

THE TOWNSHIP OF  
*East Windsor* AND *Hightstown* THE BOROUGH OF  
*Route 33 Corridor Revitalization Plan*



MAY 2012

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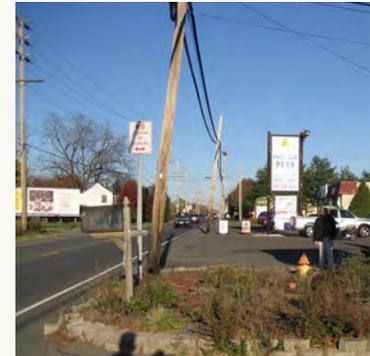
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A SPECIAL THANKS TO ALL STAKEHOLDERS WHO PARTICIPATED IN THE REVITALIZATION PROCESS.



ACKNOWLEDGMENTS

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## Study Area

## Introduction

The Route 33 Corridor Revitalization Plan focuses on the Route 33 area between Route 130 in East Windsor Township to Summit Street in Hightstown Borough. The purpose of this Plan is to comprehensively review and assess the Corridor and provide revitalization recommendations and implementation strategies in order to enhance development and redevelopment opportunities in the Area. Emphasis is on land use, zoning, marketing, traffic circulations and roadway improvements.

The Study Area is 183 acres in size. The predominant developed character is commercial although 62% of the area is vacant. One of the key properties in the Study Area is the former Minute Maid site.

This project is being funded by a grant from the DVRPC under their Transportation and Community Development Initiative program. The project is a joint effort between East Windsor and Hightstown Borough with East Windsor as the lead agency.

The Plan is organized into the following sections:

- Existing Conditions Analysis
- Public Outreach
- Opportunities and Constraints
- Market Analysis
- Planning Principles
- Vision
- Land Use Recommendations
- Traffic Analysis/Circulation Improvements





Concept

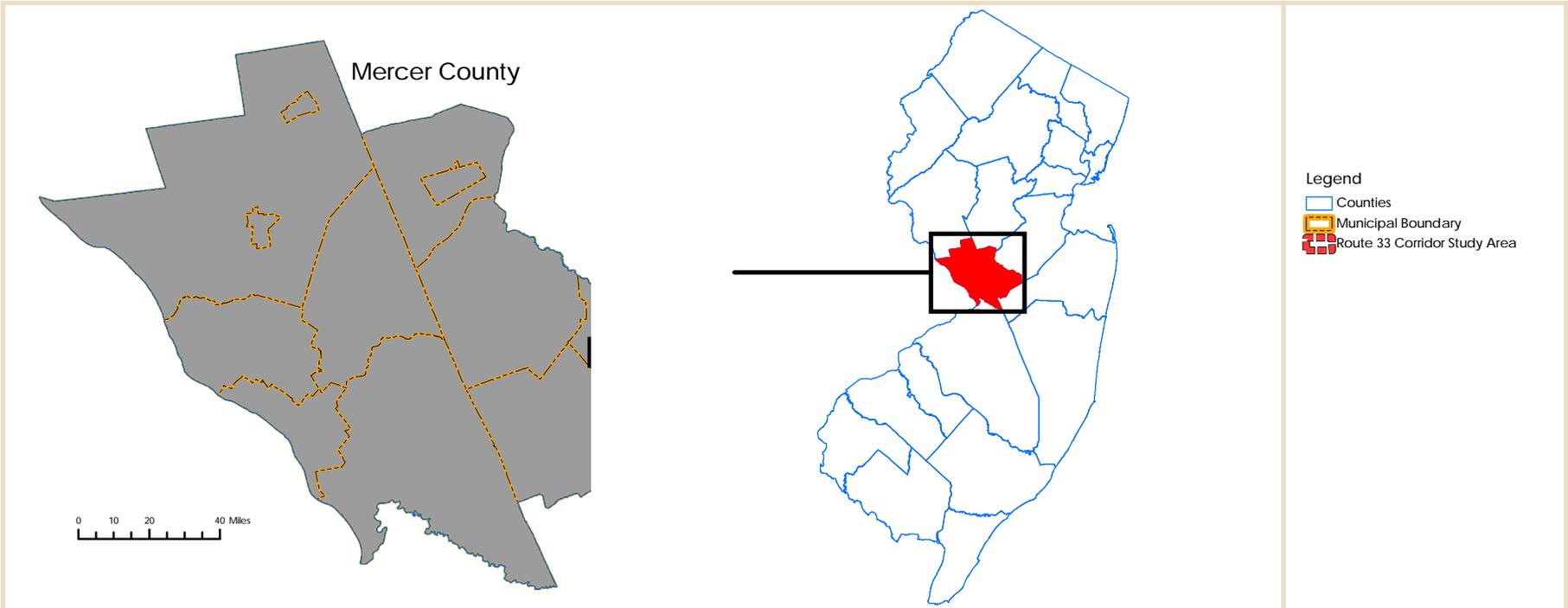
## Executive Summary

The overall vision for the Route 33 Revitalization Plan is to optimize the development potential of the Corridor by encouraging a synergy of existing and proposed uses that complement each other, in a context sensitive manner.

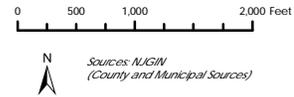
The following are the key strategies to the overall revitalization of the Area.

- It is recommended that four land use/zoning categories be established for the Route 33 corridor study area.
  - o Gateway Retail: The purpose of the district is to capitalize on its “gateway” location at the intersection of Routes 130 and 33 and create an iconic entry with a signature building.
  - o Big Box Retail: The purpose of the district is the development of big box retail supplemented by pad restaurant uses along the road frontage consistent with the existing scale of development.
  - o Main Street Retail: The intent of the district is to create a human scale walkable area with a “Main Street” appearance along both sides of the Route 33 frontage east of Airport Road.
  - o Planned Campus Development: The purpose of the district is to encourage redevelopment of the developed Minute Maid property located in Hightstown into low scale planned development in a campus form. Permitted uses would include office, an assisted living facility and a YMCA or comparable recreational facility.
- It is recommended that a regional stormwater management approach be implemented through the establishment a regional retention basin. The basin will serve as an aesthetic and recreation asset in addition to its stormwater management function. The intent is use “green” stormwater management techniques.
- The overall circulation approach for the Corridor recognizes that the corridor will be auto dominated. The intent is to minimize multiple trips within the corridor and to create a strong pedestrian/bikeway network that links to sites within and outside the corridor. Key circulation concepts include:
  - o Modification to typical roadway sections along Route 33.
  - o Access to and from properties along Route 33 through turn lanes generally at intersections or major driveways. Shared parking and shared driveways should be used to limit curb cuts.
  - o A landscaped median, landscaping along roadway edges and a roundabout at Airport Road.
  - o Alternative Street network including Airport Road extension.
  - o Interconnected network of trails and sidewalks including extension of the existing bikeway.





- Legend**
- Counties
  - Municipal Boundary
  - Route 33 Corridor Study Area



Location Map

## Existing Conditions Analysis

### Data and Sources

The existing conditions analysis of the Route 33 Corridor Revitalization Study Area was derived from a variety of data and information sources. GIS (Geographic Information Systems) base map information was collected through all available sources including the Mercer County Planning Department, the New Jersey Department of Environmental Protection (NJDEP), and the New Jersey Geographic Information Network (NJGIN). A field assessment was undertaken to determine the current status, use, and functionality of existing structures and sites. Additionally, photographic images of the Study Area that reflect both positive and negative planning/design principles were taken to illustrate the advantages of proposed revitalization strategies. Background information collected for the analysis of existing conditions included the following:

### East Windsor Planning Documents

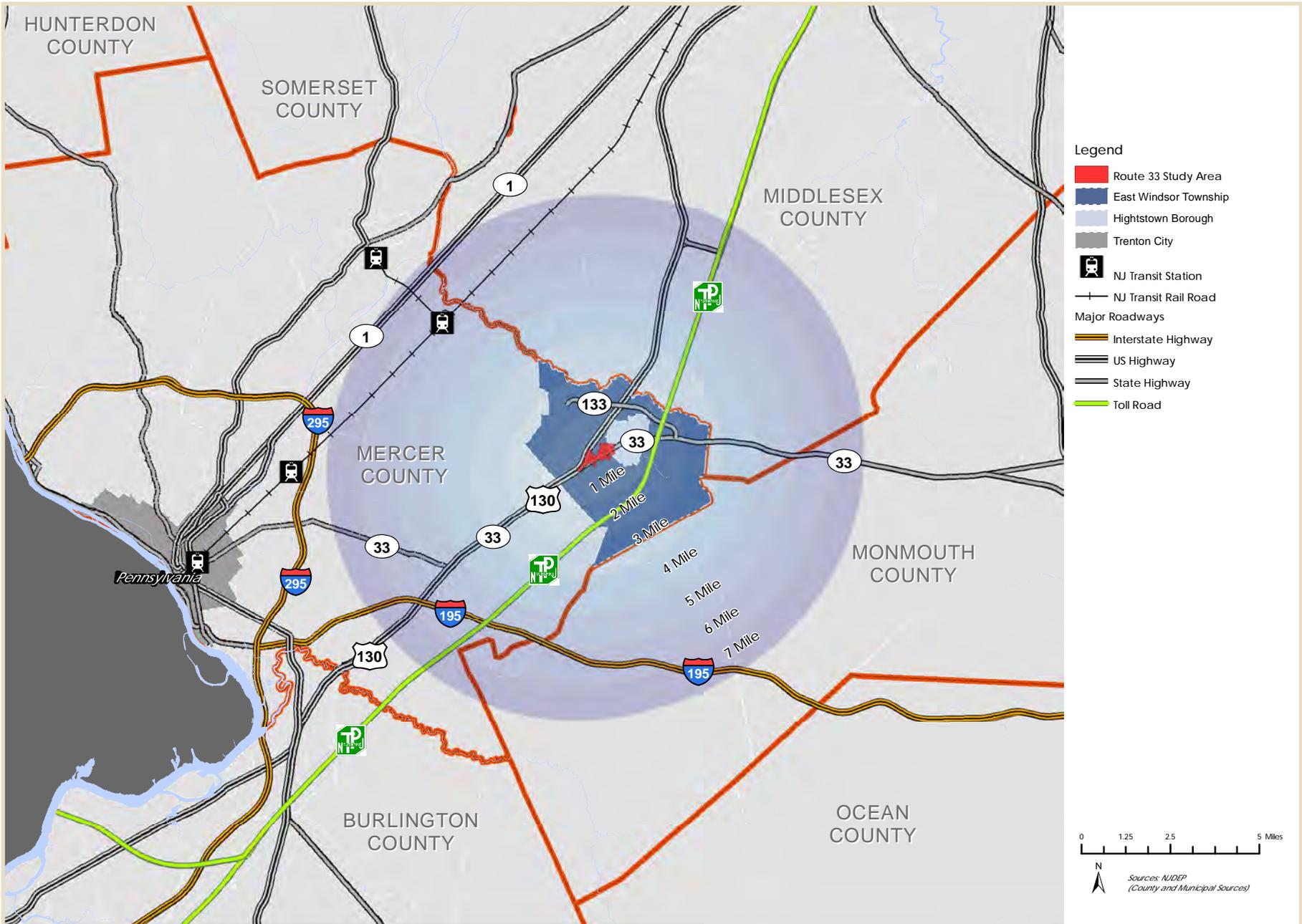
- 1993 Comprehensive Master Plan, adopted October 4, 1993
- 1999 Recreation and Open Space Inventory
- 1998 and 2000 Housing Plan Element and Fair Share Plans
- December 2001 Master Plan and Development Regulations Periodic Reexamination Report
- November 2002 Master Plan and Development Regulations Periodic Reexamination Report

- East Windsor Township Municipal Assessment, dated May 2003
- Traffic Circulation Plan, dated September 1, 2006
- Transportation & Community Development Initiative Study dated September 2006.
- Traffic Impact Assessment Hickory Corner Plaza, dated March 14, 2006
- Recreation and Open Space Inventory, dated April 5, 2007
- November 15, 2008 Master Plan and Development Regulations Periodic Reexamination Report
- Current East Windsor Township Zoning Ordinance
- Traffic Impact Study for Hickory Corner Retail Center, dated November 5, 2009

### Hightstown Borough Planning Documents

- Hightstown Borough Master Plan, dated October 13, 1998.
- 2005 Master Plan Reexamination Report
- Hightstown Planning Board Resolution 2008-15, documented in October 20, 2008 Borough of Hightstown Meeting Minutes
- 2009 Hightstown Borough Zoning Map
- Borough of Hightstown Municipal Assessment, dated June 2010
- Current Borough of Hightstown Zoning Ordinance





## Regional Proximity Map

### **Mercer County Planning Documents**

- Mercer County Cross-acceptance Report, dated March 2005
- Mercer County Master Plan Stakeholder Meeting #1, dated November 8, 2006
- Mercer County Master Plan Update Process – Documentary, dated March 2007
- Mercer County State Planning Commission Negotiations Worksheet Map Amendments, dated March 23, 2007
- County of Mercer Comprehensive Farmland Preservation Plan, adopted June 7, 2010
- Mercer County Master Plan, dated September 2010
- Mercer County Proposed Sewer Service Area Map for Hightstown 2010
- Mercer County Proposed Sewer Service Area Map for East Windsor 2010

Interviews with key stakeholders were held which provided further insight into the existing conditions and issues. Finally, periodic meetings with the joint East Windsor/ Hightstown Subcommittee provided additional information on the existing conditions and issues.

### **Context**

The Route 33 Corridor Revitalization Study Area is located along Route 33 on the border of East Windsor Township and the Borough of Hightstown. These two communities are inexorably linked to each other given their unique geographic arrangement. Route 33 and Route 130 serve as the arterial roadways connecting the two municipalities to each other and the rest of the region. The Study Area was developed as the industrial and commercial agricultural hub of the two communities. In the last 50 years, changes in the economy, the development of major highways, and suburban development in close proximity to the Study Area have led to the decline of the industrial and commercial agricultural land uses located within the

Study Area. The time has come to proactively plan for the future of the corridor to guide the area into a functionally productive state that will benefit both municipalities.

### **Study Area Overview**

The Route 33 Corridor Revitalization Study Area is located in southeastern Mercer County where the boundary of western Monmouth County and southern Middlesex County meet. The Study Area is located very close to the geographic center of New Jersey west of the New Jersey Turnpike near Exit 8 and east of Route 130 where Route 33 crosses between them. Trenton, the state's capital and the closest major city, is located approximately 13 miles to the southwest. The Study Area is located approximately mid-way between New York City and Philadelphia. New York City is located approximately 40 miles to the northeast and Philadelphia is located approximately 40 miles to the southwest. The regional location of the Study Area is shown on the Regional Proximity Map.

The Study Area is 183 acres in size and straddles the southwestern and northeastern boundaries of the Borough of Hightstown and East Windsor Township respectively as shown on the Location Map and the 2007 Aerial. It is located between Summit Street in the Borough of Hightstown and Route 130 in East Windsor Township along the spine that is Route 33. Of the 183 acres included in the Study Area, approximately 84% is located in East Windsor Township and approximately 16% is located in the Borough of Hightstown. There are a total of 68 parcels in the Study Area; 17 of which are located in Hightstown, while the remaining 51 parcels are located in East Windsor. The Study Area is bisected by a branch of Bear Brook and includes a large area of environmentally sensitive land.

The predominant developed character of the Study Area is commercial; although 62% of the Study Area is vacant. The Study Area is located at a crossroads of Route

130 and Route 33 and is the transitional area between highway commercial retail uses and the traditional downtown of Hightstown. Several commercial wholesale businesses including Diversified Shelving along Route 130, Lucas Electric, and the Tri County Cooperative Auction Market, remain active in the corridor. There is also a retail strip mall in Hightstown located on the southern side of Route 33 called Michaels' Plaza, which is home to small scale retail uses.

One of the key properties in the Study Area is known as the Minute Maid Site. Of the 37.7 acre property, 21.1 acres of vacant land, is located in East Windsor. The remaining 16.6 acres containing the former Minute Maid plant is located in Hightstown. This 37.7 acre site represents the largest developable property in the Study Area.

Adjacent uses include the East Windsor Hightstown Regional High School which is located directly east of the Study Area. To the north of the Study Area adjacent to the Minute Maid property are small lot single-family residential neighborhoods. To the northwest of the Study Area is a large residential neighborhood consisting of multifamily and single-family attached residential units. There are several substantial commercial developments located outside of the Study Area to the south along Route 33 and Route 130. They contain a Walmart, a Home Depot, and a commercial retail center, Windsor Crossings, which has several restaurants, a gym, and a bank.

### **History of the Area**

The Route 33 Study Area has a firmly rooted history of being located at an important crossroads of travel. In the early 1700's the Study Area was located along an Indian trail that ran between Perth Amboy and Burlington. By the mid 1700's, the trail was renamed "King's Highway" and revolutionary troops utilized the route on the way



1930 Aerial

to the Battle of Monmouth. In the early 1800's "Kings Highway" became a State chartered toll road known as the Bordentown-South Amboy Turnpike. Its development rejuvenated the stagecoach business in East Windsor and Hightstown and helped make the area a hub of agricultural commerce midway between Philadelphia and New York.

The development of the Camden and Amboy Railroad around 1830 helped the area transition from an agrarian hub to one of the most important agricultural centers in the State. The surrounding farming reached its peak in 1870 and manufacturing businesses started to prosper, fueled by the access to transportation and the strategic location between New York and Philadelphia.

The construction of Route 130 and the majority of the State Highways in the area began in the 1920's. With the introduction of cars and the paving of Route 33 in 1920, rail service started to decline. Passenger service was ultimately discontinued in 1940, and freight service continued until the mid-1960's. Route 130 was constructed as a by-pass to funnel traffic around the Borough of Hightstown and was the first route through East Windsor that did not run through Hightstown. This facilitated the development of commercial uses outside of the traditional center of Hightstown (see 1930 Aerial Map and Historic Topographic Map).

The completion of the New Jersey Turnpike moved the area into the modern era of suburbanization in 1951 and the areas in East Windsor outside of the traditional center of Hightstown started to develop. The creation of Exit 8 facilitated the rapid residential and commercial development throughout area and ended farming as the main economic activity.

The once economically active area transitioned into a cut through for cars traveling from Exit 8 to Route 130

impacting the uses in the Study Area. The development of the Route 133 by-pass in the 1990's helped ease some of the traffic issues in downtown Hightstown; however it exacerbated the decline of the uses within the Study Area by further reducing the amount of traffic traveling on Route 33. Recently, one of the last remaining agriculturally oriented businesses within the Study Area, Global Ag (also known as the Agway) closed. In 2003 the Minute Maid Facility located in Hightstown and the only remaining industrial use in the Study Area closed its doors.

#### **Study Area Today**

Today the Study Area is failing to live up to its rich history as one of the major economic hubs of the area. It is still home to several viable businesses, but the development is scattered and lack of a connection to the Borough of Hightstown and the more heavily traveled Route 130 is an issue. Several commercial wholesale businesses such as Diversified Shelving, Lucas Electric, and the Tri County Cooperative Auction Market remain the major active uses; however the majority of the land in the Study Area is vacant.

The area south of the Study Area on Route 130 has started to develop. In 2002 a Home Depot was developed in East Windsor along the southern boundary of the Study Area. In 2005, Windsor Crossing Shopping Center and a Wal-Mart were built in East Windsor to the south of Home Depot. Windsor Cove, a 51 unit single-family residential development, east of the Study Area off of Airport Road is currently under construction. To the north of the Study Area, the revitalization efforts in downtown Hightstown, have been successful and businesses continue to prosper.

The Study Area is located at the crossroads of two growing communities in Hightstown and East Windsor and there is a unique opportunity to guide the future development in the Study Area to help reestablish it as the one of the major economic centers of both communities.

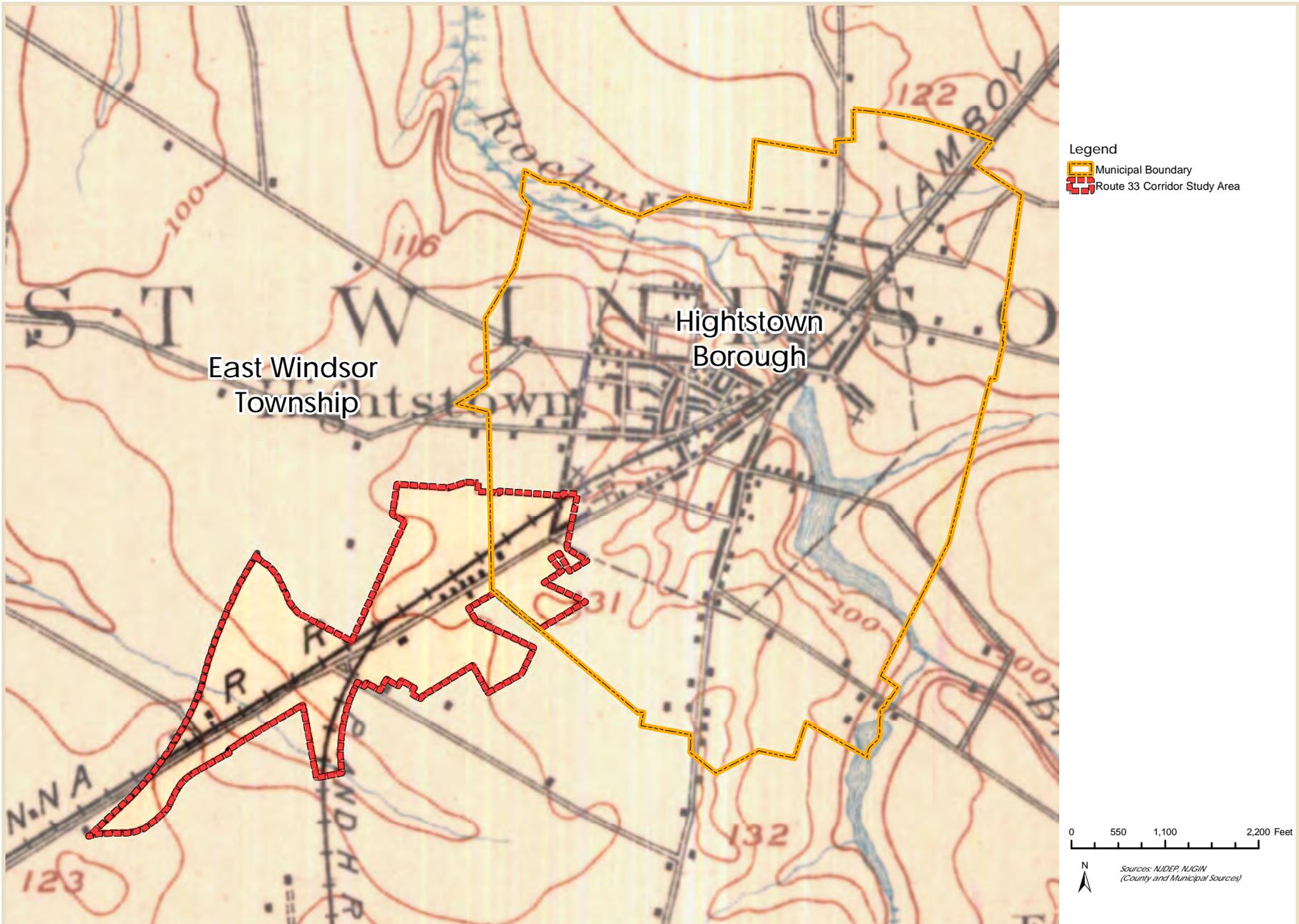
#### **East Windsor Township Overview**

The Township of East Windsor is a 15.6 square mile municipality in southeastern Mercer County, approximately 10 miles northeast of the City of Trenton. The Millstone River forms the northern boundary line for both East Windsor Township and Mercer County. The Borough of Hightstown is located, in its entirety, within the north central portion of East Windsor Township at the crossroads of State Highway 33, State Highway 130, and the New Jersey Turnpike. The development pattern and character of East Windsor can be characterized as suburban in nature ranging from large lot single-family residential developments to significant concentrations of commercial development along major roadways.

East Windsor Township contains a wide variety of housing. The western portion of the Township is developed primarily as large single family detached units in subdivisions while the residentially developed portions on the eastern side of the Township are mostly multi-family residential units. The majority of the developed portions of the Township are located west of the New Jersey Turnpike. Twin Rivers, the first planned unit development in the state, is located on the eastern side of the Township near Exit 8 of the New Jersey Turnpike.

There are three major nonresidential development areas in the Township, including the Route 571 campus corridor, the Route 130 retail corridor, and the New Jersey Turnpike/Route 33 industrial/retail corridor. All three of these non residential areas continue to experience relatively rapid development and redevelopment. These areas are home to many of the key employers in the Township including McGraw Hill Companies, Conair Corporation, Shiseido America, and Elementis.

According to the 2010 Mercer County Comprehensive Farmland Preservation Plan, East Windsor has 1009 acres of preserved farms, the majority of which are



## Historic Topographic Map

located in the southeastern portion of the Township. There are also active and passive recreational areas and environmentally sensitive lands situated among both the developed and undeveloped portions of the Township. There are 1,000 acres of preserves farmland and over 1,600 acres of parks, preserved open space and environmentally protected land in the Township.

According to the 2010 Census, the Township of East Windsor's population is 27,190, an increase of 9.6 percent, or 2,271 persons compared to 2000. The 2010 population density of 1,742.9 people per square mile is slightly higher than New Jersey's population density (1,185.31 people per square mile) and Mercer County's population density (1,624 people per square mile). The number of households in East Windsor grew by 971 or 9.8% over the ten year period between 2000 and 2010.

#### **Borough of Hightstown Overview**

The Borough of Hightstown is completely surrounded by East Windsor Township and is located in the northeastern quarter the Township. It is approximately 1.2 square miles in size and developed as the historic center of the area. The Borough is traversed by the Rocky Brook which is dammed at the intersection of North Main Street and Franklin creating Peddie Lake which serves as the centerpiece to the Borough. Route 33 runs through the Borough from the northeast to the southwest. It provides access to Exit 8 in East Windsor of the New Jersey Turnpike which is located near the Borough's eastern Boundary with East Windsor. The Borough is almost completely developed and is home to the Peddie School and the East Windsor-Regional Hightstown High School which straddles the Borough's southwestern border. The development pattern of Hightstown is consistent with that of a traditional town center consisting of compact development patterns with mixed uses, significant concentrations of commercial

development along major roadways, and relatively dense residential development consisting of a variety of housing types generally on small lots.

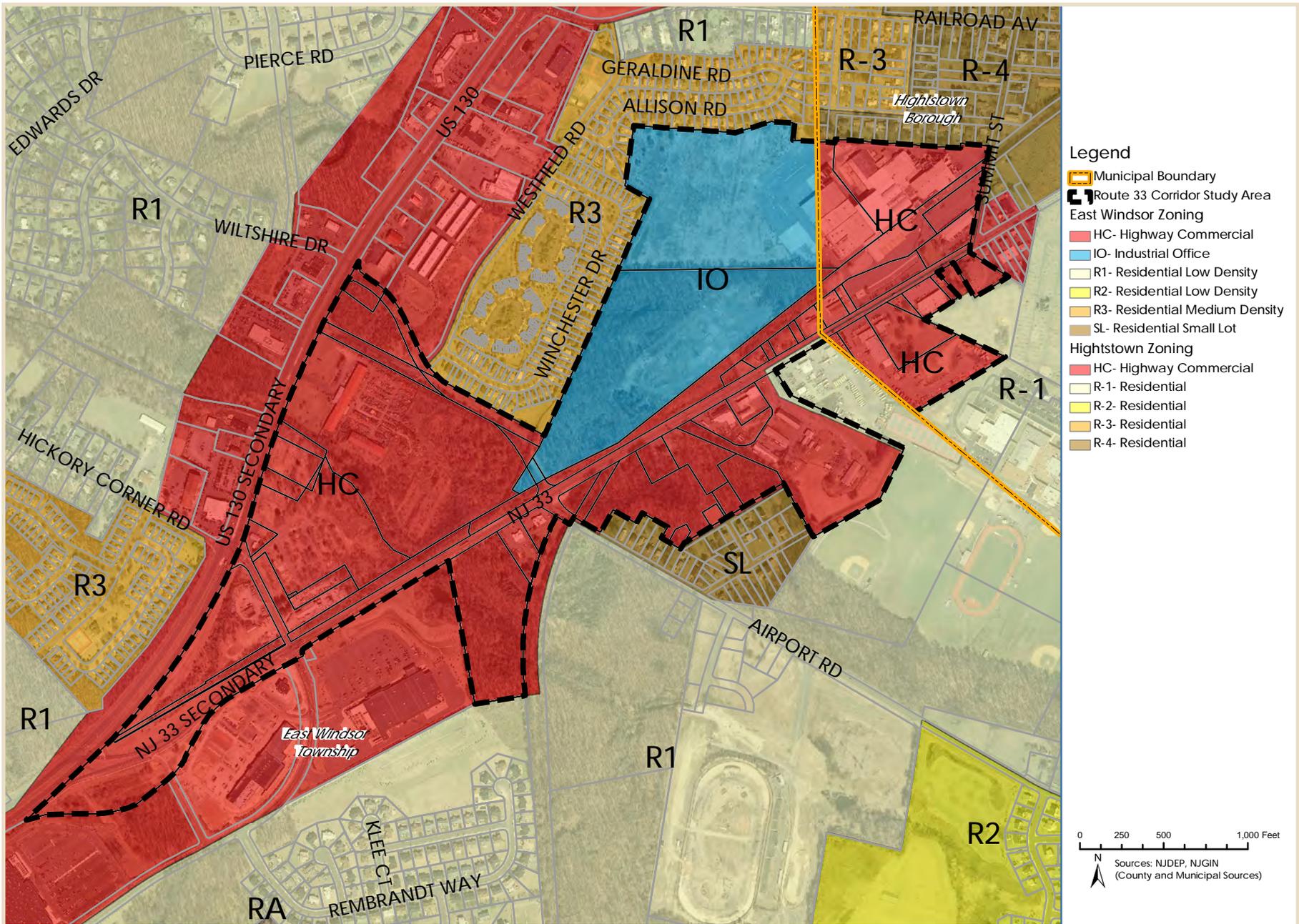
The Borough's housing stock is diverse consisting of single family homes, duplexes, large homes divided into apartments and garden apartments. The residential uses have been built over the course of the last 150 years.

The Borough has a traditional downtown which is home to a variety of commercial, office and retail uses. This small scale pedestrian friendly downtown area is located where North Main, South Main, Stockton, Franklin, and Mercer Streets meet. The other area of non-residential development is located within the Study Area along Mercer Street near the Borough's southwestern border with East Windsor Township.

The municipally owned Roger C. Cook Greenway, which includes several trails, runs through the center of Town adjacent to Rocky Brook. The Borough has also converted part of the abandoned rail road right-of-way which runs through the Borough to a trail. This railroad right-of-way runs directly through the center of the Study Area.

According to the 2010 Census, the Borough of Hightstown's population is 5,494, an increase of 5.3 percent, or 278 persons compared to 2000. The 2010 population density of 4,578.3 people per square mile is much higher than New Jersey's population density (1,185.31 people per square mile) and Mercer County's population density (1,624 people per square mile), but lower than the nearby Borough of Princeton (6,477.4 people per square mile). The number of households in Hightstown grew by 27 or 1.2% over the ten year period between 2000 and 2010.





## Existing Zoning Map

### **Zoning Context**

The entire Study Area is zoned non-residential. Of the 138 acres of the Study Area located in East Windsor, 94.6 acres are zoned HC Highway Commercial and 43.6 acres area zoned IO Industrial Office. The entire 28.7 acre portion of the Study Area located in Hightstown is zoned HC- Highway Commercial. The zoning of the Study Area is shown on the Existing Zoning Map.

East Windsor's HC Highway Commercial Zone permits an array of retail and commercial uses. The zone also permits restaurants, hotels, commuter parking facilities and movie theaters. To date, the zone has not produced these types of uses within the Study Area.

The IO Industrial Office Zone permits uses consistent with a light industrial zone including light manufacturing, scientific laboratories, and warehouses. The zone also permits office uses, industrial office parks, and agricultural and horticultural uses. The zone is directly adjacent to a large residential development consisting of attached townhomes.

Hightstown incorporates a cumulative type zoning. In this case, the Highway Commercial District permits all uses permitted in the CC-1 and CC-2 Commercial Districts. As a result, the Highway Commercial District in Hightstown permits uses ranging from neighborhood scale mixed uses with retail on the first floor and residential uses on the upper floors to distribution facilities and motor vehicle service stations.

The Hightstown Minute Maid site was changed to the HC zoning district from an industrial zone in 2008 based on the recommendations of the 2005 Master Plan Reexamination. The zoning change in 2008 eliminated industrial uses as permitted uses, but permitted mixed uses and residential uses. To date, the HC zoning district in the Study Area has not produced a substantial amount

of development. This area remains as one of the largest underutilized areas within the Borough. It should be noted that the property owner is currently in litigation with the Borough regarding the 2008 rezoning from IO to HC.

### **Planning Context**

#### ***East Windsor Township***

East Windsor's last Comprehensive Master Plan was completed in 1993 and the subsequent Master Plan Reexaminations have carried forward the goals and objectives included in the 1993 Plan. The 1993 Land Use Plan identified a zoning change to the HC Highway Commercial Zone and SL Small Lot Single Family Residential Zone within the Study Area resulting from the 1991 Master Plan Update. The change increased the depth of the HC zone to coordinate with the depth of the existing commercial development. Specifically, it recommended that the rear part of Tri County Cooperative Action Market's property be changed from the SL zone to HC zone. The Township's Zoning Map shows the zoning change in this area.

The 1993 Master Plan included a number of transportation recommendations in the Circulation Element. It recommended the extension of Airport Road from Route 33 to Route 130 as well as intersection improvements at the intersection of Airport Road and Route 33. The 2006 Traffic Circulation Plan also recommended improvements to the signalized intersection of Route 130 and Hickory Corner Road and the unsignalized intersection of Route 33 and Airport Road. The recommendations included turning lane improvements and light timing modifications at the corner of Route 130 and Hickory Corner Road. It recommended the installation of a traffic signal at the corner of Route 33 and Airport Road as well as the installation of a right hand turning lane on Airport Road.

