

NH 102 CORRIDOR UPDATE STUDY REPORT



January 6, 2015

A. Introduction

NH Route 102, known locally as Nashua Road, runs through the southern portion of the Town of Londonderry. It provides a critical east-west connection between the Nashua region to the west and the Seacoast region to the east, as well as to points north and south via I-93 Exit 4. NH 102, as a principal arterial, sees some of the highest traffic volumes in Londonderry and is also the location of much of the Town's commercial and retail development. Over the last decade, Londonderry has been among the fastest growing communities in NH and development on the NH 102 corridor has contributed to that growth. In the last few years alone, the Town has experienced new business development on the NH 102 corridor including a medical office facility, two retail pharmacies, a mixed commercial plaza and redevelopment of a service station. The location of these developments is shown in Map 1. Additionally, the Town has approved its first Planned Unit Development (PUD) master plan for the Woodmont Commons project which includes 1,400 residential units and over two million square feet of non-residential development directly accessible to the corridor. The 2013 Comprehensive Master Plan also charts a new course for the portion of the corridor in the vicinity of NH Route 128 through the establishment of a South Village Suburban Corridor Retrofit District. Finally, the Planning Board has recently approved a new 55-plus apartment community and an assisted living complex, while plans for a tire store and a gas station retrofit are being considered.

Along with this diverse and active commercial mix, the importance of NH 102 as an arterial link to the Town's population of 24,000 is apparent in that the corridor serves dual, competing purposes serving both as access to commercial properties and as a regional traffic facility requiring safe and efficient operations. The Town is continually seeking to balance the demands of both uses in a manner that preserves capacity, safety and efficiency and economic viability. The NH 102 corridor in the Town has been improved to provide additional capacity over time, particularly near the I-93 Exit 4 interchange. More improvements are likely required to accommodate anticipated growth. The purpose of this report is to document the methodology and to report on the findings to recommend a vision for the future of the NH 102 Corridor. This report will also suggest actions and improvements for the future that are consistent with that vision.

The Town recently completed a 2013 Master Plan to serve as a guide in the identified Activity Areas of development and redevelopment. The Towns of Derry and Londonderry, in association with NHDOT, are completing environmental studies associated with the improvement of the I-93 Corridor and a potential new I-93 Exit 4A interchange (east side only). Considering these studies and the numerous development projects impacting the NH 102 Corridor, the Town commissioned a study of the NH 102 corridor from the Derry town line westerly to the Mammoth Road intersection designed to:

1. Compile the results of previous studies by:
 - a. NHDOT for I-93 and for NH 102
 - b. Town of Londonderry, Master Plan 2013
 - c. Private traffic studies submitted for proposed and approved developments impacting the NH 102 corridor
2. Identify conflicts and consistencies in each of these studies and the associated recommendations for roadway improvements to NH 102 within the study limits.
3. Project likely growth in the corridor based on regional growth rates.
4. Develop a Vision Plan for the NH 102 Corridor, identifying the potential roadway

improvements necessary to achieve the desired results of serving local access and through arterial volumes all within the context of approved and/or anticipated development.

The study area comprises a 2.4 mile section of NH 102 starting from the Derry town line to the east, westerly to the intersection of Mammoth Road.

B. Compilation of Previous Results/2014 Existing Traffic Condition

An initial project meeting with Town staff was held to obtain a clear understanding of the proposed scope of work, the timetable for completion, and the deliverable product for the NH 102 Corridor Update Study. Following this meeting, SNHPC began a compilation and review of previous work completed in the study area. This work included a review of planning studies and traffic impact studies impacting the NH 102 corridor study area. The purpose of this compilation was to 1) Identify conflicts and consistencies in the studies and the associated recommendations for roadway improvements to NH 102 within the study limits and 2) develop a base condition estimate of existing traffic conditions and constraints as identified in previous studies. The reports reviewed during this portion of the study included:

1. Traffic Impact Assessment – Auto Auction of New England – 1995
2. SNHPC NH 102 Corridor Study – Upper Corridor Study – 1997
3. Final Environmental Impact Statement – Interstate 93 Improvements – Salem to Manchester – 2004
4. SNHPC NH 102 Corridor Study – Central Corridor Study – 2004
5. Traffic Impact Evaluation – Medical Facility – 2005
6. Traffic Impact and Access Study – Proposed Walgreens – 2005
7. Traffic Impact Assessment – Age-Restricted Residential Development – 2006
8. Traffic Impact and Access Study – Ravenna Investment Associates, LLC – 2006
9. Draft Environmental Impact Statement – I-93 Exit 4A Interchange Study – Derry-Londonderry – 2007
10. Woodmont Commons PUD Master Plan Traffic Impact Assessment – 2013
11. Traffic Assessment – Proposed Global Redevelopment – 2014
12. Impact Assessment Report – The Grand Estate at Londonderry – 2014

2014 Existing Traffic Condition

AM and PM peak hour turning movement counts were collected at NH 102 corridor study area intersections from the reports reviewed during this portion of the study. The details of each intersection turning movement count including peak hour, date of the count and the source of each count are summarized in Table 1 below.

Table 1 Turning-movement Count Dates and Sources

Count Number	Intersection with NH 102	AM Peak Hour		PM Peak Hour	
		Count Date	Source	Count Date	Source
1	Mammoth Rd	9/29/2010	SNHPC	9/30/2010	SNHPC
2	Mohawk Dr	10/21/2008	SNHPC	9/2/2004	Medical Facility
3	Meadow Ln	8/21/2014	SNHPC	8/21/2014	SNHPC
4	Buttrick RD/McAllister Dr	5/24/2005	Medical Facility	8/22/2005	Medical Facility
5	Winding Pond Rd	5/24/2005	Medical Facility	5/24/2005	Medical Facility
6	Orchard View Dr	8/21/2014	SNHPC	8/21/2014	SNHPC
7	Gilcreast Rd	8/4/2011	Woodmont Commons	8/4/2011	Woodmont Commons
8	Garden Lane/Hampton Dr	8/4/2011	Woodmont Commons	8/4/2011	Woodmont Commons
9	I-93 Exit 4 SB Ramps	9/1/2011	Woodmont Commons	9/1/2011	Woodmont Commons
10	I-93 Exit 4 NB Ramps	8/4/2011	Woodmont Commons	9/1/2011	Woodmont Commons
11	Londonderry RD/St Charles St	9/1/2011	Woodmont Commons	9/1/2011	Woodmont Commons

Each NH 102 intersection count used in the development of the 2014 Existing Traffic Condition was seasonally adjusted to represent weekday AM and PM peak month conditions. The seasonal adjustment factors used in the development of the 2014 Existing Traffic Condition and its source are summarized in Table 2.

Table 2 Seasonal Adjustment Factors

Number	Intersection with NH 102	AM Peak Hour		PM Peak hour	
		Count Date	Source	Count Date	Source
1	Mammoth Rd ¹	09/29/2010	0.96%	09/30/2010	2.75%
2	Mohawk Dr ¹	10/21/2008	6.41%	09/2/2004	2.75%
3	Meadow Ln ³	08/21/2014	8.93%	08/21/2014	0.85%
4	Buttrick RD/McAllister Dr ²	05/24/2005	4.10%	08/22/2005	1.01%
5	Winding Pond Rd ²	05/24/2005	4.10%	05/24/2005	2.40%
6	Orchard View Dr ³	08/21/2014	8.93%	08/21/2014	0.85%
7	Gilcreast Rd ¹	08/04/2011	3.98%	08/04/2011	2.05%
8	Garden Lane/Hampton Dr ¹	08/04/2011	3.98%	08/04/2011	2.05%
9	I-93 Exit 4 SB Ramps ¹	09/01/2011	0.96%	09/01/2011	2.75%
10	I-93 Exit 4 NB Ramps ¹	08/04/2011	0.91%	09/01/2011	2.75%
11	Londonderry RD/St Charles St ¹	09/01/2011	0.96%	09/01/2011	2.75%

Notes: 1. Seasonal adjustment factors were taken from The Woodmont Commons Planned Unit Development Master Plan Traffic Impact Assessment.

2. Seasonal adjustment factors were taken from Traffic Impact Evaluation and Compilation of Comments/Responses for Medical Facility, Londonderry, NH.

3. Seasonal adjustment factors were calculated based on 2013 New Hampshire Department of Transportation (NHDOT) permanent traffic count data.

The results of an evaluation of annual traffic growth factors were used to calculate growth factors for the development of the 2014 Existing Traffic Condition. The growth factors were calculated from data obtained from the SNHPC Regional Traffic Counting program. The calculated growth rates were used to increase corridor traffic volumes to 2014 for the 2014 Existing Traffic Condition. The data from the Regional Traffic Counting program used to develop the growth rates is shown in Table 3 below. The 2014 Existing Traffic Condition assumes that NH 102 volumes and the adjacent side streets remained constant from 2010 to 2014. Additionally, the 2014 Existing Traffic Condition also assumes that, for counts collected during and prior to 2008, intersection turning movements to/from side streets remained constant until 2014. To complete the 2014 Existing Traffic Condition, through traffic volumes on NH 102 were balanced based on the more recent traffic data at adjacent intersections. The 2014 Existing Traffic Condition is shown in Figure 1 (1-5) found at the end of this report.

Table 3 Annual Average Daily Traffic Volumes – NH 102

LOCATION	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
NH 102 NASHUA RD WEST OF NH 128 MAMMOTH RD			17000			18000			18000	
NH 128 MAMMOTH RD NORTH OF NH 102 NASHUA RD			9800			9300			9100	
NH 128 MAMMOTH RD SOUTH OF NH 102 NASHUA RD			13000			14000			10000	
NH 102 NASHUA RD EAST OF NH 128 MAMMOTH RD	23000			20000			22000			
BUTTRICK RD NORTH OF PEABODY ROW			5100			5500			4900	
NH 102 NASHUA RD WEST OF WINDING POND DR			23000			23000			22000	
GILCREAST RD SOUTH OF NH 102	8700			9500			9900			9800
GILCREAST RD NORTH OF NH 102			9800			10000			10000	
GARDEN LN 225 FT +/- NORTH OF NH 102								10000		
I-93 EXIT 4 NB-OFF RAMP TO NH 102			8600			8800			8700	
I-93 EXIT 4 NB-ON RAMP FROM NH 102			9100			9500			9200	
I-93 EXIT 4 SB-OFF RAMP TO NH 102			8400			9100			8700	
I-93 EXIT 4 SB-ON RAMP FROM EASTBOUND NH 102			4200			4500			4700	
I-93 EXIT 4 SB-ON RAMP FROM WESTBOUND NH 102			4500			4400			4500	
NH 102 NASHUA RD EAST OF I-93 UNDERPASS	30000			29000			29000			
LONDONDERRY RD NORTH OF REO LN OVER BROOK	3900			3600			3200			3500
NH 102 NASHUA RD WEST OF I-93 UNDERPASS		28000			27000			31000		

2034 Future Traffic Condition

NH 102 study area corridor intersection turning movement counts for a 2034 Future Traffic Condition are presented in Figure 2 (1-5). The Woodmont Commons Planned Unit Development Master Plan Traffic Impact Assessment included projected 2032 traffic volumes for the intersections of: 1) Londonderry Road/St. Charles Street; 2) NH 102/I-93 Exit 4 NB Ramps; 3) NH 102/I-93 Exit 4 SB Ramps; 4) NH 102/Garden Lane/Hampton Drive and 5) NH 102/Gilcreast Road. These intersection volumes were used as the basis for the development of the 2034 Future Traffic Condition for the study area.

The Woodmont Commons Planned Unit Development Master Plan Traffic Impact Assessment assumes a one percent traffic growth rate compounded annually for volumes on NH 102 and a growth rate of one half of one percent (0.50%) compounded annually along for roadways intersecting NH 102. These assumptions were used as the basis for the development of 2034 turning movement count volumes at the intersections of: 1) NH 102/Orchard View Drive; 2) NH 102/Winding Pond Road; 3) NH 102/Buttrick Road/McAllister Drive; 4) NH 102/Meadow Lane; 5) NH 102/Mohawk Drive and 6) NH 102/Mammoth Road. The 2034 Future Traffic Condition AM and PM peak hour intersection turning movement projections were developed by applying these growth rates over twenty years to the 2014 existing traffic volumes at these intersections and by adding traffic generated by: 1) the planned Grand Estate 55-Plus residential development on Button Drive and 2) the Global gas station/convenience store redevelopment project on Hampton Drive.

