



9375 Chillicothe Road
Kirtland, OH 44094-8501

T (440) 256-6500

www.sme-usa.com

July 11, 2017

David Lastovka, P.E.
ODOT District 12 Transportation Engineer
Ohio Department of Transportation
5500 Transportation Boulevard
Garfield Heights, Ohio 44125-5396

E-mail to: Dave.Lastovka@dot.state.oh.us

Re: May 23, 24, and 25, 2017 Monthly Readings
CUY-90-15.24 Slope Monitoring
PID 96504
SME Project No. 069032.00

Dear Mr. Lastovka:

Monthly instrument readings at the I-90 west slope taken on May 23, 24, and 25, 2017 are presented in this report. Monthly readings currently include instruments at I/P-001-13, I/P-002-13, I/P-003-10, P-003-13, I/P-004-13, I-008-10, I/P-009-13, B-105A, B-05-02, B-05-04, B-05-A-11, P-1, P-9N. Changes reported for the individual instruments are for the previous four-weeks unless noted otherwise.

Per ODOT's request, these will be the final monthly readings. Readings for the remainder of 2017 will be taken in August and November and will include all active instruments.

Piezometer Readings

Pore pressure readings at P-002-13, P-003-13, P-009-13, and B-05-A-11 show variations in total head of less than 0.5 feet for the period.

P-001-13, P-003-10 – Pore pressure readings in all piezometers at these locations indicate a decrease of about 0.5 feet during the last week of May 2017.

P-004-13 – Pore pressure readings in the shallow piezometer at this location show a net increase of about 0.5 feet for the month. During the last monthly period, total head in the deep piezometer saw a sudden drop of about 2.5 feet in early April followed by a gradual recovery. That recovery continued into this month until May 5, 2017, when there was another sudden drop, this time of about 3.5 feet, followed by a gradual recovery. Large spikes with a differential of about 10 feet of total head occurred on or about May 9. Despite these fluctuations, there was virtually no net change in total head in deep piezometer for the month.

B-105A – Pore pressures in the deep piezometer at this location follow a path similar to P-004-13 although the range of pressure variation is smaller than P-004-13. Pore pressures suddenly decreased on May 5, 2017, followed by a gradual recovery. Large spikes with a differential of about 2.5 feet occurred on May 9. There was virtually no net change in total head in the deep piezometer for the month. Data for the shallow piezometer indicates a slight increase this month.

B-05-02 – Both piezometers at this location indicate pore pressure increases. Total head in the shallow piezometer increased by 3.8 feet since March 23, 2017. Total head in the deep piezometer increased by 4.9 feet since April 20, 2017. These increases are likely due to site grading in this area.

B-05-A-03 – Pore pressures in both piezometers at this location were decreasing at the end of the April 2017. This decrease continued into May before reversing and starting to gradually increase. Data for the deep piezometer indicates a pore pressure increase of 0.8 feet for the month. Data for the shallow piezometer indicates pore pressure fluctuations, but no net change for the month. Pore pressures were again trending downward at the end of the month.

Inclinometer Readings

Inclinometer readings at I-001-13, I-002-13, I-003-10, I-004-13, I-008-10, I-009-13, B-101, B-102, B-105A, B-05-A-03, B-05-04, B-05-A-11, P-1, and P-9N show virtually no movement this period. Where displacement occurs near the top of the casing this is due to disturbance during construction near the instrument. Protective covers that were set in place temporarily during construction are currently being concreted into place.

I-009-13 – In order to set a final protective cover on this instrument, we cut down the inclinometer casing by 2 feet. The current plot shows an artificial reading at 2 feet for the May 25, 2017 reading. This was done so that past readings could be viewed alongside future readings.

B-05-02 – Inclinometer readings at this location show large, unrealistic displacements throughout the length of the casing in both axis directions. We believe this was caused by an erroneous data point that affects to cumulative plot. We will perform a follow-up reading to verify.

B-05-04 – This inclinometer casing broke off and was partially filled with soil as the area around the instrument was being cut down to final grade. We flushed the casing, spliced on a new section of casing to provide adequate stickup, and installed a permanent protective cover. The old length of casing was 172 feet. The new length is 170 feet. An artificial reading has been added to the data to allow us to plot the current readings with the past readings. The apparent displacement at the top of the casing is due to these adjustments.

This concludes our report of monthly instrument readings.

Please call or email with any questions.

Very truly yours,

SME

Brendan P. Lieske, P.E.
Project Engineer

Alan J. Esser, P.E., D.GE
Chief Consultant

Copies sent to distribution list.

REVISION	DATE	DESCRIPTION
A	11/21/13	REVISIONS BASED ON INSTRUMENTATION STATUS AFTER COMPLETION OF CCG1.

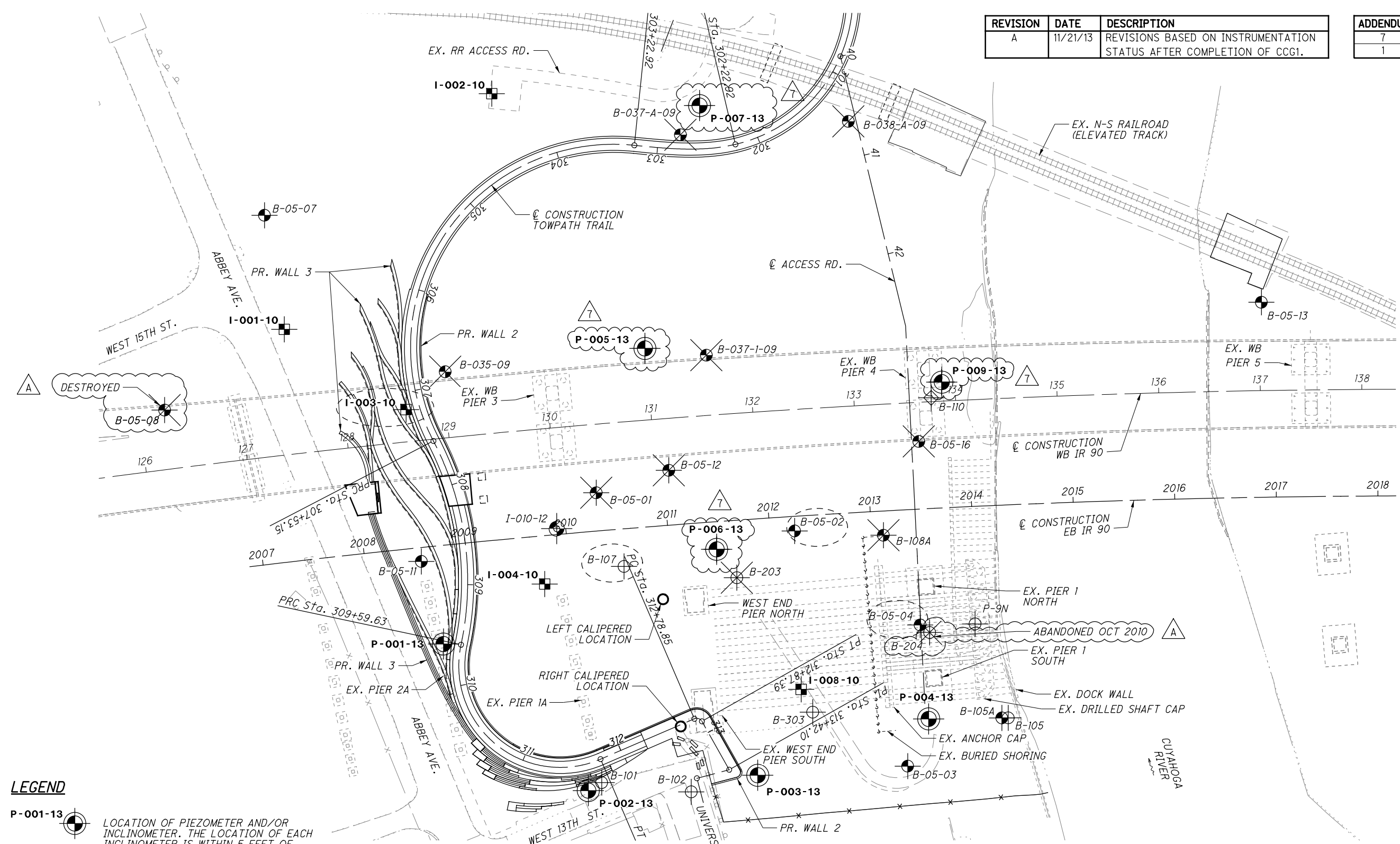
ADDENDUM	DATE
7	8/2/13
1	4/16/13




DRAWN: CDS
CHECKED: JN


INSTRUMENTATION PLAN
CUYAHOGA RIVER WEST BANK


CUY-90-14.90





LEGEND


- 
P-001-13 LOCATION OF PIEZOMETER AND/OR INCLINOMETER. THE LOCATION OF EACH INCLINOMETER IS WITHIN 5 FEET OF THE LOCATION OF THE PIEZOMETER.


- 
B-05-01 LOCATION OF INCLINOMETER/PIEZOMETER INSTALLED BY BBCM IN 2006 (B-05-01 THROUGH B-05-04, B-05-07, B-05-08, B-05-11 THROUGH B-05-13, AND B-05-16). THESE INSTRUMENTS ARE NOT AFFECTED BY THE GRADING AND REMAIN IN SERVICE.


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B-105A LOCATION OF REPLACEMENT INCLINOMETER INSTALLED BY BBCM IN 2006 (B-105A AND B-108A).

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B-101 LOCATION OF INCLINOMETER AND/OR PIEZOMETER INSTALLED BY BBCM BETWEEN 1994 AND 1999 (B-101, B-102, B-105, B-107, B-203, B-204, B-303, AND P-9N).

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B-110 LOCATION OF INCLINOMETER AT B-110, WHICH WAS DESTROYED BY EXCAVATION ACTIVITIES IN MARCH, 2006

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I-010-12 LOCATION OF INCLINOMETER INSTALLED DURING PIER 3 CONSTRUCTION, 2012

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I-001-10 LOCATION OF EXISTING INCLINOMETER AND/OR PIEZOMETER (I-001-10 THROUGH I-004-10 & I-008-10 AND P-001-10 THROUGH P-004-10 & P-008-10 INSTALLED AS PART OF THE CCG1 CONTRACT). THE LOCATION OF EACH PIEZOMETER IS WITHIN 5 FEET OF THE LOCATION OF THE INCLINOMETER. DEVELOPER IS RESPONSIBLE FOR THE REPLACEMENT INSTRUMENTATION, IF DAMAGED. (NOT USED: I-005-10 THROUGH I-007-10 & I-009-10 AND P-005-10 THROUGH P-007-10 & P-009-10).

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B-05-01, B-05-12, B-05-16, B-035-0-09, B-037-1-09, AND B-037-A-09, B-038-A-09, B-107, B-108A, B-203, B-204, B-05-08 LOCATION OF ABANDONED/DESTROYED INCLINOMETER AND/OR PIEZOMETER

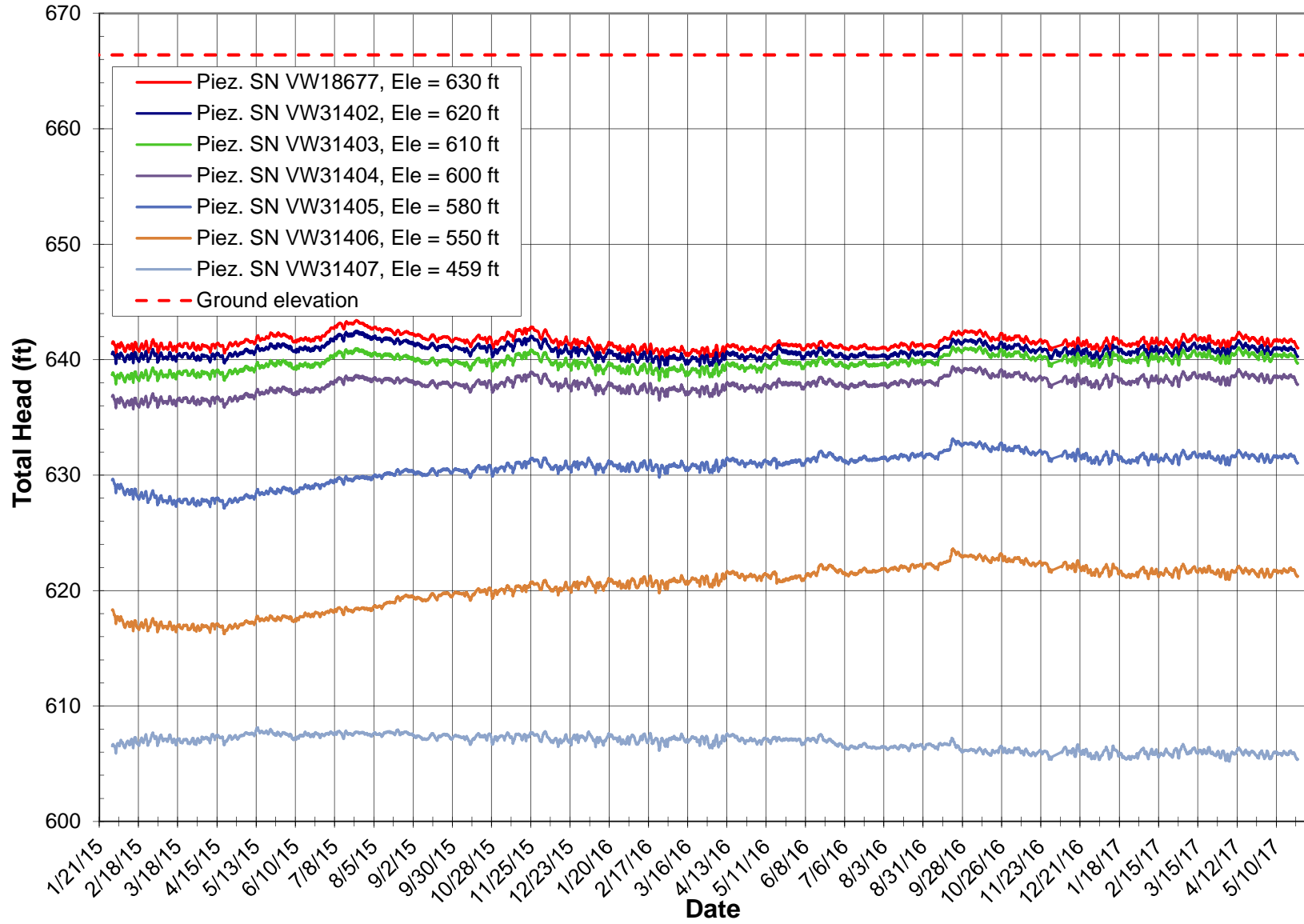
INCLINOMETER AND/OR PIEZOMETER TO BE REPLACED. THE FUTURE INSTALLATION WILL HAVE THE SAME DESIGNATION PRECEDED BY LETTER 'A' (B-05-02, B-05-04, B-107, I-003-10)

NOTE: THE DEVELOPER NEEDS TO PROTECT ALL THE INSTRUMENTS AND REPLACE ANY IF DAMAGED, PER SCOPE REQUIREMENTS.

P:\B2119\geotechnical\sheets\B2119ZP410 Addendum 7 - Revision A.dgn 11/21/2013 8:08:35 AM csteck

