ALBERTA TRANSPORTATION
NORTH CENTRAL REGION – ATHABASCA AREA
INSTRUMENTATION MONITORING RESULTS

FALL 2020

SECTION C

SITE NC006-1: MITSUE RECREATION AREA

1. OBSERVATIONS

1.1 Field Program and Instrumentation Status

One slope inclinometer (SI-1) and two standpipe piezometers (TH05-3 and TH05-4) were read at the Mitsue Recreation Area site on September 29, 2020 by Mr. Niraj Regmi, G.I.T. and Mr. Long Le, both of Thurber Engineering Ltd.

The SI was read using an RST probe with a 2-ft. wheelbase and a RST hand-held readout. Inclinometer reading depths were defined as per cable markings with respect to the top of the inclinometer casing. The standpipe piezometers were read using a DGSI dipmeter.

2. INTERPRETATION

2.1 General

SI plots for A and B directions are presented in Section D and are summarized below. Where movement has been recorded, the resultant plot (X direction) and rate of movement have also been provided. Standpipe piezometer results are also attached in Section D.

2.2 Zones of Movement

Zones of new movement were not observed in SI-1 since the last set of readings in the spring of 2020.

Table NC006-1 provides a historical account of the total movement, the depth of movement and the maximum rate of movement that has occurred at this site since the initialization of the slope inclinometers.

2.3 Interpretation of Monitoring Results

Slope inclinometer SI1 showed no discernible movement over 0.7 m to 5.0 m depth since the spring of 2020 readings.

The current groundwater levels below existing ground surface in standpipe piezometers TH05-3 and TH05-4 are 12.34 m and 6.60 m, respectively. The groundwater level decreased in TH05-3 and TH05-4 by 0.38 m and 1.06 m, respectively, since the spring of 2020.

3. RECOMMENDATIONS

3.1 Future Work

The instruments should be read again in the spring of 2021.

3.2 Instrumentation Repairs

No instrument repairs are recommended at this time.

TABLE NC006-1-1
FALL 2020 – MITSUE RECREATION AREA
SLOPE INCLINOMETER INSTRUMENTATION READING SUMMARY

Date Monitored: September 29, 2020

INSTRUMENT #	DATE INITIALIZED	TOTAL CUMULATIVE RESULTANT MOVEMENT AND DEPTH OF MOVEMENT TO DATE (mm)	MAXIMUM RATE OF MOVEMENT (mm/yr)	CURRENT STATUS	DATE OF PREVIOUS READING	INCREMENTAL MOVEMENT SINCE PREVIOUS READING (mm)	CURRENT RATE OF MOVEMENT (mm/yr)	CHANGE IN RATE OF MOVEMENT SINCE PREVIOUS READING (mm/yr)
SI1	*May 23, 1997*	131.4 over 0.7 m to 5.0 m depth in 4° direction	32.9 between May and Oct. 2004	Operational	June 1, 2020	No discernible movement	N/A	-4.7
SI2	*Feb. 18, 1993*	*71 at 3 m depth in 7^{o} direction*	*19 between May and Oct. 1999*	*Damaged*	*May 16, 2000*	*N/A*	*N/A*	*N/A*
SI3	*Dec. 16, 1993*	*115.3 over 7.9 m to 9.8 m depth in 357^{0} direction*	*58.9 between May and Oct. 2004*	*Sheared at 9.6 mBGS*	*September 28, 2012*	*N/A*	*N/A*	*N/A*

Drawing 13357-NC006-1 in section D provides a sketch of the approximate location of the monitoring instrumentation for this site.

TABLE NC006-1-2
FALL 2020 – MITSUE RECREATION AREA
PNEUMATIC PIEZOMETER INSTRUMENTATION READING SUMMARY

Date Monitored: September 29, 2020

INSTRUMENT #	DATE INITIALIZED	TIP DEPTH (m)	GROUND ELEV. (m)	CURRENT STATUS	HIGHEST MEASURED PORE PRESSURE (m)	MEASURED PORE PRESSURE (kPa)	CHANGE IN WATER LEVEL SINCE PREVIOUS READING (m)
PN1	*Jan. 27, 1993*	*Unknown*	*-*	*Damaged*	*6.2 kPa on May 24, 1999*	*N/A*	*N/A*
PN2	*Jan. 27, 1993*	*Unknown*	*-*	*Damaged*	*9.0 kPa on Jul. 29, 1993*	*N/A*	*N/A*

Drawing 13357-NC006-1 in section D provides a sketch of the approximate location of the monitoring instrumentation for this site.

