EVERSOURCE ENERGY

56 Prospect Street
P.O. Box 270
Hartford, CT 06103

Kathleen M. Shanley
Manager – Transmission Siting
Tel: (860) 728-4527

November 8, 2021

Melanie Bachman, Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Docket No. 461A Greenwich Substation and Line Project
Post-construction EMF Monitoring Report

Dear Ms. Bachman:

In accordance with condition 3(k) in the November 9, 2017 Decision and Order of the Connecticut Siting Council ("Council") in Docket No. 461A, The Connecticut Light and Power Company doing business as Eversource Energy ("Eversource") submitted a Post-construction EMF Monitoring Plan ("Plan") in Volume 1 - Appendix H of the Development and Management Plan on October 5, 2018, which the Council approved on January 17, 2019.

Per Section IV of the Plan, Eversource is providing to the Council this report on the post-construction electric and magnetic field ("EMF") measurements within 12 months of the in-service date of the Greenwich Substation & Line Project ("GSLP") facilities.

The new transmission line entered into service on October 25, 2020. Post-construction field measurements were taken on October 1, 2021, and again, on October 8, 2021. Consistent with the approved Plan, all measurements of electric and magnetic fields were taken in accordance with IEEE[1] Standard 644-1994 (R2008), Standard Procedures for Measurement of Power Frequency Electric and Magnetic Fields from AC Power Lines. The measurements were taken with an EMDEX II meter manufactured by Enertech Consultants, Campbell, CA. This meter and its accessories meet the associated instrumentation standards.

The EMF monitoring locations as specified in the Plan are listed below. Aerial photographs depicting these locations are attached (See Attachment C Figures C-1 through C-4).

1. Cos Cob Substation (Substation perimeter measurement)
2. Wood Rd, Town of Greenwich (Line Segment Measurement)
3. Arch St, Town of Greenwich (Line Segment Measurement)
4. Greenwich Substation (Substation perimeter measurement)

At the substation perimeter measurement locations, measurements were taken outside the perimeter in pedestrian spaces and ways near the substation. At the line segment measurement location, measurements were taken below and on either side of the transmission lines, where access permitted. Magnetic fields measurements were taken twice at the line segment measurement location to account for seasonal variation of transmission line current flow.

[1] Institute for Electrical and Electronics Engineers (IEEE) is a professional organization supporting many branches of engineering, computer science, and information technology. In addition to publishing journals, magazines, and conference proceedings, IEEE also sets standards followed in a wide variety of industries.

Magnetic fields were measured at each location on October 1, 2021 and October 8, 2021. The current flows over the transmission line at the time of the magnetic fields were measured, as recorded by the CONVEX SCADA system[2], are listed in Table 1. The table identifies only the current on the overhead transmission lines, which are the dominant source of electric and magnetic fields. However, other nearby distribution facilities, terrain, and vegetation affected the measurements.

Recorded Line Currents				
		October 1, 2021	October 8, 2021	Average Annual Load
Wood Rd	1020 Line (New)	56	59	101
	1703 Line (New)	59	63	101
Arch St	1020 Line (New)	56	59	101
	1703 Line (New)	60	63	101

Table 1- Recorded Transmission Line Currents (Amperes per phase)

Recordings of magnetic fields along substation perimeters can be found in Figures A1 through A4 (See Attachment A). Graphs of the measured magnetic fields for the line segments can be found in Figures B1 through B4 (See Attachment B). Figures B1 through B4 also include a graph of calculated field values for Wood Road and Arch Street. These locations were selected as the "true-up" locations, so the calculated values reflect not only the recorded line currents at the time of the measurements, but also actual cable depths at the measurement location. The recorded line currents on October 1, 2021 and October 8, 2021 were both lower than the currents used for the Annual Average Load case modeling in the Docket No. 461A record for the new line, and the conductor heights at each location were lower for the new line, and higher than the existing line, as compared to those assumed for the modeling in the Docket No. 461A record.

Electric fields were measured around the perimeter of the Cos Cob Substation. These measurements are included in Attachment D.

If any Council or staff member has any questions about this report, please contact me at (860) 728-4527.

Sincerely,

Kathleen M. Shanley

Attachment A: Substation Perimeter Measurements Graphs
Attachment B: Graphs of Line Segment Field Measurements
Attachment C: Aerial Photographs Depicting EMF Measurement Locations
Attachment D: Tabulated Electric Field Measurements at Cos Cob Substation

cc. Docket No. 461A Service List

[2] The Connecticut Valley Electric Exchange Supervisory Control And Data Acquisition system.

Attachment A – Substation Perimeter Measurements

Figure A-1 – Substation Perimeter Measurement Cos Cob Substation October 1, 2021.

