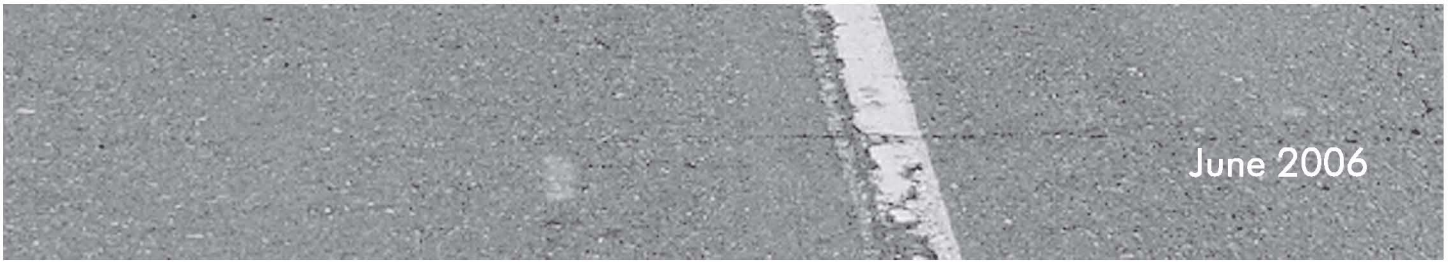
Delaware Valley
Regional Planning
Commission

Managing Change

[Along the US 322 Corridor: Land Use & Transportation Issues, Policies & Recommendations]

Volume 1: Baseline Conditions



June 2006

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DELAWARE VALLEY REGIONAL PLANNING COMMISSION

Created in 1965, the Delaware Valley Regional Planning Commission (DVRPC) is an interstate, inter-county, and intercity agency that provides continuing, comprehensive and coordinated planning to shape a vision for the future growth of the Delaware Valley region. The region includes Bucks, Chester, Delaware, and Montgomery counties, as well as the City of Philadelphia, in Pennsylvania; and Burlington, Camden, Gloucester and Mercer counties in New Jersey. DVRPC provides technical assistance and services; conducts high priority studies that respond to the requests and demands of member state and local governments; fosters cooperation among various constituents to forge a consensus on diverse regional issues; determines and meets the needs of the private sector; and practices public outreach efforts to promote two-way communication and public awareness of regional issues and the Commission.

Our logo is adapted from the official DVRPC seal, and is designed as a stylized image of the Delaware Valley. The outer ring symbolizes the region as a whole, while the diagonal bar signifies the Delaware River. The two adjoining crescents represent the Commonwealth of Pennsylvania and the State of New Jersey.

DVRPC is funded by a variety of funding sources including grants from the U.S. Department of Transportation's Federal Highway Administration (FHWA) and Federal Transit Administration (FTA), the Pennsylvania and New Jersey departments of transportation, and DVRPC's state and local member governments. The authors, however, are solely responsible for its findings and conclusions, which may not represent the official views or policies of the funding agencies.

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EXECUTIVE SUMMARY

Improving the linkage between land use and transportation is essential for the future of the US Route 322 corridor. Inappropriate land uses coupled with inadequate infrastructure and transportation access will continue to have negative impacts on the entire road network and quality of life, as well as have significant effects on the future economic growth of the corridor.

Working with the New Jersey Department of Transportation (NJDOT) and the Gloucester County Planning Department, the Delaware Valley Regional Planning Commission is conducting this study to assess land use and access management policies and to evaluate the area's growth potential. The goals of the study include: promoting multi-modal transportation in order to alleviate congestion and forecasted growth; furthering the goals of coordinated land use and transportation between municipalities and multi-municipal corridors; determining a policy rationale for future priority transportation improvements; encouraging Smart Growth principles for future development and; implementing the goals of the State Development and Redevelopment Plan, the adopted DVRPC long-range plan, *Destination 2030*, and the Gloucester County Master Plan.

This study will consist of two volumes. The second volume will be published in 2007. A summary of this first volume, *Managing Change along the US 322 Corridor: Land Use and Transportation Issues, Policies and Recommendation - Volume I: Baseline Conditions*, follows:

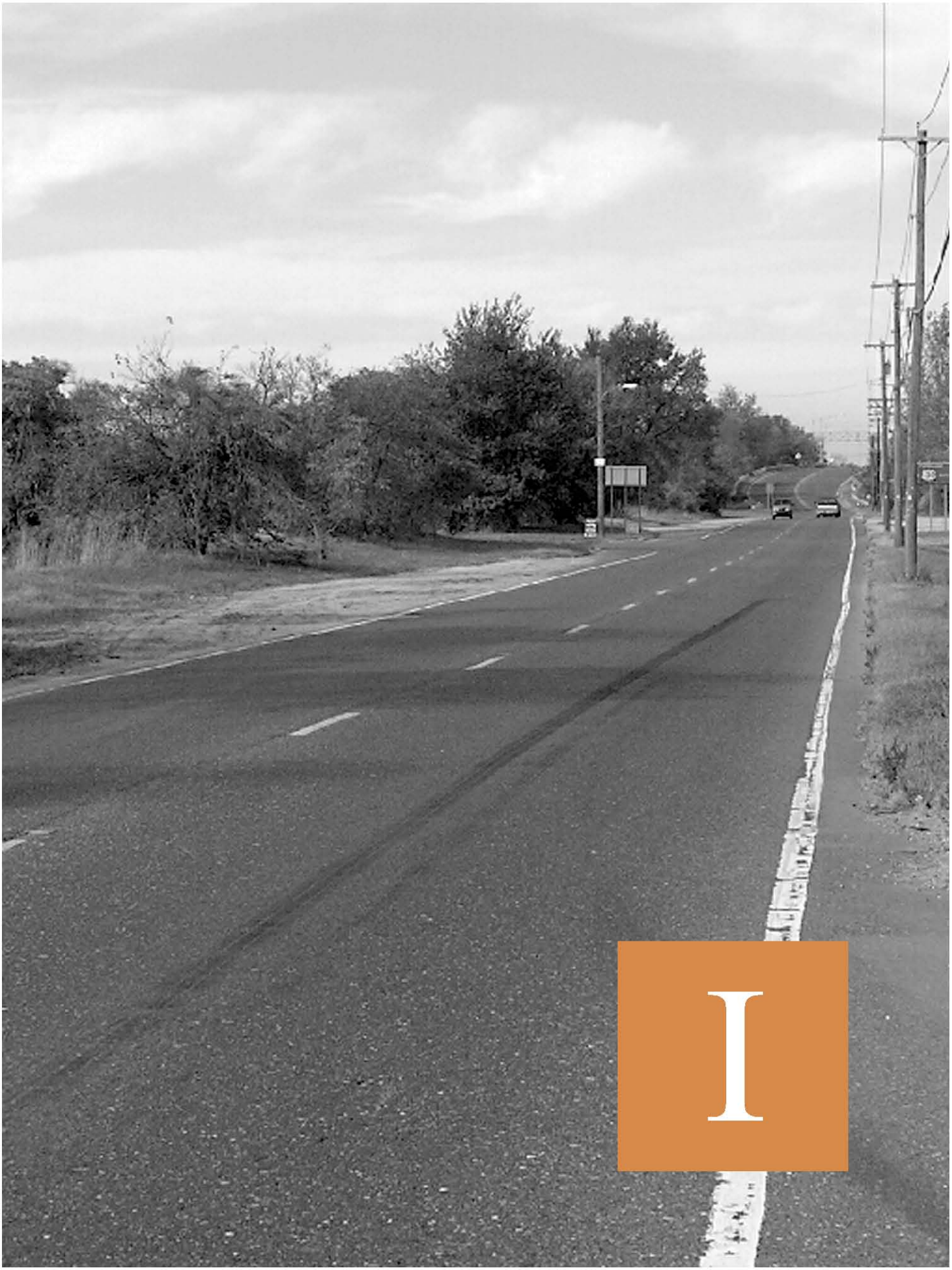
Chapter One contains a general introduction of the study process and an explanation of the study area boundaries.

Chapter Two outlines the demographics of the corridor such as population and employment change, housing, and economic development potential. Charts and maps are included in order to compare how the corridor has grown.

Chapter Three outlines the development patterns and community assets of the corridor. Within this chapter, the goals and objectives of each of the community's master plans is discussed and compared. In addition, quality of life features such as schools, cultural and historical resources, environmental features, infrastructure, and redevelopment plans are discussed.

Chapter Four presents the transportation elements of the corridor. As part of the baseline conditions, it was important to evaluate previous studies done on the corridor as well as examining current road condition such as access, crashes, speed limits, public transportation services and bicycle and pedestrian amenities.

Five appendices include:
Appendix I through IV include the zoning building out analysis and maps for each of the study area municipalities. Appendix V lists the study area steering committee.



I

Introduction

This document, *Volume I: Managing Change along the US 322 Corridor: Land Use and Transportation Issues, Policies and Recommendations*, is part of an 18-month two-volume study. Volume One contains baseline information on demographics, land use and development and transportation conditions. A municipal and corridor wide zoning build out analysis is contained in the Appendix for use by municipal and state officials. Volume Two will be published in early 2007 and will include land use, transportation, and access management strategies along the study corridor.

> " Improving the linkage between land use and transportation planning is essential for the future of this corridor. "

The New Jersey Department of Transportation (NJDOT) is encouraging municipalities and counties to work cooperatively along key transportation corridors to assess land use and access management policies and to evaluate area growth potential. The US 322 Corridor was chosen as one of 13 pilot corridors for study and is a cooperative effort among the Delaware Valley Regional Planning Commission (DVRPC), the NJ Department of Transportation, and the Gloucester County Planning Department, working with the four study corridor communities of Logan, Woolwich and Harrison Townships and Swedesboro Borough. ***This study is intended to accomplish the following:***

- Preserve the state's investment in current or pending transportation improvements within each corridor by extending the life cycle of any capacity expansions or traffic flow improvements;
- Promote the use of multimodal transportation options in order to alleviate congestion and forecasted travel growth;
- Further the goals of coordinated land use and transportation between municipalities along multi-municipal corridors;
- Determine and provide a policy rationale for future priority transportation improvements to achieve corridor-wide needs and to support and improve the quality of life for the corridor's municipalities;

- Encourage municipal actions to achieve a corridor-wide land use pattern that is reflective of Smart Growth principles; and
- Implement the goals and polices of the New Jersey State Development and Redevelopment Plan (SDRP), the adopted DVRPC long-range plan, Destination 2030, and the Gloucester County Master Plan to foster centers and corridors as a means to guide growth.

Improving the linkage between land use and transportation planning is essential for the future of this corridor. Inappropriate land uses coupled with inadequate infrastructure and transportation access will create worsening congestion and negative impacts on the road network. Inefficient transportation access and unplanned land use patterns are also a significant hindrance to economic growth and productivity of the US 322 corridor.

CORRIDOR DESCRIPTION

US 322 is a key east-west arterial through Gloucester County. This role was defined by the construction of the Commodore Barry Bridge and the resulting linkages with several major highways including US 130, I-295, the NJ Turnpike, and NJ 55. It is often the conflicting nature of various regional and local trips along US 322 that have caused this highway to become congested. Congestion and safety problems have long been a concern to state and local stakeholders.

US 322 is a major east-west arterial in Gloucester County.

STUDY AREA

The study area is along an 11-mile stretch of US 322 from the US 130 interchange in Logan Township to the interchange with NJ 55 in Harrison Township. It includes the three townships of Logan, Woolwich, and Harrison as well as the Borough of Swedesboro. At the direction of NJDOT, the Village of Mullica Hill was omitted from the study area; however, a more focused engineering study is ongoing for this small portion of US 322. The study area encompasses approximately a ½-mile buffer surrounding US 322, County Route (CR) 551, County Route (CR) 620 and County Route (CR) 671. After meeting with each of the municipalities, certain lots or blocks were added due to the impact they will have on land use and circulation in the study area. Map 1 shows the final study area for the US 322 Corridor Study. ❖

II

Demographics

POPULATION

Land use change is often spurred by changes in population and housing. Population growth places strains on existing infrastructure, such as roads, water and sewer systems, and schools. New housing construction can consume undeveloped land faster than the rate of population growth.

Key Conclusions for the Entire Corridor:

- The fastest growing municipality in the Delaware Valley region between 2000 and 2003 (by percent increase) was Woolwich Township.

- Two of the fastest growing municipalities (by percent increase) in the Delaware Valley region are included in this study area: Woolwich Township and Harrison Township.

> "...it is important that future employment and economic development of the corridor be consistent with land use and transportation capacities."

Table 1: POPULATION FORECASTS, 2000-2030

	POPULATION			POPULATION CHANGE 1990-2000	
Municipality	1990	2000	2030	Absolute	Percent
HARRISON	4,715	8,788	17,485	4,073	46.0%
LOGAN	5,147	6,032	7,320	885	14.6%
SWEDESBORO	2,024	2,055	2,240	31	0.5%
WOOLWICH	1,459	3,032	16,510	1,573	51.2%
GLOUCESTER COUNTY	230,082	254,673	337,090	24,591	9.7%

Source: DVRPC, Census 2000

According to the 2000 Census, the population of the four municipalities is currently over 19,000 people. As Table 1 indicates, the population of these municipalities will continue to grow; and, in cases such as Woolwich Township, will have four times the population in 2030 than 2000. While the Borough of Swedesboro's population has remained constant over the past decade, the townships of Harrison and Woolwich have almost doubled in terms of population.

EMPLOYMENT AND ECONOMIC DEVELOPMENT

According to DVRPC's data, there are approximately 11,990 persons employed within the study area along US 322. Table

2 shows employment numbers on a municipal basis and indicates employment growth in all four study area municipalities. Future plans show that commercial and business growth is primed for the US 322 corridor. Currently, there are two major employment centers directly on US 322: Pureland Industrial Park and the Northeast Business Park (formerly Commerce Business Park), both in Logan Township. In 1970, more than 55 farms were purchased by State Mutual Liberty Life Assurance Company. Within five years, infrastructure improvements were completed and the land that surrounds Exit 10 off I-295 was a key location for construction. The Pureland Industrial Park has over 150 tenants in over 100 buildings totaling 15 million square feet of space. Pureland is headquarters to numerous firms, and houses a variety of tenants that conduct manufacturing, assembly, warehousing, distribution, research and development and offices. According to DVRPC's 2000 Employment Centers Report, September 2005, the Pureland Industrial Park and vicinity currently employ 5,190 persons. The Swedesboro and Woolwich Township employment center currently has 3,233 employees.

The local economic conditions of the study area can have significant impacts on surrounding land use and transportation along the US 322 corridor. Local shopping centers can provide important tax revenue and offer corridor residents places to shop nearby; however, it can place tremendous demands on the infrastructure and produce additional traffic congestion. Therefore, it is important that future employment and economic development of the corridor be consistent with land use and transportation capacities. The following are three key aspects to growth in the study area:

First, while employment growth is beneficial to the study area municipalities, it is important to consider future locations of

TABLE 2: EMPLOYMENT, 2000-2030

MUNICIPALITY	2000	2010	2020	2030	PERCENT CHANGE
HARRISON	2,285	3,230	4,191	5,167	126.1%
LOGAN	6,176	8,224	9,505	10,965	77.5%
SWEDESBORO	2,356	2,634	2,703	2,635	11.9%
WOOLWICH	907	1,685	2,744	4,457	391.4%
GLOUCESTER COUNTY	99,467	114,452	123,485	135,627	6.4%

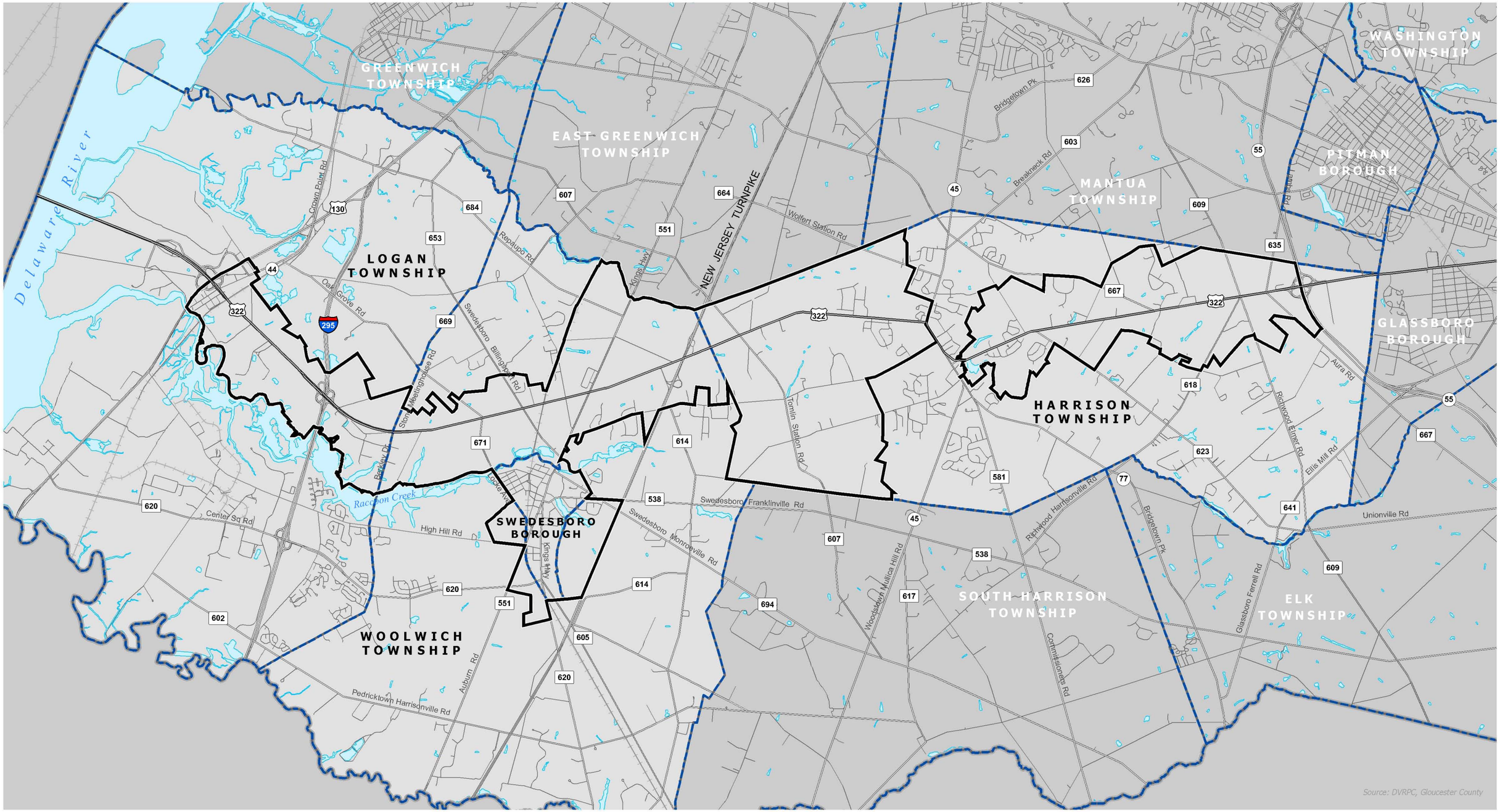
Source: DVRPC, Census 2000

The Northeast Business continues to expand onto viable farmland.

employment centers to develop a strategy for sustainable, positive growth patterns for the corridor. While economic development and growth will occur, a majority of local residents will continue to be employed in municipalities outside the corridor. Although residents commute to Delaware, the transportation system and network continues to be oriented toward Philadelphia and eastern Delaware County.

Second, population growth has exceeded the growth of employment and shopping opportunities in the study area. However, strategies should be implemented to ensure that employment growth and commercial uses can be accommodated in terms of current and expanded infrastructure systems.

Third, US 322 is an essential part of the economic base of the corridor municipalities. While commercial and retail uses are allowed per the zoning in each of the municipalities, the infrastructure in which to support such large commercial activities is not in place. Currently, the corridor is sprinkled with low-density commercial uses and residential. The corridor's relatively low level of commercial land use implies that most residents rely on other shopping centers. The major retail center is located in Deptford, NJ and is accessible via NJ 55 and I-295. The Borough of Swedesboro offers downtown shopping with quaint shops and antiques. There are intermittent strip malls that have support services for residents; however, major shopping and big-box stores are located outside the immediate area.



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DELAWARE VALLEY
REGIONAL PLANNING COMMISSION
JANUARY 2006

Study Area

Municipality

Study MCD

Map 1: Study Area

HOUSING

Across the United States, average household sizes have been declining. This trend often leads to increases in housing units faster than increases in real population. For the second quarter of 2004, the median housing price in New Jersey was $349,900. While each of the study area municipalities has lower average housing prices, they may still be unaffordable to a low-moderate income family. On average, approximately 20 percent of residents within the study area are paying more than 30 percent of their monthly income on housing costs.

As has been the trend across much of the Delaware Valley, limited availability of affordable housing is a continuing issue in these growing communities. Many moderate-income[1] households, including service, retail, clerical and public sector employees, are facing problems purchasing homes in this part of the region.

TABLE 3: HOUSING CHARACTERISTICS

MUNICIPALITY	HOUSING UNITS	AVERAGE HOUSING PRICE (2004)	HOUSE-HOLD SIZE	PERMITS IN 2000	PERMITS IN 2004
HARRISON	2,939	$262,775	3.22	115	151
LOGAN	2,077	$163,237	3.01	1	43
SWEDESBORO	860	$152,760	2.75	4	0
WOOLWICH	1,026	$299,538	3.14	225	514
GLOUCESTER COUNTY	95,054	$171,756	2.88	1,337	2,050

Source: DVRPC, Census 2000

AFFORDABLE HOUSING

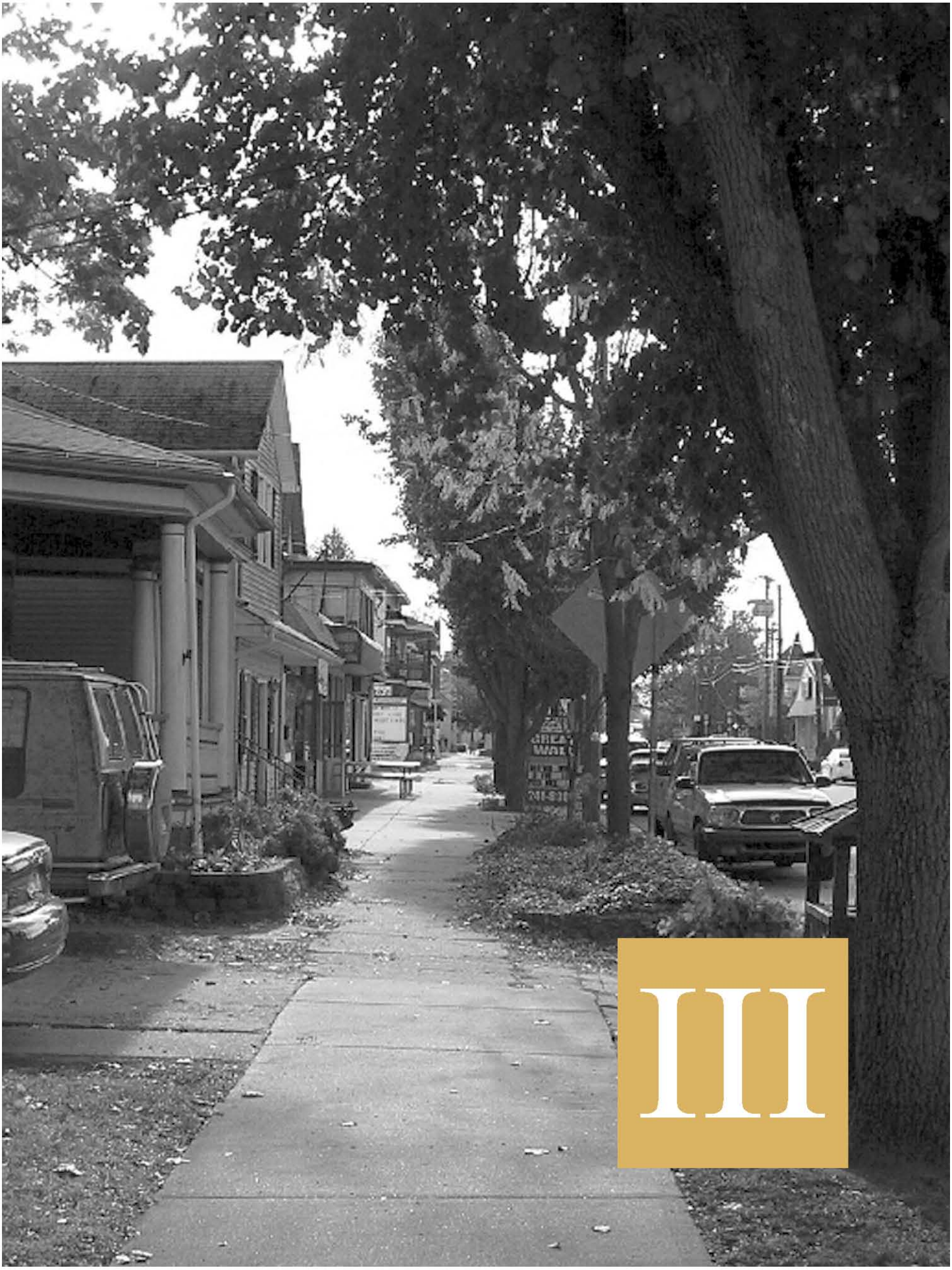
The minimum income necessary to purchase a median-priced home in New Jersey has drastically risen. The New Jersey Fair Housing Act requires all municipalities to include a fair-share housing component in their master plans that addresses the needs of low and moderate-income residents, and provides a realistic affordable-housing opportunity within the community. The study area municipalities have been working to fulfill their fair share obligations and provide for a mix of housing types. As such, third round affordable housing obligations were announced in December 2004. This round of housing obligations consists of three parts: the rehabilitation share (2000) the prior round obligation

Older homes along the corridor have small front yards and no sidewalks.

(1987-1999) and the growth share (1999-2014). In the past, the new construction obligation was a number assigned to each municipality. Under this new growth share, municipalities will determine their "growth share" obligation using the following ratios, which are added together, to arrive at the total growth share:

For every eight market-rate residential units constructed from January 1, 2004 to January 1, 2014, a one-unit affordable housing obligation is generated. For every 25 jobs resulting from new or expanded non residential construction during the same time period, based on conversion factors outlined by the Council on Affordable Housing (COAH), a one-unit affordable housing obligation is generated. Growth share numbers utilize Metropolitan Planning Organization (MPO) data on future and projected population and employment growth. Logan Township, Woolwich Township, and Harrison Township are in the process of fulfilling their obligation through new construction proposed along or near the US 322 corridor. ❖

[1] Moderate income refers to a family of 4 earning a yearly salary of $42,320.



III

Development Patterns & Community Assets

LAND USE

The land uses along the US 322 corridor consist primarily of residential, agricultural, or open space. There are little commercial uses along the corridor due to environmental constraints and the lack of water and sewer connectivity. The following is a description of land uses in each of the study area municipalities. These are shown on Map 2.

Harrison Township

Agriculture still dominates much of Harrison Township, occupying 47 percent of its total 12,242 acres. Developed lands constitute 15 percent of Harrison, which includes business parks, commercial and retail uses, industrial sites and residential developments. A majority of the developed land in Harrison is residential. However, forested land still comprises nearly 27 percent of the total land area in Harrison.

Logan Township

Much of the built environment in Logan Township is in the western portion of the township. Industrial and commercial structures dominate the riverfront and Raccoon Creek, while residential areas are in two locations: the town of Bridgeport and the Beckett development in the southeastern section of the township. Agriculture dominates much of Logan Township, occupying 25.3 percent of its 14,990 acres.

Development lands constitute 16.6 percent of the township. Developed lands consist of the three large business parks that contain large commercial structures, industrial sites, and residential developments. Barren land occupies 12.75 percent of the township.

> "Two of the study area communities have designated areas in need of redevelopment: Logan Township and Swedesboro. Both of these studies were done in a joint effort with the Gloucester County Board of Freeholders."

Woolwich Township

A majority of the built areas in Woolwich are found in three locations: near Swedesboro, in the southeast portion, or in the Weatherby Planned Unit Development. The township's primary land use is agriculture, occupying 56 percent of the township.

Swedesboro

The Borough of Swedesboro is virtually developed; only 135 acres or 27 percent of the Borough's total land area remains as woodland, agricultural, vacant, or marshland. Approximately 9 percent of the Borough is currently used for retail or commercial. Industry accounts for 8 percent; institutional uses account for 4.5 percent; recreation only accounts for less than 1 percent.

REDEVELOPMENT AREAS AND PLANS

Two of the study area communities have designated areas in need of redevelopment: Logan Township and Swedesboro. Both of these studies were done in a joint effort with the Gloucester County Board of Freeholders. This is an important step for these communities to take in their revitalization efforts since the redevelopment statute provides a municipality with the power to acquire private property through negotiation or condemnation; to clear and plan for these new parcels; to install infrastructure or other needed site improvements; and to negotiate or enter into partnerships with public or private entities in order to accomplish their redevelopment goals.

Logan Township

The boundaries of the redevelopment areas that pertain to our study area include lands situated on either side of US 322 extending from the Woolwich Township boundary (Stone Meeting House Road) to the rail line to the north. The area encompasses 780 acres of land along the study area. A majority of the blocks and lots that have been incorporated into this area are vacant, farmlands that are dormant, or residential and commercial buildings. The lots and blocks included as part of this redevelopment area can be seen on Map 3.

