INCREASING INTERMODAL ACCESS *TO TRANSIT*

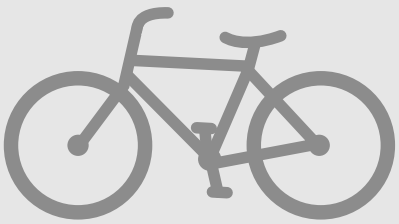
PHASE I

Delaware Valley Regional Planning Commission

SEPTEMBER 2004

INCREASING INTERMODAL ACCESS *TO TRANSIT*

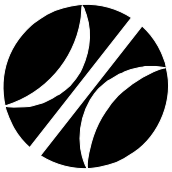
PHASE I



Delaware Valley Regional Planning Commission

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 preparation of this report was funded through federal grants from the U.S. Department of Transportation's Federal Highway Administration (FHWA) and the Pennsylvania Department of Transportation. 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

LIST OF TABLES

LIST OF MAPS

EXECUTIVE SUMMARY

This study analyzes land use and demographic data surrounding selected transit stations or hubs in the region. The intent of this analysis is to determine the extent to which the areas around transit facilities support bicycle and pedestrian traffic. Phase I of this study establishes which transit facilities are best studied further using Bike Level of Service (BLOS) software.

In this study, land use and demographic data are the two indicators analyzed. Land use is compared between units of one quarter mile and one mile boundaries from the selected stations. This comparison provides quantitative values for larger contexts than typical Transit Oriented Development (TOD) studies in the region. Demographic data from Year 2000 and Year 2025 forecasts are compared at the Transportation Analysis Zone (TAZ) level. Population, automobile and zero vehicle household are the data assessed for time-series mobility trends within the TAZ area surrounding the stations. The TAZ data is not congruent with the one mile land use boundaries, thus limiting cross-indicator comparisons.

The land use comparison reveals that pedestrian and bicycle unfriendly areas near transit stations may be non-motorized friendly generators outside the one quarter mile TOD boundary. In the case of Lindenwold, 69th Street and Trenton Station, for example, residential generators have been pushed away from the station by the transportation and commercial facilities supporting the station proper. The TAZ level demographic data show that population growth is generally accompanied by a rise in automobiles, or in the case of Ardmore Junction, a modest rise in zero vehicle households.

The data analysis yields three stations recommended for further study: Ardmore Junction, Lindenwold Station, and Trenton Station. Each of these stations is an important node in its transit network and has potential for attracting non-motorized trips to the stations. The “doughnut” like patterning of residential land use and accompanying population trends suggests a greater need for access through the immediate station surroundings to the stations at the center. The opportunity to enhance non-motorized mobility options through a deeper assessment of station access helps support or foster long term station boardings. The next step is the further gathering of data in support of BLOS software and the assessment of specific non-motorized mobility enhancements supporting station access.

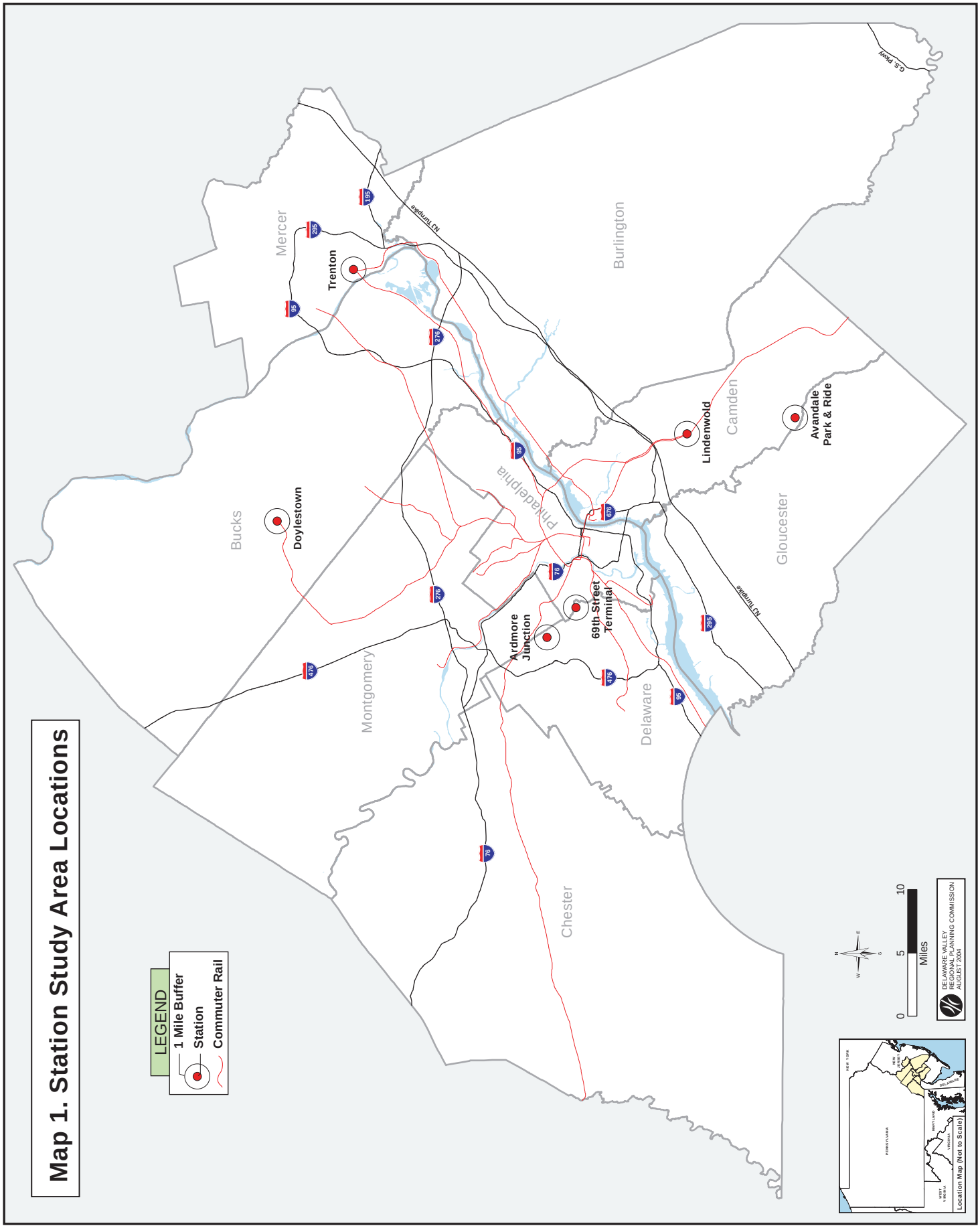
I. INTRODUCTION

This report is Phase I of a two phase study assessing non-motorized access to commuter rail stations, bus terminals or transit park and rides by examining the contextual land use and demographic data proximate to the stations. Phase II surveys station area facilities in support of Bike Level of Service (BLOS) software. Once the BLOS software has the requisite infrastructure data, it produces a letter grade (A to F) defining the level of service suitable for bicycle and pedestrian traffic using the facilities. Phase I of this study quantitatively defines the station land use and demographic context with recommendations for BLOS station analysis to be conducted in Phase II. The essential question posed in this project is: To what extent are stations accessible to bicycle and pedestrian traffic and how can this access be enhanced? The goal is to improve safety, comfort, and convenience of transit, bicycling and walking.

This technical memorandum expands upon previous station studies such as Transit Oriented Development and ongoing passenger and parking surveys by describing an expanded area of one mile surrounding each station. The Year 2000 land use surrounding the stations is disaggregated into one quarter and one mile zones for examination. The analysis takes into account the population and employment change between 2000 and forecast year 2025 at the Traffic Analysis Zone level (TAZ). From these indicators, conclusions may be drawn as to the relative context in which accessibility will be measured.

The chosen stations reflect the diversity of mode (rail, trolley, bus), differing transit systems (New Jersey Transit, PATCO, SEPTA) and the lack of previous data gathering and analysis. Map 1 locates the six stations chosen for Phase I. They are Ardmore Junction on SEPTA's Route 100 line; The Avandale Park and Ride for New Jersey Transit buses; SEPTA's Doylestown station on the R5 regional rail line; PATCO's Lindenwold station; SEPTA's 69th Street Terminal, the intersection for bus, trolley and subway-elevated service; and the Trenton Station, with New Jersey Transit regional rail and AMTRAK service to New York City, the terminus of SEPTA's R7 line, bus service and expansive private parking deck facilities.

The stations are located in New Jersey and Pennsylvania and have affiliations with each of the major transit providers in the region. Each station also handles multiple transit modes in urban and suburban settings. These stations collectively provide an array of settings, modes, agencies and services making them an representative sample to analyze and whose insights may be transferable to other locations or situations.


Map 1. Station Study Area Locations
LEGEND
1 Mile Buffer
Station
Commuter Rail
Trenton
Doylestown
Ardmore Junction
69th Street Terminal
Lindenwold
Avandale Park & Ride
Mercer
Burlington
Camden
Gloucester
Bucks
Montgomery
Philadelphia
Delaware
Chester
NJ Turnpike
NJ Turnpike
G.S. Pkwy
0
5
10
Miles
DELAWARE VALLEY REGIONAL PLANNING COMMISSION
AUGUST 2004
Location Map (Not to Scale)

Method of Analysis:
The method of analysis is a two step quantitative comparison of land use by distance and demographic current and forecast indicators surrounding each station. The emphasis will be on the land use and demographics, with some comment on the immediate transportation infrastructure enabling bicycle and pedestrian access to each station.

The first step in the analysis employs land use comparisons by distance around each station. Year 2000 land use surrounding the stations is aggregated in quarter mile and one mile buffers. The statistical data is derived from GIS generated maps. The analysis employs only Year 2000 data, there is no time series comparison, rather the make up of the two study buffers are compared. This provides a quantitative basis lacking in some TOD analyses, as well as assessing the broader context

The many types of land use data have been reclassified into six categories: commercial, manufacturing, residential, transportation, undeveloped and other. Most land use categories summarize their respective categories by combining multiple definitions of the same "type" into a single category. For example, the residential category combines all types of residential in order to summarize this land use, while the "other" category includes less prominent land uses such as community service, military, utilities and water features.