Additionally, the Statewide travel demand model and the SNHPC regional model both forecast a decrease in traffic on NH 102 east of Exit 4, including volumes to/from the I-93 Exit 4 ramps. This decrease in traffic is assumed to be the result of the impacts of the I-93 Exit 4A project. More specifically, a -0.50% annual growth rate is assumed for movements to/from the I-93 Exit 4 ramps over a twenty year period. To develop the 2034 Future Traffic Condition for this portion of the NH 102 study area corridor, this growth rate was applied to 2014 Existing Traffic Condition to calculate 2034 intersection turning movement volumes at the NH 102 NB and SB Exit 4 ramp intersections and at the NH 102/Londonderry Road/St. Charles Street intersection.

Evaluation of Studies Completed for the NH 102 Corridor

The scope for the NH 102 Corridor Update Study included the identification of conflicts and consistencies for 1) the various studies focusing on the NH 102 corridor and 2) the associated recommendations for roadway improvements to NH 102 within the study limits. In order to address this requirement, the studies listed in Section B of this report were reviewed in an effort to identify conflicts and consistencies. The studies reviewed in this portion of the NH 102 Corridor Update included reports such as environmental impact statements for regionally significant highway projects (i.e. Interstate 93 Improvements – Salem to Manchester, Draft Environmental Impact Statement, I-93 Exit 4A Interchange Study – Derry-Londonderry) as well as traffic impact studies for planned/proposed developments (i.e. Woodmont Commons PUD Master Plan Traffic Impact Assessment). The studies were reviewed for conflicts and consistencies in features such as 1) NH 102 study area traffic volumes; 2) assumptions used in the development of study area traffic volumes for the NH 102 study corridor; 3) results of capacity analyses for intersections on the NH 102 study area corridor and 4) recommendations for proposed improvements on the NH 102 study area corridor. The results of this evaluation are summarized in Exhibit 1 below.

Exhibit 1
Data Evaluation/Review
of Available Traffic Studies

NH 102 - I-93 bridge traffic volumes (two-way peak hour)

Source	Horizon Year	AM	PM	Comments	Evaluation
NH 102 Upper Corridor Study - Sept 1997	2015	N/A	3243	growth rate of 1.3% per year plus additional development growth	Projections from Exit 4A DEIS and I-93 FEIS comparatively lower due to assumed model growth rates
I-93 EIS - April 2004	2020	2525	3365	growth assumptions from I-93 sub area model developed from Statewide model - compared to SNHPC model	
Exit 4A DEIS - July 2007	2025	1956	2961	SNHPC model utilized - assumes little growth on NH 102 east of I-93 from 2000 to 2025	
Woodmont Commons Master Plan TIA - September 2013	2032	3868	4012	2011/2012 counts - growth assumes 1% per year on NH 102 based on observed growth rate of 0.35% per year observed from SNHPC count stations in the study area - includes I-93 Exit 4A and Orchard Drive connection	

NH 102 - east of Mammoth Road - traffic volumes (two-way peak hour)

Source	Horizon Year	AM	PM	Comments	Evaluation
SNHPC Counting Program	2013	1508	1981		NH 102 Central Corridor Study volumes comparatively higher due to 2% annual growth rate
Walgreens TIAS - 2005	2015	N/A	2359	growth rate of 1.0% per year growth	
Londonderry Medical Facility - 2005	2016	1857	2429	growth rate of 1.0% per year growth plus additional developments	
NH 102 Central Corridor Study - April 2004	2020	N/A	3927	growth rate of 2.0% per year growth	

NH 102 - West of I-93 - traffic volumes (two-way peak hour)

Source	Horizon Year	AM	PM	Comments	Evaluation
SNHPC Counting Program	2013	2467	2946		Corridor volumes consistent
Woodmont Commons Master Plan TIA - September 2013	2032	3666	4911	2011/2012 counts - growth assumes 1% per year on NH 102 based on observed growth rate of 0.35% per year observed from SNHPC count stations in the study area - includes I-93 Exit 4A and Orchard Drive connection	

NH 102 - East of I-93 - traffic volumes (two-way peak hour)

Source	Horizon Year	AM	PM	Comments	Evaluation
SNHPC Counting Program	2013	1650	1944		Corridor volumes consistent
Woodmont Commons Master Plan TIA - September 2013	2032	2271	3298	2011/2012 counts - growth assumes 1% per year on NH 102 based on observed growth rate of 0.35% per year observed from SNHPC count stations in the study area - includes I-93 Exit 4A and Orchard Drive connection	

NH 102 - West of Winding Pond Road - traffic volumes (two-way peak hour)

Source	Horizon Year	AM	PM	Comments	Evaluation
SNHPC Counting Program	2013	1650	1944		Corridor volumes consistent
Londonderry Medical Facility - 2005	2016	1857	2429	growth rate of 1.0% per year growth plus additional developments	

NH 102/Mammoth Road Intersection (Operations)

Source	Horizon Year		Comments	Evaluation
Walgreens TIAS - 2005	2015		NH 102/Mammoth Road intersection - 2015 Build PM peak - LOS D -intersection at capacity	Capacity analyses consistent
Londonderry Medical Facility - 2005	2016		NH 102/Mammoth Road intersection - 2016 Build PM peak - LOS E -intersection at capacity	
SNHPC Post-Development Study	2010		NH 102/Mammoth Road intersection - 2010 Build PM peak - LOS C	

NH 102/I-93 SB Ramps Intersection (Operations)

Source	Horizon Year		Comments	Evaluation
Woodmont Commons Master Plan TIA - September 2013	2032		Build PM peak - LOS C - Build AM Peak - LOS B	Capacity analyses consistent
I-93 EIS - April 2004	2020		Build PM peak - LOS B - Build AM Peak - LOS B	

NH 102/I-93 NB Ramps Intersection (Operations)

Source	Horizon Year		Comments	Evaluation
Woodmont Commons Master Plan TIA - September 2013	2032		Build PM peak - LOS C - Build AM Peak - LOS D	Capacity analyses consistent
I-93 EIS - April 2004	2020		Build PM peak - LOS B - Build AM Peak - LOS C	

NH 102/Gilcreast Road Intersection (Operations)

Source	Horizon Year		Comments	Evaluation
Woodmont Commons Master Plan TIA - September 2013	2032		Build PM peak - LOS D - Build AM Peak - LOS C	Capacity analyses consistent
I-93 EIS - April 2004	2020		Build PM peak - LOS D - Build AM Peak - LOS C	

NH 102/Hampton Drive Intersection (Operations)

Source	Horizon Year		Comments	Evaluation
Woodmont Commons Master Plan TIA - September 2013	2032		Build PM peak - LOS D - Build AM Peak - LOS C	Capacity analyses consistent
I-93 EIS - April 2004	2020		Build PM peak - LOS C - Build AM Peak - LOS B	

NH 102/Londonderry Road/St. Charles Street Intersection (Operations)

Source	Horizon Year		Comments	Evaluation
SNHPC NH 102 Corridor Study	2009		recommended for signalization	recommendation consistent
Auto Auction of New England TIA - 1995	2020		recommended for signalization	
Woodmont Commons Master Plan TIA - September 2013	2032		recommended for signalization	

The data included in Exhibit 1 indicates a fairly consistent representation of NH 102 corridor traffic volumes from the various studies reviewed. Some differences are noted in the comparison of two-way traffic volumes on NH 102 over I-93 in the I-93 FEIS, the I-93 Exit 4A DEIS, the Woodmont Commons Traffic Impact Assessment and the SNHPC NH 102 Upper Corridor Study. It should be noted that traffic projections in the I-93 FEIS and the I-93 Exit 4A DEIS were based on very low estimates of growth while the Woodmont Commons Traffic Impact Assessment and the SNHPC NH 102 Upper Corridor Study both utilized growth rates of one percent or higher for traffic on NH 102. The 2020 traffic projections on NH 102 east of Mammoth Road in the 2004 SNHPC Central Corridor Study appear to be significantly higher as compared with similar traffic volumes from other studies. This is likely as result of the two percent annual growth rate used to develop these projections.

Summary of Major Planned Improvements on the NH 102 Corridor

The studies evaluated in the previous section include planned improvements for various locations on the NH 102 corridor. The Interstate (I-93) Salem to Manchester Project to reconstruct a 19.8 mile section of Interstate 93 between Manchester and Salem includes widening the mainline highway and improvements to the existing Exit 4 interchanges. At this location, the project involves improvements to the bridge carrying I-93 over NH 102 and improvements to the NH 102 intersections with the I-93 northbound and southbound ramps.

The site of the proposed Woodmont Commons Planned Unit Development (PUD) mixed-use development is located on both sides of I-93 in an area bounded by NH 102 to the south, Gilcreast Road and Hardy Road to the west, the proposed I-93 Exit 4A to the north and Folsom Road and Ash Street to the east. The project consists of the construction of approximately 350 residential units, 350,000 SF of retail space, 400,000 SF of office space, a 200-room hotel, and 250,000 SF of hospital space to the east of I-93. The project also consists of approximately 1,080 residential units, 532,500 SF of retail space, 300,000 SF of office space, and a 350-room hotel to the west of I-93. The Master Plan Traffic Assessment for the project completed in 2013 concluded that the vehicle trips generated by the proposed development would result in the need for geometric improvements at the NH 102 intersections with Londonderry Road east of I-93 and at the NH 102 intersections with Garden Lane/Hampton Drive and Gilcreast Road west of I-93.

Synthesis of Findings from Data Evaluation/Review

- There is relative consistency between all studies regarding growth projections and assumptions on the NH 102 corridor.
- A review of the operations for the NH 102/Mammoth Road intersection located at the west end of the study area indicates that there appears to be general consensus from three studies that the operations of the intersection are approaching capacity.
- The projected operating conditions presented in the Woodmont Commons Traffic impact Assessment and the I-93 FEIS appear to be consistent for the following intersections: the NH 102 intersections with the I-93 Northbound and Southbound ramps, NH 102/Gilcreast Road, NH 102/Hampton Drive/Garden Lane.
 - Improvements designed to mitigate the impact of trips generated by the Woodmont Commons PUD are identified in the Traffic Impact Assessment. They include: 1) NB/SB/EB left turn lanes at the NH 102/Gilcreast Road intersection; 2) SB left turn lane, WB right turn lane and EB receiving lane at the NH 102/Hampton Drive/Garden Lane intersection;
- The NH 102/Londonderry Road/St. Charles Street intersection has been identified as meeting warrants for signalization as early as 1995.
 - Additional improvements at this intersection are identified in the Woodmont Commons Traffic Impact Assessment as a SB right turn lane and WB and EB left turn lanes

As shown in Figures 1 and 2 presented earlier in this report, substantial growth is anticipated to occur on the NH 102 corridor between 2014 and 2034. For example, the growth in traffic on NH 102 east of Mammoth Road during this period is approximately 18 percent. On NH 102 west of Winding Pond Road, this figure is nearly twenty percent. Additionally, there will likely be potential for additional growth from planned developments in the area. As development continues throughout Londonderry, the feeder streets that intersect NH 102 will see increased use and eventually, geometric improvements will be required to mitigate the impact of this traffic.

C. NH 102 Corridor Vision

One of the main objectives of the NH 102 Corridor Update Study was the development of a Vision Plan for the NH 102 Corridor, including the identification of potential roadway improvements necessary to achieve the desired results of serving local access and through traffic.

Corridor Sections

Based on a review of land use conditions and future demands, it is reasonable to view the Corridor as consisting of three sections representative of different character and land uses, as follows:

Commercial Zone: Derry Town line to Winding Pond Road

The Commercial Zone of the corridor, consisting of the section between the Derry town line and Winding Pond Road, can be characterized by retail and auto-oriented development. There are two distinct sections of this zone east of and west of I-93. The eastern portion consists of small buildings and lots, generally less than one acre in size, located in an area where the NH 102 corridor is contained in a 75 foot right of way cross section. In this area, there are multiple side street connections to NH 102 within a very short distance and a distinct village feeling. To the west, the zone includes more intensive commercial activities on larger lots as well as large retail establishments consisting of three strip plazas including supermarkets, an office complex, a car dealership as well as smaller auto-oriented businesses such as gas stations and car washes. The NH 102 corridor is contained in a 150 foot right of way cross section in this area. In this portion of the Commercial zone, NH 102 is at least four lanes wide with multiple turning lanes at Garden Lane and Hampton Drive, creating a six lane cross section serving the adjacent uses. In this area, Gilcreast Road is the largest intersecting cross street which introduces traffic from neighborhoods both north and south of NH 102. Gilcreast Road, combined with its connection to Pillsbury Road, is one of the most important intersections proposed to serve future growth.