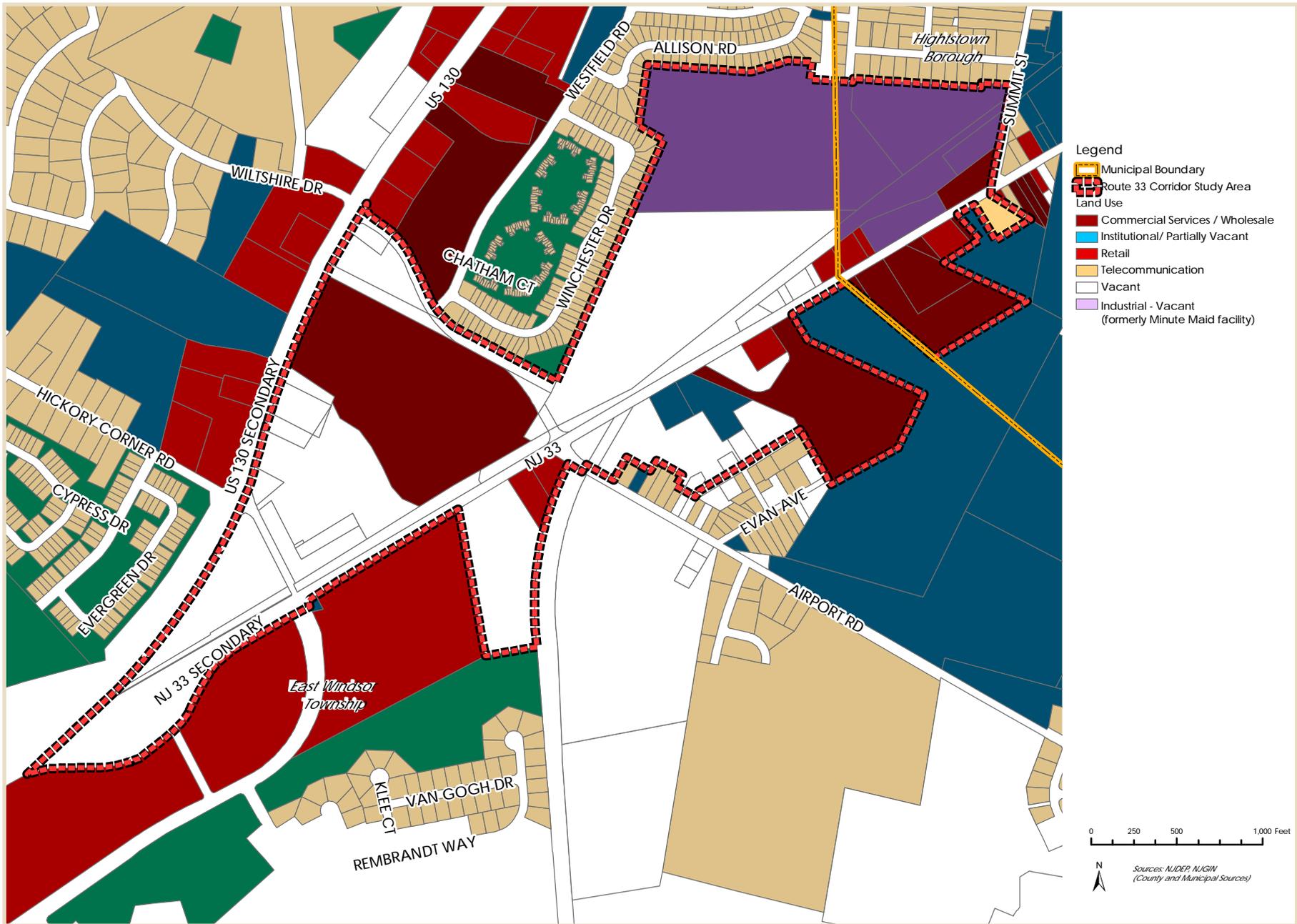
The 1993 Master Plan included a Bikeway/Pedestrian Plan that called for the creation of bike paths that would

be separated from the roadway along Route 33 and Airport Road within the Study Area. The Greenways Plan in the 1993 Master Plan also shows a connection through the Study Area along the Bear Brook.

#### ***Hightstown Borough***

The Borough's last Master Plan was completed in 1998. The Plan recognized the value of the Coca Cola Bottling Facility (now known as the Minute Maid facility) which was in operation at that time. It identified the commercial area at the eastern end of the Study Area as better suited for larger retail uses for regional shoppers. The 1998 Master Plan recognized the importance of zoning consistency with the Township of East Windsor and identified the potential for a regional center. The Plan recommended that the HC-Highway Commercial Zone in East Windsor be limited to uses that would be more regionally oriented and to discourage smaller stores that would more appropriate in the downtown of Hightstown. The 1998 Master Plan also recommended potential changes to the HC- Highway Commercial Zone that would improve the appearance of the area on Mercer Street. The 1998 Master Plan recommended that the I Industrial district, which existed at that time and included the Minute Maid site be revised to include only specific industrial uses and not permit the uses permitted in the HC Highway Commercial Zone.

The 1998 Open Space and Recreation Element recommended the creation of a trail in the abandoned railroad right-of-way which runs along Rail Road Avenue towards the Study Area. This trail has since been completed between Dawes Park and Summit Street. The remaining portion of this railroad right-of-way was abandoned and developed as part of the Minute Maid Facility. The Open Space and Recreation Element recommended the trail and greenway systems coordinate and connect with the trail/greenway network in East Windsor.



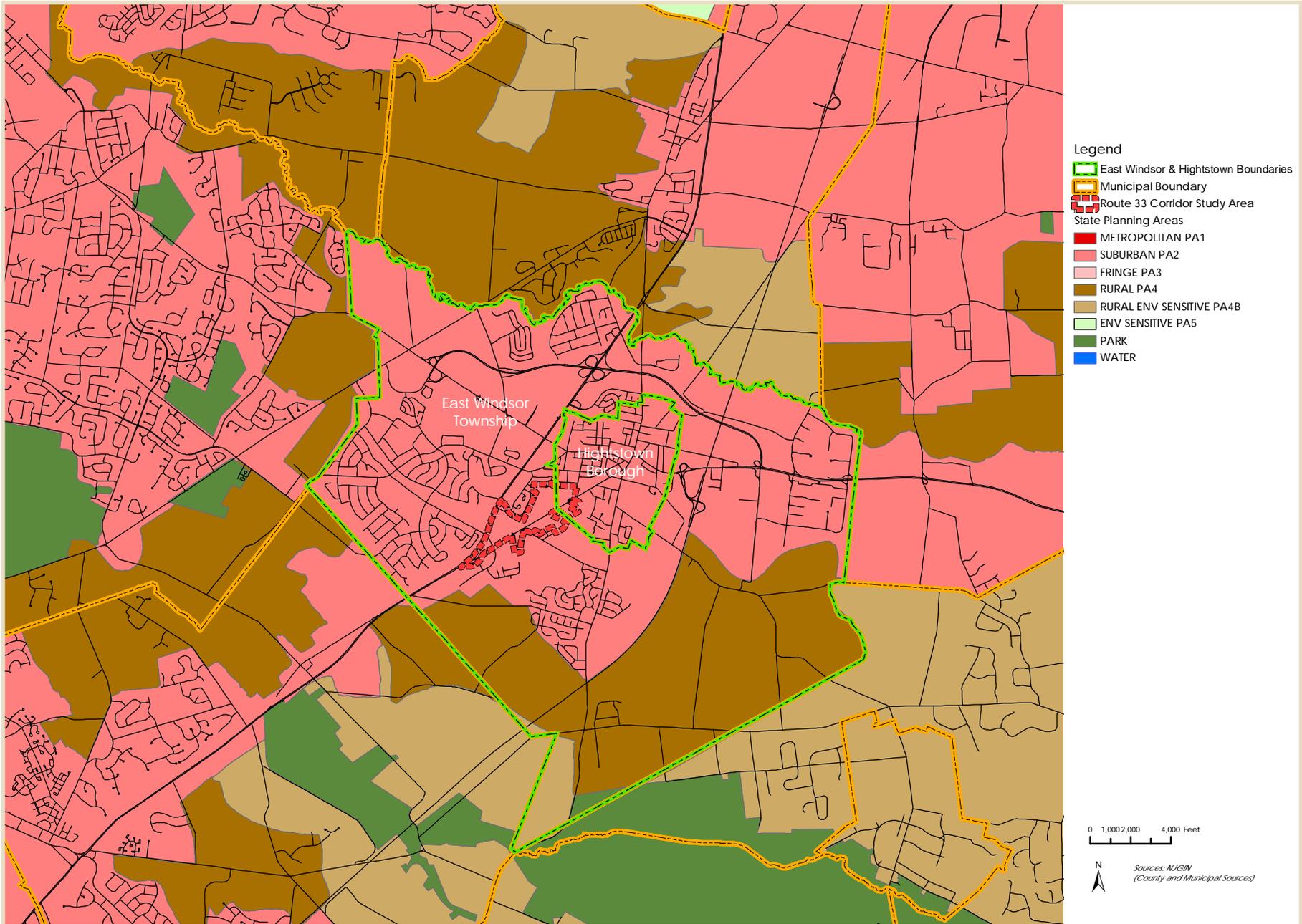
## Existing Land Use Map

The 2005 Master Plan Reexamination reaffirmed the objectives stated in the 1998 Master Plan, and recommended additional commercial businesses and in-fill residential development in an effort to improve its tax base. The 2005 Master Plan Reexamination recognized the importance of its designation as a Town Center, carried over its goals for historic preservation and maintained its goals relating to the preservation of its open-space corridors.

Planning for the Minute Maid site became a priority in the 2005 Master Plan Reexamination. Between the 1998 Master Plan and the 2005 Master Plan Reexamination, the Minute Maid Facility closed. The 2005 Reexamination recognized that the closure of the facility presented the Borough with an opportunity to make the Borough more livable and that the site was a valuable ratable. It suggested the Minute Maid Site be re-zoned to accommodate a mix of uses including retail, residential and office. It recommended that the Industrial zoning be changed to promote highway commercial development along Route 33 and residential uses on the remaining interior portions of the site. Important planning issues along Mercer Street/Route 33 were identified as easy vehicular access and good visibility from cars. Lack of municipal sanitary sewer services was also identified as an issue.

The Plan acknowledged that the highway commercial uses would complement the neighboring businesses and that allowing for residential development would make the site more economically viable for potential developers. The Reexamination included a number of specific design considerations including an emphasis on walkability. It also recommended that any development should coordinate with the Borough's Greenway Plan and with the existing development pattern in the Borough.





## State Planning Areas Map

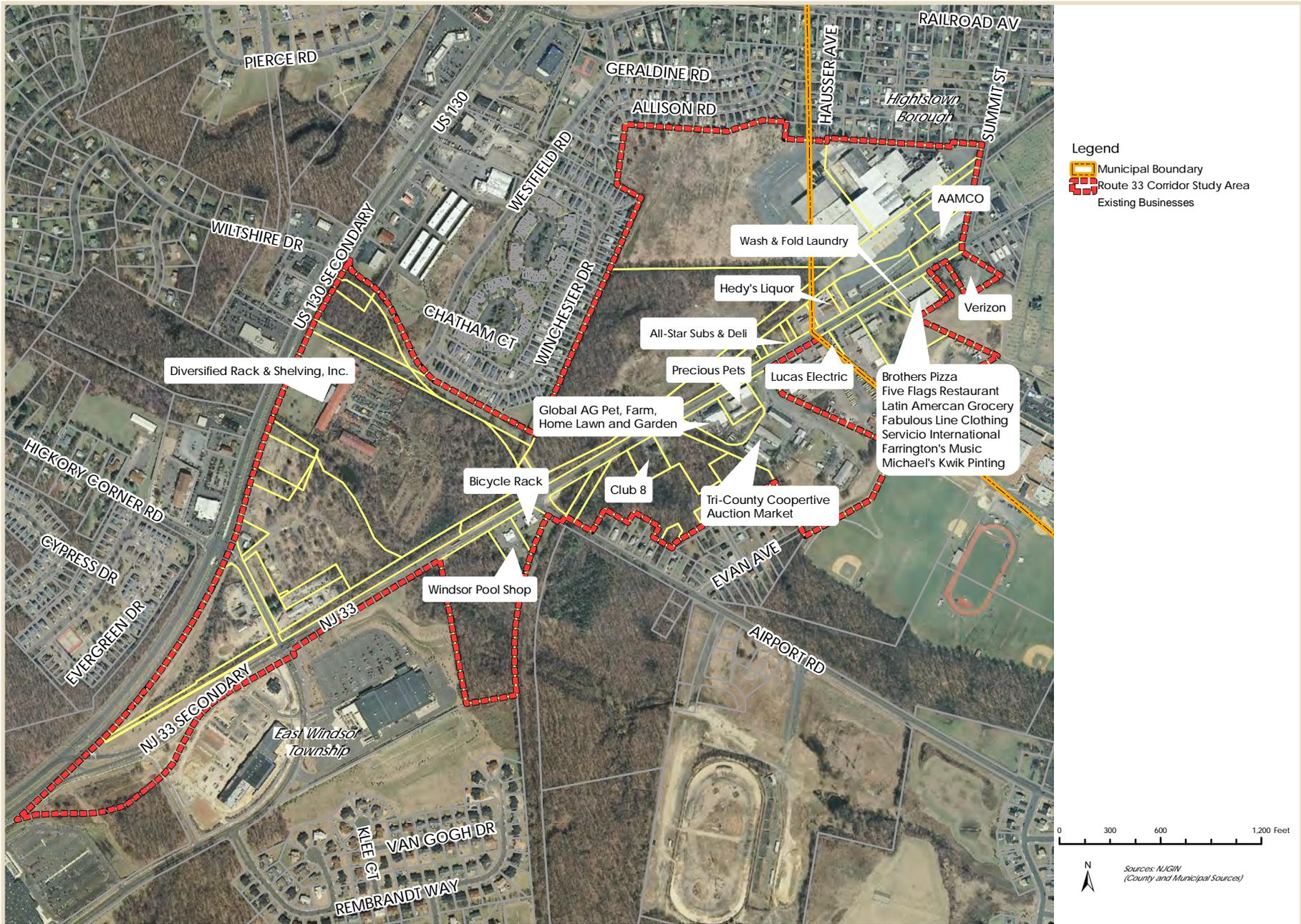
### County Planning

Mercer County recently completed a Master Plan in 2010 which took an innovative three system approach to planning. It considers land use impacts and examines the interrelationship of impacts with data and mapping which provides a sound basis for evaluating growth options and opportunities. The plan looked at economic targets for the location, type, and amount of new development, providing a balance of jobs and housing, available labor force, and affordable housing. It also looked at transportation multi-modal circulation emphasizing corridors for enhanced public transit service. Lastly, it evaluated natural resources conservation including priorities for protecting the most valuable natural and cultural resources.

### State Development and Redevelopment Plan

The study area is located in PA2 Suburban Planning Area and the northeastern portion of the Study Area is located in the state identified Hightstown Borough Town Center. The Suburban Planning Area is a designated growth area and the State Plan identifies these areas as the preferred growth areas.





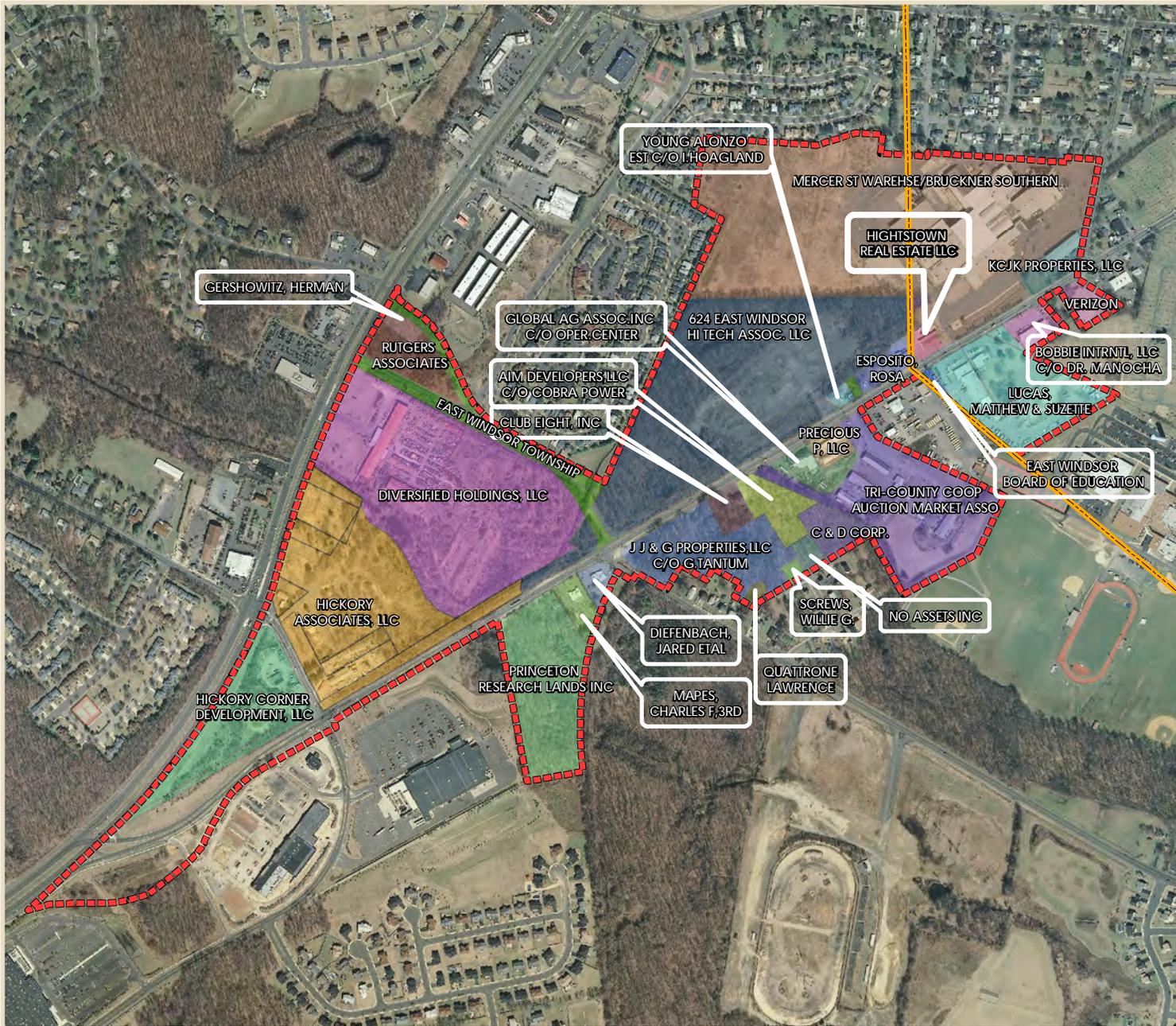
## Existing Businesses Map

**Existing Land Use**

Currently, there is a diverse mix of land uses in the Study Area ranging from the vacant industrial Minute Maid site to small regionally oriented retail stores such as the Bicycle Rack. Approximately 62% or 114 acres of the Study Area is currently vacant. Commercial /wholesale uses are the most prominent land use in the Study Area, accounting for 44 acres or 24% of the Study Area. These commercial /wholesale uses are comprised of several large established companies including Diversified Shelving Inc., Lucas Electric, the Tri-County Cooperative Auction Market and the AAMCO. Retail uses only account for 2.6% or 4.8 acres of the Study Area. Retail uses include a mix of neighborhood oriented retail uses such as Hedy's Liquors, Brothers Pizza, and Fabulous Line Clothing. The majority of these retail uses are located in Michaels' Plaza, a small strip retail center located on the southern side of Route 33 next to Lucas Electric. There are also several retail stores that are geared towards a more regional client base such as the Bicycle Rack, Windsor Pool's, or Farrington's Music. The land uses are shown on the Existing Land Use Map and the existing businesses are shown on the Existing Businesses map.

Route 33 Study Area Land Use Chart		
Land Use	Acreage	Percent
Commercial Services / Wholesale	44.0	24.0
Institutional	2.8	1.4
Retail	4.8	2.6
Telecommunications	1.0	0.6
Vacant	76.7	41.9
Vacant Industrial (Minute Maid site)	37.6	20.5
Rights of Way	16.1	9.0
<b>TOTAL*</b>	<b>183.0</b>	<b>100.0</b>





**Legend**  
 Municipal Boundary  
 Route 33 Corridor Study Area

0 250 500 1,000 Feet  
 N  
 Sources: NJGIN  
 (County and Municipal Sources)

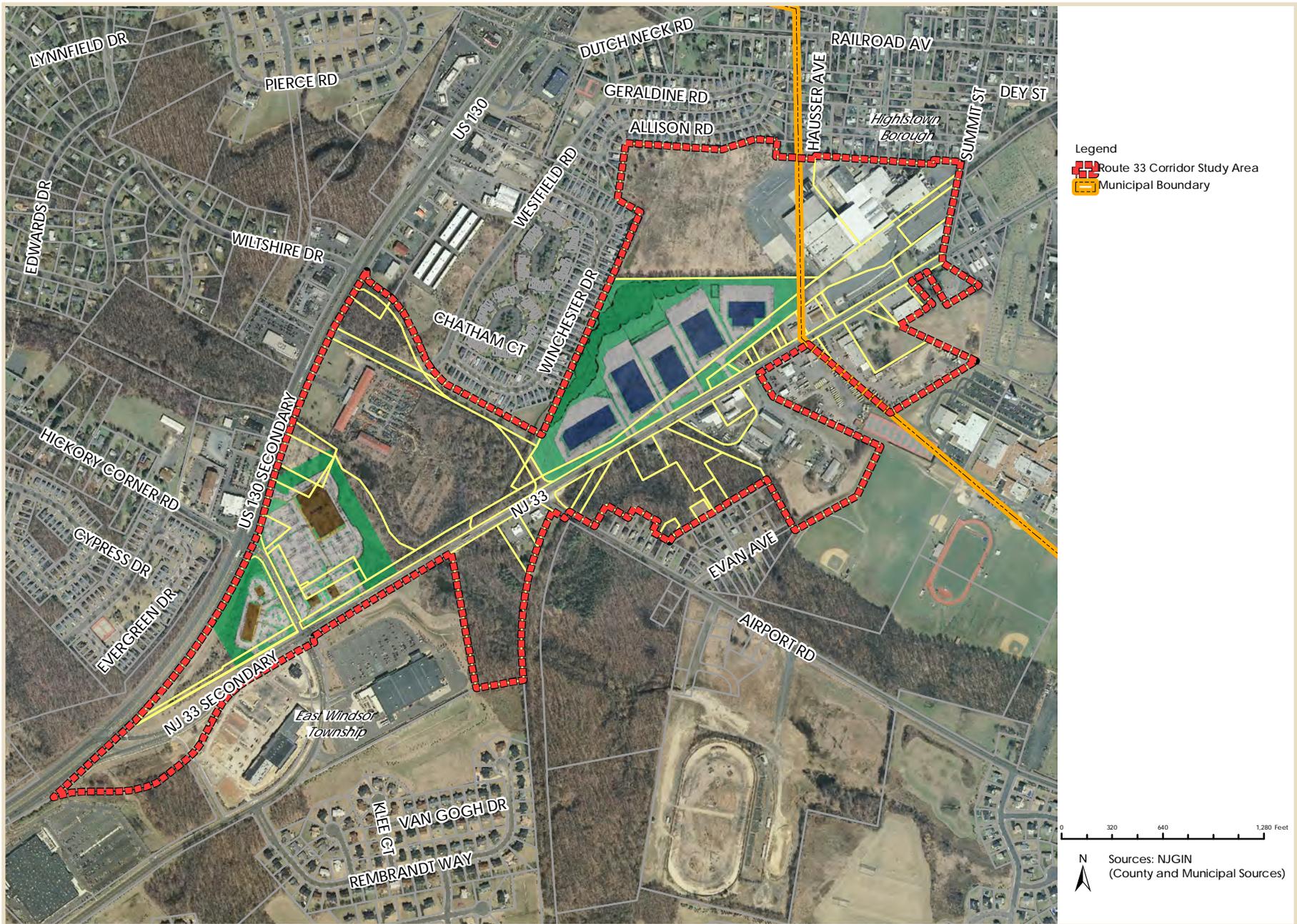
# Ownership Map

**Major Property Owners**

The Study Area has several major property owners. Mercer St Warehouse/ Bruckner Southern owns the vacant Minute Maid industrial building. 624 East Windsor Hi Tech Assoc. LLC and Hickory Corner Development LLC are also major land owners and collectively own the majority of land in the Study Area. The property owners are shown on the Ownership Map.

Owner	Acreage	Wetlands/Flood Plain Acreage	Developable Acreage
624 East Windsor Hi Tech Assoc. LLC	26.6	10.3	16.3
Hickory Associates LLC	16.8	2.6	14.2
Diversified Holdings, LLC	23.4	19.9	3.5
Hickory Corner Development LLC	7.3	0	7.3
Mercer St Warehouse/Bruckner Southern	37.8	12.2	25.5
Tri County Coop Auction Market Ass.	11.0	.7	10.3
Mathew and Suzette Lucas	7.6	0	7.5





## Approved Developments Map

### Development Approvals

There are several major development approvals within the Study Areas that could potentially impact the development of the corridor as a whole. The following are summaries of the development approvals in the corridor:

- Hickory Corner Plaza- This proposed commercial development is located at the western end of the Study Area on the northwestern corner of the intersection with Hickory Corner Road and Route 33. The applicant has obtained Preliminary and Final Site Plan approval for +/-17,000 square feet of retail and a 3,000 square foot bank.
- Hickory Associates LLC.- This proposed commercial development is located in the HC zone on the northeastern corner of the intersection with Hickory Corner Road and Route 33. The applicant has obtained Preliminary and Final Site Plan approval for a +/-105,000 square foot Kohls, a 4,300 square foot bank, and a 3,900 square foot restaurant.
- 624 East Windsor Hi Tech Associates LLC.- This proposed development is located in the IO zone near the center of the Study Area on the north side of Route 33 across from the Tri-County Cooperative Auction and Market. The applicant has received a Preliminary Subdivision Approval for 5 Flex Office/Warehouse Buildings totaling +/-200,000 square feet.

The approved development plans have been superimposed on the aerial of the Study Area. See Approved Developments map.

There are several properties in the immediate vicinity of the Study Area that have been developed recently in East Windsor. The Home Depot was constructed in 2002 adjacent to the Study Area's southern boundary on the southern side of Bear Creek. In 2005 Windsor Crossing Shopping Center and a Wal-Mart were built to the south of the Home Depot. A 51 lot residential subdivision is currently under construction on the former East Windsor speedway site. The site is located to the southeast of the corridor on the south side of Airport Road.

### Environmental Constraints and Issues

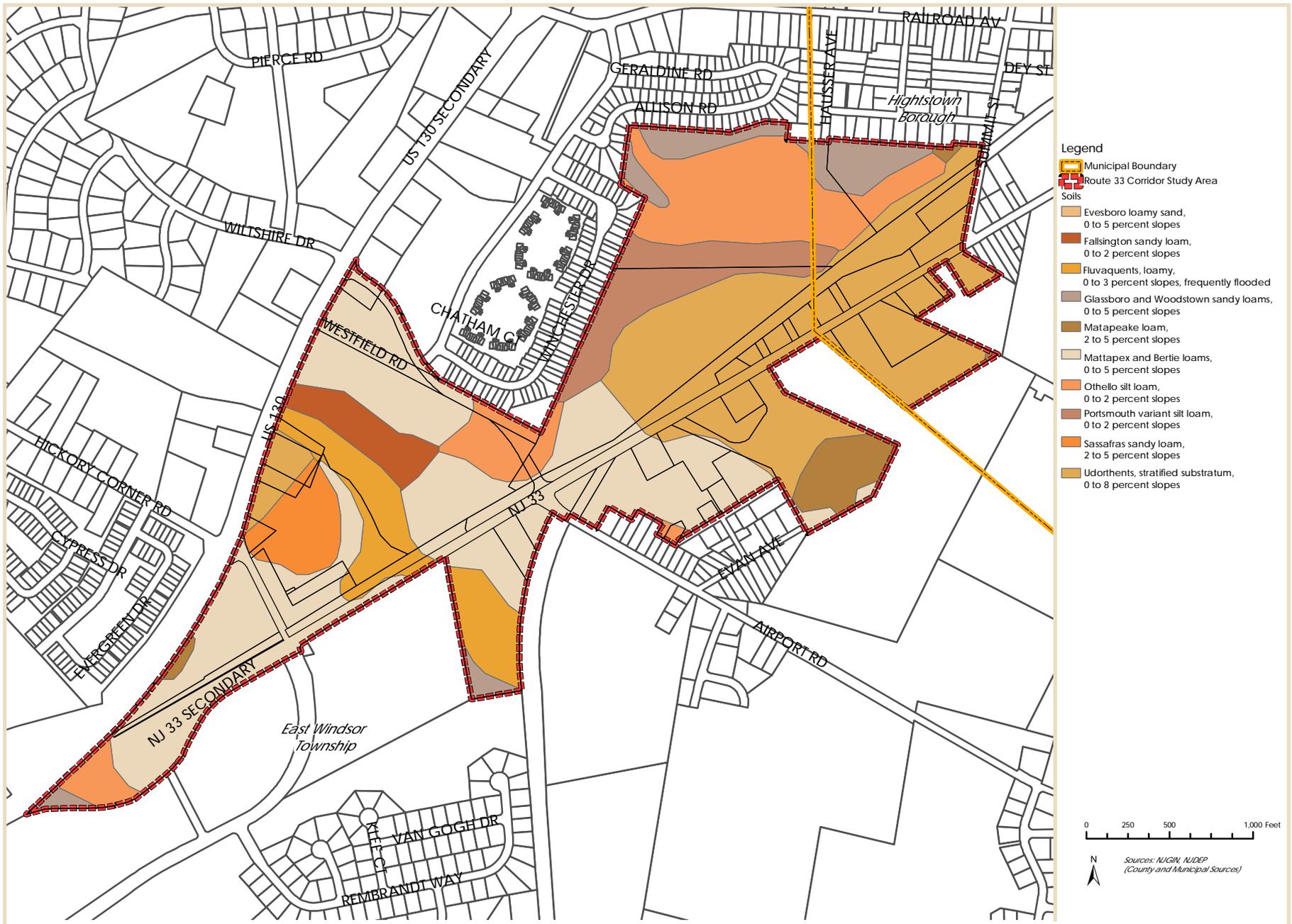
The Study Area is bisected by a large area of environmentally sensitive lands associated with a branch of the Bear Brook. Approximately 36% of the Study Area is comprised of wetlands and/or an area within the 100 Flood Zone. The environmentally sensitive lands are shown on the Environmental Constraints & Soils maps. There is also a large area in the northern corner of the Study Area that has been identified by the Landscape Project 2 data prepared by the New Jersey Department of Fish and Wildlife as Wood Turtle habitat. The Wood Turtle is listed as a State Threatened species and has been identified by the NJ Natural Heritage program as existing rarely in New Jersey. The Landscape Project Data is shown on the Landscape Project map. The environmentally sensitive areas in the Study Area will constrain the development potential of the area.

According to NJDEP, there are several Known Contaminated Sites within the Study Area and several located in close proximity. The Known Contaminated sites are shown on the Contamination map.