TABLE NC006-1-3
FALL 2020 – MITSUE RECREATION AREA
STANDPIPE PIEZOMETER INSTRUMENTATION READING SUMMARY

Date Monitored: September 29, 2020

INSTRUMENT SP #	DATE INITIALIZED	STICK-UP (mAGS)	GROUND ELEV. (m)	CURRENT STATUS	MAXIMUM WATER LEVEL (mBGS)	MEASURED WATER LEVEL (mBGS)	PREVIOUS READING (mBGS)	CHANGE IN WATER LEVEL SINCE PREVIOUS READING (m)
TH05-1	2005	-0.06	N/A	Active, covered by chip seal	16.26 on September 28, 2012	NOT READ*	NOT READ*	N/A
TH05-2	*2005*	*0.94*	*N/A*	*Destroyed*	*12.11 on September 20, 2011*	*N/A*	*N/A*	*N/A*
TH05-3	2005	1.07	N/A	Active	11.89 on September 20, 2011	12.34	11.96	-0.38
TH05-4	2005	0.75	N/A	Active	3.54 on Oct. 8, 2008	6.60	5.54	-1.06

Drawing 13357-NC006-1 in section D provides a sketch of the approximate location of the monitoring instrumentation for this site.

Note: * TH05-1 was not read due to the instrument being covered by chip seal.

ALBERTA TRANSPORTATION
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INSTRUMENTATION MONITORING RESULTS

FALL 2020

SECTION D
DATA PRESENTATION

SITE NC006-1: MITSUE RECREATION AREA

ALBERTA TRANSPORTATION
NORTH CENTRAL REGION - ATHABASCA AREA
INSTRUMENTATION MONITORING FIELD SUMMARY (NC006-1)
FALL 2020

Location:	Mitsue Recreation Area (HWY 2:26 C1 47.329)	**Readout:**	DGSI Dipmeter 38473
File Number:	13357	**Casing Diameter:**	3.34"
Probe:	RST Set 8R	**Temp:**	17
Cable:	RST Set 8R	**Read by:**	NKR/LL

