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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 Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL - 65 mm					775
	CLAY TILL, silty, some sand, trace gravel, dry, stiff, medium plastic, brown, suspect white sulphate inclusions		B1	6.6	1 m - Dispersivity Classification = ND3 % Dispersion = % 1 m - Dry Density = 1766 kg/m3 Optimum Moisture = 16.7% 1 m - LL = 44.1% PL = 14.2% PI = 29.9%	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			B2			771
	End of Borehole @4.0 m					
5						770

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

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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 Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
1	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		1.2 m - Phi: 26.9° Cohesion: 12.0 kPa 1.2 m - Gravel = 11.6% 1.2 m - Sand = 19.1% Silt = 38.9% Clay = 30.4%	779
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

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

11/01/2024

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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, gravelly, 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	...1.0m - 500 mm boulder		B1	6.6	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	...2.0m - 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

11/01/2024

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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 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 - 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%		
1									775
		SHALE (Weathered), clay and silt, some sand, ironstone concretions, highly weathered, grey with oxidation staining, damp, high plastic, extremely weak to hard soil, blocky							
2									774
		...3.0m - becoming orange							
3				B2			3.6 m - Dispersivity Classification = ND1 % Dispersion = %		773
		End of Borehole @3.7 m					3.6 m - Dry Density = 1627 kg/m3 Optimum Moisture = 20.7%		
4									772
5									771

Notes:

North borrow search. Backfilled with uncompacted cuttings.

Logged By: C. Tams

Reviewed By: T. Curtis

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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, gravelly, some sand, cobbles up to 220 mm, dry, firm to stiff, medium plastic, grey, suspect white sulphate inclusions		B1	13.8	●	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

11/01/2024

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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 300 mm, boulders up to 340 mm, dry, soft, low to medium plastic, light brown to dark grey mottling, some oxidation staining							
1				B1	2.9	●	1 m - Dispersivity Classification = ND2 % Dispersion = % 1 m - Organic Content = 5.8% 1 m - Dry Density = 1740 kg/m3 Optimum Moisture = 17.5%		776
		...1.5m - no cobbles							
2		SHALE (Weathered), clay and silt, some sand, highly weathered, light brown to dark grey mottling, oxidation staining, dry, high plastic, very weak							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

11/01/2024

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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)
0	TOPSOIL (60 mm)					776
	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		B1	4.9	1 m - Phi: 27.0° Cohesion: 30.0kPa 1 m - Dry Density = 1760 kg/m3 Optimum Moisture = 16.7%	
1	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					775
2	...2.0m - becoming orange from oxidation staining, gypsum crystals		B2			774
3	...3.2m - some ammonite inclusions					773
4	End of Borehole @4.1 m					772
5						

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

Notes:

North borrow search. Backfilled with uncompacted cuttings.

Logged By: C. Braun

Reviewed By: T. Curtis

11/01/2024

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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) / POCKET PEN (kPa) (100 200 300 400)	REMARKS	Standpipe/ Instrument	Elevation (m)
0		TOPSOIL (60 mm)							775
		CLAY TILL, some silt, gravelly, Gravel is medium grained rounded, trace rounded cobbles up to 300 mm, boulders 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			1.3 m - Phi: 27.3° Cohesion: 12.0 kPa 1.3 m - LL = 43.0% PL = 14.9% PI = 28.1%		774
2									773
3				B2			3.8 m - Dispersivity Classification = ND3 % Dispersion = % 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							771
5									770

Notes:

North borrow search. Backfilled with uncompacted cuttings.

Logged By: C. Braun

Reviewed By: T. Curtis

11/01/2024

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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 ...3.3m - 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%	766
4	SHALE, clay and silt, some sand, medium weathered, dark grey, damp, medium plastic, extremely weak, finely fissured					
						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)

Notes:

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

Logged By: C. Braun

Reviewed By: T. Curtis

11/01/2024

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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 Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	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	14.6	4.5 m - Phi: 24.7° Cohesion: 12.0 kPa 4.5 m - Dry Density = 1622 kg/m3 Optimum Moisture = 20.8%	762
5	End of Borehole @4.6 m					761

● 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

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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
	...1.8m - 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
	...2.0m - moisture decreasing					
3	...2.1m - some ironstone concretions					761
4	End of Borehole @3.9 m					760
5						759

● 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 within wetland area. Backfilled with uncompacted cuttings.

Logged By: C. Braun

Reviewed By: T. Curtis

11/01/2024

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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) / POCKET PEN (kPa) (100 200 300 400)	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	21.9		4 m - Dry Density = 1547 kg/m3 Optimum Moisture = 23.0% 4 m - LL = 85.2% PL = 17.9% PI = 67.3%		764
		End of Borehole @4.6 m							
5									763

Notes:

Test pit backfilled with uncompacted cuttings

Logged By: B.Tataryn

Reviewed By: T. Curtis

11/01/2024

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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					765
	...0.3m - some gravel, some cobble, <300mm					
	...0.5m - heavy oxide staining					
1	...1.0m - fine grained sand pocket 400mm		B1	3.2	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	3.5	2.5 m - Dispersivity Classification = D2 % Dispersion = % 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

● 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

11/01/2024

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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, trace cobbles, 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 = 69.9% PL = 17.9% PI = 52.0%	765
2	CLAY TILL, silty, trace gravel, trace sand, moist to very moist, stiff, high plastic, greyish brown, sulphate precipitation seams throughout		B2	16.1	2.5 m - Phi: 21.0° Cohesion: 20.0kPa 2.5 m - Dry Density = 1675 kg/m3 Optimum Moisture = 18.6%	764
3	SHALE (Weathered), clay and silt, trace sand, highly weathered, grey, damp, high plastic, weak, thinly laminated					763
4			B3	14.9	4.5 m - Dry Density = 1643 kg/m3 Optimum Moisture = 20.5% 4.5 m - LL = 66.3% PL = 14.7% PI = 51.6%	762
4.6	End of Borehole @4.6 m					
5						761

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

11/01/2024

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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 ...0.5m - highly oxidized pockets, some cobble (<200mm)					765
1						
						764
2			B1			
						763
3	SHALE (Weathered), clay and silt, trace sand, moist, very weak, high plastic, highly weathered, brown with some orange oxidation staining, blocky		B2	18.9	3.5 m - Dry Density = 1623 kg/m3 Optimum Moisture = 21.5%	762
4	SHALE (Softened), clay and silt, trace sand, medium weathered, grey, damp, high plastic, very weak, thickly laminated		B3	17.8	4 m - Dry Density = 1636 kg/m3 Optimum Moisture = 19.5%	761
	End of Borehole @4.5 m					
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

11/01/2024

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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	Elevation (m)
0	SAND, clayey, some silt, poorly graded, fine to medium grained, damp, loose, brown, some oxidation staining, organic odour		B1			768
1	...0.8m - becomes dry					
2	...2.4m - medium grained wet sand seam (20mm), oxidized.		B2			767
	SILT, clayey, trace sand, very moist to wet, firm, low plastic, brown, orangish some oxidation staining, laminated, sand pockets					766
3	SHALE (Weathered), clay and silt, trace sand, highly weathered, brownish grey, damp, high plastic, extremely weak, thickly laminated					765
4			B3			764
	End of Borehole @4.8 m					
5						763

● 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

11/01/2024

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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 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 - 60 mm							768
		CLAY TILL, gravelly, silty, some sand, some cobbles up to 200 mm, damp, firm, high plastic, greyish brown							
1				B1			1 m - Dispersivity Classification = ND3 % Dispersion = % 1 m - Phi: 24.8° Cohesion: 8.0 kPa 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 = 59.7% PL = 14.2% PI = 45.5%		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				B2					765
		3.6m - sandstone							
		End of Borehole @3.6 m							
4									764
5									763

Notes:

SE Borrow search. Backfilled with uncompacted fill/cuttings.

Logged By: C. Tams

Reviewed By: T. Curtis

11/01/2024

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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, gravelly, 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

11/01/2024

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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 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, silty, some sand, damp to dry, stiff, low to medium plastic, brown, grey, root hairs		B1					771
		CLAY TILL, silty, trace sand, dry, stiff, medium to high plastic, grey, suspect white sulphate inclusions, blocky ...0.7m - 150mm gravel layer (<75mm)							
1				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							769
3				B3					768
4		End of Borehole @4.5 m							767
5									766

Notes:

Test pit backfilled with uncompacted cuttings

Logged By: B.Tataryn

Reviewed By: T. Curtis

11/01/2024

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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
	...0.7m - 100mm gravel seam (50mm)		B1			
1						770
	...1.8m - 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

11/01/2024

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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

11/01/2024

a division of Englobe

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	16.5	1.2 m - Phi: 20.0° Cohesion: 10.0kPa 1.2 m - Dry Density = 1720 kg/m3 Optimum Moisture = 17.6%	
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				1.2 m - LL = 47.6% PL = 15.7% PI = 31.9%	
	...2.6m - wood debris (100mm)					772
3			B2		3.7 m - Phi: 23.0° Cohesion: 25.0kPa	
4	End of Borehole @4.0 m				3.8 m - Dry Density = 1524 kg/m3 Optimum Moisture = 21.5%	771
						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

11/01/2024

a division of Englobe

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 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							778
		CLAY, silty, trace sand, dry, soft, low to medium plastic, brown, oxide staining							
1		SHALE (Weathered), silty, clayey, some gravel, residual soil, brown, some oxidation staining, dry, medium to high plastic, extremely weak, friable, trace oxidized sandstone concretions <400mm		B1					777
2		...2.0m - becomes extremely weathered, damp, no gravel, trace oxidized large cobbles							776
3				B2					775
4		End of Borehole @4.0 m							774
5									773

Notes:

Test pit backfilled with uncompacted cuttings.

