Bridgeton Landfill, LLC

Weekly Data Submittal

Week of September 25, 2016 – October 1, 2016

Required by Section 52.F of Agreed Order, Case No. 13SL-CC01088
Effective May 13, 2013

Contents:

Attachment A – Leachate Levels in Leachate Collection Sumps
Attachment B – Temperature Monitoring Probe Analytical Charts
Attachment C – Gas Interceptor Wellhead Temperature Graphs
Attachment D – Neck-Area Gas Extraction Wellhead Temperature Graphs

Provided Separately:

- **Leachate Level in Leachate Collection Sump Raw Data Excel Spreadsheet**
- **Temperature Monitoring Probe Raw Data Excel Spreadsheet**
- **Heat Extraction System TMP Raw Data Excel Spreadsheet**
- **Gas Interceptor Well Reading Raw Data Excel Spreadsheet**
- **Neck-Area Gas Extraction Well Data Excel Spreadsheet**

October 7, 2016

Commentary on Data

October 7, 2016

Attachment A – Leachate Levels in Leachate Collection Sumps

Leachate Collection Sumps (LCSs) LCS-4B, -5A, and -6B were fully operational during the weekly reporting period.

The level sensor in LCS-4B is currently operational and responsive. Liquid level was not recorded by the level sensor during the weekly reporting period. The sump is equipped with a flow meter which displayed no flow during the weekly reporting period. Therefore, it can be concluded that the liquid level in the sump were below the bottom of the pump and level sensor in the sump.

The pumps in LCS-2D and LCS-3D were non-operational during the weekly reporting period. The transducer in LCS-3D continued to report liquid levels.

LCS-1D has been disconnected since 7/13/2016 due to construction for the HEB project. LCS-1D will be reconnected as soon as the construction for the HEB project allows it to be reconnected.

Attachment B - Temperature Monitoring Probe Analytical Charts

The following Temperature Monitoring Probes (TMPs) indicated generally consistent profiles to previous observations: TMP-1, -2, -3, -3R, -4, -4R, -6, -9, -10, -11, -14R, -16, -17, -18, -21, -22, -23, -24, -25, -26, -27, -28, and -29.

TMP readings for evaluation of the Heat Extraction System (HES) are provided as attachment "Heat Extraction System TMP Raw Data Excel Spreadsheet," but are not discussed in this report.

Attachment C - Gas Interceptor Wellhead Temperature Graphs

As part of the HES, there are currently cooling water circulation loops installed in twelve Gas Interceptor Wells (GIWs) (GIW-02 through GIW-13). The remaining well (GIW-01) had a measured gas temperature within its historical operating limits.

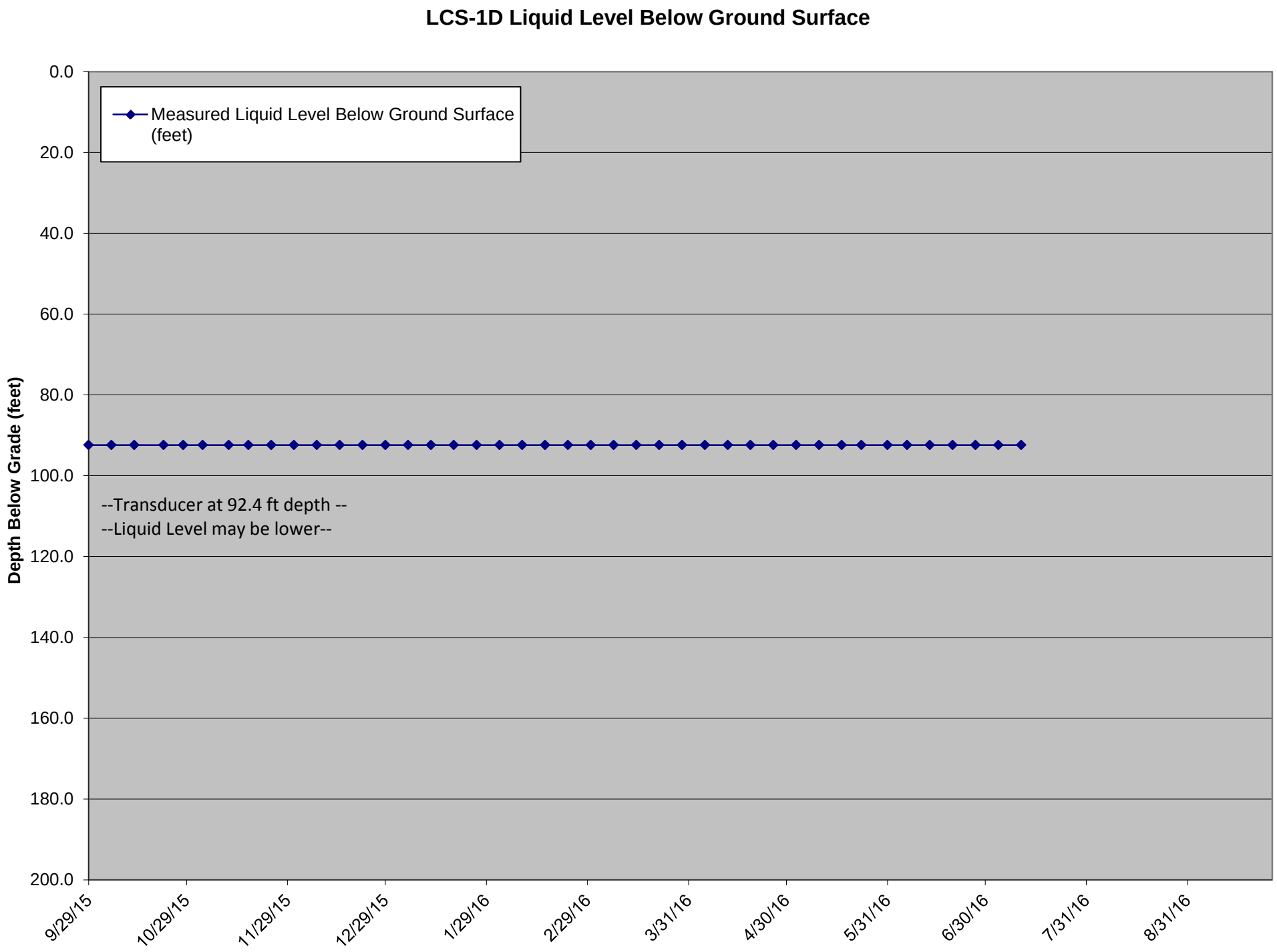
Attachment D – Neck Area Gas Extraction Well Data

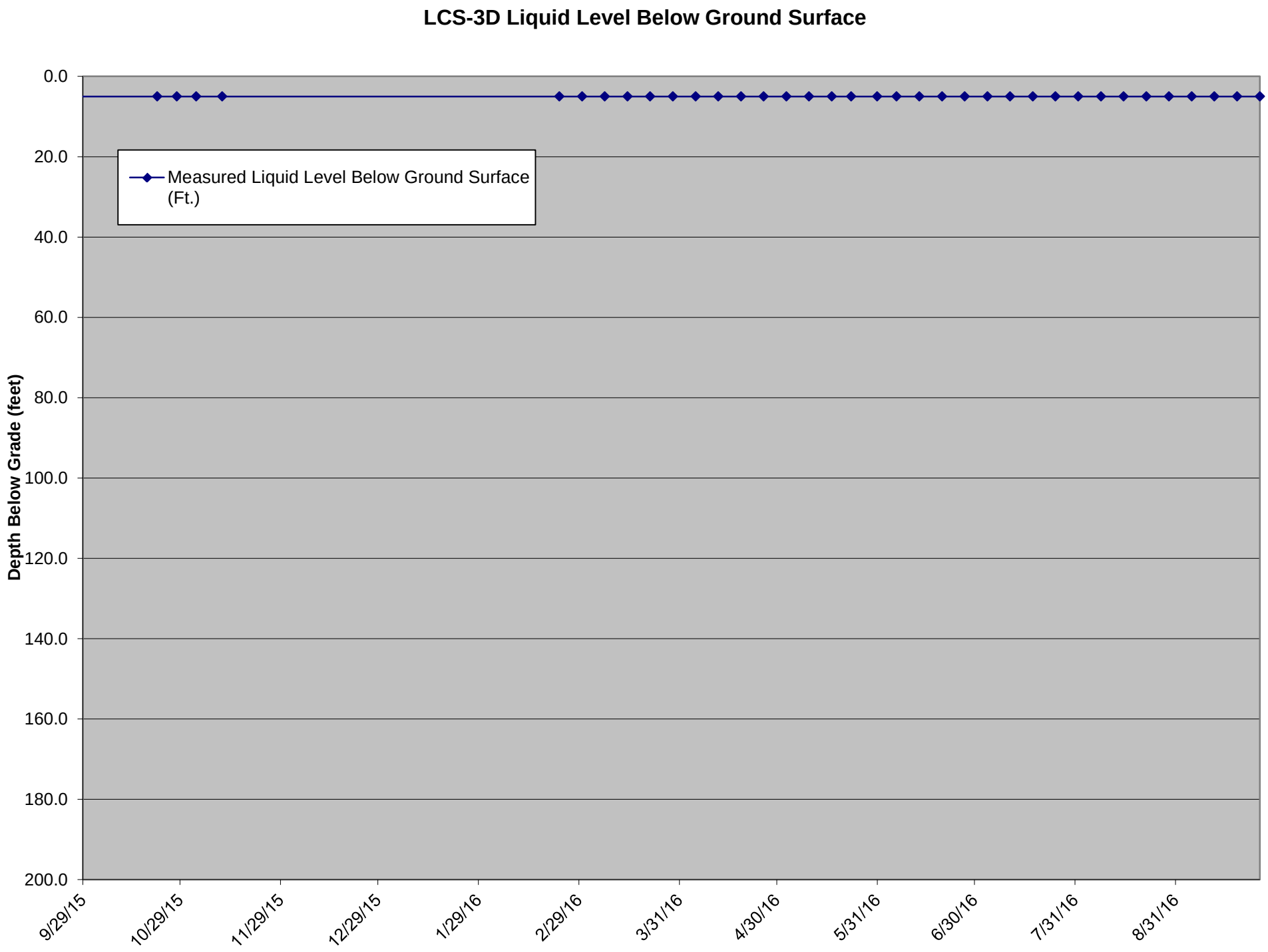
Weekly gas temperature data is collected for select Gas Extraction Wells (GEWs) located in the neck area of the landfill. These wells include GEW-008, -009, -010, -038, -039, -040, 041R, -043R, -053, -054, -055, -056R, -109, and -110.

During the weekly monitoring event it was determined that GEW-110 was not operating efficiently. Site personnel will continue to work on optimizing gas extraction from this well.

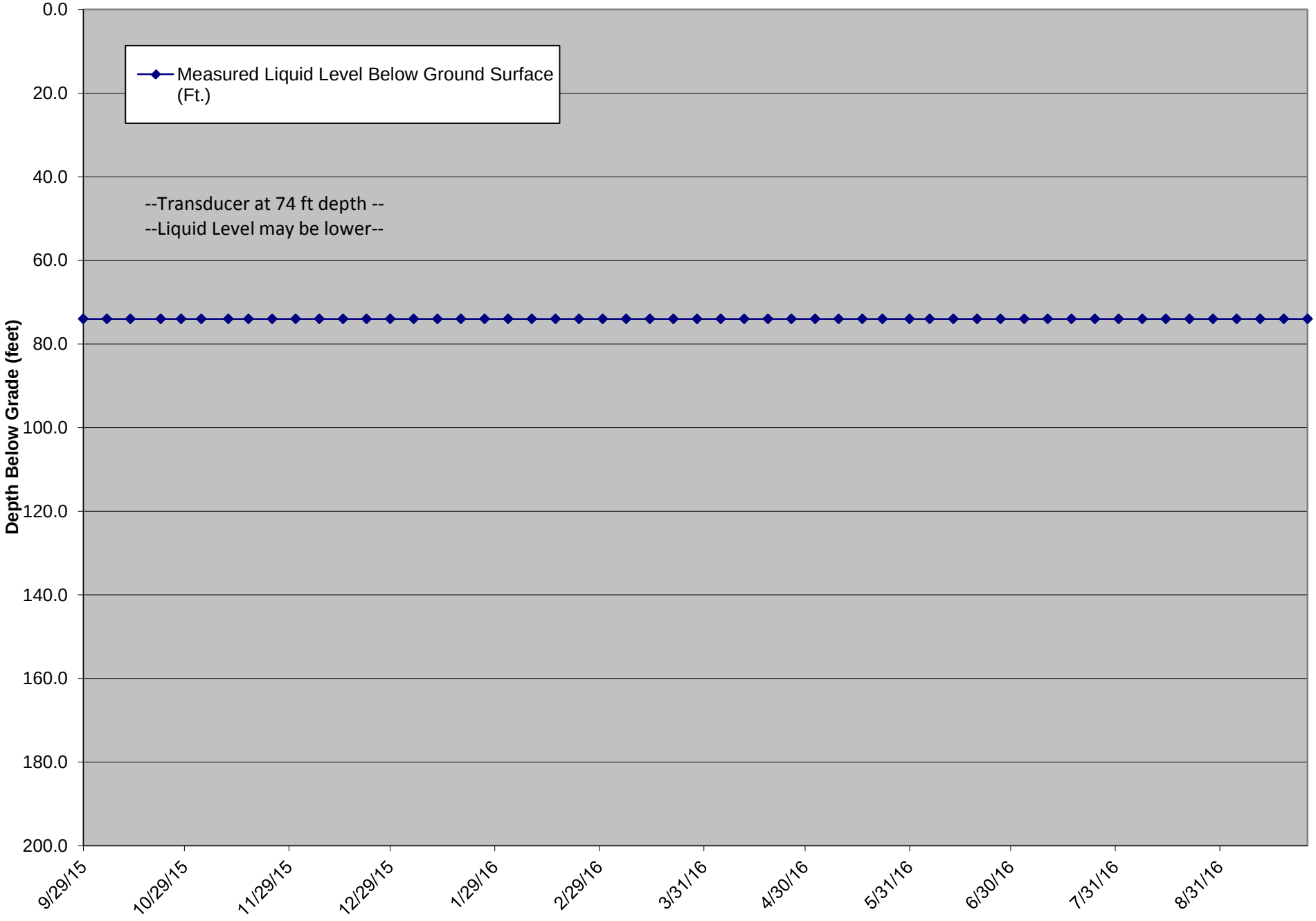
ATTACHMENT A

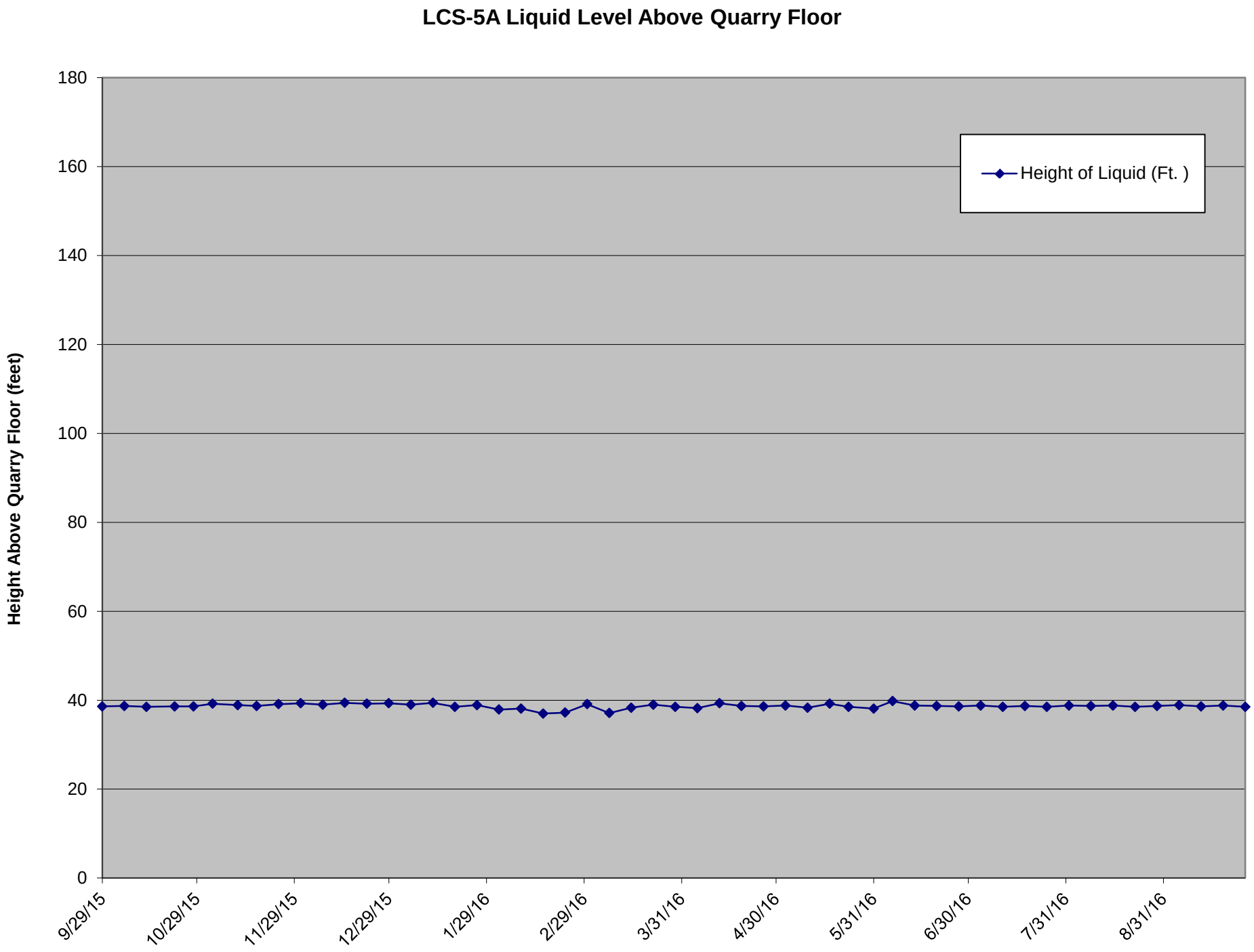
LEACHATE LEVELS IN LEACHATE COLLECTION SUMPS

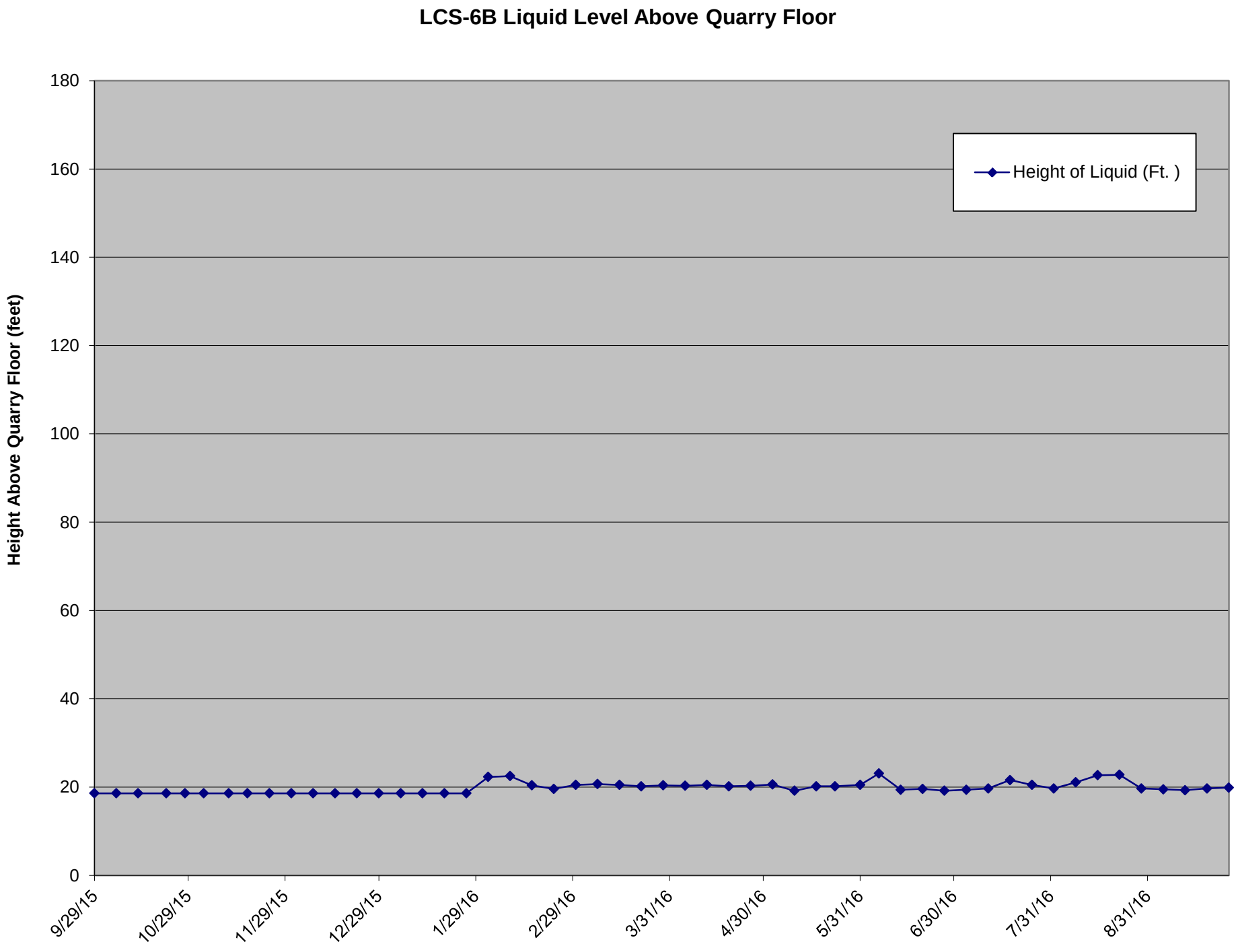

LCS-1D Liquid Level Below Ground Surface
Measured Liquid Level Below Ground Surface (feet)
Depth Below Grade (feet)
0.0
20.0
40.0
60.0
80.0
100.0
120.0
140.0
160.0
180.0
200.0
--Transducer at 92.4 ft depth --
--Liquid Level may be lower--
9/29/15
10/29/15
11/29/15
12/29/15
1/29/16
2/29/16
3/31/16
4/30/16
5/31/16
6/30/16
7/31/16
8/31/16


LCS-3D Liquid Level Below Ground Surface
Depth Below Grade (feet)
0.0
20.0
40.0
60.0
80.0
100.0
120.0
140.0
160.0
180.0
200.0
Measured Liquid Level Below Ground Surface (Ft.)
9/29/15
10/29/15
11/29/15
12/29/15
1/29/16
2/29/16
3/31/16
4/30/16
5/31/16
6/30/16
7/31/16
8/31/16

LCS-4B Liquid Level Below Ground Surface

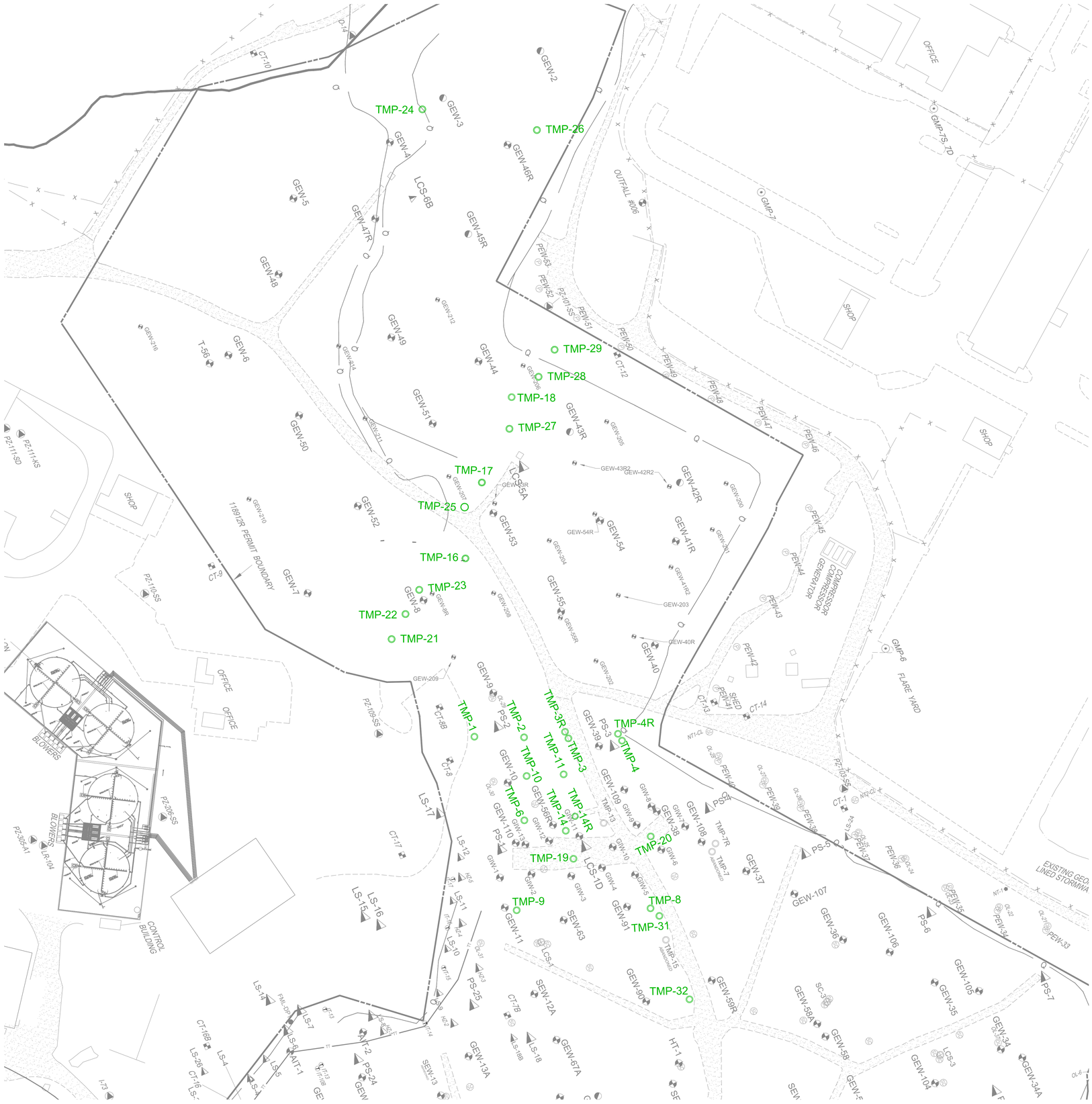



LCS-5A Liquid Level Above Quarry Floor
Height Above Quarry Floor (feet)
180
160
140
120
100
80
60
40
20
0
9/29/15
10/29/15
11/29/15
12/29/15
1/29/16
2/29/16
3/31/16
4/30/16
5/31/16
6/30/16
7/31/16
8/31/16
Height of Liquid (Ft.)


LCS-6B Liquid Level Above Quarry Floor
Height Above Quarry Floor (feet)
180
160
140
120
100
80
60
40
20
0
9/29/15
10/29/15
11/29/15
12/29/15
1/29/16
2/29/16
3/31/16
4/30/16
5/31/16
6/30/16
7/31/16
8/31/16
Height of Liquid (Ft.)