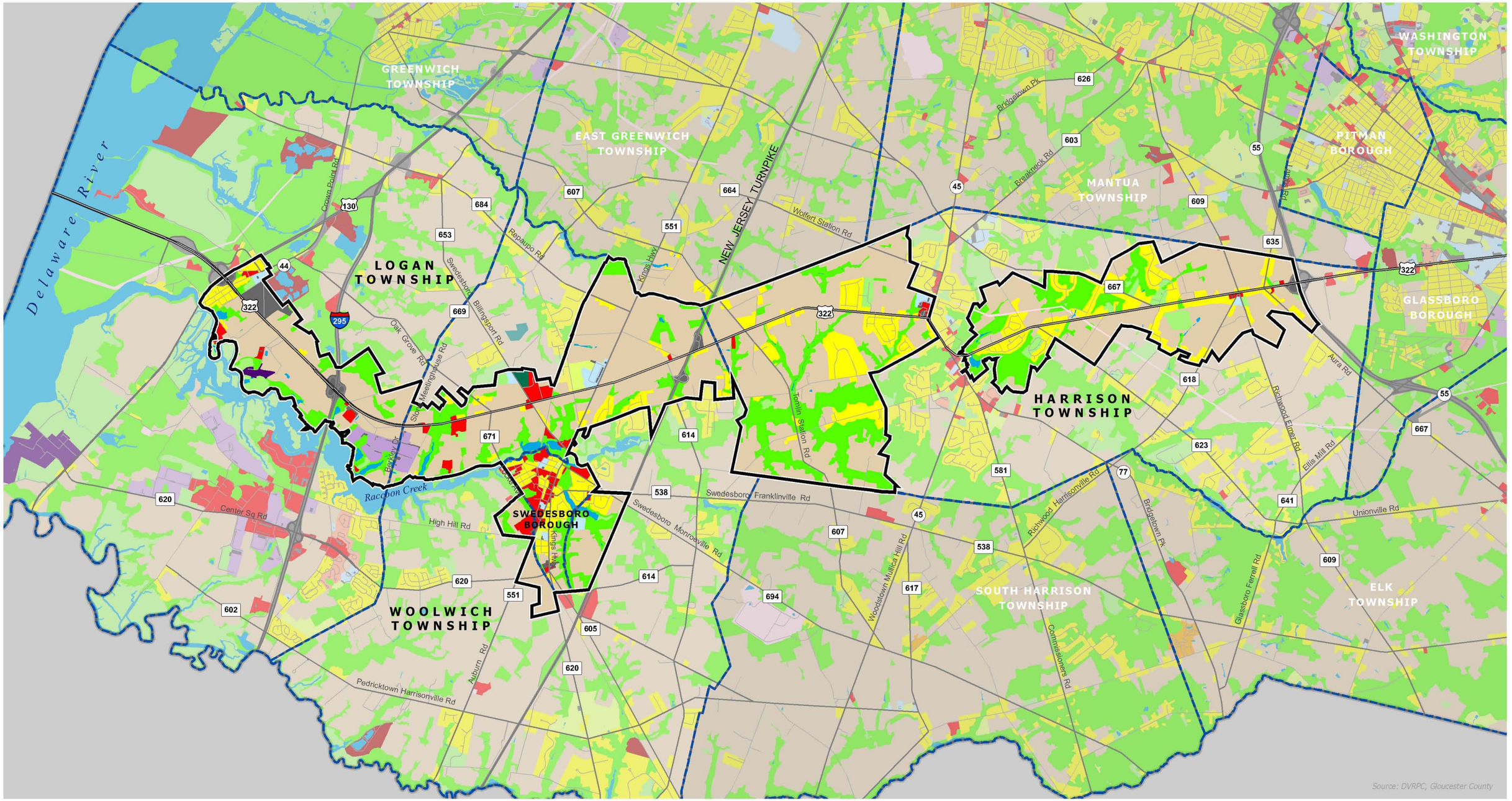
The Village of Bridgeport in Logan Township offers higher density housing.

The goals of the redevelopment plan that was part of this effort include promoting economic and commercial development, converting vacant land to productive condition, encouraging appropriate land uses for growth, utilizing private and public entities for funding, and promoting natural resource preservation within the US 322 corridor. The redevelopment plan specifically lays out a limited number of permitted uses for this area: banks/financial institutions, conference centers, cultural uses, department stores, heliports, technology parks, hotels, commerce parks, office uses, planning commercial development, retail, and telemarketing. Heavy industrial uses are no longer permitted. In addition, new zoning criteria have also been established.

> "By understanding the vision for each municipality, a corridor-wide vision can be designed that will fit into the context of future transportation and access management improvements."

This area includes the Safety-Kleen site, which includes 50 acres that were once used for incineration and the treatment of toxic chemicals. Clean Harbors Environmental Group has purchased this site and clean-up activities are currently underway. In addition, Westrum Development Company has been identified as the developer for the site. An informal development proposal has been submitted for the entire 600-acre site and includes Big-box retail; various high-density residential uses; and an active adult, age restricted community.

For the redevelopment area situated in proximity to I-295, the Newman Development Group, LLC, has been named the developer. Development plans include parcels on both sides of US 322 and include a 425,000 - square foot shopping



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JANUARY 2006

Land Use

Single Family	**Community Services**
Multi Family	**Military**
Row Home	**Recreation**
Light Manufacturing	**Agriculture**
Heavy Manufacturing	**Mining**
Transportation and Parking	**Wooded**
Utility	**Vacant**
Commercial	**Water**

Study Area

Municipality

Map 2: Land Use

Downtown Swedesboro offers a mix of commercial, retail, residential, and civic uses.

center along the southern frontage and a 225,000- square foot shopping center located on the northern frontage. These two shopping centers will include Big-box retail, smaller retail stores, and a large supermarket.

Swedesboro Borough

The boundaries for the study area were expanded to include the borough based on the present conditions of economic growth potential, physical deterioration of buildings, highest and best uses for certain parcels, and those parcels deemed detrimental to the health, safety, and welfare of borough residents. The study area parcels include vacant, residential, commercial, industrial, and publicly owned lands and are shown on Map 5.

Recommendations for the parcels have been divided into various areas; Kings Highway core, Locke Avenue, the Raccoon Creek Area, and the Southern Kings Highway corridor. The parcels and areas can be seen on the Map 5 and are further explained below.

Kings Highway Core

The redevelopment plan calls for fostering a pedestrian-friendly streetscape along Kings Highway to enhance the area as a shopping destination. Specific recommendations include adaptive reuse of the St. Joseph Church Property, new frontage allocations for business abutting Kings Highway, elimination of off-street parking in front of a primary structure, facade improvements and a new sign ordinance.

Locke Avenue

The redevelopment plan calls for uses that are beneficial to the community but are sensitive to the surrounding land use character and transportation access considerations. Specific recommendations include a new land use and zoning ordinance and the demolition of vacant buildings.

Raccoon Creek Area

The redevelopment plan proposes a planned approach for this area that attracts a mix of uses that promote flexibility in design. This area should not be planned in a piecemeal fashion. Specific recommendations include ensuring public access to Raccoon Creek, elimination of certain uses, and the inclusion of additional public uses.

Southern Kings Highway Corridor

A planned approach for this area is recommended. Specific recommendations include a new Planned Unit Development (PUD) ordinance, additional sidewalks and a new sign ordinance.

APPROVED DEVELOPMENTS

Harrison Township

As seen in Map 4, development in Harrison Township has virtually taken all available building lots. There are a few approved developments along US 322; however, a majority of the new development will be toward the South Harrison Township boundary. New development will greatly impact the internal road system, particularly Tomlin Station Road. While traffic will eventually generate either pass through or US 322 types, these new developments will not have a direct impact.

Logan Township

As seen in Map 3, Logan Township currently has no pending development applications that directly affect the US 322 corridor. However, the redevelopment areas that have been adopted by council will play a major role in the build-out analysis and future traffic and population growth of the corridor.

Woolwich Township

As seen in Map 5 development in Woolwich Township is happening at an incredible rate; however, there is no direct impact to US 322 at this time. The primary reason is the lack of water and sewer for development along US 322. The township is in negotiation with the Office of Smart Growth on having all properties along US 322 become water and sewer compliant. However, developments such as Woolwich Adult and Weatherby will have significant impacts on the circulation system, infrastructure, and resources of the township. These developments, as well as other residential and commercial developments, will play a large role in the build-out analysis for the municipality. However, the build out for the corridor will be based on current zoning and may not reflect planned large-scale commercial growth.

Swedesboro

As seen on Map 5, Swedesboro has a very compact and high intensity of land uses. There are not many building lots available for new construction; however, there are new residential units that are planned for the southern border of the borough along County Route (CR) 614, which will abut Woolwich Township. Small commercial development will take place along Kings Highway, the main corridor of the borough. This is where existing commercial uses are located. Improvements to various intersections may be needed. Since Swedesboro does not border US 322, development will not have a direct impact, however all traffic from Swedesboro flows through the intersection of US 322 and Kings Highway.

MASTER PLANS AND VISIONS

The master plans of each of the study area municipalities are an important element to the future vision of the US 322 corridor. The development patterns that have taken place have been independent of each other and continue to support sprawling land use patterns. By understanding the vision for each municipality, a corridor-wide vision can be designed that will fit into the context of future transportation and access management improvements. The goals provided in each of the master plans will be incorporated into one corridor vision in Phase Two of this study.

Intersection of Harrisonville Road, Harrison Township.

Harrison Township

Harrison Township will continue to experience development pressure in the future. Although development potential is constrained in portions of the township by the limited capacity of sanitary sewer and water systems, the township master plan illustrates a vision for sustainable development and the enhancement of environmental features.

The goals written in the Harrison master plan do not assume any major economic upheavals. The plan attempts to tie the economic activity in the private sector with those “public” improvements that would be necessary to adequately serve the new residents and businesses of the township. The new residential development that has blanketed the township has also put an overwhelming burden on the road network, particularly US 322 and Route 45. By “providing for the continued scenic and low-density natures of the township,”

Sprawling development is seen through all three townships in the study area.

various goals in the master plan support continued sprawling development. The master plan "recognizes that open space preservation must become the responsibility of the township and that the agricultural community will not be able to assure that open space will remain in the township forever," however has not provided a mechanism by which to do so. The master plan also calls for the mix of uses as evidenced in the Historic Village of Mullica Hill and the historic area of Richwood.

Logan Township

Logan Township's unique position within the study area – access to two major highways - has provided easy highway access and the development of commercial and industrial parks. Logan Township also has environmental constraints with large areas of wetlands and streams. The master plan for the township establishes goals to preserve the character of the Township, particularly Bridgeport, enhance the environmental quality within the township while accommodating residential and commercial growth and provide sound fiscal management. The goals in the master plan support mixed use and conservation of the rural nature of the community, however the township's zoning ordinance does not support this. In particular, the large lot zoning – one and five acre lots – will encourage sprawling residential development and increase the burden on the road network.

> "...DVRPC's mission to is shape a comprehensive vision for the region's future growth through the preparation of a long-range transportation and land use comprehensive plan."

Woolwich Township

Woolwich Township will continue to experience development pressure in the future. The township master plan recognizes the extensive growth pressure that will occur in the next decade and encourages smart growth principles – clustered development, a mix of uses, grid road network – to promote the quality of life for the community. The population boom within Woolwich Township has placed a tremendous burden on the infrastructure, schools, and tax base of the community. The future vision for the community is to provide a sustainable, self sufficient development pattern that promotes the community as an attractive place to live and work.

Sidewalk improvements are recommended in the Swedesboro redevelopment plan.

Swedesboro

The latest master plan update was completed in December 2002 and does not address new community goals or visions. Due to the small-scale, intense development of the Borough, the existing land use pattern will most likely continue with the exception of peripheral residential development.

NJ STATE DEVELOPMENT AND REDEVELOPMENT PLAN

In 1985, the NJ State Legislature adopted the State Planning Act, which called for integrated statewide planning. The State Development and Redevelopment Plan established statewide objectives regarding land use, housing, economic development, recreation, redevelopment, preservation, and infrastructure. It focuses on the planning process as well as planning outcomes, which support the eight statewide planning goals and many overarching policies. Since the state plan is only a policy guide for state, regional, and local agencies, ensuring implementation and compliance with all NJ's municipalities is done through a process called endorsement. It is through these measures that local municipal plans are reviewed for consistency with the state plan. The state plan also calls for local participation in the preparation of the plan. Through the process of cross-acceptance, the state ensures the participation and comments from local and county governments prior to the adoption of the SDRP. As

statewide policies are designed to improve coordination, the State Plan Policy Map accounts for the diversity of the various municipalities within NJ and provides a basis from which municipalities can grow. The Planning Areas for the study area are shown on Map 6.

Harrison Township

Harrison Township shares the same landscape as Woolwich and therefore has been categorized into the same planning areas. A majority of the township is located in the PA 3 area where no water and sewer is available. Despite the large number of residential units, Harrison has zoned for one-acre lots which is the minimum for on-lot septic systems. The Village of Mullica Hill is equipped for water and sewer infrastructure and as such is within the PA 2 Suburban Planning Area. The only other area that is within PA 2 is the Richwood Area at the intersection of NJ 55. This area is ideal for commercial development; however, it is abundant in historic structures. Public water and sewer supply portions of Harrison Township within the PA 3 area.

Logan Township

A majority of the US 322 study area within Logan is located in the PA-3 Fringe Planning Area. Despite being in the PA 3 planning area, this area has scattered residential, commercial, and industrial development. While a majority of PA 3 areas in the state do not have sewer and water infrastructure that is not the case in Logan Township.

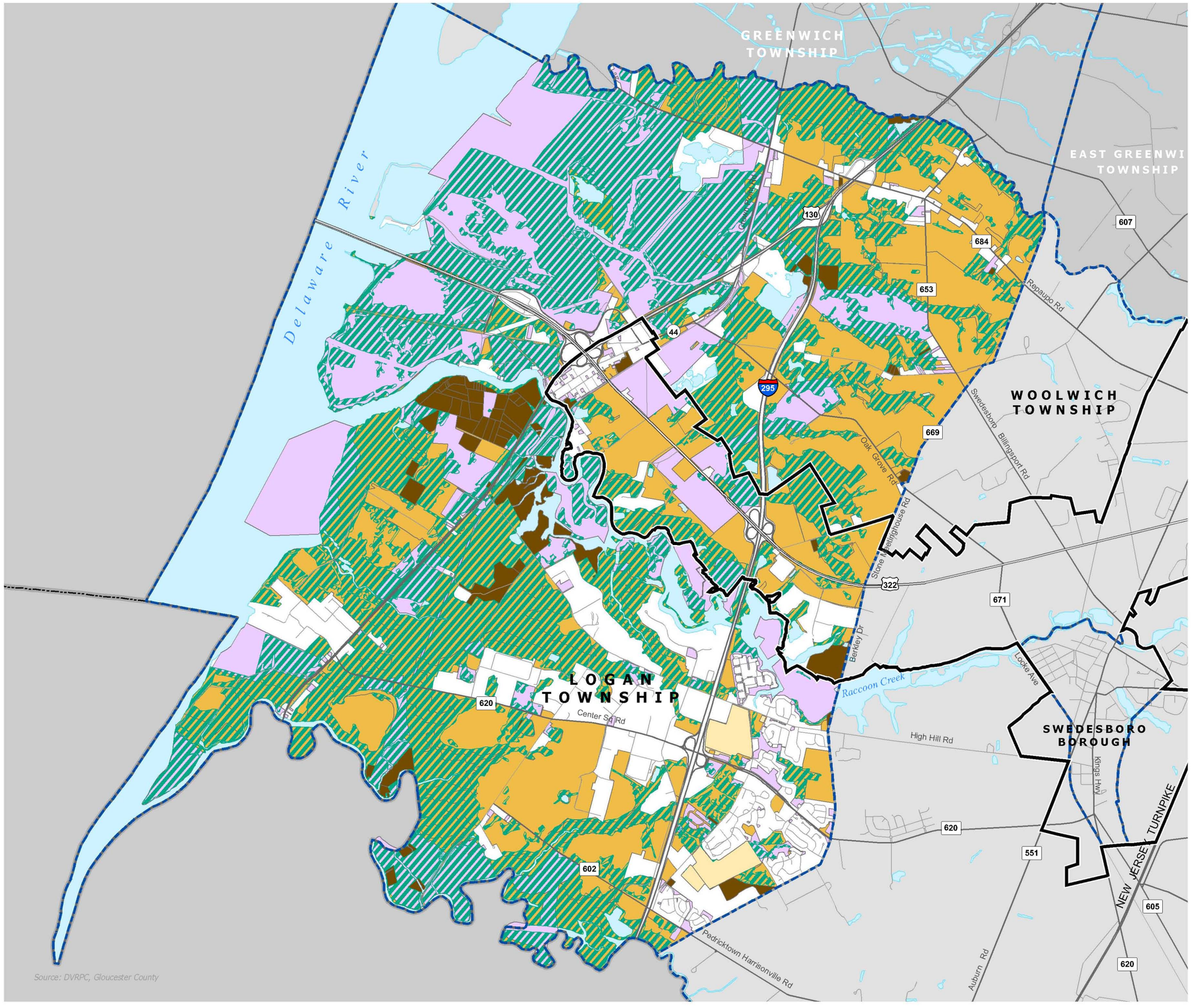
It is for this reason that development has occurred around the I-295 interchange and several redevelopment areas have been delineated along the US 322 corridor. Outside the immediate study area in Logan Township are two other planning areas. A large portion of the township is PA 5 – Environmentally Sensitive Area. This is mostly located along the water and streambeds, but interestingly covers a portion of the area on which Pureland Industrial Park is located. This area is for areas that have valuable ecosystems, geological features and wildlife habitats. These are critically important areas to the region and the state. The remaining area in Logan is PA 2 – Suburban Fringe Area. This area is characterized by low-density development and provides the necessary infrastructure for development. These areas are focused along the US 322 corridor and the southern portion of the township along the I-295 corridor and Center Square Road.

Woolwich Township/Swedesboro Borough

Unlike Logan Township, which currently has sewer and water infrastructure along the US 322 corridor, Woolwich Township does not. The entire study area is located in the PA 3 fringe area. In addition to the lack of infrastructure, circulation is provided by a state and county system that is supplemented by local roads. Due to recent development pressures within Woolwich Township, there is congestion and high costs for residents in terms of building the supporting infrastructure that is needed to sustain a large population. In the southern portion of the township, which includes all of Swedesboro Borough, this area is located in the PA 2 area. Swedesboro is entirely built out and is characterized by a dense land use pattern of residential, commercial and industrial uses. There are open fields along the periphery of the borough make them key areas for protection since they have the necessary infrastructure for development. The remaining portion of Woolwich is characterized by residential uses, such as Weatherby. This development utilizes adjoining municipalities for water and sewer and is currently undergoing construction of additional units. It is the PA 3 designation along the US 322 corridor that will make commercial development more difficult.

DELAWARE VALLEY REGIONAL PLANNING COMMISSION DESTINATION 2030 PLAN: A VISION FOR THE FUTURE

As the designated Metropolitan Planning Organization (MPO) for the Philadelphia-Camden-Trenton area, DVRPC's mission to is shape a comprehensive vision for the region's future growth through the preparation of a long-range transportation and land use comprehensive plan. The region's adopted plan, *Destination 2030*, provides a vision for future growth and determines a plan for the implementation of future transportation facilities and investments. A major issue for the Delaware Valley is the redistribution of population and jobs from existing city and older suburban communities into new rural areas. This is particularly the case along the US 322 corridor. While growth in population and employment are positive indicators of the appeal of the region, when it is coupled with decline in existing development areas, the outcome is continued sprawl that results in a loss of open space and increased traffic congestion. The US 322 corridor



Study Area

Study MCD

Municipality

Developable Land *

Protected Lands **

Developed Land

Approved Development

Vacant ***

Environmental Constraints

* Based on 2000 DVRPC Land Use Files

** Protected lands are parcels classified as 15C from 2004 tax assessment data provided by Gloucester County, plus permanently preserved farms provided by the Gloucester County Farmland Preservation Program

*** Based on 2004 Parcel Data

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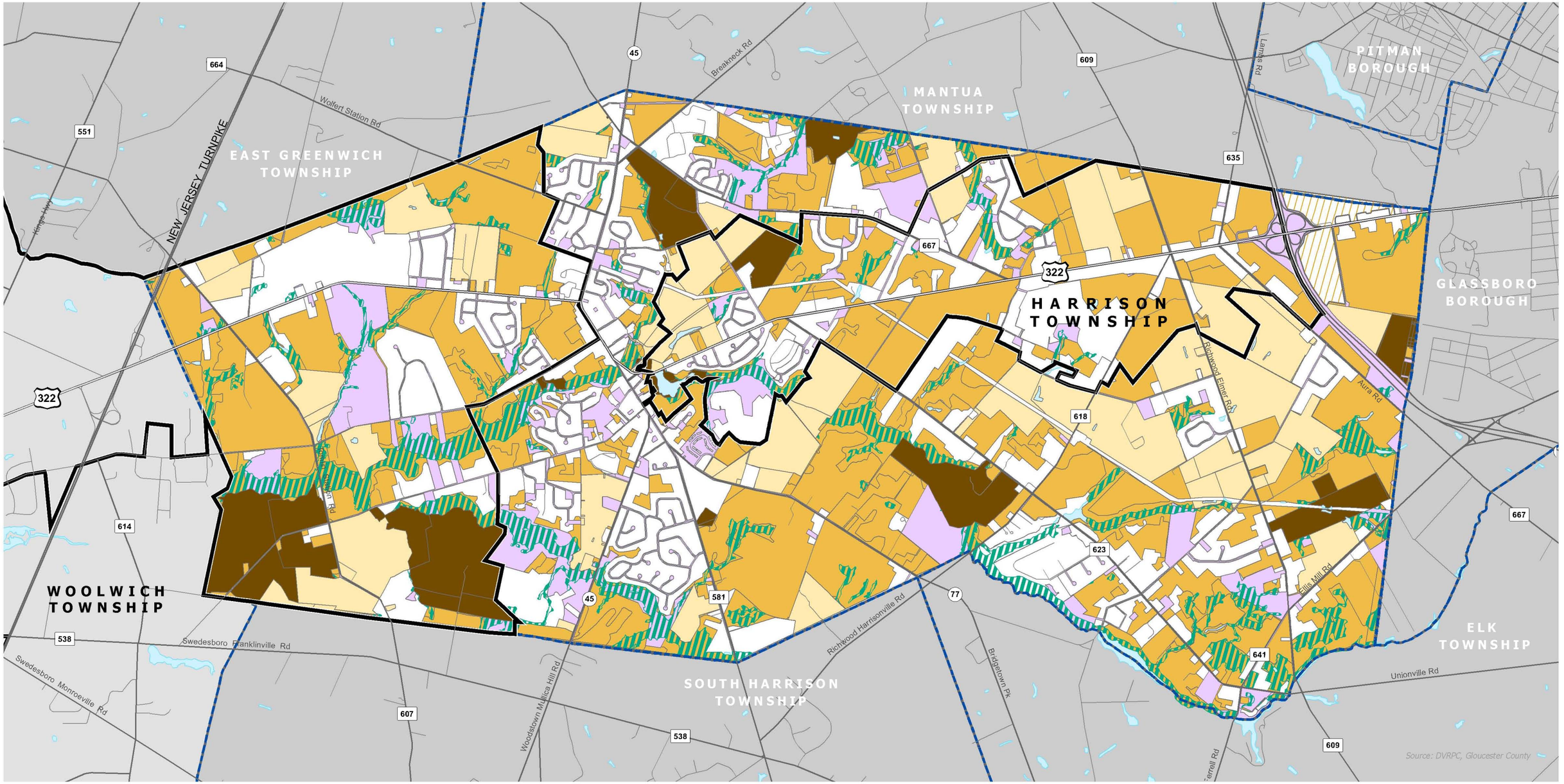
Miles

DELAWARE VALLEY
REGIONAL PLANNING COMMISSION
JANUARY 2006

Map 3: Logan Township



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DELAWARE VALLEY
REGIONAL PLANNING COMMISSION
JANUARY 2006

Developable Land *

Protected Lands **

Developed Land

Approved Development

Vacant ***

Rowan University

Environmental Constraints

Study Area

Study MCD

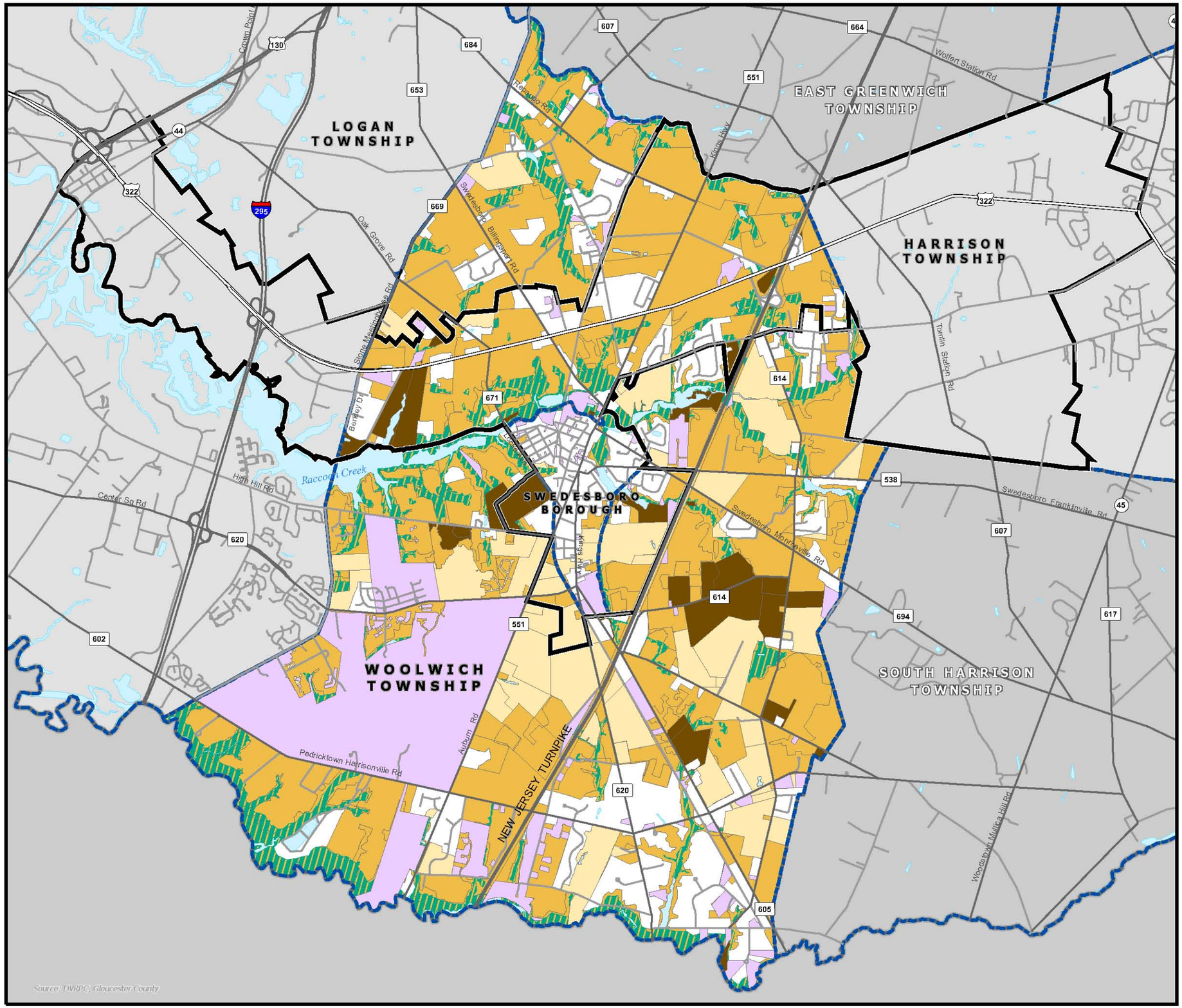
Municipality

* Based on 2000 DVRPC Land Use Files

** Protected lands are parcels classified as 15C from 2004 tax assessment data provided by Gloucester County, plus permanently preserved farms provided by the Gloucester County Farmland Preservation Program

*** Based on 2004 Parcel Data

Map 4: Harrison Township



Study Area

Study MCD

Municipality

Developable Land *

Protected Lands **

Developed Land

Approved Development

Vacant ***

Environmental Constraints

* Based on 2000 DVRPC Land Use Files

** Protected lands are parcels classified as 15C from 2004 tax assessment data provided by Gloucester County, plus permanently preserved farms provided by the Gloucester County Farmland Preservation Program

*** Based on 2004 Parcel Data

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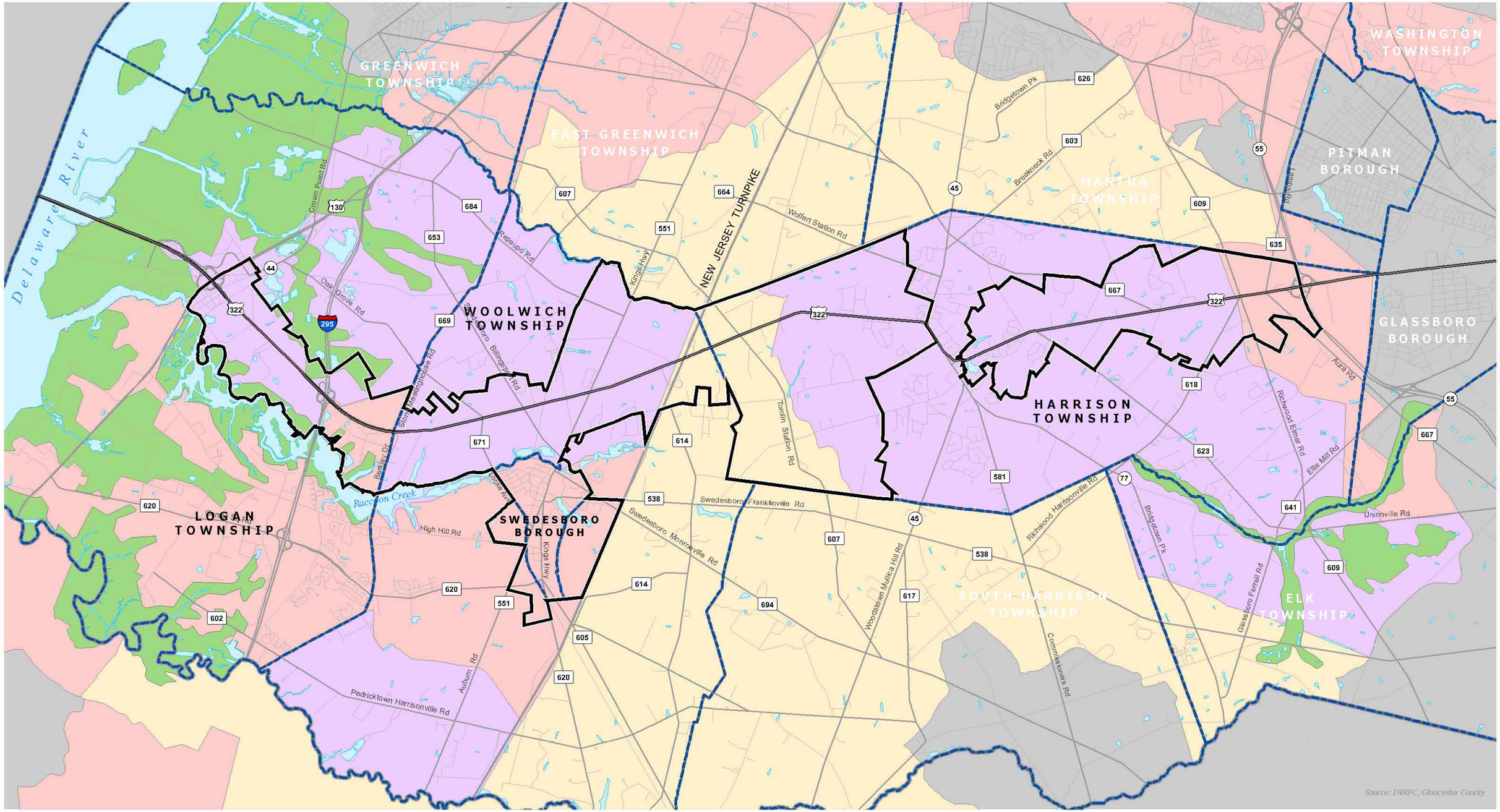
REGIONAL PLANNING COMMISSION
JANUARY 2006

Map 5: Woolwich Township & Swedesboro Borough



NJ State Planning Areas *

PA - 2, Suburban

PA - 3, Fringe

PA - 4, Rural

PA - 5, Environmentally Sensitive

* NJ Office of State Planning Designations

Study Area

Municipality

0 1 2

Miles

DELAWARE VALLEY
REGIONAL PLANNING COMMISSION
JANUARY 2006

Map 6:
New Jersey State Planning Areas

still has large tracts of undeveloped and agricultural lands that characterize these communities. Through *Destination 2030*, DVRPC is working to curb sprawl along the region's exurban rural edge through land use controls, planned infrastructure investments, land preservation and quality design. The DVRPC long-range plan is consistent with the goals of the NJ State Plan, as well as the goals of NJDOT to find land use and transportation alternatives that support a sustainable development pattern.

