



Delaware Valley Regional Planning Commission

# MERCER COUNTY–AIRPORT REGION MULTI-MODAL TRANSPORTATION CENTER STUDY

**PHASE I**



**SEPTEMBER 2004**





Delaware Valley Regional Planning Commission

# MERCER COUNTY–AIRPORT REGION

---

## MULTI-MODAL TRANSPORTATION CENTER STUDY

**PHASE I**



**SEPTEMBER 2004**

Created in 1965, the Delaware Valley Regional Planning Commission (DVRPC) is an interstate, intercounty, 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.



The DVRPC logo is adapted from the official seal of the Commission 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 flowing through it. The two adjoining crescents represent the Commonwealth of Pennsylvania and the State of New Jersey. The logo combines these elements to depict the areas served by DVRPC.

DVRPC is funded by a variety of funding sources including federal 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, as well as by 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 of policies of the funding agencies.

## TABLE OF CONTENTS

	<b>EXECUTIVE SUMMARY</b> .....	1
<b>I.</b>	<b>INTRODUCTION</b> .....	3
<b>II.</b>	<b>DEMOGRAPHICS IN THE GREATER STUDY AREA</b> .....	7
	Population Trends in Greater Study Area.....	7
	Employment Trends in the Greater Study Area.....	11
<b>III.</b>	<b>LAND USE IN THE STUDY AREA</b> .....	15
	Land Use in the Greater Study Area.....	15
	Land Use in the Defined Study Area.....	19
	Land Parcel Ownership and Size.....	22
<b>IV.</b>	<b>TRANSPORTATION FACILITIES IN THE DEFINED STUDY AREA</b> ..	25
	Trenton Mercer Airport.....	25
	Automobile Traffic in the Defined Study Area.....	27
	SEPTA Rail Service in the Defined Study Area.....	32
	Proposed West Trenton Extension.....	33
	NJ Transit Bus Service in the Defined Study Area.....	37
	Greater Mercer TMA Shuttle Service.....	39
	Patterning of Bus Service in the Defined Study Area.....	40
	Analysis of Bus Ridership Patterns.....	42
<b>V.</b>	<b>CONCLUSIONS AND RECOMMENDATIONS</b> .....	43

## LIST OF TABLES

Table 1.	Greater Study Area Population Trends 1990 to 2010 by Municipality..	7
Table 2.	Greater Study Area Employment Trends, 1990 to 2010 by Municipality.....	11
Table 3A.	Total Land Use in the Greater Study Area (in acres).....	15
Table 3B.	Percent Land Use in the Greater Study Area.....	16
Table 4A.	Total Land Use in the Defined Study Area (in acres).....	19
Table 4B.	Percent Land Use in the Defined Study Area.....	19
Table 5.	Land Parcel Ownership and Size in the Defined Study Area.....	22
Table 6.	Airport Annual and Commercial Operations, 1996-2002.....	26
Table 7.	AADT at Selected Locations 1998-2000.....	27
Table 8.	R3 West Trenton Station Rail Census Counts, 1997-2003.....	32
Table 9.	Bus Service in the Defined Study Area.....	37
Table 10.	Weekday Riders on Buses In the Defined Study Area.....	39
Table 11.	Distribution of Routes 602 and 608 Riders.....	40

**LIST OF MAPS**

Map 1.	Study Area Location.....	4
Map 2.	Population Forecast for Greater Study Area 1990-2010.....	9
Map 3.	Employment Forecast for Greater Study Area 1990-2010.....	13
Map 4.	2000 Land Use for Selected Municipalities.....	17
Map 5.	Year 2000 Land Use .....	20
Map 6.	Year 2000 Land Parcel Ownership in the Defined Study Area.....	23
Map 7.	Highway Network with Points of Interest in the Defined Study Area....	28
Map 8.	Transit Network and Services in the Defined Study Area.....	36
Map 9.	Bus Routes 602 and 608 Trip Distribution.....	41

## EXECUTIVE SUMMARY

This report explores the possibilities and challenges for connecting multi-modal transportation facilities in western Mercer County, New Jersey. The defined study area is laden with transportation possibilities, including bridge and road expansions, airport terminal replacement, and regional rail extensions potentially impacting mobility and mobility choices. It is these transportation potentials and their integration as a functioning system which concerns this report. This area has considerable open space and growing employment which could benefit from multi-modal connections where currently there are none. The major findings of this report are as follows:

- The study area is rich with transportation infrastructure providing “advantage of place”, i.e.: access to employment sites and supporting businesses. The infrastructure, however, will likely be strained by the forecast population and employment growth. Connections between the transportation modes are not well developed and provide little inter-modal access. Expansion of specific highway facilities and interchanges are inevitable due to current and forecast congestion.
- West Trenton Station has the potential to be a regional transit hub, but there are no connections to the Trenton Mercer Airport and many major employers in the area. Bus transit could connect the West Trenton Station, Trenton City and the Airport, where there are no current connections. Extending commuter rail service north to the Raritan Valley line and extending the River Line to West Trenton Station along an existent right of way, further enhance transit access from both northern and southern New Jersey.
- The Trenton Mercer Airport operates at 40 percent of its built capacity. Increased use of the airport by corporate or commercial entities would be controversial, but not without merit, though any airport expansion is a policy decision resting with the Mercer County Administration. This would require careful land use planning to create and preserve a flight path “right-of-way” out of the open space and corporate parcels in the study area. This could be done through planned development and targeted preservation of undeveloped land.
- Explore possibilities for CSX rail-freight access to land adjacent to the airport. The rail-airport connection has some business potential and is possible given proximate redevelopment opportunities. This development is worth exploring for the “advantage of place” an industry may find in that land use connection.
- Mercer County’s decision to foster a multi-modal transportation center depends on multiple jurisdictional cooperation and communication. Consequently, there is a need to create a favorable context for transportation and business enhancement, brokered between municipalities, business leaders, and the public.

This page intentionally left blank



## I. INTRODUCTION

This study explores the possibilities and challenges for the connection of multi-modal transportation facilities in western Mercer County, New Jersey. This project was advanced by the Mercer County Planning Department to assess the current and future transportation potentials in the region surrounding the Trenton Mercer Airport. The defined study area has multiple transportation possibilities such as major bridge expansions, airport terminal expansion, and regional rail extensions which may affect mobility and mobility choices. This is also an area of growing employment with open space for development. This study explores the extent to which this transportation laden area can serve as a multi-modal transportation center for the greater municipal context, enhancing both mobility and consequent employment opportunities in western Mercer County, the Delaware Valley region and beyond.

During the fall of 2003 a series of meetings were held with facility managers, municipal and planning officials of the study team to determine the boundaries of the study area (see Map 1) and issues deserving attention. The defined study area is situated in Ewing Township and the southern portion of Hopewell Township bordered by Washington Crossing / Pennington Road (CR 546) in the north, Pennington Road (NJ 31) in the east, and the Delaware River to the south and west. This area is rich with transportation infrastructure including the interstate, state, county and local road system, the Delaware River Joint Toll Bridge Commission's two bridges, the Trenton Mercer Airport (TTN), five New Jersey Transit bus routes, a Transportation Management Association (TMA) shuttle service, and Southeastern Pennsylvania Transportation Authority (SEPTA) regional rail service.

A greater geographical context surrounding the defined study area was also established to determine if the defined study area exists as a separate anomalous area or a contiguous demographic entity (see Map 1). The greater study area was defined as the nine municipalities surrounding the defined study area: Ewing, Hopewell, Lawrence, Lower Makefield, and Upper Makefield Townships; Pennington, Morrisville, and Yardley Boroughs, and Trenton City. This greater study area straddles the Delaware River with two townships (Lower Makefield, and Upper Makefield) and two boroughs (Yardley and Morrisville) located in Bucks County Pennsylvania.

A number of issues were identified during the meetings and subsequent field views. One issue being tension over conflicting land use patterns centered around the Trenton Mercer Airport, which is surrounded by growing employment centers, in whose flight path expensive homes continue to be built, and whose benefits to the Delaware Valley region and beyond are being debated at the local and federal levels. Other issues include the expansion of corporate office spaces and accompanying traffic volumes, the redevelopment of prime real estate locations, a rail extension from the north, widening of the Scudder Falls Bridge from 4 to 6 lanes, and the cumulative effect these changes will have on the already congested transportation infrastructure and on the current residents.

MAP 1

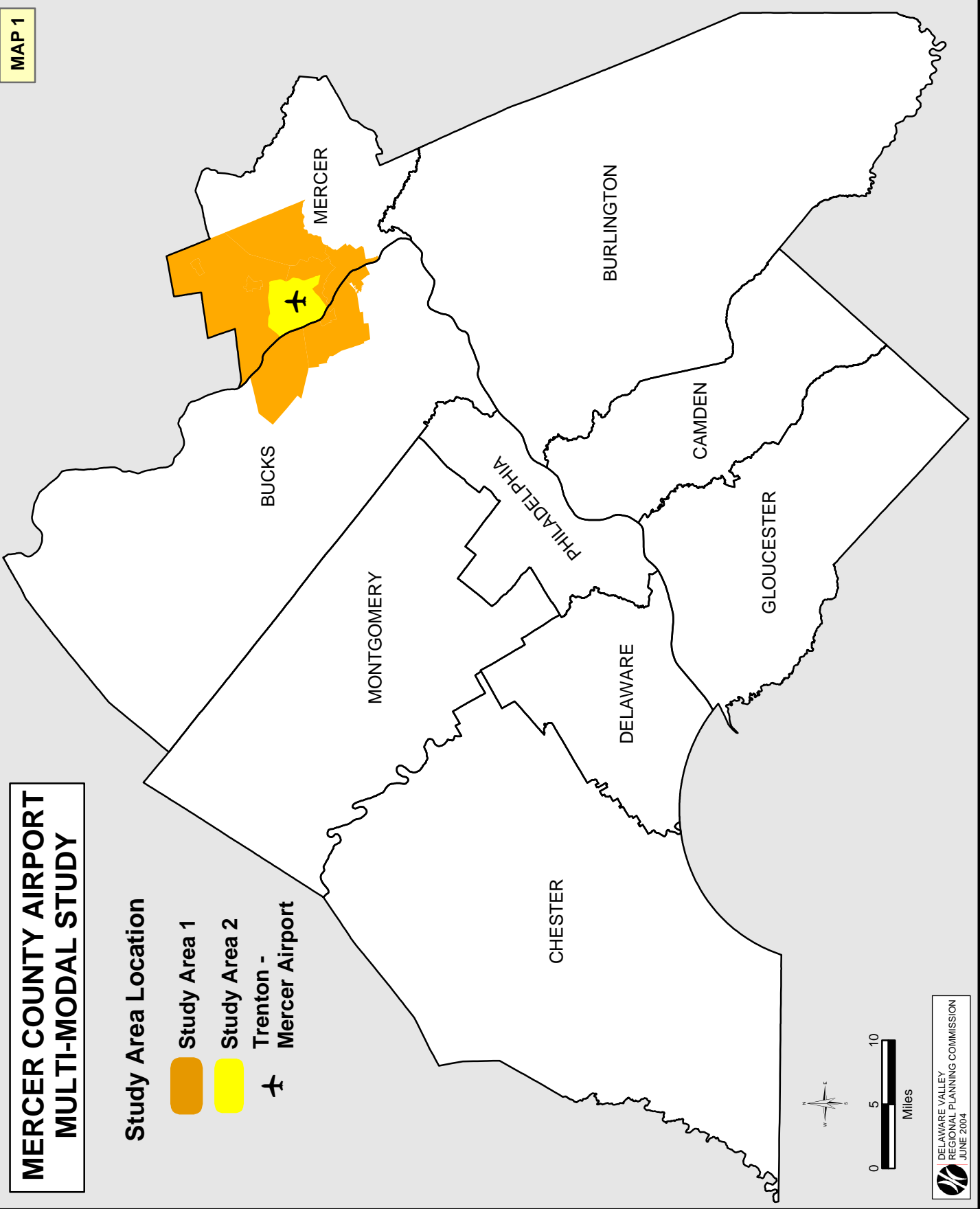
# MERCER COUNTY AIRPORT MULTI-MODAL STUDY

## Study Area Location

 Study Area 1

 Study Area 2

 Trenton -  
Mercer Airport



A number of analytical steps were performed to determine the extent to which this area can serve as a multi-modal transportation center:

- I. First, DVRPC approved municipal level historic and forecast demographic data for the greater study area were compared and reviewed for recent trends. Municipal population and employment trends provide a context for the current transportation network. The demographic trends suggest the level of trip generation which may drive service needs in the study area.
- II. Second, Year 2000 land use for the greater and defined study areas were compared to assess differences at the different scales. Multiple land uses were reclassified into six main categories to clarify what is on the ground. Individual parcels in the defined study area were also reviewed with an eye towards planned development. Maps and tables break this data out legibly.
- III. Finally, the airport, the highway and roads, and public transit are reviewed for short term trends, linkages, congestion, and construction plans. The identification of current and near-term issues or projects are reviewed to determine gaps or overlaps in service or capital investment. While some conceptual recommendations will be offered, the focus will be on taking advantage of coordination and connection between modes and transportation consumers and providers.