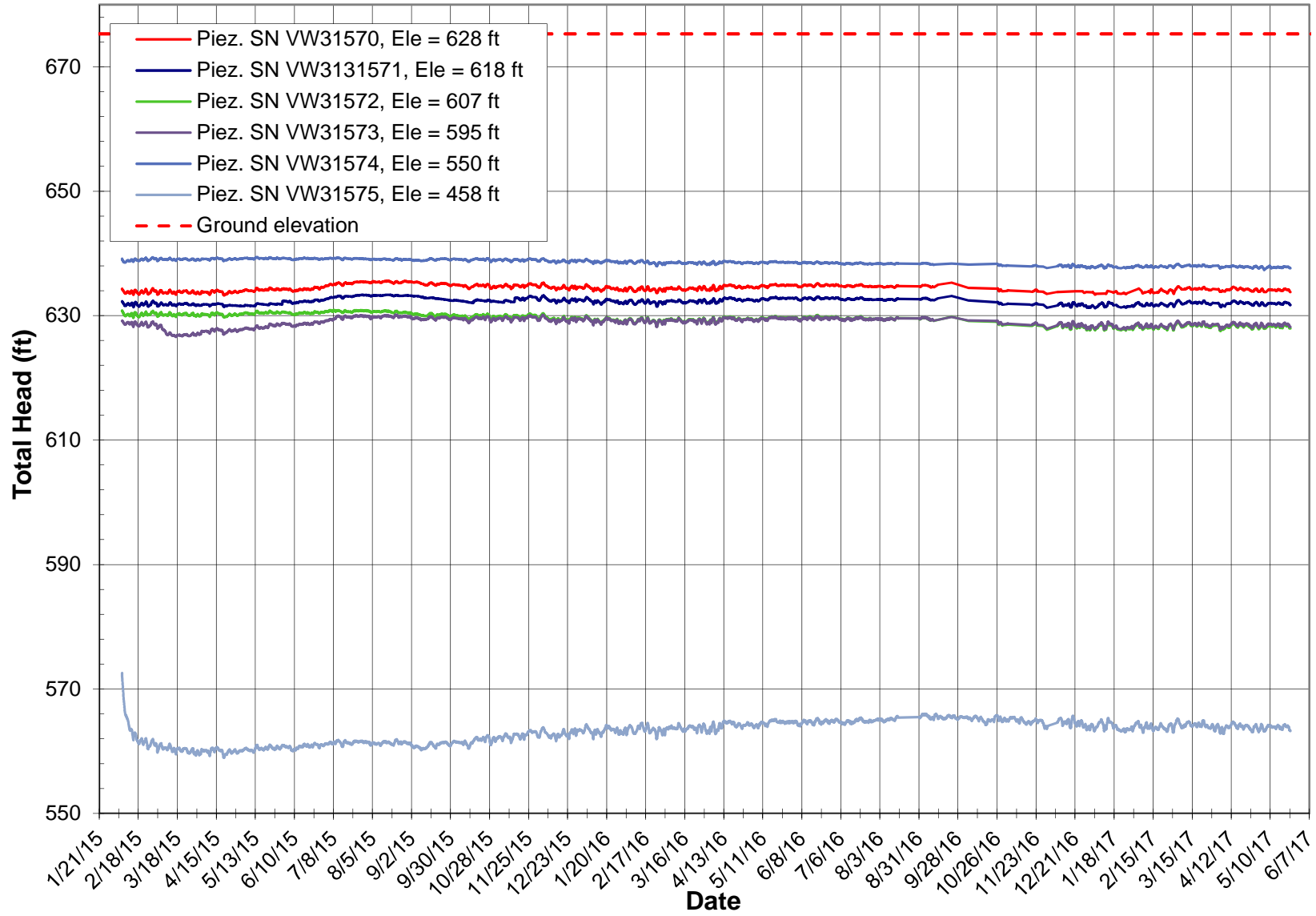
P-001-13 VW Piezometer Readings

Ground surface elevation = 666.4 ft



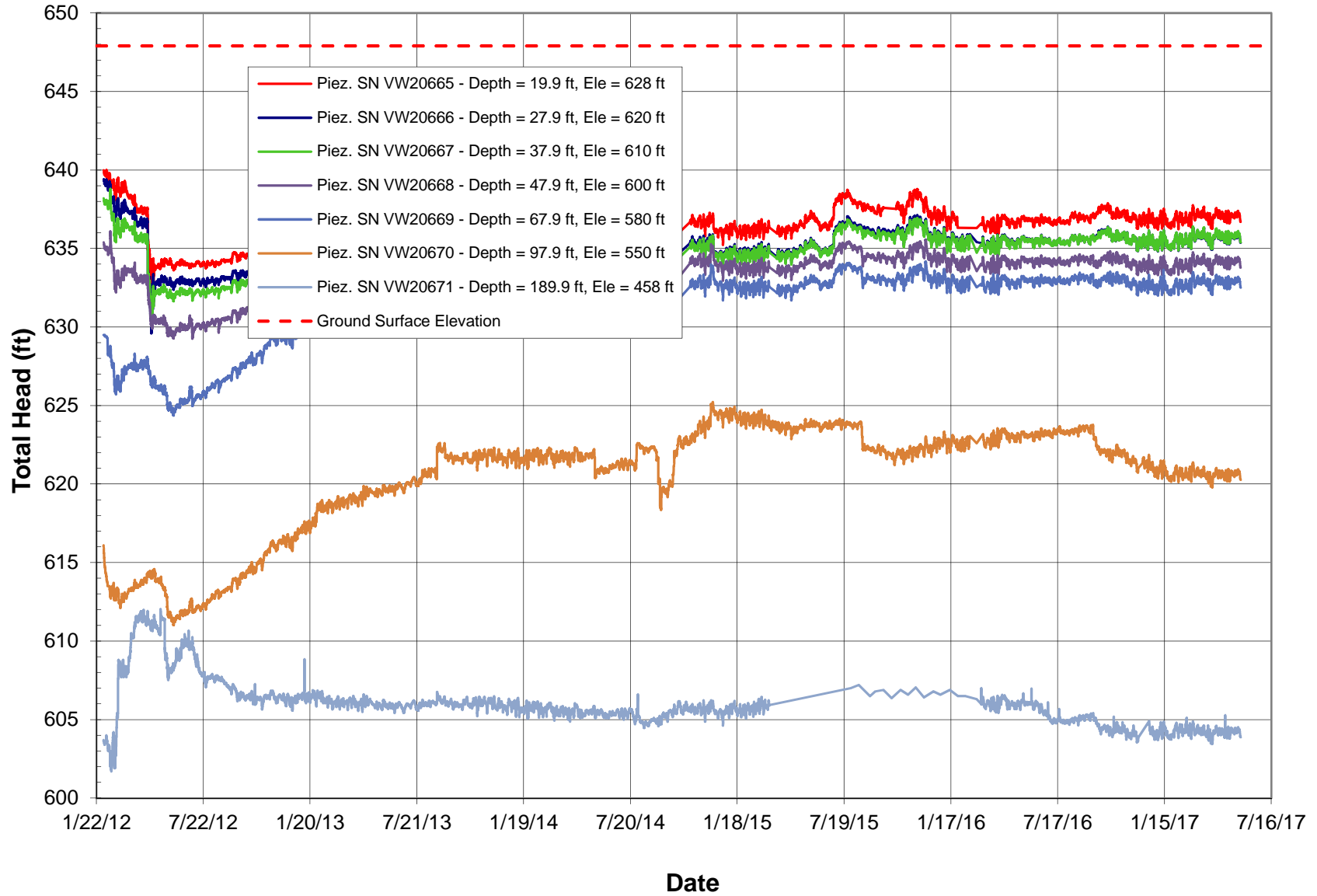
P-002-13 VW Piezometer Readings

Ground surface elevation = 675.29 ft



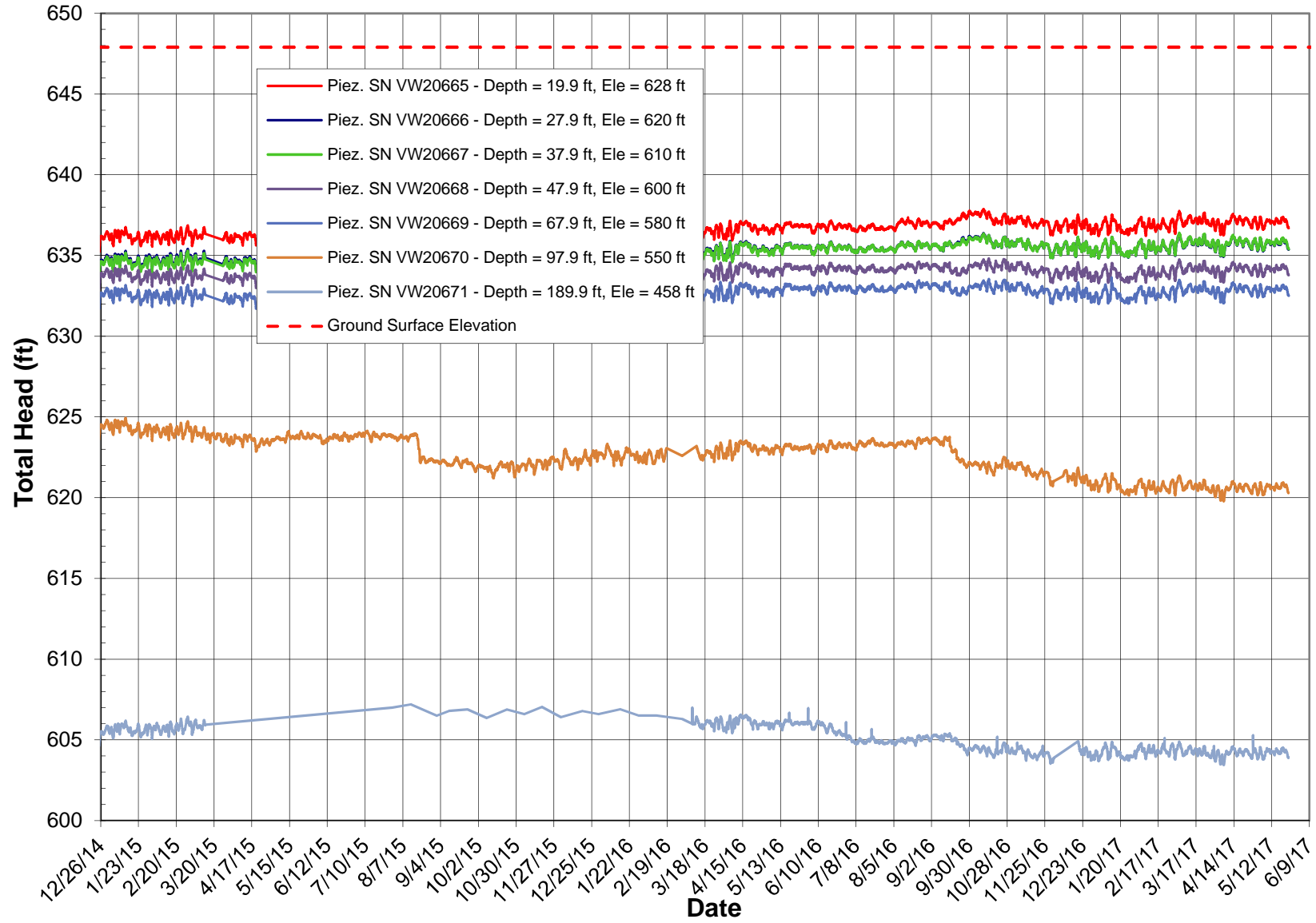
P-003-10 VW Piezometer Readings

Ground surface elevation = 647.9 ft



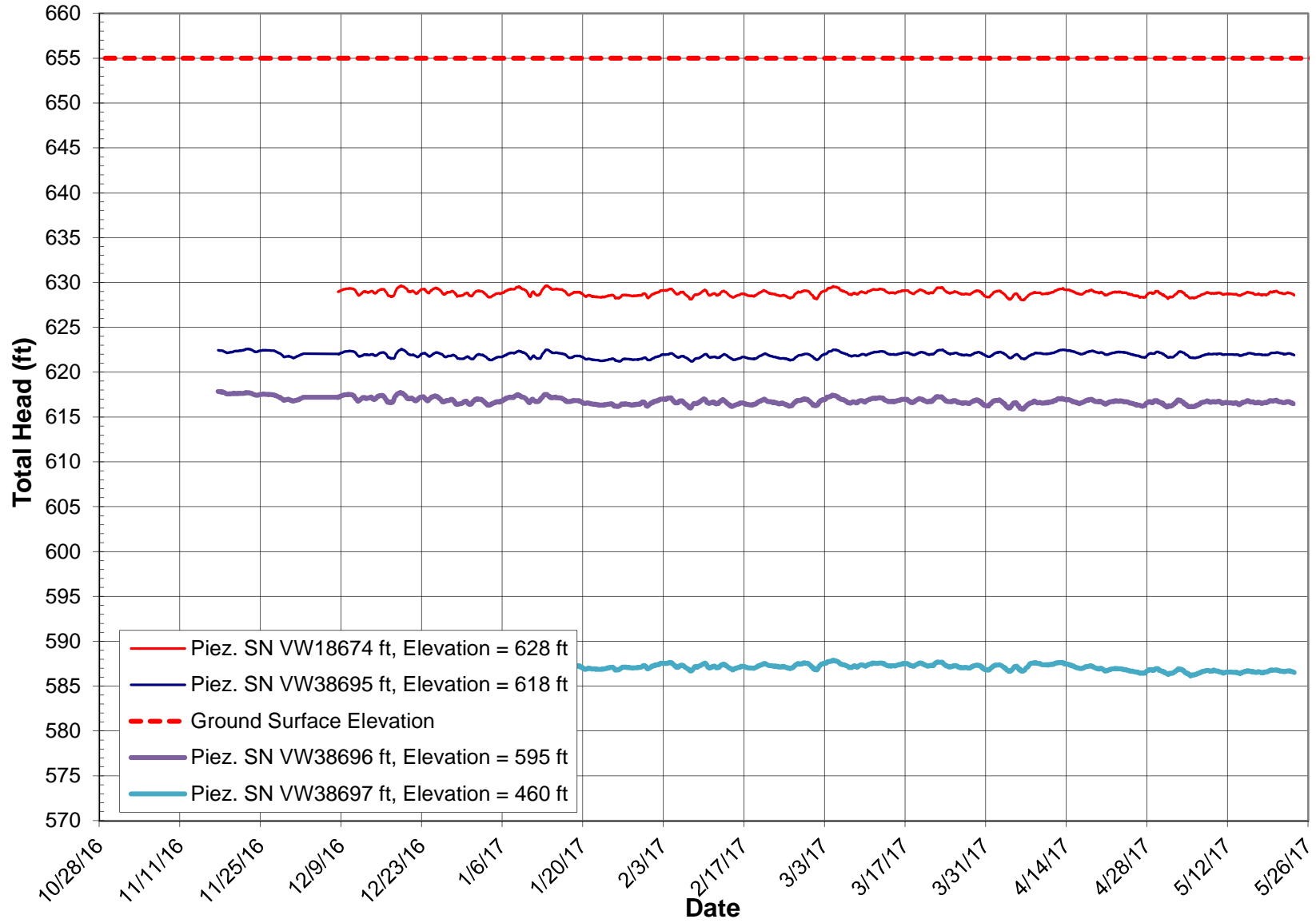
P-003-10 VW Piezometer Readings

Ground surface elevation = 647.9 ft



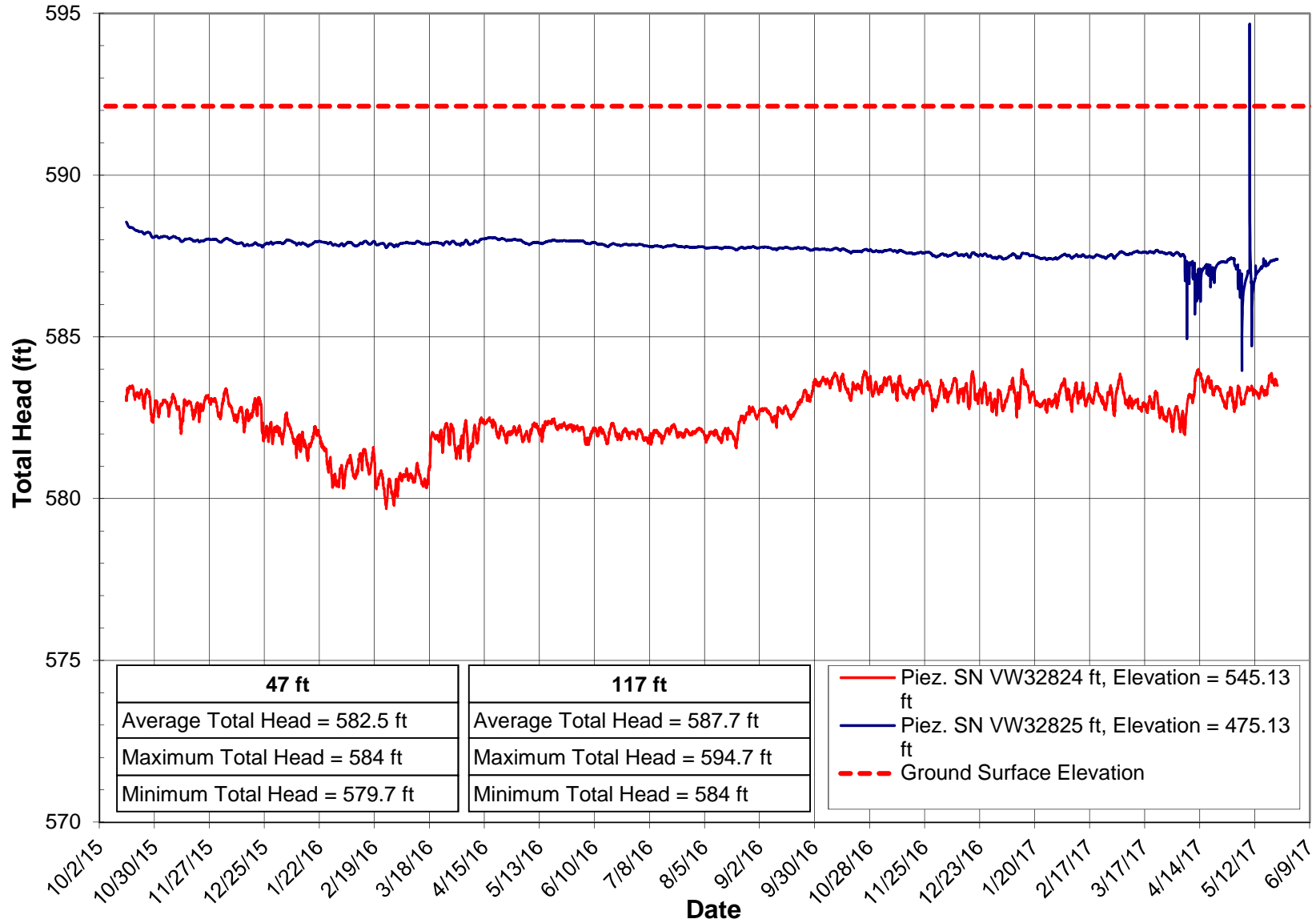
P-003-13 VW Piezometer Readings

Ground surface elevation = 655 ft



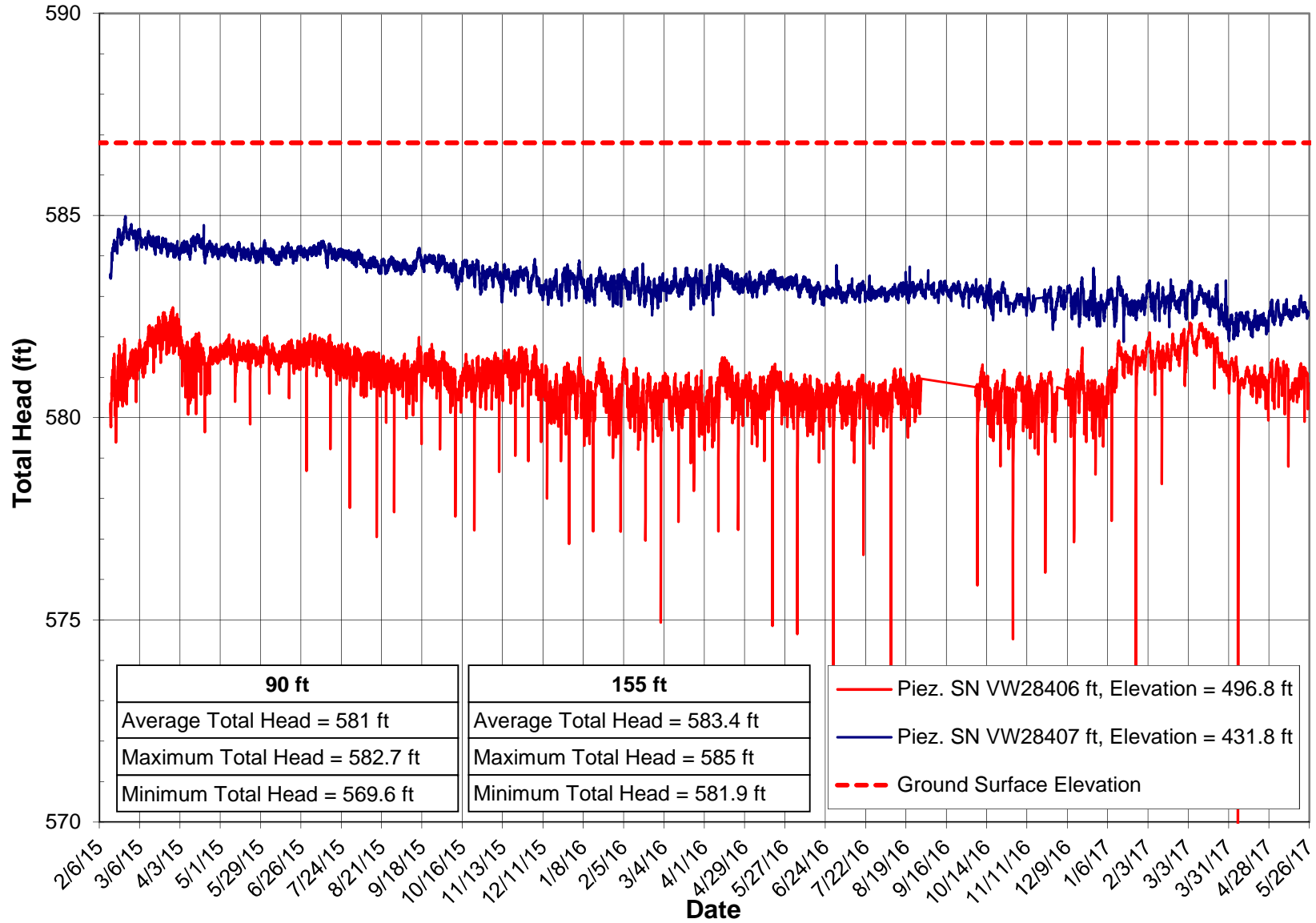
P-004-13 VW Piezometer Readings

Ground surface elevation = 592.13 ft



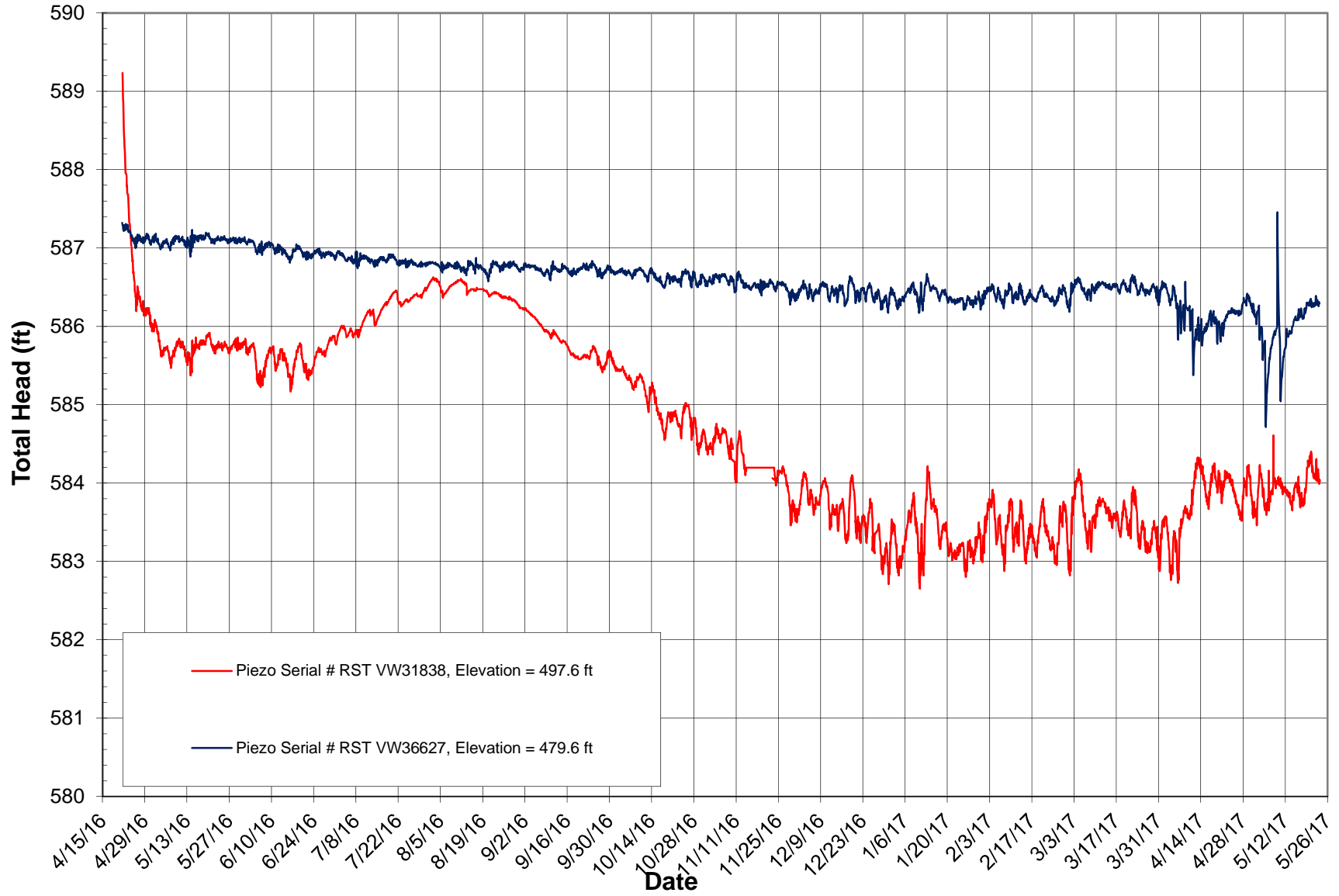
P-009-13 VW Piezometer Readings

Ground surface elevation = 586.6 ft



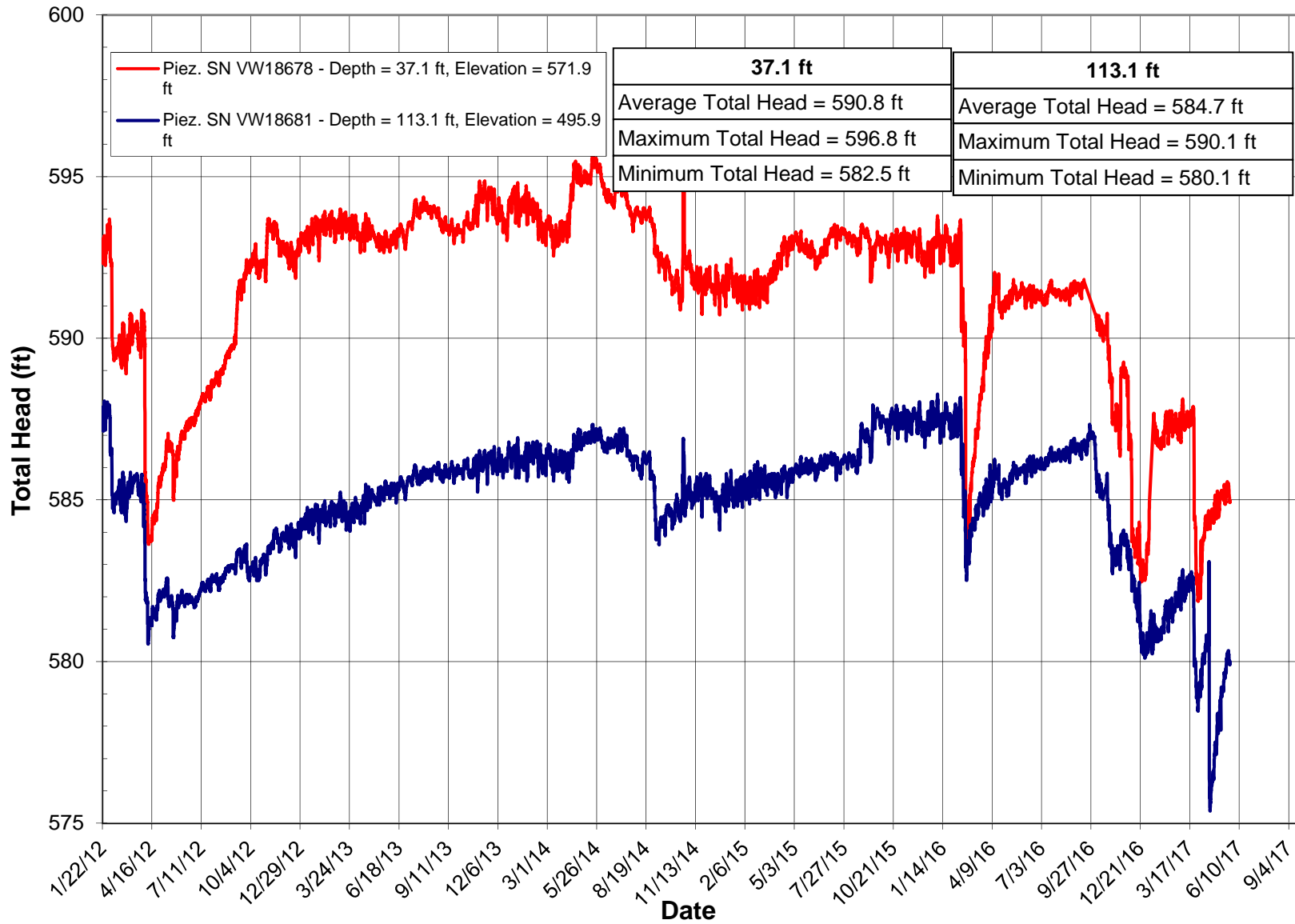
B-105A VW Piezometer Readings

