
To:	Amy Driessen Alberta Transportation	From:	Leslie Cho and Carrie Murray Stantec Consulting Ltd.
File:	123315222	Date:	June 13, 2022

Reference: North Central Region, Edson/Stony Plain, Site NC048 – Highway 40:30 Fred Creek Slide, Spring 2022 Instrumentation Monitoring Report

1.0 OBSERVATIONS

1.1 FIELD PROGRAM AND INSTRUMENTATION STATUS

The Spring 2022 reading cycle consisted of instrument readings for six pneumatic piezometers (PZ1, PZ2, PZ4, PN5, PN6-1, and PN6-2). **Figure 1** attached provides a schematic of the site. The instruments were read by Mahendran Senthoooran, M.Eng., EIT and Akintola Fakinlede, M.Sc., Engineering Technologist on May 3, 2022.

Slope inclinometer SI1 and the pneumatic piezometer PZ7 were found damaged during the Spring 2022 reading cycle.

The pneumatic piezometers (PN) were read with an RST Instruments C-109 Pneumatic readout box.

GPS coordinates of all instruments were obtained using a Garmin eTrex 10 handheld GPS unit.

Remedial measures at this site were undertaken in 2016 and comprised of grade widening, a granular berm construction with wick drains as well as culvert replacement.

2.0 INSTRUMENTATION READINGS

2.1 GENERAL

PN results are summarized in **Table NC048-1** and in the following sections with summary plots attached.

2.2 MONITORING RESULTS

2.2.1 Piezometers

Overall, the piezometric levels have remained relatively stable since completion of berm and wick drain construction in 2016. During the current reading cycle, most of the piezometric readings show little change ranging from an increase of 0.1 m to decrease of 0.2 m compared to the Spring 2021 reading cycle.

3.0 RECOMMENDATIONS

3.1 FUTURE WORK

It is recommended that the next reading cycle take place in Spring 2023.

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3.2 INSTRUMENTATION REPAIRS

SI1 was found blocked at about 1 m below ground surface (bgs) and may be potentially unrepairable without completing minor excavations around the SI, cutting the SI casing to clear the blockage, and splicing with new casing. An attempt to repair PZ7 can be made by replacing the tubing if requested.

Consideration for replacement slope inclinometers should be given for SI2 and SI3

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Table NC048-1: Spring 2022 Pneumatic Piezometer Reading Summary

Instrument Name	Date Initialized	Coordinates ⁽¹⁾ (UTM 11U, NAD1983) (m)		Tip Depth (mbgs)	Tip Elevation (m aMSL) ⁽²⁾	Current Status	Maximum Piezometric Depth (mbgs) ⁽³⁾	Measured Pore Pressure (kPa)	Measured Piezometric Depth (mbgs) (Elevation, m)	Change in Piezometric Level Since Previous Reading (m)
		Northing	Easting							
PZ1 (30041)	Oct. 6, 2006	5939982	428401	5.5	1358.5	Operational	- 2.6 (May 2019)	74.5	-2.1 (1366.1)	-0.2
PZ2 (30612)	May 23, 2001	5940024	428404	7.2	1358.9	Operational	- 5.3 (May 2016)	74.6	-0.4 (1367.2)	0.1
PZ4 (30577)	Mar 23, 2014	5940058	428391	4.3	1364.1	Operational	- 0.7 (June 2012)	39.0	0.3 (1368.1)	No Change
PN5 (36784)	April 30, 2016	5940014	428346	5.2	1363.1	Operational	- 2.0 (May 2016)	54.4	-0.4 (1368.7)	0.1
PN6-1 (36783)	April 30, 2016	5940028	428364	5.2	1363.8	Operational	- 0.7 (May 2019)	45.4	0.6 (1368.4)	-0.2
PN6-2 (36782)	April 30, 2016	5940028	428364	7.6	1361.4	Operational	- 0.4 (May 2019)	66.5	0.8 (1368.2)	No Change
PN7 (36785)	April 30, 2016	5940037	428429	6.1	1361.1	Non-operational	0 (Oct. 2016)	-	-	-

Note:
 (1) Updated May 3, 2022 with approximate accuracy of ± 3 m
 (2) aMSL = Above Mean Sea Level
 (3) mbgs = meters below ground surface

