

TEST HOLE LOGS

EXPLANATION OF SYMBOLS AND TERMS

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

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

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

ABBREVIATIONS

w or MC	Moisture content (ASTM D2216)	PP	Pocket Penetrometer
W _p or PL	Plastic limit (ASTM D4318)	γ	Unit weight
W _L or LL	Liquid limit (ASTM D4318)	γ_d	Dry unit weight
I _p or PI	Plasticity Index	ρ	Density
NP	Non-plastic soil	ρ_d	Dry density
SH	Shelby tube sample	q _u	Unconfined compressive strength
AU	Auger sample	C _u	Undrained shear strength
B	Bulk Sample	SO ₄	Concentration of water-soluble sulphates
UD	Undisturbed Sample	TCR	Total Core Recovery
RC	Rock Core Sample	RQD	Rock Quality Index
SPT	Standard Penetration Test	SCR	Solid Core Recovery
VST	Vane Shear Test	FI	Fracture Index

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

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

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

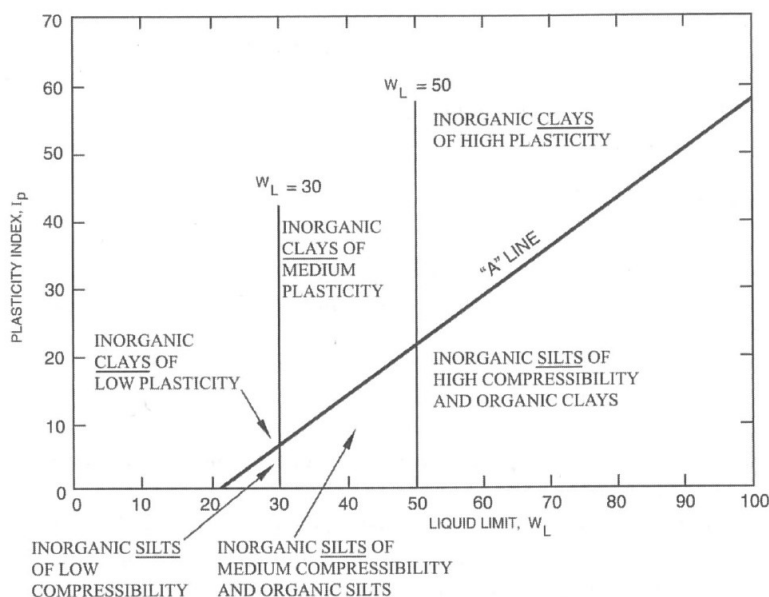
DENSITY OF COARSE GRAINED SOILS		
Term	SPT N	Approx. Relative Density (%)
Very loose	0 - 4	0 - 15
Loose	4 - 10	15 - 35
Compact	10 - 30	35 - 65
Dense	30 - 50	65 - 85
Very Dense	> 50	85 - 100

TEST HOLE LOGS

EXPLANATION OF SYMBOLS AND TERMS

UNIFIED SOIL CLASSIFICATION SYSTEM (MODIFIED)

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



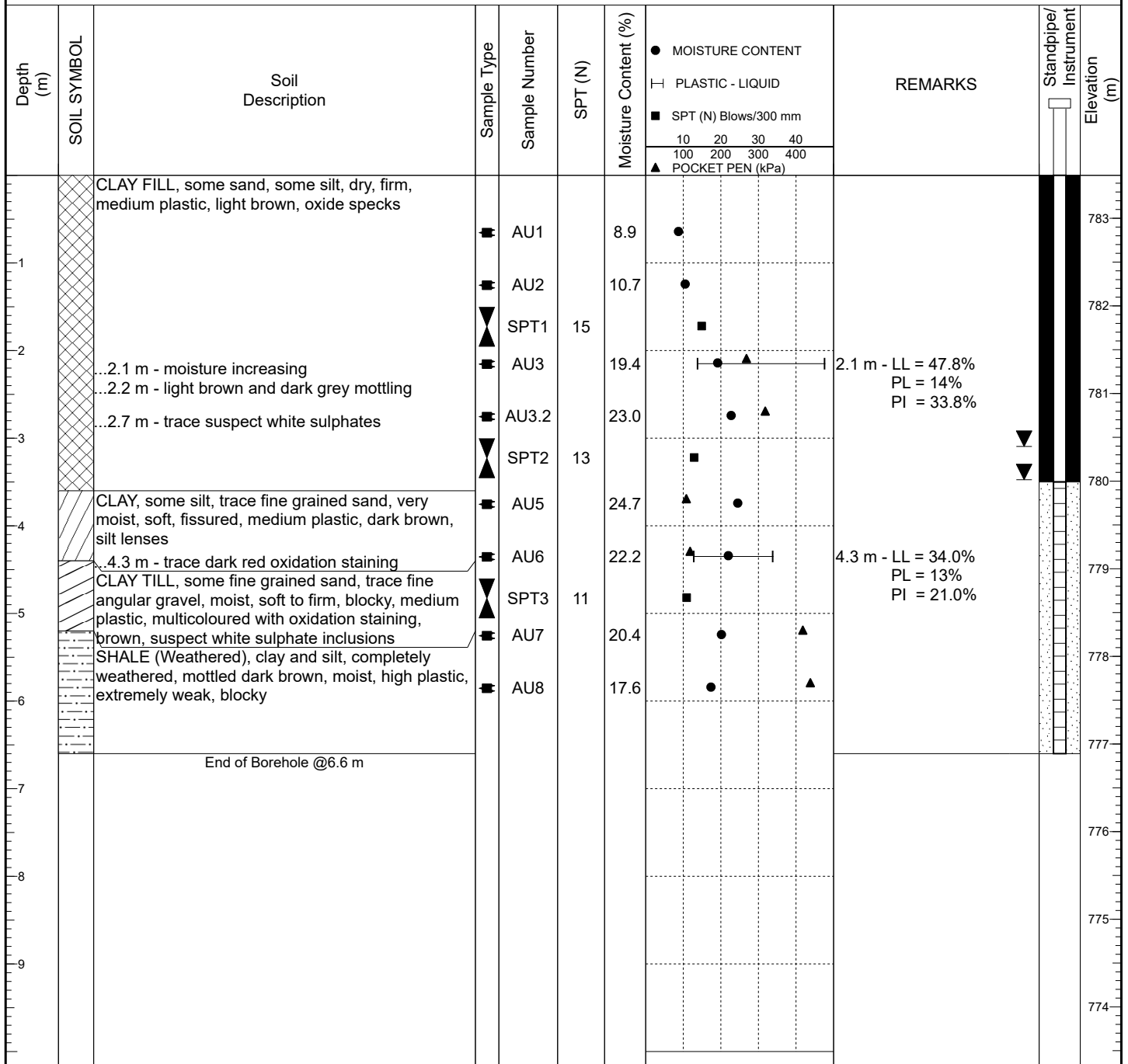


an Englobe company

BOREHOLE No : **22BH102**

PAGE 1 OF 1

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	03/22/2022	COMPLETED	03/22/2022
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND ELEVATION	783.49m N 5612599.800 E 413922.000
DRILLING METHOD	6" SSA	GROUND WATER ELEVATION / DEPTH	780.48 m 3.01 m
		DATE GROUND WATER RECORDED	09/15/2022



Notes:

Target depth of 6.6 m achieved. No seepage or sloughing observed upon completion. 50 mm standpipe installed to 6.6 m. Borehole backfilled with bentonite chips. and sand.

Logged By: C. Braun

Reviewed By: T. Curtis

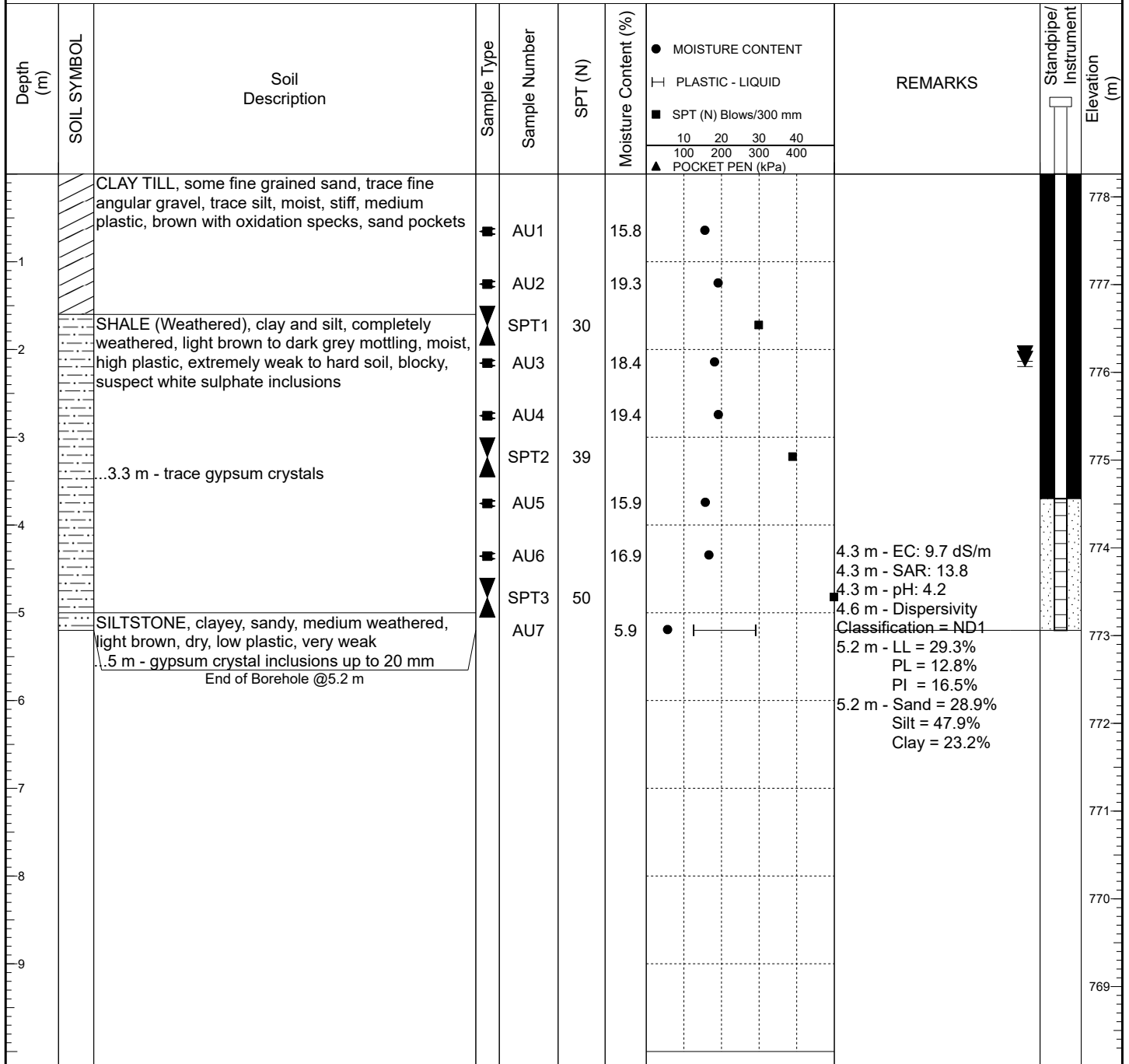


an Englobe company

BOREHOLE No : **22BH105**

PAGE 1 OF 1

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	03/23/2022	COMPLETED	03/23/2022	GROUND ELEVATION	778.26m N 5612595.700 E 414220.000
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND WATER ELEVATION / DEPTH	776.21 m	2.05 m	
DRILLING METHOD	6" SSA	DATE GROUND WATER RECORDED	09/15/2022		



Notes:

Target depth of 10 m not achieved. No seepage or sloughing observed. Borehole backfilled with sand and bentonite chips. 50 mm standpipe installed to 5.2 m.

Logged By: C. Braun

Reviewed By: T. Curtis



an Englobe company

BOREHOLE No : **22BH108**

PAGE 1 OF 1

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	03/23/2022	COMPLETED	03/23/2022
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND ELEVATION	779.03m N 5612595.831 E 414522.511
DRILLING METHOD	6" SSA	GROUND WATER ELEVATION / DEPTH	774.05 m 4.98 m
		DATE GROUND WATER RECORDED	10/12/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	SPT (N)	Moisture Content (%)	REMARKS	Standpipe/Instrument Elevation (m)
						● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 100 200 300 400 ▲ POCKET PEN (kPa)		
1		CLAY TILL, some fine grained sand, some fine angular gravel up to 20 mm, trace silt, damp, stiff, low to medium plastic, brown with oxidation specks, suspect white sulphate inclusions	■	AU1	9.6	●		
			■	AU2	9.4	●		778
2		SHALE (Weathered), clay and silt, completely weathered, dark brown with oxidation specks, moist, high plastic, extremely weak to hard soil, blocky, trace suspect white sulphate inclusions	■	AU3	16.2	●	2.1 m - EC: 8.3 dS/m 2.1 m - SAR: 11.1 2.1 m - pH: 4.8 2.1 m - LL = 52.1% PL = 19.6% PI = 32.5%	777
3		...2.8 m - becoming greyish brown	■	AU4	16.1	●		776
		...3.3 m - some gypsum crystals inclusions up to 10 mm	▲	SPT1	62		3 m - Dispersivity Classification = ND3 3.7 m - LL = 49.6% PL = 17.2% PI = 32.4%	775
4			■	AU5	16.0	●		
			■	AU6	15.2	●		774
5		BENTONITE (200 mm layer), moist, high plastic, soft, organic (see photo), trace gypsum crystals	▲	SPT3	39			
		SHALE (Weathered), clay and silt, completely weathered, dark brown with oxidation specks, moist, high plastic, extremely weak to hard soil, blocky, trace suspect white sulphate inclusions	■	AU7 SH1	36.0	●		773
6			■	AU8	18.2	●		
		...6.7 m - becoming brownish dark grey	▲	SPT4	89			772
7			■	AU9	17.9	●		
			■	AU10	17.0	●		771
8		SHALE, silty, clayey, trace fine grained sand, highly weathered, light grey with oxidation specs, damp, medium to high plastic, extremely weak, finely stratified, marine	▲	SPT5	50			770
9		End of Borehole @8.1 m						

Notes:

Target depth of 8.1 m achieved. No sloughing or seepage observed. Borehole backfilled with sand and bentonite chips. Standpipe installed to 8.1 m.

Logged By: C. Braun

Reviewed By: T. Curtis

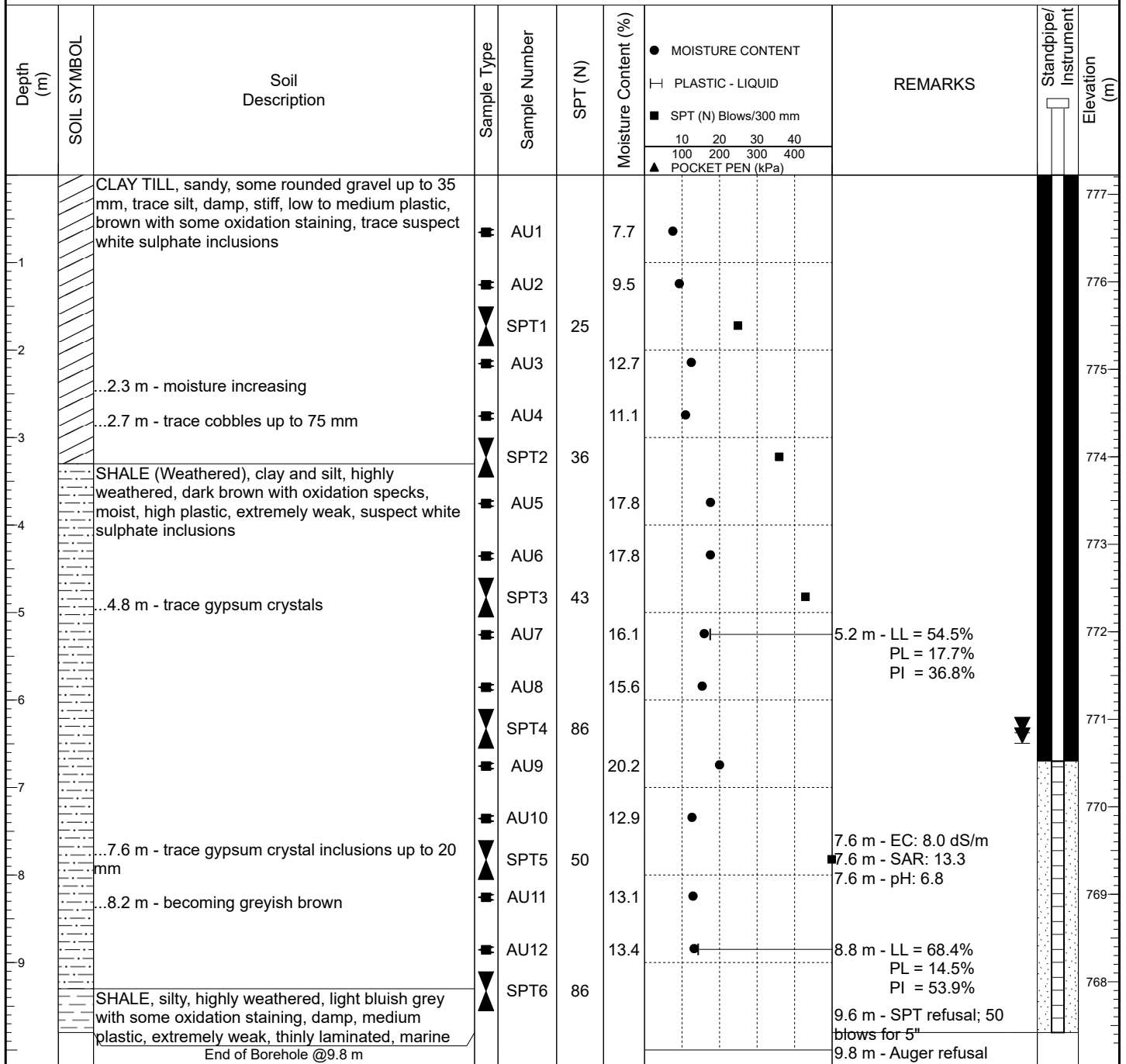


an Englobe company

BOREHOLE No : **22BH114**

PAGE 1 OF 1

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	03/22/2022	COMPLETED	03/22/2022
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND ELEVATION	777.22m N 5612585.700 E 415119.800
DRILLING METHOD	6" SSA	GROUND WATER ELEVATION / DEPTH	770.81 m 6.41 m
		DATE GROUND WATER RECORDED	09/15/2022



Notes:

Target depth of 12.7 m not achieved. Minor sloughing upon completion. Borehole backfilled with bentonite chips. and sand. 50 mm slotted standpipe installed to a depth of 9.8 m.

Logged By: C. Braun

Reviewed By: T. Curtis

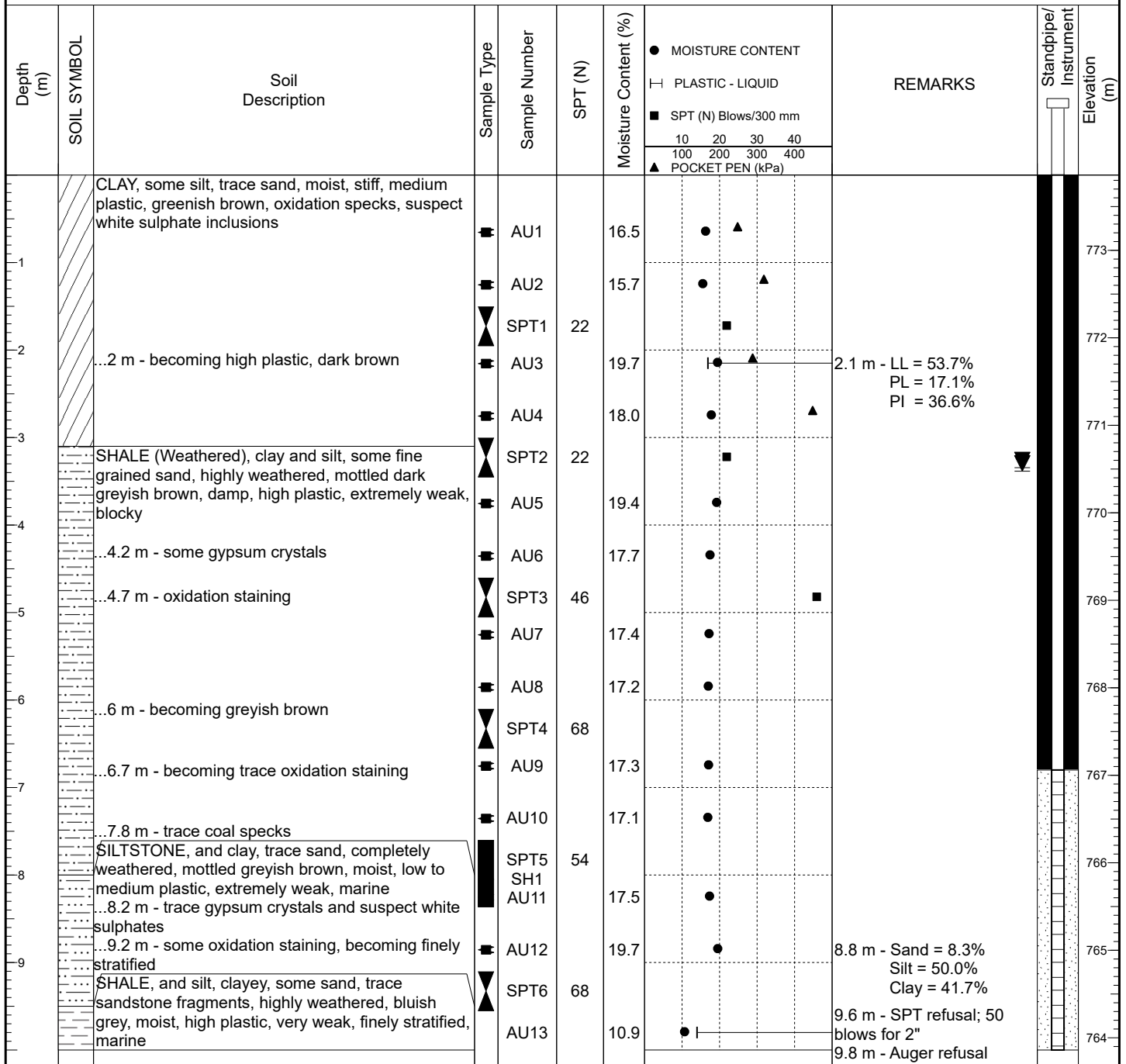


an Englobe company

BOREHOLE No : **22BH117**

PAGE 1 OF 2

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	03/21/2022	COMPLETED	03/21/2022
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND ELEVATION	773.86m N 5612553.000 E 415419.700
DRILLING METHOD	6" SSA	GROUND WATER ELEVATION / DEPTH	770.60 m 3.26 m
		DATE GROUND WATER RECORDED	10/12/2022



Notes:

Target depth of 21 m not achieved. No seepage encountered. Minor sloughing observed upon completion. Borehole backfilled with sand and bentonite chips. 50 mm slotted standpipe installed to a depth of 10.1 m. Well protector installed.

Logged By: C. Braun

Reviewed By: T. Curtis



an Englobe company

BOREHOLE No : **22BH117**

PAGE 2 OF 2

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	03/21/2022	COMPLETED	03/21/2022	GROUND ELEVATION	773.86m N 5612553.000 E 415419.700
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND WATER ELEVATION / DEPTH	770.60 m	3.26 m	
DRILLING METHOD	6" SSA	DATE GROUND WATER RECORDED	10/12/2022		

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	SPT (N)	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
						● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 100 200 300 400 ▲ POCKET PEN (kPa)			
11		SHALE, and silt, clayey, some sand, trace sandstone fragments, highly weathered, bluish grey, moist, high plastic, very weak, finely stratified, marine					9.8 m - LL = 79.2% PL = 14.2% PI = 65.0% 9.8 m - Sand = 22.3% Silt = 44.0% Clay = 33.7%		763
12		End of Borehole @10.1 m							762
13									761
14									760
15									759
16									758
17									757
18									756
19									755
									754

Notes:

Target depth of 21 m not achieved. No seepage encountered. Minor sloughing observed upon completion. Borehole backfilled with sand and bentonite chips. 50 mm slotted standpipe installed to a depth of 10.1 m. Well protector installed.

Logged By: C. Braun

Reviewed By: T. Curtis

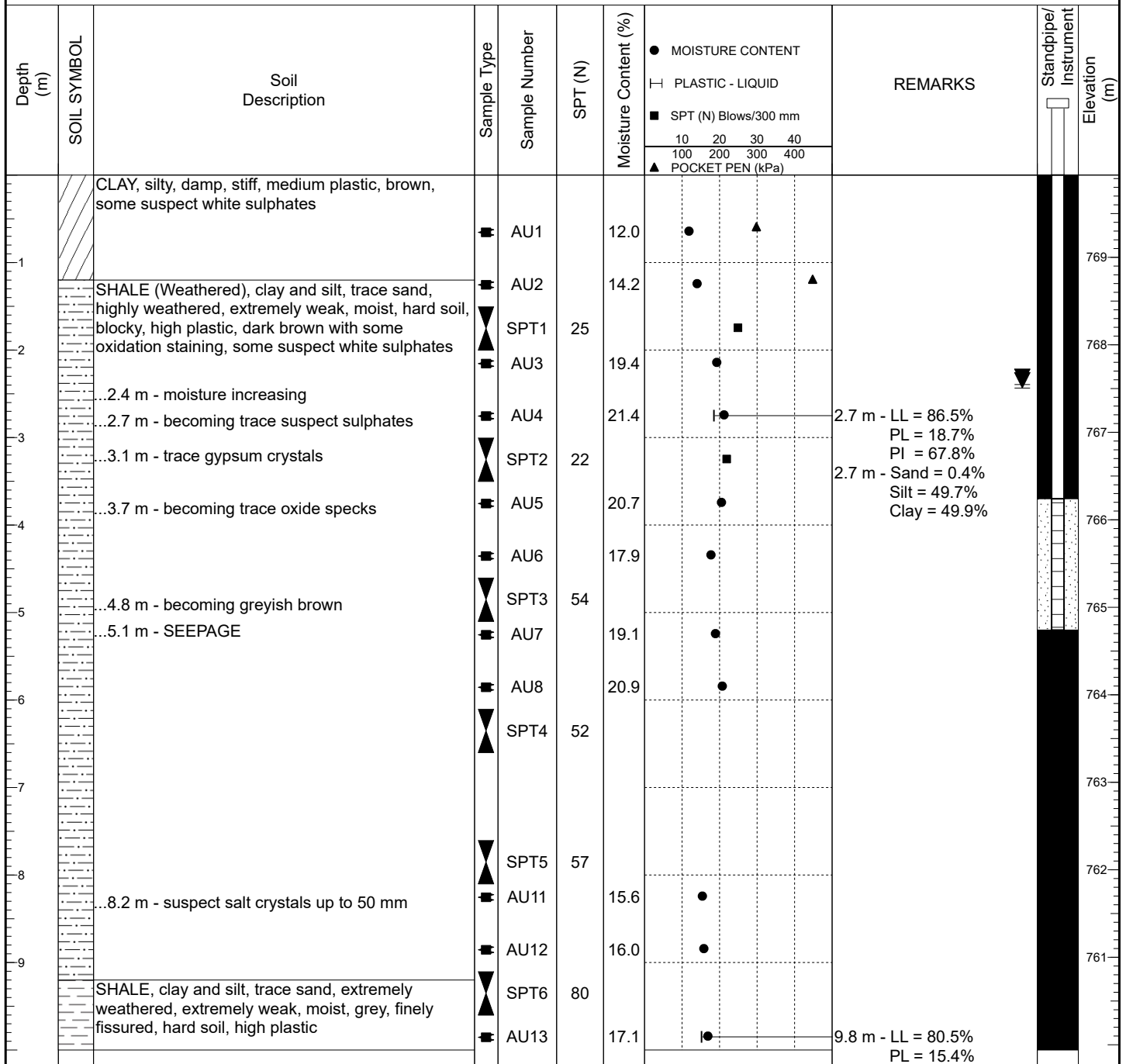


an Englobe company

BOREHOLE No : **22BH121**

PAGE 1 OF 2

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	03/11/2022	COMPLETED	03/11/2022
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND ELEVATION	769.94m N 5612535.837 E 415820.014
DRILLING METHOD	6" SSA	GROUND WATER ELEVATION / DEPTH	767.63 m 2.31 m
		DATE GROUND WATER RECORDED	09/15/2022



Notes:

Target depth of 27 m not achieved. Artesian seepage encountered at a depth of 5.1 m. Minor sloughing observed upon completion. Borehole backfilled with sand and bentonite chips. 50 mm standpipe installed to a depth of 5.2 m.

Logged By: C. Braun

Reviewed By: T. Curtis



an Englobe company

BOREHOLE No : **22BH121**

PAGE 2 OF 2

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	03/11/2022	COMPLETED	03/11/2022	
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND ELEVATION	769.94m	N 5612535.837 E 415820.014
DRILLING METHOD	6" SSA	GROUND WATER ELEVATION / DEPTH	767.63 m	2.31 m
		DATE GROUND WATER RECORDED	09/15/2022	

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	SPT (N)	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
						● MOISTURE CONTENT └─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 ▲ POCKET PEN (kPa)			
11		SHALE, clay and silt, trace sand, extremely weathered, extremely weak, moist, grey, finely fissured, hard soil, high plastic End of Borehole @10.4 m	■	AU14	16.4	●	PI = 65.1% 9.8 m - Sand = 0.8% Silt = 54.1% Clay = 45.1% 10.4 m - Auger refusal		759
12									758
13									757
14									756
15									755
16									754
17									753
18									752
19									751

Notes:

Target depth of 27 m not achieved. Artesian seepage encountered at a depth of 5.1 m. Minor sloughing observed upon completion. Borehole backfilled with sand and bentonite chips. 50 mm standpipe installed to a depth of 5.2 m.

Logged By: C. Braun

Reviewed By: T. Curtis

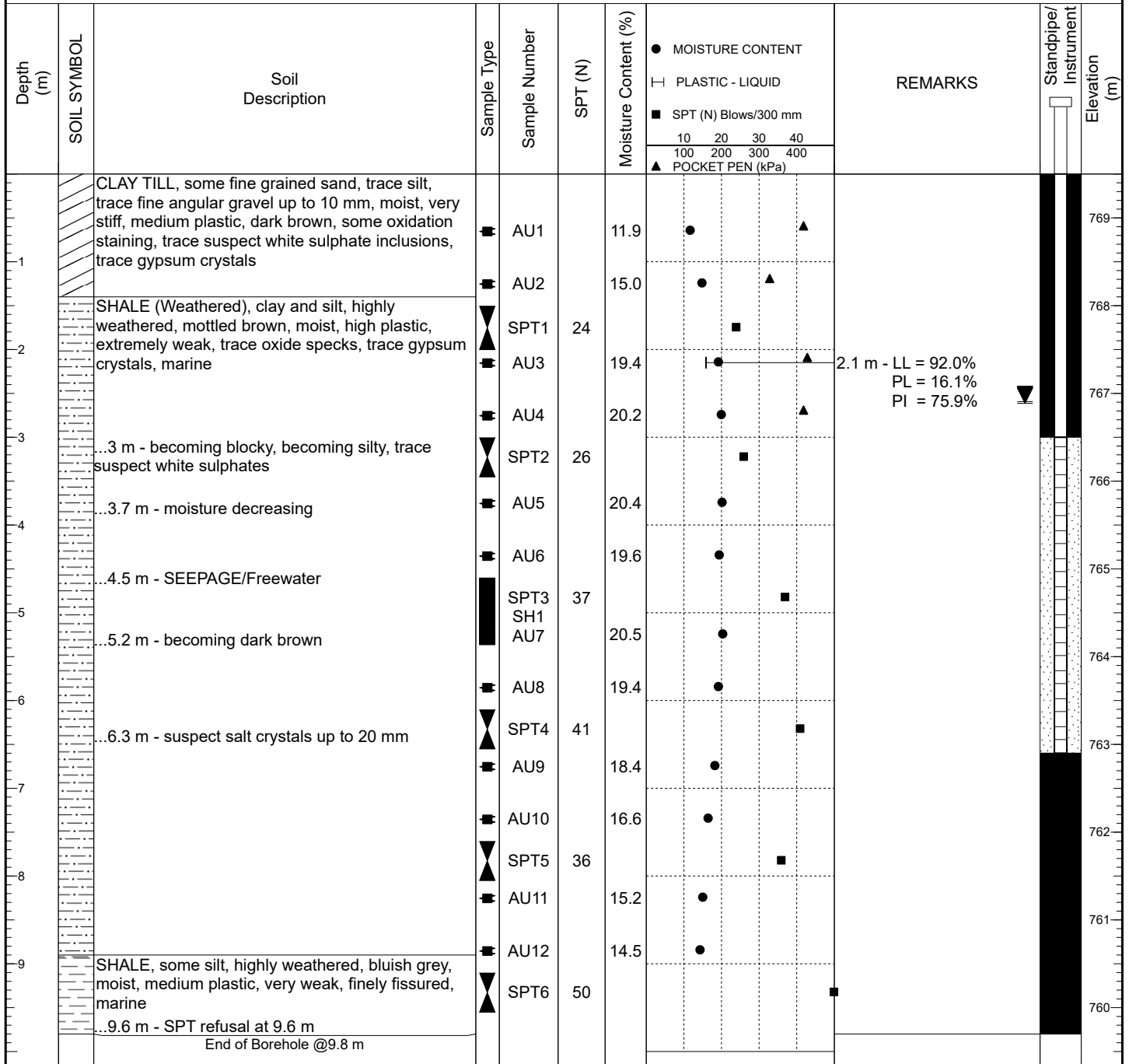


an Englobe company

BOREHOLE No : **22BH123**

PAGE 1 OF 1

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	03/10/2022	COMPLETED	03/10/2022
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND ELEVATION	769.50m N 5612529.496 E 416019.889
DRILLING METHOD	6" SSA	GROUND WATER ELEVATION / DEPTH	766.99 m 2.51 m
		DATE GROUND WATER RECORDED	10/12/2022



Notes:

Target depth of 27 m not achieved. Seepage encountered at a depth of 4.5 m. Minor sloughing upon completion. Borehole backfilled with sand and bentonite chips. 50 mm standpipe installed to a depth of 6.6 m.

Logged By: C. Braun

Reviewed By: T. Curtis

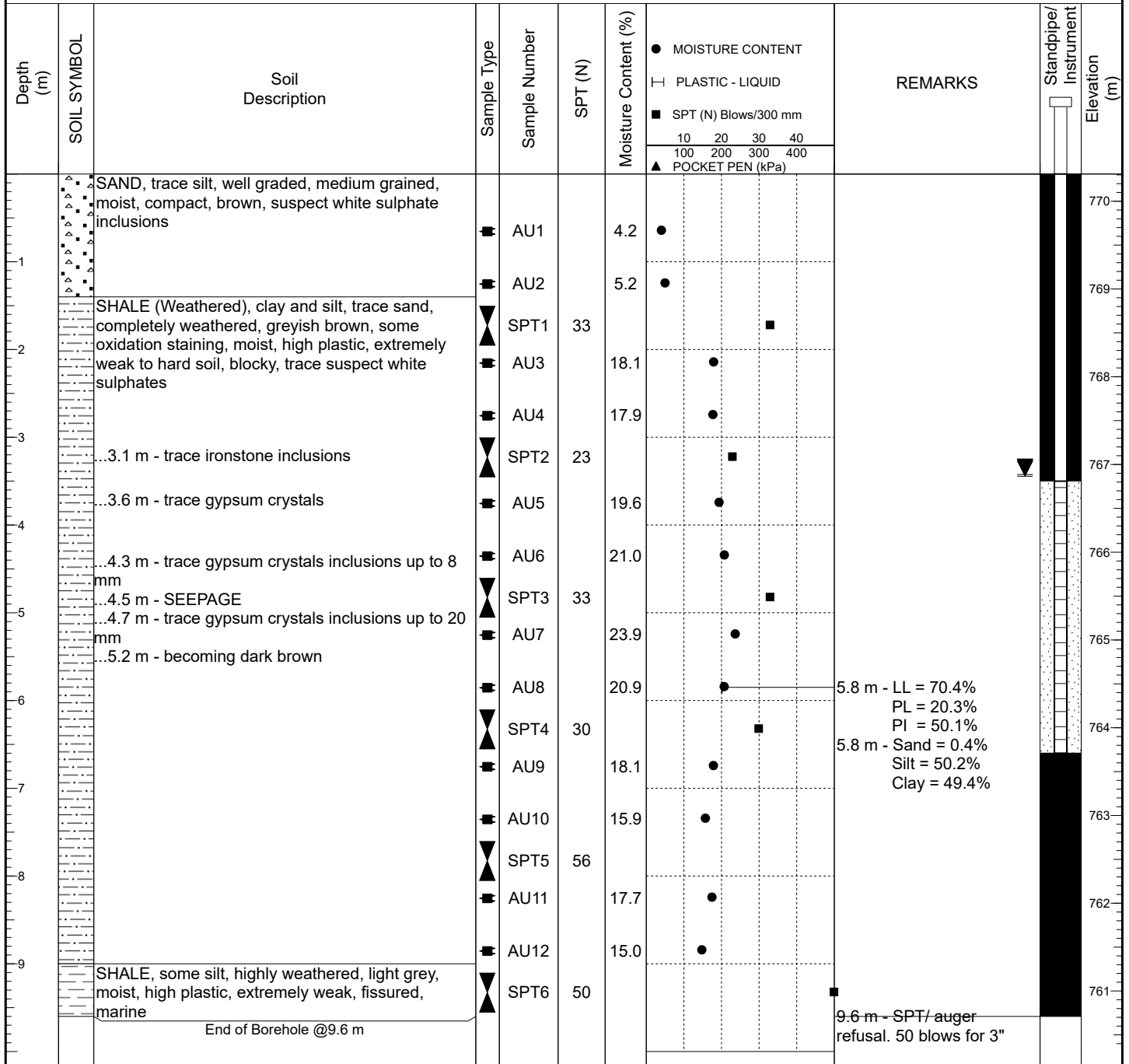


an Englobe company

BOREHOLE No : **22BH126**

PAGE 1 OF 1

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	03/09/2022	COMPLETED	03/09/2022
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND ELEVATION	770.31m N 5612524.400 E 416320.000
DRILLING METHOD	6" SSA	GROUND WATER ELEVATION / DEPTH	766.95 m 3.36 m
		DATE GROUND WATER RECORDED	10/12/2022



Notes:

Target depth of 27 m not achieved. Seepage encountered at 4.5 m. Minor sloughing observed upon completion. Borehole backfilled with sand and bentonite chips. 50 mm standpipe installed to 6.6 m.

Logged By: C. Braun

Reviewed By: T. Curtis

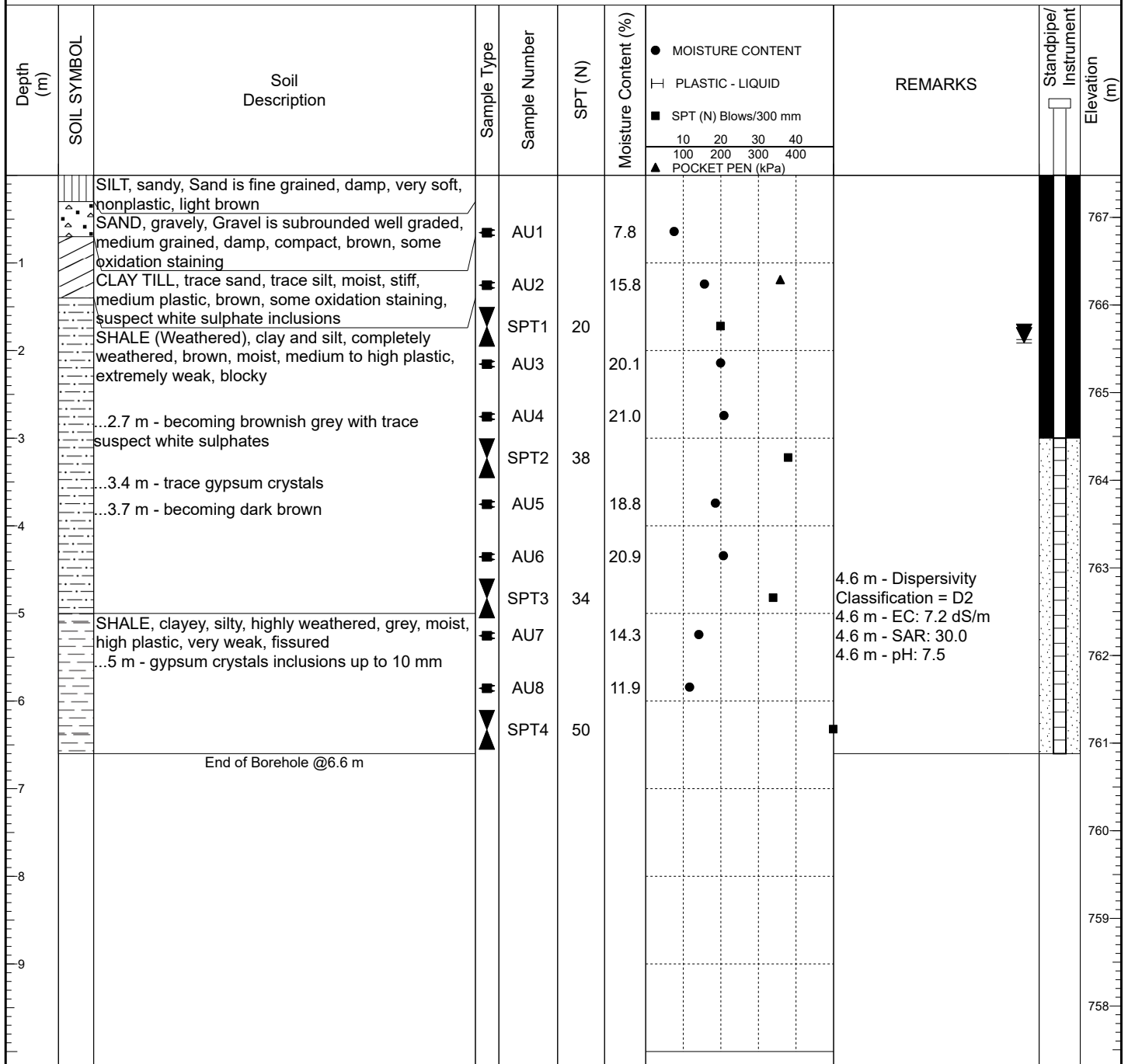


an Englobe company

BOREHOLE No : **22BH204**

PAGE 1 OF 1

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	03/03/2022	COMPLETED	03/03/2022	GROUND ELEVATION	767.48m N 5612108.000 E 416883.900
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND WATER ELEVATION / DEPTH	765.65 m	1.83 m	
DRILLING METHOD	6" SSA	DATE GROUND WATER RECORDED	10/12/2022		



Notes:

Target depth of 33 m not achieved. No sloughing or seepage observed upon completion. 50 mm standpipe installed to a depth of 6.6 m. Borehole backfilled with sand within slotted area and capped with bentonite chips.