Logged By: B.Tataryn

Reviewed By: T. Curtis

11/01/2024

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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)
0	TOPSOIL - native grasses					777
	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	11.5	1.2 m - Dry Density = 1616 kg/m3 Optimum Moisture = 22.4% 1.2 m - LL = 51.3% PL = 15.1% PI = 36.2%	776
2	...2.5m - becomes completely weathered, damp					775
3	...3.0m - becomes highly weathered, oxidized ironstone concretions<400mm		B3			774
4	End of Borehole @4.0 m					773
5						772

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

Standpipe/ Instrument

Notes:

Test pit backfilled with uncompacted cuttings

Logged By: B.Tataryn

Reviewed By: T. Curtis

11/01/2024

a division of Englobe

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 Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
1	CLAY TILL, silty, trace sand, trace gravel, dry, stiff, high plastic, brownish grey, suspect white sulphate inclusions, oxide staining		B1	11.4	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 = 51.7% PL = 14.3% PI = 37.4%	777
2	SHALE (Weathered), clay and silt, trace sand, residual soil to completely weathered, brown, dry, high plastic, extremely weak, oxide staining, blocky ...1.8m - becomes damp ...2.2m - becomes moist, extremely weathered		B2			776
3	End of Borehole @3.5 m					775
4						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

11/01/2024

a division of Englobe

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) / POCKET PEN (kPa) (100 200 300 400)	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							
1				B1			1 m - Phi: 22.7° Cohesion: 14.0 kPa 1 m - LL = 56.1% PL = 17.5% PI = 38.6%		776
		SHALE (Weathered), clay and silt, trace sand, residual soil, brown, grey, some oxidation staining, damp to moist, high plastic, blocky							
2				B2					775
		...2.5m - becomes completely weathered, large oxidized ironstone concretions <500mm							
3		...3.0m - becomes highly weathered							774
		End of Borehole @3.2 m							
4									773
5									772

Notes:

Test pit backfilled with uncompacted cuttings

Logged By: B.Tataryn

Reviewed By: T. Curtis

11/01/2024

a division of Englobe

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, gravelly, 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
	...2.5m - becomes completely weathered, damp to moist					
3	...3.0m - 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

11/01/2024

a division of Englobe

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)
	TOPSOIL - native grasses					777
	CLAY TILL, silt, sandy, gravelly, dry, soft, medium plastic, whitish brown, oxide staining, trace root hairs		B1	11.7	1 m - Dry Density = 1786 kg/m3 Optimum Moisture = 15.5% 1 m - LL = 48.8% PL = 15.2% PI = 33.6%	
1						
	SHALE (Weathered), silt and clay, trace sand, residual soil, brownish grey, dry to damp, medium to high plastic, extremely weak, blocky					776
2			B2			
	...2.6m - becomes less weathered					775
3						
	...3.6m - becomes highly to completely weathered					774
	End of Borehole @3.8 m					
4						773
5						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

11/01/2024

a division of Englobe

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) / POCKET PEN (kPa) (100 200 300 400)	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	21.4	●	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		⊢	3.2 m - Phi: 21.2° Cohesion: 23.0 kPa 3.2 m - LL = 55.1% PL = 18.2% PI = 36.9%		776
4		...3.8m - 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

11/01/2024

a division of Englobe

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, gravelly (<75mm), some silt, trace sand, dry, soft, medium plastic, whitish brown, trace root hairs, some shale residual soil		B1			
1						780
2	...2.0m - becomes damp					
	SHALE (Weathered), clay and silt, trace sand, residual soil, reddish brown, some oxidation staining, moist, high plastic, extremely weak, blocky, oxide staining					779
	...2.5m - oxidized cobbles (<500mm) for 1.0m		B2		3 m - Dispersivity Classification = ND3 % Dispersion = % 3 m - LL = 43.1% PL = 14.5% PI = 28.6%	
3						778
4	...3.8m - 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

11/01/2024

a division of Englobe

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 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		SAND, silty, trace clay, well graded, fine grained, dry, compact, light brown ...0.0m - increased clay content from 0.0m to 0.5m							780
1				B1			1 m - Sand = 69.9% Silt = 17.6% Clay = 12.5%		
		CLAY TILL, gravelly, trace sand, trace silt, dry, firm, medium plastic, dark brown, oxide staining, some shale residual soil							779
2		...2.0m - becomes moist		B2					
3		SHALE (Weathered), clay and silt, trace sand, residual soil, orangish greyish brown, damp to moist, high plastic, oxide staining, extremely weak ...3.5m - becomes completely weathered							778
									777
4		End of Borehole @4.0 m							
5									776
									775

Notes:

Test pit backfilled with uncompacted cuttings

Logged By: B.Tataryn

Reviewed By: T. Curtis

11/01/2024

a division of Englobe

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					783
	..0.1m - increased clay content from 0.0m to 0.5m					
	SAND, silty, trace clay, well graded, fine grained, dry, loose, light brown		B1			
1	CLAY TILL, gravelly, silty, trace sand, dry, firm, medium plastic, light whitish brown, oxide staining		B2			782
2	...1.9m - 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	...3.5m - 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)

Notes:

Test pit backfilled with uncompacted cuttings

Logged By: B.Tataryn

Reviewed By: T. Curtis

11/01/2024

a division of Englobe

TEST PIT No : 23TP433

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	05/08/2023 COMPLETED 05/08/2023	GROUND ELEVATION	768.61m N 5609924.400 E 416485.900
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		TOPSOIL, silty, some clay, some sand, some gravel, trace to some cobbles up to 300 mm, damp, stiff, low plastic, brown, some root hairs							768
		0.2m - 400 mm boulder							
1		SHALE (Weathered), clayey, silty, completely weathered, dark grey, trace oxidation staining, damp, high plastic, extremely weak to hard soil, blocky, trace gypsum crystals, trace white precipitates		B1	12.1	● I	0.9 m - LL = 64.4% PL = 17% PI = 47.4%		767
		End of Borehole @1.0 m							
2									766
3									765
4									764
5									763

Notes:

Test pit program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

11/01/2024

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TEST PIT No : 23TP434

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	05/08/2023 COMPLETED 05/08/2023	GROUND ELEVATION	770.49m N 5609864.400 E 416188.600
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL, silty, some clay, some sand, some gravel, trace to some cobbles up to 300 mm, damp, stiff, low plastic, brown, some root hairs					770
1	CLAY TILL, silty, sandy, trace gravel, damp, stiff, medium plastic, brown, some oxidation staining, trace gypsum crystals, trace white precipitates ...0.5m - becoming trace to some cobbles up to 300 mm, trace boulders up to 600 mm ...1.0m - becoming high plastic		B1	7.9	1 m - Dispersivity Classification = ND3 % Dispersion = 1% 1 m - LL = 77.4% PL = 22.9% PI = 54.5% 1 m - Gravel = 2.3% 1 m - Sand = 22.9% Silt = 34.5% Clay = 40.3%	769
2	SHALE (Weathered), clayey, silty, highly weathered, grey, trace oxidation staining, damp, extremely weak to hard soil, blocky, thinly laminated, trace white precipitates End of Borehole @2.0 m		B2	9.2	1.9 m - Dispersivity Classification = D2 % Dispersion = % 1.9 m - LL = 32.6% PL = 15.1% PI = 17.5%	768
3						767
4						766
5						765

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

Notes:
Test pit program. Backfilled with bucket packed cuttings.

Logged By: C. Tams
Reviewed By: C. Braun

11/01/2024

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TEST PIT No : 23TP435

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	05/08/2023 COMPLETED 05/08/2023	GROUND ELEVATION	772.68m N 5609926.700 E 415866.200
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL, silty, some clay, some sand, some gravel, trace cobbles up to 200 mm, damp, stiff, low plastic, brown, some root hairs					772
	CLAY TILL, silty, sandy, trace gravel, trace completely weathered shale inclusions, damp, stiff, medium plastic, brown, some oxidation staining, trace gypsum crystals, trace coal staining		B1	11.5	0.7 m - Dispersivity Classification = ND1 % Dispersion = % 0.7 m - Sand = 28.6% Fines = 71.4%	
1	...0.6m - becoming gravelly, some cobbles up to 250 mm					771
	SHALE (Weathered), clayey, silty, highly weathered, dark brown to grey mottling, some oxidation staining, damp, high plastic, extremely weak to hard soil, blocky, thinly laminated, trace gypsum crystals		B2	11.5		
2	End of Borehole @1.5 m					770
3						769
4						768
5						767

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 program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

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TEST PIT No : 23TP436

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	05/08/2023 COMPLETED 05/08/2023	GROUND ELEVATION	775.01m N 5609900.600 E 415565.300
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL, silty, some clay, some sand, some gravel, trace cobbles up to 200 mm, damp, stiff, low plastic, brown, some root hairs					775
	SHALE (Weathered), clayey, silty, completely weathered, brown to dark grey mottling, some oxidation staining, moist, high plastic, extremely weak to hard soil, blocky, trace gypsum crystals					
1	...1.0m - medium plastic at 1.0 m		B1	13.8	1 m - Dispersivity Classification = D2 % Dispersion = % 1 m - LL = 47.7% PL = 17.6% PI = 30.1%	774
	SHALE, clayey, silty, highly weathered, dark brown to grey mottling, some oxidation staining, moist, high plastic, extremely weak to hard soil, blocky, thinly laminated, trace gypsum crystals		AU1	16.7		
2	End of Borehole @1.7 m					773
3						772
4						771
5						770

● 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 program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

