EXPLANATION OF SYMBOLS AND TERMS

The symbols and terms used on the test hole logs to summarize the results of the field investigation and the laboratory testing are described on the following sheets.

Soils are classified and described according to their engineering properties and behaviour. The descriptions applied to the various soil units as shown on the logs follow the Unified Soil Classification system with slight modification to recognize inorganic clays to medium plasticity (CI). Such descriptions are judgmental in nature and may differ in detail from that actually encountered in the field. The descriptions noted in the logs from test holes are based solely on inspections of soil and rock samples recovered or cuttings observed. The actual nature of the materials between samples may vary.

Laboratory tests have been performed on the various samples noted, following standard testing procedures or protocol unless otherwise noted. The test results are intended to provide a general indication of some of the engineering properties of the material.

ABBREVIATIONS

w or MC	Moisture content (ASTM D2216)
W_P or PL	Plastic limit (ASTM D4318)
W_L or LL	Liquid limit (ASTM D4318)
I_P or PI	Plasticity Index
NP	Non-plastic soil
SH	Shelby tube sample
AU	Auger sample
B	Bulk Sample
UD	Undisturbed Sample
RC	Rock Core Sample
SPT	Standard Penetration Test
VST	Vane Shear Test

PP	Pocket Penetrometer
γ	Unit weight
γ_d	Dry unit weight
ρ	Density
ρ_d	Dry density
q_u	Unconfined compressive strength
C_u	Undrained shear strength
SO_4	Concentration of water-soluble sulphates
TCR	Total Core Recovery
RQD	Rock Quality Index
SCR	Solid Core Recovery
FI	Fracture Index

SIZE RANGES OF SOIL COMPONENTS	
Component	Size Range mm (US Sieve)
Boulders	Over 300 (12 inch)
Cobbles	75 (3 inch) to 300 (12 inch)
Gravel:	
Coarse	19 (3/4 inch) to 75 (3 inch)
Fine	5 (#4) to 19 (3/4 inch)
Sand:	
Coarse	2 (#10) to 5 (#4)
Medium	0.4 (#40) to 2 (#10)
Fine	0.08 (#200) to 0.4 (#40)
Clay and Silt	Less than 0.08 (#200)

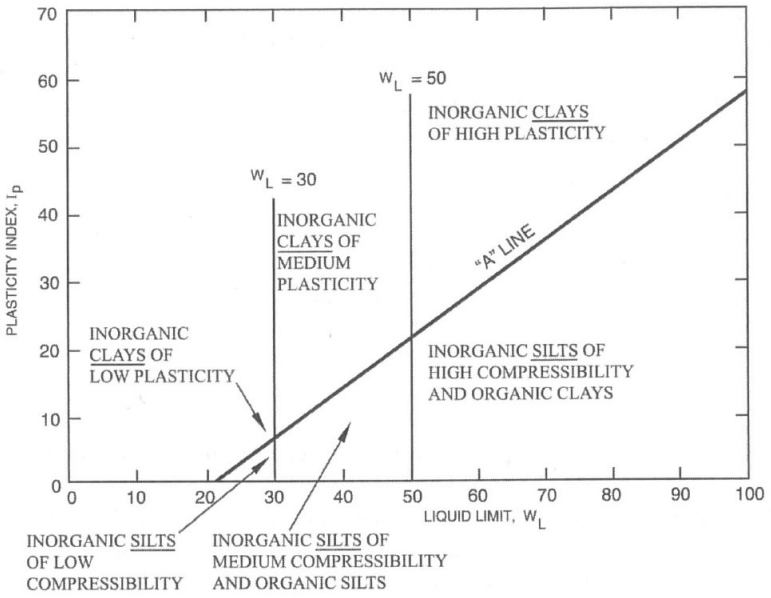
SECONDARY CONSTITUENTS	
Term	Percentage
and	35% - 50%
y/ey	20% - 35%
some	10% - 20%
trace	0 – 10%

CONSISTENCY OF FINE GRAINED SOILS			
Term	Undrained Shear Strength (kPa)	SPT N	Description
Very soft	< 12	< 2	Easily penetrated with fist
Soft	12 – 25	2 – 4	Easily penetrated with thumb
Firm	25 – 50	4 – 8	Moderate effort to penetrate with thumb
Stiff	50 – 100	8 – 15	Great effort to indent with thumb
Very Stiff	100 – 200	15 – 30	Easily indented with thumbnail
Hard	> 200	> 30	Effort required to indent with thumbnail

DENSITY OF COARSE GRAINED SOILS		
Term	SPT N	Approx. Relative Density (%)
Very loose	0 – 4	0 – 15
Loose	4 – 10	15 – 35
Compact	10 – 30	35 - 65
Dense	30 – 50	65 – 85
Very Dense	> 50	85 - 100

UNIFIED SOIL CLASSIFICATION SYSTEM (MODIFIED)

MAJOR DIVISION			GROUP SYMBOL	TYPICAL DESCRIPTION	LABORATORY CLASSIFICATION CRITERIA	
HIGHLY ORGANIC SOILS			PT	Peat and other highly organic soils	Strong colour or odor and fibrous texture	
COARSE-GRAINED SOILS MORE THAN HALF BY WEIGHT LARGER THAN 75 µm	GRAVELS MORE THAN HALF THE COARSE FRACTION LARGER THAN 4.75 mm	CLEAN GRAVELS (LESS THAN 5% FINES)	GW	Well-graded gravels, gravel-sand mixtures	$C_U=D_{60}/D_{10}$ >4	$C_C=(D_{30})^2/D_{10} \times D_{60}$ 1 to 3
			GP	Poorly graded gravels, gravel-sand mixtures	Not meeting all above requirements	
		GRAVELS WITH FINES (MORE THAN 12% FINES)	GM	Silty gravels, gravel-sand-silt mixtures	Atterberg limits below "A" line or PI < 4	
			GC	Clayey gravels, gravel-sand-clay mixtures	Atterberg limits above "A" line or PI > 7	
	SANDS MORE THAN HALF THE COARSE FRACTION LARGER THAN 4.75 mm	CLEAN SANDS (LESS THAN 5% FINES)	SW	Well-graded sands, gravelly sands	$C_U=D_{60}/D_{10}$ >6	$C_C=(D_{30})^2/D_{10} \times D_{60}$ 1 to 3
			SP	Poorly graded sands or gravelly sands	Not meeting all above requirements	
		SANDS WITH FINES (MORE THAN 12% FINES)	SM	Silty sands, sand-silt mixtures	Atterberg limits below "A" line or PI < 4	
			SC	Clayey sands, sand-clay mixtures	Atterberg limits above "A" line or PI > 7	
FINE-GRAINED SOILS MORE THAN HALF BY WEIGHT SMALLER THAN 75 µm	SILTS BELOW "A" LINE ON PLASTICITY CHART; NEGLIGIBLE ORGANIC CONTENT		ML	Inorganic silts and very fine sands, rock flour, silty sands of slight plasticity	LL < 50	SEE PLASTICITY CHART BELOW
			MH	Inorganic silts, micaceous or diatomaceous, fine sandy or silty soils	LL > 50	
	CLAYS ABOVE "A" LINE ON PLASTICITY CHART; NEGLIGIBLE ORGANIC CONTENT		CL	Inorganic clays of low plasticity, gravelly, sandy, or silty clays	LL < 30	
			CI	Inorganic clays of medium plasticity, silty clays	30 < LL < 50	
			CH	Inorganic clays of high plasticity	LL > 50	
	ORGANIC SILTS AND CLAYS BELOW "A" LINE ON PLASTICITY CHART		OL	Organic silts and organic silty clays of low plasticity	LL < 50	
			OH	Organic clays of high plasticity	LL > 50	