The character of the NH 102 Commercial Zone has already been established. The 2013 average annual daily traffic volume on NH 102 in the vicinity of Interstate 93 (I-93) is 29,000 vehicles per day (2011 data). This portion of the corridor currently experiences substantial traffic congestion during peak hours. Much of this congestion results from the combination of significant through traffic volumes and local traffic accessing properties on the corridor. Heavy through traffic volumes combined with local traffic utilizing numerous side streets and uncontrolled driveways serves to restrict the normal flow of traffic. This situation causes traffic to stop and start and creates delays and driver frustration. These restrictions to the normal flow of traffic also have a significant impact on travel safety. Roadway improvements identified in Section B of this report should help to address those identified traffic issues at the study area intersections.

Corridor Vision:

Because of the importance of the interstate access and State investment in the I-93 corridor and NH 102 ramp system, it is paramount that the access to the interstate corridor be maintained through geometric improvements and improved access management. The operations at the first major intersection on either side of the ramps, (i.e. Londonderry Road/St. Charles Street to on the east and Garden Lane on the west), must be maintained to prevent queuing from affecting operations at the NH 102/I-93 ramp intersections. This is particularly important at Garden Lane which also serves as the access to the Exit 4 Park and Ride facility and bus station. In the future, Garden Lane will also serve as a gateway to the

Woodmont Commons PUD via a connection to Pillsbury Road.

Transitional Zone: Winding Pond Road to Meadow Drive

This zone is located to the west of the Commercial Zone, encompassing the section of the corridor from Winding Pond Road to Meadow Drive. This section of the corridor is characterized by less intensive development, where this section of NH 102 serves as access for both commercial development on the north side as well as residential development on both north and south sides of the corridor. This less intensive level of development has allowed access control for properties north and south of NH 102 to be consolidated at the principal intersections and driveways on this portion of the corridor. Travelling through this zone from east to west, the multi-lane cross section found in the Commercial Zone transitions down to one travel lane in each direction.

Corridor Vision:

This section already benefits from the use of driveway consolidation and other access management techniques. This portion of the corridor must be allowed to accommodate additional development and growth and still function as an effective route for through travel. In order to accommodate this, the use of access management techniques must continue to be utilized for this section to continue to serve its mixed use access as well as providing for through traffic service.

South Village Suburban Corridor Retrofit District: Meadow Drive westerly to Mammoth Road.

This zone includes the portion of the study area corridor between Meadow Drive and Mammoth Road to the west. It includes the highest diversity of uses on the corridor, including retail, restaurant, office, medical and transportation/storage. Additionally, a medical/office facility has been approved on the final vacant lot on this portion of the corridor. The vision for the South Village Suburban Corridor Retrofit District as depicted in the Master Plan calls for improving the appearance of NH 102 in this area by relocating buildings closer to the road when new development or redevelopment affords opportunities to improve or rebuild.

The South Village Suburban Corridor Retrofit District is identified as being targeted for redevelopment to serve as a gateway to the town where a sense of place will be established in an area centered on the NH 102/Mammoth Road intersection. The focus in this area will be on the development of a strategically placed interconnected street network encouraging pedestrian and transit modes and planning for new recreational and residential land uses. It also calls for streetscape improvements to NH 102 and building out new projects in an interconnected street network that promotes walkability and complete streets and encourages higher value construction.

Corridor Vision:

The town should spend additional efforts studying this portion of the corridor. There appears to be potential for development and growth in this area, particularly in the vicinity of the intersection of NH 102 and NH 128 (Mammoth Road). With this potential as well as the focus on this portion of the corridor for serving through traffic to the west and Nashua, there is potential for conflict with other corridor priorities. The demand for Village and Municipal Center Development areas as identified in the Town's 2013 Master Plan, with its focus on pedestrian and bike friendly intersection improvements, may be in conflict with potential development and traffic growth rates given the available right of way on this portion of the corridor.

D. Recommendations

Access Management

The importance of the implementation of access management in the Commercial and Transitional Zones of the NH 102 has already been outlined in the previous section of this report. Additionally, these short-term actions should also be considered throughout the study area. This pro-active approach is designed to reduce the possibility that issues of traffic efficiency and safety currently found in the Commercial Zone of do not develop in the Transitional Zone and South Village Suburban Corridor Retrofit District. Short-term actions designed to address this situation include:

- Intersection improvements such as the addition of turning lanes and signalization based on the findings of studies already completed for the corridor
- Other access management improvements such as:
 - ✓ elimination of unnecessary curb cuts
 - ✓ consolidation of curb cuts
 - ✓ establishment of internal connections between adjacent properties on the NH 102 corridor

Access management improvements (i.e. elimination of the unnecessary curb cuts, consolidation of curb cuts, and establishing internal connections between adjacent properties on the corridor) should be pursued by the town following the completion of a detailed Access Management Plan for the corridor. The implementation of these improvements will involve modifications to means of access to properties on the corridor. This will involve the cooperation of property owners along the corridor and as a result, it is unlikely that these improvements can be implemented immediately. The recommendations of a detailed Access Management Plan would be best utilized by the town as a tool for the review of future land use proposals along the corridor, and the elements of the Plan could be put in place as opportunities arise through working with property owners during the planning process.

Future planning in the Commercial Zone of the NH 102 corridor also involves implementation of a long-term strategy to address the need for improvements. There is currently a project included in the FY 2013 – FY 2040 Regional Transportation Plan for SNHPC fiscally constrained project list involving widening the central portion of the NH 102 corridor. This project was the fifth highest ranked project of the seventy-six projects submitted to NHDOT for consideration in the FY 2015 – FY 2024 Ten Year Highway Plan. The Town should coordinate with NHDOT to pursue funding for the scoping and completion of this project. These actions are important for the development of a long-term plan to address this portion of the NH 102 corridor.

Intersection Improvements

Figure 3 identifies a Vision Plan including the general location and nature of the short-term actions to be pursued on the NH 102 study area corridor. The NH 102 intersections with Londonderry Road, the I-93 NB and SB ramps, Orchard Drive and Gilcrest Road have been identified for improvements in the Woodmont Commons PUD Master Plan Traffic Impact Assessment and the Interstate 93 Improvements – Salem to

Manchester FEIS. This NH 102 Corridor Update Study also identifies potential additional improvements required to mitigate the 2034 Future Traffic Condition scenario. These additional improvements were based not on detailed capacity analyses but rather through a qualitative review of the 2034 Future Traffic Condition scenario shown in Figure 2. The potential need for additional intersection improvements at the following locations have been identified through this process:

1. NH 102/Londonderry Road/St. Charles St. – SB right turn lane and EB left turn lane
2. NH 102/Action Blvd. – signalization
3. NH 102/I-93 NB ramps – NB left turn lane and EB left turn lane
4. NH 201/I-93 SB ramps – SB right turn lane
5. NH 102/Garden Lane (Orchard Drive) – SB left turn lane, WB right turn lane and EB left turn lane
6. NH 102/Gilcreast Road – EB left turn lane, SB left turn lane, SB right turn lane and NB right turn lane
7. NH 102/Orchard View Drive (Apple Tree Mall) – SB left turn lane and WB right turn lane
8. NH 102/Winding Pond Road – EB left turn lane and SB left turn lane
9. NH 102/Mammoth Road – WB left turn lane

The additional improvements have also been compared with the available right of way at these locations. It should be noted that, based on a review of information received from NHDOT, approximately 150 feet of right of way is available on the NH 102 corridor approximately from Mammoth Road to I-93. East of I-93, available right of way is reduced from approximately 150 feet to approximately 75 feet.

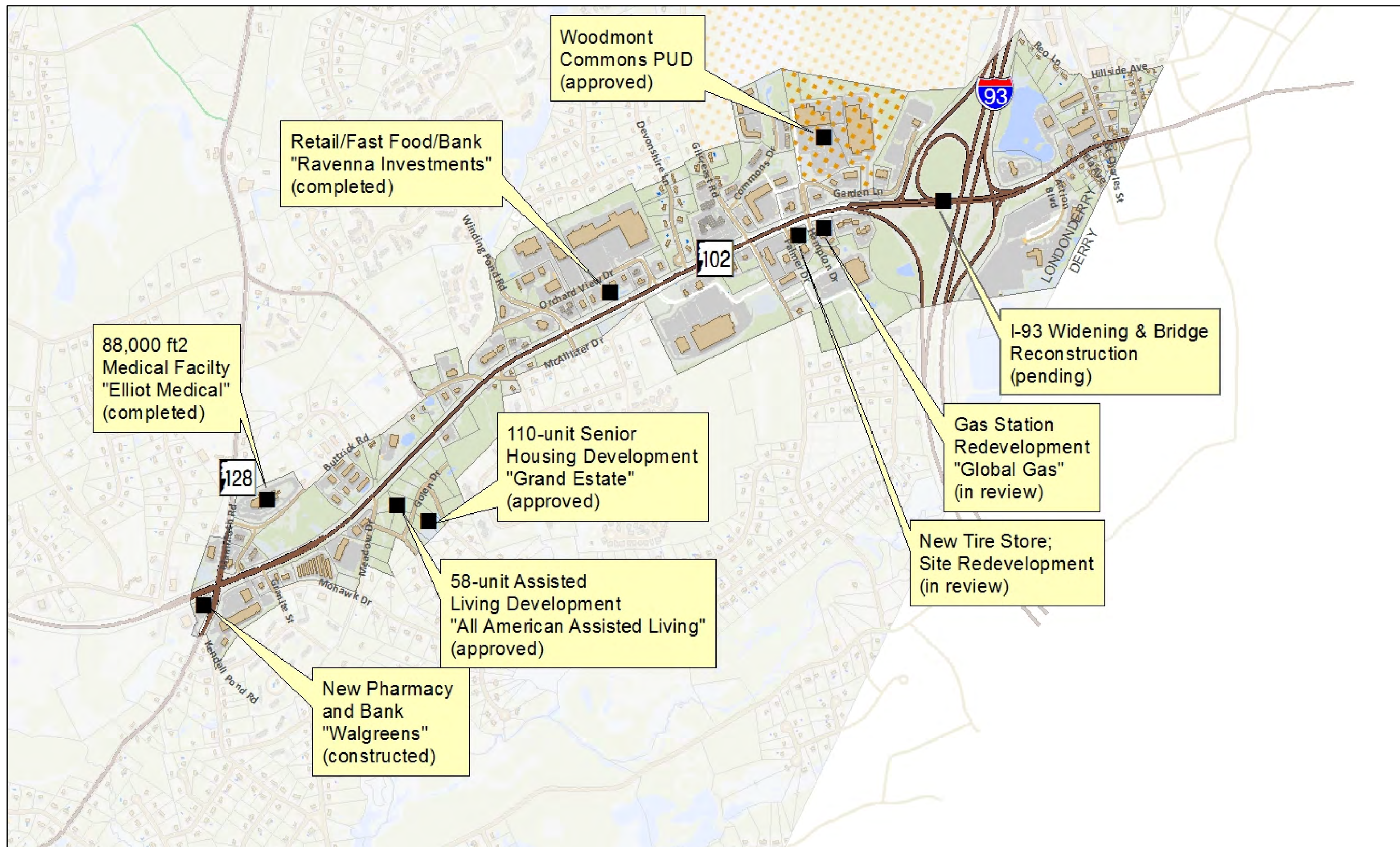
Despite this reduction in available right of way, it appears that sufficient right of way is available to accommodate the NH 102 geometric improvements at the Londonderry Road, Orchard Drive and Gilcreast Road intersections in the Woodmont Commons PUD Master Plan Traffic Impact Assessment.

However, it does appear that additional right of way may be required in order to construct the proposed geometric improvements on the Londonderry Road, Orchard Drive and Gilcreast Road side streets. Additionally, it appears that additional right of way may be required to accommodate geometric improvements identified on the Orchard View Drive approach of the NH 102/Orchard View Drive intersection. A summary of right of way needs for each section follows:

Commercial Zone: ROW may be needed to insure the proper intersection operations at the intersections on either side of the interstate ramp. The right of way for NH Route 102 appears adequate to address the future vision.

Transitional Zone: ROW may be needed on the Orchard View Drive approach to insure the proper intersection operations at this location. The right of way for NH Route 102 appears adequate to address the future vision.

South Village Suburban Corridor Retrofit District: ROW may be needed on the local approaches to address vehicular, pedestrian and bike needs. The right of way for NH Route 102 appears adequate to address the future vision.







