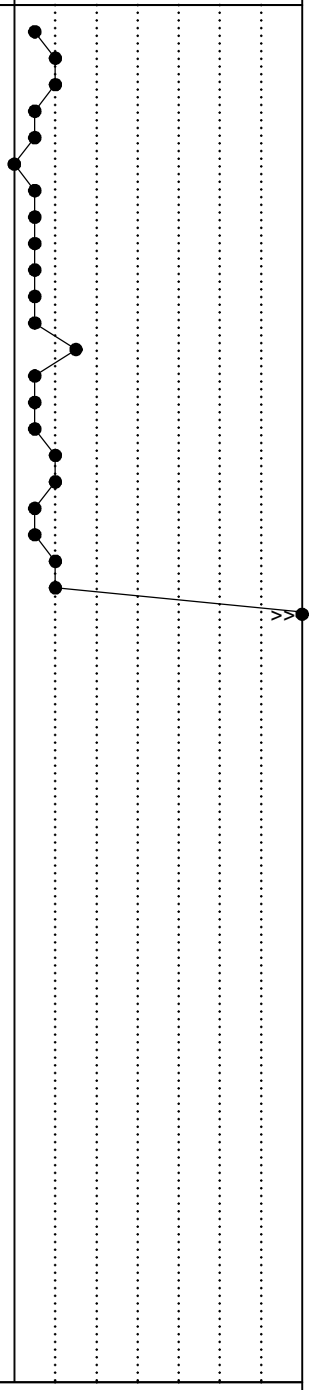
Geotechnical Investigation
Amberfield Development
Peacockes Road, Hamilton East
14280.000.000

Client : Weston Lea Ltd
Client Ref. : 14280
Date : 21/11/17
Hole Depth : 2.4 m
Hole Diameter : 50 mm

Shear Vane No : 2287
Logged By : BF
Reviewed By : HL
Latitude : -37.483331
Longitude : 175.191979

Depth (m)	Material	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength (kPa) Peak/Remolded
	TS	ML	TOPSOIL.				N/A	
	ALLUVIUM	SP	Fine to medium SAND; brown with light brown streaks. Poorly graded.			M	L	
0.5			Becomes light grey at 0.5 m depth.					
			Becomes light brown at 0.7 m depth.					
1.0								
1.5								
2.0		SW	Fine to coarse SAND; light grey. Well graded.				L	
		SW	Gravelly fine to medium SAND; light brown with grey and dark brown streaks. Well graded. Gravel, fine to medium, subrounded.				D	
2.5			End of Hole Depth: 2.4 m Termination Condition: Practical refusal					
3.0								
3.5								
4.0								
4.5								
5.0								

Scala Penetrometer
Blows per 100mm



Hand auger met practical refusal at 2.4 m depth on hard material.
Scala Penetrometer met practical refusal at 2.3 m depth.
Standing groundwater was not encountered
NA = NOT ASSESSED

TS = TOPSOIL

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LOG OF AUGER HA23

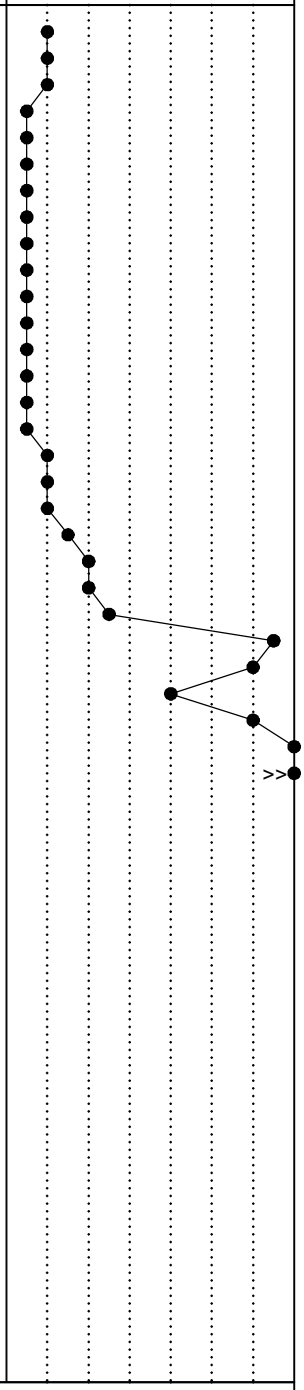
Geotechnical Investigation
Amberfield Development
Peacockes Road, Hamilton East
14280.000.000

Client : Weston Lea Ltd
Client Ref. : 14280
Date : 21/11/17
Hole Depth : 2.4 m
Hole Diameter : 50 mm

Shear Vane No : 1858
Logged By : AK
Reviewed By : HL
Latitude : -37.483592
Longitude : 174.192059

Depth (m)	Material	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength (kPa) Peak/Remolded
	TS	SW	TOPSOIL.			D	L	
0.5	ALLUVIUM	SW	Fine to medium SAND; light brown. Well graded.			M	L	
1.0			Becomes light grey mottles at 1.0 m depth.					
1.5			Becomes light grey with brownish orange mottles at 1.6 m depth.					
2.0		SW	Fine to coarse SAND with trace fine to medium gravel; grey with dark grey mottles. Well graded.			W	D	
2.5			End of Hole Depth: 2.4 m Termination Condition: Practical refusal					
3.0								
3.5								
4.0								
4.5								
5.0								

Scala Penetrometer
Blows per 100mm



Hand auger met practical refusal at 2.4 m depth on hard material.
Scala Penetrometer met practical refusal at 2.8 m depth.
Standing groundwater was not encountered
TS = TOPSOIL

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LOG OF AUGER HA24

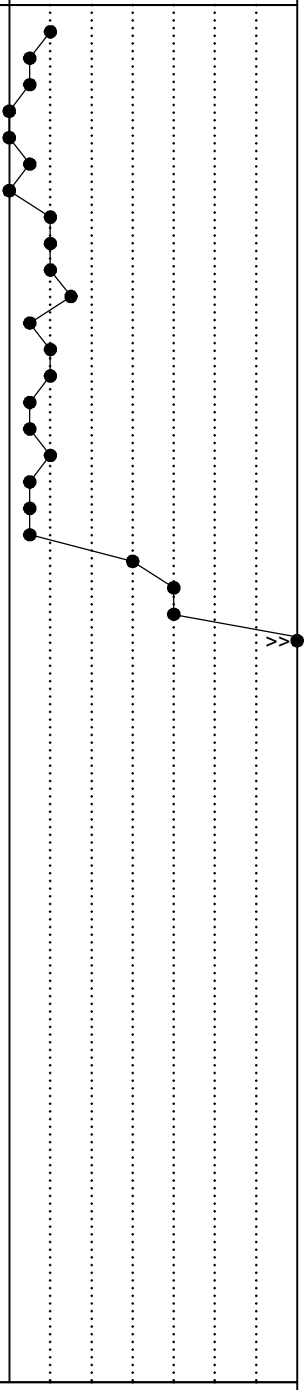
Geotechnical Investigation
Amberfield Development
Peacockes Road, Hamilton East
14280.000.000

Client : Weston Lea Ltd
Client Ref. : 14280
Date : 21/11/17
Hole Depth : 2.5 m
Hole Diameter : 50 mm

Shear Vane No : 2287
Logged By : BF
Reviewed By : HL
Latitude : -37.483869
Longitude : 175.192132

Depth (m)	Material	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength (kPa) Peak/Remolded
	TS	ML	TOPSOIL.				N/A	
0.5	ALLUVIUM	SP	Fine to medium SAND; light brown. Poorly graded.			M	VL - L	
1.0			Becomes orange and grey mottled at 1.0 m depth.					
1.5		SW	Fine to coarse SAND; dark grey with orange mottles. Well graded.			W	L	
2.0			Becomes saturated at 2.1 m depth.		▼	S	MD	
2.5		SW	Gravelly fine to coarse SAND; dark brown with orange mottles. Well graded.				D	
3.0			End of Hole Depth: 2.5 m Termination Condition: Practical refusal					
3.5								
4.0								
4.5								
5.0								

Scala Penetrometer
Blows per 100mm



Hand auger met practical refusal at 2.5 m depth on hard material.
Scala Penetrometer met practical refusal at 2.5 m depth.
Dip test showed standing water at 2.2 m depth.
NA = NOT ASSESSED

TS = TOPSOIL

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LOG OF AUGER HA25

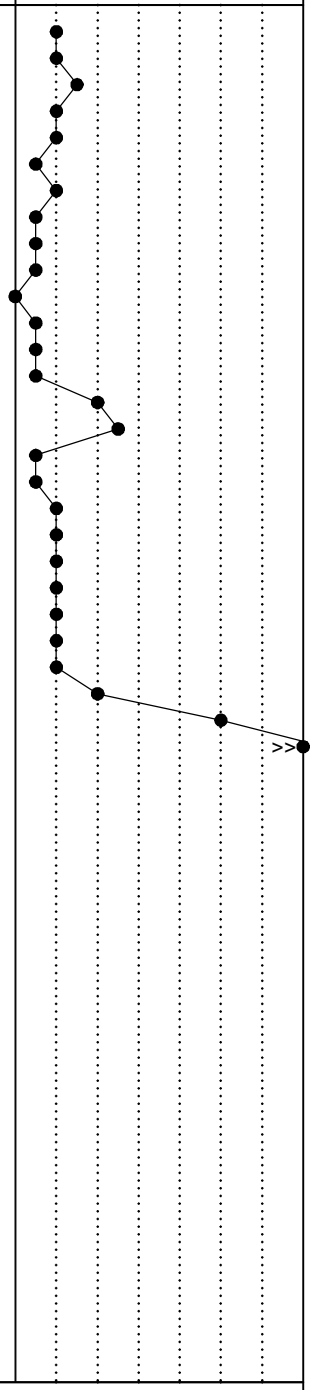
Geotechnical Investigation
Amberfield Development
Peacockes Road, Hamilton East
14280.000.000

Client : Weston Lea Ltd
Client Ref. : 14280
Date : 21/11/17
Hole Depth : 2.8 m
Hole Diameter : 50 mm

Shear Vane No : 1858
Logged By : AK
Reviewed By : HL
Latitude : -37.484221
Longitude : 175.19212

Depth (m)	Material	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength (kPa) Peak/Remolded
	TOPSOIL	ML	TOPSOIL.			M	L	
0.5	ALLUVIUM	SW	Silty fine to medium SAND; brownish grey with orange and dark grey streaks. Well graded.			W	VL - L	
1.0								
1.5		SW	Medium to coarse SAND with minor fine to medium pumice gravel; light brownish grey. Well graded.		▼		L - MD	
2.0		SW	Silty fine to coarse SAND with minor fine gravel; light orange with brown and dark grey streaks. Well graded.			S	L	
2.5		SW	Silty fine to coarse SAND; dark green with orange streaks. Well graded.				D	
3.0			End of Hole Depth: 2.8 m Termination Condition: Practical refusal					
3.5								
4.0								
4.5								
5.0								

Scala Penetrometer
Blows per 100mm



Hand auger met practical refusal at 2.8 m depth on hard material.
Scala Penetrometer met practical refusal at 2.8 m depth.
Dip test showed standing water at 1.7 m depth.

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15 June 2018

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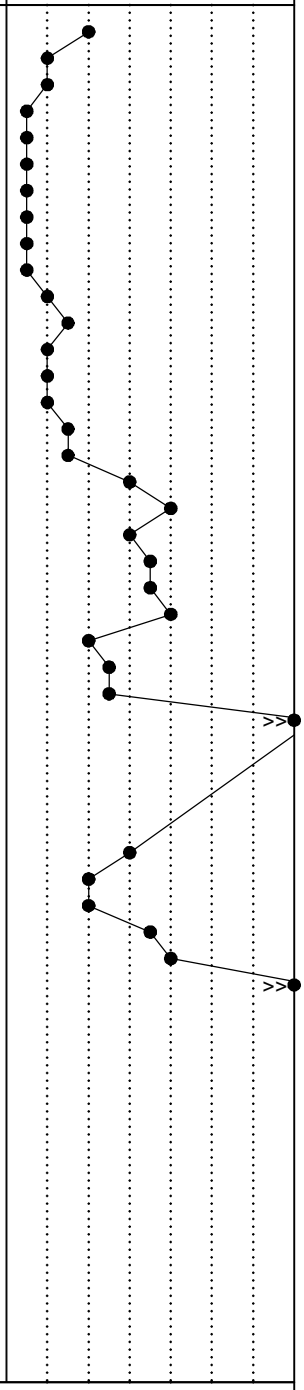
LOG OF AUGER HA26

Geotechnical Investigation
Amberfield Development
Peacockes Road, Hamilton East
14280.000.000

Client : Weston Lea Ltd
Client Ref. : 14280
Date : 21/11/17
Hole Depth : 3.6 m
Hole Diameter : 50 mm

Shear Vane No : 2287
Logged By : BF
Reviewed By : HL
Latitude : -37.484468
Longitude : 175.192042

Depth (m)	Material	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength (kPa) Peak/Remolded
0.5	ALLUVIUM	SP	Silty fine to medium SAND; dark brown. Poorly graded			M	L - MD	
1.0		SP	Fine to medium SAND; light grey. Poorly graded				L	
		SW	Fine to coarse SAND; dark grey with orange and white speckles. Well graded.				L	
1.5		SW	Fine to coarse SAND with minor fine gravel; light grey with orange and grey speckles. Well graded.				L - MD	
2.0		CH	Silty CLAY; orange with dark orange mottles. High plasticity.				St	
		SW	Fine to coarse SAND; dark grey with orange and white speckles. Well graded.				MD - D	
2.5		ML	Fine to coarse sandy SILT; light brown with orange and grey mottles. Low plasticity.			W	VSt	163/27
3.0		SW	Fine to coarse SAND; dark grey with orange and white speckles. Well graded.			S	MD - D	
3.5			End of Hole Depth: 3.6 m Termination Condition: Practical refusal					
4.0								
4.5								
5.0								



Hand auger met practical refusal at 3.6 m depth on hard material.
Scala Penetrometer met practical refusal at 3.7 m depth.
Standing groundwater was not encountered

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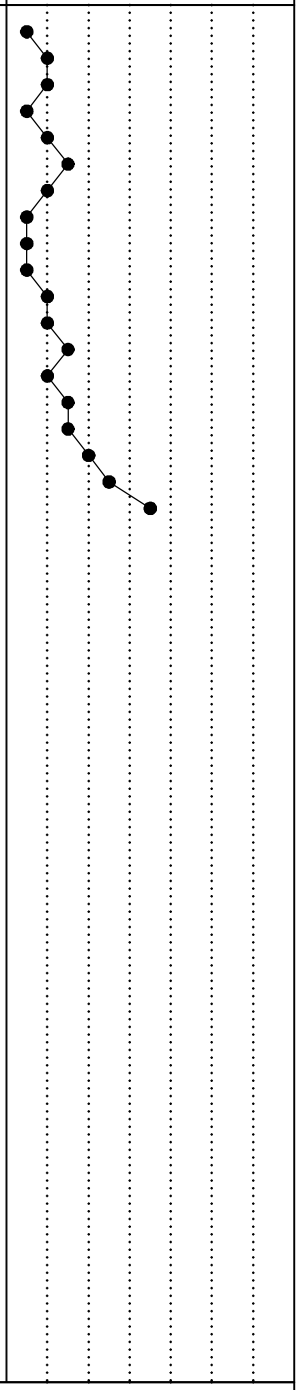
LOG OF AUGER HA27

Geotechnical Investigation
Amberfield Development
Peacockes Road, Hamilton East
14280.000.000

Client : Weston Lea Ltd
Client Ref. : 14280
Date : 21/11/17
Hole Depth : 5 m
Hole Diameter : 50 mm

Shear Vane No : 1858
Logged By : AK
Reviewed By : HL
Latitude : -37.485082
Longitude : 175.19209

Depth (m)	Material	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength (kPa) Peak/Remolded
	TS	ML	TOPSOIL.			D	L	
	ALLUVIUM	SW	Silty fine to medium SAND; light brown. Well graded.			M	L	
0.5		SP	Fine SAND; light grey. Poorly graded.			W	L	
1.0		CH	Silty CLAY; dark brown with black and orange streaks. High plasticity.				F - St	42/17
1.5								64/30
2.0			Becomes brown with light bluish and orange streaks at 1.9 m depth.				VSt	171/57
2.5								158/55
								148/45
3.0								175/35
								156/52
3.5		CH	Clay; grey. High plasticity.				St - VSt	54/25
								59/24
4.0			Becomes saturated at 4.1 m depth.			S		76/28
4.5								113/31
								139/64
5.0			End of Hole Depth: 5 m Termination Condition: Target depth					



Hand auger met target depth at 5 m.
Standing groundwater was not encountered
TS = TOPSOIL

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LOG OF AUGER HA28

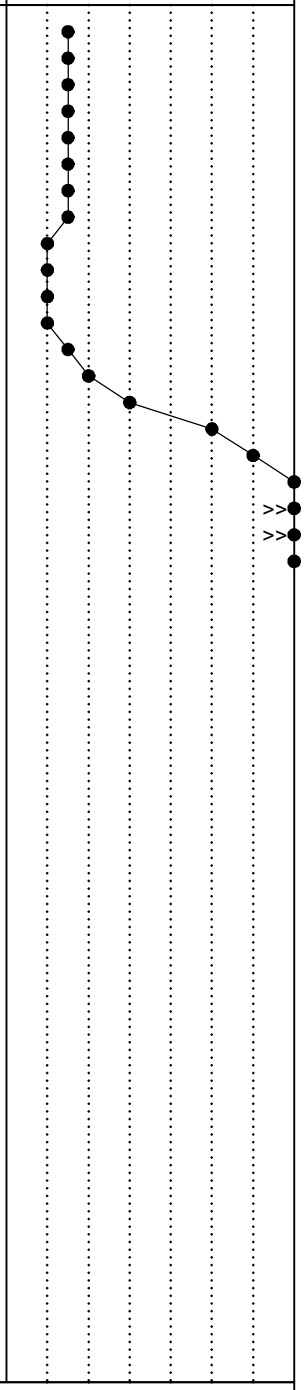
Geotechnical Investigation
Amberfield Development
Peacockes Road, Hamilton East
14280.000.000

Client : Weston Lea Ltd
Client Ref. : 14280
Date : 21/11/17
Hole Depth : 2.1 m
Hole Diameter : 50 mm

Shear Vane No : 1858
Logged By : AK
Reviewed By : HL
Latitude : -37.485529
Longitude : 175.192345

Depth (m)	Material	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength (kPa) Peak/Remolded
	TS	ML	TOPSOIL.			D	L	
0.5	ALLUVIUM	SP	Fine to medium SAND; grey with brown streaks. Poorly graded. Becomes wet at 0.7 m depth.			M / W	L	
1.0								
1.5		SW	Silty fine to coarse SAND with trace fine gravel; light bluish grey with orange and reddish orange mottles. Well graded.				L - D	
2.0		SW	Silty fine to coarse SAND; light grey. Well graded.				D	
2.5			End of Hole Depth: 2.1 m Termination Condition: Practical refusal					
3.0								
3.5								
4.0								
4.5								
5.0								

Scala Penetrometer
Blows per 100mm



Hand auger met practical refusal at 2.1 m depth on hard material.
Scala Penetrometer met practical refusal at 2.2 m depth.
Standing groundwater was not encountered
TS = TOPSOIL

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LOG OF AUGER HA29

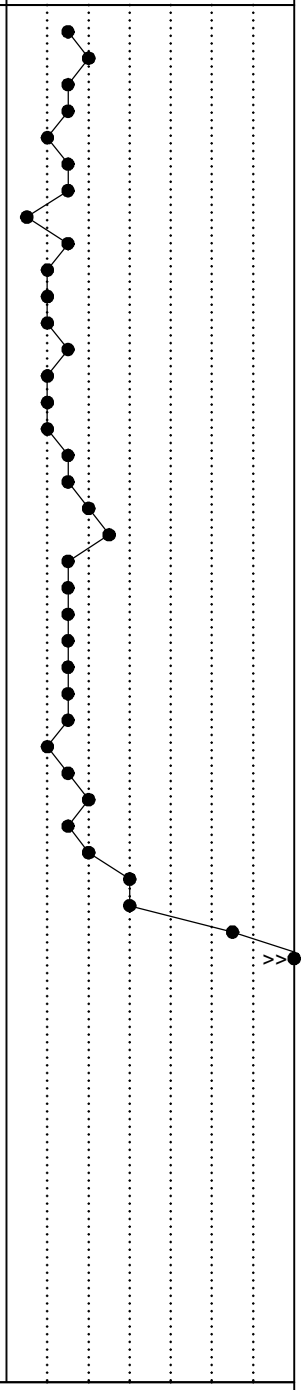
Geotechnical Investigation
Amberfield Development
Peacockes Road, Hamilton East
14280.000.000

Client : Weston Lea Ltd
Client Ref. : 14280
Date : 21/11/17
Hole Depth : 3.2 m
Hole Diameter : 50 mm

Shear Vane No : 2287
Logged By : BF
Reviewed By : HL
Latitude : -37.4909
Longitude : 1751927.25

Depth (m)	Material	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength (kPa) Peak/Remolded
	TS	ML	TOPSOIL.			M	L	
0.5	ALLUVIUM	SP	Fine to medium SAND; light grey. Poorly graded. Becomes light grey with orange mottles at 0.5 m depth.			W	L - MD	94/30
1.0		ML	Fine to medium sandy SILT; dark bluish grey. Low plasticity.				F - St	61/27 37/23
1.5		ML	Fine to coarse sandy SILT; dark bluish grey. Low plasticity.			S	VSt - H	113/41 151/47 141/57 200+ 166/71 137/23
2.0								
2.5								
3.0					▼			
3.5			End of Hole Depth: 3.2 m Termination Condition: Practical refusal					
4.0								
4.5								
5.0								

Scala Penetrometer
Blows per 100mm



Hand auger met practical refusal at 3.2 m depth on hard material.
Scala Penetrometer met practical refusal at 3.6 m depth.
Dip test showed standing water at 3.0 m depth.
TS = TOPSOIL

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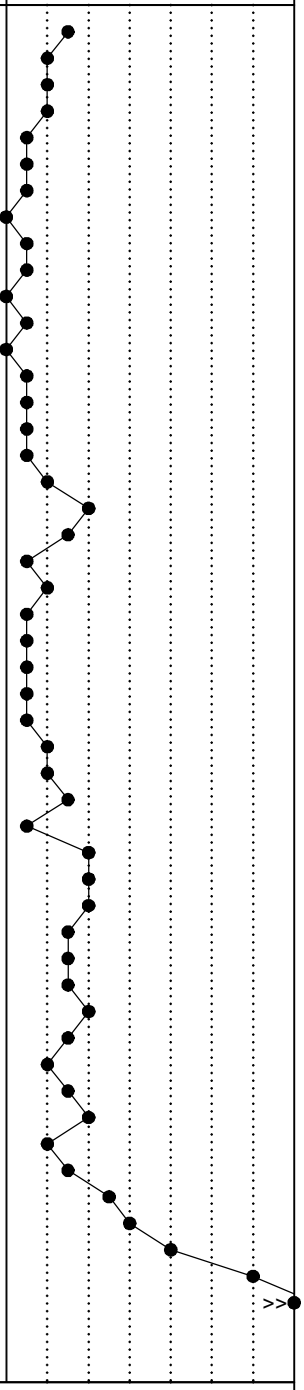
LOG OF AUGER HA30

Geotechnical Investigation
Amberfield Development
Peacockes Road, Hamilton East
14280.000.000

Client : Weston Lea Ltd
Client Ref. : 14280
Date : 20/11/17
Hole Depth : 4 m
Hole Diameter : 50 mm

Shear Vane No : 1858
Logged By : AK
Reviewed By : HL
Latitude : -37.491075
Longitude : 175.193622

Depth (m)	Material	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength (kPa) Peak/Remolded
	TS	ML	TOPSOIL.			M	L	
0.5	ALLUVIUM	SW	Fine to coarse SAND with minor fine gravel; brown with dark brown mottles. Well graded.			W	L	
		ML	Fine to coarse sandy SILT; brown with dark grey mottles. Low plasticity.				F	
1.0		SP	Medium to coarse SAND with trace fine gravel; brown with light brown, dark grey and orange speckles. Poorly graded.				VL - L	
1.5								
2.0							MD	
		SW	Fine to medium SAND; light grey with orange mottles. Well graded.				L	
2.5		SP	Medium to coarse SAND; brown with light brown and dark grey streaks. Poorly graded. Becomes grey at 2.8 m depth.				L	
3.0		SP	Fine to medium SAND; light grey with orange mottles. Poorly graded. Becomes light grey at 3.3 m depth. Becomes trace fine gravel at 3.6 m depth.				L - D	
3.5								
4.0			End of Hole Depth: 4 m Termination Condition: Practical refusal					
4.5								
5.0								



Hand auger met practical refusal at 4 m depth on hard material.
Scala Penetrometer met practical refusal at 4.7 m depth.
Standing groundwater was not encountered
TS = TOPSOIL

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LOG OF AUGER HA31

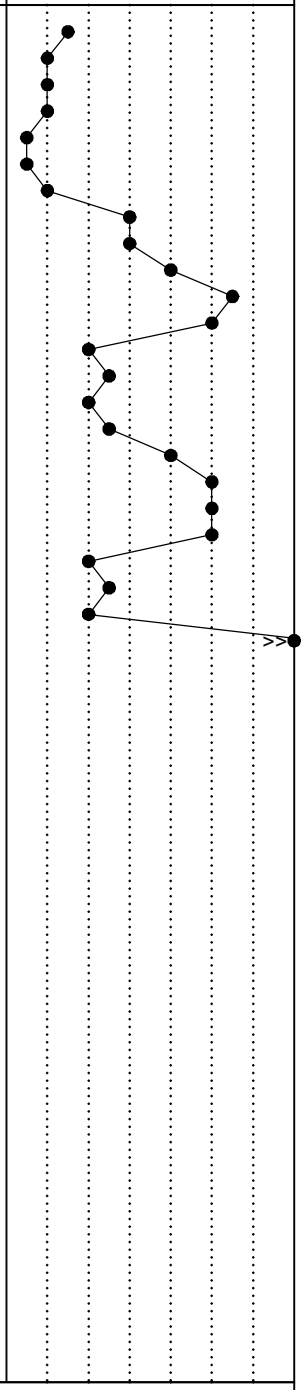
Geotechnical Investigation
Amberfield Development
Peacockes Road, Hamilton East
14280.000.000

Client : Weston Lea Ltd
Client Ref. : 14280
Date : 20/11/17
Hole Depth : 1.9 m
Hole Diameter : 50 mm

Shear Vane No : 2287
Logged By : BF
Reviewed By : HL
Latitude : -37.491813
Longitude : 175.193138

Depth (m)	Material	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength (kPa) Peak/Remolded
	TS	ML	TOPSOIL				L	
0.5	ALLUVIUM	SP	Silty fine to medium SAND; orange brown. Poorly graded			M	L	
1.0	ALLUVIUM	SW	Gravelly medium to coarse SAND; brown with orange streaks. Well graded.			W	MD - D	
1.5	ALLUVIUM	SP	Medium to coarse SAND with trace gravel; dark grey with white speckles. Poorly graded. Gravel, fine to medium, Subrounded.			W	MD	
	ALLUVIUM	SW	Gravelly medium to coarse SAND; brown with orange streaks. Well graded.			W	D	
2.0			End of Hole Depth: 1.9 m Termination Condition: Practical refusal					
2.5								
3.0								
3.5								
4.0								
4.5								
5.0								

Scala Penetrometer
Blows per 100mm



Hand auger met practical refusal at 1.9 m depth on inferred gravel.
Scala Penetrometer met practical refusal at 2.5 m depth.
Standing groundwater was not encountered
TS = TOPSOIL

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15 June 2018

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LOG OF AUGER HA32

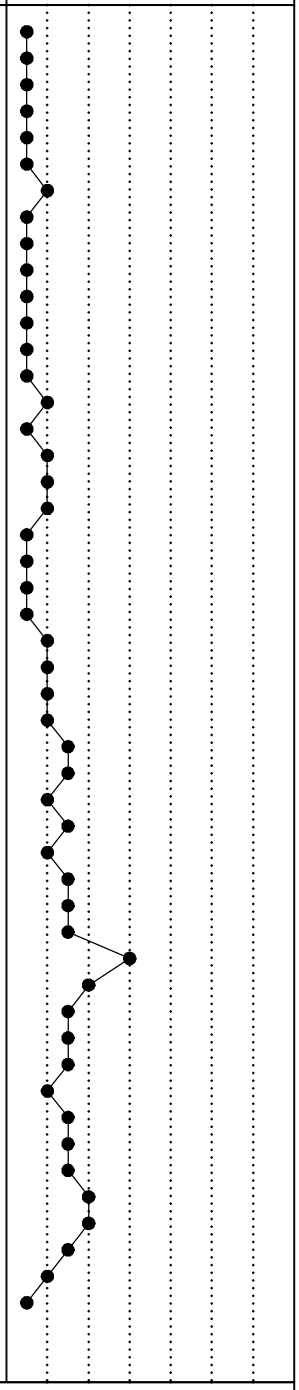
Geotechnical Investigation
Amberfield Development
Peacockes Road, Hamilton East
14280.000.000

Client : Weston Lea Ltd
Client Ref. : 14280
Date : 21/11/17
Hole Depth : 3.5 m
Hole Diameter : 50 mm

Shear Vane No : 2287
Logged By : BF
Reviewed By : HL
Latitude : -37.491284
Longitude : 175.193743

Depth (m)	Material	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength (kPa) Peak/Remolded
0.5–1.0	COLLUVIUM	SP	Fine to medium SAND; brown. Poorly graded [COLLUVIUM].		▼	S	L	
1.5–3.0	ALLUVIUM	ML	Fine to medium sandy SILT; light grey Low plasticity.				St - VSt	95/17; 92/17; 107/20; 89/17; 92/17; 75/12
3.0–3.5	ALLUVIUM	SW	Medium to coarse SAND; orange brown. Well graded.				L	
3.5			End of Hole Depth: 3.5 m Termination Condition: Practical refusal					

Scala Penetrometer
Blows per 100mm



Hand auger met practical refusal at 3.5 m depth on hard material.
Scala Penetrometer met target depth at 5 m.
Dip test showed standing water at 0.2 m depth

