

Traffic Assessment Report

Northeast Metropolitan Regional
Vocational High School
Wakefield, MA

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Prepared for:

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1 Introduction

As part of the Feasibility Study for the Northeast Metropolitan Regional Vocational High School project located in Wakefield, Massachusetts, Nitsch Engineering has been retained by Drumney Rosane Anderson, Inc. (DRA) to observe the existing traffic conditions at the existing Northeast Metropolitan Regional Vocational High School to assess the planned on-site improvements and site access alternatives. It is our understanding that the proposed access alternatives include:

- Existing access to remain off Hemlock Road only;
- An additional access road from Water Street; or
- An additional access road from Farm Street south of Hemlock Road.

As this report focuses strictly on the issues above, traffic operations are secondary to the goals of the report, so we did not collect Automatic Traffic Recorder (ATR) counts or Turning Movement Counts (TMCs), and we did not perform roadway and intersection capacity analyses.

1.1 Existing Site

The existing Northeast Metropolitan Regional Vocational High School, located at 100 Hemlock Road in Wakefield was formed in an agreement in 1964 by the twelve Massachusetts communities of Chelsea, Malden, Melrose, North Reading, Reading, Revere, Saugus, Stoneham, Wakefield, Winchester, Winthrop and Woburn. The school serves Grade 9 through 12 with a total enrollment of about 1250 students.

The site includes the school building, parking lot, baseball and football field, and basketball court. It is bound by Water Street and residential properties to the north, Breakheart Reservation to the east and south, and Wakefield Memorial High School to the west.

Site access is provided via Hemlock Road, which is a two-way private roadway. Hemlock road extends from Farm Lane, where it forms a three-legged unsignalized intersection, to the entrance to the Northeast Metropolitan Regional Vocational High School. The road also serves as a main access point to the Wakefield Memorial High School.

Figure 1 is the Locus Map showing Northeast Metropolitan Regional Vocational High School and the surrounding roadway network.

Figure 2 shows the existing site layout for the Northeast Metropolitan Regional Vocational High School.