NATURAL RESOURCES

Each of the municipalities within the study area has unique natural features that have characterized them as farming communities. Due to development pressures in recent years, many of the natural and environmental amenities these communities have to offer have decreased. This section highlights the natural features in each of the study area municipalities. A majority of the natural features in the study area have statewide significance and often contain endangered species or lands of critical significance. The natural features within the study area can be seen in Map 7.

Harrison Township

Harrison Township's landscape was once agricultural because of the rich soils. Forty-eight percent of the landscape is classified as Prime Farmland, while an additional 32 percent of the soils in Harrison Township are classified as of Statewide Importance.

There are 33 stream miles that flow through Harrison Township. In addition, the township has several small ponds and four named lakes: Mullica Hill Pond, Ewan Lake, Gilman Lake, and Kincaid Lake. The lakes occupy 69 acres within the township, but only Mullica Hill Pond is open to the public. Harrison Township has three watersheds: the Raccoon Creek, the Mantua Creek and the Repaupo Creek. According to Federal Emergency Management Agency, 5 percent of Harrison Township is located in a flood hazard zone.

According to the New Jersey Department of Environmental Protection (NJDEP), 7 percent of Harrison's total land cover is "suitable" or "critical" forest habitat. Harrison Township has within its borders two National Heritage Priority (NHP) sites: the Mill Race Farms site and the Pancosts Woods site.

Rich soils provide for a variety of agricultural uses.

The NJ Division of Parks and Forestry's Office of Lands Management designates these sites as critically important areas of habitat for rare species.

Logan Township

Logan Township's landscape is heavily dominated by wetlands; especially along the Delaware riverfront. Along the river valleys are freshwater tidal marshes and wet forests. The township's soils provide high agricultural value and are classified as having Statewide Importance.

Logan Township has a total of 74 stream miles. Of those, 56 are headwater streams. There are two permanent lakes: Cooper Lake and Logan Pond. Logan Pond is accessible to the public and is located in a state-owned Wildlife Management Area. There is no direct access to Logan Pond from Logan Township. Neither pond is used much for

Environmental features in Logan Township restrict development.

Open space, Woolwich Township.

recreation. Seventy-three percent of Logan Township is characterized as a flood hazard area. Logan Township has within its borders a National Heritage Priority (NHP) site – Repaupo State Site. It is located along the Pargey/Repaupo stream corridor on the northeastern side of the township and contains a population of state-listed endangered plant species and a plant species of special concern.

Woolwich Township

Woolwich Township is characterized by rich soils that once supported forests. These soils are rich in agricultural value and are considered Prime Farmlands. Woolwich Township also has both tidal and freshwater wetlands, occupying 1,165 acres of the township. Three watersheds drain Woolwich Township: the Repaupo Creek, the Raccoon Creek, and the Oldmans Creek. Damming created a majority of Woolwich's open waters, which resulted in 233 acres of lakes. Only Lake Narraticon is open to public recreation.

DVRPC has worked with three of the four study area municipalities on open space preservation and recreation plans.

Woolwich Township lies directly above the Potomac-Raritan-Magothy (PRM) aquifer, which provides all of Woolwich Township's water, as well as all the communities from Burlington to Salem counties in New Jersey. Woolwich Township has several areas of high quality wildlife. The Landscape Project, developed by the Endangered and Nongame Species Program of the NJDEP Fish and Wildlife Service, has mapped critical habitat in Woolwich. There are two National Heritage Priority (NHP) Sites in Woolwich Township. This first, Grand Sprute Run, is located along the Grand Sprute stream corridor; and the second, the Tomlin Station site, is located along the Warrington Mill pond.

Swedesboro

The land that is not built on in Swedesboro falls into two categories: land suited for development and land suited for conservation due to its natural state. Nearly half of the borough's undeveloped land has moderate to severe limitations for construction because of susceptibility to flooding, or extreme steep slopes.

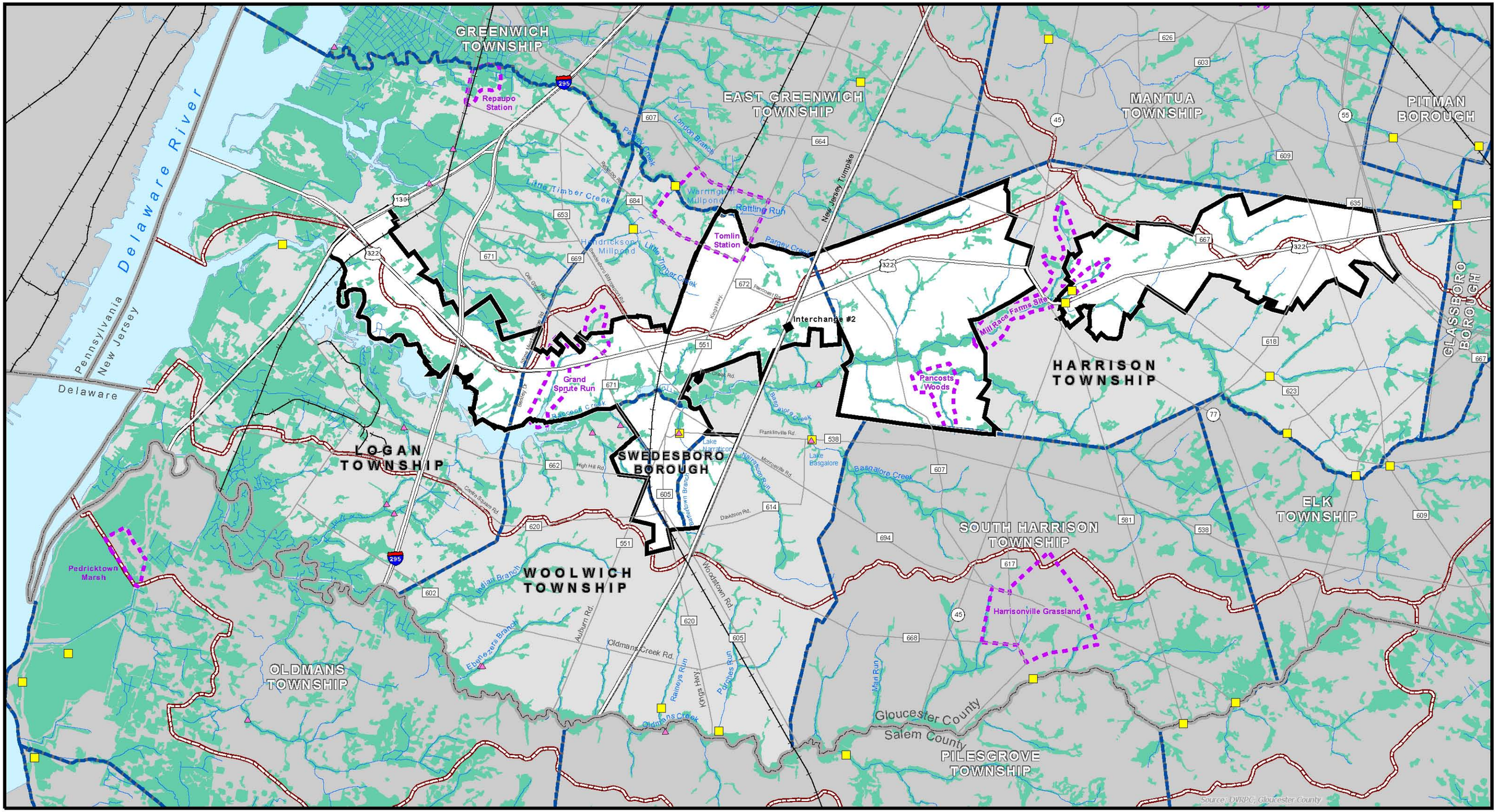
OPEN SPACE

Between May 2004 and June 2005, the Delaware Valley Regional Planning Commission (DVRPC) worked with three of the four study area municipalities on open space preservation and recreation plans for their communities. Recommended and existing open space is shown on the township maps (Maps 3-6). Below is a list of the amount of land preserved and what is left for open space preservation within the study area municipalities. Preserved land refers to municipally-owned land, permanently preserved farmland, or

TABLE 4: OPEN SPACE ACREAGE

MUNICIPALITY	TOTAL LAND	AVAILABLE OPEN SPACE	PRESERVED LAND
HARRISON	12,230 acres	5,195 acres	767 acres
LOGAN	14,990 acres	11,046 acres	179 acres
WOOLWICH	13,713 acres	7,701 acres	417 acres
SWEDESBORO	498 acres	132 acres	22 acres
TOTAL	41,431 acres	24,074 acres	1,385 acres

Source: DVRPC, 2005



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Miles

DELAWARE VALLEY
REGIONAL PLANNING COMMISSION
JANUARY 2006

US 322 Study Area
Study MCDs
Municipal Boundary
County Boundary

Natural Features *

Lakes
Head of Tide
Dam
Wetlands
Natural Heritage Priority Site
Watersheds
Rivers and Streams

* Source: New Jersey Department of Environmental Protection

Map 7: Natural Features

Many of the historic resources maintained in Harrison Township are located in the Village of Mullica Hill.

environmentally sensitive areas. Land available for open space includes farm-assessed land (without development approvals), vacant land (without development approvals), and recreation sites. In Woolwich Township, preserved land also includes Swedesboro/Woolwich jointly owned property, Swedesboro-owned open space property in Woolwich, and New Jersey Natural Lands Trust property.

CULTURAL AND HISTORICAL RESOURCES

Harrison Township

Harrison Township's Mullica Hill is a prime example of a 18th and 19th century rural village. Much of the historic and cultural resources that are maintained in Harrison Township are located in Mullica Hill and include building stock from the Colonial, Federal, Greek Revival, late Victorian, and Colonial Revival styles. Two of Harrison's historic buildings are listed on the National Register of Historic Places as well as New Jersey's State Register of Historic Places: the Jessup Farm and the Sherwin Farm. In 1991, the entire Village of Mullica Hill was placed on the New Jersey and National Registers of Historic Places and a Historic Preservation Commission was established.

Logan Township

Logan Township was originally within Greenwich Township, one of the original four incorporated jurisdictions in Gloucester County. Initially, Logan Township was incorporated in 1877 as West Woolwich Township. Renamed a year later, this township is rich in history and has several remaining structures from its early settlers. The Village of Bridgeport also has many historic structures that date back as early as the 18th and 19th centuries.

Woolwich Township/Swedesboro

Woolwich Township was originally settled as Greenwich Township. Woolwich Township was incorporated in 1767; and, in 1902 the Borough of Swedesboro was incorporated as a separate municipality. This area was known for its many saw and grist mills through the 20th century. The township and borough are rich in history and have several remaining structures from early settlers. One of the original log houses is still standing: the Schorn Cabin, which is located in New Sweden Park in Swedesboro, where it is open to the public. In addition, this cabin was known as a station along the Underground Railroad that existed during the Civil War era. Woolwich Township was also part of the Underground Railroad. Swedesboro was the center of most community life for Woolwich Township throughout its history. Many notable people have lived there including the sixteenth governor of New Jersey, Jonathon Belcher (1747-1757).

RECREATION FACILITIES

Harrison Township

The Harrison Public Works Department maintains the recreational facilities and administers all recreation activities. The Recreation Committee enhances the department's efforts by sponsoring community events throughout the year.

Recreational facilities in Woolwich Township are shared with the Borough of Swedesboro.

The Ella Harris Recreation Park, until recently, was the principal recreation facility. In 2004, Harrison Township purchased a 47-acre site on Walters Road for recreational use and established ball fields. The Gloucester County 4-H organization owns fairgrounds in the township as well, which is where the 4-H Fair and New Jersey Peach Festival are held annually. Other facilities that are used in the township for recreation include the Pleasant Valley Recreation Fields and the Clearview High School recreation fields.

Logan Township

Logan Township sponsors a wide variety of sports programs as well as other offerings by the Parks and Recreation Committee. All activities take place on the 65-acre municipal facility on Township Line Road. The municipal facility accommodates Little League baseball, softball, basketball, soccer and football and also has a skate park, tennis courts, a concession stand, a picnic pavilion, and a playground at this site. In addition, the municipal building in Bridgeport has basketball courts and a roller hockey rink. The Kingsway High School has playing fields that are utilized by township teams as allowed.

Woolwich Township/Swedesboro

Woolwich shares its active recreation lands with the Borough of Swedesboro. Together, the two communities acquired the 23-acre Locke Avenue site to serve as the principal park for outdoor recreation. This complex provides two baseball fields, two soccer fields, a walking/rollerblading trail, and a playground. A concession stand, bathroom facilities and picnic pavilion have also been added. An adjoining 56 acres has recently been added to the site and will greatly expand the recreational facilities for the two communities. A 29-acre parking area is located near Lake Narraticon is available to Woolwich residents for passive recreation. It has a ½-mile walking trail that is accessible from Swedesboro.

WATER AND SEWER INFRASTRUCTURE

Harrison Township

Residences in the more developed sections of Harrison, including Mullica Hill, are supplied with public drinking water through South Jersey Water Supply. Drinking water

The more developed sections of Logan Township have public water supply.

is primarily served from the wells drilled into the Potomac-Raritan-Magothy Aquifer, supplemented by New Jersey American. Newer residential communities along US 322, including Willowbrook Farm, Cider Press Estates, and Turtle Creek are also supplied with public water. Those who live in less developed areas must rely on private wells for water.

Like the public water, sewer service is provided to the more developed sections of Harrison, including Mullica Hill and new developments. The central part of Harrison Township and the area surrounding the NJ 55 interchange are approved for sewer service. All public sewage is provided through the Harrison Township Wastewater Treatment Plant. There are future plans for a Richwood Wastewater Treatment Plant that would serve approximately 1,000 acres near NJ 55.

Logan Township

The New Jersey-American Water Company supplies drinking water in Logan Township to the more developed sections such as Beckett and the business parks. Bridgeport and Repaupo have public water provided by the South Jersey Water Company. Township residents that live in less developed areas rely on private wells.

Like the public water, sewer service is provided to the more developed sections of Logan, including Beckett, Bridgeport, and the business parks. Approximately two-thirds of Logan is approved for sewer service, although the infrastructure is currently still being constructed. All sewer service is provided through the Logan Township Municipal Utility

Authority. Residents in the less developed areas of Logan rely on private septic systems.

Woolwich Township

Until recently, water for Woolwich residents and commercial properties was provided through private wells. Only one Woolwich development had public water, which was provided by the Swedesboro Water Department. Currently, parts of the Weatherby Planned Unit Development have been constructed to receive water service from Aqua of New Jersey (formerly Consumers New Jersey Water Company).

Like the water service in Woolwich Township, most residences and commercial properties have relied on septic systems for sewage disposal. Weatherby Planned Unit Development residents have been or will be connected to public sewer through the Logan Township Municipal Utility Authority. A separate treatment plant operated by the Swedesboro Municipal Utility Authority (MUA) provides sewage disposal for residences in Swedesboro. There are currently plans to expand the Swedesboro plant and its sewer service area to accommodate business growth within Woolwich Township.

Swedesboro

Water and sewer service is provided by the Swedesboro Water and Sewer Department to all developed portions of the borough. The Swedesboro Water Department provides water to 750 customers within the borough. The Swedesboro sewer system has a secondary treatment facility that serves the Swedesboro municipal area (approximately 2,620 persons). The system is almost at capacity.

SCHOOLS

Harrison Township

Harrison Township has two public elementary schools: the Harrison Township Elementary School and Pleasant Valley Elementary School. The Harrison Township Elementary School educates children in kindergarten through grade three. The Pleasant Valley School educates children in grades four through six. Afterwards, Harrison Township school children attend the Clearview Regional Middle and High School. The Clearview School system educates more than 2,000 students

Kingsway High School, Woolwich Township.

from Harrison and Mantua townships. In addition, Harrison Township is home to the Friends School of Mullica Hill, a private institution.

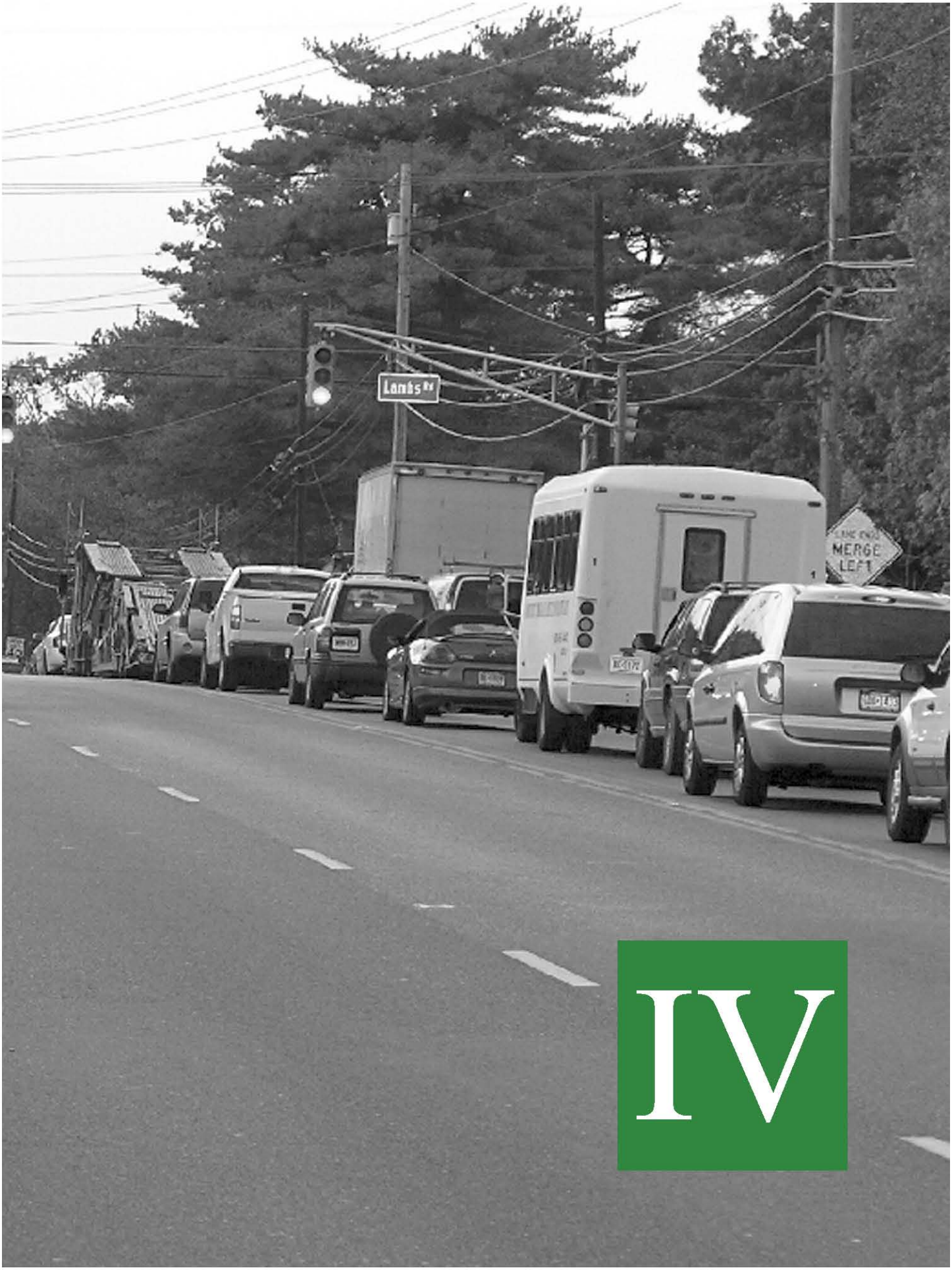
Logan Township

Logan Township has two elementary schools. The Center Square School educates children pre-kindergarten through first grade. Logan Elementary School educates children from second through eighth grade.

Kingsway Regional High School, which is located directly on US 322 within the study area, educates grades 9 through 12. As a regional high school, students who reside in Woolwich, South Harrison, and East Greenwich townships, as well as the Borough of Swedesboro, also attend.

Woolwich Township/Swedesboro

Both Woolwich and Swedesboro students attend the Margaret Clifford School in Swedesboro for pre-kindergarten and kindergarten. Grades one through four are taught in the Charles Stratton School and grades five and six are at the Walter Hill School. Grades seven and nine are taught at the Kingsway Regional School System. The St. Joseph's Parochial School, which is operated by the Camden Diocese, is also available to school age children and is located in the Borough of Swedesboro. ❖



IV

Transportation & Access

ROAD NETWORK

The study area is served by a combination of state, county and municipal roads that provide mobility and access to both freight and vehicular traffic traveling through the area. The transportation network is shown on Map 8. The principal routes are as follows:

US 322

The US 322 corridor is a regionally significant road that serves both regional and local traffic in southern Gloucester County. US 322 is classified as a principal arterial highway and is oriented in an east-west direction. It provides a direct link to many regional transportation facilities such as the Commodore Barry Bridge, US 130, I-295, New Jersey Turnpike and NJ 55. Traffic flows well on US 322 during off-peak periods, but congestion is quite noticeable during peak periods. US 322 provides a direct link between the Commodore Barry Bridge and NJ 55; as a result, the facility typically experiences greater than normal increases in summertime traffic. Impacts from this seasonal traffic have resulted in localized congestion along this corridor, and are especially intense on weekends.

New Jersey Turnpike

The turnpike is a highway that runs north-south through New Jersey. It is four lanes in the study area and serves as a limited-access toll road. The turnpike's US 322, Swedesboro, Chester Interchange (exit 2), is situated in the middle of the US 322 study corridor. The closest interchanges are Exit 1, which is 12 miles to the south, and Exit 3, which is 13 miles to the north.

> "...the higher traffic volumes along US 322 tend to occur in the vicinity of other major regional highway facilities,...These facilities attract vehicles heading toward other regional locations."

I-295

I-295 is a four-lane highway that complements the parallel New Jersey Turnpike. It runs in a north-south direction that extends from US 1 in Mercer County in the north to the Delaware Memorial Bridge in Salem County to the south. It provides the local traffic access to the interstates for Salem,

Gloucester, Camden, Burlington, and Mercer counties. The Exit 11 interchange for I-295 is located in the western portion of US 322. This is a partial interchange with no direct access from I-295 south to US 322 west. To do so, vehicles use US 130 to access US 322 west to get to the Commodore Barry Bridge. The I-295 and NJ Turnpike interchanges are located about four miles apart on US 322, allowing for access between the two highways. The nearest neighboring interchange is less than two miles to the south and connects with Center Square Road (CR 620) in the Pureland Industrial

TABLE 5: NETWORK FACILITY CHARACTERISTICS

FACILITY		LIMITS	FUNCTIONAL CLASSIFICATION	NUMBER OF LANES	SPEED LIMIT (MPH)	TRAFFIC SIGNALS	MEDIAN
US 322		US 130 to Main St.	Urban Principal Arterial	6	45		Protected Median
		Main St. to I-295	Rural Principal Arterial	4	45		None
		I-295 to CR 669	Urban Principal Arterial	4	45	CR 669	Grass Median
		CR 669 to CR 551	Urban Principal Arterial	2	45	CR 653 CR 551	None
		CR 551 to CR 607	Rural Principal Arterial	2	45		None
		CR 607 to NJ 45	Urban Principal Arterial	2	35 - 45	NJ 45	None
		Main St. to CR 667	Urban Principal Arterial	2	35 - 45		None
		CR 667 to NJ 55	Rural Principal Arterial	2	40 - 50	CR 609 / CR 618 CR 635 / CR 667	None
US 130	Crown Point Rd	Salem County Line to CR 674	Rural Arterial	4	55		Grass Median
		CR 674 to US 322	Urban Minor Arterial	4	55		Grass Median
		US 322 to I-295	Urban Principal Arterial	4	55		Grass Median
CR 669	Stone Meeting House Rd	US 322 to Logan Twp Line	Rural Local	2	50	US 322	
CR 671	Locke Avenue	CR 551 to US 322	Urban Collector	2	40		None
	Oak Grove Rd	US 322 to Woolwich Twp Line	Rural Local	2	45		None
CR 653	Paulsboro-Swedesboro Rd	CR 551 to US 322	Urban Collector	2	35	US 322	
		US 322 to Woolwich Twp Line	Rural Major Collector	2	50		None
CR 551	Auburn Ave	Salem County Line to CR 620	Rural Major Collector	2	50		None
		CR 620 to CR 694	Urban Collector	2	35		None
	Kings Highway	CR 694 to US 322	Urban Collector	2	25, 50		None
		US 322 to Woolwich Twp Line	Urban Minor Arterial	2	50	US 322	None
CR 672	Pancoast Rd	US 322 to CR 551	Rural Local	2	50		None
CR 607	Tomlin Station Rd	CR 538 to High St	Rural Major Collector	2	40		None
		High St to US 322	Urban Collector	2	45		None
		US 322 to Harrison Twp Line	Rural Major Collector	2	50		None
NJ 45	North Main Street	US 322 to Colson Lane	Urban Principal Arterial	2	35	US 322	None
CR 623	Clems Run	US 322 to Harrison Twp Line	Urban Local	2	50		None
CR 667 II	Cedar Rd	US 322 to Harrison Twp Line	Urban Collector	2	40 - 45		None
CR 609	Barnsboro - Richwood Rd	CR 622 to Harrison Twp Line	Rural Minor Collector	2	50	US 322 / CR 618	None
CR 618	Harrisonville Rd	CR 623 to US 322	Rural Local	2	35 - 45	US 322 / CR 609	None
CR 635	Lambs Rd	US 322 to Harrison Twp Line	Rual Major Collector	2	35	US 322 / CR 667	None
CR 667	Aura Rd	Harrison Twp Line to US 322	Rual Major Collector	2	50	US 322 / CR 635	None
NJ 55		Harrison Twp	Urban Freeway/Expressway	4	65		Grass Median
CR 620	Center Square Rd	US 130 to I-295	Rural Major Collector	2 - 4	45	Heron Drive	None
		I-295 to School Lane	Urban Collector	4	45	Beckett Rd.	Grass Median
		School Lane to Township Line Road	Urban Collector	2	45		None
	Old Ferry Road	Township Line Rd to CR 605	Urban Collector	2	45	CR 551	None

Source: New Jersey Straight Line Diagram: 2005, NJDOT

Major intersection along US 322.

Complex. To the north, the next interchange is 2.4 miles away connecting with US 130. The functional class of this I-295 in Logan Township is both a rural and urban interstate.

US 130

US 130 is located at the western edge of the study area and has a direct interchange with US 322. It is a four-lane urban principal arterial with a grass median that runs in a north-south direction. To the north of the study area, US 130 converges with I-295 for a nine-mile stretch as it heads toward Camden.

New Jersey State Route 45 (NJ 45)

NJ 45 is a two-to four-lane urban principal arterial that bisects the middle of the study area. It serves both regional and local traffic in southern New Jersey by providing access to the main street areas of City of Woodbury and Harrison (Mullica Hill) and south toward Salem County. It has become a commercial destination for both local and regional shoppers.

The intersection of Route 45 and US 322 receives heavy car and truck traffic.

New Jersey Route 55 (NJ 55)

At the eastern end of the study area, US 322 provides direct access to NJ 55. NJ 55 is a limited access Urban Freeway/Expressway that has four lanes with a grass median. The NJ 55 freeway is a 40-mile-long expressway linking NJ 42 in Deptford and NJ 47 in Millville. The northern section provides an important commuter link for bedroom communities in southern New Jersey and the Philadelphia-Camden metropolitan area. The southern section of NJ 55 provides a direct link for traffic toward the shore points in southern New Jersey. The nearest neighboring interchanges are only two miles to the south at Ellis Mill Road (CR 641) and three miles to the north at Woodbury-Glassboro Road (CR 538).

County Route 551 (CR 551)

Kings Highway (CR 551) bisects the western portion of the study area, providing direct access from US 322 to the Borough of Swedesboro. Kings Highway is an urban minor arterial that traverses north-south and connects Gloucester County with Camden County to the north and with Salem County to the south. Throughout the study area, Kings Highway has only one lane by direction.

There are other key facilities within the study corridor that parallel or intersect US 322. US 322 provides direct access to other key county arterials within the corridor. Table 5 summarizes some of the attributes of these and other network facilities.

TRAFFIC DATA

Average Annual Daily Traffic (AADT) Volumes

The average annual daily traffic (AADT) volumes are displayed on Map 9. Raw daily traffic counts are factored to AADTs to account for day of week and seasonal fluctuations in traffic levels. AADT volumes represent the daily traffic at a location on an average day of the year. These counts collected by DVRPC are for a five-year period from 2000 to 2004. US 322 experiences average annual daily traffic volumes of 18,000 to 21,000 vehicles between the

County Route 671

Commodore Barry Bridge and I-295. From I-295 to Main Street in Mullica Hill, US 322 has AADTs ranging from 13,000 to 23,000 vehicles per day. Between Mullica Hill and NJ 55, the traffic volumes are 16,000 to 22,000 vehicles per day.

As can be expected, the higher traffic volumes along US 322 tend to occur in the vicinity of other major regional highway facilities, such as the Commodore Barry Bridge, I-295 and NJ 55. These facilities attract vehicles heading toward other regional locations. Along I-295, average annual daily traffic (AADT) volumes are approximately 37,000 to 40,000. The NJ Turnpike carries volumes of 39,400 in the vicinity of the study area, while NJ 55 has volumes of 46,000 daily. NJ 45 leading directly into Mullica Hill encounters volumes of about 16,000 vehicles daily.


County Route 667

The map also illustrates the AADTs along some of local and county roads. The majority of these facilities contain AADTs of fewer than 5,000 vehicles. In Swedesboro, Kings Highway (CR 551) carries higher daily volumes ranging from 6,000 to 15,000 vehicles. Another county road that features greater volumes is Center Square Road (CR 620), which carries 6,000 to 9,000 vehicles per day between Swedesboro and I-295 in Logan Township.