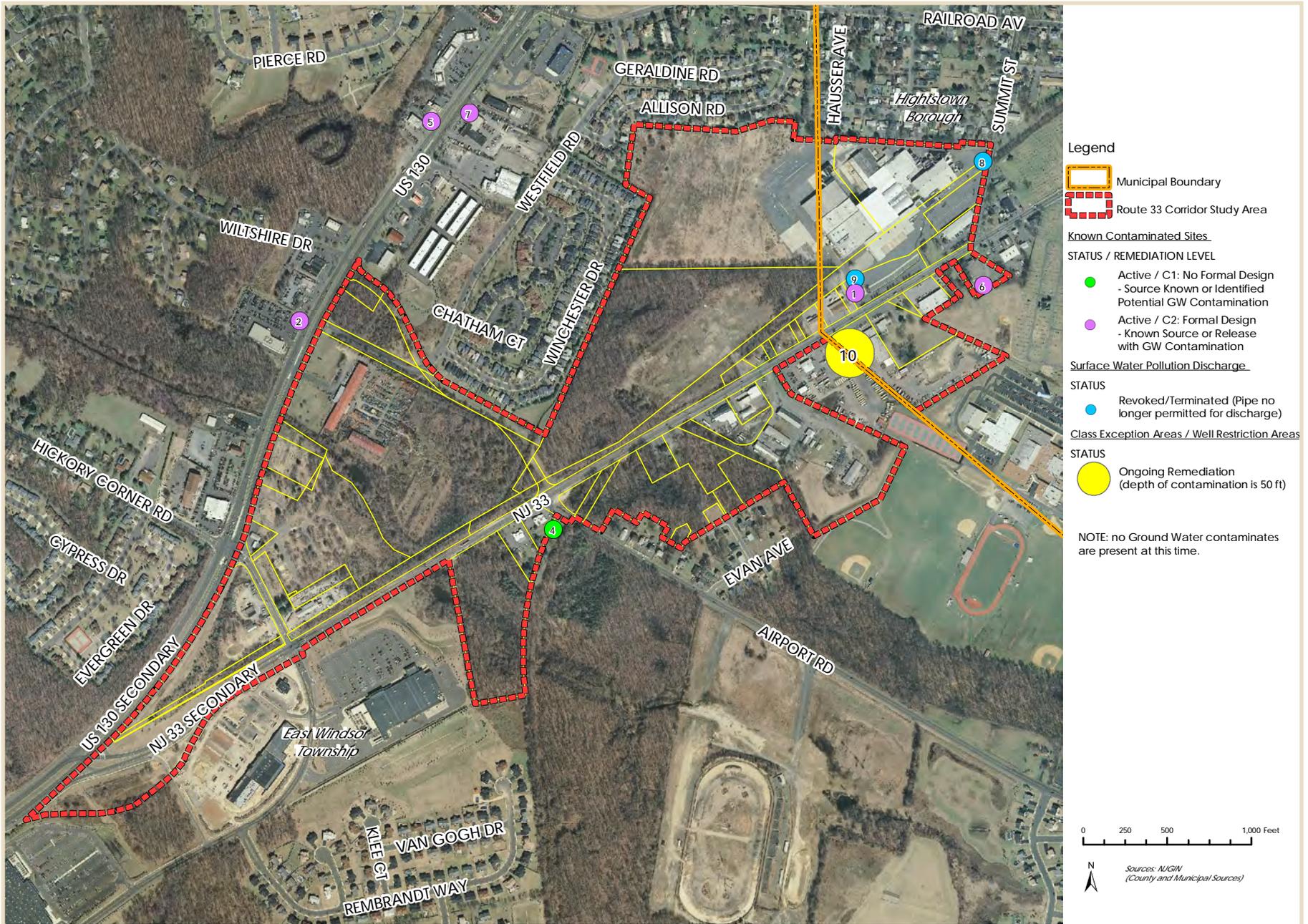




## Environmental Constraints Map



## Soils Map

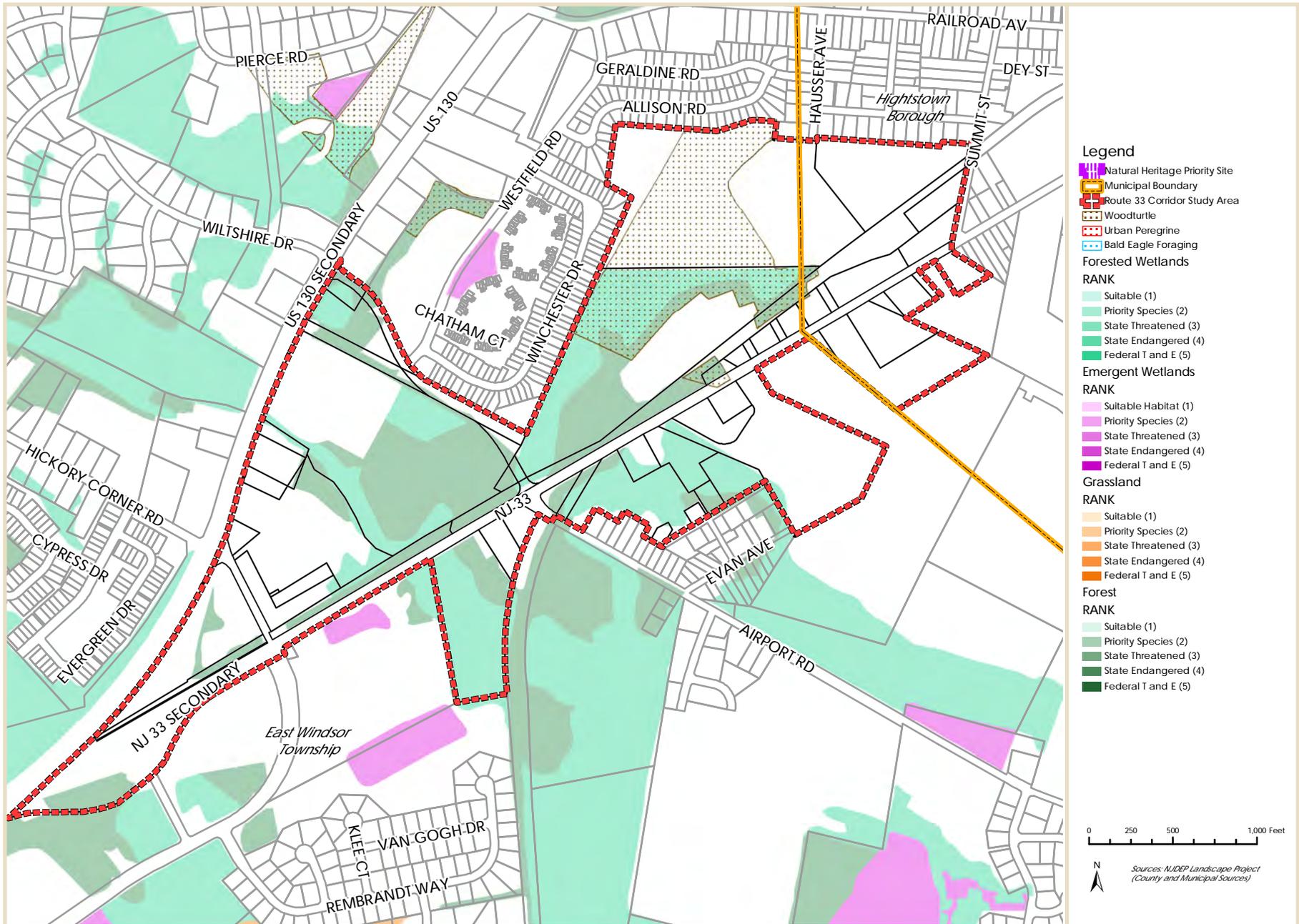


## Contamination Map

Contaminates In and Around the Study Area						
Known Contaminated Sites - 2009						
Map ID	PI Number	Facility Name	Address	Status	Remediation Level	Lead Agency
1	3594	Coca Cola Foods-Citrus Plant	480 Mercer St Hightstown Boro	Active	C2: Formal Design - Known Source or Release with GW Contamination	BOMM
2	2760	Davies Nissan Inc	590 Rt 130 East Windsor Twp	Active	C2: Formal Design - Known Source or Release with GW Contamination	BUST
3	5864	Gulf Service Station 2927 (Former)	315 Mercer St Hightstown Boro	Active	C2: Formal Design - Known Source or Release with GW Contamination	BUST
4	302138	Hickory Corners	Rt 130 East Windsor Twp	Active	C1: No Formal Design - Source Known or Identified- Potential GW Contamination	BFO-S
5	829	Hightstown Exxon	522 Rt 130 S East Windsor Twp	Active	C2: Formal Design - Known Source or Release with GW Contamination	BUST
6	9977	Lucas Electric Company Inc	415 Mercer St Hightstown Boro	Active	C2: Formal Design - Known Source or Release with GW Contamination	BOMM
7	23040	M & M Quality Automotive	521 Rt 130 N East Windsor Twp	Active	C2: Formal Design - Known Source or Release with GW Contamination	BUST

Surface Water Pollution Discharge					
Map ID	NJPDES ID	Facility Name	Receiving Waters	Status	Last Checked
8	NJ0004561.002A	Coca-Cola Foods Hightstown	Rocky Brook via storm sewer	Revoked/Terminated - Pipe no longer permitted for discharge	11/15/1999
9	NJ0004561.003A	Coca-Cola Foods Hightstown	Bear Brook via storm sewer and unnamed tributary	Revoked/Terminated - Pipe no longer permitted for discharge	10/20/2000

Class Exception Areas / Well Restriction Areas						
Map ID	CEA ID	Facility Name	Address	Depth of Contamination	KCSL ID	Lead Agency
10	1006	Jersey Central Power & Light Co.	401 Mercer St. Hightstown Boro	50 ft	NJD980646905	BOMM



## Landscape Project Map

### **Infrastructure**

The portion of the Study Area in East Windsor is served by the East Windsor MUA while the portion in Hightstown is served by the Borough's Water and Sewer Department. Both of these entities provide both water and sewer services to the Study Area. Water and sewer lines run along Route 33 within the Study Area.

Mercer County is in the process of completing a consolidated county-wide Wastewater Management Plan. The County's plan identifies all portions of the Study Area as being within a sewer service area. There are elevated electrical and telecommunication distribution lines that run the entire length of the Study Area on both sides of Route 33.

### **Property Assessment**

The conditions of the properties vary throughout the Study Area. Some buildings and businesses are well kept and in good shape while others are in a state of deterioration. The development pattern is disjointed. The corridor, in its current state, creates a hostile pedestrian and bike environment.

In Hightstown, the properties within the Study Area lack the historic character of the Borough. The majority of the parking is located in the front of the buildings and the buildings do not include any architectural features that coordinate with architectural stylings of the downtown. There are no sidewalks in the area and the retail stores are almost exclusively reached by use of a car. The Minute Maid Bottling Facility's corrugated metal façade and large scale contrast with the single family detached residential neighborhood to the north of the site. The AAMCO facility located on the northeast corner of the intersection of Summit Street and Route 33 is well maintained with a nicely landscaped strip including street trees but lacks a sidewalk between the parking lot and the street. This strip extends southeast on the northern side

of Route 33 along the Minute Maid property's frontage and stops before Hedy's Liquors. There is no curbing or landscaping along Hedy's Liquors frontage or the deli.

The southern side of Route 33 has a nicely landscaped strip including street trees along the frontage of the East Windsor Hightstown Regional School's bus yard. The Lucas Electric's frontage has a curbed strip of grass but does not include street trees or landscaping. Michael's Plaza's frontage also includes a small strip of curbed landscaping between the parking lot and the street.

The majority of the properties in the Study Area in East Windsor are undeveloped. The developed properties closer towards Hightstown such as the Global Ag property and the Club 8 property do not have sufficient landscaping and do not include curbing or a landscaped strip with street trees. There is a vacant home on the north side of Route 33 across from the Tri County Cooperative Market. This building is in a state of deterioration. A large billboard is on the site. The Bicycle Rack and Windsor Pools are located at the southeastern corner of the intersection of Route 33 and Airport Road. Both of these properties are well maintained. The Bicycle Rack has parking in the front of the building. Its frontage lacks landscaping and is uncurbed. Winsor Pool's frontage has a curbed landscaped strip with street trees.

The properties near the intersections of Hickory Corner Road and both Route 130 and Route 33 are vacant. The property on the southwestern side of Hickory Corner Road between Route 130 and Route 33 has several vacant deteriorated commercial buildings. The property's frontages on Hickory Corner Road and Route 33 are curbed but lack landscaping. The property on the northeastern side of Hickory Corner Road is also vacant with several commercial structures that are in a state of deterioration. The property's frontage on all roadways

is curbed but lacks landscaping. Diversified Shelving is located along Route 130 in the northwestern part of the Study Area. The building appears to be in good condition. It is set back over 250 feet from Route 130 and has parking along the front of the building. The frontage lacks a substantial amount of landscaping and the entire frontage of the property is curbed with a sidewalk. There is no landscaping between Route 130 and the sidewalk.

### **Minute Maid Property**

The Minute Maid property is located in the northeast portion of the Study Area, adjacent to the municipal border with the Township of East Windsor and Hightstown. The Minute Maid property including the vacant former plant includes Lots 25, 26, 27, 32, 33, 34 and 35 in Block 48 on the Hightstown tax map and Lot 106, Block 53.03 which is vacant in the Township of East Windsor. The total acreage of the Minute Maid site is 37.7 acres. According to the NJDEP wetland data, 12.6 acres of the property are wet. The area of wetlands is confined to the rear undeveloped portion of the property located in East Windsor.

### **Build-out Analysis under Current Zoning**

The following Build-out analysis shows what the corridor could look like if built to the capacity allowed under current zoning while also taking into consideration known environmental constraints. It is important to evaluate whether the current zoning will achieve the goals of the Master Plan. This analysis will also help identify changes needed in the East Windsor and Hightstown master plans, zoning ordinances and development regulations. A Build-Out will not address the capacity of the natural or infrastructure systems, because it is based on zoning that may not recognize the capacity of these systems.

This analysis was completed under the assumption that the entire 183 acre study area would be redeveloped to its maximum capacity under current zoning. The analysis does not consider the existing development approvals within the Area. The Study Area is located in the HC Highway Commercial Zone and Industrial Office Zone in East Windsor Township and in the Highway Commercial district in Hightstown. This analysis was based upon the following assumptions:

- Study Area= 183 Acres
- Developed right-of ways and Publicly owned properties=20.2 acres
- Wetlands and 100 year Flood Plain =63.8 acres
- Study Area Properties in East Windsor HC Zone = 90.7 acres
- Study Area Properties in East Windsor IO Zone =43.6 acres
- Study Area Properties in Hightstown HC Zone = 28.7 acres

Zone	Area (acres)	Wetlands/Flood Plain Area (acres)	Developable area (acres)	Maximum FAR or lot coverage and height	Maximum Square Feet of Permitted Uses
<b>East Windsor</b>					
HC	90.7	41.9	48.8	.3	637,718 sq ft
IO	43.6	21.8	21.8	.25	237,402 sq ft
<b>Subtotal</b>	<b>134.3</b>	<b>63.8</b>	<b>70.6</b>		<b>875,120 sq ft</b>
<b>Hightstown</b>					
HC	28.7	0 acres	28.7 acres	30% and 2.5 stories	750,103 sq ft or 375,051 sq ft and +/- 300 residential units
<b>Total</b>	<b>163</b>	<b>63.8 acres</b>	<b>99.3 acres</b>		<b>1,625,233 sq ft or 1,250,172 sq ft and +/- 300 residential units</b>

**Minute Maid Property Build-out**

The Minute Maid site is the largest site within the study area, the following chart shows the build out of the site.

Zone	Area	Wetlands/Flood Plain Area	Developable area	Maximum FAR or lot coverage and height	Maximum Square Feet of Permitted Uses
<b>East Windsor</b>					
IO	21 acres	12.6 acres	8.3 acres	.25	90,604 sq ft
<b>Hightstown</b>					
HC	16.6 acres	0 acres	16.6 acres	30% and 2.5 stories	433,857 sq ft or 216,928 sq ft and +/- 175 units of residential
<b>Total</b>	<b>37.7 acres</b>	<b>12.6 acres</b>	<b>24.9 acres</b>		<b>524,461 sq ft or 307,532 sq ft and +/- 175 units of residential</b>

## Public Outreach / Stakeholders

Public participation and input is paramount to understanding the dynamic of the study area. The stakeholders identified consisted of property owners, business owners, and local organizations. A questionnaire was also utilized to help stimulate the stakeholder's thoughts on the area. A series of group stakeholder meetings were held as well as various in person and over the phone interviews to gain local insight on the issues that currently exist in the area.

Appendix A details the list of stakeholders and a summary of the comments. The following is a list of the key issues that were derived from the public participation process:

- The appearance of the corridor. Some of the words used to describe it were antiquated, underutilized, and depressed, disjointed and aesthetically unappealing
- Lack of retail and shopping options in the Study Area
- Hostile environment for pedestrians and bikers
- The lack of visibility from Route 130
- The lack of medical facilities in the area
- Tax issues and the overcrowding of the regional school system
- The underutilization of properties in the corridor
- Lack of commercial recreation facilities in the area
- The lack of a community center within a close proximity to the center of Hightstown
- Retaining and promoting existing businesses
- Accessibility of the corridor by both pedestrian and vehicular traffic

- The connection of passive and active recreational areas
- The economic viability of the corridor
- Potential land use conflicts
- The existence of environmentally sensitive areas in the corridor
- The lack of connectivity between Hightstown and the study area
- The extension of Airport Road to Route 130.
- The traffic issues associated with the intersection of Route 33 and Airport Road
- The potential impact from the realignment of New Jersey Turnpike Exit 8
- The lack of public recreational facilities such as a skate park or dog park.

In addition to stakeholder meetings and subcommittee meetings, a special public meeting was held on March 14, 2012 at the East Windsor Senior Center. The purpose of the meeting was a presentation to the public of the findings and proposals of the Route 33 Revitalization Plan.





## Opportunities and Constraints

### Opportunities

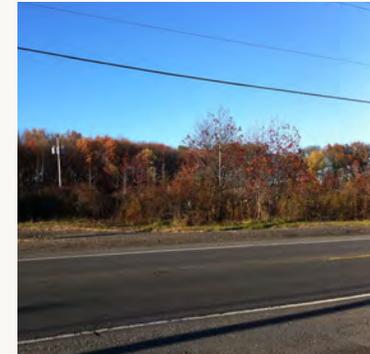
The corridor offers an array of different opportunities given its location, abundance of vacant undeveloped land, and location on and proximity to major roadways such as Route 130. This list was derived from site visits and the public participation process consisting of stakeholder interviews, and meetings with public officials.

- Close proximity to major roadways
- Availability of vacant land.
- Proximity to, and pedestrian access from, adjoining residential development
- Existence of underutilized parcels ripe for revitalization.
- Proximity to downtown Hightstown
- Proximity to the Regional High School
- Proximity to The Peddie School
- Proximity to a diversity of recreational resources and open space.
- Potential Greenway connections

### Constraints

The following constraints were identified throughout the public outreach process.

- Lack of access to and visibility from Route 130
- Traffic issues on Airport Road
- Lack of visually appealing structures and signs along the corridor
- Presence of poor or outdated building facades, signs and awnings
- No connection to Hightstown Borough downtown
- Lack of retail destinations
- Lack of streetscape continuity
- Lack of consistent bicycle and pedestrian linkages or infrastructure
- Costs of public improvements
- Current Land Development Ordinances in East Windsor and Hightstown
- Environmental Constraints



OPPORTUNITIES AND CONSTRAINTS



## Market Analysis

### Summary of Findings and Conclusions

Table 1 presents a summary of population and household estimates and projections, using data from ESRI, a national demographic data vending service. The data indicate that East Windsor experienced substantial growth in its population base during the previous decade, while Hightstown's population was stable. Together, the two communities housed an estimated 33,697 persons in 2010. The population of East Windsor is expected to continue to increase by 2015, but at a slower rate than it did between 2000 and 2010, while Hightstown is projected to remain with less than 5,200 residents.

<b>Table 1 Demographics</b>		
	<b>Township of East Windsor</b>	<b>Borough of Hightstown</b>
<b>Population</b>		
2000	24,919	5,216
2010 estimate	28,506	5,191
% change, 2000-2010	14.4%	-0.5%
2015 projection	29,730	5,164
% change, 2010-2015	4.3%	-0.5%
Median age, 2010	37.1	38.6
<b>Households</b>		
2000	9,448	2,001
2010 estimate	10,643	1,963
% change, 2000-2010	12.6%	-1.9%
2015 projection	11,094	1,954
% change, 2010-2015	4.2%	-0.5%
Average household size, 2010	2.65	2.63
<b>Household Income, 2010</b>		
Median	\$79,282	\$73,086
Average	\$96,391	\$83,653
<b>Homeownership Rate</b>		
2010 estimate	60.3%	59.8%





### Population and Household Trends

The ESRI estimates and projections were prepared prior to release of initial data from the 2010 Census. The Census count for East Windsor is 27,190, which is 1,316 persons less than the ESRI estimate. In contrast, the Census puts Hightstown's population at 5,494 (higher than ESRI by 303 persons) and suggests that it gained 278 residents after 2000. ESRI estimates have been used in the above table because 2010 Census data are only available for population counts; no household estimates are currently available.

While population growth is important, households are the key consumer unit considered by retailers when evaluating opportunities for new store locations. Despite the effects of the recent economic recession, East Windsor experienced strong household growth, largely due to new single family home construction. The ESRI estimates indicate that Hightstown experienced a loss in households, which can be attributed to two factors: conversion of older homes to non-residential use, and renovation of large historic homes that once contained multiple units and are now single-family dwellings.

Although homeownership dominates in both communities, East Windsor and Hightstown have a substantial rental housing stock. Rentals account for 40 percent of occupied housing units. Most of these units consist of older Class B and C apartment complexes built more than 25 years ago. However, the communities also have single family homes, townhouses, and condominiums that are rented by their owners.

East Windsor and Hightstown are upper middle income communities. Median household income in East Windsor is estimated by ESRI at \$79,282; Hightstown's median is lower at \$73,086.

Household demographics are used by retailers to identify prospective sites for new store locations. RES Advisors compared the demographics of the five-mile area surrounding the intersection of Route 33 and Hickory Corner Road with three other big-box retail nodes in central New Jersey:

- The Hamilton Marketplace area, south of I-195 and Route 130
- The Quakerbridge area, at Route 1 and Quakerbridge/Provinceline Roads
- The Freehold/Manalapan area

Table 2 shows that the five-mile area surrounding the Route 33 corridor is less densely populated than the trade areas served by the other three retail concentrations. This is due to large lot, low density development in Millstone Township to the east of the study area, and a significant amount of undeveloped land between East Windsor and Robbinsville. Also, the predominance of industrial development to the north near Turnpike Exit 8A limits population density. In other ways, the Route 33 corridor compares favorably. It is growing faster than the other three commercial nodes and its population is as young or younger. Median household income is higher than in the area surrounding Hamilton Marketplace, and home ownership rates are above the national average. While the area surrounding the Route 33 corridor would not be able to support the sheer quantity of store space found in the three comparable locations, it has strong potential as a secondary retail node.



**Table 2**  
**Comparative Demographics: Five Mile Areas Surrounding Retail Nodes**

	Subject Site*	Hamilton Market- place	Quakerbridge Mall Area	Route 9 Area **
<b>Population</b>				
2000	63,491	114,978	108,698	103,761
2010 estimate	74,695	122,983	116,454	114,450
% change, 2000-2010	17.6%	7.0%	7.1%	10.3%
2015 projection	79,621	125,178	119,407	118,194
% change, 2010-2015	6.6%	1.8%	2.5%	3.3%
Median age, 2010	38.2	40.8	38.7	40.5
<b>Households</b>				
2000	23,123	43,434	37,773	34,054
2010 estimate	26,738	46,181	40,256	37,737
% change, 2000-2010	15.6%	6.3%	6.6%	10.8%
2015 projection	28,417	47,035	41,369	39,024
% change, 2010-2015	6.3%	1.8%	2.8%	3.4%
Average household size, 2010	2.78	2.57	2.64	2.98
<b>Household Income, 2010</b>				
Median	\$90,199	\$76,268	\$90,917	\$101,891
Average	\$124,518	\$88,288	\$127,147	\$133,669
<b>Homeownership Rate</b>				
2010 estimate	71.0%	75.6%	72.5%	86.8%

\*Measured from intersection of Rt. 33 and Hickory Corner Road

\*\* Measured from intersection of Rt. 9 and Craig Road

Source: ESRI; RES Advisors

**The Route 33 Study Area:  
 Advantages and Limitations**

From the perspective of commercial real estate developers, investors, and potential tenants, the Route 33 study area offers advantages and disadvantages:

*Advantages*

- The corridor's proximity to Exit 8 of the New Jersey Turnpike is important to industrial/warehouse space users and hotels. The widening of the Turnpike between Exits 8 and Exit 8A and improvements to the Exit 8A interchange will enhance the potential for redevelopment of older East Windsor industrial, warehouse, and office properties near the new interchange.
- Route 33 intersects with US 130 just south of the study area, providing easy connections to Hamilton and Robbinsville Townships and Interstate 195.
- East Windsor has a number of neighborhood and community shopping centers with strong retail tenants such as Target, Wal Mart, and Shop Rite, as well as the only multi-screen cinema serving a large area.
- Downtown Hightstown is an attractive, historic commercial district with a distinctive mix of shops, restaurants, and service businesses. Improvements to the streetscape and parking, as well as the renovation of nearby historic homes, have enhanced its desirability as a business location.
- The strong demographics of the two communities and nearby municipalities should be attractive to retailers and restaurants. There is limited retail competition to the east and north of East Windsor.



#### Limitations

- Within the study area, Route 33 is not a major commercial artery.
- It carries only one lane of traffic in each direction, which would be insufficient for handling traffic from large warehouses or office buildings.
  - Retailers and chain restaurants prefer the visual exposure available on US 130 or CR 571. Such exposure is possible at the southern end of the study area near Hickory Corner Road, but not along Route 33 north of Airport Road.
- With the exception of the newer big box stores (Wal Mart and Home Depot) and the Windsor Crossing shopping center, the retail/commercial uses along Route 33 lack connectivity and do not present an image of quality that would attract top-quality new development.
- East Windsor is not well known as Class A office submarket<sup>1</sup>, although it does have Class A buildings near the intersection of CR 571 and CR 535.
- The study area currently lacks the corporate headquarters, multi-tenant office buildings, institutional uses, or tourist attractions that would draw additional hotels.
- Over the last decade, new industrial/warehouse construction has been concentrated closer to Turnpike Exit 8A in Cranbury and South Brunswick and Exit 7A in Robbinsville rather than at Exit 8.

#### Current Property Market Conditions

All commercial property sectors are still experiencing the effects of the economic recession. Job losses, declining household buying power (in real dollar terms), and corporate contraction affects local property markets in many ways:

- Space is vacated, as current tenants downsize, go out of business, or relocate to cheaper quarters.
- Property owners and leasing agents have difficulty finding new tenants for empty offices or stores.
- Rents are lowered, as property owners compete for a dwindling tenant pool
- Concessions, such as free rent periods or higher build-out allowances, increase, reducing the value of new leases.
- Finding investment capital and debt financing for new projects becomes difficult.
- Announced (and approved) development plans are put on indefinite hold.

While there are indications that commercial property markets are firming, as indicated by stabilizing rents and vacancies and an uptick in new leases signed, conditions will have to continue to improve for there to be significant demand for new construction. Plans for major redevelopment along the Route 33 corridor will therefore require a time frame of three to ten years or longer. Projects that have already received approvals may move ahead more quickly, but may need to be revised to meet current market conditions.

Presented below is a brief review of current commercial/industrial property market conditions in the Hightstown/East Windsor area.

<sup>1</sup> The Building Owners and Managers Association International (BOMA) defines a Class A buildings as "most prestigious buildings competing for premier office users, with rents above average for the area. Buildings have high quality standard finishes, state of the art systems, exceptional accessibility, and a definite market presence." Such buildings include may include food service, copying, express mail collection, fitness centers, and/or child care centers, and are professionally managed. Class A space tends to be new or recently renovated. Typical tenants include banks, law firms, investment banking companies and others who are able to pay top rents.

### Retail Space and Shopping Centers

Characteristics of the larger shopping concentrations in East Windsor and Hightstown are summarized in Table 3 on the following page. The Twin Rivers center in East Windsor, with a CVS and small stores and service businesses, is not included in the table.

Table 3 Business Districts and Larger Shopping Centers				
Name/Location	Anchors	Other Tenants	Vaccancies	Comments
East Windsor Village NEC Rt. 571 & One Mile Road East Windsor	Target, TJ Maxx, Famous Footwear, Pearle Vision, AT&T, Gamestop, Thai restaurant, bank (pad)	Bath & Body Works, Radio Shack, Cold Stone Creamery, Pearle Vision, AT&T, Gamestop, Thai restaurant, bank (pad)	25%; former Genuardi's supermarket (52,869 SF); former Charlie Brown steakhouse on pad; one small in-line space	Genuardi was never successful. Still paying rent. Asking rent for 2,200 SF in-line space is \$22, but would take mid-teens.
Windsor Hights Center SWC Rt. 571 & Rt. 130	Staples (Super Fresh recently closed)	Payless Shore, Benjamin Moore paints, Sprint; dollar store, nails, sushi, pizza, deli, Indian restaurant, hair salon, nails. Pad sites: PNC & Wells Fargo Banks, Rita's, Taco Bell, convenience store	4 small in-line spaces. Former Super Fresh= 53,800sf	Party Fair will be replacing Fitness Zone mid-spring. Super Fresh will be closing.
East Windsor Towne Center W. Side of Rt. 130 n. or 571 152,555sf	Burlington Coat Factory, Dollar Tree, CVS, Party Fair, produce market/deli, Sally Beauty	laudromat, hair salon, bank, CHinese, Indian and Italian restaurants, tanning	7% 10,908 sf	Some in-line vacancies; New Chase Bank (pad). Another pad site available for build-to-suit at \$19/SF (up to 5,000 SF)
Towne Center Plaza E. Side of Rt. 130, s. of Rt. 133 230,000 SF	Shop Rite, 15-screen cinema	Hallmark, nail and hair salons, GNC Dress Barn, pizza, liquor, cleaners, Pak Mail, pet supply, oriental buffet, mattress store, furniture, TGI Friday, bank on pads.	Small in-line space; pad site.	Plans to renovate cinemas, install more stadium seating. Asking \$15/SF
Windsor Crossing Rt. 33 & Hickory Corner Rd. 80,009 SF	Gold's Gym	Japanese restaurant, pizzeria, day spa, grill, dry cleaner; large Indian grocery; Indian takeout; beauty salon; Edible Arrangements; bank/offices, day care center on pads.	One small in-line space; pad site	Between Home Depot and Wal-mart Asking rents: \$15-\$20/SF Center sold January 2011 for \$181 PSF
Downtown Hightstown Rt. 571, Rt. 33 & Main Street Hightstown	Post office, banks, library, Borough Hall	Restaurants, cafes, pizza, conveience stores, independent pharmacy, home design/decor, bakery, shoes, flowers, music. Service businesses, such as photographer, beauty salon, nails, tax preperation, shoe repair, printer, tailor, insurance, dry cleaner, day care.	<10%	

Source: RES Advisors

In addition to the centers listed in the table, East Windsor has a Home Depot located at the southeast corner of Route 33 and Hickory Corner Road, and a Wal Mart located south of the Windsor Crossing shopping center. Each of these stores is over 100,000 square feet. The two communities also have a number of smaller strip centers, mostly on Route 130. The Route 33 corridor includes a smaller strip center (Michael's Plaza) as well as freestanding retail/service buildings housing long-time businesses (a bicycle shop, pet store, pool supply store, liquor store, deli).

Key observations with respect to retail space in the trade area are as follows:

- Asking rents for vacant small store spaces in East Windsor and Hightstown are in the \$10-\$20 range, depending on location and condition. Rents are negotiable, but retail vacancies are lower than for other commercial and industrial property types.
- East Windsor is well served by national chain pharmacies; Walgreen, Rite Aid, and CVS are all represented in the Township. An independent pharmacy is located in downtown Hightstown.
- The area also has numerous banks, including newly constructed locations for Chase, PNC, and First Choice.
- With the exception of the vacant former Genuardi's supermarket on Route 571 in the East Windsor Village center and the recently closed Super Fresh at Windsor Hights Center, there are no vacant retail spaces in East Windsor or Hightstown with more than 15,000 square feet at the present time.
- Downtown Hightstown has a mix of unique shops, restaurants, and service businesses catering to a diverse range of consumers, as well as strong anchors that include the Borough Hall, library, post office, banks, and churches.

Vacancies are relatively low. Some stores have a long history in the community (The Shoe Buckle is an example), while others are relatively new (Molto Bene, Fernando's Grill, Slowdown Cafe).

- Businesses such as the kitchen design center draw from a wide trade area and attract an upscale clientele, while others cater to locals (the pizzerias are popular with Peddie School students). Some newer businesses are targeting the area's growing Hispanic population.
- The residential population within walking distance of downtown is small, making parking very important to the success of downtown stores.
- Downtown Hightstown has a business association that promotes the community, but it does not have a paid executive director.

There are some issues with respect to the existing mix of retail space. Some of these reflect the lingering effects of the recession and the difficulties experienced by small independent businesses in gaining access to credit. Others are purely local. As the economy begins to recover, new stores are opening in East Windsor and Hightstown:

- A number of new tenants recently moved into the Windsor Crossing shopping center, including a large Indian grocery that is attracting considerable customer traffic.
- The long-established H & H appliance store moved from Robbinsville to a vacant space at the southern end of Route 130 in East Windsor.
- As noted, the Super Fresh supermarket recently closed, a reflection of the financial difficulties experienced by its parent company.
- Managers at the Wal Mart and the Home Depot indicated that their East Windsor store sales are below the performance of similarly-sized stores at/near Hamilton Marketplace or

the Quakerbridge Mall/Route 1 area.

- The Home Depot is not visible for drivers going southbound on US 130. Visiting the Wal Mart is hampered by cumbersome access for southbound travelers.
- Approved plans for a Kohl's department store (105,000 square feet), a 4,300 square foot bank, and a restaurant to be located west of Route 33 and east of US 130 north of Hickory Corner Road are yet to materialize. Other retail/service uses planned near this intersection total 20,000 square feet (17,000 for retail and a 3,000 square-foot bank). The approved location would be a suitable location for Kohl's.
- Construction of a Kohl's and other big box retailing at this intersection has the potential to improve the performance of the Home Depot and Wal Mart stores, while creating a concentrated center for retailing along US 130 in East Windsor.
- However, more stores will not solve the difficult access and visibility problems facing the existing retailers near the intersection of Route 33 and Hickory Corner.

### Office Space

#### Market Overview

East Windsor and Hightstown are part of the Greater Princeton office sub-market. According to the NAI Fennelly brokerage, the current office vacancy rate in the Greater Princeton area is 21 percent. Although high, this vacancy rate represents an improvement over 2008 and 2009. As seen in Table 4, this market has had consistently high vacancy; new construction exceeded demand for space even in years when the economy was much healthier.

**Table 4**  
**Office Absorption and Vacancy Trends**  
**Greater Princeton Sub-Market**

	<b>Gross Absorption (Square feet)</b>	<b>Net Absorption (Square feet)</b>	<b>Year-End Vacancy Rate</b>
2001	983,970	768,670	16.3%
2002	982,747	587,502	17.1%
2003	977,957	692,817	17.6%
2004	1,378,653	976,021	18.2%
2005	1,360,851	1,073,261	21.3%
2006	1,148,067	561,041	21.8%
2007	1,136,005	936,182	21.7%
2008	1,657,578	1,150,658	22.2%
2009	1,047,753	726,856	21.9%
2010	1,353,017	469,924	21.0%

Source: NAI Fennelly

Other brokerage firms reporting on the Greater Princeton office market put the vacancy rate even higher. Newmark Knight Frank, which manages two complexes in East Windsor near CR 571 and 535, put the vacancy rate at over 25 percent for the third quarter of 2010. It must be noted, however, that each brokerage firm defines the boundaries of the market differently, and they have varying minimum sizes for buildings included in their inventory. Asking rents are said to average \$23-\$25, with \$27 or more in Class A buildings. Because of rent reductions and other incentives, businesses that were looking to rent space or renew leases during the recession have been able to move to better quality buildings at contract rents that would have been paid for B-quality space during the boom years.

### Space in East Windsor and Hightstown

A small medical office space in the Twin Rivers area of East Windsor is listed at \$18, while newer, larger, and better spaces in the two buildings at East Windsor Medical Commons at CR 571 and CR 535 are listed at just under \$20. Together, nearly 24,000 square feet of space were available in the two buildings at the end of 2010 -- nearly 30 percent of the total.

It should be noted that this medical office park has approval for a third building with 40,000 square feet. If committed tenants could be identified, this building would be more attractive than any future medical office space in the Route 33 study area, as the site is already cleared, has infrastructure in place, and is ready for development. It is also closer to the new University Medical Center of Princeton Medical Center that will open in Plainsboro at the end of 2011. Children's Hospital of Philadelphia is also planning to build an outpatient facility on the Plainsboro campus.

East Windsor has three other concentrations of office space located near the same intersection. This intersection has the advantage of being near the Shiseido and McGraw Hill facilities and the Route 133 bypass terminus. Its location on CR 571 provides a direct link to Route 1 and the center of Princeton. Yet, the existing buildings near the intersection still have substantial vacancies. Other parcels remain undeveloped, even though many have approvals from East Windsor.

- Windsor Corporate Park consists of two and three story buildings, totaling 287,000 square feet. This Class A complex is well occupied; the only listing at the end of 2010 was for 20,000 square feet, at an asking rent of \$27 per square foot.
- Sci Park was approved for four buildings totaling 240,000 square feet, on a site to the north of the Medical Commons on CR 535. Its

first building, a 65,975 square foot single-story structure, was built prior to the recession and was listed for rent at \$14 per square foot. It was leased as of April 2011, and will be used as the global headquarters of Elementis, a specialty chemicals firm. No schedule has been announced for construction of a second building at SciPark.

- Windsor Center is an older business park with a single-story, multi-tenant office building as well as the newer McGraw Hill credit union building. There is space available in the older office building, but no details could be obtained. There are also other vacant parcels in Windsor Center that could be developed.
- A 79 acre parcel on Millstone Road adjacent to Windsor Corporate Park is also listed for sale. It would also be suitable for future office development, but would not be more desirable than a site along Route 33.
- A number of medical and dental practices operate from converted houses or older small office buildings along CR 571, both east and west of CR 535.