NH 102 Corridor Development

Figure 1-1

2014 Existing Conditions Weekday Morning and Weekday Evening Peak Hour Traffic Volumes

 Signalized Intersection

Project Area

-  Commercial Zone
-  Transitional Zone
-  South Village Suburban Corridor Retrofit District
-  Parcels

0 0.5 1 2 Miles

Data Sources:
Granit Digital Data (1:24,000)
NH Department of Transportation
Town of Londonderry
SNHPC

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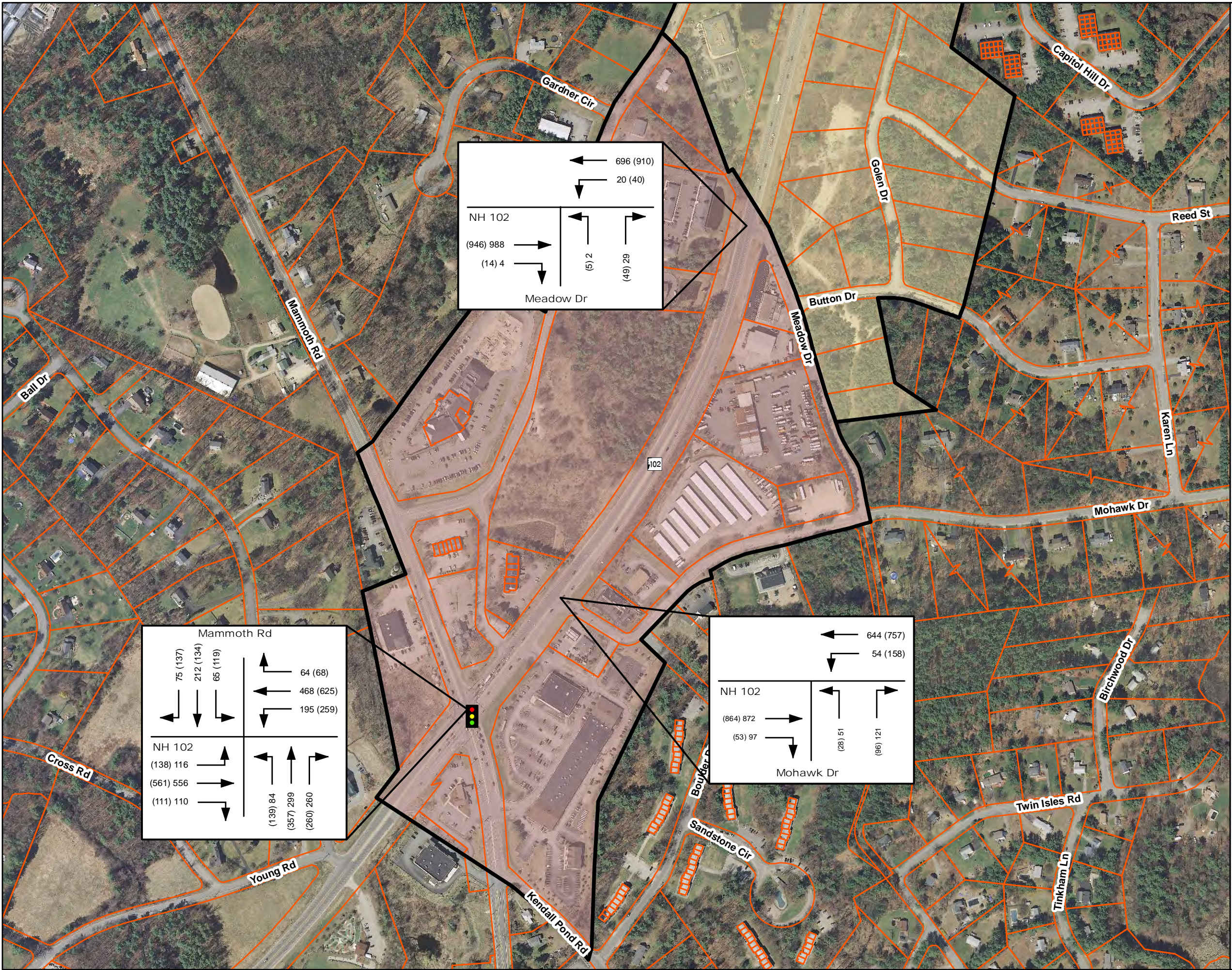
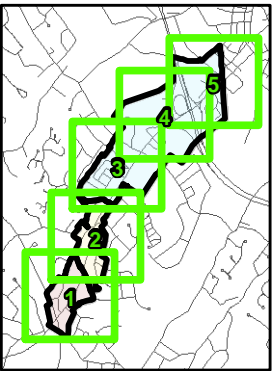







Figure 1-2

2014 Existing Conditions Weekday Morning and Weekday Evening Peak Hour Traffic Volumes

 Signalized Intersection

Project Area

-  Commercial Zone
-  Transitional Zone
-  South Village Suburban Corridor Retrofit District
-  Parcels

0 0.5 1 2
Miles

Data Sources:
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Town of Londonderry
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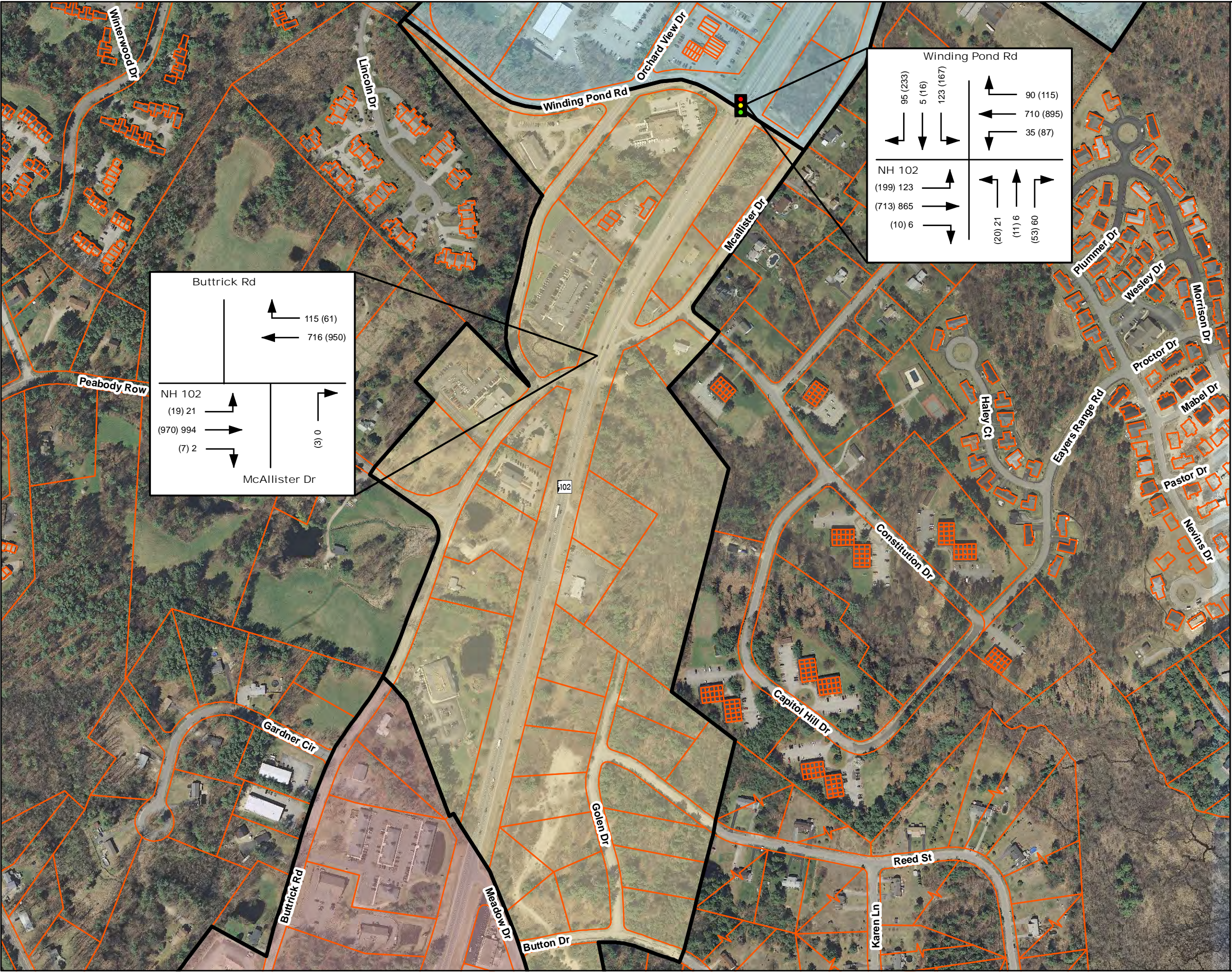
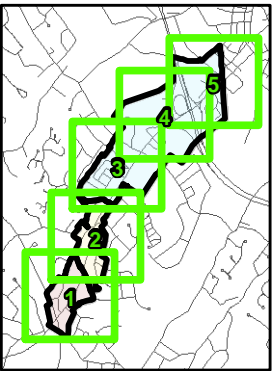


Figure 1-3

2014 Existing Conditions Weekday Morning and Weekday Evening Peak Hour Traffic Volumes

 Signalized Intersection

Project Area

 Commercial Zone

 Transitional Zone

 South Village Suburban
Corridor Retrofit
District

 Parcels

0 0.5 1 2
Miles

Data Sources:
Granit Digital Data (1:24,000)
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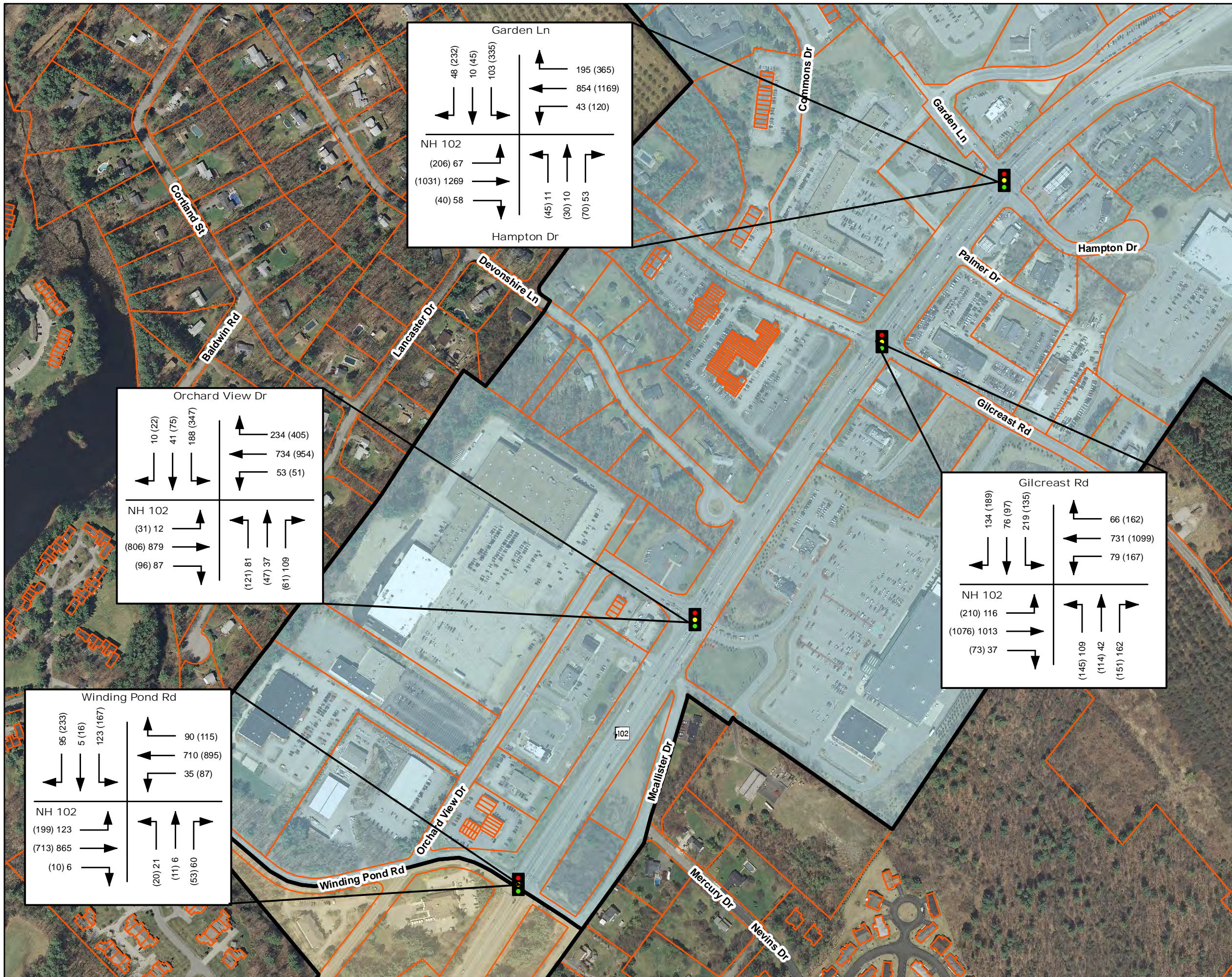
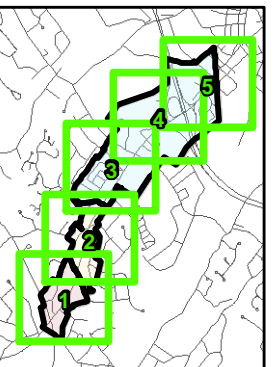