This page intentionally left blank

## II. DEMOGRAPHICS IN THE GREATER STUDY AREA

### Population Trends in the Greater Study Area

The population data for the nine municipalities in New Jersey and Pennsylvania are shown in Table 1. These municipalities comprise the greater study area. Data is from the 1990 and 2000 Census, with 2010 numbers taken from DVRPC board approved forecasts used for transportation and land use modeling. Year 2010 forecast data provides a realistic short term planning horizon, taking into account time frames for capital projects in the area. The municipal level data provides an aggregate profile of an area and does not distinguish between different rates of change within the municipality.

These statistics are described by the absolute change and the percent change. They are further disaggregated by decade so differences between decades may be compared. All these figures are shown in Table 1 below.

**Table 1. Greater Study Area Population Trends 1990 to 2010 by Municipality**

Municipality	Census 1990	Census 2000	Forecast 2010	Ab. Chg 90-00	% Chg 90-00	Ab. Chg 00-10	% Chg 00-10	Ab. Chg 90-10	% Chg 90-10
Ewing Twp.	34,185	35,707	37,030	1,522	4.5%	1,323	3.7%	2,845	8.3%
Hopewell Boro.	1,968	2,035	2,040	67	3.4%	5	0.2%	72	3.7%
Hopewell Twp.	11,590	16,105	19,680	4,515	39.0%	3,575	22.2%	8,090	69.8%
Lawrence Twp.	25,787	29,159	33,900	3,372	13.1%	4,741	16.3%	8,113	31.5%
Pennington Boro.	2,537	2,696	2,650	159	6.3%	-46	-1.7%	113	4.5%
Trenton City	88,675	85,403	85,030	-3,272	-3.7%	-373	-0.4%	-3,645	-4.1%
L. Makefield Twp.	25,124	32,681	37,420	7,557	30.1%	4,739	14.5%	12,296	48.9%
U. Makefield Twp.	5,949	7,180	9,530	1,231	20.7%	2,350	32.7%	3,581	60.2%
Morrisville Boro.	9,765	10,023	10,450	258	2.6%	427	4.3%	685	7.0%
Yardley Boro.	2,247	2,498	2,790	251	11.2%	292	11.7%	543	24.2%
<b>Total</b>	<b>207,827</b>	<b>223,487</b>	<b>240,520</b>	<b>15,660</b>	<b>7.5%</b>	<b>17,033</b>	<b>7.6%</b>	<b>32,693</b>	<b>15.7%</b>

Source: Years 1990, 2000 United States Census and 2010 DVRPC Forecasts

The numbers in Table 1 show that between 1990 and 2010, the total population is forecast to increase by 32,693 people, from 207,827 to 240,520 people. The total population is forecast to increase about 16 percent in the greater study area. This growth is greater than forecast county growth or growth in the region during this period. The historic (1990-2000) and forecast (2000-2010) rates of growth are similar 7.5 and 7.6 percent per decade. This is a fast growing area in the region, and one which is growing at a consistent rate.

From 1990 to 2010, the individual municipalities of Lower Makefield, Lawrence, and Hopewell Townships are forecast to experience absolute increases of 12,296, 8,113,

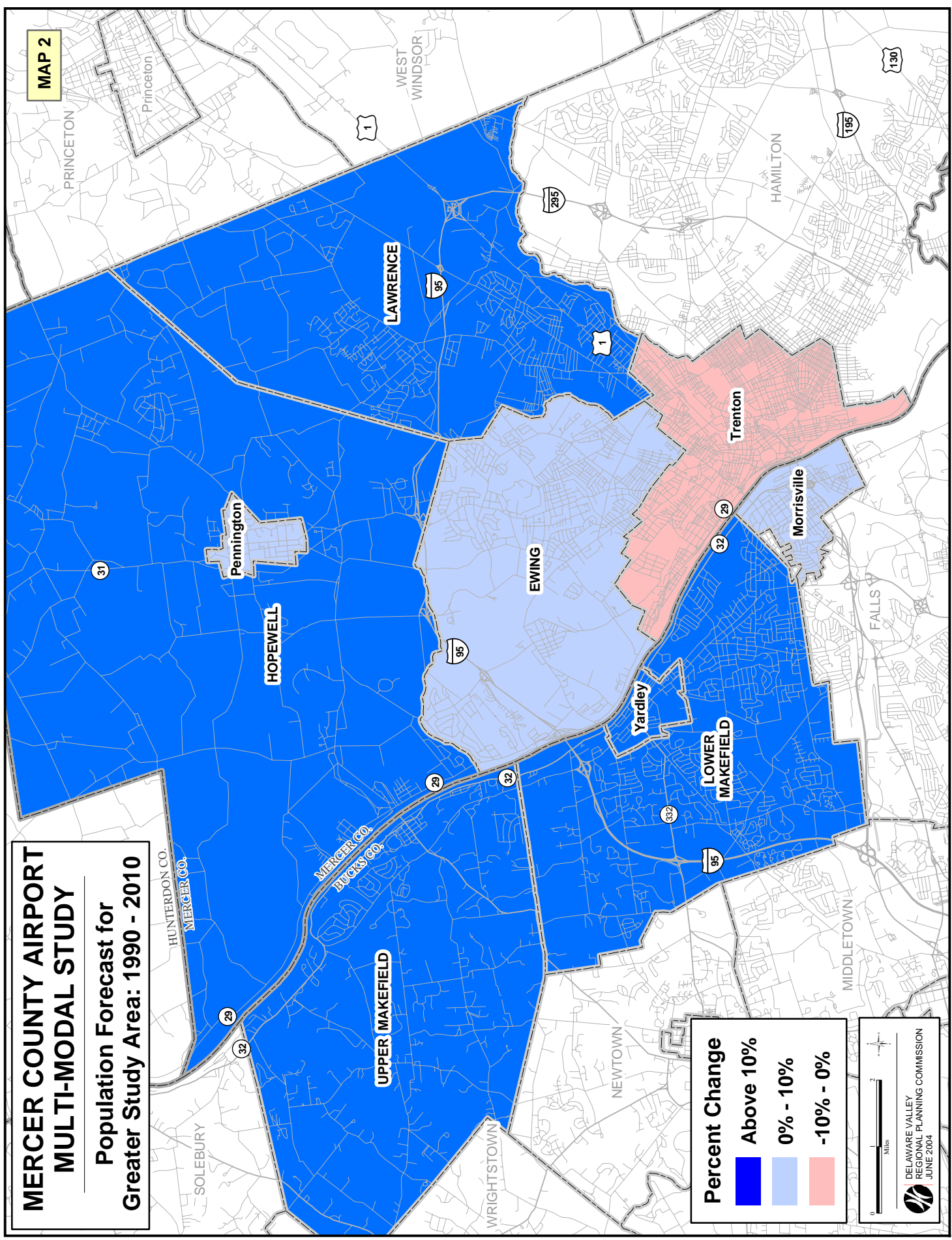
and 8,090 people, respectively. These three municipalities account for 28,499 of the 32,641 change in population between 1990 to 2010, about 87 percent of the total increase in population.

The greatest percent population change between 1990 and 2010 is forecast to occur in Hopewell Township with about a 70 percent increase in population. The second greatest rate of change is forecast to occur in Upper Makefield with about a 60 percent increase in population. Lower Makefield's population is forecast to rise by 49 percent, Laurence by about 32 percent, Yardley by 24 percent, and Ewing Township and Morrisville Borough both expect increases of about 8 and 7 percent respectively between 1990 and 2010.

Map 2 illustrates the population trends in Table 1. They are grouped by percentage change, those above 10 percent, those between 10 and 0 percent, and those with a negative rate of change between 0 and minus 10 percent. No municipality shows a population decrease between 1990 and 2010 of more than about 4 percent. Trenton City's population, the largest in the greater study area, declined by 4 percent between 1990 and 2000, from 88,675 to 85,403 people. The city's population is forecast to remain steady, decreasing about 0.4 percent or 373 people from 2000 to 2010. Other municipalities such as Morrisville Borough, Ewing Township, and Pennington Borough show relatively flat single digit growth over the two decade time span. The trend in Map 2 shows population growth in less developed townships surrounding Trenton City, and slow or declining population growth in older, more developed areas such as Trenton City, Ewing Township, and the smaller boroughs.

**MERCER COUNTY AIRPORT  
MULTI-MODAL STUDY**  
Population Forecast for  
Greater Study Area: 1990 - 2010

MAP 2



**Percent Change**

- Above 10%
- 0% - 10%
- 10% - 0%

0 1 2 Miles

DELAWARE VALLEY  
REGIONAL PLANNING COMMISSION  
JUNE 2004

This page intentionally left blank



## Employment Trends in the Greater Study Area

The employment data was obtained from the 1990 and 2000 Census, with 2010 numbers from DVRPC board approved forecasts used for transportation and land use modeling. Employment data in this table provides the number of jobs in the study area, not the number of people living in the study area who are employed. This distinction is important as it reflects the relative attractiveness of an area and gauges future job growth.

**Table 2. Greater Study Area Employment Trends, 1990 to 2010 by Municipality**

Municipality	Census 1990	Census 2000	Forecast 2010	Ab. Chg 90-00	% Chg 90-00	Ab. Chg 00-10	% Chg 00-10	Ab. Chg 90-10	% Chg 90-10
Ewing Twp.	32,234	32,550	31,700	316	1.0%	-850	-2.6%	-534	-1.7%
Hopewell Boro.	646	800	800	154	23.8%	0	0.0%	154	23.8%
Hopewell Twp.	4,170	5,900	8,950	1,730	41.5%	3,050	51.7%	4,780	114.6%
Lawrence Twp.	26,024	27,750	28,450	1,726	6.6%	700	2.5%	2,426	9.3%
Pennington Boro.	815	900	1,150	85	10.4%	250	27.8%	335	41.1%
Trenton City	63,779	62,700	61,650	-1,079	-1.7%	-1,050	-1.7%	-2,129	-3.3%
L. Makefield Twp.	3,080	3,550	3,900	470	15.3%	350	9.9%	820	26.6%
U. Makefield Twp.	910	1,310	1,740	400	44.0%	430	32.8%	830	91.2%
Morrisville Boro.	4,680	4,700	4,870	20	0.4%	170	3.6%	190	4.1%
Yardley Boro.	2,040	2,000	2,100	-40	-2.0%	100	5.0%	60	2.9%
<b>Total</b>	<b>138,378</b>	<b>142,160</b>	<b>145,310</b>	<b>3,782</b>	<b>2.7%</b>	<b>3,150</b>	<b>2.2%</b>	<b>6,932</b>	<b>5.0%</b>

Source: Years 1990, 2000 United States Census and 2010 DVRPC Forecasts

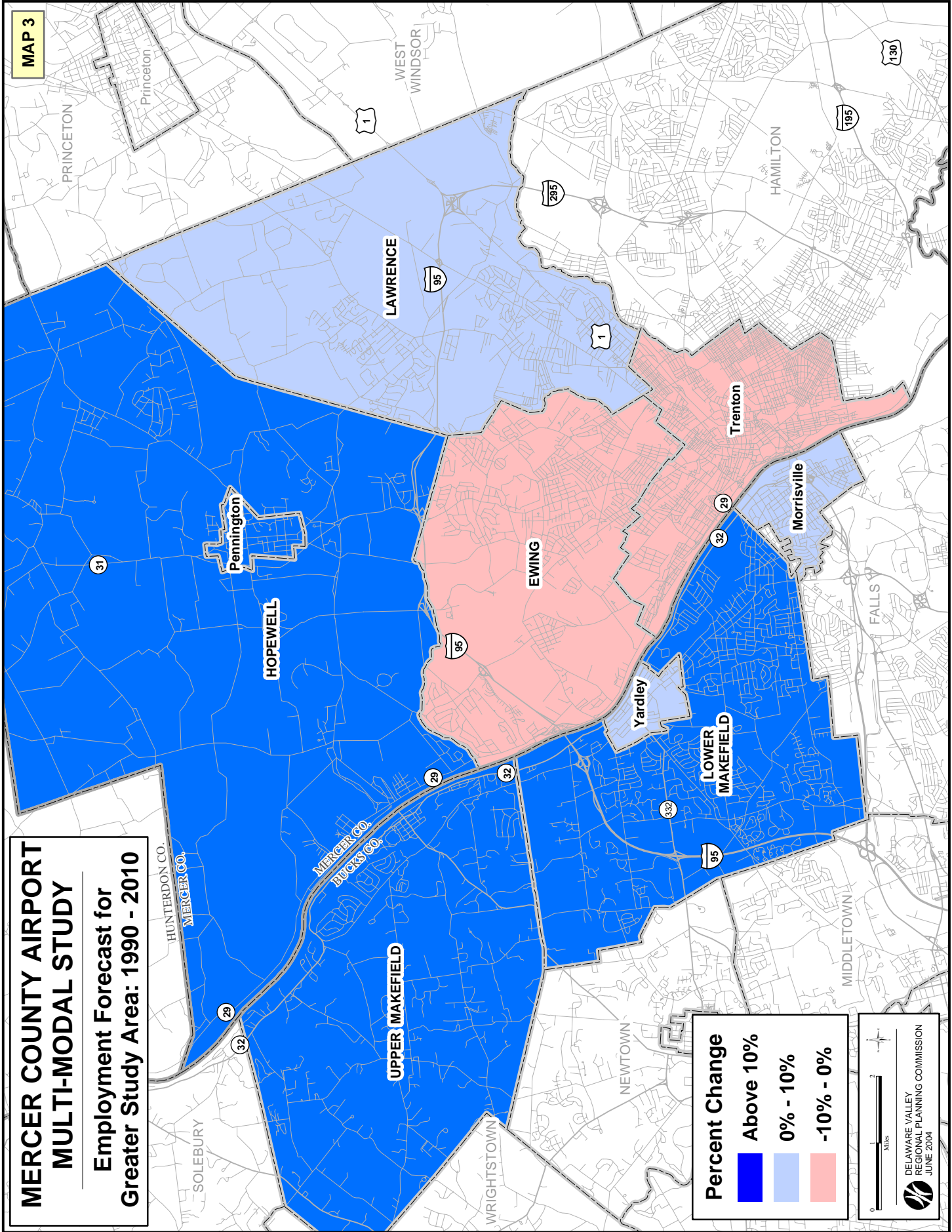
The numbers in Table 2 show that between 1990 and 2010, total employment is forecast to increase by about 7,000 jobs, from 138,378 to 145,310 jobs. The relative number of jobs is forecast to increase about 5 percent in the greater study area. The historic (1990 to 2000) and forecast (2000 to 2010) rates of employment change are a similar 2.6 and 2.2 percent per decade. From 1990 to 2010, employment (5%) is forecast to grow at a slower pace than population (15.7%) in the greater study area.

