Memorandum

Duke Street Crash Analysis 2016-2020

VHB reviewed 2016 through 2020 crash data provided by the Alexandria Vision Zero Viewer in order to understand prevailing crash factors and crash severities in the corridor and develop recommendations to mitigate prevailing crash factors at critical locations. The findings are summarized below and illustrated on the following pages.

- From 2016-2020, there were 742 crashes in the study corridor, of which 241 resulted in an injury; three of the crashes were fatal and 17 crashes resulted in a serious injury.
- Of the 742 crashes, 28 (3.7 percent) involved a pedestrian.
- Of the 20 fatal and serious injury crashes, five (25 percent) involved a pedestrian, showing that pedestrians make up a larger share of the more severe crashes in the corridor.
- There are no recorded severe crashes involving a bicyclist. Overall there were three crashes involving bicycles.
- The fatal and serious injury crashes were distributed throughout the corridor. However, there were two each at Quaker Lane, Fort Williams Parkway, and Jordan Street (slightly north of the intersection).
- When looking at the 241 injury crashes, the most significant clusters can be found at:
    - Yale Drive (700 feet each way from the intersection, also includes one pedestrian fatality)
    - Quaker Lane intersection
    - Taylor Run intersection
    - The intersections at North Pickett and South Pickett streets and the segments and intersections in between (includes one pedestrian fatality)
    - The intersections at North Paxton and North Ripley streets and the segments and intersections in between
    - South Walker Street intersection

The tables and graphics on the following pages provide additional detail about crashes in the corridor. Specifically:

- **Table 1** classifies crashes by emphasis area and the "KABCO" injury scale, where K = fatal, A = incapacitating injury, B = minor injury, C = possible injury, and O = property damage only.
- **Table 2** is a matrix illustrating the relationships among crashes resulting in a fatality or incapacitating injury (for example, 40 percent of crashes involving a pedestrian also involved impaired driving).
- **Table 3** is a matrix illustrating the relationships among all crashes resulting in a fatality, injury, or possible injury.
- **Figure 1** shows the locations of crashes resulting in a fatality or incapacitating injury.
- **Figure 2** shows a heatmap of all crashes resulting in a fatality, injury, or possible injury along the corridor.
- **Figures 3 through 6** show the locations of all crashes resulting in a fatality, injury, or possible injury along the corridor.
- **Figures 7 through 8** show the locations of all crashes involving pedestrians along the corridor.

Table 1 Crashes by Emphasis Area and Injury Type

Emphasis Area	K	A	B	C	O	Total

Occupant Protection	0	0	9	1	2	12
Impaired Driving	1	6	50	5	121	183
Bicycle Involved	0	0	3	0	0	3
Motorcycle Involved	0	1	4	0	2	7
Pedestrian Involved	2	3	19	4	0	28
Speeding	1	2	20	1	55	79
Older Driver	1	4	37	2	92	136
Young Driver	0	3	10	3	56	72
Roadway Departure	0	0	2	0	3	5
Intersections	3	12	158	22	395	590
Total Crashes	3	17	197	24	501	742

Table 2 Percentage of Fatal or Incapacitating Injury Crashes by Relationship

KA Crashes (20)	Occupant Protection	Impaired Driving (7)	Bicycle Involved	Motorcycle Involved (1)	Pedestrian Involved (5)	Speeding (3)	Older Driver (5)	Younger Driver (3)	Roadway Departure	Intersections (15)
Occupant Protection		0%	0%	0%	0%	0%	0%	0%	0%	0%
Impaired Driving	0%		0%	0%	40%	33.33%	40%	66.67%	0%	33.33%
Bicycle Involved	0%	0%		0%	0%	0%	0%	0%	0%	0%
Motorcycle Involved	0%	0%	0%		0%	0%	0%	0%	0%	6.67%
Pedestrian Involved	0%	28.57%	0%	0%		0%	20%	0%	0%	26.67%
Speeding	0%	14.28%	0%	0%	0%		40%	33.33%	0%	20%
Older Driver	0%	28.57%	0%	0%	20%	66.67%		0%	0%	26.67%
Younger Driver	0%	28.57%	0%	0%	0%	33.33%	0%		0%	20%
Roadway Departure	0%	0%	0%	0%	0%	0%	0%	0%		0%
Intersections	0%	71.42%	0%	100%	80%	100%	80%	100%	0%	
Percentages are read in relation to the column. Color scale is provided in this row.										

