

# Mont Vernon - NH 13 Access Management Study



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Prepared by the Nashua Regional Planning Commission



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## MONT VERNON - NH 13 ACCESS MANAGEMENT STUDY

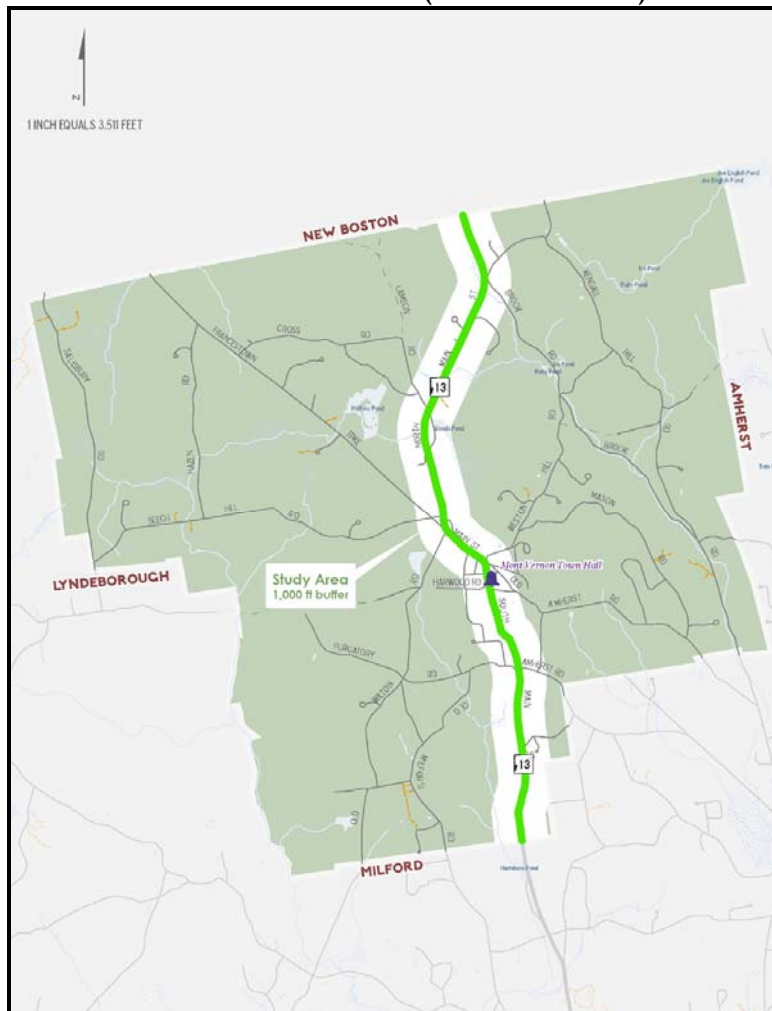
### A. INTRODUCTION

The Nashua Regional Planning Commission (NRPC) has conducted a comprehensive access management study of the Mont Vernon segment of the NH 13 corridor. The study has several goals:

- To document existing traffic conditions along the corridor.
- To utilize anticipated land use build-out scenarios to forecast future traffic conditions in the corridor.
- To develop access management recommendations for the corridor based on anticipated future conditions.

The study area encompasses 1,000 feet on either side of the centerline of the highway and includes the segment of the corridor within Mont Vernon. The Milford segment of the corridor was not part of this study because issues along the corridor in Milford were previously addressed in the *Transportation and Community and Systems Preservation Study, July 2006*. The study area is shown on Map 1.

**MAP 1: STUDY AREA (MONT VERNON)**



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## B. STUDY PROCESS

This study was developed to provide the public, town staff and town officials with information regarding the impacts of land use patterns on the traffic circulation system, and how the implementation of access management techniques will help to mitigate those impacts. The study process included analysis of data, development of a range of possible access management solutions and preparation of this report documenting study results:



**Public Involvement:** The public involvement process began with a public meeting at the Mont Vernon Village School. The public meeting had several goals.

- To educate the public about access management techniques;
- To present information regarding existing traffic conditions in the Corridor;
- To gather information from the public regarding their perception of existing and potential future traffic problems along the corridor.

**Land Use:** A comprehensive review of land use and subdivision regulations was conducted in the town to determine what land development could take place in the corridor under existing ordinances. Existing regulations and ordinances were then used to determine the maximum future build out anticipated on the properties that adjoin NH 13 within a 1,000-foot buffer on either side of the roadway centerline.

**Traffic Analysis:** The traffic analysis section of the study identifies existing and future traffic conditions in the study area. Data collection included traffic volume counts along the corridor and on secondary roadways. Turning movement counts were also conducted at critical locations in order to determine level of service at critical intersections.

**Access Management Principles:** Access management is the practice of coordinating the location, number, spacing and design of access points to minimize site access conflicts and maximize the traffic capacity of a roadway. This section defines what access management is, gives examples of access management techniques, and reviews existing access management-related regulations in Mont Vernon.

Also, a review of the Mont Vernon Site Plan Review Regulations, Subdivision Regulations and Zoning ordinances was conducted to identify existing regulations that are consistent with access management strategies. The Town of Mont Vernon does not have a specific access management plan in place, but existing regulations provide some level of access control.

**Access Management Recommendations:** The NH 13 corridor is currently rural in character yet has the potential for substantial future development. Although the corridor may not experience the high traffic volumes and congestion of other more developed areas, access management techniques can preserve the existing capacity and improve safety as new development occurs. These recommendations and guidelines for access management will significantly enhance the future function of the NH 13 corridor.

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## C. PUBLIC INVOLVEMENT

### 1. Introduction

A public meeting was held on June 28, 2006 at the Mont Vernon Village School. The meeting was advertised in advance in local newspapers, on the local cable channel where possible, town web sites and the NRPC website. Advertising flyers were also developed and placed in various public locations around town, including the landfill, library, General Store and town hall.

The meeting was informational in nature and designed to present information regarding existing traffic conditions in the Corridor, to educate the public about access management techniques, and to gather information from the public regarding their perception of existing and potential future traffic issues along the corridor. The meeting was structured to allow those in attendance to move around the room at their own pace and NRPC staff members were available to answer questions.

At the meeting, posters were set up around the room that portrayed various types of information; one section of posters displayed examples of access management principals in order to increase public awareness of those principles. A power point presentation that also explained access management techniques ran continuously during the evening. Another section of posters displayed maps of the corridor with information about traffic volume, land use and zoning, level of service analysis and other information. A third section of posters displayed maps of the corridor and asked citizens to identify perceived issue areas regarding traffic congestion, difficult access to parking lots, dangerous left-hand turns and other traffic safety issues. Those citizens in attendance were encouraged to express their opinions about these issues by placing pushpins directly on the maps at those locations.

The input from citizens collected at the public meeting was used, along with analysis that was completed by NRPC staff, to develop the access management recommendations that appear later in this report.

A summary of the information that was gathered at the public meeting follows:

### 2. Mont Vernon Meeting Results

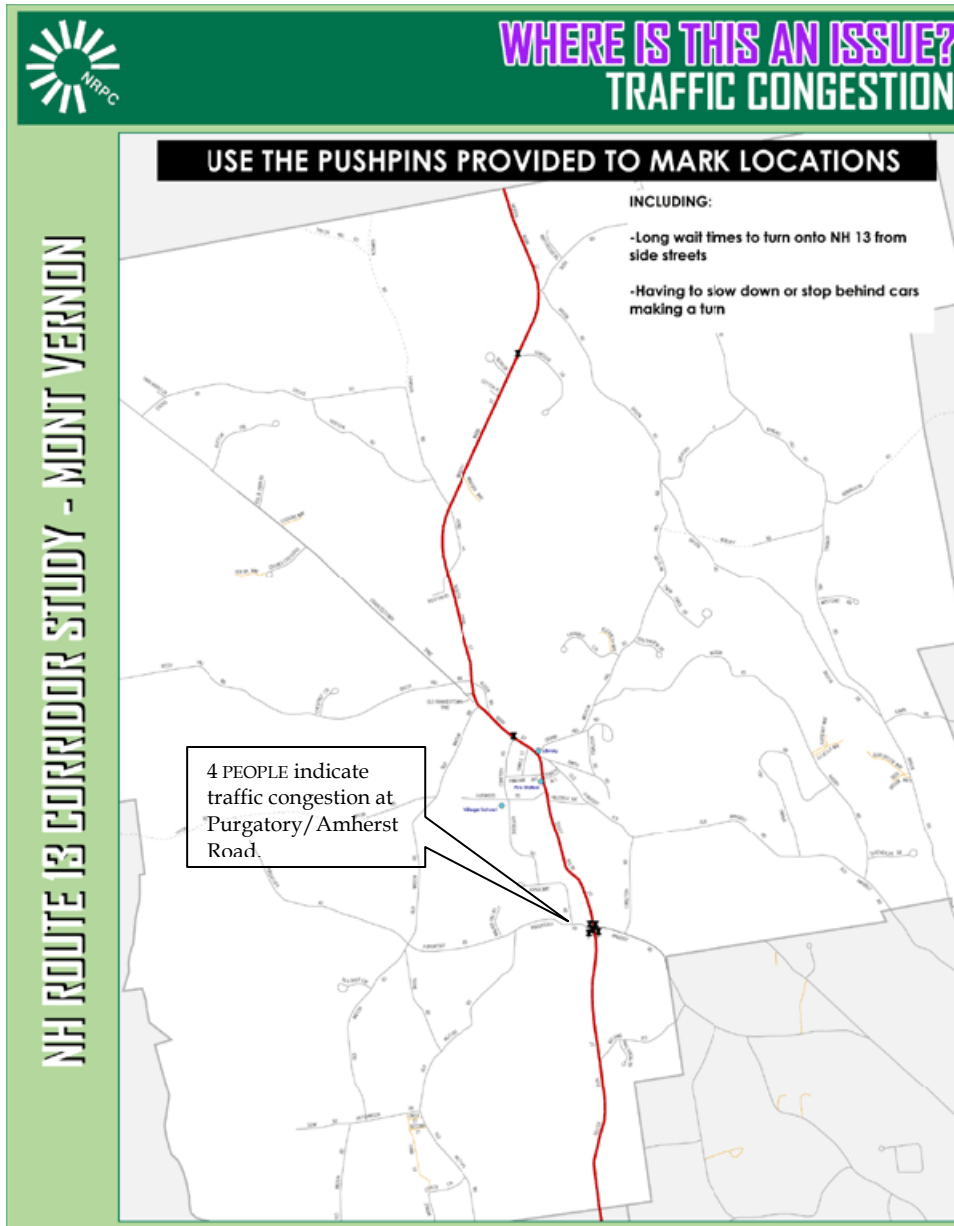
Approximately twenty Mont Vernon residents attended the meeting. Residents were encouraged to comment on access management-related traffic issues along the Mont Vernon segment of the corridor by placing pushpins on the maps/posters on display around the room. Residents were asked about traffic congestion, poorly defined curb cuts and places where turning off NH 13 was difficult. The following is a summary of comments.