Figure 1-4

**2014 Existing Conditions
Weekday Morning and
Weekday Evening
Peak Hour Traffic Volumes**

 Signalized Intersection

Project Area

 Commercial Zone

 Transitional Zone

 South Village Suburban
Corridor Retrofit
District

 Parcels

0 0.5 1 2
Miles

Data Sources:
Granit Digital Data (1:24,000)
NH Department of Transportation
Town of Londonderry
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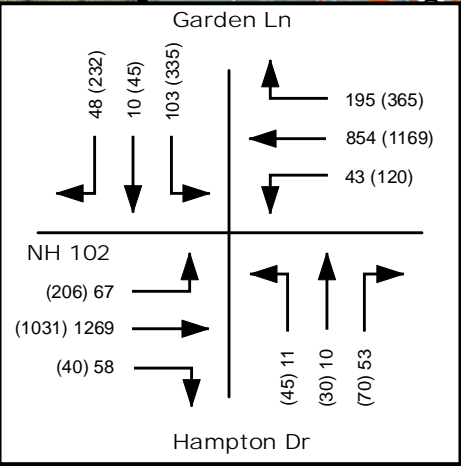
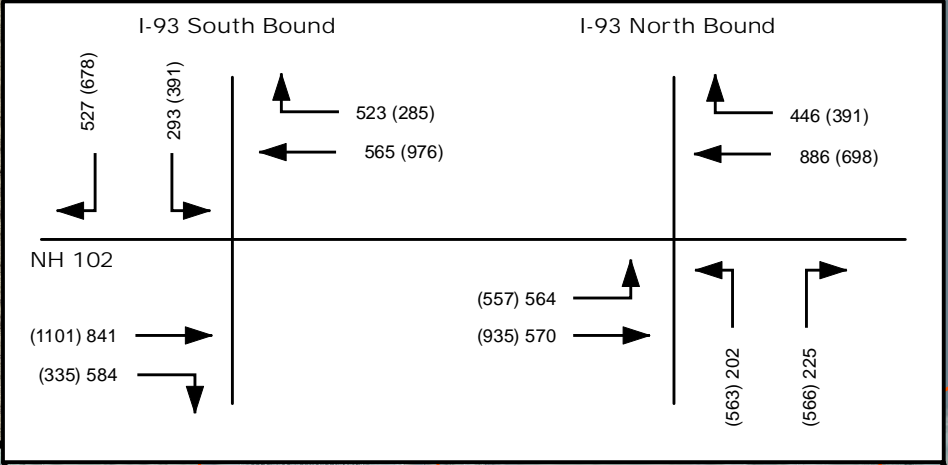
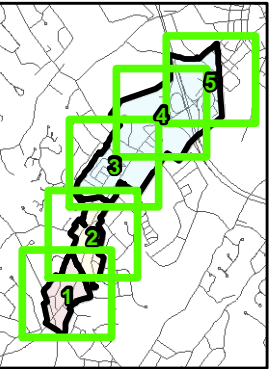



Figure 1-5


**2014 Existing Conditions
Weekday Morning and
Weekday Evening
Peak Hour Traffic Volumes**

 Signalized Intersection

Project Area

 Commercial Zone

 Transitional Zone

South Village Suburban
 Corridor Retrofit
District

 Parcels

0 0.5 1 2
Miles

Data Sources:
Granit Digital Data (1:24,000)
NH Department of Transportation
Town of Londonderry
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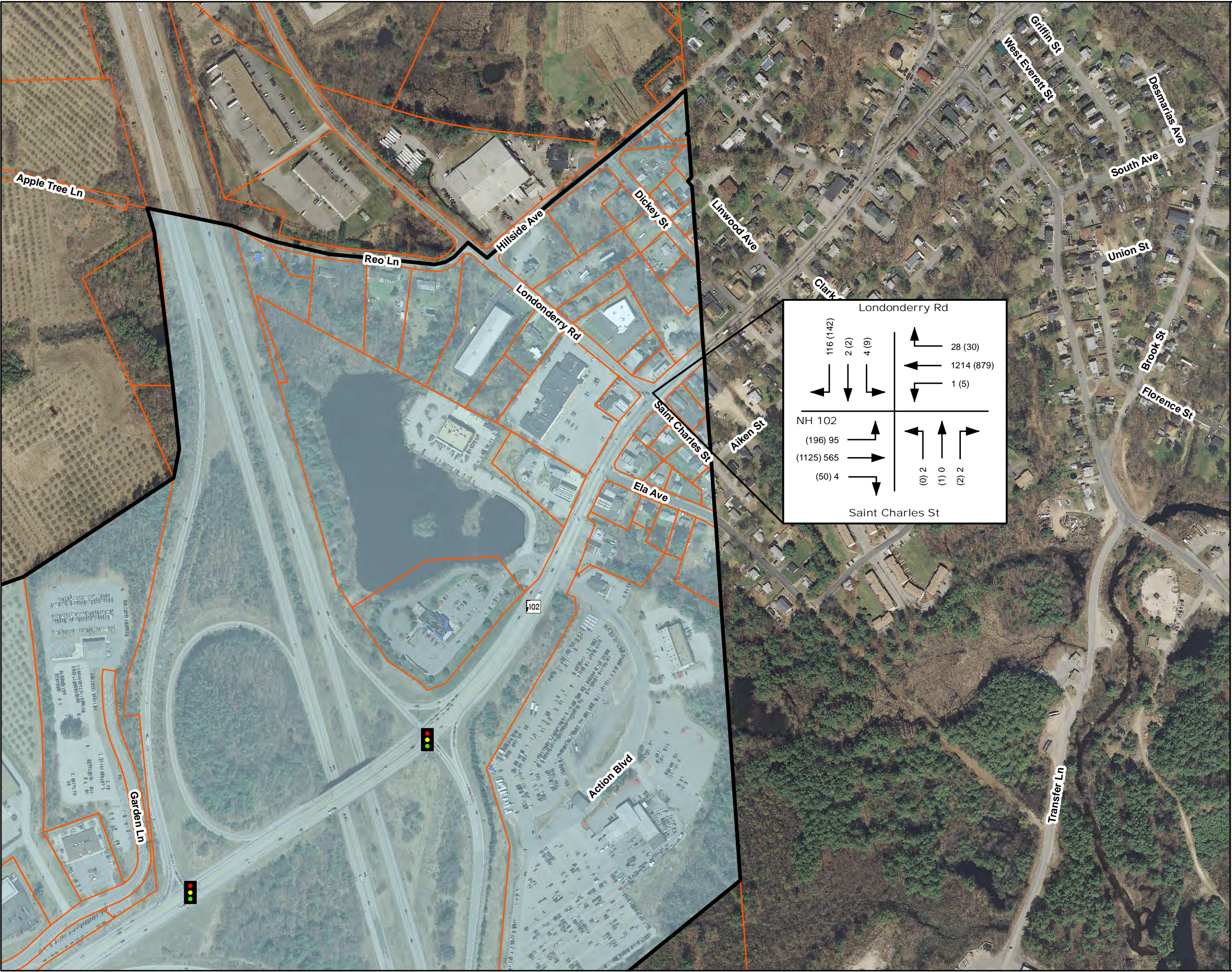






Figure 2-1

2034 Future Conditions Weekday Morning and Weekday Evening Peak Hour Traffic Volumes

 Signalized Intersection

Project Area

-  Commercial Zone
-  Transitional Zone
-  South Village Suburban Corridor Retrofit District
-  Parcels

0 0.5 1 2 Miles

Data Sources:
Granit Digital Data (1:24,000)
NH Department of Transportation
Town of Londonderry
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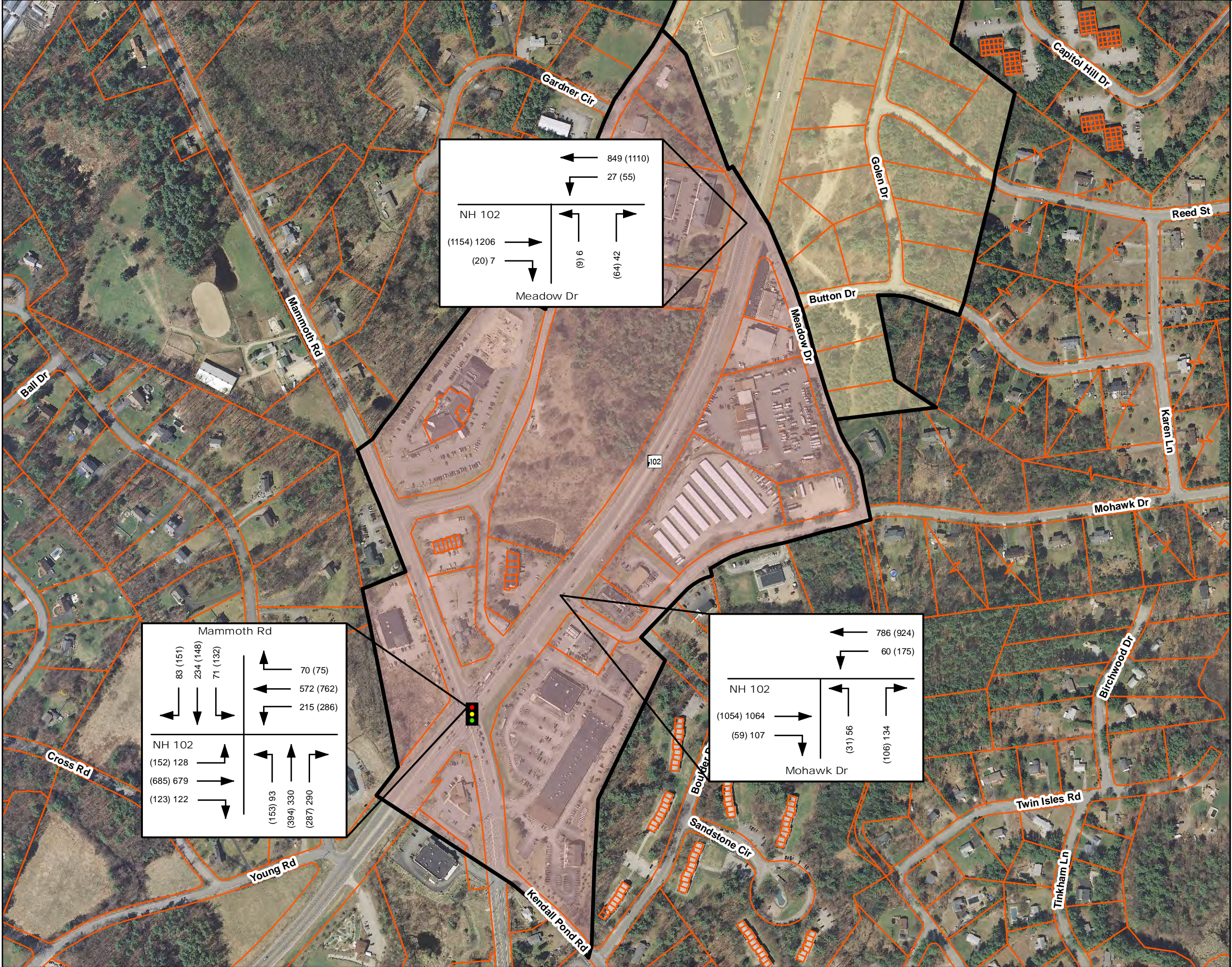
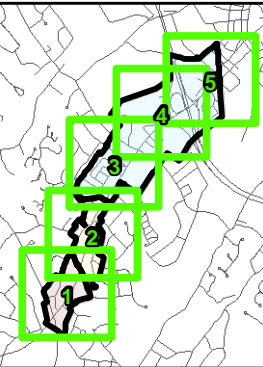







Figure 2-2

**2034 Future Conditions
Weekday Morning and
Weekday Evening
Peak Hour Traffic Volumes**

 Signalized Intersection

Project Area

-  Commercial Zone
-  Transitional Zone
-  South Village Suburban Corridor Retrofit District
-  Parcels

0 0.5 1 2
Miles

Data Sources:
Granit Digital Data (1:24,000)
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Town of Londonderry
SNHPC

