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Memo

To:	Amy Driessen Transportation and Economic Corridors	From:	Leslie Cho and Xiteng Liu Stantec Consulting Ltd.
File:	123315222	Date:	October 18, 2024

Reference: North Central Region, Stony Plain, Site NC057 - Highway 624:02, Fall 2024 Instrumentation Monitoring Report

1.0 OBSERVATIONS

1.1 FIELD PROGRAM AND INSTRUMENTATION STATUS

The Fall 2024 reading cycle consisted of instrument readings of two vibrating wire piezometers (VW17-02a and VW17-02b) and one standpipe piezometer (SP17-06). An instrumentation location plan is provided in the attached Figure 1. The instruments were read by Benjamin Lou, EIT and Olawale Odusi, Geotechnical Technologist on September 24, 2024.

The vibrating wire piezometers (VW) were read with a Slope Indicator VW Data Recorder 52613500 readout box. Standpipe piezometers (SP) were read/attempted to be read with a Heron Instruments water tape.

GPS coordinates of all instruments were obtained using a Garmin GPS map 60Cx handheld GPS unit.

2.0 INSTRUMENTATION READINGS

2.1 GENERAL

There are no slope inclinometers installed at this site.

The standpipe and vibrating wire piezometers readings are summarized in **Table NC57-1**.

2.2 MONITORING RESULTS

2.2.1 Piezometers

The water levels in most of the piezometers remained relatively steady since the first reading in December 2017.

Compared with the water level measured during the Spring 2024 reading cycle, the water level in both VW17-02a and VW17-02b showed an increase of less than 0.1 m during the Fall 2024 reading cycle. The water level in VW17-02a is about 0.4 m above ground surface (artesian) and the water level in VW17-02b is about 4.9 m below ground surface.

SP17-06 showed an increase in water level by approximately 0.1 m since the previous reading in Spring 2024 and indicated a piezometric level 0.4 m above ground surface.

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3.0 RECOMMENDATIONS

3.1 FUTURE WORK

It is recommended that all instruments are read in Spring 2025.

3.2 INSTRUMENT REPAIR

SP17-01, SP07-03, and SP17-05 were blocked at 0.2 m, 0.0 m, and 0.8 m, respectively during the Spring 2021 reading cycle. The standpipes could potentially be fixed by removing the protective casing and cutting the standpipes below the blockage depth. An attempt to remove the blockage can be carried out upon approval by Transportation and Economic Corridors.

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Table NC57-1: Fall 2024 Standpipe and Vibrating Wire Piezometer Reading Summary

INSTRUMENT NAME	DATE INITIALIZED	GROUND ELEVATION (m aMSL) (1)	COORDINATES (UTM 11U, NAD1983) (m)		PIEZOMETER TIP ELEVATION OR SCREEN ELEVATION (m aMSL)	CURRENT STATUS	MAXIMUM PIEZOMETRIC ELEVATION (m aMSL)	MEASURED PIEZOMETRIC ELEVATION (m aMSL)	PREVIOUS PIEZOMETRIC ELEVATION (Fall 2023) (m aMSL)	CHANGE IN WATER LEVEL SINCE PREVIOUS READING (m)
			NORTHING	EASTING						
VW17-02a (1702901)	Dec 6, 2017	810.6	5915081	637128	807.5	Operational	811.0 May 2019	811.0	811.0	<0.1
VW17-02b (1702902)	Dec 6, 2017	810.6	5915081	637128	803.7	Operational	805.6 Sept. 2019	805.5	805.5	<0.1
VW17-04 (1702903)	Dec 6, 2017	811.2	5915064	637090	808.5	Damaged	n/a	Damaged or dry since 2017. Stick-up found damaged in 2019.		
SP17-01	Dec 6, 2017	809	5915085	637077	808.8 – 805.8	Non-Operational	811.1 Sep. 2019	Blocked at 0.2 m since Spring 2021		
SP17-03	Dec 6, 2017	807	5915090	637162	804.3 – 801.3	Non-Operational	809.1 Dec. 2017	Blocked at ground surface in Fall 2021		
SP17-05	Dec 6, 2017	809	5915061	637127	806.8 – 803.8	Non-Operational	809.9 Sept. 2019	Blocked at 0.8 m Spring 2021		
SP17-06	Dec 6, 2017	812	5915065	637163	805.3 – 802.3	Operational	810.5 Dec. 2017	810.3	810.2	0.1