The largest employment gains between 1990 to 2010 are forecast to occur in Hopewell, Lawrence and Lower Makefield Townships for a combined increase of 7,206 jobs. Hopewell Township shows the largest gains in both percent and absolute job growth (115% growth or 4,780 more jobs by 2010). Upper Makefield Township is forecast 91 percent rate of employment growth, based on 830 new jobs added to the 1990 total of 910 jobs. Pennington Borough's employment is forecast to increase about 41 percent, a forecast increase of 250 jobs. Yardley and Morrisville Boroughs show small absolute job gains begetting their relative small geographic sizes.

Between 1990 and 2010, the only job decline in the study area occurs in Trenton City (-2,129) and Ewing Township (-534), municipalities with the largest job bases. These losses have offset some of the increases forecast elsewhere. Due to the size of the municipal employment base, the forecasted losses represent a small percentage change (-3% for Trenton and -2% for Ewing). It is common to say that the older manufacturing centers have seen their employment disperse to the more open suburban areas. It is also true that these urban areas have experienced a declining job base due to the changing economy.

Greater study area demographics in summary:

- Between 1990 and 2010, the nine municipalities in the greater study area have forecast population increases between 113 and 12,296 people, with Trenton City being the only to decline in population (-3,645).
- Between 1990 and 2010, eight municipalities have forecast employment growth between 60 and 4,780 jobs, two municipalities forecast to experience job shrinkage, Ewing Township (-534) and Trenton City (-2,129).
- Map 2 emphasizes the relative change in employment from 1990 to 2010 along the Ewing/Trenton axis, where development is slower compared to the surrounding municipalities. A large portion of this municipal growth is distributed in relatively open and sparsely populated Upper Makefield Township in Pennsylvania and Hopewell Township in New Jersey.
- Overall, population is increasing faster than jobs are being created. The forecast growth in people and employment is occurring in areas with the most open space available for development.



This page left intentionally blank.

### III. LAND USE IN THE STUDY AREA

#### Land Use in the Greater Study Area

Tables 3A and 3B describe the Year 2000 total and percent land use for the greater study area. The greater and defined study areas are compared to assess the coherence between the land use patterns. The land uses have been reclassified from the thirty one DVRPC classes of land use into seven categories in order to simplify the analysis: undeveloped, residential, transportation, commercial, community service manufacturing and other. Residential land use, for example, has combined the four different DVRPC classes to summarize this generalize type of land use. The “other” category includes military and utility land uses, as well as water features. These statistics provide a Year 2000 snap shot of what is on the ground.

**Table 3A: Total Land Use in the Greater Study Area (in acres)**

Municipality	Undev	Res	Trans	Comm	Comm Serv	Manu	Other	Total
Ewing Twp.	3,331	3,939	1,050	709	484	203	229	9,946
Hopewell Boro.	95	224	78	42	11	4	0	454
Hopewell Twp.	29,839	6,070	268	466	153	44	715	37,554
Lawrence Twp.	7,922	4,078	775	695	313	80	321	14,184
Pennington Boro.	96	419	12	64	34	0	3	627
Trenton City	761	2,180	593	730	382	156	407	5,208
L. Makefield Twp.	4,601	6,087	415	108	153	25	391	11,780
U. Makefield Twp.	9,185	4,224	23	47	34	0	375	13,887
Morrisville Boro.	158	650	105	86	39	78	172	1,288
Yardley Boro.	176	302	26	73	5	0	68	650
<b>Total</b>	<b>56,164</b>	<b>28,171</b>	<b>3,344</b>	<b>3,020</b>	<b>1,608</b>	<b>590</b>	<b>2,681</b>	<b>95,579</b>

Source: Year 2000 DVRPC Land Use

The primary land use within the greater study area is undeveloped land with 56,164 acres or 59 percent of the greater study area. Second is residential land use (28,171 acres or 29%) followed by transportation land uses (3,344 acres or 3%). The highest proportion of undeveloped land can be found in Hopewell Township (79%) and the lowest proportions appear in Morrisville Borough (12%). However, this borough represents 1 percent of the overall land area within the greater study area. Thus, more significant are the lower levels of undeveloped land to be found in Trenton City (15%), which accounts for a larger proportion (5%) of the greater study area. The four boroughs account for only 3 percent of the total land area within the greater study area with 97 percent of the total land area in the greater study area.

**Table 3B: Percent Land Use in the Greater Study Area**

<b>Municipality</b>	<b>Undev</b>	<b>Res</b>	<b>Trans</b>	<b>Comm</b>	<b>Comm Serv</b>	<b>Manu</b>	<b>Other</b>	<b>Total</b>
Ewing Twp.	33%	40%	11%	7%	5%	2%	2%	100%
Hopewell Boro.	21%	49%	17%	9%	2%	1%	0%	100%
Hopewell Twp.	79%	16%	1%	1%	0%	0%	2%	100%
Lawrence Twp.	56%	29%	5%	5%	2%	1%	2%	100%
Pennington Boro.	15%	67%	2%	10%	5%	0%	0%	100%
Trenton City	15%	42%	11%	14%	7%	3%	8%	100%
L. Makefield Twp.	39%	52%	4%	1%	1%	0%	6%	100%
U. Makefield Twp.	66%	30%	0%	0%	0%	0%	3%	100%
Morrisville Boro.	12%	50%	8%	7%	3%	6%	13%	100%
Yardley Boro.	27%	46%	4%	11%	1%	0%	10%	100%
<b>Total</b>	<b>59%</b>	<b>29%</b>	<b>3%</b>	<b>3%</b>	<b>2%</b>	<b>1%</b>	<b>3%</b>	<b>100%</b>

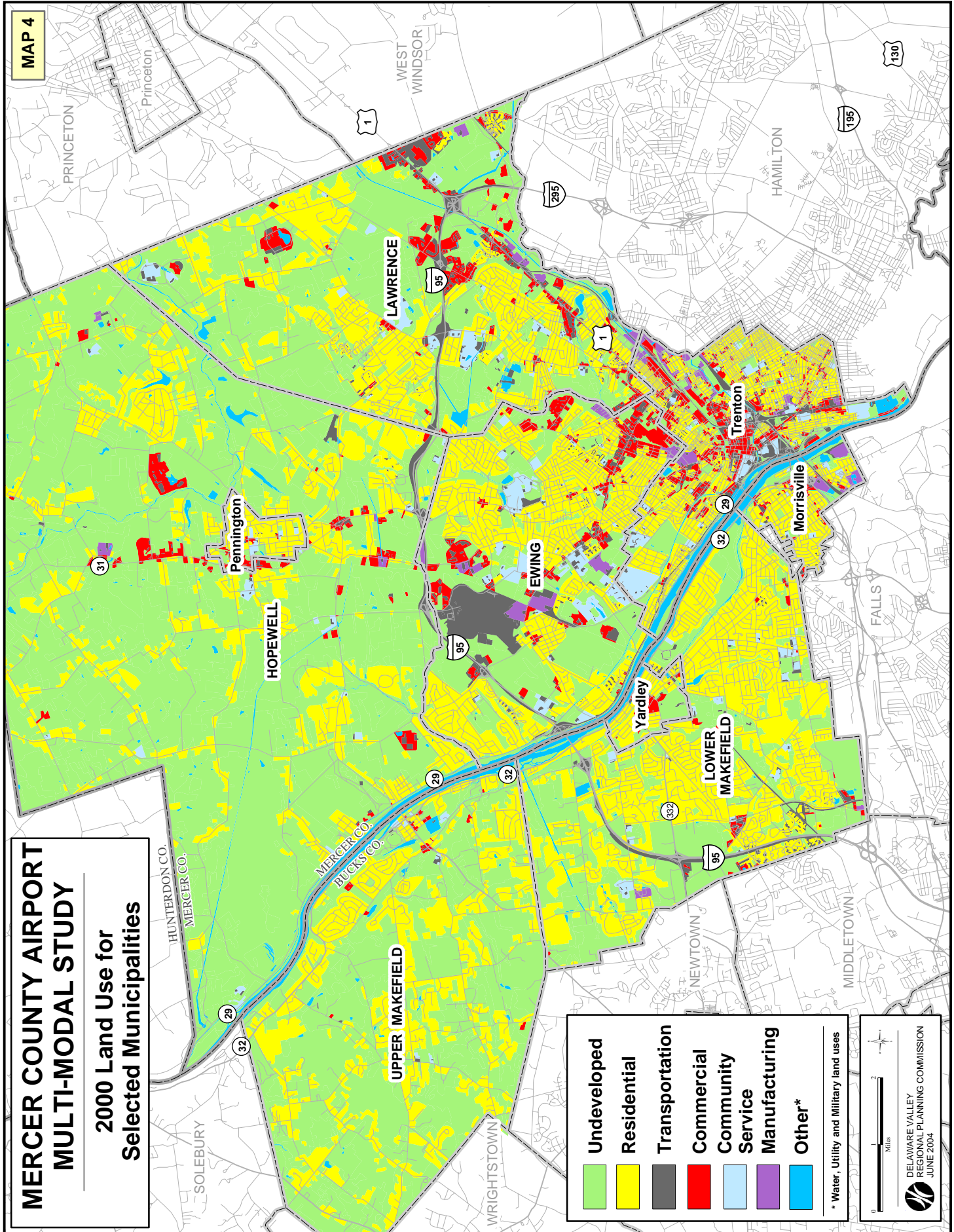
Source: Year 2000 DVRPC Land Use

Residential land use is the second largest land use type within the greater study area. Trenton City has the highest levels of residential land use representing 42 percent of its total land area. Hopewell Township exhibits the lowest levels of this land use type within the entire regional context (16%).

Transportation comprises the third largest proportion of land use. High concentrations of transportation infrastructure are found in Trenton City and Ewing at 11 percent of their total land area each. The lowest levels are in Upper Makefield Township, which has less than 1 percent of its land area devoted to transportation.

Land use comparisons between the New Jersey and Pennsylvania municipalities highlight some key similarities and differences. As a whole, both areas of the greater study area follow a similar land use pattern with undeveloped land having the most acreage followed by residential and transportation land uses. However, New Jersey's portion of the region has a greater percentage of undeveloped land than Pennsylvania, 62 percent compared to 51 percent. Other than undeveloped land, residential land use constitutes a greater percentage of land in Pennsylvania's portion of the region (41%) than New Jersey's (25%).





New Jersey's portion shows a more visible mix of other types of land uses while Pennsylvania's overwhelmingly residential landscape points to a bedroom community. A higher percentage of transportation land use is in New Jersey (4%) than in Pennsylvania (2%). The concentration of transportation land use in the greater region is due to the Trenton-Mercer Airport in Ewing Township and the density of transportation infrastructure found in Trenton.

Map 4 illustrates the distribution of these land uses in the greater study area. It shows undeveloped land in the north in Hopewell, Upper Makefield and Lawrence Townships. Moving south, the amount of undeveloped land decreases through Ewing and Lower Makefield, with the lowest concentrations of undeveloped land in the Trenton and Morrisville areas. Conversely, a general pattern of residential and commercial land use densities increases from north to south. Hopewell has the least residential land use with increasing density southward in Ewing to reach its highest levels in Trenton, Morrisville, and Lower Makefield.

Commercial land uses increase in a similar pattern from less in the north to more in the southern part of the greater study area. The greatest concentrations of commercial land use type are in Trenton City. Almost the same amount of land area is devoted to commercial land use in Ewing as Trenton, 710 acres and 730 acres. Ewing Township's land area (9,946 acres), however, is almost twice the size of Trenton City (5,208 acres).