11/01/2024

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TEST PIT No : 23TP437

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	05/09/2023 COMPLETED 05/09/2023	GROUND ELEVATION	768.83m N 5610236.100 E 416493.700
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL, silty, some clay, some sand, some gravel, damp, stiff, low plastic, brown, some root hairs					768
	CLAY AND SAND TILL, silty, trace gravel, damp, stiff, low to medium plastic, light brown, trace oxidation staining, trace white precipitates					
1	...1.0m - becoming gravelly, some cobbles up to 200 mm ...1.1m - becoming cobbley		B1	4.7	1.3 m - Dispersivity Classification = ND1 % Dispersion = % 1.3 m - LL = 35.5% PL = 17% PI = 18.5%	
	...1.4m - becoming some completely weathered shale inclusions					767
2			B2	4.0	2 m - Dispersivity Classification = ND4 % Dispersion = 10% 2 m - Gravel = 40.4% 2 m - Sand = 37.2% Silt = 12.5% Clay = 9.9%	
3	GRAVEL, sandy, silty, some clay infill, well graded, fine grained, sub-angular, wet, compact, brown		B3	10.4	3.3 m - Gravel = 32.8% 3.3 m - Sand = 52.2% Fines = 15.0%	766
	...3.4m - SEEPAGE					
	SHALE, clayey, some silt, moderately weathered, grey, very moist, high plastic, extremely weak, thinly laminated		AU1	16.8		765
4	End of Borehole @3.7 m					
						764
5						
						763

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

Notes:

Test pit program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

11/01/2024

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TEST PIT No : 23TP438

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	05/09/2023 COMPLETED 05/09/2023	GROUND ELEVATION	771.61m N 5610245.900 E 416172.100
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL, silty, some clay, some sand, trace gravel, damp, stiff, low plastic, brown, some root hairs					
	CLAY, silty, sandy, trace fine gravel, damp, stiff, low plastic, light brown, trace root hairs		B1	4.0	0.5 m - Dispersivity Classification = ND1 % Dispersion = % 0.5 m - LL = 53.3% PL = 14.6% PI = 38.7%	771
1	CLAY TILL, silty, coarse grained sandy, some completely weathered shale inclusions, trace coarse gravel, moist, stiff, medium plastic, dark brown, some oxidation staining, trace gypsum crystals					770
2			B2	10.2	2.1 m - Dispersivity Classification = ND1 % Dispersion = % 2.1 m - LL = 31.3% PL = 11.3% PI = 20.0%	769
3	SHALE (Weathered), clayey, silty, completely weathered, grey, some oxidation staining, damp, high plastic, extremely weak to hard soil, blocky, trace gypsum crystals		B3	20.2	3.2 m - Dispersivity Classification = D2 % Dispersion = % 3.2 m - LL = 55.8% PL = 25.3% PI = 30.5%	768
	End of Borehole @3.3 m					
4						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 program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

11/01/2024

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TEST PIT No : 23TP439

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	05/09/2023 COMPLETED 05/09/2023	GROUND ELEVATION	773.09m N 5610165.300 E 415877.800
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL, silty, sandy, some clay, trace gravel, damp, stiff, low plastic, brown, some root hairs					773
	GRAVEL, silty, sandy, some clay infill, trace to some cobbles up to 160 mm, well graded, coarse grained, sub-rounded, damp, compact, grey, trace root hairs		B1	2.4	0.6 m - Gravel = 61.6% 0.6 m - Sand = 20.4% Fines = 18.0%	
1	SHALE (Weathered), clayey, silty, dark brown to grey mottling, some oxidation staining, moist, high plastic, extremely weak to hard soil, blocky, trace gypsum crystals					772
			B2	18.0	1.9 m - Dispersivity Classification = ND4 % Dispersion = %	
2	End of Borehole @2.0 m					771
3						770
4						769
5						768

● 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 program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

11/01/2024

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TEST PIT No : 23TP440

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	05/09/2023 COMPLETED 05/09/2023	GROUND ELEVATION	774.12m N 5610174.000 E 415589.400
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL, silty, sandy, some clay, trace gravel, damp, stiff, low plastic, brown, some root hairs					774
	CLAY TILL, silty, some sand, trace fine gravel up to 20 mm, moist, stiff, medium to high plastic, dark brown, some oxidation staining, trace white precipitates, trace gypsum crystals					
1			B1	15.4	0.9 m - Dispersivity Classification = ND2 % Dispersion = 5% 0.9 m - LL = 41.4% PL = 19.3% PI = 22.1% 0.9 m - Gravel = 0.1% 0.9 m - Sand = 21.6% Silt = 31.4% Clay = 46.9%	773
	...1.0m - becoming sandy, trace coal staining					
2	...2.0m - becoming some completely weathered shale inclusions		AU1	16.7	2 m - Dispersivity Classification = ND3 % Dispersion = % 2 m - LL = 38.6% PL = 10.1% PI = 28.5%	772
	SHALE (Weathered), clayey, silty, moderately weathered, grey, some oxidation staining, moist, high plastic, extremely weak, thinly laminated, trace gypsum crystals					
3	End of Borehole @3.0 m		B2	17.4	2.9 m - Dispersivity Classification = ND3 % Dispersion = %	771
4						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 program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

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TEST PIT No : 23TP441

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	05/09/2023 COMPLETED 05/09/2023	GROUND ELEVATION	769.73m N 5610519.200 E 416475.600
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL, silty, sandy, some clay, trace gravel, damp, stiff, low plastic, brown, some root hairs					769
	CLAY, silty, sandy, trace fine gravel, damp, stiff, low plastic, light brown, trace root hairs					
1	SAND, silty, trace fine gravel, poorly graded, fine grained, sub-rounded, moist, compact, brown, trace oxide specks		AU1	8.2	1.4 m - Sand = 77.0% Silt = 14.8% Clay = 8.2%	768
2	CLAY TILL, silty, some coarse grained sand, some gravel up to 20 mm, some completely weathered siltstone inclusions, moist, stiff, low to medium plastic, brown to grey mottling, some oxidation staining, trace coal staining, trace gypsum crystals ...2.4m - wet sand and gravel seam		B1	24.3	2.6 m - Sand = 27.5% Silt = 45.1% Clay = 27.4%	767
3	SHALE (Weathered), clayey, silty, highly weathered, grey, some oxidation staining, moist, high plastic, extremely weak to hard soil, thickly laminated		AU2	20.9		766
4	End of Borehole @3.9 m					765
5						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 program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

11/01/2024

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TEST PIT No : 23TP442

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	05/09/2023 COMPLETED 05/09/2023	GROUND ELEVATION	772.40m N 5610479.100 E 416153.200
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL, silty, sandy, some clay, some gravel, trace cobbles, damp, stiff, low plastic, brown, some root hairs					772
	CLAY TILL, silty, sandy, coarse gravelly, some completely weathered shale inclusions, some cobbles up to 170 mm, damp, stiff, low plastic, light grey, some white precipitates		B1	3.0	0.9 m - Dispersivity Classification = ND1 % Dispersion = % 0.9 m - Gravel = 58.7% 0.9 m - Sand = 28.3% Fines = 13.0%	
1						771
	...1.3m - becoming some coarse grained sand, moist, dark grey, some oxidation staining					
2						770
	...2.5m - becoming some gravel, trace cobbles		AU1	11.1	2.5 m - Dispersivity Classification = ND3 % Dispersion = % 2.5 m - LL = 38.4% PL = 17.8% PI = 20.6%	
3						769
	SHALE (Weathered), clayey, silty, completely weathered, dark brown to grey mottling, some oxidation staining, moist, high plastic, extremely weak to hard soil, blocky, thinly laminated, trace gypsum crystals		AU2	16.0	3.5 m - Dispersivity Classification = ND3 % Dispersion = 6% 3.5 m - Gravel = 3.3% 3.5 m - Sand = 9.1% Silt = 32.9% Clay = 54.7%	
4	...3.8m - becoming some siltstone concretions		AU3	19.9	3.9 m - Dispersivity Classification = D2 % Dispersion = %	768
	End of Borehole @4.0 m					
5						767

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 program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

11/01/2024

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TEST PIT No : 23TP443

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	05/09/2023 COMPLETED 05/09/2023	GROUND ELEVATION	773.86m N 5610499.400 E 415859.200
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL, silty, sandy, some clay, trace gravel, damp, stiff, low plastic, brown, some root hairs					773
	CLAY AND SILT, some sand, trace fine gravel, moist, stiff, low to medium plastic, light brown, some white precipitates					
1			B1	17.3	1.3 m - Sand = 24.0% Silt = 53.1% Clay = 22.9%	772
	CLAY TILL, silty, sandy, some course gravel, some completely weathered shale inclusions, some cobbles up to 150 mm, moist, stiff, high plastic, dark grey, some oxidation staining, trace coal staining, trace gypsum crystals		B2	6.7	2.1 m - Dispersivity Classification = ND3 % Dispersion = % 2.1 m - LL = 24.3% PL = 12.8% PI = 11.5%	
2						771
	SHALE (Weathered), clayey, silty, completely weathered, dark brown to grey mottling, some oxidation staining, moist, high plastic, extremely weak to hard soil, blocky, trace gypsum crystals					
3			AU1	25.6		770
	End of Borehole @3.5 m					
4						769
5						768

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

Notes:

Test pit program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

11/01/2024

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TEST PIT No : 23TP444

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	05/09/2023 COMPLETED 05/09/2023	GROUND ELEVATION	775.02m N 5610517.300 E 415575.800
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL, silty, sandy, some clay, trace gravel, damp, stiff, low plastic, brown, some root hairs					775
	CLAY TILL, silty, some sand, gravelly, trace cobbles up to 150 mm, damp, stiff, low plastic, light brown, some white precipitates, trace root hairs					
1	...1.0m - becoming sandy, some cobbles up to 200 mm		B1	8.4	0.9 m - Dispersivity Classification = ND1 % Dispersion = % 0.9 m - Gravel = 8.9% 0.9 m - Sand = 35.8% Fines = 55.3%	774
	...1.5m - becoming some completely weathered shale inclusions, some oxidation staining		B2	7.2	1.5 m - Dispersivity Classification = ND3 % Dispersion = 9% 1.5 m - LL = 34.1% PL = 13.3% PI = 20.8% 1.5 m - Gravel = 20.0% 1.5 m - Sand = 38.1% Silt = 22.3% Clay = 19.6%	
2						773
3	SHALE (Weathered), clayey, silty, moderately weathered, dark brown to grey mottling, some oxidation staining, moist, high plastic, extremely weak, thinly laminated, trace gypsum crystals		B3	19.5	3.3 m - Dispersivity Classification = D2 % Dispersion = %	772
	End of Borehole @3.4 m					
4						771
5						770