an Englobe company

TEST PIT No : 22TP401

CLIENT	Eastern Irrigation District	PROJECT NAME	Snake Lake Reservoir Expansion
PROJECT NUMBER	1560-193-00	PROJECT LOCATION	NE 1/4 32-19-16
DATE STARTED	06/23/2022 COMPLETED 06/23/2022	GROUND ELEVATION	775.36m N 5612438.700 E 414258.500
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Moisture Content (%)	MOISTURE CONTENT / PLASTIC - LIQUID / SPT (N) Blows/300 mm (10 20 30 40) / POCKET PEN (kPa) (100 200 300 400)	REMARKS	Standpipe/ Instrument	Elevation (m)
0		TOPSOIL - 65 mm							775
		CLAY TILL, silty, some sand, trace gravel, dry, stiff, medium plastic, brown, suspect white sulphate inclusions		B1			1 m - Dispersivity Classification = ND3 1 m - Dry Density = 1766 kg/m3 Optimum Moisture = 16.7%		
1									774
2									773
3		SHALE (Weathered), clay and silt, some sand, highly weathered, light brown to dark grey mottling, some oxidation staining, damp, high plastic, extremely weak, finely fissured							772
4		End of Borehole @4.0 m		B2					771
5									770

Notes:

North borrow search. Backfilled with uncompacted cuttings.

Logged By: C. Tams

Reviewed By: T. Curtis

16/11/2022

an Englobe company

TEST PIT No : 22TP402

CLIENT	Eastern Irrigation District	PROJECT NAME	Snake Lake Reservoir Expansion
PROJECT NUMBER	1560-193-00	PROJECT LOCATION	NE 1/4 32-19-16
DATE STARTED	06/23/2022 COMPLETED 06/23/2022	GROUND ELEVATION	779.89m N 5612509.400 E 414499.700
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Moisture Content (%)	● MOISTURE CONTENT ⊢ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm (10 20 30 40) (100 200 300 400) ▲ POCKET PEN (kPa)	REMARKS	Standpipe/ Instrument	Elevation (m)
0		CLAY TILL, some rounded gravel up to 80 mm, some sand, trace ironstone inclusions up to 350 mm, trace rounded boulders up to 470 mm, trace silt, damp, stiff, low to medium plastic, greyish brown, some oxidation staining, gypsum crystals		B1					779
1									
2		SHALE (Weathered), silt and clay, trace sand, highly weathered, dark grey, moist, high plastic, extremely weak to hard soil, finely fissured							778
3									777
4		End of Borehole @4.0 m		B2					776
5									775
									774

Notes:

North borrow search. Backfilled with uncompacted cuttings.

Logged By: C. Tams

Reviewed By: T. Curtis

an Englobe company

TEST PIT No : 22TP403

CLIENT	Eastern Irrigation District	PROJECT NAME	Snake Lake Reservoir Expansion
PROJECT NUMBER	1560-193-00	PROJECT LOCATION	NE 1/4 32-19-16
DATE STARTED	06/23/2022 COMPLETED 06/23/2022	GROUND ELEVATION	779.47m N 5612554.700 E 414640.700
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL - 50 mm					779
	CLAY TILL, gravely, silty, some sand, rounded cobbles up to 300 mm, dry, firm, medium to high plastic, grey, suspect white sulphate inclusions, trace completely weathered mudstone					
1	...1.00m - 500 mm boulder		B1		1.3 m - EC: 6.0 dS/m 1.3 m - SAR: 8.0 1.3 m - pH: 8.2 1.3 m - Dry Density = 1761 kg/m3 Optimum Moisture = 17.3%	778
2	...2.00m - oxidized shale seams					777
3						776
4	SHALE (Weathered), clay and silt, trace sand, highly weathered, light brown to dark grey mottling, damp, high plastic, extremely weak, blocky, trace bentonite seams		B2			775
	End of Borehole @4.2 m					
5						774

● MOISTURE CONTENT
⊢ PLASTIC - LIQUID
■ SPT (N) Blows/300 mm
10 20 30 40
100 200 300 400
▲ POCKET PEN (kPa)

Standpipe/ Instrument

Notes:

North borrow search. Backfilled with uncompacted cuttings.

Logged By: C. Tams

Reviewed By: T. Curtis

16/11/2022

an Englobe company

TEST PIT No : 22TP404

CLIENT	Eastern Irrigation District	PROJECT NAME	Snake Lake Reservoir Expansion
PROJECT NUMBER	1560-193-00	PROJECT LOCATION	NE 1/4 32-19-16
DATE STARTED	06/22/2022 COMPLETED 06/22/2022	GROUND ELEVATION	776.17m N 5612389.600 E 414786.700
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL - 60mm					776
	CLAY TILL, some completely weathered shale inclusions, silty, some gravel, boulders up to 750 mm, dry, firm, medium to high plastic, brownish grey, oxide staining, trace root hairs		B1		1 m - Dry Density = 1713 kg/m3 Optimum Moisture = 18.7%	775
1						
2	SHALE (Weathered), clay and silt, some sand, ironstone concretions, highly weathered, grey with oxidation staining, damp, high plastic, extremely weak to hard soil, blocky					774
3	...3.00m - becoming orange		B2		3.6 m - Dispersivity Classification = ND1 3.6 m - Dry Density = 1627 kg/m3 Optimum Moisture = 20.7%	773
	End of Borehole @3.7 m					
4						772
5						771

● MOISTURE CONTENT
⊢ PLASTIC - LIQUID
■ SPT (N) Blows/300 mm
10 20 30 40
100 200 300 400
▲ POCKET PEN (kPa)

Standpipe/ Instrument

Notes:

North borrow search. Backfilled with uncompacted cuttings.