Ground surface elevation = 585.6 ft



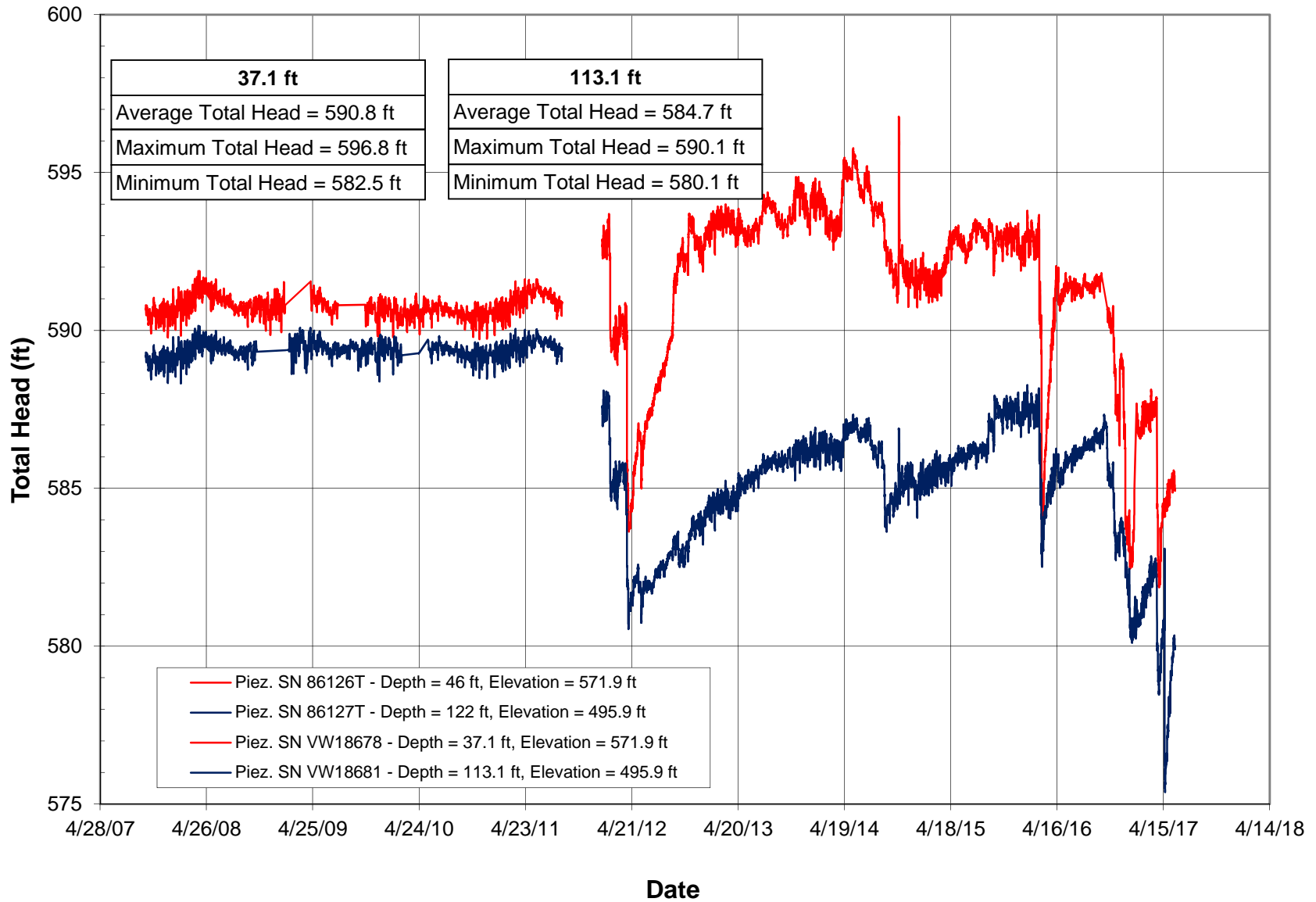
B-05-02 VW Piezometer Readings

Ground surface elevation = approx 609.0 ft



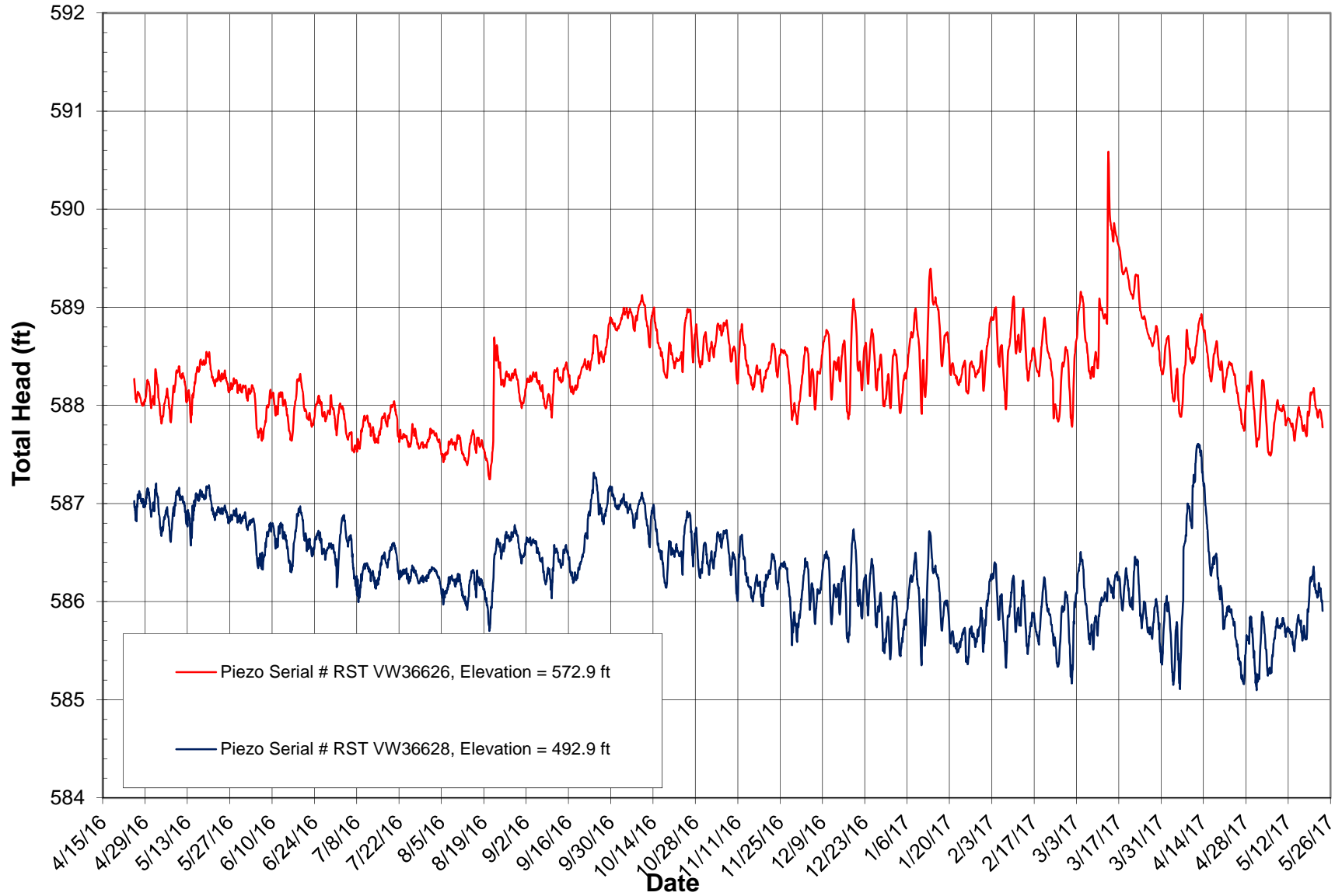
B-05-02 VW Piezometer Readings

Ground surface elevation = approx 609.0 ft



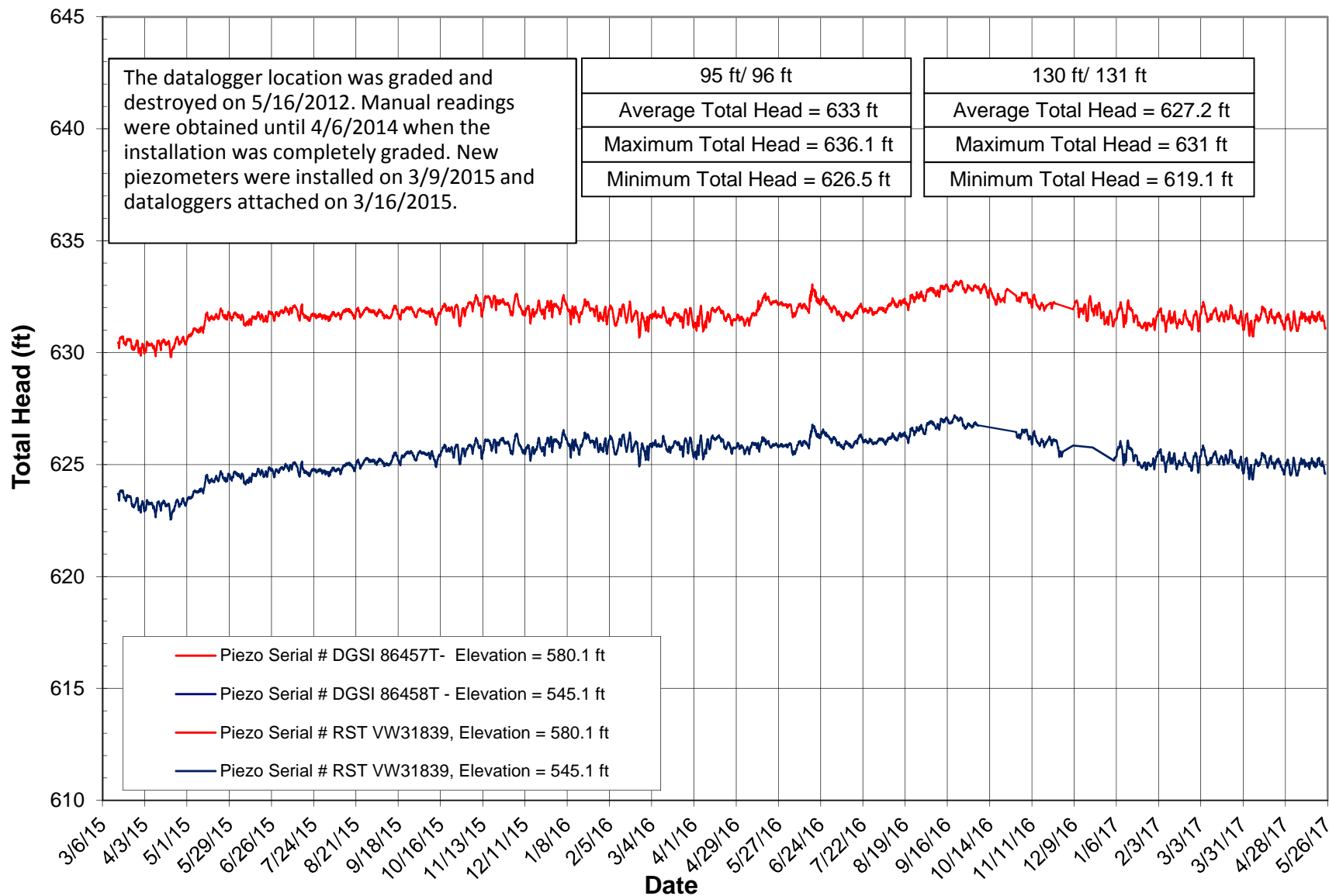
B-05-A-03 VW Piezometer Readings

Ground surface elevation = 599.9 ft



B-05-11/B-05-A-11 VW Piezometer Readings

Ground surface elevation = 675.1 ft (B-05-11) / 676.1 ft (B-05-A-11)

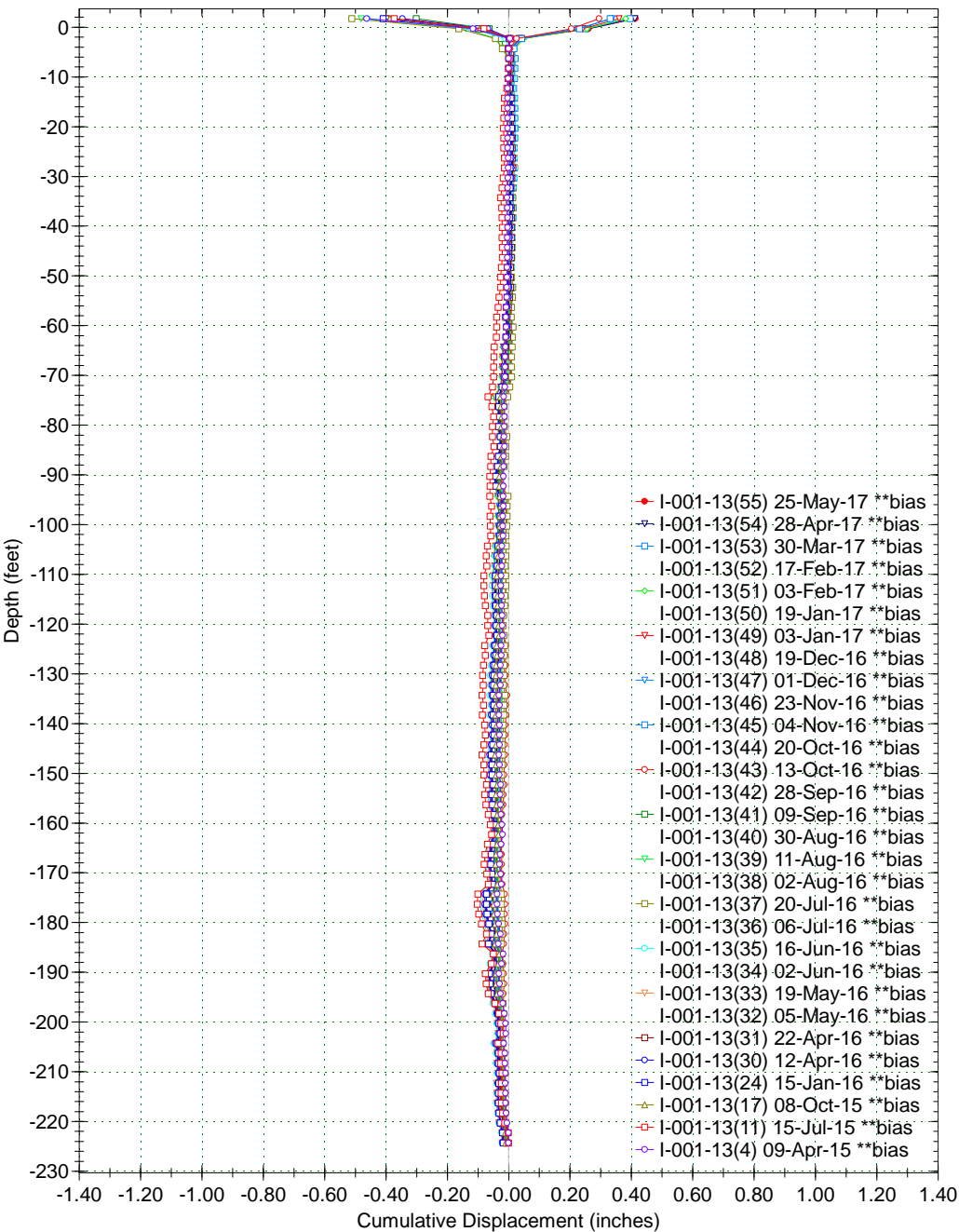


Borehole : I-001-13
Project : CUY-90-15-24
Location : Cleveland, Ohio
Northing :
Easting :
Collar :

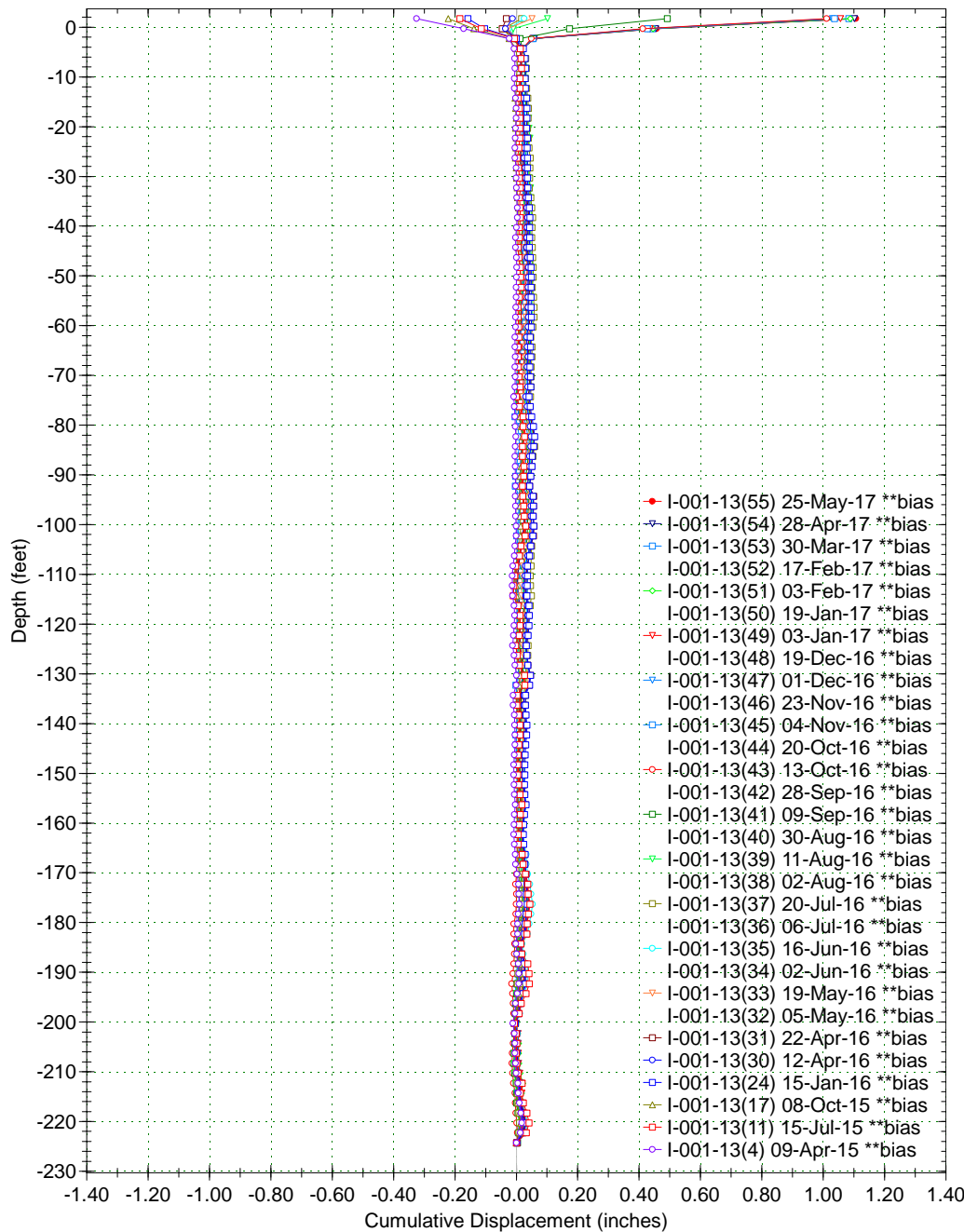


Spiral Correction : N/A
Collar Elevation : 3.7 feet
Borehole Total Depth : 228.0 feet
A+ Groove Azimuth :
Base Reading : 2015 Mar 03 11:14
Applied Azimuth : 0.0 degrees