Moisture Content (%): ● 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 program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

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TEST PIT No : 23TP445

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	05/10/2023 COMPLETED 05/10/2023	GROUND ELEVATION	773.64m N 5610930.400 E 416025.500
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL, silty, sandy, some clay, trace gravel, damp, stiff, low plastic, brown, some root hairs					773
	CLAY TILL, silty, sandy, some coarse gravel, trace to some cobbles up to 150 mm, damp, stiff, low plastic, light brown, some white precipitates		B1	4.7	0.8 m - Dispersivity Classification = ND1 % Dispersion = % 0.8 m - Gravel = 43.9% 0.8 m - Sand = 18.4% Fines = 37.7%	
1	...1.2m - becoming some completely weathered shale inclusions, trace cobbles up to 100 mm, some oxidation staining		AU1	9.2	1.8 m - Dispersivity Classification = ND3 % Dispersion = %	772
2			B2	10.4	2.5 m - Dispersivity Classification = ND3 % Dispersion = % 2.5 m - LL = 46.0% PL = 13.4% PI = 32.6%	771
3	CLAY TILL, residual soil, silty, some sand, some completely weathered shale inclusions, trace coarse gravel, trace cobbles up to 100 mm, moist, stiff, medium to high plastic, dark brown to grey mottling, some oxidation staining, trace coal staining, trace white precipitates					770
4	...4.0m - becoming some coarse grained sand, some fine gravel, moist					
	SHALE (Weathered), clayey, silty, highly weathered, dark brown to grey mottling, some oxidation staining, moist, high plastic, extremely weak, thinly laminated, trace gypsum crystals		AU2			769
5	End of Borehole @4.8 m					768

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 program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

11/01/2024

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TEST PIT No : 23TP446

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	05/10/2023 COMPLETED 05/10/2023	GROUND ELEVATION	769.92m N 5610972.000 E 416470.600
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL, silty, sandy, some clay, trace gravel, damp, stiff, low plastic, brown, some root hairs					769
	GRAVEL, silty, sandy, some clay infill, trace to some cobbles up to 200 mm, well graded, coarse grained, sub-rounded, damp, compact, grey, some white precipitates		B1	4.6	0.7 m - Gravel = 53.5% 0.7 m - Sand = 33.7% Fines = 12.8%	
1	CLAY TILL, silty, coarse grained sandy, some fine gravel to gravelly, some completely weathered shale inclusions, trace cobbles up to 120 mm, moist, stiff, medium plastic, dark brown, some oxidation staining, trace coal staining, trace gypsum crystals		B2	6.9	1.6 m - Dispersivity Classification = ND1 % Dispersion = 1% 1.6 m - Gravel = 49.1% 1.6 m - Sand = 25.1% Silt = 12.4% Clay = 13.4%	768
2	...2.3m - increasing bedrock content					767
3			AU1	11.6	3.2 m - Dispersivity Classification = ND3 % Dispersion = % 3.2 m - LL = 37.8% PL = 13.3% PI = 24.5%	766
	SHALE (Weathered), silty, clayey, moderately weathered, grey, some oxidation staining, damp, high plastic, very weak, thickly laminated, trace gypsum crystals		AU2	17.9		
4	End of Borehole @3.8 m				3.7 m - Dispersivity Classification = ND3 % Dispersion = %	765
5						764

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

Standpipe/ Instrument

Notes:

Test pit program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

11/01/2024

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TEST PIT No : 23TP447

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	05/10/2023 COMPLETED 05/10/2023	GROUND ELEVATION	765.64m N 5611266.800 E 416301.000
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) (100 200 300 400) ▲ POCKET PEN (kPa)	REMARKS	Standpipe/ Instrument	Elevation (m)
0		TOPSOIL, clayey, some silt, some sand, trace gravel, trace cobbles up to 160 mm, damp, stiff, low plastic, brown, some root hairs							765
1		SHALE (Weathered), residual soil, clayey, silty, completely weathered, dark brown, moist, high plastic, extremely weak to hard soil, blocky, some white precipitates, trace gypsum crystals ...0.9m - becoming very moist		B1	23.3	●	0.8 m - Dry Density = 1617 kg/m3 Optimum Moisture = 20.4%		764
2		SHALE, clayey, silty, highly weathered, dark brown to grey mottling, trace oxidation staining, moist, high plastic, extremely weak, thinly laminated, trace gypsum crystals		AU1					763
		End of Borehole @2.1 m							
3									762
4									761
5									760

Notes:

Test pit program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

11/01/2024

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TEST PIT No : 23TP448

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	05/10/2023 COMPLETED 05/10/2023	GROUND ELEVATION	767.19m N 5611325.500 E 415856.600
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL, silty, sandy, some clay, trace gravel, damp, stiff, low plastic, brown, some root hairs					767
	CLAY TILL, silty, some sand to sandy, damp, stiff, medium plastic, brown, trace white precipitates, trace oxidation staining, trace gypsum crystals		B1	8.9	0.8 m - Dispersivity Classification = ND3 % Dispersion = %	
1	SHALE (Weathered), residual soil, clayey, silty, completely weathered, dark brown to grey mottling, moist, high plastic, extremely weak to hard soil, blocky, some white precipitates, trace gypsum crystals				0.8 m - LL = 32.9% PL = 11.5% PI = 21.4%	766
	...1.4m - 100 mm seam of oxidized concretions		B2	14.3	1.7 m - Dispersivity Classification = ND3 % Dispersion = %	
2	...2.5m - becoming very silty, highly weathered					765
			AU1	17.8		
	End of Borehole @2.8 m					
3						764
4						763
5						762

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 program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

11/01/2024

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TEST PIT No : 23TP449

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	05/10/2023 COMPLETED 05/10/2023	GROUND ELEVATION	769.00m N 5611539.300 E 415568.500
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, silty, sandy, some clay, trace gravel, damp, stiff, low plastic, brown, some root hairs							769
		SHALE (Weathered), residual soil, clayey, silty, completely weathered, brown, medium plastic, extremely weak to hard soil, blocky, thinly laminated, some white precipitates		B1					
1		...1.0m - becoming some oxidation staining, some siltstone concretions							768
		...1.4m - becoming dark brown to grey mottling		AU1	9.0	●			
				AU2	10.5	●			
2		End of Borehole @2.0 m							767
3									766
4									765
5									764

Notes:

Test pit program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

11/01/2024

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TEST PIT No : 23TP450

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	05/10/2023 COMPLETED 05/10/2023	GROUND ELEVATION	769.90m N 5611533.100 E 416165.800
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
		TOPSOIL, silty, sandy, some clay, trace gravel, damp, stiff, low plastic, brown, some root hairs						
		CLAY TILL, silty, sandy, some coarse gravel to gravelly, some cobbles up to 120 mm, damp, stiff, low plastic, light brown, some white precipitates ...0.7m - becoming some oxidation staining, trace gypsum crystals		B1	3.2	0.6 m - Dispersivity Classification = ND1 % Dispersion = 17% 0.6 m - Gravel = 29.3% 0.6 m - Sand = 48.0% Silt = 13.8% Clay = 8.9% 1.3 m - Dispersivity Classification = ND3 % Dispersion = %		
1		SHALE (Weathered), residual soil, clayey, silty, completely weathered, dark brown to grey mottling, moist, high plastic, extremely weak to hard soil, blocky, some white precipitates		B2	24.2			769
2		SHALE (Weathered), silty, clayey, completely weathered, light grey, moist, high plastic, extremely weak to hard soil, blocky, thinly laminated, some white precipitates, trace gypsum crystals		AU1	33.6			768
		End of Borehole @2.0 m						
3								767
4								766
5								765
								764

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

Notes:
Test pit program. Backfilled with bucket packed cuttings.

Logged By: C. Tams
Reviewed By: C. Braun

11/01/2024

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TEST PIT No : 23TP451

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	05/10/2023 COMPLETED 05/10/2023	GROUND ELEVATION	768.96m N 5611796.000 E 416456.400
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
0		TOPSOIL, silty, sandy, some clay, trace gravel, damp, stiff, low plastic, brown, some root hairs						769
		GRAVEL, sandy, silty, some cobbles up to 160 mm, well graded, coarse grained, sub-rounded, moist, compact, brown		B1	5.8	0.8 m - Gravel = 52.8% 0.8 m - Sand = 31.4% Fines = 15.8%		
1								768
		SHALE (Weathered), silty, clayey, highly weathered, grey, moist, high plastic, extremely weak, thinly laminated		AU1	18.4			
2		End of Borehole @2.1 m						767
3								766
4								765
5								764

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

Notes:
Test pit program. Backfilled with bucket packed cuttings.