In Hightstown, two office listings in historic buildings have asking rents of less than \$15 per square foot.

### Industrial/Warehouse Space

#### Market Overview

East Windsor and Hightstown are part of the Exit 8A industrial submarket. Industrial space users, unlike office tenants, are very interested in proximity to the Turnpike. A central New Jersey location is attractive for warehouse/distribution uses because it is mid-way between the large New York and Philadelphia markets, is close to the port in Elizabeth, and can reach the Wilmington, Baltimore, and Washington markets in two to four hours.

Table 5 summarizes brokerage firms' assessments of current inventory and market conditions. As with office space, the findings vary based on different definitions of geographic coverage and minimum building sizes included in the inventories,

Table 5 Estimates of Warehouse/Industrial Inventory, Availability, and Average Rents Exit 8A Sub-Market			
	Inventory (SF, 000s)	Availability (inc.sublets)	Asking Rent Warehouse (\$/SF)
Grubb & Ellis	60,186	20.0%	\$3.67
Jones Lang LaSalle (1)	56,678	19.7%	\$3.83
Cassidy Turley	59,501	20.1%	\$3.91
CB Richard Ellis (2)	64,100	18.6%	\$3.94

(1) Includes owner-occupied spaces; buildings 30,000 SF and larger

(2) Buildings 10,000 SF and larger, 4th Quarter data.

Source: RES Advisors, from brokerage firm reports

In the last 15 years, many new big-box warehouses were constructed in Cranbury and South Brunswick Townships near Exit 8A in response to changing logistics operations. Most of these properties have 36-foot high ceilings and other design features that allow for efficient operations. They are occupied by single users, such as retailers and automobile companies, or shared by multiple tenants.

**Space in East Windsor and Hightstown**

By far the largest industrial property in the study area is the former Minute Maid factory, located within Hightstown. According to a rental listing, the building contains 324,000 square feet of space with 27 docks plus drive-in bays, and can be divided for smaller users. Ceiling heights vary from 18 to 28 feet, but its suitability for re-use as industrial space could not be determined from the information available. The site totals 38 acres; the building is listed for lease at \$2 per square foot.

East Windsor has a substantial inventory of industrial and warehouse properties to the east of the current Turnpike Exit 8, mainly in the area from Millford Road east to Lake Drive.

- This business park contains the Conair facility.
- Only one large vacant parcel was noted; it could hold 75,000 square feet of building space.
- However, there are a number of wholly or partially vacant existing buildings listed for rent or sale.
- The existing buildings are older and have lower ceiling heights than the newer mega-warehouses near 8A, but would certainly be competitive for users that don't need state-of-the art space.

RES Advisors believes that the relocation of the Turnpike's Exit 8 entrance closer to the Millford/Lake Drive business park will improve its attractiveness for warehouse/distribution uses. Vacant sites will eventually be absorbed and older properties redeveloped.

East Windsor has approved a plan for five new industrial buildings with a total of +/- 200,000 square feet in the Route 33 study area, to the northwest of the Airport Road intersection. However, we believe that the Millford/Lake Drive area will be more attractive for warehouses

than the Route 33 corridor because it already has the infrastructure to handle high volumes of truck traffic.

Table 6 summarizes commercial and industrial availabilities identified during the fourth quarter of 2010. The list does not include all vacant or available space in East Windsor or Hightstown.



<b>Table 6</b>				
<b>Available Commercial and Industrial Space in East Windsor and Hightstown</b>				
<b>4th Quarter 2010</b>				
<b>Location</b>	<b>Type</b>	<b>Size (SF)</b>	<b>Asking Rent (\$/SF/Year)</b>	<b>Comments</b>
<b>East Windsor</b>				
658 Etra Road East Windsor	Office/Warehouse	11,000	\$5.00-\$7.50	Also listed for sale. 3 drive-ins, 2 docks 15,000 SF building.
70 Lake Drive East Windsor	Office/Warehouse	35,964	\$3.85 NNN	Also listed for sale at \$2.75 million. 4 docks, 1 drive-in. 21-foot ceiling height.
19 Probasco Road East Windsor	Warehouse	18,198	\$8.00	Older building. 28 docks, 1 drive-in.
85 Twin Rivers Drive East Windsor	Office/Warehouse	76,800	Negotiable	18-foot ceiling height. 19 docks and 3 drive-ins. 8,000 SF of office
406 Wycoffs Mill Road East Windsor	Warehouse	84,000	\$2.25 modified net	10.6 acres. Only 1,400 SF of office space.
S. Side of Rt. 33, Twin Rivers area East Windsor	Medical Office	1,500	\$18.00	6,000 SF building
East Windsor Medical Commons, Rt. 571 & Rt. 535 East Windsor	Medical Office			
	Building A	15,810	\$19.50	40,888 SF total; 2 story
	Building B	7,954	\$19.81	40,000 SF total; 2 story
	Building C	40,000	\$20.00	Approved; to be built Site also for sale for \$2.4 million
Windsor Corporate Park 50 Millstone Road East Windsor	Office	20,000	\$27.00	2 & 3 story buildings 287,000 SF total; Class A
Sci Park 469 Old Trenton Rd. East Windsor	Office/Research	65,975	\$14.00	New speculative building reported leased as of 4/11. Room for 3 additional buildings in approved site plan. Also listed for sale at \$250/SF. Divisible to as small as 2,500 SF.
<b>Location</b>	<b>Type</b>	<b>Size (SF)</b>	<b>Asking Rent (\$/SF/Year)</b>	<b>Comments</b>
<b>Hightstown</b>				
163 Stockton Street Hightstown	Office	1,688	\$14.18 NNN	Also listed for sale at \$259,900. Historic building.
Old York Commons Hightstown	Office	1,945	\$13.75	Historic building.
480 Mercer Street Hightstown	Industrial	342,000	\$2.00	Former Minute Maid plant. Divisible to 25,000. 18-28.5 foot ceiling heights. 27+ drive-ins. 38 acre site.
400 Mercer Street Hightstown	Comm'l/ industrial	13,200	\$6.00 for 4,500 SF	Transmission shop (7,500 SF); warehouse (4,500 SF); office (1,200 SF)

Source: RES Advisors



### Hotels

East Windsor has four national flag hotels located near Exit 8, offering a total of 435 rooms. Characteristics of these hotels are summarized in Table 7 on the following page.

- The newest of these is the Hampton Inn, which opened in 2005.
- The other three hotels are more than 25 years old, but have been renovated.
- The Holiday Inn, once a Ramada, is by far the largest at Exit 8 (200 rooms), and contains substantial meeting and banquet space.
- These hotels compete with other lodging properties located near Exit 8A (four properties with 489 rooms).
  - o Located near US 130 in Cranbury are the Residence Inn and Staybridge Suites, which date from 2002 and 2004 respectively.
  - o Closer to 8A are the Courtyard by Marriott (144 rooms, built 2001) and the Crowne Plaza (150 rooms, built 1986).
  - o The East Windsor hotels also compete to a less extent with those near Exit 7A, such as the Hilton Garden Inn across from Hamilton Marketplace.

Managers of the East Windsor hotels were unwilling to divulge performance data (average occupancy, average daily room rate, or revenue per available room) for 2010.

- Based on historic information, RES Advisors estimates that 2010 occupancy for the four properties averaged +/- 55 percent.
- We believe that the conference/business meeting/banquet business at the Holiday Inn is not as strong as it was in prior years.

- Management opinions were mixed as to whether 2010 was a better year than 2009.
- All of the managers, however, feel strongly that the market is not strong enough to support additional hotel rooms near Exit 8.
  - o The East Windsor hotels rely on a mix of individual leisure travelers and business visitors who choose the convenience of being near the Turnpike. The market is price sensitive.
  - o Only the Holiday Inn has a significant meeting or conference trade.
  - o There is some concern about the potential impact of moving the Turnpike exit to the east -- further from the existing hotels.
  - o Visibility from Route 33 is already a problem, especially for the Hampton Inn and Holiday Inn, which do not front on Route 33. Signage will need to be improved as the new interchange is completed.

Although there was discussion of a new hotel that would replace the older motel south of the Americana Diner on Route 130, these plans have not materialized. A proposal for a Hyatt Place hotel on Route 130 in Cranbury was also deferred as the recession began. Lenders are currently looking for loan-to-value ratios for proposed hotels at 50 to 65 percent, depending on the strength of the flag and the track record of the operator. Thus, substantial equity would be needed in order to finance a new hotel in the short run.

Table 7 Existing National Hotel Chains Near Exits 8 and 8A					
Name	Location	Year Built/ Renovated	Type	Rooms	Comments
<b>Exit 8</b>					
Holiday Inn	N. of Rt. 33, W. of exit 8, East Windsor	1972/2006	Full Service	201	Former Ramada. Lacks visibility from Rt. 33. Ample conference and banquet space. (14,000 square feet). Restaurant. Ballroom.
Days Inn	S. side of Rt. 33, E. of exit 8 (until completion of new interchange), East Windsor	1985	Economy	100	Basil's Restaurant. Even mix of leisure and individual business visitors. No meeting space.
Hampton Inn	N. of Rt. 33, W. of exit 8, East Windsor	2005	Limited service	80	One meeting room. Newest hotel at Exit 8. Poor visibility from Rt. 33. Mix of individual business & leisure visitors.
Quality Inn	N. side of Rt. 33, W. of Exit 8, East Windsor				
<b>Subtotal</b>				<b>435</b>	
<b>Between Exits 8 and 8A</b>					
Residence Inn	E. side of Rt. 33 Cranbury	2002	Extended stay/suites with kitchen	108	Near newer business parks and warehouses. One meeting room. Extended stay, individual business and leisure patrons.
Stay Bridge Suites	Rt. 535 (e. of Rt. 130), Cranbury	2004	Extended stay/suites with kitchen	87	Individual business, extended stay, leisure. Near new business parks and warehouses.
Name	Location	Year Built/ Renovated	Type	Rooms	Comments
<b>Exit 8A</b>					
Crowne Plaza	E. of the Turnpike, S. side of Rt. 32, Monroe	1984/2006	Full service	150	Restaurant, 11 meeting rooms. Majority of patrons are business visitors.
Courtyard by Marriott	W. side of Rt. 535, S. side of Rt. 32, South Brunswick	2001	Limited Service	144	Cafe, four meeting rooms. Majority of patrons are business visitors.

Source: RES Advisors

Smith Travel Research estimates that national average occupancy for all hotel properties in 2010 was 57.6 percent, up 5.7 percent from 2009, but average daily room rates did not go up. With an improving economy and limited new construction underway, STR projects improved occupancy and higher room rates in 2011 and 2012. With demand growth outstripping additions to supply, the market for additional hotel rooms will grow both nationally and in the Central New Jersey market.

The upcoming shift of the Exit 8 interchange will create opportunities for hotel development further east on Route 33 that would be more attractive than a location in the study area. In the long run, for a hotel to be successful in the study area, it would need to have frontage on US 130 as well as Route 33. This would rule out using a portion of the Minute Maid property for a hotel site. It would also need to cater to a different market niche than the existing Exit 8 properties or the all-suite hotels in Cranbury. The study area would not have enough sources of corporate business at the present time to draw an upscale, full service hotel franchise such as a Hyatt, Hilton, Marriott, or Sheraton

### Potential Land Uses In The Study Area

Based on the area's demographics, existing development patterns, and real estate market conditions, RES Advisors believes that retail/service/restaurant uses have the best potential for the next three years.

According to ESRI, more than 253,000 people and 95,500 households reside within a 15-minute drive time (off peak/not rush hour) from the intersection of Route 33 and Hickory Corner Road. ESRI's estimates of potential expenditures, when compared with actual sales in this area, show substantial purchasing power leakage to other shopping concentrations outside the 15-minute drive

time area. The only major store types where estimated sales exceeded potential spending from area residents were general merchandise stores<sup>2</sup>, furniture<sup>3</sup> and fast food restaurants (which are amply represented on Route 130 and at Hamilton Marketplace, and to a lesser extent on Route 571. There is the potential to capture more sales dollars locally, even though there is some overlap between the Hightstown/East Windsor market area and that of Hamilton Marketplace (and to a lesser extent, that of the Quakerbridge Mall area). For some store types, such as clothing and sit-down restaurants, sales outflow exceeds 50 percent of demand.

At the present time, we see a market for:

- Big box and other retail near the intersection of Hickory Corner Road, with visibility from both Route 130 and Route 33
  - o This would include the planned Kohl's store.
  - o Other potential tenants could include:
    - specialty grocers (Whole Foods, Trader Joe) or traditional markets (such as Wegman) that are expanding in New Jersey
    - sporting goods (Dick's, Sports Authority or similar)
    - warehouse club (ideally, a Costco)
    - home furnishings (Bed Bath and Beyond or similar)
    - electronics (Best Buy, or chains that are new to Central New Jersey, such as HH Gregg and P. C. Richard that are now located near Quakerbridge Mall)
    - off price/discount clothing and shoe retailers, such as Marshalls, Ross, DSW)

- furniture stores (Ashley, Bob's, or Raymour & Flanagan. The Randall furniture store on Route 130 recently closed.
- book store (with the Borders bankruptcy, Barnes & Noble is the only remaining large chain bookstore)
- Vacant acreage within the study area would not be able to support all of these store types, and some would feel that the study area is too close to their existing locations at Hamilton Marketplace.

- Restaurants and service businesses on outparcels near the big box stores.
  - o While the Route 130 corridor is amply supplied with fast food, there are few national chain sit-down restaurants.
  - o The recent closing of the Charlie Brown steakhouse at East Windsor Village should not be viewed as a deterrent. Charlie Brown had chain-wide problems. A new Asian buffet (Silver Spoon) opened in Town Center Plaza during the spring of 2011, indicating the area's attractiveness for restaurants
  - o Potential restaurant types would include Chinese (such as P. F. Chang), Italian (Bertucci, Macaroni Grill), steaks and burgers (Longhorn), barbeque (Famous Dave's), Mexican (On the Border), and salad/healthy fare. The area already is well supplied with Japanese and Indian cuisine.

<sup>2</sup> The general merchandise category includes department stores/superstores, warehouse clubs, and dollar stores. The East Windsor Wal-Mart, Target, and T. J. Maxx are in the heart of the 15-minute drive time; the Wal-Mart, Kohl's, and Sam's Club at Hamilton Marketplace are at the southern edge.

<sup>3</sup> The ESRI estimates do not reflect the recent closing of the Randall furniture store on Route 130. Current estimates would probably show sales leakage in this category as well.

- o Independent, destination restaurants should continue to be encouraged along Route 33 and marketed to hotel visitors as well as locals. They should be part of the redevelopment plan for the Minute Maid site if it does not remain in industrial/warehouse use.

Mid-term uses that may be supportable in 3-7 years would include:

- A satellite outpatient health care facility affiliated with one of Central New Jersey's hospitals, offering either an outpatient surgical center, emergency care, or both.
  - o This would be a good use at or near the redeveloped Minute Maid site.
  - o This type of off-campus hospital-affiliated facility is not common in central New Jersey, but is seen in the southern part of the state and in Philadelphia's Pennsylvania suburbs.
    - One example is a 130,000 square foot affiliate of Main Line Health Center in Newtown Square, PA, which offers primary care, pediatrics, specialists, physical and speech therapy, laboratory space, and diagnostic imaging in a three-story building that opened in 2007.
    - Virtua Health Systems operates outpatient centers in Camden and Gloucester counties.
    - It is possible that Jersey Shore Medical Center or other Monmouth or Ocean County hospitals would look to the west to increase their market by locating a facility in

Hightstown/East Windsor. Mercer and Middlesex County medical centers, such as St. Francis, Capital Health, St. Peter's, and Robert Wood Johnson should also be contacted by local officials regarding the availability of potential sites in the Route 33 corridor.

- o Some of these specialties are already located at East Windsor Medical Commons, but not under the management of a single hospital and with no emergency care services.
- o We do not see short- to mid-term potential for more general medical office space, given the room for a third building at the Medical Commons complex and the construction of new medical office buildings near the new hospital in Plainsboro.
- Assisted living and/or nursing care, catering to the growing senior population not only in East Windsor and Hightstown but in surrounding townships. Adult day care could be part of this complex. It should be noted that East Windsor recently approved a 100-bed assisted living facility on Route 571 west of Old Trenton Road. Over time, there should be demand for more than one such facility in the East Windsor-Hightstown area. At the present time, only Meadow Lakes offers assisted living as part of its continuing care retirement community, which requires payment of a substantial entrance fee.
- Commercial or non-profit indoor recreation facilities
  - o A new YMCA with a pool, athletic facilities, and classroom space. An example of a full-service YMCA

can be seen at the Rafferty branch in Hamilton Township. In addition to child care, this 52,000 square foot facility has a wellness center, exercise studios, a heated indoor pool and whirlpool, indoor running track, and an air conditioned gym. Another branch of the Hamilton Y offers on-site summer camp programs.

- o A privately owned and operated indoor ice rink. This is an expensive facility to operate, and would compete with the existing Ice Land facility in Hamilton township and, to a lesser extent, the public rink at Mercer County Park. A private investor/developer would want commitments from existing youth and adult leagues before proceeding with this type of project.
- o An indoor, climate-controlled sports facility focusing on league play. These spaces range in size from as small as 10,000 to more than 100,000 square feet.

One such facility (Sports Zone) was built within the last year near the intersection of Route 33 and Perrineville Road in Monroe Township. It offers indoor tennis and basketball courts, and practice/game turf field for youth and adult soccer, baseball, field hockey, flag football, and lacrosse. It also hosts private parties. The largest facility of this type in central New Jersey is located in Florence Township, Burlington County. In addition to the types of sports offered at Sports Zone, this church-affiliated center has a banquet hall seating up to 300 guests and a full fitness center and exercise studio. A plan for an indoor multi-sport facility has been presented for a greenfield site in southeast Hamilton Township. The

proposal is meeting with resistance because the site is part of a rural resource conservation zone and would need a use variance in order to proceed.

Because of the study area's proximity to Sports Zone, it is unlikely that a second multi-sport indoor facility can be supported on Route 33; these businesses typically serve large trade areas. For example, the New Jersey Youth Soccer Association sanctions only 11 indoor soccer facilities in the entire state, of which Sports Zone is one. Multi-sport indoor facilities tend not to include ice skating, but often have space that can be used for roller hockey or in-line skating. Other indoor sports facilities focus on a single sport, such as soccer or basketball, but these tend to be smaller.

- Specialized health care or recreation uses would require detailed market and financial feasibility analyses that reflect specific development proposal..
- Small scale specialty retailers and service businesses
  - o Businesses that already have an established presence elsewhere in central New Jersey (especially in eastern Mercer County municipalities such as West Windsor, Princeton, or Hamilton) are most likely to be successful.
  - o While the area has unmet potential for specialty food uses (such as delis, candy and ice cream, bakeries, meats, etc.), these types business tend to be individually owned and operated, and difficult to finance in the current business climate.

- o A pedestrian-oriented lifestyle center would not be successful at or near the Minute Maid site. It would have no exposure to traffic on US 130. Also, the site does not have a sufficient residential population within walking distance, and lacks strong connection to downtown Hightstown.

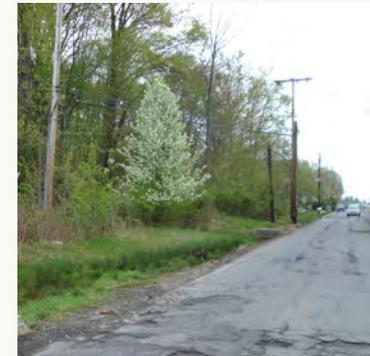
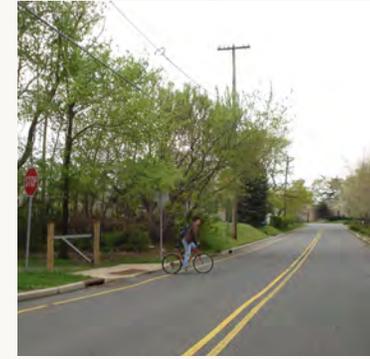
Extending Airport Road west to Route 130 and installing a signal at Airport Road and Route 130 would enhance retail/commercial development potential in the corridor and improve the flow of traffic. Signage and access changes will also be needed to maximize retail sales potential at both existing and future stores.

15-Minute Drive Time Map



## Planning Principles

- Create a “Main Street feel” for a portion of the study area;
- Capitalize on the proximity to established residential neighborhoods to provide a mixed use setting while limiting or precluding additional residential development in the Study Area;
- Establish a pedestrian friendly streetscape;
- Maximize the Route 33 frontage for commercial development by the potential relocation of the BOE bus yard;
- Maximize access and visibility from Route 130;
- Create interconnections with existing and proposed roadway network;
- Establish connections to schools and recreational facilities from Route 33;
- Establish larger scale uses from Airport Road to the Route 130 intersection;
- Establish coordinated streetscape and design standards (e.g. signage, setbacks, and landscaping);
- Minimize generation of additional truck traffic and their impacts on surrounding areas;
- Preserve generation of additional environmentally sensitive and constrained properties;
- Create greenway connections;
- Create a regional detention basin that can also serve as an amenity;
- Establish flexible land use regulations that can respond to the market;
- Use a Form-Based Code approach;
- Promote economically viable development which complements surrounding uses and businesses;
- Create a pedestrian and bike friendly environment;
- Incorporate existing businesses into any design





## Vision/Key Strategies

The overall vision for the Route 33 corridor is to maximize its development potential by encouraging a synergy of existing and proposed uses that complement each other. This could take the form of a variety of health care, wellness, entertainment and recreation uses. The relocation and expansion of the YMCA to this area in particular could serve as a recreation destination anchor. The proximity of the Board of Education recreational facilities can reinforce the proposed uses. The design of the area as a coordinated, well-planned corridor would serve as the impetus for people to “discover” the area. Currently, there is approximately 70,000 square feet of existing commercial development along the corridor. It is projected that an additional million of commercial space can be developed.

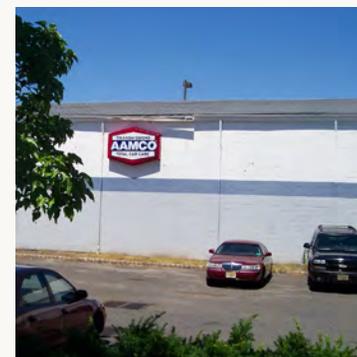
There are several strategies proposed that are key to the overall revitalization vision of the area. The first strategy relates to stormwater management. Rather than “squander” developable land for individual stormwater systems, a regional stormwater approach is recommended. Stormwater management systems designed for each development tend to be redundant, inefficient and “use up” land that could more appropriately be used for development. Individual detention basins are often viewed as a liability.

A regional approach to stormwater management is proposed through the establishment of a regional retention basin that can also function as an aesthetic and recreation asset. The intent is to also use green stormwater management techniques such as bioswales for the entire corridor. “Green” sustainable principles should also be

integrated into the building and site design, wherever possible.

The second key strategy relates to circulation improvements. The overall circulation approach recognizes that the corridor will continue to be auto dominated. The intent, however, is to minimize multiple trips within the corridor (ie. park and walk between sites). This strategy should be implemented through the creation of a strong pedestrian/ bikeway network that connects the sites within the corridor and links to downtown Hightstown, Peddie School and the Board of Education facilities. The existing bikeway network which currently ends at the Minute Maid site should be extended throughout the area and connect to the proposed regional greenway network.

The third strategy is to create four land use categories. These strategies are discussed in more detail in the following sections.





## Land Use Recommendations

It is recommended that four land use/zoning categories be established for the Route 33 corridor study area. These include:

- Gateway Retail
- Big Box Retail
- Main Street Retail
- Planned Campus Development

These recommendations are based upon a detailed existing conditions assessment, a SWOT analysis, a real estate market study, a circulation assessment and stakeholder input. The proposed Land Use map graphically shows the location of the four land use categories.

### Gateway Retail

As shown on the Land Use map, this triangular area is located at the intersection of Routes 130 and 33, west of the Hickory Corner Road right of way. The purpose of this district is to capitalize on its “gateway” location and to create an iconic entry which will draw the public into the area.

In order to create a sense of entry, it is recommended that the publicly owned property be developed into a “public” park with a visually prominent art/sculpture component.

A complementary element in capitalizing on the Gateway location is the development of a signature building. The building should be aesthetically pleasing and might include a mix of restaurants, retail and office space. Due to its location, the focus should be more on form and aesthetics than function/use.

It is anticipated that the coordinated development of this gateway area will require a public/private partnership among the Township of East Windsor, NJDOT and the developer of the Hickory Corner Plaza.

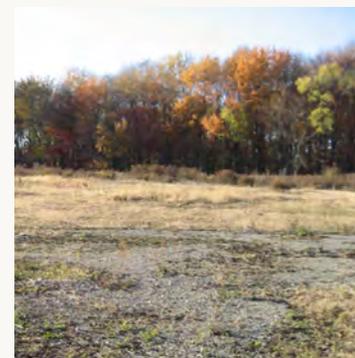
### Big Box Retail

This area has frontage on both Route 130 and Route 33 and is located between the extension of Airport Road and Hickory Corner Road. The development of big box retail supplemented by pad restaurant uses along the frontage capitalizes on the established presence of big box retail in the immediate area. The proposed extension of Airport Road to Route 130 and the proposed internal circulation network will provide increased access and visibility.

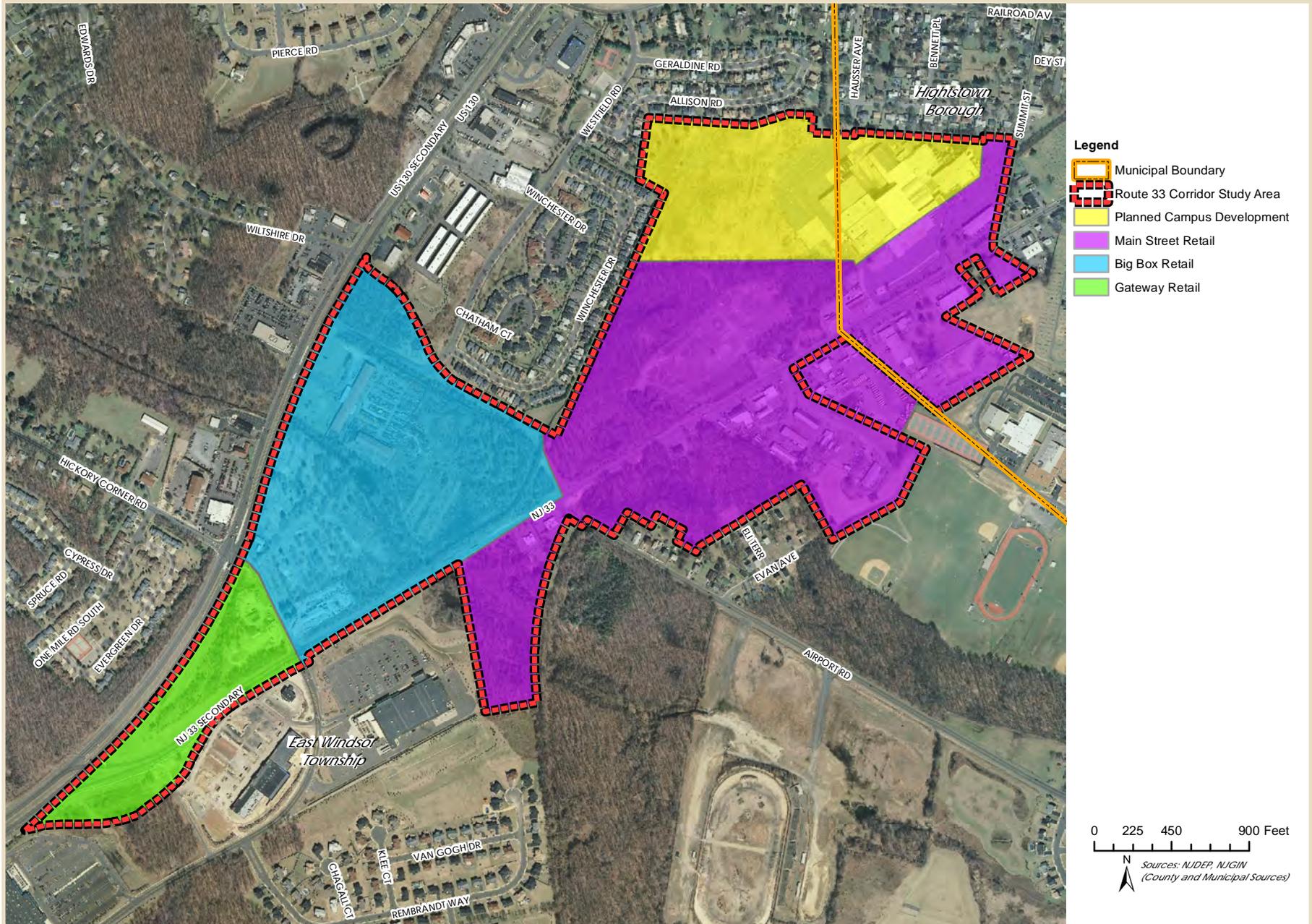
Shared parking is proposed. Big Box tenants should be targeted that will complement existing smaller users in the area and the presence of the high school recreation fields. Complementary users may include large scale retail recreation users such as Sports Authority or Dick’s Sporting Goods.

It is recommended that the Township of East Windsor work with the two key property owners in this proposed district, Diversified Holdings, LLC and Hickory Associates, LLC, in order to coordinate and maximize development potential.

A key component of the revitalization strategy of the Route 33 Corridor is the creation of a master storm water retention basin with an associated park. The basin which can be designed as a water amenity is proposed to be



LAND USE RECOMMENDATIONS



## Proposed Land Use Map



located at the northwest corner of Route 33 and the Airport Road Extension. This is an appropriate location since the development potential is limited in this area due to environmental constraints.

#### **Main Street Retail**

The predominant feature of this district is its frontage along both sides of Route 33 east of Airport Road and along the proposed parallel roadway. This district which is located in both East Windsor and Hightstown, contains the frontage portion of the Minute Maid Site. The intent is to create a small scale walkable area, with a “Main Street” appearance. A wide variety of retail uses should be promoted which reinforces existing uses in the corridor. Buildings should be located close to the right of way with minimal front yard parking. Shared parking should be strongly encouraged. Access to individual properties through individual driveway curbs cuts should be replaced with linked parking areas and coordinated driveways that serve more than one user.

In order to promote a sense of place, there is a need to develop a pedestrian/bikeway network along the roadway frontages. The proposed pedestrian/bikeway should physically link to the existing greenway system in Hightstown.

One of the concept options is to develop a YMCA or similar recreation use in the Main Street retail district fronting Route 33. The user can be considered a recreation destination anchor which can provide a draw for other complementary retail users. The location of the YMCA should be readily accessible to the bikeway/greenway. Two options are shown on the concept plans.

In order to create a walkable “Main Street” environment, building gaps along the frontage should be minimized. Currently, the Board of Education bus depot occupies significant frontage along the south side of Route 33. It

is recommended that the Township work with the Board of Education to facilitate a land swap with the adjacent property owned by the Tri County Cooperative Auction Market Associates. The intent is to relocate the bus parking to the rear and permit commercial development along the frontage.

#### **Planned Campus Development**

The majority of the Minute Maid site is located in this land use district. The purpose of the district is to encourage the redevelopment of this portion of the property into low scale campus form development. Permitted uses would include professional, medical or general offices in a campus setting. As detailed on the concept plans, the rear portion of the district is appropriate for the development of an assisted living facility. The proposed facility is sited to take advantage of the existing open space/wetlands. The use does not require highway exposure. A YMCA or comparable recreation facility could also be located in this district.

The following concept plans and associated matrix graphically show the land use concepts related to potential build out of the project area.





Concept A

East Windsor/Hightstown Land Use Concept A						
New Buildings						
Building	Use	Footprint	stories	Retail area	Office Area	Other
1	Office/Medical Office	11400	2		22800	
2	Office/Medical Office	6600	2		13200	
3	Office/Medical Office	9000	2		18000	
4	Office/Medical Office	12000	2		24000	
5	Office/Medical Office	11000	2		22000	
6	Office/Medical Office	7200	2		14400	
7	Office/Medical Office	7200	2		14400	
8	Office/Medical Office	9600	2		19200	
9	1st Floor Retail 2nd Floor Office	7200	2	7200	7200	
10	1st Floor Retail 2nd Floor Office	14400	2	14400	14400	
11	1st Floor Retail 2nd Floor Office	10500	2	10500	10500	
12	1st Floor Retail 2nd Floor Office	7150	2	7150		
13	125 Unit Assisted Living Facility	26000	2			52000
14	1st Floor Retail 2nd Floor Office	7150	2	7150		
15	1st Floor Retail 2nd Floor Office	13500	2	13500	13500	
16	YMCA	104000	1			104000
17	Retail	21600	1	21600		
18	Retail	21600	1	21600		
19	Office	21600	2		43200	
20	Office	21600	2		43200	
21	Retail	40400	1	40400		
22	Retail	41000	1	41000		
23	Retail	175000	1	175000		
24	Retail	36000	1	36000		
25	Retail	16000	1	16000		
26	Retail	80000	1	80000		
27	Restaurant	6500	1			6500
28	Restaurant	6500	1			6500
29	Restaurant	6500	1			6500
30	Restaurant	6500	1			6500
31	Restaurant	6500	1			6500
32	Retail	41000	1	41000		
33	Restaurant	10000	1			10000
34	Restaurant	10000	1			10000
				532500	280000	208500
<b>Total Area of New Buildings:</b>						<b>1021000</b>

Existing Buildings						
Building	Use	Footprint	# of stories			Total Area
A	AAMCO	12000	1			12000
B	Verizon	8000	1			8000
C	Lucas Electric	24500	1			24500
D	Hedy's Liquors	7700	1			7700
E	Deli	2400	2			4800
F	Club 8	2300	2			4600
G	Bicycle Rack	4000	1			4000
H	Pool Shop	4000	1			4000
<b>Total Area of Existing Buildings:</b>						<b>69600</b>





Concept B

East Windsor/Hightstown Land Use Concept B						
New Buildings						
Building	Use	Footprint	stories	Retail area	Office Area	Other
3	Office/Medical Office	9000	2		18000	
4	Office/Medical Office	12000	2		24000	
5	Office/Medical Office	11000	2		22000	
6	Office/Medical Office	7200	2		14400	
7	Office/Medical Office	7200	2		14400	
8	Office/Medical Office	9600	2		19200	
9	1st Floor Retail 2nd Floor Office	7200	2	7200	7200	
10	1st Floor Retail 2nd Floor Office	14400	2	14400	14400	
11	1st Floor Retail 2nd Floor Office	10500	2	10500	10500	
12	1st Floor Retail 2nd Floor Office	7150	2	7150		
13	125 Unit Assisted Living Facility	26000	2			52000
14	1st Floor Retail 2nd Floor Office	7150	2	7150		
15	1st Floor Retail 2nd Floor Office	13500	2	13500	13500	
16	YMCA	104000	1			104000
17	Retail	21600	1	21600		
18	Retail	21600	1	21600		
19	Office	21600	2		43200	
20	Office	21600	2		43200	
21	Retail	40400	1	40400		
22	Retail	41000	1	41000		
23	Retail	175000	1	175000		
24	Retail	36000	1	36000		
25	Retail	16000	1	16000		
26	Retail	80000	1	80000		
27	Restaurant	6500	1			6500
28	Restaurant	6500	1			6500
29	Restaurant	6500	1			6500
30	Restaurant	6500	1			6500
31	Restaurant	6500	1			6500
32	Retail	41000	1	41000		
33	Retail	19200	1	19200		
34	Retail	19200	1	19200		
35	Restaurant	10000				10000
36	Restaurant	10000				10000
				<b>570900</b>	<b>244000</b>	<b>208500</b>
<b>Total Area of New Buildings:</b>						<b>1023400</b>

East Windsor/Hightstown Land Use Concept B						
Existing Buildings						
Building	Use	Footprint	# of stories			Total Area
A	AAMCO	12000	1			12000
B	Verizon	8000	1			8000
C	Lucas Electric	24500	1			24500
D	Hedy's Liquors	7700	1			7700
E	Deli	2400	2			4800
F	Club 8	2300	2			4600
G	Bicycle Rack	4000	1			4000
H	Pool Shop	4000	1			4000
<b>Total Area of Existing Buildings:</b>						<b>69600</b>





## Traffic Analysis

A network analysis was conducted for the Route 33 corridor through the Study Area based on the site layout and trips generated by Land Use Concept B.