ATTACHMENT B

TEMPERATURE MONITORING PROBE ANALYTICAL CHARTS

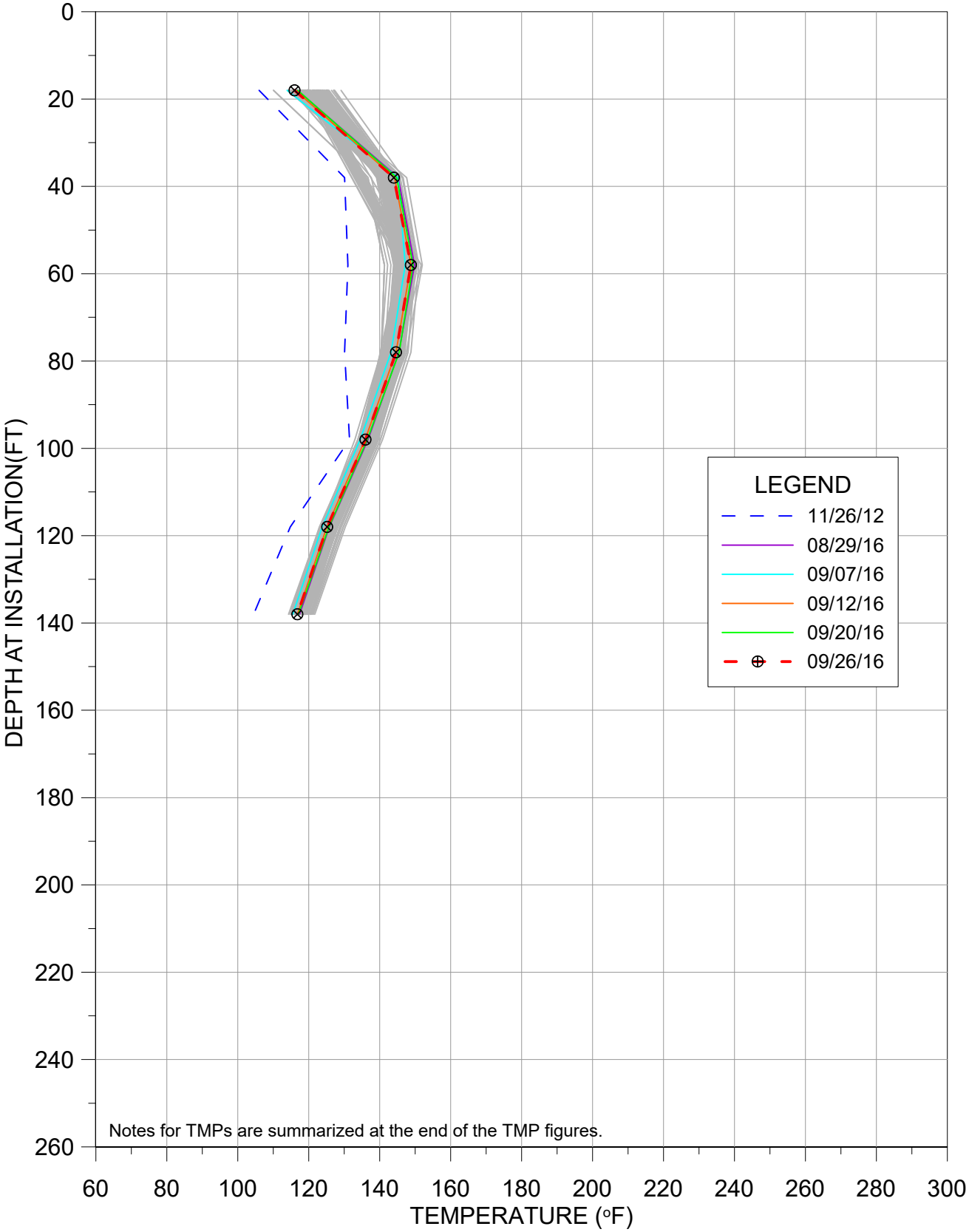


LEGEND

TMP-24 — TEMPERATURE MONITORING PROBE (EXISTING)

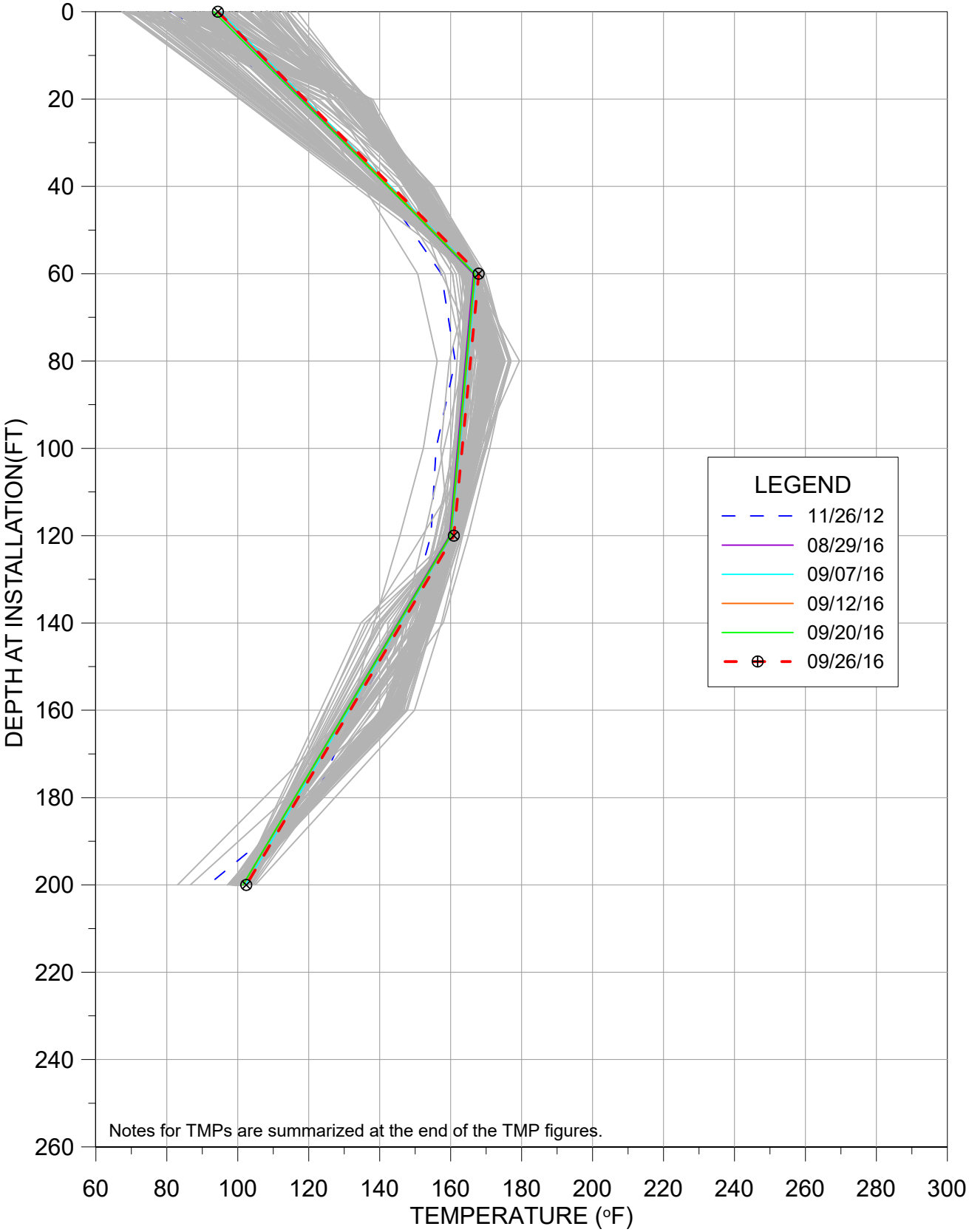
BRIDGETON LANDFILL, LLC 13570 ST. CHARLES ROCK ROAD BRIDGETON, MISSOURI 63044	BRIDGETON LANDFILL	FEEZOR ENGINEERING, INC. Engineering for a Better World	FEBRUARY 2015 DESIGNED BY: DMK APPROVED BY: ALK
WEEKLY TMP MONITORING			DRAWING NO.: **001**
PROJECT NUMBER: BT-041 FILE PATH:		REVISION	DATE

TMP-1



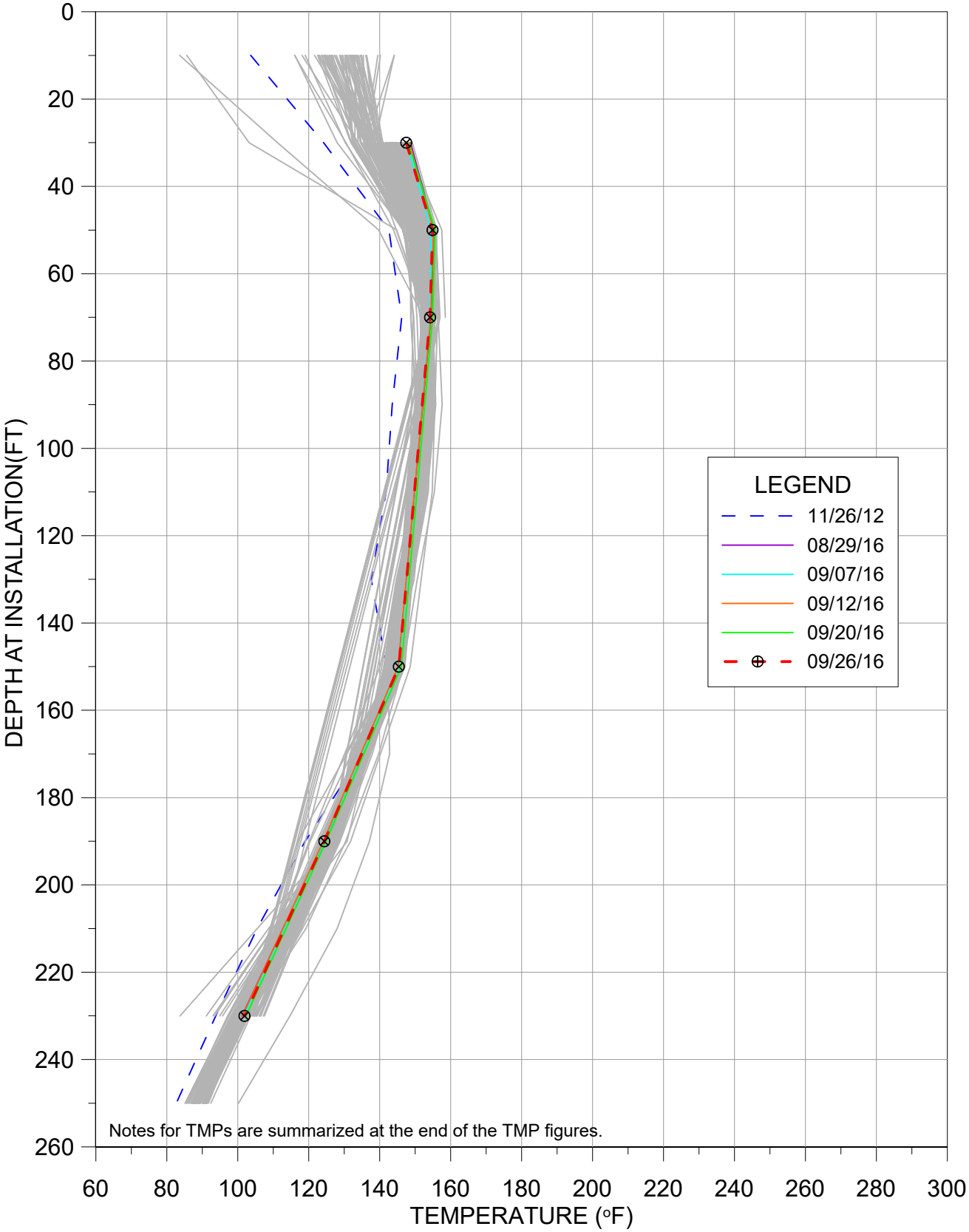
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-2



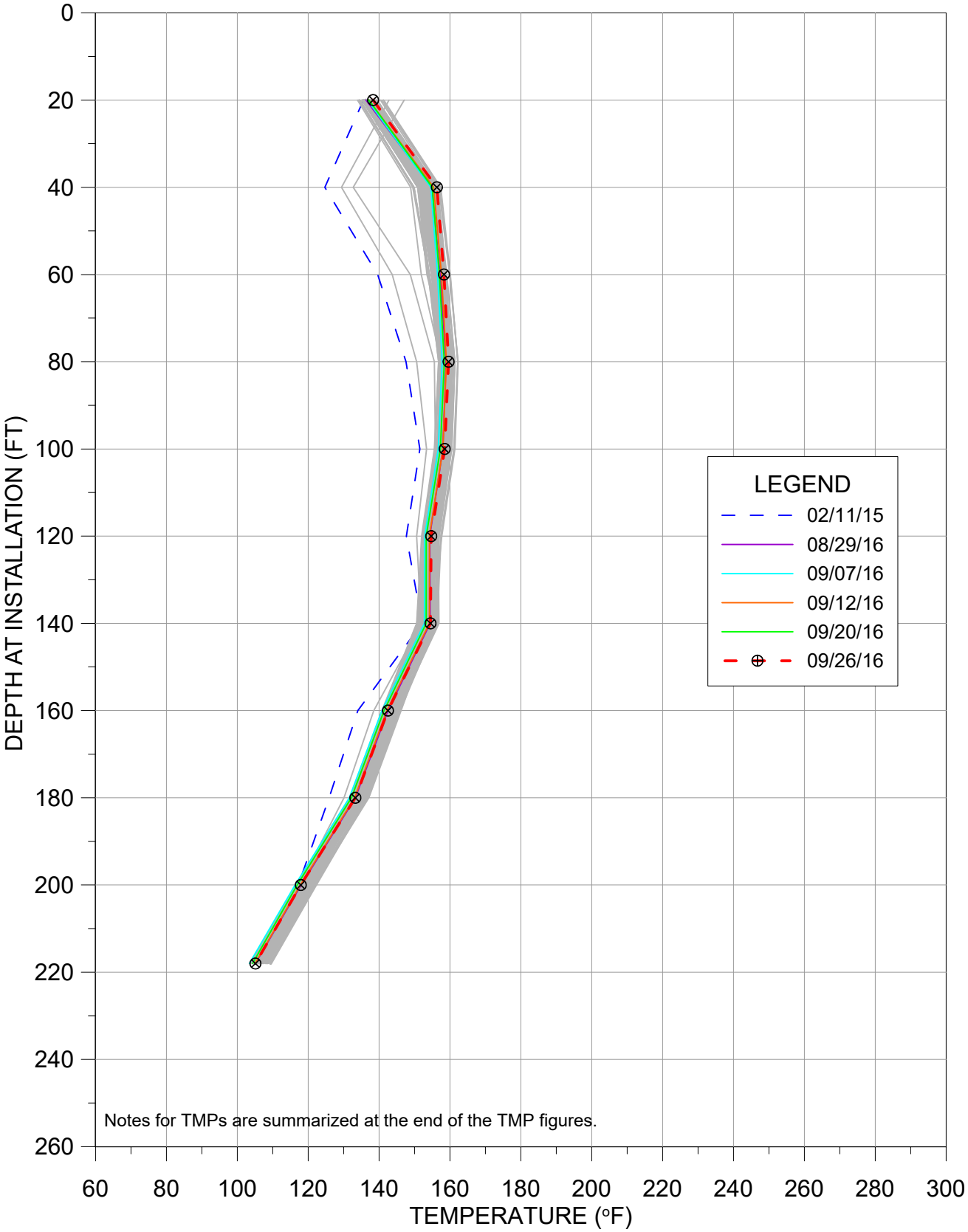
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-3



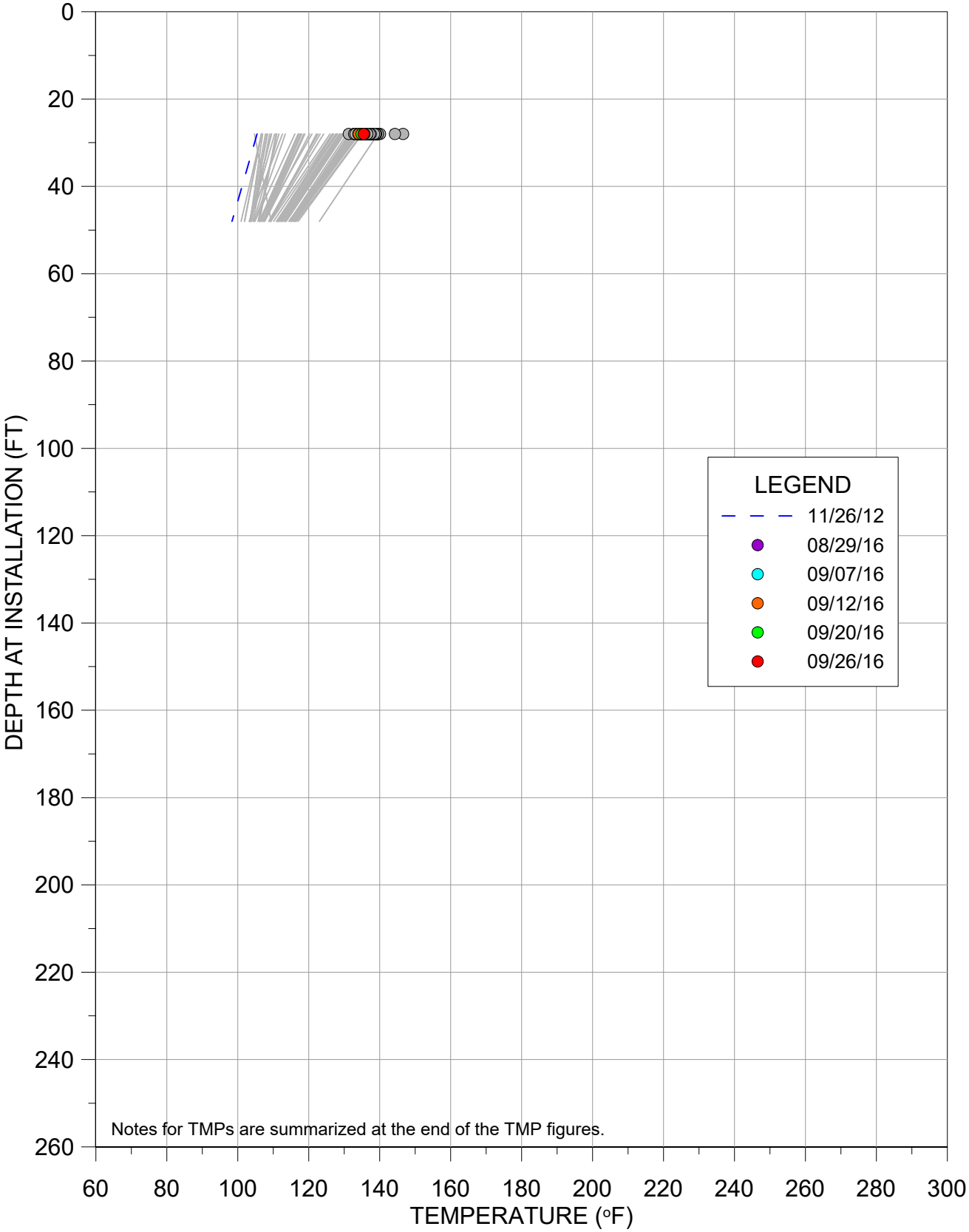
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-3R



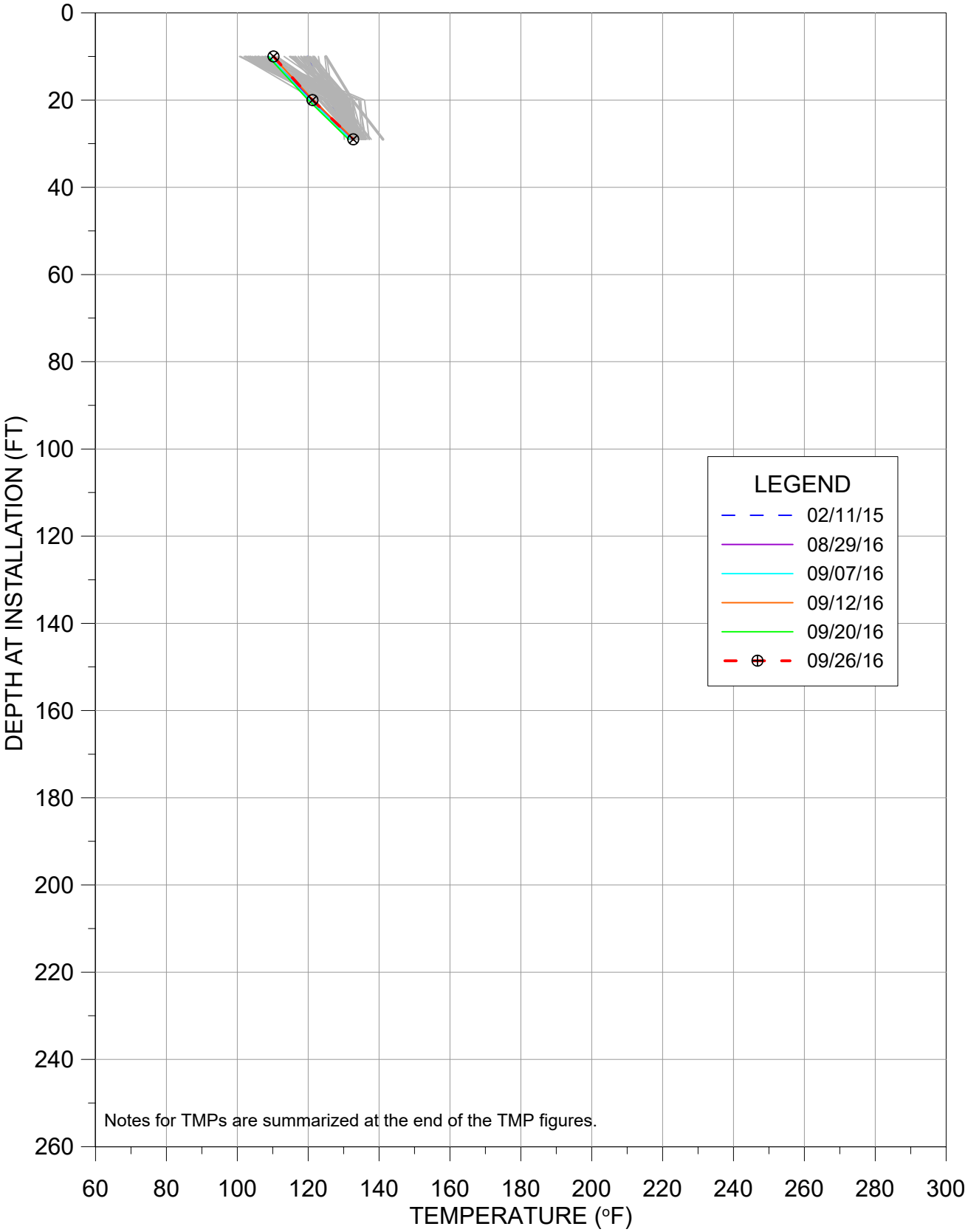
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-4



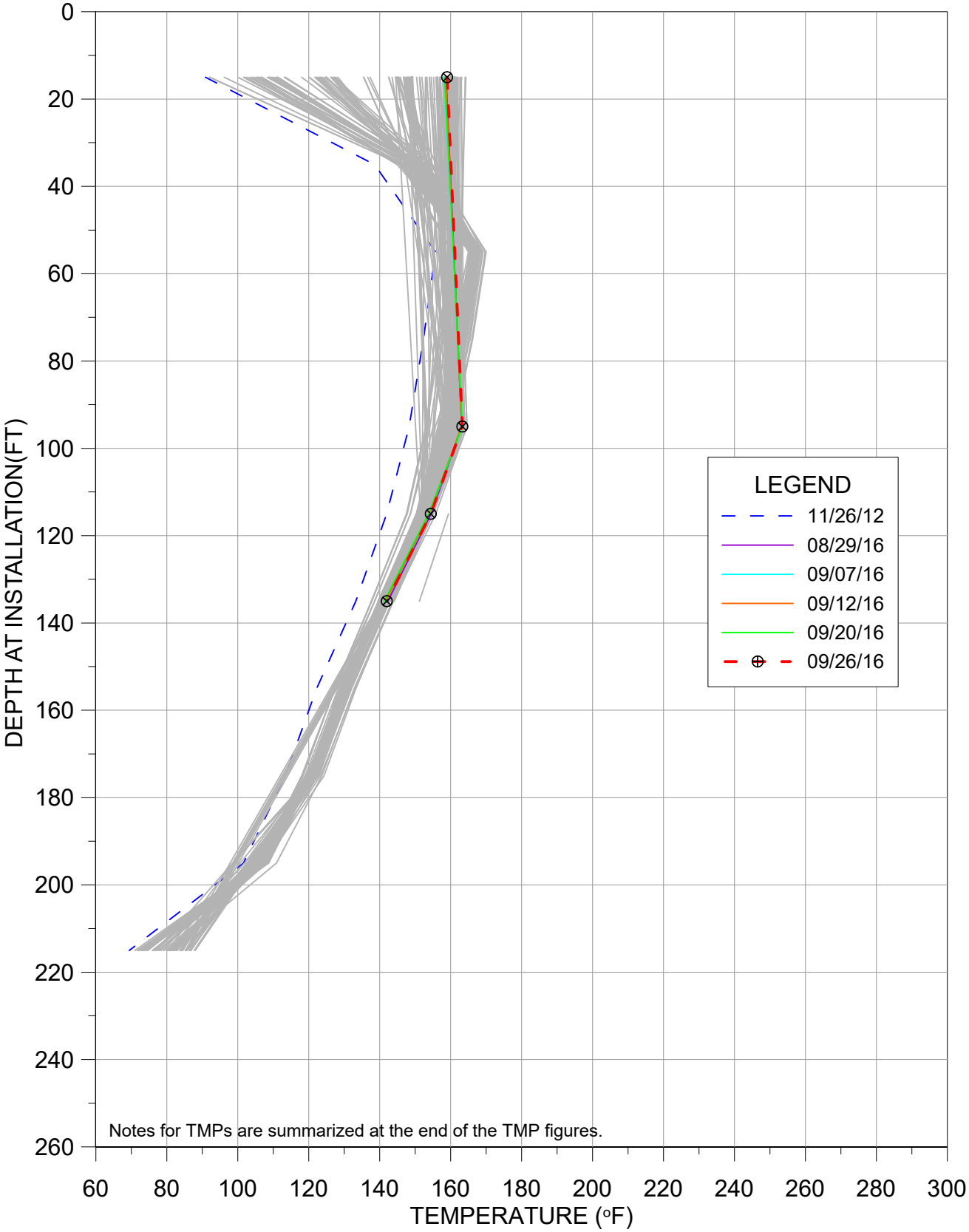
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-4R



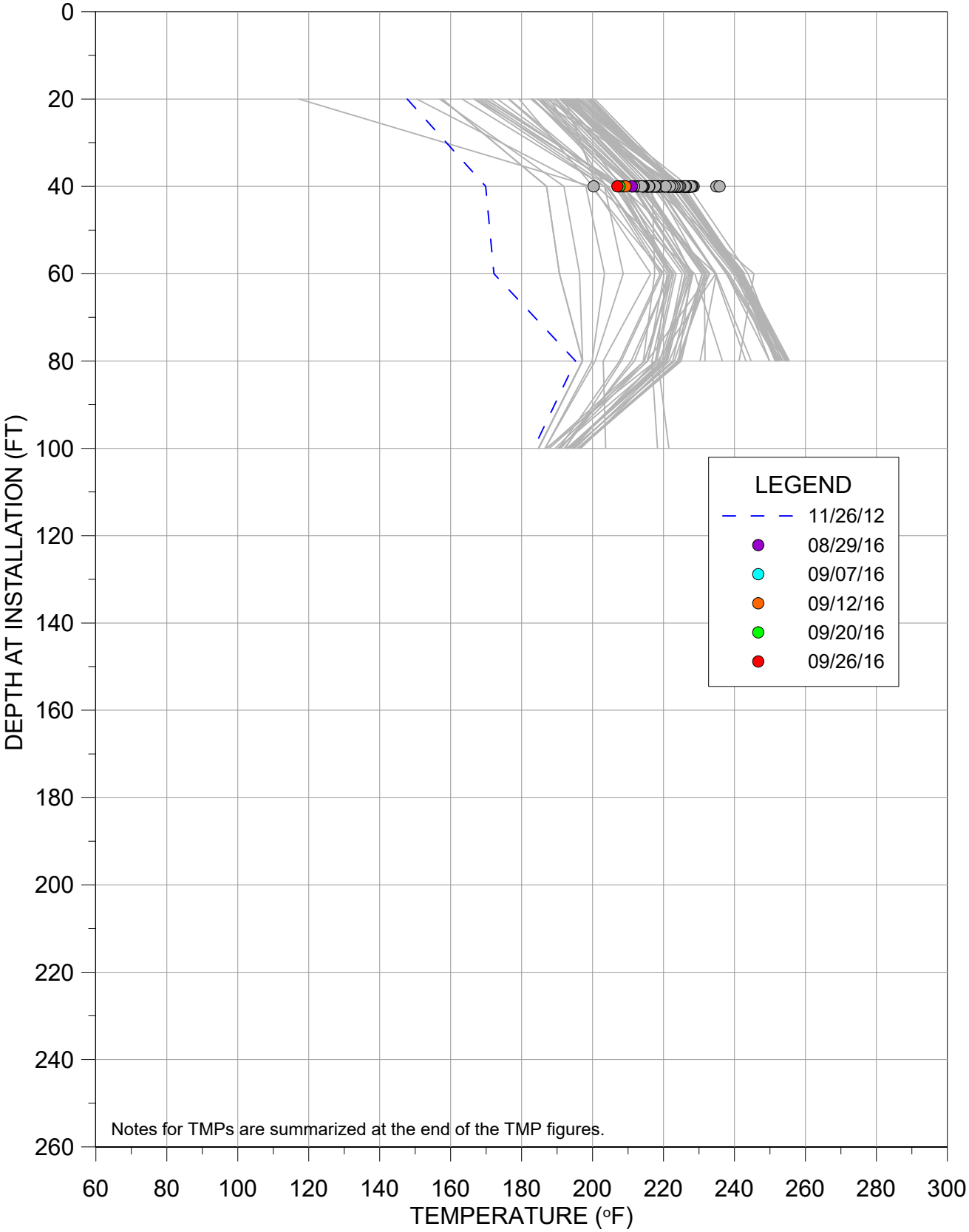
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-6



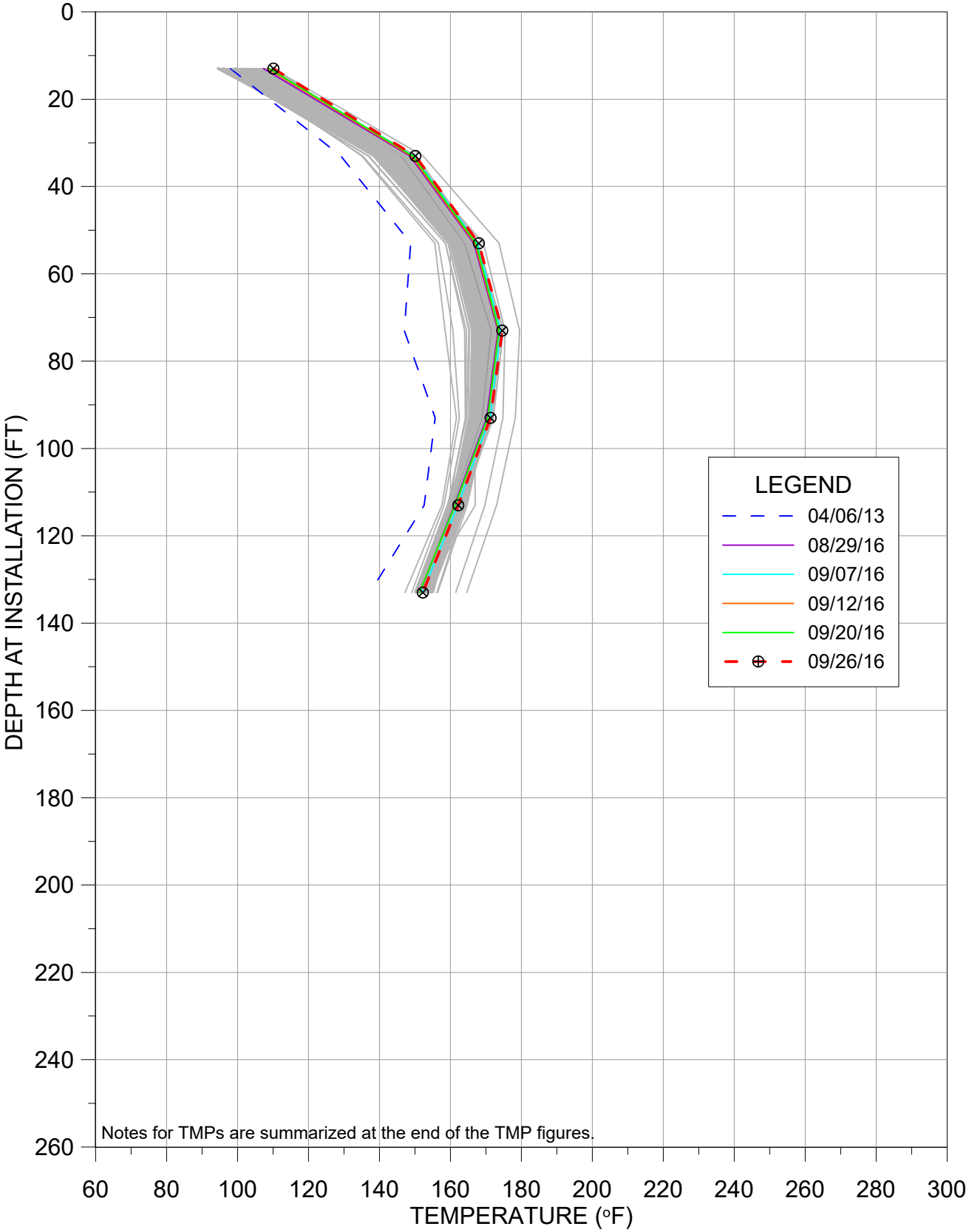
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-9