Logged By: C. Tams
Reviewed By: C. Braun

11/01/2024

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TEST PIT No : 23TP452

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	05/10/2023 COMPLETED 05/10/2023	GROUND ELEVATION	768.67m N 5612134.600 E 416508.300
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL, silty, sandy, some clay, trace gravel, damp, stiff, low plastic, brown, some root hairs					768
	CLAY TILL, silty, some sand, some coarse gravel, moist, stiff, medium plastic, dark brown, some oxidation staining, some white sulphate inclusions, trace gypsum crystals		B1	12.0	0.6 m - Dispersivity Classification = ND3 % Dispersion = %	
1	SHALE (Weathered), clayey, silty, highly weathered, dark brown to grey mottling, moist, high plastic, extremely weak to hard soil, thinly laminated, trace gypsum crystals					767
			AU1	22.9	1.7 m - Dispersivity Classification = D2 % Dispersion = %	
2	End of Borehole @1.8 m					766
3						765
4						764
5						763

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 program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

11/01/2024

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TEST PIT No : 23TP453

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	05/09/2023 COMPLETED 05/09/2023	GROUND ELEVATION	776.52m N 5610063.400 E 415115.500
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) (100 200 300 400) ▲ POCKET PEN (kPa)	REMARKS	Standpipe/ Instrument	Elevation (m)
0		TOPSOIL, silty, sandy, some clay, trace gravel, damp, stiff, low plastic, brown, some root hairs							776
1		SHALE (Weathered), clayey, silty, highly weathered, dark brown to grey mottling, some oxidation staining, damp, high plastic, extremely weak to hard soil, thickly laminated, trace gypsum crystals		B1			0.8 m - Dry Density = 1645 kg/m3 Optimum Moisture = 19.4%		775
2		End of Borehole @1.0 m							774
3									773
4									772
5									771

Notes:

Test pit program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

11/01/2024

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TEST PIT No : 23TP454

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	05/09/2023 COMPLETED 05/09/2023	GROUND ELEVATION	776.03m N 5610198.600 E 415132.900
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
0		TOPSOIL, silty, sandy, some clay, trace gravel, trace cobbles, damp, stiff, low plastic, brown, some root hairs						776
		CLAY TILL, silty, residual soil, trace sand, trace fine gravel, moist, stiff, high plastic, dark brown, trace oxidation staining, trace gypsum crystals		B1	16.1	0.7 m - Dispersivity Classification = ND3 % Dispersion = % 0.7 m - LL = 54.6% PL = 17.9% PI = 36.7%		
1								775
		SHALE (Weathered), clayey, silty, highly weathered, dark brown to grey mottling, some oxidation staining, damp, high plastic, extremely weak to hard soil, thickly laminated, trace gypsum crystals		AU1	19.3	2 m - Dispersivity Classification = ND1 % Dispersion = 2% 2 m - Sand = 62.1% Silt = 20.2% Clay = 17.7%		
2		End of Borehole @2.1 m						774
3								773
4								772
5								771

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

Notes:

Test pit program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

11/01/2024

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TEST PIT No : 23TP455

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	05/09/2023 COMPLETED 05/09/2023	GROUND ELEVATION	777.78m N 5610205.100 E 414872.000
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL, silty, sandy, some clay, trace gravel, trace cobbles, damp, stiff, low plastic, brown, some root hairs					777
1	CLAY TILL, silty, residual soil, trace sand, trace fine gravel, moist, stiff, high plastic, dark brown, trace oxidation staining, trace gypsum crystals		B1	14.7	0.9 m - Dispersivity Classification = ND3 % Dispersion = % 0.9 m - Sand = 25.2% Fines = 74.8%	
2	SHALE (Weathered), clayey, silty, completely weathered, dark brown to grey mottling, some oxidation staining, moist, high plastic, extremely weak to hard soil, blocky, thinly laminated, trace gypsum crystals		AU1	22.6	1.8 m - Dispersivity Classification = ND3 % Dispersion = %	776
	SHALE (Weathered), clayey, silty, highly weathered, dark brown to grey mottling, some oxidation staining, damp, high plastic, extremely weak to hard soil, thickly laminated, trace gypsum crystals 2.2m - bentonite seam		AU2	27.9		
3	End of Borehole @2.3 m					775
4						774
5						773
						772

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

Standpipe/ Instrument

Notes:

Test pit program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

11/01/2024

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TEST PIT No : 23TP456

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	05/09/2023 COMPLETED 05/09/2023	GROUND ELEVATION	775.86m N 5610438.800 E 415111.600
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL, silty, sandy, some clay, trace gravel, damp, stiff, low plastic, brown, some root hairs					775
1	CLAY TILL, silty, trace sand, trace fine gravel, moist, stiff, high plastic, dark brown, some white precipitates		AU1	23.5	0.8 m - Dispersivity Classification = ND4 % Dispersion = %	
2	SHALE (Weathered), clayey, silty, highly weathered, dark brown to grey mottling, some oxidation staining, damp, high plastic, extremely weak to hard soil, thickly laminated, trace gypsum crystals		AU2	13.1	1.7 m - Dispersivity Classification = ND3 % Dispersion = %	774
	End of Borehole @1.8 m					
3						773
4						772
5						771
						770

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 program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

a division of Englobe

TEST PIT No : 23TP457

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	05/09/2023 COMPLETED 05/09/2023	GROUND ELEVATION	775.83m N 5610616.400 E 415105.000
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL, silty, sandy, some clay, trace gravel, damp, stiff, low plastic, brown, some root hairs					775
1	CLAY TILL, silty, sandy, gravelly, trace cobbles up to 150 mm, damp, stiff, low plastic, light brown, some white precipitates		B1	10.0	0.6 m - Dispersivity Classification = ND3 % Dispersion = 15% 0.6 m - Gravel = 34.2% 0.6 m - Sand = 23.4% Silt = 17.2% Clay = 25.2%	
2	SHALE (Weathered), clayey, silty, completely weathered, dark brown to grey mottling, some oxidation staining, moist, high plastic, extremely weak to hard soil, blocky, trace gypsum crystals, trace white precipitates End of Borehole @1.6 m		B2	15.1	1.5 m - Dispersivity Classification = D2 % Dispersion = %	774
3						773
4						772
5						771
						770

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 program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

11/01/2024

a division of Englobe

TEST PIT No : 23TP458

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	05/09/2023 COMPLETED 05/09/2023	GROUND ELEVATION	778.34m N 5610951.700 E 415070.800
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL, silty, sandy, some clay, trace gravel, damp, stiff, low plastic, brown, some root hairs					778
	CLAY AND SILT, some sand, trace fine gravel, moist, stiff, low to medium plastic, light brown, some white precipitates					
1	CLAY TILL, silty, some sand, some completely weathered shale inclusions, some gravel, trace cobbles up to 150 mm, damp, stiff, medium plastic, dark brown, some oxidation staining, some white precipitates		B1	10.8	1.2 m - Dispersivity Classification = ND1 % Dispersion = % 1.2 m - LL = 42.9% PL = 19.5% PI = 23.4%	777
2						776
3	SHALE (Weathered), clayey, silty, some medium grained sand lenses, completely weathered, grey, some oxidation staining, damp, high plastic, extremely weak to hard soil, blocky, thinly laminated, trace coal staining, trace gypsum crystals		AU1			775
4	End of Borehole @3.8 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 program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

11/01/2024

a division of Englobe

TEST PIT No : 23TP459

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	05/10/2023 COMPLETED 05/10/2023	GROUND ELEVATION	778.50m N 5611076.500 E 414985.300
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL, silty, sandy, some clay, trace gravel, damp, stiff, low plastic, brown, some root hairs					778
	CLAY AND SILT, some sand, trace fine gravel, moist, stiff, low to medium plastic, light brown, some white precipitates		AU1	17.0	0.8 m - Dispersivity Classification = ND2 % Dispersion = %	
1	CLAY TILL, silty, sandy, some coarse gravel, trace to some cobbles up to 150 mm, damp, stiff, low plastic, light brown, some white precipitates					777
	CLAY TILL, silty, some sand, some completely weathered shale inclusions, trace coarse gravel, trace cobbles up to 100 mm, moist, stiff, medium to high plastic, dark brown to grey mottling, some oxidation staining, trace coal staining, trace white precipitates ...2.0m - bedrock content increases with depth		B1	9.4	1.6 m - Dispersivity Classification = ND3 % Dispersion = 5% 1.6 m - Dry Density = 1705 kg/m3 Optimum Moisture = 18.6% 1.6 m - Gravel = 27.7% 1.6 m - Sand = 20.1% Fines = 52.2%	
2			B2	15.1	2.6 m - Dispersivity Classification = ND1 % Dispersion = % 2.6 m - LL = 40.4% PL = 22.7% PI = 17.7%	776
3	SHALE (Weathered), clayey, silty, highly weathered, dark brown to grey mottling, some oxidation staining, moist, high plastic, extremely weak, thinly laminated, trace gypsum crystals					775
4	End of Borehole @4.0 m		AU2	17.1	3.9 m - Dispersivity Classification = ND3 % Dispersion = %	774
5						773

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

Notes:

Test pit program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

11/01/2024

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TEST PIT No : 23TP460

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	05/10/2023 COMPLETED 05/10/2023	GROUND ELEVATION	767.43m N 5611314.900 E 415467.500
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
0		TOPSOIL, silty, sandy, some clay, trace gravel, trace cobbles up to 100 mm, damp, stiff, low plastic, brown, some root hairs						767
		SHALE (Weathered), residual soil, clayey, silty, completely weathered, dark brown, trace oxidation staining, moist, high plastic, extremely weak to hard soil, blocky, thinly laminated, some white precipitates, trace gypsum crystals		B1	26.2	0.7 m - Dispersivity Classification = ND3 % Dispersion = %		
1				AU1	14.1			
		SHALE (Weathered), silty, clayey, highly weathered, dark brown to grey mottling, some oxidation staining, damp, medium plastic, extremely weak, thickly laminated, trace gypsum crystals		AU2	8.0			766
2		End of Borehole @1.4 m						765
3								764
4								763
5								762

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

Notes:

Test pit program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

11/01/2024

a division of Englobe

TEST PIT No : 23TP461

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	05/11/2023 COMPLETED 05/11/2023	GROUND ELEVATION	773.54m N 5611753.300 E 415387.900
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL, silty, moist, loose, brown					773
	CLAY TILL, silty, some sand, some gravel, boulders to 450 mm, moist, stiff to very stiff, medium plastic, light brown to dark grey mottling, oxide staining, coal specks, suspect white sulphate inclusions					
1			B1	6.8	1.7 m - LL = 42.4% PL = 18.9% PI = 23.5% 1.7 m - Dispersivity Classification = ND3 % Dispersion = % 1.7 m - Gravel = 31.9% 1.7 m - Sand = 24.5% Fines = 43.6%	772
2	...2.0m - boulders to 650 mm SHALE (Weathered), completely weathered, light brown to dark grey mottling, moist, high plastic, extremely weak, oxide staining, coal staining		B2	12.2	2.3 m - Dispersivity Classification = ND1 % Dispersion = 6% 2.3 m - Gravel = 21.3% 2.3 m - Sand = 24.2% Silt = 30.3% Clay = 24.2%	771
3	...2.5m - becoming shale, grey, highly weathered, oxide staining End of Borehole @2.6 m					770
4						769
5						768

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 program. Backfilled with bucket packed cuttings.