The second step in the analysis uses comparisons between 2000 and 2025 demographic indicators. Year 2000 demographic attributes and Year 2025 forecasts are presented in both graphic and tabular information in order to compare change over time in the station areas. This data is aggregated by 1990 Transportation Analysis Zones, since the Year 2000 TAZ boundaries were not available during the time of the study. Included are TAZ's within and intersecting the one-mile study area radii. This means the TAZ areas under analysis do not cleanly fit into the one mile boundaries established in the land use analysis.

Population, total vehicles and zero vehicle households are the demographic indicators used in the TAZ level analysis. The degree of population change over time hints at the the study area as a generator of trips. The number of automobiles suggests the forecast intention for motorized mobility, though this option does not necessarily exclude trips to the proximate transit stations. The inclusion of zero vehicle households suggests a level of station area proximity as an option for households choosing transit mobility as a travel option. Taken together these demographic indicators suggest to what extent the station environments generate, enhance, support, and promote pedestrian/bike as a mobility option to the nearest transit station. The compiled and analyzed data is used to recommend stations for more in depth study of their potential pedestrian and bike access.

This page intentionally left blank.

II. STATION STUDY AREAS

ARDMORE JUNCTION

Ardmore Junction is a station along the Route 100 high speed line, with connections to SEPTA bus route 103, which serves the area between 69th Street Station to Suburban Square in Ardmore and which runs along a former trolley right of way. There are also scheduled connections between the train and shuttles for two assisted living centers.

Land Use

Table 1 shows the land use data around Ardmore Junction in sections of one quarter mile and one mile with land use percentages within each distance. It is worth noting that the quarter mile boundary occupies about six percent of the total area bounded by one mile. This data is displayed graphically in Map 2 and Map 3 on the following pages.

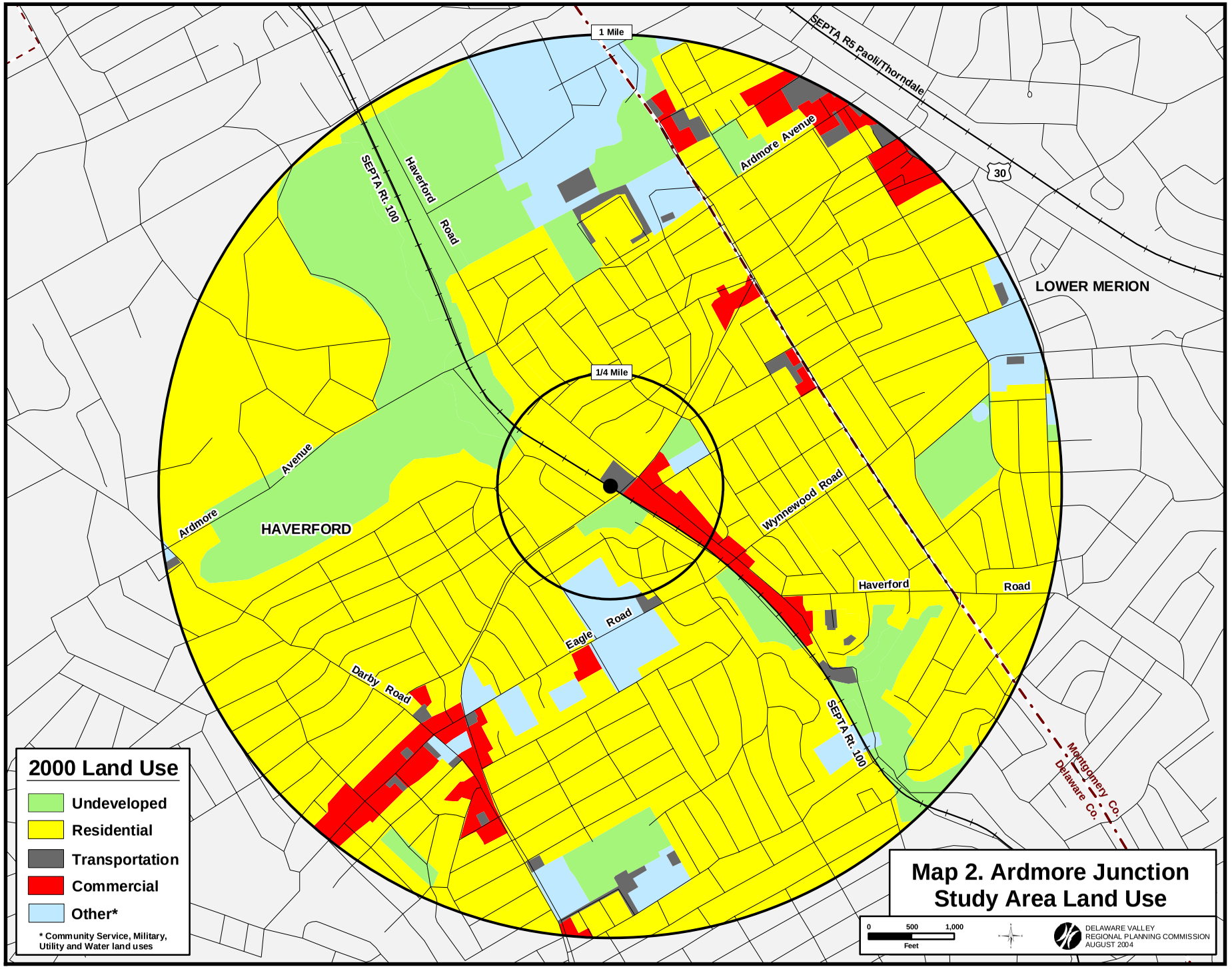
Comparing land uses by distance from the station yields a couple of minor differences worth noting. Both commercial and residential area are a larger proportion of the quarter mile land area than the full mile, 7.7 percent vs. 4.0 percent and 77.8 percent vs. 70.3 percent. The area occupied by undeveloped land in the quarter mile ring is only 7.0 percent vs. 17.0 percent in the mile ring, making it the greatest proportional land difference. Interestingly, there is no manufacturing in the entire one mile area surrounding the station. The most popular use of land outside of the quarter mile area is residential (70.3 percent) followed by undeveloped land, which occupies 17 percent of the one mile area.

TABLE 1. ARDMORE JUNCTION STUDY AREA BY LAND USE (IN ACRES)

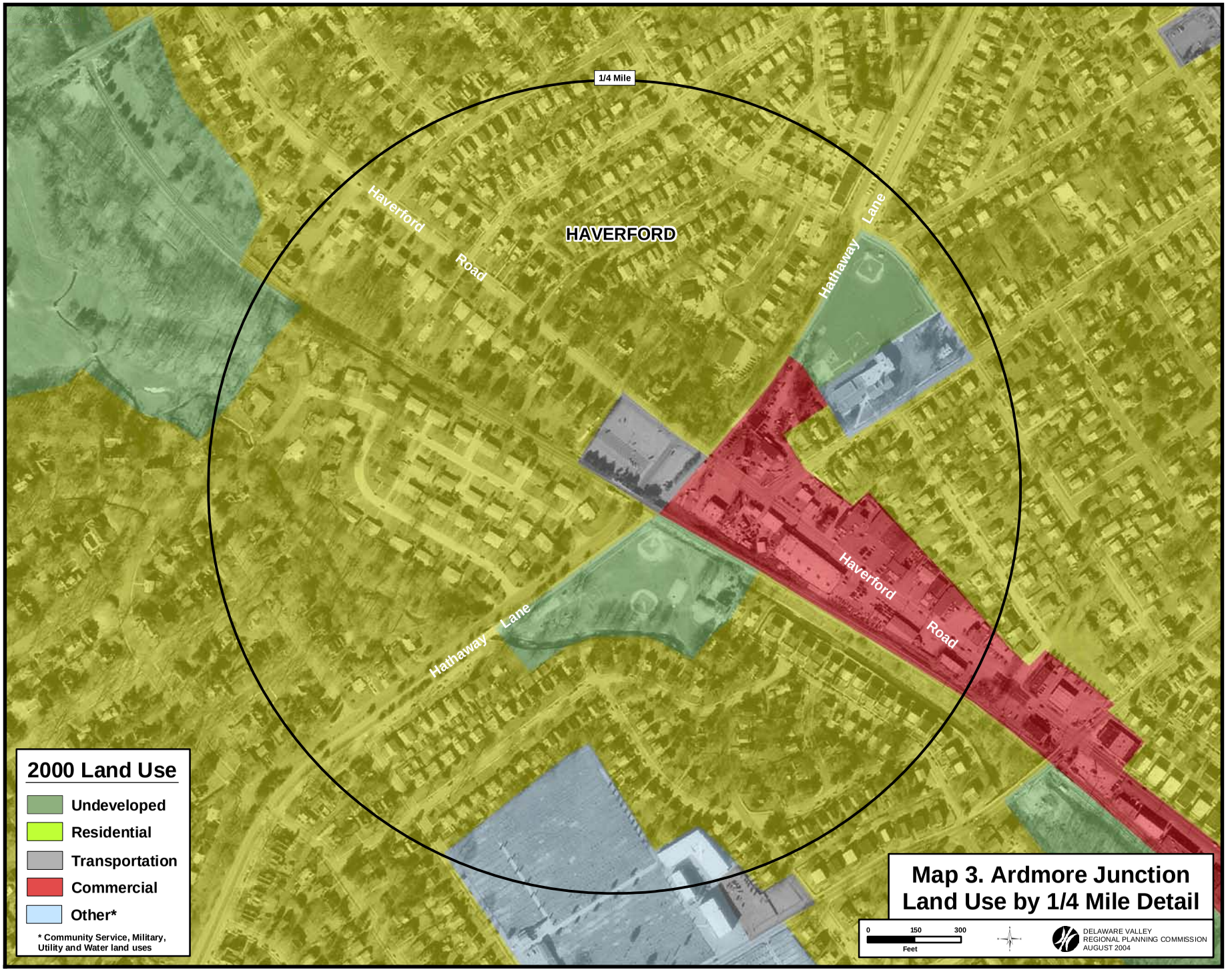
Ardmore Junction	1/4 Mile	1 Mile	% 1/4 Mile	% 1 Mile
Commercial	9.7	79.8	7.7%	4.0%
Manufacturing	0.0	0.0	0.0%	0.0%
Other	7.4	146.8	5.9%	7.3%
Residential	97.7	1414.4	77.8%	70.3%
Transportation	2.0	28.3	1.6%	1.4%
Undeveloped	8.8	342.8	7.0%	17.0%
TOTAL	**126**	**2012**	**100.0%**	**100.0%**

Source: DVRPC 2000 Land Use

Map 3 is an aerial representation of the land use within a quarter mile of the Ardmore Junction Station. Within the quarter mile ring, commercial uses are concentrated in the area southeast of the station along Haverford Road. A large portion of the undeveloped land in this area consists of parks; leaving little land available that could significantly change the character of the Station area in the future.