**Traffic Congestion:** Residents were asked if there were places along the corridor where there are long waits to turn onto NH 13 from side streets or where they have to slow down to wait for cars turning off NH 13. Their responses are shown in Figure 1.

- Four people said they had this problem at NH 13/Purgatory Road/ Amherst Road.

**Figure 1: Mont Vernon NH 13 Traffic Congestion Responses – Long Waits/Slow Downs**

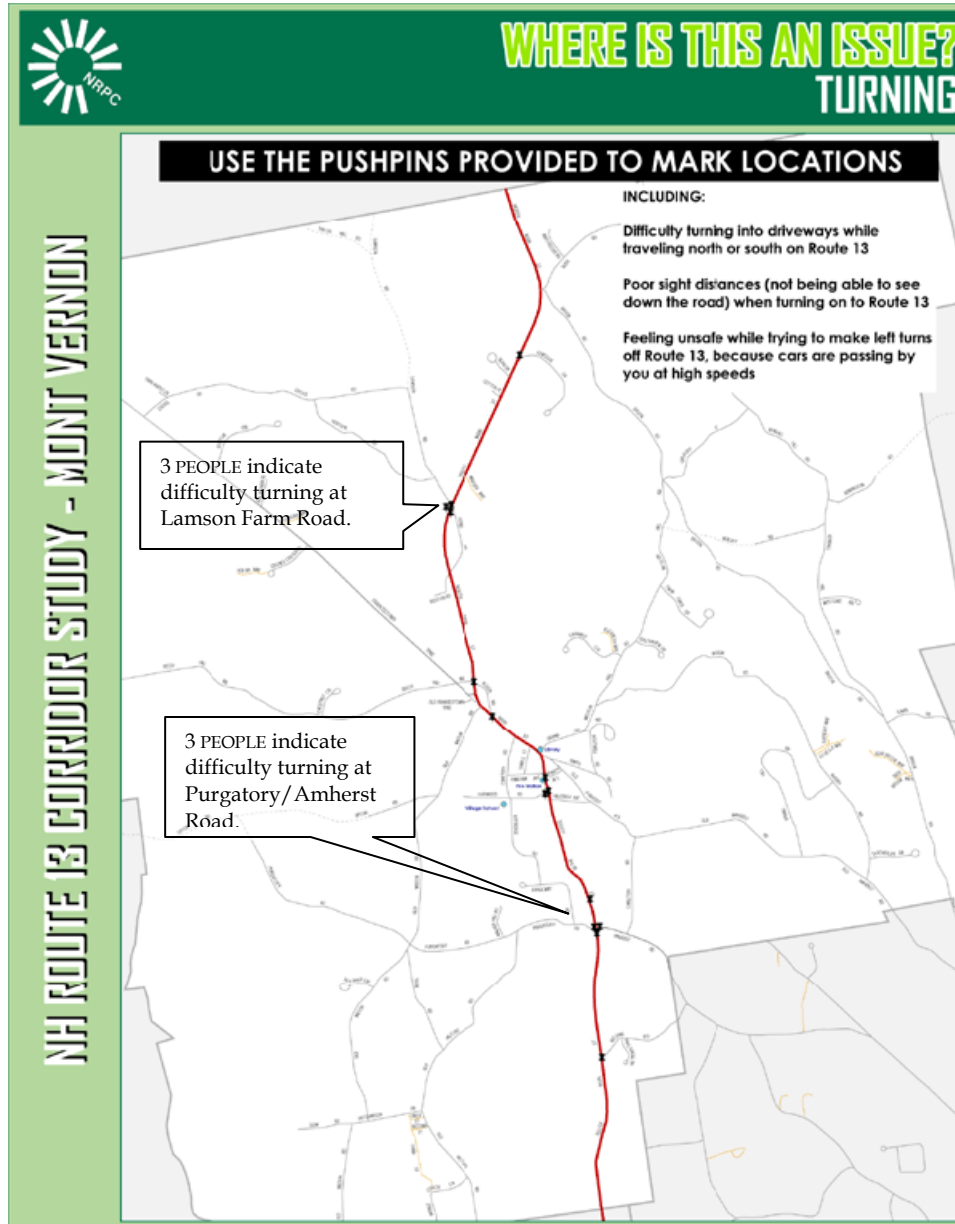




**Turning off NH 13:** Residents were asked if there were places along the corridor where they have difficulty turning into driveways from NH 13 or where they feel unsafe while waiting to turn off NH 13. Their responses are shown in Figure 2.

- Three people said they had this difficulty at NH 13/Purgatory Road/Amherst Road;
- Three people said they had this difficulty at NH 13/Lamson Farm Road;
- Other locations along the corridor where people indicated this was an issue included Hillcrest Avenue, Conant Avenue, Blood Road and Beech Hill Road.

**Figure 2: MontVernon Traffic Congestion Responses - Turning Off NH 13**

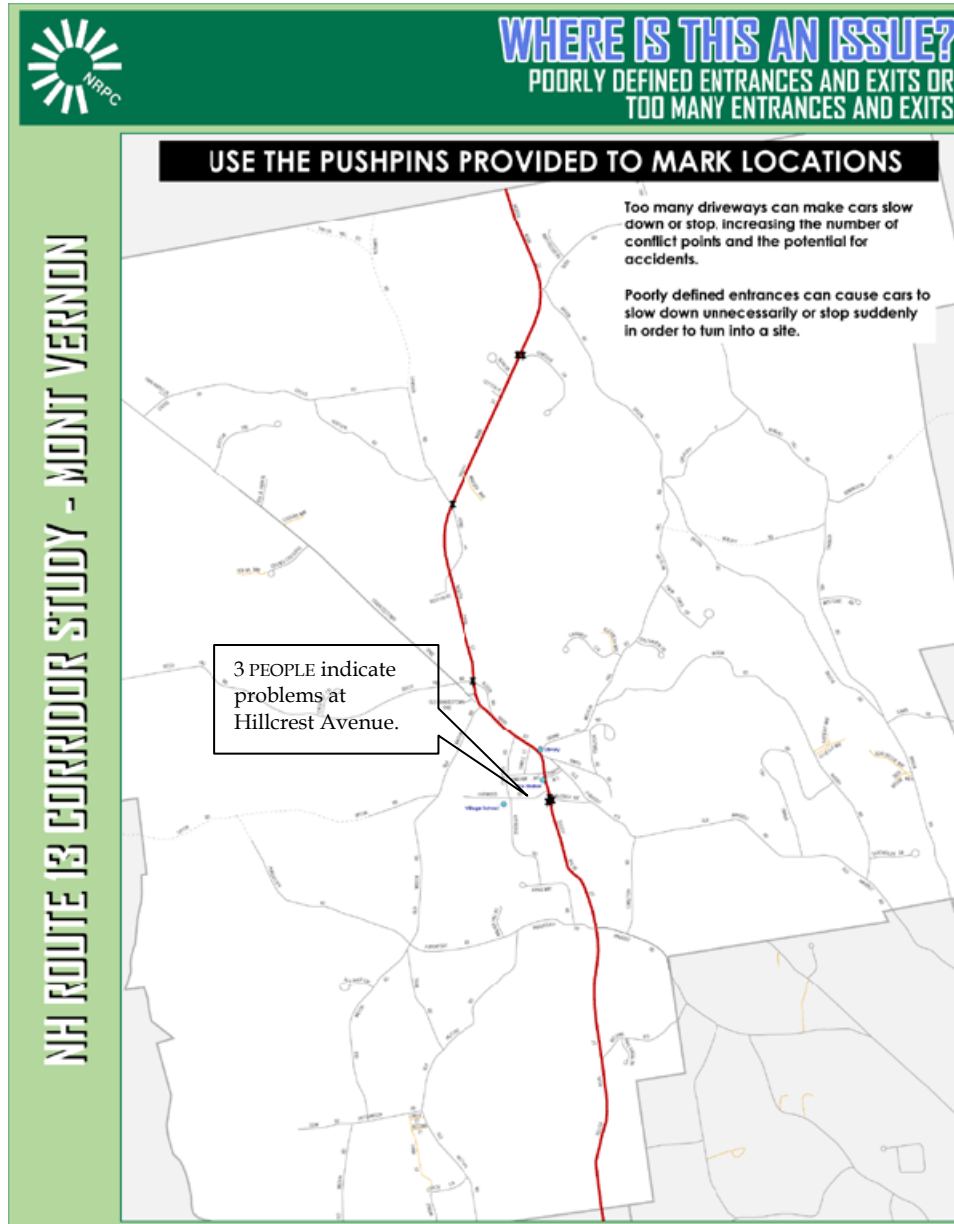




**Too Many or Poorly Defined Curb Cuts:** Residents were asked if there were places along the corridor where there were poorly defined curb cuts or too many curb cuts. This situation can cause motor vehicles too slow down unexpectedly, or increase the number of conflict points along the roadway. Their responses are shown in Figure 3.

- Three people said this is an issue at NH 13/Hillcrest Avenue;
- One person said this is an issue at Blood Road;
- One person said this is an issue at Pond Road.

**Figure 3: Mont Vernon NH 13 Traffic Congestion Responses – Curb Cuts**





**Responses to written surveys:** Surveys were distributed at the meeting to provide residents with the opportunity to further elaborate on conditions along the corridor. A summary of written comments follows.