Table 3 Percentage of Fatal or Incapacitating, Minor, or Possible Injury Crashes by Relationship

KABC Crashes (241)	Occupant Protection (10)	Impaired Driving (62)	Bicycle Involved (3)	Motorcycle Involved (5)	Pedestrian Involved (28)	Speeding (24)	Older Driver (44)	Younger Driver (16)	Roadway Departure (2)	Intersections (195)
Occupant Protection		9.67%	0%	0%	0%	16.67%	2.27%	0%	100%	4.10%
Impaired Driving	60%		33.33%	0%	21.42%	37.50%	27.27%	37.5%	50%	26.15%
Bicycle Involved	0%	1.6%		0%	0%	0%	4.54%	6.25%	0%	1.53%
Motorcycle Involved	0%	0%	0%		0%	0%	0%	0%	0%	2.56%
Pedestrian Involved	0%	9.67%	0%	0%		0%	6.81%	0%	0%	12.82%
Speeding	40%	14.5%	0%	0%	0%		9.09%	25%	100%	87.17%
Older Driver	10%	19.35%	66.67%	0%	10.71%	16.67%		18.75%	50%	20%
Younger Driver	0%	9.67%	33.33%	0%	0%	16.67%	6.81%		0%	7.17%
Roadway Departure	20%	1.6%	0%	0%	0%	8.33%	2.27%	0%		0.5%
Intersections	80%	82.25%	100%	100%	89.28%	70.83%	88.63%	87.5%	50%	
Percentages are read in relation to the column. Color scale is provided in this row.										

Figure 1 Locations of Fatal or Incapacitating Injury Crashes (entire corridor)

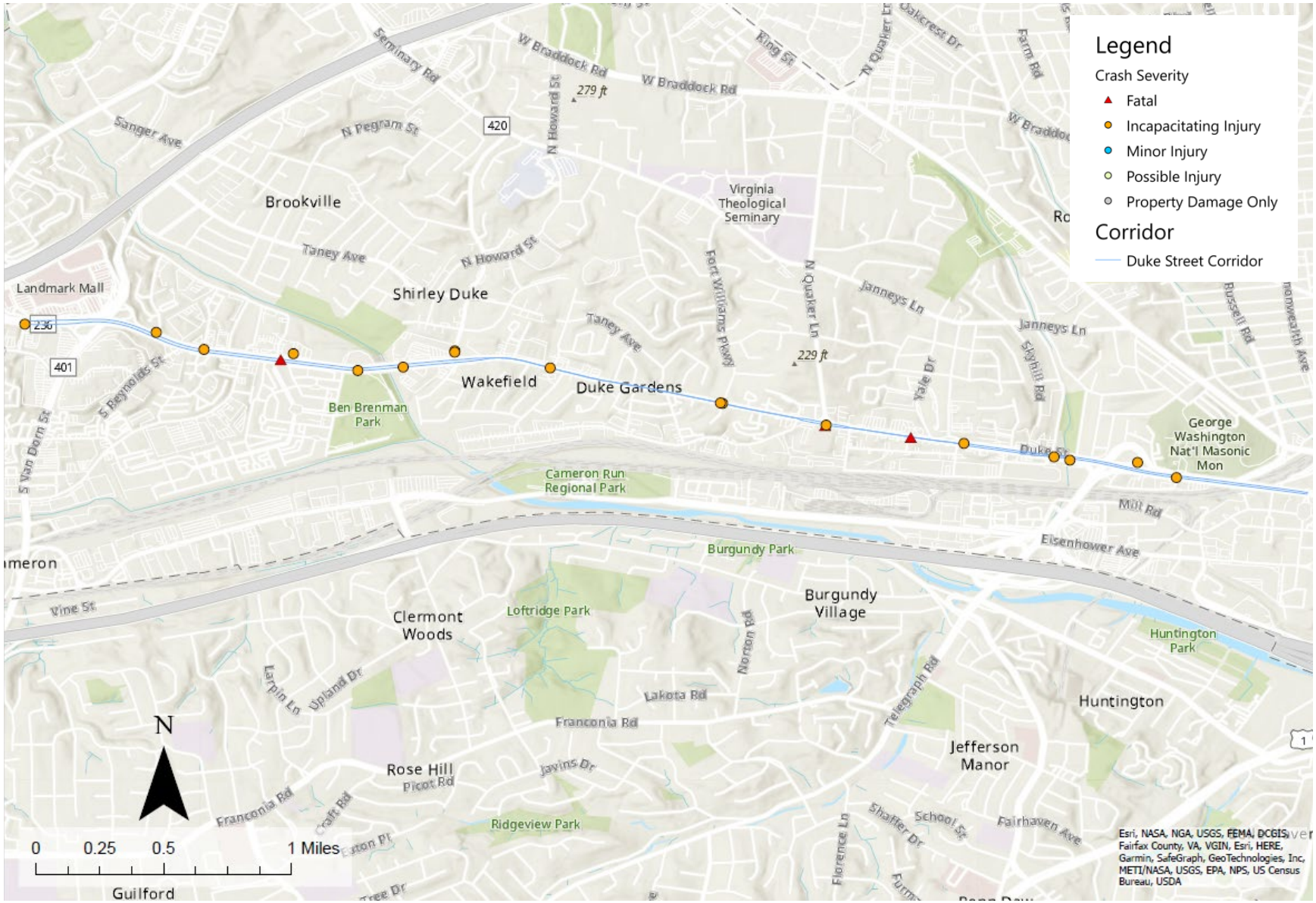

Figure 2 Heatmap of Fatal or Incapacitating, Minor, or Possible Injury Crashes (entire corridor)