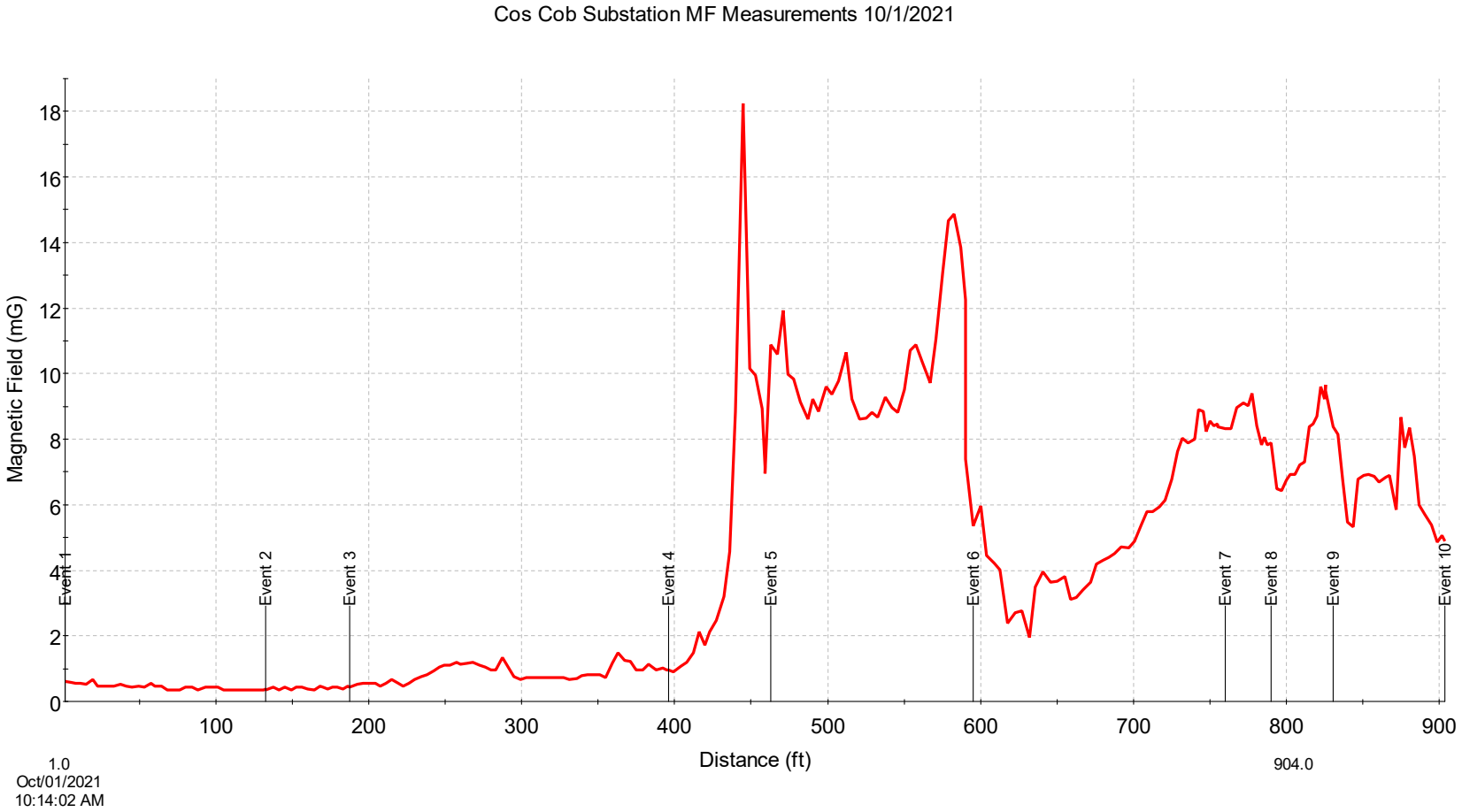


Figure A-2 – Substation Perimeter Measurement Cos Cob Substation October 8, 2021.

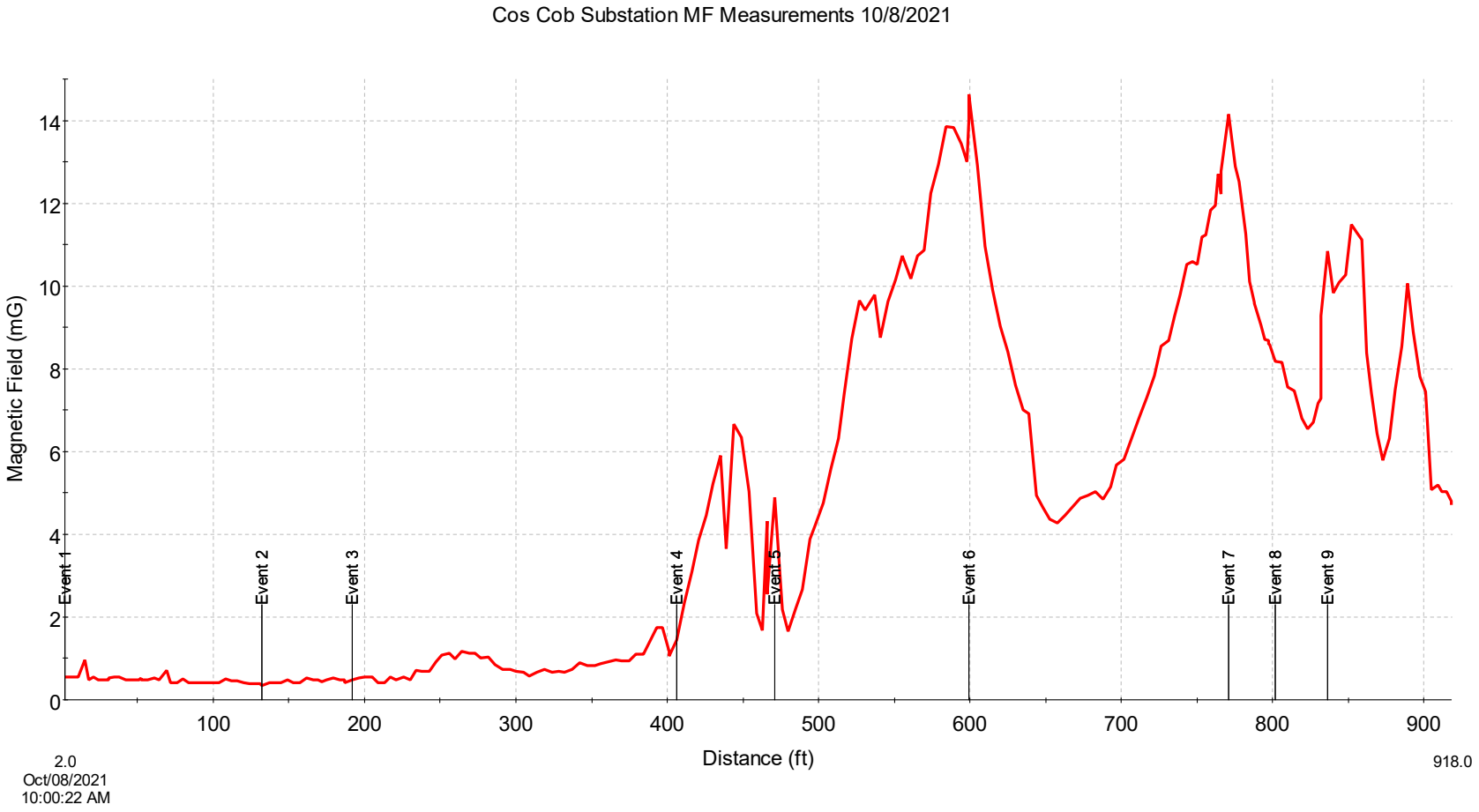


Figure A-3 – Substation Perimeter Measurement Greenwich Substation October 1, 2021.