- A significant number of vehicles that are southbound on NH 13 turn left onto Amherst Road. Other vehicles that continue south on NH 13 must pass on the right in the breakdown lane and through the Purgatory Road intersection. There needs to be a left turn pocket on southbound NH 13;
- There needs to be a slow vehicle climbing lane beginning at the Amherst Road intersection; Currently, slow moving northbound trucks travel in the breakdown lane (technically prohibited) and cars pass at 40+ mph;
- There is limited sight distance at Lamson Farm Road, Levesque Road and Cross Road;
- Use signage to direct traffic to west Milford via Old Wilton Road, and traffic to Amherst down Old Amherst Road;
- Forbid left turns from Purgatory Road onto northbound NH 13;
- Curb cuts are increasing and need to be limited in the future;
- Pedestrian safety; Crosswalks needed between Town Hall and McCollum building and between Village Store and Cross Street.
- Eliminate passing zone between Secomb Road and Purgatory Road;
- Traffic has increased on Old Wilton Road since it was paved. Speed of vehicles has also increased;
- Bypass road around Amherst and Milford town centers.

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## D. LAND USE ANALYSIS

### 1. Existing Land Use

The link between transportation and land use is at the core of access management decisions. The way we develop land and provide access to the transportation system has far-reaching implications on the safety and mobility of the residents of a community as well as the property owners who are developing the land.

**Existing Land Use - Mont Vernon:** The NH 13 Corridor stretches from the Milford town line in the south to the New Boston town line in the north.

Single-Family Residential is the most dominant type of development along the corridor (Table 1, Map 2). There are one hundred and ninety three residential parcels in the study area and fifty-two have frontage on NH 13. The second largest land use along the corridor is vacant land, which covers 329.6 acres (36 parcels). Most of the vacant land is in the southern end of town. Agriculture is the next largest with 69.3 acres followed by Permanent Open Space with 68.9 acres.

Residential development dominates the northern two-thirds of the corridor from the New Boston town line south to the intersection with Purgatory and Amherst Roads. Most of the land along the corridor from this intersection south to the Milford town line is vacant.

Zoning districts in Mont Vernon include Limited Commercial, Managed Commercial/Conservation, Residential, Rural Residential, Watershed Residential and Watershed Rural Residential (Map 3). It is significant to note that the Limited Commercial zoning district dominates the corridor from the Mont Vernon-Milford town line north to Secomb Road.

**TABLE 1: EXISTING CORRIDOR LAND USE - MONT VERNON**

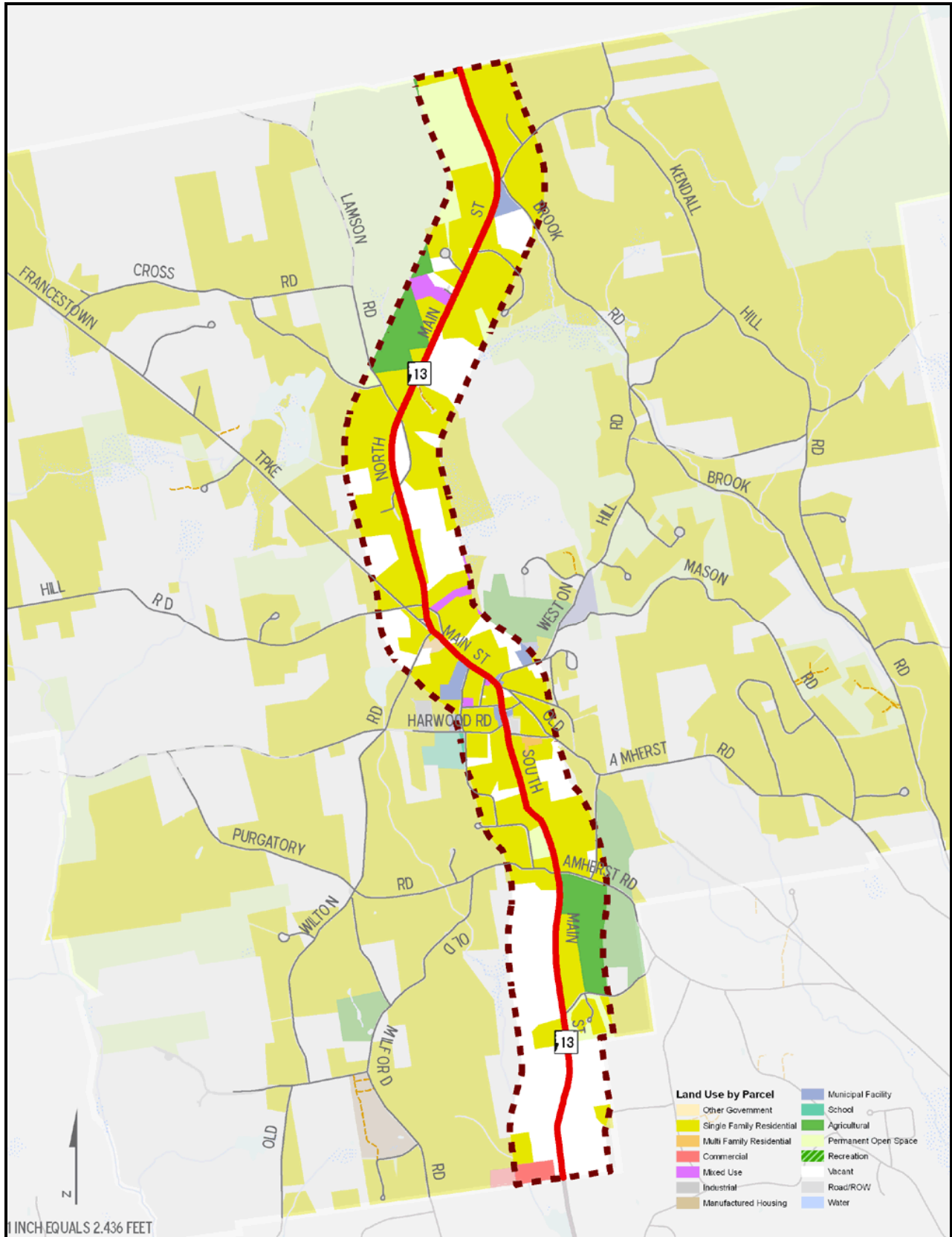
Land Use	# Parcels	Total Acreage*
Agricultural	3	69.3
Commercial	1	8.0
Mixed Use	4	12.9
Multi-Family Residential	1	1.9
Municipal	8	16.3
Permanent Open Space	8	68.9
Single Family Residential	193	567.2
Vacant	36	329.6

\* Total acreage within 1,000 ft buffer only

**Existing Access Points:** NRPC staff conducted a field survey using GPS equipment to locate all access points along the Mont Vernon segment of the NH 13 Corridor. Seventy driveways were inventoried including four that access more than one parcel and fifty-six that provide access to residential parcels. Fifty-two of the residential parcels have access on NH 13. There are two interconnections between adjacent parcels.

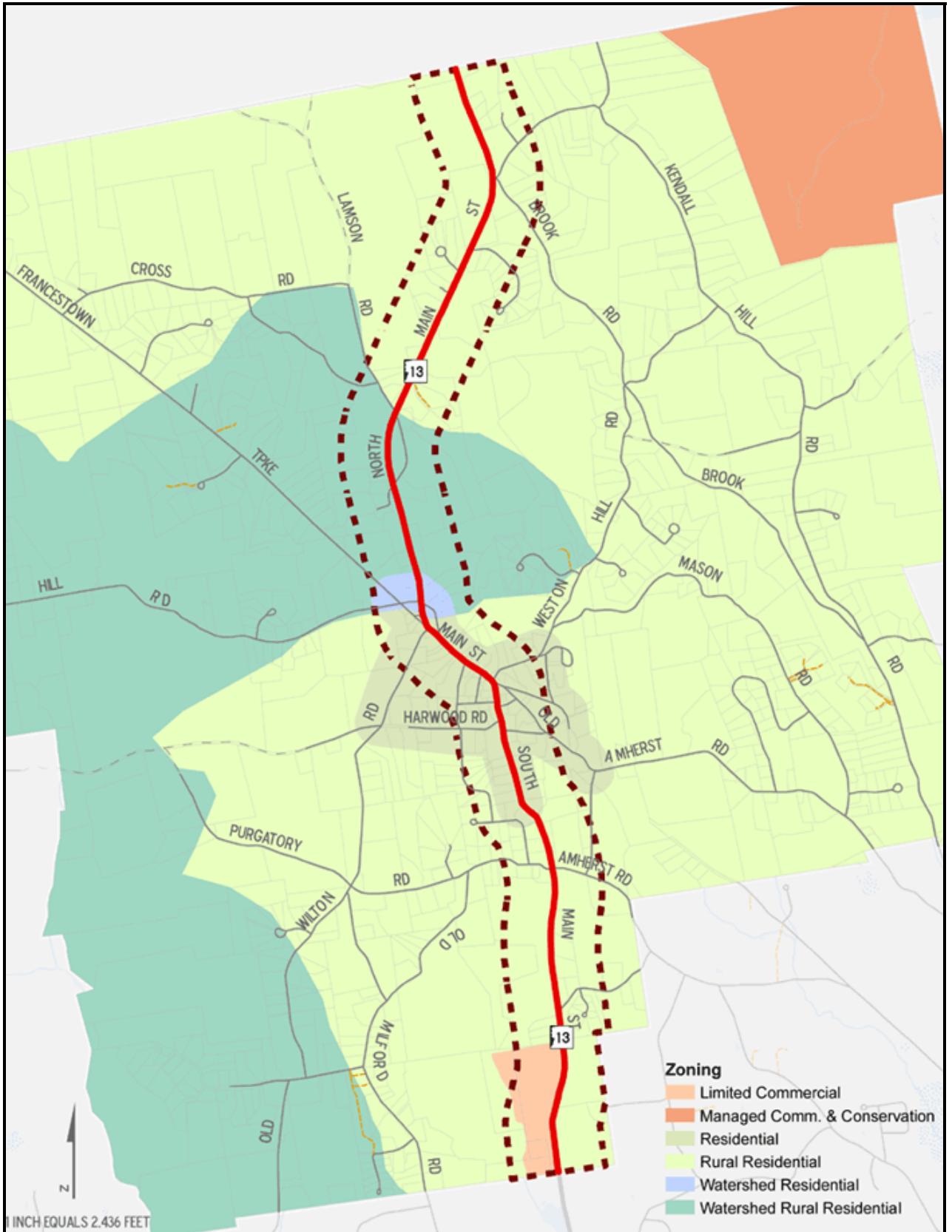


MAP 2: EXISTING LAND USE - MONT VERNON





MAP 3: ZONING - MONT VERNON





## 2. Buildout Land Use

NRPC completed the *Region-Wide Buildout Impact Analysis* in October 2005. “Buildout” is a theoretical condition and exists when all available land suitable for residential and non-residential construction is developed. Within the set parameters and under a particular set of adopted policies, buildout represents the carrying capacity of an area, community or region. Through an application of development requirements and past development patterns, combined with an inventory of developable space, a community can produce an estimate of future growth. Buildout refers to an estimate for the maximum number of single family and multi family housing units that will result when all of the available developable land is consumed. Buildout also estimates the maximum square footage and number of employees for commercial, office and industrial developments at buildout. These estimates are used to determine the impacts of buildout including: housing and population, employment, non-residential square footage, traffic, the number of school children, demand for water and solid waste disposal, and the buildout demand for public safety services.