Logged By: C. Braun

Reviewed By: T. Curtis

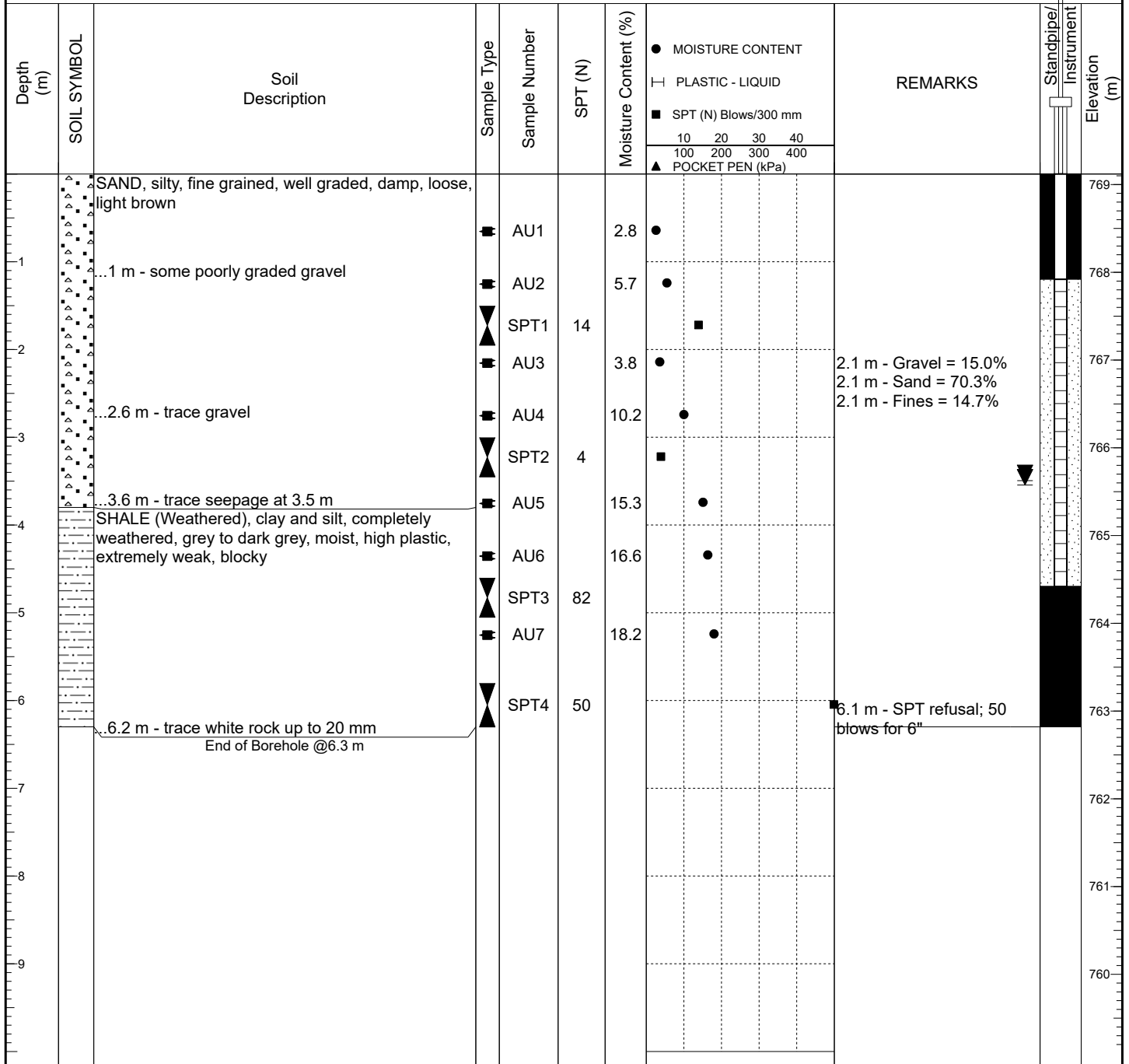


an Englobe company

BOREHOLE No : **22BH207**

PAGE 1 OF 1

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	03/03/2022	COMPLETED	03/03/2022	GROUND ELEVATION	769.12m N 5611808.000 E 416876.500
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND WATER ELEVATION / DEPTH	765.71 m	3.41 m	
DRILLING METHOD	6" SSA	DATE GROUND WATER RECORDED	09/15/2022		



Notes:

Target depth of 30 m not achieved. Sloughing observed to a depth of 3.6 m. Seepage observed at a depth of 3.5 m. 50 mm standpipe installed to a depth of 4.7 m. Backfilled with sand within slotted area and capped with bentonite chips.

Logged By: C. Braun

Reviewed By: T. Curtis

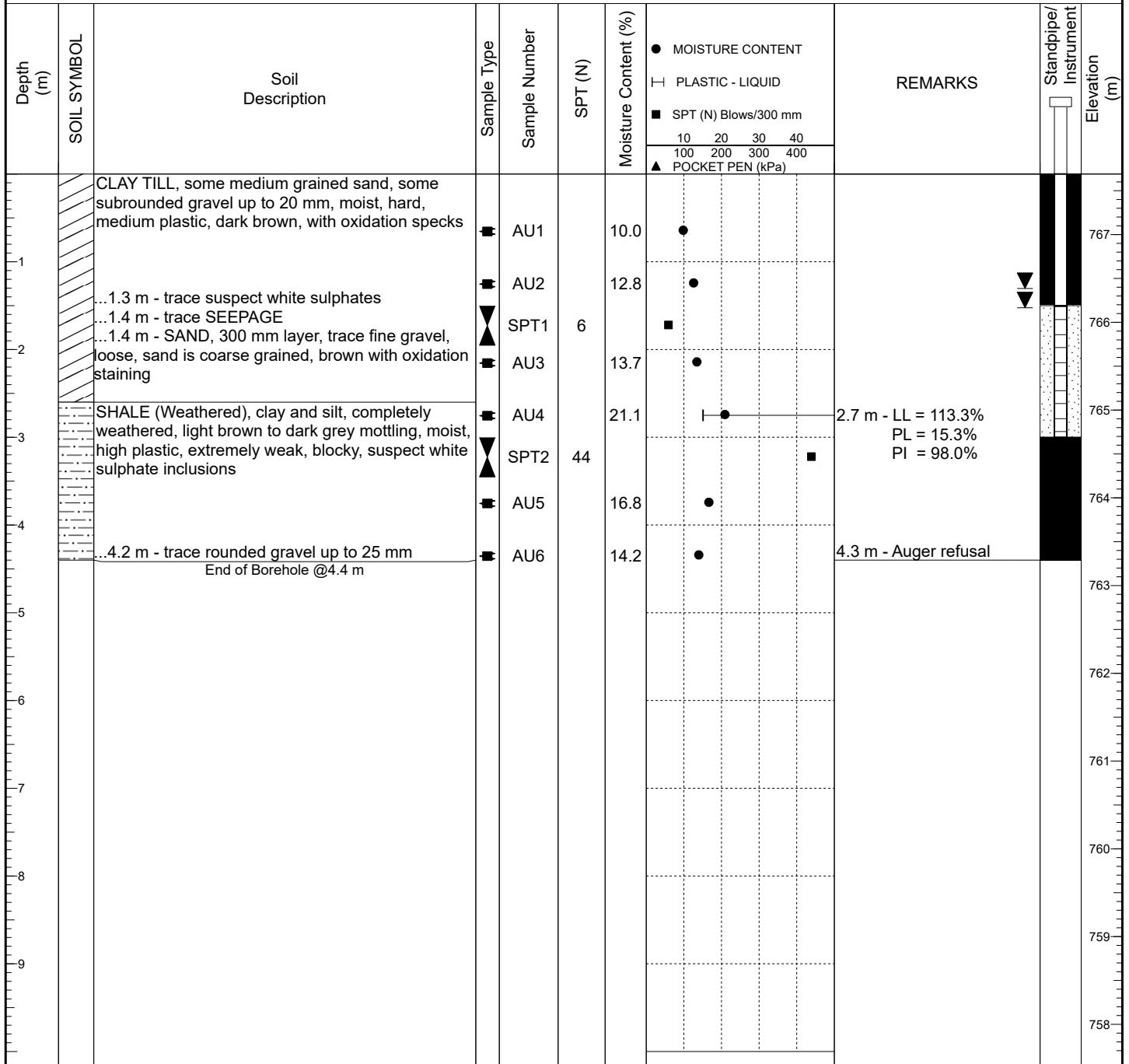


an Englobe company

BOREHOLE No : **22BH210**

PAGE 1 OF 1

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	03/08/2022	COMPLETED	03/08/2022	GROUND ELEVATION	767.69m N 5611508.000 E 416869.000
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND WATER ELEVATION / DEPTH	766.47 m	1.22 m	
DRILLING METHOD	6" SSA	DATE GROUND WATER RECORDED	09/15/2022		



Notes:

Target depth of 33 m not achieved. Seepage observed at a depth of 1.4 m. Minor sloughing observed upon completion. Borehole backfilled with sand and bentonite chips. 50 mm standpipe installed to a depth of 3.0 m

Logged By: C. Braun

Reviewed By: T. Curtis

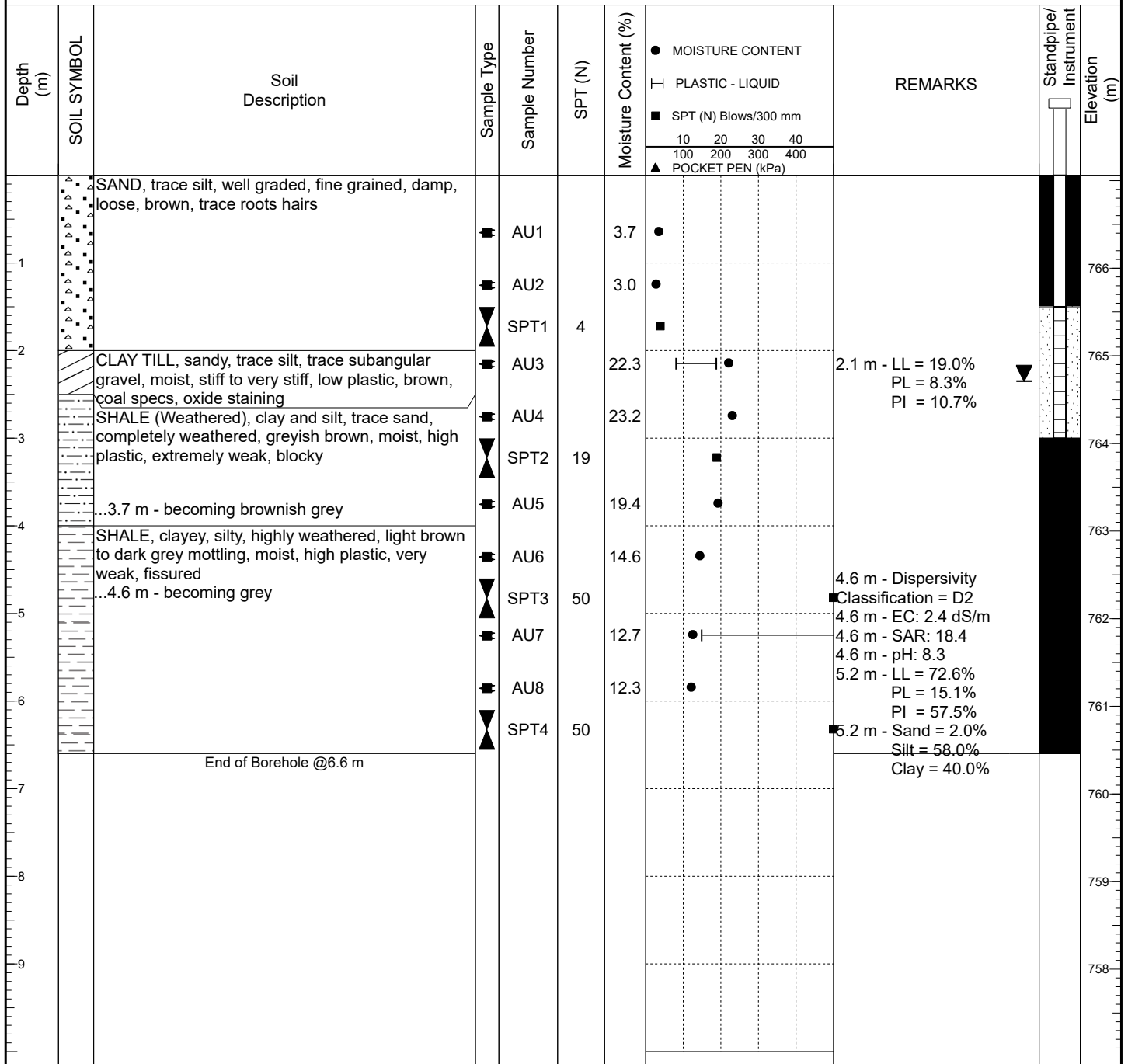


an Englobe company

BOREHOLE No : **22BH217**

PAGE 1 OF 1

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	03/11/2022	COMPLETED	03/11/2022	
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND ELEVATION	767.06m	N 5610808.000 E 416858.200
DRILLING METHOD	6" SSA	GROUND WATER ELEVATION / DEPTH	764.80 m	2.26 m
		DATE GROUND WATER RECORDED	09/15/2022	



Notes:

Target depth of 33 m not achieved. Minor sloughing observed upon completion. Borehole backfilled with sand and bentonite chips. 50 mm standpipe installed to a depth of 3.0 m.

Logged By: C. Braun

Reviewed By: T. Curtis

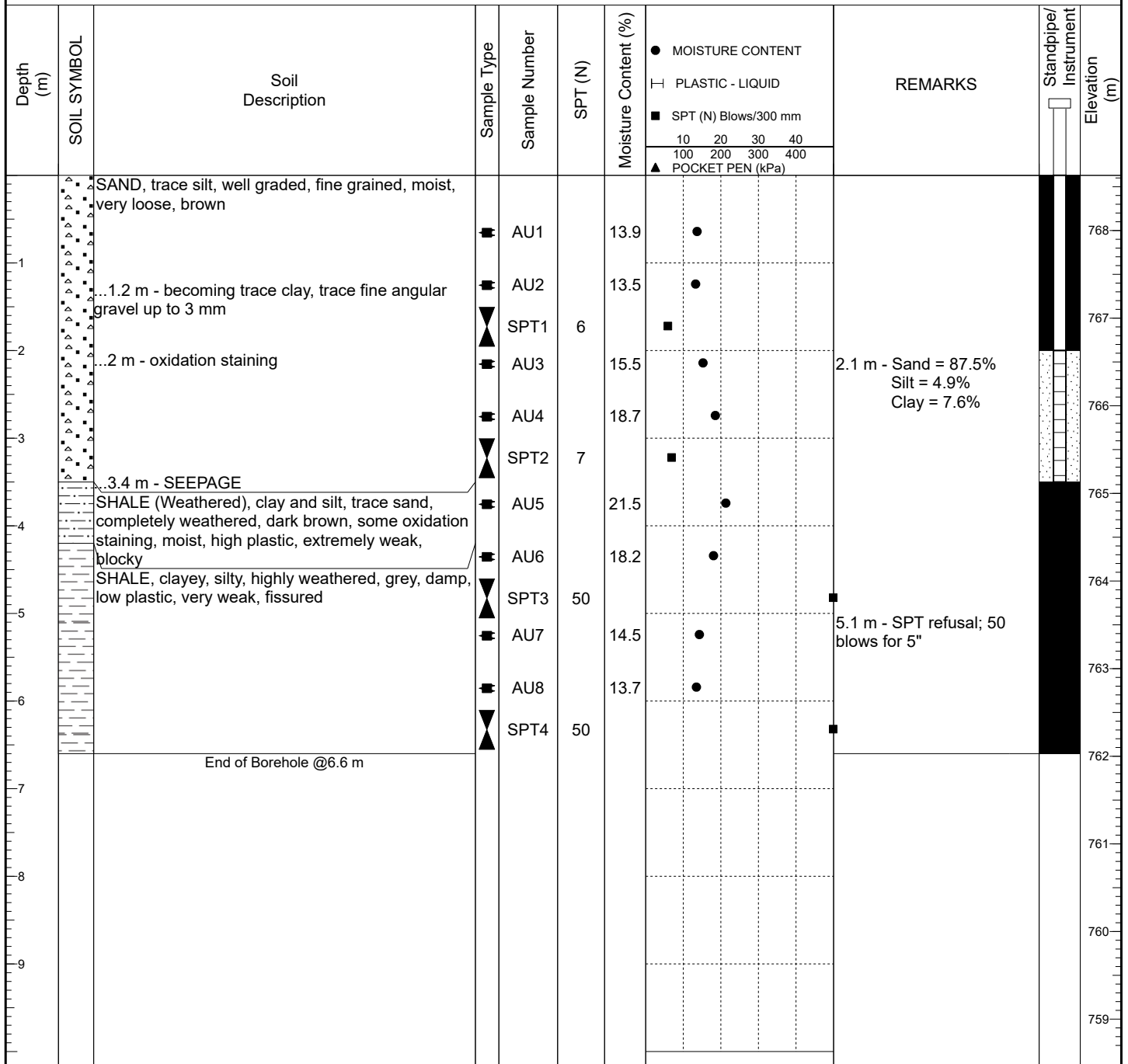


an Englobe company

BOREHOLE No : **22BH225**

PAGE 1 OF 1

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	03/10/2022	COMPLETED	03/10/2022	
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND ELEVATION	768.63m	N 5610010.000 E 416838.400
DRILLING METHOD	6" SSA	GROUND WATER ELEVATION / DEPTH		
		DATE GROUND WATER RECORDED	09/15/2022	



Notes:

Target depth of 30 m not achieved. Seepage observed at a depth of 3.4 m. Minor sloughing observed upon completion. Borehole backfilled with sand and bentonite chips. 50 mm standpipe installed to a depth of 6.6 m. Borehole measured dry on August 10, September 15, and October 12, 2022

Logged By: C. Braun

Reviewed By: T. Curtis

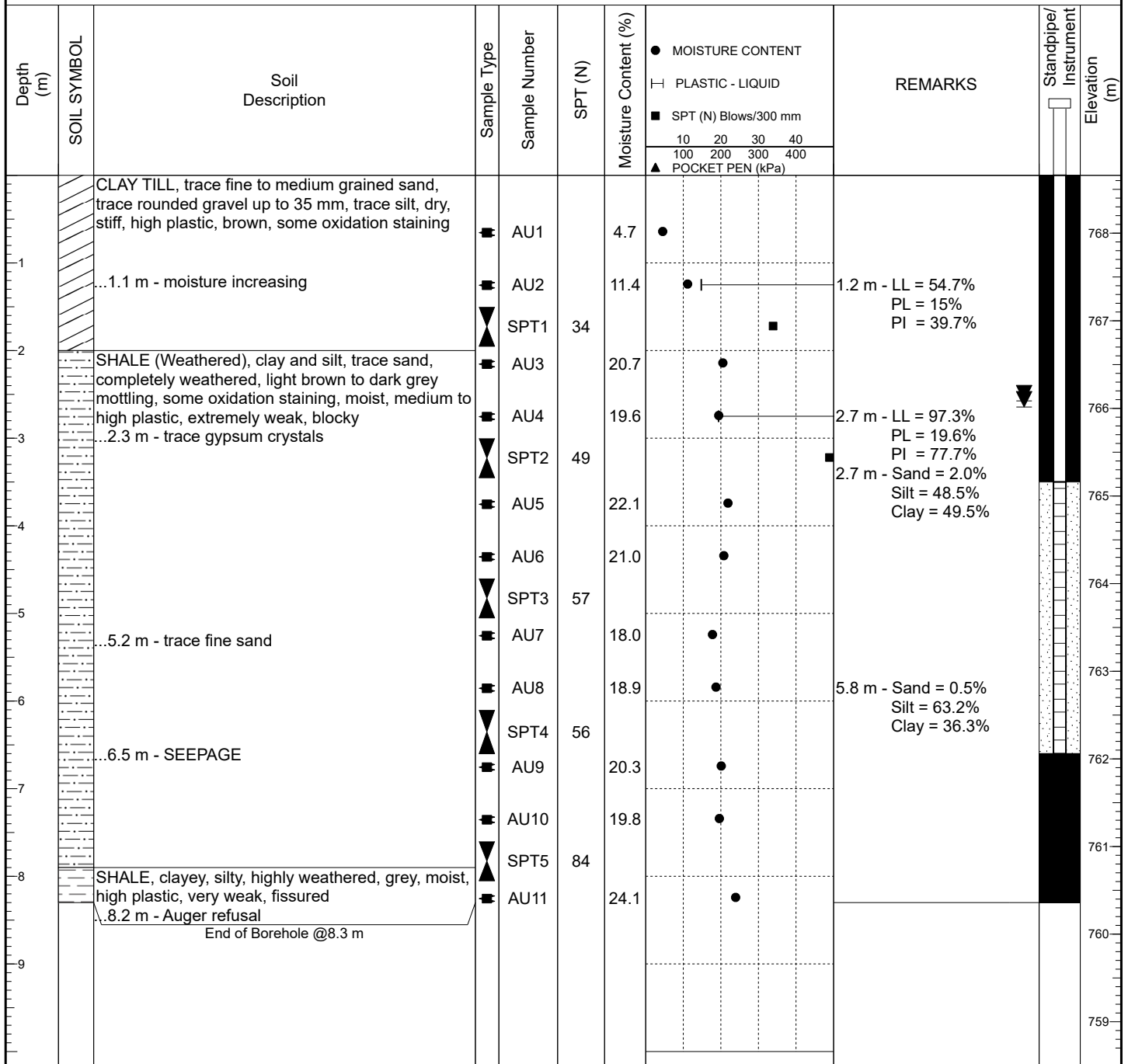


an Englobe company

BOREHOLE No : **22BH228**

PAGE 1 OF 1

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	03/10/2022	COMPLETED	03/10/2022
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND ELEVATION	768.66m N 5609686.900 E 416829.300
DRILLING METHOD	6" SSA	GROUND WATER ELEVATION / DEPTH	766.10 m 2.56 m
		DATE GROUND WATER RECORDED	10/12/2022



Notes:

Target depth of 30 m not achieved. Seepage observed at a depth of 6.5 m. Minor sloughing observed upon completion. Borehole backfilled with sand and bentonite chips. 50 mm standpipe installed to depth of 6.6 m.

Logged By: C. Braun

Reviewed By: T. Curtis

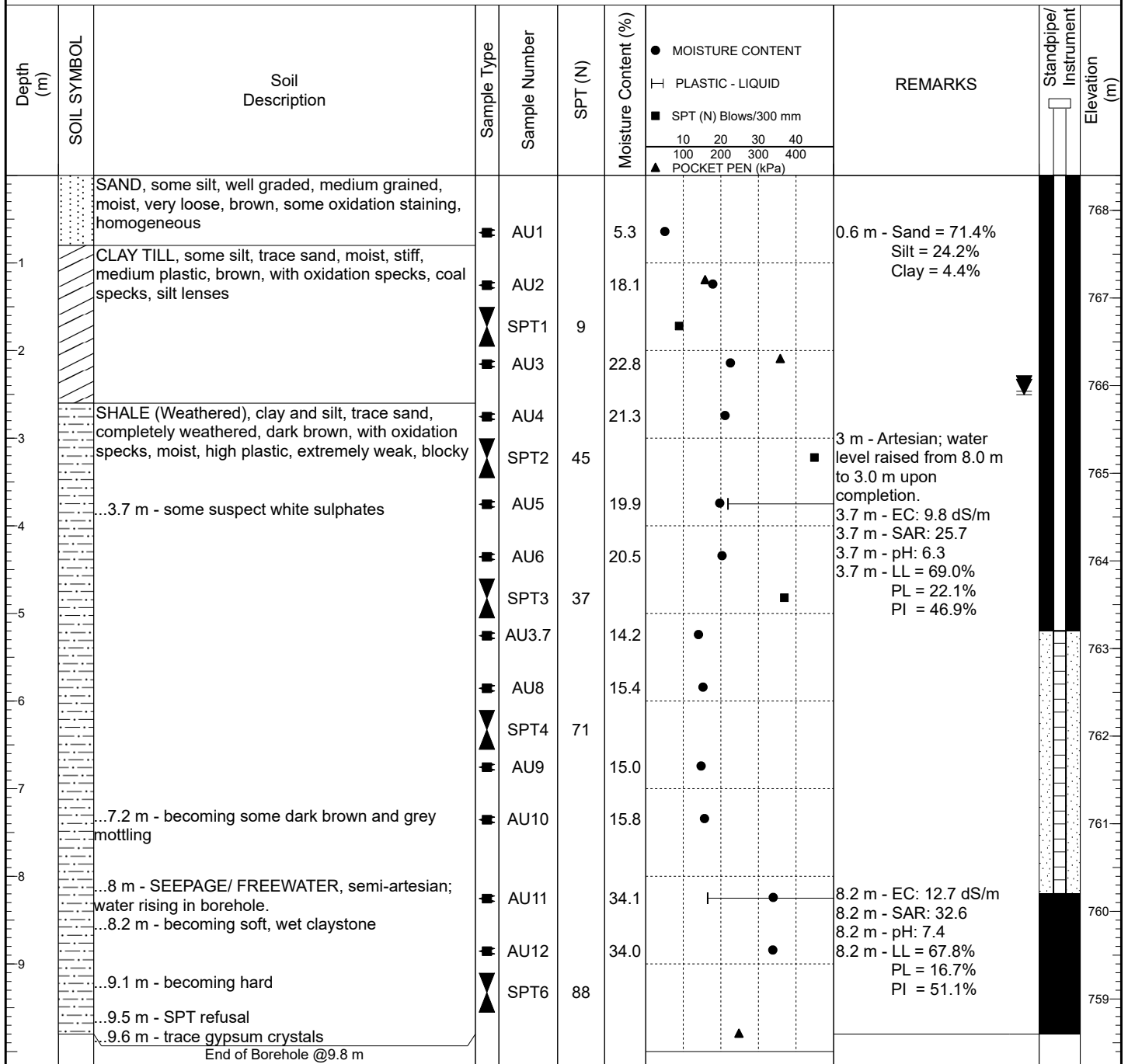


an Englobe company

BOREHOLE No : **22BH300**

PAGE 1 OF 1

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	03/23/2022	COMPLETED	03/23/2022
GROUND ELEVATION	768.40m	N	5609577.900
GROUND ELEVATION	768.40m	E	416770.200
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND WATER ELEVATION / DEPTH	765.98 m 2.42 m
DRILLING METHOD	6" SSA	DATE GROUND WATER RECORDED	10/12/2022



Notes:

Target depth of 30 m not achieved. Artesian seepage observed at a depth of 8.0 m, water level measured at 3.0 m upon completion. Minor sloughing observed upon completion. Borehole backfilled with sand and bentonite chips. 50 mm slotted standpipe installed to a depth of 8.2 m.

Logged By: C. Braun

Reviewed By: T. Curtis

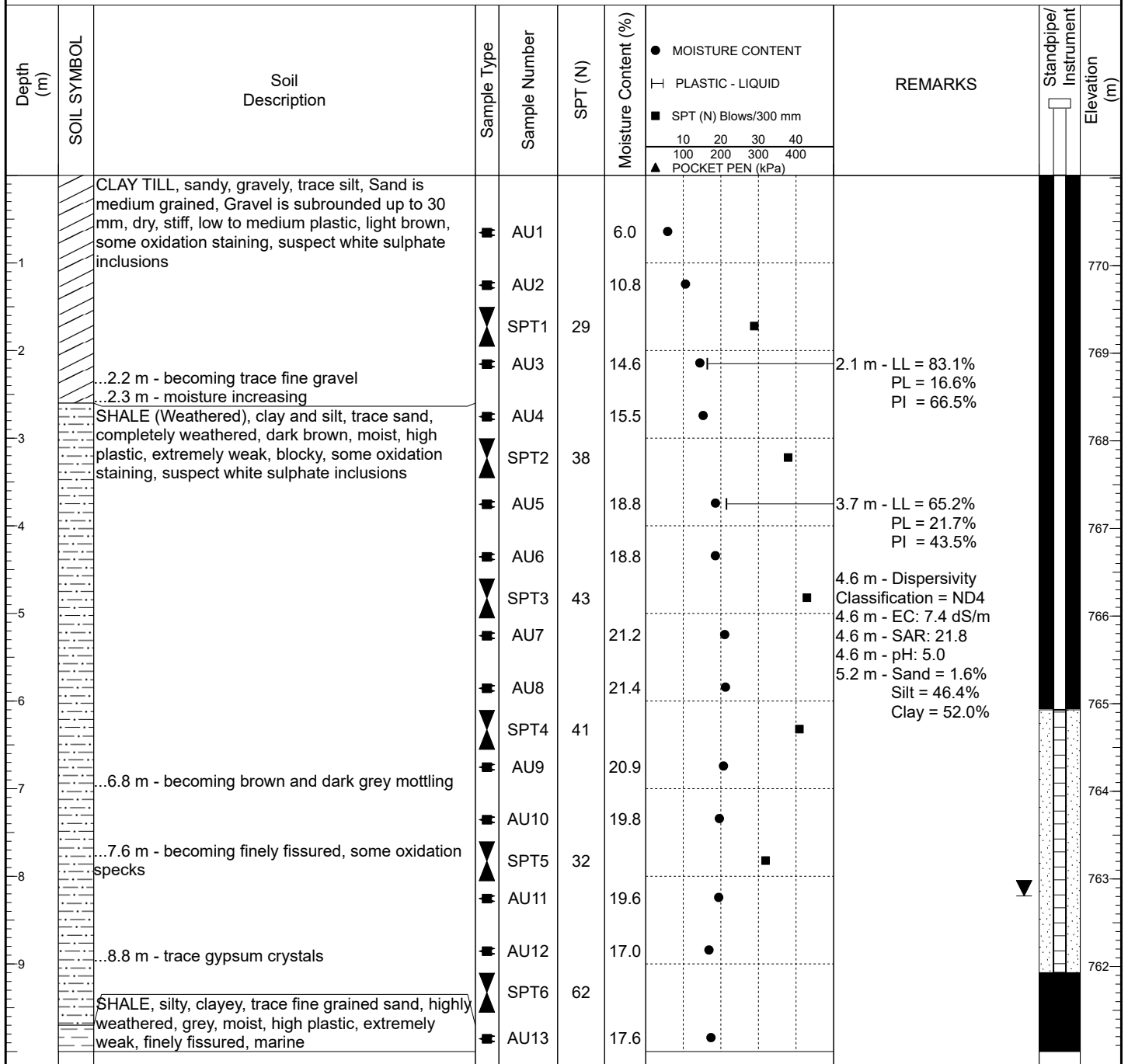


an Englobe company

BOREHOLE No : **22BH303**

PAGE 1 OF 2

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	03/24/2022	COMPLETED	03/24/2022
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND ELEVATION	771.03m N 5609474.100 E 416493.000
DRILLING METHOD	6" SSA	GROUND WATER ELEVATION / DEPTH	762.89 m 8.14 m
		DATE GROUND WATER RECORDED	08/10/2022



Notes:

Target depth of 27 m not achieved. Seepage not encountered. Sloughing observed to a depth of 10.7 m upon completion. Borehole backfilled with sand and bentonite chips. Standpipe installed to a depth of 9.1 m.

Logged By: C. Braun

Reviewed By: T. Curtis



an Englobe company

BOREHOLE No : **22BH303**

PAGE 2 OF 2

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	03/24/2022	COMPLETED	03/24/2022	GROUND ELEVATION	771.03m N 5609474.100 E 416493.000
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND WATER ELEVATION / DEPTH		762.89 m	8.14 m
DRILLING METHOD	6" SSA	DATE GROUND WATER RECORDED		08/10/2022	

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	SPT (N)	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
						● MOISTURE CONTENT └─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 ▲ POCKET PEN (kPa)			
11		SHALE, silty, clayey, trace fine grained sand, highly weathered, grey, moist, high plastic, extremely weak, finely fissured, marine	■	AU14		18.2	●		
			▲	SPT7	88				760
			■	AU15		17.6	●		
12			■	AU16		17.6	●	12 m - Auger refusal	759
			▲	SPT8	50			12.6 m - SPT refusal; 50 blows for 3"	
13		End of Borehole @12.7 m							758
14									757
15									756
16									755
17									754
18									753
19									752

Notes:

Target depth of 27 m not achieved. Seepage not encountered. Sloughing observed to a depth of 10.7 m upon completion. Borehole backfilled with sand and bentonite chips. Standpipe installed to a depth of 9.1 m.

Logged By: C. Braun

Reviewed By: T. Curtis



an Englobe company

BOREHOLE No : **22BH306**

PAGE 1 OF 1

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	03/24/2022	COMPLETED	03/24/2022
GROUND ELEVATION	771.34m	N	5609475.000
GROUND ELEVATION	771.34m	E	416193.000
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND WATER ELEVATION / DEPTH	767.99 m 3.35 m
DRILLING METHOD	6" SSA	DATE GROUND WATER RECORDED	09/15/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	SPT (N)	Moisture Content (%)	REMARKS	Standpipe/Instrument Elevation (m)
						● MOISTURE CONTENT ┌─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 100 200 300 400 ▲ POCKET PEN (kPa)		
1		PEAT, organics, clayey, damp, stiff, brown, suspect white sulphate inclusions	■	AU1	17.4	●		771
		SHALE (Weathered), clay and silt, some sand, completely weathered, brown with oxidation specks, moist, medium to high plastic, extremely weak, blocky, suspect white sulphate inclusions	■	AU2	18.7	●		770
2			▲	SPT1	33	■		769
			■	AU3	19.1	●		768
3			■	AU4	19.3	●		767
			▲	SPT2	43	■		766
4			■	AU5	16.0	●		765
		...4.3 m - trace gypsum crystals	■	AU6	17.9	●		764
		...4.4 m - moisture increasing	▲	SPT3	27	■		763
5		...4.7 m - gypsum crystals inclusions up to 25 mm	■	AU7	18.4	●		762
			■	AU8	19.9	●		761
6			▲	SPT4	27	■		760
			■	AU9	18.5	●		759
7			■	AU10	18.2	●		758
		...7.5 m - becoming dark brown	▲	SPT5	50	■	7.8 m - SPT refusal	757
8		SHALE, silty, clayey, highly weathered, grey, moist, high plastic, extremely weak, fissured	■	AU11	17.7	●		756
		...8.2 m - becoming dark brown to dark grey mottling	■	AU12	17.5	●		755
9			▲	SPT6	50	■	9.3 m - SPT refusal	754
		...9.5 m - trace seepage	■	AU13	12.1	●	9.9 m - Auger refusal	753
		End of Borehole @9.9 m						

Notes:

Target depth of 24 m not achieved. Seepage encountered at 9.5 m. Minor sloughing observed upon completion. Borehole backfilled with sand and bentonite chips. Standpipe installed to a depth of 9.9 m

Logged By: C. Braun

Reviewed By: T. Curtis

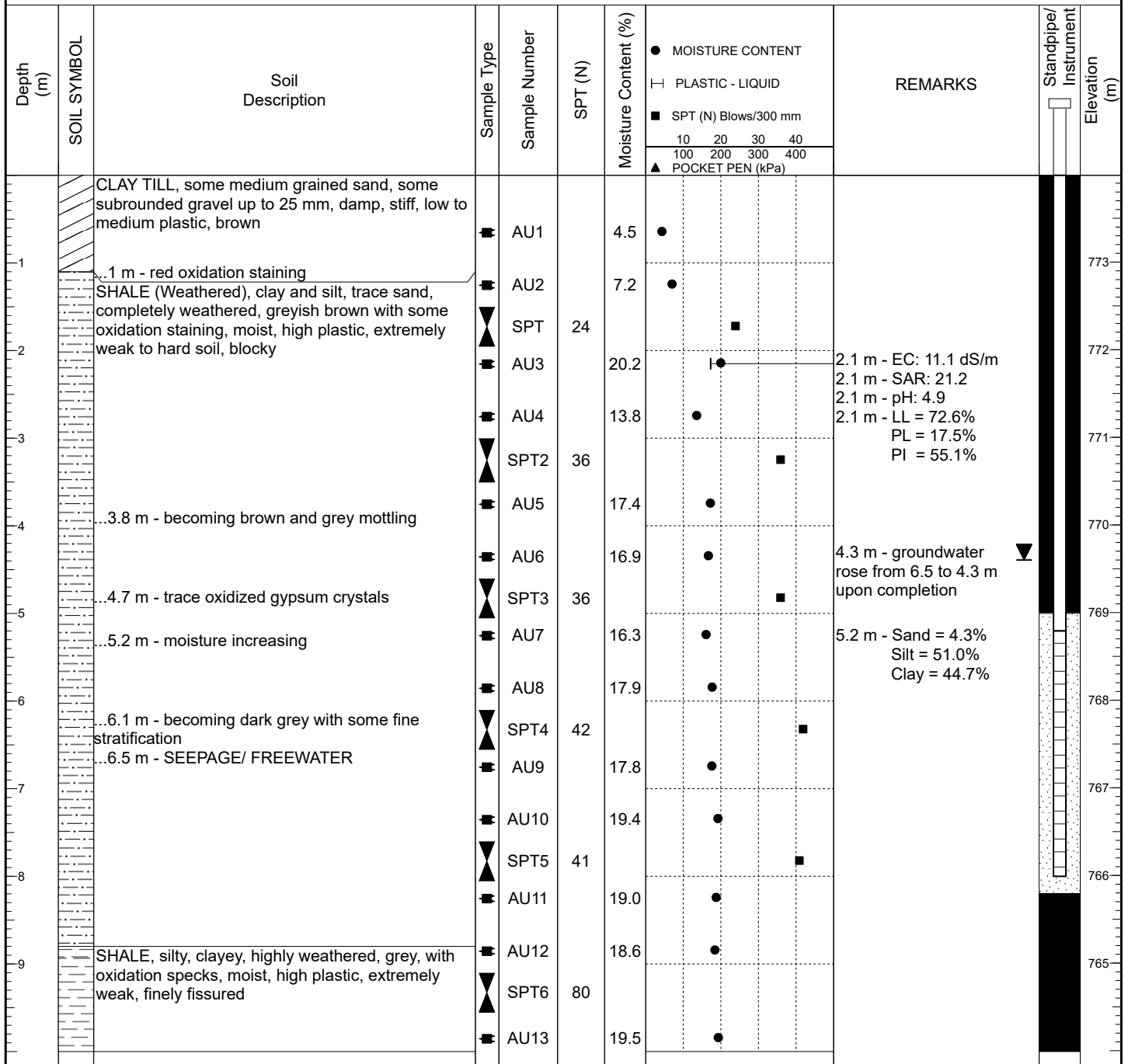


an Englobe company

BOREHOLE No : **22BH309**

PAGE 1 OF 2

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	03/25/2022	COMPLETED	03/25/2022
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND ELEVATION	773.99m N 5609471.400 E 415893.000
DRILLING METHOD	6" SSA	GROUND WATER ELEVATION / DEPTH	769.68 m 4.31 m
		DATE GROUND WATER RECORDED	09/15/2022



Notes:

Target depth of 21 m not achieved. Seepage encountered at 6.5 m. Minor sloughing observed upon completion. Borehole backfilled with sand and bentonite chips. Standpipe installed to a depth of 8.0 m.

Logged By: C. Braun

Reviewed By: T. Curtis



an Englobe company

BOREHOLE No : **22BH309**

PAGE 2 OF 2

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	03/25/2022	COMPLETED	03/25/2022	GROUND ELEVATION	773.99m N 5609471.400 E 415893.000
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND WATER ELEVATION / DEPTH	769.68 m	4.31 m	
DRILLING METHOD	6" SSA	DATE GROUND WATER RECORDED	09/15/2022		

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	SPT (N)	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
						● MOISTURE CONTENT └─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 100 200 300 400 ▲ POCKET PEN (kPa)			
11		SHALE, silty, clayey, highly weathered, grey, with oxidation specks, moist, high plastic, extremely weak, finely fissured	■	AU14	50	24.3			
		End of Borehole @11.2 m	▲	SPT7			11.2 m - SPT and auger refusal		763
12									762
13									761
14									760
15									759
16									758
17									757
18									756
19									755

Notes:

Target depth of 21 m not achieved. Seepage encountered at 6.5 m. Minor sloughing observed upon completion. Borehole backfilled with sand and bentonite chips. Standpipe installed to a depth of 8.0 m.

Logged By: C. Braun

Reviewed By: T. Curtis



an Englobe company

BOREHOLE No : **22BH312**

PAGE 1 OF 1

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	03/28/2022	COMPLETED	03/28/2022
GROUND ELEVATION	774.15m	N	5609463.400
GROUND ELEVATION	771.43 m	E	415593.000
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND WATER ELEVATION / DEPTH	771.43 m 2.72 m
DRILLING METHOD	6" SSA	DATE GROUND WATER RECORDED	10/12/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	SPT (N)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
						● MOISTURE CONTENT ┌─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 100 200 300 400 ▲ POCKET PEN (kPa)			
1		CLAY TILL, silty, trace sand, moist, very stiff, medium plastic, brown, some oxidation staining, gypsum crystals, trace root hairs	■	AU1	14.2	●			774
2		SHALE (Weathered), clay and silt, trace sand, completely weathered, brown, some oxidation staining, moist, high plastic, extremely weak, blocky, oxide specks	■	AU2	18.0	●			773
		...1.6 m - trace interbedded red laminations	▲	SPT1	22	■			
		...2.1 m - orange and brown with suspect white sulphates	■	AU3	17.8	●			772
3		...3 m - red/orange, trace quartz fragments, trace gypsum crystals	■	AU4	17.4	●	2.7 m - LL = 54.4% PL = 17.7% PI = 36.7%		771
		...3.8 m - orange and red mottling	■	AU5	15.3	●			770
5		...4.6 m - interbedded orange laminations	■	AU6	13.8	●	4.3 m - EC: 5.7 dS/m 4.3 m - SAR: 12.5 4.3 m - pH: 5.5 4.3 m - Sand = 13.4% Silt = 51.3% Clay = 35.3%		769
		...5.2 m - grey, orange, and brown laminated layers	■	AU7	17.5	●			
6		...5.5 m - brown and orange with grey shale inclusions	■	AU8	20.7	●	6.2 m - SPT refusal; 50 blows for 6"		768
		SHALE, clayey, silty, highly weathered, grey, with oxidation specs, moist, high plastic, very weak, finely fissured	■	AU9	18.8	●			767
8		...7.8 m - SEEPAGE	■	AU10	17.8	●	8.1 m - SPT refusal; 50 blows for 3"		766
		End of Borehole @8.2 m	▲	SPT5	50				765

Notes:

Target depth of 18 m not achieved. Seepage encountered at 7.8 m. Minor sloughing observed upon completion. Borehole backfilled with sand and bentonite chips. Standpipe installed to a depth of 8.2 m.