Notes:
(1) aMSL = Above Mean Sea Level
(2) Updated September 24, 2024, with approximate accuracy of ± 3 m

Reference: **North Central Region, Stony Plain, Site NC057 - Highway 624:02, Fall 2024 Instrumentation Monitoring Report**

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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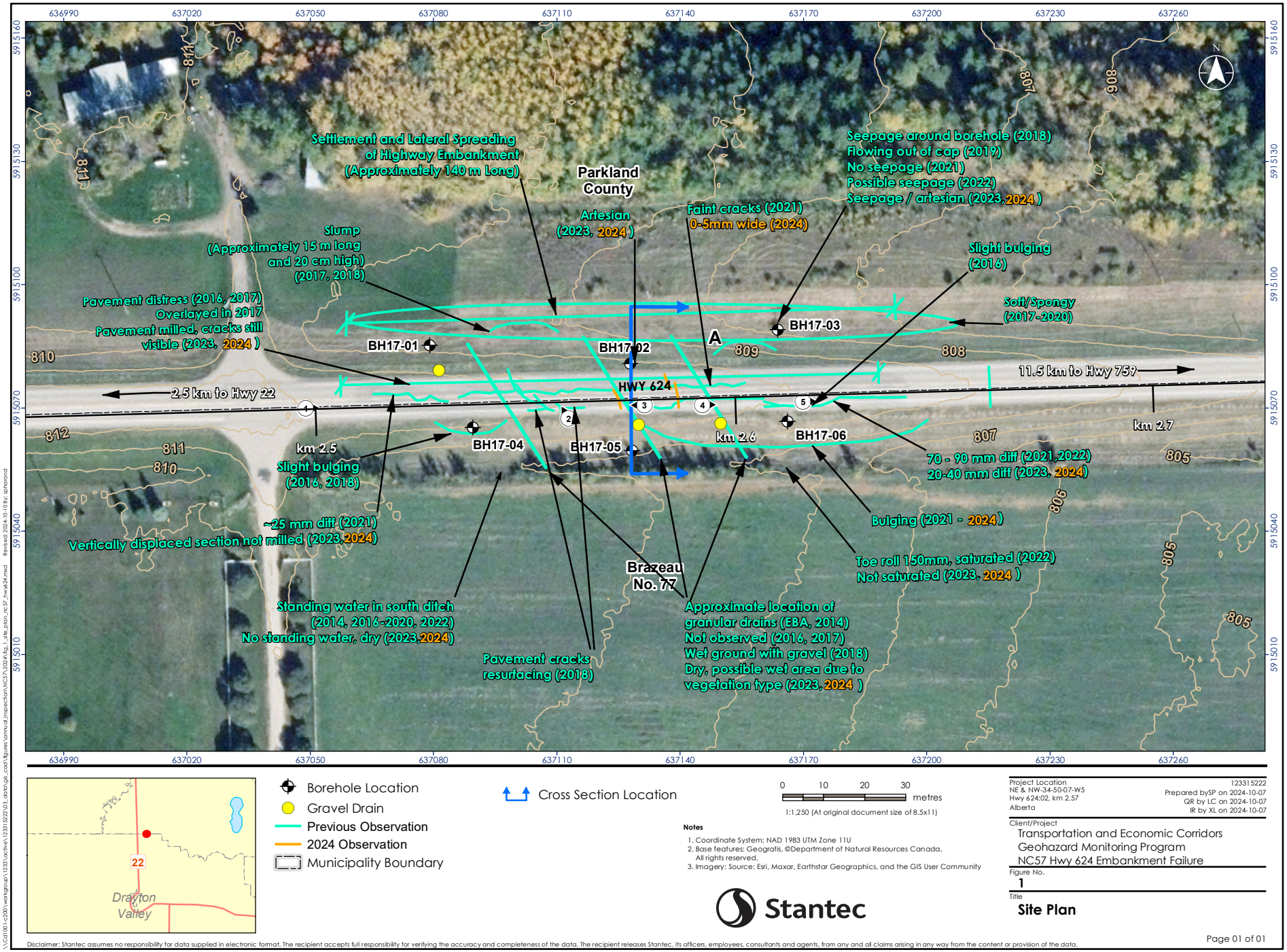
Attachment: Figure 1 – Site Plan
Standpipe and Vibrating Wire Piezometer Depth vs. Time Plot
Standpipe and Vibrating Wire Piezometer Elevation vs. Time Plot