Map 2. Ardmore Junction Study Area Land Use



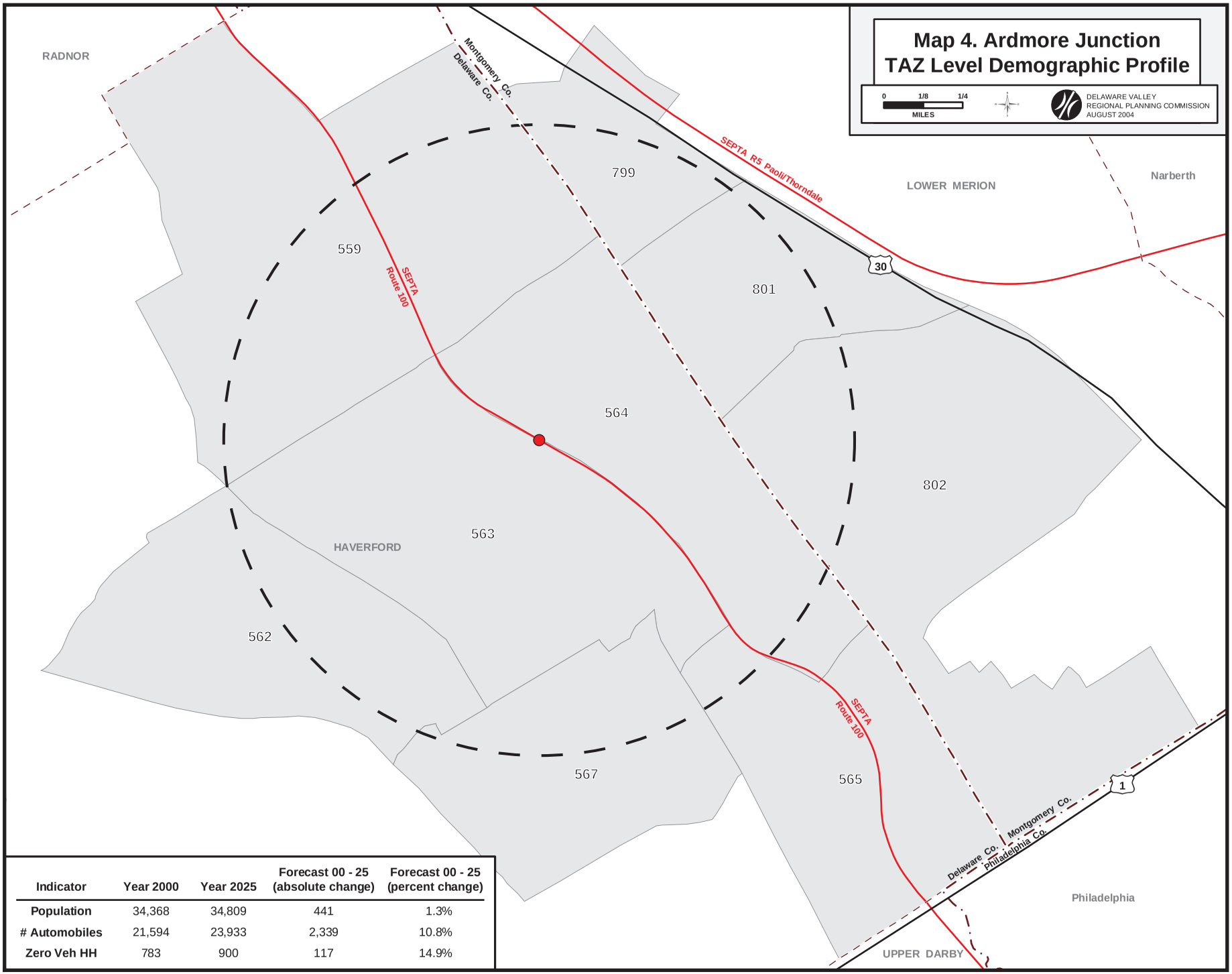
Map 3. Ardmore Junction Land Use by 1/4 Mile Detail

DEMOGRAPHICS

There are nine TAZ's which intersect or are within the one mile buffer around Ardmore Junction station as shown in Map 4. The map data table provides Year 2000 and Year 2025 forecasts to profile the present and future demographic scenarios potentially influencing access to the station. The indicators used in this profile are population, the number of automobiles, and the number of zero vehicle households. The complete disaggregated TAZ data sets can be found in the Appendix in the back of this report.

Since TAZ's cannot be subdivided, the following data is true for the entire area covered by the nine aforementioned TAZ's. Information specific to the one mile area surrounding Ardmore Junction may be slightly different, however, the same general trends will apply.

While the current population (34,368 people) within the nine TAZ's is expected to increase by 1.3 percent by 2025, the number of automobiles in this same area is projected to grow by 10.8 percent. Similarly, between 2000 and 2025, zero vehicle households are forecasted to increase by 14.9 percent or 117 households. This increase of zero vehicle households in comparison to the flat population growth suggests that the Ardmore Junction station is accessible by non-motorized means such as walking or biking and that this intermodalism will continue to increase in the future. As the amount of zero vehicle households in the immediate vicinity of the Station is expected to increase slightly faster than the number of automobiles, it is likely that most residents see the use of transit as a viable commuting and transportation option.



Indicator	Year 2000	Year 2025	Forecast 00 - 25 (absolute change)	Forecast 00 - 25 (percent change)
Population	34,368	34,809	441	1.3%
# Automobiles	21,594	23,933	2,339	10.8%
Zero Veh HH	783	900	117	14.9%

This page left blank intentionally.

AVANDALE PARK & RIDE

Land Use

Table 2 shows the land use data around Avandale Park & Ride in sections of one quarter mile and one mile with land use percentages within each distance. Maps 5 and 6 visually illustrate this data. It is worth noting that the quarter mile boundary occupies about six percent of the total area bounded by one mile.

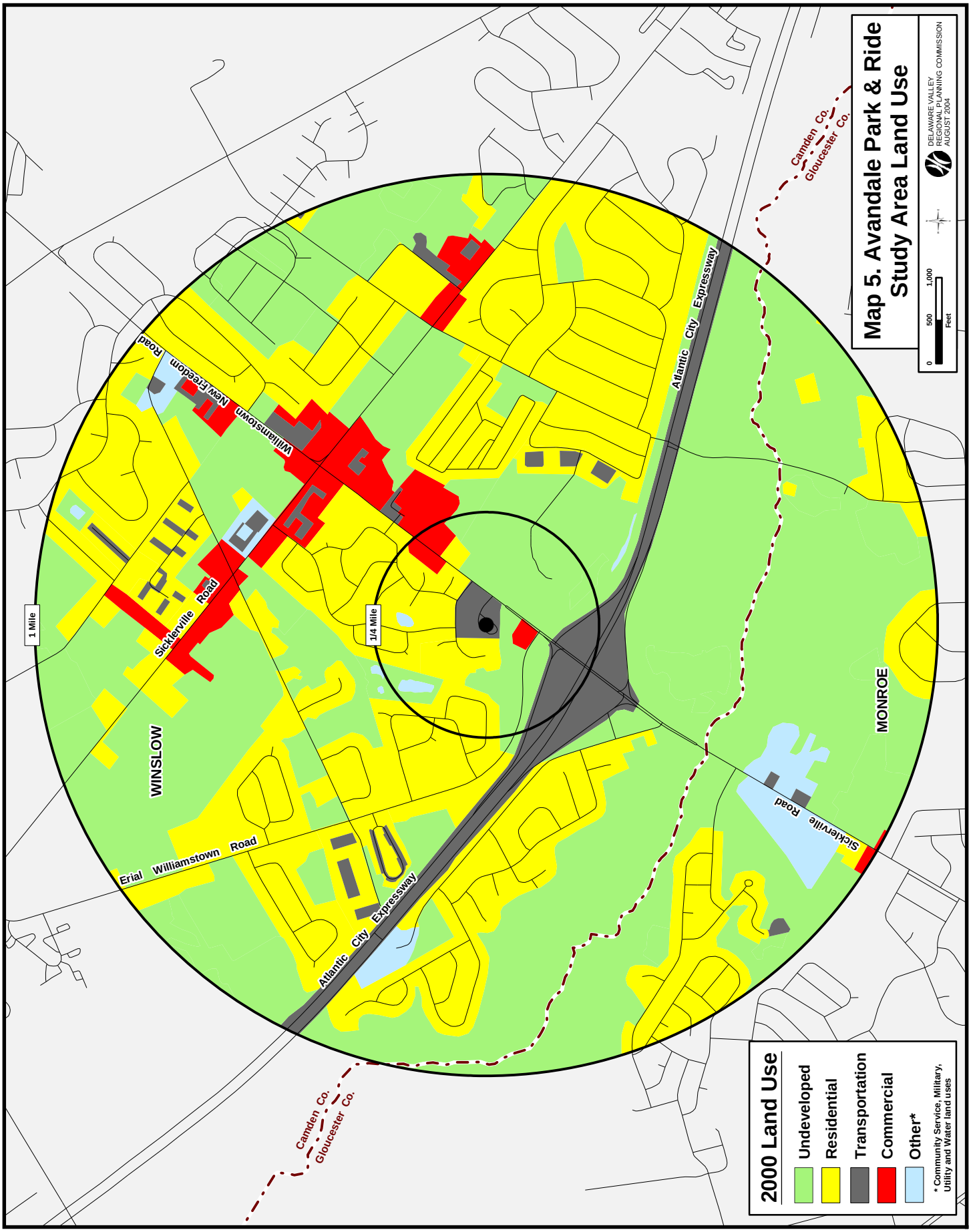
Comparing land uses by distance from the station yields a couple of minor differences worth noting. Residential area holds a slightly larger proportion of the full mile area compared to the quarter mile area, 36.8 percent vs 35.2 percent. In both cases, undeveloped land occupies the largest amount of area, and is higher than that of both residential and commercial combined. Within the quarter mile ring, 42.9 percent of the land is undeveloped while 39.9 percent is occupied by either commercial or residential uses. Likewise, the full mile exhibits 52 percent undeveloped land compared to 40.4 percent commercial or residential area. The greatest proportional land difference between the quarter mile radius and the full mile area occurs with transportation land use, which occupies 15.9 percent of the land immediately surrounding the Avandale Park & Ride, compared to 5.5 percent in the entire mile radius. Both the quarter mile and one mile areas share the trend of having most land as either undeveloped or residential and neither area contains manufacturing land use.