Axis - A



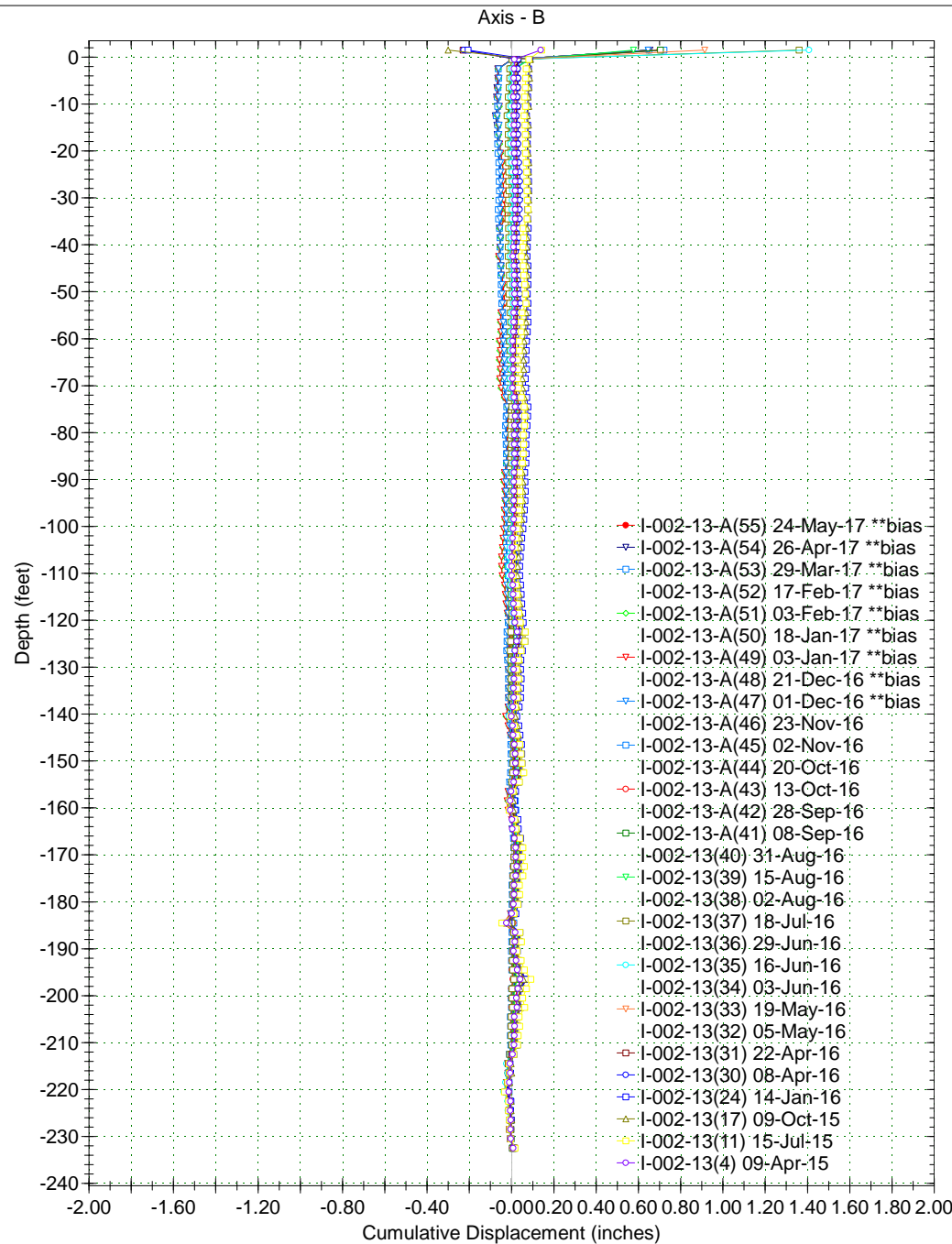
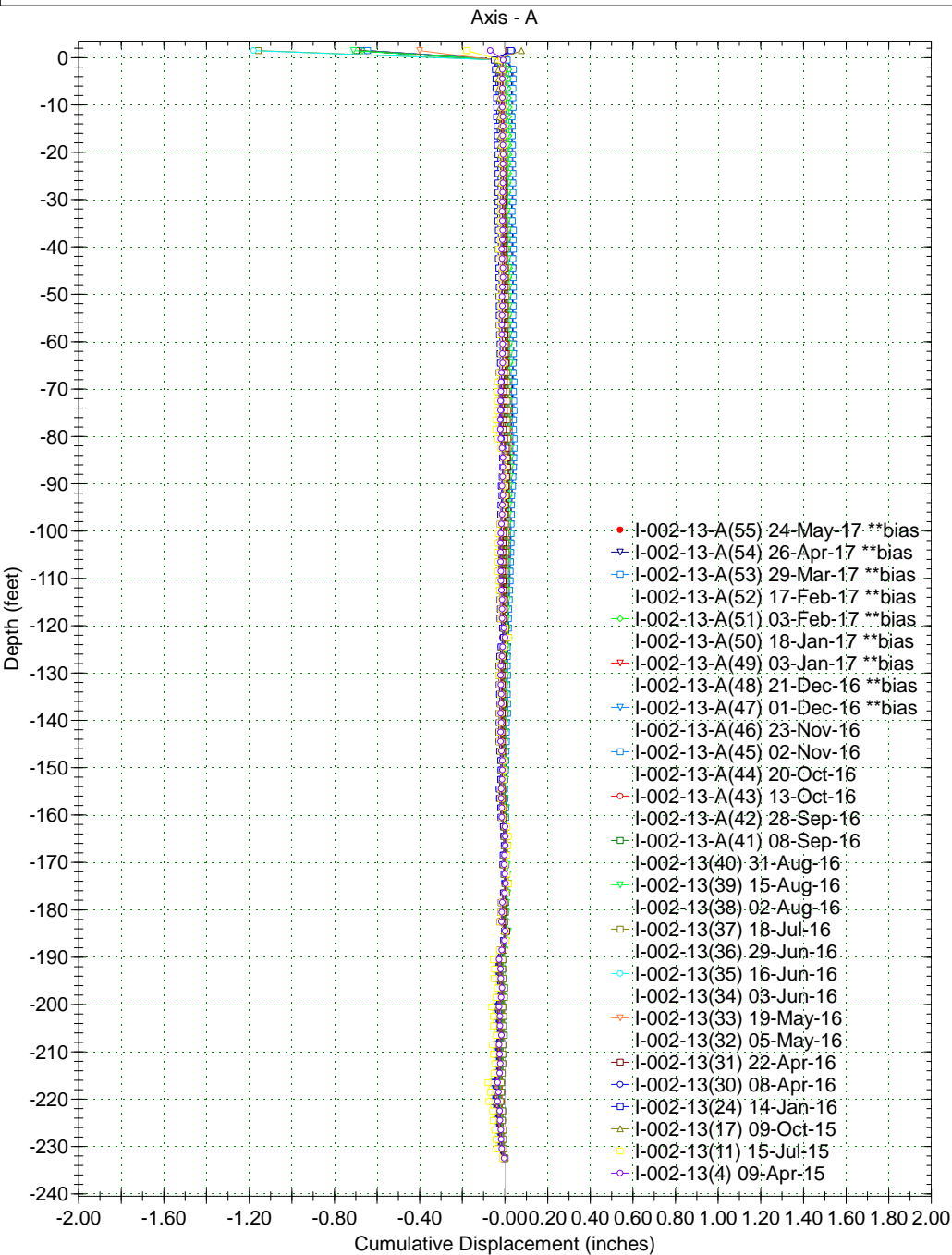
Axis - B



Borehole : I-002-13
Project : CUY-90-15-24
Location : Cleveland, Ohio
Northing :
Easting :
Collar :



Spiral Correction : N/A
Collar Elevation : 3.5 feet
Borehole Total Depth : 236.0 feet
A+ Groove Azimuth :
Base Reading : 2015 Mar 03 10:04
Applied Azimuth : 0.0 degrees



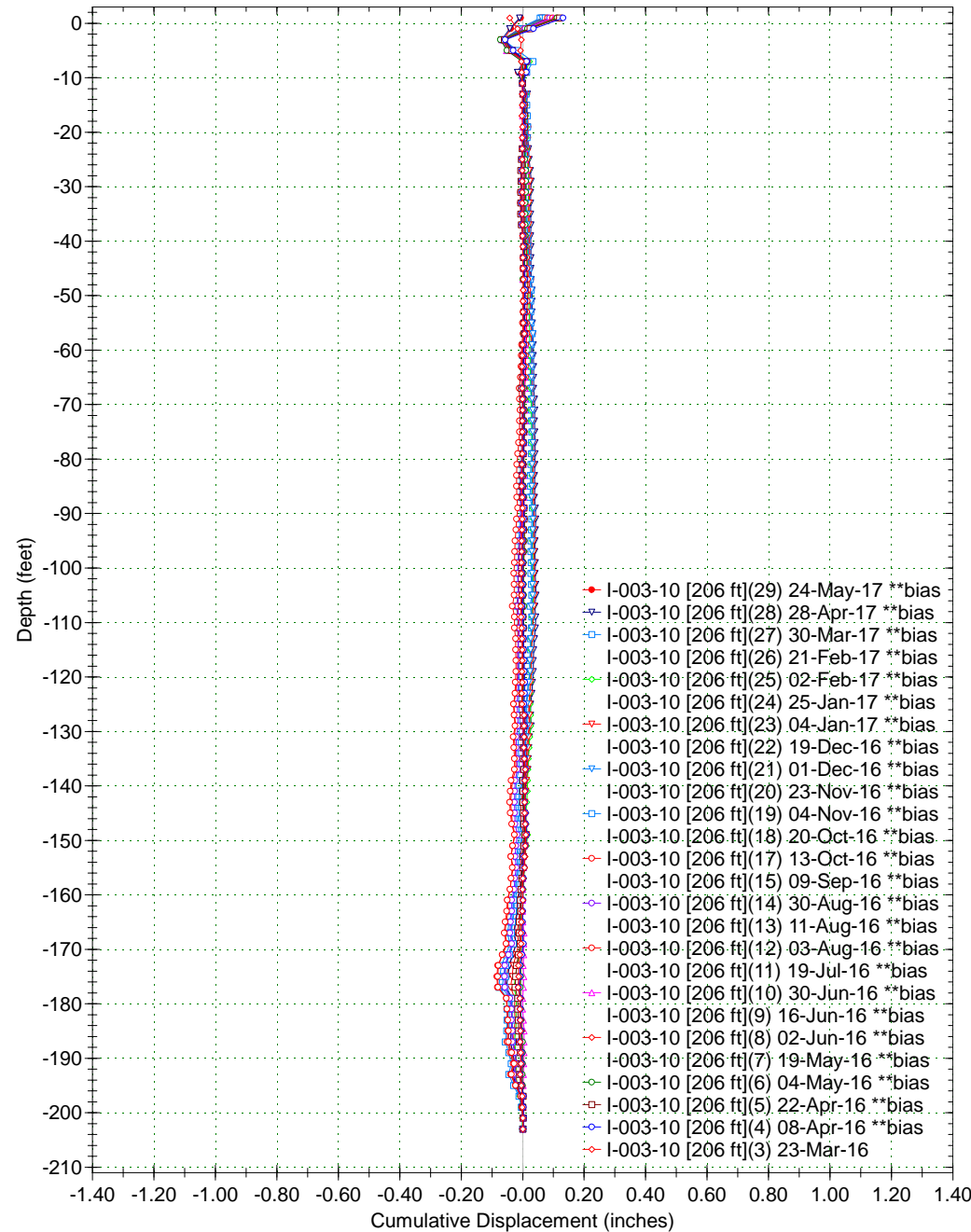
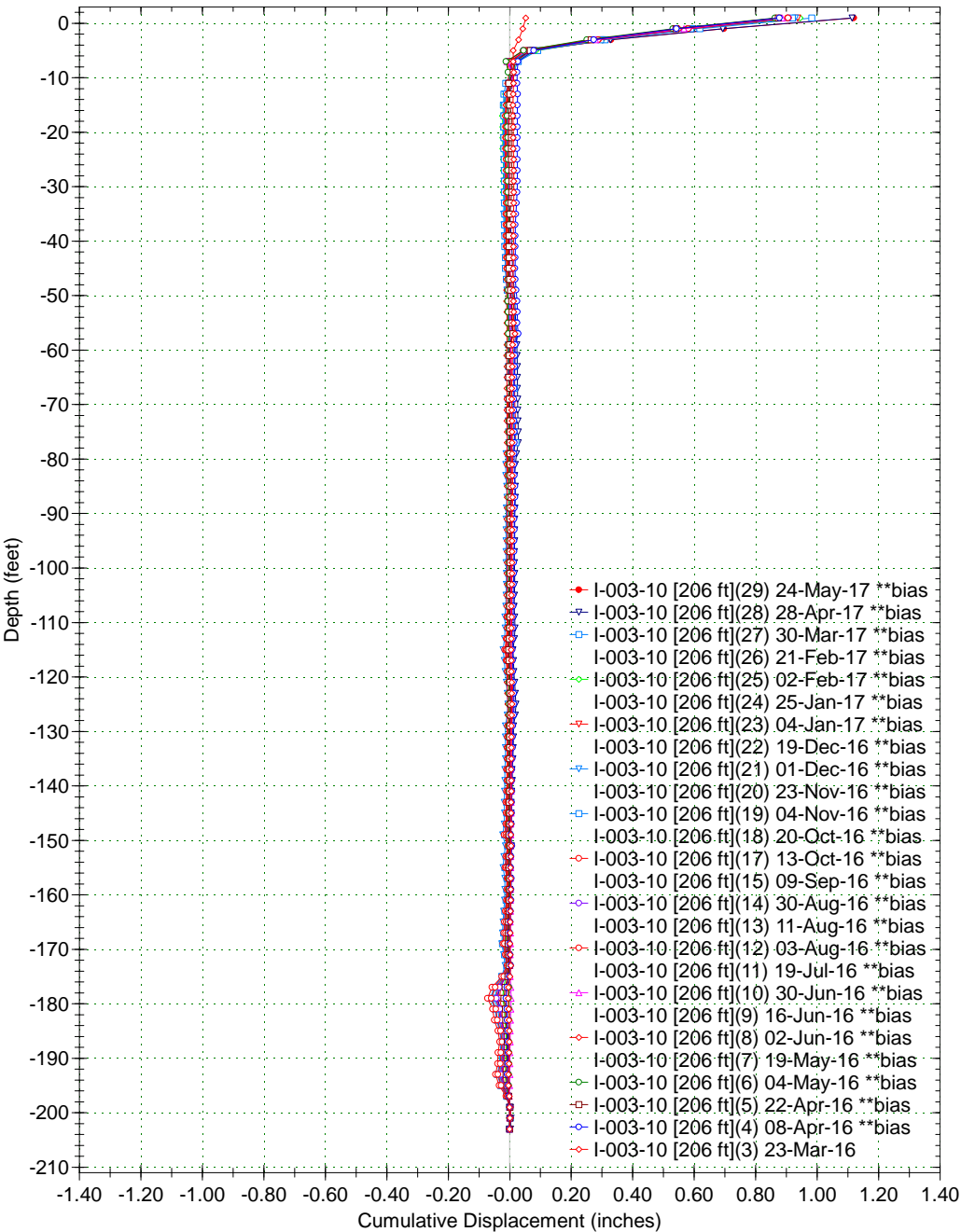
Borehole : I-003-10 [206 ft]
 Project : CUY-90-15-24
 Location :
 Northing :
 Easting :
 Collar :



Spiral Correction : N/A
 Collar Elevation : 3.0 feet
 Borehole Total Depth : 206.0 feet
 A+ Groove Azimuth :
 Base Reading : 2016 Mar 08 15:42
 Applied Azimuth : 0.0 degrees

Axis - A

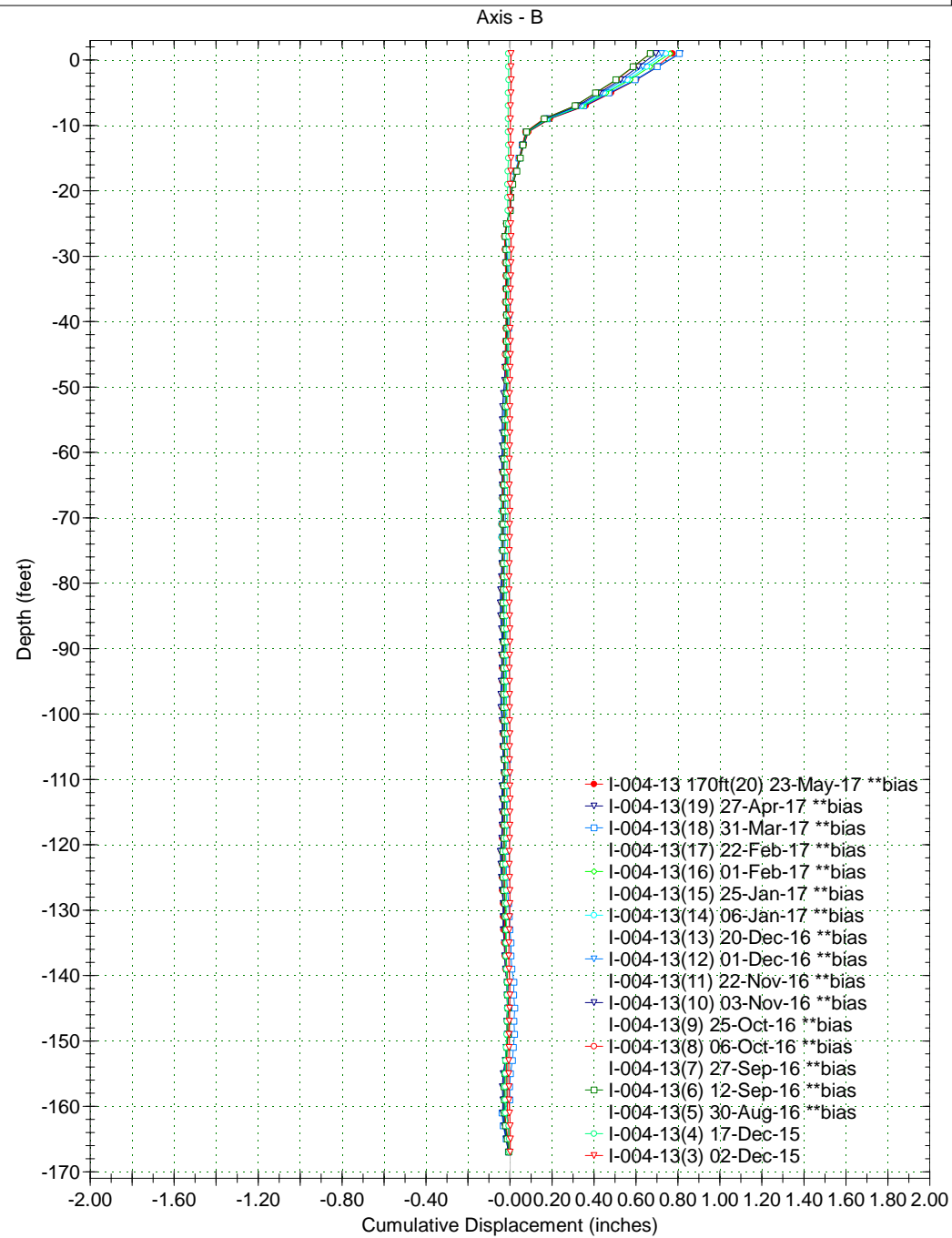
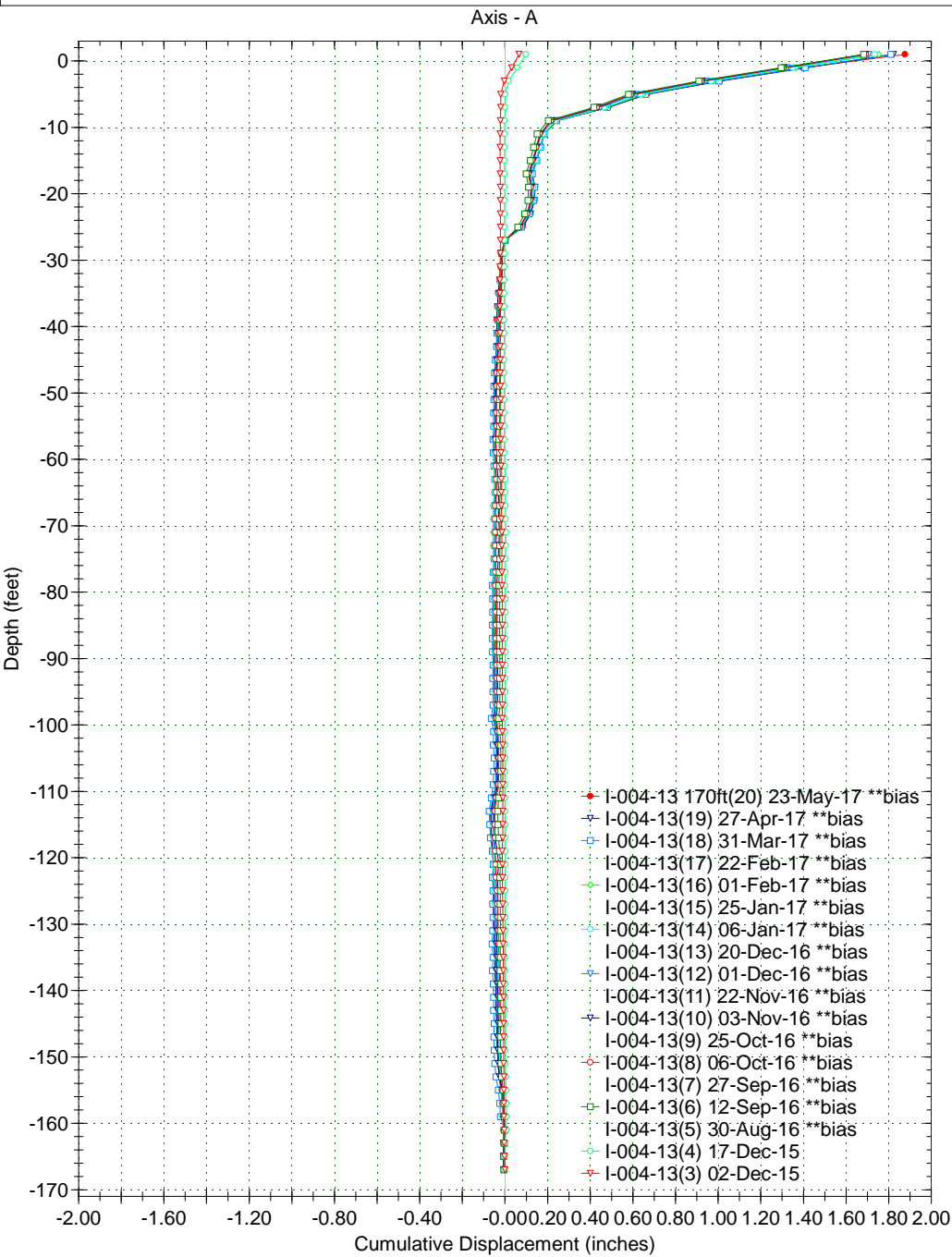
Axis - B