The primary goal of NRPC’s buildout analysis is to provide policy makers and the public with the information needed to make informed choices regarding the future growth of the region. Understanding what the region will look like at buildout is critical to the evaluation of current land use policies, such as zoning ordinances, growth management ordinances, and access management policies, because these ordinances and policies guide how development happens.

The *Region-Wide Buildout Analysis* provides *estimates* of the additional building lots that will be available in the future based on current land use policies and regulations, but it does not necessarily indicate exact locations along the corridor of the additional lots. Results of the analysis for the Town Mont Vernon is described below, and the implications of the results on traffic are described later in the traffic analysis section of this report.

**Buildout Land Use - Mont Vernon:** Results of the buildout analysis for the Town of Mont Vernon are included in Table 2 below. The buildout study estimates that an additional 943 single-family housing units are possible in Mont Vernon. This represents a 133% increase from 711 current housing units to 1,654 housing units at buildout. Commercial (retail/service) space is estimated to increase by 475% from four current lots to 23 lots at buildout.

The buildout analysis also estimates that in the immediate corridor there will be an increase of 140 residential lots and additional 18 office/industrial lots

Again, the NRPC analysis cannot predict exactly where these additional lots will be situated along the NH 13 corridor. However, the effects of the additional lots will be analyzed in the traffic analysis section of this report.

**TABLE 2: BUILDOUT RESULTS - MONT VERNON (TOWN-WIDE)**

	Current	Additional	At Buildout
Single Family Housing Units	688	943	1,631
Multi Family Lots	1	-	1
Commercial/Retail Lots	4	19	23
Office Lots	-	-	-
Industrial Lots	1	-	1

**TABLE 3: BUILDOUT RESULTS - CORRIDOR ONLY**

	Current	Additional	At Buildout
Single/Multi-Family Housing	16	140	156
Office/Industrial Lots	1	18	19



## E. TRAFFIC ANALYSIS

### 1. Existing Traffic Conditions - Mont Vernon

**Traffic Counts:** NRPC staff conducted 24-hour volume counts at 17 locations in Mont Vernon for this project. The locations of the volume counts are recorded in Table 4 and shown on Map 4. Thirteen of the counts recorded the volume of traffic and time of day only. The remaining four were classification counts that registered volume of traffic, vehicle type and vehicle speed. The classification counts were used to determine the speed of vehicles at various locations in Town. NRPC also conducted morning and afternoon (peak-period) manual turning movement counts (TMC's) at critical intersections in Mont Vernon. The data from these counts was used to calculate intersection level of service (LOS). The locations of the various counts are shown on Maps 4 and 5. Tables 4-9 and Figures 4-6 summarize the data.

#### a. Traffic Volume

**Traffic on NH 13:** The average daily traffic (adt) at the Milford/Mont Vernon town line is 4,619. Traffic volume decreases to 3,444 adt just south of the Purgatory/Amherst Road intersection, increases to 5,459 adt just north of Purgatory/Amherst Road intersection and then remains consistent at approximately 5,400 adt until just north of Grand Hill Road. Traffic volume decreases to approximately 3,700 adt just north of the Francestown Turnpike and remains consistent to the New Boston town line where the volume is 3,346 adt.

**Traffic on Approaches to NH 13:** Traffic volume on secondary roads in Mont Vernon include 2,591 adt on Amherst Road just east of NH 13 and 809 adt on Purgatory Road just west of NH 13. Traffic volume on Grand Hill Road just east of NH 13 is 1,060 adt.

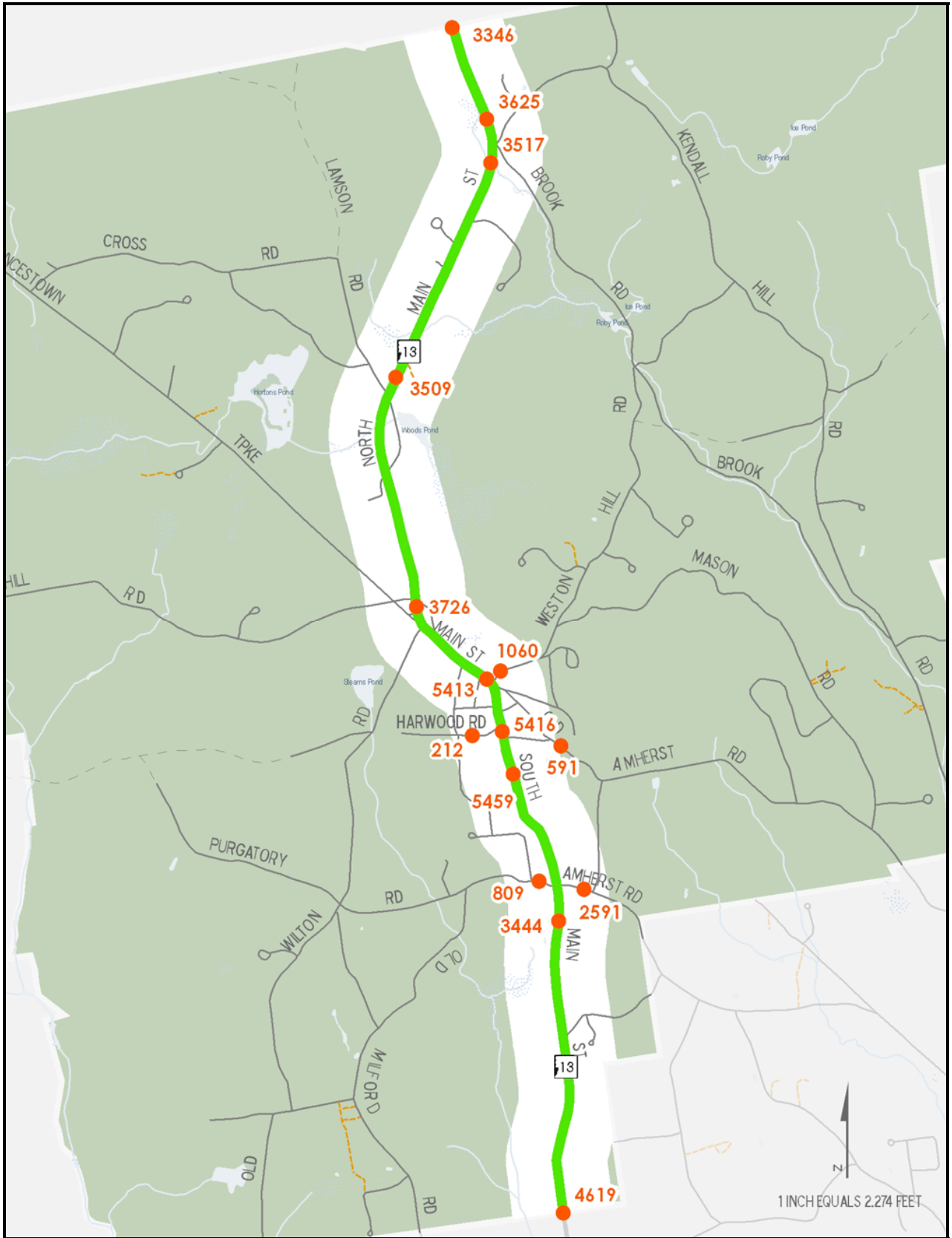
**TABLE 4: EXISTING TRAFFIC VOLUME - MONT VERNON**

Location	Most Recent Traffic Count(adt)	
	Volume	Year
<b>TRAFFIC ON NH 13</b>		
NH 13 at Milford T/L*	4,619	2006
NH 13 South of Purgatory/Amherst Road	3,444	2005
NH 13 North of Purgatory/Amherst Road*	5,459	2006
NH 13 North of Hillcrest Avenue	5,416	2005
NH 13 North of Grand Hill Road	5,466	2005
NH 13 North of Francestown Turnpike*	3,726	2005
NH 13 North of Lamson Road	3,509	2005
NH 13 South of Tater Road	3,517	2005
NH 13 North of Tater Road	3,625	2005
NH 13 @ New Boston T/L*	3,346	2005
<b>TRAFFIC ON APPROACHES TO NH 13</b>		
Purgatory Road W. of NH13	809	2006
Amherst Road E. of NH13	2,591	2005
Old Amherst Road S. of Hillcrest	591	2005
Old Hardwood Road w. of NH13	212	2005
Grand Hill Road E. of NH13	1,060	2005

\* Classification count



MAP 4: EXISTING TRAFFIC VOLUME - MONT VERNON





**b. Peak-Hour Turning Movement Counts**

NRPC staff conducted peak-hour turning movement counts at critical intersection in Mont Vernon. The locations of the turning movement counts are listed in Table 5 and shown on Map 5.

**TABLE 5: TURNING MOVEMENT  
COUNT LOCATIONS**

Location
NH13/Purgatory Road
NH13/Grand Hill Road
NH13/Old Wilton Road
NH13/Francestown Turnpike

**c. Peak-Hour Level of Service**

The TMC's were used to determine the Level of Service (LOS) at critical intersections in Mont Vernon. The LOS for each of the locations is listed in Table 6 and shown on Map 5.