Logged By: J. Boyd

Reviewed By: T. Curtis

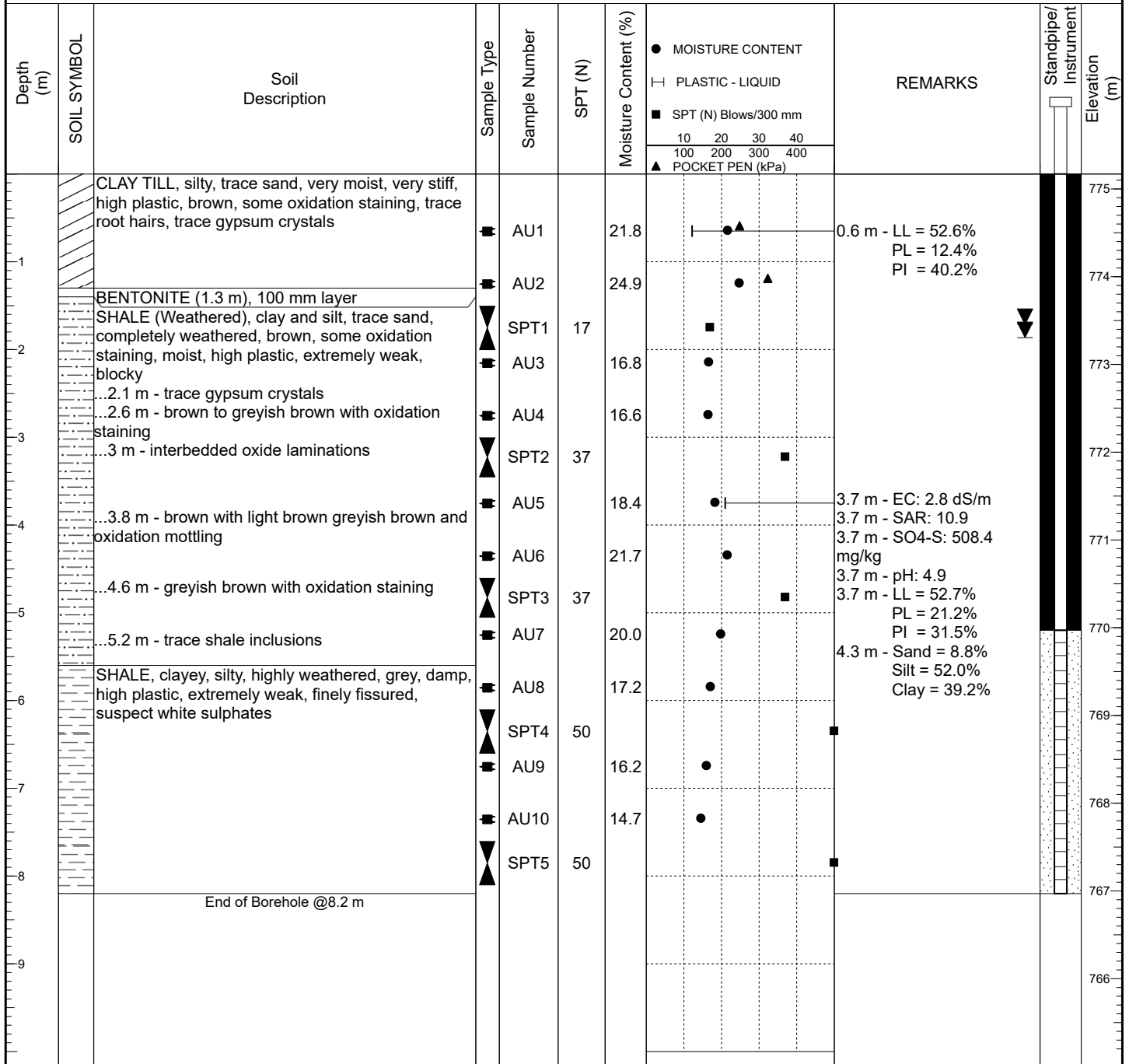


an Englobe company

BOREHOLE No : **22BH315**

PAGE 1 OF 1

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	03/28/2022	COMPLETED	03/28/2022
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND ELEVATION	775.17m N 5609456.400 E 415293.000
DRILLING METHOD	6" SSA	GROUND WATER ELEVATION / DEPTH	773.54 m 1.63 m
		DATE GROUND WATER RECORDED	09/15/2022



Notes:

Target depth of 18 m not achieved. Borehole backfilled with bentonite chips.

Logged By: J. Boyd

Reviewed By: T. Curtis

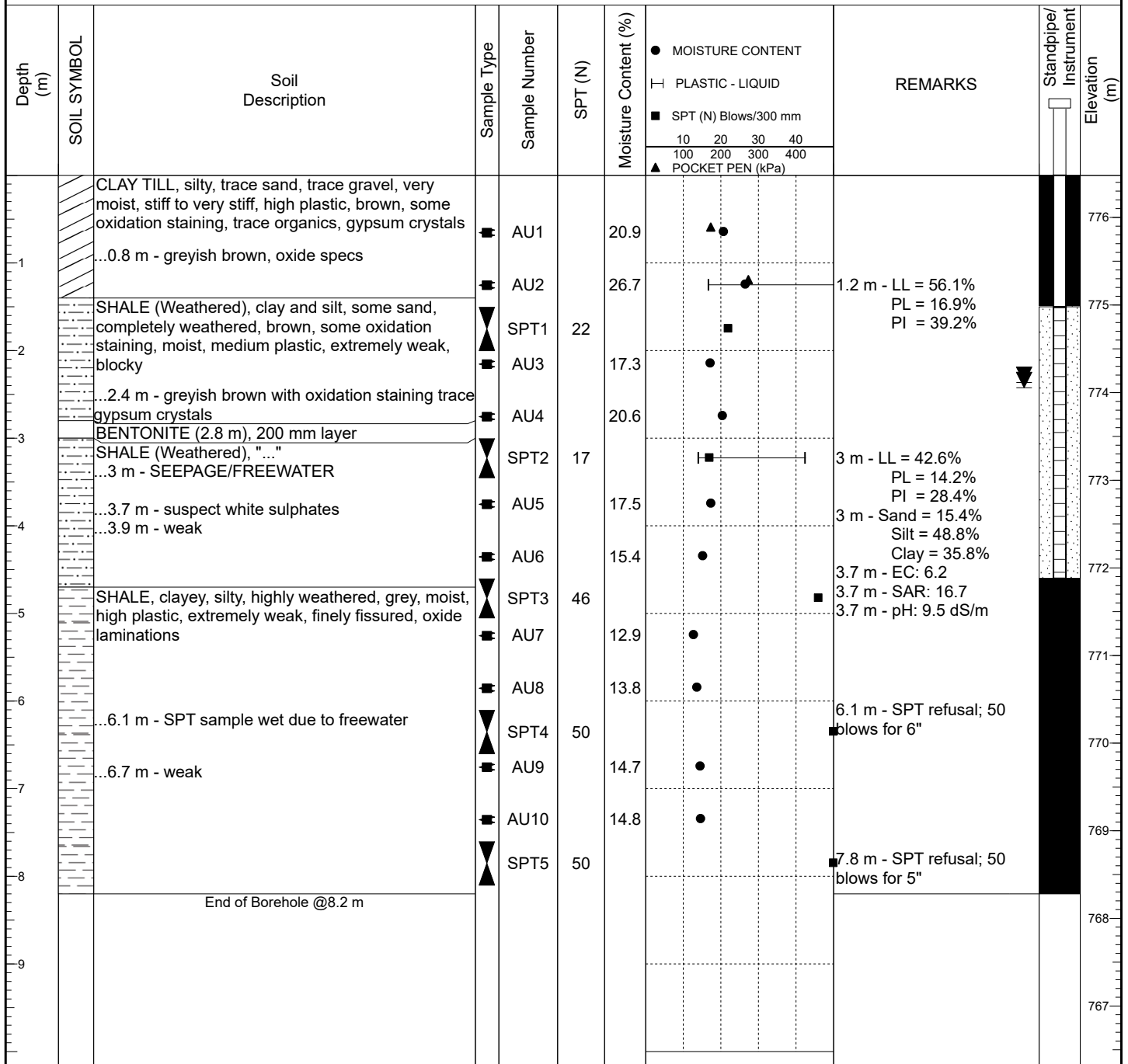


an Englobe company

BOREHOLE No : **22BH318**

PAGE 1 OF 1

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	03/28/2022	COMPLETED	03/28/2022
GROUND ELEVATION	776.48m	N	5609453.300
GROUND WATER ELEVATION / DEPTH	774.14 m	E	414993.000
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	DATE GROUND WATER RECORDED	10/12/2022
DRILLING METHOD	6" SSA		



Notes:

Target depth of 18 m not achieved. Seepage encountered at 3.0 m. Minor sloughing observed upon completion. Borehole backfilled with bentonite chips. Standpipe installed to a depth of 8.2 m.

Logged By: J. Boyd

Reviewed By: T. Curtis



an Englobe company

BOREHOLE No : **22BH321**

PAGE 1 OF 1

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	03/29/2022	COMPLETED	03/29/2022
GROUND ELEVATION	784.90m	N	5609450.700
GROUND ELEVATION	784.90m	E	414720.100
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND WATER ELEVATION / DEPTH	782.77 m 2.13 m
DRILLING METHOD	6" SSA	DATE GROUND WATER RECORDED	09/15/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	SPT (N)	Moisture Content (%)	REMARKS	Standpipe/Instrument Elevation (m)
						● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm ▲ POCKET PEN (kPa)		
1		CLAY FILL, silty, trace to some sand, moist, very stiff to hard, medium to high plastic, brown, trace root hairs, trace oxide staining, trace gypsum crystals	■	AU1	12.8	●		784
1.3		...1.3 m - suspect white sulphates	■	AU2	13.6	●		783
2			▲	SPT1	7	■		783
2.2			■	AU3	20.2	●		783
2.4			■	AU4	18.4	●		782
3		SHALE (Weathered), clay and silt, trace sand, completely weathered, brown, light brown to dark grey mottling, moist, high plastic, extremely weak, blocky	▲	SPT2	17	■		782
3.2		...3.2 m - interbedded oxide laminations	■	AU5	15.0	●		781
4.3		...4.3 m - brown with greyish brown and oxide mottling	■	AU6	14.0	●		781
4.7		...4.7 m - trace coal specks	▲	SPT3	37	■		780
5.4		...5.4 m - trace oxide specks	■	AU7	15.1	●		780
5.8			■	AU8	13.7	●		779
6.6		End of Borehole @6.6 m	▲	SPT4	87			779
7								778
8								777
9								776
								775

Notes:

Target depth of 6.6 m not achieved. Minor sloughing observed upon completion. Borehole backfilled with bentonite chips. Standpipe installed to a depth of 6.1 m.

Logged By: J. Boyd

Reviewed By: T. Curtis



an Englobe company

BOREHOLE No : **22BH402**

PAGE 1 OF 1

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	774.63m N 5609515.100 E 415474.100
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND WATER ELEVATION / DEPTH	772.73 m	1.90 m	
DRILLING METHOD	6" SSA	DATE GROUND WATER RECORDED	08/10/2022		

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	SPT (N)	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
						● MOISTURE CONTENT ┤ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 100 200 300 400 ▲ POCKET PEN (kPa)			
1		SHALE (Weathered), clay and silt, some sand, highly weathered, dark brown with oxidation specs, moist, high plastic, extremely weak to hard soil	■	AU1	18.5	●	1 m - Sand = 12.0% Silt = 43.9% Clay = 44.1%		774
2			■	D2					773
3			■	AU2	17.8	●	2.3 m - LL = 63.0% PL = 24% PI = 39.0%		772
4		...4 m - becoming very weak	■	AU3	16.7	●	2.3 m - Sand = 4.4% Silt = 52.5% Clay = 43.2%		771
5							2.5 m - LL = 56.6% PL = 22.3% PI = 34.3%		770
6			■	AU4	15.2	●	4 m - Sand = 2.9% Silt = 54.9% Clay = 42.2%		769
6		End of Borehole @6.1 m					5.5 m - LL = 74.6% PL = 21.7% PI = 52.9%		768
7									767
8									766
9									765

Notes:

No seepage or sloughing observed upon completion. 25 slotted PVC pipe installed to a depth of 6.1 m. Backfilled sand and bentonite.

Logged By: C. Tams

Reviewed By: T. Curtis



an Englobe company

BOREHOLE No : **22BH405**

PAGE 1 OF 1

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	778.15m	N	5609549.700
GROUND ELEVATION		E	415130.900
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND WATER ELEVATION / DEPTH	774.17 m 3.98 m
DRILLING METHOD	6" SSA	DATE GROUND WATER RECORDED	09/15/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	SPT (N)	Moisture Content (%)	REMARKS	Standpipe/Instrument Elevation (m)
						● MOISTURE CONTENT ┤ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 100 200 300 400 ▲ POCKET PEN (kPa)		
1		CLAY TILL, some silt, some sand, trace gravel, dry, soft, low to medium plastic, brown, some white precipitates	■	AU1	9.4	●	1 m - LL = 55.6% PL = 14.2% PI = 41.4%	778
2		SHALE (Weathered), silt and clay, trace sand, highly weathered, brown with grey mottling, some oxidation staining, damp, high plastic, extremely weak	■	AU2	14.2	●	2.5 m - Sand = 1.9% Silt = 53.6% Clay = 44.5%	777
3								776
4								775
5		...5.2 m - becoming very weak	■	AU3	11.8	●	4.5 m - LL = 41.9% PL = 16.5% PI = 25.4%	774
6		...5.5 m - becoming some sand	■	AU4	13.9	●	5 m - hard drilling 5.5 m - Sand = 10.5% Silt = 43.9% Clay = 45.6%	773
7		End of Borehole @6.1 m						772
8								771
9								770
								769

Notes:

No seepage and minor sloughing observed upon completion. 25 mm slotted PVC pipe installed to a depth of 6.1 m. Backfilled with sand and bentonite.

Logged By: C. Tams

Reviewed By: T. Curtis

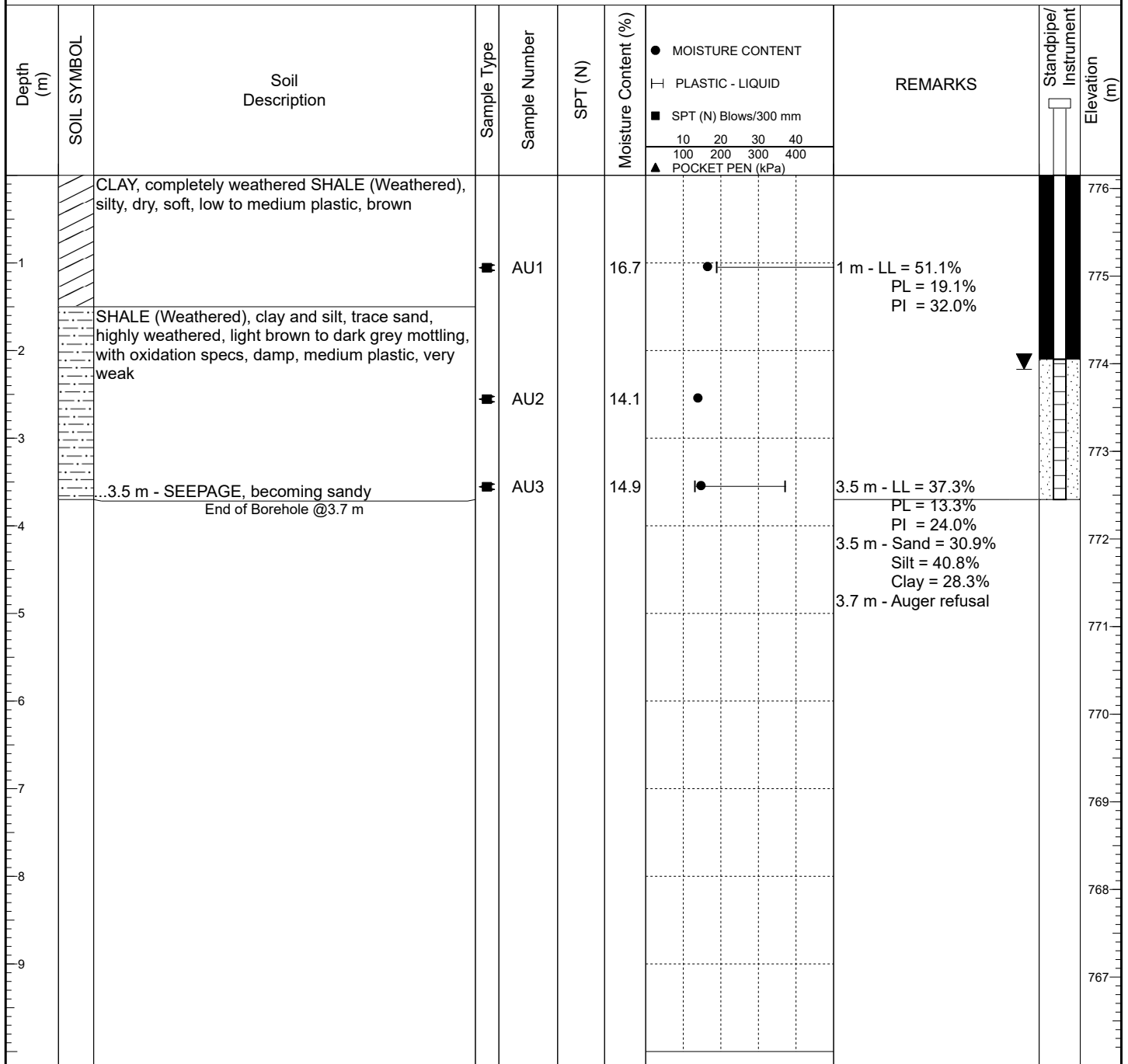


an Englobe company

BOREHOLE No : **22BH413**

PAGE 1 OF 1

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	
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND ELEVATION	776.15m	N 5609941.400 E 415203.800
DRILLING METHOD	6" SSA	GROUND WATER ELEVATION / DEPTH	774.02 m	2.13 m
		DATE GROUND WATER RECORDED	09/15/2022	



Notes:

Seepage encountered at 3.6 m. 25 mm slotted PVC pipe installed to a depth of 3.7 m. Backfilled with sand and bentonite.

Logged By: C. Tams

Reviewed By: T. Curtis

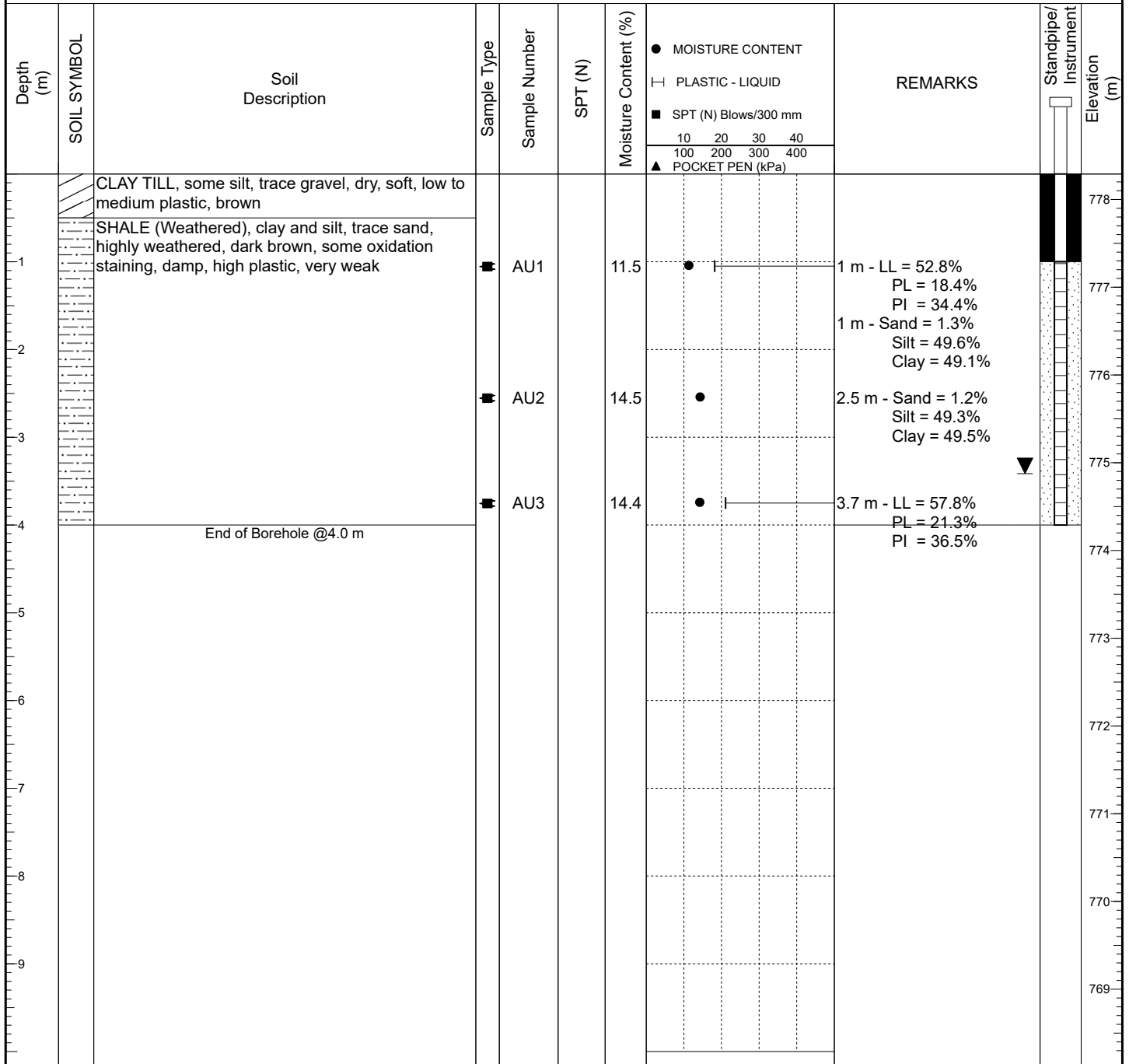


an Englobe company

BOREHOLE No : **22BH415**

PAGE 1 OF 1

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	06/21/2022	COMPLETED	06/21/2022	GROUND ELEVATION	778.29m N 5609946.300 E 414951.600
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND WATER ELEVATION / DEPTH	774.96 m	3.33 m	
DRILLING METHOD	6" SSA	DATE GROUND WATER RECORDED	09/15/2022		



Notes:

No seepage or sloughing observed upon completion. 25 mm standpipe installed to 4.0 m. Backfilled with sand and bentonite.

Logged By: C. Tams

Reviewed By: T. Curtis

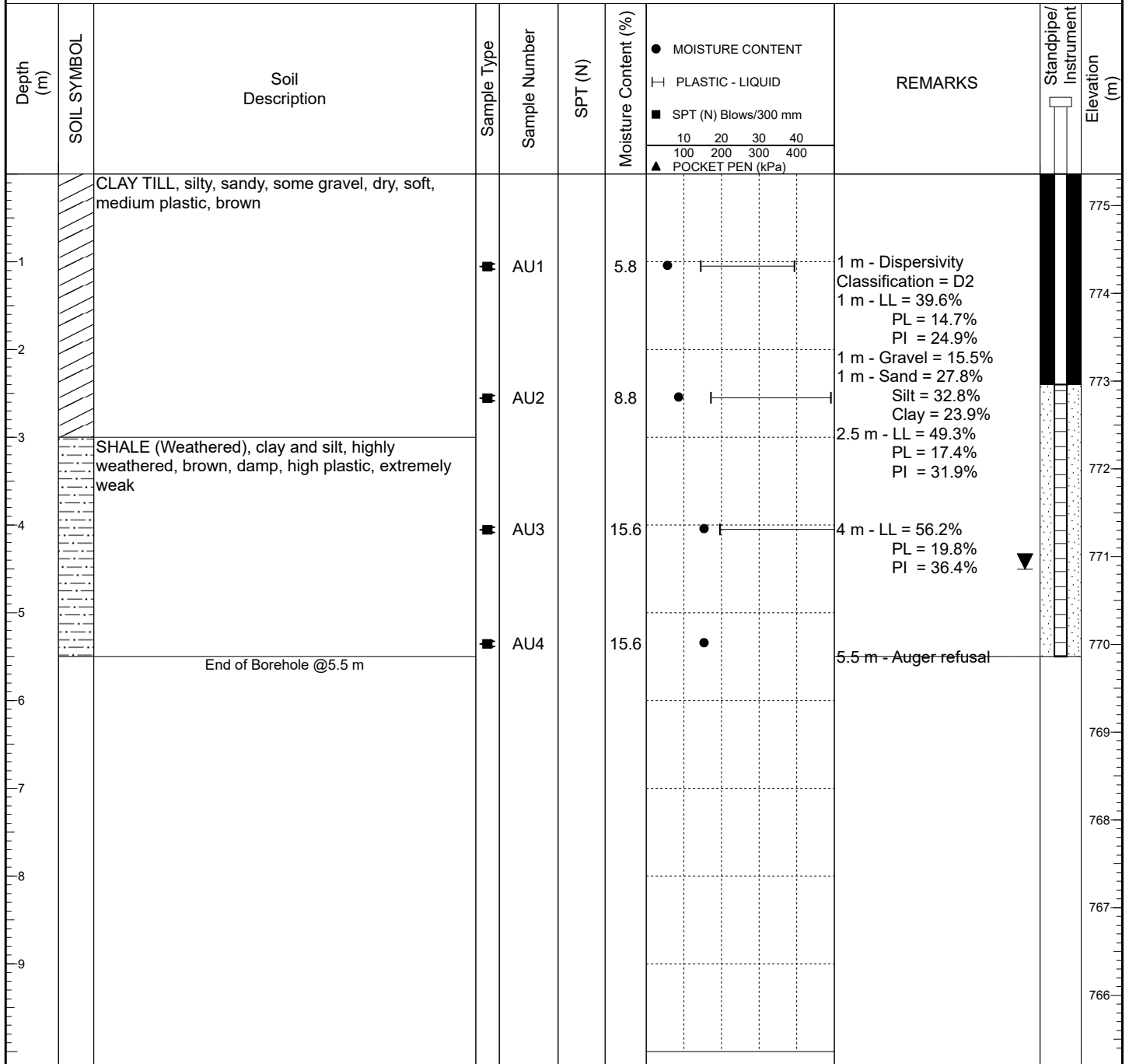


an Englobe company

BOREHOLE No : **22BH417**

PAGE 1 OF 1

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	06/21/2022	COMPLETED	06/21/2022	GROUND ELEVATION	775.36m N 5612279.300 E 415285.900
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND WATER ELEVATION / DEPTH	770.94 m	4.42 m	
DRILLING METHOD	6" SSA	DATE GROUND WATER RECORDED	09/15/2022		



Notes:

No seepage or sloughing observed. 25 mm PVC pipe installed to a depth of 5.5 m. Backfilled with sand and bentonite.

Logged By: C. Tams

Reviewed By: T. Curtis

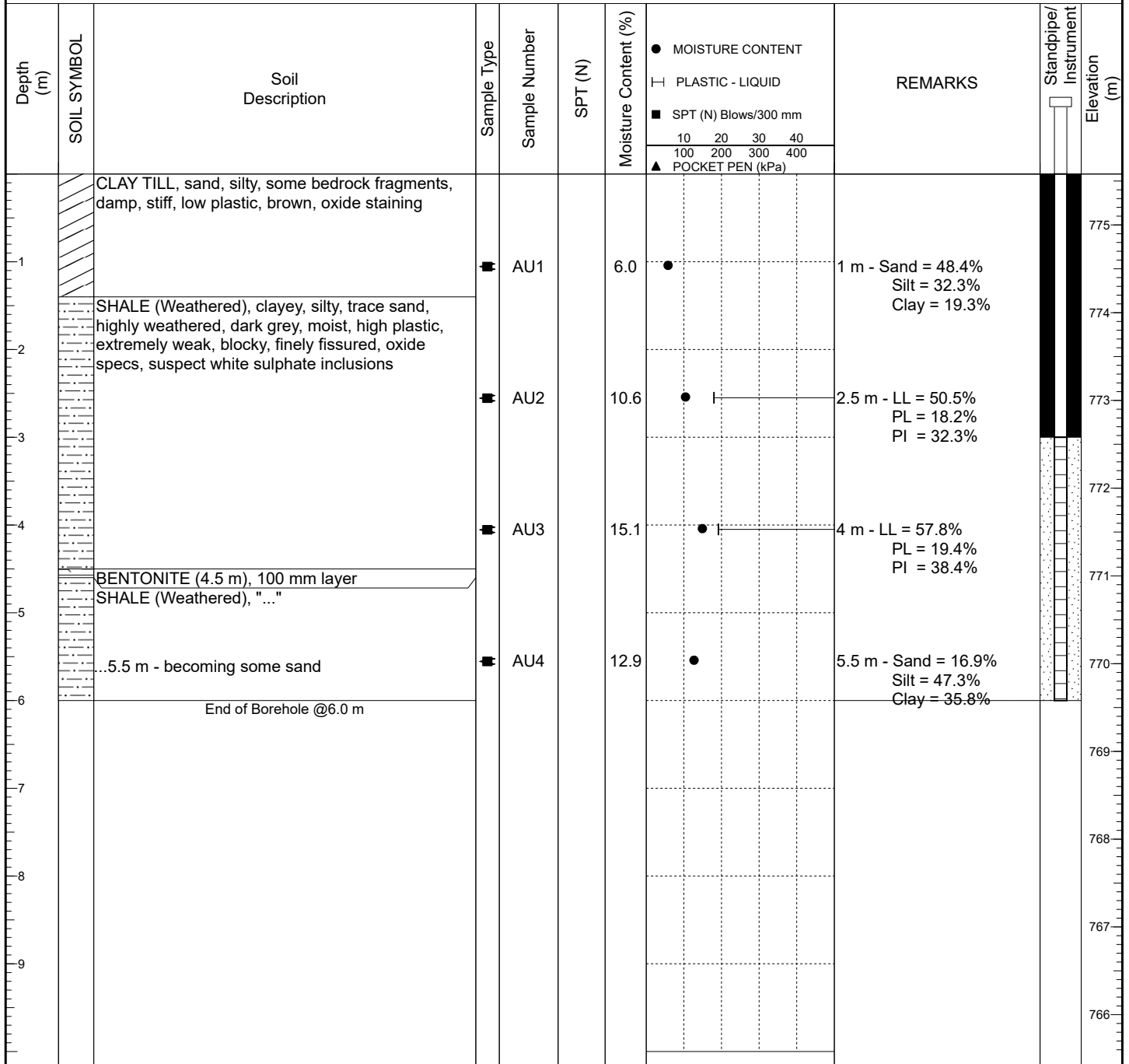


an Englobe company

BOREHOLE No : **22BH427**

PAGE 1 OF 1

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	06/20/2022	COMPLETED	06/20/2022	
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND ELEVATION	775.58m	N 5612356.800 E 414709.200
DRILLING METHOD	6" SSA	GROUND WATER ELEVATION / DEPTH		
		DATE GROUND WATER RECORDED	09/15/2022	



Notes:

Borrow search. 25 mm standpipe installed to 6.0 m. Backfilled with sand and bentonite chips.

Logged By: C. Braun

Reviewed By: T. Curtis

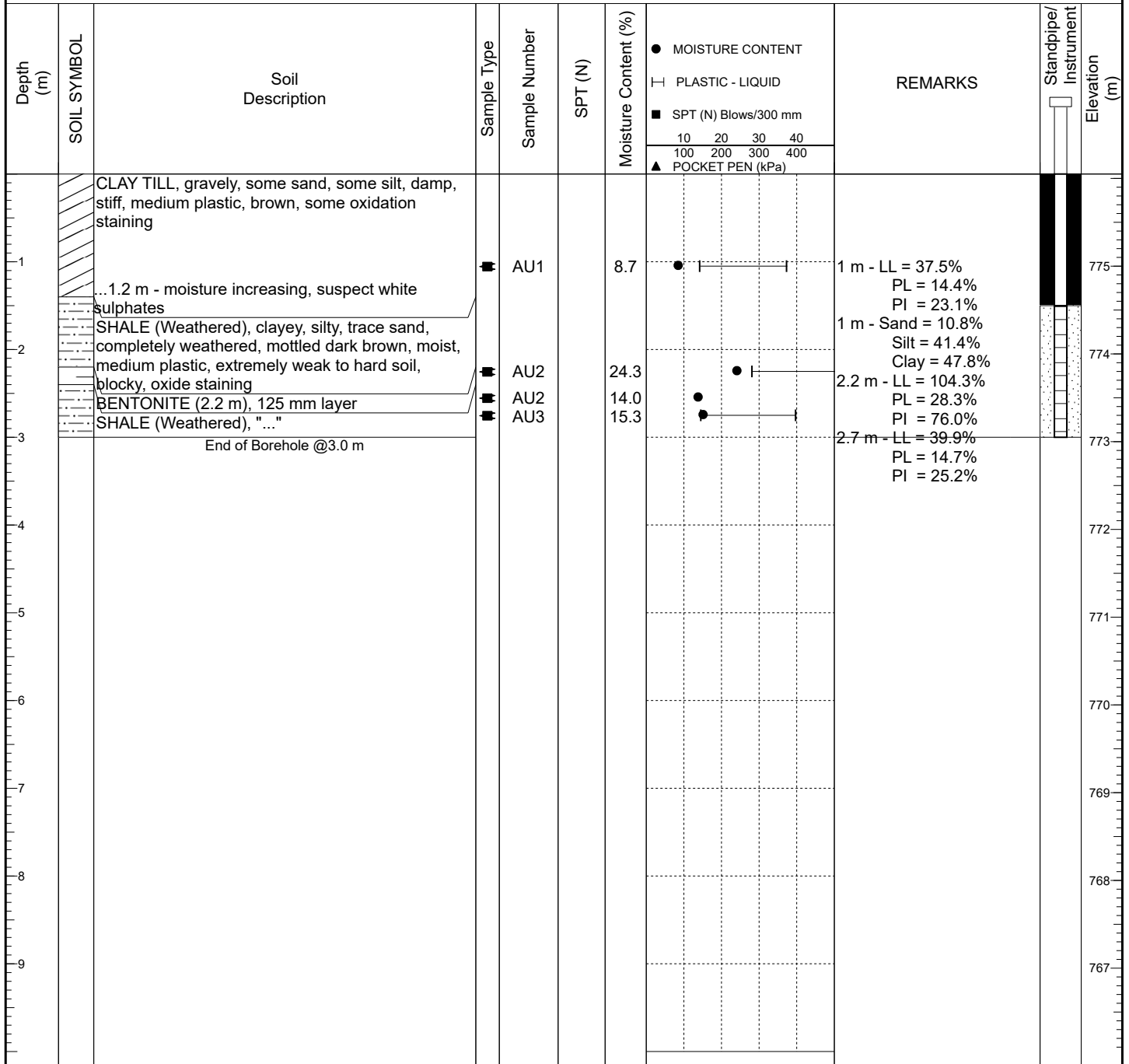


an Englobe company

BOREHOLE No : **22BH430**

PAGE 1 OF 1

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	06/20/2022	COMPLETED	06/20/2022	
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND ELEVATION	776.05m	N 5612462.000 E 414464.200
DRILLING METHOD	6" SSA	GROUND WATER ELEVATION / DEPTH		
		DATE GROUND WATER RECORDED	09/15/2022	



Notes:

Borrow search. 25 mm standpipe installed to 3.0 m. Backfilled with sand and bentonite chips. Moved 10 m west

Logged By: C. Braun

Reviewed By: T. Curtis

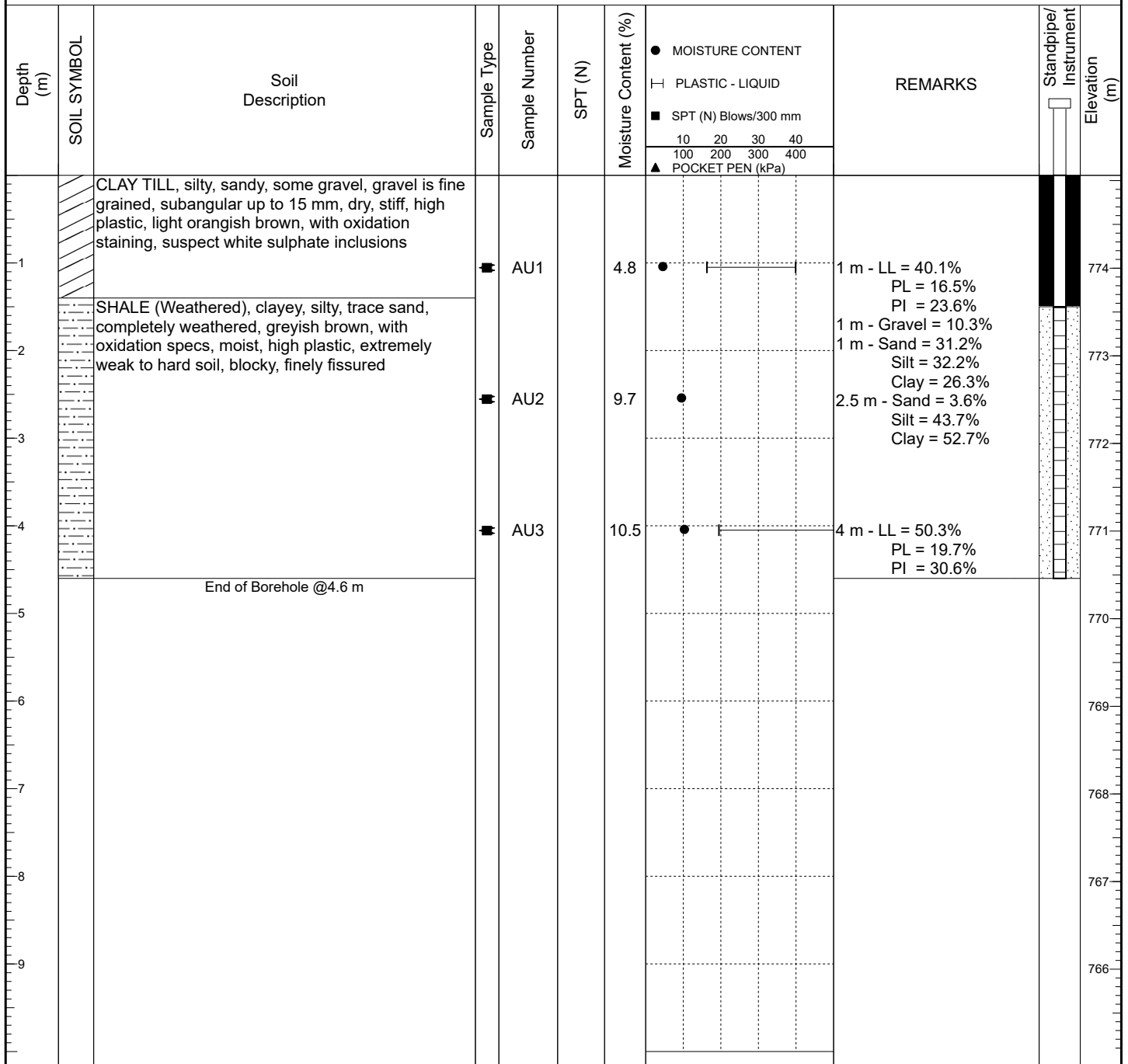


an Englobe company

BOREHOLE No : **22BH433**

PAGE 1 OF 1

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	06/20/2022	COMPLETED	06/20/2022	GROUND ELEVATION
				775.06m N 5612426.600 E 414201.700
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND WATER ELEVATION / DEPTH		
DRILLING METHOD	6" SSA	DATE GROUND WATER RECORDED		09/15/2022



Notes:

Borrow search. Backfilled with and bentonite chips. 25 mm standpipe to 3.0 m

Logged By: C. Braun

Reviewed By: T. Curtis

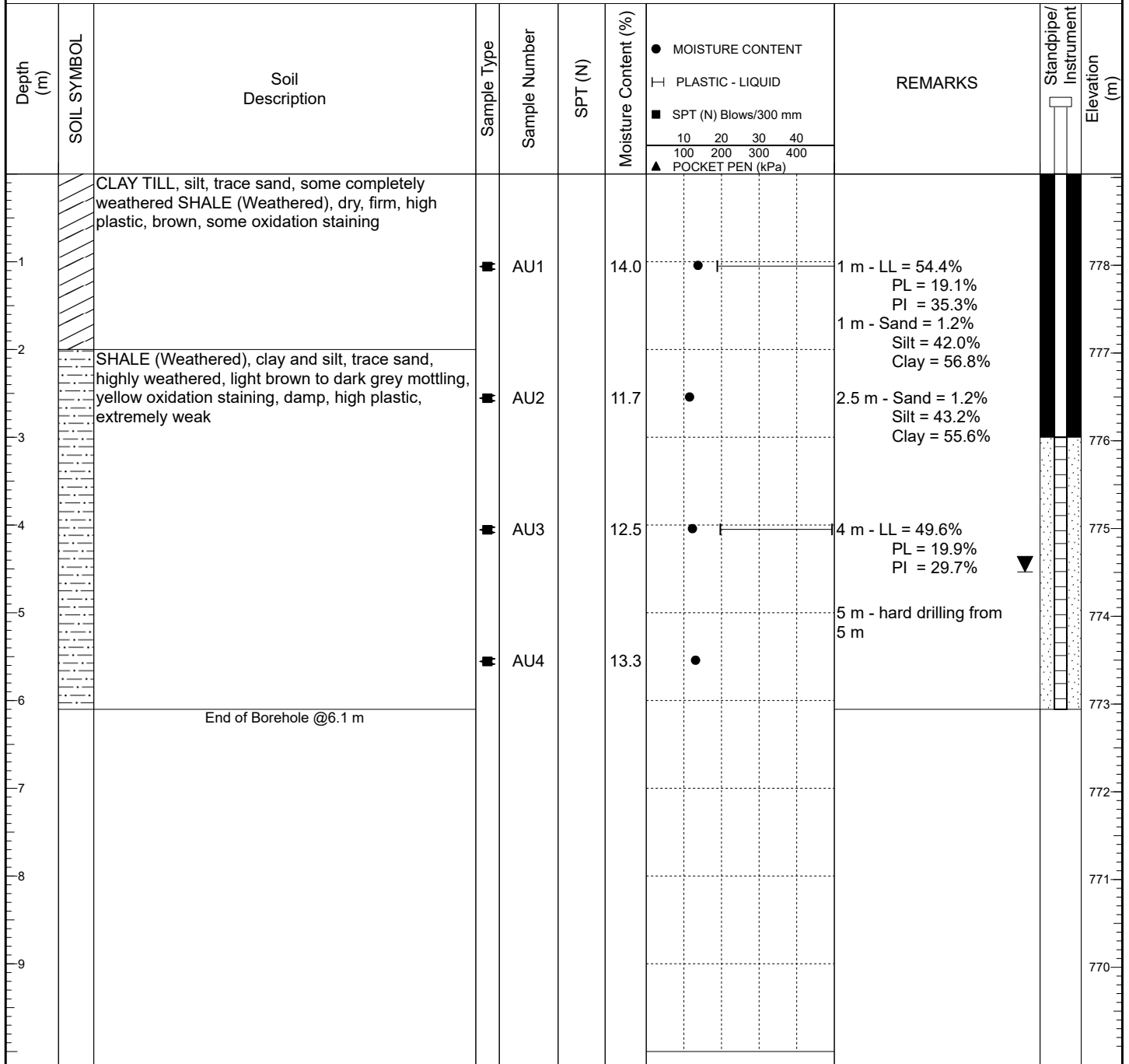


an Englobe company

BOREHOLE No : **22BH435**

PAGE 1 OF 1

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	779.04m N 5610655.600 E 414876.600
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND WATER ELEVATION / DEPTH	774.59 m	4.45 m	
DRILLING METHOD	6" SSA	DATE GROUND WATER RECORDED	08/10/2022		



Notes:

Borrow search. 25 mm standpipe installed to 6.0 m. Backfilled with sand and bentonite chips.