Borehole : I-004-13
Project : CUY-90-15-24
Location :
Northing :
Easting :
Collar :



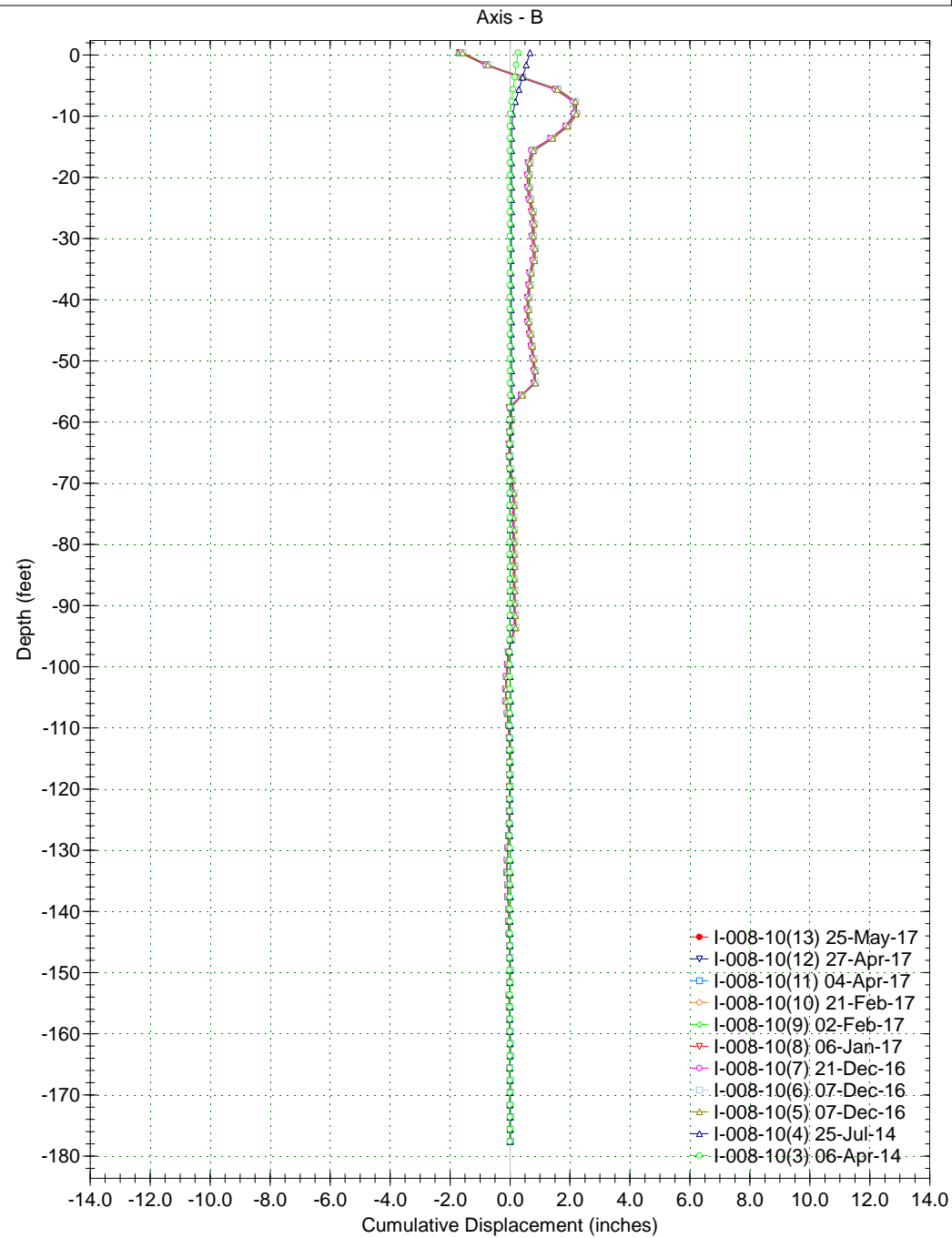
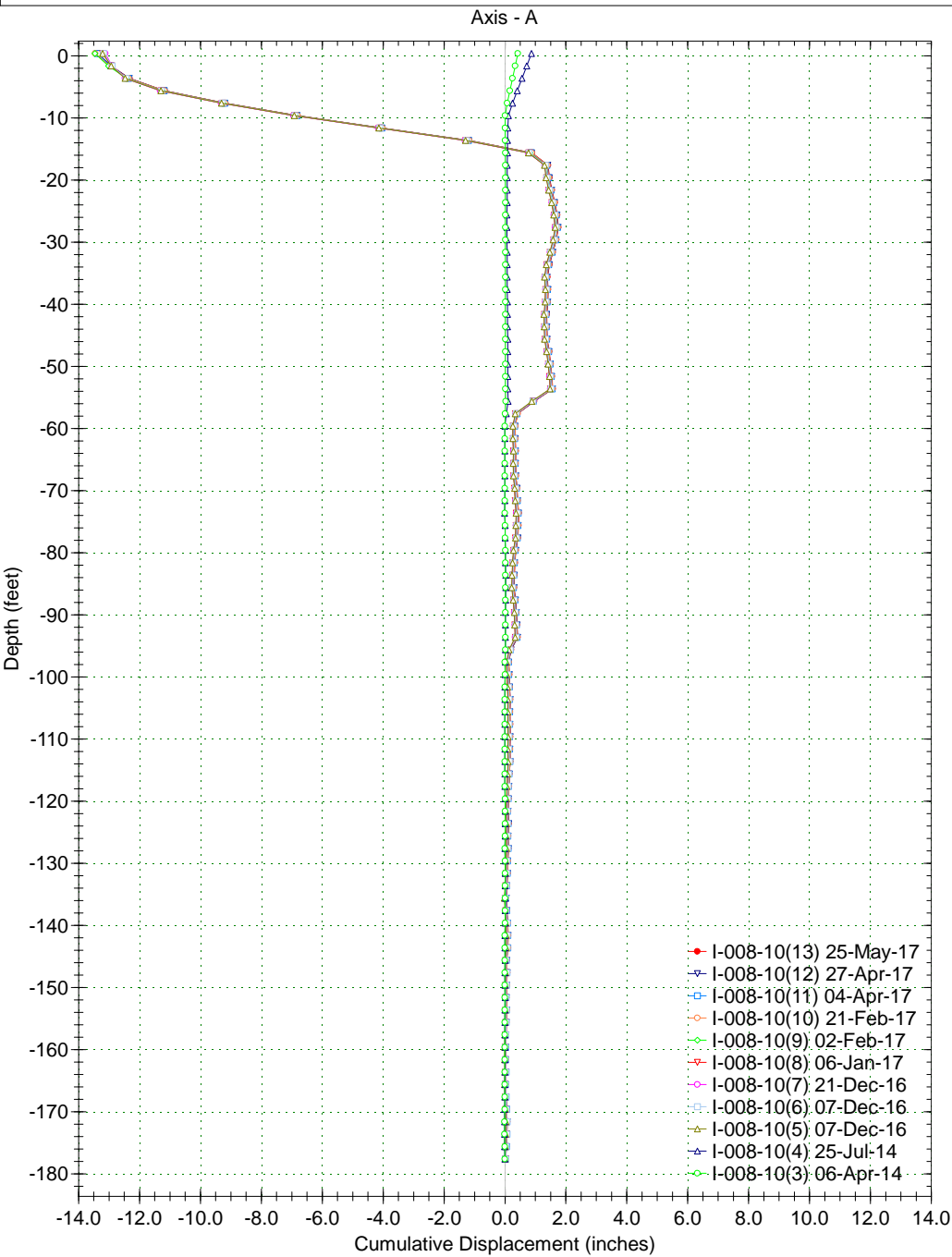
Spiral Correction : N/A
Collar Elevation : 3.0 feet
Borehole Total Depth : 170.0 feet
A+ Groove Azimuth :
Base Reading : 2015 Nov 20 09:09
Applied Azimuth : 0.0 degrees



Borehole : I-008-10
Project : CUY-90-15-24
Location : Cleveland, Ohio
Northing :
Easting :
Collar :



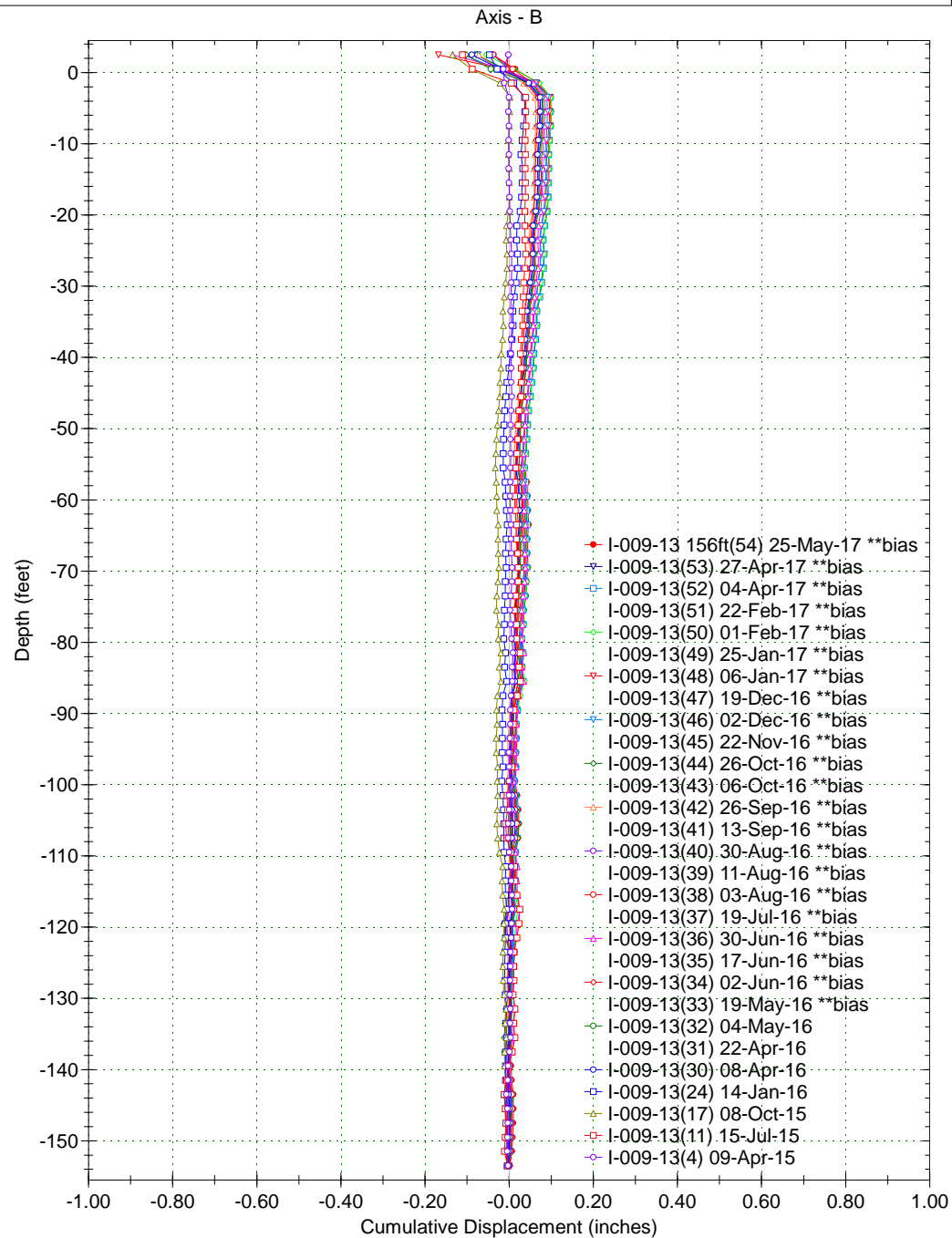
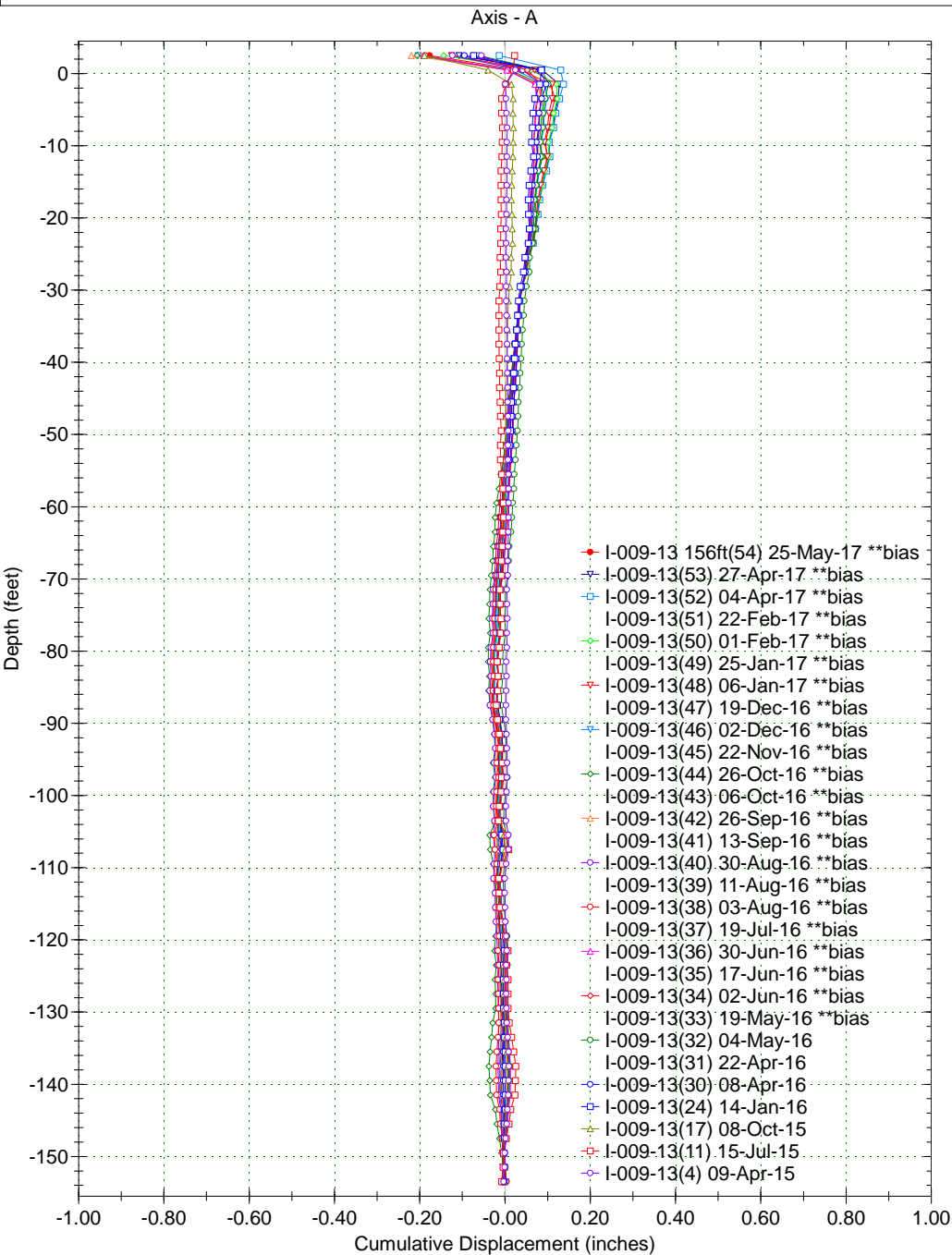
Spiral Correction : N/A
Collar Elevation : 2.4 feet
Borehole Total Depth : 180.0 feet
A+ Groove Azimuth :
Base Reading : 2014 Jan 14 07:26
Applied Azimuth : 0.0 degrees



Borehole : I-009-13
Project : CUY-90-15-24
Location : Cleveland, Ohio
Northing :
Easting :
Collar :



Spiral Correction : N/A
Collar Elevation : 4.5 feet
Borehole Total Depth : 158.0 feet
A+ Groove Azimuth :
Base Reading : 2015 Mar 18 15:56
Applied Azimuth : 0.0 degrees