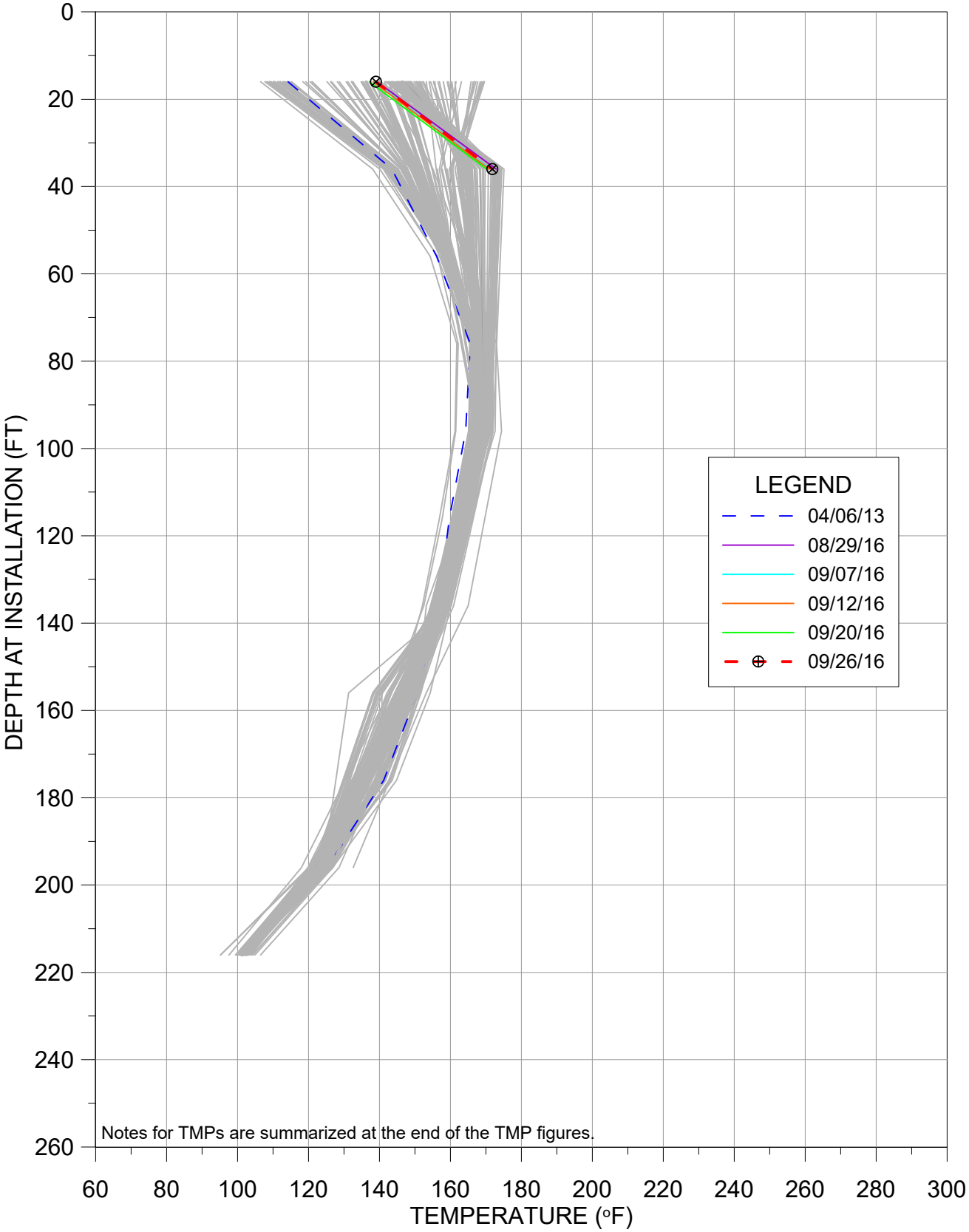
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-10



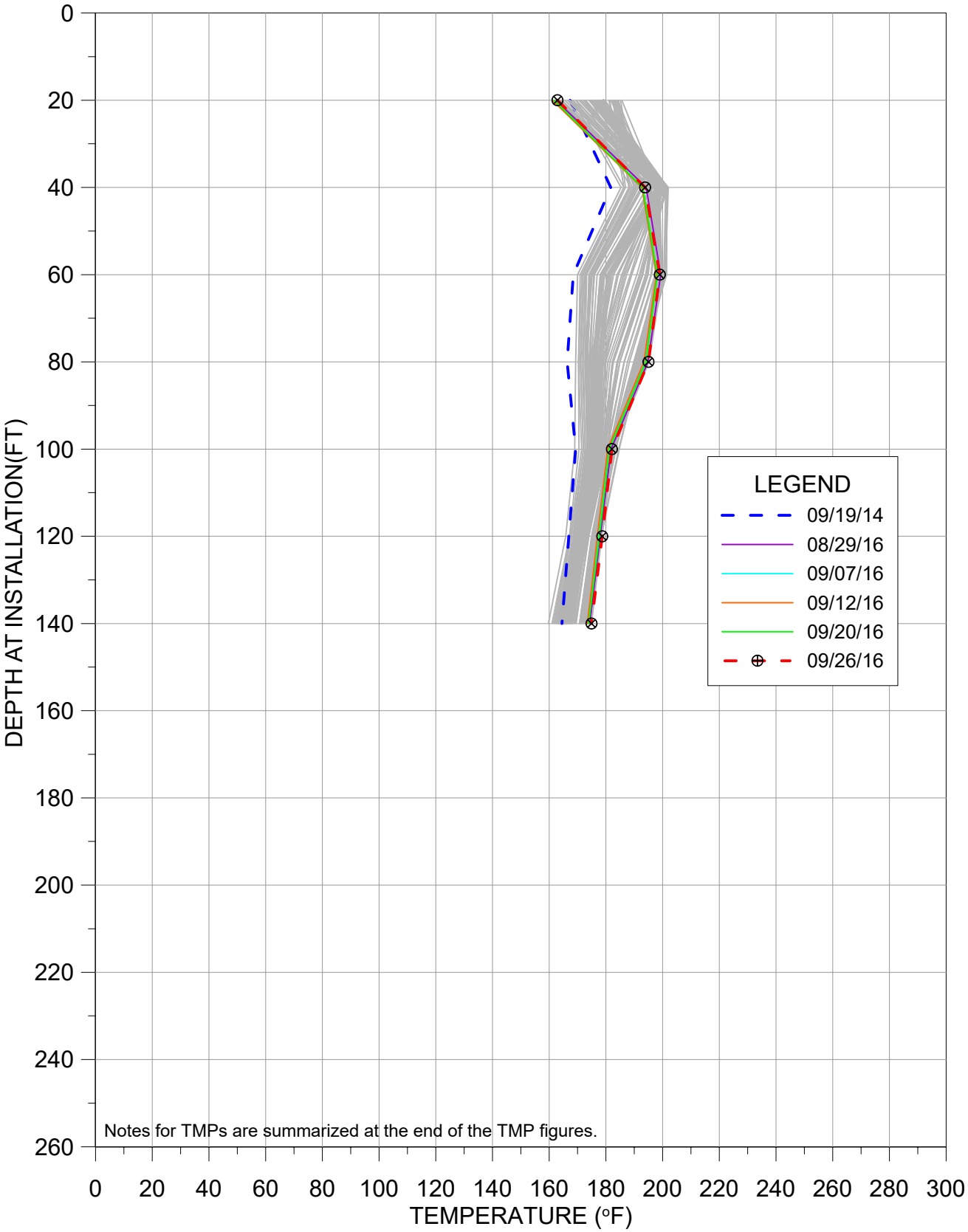
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-11



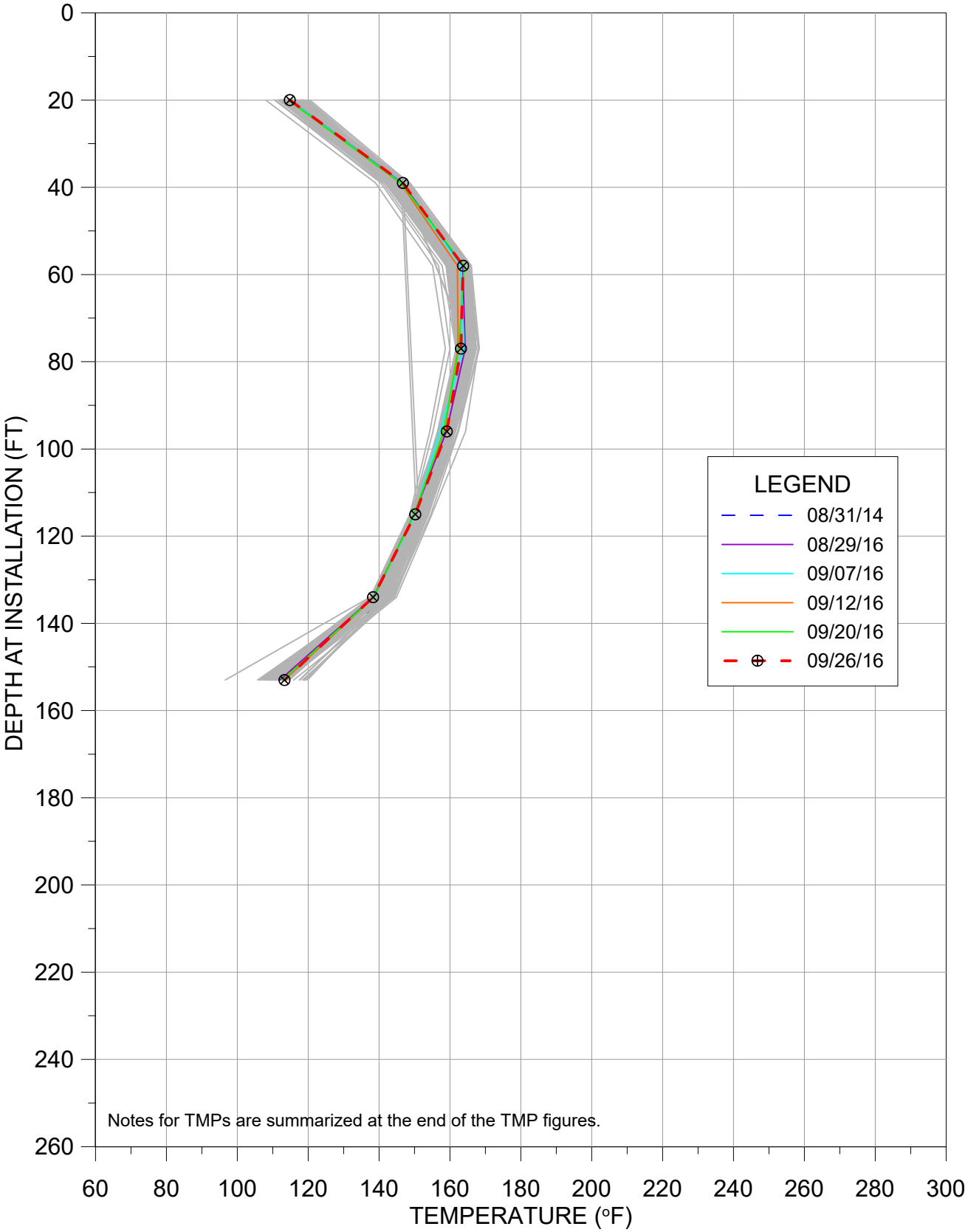
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-14R



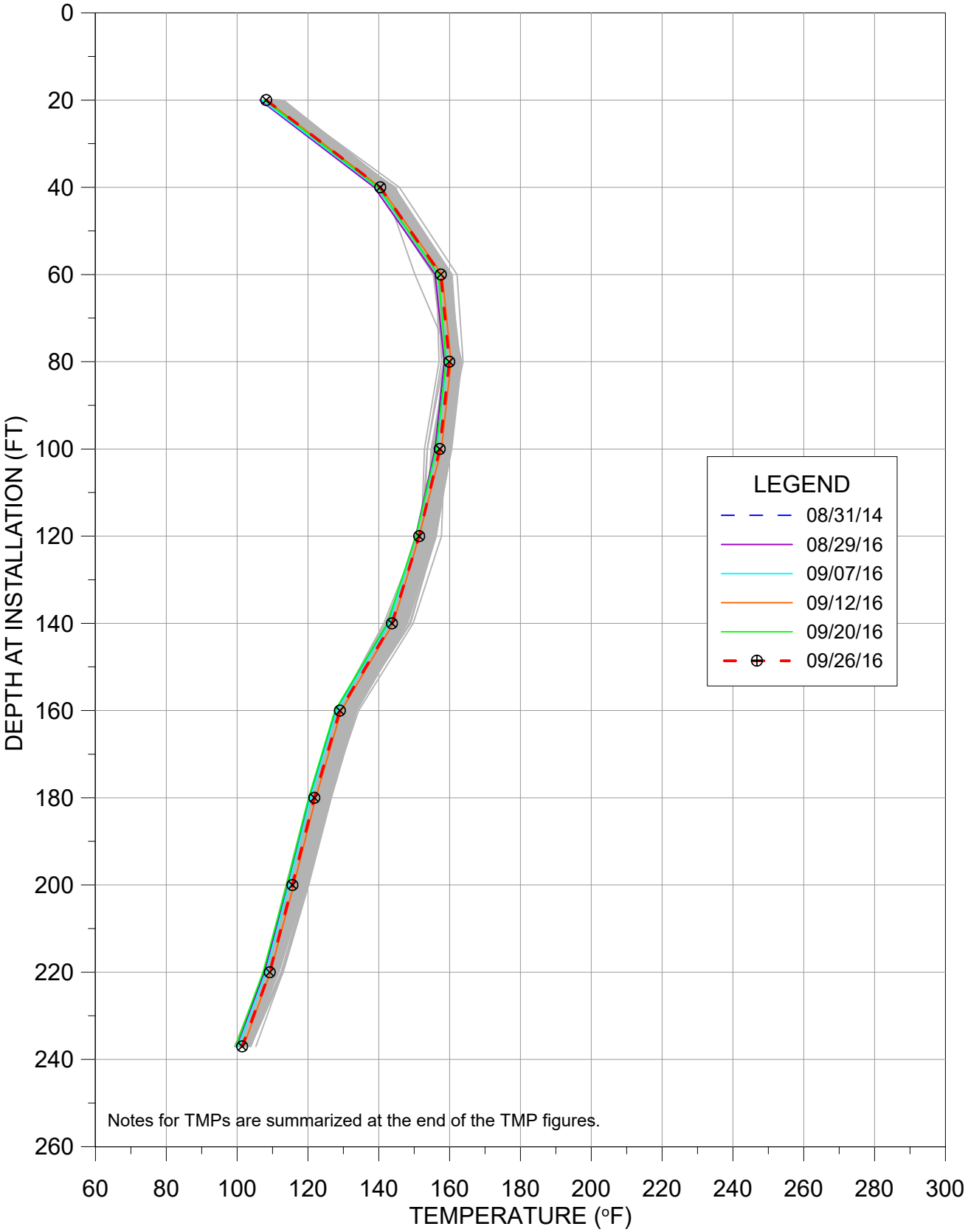
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-16



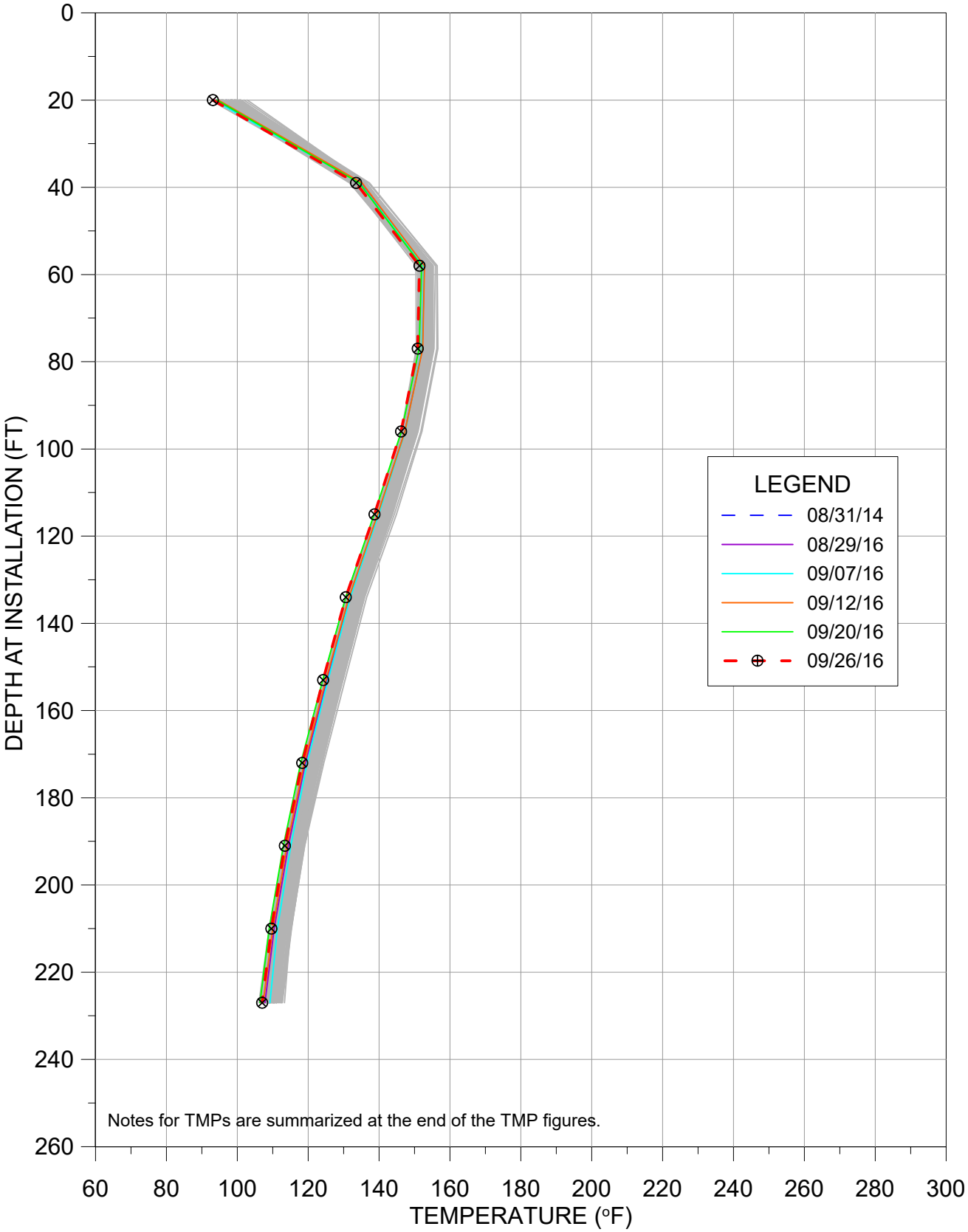
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-17



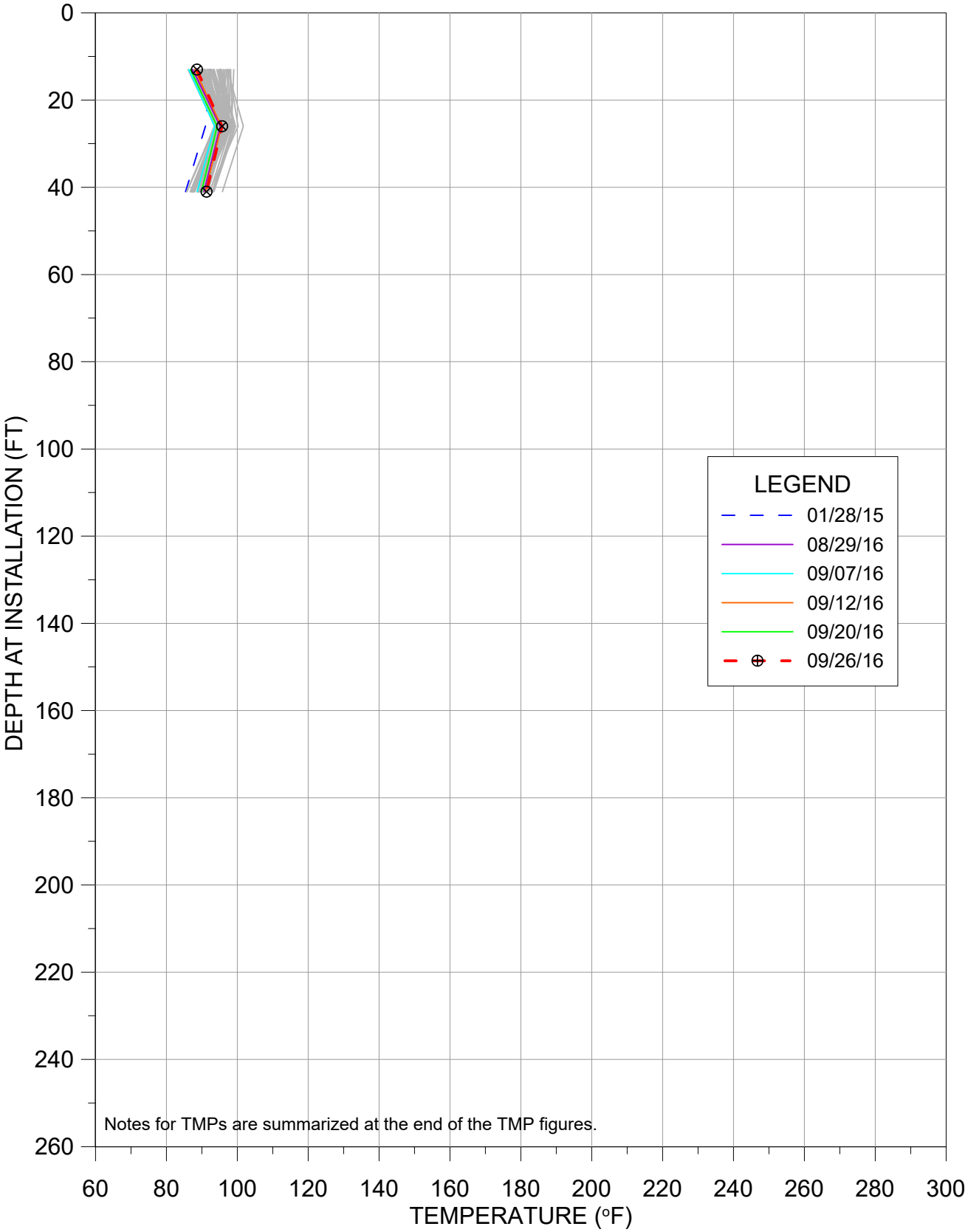
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-18



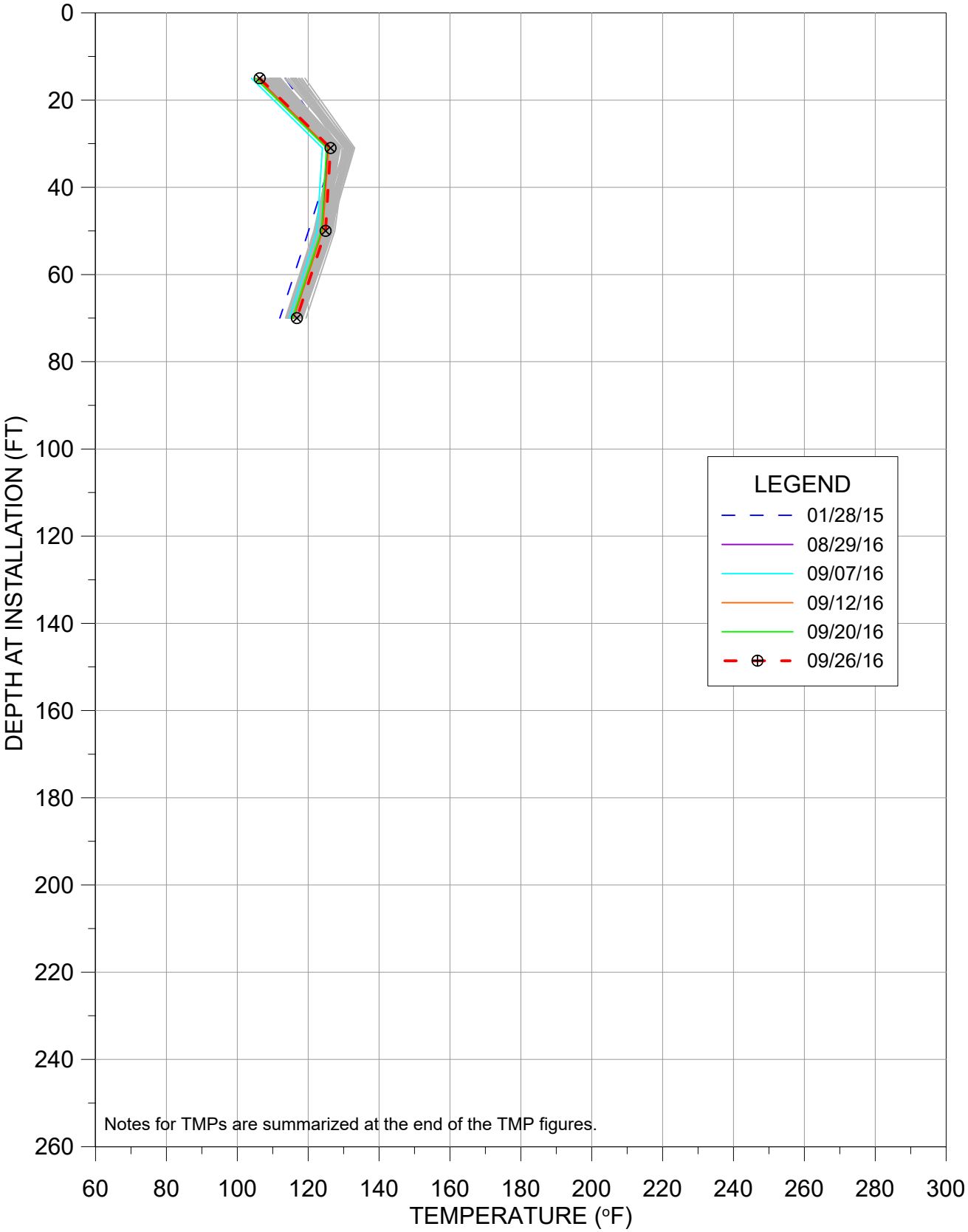
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-21



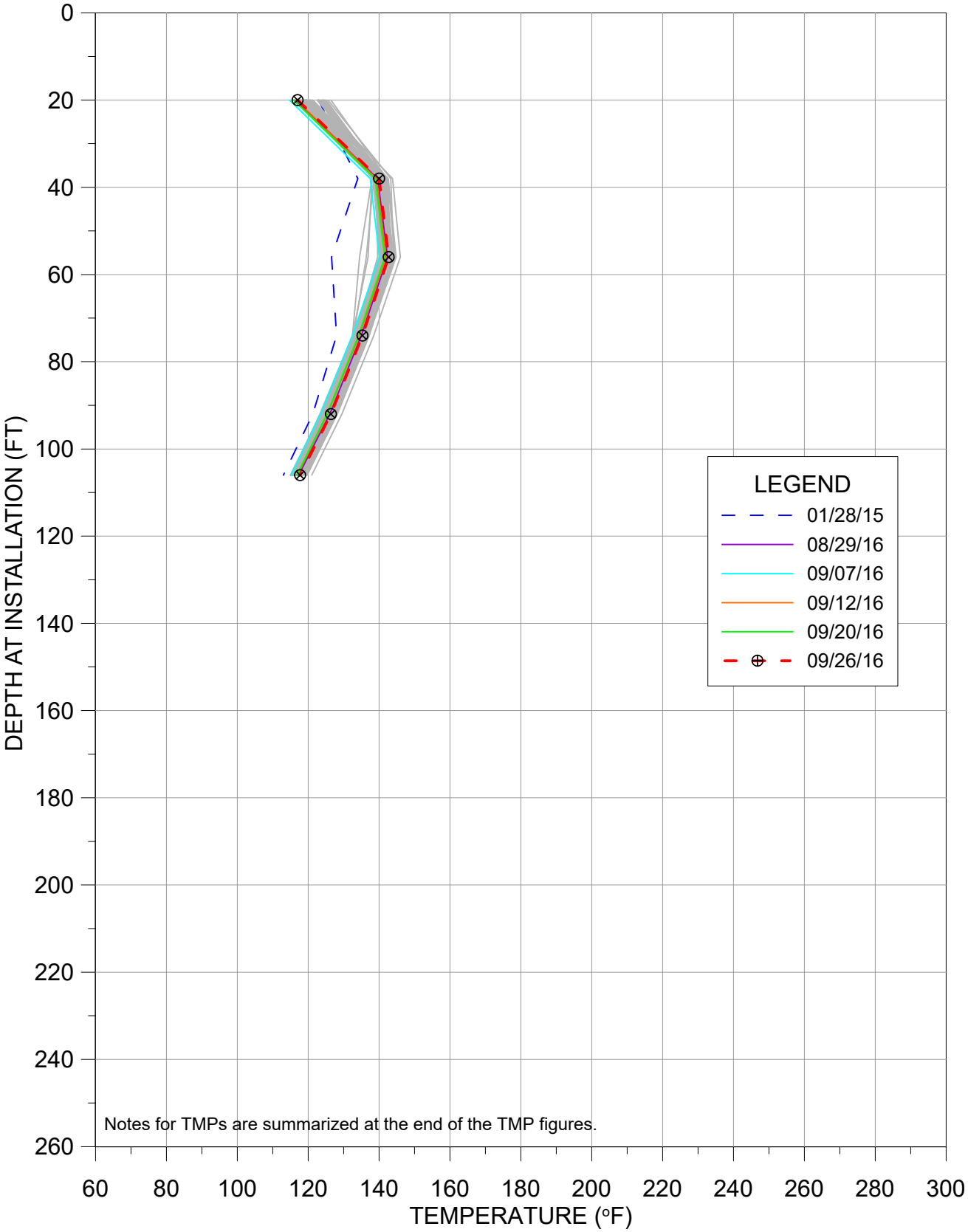
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-22