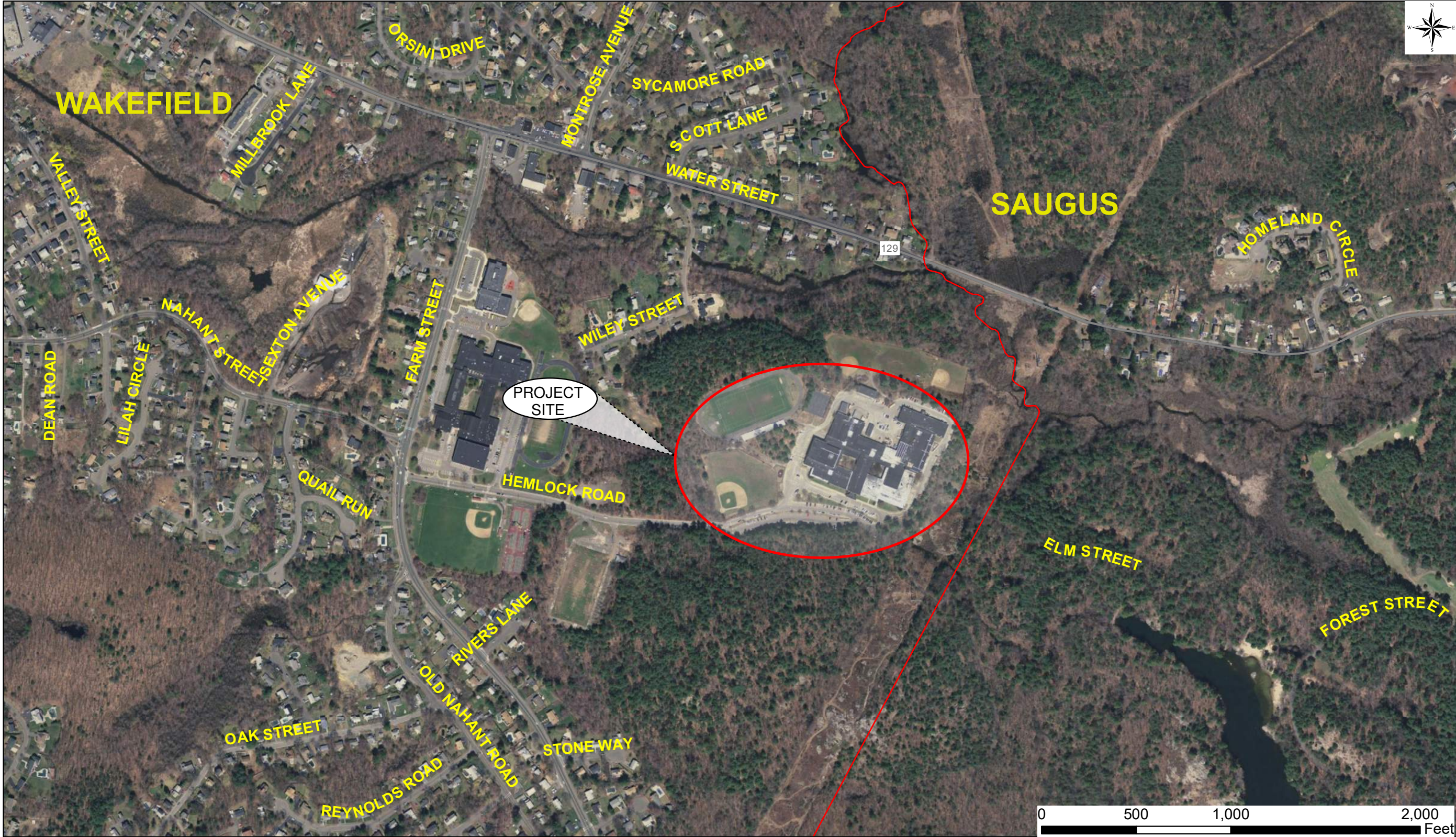


Figure 1: Locus Map
Northeast Metropolitan Regional Vocational High School
Wakefield, MA
Data Source: MassGIS
Nitsch Project #13872.