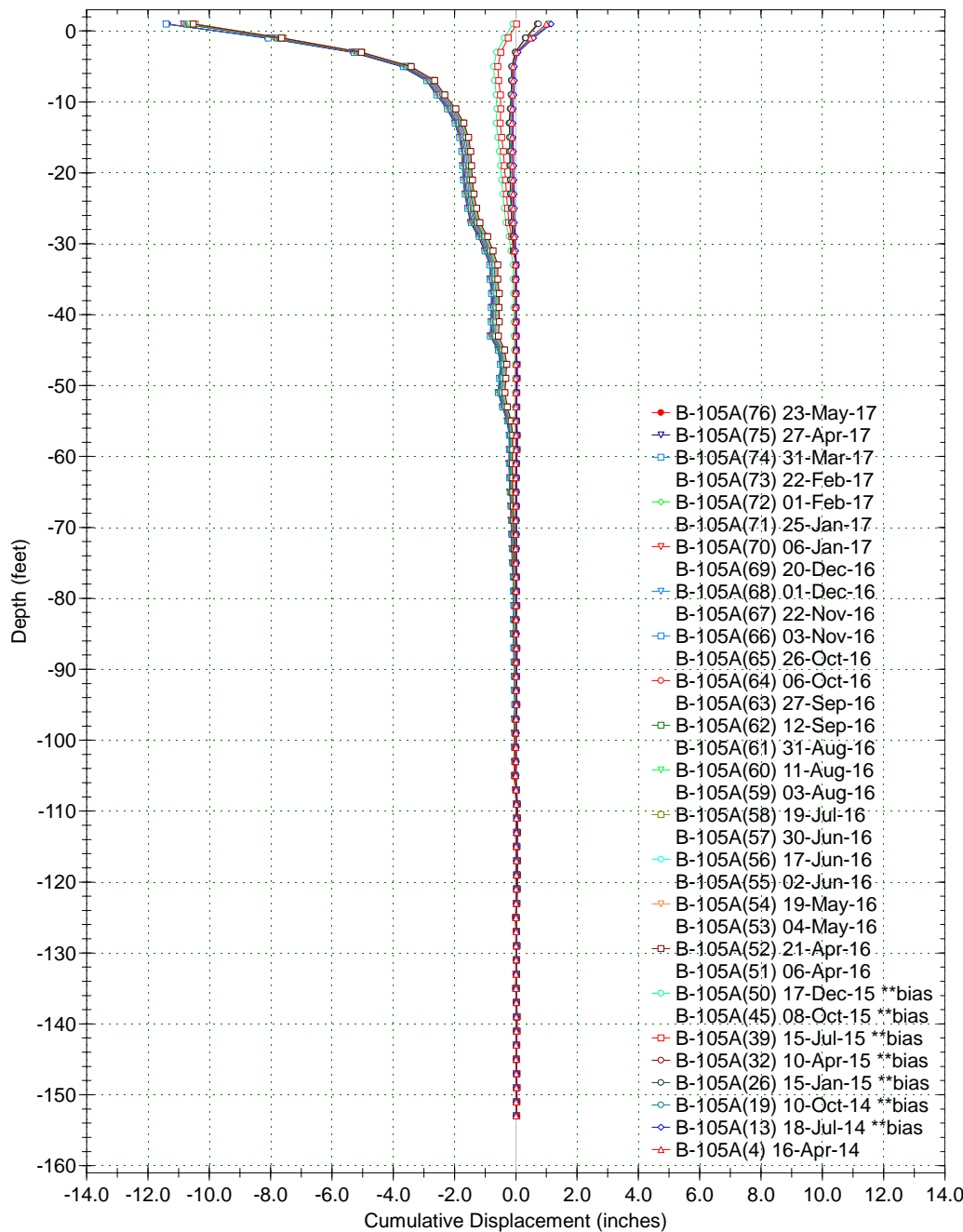
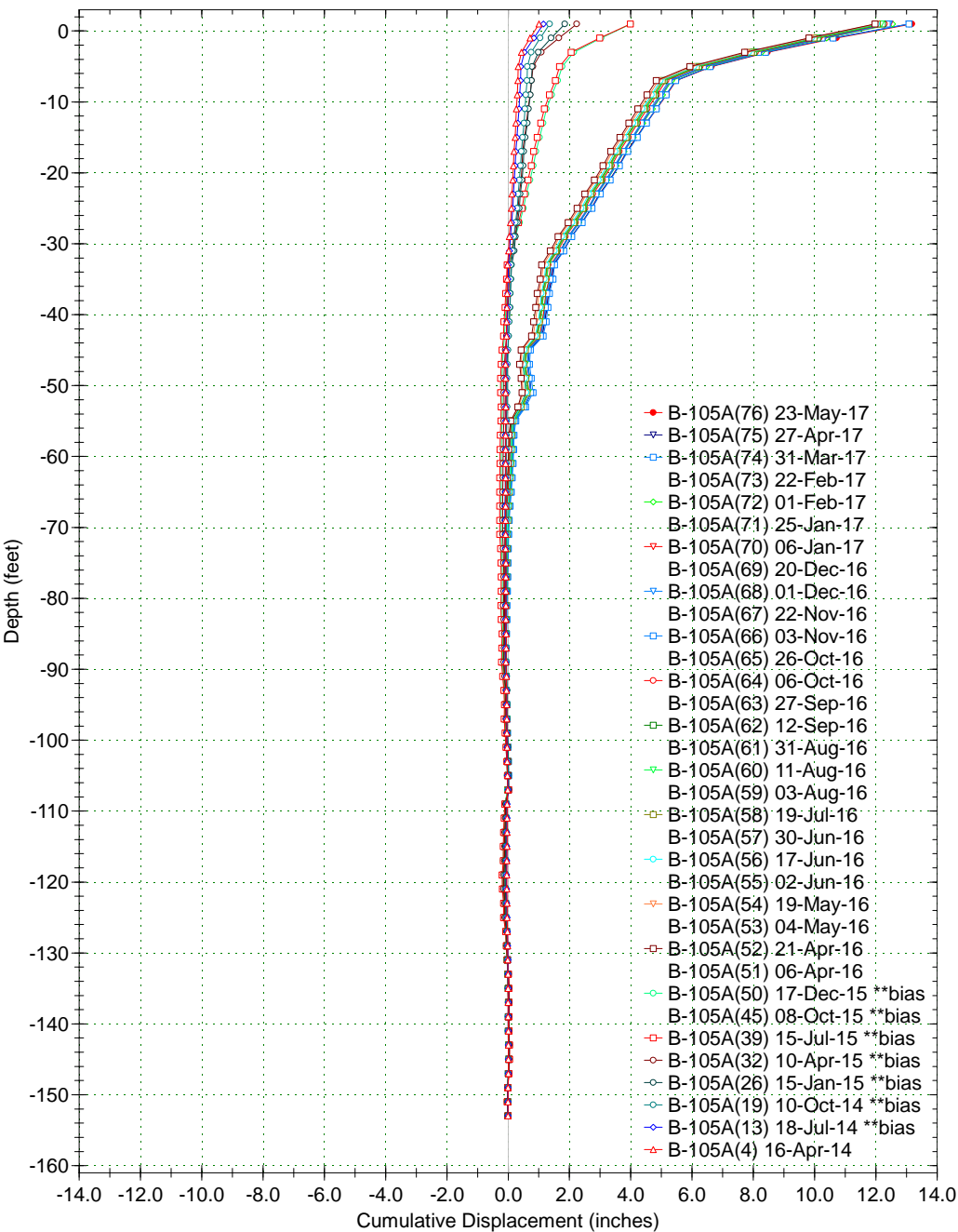
Borehole : B-105A
 Project : CUY-90-15-24
 Location : Cleveland, Ohio
 Northing : Sta. 19+11.38
 Easting : 90.9' Rt of CL
 Collar :



Spiral Correction : N/A
 Collar Elevation : 3.0 feet
 Borehole Total Depth : 156.0 feet
 A+ Groove Azimuth :
 Base Reading : 2014 Jan 15 09:19
 Applied Azimuth : 0.0 degrees

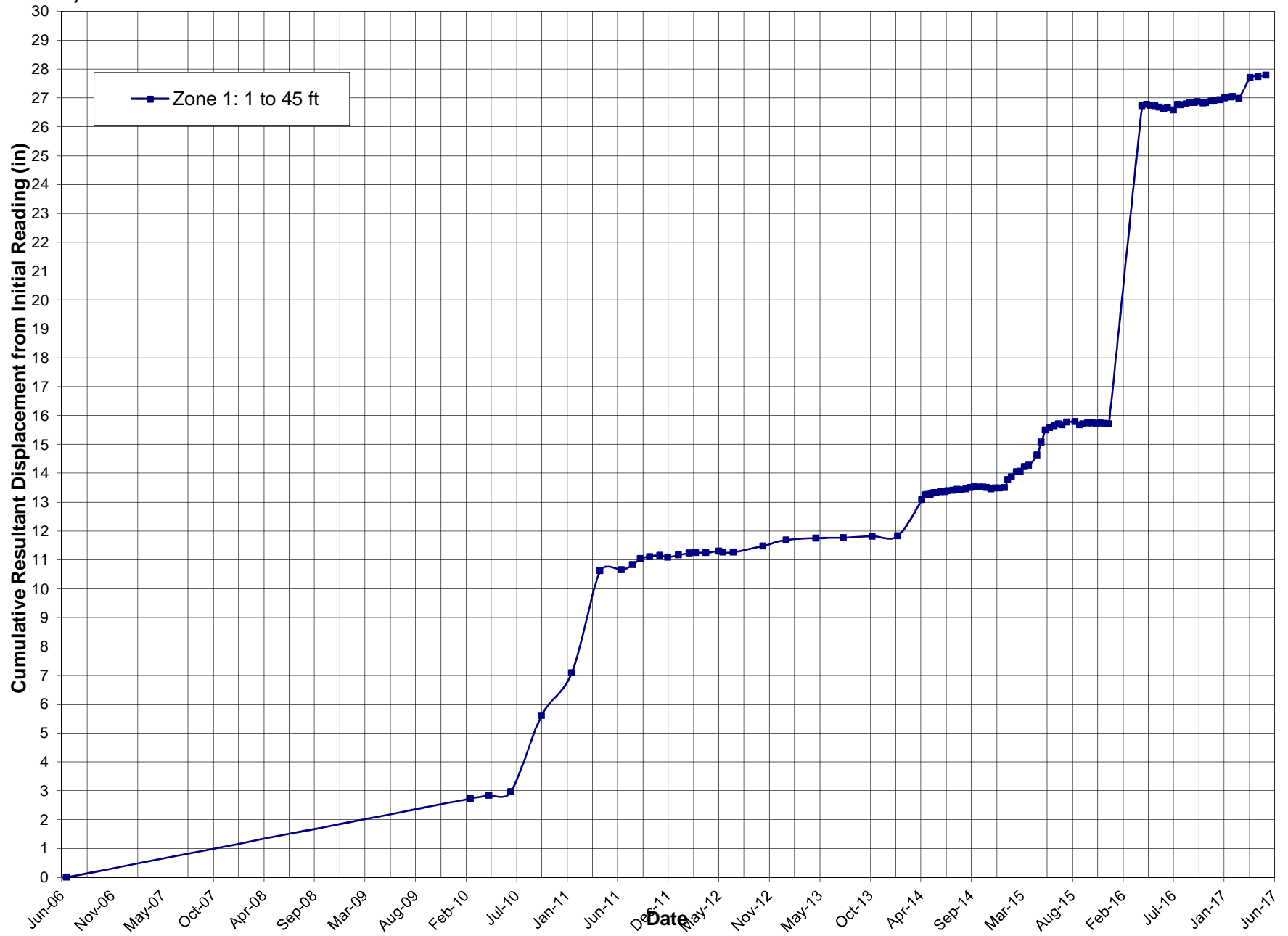
Axis - A

Axis - B



CUY-90-15.24
PID 96504
SME Project#: 069032.00

B-105A



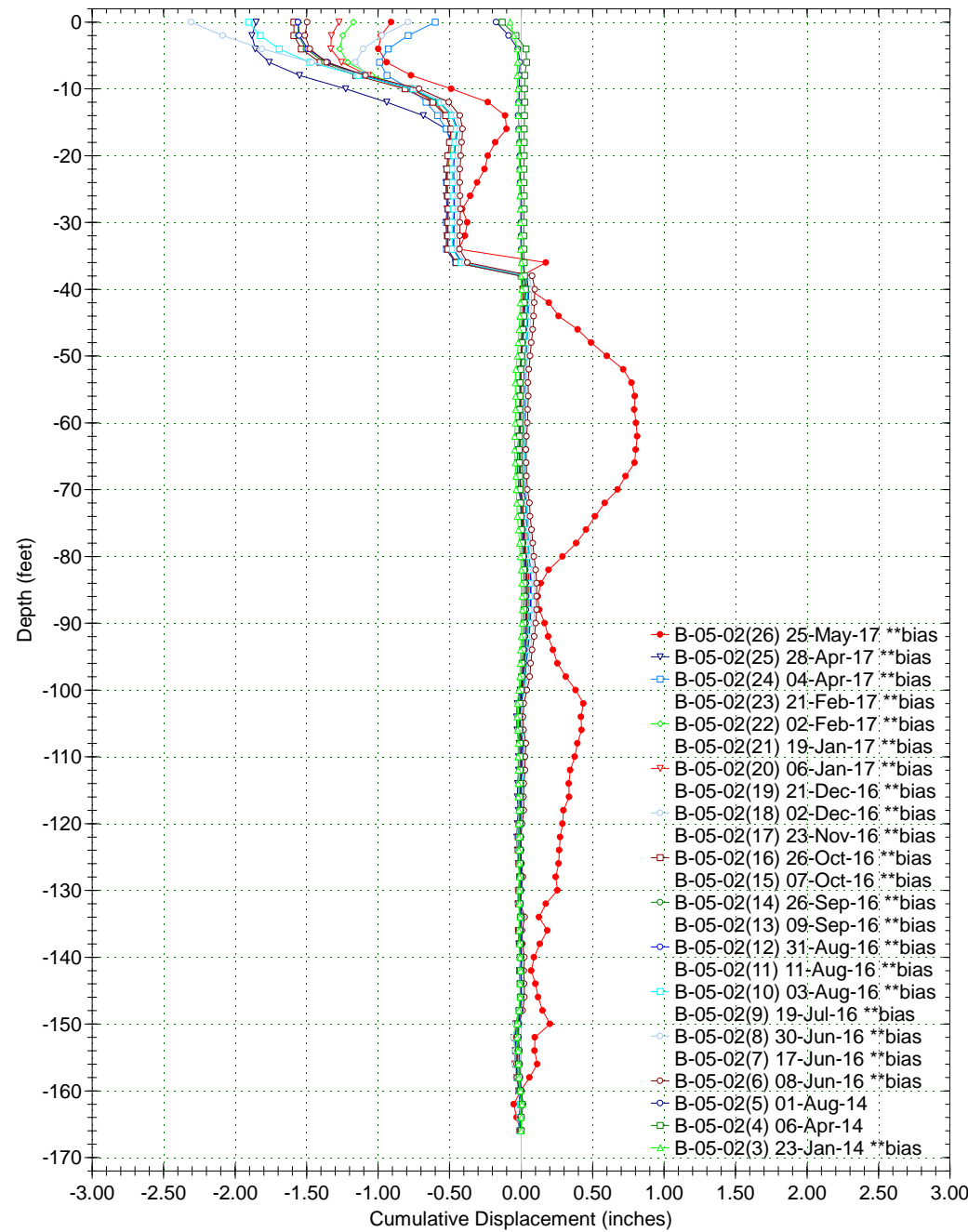
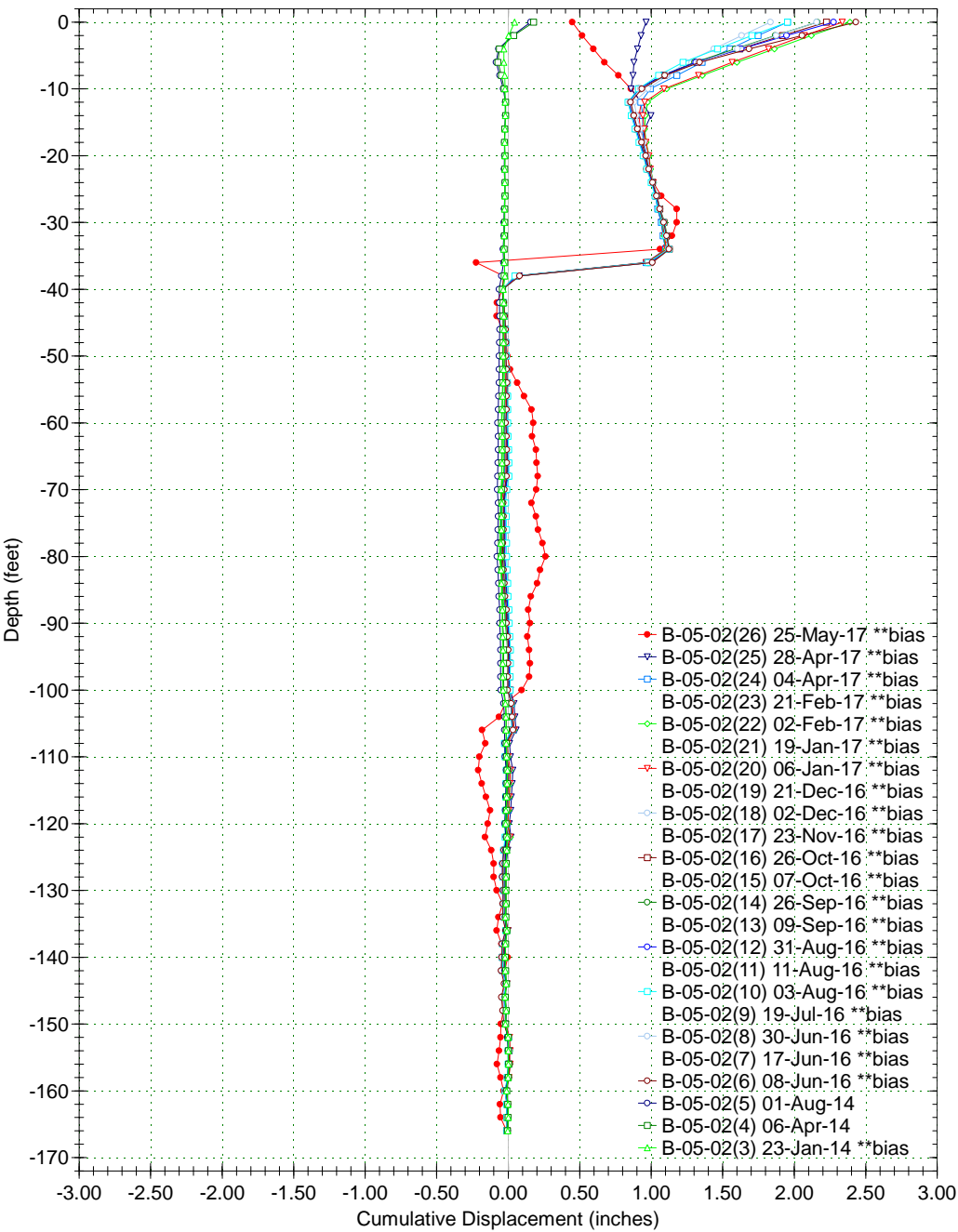
Borehole : B-05-02
 Project : CUY-90-15-24
 Location : Cleveland, Ohio
 Northing : 663737.939
 Easting : 2190289.081
 Collar :



Spiral Correction : N/A
 Collar Elevation : 2.0 feet
 Borehole Total Depth : 168.0 feet
 A+ Groove Azimuth :
 Base Reading : 2013 Dec 24 11:12
 Applied Azimuth : 0.0 degrees

Axis - A

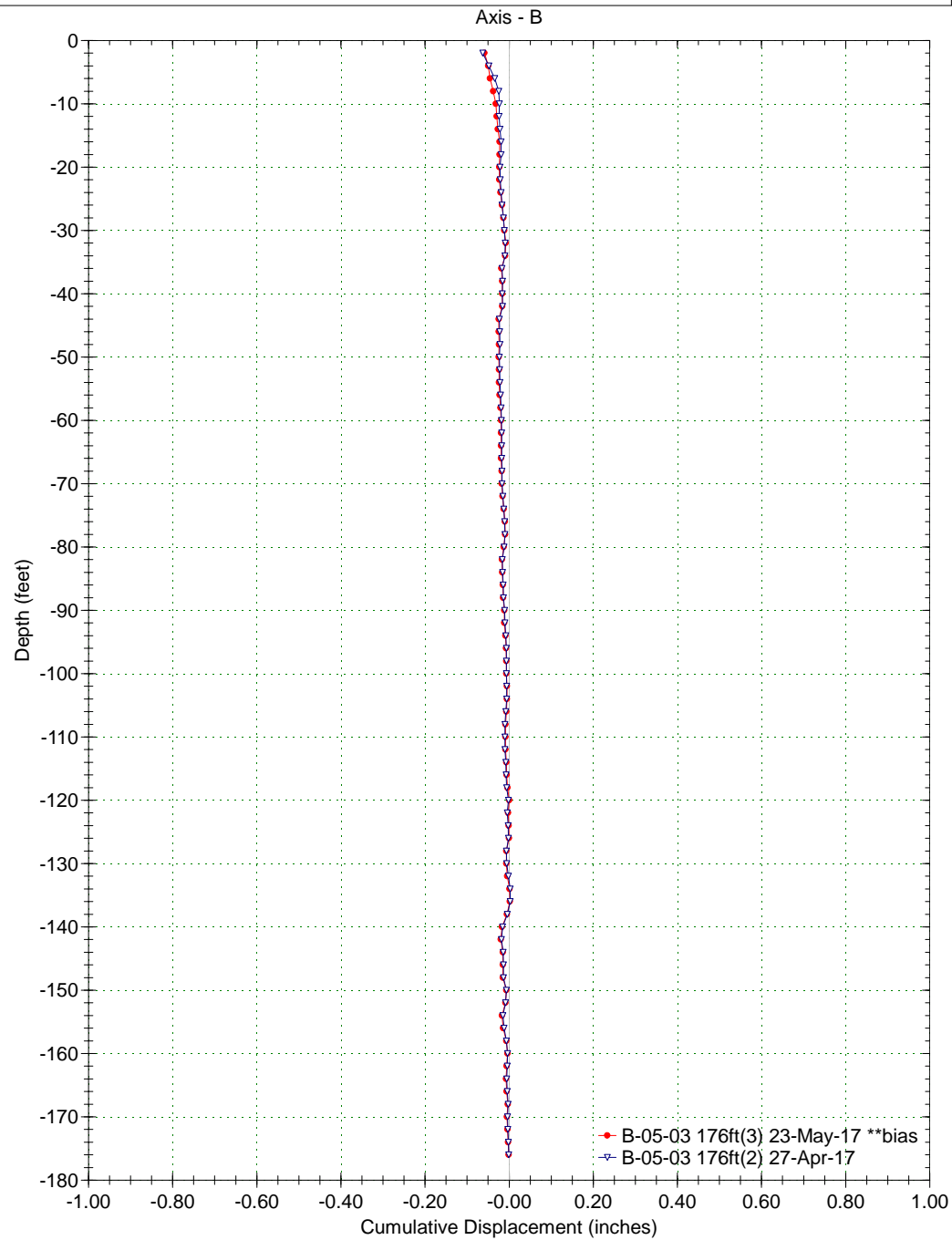
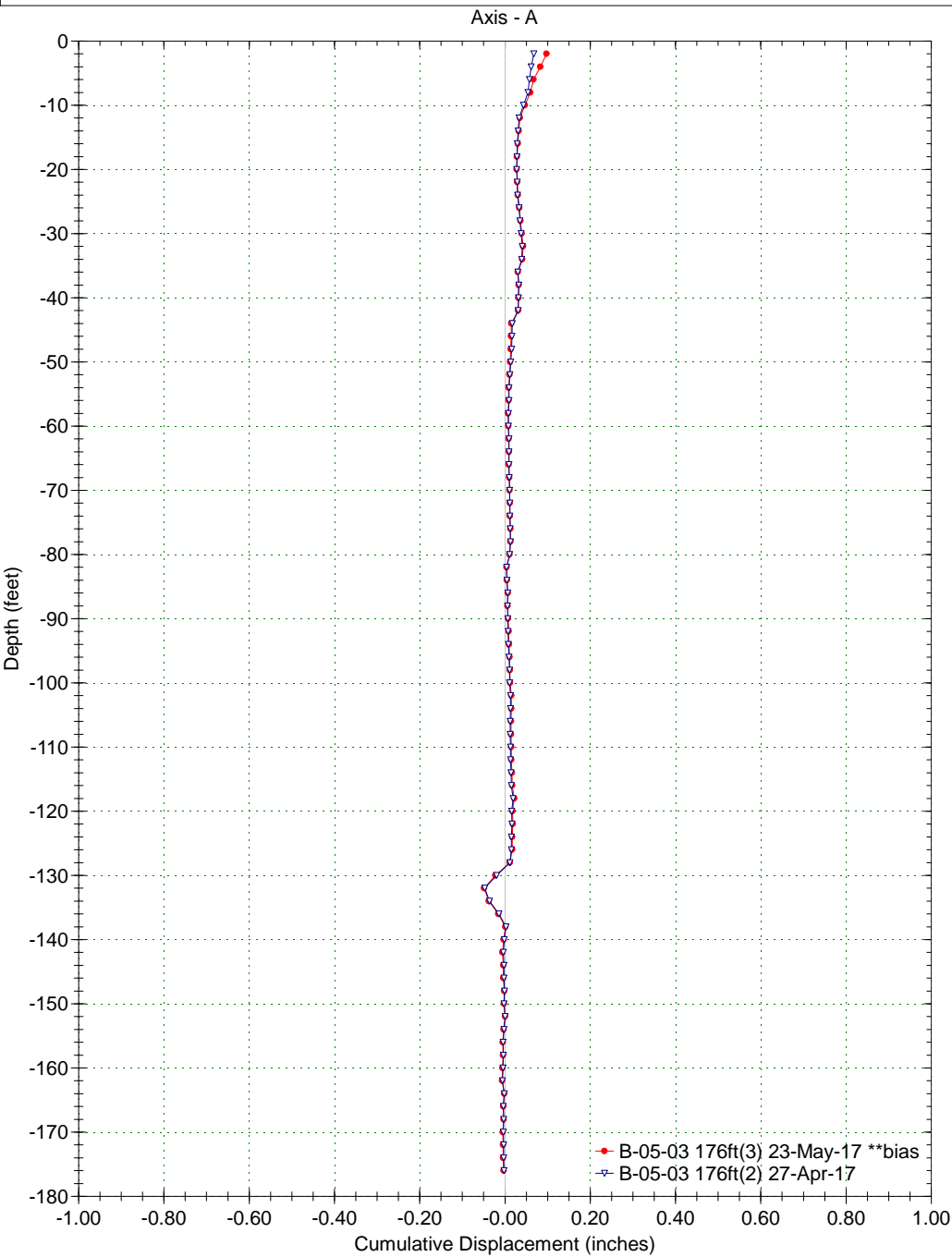
Axis - B