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4.0 CLOSING

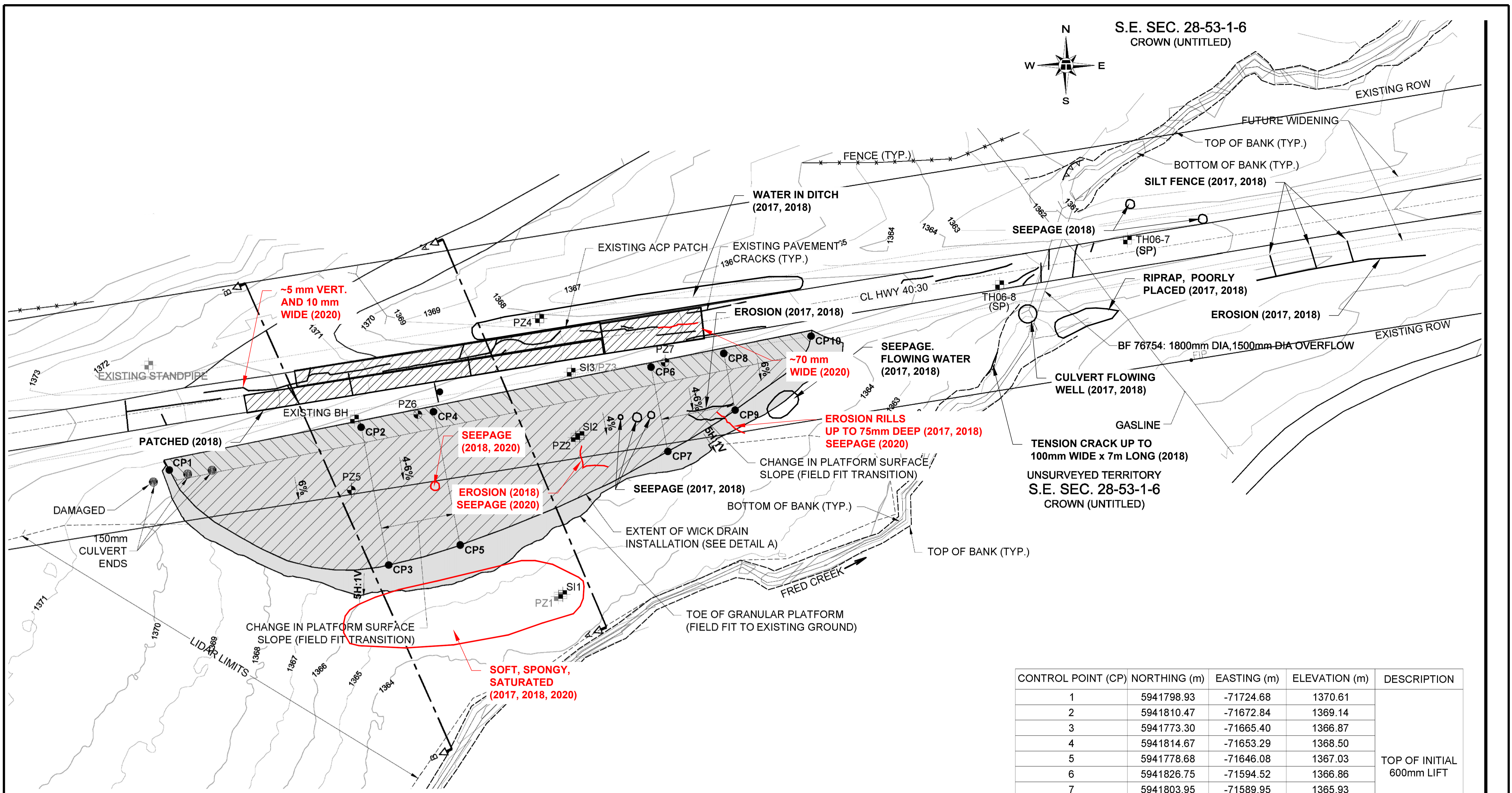
We trust this instrumentation report meets your requirements. If you have any questions, please do not hesitate to contact the undersigned.

Stantec Consulting Ltd.

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Attachment: Figure 1 – Site Plan
Standpipe Piezometer Level Depth vs Time Plot
Standpipe Piezometric Elevation vs Time Plot
NC048 Spring 2022 Damaged Instruments Photo



CONTROL POINT (CP)	NORTHING (m)	EASTING (m)	ELEVATION (m)	DESCRIPTION
1	5941798.93	-71724.68	1370.61	TOP OF INITIAL 600mm LIFT
2	5941810.47	-71672.84	1369.14	
3	5941773.30	-71665.40	1368.87	
4	5941814.67	-71653.29	1368.50	
5	5941778.68	-71646.08	1367.03	
6	5941826.75	-71594.52	1366.86	
7	5941803.95	-71589.95	1365.93	
8	5941830.43	-71574.87	1366.42	
9	5941815.14	-71571.79	1365.48	
10	5941835.11	-71551.11	1365.51	