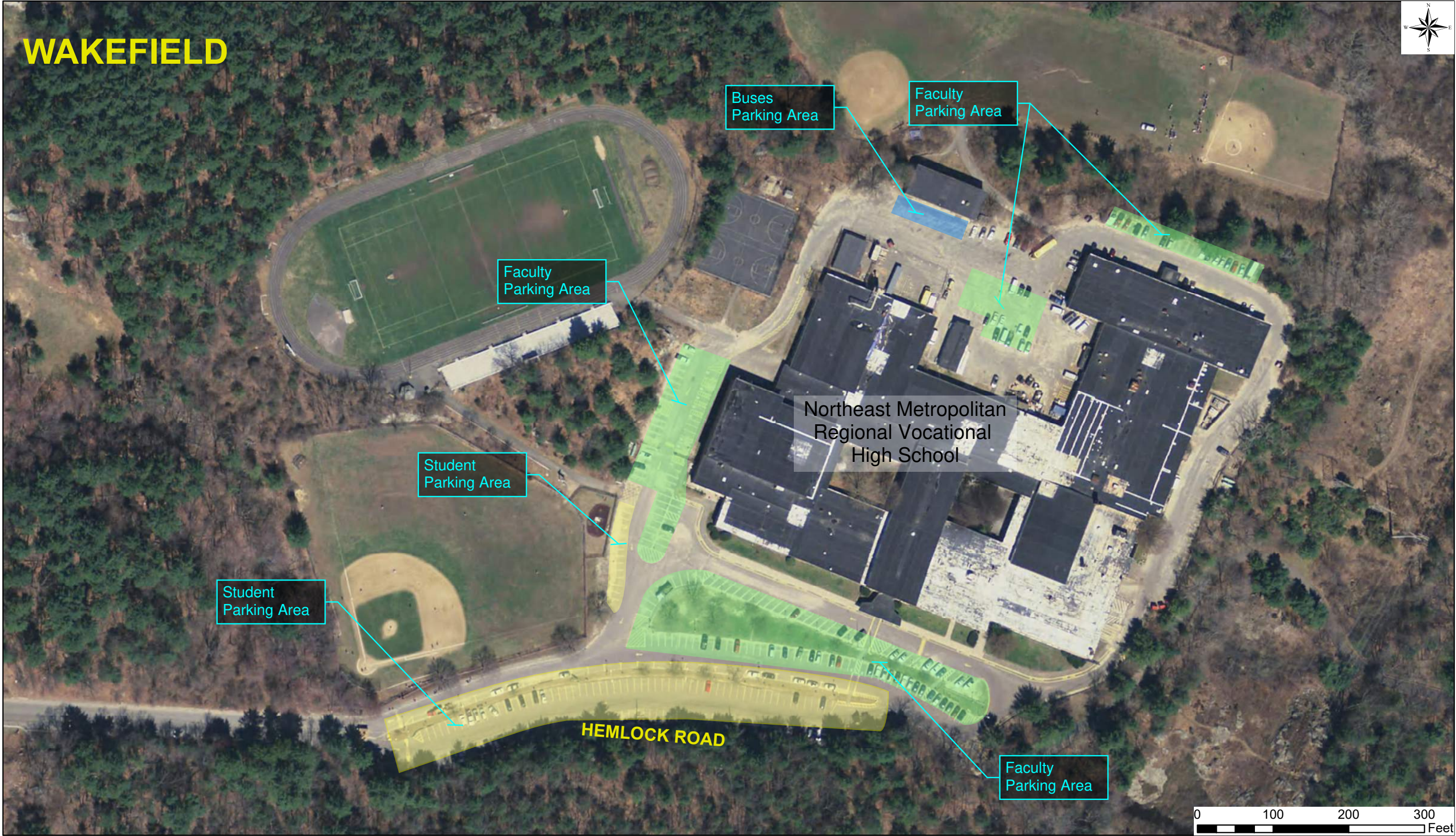


Figure 2: Existing Site

Northeast Metropolitan Regional Vocational High School
Wakefield, MA

Data Source: MassGIS
Nitsch Project #13872.



2 Existing Traffic Conditions

Nitsch Engineering conducted a site visit on Tuesday, February 25, 2020 to observe the site circulation associated with the weekday morning drop-off period and the weekday afternoon pick-up period. The observations occurred during overcast conditions.

2.1 Off-site Traffic Observations

To understand the magnitude of traffic along the adjacent roadways, we conducted 15-minute spot counts on Water Street just northwest of Montrose Avenue and at the intersection of Farm Street and Old Nahant Road, shown in Tables 1 and 2.

Table 1 – Traffic Count at Water Street (Route 129) near Montrose Avenue

Direction	Count	Directional Split
Morning - 9:15-9:30 AM		
Westbound towards Farm Street	72	51%
Eastbound away from Farm Street	69	49%
Afternoon - 3:00-3:15 PM		
Westbound towards Farm Street	82	53%
Eastbound away from Farm Street	74	47%

Table 2 – Traffic Count at Farm Street near Old Nahant Road

Direction	Count	Directional Split
Morning - 9:40-9:55 AM		
Northbound towards Hemlock Road	69	59%
Southbound away from Hemlock Road	47	41%
Afternoon - 3:00-3:15 PM		
Northbound towards Hemlock Road	102	48%
Southbound away from Hemlock Road	109	52%

As shown, the volumes are slightly higher in the weekday afternoon period however an approximate 50-50 directional distribution is maintained on both roadways.