Borehole : B-05-03
Project : CUY-90-15-24
Location : Cleveland, Ohio
Northing :
Easting :
Collar :



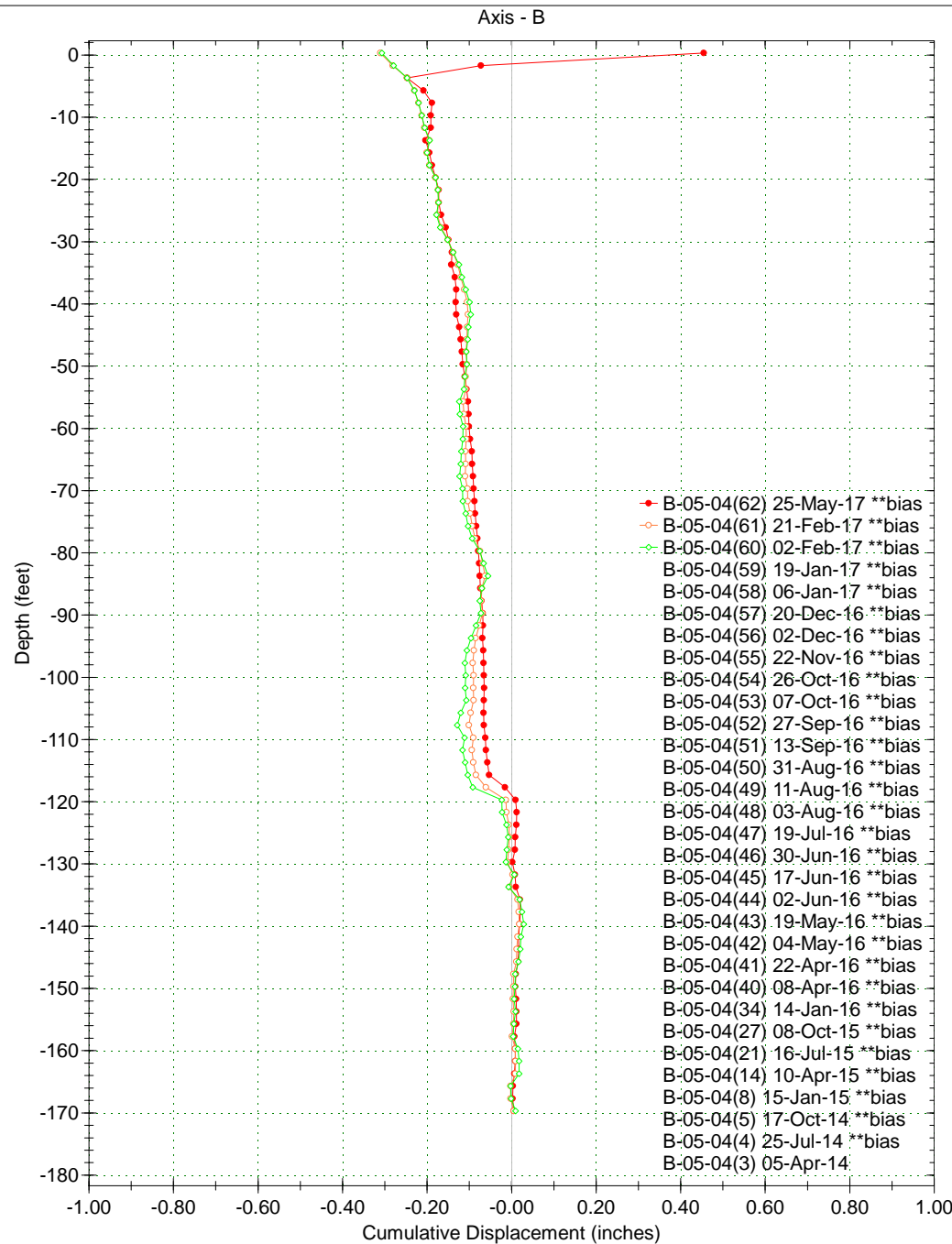
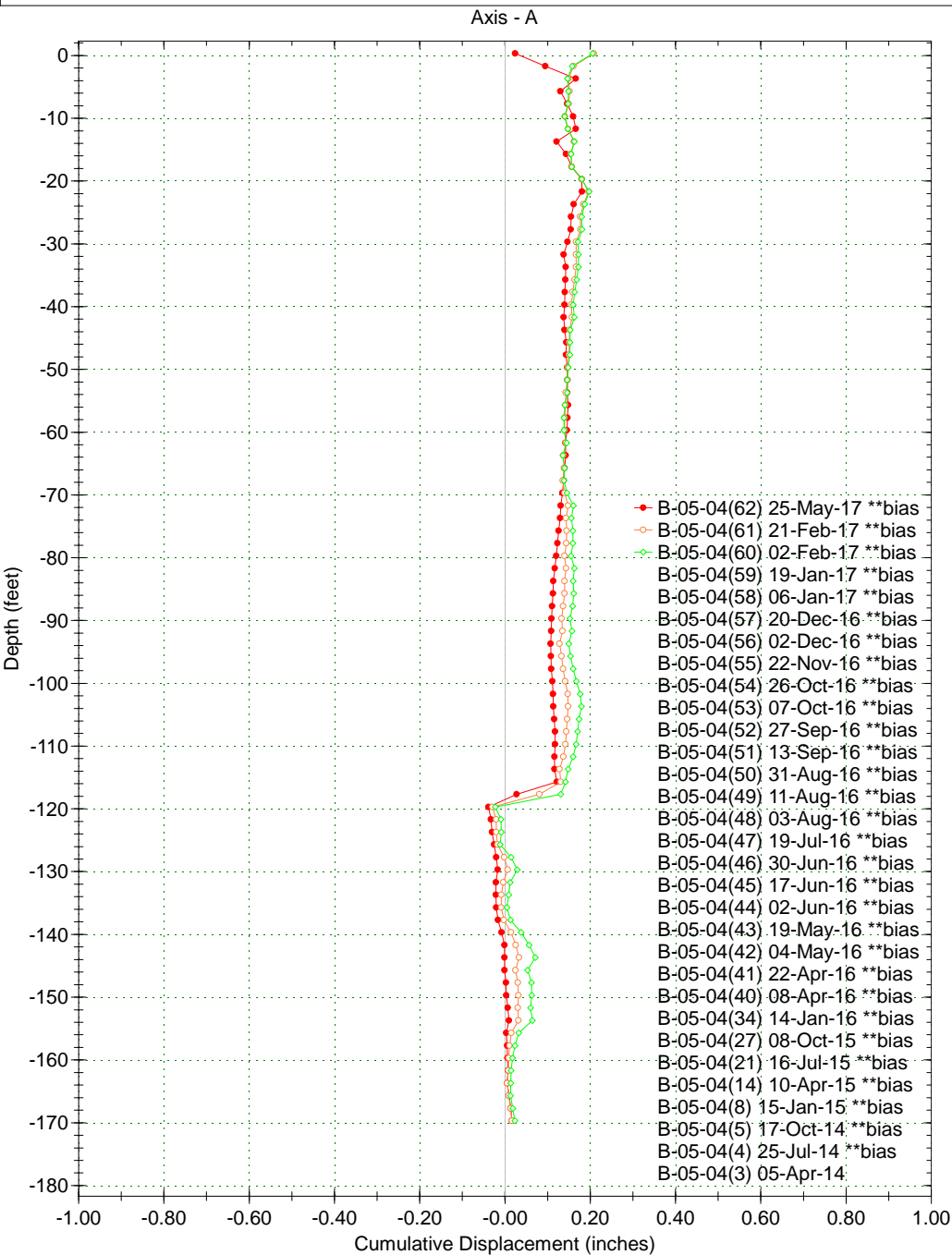
Spiral Correction : N/A
Collar Elevation : 0.0 feet
Borehole Total Depth : 176.0 feet
A+ Groove Azimuth :
Base Reading : 2017 Apr 04 08:38
Applied Azimuth : 0.0 degrees



Borehole : B-05-04
 Project : CUY-90-15-24
 Location : Cleveland, Ohio
 Northing : Sta. 133+51.67
 Easting : 242.09' Rt of CL
 Collar :



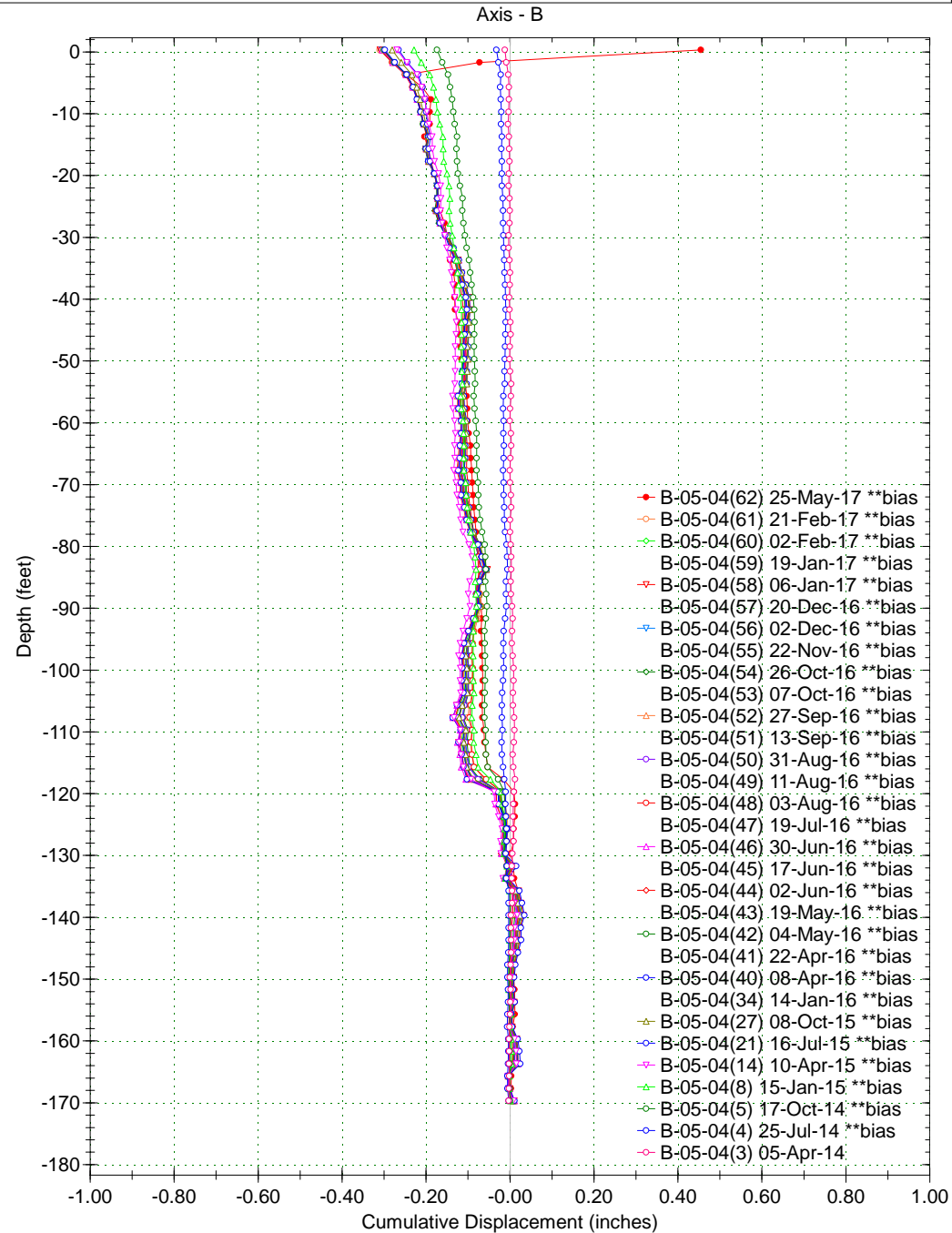
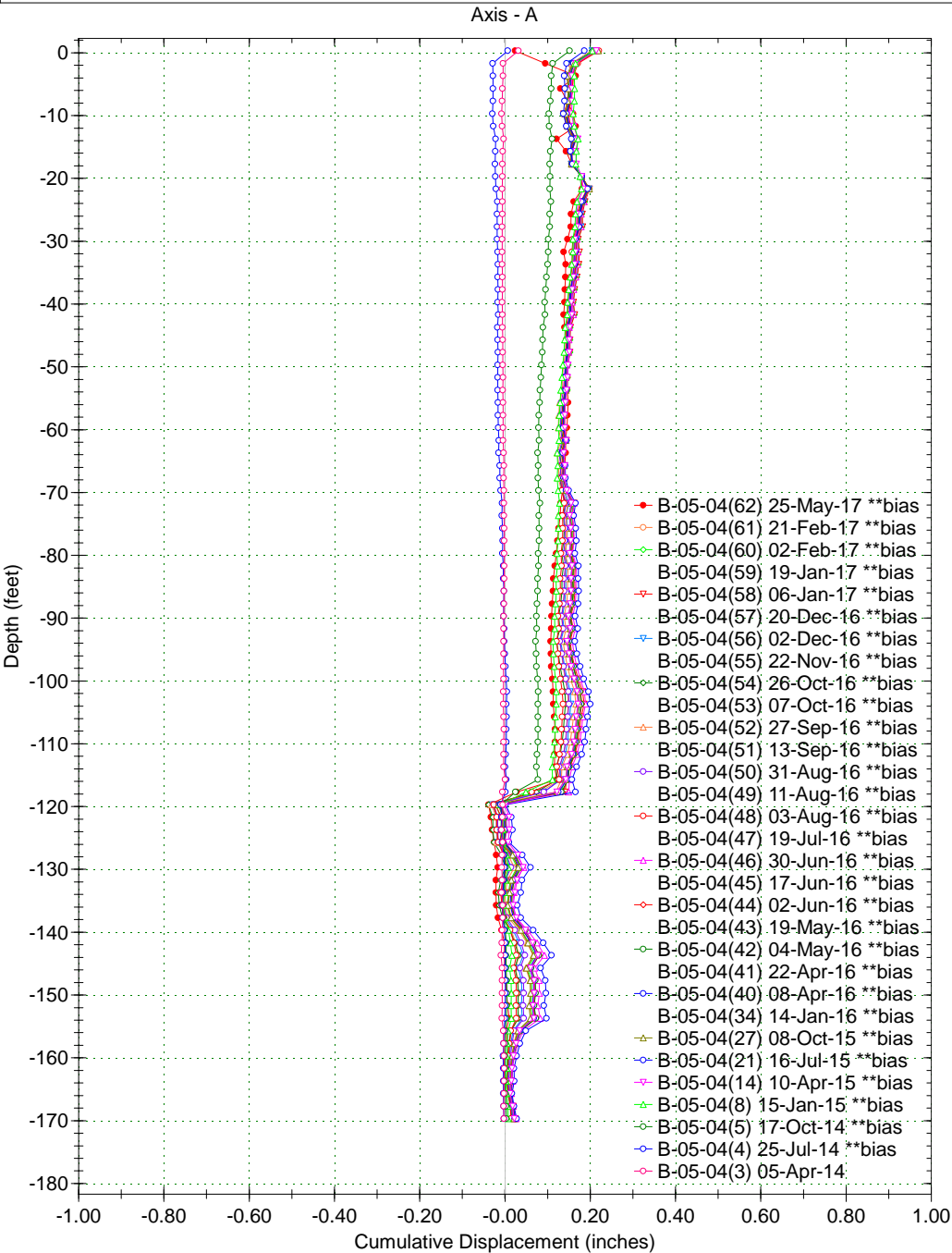
Spiral Correction : N/A
 Collar Elevation : 2.3 feet
 Borehole Total Depth : 172.0 feet
 A+ Groove Azimuth :
 Base Reading : 2014 Jan 22 12:30
 Applied Azimuth : 0.0 degrees



Borehole : B-05-04
Project : CUY-90-15-24
Location : Cleveland, Ohio
Northing : Sta. 133+51.67
Easting : 242.09' Rt of CL
Collar :