PERMIT TO PRACTICE
STANTEC CONSULTING LTD.
Signature _____
Date 2024-10-18
PERMIT NUMBER: P 0258
The Association of Professional Engineers and Geoscientists of Alberta



- Borehole Location
- Gravel Drain
- Previous Observation
- 2024 Observation
- Municipality Boundary
- Cross Section Location

0 10 20 30 metres

1:1,250 (At original document size of 8.5x11)

Notes

1. Coordinate System: NAD 1983 UTM Zone 11U
2. Base features: Geogratis, ©Department of Natural Resources Canada, All rights reserved.
3. Imagery: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

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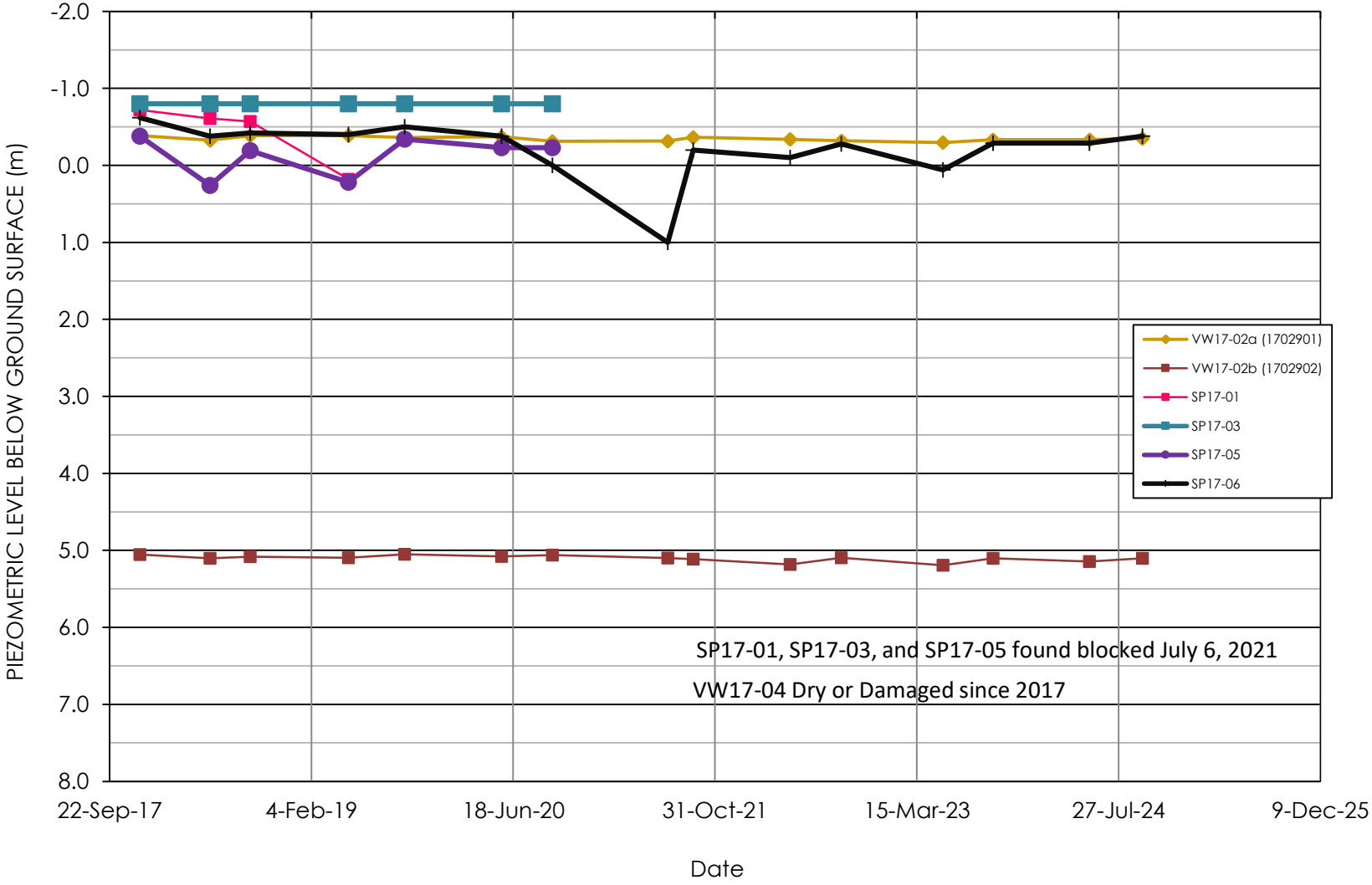
Project Location	123315222
NE & NW-34-50-07-W5	Prepared by SP on 2024-10-07
Hwy 624:02, km 2.57	QR by LC on 2024-10-07
Alberta	IR by XL on 2024-10-07