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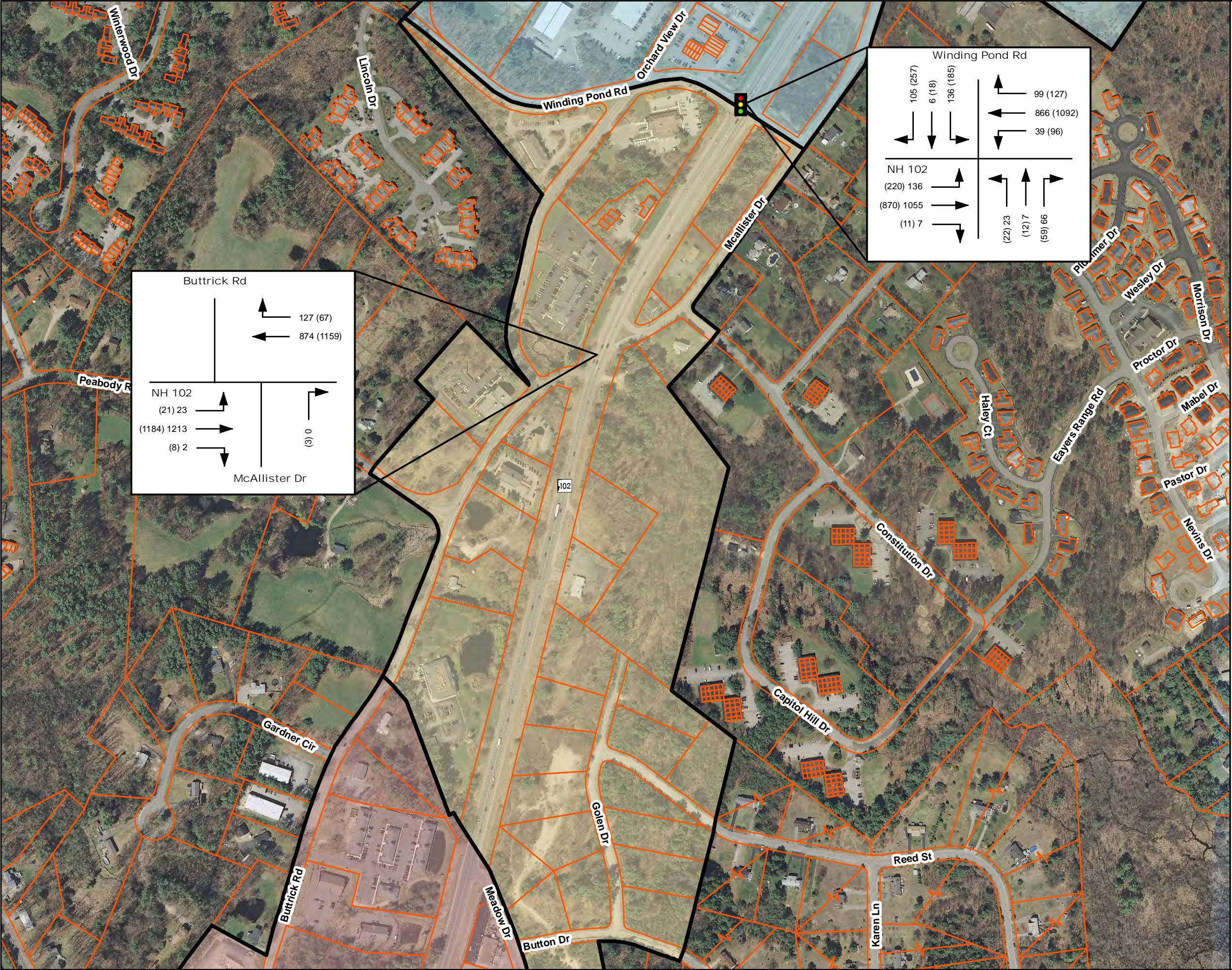


Figure 2-3

**2034 Future Conditions
Weekday Morning and
Weekday Evening
Peak Hour Traffic Volumes**

 Signalized Intersection

Project Area

 Commercial Zone

 Transitional Zone

 South Village Suburban District

 Parcels



Data Sources:
Granit Digital Data (1:24,000)
NH Department of Transportation
Town of Londonderry
SNHPC

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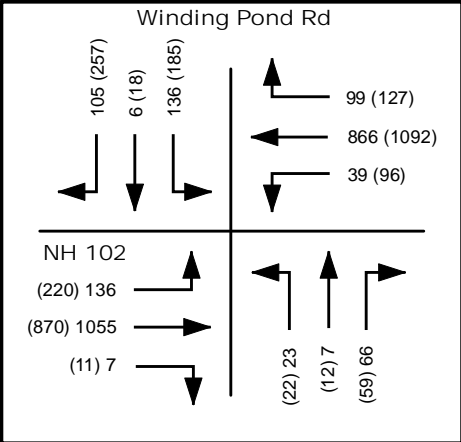
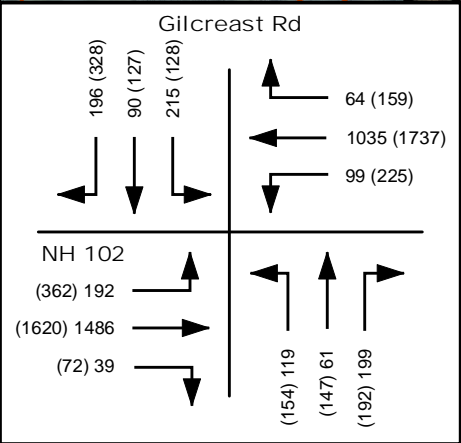
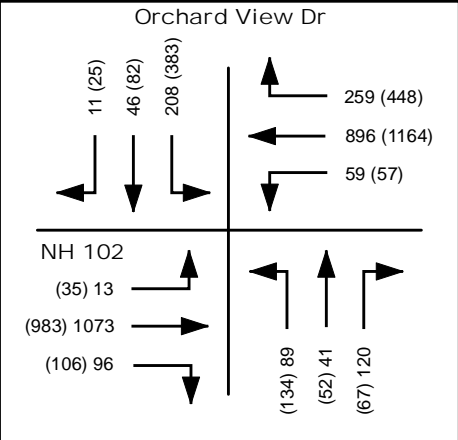
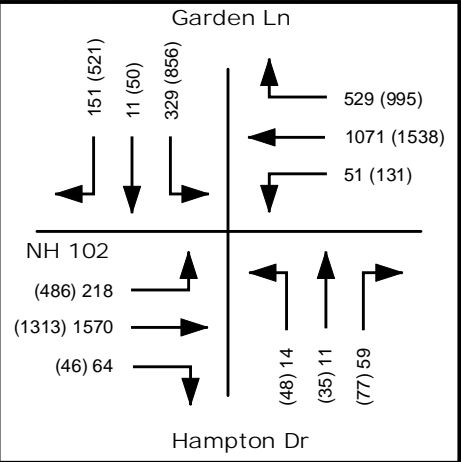
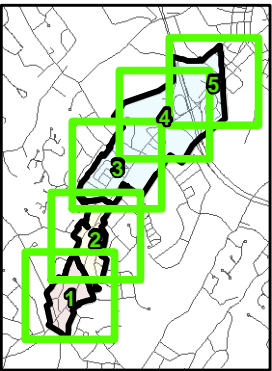



Figure 2-4

**2034 Future Conditions
Weekday Morning and
Weekday Evening
Peak Hour Traffic Volumes**

 Signalized Intersection

Project Area

 Commercial Zone

 Transitional Zone

 South Village Suburban
Corridor Retrofit
District

 Parcels

0 0.5 1 2
Miles

Data Sources:
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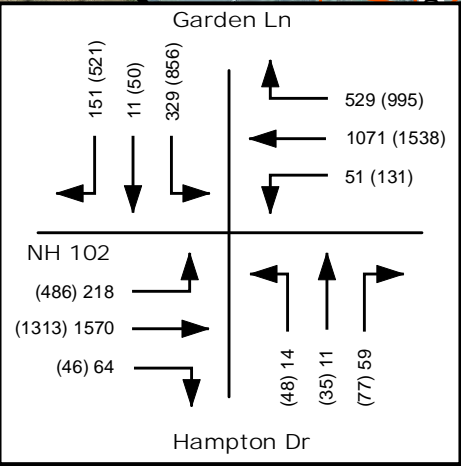
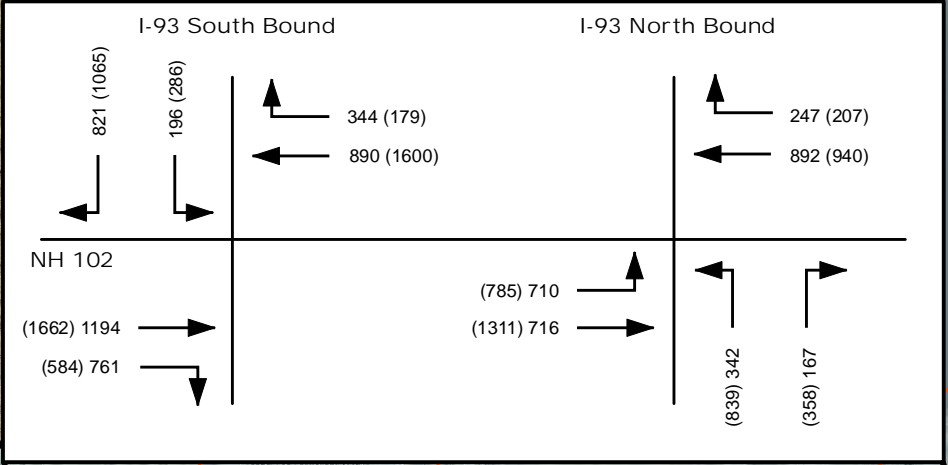
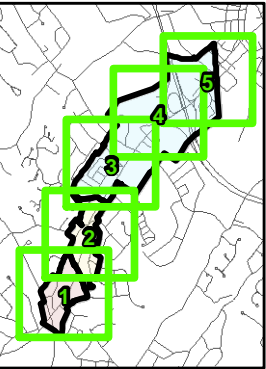




Figure 2-5


**2034 Future Conditions
Weekday Morning and
Weekday Evening
Peak Hour Traffic Volumes**

 Signalized Intersection

Project Area

 Commercial Zone

 Transitional Zone

South Village Suburban
 Corridor Retrofit
District

 Parcels

0 0.5 1 2
Miles

Data Sources:
Granit Digital Data (1:24,000)
NH Department of Transportation
Town of Londonderry
SNHPC

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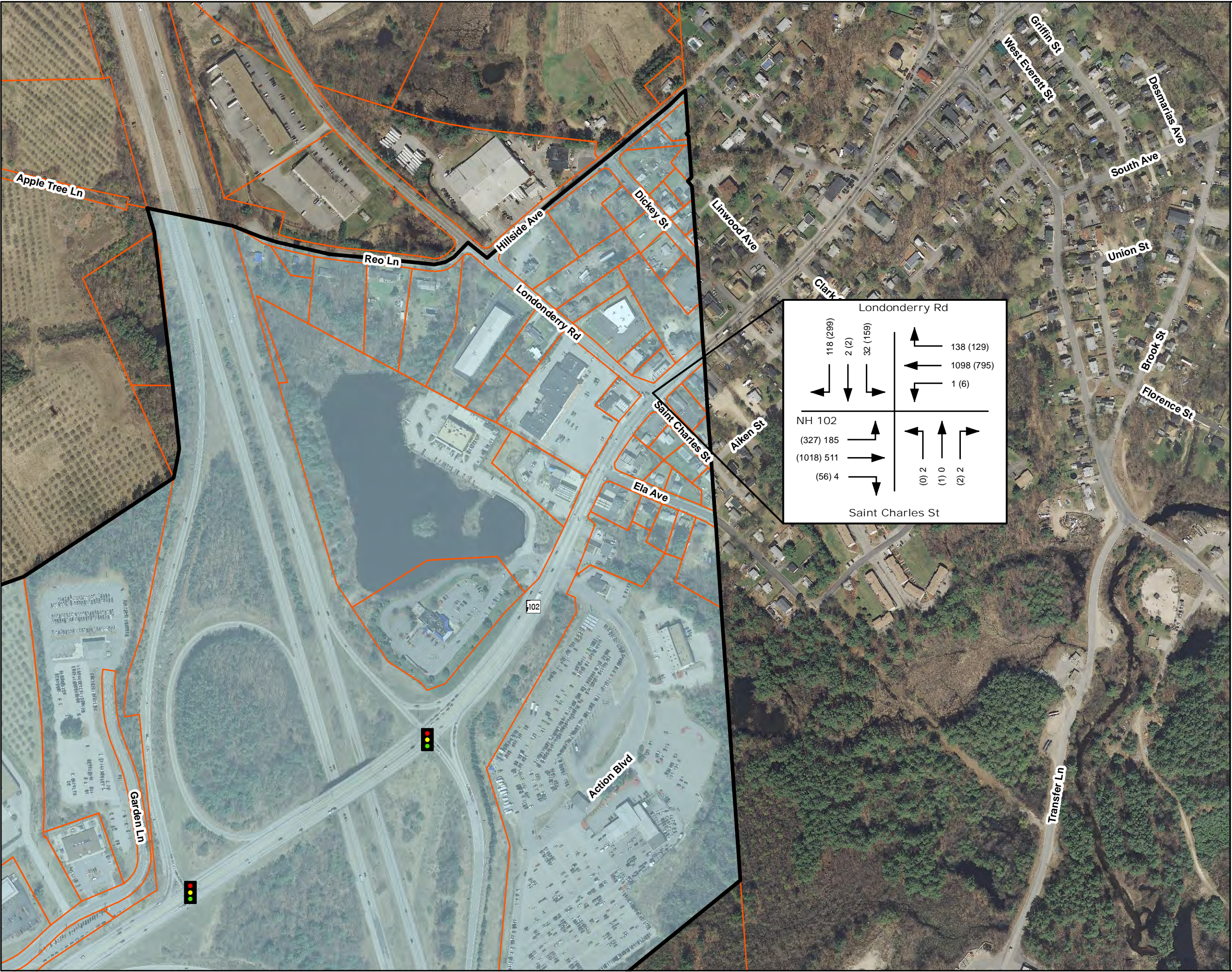
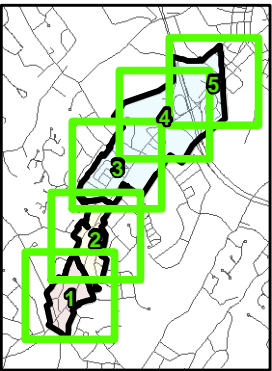