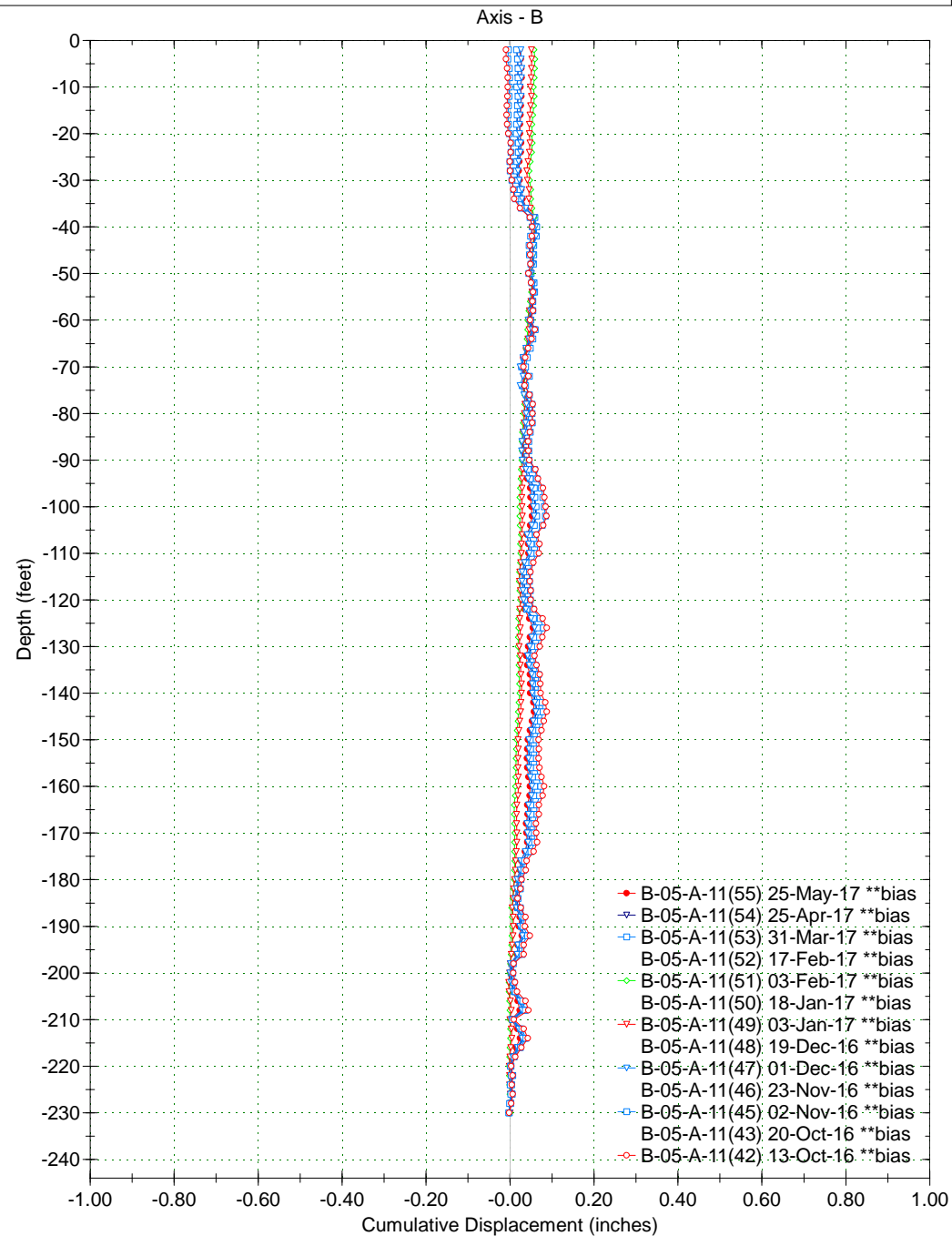
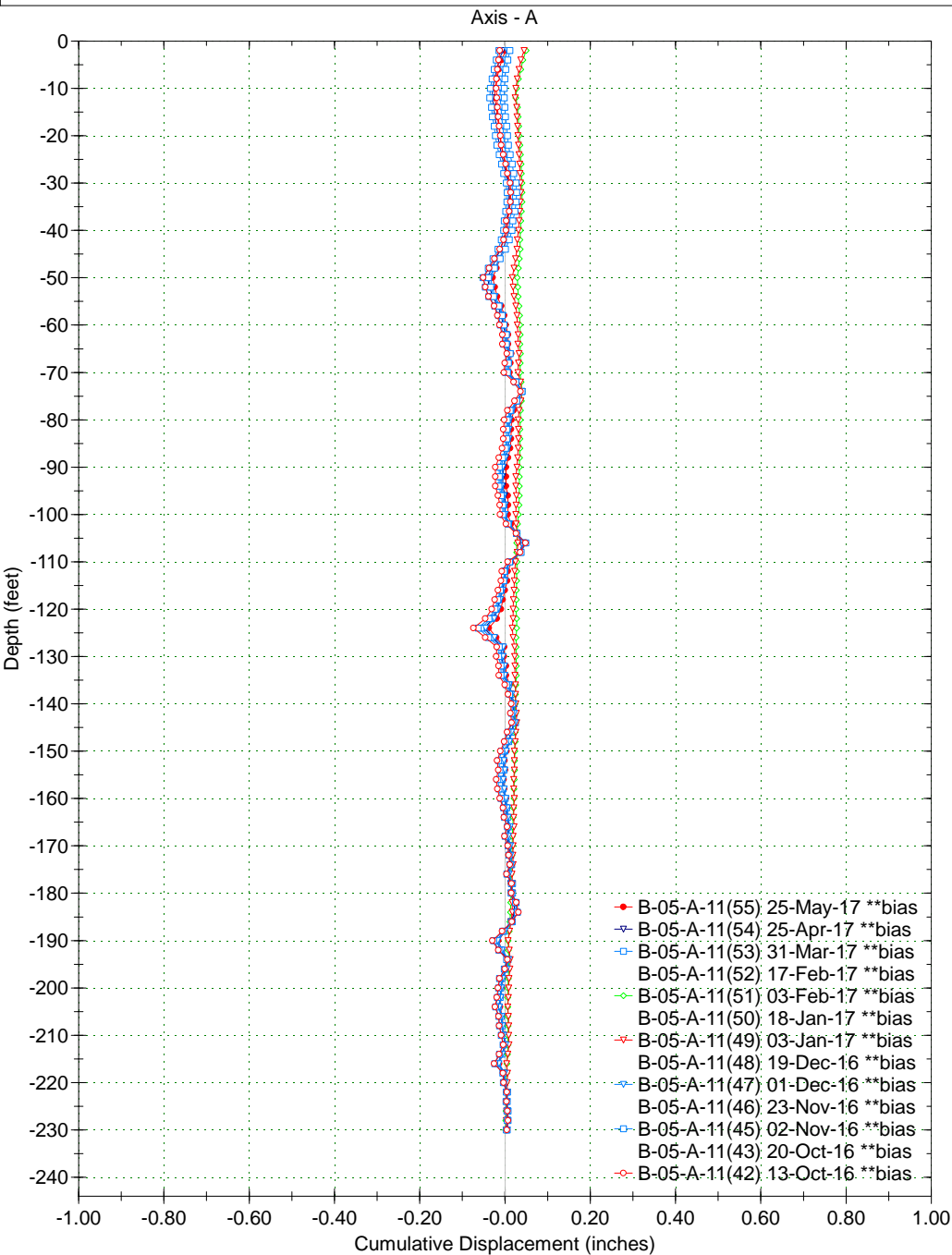
Spiral Correction : N/A
Collar Elevation : 2.3 feet
Borehole Total Depth : 172.0 feet
A+ Groove Azimuth :
Base Reading : 2014 Jan 22 12:30
Applied Azimuth : 0.0 degrees



Borehole : B-05-A-11 230 ft
Project : CUY-90-15-24
Location :
Northing :
Easting :
Collar :



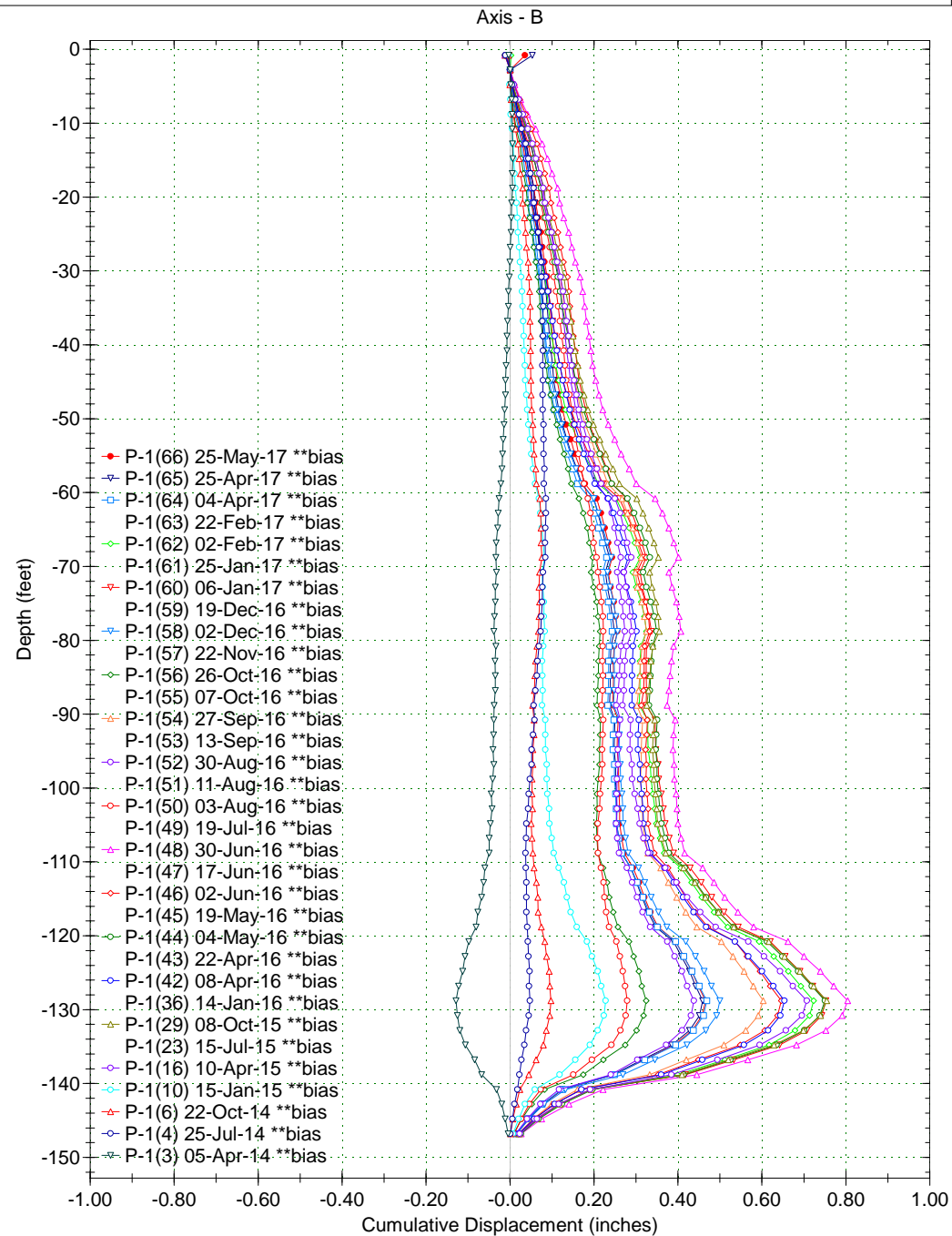
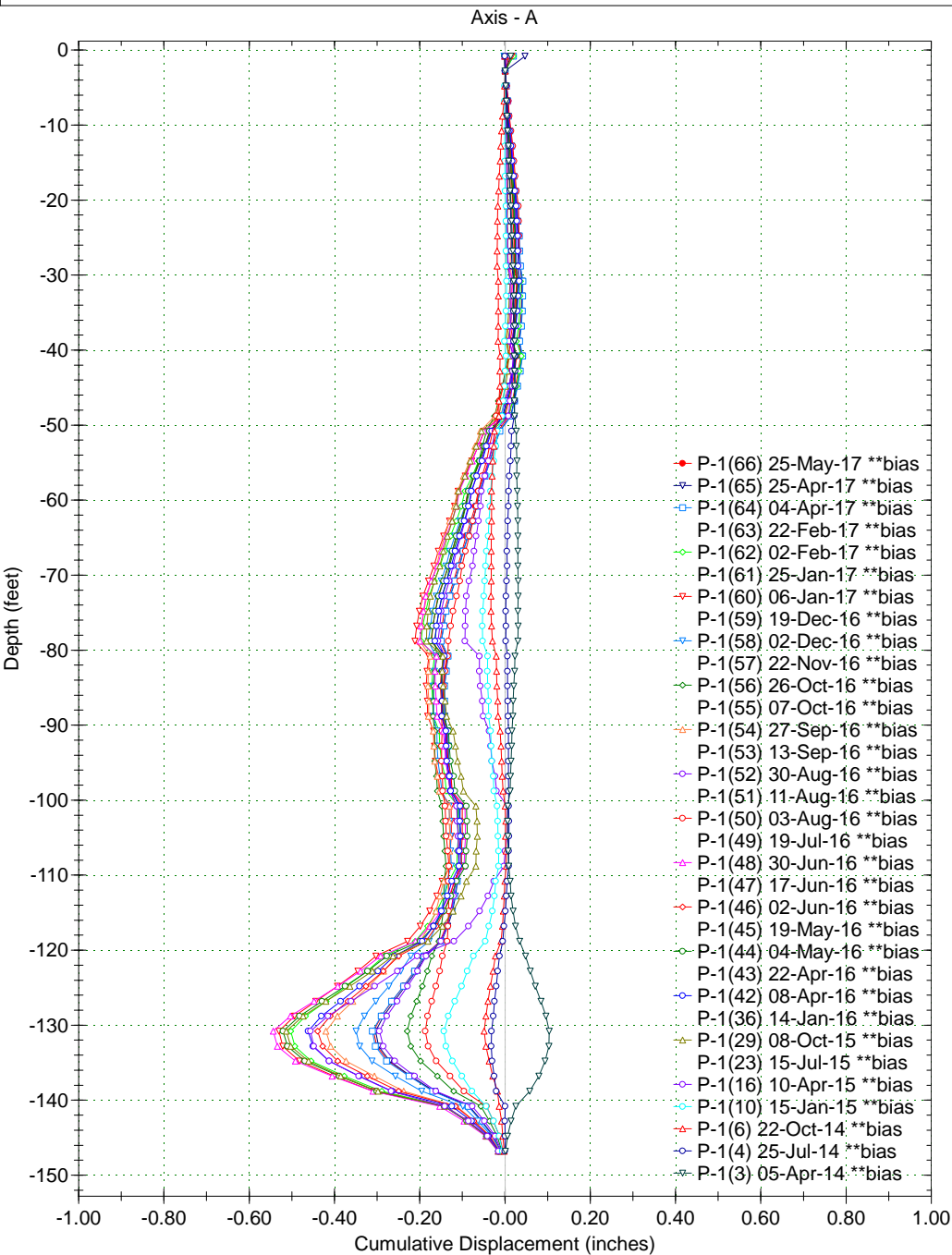
Spiral Correction : N/A
Collar Elevation : 0.0 feet
Borehole Total Depth : 230.0 feet
A+ Groove Azimuth :
Base Reading : 2016 Sep 28 08:37
Applied Azimuth : 0.0 degrees



Borehole : P-1
Project : CUY-90-15-24
Location : Cleveland, Ohio
Northing :
Easting :
Collar :

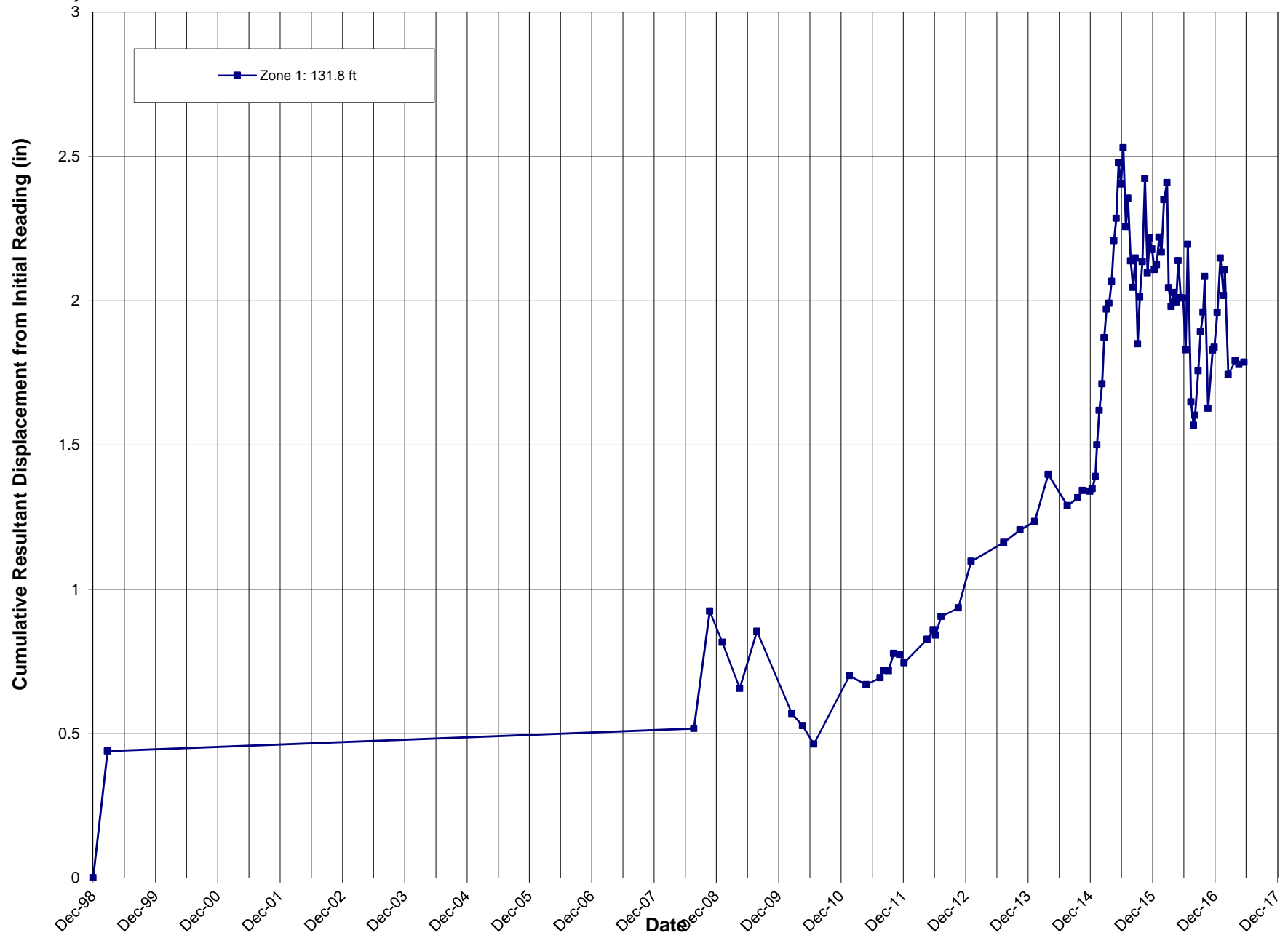


Spiral Correction : N/A
Collar Elevation : 1.2 feet
Borehole Total Depth : 148.0 feet
A+ Groove Azimuth :
Base Reading : 2014 Jan 22 10:47
Applied Azimuth : 0.0 degrees



CUY-90-15.24
PID 96504
SME Project#: 069032.00

P-1

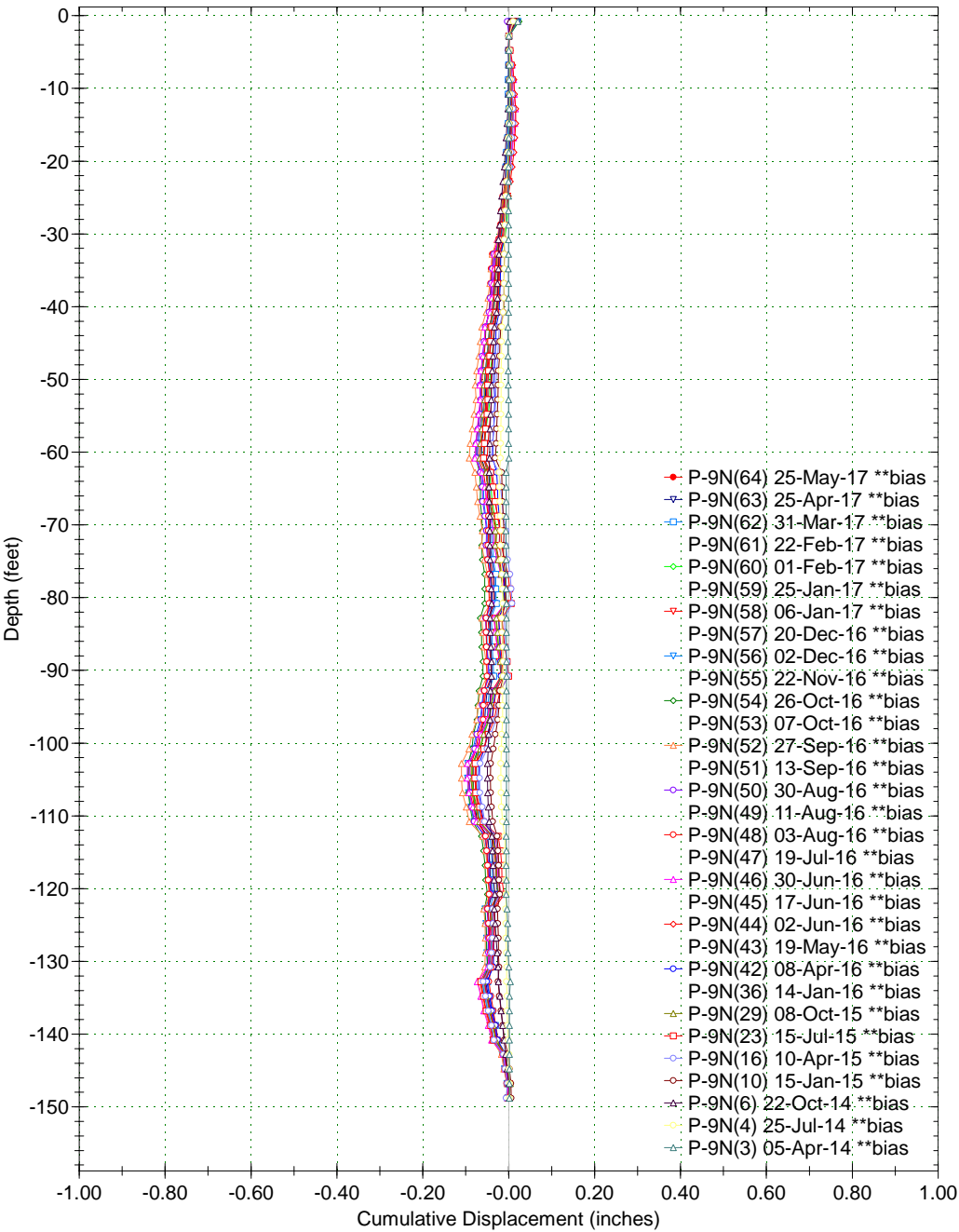


Borehole : P-9N
Project : CUY-90-15-24
Location : Cleveland, Ohio
Northing :
Easting :
Collar :



Spiral Correction : N/A
Collar Elevation : 1.2 feet
Borehole Total Depth : 150.0 feet
A+ Groove Azimuth :
Base Reading : 2014 Jan 16 09:28
Applied Azimuth : 0.0 degrees

Axis - A



Axis - B