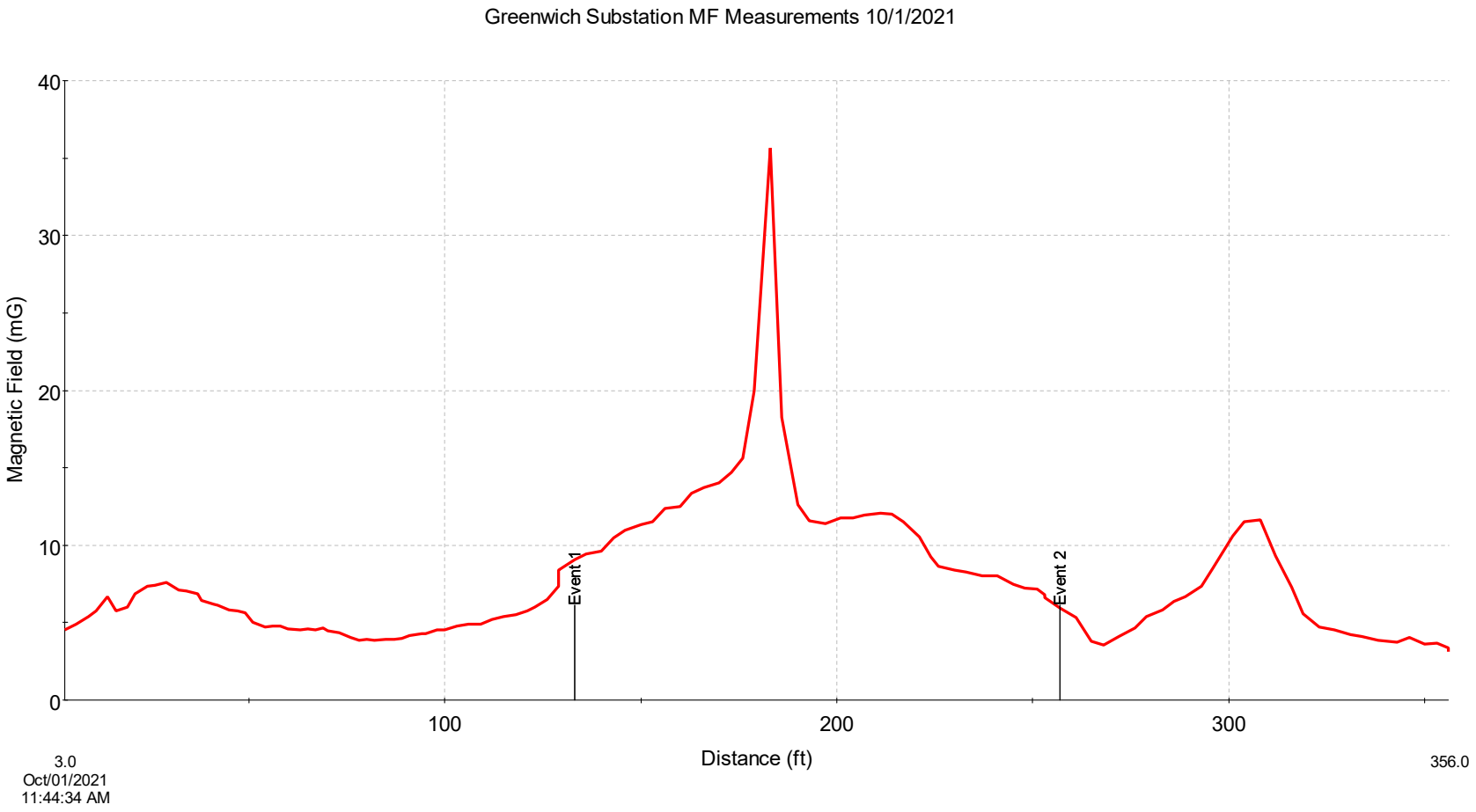
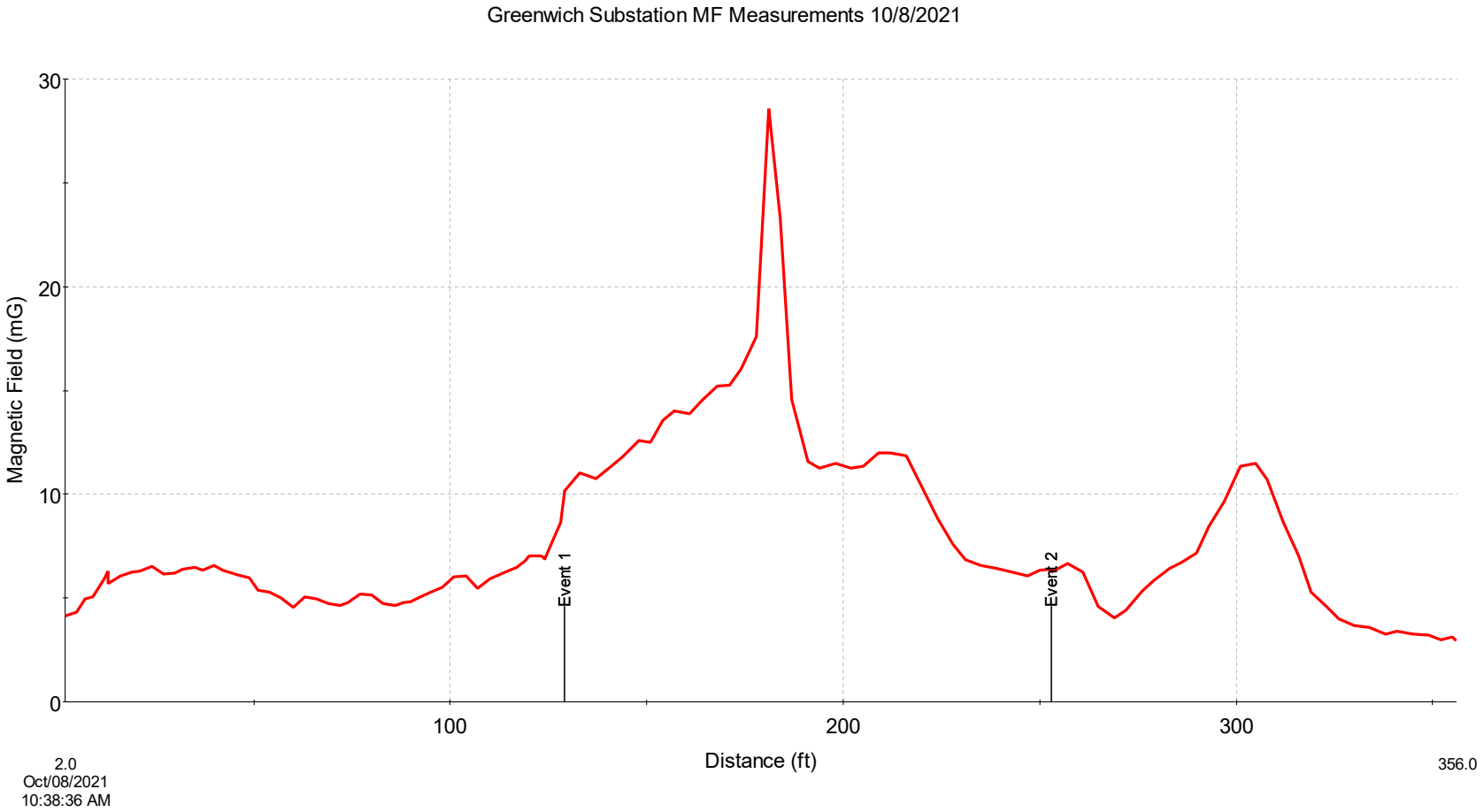