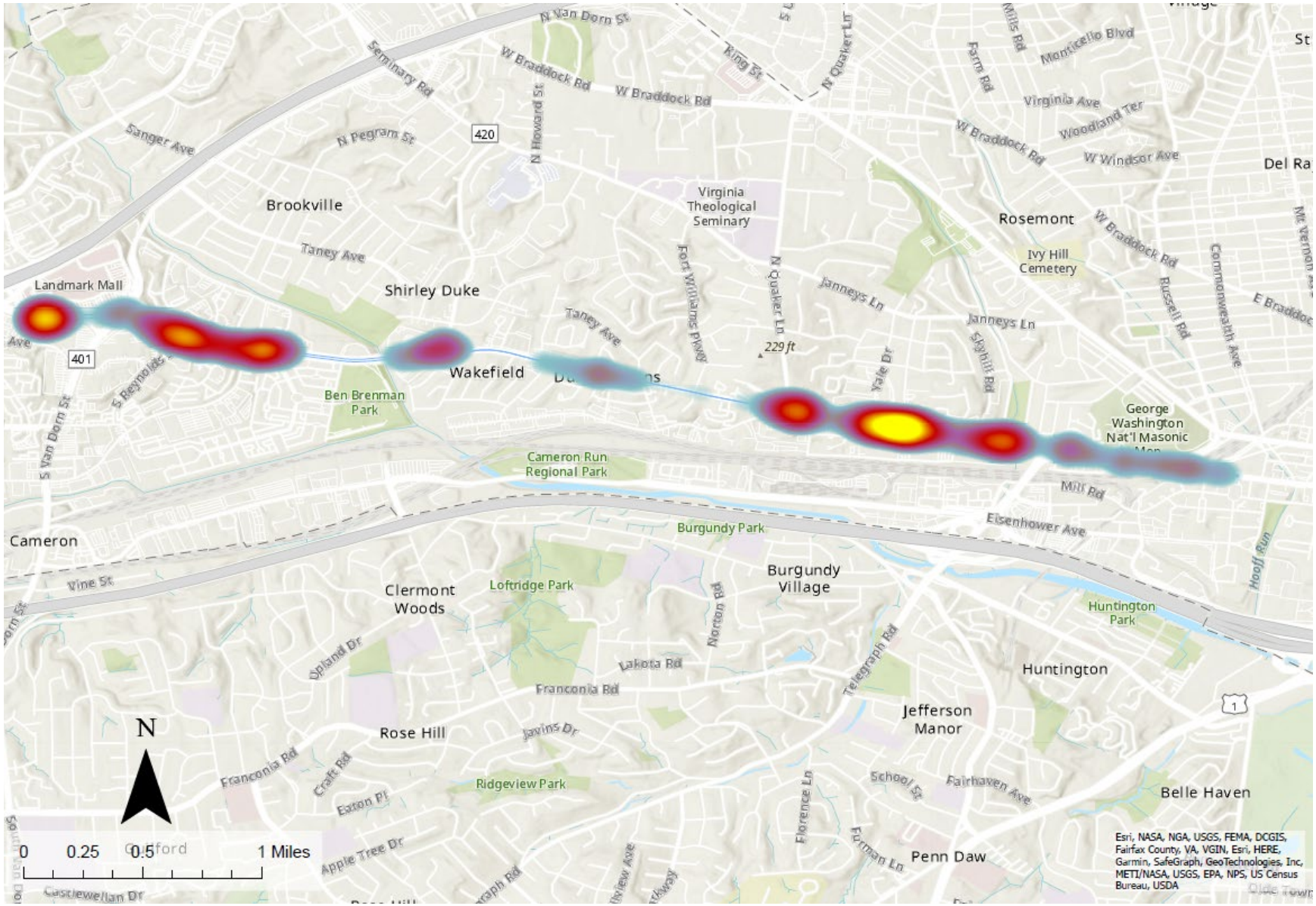

Figure 3 Locations of Fatal or Incapacitating, Minor, or Possible Injury Crashes (entire corridor)