Trenton City with 14 percent commercial land use is more densely commercial than Ewing Township. Much of this is clustered around the bountiful highway and rail network which converges in the urban area. Many of the commercial land uses outside of Trenton City are also clustered along the transportation network within the greater study area. In Lawrence, commercial activity follows the I-95 and Route 1 corridors, while in Ewing, Hopewell and Pennington clustering follows the Route 31 corridor.



## Land Use in the Defined Study Area

Tables 4A and 4B provide land use information for the smaller, defined study area with the Trenton-Mercer Airport in New Jersey as its center. This information is reclassified by the same land use aggregations used for the greater study area: undeveloped, residential, transportation, commercial, community service manufacturing and other. The defined study area, with the southern portion of Hopewell Township (10%) and a larger percentage of Ewing Township (61%) is a subset of the greater study area. This area was defined through meetings with municipal and county officials. This smaller aggregation is the focus of the rest of the report. The following two tables provide the total number of acres and corresponding percentages for the types of land uses in the area.

**Table 4A: Total Land Use in the Defined Study Area (in acres)**

MCD	Undev	Res	Trans	Comm	Commtly Serv	Manu	Other	Total
Ewing Twp.	2,392	2,147	854	314	223	121	51	6,103
Hopewell Twp.	2,784	693	76	109	12	15	47	3,737
<b>Total</b>	<b>5,177</b>	<b>2,840</b>	<b>930</b>	<b>423</b>	<b>235</b>	<b>136</b>	<b>99</b>	<b>9,840</b>

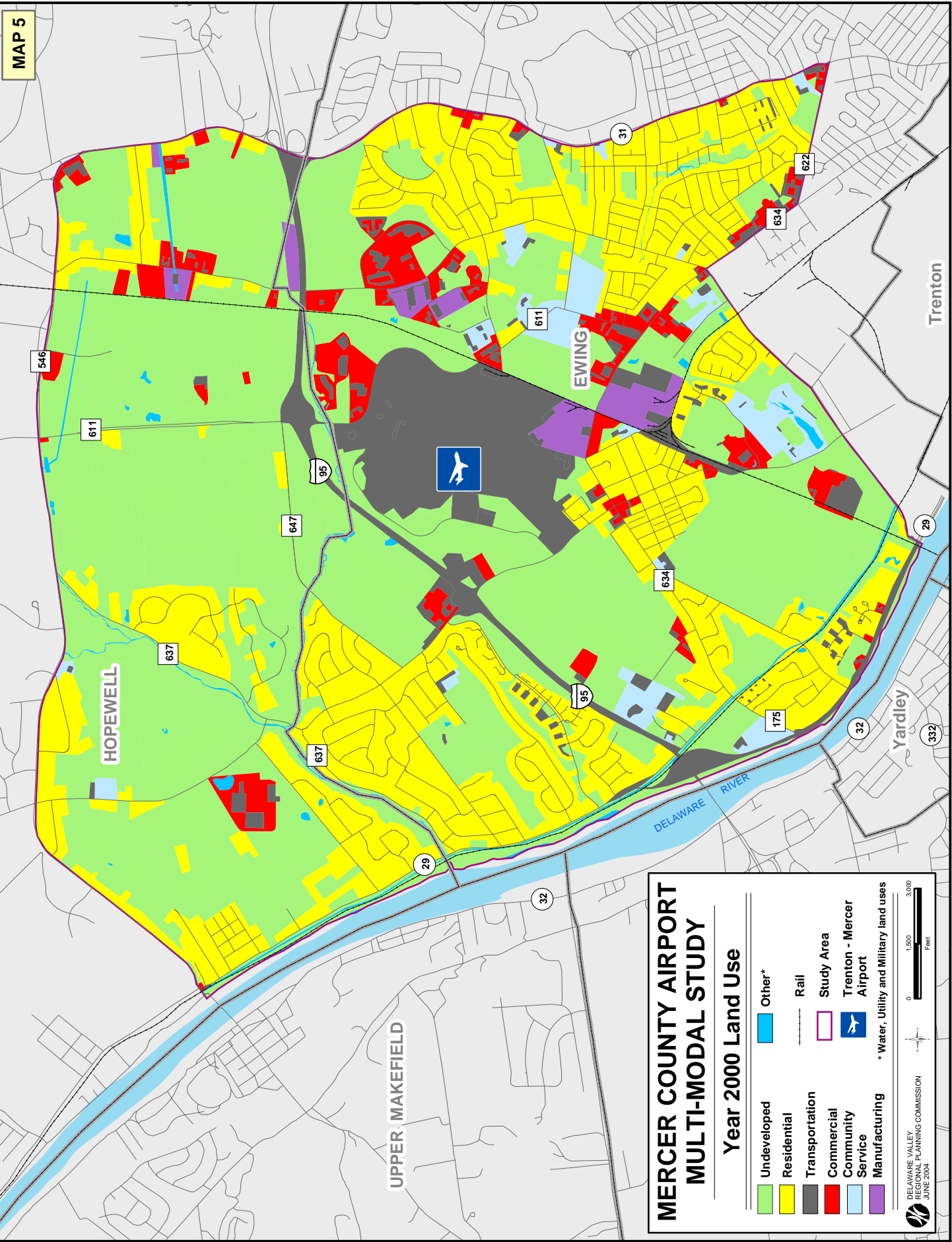
Source: Year 2000 DVRPC Land Use

**Table 4B: Percent Land Use in the Defined Study Area**

MCD	Undev	Res	Trans	Comm	Commtly Serv	Manu	Other	Total
Ewing Twp.	39%	35%	14%	5%	4%	2%	1%	100%
Hopewell Twp.	75%	19%	2%	3%	0%	0%	1%	100%
<b>Percent</b>	<b>53%</b>	<b>29%</b>	<b>9%</b>	<b>4%</b>	<b>2%</b>	<b>1%</b>	<b>1%</b>	<b>100%</b>

Source: Year 2000 DVRPC Land Use

About two-thirds of the defined study area, lies within Ewing Township (62%). A little more than half of the defined area is undeveloped (53%). In absolute and percentage terms, however, Hopewell's portion of this area has the most undeveloped land with 2,784 acres (75% of its total acreage) compared to 2,392 acres (39%) in Ewing.



The defined study area and the greater study area have similar distributions of land use with undeveloped land taking up the most land area, followed by residential and transportation land uses. Undeveloped land is a smaller percent of the land area within the defined study area than in greater region (53% to 59%) but both study areas exhibit the same levels of residential land use (29%). The difference between the two study area is the concentration of transportation land use, which is higher in the defined area than in the greater study area, 9 percent compared to 3 percent. This is due to the Trenton/Mercer airport in Ewing and the density of rail and road infrastructure in the immediate area.

Differences in the land uses exist between the study area sections of the two Townships: residential development is 35 percent of Ewing Township's study area compared to 19 percent in Hopewell Township's study area. Community services account for four percent of Ewing Townships land area and less than 1 percent in Hopewell Townships. Transportation infrastructure in particular is a visible feature of the Ewing Township's landscape, accounting for 14 percent of its land area compared to 2 percent in Hopewell Township.

Map 5 illustrates the land uses within the defined study area surrounding the Trenton-Mercer Airport. Undeveloped land is prevalent in the north (in Hopewell Township) and continues from north to south on either side of the airport forming a buffer. Residential land uses generally increase in density towards the southern end of the study area. However this occurs to the east and west of the airport, on either side of the buffer of undeveloped land. To the east, commercial land uses are clustered between the airport and Route 31 along the rail line that travels north to south through the area.

The defined study area is largely situated in Ewing Township. In summary, the defined study area has a smaller portion of undeveloped land, similar portion of residential, and a greater portion of transportation land use than the greater study area. The obvious conclusion of this is that the defined area as a proportion is more intensively developed than the greater study area. It would be fair to conclude that the development and the transportation infrastructure have coincided and reinforces one another in this area.

## Land Parcel Ownership and Size

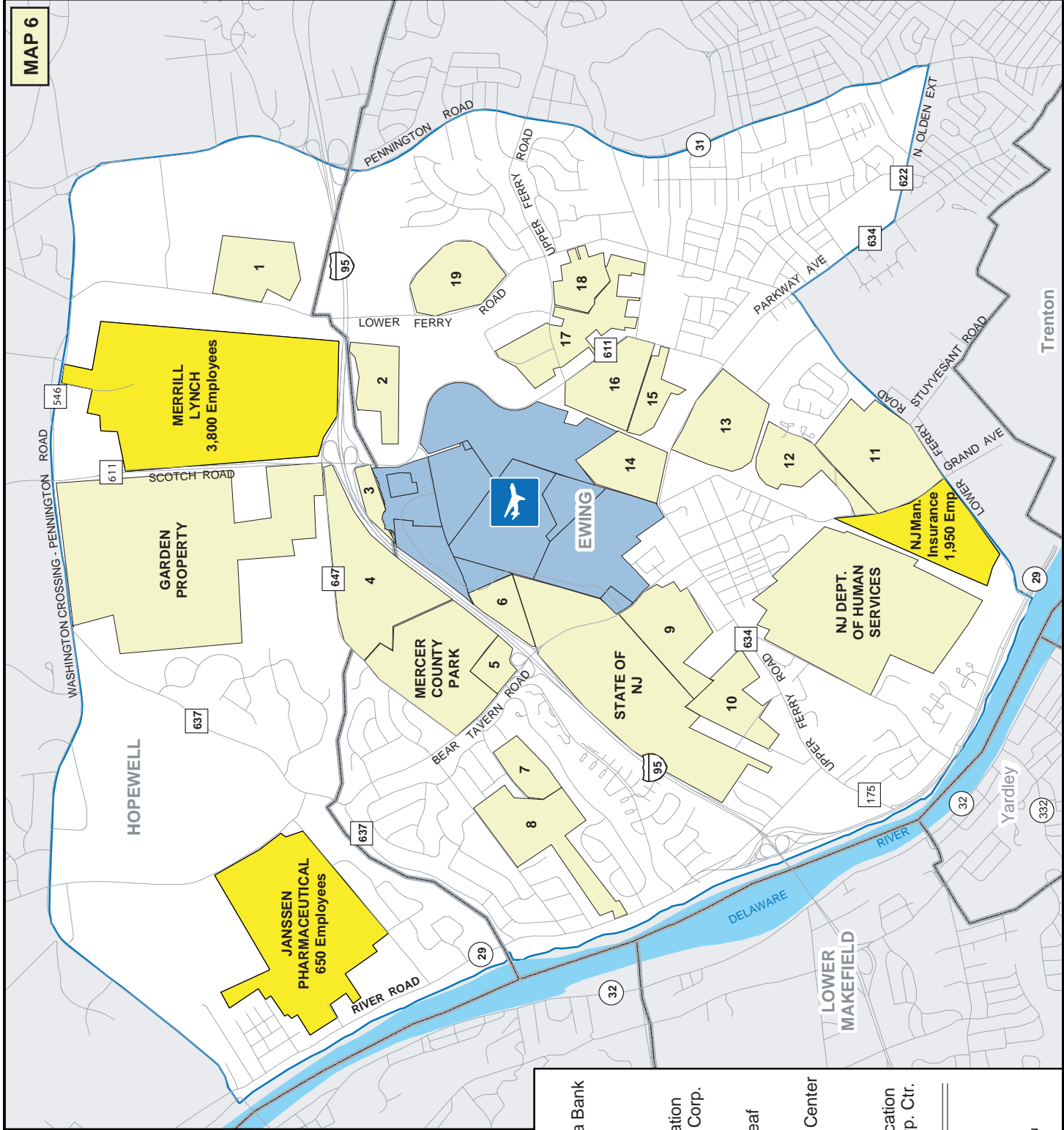
Map 6 shows the large land parcels and preserved open space within the defined study area. A number of large areas which appeared as undeveloped land in Map 5, are revealed in Map 6 as parcels owned by private and public entities. These parcels may not have been developed, only with part of their land developed or remain in the planning stages of development.