TABLE 2. AVANDALE PARK & RIDE STUDY AREA BY LAND USE (in acres)

Avandale Park & Ride	1/4 Mile	1 Mile	% 1/4 Mile	% 1 Mile
Commercial	5.9	72.5	4.7%	3.6%
Manufacturing	0.0	0.0	0.0%	0.0%
Other	1.7	42.9	1.3%	2.1%
Residential	44.2	739.4	35.2%	36.8%
Transportation	19.9	111.3	15.9%	5.5%
Undeveloped	53.9	1045.8	42.9%	52.0%
TOTAL	**126**	**2012**	**100.0%**	**100.0%**

Source: DVRPC 2000 Land Use

Map 6 is an aerial representation of the land use within a quarter mile of the Avandale Park & Ride. Most of the residential land use in this area is located north and west of the Park & Ride, with land to the south and east being primarily undeveloped. A commercial concentration exists along the northern portion of Williamstown New Freedom Road, with another small cluster along the same road just south of the Park & Ride.


Map 5. Avandale Park & Ride
Study Area Land Use
DELAWARE VALLEY
REGIONAL PLANNING COMMISSION
AUGUST 2004
0
500
1,000
Feet
2000 Land Use
Undeveloped
Residential
Transportation
Commercial
Other*
* Community Service, Military, Utility and Water land uses
1 Mile
1/4 Mile
WINSLOW
MONROE
Camden Co.
Gloucester Co.
Atlantic City Expressway
Williamstown
New Freedom
Road
Sicklerville
Road
Erial
Williamstown
Road


1/4 Mile
WINSLOW
704
New Freedom Road
Williamstown
Atlantic City Expressway
2000 Land Use
Undeveloped
Residential
Transportation
Commercial
Other*
* Community Service, Military, Utility and Water land uses
Map 6. Avandale Park & Ride
Land Use by 1/4 Mile Detail
0 150 300
Feet
DELAWARE VALLEY
REGIONAL PLANNING COMMISSION
AUGUST 2004

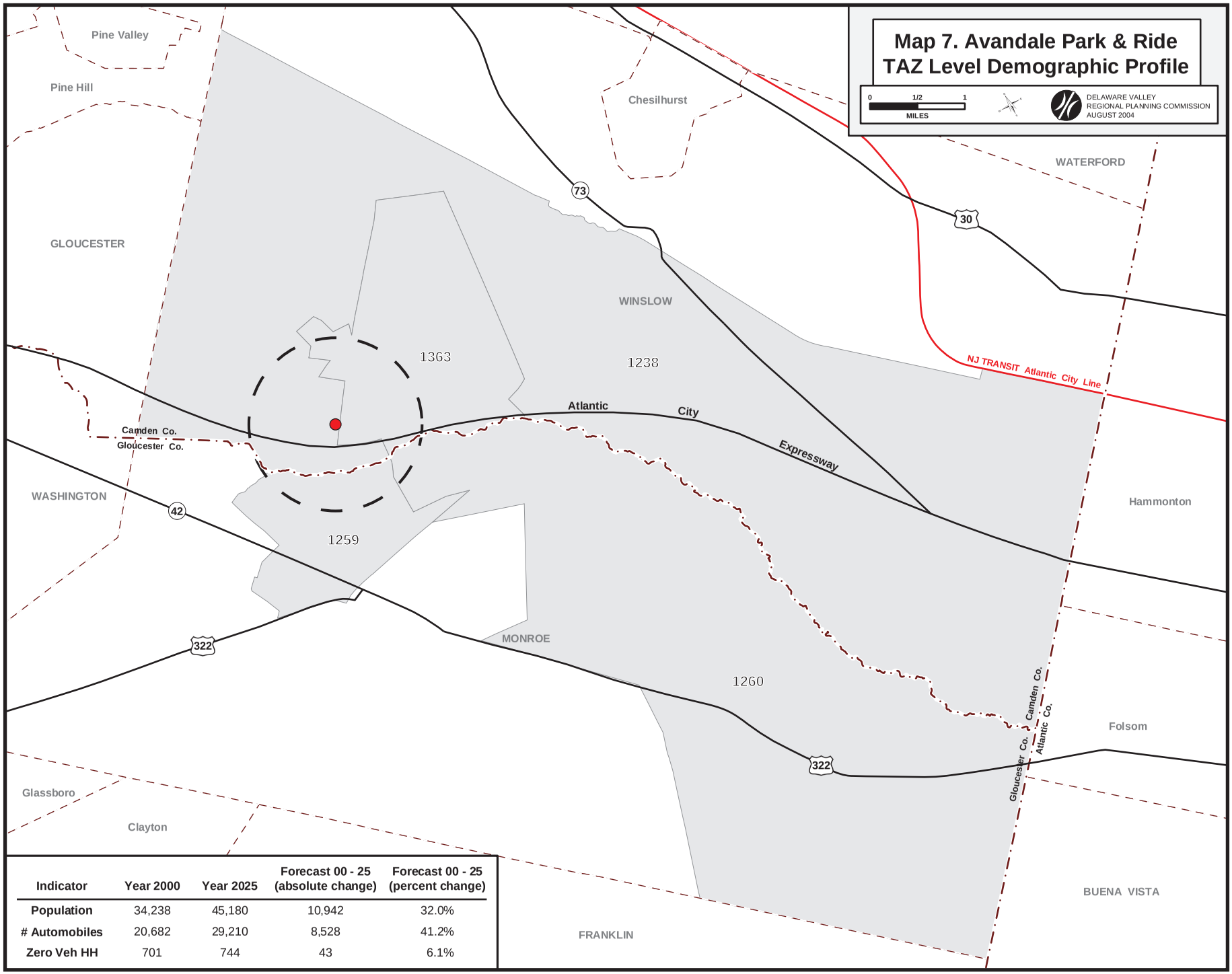
DEMOGRAPHICS

There are four TAZ's which intersect or are within the one mile buffer around the Avandale Park & Ride station as shown in Map 7. The map data table provides Year 2000 and Year 2025 forecasts to profile the present and future demographic scenarios potentially influencing access to the station. The indicators used in this profile are population, the number of automobiles, and the number of zero vehicle households. The complete disaggregated TAZ data sets can be found in the Appendix in the back of this report.

Since TAZ's cannot be subdivided, the following data is true for the entire area covered by the four aforementioned TAZ's. Information specific to the one mile area surrounding Avandale Park & Ride may be slightly different, however, the same general trends will apply.

Between 2000 and 2025, the population within one mile of Avandale is expected to increase by nearly one third (32%, or 10,942 people). This 32 percent population increase will contribute to a forecasted 41.2 percent growth in the number of automobiles during the same time period. This pair of statistics suggests that a significant number of local residents will rely on automobiles as a primary mode of transportation.

In contrast, zero vehicle households are projected to experience a slight increase of 6.1 percent, or 43 households. While an increase in zero vehicle households assumes that the area will continue to be accessible by non-motorized means, the large difference between the increase in zero vehicle households and the increase in automobiles suggests that the Avandale Station is not greatly accessible by intermodal means such as bicycling or walking. This uneven growth could also illustrate a travel pattern of origins and destinations that are not readily served by the Avandale Park & Ride.



Indicator	Year 2000	Year 2025	Forecast 00 - 25 (absolute change)	Forecast 00 - 25 (percent change)
Population	34,238	45,180	10,942	32.0%
# Automobiles	20,682	29,210	8,528	41.2%
Zero Veh HH	701	744	43	6.1%

This page left blank intentionally.

DOYLESTOWN STATION

Land Use

Table 3 shows the land use data around Doylestown in sections of one quarter mile and one mile with land use percentages within each distance. It is worth noting that the quarter mile boundary occupies about six percent of the total area bounded by one mile. This data is displayed graphically in Map 8 and Map 9 on the following pages.