Logged By: C. Tams

Reviewed By: T. Curtis



an Englobe company

BOREHOLE No : **22BH438**

PAGE 1 OF 1

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	07/27/2022	COMPLETED	07/27/2022	
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND ELEVATION	768.34m	N 5612003.300 E 415264.900
DRILLING METHOD	6" SSA	GROUND WATER ELEVATION / DEPTH		
		DATE GROUND WATER RECORDED	08/10/2022	

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	SPT (N)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
						● MOISTURE CONTENT ┤ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 ▲ POCKET PEN (kPa)			
1		CLAY TILL, silty, sandy, trace gravel, damp, firm, high plastic, brown to dark brown, suspect white sulphate inclusions, salt lenses	■	AU1	7.1	●	0.6 m - LL = 86.8% PL = 15.7% PI = 71.1%		768
2		SHALE (Weathered), silty, clayey, completely weathered, grey, some oxidation staining, moist, high plastic, extremely weak, thinly laminated, suspect white sulphate inclusions, salt lenses	■	AU2	10.3	●	0.6 m - Gravel = 1.0% 0.6 m - Sand = 22.1% Silt = 27.1% Clay = 49.8%		767
3		...2.5 m - becoming some thinly bedded sandstone layers, with bentonite seams	■	AU3	13.7	●			766
4			■	AU4	7.6	●	2.7 m - LL = 102.6% PL = 20.3% PI = 82.3%		765
5			■	AU5	9.1	●	2.7 m - Sand = 8.3% Silt = 47.5% Clay = 44.2%		764
6			■	AU6	11.2	●			763
7			■	AU7	10.9	●			762
8			■	AU8	14.8	●			761
9		End of Borehole @6.1 m							760
									759

Notes:

NW Borrow search. Completed as a well. 25 mm standpipe installed to 6.1 m. Backfilled with bentonite chips.

Logged By: C. Tams

Reviewed By: T. Curtis

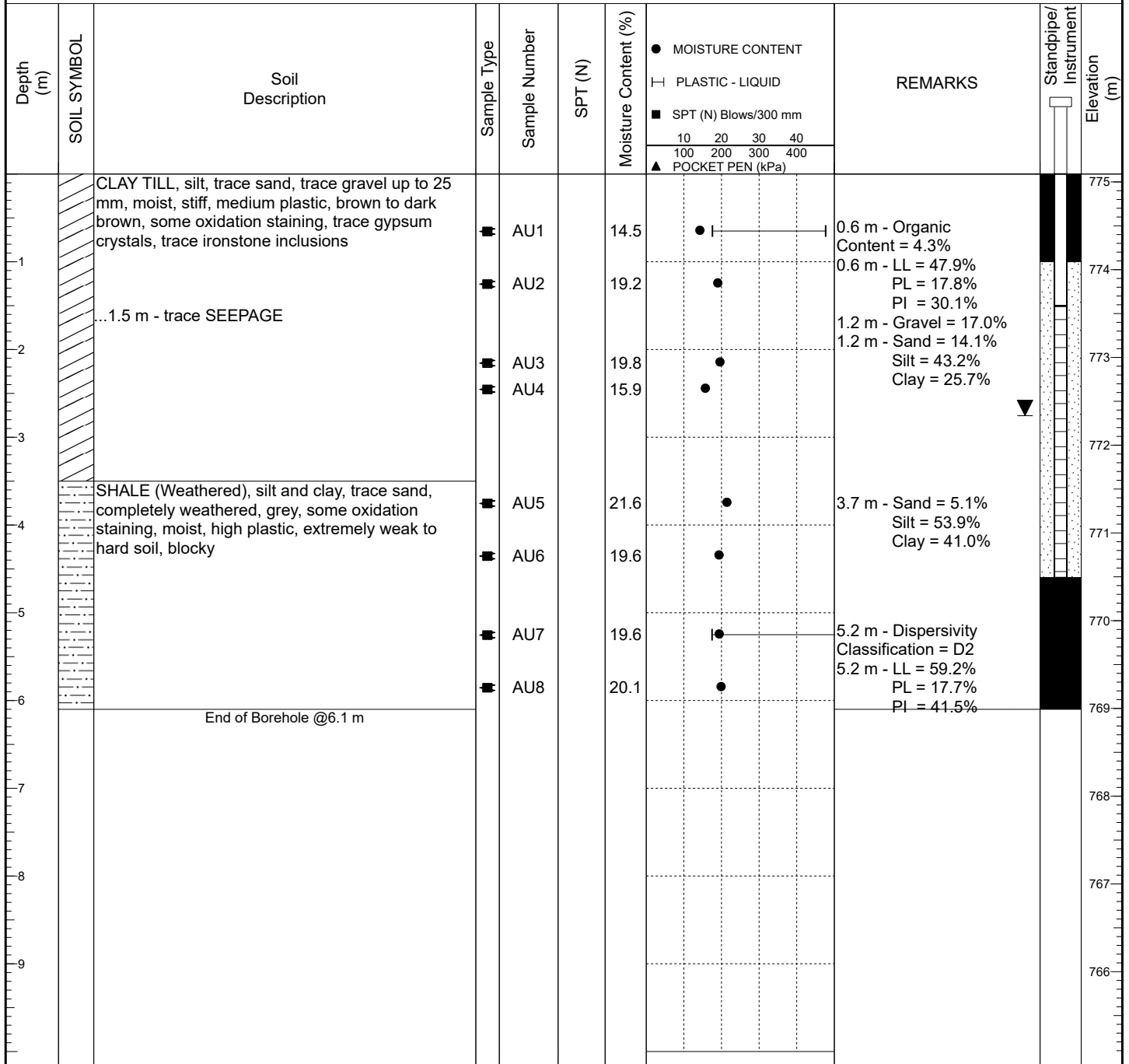


an Englobe company

BOREHOLE No : **22BH478**

PAGE 1 OF 1

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	07/26/2022	COMPLETED	07/26/2022	
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND ELEVATION	775.09m	N 5610666.200 E 415730.800
DRILLING METHOD	6" SSA	GROUND WATER ELEVATION / DEPTH	772.42 m	2.67 m
		DATE GROUND WATER RECORDED	08/10/2022	



Notes:

SW Borrow search. Backfilled with bentonite chips.

Logged By: C. Tams

Reviewed By: T. Curtis

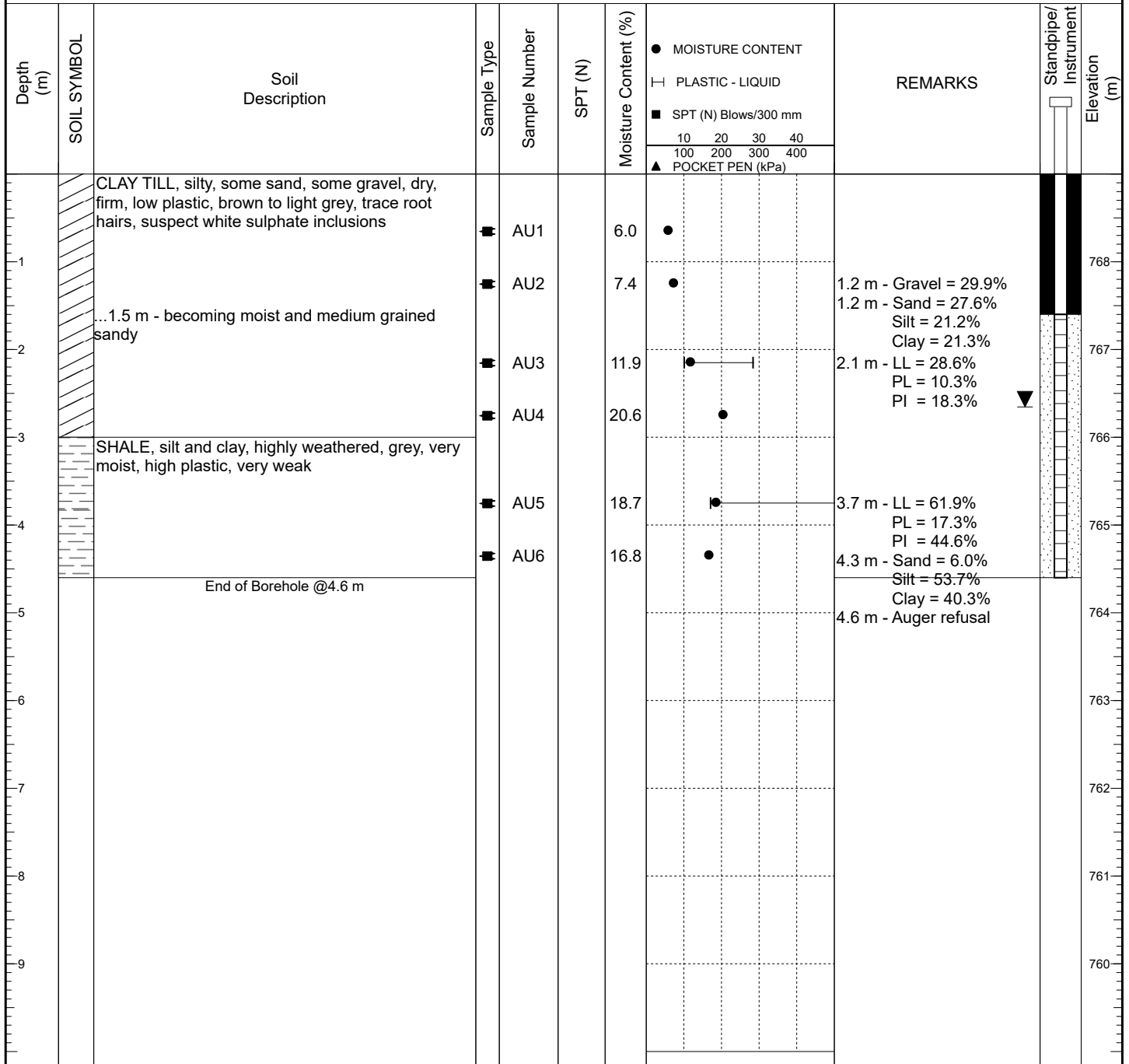


an Englobe company

BOREHOLE No : **22BH481**

PAGE 1 OF 1

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	07/26/2022	COMPLETED	07/26/2022	
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND ELEVATION	769.00m	N 5610678.600 E 416638.100
DRILLING METHOD	6" SSA	GROUND WATER ELEVATION / DEPTH	766.43 m	2.57 m
		DATE GROUND WATER RECORDED	09/15/2022	



Notes:

SE Borrow search. 25 mm standpipe installed to 4.6 m. Backfilled with sand and bentonite.

Logged By: C. Tams

Reviewed By: T. Curtis



an Englobe company

BOREHOLE No : **22BH484**

PAGE 1 OF 1

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	07/26/2022	COMPLETED	07/26/2022
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND ELEVATION	774.88m N 5610357.100 E 415436.300
DRILLING METHOD	6" SSA	GROUND WATER ELEVATION / DEPTH	770.92 m 3.96 m
		DATE GROUND WATER RECORDED	09/15/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	SPT (N)	Moisture Content (%)	REMARKS	Standpipe/Instrument Elevation (m)
						● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 100 200 300 400 ▲ POCKET PEN (kPa)		
1		CLAY TILL, silty, some gravel, trace sand, moist, firm, medium plastic, dark brown, some oxidation staining, suspect white sulphate inclusions	■	AU1	14.6	●	0.6 m - Sand = 8.6% Silt = 24.7% Clay = 66.7%	774
2		SHALE (Weathered), clay and silt, completely weathered, dark brown to grey mottling, some oxidation staining, moist, high plastic, extremely weak, blocky, suspect white sulphate inclusions	■	AU2	20.6	●		773
3			■	AU3	18.0	●	2.1 m - LL = 56.9% PL = 17.7% PI = 39.2%	772
4			■	AU4	19.3	●		771
5		BENTONITE (4.1 m), 200 mm layer	■	AU5	14.9	●		770
6		SHALE (Weathered), "..."	■	AU6	12.4	●	4.3 m - LL = 51.2% PL = 13.9% PI = 37.3%	769
7		...5 m - becoming grey	■	AU7	16.9	●		768
8		SHALE, clayey, silty, completely weathered, grey, damp, medium plastic, very weak, ground up	■	AU8	15.3	●	5.8 m - Sand = 5.4% Silt = 51.9% Clay = 42.7%	767
9		End of Borehole @6.1 m						766
								765

Notes:

SW Borrow search. 25 mm standpipe installed to 6.1 m. Backfilled with sand and bentonite.

Logged By: C. Tams

Reviewed By: T. Curtis

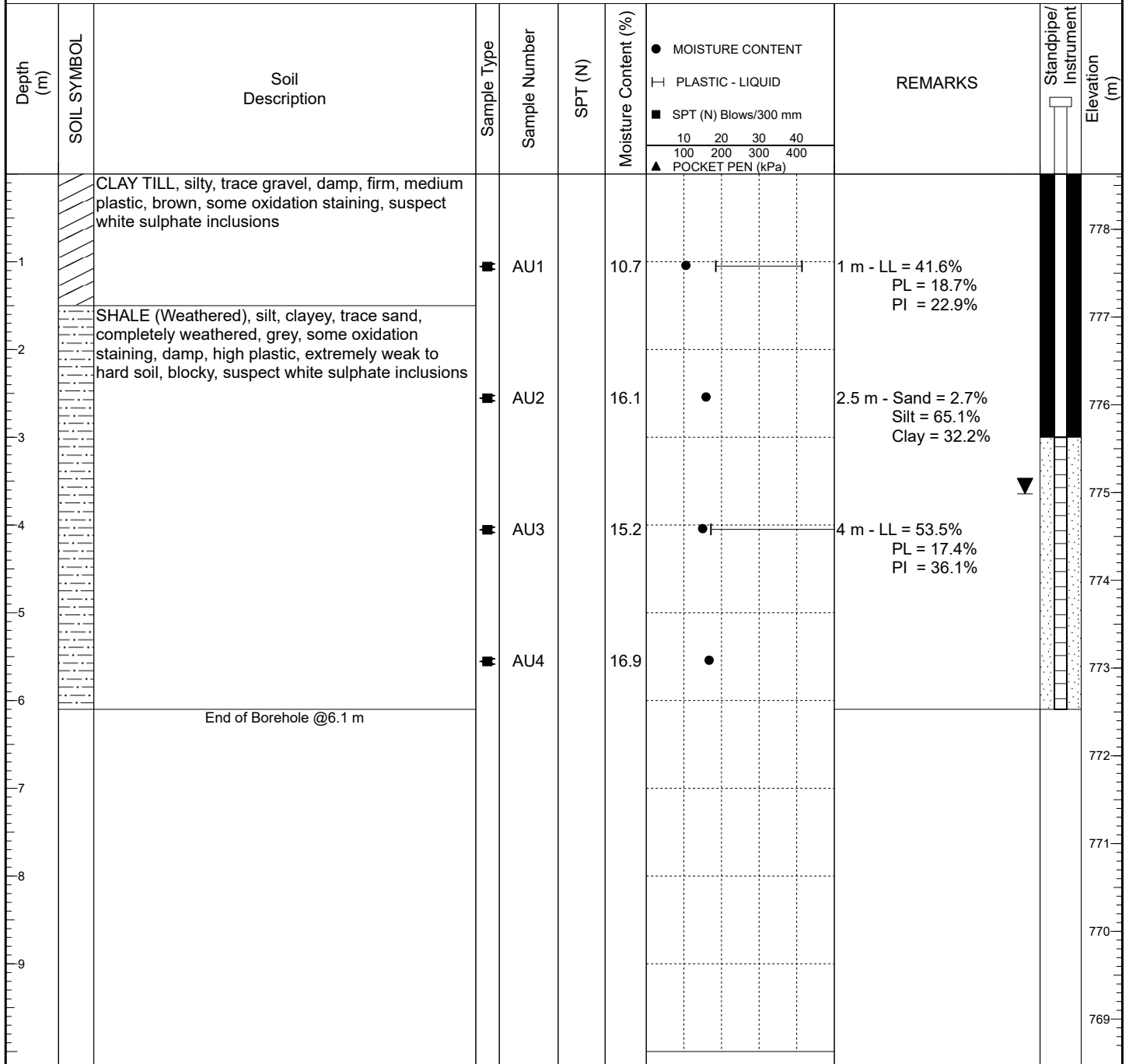


an Englobe company

BOREHOLE No : **22BH532**

PAGE 1 OF 1

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	07/25/2022	COMPLETED	07/25/2022	GROUND ELEVATION	778.63m N 5611253.200 E 414634.600
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND WATER ELEVATION / DEPTH	775.07 m	3.56 m	
DRILLING METHOD	6" SSA	DATE GROUND WATER RECORDED	08/10/2022		



Notes:

SW Borrow search. Standpipe installed to 6.1 m. Backfilled with sand and bentonite.

Logged By: C. Tams

Reviewed By: T. Curtis

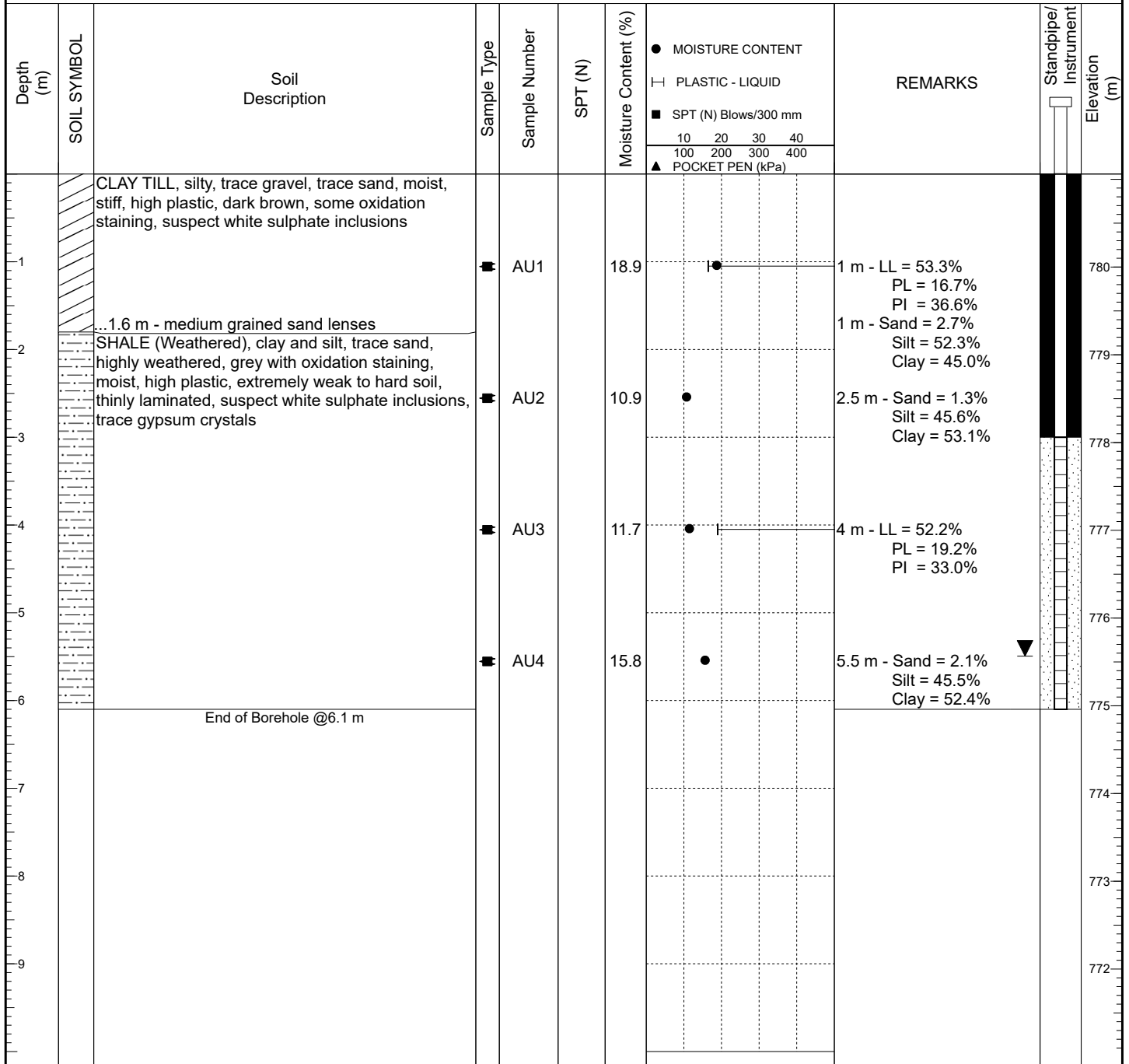


an Englobe company

BOREHOLE No : **22BH542**

PAGE 1 OF 1

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	07/25/2022	COMPLETED	07/25/2022	GROUND ELEVATION	781.06m N 5611037.200 E 414455.100
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND WATER ELEVATION / DEPTH	775.65 m	5.41 m	
DRILLING METHOD	6" SSA	DATE GROUND WATER RECORDED	08/10/2022		



Notes:

SW Borrow search. Backfilled with bentonite.

Logged By: C. Tams

Reviewed By: T. Curtis

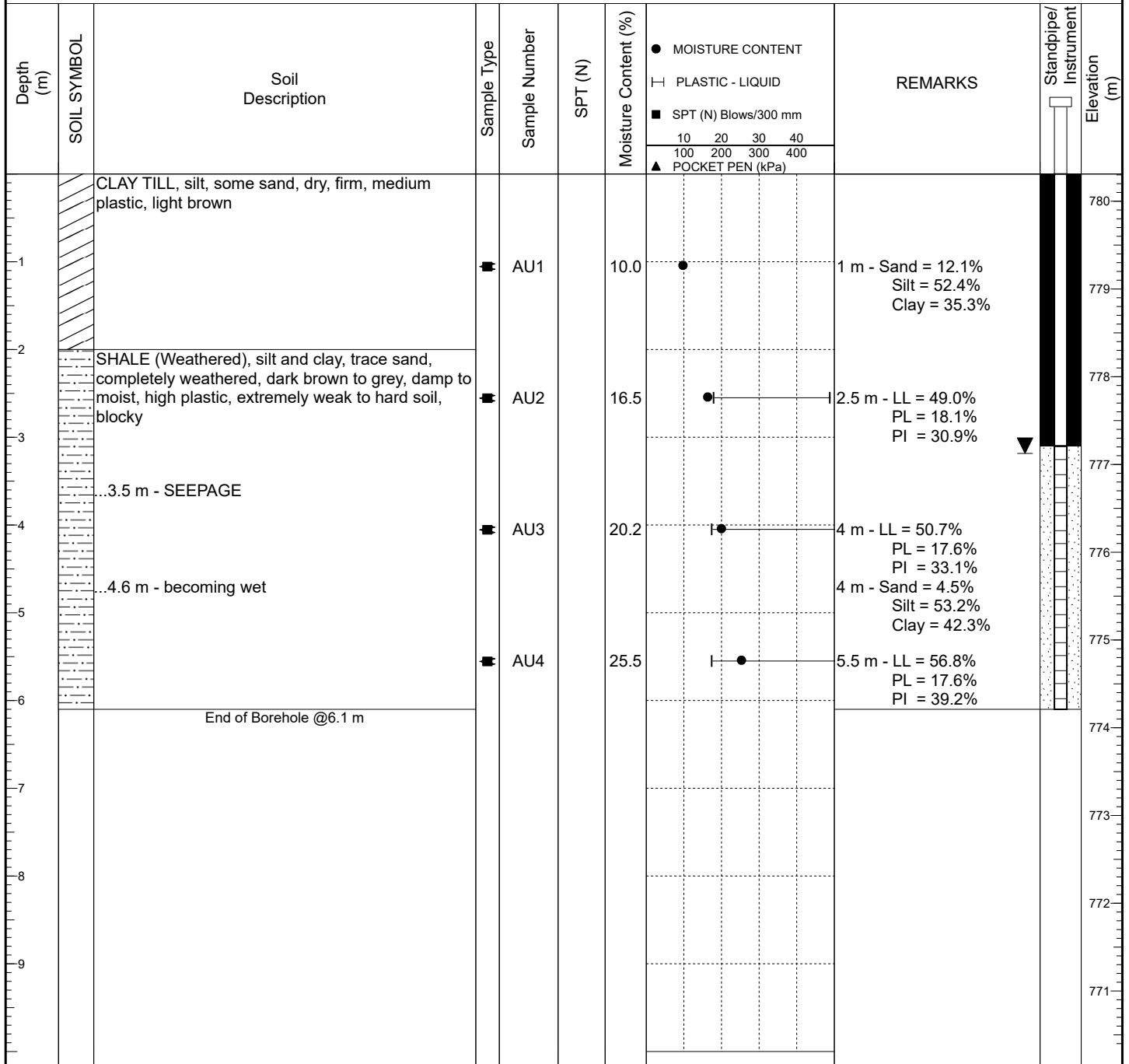


an Englobe company

BOREHOLE No : **22BH555**

PAGE 1 OF 1

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	780.31m N 5610839.600 E 414538.900
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND WATER ELEVATION / DEPTH	777.21 m	3.10 m	
DRILLING METHOD	6" SSA	DATE GROUND WATER RECORDED	08/10/2022		



Notes:

SW Borrow search. Backfilled with bentonite.

Logged By: C. Tams

Reviewed By: T. Curtis



an Englobe company

BOREHOLE No : **22BH567**

PAGE 1 OF 1

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	779.85m N 5610634.300 E 414557.100
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND WATER ELEVATION / DEPTH	777.08 m	2.77 m	
DRILLING METHOD	6" SSA	DATE GROUND WATER RECORDED	08/10/2022		

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	SPT (N)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
						● MOISTURE CONTENT ┌─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 100 200 300 400 ▲ POCKET PEN (kPa)			
1		CLAY TILL, silt, trace sand, trace gravel, dry, stiff, medium plastic, light brown, trace oxidation specs,	■	AU1	9.1	●	1 m - Gravel = 1.5% 1 m - Sand = 2.5% Silt = 49.5% Clay = 46.5%		779
2		SHALE (Weathered), silt and clay, trace sand, grey, some oxidation staining, damp, high plastic, extremely weak to hard soil, blocky	■	AU2	16.7	●	2.5 m - LL = 50.9% PL = 19% PI = 31.9%	▼	778
3		...3.5 m - becoming some sand	■	AU3	15.0	●	3.5 m - LL = 50.0% PL = 18.7% PI = 31.3%		777
4		...3.8 m - TRACE SEEPAGE End of Borehole @4.0 m					3.5 m - Sand = 11.7% Silt = 52.7% Clay = 35.6% 4 m - Auger refusal		776
5									775
6									774
7									773
8									772
9									771
									770

Notes:

SW Borrow search. Standpipe installed to 4.0 m. Backfilled with sand and bentonite.

Logged By: C. Tams

Reviewed By: T. Curtis

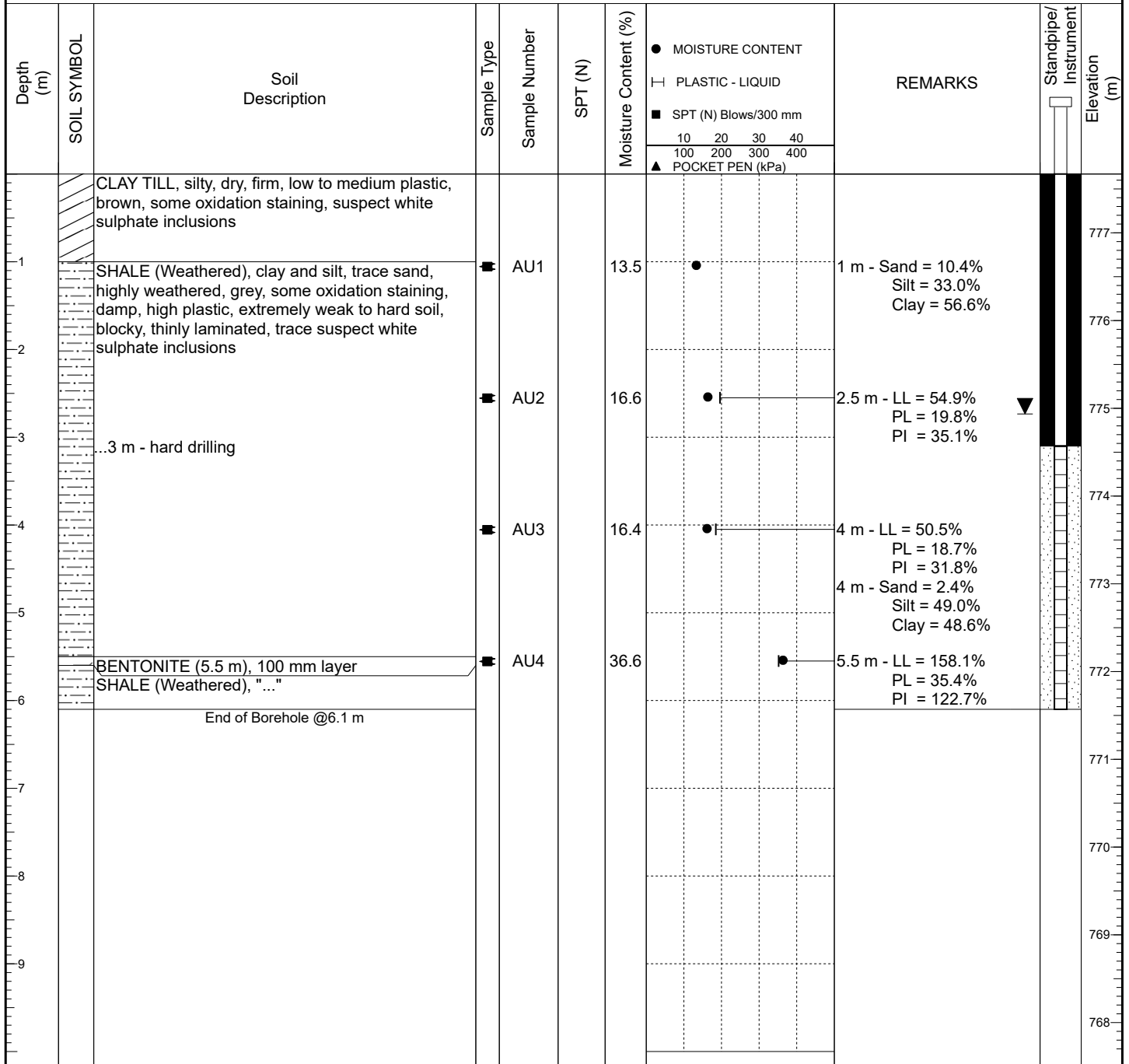


an Englobe company

BOREHOLE No : **22BH587**

PAGE 1 OF 1

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	
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND ELEVATION	777.67m	N 5610330.100 E 414851.000
DRILLING METHOD	6" SSA	GROUND WATER ELEVATION / DEPTH	775.02 m	2.65 m
		DATE GROUND WATER RECORDED	09/15/2022	



Notes:

SW Borrow search. 25 mm PVC standpipe installed to a depth of 6.1 m.

Logged By: C. Tams

Reviewed By: T. Curtis



an Englobe company

BOREHOLE No : **22BH588**

PAGE 1 OF 1

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	07/27/2022	COMPLETED	07/27/2022	
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND ELEVATION	774.42m	N 5612095.700 E 415843.700
DRILLING METHOD	6" SSA	GROUND WATER ELEVATION / DEPTH		
		DATE GROUND WATER RECORDED	09/15/2022	

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	SPT (N)	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
						● MOISTURE CONTENT ┤ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 ▲ POCKET PEN (kPa)			
1		CLAY TILL, silty, gravelly, some cobbles, dry, firm, medium plastic, brown, suspect white sulphate inclusions	■	AU1	5.2	●	0.6 m - LL = 40.6% PL = 13.3% PI = 27.3%		774
		...1 m - becoming trace to some gravel, no cobbles	■	AU2	8.4	●	1.2 m - Gravel = 4.2% 1.2 m - Sand = 21.1% Silt = 42.4% Clay = 32.3%		773
2		...1.5 m - becoming damp, dark brown	■	AU3	11.0	●	2.1 m - LL = 49.9% PL = 13.2% PI = 36.7%		772
		...2 m - becoming some oxidation staining	■	AU4	12.5	●	2.7 m - Sand = 9.7% Silt = 50.6% Clay = 39.7%		771
3		SHALE (Weathered), clay and silt, trace sand, completely weathered, grey, some oxidation staining, damp, high plastic, extremely weak, blocky, suspect white sulphate inclusions	■	AU5	16.3	●			770
4			■	AU6	16.3	●			769
5			■	AU7	15.8	●			768
6		End of Borehole @6.1 m	■	AU8	16.3	●			767
7									766
8									765
9									

Notes:

NW Borrow search. Backfilled with bentonite chips.

Logged By: C. Tams

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH118**

PAGE 1 OF 3

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 06/10/2022 COMPLETED 06/11/2022 GROUND ELEVATION 772.37m N 5612553.698 E 415512.170
 DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH 769.91 m 2.46 m
 CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED 08/10/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument Elevation (m)
		OVERBURDEN, drilled by 6" SSA to 3.1 m. REFER TO 22BH118 LOG							● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)		
1											772
2											771
3											770
4		SHALE (Weathered), clay and silt, trace sand, highly weathered, dark banded brown, some oxidation staining, moist, high plastic, very weak, blocky, finely stratified, medium spaced oxidized fractures, some gypsum crystal inclusions	RC1 UD1	3.10 - 4.62	1	58 69 58	20			3.3 m - LL = 73.2% PL = 17.7% PI = 55.5%	769
5			UD2							3.8 m - Dispersivity Classification = D2 3.8 m - EC: 1.8 dS/m 3.8 m - SAR: 29.9 3.8 m - pH: 8.4	768
6			RC2	4.62 - 6.14	2	53 67 48	4				767
7		BENTONITE (6.2 m), 50 mm layer of bentonitic shale, high plastic, clay and silt, trace sand	RC3 UD4	6.14 - 7.66	3	86 100 80	6			6 m - LL = 160.2% PL = 16.4% PI = 143.8%	766
8		SHALE (Weathered), "..." ...6.3 m - 20 mm layer of strong sandstone	UD3							6.2 m - Sand = 3.0% Silt = 45.0% Clay = 52.0%	765
9			RC4	7.66 - 9.18	4	90 100 91	4			6.6 m - Sand = 20.3% Silt = 53.8% Clay = 25.9%	764
		SHALE, clay and silt, trace sand, unweathered, grey, moist, high plastic, moderately strong, finely fissured	UD5 UD6							6.6 m - EC: 5.5 dS/m 6.6 m - SAR: 22.4 6.6 m - pH: 7.9	763
		...9.2 m - becoming very strong ...9.3 m - 43° fracture ...9.6 m - 55° fracture	RC5	9.18 - 10.70	5	84 100 91	1			8.6 m - Dispersivity Classification = ND3	

Notes:

Target depth of 24 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	6.30	PLAIN
6.30	7.80	SLOTTED

Logged By: C. Braun / J. BoydReviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH118**

PAGE 2 OF 3

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	06/10/2022	COMPLETED	06/11/2022	
DRILLING CONTRACTOR	Val's Drilling	GROUND ELEVATION	772.37m	N 5612553.698 E 415512.170
CORING TYPE	HQ3	DIAMETER (mm)	61	
		GROUND WATER ELEVATION / DEPTH	769.91 m	2.46 m
		DATE GROUND WATER RECORDED	08/10/2022	

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT ┌─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
11				RC6	10.70	6	93	3				762
				UD7	12.22		100					761
12		...11.7 m - 69° fracture								11.3 m - LL = 102.0% PL = 17.2% PI = 84.8%		
		...12.0 m - 57° fracture										
13		...12.5 m - 76° fracture		RC7	12.22	7	97	5				760
		...12.9 m - 55° fracture					100					
		...13.4 m - 47° fracture			13.74		87					759
14		...14.0 m - 65° fracture		RC8	13.74	8	95	3				758
		...14.4 m - 53° fracture			15.26		100					
15		...14.9 m - 75 mm layer of suspect calcified shale, very strong, some ammonites		UD8			91			14.6 m - Sand = 7.8% Silt = 59.9% Clay = 32.3%		757
		...15.6 m - 31° fracture		RC9	15.26	9	93	3				
16		...16.1 m - 56° fracture			16.78		100					756
		...16.6 m - 55° fracture					86					
17		...17.7 m - 52° fracture		RC10	16.78	10	100	1				755
		...18.5 m - 52° fracture			18.30		100					
18				RC11	18.30	11	100	1				754
					19.82		100					
19							97					753
				RC12	19.82	12	93	2				
				UD9						20 m - LL = 92.7%		

Notes:

Target depth of 24 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	6.30	PLAIN
6.30	7.80	SLOTTED

Logged By: C. Braun / J. Boyd

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH118**

PAGE 3 OF 3

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 06/10/2022 COMPLETED 06/11/2022 GROUND ELEVATION 772.37m N 5612553.698 E 415512.170
 DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH 769.91 m 2.46 m
 CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED 08/10/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
									● MOISTURE CONTENT └─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
21		...20.7 m - 50mm weak section of seam infill material starting with an 80° fracture		RC13	21.34	13	93 86	2		PL = 16.4% PI = 76.3%		752
		...20.9 m - 69° fracture			-		100					751
		...21.6 m - 65° fracture			22.86		100 90					750
22		...22.3 m - 24° fracture										749
23				RC14	22.86	14	99 99 97	1				748
		...24.2 m - 90° fracture, bentonite fragment			24.38							747
24												746
25												745
26												744
27												743
28												
29												

Notes:

Target depth of 24 m achieved. Corehole completed as
a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work		
Depth Top	Depth Bottom	Pipe Type
0.00	6.30	PLAIN
6.30	7.80	SLOTTED

Logged By: C. Braun / J. BoydReviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH126**

PAGE 1 OF 3

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	06/03/2022	COMPLETED	06/03/2022	GROUND ELEVATION	770.17m N 5612519.800 E 416328.000
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND WATER ELEVATION / DEPTH		764.36 m	5.81 m
CORING TYPE	3" x 4 5/8"	DIAMETER (mm)	76	DATE GROUND WATER RECORDED	08/10/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
		OVERBURDEN, drilled by 6" SSA to 4.5 m. REFER TO 22BH126 LOG							● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
1												770
2												769
3												768
4												767
5		SHALE (Weathered), clay and silt, highly weathered, light brown to dark grey mottling, moist, high plastic, very weak, very closely spaced oxidation laminations, thinly laminated, highly fractured	RC1		4.47 - 6.22	1	0 100 0					766
6		...4.8 m - weak to moderately strong										765
7		...7.2 m - weak, closely spaced oxidation laminations	RC2		6.22 - 7.77	2	0 98 34			7 m - EC: 9.9 dS/m 7 m - SAR: 29.0 7 m - pH: 7.2		764
8			RC3		7.77 - 9.26	3	76 98 78					763
9		SHALE, clay and silt, trace sand, medium weathered, grey, damp, high plastic, weak, finely stratified, marine ...9.3 m - shallowly inclined fractures	UD1							8.61 m - Dispersivity Classification = ND4 8.61 m - Jar Slake Index: 1.0 9.3 m - Loss of drilling fluid		762
			RC4		9.26 - 10.85	4	80 100 81					761

Notes:

Target depth of 27 m achieved. Corehole backfilled with bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	16.70	PLAIN
16.70	18.00	SLOTTED

Logged By: J. Boyd

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH126**

PAGE 2 OF 3

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	06/03/2022	COMPLETED	06/03/2022	
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND ELEVATION	770.17m	N 5612519.800 E 416328.000
CORING TYPE	3" x 4 5/8"	DIAMETER (mm)	76	
		GROUND WATER ELEVATION / DEPTH	764.36 m	5.81 m
		DATE GROUND WATER RECORDED	08/10/2022	

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
									● MOISTURE CONTENT ┌─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
11				RC5	10.85 - 12.32	5	90 100 82			circulation, loss of 500L of fluid		760
12		...12.3 m - slightly inclined fracturing		RC6	12.32 - 13.87	6	87 101 91					759
13				RC7	13.87 - 15.37	7	97 101 89					758
14				UD2								757
15				RC8	15.37 - 16.92	8	94 102 95					756
16												755
17		BENTONITE (16.6 m), 300 mm layer ...16.6 m - clay and silt, high plastic		RC9	16.92	9	61			16.6 m - LL = 141.4% PL = 23.7% PI = 117.7%		754
18		SILTSTONE, clayey, trace sand, unweathered, light grey, damp, high plastic, very strong, finely fissured ...17.0 m - strong		RC10	17.15 - 18.42	10	100 83 93 100 93			16.6 m - Sand = 0.0% Silt = 44.4% Clay = 55.6%		753
19		...17.2 m - very fractured, weak to moderately strong, slightly inclined fracturing		RC11	18.42 - 19.98	11	84 102 94			17.2 m - Sand = 0.3% Silt = 69.0% Clay = 30.7%		752
		BENTONITE (18.1 m), 5 mm layer SHALE, clay and silt, unweathered, light grey, damp, high plastic, very strong, finely fissured, finely stratified								18 m - LL = 102.5% PL = 17.1% PI = 85.4%		751
				RC12		12						

Notes:

Target depth of 27 m achieved. Corehole backfilled with bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	16.70	PLAIN
16.70	18.00	SLOTTED

Logged By: J. Boyd

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH126**

PAGE 3 OF 3

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	06/03/2022	COMPLETED	06/03/2022	GROUND ELEVATION	770.17m N 5612519.800 E 416328.000
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND WATER ELEVATION / DEPTH	764.36 m	5.81 m	
CORING TYPE	3" x 4 5/8'	DIAMETER (mm)	76	DATE GROUND WATER RECORDED	08/10/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT ┌─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
21		...21.5 m - strong to very strong, calcified shale (suspect)	UD3		19.98 - 21.44	95 100 88						750
22		...21.8 m - weak to moderately strong	RC13		21.44 - 21.80	13 14 92 86						749
			RC14		21.80 - 23.02	14 98 98 88				21.99 m - LL = 80.0% PL = 20.3% PI = 59.7% 21.99 m - UCS = 1702 kPa		748
23		...23.0 m - strong	RC15		23.02 - 24.49	15 105 114 103						747
		...23.4 m - weak										746
24		...24.3 m - strong	RC16		24.49 - 27.24	16 93 101 91						745
25		...24.6 m - weak to moderately strong										744
26												743
27												742
28												741
29												

Notes:

Target depth of 27 m achieved. Corehole backfilled with bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	16.70	PLAIN
16.70	18.00	SLOTTED

Logged By: J. Boyd

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH135**

PAGE 1 OF 3

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	06/10/2022	COMPLETED	06/13/2022	
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND ELEVATION	770.05m	N 5612521.800 E 416417.600
CORING TYPE	2 3/4" x 4 5/8"	DIAMETER (mm)	75	
		DATE GROUND WATER RECORDED	10/12/2022	

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument Elevation (m)
		OVERBURDEN, drilled by 6" SSA to 4.4 m. REFER TO 22BH134 LOG							● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)		
1											769
2											768
3											767
4											766
5		SHALE (Weathered), silty, clayey, medium weathered, light brown to dark grey mottling, moist, high plastic, very weak, thinly laminated	RC1		4.47 - 6.25	1	0 71 17	20			765
6		...4.6 m - crumbled core									764
		...5.2 m - crumbled core									
		...5.3 m - crumbled core									
7		...6.2 m - crumbled core	RC2		6.25 - 7.76	2	0 81 32	20			763
		...7.0 m - 60° fracture									
		...7.4 m - 67° fracture									
8		...7.8 m - weak to moderately strong	RC3		7.76 - 9.28	3	32 100 47	20			762
		...7.8 m - crumbled core	UD1								
		...8.0 m - bentonite inclusions									
		...8.1 m - and silt, clayey, sandy, medium plastic, very oxidized orange layer								8.1 m - LL = 46.6% PL = 17% PI = 29.6%	
9		SHALE, clay and silt, trace sand, slightly weathered, grey, damp, high plastic, weak, finely stratified, marine	RC4		9.28 - 10.90	4	0 35 6	4		8.1 m - Sand = 29.7%	761
		...8.8 m - 58° fracture								Silt = 49.8% Clay = 20.5%	
		...9.2 m - 83° fracture								9.3 m - Core loss due improper bit sizing.	