Figure 3-1

NH 102 Vision Plan

- Corridor Issue Locations
- Linear Issue Locations
- Signalized Intersection
- Average Annual Daily Traffic

- Project Area**
- Commercial Zone
 - Transitional Zone
 - South Village Suburban Corridor Retrofit District
 - Parcels

0 0.5 1 2
Miles

Data Sources:
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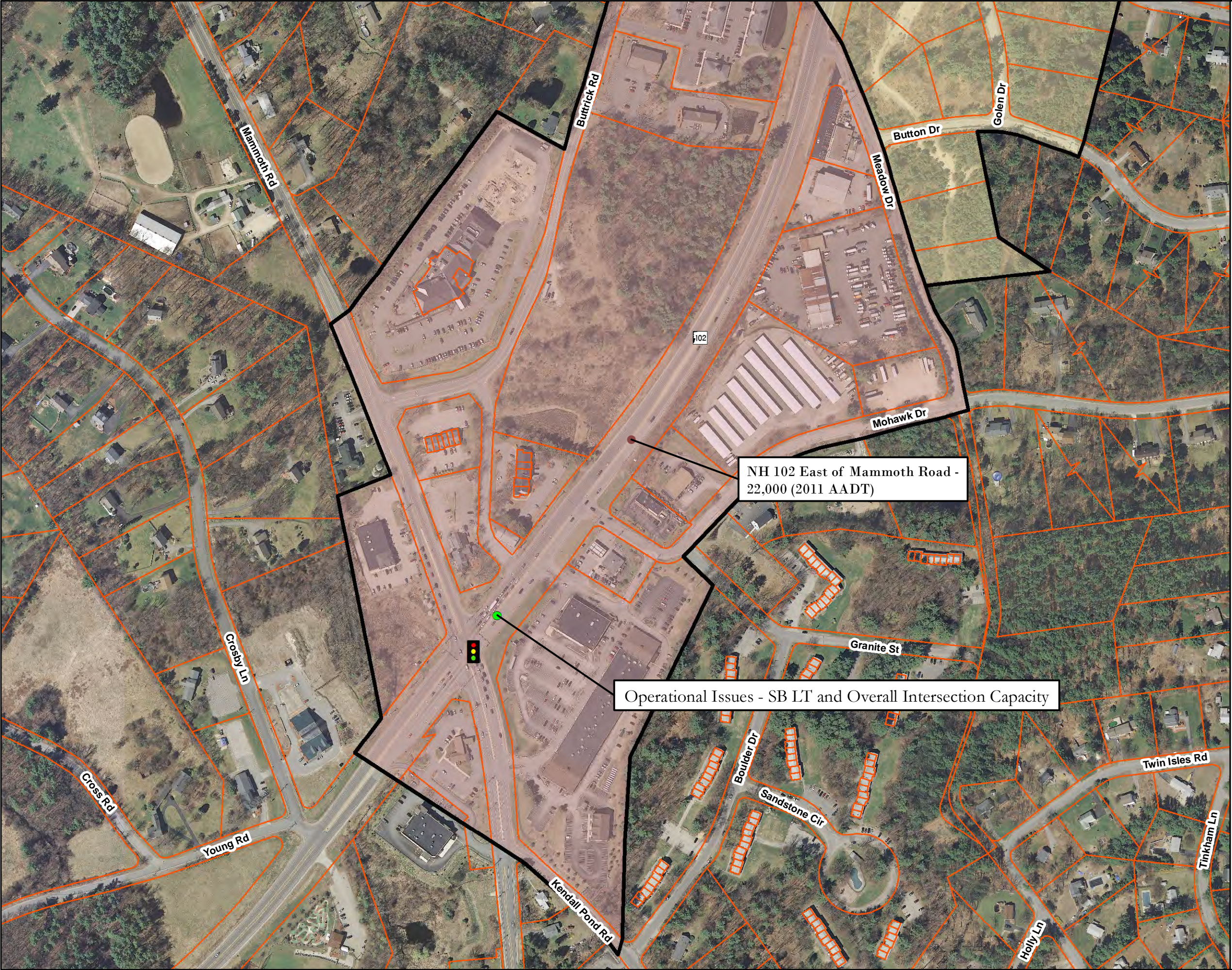
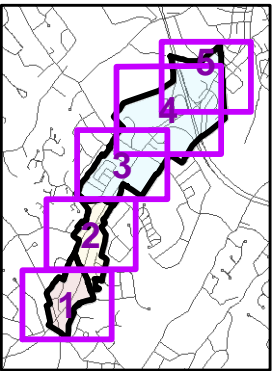


Figure 3-2

NH 102 Vision Plan

- Corridor Issue Locations
- Linear Issue Locations
- Signalized Intersection
- Average Annual Daily Traffic

- Project Area**
- Commercial Zone
 - Transitional Zone
 - South Village Suburban Corridor Retrofit District
 - Parcels

0 0.5 1 2
Miles

Data Sources:
Granit Digital Data (1:24,000)
NH Department of Transportation
Town of Londonderry
SNHPC

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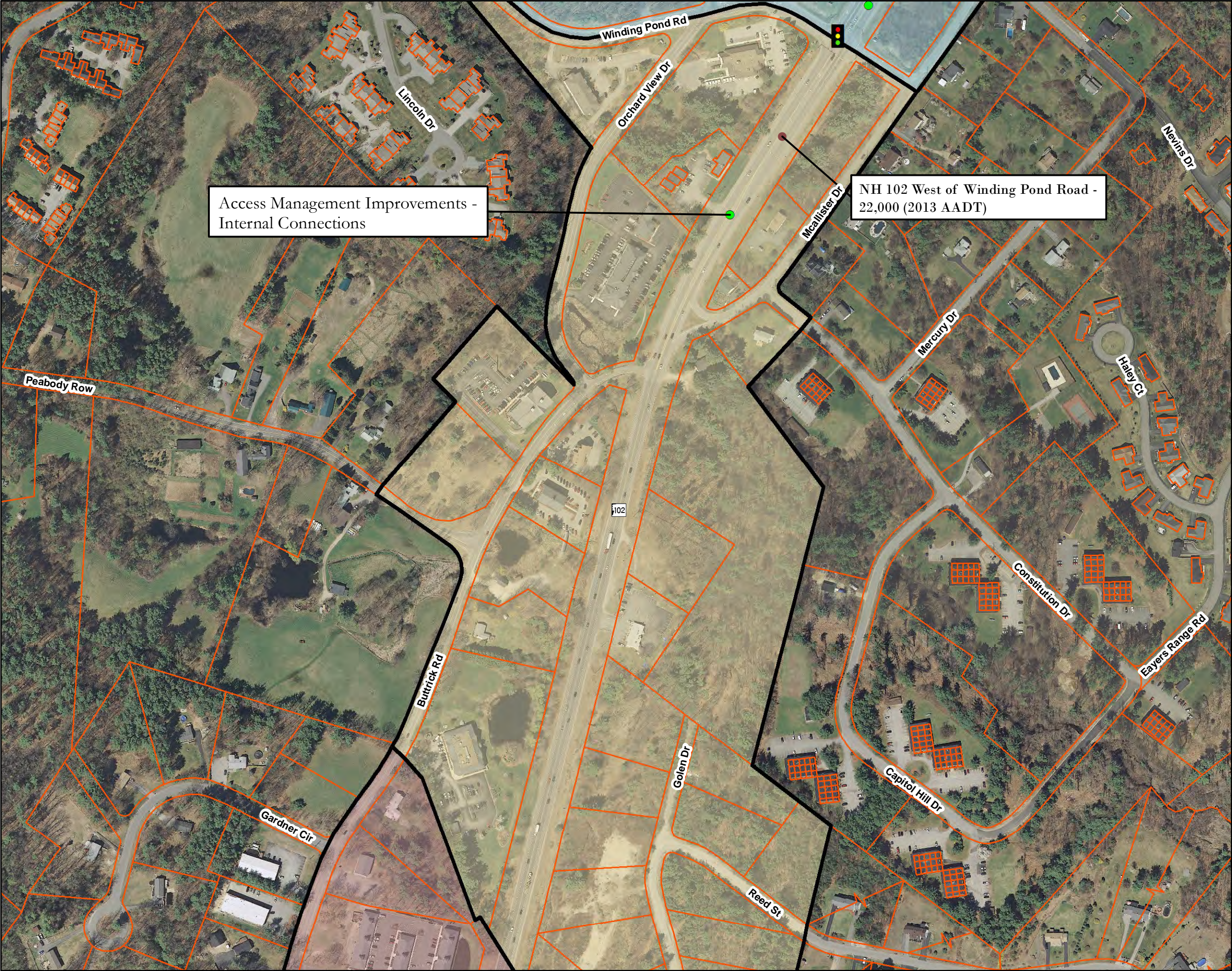
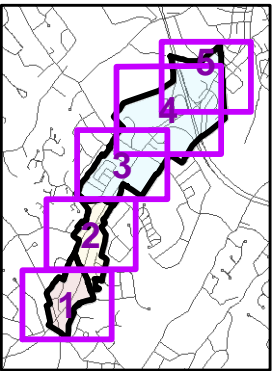


Figure 3-3

NH 102 Vision Plan

- Corridor Issue Locations
- Linear Issue Locations
- Signalized Intersection
- Average Annual Daily Traffic

Project Area

- Commercial Zone
- Transitional Zone
- South Village Suburban Corridor Retrofit District
- Parcels