Figure A-4 – Substation Perimeter Measurement Greenwich Substation October 8, 2021.



Attachment B – Graphs of Line Segment Field Measurements

Figure B-1

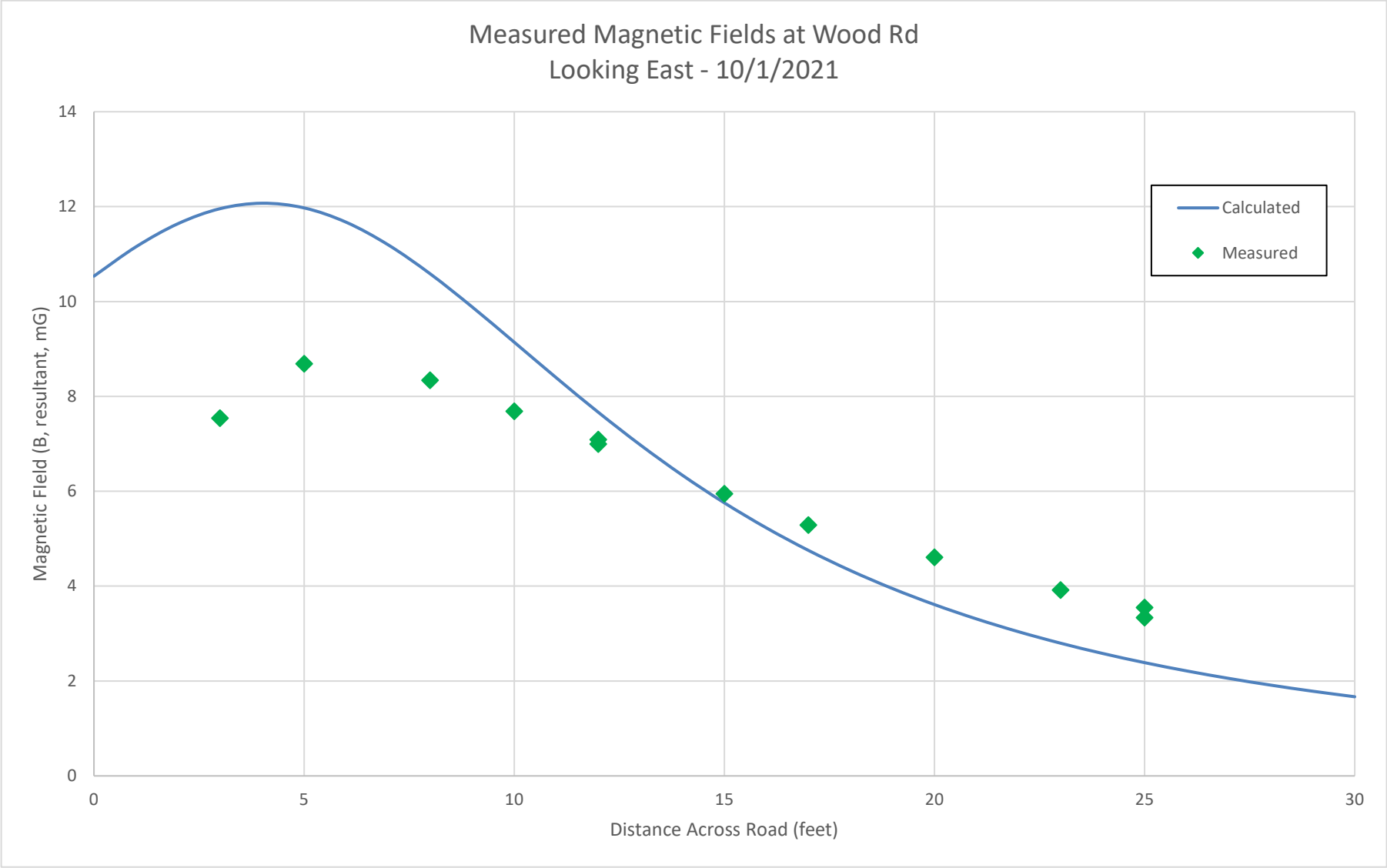

Measured Magnetic Fields at Wood Rd
Looking East - 10/1/2021
Magnetic Field (B, resultant, mG)
Distance Across Road (feet)
Calculated
Measured
0
2
4
6
8
10
12
14
0
5
10
15
20
25
30