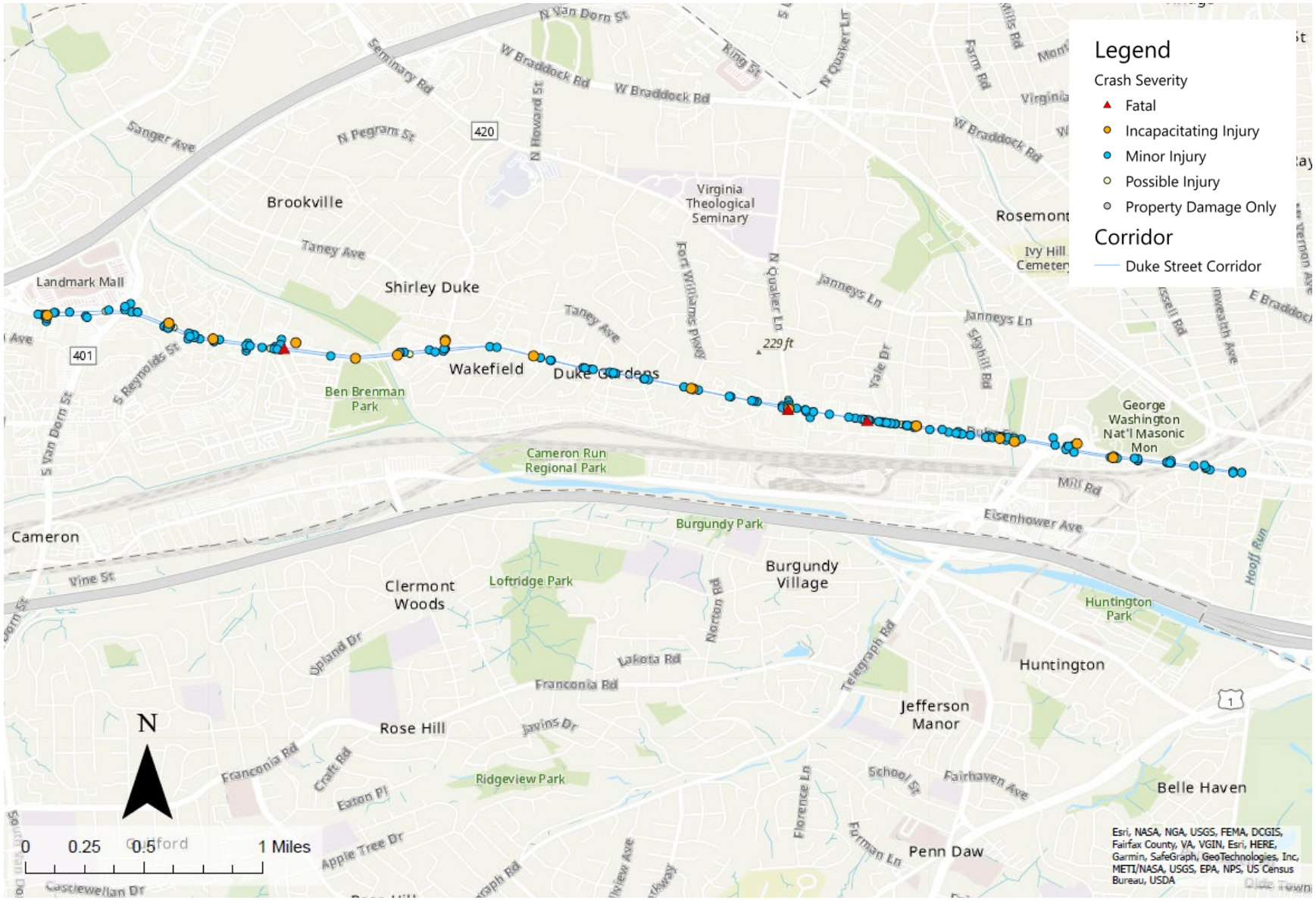

Figure 4 Locations of Fatal or Incapacitating, Minor, or Possible Injury Crashes (Landmark to Gordon)