Client/Project
Transportation and Economic Corridors
Geohazard Monitoring Program
NC57 Hwy 624 Embankment Failure

Figure No.
1

Title
Site Plan

PIEZOMETER DATA



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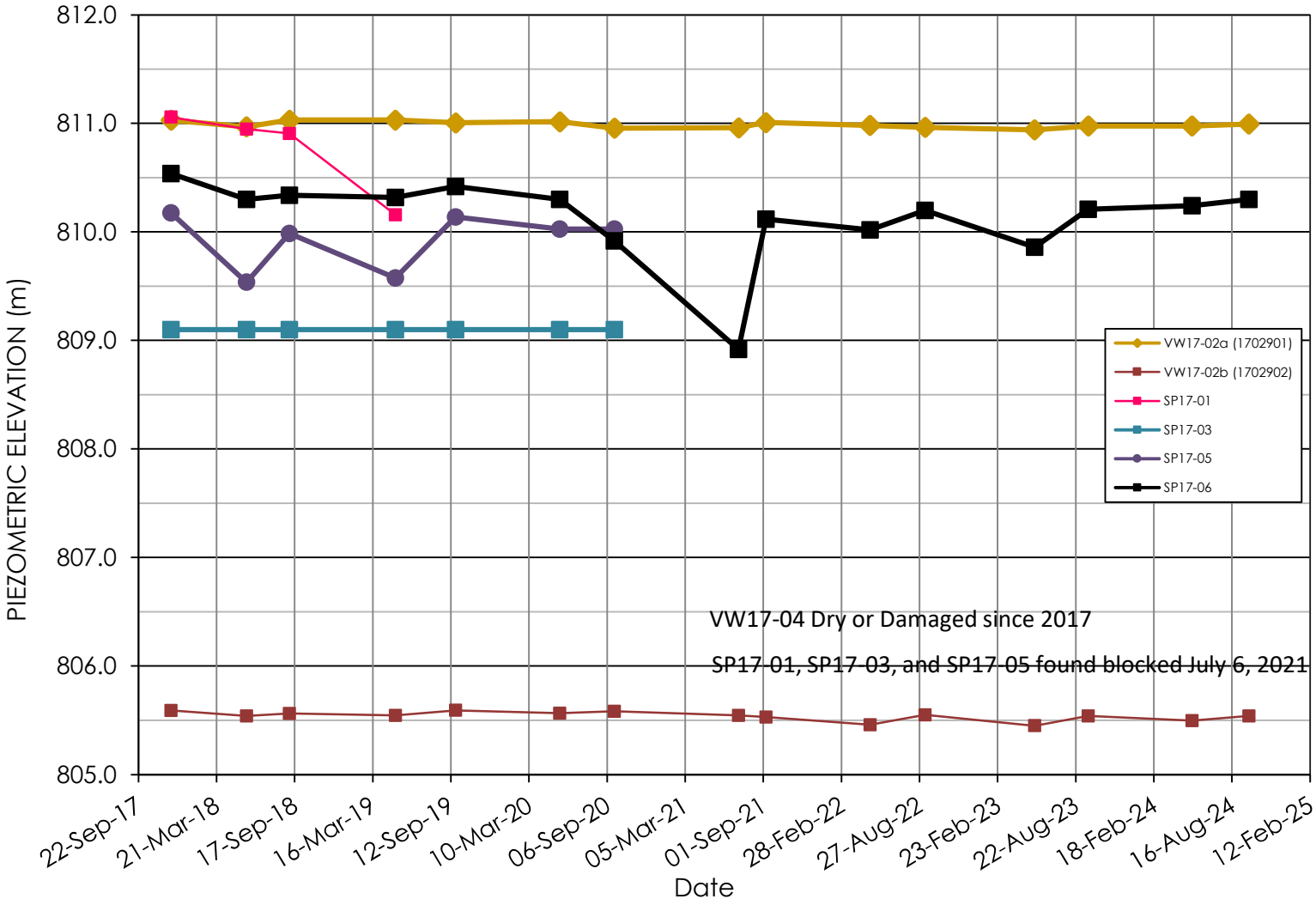

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