Logged By: C. Tams

Reviewed By: T. Curtis

16/11/2022

an Englobe company

TEST PIT No : 22TP405

CLIENT	Eastern Irrigation District	PROJECT NAME	Snake Lake Reservoir Expansion
PROJECT NUMBER	1560-193-00	PROJECT LOCATION	NE 1/4 32-19-16
DATE STARTED	06/23/2022 COMPLETED 06/23/2022	GROUND ELEVATION	780.99m N 5612529.200 E 414908.300
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Moisture Content (%)	● MOISTURE CONTENT ⊢ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm (10 20 30 40) (100 200 300 400) ▲ POCKET PEN (kPa)	REMARKS	Standpipe/ Instrument	Elevation (m)
0		TOPSOIL - 60 mm							780
		CLAY TILL, silty, gravely, some sand, cobbles up to 220 mm, dry, firm to stiff, medium plastic, grey, suspect white sulphate inclusions		B1			1.2 m - EC: 3.7 dS/m 1.2 m - SAR: 2.5 1.2 m - pH: 7.9 1.2 m - Dry Density = 1771 kg/m3 Optimum Moisture = 15.6%		
1									779
2									778
3									777
4				B2					776
5		SHALE, clay and silt, some sand, medium weathered, grey, some oxidation staining, damp, medium plastic, very weak, blocky, trace gypsum crystals End of Borehole @5.0 m							

Notes:

North borrow search. Backfilled with uncompacted cuttings.

Logged By: C. Tams

Reviewed By: T. Curtis

16/11/2022

an Englobe company

TEST PIT No : 22TP406

CLIENT	Eastern Irrigation District	PROJECT NAME	Snake Lake Reservoir Expansion
PROJECT NUMBER	1560-193-00	PROJECT LOCATION	NE 1/4 32-19-16
DATE STARTED	06/22/2022 COMPLETED 06/22/2022	GROUND ELEVATION	777.61m N 5612396.300 E 415042.000
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Moisture Content (%)	MOISTURE CONTENT / PLASTIC - LIQUID / SPT (N) Blows/300 mm (10 20 30 40) / POCKET PEN (kPa) (100 200 300 400)	REMARKS	Standpipe/ Instrument	Elevation (m)
0		TOPSOIL - 100mm							777
		CLAY TILL, some completely weathered shale inclusions, silty, some gravel, some cobbles up to 340 mm, dry, soft, low to medium plastic, light brown to dark grey mottling, some oxidation staining		B1			1 m - Dispersivity Classification = ND2 1 m - Organic Content = 5.8% 1 m - Dry Density = 1740 kg/m3 Optimum Moisture = 17.5%		
1									776
		...1.50m - no cobbles							
		SHALE (Weathered), clay and silt, some sand, highly weathered, light brown to dark grey mottling, oxidation staining, dry, high plastic, very weak							
2									775
3									
		End of Borehole @3.6 m							774
4									773
5									772

Notes:

North borrow search. Backfilled with uncompacted cuttings.

Logged By: C. Tams

Reviewed By: T. Curtis

16/11/2022

an Englobe company

TEST PIT No : 22TP407

CLIENT	Eastern Irrigation District	PROJECT NAME	Snake Lake Reservoir Expansion
PROJECT NUMBER	1560-193-00	PROJECT LOCATION	NE 1/4 32-19-16
DATE STARTED	06/22/2022 COMPLETED 06/22/2022	GROUND ELEVATION	776.98m N 5612493.600 E 415254.400
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
	TOPSOIL (60 mm)					
	CLAY TILL, silt, some sand, trace gravel, some rounded cobbles up to 300 mm, trace sand, damp, stiff, medium plastic, light brown to brown, oxide specs					
1			B1		1 m - Dry Density = 1760 kg/m3 Optimum Moisture = 16.7%	776
	SHALE (Weathered), clay and silt, trace sand, completely weathered, dark mottled brown, some oxidation staining, moist, high plastic, extremely weak to hard soil, blocky, ironstone concretions up to 500 mm					
2	...2.00m - becoming orange from oxidation staining, gypsum crystals					775
			B2			
3	...3.20m - some ammonite inclusions					774
4						773
	End of Borehole @4.1 m					
5						772

MOISTURE CONTENT
PLASTIC - LIQUID
SPT (N) Blows/300 mm
10 20 30 40
100 200 300 400
POCKET PEN (kPa)

Notes:
North borrow search. Backfilled with uncompacted cuttings.

Logged By: C. Braun
Reviewed By: T. Curtis

16/11/2022

an Englobe company

TEST PIT No : 22TP408

CLIENT	Eastern Irrigation District	PROJECT NAME	Snake Lake Reservoir Expansion
PROJECT NUMBER	1560-193-00	PROJECT LOCATION	NE 1/4 32-19-16
DATE STARTED	06/22/2022 COMPLETED 06/22/2022	GROUND ELEVATION	775.76m N 5612309.700 E 415217.200
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Moisture Content (%)	● MOISTURE CONTENT ⊢ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm (10 20 30 40) (100 200 300 400) ▲ POCKET PEN (kPa)	REMARKS	Standpipe/ Instrument	Elevation (m)
0		TOPSOIL (60 mm)							775
		CLAY TILL, some silt, gravely, Gravel is medium grained rounded, trace rounded cobbles up to 650 mm, trace sand, damp, stiff, medium plastic, brown with oxidation specs, suspect white sulphate inclusions							
1		SHALE (Weathered), clay and silt, some sand, some ironstone concretions up to 400 mm, completely weathered, greyish brown with oxidation staining, damp, low to medium plastic, extremely weak to hard soil, blocky		B1					774
2									
3									773
				B2			3.8 m - Dispersivity Classification = ND3 3.8 m - EC: 9.7 dS/m 3.8 m - SAR: 19.1 3.8 m - pH: 4.7 3.8 m - Dry Density = 1729 kg/m3 Optimum Moisture = 16.1%		772
4		End of Borehole @3.9 m							
5									771
									770

Notes:

North borrow search. Backfilled with uncompacted cuttings.