0 0.5 1 2
Miles

Data Sources:
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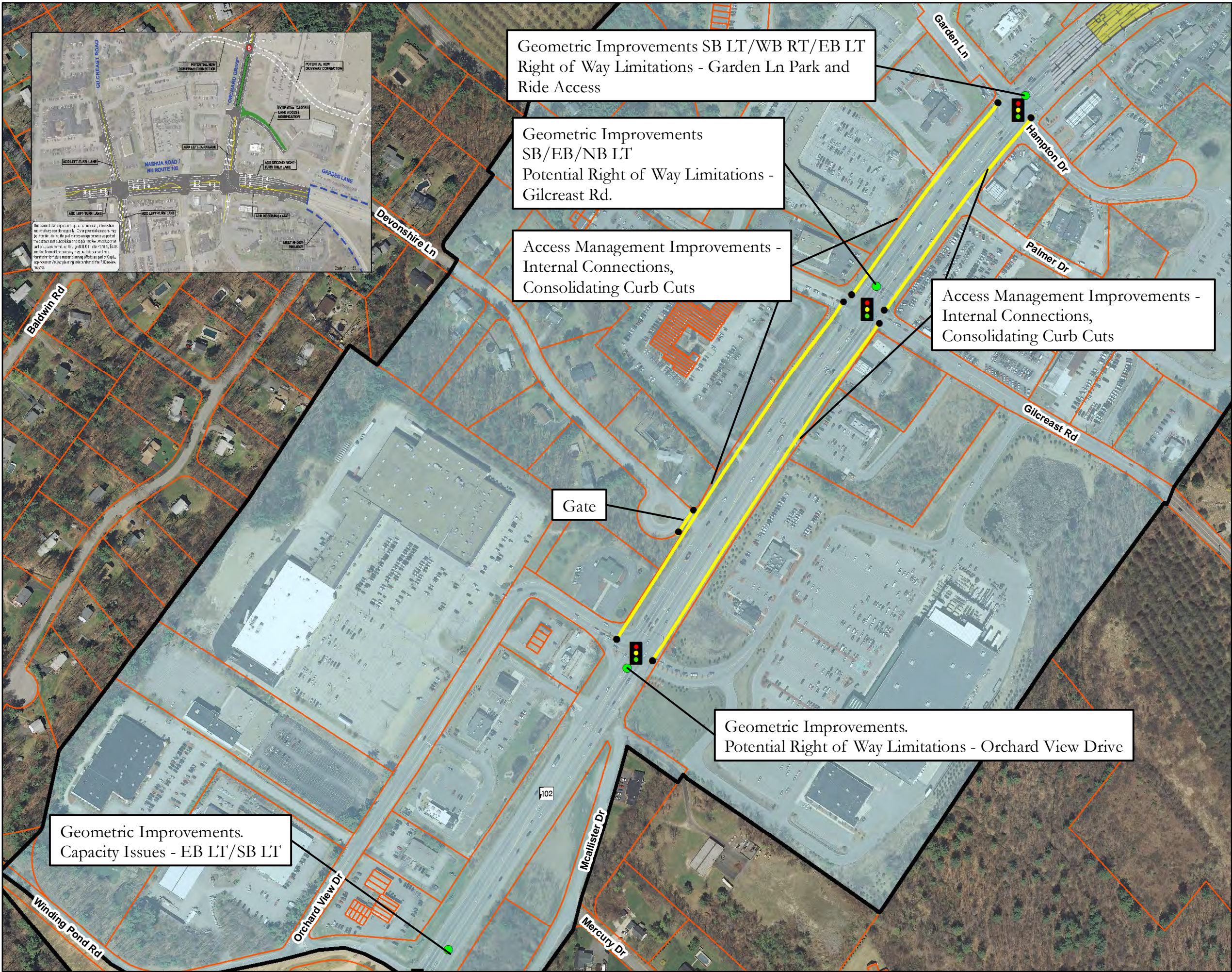
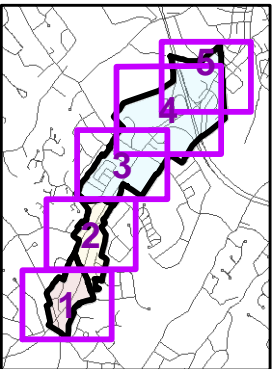


Figure 3-4

NH 102 Vision Plan

- Corridor Issue Locations
- Linear Issue Locations
- Signalized Intersection
- Average Annual Daily Traffic

- Project Area**
- Commercial Zone
 - Transitional Zone
 - South Village Suburban Corridor Retrofit District
 - Parcels

0 0.5 1 2
Miles

Data Sources:
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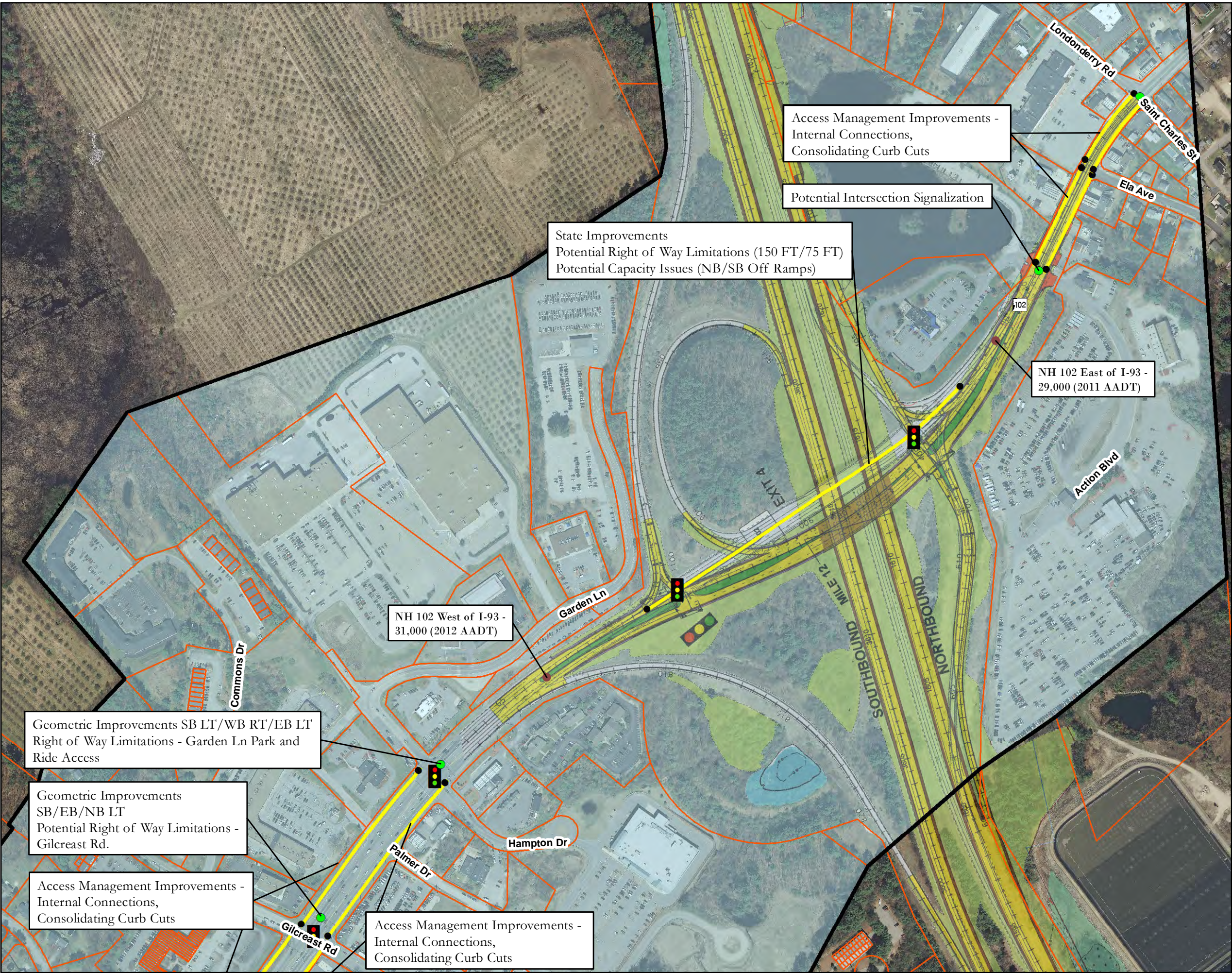
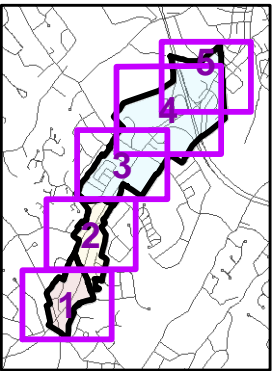


Figure 3-5

NH 102 Vision Plan

● Corridor Issue Locations

● Linear Issue Locations

● Signalized Intersection

● Average Annual Daily Traffic

Project Area

○ Commercial Zone

○ Transitional Zone

○ South Village Suburban
Corridor Retrofit District

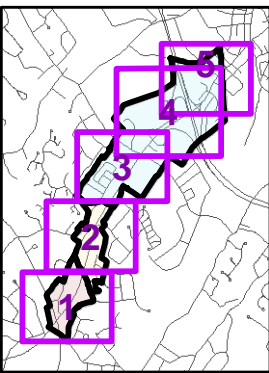
□ Parcels

0 0.5 1 2
Miles

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Intersection Signalization
Geometric Improvements EB/WB LT, SB RT
Potential Right of Way Limitations - Londonderry Rd.

Access Management Improvements -
Internal Connections,
Consolidating Curb Cuts

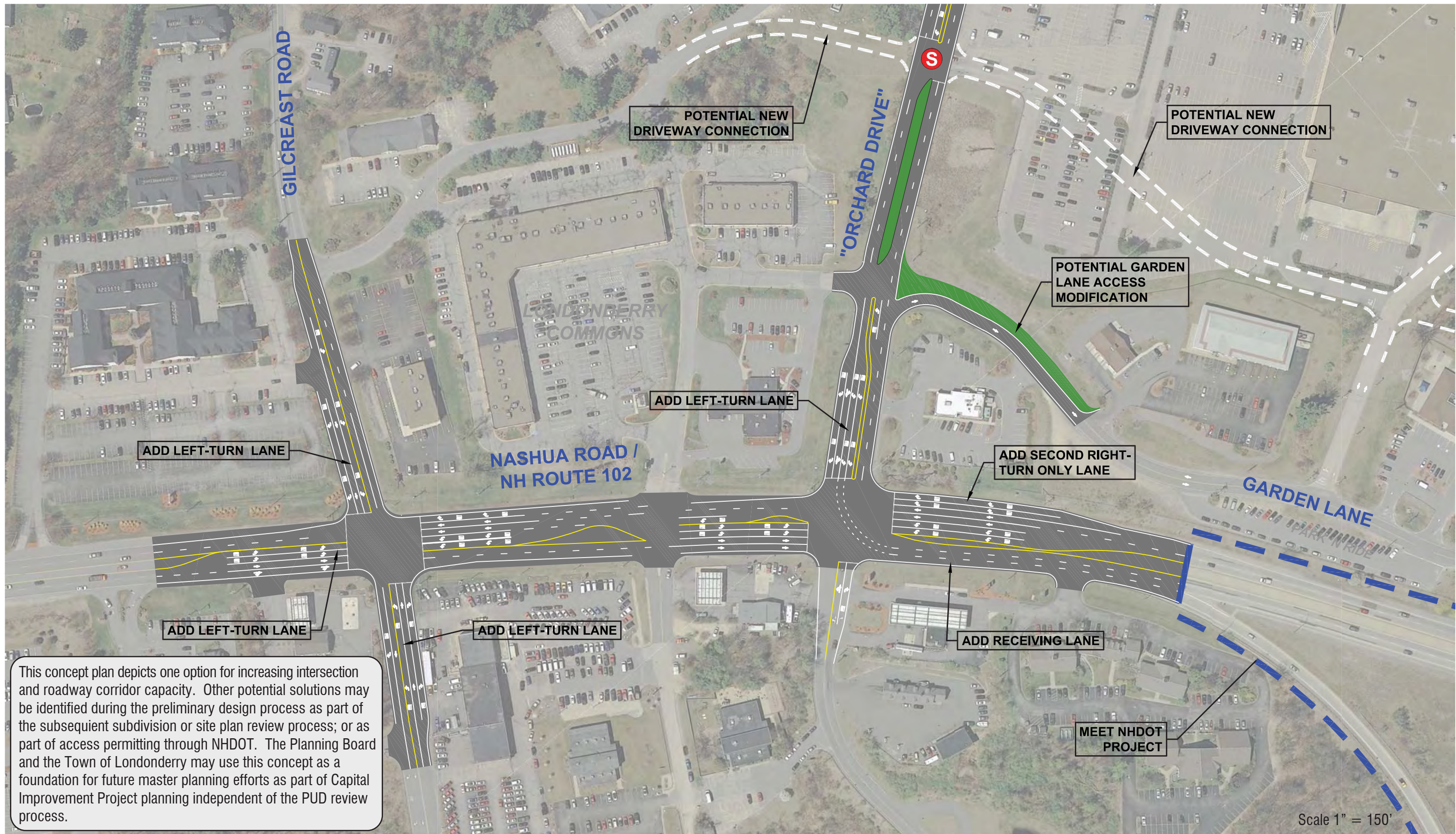
Potential Intersection Signalization

State Improvements
Potential Right of Way Limitations (150 FT/75 FT)
Potential Capacity Issues (NB/SB Off Ramps)

NH 102 East of I-93 -
29,000 (2011 AADT)

Access Management Improvements -
Internal Connections,
Consolidating Curb Cuts





This concept plan depicts one option for increasing intersection and roadway corridor capacity. Other potential solutions may be identified during the preliminary design process as part of the subsequent subdivision or site plan review process; or as part of access permitting through NHDOT. The Planning Board and the Town of Londonderry may use this concept as a foundation for future master planning efforts as part of Capital Improvement Project planning independent of the PUD review process.