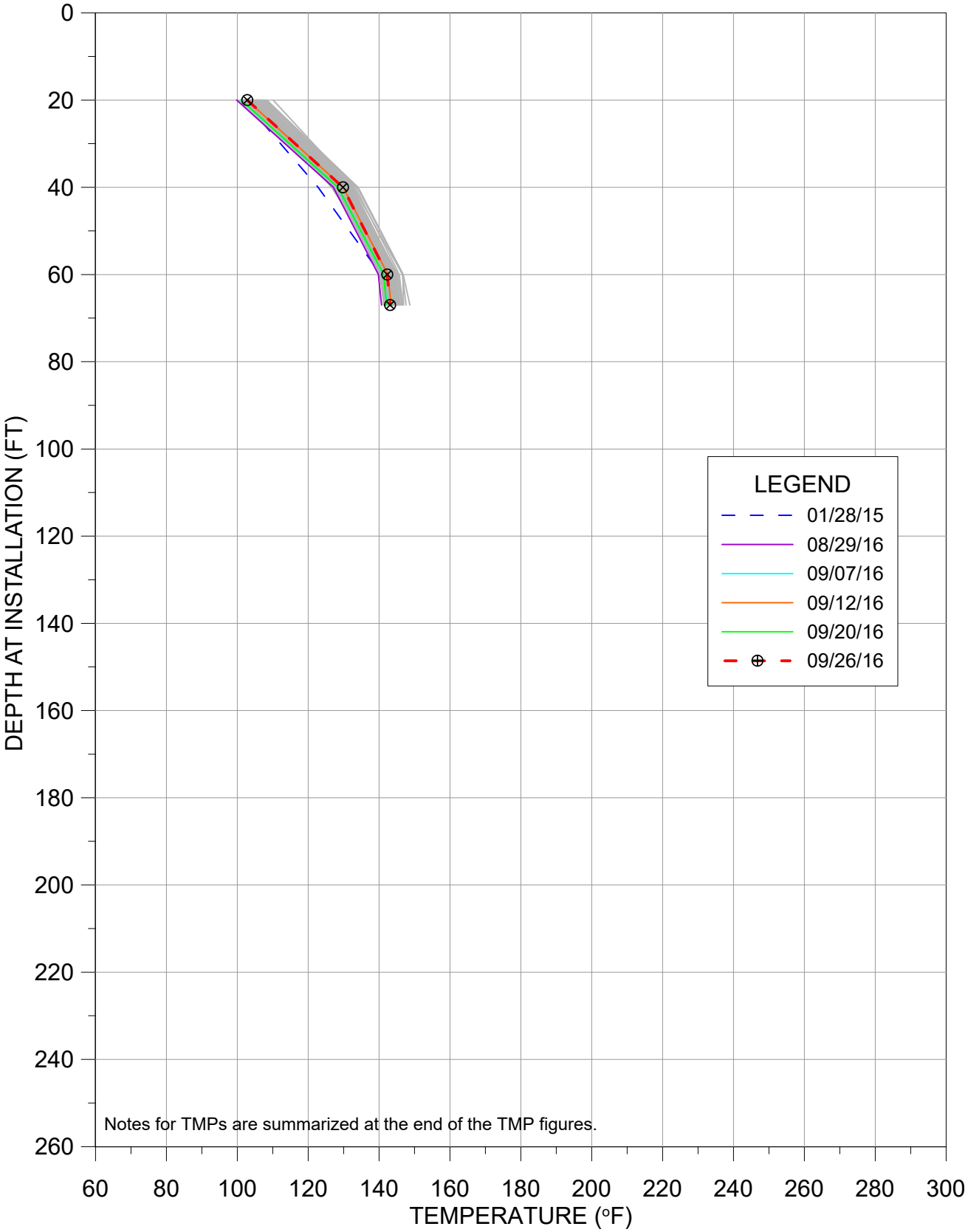
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-23



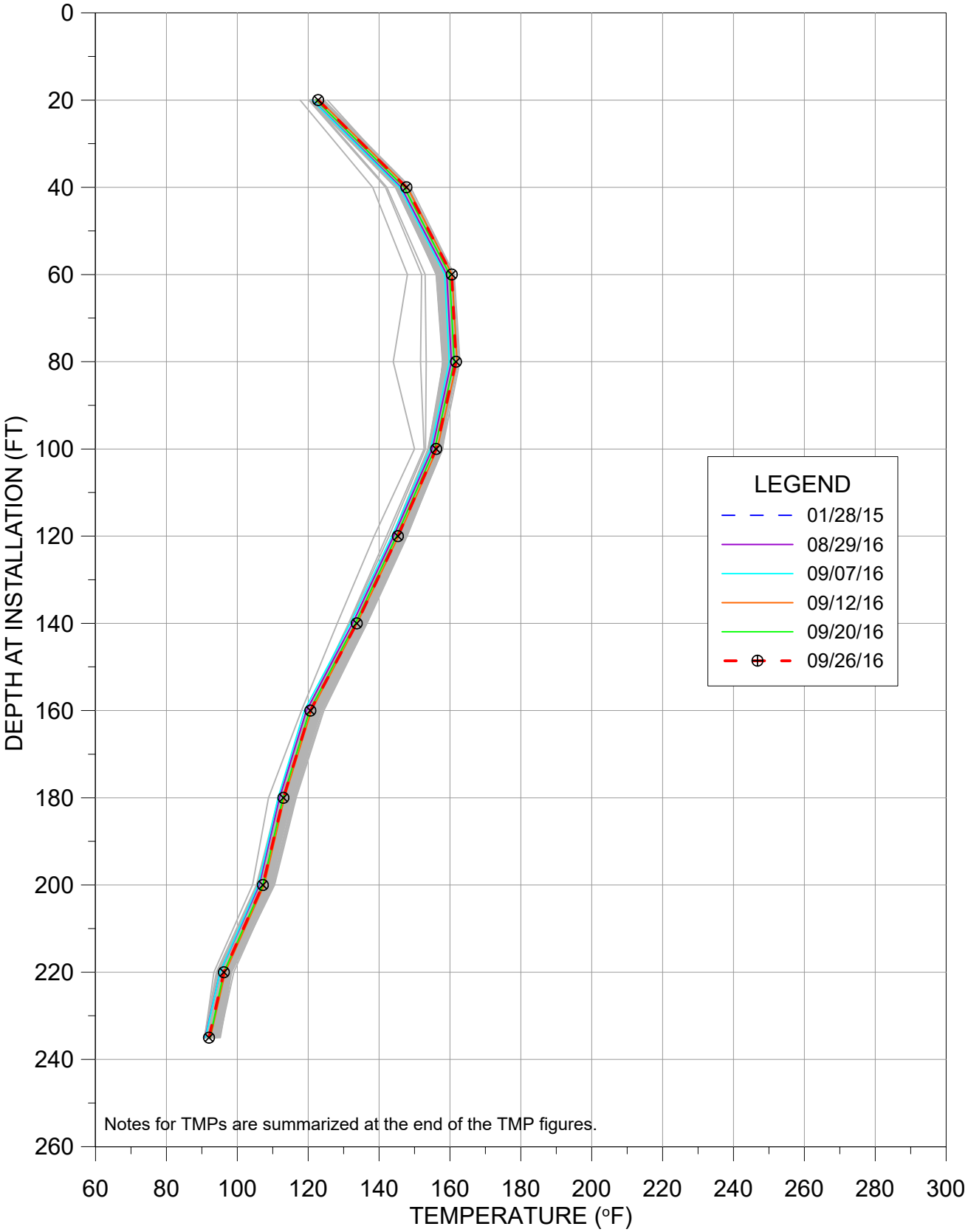
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-24



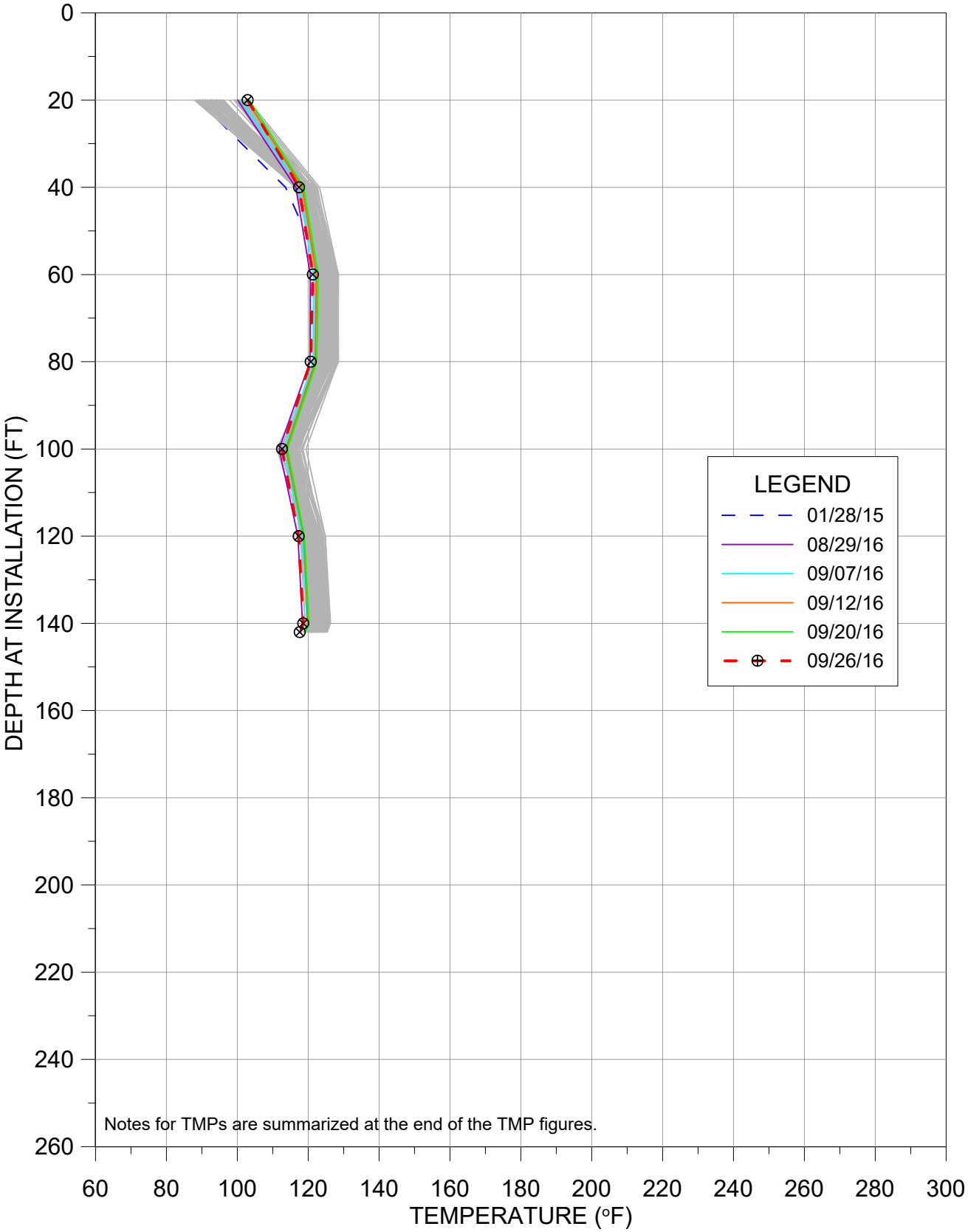
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-25



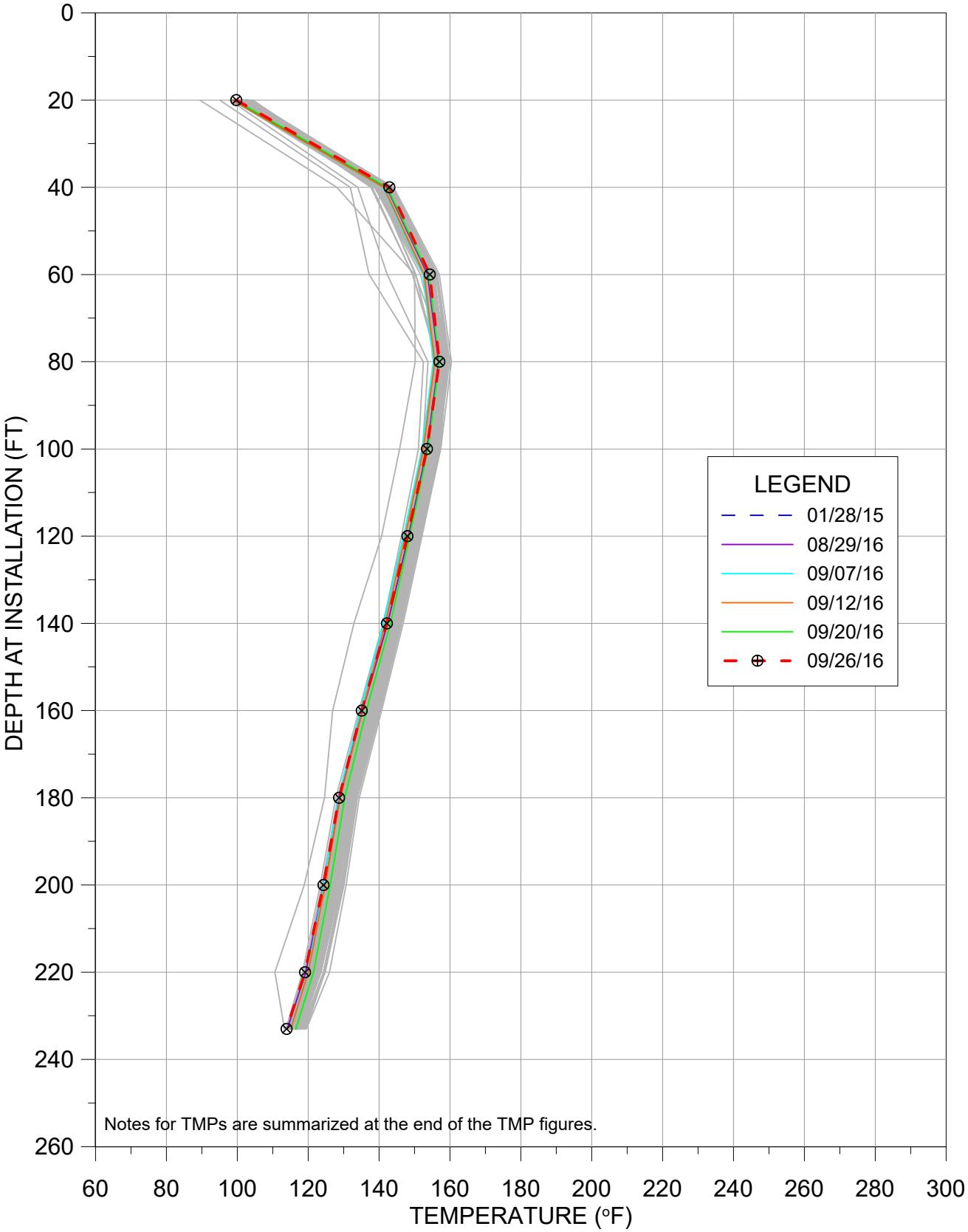
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-26



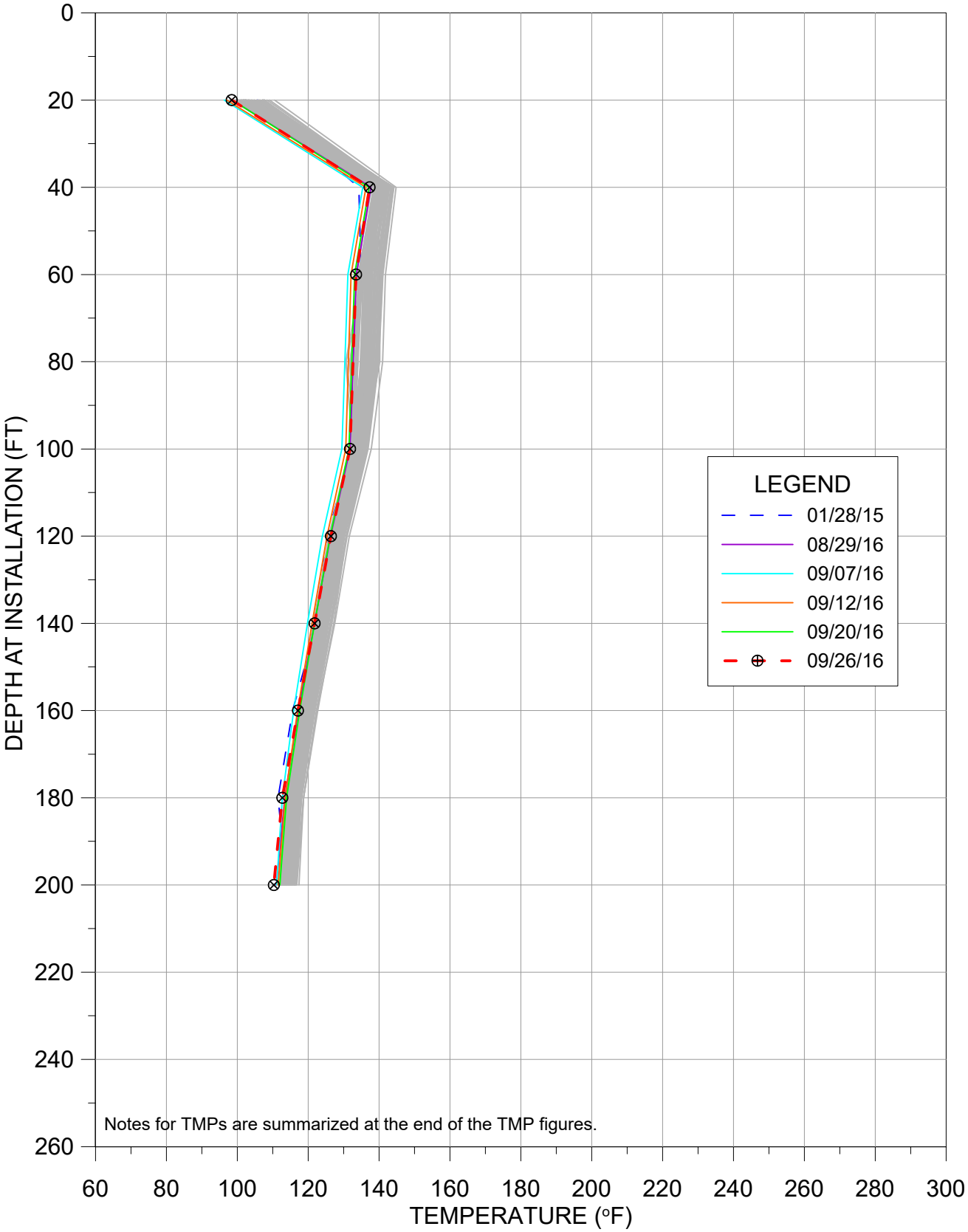
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-27



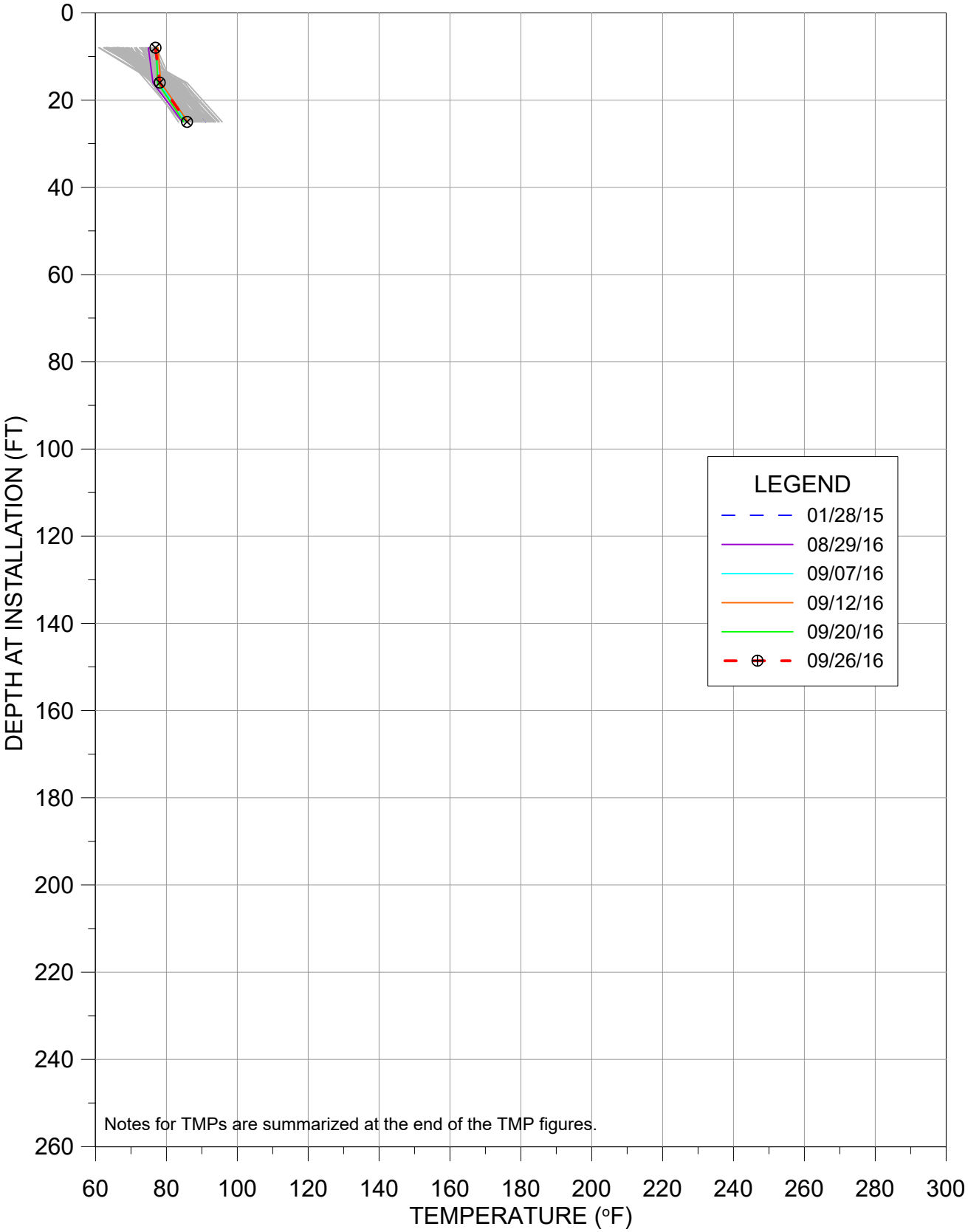
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-28



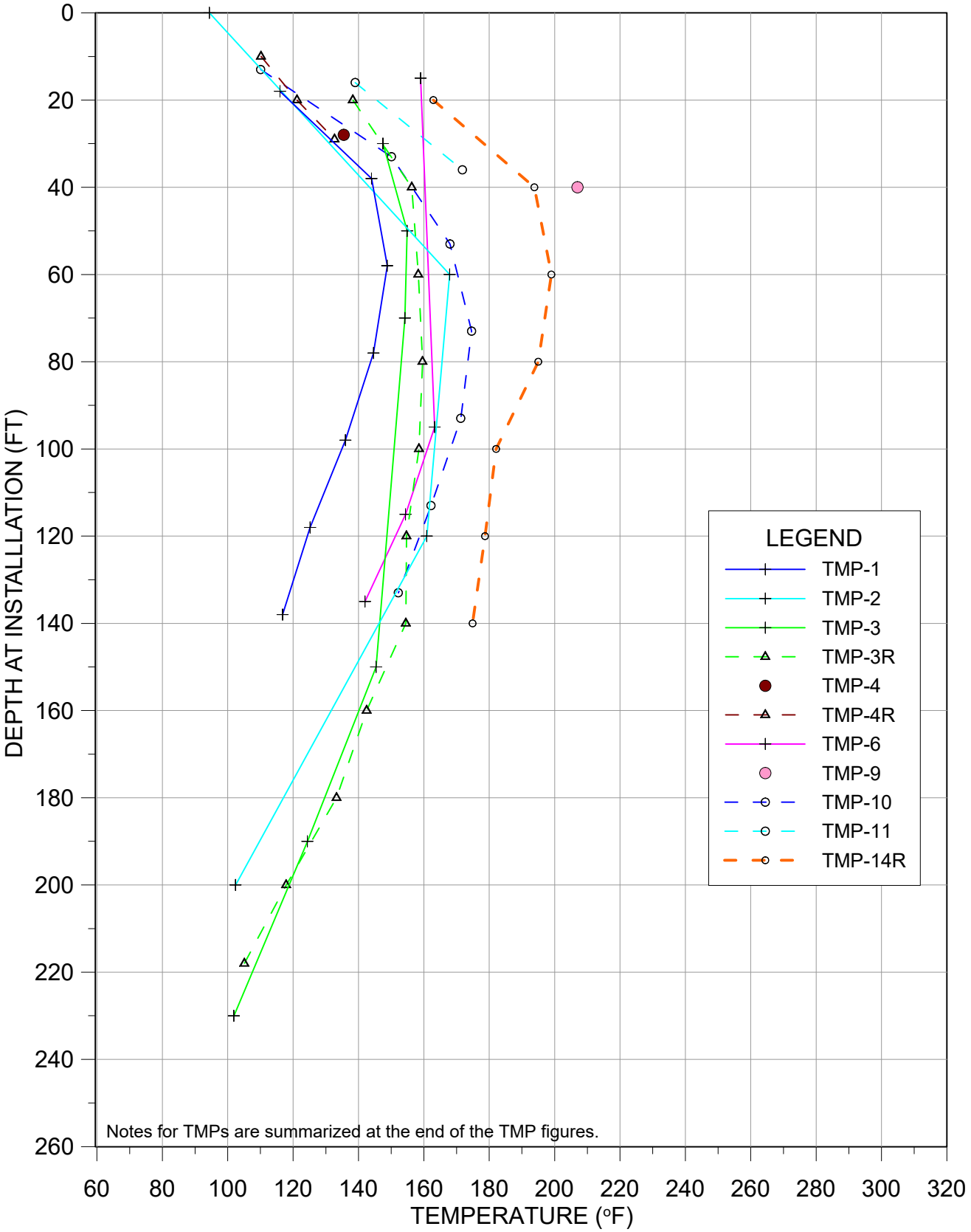
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-29



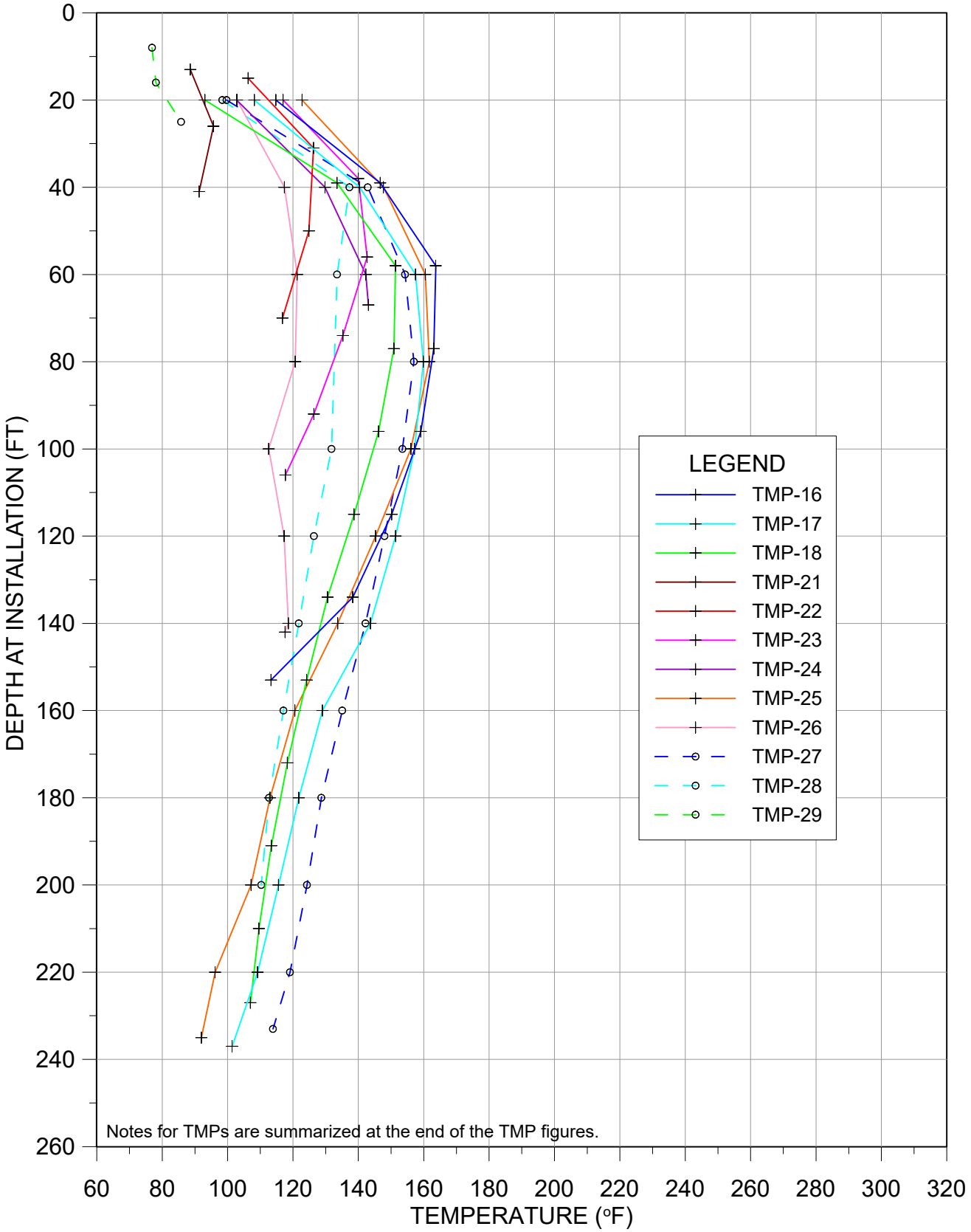
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