Turning Movement Counts

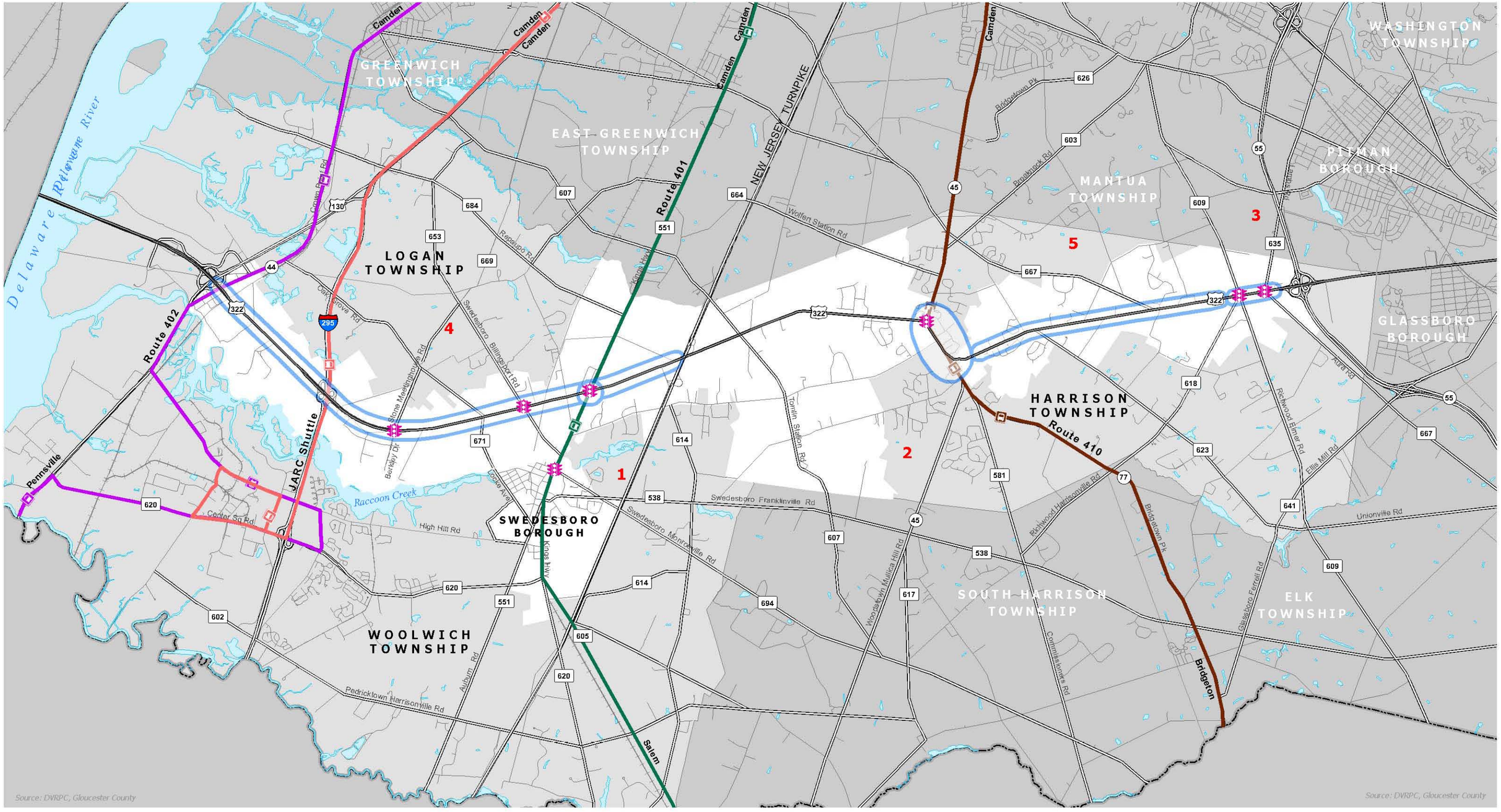
In February 2000, Urban Engineers, NJDOT consultants for the US 322 Concept Development Study Final Report, conducted peak hour turning movement counts along US 322 at each of the signalized intersections and the access road to the NJ Turnpike. The turning movement counts for each of the intersections are also displayed on Map 9. ***The signalized intersections along US 322 are:***

- Stone Meeting House Road (CR 669)/Berkley Drive Paulsboro-Swedesboro Road (CR 653)
- Kings Highway (CR 551)
- NJ 45 (Bridgeton Pike)
- Barnsboro - Richwood Road (CR 609)/Harrisonville Road (CR 618)
- Lambs Road (CR 635)/Aura Road (CR 667)

Level of Service

Urban Engineers conducted a level of service analysis for each of these locations. The level of service analysis (LOS) is a common tool for assessment of transportation facilities and is used extensively in this report. The concept of LOS, when applied to the performance of an intersection, refers to the average delay experienced by a vehicle traveling through the intersection. The measure of effectiveness for signalized intersection LOS is the average control delay per vehicle. Table 6 shows level of service categories, from A to F, with associated criteria for each category. The turning movement counts and traffic volume data, along with data from the traffic signal timing and operation plans, were analyzed using the Highway Capacity Software to determine the LOS.

Table 7 shows AM and PM Peak Hour levels of service for each intersection inventoried by Urban Engineers for the US 322 Concept Development Study Final Report. The data analysis conducted by Urban Engineers shows that during the



0 1 2

Miles

DELAWARE VALLEY
REGIONAL PLANNING COMMISSION
JANUARY 2006

Study MCD

Study Area

Municipality

Signals

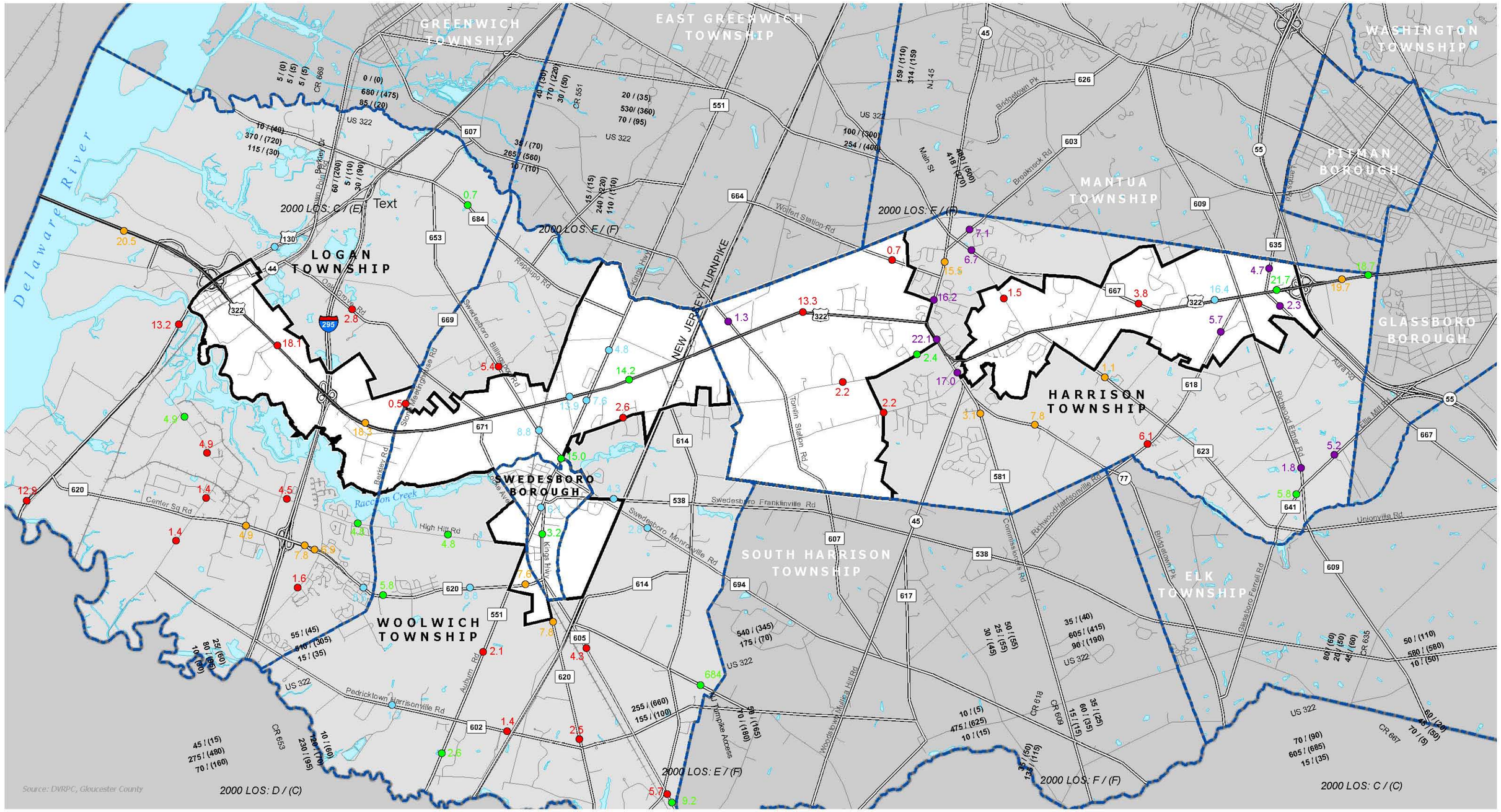
4 Priority Areas *

* Source: Urban Engineers Inc., *Route 322 Concept Development Study Final Report: M.P. 2.25 - M.P. 15.4*, October 2002

Bus Routes

- Route 401
- Route 402
- Route 410
- JARC Pureland Industrial Complex Shuttle

Map 8: Transportation Baseline Conditions



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Miles

DELAWARE VALLEY
REGIONAL PLANNING COMMISSION
JANUARY 2006

Study Area

Study MCD

Municipality

Turning Movement Counts = AM/(PM)
(LOS) Level of Service = AM/(PM) *

* Source: Urban Engineers Inc., *Route 322 Concept Development Study Final Report: M.P. 2.25 - M.P. 15.4*, October 2002

Average Annual Daily Traffic (AADTin thousands) as of 6/1/04

- 2000
- 2001
- 2002
- 2003
- 2004

Map 9: Traffic Volumes

TABLE 6: LEVEL OF SERVICE (LOS) DESIGNATIONS AND ASSOCIATED DELAYS AT SIGNALIZED INTERSECTIONS

Level Of Service	Control Delay Per Vehicle (Seconds/vehicle)
A (DESIRABLE)	< = 10
B (DESIRABLE)	> 10 - 20
C (DESIRABLE)	> 20 - 35
D (ACCEPTABLE)	> 35 - 55
E (UNDESIRABLE)	> 55 - 80
F (UNSATISFACTORY)	> 80

Source: Route 322 Concept Development Study Final Development Report, Urban Engineers, 2002

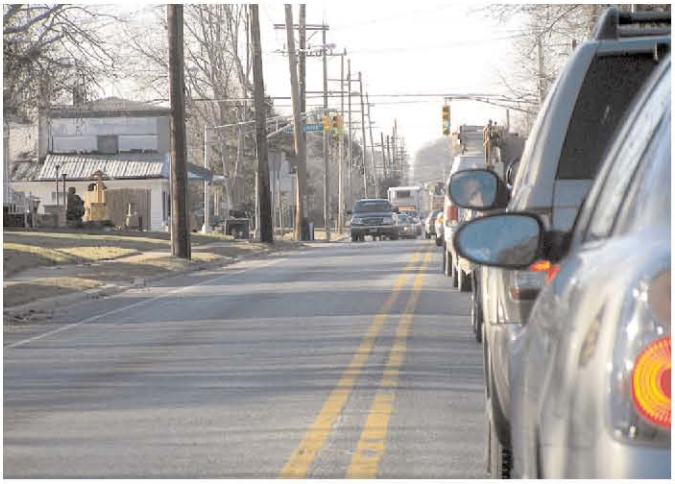
TABLE 7: 2000 SIGNALIZED INTERSECTION PEAK HOUR LEVEL OF SERVICE (LOS)

INTERSECTION	AM PEAK		PM PEAK	
	LOS	Delay (sec)	LOS	Delay (sec)
US 322 at Stone Meeting House Rd. (CR 669) / Berkley Drive	C	21.2	E	78.9
US 322 at Paulsboro - Swedesboro Rd. (CR 653)	D	40.3	C	21.8
US 322 at Kings Highway (CR 551)	E	58.2	F	131.9
US 322 at NJ 45 (Bridgeton Pike)	F	90.1	F	241.6
US 322 at Barnsboro - Richwood Rd. (CR 609) / Harrisonville Rd. (CR 618)	F	83.6	F	89.3
US 322 at Lambs Rd. (CR 635) / Aura Rd. (CR 667)	C	32.5	C	23.2

Source: Urban Engineers Inc., Route 322 Concept Development Study Final Report: M.P. 2.25 - M.P. 15.4, October 2002

peak hour travel periods, the majority of the locations experience levels of service of E and F. In the AM peak, only three of the analyzed intersections on US 322 operate at either an acceptable level or better: Stone Meeting House Road (CR 669)/Berkley Drive, Paulsboro-Swedesboro Road (CR 635) and Lambs Road (CR 635)/Aura Road (CR 667). The other intersections that were examined all experience vehicle delays ranging from 49 – 90 seconds.

For most of the intersections, the PM peak periods are generally worse than the AM peak hour. The only exceptions occur at Paulsboro-Swedesboro Road (CR 653) where the LOS lowers from a D in the AM to C in the PM, and the vehicle delay decreases by approximately 19 seconds; and at Lambs Road (CR 635)/Aura Road (CR 667) where the LOS remains at LOS C for both peak periods with a decline in



Cars line up at traffic light during the morning peak hours.

vehicle delay by 10 seconds in the PM. The intersections at Kings Highway (CR 551) and NJ 45 suffer severe congestion during the PM peaks. At Kings Highway, vehicles encounter delays of approximately 132 seconds per vehicle, while at NJ 45 the delays are 241 seconds per vehicle.

A level of service analysis was also conducted at the NJ Turnpike entrance along US 322. This intersection is unsignalized and the LOS criteria and associated delay are different than that used for a signalized intersection. At this intersection the AM peak experiences a delay of 49 seconds per vehicle, which corresponds to a LOS E. In the PM peak, the delay significantly increases to 162 seconds per vehicle for a LOS F.

PREVIOUS TRANSPORTATION STUDIES

US 322 Concept Development Study

In October 2002, the New Jersey Department of Transportation and Urban Engineers, Inc. completed the US 322 Concept Development Study Final Report: M.P. 2.25 – M.P. 15.4. The study limits for this effort are defined as US 322 from the Commodore Barry Bridge east to NJ 55. These limits are similar to the current effort, although DVRPC's study does not examine the main street region of Mullica Hill. As part of the NJDOT Concept Development Study, there was a public involvement and consensus building process. A working group was formed to develop consensus among local stakeholders and to formulate a list of improvements that are designed to address the safety concerns along US 322. Table 8 provides a brief description of the proposed improvements

TABLE 8: US 322 CONCEPT DEVELOPMENT STUDY PROPOSED IMPROVEMENTS

IMPROVEMENT	DESCRIPTION
1	Improve US 322/Kings Highway (CR 551) Intersection
	◆ Provide left turn treatments on both directions of US 322 ◆ Provide left turn treatments on both directions of CR 551 ◆ Provide two through-lanes per direction on CR 551 ◆ Address vertical curve on western approach of US 322
2	Improvements to Mullica Hill Corridor (US 322/45 to US 322/ NJ 45/ Mill Road Triangle)
	US 322 (Swedesboro Rd) & NJ 45 Intersection ◆ Provide separate left and right turn lanes on US 322 EB via minor widening and restriping ◆ Provide separate NJ 45 southbound right-turn lane via minor widening and restriping *US 322/NJ 45/Mill Road Triangle* ◆ Investigate signalizing some or all of the intersections of the triangle ◆ Provide left-turn lane from US 322 EB/NJ 45 SB to Mill Rd ◆ Provide left-turn lane from NJ 45 SB to Mullica Hill Rd ◆ Provide right-turn lane from US 322 westbound onto Mill Rd ◆ Address horizontal curve on US 322 east of Mill Rd/Mullica Hill intersection ◆ Investigate traffic calming /streetscaping / parking / bicycle / pedestrian issues on Main St
3	Improvements to Richwood Area (US 322/CR 609/CR 618 to US 322/CR 635/CR 667)
	◆ Investigate the redesign of US 322/CR 609/CR 618 intersection to provide left-turn lanes ◆ Investigate the redesign of US 322/CR 635/CR 667 intersection to provide left-turn lanes ◆ Provide minimal widening (approx 6') between the two intersections to allow for left-turn lanes ◆ Investigate the redesign of CR 618 to be one-way exiting intersection and corresponding construction of a connector between CR 618/CR 609 ◆ Extend lane drop west of CR 635/CR 667
4	Construct consistent 4-lane section from Commodore Barry Bridge to NJ Turnpike
	◆ Provide left-turn movements from US 322 onto CR 653/CR 538 in both directions ◆ Signalize the intersection of US 322/NJ Turnpike ◆ Provide eastbound right-turn lane and westbound left-turn lane at NJ Turnpike intersection ◆ Signalize the intersection of US 322/CR 607
5	Provide consistent shoulder from Mullica hill area to Richwood area
	◆ Realign US 322/CR 667 intersection
Various	Optimize signal timing and address signage issues
	◆ Optimize signal timing to improve northbound left-turn lane at CR 669 ◆ Reevaluate passing zone at CR 671 ◆ Optimize signal timing at CR 653/CR 538 and US 322 ◆ Optimize signal timing at CR 551 Kings Highway ◆ Install vehicle sensors to make NJ 45/US 322 intersection operate as fully actuated signal ◆ Investigate prohibiting left turns on Mill Road approach of the Mill Road/NJ 45 Intersection ◆ Add curve advisory signs and intersection warning on Mullica Hill Road eastbound toward Mill Road ◆ Investigate relocating the stop bar at CR 667 and US 322 to provide better visibility ◆ Revise signal timing at US 322/CR 635/CR 667 to provide lead left from US 322 onto Lambs Road

Source: US 322 Concept and Development Study: Final Report, October 2002, Urban Engineers

Street trees line portions of US 322.

within the study area. The locations of these proposed improvements are illustrated on Map 8.

NJDOT Study & Development Program (2006-2007)

NJDOT has established a highway project development process referred to as Study & Development that takes a selected highway deficiency through the steps of problem documentation, initial concept development (CD), feasibility assessment (FA) of alternative solutions, and preliminary design (PD). The work of study and development includes developing a preferred alternative, securing community support for the alternative, securing approval of environmental agencies for the alternative, and developing a specific scope of work for the project. The objective of the program is to make candidate projects ready for consideration in a future Transportation Improvement Program (TIP) update cycle for final design, right-of-way acquisition and construction.

> "There are no passenger rail stations within the defined study corridor. However, each of the buses passing through the corridor makes a connection with rail service..."

In the fiscal year 2006-07 Study & Development Program, several of the identified improvements from the US 322 Concept Development Study have been taken from a CD level of definition into more refined scoping and feasibility analysis. As mentioned in Table 8, the intersection improvements suggested for Route 322 at Kings Highway and in the Richwood area have been slated for the preliminary design phase with an anticipated schedule for 2006. The PD phase is the process of advancing preliminary engineering, obtaining formal community and environmental approvals. Improvements suggested for Route 45 Mullica Hill Center Business District have been scheduled for a feasibility analysis phase in 2006, followed by the PD phase in 2007. The FA phase determines whether the improvements documented in the Concept Development Study are feasible within any environmental and community constraints and issues. If constraints arise, then a range of design and alignment alternatives may be considered. Another project listed in the NJDOT 2006-07 Study & Development Program involves the rehabilitation or replacement the Raccoon Creek Bridge. In addition, the Mullica Hill Pond Dam spillway may require redesign. This project has an anticipated schedule for PD phase in 2006.

PUBLIC TRANSPORTATION SERVICE

Bus Service

New Jersey Transit buses are the major mode of public transportation in the US 322 corridor. The study area is served to support the level of development density. The rural and suburban nature of the land use development within the municipalities typically does not lend itself to traditional mass transportation services. The scheduling and routing of NJ Transit bus services in the study area are designed to meet levels of passenger demand and primarily serve higher density

TABLE 9: WEEKDAY BUS SERVICE ALONG US 322 STUDY AREA

BUS ROUTE	HOURS OF OPERATION	DAILY TRIPS	AM PEAK TRIPS (6AM-9AM)	PM PEAK TRIPS (4PM-7PM)	TOTAL RIDERSHIP
401	5:19 AM -11:09 PM	25	4	5	622
402	4:42 AM -12:22 AM	22	6	5	671
410	4:52 AM -12:39 AM	34	7	7	1127

Source: New Jersey Transit, Median Ridership Report, March 2005; NJ Transit Schedules, June 2005

"traditional" peak direction travel (which in this case is away from the study area) toward Camden and Philadelphia during the morning peak and in the reverse direction for the afternoon peak period.

There are three NJ Transit bus routes that pass through the study area: routes 401, 402 and 410. Map 8 illustrates each of the bus routes as they traverse through the study area. All of the routes travel in a north-south direction through different sections of the study area. There is no direct NJ Transit service along US 322. Table 9 provides a statistical summary of the bus routes with intersecting service in the study area.

Philadelphia and Camden are the primary origins for these bus services, with their destinations outside the study area in suburban south New Jersey. Each of these routes travels into Woodbury, where at that point they operate on the same route between Woodbury and Philadelphia. The routes are staggered to create the combined service headway on this portion of the route. The result is that none of the buses arrive at Woodbury at the same time, which makes transfers difficult and reduces the chances of effectively transferring within the system in order to travel within New Jersey.

The Route 401 bus serves areas between Philadelphia and Salem and runs the entire length of Kings Highway within the study area traveling through Woolwich and Swedesboro. There are 25 total weekday trips for this bus route. Inbound to Philadelphia during the AM peak (6 AM to 9 AM), there are three trips with headways all under an hour and one under 30 minutes. From Philadelphia to Salem, NJ Transit operates two trips in the AM peak. Both are on headways of over 60 minutes. In the PM peak period from 4 PM to 7 PM, there are three trips running from Philadelphia to Salem on varying headways of at least 30 minutes. In the reverse direction from Salem to Philadelphia, there are two trips with over one-hour headways. The total weekday ridership for this route is 622 riders. There is limited Saturday service with headways of about two hours, and minimal Sunday service with only one trip in each direction in both the morning and afternoon.

The Route 402 bus runs from Philadelphia to Pennsville, utilizing US 130 in the western portion of the study area in Logan Township. This route operates 22 weekday trips. In the AM peak period from Pennsville to Philadelphia, NJ Transit operates three trips, which operate on headways of greater than 60 minutes. In the reverse direction from Philadelphia to Pennsville, NJ Transit operates three trips. Each runs on headways of greater than 60 minutes. In the PM peak, there is only one trip that operates inbound to Philadelphia, while there are four trips that terminate in Pennsville. Headways in the PM peak vary among the four trips from 30 to over 60 minutes. The total weekday ridership for this route is 671 riders. Weekend service is very limited with only four trips in each direction on Saturday and two trips by direction on Sunday

The Route 402 bus serves Pureland Industrial Complex, a major employment center. The complex is located to the south of the study area, but within Logan Township. The buses turn off US 130 and traverse the business park on High Hill Road and Center Square Road.

The Route 410 bus service operates between Philadelphia and Bridgeton. This route is in the eastern portion of the study area and runs along NJ 45 and into Mullica Hill in Harrison Township. The route operates 34 weekday trips. There are 18 weekday inbound trips toward Philadelphia with 5 of those occurring during the morning peak period between 6 AM and 9 AM. Peak-hour headways are approximately 30 minutes. The reverse commute contains two peak period trips with headways of approximately 40 minutes. During the 4 PM to 7 PM afternoon peak period there are four outbound trips to Bridgeton with headways of about 20 to 40 minutes. The PM peak period reverse commute to Philadelphia contains two peak period trips with headways of approximately 50-70 minutes. Limited Saturday and Sunday service is provided with headways of approximately one hour. The total weekday ridership for this route is 1,127 riders.

Pureland Industrial Complex Shuttle Service

Just south of the study area limits, the Pureland Industrial Complex is a major employment center that is served by a shuttle service. As part of the Job Access Reverse Commute (JARC) program, the South Jersey Transportation Authority operates the Pureland Industrial Complex Shuttle. The service runs from the Walter Rand Transportation Center in Camden through Westville and Woodbury to the Pureland

Industrial Park in Logan Township. The service on the shuttle corresponds with the major shifts at the Pureland Industrial Complex, and provides in-bound and out-bound service to correspond with shift times. The service is free and the hours of operation are: 6:45 a.m. to 7:16 a.m. and 4 p.m. to 4:52 p.m.

Paratransit

In addition to NJ Transit buses that serve the study area, the Gloucester County Division of Transportation Services (DTS) provides additional services. The DTS provides fare-free, no emergency, curb-to-curb services to eligible county residents. Eligible residents may be senior citizens (60 years or older), veterans, permanently or temporarily disabled residents and Medicaid-eligible residents. Services are also provided to patients in need of dialysis, radiation and/or chemotherapy, or therapy (physical/occupational) treatments. The service area is countywide and may operate within two miles outside the county.

> "The placement of curb cuts can have significant impacts on the safety and quality of life of the surrounding neighborhood... slowing traffic and increasing the potential for accidents."

Rail Transit Service

There are no passenger rail stations within the defined study corridor. However, each of the buses passing through the corridor makes a connection with rail service at the Walter Rand Transportation Center in Camden. Here there is service for both the PATCO High Speed Line operating between Lindenwold, NJ, and Philadelphia, and NJ Transit's River LINE that operates between Camden and Trenton, NJ. Each of the bus routes also provides direct access to Center City Philadelphia where there is access to the Southeastern Pennsylvania Transportation Authority's (SEPTA) Market Frankford line, Broad Street line, and regional rail system.

Currently, there is an ongoing effort sponsored by the Delaware River Port Authority (DRPA) and PATCO that is assessing the need and potential for expanded rapid passenger transit service in a congested automobile corridor that extends from Southern New Jersey into the City of Philadelphia. The Southern New Jersey to Philadelphia Transit Study represents the initial phase of the planning development process for major transit investments that intend to seek federal funds for design and construction. The study has initially identified three preliminary alternative routes for further analysis with each route operating a PATCO-style service that may be grade separated. The studied alignments were: Camden to Williamstown via NJ 42, Camden to Glassboro/Millville via NJ 55, and Camden to Glassboro/Millville via existing railroad right-of-way. This service could attract riders from the study area.

Curb Cut Inventory

Access Management is one of many strategies that a municipality can use to improve the function of its roadways. The methods employed in access management seek to optimize and maintain the existing transportation system while preparing for its future growth. Access management is a relatively low-cost strategy to reduce congestion and increase both the efficiency and safety of a roadway by reducing through travel interruptions and making vehicle entrances and exits to/from intersecting highways and driveways as controlled as possible. Since this corridor is currently attracting new development, appropriate access management techniques could be a mix between retrofit

A majority of the curb cuts along US 322 are for commercial establishments or residences.

strategies and policies to guide future development along US 322. The placement of curb cuts can have significant impacts on the safety and quality of life of the surrounding neighborhood. The more curb cuts there are, the more turning movements may occur, slowing traffic and increasing the potential for accidents.

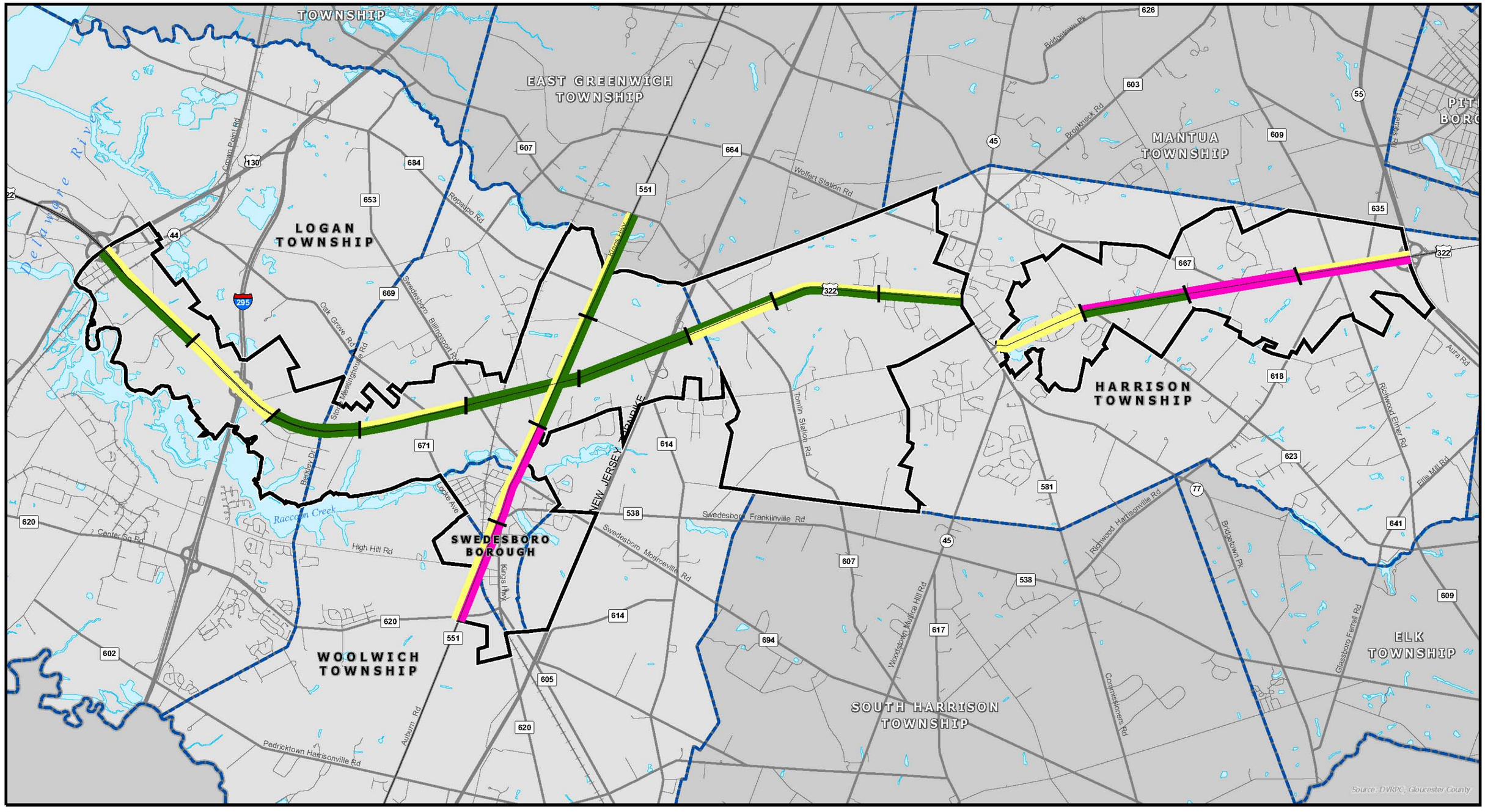
As a precursor to Phase Two study recommendations for access management strategies or policies to guide future development, a visual inspection of the curb cut inventory of US 322 and Kings Highway (CR 511) was conducted. For purposes of this study, a curb cut is an access point that can be used by a motor vehicle to enter or exit onto the roadway. Typical curb cuts are residential driveways or entrances to a parking lot. Field views also noted a number of locations where there are entrances into agricultural fields and farmlands and these were also counted as curb cuts. Along US 322 there are also sections of the road were there is a median. For the purposes of this inventory, any breaks in the median to allow for left turns and U-turns was also considered a curb cut.