The intersections along NH13 in Mont Vernon exhibit relatively good LOS. Generally, the movements from the approaches from secondary roads onto NH13 are either "A" or "B". The exception is associated with Purgatory Road:

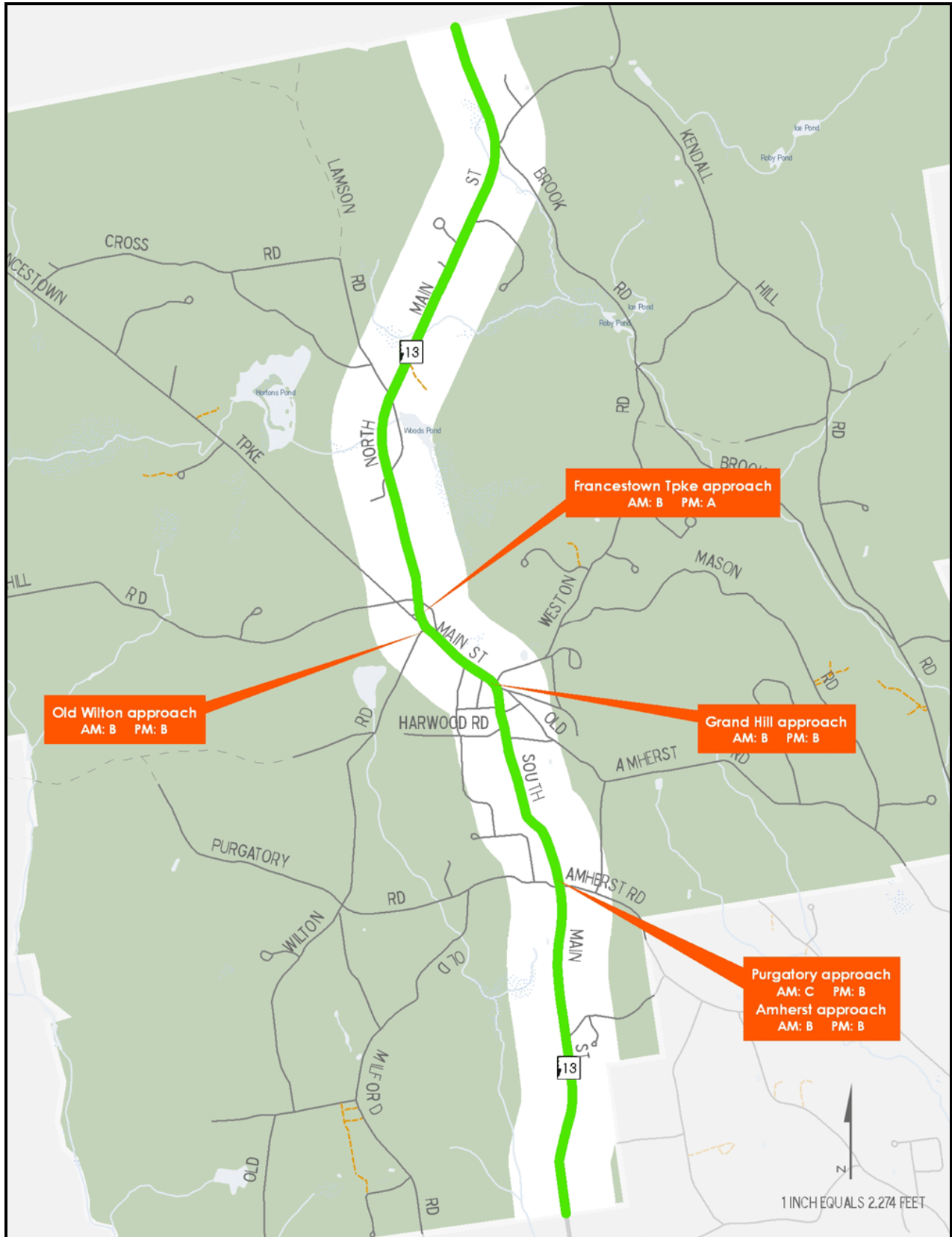
- **Purgatory Road:** The eastbound approach from Purgatory Road to NH13 is LOS "C" during the morning peak period.

**TABLE 6: PEAK-HOUR LEVEL OF SERVICE -  
MONT VERNON**

Location	Approach Level of Service	
	AM	PM
NH13/Purgatory Road		
- Purgatory Road EB	C	B
- Amherst Road WB	B	B
NH13/Grand Hill Road		
- Grand Hill Road WB	B	B
NH13/Old Wilton Road		
- Old Wilton Road	B	B
NH13/Francestown Turnpike		
- Francestown Turnpike EB	B	A



MAP 5: PEAK-HOUR LEVEL OF SERVICE - MONT VERNON





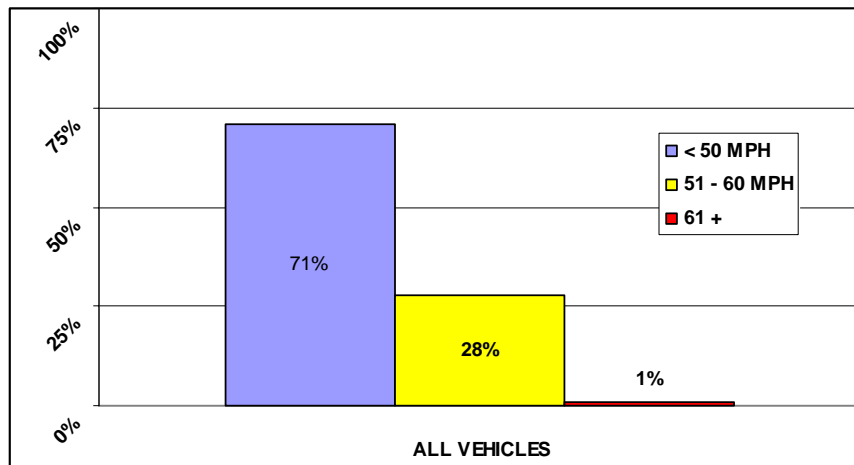
d. **Speed of Motor Vehicles**

**NH 13 Between Pond Road and Beech Hill Road:** The location of this count is on NH 13 between Pond Road and Beech Hill Road. Table 7 compares the actual speed of motor vehicles with the posted speed limit of 50 mph at this location. Figure 4 displays this information graphically. It can be seen that 71% of all vehicles travel at or below the speed limit at this location on an average weekday, and 28% exceed the speed limit by between one and 10 miles per hour and 1% exceed the speed limit by greater than 10 miles per hour.

**TABLE 7:  
B/T POND ROAD & BEECH HILL ROAD  
# OF VEHICLES VS. SPEED LIMIT**

Speed Limit (50 mph)	# of Vehicles	% of Total
< 50 MPH	2,329	71%
51 - 60 MPH	918	28%
61+ MPH	34	1%
Total	3,281	100%

**Figure 4:  
b/t Pond Road & Beech Hill Road  
# Of Vehicles Above/Below Speed Limit**



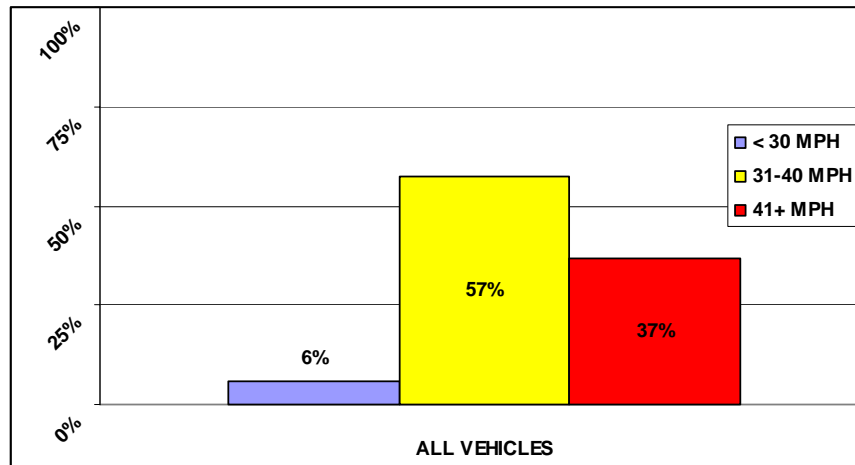


**NH 13 Between Francestown Turnpike and Blood Road:** The location of this count is on NH 13 between the Francestown Turnpike and Blood Road. Table 8 compares the actual speed of motor vehicles with the posted speed limit of 30 mph at this location. Figure 5 displays this information graphically. It can be seen that 6% of all vehicles travel at or below the speed limit at this location on an average weekday, 57% exceed the speed limit by between one and 10 miles per hour and 37% exceed the speed limit by greater than 10 miles per hour.

**TABLE 8:  
B/T FRANCESTOWN TRPKE & BLOOD ROAD  
# OF VEHICLES VS. SPEED LIMIT**

Speed Limit (30 mph)	# of Vehicles	% of Total
< 30 MPH	189	6%
31 - 40 MPH	1,857	57%
41+ MPH	1,191	37%
Total	3,237	100%

**Figure 5:  
b/t Francestown Trpke & Blood Road  
# Of Vehicles Above/Below Speed Limit**



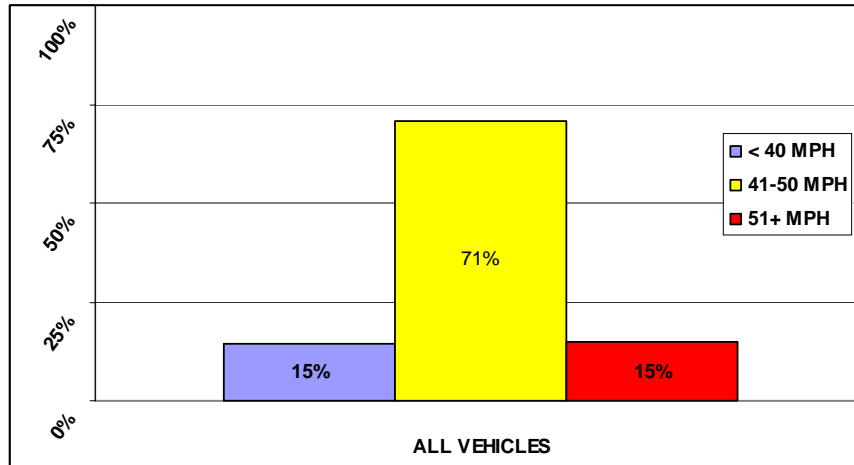


**NH 13 North of Secomb Road:** The location of this count is on NH 13 just north of Secomb Road. Table 9 compares the actual speed of motor vehicles with the posted speed limit of 40 mph at this location. Figure 6 displays this information graphically. It can be seen 15% of all vehicles travel at or below the speed limit at this location on an average weekday, 71% exceed the speed limit by between one and 10 miles per hour and 15% exceed the speed limit by greater than 10 miles per hour.