9/26/2016



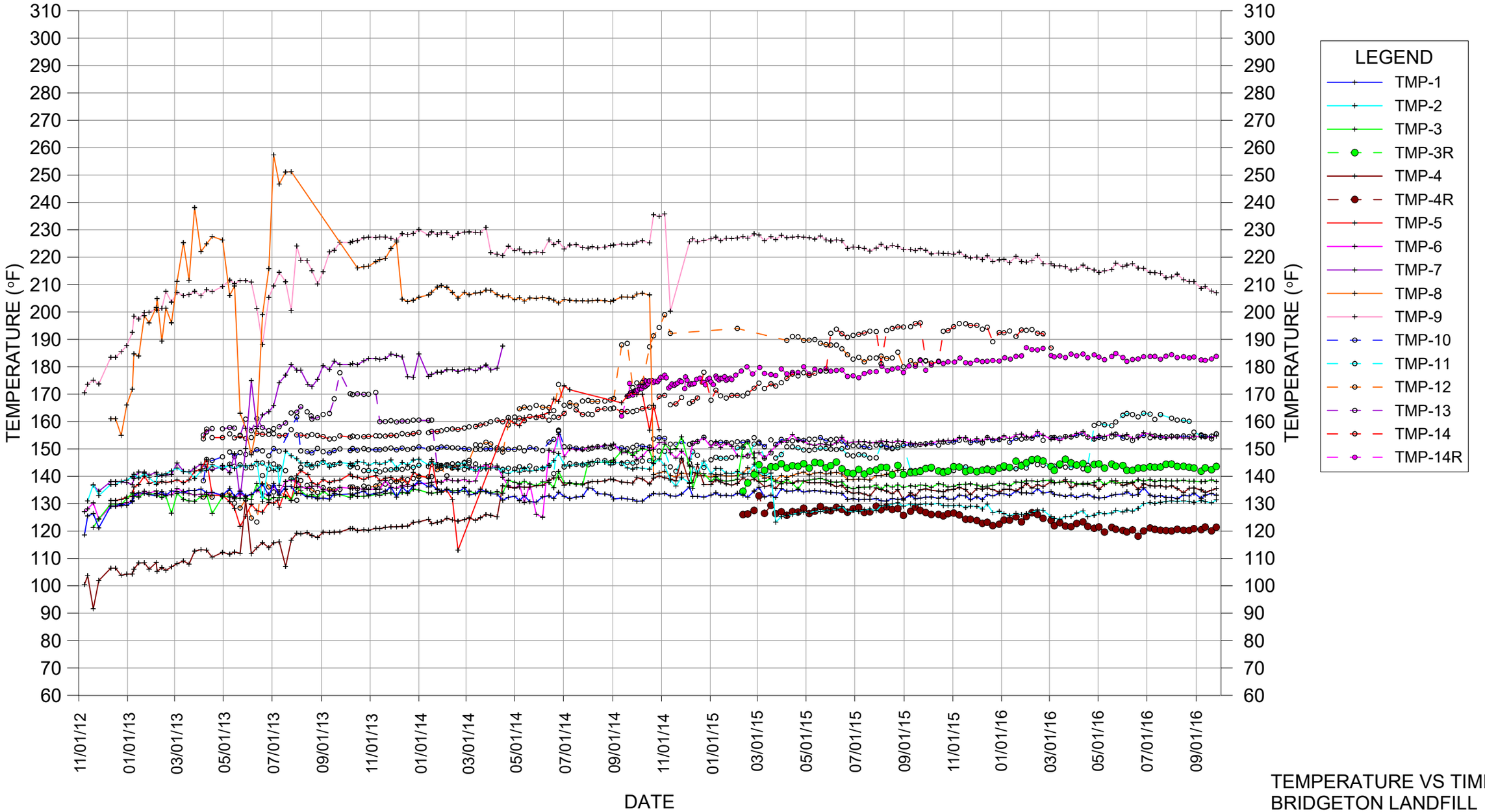
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

9/26/2016 - NORTH QUARRY



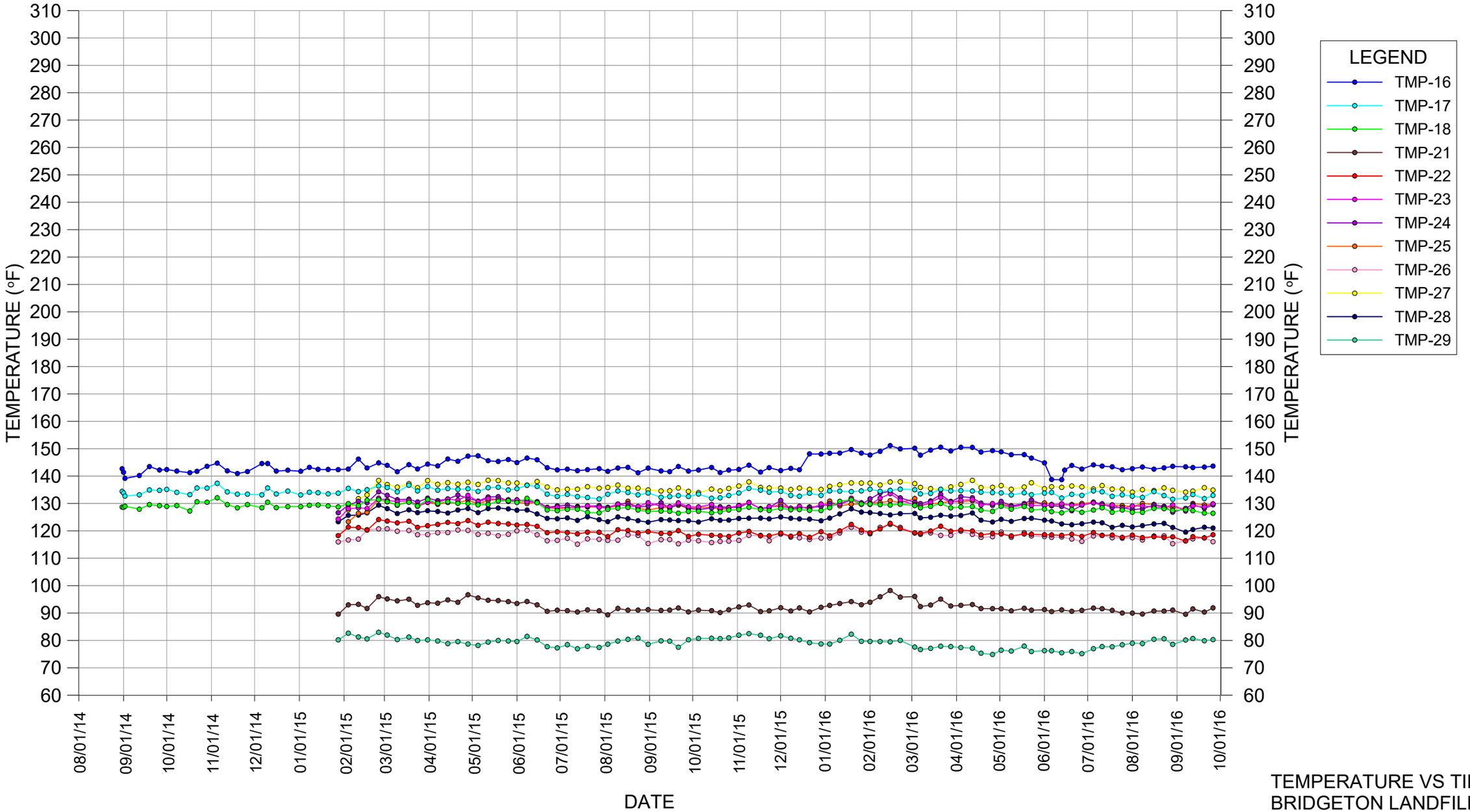
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

AVERAGE TEMPERATURES



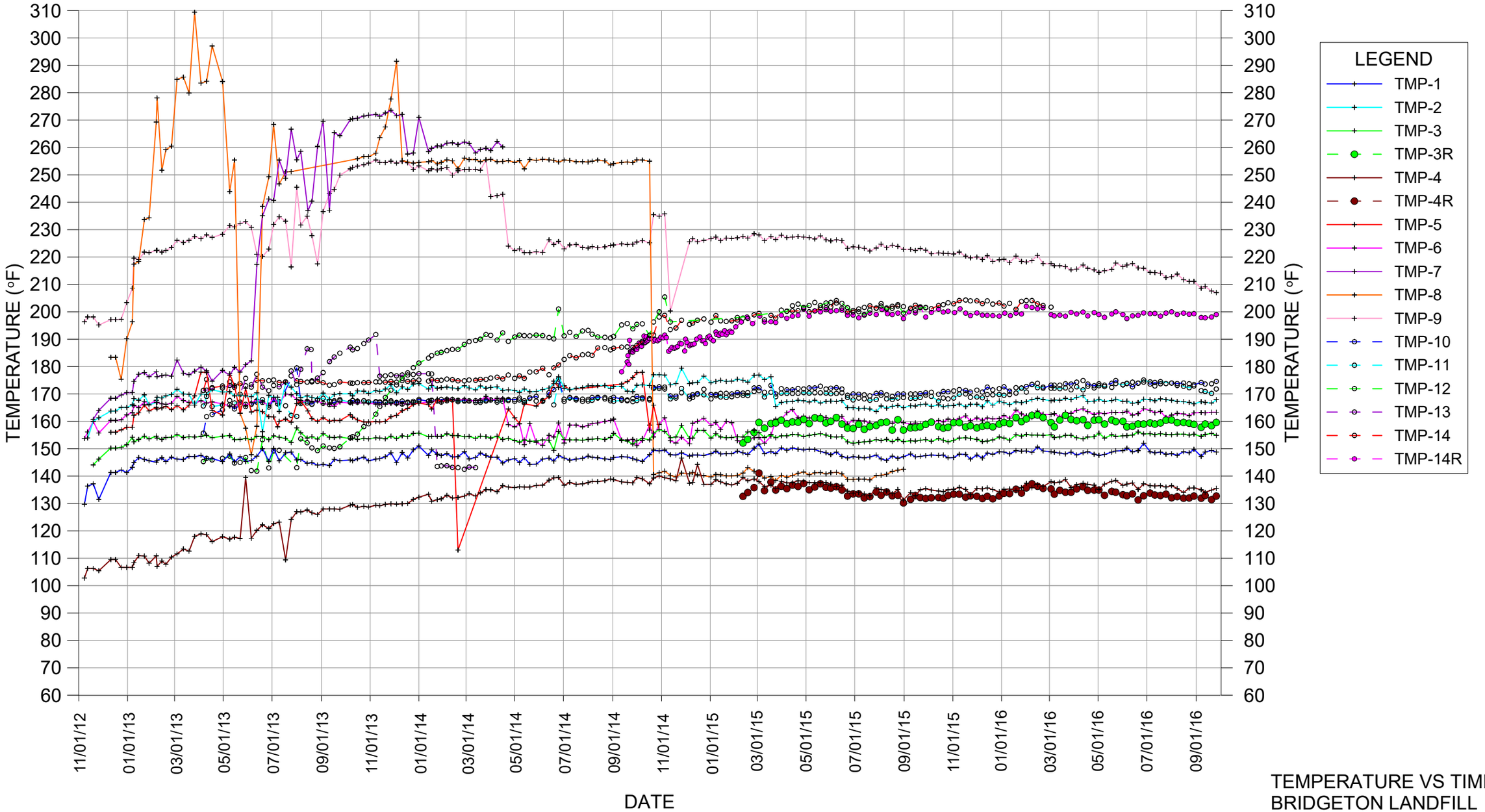
TEMPERATURE VS TIME
BRIDGETON LANDFILL

AVERAGE TEMPERATURES - NORTH QUARRY



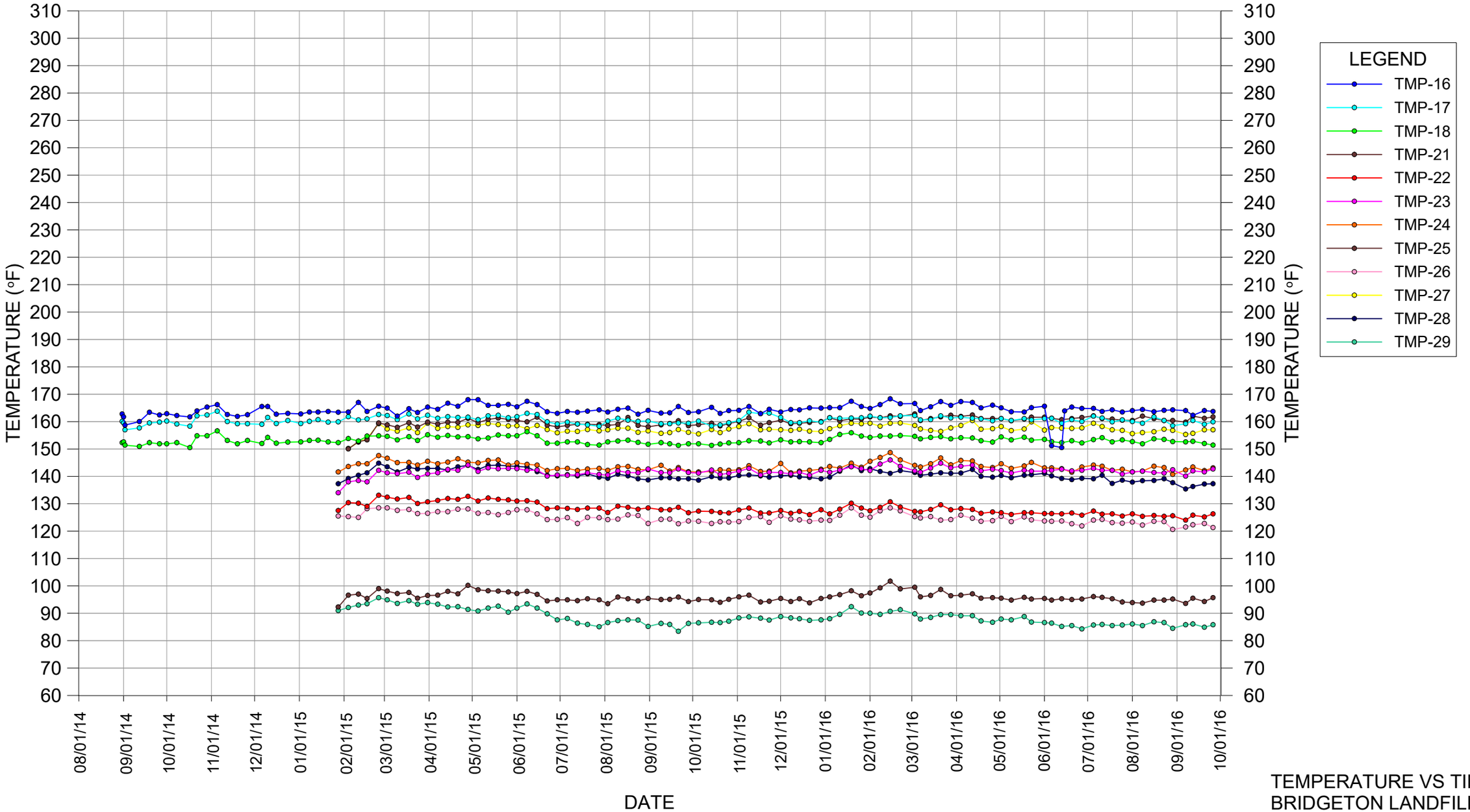
TEMPERATURE VS TIME
BRIDGETON LANDFILL

MAXIMUM TEMPERATURES



TEMPERATURE VS TIME
BRIDGETON LANDFILL

MAXIMUM TEMPERATURES - NORTH QUARRY



TEMPERATURE VS TIME
BRIDGETON LANDFILL

TMP BRIDGETON LANDFILL NOTES

TMP-1: NONE

TMP-2:

1. Unit at 180 ft depth had resistance reading above allowable and is no longer working. No reliable reading has been obtained since 11/26/2012.
2. The resistance reading was high and no temperature readings were obtained at 160 ft depth since 6/19/2014.
3. The connectivity tests on 3/19/2015 conducted by Feezor Engineering showed that units at 20, 40, 80, 100, 140 ft depths are no longer reliable.

TMP-3:

1. No reliable temperature readings have been obtained at 170 ft depth since 1/29/2014, except on 3/13/2014.
2. The connectivity tests on 4/11/2014 conducted by CEC showed that units at 10, 90, 130, 210 and 250 ft depths are no longer reliable.
3. The connectivity tests on 10/28/2014 conducted by Feezor Engineering showed that units at 10, 90, 110, 130, 210 and 250 ft depths are not reliable.

TMP-3R: NONE

TMP-4:

1. The connectivity tests on 4/11/2014 conducted by CEC showed that the unit at 48 ft depth is no longer reliable.

TMP-4R: NONE

TMP-5: TMP NO LONGER IN SERVICE– Verified by Connectivity testing by Feezor Engineering in March 2015.

TMP-6:

1. The connectivity tests on 4/11/2014 conducted by CEC showed that units at 35, 55, 75, 155, 175, and 195 ft depths are no longer reliable.
2. No reliable temperature readings have been obtained at the unit at 215 ft depth since 6/13/2014.

TMP-7R: TMP NO LONGER IN SERVICE

TMP-8: TMP NO LONGER IN SERVICE

TMP-9:

1. Unit at 100 ft depth had an inaccurate temperature reading on 8/1/2013 and no reading since 8/6/2013.
2. The connectivity tests on 4/11/2014 conducted by CEC showed that units at 20, 60, 80, and 100 ft depths are no longer reliable.

TMP-10: NONE

TMP-11:

1. All units had acceptable resistance readings starting on 7/25/2013, except a high resistance reading at 116 ft depth since 10/30/2013.
2. No temperature reading has been obtained at 176 ft depth since 1/17/2014.
3. The unit at 156 ft depth has had high or questionable resistance since 1/17/2014. The unit at 56 ft depth has had a high resistance reading since 3/19/2014 and no temperatures have been obtained since this time.
4. The connectivity tests on 4/11/2014 conducted by CEC showed that units at 56, 116, and 176 ft depths are no longer reliable.
5. The connectivity tests on 10/28/2014 conducted by Feezor Engineering showed that units at 56, 116 and 176 ft are not reliable.
6. No temperature or resistivity readings were obtained at a depth of 96 ft depth since 8/29/2016 despite multiple attempts.

TMP-12:

1. All units were verified by connectivity testing by Feezor Engineering in October 2015 to be unreliable.

TMP-13: TMP NO LONGER IN SERVICE

TMP-14:

1. All units were verified by connectivity testing by Feezor Engineering in March 2016 to be unreliable.

TMP-14R:

1. Due to the connectivity test results by Feezor Engineering on TMP-14 (see note above), TMP-14R is added to this reporting data set as of 3/7/2016.

TMP-15: TMP WAS NEVER IN SERVICE

TMP-16:

1. A connectivity test conducted by Feezor Engineering showed that the units on TMP-16 may not be reliable since 9/9/2015. Further testing at the end of September 2015 showed possible connectivity on some of the units.
2. The unit at 153 ft depth had a low resistance reading and unreliable temperature since 12/21/2015.

TMP-17: NONE

TMP-18: NONE

TMP-19: NOT PART OF THIS SUBMITTAL (HEAT EXTRACTION TMP)

TMP-20: NOT PART OF THIS SUBMITTAL (HEAT EXTRACTION TMP)

TMP-21: NONE

TMP-22: NONE

TMP-23: NONE

TMP-24: NONE

TMP-25: NONE

TMP-26: NONE

TMP-27: NONE

TMP-28:

1. The unit at 217 ft depth has had no resistance or temperature readings since installation.
2. The unit at 80 ft depth had a resistance drop and an unreasonable temperature decrease on 6/1/2016. The temperature has since fluctuated and is determined to be unreliable.

TMP-29: NONE

TMP vs DEPTH and TMP vs ELEVATION (for 9/26/16):

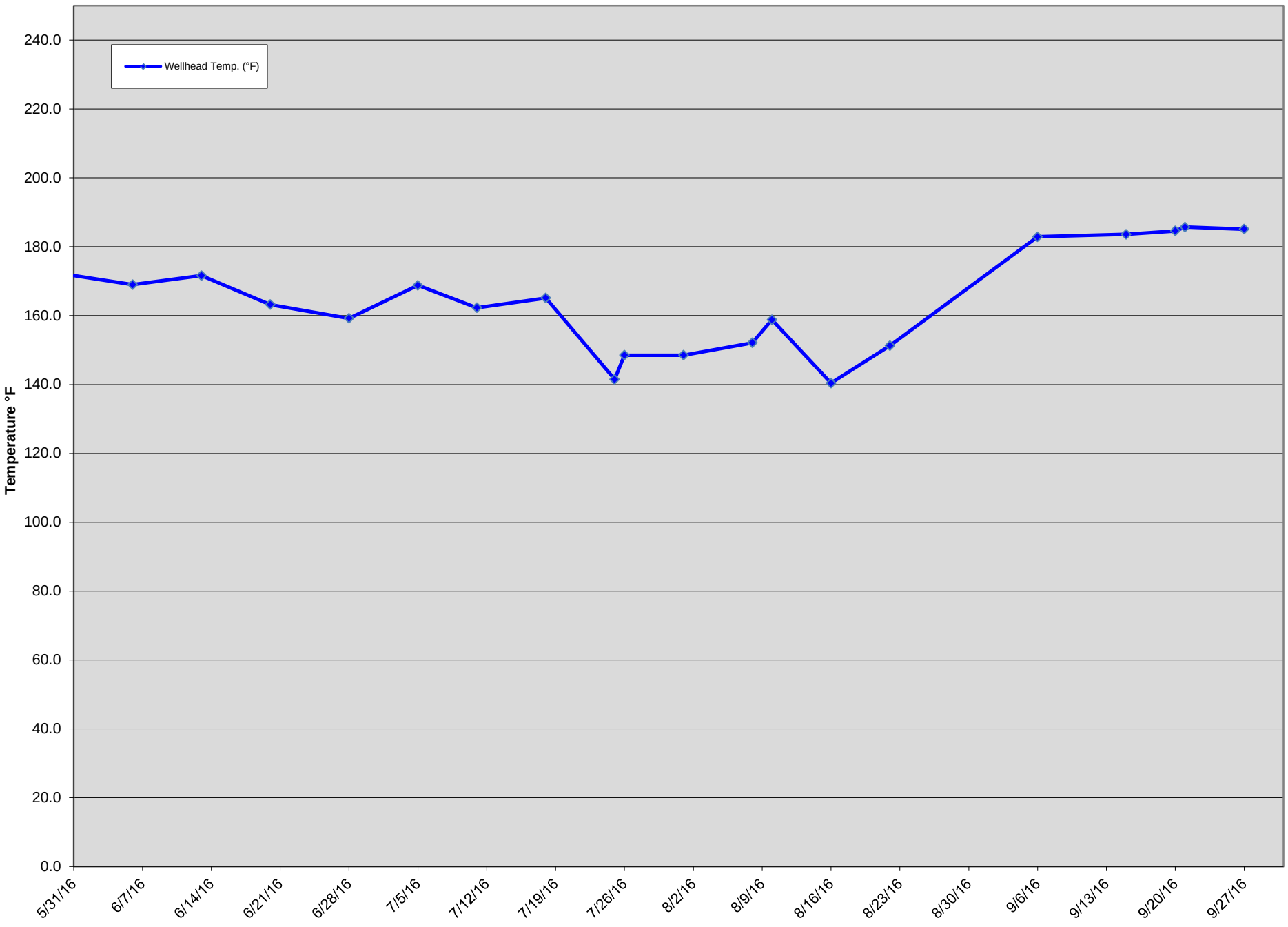
1. There were no reliable temperature readings for TMP-13 since 3/19/2014.
2. There were no reliable temperature readings for TMP-7R, as determined by the connectivity test on 4/11/2014.
3. There were no reliable temperature readings for TMP-5 since 11/5/2014.
4. 5. There were no reliable temperature readings for TMP-12 since 9/28/2015.
6. There were no reliable temperature readings for TMP-8 since 9/9/2015.
7. There were no reliable temperature readings for TMP-14, confirmed since 3/7/2016.

ATTACHMENT C

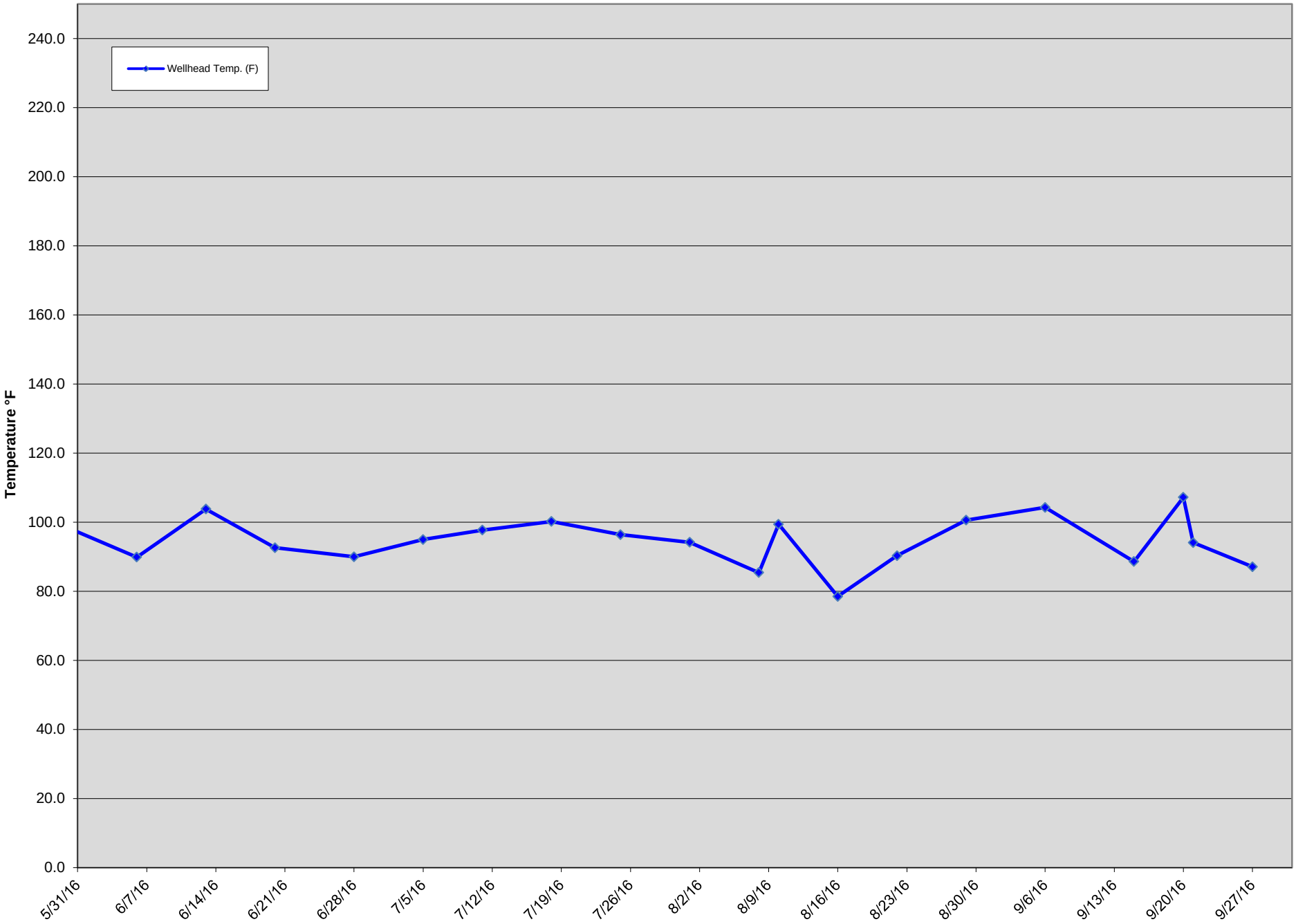
GAS INTERCEPTOR WELLHEAD TEMPERATURE GRAPHS