For both US 322 and Kings Highway, the roadway was divided into approximately one-mile segments. For each segment, an inventory of curb cuts was taken for each side of the roadway (US 322: North/South; CR 551: East/West). US 322 is divided into 26 segments and CR 551 is divided into 8. Both Map 10 and Table 10 provide a detailed account of the curb cut inventory for the corridor. Overall, there does not appear to be a significant problem of excessive curb cuts

TABLE 10: CURB CUT INVENTORY OF US 322 & KINGS HIGHWAY (CR 551)

Segment	General Limits	Mile Post	Side of Street	Driveways / Access Points	Roads	Median Breaks	Total
US 322	US 130 to East of Bridgeport Rd.	2.18 to 3.18	North	11	1		12
			South	4	2		6
US 322	East of Bridgeport Rd. to East of I-295	3.18 to 4.18	North	7	3	3	13
			South	6	2	3	11
US 322	East of I-295 to East of CR 669	4.18 to 5.18	North	8	1		9
			South	3	1		4
US 322	East of CR 669 to West of CR 653	5.18 to 6.18	North	16	1		17
			South	7	1		8
US 322	West of CR 653 to East of CR 551	6.18 to 7.18	North	7	3		10
			South	3	3		6
US 322	East of CR 551 to East of NJ Turnpike Bridge	7.18 to 8.18	North	8	1		9
			South	5	1		6
US 322	East of NJ Turnpike Bridge to East of Union Rd.	8.18 to 9.18	North	7	2		9
			South	15	1		16
US 322	East of Union Rd. to West of Cider Press Dr.	9.18 to 10.18	North	10	3		13
			South	8	1		9
US 322	West of Cider Press Dr. to NJ 45 (Mullica Hill)	10.18 to 10.82	North	15	0		15
			South	5	1		6
US 322	Main St. (Mullica Hill) to West of CR 623	11.21 to 12.21	North	8	3		11
			South	13	4		17
US 322	West of CR 623 to East of Sherwin Rd.	12.21 to 13.21	North	19	3		22
			South	6	2		8
US 322	East of Sherwin Rd. to East of Heritage Station Farm market	13.21 to 14.21	North	22	2		24
			South	23	1		24
US 322	East of Heritage Station Farm market to NJ 55	14.21 to 15.22	North	12	4		16
			South	26	4		30
CR 551	Center Square Rd. to Grant St.	14.72 to 15.70	East	17	4		21
			West	13	4		17
CR 551	Grant St. to North of Kelly Rd.	15.70 to 16.7	East	20	4		24
			West	14	4		18
CR 551	North of Kelly Rd. to Pancoast Rd.	16.7 to 17.67	East	5	1		6
			West	10	1		11
CR 551	Pancoast Rd. to Tomlin Station Rd.	17.67 to 18.69	East	5	1		6
			West	11	1		12

Source: DVRPC, 2006



0 1 2
Miles

DELAWARE VALLEY
REGIONAL PLANNING COMMISSION
JANUARY 2006

Curb Cuts

- 0-10
- 11-20
- 21+

- Study Area
- Study MCD
- Municipality

Map 10: Curb Cut Inventory

along both US 322 and Kings Highway. Through the entire study area, the average number of curb cuts per mile is 13. Most of the mile segments either fall in a range of 0-10 or 11-20 curb cuts per mile. In Woolwich and Logan Township along US 322, there are no segments that have greater than 17 curb cuts per mile. In fact, over half of the segments have fewer than 10 per mile.

On US 322, east of Mullica Hill in Harrison Township, the number of access points per mile tends to increase. Many segments have more than 10 curb cuts per mile. The two segments on US 322 from Sherwin Road to NJ 55 have three out of four sections that contain more than 20 curb cuts per mile. As noted in previous sections and the following crash analysis, there is significant congestion with traffic volumes and crashes. The larger number of access points may be a contributing factor. Along Kings Highway (CR 551), north of US 322 there are fewer access points per mile than south of US 322. The curb cuts are heaviest in the downtown area of Swedesboro. This is no surprise since the core area of Swedesboro is denser and has more residential and commercial properties fronting the roadway. In Swedesboro, from Center Square Road to north of Kelly Road, there are two segments with over 20 curb cuts per mile.

Crash Analysis

A crash analysis was conducted along the US 322 corridor. This analysis utilizes data collected from the New Jersey Department of Transportation Bureau of Safety Program's Crash Records Database. The data set used for this report focuses on US 322 within the study limits for the years 2002 through 2004.

During 2002-2004, there were a reported 422 crashes along US 322. Of these crashes, 73.2 percent (309) involved property damage only, 26.8 percent (113) were injury accidents, and there were zero fatalities. For a more detailed look at the crashes, data was compiled and examined for US 322 in two separate segments: east and west of Mullica Hill. Table 11 provides a detailed account of the crash summary for the corridor and each section.

The first section is west of Mullica Hill from US 130 in Logan Township to NJ 45 in Harrison Township between milepost 2.1 to 10.82. In this segment, there were 223 accidents during the three-year period of 2002 to 2004. Regarding severity, there were zero fatalities, 61 injuries, and 162 crashes had property damage only.

According to the New Jersey Department of Transportation, rear end and sideswipe collisions involve traffic moving in the same direction. Angle crashes involve angular traffic (e.g. north and west), and left turn and head-on events involve opposing traffic. Rear end collisions, the highest percentage in the western segment, account for 36.3 percent of the total. Congestion may likely be a contributing factor for rear-end crashes. In addition, the intersections in this section do not contain dedicated left turn lanes where queuing may occur and contribute to this type of crash.

Fixed object crashes accounted for 22.4 percent of the total accidents. This section of US 322 is more rural and open, so vehicles that go off the road may hit trees, poles or signage. The rural nature of this section may also contribute to crashes involving animals, which total 7.2 percent of the total crashes. Angle crashes accounted for 13 percent of the total, while sideswipe accidents accounted for 7.6 percent. A lack of dedicated left turn lanes may contribute to sideswipe accidents due to weaving between lanes in an attempt to avoid vehicles queuing to turn left. Other types of crashes that occurred are classified as left turn accidents, head-on and overturned vehicles.

NJDOT considers an accident to be "at intersection" when it occurs 30 feet or less from the center of the intersection. Crashes outside of this area are considered "between intersections." In the western portion of US 322, "at intersection" crashes account for 35.4 percent of the total, while crashes "between intersections" account for the remaining 64.6 percent. Concerning lighting and surface condition of the roadway, most of the accidents occurred during daylight hours (73.1 percent) under dry conditions (67.6 percent). This suggests that other contributing factors may be more significant, such as road geometry, sight distance, or driver behavior, etc.

The second segment analyzed is east of Mullica Hill in Harrison Township. Crash data was collected from Main Street at US 322 milepost 11.18 to NJ 55 at 15.22. During

2002 through 2004, there were 199 crashes along this four-mile stretch of US 322. Regarding severity, there were 147 property-damage-only crashes, 52 injury crashes, and zero fatalities. In this eastern segment, the most common collision type is rear end (51.3 percent). Recurring peak period congestion may be a contributing factor to the higher percentage of rear-end collisions. Frequent stopping and starting combined with multiple access points along the

TABLE 11: US 322 CORRIDOR CRASH SUMMARY (2002-2004)

	US 130 to NJ 45 Milepost: 2.1 - 10.82		Main St (Mullica Hill) to NJ 55 Milepost: 11.18 - 15.22		Total Study Area		Statewide 2004	
	Count	% of Total	Count	% of Total	Count	% of Total	Count	% of Total
Crashes	223		199		422		68,049	
SEVERITY								
Fatal	0	0.0%	0	0.0%	0	0.0%	209	0.3%
Injury	61	27.4%	52	26.1%	113	26.8%	20,445	30.0%
Property	162	72.6%	147	73.9%	309	73.2%	47,395	69.6%
ACCIDENT TYPE								
Same Direction - Rear End	81	36.3%	102	51.3%	183	43.4%	30,840	45.32%
Same Direction - Sideswipe	17	7.6%	13	6.5%	30	7.1%	11,197	16.45%
Angle	29	13.0%	30	15.1%	59	14.0%	8,432	12.39%
Head-On	10	4.5%	5	2.5%	15	3.6%	1,018	1.50%
Left Turn	8	3.6%	11	5.5%	19	4.5%	2,604	3.83%
Struck Parked Vehicle	1	0.4%	1	0.5%	2	0.5%	1,012	1.49%
Other	6	2.7%	5	2.5%	11	2.6%	2,218	3.26%
Overturned	5	2.2%	0	0.0%	5	1.2%	261	0.38%
Pedestrian	0	0.0%	0	0.0%	0	0.0%	505	0.74%
Fixed Object	50	22.4%	26	13.1%	76	18.0%	7,740	11.37%
Animal	16	7.2%	5	2.5%	21	5.0%	1,875	2.76%
Pedacycle	0	0.0%	1	0.5%	1	0.2%	347	0.51%
INTERSECTION								
Not at Intersection	144	64.6%	92	46.2%	236	55.9%	43,140	63.40%
At Intersection	79	35.4%	107	53.8%	186	44.1%	24,909	36.60%
LIGHT CONDITIONS								
Daylight	163	73.1%	153	76.9%	316	74.9%	47,880	70.36%
Night, Dawn or Dusk	60	26.9%	46	23.1%	106	25.1%	19,924	29.28%
Other or Unknown	0	0.0%	0	0.0%	0	0.0%	245	0.36%
SURFACE CONDITIONS								
Dry	151	67.7%	135	67.8%	286	67.8%	50,316	73.94%
Wet	57	25.6%	61	30.7%	118	28.0%	15,266	22.43%
Snowy or Icy	15	6.7%	3	1.5%	18	4.3%	2,211	3.25%
Other or Unknown	0	0.0%	0	0.0%	0	0.0%	256	0.38%

Source: NJDOT, Bureau of Safety Programs, Crash Records Database, 2002-2004
NJDOT, Bureau of Safety Programs, At / Between Intersections Accident Summary for State System Roads, December 20, 2005

roadway creates an environment that is conducive to rear-end crashes. Angle accidents account for 15.1 percent of the total crashes, while head-on, left turn and sideswipe collisions combined account for 14.5 percent of the crashes. Over half of the crashes (107) occurred at intersections, with the balance occurring within the mid-block (92 crashes). Similar to the other section of US 322, most of the accidents occurred during daylight hours (76.9 percent) under dry conditions (67.8 percent).

Comparison to Statewide Percentage

To take a closer examination of the compiled 2002 through 2004 crash data, the summary data for both the eastern and western segments of US 322 are compared to the 2004 "At/Between Intersections Accident Summary for State System Roads" published by NJDOT. This summary excludes toll roads and interstate. In 2004, there were 68,049 crashes on the state system. In the western portion of US 322, the 22.4 percent of fixed object crashes exceeds the statewide percentage of 11.4 percent. This segment is very rural in character. There the roadway is generally flat and straight with limited median openings and guardrails preventing vehicles from exiting the roadway into various fixed objects.

The eastern portion of US 322 exceeds the statewide percentages in several collision types. Same direction rear end crashes are the most common crash, which represents 51.3 percent of the total crashes for this segment. This is generally higher when compared to the statewide percentage of 45.3 percent. Angle, left turn and fixed objects crashes also slightly exceed the statewide percentages for each category by 3 percent.

This eastern segment of US 322 also exceeds the statewide percentage when compared to the intersection location data. At-intersection crashes along the US 322 section of roadway accounted for 53.8 percent. This is significantly higher than the statewide percentage of 36.6 percent. Again, recurring peak period congestion may play a role in this inflated percentage.

Crash Cluster Locations

To identify possible problematic locations, the crash data was analyzed to determine where, if any, crash clusters exist within the corridor. To identify crash clusters, data was examined for, not only US 322, but for all of the major network facilities within the study area. An accident cluster is considered a section of roadway up to one-tenth-mile long where a set minimum number of crashes occur over a three-year period. Typically, New Jersey Department of Transportation's annual safety report uses a threshold of 24 crashes over a three-year period.

Using NJDOT's threshold, four crash cluster locations are identified within the study area. Three of the locations occurred along US 322 at Mill Road, Barnsboro-Richwood Road (CR 609)/Harrisonville Road (CR 618) and Lambs Road (CR 635)/Aura Road (CR 667). The other location occurs on NJ 45 where it meets US 322 at the northern end of Main Street in Mullica Hill. Map 11 illustrates the location of the crash clusters in the corridor, while Table 12 provides the crash data summary for each of the locations.

> "...DVRPC Congestion Management Process (CMP) advances the goals of the DVRPC Long Range Plan...It identifies congested corridors and strategies to mitigate the congestion."

At each of the three locations on US 322, rear end crashes are the prevalent collision type with the percentages exceeding the statewide percentage of 45.3 percent. At Mill Road and US 322, there were 29 crashes during this three-year period with 16 (55.2 percent) rear end crashes. Other common collisions at this location are angle (13.8 percent) and sideswipe (13.8 percent) crashes. At Barnesboro-Richwood Road (CR 609)/Harrisonville Road (CR 618) there were 33 reported crashes during 2002-2004, with rear end crashes accounting for 57.6 percent of the total. At Lambs Road (CR 635)/Aura Road (CR 667), there were 30 crashes, with rear end collisions accounting for 66.7 percent of the total. These two intersections are only three-tenths of a mile apart from each other. This section of US 322 is highly congested,

TABLE 12: CORRIDOR STUDY AREA CRASH CLUSTERS >= 15, (2002 TO 2004)

ROUTE	MILE POSTS	INTERSECTION	Total	Fatalities	Total Injured	Property Damage Only	Rear End	Angle	Fixed Object	Left Turn	Side-swipe	Other
US 322	2.12 to 2.22	US 130	15	0	4	11	6.7%	0.0%	73.3%	6.7%	6.7%	6.7%
US 322	4.80 to 4.90	Stone Meeting House Rd.(CR 669) / Berkley Dr.	17	0	1	16	23.5%	0.0%	41.2%	0.0%	23.5%	11.8%
US 322	6.21 to 6.31	Paulsboro-Swedesboro Rd. (CR 653)	19	0	6	13	57.9%	21.1%	10.5%	5.3%	5.3%	0.0%
US 322	6.98 to 7.08	Kings Highway (CR 551)	21	0	4	17	76.2%	9.5%	9.5%	4.8%	0.0%	0.0%
US 322	8.69 to 8.79	Tomlin Station Rd. (CR 607)	18	0	7	11	11.1%	50.0%	11.1%	11.1%	0.0%	16.7%
US 322	11.18 to 11.28	Main St. (Mullica Hill)	21	0	2	19	52.4%	38.1%	4.8%	4.8%	0.0%	0.0%
US 322	11.35 to 11.45	Mill Rd.	29	0	3	26	55.2%	13.8%	3.4%	6.9%	13.8%	6.9%
US 322	14.52 to 14.62	Barnsboro-Richwood Rd. (CR 609) / Harrisonville Rd. (CR 618)	33	0	14	19	57.6%	12.1%	12.1%	9.1%	0.0%	9.1%
US 322	14.76 to 14.86	Lambs Rd. (CR 635) / Aura Rd. (CR 667)	30	0	8	22	66.7%	6.7%	3.3%	6.7%	6.7%	10.0%
CR 551	15.69 to 15.79	Grant St. / Kings Highway (CR 605) / Lake St (CR 694)	18	0	2	16	55.6%	5.6%	22.2%	5.6%	5.6%	5.6%
CR 551	15.98 to 16.08	Glen Echo Ave. (CR 538)	16	0	3	13	43.8%	18.8%	0.0%	0.0%	6.3%	31.3%
NJ 45	18.16 to 18.26	US 322 / Main St (Mullica Hill)	26	0	6	20	46.2%	38.5%	0.0%	7.7%	0.0%	7.7%

Source: NJDOT, Bureau of Safety Programs, Crash Records Database, 2002-2004

especially during the peak hours, when there is bumper-to-bumper traffic between the two intersections.

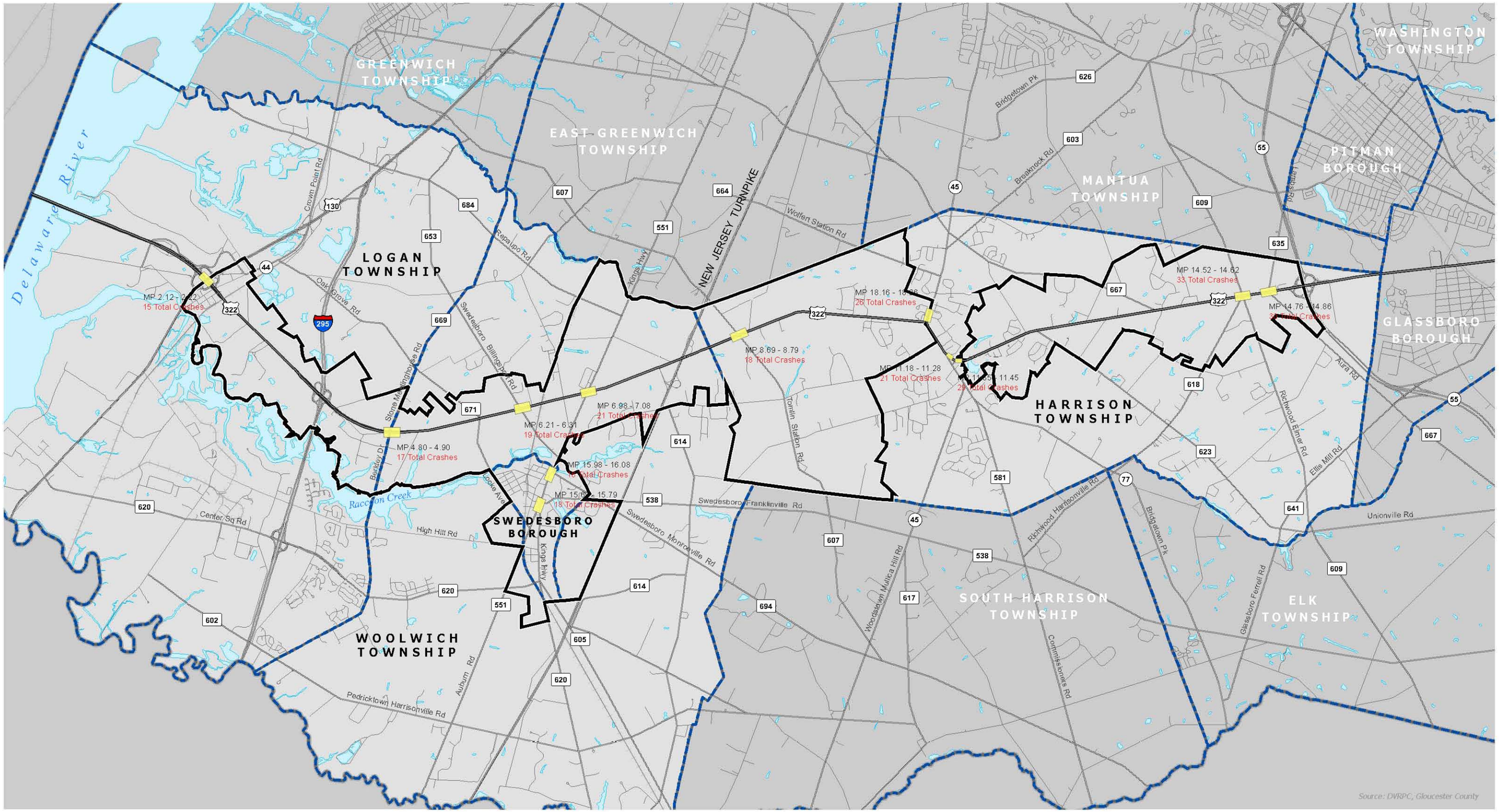
The other crash cluster location is at the intersection of NJ 45 and US 322, where there were 29 total crashes. Rear end (46.2 percent) and angle (38.5 percent) make up the majority of the crashes. Although the cluster analysis did not identify the eastbound approach of US 322 as a crash cluster, there were 21 crashes during this same period. Similar to the NJ 45 approach, rear end and angle crashes are prevalent and make up over 90 percent of the total crashes. This junction point of two regional roadways creates a great deal of congestion that is likely the contributing factor for the high percentage of rear-end crashes.

Each of these four crash cluster locations has also been acknowledged as problem areas in the NJDOT, US 322 Concept Development Study Final Report. That report suggests possible improvements to each location such as adding dedicated left turn lanes, optimizing signal timing, and possible roadway realignments where necessary.

To identify any additional problem areas within the study area, a similar cluster analysis was conducted with the threshold of crashes being reduced from 24 crashes to a minimum of 15 crashes. Since the evaluation looks at a 3-year period, the use of 15 crashes per location is an average of 5 per year. Using DVRPC's method, 16 additional clusters were identified within the US 322 study area during the analysis period. The amount of crashes within the clusters ranges from 15 to 21. Table 12 also provides the crash data summary for each of these locations. The crash clusters generally occur at major intersections along US 322 with rear end, angle and fixed object collisions having the most common occurrences. Only two cluster locations were identified off US 322. Both of these locations were identified in Swedesboro along Kings Highway (CR 551). The first is located at Glen Echo Road (CR 538) where a new traffic signal was installed recently and the other is located at the complicated intersection of Grant Street/ Kings Highway (CR 605)/ Lake Street (CR 694).

Congestion Management Process (CMP)

The 2005 DVRPC Congestion Management Process (CMP) advances the goals of the DVRPC Long Range Plan and strengthens the connection between the Plan and the Transportation Improvement Program. It identifies congested corridors and strategies to mitigate the congestion. Where additions to capacity are appropriate, the CMP includes supplemental strategies to reduce travel demand and improve operations.



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Crash Clusters *

Municipality

Study Area

Study MCD

* Source: NJ Department of Transportation

Map 11:
Crash Clusters (2002 - 2004)

Summary of Principles

The CMP is region-wide. The CMP will provide information on transportation system performance and identify strategies to minimize congestion and enhance the mobility of people and goods. Building new road capacity may be appropriate when other strategies do not reasonably reduce congestion. Regulations require that projects that add Single Occupancy Vehicles (SOV) capacity conform to the CMP to be eligible for federal funding. The CMP is regularly updated.

> "*Transit First*" Policies and Transit Oriented Design: ...give preferential treatment to transit, thereby making it more attractive than single occupant vehicle travel."

Subcorridor Types

CMP corridors were divided into subcorridors. These subcorridor types help with selecting strategies to reduce or manage congestion in congested corridors and were divided where similar strategies may be applicable. For example, an older dense grid is a subcorridor type different from a suburban network. Each subcorridor is assigned one primary type, with notes providing more detail about its other characteristics.

A wide range of techniques has been identified in the CMP as potential congestion management strategies. This range of CMP strategies serves two purposes. It is an educational resource for planners, engineers, and others thinking about ways to address congestion problems fully, for as long a term as possible, and within tight budgets. A set of basic congestion management strategies has been approved for all corridors. These strategies are:

- Safety Improvements and Programs
- Pedestrian Improvements
- Signage
- Basic Upgrades of Signals
- Intersection Improvements (of a limited scale)
- Access Management, both engineering and policy strategies
- Marketing (including outreach, education, and planning) of Transportation Demand Management (TMD) and Transit, including carpool, vanpool, and ridesharing programs, alternate work hours, guaranteed ride home, and TransitChek where applicable
- Review of Existing Land Use/Transportation Regulations
- Growth Management and Smart Growth

In addition, a set of Very Appropriate and Secondary Appropriate multimodal transportation strategies by subcorridor were developed to help minimize congestion. These strategies were chosen from a comprehensive list developed in the DVRPC CMP.

US 322 CMP Corridors

One of the corridors identified in the DVRPC CMP is the US 322 & Cross Keys Area. This large corridor extends along US 322 from the Commodore Barry Bridge eastward to NJ 73 in Berlin, NJ. It includes portions of Borough of Glassboro, Washington, Monroe and Gloucester townships. The corridor has been separated into various subcorridors. Within the limits of the US 322 study area, there are three CMP subcorridor types that have been identified. ***These subcorridors make up five separate sections of the study area. Map 12 identifies the subcorridors and their boundaries along the US 322 corridor. The following text describes the subcorridor limits and general characteristics.***

Subcorridor 1: Commodore Barry Bridge to Mullica Hill
Subcorridor 4: Mullica Hill to Richwood
CMP Type: Lightly Developed
Description: Through-routes that form the more open, rural or semi-suburban stretches between centers. In some cases they are congested at major intersections, but also they connect congested subcorridors.

Both subcorridor 1 and 4 have been classified as lightly developed and are very similar in nature. Subcorridor 1 includes the western portion of the US 322 Study area through Logan, Woolwich and Harrison townships. Within Logan Township, the lane configuration of US 322 varies slightly along this span of this subcorridor. The western-most mile is a six-lane cross section with a protected median where

it passes from the Commodore Barry Bridge to the US 130 interchange, after which it narrows down to four lanes with a grass median near the I-295 interchange. The land use is generally agricultural in nature, with an infrequent mix of single-family housing and commercial properties. The largest commercial activity occurs within the Commodore 295 Business Center located at Berkley Drive/Stone Meeting House Road (CR 669). Although there is no direct NJ Transit service along US 322, the Route 402 bus along US 130 provides transit service in this section of the subcorridor. As US 322 continues east into Woolwich Township and Harrison Township, the travel lanes reduce from four to two. There is a direct interconnect with the NJ Turnpike. Signalized intersections in this segment are Paulsboro-Swedesboro Road (CR 653), Kings Highway (CR 551) and NJ 45. Two NJ Transit Routes serve this subcorridor. The Route 401 provides public transportation as it traverses north-south along Kings Highway, while the Route 410 bus serves the eastern portion along NJ 45 in Mullica Hill. The land use in this segment is also dominated by agricultural farmlands. There is a commercial area located at Paulsboro-Swedesboro Road (CR 653) in the Sandy Hill Business Center. The regional Kingsway High School draws its students from the towns of East Greenwich, Woolwich, South Harrison and Swedesboro. Within Harrison Township, the land use has both agriculture and single-family housing.

Sub corridor 4 is approximately a 1.5-mile stretch that extends eastward along US 322 from Mullica Hill to the Richwood section of Harrison Township. This section of US 322 is a two-lane road providing access to several local roads including Clems Run (CR 623) and Cedar Road (CR 667). There is no NJ Transit service in this subcorridor. The land use is a mix of agriculture and single-family residential.

Recurring peak period congestion is a common problem at many of the intersections in these two subcorridors along US 322. The primary need is to address mobility and safety issues while retaining quality of life for the local residents. Techniques identified in the CMP as potential congestion management strategies in both of these subcorridors are as follows:

Very Appropriate Strategies

- Access Management
- Bottleneck Improvements: Removal or correction of temporary lane reductions, substandard design elements, and other physical limitations that form a capacity constraint
- Park and Ride Lots
- Environmentally Friendly Transportation Policies: Strategies that seek to minimize the impacts of transportation on the natural environment. These may include preserving farmland, natural features and open spaces.
- Transit Services for Specific Populations

Secondary Appropriate Strategies

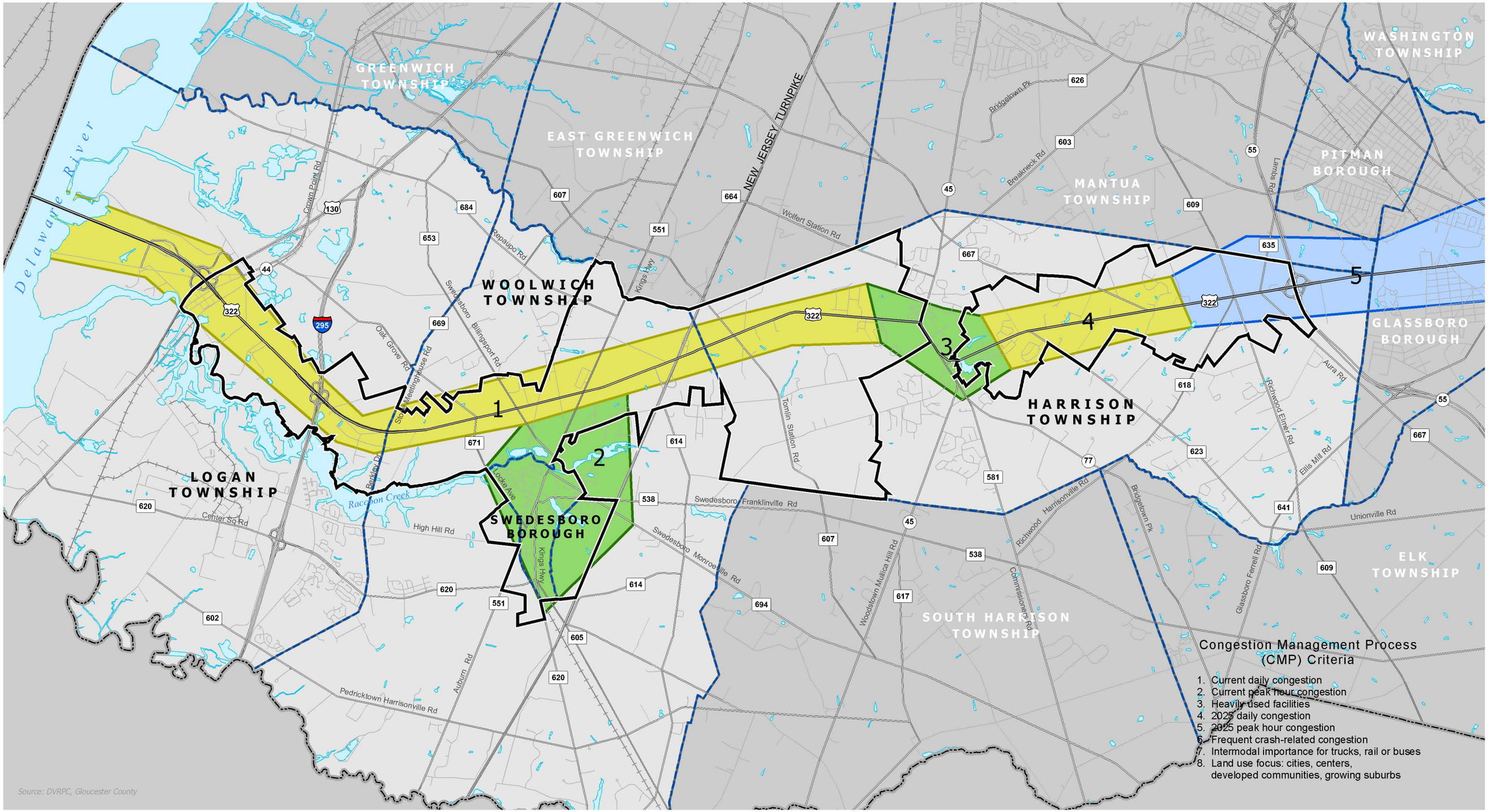
- Planning & Design (non-auto): Strategies that seek to make an overall area more conducive for consideration of any mode other than driving alone. This includes landscaping, streetscaping and development of regional bicycling and walking plans.
- County and Local Road Connectivity: Encourage local traffic to use the more local road network in order to maximize use of highways for through traffic. It can be encouraged through enhanced signage and additional connections within the local road network.