The following is a description of the analysis methodology and results. Appendix B contains background data used in the network analysis.

### Traffic Analysis Methodology

- **Traffic Volumes:** Existing PM peak hour volumes (2005) were obtained from the "TCDI Study for East Windsor Township" (Maser, 2006).
- **Trip Generation:** Trip generation calculations for Land Use Concept B are based on the ITE Trip Generation Manual (8th Edition). Pass-by trips were calculated based on the ITE Trip Generation Handbook (2nd Edition).
- **Trip Distribution/Assignment:** Trips were distributed and assigned based on logical local and regional traffic patterns. The Traffic Impact Study for the Hickory Corner Retail Center (Maser, 2009) was used as a reference.

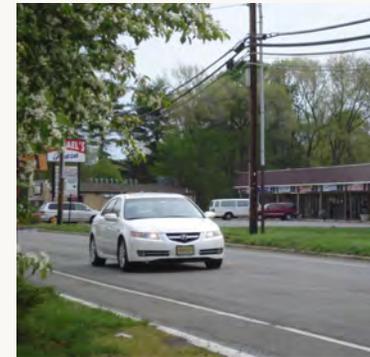
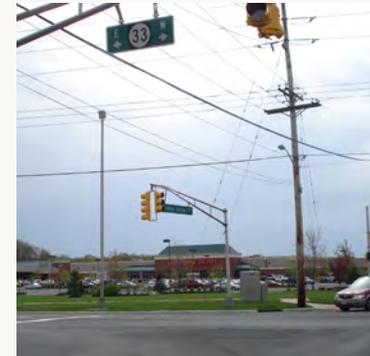
### Traffic Analysis Results

- **Build Year:** Full build-out of Land Use Concept B was estimated as Year 2026.
- **Background Growth:** Available data indicates that a nominal background growth rate of 0.5% per year is appropriate for this corridor. Factors that contribute to this nominal rate include the Route 133 bypass, peak period traffic constraints in downtown Hightstown, and the relocation of interchange 8, which will make Route 133 more convenient to drivers.

- **Traffic Analysis:** The traffic analysis of existing and future conditions was conducted in Synchro 7 and SimTraffic. For future conditions, Airport Road and Route 33 were modeled with one lane in each direction. The intersections of Route 33 with Airport Road and Summit Street include individual opposing left lanes along Route 33. A 200-foot long southbound right turn pocket was also included on Airport Road at the Route 33/Airport Road intersection. The phasing for this southbound right movement includes an overlap right turn phase with the lead lefts on Route 33.
- **Measures of Effectiveness:** The measures of effectiveness for this analysis included LOS (level of service)/delay, v/c ratios, and average and maximum queuing. Analysis indicates that key intersections perform at a LOS D or better. The highest volume-to-capacity (v/c) ratio along Route 33 is 0.84, which indicates excess capacity along the roadway. As shown in Figure 1, new traffic signals are proposed at Route 33/Airport Road and the intersection of Route 33 with a new retail street near Summit Street. A preliminary screening indicates that these intersections are also candidates for roundabouts in lieu of a signal.

### Key Concepts

- **Typical Roadway Section:** Figure 2 shows typical sections along Route 33 through the study area. The existing section between Route 130 and Hickory Corner Road would remain unchanged.





Candidate Section 2, between Hickory Corner Road and Airport Road, shows a 44-foot cartway with a multi-use path on the north side and a sidewalk on the south side. Candidate Section 3, between Airport Road and Summit Street, continues the 44-foot wide proposed cartway but shows a sidewalk on both the north and south side. For both candidate sections, the proposed roadway section for Route 33 is one lane in each direction with shoulders and a two-way left turn lane or median (NJDOT Desired Typical Section 2B). The proposed speed limit should be posted at 35mph or less.

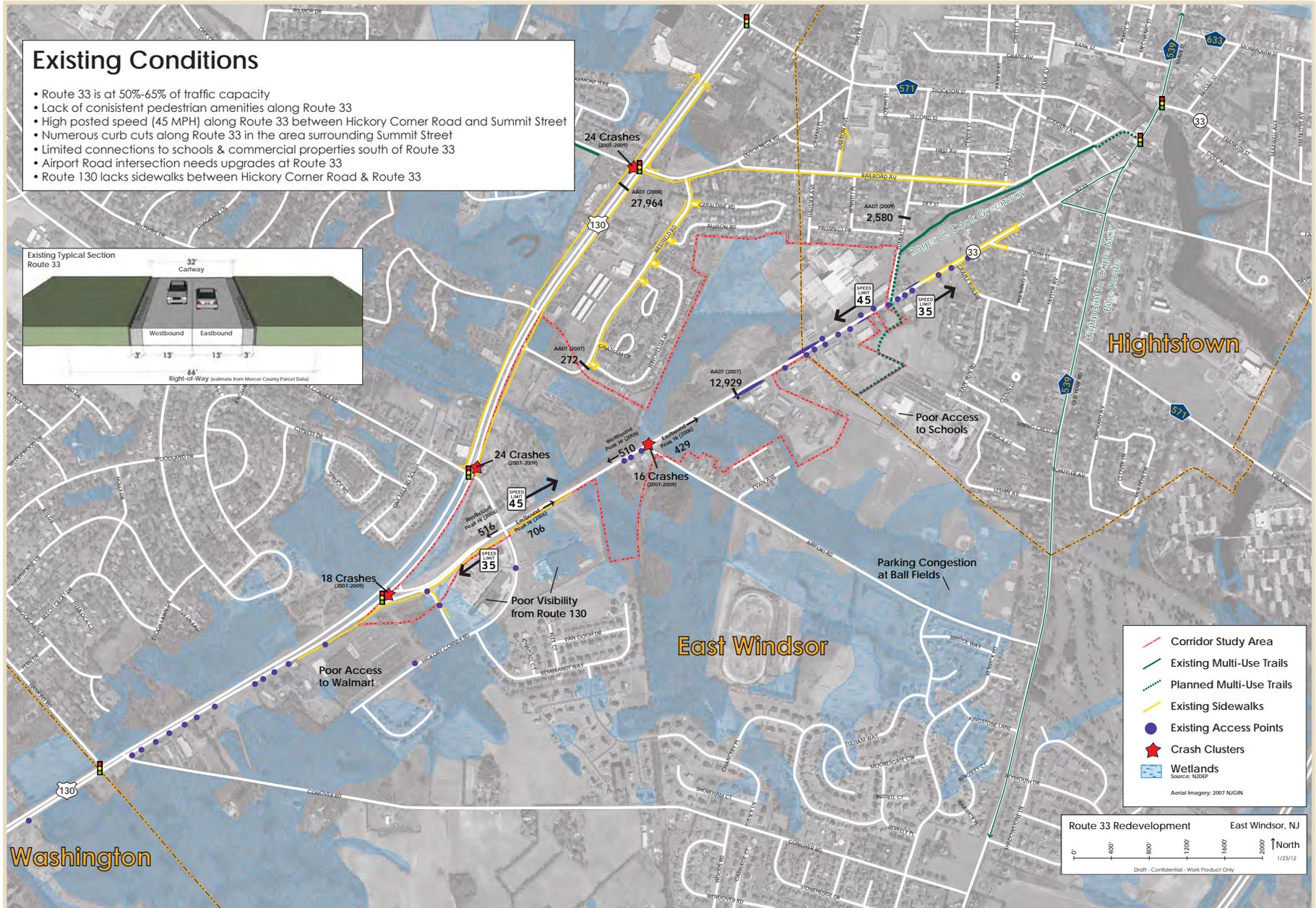
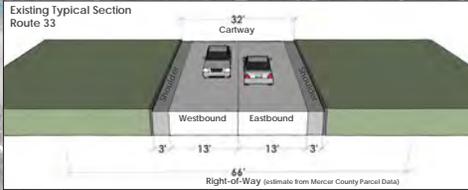
- **Access/Parking:** Access to and from properties along Route 33 would be provided by right-turn access to and from an access point, left-turn ingress via a left-turn lane, and left-turn egress from an access point (NJDOT Access Level 4). Access points will generally be provided at intersections and major driveways, although a detailed access management plan would be developed during the next phase of design. Shared parking and shared driveways should be used to limit curb cuts and reduce the need for surface parking.
- **Landscaping/Gateways:** A roundabout at Airport Road would help create a transition between the large-scale/big-box area to the west and the smaller-scale, pedestrian-oriented area to the east. While specific treatments for the Route 33 median will be developed at a later phase, landscaping along the median and roadway edges should act as a unifying features
- **Street Network:** The street network shown in Figure 1 will reduce the traffic burden on Route 33 by providing alternative routes such as Road B for local access and parking movements. Coupled with Road A, an extension of Airport

Avenue to Route 130 will improve regional access to new development in the study area, decrease through volumes along Route 33, and establish a network density that is scaled to the proposed land use scenario. Road C, which is a future extension of Evans Avenue to Summit Street, would provide better local access to the high school and new development along the south side of Route 33. This future extension should be designed with traffic calming features to keep speeds low and limit cut through traffic.

- **Multi-modal Considerations:** The interconnected network of trails and sidewalks shown in Figure 1 will provide non-motorized access to the new development sites, which will help reduce the number of vehicle trips and the need for parking. Sidewalks should be provided on all new and reconstructed roads within the study area. Transit amenities should be provided at bus stops for the Route 130 Connection shuttle bus, which currently has service along Route 33 between Hickory Corner Road and downtown Hightstown.

# Existing Conditions

- Route 33 is at 50%-65% of traffic capacity
- Lack of consistent pedestrian amenities along Route 33
- High posted speed (45 MPH) along Route 33 between Hickory Corner Road and Summit Street
- Numerous curb cuts along Route 33 in the area surrounding Summit Street
- Limited connections to schools & commercial properties south of Route 33
- Airport Road intersection needs upgrades at Route 33
- Route 130 lacks sidewalks between Hickory Corner Road & Route 33



Existing Conditions

## Key Circulation Concepts

### Street Network

- Develop street network parallel to Route 33
- Extend Airport Road for better access to Route 130
- Consider additional network connections with future development

### Multi-modal Considerations

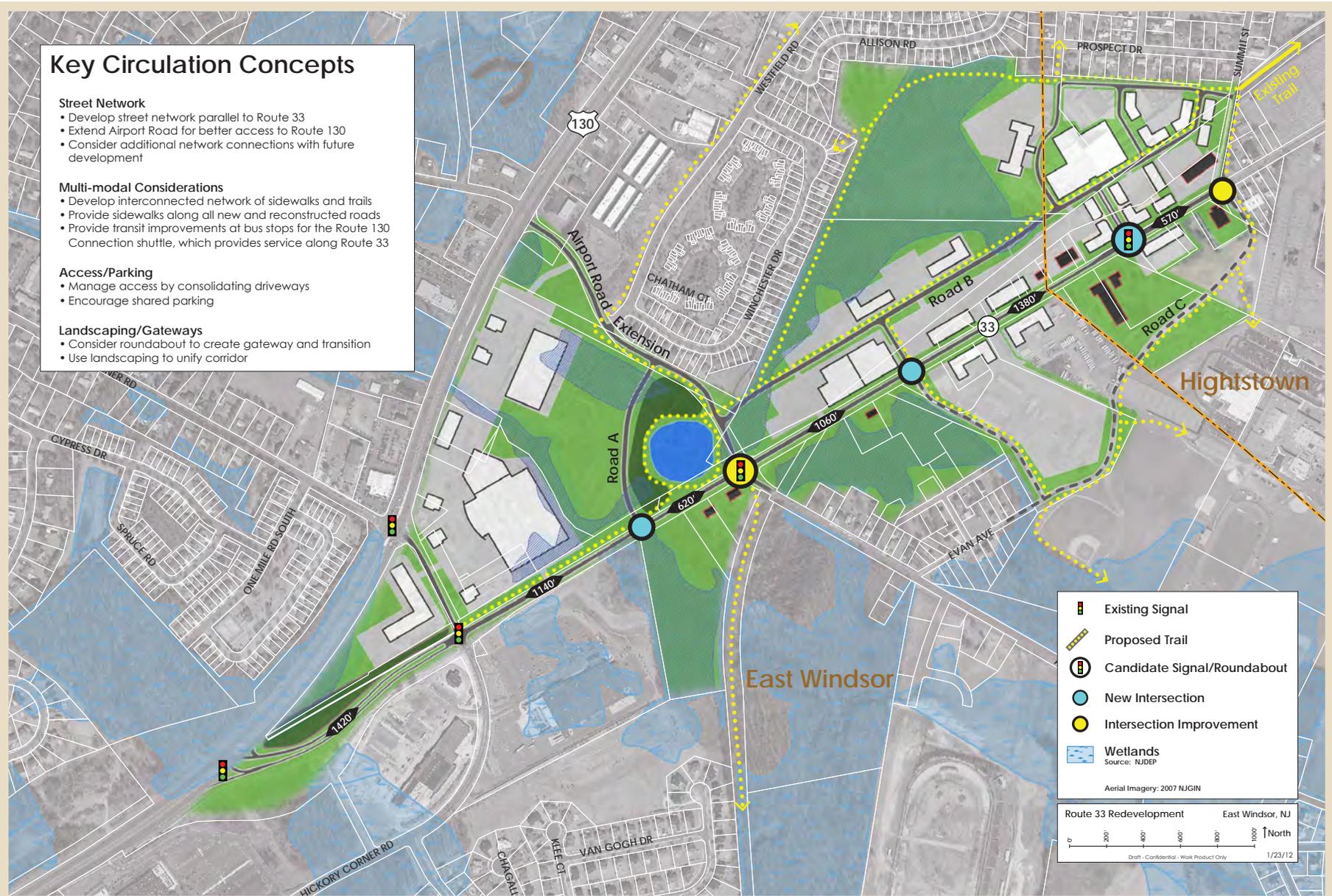
- Develop interconnected network of sidewalks and trails
- Provide sidewalks along all new and reconstructed roads
- Provide transit improvements at bus stops for the Route 130 Connection shuttle, which provides service along Route 33

### Access/Parking

- Manage access by consolidating driveways
- Encourage shared parking

### Landscaping/Gateways

- Consider roundabout to create gateway and transition
- Use landscaping to unify corridor



Key Circulation Concepts - Figure 1

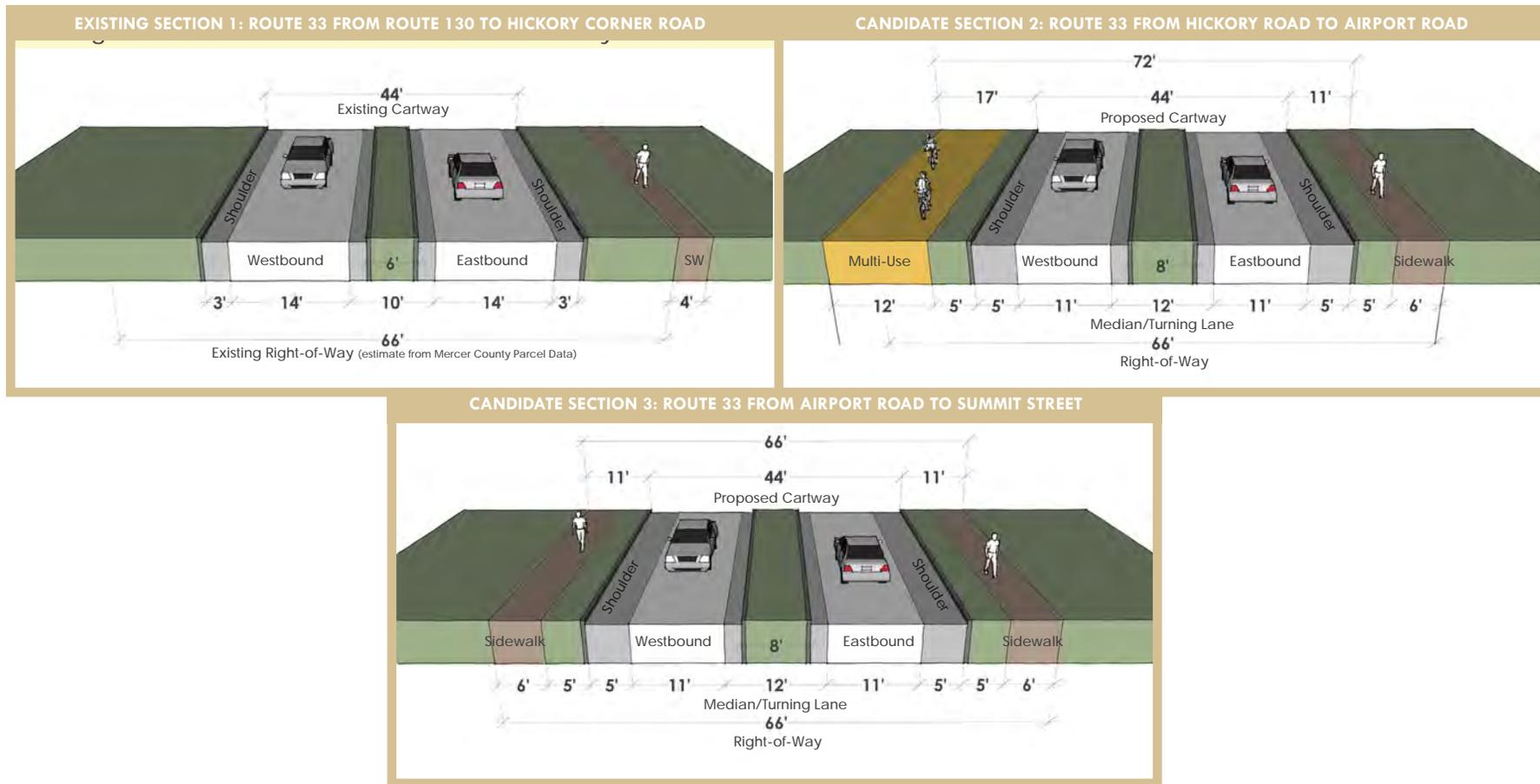


Figure 2: Typical Sections, Route 33

# ROUTE 33 CORRIDOR REVITALIZATION PLAN

Recommended Circulation Elements	Benefits	Implementation (Lead/Support)	Timeframe
<p><b>Route 33/Airport Road Intersection Improvements</b></p> <p>Signalized Option Roundabout Option</p> <p><b>Airport Road Extension</b></p>	<p>Addresses poor intersection geometry</p> <p>Alleviates existing congestion</p> <p>Alleviates existing congestion and adds gateway feature</p> <p>Improves access to/from Route 130</p> <p>Improves access to development parcels</p>	<p>NJDOT / Municipality</p> <p>NJDOT / Municipality</p> <p>NJDOT / Municipality</p>	<p>Early Action</p> <p>Early Action</p> <p>Early Action</p>
<p><b>Route 33 Roadway Section</b></p> <p>Between Hickory Corner Road and Airport Road Between Airport Road and Summit Street</p> <p><b>Multi-use Path Network</b></p> <p>Along Route 33 Along other roadway / greenway corridors</p> <p><b>Route 33/Summit Street Intersection Improvements</b></p> <p><b>Road A</b></p> <p><b>Road B</b></p>	<p>Provides left-turn access on/off Route 33 with median</p> <p>Provides left-turn access on/off Route 33 with median</p> <p>Improves multi-modal accessibility</p> <p>Improves multi-modal accessibility</p> <p>Addresses poor intersection geometry</p> <p>Provides local access to gateway/water feature area</p> <p>Provides local access to new businesses/parking</p>	<p>NJDOT / Developer</p> <p>NJDOT / Developer</p> <p>NJDOT / Developer</p> <p>Municipality / Developer</p> <p>NJDOT / Municipality</p> <p>Developer</p> <p>Developer</p>	<p>Medium Term</p> <p>With Development</p> <p>Medium Term</p> <p>With Development</p> <p>Medium Term</p> <p>With Development</p> <p>With Development</p>
<p><b>Road C</b></p>	<p>Provides improved access to businesses/High School</p>	<p>BOE / Developer</p>	<p>Long Term</p>

Circulation Improvement Program

ROUTE 33 CORRIDOR REVITALIZATION PLAN

# Appendix A: Analysis of Existing Property Attributes

The property matrix outlines the information and conditions for each of the properties in the Study Area.

Property Matrix East Windsor Parcels																
Photo	Block	Lot	Address	Owner	Land Use	Zone	Lot Area (AC)	Wetlands Area/ Floodplains (AC)	Developable Area (AC)	Approvals	Site Specifics			Land Value (\$)	Improvements (\$)	Net Value (\$)
											Facility Name	Building Description	Square Footage			
	48	20	619 Route 33 West	Tri-County Coop Auction Market Asso	Commercial Services / Wholesale	HC	11.04	0.66	10.38		Tri-County Cooperative Auction Market	2 story concrete block	7,250	917,100	264,300	1,181,400
	48	22	625 Route 33 West	Precious P, LLC	Retail	HC	0.82	< 0.00	0.82		Precious Pets	1 story concrete block	10,850	344,000	173,700	517,700
	48	23	633 Route 33 West	Global Ag Assoc.Inc C/O Oper.Center	Vacant	HC	1.47	< 0.00	1.47		Global AG Pet, Farm, Home Lawn and Garden	1 story metal	9,050	459,000	186,000	645,000
	48	24	641 Route 33 West	Aim Developers, LLC C/O Cobra Power	Institutional/ Partially Vacant	HC	1.88	1.53	0.35					150,500	0	150,500
	48	27	25 Columbia Ave	No Assets Inc	Vacant	HC	0.46	0.17	0.29					4,800	0	4,800
	48	28	31 Columbia Ave	C & D Corp.	Vacant	HC	1.49	1.31	0.19					26,000	0	26,000
	49	11	5 Columbia Ave	Quattrone Lawrence	Vacant	HC	0.23	0.02	0.22					6,000	0	6,000
	49	2	651 Route 33 West	Club Eight, Inc	Institutional/ Partially Vacant	HC	0.92	0.42	0.51		Club 8	1 story frame	3,240	350,000	126,600	476,600
	49	23	19 Columbia Ave	Screws, Willie G.	Vacant	HC	0.23	0.00	0.22					56,300	0	56,300
	49	24	178 Airport Rd	J J & G Properties,LLC C/O G.Tantum	Vacant	HC	0.54	0.27	0.27					27,000	0	27,000
	49	25	673 Route 33 West	J J & G Properties,LLC C/O G.Tantum	Vacant	HC	0.54	0.02	0.52					48,600	0	48,600
	49	3	655 Route 33 West	J J & G Properties,LLC C/O G.Tantum	Vacant	HC	4.96	3.65	1.31					188,000	0	188,000
	50.03	17	699 Route 33 West	Princeton Research Lands Inc	Vacant	HC	7.99	7.95	0.04					3,600	0	3,600
	50.03	18	683 Route 33 West	Diefenbach,Jared Etal	Retail	HC	0.71	0.66	0.05		Bicycle Rack	1 story concrete block	2,584	297,000	175,300	472,300

Property Matrix East Windsor Parcels																
Photo	Block	Lot	Address	Owner	Land Use	Zone	Lot Area (AC)	Wetlands Area/ Floodplains (AC)	Developable Area (AC)	Approvals	Site Specifics			Land Value (\$)	Improvements (\$)	Net Value (\$)
											Facility Name	Building Description	Square Footage			
	50.03	18.01	689 Route 33 West	Mapes, Charles F, 3rd	Retail	HC	1.06	1.01	0.04		Windsor Pool Shop	1 Story frame	3,136	340,200	156,400	496,600
	52	1	89 Hickory Corner Rd	Hickory Corner Development, LLC	Vacant	HC	6.34	< 0.00	6.34	Preliminary and Final Site Plan approval for +/-17,000 sq ft of retail and 3,000 sq ft Bank		1 story frame	2,246	1,080,000	40,000	1,120,000
	52	2	752 Route 33 West	Hickory Corner Development, LLC	Vacant	HC	0.97	< 0.00	0.97	Preliminary and Final Site Plan approval for +/-17,000 sq ft of retail and 3,000 sq ft Bank				228,000	0	228,000
	52	2.01	754 Route 33 West	State Of NJ DOT	Vacant	HC	0.13	< 0.00	0.13					3,000	0	3,000
	53.03	100	614 Route 33 West	East Windsor Township	Vacant	HC	0.12	< 0.00	0.12					65,000	0	65,000
	53.03	101	610 Route 33 West	Esposito, Rosa	Vacant	HC	0.41	< 0.00	0.41					213,000	0	213,000
	53.03	102	606 Route 33 West	Esposito, Rosa	Vacant	HC	0.14	< 0.00	0.14					60,000	0	60,000
	53.03	103	602 Route 33 West	Esposito, Rosa	Retail/ Partially Vacant	HC	0.44	< 0.00	0.44			2 story concrete block	4,752	319,000	359,300	678,300
	53.03	104	Ass'd Boro Of Hightstown	Hightstown Real Estate LLC	Retail	HC	0.01	< 0.00	0.01					0	0	0
	53.03	105	Ass'd Boro Of Hightstown	Mercer Street Warehouse, LLC Als	Retail	HC	0.03	< 0.00	0.03					0	0	0
	53.03	106	Route 33 West Rear	Mercer Street Warehouse, LLC Als	Vacant Industrial	IO	21.16	12.20	8.96				30,000	965,700	278,900	1,244,600
	53.03	96	Route 33 West Rear	624 East Windsor Hi Tech Assoc. LLC	Vacant	IO	22.06	9.70	12.36	Preliminary Subdivision Approval for 5 Flex Office/ Warehouse Buildings +/- 200,000 sq ft				1,115,000	0	1,115,000

Property Matrix East Windsor Parcels																
Photo	Block	Lot	Address	Owner	Land Use	Zone	Lot Area (AC)	Wetlands Area/ Floodplains (AC)	Developable Area (AC)	Approvals	Site Specifics			Land Value (\$)	Improvements (\$)	Net Value (\$)
											Facility Name	Building Description	Square Footage			
	53.03	97	674 Route 33 West	624 East Windsor Hi Tech Assoc. LLC	Vacant	HC	3.25	0.13	3.12	Preliminary Subdivision Approval for 5 Flex Office/ Warehouse Buildings +/- 200,000 sq ft				175,000	0	175,000
	53.03	98	624 Route 33 West	624 East Windsor Hi Tech Assoc. LLC	Vacant	HC	0.34	< 0.00	0.34	Preliminary Subdivision Approval for 5 Flex Office/ Warehouse Buildings +/- 200,000 sq ft				103,900	0	103,900
	53.03	99	618 Route 33 West	Young Alonzo Est C/O I.Hoagland	Vacant	HC	0.26	< 0.00	0.26			2 story frame	1,200	139,200	5,400	144,600
	53	1	82 Hickory Corner Rd	Hickory Associates, LLC	Vacant	HC	1.88	0.11	1.77	Preliminary and Final Site Plan approval for +/-105,000 Kohls, 4,300 sq ft Bank, and 3,900 sq ft restaurant.				285,000	0	285,000
	53	10.01	565 Route 130	East Windsor Township	Vacant	HC	0.33	0.01	0.32					28,000	0	28,000
	53	11.01	676 Route 33 West Rear	East Windsor Township	Vacant	IO	0.18	0.08	0.11					27,700	0	27,700
	53	13.01	581 Route 130	East Windsor Township	Vacant	HC	1.20	0.69	0.51					230,000	0	230,000
	53	13.02	565 Route 130 Rear	East Windsor Township	Vacant	HC	0.71	< 0.00	0.71					77,000	0	77,000
	53	13.03	585 Route 130 Rear	East Windsor Township	Vacant	HC	1.31	0.91	0.39					119,000	0	119,000
	53	2	84 Hickory Corner Rd	Hickory Associates, LLC	Vacant	HC	0.69	< 0.00	0.69	Preliminary and Final Site Plan approval for +/-105,000 Kohls, 4,300 sq ft Bank, and 3,900 sq ft restaurant.				101,300	0	101,300
	53	3	633 Route 130	Hickory Associates, LLC C/O T.Orban	Vacant	HC	0.52	< 0.00	0.52	Preliminary and Final Site Plan approval for +/-105,000 Kohls, 4,300 sq ft Bank, and 3,900 sq ft restaurant.		1 story concrete block	3,172	392,500	75,300	467,800

Route 33 Corridor Revitalization Plan Township of East Windsor and Borough of Hightstown

Property Matrix East Windsor Parcels																
Photo	Block	Lot	Address	Owner	Land Use	Zone	Lot Area (AC)	Wetlands Area/ Floodplains (AC)	Developable Area (AC)	Approvals	Site Specifics			Land Value (\$)	Improvements (\$)	Net Value (\$)
											Facility Name	Building Description	Square Footage			
	53	37	Hickory Corner Rd Rear	Hickory Associates, LLC	Vacant	HC	0.02	< 0.00	0.02	Preliminary and Final Site Plan approval for +/-105,000 Kohls, 4,300 sq ft Bank, and 3,900 sq ft restaurant.				500	0	500
	53	38	710 Route 33 West	Hickory Associates LLC C/O T.Orban	Vacant	HC	1.78	0.89	0.88	Preliminary and Final Site Plan approval for +/-105,000 Kohls, 4,300 sq ft Bank, and 3,900 sq ft restaurant.				81,000	0	81,000
	53	39	573 Route 130	Rutgers Associates	Vacant	HC	2.35	0.82	1.52					93,600	0	93,600
	53	4	627 Route 130	Hickory Associates, LLC	Vacant	HC	9.28	0.94	8.34	Preliminary and Final Site Plan approval for +/-105,000 Kohls, 4,300 sq ft Bank, and 3,900 sq ft restaurant.				1,346,400	0	1,346,400
	53	40	569 Route 130	Gershowitz, Herman	Vacant	HC	0.45	0.30	0.15					35,100	0	35,100
	53	41	680 Route 33 West	624 East Windsor Hi Tech Assoc, LLC	Vacant	HC	0.73	0.46	0.27					13,300	0	13,300
	53	42	676 Route 33 West	East Windsor Township	Vacant	HC	0.12	0.05	0.08					7,200	0	7,200
	53	43	680 Route 33 West Rear	624 East Windsor Hi Tech Assoc. LLC	Vacant	IO	0.24	< 0.00	0.24					40,600	0	40,600
	53	5	619 Route 130	Hickory Associates, LLC	Vacant	HC	0.60	< 0.00	0.60	Preliminary and Final Site Plan approval for +/-105,000 Kohls, 4,300 sq ft Bank, and 3,900 sq ft restaurant.				81,000	0	81,000
	53	6	613 Route 130	Hickory Associates, LLC	Vacant	HC	1.38	0.31	1.07	Preliminary and Final Site Plan approval for +/-105,000 Kohls, 4,300 sq ft Bank, and 3,900 sq ft restaurant.				187,500	0	187,500

Property Matrix East Windsor Parcels																
Photo	Block	Lot	Address	Owner	Land Use	Zone	Lot Area (AC)	Wetlands Area/ Floodplains (AC)	Developable Area (AC)	Approvals	Site Specifics			Land Value (\$)	Improvements (\$)	Net Value (\$)
											Facility Name	Building Description	Square Footage			
	53	7	615 Route 130	Hickory Associates, LLC	Vacant	HC	0.09	0.01	0.09	Preliminary and Final Site Plan approval for +/-105,000 Kohls, 4,300 sq ft Bank, and 3,900 sq ft restaurant.				13,500	0	13,500
	53	8	607 Route 130	Hickory Associates, LLC	Vacant	HC	0.55	0.32	0.23	Preliminary and Final Site Plan approval for +/-105,000 Kohls, 4,300 sq ft Bank, and 3,900 sq ft restaurant.				87,000	0	87,000
	53	9	603 Route 130	Diversified Holdings, LLC	Commercial Services / Wholesale	HC	23.46	19.95	3.51		Diversified Rack & Shelving, Inc.	1 story metal	42,240	1,202,000	535,000	1,737,000
	53	9.01	Route 33 West Rear	East Windsor Township	Vacant	HC	0.42	< 0.00	0.41					30,600	0	30,600
<b>TOTAL</b>	51 Parcels						138.29	65.55	72.74				119,720	12,164,700	2,376,200	14,540,900