Gas Extraction Wells - Bridgeton Landfill

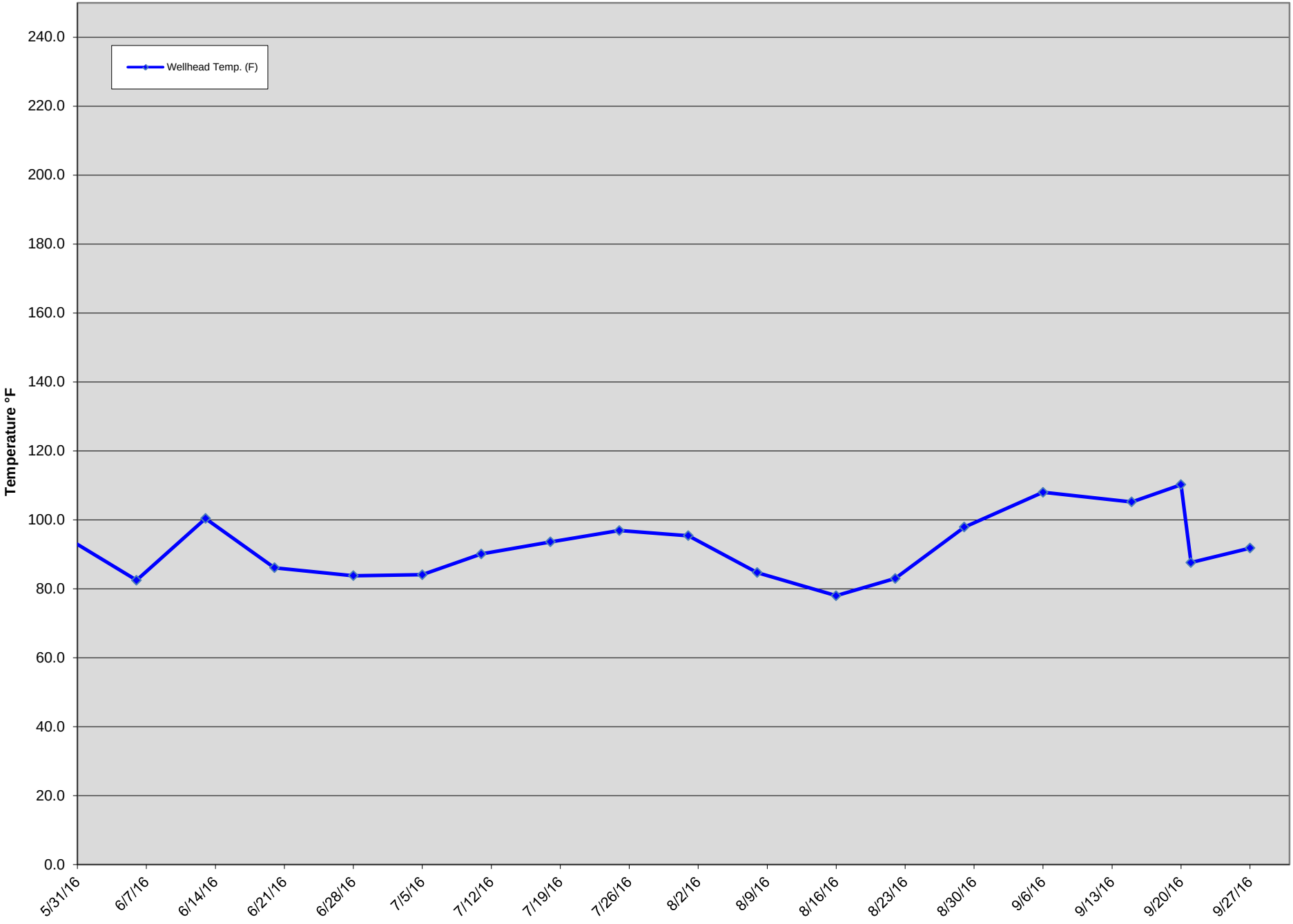
GIW-1 Wellhead Temperatures



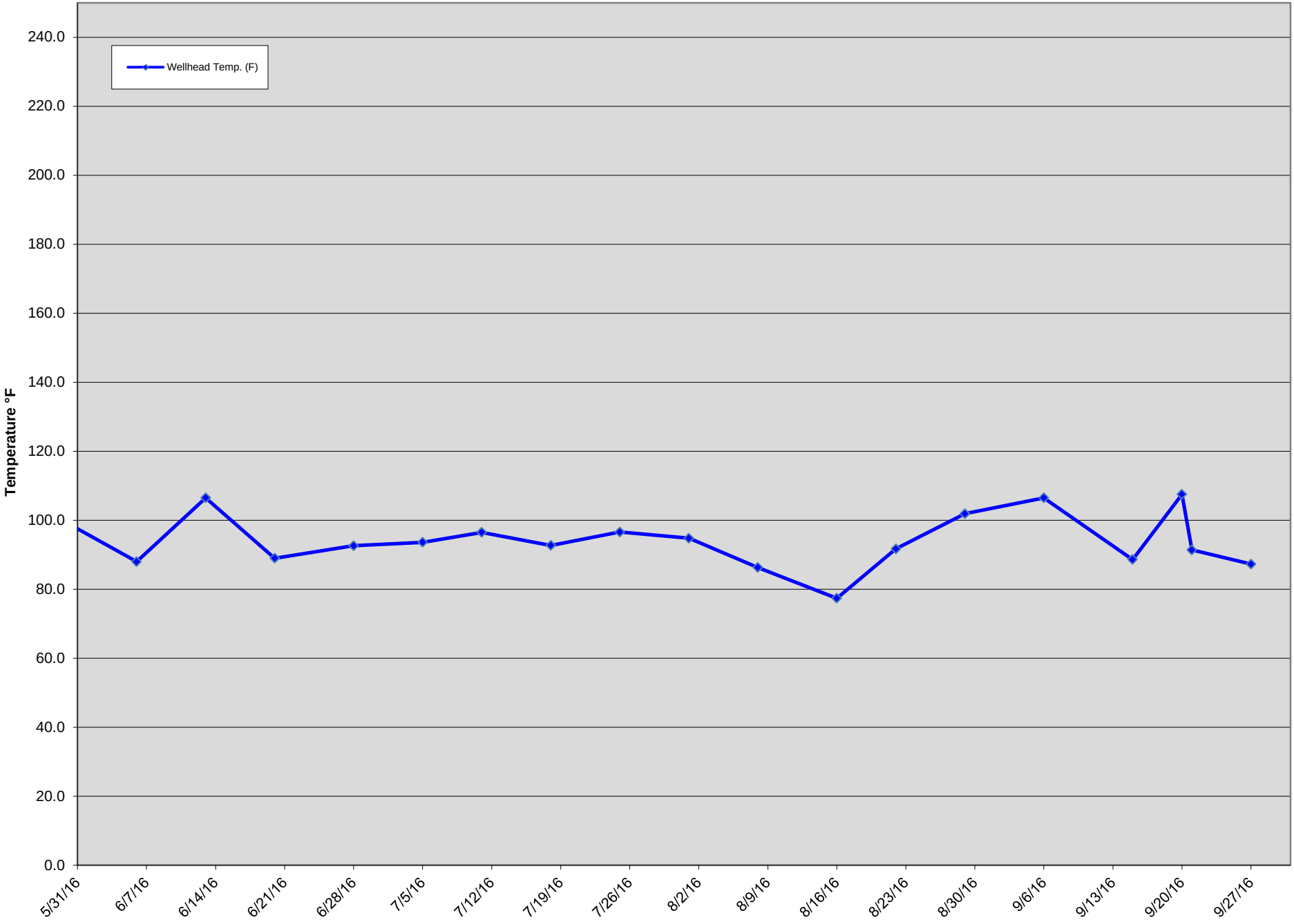
GIW-2 Wellhead Temperatures



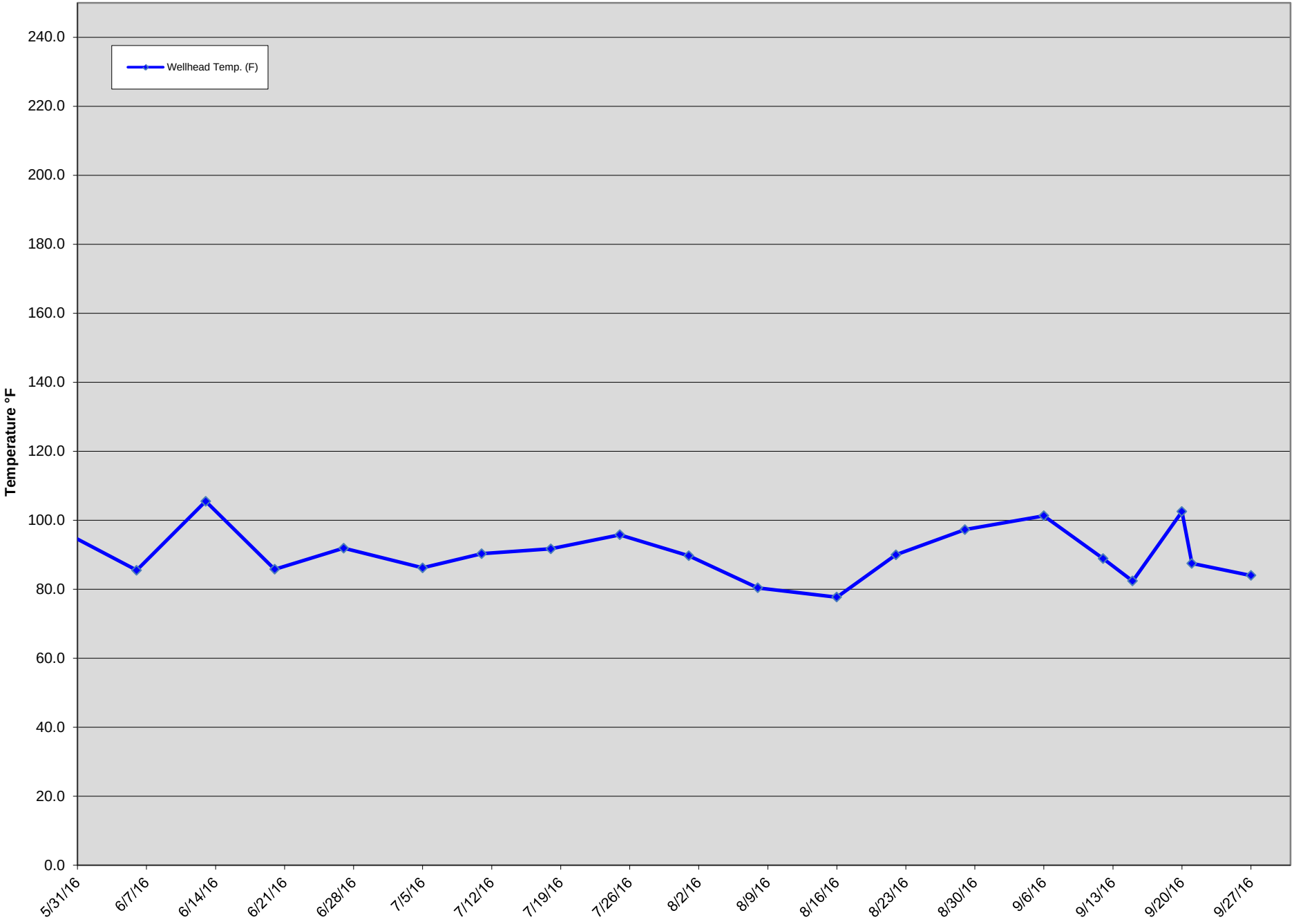
GIW-3 Wellhead Temperatures



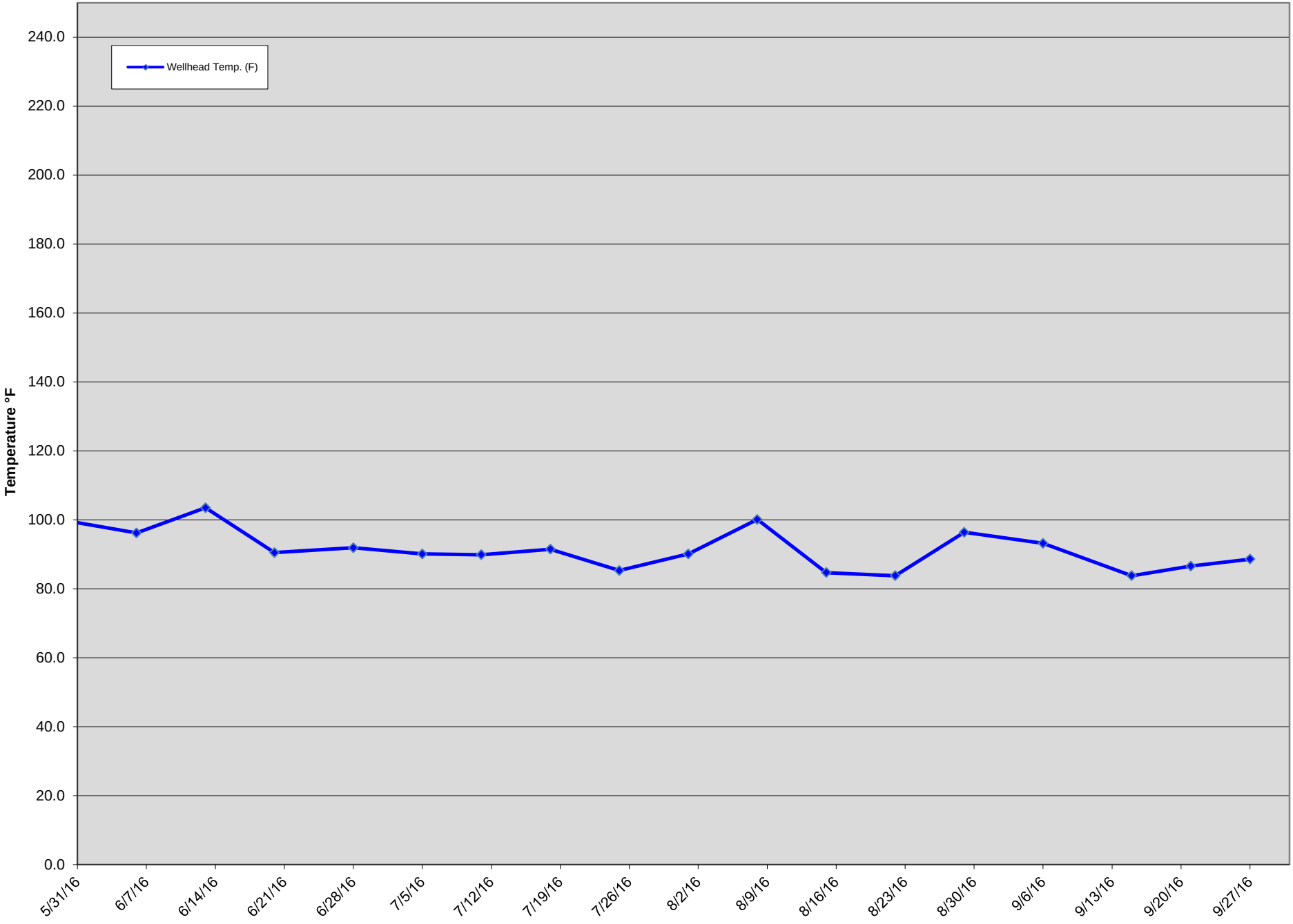
GIW-4 Wellhead Temperatures



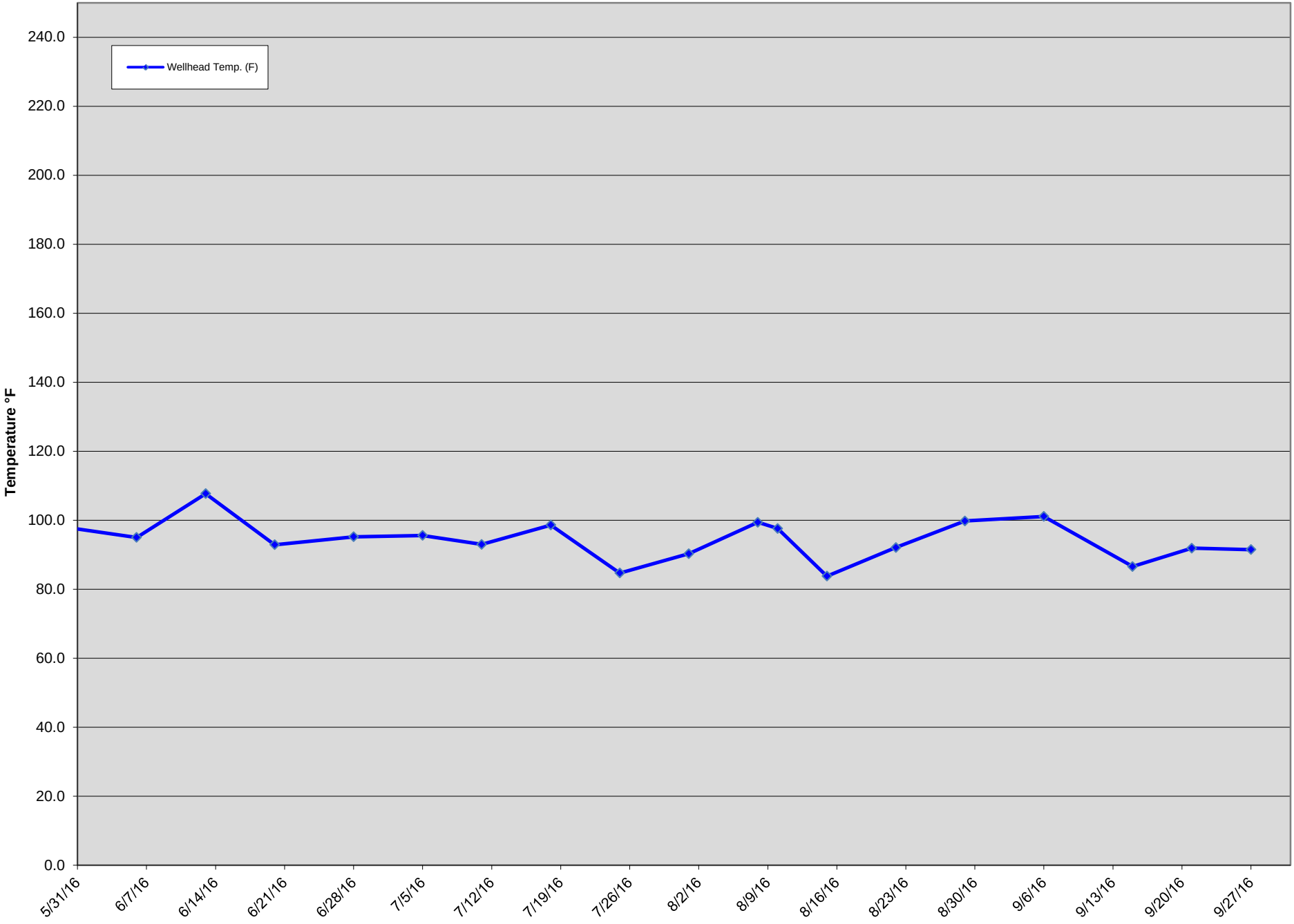
GIW-5 Wellhead Temperatures



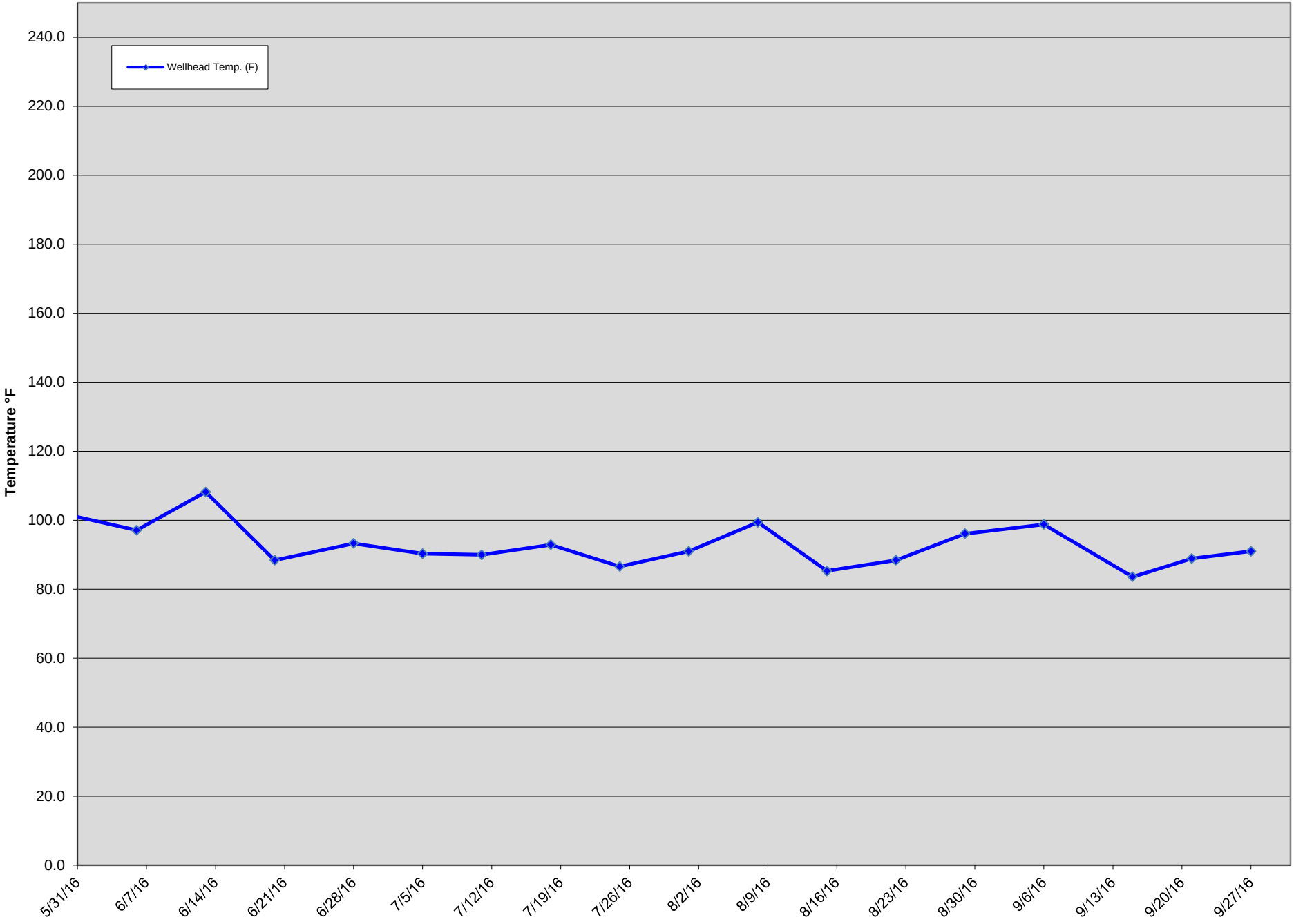
GIW-6 Wellhead Temperatures



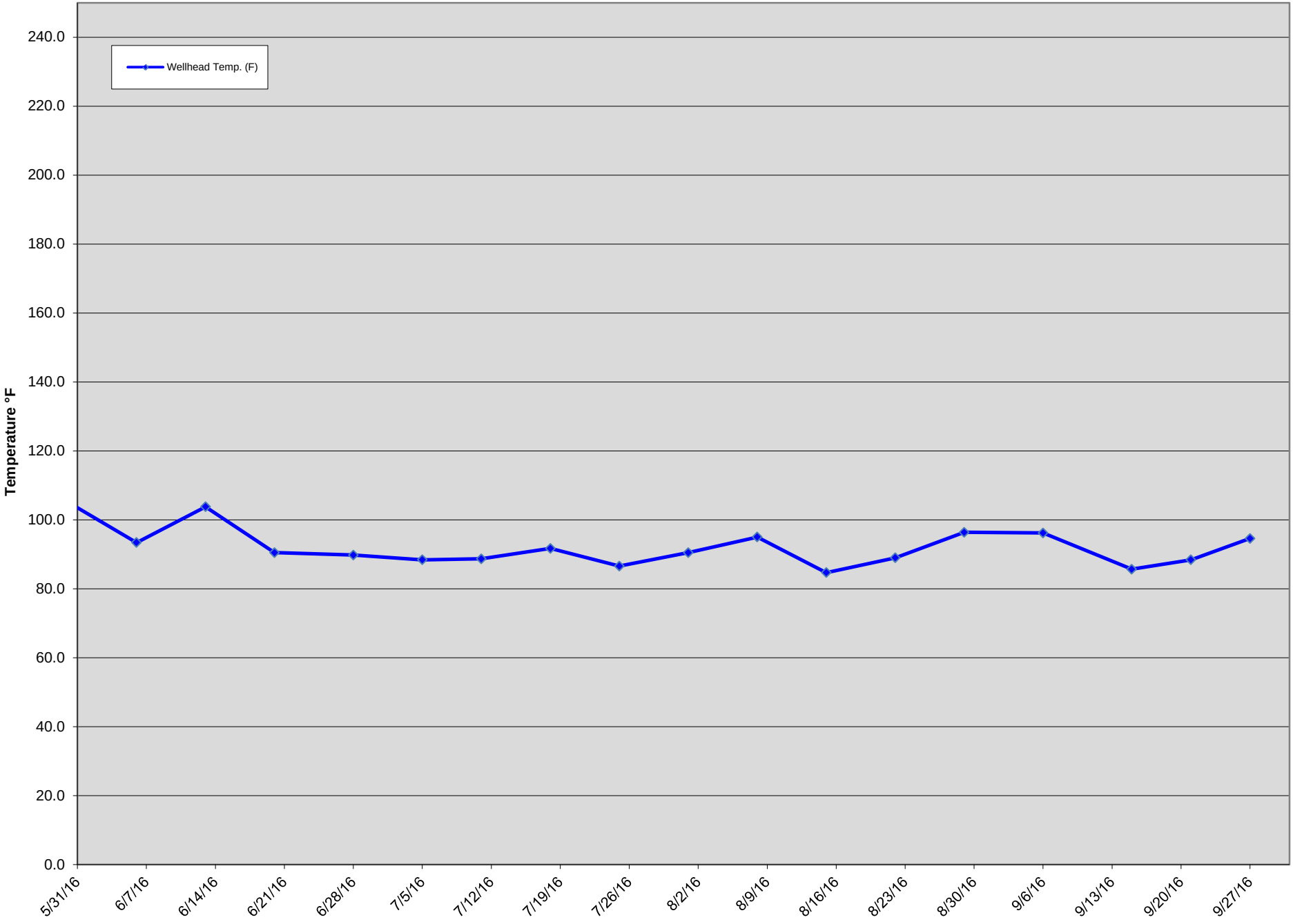
GIW-7 Wellhead Temperatures



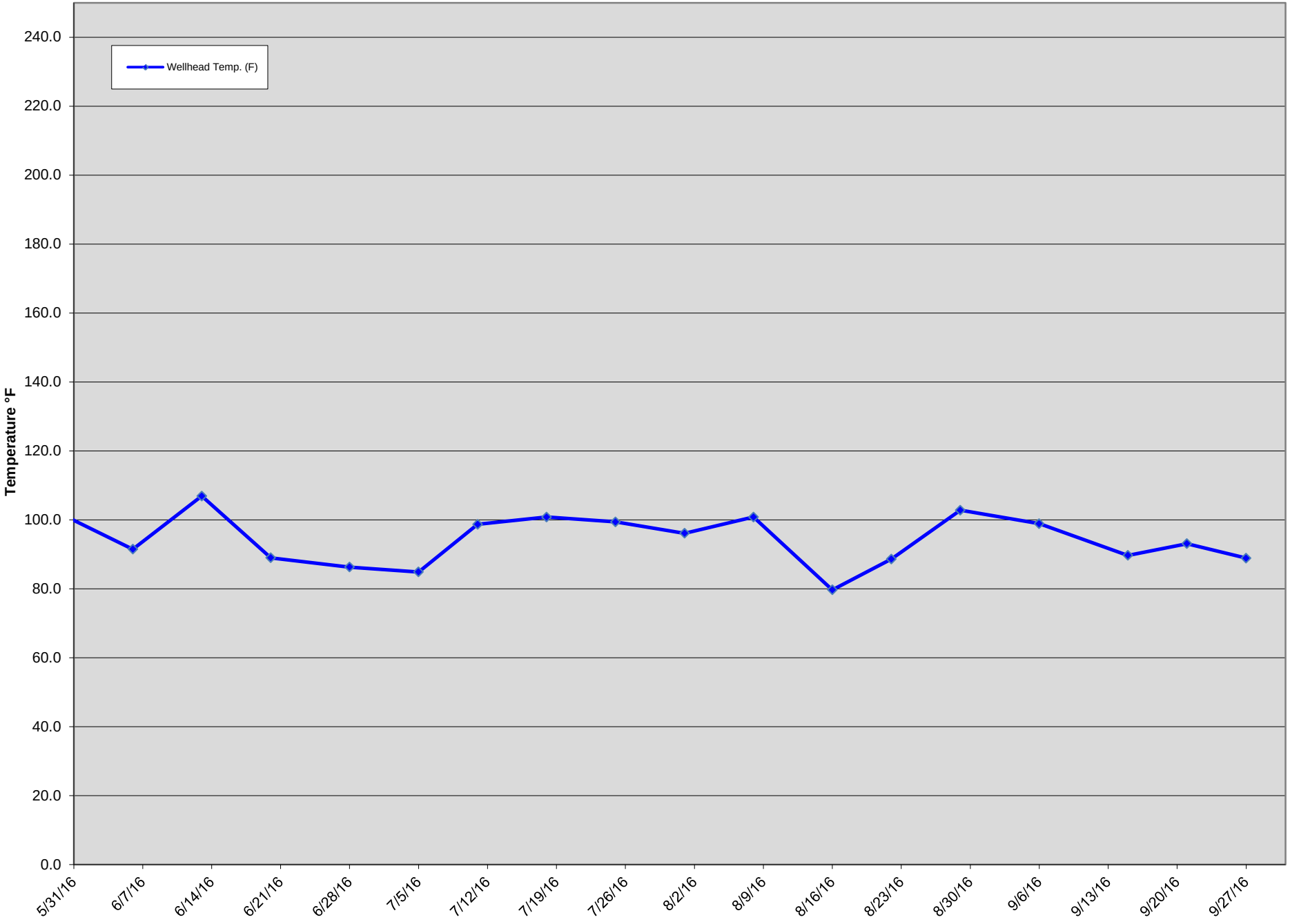
GIW-8 Wellhead Temperatures



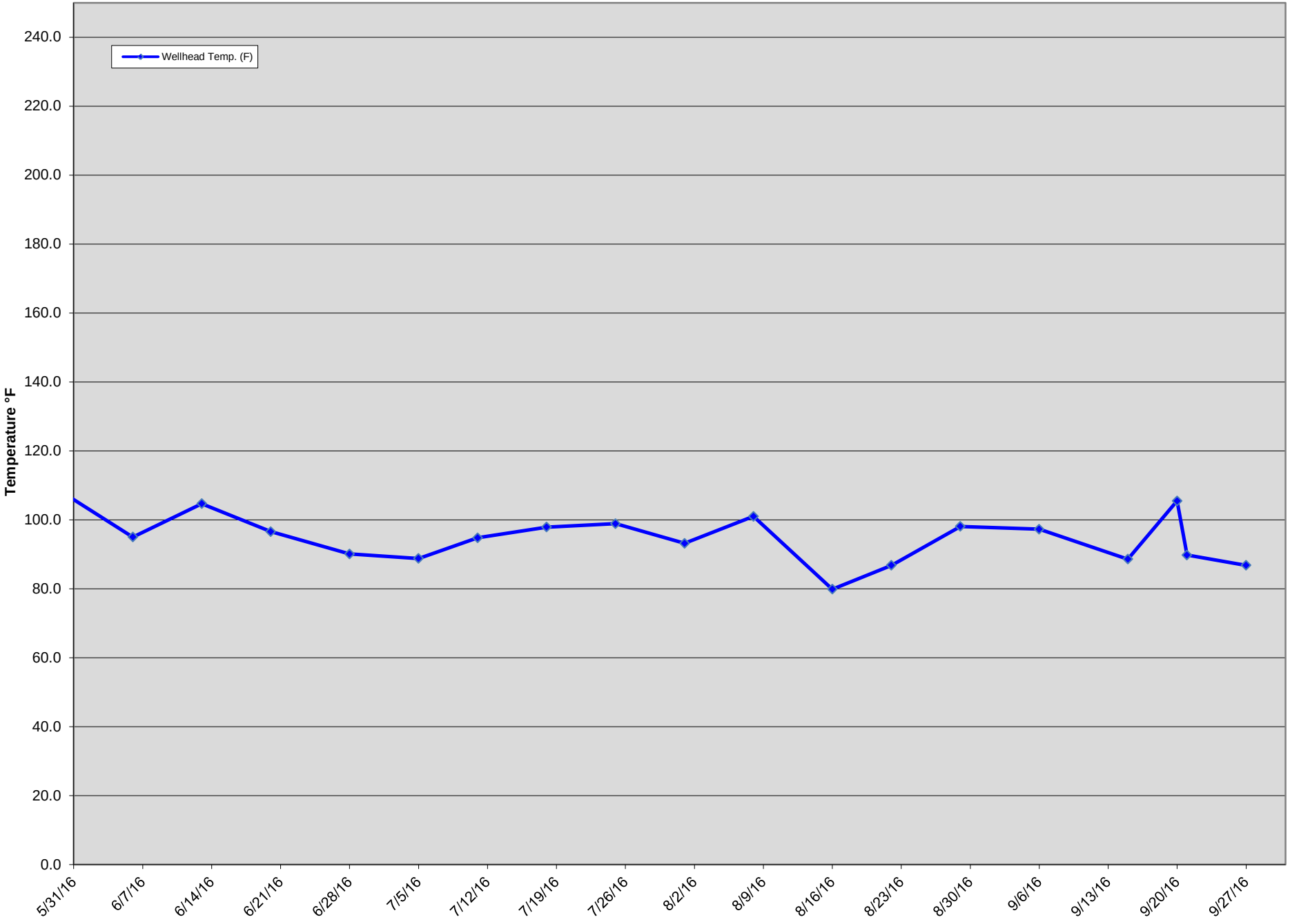