Economic Development Oriented Transportation Policies

Strategies that serve the goals of revitalization, renewal, and recentralization of the region. Such approaches are generally more efficient ways for a region to manage congestion while retaining or increasing employment than developing new rural areas.

- Demand Response Services: Transit service scheduled by appointment available to the general public using smaller vehicles.
- Flexible Routing/Route Deviation Service: Ability for buses to deviate a defined distance, such as a quarter mile from a fixed route.

Subcorridor 2: Swedesboro
Subcorridor 3: Mullica Hill
CMP Type: Main Street



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Subcorridor Types

- Lightly Developed
- Main Street
- Suburban Secondary

- Study Area
- Study MCD
- Municipality

Map 12: Congestion Management Process

Description: The main street of a community is also a highway serving a major role in carrying regional traffic. This type of Main Street, with few parallel-related transportation facilities, is a more common type of subcorridor for communities in the DVRPC than dense grid. In some cases, the area around the original stand-alone community is developing, resulting in growing traffic. A common transportation issue is maintaining a meaningful multimodal system and retaining community character.

Two Main Street subcorridors have been identified along the US 322 corridor. One is located just south of US 322 and is centralized around the Borough of Swedesboro and focuses along Kings Highway (CR 551). The other is located along Main Street (US 322/NJ 45) in historic Mullica Hill in Harrison Township.

> "Throughout the corridor, any future improvement should consider incorporating bicycle and pedestrian safety needs...and new construction projects to provide a cost-efficient way to increase bicycle use and mobility."

Subcorridor 2 in the Borough of Swedesboro has close ties with the increased growth and development of surrounding townships like Woolwich and Harrison. Kings Highway is a two-lane road that serves as an urban collector with direct access to US 322. Kings Highway also provides access to many local and county roads such as Glen Echo Road (CR 538), Locke Avenue (CR 671) and Center Square Road (CR 620). The land use in Swedesboro is a heavy mix of commercial properties along Kings Highway with a mix of residential. There is on-street parking and sidewalks along this subcorridor. There are multiple driveways and access points along the corridor. This subcorridor is served by NJ Transit bus route 401, which provides direct public transportation into the heart of Swedesboro.

As a small community centered on growing development areas, the congestion and access problems will continue to increase. Pedestrian amenities are more important issues that need to be addressed to help revitalize the Main Street charm of Swedesboro. The primary need is to address mobility and safety issues while retaining quality of life for the local residents.

Subcorridor 3 in Mullica Hill provides both a north-south access through Gloucester County with NJ 45 and an east-west access across the state with US 322. Main Street currently has a dual role by providing mobility to the region as well as local access to the village's commercial and historic district. These roles are conflicting in that mobility requires higher speeds for sustained travel while land access mandates lower speeds to accommodate frequent turning movement. ***Although, subcorridor 3 is located outside the study area for the current DVRPC effort, the list of strategies developed by the CMP for a Main Street community are the same for those that can be applied to Swedesboro. Techniques identified as potential congestion management strategies are as follows:***

Very Appropriate Strategies

- Improvements for Pedestrians and Bicyclists
- County and Local Road Connectivity; Short Connections
- Computerized Traffic Signals
- Parking Operations: Changes to parking intended to improve the operation of roadways, such as elimination of parking spaces near dangerous intersections, time of day limitations.
- *"Transit First"* Policies and Transit Oriented Design: Development, implementation and enforcement of policies, which give preferential treatment to transit, thereby making it more attractive than single occupant vehicle travel. This also includes TOD, pedestrian friendly, mixed-use forms of development focused around transit stations. This pedestrian-oriented design encourages residents and workers to rely on transit rather than the automobile.

Secondary Appropriate Strategies

- Bottleneck Improvements
- Planning and Design (nonmotorized): Strategies that seek

to make an area overall more conducive for consideration of any mode other than driving alone. This includes landscaping, streetscaping and development of regional bicycling and walking plans.
- Community Friendly Transportation Policies: Strategies that seek to enhance community and regional character, such as traffic-calming and context-sensitive design.
- Park and Ride Lots
- More Frequent or More Hours of Service for Transit
- Transit Services for Specific Populations

Subcorridor 5: NJ 55
CMP Type: Suburban Secondary Arterial
Description: Corridors connecting suburban development with major employment areas such as office parks and/or light industrial sites. They are not limited to minor arterials but often include them. These areas tend to be auto-dependent and have medium or low densities. Peak hour commuter demand is a significant issue.

This subcorridor is located in the eastern portion of the study area. Only a small part of the subcorridor actually falls within the study area. The remainder of the subcorridor extends eastward to Glassboro and Monroe Township. In this section, US 322 is a two-lane road that provides access to NJ 55 via an interchange. It also has connections with several county roads including Barnsboro-Richwood Road (CR 609), Harrisonville Road (CR 618), Lambs Road (CR 635), and Aura Road (CR 667). There is no NJ Transit service in this subcorridor.

The land use in this corridor is similar to the other subcorridors consisting of a mix of agriculture and single-family residential. However, this section has more curb cuts than other portions of US 322 within the study area. The majority of residential properties each have their own driveway access to US 322. There are commercial properties also located at the major intersections.

Recurring peak period congestion, high crash rates, and access problems plague this section. The primary need is to address mobility and safety issues while retaining quality of life for the local residents. Techniques identified in the CMP as potential congestion management strategies are as follows:

Very Appropriate Strategies
- Computerized Traffic Signals
- Bottleneck Improvements

Secondary Appropriate Strategies
- Signal Prioritization for Emergency Vehicles
- Channelization: Strategies used in optimizing the flow of traffic for making left or right turns usually using concrete islands.
- County and Local Road Connectivity; Short Connections
- Center Turn Lane
- Community-Friendly Transportation Planning
- Parking Management (such as transportation allowances)
- *Trip Reduction Ordinances:* The use of a municipality's regulatory authority to limit trip generation from development sites. They usually cover an entire local political subdivision rather than just an individual project. They spread the burden more equitably between existing and future development and they may be less vulnerable to legal challenges than conditions imposed on development approvals.
- Bicycle or Pedestrian Improvements
- Services for Specific Populations
- Demand Responsive Transit
- Arterial or Collector Road

Bicycle and Pedestrian Amenities
Pedestrian and Bicycle trips can be an effective method of reducing vehicle trips, especially for short-distance trips. Most bike trips are less than five miles and most pedestrian trips are less than one-half mile. In order to integrate pedestrians and bicyclists into the existing transportation systems, the appropriate safe facilities—including sidewalks and bike lanes—should be provided. These are influenced by characteristics such as land use, population, and transportation patterns. A regional pedestrian/bicycle program should consist of an interconnected system of routes, lanes, paths, and greenways that provide recreational as well as alternative transportation opportunities.

However, along the US 322 Corridor, there are no existing pedestrian and bicycle routes and trails in the study area that can provide alternative transportation opportunities. Due to the nature of the corridor, there is less bus or rail

A majority of the US 322 corridor does not provide for pedestrians or bicyclists.

transportation that typically encourages pedestrian activity than in more urban settings. The US 322 facility itself is also incompatible with bicycle and pedestrian activity due to a very narrow shoulder. Typical shoulder widths along the corridor are only two to three feet. According to the AASHTO Guide for the Development of Bicycle Facilities, a lane width of five feet or greater is preferable where substantial truck traffic is present or where vehicle speeds exceed 40 mph. These conditions all occur along the US 322 corridor.

In 2004, NJDOT released Phase 2 of the Statewide Bicycle and Pedestrian Master Plan. The plan presents a vision of New Jersey as a place where people can choose to safely and conveniently bicycle and walk as alternatives to automotive use. The goal of Phase 2 is to provide clear guidance on the most efficient and effective use of federal, state and local resources to implement bicycle and pedestrian initiatives. These strategies prioritize and target resources for appropriate bicycle and pedestrian improvements to achieve the greatest results and benefits. According to the New Jersey Statewide Bicycle and Pedestrian Master Plan, there are no segments of US 322 within the study corridor that have been designated as high priority bicycle links. US 322 has generally classified as a medium or low priority.

The downtown area in Swedesboro has sidewalks and crosswalks at key intersections.

The study area is inconsistent in the amenities provided for pedestrian traffic. Most areas of US 322 do not have sidewalks. However, sidewalks along US 322 are available at the US 130 and I-295 overpasses where pedestrian activity is minimal. In other locations where they are available, they are narrow and poorly maintained. During several field observations, pedestrian activity was negligible except in the downtown areas of Swedesboro and Mullica Hill.

These downtown areas both have sidewalks and crosswalks at key intersections. The downtown areas also have a denser land use than the surrounding corridor. There are commercial districts with transit accessibility and bus stops that encourage pedestrian activity. In Swedesboro, there are many commercial properties that front Kings Highway. The borough recently received a fiscal year 2006 Transportation Enhancement grant from the NJDOT for $200,000 for the Swedesboro Pedestrian Transportation Enhancement Project. This is an effort to increase pedestrian safety and enhances the section of Kings Highway between Ashton and Franklin avenues. The project will install decorative streetlamps to create uniform lighting along the street. Improvements to sidewalks will also take place with upgrades to brick pavers and concrete driveways. Other improvements include new trash receptacles, planters, landscaping, benches and bicycle racks.

Throughout the corridor, any future improvement should consider incorporating bicycle and pedestrian safety needs. New bicycle facility improvements (shoulders, bike lanes) can be designed to supplement scheduled roadway widening, resurfacing and new construction projects to provide a cost-efficient way to increase bicycle use and mobility.❖

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Appendices: Introduction

METHODOLOGY

Purpose

As part of the Route 322 corridor study, DVRPC is conducting a zoning build-out analysis, which demonstrates the maximum population and employment levels that could possibly occur within the areas being analyzed, regardless of current population and employment, or current and future trends and market conditions. Maximum population and employment levels are derived from existing zoning classifications and standards. The build-out analysis is a quantitative process, requiring a large amount of data input. Often, some data is not made available, which results in assumptions regarding the manner in which the land will be developed. These assumptions are carefully documented in the build–out report.

Geographic Scope

The study area consists of all or part of the following municipalities in Gloucester County, New Jersey: Logan Township, Woolwich Township, Harrison Township, and Swedesboro Borough. Build-out analysis have been performed for the defined study area (seen in Map 1 of the report), as well as for each municipality in its entirety. Thus, Logan, Woolwich, and Harrison townships each have two separate build-out analysis – one for the entire township and one for the defined study area. The Borough of Swedesboro only requires one build-out analysis since the entire borough falls within the study area.

Methodology

Map Production

Esri's ArcView GIS is used to produce the maps and calculate the amount of developable land by zoning classification for the build-out analysis. Three layers of information are used. County digital tax parcel files for each municipality is used as the base layer. Standard land use categories are assigned as the first layer. The county provides the land use codes for each parcel in the study area municipalities. DVRPC assigns land use categories to any undefined parcels by linking the GIS key to blocks and lots in a county's tax assessment file, and converts property classifications to land use codes.

The zoning district boundaries, compiled from municipal zoning maps, are included in the second layer. The third layer consists of the 100-year flood plain zone, obtained from FEMA (the Federal Emergency Management Agency), and wetlands, based on digital data from the New Jersey Department of Environmental Protection. These two layers are merged to create one digital file that is used to clip out parcels containing environmental constraints.

Deriving the Total Acres Developable

The total acreage of developable land in study area municipalities is calculated by each community's zoning district. Vacant land, agricultural land and land deemed appropriate for redevelopment are considered developable in this analysis.

A mapped layer of 100-year flood plains and wetlands reveals land on which development is environmentally constrained. The acres of developable land affected by environmental constraints are then subtracted from the total developable acres. An additional 10 percent is subtracted from the resulting amount in residential zoning districts to account for streets and infrastructure, with the remainder equaling the net total acres developable by zoning district.

Calculating Total Dwelling Units and the Total Nonresidential Square Feet of Space Possible Under Existing Zoning

The particular zoning regulations per district are applied to the net total acres developable to yield total buildable dwelling units and total buildable nonresidential square footage for the subject municipalities.

ASSUMPTIONS

1. In Mixed-Use Districts, the greatest percentage of nonresidential uses and of higher density residential uses permitted per development is used.

Cluster development densities are not applied because tract sizes are often not obtainable in each district. Review of the municipal zoning ordinance should determine figures for the by-right densities and minimum lot sizes, cluster densities and minimum tract areas for residential zoning districts.

The achievable FAR (floor area ratio) is calculated for each study area municipality by using the following formula:

Impervious Coverage Ratio:

$$FAR = \frac{1}{\text{\# of Stories}} + \frac{400\ SF}{\text{Parking Ratio}}$$

Impervious Coverage Ratio: The maximum percentage of the site that may be covered by impervious surfaces (buildings, parking lots, driveways, etc.), as stated in the zoning ordinance.

Number of Stories: Manufacturing and warehousing-type uses are assumed to be no more than one-story structures. Likewise, retail is assumed to consume one floor only. Generally, only offices are deemed likely to be built to more than one story, with the maximum number of floors permitted per the zoning ordinance.

400 Square Feet: A standard amount of impervious coverage per parking space, aisle and associated driveway space.

Parking Ratio: The ratio stated in the zoning ordinance per gross square feet (SF) of building space. For example, a common parking ratio requirement for office use is 1 space per 200 SF of building space. The parking ratio in this case would be 200, meaning 200 SF per 1 parking space.

The achievable FARs for the nonresidential zoning districts in each municipality should reflect the standards in the pertinent municipal zoning ordinance.

Small, vacant land-locked parcels (parcels without street access) are not considered as having development potential.

Developable land with environmental constraints, such as 100-year flood plains and wetlands, is removed from the total acres that are developable for both residential and nonresidential zoning districts, even though those lands could be included as part of a whole parcel for density determination.

Ten percent (10%) of land area is deducted from the total acres developable in residential zoning districts to account for streets and other infrastructure requirements. Developable land that may be developed in the near future (indicated by building proposals that are expected to be approved shortly, approved building proposals, and land under construction) is subtracted from the net total acres developable prior to the application of the zoning regulations. Data on dwelling units and nonresidential square footage for these areas is added to the buildable dwelling units and buildable square footage determined after the zoning regulations are applied.

Land with previously subdivided vacant parcels in residential zoning districts is subtracted from the net total acres developable prior to the application of the zoning regulations. In most cases, one dwelling unit per parcel is added to the buildable dwelling units found after the zoning regulations are applied.

Employment generation is based on standards from The Fiscal Impact Handbook, Robert W. Burchell and David Listokin, Rutgers University Center for Urban Policy Research (1979, 1994). The following standards are applied to each districts' most prominent use:

Shopping Centers: .....1 employee per 500 SF GLA
Offices:.....1 employee per 250 SF NLA
Industrial Plants:.....1 employee per 300 SF NLA
Warehouses:.....1 employee per 750 SF GLA

SF = Square Feet
GLA = Gross Leasable Area
NLA = Net Leasable Area

The total buildable square footage is reduced by 10 percent to account for NLA, where applicable.❖

US Route 322 Municipal Zoning Build-Out
Summary of Findings

Municipality	2000 Population	2000 Occupied Housing Units	Potential New Housing Units from Build-out Analysis	Potential Additional Persons	Potential Total Persons	Compared to DVRPC 2030 Population Forecast
Harrison Township	8,788	2,848	6,494	19,690	28,478	17,485
Logan Township	6,032	2,001	1,656	4,905	10,937	7,320
Swedesboro Borough	2,055	771	434	1,137	3,192	2,240
Woolwich Township	3,032	959	17,200	53,423	56,455	16,510
Corridor Municipalities	19,907	6,579	25,784	79,155	99,062	43,555

Municipality	2000 Employment		Potential New Nonresidential SF from buildout analysis	Potential Additional Employees	Potential Total Employees	Compared to DVRPC 2030 Employment Forecast
Harrison Township	2,285		11,578,020	36,954	39,239	5,167
Logan Township	6,176		26,599,101	12,274	18,450	10,965
Swedesboro Borough	2,356		155,830	354	2,710	2,635
Woolwich Township	907		11,196,767	29,158	30,065	4,457
Corridor Municipalities	11,724		49,529,718	78,740	90,464	23,224

Notes: Potential new housing units and potential new nonresidential square feet are derived from the zoning build-out analysis. Potential additional population is based on an estimate of future household size. Potential additional employees is based on standards from *The Fiscal Impact Handbook* (Burchell and Listokin, 1979).

Source: DVRPC, June 2006

LOGAN TOWNSHIP ASSUMPTIONS

Heavy Industrial (HI): Assumes a single story, with parking requirements of one space per 1000 square feet, as specified in the Logan Township Development Ordinance. ("development ordinance") for manufacturing use, and 70% impervious coverage generates an achievable FAR of .50. However, the maximum FAR allowed is .20, which is the FAR used in the build-out table.

Light Industrial (LI): Allows manufacturing, warehousing and office uses. "Regular" LI uses have only a 30% impervious coverage maximum, producing a vastly different achievable FAR than "planned" LI zoning which allows 70% impervious coverage. Two stories were assumed for Light Industrial and one story for Planned Light Industrial, yielding .4 and .5 FARs. For the purposes of the buildout analysis, buildable land in this category is distributed evenly between the two zoning subtypes.

Interchange Commercial (IC): Specifications for corporate offices are used, as this is the densest use allowed by right, with a maximum height of four stories. Parking requirements of one space per 250 square feet (4 spaces per 1000 square feet) derive from the development ordinance specification for general office use.

Marine Commercial – Reserve (MC-R): The uses allowed by right in this district – boat building, boat storage and repair, and marinas – have more in common with industrial/manufacturing uses than retail. Thus, parking requirements are reduced to 1 space per 1000 square feet.

Planned Professional Campus (PPC): The zoning ordinance specifies a maximum number of stories of "2.5" or 35 feet. The maximum number of stories is adjusted to 2.0, which is used to calculate achievable FAR. The parking ratio of 5 spaces per 1000 square feet is derived from the development ordinance specification for medical office use.

Regional Commercial (RC): Parking specifications of 4.5 spaces per 1000 square feet are derived from the development ordinance specifications for retail business.

Riverfront Industrial (RFI): Parking specifications of 1 space per 1000 square feet are derived from the development ordinance specifications for manufacturing.

Village Commercial (VC): Three different sub-districts exist within VC: VC, VC-Banks, and VC- Shopping Center, with slightly different specifications. Achievable FARs were calculated for the three uses, and found to be so similar that, for the sake of simplicity, all VC developable land was kept within the VC district, rather than distributing developable acres to the subgroups.

REDEV: There are a number of tax parcels included in a series of redevelopment plans for Logan Township. These redevelopment areas have their own zoning specifications separate from whichever district they lie within. There are three redevelopment zones designated in this analysis: 'A', 'B', and 'C'.

Redevelopment Plan A refers to the November 2004 Preliminary Investigation for Determination of an Area in Need of Redevelopment and Redevelopment Plan. A is subdivided into two separate zoning classifications depending on whether the development is single use/single parcel, or a planned development. The acreage in this zone is divided evenly between single use/single parcel and planned development.

Redevelopment Plan B refers to the January 2002 Redevelopment Area Study and Redevelopment Plan for U.S. Route 322 Stone Meeting House Road to Conrail Line. The B plans are further subdivided into three sections, because impervious coverage requirements differ depending on parcel size (2-4.99 acres; 5-9.99 acres; >10 acres), and so different Achievable FARs are possible. For the purposes of the buildout, developable land was distributed evenly into the three REDEV sub-categories.

Redevelopment Plan C refers to the January 2005 Preliminary Investigation for Determination of an Area in Need of Redevelopment and Redevelopment Plan. It consists of a single parcel, 14.76 acres in size. The plan specifies identical requirements as the B plan; however since the parcel is relatively small, it is assumed here that it will be developed

as a single parcel. Therefore it is assigned the requirements of parcels larger than 10 acres.

Impervious Coverage: The B and C plans specify maximum impervious coverage. The A plan does not, and is assigned values similar to the B plan, based on lot size requirements.

Maximum Height and number of stories: Assumptions on number of stories were based on permitted uses and assumptions that most office space would be built at the maximum height allowed, while most other uses would be built at one story. The exceptions are Village Commercial uses, which were expected to be two stories, as most structures within existing villages are 2 stories.

Parking Ratio: All REDEV zones are assigned parking ratios of 4.5 spaces per 1000 square feet of building space, (or 222 SF/space) as per the Logan Township Development Ordinance

Protected lands are parcels classified as 15C from 2004 tax assessment data provided by Gloucester County, plus permanently preserved farms provided by the Gloucester County Farmland Preservation Program.

Logan Township

Municipality-Wide Zoning Build-Out Analysis

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
		B=A-C-D						H=C-E-F-G	I=H*.1	J=H-I		L=J*K		N=L+M
Residential Zoning Districts	**Total Acres**	**Developed Acres**	**Gross Developable Land (Acres)**	**Water (Acres)**	**Protected Undevelopable Land (Acres)**	**Approved Development (Acres)**	**Environmentally Constrained Land (Acres)**	**Preliminary Calculated Developable Land (Acres**	**Less 10% for Streets and Infrastructure**	**Net Developable Land (Acres)**	**Permitted DU/Acre**	**Buildable Units**	**Plus Approved Development (Units)**	**Total Residential Buildout (Units)**
R-1 Residential/Single Family Cluster	588.7	85.2	495.6	7.9	1.1	0.0	159.6	335.0	33.5	301.5	1.5	452.2	0.0	452.2
R-2 Residential	2475.0	224.9	2157.7	92.4	37.5	0.0	1013.4	1106.8	110.7	996.1	0.5	498.1	0.0	498.1
R-5 Residential	1317.8	230.7	950.9	136.2	0.0	0.0	917.9	33.0	3.3	29.7	0.2	5.9	0.0	5.9
VR-A Village Residential A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	0.0	0.0	
VR-B Village Residential B	220.8	155.3	36.6	28.9	7.9	0.0	12.9	15.9	1.6	14.3	5.5	78.5	0.0	78.5
VR-C Village Residential C	959.6	532.2	329.3	98.1	20.1	63.5	94.7	151.0	15.1	135.9	4.0	543.7	78.0	621.7
Total	**5561.9**	**1591.8**	**3970.1**	**363.5**	**66.6**	**63.5**	**2198.4**	**1641.7**	**164.2**	**1477.5**		**1578.4**	**78.0**	**1656.4**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
		B=A-C-D						H=C-E-F-G	I=H*.1	J=H-I		L=J*K*43,560		N=L+M
Nonresidential Zoning Districts	**Total Acres**	**Developed Acres**	**Gross Developable Land (Acres)**	**Water (Acres)**	**Protected Undevelopable Land (Acres)**	**Approved Development (Acres)**	**Environmentally Constrained Land (Acres)**	**Preliminary Calculated Developable Land (Acres)**	**Less 10% for Streets and Infrastructure**	**Net Developable Land (Acres)**	**Achievable Floor/Area Ratio**	**Buildable Square Feet**	**Plus Approved Development (Sq. Ft.)**	**Total Nonresidential Buildout (Sq. Ft.)**
HI Heavy Industrial	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	
IC Interchange Commercial	375.6	152.0	223.2	0.4	2.0	56.2	64.3	100.7	10.1	90.6	0.4	1387169.4	34096.0	1421265.4
LI Light Industrial	2593.4	501.0	1761.1	331.3	95.7	0.0	1230.4	435.0	43.5	391.5	0.2	3654157.8	0.0	3654157.8
LI Light Industrial - Planned Industrial Development	2593.4	501.0	1761.1	331.3	95.7	0.0	1230.4	435.0	43.5	391.5	0.5	8526368.2	0.0	8526368.2
NC Neighborhood Commercial	15.8	16.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
MC-R Marine Commercial - Reserve	889.6	97.6	696.3	95.6	0.0	0.0	519.7	176.7	17.7	159.0	0.5	3463332.3	0.0	3463332.3
PPC Planned Professional Campus	9.2	9.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	121.4	0.0	121.4
RC Regional Commercial	232.7	103.8	128.8	0.0	0.0	0.0	95.9	32.9	3.3	29.7	0.3	345982.0	0.0	345982.0
RFI Riverfront Industrial	246.1	93.2	142.3	10.5	0.0	0.0	103.8	38.5	3.9	34.7	0.4	603766.7	0.0	603766.7
VC Village Commercial	97.2	25.0	55.2	17.0	0.0	0.0	34.6	20.7	2.1	18.6	0.3	264333.0	0.0	264333.0
Redevelopment Plan A (single use/single parcel)	957.5	45.0	731.7	180.9	92.2	0.0	410.4	229.1	22.9	206.2	0.2	1924775.0	0.0	1924775.0
Redevelopment Plan A (planned development)	957.5	45.0	731.7	180.9	92.2	0.0	410.4	229.1	22.9	206.2	0.2	2085172.9	0.0	2085172.9
Redevelopment Plan B (2 - 4.99 acres)	286.4	48.9	227.1	10.5	0.7	0.0	60.5	165.9	16.6	149.3	0.2	1277474.9	0.0	1277474.9
Redevelopment Plan B (5 - 9.99 acres)	286.4	48.9	227.1	10.5	0.7	0.0	60.5	165.9	16.6	149.3	0.2	1393609.0	0.0	1393609.0
Redevelopment Plan B (> 10 acres)	286.4	48.9	227.1	10.5	0.7	0.0	60.5	165.9	16.6	149.3	0.2	1509743.0	0.0	1509743.0
Redevelopment Plan C	14.8	0.1	14.7	0.0	0.0	0.0	0.5	14.2	1.4	12.8	0.2	128999.3	0.0	128999.3
Total	**9842.1**	**2914.7**	**6927.4**	**1179.3**	**379.7**	**56.2**	**4281.9**	**2209.6**	**221.0**	**1988.6**		**26565004.8**	**34096.0**	**26599100.8**

Total Residential and Nonresidential Acres	**15404.0**	**4506.5**	**10897.5**	**1542.8**	**446.3**	**119.7**	**6480.3**	**3851.2**	**385.1**	**3466.1**

Notes

1. Developed Acres = Total Acres - (Gross Developable Acres plus water)
2. Total Acres in this table may not exactly match Total Acres in the DVRPC land use database. This is due to the use of a different GIS map layer needed because of its divisions of the municipality by zone.
3. Approved Development Acres were adjusted to reflect Logan Township Planning Board subdivision list.