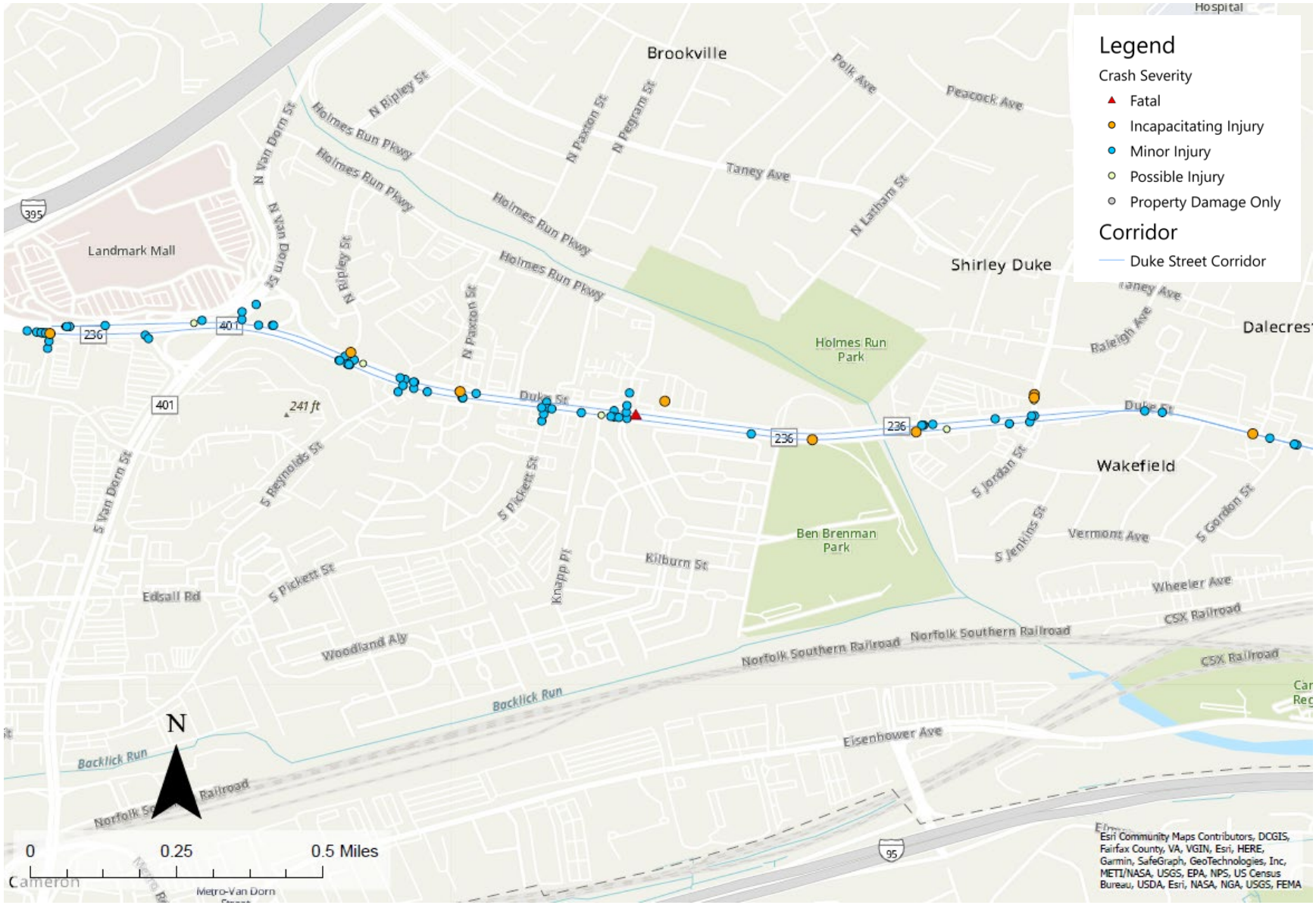

Figure 5 Locations of Fatal or Incapacitating, Minor, or Possible Injury Crashes (Gordon to Yale)