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LOG OF AUGER HA33

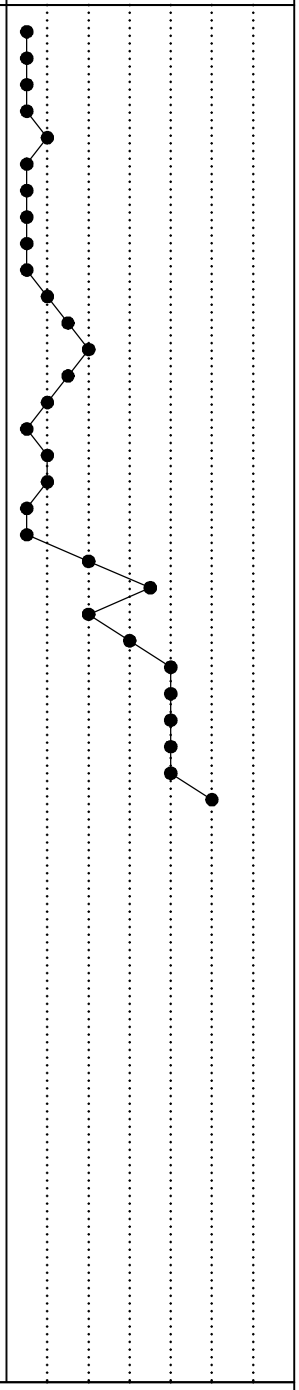
Geotechnical Investigation
Amberfield Development
Peacockes Road, Hamilton East
14280.000.000

Client : Weston Lea Ltd
Client Ref. : 14280
Date : 21/11/17
Hole Depth : 2.1 m
Hole Diameter : 50 mm

Shear Vane No : 1858
Logged By : AK
Reviewed By : HL
Latitude : -37.49162
Longitude : 1751926.54

Depth (m)	Material	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength (kPa) Peak/Remolded
	TS	SW	TOPSOIL			M	L	
0.5	ALLUVIUM	SP	Fine to medium SAND; light bluish grey with orange brown steaks. Poorly graded.			W	L - MD	
1.0			Becomes fine to coarse SAND at 1.0 m depth.					
1.5			Trace fine gravel encountered at 1.6 m depth.					
			Becomes saturated at 1.8 m depth.		▼	S		
2.0			End of Hole Depth: 2.1 m Termination Condition: Practical refusal					
2.5								
3.0								
3.5								
4.0								
4.5								
5.0								

Scala Penetrometer
Blows per 100mm



Hand auger met practical refusal at 2.1 m depth due to poor recovery.
Scala Penetrometer met target depth at 3 m.
Dip test showed standing water at 1.8 m depth
TS = TOPSOIL

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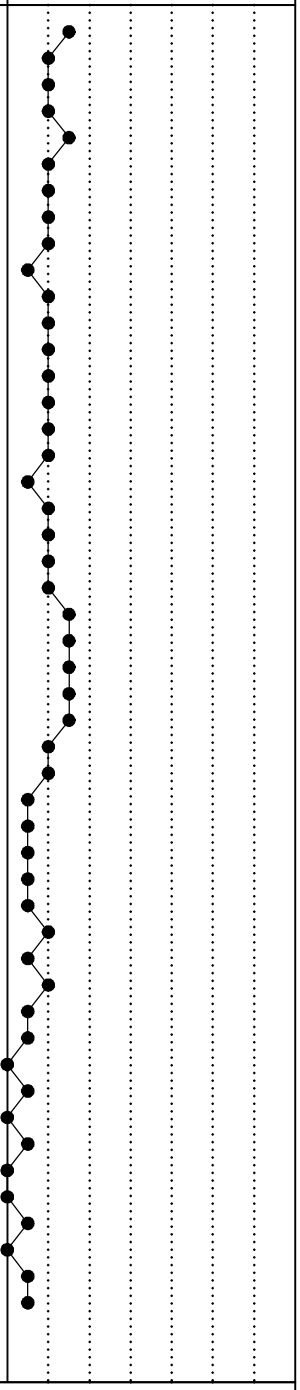
LOG OF AUGER HA34

Geotechnical Investigation
Amberfield Development
Peacockes Road, Hamilton East
14280.000.000

Client : Weston Lea Ltd
Client Ref. : 14280
Date : 20/11/17
Hole Depth : 5 m
Hole Diameter : 50 mm

Shear Vane No : 1858
Logged By : AK
Reviewed By : HL
Latitude : -37.494078
Longitude : 175192939

Depth (m)	Material	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength (kPa) Peak/Remolded	Scala Penetrometer Blows per 100mm
	TS	SW	Silty fine to medium SAND; dark brown. Well graded [TOPSOIL].				L		
0.5	ALLUVIUM	SW	Silty fine to coarse SAND; brown. Well graded.				L		
1.0		SW	Fine to coarse SAND; light brown. Well graded. Becomes light grey with light bluish orange streaks.			W	VL - L		
1.5			Becomes dark orange brown for 150 mm at 1.5 m depth.						
2.0			Becomes wet at 1.9 m depth.						
2.5			Becomes orange brown at 2.6 m depth.			W			
3.0			Becomes brownish grey at 3.2 m depth.						
3.5			Becomes saturated at 3.4 m depth.		▼				
4.0						S			
4.5									
5.0			End of Hole Depth: 5 m Termination Condition: Target depth						



Hand auger met target depth at 5 m.
Scala Penetrometer met target depth at 5 m.
Dip test showed standing water at 3.4 m depth
TS = TOPSOIL

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LOG OF AUGER HA35

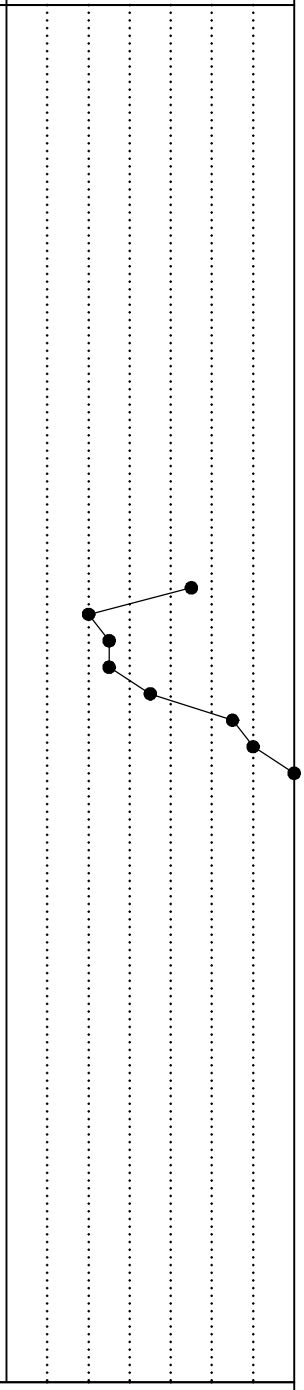
Geotechnical Investigation
Amberfield Development
Peacockes Road, Hamilton East
14280.000.000

Client : Weston Lea Ltd
Client Ref. : 14280
Date : 20/11/17
Hole Depth : 5 m
Hole Diameter : 50 mm

Shear Vane No : 1858
Logged By : AK
Reviewed By : HL
Latitude : -37.492867
Longitude : 175.192226

Depth (m)	Material	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength (kPa) Peak/Remolded
	TS	ML	TOPSOIL.				VSt	171/25
0.5	ALLUVIUM	ML	Clayey SILT with trace sand; light bluish grey with orange brown mottles. Low plasticity.				VSt	133/18
1.0		CH	Silty CLAY with trace sand; light grey with orange and dark grey mottles. High plasticity.				St - VSt	171/27
								92/25
1.5								153/42
								182/24
2.0		SP	Fine to medium SAND; light grey with brown mottles. Poorly graded.				MD	200+
2.5		ML	Clayey SILT with minor fine to medium sand; light bluish grey with light brown and grey streaks. Low plasticity. Becomes brown at 2.5 m depth.			W	St - H	57/30
								200+
3.0		CH	CLAY; brown with orange mottles. high plasticity.				St - H	200+
								200+
3.5								185/57
4.0								99/25
								122/21
4.5					▼			130/52
								200+
5.0			End of Hole Depth: 5 m Termination Condition: Target depth					

Scala Penetrometer
Blows per 100mm
2 4 6 8 10 12



Hand auger met target depth at 5 m.
Dip test showed standing water at 4.4 m depth
TS = TOPSOIL

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LOG OF AUGER HA36

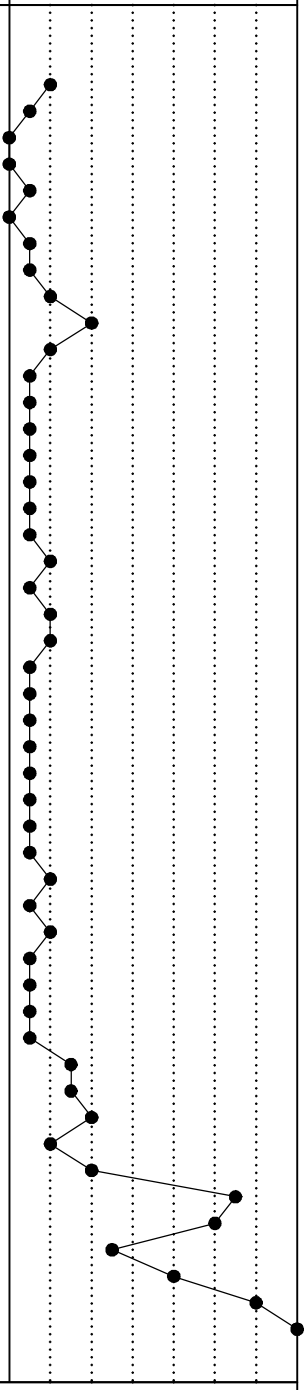
Geotechnical Investigation
Amberfield Development
Peacockes Road, Hamilton East
14280.000.000

Client : Weston Lea Ltd
Client Ref. : 14280
Date : 20/11/17
Hole Depth : 5 m
Hole Diameter : 50 mm

Shear Vane No : 2287
Logged By : BF
Reviewed By : HL
Latitude : -37.485528
Longitude : 175.191972

Depth (m)	Material	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength (kPa) Peak/Remolded
	TS	ML	TOPSOIL				N/A	
0.5	ALLUVIUM	SP	Silty fine to medium SAND; light grey. Poorly graded.			M	VL - MD	
1.0								
1.5		SW	Fine to coarse SAND with trace gravel; orange brown. Well graded.			W	L	
2.0								
2.5					▼			
3.0			Becomes saturated at 3.0 m depth.					
3.5		SW	Fine to coarse SAND; orange and dark grey. Well graded.			S	L - MD	
4.0								
4.5		SP	Medium to coarse SAND; dark grey. Poorly graded.				MD - D	
5.0			End of Hole Depth: 5 m Termination Condition: Target depth					

Scala Penetrometer
Blows per 100mm



Hand auger met target depth at 5 m.
Scala Penetrometer met target depth at 5 m.
Dip test showed standing water at 2.8 m depth
TS = TOPSOIL

NA = NOT ASSESSED

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LOG OF AUGER HA37

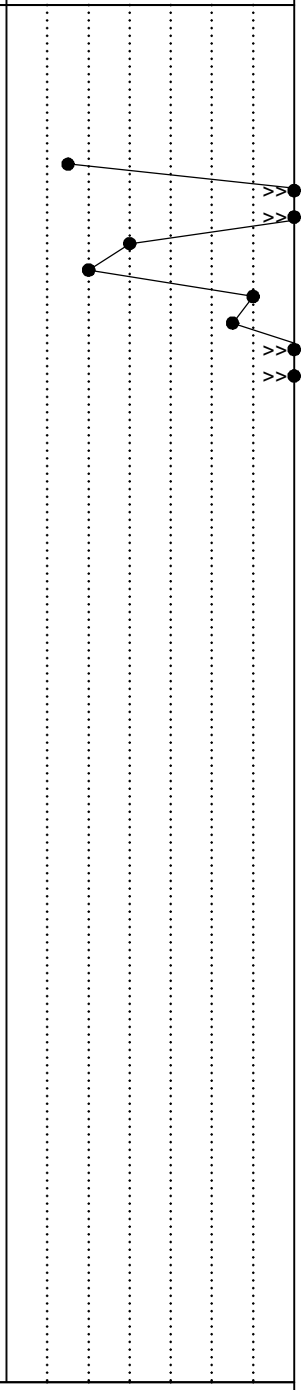
Geotechnical Investigation
Amberfield Development
Peacockes Road, Hamilton East
14280.000.000

Client : Weston Lea Ltd
Client Ref. : 14280
Date : 21/11/17
Hole Depth : 1.7 m
Hole Diameter : 50 mm

Shear Vane No : 2287
Logged By : BF
Reviewed By : HL
Latitude : -37.484863
Longitude : 175191314

Depth (m)	Material	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength (kPa) Peak/Remolded
	TS	ML	TOPSOIL.				VSt	157/49
0.5	ALLUVIUM	ML	Fine to medium sandy SILT; brown. Low plasticity.		▼		VSt	
		SW	Gravelly fine to coarse SAND; orange brown. Well graded. Gravel, fine to medium, angular.				D	
1.0		SP	coarse SAND with minor fine to medium gravel; orange brown. Poorly graded.			M	MD - D	
1.5								
			End of Hole Depth: 1.7 m Termination Condition: Practical refusal					
2.0								
2.5								
3.0								
3.5								
4.0								
4.5								
5.0								

Scala Penetrometer
Blows per 100mm



Hand auger met practical refusal at 1.7 m depth on hard material.
Scala Penetrometer met practical refusal at 1.5 m depth.
Dip test showed standing water at 0.5 m depth
TS = TOPSOIL

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LOG OF AUGER HA38

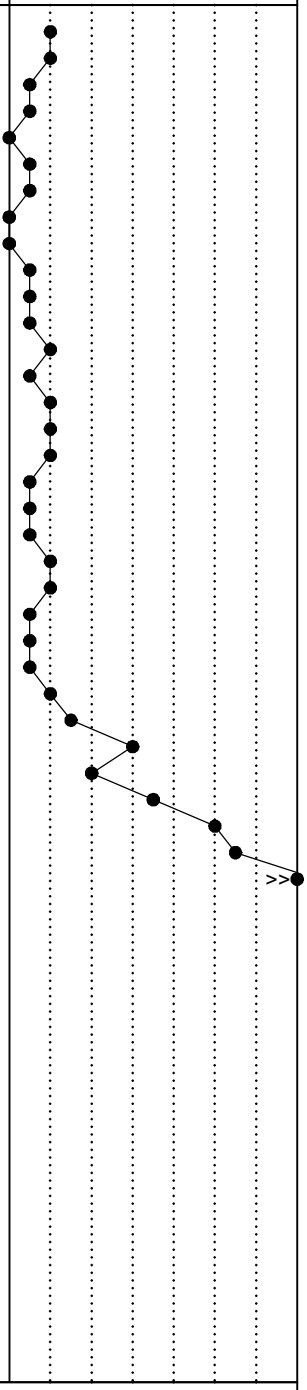
Geotechnical Investigation
Amberfield Development
Peacockes Road, Hamilton East
14280.000.000

Client : Weston Lea Ltd
Client Ref. : 14280
Date : 21/11/17
Hole Depth : 3.3 m
Hole Diameter : 50 mm

Shear Vane No : 2287
Logged By : BF
Reviewed By : HL
Latitude : -37.48403
Longitude : 175.191188

Depth (m)	Material	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength (kPa) Peak/Remolded
	TS	ML	TOPSOIL.			M	L	
0.5	ALLUVIUM	SP	SIlty fine to medium SAND; light grey. Poorly graded.			W	VL	
1.0								
1.5		SP	Fine to medium SAND; light grey with dark grey and orange mottles. Poorly graded.				VL	
2.0		SP	Silty fine to medium SAND; dark brown. Poorly graded.			S	L - MD	
2.5								
3.0		SP	Gravelly medium to coarse SAND; dark brown with orange mottles. Poorly graded.				MD - D	
3.5			End of Hole Depth: 3.3 m Termination Condition: Practical refusal					
4.0								
4.5								
5.0								

Scala Penetrometer
Blows per 100mm



Hand auger met practical refusal at 3.3 m depth on hard material.
Scala Penetrometer met practical refusal at 3.3 m depth.
Standing groundwater was not encountered
TS = TOPSOIL

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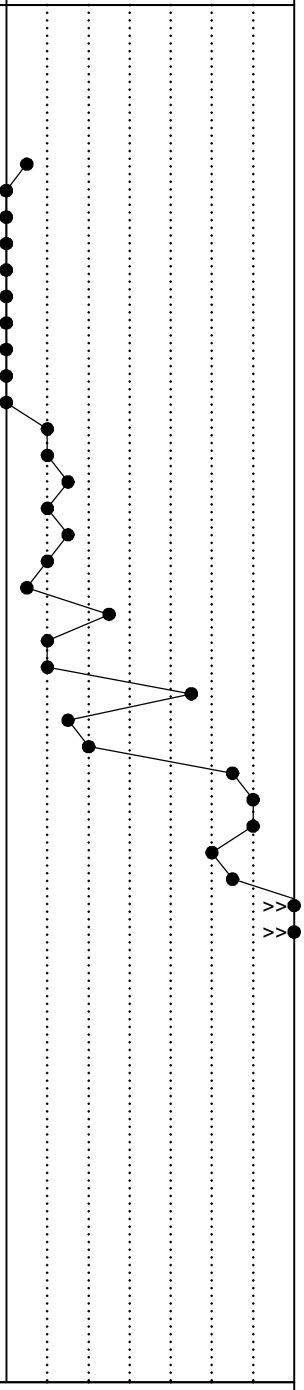
LOG OF AUGER HA39

Geotechnical Investigation
Amberfield Development
Peacockes Road, Hamilton East
14280.000.000

Client : Weston Lea Ltd
Client Ref. : 14280
Date : 20/11/17
Hole Depth : 3.3 m
Hole Diameter : 50 mm

Shear Vane No : 2287
Logged By : BF
Reviewed By : HL
Latitude : -37.492637
Longitude : 175.194029

Depth (m)	Material	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength (kPa) Peak/Remolded
0.5	TOPSOIL	ML	TOPSOIL.				VSt	117/23 130/23
1.0 1.5 2.0	ALLUVIUM	SW	Fine to coarse SAND; Light grey. Well graded.			M	VL - L	
2.5		SW	Medium to coarse SAND with minor gravel; brown. Well graded. Gravel, fine to medium, rounded.			W	MD - D	
3.0		SW	Silty fine to medium SAND; light grey. Well graded.			S	D	
3.5 4.0 4.5 5.0			End of Hole Depth: 3.3 m Termination Condition: Practical refusal					



Hand auger met practical refusal at 3.3 m depth on hard material.
Scala Penetrometer met practical refusal at 3.4 m depth.
Standing groundwater was not encountered

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LOG OF TEST PIT TP1

Geotechnical Investigation

Peacockes Road
Hamilton
14280.000.000

Client	: The Adare Company Ltd.	**Shear Vane No**	: NA
Date	: 14/12/2017	**Logged By**	: AK/MM
Max Test Pit Depth	: 5 m	**Reviewed By**	: BF
Digger Type/Size	: Bucket Excavator	**Latitude**	: -37.811698
Bucket Type/Size	: 0.8 m	**Longitude**	: 175.32111

Depth (m)	Material	Excavatability (Relative Scale) Easier – Harder	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength Peak/Remolded (kPa)	Scala Penetrometer Blows per 100mm (2 4 6 8 10 12)
	T		ML	TOPSOIL.			M	St		
0.5	AD		SW	Fine to coarse SAND with minor fine gravel; brown. Well graded. Gravel, subrounded to rounded.				L		
			ML	SILT; dark orange brown. Low plasticity.				St		
1.0			ML	Clayey SILT; light grey. Low plasticity.				St		
1.5	VOLCANIC ASH DEPOSITS		CH	Silty CLAY; reddish brown with light grey mottles. High plasticity.			W	St		
2.5			ML	Clayey SILT; brown with orange streaks. Low plasticity, moderately sensitive.				VSt		
3.5	ALLUVIAL DEPOSITS		CH	CLAY; light brown. High plasticity.			S	F		
4.0			ML	Clayey SILT; grey with occasional dark orange streaks. Low plasticity, becoming partially cemented.			W	VSt-H		
4.5				Becomes light greyish brown with orange streaks at 4.6 m depth. Limonite staining encountered at 4.8 m depth.						
5.0				Depth of Excavation: 5 m Termination Condition: Target depth						

Test pit met target depth at 5 m.
T = TOPSOIL
AD = ALLUVIAL DEPOSITS

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LOG OF TEST PIT TP2

Geotechnical Investigation

Peacockes Road
Hamilton
14280.000.000

Client	: The Adare Company Ltd.	**Shear Vane No**	: NA
Date	: 14/12/2017	**Logged By**	: AK/MM
Max Test Pit Depth	: 1.5 m	**Reviewed By**	: BF
Digger Type/Size	: Bucket Excavator	**Latitude**	: -37.815962
Bucket Type/Size	: 0.8 m	**Longitude**	: 175.323271

Depth (m)	Material	Excavatability (Relative Scale) Easier – Harder	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength Peak/Remolded (kPa)	Scala Penetrometer Blows per 100mm (2 4 6 8 10 12)
	T		ML	TOPSOIL.			W	St		
0.5	AD		SP	Fine SAND; brownish grey with occasional orange brown and dark grey streaks. Poorly graded, liquefiable.			S	L		
1.0				Some woody organics encountered from 0.8 m depth.						
1.5				Very thin lenses of coarse SAND with minor fine to medium pumiceous gravel; brownish orange with dark grey streaks and light grey speckles encountered from 1.3 m depth. Well graded. Gravel, subrounded to rounded.						
2.0				Depth of Excavation: 1.5 m Termination Condition: Practical refusal						
2.5										
3.0										
3.5										
4.0										
4.5										
5.0										

Test pit met practical refusal at 1.5 m depth .
T = TOPSOIL
AD = ALLUVIAL DEPOSITS

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LOG OF TEST PIT TP3a

Geotechnical Investigation

Peacockes Road
Hamilton
14280.000.000

Client : The Adare Company Ltd.
Date : 13/12/2017
Max Test Pit Depth : 5 m
Digger Type/Size : Bucket Excavator
Bucket Type/Size : 0.8 m
Shear Vane No : NA
Logged By : AK/MM
Reviewed By : BF
Latitude : -37.819619
Longitude : 175.325586

Depth (m)	Material	Excavatability (Relative Scale) Easier – Harder	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength Peak/Remolded (kPa)	Scala Penetrometer Blows per 100mm (2 4 6 8 10 12)
	T		ML	TOPSOIL.			M	St		
0.5	ALLUVIAL DEPOSITS		SW	Fine SAND with trace silt; light brown. Poorly graded.				L		
1.0			ML	Clayey SILT with trace sand and rootlets; orange brown. Low plasticity. Poorly defined contact with above layer.			W	St		
1.5										
2.0			CL	CLAY; dark grey to black. Low plasticity, moderate sensitivity. Portions of the two overlying layers may be incorporated. Occasional clay seams observed on contact with overlying layer.				St		
2.5			SP	Medium to coarse SAND with some clay; light grey. Gap graded, slightly plastic.				MD		
3.0	VOLCANIC ASH DEPOSITS		ML	SILT; light brown. Low plasticity, highly sensitive, abrasive. Lense of limonite; dark orange brown encountered at 3.5 m depth.			S	VSt		
3.5			CH	CLAY; light grey. High plasticity. Looks like gouge.				F		
4.0			ML	SILT; light grey. Low plasticity, moderately cemented, blocky, sensitive. Occasional seams of CLAY; light grey encountered. Becomes intermixed with dark brown CLAY at 4.5 m depth.				VSt		
4.5										
5.0				Depth of Excavation: 5 m Termination Condition: Target depth						

Test pit met target depth at 5 m.
T = TOPSOIL

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LOG OF TEST PIT TP3b

Geotechnical Investigation

Peacockes Road
Hamilton
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Client	: The Adare Company Ltd.	**Shear Vane No**	: NA
Date	: 13/12/2017	**Logged By**	: AK/MM
Max Test Pit Depth	: 5 m	**Reviewed By**	: BF
Digger Type/Size	: Bucket Excavator	**Latitude**	: -37.819608
Bucket Type/Size	: 0.8 m	**Longitude**	: 175.325415

Depth (m)	Material	Excavatability (Relative Scale) Easier – Harder	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength Peak/Remolded (kPa)	Scala Penetrometer Blows per 100mm (2 4 6 8 10 12)
	T		ML	TOPSOIL.				St		
0.5	ALLUVIAL DEPOSITS			Fine SAND with trace silt; light brown. Poorly graded.						
1.0										
1.5				Becomes light grey with light brown bands at 1.4 m depth.						
2.0										
2.5			SW					L-MD		
3.0										
3.5										
4.0										
4.5										
5.0				Depth of Excavation: 5 m Termination Condition: Target depth						

Test pit met target depth at 5 m.
T = TOPSOIL

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LOG OF TEST PIT TP4

Geotechnical Investigation

Peacockes Road
Hamilton
14280.000.000

Client : The Adare Company Ltd.
Date : 13/12/2017
Max Test Pit Depth : 3 m
Digger Type/Size : Bucket Excavator
Bucket Type/Size : 0.8 m
Shear Vane No : NA
Logged By : AK/MM
Reviewed By : BF
Latitude : -37.824403
Longitude : 175.328445

Depth (m)	Material	Excavatability (Relative Scale) Easier – Harder	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength Peak/Remolded (kPa)	Scala Penetrometer Blows per 100mm (2 4 6 8 10 12)
	T		ML	TOPSOIL.			M	St		
	ALLUVIAL DEPOSITS		ML	SILT with minor fine gravel; dark brown. Low plasticity. Gravel, subangular to subrounded.				VSt		
0.5										
			SP	Fine SAND with trace silt; brown. Poorly graded.				L		
1.0										
1.5							W			
			SW	Medium to coarse SAND; grey with black streaks. Well graded, stratified.				L-MD		
2.0										
2.5				20 mm lense of rounded river GRAVEL encountered at 2.25 m depth.						
3.0				Depth of Excavation: 3 m Termination Condition: Practical refusal						
3.5										
4.0										
4.5										
5.0										

Test pit met practical refusal at 3 m depth .
T = TOPSOIL

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LOG OF TEST PIT TP5

Geotechnical Investigation

Peacockes Road
Hamilton
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Client	: The Adare Company Ltd.	**Shear Vane No**	: NA
Date	: 14/12/2017	**Logged By**	: AK/MM
Max Test Pit Depth	: 5 m	**Reviewed By**	: BF
Digger Type/Size	: Bucket Excavator	**Latitude**	: -37.821406
Bucket Type/Size	: 0.8 m	**Longitude**	: 175.323886

Depth (m)	Material	Excavatability (Relative Scale) Easier – Harder	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength Peak/Remolded (kPa)	Scala Penetrometer Blows per 100mm (2 4 6 8 10 12)
	T		ML	Gravelly SILT; brown to dark brown. Low plasticity. Gravel, fine to medium, subangular to subrounded [TOPSOIL].				VSt		
0.5	COLLUVIUM		SP	Fine SAND; intermixed light greyish brown, dark brown and orange brown. TOPSOIL present throughout unit [COLLUVIUM].				L		
1.0										
1.5										
2.0										
2.5	VOLCANIC ASH DEPOSITS		ML	Clayey SILT with some fine pumiceous sand; brown. Low plasticity, moderately sensitive [COLLUVIUM].				VSt		
3.0			ML	Clayey SILT; light grey with orange and brown mottles. Low plasticity, slightly dilatant, sensitive.				VSt		
3.5										
4.0										
4.5										
5.0				Depth of Excavation: 5 m Termination Condition: Target depth						

Test pit met target depth at 5 m.
T = TOPSOIL

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LOG OF TEST PIT TP7a

Geotechnical Investigation

Peacockes Road
Hamilton
14280.000.000

Client	: The Adare Company Ltd.	**Shear Vane No**	: NA
Date	: 13/12/2017	**Logged By**	: AK/MM
Max Test Pit Depth	: 4.1 m	**Reviewed By**	: BF
Digger Type/Size	: Bucket Excavator	**Latitude**	: -37.826787
Bucket Type/Size	: 0.8 m	**Longitude**	: 175.326631

Depth (m)	Material	Excavatability (Relative Scale) Easier – Harder	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength Peak/Remolded (kPa)	Scala Penetrometer Blows per 100mm (2 4 6 8 10 12)
0.5	C		SP	Fine SAND with trace silt; brown to greyish brown. Poorly graded. Occasional lenses of TOPSOIL encountered throughout. Limonite stained, nonplannar contact with underlying layer [COLLUVIUM].			M	MD		
1.0, 1.5	VOLCANIC ASH DEPOSITS		ML	Clayey SILT with some fine sand; light grey with some orange mottles. Low plasticity, very sensitive. Bands of limonite staining encountered from 1.0 m depth.			W	F		
2.0			ML	Clayey SILT; grey with brown mottles. Low plasticity, dipping slightly east.				S		
2.5, 3.0, 3.5, 4.0			CH	Silty CLAY with trace slightly woody organics; dark grey. High plasticity, moderately sensitive. Lense of coarse SAND encountered at 3.7 m depth.			S	H		
4.5, 5.0				Depth of Excavation: 4.1 m Termination Condition: Practical refusal						

Test pit met practical refusal at 4.1 m depth .
T = TOPSOIL
C = COLLUVIUM

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LOG OF TEST PIT TP7b

Geotechnical Investigation

Peacockes Road
Hamilton
14280.000.000

Client : The Adare Company Ltd.
Date : 13/12/2017
Max Test Pit Depth : 4.6 m
Digger Type/Size : Bucket Excavator
Bucket Type/Size : 0.8 m
Shear Vane No : NA
Logged By : AK/MM
Reviewed By : BF
Latitude : -37.827025
Longitude : 175.326376