**Table 5: Land Parcel Ownership and Size in the Defined Study Area**

<b>MUNICIPALITY</b>	<b>OWNER NAME</b>	<b>PARCEL#</b>	<b>ACRES</b>
Ewing Twp.	Mercer County C/O S Zielinski	3	16
Ewing Twp.	Mountainview Office Park Llc	5	20
Ewing Twp.	Mercer County Library	15	28
Ewing Twp.	Mercer County	4	30
Ewing Twp.	Ewing Twp Board Of Education	7	30
Ewing Twp.	Ewing Twp Board Of Education	18	34
Ewing Twp.	Textron Financial/Wachovia Bank	2	47
Ewing Twp.	S & S Investments	12	54
Ewing Twp.	Naval Air Propulsion Test Center	14	56
Ewing Twp.	New Jersey Dept Of Treasury	10	56
Hopewell Twp.	Reed Road Industrial Park Llc	1	64
Ewing Twp.	Princeton Crossroad Corp Centre	19	67
Ewing Twp.	American Properties	16	69
Ewing Twp.	Mercer County	9	75
Ewing Twp.	General Motors Corp	13	83
Ewing Twp.	Ewing Township	17	86
Ewing Twp.	Transcontinental Pipe Line Corp	8	94
Ewing Twp.	NJ Manufacturing Insurance Co	labeled	101
Ewing Twp.	Bloomberg	labeled	108
Ewing Twp.	NJ State School For The Deaf	11	118
Ewing Twp.	Mercer County C/O S Zielinski	4	140
Ewing Twp.	Mercer County Park	labeled	143
Hopewell Twp.	Janssen Pharmaceutical	labeled	268
Ewing Twp.	New Jersey State Property	labeled	280
Ewing Twp.	New Jersey Dept Of Human Services	labeled	311
Hopewell Twp.	Merrill Lynch Hpl Llc C/O S Keyes	labeled	903
<b>TOTAL ACERAGE</b>			<b>3,281</b>

Source: Year 2000 Mercer County Planning Department

MAP 6



# MERCER COUNTY AIRPORT MULTI-MODAL STUDY

## Year 2000 Land Parcel Ownership in the Defined Study Area

- Parcel
- Highlighted Parcel
- Study Area
- Trenton - Mercer Airport
- Rail

- 1 - Reed Road Industrial Park
- 2 - Textron Financial/Wachovia Bank
- 3 - Mercer County
- 4 - Mercer County
- 5 - Mountainview Office Park
- 6 - Mercer County
- 7 - Ewing Twp. Board of Education
- 8 - Transcontinental Pipe Line Corp.
- 9 - Mercer County
- 10 - NJ Dept. of Treasury
- 11 - NJ State School for the Deaf
- 12 - S&S Investments
- 13 - General Motors Corp.
- 14 - Naval Air Propulsion Test Center
- 15 - Mercer County Library
- 16 - American Properties
- 17 - Ewing Township
- 18 - Ewing Twp. Board of Education
- 19 - Princeton Crossroads Corp. Ctr.



DELAWARE VALLEY REGIONAL PLANNING COMMISSION  
JUNE 2004

Trenton

Yardley

LOWER MAKEFIELD

HOPEWELL

EWING

GARDEN PROPERTY

JANSSEN PHARMACEUTICAL  
650 Employees

MERRILL LYNCH  
3,800 Employees

NJ DEPT. OF HUMAN SERVICES

NJ Man. Insurance  
1,950 Emp

MERCER COUNTY PARK

STATE OF NJ

PENNINGTON ROAD

LOWER FERRY ROAD

UPPER FERRY ROAD

SCOTCH ROAD

PARKWAY AVE

STUYVESANT ROAD

N OLDEN EXT

BEAR TAVERN ROAD

RIVER ROAD

DELAWARE RIVER

546

611

647

637

637

29

32

95

634

175

32

29

95

19

17

18

16

15

14

13

12

11

622

634

332

Table 5 gives a list of parcel owners and parcel sizes shown in the defined study area in Map 6. The total volume of these land parcels are about 33 percent of the total acreage of the defined study area (3,281 of 9,840 acres). Of the 26 parcels shown, 14 belong to governmental or public institutions and 12 are privately held. The employers Merrill Lynch, New Jersey Manufacturers, Bloomberg and Janssen Pharmaceuticals own about 40 percent of the land area covered by the parcels (1,380 out of 3,281 acres). The largest of these parcels is owned by Merrill Lynch, with about 900 acres and 5,500 employees presently stationed at this location in Hopewell Township. It is expanding its office park development and is aiming to nearly double this employee figure. Other expansions (such as Janssen) and developments (such as Bloomberg's 108 acres just south-east of Merrill) are planned in the study area. These developments provide a sample of the major development in the defined study area.

Two other land parcels, preserved open space (shown in green) and the Trenton Mercer Airport, are shown in Map 6 and listed in Table 5 but require special mention. The first of these is preserved open space which accounts for about 645 acres of land in the defined study area, making it one of the largest parcel categories in the area. This includes municipal and county parkland, as well as the D & R Trail along the River Road paralleling the Delaware River. The second parcel of note is the airport area, built on about 1,350 acres, with about 75 percent of that land used for aviation and the remaining 25 percent used for non-aviation uses, e.g.: indoor tennis courts. Portions of the airport parcel are shown as Mercer County parcels or listed separately. This parcel accounts for the majority of the transportation land use shown in Table 4A though not all of it is labeled as "airport". Neither of these two parcels are likely to be developed (certainly not the designated open space) and may be considered to be unchanged for the foreseeable future.

This area is already a regional economic center and business is set to expand further. The relocation and expansion plans of major companies and large employers in the region is a testament to, and greatly enhanced by, the advantages of place. Some of these advantages include: the concentration of rail and highway facilities; the location of the airport within the larger region (close to Trenton City, midway between New York and Philadelphia); proximity to growing residential communities in New Jersey and Pennsylvania; and the approval (and pending approval) of significant expansion plans on several parcels. The wealth of residential and transportation infrastructure reinforce the advantage of place for businesses locating in and around the study area.

#### IV. TRANSPORTATION FACILITIES IN THE DEFINED STUDY AREA

##### **Trenton Mercer Airport**

The Trenton Mercer Airport (TTN) is the major publicly owned commercial airport in the northern part of the Delaware Valley region. The functional classification of TTN as a commercial airport means it serves scheduled service airlines, corporate aviation and some military operations. The airport is built on about 1,350 acres between I-95 and the CSX rail right of way, with about 75 percent of that land used for aviation and the remaining 25 percent used for non-aviation uses, e.g.: indoor tennis courts. It provides scheduled commercial service, corporate operations, rental storage space and hangars, charter service, avionics and maintenance, restaurant, and a free car parking lot. Since February 1999, Shuttle America has been the principle commercial carrier out of Trenton Mercer, replacing Eastwind Airlines who ceased service in September 1999.

The airport has two active runways: numbers 6/24 and 16/34, which are 7,000 feet and 4,800 feet long, respectively. These runways are large enough for most commercial carriers. There is also a full control tower, providing greater flexibility in the size, type and number of aircraft which can land and take off. Approximately 120,000 operations occurred in 2002 and the airport based aircraft compliment averages about 155 aircraft and helicopters. The airport is designated as a Foreign Trade Zone. Desired future improvements to the airport include construction of a new terminal building, expanded parking, and storage for aircraft and snow removal equipment. The required environmental assessment has been submitted to the FAA for a new terminal replacing the functionally obsolete existing terminal. There are no plans to physically or functionally expand the runways.

Neighborhood opposition has created delay and resistance in Mercer County, where all aspects of the master plan environmental assessment, economic impacts analysis are being contested. Contrarily, neighbors have also registered support for additional service options in the proximate Trenton area. Terminal replacement will not increase the size of aircraft using the facility, but will permit more passengers to be handled, potentially increasing municipal revenues on the tickets sold. Future aircraft operations are expected to be quieter due to technical innovation in aircraft design and airspace configuration improvements

Table 6 shows the total annual and commercial operations at Trenton Mercer Airport. A single operation is defined as an aircraft landing or take-off. A landing and subsequent take-off would constitute two operations. This differs from enplanements which are the number of passengers boarding a specific craft for travel. The commercial service here is of an itinerant nature, where a commercial provider may land and take off, but none of its planes are housed at the airport. The commercial operations shown in Table 6 reflect a mix of commercial carriers (Eastwind and/or Shuttle America) and air taxis, which are not regularly scheduled but chartered as required. Consequently, the number of scheduled airline flights is an even smaller portion of the total number of operations.

**Table 6. Airport Annual and Commercial Operations, 1996-2002**

	1996	1997	1998	1999	2000	2001	2002
Total Operations	123,391	107,337	121,448	154,489	146,539	124,831	119,726
Commercial Operations	3,496	3,242	3,914	4,386	8,132	5,096	3,800
% of Total	2.8%	3.0%	3.2%	2.8%	5.5%	4.1%	3.2%

Source: November 2003, Airport Traffic Count 1996-2002

Operations not designated as commercial are, by definition, corporate. The corporate definition includes private crafts, planes used at the flight school on the premises, and business owned operations by companies in the immediate area. The commercial activity is a mix of air carrier service and smaller airline taxi planes. Commercial activity is defined in part by an airlines designation of TTN as a commercial airport, with scheduled take-offs and landings by a provider such as Shuttle America or previously, Eastwind Airlines. Airline taxis are smaller planes, generally private in nature, providing either on-call or unscheduled charter flights.

The number of operations has varied from a high of 154,489 annual operations in 1999 and a low of 107,337 annual operations in 1997. The peak operations in 1999 and 2000 reflect the overlap occurring when both Shuttle America and Eastwind Airlines operated simultaneously for a short time. The total annual operations has decreased about 3 percent from 123,391 to 119,726 operations between 1996 and 2002, though there has been variation year to year. While designated as a commercial airport, only about 3 percent of the operations at the Trenton Mercer Airport are commercial in nature. This is the inverse of the Philadelphia International Airport (PHL), where in 1999, 89 percent of operations (429,257) were commercial and the remaining 11 percent were corporate.

The Trenton Mercer Airport is operating at about forty percent of its built 300,000 annual operations capacity. The facility serves the corporations in the immediate area with general aviation services, but serves commercial flights only marginally. Expansion either physically or functionally (neither which is planned) is controversial with formalized opposition. While some nearby residents have indicated support for more convenient commercial flight options, enhanced commercial operations appear dead at this time.



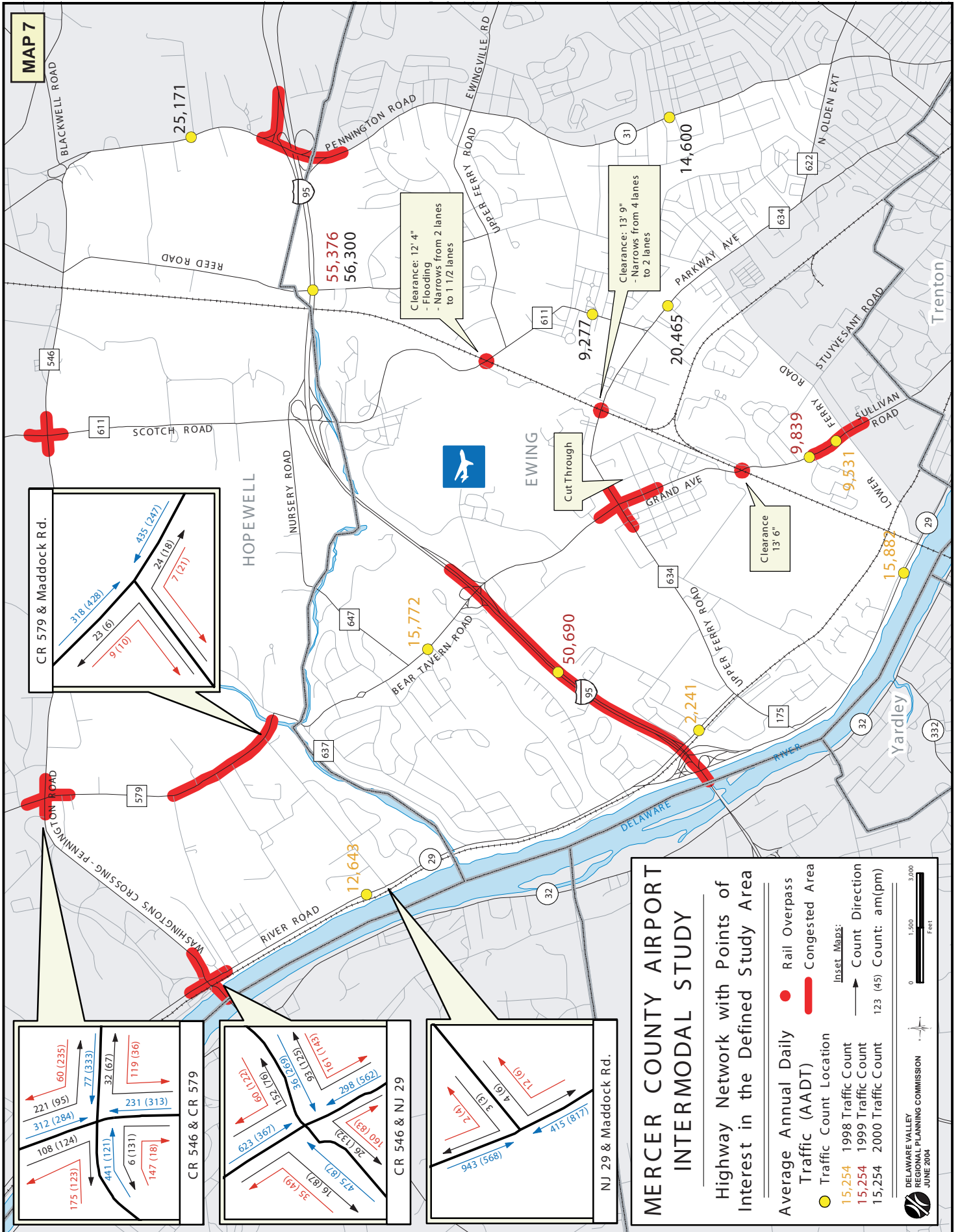
## Automobile Traffic in the Defined Study Area

The major access road in the study area is I-95 which is the primary conduit from Pennsylvania and New Jersey. It provides access to the rest of New Jersey via I-295, I-195, NJ Turnpike and US 1. The Scudder Falls Bridge provides the access for I-95 over the Delaware River. Pennington Road (NJ 31), Scotch Road (CR 611) and CR 579 (alternately Bear Tavern Road in the north and Sullivan Way in the southern portion) are the primary north-south arteries intersecting I-95 in the defined study area. The major arteries within the study area are shown on Map 7 and described in Table 7.