Logged By: C. Braun

Reviewed By: T. Curtis

16/11/2022

an Englobe company

TEST PIT No : 22TP409

CLIENT	Eastern Irrigation District	PROJECT NAME	Snake Lake Reservoir Expansion
PROJECT NUMBER	1560-193-00	PROJECT LOCATION	NE 1/4 32-19-16
DATE STARTED	06/22/2022 COMPLETED 06/22/2022	GROUND ELEVATION	769.67m N 5611757.600 E 416865.600
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
	TOPSOIL (80 mm)					
	CLAY, silt, trace sand, dry, stiff, blocky, low plastic, light brown, suspect white sulphates		AU1		0.5 m - EC: 0.6 dS/m 0.5 m - SAR: 1.6 0.5 m - pH: 7.3 0.5 m - Sand = 5.1% Silt = 39.5% Clay = 55.4%	769
1	SAND and GRAVEL, trace silt, Sand is medium to coarse grained, Gravel is subangular medium grained, well graded, damp, compact, brown with oxidation specs		B1		1.5 m - Gravel = 10.0% 1.5 m - Sand = 82.5% Fines = 7.5%	768
2						
						767
3	GRAVEL, sandy, some cobbles to boulders, trace fines, Gravel is well rounded, poorly graded, Rounded, wet, very loose, brown, some oxidation staining ...3.30m - SEEPAGE, FREEWATER, Boulder, 1.3x0.6,x1.1 m		B2		3.4 m - Gravel = 1.0% 3.4 m - Sand = 90.2% Fines = 8.8%	
4	SHALE, clay and silt, some sand, medium weathered, dark grey, damp, medium plastic, extremely weak, finely fissured					766
						765
5	End of Borehole @4.9 m					
						764

● MOISTURE CONTENT
⊢ PLASTIC - LIQUID
■ SPT (N) Blows/300 mm
10 20 30 40
100 200 300 400
▲ POCKET PEN (kPa)

Standpipe/ Instrument

Notes:

Test pit north of abandoned gravel pit. Hole backfilled with uncompacted cuttings.

Logged By: C. Braun

Reviewed By: T. Curtis

16/11/2022

an Englobe company

TEST PIT No : 22TP410

CLIENT	Eastern Irrigation District	PROJECT NAME	Snake Lake Reservoir Expansion
PROJECT NUMBER	1560-193-00	PROJECT LOCATION	NE 1/4 32-19-16
DATE STARTED	07/06/2022 COMPLETED 07/06/2022	GROUND ELEVATION	766.28m N 5611419.200 E 416524.700
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Moisture Content (%)	MOISTURE CONTENT / PLASTIC - LIQUID / SPT (N) Blows/300 mm (10 20 30 40) / POCKET PEN (kPa) (100 200 300 400)	REMARKS	Standpipe/ Instrument	Elevation (m)
0		CLAY TILL, silty, trace sand, trace gravel, moist, stiff, medium to high plastic, brown, sulphate crystals		B1		▲			766
1		SHALE (Weathered), clay and silt, trace sand, highly weathered, brownish grey, damp, high plastic, very weak, thinly laminated, oxide staining							765
2									764
3									763
4				B2			4.5 m - Dry Density = 1622 kg/m3 Optimum Moisture = 20.8%		762
5		End of Borehole @4.6 m							761

Notes:

Test pit backfilled with uncompacted cuttings

Logged By: B.Tataryn

Reviewed By: T. Curtis

16/11/2022

an Englobe company

TEST PIT No : 22TP411

CLIENT	Eastern Irrigation District	PROJECT NAME	Snake Lake Reservoir Expansion
PROJECT NUMBER	1560-193-00	PROJECT LOCATION	NE 1/4 32-19-16
DATE STARTED	06/22/2022 COMPLETED 06/22/2022	GROUND ELEVATION	764.47m N 5611304.500 E 416861.400
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	ORGANIC CLAY, silty, trace sand, very moist, soft, low to medium plastic, dark brown, organic odour, root hairs					764
	CLAY, some silt, very moist, soft, medium plastic, brown, gypsum crystals, root hairs					
1			B1			763
	...1.80m - becoming no root hairs					
2	SHALE (Weathered), clay and silt, trace sand, highly weathered, dark mottled brown, moist, high plastic, extremely weak to hard soil, blocky, finely fissured, oxide staining		B2			762
	...2.00m - moisture decreasing					
	...2.10m - some ironstone concretions					
3						761
4	End of Borehole @3.9 m					760
5						759

MOISTURE CONTENT ● | PLASTIC - LIQUID ⊢ | SPT (N) Blows/300 mm ■ (10 20 30 40) | POCKET PEN (kPa) ▲ (100 200 300 400)

Standpipe/ Instrument

Notes:

Test pit within wetland area. Backfilled with uncompacted cuttings.

Logged By: C. Braun

Reviewed By: T. Curtis

16/11/2022

an Englobe company

TEST PIT No : 22TP412

CLIENT	Eastern Irrigation District	PROJECT NAME	Snake Lake Reservoir Expansion
PROJECT NUMBER	1560-193-00	PROJECT LOCATION	NE 1/4 32-19-16
DATE STARTED	07/06/2022 COMPLETED 07/06/2022	GROUND ELEVATION	768.06m N 5611183.800 E 416527.700
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Moisture Content (%)	● MOISTURE CONTENT ⊢ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 100 200 300 400 ▲ POCKET PEN (kPa)	REMARKS	Standpipe/ Instrument	Elevation (m)
0		GRAVEL AND COBBLE, sandy, some silt, trace clay, poorly graded, dry to damp, compact, brown							768
1				B1					767
		SHALE (Weathered), clay and silt, trace sand, highly weathered, brownish grey, damp, medium to high plastic, very weak, thinly laminated							
2									766
3									765
4				B2			4 m - Dry Density = 1547 kg/m3 Optimum Moisture = 23.0%		764
		End of Borehole @4.6 m							
5									763

Notes:

Test pit backfilled with uncompacted cuttings

Logged By: B.Tataryn

Reviewed By: T. Curtis

16/11/2022

an Englobe company

TEST PIT No : 22TP413

CLIENT	Eastern Irrigation District	PROJECT NAME	Snake Lake Reservoir Expansion
PROJECT NUMBER	1560-193-00	PROJECT LOCATION	NE 1/4 32-19-16
DATE STARTED	07/06/2022 COMPLETED 07/06/2022	GROUND ELEVATION	765.73m N 5611181.100 E 416827.100
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	CLAY TILL, silty, some sand, moist to very moist, stiff, medium to high plastic, brown ...0.30m - some gravel, some cobble, <300mm ...0.50m - heavy oxide staining					765
1	...1.00m - fine grained sand pocket 400mm		B1		1 m - Organic Content = 4.7% 1 m - Dry Density = 1656 kg/m3 Optimum Moisture = 19.7%	764
2	SHALE (Weathered), clay and silt, trace sand, highly weathered, brownish grey, damp, high plastic, weak, thickly laminated, oxide staining		B2		2.5 m - Dispersivity Classification = D2 2.5 m - Dry Density = 1516 kg/m3 Optimum Moisture = 21.8%	763
3						762
4	End of Borehole @4.0 m					761
5						760

SOIL SYMBOL

MOISTURE CONTENT
PLASTIC - LIQUID
SPT (N) Blows/300 mm
10 20 30 40
100 200 300 400
POCKET PEN (kPa)