Depth (m)	Material	Excavatability (Relative Scale) Easier – Harder	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength Peak/Remolded (kPa)	Scala Penetrometer Blows per 100mm (2 4 6 8 10 12)
0.5, 1.0, 1.5, 2.0	COLLUVIUM		SP	Fine SAND with trace silt; brown to greyish brown. Poorly graded. Occasional lenses of TOPSOIL encountered throughout [COLLUVIUM].				L		
2.5	VOLCANIC ASH DEPOSITS		ML	Clayey SILT with some fine sand; light grey with some orange mottles, low plasticity, intermixed with fine SAND with trace silt; brown to greyish brown, poorly graded.			W	St		
3.0, 3.5			ML	Clayey SILT with some fine sand; light grey with some orange mottles. Low plasticity, very sensitive.				VSt		
4.0, 4.5			CH	Silty CLAY with trace slightly woody organics; dark grey. High plasticity, moderately sensitive.			S	St		
5.0				Depth of Excavation: 4.6 m Termination Condition: Target depth						

Test pit met target depth at 4.6 m.
T = TOPSOIL

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LOG OF TEST PIT TP8

Geotechnical Investigation

Peacockes Road
Hamilton
14280.000.000

Client : The Adare Company Ltd.
Date : 14/12/2017
Max Test Pit Depth : 1 m
Digger Type/Size : Bucket Excavator
Bucket Type/Size : 0.8 m
Shear Vane No : NA
Logged By : AK/MM
Reviewed By : BF
Latitude : -37.813271
Longitude : 175.322029

Depth (m)	Material	Excavatability (Relative Scale) Easier – Harder	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength Peak/Remolded (kPa)	Scala Penetrometer Blows per 100mm (2 4 6 8 10 12)
	T		ML	TOPSOIL.				St		
0.5	C		SP	Fine SAND; light grey and black. Poorly graded. Intermixed lenses of TOPSOIL encountered throughout [COLLUVIUM].			W	L		
	AD		SW	Medium to coarse quartz SAND; grey. Well graded, groundwater piping in from side wall.			S	MD		
			SP					VL		
1.0			OL					VL		
				Fine SAND; grey. Poorly graded, liquefiable.						
1.5				ORGANICS; brown. Woody, young, little to no matrix. Major pit collapse.						
				Depth of Excavation: 1 m Termination Condition: Practical refusal						
2.0										
2.5										
3.0										
3.5										
4.0										
4.5										
5.0										

Test pit met practical refusal at 1 m depth .
T = TOPSOIL
C = COLLUVIUM

AD = ALLUVIAL DEPOSITS

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LOG OF TEST PIT TP9

Geotechnical Investigation

Peacockes Road
Hamilton
14280.000.000

Client	: The Adare Company Ltd.	**Shear Vane No**	: NA
Date	: 14/12/2017	**Logged By**	: AK/MM
Max Test Pit Depth	: 4.8 m	**Reviewed By**	: BF
Digger Type/Size	: Bucket Excavator	**Latitude**	: -37.809186
Bucket Type/Size	: 0.8 m	**Longitude**	: 175.320724

Depth (m)	Material	Excavatability (Relative Scale) Easier – Harder	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength Peak/Remolded (kPa)	Scala Penetrometer Blows per 100mm (2 4 6 8 10 12)
	T		ML	TOPSOIL.			M	St		
0.5	ALLUVIAL DEPOSITS		SP	Fine SAND; brown. Pooly graded.				MD		
1.0			GW	Sandy fine to coarse GRAVEL; reddish orange. Well graded, subrounded to rounded. Sand, coarse.			W	D		
1.5			SP	Coarse SAND; brown. Poorly graded.				MD		
2.0	VOLCANIC ASH DEPOSITS		ML	SILT; light brownish grey. Low plasticity, highly dilatant.			S	VSt-H		
2.5										
3.0										
3.5										
4.0										
4.5				Becomes grey at 4.5 m depth. Trace pumiceous sand encountered.						
5.0				Depth of Excavation: 4.8 m Termination Condition: Practical refusal						

Test pit met practical refusal at 4.8 m depth .
T = TOPSOIL

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LOG OF TEST PIT TP1

Geotechnical Investigation

Peacockes Road
Hamilton East
14280.000.000

Client : Weston Lea Ltd
Date : 15/12/2017
Max Test Pit Depth : 3 m
Digger Type/Size : Bucket Excavator
Bucket Type/Size : 0.8 m

Shear Vane No : NA
Logged By : AK
Reviewed By : JC
Latitude : 175.321047
Longitude : -37.809341

Depth (m)	Material	Excavatability (Relative Scale) Easier – Harder	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength Peak/Remolded (kPa)	Scala Penetrometer Blows per 100mm (2 4 6 8 10 12)
	TS		ML	TOPSOIL.			D			
0.5	ALLUVIAL DEPOSITS		SP	Fine to medium SAND; brownish grey. Poorly graded.			M			
			SW	Gravelly coarse SAND; brown. Well graded. Gravel, fine to coarse, subrounded to rounded.						
1.0			ML	Clayey SILT; light grey with brownish orange streaks. Low plasticity. Highly dilatant.			S			
1.5										
2.0				Dark orange staining encountered at 2.2 m depth.						
2.5			ML	Clayey SILT with minor fine sand; grey with occasional orange streaks. Low plasticity.						
3.0				Depth of Excavation: 3 m Termination Condition: Target depth						

Test pit met target depth at 3 m.
TS = TOPSOIL
Standing groundwater was not encountered

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LOG OF TEST PIT TP2

Geotechnical Investigation

Peacockes Road
Hamilton East
14280.000.000

Client : Weston Lea Ltd
Date : 15/12/2017
Max Test Pit Depth : 3 m
Digger Type/Size : Bucket Excavator
Bucket Type/Size : 0.8 m

Shear Vane No : NA
Logged By : AK
Reviewed By : JC
Latitude : 175.3197
Longitude : -37.809825

Depth (m)	Material	Excavatability (Relative Scale) Easier – Harder	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength Peak/Remolded (kPa)	Scala Penetrometer Blows per 100mm (2 4 6 8 10 12)
	TS		ML	TOPSOIL.			D			
0.5	HINUERA FORMATION		SP	Fine SAND; light brown. Poorly graded. Pumiceous coarse gravel encountered from 0.75 m to 0.78 m depth.			M			
1.0				Becomes wet at 1.0 m depth.						
1.5							W			
2.0				Becomes grey at 2.0 m depth.						
2.5			SP	Silty fine SAND; light brownish grey with brownish orange streaks. Poorly graded, slightly cemented.			S			
3.0				Depth of Excavation: 3 m Termination Condition: Target depth						

Test pit met target depth at 3 m.
TS = TOPSOIL
Standing groundwater was not encountered

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LOG OF TEST PIT TP3

Geotechnical Investigation

Peacockes Road
Hamilton East
14280.000.000

Client	Weston Lea Ltd	**Shear Vane No**	NA
Date	15/12/2017	**Logged By**	AK
Max Test Pit Depth	3 m	**Reviewed By**	JC
Digger Type/Size	Bucket Excavator	**Latitude**	175.321855
Bucket Type/Size	0.8 m	**Longitude**	-37.811546

Depth (m)	Material	Excavatability (Relative Scale) Easier – Harder	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength Peak/Remolded (kPa)	Scala Penetrometer Blows per 100mm (2 4 6 8 10 12)
	TS		ML	TOPSOIL.			M			
0.5	ALLUVIAL DEPOSITS		SP	Fine to medium SAND; brownish grey with brownish orange streaks. Poorly graded.						
1.0			SW	Coarse SAND with some fine to medium gravel; grey. Well graded. Gravel, subrounded to rounded.						
1.5			ML	Clayey SILT; light grey with light brown streaks. Low plasticity.			W			
2.0			ML	Clayey SILT with minor fine to coarse sand; grey with light grey streaks. Low plasticity. Occasional very thin lenses of coarse sand encountered.						
2.5										
3.0				Depth of Excavation: 3 m Termination Condition: Target depth						

Test pit met target depth at 3 m.
TS = TOPSOIL
Standing groundwater was not encountered

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LOG OF TEST PIT TP4

Geotechnical Investigation

Peacockes Road
Hamilton East
14280.000.000

Client : Weston Lea Ltd
Date : 15/12/2017
Max Test Pit Depth : 3 m
Digger Type/Size : Bucket Excavator
Bucket Type/Size : 0.8 m

Shear Vane No : NA
Logged By : AK
Reviewed By : JC
Latitude : 175.320142
Longitude : -37.813385

Depth (m)	Material	Excavatability (Relative Scale) Easier – Harder	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength Peak/Remolded (kPa)	Scala Penetrometer Blows per 100mm (2 4 6 8 10 12)
	TS		ML	TOPSOIL.			M			
0.5	HINUERA FORMATION		SM	Silty fine to coarse SAND; brownish grey with brown streaks. Well graded.			W			
			SW	Fine to coarse SAND; grey. Well graded.						
1.0			SP	Coarse SAND; dark grey. Poorly graded.			S			
1.5				Becomes dark orange from 1.5 m to 1.6 m depth. Becomes brownish grey at 1.6 m depth.						
2.0				Minor fine to coarse, subrounded to rounded gravel encountered from 2.0 m depth. Groundwater piping at 2.0 m depth.		▼				
2.5			ML	Clayey SILT with some medium to coarse sand; greenish grey. Low plasticity.						
3.0				Depth of Excavation: 3 m Termination Condition: Target depth						

Test pit met target depth at 3 m.
TS = TOPSOIL
Dip test showed standing water at 2.0 m depth.

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LOG OF TEST PIT TP5

Geotechnical Investigation

Peacockes Road
Hamilton East
14280.000.000

Client	: Weston Lea Ltd	**Shear Vane No**	: NA
Date	: 15/12/2017	**Logged By**	: AK
Max Test Pit Depth	: 2.5 m	**Reviewed By**	: JC
Digger Type/Size	: Bucket Excavator	**Latitude**	: 175.321905
Bucket Type/Size	: 0.8 m	**Longitude**	: -37.813907

Depth (m)	Material	Excavatability (Relative Scale) Easier – Harder	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength Peak/Remolded (kPa)	Scala Penetrometer Blows per 100mm 2 4 6 8 10 12
	TS		ML	TOPSOIL.			D			
0.5	HINUERA FORMATION		SP	Fine SAND; light brown. Poorly graded.			W			
1.0				Becomes light grey with orange brown streaks at 0.75 m depth.						
1.5				Fine to medium sand encountered and becomes grey from 1.25 m depth.						
2.0										
2.5				Depth of Excavation: 2.5 m Termination Condition: Practical refusal						
3.0										

Test pit met practical refusal at 2.5 m depth due to hole collapse.
TS = TOPSOIL
Standing groundwater was not encountered

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LOG OF TEST PIT TP6

Geotechnical Investigation

Peacockes Road
Hamilton East
14280.000.000

Client	: Weston Lea Ltd	**Shear Vane No**	: NA
Date	: 18/12/2017	**Logged By**	: AK
Max Test Pit Depth	: 3 m	**Reviewed By**	: JC
Digger Type/Size	: Bucket Excavator	**Latitude**	: 175.320069
Bucket Type/Size	: 0.8 m	**Longitude**	: -37.814835

Depth (m)	Material	Excavatability (Relative Scale) Easier – Harder	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength Peak/Remolded (kPa)	Scala Penetrometer Blows per 100mm (2 4 6 8 10 12)
	TS		ML	TOPSOIL.			M			
0.5	HINUERA FORMATION		ML	Clayey SILT with trace sand; light brownish orange with light grey mottles. Low plasticity.						
1.0			SW	Medium to coarse SAND with trace fine gravel; brown with reddish brown and orange brown mottles. Well graded.						
1.5				Becomes gravelly for 10 mm at 1.4 m depth. Gravel, fine to medium, subrounded to rounded, pumiceous.			W			
2.0			ML	Clayey SILT; light grey with occasional light brown streaks. Low plasticity, sensitive. Becomes reddish brown with dark grey streaks at 1.8 m depth.						
2.5				Becomes brown with reddish brown streaks at 2.6 m depth.						
				Becomes saturated at 2.8 m depth.			S			
3.0				Depth of Excavation: 3 m Termination Condition: Target depth						

Test pit met target depth at 3 m.
TS = TOPSOIL
Standing groundwater was not encountered

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LOG OF TEST PIT TP7

Geotechnical Investigation

Peacockes Road
Hamilton East
14280.000.000

Client	: Weston Lea Ltd	**Shear Vane No**	: NA
Date	: 18/12/2017	**Logged By**	: AK
Max Test Pit Depth	: 3 m	**Reviewed By**	: JC
Digger Type/Size	: Bucket Excavator	**Latitude**	: 175.319701
Bucket Type/Size	: 0.8 m	**Longitude**	: -37.815242

Depth (m)	Material	Excavatability (Relative Scale) Easier – Harder	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength Peak/Remolded (kPa)	Scala Penetrometer Blows per 100mm (2 4 6 8 10 12)
	FILL		ML	Clayey SILT with trace gravel; dark brown with brown mottles. Low plasticity [FILL].			D			
0.5	HINUERA FORMATION		ML	Clayey SILT with trace sand; greyish brown with orange brown mottles. Low plasticity.			M			
1.0										
1.5			CH	Silty CLAY; brown with light grey streaks. High plasticity, sensitive.			W			
2.0										
2.5			ML	Clayey SILT; brown. Low plasticity.						
3.0				Depth of Excavation: 3 m Termination Condition: Target depth						

Test pit met target depth at 3 m.

Standing groundwater was not encountered

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LOG OF TEST PIT TP8

Geotechnical Investigation

Peacockes Road
Hamilton East
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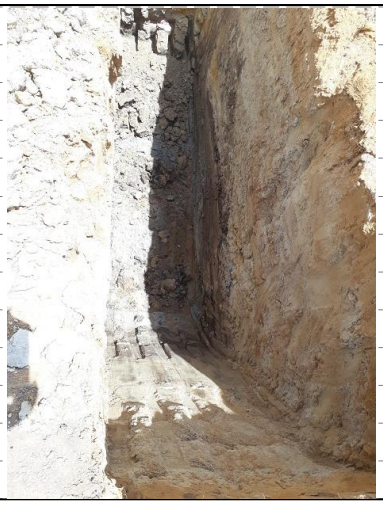
Client	: Weston Lea Ltd	**Shear Vane No**	: NA
Date	: 15/12/2017	**Logged By**	: AK
Max Test Pit Depth	: 3 m	**Reviewed By**	: JC
Digger Type/Size	: Bucket Excavator	**Latitude**	: 175.320167
Bucket Type/Size	: 0.8 m	**Longitude**	: -37.81648

Depth (m)	Material	Excavatability (Relative Scale) Easier – Harder	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength Peak/Remolded (kPa)	Scala Penetrometer Blows per 100mm (2 4 6 8 10 12)
	TS		ML	TOPSOIL.			D			
0.5	HINUERA FORMATION		SP	Fine to medium SAND; light brown. Poorly graded. Becomes wet at 0.75 m depth.			M			
1.0										
1.5			SM	Silty fine to medium SAND; light brownish grey with light brown streaks. Well graded.			W			
2.0										
2.5			OL	Organic clayey SILT; dark grey with black and dark greenish grey streaks. Moderate plasticity, sensitive, slightly dilatant.			S			
			ML	SILT with minor fine sand and trace cobbles; greenish grey. Low plasticity. Cobbles, subrounded to rounded.						
3.0				Depth of Excavation: 3 m Termination Condition: Target depth						



Test pit met target depth at 3 m.
TS = TOPSOIL
Standing groundwater was not encountered

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LOG OF TEST PIT TP9

Geotechnical Investigation

Peacockes Road
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Client	: Weston Lea Ltd	**Shear Vane No**	: NA
Date	: 15/12/2017	**Logged By**	: AK
Max Test Pit Depth	: 3 m	**Reviewed By**	: JC
Digger Type/Size	: Bucket Excavator	**Latitude**	: 175.321734
Bucket Type/Size	: 0.8 m	**Longitude**	: -37.816267

Depth (m)	Material	Excavatability (Relative Scale) Easier – Harder	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength Peak/Remolded (kPa)	Scala Penetrometer Blows per 100mm (2 4 6 8 10 12)
	TS		ML	TOPSOIL.			D			
0.5	HINUERA FORMATION		SM	Silty fine to coarse SAND; light brown. Well graded.			M			
1.0			SP	Medium to coarse SAND; grey. Poorly graded.			W			
1.5			GW	Sandy fine to coarse GRAVEL; orange brown. Well graded, subrounded to rounded. Sand, coarse. Groundwater piping at 1.8 m depth.		▼				
2.0			ML	Sandy SILT; light grey with orange streaks. Low plasticity, dilatant. Sand, fine to coarse.			S			
2.5										
3.0				Depth of Excavation: 3 m Termination Condition: Target depth						

Test pit met target depth at 3 m.
TS = TOPSOIL
Standing groundwater was not encountered

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LOG OF TEST PIT TP10

Geotechnical Investigation

Peacockes Road
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Client	Weston Lea Ltd	**Shear Vane No**	NA
Date	18/12/2017	**Logged By**	AK
Max Test Pit Depth	3 m	**Reviewed By**	JC
Digger Type/Size	Bucket Excavator	**Latitude**	175.322249
Bucket Type/Size	0.8 m	**Longitude**	-37.820097

Depth (m)	Material	Excavatability (Relative Scale) Easier – Harder	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength Peak/Remolded (kPa)	Scala Penetrometer Blows per 100mm (2 4 6 8 10 12)
	TS		ML	TOPSOIL.			D			
0.5	HINUERA FORMATION		SM	Sandy SILT; light brown. Low plasticity. Sand, fine.			M			
1.0			SW	Gravelly medium to coarse SAND; brown with light grey and orange streaks. Well graded. Gravel, fine to coarse, subrounded to rounded.						
1.5										
2.0			ML	Clayey SILT; reddish brown. Low plasticity.			W			
2.5				Becomes light brown at 2.75 m depth.						
3.0				Depth of Excavation: 3 m Termination Condition: Target depth						

Test pit met target depth at 3 m.
TS = TOPSOIL
Standing groundwater was not encountered

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LOG OF TEST PIT TP11

Geotechnical Investigation

Peacockes Road
Hamilton East
14280.000.000

Client	: Weston Lea Ltd	**Shear Vane No**	: NA
Date	: 18/12/2017	**Logged By**	: AK
Max Test Pit Depth	: 3 m	**Reviewed By**	: JC
Digger Type/Size	: Bucket Excavator	**Latitude**	: 175.32389
Bucket Type/Size	: 0.8 m	**Longitude**	: -37.819942

Depth (m)	Material	Excavatability (Relative Scale) Easier – Harder	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength Peak/Remolded (kPa)	Scala Penetrometer Blows per 100mm (2 4 6 8 10 12)
	TS		ML	TOPSOIL.			D			
0.5	HINUERA FORMATION		SM	Silty fine to medium SAND; light brown. Well graded. Fine to coarse gravel encountered from 0.8 m depth.			M			
1.0, 1.5, 2.0			SW	Gravelly medium to coarse SAND with minor cobbles; brownish grey. Well graded. Gravel, fine to coarse, subrounded to rounded. Cobbles, subrounded to rounded.			W			
2.5			ML	Clayey SILT; brown with brownish red streaks. Low plasticity. Moderately sensitive.						
3.0				Depth of Excavation: 3 m Termination Condition: Target depth						

Test pit met target depth at 3 m.
TS = TOPSOIL
Standing groundwater was not encountered

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LOG OF TEST PIT TP12

Geotechnical Investigation

Peacockes Road
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Client : Weston Lea Ltd
Date : 19/12/2017
Max Test Pit Depth : 2.6 m
Digger Type/Size : Bucket Excavator
Bucket Type/Size : 0.8 m

Shear Vane No : NA
Logged By : AK
Reviewed By : JC
Latitude : 175.325237
Longitude : -37.819884

Depth (m)	Material	Excavatability (Relative Scale) Easier – Harder	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength Peak/Remolded (kPa)	Scala Penetrometer Blows per 100mm (2 4 6 8 10 12)
	TS		ML	TOPSOIL.			D			
0.5	ALLUVIAL DEPOSITS		SP	Fine SAND; light brown. Poorly graded.			M			
1.0			SW	Fine to coarse SAND; brownish grey. Well graded.						
1.5				Becomes grey at 1.6 m depth.			W			
2.0										
2.5				Depth of Excavation: 2.6 m Termination Condition: Practical refusal						
3.0										

Test pit met practical refusal at 2.6 m depth due to hole collapse.
TS = TOPSOIL
Standing groundwater was not encountered

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LOG OF TEST PIT TP13

Geotechnical Investigation

Peacockes Road
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Client : Weston Lea Ltd
Date : 19/12/2017
Max Test Pit Depth : 2.3 m
Digger Type/Size : Bucket Excavator
Bucket Type/Size : 0.8 m

Shear Vane No : NA
Logged By : AK
Reviewed By : JC
Latitude : 175.328079
Longitude : -37.821528

Depth (m)	Material	Excavatability (Relative Scale) Easier – Harder	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength Peak/Remolded (kPa)	Scala Penetrometer Blows per 100mm (2 4 6 8 10 12)
	TS		ML	TOPSOIL.			D			
0.5	HINUERA FORMATION		SM	Silty fine SAND; light brown. Well graded.			M			
1.0			SW	Fine to coarse SAND with minor fine to coarse gravel; brownish grey. Well graded.			W			
1.5				Some fine to coarse gravel encountered from 1.3 m depth. Trace cobbles encountered from 1.5 m depth.						
2.0			ML	SILT with some fine to medium sand; light grey with orange streaks. Low plasticity, moderately sensitive, moderately dilatant.			S			
2.5				Depth of Excavation: 2.3 m Termination Condition: Practical refusal						
3.0										

Test pit met practical refusal at 2.3 m depth due to hole collapse.
TS = TOPSOIL
Standing groundwater was not encountered

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LOG OF TEST PIT TP14

Geotechnical Investigation

Peacockes Road
Hamilton East
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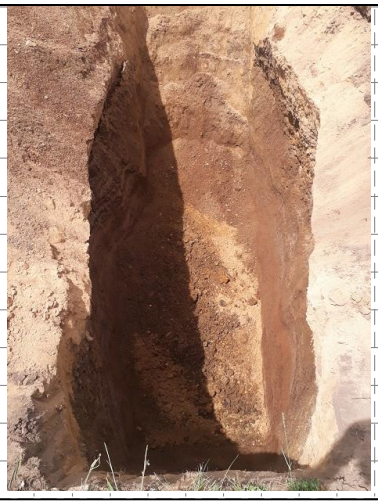
Client	Weston Lea Ltd	**Shear Vane No**	NA
Date	19/12/2017	**Logged By**	AK
Max Test Pit Depth	2.5 m	**Reviewed By**	JC
Digger Type/Size	Bucket Excavator	**Latitude**	175.325066
Bucket Type/Size	0.8 m	**Longitude**	-37.821896

Depth (m)	Material	Excavatability (Relative Scale) Easier – Harder	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength Peak/Remolded (kPa)	Scala Penetrometer Blows per 100mm (2 4 6 8 10 12)
	TS		ML	TOPSOIL.			M			
0.5	HINUERA FORMATION		SP	Silty fine SAND; light brown. Poorly graded.						
1.0			GW	Sandy fine to coarse GRAVEL with minor cobbles; brown. Well graded, subrounded to rounded. Sand, fine to coarse. Cobbles, rounded.			W			
1.5			SW	Gravelly coarse SAND; reddish brown. Well graded. Gravel, fine to coarse, subrounded to rounded.						
2.5				Depth of Excavation: 2.5 m Termination Condition: Practical refusal						
3.0										



Test pit met practical refusal at 2.5 m depth due to hole collapse.
TS = TOPSOIL
Standing groundwater was not encountered

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LOG OF TEST PIT TP15

Geotechnical Investigation

Peacockes Road
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Client : Weston Lea Ltd
Date : 18/12/2017
Max Test Pit Depth : 3 m
Digger Type/Size : Bucket Excavator
Bucket Type/Size : 0.8 m

Shear Vane No : NA
Logged By : AK
Reviewed By : JC
Latitude : 175.32296
Longitude : -37.822864

Depth (m)	Material	Excavatability (Relative Scale) Easier – Harder	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength Peak/Remolded (kPa)	Scala Penetrometer Blows per 100mm (2 4 6 8 10 12)
	TS		ML	TOPSOIL.			D			
0.5	ALLUVIAL DEPOSITS		SM	Sandy SILT; light brown with orange mottles. Low plasticity. Sand, fine to medium.			M			
1.0			SW	Silty fine to coarse SAND; light grey with occasional light brown mottles. Well graded.			W			
1.5										
2.0			ML	SILT with minor fine to coarse sand; light grey with light brownish orange mottles. Low plasticity.						
2.5			SW	Fine to coarse SAND with minor silt; grey with light brown mottles. Well graded, slightly dilatant.			S			
3.0				Depth of Excavation: 3 m Termination Condition: Target depth						

Test pit met target depth at 3 m.
TS = TOPSOIL
Standing groundwater was not encountered

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LOG OF TEST PIT TP16

Geotechnical Investigation

Peacockes Road
Hamilton East
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Client	Weston Lea Ltd	**Shear Vane No**	NA
Date	19/12/2017	**Logged By**	AK
Max Test Pit Depth	2.5 m	**Reviewed By**	JC
Digger Type/Size	Bucket Excavator	**Latitude**	175.328593
Bucket Type/Size	0.8 m	**Longitude**	-37.823017

Depth (m)	Material	Excavatability (Relative Scale) Easier – Harder	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength Peak/Remolded (kPa)	Scala Penetrometer Blows per 100mm (2 4 6 8 10 12)
	TS		ML	TOPSOIL.			M			
0.5	HINUERA FORMATION		SM	Silty fine SAND; light brownish grey with light brownish orange mottles. Poorly graded.						
1.0			SW	Fine to coarse SAND; grey. Well graded.			W			
1.5				Becomes grey with dark grey streaks at 1.5 m depth.						
2.0			GP	50 mm lense of limonite stained clayey SILT; dark orange encountered at 2.0 m depth. Low plasticity.		▼				
2.5			ML	Sandy fine to coarse GRAVEL; brownish orange with light grey mottles. Well graded, subrounded to rounded. Sand, medium to coarse. Groundwater piping at 2.1 m depth.			S			
				Clayey SILT; dark grey. Low plasticity.						
3.0				Depth of Excavation: 2.5 m Termination Condition: Practical refusal						

Test pit met practical refusal at 2.5 m depth due to hole collapse.
TS = TOPSOIL
Dip test showed standing water at 2.1 m depth.

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LOG OF TEST PIT TP17

Geotechnical Investigation

Peacockes Road
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Client	: Weston Lea Ltd	**Shear Vane No**	: NA
Date	: 19/12/2017	**Logged By**	: AK
Max Test Pit Depth	: 3 m	**Reviewed By**	: JC
Digger Type/Size	: Bucket Excavator	**Latitude**	: 175.322275
Bucket Type/Size	: 0.8 m	**Longitude**	: -37.823231

Depth (m)	Material	Excavatability (Relative Scale) Easier – Harder	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength Peak/Remolded (kPa)	Scala Penetrometer Blows per 100mm (2 4 6 8 10 12)
	TS		ML	TOPSOIL.			D			
0.5	ALLUVIAL DEPOSITS			Clayey SILT; brown with brownish orange mottles. Low plasticity.			M			
1.0				Becomes wet at 1.1 m depth.						
1.5			ML	Becomes brown at 1.5 m depth.						
2.0							W			
2.5				Trace sand encountered from 2.5 m depth.						
3.0				Depth of Excavation: 3 m Termination Condition: Target depth						

Test pit met target depth at 3 m.
TS = TOPSOIL
Standing groundwater was not encountered

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LOG OF TEST PIT TP18

Geotechnical Investigation

Peacockes Road
Hamilton East
14280.000.000

Client	: Weston Lea Ltd	**Shear Vane No**	: NA
Date	: 18/12/2017	**Logged By**	: AK
Max Test Pit Depth	: 2.75 m	**Reviewed By**	: JC
Digger Type/Size	: Bucket Excavator	**Latitude**	: 175.324553
Bucket Type/Size	: 0.8 m	**Longitude**	: -37.823773

Depth (m)	Material	Excavatability (Relative Scale) Easier – Harder	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength Peak/Remolded (kPa)	Scala Penetrometer Blows per 100mm (2 4 6 8 10 12)
	TS		ML	TOPSOIL.			M			
0.5	ALLUVIAL DEPOSITS		ML	Sandy SILT; light brown. Low plasticity. Sand, fine.						
1.0			SW	Gravelly medium to coarse SAND; light brown with light grey streaks. Well graded. Gravel, fine to coarse, subrounded to rounded.			W			
1.5										
2.0			SW	Medium to coarse SAND with minor fine to coarse gravel; light brown with light grey streaks. Well graded. Gravel, subrounded to rounded.						
2.5										
				Depth of Excavation: 2.75 m Termination Condition: Practical refusal						
3.0										

Test pit met practical refusal at 2.75 m depth due to hole collapse.
TS = TOPSOIL
Standing groundwater was not encountered

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LOG OF TEST PIT TP19

Geotechnical Investigation

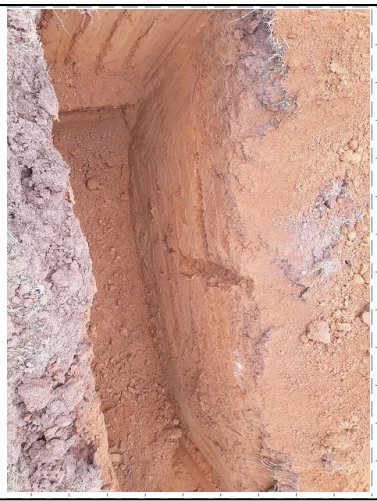
Peacockes Road
Hamilton East
14280.000.000

Client : Weston Lea Ltd
Date : 19/12/2017
Max Test Pit Depth : 3 m
Digger Type/Size : Bucket Excavator
Bucket Type/Size : 0.8 m

Shear Vane No : NA
Logged By : AK
Reviewed By : JC
Latitude : 175.326463
Longitude : -37.824082

Depth (m)	Material	Excavatability (Relative Scale) Easier – Harder	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength Peak/Remolded (kPa)	Scala Penetrometer Blows per 100mm (2 4 6 8 10 12)
	TS		ML	TOPSOIL.						
0.5	HINUERA FORMATION		SP	Fine to medium SAND; light brown. Poorly graded.			M			
1.0			SM	Silty fine to medium SAND; brown. Well graded.			W			
1.5			ML	Sandy SILT with trace gravel; light grey with light brownish orange streaks. Low plasticity, highly dilatant. Sand, fine to medium.			S			
2.0										
2.5										
3.0			SW	Gravelly coarse SAND; brownish grey with dark orange brown mottles. Well graded. Gravel, fine to coarse, subrounded to rounded.						