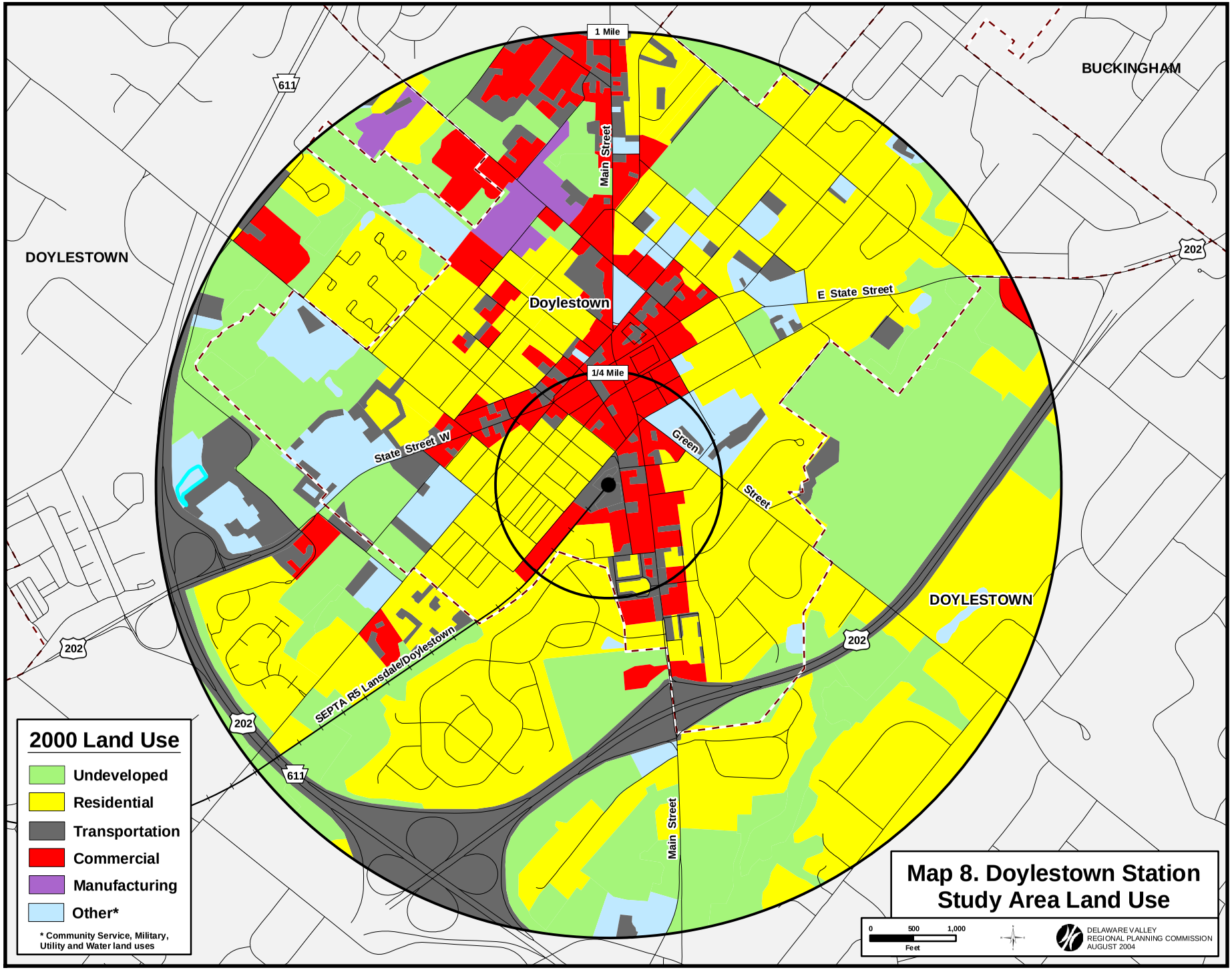
When examining the land uses by distance from the station there are a couple of significant differences worth noting. In the quarter mile surrounding the station, the proportion of commercial land use is 34.5 percent while the entire one mile area contains 8.5 percent commercially utilized land. Within the quarter mile ring there is no manufacturing or undeveloped land whereas the mile ring contains 1.2 percent of manufacturing land, and 28.6 percent of land classified as undeveloped. This large difference of undeveloped land is the greatest proportional land use difference between the two boundaries. In both study areas, residential land use is the primary land use, occupying 46.6 percent of the quarter mile area and 43 percent of the entire mile area. From this point, the use of land differs between the quarter mile boundary and the mile area. With a quarter mile of the station the most popular land uses based on percentage are residential, commercial, and transportation. In contrast, the one mile area consists of higher percentages of residential, undeveloped and transportation land uses.

TABLE 3. DOYLESTOWN STATION STUDY AREA BY LAND USE (in acres)

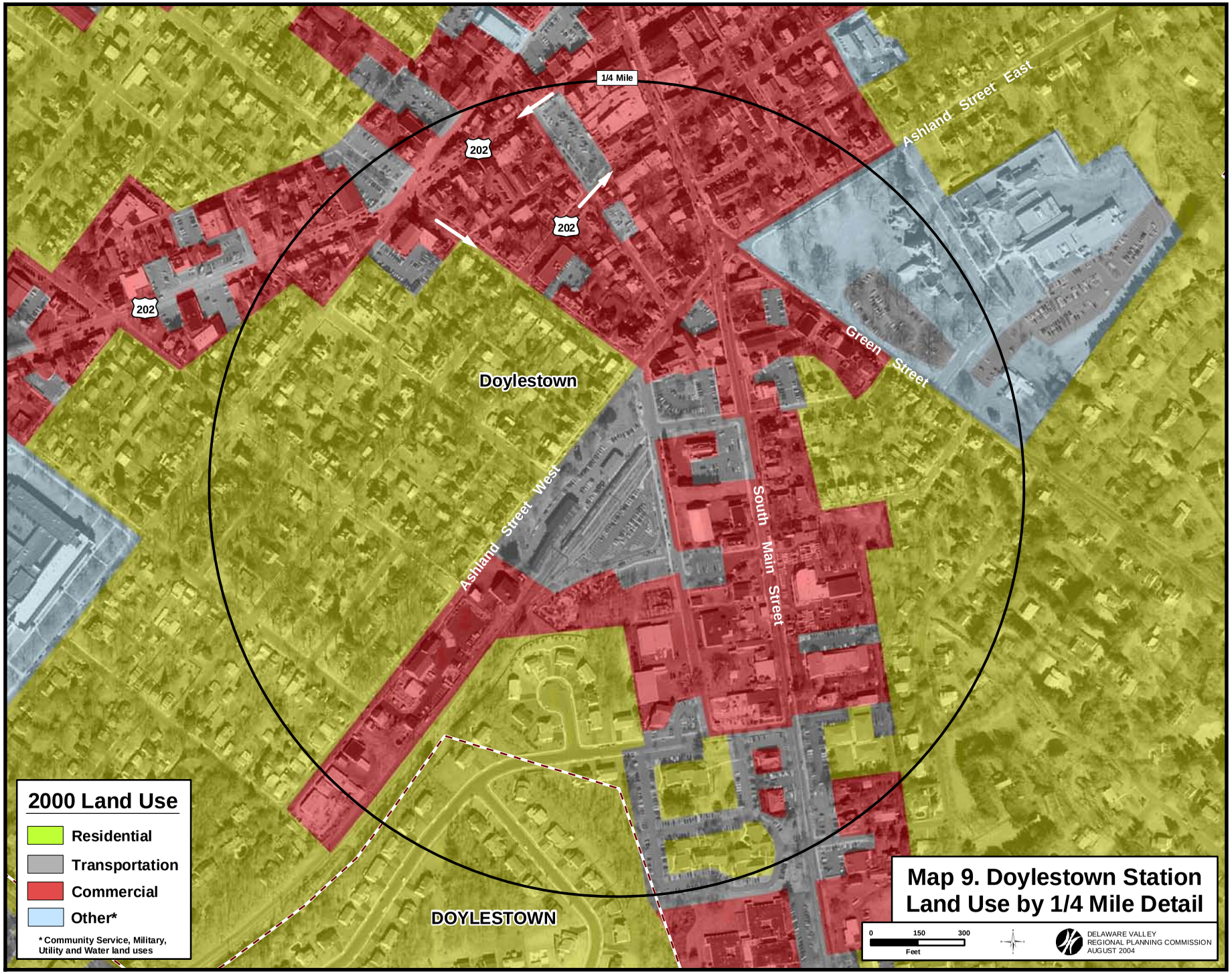
Doylestown	1/4 Mile	1 Mile	% 1/4 Mile	% 1 Mile
Commercial	43.4	171.3	34.5%	8.5%
Manufacturing	0.0	23.8	0.0%	1.2%
Other	6.3	124.0	5.0%	6.2%
Residential	58.5	866.1	46.6%	43.0%
Transportation	17.4	252.4	13.9%	12.5%
Undeveloped	0.0	574.4	0.0%	28.6%
TOTAL	**126**	**2,012**	**100.0%**	**100.0%**

Source: DVRPC 2000 Land Use

The land uses within the quarter mile ring are depicted in Map 9, with the use of aerial photography. Commercial uses are concentrated about the intersection of Ashland Street, Main Street, and Green Street. From this point commercial uses spread along the first two blocks of each street and continue south on Main Street and Ashland Street the entire length of the radius. The combination of commercial, and residential land uses in the immediate vicinity of the Doylestown station creates an ideal situation for the use of non-motorized transportation, such as biking or walking.



Map 8. Doylestown Station Study Area Land Use



Map 9. Doylestown Station Land Use by 1/4 Mile Detail

DEMOGRAPHICS

There are six TAZ's which intersect or are within the one mile buffer around Doylestown station as shown in Map 10. The map data table provides Year 2000 and Year 2025 forecasts to profile the present and future demographic scenarios potentially influencing access to the station. The indicators used in this profile are population, the number of automobiles, and the number of zero vehicle households. The complete disaggregated TAZ data sets can be found in the Appendix in the back of this report.

Since TAZ's cannot be subdivided, the following data is true for the entire area covered by the six aforementioned TAZ's. Information specific to the one mile area surrounding Doylestown station may be slightly different, however, the same general trends will apply.