Figure B-2

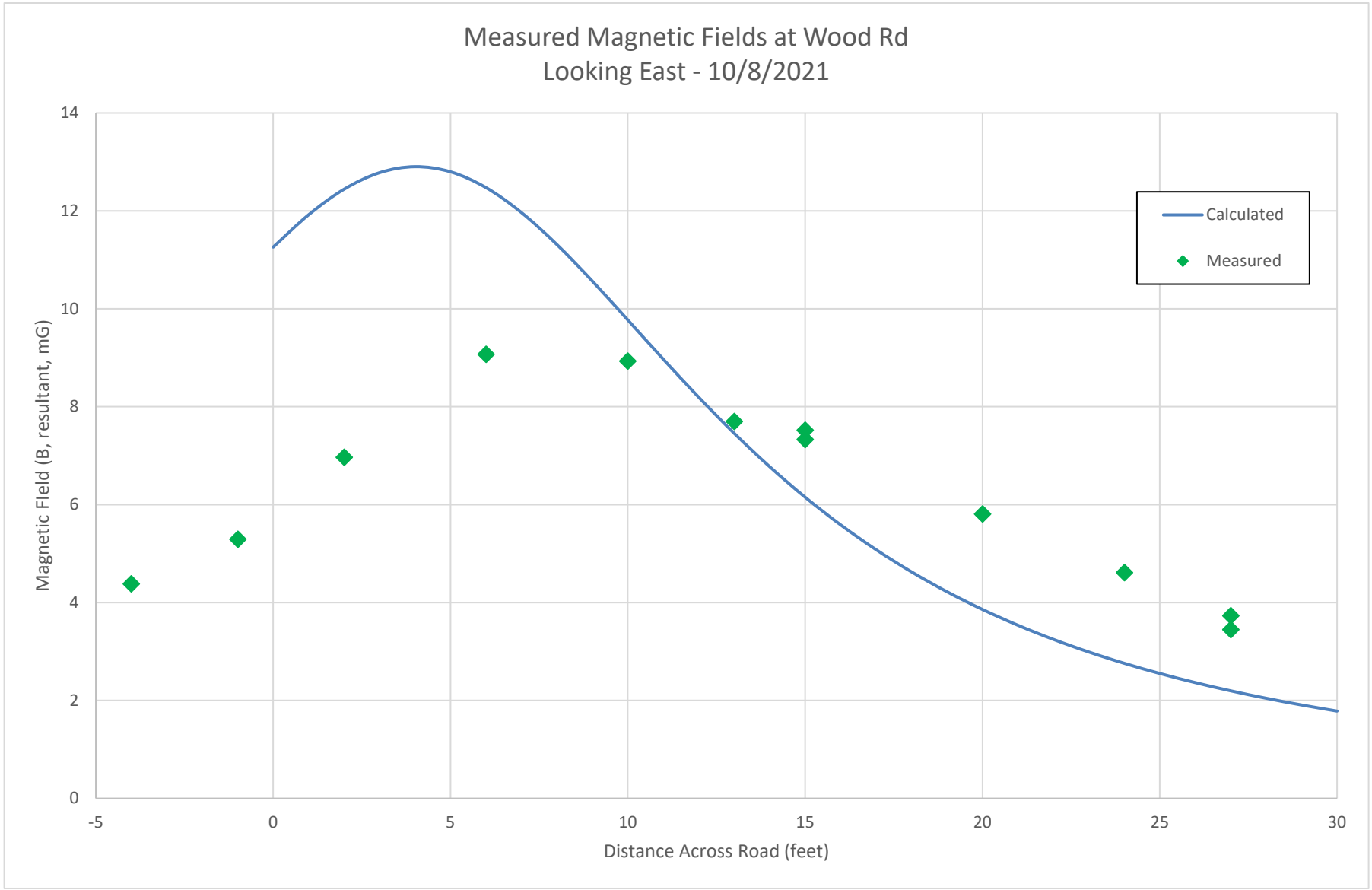

Measured Magnetic Fields at Wood Rd
Looking East - 10/8/2021
Magnetic Field (B, resultant, mG)
Distance Across Road (feet)
Calculated
Measured
0
2
4
6
8
10
12
14
-5
0
5
10
15
20
25
30