Logan Township

Study Area Zoning Build-Out Analysis

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
		B=A-C-D						H=C-E-F-G	I=H*.1	J=H-I		L=J*K		N=L+M
Residential Zoning Districts	**Total Acres**	**Developed Acres**	**Gross Developable Land (Acres)**	**Water (Acres)**	**Protected Undevelopable Land (Acres)**	**Approved Development (Acres)**	**Environmentally Constrained Land (Acres)**	**Preliminary Calculated Developable Land (Acres**	**Less 10% for Streets and Infrastructure**	**Net Developable Land (Acres)**	**Permitted DU/Acre**	**Buildable Units**	**Plus Approved Development (Units)**	**Total Residential Buildout (Units)**
R-1 Residential/Single Family Cluster	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	1.5	0.0	0.0	0.0
R-2 Residential	65.7	0.1	65.6	0.0	0.0	0.0	53.4	12.2	1.2	11.0	0.5	5.5	0.0	5.5
R-5 Residential	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.2	0.0	0.0	0.0
VR-A Village Residential A	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	5.5	0.0	0.0	0.0
VR-B Village Residential B	172.3	133.4	36.2	2.7	7.9	0.0	12.5	15.9	1.6	14.3	5.5	78.5	0.0	78.5
VR-C Village Residential C	1.2	0.0	1.2	0.0	0.4	0.0	0.8	0.0	0.0	0.0	4.0	0.0	0.0	0.0
Total	**239.1**	**133.5**	**103.0**	**2.7**	**8.3**	**0.0**	**66.6**	**28.1**	**2.8**	**25.3**		**84.0**	**0.0**	**84.0**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
		B=A-C-D						H=C-E-F-G	I=H*.1	J=H-I		L=J*K *43,560		N=L+M
Nonresidential Zoning Districts	**Total Acres**	**Developed Acres**	**Gross Developable Land (Acres)**	**Water (Acres)**	**Protected Undevelopable Land (Acres)**	**Approved Development (Acres)**	**Environmentally Constrained Land (Acres)**	**Preliminary Calculated Developable Land (Acres**	**Less 10% for Streets and Infrastructure**	**Net Developable Land (Acres)**	**Achievable Floor/Area Ratio**	**Buildable Square Feet**	**Plus Approved Development (Sq. Ft.)**	**Total Non-Residential Buildout (Sq. Ft.)**
HI Heavy Industrial	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.5	0.0	0.0	0.0
IC Interchange Commercial	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.4	0.0	0.0	0.0
LI Light Industrial	113.0	35.6	66.9	10.6	16.6	0.0	18.5	31.8	3.2	28.6	0.2	267389.6	0.0	267389.6
LI Light Industrial - Planned Industrial Development	113.0	35.6	66.9	10.6	16.6	0.0	18.5	31.8	3.2	28.6	0.5	623909.1	0.0	623909.1
MC Marine Commercial	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.3	0.0	0.0	0.0
MC-R Marine Commercial - Reserve	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.5	0.0	0.0	0.0
PPC Planned Professional Campus	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.2	0.0	0.0	0.0
RC Regional Commercial	122.2	9.8	108.1	4.2	0.0	0.0	75.6	32.5	3.3	29.3	0.3	341440.2	0.0	341440.2
RFI Riverfront Industrial	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.5	0.0	0.0	0.0
VC Village Commercial	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.3	0.0	0.0	0.0
VC-Banks Village Commercial - Banks	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.3	0.0	0.0	0.0
Redevelopment Plan A (single use/single parcel)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.2	0.0	0.0	0.0
Redevelopment Plan A (planned development)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.2	0.0	0.0	0.0
Redevelopment Plan B (2 - 4.99 acres)	281.1	48.9	227.1	5.2	0.7	0.0	60.5	165.9	16.6	149.3	0.2	1277480.3	0.0	1277480.3
Redevelopment Plan B (5 - 9.99 acres)	281.1	48.9	227.1	5.2	0.7	0.0	60.5	165.9	16.6	149.3	0.2	1393614.8	0.0	1393614.8
Redevelopment Plan B (> 10 acres)	281.1	48.9	227.1	5.2	0.7	0.0	60.5	165.9	16.6	149.3	0.2	1509749.4	0.0	1509749.4
Redevelopment Plan C	14.8	0.1	14.7		0.0	0.0	0.5	14.2	1.4	12.8	0.2	128999.3	0.0	128999.3
Total	**1206.3**	**227.7**	**937.8**	**40.9**	**35.2**	**0.0**	**294.5**	**608.0**	**60.8**	**547.2**		**5542582.8**	**0.0**	**5542582.8**
Total Residential and Nonresidential Acres	**1445.4**	**361.2**	**1040.7**	**43.6**	**43.5**	**0.0**	**361.1**	**636.1**	**63.6**	**572.5**				

Logan Township Zoning District Specifications

Residential Districts

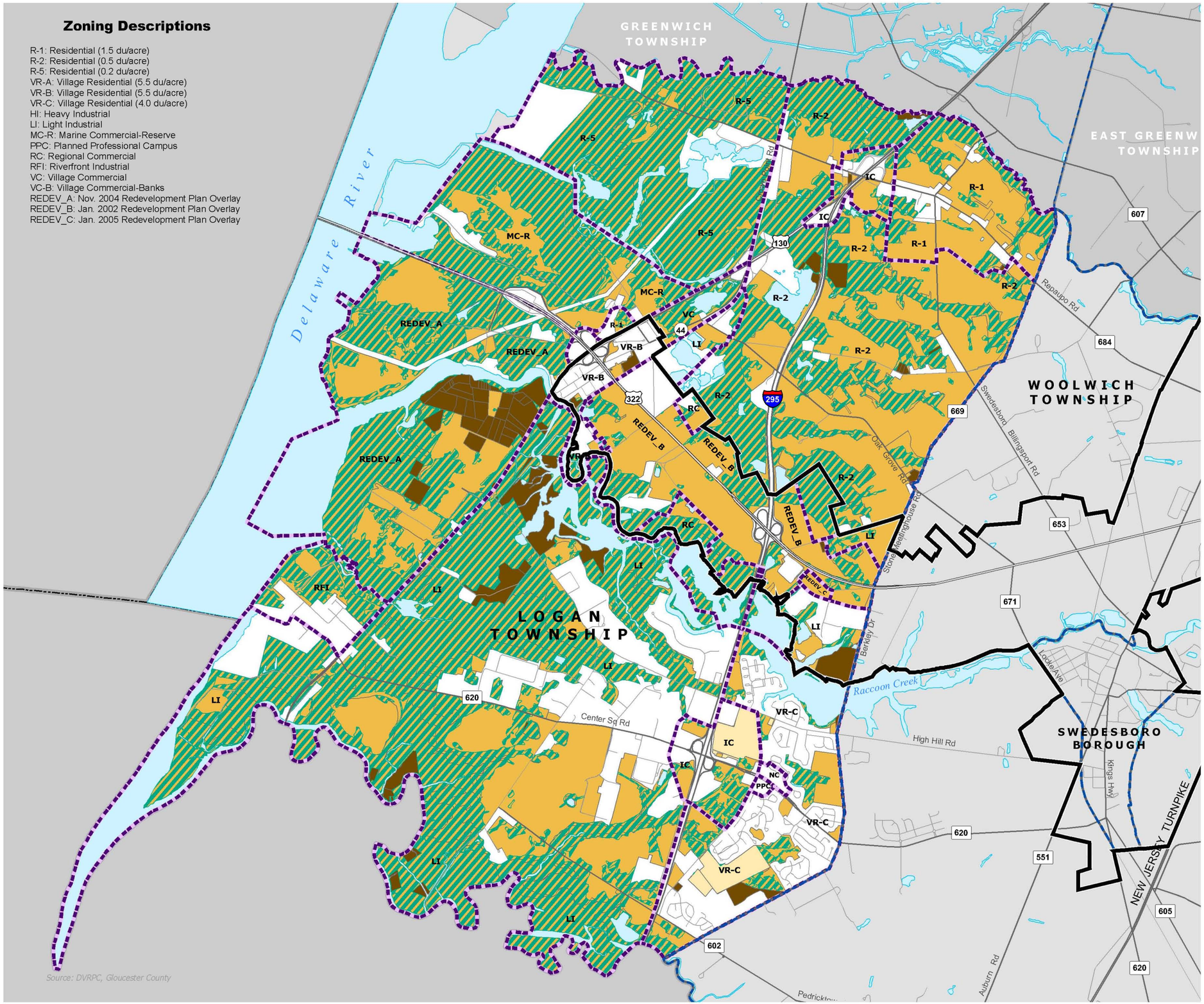
Zoning District	Name	By Right Density (du/acre)	Min. Lot Size (Sq. Ft.)
R-1	Residential/Single Family Cluster	1.5	15000
R-2	Residential	0.5	87120
R-5	Residential	0.2	217800
VR-A	Village Residential A	5.5	7500
VR-B	Village Residential B	5.5	7500
VR-C	Village Residential C	4	10000

Nonresidential Districts

Zoning District	Name	Impervious Coverage Ratio	# Stories	Parking Ratio (Sq. Ft./Space)	Achievable FAR
HI	Heavy Industrial	0.7	1	1000	0.20
IC	Interchange Commercial	0.65	4	250	0.35
LI	Light Industrial	0.3	2	1000	0.33
LI - Planned	Light Industrial - Planned Industrial Development	0.7	1	1000	0.50
MC	Marine Commercial	0.7	1	222	0.25
MC-R	Marine Commercial - Reserve	0.7	1	1000	0.50
PPC	Planned Professional Campus	0.6	2	200	0.24
RC	Regional Commercial	0.75	1	222	0.27
RFI	Riverfront Industrial	0.65	1	1000	0.40
VC	Village Commercial	0.75	2	222	0.33
Redevelopment Plan A (single use/single parcel)	Redevelopment	0.6	1	222	0.21
Redevelopment Plan A (planned development)	Redevelopment	0.65	1	222	0.23
Redevelopment Plan B (2 - 4.99 acres)	Redevelopment	0.55	1	222	0.20
Redevelopment Plan B (5 - 9.99 acres)	Redevelopment	0.6	1	222	0.21
Redevelopment Plan B (> 10 acres)	Redevelopment	0.65	1	222	0.23
Redevelopment Plan C	Redevelopment	0.65	1	222	0.23

Zoning Descriptions

R-1: Residential (1.5 du/acre)
R-2: Residential (0.5 du/acre)
R-5: Residential (0.2 du/acre)
VR-A: Village Residential (5.5 du/acre)
VR-B: Village Residential (5.5 du/acre)
VR-C: Village Residential (4.0 du/acre)
HI: Heavy Industrial
LI: Light Industrial
MC-R: Marine Commercial-Reserve
PPC: Planned Professional Campus
RC: Regional Commercial
RFI: Riverfront Industrial
VC: Village Commercial
VC-B: Village Commercial-Banks
REDEV_A: Nov. 2004 Redevelopment Plan Overlay
REDEV_B: Jan. 2002 Redevelopment Plan Overlay
REDEV_C: Jan. 2005 Redevelopment Plan Overlay



Source: DVRPC, Gloucester County

Zoning

Study Area

Study MCD

Municipality

Developable Land *

Protected Lands **

Developed Land

Approved Development

Environmental Constraints

* Based on 2000 DVRPC Land Use Files

** Protected lands are parcels classified as 15C from 2004 tax assessment data provided by Gloucester County, plus permanently preserved farms provided by the Gloucester County Farmland Preservation Program

0 0.5 1

Miles

DELAWARE VALLEY
REGIONAL PLANNING COMMISSION
JANUARY 2006

Logan Township Zoning

HARRISON TOWNSHIP ASSUMPTIONS

Zone VB: In the Village Business District zone, no parking ratio is specified. The township standard of 5.5 spaces per 1000 square feet for retail use is therefore assumed. In addition, two stories are assumed to match the village development pattern.

Zone C-2: Impervious Coverage Ratio of 60% derived from the Gas Station/Convenience Store conditional use specification. No other impervious surface coverage specification is given for uses by right in this type of zone. For the parking ratio, retail specifications of 5.5 spaces per 1000 square feet are assumed, as are two stories of development.

Zone C-55: In the flexible planned industrial-commercial district, three separate achievable FAR calculations are made – for industrial (1 story, 1000 parking ratio); retail (1 story, 182 parking ratio); and office (4 stories, 200 parking ratio). Retail is included because all uses outlined in zone C-2 are permitted by right in zone C-55. Offices are estimated to have four stories based on a maximum zone height of 50 feet. Accordingly, this zone is divided into three equal sections reflecting the different achievable FAR derived from each ordinance specification.

Zone C-4: This is generally a retail district that allows shopping centers. Parking ratios are standard retail, though heights are specified at 3 stories maximum even though retail generally only has a single story. For the purposes of this buildout two stories are assumed to calculate achievable FAR. No impervious coverage ratio is specified for C-4 – therefore, the ratio of 60% is derived from the similar C-2 general commercial zone.

Zone C-1H: No specifications for height, parking ratio, or impervious coverage ratio are specified for the uses by-right in this zone. This is because the zone is tailored for the re-use of older, primarily residential lots, for both residential and commercial use, typically manifested in an existing house used as a business. New structures built in this zone on previously vacant parcels are essentially required to conform to the character of the surrounding parcels. Developable parcels in this zone are therefore assigned the 60% impervious coverage ratio specified for the conditional use of 'convenience store' in this zone, as well as the parking ratio of 125. The number of stories assumed is three since many existing buildings are three stories high.

Zone INS: Institutional district ordinance does not specify parking requirements. Government buildings are characteristically similar to office buildings, but tend to receive more visitors, and thus require more parking spaces. Therefore, a parking ratio of 175 is assigned for INS.

Zoning districts with the O-INS and O-PO prefixes are not specified in the zoning ordinance. According to township planning staff, these are overlay districts that reflect the INS and PO zoning ordinance requirements.

Approved Development: Data was obtained from the Harrison Township subdivision list and updated in March 2005. This list was culled to include only those developments approved since 2000 – all others built before 2000 were not included in the Approved Development layer, and are considered already developed. Additionally, some development projects listed by the township that are incongruous with DVRPC GIS data are not included, eliminating 650 residential units and 106,950 square feet of approved development. These areas instead were treated as 'developable' and were subject to the buildout formulas.

Protected lands are parcels classified as 15C from 2004 tax assessment data provided by Gloucester County, plus permanently preserved farms provided by the Gloucester County Farmland Preservation Program.

Harrison Township

Municipality-Wide Zoning Build-Out Analysis

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
		B=A-C-D						H=C-E-F-G	I=H*.1	J=H-I		L=J*K		N=L+M
Residential Zoning Districts	**Total Acres**	**Developed Acres**	**Gross Developable Land (Acres)**	**Water (Acres)**	**Protected Undevelopable Land (Acres)**	**Approved Development (Acres)**	**Environmentally Constrained Land (Acres)**	**Preliminary Calculated Developable Land (Acres**	**Less 10% for Streets and Infrastructure**	**Net Developable Land (Acres)**	**Permitted DU/Acre**	**Buildable Units**	**Plus Approved Development (Units)**	**Total Residential Buildout (Units)**
AC Adult Community Devleopment	155.9	1.6	153.4	0.9	0.0	135.7	0.0	17.7	1.8	15.9	4.0	63.6	506.0	569.6
R-1 (no sewer) Residence - Agricultural District	7301.4	1797.4	5471.0	33.1	632.0	1170.5	617.4	3051.2	305.1	2746.1	1.0	2746.1	686.0	3432.1
R-1 (sewer) Residence - Agricultural District	731.5	244.6	484.0	3.0	0.0	287.5	25.3	171.2	17.1	154.0	2.0	308.1	368.0	676.1
R-2 (sewer) Residence District	1223.5	707.2	513.6	2.7	10.9	147.1	86.9	268.8	26.9	241.9	2.3	556.4	178.0	734.4
R-4 Special Residential District	118.7	64.9	53.8		0.1	0.0	8.7	45.0	4.5	40.5	4.0	162.2		162.2
RR Rural Residential District	862.2	344.9	498.2	19.1	0.0	0.4	124.8	373.1	37.3	335.7	0.5	167.9		167.9
Total	10393.3	3160.6	7174.0	58.7	642.9	1741.1	863.1	3926.9	392.7	3534.2		4004.2	1738.0	5742.2

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
		B=A-C-D						H=C-E-F-G	I=H*.1	J=H-I		L=J*K*43,560		N=L+M
Nonresidential Zoning Districts	**Total Acres**	**Developed Acres**	**Gross Developable Land (Acres)**	**Water (Acres)**	**Protected Undevelopable Land (Acres)**	**Approved Development (Acres)**	**Environmentally Constrained Land (Acres)**	**Preliminary Calculated Developable Land (Acres**	**Less 10% for Streets and Infrastructure**	**Net Developable Land (Acres)**	**Achievable Floor/Area Ratio**	**Buildable Square Feet**	**Plus Approved Development (Sq. Ft.)**	**Total Nonresidential Buildout (Sq. Ft.)**
VB Village Business District	60.9	4.0	57.0		0.0	0.0	0.1	56.8	5.7	51.1	0.3	623721.1	0.0	623721.1
C-1 Village Center District	94.2	56.1	38.1		0.0	0.0	0.0	38.0	3.8	34.2	0.2	238624.4	0.0	238624.4
C-1H Historic Commercial District	20.6	14.4	6.2		0.0	0.0	3.8	2.4	0.2	2.2	0.2	22497.8	0.0	22497.8
C-2 General Commercial District	102.8	32.4	70.4		0.0	3.3	1.8	65.2	6.5	58.7	0.2	562544.9	0.0	562544.9
C-4 Flexible Commercial District	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.2	37.9	0.0	37.9
C-55 Flexible Planned Industrial-Commerical District	699.2	187.4	511.0	0.9	4.8	82.2	20.7	403.3	40.3	362.9			216203.0	216203.0
C-55 - Office			170.3		1.6	27.4	6.9	134.4	13.4	121.0	0.3	1739085.9	0.0	1739085.9
C-55 - Retail			170.3		1.6	27.4	6.9	134.4	13.4	121.0	0.2	1212090.2	0.0	1212090.2
C-55 - Industrial			170.3		1.6	27.4	6.9	134.4	13.4	121.0	0.5	2845776.9	0.0	2845776.9
C-6 Flexible Planned Commercial District	110.2	23.1	87.1					87.1	8.7	78.4	0.3	948958.6		948958.6
INS Institutional District	549.7	161.0	377.9	10.9	169.8	31.1	8.8	168.2	16.8	151.3	0.3	1762002.1	91729.0	1853731.1
PI Planned Industrial District	5.2	1.4	3.8		0.0	0.0	0.3	3.5	0.4	3.2	1.2	157913.3	0.0	157913.3
PO Professional Office District	103.2	54.1	48.8	0.2	0.1	0.0	2.8	45.9	4.6	41.3	0.1	248973.0	0.0	248973.0
O-INS-14-1996 (Institutional overlay district)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
O-INS-20-1999 (Institutional overlay district)	46.1	0.2	46.0		0.0	0.0	1.8	44.1	4.4	39.7	0.3	462526.9	0.0	462526.9
O-INS-7-1997 (Institutional overlay district)	2.8	2.8	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.3	107.9	0.0	107.9
O-PO-15-1997 (Professional Office overlay district)	0.3	0.3	0.1		0.0	0.0	0.0	0.1	0.0	0.1	0.1	319.2	0.0	319.2
O-PO-22-1997 (Professional Office overlay district)	18.9	2.8	16.1		0.0	14.8	0.0	1.3	0.1	1.2	0.1	7148.5	0.0	7148.5
O-PO-13-2000 (Professional Office overlay district)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Total	**1814.1**	**539.8**	**1262.4**	**11.9**	**174.8**	**131.4**	**40.3**	**915.9**	**91.6**	**824.3**		**10832328.6**	**307932.0**	**11140260.6**

Total Residential and Nonresidential Acres	**12207.4**	**3700.4**	**8436.4**	**70.6**	**817.7**	**1872.5**	**903.3**	**4842.8**	**484.3**	**4358.5**				

Harrison Township

Study Area Zoning Build-Out Analysis

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
		B=A-C-D						H=C-E-F-G	I=H*.1	J=H-I		L=J*K		N=L+M
Residential Zoning Districts	**Total Acres**	**Developed Acres**	**Gross Developable Land (Acres)**	**Water (Acres)**	**Protected Undevelopable Land (Acres)**	**Approved Development (Acres)**	**Environmentally Constrained Land (Acres)**	**Preliminary Calculated Developable Land (Acres**	**Less 10% for Streets and Infrastructure**	**Net Developable Land (Acres)**	**Permitted DU/Acre**	**Buildable Units**	**Plus Approved Development (Units)**	**Total Residential Buildout (units)**
AC Adult Community Devleopment	77.9	0.9	77.0	0.0	0.0	59.3	0.0	17.7	1.8	15.9	4.0	63.6	76.0	139.6
R-1 (no sewer) Residence - Agricultural District	3626.0	1085.6	2526.5	13.9	413.2	461.0	257.4	1395.0	139.5	1255.5	1.0	1255.5	251.0	1506.5
R-1 (sewer) Residence - Agricultural District	318.4	26.6	288.8	3.0	0.0	172.1	8.3	108.3	10.8	97.5	2.0	195.0	217.0	412.0
R-2 (sewer) Residence District	334.9	236.6	98.3	0.1	2.8	21.2	24.5	49.8	5.0	44.9	2.3	103.2	0.0	103.2
R-4 Special Residential District	85.1	47.7	37.4	0.0	0.1	0.0	8.2	29.1	2.9	26.2	4.0	104.9	0.0	104.9
RR Rural Residential District	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0
Total	4442.4	1397.4	3028.0	17.0	416.0	713.6	298.4	1600.0	160.0	1440.0		1722.2	544.0	2266.2

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
		B=A-C-D						H=C-E-F-G	I=H*.1	J=H-I		L=J*K*43,560		N=L+M
Non-Residential Zoning Districts	**Total Acres**	**Developed Acres**	**Gross Developable Land (Acres)**	**Water (Acres)**	**Protected Undevelopable Land (Acres)**	**Approved Development (Acres)**	**Environmentally Constrained Land (Acres)**	**Preliminary Calculated Developable Land (Acres**	**Less 10% for Streets and Infrastructure**	**Net Developable Land (Acres)**	**Achievable Floor/Area Ratio**	**Buildable Square Feet**	**Plus Approved Development (Sq. Ft.)**	**Total Nonresidential Buildout (Sq.Ft.)**
VB Village Business District	60.5	3.9	56.7	0.0	0.0	0.0	0.1	56.5	5.7	50.9	0.3	620577.2	0.0	620577.2
C-1 Village Center District	89.6	52.7	36.9	0.0	0.0	0.0	0.0	36.8	3.7	33.2	0.2	231065.9	0.0	231065.9
C-1H Historic Commercial District	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0
C-2 General Commercial District	14.5	1.8	12.7	0.0	0.0	0.0	0.0	12.7	1.3	11.4	0.2	109505.8	0.0	109505.8
C-4 Flexible Commercial District	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0
C-55 Flexible Planned Industrial-Commercil District	338.9	23.7	314.4	0.9	0.0	0.0	14.3	300.1	30.0	270.1		0.0	0.0	0.0
C-55 - Office			104.8	0.3	0.0	0.0	4.8	100.0	10.0	90.0	0.3	1294165.4	0.0	1294165.4
C-55 - Retail			104.8	0.3	0.0	0.0	4.8	100.0	10.0	90.0	0.2	901994.1	0.0	901994.1
C-55 - Industrial			104.8	0.3	0.0	0.0	4.8	100.0	10.0	90.0	0.5	2117725.2	0.0	2117725.2
C-6 Flexible Planned Commercial District	107.6	20.4	87.1	0.0	0.0	0.0	0.0	87.1	8.7	78.4	0.3	948958.6		948958.6
INS Institutional District	101.3	26.9	64.8	9.6	53.7	0.2	1.0	9.9	1.0	8.9	0.3	103494.9	0.0	103494.9
PI Planned Industrial District	5.2	1.4	3.8	0.0	0.0	0.0	0.3	3.5	0.4	3.2	1.2	157913.3	0.0	157913.3
PO Professional Office District	27.8	16.2	11.7	0.0	0.0	0.0	0.0	11.7	1.2	10.5	0.1	63402.5	0.0	63402.5
O-INS-14-1996 (Institutional overlay district)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
O-INS-20-1999 (Institutional overlay district)	46.1	0.2	46.0	0.0	0.0	0.0	1.8	44.1	4.4	39.7	0.3	462526.9	0.0	462526.9
O-INS-7-1997 (Institutional overlay district)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
O-PO-15-1997 (Professional Office overlay district)	0.3	0.3	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	292.0	0.0	292.0
O-PO-22-1997 (Professional Office overlay district)	6.4	1.0	5.4	0.0	0.0	5.0	0.0	0.5	0.0	0.4	0.1	2520.3	0.0	2520.3
O-PO-13-2000 (Professional Office overlay district)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Total	**798.4**	**148.5**	**639.5**	**10.5**	**53.7**	**5.2**	**17.6**	**563.0**	**56.3**	**506.7**		**7014142.1**	**0.0**	**7014142.1**

Total Residential and Nonresidential Acres	**5240.8**	**1545.9**	**3667.5**	**27.4**	**469.7**	**718.8**	**316.0**	**2163.0**	**216.3**	**1946.7**

Harrison Township Zoning District Specifications

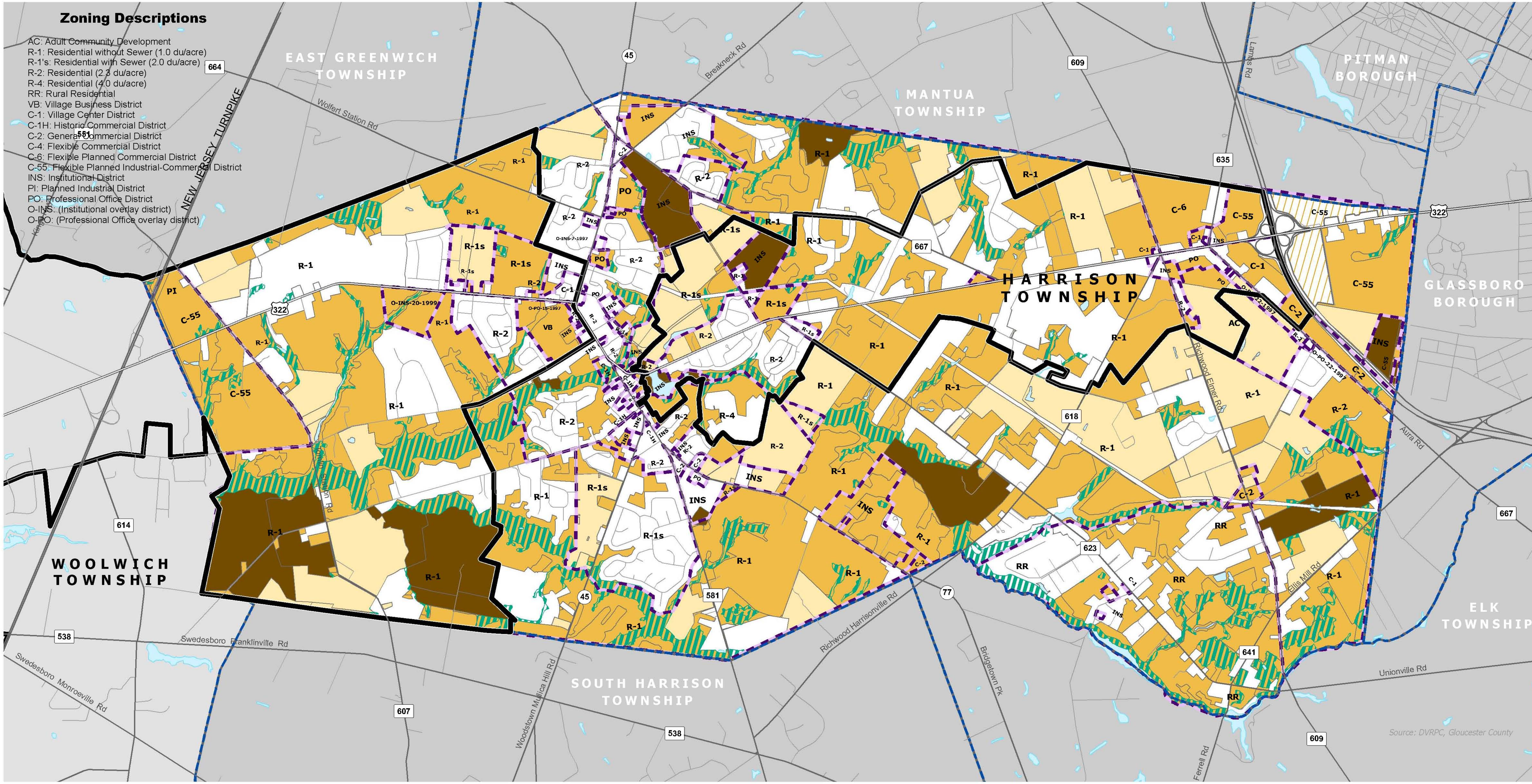
Residential Districts

Zoning District	Name	By Right Density (du/acre)	Min. Lot Size (Sq. Ft.)
AC	Adult Community Devleopment	4	10890
R-1 (no sewer)	Residence - Agricultural District	1	43560
R-1 (sewer)	Residence - Agricultural District	2	21750
R-2 (sewer)	Residence District	2.3	18750
R-2 (no sewer)	Residence District	1	43560
R-4	Special Residential District	4	
RR	Rural Residential District	0.5	87120

Nonresidential Districts

Zoning District	Name	Impervious Coverage Ratio	# Stories	Parking Ratio (Sq. Ft./Space)	Achievable FAR
VB	Village Business District	0.75	2	181.82	0.28
C-1	Village Center District	0.6	2	125.00	0.16
C-1H*	Historic Commercial District	0.6	3	181.82	0.24
C-2 *	General Commercial District	0.6	2	181.82	0.22
C-4 *	Flexible Commercial District	0.6	2	181.82	0.22
C-55 *	Flexible Planned Industrial-Commerical District - Office	0.75	4	200.00	0.33
C-55 *	Flexible Planned Industrial-Commerical District - Retail	0.75	1	181.82	0.23
C-55 *	Flexible Planned Industrial-Commerical District - Industrial	0.75	1	1000.00	0.54
C-6	Flexible Planned Commercial District	0.75	2	181.82	0.28
INS*	Institutional District	0.7	3	175.00	0.27
PI	Planned Industrial District	0.75	4	1000.00	1.15
PO	Professional Office District	0.6	3	100.00	0.14
O-INS-14-1996	(Institutional overlay district)	0.7	3	175.00	0.27
O-INS-20-1999	(Institutional overlay district)	0.7	3	175.00	0.27
O-INS-7-1997	(Institutional overlay district)	0.7	3	175.00	0.27
O-PO-15-1997	(Professional Office overlay district)	0.6	3	100.00	0.14
O-PO-22-1997	(Professional Office overlay district)	0.6	3	100.00	0.14
O-PO-13-2000	(Professional Office overlay district)	0.6	3	100.00	0.14

Harrison Township Zoning



Zoning Descriptions
AC: Adult Community Development
R-1: Residential without Sewer (1.0 du/acre)
R-1's: Residential with Sewer (2.0 du/acre)
R-2: Residential (2.3 du/acre)
R-4: Residential (4.0 du/acre)
RR: Rural Residential
VB: Village Business District
C-1: Village Center District
C-1H: Historic Commercial District
C-2: General Commercial District
C-4: Flexible Commercial District
C-6: Flexible Planned Commercial District
C-55: Flexible Planned Industrial-Commercial District
INS: Institutional District
PI: Planned Industrial District
PO: Professional Office District
O-INS: (Institutional overlay district)
O-PO: (Professional Office overlay district)
EAST GREENWICH TOWNSHIP
MANTUA TOWNSHIP
PITMAN BOROUGH
HARRISON TOWNSHIP
GLASSBORO BOROUGH
WOOLWICH TOWNSHIP
SOUTH HARRISON TOWNSHIP
ELK TOWNSHIP
NEW JERSEY TURNPIKE
Source: DVRPC, Gloucester County

Zoning

Developable Land *

Protected Lands **

Developed Land

Approved Development

Rowan University

Environmental Constraints

Study Area

Study MCD

Municipality

* Based on 2000 DVRPC Land Use Files

** Protected lands are parcels classified as 15C from 2004 tax assessment data provided by Gloucester County, plus permanently preserved farms provided by the Gloucester County Farmland Preservation Program

0 0.5 1

Miles

DELAWARE VALLEY
REGIONAL PLANNING COMMISSION
JANUARY 2006

SWEDESBORO BOROUGH ASSUMPTIONS

All of ***Swedesboro Borough*** lies within the Route 322 Corridor study area; therefore, there is just one single build-out analysis table.

January 2005 Redevelopment Plan: This plan affects the build-out analysis by altering zoning districts for select blocks and lots. Rather than including a map overlay displaying the entire redevelopment zone, these small changes were made directly to the zoning layer to reflect the contents of this adopted redevelopment plan.

"Overlay" on the borough map is not a separate zone; it falls entirely within the LM zone.

Permitted DU/Acre and Achievable FAR is derived from the borough zoning ordinance.

Protected lands are parcels classified as 15C from 2004 tax assessment data provided by Gloucester County, plus permanently preserved farms provided by the Gloucester County Farmland Preservation Program.