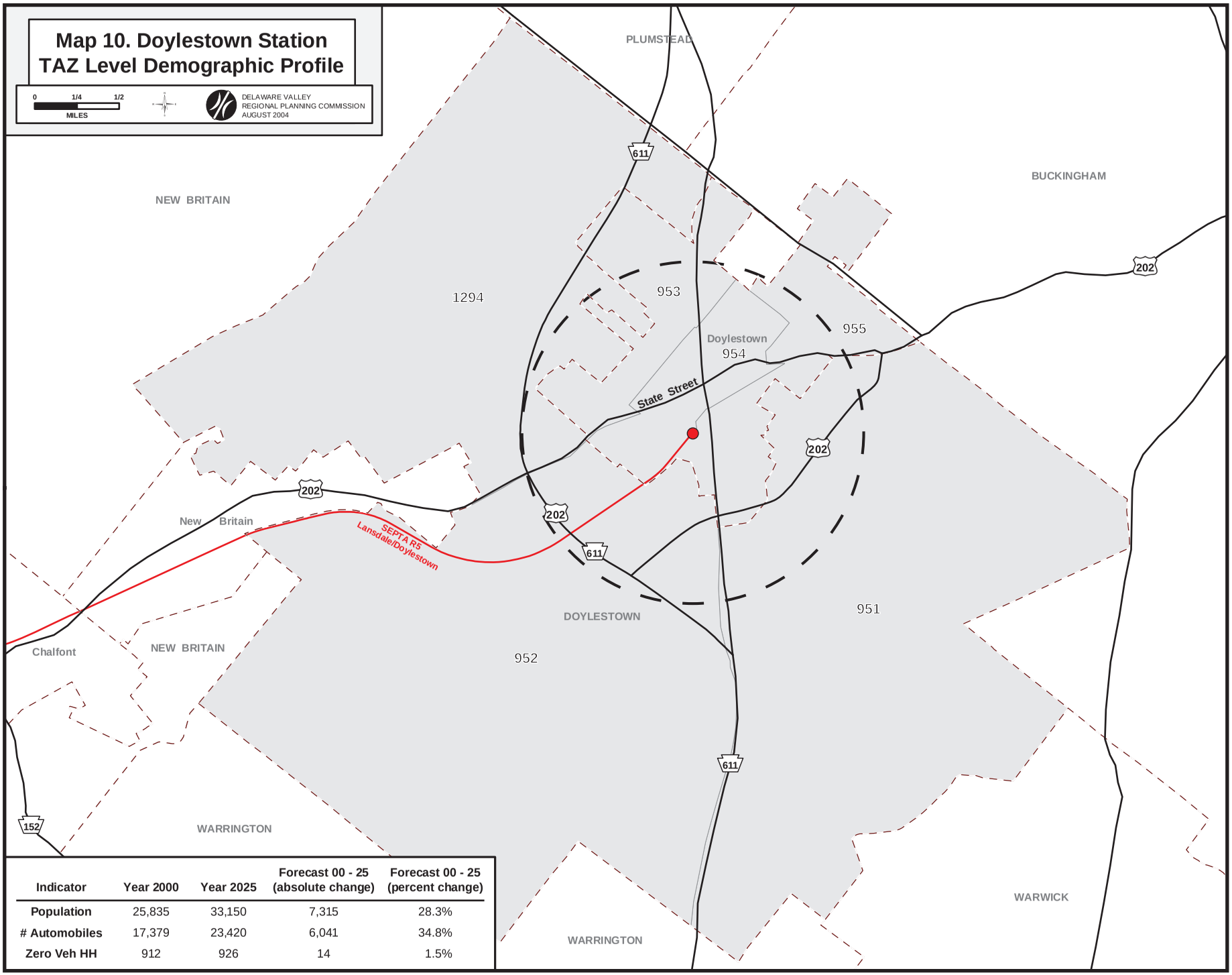
The population within one mile of the Doylestown station is expected to increase over the next 25 years by 28.3 percent, from 25,835 residents to 33,150 people. In this same area, the number of automobiles is projected to grow by 34.8 percent, which would add 6,041 new vehicles to the roadways. This is nearly one automobile for every new resident. In contrast, between 2000 and 2025, the amount of zero vehicle households is forecasted to increase by 1.5 percent or about 14 households.

This increase of both population and automobiles compared to the rather stagnant zero vehicle households statistics, suggests that the Station is not very accessible by non-motorized means such as walking or biking. The increasingly popular use of automobiles could also reflect a disparity in the origins and destinations of local residents compared to the service provided at Doylestown station. While nearly half of the land within the quarter mile boundary is residential, it is possible that a large portion of transit riders do not live within this comfortable walking or biking distance of Doylestown station.

Map 10. Doylestown Station
TAZ Level Demographic Profile

0 1/4 1/2
MILES

DELAWARE VALLEY
REGIONAL PLANNING COMMISSION
AUGUST 2004



Indicator	Year 2000	Year 2025	Forecast 00 - 25 (absolute change)	Forecast 00 - 25 (percent change)
Population	25,835	33,150	7,315	28.3%
# Automobiles	17,379	23,420	6,041	34.8%
Zero Veh HH	912	926	14	1.5%

This page left blank intentionally.

LINDENWOLD STATION

Land Use

Table 4 shows the land use data around Lindewold Station in sections of one quarter mile and one mile with land use percentages within each distance. It is worth noting that the quarter mile boundary occupies about six percent of the total area bounded by one mile. This data is also displayed graphically in Map 11 on the next page.

In the quarter mile area, transportation land uses occupy the greatest amount of land with 60.8 percent, compared to the 11.7 percent of land within the entire mile radius that is considered to be transportation related. This difference of 49.1 percent represents the largest proportional land difference between the two study boundaries. Another large difference when comparing land uses by distance from the station is the amount of residential land. Within the entire one mile area, 54.9 percent of the land is residential. This represents a 41.2 percent difference from the 13.7 percent of the quarter mile area that is classified as residential. Similarly, undeveloped land takes up over 20 percent throughout the entire one mile radius, while it constitutes 8.1 percent of the area immediately surrounding the station.

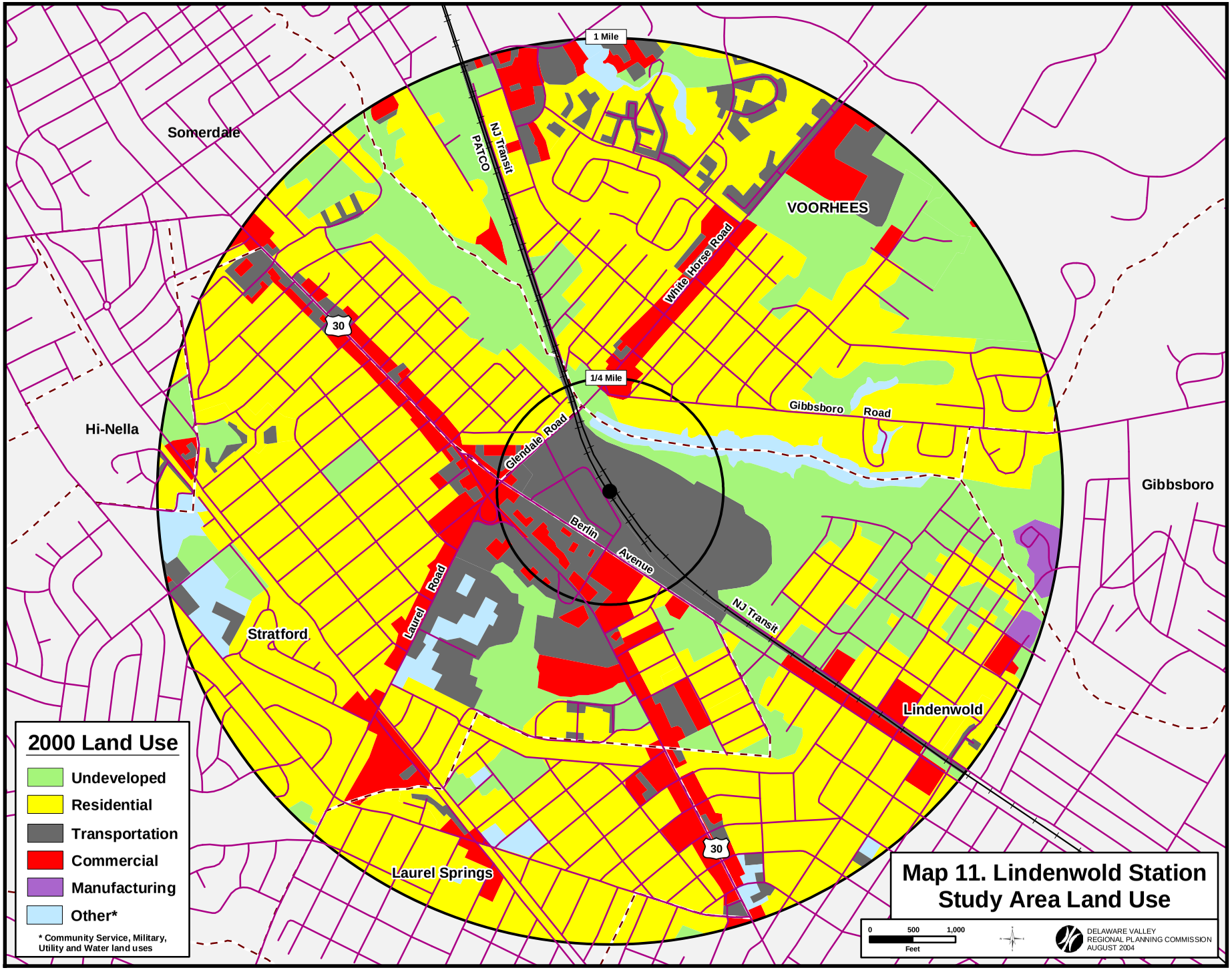
This data then represents a quarter mile area immediately surrounding the Lindenwold station that is almost entirely utilized by transportation or commercial uses and does not include any manufacturing land. Much of the outlying area contains residences and undeveloped land. Manufacturing controls 9.5 acres, or 0.5 percent, of the one mile area.