GIW-9 Wellhead Temperatures



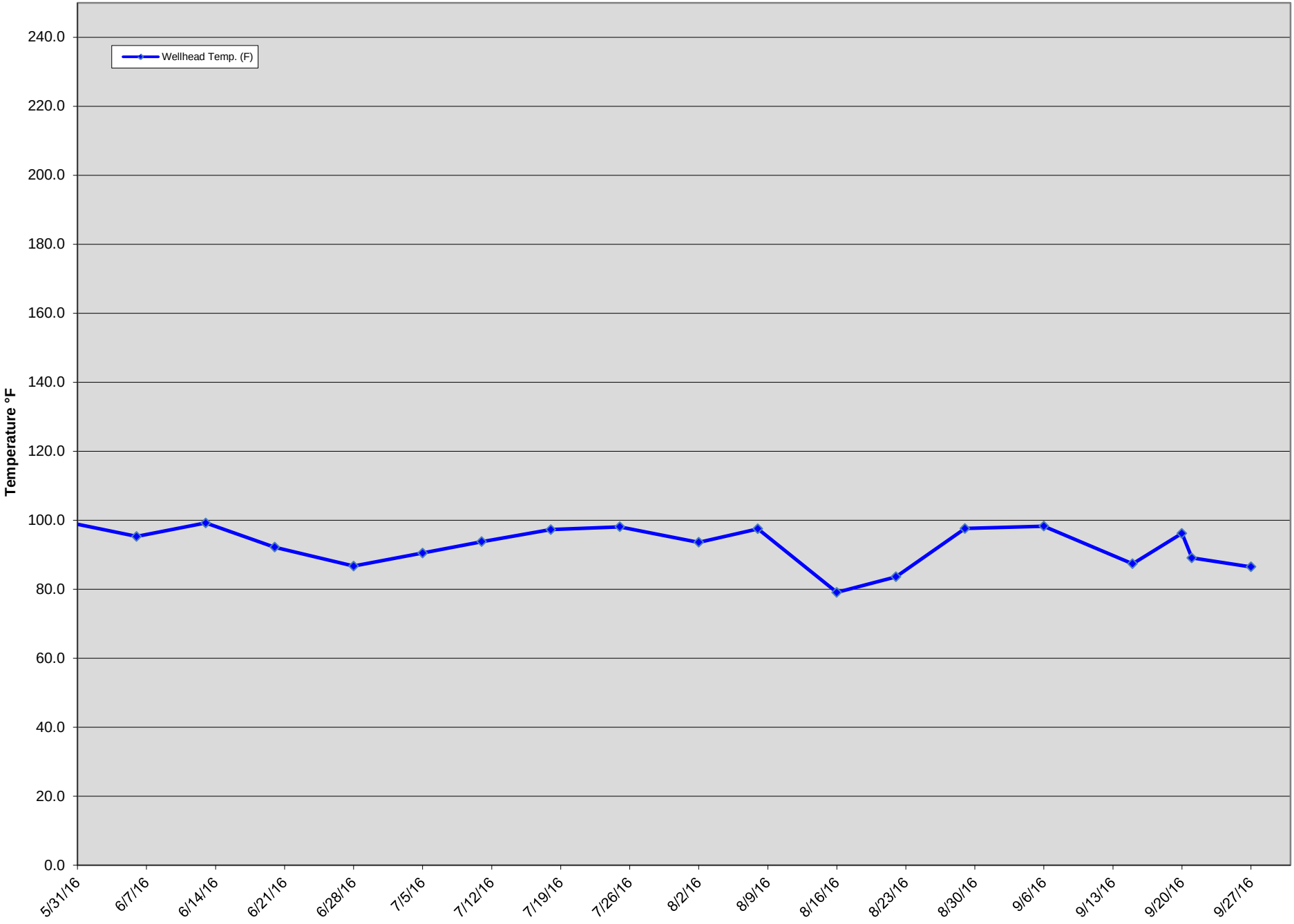
GIW-10 Wellhead Temperatures



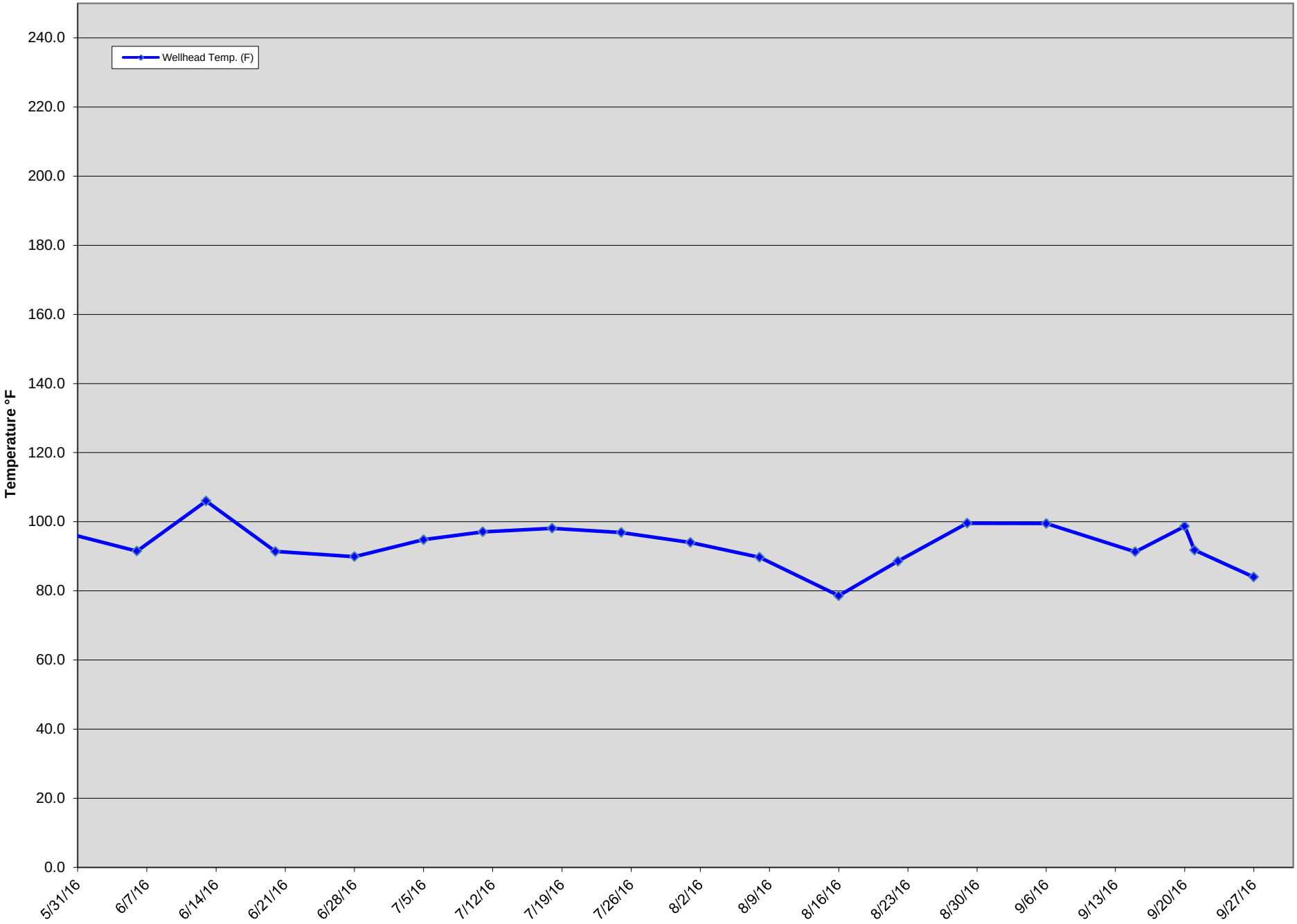
GIW-11 Wellhead Temperatures



GIW-12 Wellhead Temperatures



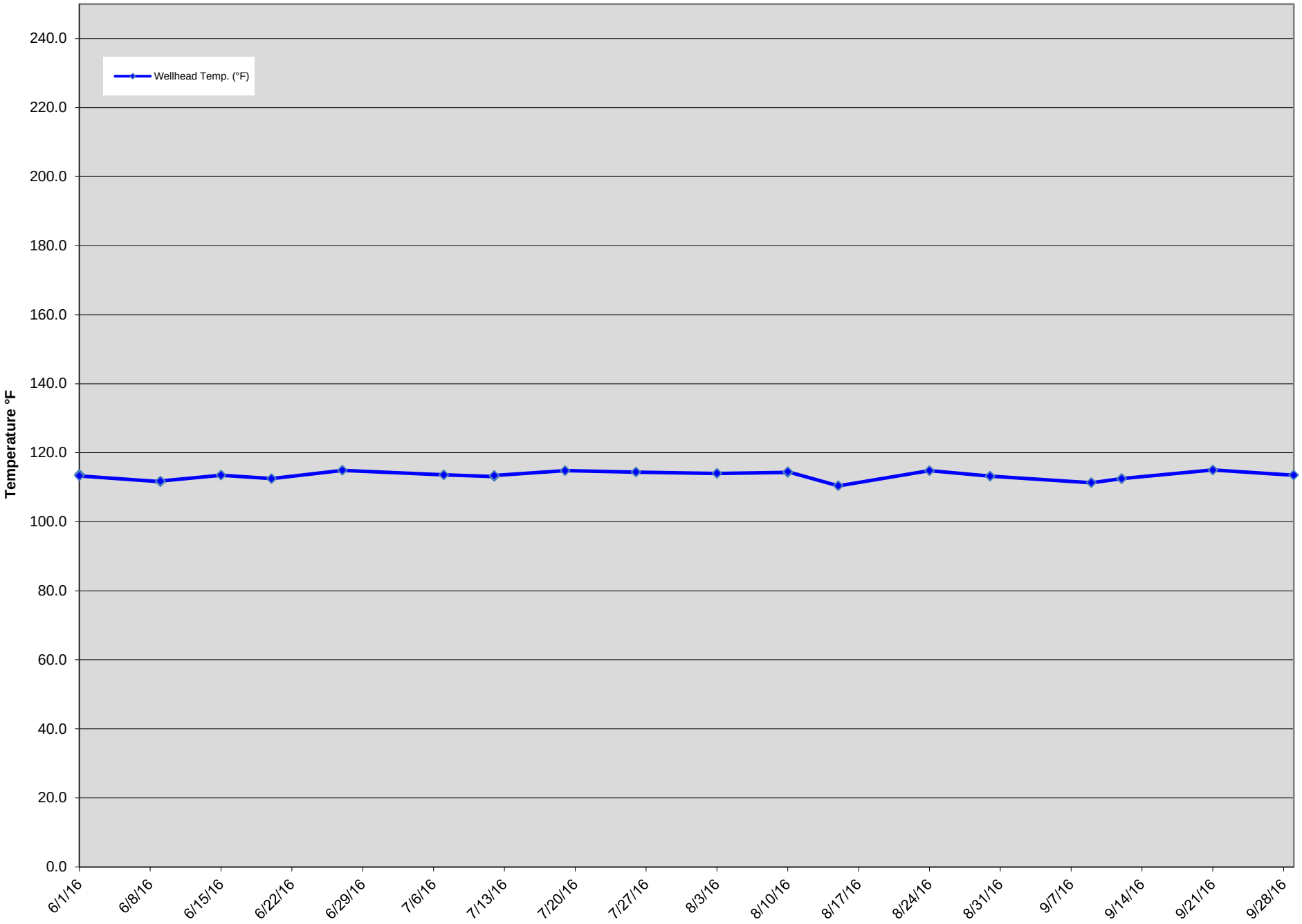
GIW-13 Wellhead Temperatures



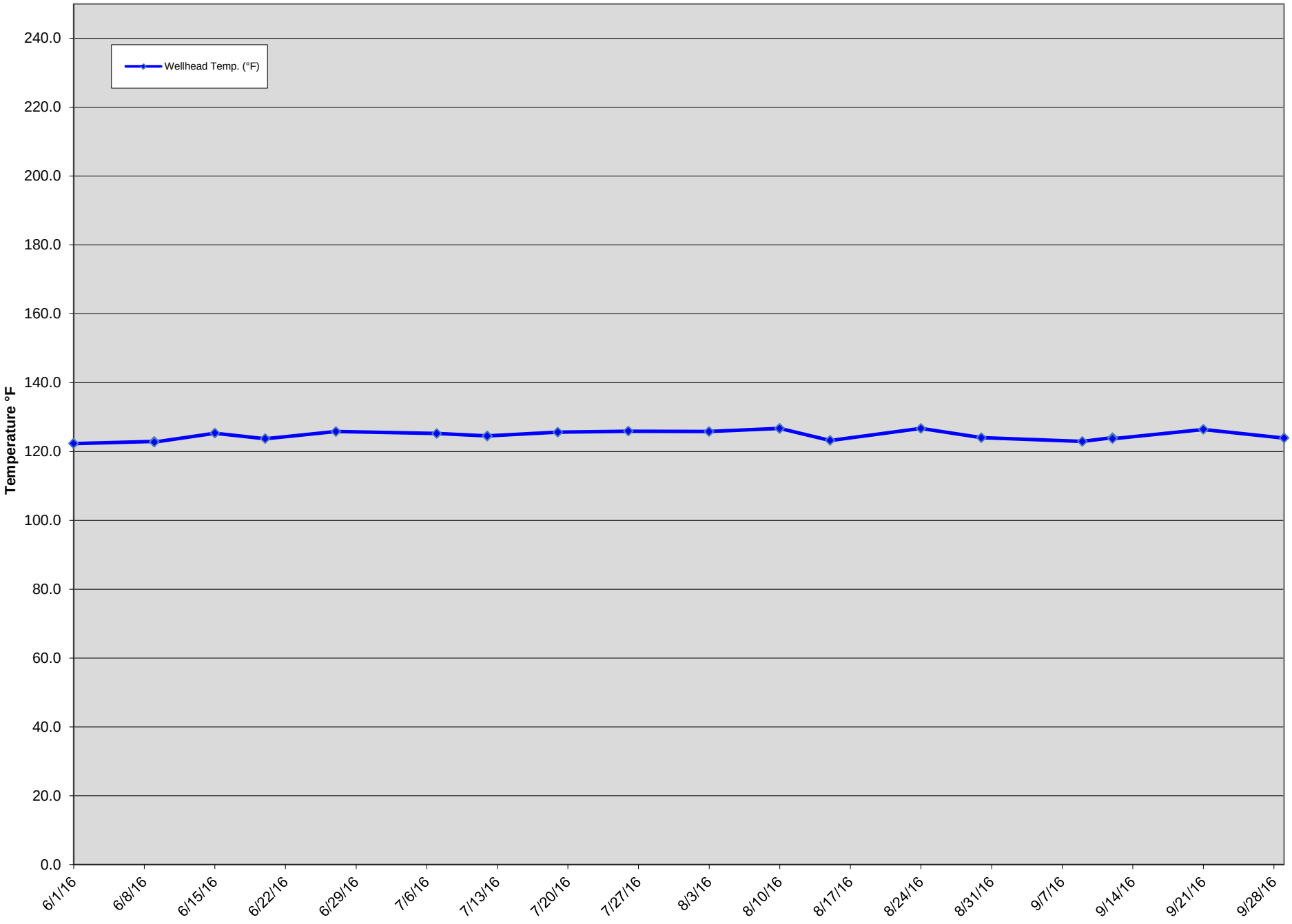
ATTACHMENT D

NECK-AREA GAS EXTRACTION WELL DATA

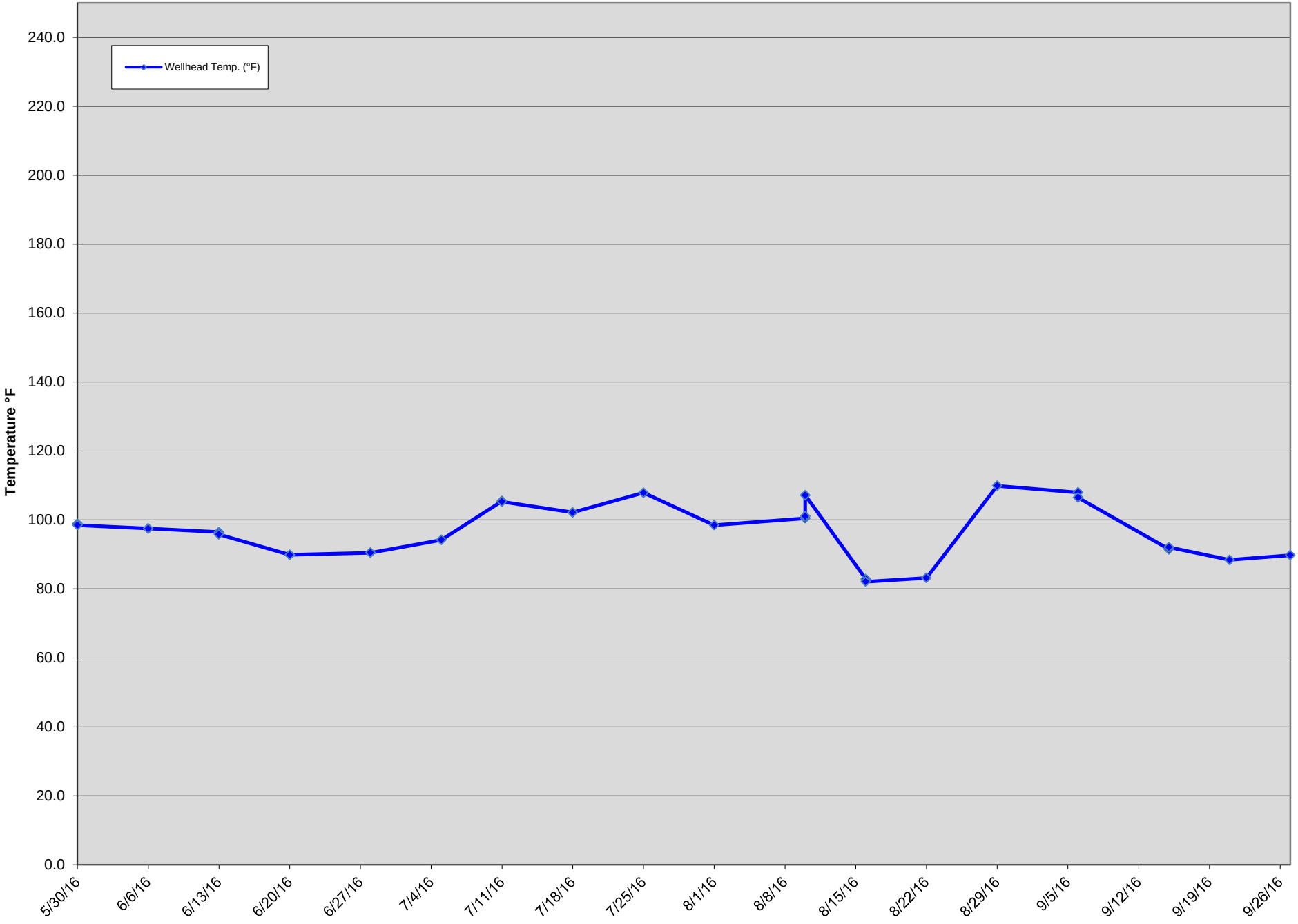
GEW-008 Wellhead Temperatures



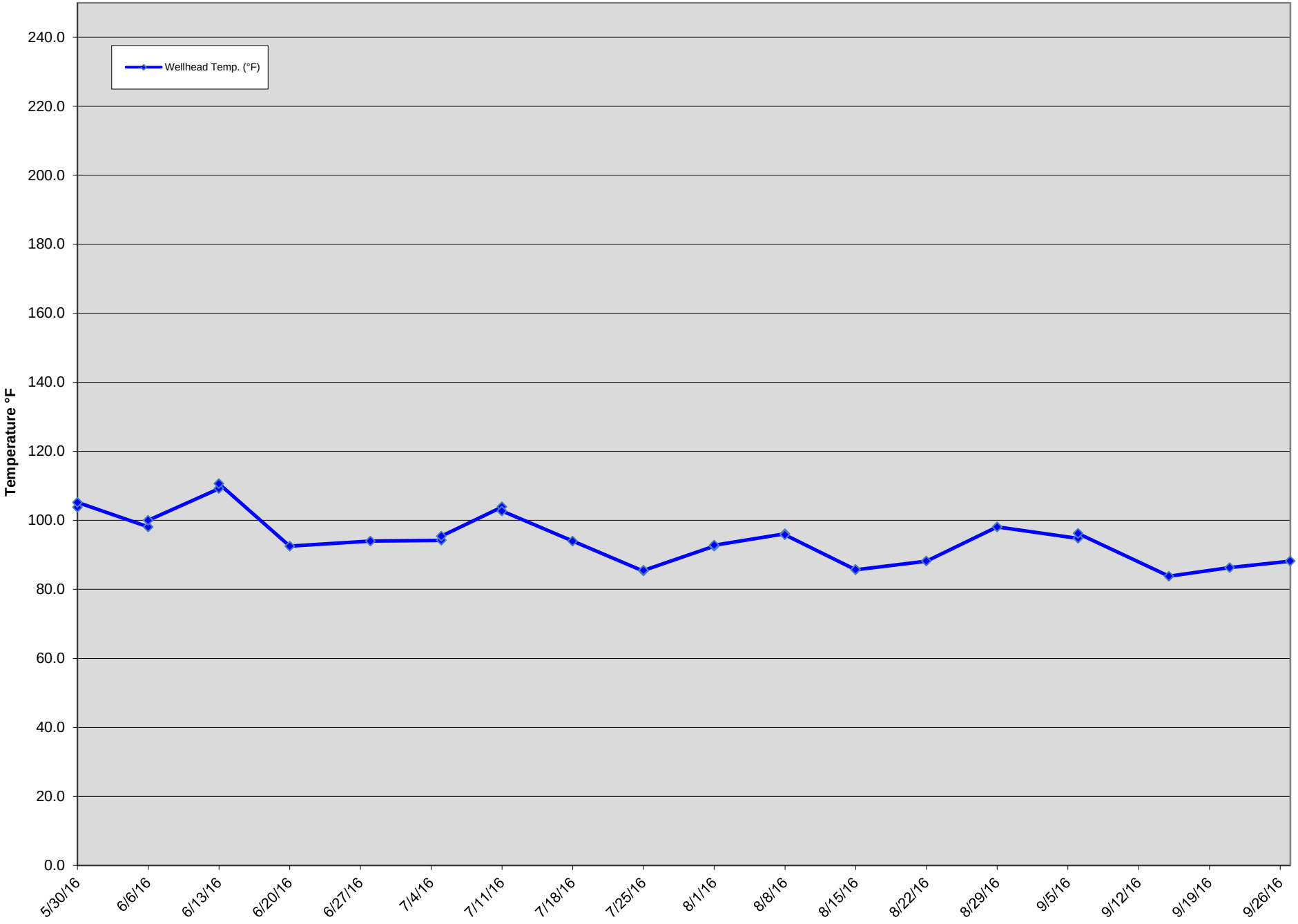
GEW-009 Wellhead Temperatures



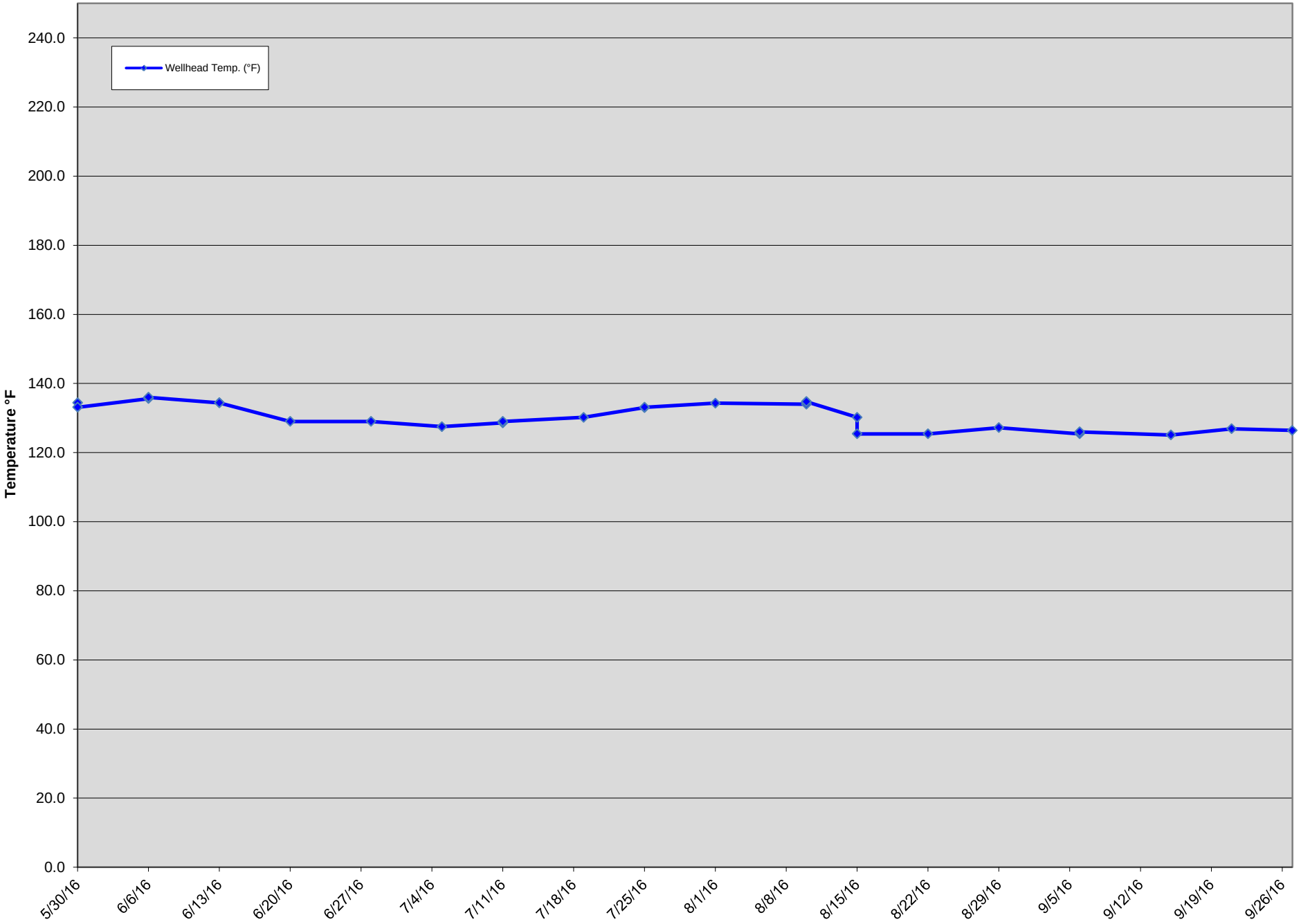
GEW-010 Wellhead Temperatures



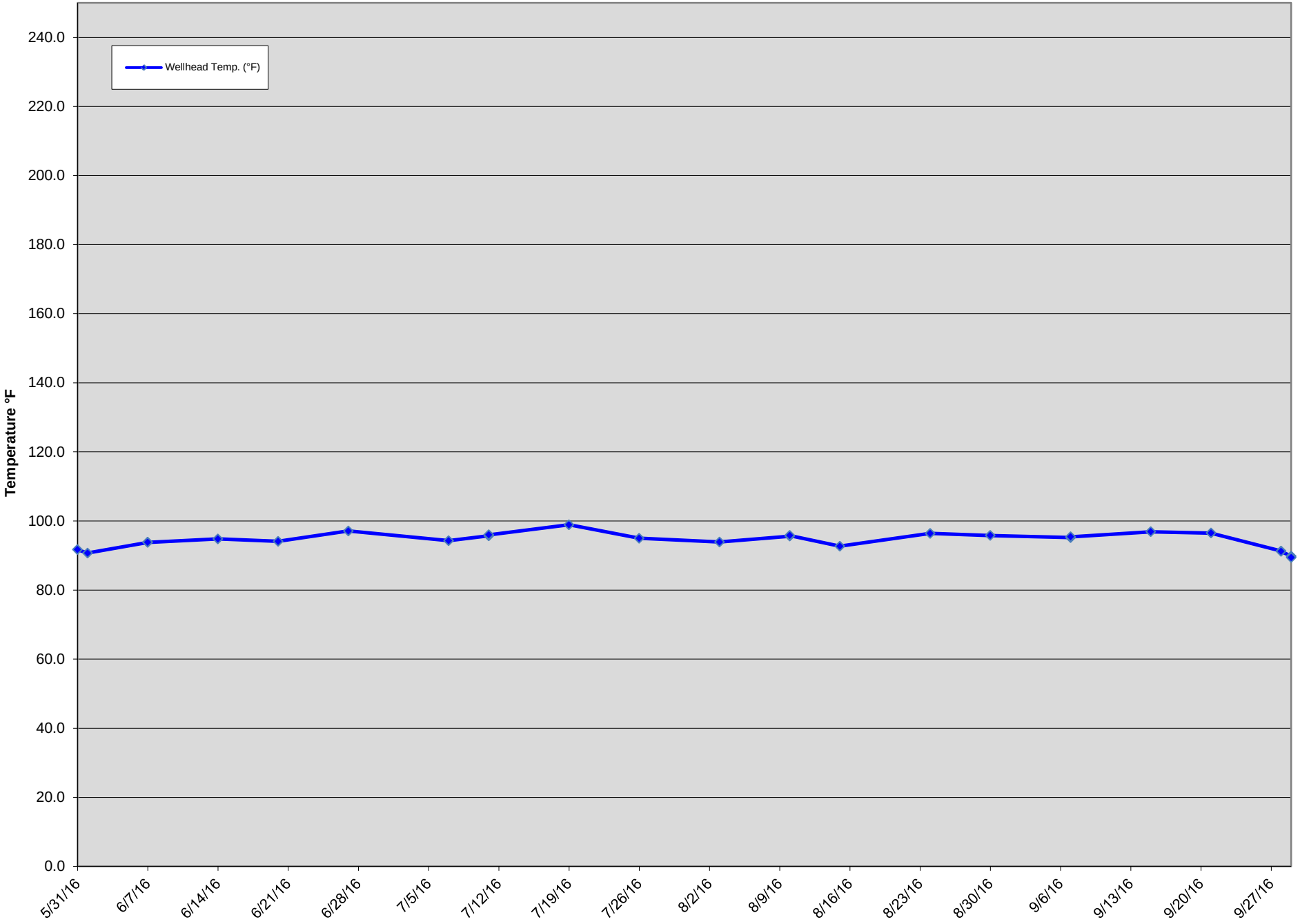
GEW-038 Wellhead Temperatures