We also observed the existing traffic conditions at the intersections of Hemlock Road and Farm Street and Hemlock Street and the Wakefield Memorial High School Driveway to understand the effects the school traffic has during the peak arrival and dismissal periods. The following is a summary:

- The Wakefield Memorial High School day ends at 2:00 PM, and only a few cars remained on Hemlock Road as the Northern Metropolitan Regional Vocational High School traffic was exiting school property.
- Approximately 70% of vehicles were turning right from Hemlock Road onto Farm Street

- Most of the vehicles were taking a left from Farm Street onto Hemlock Road for pick-up
- Queueing quickly cleared at the end of Hemlock Road

2.2 On-site Traffic Observations

The parking lot has approximately 418 spaces, as shown in Table 3. Student, Breakheart Reservation, visitor, reserved and some faculty parking are in front of the school, with faculty only parking behind the building.

Table 3 – Parking Utilization

		Total Spaces	Unoccupied
Back of Building	Faculty (White Striping)	154	19
Front of Building	Faculty (White Striping)	61	0
	Student / Resident (Yellow Striping)	156	10
	Handicap	10	8
	Reserved	20	9
	Visitor	10	6
	Breakheart Reserved	5	2
	Van Access	1	1
	Co-Op	1	1
Total		418	56

Each student is required to have a parking sticker, which is checked at the front gate by a security guard. To the best of the guard's ability, the parking stickers are quickly checked to keep drop-off traffic moving. As shown in the tables, there are equal amount of parking stickers as there are dedicated student spaces. There were also 26 vehicles without license plates observed in the parking lot behind the building which were assumed to be for the automotive classes. The limited parking capacity becomes an issue as the school year approaches summer when patrons looking to visit Breakheart Reservation occupy the student parking spaces and as newly licensed drivers begin to drive to school without parking stickers. This results in the excess student vehicles occupying faculty parking behind the building or park outside of school property.

It was observed that student cars and buses all enter the site via the single entrance off Hemlock Road. Student pick-up and drop-off operates via one-way circulation at the front entrance to the building and buses circulate around the building to drop off students at the back entrance. Traffic circulation is illustrated in Figure 3.

Buses and pick-up vehicles arrive between 1:45 PM and 2:45 PM, with the school dismissal at 2:30 PM. Queueing will then occur on all exit routes as shown in Figure 4. A flagger will stop pick-up and student vehicles to let buses exit from the back of the building. This exit point is also a conflict area as students and faculty will come from behind the building to try and merge with the pick-up vehicles from the front of the building.

Below are the detailed field notes of the on-site observations made during our site visit.

Morning Drop-Off (7:00 AM-8:00 AM)