TABLE 4. LINDENWOLD STATION STUDY AREA BY LAND USE (in acres)

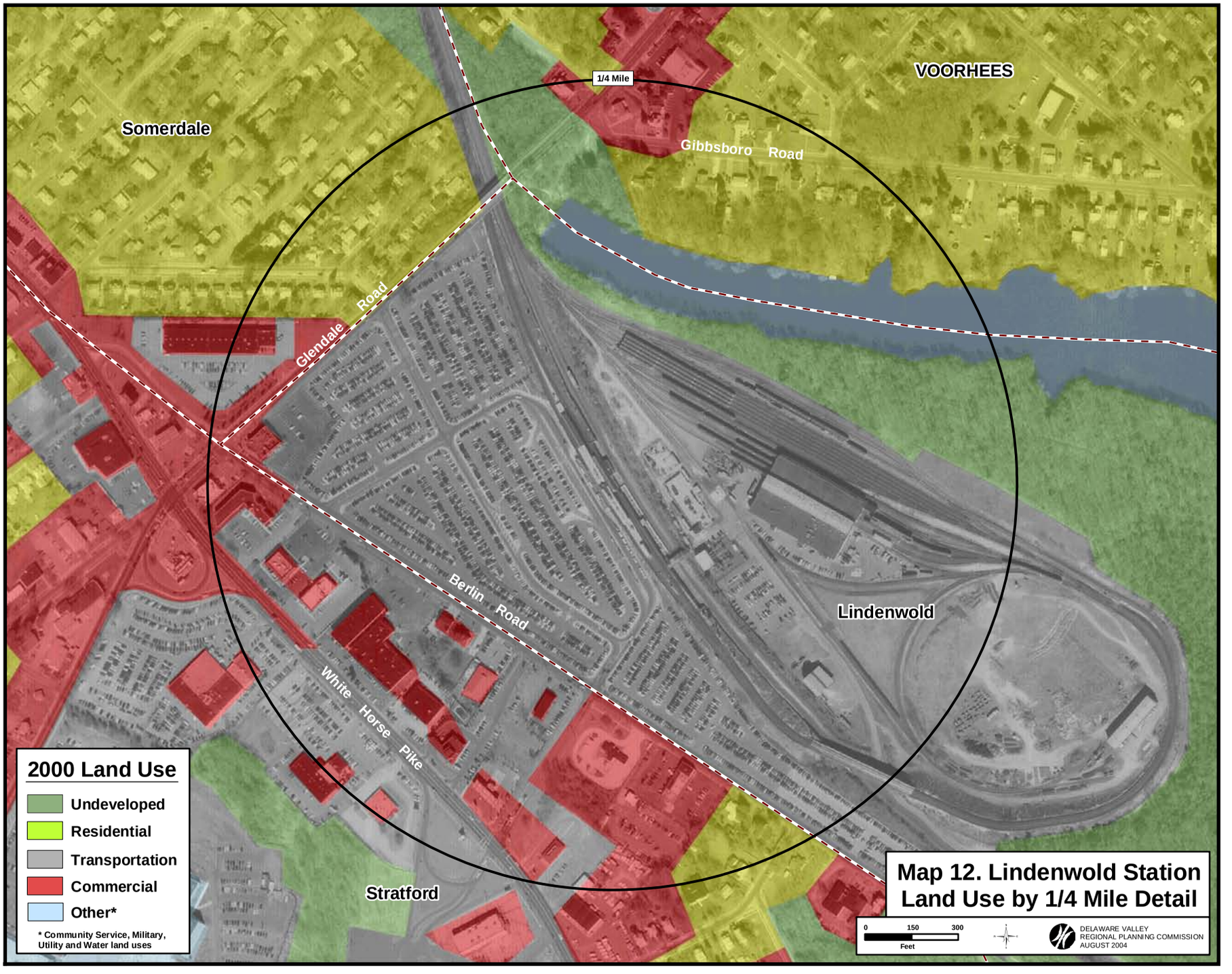
Lindenwold	1/4 Mile	1 Mile	% 1/4 Mile	% 1 Mile
Commercial	15.0	184.9	11.9%	9.2%
Manufacturing	0.0	9.5	0.0%	0.5%
Other	7.2	65.7	5.7%	3.3%
Residential	17.1	1105.3	13.7%	54.9%
Transportation	76.3	235.8	60.8%	11.7%
Undeveloped	10.2	410.8	8.1%	20.4%
TOTAL	**126**	**2012**	**100.0%**	**100.0%**

Source: DVRPC 2000 Land Use

Land uses within the quarter mile ring are shown on Map 12, using an aerial of the area. Though transportation uses take up most of the quarter mile area around Lindenwold station, a large commercial area exists between White Horse Pike and Berlin Road. Residential uses in the area tend to be located at the edge of the quarter mile radius and continue into the larger area. Residential uses are particularly common in areas north and west of the station.



Map 11. Lindenwold Station Study Area Land Use


1/4 Mile
VOORHEES
Somerdale
Gibbsboro Road
Glendale Road
Berlin Road
White Horse Pike
Lindenwold
Stratford
2000 Land Use
Undeveloped
Residential
Transportation
Commercial
Other*
* Community Service, Military, Utility and Water land uses
Map 12. Lindenwold Station
Land Use by 1/4 Mile Detail
0
150
300
Feet
DELAWARE VALLEY
REGIONAL PLANNING COMMISSION
AUGUST 2004

DEMOGRAPHICS

There are nine TAZ's which intersect or are within the one mile buffer around Lindenwold station as shown in Map 13. The map data table provides Year 2000 and Year 2025 forecasts to profile the present and future demographic scenarios potentially influencing access to the station. The indicators used in this profile are population, the number of automobiles, and the number of zero vehicle households. The complete disaggregated TAZ data sets can be found in the Appendix in the back of this report.

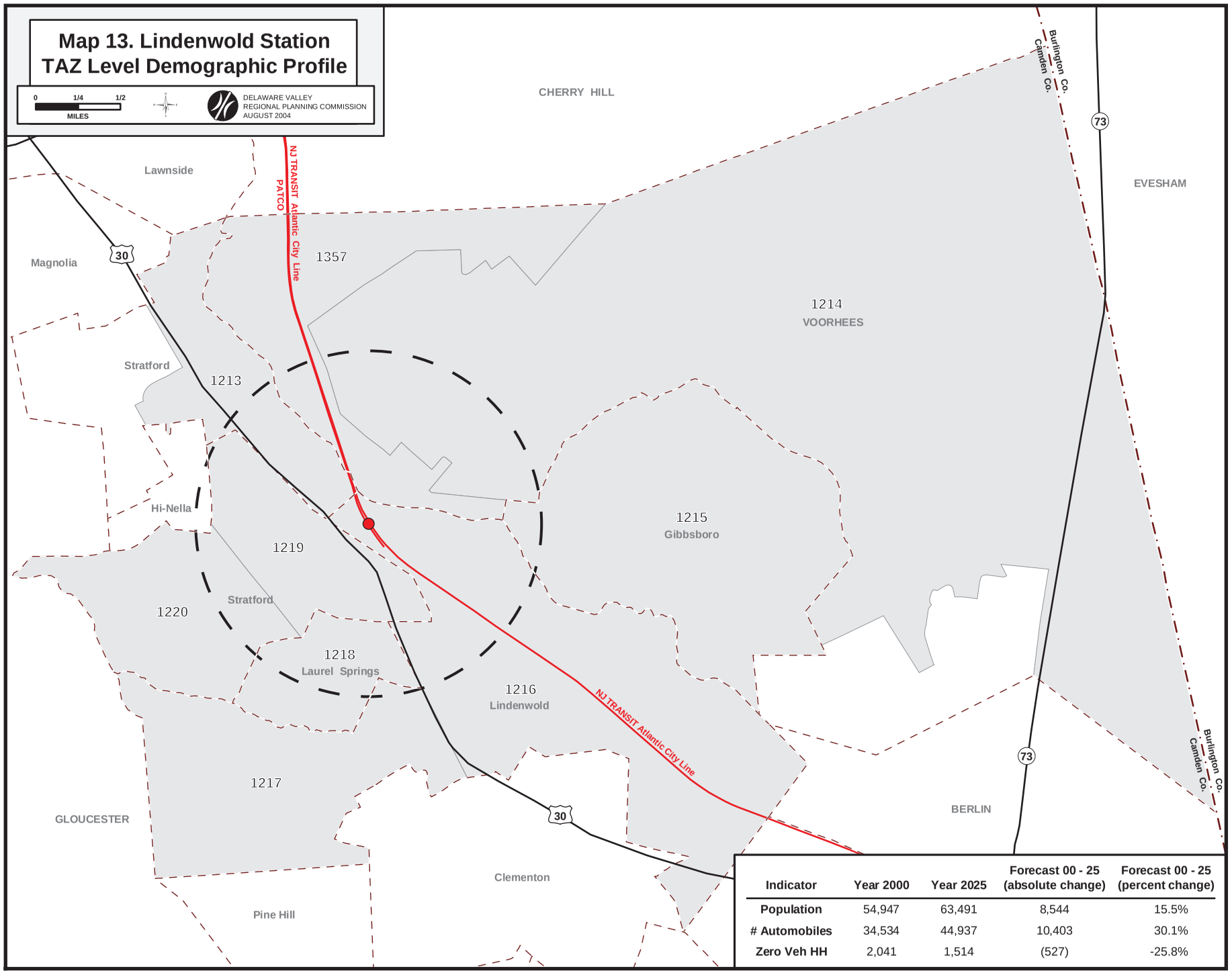
Since TAZ's cannot be subdivided, the following data is true for the entire area covered by the nine aforementioned TAZ's. Information specific to the one mile area surrounding Lindenwold station may be slightly different, however, the same general trends will apply.

Both the population and the number of automobiles in the one mile area surrounding the Station are estimated to increase by 2025, adding 15.5 percent more residents and 30.1 percent more vehicles (10,403 autos). While the population is expected to increase by 8,544 people, the number of zero vehicle households is forecasted to decline by 25.8 percent, or 527 households. With more vehicles on the roadways, and more households with automobiles, it is assumed that fewer individuals will rely on non-motorized forms of transportation, such as biking or walking. The substantial increase in vehicles will also likely contribute to a less bicycle and pedestrian friendly atmosphere in the immediate vicinity of Lindenwold station.

Map 13. Lindenwold Station
TAZ Level Demographic Profile

0 1/4 1/2
MILES

DELAWARE VALLEY
REGIONAL PLANNING COMMISSION
AUGUST 2004



Indicator	Year 2000	Year 2025	Forecast 00 - 25 (absolute change)	Forecast 00 - 25 (percent change)
Population	54,947	63,491	8,544	15.5%
# Automobiles	34,534	44,937	10,403	30.1%
Zero Veh HH	2,041	1,514	(527)	-25.8%

This page left blank intentionally.

69TH STREET TERMINAL

Land Use

Table 5 shows the land use data around 69th Street Terminal in sections of one quarter mile and one mile with land use percentages within each distance. It is worth noting that the quarter mile boundary occupies about six percent of the total area bounded by one mile. For further illustration, this data is displayed graphically in Map 14 on the next page.