Property Matrix Hightstown Parcels																
Photo	Block	Lot	Address	Owner	Land Use	Zone	Lot Area (AC)	Wetlands Area/ Floodplains (AC)	Developable Area (AC)	Approvals	Site Specifics			Land Value (\$)	Improvements (\$)	Net Value (\$)
											Facility Name	Building	Square Footage			
	48	25	RAILROAD AVE	EDG ASSOCIATES LLC	Vacant Industrial	HC	0.12	0.01	0.11					23,500	0	23,500
	48	26, 27, 32, 33, 34, 35	MERCER ST	MERCER ST WAREHSE/BRUCKNER SOUTHERN	Vacant Industrial	HC	16.56	0.00	16.56					2,580,000	2,920,000	5,500,000
	48	28	400 MERCER ST	KCJK PROPERTIES, LLC	Commercial Services / Wholesale	HC	1.28	0.00	1.28		AAMCO	1 story concrete block		209,000	785,900	994,900
	48	30	500 MERCER ST	HIGHTSTOWN REAL ESTATE, LLC	Retail	HC	0.56	0.00	0.56			1 story concrete block		486,600	468,300	954,900
	48	31	MERCER ST	MERCER ST WAREHSE/BRUCKNER SOUTHERN	Retail/ Partially Vacant	HC	0.05	0.00	0.05			1 story concrete block				
	61.01	39	393 MERCER ST	VERIZON (Additional Lot to Block 61.01 Lot 38)	Telecommunication	HC	0.98	0.00	0.98		Verizon					
	61.01	41	397 MERCER ST	BOBBIE INTRNL, LLC C/O DR. MANOCHA	Commercial Services / Wholesale	HC	0.22	0.00	0.22		Wash & Fold			162,500	94,500	257,000
	61.01	42	399-413 MERCER ST	BOBBIE INTRNL, LLC C/O DR. MANOCHA	Retail	HC	0.91	0.00	0.91		Laundry	1 story concrete block		550,000	1,391,400	1,941,400

Property Matrix Hightstown Parcels																
Photo	Block	Lot	Address	Owner	Land Use	Zone	Lot Area (AC)	Wetlands Area/ Floodplains (AC)	Developable Area (AC)	Approvals	Site Specifics			Land Value (\$)	Improvements (\$)	Net Value (\$)
											Facility Name	Building	Square Footage			
	61.01	43, 44	415 MERCER ST	LUCAS, MATTHEW & SUZETTE	Commercial Services / Wholesale	HC	2.67	0.00	2.67		Brothers Pizza, Five Flags Restaurant, Latin American Grocery, Fabulous Line Clothing, Servicio International	1 story brick & concrete block		525,000	160,500	685,500
	61.01	45	MERCER ST	LUCAS, MATTHEW & SUZETTE	Commercial Services / Wholesale	HC	5.16	0.00	5.16		Lucas Electric	1 story brick, stucco, & concrete block		750,000	639,100	1,389,100
	61.01	46	MERCER ST	EAST WINDSOR BOARD OF EDUCATION	Commercial Services / Wholesale	HC	0.20	0.00	0.20					863,000	0	863,000
<b>TOTAL</b>	11 Parcels (17 w/ adtl.)						28.71	0.01	28.70				unk	6,149,600	6,459,700	12,609,300

**Appendix A Stakeholders**

Name	Affiliation
Nina Melker	Mercer Chamber of Commerce Vice Chairwomen, East Windsor Chapter / The Bank of Princeton
Edward Forsthoffer, III	Superintendent East Windsor Regional School District
Michael Drwonar, Assistant Superintendent	East Windsor Regional School District
Michael McKitish	Assistant Head for Finance and Operations, Peddie School
Lt. John Funda	Executive Director Athletic League
Amanda Porter	Downtown Hightstown
Jay Zimmer	Meadow Lakes Executive Director
Edward Houlihan	Senior Vice President Shiseido America Inc.
Tom Rooney	Regional Director McGraw Hill Companies
John Mayorek	Conair Corporation
Mike Vanderbeck	
Cappy Stults	Allen and Stults Co.
Rob Ryckman	CCL Label
Mark Carduner	Silver Decoy Winery
Kathy Stauffer	Administrator Twin Rivers Community Trust
Donna M. Lewis	Mercer County Planning Director McDade Administration Building
Leslie Koppel	RISE
Peter Crowley	CEO Princeton Regional Chamber of Commerce
624 East Windsor Hi Tech Assoc. LLC	Route 33 West Rear 674 Route 33 West 624 Route 33 West
Cardoso Realty, LLC	641 Route 33 West
Bobbie Intrntl, Llc C/O Dr. Manocha	397 Mercer St. 399-413 Mercer St
Michael's Plaza	Ragiv Menocha
C & D Corp.	31 Columbia Ave
Club Eight, Inc	651 Route 33 West
Diefenbach, Jared Etal	683 Route 33 West
Diversified Holdings, LLC	603 Route 130

Owner Name	Route 33 Corridor Address
Edg Associates LLC	Railroad Ave
Eposito, Rosa	610 Route 33 West 606 Route 33 West 602 Route 33 West 78
Global Ag Assoc.Inc C/O Oper. Center	633 Route 33 West
Hickory Associates LLC C/O T.Orban	710 Route 33 West 633 Route 130
Hickory Associates, LLC	84 Hickory Corner Rd
Hickory Corner Development, LLC	89 Hickory Corner Rd 752 Route 33 West
J J & G Properties, LLC	178 Airport Rd / 673 Route 33 West / 655 Route 33 West
Lucas Electric	415 Mercer St
Mapes, Charles F, 3rd	689 Route 33 West
Windsorpool	
Mercer St Warehse/Bruckner Southern	Mercer St
Mercer Street Warehouse, LLC ALS	
Precious P, LLC	625 Route 33 West
Princeton Research Lands Inc	699 Route 33 West
State of NJ Dot	754 Route 33 West
Tri-County Coop Auction Market Asso	619 Route 33 West

RES Contact List	
Name	Affiliation
Tom Orban	Realtor and owner of Kohl's site
Joanne Guzman	Assistant Manager of Wal-Mart
Van Delfino	Owner of The Bicycle Rack
Amanda Porter	Director of Downtown Hightstown
Doug Perk	Home Depot Store Manger
Eva Teller	First Constitution Bank
Peter Adamo	Owner of Molto Bene
Josh Winkranz or Robert Wachtler	Kimco Realty leasing agent for Target shopping center
Andrea Lukens	Vornado leasing agent for East Windsor Towne Center
East Windsor Village Leasing Agent	
Mark Wexler	Keller Williams, Leasing Agent for Windsor Crossing
Newmark, Knight Frank	Leasing Agent Sci Park and Windsor Corporate Park
Kretowicz Commercial realty	Leasing Agent for East Windsor Medical Commons

## Appendix A Summary

1. There was a general consensus that the Route 33 corridor was not visually pleasant. Words used were as follows:
  - a. Poor
  - b. Outdated
  - c. Undeveloped
2. The location was described as being right in the middle of NJ and great access to many major roadways.
3. There were mixed feelings about the what people thought about potential future development in the area:
  - a. Most of the respondents seemed to be in favor of retail development near the Route 33 intersection with Route 130
  - b. Some respondents were not in favor of any development in the area.
  - c. All favored some type of recreation or passive open space in the area.
4. Some of the respondents indicated that there was a lack of restaurants.
5. Some respondents thought there was too much retail development in the area.
6. Some of the respondents believed there was a pedestrian issue in the corridor. Additionally identified that pedestrians from the high school and the apartments near the high school cut through properties to get to the liquor store, deli, and Michaels Plaza
7. Some respondents wanted to see the corridor remain as a wholesale industrial use type place.
8. Some respondents wanted to see the corridor developed with a mix of uses.
9. Recreation and pedestrian/bike friendly connection to Hightstown through the corridor were priorities for many of respondents.
10. Feed supply uses were mentioned as being a possibility.
11. A farmers market was discussed.
12. The lack of available residential uses was mentioned
13. The over development of residential was also mentioned
14. Most respondents thought that the development of the Home Depot and the shopping center at the intersection of 130 and Route 33 has been a good thing.
15. Most respondents agreed that there is a traffic issue at the corner of Route 33 and Airport Road.
16. Several respondents indicated that there are drainage and flooding issues.
17. Several respondents identified that there are environmentally sensitive areas within the corridor that should be protected. Also it was identified that beavers were seen in the area.
18. Some respondents were open to land swaps or relocation.



# Appendix B: Circulation - Background Data

## Trip Generation - Land Use Concept B

Route 33 Corridor Revitalization Plan, East Windsor, NJ  
Last Updated: 8/27/2011

Building	Use	Gross Area (SF)						PM Peak Hour								
		Footprint	Stories	Retail	Office	Other	ITE Code	Total Trips			Pass-by Trips			Primary Trips		
								Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
3	Medical Office	9000	2		18000			17	45	62	0	0	0	17	45	62
4	Medical Office	12000	2		24000		610	22	61	83	0	0	0	22	61	83
5	Medical Office	11000	2		22000			21	56	76	0	0	0	21	56	76
6	Medical Office	7200	2		14400			13	36	50	0	0	0	13	36	50
7	Medical Office	7200	2		14400		610	13	36	50	0	0	0	13	36	50
8	Medical Office	9600	2		19200			18	48	66	0	0	0	18	48	66
9	1st Floor Retail 2nd Floor Office	7200	2	7200	7200			19	31	49	9	11	19	10	20	30
10	1st Floor Retail 2nd Floor Office	14400	2	14400	14400			28	49	77	12	16	28	16	33	49
11	1st Floor Retail 2nd Floor Office	10500	2	10500	10500		814/710	23	39	62	10	13	23	13	26	39
12	1st Floor Retail 2nd Floor Office	7150	2	7150				17	22	39	9	11	19	9	11	19
13	125 Unit Assisted Living Facility	26000	2			52000	254	12	15	28	0	0	0	12	15	28
14	1st Floor Retail 2nd Floor Office	7150	2	7150			814/710	17	22	39	9	11	19	9	11	19
15	1st Floor Retail 2nd Floor Office	13500	2	13500	13500			27	47	74	14	13	27	14	33	47
16	YMCA	104000	1			104000	495	50	85	135	0	0	0	50	85	135
17	Retail (Specialty Center)	21600	1	21600			814	32	41	73	16	21	37	16	21	37
18	Retail (Specialty Center)	21600	1	21600				32	41	73	16	21	37	16	21	37
19	Office (General)	21600	2		43200		710	11	53	64	0	0	0	11	53	64
20	Office (General)	21600	2		43200			11	53	64	0	0	0	11	53	64
21	Retail (Specialty Center)	40400	1	40400			814	52	66	118	26	33	59	26	33	59
22	Retail (Specialty Center)	41000	1	41000				53	67	120	26	34	60	26	34	60
23	Retail (Big Box)	175000	1	175000				395	411	807	158	165	323	237	247	484
24	Retail (Big Box)	36000	1	36000			813	81	85	166	33	34	66	49	51	100
25	Retail (Big Box)	16000	1	16000				36	38	74	14	15	30	22	23	44
26	Retail (Big Box)	80000	1	80000				181	188	369	72	75	148	108	113	221
27	Restaurant (High-Turnover)	6500	1		6500			43	30	72	0	0	0	43	30	72
28	Restaurant (High-Turnover)	6500	1		6500			43	30	72	0	0	0	43	30	72
29	Restaurant (High-Turnover)	6500	1		6500		932	43	30	72	0	0	0	43	30	72
30	Restaurant (High-Turnover)	6500	1		6500			43	30	72	0	0	0	43	30	72
31	Restaurant (High-Turnover)	6500	1		6500			43	30	72	0	0	0	43	30	72
32	Retail (Specialty Center)	41000	1	41000			814	53	67	120	26	34	60	26	34	60
33	Retail (Specialty Center)	19200	1	19200				30	38	68	15	19	34	15	19	34
34	Retail (Specialty Center)	19200	1	19200			814	30	38	68	15	19	34	15	19	34
		532500		244000	188500			1509	1928	3437	480	543	1022	1029	1385	2414
		Total Area of New Buildings:		965000												

**Notes**

Trip generation calculations are based on the ITE Trip Generation Manual (8th Edition). Pass-by trips were calculated based on the ITE Trip Generation Handbook (2nd Edition).

### Trip Distribution - Land Use Concept B

Route 33 Corridor Revitalization Plan, East Windsor, NJ

Last Updated:

Drive	Buildings	Primary Trips			Trip Distribution									
		Enter	Exit	Total	1	2	3	4	5	6	7	8	9	Sum
A	3,4,5	60	162	221	20%	20%	5%	30%	0%	5%	5%	15%	0%	100%
	Enter				12	12	3	18	0	3	3	9	0	60
	Exit				32	32	8	48	0	8	8	24	0	162
B	6,7,8	45	121	166	20%	20%	5%	30%	0%	5%	5%	15%	0%	100%
	Enter				9	9	2	13	0	2	2	7	0	45
	Exit				24	24	6	36	0	6	6	18	0	121
C	9,11,12,13,14,15,16,19,20, half of 21,22,33,34	179	360	539	20%	20%	5%	30%	0%	5%	5%	15%	0%	100%
	Enter				36	36	9	54	0	9	9	27	0	179
	Exit				72	72	18	108	0	18	18	54	0	360
D	10, half of 21,22,33,34,17,18	73	106	179	20%	20%	5%	30%	0%	5%	5%	15%	0%	100%
	Enter				15	15	4	22	0	4	4	11	0	73
	Exit				21	21	5	32	0	5	5	16	0	106
E	half of 17,18	16	21	37	20%	20%	5%	30%	0%	5%	5%	15%	0%	100%
	Enter				3	3	1	5	0	1	1	2	0	16
	Exit				4	4	1	6	0	1	1	3	0	21
F	third of 23,24,25,26,27,28,29,30,31	210	194	404	30%	30%	0%	30%	0%	0%	0%	10%	0%	100%
	Enter				63	63	0	63	0	0	0	21	0	210
	Exit				58	58	0	58	0	0	0	19	0	194
G	half of 32	13	17	30	30%	30%	0%	30%	0%	0%	0%	10%	0%	100%
	Enter				4	4	0	4	0	0	0	1	0	13
	Exit				5	5	0	5	0	0	0	2	0	17
H	third of 23,24,25,26,27,28,29,30,31 + half of 32	223	211	434	0%	0%	0%	10%	10%	35%	10%	0%	35%	100%
	Enter				0	0	0	22	22	78	22	0	78	223
	Exit				0	0	0	21	21	74	21	0	74	211
I	third of 23,24,25,26,27,28,29,30,31	210	194	404	10%	10%	0%	0%	0%	0%	35%	10%	35%	100%
	Enter				21	21	0	0	0	0	73	21	73	210
	Exit				19	19	0	0	0	0	68	19	68	194
<b>TOTAL</b>		<b>1029</b>	<b>1385</b>	<b>2414</b>										

**Traffic Volumes: No-Build Condition**  
Route 33 Corridor Revitalization Plan, East Windsor, NJ  
Last Updated 10/17/2011

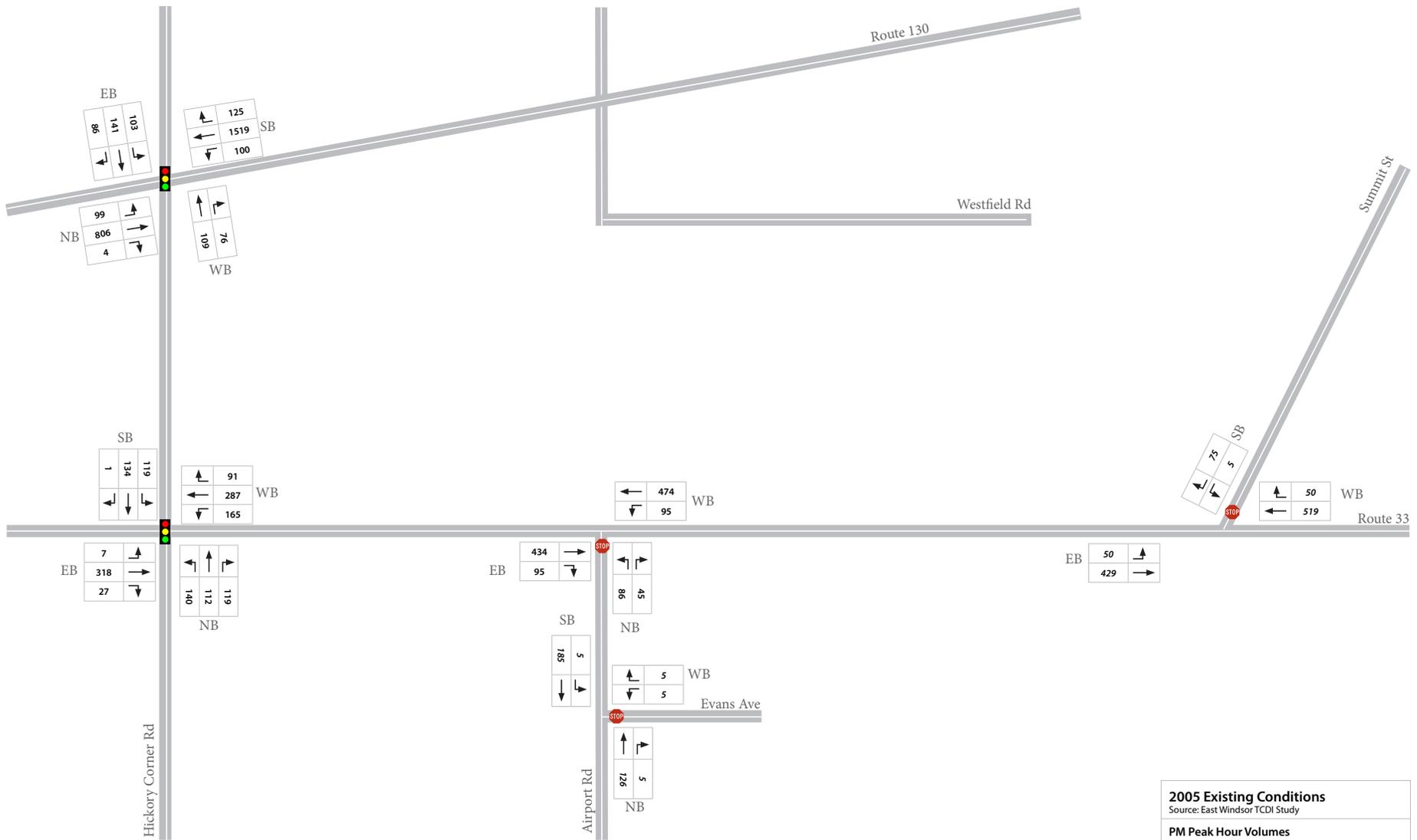
Through Street	Approach	Turn	PM Peak Hour				Site Generated Trips											No-Build Volume (2026)	
			Existing Volume (2005)	Existing Volume (revised)	Future Volume (2026)	Divert	Site A	Site B	Site C	Site D	Site E	Site F	Site G	Site H	Site I	Total			
Route 130	NB	L	99		110													0	110
		T	806		895													0	895
		R	4		4										21			21	25
Route 130	SB	L	100		111		3	2	9	4	1				95			114	225
		T	1519		1687													0	1687
		R	125		139													0	139
Hickory	EB	L	103		114													0	114
		T	141		157		3	2	9	4	1				74		93	250	
		R	86		95													0	95
Hickory	WB	T	109		121									1			78	79	200
		R	76		84									1		100	101	185	
Route 33	EB	L	7		8										21			21	29
		T	418	318	353		18	13	54	22	5	63	12					187	540
		R	27		30													0	30
Route 33	WB	L	165		183		10	7	18	6	2				78	7		43	226
		T	387	287	319		48	36	108	32	6	58	9	22				319	638
		R	141	91	101									2				2	103
Hickory	NB	L	140		155													0	155
		T	112		124													0	124
		R	119		132		3	2	9	4	1							19	151
Hickory	SB	L	169	119	132		6	4	18	8	2							38	170
		T	134		149													0	149
		R	1		1										22			22	23
Route 33	EB	L	0		0													0	0
		T	384	434	482		27	19	81	34					78	7		38	284
		R	95		105										8	58	5	20	91
Route 33	WB	L	95		105													21	126
		T	424	474	526										84	5		42	169
		R	0		0													0	0
Airport Road	NB	T	86		95									10	63	4		21	98
		R	0		0													0	0
Airport Road	SB	L	45		50		12	9	36	15								72	122
		T	0		0													0	0
		R	0		0													0	0
Airport Road	NB	T	126		140		12	9	36	15					63	4		21	160
		R*	5		6									3				3	9
		T	185		205										21				84
Airport Road	SB	L*	5		6													8	14
		R*	5		6										10			10	16
		L*	5		6										4			4	10
Route 33	EB	L*	50		56										26			20	2
		T	379	429	476										58	5		19	175
		R	0		0													3	3
Route 33	WB	L	0		0													0	0
		T	469	519	576										63	4		21	139
		R*	50		56		12	9										21	139
Summit St	NB	L	0		0													0	0
		T	0		0													3	3
		R	0		0													4	4
Summit St	SB	L	5		6		32	24										56	62
		T	0		0										2			2	2
		R	75		83										21	1		21	52

**Notes**

- (1) Existing volumes are PM peak hour volumes from TCDI Study for East Windsor Township (Maser, 2006)
- (2) Some existing volumes were revised (as noted) to account for volume in-balances that were present in the original counts
- (3) Asterisks indicate movements where existing volumes are not available; in these cases a nominal value was used
- (4) Available data indicates that a nominal background growth rate of 0.5% is appropriate for this corridor. Factors that contribute to this nominal rate include the Route 133 bypass, peak period traffic constraints in downtown Hightstown, and the relocation of interchange 8, which will make Route 133 more convenient to drivers.

**Traffic Volumes: Build Condition**  
Route 33 Corridor Revitalization Plan, East Windsor, NJ  
Last Updated 10/17/2011

Through Street	Approach	Turn	PM Peak Hour				Site Generated Trips											Build Volume (2026)	
			Existing Volume (2005)	Existing Volume (revised)	Future Volume (2026)	Divert	Site A	Site B	Site C	Site D	Site E	Site F	Site G	Site H	Site I	Total			
Route 130	NB	L	99		110													0	110
		T	806		895													0	895
		R	4		4													21	25
Route 130	SB	L	100		111													95	206
		T	1519		1687													0	1687
		R	125		139													38	177
Hickory	EB	L	103		114													19	133
		T	141		157		3	2	9	4	1						74	231	
		R	86		95													0	95
Hickory	WB	T	109		121													78	199
		R	76		84												100	100	
Route 33	EB	L	7		8													21	29
		T	418	318	353		18	13	54	22	5	63	12					187	540
		R	27		30													0	30
Route 33	WB	L	165		183		10	7	18	6	2							43	226
		T	387	287	319		48	36	108	32	6	58	9	22				319	638
		R	141	91	101													2	103
Hickory	NB	L	140		155													0	155
		T	112		124													0	124
		R	119		132		3	2	9	4	1							19	151
Hickory	SB	L	169	119	132		6	4	18	8	2							38	170
		T	134		149													0	149
		R	1		1													22	23
Route 33	EB	L	0		0													21	184
		T	384	434	482		27	19	81	34					78	7		38	284
		R	95		105										8	58	5	20	91
Route 33	WB	L	95		105													21	126
		T	424	474	526										84	5		42	169
		R	0		0													0	0
Airport Road	NB	T	86		95										10	63	4	21	98
		R	0		0													0	0
Airport Road	SB	L	45		50		12	9	36	15								72	122
		T	0		0													0	0
		R	0		0													0	0
Airport Road	NB	T	126		140		12	9	36	15					63	4		21	160
		R*	5		6													3	9
		T	185		205										21				84
Airport Road	SB	L*	5		6														

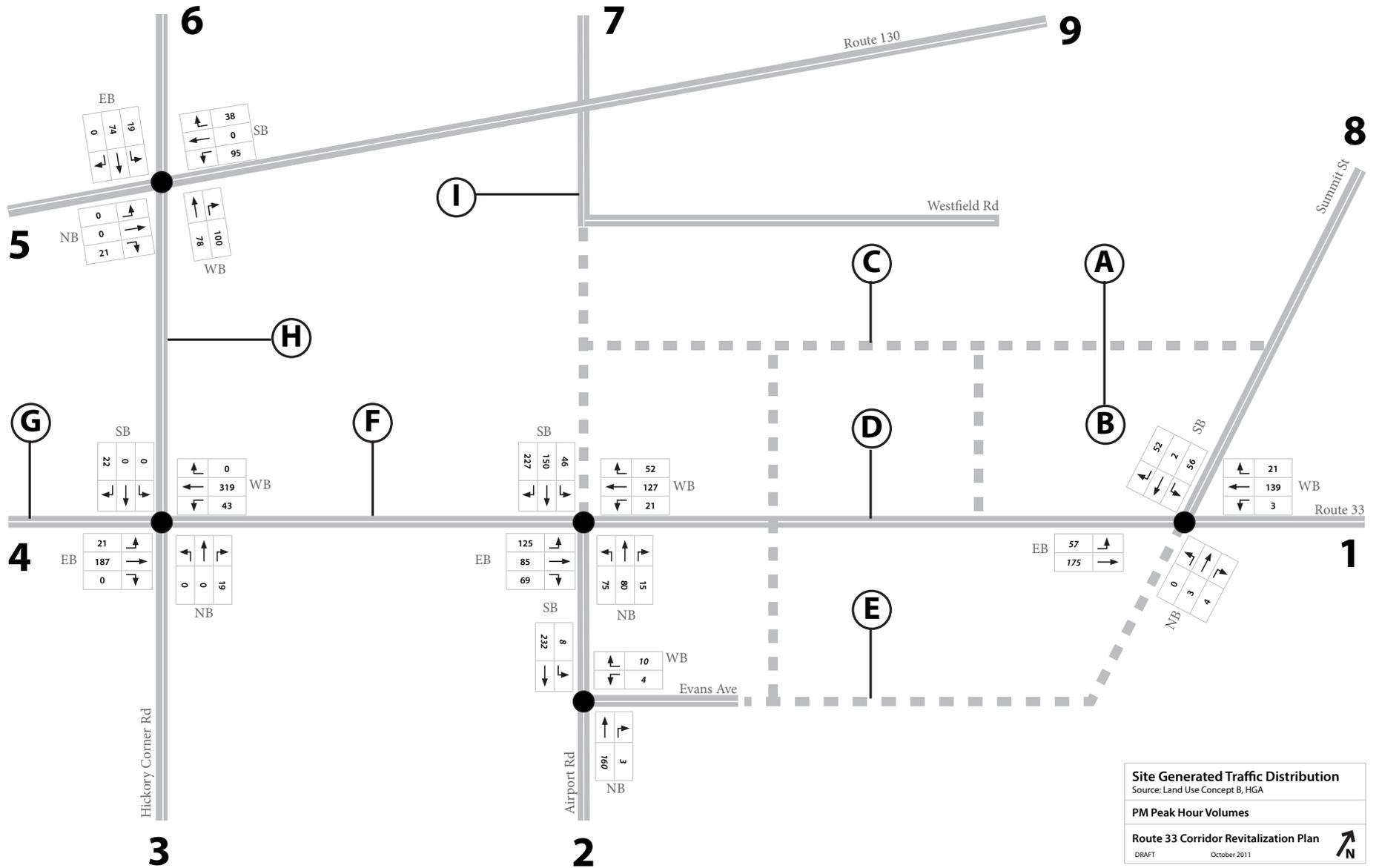


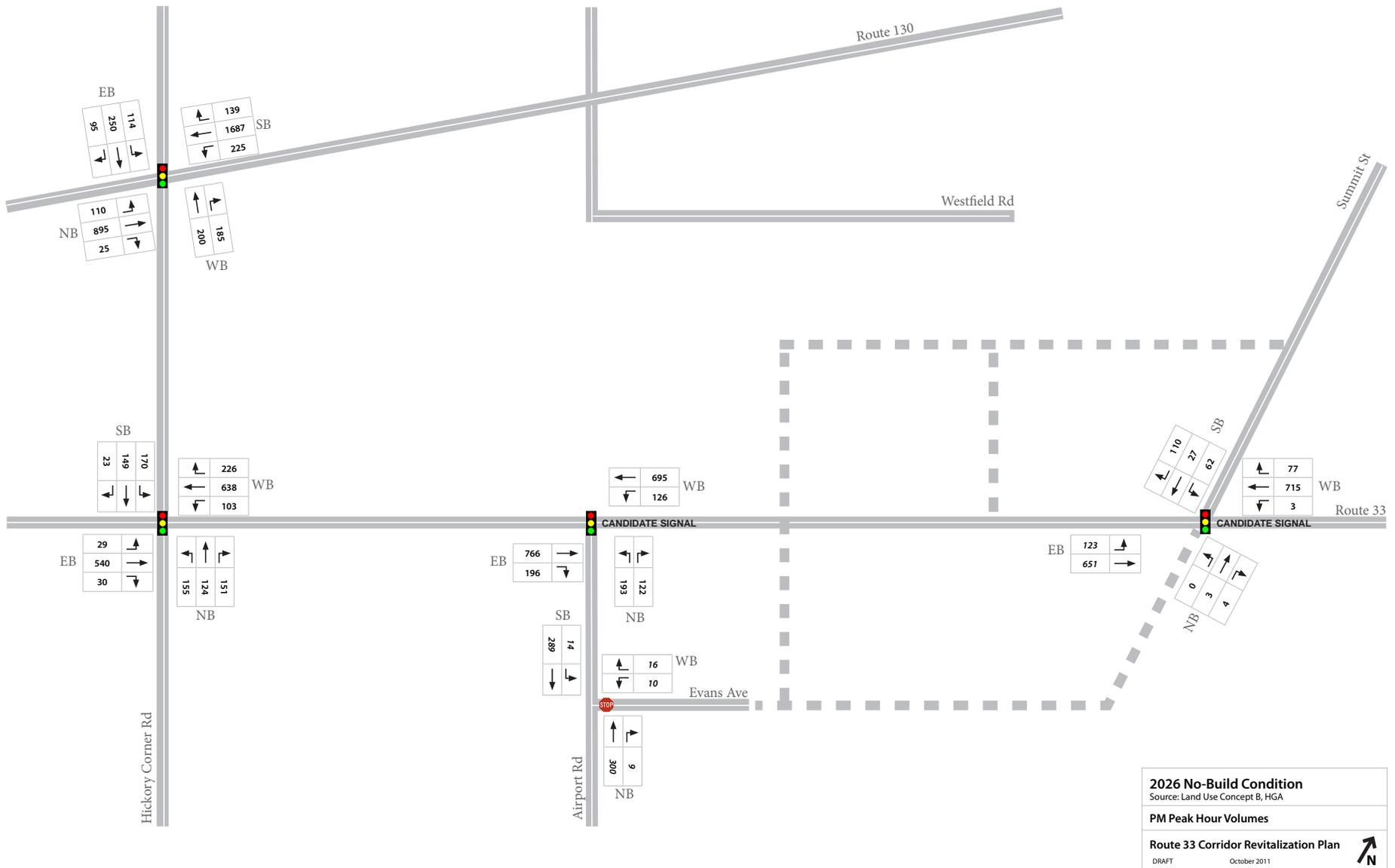
**2005 Existing Conditions**  
 Source: East Windsor TCDI Study

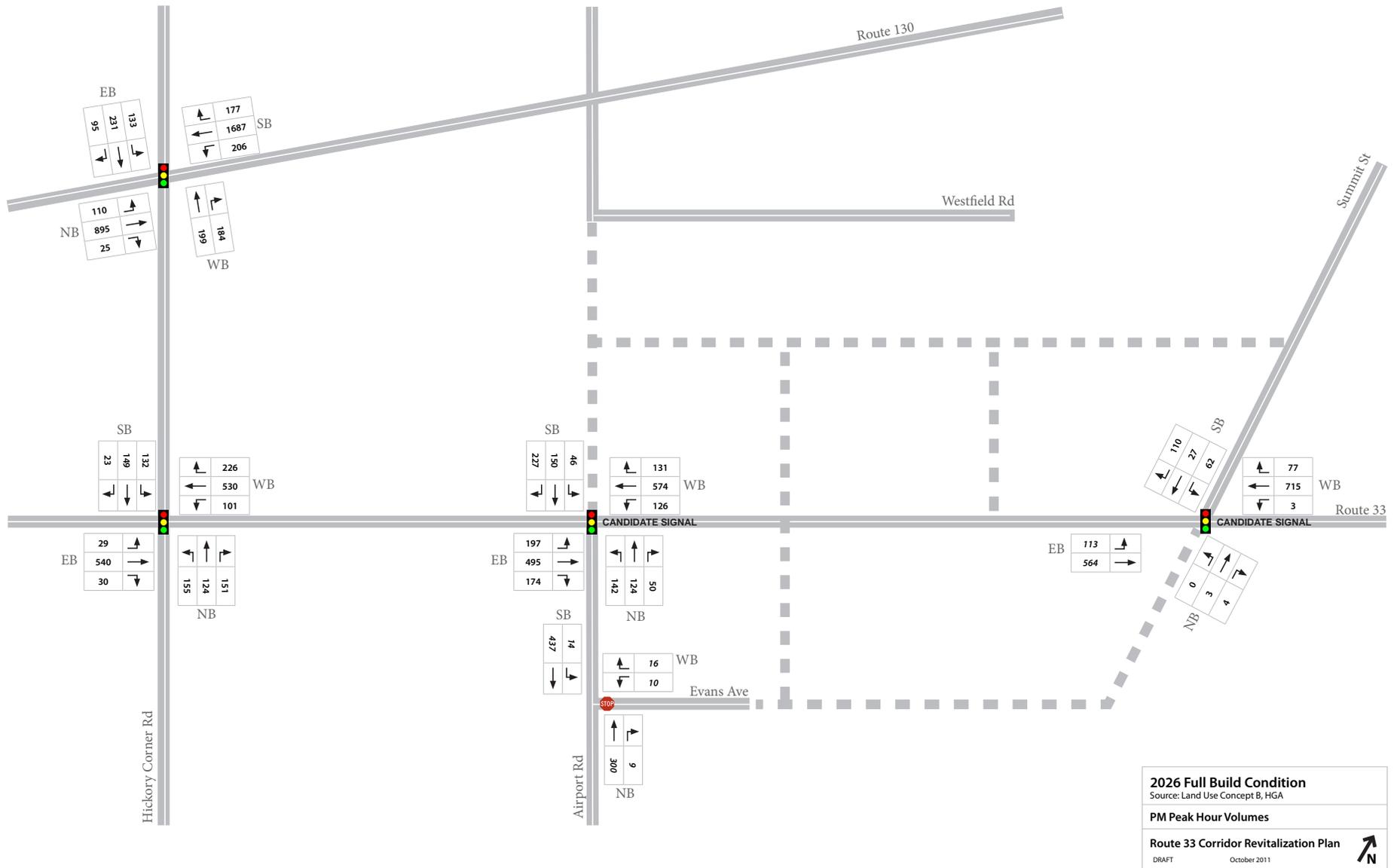
**PM Peak Hour Volumes**

**Route 33 Corridor Revitalization Plan**

DRAFT October 2011







**Route 33 Corridor Revitalization Plan**  
**Traffic Operations Analysis**  
**Synchro and SimTraffic Results**

Intersection	Direction	Synchro												
		Existing			2026 No Build Unsignalized Airport Rd			2026 No Build Signalized Airport Rd			2026 Proposed			
		LOS (Delay)	Queue (ft)		LOS (Delay)	Queue (ft)		LOS (Delay)	Queue (ft)		LOS (Delay)	Queue (ft)		
	50th	95th	50th	95th	50th	95th	50th	95th	50th	95th	50th	95th		
Route 130 & Hickory Corner Rd	EB	C (22)	131	185	C (30)	197	244	Same as 2026 No Build Unsignalized Airport Rd				C (30)	197	244
	WB	C (24)	345	452	D (36)	485	579		D (36)	501	598			
	NB	E (57)	87	118	D (52)	180	241		D (51)	171	252			
	SB	D (49)	162	240	D (53)	261	373		D (50)	242	349			
	All	C (28)	-	-	D (38)	-	-		D (37)	-	-			
Route 33 & Hickory Corner Rd	EB	B (17)	154	264	C (21)	314	457					C (21)	313	457
	WB	A (9)	121	204	B (13)	295	523					B (16)	397	484
	NB	D (38)	91	149	D (41)	101	168					D (40)	100	168
	SB	E (65)	93	136	D (53)	114	163					D (54)	119	180
	All	C (28)	-	-	C (26)	-	-					C (28)	-	-
Route 33 & Airport Rd (Existing - unsignalized) (2026 No Build - As designated in column header) (2026 Proposed - signalized)	EB	A (1)	-	0	A (1)	-	0	C (21)	295	1027	C (25)	283	587	
	WB	A (3)	-	9	B (12)	-	19	B (16)	476	659	C (29)	379	720	
	NB	E (36)	-	74	F (1000+)	-	665+	D (45)	156	235	D (40)	122	180	
	SB	-	-	-	-	-	-	-	-	-	D (52)	122	185	
	All	-	-	-	-	-	-	C (23)	-	-	C (33)	-	-	
Route 33 & Summit St	EB				A (6)	240	195	Same as 2026 No Build Unsignalized Airport Rd				A (7)	171	295
	WB				B (17)	388	560					B (13)	266	651
	NB				D (37)	2	17					D (36)	2	0
	SB				C (25)	19	80					C (29)	21	76
	All				B (13)	-	-					B (12)	-	-
Airport Rd & Evans Ave (unsignalized)	EB				-	-	-					-	-	-
	WB				B (12)	-	4					B (13)	-	5
	NB				A (1)	-	0					A (1)	-	0
	SB				A (1)	-	1					A (1)	-	1
	All				-	-	-					-	-	-
Route 33 & Driveway 1 (unsignalized)	EB											B (13)	-	11
	WB											A (1)	-	0
	SB											F (179)	-	212
	All											-	-	-
Hickory Corner Rd & Driveway 2 (unsignalized)	WB											C (21)	-	8
	NB											A (1)	-	0
	SB											A (8)	-	13
	All											-	-	-