**Table 7. AADT at Selected Locations 1998-2000**

Year	AADT	Primary Road	Nearest Intersecting Street
1998	15,772	Bear Tavern Rd. (CR 579)	I-95
1998	7,777	Pennington Rd. (NJ 31)	Green Ln.
1998	9,839	Sullivan Way (CR 579)	Palmer Ln.
1998	15,882	River Rd. (NJ 29)	Lower Ferry Rd.
1998	12,643	River Rd. (NJ 29)	Maddock Rd.
1999	50,690	I-95	Bear Tavern Rd. (CR 579)
1999	4,038	Stuyvesant Ave.	Palmer Ln.
1999	5,148	Lower Ferry Rd.	Phillips Blvd.
1999	1,777	Nursery Rd.	Scotch Rd.
1999	5,823	Green Ln.	Running Brook Rd.
1999	55,376	I-95	Reed Rd.
2000	9,277	Scotch Rd (CR 611)	Shelton Rd.
2000	56,300	I-95	Reed Rd.
2000	25,171	Pennington Rd. (NJ 31)	Steinway Ave.
2000	20,465	Parkway Ave. (CR 634)	Scotch Rd.
2000	14,600	Pennington Rd. (NJ 31)	Green Ln.
2000	9,531	Sullivan Way (CR 579)	Palmer Ln.
2000	752	Jacob's Creek Rd. (CR 637)	Montague Ave.
2000	621	Mountain View Rd.	Delaware Ave.
2000	64,600	I-95	Federal City Rd. (CR 643)

Source: DVRPC 1998, 1999, 2000 Traffic Counts



**Interstate 95 (I-95)**

This is a major interstate highway running in the study area south-west to north-east. Locally it functions as a commuter road serving the Hopewell/Ewing/Princeton/Trenton area. I-95 crosses the Delaware River between New Jersey and Pennsylvania using the Scudder Falls Bridge, where Year 2000 AADTs of about 51,000 have been recorded and are forecast to pass 80,000 by 2030. Where it crosses Reed Road, AADTs have been recorded of about 56,000, and further east near Federal City Road (CR 643) the AADT is about 65,000 (this is just off the map in Lawrence Twp.). The interchanges providing access to employment experience significant congestion. By reconfiguring the Scotch Road interchange, congestion and delays have been relieved somewhat.

**River Road (NJ 29)**

This road is classified as an urban principal arterial north of I-95 and an urban freeway south of I-95. An AADT of 12,643 was recorded north of I-95 and one of 15,882 was recorded south of I-95. Where NJ 29 intersects with CR 546, traffic associated with commuters traveling over Washington's Crossing Bridge into or from Pennsylvania is high with 2,135 cars passing through this intersection during the AM peak hour and 2,102 during the PM peak hour.

**Pennington Road (NJ 31)**

This urban principal arterial provides north-south access for the eastern limits of the study area. This road has two lanes in each direction. Peak period congestion is heavy in the vicinity of the I-95 interchange. The College of New Jersey, located just east of NJ 31 outside the study area, is a major trip generator, with Year 2000 AADTs at Steinway Avenue of 25,171 and Green Lane of 14,600 (up from 7,777 in 1998).

**Bear Tavern Road (CR 579)**

This is an urban minor arterial with two travel lanes. Because of high traffic volume along Washington Crossing (CR 546) towards Washington's Crossing Bridge and Pennsylvania, township officials have expressed concern about the intersection of these two routes (see inset in Map 7). A Year 1998 AADT of 15,772 was recorded on a road segment north of I-95. The high volume is due to its access to I-95 and its proximity to Janssen Pharmaceutical, a major employer in the area. The West Trenton Bypass is proposed at the intersection with Upper Ferry Road in the south, to alleviate congestion associated with I-95, but this is still in its initial phase.

**Grand Avenue (CR 579)**

This is a two lane principal urban collector with six foot shoulders along the segment south of the CSX owned rail line. A limiting factor is the railroad underpass which has a clearance of 13 feet and 6 inches. Its low clearance as well as its location at a curve raises safety issues for this section of roadway. Just south of Grand Avenue's intersection with Lower Ferry Road, AADTs of 9,531 and 9,839 were recorded in 1998 and 1999, respectively. The New Jersey Manufacturing Insurance Co., The State School for the Deaf, S & S Investments, and the Heritage Crossing Industrial Park are all trip generators during the peak hours along this corridor.

**Scotch Road (CR 611)**

This is an urban minor arterial providing direct access to the Trenton-Mercer Airport and several corporate office complexes. This facility consists of two travel lanes with additional acceleration/deceleration lanes in the vicinity of major trip generators and I-95. The Conrail railroad underpass which has a clearance of only 12 feet and 4 inches and whose roadway is depressed and experiences flooding. Scotch Road is lined by employment sites generating trips. Its interchange with I-95, coupled with direct access to the Merrill Lynch Site and the Mercer County Airport make for consistently high traffic volumes.

**Upper Ferry Road (CR 634)**

This is a two lane urban minor arterial to the west of Bear Tavern Road and a urban principal arterial to the east of Bear Tavern Road. High traffic volumes and congestion associated with I-95 result in peak period delays. The proposed West Trenton Bypass will alleviate congestion at the Upper Ferry Road/Bear Tavern Road intersection and is in its initial phase.

**Parkway Avenue (CR 634)**

This is a four lane urban principal arterial east of Bear Tavern Road. Going east to west, Parkway Avenue (CR 634) narrows from four lanes to two lanes as it goes under the CSX railroad tracks. The narrow underpass was noted as an access problem due its width inhibiting truck traffic and the inability to widen the road without replacing the entire structure.

**Jacobs Creek Rd (CR 637)**

This is an urban minor arterial which consists of two travel lanes. The posted speed limit for much of its length is 35 MPH. Where Jacobs Creek intersects with CR 546, the majority of the traffic is traveling through the intersection on CR 546. Most of the turning movement is directed to or from CR 546 east of this intersection indicating travel associated with Garden Property LLC, Merrill Lynch, or through travel to NJ 31.

**Lower Ferry Road**

This is an urban minor arterial with two travel lanes becoming Reed Road to the north where it crosses I-95. It crosses Parkway Avenue and in the southern portion connects with River Road. Trip generators along its length include: the Princeton Crossroads Corporate Center, the State School for the Deaf, and the New Jersey Manufacturing Insurance Company.

**Stuyvesant Avenue**

This is a two lane urban minor arterial with a posted speed limit of 25 MPH. Trips are generated by the State School for the Deaf, the New Jersey Manufacturing Insurance Co. and by the Heritage Crossing Industrial Park. An AADT of 4,038 was recorded in 1998 at the southern approach to Lower Ferry Road.

### **Reed Road**

This is a continuation of Lower Ferry Road north of I-95. It is a two lane urban collector with a posted speed limit of 35 MPH. The maximum shoulder width is 7 feet. During the AM peak hour, AADTs of 1,016 were recorded at the Reed Road intersection with Pennington Road (CR 546) and during the PM peak hour AADTs of 1,014 were recorded.

In summary:

- The I-95 corridor, which provides access throughout the study area, is congested and often backed up during the peak hours at the four interchanges in the study area (and a fifth, Federal City Road interchange, just outside the study area).
- The Scudder Falls Bridge, the I-95 passage over the Delaware River into the study area, carries more than 50,000 vehicles per day in 2000 and operates at a level of service "F" during the peak commute times. "No build" scenarios for Year 2030 forecast an additional 30,000 vehicles per day. This bridge is currently under study by the Delaware River Joint Toll Bridge Commission and their consultants for expansion.
- The I-95/Scotch Road interchange experiences peak hour congestion as a result of employees accessing the Merrill Lynch site. Recent improvements to this interchange have helped to alleviate the congestion.
- Congestion on Pennington Road (NJ 31) is primarily in the vicinity of the I-95 interchange. A Year 2000 AADT of 25,171 was recorded on the segment of Pennington Road to the north of the I-95 interchange.
- Congestion occurs at the intersection of Bear Tavern Road/Grand Avenue (CR 579) and Upper Ferry Road in both AM and PM peak periods. These two arterials are the main access points to large employment sites from I-95. Poor traffic signal timing along the corridor may also contribute to the congestion.
- There is congestion at the intersection of Sullivan Way (CR 579) and Lower Ferry Road, during both peak periods. This is primarily because of heavy volumes entering and leaving the complex of the NJ Manufactures Insurance Companies.
- Three rail overpasses with narrowed roadways or low clearances pose a safety challenge for truck and delivery traffic. They can not be altered without complete replacement of the rail structures, which are currently in use.

## SEPTA Rail Service in the Defined Study Area

The West Trenton train station is the northern terminus of Southeastern Pennsylvania Transportation Authority's (SEPTA) R3 West Trenton regional rail line. The station is owned by New Jersey Transit but is leased to SEPTA. The Station is located on Grand Avenue (CR 579) at Railroad Avenue in Ewing Township. Grand Avenue/Sullivan Way is the main road running through the station area with the smaller Railroad Avenue linking the station with several minor streets. The station itself consists of two platforms, each with a red brick building. On the west side of the rail line is a smaller building that now functions as a waiting room. The former station building stands on the east side of the rail line and currently houses an architecture firm. Street lighting throughout the station area is auto-oriented. The pedestrian network in the station area is limited to narrow sidewalks with buffers along Grand Avenue, and pedestrian crossings are not well demarcated. The West Trenton station has been inventoried as a potential site for Transit Oriented Development.

The rail right of way is owned by the CSX corporation and is leased for commuter rail use. The railroad tracks continue northward from the station, but they are used for CSX freight movement. There have been conversations regarding the extension of commuter rail service from Philadelphia to a point adjacent to the large Merrill Lynch office park. NJ Transit bus route 608, which runs between Hamilton and Lambertville, stops near the station at the intersection of Railroad and Grand Avenues, during specific peak hour commuting times, but there is neither a sheltered stop nor a dual fare between the two transit agencies.

SEPTA's R3 regional rail train arrives at the West Trenton Station from Philadelphia 27 times a day and departs for Philadelphia 26 times a day. Weekday frequency is about once per hour and twice per hour during peak commuting times. There are 9 morning peak arrivals and 10 afternoon peak departures. On weekends, service is hourly with 17 trains running in each direction per day.

**Table 8. R3 West Trenton Station Rail Census Counts, 1997-2003**

	1997	1999	2001	2003
Boards	186	261	189	221
Alights	183	199	173	224

Source: SEPTA Regional Rail Surveys for 1997, 1999, 2001, 2003

Table 8 shows the SEPTA regional rail census counts at the West Trenton Station from 1997 to 2003. These numbers are a single day sample of boards and alights which represent station activity. Overall activity for the years shown has varied, but seems to buoy above 180 daily passengers. This sample does not permit any sweeping assessments, but with limited transit connections into the nearby community it can be assumed that the majority of riders are heading towards employment or school in

Philadelphia. Consequently, employment changes in Philadelphia, station access and/or limited free parking may be variables limiting ridership at West Trenton.

The West Trenton station has a parking capacity of 117 free spaces, but in 2002, SEPTA personnel counted 139 cars, with the overflow of 22 automobiles spread around the lot and roadway. It is possible that some Pennsylvania residents find the drive to West Trenton to catch the train easier than the drive to the Yardley station. The Yardley parking lot has 275 daily slots, but has been counted with about 84 percent of capacity. It is likely that free parking in West Trenton, as opposed to SEPTA daily fee parking at the larger Yardley station, is a motivating factor to drive over the bridge (which is not tolled). Parking expansion at West Trenton might help boost boards at the station, as well as get parked cars off the streets and grass strips.

### **Proposed West Trenton Extension**

There have been sketch plans by New Jersey Transit to extend commuter rail service from the West Trenton Station north to Newark, New Jersey connecting with the Raritan Valley line in Bridgewater. The service would use the tracks currently owned by CSX Corporation and is estimated to cost about \$120 Million. An additional station, shown in Map 8 was proposed north of I-95 just west of Reed Road adjoining the Merrill Lynch Office park campus. The parking lot would create a connection between Reed Road and the rail line. The creation of this facility has been encouraged by Merrill Lynch to add a layer of accessibility to their facility. Negotiations with municipalities and CSX and New Jersey Transit railroads would be required prior to any capital planning.

NJ Transit has conducted planning, conceptual design and an Environmental Assessment (EA) for the restoration of commuter rail service on the West Trenton Line between West Trenton and Newark, New Jersey. The proposed project would include the installation of a second track in selected locations, signal improvements, construction of five new stations, parking facilities, train storage yard, and rail equipment acquisition. Information on mobility improvements, environmental benefits, cost effectiveness, operating efficiencies, transit-supportive land use and other factors are being developed. The EA was scheduled for completion in early 2001. Through FY 2001, Congress had appropriated \$4.46 million in Section 5309 New Starts funds for this effort.