Logged By: J. Boyd

Reviewed By: C. Braun

11/01/2024

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TEST PIT No : 23TP462

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	05/11/2023 COMPLETED 05/11/2023	GROUND ELEVATION	772.20m N 5611906.300 E 414814.100
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
	TOPSOIL, silty, moist, loose, brown					772
	CLAY TILL, silty to and silt, sandy, trace gravel, damp, very stiff, low to medium plastic, brown, suspect white sulphate inclusions, oxide specks					
1			B1	4.5	1 m - Dispersivity Classification = D2 % Dispersion = % 1 m - Sand = 55.9% Fines = 44.1%	771
	SHALE (Weathered), completely weathered, light brown to dark grey mottling, damp, medium plastic, extremely weak, suspect white sulphate inclusions, oxide staining, trace cobbles to 100 mm					
2	...2.0m - becoming shale, grey, highly weathered, extremely weak to weak, oxide staining ...2.4m - gypsum and quartz crystals		B2	11.6	2 m - Dispersivity Classification = D2 % Dispersion = % 2 m - Sand = 30.9% Fines = 69.1%	770
3	End of Borehole @3.0 m					769
4						768
5						767

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 program. Backfilled with bucket packed cuttings.

Logged By: J. Boyd

Reviewed By: C. Braun

11/01/2024

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TEST PIT No : 23TP463

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	05/11/2023 COMPLETED 05/11/2023	GROUND ELEVATION	783.94m N 5611221.300 E 414155.800
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
	TOPSOIL, silty, sandy, moist, loose, brown, organics					
	CLAY TILL, silty, some sand to sandy, trace gravel, damp, very stiff, low to medium plastic, brown, suspect white sulphate inclusions, oxide specks, trace organics		B1	8.4	0.5 m - LL = 56.7% PL = 14.5% PI = 42.2% 0.5 m - Dispersivity Classification = ND4 % Dispersion = %	
	...0.6m - becoming silty to and silt, increasing suspect white sulphate content		B2			
1	SHALE (Weathered), residual soil to completely weathered, light brown to dark grey mottling, damp, medium plastic, extremely weak, suspect white sulphate inclusions, oxide staining, coal pockets to 10 mm, trace cobbles (<5%)				0.9 m - Dispersivity Classification = D2 % Dispersion = %	783
	...1.0m - increasing suspect white sulphate content, increasing oxide staining		B3			
2	...2.1m - becoming grey and brown, highly weathered, extremely to very weak, decreasing suspect white sulphate inclusions, decreasing oxide staining					782
	...2.7m - becoming shale, grey, medium to highly weathered, very weak, suspect white sulphate inclusions, oxide staining					
3	End of Borehole @3.5 m					781
4						780
5						779
						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 program. Backfilled with bucket packed cuttings.

Logged By: J. Boyd

Reviewed By: C. Braun

11/01/2024

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TEST PIT No : 23TP464

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	05/11/2023 COMPLETED 05/11/2023	GROUND ELEVATION	784.02m N 5611384.200 E 414134.800
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL, silty, moist, loose, brown, organics					784
	CLAY TILL, silty, some sand to sandy, trace gravel, damp, very stiff, low to medium plastic, brown, suspect white sulphate inclusions, oxide specks, trace organics					
	...0.7m - becoming silty to and silt, increasing suspect white sulphate content					
1			B1	10.8	1.1 m - Dispersivity Classification = ND3 % Dispersion = 5% 1.1 m - Gravel = 3.1% 1.1 m - Sand = 27.6% Silt = 32.8% Clay = 36.5%	783
	...1.5m - becoming sandy to and sand, low plastic					
	...1.8m - shale fragments to 20 mm		B2	16.2		
2	SHALE (Weathered), completely weathered, light brown to dark grey mottling, damp, medium plastic, extremely weak, suspect white sulphate inclusions, oxide staining, trace cobbles (<5%)				1.8 m - Dispersivity Classification = ND3 % Dispersion = %	782
	...2.8m - becoming shale, grey, medium weathered, very weak, oxide staining					
3	End of Borehole @3.2 m					781
4						780
5						779

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 program. Backfilled with bucket packed cuttings.

Logged By: J. Boyd

Reviewed By: C. Braun

a division of Englobe

TEST PIT No : 23TP465

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	05/11/2023 COMPLETED 05/11/2023	GROUND ELEVATION	784.58m N 5611560.700 E 414109.600
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL, silty, moist, loose, brown, organics					784
	CLAY TILL, silty, some sand to sandy, trace gravel, damp, very stiff, low to medium plastic, brown, suspect white sulphate inclusions, oxide specks, trace organics		B1	3.9	0.8 m - LL = 22.6% PL = 12% PI = 10.6% 0.8 m - Dispersivity Classification = ND3 % Dispersion = %	
1	SHALE (Weathered), completely weathered, light brown to dark grey mottling, damp, medium plastic, extremely weak, suspect white sulphate inclusions, oxide staining, trace cobbles		B2	14.9	1.4 m - Dispersivity Classification = ND3 % Dispersion = %	783
2	...2.0m - becoming more grey, highly weathered, extremely weak, gypsum and quartz crystals		B3			782
	...2.5m - sand pockets to 20 mm					
	End of Borehole @2.7 m					
3						781
4						780
5						779

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

Notes:
Test pit program. Backfilled with bucket packed cuttings.

Logged By: J. Boyd
Reviewed By: C. Braun

11/01/2024

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TEST PIT No : 23TP467

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	05/10/2023 COMPLETED 05/10/2023	GROUND ELEVATION	764.45m N 5611305.900 E 416720.200
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL, silty, sandy, some clay, trace gravel, damp, stiff, low plastic, brown, some root hairs					764
	SHALE (Weathered), residual soil, clayey, silty, completely weathered, dark brown, moist, high plastic, extremely weak to hard soil, blocky, thinly laminated, some white precipitates, trace gypsum crystals					
	...0.7m - becoming very moist		B1	16.7	0.8 m - LL = 49.7% PL = 16.5% PI = 33.2%	
1						763
			AU1	23.4		
2						762
	...2.5m - becoming highly to moderately weathered, moist		AU2	18.9		
	End of Borehole @2.7 m					
3						761
4						760
5						759

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 program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

a division of Englobe

TEST PIT No : 23TP468

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	05/11/2023 COMPLETED 05/11/2023	GROUND ELEVATION	774.92m N 5612161.800 E 415454.500
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL, silty, sandy, moist, loose, brown, organics					774
	CLAY TILL, silty to and silt, some sand to sandy, trace gravel, damp, very stiff, low to medium plastic, brown, oxide specks					
1	...0.9m - becoming sandy, suspect white sulphate inclusions		B1	17.3	1 m - Dispersivity Classification = D2 % Dispersion = %	
	SAND, some clay, some silt, poorly graded, fine to medium grained, damp, dense, brown, oxide specks, coal specks					773
2	SHALE (Weathered), residual soil to completely weathered, light brown to dark grey mottling, damp, medium plastic, extremely weak, suspect white sulphate inclusions, oxide staining, coal pockets, trace cobbles ...2.0m - trace to some boulders to 900 mm, sand pockets to 100 mm		B2	11.3	2 m - Dispersivity Classification = ND3 % Dispersion = 5% 2 m - Gravel = 15.4% 2 m - Sand = 18.7% Silt = 36.7% Clay = 29.2%	
	End of Borehole @2.6 m				excavator refusal on boulders	772
3						
4						771
5						770
						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 program. Backfilled with bucket packed cuttings.

Logged By: J. Boyd

Reviewed By: C. Braun

11/01/2024

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TEST PIT No : 23TP469

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	05/11/2023 COMPLETED 05/11/2023	GROUND ELEVATION	776.27m N 5612137.900 E 415704.700
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
0		TOPSOIL, silty, sandy, some grave, moist, loose, brown, organics						776
		CLAY TILL, some silt, some sand, some gravel, some cobbles, trace boulders, damp, hard, low plastic, brown, coal specks, oxide staining ...0.6m - suspect white sulphate inclusions		B1	14.0	0.6 m - Dispersivity Classification = ND3 % Dispersion = %		
1								775
		SHALE (Weathered), residual soil to completely weathered, light brown to dark grey mottling, damp, medium plastic, extremely weak, suspect white sulphate inclusions, gypsum crystal pockets to 75 mm, oxide staining, coal pockets, trace cobbles, trace boulders to 450 mm ...2.0m - becoming shale, grey, medium to highly weathered, very weak, oxide staining		B2	9.8	1.7 m - Dispersivity Classification = ND3 % Dispersion = % 1.7 m - Gravel = 13.0% 1.7 m - Sand = 15.4% Fines = 71.6%		
2								774
		End of Borehole @2.7 m						
3								773
4								772
5								771

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

Notes:

Test pit program. Backfilled with bucket packed cuttings.