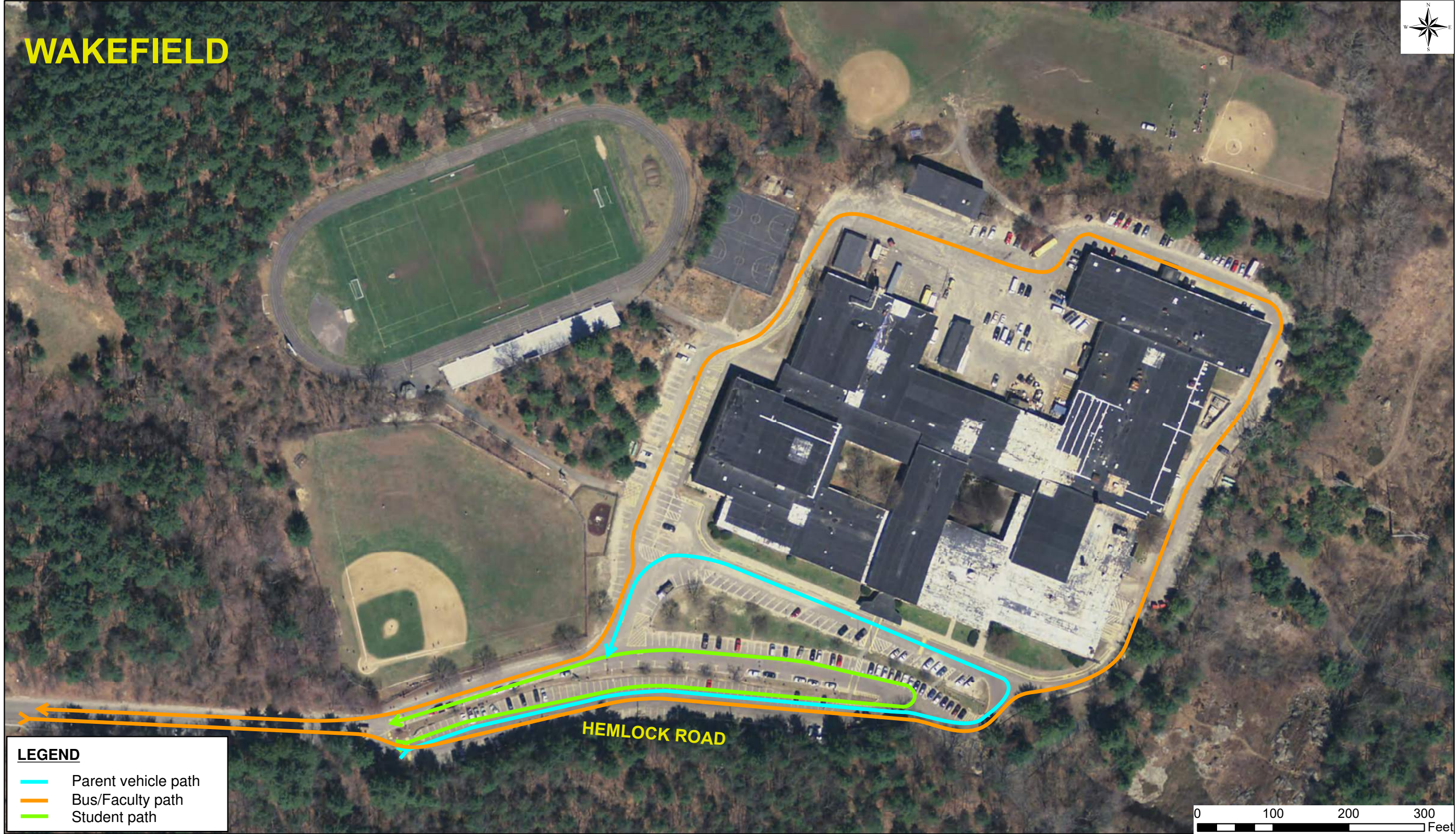
- Security guard's shift at the gate starts at 7:00 AM
- Student parking requires paid parking decal
- Few students were observed in the parking lot before 7:00 AM
- School buses park around the back
- First bus was observed at 7:06 AM
- Total of 20 buses in the morning
- Cars start queueing up at the gate by 7:15 AM
- 15+ cars observed in queue at 7:30 AM on
- There was no queue observed at the front of the school after 7:25 AM
- First bell occurred at 7:45 AM and due to queue vehicles were still pulling into parking lot
- Gate to exit back parking lot closes at 7:55 AM
- There is also a preschool and restaurant at this school
- 8 Reserved parking spaces for preschool drop off, restaurant and Reading Cooperative Bank
- Preschool drop off does not happen until 8:15-8:20 AM, when queues and traffic has calmed down
- Restaurant does not open until 11:30 AM, with 8 parking spaces reserved
- Of the 286 Seniors, 115 have parking decals and of 304 Juniors, 41 have decals
- Separate parking for faculty and students
- Students compete with the local community for parking due to Breakheart Reservation, which has an entrance near the front entrance of the school
- There are also 5 spots reserved with signs for Breakheart Reservation, and when these are full residents will take student parking
- Once student parking is full, they will circulate to the back of the building where it is faculty only parking and take vacant spaces