Standpipe/ Instrument

Notes:

Test pit backfilled with uncompacted cuttings

Logged By: B.Tataryn

Reviewed By: T. Curtis

16/11/2022

an Englobe company

TEST PIT No : 22TP414

CLIENT	Eastern Irrigation District	PROJECT NAME	Snake Lake Reservoir Expansion
PROJECT NUMBER	1560-193-00	PROJECT LOCATION	NE 1/4 32-19-16
DATE STARTED	07/06/2022 COMPLETED 07/06/2022	GROUND ELEVATION	766.58m N 5610901.100 E 416786.800
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	CLAY TILL AND GRAVEL, silty, some sand, moist to very moist, stiff, high plastic, brown, grey, gypsum crystals, highly oxide staining, black and gold specs, trace sand pockets, (conglomerate formation)					766
1			B1		1.1 m - LL = 70% PL = 17.9% PI = 52%	765
2	CLAY TILL, silty, trace gravel, trace sand, moist to very moist, stiff, high plastic, greyish brown, sulphate precipitation seams throughout		B2			764
3	SHALE (Softened), clay and silt, trace sand, highly weathered, grey, damp, high plastic, weak, thinly laminated					763
4			B3		4.5 m - Dry Density = 1643 kg/m3 Optimum Moisture = 20.5% 4.5 m - LL = 66% PL = 14.7% PI = 52%	762
5	End of Borehole @4.6 m					761

Moisture Content (%): ● MOISTURE CONTENT; ⊢ PLASTIC - LIQUID; ■ SPT (N) Blows/300 mm (10 20 30 40); 100 200 300 400 ▲ POCKET PEN (kPa)

Standpipe/ Instrument

Notes:

Test pit backfilled with uncompacted cuttings.

Logged By: B.Tataryn

Reviewed By: T. Curtis

16/11/2022

an Englobe company

TEST PIT No : 22TP415

CLIENT	Eastern Irrigation District	PROJECT NAME	Snake Lake Reservoir Expansion
PROJECT NUMBER	1560-193-00	PROJECT LOCATION	NE 1/4 32-19-16
DATE STARTED	07/06/2022 COMPLETED 07/06/2022	GROUND ELEVATION	765.50m N 5610121.400 E 416824.300
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	CLAY TILL, silty, trace sand, trace to some gravel, moist, stiff, medium to high plastic, brown, some oxidation staining, sulphate crystals ...0.50m - highly oxidized pockets, some cobble (<200mm)					765
1						
2			B1			764
3	SHALE (Weathered), clay and silt, trace sand, moist, very weak, high plastic, highly weathered, brown with some orange oxidation staining, blocky		B2		3.5 m - Dry Density = 1636 kg/m3 Optimum Moisture = 19.5%	763
4	SHALE (Softened), clay and silt, trace sand, medium weathered, grey, damp, high plastic, very weak, thickly laminated		B3		4 m - Dry Density = 1636 kg/m3 Optimum Moisture = 19.5%	762
	End of Borehole @4.5 m					761
5						760

MOISTURE CONTENT
PLASTIC - LIQUID
SPT (N) Blows/300 mm
10 20 30 40
100 200 300 400
POCKET PEN (kPa)

Standpipe/ Instrument

Notes:

Moved 20m N to avoid standing water. Test pit backfilled with uncompacted cuttings

Logged By: B.Tataryn

Reviewed By: T. Curtis

16/11/2022

an Englobe company

TEST PIT No : 22TP416

CLIENT	Eastern Irrigation District	PROJECT NAME	Snake Lake Reservoir Expansion
PROJECT NUMBER	1560-193-00	PROJECT LOCATION	NE 1/4 32-19-16
DATE STARTED	07/06/2022 COMPLETED 07/06/2022	GROUND ELEVATION	768.69m N 5610008.000 E 416828.500
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
0	SAND, clayey, some silt, poorly graded, fine to medium grained, damp, loose, brown, some oxidation staining, organic odour		B1				768
1	...0.80m - becomes dry						
2	...2.40m - medium grained wet sand seam (20mm), oxidized.		B2				767
3	SILT, clayey, trace sand, very moist to wet, firm, low plastic, brown, orangish some oxidation staining, laminated, sand pockets						766
4	SHALE (Weathered), clay and silt, trace sand, highly weathered, brownish grey, damp, high plastic, extremely weak, thickly laminated		B3				765
5	End of Borehole @4.8 m						764
							763

● MOISTURE CONTENT
⊢ PLASTIC - LIQUID
■ SPT (N) Blows/300 mm
10 20 30 40
100 200 300 400
▲ POCKET PEN (kPa)

Notes:

Test pit backfilled with uncompacted cuttings.

Logged By: B.Tataryn

Reviewed By: T. Curtis

16/11/2022

an Englobe company

TEST PIT No : 22TP417

CLIENT	Eastern Irrigation District	PROJECT NAME	Snake Lake Reservoir Expansion
PROJECT NUMBER	1560-193-00	PROJECT LOCATION	NE 1/4 32-19-16
DATE STARTED	06/23/2022 COMPLETED 06/23/2022	GROUND ELEVATION	768.34m N 5609701.600 E 416810.900
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL - 60 mm					768
	CLAY TILL, gravely, silty, some sand, some cobbles up to 200 mm, damp, firm, high plastic, greyish brown		B1		1 m - Dispersivity Classification = ND3 1 m - EC: 9.5 dS/m 1 m - SAR: 25.0 1 m - pH: 8.6 1 m - Dry Density = 1820 kg/m3 Optimum Moisture = 15.5% 1 m - LL = 60% PL = 14.2% PI = 46%	767
2	SHALE (Weathered), clay and silt, trace sand, trace sand, highly weathered, dark grey with oxidation specs, moist, high plastic, extremely weak to hard soil, finely fissured					766
3	3.55m - sandstone		B2			765
	End of Borehole @3.6 m					
4						764
5						763

● MOISTURE CONTENT
⊢ PLASTIC - LIQUID
■ SPT (N) Blows/300 mm
10 20 30 40
100 200 300 400
▲ POCKET PEN (kPa)

Notes:

SE Borrow search. Backfilled with uncompacted fill/cuttings.