Logged By: J. Boyd

Reviewed By: C. Braun

11/01/2024

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TEST PIT No : 23TP470

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	05/11/2023 COMPLETED 05/11/2023	GROUND ELEVATION	772.72m N 5612156.300 E 415939.900
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL, silty, sandy, some grave, moist, loose, brown, organics					772
	CLAY TILL, silty, some sand, some gravel, damp, hard, low to medium plastic, brown, oxide specks, coal specks		B1	6.1	0.4 m - LL = 31.5% PL = 10.5% PI = 21.0% 0.4 m - Dispersivity Classification = ND4 % Dispersion = %	
1	SHALE (Weathered), residual soil to completely weathered, light brown to dark grey mottling, damp, medium plastic, extremely weak, suspect white sulphate inclusions, gypsum crystals, oxide staining, coal pockets, trace cobbles ...0.5m - 50 mm sand layer		B2	19.2	1.2 m - Dispersivity Classification = ND3 % Dispersion = %	771
2	...1.5m - becoming highly weathered, very weak, brown and grey, trace to none white sulphate inclusions ...2.0m - becoming shale, highly weathered, very weak, grey, high oxide staining					770
3	End of Borehole @2.8 m					769
4						768
5						767

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 program. Backfilled with bucket packed cuttings.

Logged By: J. Boyd
Reviewed By: C. Braun

11/01/2024

a division of Englobe

TEST PIT No : 23TP471

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	05/11/2023 COMPLETED 05/11/2023	GROUND ELEVATION	770.92m N 5612327.900 E 415942.700
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		TOPSOIL, silty, sandy, some grave, moist, loose, brown, organics							770
		CLAY TILL, silty, some sand to sandy, trace gravel, damp, hard, low to medium plastic, brown, oxide specks, coal specks							
1		SHALE (Weathered), residual soil to completely weathered, light brown to dark grey mottling, damp, medium plastic, extremely weak, suspect white sulphate inclusions, gypsum crystals, oxide staining, coal pockets		B1	16.2	●	1 m - Dispersivity Classification = ND3 % Dispersion = 7% 1 m - Gravel = 0.1% 1 m - Sand = 9.8% Silt = 47.3% Clay = 42.8%		769
2		...1.1m - decreasing white sulphate inclusions ...1.5m - becoming shale, highly weathered, very weak, grey, high oxide staining							768
3		End of Borehole @2.4 m							767
4									766
5									765

Notes:

Test pit program. Backfilled with bucket packed cuttings.

Logged By: J. Boyd

Reviewed By: C. Braun

11/01/2024

a division of Englobe

TEST PIT No : 23TP472

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	05/11/2023 COMPLETED 05/11/2023	GROUND ELEVATION	773.88m N 5612390.500 E 415638.800
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)
		TOPSOIL, silty, sandy, trace gravel, moist, loose, brown, organics							773
		CLAY TILL, silty, some sand to sandy, trace gravel, damp, hard, low to medium plastic, brown, oxide specks, coal specks, suspect white sulphate inclusions ...0.7m - potential 100 mm sand layer. grab sample taken							
1		SHALE (Weathered), residual soil to completely weathered, light brown to dark grey mottling, damp, medium plastic, extremely weak, suspect white sulphate inclusions, gypsum crystals, oxide staining, coal pockets ...1.7m - becoming highly weathered, very weak, grey and brown, high oxide staining							772
2									
3		...2.7m - becoming shale, highly weathered, very weak, grey, high oxide staining							771
		End of Borehole @3.4 m							770
4									
5									769
									768

Notes:

Test pit program. Backfilled with bucket packed cuttings.

Logged By: J. Boyd

Reviewed By: C. Braun

11/01/2024

a division of Englobe

TEST PIT No : 23TP473

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	05/08/2023 COMPLETED 05/08/2023	GROUND ELEVATION	771.06m N 5609650.800 E 416197.900
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, some gravel, trace cobbles up to 300 mm, damp, stiff, low plastic, brown, root hairs					771
	CLAY TILL, silty, some sand, trace gravel, moist, stiff, medium plastic, brown to grey mottling, some oxidation staining, trace gypsum crystals					
	...0.8m - becoming high plastic		B1	10.3	0.8 m - Dispersivity Classification = ND3 % Dispersion = % 0.8 m - LL = 56.3% PL = 12.1% PI = 44.2%	
1	SHALE (Weathered), clayey, silty, completely weathered, brown to dark grey mottling, some oxidation staining, damp, high plastic, extremely weak to hard soil, blocky					770
			B2	16.4	1.8 m - Dispersivity Classification = ND4 % Dispersion = %	
2	End of Borehole @1.9 m					769
3						768
4						767
5						766

Moisture Content (%): ● 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 program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

a division of Englobe

TEST PIT No : 23TP474

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	05/08/2023 COMPLETED 05/08/2023	GROUND ELEVATION	772.95m N 5609648.200 E 415896.200
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, some gravel, trace cobbles up to 300 mm, damp, stiff, low plastic, brown, root hairs					772
	CLAY TILL, silty, sandy, trace gravel, dry, very stiff, medium to high plastic, dark brown, some oxidation staining, trace gypsum crystals		AU1			
1	...1.2m - becoming some completely weathered shale inclusions		B1			
			AU2	6.3	1.8 m - Dispersivity Classification = ND3 % Dispersion = 5% 1.8 m - Sand = 11.8% Silt = 51.4% Clay = 36.8%	771
2	SHALE (Weathered), clayey, silty, completely weathered, dark brown to grey mottling, some oxidation staining, damp, high plastic, extremely weak to hard soil, blocky		B2	16.4	2.4 m - Dispersivity Classification = ND3 % Dispersion = %	
	End of Borehole @2.6 m					770
3						
4						769
5						768
						767

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 program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

a division of Englobe

TEST PIT No : 23TP475

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	05/10/2023 COMPLETED 05/10/2023	GROUND ELEVATION	768.10m N 5612521.400 E 416626.300
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL, silty, sandy, some clay, trace gravel, damp, stiff, low plastic, brown, some root hairs					768
	CLAY TILL, silty, some coarse grained sand, trace gravel, moist, stiff, medium to high plastic, dark brown					
1	...0.8m - becoming some oxidation staining, trace coal staining, trace gypsum crystals					767
	SHALE (Weathered), clayey, silty, completely weathered, dark brown to grey mottling, moist, high plastic, extremely weak to hard soil, blocky, some white precipitates		B1			
2	...2.0m - becoming very moist, trace white precipitates		B2			766
3	...3.5m - becoming highly weathered		AU1			765
	End of Borehole @3.8 m					
4						764
5						763

Moisture Content (%): ● 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 program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

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TEST PIT No : 23TP476

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	05/10/2023 COMPLETED 05/10/2023	GROUND ELEVATION	767.77m N 5611501.400 E 416869.000
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
		TOPSOIL, silty, sandy, some clay, trace gravel, damp, stiff, low plastic, brown, some root hairs						767
		CLAY TILL, silty, some sand, some coarse gravel, some completely weathered shale inclusions, moist, very stiff, medium to high plastic, dark brown, some oxidation staining, trace gypsum crystals, trace white precipitates						
1		...1.0m - becoming some gypsum crystals		B1	10.3	0.9 m - Dispersivity Classification = D2 % Dispersion = % 0.9 m - Gravel = 13.8% 0.9 m - Sand = 48.0% Fines = 38.2%		766
2				AU1				
		SHALE (Weathered), clayey, silty, highly weathered, dark brown to grey mottling, some oxidation staining, moist, high plastic, extremely weak, thinly laminated, trace gypsum crystals						765
3				B2	23.3	2.9 m - Dispersivity Classification = D2 % Dispersion = %		
		End of Borehole @3.1 m						764
4								
								763
5								
								762

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

Notes:
Test pit program. Backfilled with bucket packed cuttings.

Logged By: C. Tams
Reviewed By: C. Braun

11/01/2024

a division of Englobe

TEST PIT No : 23TP477

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	05/08/2023 COMPLETED 05/08/2023	GROUND ELEVATION	771.26m N 5609472.600 E 416293.000
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, some gravel, trace cobbles up to 300 mm, damp, stiff, low plastic, brown, root hairs					771
	CLAY TILL, silty, sandy, trace gravel, damp, very stiff, medium to high plastic, brown, some oxidation staining, trace gypsum crystals		AU1	8.2	0.6 m - Dispersivity Classification = ND3 % Dispersion = 20%	
	...0.6m - trace cobbles up to 200 mm				0.6 m - LL = 40.8% PL = 11.5% PI = 29.3%	
1	SHALE (Weathered), clayey, silty, completely weathered, dark brown to grey mottling, some oxidation staining, damp, high plastic, extremely weak to hard soil, blocky, thinly laminated, trace gypsum crystals		B1	15.0	0.6 m - Sand = 5.6% Silt = 62.2% Clay = 32.2%	770
			AU2	16.0	1 m - Dispersivity Classification = ND4 % Dispersion = %	
2					1 m - Sand = 0.6% Silt = 52.9% Clay = 46.5%	769
	...2.5m - becoming highly to moderately weathered, very weak		AU3		1.6 m - Dispersivity Classification = D2 % Dispersion = %	
3					1.6 m - LL = 62.2% PL = 13.9% PI = 48.3%	768
			AU4			
	End of Borehole @3.5 m					
4						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 program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