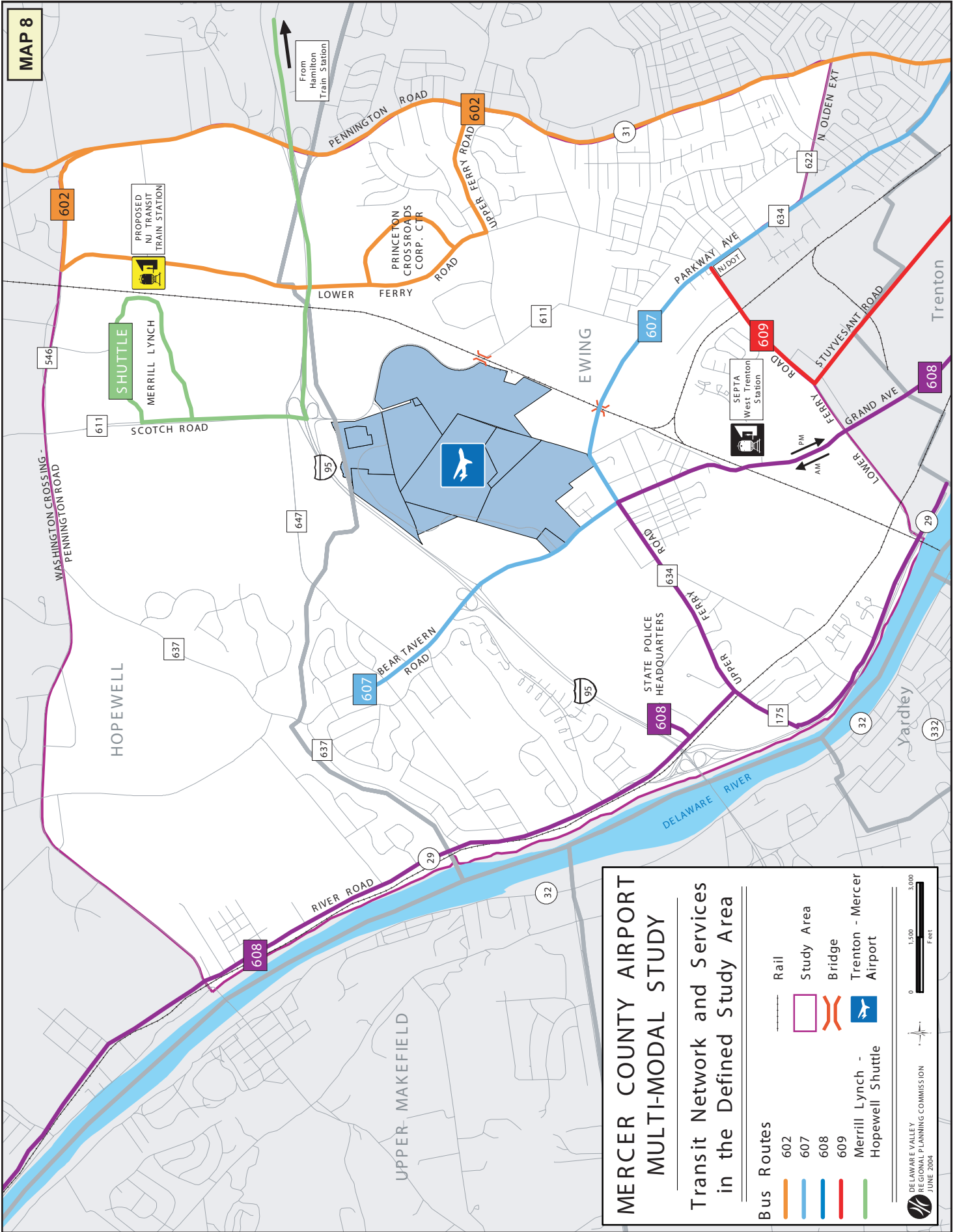
There have also been ideas to extend the newly operational River Line from Trenton to the State House and then further along a current right of way to the West Trenton Station. Potentially, this could create a significant transit hub at the West Trenton Station. The current rail right of way from the State House west is currently used as a pedestrian-bike way. The adaptive reuse preserves the right of way with activity, but does not rule out its conversion to light rail. This River line with a current one hour and thirteen minute travel time from Camden to Trenton City (comparable time to SEPTA's current R7 service), could provide a link into the West Trenton Station, with potential for an airport connection.

The opportunities for the West Trenton station as a major rail transportation center may be summarized as follows:

- Consider rerouting local bus services to create connections or a stop at the West Trenton Train Station, currently there is no direct connection. Additionally, bus or shuttle connections to the airport from West Trenton take advantage of the local transportation infrastructure;
- SEPTA station boards to Philadelphia could be enhanced with expanded free parking;
- New Jersey Transit commuter service is possible to Newark, New Jersey with proximate station connections at the Merrill Lynch headquarters and intermediate stations connecting in the north with the Raritan Valley line;
- New Jersey Transit River Line service from Southern New Jersey, through Trenton City is also a possibility, though this would involve reclaiming a section of pedestrian-bicycle trail;
- CSX freight through service along their right of way could be leveraged to enhance the value of undeveloped or redeveloped parcels in the study area, particularly if they have access to the airport.



This page intentionally left blank



MAP 8

**MERCER COUNTY AIRPORT  
MULTI-MODAL STUDY**  
Transit Network and Services  
in the Defined Study Area

**Bus Routes**

- 602
- 607
- 608
- 609
- Merrill Lynch - Hopewell Shuttle

**Rail**

**Study Area**

**Bridge**

**Trenton - Mercer Airport**

**Merrill Lynch - Hopewell Shuttle**

0 1,500 3,000 Feet

DELAWARE VALLEY REGIONAL PLANNING COMMISSION  
JUNE 2004

## NJ Transit Bus Service in the Defined Study Area

Public transportation provides an additional level of mobility for residents and for outsiders working in the region. Generally speaking, the Mercer County-Airport study area has direct access to employment centers such as the CBD of Philadelphia, Trenton City and multiple regional malls. The future of transit rests ultimately on land use, demographic patterns, and willingness to ride, all of which require political and business motivation to shape into coherence. There still exists opportunities for those with no other choice but to ride transit, the “captive rider”, perhaps enough to appeal to the discretionary rider.

**Table 9. Bus Service in the Defined Study Area**

Bus Route	Service Span	Daily Trips (one way)	Inbnd Pk Trips AM/PM	AM Pk Headway	PM Pk Headway	Off Pk Headway
602	4:55am-10:48pm	32	3/3	60 min	60 min	60 min
607	5:35am-10:23pm	44	7/6	26 min	30 min	60 min
608	6:33am-6:33pm	37	10/8	20 min	20 min	N/A
609	5:43am-10:54pm	53	10/8	18 min	22 min	54 min

Source: NJ Transit Schedules 2003

Four New Jersey Transit (NJT) bus lines, the 602, 607, 608 and 609 pass through the study area, though none directly serve the Trenton Mercer Airport, nor directly connect with the West Trenton Station. Table 9 provides a summary of the bus service in the defined study area. The service span captures the activity in the study area. The number of daily trips combines all trips in both inbound and outbound directions, while the remaining columns are figured from one way inbound trips. The headways are the time it takes between inbound buses passing a point in the study area. Routes 608 and 609 cross peripherally into the defined study area with destinations at the New Jersey State Police Barracks and the New Jersey Department of Transportation (NJDOT), respectively.

The **602 bus** runs inbound between Pennington and Trenton City. Its hours of operation are between 4:55 am (first out of Trenton) and 10:48 pm (last into Trenton). There are 16 round trips per weekday (32 total one way trips) with four morning peak and four afternoon peak trips in each direction which include two outbound “loop” trips in the morning peak and three inbound “loop” trips in the afternoon. These runs operate via NJ 31, Upper Ferry Road, Reed Road and then looping into the Princeton Crossroads Corporate Center (including the Educational Testing Service complex) via Phillips Blvd. The direction and timing of these trip variations suggest a commuting variation for employees into the suburban complex from the city of Trenton.

The **607 bus** runs inbound between the Bear Tavern Road loop in Ewing and Independence Plaza in Hamilton. Its hours of operation are between 5:35 am (leaving

from Independence Plaza) and 10:23 pm (last arrival in Ewing at Parkway Avenue and Scotch Road). The route section within the study area runs west along Parkway Avenue (NJ 634) with time points where it crosses Lower Ferry Road and then Scotch Road (NJ 611), turning onto Bear Tavern Road (NJ 579) and proceeding until turning around at a loop road near the Ewing Township line.

There are 44 round trips per day, with 21 inbound and 23 outbound. Of these trips, there are 7 peak inbound and outbound trips in both the morning and the afternoon peaks. The bus goes through the Conrail underpass on Parkway Avenue, which has been pointed out as a choke point for traffic. The last three outbound trips each weekday night after 7:00 pm “short turn” at Parkway Avenue and Scotch Road, while one inbound trip also originates at that intersection.

The **608 bus** runs inbound between the New Jersey State Police barracks in West Trenton to the Hamilton rail station. The Police trips are only peak hour variations in the morning and afternoon in the study area between 6:33 am and 6:33 pm. The section of the route within the study area consists of a peak hour “loop” variation. This loop proceeds from West Drive to Sullivan Way (becoming Grand Avenue after crossing Lower Ferry Road), passing the West Trenton Regional rail station and then turning onto West Upper Ferry Road, then turning onto River Road and to Trooper Drive to the State Police barracks. From there, the route backtracks east to River Road which merges with West Drive going back to West Trenton.

There are 19 inbound trips and 19 outbound trips on a weekday, with 10 inbound trips in the morning peak, and 8 inbound in the afternoon peak. There is a single additional variation where once in the morning and once in the evening the bus passes Trooper Road and proceeds to Union and Cherry Streets in Lambertville. This peak variation moves in a counterclockwise direction in the West Trenton area in the morning and counterclockwise in the afternoon (see Map 9).

The **609 bus** runs inbound between Ewing (the NJDOT headquarters) and Lawrence Township (the Quakerbridge Mall). Its hours of operation are between 5:43 am (departing NJ DOT) and 10:54 pm (arriving at NJDOT). The section of the route within the study area is a limited service area proceeding from the NJ Library for the Blind (where it short turns for all other trips) along Stuyvesant Drive north to Lower Ferry Road and ending at the NJDOT offices where Lower Ferry meets Parkway Avenue (NJ 634). There are 28 inbound trips to Trenton and 25 outbound trips on weekdays, with 10 inbound in the morning peak, and 8 inbound trips in the afternoon peak.

**Table 10. Weekday Riders on Buses In the Defined Study Area**

Bus Route	2000 Daily Ridership	2003 Daily Ridership	% Change 00-03	2003 Daily Trips	Avg. Rdrs per Trip
602	332	283	-14.8%	32	9
607	1,019	963	-5.5%	44	22
608	1,899	1,910	0.6%	78	26
609	3,265	3,502	7.3%	104	32

Source: New Jersey Transit, December 2000, 2003 Median Ridership

These ridership and trip totals are sampled from the New Jersey Transit Southern Division reports and reflect scheduled trips and route variations for comparable months of December. These numbers provide a general magnitude of ridership and not an accurate count in the study area. The 602 bus ridership is about one percent of the 609 bus ridership, and the trend for both appears headed in opposite directions. The 607 and 608 buses lie in between the two, though their ridership trend is flat or decreasing. Route 609 barely crosses into the study area and the bulk of its riders appear to be traveling from Trenton City. The 602 and 608 buses are discussed in further detail in the following section.

### **Greater Mercer TMA Shuttle Service**

The Mercer County Transportation Management Association runs the Merrill Lynch Hopewell shuttle providing peak-hour commuter rides for Merrill Lynch employees between the Hamilton Rail Station and the Merrill Lynch Campus in Hopewell Township. The service is free, but riders must show their employee ID to ride. Employees are picked up and dropped off at three locations within the Office park.

The shuttle makes a total of seven morning trips from the Hamilton train station to the Merrill Lynch campus. These are scheduled to meet trains arriving from New York City. There are five departure times at the Hamilton train station during the morning peak hours 6:00-9:00 a.m. and two more before 10 a.m. The return trips from Merrill Lynch to Hamilton train station are scheduled to meet trains departing north to New York City. There are seven departure times from Merrill Lynch during the afternoon peak hours 4:00-7:00 p.m. with one before the peak and three more between 7:00 and 9:00 p.m. for a total of eleven afternoon trips.

The bus transit and shuttle services may be summarized as follows:

- There are no direct nor timed bus or shuttle connections at West Trenton station,
- No dual fare transfer instrument exists between SEPTA and New Jersey Transit;
- There is no rail or bus connection between West Trenton station and Trenton Mercer Airport.

## Patterning of Bus Service in the Defined Study Area

Map 10 illustrates the association between New Jersey Transit fare zones, the 602 and 608 bus routes and the study area. When NJ Transit fare zones and study area boundaries match, it is possible to disaggregate the rider movement through the study area from the general route ridership. This is another level of information helping to define bus transit's role in the study area. The other bus routes fare zones do not match the study area boundaries, consequently Routes 607 and 609 were excluded from this analysis.

The analysis of Routes 602 and 608 uses a three day sample taken Tuesday, Wednesday, and Thursday on the 2, 3, 4 of December 2003. The process of bus rider distributions involved matching NJ Transit fare zones with study corridor boundaries. Ridership was then tabulated for trips occurring inside the study area (Zone 1 only) and internal-external corridor trips (Zones 1 to 2 and 1 to 4). The rider totals for each zone in each direction were averaged to provide a representative weekday travel movement. Trips occurring entirely outside the study area were not counted.