Figure B-3

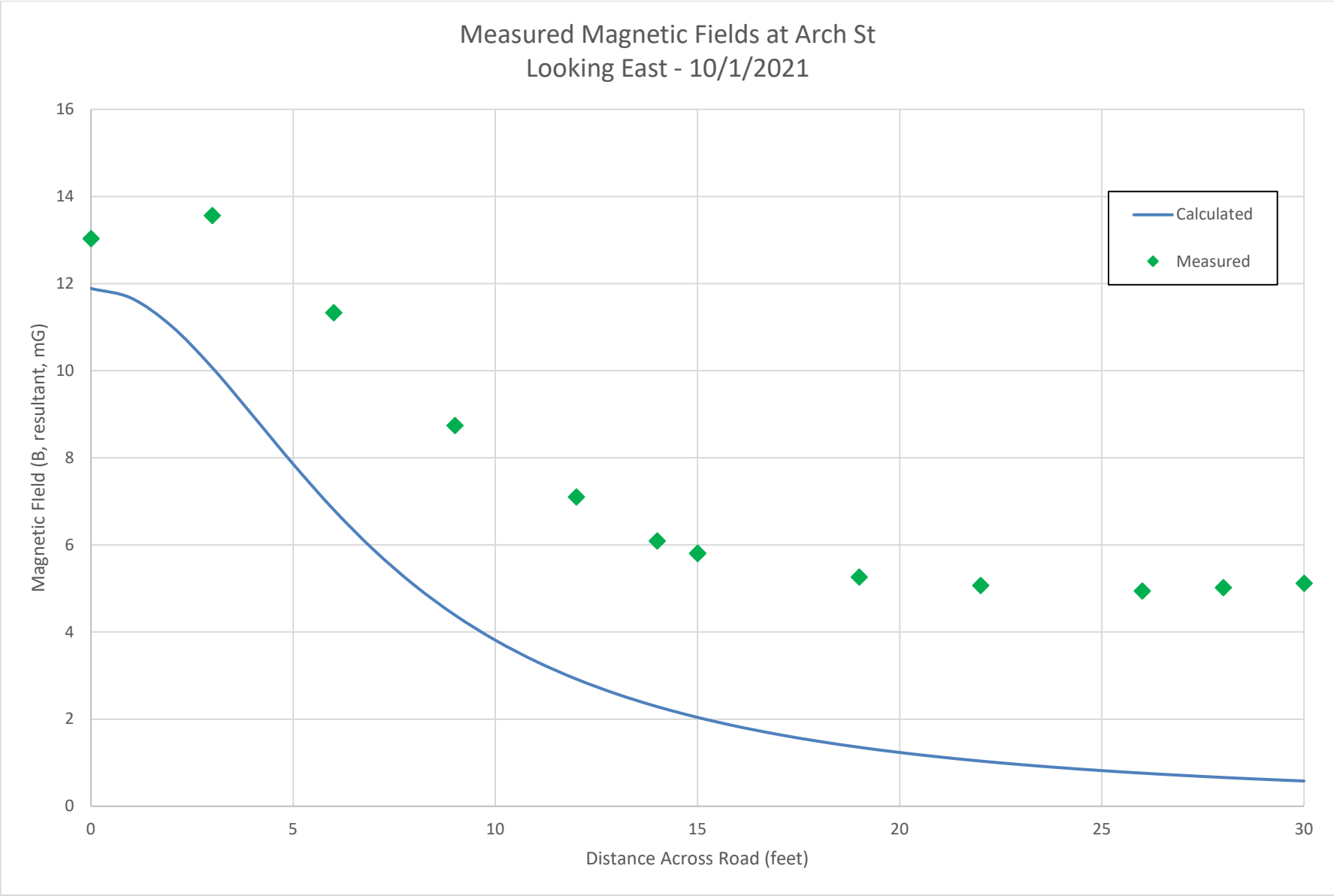
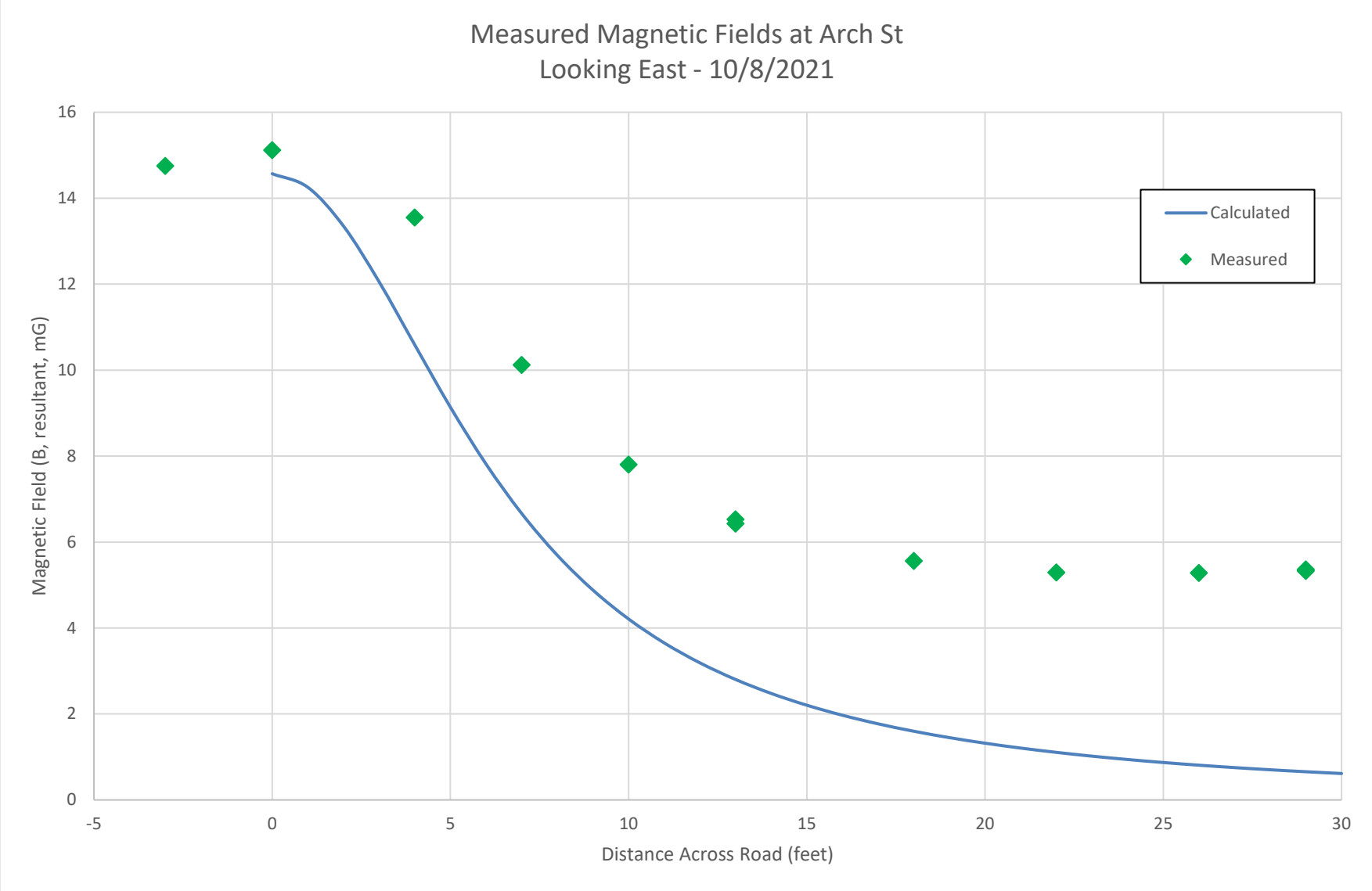

Measured Magnetic Fields at Arch St
Looking East - 10/1/2021
Magnetic Field (B, resultant, mG)
Distance Across Road (feet)
Calculated
Measured
0
2
4
6
8
10
12
14
16
0
5
10
15
20
25
30

Figure B-4


Measured Magnetic Fields at Arch St
Looking East - 10/8/2021
Magnetic Field (B, resultant, mG)
16
14
12
10
8
6
4
2
0
-5
0
5
10
15
20
25
30
Distance Across Road (feet)
Calculated
Measured