Depth of Excavation: 3 m
Termination Condition: Target depth



Test pit met target depth at 3 m.
TS = TOPSOIL
Standing groundwater was not encountered

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LOG OF TEST PIT TP20

Geotechnical Investigation

Peacockes Road
Hamilton East
14280.000.000

Client : Weston Lea Ltd
Date : 18/12/2017
Max Test Pit Depth : 3 m
Digger Type/Size : Bucket Excavator
Bucket Type/Size : 0.8 m

Shear Vane No : NA
Logged By : AK
Reviewed By : JC
Latitude : 175.319581
Longitude : -37.825921

Depth (m)	Material	Excavatability (Relative Scale) Easier – Harder	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength Peak/Remolded (kPa)	Scala Penetrometer Blows per 100mm (2 4 6 8 10 12)
	TS		ML	TOPSOIL.			D			
0.5	HINUERA FORMATION		ML	Clayey SILT; light brown. Low plasticity.			W			
1.0										
1.5				Occasional dark grey streaks encountered from 1.4 m depth.						
				Becomes brown at 1.75 m depth.						
2.0										
2.5			CH	Silty CLAY with trace sand; brown. High plasticity.						
3.0				Depth of Excavation: 3 m Termination Condition: Target depth						

Test pit met target depth at 3 m.
TS = TOPSOIL
Standing groundwater was not encountered

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LOG OF TEST PIT TP21

Geotechnical Investigation

Peacockes Road
Hamilton East
14280.000.000

Client	: Weston Lea Ltd	**Shear Vane No**	: NA
Date	: 18/12/2017	**Logged By**	: AK
Max Test Pit Depth	: 3 m	**Reviewed By**	: JC
Digger Type/Size	: Bucket Excavator	**Latitude**	: 175.321002
Bucket Type/Size	: 0.8 m	**Longitude**	: -37.826675

Depth (m)	Material	Excavatability (Relative Scale) Easier – Harder	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength Peak/Remolded (kPa)	Scala Penetrometer Blows per 100mm (2 4 6 8 10 12)
	TS		ML	TOPSOIL.			M			
0.5	HINUERA FORMATION		SP	Silty fine SAND; light grey with light brown mottles. Poorly graded.			W			
1.0			SW	Gravelly coarse SAND; grey with brown and orange mottles. Well graded. Gravel, fine to coarse, subrounded to rounded.						
1.5			SM	Silty fine SAND; light grey. Poorly graded, slightly dilatant.		▼				
2.0			OH	Organic CLAY; dark brown. High plasticity. Organics, fibrous to amorphous. Groundwater seepage at 2.25 m depth.			S			
2.5			ML	Sandy SILT; grey. Low plasticity, slightly dilatant. Sand, fine.						
3.0				Depth of Excavation: 3 m Termination Condition: Target depth						

Test pit met target depth at 3 m.
TS = TOPSOIL
Dip test showed standing water at 2.25 m depth.

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LOG OF TEST PIT TP22

Geotechnical Investigation

Peacockes Road
Hamilton East
14280.000.000

Client	: Weston Lea Ltd	**Shear Vane No**	: NA
Date	: 18/12/2017	**Logged By**	: AK
Max Test Pit Depth	: 2.25 m	**Reviewed By**	: JC
Digger Type/Size	: Bucket Excavator	**Latitude**	: 175.324505
Bucket Type/Size	: 0.8 m	**Longitude**	: -37.82857

Depth (m)	Material	Excavatability (Relative Scale) Easier – Harder	USCS Symbol	DESCRIPTION	Graphic Symbol	Water Level	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength Peak/Remolded (kPa)	Scala Penetrometer Blows per 100mm (2 4 6 8 10 12)
	TS		ML	TOPSOIL.			D			
	ALLUVIAL DEPOSITS		SM	Silty fine to coarse SAND; light grey. Well graded.			M			
0.5			ML	SILT with minor fine to medium sand; greyish brown. Low plasticity.						
1.0			SW	Fine to coarse SAND; greyish brown. Well graded.			W			
1.5										
2.0						▼				
				Groundwater piping in at 2.2 m depth. Becomes saturated.			S			
2.5				Depth of Excavation: 2.25 m Termination Condition: Practical refusal						
3.0										

Test pit met practical refusal at 2.25 m depth due to hole collapse.
TS = TOPSOIL
Dip test showed standing water at 2.2 m depth.

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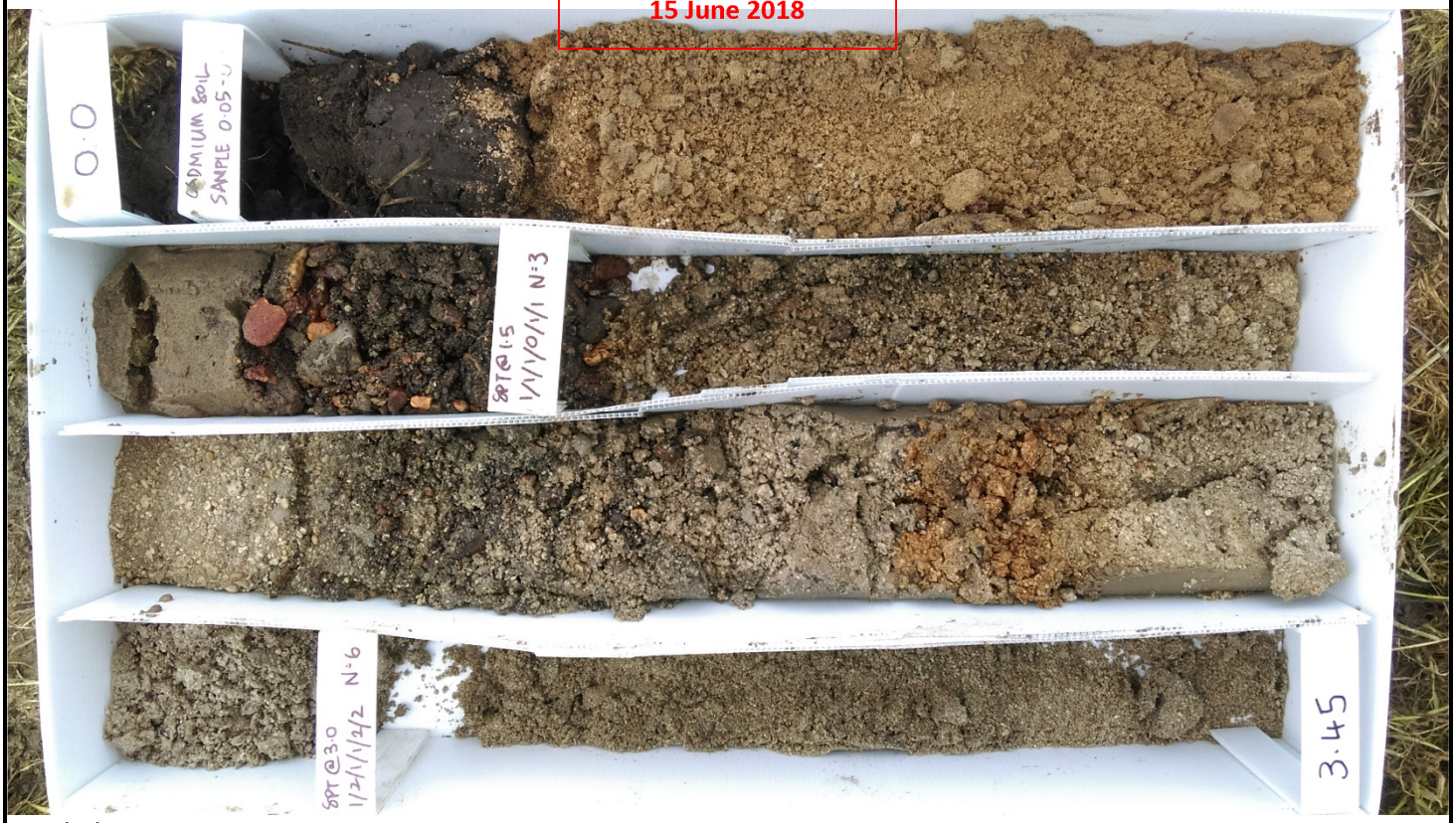

Borehole MBH01: 0.0 m to 3.45 m

Borehole MBH01: 3.45 m to 6.55 m

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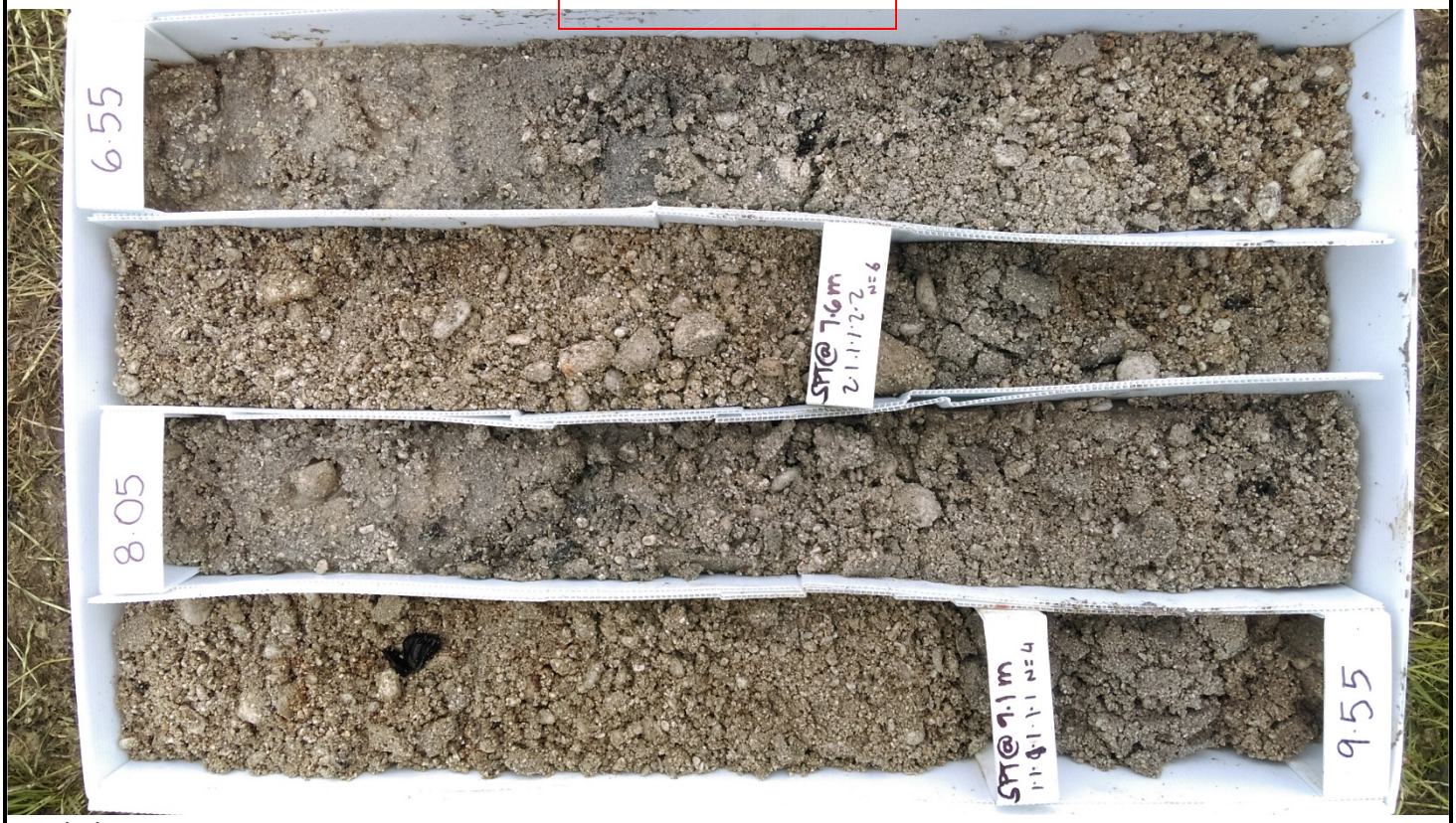

Borehole MBH01: 6.55 m to 9.55 m

Borehole MBH01: 9.55 m to 12.65 m

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Borehole MBH01: 12.65 m to 15.65 m

Borehole MBH01: 15.65 m to 18.75 m

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Borehole MBH01: 18.75 m to 20.25 m

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Borehole MBH02: 0.0 m to 2.6 m

Borehole MBH02: 2.6 m to 6.55 m

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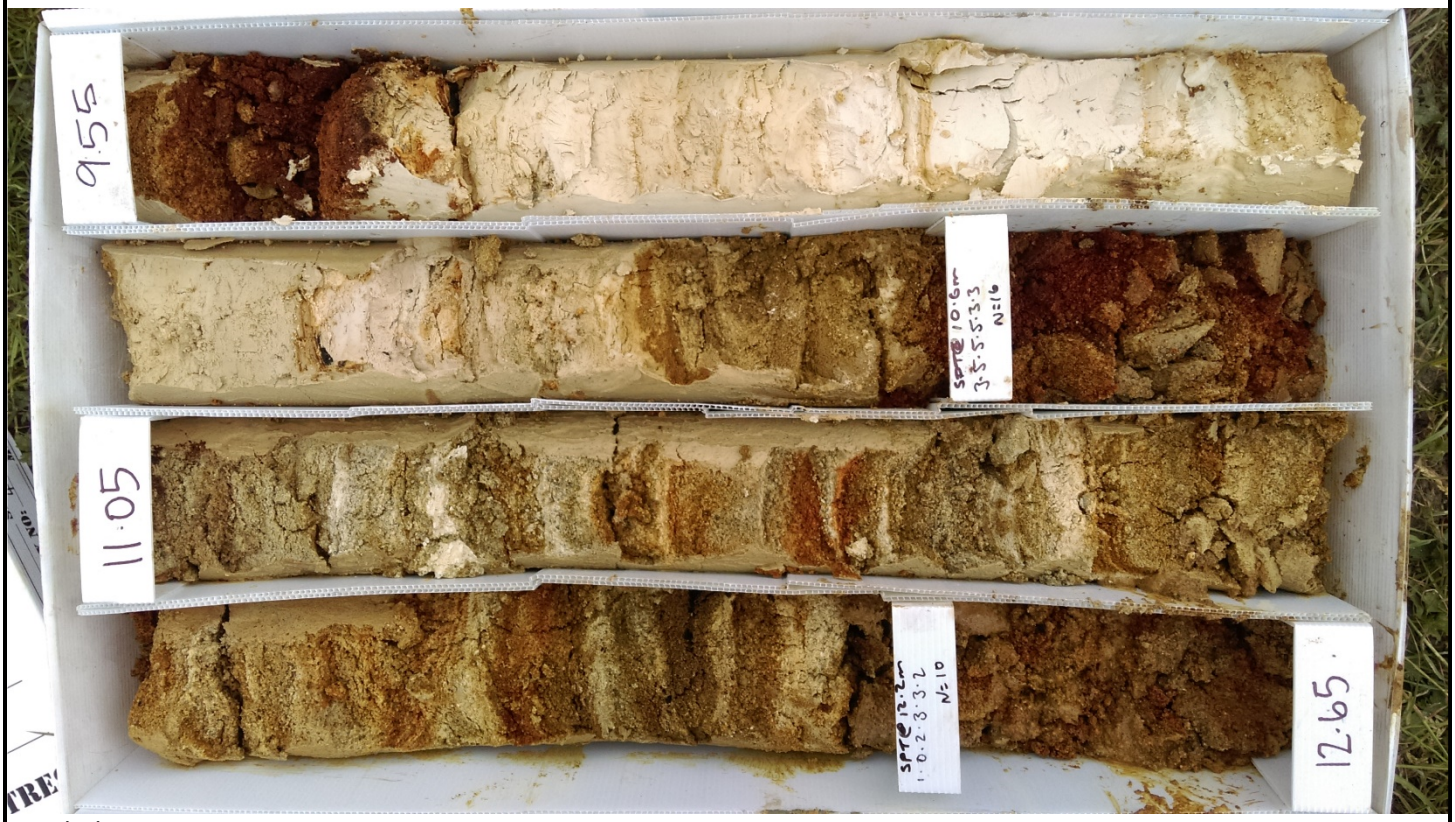
Borehole MBH02: 6.55 m to 9.55 m



Borehole MBH02: 9.55 m to 12.65 m

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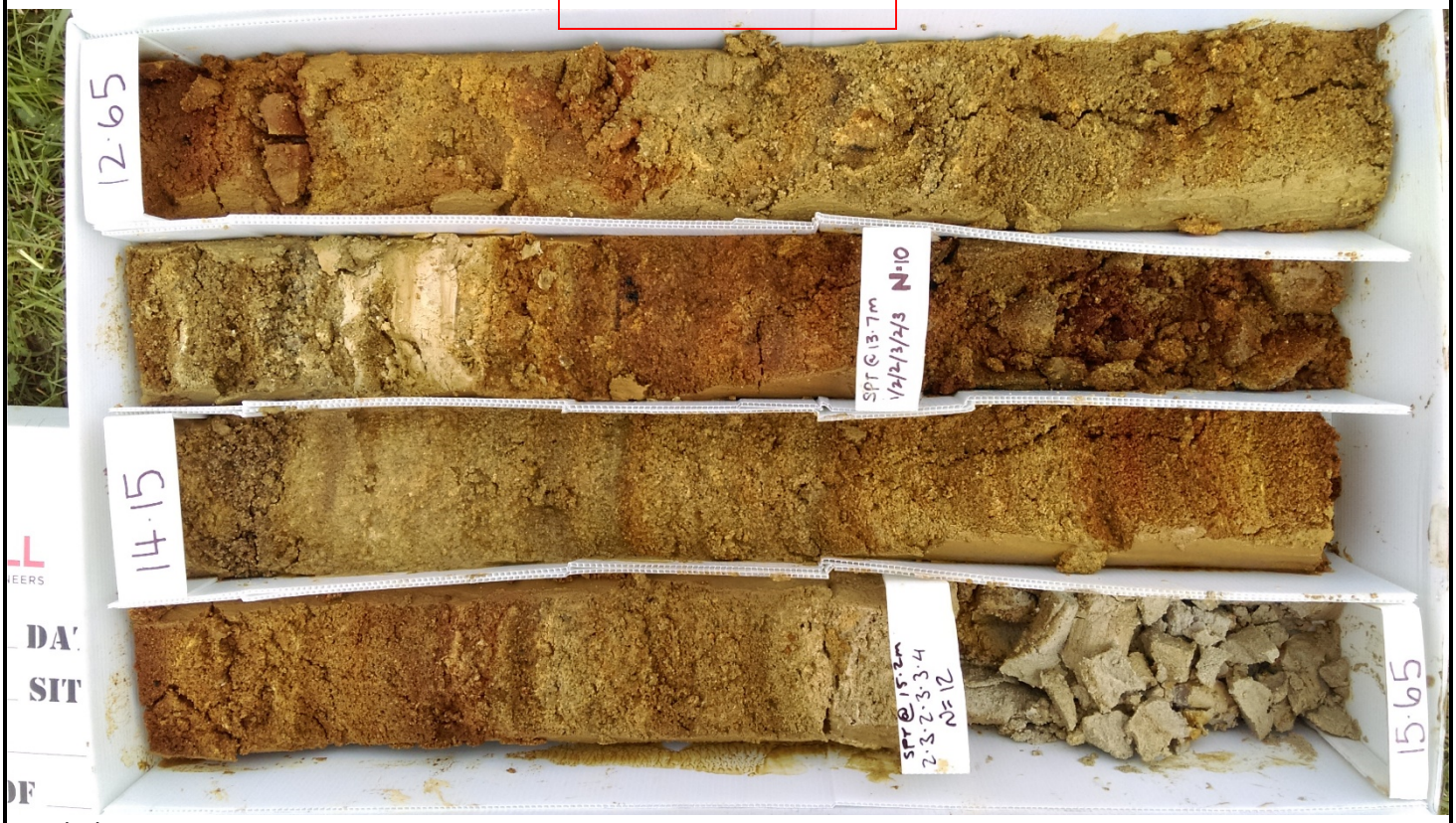
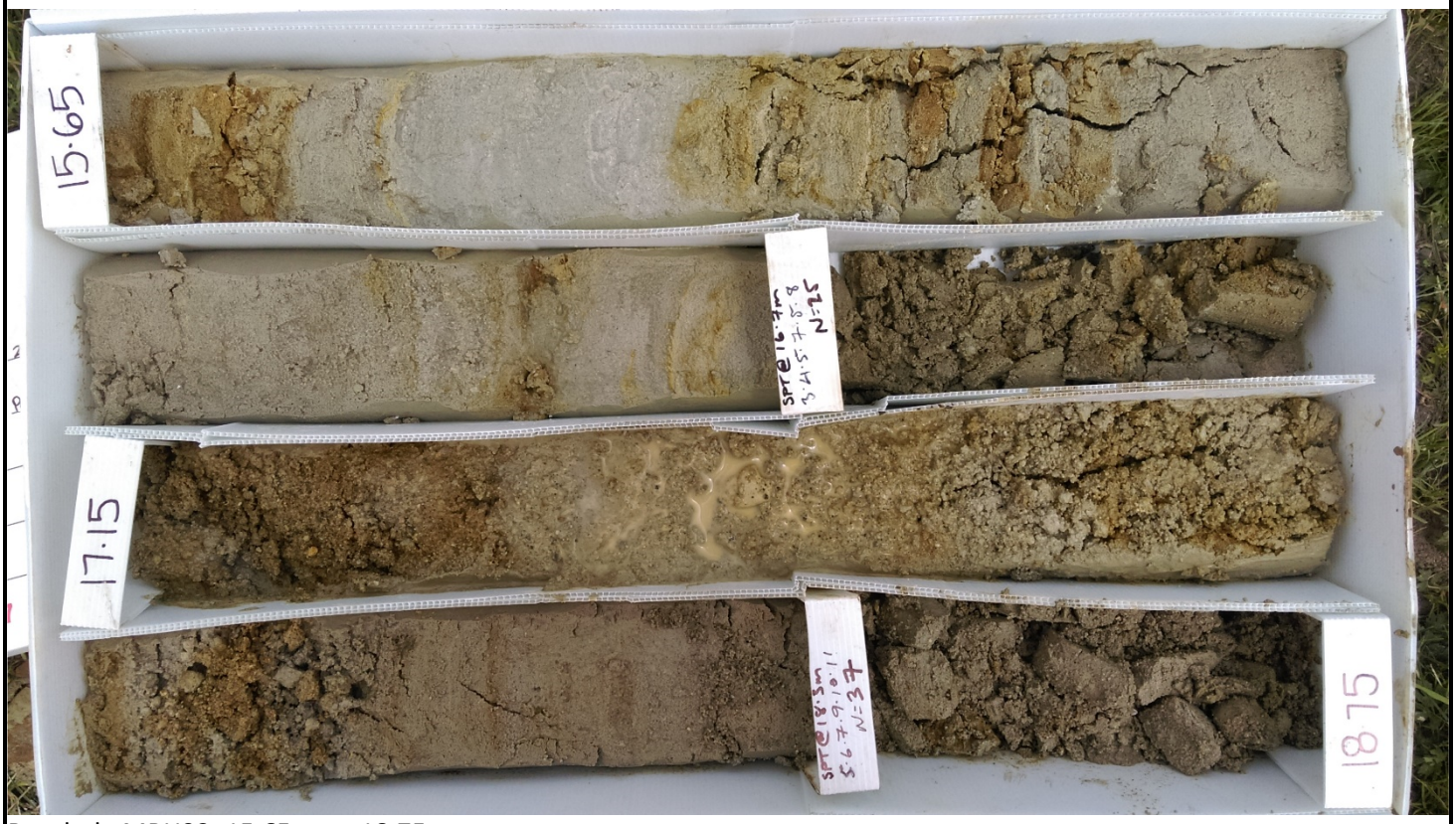


Borehole MBH02: 12.65 m to 15.65 m



Borehole MBH02: 15.65 m to 18.75 m

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Borehole MBH02: 18.75 m to 20.25 m

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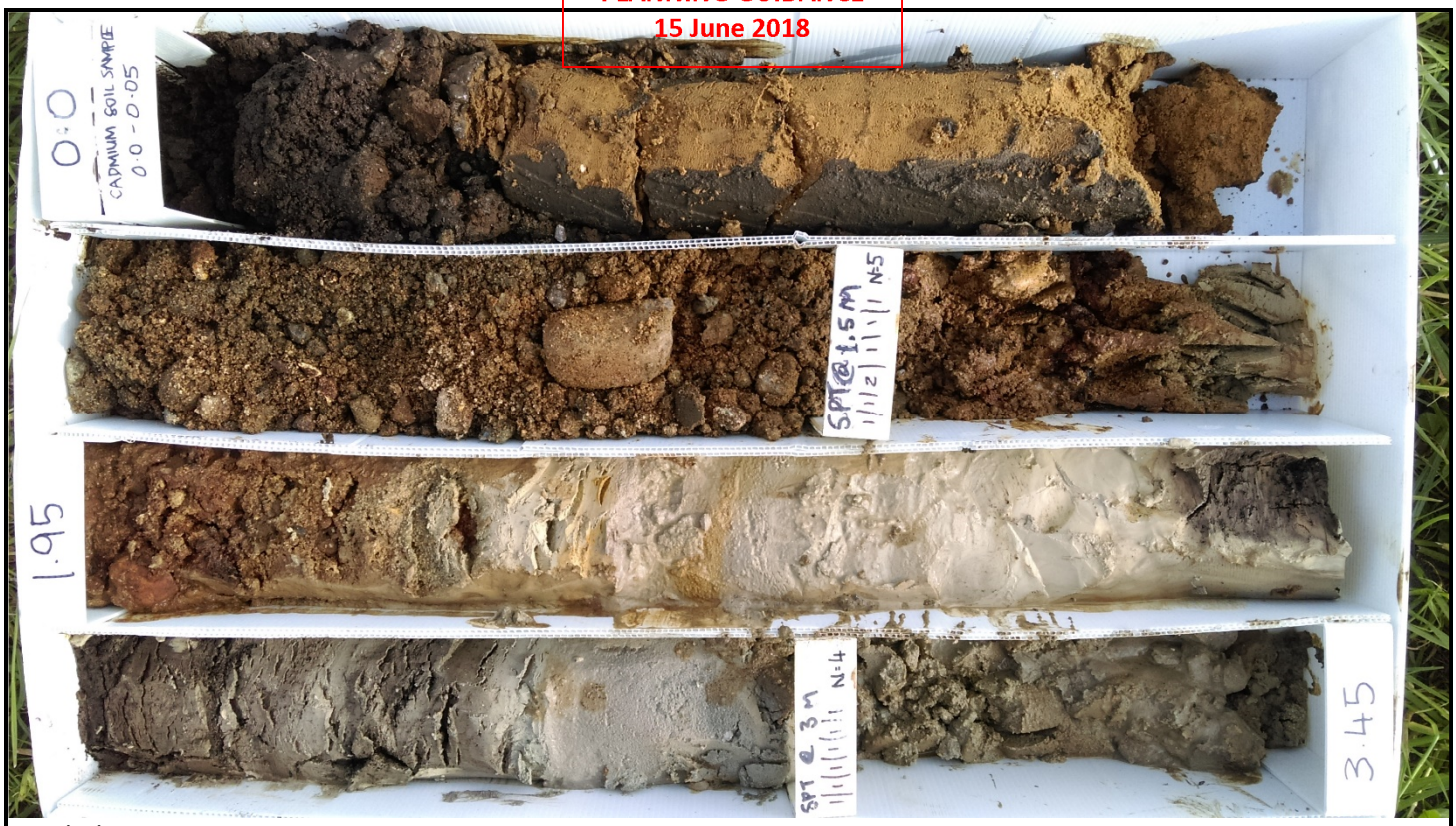

Borehole MBH03: 0.0 m to 3.45 m

Borehole MBH03: 3.45 m to 6.55 m

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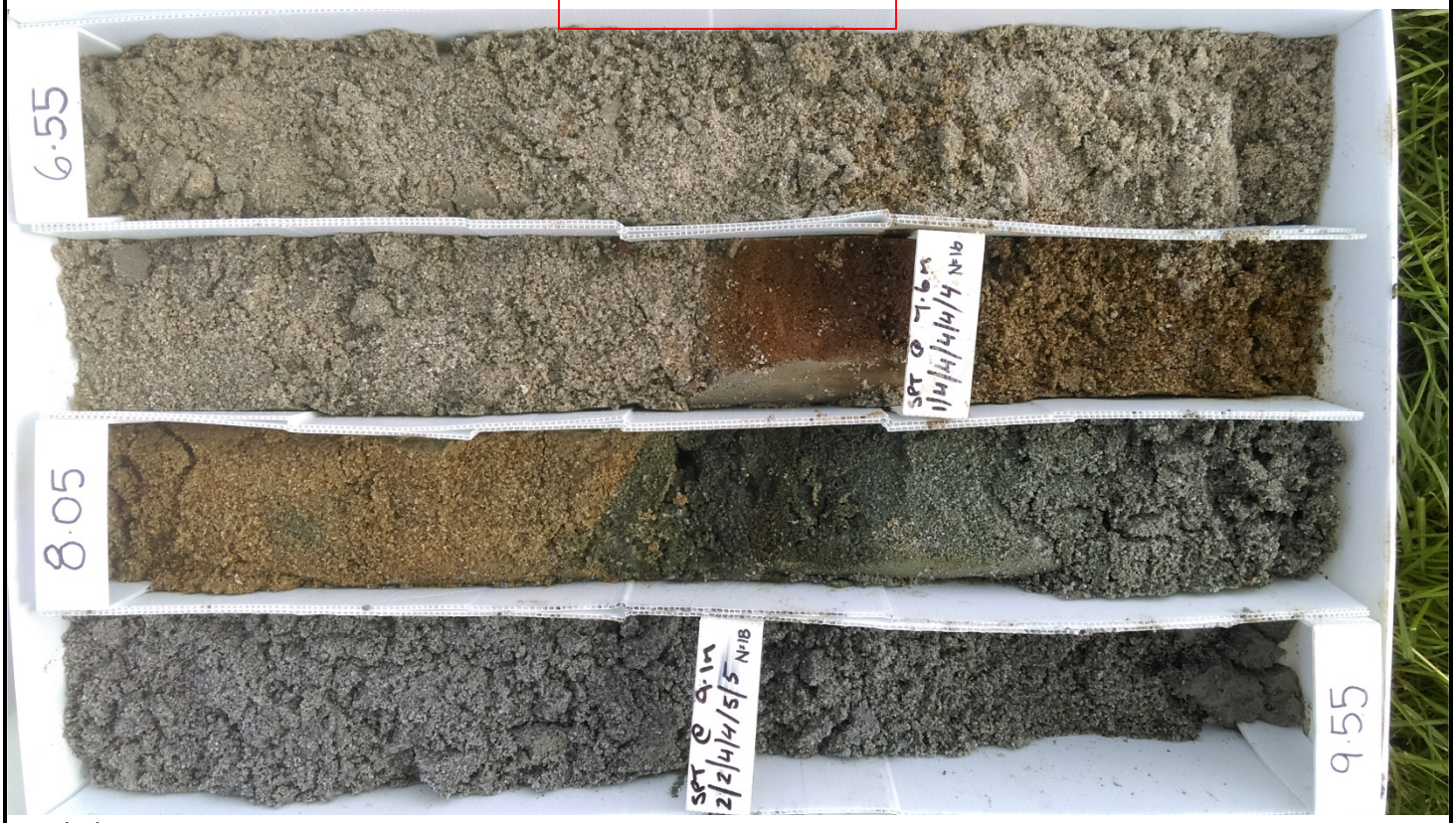