**TABLE 9:  
NORTH OF SECOMB ROAD  
# OF VEHICLES VS. SPEED LIMIT**

Speed Limit (40 mph)	# of Vehicles	% of Total
< 40 MPH	451	15%
41 - 50 MPH	2,186	71%
51+ MPH	463	15%
Total	3,100	100%

**Figure 6:  
North of Secomb Road  
# of Vehicles Above/Below Speed Limit**





## 2. Buildout Traffic Conditions - Mont Vernon

### a. Buildout Traffic Volume - Mont Vernon

NRPC maintains a sophisticated Regional Travel Demand Model to predict traffic patterns and volumes on road segments region-wide. The base year (2000) version of the traffic model contains current road networks, current housing and no-residential information. The buildout version was developed using the base year road network, existing land use patterns, local land use policies and zoning, the availability of vacant land and the presence of environmental constraints. The traffic volumes and conditions are then compared between the base year model and the buildout model. According to the model, the mean percent volume increase in traffic for road segments region-wide is 55%. Three (3) percent of road segments are estimated to increase in volume by 300% or more at buildout. Fifteen (15) percent are estimated to increase by 100% or more and 30% are estimated to increase by 50% or more. The transportation model includes only major routes. It does not include every street in the region.

Traffic volume will obviously increase in the event that the Town reaches full buildout conditions in the future. It is important to keep in mind however, that buildout is a hypothetical situation and should be considered for planning purposes only.

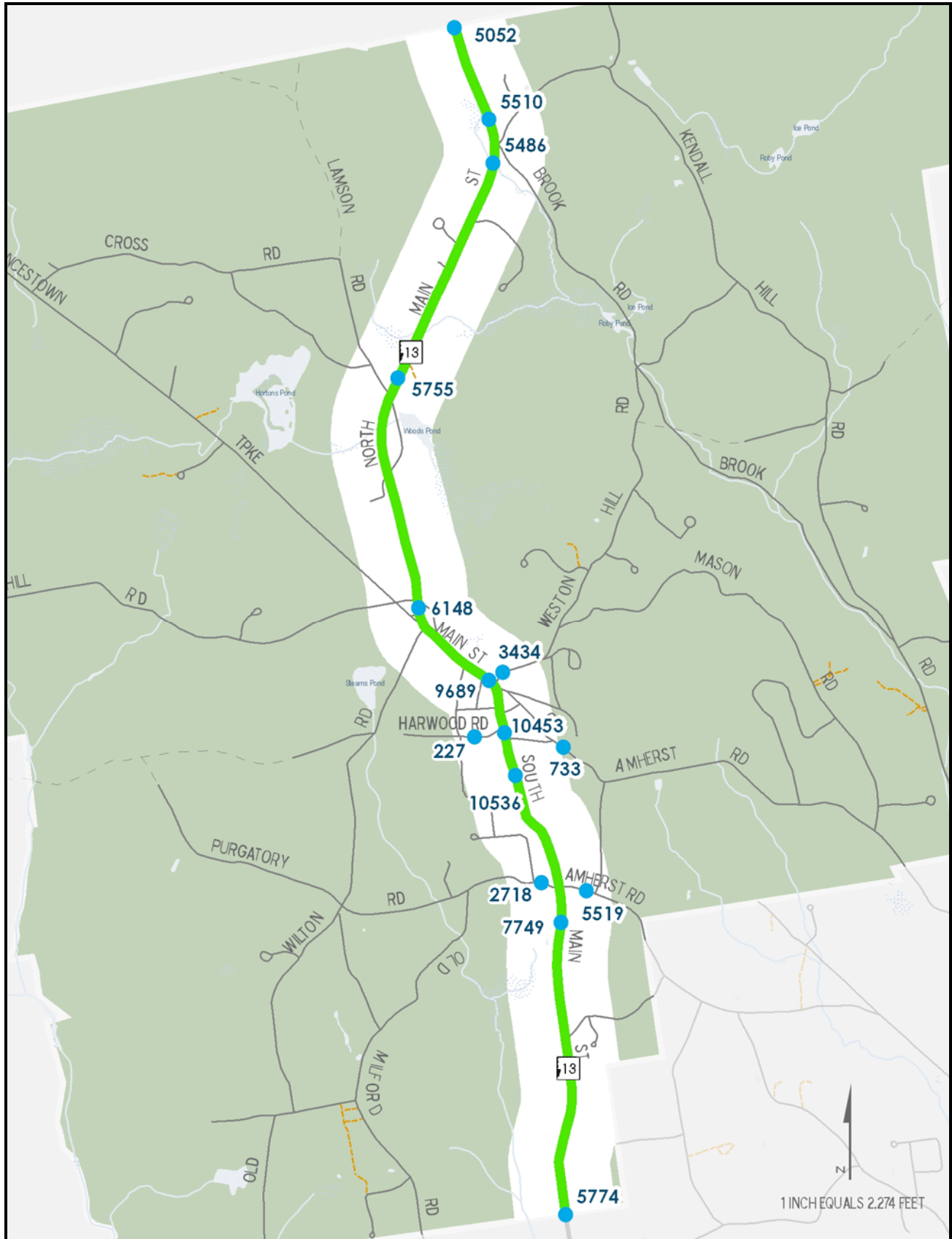
The estimated traffic volumes are shown in Table 10 and on Map 6. The data suggests that the segment of NH 13 between the Purgatory Road/ Amherst Road intersection and the Grand Hill Road intersection will see the most significant increase in traffic volume. The most significant increases in traffic volume on the minor approaches to NH 13 will be on Purgatory Road, Amherst Road and Grand Hill Road.

**TABLE 10: BUILDOUT TRAFFIC VOLUME - MONT VERNON**

Location	Existing Traffic (adt)	Buildout Traffic(adtt)
NH 13 at Milford T/L*	4,619	5,774
NH 13 South of Purgatory/ Amherst Road	3,444	7,749
NH 13 North of Purgatory/ Amherst Road	5,459	10,536
NH 13 North of Hillcrest Avenue	5,416	10,453
NH 13 North of Grand Hill Road	5,466	9,689
NH 13 North of Francestown Turnpike	3,726	6,148
NH 13 North of Lamson Road	3,509	5,755
NH 13 South of Tater Road	3,517	5,486
NH 13 North of Tater Road	3,625	5,510
NH 13 @ New Boston T/L*	3,346	5,052
<b>OFF NH 13 CORRIDOR</b>		
Purgatory Road W. of NH 13	809	2,718
Amherst Road E. of NH 13	2,591	5,519
Old Amherst Road S. of Hillcrest	591	733
Old Hardwood Road w. of NH 13	212	227
Grand Hill Road E. of NH 13	1,060	3,434



MAP 6: BUILDOUT TRAFFIC VOLUME - MONT VERNON





**b. Buildout Level of Service – Mont Vernon**

The NRPC traffic model was used to develop the build out scenario for Mont Vernon and the associated Levels of Service that could possibly result.

The critical movements from the main line of NH 13 onto the minor streets will remain LOS “A” or “B” in the future. The LOS for some of the minor street approaches onto NH 13, however, will deteriorate.

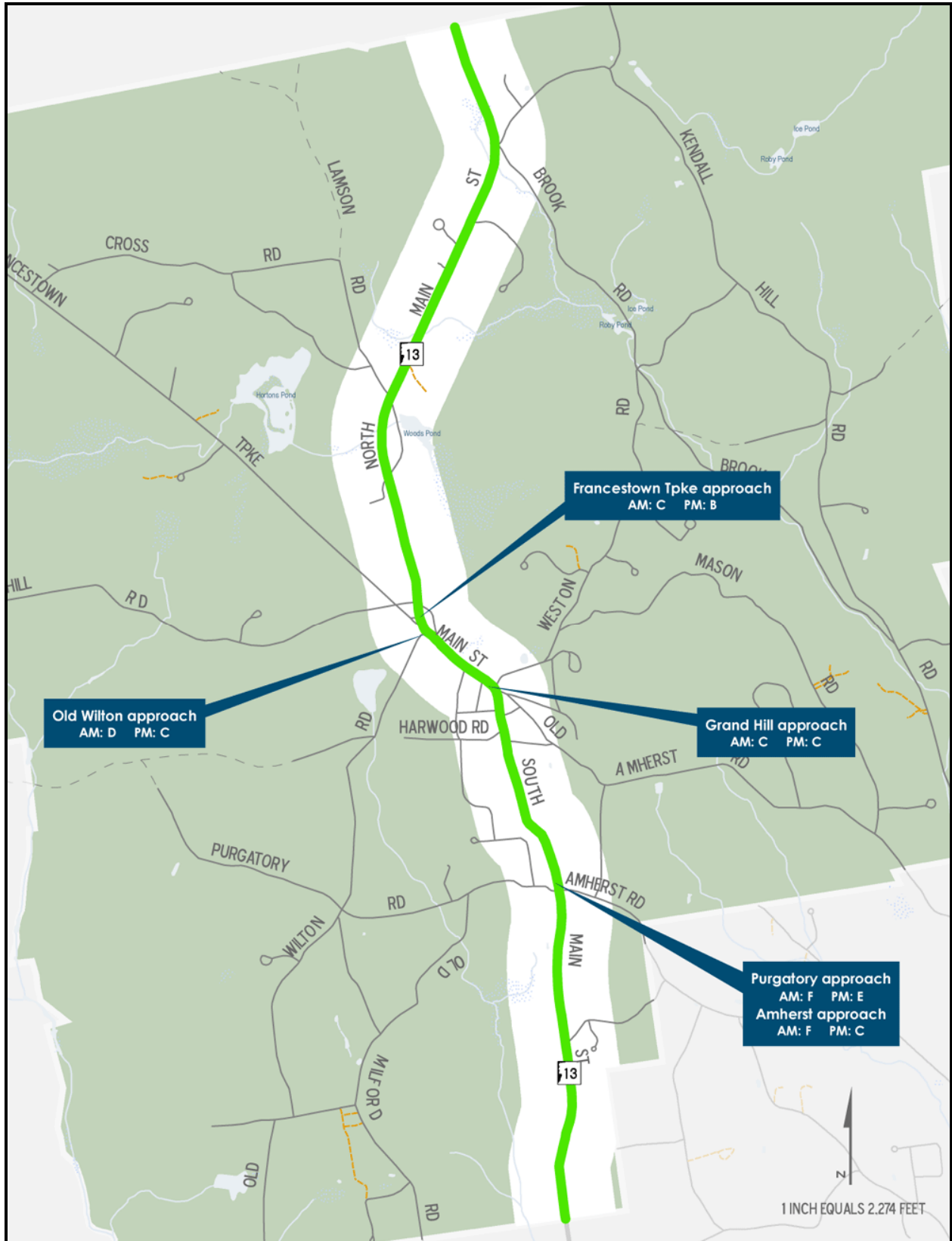
- **NH 13/Purgatory Road/Amherst Road:** The westbound approach to NH 13 on Purgatory Road will be LOS of “F” during the morning peak and a LOS “E” during the afternoon peak. The eastbound approach on Amherst Road will be LOS “F” during the morning peak and LOS “C” during the afternoon.
- **NH 13/Old Wilton Road:** The Old Wilton Road approach to NH 13 will be LOS “D” during the morning peak period.