Afternoon Pick-Up (1:45 PM – 3:15 PM)

- Parents start to show up around 1:45 PM
- School dismissal is at 2:30 PM
- Buses park in the back waiting for dismissal
- Total of 18 buses in the afternoon
- Buses started to show up as early as 1:55 PM
- Queue outside entrance grew to 49 and stretched down the entire side of building before students were released
- There were vehicles parked illegally and in handicap spaces waiting to pick-up students
- As vehicles started to exit, there was a dangerous point of conflict where pick-up and faculty/students from the rear of the school were forced to merge but had limited sight due to parked cars in between
- There is a flagger controlling exiting vehicles, directing traffic from the student parking lot, the entrance pick-up vehicles and buses/faculty and students coming from the rear of the school
- Buses receive priority when ready to exit from the back of the building
- Queueing in student parking lot circulated all the way to the security at the gate
- Students could not back out of parking spaces due to this queue
- Queue from student parking lot cleared at 2:45 PM



- Flagger left at 2:50 PM
- There were only 11 unoccupied faculty spaces at 2:50 PM



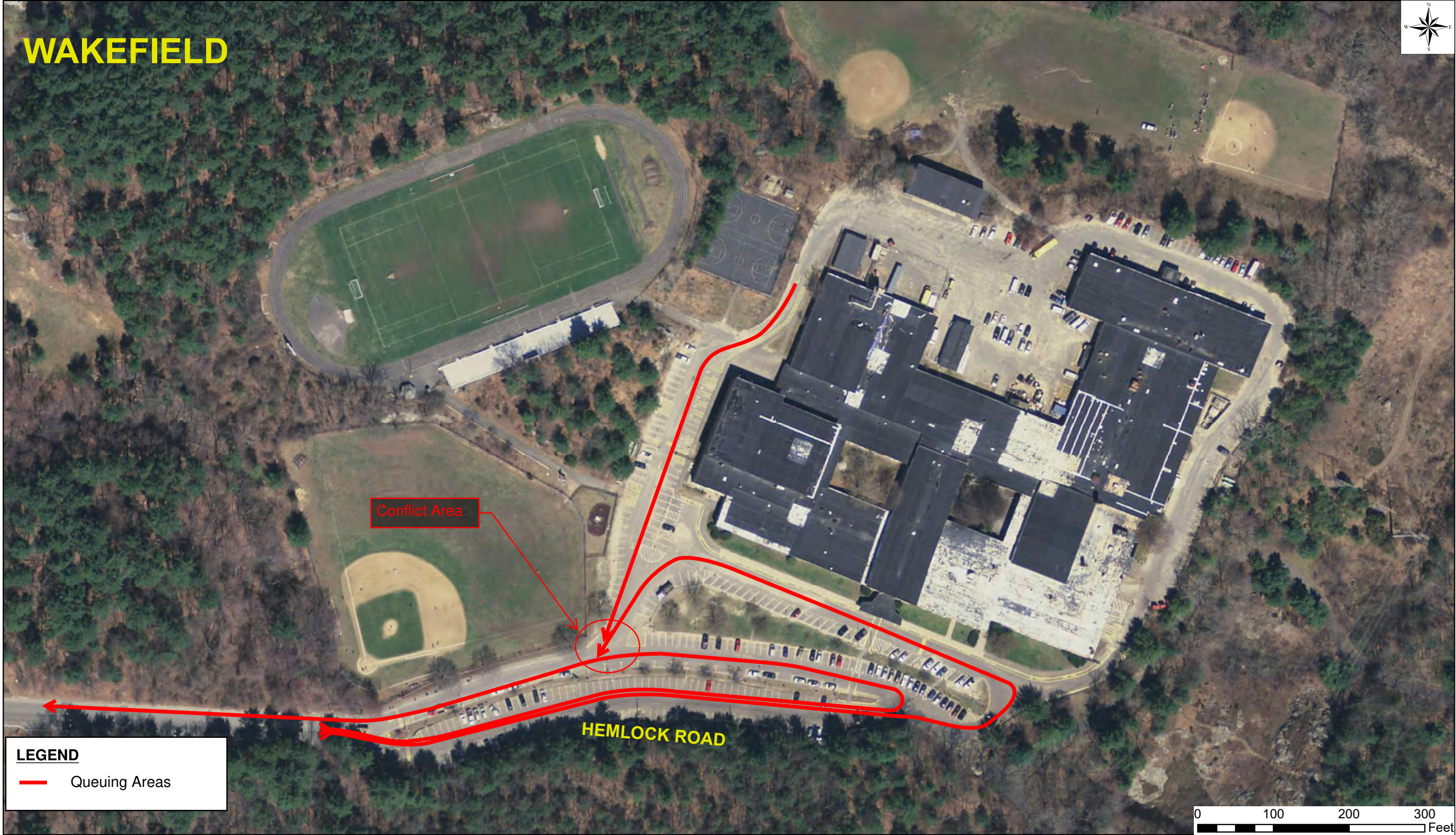


Figure 4: Queue Location

Northeast Metropolitan Regional Vocational High School
Wakefield, MA

Data Source: MassGIS
Nitsch Project #13872.



3 Assessment of Future Traffic

To assist the Project Team in developing the schematic designs, Nitsch Engineering has developed the following list of pros and cons for each of the proposed site design alternatives.

3.1 Access from Hemlock Road Only

Pros

- Current one-way traffic circulation can be maintained.
- Single route to see all vehicles entering and exiting.
- Student parking stickers would be checked as they currently are.

Cons

- Queueing will continue, making exiting school property difficult and time consuming.
- Students will continue to park in outside of school property and in faculty spaces behind the building while their spaces are taken by residents visiting Breakheart Reservation.
- There will still be a conflict point where vehicles from behind the building merge with pick-up and drop-off vehicles.
- Flagger will still be needed to direct traffic and stop vehicles for exiting buses.