**Notes:**  
 Queuing results based on approach through lanes average and maximum queue  
 Synchro does not report 50th percentile queuing or overall intersection delay for unsignalized intersections

**Route 33 Corridor Revitalization Plan**  
**Traffic Operations Analysis**  
**Synchro and SimTraffic Results**

Intersection	Direction	SimTraffic												
		Existing			2026 No Build Unsignalized Airport Rd				2026 No Build Signalized Airport Rd			2026 Proposed		
		LOS (Delay)	Queue (ft)		LOS (Delay)	Queue (ft)		LOS (Delay)	Queue (ft)		LOS (Delay)	Queue (ft)		
			Average	Maximum		50th	95th		50th	95th		Average	Maximum	
Route 130 & Hickory Corner Rd	EB	B (19)	108	207	C (29)	154	255	C (29)	154	250	C (28)	155	262	
	WB	C (23)	260	428	D (36)	349	537	D (36)	351	529	D (38)	373	585	
	NB	C (33)	74	180	D (36)	139	263	D (36)	152	295	D (40)	133	267	
	SB	D (45)	155	315	E (58)	289	515	E (58)	289	5153	D (49)	252	480	
	All	C (25)	-	-	D (37)	-	-	D (37)	-	-	D (37)	-	-	
Route 33 & Hickory Corner Rd	EB	B (16)	129	376	C (22)	222	468	C (24)	232	486	C (20)	214	429	
	WB	B (13)	98	229	C (26)	266	792	D (37)	372	968	C (23)	273	504	
	NB	D (36)	89	213	D (40)	105	237	D (42)	108	243	D (42)	110	291	
	SB	E (69)	109	202	D (45)	119	221	D (46)	120	220	E (61)	131	252	
	All	C (29)	-	-	C (32)	-	-	D (37)	-	-	C (32)	-	-	
Route 33 & Airport Rd (Existing - unsignalized) (2026 No Build - As designated in column header) (2026 Proposed - signalized)	EB	A (4)	1	13	A (9)	6	37	D (36)	394	962	C (35)	295	545	
	WB	A (9)	50	180	C (21)	79	843	C (25)	130	402	D (52)	490	954	
	NB	C (22)	52	172	F (1339)	957	1092	D (51)	179	423	D (49)	134	318	
	SB	-	-	-	-	-	-	-	-	-	E (57)	171	554	
	All	A (9)	-	-	F (178)	-	-	C (34)	-	-	D (47)	-	-	
Route 33 & Summit St	EB				B (15)	90	245	C (21)	99	249	B (13)	91	319	
	WB				B (18)	212	553	B (18)	209	540	B (15)	181	404	
	NB				C (25)	4	28	C (26)	4	28	B (11)	6	36	
	SB				C (34)	68	192	C (34)	68	175	D (36)	54	178	
	All				B (18)	-	-	C (21)	-	-	B (17)	-	-	
Airport Rd & Evans Ave (unsignalized)	EB													
	WB				F (694)	98	304	A (5)	12	30	A (5)	12	41	
	NB				F (878)	995	2326	A (2)	0	0	A (2)	0	0	
	SB				A (1)	3	51	A (1)	4	49	A (2)	6	53	
	All				-	-	-	A (2)	-	-	A (2)	-	-	
Route 33 & Driveway 1 (unsignalized)	EB										A (4)	29	70	
	WB										A (6)	1	11	
	SB										F (341)	322	769	
	All										E (39)	-	-	
												C (18)	67	236
Hickory Corner Rd & Driveway 2 (unsignalized)	WB										A (2)	10	84	
	NB										A (4)	32	103	
	SB										A (4)	32	103	
	All										A (6)	-	-	
												A (6)	-	-

**Notes:**  
 Queuing results based on approach through lanes average and maximum queue  
 Synchro does not report 50th percentile queuing or overall intersection delay for unsignalized intersections

Lanes, Volumes, Timings

1: RT 130 & Hickory Corner Rd

10/17/2011

	↖	→	↗	↖	←	↖	↖	↑	↗	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↖↖	↖	↖	↖↖↖			↖	↖	↖	↖	↖
Volume (vph)	110	895	25	225	1687	139	0	200	185	114	250	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200	175	250	0	250	0	150	0	150	0	150	0
Storage Lanes	1	1	1	0	1	0	1	1	1	0	1	0
Taper Length (ft)	100	100	100	25	100	25	75	25	75	25	75	25
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.989			0.850		0.959			
Flt Protected	0.950			0.950					0.950			
Satd. Flow (prot)	1805	5036	1583	1770	4903	0	0	1845	1568	1805	1761	0
Flt Permitted	0.950			0.950					0.301			
Satd. Flow (perm)	1805	5036	1583	1770	4903	0	0	1845	1568	572	1761	0
Right Turn on Red			Yes		Yes			Yes			Yes	
Satd. Flow (RTOR)			27		14			201			16	
Link Speed (mph)		55			50			35			35	
Link Distance (ft)		1356			1223			710			560	
Travel Time (s)		16.8			16.7			13.8			10.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	3%	2%	2%	5%	0%	0%	3%	3%	0%	4%	2%
Adj. Flow (vph)	120	973	27	245	1834	151	0	217	201	124	272	103
Shared Lane Traffic (%)												
Lane Group Flow (vph)	120	973	27	245	1985	0	0	217	201	124	375	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)		24			24			0			12	
Link Offset(ft)		0			0			-10			-10	
Crosswalk Width(ft)		30			30			30			30	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0	0	1	0			1	1	1	1	1
Detector Template	all			all				all	all	all	all	all
Leading Detector (ft)	35	0	0	35	0			35	35	35	35	35
Trailing Detector (ft)	-5	0	0	-5	0			-5	-5	-5	-5	-5
Detector 1 Position(ft)	-5	0	0	-5	0			-5	-5	-5	-5	-5
Detector 1 Size(ft)	40	6	20	40	6			40	40	40	40	40
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0
Turn Type	Prot		Perm	Prot				Perm	pm+pt			
Protected Phases	5	2		1	6			8	7	4		
Permitted Phases			2					8	4			
Detector Phase	5	2	2	1	6			8	8	7	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0			7.0	7.0	7.0	4.0	
Minimum Split (s)	10.0	28.0	28.0	10.0	28.0			13.0	13.0	10.0	10.0	
Total Split (s)	19.0	56.0	56.0	25.0	62.0	0.0	0.0	27.0	27.0	12.0	39.0	0.0

2026 No Build PM Peak - Airport Signalized

Synchro 7 - Report Page 1

Lanes, Volumes, Timings

1: RT 130 & Hickory Corner Rd

10/17/2011

	↖	→	↗	↖	←	↖	↖	↑	↗	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↖↖	↖	↖	↖↖↖			↖	↖	↖	↖	↖
Volume (vph)	110	895	25	225	1687	139	0	200	185	114	250	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200	175	250	0	250	0	150	0	150	0	150	0
Storage Lanes	1	1	1	0	1	0	1	1	1	0	1	0
Taper Length (ft)	100	100	100	25	100	25	75	25	75	25	75	25
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.989			0.850		0.959			
Flt Protected	0.950			0.950					0.950			
Satd. Flow (prot)	1805	5036	1583	1770	4903	0	0	1845	1568	1805	1761	0
Flt Permitted	0.950			0.950					0.301			
Satd. Flow (perm)	1805	5036	1583	1770	4903	0	0	1845	1568	572	1761	0
Right Turn on Red			Yes		Yes			Yes			Yes	
Satd. Flow (RTOR)			27		14			201			16	
Link Speed (mph)		55			50			35			35	
Link Distance (ft)		1356			1223			710			560	
Travel Time (s)		16.8			16.7			13.8			10.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	3%	2%	2%	5%	0%	0%	3%	3%	0%	4%	2%
Adj. Flow (vph)	120	973	27	245	1834	151	0	217	201	124	272	103
Shared Lane Traffic (%)												
Lane Group Flow (vph)	120	973	27	245	1985	0	0	217	201	124	375	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)		24			24			0			12	
Link Offset(ft)		0			0			-10			-10	
Crosswalk Width(ft)		30			30			30			30	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0	0	1	0			1	1	1	1	1
Detector Template	all			all				all	all	all	all	all
Leading Detector (ft)	35	0	0	35	0			35	35	35	35	35
Trailing Detector (ft)	-5	0	0	-5	0			-5	-5	-5	-5	-5
Detector 1 Position(ft)	-5	0	0	-5	0			-5	-5	-5	-5	-5
Detector 1 Size(ft)	40	6	20	40	6			40	40	40	40	40
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0
Turn Type	Prot		Perm	Prot				Perm	pm+pt			
Protected Phases	5	2		1	6			8	7	4		
Permitted Phases			2					8	4			
Detector Phase	5	2	2	1	6			8	8	7	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0			7.0	7.0	7.0	4.0	
Minimum Split (s)	10.0	28.0	28.0	10.0	28.0			13.0	13.0	10.0	10.0	
Total Split (s)	19.0	56.0	56.0	25.0	62.0	0.0	0.0	27.0	27.0	12.0	39.0	0.0

2026 No Build PM Peak - Airport Unsignalized

Synchro 7 - Report Page 1

Lanes, Volumes, Timings

1: RT 130 & Hickory Corner Rd

10/17/2011

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	15.8%	46.7%	46.7%	20.8%	51.7%	0.0%	0.0%	22.5%	22.5%	10.0%	32.5%	0.0%
Maximum Green (s)	14.0	48.0	48.0	20.0	54.0		21.0	21.0	9.0	33.0		
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	3.0	3.0	3.0		
All-Red Time (s)	2.0	4.0	4.0	2.0	4.0		3.0	3.0	0.0	3.0		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	8.0	8.0	5.0	8.0	4.0	4.0	6.0	6.0	3.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0		
Recall Mode	None	C-Max	C-Max	None	C-Max		None	None	None	None		
Act Effct Green (s)	12.2	51.9	51.9	19.1	58.8		18.2	18.2	33.0	30.0		
Actuated g/C Ratio	0.10	0.43	0.43	0.16	0.49		0.15	0.15	0.28	0.25		
v/c Ratio	0.66	0.45	0.04	0.87	0.82		0.78	0.49	0.50	0.83		
Control Delay	68.5	25.5	7.9	78.1	30.6		77.9	24.9	40.4	56.7		
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total Delay	68.5	25.5	7.9	78.1	30.6		77.9	24.9	40.4	56.7		
LOS	E	C	A	E	C		E	C	D	E		
Approach Delay		29.7			35.8			52.4			52.7	
Approach LOS		C			D			D			D	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	80
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.87
Intersection Signal Delay:	37.8
Intersection LOS:	D
Intersection Capacity Utilization:	77.8%
ICU Level of Service:	D
Analysis Period (min):	15

Splits and Phases: 1: RT 130 & Hickory Corner Rd



2026 No Build PM Peak - Airport Unsignalized

Synchro 7 - Report Page 2

Lanes, Volumes, Timings

2: RT 33 & Hickory Corner Rd

10/17/2011

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗
Volume (vph)	29	540	30	103	638	226	155	124	151	170	149	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150	0	350	0	150	200	200	200	200	200	200	0
Storage Lanes	1	0	1	0	1	1	1	1	1	1	1	0
Taper Length (ft)	50	25	75	25	75	75	75	75	75	75	75	25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.961				0.850		0.980	
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1848	0	1770	1786	0	1770	1845	1583	1752	1808	0
Fit Permitted	0.189			0.283			0.421			0.418		
Satd. Flow (perm)	352	1848	0	527	1786	0	784	1845	1583	771	1808	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					29				164		5	
Link Speed (mph)		35			45			35			35	
Link Distance (ft)		1126			1743			1289			710	
Travel Time (s)		21.9			26.4			25.1			13.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	3%	2%	3%	2%	3%	3%	3%
Adj. Flow (vph)	32	587	33	112	693	246	168	135	164	185	162	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	32	620	0	112	939	0	168	135	164	185	187	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			-15	
Crosswalk Width(ft)		30			30			28			30	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0		1	0		1	1	1	1	1	1
Detector Template	all			all			all	all	all	all	all	all
Leading Detector (ft)	35	0		35	0		35	35	35	35	35	35
Trailing Detector (ft)	-5	0		-5	0		-5	-5	-5	-5	-5	-5
Detector 1 Position(ft)	-5	0		-5	0		-5	-5	-5	-5	-5	-5
Detector 1 Size(ft)	40	6		40	6		40	40	40	40	40	40
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Perm			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6			8		8	4		
Detector Phase	2	2		1	6		3	8	8	7	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0		5.0	20.0		5.0	7.0	7.0	5.0	7.0	
Minimum Split (s)	27.0	27.0		8.0	27.0		8.0	12.0	12.0	8.0	12.0	
Total Split (s)	64.0	64.0	0.0	19.0	83.0	0.0	14.0	20.0	20.0	17.0	23.0	0.0

2026 No Build PM Peak - Airport Unsignalized

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Lanes, Volumes, Timings

2: RT 33 & Hickory Corner Rd

10/17/2011

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	53.3%	53.3%	0.0%	15.8%	69.2%	0.0%	11.7%	16.7%	16.7%	14.2%	19.2%	0.0%
Maximum Green (s)	57.0	57.0		16.0	76.0		11.0	15.0	15.0	14.0	18.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	4.0	4.0		0.0	4.0		0.0	2.0	2.0	0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	3.0	7.0	4.0	3.0	5.0	5.0	3.0	5.0	4.0
Lead/Lag	Lag	Lag		Lead			Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0			3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max		None	C-Max		None	None	None	None	None	
Act Effct Green (s)	67.1	67.1		82.3	78.3		26.3	13.5	13.5	31.2	16.0	
Actuated g/C Ratio	0.56	0.56		0.69	0.65		0.22	0.11	0.11	0.26	0.13	
v/c Ratio	0.16	0.60		0.25	0.80		0.65	0.65	0.51	0.60	0.76	
Control Delay	17.1	21.4		5.0	14.0		48.3	65.7	13.1	43.5	62.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	17.1	21.4		5.0	14.0		48.3	65.7	13.1	43.5	62.7	
LOS	B	C		A	B		D	E	B	D	E	
Approach Delay		21.2			13.0			41.0			53.2	
Approach LOS		C			B			D			D	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle:	70
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.80
Intersection Signal Delay:	26.1
Intersection LOS:	C
Intersection Capacity Utilization:	101.0%
ICU Level of Service:	G
Analysis Period (min):	15

Splits and Phases: 2: RT 33 & Hickory Corner Rd



2026 No Build PM Peak - Airport Unsignalized

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Lanes, Volumes, Timings

4: RT 33 & Summitt Rd

10/17/2011

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔		↔	↔		↔	↔	
Volume (vph)	123	651	0	3	715	77	0	3	4	62	27	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200	0	200	0	200	0	150	0	150	0	150	0
Storage Lanes	1	0	1	0	1	0	1	0	1	0	1	0
Taper Length (ft)	50	25	50	0	25	50	25	50	25	50	25	50
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.985			0.914			0.879	
Fit Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1770	1863	0	1770	1835	0	1863	1703	0	1770	1637	0
Fit Permitted	0.192			0.376						0.617		
Satd. Flow (perm)	358	1863	0	700	1835	0	1863	1703	0	1149	1637	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					9			4			120	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		5280			1217			1326			819	
Travel Time (s)		80.0			18.4			30.1			18.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	134	708	0	3	777	84	0	3	4	67	29	120
Shared Lane Traffic (%)												
Lane Group Flow (vph)	134	708	0	3	861	0	0	7	0	67	149	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0		1	0		1	1		1	1	
Detector Template	all			all			all	all		all	all	
Leading Detector (ft)	35	0		35	0		35	35		35	35	
Trailing Detector (ft)	-5	0		-5	0		-5	-5		-5	-5	
Detector 1 Position(ft)	-5	0		-5	0		-5	-5		-5	-5	
Detector 1 Size(ft)	40	6		40	6		40	40		40	40	
Detector 1 Type	CI+Ex	CI+Ex										
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt			Perm			Perm			pm+pt		
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2				6			8		4		
Detector Phase	5	2			6	6		8	8	7	4	
Switch Phase												
Minimum Initial (s)	4.0	20.0		20.0	20.0		10.0	10.0		5.0	10.0	
Minimum Split (s)	7.0	25.0		25.0	25.0		17.0	17.0		8.0	17.0	
Total Split (s)	12.0	95.0	0.0	83.0	83.0	0.0	17.0	17.0	0.0	8.0	25.0	0.0
Total Split (%)	10.0%	79.2%	0.0%	69.2%	69.2%	0.0%	14.2%	14.2%	0.0%	6.7%	20.8%	0.0%

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Lanes, Volumes, Timings

4: RT 33 & Summitt Rd

10/17/2011

	↖	→	↗	↖	←	↖	↖	↑	↗	↘	↓	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	9.0	90.0		78.0	78.0		12.0	12.0		5.0	20.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0		2.0	2.0		2.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	3.0	5.0	4.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		C-Max	C-Max		Max	Max		None	Max	
Walk Time (s)							7.0	7.0			7.0	
Flash Dont Walk (s)							5.0	5.0			5.0	
Pedestrian Calls (#/hr)							0	0			0	
Act Effct Green (s)	92.0	90.0		79.2	79.2		13.6	13.6		22.0	20.0	
Actuated g/C Ratio	0.77	0.75		0.66	0.66		0.11	0.11		0.18	0.17	
v/c Ratio	0.37	0.51		0.01	0.71		0.04	0.04		0.28	0.40	
Control Delay	4.8	6.6		7.3	17.2		37.2	37.2		45.2	15.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	4.8	6.6		7.3	17.2		37.2	37.2		45.2	15.5	
LOS	A	A		A	B		D	D		D	B	
Approach Delay		6.3			17.1			37.2			24.7	
Approach LOS		A			B			D			C	

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.71  
 Intersection Signal Delay: 13.3 Intersection LOS: B  
 Intersection Capacity Utilization 73.5% ICU Level of Service D  
 Analysis Period (min) 15

Splits and Phases: 4: RT 33 & Summitt Rd



HCM Unsignalized Intersection Capacity Analysis

3: RT 33 & Airport Rd

10/17/2011

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖	↗	↖	↗	↖	↗
Volume (veh/h)	766	196	126	695	193	122
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	833	213	137	755	210	133
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						2
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			1046		1968	939
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1046		1968	939
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			79		0	59
cM capacity (veh/h)			665		55	320

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	1046	137	755	342
Volume Left	0	137	0	210
Volume Right	213	0	0	133
cSH	1700	665	1700	81
Volume to Capacity	0.62	0.21	0.44	4.24
Queue Length 95th (ft)	0	19	0	Err
Control Delay (s)	0.0	11.8	0.0	Err
Lane LOS		B		F
Approach Delay (s)	0.0	1.8		Err
Approach LOS				F

Intersection Summary

Average Delay 1502.0  
 Intersection Capacity Utilization 79.9% ICU Level of Service D  
 Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

5: Evans Ave & Airport Rd

10/17/2011

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↑		↑		↑	↑
Volume (veh/h)	10	16	300	9	14	289
Sign Control	Stop		Free		Free	Free
Grade	0%		0%		0%	0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	17	326	10	15	314
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	676	331			336	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	676	331			336	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	98			99	
cM capacity (veh/h)	414	711			1223	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	28	336	329			
Volume Left	11	0	15			
Volume Right	17	10	0			
cSH	557	1700	1223			
Volume to Capacity	0.05	0.20	0.01			
Queue Length 95th (ft)	4	0	1			
Control Delay (s)	11.8	0.0	0.5			
Lane LOS	B		A			
Approach Delay (s)	11.8	0.0	0.5			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.7			
Intersection Capacity Utilization		36.6%		ICU Level of Service	A	
Analysis Period (min)		15				

2026 No Build PM Peak - Airport Unsignalized

Synchro 7 - Report  
Page 2

Lanes, Volumes, Timings

1: RT 130 & Hickory Corner Rd

10/17/2011

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑↑	↑	↑	↑↑↑			↑	↑	↑	↑	↑
Volume (vph)	110	895	25	206	1687	177	0	199	184	133	231	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		175	250		0	100	0	150	0		0
Storage Lanes	1		1	1		0	1	1	1	1		0
Taper Length (ft)	100		100	100		25	50	25	75	25		25
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>			0.850		0.986			0.850		0.956		
Fit Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1805	5036	1583	1770	4893	0	0	1845	1568	1805	1756	0
Fit Permitted	0.950			0.950						0.301		
Satd. Flow (perm)	1805	5036	1583	1770	4893	0	0	1845	1568	572	1756	0
Right Turn on Red			Yes		Yes			Yes			Yes	Yes
Satd. Flow (RTOR)			27		19			200			17	
Link Speed (mph)		55			50			35			35	
Link Distance (ft)		1356			1223			378			560	
Travel Time (s)		16.8			16.7			7.4			10.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	3%	2%	2%	5%	0%	0%	3%	3%	0%	4%	2%
Adj. Flow (vph)	120	973	27	224	1834	192	0	216	200	145	251	103
Shared Lane Traffic (%)												
Lane Group Flow (vph)	120	973	27	224	2026	0	0	216	200	145	354	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			0			12	
Link Offset(ft)		0			0			-10			-10	
Crosswalk Width(ft)		30			30			30			30	
<b>Two way Left Turn Lane</b>												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0	0	1	0			1	1	1	1	1
Detector Template	all			all				all	all	all	all	
Leading Detector (ft)	35	0	0	35	0			35	35	35	35	
Trailing Detector (ft)	-5	0	0	-5	0			-5	-5	-5	-5	
Detector 1 Position(ft)	-5	0	0	-5	0			-5	-5	-5	-5	
Detector 1 Size(ft)	40	6	20	40	6			40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	
Turn Type	Prot		Perm	Prot				Perm	pm+pt			
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases			2						8	4		
Detector Phase	5	2	2	1	6			8	8	7	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0			7.0	7.0	7.0	4.0	
Minimum Split (s)	10.0	28.0	28.0	10.0	28.0			13.0	13.0	10.0	10.0	
Total Split (s)	19.0	56.0	56.0	25.0	62.0	0.0	0.0	27.0	27.0	12.0	39.0	0.0

2026 Proposed PM Peak  
Urban Engineers

Synchro 7 - Report  
Page 1

Lanes, Volumes, Timings

1: RT 130 & Hickory Corner Rd

10/17/2011

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	15.8%	46.7%	46.7%	20.8%	51.7%	0.0%	0.0%	22.5%	22.5%	10.0%	32.5%	0.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0			3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	4.0	4.0	2.0	4.0			3.0	3.0	0.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	8.0	8.0	5.0	8.0	4.0	4.0	6.0	6.0	3.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag			Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes			Yes	Yes	Yes		
Recall Mode	None	C-Max	C-Max	None	C-Max			None	None	None	None	
Act Effct Green (s)	12.2	52.5	52.5	18.4	58.7			18.1	18.1	33.1	30.1	
Actuated g/C Ratio	0.10	0.44	0.44	0.15	0.49			0.15	0.15	0.28	0.25	
v/c Ratio	0.66	0.44	0.04	0.83	0.84			0.77	0.49	0.58	0.78	
Control Delay	68.5	25.1	7.9	73.4	31.4			75.1	17.2	43.6	52.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	68.5	25.1	7.9	73.4	31.4			75.1	17.2	43.6	52.4	
LOS	E	C	A	E	C			E	B	D	D	
Approach Delay		29.3			35.6			47.3			49.8	
Approach LOS		C			D			D			D	
Queue Length 50th (ft)	90	197	0	167	501			171	22	87	242	
Queue Length 95th (ft)	154	244	19	#283	598			m252	m86	142	349	
Internal Link Dist (ft)		1276			1143			298			480	
Turn Bay Length (ft)	200		175	250						150		
Base Capacity (vph)	211	2204	708	295	2404			323	439	250	495	
Starvation Cap Reductn	0	0	0	0	0			0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0			0	0	0	0	
Storage Cap Reductn	0	0	0	0	0			0	0	0	0	
Reduced v/c Ratio	0.57	0.44	0.04	0.76	0.84			0.67	0.46	0.58	0.72	

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.84  
 Intersection Signal Delay: 36.8 Intersection LOS: D  
 Intersection Capacity Utilization 79.6% ICU Level of Service D  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: RT 130 & Hickory Corner Rd



Lanes, Volumes, Timings

1: RT 130 & Hickory Corner Rd

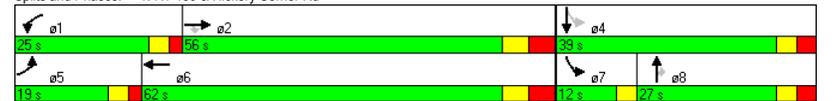
10/17/2011

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	15.8%	46.7%	46.7%	20.8%	51.7%	0.0%	0.0%	22.5%	22.5%	10.0%	32.5%	0.0%
Maximum Green (s)	14.0	48.0	48.0	20.0	54.0			21.0	21.0	9.0	33.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0			3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	4.0	4.0	2.0	4.0			3.0	3.0	0.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	8.0	8.0	5.0	8.0	4.0	4.0	6.0	6.0	3.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag			Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes			Yes	Yes	Yes		
Recall Mode	None	C-Max	C-Max	None	C-Max			None	None	None	None	
Act Effct Green (s)	12.2	51.9	51.9	19.1	58.8			18.2	18.2	33.0	30.0	
Actuated g/C Ratio	0.10	0.43	0.43	0.16	0.49			0.15	0.15	0.28	0.25	
v/c Ratio	0.66	0.45	0.04	0.87	0.82			0.78	0.49	0.50	0.83	
Control Delay	68.5	25.5	7.9	78.1	30.6			75.9	23.2	40.4	56.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	68.5	25.5	7.9	78.1	30.6			75.9	23.2	40.4	56.7	
LOS	E	C	A	E	C			E	C	D	E	
Approach Delay		29.7			35.8			50.5			52.7	
Approach LOS		C			D			D			D	

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.87  
 Intersection Signal Delay: 37.6 Intersection LOS: D  
 Intersection Capacity Utilization 77.8% ICU Level of Service D  
 Analysis Period (min) 15

Splits and Phases: 1: RT 130 & Hickory Corner Rd



Lanes, Volumes, Timings

2: RT 33 & Hickory Corner Rd

10/17/2011

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Volume (vph)	29	540	30	100	530	226	155	124	151	132	149	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150	0	350	0	150	0	150	200	200	0	0	0
Storage Lanes	1	0	1	0	1	0	1	1	1	0	0	0
Taper Length (ft)	50	25	75	25	75	75	75	75	75	25	25	25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992		0.955			0.850		0.980			
Flt Protected	0.950		0.950		0.950		0.950		0.950			
Satd. Flow (prot)	1770	1848	0	1770	1774	0	1770	1845	1583	1752	1808	0
Fit Permitted	0.266		0.284		0.395		0.459					
Satd. Flow (perm)	495	1848	0	529	1774	0	736	1845	1583	847	1808	0
Right Turn on Red		Yes										
Satd. Flow (RTOR)	3		35		164		5					
Link Speed (mph)	35		45		35		35		35		35	
Link Distance (ft)	1126		990		1289		334		6.5			
Travel Time (s)	21.9		15.0		25.1		6.5					
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	3%	2%	3%	2%	3%	3%	3%
Adj. Flow (vph)	32	587	33	109	576	246	168	135	164	143	162	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	32	620	0	109	822	0	168	135	164	143	187	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)	12		12		12		12		12		12	
Link Offset(ft)	0		0		0		0		-15		30	
Crosswalk Width(ft)	30		30		28		30					
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0	1	0	1	1	1	1	1	1	1	1
Detector Template	all		all		all							
Leading Detector (ft)	35	0	35	0	35	35	35	35	35	35	35	35
Trailing Detector (ft)	-5	0	-5	0	-5	-5	-5	-5	-5	-5	-5	-5
Detector 1 Position(ft)	-5	0	-5	0	-5	-5	-5	-5	-5	-5	-5	-5
Detector 1 Size(ft)	40	6	40	6	40	40	40	40	40	40	40	40
Detector 1 Type	Cl+Ex											
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Perm		pm+pt		pm+pt		Perm	pm+pt		Perm	pm+pt	
Protected Phases		2		1	6		3	8		7	4	
Permitted Phases	2		6		8		8	4		8	4	
Detector Phase	2	2	1	6	3	8	8	7	4			
Switch Phase												
Minimum Initial (s)	20.0	20.0	5.0	20.0	5.0	7.0	7.0	5.0	7.0	8.0	12.0	0.0
Minimum Split (s)	27.0	27.0	8.0	27.0	8.0	12.0	12.0	8.0	12.0	8.0	12.0	0.0
Total Split (s)	64.0	64.0	0.0	19.0	83.0	0.0	14.0	20.0	20.0	17.0	23.0	0.0

Lanes, Volumes, Timings

2: RT 33 & Hickory Corner Rd

10/17/2011

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	53.3%	53.3%	0.0%	15.8%	69.2%	0.0%	11.7%	16.7%	16.7%	14.2%	19.2%	0.0%
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	3.0	7.0	4.0	3.0	5.0	5.0	3.0	5.0	4.0
Lead/Lag	Lag	Lag		Lead			Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max		None	C-Max		None	None	None	None	None	None
Act Effct Green (s)	67.1	67.1		82.3	78.3		27.2	14.4	14.4	30.3	16.0	
Actuated g/C Ratio	0.56	0.56		0.69	0.65		0.23	0.12	0.12	0.25	0.13	
v/c Ratio	0.12	0.60		0.24	0.70		0.65	0.61	0.49	0.47	0.76	
Control Delay	15.4	21.3		7.9	17.4		48.3	62.2	12.6	41.2	65.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	15.4	21.3		7.9	17.4		48.3	62.2	12.6	41.2	65.2	
LOS	B	C		A	B		D	E	B	D	E	
Approach Delay		21.0			16.3			39.8			54.8	
Approach LOS		C			B			D			D	
Queue Length 50th (ft)	12	313		27	397		104	100	0	64	119	
Queue Length 95th (ft)	31	457		m39	484		167	168	63	m98	m180	
Internal Link Dist (ft)		1046			910			1209			254	
Turn Bay Length (ft)	150			350			150	200	200			
Base Capacity (vph)	277	1035		528	1169		263	232	342	330	275	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.12	0.60		0.21	0.70		0.64	0.58	0.48	0.43	0.68	
<b>Intersection Summary</b>												
Area Type:	Other											
Cycle Length:	120											
Actuated Cycle Length:	120											
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green												
Natural Cycle:	60											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	0.76											
Intersection Signal Delay:	27.6						Intersection LOS: C					
Intersection Capacity Utilization:	95.3%						ICU Level of Service F					
Analysis Period (min):	15											
m Volume for 95th percentile queue is metered by upstream signal.												
<b>Splits and Phases: 2: RT 33 &amp; Hickory Corner Rd</b>												

Lanes, Volumes, Timings  
3: RT 33 & Airport Rd

10/17/2011

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Volume (vph)	197	495	174	126	574	131	142	124	50	46	150	227
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	12	12	12	12	12	12	12	12
Storage Length (ft)	200		0	200		0	150		0	150		150
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	100		25	100		25	50		25	50		50
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.961			0.972			0.957				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1711	1730	0	1770	1796	0	1770	1783	0	1770	1863	1583
Flt Permitted	0.176			0.219			0.364			0.639		
Satd. Flow (perm)	317	1730	0	408	1796	0	678	1783	0	1190	1863	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			30				30
Link Distance (ft)		752			3044			1134				895
Travel Time (s)		11.4			46.1			25.8				20.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	3%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	214	538	189	137	624	142	154	135	54	50	163	247
Shared Lane Traffic (%)												
Lane Group Flow (vph)	214	727	0	137	766	0	154	189	0	50	163	247
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0		1	0		1	1		1	1	1
Detector Template	all			all			all	all		all	all	all
Leading Detector (ft)	35	0		35	0		35	35		35	35	35
Trailing Detector (ft)	-5	0		-5	0		-5	-5		-5	-5	-5
Detector 1 Position(ft)	-5	0		-5	0		-5	-5		-5	-5	-5
Detector 1 Size(ft)	40	6		40	6		40	40		40	40	40
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	pm+pt			pm+pt			pm+pt			Perm		pm+ov
Protected Phases	5	2		1	6		3	8			4	5
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		1	6		3	8		4	4	5
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		4.0	7.0		7.0	7.0	5.0
Minimum Split (s)	8.0	26.0		11.0	26.0		8.0	17.0		17.0	17.0	8.0