Notes:

Target depth of 27 m achieved. Corehole backfilled with bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	7.60	PLAIN
7.60	9.10	SLOTTED

Logged By: J. Boyd / C. Tams

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH135**

PAGE 2 OF 3

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	06/10/2022	COMPLETED	06/13/2022	
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND ELEVATION	770.05m	N 5612521.800 E 416417.600
CORING TYPE	2 3/4" x 4 5/8"	DIAMETER (mm)	75	
		DATE GROUND WATER RECORDED	10/12/2022	

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT ┌─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
11		...10.3 m - 7° fracture approximately 200mm long ...10.9 m - moderately strong to strong		RC5	10.90 - 12.30	5	100 100 89	3		Bit size changed for subsequent runs.		759
12				RC6	12.30 - 13.85	6	100 100 93	2				758
13										13 m - LL = 84.4% PL = 15.8% PI = 68.6%		757
14				RC7	13.85 - 15.35	7	97 100 92	3		13 m - Sand = 0.8% Silt = 57.8% Clay = 41.4%		756
15												755
16				RC8	15.35 - 16.89	8	65 100 92	7		15.35 m - Switched to 3" core bit at 15.35 m		754
17		...17.1 m - 26° fracture		UD4 RC9	16.89 - 18.34	9	66 100 92	6		16.5 m - Dispersivity Classification = ND3 16.65 m - EC: 1.7 dS/m 16.65 m - SAR: 19.2 16.65 m - pH: 8.7		753
18		...17.8 m - 23° fracture										752
19		...19.3 m - near vertical fractures		RC10	18.34 - 19.89	10	75 100 90	5				751
				RC11	19.89	11	88	5				

Notes:

Target depth of 27 m achieved. Corehole backfilled with bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	7.60	PLAIN
7.60	9.10	SLOTTED

Logged By: J. Boyd / C. Tams

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH135**

PAGE 3 OF 3

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	06/10/2022	COMPLETED	06/13/2022	GROUND ELEVATION	770.05m N 5612521.800 E 416417.600
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND WATER ELEVATION / DEPTH		767.21 m	2.84 m
CORING TYPE	2 3/4" x 4 5/8"	DIAMETER (mm)	75	DATE GROUND WATER RECORDED	10/12/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
21				UD5	- 21.44		100 92					
22				RC12	21.44 - 22.71	12	72 100 87	5		20.93 m - LL = 69.3% PL = 18.5% PI = 50.8%		749
23		...22.5 m - 31° fracture ...22.6 m - 24° fracture		RC13 UD6	22.71 - 24.49	13	87 100 97	3				748
24												747
25		...25.0 m - becoming moderately strong		RC14	24.49 - 26.02	14	89 100 96	3				746
26				UD7 RC15	26.02 - 27.56	15	82 100 95	3		25.7 m - Sand = 0.1% Silt = 47.7% Clay = 52.2%		745
27												744
28												743
29												742

Notes:

Target depth of 27 m achieved. Corehole backfilled with bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	7.60	PLAIN
7.60	9.10	SLOTTED

Logged By: J. Boyd / C. Tams

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH138**

PAGE 1 OF 2

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	08/29/2022	COMPLETED	08/29/2022	GROUND ELEVATION	779.13m N 5612608.840 E 414518.970
DRILLING CONTRACTOR	Val's Drilling		GROUND WATER ELEVATION / DEPTH	774.25 m 4.88 m	
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	10/12/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
1		OVERBURDEN										779
2		...1.5 m - 60 mm of core loss		SH1								778
3		SHALE (Weathered), clay and silt, highly weathered, grey, some oxidation staining, damp, high plastic, extremely weak, extremely closely spaced fractures, blocky, some gypsum crystals		RC1	3.00 - 4.52	1	0 100 80	20		3.1 m - LL = 58.0% PL = 15.9% PI = 42.1% 3.1 m - Sand = 3.5% Silt = 45.1% Clay = 51.4%		776
4				RC2	4.52 - 6.04	2	0 100 91	20				775
5		...5.2 m - 39° fracture BENTONITE (5.4 m), 30 mm layer ...5.4 m - 120 mm layer of cemented shale		RC3	6.04 - 7.56	3	0 100 74	20		5.4 m - LL = 43.0% PL = 15.8% PI = 27.2% 5.4 m - Sand = 11.1% Silt = 55.5% Clay = 33.4%		774
6		SHALE (Weathered), "..." ...5.7 m - 68° oxidized fracture SHALE, clay and silt, trace sand, highly weathered, grey, some oxidation staining, damp, high plastic, extremely weak, extremely closely spaced fractures, weakly cemented layers, thinly laminated, trace gypsum crystals		RC4	7.56 - 9.08	4	0 100 65	11		6.2 m - LL = 45.5% PL = 16.7% PI = 28.8% 6.2 m - Sand = 10.9% Silt = 55.3% Clay = 33.8%		773
7		...7.6 m - clay rubble in fractures for 200 mm ...7.7 m - becoming dark grey ...8.4 m - becoming unoxidized fractures ...8.7 m - 5 mm quartz lense ...9.0 m - becoming unweathered		RC5	9.08 - 10.60	5	39 96 76	7				772
8												771
9												770

Notes:

Target depth of 15 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	5.80	PLAIN
5.80	7.30	SLOTTED

Logged By: C. Tams

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH138**

PAGE 2 OF 2

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 08/29/2022 COMPLETED 08/29/2022 GROUND ELEVATION 779.13m N 5612608.840 E 414518.970
 DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH 774.25 m 4.88 m
 CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED 10/12/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT ┌─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
11		...11.0 m - becoming moderately widely spaced fractures		RC6	10.60	6	59	5				769
		...11.1 m - becoming very weak			-		98					
		...11.1 m - some thin calcified shale layers for 100 mm			12.12		79					768
12		...11.3 m - becoming very silty		RC7	12.12	7	87	4				767
		...11.6 m - 120 mm calcified shale layer			-		100					
		...12.3 m - becoming weak			13.64		95					766
13												
14		...13.6 m - 470 mm extremely weak layer		RC8	13.64	8	59	7				765
		...14.1 m - becoming some thinly laminated calcified shale layers for 110 mm			-		100					
15		...14.5 m - 200 mm mechanically fractured area			15.16		86					764
16												763
17												762
18												761
19												760

Notes:

Target depth of 15 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	5.80	PLAIN
5.80	7.30	SLOTTED

Logged By: C. TamsReviewed By: T. Curtis

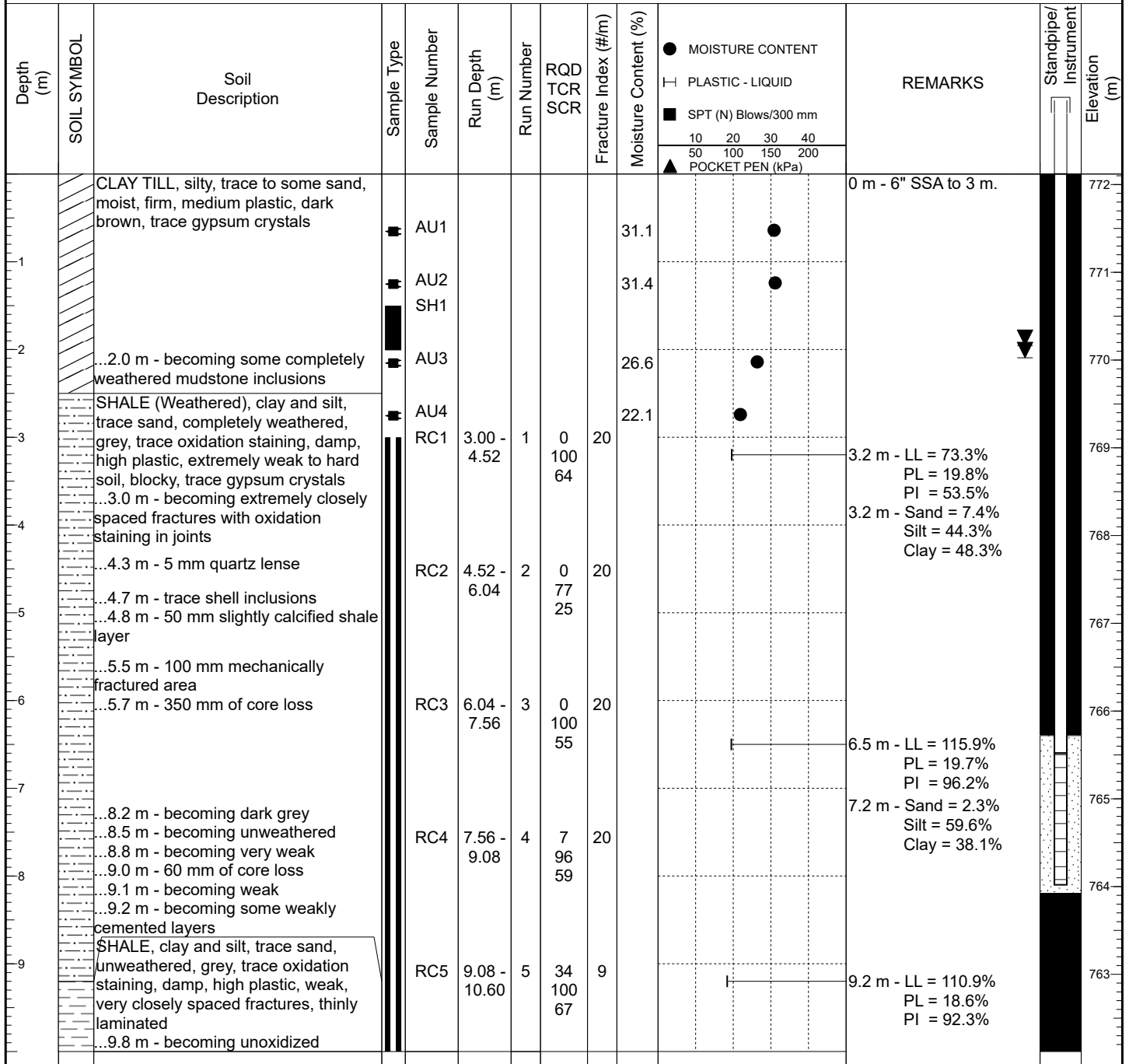


an Englobe company

COREHOLE No : **22CH139**

PAGE 1 OF 2

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	08/29/2022	COMPLETED	08/30/2022	GROUND ELEVATION	772.12m N 5612587.880 E 415502.981
DRILLING CONTRACTOR	Val's Drilling	GROUND WATER ELEVATION / DEPTH		770.11 m	2.01 m
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	10/12/2022



Notes:

Target depth of 15 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	6.60	PLAIN
6.60	8.10	SLOTTED

Logged By: C. Tams

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH139**

PAGE 2 OF 2

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	08/29/2022	COMPLETED	08/30/2022	GROUND ELEVATION	772.12m N 5612587.880 E 415502.981
DRILLING CONTRACTOR	Val's Drilling	GROUND WATER ELEVATION / DEPTH		770.11 m	2.01 m
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	10/12/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT ┌─┐ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
11		...10.5 m - 54° fracture ...10.6 m - 300 mm of mechanical rubble ...11.0 m - becoming moderately widely spaced fractures		RC6	10.60 - 12.12	6	52 91 63	5				762
12		...12.0 m - 140 mm of core loss		RC7	12.12 - 13.64	7	92 100 84	3				761
13		...12.6 m - 180 mm strong layer ...12.6 m - some thinly laminated calcified shale ...13.1 m - 59° fracture		RC8	13.64 - 15.16	8	91 100 91	3		12.6 m - LL = 38.3% PL = 15.1% PI = 23.2% 12.6 m - Sand = 47.5% Silt = 38.2% Clay = 14.3%		760
14		...14.4 m - large shell inclusion										759
15												758
16												757
17												756
18												755
19												754
												753

Notes:

Target depth of 15 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	6.60	PLAIN
6.60	8.10	SLOTTED

Logged By: C. Tams

Reviewed By: T. Curtis

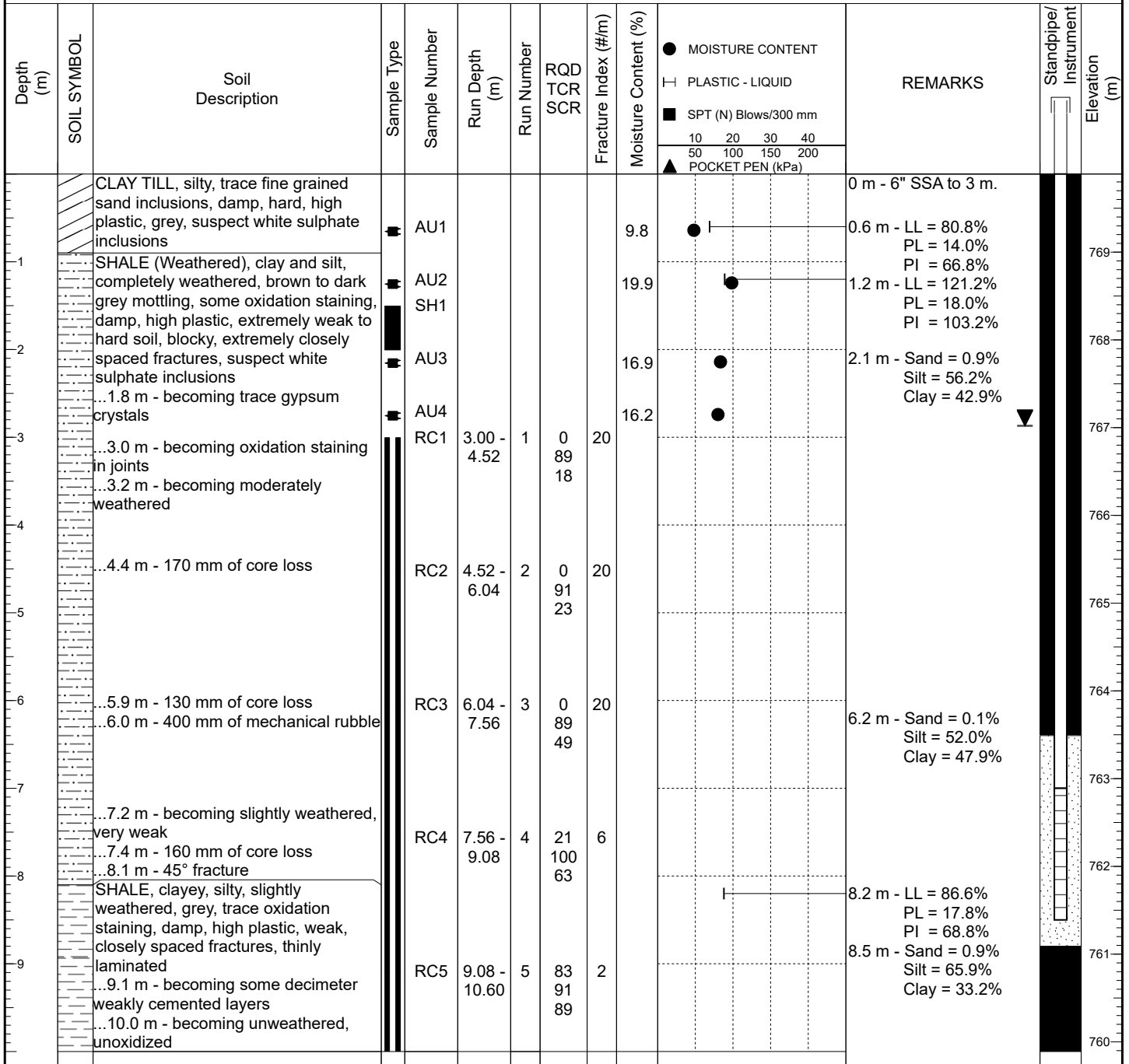


an Englobe company

COREHOLE No : **22CH140**

PAGE 1 OF 2

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	08/30/2022	COMPLETED	08/30/2022	
DRILLING CONTRACTOR	Val's Drilling	GROUND ELEVATION	769.89m	N 5612575.001 E 416113.373
CORING TYPE	HQ3	DIAMETER (mm)	61	
		GROUND WATER ELEVATION / DEPTH	767.11 m	2.78 m
		DATE GROUND WATER RECORDED	10/12/2022	



Notes:

Target depth of 15 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	7.00	PLAIN
7.00	8.50	SLOTTED

Logged By: C. Tams

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH140**

PAGE 2 OF 2

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	08/30/2022	COMPLETED	08/30/2022	GROUND ELEVATION	769.89m N 5612575.001 E 416113.373
DRILLING CONTRACTOR	Val's Drilling	GROUND WATER ELEVATION / DEPTH		767.11 m	2.78 m
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	10/12/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
11		...10.5 m - 130 mm of core loss ...10.6 m - becoming moderately widely spaced fractures		RC6	10.60 - 12.12	6	88 100 98	3		10.2 m - LL = 70.3% PL = 21.4% PI = 48.9%		759
12				RC7	12.12 - 13.64	7	95 100 95	2				758
13		...13.2 m - 35° fracture										757
14		...14.3 m - 29° fracture		RC8	13.64 - 15.16	8	105 106 102	3				756
15		...14.8 m - becoming moderately strong										755
16												754
17												753
18												752
19												751
												750

Notes:

Target depth of 15 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work		
Depth Top	Depth Bottom	Pipe Type
0.00	7.00	PLAIN
7.00	8.50	SLOTTED

Logged By: C. Tams

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH201**

PAGE 1 OF 4

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	06/12/2022	COMPLETED	06/12/2022	GROUND ELEVATION	767.67m N 5612418.468 E 416810.383
DRILLING CONTRACTOR	Val's Drilling	GROUND WATER ELEVATION / DEPTH		765.58 m	2.09 m
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	08/10/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
		OVERBURDEN. REFER TO 22BH201 LOG.							● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
1												767
2												766
3		SHALE (Weathered), clay and silt, trace sand, highly weathered, brown, mottled, moist, medium plastic, very weak, blocky, oxidized fractures	RC1		3.00 - 4.52	1	0 79 13	20		3 m - All fracture angles relative to core axis.		765
4		...3.2 m - extremely closely spaced fractures								3.5 m - LL = 48.3% PL = 15.5% PI = 32.8%		764
5		...5.0 m - 150 mm layer of very strong fractured siltstone, black magnesium oxide staining	RC2		4.52 - 6.04	2	70 100 76	8				763
6		...5.2 m - becoming less fractured, greyish brown, trace gypsum crystal inclusions	UD1									762
7		...6.5 m - 63° fracture ...6.6 m - 73° fracture	RC3		6.04 - 7.56	3	67 92 86	3		7 m - LL = 56.7% PL = 18.4% PI = 38.3%		761
8		SHALE, silt and clay, unweathered, grey, moist, medium plastic, moderately strong, finely fissured, widely spaced fractures, marine	RC4 UD2		7.56 - 9.08	4	94 100 93	2		7 m - Sand = 0.6% Silt = 60.7% Clay = 38.7%		760
9		...8.3 m - 68° fracture ...8.6 m - 42° fracture ...9.0 m - 69° fracture ...9.5 m - 66° fracture ...9.7 m - 56° fracture	RC5		9.08 - 10.60	5	100 100 92	3		7.3 m - Sand = 0.1% Silt = 66.2% Clay = 33.7%		759
												758

Notes:

Target depth of 33 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	11.80	PLAIN
11.80	13.30	SLOTTED

Logged By: C. Braun

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH201**

PAGE 2 OF 4

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 06/12/2022 COMPLETED 06/12/2022 GROUND ELEVATION 767.67m N 5612418.468 E 416810.383
 DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH 765.58 m 2.09 m
 CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED 08/10/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
11		...10.1 m - becoming very strong ...10.3 m - 79° fracture		RC6	10.60	6	88 100	3				757
		...10.8 m - 57° fracture ...10.9 m - 35° fracture ...11.3 m - 57° fracture			12.12		77					
12		...11.7 m - 36° fracture		RC7	12.12	7	93 100	3				756
		...12.5 m - 53° fracture ...12.7 m - 71° fracture ...13.0 m - 71° fracture ...13.3 m - 68° fracture		UD3	13.64		92					755
13										12.7 m - Sand = 0.2%		
										Silt = 61.4% Clay = 38.4%		
14		BENTONITE (13.7 m), 150 mm layer SHALE, silt and clay, unweathered, grey, moist, medium plastic, moderately strong, finely fissured, widely spaced fractures, marine		RC8	13.64	8	95 95	1		13.7 m - LL = 125.8% PL = 24.4% PI = 101.4%		754
		...14.0 m - becoming extremely strong, suspect calcification, becoming widely spaced fractures		UD4	15.16		95			14.3 m - Sand = 0.1%		753
15										Silt = 67.3% Clay = 32.6%		
		...14.0 m - becoming extremely strong, suspect calcification, becoming widely spaced fractures		RC9	15.16	9	94 94	1				752
		...15.6 m - 90 mm weak layer ...15.8 m - 22° fracture ...15.9 m - 200 mm weak layer ...16.3 m - becoming strong			16.68		91					
16												
		...16.3 m - becoming strong		RC10	16.68	10	106 106	2				751
17		...17.2 m - 63° fracture			18.20		100					
		...17.6 m - becoming very strong ...17.9 m - 74° fracture										750
18				RC11	18.20	11	100 100	1				
		...18.4 m - 19 4 - many gypsum crystal inclusions			19.72		97					749
19		...19.3 m - 60° fracture		RC12	19.72	12	87	3				748

Notes:

Target depth of 33 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	11.80	PLAIN
11.80	13.30	SLOTTED

Logged By: C. BraunReviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH201**

PAGE 3 OF 4

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	06/12/2022	COMPLETED	06/12/2022	
GROUND ELEVATION	767.67m	N	5612418.468	E 416810.383
DRILLING CONTRACTOR	Val's Drilling	GROUND WATER ELEVATION / DEPTH	765.58 m	2.09 m
CORING TYPE	HQ3	DIAMETER (mm)	61	
DATE GROUND WATER RECORDED	08/10/2022			

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
21		...20.1 m - 48° fracture			-		100					
		...20.6 m - becoming weak			21.24		92					747
		...20.7 m - parallel 81° fractures 100 mm apart	RC13		21.24	13	83	3				
		...21.5 m - 73° fracture, becoming strong			-		100			21.5 m - LL = 65.6% PL = 20.0% PI = 45.6%		746
22		...21.8 m - 16° fracture			22.76		89					
		...21.9 m - 74° fracture										
		...22.2 m - 77° fracture										
23		...22.8 m - 78° fracture	RC14		22.76	14	98	1				745
					-		100					
			UD5		24.28		95					744
24		...23.9 m - 300 mm weaker layer										
		...24.2 m - 72° fracture	RC15		24.28	15	90	1				
					-		92					743
25					25.80		84					
		...25.1 m - 83° fracture										
26			RC16		25.80	16	74	3				742
					-		91					
		...26.3 m - 57° fracture			27.32		64					
		...26.5 m - 26° fracture										741
27		...26.9 m - becoming weak										
		...27.0 m - 7° fracture	RC17		27.32	17	84	1				
		...27.3 m - 27.8 m - strong layer			-		94					740
					28.84		84					
28		...27.8 m - 28.7 m - weak layer										
		...28.2 m - 29° fracture										
29			RC18		28.84	18	100	1				739
		...29.0 m - becoming very strong			-		100					
		...29.1 m - 83° fracture			30.36		84					
		...29.6 m - 82° fracture, 100 mm moderately strong layer										738

Notes:

Target depth of 33 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work		
Depth Top	Depth Bottom	Pipe Type
0.00	11.80	PLAIN
11.80	13.30	SLOTTED

Logged By: C. Braun

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH201**

PAGE 4 OF 4

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 06/12/2022 COMPLETED 06/12/2022 GROUND ELEVATION 767.67m N 5612418.468 E 416810.383
 DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH 765.58 m 2.09 m
 CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED 08/10/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
31		...31.0 m - 53° fracture		RC19	30.36	19	100	2		30.4 m - LL = 61.8% PL = 17.3% PI = 44.5%		737
				UD6	31.88		100			30.4 m - Sand = 0.6%		
32				RC20	31.88	20	100	1		Silt = 59.7% Clay = 39.7%		736
					33.40		100					735
33							95					734
34												733
35												732
36												731
37												730
38												729
39												728

Notes:

Target depth of 33 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work		
Depth Top	Depth Bottom	Pipe Type
0.00	11.80	PLAIN
11.80	13.30	SLOTTED

Logged By: C. BraunReviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH209**

PAGE 1 OF 3

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 06/20/2022 COMPLETED 06/20/2022 GROUND ELEVATION 769.53m N 5611608.000 E 416912.600
 DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH 767.98 m 1.55 m
 CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED 08/10/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument Elevation (m)
		OVERBURDEN. REFER TO 22BH209 LOG.							● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)		
1											769
2											768
3											767
4											766
5		SHALE, clay and silt, trace sand, slightly weathered, grey, moist, high plastic, moderately strong, closely spaced fracture, finely stratified ...4.5 m - inclined fracturing	RC1		4.50 - 6.02	1	57 95 53	10			765
6		...5.8 m - 120 mm fractured section	RC2		6.02 - 7.54	2	83 98 82	7		6.3 m - LL = 92.4% PL = 20.8% PI = 71.6%	764
7		...6.7 m - 50 mm fractured section	RC3 UD1		7.54 - 9.06	3	105 105 100	3		6.3 m - EC: 2.6 dS/m 6.3 m - SAR: 22.4 6.3 m - pH: 8.5	763
8		...7.8 m - 88° fracture ...7.9 m - 81° fracture ...8.1 m - 76° fracture									762
9		...9.1 m - strong	RC4		9.06 - 10.58	4	101 101 97	3			761
		...9.8 m - 68° fracture ...9.9 m - 75° fracture									760

Notes:

Target depth of 27 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work		
Depth Top	Depth Bottom	Pipe Type
0.00	5.00	PLAIN
5.00	6.50	SLOTTED

Logged By: J. BoydReviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH209**

PAGE 2 OF 3

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	06/20/2022	COMPLETED	06/20/2022	GROUND ELEVATION	769.53m N 5611608.000 E 416912.600
DRILLING CONTRACTOR	Val's Drilling	GROUND WATER ELEVATION / DEPTH	767.98 m	1.55 m	
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	08/10/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
11		...10.3 m - 85° fracture		RC5	10.58 - 12.10	5	95 95 92	2				759
		...11.4 m - 85° fracture		UD2						11.45 m - LL = 83.7% PL = 17.1% PI = 66.6%		758
12		...12.0 m - 85° fracture		RC6	12.10 - 13.62	6	92 96 88	2				757
13		...12.7 m - 63° fracture ...12.9 m - 50 mm section with slight fractured		RC7	13.62 - 15.14	7	101 101 96	3				756
14		...14.0 m - 83° fracture ...14.3 m - 60° fracture		UD3								755
15		...14.8 m - 82° fracture ...15.2 m - crumbled core		RC8	15.14 - 16.66	8	24 60 24	0				754
16		...16.0 m - core loss from 16.0 m to 16.66 m		RC9	16.66 - 18.18	9	46 74 45	1			15.6 m - Sand = 0.5% Silt = 62.4% Clay = 37.1%	753
17		...17.0 m - crumbled core with weak infill ...17.0 m - weak, slightly bentonitic ...17.2 m - core loss from 17.2 m to 17.55 m		UD4	18.18 - 19.70	10	103 103 101	1				752
18		...17.8 m - moderately strong to strong ...18.0 m - 83° fracture ...18.2 m - strong		RC10						18.2 m - Dispersivity Classification = ND3 18.2 m - EC: 1.1 dS/m 18.2 m - SAR: 16.5 18.2 m - pH: 8.6		751
19		...18.7 m - 83° fracture ...18.8 m - trace shells and sandstone pockets to 10mm		UD5 RC11	19.70	11	101	1				750

Notes:

Target depth of 27 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	5.00	PLAIN
5.00	6.50	SLOTTED

Logged By: J. Boyd

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH209**

PAGE 3 OF 3

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	06/20/2022	COMPLETED	06/20/2022	GROUND ELEVATION	769.53m N 5611608.000 E 416912.600
DRILLING CONTRACTOR	Val's Drilling	GROUND WATER ELEVATION / DEPTH		767.98 m	1.55 m
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	08/10/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
21		...20.4 m - 79° fracture			-		101					
					21.22		99					
			RC12		21.22	12	100	0		20.5 m - LL = 85.2% PL = 19.9% PI = 65.3%		749
					-		100					
					22.74		100					748
22			UD6									
			RC13		22.74	13	97	2				747
					-		97					
		...23.2 m - 83° fracture			24.26		95					746
24		...23.9 m - horizontal fracture with slight weak infill										
		...24.5 m - 60° fracture	RC14		24.26	14	100	2				745
		...24.5 m - 220 mm Siltstone layer	UD7		-		100			24.45 m - Sand = 28.8% Silt = 44.6% Clay = 26.6%		
		...24.7 m - horizontal fracture followed by 10 mm of weak infill			25.78		95					744
26			UD8									
			RC15		25.78	15	104	2				743
		...26.1 m - 81° fracture			-		104					
					27.30		101					
27		...27.1 m - 79° fracture										
			UD9									742
28												
												741
29												740

Notes:

Target depth of 27 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work		
Depth Top	Depth Bottom	Pipe Type
0.00	5.00	PLAIN
5.00	6.50	SLOTTED

Logged By: J. Boyd

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH213**

PAGE 1 OF 5

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	07/19/2022	COMPLETED	07/20/2022	GROUND ELEVATION	765.04m N 5611187.600 E 416863.900
DRILLING CONTRACTOR	Val's Drilling		GROUND WATER ELEVATION / DEPTH	764.21 m 0.83 m	
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	10/12/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument Elevation (m)
									● MOISTURE CONTENT □ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm ▲ POCKET PEN (kPa)		
1		OVERBURDEN. REFER TO 22BH213 LOG.									
2		SHALE (Weathered), clay and silt, trace sand, highly weathered, light brown to dark grey mottling, damp, high plastic, extremely weak, blocky, finely stratified, oxide staining, gypsum crystals									
3		...3.6 m - becoming shale									
4		SHALE, clay and silt, trace sand, medium weathered, grey, damp, high plastic, very weak to weak, very closely spaced fracture, finely stratified, slight oxide staining	RC1		3.00 - 4.52	1	14 100 33	20			
5		...4.3 m - becoming weak									
6		...4.5 m - 200 mm crumbled core									
7		...4.8 m - becoming slightly weathered, weak to moderately strong	RC2		4.52 - 6.04	2	76 100 68	7			
8		...4.8 m - 85° fracture									
9		...5.2 m - 100 mm crumbled core	UD1								
10		...5.4 m - becoming unweathered, moderately strong, unoxidized									
11		...5.4 m - 68° fracture									
12		...5.6 m - 55° fracture									
13		...6.0 m - becoming moderately strong to strong	RC3		6.04 - 7.56	3	100 100 98	2			
14		...6.1 m - 62° fracture									
15		...6.3 m - 88° fracture									
16		...6.8 m - 76° fracture									
17		...7.0 m - becoming weak to moderately strong									
18		...7.8 m - 70° fracture	RC4		7.56 - 9.08	4	95 100 88	3			
19		...8.0 m - 87° fracture									
20		...8.2 m - becoming moderately strong									
21		...8.7 m - 40° fracture									
22		...9.0 m - 82° fracture									
23		...9.0 m - 18° fracture									
24		...9.1 m - severe mechanical fracturing to 9.7 m									
25		...9.4 m - 19° fracture	RC5		9.08 - 10.60	5	100 100 89	2			
26		...9.8 m - 77° fracture									
27		...9.8 m - becoming moderately strong to strong									

Notes:

Target depth of 39 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	7.50	PLAIN
7.50	9.00	SLOTTED

Logged By: J. Boyd

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH213**

PAGE 2 OF 5

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	07/19/2022	COMPLETED	07/20/2022	GROUND ELEVATION	765.04m N 5611187.600 E 416863.900
DRILLING CONTRACTOR	Val's Drilling	GROUND WATER ELEVATION / DEPTH		764.21 m	0.83 m
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	10/12/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
11		...10.0 m - 74° fracture	UD2									
		...10.7 m - becoming strong	RC6		10.60	6	100	2		10.3 m - LL = 92.5% PL = 17.3% PI = 75.2%		754
		...10.7 m - 55° fracture			-		100					
		...11.2 m - 79° fracture			12.12		96					
12		...11.7 m - 89° fracture	RC7		12.12	7	93	3				753
					-		99					
					13.64		93					
13		...12.8 m - 79° fracture										752
		...13.1 m - 85° fracture										
		...13.2 m - 50° fracture										
		...13.3 m - 86° fracture	RC8		13.64	8	100	3				751
14		...13.4 m - interbedded shells			-		100					
		...13.4 m - 50° fracture			15.16		98					
		...13.8 m - 70° fracture										
		...14.4 m - 88° fracture	UD3							14.65 m - EC: 3.8 dS/m		
15		...14.6 m - 89° fracture										750
		...15.0 m - 87° fracture	RC9		15.16	9	97	3		14.65 m - SAR: 33.2		
		...15.3 m - 84° fracture			-		100			14.65 m - pH: 8.2		
		...15.6 m - 86° fracture			16.68		93			14.65 m - UCS = 1459 kPa		749
16		...16.1 m - 68° fracture										
		...16.4 m - 84° fracture										
		...16.4 m - 41° fracture	RC10		16.68	10	103	2				748
17		...16.7 m - moderately strong to strong			-		103					
		...17.1 m - 70 mm calcified shale			18.20		101					
18		...17.6 m - 83° fracture	UD4							17.77 m - LL = 71.3% PL = 15.9% PI = 55.4%		747
		...18.0 m - 77° fracture	RC11		18.20	11	96	2				
		...18.4 m - 89° fracture			-		96					
		...18.5 m - becoming strong			19.72		95					
19		...19.0 m - 84° fracture										746
		...19.2 m - 85° fracture	RC12		19.72	12	100	2				

Notes:

Target depth of 39 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	7.50	PLAIN
7.50	9.00	SLOTTED

Logged By: J. Boyd

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH213**

PAGE 3 OF 5

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	07/19/2022	COMPLETED	07/20/2022	
DRILLING CONTRACTOR	Val's Drilling	GROUND ELEVATION	765.04m	N 5611187.600 E 416863.900
CORING TYPE	HQ3	DIAMETER (mm)	61	
		GROUND WATER ELEVATION / DEPTH	764.21 m	0.83 m
		DATE GROUND WATER RECORDED	10/12/2022	

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT ┌─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
21		...20.2 m - 87° fracture ...20.6 m - horizontal fracture			- 21.24		100 99					
				RC13	21.24 - 22.76	13	103 103 100	2				744
22		...21.7 m - 86° fracture ...22.0 m - 65° fracture		UD5								743
				RC14	22.76 - 24.28	14	90 90 88	2				742
23		...23.0 m - 86° fracture ...23.4 m - 88° fracture										741
24		...24.0 m - 72° fracture		RC15	24.28 - 25.80	15	104 104 103	1				740
25		...24.7 m - 89° fracture										739
				UD6 RC16	25.80 - 27.32	16	100 100 97	2				738
26		...26.9 m - 54° fracture ...27.0 m - 81° fracture										737
				RC17	27.32 - 28.84	17	107 107 106	1				736
27		...27.9 m - 75° fracture		UD7								
28				RC18	28.84 - 30.36	18	101 101 101	0				
29												

Notes:

Target depth of 39 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work		
Depth Top	Depth Bottom	Pipe Type
0.00	7.50	PLAIN
7.50	9.00	SLOTTED

Logged By: J. Boyd

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH213**

PAGE 4 OF 5

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	07/19/2022	COMPLETED	07/20/2022	GROUND ELEVATION	765.04m N 5611187.600 E 416863.900
DRILLING CONTRACTOR	Val's Drilling	GROUND WATER ELEVATION / DEPTH		764.21 m	0.83 m
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	10/12/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
31				RC19	30.36 - 31.88	19	100 100 99	1				734
32		...31.9 m - becoming moderately strong to strong		RC20	31.88 - 33.40	20	103 103 103	1				733
33		...32.8 m - 87° fracture		UD8						32.75 m - LL = 65.6% PL = 14.3% PI = 51.3%		732
		...33.2 m - becoming strong		RC21	33.40 - 34.92	21	101 101 99	1				731
34		...33.8 m - 72° fracture										
35				RC22	34.92 - 36.44	22	93 93 91	1				730
36		...36.1 m - 46° fracture		UD9						35.75 m - Sand = 0.3% Silt = 57.9% Clay = 41.8%		729
37		...36.5 m - becoming strong to very strong		RC23	36.44 - 37.96	23	100 100 100	0				728
38				RC24	37.96 - 39.48	24	100 100 98	1				727
39		...39.0 m - 45° fracture		UD10						39.26 m - LL = 67.9% PL = 13.4% PI = 54.5%		726

Notes:

Target depth of 39 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	7.50	PLAIN
7.50	9.00	SLOTTED

Logged By: J. Boyd

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH213**

PAGE 5 OF 5

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 07/19/2022 COMPLETED 07/20/2022 GROUND ELEVATION 765.04m N 5611187.600 E 416863.900
 DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH 764.21 m 0.83 m
 CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED 10/12/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
									● MOISTURE CONTENT └─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
41										39.26 m - UCS = 3179 kPa		724
42												723
43												722
44												721
45												720
46												719
47												718
48												717
49												716

Notes:

Target depth of 39 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work		
Depth Top	Depth Bottom	Pipe Type
0.00	7.50	PLAIN
7.50	9.00	SLOTTED

Logged By: J. BoydReviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH214**

PAGE 1 OF 4

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	07/12/2022	COMPLETED	07/12/2022	
GROUND ELEVATION	767.63m	N	5611105.500	E 416858.240
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND WATER ELEVATION / DEPTH	765.02 m	2.61 m
CORING TYPE	2 3/4" x 4 5/8"	DIAMETER (mm)	76	
DATE GROUND WATER RECORDED	08/10/2022			

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument Elevation (m)
									● MOISTURE CONTENT ┌─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)		
1		OVERBURDEN. REFER TO 22BH214 LOG.									767
2											766
3											765
4											764
5											763
6											762
7		SHALE, clay and silt, trace sand, medium weathered, grey, some oxidation staining, damp, high plastic, extremely weak, closely spaced fractures, thinly laminated	RC1		6.10 - 7.62	1	17 81 22	20			761
8		...7.3 m - 290 mm of core loss									760
		...7.9 m - 1.36 m of core loss	RC2		7.62 - 9.32	2	0 11 5	1		7 m - LL = 59.4% PL = 14% PI = 45.4% 7.62 m - Sideways piece of core in coring bit. 1.36 m of the run was ground up and washed away	759
9		...9.3 m - no recovery	RC3		9.32 - 10.06	3	0 0 0			9.32 m - entire run was lost	758

Notes:

Target depth of 33 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	10.10	PLAIN
10.10	11.60	SLOTTED

Logged By: C. Tams

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH214**

PAGE 2 OF 4

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	07/12/2022	COMPLETED	07/12/2022	
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND ELEVATION	767.63m	N 5611105.500 E 416858.240
CORING TYPE	2 3/4" x 4 5/8"	DIAMETER (mm)	76	
		DATE GROUND WATER RECORDED	08/10/2022	

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT H PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
11		...10.0 m - becoming unweathered, no oxidation staining ...10.1 m - 200 mm of slough recovered from Run 3 ...10.8 m - 50° fracture		RC4	10.06 - 10.85	4	100 140 100	4		10.1 m - LL = 71.7% PL = 18.4% PI = 53.3% 10.1 m - Sand = 0.7% Silt = 59.8% Clay = 39.5%		757
12		...12.0 m - 50° fracture		RC5	10.85 - 12.42	5	96 97 92	4				756
13				RC6	12.42 - 13.95	6	100 100 98	2				755
14		...13.9 m - becoming very weak to weak		RC7	13.95 - 15.42	7	89 102 90	3		14 m - LL = 77.9% PL = 17.9% PI = 60.0%		754
15		...14.7 m - 40° fracture										753
16		...15.2 m - 35° fracture		RC8	15.42 - 16.41	8	90 121 99	1				752
17		BENTONITE (16.3 m), 100 mm layer SHALE, clay and silt, trace sand, medium weathered, grey, some oxidation staining, damp, high plastic, extremely weak, closely spaced fractures, thinly laminated		RC9	16.41 - 18.50	9	80 86 75	2		16.3 m - LL = 55.1% PL = 18.6% PI = 36.5% 16.3 m - Sand = 0.2% Silt = 64.2% Clay = 35.6% 16.3 m - EC: 2.5 dS/m 16.3 m - SAR: 26.4 16.3 m - pH: 8.3 18.06 m - Switched to 76.2 mm core		751
18												750
19				RC10	18.50 - 19.94	10	100 100 98	1				749
		...19.9 m - becoming weak		RC11		11		1				748

Notes:

Target depth of 33 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	10.10	PLAIN
10.10	11.60	SLOTTED