3.2 Additional Access Road from Water Street

Pros

- Most of the traffic leaving on Hemlock Road turns right onto Farm Street heading in this direction.
- There would be less queueing and less waiting time to leave school property.
- There would no longer be a conflict point where vehicles from behind the building are forced to merge with pick-up and drop-off vehicles.

Cons

- An additional security guard would be needed to check student parking stickers at this additional access point behind the building.
- Students would also need to travel all the way around the school to access student parking spaces.
- One-way traffic circulation would need to be modified.

3.3 Additional Access Road from Farm Street south of Hemlock Road

Pros

- Similar to access alternative 2, there would be less queueing and less waiting time to leave school property.
- Less of the traffic is leaving Hemlock Road and turning left onto Farm Street in this direction.

Cons

- There would still be a conflict point with vehicles from behind the building and pick-up and drop-off vehicles.
- An additional security guard would be needed to check student parking stickers at this additional access point.
- One-way traffic circulation would need to be modified.

4 Recommendations

After observing the traffic and parking at the Northeast Metropolitan Regional Vocational High School, Nitsch Engineering recommends an additional access road to the school either from Farm Street or Winter Street. Although the intersection of Hemlock Road and Farm Street was not observed to be problematic during the peak periods, the additional access point would alleviate the extensive queuing and delays entering the school.

To address the parking issues, additional parking should be provided to meet the projected demand and areas should be designated specifically to students, faculty, automotive classes, and Breakheart Reservation patrons. This would create more available spaces limiting the interactions between Breakheart Reservation patron parking and student parking therefore not requiring students to park outside of school property.

By implementing these conceptual changes for site access and parking layout, we anticipate there will be more efficient arrival and dismissal traffic operations, less on-site congestion, and limited use of off-site parking.