Swedesboro Borough

Municipality-Wide Zoning Build-Out Analysis

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
		B=A-C-D						H=C-E-F-G	I=H*.1	J=H-I		L=J*K		N=L+M
Residential Zoning Districts	**Total Acres**	**Developed Acres**	**Gross Developable Land (Acres)**	**Water (Acres)**	**Protected Undevelopable Land (Acres)**	**Approved Devlepment (Acres)**	**Environmentally Constrained Land (Acres)**	**Preliminary Calculated Developable Land (Acres)**	**Less 10% for Streets and Infrastructure**	**Net Developable Land (Acres)**	**Permitted DU/Acre**	**Buildable Units**	**Plus Approved Development (Units)**	**Total Buildout (Units)**
R-1 Residential District	169.33	124.68	30.95	13.7	0.0	0.03	14.00	16.92	1.69	15.23	6.05	92.12		92.12320942
R-2 Residential District	124.79	109.73	11.75	3.3	0.0	0.00	6.00	5.75	0.58	5.18	14.52	75.16	0	75.1645224
R-3 Residential District	1.09	1.03	0.05	0	0.0	0.00	0.00	0.05	0.01	0.05	0.33	0.02		0.01599
Other Residential Development in Non-Residential Districts													267	267
Total	**295.20**	**235.45**	**42.75**	**17**	**0.0**	**0.03**	**20.00**	**22.72**	**2.27**	**20.45**		**167.30**	**267**	**434.3037218**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
		B=A-C-D						H=C-E-F-G	I=H*.1	J=H-I		L=J*K*43,460		N=L+M
Nonresidential Zoning Districts	**Total Acres**	**Developed Acres**	**Gross Developable Land (Acres)**	**Water (Acres)**	**Protected Undevelopable Land (Acres)**	**Approved Development (Acres)**	**Environmentally Constrained Land (Acres)**	**Preliminary Calculated Developable Land (Acres)**	**Less 10% for Streets and Infrastructure**	**Net Developable Land (Acres)**	**Acheivable Floor/Area Ratio**	**Buildable Square Feet**	**Plus Approved Development (Sq. Ft.)**	**Total Buildout (Sq. Ft.)**
C Commercial	135.56	61.98	73.08	0.5		56.97	0.32	15.79	1.58	14.21	0.20	123803.08	0	123803.0827
LM Light Manufacturing	59.26	41.50	13.76	4		6.58	4.00	3.18	0.32	2.86	0.26	32027.21	0	32027.211
Total	194.82	103.48	86.84	4.5	0.0	63.55	4.32	18.97	1.90	17.07	0.46	155830.29	0	155830.2937

Total Residential and Nonresidential Acres	**490.02**	**338.93**	**129.59**	**21.5**	**0.0**	**63.58**	**24.32**	**41.69**	**4.17**	**37.52**				

Notes

1. **Developed Acres = Total Acres - Gross Developable Acres - water**
2. **Total Acres in this table may not exactly match Total Acres in the DVRPC land use database. This is due to the use of a different GIS map layer needed because of its divisions of the municipality by zone.**
3. **Several non-residential approved developments are included in the map, but are not later assigned individual square footages because we are missing that data as of this writing.**

Swedesboro Borough Zoning
District Specifications

Residential Zones

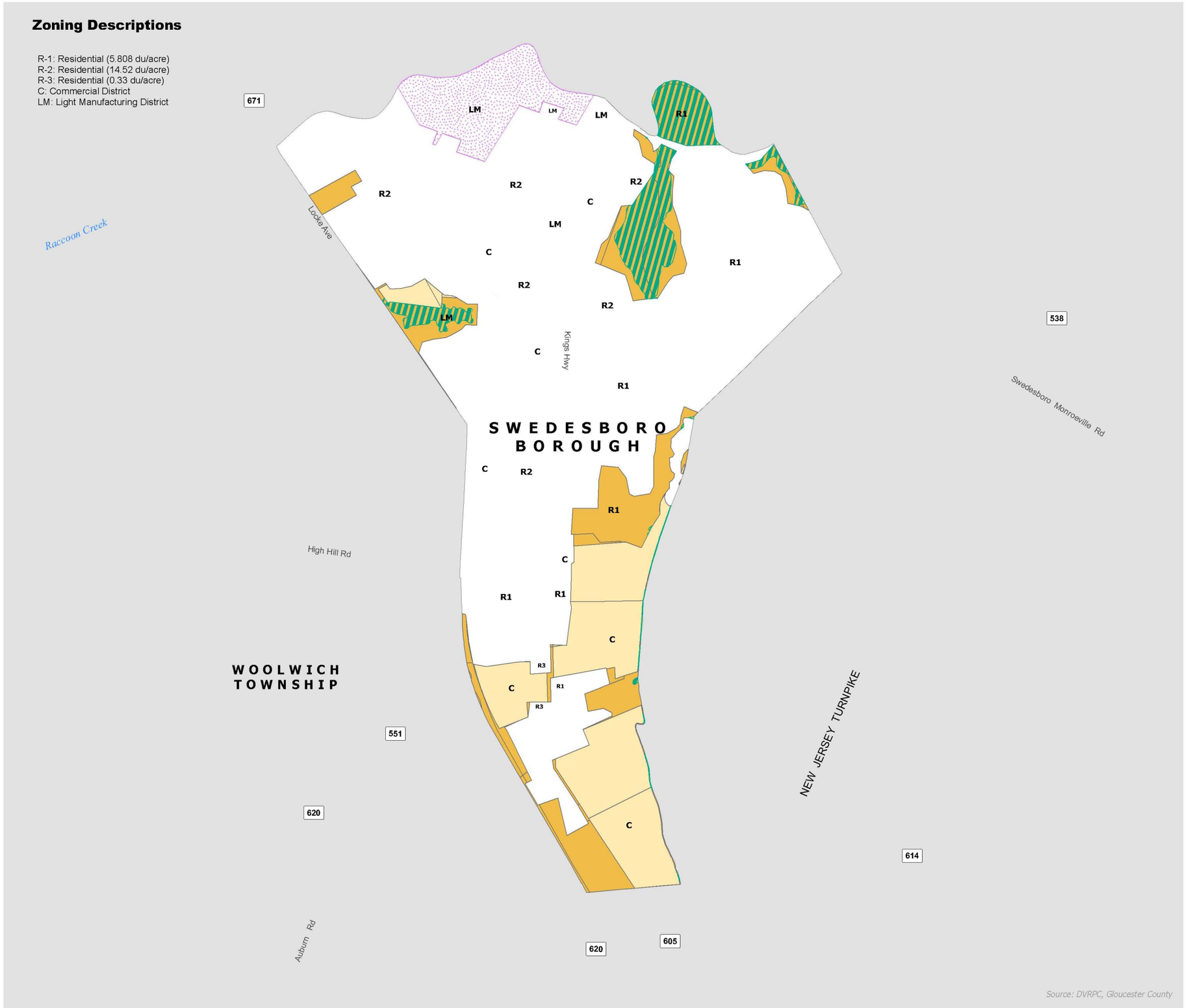
Zoning District	Definition	By Right Density (Acre/Min Lot Size)	Min. Lot Size (Sq. Ft.)
R-1	Residential District	5.808	7500
R-2	Residential District	14.52	3000
R-3	Residential District	0.333333333	130680

Nonresidential Zones

		Impervious Coverage Ratio	# Stories	Parking Ratio (Sq. Ft./Space)	Acheivable FAR
C	Commercial	0.6	1	200	0.2
LM	Light Manufacturing	0.6	1	300	0.257142857

Zoning Descriptions

R-1: Residential (5.808 du/acre)
R-2: Residential (14.52 du/acre)
R-3: Residential (0.33 du/acre)
C: Commercial District
LM: Light Manufacturing District



Source: DVRPC, Gloucester County

Zoning

Study Area

Municipality

Developable Land *

Developed Land

Approved Development

Redevelopment Zone

Environmental Constraints

* Based on 2000 DVRPC Land Use Files

0 750 1,500

Feet

DELAWARE VALLEY
REGIONAL PLANNING COMMISSION
JANUARY 2006

Swedesboro Borough Zoning

WOOLWICH TOWNSHIP ASSUMPTIONS

Planned Adult Community (PAC): This zone has far lower minimum lot sizes for townhouses. For the purposes of this analysis, the amount of buildable land within this zone will be divided roughly evenly between townhouses and non-townhouse developments.

Planned Unit Development (PUD): There are four types of PUD – single family, age restricted, duplex, and townhouses, each of which have progressively smaller minimum lot sizes. For the purposes of this analysis, the buildable acreage in zone PUD will be divided roughly evenly between these four dwelling types.

Flexible Office/Commercial (FOC): These are essentially three different zones whose specifications depend upon lot size: 4 acres, 10 acres, and 25 acres, each with different impervious coverage ratios and height limits. Height limits are given in feet – 25, 40, and 40 feet, respectively. These are translated as 2, 3, and 3 stories, respectively. Parking ratios are set at 250 spaces per 1000 square feet, for consistency. This parking ratio derives from the township's specifications for office use. The maximum FAR permitted is lower than the achievable FAR for the 4 and 10 acre specifications, so the maximum FAR of .10 and .12 are used for those sub-categories. For the purposes of this buildout, the amount of buildable land in this category is divided evenly among the three sub-categories.

Kingsway Town Center Overlay and Kingsway Commercial Overlay: These overlays lie within the Flexible Office Commercial (FOC) zoning district. Its purpose is to establish a zone in which the most intensive commercial and office development can be concentrated in specific designated areas at higher densities than allowed elsewhere. Maximum building height is set at 60 feet for office, 42 feet for retail. Since these overlays are within an area designated for office use, 60 feet, or 5 stories, is used as the maximum height for this analysis. Parking ratios are set at 250 spaces per 1000 square feet, as specified by the township ordinance for office use. Impervious coverage ratios are set at .8, as specified in the ordinance.

Re-addition of approved development: This is the information provided by Woolwich Township about their approved subdivisions as of June 2005. The number of new units planned for each subdivision or development is added to the "plus future development" column. Because some blocks and lots are split between more than one zoning district, the exact location of each subdivision is only approximate. The purpose of the "plus approved development" column is to provide an actual number of residential units or non-residential square feet that have been approved, but not yet built, instead of relying on the build-out analysis to calculate the estimated units and square feet of those lands that would otherwise appear as developable.

Protected lands are parcels classified as 15C from 2004 tax assessment data provided by Gloucester County, plus permanently preserved farms provided by the Gloucester County Farmland Preservation Program.

Woolwich Township
Municipality-Wide Zoning Build-Out Analysis

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
		B=A-C-D						H=C-E-F-G	I=H*.1	J=H-I		L=J*K		N=L+M
Residential Zoning Districts	**Total Acres**	**Developed Acres**	**Gross Developable Land (Acres)**	**Water (Acres)**	**Protected Undevelopable Land (Acres)**	**Approved Development (Acres)**	**Environmentally Constrained Land (Acres)**	**Preliminary Calculated Developable Land (Acres**	**Less 10% for Streets and Infrastructure**	**Net Developable Land (Acres)**	**Permitted DU/Acre**	**Buildable Units**	**Plus Approved Development (Units)**	**Total Residential Buildout (Units)**
5A 5 Acre	648.6	399.5	236.0	13.0	5.6	5.7	84.9	139.8	14.0	125.9	0.2	25.2	7.0	32.2
PAC Planned Adult Community	232.3	7.2	222.3	2.8	0.0	0.0	13.1	209.2	20.9	188.3	7.6	1433.9	1000.0	2433.9
PAC- Townhouses	232.3	7.2	222.3	2.8	0.0	0.0	13.1	209.2	20.9	188.3	18.2	3417.4		3417.4
PUD Planned Unit Development	1533.7	79.1	1447.7	6.9	21.9	947.2	44.8	433.9	43.4	390.5	0.0		8113.0	8113.0
PUD- Single Family			361.9		5.5	236.8	11.2	108.5	10.8	97.6	6.7	654.2		654.2
PUD- Age Restricted			361.9		5.5	236.8	11.2	108.5	10.8	97.6	8.7	850.5		850.5
PUD- Duplex			361.9		5.5	236.8	11.2	108.5	10.8	97.6	14.5	1417.5		1417.5
PUD- Townhouses			361.9		5.5	236.8	11.2	108.5	10.8	97.6	17.4	1700.9		1700.9
R-1 Residential	3452.5	323.4	3103.2	25.9	306.5	891.3	162.6	1742.8	174.3	1568.5	0.5	784.3	365.0	1149.3
R-2 Residential	4332.3	911.7	3307.4	113.2	58.9	831.9	441.2	1975.4	197.5	1777.8	0.7	1173.4	204.0	1377.4
R-3 Residential	1214.4	133.8	1017.4	63.2	79.8	309.9	135.2	492.5	49.2	443.2	2.0	886.4	264.0	1150.4
RLM Residential Low/Moderate	73.0	0.5	72.5	0.0	0.0	0.0	4.3	68.2	6.8	61.4	6.0	368.4		368.4
Residential Projects in Non-Residential Zones (FOC, Kingsway)													35.0	35.0
Total	**11719.1**	**1862.5**	**9628.7**	**227.8**	**472.7**	**2985.9**	**899.1**	**5271.0**	**527.1**	**4743.9**		**12712.0**	**9988.0**	**22700.0**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
		B=A-C-D						H=C-E-F-G	I=H*.1	J=H-I		L=J*K*43,560		N=L+M
Nonresidential Zoning Districts	**Total Acres**	**Developed Acres**	**Gross Developable Land (Acres)**	**Water (Acres)**	**Protected Undevelopable Land (Acres)**	**Approved Development (Acres)**	**Environmentally Constrained Land (Acres)**	**Preliminary Calculated Developable Land (Acres**	**Less 10% for Streets and Infrastructure**	**Net Developable Land (Acres)**	**Achievable Floor/Area Ratio**	**Buildable Square Feet**	**Plus Approved Development (Sq. Ft.)**	**Total Nonresidential Buildout (Sq. Ft.)**
FOC Flexible Office Commercial	1232.1	202.8	926.2	103.1	110.1	18.6	162.2	635.3	63.5	571.7	0.0		0.0	0.0
FOC- 4 Acre			308.7		36.7		54.1	211.8	21.2	190.6	0.1	830179.3		830179.3
FOC- 10 Acre			308.7		36.7		54.1	211.8	21.2	190.6	0.1	996215.2		996215.2
FOC- 25 Acre			308.7		36.7		54.1	211.8	21.2	190.6	0.2	1263316.4		1263316.4
LIO Light Industrial Office	102.8	53.6	49.2	0.0	1.4	0.0	3.0	44.8	4.5	40.3	0.3	439062.3	0.0	439062.3
Weatherby Commercial Zoning Overlay (from PUD, R3)													225000.0	225000.0
Kingsway Overlay	621.1	138.7	481.0	1.5	8.6	6.6	28.5	437.2	43.7	393.5	0.4	7617994.1	0.0	7617994.1
Total	**1956.1**	**395.1**	**1456.3**	**104.6**	**120.0**	**25.3**	**193.7**	**1117.3**	**111.7**	**1005.6**		**11146767.2**	**50000.0**	**11371767.2**
Total Residential and Nonresidential Acres	**13675.1**	**2257.7**	**11085.0**	**332.4**	**592.7**	**3011.2**	**1092.8**	**6388.3**	**638.8**	**5749.4**				

Woolwich Township

Study Area Zoning Build-Out Analysis

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
		B=A-C-D						H=C-E-F-G	I=H*.1	J=H-I		L=J*K		N=L+M
Residential Zoning Districts	**Total Acres**	**Developed Acres**	**Gross Developable Land (Acres)**	**Water (Acres)**	**Protected Undevelopable Land (Acres)**	**Approved Development (Acres)**	**Environmentally Constrained Land (Acres)**	**Preliminary Calculated Developable Land (Acres**	**Less 10% for Streets and Infrastructure**	**Net Developable Land (Acres)**	**Permitted DU/Acre**	**Buildable Units**	**Plus Approved Development (Units)**	**Total Residential Buildout**
5A 5 Acre	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0		0.0
PAC Planned Adult Community	232.3	7.2	222.2	2.8	0.0	0.0	13.0	209.2	20.9	188.3	7.6	1433.8	1000.0	2433.8
PAC- Townhouses	232.3	7.2	222.2	2.8	0.0	0.0	13.0	209.2	20.9	188.3	18.2	3417.1		3417.1
PUD Planned Unit Development	67.4	7.1	60.3	0.0	0.3	49.2	0.7	10.0	1.0	9.0	0.0	0.0	357.0	357.0
PUD- Single Family			15.1		0.1	12.3	0.2	2.5	0.3	2.3	6.7	15.1		15.1
PUD- Age Restricted			15.1		0.1	12.3	0.2	2.5	0.3	2.3	8.7	19.6		19.6
PUD- Duplex			15.1		0.1	12.3	0.2	2.5	0.3	2.3	14.5	32.7		32.7
PUD- Townhouses			15.1		0.1	12.3	0.2	2.5	0.3	2.3	17.4	39.3		39.3
R-1 Residential	36.0	2.1	33.8	0.0	0.0	0.0	10.6	23.2	2.3	20.9	0.5	10.4		10.4
R-2 Residential	191.2	57.4	125.0	8.8	38.1	7.2	10.7	69.0	6.9	62.1	0.7	41.0	41.0	82.0
R-3 Residential	339.8	104.1	235.1	0.5	57.1	97.4	1.2	79.3	7.9	71.4	2.0	142.8	43.0	185.8
RLM Residential Low/Moderate	70.2	0.0	70.2	0.0	0.0	0.0	4.3	65.9	6.6	59.3	6.0	355.6		355.6
Residential Projects in Non-Residential Zones (from FOC, Kingsway) Column													35.0	35.0
Total	**1169.1**	**185.2**	**968.9**	**15.0**	**95.5**	**153.9**	**53.7**	**665.8**	**66.6**	**599.2**		**5507.5**	**1476.0**	**6983.5**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
		B=A-C-D						H=C-E-F-G	I=H*.1	J=H-I		L=J*K*43,560		N=L+M
Nonresidential Zoning Districts	**Total Acres**	**Developed Acres**	**Gross Developable Land (Acres)**	**Water (Acres)**	**Protected Undevelopable Land (Acres)**	**Approved Development (Acres)**	**Environmentally Constrained Land (Acres)**	**Preliminary Calculated Developable Land (Acres**	**Less 10% for Streets and Infrastructure**	**Net Developable Land (Acres)**	**Achievable Floor/Area Ratio**	**Buildable Square Feet**	**Plus Approved Development (Sq. Ft.)**	**Total Nonresidential Buildout**
FOC Flexible Office Commercial	1132.5	202.7	891.5	38.3	110.1	18.6	147.3	615.5	61.6	554.0	0.0	0.0		0.0
FOC- 4 Acre			297.2		36.7		49.1	205.2	20.5	184.7	0.1	804397.7		804397.7
FOC- 10 Acre			297.2		36.7		49.1	205.2	20.5	184.7	0.1	965277.3		965277.3
FOC- 25 Acre			297.2		36.7		49.1	205.2	20.5	184.7	0.2	1224083.5		1224083.5
LIO Light Industrial Office	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	84.3		84.3
Weatherby Commercial Zoning Overlay (from PUD, R3)														0.0
Kingsway Overlay	620.8	138.7	480.6	1.5	8.6	6.6	28.5	436.9	43.7	393.2	0.4	7613111.9		7613111.9
Total	1753.4	341.4	1372.2	39.7	118.7	25.3	175.8	1052.5	105.2	947.2		10606954.7	0.0	10606954.7
Total Residential and Nonresidential Acres	**2922.4**	**526.6**	**2341.1**	**54.7**	**214.2**	**179.2**	**229.4**	**1718.3**	**171.8**	**1546.4**				

Note: Approved units attributed to the PUD and R-2 zones may include units that are actually built outside the study area because most projects contain multiple lots both inside and outside the study area with no way to determine whether the units are to be built inside or outside the study area.

Note: Since the exact number of approved units in zone PUD that fall within the study area cannot be determined, the number of approved units shown here are an estimate based on the proportion of PUD acreage that falls within the study area, multiplied by the total number of approved units in zone PUD in the "Municipality-Wide" build-out spreadsheet.

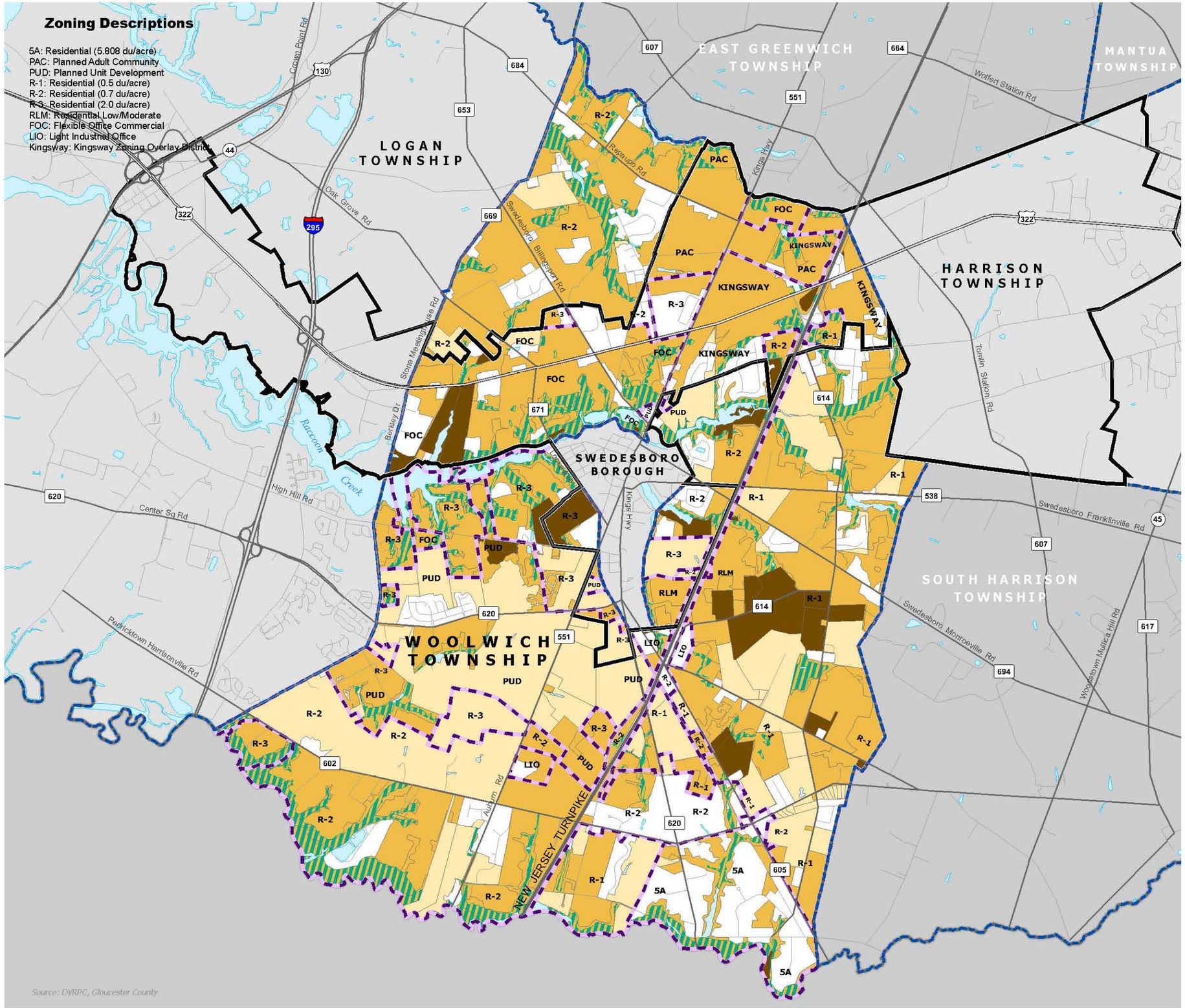
Woolwich Township Zoning District Build-Out Analysis Specifications

Residential Zones

Zoning District	Description	By Right Density (units/acre)	Min. Lot Size (Sq. Ft.) (43,560 sq. ft./acre)
5A	5 Acre	0.2	217,800
PAC	Planned Adult Community	7.6	5,720
	PAC- Townhouses	18.2	2,400
PUD	Planned Unit Development		
	PUD- Single Family	6.7	6,500
	PUD- Age Restricted	8.7	5,000
	PUD- Duplex	14.5	3,000
	PUD- Townhouses	17.4	2,500
R-1	Residential	0.5	87,120
R-2	Residential	0.7	65,340
R-3	Residential	2.0	20,000
RLM	Residential Low/Moderate	6.0	2,600
	RLM- Townhouses	6.0	2,400

Nonresidential Zones

Zoning District	Description	Impervious Coverage Ratio	# Stories	Parking Ratio (Sq. Ft./Space)	Achievable FAR
FOC	Flexible Office Commercial				
	FOC- 4 Acre	0.5	2	250	0.10
	FOC- 10 Acre	0.6	3	250	0.12
	FOC- 25 Acre	0.7	3	250	0.15
LIO	Light Industrial Office	0.7	1	250	0.25
W	Weatherby Commercial Zoning Overlay	0.7	1	250	0.27
KING C	Kingsway C	0.8	5	250	0.44
KING C	Kingsway TC	0.8	5	250	0.44



Zoning

Study Area

Study MCD

Municipality

Developable Land *

Protected Lands **

Developed Land

Approved Development

Environmental Constraints

* Based on 2000 DVRPC Land Use Files

** Protected lands are parcels classified as 15C from 2004 tax assessment data provided by Gloucester County, plus permanently preserved farms provided by the Gloucester County Farmland Preservation Program

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Miles

DELAWARE VALLEY
REGIONAL PLANNING COMMISSION
JANUARY 2006

Woolwich Township Zoning

Logan Township
Elizabeth H. Bullock, Clerk
Frank W. Minor, Mayor
Frank Donnelly, Planning Board Chairman
Frank Servais, Zoning Board
Captain Jim Schmidt, Police Department

Harrison Township
Phillip S. Rhudy, Mayor
Joe Pacera, Planning Board Chairman
Carole Rieck, Administrator
Paul Maggioncalda, Committeeman
Cathy Noakes, Historic Preservation Committee
Webber Gaunt, Historic Preservation Committee

Woolwich Township
Jane DiBella, Clerk
Guiseppe (Joe) Chila, Mayor
Leslie A. Viereck, III, Planning Board Chairman
Steven Kosluk, Planning Board
Alan Schwager, Planning Board

Swedesboro
Dolores M. Conners, Clerk
Thomas W. Fromm, Mayor
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J. Marvin Dare, Planning Board
Diane Hale, Economic Development Committee
Marcie Voight, Economic Development Committee

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New Jersey Department of Transportation
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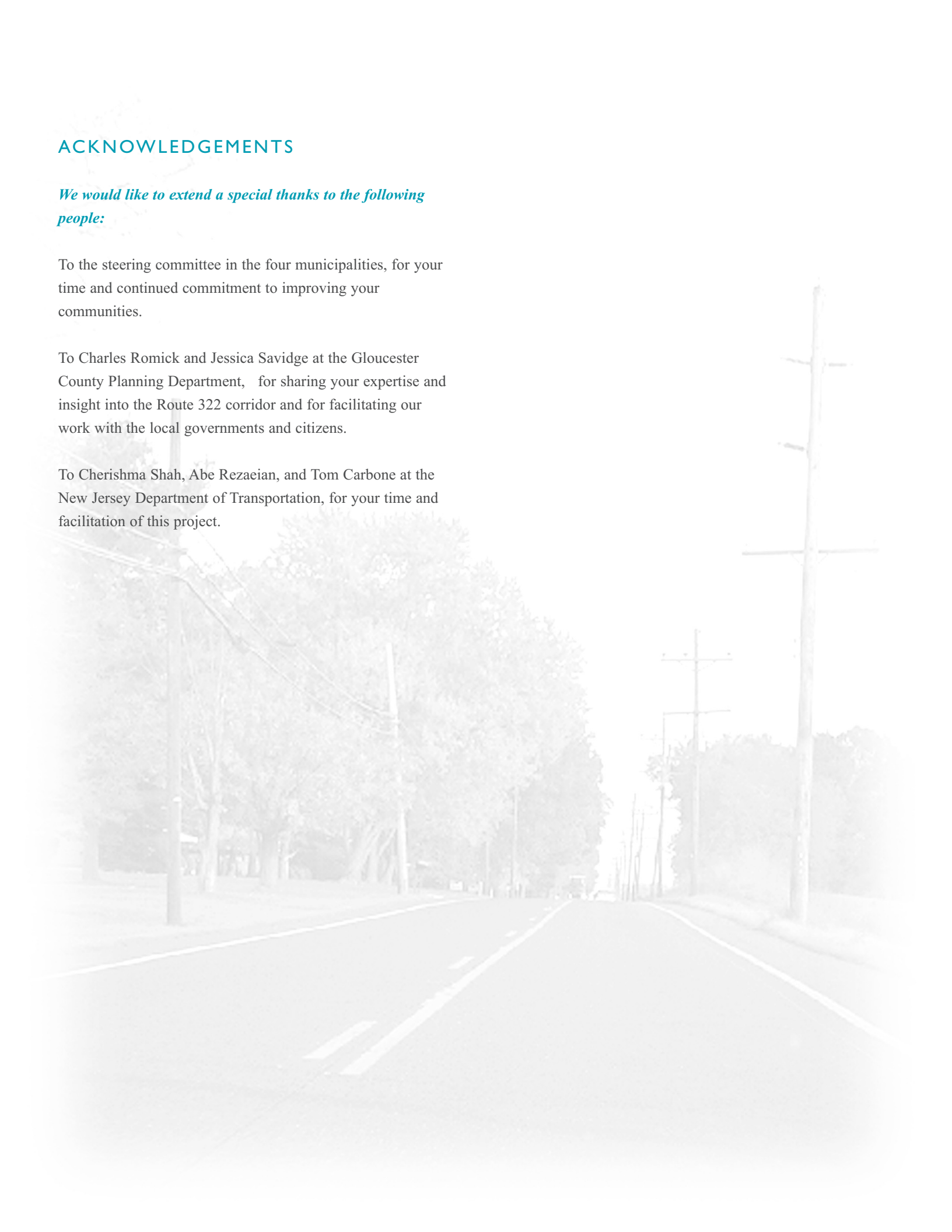

PUBLICATION ABSTRACT

Title of Report: Managing Change along the US 322 Corridor: Land Use and Transportation Issues, Policies and Recommendations- Volume I
Publication No: 06023
Date Published: June 2006

Geographic Area Covered: Route 322 Corridor, Gloucester County, New Jersey

Key Words: land use, access management, smart growth, build-out, congestion management process, mixed uses, open space preservation, sprawl, overlay districts, curb cuts, traffic accidents, population growth, zoning ordinances, historic districts.

Abstract: The New Jersey Department of Transportation (NJDOT), through its Concept Development Program, is encouraging counties and municipalities to work cooperatively along key transportation corridors to assess land use and access management policies and to evaluate area growth potential, as defined in local zoning ordinances, and its transportation improvement and policy implications. The US 322 corridor assessment and the resulting implementation recommendations are intended to (1) preserve the State's investment in current or pending transportation investments; (2) promote the conditions to achieve multi-modal transportation solutions to help alleviate current corridor congestion and forecasted travel growth; and (3) to further the goals of coordinated land use and transportation planning both within municipalities and along multi-municipal corridors. Volume One documents the baseline conditions along the corridor and provides a municipal and corridor wide build out analysis. Volume Two will include land use and transportation recommendations as well as sample ordinances.

DELAWARE VALLEY
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