Borehole MBH03: 6.55 m to 9.55 m

Borehole MBH03: 9.55 m to 12.65 m

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Borehole MBH03: 12.65 m to 15.65 m

Borehole MBH03: 15.65 m to 18.75 m

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Borehole MBH03: 18.75 m to 20.25 m

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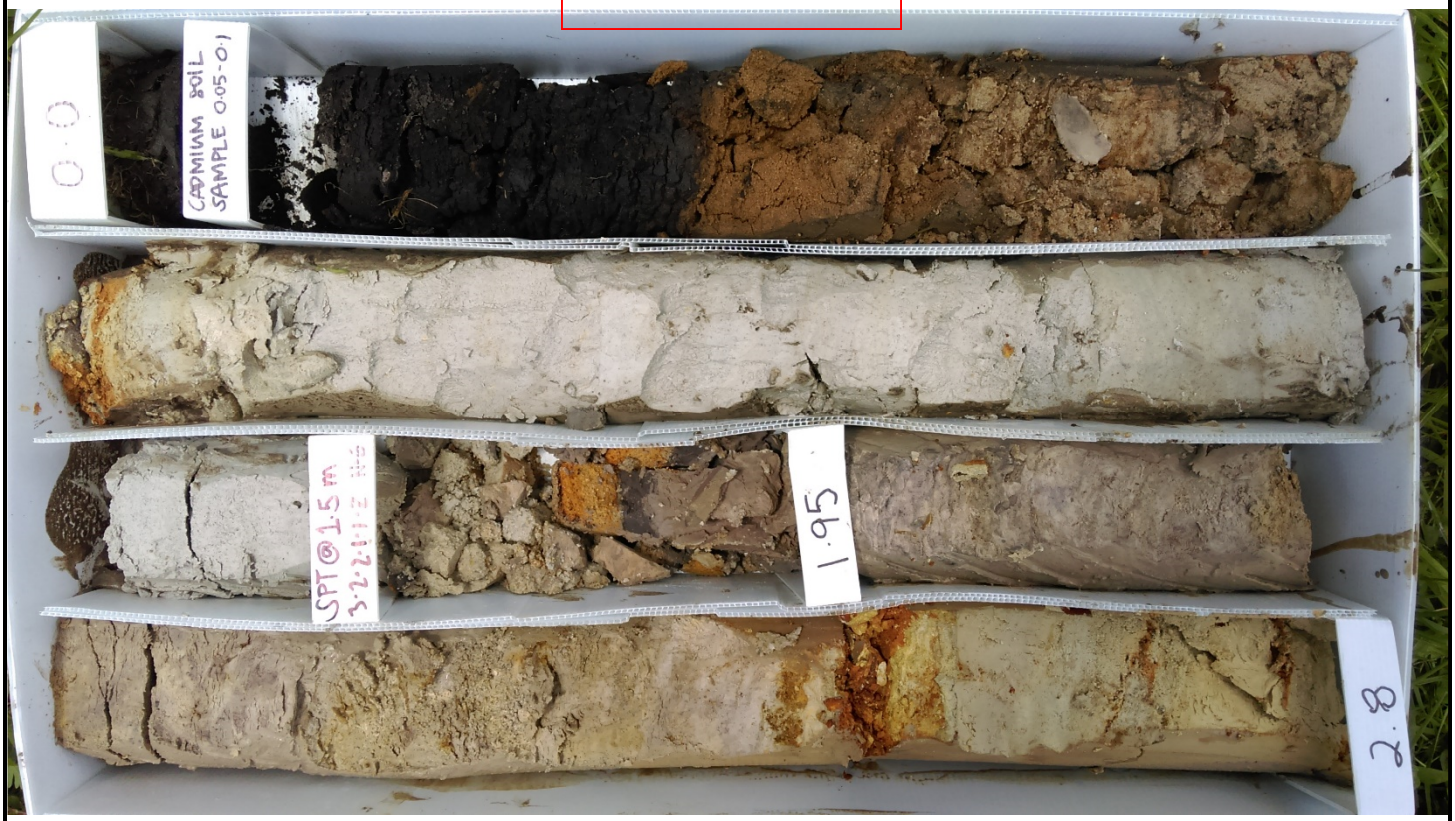
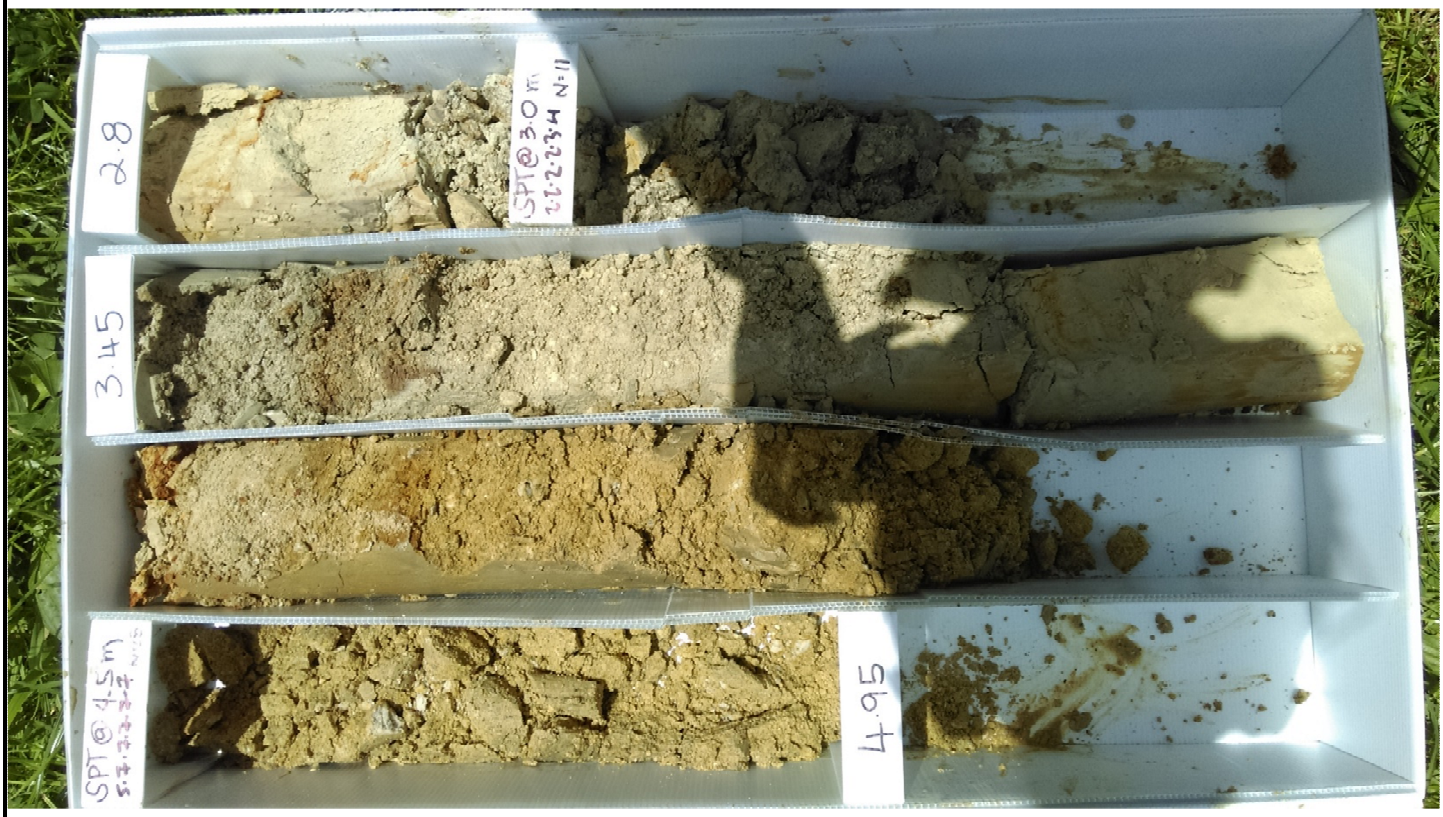


Borehole MBH04: 0.0 m to 2.8 m



Borehole MBH04: 2.8 m to 4.95 m

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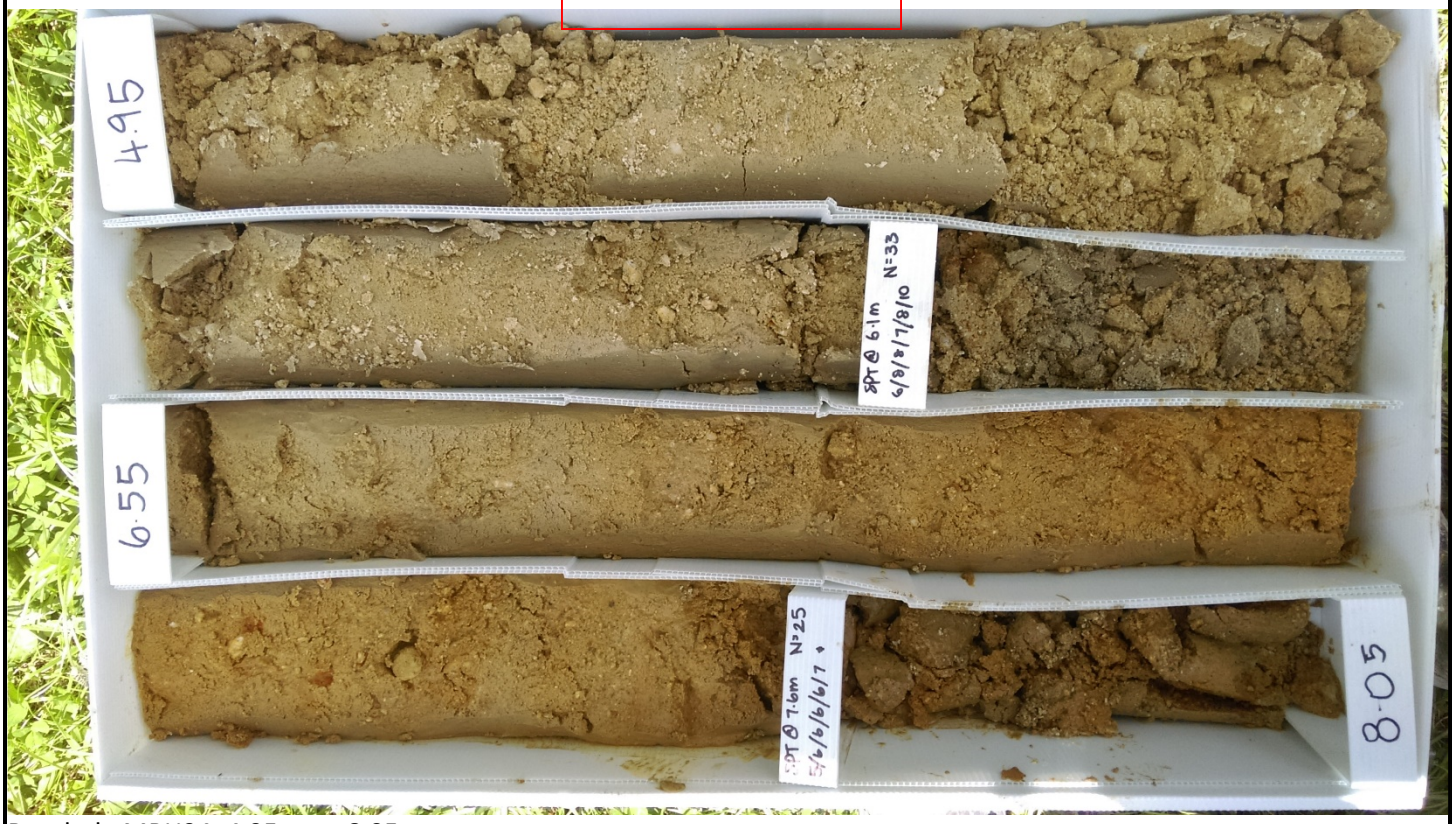
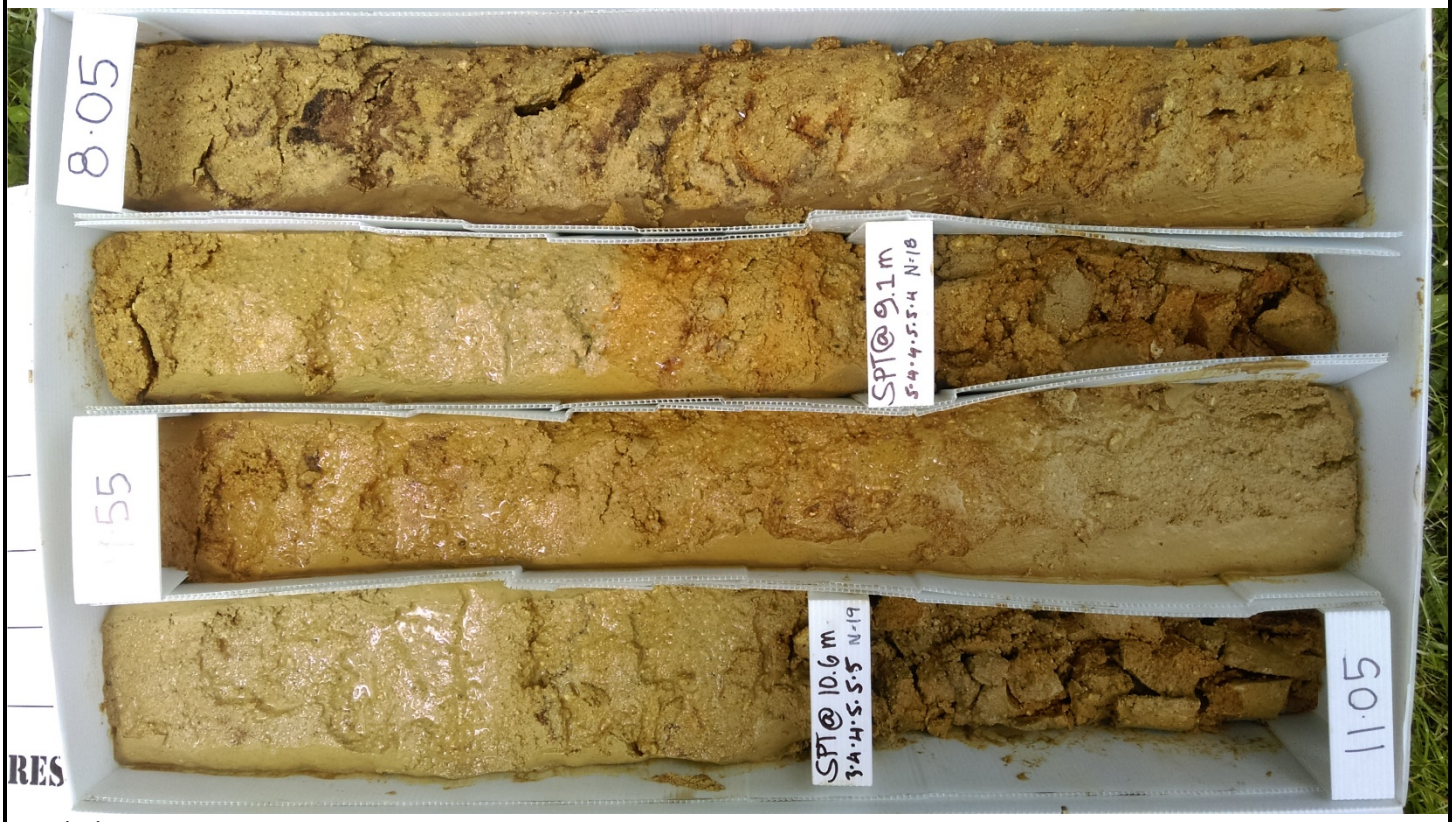


Borehole MBH04: 4.95 m to 8.05 m



Borehole MBH04: 8.05 m to 11.05 m

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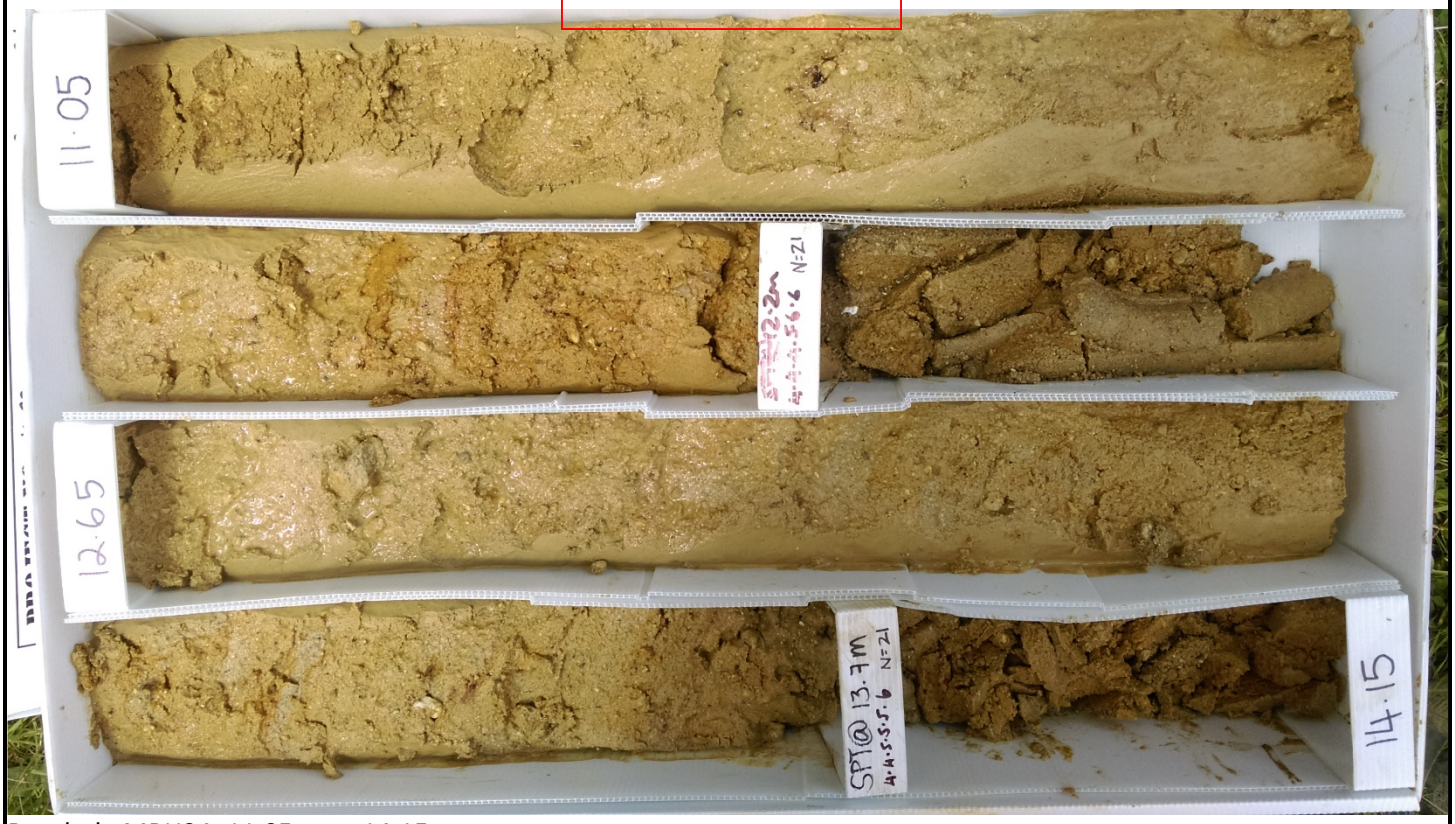
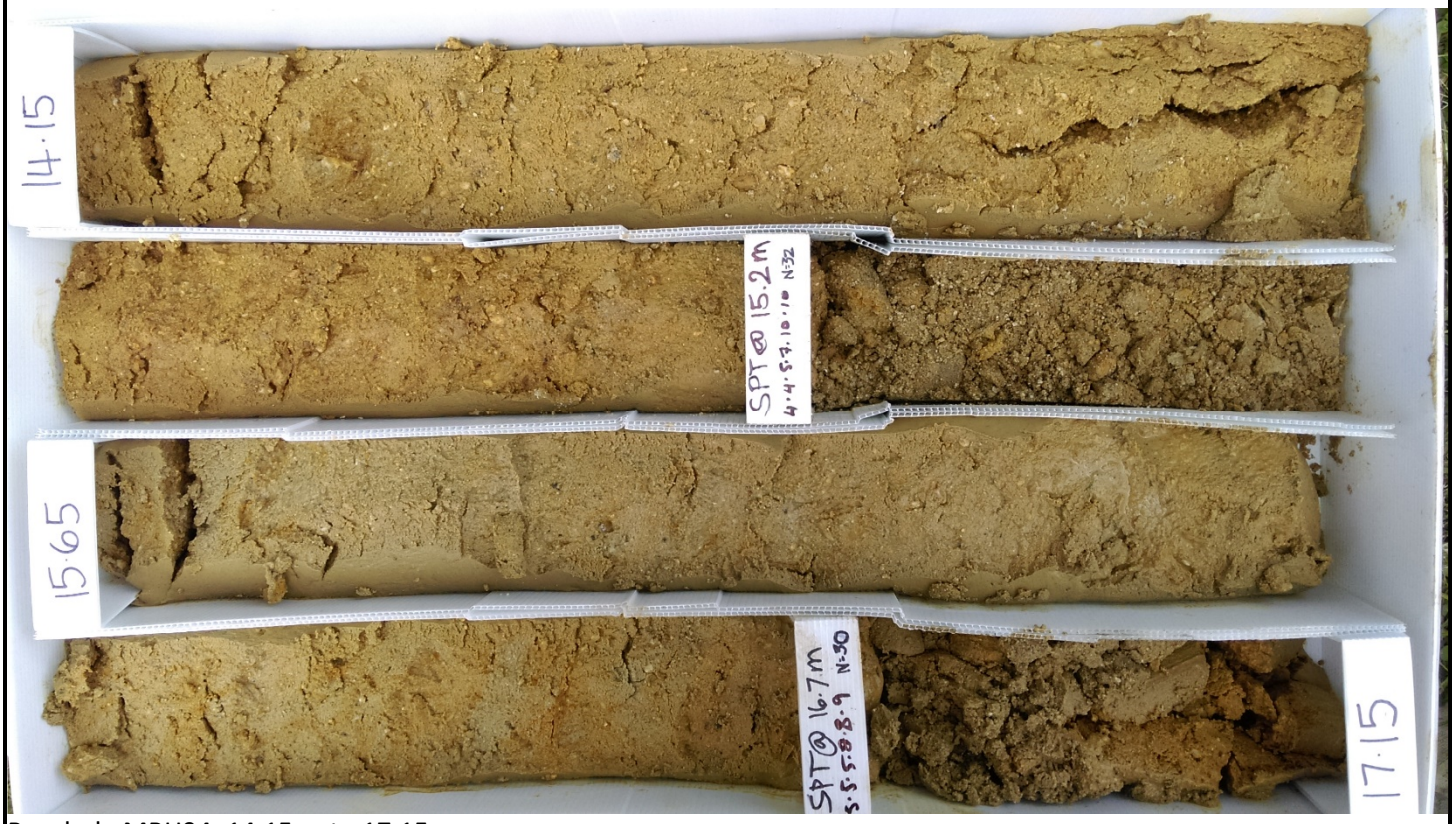


Borehole MBH04: 11.05 m to 14.15 m



Borehole MBH04: 14.15 m to 17.15 m

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Borehole MBH04: 17.15 m to 20.25 m

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Borehole MBH05: 0.0 m to 3.45 m

Borehole MBH05: 3.45 m to 6.55 m

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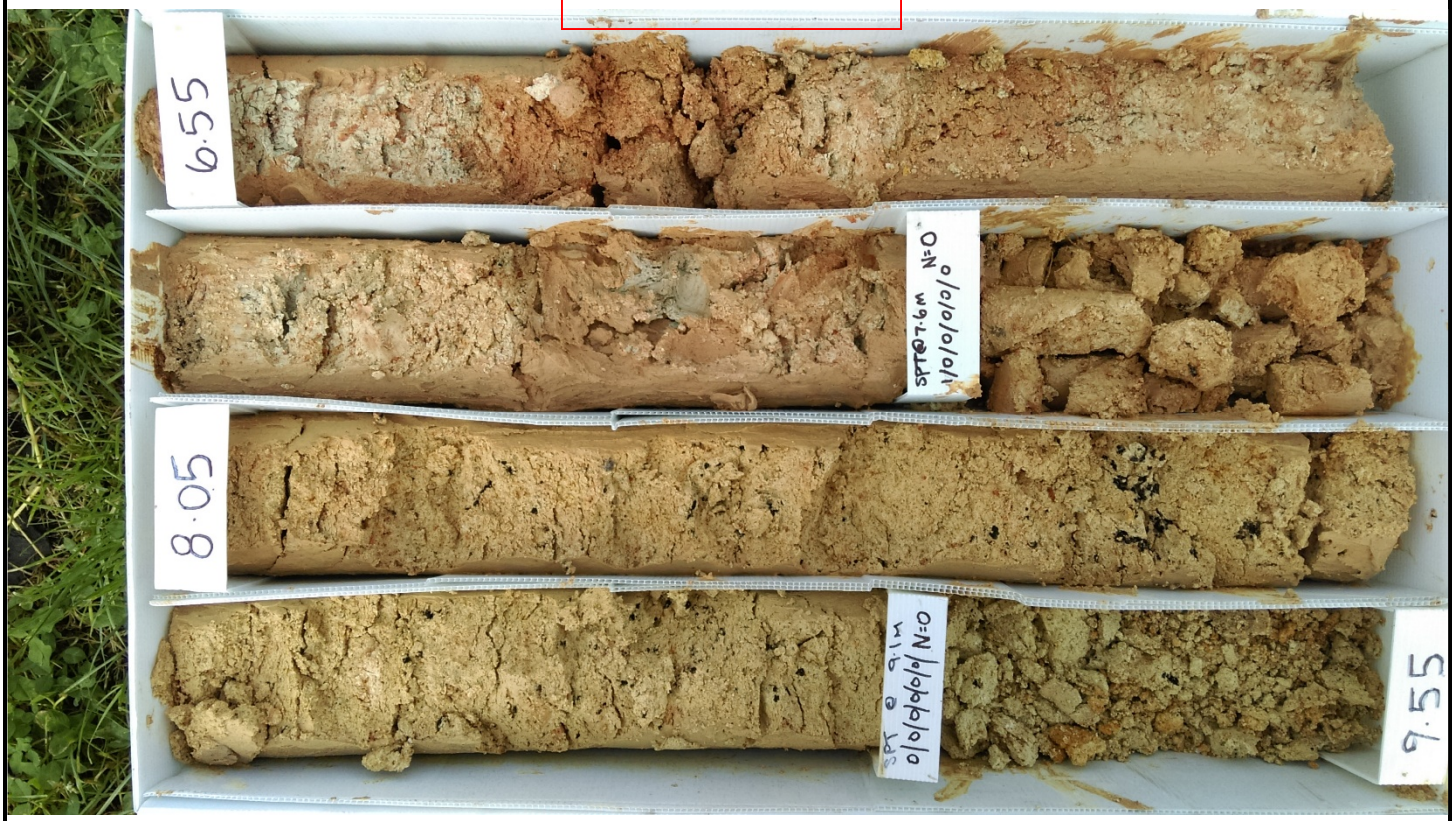
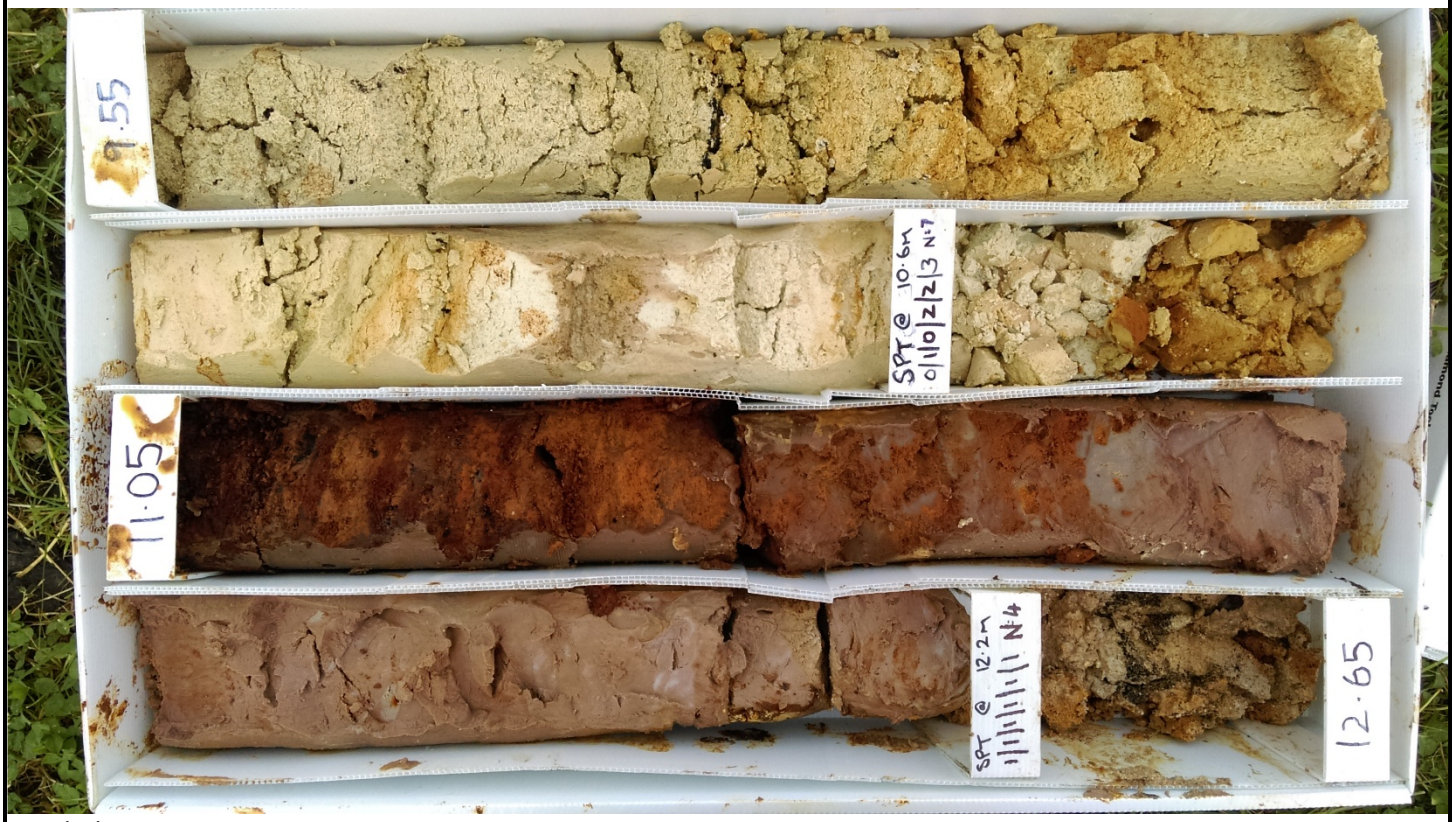