Logged By: C. Tams

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH214**

PAGE 3 OF 4

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	07/12/2022	COMPLETED	07/12/2022	
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND ELEVATION	767.63m	N 5611105.500 E 416858.240
CORING TYPE	2 3/4" x 4 5/8"	DIAMETER (mm)	76	
		DATE GROUND WATER RECORDED	08/10/2022	

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
									● MOISTURE CONTENT ┌─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
21		...20.6 m - 70° fracture			19.94 - 21.52	98 100 98						747
22		...21.5 m - 20 mm moderately strong layer	RC12		21.52 - 23.07	12 97 100 99		1				746
23			RC13		23.07 - 24.59	13 77 78 76		2				745
24		...24.0 m - 55° fracture										744
25		...24.6 m - 180 mm mechanically fractured area	RC14		24.59 - 26.04	14 77 100 83		3				743
26		...25.2 m - 45° fracture ...25.4 m - 60° fracture	RC15		26.04 - 27.59	15 97 100 97		1				742
27		...26.8 m - 60° fracture								26.8 m - LL = 58.2% PL = 14.6% PI = 43.6%		741
28			RC16		27.59 - 29.12	16 100 100 99		1				740
29		...28.8 m - 75° fracture	RC17		29.12 - 30.69	17 100 100 98		1				739
		...29.7 m - 70° fracture										738

Notes:

Target depth of 33 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work		
Depth Top	Depth Bottom	Pipe Type
0.00	10.10	PLAIN
10.10	11.60	SLOTTED

Logged By: C. Tams

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH214**

PAGE 4 OF 4

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	07/12/2022	COMPLETED	07/12/2022	GROUND ELEVATION	767.63m N 5611105.500 E 416858.240
DRILLING CONTRACTOR	Chilako Drilling Services Ltd.	GROUND WATER ELEVATION / DEPTH		765.02 m	2.61 m
CORING TYPE	2 3/4" x 4 5/8"	DIAMETER (mm)	76	DATE GROUND WATER RECORDED	08/10/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT ┌─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
31		...30.1 m - 60° fracture		RC18	30.69 - 33.13	18	100 100 97	1				737
32												736
33		...32.6 m - 45° fracture										735
34												734
35												733
36												732
37												731
38												730
39												729
												728

Notes:

Target depth of 33 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	10.10	PLAIN
10.10	11.60	SLOTTED

Logged By: C. Tams

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH222**

PAGE 1 OF 4

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 06/24/2022 COMPLETED 06/25/2022 GROUND ELEVATION 767.99m N 5610303.452 E 416849.554
 DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH 766.92 m 1.07 m
 CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED 08/10/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument Elevation (m)
		OVERBURDEN. REFER TO 22BH222 LOG.							● MOISTURE CONTENT ┌─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)		
1											767
2											766
3											765
4											764
5											763
6											762
7		SHALE, silt and clay, slightly weathered, grey, damp, high plastic, weak, medium spaced fractures, finely stratified	RC1		6.20 - 7.72	1	95 99 96	4			761
		...6.5 m - horizontal fracture	UD1							7.2 m - LL = 61.1% PL = 26.2% PI = 34.9%	
		...6.5 m - horizontal fracture									
		...6.8 m - 60° fracture	RC2		7.72 - 9.24	2	90 90 88	2			760
		...7.6 m - horizontal fracture								8.1 m - Sand = 0.5% Silt = 68.2% Clay = 31.3%	
		...7.6 m - weak to moderately strong								8.1 m - EC: 2.0 dS/m	
		...8.0 m - 89° fracture								8.1 m - SAR: 22.6	
		...8.2 m - 76° fracture								8.1 m - SO4-S: 220.7 mg/kg	
		...8.7 m - horizontal fracture	RC3		9.24 - 10.76	3	99 99 95	3		8.1 m - pH: 8.5	759
		...9.5 m - 85° fracture									
		...9.7 m - 71° fracture									

Notes:

Target depth of 33 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	11.90	PLAIN
11.90	13.10	SLOTTED

Logged By: J. Boyd / C. TamsReviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH222**

PAGE 2 OF 4

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	06/24/2022	COMPLETED	06/25/2022	GROUND ELEVATION	767.99m N 5610303.452 E 416849.554
DRILLING CONTRACTOR	Val's Drilling	GROUND WATER ELEVATION / DEPTH		766.92 m	1.07 m
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	08/10/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
11		...10.5 m - 80° fracture	UD2									
		...10.8 m - moderately strong	RC4		10.76	4	93	3				757
		...10.9 m - horizontal fracture			-		99					
		...11.2 m - 70 mm slightly fracture section			12.28		92					
12			RC5		12.28	5	103	3				756
		...12.4 m - moderately strong to strong			-		103					
		...12.5 m - 67° fracture			13.80		101					
13		...12.7 m - 88° fracture	UD3									755
		...13.2 m - 200 mm section of calcified shale										
		...13.4 m - horizontal fracture	RC6		13.80	6	101	1				754
14					-		101					
					15.32		98					
15			RC7		15.32	7	78	1				753
		...15.3 m - 55° fracture followed by 10 mm of weak infill, trace interbedded shell fragments			-		78					
		...15.7 m - horizontal fracture			16.84		77					752
16												
		...16.5 m - 340 mm of core loss	RC8		16.84	8	92	3				751
		...17.0 m - 48° fracture			-		92					
		...17.3 m - 68° fracture			18.36		84					
17			UD4									750
		...17.7 m - 54° fracture										
18			RC9		18.36	9	96	2				749
		...18.2 m - 120 mm of core loss			-		103					
		...18.4 m - 100 mm fractured section			19.88		94					
19												
		...19.3 m - horizontal fracture	RC10		19.88	10	99	2				

Notes:

Target depth of 33 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	11.90	PLAIN
11.90	13.10	SLOTTED

Logged By: J. Boyd / C. Tams

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH222**

PAGE 3 OF 4

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	06/24/2022	COMPLETED	06/25/2022	GROUND ELEVATION	767.99m N 5610303.452 E 416849.554
DRILLING CONTRACTOR	Val's Drilling		GROUND WATER ELEVATION / DEPTH	766.92 m 1.07 m	
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	08/10/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
21		...20.4 m - 63° fracture ...20.6 m - horizontal fracture			- 21.40		99 97					747
22			RC11		21.40	11	99 105	2				746
			UD5		- 22.92		93			22 m - UCS = 1781 kPa		
23		...22.4 m - 55° fracture ...22.6 m - possible sandstone inclusion	RC12		22.92	12	76 80 72	2				745
24					- 24.44							744
25		...24.1 m - 300 mm core loss ...24.6 m - horizontal fracture	RC13		24.44	13	76 100 70	3				743
					- 25.96							
26		...25.5 m - horizontal fracture	RC14		25.96	14	98 100 100	2		26 m - LL = 64.2% PL = 15% PI = 49.2%		742
			UD6		- 27.48							
27		...26.6 m - moderately strong layer										741
28		...27.2 m - becoming sandy, fine grained	RC15		27.48	15	87 87 87	1				740
					- 29.00							
29		...28.8 m - 200 mm core loss	RC16		29.00	16	96 99 80	1		28.3 m - Gravel = 0.1% 28.3 m - Sand = 18.4% Silt = 49.4% Clay = 32.1% 28.3 m - EC: 3.0 dS/m 28.3 m - SAR: 24.9		739
					- 30.52							

Notes:

Target depth of 33 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	11.90	PLAIN
11.90	13.10	SLOTTED

Logged By: J. Boyd / C. Tams

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH222**

PAGE 4 OF 4

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 06/24/2022 COMPLETED 06/25/2022 GROUND ELEVATION 767.99m N 5610303.452 E 416849.554
 DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH 766.92 m 1.07 m
 CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED 08/10/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
31		...30.3 m - 55° fracture ...30.5 m - horizontal fracture ...30.6 m - horizontal fracture		UD7 RC17	30.52 - 32.04	17	82 96 66	3		28.3 m - pH: 8.6		737
32		...31.6 m - 78° fracture ...31.8 m - 48° fracture		RC18	32.04 - 33.56	18	93 100 95	3				736
33		...32.8 m - 51° fracture										735
34												734
35												733
36												732
37												731
38												730
39												729

Notes:

Target depth of 33 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work		
Depth Top	Depth Bottom	Pipe Type
0.00	11.90	PLAIN
11.90	13.10	SLOTTED

Logged By: J. Boyd / C. TamsReviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH227**

PAGE 1 OF 4

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	06/29/2022	COMPLETED	06/30/2022	GROUND ELEVATION	766.71m N 5609808.700 E 416835.400
DRILLING CONTRACTOR	Val's Drilling	GROUND WATER ELEVATION / DEPTH		765.00 m	1.71 m
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	08/10/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
1		OVERBURDEN, REFER TO 22BH227 LOG.										766
2												765
3												764
4												763
5		SHALE (Weathered), clay and silt, trace sand, highly weathered, brownish brown, some oxidation staining, moist, high plastic, extremely weak, blocky	RC1		4.53 - 6.05	1	55 100 57	7				762
6		SHALE, clay and silt, trace sand, medium weathered, grey, damp, high plastic, extremely weak, very closely spaced fractures, finely fissured	RC2		6.05 - 7.57	2	0 72 28	20		5.5 m - LL = 89.3% PL = 24.7% PI = 64.6%		761
7		...7.2 m - 420 mm of core loss	RC3		7.57 - 9.09	3	48 100 64	10		5.5 m - Sand = 0.2% Silt = 63.1% Clay = 36.7%		760
8			UD1							8.4 m - LL = 78.7% PL = 15.9% PI = 62.8%		759
9		...9.0 m - becoming slightly weathered ...9.1 m - becoming very weak with closely spaced fractures	RC4		9.09 - 10.61	4	81 100 89	5		8.4 m - Sand = 3.0% Silt = 60.8% Clay = 36.2%		758
												757

Notes:

Target depth of 33 m achieved. Corehole backfilled with bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	20.50	PLAIN
20.50	22.00	SLOTTED

Logged By: C. Tams / C. Braun

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH227**

PAGE 2 OF 4

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	06/29/2022	COMPLETED	06/30/2022	GROUND ELEVATION	766.71m N 5609808.700 E 416835.400
DRILLING CONTRACTOR	Val's Drilling	GROUND WATER ELEVATION / DEPTH		765.00 m	1.71 m
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	08/10/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
11		...10.6 m - becoming moderately widely spaced fractures	RC5		10.61	5	97	3				756
		...11.0 m - becoming unweathered/fresh rock	UD2		12.13		100					
							96					
12		...12.1 m - becoming weak	RC6		12.13	6	90	4				755
							100					
							95					754
13												
14		...13.9 m - 100 mm highly fractured area with weak infill	RC7		13.65	7	70	3				753
							100					
							86					
15			RC8		15.17	8	95	3		14.5 m - LL = 73.6% PL = 17% PI = 56.6%		752
							100					
							99					751
16												
17			RC9		16.69	9	91	2				750
			UD3		18.21		100			17 m - LL = 72.2% PL = 17.9% PI = 54.3%		
							97					749
18		...18.0 m - 35° fracture	RC10		18.21	10	84	3				
							96					
							86					748
19		...19.1 m - highly fractured area										
		...19.7 m - 60 mm of core loss	RC11		19.73	11	73	6				747
			UD4									

Notes:

Target depth of 33 m achieved. Corehole backfilled with bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	20.50	PLAIN
20.50	22.00	SLOTTED

Logged By: C. Tams / C. Braun

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH227**

PAGE 3 OF 4

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	06/29/2022	COMPLETED	06/30/2022	GROUND ELEVATION	766.71m N 5609808.700 E 416835.400
DRILLING CONTRACTOR	Val's Drilling	GROUND WATER ELEVATION / DEPTH		765.00 m	1.71 m
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	08/10/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT ┌─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
21		...20.3 m - 200 mm of highly fractured, very weak infill			- 21.25		100 78					746
		...21.0 m - becoming widely spaced fractures	RC12		21.25 - 22.77	12	83 96 79	3				745
22		...22.1 m - 300 mm calcified shale layer										744
23			RC13		22.77 - 24.29	13	76 81 76	1				743
24		...24.0 m - 24.7 m - strong calcified shale layer	RC14		24.29 - 25.81	14	110 115 110	0				742
25		...25.0 m - 75 mm of fractured core										741
26		...25.8 m - becoming strong ...25.9 m - 30 mm layer of strong shale	RC15		25.81 - 27.33	15	85 85 85	1				740
27		...26.5 m - 200 mm layer of alternating layers of strong and moderately strong shale ...26.9 m - becoming strong ...27.2 m - 120 mm layer of weak shale	RC16		27.33 - 28.85	16	120 120 120	1				739
28		...27.4 m - alternating layers of strong shale to weak/moderately weak shale ...28.1 m - horizontally oriented fracture ...28.3 m - 42° fracture with soft infill								27.4 m - LL = 63.4% PL = 22.2% PI = 41.2% 27.4 m - Sand = 0.7% Silt = 58.2% Clay = 41.1%		738
29		...28.4 m - 29.2 - becoming strong	RC17		28.85 - 30.37	17	94 94 94	1				737

Notes:

Target depth of 33 m achieved. Corehole backfilled with bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	20.50	PLAIN
20.50	22.00	SLOTTED

Logged By: C. Tams / C. Braun

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH227**

PAGE 4 OF 4

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	06/29/2022	COMPLETED	06/30/2022	GROUND ELEVATION	766.71m N 5609808.700 E 416835.400
DRILLING CONTRACTOR	Val's Drilling	GROUND WATER ELEVATION / DEPTH		765.00 m	1.71 m
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	08/10/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT ┌─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
31		...30.4 m - 20° fracture ...30.7 m - 225 mm layer of weak shale		RC18	30.37 - 31.89	18	101 107 80	2				736
32		...31.2 m - 35° with weak infill ...31.4 m - horizontally oriented fracture with soft infill		RC19	31.89 - 33.41	19	93 93 93	1				735
33												734
34												733
35												732
36												731
37												730
38												729
39												728
												727

Notes:

Target depth of 33 m achieved. Corehole backfilled with bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	20.50	PLAIN
20.50	22.00	SLOTTED

Logged By: C. Tams / C. Braun

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH229**

PAGE 1 OF 3

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	08/30/2022	COMPLETED	08/31/2022	GROUND ELEVATION	767.30m N 5612179.983 E 416937.836
DRILLING CONTRACTOR	Val's Drilling	GROUND WATER ELEVATION / DEPTH		765.43 m	1.87 m
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	09/15/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument Elevation (m)	
									● MOISTURE CONTENT ┌─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm ▲ POCKET PEN (kPa)			
		CLAY TILL, silty, trace to some sand, damp, stiff, medium plastic, brown, suspect white sulphate inclusions	■	AU1					17.6		0 m - 6" SSA to 3 m.	767
1		...1.0 m - becoming very silty, firm, dark brown	■	AU2					21.4			766
2		...2.0 m - becoming trace gypsum crystals	■	AU3					26.4			765
3		SHALE (Weathered), clay and silt, trace sand, completely weathered, brown to dark grey mottling, some oxidation staining, damp, high plastic, extremely weak, blocky, trace gypsum crystals	■	AU4					23.0			764
4		...3.0 m - becoming extremely closely spaced fractures		RC1	3.00 - 4.52	1	7 82 17	20			3.2 m - LL = 72.2% PL = 20.5% PI = 51.7%	763
5		...4.2 m - becoming highly weathered		RC2	4.52 - 6.04	2	7 100 33	20			3.2 m - Sand = 0.4% Silt = 55.5% Clay = 44.1%	762
6		SHALE, clay and silt, trace sand, slightly weathered, grey, dry, high plastic, very weak, closely spaced fractures, thinly laminated, unoxidized		RC3	6.04 - 7.56	3	86 96 79	3			5.7 m - LL = 83.9% PL = 19.5% PI = 64.4%	761
7		...5.8 m - 160 mm of crumbled core									5.9 m - Sand = 0.3% Silt = 69.1% Clay = 30.6%	760
8		...6.0 m - becoming weak, unweathered		RC4	7.56 - 9.08	4	83 100 84	3			7.8 m - LL = 71.9% PL = 20.0% PI = 51.9%	759
9		...6.1 m - becoming some decimeter weakly cemented layers										
		...7.5 m - 60 mm of core loss										
		...7.6 m - mechanically fractured run										
		...7.8 m - 40 mm of strong calcified shale										
		...8.5 m - 76° fracture										
		...9.0 m - 120 mm of crumbled core		RC5	9.08 - 10.60	5	77 99 74	3				758

Notes:

Target depth of 20 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	6.10	PLAIN
6.10	7.60	SLOTTED

Logged By: C. Tams

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH229**

PAGE 2 OF 3

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	08/30/2022	COMPLETED	08/31/2022	GROUND ELEVATION	767.30m N 5612179.983 E 416937.836
DRILLING CONTRACTOR	Val's Drilling	GROUND WATER ELEVATION / DEPTH		765.43 m	1.87 m
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	09/15/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
11		...10.1 m - 47° fracture		RC6	10.60	6	95	3				757
		...10.6 m - 20 mm of core loss			-		101					
		...10.6 m - becoming moderately			12.12		88			10.9 m - LL = 125.4%		
		widely spaced fractures								PL = 21.0%		
		...10.8 m - 74° fracture								PI = 104.4%		756
		...11.0 m - 65° fracture										
12		...11.8 m - 81° fracture		RC7	12.12	7	93	3				755
					-		102					
					13.64		94					
13		...12.8 m - 50° fracture										
		...12.9 m - 65° fracture										
		...13.0 m - 109° fracture										754
		...13.3 m - trace shell inclusions		RC8	13.64	8	89	2				
14		...13.9 m - 27° fracture			-		94					
					15.16		92					753
		...14.6 m - 67° fracture										
15		...15.1 m - 90 mm of core loss		RC9	15.16	9	80	3				752
		BENTONITE (15.4 m), 170 mm thin			-		100					
		bentonite seams			16.68		84					
16		...15.5 m - becoming moderately										
		strong										
		...15.6 m - 71° fracture										751
		SILTSTONE, and Clay, unweathered,		RC10	16.68	10	89	1				
		light grey, damp, high plastic,			-		180					
		moderately strong, medium spaced			18.20		96					750
		fractures, thinly laminated								17.4 m - Sand =		
		...16.5 m - mechanically fractured area								0.0%		
		...16.7 m - mechanically fractured area								Silt = 63.0%		
18		...17.2 m - 74° fracture		RC11	18.20	11	98	1		Clay = 37.0%		749
		...17.3 m - becoming widely spaced			-		98					
		fractures			19.72		98					
19		...18.5 m - vertical fracture										748
		...19.7 m - 30 mm of core loss		RC12	19.72	12	53	1				

Notes:

Target depth of 20 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	6.10	PLAIN
6.10	7.60	SLOTTED

Logged By: C. Tams

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH229**

PAGE 3 OF 3

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 08/30/2022 COMPLETED 08/31/2022 GROUND ELEVATION 767.30m N 5612179.983 E 416937.836
 DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH 765.43 m 1.87 m
 CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED 09/15/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
									● MOISTURE CONTENT └─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
21		20.5 m - 350 mm of crumbled core 20.9 m - 310 mm of core loss			21.24		80 55			20.4 m - LL = 66.1% PL = 15.8% PI = 50.3%		747
22												746
23												745
24												744
25												743
26												742
27												741
28												740
29												739
												738

Notes:

Target depth of 20 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work		
Depth Top	Depth Bottom	Pipe Type
0.00	6.10	PLAIN
6.10	7.60	SLOTTED

Logged By: C. TamsReviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH230**

PAGE 1 OF 2

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	08/31/2022	COMPLETED	08/31/2022	GROUND ELEVATION	768.39m N 5611459.935 E 416940.874
DRILLING CONTRACTOR	Val's Drilling	GROUND WATER ELEVATION / DEPTH		765.90 m	2.49 m
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	09/15/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
1		GRAVEL, silty, some clay infill, trace cobbles, well graded up to 50 mm, coarse grained, sub-angular, dry, compact, brown	AU1						6.1		0 m - 6" SSA to 3 m.	768
			AU2						7.0		0.6 m - Gravel = 56.6% 0.6 m - Sand = 27.7% Silt = 9.2% Clay = 6.5%	767
2		CLAY TILL, silty, some gravel up to 15 mm, trace sand, damp, stiff, medium plastic, dark brown, suspect white sulphate inclusions, trace gypsum crystals	AU3						17.0		2.1 m - LL = 63.1% PL = 16.8% PI = 46.3%	766
3		SHALE (Weathered), clayey, silty, completely weathered, brown to grey mottling, some oxidation staining, damp, high plastic, extremely weak to hard soil, blocky, trace gypsum crystals	AU4						18.8			
4		...3.3 m - becoming extremely closely spaced fractures	SH1		3.30 - 4.82	1	0 58 9	20			3.6 m - LL = 69.2% PL = 22.6% PI = 46.6%	765
5		SHALE, clay and silt, slightly weathered, grey, damp, high plastic, very weak, very closely spaced fractures, thinly laminated, trace oxidation staining	RC2		4.82 - 6.34	2	16 86 28	20			3.6 m - Sand = 0.2% Silt = 51.5% Clay = 48.3%	764
6		...4.2 m - 640 mm of core loss ...4.8 m - very crumbled core throughout run									4.9 m - LL = 76.0% PL = 20.0% PI = 56.0%	763
7		...5.9 m - becoming unoxidized ...6.1 m - 220 mm of core loss ...6.3 m - becoming unweathered	RC3		6.34 - 7.86	3	61 100 62	5			5.3 m - Sand = 0.1% Silt = 57.2% Clay = 42.7%	762
8		...7.5 m - 38° fracture ...7.9 m - becoming moderately widely spaced fractures ...8.2 m - 47° fracture	RC4		7.86 - 9.38	4	82 88 81	1			8.1 m - LL = 78.4% PL = 16.2% PI = 62.2%	761
9		...9.2 m - 180 mm of core loss	RC5		9.38 - 10.90	5	76 100 64	3				760

Notes:

Target depth of 15 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	4.90	PLAIN
4.90	6.40	SLOTTED

Logged By: C. Tams

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH230**

PAGE 2 OF 2

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	08/31/2022	COMPLETED	08/31/2022	GROUND ELEVATION	768.39m N 5611459.935 E 416940.874
DRILLING CONTRACTOR	Val's Drilling	GROUND WATER ELEVATION / DEPTH		765.90 m	2.49 m
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	09/15/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm ▲ POCKET PEN (kPa)			
11		...10.0 m - 100 mm of crumbled core ...10.1 m - becoming weak ...10.2 m - 39° fracture ...10.5 m - 28° fracture ...10.9 m - becoming centimeter to decimeter weakly cemented layers ...11.0 m - crumbled core		RC6	10.90 - 12.42	6	66 100 66	3				758
12		...12.1 m - 36° fracture		RC7	12.42 - 13.94	7	75 100 70	3				757
13		...12.9 m - horizontal fracture ...13.2 m - 48° fracture										756
14		...13.9 m - trace bentonite seam ...14.3 m - becoming some thin moderately strong layers ...14.6 m - 21° fracture		RC8	13.94 - 15.46	8	73 103 78	3		13.9 m - LL = 91.2% PL = 20.9% PI = 70.3%		755
15												754
16												753
17												752
18												751
19												750
												749

Notes:

Target depth of 15 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work		
Depth Top	Depth Bottom	Pipe Type
0.00	4.90	PLAIN
4.90	6.40	SLOTTED

Logged By: C. Tams

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH231**

PAGE 1 OF 3

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	09/01/2022	COMPLETED	09/02/2022	GROUND ELEVATION	766.75m N 5610778.957 E 416912.982
DRILLING CONTRACTOR	Val's Drilling		GROUND WATER ELEVATION / DEPTH	764.77 m 1.98 m	
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	10/12/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument Elevation (m)
									● MOISTURE CONTENT ▬ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)		
1		SAND, silty, poorly graded, fine grained, sub-rounded, damp, compact, light brown	AU1						3.5	0 m - 6" SSA to 3.3 m.	766
			AU2						3.1	0.6 m - Sand = 71.9%	
2		CLAY TILL, silty, trace gravel up to 20 mm, trace sand lenses, damp, stiff, medium plastic, dark brown, some oxidation staining, suspect white sulphate inclusions	AU3						16.9	Silt = 16.3% Clay = 11.8%	765
3		SHALE (Weathered), clay and silt, completely weathered, brown to dark grey mottling, some oxidation staining, damp, high plastic, extremely weak to hard soil, blocky	AU4						23.0	2.1 m - LL = 57.4% PL = 16.2% PI = 41.2%	764
4		...3.3 m - 560 mm of core loss ...3.9 m - 130 mm of residual soil	SH1		3.30 - 4.82	1	0 63 9	20		3.6 m - LL = 67.0% PL = 22.3% PI = 44.7%	763
5		SHALE, silt, clayey to and clay, medium weathered, grey, damp, high plastic, extremely weak, extremely closely spaced fractures, thinly laminated, unoxidized	RC2		4.82 - 6.34	2	39 100 57	20		3.6 m - Sand = 1.5% Silt = 60.6% Clay = 37.9%	762
6		...4.0 m - crumbled core ...4.8 m - 150 mm of slough ...5.0 m - 200 mm of mechanical rubble	RC3		6.34 - 7.86	3	86 100 86	3		4.1 m - LL = 58.3% PL = 21.2% PI = 37.1%	761
7		...5.9 m - 160 mm of strong calcified shale ...6.1 m - suspect white sulphate inclusions	RC4		7.86 - 9.38	4	73 100 76	4		5.9 m - Sand = 3.8% Silt = 64.1% Clay = 32.1%	760
8		...6.5 m - becoming unweathered, very weak, closely spaced fractures ...6.6 m - 112° fracture ...7.4 m - vertical fracture with weak clay infill	RC5		9.38 - 10.90	5	89 100 89	3		7.9 m - Sand = 0.3% Silt = 69.2% Clay = 30.5%	759
9		...7.7 m - vertical fracture ...7.9 m - becoming some centimeter to decimeter weakly cemented layers ...8.1 m - 63° fracture ...8.9 m - 39° fracture ...9.1 m - mechanical rubble ...9.9 m - 104° fracture									758
											757

Notes:

Target depth of 20 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	7.60	PLAIN
7.60	9.10	SLOTTED

Logged By: C. Tams

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH231**

PAGE 2 OF 3

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	09/01/2022	COMPLETED	09/02/2022	GROUND ELEVATION	766.75m N 5610778.957 E 416912.982
DRILLING CONTRACTOR	Val's Drilling	GROUND WATER ELEVATION / DEPTH		764.77 m	1.98 m
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	10/12/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
11		...10.0 m - 122° fracture										
		...10.6 m - 118° fracture										
		...10.9 m - 160 mm of mechanical rubble		RC6	10.90 - 12.42	6	84 101 86	2				756
12		...11.7 m - 79° fracture										
		...11.8 m - 74° fracture										
		...11.9 m - 107° fracture		RC7	12.42 - 13.94	7	90 100 84	3				755
13		...12.5 m - 135° fracture										
		...12.9 m - 122° fracture										
		...13.3 m - 118° fracture										
14		...14.2 m - 156° fracture		RC8	13.94 - 15.46	8	82 100 81	3				753
15		...14.7 m - vertical fracture followed by crumbled core										
		...14.8 m - 80 mm moderately strong layer										
		...15.0 m - 42° fracture		RC9	15.46 - 16.98	9	82 101 93	3		15.5 m - LL = 296.0% PL = 36.9% PI = 259.1%		751
16		BENTONITE (15.4 m), 140 mm seam, weak layer										
		SHALE, silt, clayey, unweathered, light grey, damp, high plastic, moderately strong, finely fissured										
17		...15.8 m - vertical fracture		RC10	16.98 - 18.50	10	82 100 82	4				750
		...16.6 m - vertical fracture with trace shell inclusions										
		...16.8 m - vertical fracture with trace shell inclusions										
18		...17.0 m - 70 mm of slough										749
		...17.6 m - 106° fracture										
		...17.8 m - 76° fracture										
		...17.9 m - 50 mm of crumbled core		RC11	18.50 - 20.02	11	93 107 89	3				748
19		...18.4 m - 73° fracture										
		...19.2 m - 132° fracture										
		...19.6 m - vertical fracture with weak clay infill										
		...19.7 m - 162° fracture										
		...19.8 m - 151° fracture										747

Notes:

Target depth of 20 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	7.60	PLAIN
7.60	9.10	SLOTTED

Logged By: C. Tams

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH231**

PAGE 3 OF 3

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 09/01/2022 COMPLETED 09/02/2022 GROUND ELEVATION 766.75m N 5610778.957 E 416912.982
 DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH 764.77 m 1.98 m
 CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED 10/12/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
									● MOISTURE CONTENT └─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
21												746
22												745
23												744
24												743
25												742
26												741
27												740
28												739
29												738
												737

Notes:

Target depth of 20 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work		
Depth Top	Depth Bottom	Pipe Type
0.00	7.60	PLAIN
7.60	9.10	SLOTTED

Logged By: C. TamsReviewed By: T. Curtis

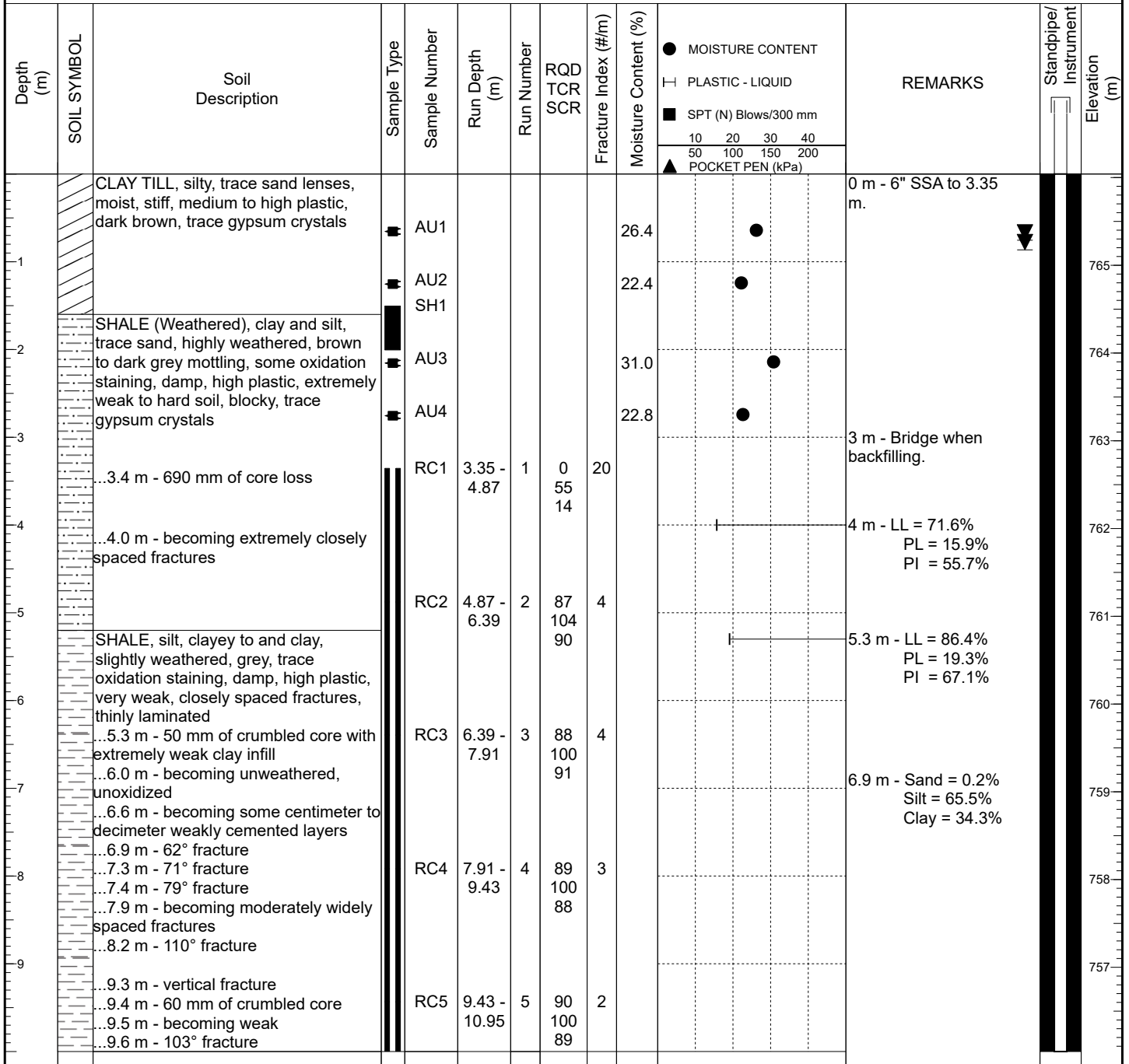


an Englobe company

COREHOLE No : **22CH232**

PAGE 1 OF 3

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	09/06/2022	COMPLETED	09/06/2022	GROUND ELEVATION	766.04m N 5609873.977 E 416899.490
DRILLING CONTRACTOR	Val's Drilling	GROUND WATER ELEVATION / DEPTH		765.37 m	0.67 m
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	10/12/2022



Notes:

Target depth of 20 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	15.20	PLAIN
15.20	16.80	SLOTTED

Logged By: C. Tams

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH232**

PAGE 2 OF 3

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	09/06/2022	COMPLETED	09/06/2022	GROUND ELEVATION	766.04m N 5609873.977 E 416899.490
DRILLING CONTRACTOR	Val's Drilling	GROUND WATER ELEVATION / DEPTH		765.37 m	0.67 m
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	10/12/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
11		...10.3 m - 70° fracture		RC6	10.95 - 12.47	6	89 96 86	2				755
12		...11.5 m - vertical fracture										754
13		...12.0 m - 46° fracture		RC7	12.47 - 13.99	7	93 103 95	3				753
14		...12.4 m - 60 mm of core loss										
15		...12.9 m - vertical fracture										752
16		...13.5 m - 70° fracture		RC8	13.99 - 15.51	8	85 100 86	4		14.2 m - LL = 236.0% PL = 34.3% PI = 201.7%		751
17		...13.6 m - 30 mm of slightly calcified shale followed by 40 mm of crumbled core		D1								750
18		...14.1 m - mechanical rubble										749
19		BENTONITE (14.2 m), 40 mm laminated seams										748
20		...14.3 m - 70 mm moderately strong layer		RC9	15.51 - 17.03	9	58 86 66	3		16.5 m - Sand = 0.1% Silt = 62.6% Clay = 37.3%		747
21		SHALE, "..."										
22		...15.0 m - vertical fracture										
23		...15.4 m - mechanically damaged core										
24		...15.5 m - 210 mm of core loss										
25		...15.9 m - 120 mm of mechanical rubble										
26		...16.7 m - 121° fracture		RC10	17.03 - 18.55	10	90 100 83	3				
27		...17.4 m - 100° fracture										
28		...17.8 m - 110° fracture										
29		...18.3 m - mechanically fractured area		RC11	18.55 - 20.07	11	95 100 92	2		19.3 m - LL = 60.0% PL = 16.4% PI = 43.6%		
30		...19.3 m - becoming some thin moderately strong layers										
31		...19.4 m - 57° fracture										
32		...19.6 m - 66° fracture										

Notes:

Target depth of 20 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	15.20	PLAIN
15.20	16.80	SLOTTED

Logged By: C. Tams

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH232**

PAGE 3 OF 3

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 09/06/2022 COMPLETED 09/06/2022 GROUND ELEVATION 766.04m N 5609873.977 E 416899.490
 DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH 765.37 m 0.67 m
 CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED 10/12/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument Elevation (m)
								● MOISTURE CONTENT └─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)		
21										745
22										744
23										743
24										742
25										741
26										740
27										739
28										738
29										737

Notes:

Target depth of 20 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work		
Depth Top	Depth Bottom	Pipe Type
0.00	15.20	PLAIN
15.20	16.80	SLOTTED

Logged By: C. TamsReviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH301**

PAGE 1 OF 4

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 07/05/2022 COMPLETED 07/06/2022 GROUND ELEVATION 769.34m N 5609512.400 E 416686.400
 DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH 766.27 m 3.07 m
 CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED 10/12/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument Elevation (m)
		OVERBURDEN. REFER TO 22BH301 LOG.							● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)		
1											769
2											768
3											767
4											766
5				SH1							765
6											764
7											763
8		SHALE (Weathered), clay and silt, trace sand, highly weathered, brownish grey, some oxidation staining, damp, high plastic, extremely weak to hard soil, blocky	RC1		7.60 - 9.12	1	40 93 53	7		8 m - LL = 76.7% PL = 15.8% PI = 60.9%	762
9		...8.0 m - 35° fracture ...9.0 m - 100 mm of core loss ...9.1 m - becoming some very weak shale	RC2		9.12 - 10.64	2	32 100 57	9		8 m - EC: 4.3 dS/m 8 m - SAR: 30.1 8 m - pH: 7.9 8.6 m - Dispersivity Classification = D2	761
											760

Notes:

Target depth of 30 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work		
Depth Top	Depth Bottom	Pipe Type
0.00	15.35	PLAIN
15.35	16.85	SLOTTED

Logged By: C. Tams / J. BoydReviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH301**

PAGE 2 OF 4

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	07/05/2022	COMPLETED	07/06/2022	GROUND ELEVATION	769.34m N 5609512.400 E 416686.400
DRILLING CONTRACTOR	Val's Drilling	GROUND WATER ELEVATION / DEPTH		766.27 m	3.07 m
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	10/12/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
11		... 10.9 m - 150 mm mechanically fractured area		RC3	10.64 - 12.16	3	48 100 57	5				759
12		SHALE, clay and silt, trace sand, medium weathered, grey, some oxidation staining, damp, high plastic, very weak, thinly laminated, medium spaced fractures, trace gypsum crystals		RC4 UD1	12.16 - 13.68	4	99 100 92	3				758
13		... 12.1 m - becoming slightly weathered to unweathered										757
14		... 12.2 m - becoming widely spaced fractures										756
15		... 13.6 m - becoming no oxidation staining		RC5 UD2	13.68 - 15.20	5	88 100 97	4				755
16		... 13.7 m - some centimeter to decimeter weakly cemented layers								14.37 m - Sand = 0.2%		754
17		... 13.8 m - becoming unweathered, weak								Silt = 60.8% Clay = 39.0%		753
18		BENTONITE (16.1 m), 140 mm layer		RC6 UD3	15.20 - 16.72	6	81 100 91	4				752
19		... 16.2 m - 60 mm moderately strong layer								16.1 m - LL = 128.5% PL = 20.9% PI = 107.6%		751
		SHALE, clay and silt, trace sand, medium weathered, grey, some oxidation staining, damp, high plastic, very weak, thinly laminated, medium spaced fractures, trace gypsum crystals		RC7 UD4	16.72 - 18.24	7	103 103 101	2		16.1 m - EC: 1.5 dS/m 16.1 m - SAR: 21.6 16.1 m - pH: 9.3		750
		... 17.2 m - 81° fracture										
		... 17.6 m - 87° fracture										
		... 18.2 m - horizontal fracture										
		... 18.6 m - 76° fracture										
		... 19.4 m - 81° fracture										
				RC8	18.24 - 19.76	8	101 101 99	2		18.2 m - Sand = 0.1% Silt = 59.1% Clay = 40.8%		
				RC9	19.76	9	99	2		19.76 m - Sand = 0.8%		

Notes:

Target depth of 30 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	15.35	PLAIN
15.35	16.85	SLOTTED

Logged By: C. Tams / J. Boyd

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH301**

PAGE 3 OF 4

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	07/05/2022	COMPLETED	07/06/2022	GROUND ELEVATION	769.34m N 5609512.400 E 416686.400
DRILLING CONTRACTOR	Val's Drilling	GROUND WATER ELEVATION / DEPTH		766.27 m	3.07 m
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	10/12/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
21		...20.6 m - 85° fracture ...20.7 m - horizontal fracture ...20.9 m - 25 mm sandy shale section ...21.0 m - horizontal fracture	RC10		- 21.28	99 96				Silt = 64.6% Clay = 34.6%		749
22			UD5							20.9 m - LL = 63.5% PL = 14.5% PI = 49.0% 20.9 m - Sand = 0.8%		748
23		...22.4 m - interbedded shells ...22.5 m - moderately strong ...22.7 m - horizontal fracture ...23.0 m - horizontal fracture	RC11		21.28 22.80	10 103 103 102	1			Silt = 64.6% Clay = 34.6%		747
24		...23.7 m - 66° fracture ...24.1 m - horizontal fracture	RC12		22.80 24.32	11 101 101 98	2					746
25		...24.6 m - horizontal fracture ...24.8 m - horizontal fracture	RC13		24.32 25.84	12 103 103 101	2					745
26			UD6									744
27			RC14		25.84 27.36	13 100 100 99	1					743
28			RC15		27.36 28.88	14 100 100 99	1			28 m - LL = 62.0% PL = 18.2% PI = 43.8%		742
29		...29.3 m - horizontal fracture	UD7		28.88 30.40	15 104 104 103	1					741
												740

Notes:

Target depth of 30 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	15.35	PLAIN
15.35	16.85	SLOTTED

Logged By: C. Tams / J. Boyd

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH301**

PAGE 4 OF 4

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 07/05/2022 COMPLETED 07/06/2022 GROUND ELEVATION 769.34m N 5609512.400 E 416686.400
 DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH 766.27 m 3.07 m
 CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED 10/12/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
									● MOISTURE CONTENT └─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
31												739
32												738
33												737
34												736
35												735
36												734
37												733
38												732
39												731
												730

Notes:

Target depth of 30 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work		
Depth Top	Depth Bottom	Pipe Type
0.00	15.35	PLAIN
15.35	16.85	SLOTTED

Logged By: C. Tams / J. BoydReviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH305**

PAGE 1 OF 3

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 771.35m N 5609472.900 E 416292.500
 DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH _____
 CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED 09/15/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
1		OVERBURDEN. REFER TO 22BH305 LOG.										771
2												770
3			SH1									769
4										3 m - LL = 119.0% PL = 24% PI = 95.0% 3 m - Sand = 1.2% Silt = 63.3% Clay = 35.5%		768
5		SHALE (Weathered), and silt, clayey, trace sand, highly weathered, grey with oxidation staining, moist, high plastic, extremely weak, very closely spaced fractures, thinly laminated, trace gypsum crystals	RC1		4.54 - 6.06	1	14 100 53	17				767
6		...6.1 m - extremely fractured run	RC2		6.06 - 7.58	2	0 76 13	7		6.2 m - Dispersivity Classification = D2 6.21 m - Sand = 0.1% Silt = 68.2% Clay = 31.7%		766
7		...7.2 m - 370 mm of core loss										765
8		...7.6 m - highly fractured run ...7.8 m - 55° fracture	RC3		7.58 - 9.10	3	31 92 30	7		6.21 m - Dispersivity Classification = D2		764
9		...9.0 m - 120 mm of core loss	RC4 UD1		9.10 - 10.62	4	58 100 68	4		9.46 m - LL = 52.0% PL = 20% PI = 32.0%		763 762

Notes:

Target depth of 24 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	18.20	PLAIN
18.20	19.70	SLOTTED

Logged By: C. TamsReviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH305**