Attachment C – Aerial Photographs Depicting EMF Measurement Locations

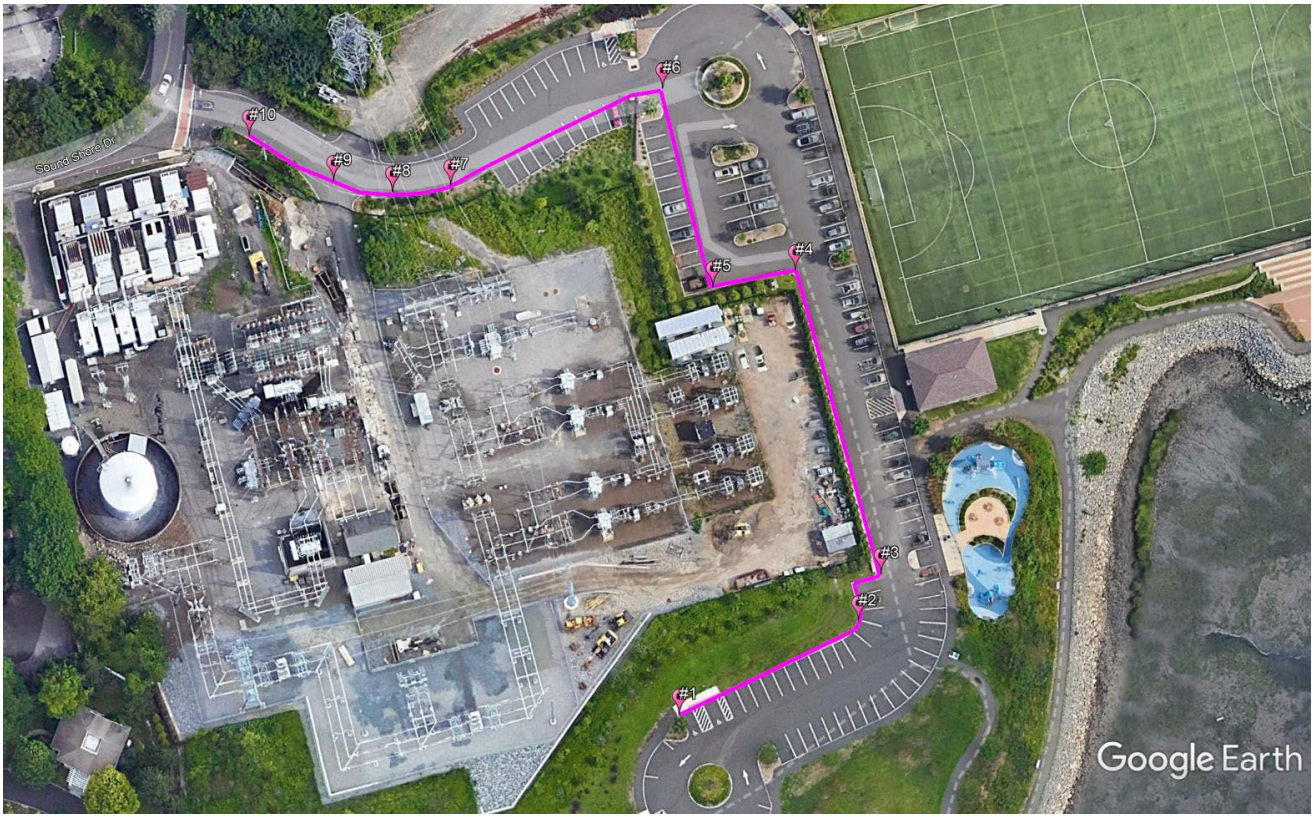


Figure C-1 – Measurement Path around Cos Cob Substation

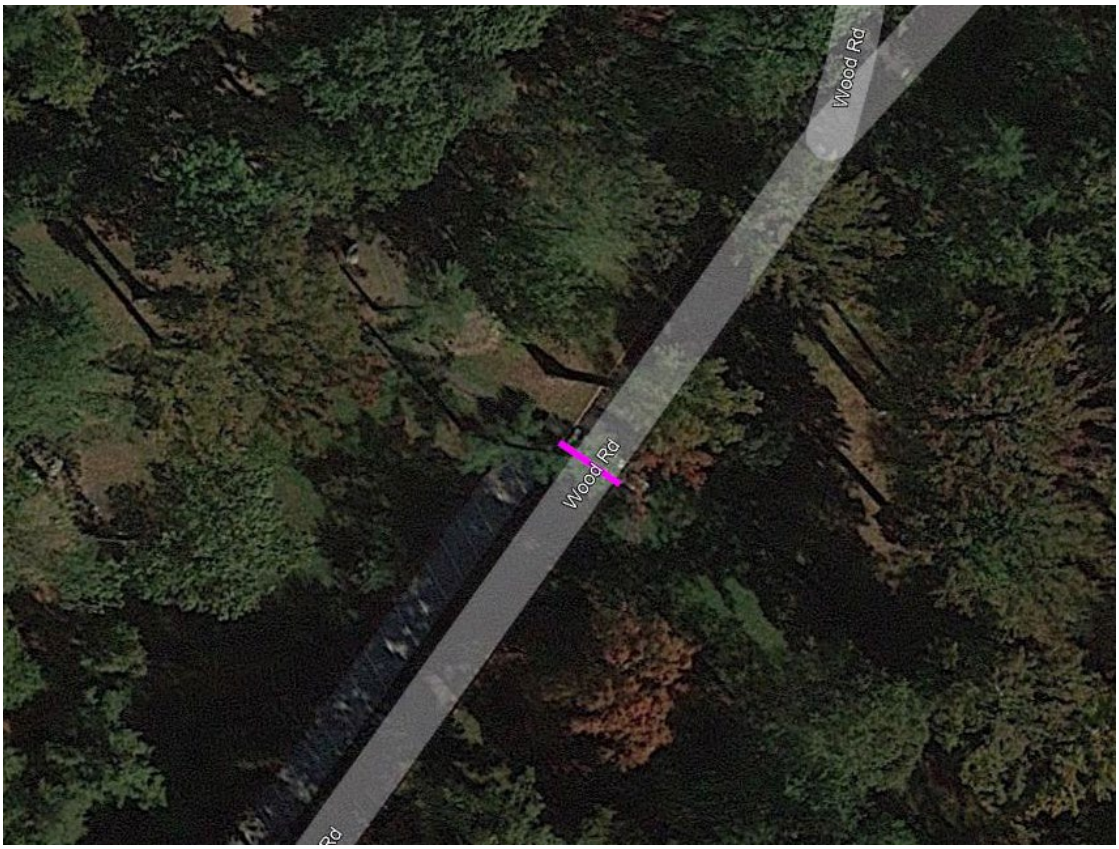


Figure C-2 – Measurement Path for Line Segment on Wood Rd (Magnetic field only)