Logged By: C. Tams

Reviewed By: T. Curtis

16/11/2022

an Englobe company

TEST PIT No : 22TP418

CLIENT	Eastern Irrigation District	PROJECT NAME	Snake Lake Reservoir Expansion
PROJECT NUMBER	1560-193-00	PROJECT LOCATION	NE 1/4 32-19-16
DATE STARTED	06/23/2022 COMPLETED 06/23/2022	GROUND ELEVATION	769.28m N 5609489.700 E 416583.400
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Moisture Content (%)	● MOISTURE CONTENT ⊢ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 100 200 300 400 ▲ POCKET PEN (kPa)	REMARKS	Standpipe/ Instrument	Elevation (m)
0		TOPSOIL - 50 mm							769
		CLAY TILL, gravely, silty, some sand, some cobbles up to 300 mm, dry, stiff, medium plastic, light brown, trace medium grained sand lenses		B1					
1									768
		SHALE (Weathered), clay and silt, trace sand, highly weathered, dark grey with oxidation staining, moist, high plastic, extremely weak to hard soil, finely fissured							
2									767
3				B2					766
		End of Borehole @3.4 m							
4									765
5									764

Notes:

SE Borrow search. Backfilled with uncompacted fill/cuttings.

Logged By: C. Tams

Reviewed By: T. Curtis

16/11/2022

an Englobe company

TEST PIT No : 22TP419

CLIENT	Eastern Irrigation District	PROJECT NAME	Snake Lake Reservoir Expansion
PROJECT NUMBER	1560-193-00	PROJECT LOCATION	NE 1/4 32-19-16
DATE STARTED	07/06/2022 COMPLETED 07/06/2022	GROUND ELEVATION	771.57m N 5609500.200 E 416288.300
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	CLAY, silty, some sand, damp to dry, stiff, low to medium plastic, brown, grey, root hairs		B1			771
1	CLAY TILL, silty, trace sand, dry, stiff, medium to high plastic, grey, suspect white sulphate inclusions, blocky ...0.70m - 150mm gravel layer (<75mm)		B2			770
2	SHALE (Weathered), clay and silt, trace sand, extremely weathered, brownish grey, damp to dry, high plastic, very weak, oxide staining, thickly laminated		B3			769
3						768
4	End of Borehole @4.5 m					767
5						766

● MOISTURE CONTENT
⊢ PLASTIC - LIQUID
■ SPT (N) Blows/300 mm
10 20 30 40
100 200 300 400
▲ POCKET PEN (kPa)

Standpipe/ Instrument

Notes:
Test pit backfilled with uncompacted cuttings

Logged By: B.Tataryn
Reviewed By: T. Curtis

16/11/2022

an Englobe company

TEST PIT No : 22TP420

CLIENT	Eastern Irrigation District	PROJECT NAME	Snake Lake Reservoir Expansion
PROJECT NUMBER	1560-193-00	PROJECT LOCATION	NE 1/4 32-19-16
DATE STARTED	07/06/2022 COMPLETED 07/06/2022	GROUND ELEVATION	771.48m N 5609526.000 E 416103.000
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	CLAY TILL, silty, trace sand, moist, high plastic, stiff, brown to grey, suspect white sulphate inclusions					771
	...0.70m - 100mm gravel seam (50mm)		B1			
1						770
	...1.80m - becoming brown, flakey					
2	SHALE (Weathered),clay and silt, trace sand, highly to completely weathered, brown, dry to damp, high plastic, very weak, blocky					769
3			B2			768
4	SANDSTONE, silt, some clay, completely weathered, light brown, grey, dry, damp, low plastic, extremely weak, finely stratified		B3			767
	End of Borehole @4.5 m					
5						766

● MOISTURE CONTENT
⊢ PLASTIC - LIQUID
■ SPT (N) Blows/300 mm
10 20 30 40
100 200 300 400
▲ POCKET PEN (kPa)

Standpipe/ Instrument

Notes:

Test pit backfilled with uncompacted cuttings.

Logged By: B.Tataryn

Reviewed By: T. Curtis

16/11/2022

an Englobe company

TEST PIT No : 22TP421

CLIENT	Eastern Irrigation District	PROJECT NAME	Snake Lake Reservoir Expansion
PROJECT NUMBER	1560-193-00	PROJECT LOCATION	NE 1/4 32-19-16
DATE STARTED	07/07/2022 COMPLETED 07/07/2022	GROUND ELEVATION	772.76m N 5609473.400 E 415792.800
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Moisture Content (%)	● MOISTURE CONTENT ⊢ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 100 200 300 400 ▲ POCKET PEN (kPa)	REMARKS	Standpipe/ Instrument	Elevation (m)
0		CLAY TILL, silty, some sand, trace gravel, moist, stiff, stiff, medium to high plastic, brownish grey, oxide staining		B1					772
1		SHALE (Weathered), clay and silt, trace sand, highly weathered, brownish grey, medium to high plastic, very weak, thickly laminated, oxide staining							771
2									770
3				B2					769
4		End of Borehole @4.5 m							768
5									767

Notes:

Test pit backfilled with uncompacted cuttings

Logged By: B.Tataryn

Reviewed By: T. Curtis

16/11/2022

an Englobe company

TEST PIT No : 22TP422

CLIENT	Eastern Irrigation District	PROJECT NAME	Snake Lake Reservoir Expansion
PROJECT NUMBER	1560-193-00	PROJECT LOCATION	NE 1/4 32-19-16
DATE STARTED	07/07/2022 COMPLETED 07/07/2022	GROUND ELEVATION	774.71m N 5609515.000 E 415499.300
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL - native vegetation					774
	CLAY TILL, silty, some sand, moist, stiff, medium, brownish grey, oxide staining, suspect white sulphate inclusions, trace root hairs		B1		1.2 m - LL = 48% PL = 15.7% PI = 32%	
1						773
2	SHALE (Weathered), clay and silt, trace sand, moist, highly weathered, brown, grey, high plastic, extremely weak, thickly laminated, oxide staining, trace bentonitic pockets ...2.60m - wood debris (100mm)					772
3			B2		3.8 m - Dry Density = 1524 kg/m3 Optimum Moisture = 21.5%	771
4	End of Borehole @4.0 m					770
5						769

MOISTURE CONTENT
PLASTIC - LIQUID
SPT (N) Blows/300 mm
10 20 30 40
100 200 300 400
POCKET PEN (kPa)

Standpipe/ Instrument

Notes:

Test pit backfilled with uncompacted cuttings

Logged By: B.Tataryn

Reviewed By: T. Curtis

16/11/2022

an Englobe company

TEST PIT No : 22TP423

CLIENT	Eastern Irrigation District	PROJECT NAME	Snake Lake Reservoir Expansion
PROJECT NUMBER	1560-193-00	PROJECT LOCATION	NE 1/4 32-19-16
DATE STARTED	07/07/2022 COMPLETED 07/07/2022	GROUND ELEVATION	778.63m N 5609460.000 E 415187.500
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
	TOPSOIL - native grasses					
	CLAY, silty, trace sand, dry, soft, low to medium plastic, brown, oxide staining					
	SHALE (Weathered), silty, clayey, some gravel, residual soil, brown, some oxidation staining, dry, medium to high plastic, extremely weak, friable, trace oxidized instone concreteions <400mm		B1			778
1						
						777
2	...2.00m - becomes extremely weathered, damp, no gravel, trace oxidized large cobbles					
						776
3						
			B2			775
4	End of Borehole @4.0 m					
						774
5						
						773

MOISTURE CONTENT
PLASTIC - LIQUID
SPT (N) Blows/300 mm
10 20 30 40
100 200 300 400
POCKET PEN (kPa)

Standpipe/ Instrument

Notes:
Test pit backfilled with uncompacted cuttings.