2026 Proposed PM Peak  
Urban Engineers

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Lanes, Volumes, Timings  
3: RT 33 & Airport Rd

10/17/2011

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)	13.0	58.0	0.0	13.0	58.0	0.0	15.0	49.0	0.0	34.0	34.0	13.0
Total Split (%)	10.8%	48.3%	0.0%	10.8%	48.3%	0.0%	12.5%	40.8%	0.0%	28.3%	28.3%	10.8%
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	0.0	3.0		0.0	3.0		0.0	2.0		2.0	2.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.0	4.0	3.0	6.0	4.0	3.0	5.0	4.0	5.0	5.0	3.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	Yes
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	None
Act Effct Green (s)	79.8	66.9		77.4	65.6		32.4	30.4		15.9	15.9	30.9
Actuated g/C Ratio	0.66	0.56		0.64	0.55		0.27	0.25		0.13	0.13	0.26
v/c Ratio	0.65	0.75		0.38	0.78		0.53	0.42		0.32	0.66	0.61
Control Delay	23.6	23.0		12.6	32.3		41.1	39.4		50.9	61.8	45.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	23.6	23.0		12.6	32.3		41.1	39.4		50.9	61.8	45.4
LOS	C	C		B	C		D	D		D	E	D
Approach Delay		23.2			29.3			40.2			51.8	
Approach LOS		C			C			D			D	
Queue Length 50th (ft)	58	283		33	379		95	122		36	122	169
Queue Length 95th (ft)	#143	#585		m108	#720		145	180		72	185	242
Internal Link Dist (ft)		672			2964			1054			815	
Turn Bay Length (ft)	200			200			150			150		150
Base Capacity (vph)	327	964		381	982		292	654		288	450	408
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.65	0.75		0.36	0.78		0.53	0.29		0.17	0.36	0.61

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle:	75
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.78
Intersection Signal Delay:	32.4
Intersection LOS:	C
Intersection Capacity Utilization:	81.2%
ICU Level of Service:	D
Analysis Period (min):	15
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

2026 Proposed PM Peak  
Urban Engineers

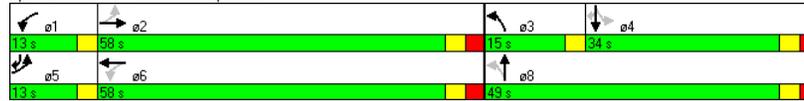
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Lanes, Volumes, Timings

3: RT 33 & Airport Rd

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Splits and Phases: 3: RT 33 & Airport Rd



Lanes, Volumes, Timings

4: RT 33 & Summitt Rd

10/17/2011

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔		↔	↔		↔	↔	↔
Volume (vph)	113	564	0	3	715	77	0	3	4	62	27	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200	0	200	0	150	0	150	0	150	0	150	0
Storage Lanes	1	0	1	0	1	0	1	0	1	0	1	0
Taper Length (ft)	50	25	50	25	50	25	50	25	50	25	50	25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frts				0.985			0.914			0.879		
Fit Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1770	1863	0	1770	1835	0	1863	1703	0	1770	1637	0
Fit Permitted	0.216			0.433						0.571		
Satd. Flow (perm)	402	1863	0	807	1835	0	1863	1703	0	1064	1637	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)				8			4			120		
Link Speed (mph)		45		45		25		25		25		25
Link Distance (ft)		3044		2237		747		809		809		809
Travel Time (s)		46.1		33.9		20.4		22.1		22.1		22.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	123	613	0	3	777	84	0	3	4	67	29	120
Shared Lane Traffic (%)												
Lane Group Flow (vph)	123	613	0	3	861	0	0	7	0	67	149	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)		12		12		12		12		12		12
Link Offset(ft)		0		0		0		0		0		0
Crosswalk Width(ft)		16		16		16		16		16		16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0		1	0		1	1		1	1	
Detector Template	all			all			all	all		all	all	
Leading Detector (ft)	35	0		35	0		35	35		35	35	
Trailing Detector (ft)	-5	0		-5	0		-5	-5		-5	-5	
Detector 1 Position(ft)	-5	0		-5	0		-5	-5		-5	-5	
Detector 1 Size(ft)	40	6		40	6		40	40		40	40	
Detector 1 Type	CI+Ex	CI+Ex										
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt			Perm			Perm			pm+pt		
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		7	4	
Switch Phase												
Minimum Initial (s)	4.0	20.0		20.0	20.0		10.0	10.0		5.0	10.0	
Minimum Split (s)	8.0	25.0		25.0	25.0		17.0	17.0		8.0	17.0	
Total Split (s)	11.0	88.0	0.0	77.0	77.0	0.0	17.0	17.0	0.0	15.0	32.0	0.0
Total Split (%)	9.2%	73.3%	0.0%	64.2%	64.2%	0.0%	14.2%	14.2%	0.0%	12.5%	26.7%	0.0%

Lanes, Volumes, Timings

4: RT 33 & Summitt Rd

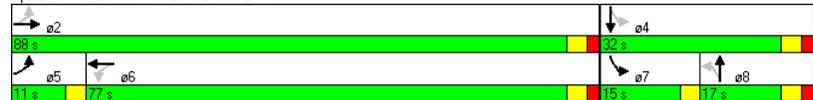
10/17/2011

	↖	→	↗	↖	←	↖	↗	↖	↗	↖	↗	↖
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0		2.0	2.0		2.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	3.0	5.0	4.0
Lead/Lag	Lead			Lag			Lag			Lead		
Lead-Lag Optimize?	Yes			Yes			Yes			Yes		
Recall Mode	None	C-Max		C-Max		C-Max		None	None	None	None	
Act Effct Green (s)	98.9	96.9		86.6	86.6		10.0	10.0		15.1	13.1	
Actuated g/C Ratio	0.82	0.81		0.72	0.72		0.08	0.08		0.13	0.11	
v/c Ratio	0.30	0.41		0.01	0.65		0.05	0.34		0.34	0.52	
Control Delay	5.4	6.6		7.3	13.1		36.0	50.6		19.4	19.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	5.4	6.6		7.3	13.1		36.0	50.6		19.4	19.4	
LOS	A	A		A	B		D	D		D	B	
Approach Delay	6.4			13.1			36.0			29.1		
Approach LOS	A			B			D			C		
Queue Length 50th (ft)	18	149		1	266		2	49		21	21	
Queue Length 95th (ft)	m48	295		5	651		m0	83		76	76	
Internal Link Dist (ft)	2964			2157			667			729		
Turn Bay Length (ft)	200			200			150			461		
Base Capacity (vph)	427	1505		583	1326		174	205		461	461	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.29	0.41		0.01	0.65		0.04	0.33		0.32	0.32	

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.65  
 Intersection Signal Delay: 12.4 Intersection LOS: B  
 Intersection Capacity Utilization 70.3% ICU Level of Service C  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: RT 33 & Summitt Rd



HCM Unsignalized Intersection Capacity Analysis

5: Evans Ave & Airport Rd

10/17/2011

	↖	↗	↖	↗	↖	↗
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↖
Volume (veh/h)	10	16	300	9	14	437
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	17	326	10	15	475
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						1134
pX, platoon unblocked	0.96					
vC, conflicting volume	836	331			336	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	810	331			336	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	98			99	
cM capacity (veh/h)	332	711			1223	

Direction, Lane #

	WB 1	NB 1	SB 1
Volume Total	28	336	490
Volume Left	11	0	15
Volume Right	17	10	0
cSH	494	1700	1223
Volume to Capacity	0.06	0.20	0.01
Queue Length 95th (ft)	5	0	1
Control Delay (s)	12.7	0.0	0.4
Lane LOS	B		A
Approach Delay (s)	12.7	0.0	0.4
Approach LOS	B		

Intersection Summary

Average Delay 0.6  
 Intersection Capacity Utilization 44.3% ICU Level of Service A  
 Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

27: RT 33 & Driveway 1

10/17/2011

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	63	730	796	147	136	58
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	68	793	865	160	148	63
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (ft)	990		752			
pX, platoon unblocked	0.62			0.75	0.62	
vC, conflicting volume	1025			1876	945	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	732			1209	603	
tC, single (s)	4.1			6.4	6.2	
tC, 2 stage (s)						
tF (s)	2.2			3.5	3.3	
p0 queue free %	87			0	80	
cM capacity (veh/h)	540			132	309	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>WB 1</b>	<b>SB 1</b>	<b>SB 2</b>	
Volume Total	68	793	1025	148	63	
Volume Left	68	0	0	148	0	
Volume Right	0	0	160	0	63	
cSH	540	1700	1700	132	309	
Volume to Capacity	0.13	0.47	0.60	1.12	0.20	
Queue Length 95th (ft)	11	0	0	212	19	
Control Delay (s)	12.6	0.0	0.0	178.6	19.6	
Lane LOS	B			F	C	
Approach Delay (s)	1.0	0.0		131.1		
Approach LOS			F			
<b>Intersection Summary</b>						
Average Delay			13.6			
Intersection Capacity Utilization			66.6%	ICU Level of Service	C	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

30: Driveway 2 & Hickory Corner Rd

10/17/2011

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	22	200	183	21	190	272
Sign Control	Stop	200	Free		Free	
Grade	0%	0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	24	217	199	23	207	296
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)			334		378	
pX, platoon unblocked	0.95	0.95			0.95	
vC, conflicting volume	919	210			222	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	887	140			152	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	91	75			85	
cM capacity (veh/h)	253	861			1355	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>WB 2</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>	
Volume Total	24	217	222	207	296	
Volume Left	24	0	0	207	0	
Volume Right	0	217	23	0	0	
cSH	253	861	1700	1355	1700	
Volume to Capacity	0.09	0.25	0.13	0.15	0.17	
Queue Length 95th (ft)	8	25	0	13	0	
Control Delay (s)	20.7	10.6	0.0	8.1	0.0	
Lane LOS	C	B		A		
Approach Delay (s)	11.6		0.0	3.3		
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			4.6			
Intersection Capacity Utilization			34.8%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings

2: RT 33 & Hickory Corner Rd

10/17/2011

	↖	→	↗	↖	←	↖	↑	↗	↘	↓	↘	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗	↘	↘	↘	
Volume (vph)	29	540	30	103	638	226	155	124	151	170	149	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150	0	350	0	150	0	150	200	200	0	150	0
Storage Lanes	1	0	1	0	1	0	1	1	1	0	1	0
Taper Length (ft)	50	25	75	25	75	25	75	75	75	25	75	25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992		0.961			0.850		0.980			
Fit Protected	0.950			0.950			0.950		0.950			
Satd. Flow (prot)	1770	1848	0	1770	1786	0	1770	1845	1583	1752	1808	0
Fit Permitted	0.189			0.283			0.421		0.418			
Satd. Flow (perm)	352	1848	0	527	1786	0	784	1845	1583	771	1808	0
Right Turn on Red		Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)	3			29				164		5		
Link Speed (mph)	35			45			35		35		35	
Link Distance (ft)	1126			1743			1289		710		560	
Travel Time (s)	21.9			26.4			25.1		13.8		10.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	3%	2%	3%	2%	3%	3%	3%
Adj. Flow (vph)	32	587	33	112	693	246	168	135	164	185	162	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	32	620	0	112	939	0	168	135	164	185	187	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(ft)	12			12			12		12		12	
Link Offset(ft)	0			0			0		-15		-10	
Crosswalk Width(ft)	30			30			28		30		30	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0		1	0		1	1	1	1		1
Detector Template	all			all			all	all	all	all		all
Leading Detector (ft)	35	0		35	0		35	35	35	35		35
Trailing Detector (ft)	-5	0		-5	0		-5	-5	-5	-5		-5
Detector 1 Position(ft)	-5	0		-5	0		-5	-5	-5	-5		-5
Detector 1 Size(ft)	40	6		40	6		40	40	40	40		40
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0		0.0
Turn Type	Perm			pm+pt			pm+pt	Perm	pm+pt			
Protected Phases		2		1	6		3	8		7		4
Permitted Phases	2			6			8		8	4		
Detector Phase	2	2		1	6		3	8	8	7		4
Switch Phase												
Minimum Initial (s)	20.0	20.0		5.0	20.0		5.0	7.0	7.0	5.0		7.0
Minimum Split (s)	27.0	27.0		8.0	27.0		8.0	12.0	12.0	8.0		12.0
Total Split (s)	64.0	64.0	0.0	19.0	83.0	0.0	14.0	20.0	20.0	17.0	23.0	0.0

2026 No Build PM Peak - Airport Signalized

Synchro 7 - Report Page 3

Lanes, Volumes, Timings

1: RT 130 & Hickory Corner Rd

10/17/2011

	↖	→	↗	↖	←	↖	↑	↗	↘	↓	↘	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↘	↘	↘
Volume (vph)	99	806	4	100	1519	125	0	109	76	103	141	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200	175	250	0	250	0	250	0	150	0	150	0
Storage Lanes	1	1	1	0	1	0	1	1	1	0	1	0
Taper Length (ft)	100	100	100	25	100	25	100	25	75	25	75	25
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.989			0.850		0.943		
Fit Protected	0.950			0.950			0.950		0.950			
Satd. Flow (prot)	1805	5036	1583	1770	4903	0	0	1845	1568	1805	1735	0
Fit Permitted	0.950			0.950			0.950		0.950		0.491	
Satd. Flow (perm)	1805	5036	1583	1770	4903	0	0	1845	1568	933	1735	0
Right Turn on Red		Yes			Yes			Yes		Yes		Yes
Satd. Flow (RTOR)	4			15				83		24		
Link Speed (mph)	55			50			35		35		35	
Link Distance (ft)	1356			1223			710		560		560	
Travel Time (s)	16.8			16.7			13.8		10.9		10.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	3%	2%	2%	5%	0%	0%	3%	3%	0%	4%	2%
Adj. Flow (vph)	108	876	4	109	1651	136	0	118	83	112	153	93
Shared Lane Traffic (%)												
Lane Group Flow (vph)	108	876	4	109	1787	0	0	118	83	112	246	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(ft)	24			24			0		12		12	
Link Offset(ft)	0			0			-10		-10		-10	
Crosswalk Width(ft)	30			30			30		30		30	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0		1	0		1	1	1	1		1
Detector Template	all			all			all	all	all	all		all
Leading Detector (ft)	35	0		35	0		35	35	35	35		35
Trailing Detector (ft)	-5	0		-5	0		-5	-5	-5	-5		-5
Detector 1 Position(ft)	-5	0		-5	0		-5	-5	-5	-5		-5
Detector 1 Size(ft)	40	6		40	6		40	40	40	40		40
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0		0.0
Turn Type	Prot			Perm	Prot			Perm	pm+pt			
Protected Phases	5	2		1	6			8		7		4
Permitted Phases				2				8		4		
Detector Phase	5	2		2	1	6		8	8	7		4
Switch Phase												
Minimum Initial (s)	5.0	20.0		20.0	5.0		20.0		7.0	7.0		4.0
Minimum Split (s)	10.0	28.0		28.0	10.0		28.0		13.0	13.0		10.0
Total Split (s)	19.0	65.0	65.0	20.0	66.0	0.0	0.0	25.0	25.0	10.0	35.0	0.0

2005 Existing PM Peak

Synchro 7 - Report Page 1

Lanes, Volumes, Timings

1: RT 130 & Hickory Corner Rd

10/17/2011

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	15.8%	54.2%	54.2%	16.7%	55.0%	0.0%	0.0%	20.8%	20.8%	8.3%	29.2%	0.0%
Maximum Green (s)	14.0	57.0	57.0	15.0	58.0			19.0	19.0	7.0	29.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0			3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	4.0	4.0	2.0	4.0			3.0	3.0	0.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	8.0	8.0	5.0	8.0	4.0	4.0	6.0	6.0	3.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag			Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes			Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max			None	None	None	None	
Act Effct Green (s)	11.8	65.7	65.7	12.2	66.1			13.1	13.1	26.1	23.1	
Actuated g/C Ratio	0.10	0.55	0.55	0.10	0.55			0.11	0.11	0.22	0.19	
v/c Ratio	0.61	0.32	0.00	0.61	0.66			0.58	0.34	0.44	0.69	
Control Delay	66.1	16.1	9.8	65.6	21.3			77.5	28.0	44.0	51.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	66.1	16.1	9.8	65.6	21.3			77.5	28.0	44.0	51.0	
LOS	E	B	A	E	C			E	C	D	D	
Approach Delay		21.5			23.8			57.0			48.8	
Approach LOS		C			C			E			D	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle:	65
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.69
Intersection Signal Delay:	27.7
Intersection LOS:	C
Intersection Capacity Utilization:	66.1%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 1: RT 130 & Hickory Corner Rd



2005 Existing PM Peak

Synchro 7 - Report  
Page 2

Lanes, Volumes, Timings

2: RT 33 & Hickory Corner Rd

10/17/2011

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	7	318	27	165	287	91	140	112	119	134	134	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150	0	350	0	150	0	150	200	200	200	0	0
Storage Lanes	1	0	1	0	1	0	1	1	1	1	0	0
Taper Length (ft)	50	25	75	25	75	25	75	75	75	25	25	25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frnt		0.988			0.964			0.850		0.999		
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1840	0	1770	1791	0	1770	1845	1583	1752	1843	0
Fit Permitted	0.521			0.460			0.498			0.521		
Satd. Flow (perm)	970	1840	0	857	1791	0	928	1845	1583	961	1843	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			4		22				129			
Link Speed (mph)	35			45			35			35		
Link Distance (ft)	1126			1743			1289			710		
Travel Time (s)	21.9			26.4			25.1			13.8		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	3%	2%	3%	2%	3%	3%	3%
Adj. Flow (vph)	8	346	29	179	312	99	152	122	129	129	146	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	8	375	0	179	411	0	152	122	129	129	147	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)	12			12			12			12		
Link Offset(ft)	0			0			0			-15		
Crosswalk Width(ft)	30			30			28			30		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0		1	0		1	1	1	1	1	1
Detector Template	all			all			all	all	all	all	all	all
Leading Detector (ft)	35	0		35	0		35	35	35	35	35	35
Trailing Detector (ft)	-5	0		-5	0		-5	-5	-5	-5	-5	-5
Detector 1 Position(ft)	-5	0		-5	0		-5	-5	-5	-5	-5	-5
Detector 1 Size(ft)	40	6		40	6		40	40	40	40	40	40
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Perm			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases		2			6			3	8		7	4
Permitted Phases	2			6			8		8		4	
Detector Phase	2	2		1	6		3	8	8		7	4
Switch Phase												
Minimum Initial (s)	20.0	20.0		5.0	20.0		5.0	7.0	7.0	5.0	7.0	
Minimum Split (s)	27.0	27.0		8.0	27.0		8.0	12.0	12.0	8.0	12.0	
Total Split (s)	57.0	57.0	0.0	19.0	76.0	0.0	14.0	28.0	28.0	16.0	30.0	0.0

2005 Existing PM Peak

Synchro 7 - Report  
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Lanes, Volumes, Timings

2: RT 33 & Hickory Corner Rd

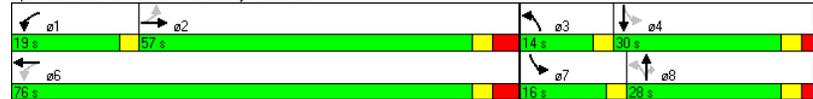
10/17/2011

	↖	→	↗	↙	←	↖	↙	↑	↗	↘	↓	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	47.5%	47.5%	0.0%	15.8%	63.3%	0.0%	11.7%	23.3%	23.3%	13.3%	25.0%	0.0%
Maximum Green (s)	50.0	50.0		16.0	69.0		11.0	23.0	23.0	13.0	25.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	4.0	4.0		0.0	4.0		0.0	2.0	2.0	0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	3.0	7.0	4.0	3.0	5.0	5.0	3.0	5.0	4.0
Lead/Lag	Lag	Lag		Lead			Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max		None	C-Max		None	None	None	None	None	
Act Effct Green (s)	66.4	66.4		83.3	79.3		26.8	14.1	14.1	28.5	15.0	
Actuated g/C Ratio	0.55	0.55		0.69	0.66		0.22	0.12	0.12	0.24	0.12	
v/c Ratio	0.01	0.37		0.27	0.34		0.54	0.56	0.43	0.42	0.64	
Control Delay	15.3	17.5		8.0	10.0		43.1	59.7	12.5	51.9	76.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	15.3	17.5		8.0	10.0		43.1	59.7	12.5	51.9	76.6	
LOS	B	B		A	A		D	E	B	D	E	
Approach Delay		17.4			9.4			38.3			65.1	
Approach LOS		B			A			D			E	

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 55  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.64  
 Intersection Signal Delay: 27.6  
 Intersection LOS: C  
 Intersection Capacity Utilization 71.3%  
 ICU Level of Service C  
 Analysis Period (min) 15

Splits and Phases: 2: RT 33 & Hickory Corner Rd



HCM Unsignalized Intersection Capacity Analysis

3: RT 33 & Airport Rd

10/17/2011

	→	↗	↙	←	↖	↘
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Volume (veh/h)	434	95	95	474	86	45
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	472	103	103	515	93	49
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						2
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			575		1245	523
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			575		1245	523
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			90		46	91
cM capacity (veh/h)			998		172	554

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	575	618	142
Volume Left	0	103	93
Volume Right	103	0	49
cSH	1700	998	262
Volume to Capacity	0.34	0.10	0.54
Queue Length 95th (ft)	0	9	74
Control Delay (s)	0.0	2.6	35.9
Lane LOS		A	E
Approach Delay (s)	0.0	2.6	35.9
Approach LOS			E

Intersection Summary

Average Delay 5.0  
 Intersection Capacity Utilization 73.6%  
 ICU Level of Service D  
 Analysis Period (min) 15

Lanes, Volumes, Timings  
2: RT 33 & Hickory Corner Rd

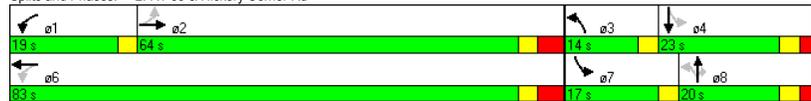
10/17/2011

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	53.3%	53.3%	0.0%	15.8%	69.2%	0.0%	11.7%	16.7%	16.7%	14.2%	19.2%	0.0%
Maximum Green (s)	57.0	57.0		16.0	76.0		11.0	15.0	15.0	14.0	18.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	4.0	4.0		0.0	4.0		0.0	2.0	2.0	0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	3.0	7.0	4.0	3.0	5.0	5.0	3.0	5.0	4.0
Lead/Lag	Lag	Lag		Lead			Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max		None	C-Max		None	None	None	None	None	
Act Effct Green (s)	67.1	67.1		82.3	78.3		26.3	13.5	13.5	31.2	16.0	
Actuated g/C Ratio	0.56	0.56		0.69	0.65		0.22	0.11	0.11	0.26	0.13	
v/c Ratio	0.16	0.60		0.25	0.80		0.65	0.65	0.51	0.60	0.76	
Control Delay	17.1	21.4		4.9	11.6		48.3	65.7	13.1	43.5	62.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	17.1	21.4		4.9	11.6		48.3	65.7	13.1	43.5	62.7	
LOS	B	C		A	B		D	E	B	D	E	
Approach Delay		21.2			10.9			41.0			53.2	
Approach LOS		C			B			D			D	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle:	70
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.80
Intersection Signal Delay:	25.2
Intersection LOS:	C
Intersection Capacity Utilization:	101.0%
ICU Level of Service:	G
Analysis Period (min):	15

Splits and Phases: 2: RT 33 & Hickory Corner Rd



2026 No Build PM Peak - Airport Signalized

Synchro 7 - Report  
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Lanes, Volumes, Timings  
3: RT 33 & Airport Rd

10/17/2011

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Volume (vph)	766	196	126	695	193	122
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	150	0	100	0	100
Storage Lanes	0	1	0	1	0	1
Taper Length (ft)	25	50	25	50	25	50
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.973					0.850
Fit Protected		0.950		0.950		
Satd. Flow (prot)	1812	0	1770	1845	1770	1583
Fit Permitted		0.103		0.950		
Satd. Flow (perm)	1812	0	192	1845	1770	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	20					118
Link Speed (mph)	45		45	30		
Link Distance (ft)	1743		5280	1134		
Travel Time (s)	26.4		80.0	25.8		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	3%	2%	2%
Adj. Flow (vph)	833	213	137	755	210	133
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1046	0	137	755	210	133
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	6		12	12		
Link Offset(ft)	0		0	0		
Crosswalk Width(ft)	16		16	16		
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15	15	9	
Number of Detectors	0		1	1	1	1
Detector Template			all			
Leading Detector (ft)	0		40	5	35	35
Trailing Detector (ft)	0		-5	0	-5	-5
Detector 1 Position(ft)	0		-5	0	-5	-5
Detector 1 Size(ft)	6		45	5	40	40
Detector 1 Type	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	10.0
Turn Type			pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases			6			8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0		5.0	20.0	7.0	7.0
Minimum Split (s)	25.0		8.0	25.0	17.0	17.0
Total Split (s)	80.0	0.0	12.0	92.0	28.0	28.0

2026 No Build PM Peak - Airport Signalized

Synchro 7 - Report  
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Lanes, Volumes, Timings  
3: RT 33 & Airport Rd

10/17/2011

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (%)	66.7%	0.0%	10.0%	76.7%	23.3%	23.3%
Maximum Green (s)	75.0		9.0	87.0	23.0	23.0
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0
All-Red Time (s)	2.0		0.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	4.0	3.0	5.0	5.0	5.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)				7.0	7.0	
Flash Dont Walk (s)				5.0	5.0	
Pedestrian Calls (#/hr)				0	0	
Act Effect Green (s)	80.0		93.2	91.2	18.8	18.8
Actuated g/C Ratio	0.67		0.78	0.76	0.16	0.16
v/c Ratio	0.86		0.53	0.54	0.76	0.38
Control Delay	20.8		14.0	16.6	65.4	13.2
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	20.8		14.0	16.6	65.4	13.2
LOS	C		B	B	E	B
Approach Delay	20.8			16.2	45.1	
Approach LOS	C			B	D	

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.86  
 Intersection Signal Delay: 22.7  
 Intersection LOS: C  
 Intersection Capacity Utilization 81.6%  
 ICU Level of Service D  
 Analysis Period (min) 15

Splits and Phases: 3: RT 33 & Airport Rd



Lanes, Volumes, Timings  
4: RT 33 & Summitt Rd

10/17/2011

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	123	651	0	3	715	77	0	3	4	62	27	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200	0	200	0	150	0	150	0	150	0	150	0
Storage Lanes	1	0	1	0	1	0	1	0	1	0	1	0
Taper Length (ft)	50	25	50	25	50	25	50	25	50	25	50	25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fit				0.985			0.914				0.879	
Fit Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1770	1863	0	1770	1835	0	1863	1703	0	1770	1637	0
Fit Permitted	0.192			0.376						0.617		
Satd. Flow (perm)	358	1863	0	700	1835	0	1863	1703	0	1149	1637	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					9			4				120
Link Speed (mph)		45			45			30				30
Link Distance (ft)		5280			1217			1326				819
Travel Time (s)		80.0			18.4			30.1				18.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	134	708	0	3	777	84	0	3	4	67	29	120
Shared Lane Traffic (%)												
Lane Group Flow (vph)	134	708	0	3	861	0	0	7	0	67	149	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0		1	0		1	1		1	1	
Detector Template	all			all			all	all		all	all	
Leading Detector (ft)	35	0		35	0		35	35		35	35	
Trailing Detector (ft)	-5	0		-5	0		-5	-5		-5	-5	
Detector 1 Position(ft)	-5	0		-5	0		-5	-5		-5	-5	
Detector 1 Size(ft)	40	6		40	6		40	40		40	40	
Detector 1 Type	CI+Ex	CI+Ex										
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt			Perm			Perm			pm+pt		
Protected Phases	5	2		6			8			7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		7	4	
Switch Phase												
Minimum Initial (s)	4.0	20.0		20.0	20.0		10.0	10.0		5.0	10.0	
Minimum Split (s)	7.0	25.0		25.0	25.0		17.0	17.0		8.0	17.0	
Total Split (s)	12.0	95.0	0.0	83.0	83.0	0.0	17.0	17.0	0.0	8.0	25.0	0.0
Total Split (%)	10.0%	79.2%	0.0%	69.2%	69.2%	0.0%	14.2%	14.2%	0.0%	6.7%	20.8%	0.0%

2026 No Build PM Peak - Airport Signalized

Synchro 7 - Report  
Page 7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	9.0	90.0		78.0	78.0		12.0	12.0		5.0	20.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0		2.0	2.0		2.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	3.0	5.0	4.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		C-Max	C-Max		Max	Max		None	Max	
Walk Time (s)							7.0	7.0				7.0
Flash Dont Walk (s)							5.0	5.0				5.0
Pedestrian Calls (#/hr)							0	0				0
Act Effct Green (s)	92.0	90.0		79.2	79.2		13.6	13.6		22.0	20.0	
Actuated g/C Ratio	0.77	0.75		0.66	0.66		0.11	0.11		0.18	0.17	
v/c Ratio	0.37	0.51		0.01	0.71		0.04	0.04		0.28	0.40	
Control Delay	7.5	14.4		7.3	17.2		37.2	37.2		45.2	15.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	7.5	14.4		7.3	17.2		37.2	37.2		45.2	15.5	
LOS	A	B		A	B		D	D		D	B	
Approach Delay		13.3			17.1		37.2	37.2			24.7	
Approach LOS		B			B		D	D			C	

**Intersection Summary**  
 Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.71  
 Intersection Signal Delay: 16.4  
 Intersection LOS: B  
 Intersection Capacity Utilization 73.5%  
 ICU Level of Service D  
 Analysis Period (min) 15



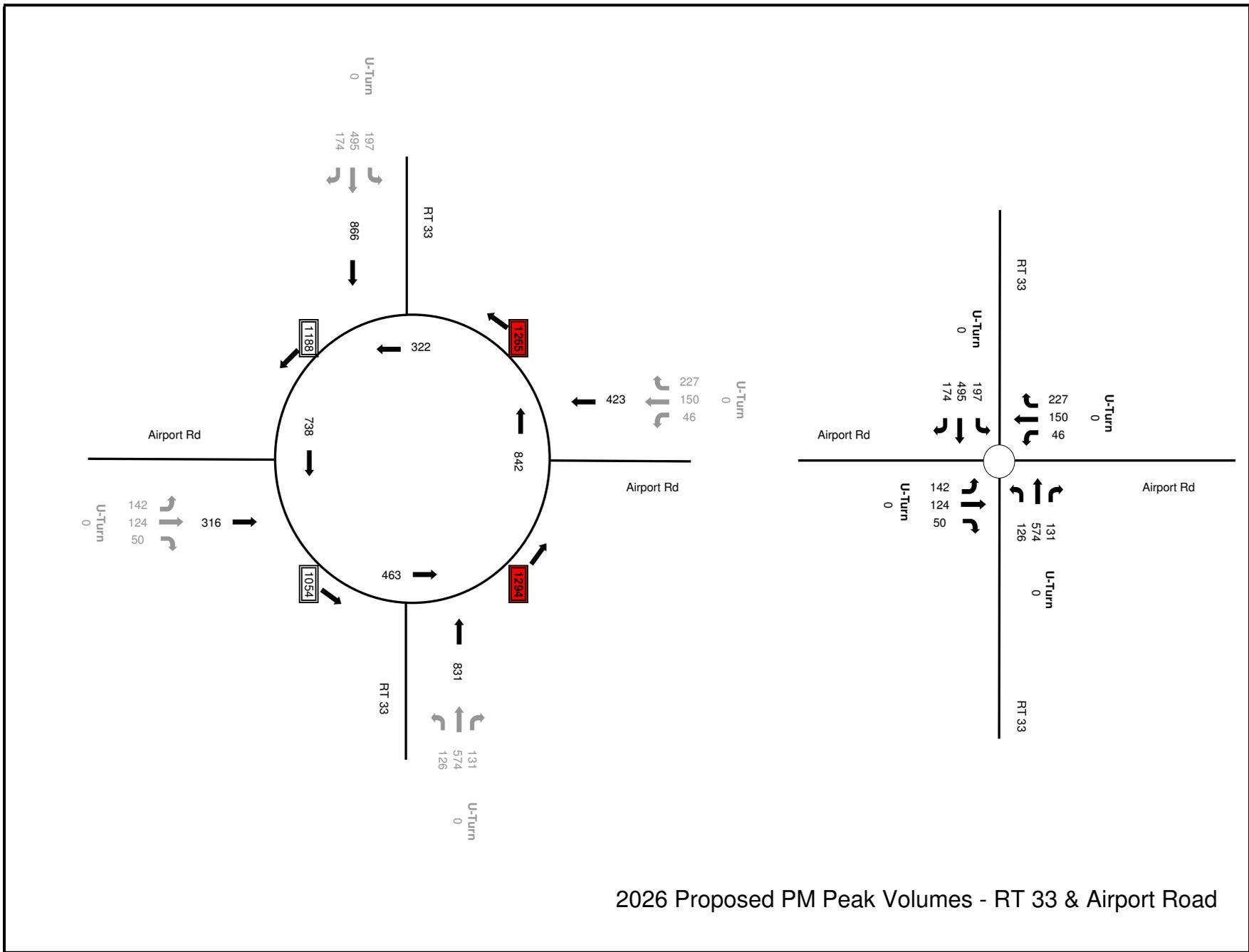
HCM Unsignalized Intersection Capacity Analysis  
 5: Evans Ave & Airport Rd

10/17/2011

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T		T			T
Volume (veh/h)	10	16	300	9	14	289
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	17	326	10	15	314
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						1134
pX, platoon unblocked						
vC, conflicting volume	676	331			336	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	676	331			336	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	98			99	
cM capacity (veh/h)	414	711			1223	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	28	336	329
Volume Left	11	0	15
Volume Right	17	10	0
cSH	557	1700	1223
Volume to Capacity	0.05	0.20	0.01
Queue Length 95th (ft)	4	0	1
Control Delay (s)	11.8	0.0	0.5
Lane LOS	B		A
Approach Delay (s)	11.8	0.0	0.5
Approach LOS	B		

**Intersection Summary**  
 Average Delay 0.7  
 Intersection Capacity Utilization 36.6%  
 ICU Level of Service A  
 Analysis Period (min) 15



2026 Proposed PM Peak Volumes - RT 33 & Airport Road