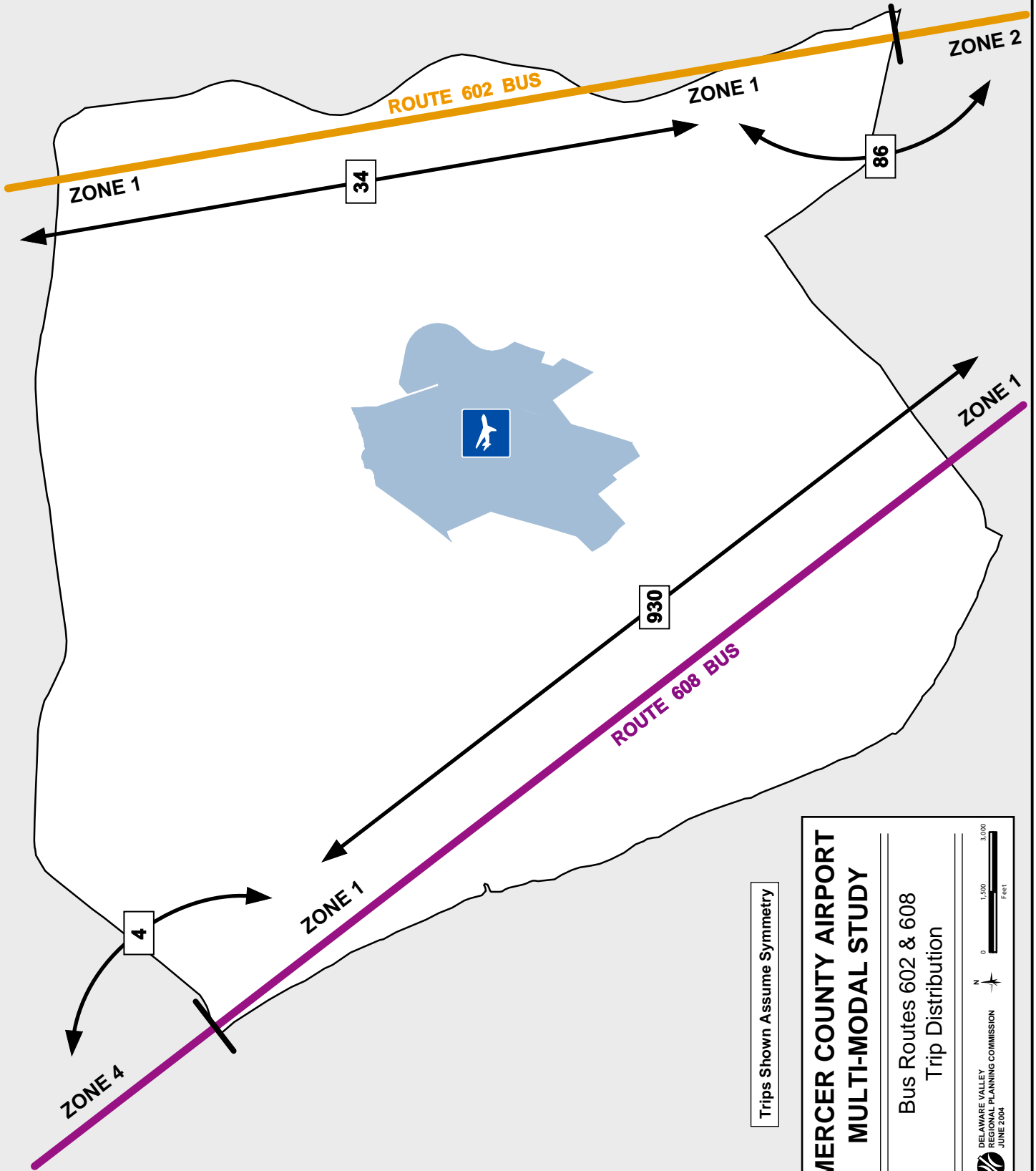
**Table 11. Distribution of Route 602 and 608 Riders**

Route	Internal Riders (both directions)	Ex-In Riders (both directions)	Avg Wkdy Riders*
602	34 (68)	86 (172)	283
608	930 (1,830)	4 (8)	1,910

Sources: New Jersey Transit Farebox Counts, December 2003  
\*New Jersey Transit, Median Ridership, December 2003

Table 11 displays the distribution of internal riders (within fare zones), and external-internal riders (traveling between zones). The number of average weekday riders for the month of December 2003 to provide a contrast with the entire bus route versus the study corridor portion. It is worth noting that Tables 10 and 11 are both derived from the December 2003 data to ensure comparability. The numbers in Map 10 and Table 11 express both one way and total ridership (in parentheses) in the study area. The disaggregated pattern is graphically represented in Map 10 and elaborated upon in the following text.

MAP 9



Trips Shown. Assume Symmetry

**MERCER COUNTY AIRPORT  
MULTI-MODAL STUDY**

Bus Routes 602 & 608  
Trip Distribution

DELAWARE VALLEY  
REGIONAL PLANNING COMMISSION  
JUNE 2004

N  
0 1,500 3,000  
Feet

## Analysis of Bus Ridership Patterns

The 602 bus travels along the NJ 31 corridor with Zone 1 between NJ 31 at Delaware Avenue in Pennington Borough and Ewingville Road, and Zone 2 south to Trenton Commons. While part of Zone 1 extends outside of the defined study area it is still classified as an internal trip. There are four zones for the 608 bus, but only Zone 1, from the Hamilton Bus Complex to River Road at Jacobs Creek Road, and Zone 4 in Lambertville overlap with the study area boundaries. The total farebox count for Route 602 is close to the average weekday ridership (240 to 283 riders), if internal and external/internal numbers are combined. The total farebox count for Route 608 rider nearly matches the average weekday ridership (1,838 to 1,910), if internal and external/internal distributions are added. This means the farebox sample captures about 85 and 96 percent of the average weekday ridership on Routes 602 and 608 respectively.

The 602 bus carries about one-sixth the sampled and average weekday riders as the 608 bus. About 28 percent of the 602 riders (68 of the 240) are getting on and off within Zone 1. This is a comparatively small number of riders and it can not be determined from the available data the proportion getting on and off within the study area, consequently, this information is limited. By contrast, 72 percent of the trips (172 riders) are traveling from outside the study area into the study area and perhaps beyond (Zone 2 into Zone 1). This describes active movement between Trenton City and the study area. One suggestion is that the ETS peak hour loop is justified by this movement and that the aggregation of business parcels in Zone 1 and along the NJ 31 corridor are great attractors for the residents of Trenton.

The 608 bus has 96 percent of its riders traveling internally from the Hamilton Bus Complex to River Road at Jacobs Creek Road, with only 8 trips passing between zones 1 and 4. While a considerable portion of Zone 1 is outside the study area, the AM and PM loop variation along Grand Avenue, Upper Ferry Road and River Road “triangle” suggests strong ridership in that area. This break out also makes clear that the riders are not venturing beyond the Jacobs Creek Road edge of the study area. Whatever movements are occurring are being undertaken within the Trenton City – Ewing Township area.

In summary: the patterning of ridership by zones permits general origin and destination conclusions in the study area. Second, riders on the bus are crossing into the study area, or in the case of the 608 bus, operating within Zone 1 areas where the parcel land use is heavily employment based. This movement is also reinforced by peak hour loops for both bus routes which supply inbound and outbound transport to well developed employment nodes. One may assume from land use maps of the “greater” study area and the parcel maps of the “defined” study area that these general rider patterns are movements of commuters from the Trenton residential areas into and along areas with clustered employment.



#### IV. CONCLUSIONS AND RECOMMENDATIONS

Multi-modal constraints or opportunities fall into some major categories:

**The Ewing and Hopewell study area provides an “Advantage of Place”.**

Ewing Township is forecast to have flat population and employment growth, but it possesses vital infrastructure: an airport, train station, and major highway access. Hopewell Township, which is relatively undeveloped, is forecast to have population and employment growth of about 70 and 115 percent, respectively. The forecast trends impacting residential growth and business location are influenced by large areas of undeveloped land and an “advantage of place” in Ewing and Hopewell Townships derived from multimodal transportation access.

**The current road network will be strained to handle the forecast business and residential development.**

Forecast growth will strain the current infrastructure, particularly at I-95 exchanges, bridge crossings, and rail underpasses where traffic is already congested. As forecast business growth proceeds in the airport area and to the north, congestion is likely to grow. Demographic growth will contribute to an additional 30,000 vehicles congesting the Scudder Falls Bridge/I-95 corridor by Year 2025. The replacement of rail underpasses would permit appropriate height and lane widths for safety and internal automobile and truck circulation. It is also worth reviewing business development plans to ensure that road improvements are integrated into their design rather than press retrofit access solutions on the DOT.

**There are no public transit connections with the Trenton Mercer Airport.**

There are currently no public transit connections between the Trenton Mercer Airport and other travel nodes such as Trenton City, the West Trenton Train station, or the Route 1 business corridor. Terminal and parking expansion could make the airport more attractive to potential commercial and corporate customers. One recommendation is to examine transit connections between the airport and the West Trenton train terminus or to extend access by current bus service to potential park and ride locations over the river in Pennsylvania. Another recommendation is an airport shuttle circulator, perhaps funded by the businesses through the TMA.

**The Trenton Mercer Airport is being used at 40 percent of capacity.**

Increased commercial or corporate service would use the airport’s amenities to a fuller extent, though not without controversy. Any policy decisions regarding the Airport rest with the Mercer County Administration. Sections of undeveloped land in Hopewell and Upper Makefield Townships or large corporate parcels might be explored as flight right-of-ways to minimize neighborhood conflicts. Subdivision and land use reviews might be advised to consider airport flight patterns in future development plans. Arrangements with commercial carriers limiting hours of departures and arrivals, might also be sought which maximize flight hours when most residents would be at work.

**West Trenton Station has potential as a rail crossroad for the Delaware Valley.**

Connections by SEPTA in the south and potentially NJ Transit to the north could enhance this location as a major transit hub. Bus connections with the surrounding area, which currently don't exist, could enhance local accessibility. The potential rail extension to the Raritan Valley line in the north and a River Line connection from the south could enhance connections between north and south New Jersey. A bus connection with the airport might also increase mobility options in the region.

**Rail-freight access and rail extension opportunities could be figured into adjacent redevelopment sites.**

Freight movement remains important on the rail corridor as CSX continues to run regular service on these tracks. Considerable negotiations would be necessary to make enhance freight movement in this corridor work. The confluence of freight connection, redevelopment opportunity, and airport proximity are a potent mix for business incubation in this area. Multi-agency cooperation and coordination would need to be brokered by the County, township or land owners as a means of enhancing the standing infrastructure for economic benefit.

**Mercer County's role as a multi-modal transportation center depends on multiple jurisdictional communication and cooperation.**

The allure of open space is often a call for unconstrained development. Yet the location and development of the transportation system produces a ripple effect in neighboring municipalities. Bridge expansion may open the floodgates of development and traffic in a seemingly unrelated municipality. Airport related issues may have consequences across the eastern seaboard and inland, requiring federal intervention. Strong facilitation and coordination among municipalities or agencies would to be undertaken if multi-modal transportation center development is labeled a priority.

This page intentionally left blank



---

## MERCER COUNTY AIRPORT MULTI-MODAL TRANSPORTATION CENTER STUDY

**Publication No.:** 04030

**Date Published:** September 2004

**Geographic Area Covered:** Southwestern Mercer County and southeastern Bucks County.

**Key Words:** Trenton Mercer Airport, West Trenton Station, Ewing Township, Hopewell Township, SEPTA, New Jersey Transit, Scudder Falls Bridge, demographic forecasts,

**ABSTRACT:** The report explores the potential for a multi-modal transportation center in the southwestern portion of Mercer County surrounding the Trenton Mercer Airport. Analysis uses forecast demographic data, current land use, and inventories of the multiple transportation modes converging in the study area. Based on the available data, the study area was determined to have an extensive multi-modal transportation infrastructure, though the various modes are not integrated, and the airport remains an underutilized resource. In addition to recommendations for modal integration, land use planning to create an air space “right of way” for the airport is seen as an important factor for the future. Ultimately, transportation priorities and strategies facilitating growth require constructive inter-state, inter-municipal, and inter-agency cooperation and communication.

---

Delaware Valley Regional Planning Commission  
8<sup>th</sup> Floor – The Bourse  
111 South Independence Mall East  
Philadelphia, PA 19106-2582

**Phone:** 215-592-1800  
**Fax:** 215-592-9125  
**Internet:** [www.dvrpc.org](http://www.dvrpc.org)

**Staff Contact:** Joseph F. Hacker, Ph.D., AICP  
**Direct Phone:** 215-238-2935  
**Email:** [jhacker@dvrpc.org](mailto:jhacker@dvrpc.org)



Delaware Valley  
Regional Planning  
Commission

The Bourse Building  
111 South Independence Mall East  
Philadelphia, PA 19106-2582  
215.592.1800  
[www.dvrpc.org](http://www.dvrpc.org)