Borehole MBH05: 6.55 m to 9.55 m



Borehole MBH05: 9.55 m to 12.65 m

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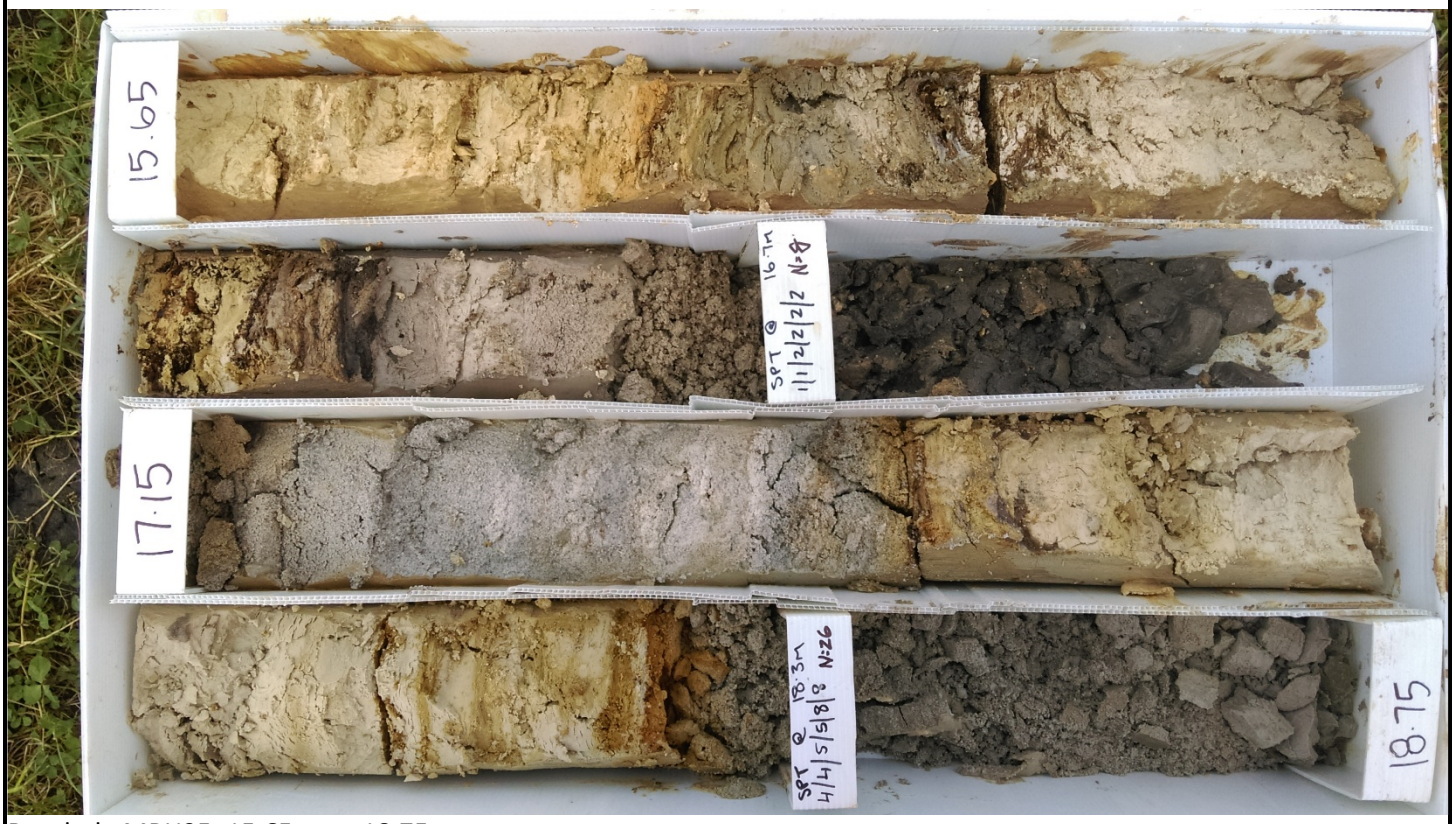
Borehole MBH05: 12.65 m to 15.65 m



Borehole MBH05: 15.65 m to 18.75 m

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Borehole MBH03: 18.75 m to 20.25 m

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Borehole MBH06: 0.0 m to 2.8 m

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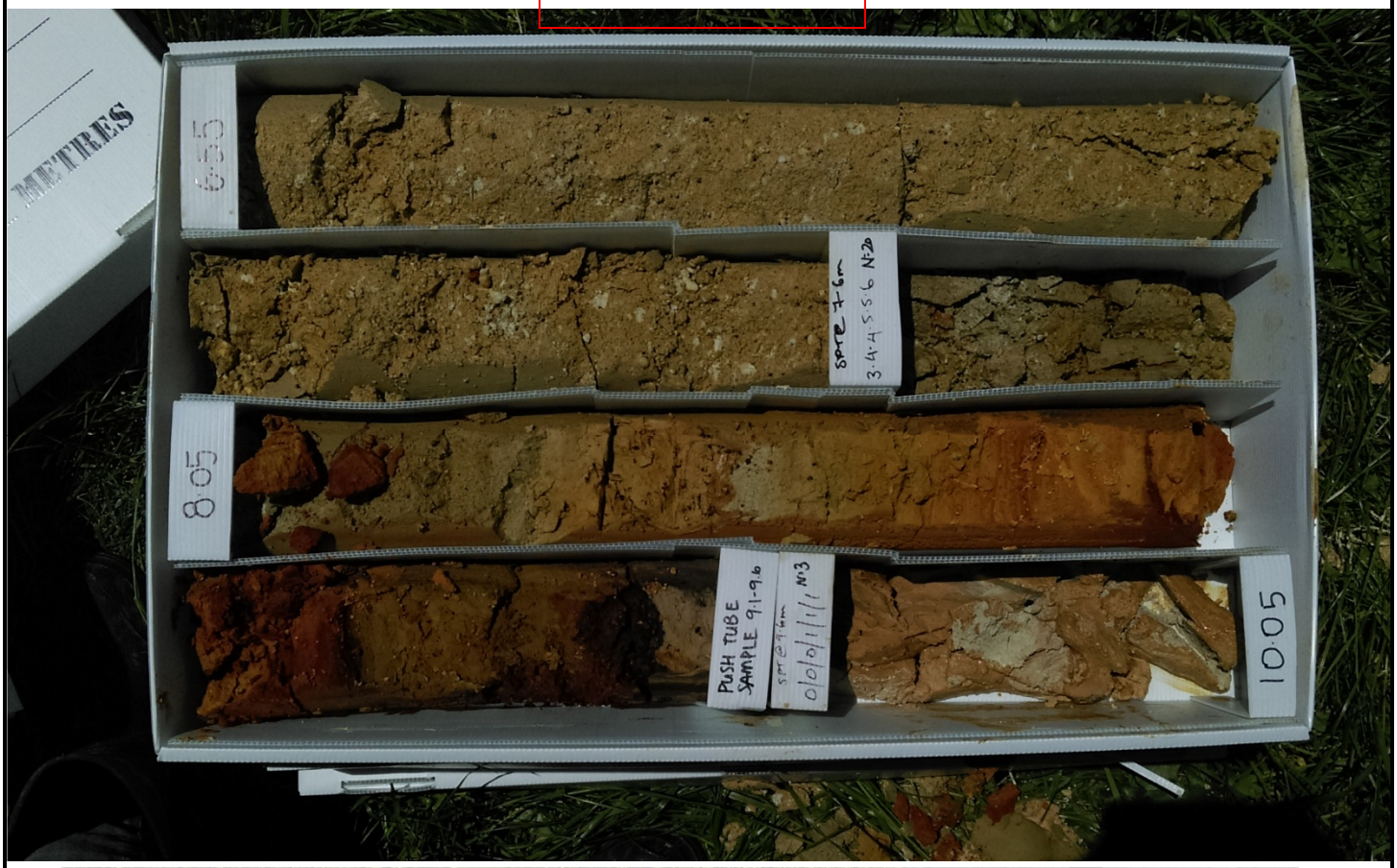

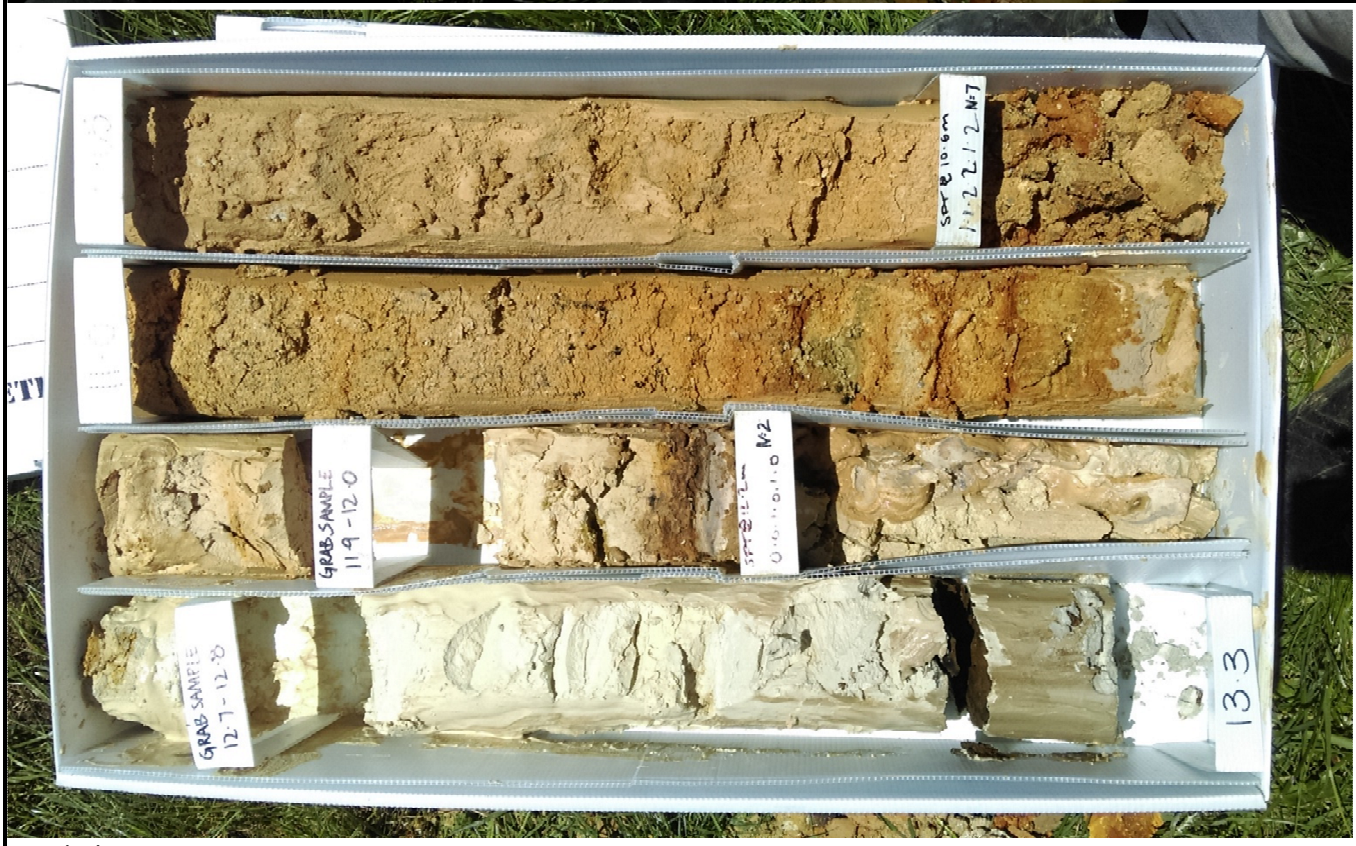

Borehole MBH06: 10.05 m to 13.3 m

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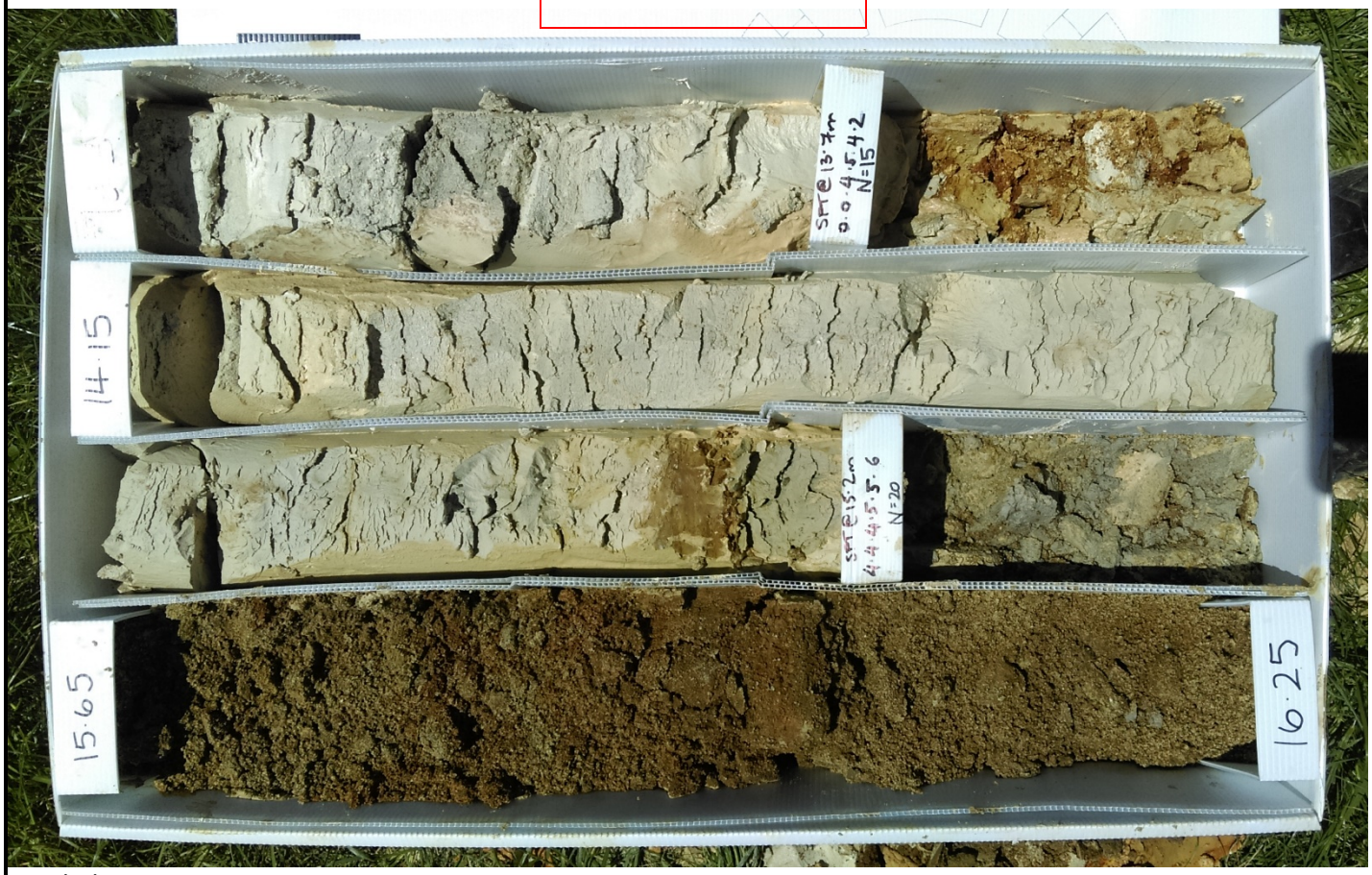
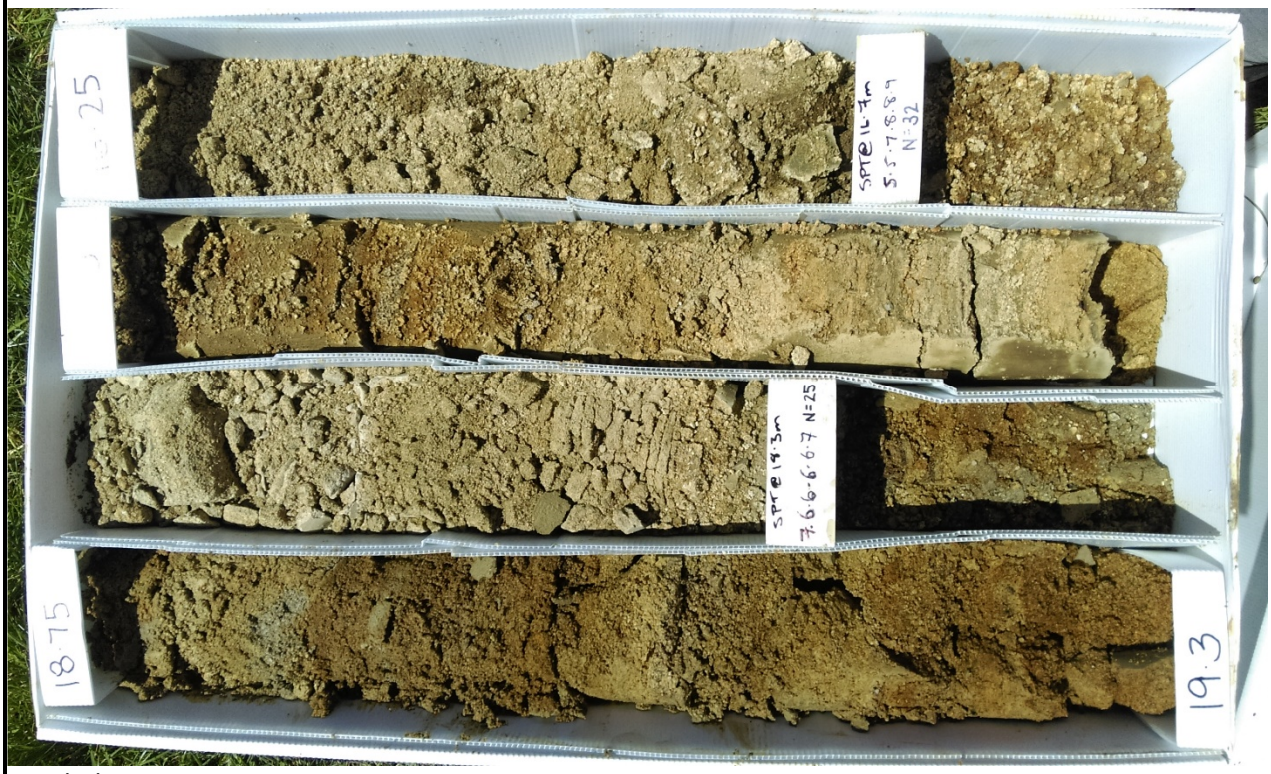


Borehole MBH06: 33.3 m to 16.25 m



Borehole MBH06: 16.25 m to 19.3 m

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Borehole MBH06: 19.3 m to 20.25 m

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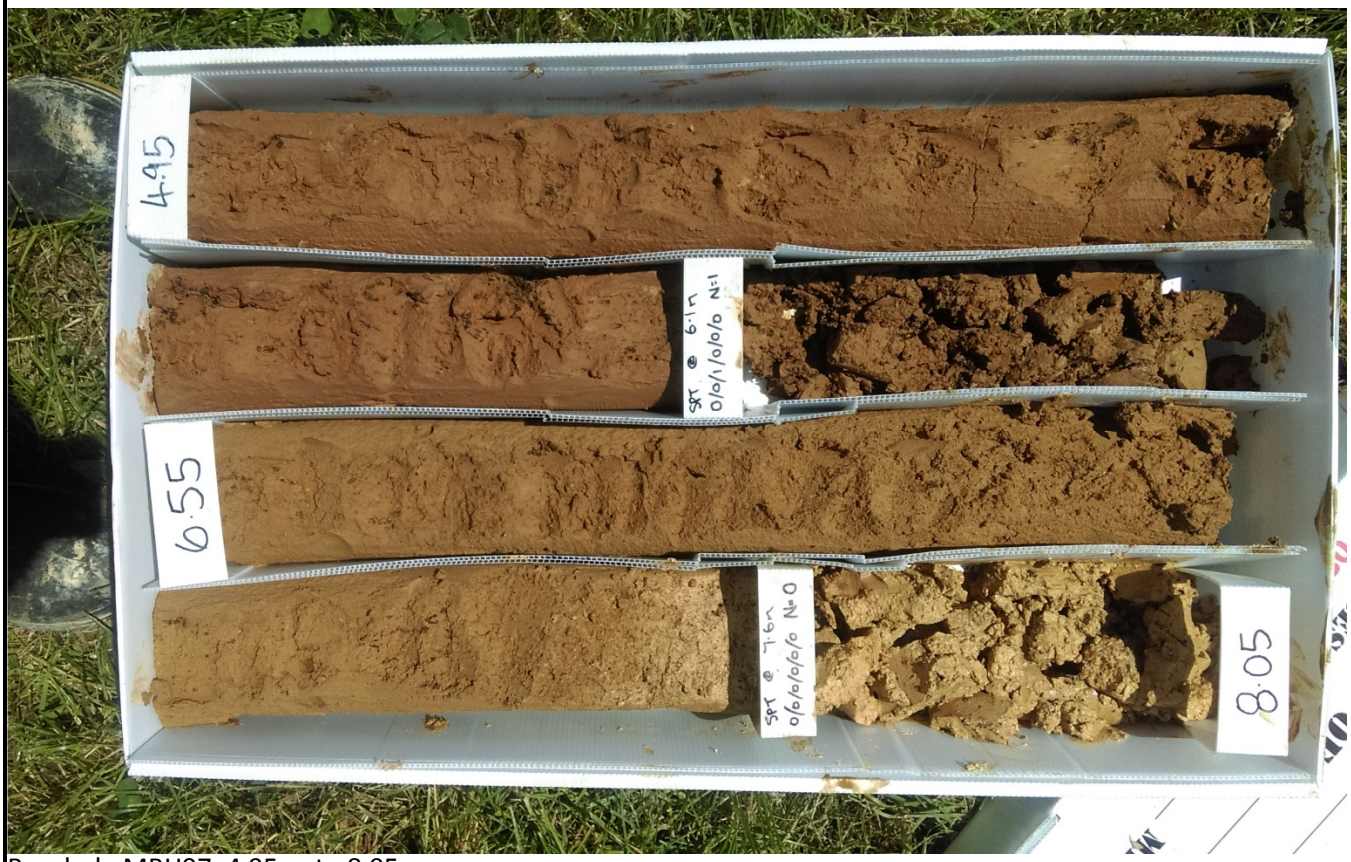
Borehole MBH07: 0.0 m to 4.95 m



Borehole MBH07: 4.95 m to 8.05 m

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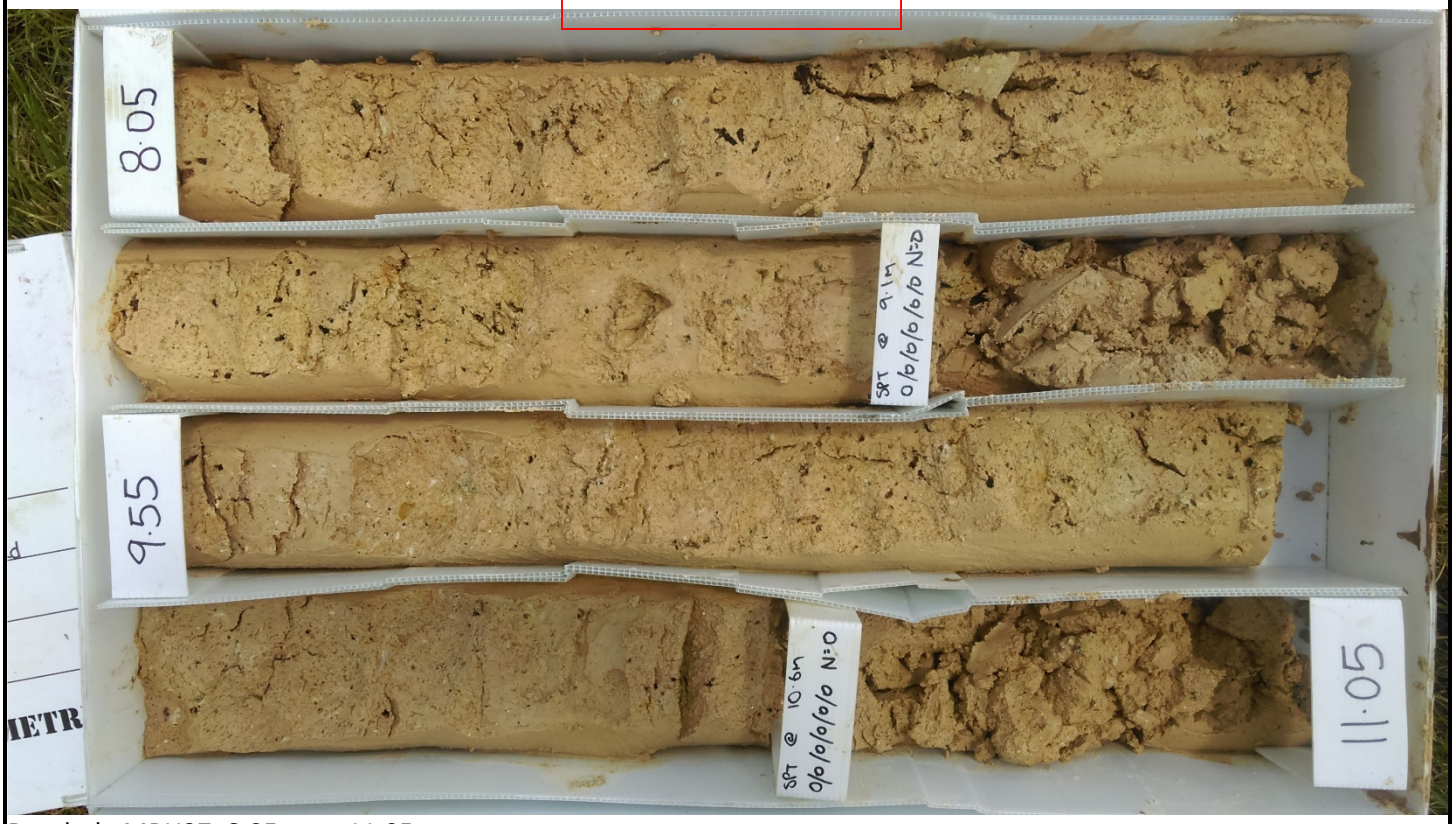