**TABLE 11: BUILDOUT PEAK-HOUR LEVEL OF SERVICE –  
MONT VERNON**

Location	Approach Level of Service	
	AM	PM
NH13/Purgatory Road		
- Purgatory Road EB	F	E
- Amherst Road WB	F	C
NH13/Grand Hill Road		
- Grand Hill Road WB	C	C
NH13/Old Wilton Road		
- Old Wilton Road EB	D	C
NH13/Franchestown Turnpike		
- Franchestown Turnpike EB	C	B



MAP 7: BUILDOUT LEVEL OF SERVICE - MONT VERNON



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## F. KEY ISSUES

The following key issues were identified through a combination of input from residents of Mont Vernon, analysis of existing traffic conditions and observation of current land uses:

### 1. Mont Vernon – Key Issues

#### a. Traffic Congestion

As mentioned above, the Level of Service analysis is a good way to measure traffic congestion. The current LOS at critical intersections in Mont Vernon is generally “B” or better. The exception is the eastbound approach to NH 13 on Purgatory Road, which is LOS “C” during the AM peak period.

Buildout analysis suggests that LOS will deteriorate at several intersections in Mont Vernon. Eastbound Purgatory Road LOS will deteriorate to “F” during the morning and “E” during the afternoon peak period. Westbound Amherst Road will deteriorate to “F” during the morning peak and “C” during the afternoon. The remaining intersections will be LOS “C” or better.

The public input session also made it clear that residents consider this intersection to be congested. Residents pointed out that vehicles turning right onto northbound NH 13 from Amherst Road typically travel in the breakdown lane to get up to speed before merging into travel lane. Through traffic must avoid the vehicles that perform this maneuver.

#### b. Turning Safely Onto and Off of NH 13

Residents of Mont Vernon said that there are several intersections where it is difficult and unsafe to turn off NH 13. This is especially true of the intersection with Purgatory / Amherst Road when vehicles that are southbound on NH 13 attempt to turn left onto Amherst Road. This forces southbound traffic to “squeeze by” on the right onto the shoulder and through the Purgatory Road intersection.

Residents also said that the turning into and out of Lamson Farm Road is difficult because of visibility issues. Other intersections that were mentioned include Hillcrest Avenue, Conant Avenue, Blood Road and Beech Hill Road.

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## G. ACCESS MANAGEMENT PRINCIPLES

### 1. Introduction

Access management is the practice of coordinating the location, number, spacing and design of access points to minimize site access conflicts and maximize the traffic capacity of a roadway.

Uncoordinated growth along some of the region's major travel corridors has resulted in strip development and a proliferation of access points. In most instances, each individual development along the corridor has its own access driveway. Numerous access points along the corridor create conflicts between turning and through traffic, which causes delays and accidents.

The NH 13 Corridor is identified in the *Nashua Regional Planning Commission Access Management Guidelines*, as a corridor with the potential for substantial future development resulting in high traffic volumes and congestion. Applying access management techniques can preserve the existing capacity and improve safety as new development occurs.

Historically, transportation and access management plans concentrated primarily on the movement of vehicles. Current planning efforts focus on all modes of transportation, including bicycle and pedestrian travel, as well as land use patterns.

Numerous benefits are derived from managing the location and number of access points to a roadway. The benefits include:

- improving overall roadway safety;
- reducing the total number of vehicle trips;
- decreasing interruptions in traffic flow;
- minimizing traffic delays and congestion;
- maintaining roadway capacity;
- extending the useful life of roads;
- avoiding costly highway projects;
- improving air quality;
- encouraging compact development patterns;
- improving access to adjacent land uses; and
- enhancing pedestrian and bicycle facilities.

In addition to preserving capacity, access management techniques can be coordinated with design guidelines to significantly enhance the aesthetics of a roadway corridor. The NH 13 corridor is currently a diversely developed, auto-oriented environment with a rural character that can be preserved through coordination of land use and transportation planning. Developing a common vision that includes guidelines for access in addition to a unified design for signage, landscaping and pedestrian facilities can significantly improve the function and aesthetics of the corridor.

Below are access management techniques recommended in the *Nashua Regional Planning Commission Access Management Guidelines, April 2002* that may be adapted to local Site Plan and Subdivision Regulations in Mont Vernon.

- ***Number of Access Points***  
Managing the number of access points (driveways) from a site to a roadway reduces potential conflicts between cars, pedestrians and bicycles.
- ***Spacing of Access Points***  
Establishing a minimum distance between access points reduces the number of points a driver has to observe and reduces the opportunity for conflicts.



- ***Width of Access Points***

Uncontrolled access is a serious hazard for vehicles entering or exiting the site, vehicles passing by the site, bicycles and pedestrians. In addition to limiting the number of access points, the width of the access point should be restricted based on the use of the site.
- ***Turning Radius***

The turning radius of a driveway or access road affects both the flow and safety of through traffic as well as vehicles entering and exiting the roadway. The size of the turning radius affects the speed at which vehicles can exit the flow of traffic and enter a driveway.
- ***Corner Clearance***

Corner clearance is the distance between a driveway and an intersection. Providing adequate corner clearance improves traffic flow and roadway safety by ensuring that the traffic turning into the driveway does not interfere with the function of the intersection.
- ***Driveway Throat Length***

Driveway throat length is the length of the driveway that is controlled internally from turning traffic measured from the intersection with the road. Driveways should be designed with adequate throat length to accommodate queuing of the maximum number of vehicles as defined by the peak period of operation in a traffic study.
- ***Shared access***

Access points should be shared between adjacent parcels to minimize the potential for conflict between turning and through traffic. Shared access can be used effectively for both residential and nonresidential developments.
- ***Consolidation of Access Points***

Communities should take advantage of any opportunities to consolidate access points and provide cross access between existing developments as projects come under the review process. Reducing the number of potential conflict points will improve traffic flow and increase safety on the roadway.
- ***Frontage and Backage Roads***

Frontage and backage roads generally run parallel to an arterial or major collector and provide direct access to adjacent properties. As the names imply, frontage roads are located in front of the buildings/parcels - between the buildings and the arterial. Backage roads run behind the parcels providing access to the rear of parcels that front on the arterial. The major benefit of frontage/backage roads and service roads is the elimination of conflict points along the arterial. Eliminating the need for direct access improves the efficiency and safety of the arterial or collector.
- ***Alignment of Access Points***

Street and driveway intersections represent points of conflict for vehicles, bicycles and pedestrians. To minimize the potential conflicts and improve safety, intersections and driveways should be aligned opposite each other wherever possible and intersect roadways at a 90 degree angle.
- ***Sight Distance***

Sight distance is the length of the road that is visible to the driver. A minimum safe sight distance should be required for access points based on the roadway classification. The American Association of State Highway and Transportation Officials (AASHTO) publication



*A Policy on Geometric Design of Highways and Streets* contains recommendations for sight distance based on the roadway design speed and grade.

- ***Turning Lanes***  
Turning lanes and tapers remove turning traffic from the through travel lanes reducing congestion on the main line.
- ***Medians***  
Medians are used to control and manage left turns and crossing movements as well as separating traffic moving in opposite directions. Restricting left turning movements reduces the conflicts between through and turning traffic, resulting in improved safety.
- ***Pedestrian and Bicycle Access***  
A key aspect of access management is reducing the number of vehicle trips. This can be accomplished by providing safe and appealing pedestrian access within developments and between adjacent developments.

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## H. REVIEW OF ZONING AND LAND USE REGULATIONS

### 1. Introduction

A review of the Mont Vernon Site Plan and Subdivision Regulations and Zoning Ordinances was conducted to identify existing regulations consistent with access management strategies. The Town of Mont Vernon does not have specific access management strategies in place, but existing regulations provide some level of access control. The review of existing regulations and ordinances is summarized below and the specific language of the regulations ordinances can be seen in Appendix A.

### 2. Existing Mont Vernon Regulations

#### a. Non-Residential Site Plan Review Regulations

The regulations address access management through the parking design and pedestrian provisions. The regulations require that within the development, vehicle and pedestrian circulation and parking be designed to ensure the safety of vehicles and pedestrians on the site. Additionally, the regulations require that traffic access to the site from town streets ensure the safety of pedestrians and vehicles.

#### b. Zoning Ordinance

Access management issues are addressed in Mont Vernon's Open Space Development regulations which require that any open space development along NH 13 will be allowed a single access per development only if access is not available through other acceptable means.

The regulations address access and parking in the Limited Commercial District. These regulations require 500 feet of frontage on NH 13 and that there be no more than one access to any lot within the district and no more than one access point on NH 13 per 1,000 feet. The regulations also require that consideration be given to combining access points where two or more lots are being concurrently developed.

#### c. Subdivision Regulations

The regulations address access management through general street design requirements. The design standards require streets to intersect as nearly as possible at right angles and that streets entering opposite sides of another street shall be laid out either directly opposite one another, or with a minimum offset of one hundred twenty-five (125) feet between the centerlines.





## I. ACCESS MANAGEMENT RECOMMENDATIONS

### 1. Introduction

The following access management recommendations are designed to assist the community of Mont Vernon in coordinating the location, number, spacing and design of access points in order to minimize site access conflicts and maximize the traffic capacity of the NH 13 corridor. The recommendations will enhance safety, efficiency and aesthetics along the corridor. This will be accomplished by coordinating the implementation of the plan with Zoning Ordinances, Site Plan Regulations and other Town planning documents.