Logged By: B.Tataryn
Reviewed By: T. Curtis

16/11/2022

an Englobe company

TEST PIT No : 22TP424

CLIENT	Eastern Irrigation District	PROJECT NAME	Snake Lake Reservoir Expansion
PROJECT NUMBER	1560-193-00	PROJECT LOCATION	NE 1/4 32-19-16
DATE STARTED	07/07/2022 COMPLETED 07/07/2022	GROUND ELEVATION	777.79m N 5609628.100 E 415175.200
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
	TOPSOIL - native grasses					
	CLAY TILL, silty, trace sand, trace gravel, moist, firm, blocky, medium to high plastic, brownish grey, some oxidation staining, suspect white sulphate inclusions, (mudstone residual soil)		B1			
1	SHALE (Weathered), clay and silt, trace sand, residual soil, completely weathered, brown, dry, high plastic, extremely weak, oxide staining		B2		1.2 m - Dry Density = 1616 kg/m3 Optimum Moisture = 22.4% 1.2 m - LL = 51% PL = 15.1% PI = 36%	777
2	...2.50m - becomes completely weathered, damp					776
3	...3.00m - becomes highly weathered, oxidized ironstone concretions<400mm		B3			775
4	End of Borehole @4.0 m					774
5						773
						772

MOISTURE CONTENT
PLASTIC - LIQUID
SPT (N) Blows/300 mm
10 20 30 40
100 200 300 400
POCKET PEN (kPa)

Standpipe/ Instrument

Notes:

Test pit backfilled with uncompacted cuttings

Logged By: B.Tataryn

Reviewed By: T. Curtis

16/11/2022

an Englobe company

TEST PIT No : 22TP425

CLIENT	Eastern Irrigation District	PROJECT NAME	Snake Lake Reservoir Expansion
PROJECT NUMBER	1560-193-00	PROJECT LOCATION	NE 1/4 32-19-16
DATE STARTED	07/07/2022 COMPLETED 07/07/2022	GROUND ELEVATION	777.88m N 5609778.300 E 414999.900
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Moisture Content (%)	MOISTURE CONTENT / PLASTIC - LIQUID / SPT (N) Blows/300 mm (10 20 30 40) / POCKET PEN (kPa) (100 200 300 400)	REMARKS	Standpipe/ Instrument	Elevation (m)
0		CLAY TILL, silty, trace sand, trace gravel, dry, stiff, high plastic, brownish grey, suspect white sulphate inclusions, oxide staining							777
1				B1			1 m - EC: 7.9 dS/m 1 m - SAR: 10.7 1 m - pH: 7.6 1 m - Dry Density = 1631 kg/m3 Optimum Moisture = 20.7% 1 m - LL = 52% PL = 14.3% PI = 37%		
2		SHALE (Weathered), clay and silt, trace sand, residual soil to completely weathered, brown, dry, high plastic, extremely weak, oxide staining, blocky ...1.80m - becomes damp ...2.20m - becomes moist, extremely weathered		B2					776
3		End of Borehole @3.5 m							775
4									774
5									773
									772

Notes:

Test pit backfilled with uncompacted cuttings

Logged By: B.Tataryn

Reviewed By: T. Curtis

16/11/2022

an Englobe company

TEST PIT No : 22TP426

CLIENT	Eastern Irrigation District	PROJECT NAME	Snake Lake Reservoir Expansion
PROJECT NUMBER	1560-193-00	PROJECT LOCATION	NE 1/4 32-19-16
DATE STARTED	07/07/2022 COMPLETED 07/07/2022	GROUND ELEVATION	777.76m N 5609864.800 E 414895.100
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Moisture Content (%)	● MOISTURE CONTENT ⊢ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 100 200 300 400 ▲ POCKET PEN (kPa)	REMARKS	Standpipe/ Instrument	Elevation (m)
0		TOPSOIL - native grasses							777
		CLAY TILL, silty, clayey, trace gravel, damp to moist, stiff, medium to high plastic, greyish brown, suspect white sulphate inclusions, oxide staining, blocky		B1					
1									
		SHALE (Weathered), clay and silt, trace sand, residual soil, brown, grey, some oxidation staining, damp to moist, high plastic, blocky		B2					776
2									
		...2.50m - becomes completely weathered, large oxidized ironstone concretions <500mm							775
3		...3.00m - becomes highly weathered							
		End of Borehole @3.2 m							774
4									
									773
5									
									772

Notes:

Test pit backfilled with uncompacted cuttings

Logged By: B.Tataryn

Reviewed By:

16/11/2022

an Englobe company

TEST PIT No : 22TP427

CLIENT	Eastern Irrigation District	PROJECT NAME	Snake Lake Reservoir Expansion
PROJECT NUMBER	1560-193-00	PROJECT LOCATION	NE 1/4 32-19-16
DATE STARTED	07/07/2022 COMPLETED 07/07/2022	GROUND ELEVATION	778.94m N 5610082.700 E 414842.300
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
	TOPSOIL - native grasses					
	CLAY TILL, gravely, some silt, some clay, dry, soft, medium plastic, reddish brown, highly oxidized, root hairs, suspect white sulphate inclusions					
1	SHALE (Weathered), clayey, silty, residual soil, reddish brown, damp, medium to high plastic, extremely weak, blocky, oxide staining		B1			778
2			B2			777
	...2.50m - becomes completely weathered, damp to moist					
3	...3.00m - becomes less weathered					776
	End of Borehole @3.8 m					775
4						
5						774
						773

● MOISTURE CONTENT
⊢ PLASTIC - LIQUID
■ SPT (N) Blows/300 mm
10 20 30 40
100 200 300 400
▲ POCKET PEN (kPa)

Standpipe/ Instrument

Notes:

Test pit backfilled with uncompacted cuttings

Logged By: B.Tataryn

Reviewed By: T. Curtis

16/11/2022

an Englobe company

TEST PIT No : 22TP428

CLIENT	Eastern Irrigation District	PROJECT NAME	Snake Lake Reservoir Expansion
PROJECT NUMBER	1560-193-00	PROJECT LOCATION	NE 1/4 32-19-16
DATE STARTED	07/07/2022 COMPLETED 07/07/2022	GROUND ELEVATION	777.46m N 5610807.800 E 415035.600
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL - native grasses					777
	CLAY TILL,silt, sandy, gravely, dry, soft, medium plastic, whitish brown, oxide staining, trace root hairs		B1		1 m - Dry Density = 1786 kg/m3 Optimum Moisture = 15.5%	
1						776
2	SHALE (Weathered), silt and clay, trace sand, residual soil, brownish grey, dry to damp, medium to high plastic, extremely weak, blocky		B2			775
	...2.60m - becomes less weathered					
3						774
	...3.60m - becomes highly to completely weathered					
	End of Borehole @3.8 m					
4						773
5						772

MOISTURE CONTENT ● PLASTIC - LIQUD ⊢ SPT (N) Blows/300 mm ■ 10 20 30 40 POCKET PEN (kPa) ▲ 100 200 300 400

Notes:

Test pit backfilled with uncompacted cuttings

Logged By: B.Tataryn

Reviewed By: T. Curtis

16/11/2022

an Englobe company

TEST PIT No : 22TP429

CLIENT	Eastern Irrigation District	PROJECT NAME	Snake Lake Reservoir Expansion
PROJECT NUMBER	1560-193-00	PROJECT LOCATION	NE 1/4 32-19-16
DATE STARTED	07/08/2022 COMPLETED 07/08/2022	GROUND ELEVATION	779.24m N 5610703.400 E 414460.300
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Moisture Content (%)	● MOISTURE CONTENT ⊢ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 100 200 300 400 ▲ POCKET PEN (kPa)	REMARKS	Standpipe/ Instrument	Elevation (m)
0		TOPSOIL - native grasses							779
		CLAY TILL, silty, trace sand, moist to very moist, soft, medium to high plastic, brown, suspect white sulphate inclusions, trace organics							
1				B1			1 m - EC: 11.9 dS/m 1 m - SAR: 24.7 1 m - pH: 8.3 1 m - Dry Density = 1635 kg/m3 Optimum Moisture = 21.6%		778
2									777
3		SHALE (Weathered), clay and silt, trace sand, trace gravel, residual soil, greyish brown, moist, medium to high plastic, extremely weak, blocky, oxide staining, some ironstone concretions (<400mm)		B2					776
4		...3.80m - becomes completely weathered to highly weathered, thickly laminated, cobble content increase							775
		End of Borehole @4.2 m							
5									774

Notes:

Test pit backfilled with uncompacted cuttings

Logged By: B.Tataryn

Reviewed By: T. Curtis

16/11/2022

an Englobe company

TEST PIT No : 22TP430

CLIENT	Eastern Irrigation District	PROJECT NAME	Snake Lake Reservoir Expansion
PROJECT NUMBER	1560-193-00	PROJECT LOCATION	NE 1/4 32-19-16
DATE STARTED	07/08/2022 COMPLETED 07/08/2022	GROUND ELEVATION	781.38m N 5611058.300 E 414528.700
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL - clayey, silty, native grasses					781
	CLAY TILL, gravely (<75mm), some silt, trace sand, dry, soft, medium plastic, whitish brown, trace root hairs, some shale residual soil		B1			
1						780
2	...2.00m - becomes damp					779
	SHALE (Weathered), clay and silt, trace sand, residual soil, reddish brown, some oxidation staining, moist, high plastic, extremely weak, blocky, oxide staining					
	...2.50m - oxidized cobbles (<500mm) for 1.0m		B2			
3						778
4	...3.80m - becomes completely to highly weathered					
	End of Borehole @4.2 m					777
5						776

● MOISTURE CONTENT
⊢ PLASTIC - LIQUID
■ SPT (N) Blows/300 mm
10 20 30 40
100 200 300 400
▲ POCKET PEN (kPa)

Standpipe/ Instrument

Notes:

Test pit backfilled with uncompacted cuttings

Logged By: B.Tataryn

Reviewed By: T. Curtis

16/11/2022

an Englobe company

TEST PIT No : 22TP431

CLIENT	Eastern Irrigation District	PROJECT NAME	Snake Lake Reservoir Expansion
PROJECT NUMBER	1560-193-00	PROJECT LOCATION	NE 1/4 32-19-16
DATE STARTED	07/08/2022 COMPLETED 07/08/2022	GROUND ELEVATION	780.93m N 5611317.000 E 414704.900
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	SAND, silty, trace clay, well graded, fine grained, dry, compact, light brown ...0.00m - increased clay content from 0.0m to 0.5m		B1		1 m - Sand = 69.9% Silt = 17.6% Clay = 12.5%	780
1	CLAY TILL, gravely, trace sand, trace silt, dry, firm, medium plastic, dark brown, oxide staining, some shale residual soil ...2.00m - becomes moist		B2			779
2						
3	SHALE (Weathered), clay and silt, trace sand, residual soil, orangish greyish brown, damp to moist, high plastic, oxide staining, extremely weak ...3.50m - becomes completely weathered					778
4	End of Borehole @4.0 m					777
5						776
						775

● MOISTURE CONTENT
⊢ PLASTIC - LIQUID
■ SPT (N) Blows/300 mm
10 20 30 40
100 200 300 400
▲ POCKET PEN (kPa)

Standpipe/ Instrument

Notes:

Test pit backfilled with uncompacted cuttings

Logged By: B.Tataryn

Reviewed By: T. Curtis

16/11/2022

an Englobe company

TEST PIT No : 22TP432

CLIENT	Eastern Irrigation District	PROJECT NAME	Snake Lake Reservoir Expansion
PROJECT NUMBER	1560-193-00	PROJECT LOCATION	NE 1/4 32-19-16
DATE STARTED	07/08/2022 COMPLETED 07/08/2022	GROUND ELEVATION	783.50m N 5611557.700 E 414384.900
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL - silty, clayey, native grasses ..0.06m - increased clay content from 0.0m to 0.5m SAND, silty, trace clay, well graded, fine grained, dry, loose, light brown		B1			783
1	CLAY TILL, gravely, silty, trace sand, dry, firm, medium plastic, light whitish brown, oxide staining		B2			782
2	...1.90m - becomes damp					
	SHALE (Weathered), clay and silt, trace sand, residual soil, greyish brown, some oxidation staining, damp, high plastic, extremely weak, suspect white sulphate inclusions		B3			781
3	...3.50m - becomes completely to highly weathered		B4			780
4	End of Borehole @4.0 m					779
5						778

MOISTURE CONTENT
PLASTIC - LIQUID
SPT (N) Blows/300 mm
10 20 30 40
100 200 300 400
POCKET PEN (kPa)

Standpipe/ Instrument

Notes:

Test pit backfilled with uncompacted cuttings

Logged By: B.Tataryn

Reviewed By: T. Curtis

16/11/2022