Borehole MBH07: 8.05 m to 11.05 m

Borehole MBH07: 11.05 m to 14.15 m

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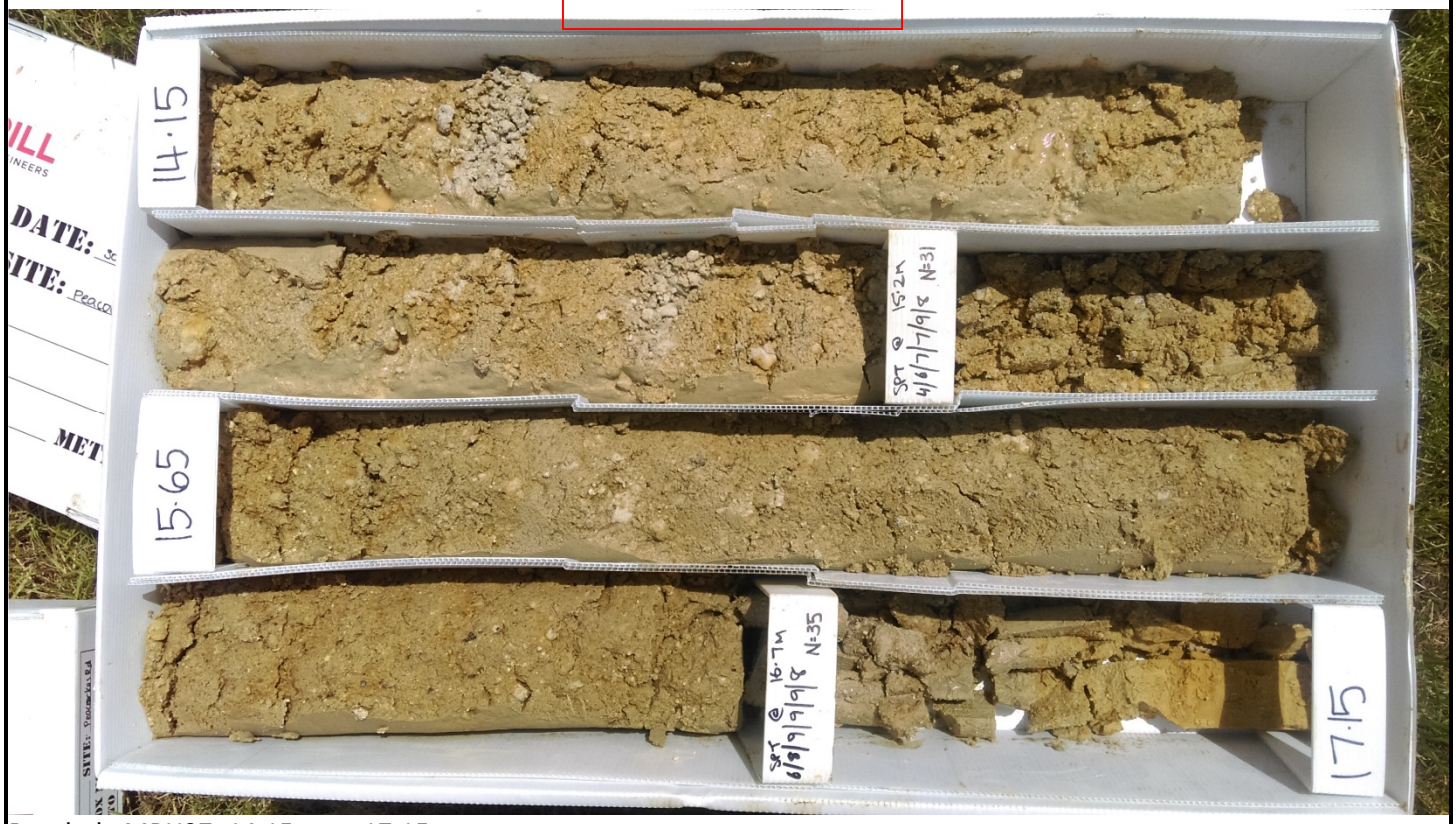

Borehole MBH07: 14.15 m to 17.15 m

Borehole MBH07: 17.15 m to 20.25 m

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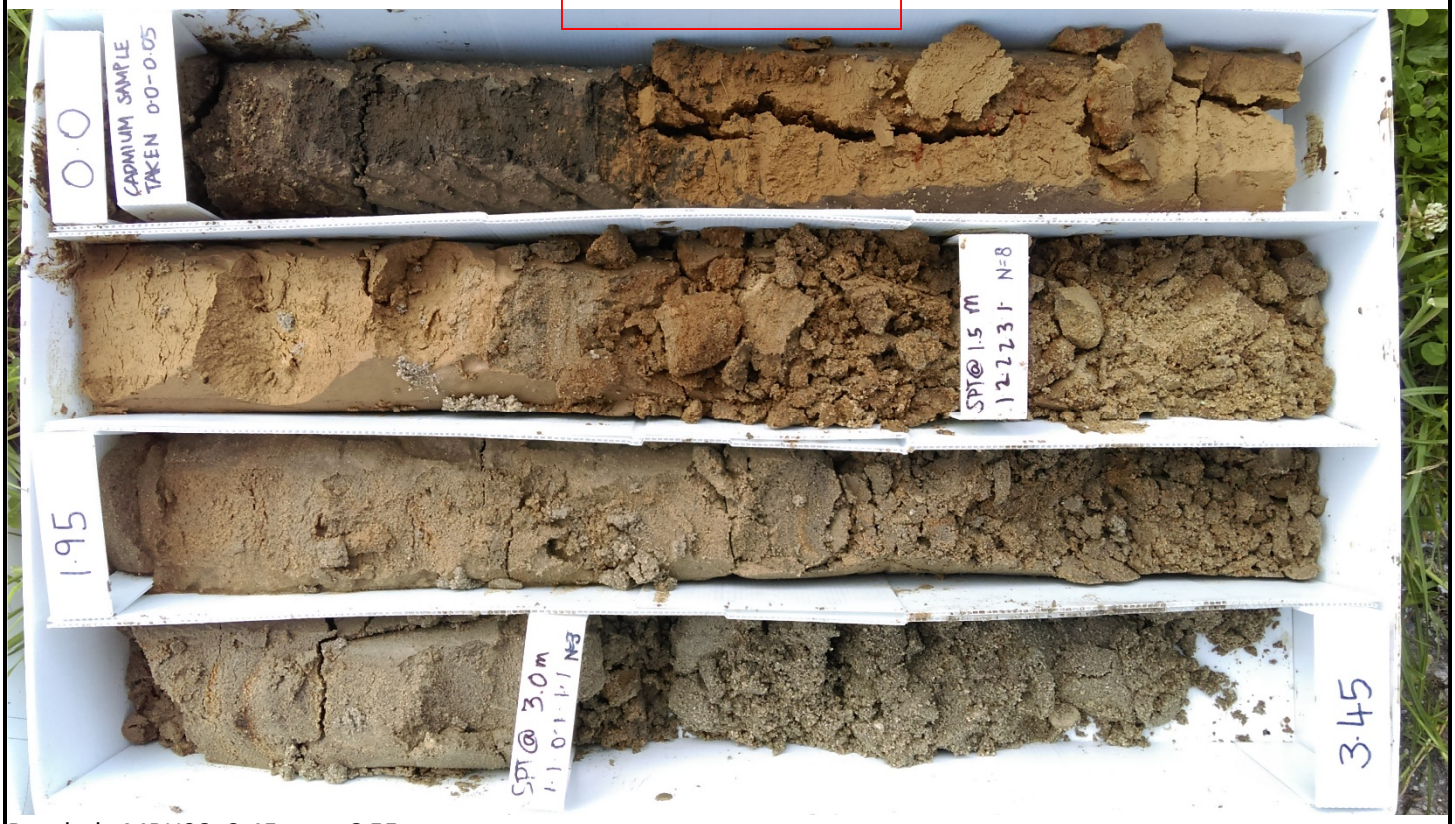

Borehole MBH08: 3.45 m to 6.55 m

Borehole MBH08: 3.45 m to 6.55 m

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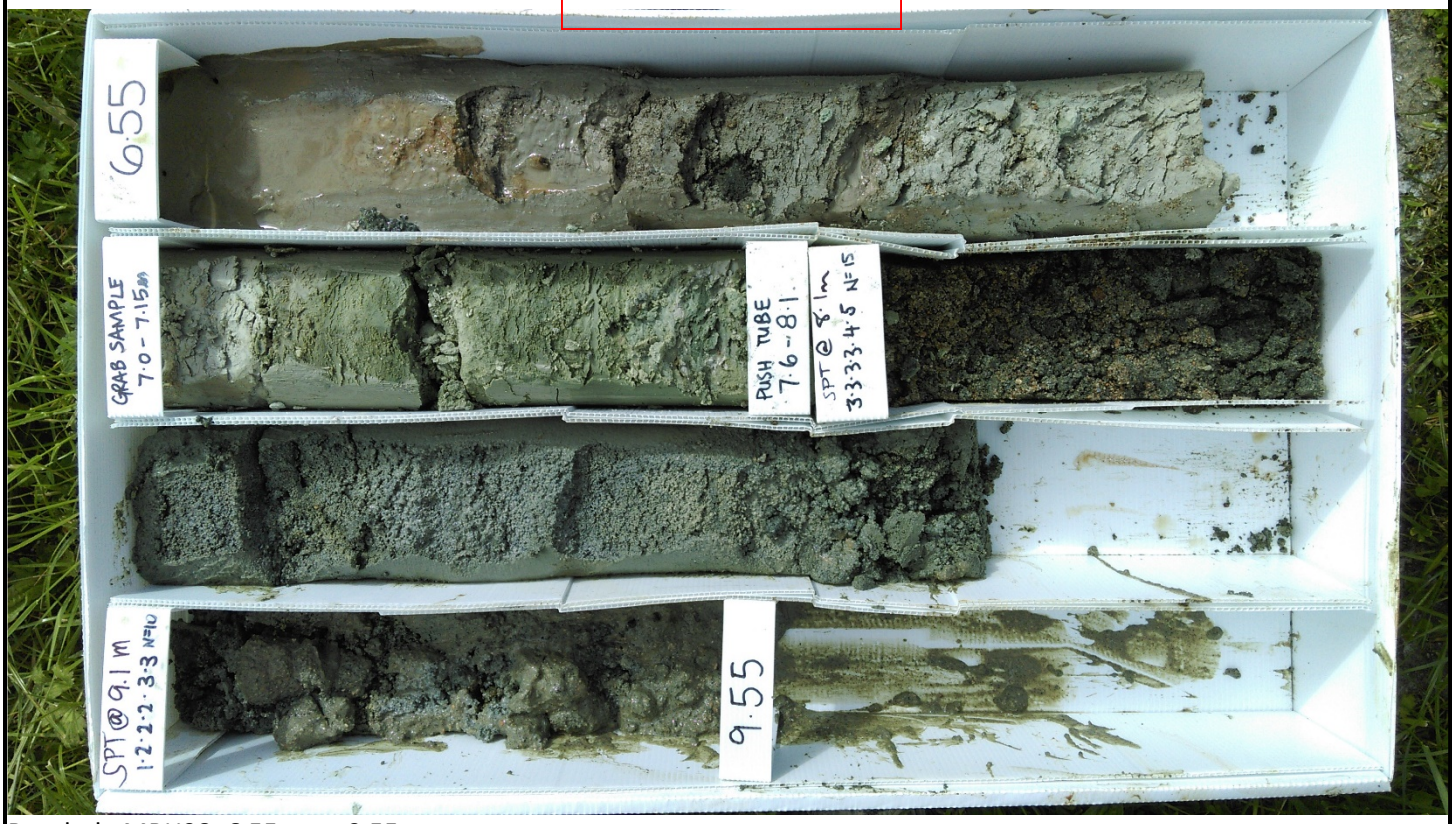
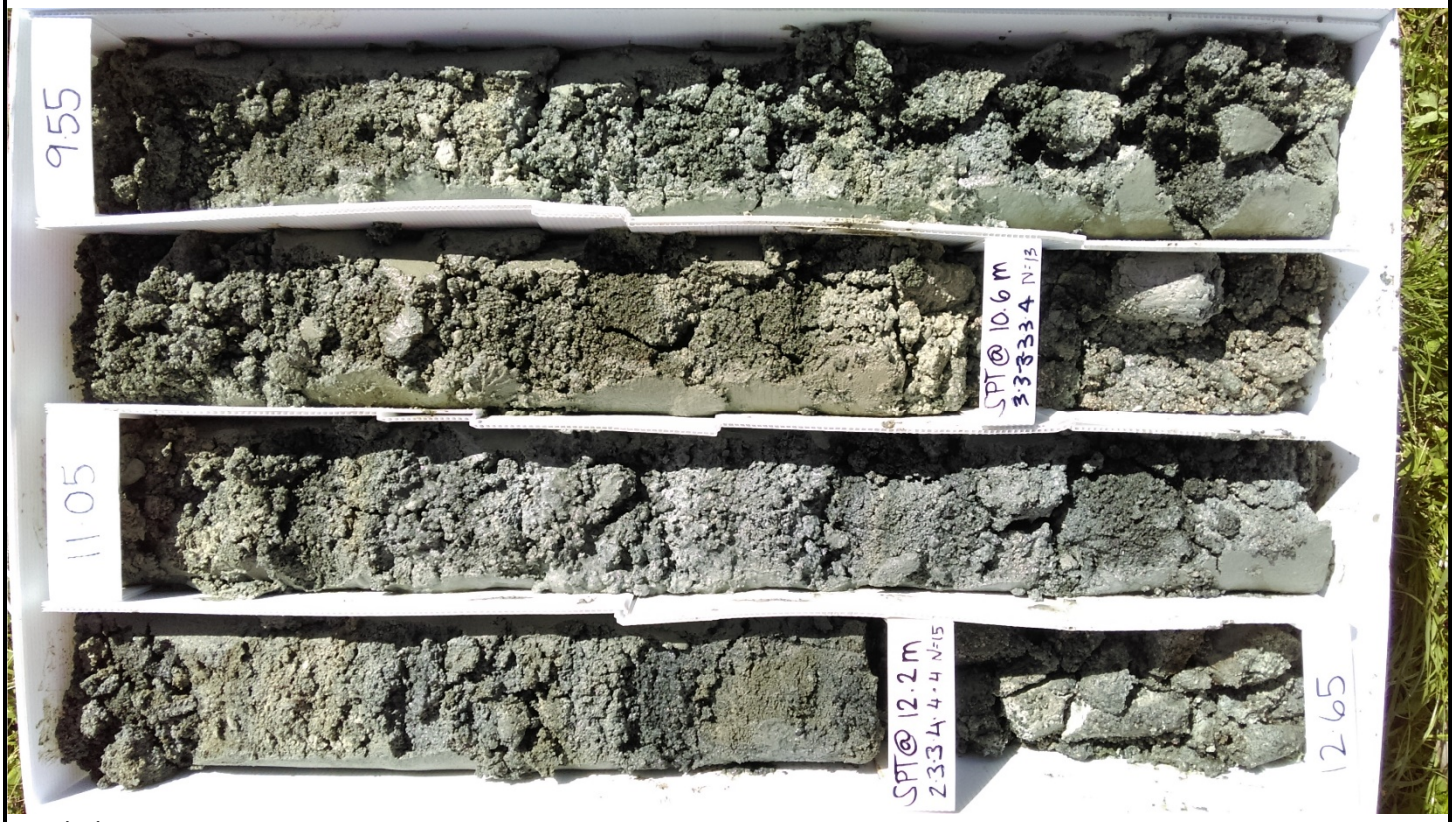


Borehole MBH08: 6.55 m to 9.55 m



Borehole MBH08: 9.55 m to 12.65 m

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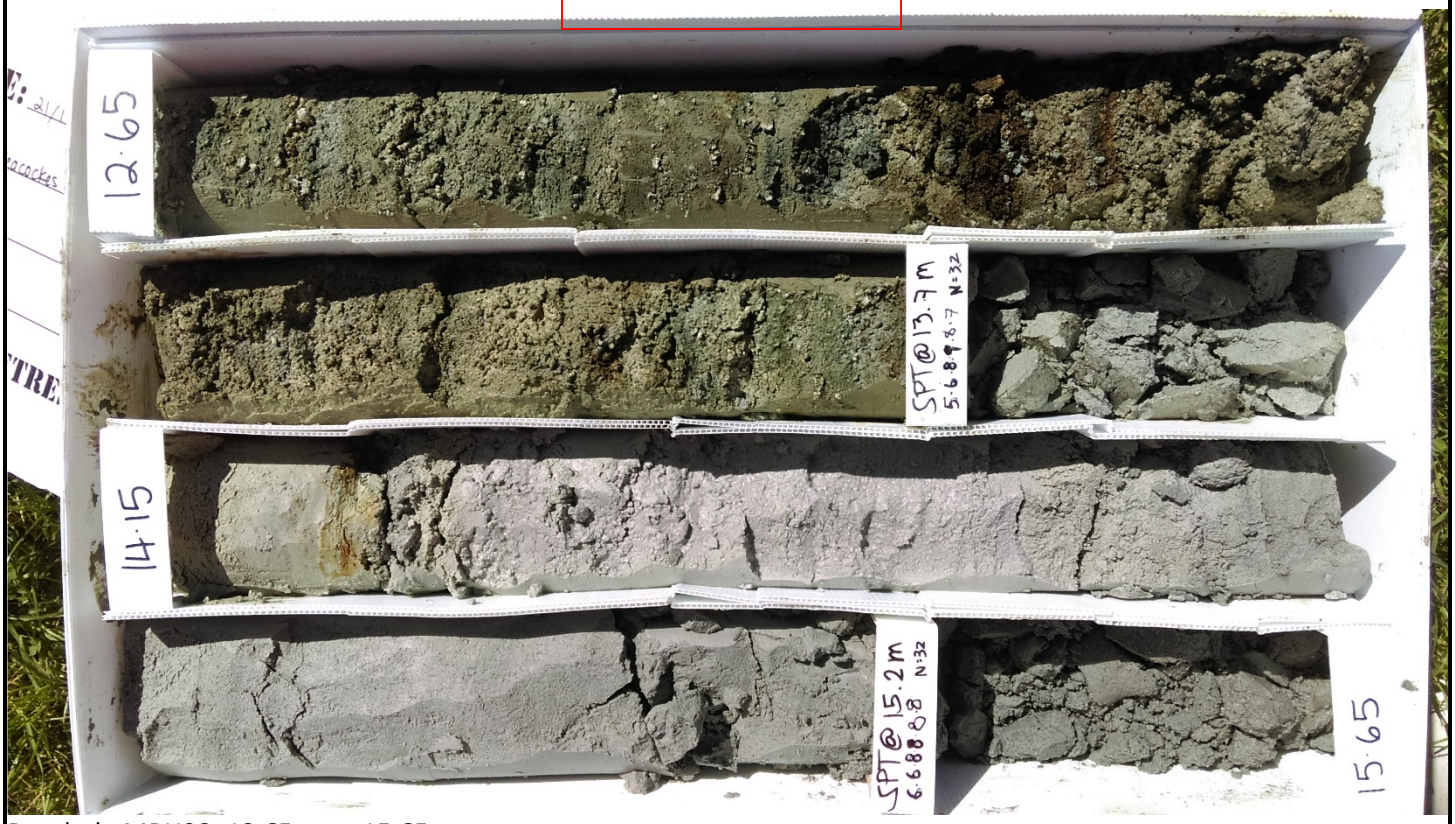
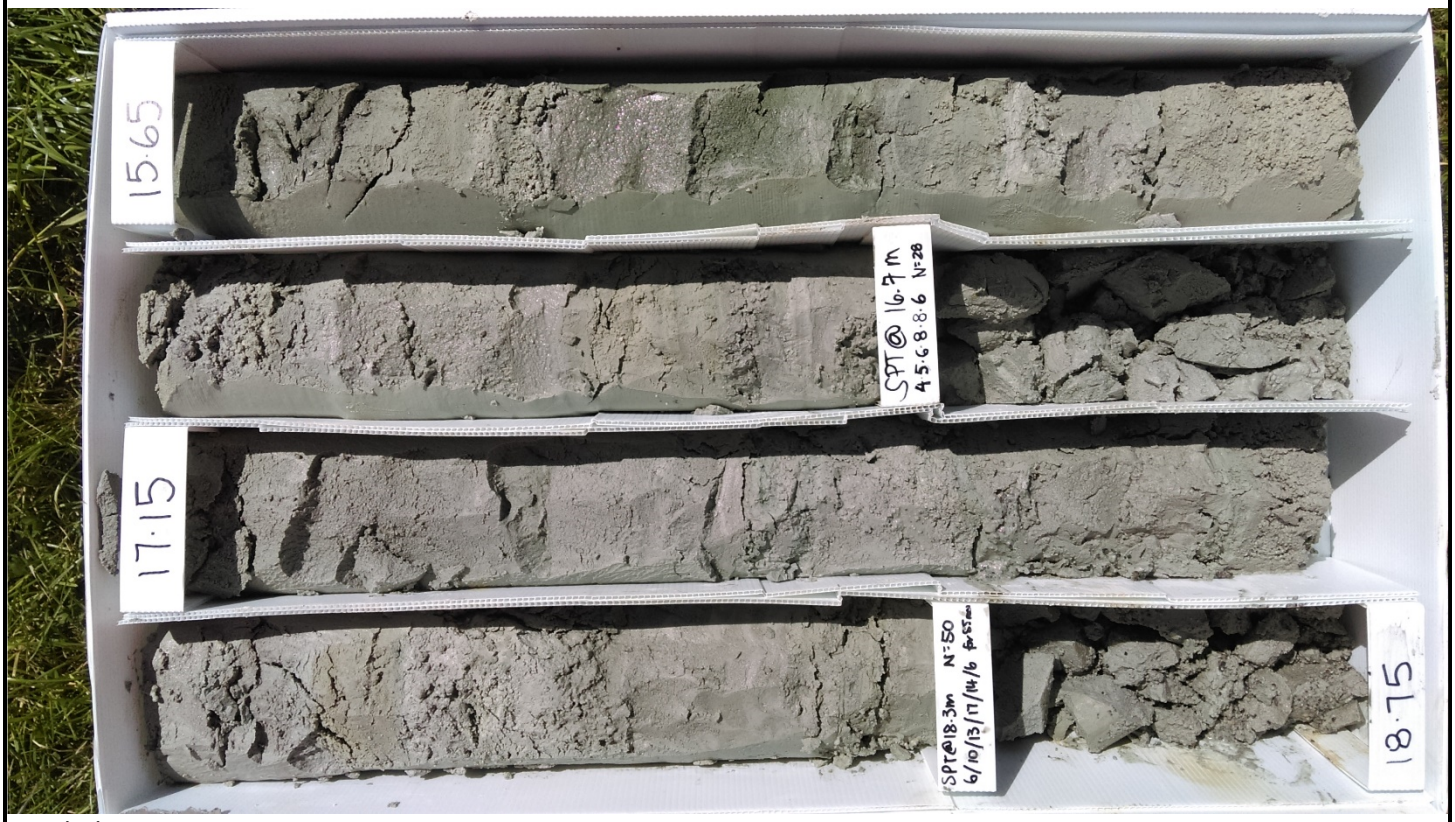


Borehole MBH08: 12.65 m to 15.65 m



Borehole MBH08: 15.65 m to 18.75 m

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Borehole MBH08: 18.75 m to 20.25 m

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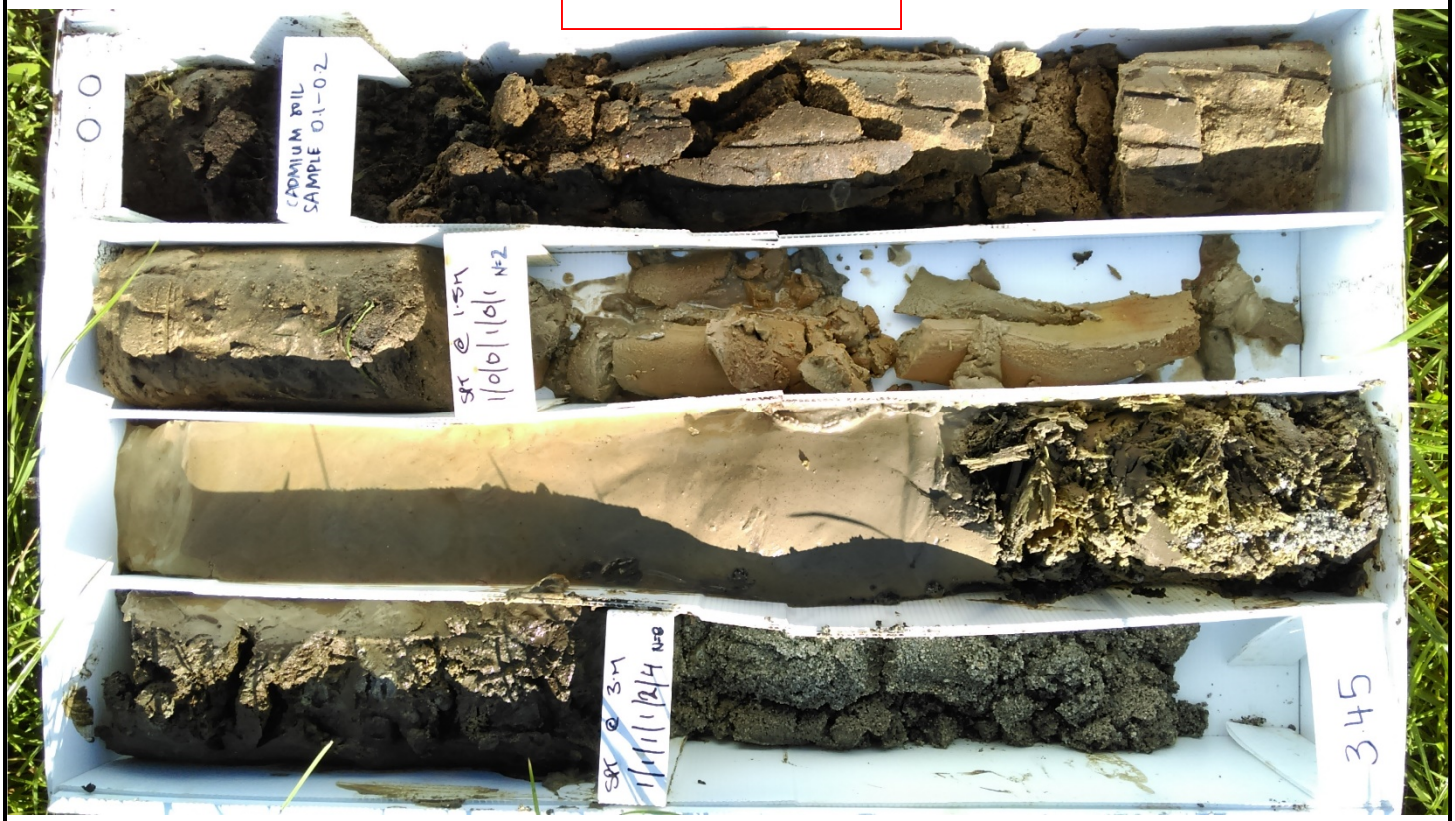
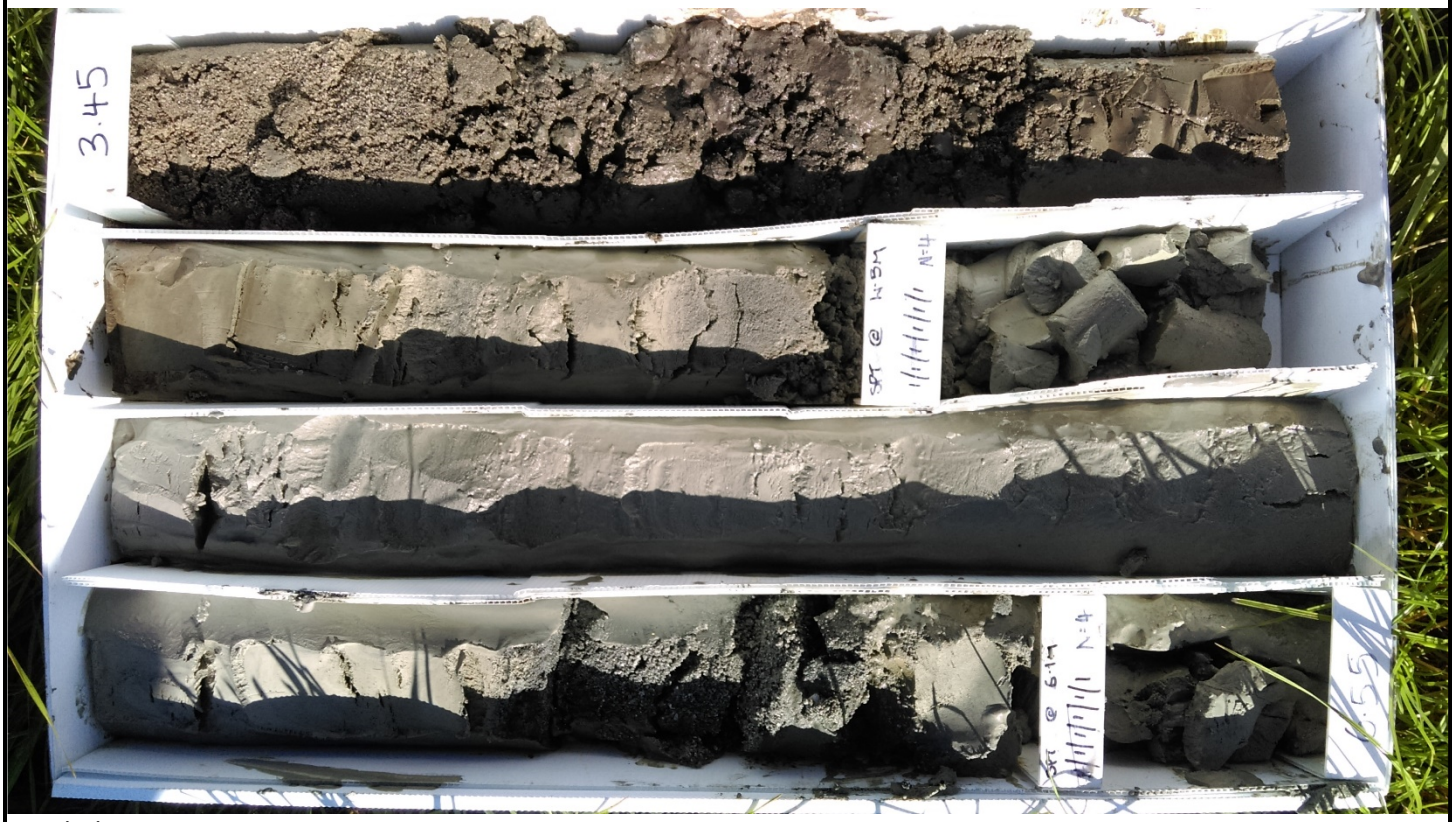