PAGE 2 OF 3

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 771.35m N 5609472.900 E 416292.500
 DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH _____
 CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED 09/15/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT ┤ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
11		10.2 m - 43° fracture SHALE, clay and silt, trace sand, slightly weathered, grey, some oxidation staining, damp, high plastic, extremely weak, thinly laminated, closely spaced fractures ...11.1 m - 72° fracture	RC5	10.62 - 12.14	5	63 100 72	5			9.46 m - Sand = 6.9% Silt = 63.5% Clay = 29.6%		761
12		...12.1 m - 240 mm of completely weathered clay infill ...12.5 m - becoming very weak and unweathered	RC6	12.14 - 13.66	6	82 100 88	5					759
13		...12.6 m - becoming centimeter to decimeter weakly cemented layers ...12.9 m - quartz crystals ...13.6 m - becoming no oxidation staining	UD2							12.95 m - LL = 89.0% PL = 15.3% PI = 73.7%		758
14		...13.7 m - becoming weak with moderately widely spaced fractures	RC7	13.66 - 15.18	7	104 104 101	3			12.95 m - EC: 2.8 dS/m 12.95 m - SAR: 35.0 12.95 m - pH: 8.8 12.96 m - EC: 3.0 dS/m		757
15			UD3							12.96 m - pH: 8.5		
16			RC8	15.18 - 16.70	8	86 100 89	4			14.96 m - LL = 85.9% PL = 15.4% PI = 70.5%		756
17		...16.7 m - becoming widely spaced fractures	RC9	16.70 - 18.22	9	88 100 88	3					755
18			RC10	18.22 - 19.74	10	86 100 93	2			18.22 m - LL = 302.0% PL = 27.4% PI = 274.6%		753
19		BENTONITE (18.2 m), 160 mm layer SHALE, and silt, clayey, trace sand, slightly weathered, grey, some oxidation staining, damp, high plastic, extremely weak, thinly laminated, closely spaced fractures ...19.7 m - becoming moderately strong	UD4							18.22 m - Sand = 0.2% Silt = 20.5% Clay = 79.3%		752
			RC11	19.74	11	100	1					

Notes:

Target depth of 24 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	18.20	PLAIN
18.20	19.70	SLOTTED

Logged By: C. TamsReviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH305**

PAGE 3 OF 3

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 771.35m N 5609472.900 E 416292.500
 DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH _____
 CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED 09/15/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
21		...20.9 m - 50° fracture, some crumbled core		RC12	21.26	12	93	1		21 m - LL = 69.5%		751
		...21.4 m - 54° fracture, some crumbled core			21.26		93			PL = 20.6%		750
22					22.78		84			21 m - Sand = 0.2%		749
										Silt = 76.1%		748
23		...22.7 m - 100 mm of core loss		RC13 UD5	22.78	13	96	1		Clay = 23.7%		747
					24.30		100					746
24							98					745
25												744
26												743
27												742
28												
29												

Notes:

Target depth of 24 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work		
Depth Top	Depth Bottom	Pipe Type
0.00	18.20	PLAIN
18.20	19.70	SLOTTED

Logged By: C. TamsReviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH310**

PAGE 1 OF 3

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	07/11/2022	COMPLETED	07/12/2022	GROUND ELEVATION	772.77m N 5609466.800 E 415800.700
DRILLING CONTRACTOR	Val's Drilling	GROUND WATER ELEVATION / DEPTH		770.70 m	2.07 m
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	10/12/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)		
1		OVERBURDEN. REFER TO 22BH310 LOG.									772
2											771
3		SHALE (Weathered), clay and silt, trace sand, highly weathered, brown, moist, high plastic, extremely weak, extremely closely spaced fractures, finely stratified, coal staining, oxide staining, gypsum crystals	SH1							3 m - LL = 62.0% PL = 14% PI = 48.0%	770
4		...4.8 m - 70 mm crumbled core								3 m - Sand = 0.9% Silt = 54.8% Clay = 44.3%	769
5		...5.2 m - becoming very weak	RC1		4.52 - 6.04	1	74 102 72	7			768
6		...5.2 m - 80 mm crumbled core									767
7		...5.5 m - 35 mm crumbled core	RC2		6.04 - 7.56	2	80 100 79	6			766
8		...5.9 m - 45° fracture									765
9		...6.2 m - 240 mm crumbled core	UD1								764
		...6.7 m - becoming medium weathered									763
		...7.2 m - 100 mm section that is weak, light brown, some sand	RC3		7.56 - 9.08	3	95 100 90	4			
		SHALE, clay and silt, trace sand, slightly weathered, grey, damp, high plastic, very weak, closely spaced fractures, finely stratified, oxide staining									
		...7.7 m - 70 mm crumbled core									
		...8.1 m - 88° fracture									
		...8.1 m - 10 mm possible sandstone layer									
		...8.2 m - becoming weak, moderately widely to widely spaced fracture									
		...8.2 m - horizontal fracture									
		...8.7 m - 74° fracture									
		...9.0 m - horizontal fracture									
		...9.1 m - becoming unweathered									
		...9.3 m - 89° fracture									
		...9.6 m - horizontal fracture									
		...9.7 m - 88° fracture									
		...9.8 m - horizontal fracture									

Notes:

Target depth of 21 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	6.98	PLAIN
6.98	8.50	SLOTTED

Logged By: J. Boyd

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH310**

PAGE 2 OF 3

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	07/11/2022	COMPLETED	07/12/2022	GROUND ELEVATION	772.77m N 5609466.800 E 415800.700
DRILLING CONTRACTOR	Val's Drilling	GROUND WATER ELEVATION / DEPTH		770.70 m	2.07 m
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	10/12/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
11		...10.5 m - 84° fracture ...10.6 m - becoming weak to moderately strong ...11.1 m - becoming widely to very widely spaced fractures ...11.2 m - horizontal fracture	RC5		10.60 - 12.12	5	94 94 93	2				762
12		...11.9 m - 85° fracture	UD2							11.62 m - LL = 89.4% PL = 17.9% PI = 71.5%		761
13		...12.6 m - becoming moderately strong to strong ...12.6 m - 88° fracture ...12.8 m - 86° fracture ...13.5 m - 73° fracture ...13.8 m - 87° fracture	RC6		12.12 - 13.64	6	103 103 101	2				760
14			RC7		13.64 - 15.16	7	103 103 101	2				759
15		...15.0 m - 60° fracture	UD3							14.8 m - LL = 84.1% PL = 14.4% PI = 69.7% 14.8 m - Sand = 0.5% Silt = 74.3% Clay = 25.2%		758
16		...15.9 m - horizontal fracture ...16.4 m - 87° fracture	RC8		15.16 - 16.68	8	99 99 98	2				757
17		...17.2 m - weak to moderately strong	RC9		16.68 - 18.20	9	100 100 99	1				756
18		...17.7 m - 85° fracture ...17.8 m - moderately strong	RC10		18.20 - 19.72	10	105 105 105	0				755
19		...19.4 m - strong ...19.8 m - moderately strong to strong	UD4 RC11		19.72	11	93	1		19.56 m - UCS = 3225 kPa		754 753

Notes:

Target depth of 21 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	6.98	PLAIN
6.98	8.50	SLOTTED

Logged By: J. Boyd

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH310**

PAGE 3 OF 3

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 07/11/2022 COMPLETED 07/12/2022 GROUND ELEVATION 772.77m N 5609466.800 E 415800.700
 DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH 770.70 m 2.07 m
 CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED 10/12/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
21		...20.4 m - horizontal fracture		UD5	21.24		93 92			20.83 m - EC: 1.5 dS/m		752
22		...21.1 m - 110 mm core loss								20.84 m - LL = 87.6% PL = 20.7% PI = 66.9%		751
23										20.84 m - SAR: 14.3		750
24										20.84 m - pH: 9.2		749
25												748
26												747
27												746
28												745
29												744
												743

Notes:

Target depth of 21 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work		
Depth Top	Depth Bottom	Pipe Type
0.00	6.98	PLAIN
6.98	8.50	SLOTTED

Logged By: J. BoydReviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH313**

PAGE 1 OF 2

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	07/13/2022	COMPLETED	07/13/2022	GROUND ELEVATION	774.02m N 5609465.500 E 415488.000
DRILLING CONTRACTOR	Val's Drilling	GROUND WATER ELEVATION / DEPTH		771.70 m	2.32 m
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	08/10/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)		
1		OVERBURDEN. REFER TO 22CH313 LOG.									773
2		SHALE, clay and silt, trace sand, completely weathered, grey with brown mottling, moist, high plastic, extremely weak, blocky, finely stratified, oxide staining, gypsum crystals, trace sand to sandstone pockets	SH1								772
3		...4.9 m - 130 mm crumbled core									771
4		...5.0 m - 130 mm light brown, highly weathered, extremely weak to very weak sandstone layer with oxide staining									770
5		...5.2 m - 50 mm crumbled core	RC1	4.53 - 6.05	1	20	16			5 m - Sand = 1.1% Silt = 42.8% Clay = 56.1%	769
6		...5.3 m - becoming highly weathered, extremely weak to very weak, extremely to very closely spaced fractures								5 m - Dispersivity Classification = D2 5 m - EC: 3.5 dS/m 5 m - SAR: 21.1 5 m - pH: 7.6	768
7		...5.6 m - 110 mm crumbled core	RC2	6.05 - 7.57	2	13	20				767
8		...5.7 m - 100 mm crumbled core									766
9		...6.1 m - 700 mm crumbled core	RC3	7.57 - 9.09	3	80	6			7 m - LL = 67.0% PL = 27.2% PI = 39.8%	765
		...6.3 m - becoming weak to moderately strong									
		...7.0 m - becoming moderately to slightly weathered, moderately strong									
		...7.1 m - 60 mm crumbled core	D1							8.3 m - LL = 175.5% PL = 20.8% PI = 154.7%	
		SILTSTONE, clayey, sandy, slightly weathered, banded light and dark grey, damp, high plastic, weak, thinly laminated, suspect slightly bentonitic BENTONITE (8.1 m), 200 mm layer								8.3 m - Sand = 25.4% Silt = 39.8% Clay = 34.8%	
		SILTSTONE, "..."									
		...8.3 m - 50 mm calcified siltstone section	RC4	9.09 - 10.61	4	95	3				
		...8.4 m - becoming strong, slight inclined medium spaced fractures									
		...8.6 m - becoming finely stratified									
		...9.3 m - 84° fracture									
		...9.6 m - 81° fracture									

Notes:

Target depth of 18 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	8.28	PLAIN
8.28	9.50	SLOTTED

Logged By: J. Boyd

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH313**

PAGE 2 OF 2

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	07/13/2022	COMPLETED	07/13/2022	GROUND ELEVATION	774.02m N 5609465.500 E 415488.000
DRILLING CONTRACTOR	Val's Drilling	GROUND WATER ELEVATION / DEPTH		771.70 m	2.32 m
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	08/10/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
11	...	...10.0 m - horizontal fracture										
	...	...10.1 m - 72° fracture										
		SHALE, clayey, silty, unweathered, grey, damp, high plastic, strong, widely spaced to very widely spaced fractures, finely stratified	RC5		10.61	5	99	2				
					-		99					
					12.13		96					763
12		...11.6 m - 83° fracture										
		...12.0 m - 84° fracture	RC6		12.13	6	95	2				762
		...12.1 m - 78° fracture			-		100					
					13.65		99					
13		...12.7 m - 87° fracture										761
		...13.5 m - 88° fracture	RC7		13.65	7	98	3				
		...13.6 m - 83° fracture			-		98					
14		...13.7 m - 68° fracture			15.17		95					760
		...13.9 m - 88° fracture										
		...14.0 m - becoming strong to very strong										
15		...14.7 m - 83° fracture	RC8		15.17	8	101	2				759
		...15.0 m - 70° fracture			-		101					
		...15.3 m - horizontal fracture			16.69		99					
16												758
		...16.4 m - 83° fracture	RC9		16.69	9	93	2				
					-		99					
					18.21		97					757
17		...17.2 m - 88° fracture										
		...17.3 m - 72° fracture										
18		...17.6 m - horizontal fracture										756
19												755

Notes:

Target depth of 18 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	8.28	PLAIN
8.28	9.50	SLOTTED

Logged By: J. Boyd

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH319**

PAGE 1 OF 2

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	07/15/2022	COMPLETED	07/15/2022	GROUND ELEVATION	776.27m N 5609451.900 E 414896.900
DRILLING CONTRACTOR	Val's Drilling	GROUND WATER ELEVATION / DEPTH		775.21 m	1.06 m
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	08/10/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
		OVERBURDEN. REFER TO 22CH319 LOG.							● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
1												776
2												775
3		SHALE, clay and silt, some sand, slightly weathered, grey, moist, medium plastic, very weak, medium spaced finely stratified, oxide staining	SH1									774
4		...4.6 m - 90 mm crumbled core										773
5		...4.9 m - becoming unweathered, weak, unoxidized										772
6		BENTONITE (5.5 m), 20 mm layer										771
7		SILTSTONE, and clay, some fine grained sand, slightly weathered, light brown to grey, medium plastic, moderately strong	RC1		4.52 - 6.04	1	92 100 92	4				770
8		...5.8 m - 78° fracture										769
9		...6.0 m - becoming weak to moderately strong, widely to very widely spaced fractures										768
10		...6.1 m - 84° fracture	RC2		6.04 - 7.56	2	99 99 97	2				767
11		...6.6 m - 70 mm mechanically crumbled core										
12		...6.7 m - becoming moderately strong										
13		...6.9 m - 86° fracture										
14		...7.3 m - becoming moderately strong to strong										
15		...7.4 m - 72° fracture	RC3		7.56 - 9.08	3	100 100 99	2				
16		SHALE, clay and silt, some sand, slightly weathered, grey, moist, medium plastic, very weak, medium spaced finely stratified, oxide staining										
17		...7.8 m - 84° fracture										
18		...8.0 m - 83° fracture										
19		...8.1 m - 82° fracture										
20		...8.6 m - high plastic	RC4		9.08 - 10.60	4	100 100 97	2				
21		...9.0 m - becoming strong										
22		...9.6 m - 87° fracture										
23		...9.9 m - 83° fracture										

Notes:

Target depth of 15 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	13.00	PLAIN
13.00	14.50	SLOTTED

Logged By: J. Boyd

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH319**

PAGE 2 OF 2

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 07/15/2022 COMPLETED 07/15/2022 GROUND ELEVATION 776.27m N 5609451.900 E 414896.900
 DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH 775.21 m 1.06 m
 CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED 08/10/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
11		...10.0 m - 60 mm unweathered, moderately strong, grey siltstone layer		RC5	10.60	5	99	2				766
		...10.4 m - 67° fracture			-		99					
		...10.7 m - becoming very widely spaced fractures			12.12		96					765
		...10.8 m - 88° fracture										
12		...11.8 m - 65° fracture		RC6	12.12	6	94	3				764
		...12.0 m - 68° fracture			-		99					
		...12.4 m - 80° fracture			13.64		97					
13		SILTSTONE, clayey, trace sand, unweathered, grey, damp, high plastic, strong to very strong, widely spaced fractures, very thinly laminated to finely stratified								12.12 m - EC: 1.9 dS/m 12.12 m - SAR: 20.4 12.12 m - pH: 9.5		
14		...12.9 m - becoming slightly bentonitic, weak to moderately strong		RC7	13.64	7	100	2				763
		...13.3 m - 90 mm calcified siltstone			-		100					
		...13.4 m - 140 mm cemented siltstone			15.16		99					762
15		...13.4 m - 82° fracture								13.2 m - Sand = 8.8% Silt = 63.8% Clay = 27.4%		
		...13.5 m - becoming strong to very strong								13.64 m - UCS = 4187 kPa		
16		...13.6 m - interbedded shells								13.9 m - EC: 1.0 dS/m		
		...13.9 m - 88° fracture								13.9 m - SAR: 15.6		
		...14.2 m - 85° fracture								13.9 m - pH: 8.9		761
		...14.7 m - 86° fracture								14.4 m - LL = 96.4% PL = 18.5% PI = 77.9%		760
17		SHALE, clay and silt, trace sand, unweathered, grey, damp, high plastic, strong, finely stratified										759
18												758
19												757

Notes:

Target depth of 15 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	13.00	PLAIN
13.00	14.50	SLOTTED

Logged By: J. BoydReviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH320**

PAGE 1 OF 3

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	09/06/2022	COMPLETED	09/07/2022	GROUND ELEVATION	771.49m N 5609434.127 E 416204.701
DRILLING CONTRACTOR	Val's Drilling		GROUND WATER ELEVATION / DEPTH	769.72 m 1.77 m	
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	10/12/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument Elevation (m)
									● MOISTURE CONTENT ┤ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)		
0	TOPSOIL									0 m - 6" SSA to 3 m.	
1		SHALE (Weathered), clay and silt, trace sand, completely weathered, brown to grey mottling, trace oxidation staining, damp, high plastic, extremely weak to hard soil, blocky, extremely closely spaced fractures, suspect white sulphate inclusions	AU1						16.1	0.6 m - LL = 75.1% PL = 18.5% PI = 56.6%	771
2			AU2						17.6		770
3			AU3						17.2		769
4		...3.0 m - 400 mm of slough	AU4						17.2		768
5		...3.4 m - becoming some oxidation staining	RC1 SH1		3.00 - 4.52	1	0 100 72	20			768
6		...3.8 m - becoming trace gypsum crystals									767
7		BENTONITE, 190 mm of bentonitic shale, silt, light brown	RC2		4.52 - 6.04	2	0 103 80	20		4.2 m - LL = 107.0% PL = 18.0% PI = 89.0%	767
8		SHALE (Weathered), "..."									766
9		...4.9 m - becoming dry	RC3		6.04 - 7.56	3	0 100 82	20			765
10											764
11		SHALE, clay and silt, medium weathered, grey, damp, high plastic, extremely weak, extremely closely spaced fractures, thinly laminated, oxidation staining in joints	RC4		7.56 - 9.08	4	0 93 27	20		7.7 m - LL = 69.5% PL = 20.6% PI = 48.9%	763
12		...8.0 m - trace gypsum crystals									762
13		...9.0 m - 100 mm of core loss									
14		...9.1 m - 120 mm of slough									
15		...9.6 m - 132° fracture								8.5 m - Sand = 0.1% Silt = 58.7% Clay = 41.2%	
16		...9.6 m - becoming very weak	RC5		9.08 - 10.60	5	12 93 28	20			
17		...9.8 m - 17° fracture with suspect white sulphate inclusions									
18		...9.9 m - horizontal fracture with suspect white sulphate inclusions									

Notes:

Target depth of 25 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	7.60	PLAIN
7.60	9.10	SLOTTED

Logged By: C. Tams

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH320**

PAGE 2 OF 3

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	09/06/2022	COMPLETED	09/07/2022	GROUND ELEVATION	771.49m N 5609434.127 E 416204.701
DRILLING CONTRACTOR	Val's Drilling	GROUND WATER ELEVATION / DEPTH		769.72 m	1.77 m
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	10/12/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
11		...10.1 m - near horizontal fractures with suspect white sulphate inclusions ...10.3 m - becoming unweathered, weak ...10.5 m - 110 mm of core loss ...10.6 m - becoming closely spaced fractures		RC6	10.60 - 12.12	6	82 100 86	5				761
12		...12.0 m - becoming unoxidized ...12.1 m - 120 mm of strong calcified shale ...12.2 m - suspect white sulphate inclusions		RC7	12.12 - 13.64	7	16 64 19	20			12.3 m - LL = 65.8% PL = 17.6% PI = 48.2%	759
13		...12.6 m - 380 mm of crumbled core ...13.1 m - 540 mm of core loss		RC8	13.64 - 15.16	8	89 90 89	2				758
14		...13.6 m - becoming moderately widely spaced fractures ...13.7 m - becoming some centimeter to decimeter weakly cemented layers ...14.2 m - vertical fracture ...14.5 m - 78° fracture		RC9	15.16 - 16.68	9	99 100 99	1				756
15		...15.0 m - 150 mm of core loss ...15.4 m - 82° fracture		RC10	16.68 - 18.20	10	89 92 88	1				755
16		...16.1 m - vertical fracture		RC11	18.20 - 19.72	11	86 100 86	3				753
17		...16.9 m - 57° fracture ...17.5 m - vertical fracture		RC12	19.72	12	24	3				752
18		...18.1 m - 120 mm of core loss ...18.7 m - 104° fracture										
19		...19.4 m - 140 mm of strong calcified shale ...19.6 m - sub-horizontal fractures										
										20 m - Sand = 0.3%		

Notes:

Target depth of 25 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	7.60	PLAIN
7.60	9.10	SLOTTED

Logged By: C. Tams

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH320**

PAGE 3 OF 3

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 09/06/2022 COMPLETED 09/07/2022 GROUND ELEVATION 771.49m N 5609434.127 E 416204.701
 DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH 769.72 m 1.77 m
 CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED 10/12/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
									● MOISTURE CONTENT ┌─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
21		...20.1 m - becoming moderately strong			-		71					
		...20.5 m - 200 mm of crumbled core			21.24		32					751
		...20.8 m - 440 mm of core loss										
		...21.4 m - 75° fracture	RC13		21.24	13	99	2				750
22		...21.8 m - vertical fracture, becoming widely spaced fractures			-		101					
					22.76		100					
												749
23		...22.9 m - vertical fracture	RC14		22.76	14	99	1				748
					-		99					
					24.28		99					
24												
												747
25		...25.2 m - 54° fracture	RC15		24.28	15	93	1				
					-		103					
					25.80		92					746
26												
												745
27												
												744
28												
												743
29												
												742

Notes:

Target depth of 25 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work		
Depth Top	Depth Bottom	Pipe Type
0.00	7.60	PLAIN
7.60	9.10	SLOTTED

Logged By: C. TamsReviewed By: T. Curtis

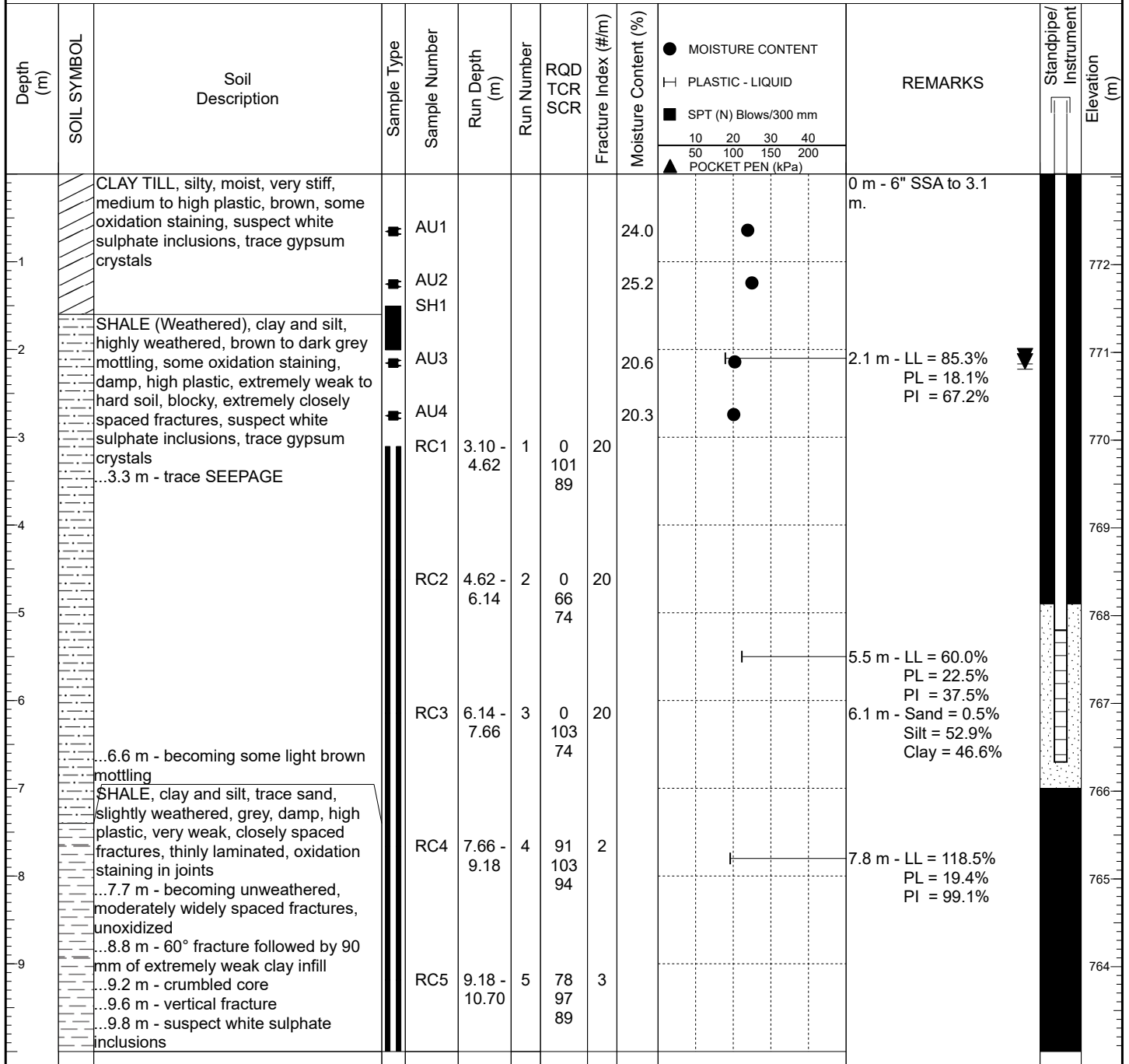


an Englobe company

COREHOLE No : **22CH321**

PAGE 1 OF 2

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	09/08/2022	COMPLETED	09/08/2022	GROUND ELEVATION	773.03m N 5609430.825 E 415706.861
DRILLING CONTRACTOR	Val's Drilling	GROUND WATER ELEVATION / DEPTH		770.89 m	2.14 m
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	10/12/2022



Notes:

Target depth of 15 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	5.20	PLAIN
5.20	6.70	SLOTTED

Logged By: C. Tams

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH321**

PAGE 2 OF 2

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	09/08/2022	COMPLETED	09/08/2022	GROUND ELEVATION	773.03m N 5609430.825 E 415706.861
DRILLING CONTRACTOR	Val's Drilling		GROUND WATER ELEVATION / DEPTH	770.89 m 2.14 m	
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	10/12/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
11		...10.2 m - vertical fracture ...10.7 m - 40 mm of core loss ...10.8 m - 25° fracture		RC6	10.70 - 12.22	6	84 101 84	2				762
12		...11.4 m - trace shell inclusion ...11.7 m - trace shell inclusion ...11.8 m - horizontal fracture		RC7	12.22 - 13.74	7	99 100 99	2		11.7 m - LL = 80.0% PL = 24.4% PI = 55.6%		761
13		...12.8 m - becoming weak ...13.0 m - 97° fracture		RC8	13.74 - 15.26	8	98 101 98	1		13.1 m - Sand = 0.3% Silt = 70.7% Clay = 29.0%		760
14												759
15		...14.6 m - 77° fracture ...15.1 m - 79° fracture followed by 30 mm of calcified shale										758
16												757
17												756
18												755
19												754

Notes:

Target depth of 15 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work		
Depth Top	Depth Bottom	Pipe Type
0.00	5.20	PLAIN
5.20	6.70	SLOTTED

Logged By: C. Tams

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH322**

PAGE 1 OF 2

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	09/08/2022	COMPLETED	09/08/2022	GROUND ELEVATION	778.92m N 5609434.154 E 415206.870
DRILLING CONTRACTOR	Val's Drilling	GROUND WATER ELEVATION / DEPTH		773.64 m	5.28 m
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	09/15/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument Elevation (m)	
									● MOISTURE CONTENT ┤ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
1		CLAY TILL, silty, some gravel up to 20 mm, trace sand, dry, stiff, medium plastic, light brown, some oxidation staining, suspect white sulphate inclusions	AU1						7.6		0 m - 6" SSA to 3.2 m.	778
2		...2.0 m - becoming very stiff, damp, dark brown	AU2						9.3		1.2 m - LL = 43.9% PL = 16.2% PI = 27.7%	777
3		SHALE (Weathered), clay and silt, trace sand, highly weathered, dark brown to dark grey mottling, some oxidation staining, damp, high plastic, extremely weak to hard soil, blocky, extremely closely spaced fractures, suspect white sulphate inclusions, trace gypsum crystals	AU3						13.6			776
4		...3.2 m - becoming grey with oxidation staining	AU4						16.1			775
5		...4.0 m - 19° fracture	SH1		3.20 - 4.72	1	0 100 58	20			4 m - LL = 46.8% PL = 19.2% PI = 27.6%	774
6		...4.4 m - 110 mm of slough	RC1								4.9 m - Sand = 8.1% Silt = 58.3% Clay = 33.6%	773
7		...4.9 m - becoming moderately weathered	RC2		4.72 - 6.24	2	0 105 89	20			5.8 m - LL = 47.0% PL = 18.7% PI = 28.3%	772
8		BENTONITE (6.6 m), 150 mm layer	RC3		6.24 - 7.76	3	0 99 66	20			6.8 m - LL = 103.3% PL = 41.3% PI = 62.0%	771
9		SHALE (Weathered), "..."	RC4		7.76 - 9.28	4	0 106 99	20			9.4 m - LL = 57.4% PL = 18.6% PI = 38.8%	770
		...6.9 m - 109° fracture followed by 60 mm weak layer	RC5		9.28 - 10.80	5	57 97 86	6				
		...7.2 m - becoming very weak										
		...7.8 m - trace bentonite inclusions										
		...8.4 m - 5 mm quartz lense										
		...8.9 m - 106° fracture										
		SHALE, clay and silt, moderately weathered, grey, damp, high plastic, extremely weak, very closely spaced fractures, thinly laminated, oxidation staining in joints, trace gypsum crystals										
		...9.8 m - becoming unweathered, very weak, trace oxidation staining										

Notes:

Target depth of 15 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	4.60	PLAIN
4.60	6.10	SLOTTED

Logged By: C. Tams

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH322**

PAGE 2 OF 2

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	09/08/2022	COMPLETED	09/08/2022	GROUND ELEVATION	778.92m N 5609434.154 E 415206.870
DRILLING CONTRACTOR	Val's Drilling	GROUND WATER ELEVATION / DEPTH		773.64 m	5.28 m
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	09/15/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT ┌─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
11		...10.1 m - 160 mm of laminated calcified shale		RC6	10.80	6	81	4				768
		...10.3 m - becoming unoxidized			-		100					
		...10.6 m - 121° fracture			12.32		88					
		...10.8 m - 40 mm of core loss										
		...11.1 m - extremely weak clay infill										
		...11.5 m - 73° fracture										
12				RC7	12.32	7	66	7				767
		...12.3 m - mechanically fractured run			-		100					
		...12.5 m - 132° fracture			13.84		72					
13												766
		...13.2 m - becoming weak										
14		...13.8 m - becoming moderately widely spaced fractures		RC8	13.84	8	102	3				765
					-		113					
					15.36		106					
15		BENTONITE (14.5 m), 150 mm thin bentonite laminations		D1								764
		SHALE, "..."										
		...14.7 m - 30 mm of calcified shale followed by 60 mm of slough										
16		...14.8 m - becoming moderately strong										763
17												762
18												761
19												760

Notes:

Target depth of 15 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	4.60	PLAIN
4.60	6.10	SLOTTED

Logged By: C. Tams

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH323**

PAGE 1 OF 2

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	09/07/2022	COMPLETED	09/07/2022	
DRILLING CONTRACTOR	Val's Drilling	GROUND ELEVATION	776.12m	N 5609425.157 E 415007.962
CORING TYPE	HQ3	DIAMETER (mm)	61	
		GROUND WATER ELEVATION / DEPTH	774.13 m	1.99 m
		DATE GROUND WATER RECORDED	09/15/2022	

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT ┌─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
1		CLAY TILL, silty, some sand, moist, stiff, medium plastic, brown, some oxidation staining, suspect white sulphate inclusions, trace coal staining	AU1						16.9		0 m - 6" SSA to 3.15 m.	776
		...1.1 m - becoming sandy	AU2						14.5		1.2 m - Sand = 51.3%	775
2		SHALE (Weathered), clay and silt, trace sand, completely weathered, brown to dark grey mottling, some oxidation staining, damp, high plastic, extremely weak to hard soil, blocky	SH1								Silt = 24.1% Clay = 24.6%	774
			AU3						20.0		1.2 m - EC: 4.0 dS/m	
			AU4						17.8		1.2 m - SAR: 5.8 1.2 m - pH: 7.7 2.1 m - LL = 50.6% PL = 16.6% PI = 34.0%	
3		...3.2 m - becoming extremely closely spaced fractures	RC1		3.15 - 4.67	1	0	20				773
		BENTONITE (3.5 m) 70 mm seam					108				3.5 m - LL = 104.5% PL = 35.7% PI = 68.8%	
4		SHALE (Weathered), ...					88				3.6 m - LL = 50.9% PL = 20.7% PI = 30.2%	772
5		SHALE, clay and silt, trace sand, medium weathered, grey, dry, high plastic, extremely weak, very closely spaced fractures, thinly laminated, oxidation staining in joints	RC2		4.67 - 6.19	2	30	20				771
		...5.3 m - 5 mm quartz lense					97					
6		...5.5 m - becoming slightly weathered	RC3		6.19 - 7.71	3	59	8			6.2 m - LL = 53.3% PL = 19.2% PI = 34.1%	770
		...5.6 m - becoming unoxidized					100					
7		...6.1 m - 50 mm of core loss					67					
		...7.1 m - becoming very weak									7.3 m - Sand = 2.4% Silt = 58.4% Clay = 39.2%	769
		...7.2 m - becoming unweathered										
8		...7.8 m - 70 mm of crumbled core	RC4		7.71 - 9.23	4	30	7				768
							103					
9		...9.2 m - quartz crystals					63					
		...9.2 m - 260 mm of mechanical rubble	RC5		9.23 - 10.75	5	18	7				767
							100					
							36					

Notes:

Target depth of 15 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	6.10	PLAIN
6.10	7.60	SLOTTED

Logged By: C. Tams

Reviewed By: T. Curtis



an Englobe company

COREHOLE No : **22CH323**

PAGE 2 OF 2

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	09/07/2022	COMPLETED	09/07/2022	GROUND ELEVATION	776.12m N 5609425.157 E 415007.962
DRILLING CONTRACTOR	Val's Drilling	GROUND WATER ELEVATION / DEPTH	774.13 m	1.99 m	
CORING TYPE	HQ3	DIAMETER (mm)	61	DATE GROUND WATER RECORDED	09/15/2022

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT └ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
11		...10.2 m - crumbled core		RC6	10.75 - 12.27	6	61 94 75	5		11.1 m - LL = 82.2% PL = 21.2% PI = 61.0%		766
12		BENTONITE (11.7 m), 290 mm seam ...11.9 m - becoming very silty, weak SILTSTONE, and clay, unweathered, grey, damp, high plastic, weak, finely fissured		RC7	12.27 - 13.79	7	74 100 94	4				765
13		...12.2 m - 90 mm of core loss ...13.0 m - becoming moderately widely spaced fractures										764
14		...13.8 m - becoming some weakly cemented layers		RC8	13.79 - 15.31	8	82 99 86	3		13.9 m - Sand = 0.8% Silt = 60.7% Clay = 38.5%		763
15												762
16												761
17												760
18												759
19												758
												757

Notes:

Target depth of 15 m achieved. Corehole completed as a well and backfilled with sand and bentonite chips.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	6.10	PLAIN
6.10	7.60	SLOTTED

Logged By: C. Tams

Reviewed By: T. Curtis



an Englobe company

BOREHOLE No : **23BH123B**

PAGE 1 OF 1

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 08/08/2023 COMPLETED 08/08/2023 GROUND ELEVATION 765.00m N 5612531.781 E 416025.057
DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH _____
DRILLING METHOD 6" SSA DATE GROUND WATER RECORDED _____

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	SPT (N)	Moisture Content (%) ● MOISTURE CONTENT └─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm ▲ POCKET PEN (kPa) 10 20 30 40 100 200 300 400	REMARKS	Standpipe/ Instrument	Elevation (m)
1		CLAY TILL, some fine grained sand, trace silt, trace fine angular gravel up to 10 mm, moist, medium to high plastic, dark brown							764
2		SHALE (Weathered), clay and silt, moist, stiff, dark brown, high plastic, trace oxide specs							763
3									762
4									761
5									760
6									759
7									758
8									757
9		SHALE, silty, highly weathered, grey, moist, medium to high plastic, very weak							756
		End of Borehole @9.6 m							

Notes:

No seepage or sloughing observed upon completion. Packer test completed after drilling.

Logged By: C. Tams

Reviewed By: C. Braun



an Englobe company

BOREHOLE No : **23BH136B**

PAGE 1 OF 1

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	08/10/2023	COMPLETED	08/10/2023	GROUND ELEVATION	770.00m N 5612485.432 E 416514.596
DRILLING CONTRACTOR	Val's Drilling	GROUND WATER ELEVATION / DEPTH			
DRILLING METHOD	4" SSA	DATE GROUND WATER RECORDED			

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	SPT (N)	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
						● MOISTURE CONTENT └─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 100 200 300 400 ▲ POCKET PEN (kPa)			
		CLAY AND SILT, sandy, trace fine gravel, dry, stiff, low plastic, light brown, trace oxide specks							
1		SHALE (Weathered), clayey, silty, trace sand, completely weathered, dark brown to grey mottling, damp, high plastic, extremely weak to hard soil, blocky, thinly laminated, trace white precipitates							769
2		...1.5 m - becoming highly weathered							768
3									767
4		...4 m - becoming some oxidation staining							766
5									765
6									764
7		...6.5 m - becoming trace gypsum crystals							763
8		...7 m - becoming moderately weathered							762
9		SHALE, silty, clayey, slightly weathered, grey, damp, high plastic, very weak, thinly laminated							761
		End of Borehole @9.1 m							

Notes:

No seepage or sloughing observed upon completion. Packer testing done after drilling.

Logged By: C. Tams

Reviewed By: C. Braun



an Englobe company

BOREHOLE No : **23BH201B**

PAGE 1 OF 1

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	08/11/2023	COMPLETED	08/11/2023
DRILLING CONTRACTOR	Val's Drilling	GROUND ELEVATION	768.00m N 5612424.215 E 416805.362
DRILLING METHOD	4" SSA	GROUND WATER ELEVATION / DEPTH	
		DATE GROUND WATER RECORDED	

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	SPT (N)	Moisture Content (%)	REMARKS	Standpipe/ Instrument Elevation (m)
						● MOISTURE CONTENT └─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 ▲ POCKET PEN (kPa)		
1		CLAY AND SILT, sandy, dry, stiff, low plastic, light brown, trace root hairs						767
		CLAY TILL, silty, trace sand, moist, stiff, medium to high plastic, dark brown, trace oxidation staining						
2		SAND, silty, poorly graded, medium grained, sub-rounded, moist, compact, reddish brown						766
		CLAY TILL, silty, trace sand, trace fine gravel, trace completely weathered shale inclusions, moist, stiff, high plastic, dark brown, some oxidation staining						
3		SHALE (Weathered), clayey, silty, trace sand, highly weathered, dark brown to grey mottling, damp, high plastic, extremely weak to hard soil, blocky, thinly laminated, trace oxidation staining, trace white precipitates, trace gypsum crystals						765
4		...3.9 m - becoming moderately weathered						764
5		...5.2 m - some orange oxidation staining						763
6		...5.7 m - becoming slightly weathered						762
		End of Borehole @6.1 m						
7								761
8								760
9								759

Notes:

No seepage or sloughing observed upon completion. Packer testing done after drilling.

Logged By: C. Tams

Reviewed By: C. Braun



an Englobe company

BOREHOLE No : **23BH301B**

PAGE 1 OF 2

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 06/19/2023 COMPLETED 06/20/2023 GROUND ELEVATION 769.23m N 5609510.559 E 416687.289
 DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH _____
 DRILLING METHOD 4" SSA DATE GROUND WATER RECORDED _____

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	SPT (N)	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
						● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 100 200 300 400 ▲ POCKET PEN (kPa)			
1		CLAY TILL, silty, sandy, trace fine gravel, dry, stiff, medium plastic, light brown, trace oxide specks							769
2		SHALE, clayey, silty, highly weathered, grey, damp, high plastic, extremely weak, blocky, thinly laminated, trace oxidation staining, trace white precipitates							768
3									767
4									766
5									765
6									764
7									763
8									762
9									761
									760

Notes:

No seepage or sloughing observed upon completion. Packer test completed after drilling.

Logged By: C. TamsReviewed By: C. Braun



a division of Englobe

COREHOLE No : **23CH702**

PAGE 1 OF 2

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 08/11/2023 COMPLETED 08/11/2023 GROUND ELEVATION 767.62m N 5611494.100 E 416865.300
 DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH _____
 CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED _____

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
1		CLAY AND SILT, sandy, gravelly, dry, stiff, low plastic, light brown	AU1						18.2			767
		CLAY TILL, silty, trace sand, trace gravel up to 30 mm, moist, firm, medium plastic, brown, some oxidation staining, trace gypsum crystals, trace white precipitates, trace coal staining	AU2						26.6			766
2		...1.2 m - becoming no gravel, some completely weathered shale inclusions	AU3						22.3			765
		SHALE (Weathered), clayey, silty, highly weathered, dark brown to grey mottling, damp, high plastic, extremely weak, blocky, thinly laminated, trace oxidation staining, trace white precipitates, trace gypsum crystals	AU4						24.3			764
3		...3.0 m - 270 mm of core loss	RC1		3.05 - 4.57	1	49 82 64	2				763
		...3.3 m - 200 mm of slough										762
4		...3.6 m - becoming moderately weathered	RC2		4.57 - 6.09	2	75 93 78	3				761
		SHALE, clayey, silty, unweathered, grey, damp, high plastic, extremely weak, moderately widely spaced fractures, thinly laminated										760
5		...4.6 m - 100 mm of core loss										759
		...4.7 m - 100 mm of crumbled core										758
6		...5.0 m - becoming very weak	RC3		6.09 - 7.61	3	89 100 90	2				
		...5.5 m - some mechanical rubble										
7		...6.4 m - becoming weak										
		...7.0 m - 62° fracture										
8		...7.4 m - 42° fracture	RC4		7.61 - 9.13	4	87 100 89	2				
		...7.6 m - mechanically fractured run										
9		...8.3 m - 45° fracture	RC5		9.13 - 10.65	5	93 93 93	1				

Notes:

Target depth of 10 m achieved. Corehole completed as a 50 mm well. Packer test completed after coring.