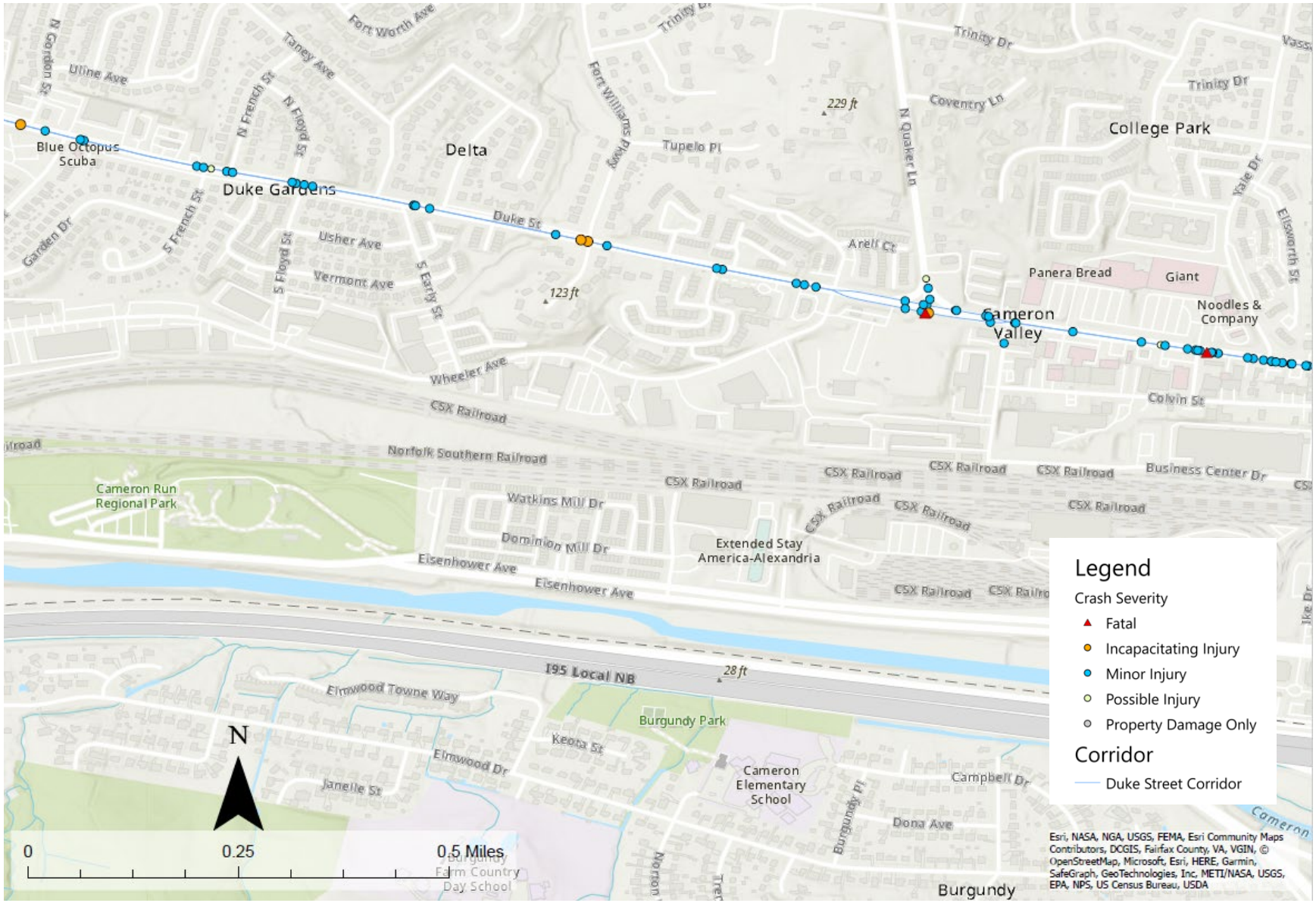

Figure 6 Locations of Fatal or Incapacitating, Minor, or Possible Injury Crashes (Quaker to Carlyle)