Borehole MBH09: 0.0 m to 3.45 m



Borehole MBH09: 3.45 m to 6.55 m

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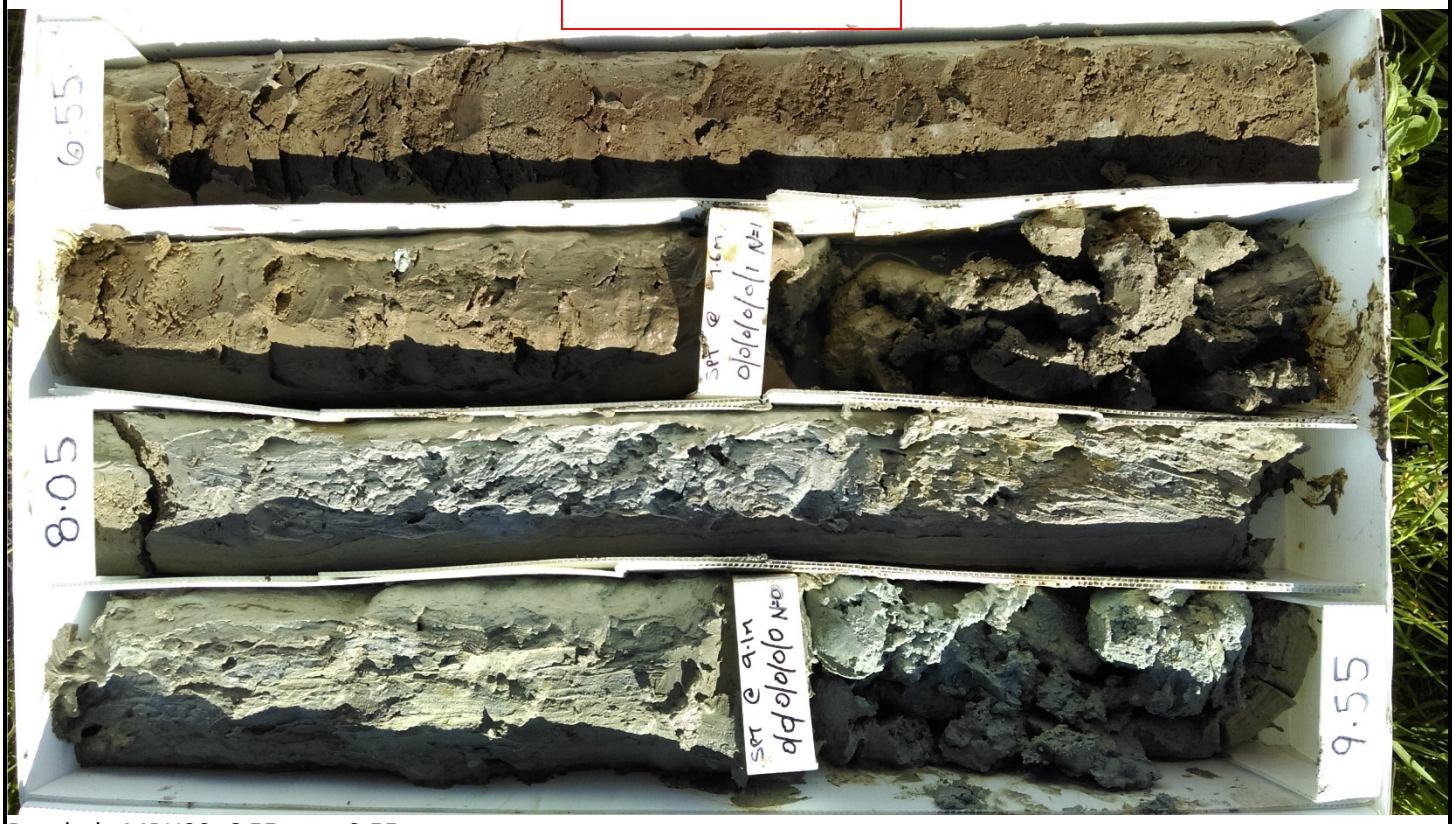
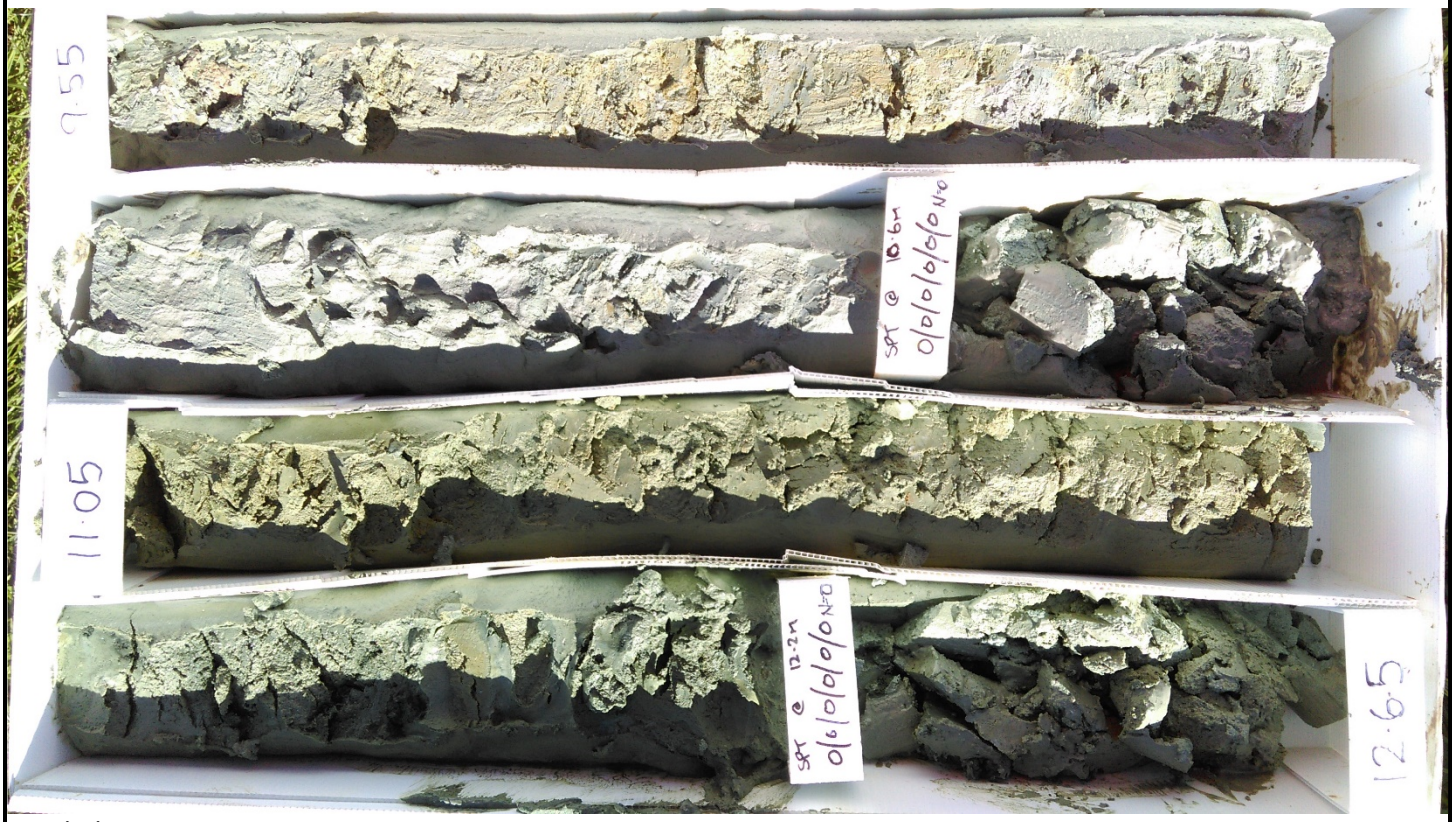


Borehole MBH09: 6.55 m to 9.55 m



Borehole MBH09: 9.55 m to 12.65 m

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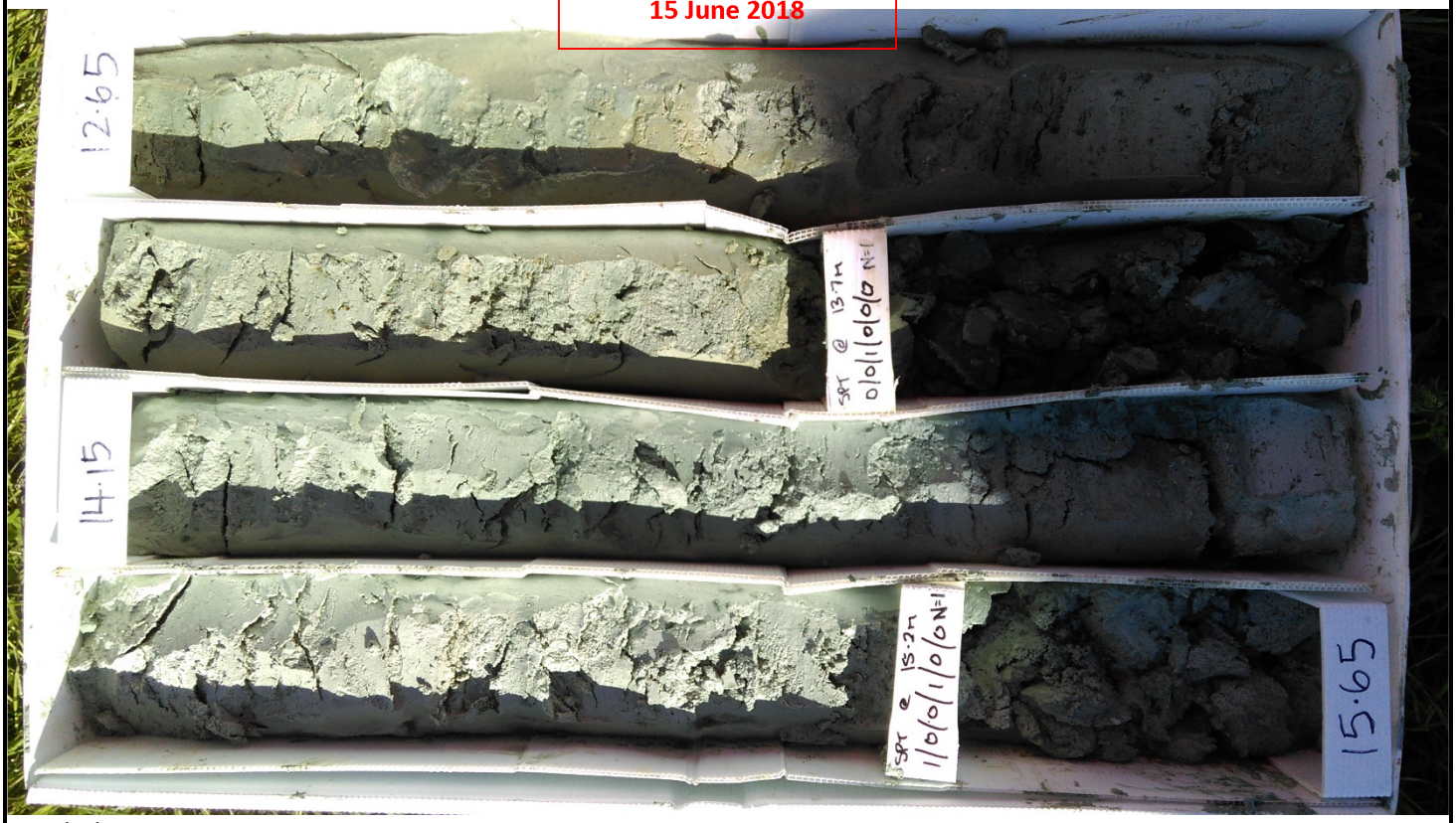
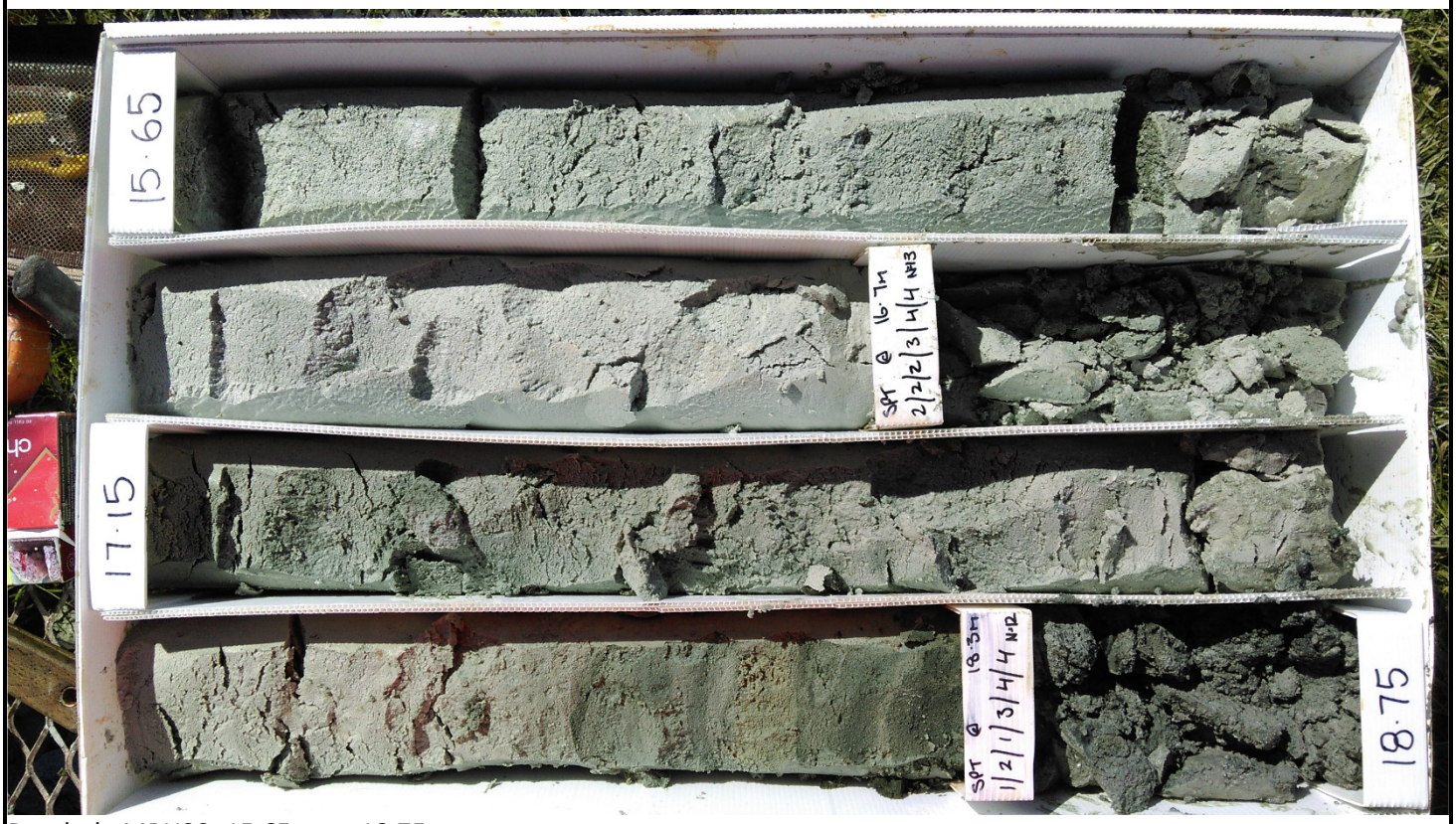


Borehole MBH09: 12.65 m to 15.65 m



Borehole MBH09: 15.65 m to 18.75 m

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Borehole MBH09: 18.75 m to 20.25 m

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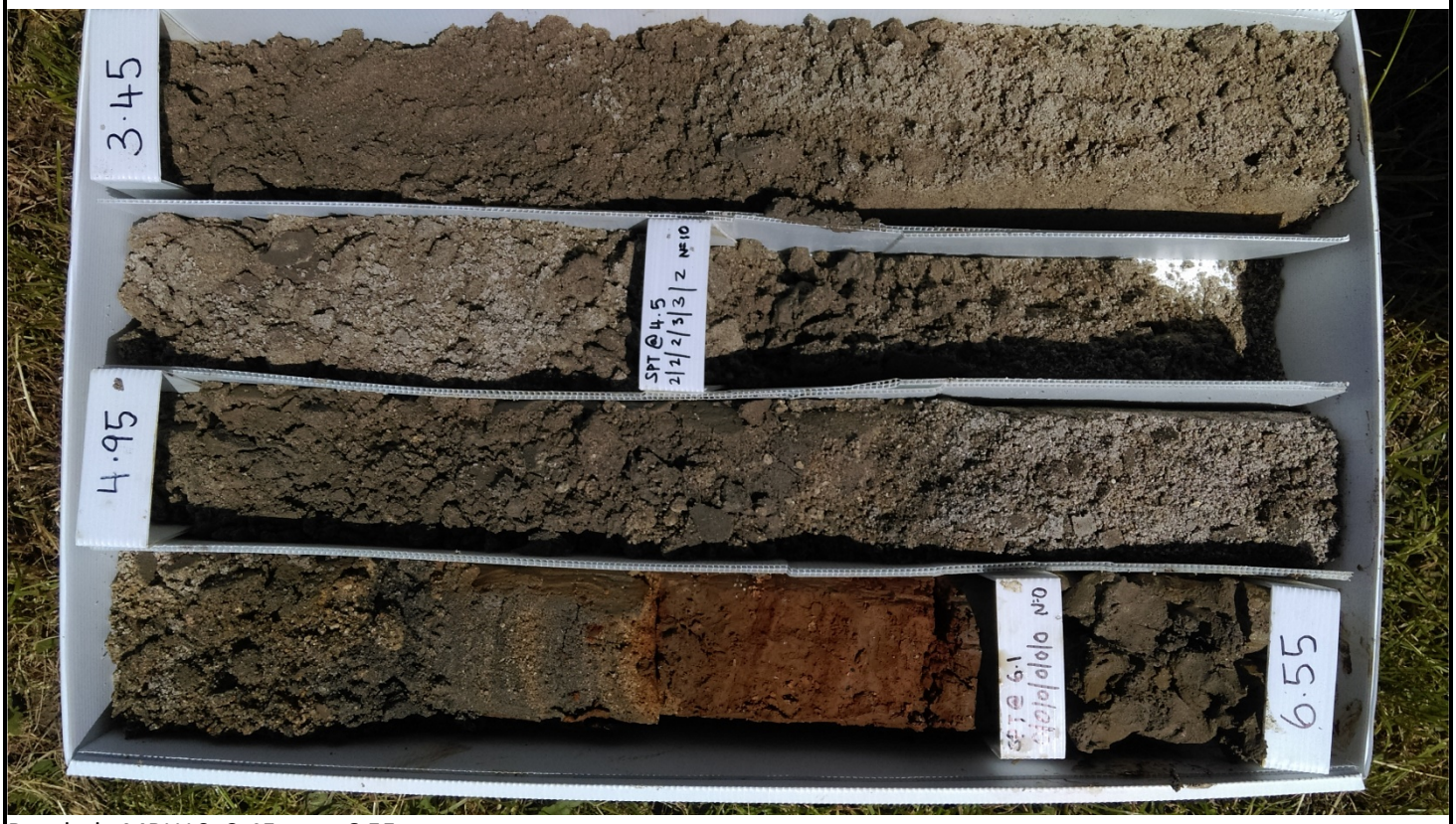
Borehole MBH10: 0.0 m to 3.45 m



Borehole MBH10: 3.45 m to 6.55 m

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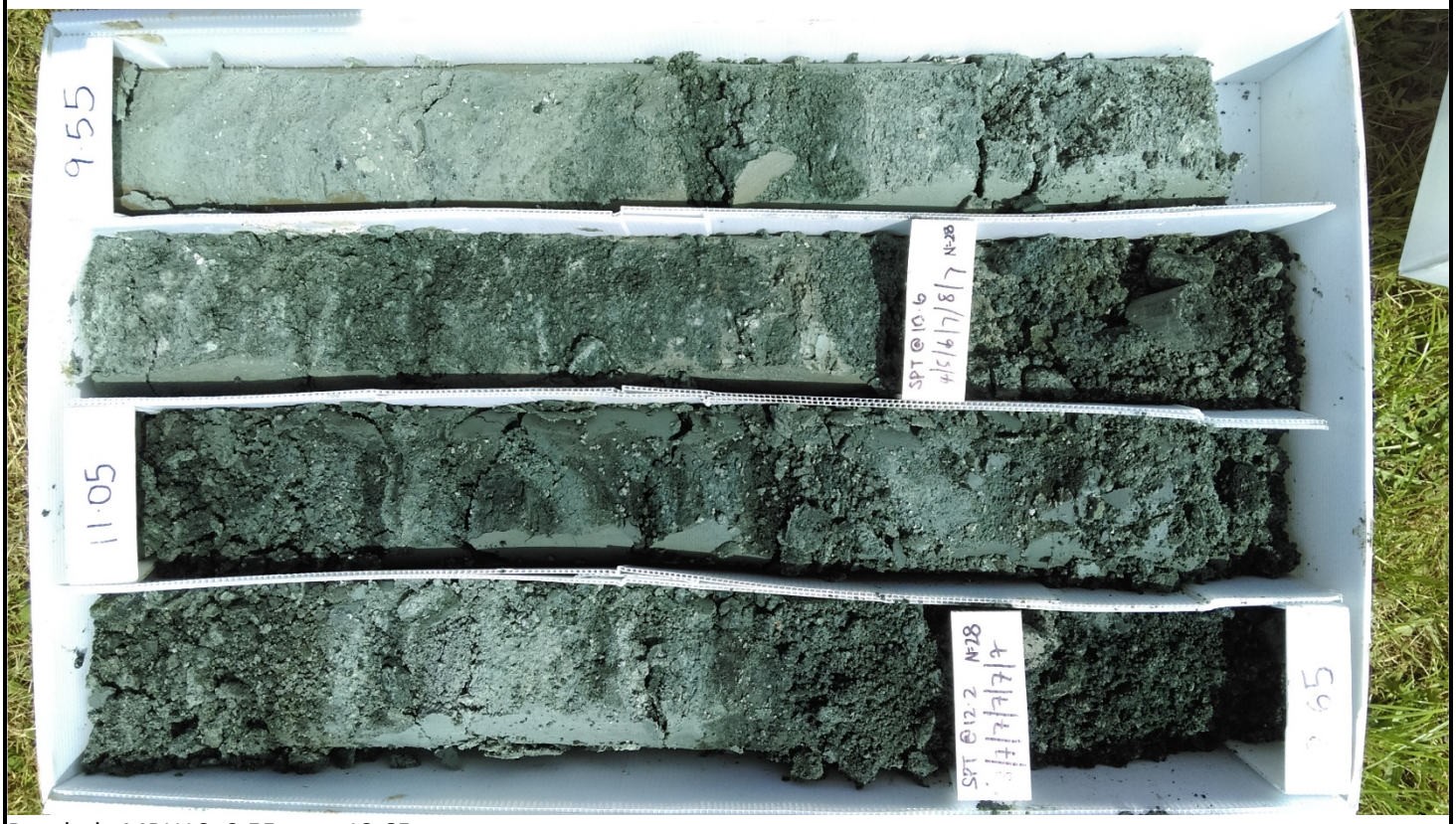
Borehole MBH10: 6.55 m to 9.55 m



Borehole MBH10: 9.55 m to 12.65 m

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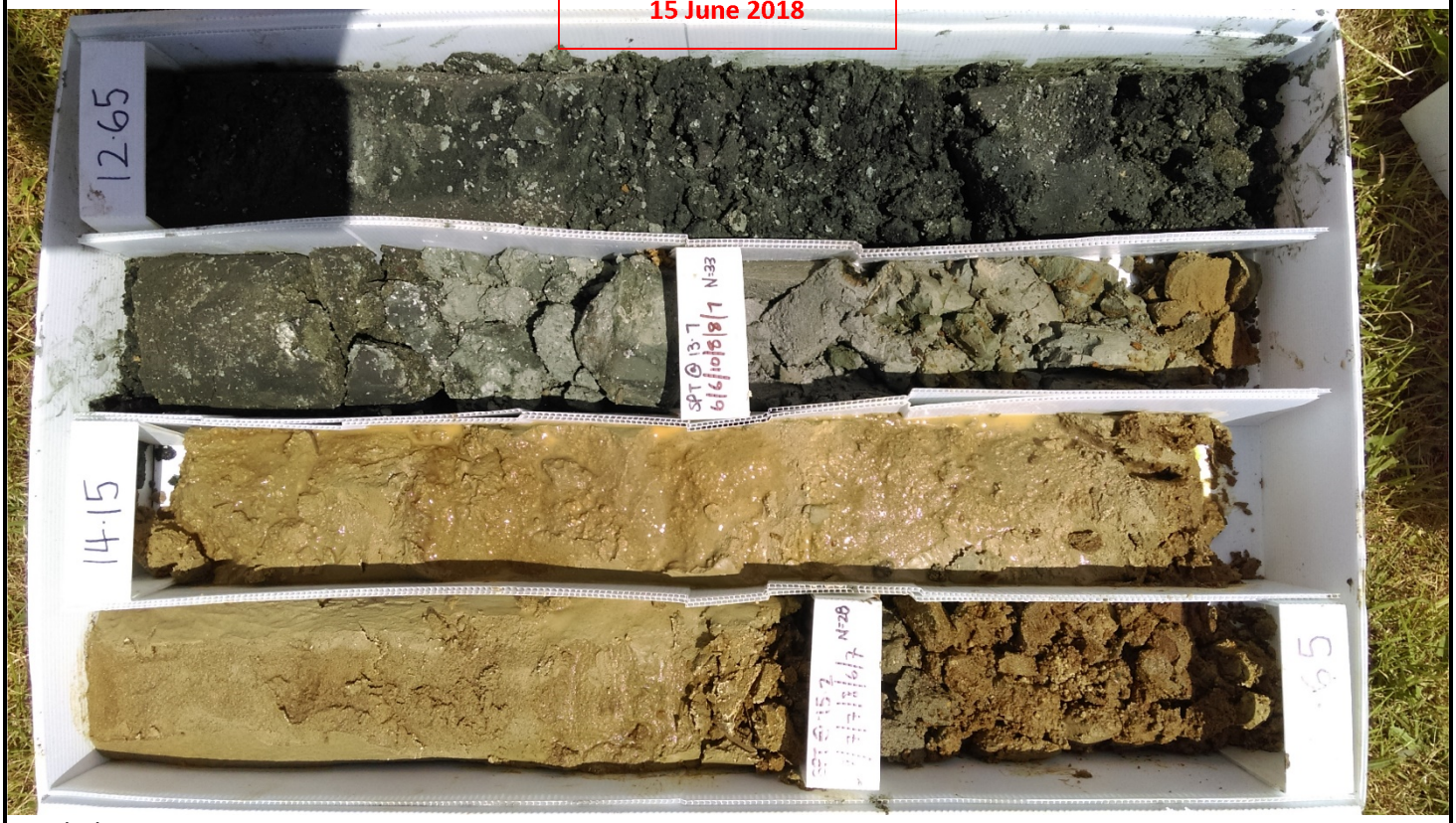
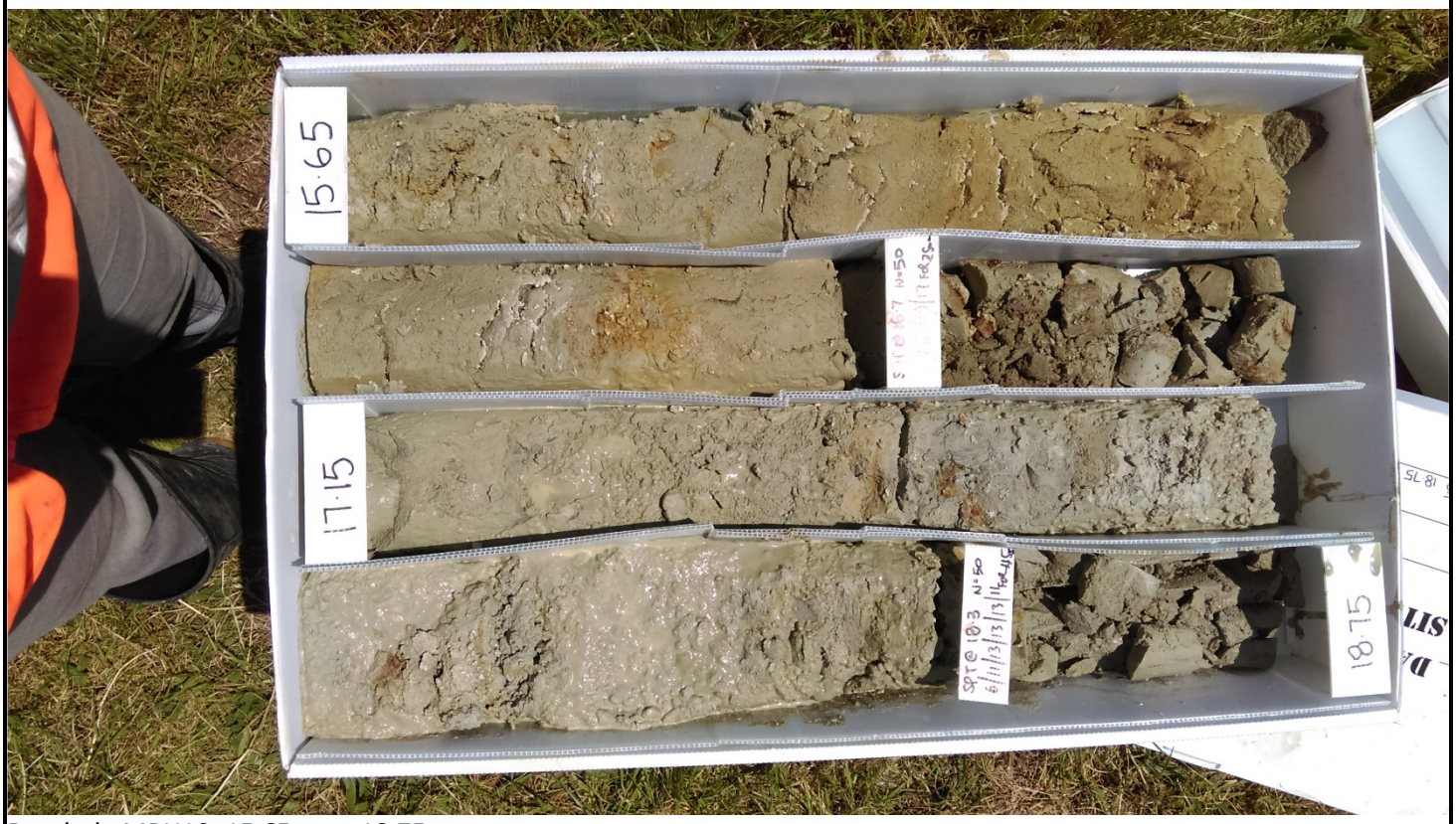


Borehole MBH10: 12.65 m to 15.65 m



Borehole MBH10: 15.65 m to 18.75 m

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Borehole MBH10: 18.75 m to 20.25 m

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