- LEGEND**
- APPROXIMATE EXISTING INSTRUMENT LOCATION
 - ⊕ DAMAGED INSTRUMENT
 - TH TEST HOLE
 - SP STANDPIPE PIEZOMETER
 - PZ PIEZOMETER (PNEUMATIC)
 - SI SLOPE INCLINOMETER
 - ⊕ NEW PNEUMATIC PIEZOMETER LOCATION
 - CP1 CONTROL POINT
 - ▨ WICK DRAINS INSTALLED AT 1.5m TRIANGULAR SPACING
 - ▨ WICK DRAINS INSTALLED AT 1.0m TRIANGULAR SPACING

- NOTES**
1. FEATURE LOCATIONS ARE APPROXIMATE.
 2. 1m CONTOURS FROM ARA SURVEY AND LIDAR PROVIDED BY ALBERTA TRANSPORTATION.
 3. GRADE WIDENING NOT SHOWN FOR CLARITY.
 4. PREVIOUS OBSERVATIONS SHOWN IN BLACK
 5. 2020 OBSERVATIONS SHOWN IN RED

REFERENCE
THURBER ENGINEERING LTD. PROJECT No.15-16-324, PLAN No. RD-19126-p
DATE: JAN 2015 (BASE PLAN PROVIDED BY ARA ENGINEERING LTD., 2007)