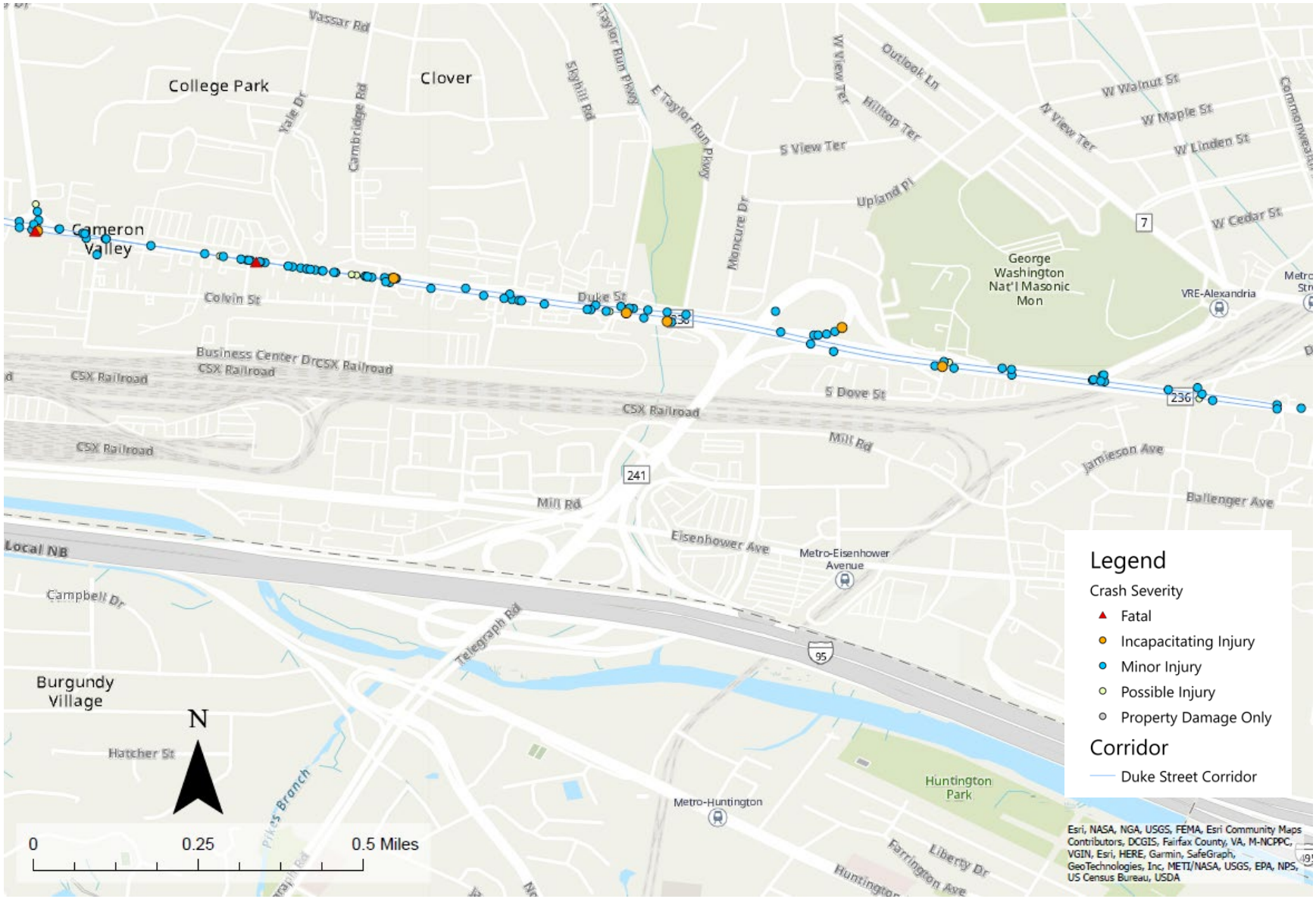

Figure 7 Locations of Crashes Involving Pedestrians (entire corridor)