SLOPE INCLINOMETER (SI) READINGS

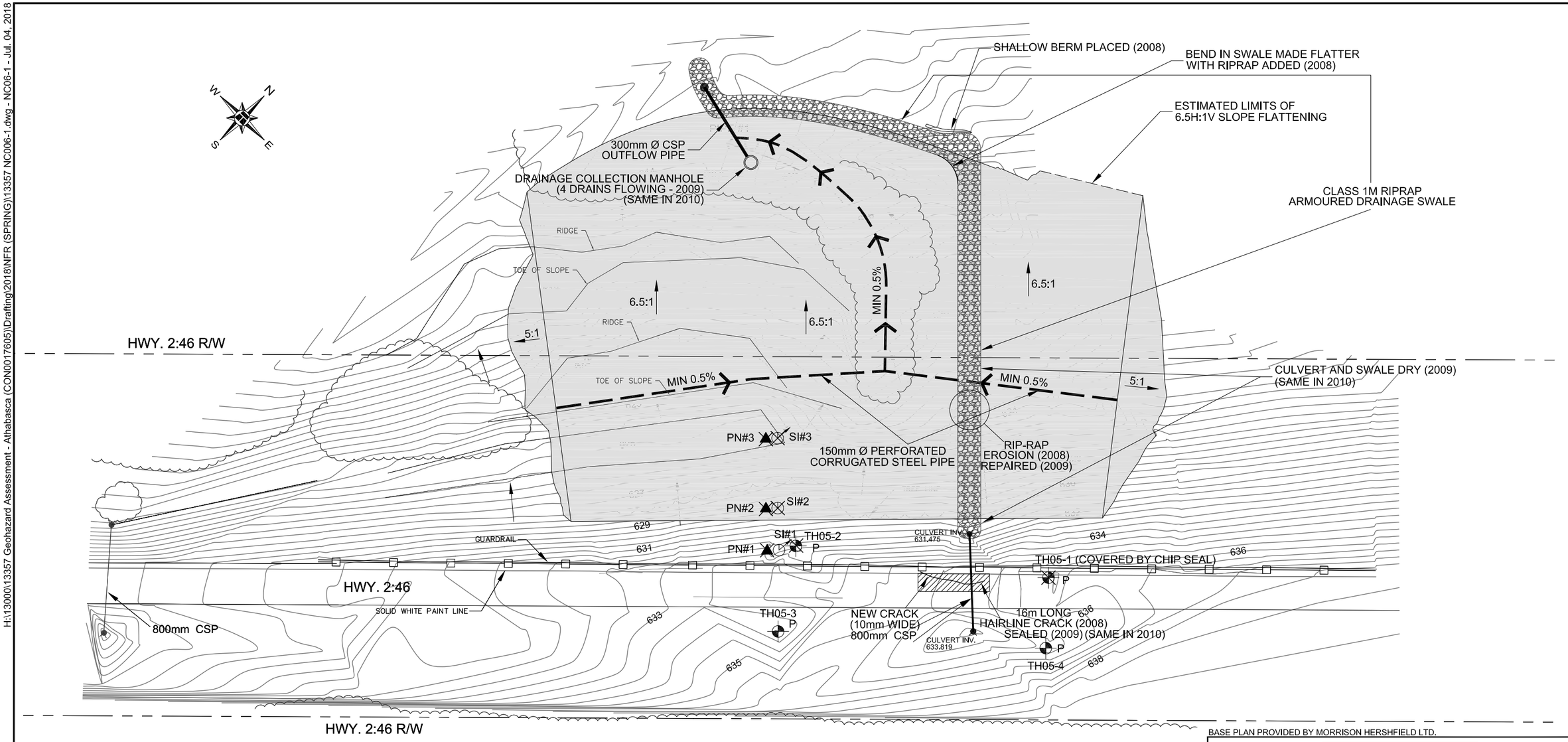
SI#	GPS Location (UTM 11)		Date	Stickup (m)	Depth from top of **Casing** (ft)	Azimuth of A+ Groove degree	Current Bottom Depth Readings				Probe/ Reel #	Remarks
	Easting	Northing					A+	A-	B+	B-		
SI-1	651665	6122215	29-Sep-20	0.5	99 to 5	11	98	-76	-982	985	8R/8R	

STANDPIPE PIEZOMETER (SP) READINGS

SP#	GPS Location (UTM 11)		Date	Stick-up (m)	Reading below top of casing (m)	Bottom Pipe Depth (below top of casing (m)
	Easting	Northing				
TH05-3	651666	6122193	29-Sep-20	1.07	13.41	15.84
TH05-4	651741	6122199	29-Sep-20	0.75	7.35	15.40

INSPECTOR REPORT

H:\13000\13357 Geohazard Assessment - Athabasca (CON0017605)\Drafting\2018\NFR (SPRING)\13357 NC006-1.dwg - NC06-1 - Jul. 04, 2018



BASE PLAN PROVIDED BY MORRISON HERSHFIELD LTD.

LEGEND

- TEST HOLE LOCATIONS (2005)
- P — STANDPIPE PIEZOMETER (2005)
- NON-OPERATIONAL INSTRUMENT
- OPERATIONAL SLOPE INCLINOMETER SHOWING DIRECTION OF SLOPE MOVEMENT
- SUBDRAIN ALIGNMENT
- RIPRAP ARMOURED CHANNEL
- EXISTING PIPES (HORIZONTAL DRAINS)

0 10 20 30 40 50 60m

SCALE 1:1000

Alberta

NORTH CENTRAL REGION - ATHABASCA AREA

NC006-1: MITSUE LAKE
SITE PLAN SHOWING INSTRUMENT LOCATIONS

DWG No. 13357-NC006-1

DRAWN BY	ML
DESIGNED BY	NFR
APPROVED BY	TSA
SCALE	1:1000
DATE	JUNE 2018
FILE No.	13357

THURBER ENGINEERING LTD.