### 2. Recommended Access Management Strategies for Mont Vernon

Mont Vernon has experienced limited commercial and industrial development along the NH 13 Corridor. As such, access to private developments has not lead to significant congestion or safety impacts along this section of the corridor. However, with large tracts of undeveloped land directly abutting the corridor, access management strategies are needed in planning the future of the corridor. It is recommended that the Town of Mont Vernon consider developing an Access Management Plan to address future growth along the corridor. The following sections outlines access management strategies to consider in development of an access management plan for Mont Vernon.

#### a. Limited Commercial District Recommendations

The southern portion of the NH 13 corridor is zoned as a limited commercial district. Current zoning ordinances manage access through frontage requirements and access point spacing. Since much of this area is still undeveloped, there is an excellent opportunity to manage access along this portion of the corridor. Access management strategies were defined in section G of this document. Below are several strategies that can be developed further and incorporated into the site plan and subdivision regulations for Mont Vernon:

- Alignment of Access Points: Purgatory and Amherst Roads are not directly aligned
- Turning Lanes: A left-turn lane from southbound NH 13 onto Amherst Road should be considered
- Managing the Spacing and Number of Access Points: There are a large number of potential commercial lots near the south edge of town
- Defining Width of Access Points: Important because of potential lots near south edge of town
- Requiring Shared access: Important because of potential lots near south edge of town
- Consolidation of Access Points
- Frontage and Backage Roads
- Pedestrian and Bicycle Access

#### b. Residential Development Access Management Recommendations

The majority of the NH 13 Corridor through Mont Vernon is zoned for residential use. To enhance the access management components of the current subdivision regulations the Town of Mont Vernon could consider the following access management strategies:

- Requiring shared driveways: There are a large number of potential residential lots near the south edge of town
- Protection of land and view shed through conservation: The potential for development on the south edge of town means the view shed there is vulnerable
- Connecting through streets
- Limiting the use of cul-de-sacs off of NH 13



c. **Specific Access Concerns Identified at the Public Meeting**

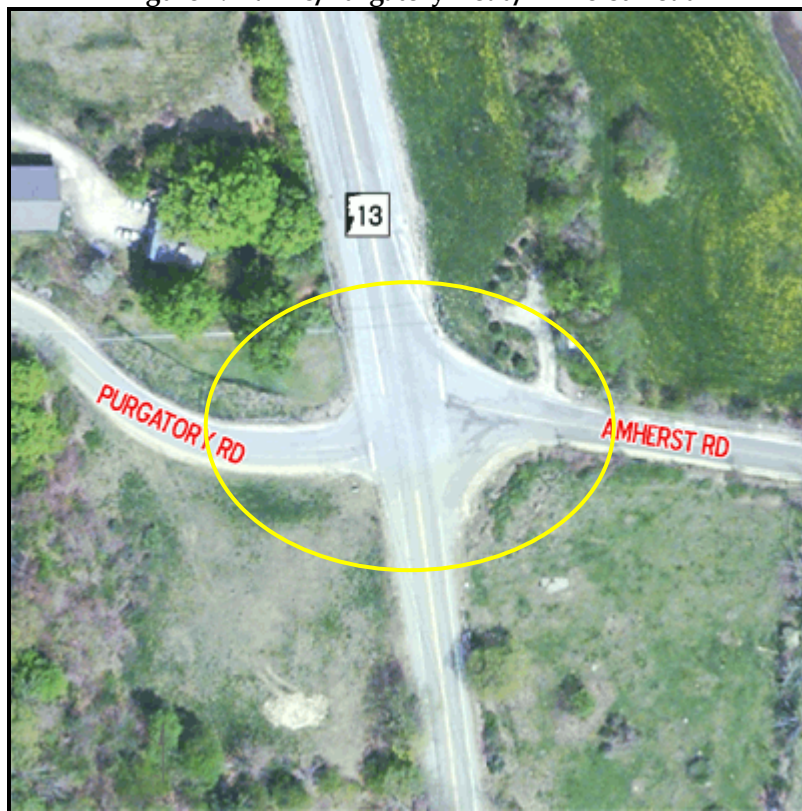
Access concerns voiced by Mont Vernon residents centered on existing intersection along the corridor. Residents specifically identified the intersections of NH 13 with Purgatory Road and Amherst Road and the intersection of NH 13 with Lamson Farm Road as areas of concern.

**Intersection of NH 13/Purgatory Road/Amherst Road**

Buildout analysis suggests that LOS on the eastbound Purgatory Road approach will deteriorate in the future to “F” during the morning peak period and “E” during the afternoon peak period. The LOS on westbound Amherst Road will deteriorate to “F” during the morning peak period.

Those who attended the public information meeting noted that a large number of southbound vehicles on NH 13 must wait to turn left onto Amherst Road, which causes the vehicles that are continuing south on NH 13 to pass on the right side of the waiting vehicles. The southbound vehicles that pass on the right need to use the breakdown lane and must pass through the front edge of Purgatory Road.

**Figure 7: NH 13/Purgatory Road/Amherst Road**



**Recommendations:**

- Investigate the need for turning lanes for all approaches to the intersection;
- Enforce speed limit on this segment of NH 13.

NRPC recommends additional analysis be undertaken to develop a solution to the safety concerns identified during the public meetings. Any improvements to the intersection of NH 13 with Amherst Road and Purgatory Road will require close coordination with NHDOT.

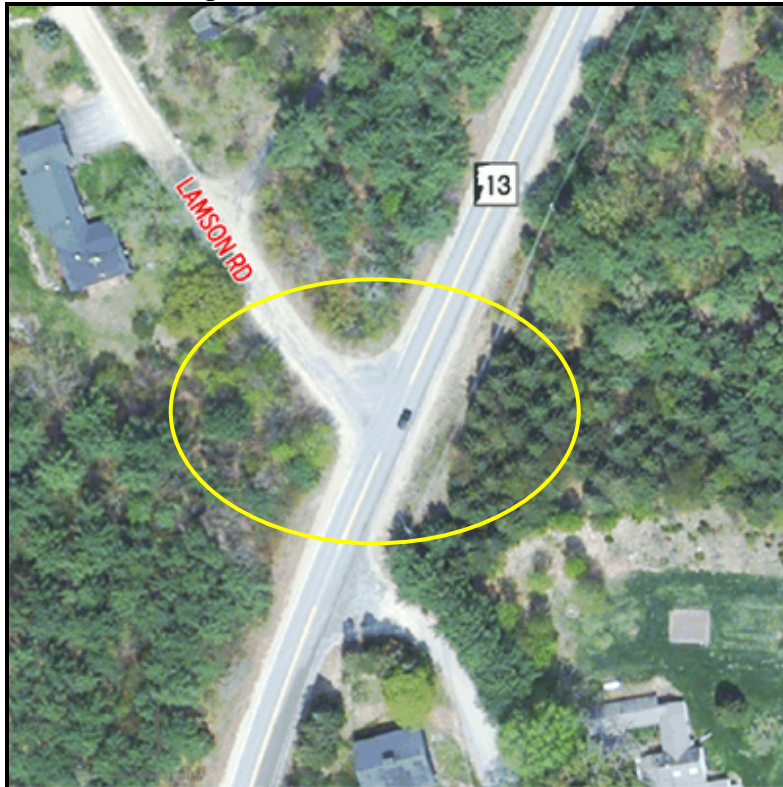


Future access management planning strategies should include requirements to align the intersections of local roads opposite one another.

#### **Intersection of NH with 13 Lamson Farm Road**

Residents of Mont Vernon said there are several intersections along the corridor that have limited sight distance. The intersections cited include Hillcrest Avenue, Conant Avenue, Blood Road, Beech Hill Road and Lamson Farm Road. Figure 8 is an aerial view of the Lamson Farm Road intersection.

**Figure 8: NH 13/Lamson Farm Road**



#### **Recommendations:**

- Realign Lamson Farm Road to meet NH 13 at a 90 degree angle;
- Ensure right of way is clear to allow unobstructed sight distance;
- Enforce speed limit on this segment of NH 13.

Any improvements to address sight distance deficiencies will need to be coordinated with NHDOT. NRPC recommends additional analysis be undertaken to develop a solution to the safety concerns identified during the public meetings. Future access management planning strategies should include sight distance requirements that meet or exceed AASHTO recommendations.

#### **Developing an Access Management Plan**

The access management strategies recommended above offer a start to developing a plan that meets the unique requirements of the Town. To be effective the access management strategies need to migrate from study documents and guiding plans to the Town Site Plan review regulations, Subdivision regulations and/or Zoning ordinances. NRPC recommends that the



Town of Mont Vernon formally develop an access management plan to address traffic impacts from future growth along the NH 13 corridor and work towards entering into an access management Memorandum of Understanding (MOU) with NHDOT.

The development of an access management plan is a requirement for entering into an access management MOU with the New Hampshire Department of Transportation. The MOU recently finalized by NH DOT is designed to improve coordination between site plan approvals and driveway access permits.

The MOU formally recognizes the mutual benefits of improving safety and maximizing capacity of state highways and recognizes the continued necessity to integrate transportation and land use planning.

The steps towards executing the MOU are straightforward. First, the Town and NHDOT must develop and adopt agreed upon procedures for the coordination between site plan approvals and driveway access permits. These procedures should include requirements for NHDOT to send driveway permit applications to a Town designated contact for review. In addition, a timeline and process for review is established. The Joint Responsibility section of the MOU will ensure driveway permits are not issued to a developer before the Planning Board has an opportunity to review the application. The next step is the development of an access management plan. The plan may take the form of a stand alone document or be incorporated into the local land use regulations such as Site Plan and Subdivision regulations or Zoning ordinances. The Town may define where the MOU is applicable, either Town wide or on specific state roads.

The Nashua Regional Planning Commission and NH DOT can provide technical assistance in the development of an access management plan. NRPC is uniquely positioned to assist its member communities with access management plan development and implementation through the iTRaC program. With a focus on integrating transportation, land use, and environmental planning, iTRaC is designed to help communities deal with the challenges of growth in a coordinated way that sustains community character. Access management is an ideal application for the iTRaC Program.

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