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TEST PIT No : 23TP478

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	05/08/2023 COMPLETED 05/08/2023	GROUND ELEVATION	771.94m N 5609475.200 E 415994.100
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, some gravel, trace cobbles up to 300 mm, damp, stiff, low plastic, brown, root hairs					771
	CLAY TILL, silty, some sand, trace gravel, damp, very stiff, medium plastic, brown, some oxidation staining, trace gypsum crystals		B1	7.5	0.6 m - Dispersivity Classification = ND3 % Dispersion = %	
	...0.8m - becoming sandy, gravelly, some cobbles up to 200 mm		B2	4.0	0.6 m - Gravel = 16.8% 0.6 m - Sand = 49.7% Fines = 33.5% 0.9 m - Dispersivity Classification = ND1 % Dispersion = % 0.9 m - Dry Density = 1946 kg/m3 Optimum Moisture = 11.8%	
1	SHALE (Weathered), clayey, silty, completely weathered, dark brown to grey mottling, some oxidation staining, damp, high plastic, extremely weak to hard soil, blocky, thinly laminated, trace gypsum crystals					770
2			B3		2.1 m - Dispersivity Classification = D2 % Dispersion = %	
	...2.5m - becoming highly to moderately weathered, very weak		AU1	12.3	2.7 m - Dispersivity Classification = D2 % Dispersion = 4% 2.7 m - Sand = 38.5% Silt = 27.9% Clay = 33.6%	769
3	...3.2m - becoming very silty					
	End of Borehole @3.5 m					768
4						
						767
5						
						766

Moisture Content (%): ● 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 program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

11/01/2024

a division of Englobe

TEST PIT No : 23TP479

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	05/08/2023 COMPLETED 05/08/2023	GROUND ELEVATION	773.53m N 5609466.000 E 415693.000
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
0		SHALE (Weathered), clayey, silty, completely weathered, brown to dark grey mottling, some oxidation staining, moist, high plastic, extremely weak to hard soil, blocky, trace gypsum crystals		B1	31.5	0.6 m - Dispersivity Classification = ND4 % Dispersion = %		773
1		SHALE (Weathered),, clayey, silty, highly weathered, dark brown to grey mottling, some oxidation staining, moist, high plastic, extremely weak to hard soil, blocky, thinly laminated, trace gypsum crystals ...1.1m - 100 mm continuous bentonite seam		AU1		0.6 m - Dry Density = 1558 kg/m3 Optimum Moisture = 23.4% 0.6 m - LL = 65.6% PL = 14.9% PI = 50.7%		772
2								
3				B2	20.9	2.6 m - Dispersivity Classification = ND3 % Dispersion = %		771
		End of Borehole @3.5 m						770
4								769
5								768

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

Notes:
Test pit program. Backfilled with bucket packed cuttings.

Logged By: C. Tams
Reviewed By: C. Braun

11/01/2024

a division of Englobe

TEST PIT No : 23TP480

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	05/08/2023 COMPLETED 05/08/2023	GROUND ELEVATION	775.30m N 5609463.900 E 415285.700
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, some gravel, trace cobbles up to 300 mm, damp, stiff, low plastic, brown, root hairs					775
	SHALE (Weathered), clayey, silty, completely weathered, brown to dark grey mottling, some oxidation staining, moist, high plastic, extremely weak to hard soil, blocky, trace gypsum crystals					
1			B1	24.1	0.9 m - Dispersivity Classification = ND3 % Dispersion = %	
	BENTONITE 100 mm SEAM		AU1	65.3	0.9 m - Dry Density = 1628 kg/m3 Optimum Moisture = 19.9% 1.2 m - Dispersivity Classification = D2 % Dispersion = 40% 1.2 m - LL = 121.8% PL = 47.6% PI = 74.2% 1.2 m - Gravel = 2.1% 1.2 m - Sand = 63.8% Silt = 9.4% Clay = 24.7%	774
	SHALE, clayey, silty, highly weathered, dark brown to grey mottling, some oxidation staining, very moist, high plastic, extremely weak to hard soil, blocky, thinly laminated, trace gypsum crystals					
2	...1.4m - concretions under bentonite seam					773
3			B2	37.4		
	...3.4m - SEEPAGE				2.6 m - Dispersivity Classification = D2 % Dispersion = %	772
			AU2			
	End of Borehole @3.7 m					
4						771
5						770

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 program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

a division of Englobe

TEST PIT No : 23TP481

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	05/08/2023 COMPLETED 05/08/2023	GROUND ELEVATION	778.69m N 5609458.200 E 415194.200
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, some gravel, trace cobbles up to 300 mm, damp, stiff, low plastic, brown, root hairs					778
	CLAY TILL, silty, sandy, some gravel, trace rounded cobbles up to 250 mm, damp, very stiff, medium plastic, brown, some oxidation staining, trace gypsum crystals					
1	...0.9m - becoming some completely weathered shale inclusions		B1	9.4	0.8 m - Dispersivity Classification = ND3 % Dispersion = %	
			AU1	10.2	1.6 m - Dispersivity Classification = ND3 % Dispersion = % 1.6 m - LL = 40.8% PL = 16.4% PI = 24.4%	777
2	SHALE, clayey, silty, highly weathered, dark brown to grey mottling, some oxidation staining, damp, high plastic, extremely weak to hard soil, blocky, thinly laminated, trace gypsum crystals					
	...2.6m - trace bentonite inclusions		B2	10.2	2.5 m - Dispersivity Classification = ND3 % Dispersion = % 2.5 m - LL = 59.5% PL = 18.7% PI = 40.8%	776
3	End of Borehole @3.5 m					
4						775
						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 program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

11/01/2024

a division of Englobe

TEST PIT No : 23TP482

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	05/08/2023 COMPLETED 05/08/2023	GROUND ELEVATION	774.95m N 5609459.200 E 415091.300
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) / POCKET PEN (kPa) (100 200 300 400)	REMARKS	Standpipe/ Instrument	Elevation (m)
0		SHALE (Weathered), clayey, silty, completely weathered, brown to dark grey mottling, some oxidation staining, moist, high plastic, extremely weak to hard soil, blocky, trace gypsum crystals ...0.6m - becoming very moist							774
1				B1	21.6	●	0.9 m - Dispersivity Classification = ND3 % Dispersion = 13% 0.9 m - Dry Density = 1625 kg/m3 Optimum Moisture = 21.4% 0.9 m - Gravel = 0.2% 0.9 m - Sand = 44.1% Silt = 32.4% Clay = 23.3%		
		SHALE, clayey, silty, highly weathered, dark brown to grey mottling, some oxidation staining, very moist, high plastic, extremely weak to hard soil, blocky, thinly laminated, trace gypsum crystals ...1.2m - 100 mm continuous bentonite seam		AU1					
2		...1.9m - becoming moderately weathered, very weak		B2	16.3	●	1.1 m - Dispersivity Classification = ND4 % Dispersion = % 2 m - Dispersivity Classification = ND4 % Dispersion = %		773
		End of Borehole @2.1 m							
3									772
4									771
5									770
									769

Notes:

Test pit program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

11/01/2024

a division of Englobe

TEST PIT No : 23TP483

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	05/08/2023 COMPLETED 05/08/2023	GROUND ELEVATION	775.97m N 5609458.500 E 415001.500
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, some gravel, trace cobbles up to 300 mm, damp, stiff, low plastic, brown, root hairs					775
	CLAY TILL, silty, some sand, some completely weathered shale, moist, firm, medium to high plastic, dark brown, some oxidation staining, trace white precipitates					
	...0.8m - fine grained sand and gravel seam		B1	9.3	0.8 m - Dispersivity Classification = ND4 % Dispersion = %	
1	SHALE (Weathered), clayey, silty, completely weathered, brown to dark grey mottling, some oxidation staining, moist, high plastic, extremely weak to hard soil, blocky, trace gypsum crystals					774
	SHALE, clayey, silty, highly weathered, dark brown to grey mottling, some oxidation staining, very moist, high plastic, extremely weak to hard soil, blocky, thinly laminated, trace gypsum crystals		B2	11.4	1.8 m - Dispersivity Classification = ND3 % Dispersion = %	
2	...2.5m - SEEPAGE					
	...2.8m - 100 mm continuous bentonite seam		AU1 B3	47.4	2.8 m - LL = 101.2% PL = 37.2% PI = 64.0%	773
3	End of Borehole @3.0 m					
4						772
5						771

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 program. Backfilled with bucket packed cuttings.

Logged By: C. Tams

Reviewed By: C. Braun

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TEST PIT No : 23TP484

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	05/10/2023 COMPLETED 05/10/2023	GROUND ELEVATION	771.72m N 5611825.500 E 416162.600
DRILLING CONTRACTOR	Eastern Irrigation District		
EXCAVATION METHOD	Excavator		

Depth (m)	Soil Description	Sample Type	Sample Number	Moisture Content (%)	REMARKS	Elevation (m)
0	TOPSOIL, silty, sandy, some clay, trace gravel, damp, stiff, low plastic, brown, some root hairs					771
	GRAVEL, silty, sandy, some cobbles up to 150 mm, trace 300 mm cobbles, well graded, coarse grained, sub-rounded, damp, compact, brown		B1	6.0	0.5 m - Gravel = 48.5% 0.5 m - Sand = 33.1% Fines = 18.4%	
1	CLAY TILL, silty, some sand, some coarse gravel, some completely weathered shale inclusions, trace cobbles up to 150 mm, moist, stiff, medium plastic, dark brown, some oxidation staining, trace gypsum crystals		B2	6.5	1.6 m - Dispersivity Classification = ND3 % Dispersion = 26% 1.6 m - LL = 43.3% PL = 14.1% PI = 29.2% 1.6 m - Gravel = 29.3% 1.6 m - Sand = 37.6% Silt = 19.5% Clay = 13.6%	770
2	SHALE (Weathered), clayey, silty, highly weathered, dark brown to grey mottling, moist, high plastic, extremely weak to hard soil, thinly laminated, trace gypsum crystals		AU1	21.0	2.3 m - Dispersivity Classification = ND3 % Dispersion = %	769
	End of Borehole @2.4 m					
3						768
4						767
5						766

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

Notes:

Test pit program. Backfilled with bucket packed cuttings.

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