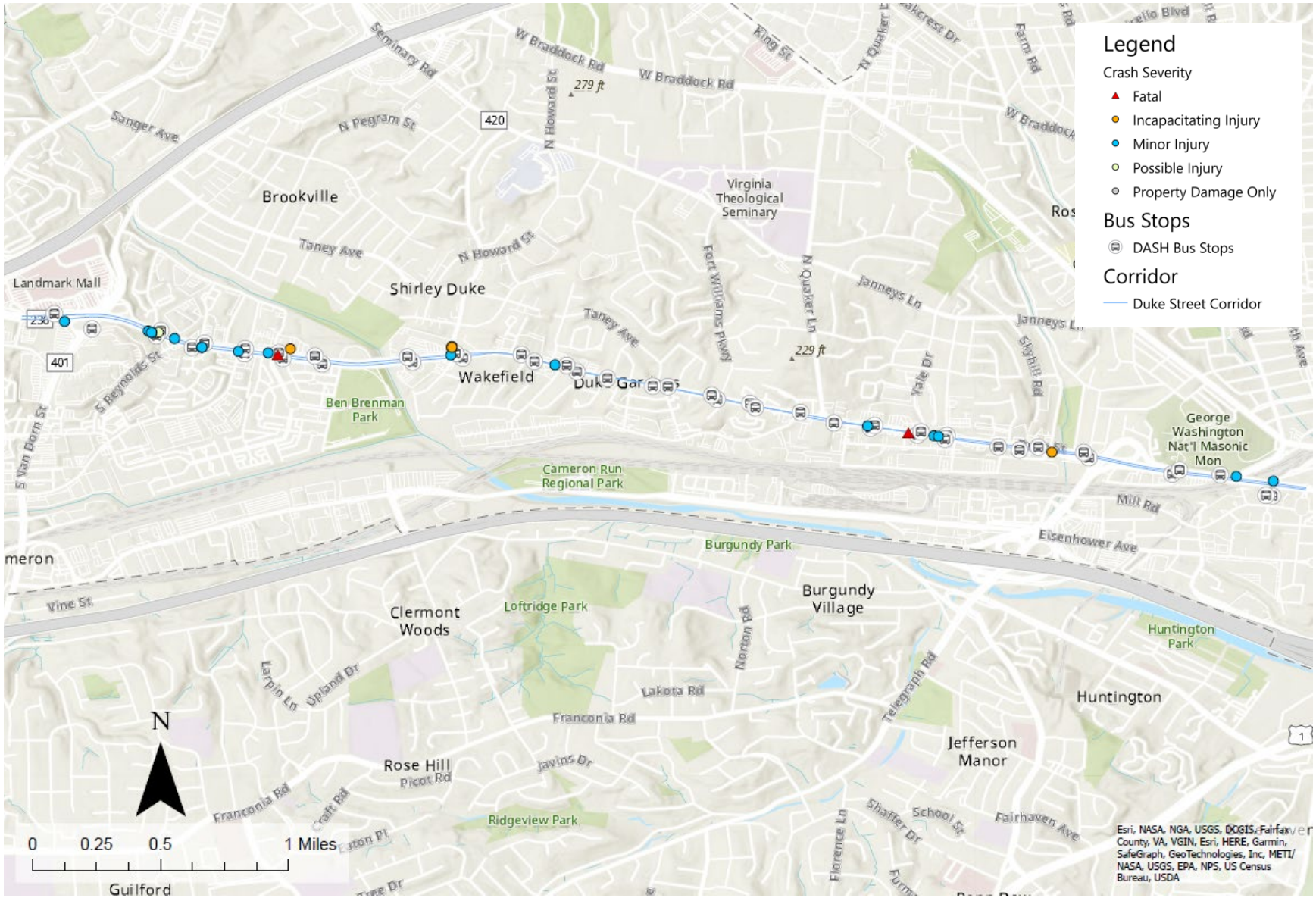

Figure 8 Locations of Crashes Involving Pedestrians (Landmark to Gordon)

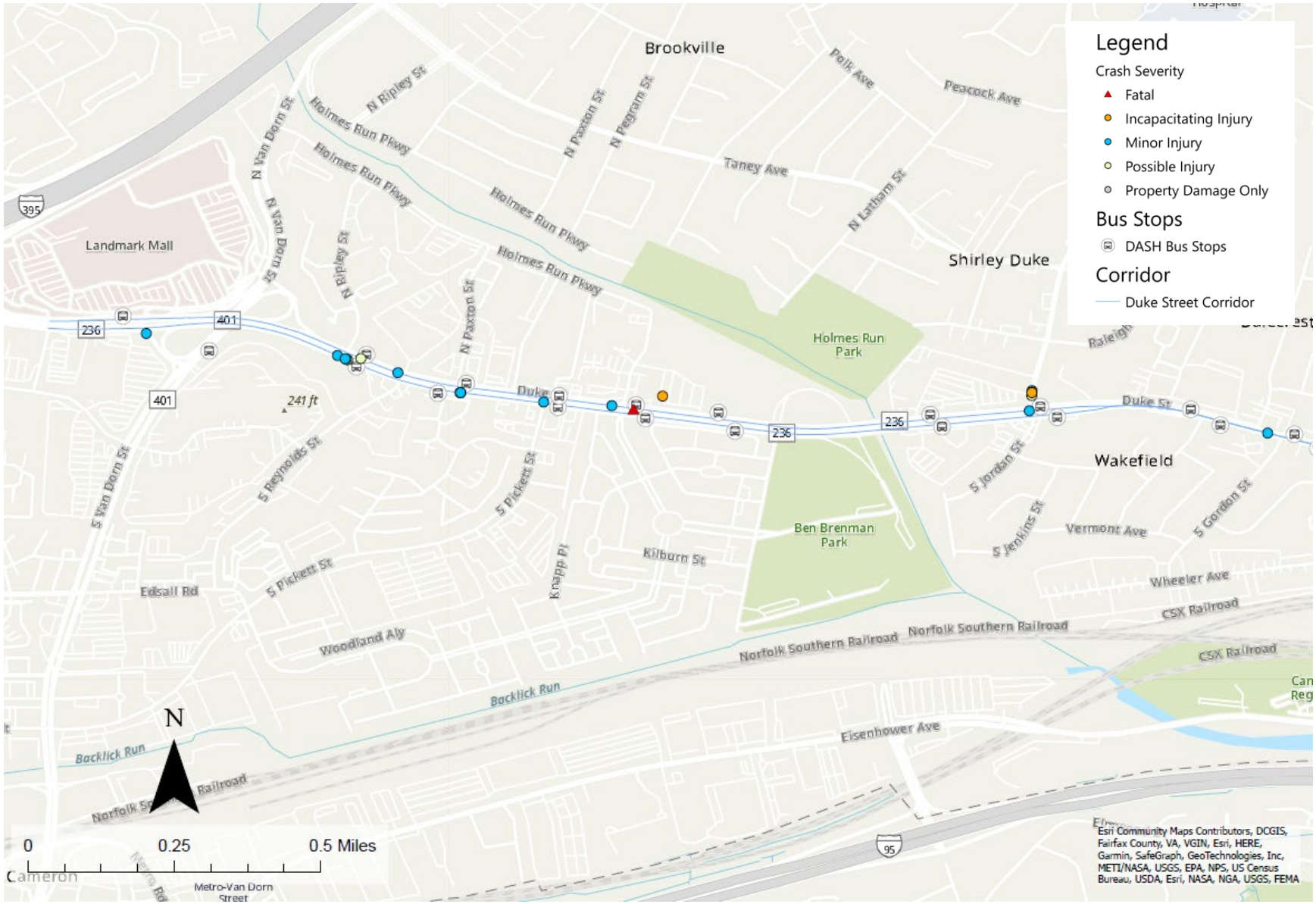

Figure 9 Locations of Crashes Involving Pedestrians (Quaker to Carlyle)