Monitoring Installation Pipe Work		
Depth Top	Depth Bottom	Pipe Type
0.00	7.60	PLAIN
7.60	10.60	SLOTTED

Logged By: C. Tams

Reviewed By: T. Curtis



a division of Englobe

COREHOLE No : **23CH702**

PAGE 2 OF 2

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 08/11/2023 COMPLETED 08/11/2023 GROUND ELEVATION 767.62m N 5611494.100 E 416865.300
DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH _____
CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED _____

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
									● MOISTURE CONTENT └ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
11		...10.0 m - 500 mm of mechanical rubble										757
		...10.6 m - 100 mm of core loss										
12												756
13												755
14												754
15												753
16												752
17												751
18												750
19												749
												748

Notes:

Target depth of 10 m achieved. Corehole completed as a 50 mm well. Packer test completed after coring.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	7.60	PLAIN
7.60	10.60	SLOTTED

Logged By: C. Tams

Reviewed By: T. Curtis



a division of Englobe

COREHOLE No : **23CH700**

PAGE 1 OF 2

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 08/07/2023 COMPLETED 08/07/2023 GROUND ELEVATION 779.07m N 5612596.600 E 414519.200
DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH _____
CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED _____

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument Elevation (m)
		TOPSOIL, silty, sandy, some clay, damp, firm, low plastic, brown, trace root hairs		AU1							
1		CLAY TILL, silty, sandy, trace fine gravel, damp, stiff, medium plastic, brown, some white precipitates, trace oxidation staining		AU2							778
2		...1.5 m - becoming some gravel up to 30 mm		AU3							777
3		SHALE (Weathered), clayey, silty, trace sand, highly weathered, grey, damp, high plastic, extremely weak to hard soil, blocky, thinly laminated, some oxidation staining, trace white precipitates		AU4							776
4		...3.2 m - becoming moderately weathered, trace oxidation staining		AU5							775
5		...4.3 m - 100 mm of core loss		RC1	4.27 -	1	72	3		4.27 m - Switched from 6" SSA to HQ3 Rotary Coring	774
		...4.6 m - 100 mm bentonite seam		AU6	5.79		93				773
		...5.2 m - 73° fracture					80				772
6		...5.6 m - some crumbled core		RC2	5.79 -	2	66	4			771
		...5.8 m - mechanically fractured run, 210 mm of core loss			7.31		86				770
7		...6.4 m - trace bentonite inclusions					66				
		...6.9 m - 63° fracture		RC3	7.31 -	3	80	3			
		...7.1 m - some crumbled core			8.83		82				
8		...7.3 m - 270 mm of core loss					80				
		...7.9 m - becoming slightly weathered, very weak									
		...8.1 m - 65° fracture		RC4	8.83 -	4	92	1			
9		SHALE, clayey, silty, unweathered, grey, damp, high plastic, very weak, moderately widely spaced fractures, thinly laminated			10.35		92				
		...8.3 m - 56° fracture					92				

Notes:

Target depth of 14 m achieved. Corehole completed as a well, refer to diagram. Packer test completed after coring.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	13.40	PLAIN
13.40	14.91	SLOTTED

Logged By: C. Tams

Reviewed By: C. Braun



a division of Englobe

COREHOLE No : **23CH700**

PAGE 2 OF 2

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 08/07/2023 COMPLETED 08/07/2023 GROUND ELEVATION 779.07m N 5612596.600 E 414519.200
DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH _____
CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED _____

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument Elevation (m)
									● MOISTURE CONTENT └ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)		
11		...10.2 m - 120 mm of core loss		RC5	10.35	5	97	1			
		...10.6 m - 56° fracture			-		100				
		...10.8 m - bedding fracture, becoming widely spaced fractures			11.87		97				768
		...10.9 m - becoming weak, some thinly bedded sandstone layers									
12		...11.8 m - trace shell fragments		RC6	11.87	6	100	1			767
		...12.1 m - 75° fracture			-		100				
					13.39		100				
13		...13.0 m - 550 mm of very high plastic, extremely weak shale									766
		...13.6 m - 180 mm of strong calcified shale		RC7	13.39	7	100	1			
		...14.2 m - 78° fracture			-		100				765
					14.91		100				
15											764
16											763
17											762
18											761
19											760

Notes:

Target depth of 14 m achieved. Corehole completed as a well, refer to diagram. Packer test completed after coring.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	13.40	PLAIN
13.40	14.91	SLOTTED

Logged By: C. Tams

Reviewed By: C. Braun



a division of Englobe

COREHOLE No : **23CH700B**

PAGE 2 OF 3

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 08/07/2023 COMPLETED 08/08/2023 GROUND ELEVATION 779.05m N 5612605.400 E 414525.400
DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH _____
CORING TYPE Other DIAMETER (mm) _____ DATE GROUND WATER RECORDED _____

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
									● MOISTURE CONTENT └ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
11												768
12												767
13												766
14												765
15												764
16												763
17												762
18												761
19												760

Notes:

100 mm PVC well installed to 25 m for pumping test.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	22.00	PLAIN
22.00	25.00	SLOTTED

Logged By: C. Tams

Reviewed By: C. Braun



a division of Englobe

COREHOLE No : **23CH700B**

PAGE 3 OF 3

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 08/07/2023 COMPLETED 08/08/2023 GROUND ELEVATION 779.05m N 5612605.400 E 414525.400
DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH _____
CORING TYPE Other DIAMETER (mm) _____ DATE GROUND WATER RECORDED _____

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
21									● MOISTURE CONTENT └─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			758
22												757
23												756
24												755
25												754
26												753
27												752
28												751
29												750

Notes:

100 mm PVC well installed to 25 m for pumping test.

Monitoring Installation Pipe Work		
Depth Top	Depth Bottom	Pipe Type
0.00	22.00	PLAIN
22.00	25.00	SLOTTED

Logged By: C. Tams

Reviewed By: C. Braun



a division of Englobe

COREHOLE No : **23CH701**

PAGE 1 OF 3

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 08/09/2023 COMPLETED 08/09/2023 GROUND ELEVATION 770.28m N 5612525.300 E 416317.500
 DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH _____
 CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED _____

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT H PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
1		SILT AND SAND, some clay, dry, firm, low plastic, light brown, trace root hairs	■	AU1					3.3 ● H	0.6 m - LL = 17.1% PL = 13% PI = 4.1%		770
2		CLAY TILL, silty, sandy, trace fine gravel, damp, stiff, low to medium plastic, brown, some white precipitates	■	AU2						0.6 m - Sand = 62.5% Silt = 26.4% Clay = 11.1%		769
3		SHALE (Weathered), clayey, silty, some sand, completely weathered, dark brown to grey mottling, damp, high plastic, extremely weak to hard soil, blocky, some oxidation staining	■	AU3								768
4		3.0 m - 100 mm of core loss	■	AU4								767
5		3.3 m - becoming trace sand, highly weathered	■	RC1	3.05 - 4.57	1	21 93 63	13		3.05 m - Switched from 6" SSA to HQ3 Rotary Coring		766
6		4.4 m - becoming trace gypsum crystals	■	RC2	4.57 - 6.09	2	44 90 59	7				765
7		4.6 m - 150 mm of core loss	■	RC3	6.09 - 7.61	3	61 100 86	5				764
8		5.0 m - some crumbled core	■	RC4	7.61 - 9.13	4	94 96 95	3				763
9		5.9 m - some crumbled core	■	RC5	9.13 - 10.65	5	97 100 97	3				762
		6.4 m - becoming moderately weathered										761
		6.8 m - 83° fracture										
		7.0 m - 69° fracture										
		7.1 m - 76° fracture										
		7.4 m - 100 mm of strong shale										
		7.6 m - 60 mm of core loss										
		8.2 m - bedding fracture										
		8.3 m - 65° fracture										
		8.4 m - becoming slightly weathered, very weak, moderately widely spaced fractures										
		9.0 m - 68° fracture										
		9.1 m - becoming grey with trace oxidation staining										
		9.3 m - 78° fracture										
		9.9 m - 82° fracture										

Notes:

Target depth of 27 m achieved. Corehole completed as a well, refer to diagram. Packer test completed after coring.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	25.90	PLAIN
25.90	27.37	SLOTTED

Logged By: C. Tams

Reviewed By: C. Braun



a division of Englobe

COREHOLE No : **23CH701**

PAGE 2 OF 3

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 08/09/2023 COMPLETED 08/09/2023 GROUND ELEVATION 770.28m N 5612525.300 E 416317.500
DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH _____
CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED _____

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
		...10.1 m - 64° fracture										760
11		SHALE, silty, clayey, unweathered, grey, damp, high plastic, very weak, moderately widely spaced fractures, thinly laminated		RC6	10.65 - 12.17	6	98 100 98	1				
		...10.6 m - becoming some very thin to thin weakly cemented layers										
12		...10.8 m - 31° fracture										
		...11.4 m - bedding fracture, becoming widely spaced fractures		RC7	12.17 - 13.69	7	106 106 106	0				758
13		...12.3 m - becoming weak										
												757
14				RC8	13.69 - 15.21	8	99 100 99	1				756
		...14.7 m - 72° fracture										
15		...15.5 m - 41° fracture										
				RC9	15.21 - 16.73	9	95 100 96	2				755
16		...16.1 m - becoming very weak										
		...16.3 m - 67° fracture										754
		...16.4 m - some crumbled core										
17		...16.8 m - 50 mm of bentonitic inclusions		RC10	16.73 - 18.25	10	87 100 91	1				753
		...16.9 m - becoming weak										
18		...17.9 m - 60° fracture										
		...18.0 m - bedding fracture with some crumbled core		RC11	18.25 - 19.77	11	84 94 84	1				752
19		...18.0 m - 420 mm very weak layer										
		...18.2 m - 90 mm of core loss										
		...19.5 m - 65° fracture										751
		...19.6 m - trace shell fragments										
		...19.6 m - some crumbled core		RC12	19.77	12	97	1				

Notes:

Target depth of 27 m achieved. Corehole completed as a well, refer to diagram. Packer test completed after coring.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	25.90	PLAIN
25.90	27.37	SLOTTED

Logged By: C. Tams

Reviewed By: C. Braun



a division of Englobe

COREHOLE No : **23CH701**

PAGE 3 OF 3

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 08/09/2023 COMPLETED 08/09/2023 GROUND ELEVATION 770.28m N 5612525.300 E 416317.500
DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH _____
CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED _____

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
									● MOISTURE CONTENT └ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
21		...20.6 m - 77° fracture ...20.8 m - 78° fracture		RC13	- 21.29	100 97						750
22		...22.1 m - 69° fracture			21.29 - 22.81	13 86 91 90	1					749
23		...22.7 m - 130 mm of core loss ...23.3 m - bedding fracture		RC14	22.81 - 24.33	14 88 88 88	1					748
24		...24.2 m - 180 mm of core loss		RC15	24.33 - 25.85	15 82 101 84	3					747
25		...24.5 m - vertical fractures ...24.7 m - 64° fracture ...25.2 m - 79° fracture										746
26		...25.8 m - 130 mm of core loss ...26.5 m - bedding fracture		RC16	25.85 - 27.37	16 91 91 91	1					745
27												744
28												743
29												742
												741

Notes:

Target depth of 27 m achieved. Corehole completed as a well, refer to diagram. Packer test completed after coring.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	25.90	PLAIN
25.90	27.37	SLOTTED

Logged By: C. Tams

Reviewed By: C. Braun



a division of Englobe

COREHOLE No : **23CH704**

PAGE 1 OF 3

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 06/13/2023 COMPLETED 06/14/2023 GROUND ELEVATION 771.21m N 5609474.300 E 416207.200
DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH _____
CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED _____

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)		
1		CLAY, silty, some sand, damp, stiff, medium plastic, light brown	AU1								771
		SHALE (Weathered), clayey, silty, highly weathered, dark brown to grey mottling, damp, high plastic, extremely weak to hard soil, blocky, thinly laminated, some oxidation staining, trace white precipitates, trace gypsum crystals	AU2								770
2			SPT1								
			AU3								769
3		...3.3 m - 70° fracture	AU4								
		...3.4 m - some crumbled core	RC1		3.00 -	1	89	4			
4		SHALE, clayey, silty, moderately weathered, dark brown to grey mottling, damp, high plastic, extremely weak, moderately widely spaced fractures, thinly laminated, some oxidation staining, trace gypsum crystals	SPT2		4.52		100				768
							93				
5		...4.0 m - 78° fracture	RC2		4.52 -	2	96	3			767
		...5.1 m - horizontal fracture			6.04		97				
6		...5.4 m - 64° fracture					96				766
		...5.6 m - 56° fracture									
7		...5.7 m - 72° fracture									
		...6.0 m - 40 mm of core loss	RC3		6.04 -	3	66	7			765
		...6.2 m - sub-horizontal fracture			7.56		97				
8		...6.4 m - 74° fracture					70				
		...6.5 m - mechanically fractured area									764
9		...6.8 m - 50 mm of crumbled core									
		...7.0 m - 77° fracture									763
		...7.2 m - 60° fracture									
		...7.5 m - 60 mm of core loss	RC4		7.56 -	4	59	3			
		...7.7 m - becoming grey, trace oxidation staining			9.08		84				
		...8.1 m - 34° fracture					70				
		...8.2 m - becoming very weak									762
		...8.4 m - 74° fracture									
		...8.6 m - 70° fracture									
		...8.8 m - 240 mm of core loss	RC5		9.08 -	5	80	5			
		...9.1 m - becoming slightly weathered, weak			10.60		100				
		...9.7 m - 42° fracture					84				
		...9.8 m - 74° fracture									

Notes:

Target depth of 20 m achieved. Packer test completed after coring. Corehole completed as a well, refer to diagram.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	18.50	PLAIN
18.50	20.00	SLOTTED

Logged By: C. Tams

Reviewed By: C. Braun



a division of Englobe

COREHOLE No : **23CH704**

PAGE 2 OF 3

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 06/13/2023 COMPLETED 06/14/2023 GROUND ELEVATION 771.21m N 5609474.300 E 416207.200
DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH _____
CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED _____

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)		
11		...10.1 m - becoming some very thin weakly cemented layers ...10.4 m - 41° fracture ...10.7 m - 75° fracture ...10.8 m - becoming unweathered, widely spaced fractures, unoxidized ...11.4 m - 69° fracture		RC6	10.60 - 12.12	6	93 100 100	2			761
12		...12.1 m - becoming moderately strong		RC7	12.12 - 13.64	7	100 100 100	1			760
13		...13.0 m - horizontal fracture ...13.3 m - horizontal fracture		RC8	13.64 - 15.16	8	100 100 100	1			759
14		...14.1 m - 76° fracture ...14.4 m - horizontal fracture		RC9	15.16 - 16.68	9	76 84 78	2			758
15		...15.6 m - 61° fracture ...15.7 m - 73° fracture		RC10	16.68 - 18.20	10	71 96 86	1			757
16		...16.2 m - horizontal fracture with extremely weak clay infill ...16.4 m - 240 mm of core loss ...16.7 m - 100 mm of crumbled core ...16.8 m - vertical fracture		RC11	18.20 - 19.72	11	85 100 86	1			756
17		...18.0 m - 35° fracture ...18.1 m - 60 mm of core loss ...18.6 m - 25° fracture		RC12	19.72	12	39	2			755
18		...19.5 m - 41° fracture ...19.8 m - 200 mm of very strong calcified shale ...19.9 m - 60 mm of crumbled core									754
19											753
											752

Notes:

Target depth of 20 m achieved. Packer test completed after coring. Corehole completed as a well, refer to diagram.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	18.50	PLAIN
18.50	20.00	SLOTTED

Logged By: C. Tams

Reviewed By: C. Braun



a division of Englobe

COREHOLE No : **23CH704**

PAGE 3 OF 3

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 06/13/2023 COMPLETED 06/14/2023 GROUND ELEVATION 771.21m N 5609474.300 E 416207.200
DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH _____
CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED _____

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
									● MOISTURE CONTENT └ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
21		...20.1 m - 78° fracture ...20.4 m - sub-horizontal fracture ...20.5 m - 50 mm of extremely weak bentonitic clay ...20.6 m - 620 mm of core loss			- 21.24		59 43					751
22												750
23												749
24												748
25												747
26												746
27												745
28												744
29												743
												742

Notes:

Target depth of 20 m achieved. Packer test completed after coring. Corehole completed as a well, refer to diagram.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	18.50	PLAIN
18.50	20.00	SLOTTED

Logged By: C. Tams

Reviewed By: C. Braun



a division of Englobe

COREHOLE No : **23CH704B**

PAGE 1 OF 3

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 06/16/2023 COMPLETED 06/17/2023 GROUND ELEVATION 771.32m N 5609458.400 E 416204.500
DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH _____
CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED _____

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument Elevation (m)
									● MOISTURE CONTENT ┌─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)		
1		TOPSOIL, silty, sandy, some clay, trace gravel, dry, firm, low plastic, light brown, trace root hairs	AU1								771
1		SHALE, clayey, silty, completely weathered, brown to grey mottling, damp, high plastic, extremely weak to hard soil, blocky, thinly laminated, some oxidation staining, trace gypsum crystals, trace white precipitates	AU2								770
2		SHALE, silty, clayey, moderately weathered, brown to dark grey mottling, damp, high plastic, extremely weak, moderately widely spaced fractures, thinly laminated, some oxidation staining, trace gypsum crystals	RC1		1.50 - 3.02	1	63 75 64	1		1.5 m - No samples kept this hole.	
3		...1.5 m - 380 mm of core loss									769
3		...1.9 m - 56° fracture									768
3		...3.2 m - 100 mm of mechanical rubble	RC2		3.02 - 4.54	2	62 99 80	2			767
3		...3.5 m - 80 mm of mechanical rubble									766
4		...4.5 m - mechanically fractured run	RC3		4.54 - 6.06	3	55 100 95	1			765
5		...6.1 m - 220 mm of core loss									764
5		...7.2 m - becoming slightly weathered, grey	RC4		6.06 - 7.58	4	19 86 46	2			763
5		...7.6 m - mechanically fractured run									762
6		...9.1 m - mechanically fractured run	RC5		7.58 - 9.10	5	0 100 66	2			
6		...9.4 m - becoming very weak									
6			RC6		9.10 - 10.62	6	23 89 72	2			

Notes:

Target depth of 25 m achieved. Corehole completed as a well, refer to diagram.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	16.00	PLAIN
16.00	19.00	SLOTTED

Logged By: C. Tams

Reviewed By: C. Braun



a division of Englobe

COREHOLE No : **23CH704B**

PAGE 2 OF 3

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 06/16/2023 COMPLETED 06/17/2023 GROUND ELEVATION 771.32m N 5609458.400 E 416204.500
DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH _____
CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED _____

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
11		...10.4 m - 170 mm of core loss		RC7	10.62	7	89	1				761
		...11.2 m - becoming unweathered, widely spaced fractures, unoxidized			- 12.14		93 93					760
12		...12.0 m - 100 mm of core loss		RC8	12.14	8	100	1				759
		...12.7 m - 62° fracture			- 13.66		100 100					758
14		...13.7 m - becoming weak		RC9	13.66	9	100	2				757
		...13.8 m - 78° fracture			- 15.18		100 100					757
15		...14.0 m - 71° fracture										756
		...14.8 m - 68° fracture										756
16		...15.2 m - becoming some thin weakly cemented layers		RC10	15.18	10	95	1				755
		...15.5 m - 66° fracture			- 16.70		105 98					755
17		...15.6 m - 44° fracture										754
		...17.3 m - 74° fracture										754
18		...18.6 m - bedding fracture		RC12	18.22	12	91	1				753
		...19.4 m - 150 mm of strong calcified shale			- 19.74		93 91					752
19		...19.6 m - 100 mm of core loss		RC13	19.74	13	67	1		19 m - Hole sloughed in - installed well to 19 m.		752

Notes:

Target depth of 25 m achieved. Corehole completed as a well, refer to diagram.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	16.00	PLAIN
16.00	19.00	SLOTTED

Logged By: C. Tams

Reviewed By: C. Braun



a division of Englobe

COREHOLE No : **23CH704B**

PAGE 3 OF 3

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 06/16/2023 COMPLETED 06/17/2023 GROUND ELEVATION 771.32m N 5609458.400 E 416204.500
DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH _____
CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED _____

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
									● MOISTURE CONTENT └ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
21		...20.3 m - bedding fracture ...20.4 m - becoming moderately strong ...20.8 m - 450 mm of core loss, recovered on next run ...21.4 m - 100 mm weak layer ...21.5 m - 69° fracture ...21.6 m - becoming very widely spaced fractures		RC14	- 21.26	70 67						751
22					21.26 - 22.78	14 126 126	1					750
23				RC15	22.78 - 24.30	15 112 112	0					749
24												748
25				RC16	24.30 - 25.82	16 95 95	0					747
26		...25.7 m - 80 mm of core loss										746
27												745
28												744
29												743
												742

Notes:

Target depth of 25 m achieved. Corehole completed as a well, refer to diagram.

Monitoring Installation Pipe Work		
Depth Top	Depth Bottom	Pipe Type
0.00	16.00	PLAIN
16.00	19.00	SLOTTED

Logged By: C. Tams

Reviewed By: C. Braun



a division of Englobe

COREHOLE No : **23CH705**

PAGE 1 OF 2

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 06/12/2023 COMPLETED 06/12/2023 GROUND ELEVATION 776.43m N 5609460.700 E 414986.100
DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH _____
CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED _____

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument Elevation (m)
									● MOISTURE CONTENT └ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)		
1		TOPSOIL, clayey, sandy, some silt, trace gravel, moist, stiff, medium plastic, brown, trace root hairs	■	AU1							776
		CLAY TILL, sandy, silty, trace fine gravel, moist, very stiff, medium plastic, brown, some oxidation staining, trace gypsum crystals	■	AU2							
2		SHALE (Weathered), clayey, silty, completely weathered, dark brown to grey mottling, damp, high plastic, extremely weak to hard soil, blocky, thinly laminated, some oxidation staining, trace white precipitates, trace gypsum crystals	▲	SPT1							775
		...2.0 m - becoming highly weathered, dark grey	■	AU3							
3		...3.4 m - horizontal fracture with some crumbled core	■	AU4							
		SHALE, clayey, silty, highly weathered, grey, damp, high plastic, extremely weak, blocky, closely spaced fractures, thinly laminated, some oxidation staining, trace gypsum crystals	▲	SPT2	3.10 - 4.62	1	82 100 95	5			773
4		...3.8 m - horizontal fracture		RC2	4.62 - 6.14	2	91 100 95	3		3.5 m - Switched to rotary coring	772
5		...3.8 m - 80 mm bentonite seam									771
6		...4.2 m - 80° fracture		RC3	6.14 - 7.66	3	71 100 75	4			770
7		...4.4 m - becoming moderately weathered									769
8		...4.6 m - 70 mm of mechanical rubble		RC4	7.66 - 9.18	4	9 50 17	20			768
9		...4.7 m - 88° fracture									767
		...4.8 m - becoming slightly weathered, very weak, moderately widely spaced fractures, unoxidized		RC5	9.18 - 10.70	5	92 100 95	3			
		...5.7 m - 84° fracture									
		...6.1 m - 200 mm of slough									
		...6.3 m - 300 mm mechanically fractured area									
		...6.6 m - 53° fracture followed by crumbled core									
		...6.7 m - 51° fracture									
		...6.9 m - 68° fracture									
		...7.0 m - 39° fracture									
		...7.5 m - becoming some thin weakly cemented layers									

Notes:

Target depth of 15 m achieved. Packer test completed after coring. Corehole completed as a well, refer to diagram.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	12.20	PLAIN
12.20	15.20	SLOTTED

Logged By: C. Tams

Reviewed By: C. Braun



a division of Englobe

COREHOLE No : **23CH705**

PAGE 2 OF 2

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 06/12/2023 COMPLETED 06/12/2023 GROUND ELEVATION 776.43m N 5609460.700 E 414986.100
 DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH _____
 CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED _____

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT □ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
11		...7.7 m - mechanically fractured area ...7.9 m - 360 mm of crumbled core ...8.3 m - 760 mm of core loss ...9.2 m - mechanically fractured run ...9.5 m - 74° fracture ...9.5 m - becoming unweathered, weak ...9.8 m - 73° fracture followed by vertical fractures		RC6	10.70 - 12.22	6	86 96 88	3				766
12		...10.4 m - 63° fracture ...10.5 m - 76° fracture ...11.0 m - 76° fracture ...11.1 m - becoming very silty, moderately strong ...11.8 m - 81° fracture ...11.8 m - 50 mm of crumbled core ...11.9 m - 100 mm of bentonitic clay ...12.0 m - 140 mm of strong calcified shale		RC7	12.22 - 13.74	7	95 100 100	2				765 764
13		...12.2 m - 60 mm of core loss ...12.4 m - 73° fracture ...12.5 m - 40° fracture ...12.6 m - becoming widely spaced fractures ...13.7 m - becoming very clayey, weak ...14.6 m - 74° fracture ...14.9 m - horizontal fracture with some crumbled core ...15.2 m - 60 mm of core loss		RC8	13.74 - 15.26	8	96 96 96	2				763 762 761 760 759 758 757

Notes:

Target depth of 15 m achieved. Packer test completed after coring. Corehole completed as a well, refer to diagram.

Monitoring Installation Pipe Work		
Depth Top	Depth Bottom	Pipe Type
0.00	12.20	PLAIN
12.20	15.20	SLOTTED

Logged By: C. Tams

Reviewed By: C. Braun



a division of Englobe

COREHOLE No : **23CH709**

PAGE 1 OF 2

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 06/26/2023 COMPLETED 06/26/2023 GROUND ELEVATION 777.39m N 5611051.400 E 415415.900
DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH _____
CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED _____

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)		
1		TOPSOIL, sandy, some silt, damp, firm, low plastic, brown, trace root hairs	■	AU1					7.1		777
		CLAY, silty, sandy, dry, firm, low plastic, brown	■	AU2					7.1		
2		CLAY TILL, silty, some sand, trace fine gravel, damp, very stiff, medium plastic, brown, some oxidation staining, trace white precipitates	▲	SPT1					6.0		776
		...2.6 m - becoming trace coal staining	■	AU3					6.0		
		...3.0 m - becoming some completely weathered shale inclusions	■	AU4					11.6		775
		SHALE (Weathered), clayey, silty, completely weathered, dark brown to grey mottling, damp, high plastic, extremely weak, blocky, thinly laminated, some oxidation staining, trace gypsum crystals	▲	SPT2					11.6	2.1 m - Gravel = 9.2%	
3		...4.2 m - becoming some bentonite inclusions	■	AU5					12.5	2.1 m - Sand = 71.4%	
		...4.4 m - 100 mm bentonite seam	■	AU6					12.5	Silt = 9.3%	
4		...4.7 m - 70 mm of core loss	■	SPT3						Clay = 10.1%	
		...4.7 m - 80 mm of slough	■	RC1					13.8	2.1 m - Dispersivity Classification = D2	774
		SHALE, silty, clayey, moderately weathered, grey, damp, high plastic, extremely weak, moderately widely spaced fractures, thinly laminated, some oxidation staining, trace gypsum crystals	■	RC2					13.8	% Dispersion = 6%	
5		...5.2 m - 60° fracture	■	RC3					24.2	2.7 m - Dispersivity Classification = ND3	773
		...5.4 m - 74° fracture	■	RC4					24.2	% Dispersion = 5%	
6		...6.1 m - 79° fracture	■	RC5						3.28 m - Rock in SPT - 50 blows for 5"	
		...6.2 m - 50 mm of core loss	■	RC6						3.7 m - Dispersivity Classification = D2	772
		...6.2 m - 190 mm of slough	■	RC7						% Dispersion = 4%	
		...6.5 m - becoming slightly weathered	■	RC8						4.3 m - LL = 60.4%	771
		...6.6 m - 75° fracture	■	RC9						PL = 22.8%	
		...7.3 m - 79° fracture	■	RC10						PI = 37.6%	
		...7.5 m - 82° fracture	■	RC11						4.3 m - Gravel = 0.3%	770
		...7.6 m - bedding fracture	■	RC12						4.3 m - Sand = 38.6%	
		...7.9 m - 81° fracture	■	RC13						Silt = 22.5%	769
		...8.2 m - 81° fracture	■	RC14						Clay = 38.6%	
		...8.5 m - 43° fracture	■	RC15						4.3 m - Dispersivity Classification = D2	768
		...9.0 m - some crumbled core	■	RC16						% Dispersion = 23%	
		...9.1 m - 42° fracture	■	RC17							
		...9.4 m - vertical fractures	■	RC18						9.23 m - Run 4 - Used ~2000 litres of water	

Notes:

Target depth of 10 m achieved. Packer test completed after coring. Corehole completed as a well, refer to diagram.

Monitoring Installation Pipe Work		
Depth Top	Depth Bottom	Pipe Type
0.00	9.10	PLAIN
0.00	3.40	PLAIN

Logged By: C. Tams

Reviewed By: C. Braun



a division of Englobe

COREHOLE No : **23CH709**

PAGE 2 OF 2

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 06/26/2023 COMPLETED 06/26/2023 GROUND ELEVATION 777.39m N 5611051.400 E 415415.900
DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH _____
CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED _____

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
									● MOISTURE CONTENT └ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
11		...9.6 m - becoming unweathered, very weak, unoxidized										767
		...9.9 m - 41° fracture										
		...10.6 m - some crumbled core										
12												766
13												765
14												764
15												763
16												762
17												761
18												760
19												759
												758

Notes:

Target depth of 10 m achieved. Packer test completed after coring. Corehole completed as a well, refer to diagram.

Monitoring Installation Pipe Work		
Depth Top	Depth Bottom	Pipe Type
0.00	9.10	PLAIN
0.00	3.40	PLAIN

Logged By: C. Tams

Reviewed By: C. Braun



a division of Englobe

COREHOLE No : **23CH709B**

PAGE 1 OF 3

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 06/27/2023 COMPLETED 06/27/2023 GROUND ELEVATION 777.00m N 5611051.600 E 415415.900
DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH _____
CORING TYPE Other DIAMETER (mm) _____ DATE GROUND WATER RECORDED _____

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument Elevation (m)
1											776
2											775
3											774
4											773
5											772
6											771
7											770
8											769
9											768

Notes:

100 mm PVC well installed to 25 m for pumping test.

Monitoring Installation Pipe Work		
Depth Top	Depth Bottom	Pipe Type
0.00	22.00	PLAIN
22.00	25.00	SLOTTED

Logged By: C. Tams

Reviewed By: C. Braun



a division of Englobe

COREHOLE No : **23CH709B**

PAGE 2 OF 3

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 06/27/2023 COMPLETED 06/27/2023 GROUND ELEVATION 777.00m N 5611051.600 E 415415.900
DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH _____
CORING TYPE Other DIAMETER (mm) _____ DATE GROUND WATER RECORDED _____

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
11									● MOISTURE CONTENT └ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			766
12												765
13												764
14												763
15												762
16												761
17												760
18												759
19												758

Notes:

100 mm PVC well installed to 25 m for pumping test.

Monitoring Installation Pipe Work		
Depth Top	Depth Bottom	Pipe Type
0.00	22.00	PLAIN
22.00	25.00	SLOTTED

Logged By: C. Tams

Reviewed By: C. Braun



a division of Englobe

COREHOLE No : **23CH709B**

PAGE 3 OF 3

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 06/27/2023 COMPLETED 06/27/2023 GROUND ELEVATION 777.00m N 5611051.600 E 415415.900
DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH _____
CORING TYPE Other DIAMETER (mm) _____ DATE GROUND WATER RECORDED _____

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
21									● MOISTURE CONTENT ┌─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			756
22												755
23												754
24												753
25												752
26												751
27												750
28												749
29												748

Notes:

100 mm PVC well installed to 25 m for pumping test.

Monitoring Installation Pipe Work		
Depth Top	Depth Bottom	Pipe Type
0.00	22.00	PLAIN
22.00	25.00	SLOTTED

Logged By: C. Tams

Reviewed By: C. Braun



a division of Englobe

COREHOLE No : **23CH711**

PAGE 1 OF 2

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 06/13/2023 COMPLETED 06/13/2023 GROUND ELEVATION 771.69m N 5610068.500 E 416031.000
DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH
CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument Elevation (m)
									● MOISTURE CONTENT ┌─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)		
1		TOPSOIL, silty, sandy, some clay, trace gravel, dry, firm, low plastic, light brown, trace root hairs	■	AU1							771
		CLAY AND SILT, silty, dry, firm, low plastic, light brown	■	AU2							
2		CLAY TILL, silty, sandy, some fine gravel, damp, stiff, medium plastic, brown, trace oxidation staining, trace white precipitates	▲	SPT1					3.8 3.8	1.2 m - Gravel = 55.7% 1.2 m - Sand = 42.7%	770
		...1.5 m - becoming moist, trace gypsum crystals	■	AU3						Silt = 1.0% Clay = 0.6%	
		...1.8 m - becoming some completely weathered shale inclusions	■	AU4					17.7 17.7	1.2 m - Dispersivity Classification = ND4 % Dispersion = 33%	769
3		SHALE (Weathered), clayey, silty, completely weathered, dark brown to grey mottling, damp, high plastic, extremely weak, very closely spaced fractures, thinly laminated, some oxidation staining, trace gypsum crystals	▲	SPT2	3.20 - 4.72	1	12 69 22	20	21.5 21.5	2.1 m - Sand = 95.1%	768
4		...3.2 m - 470 mm of core loss								Silt = 2.7% Clay = 2.2%	
5		...4.7 m - 410 mm of core loss								2.1 m - Dispersivity Classification = ND4 % Dispersion = 86%	767
		...6.2 m - 50 mm of core loss								2.7 m - Dispersivity Classification = ND3 % Dispersion = 42%	
		...6.3 m - becoming highly weathered								3.5 m - Switched to rotary coring.	766
6		...6.6 m - 69° fracture									
		...6.9 m - 51° fracture									765
7		...7.0 m - becoming closely spaced fractures									
		...7.6 m - 55° fracture									764
		...7.9 m - horizontal fracture									
8		SHALE, clayey, silty, slightly weathered, grey, damp, high plastic, extremely weak, moderately widely spaced fractures, thinly laminated, trace oxidation staining, trace gypsum crystals	■	RC1	6.24 - 7.76	3	72 97 84	7			763
		...8.1 m - 72° fracture									
		...8.4 m - 57° fracture									762
		...9.0 m - becoming unoxidized									
9		...9.2 m - 61° fracture									
		...9.3 m - mechanically fractured run									
		...9.4 m - 62° fracture									
		...9.6 m - 52° fracture									
		...9.7 m - 30 mm of crumbled core									
		...9.9 m - 53° fracture									

Notes:

Target depth of 10 m achieved. Packer test completed after coring. Corehole completed as a well, refer to diagram.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type
0.00	3.50	PLAIN
0.00	8.50	PLAIN

Logged By: C. Tams

Reviewed By: C. Braun



a division of Englobe

COREHOLE No : **23CH711**

PAGE 2 OF 2

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 06/13/2023 COMPLETED 06/13/2023 GROUND ELEVATION 771.69m N 5610068.500 E 416031.000
DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH _____
CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED _____

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
11		...10.6 m - 170 mm of core loss										761
12												760
13												759
14												758
15												757
16												756
17												755
18												754
19												753
												752

Notes:

Target depth of 10 m achieved. Packer test completed after coring. Corehole completed as a well, refer to diagram.

Monitoring Installation Pipe Work		
Depth Top	Depth Bottom	Pipe Type
0.00	3.50	PLAIN
0.00	8.50	PLAIN

Logged By: C. Tams

Reviewed By: C. Braun



a division of Englobe

COREHOLE No : **23TH02**

PAGE 1 OF 2

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 08/08/2023 COMPLETED 08/08/2023 GROUND ELEVATION 779.80m N 5612565.900 E 414787.100
 DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH _____
 CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED _____

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
1		TOPSOIL, silty, sandy, some clay, damp, firm, low plastic, brown, trace root hairs		ST1								779
		CLAY TILL, silty, sandy, trace fine gravel, damp, stiff, medium plastic, brown, trace oxide specks, trace white precipitates		ST2								778
2		...1.0 m - becoming trace to some gravel up to 40 mm		ST3								777
		...1.5 m - becoming dark brown to grey mottling, some oxidation staining, trace coal specks		AU1								776
3		...3.0 m - becoming some completely weathered shale inclusions		AU2								775
				AU3								774
4		SHALE (Weathered), clayey, silty, trace sand, highly weathered, dark grey, damp, high plastic, extremely weak, blocky, moderately widely spaced fractures, thinly laminated, trace oxidation staining, trace gypsum crystals		AU4	4.45 - 5.97	1	91 97 93	2			4.45 m - Switched from 6" SSA to HQ3 Rotary Coring	773
5		...4.4 m - 40 mm of core loss		RC1								772
		...4.7 m - 84° fracture										771
6		...5.8 m - 200 mm of strong calcified shale		RC2	5.97 - 7.49	2	83 100 95	3				770
7		...6.2 m - becoming moderately weathered										
		...6.7 m - 69° fracture										
8		...7.5 m - 30 mm of core loss		RC3	7.49 - 9.01	3	93 98 96	3				
		...7.8 m - becoming slightly weathered, very weak, trace oxidation staining										
9		...8.1 m - 2 mm gypsum lense										
		...8.3 m - 83° fracture										
		SHALE, clayey, silty, unweathered, grey, damp, high plastic, very weak, moderately widely spaced fractures, thinly laminated		RC4	9.01 - 10.53	4	92 100 92	2				
		...9.0 m - mechanically fractured run										
		...9.3 m - 56° fracture										
		...9.7 m - 73° fracture										

Notes:

Target depth of 15 m achieved. Corehole backfilled with bentonite chips. Packer test completed after coring.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type

Logged By: C. Tams

Reviewed By: C. Braun



a division of Englobe

COREHOLE No : **23TH02**

PAGE 2 OF 2

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 08/08/2023 COMPLETED 08/08/2023 GROUND ELEVATION 779.80m N 5612565.900 E 414787.100
DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH _____
CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED _____

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
									● MOISTURE CONTENT — PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
11		...10.3 m - some crumbled core ...10.5 m - 60 mm of core loss		RC5	10.53 - 12.05	5	91 96 93	2				769
12		...11.5 m - 57° fracture ...11.7 m - 59° fracture ...11.8 m - shell fragments with organic inclusions		RC6	12.05 - 13.57	6	100 100 100	1				768
13		...11.8 m - becoming some moderately thick sandstone layers ...12.0 m - becoming weak ...12.2 m - 120 mm moderately strong layer										767
14		...13.0 m - bedding fracture ...13.1 m - trace shell fragments		RC7	13.57 - 15.09	7	109 109 109	2				766
15		...14.2 m - 74° fracture ...14.3 m - becoming some bentonitic inclusions ...14.6 m - 50 mm of moderately strong calcified shale ...14.7 m - becoming moderately strong										765
16												764
17												763
18												762
19												761
												760

Notes:

Target depth of 15 m achieved. Corehole backfilled with bentonite chips. Packer test completed after coring.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type

Logged By: C. Tams

Reviewed By: C. Braun



a division of Englobe

COREHOLE No : **23TH04**

PAGE 1 OF 2

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 08/10/2023 COMPLETED 08/10/2023 GROUND ELEVATION 770.73m N 5612438.300 E 416352.100
 DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH _____
 CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED _____

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/Instrument	Elevation (m)
									● MOISTURE CONTENT ┌─ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
1		CLAY FILL, silty, sandy, damp, stiff, low plastic, brown	■	AU1						0.5 m - Couldn't push Shelby Tube due to loose sloughing fill		770
		CLAY TILL, silty, some sand, trace fine gravel, damp, stiff, medium plastic, dark brown, trace oxide specks, trace white precipitates	■	ST1						1 m - Consolidation Index: 0.24		769
2		SHALE (Weathered), clayey, silty, some sand, residual soil, dark brown to grey mottling, damp, high plastic, extremely weak to hard soil, ground up	■	ST2						Expansion Index: 0.08		768
3		...2.9 m - becoming completely weathered, blocky, trace oxidation staining, trace white precipitates	■	AU2								767
4			■	AU3								766
5		...4.6 m - 80 mm of core loss	■	AU4								765
		...4.7 m - 220 mm of slough	■	RC1	4.60 - 6.12	1	31 95 72	5		4.6 m - Switched from 6" SSA to HQ3 Rotary Coring		764
6		...4.9 m - becoming highly weathered, closely spaced fractures, extremely weak, some oxidation staining, trace gypsum crystals	■	RC2	6.12 - 7.64	2	92 100 92	3				763
7			■	RC3	7.64 - 9.16	3	51 84 58	3				762
8		...7.7 m - 260 mm of mechanical rubble	■	RC4	9.16 - 10.68	4	71 91 79	2				761
9		...8.3 m - 72° fracture										
		...8.5 m - becoming moderately weathered, moderately widely spaced fractures										
		...8.9 m - 250 mm of core loss										
		...9.2 m - 140 mm of core loss										
		...9.3 m - 200 mm of slough										
		...9.5 m - becoming moderately weathered, very weak										

Notes:

Target depth of 19 m achieved. Corehole backfilled with bentonite chips Packer test completed after coring.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type

Logged By: C. Tams

Reviewed By: C. Braun



a division of Englobe

COREHOLE No : **23TH04**

PAGE 2 OF 2

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 08/10/2023 COMPLETED 08/10/2023 GROUND ELEVATION 770.73m N 5612438.300 E 416352.100
DRILLING CONTRACTOR Val's Drilling GROUND WATER ELEVATION / DEPTH _____
CORING TYPE HQ3 DIAMETER (mm) 61 DATE GROUND WATER RECORDED _____

Depth (m)	SOIL SYMBOL	Soil Description	Sample Type	Sample Number	Run Depth (m)	Run Number	RQD TCR SCR	Fracture Index (#/m)	Moisture Content (%)	REMARKS	Standpipe/ Instrument	Elevation (m)
									● MOISTURE CONTENT └ PLASTIC - LIQUID ■ SPT (N) Blows/300 mm 10 20 30 40 50 100 150 200 ▲ POCKET PEN (kPa)			
11		SHALE, clayey, silty, unweathered, grey, damp, high plastic, very weak, moderately widely spaced fractures, thinly laminated		RC5	10.68 - 12.20	5	89 96 91	2				760
12		...11.3 m - 64° fracture ...11.4 m - some mechanical rubble ...11.7 m - 60° fracture ...12.0 m - some mechanical rubble ...12.2 m - some mechanical rubble		RC6	12.20 - 13.72	6	85 100 89	2				759
13		...12.6 m - 76° fracture ...13.2 m - 73° fracture		RC7	13.72 - 15.24	7	100 109 100	1				758
14		...14.4 m - 37° fracture		RC8	15.24 - 16.76	8	100 100 100	1				757
15		...15.6 m - becoming weak		RC9	16.76 - 18.28	9	95 95 95	2				756
16		...16.2 m - 130 mm of strong calcified shale ...16.6 m - bedding fracture ...16.8 m - 80 mm of core loss ...16.9 m - 80 mm of bentonitic clay ...17.4 m - 76° fracture		RC10	18.28 - 19.80	10	89 94 89	1				755
17		...18.0 m - 66° fracture with shell fragments ...18.3 m - 90 mm of core loss										754
18		...19.0 m - 70° fracture ...19.6 m - 38° fracture										753
19												752
												751

Notes:

Target depth of 19 m achieved. Corehole backfilled with bentonite chips Packer test completed after coring.

Monitoring Installation Pipe Work

Depth Top	Depth Bottom	Pipe Type

Logged By: C. Tams

Reviewed By: C. Braun