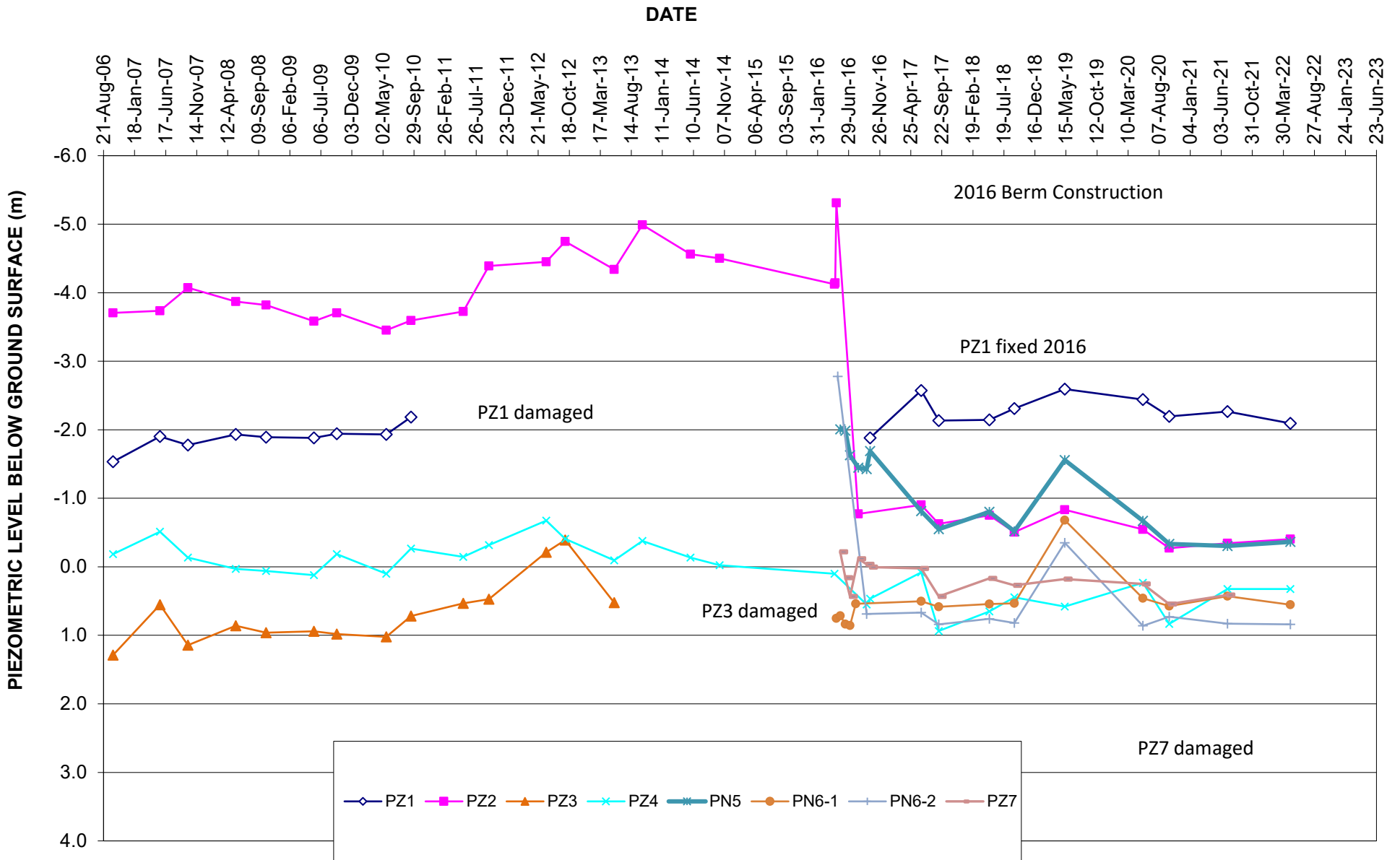
STANTEC CONSULTING
 10160-112 STREET
 EDMONTON ALBERTA CANADA

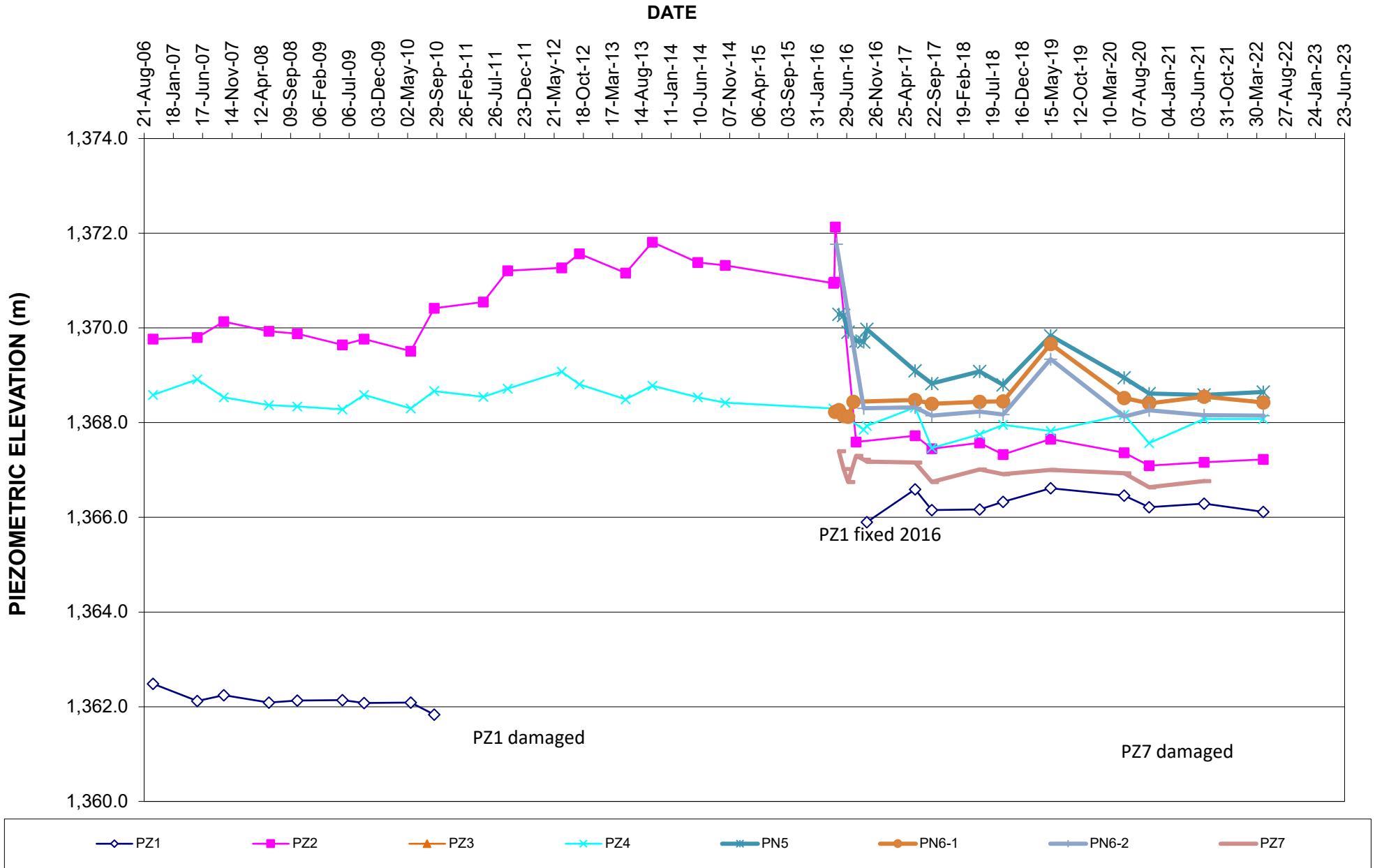
Stantec

ALBERTA TRANSPORTATION
 GEOHAZARD MONITORING PROGRAM
 NC48 HWY 40:30, km 48.8 - FRED CREEK
 SITE PLAN

DRAWN MK	CHECK XL	APPROVE LC
DATE 19 JUN. 2020	SCALE AS SHOWN	PROJECT # 123315222

FIGURE -1





NC048 Spring 2022 Damaged Instruments Photo



PZ7 Piezometer tubing was damaged.