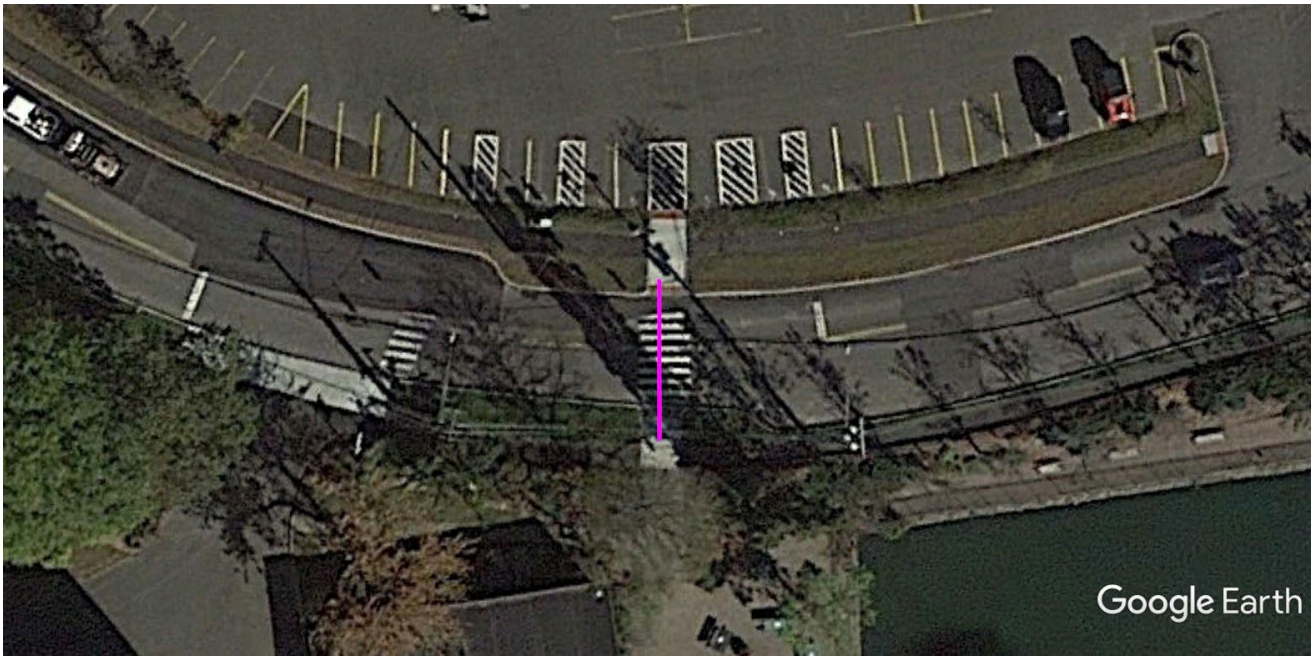


Figure C-3 – Measurement Path for Line Segment on Arch St (Magnetic Field Only)

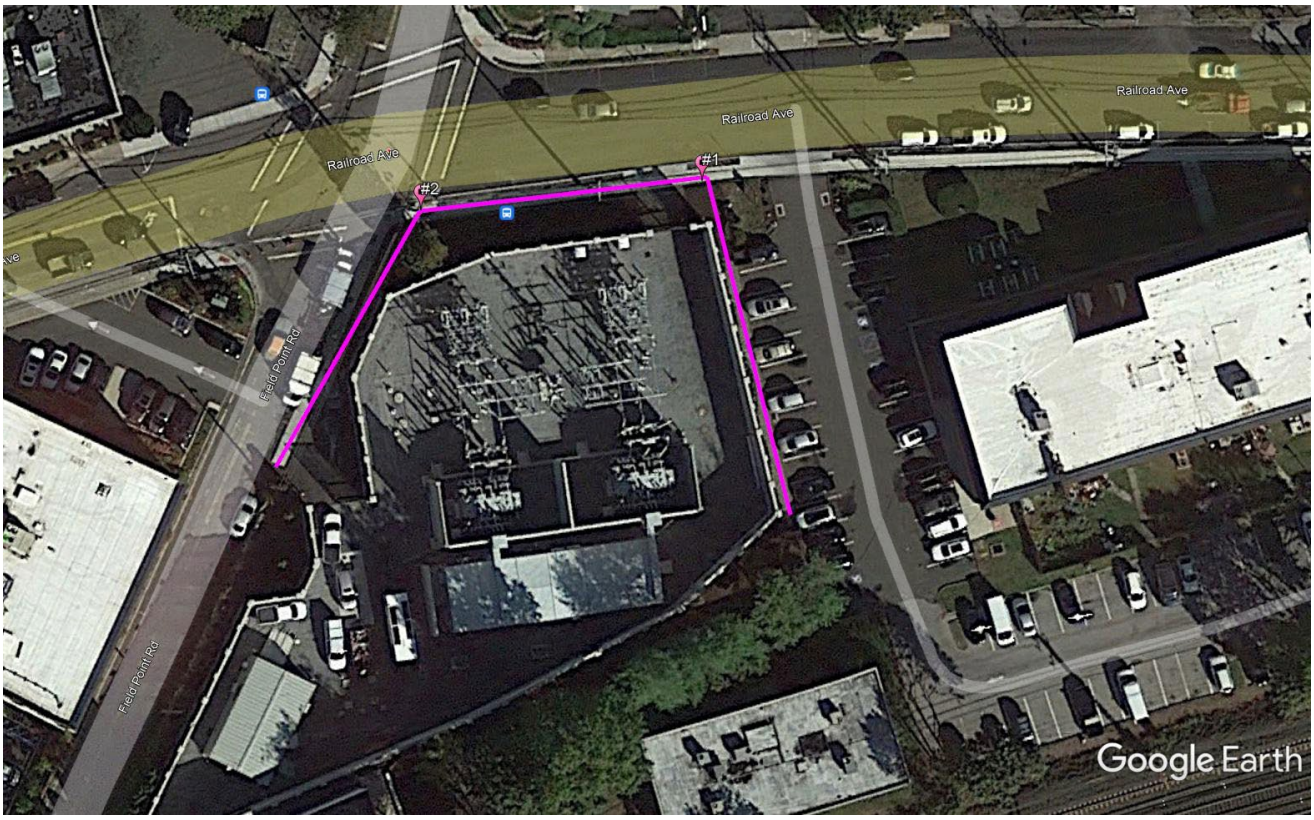


Figure C-4 – Measurement Path around Greenwich Substation

Attachment D – Tabulated Electric Field Measurements

Tabulated Electric Field Measurements around Cos Cob Substation on October 1, 2021.

Location ID	Electric Field (kV/m)
1	0.010
2	0.005
3	0.005
4	0.010
5	0.016
6	0.032
7	0.155
8	0.171
9	0.101
10	0.016