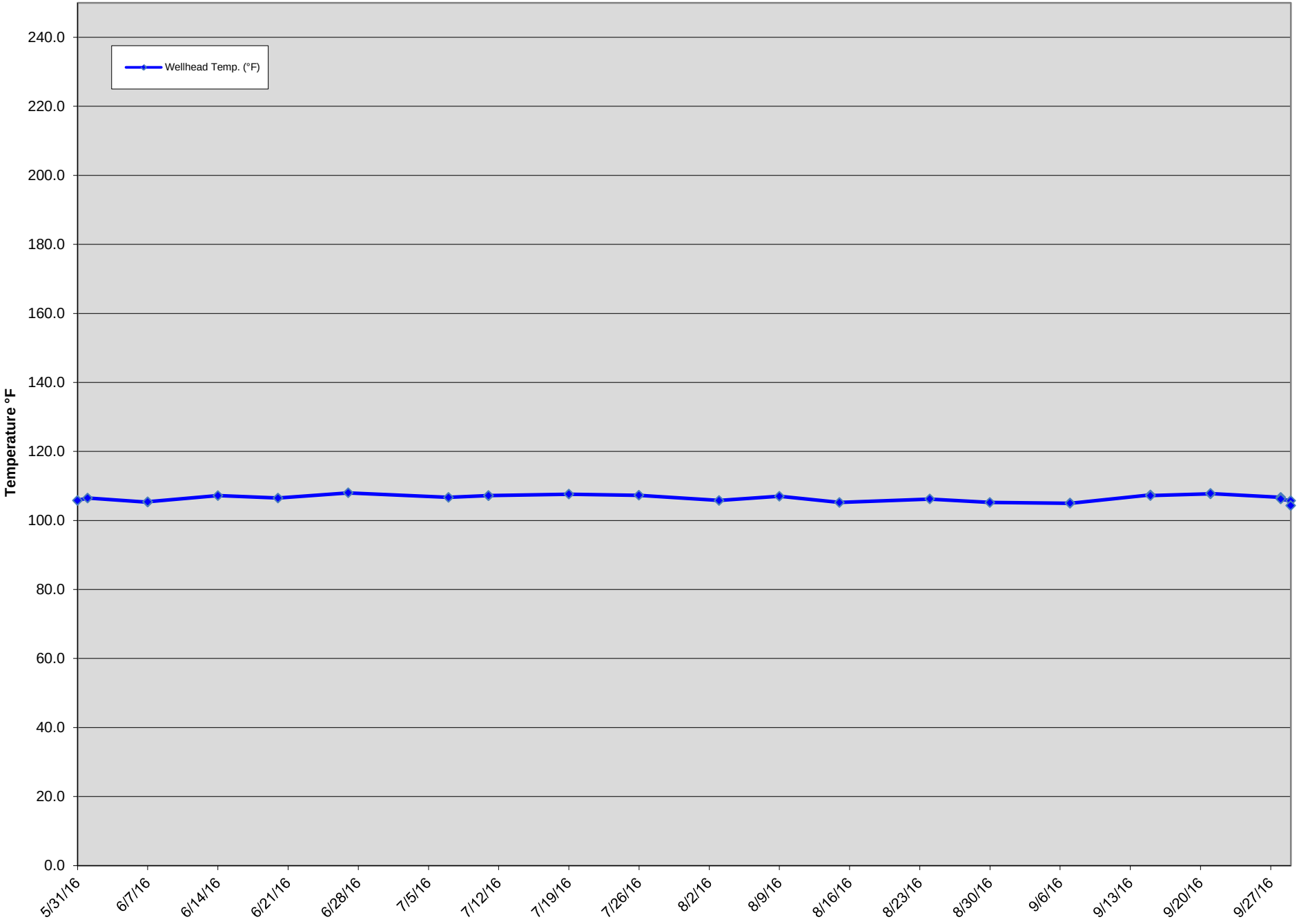
GEW-039 Wellhead Temperatures



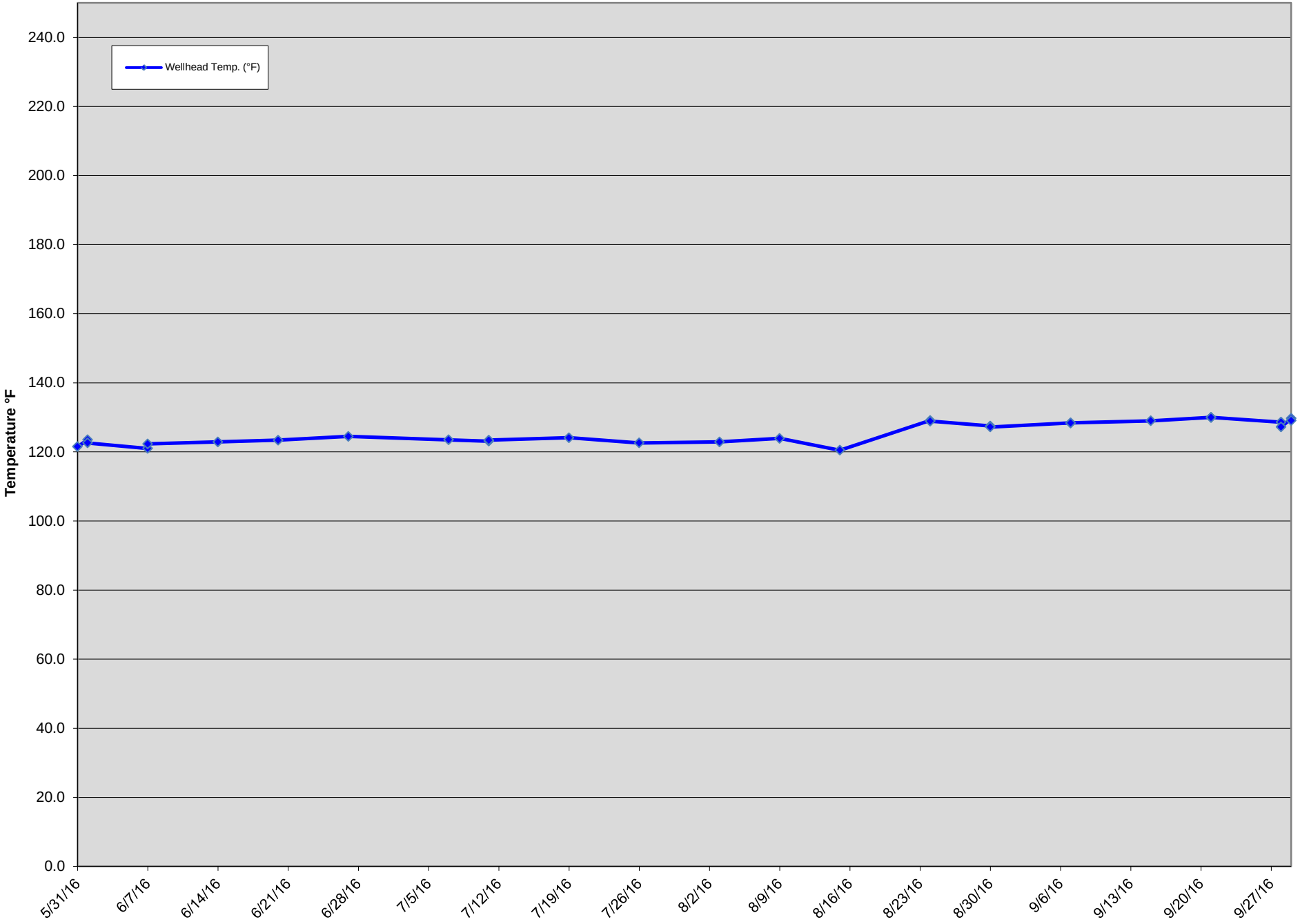
GEW-040 Wellhead Temperatures



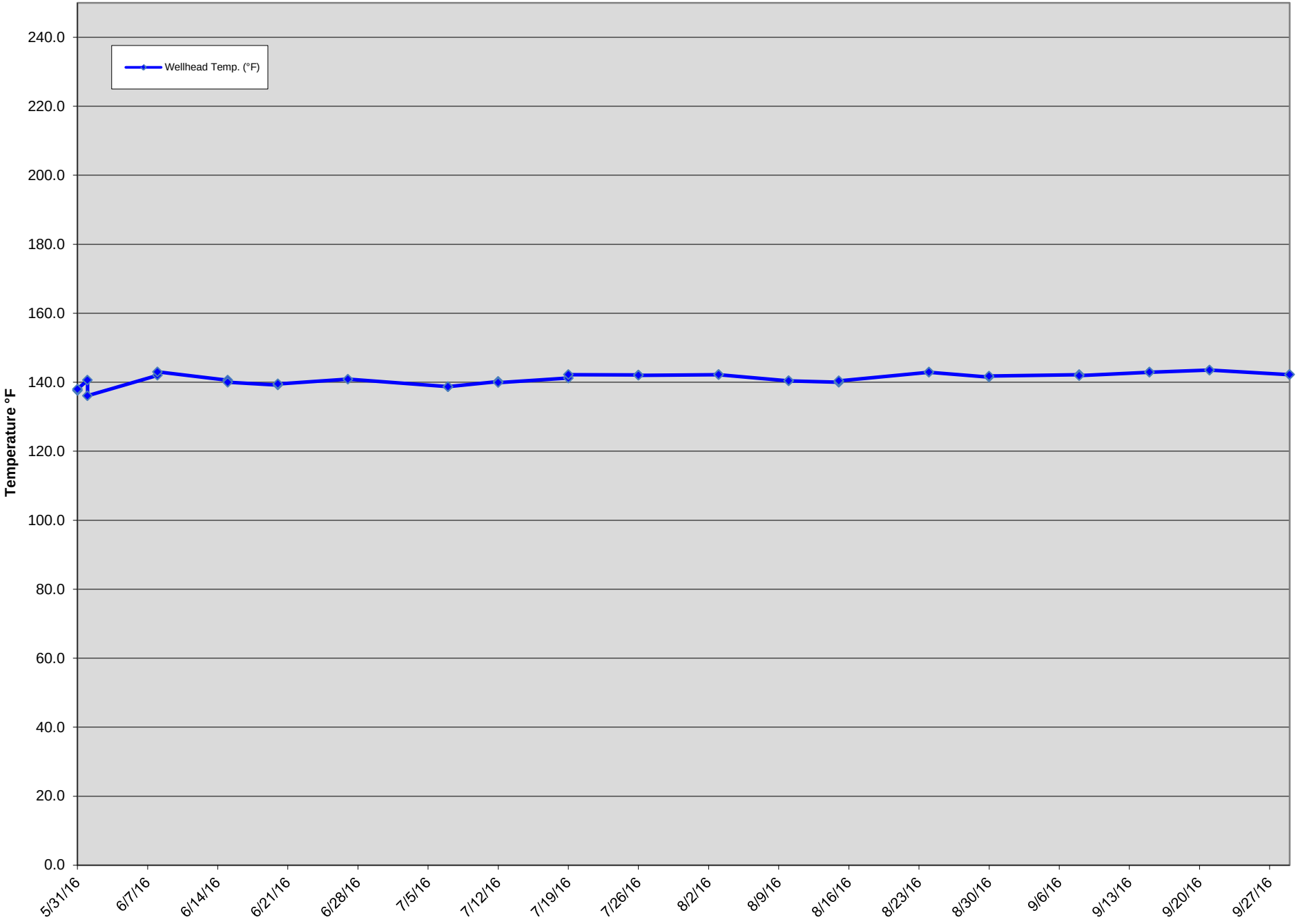
GEW-041R Wellhead Temperatures



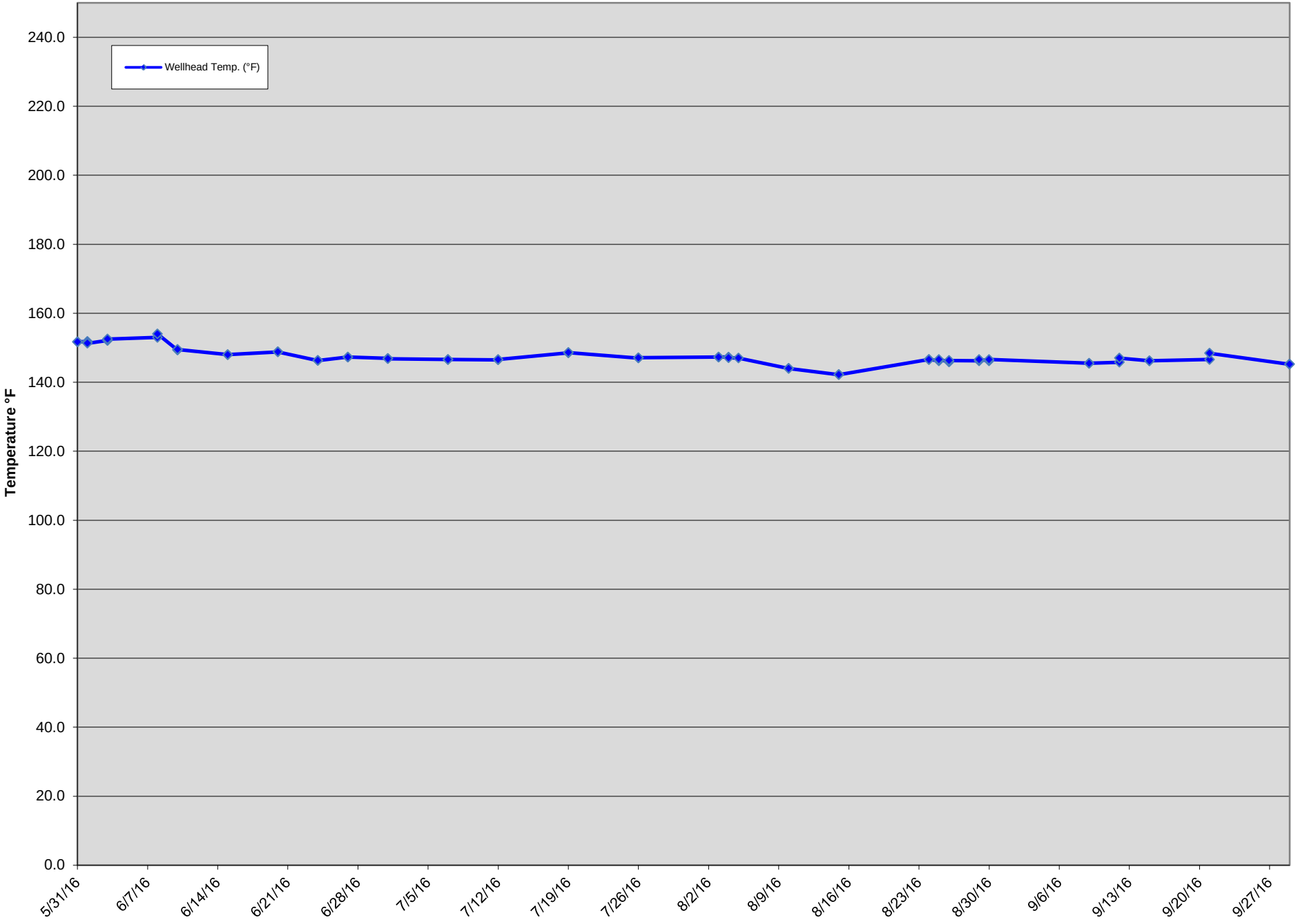
GEW-043R Wellhead Temperatures



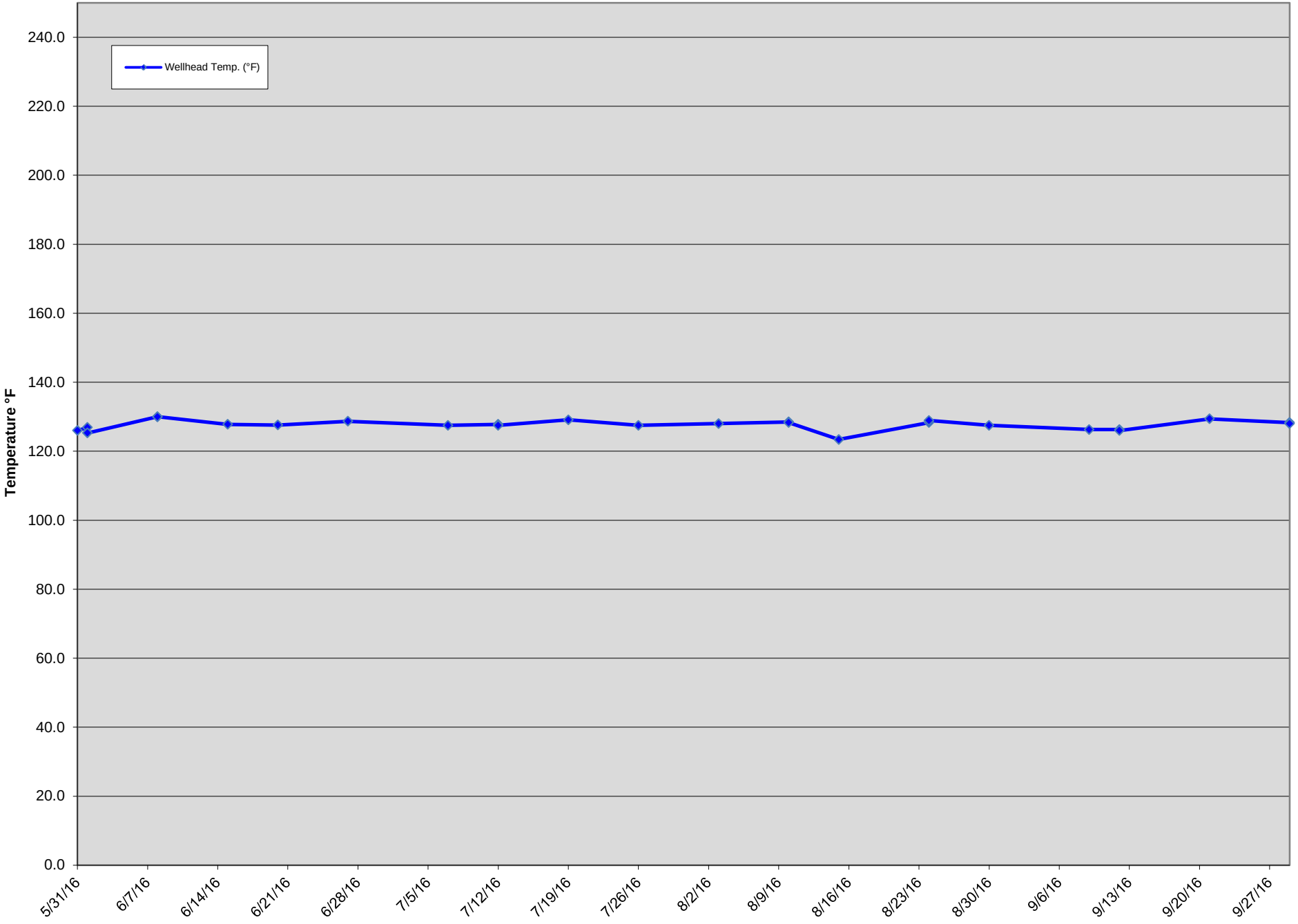
GEW-053 Wellhead Temperatures



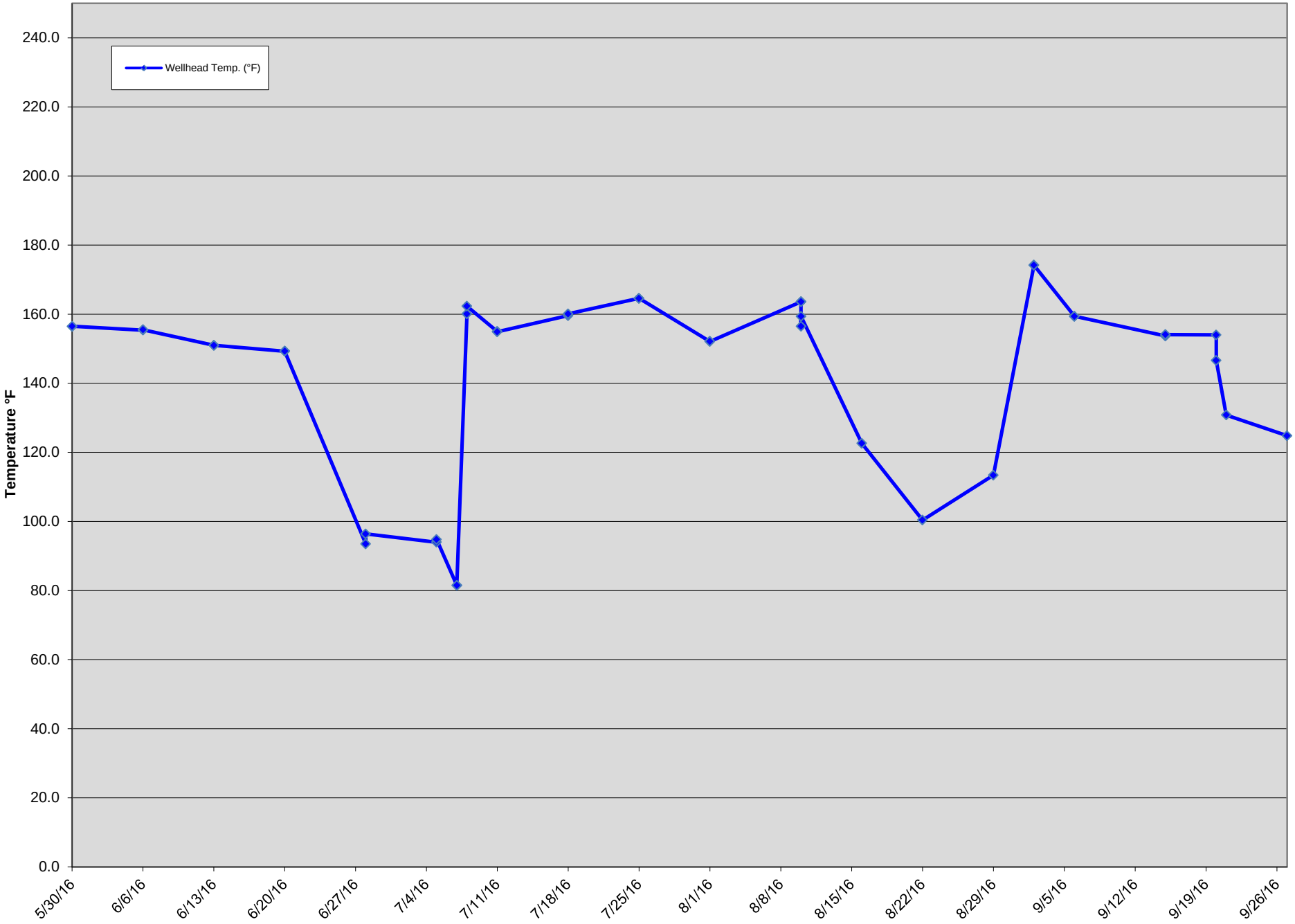
GEW-054 Wellhead Temperatures



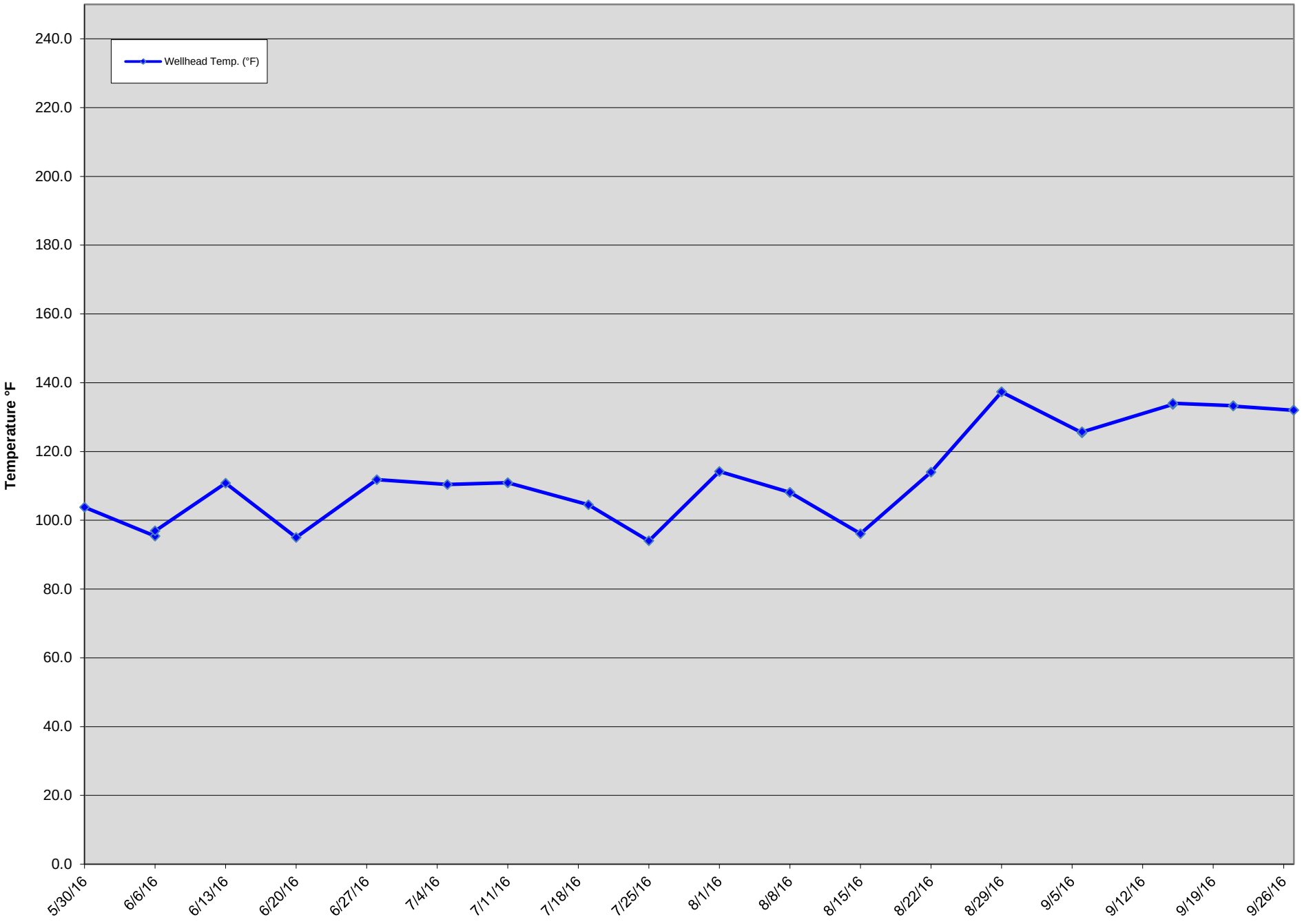
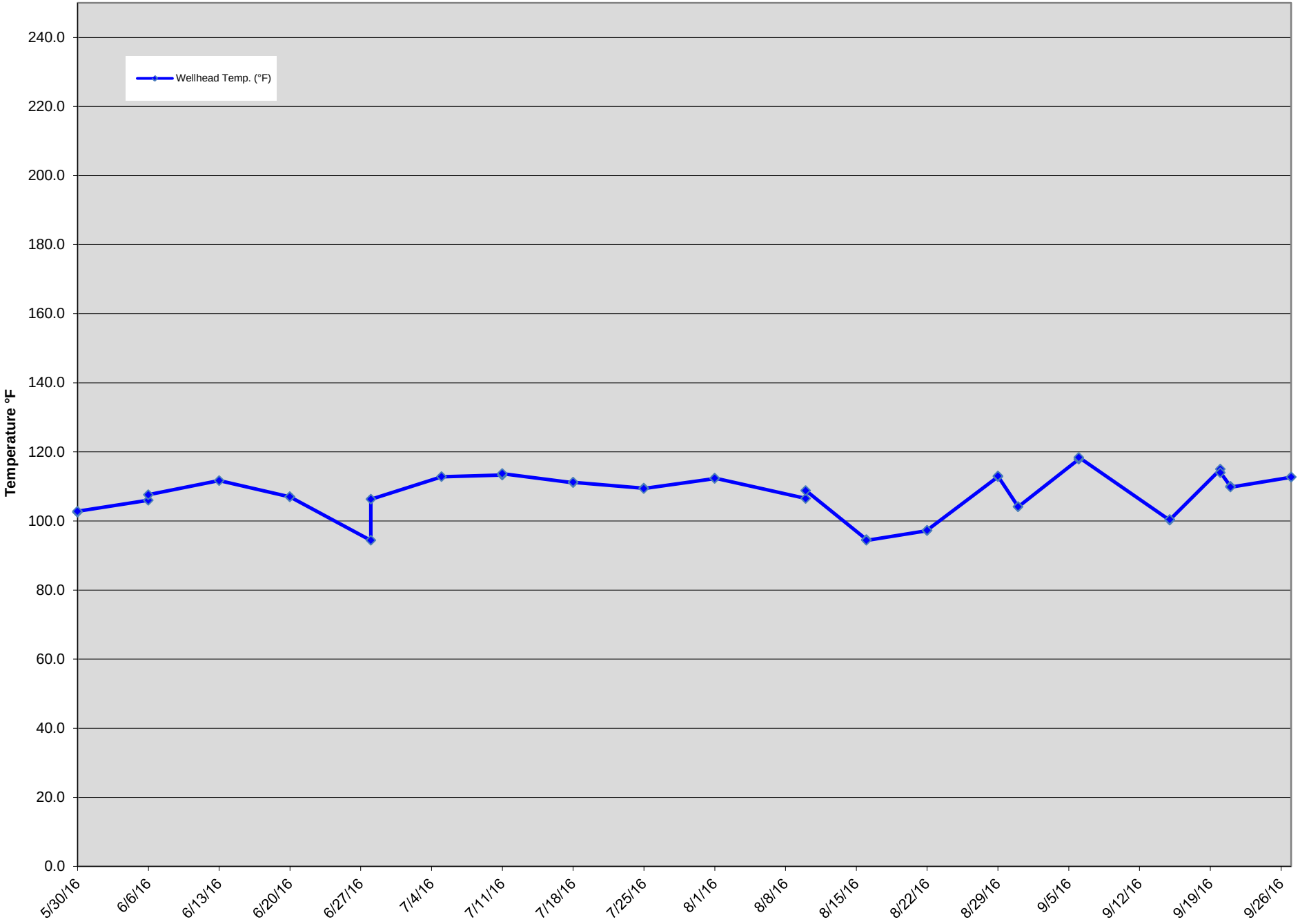
GEW-055 Wellhead Temperatures



GEW-056R Wellhead Temperatures



GEW-109 Wellhead Temperatures



GEW-110 Wellhead Temperatures