The greatest proportional land difference between the quarter mile area and the entire mile radius occurs in residential use. Within a quarter mile of 69th Street Terminal, about 20 percent of land is residential, while 51 percent of the entire mile area is residential, representing about a 31 percent difference. As one may expect, transportation is a primary land use in the quarter mile area, occupying nearly one third (30 percent) of the land. In contrast, about 5 percent of the entire mile area is transportation related. Commercial land use is also more abundant in the quarter mile vicinity of the Terminal when compared to the larger mile wide area, comprising 25.7 percent vs. 11.8 percent of the land.

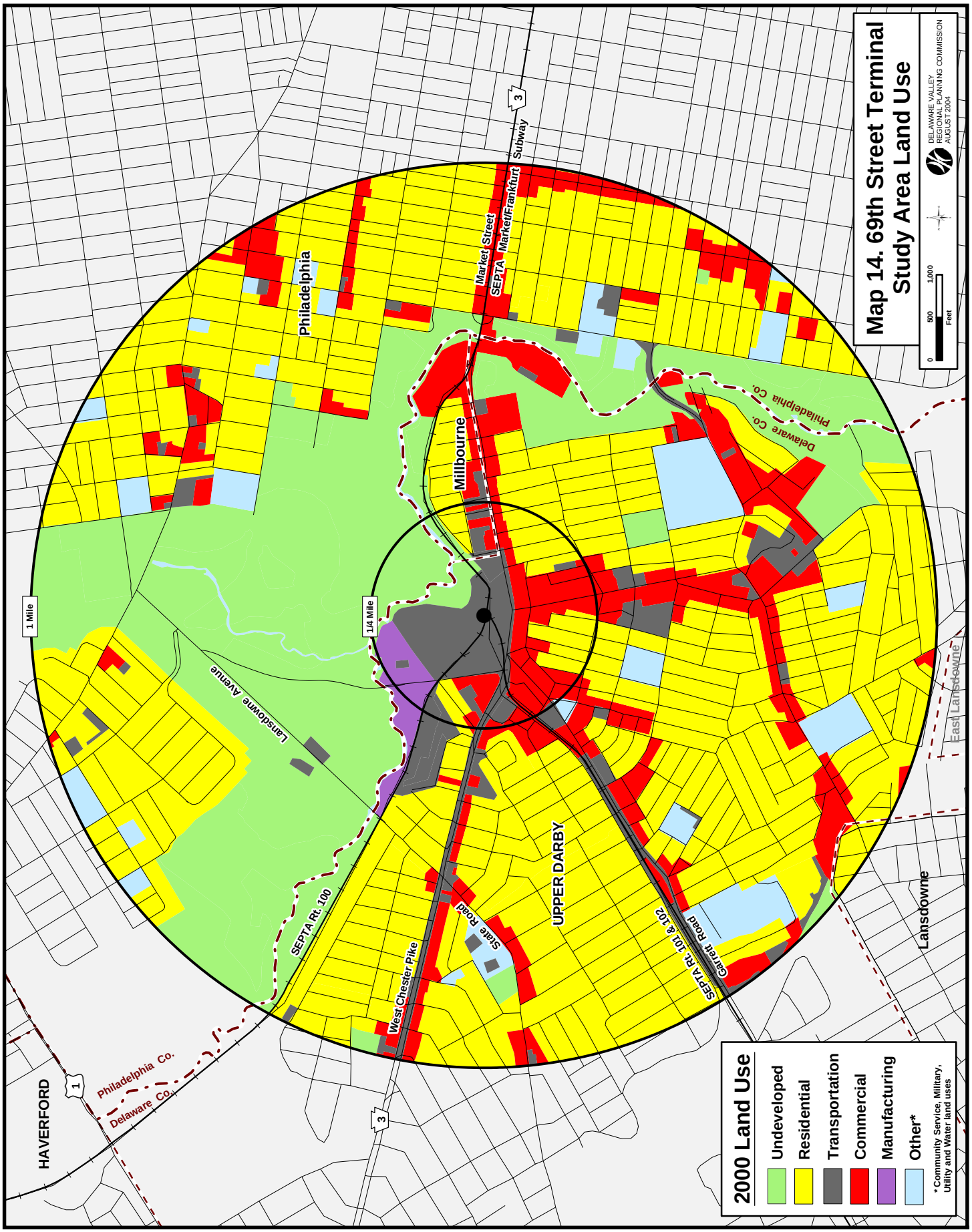
This data shows that the area within a quarter mile of the Terminal is most heavily utilized by transportation and commercial uses (55.7%), with a large portions of residential and undeveloped land taking up another 36.2 percent.

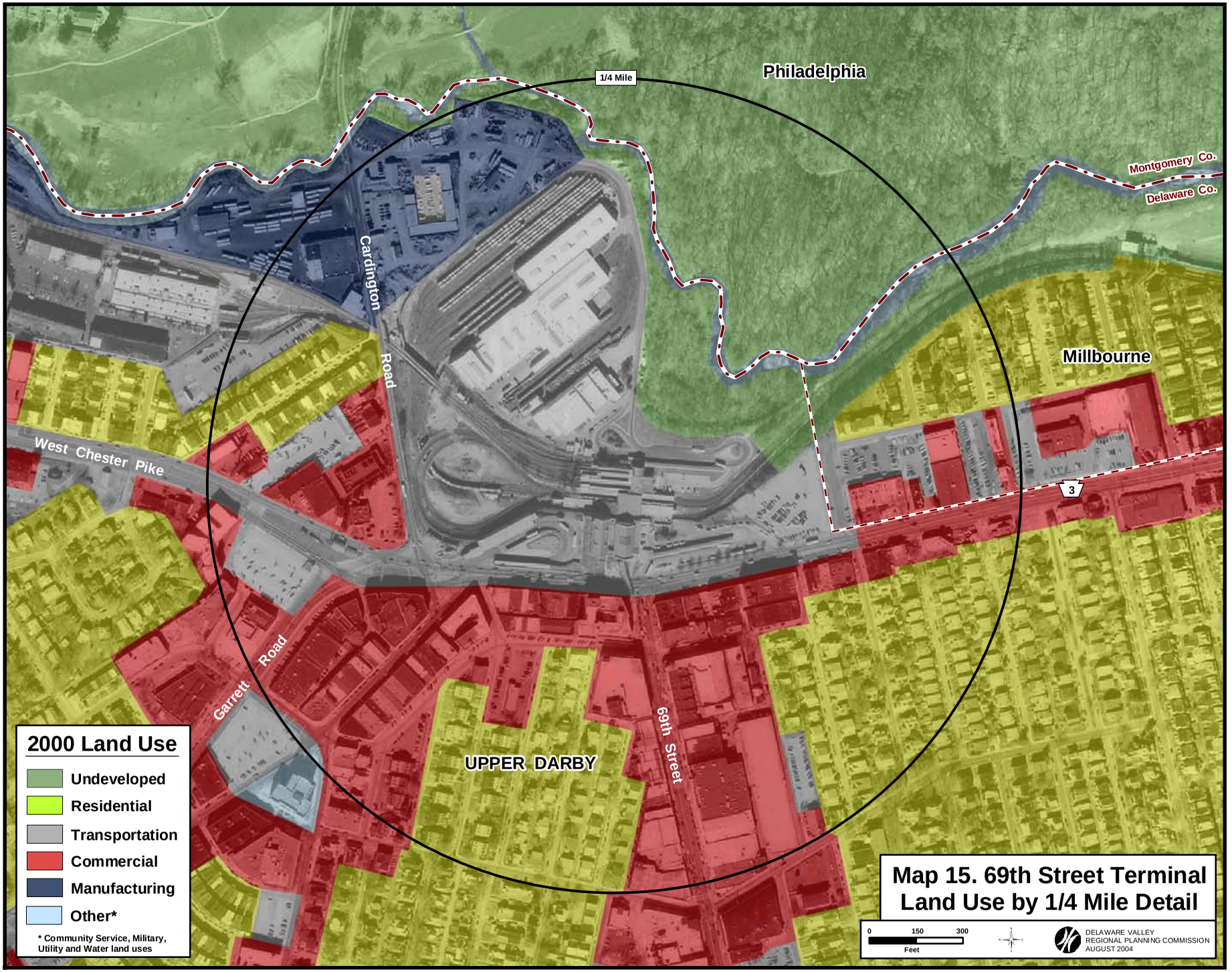
TABLE 5. 69th STREET TERMINAL STUDY AREA BY LAND USE (in acres)

69th Street Terminal	1/4 Mile	1 Mile	% 1/4 Mile	% 1 Mile
Commercial	32	238	25.7%	11.8%
Manufacturing	8	13	6.3%	0.7%
Other	2	112	1.9%	5.6%
Residential	25	1025	19.9%	51.0%
Transportation	38	106	30.0%	5.3%
Undeveloped	20	517	16.3%	25.7%
TOTAL	**126**	**2,012**	**6%**	**94%**

Source: DVRPC 2000 Land Use

Map 15 uses an aerial of the quarter mile boundary around 69th Street Terminal. A large portion of this area is occupied by the station itself, with undeveloped land remaining to the northeast of the Terminal. Commercial uses are concentrated along the major roadways of Route 3/West Chester Pike, Garrett Road, and 69th Street. Residential uses are pushed to the edges of the quarter mile area, making non-motorized transportation less convenient for most residents. Other than a large expanse of undeveloped land north of the station, residential land use fills out most of the remaining portion of the one mile boundary.


Map 14. 69th Street Terminal
Study Area Land Use
DELAWARE VALLEY
REGIONAL PLANNING COMMISSION
AUGUST 2004
0
500
1,000
Feet
2000 Land Use
Undeveloped
Residential
Transportation
Commercial
Manufacturing
Other*
*Community Service, Military, Utility and Water land uses
1 Mile
1/4 Mile
Philadelphia
Millbourne
UPPER DARBY
Lansdowne
East Lansdowne
HAVERFORD
Market Street
SEPTA
Market/Frankfurt
Subway
Lansdowne Avenue
SEPTA Rt. 100
West Chester Pike
State Road
SEPTA Rt. 101 & 102
Garrett Road
Philadelphia Co.
Delaware Co.
Philadelphia Co.
Delaware Co.
1
3
3



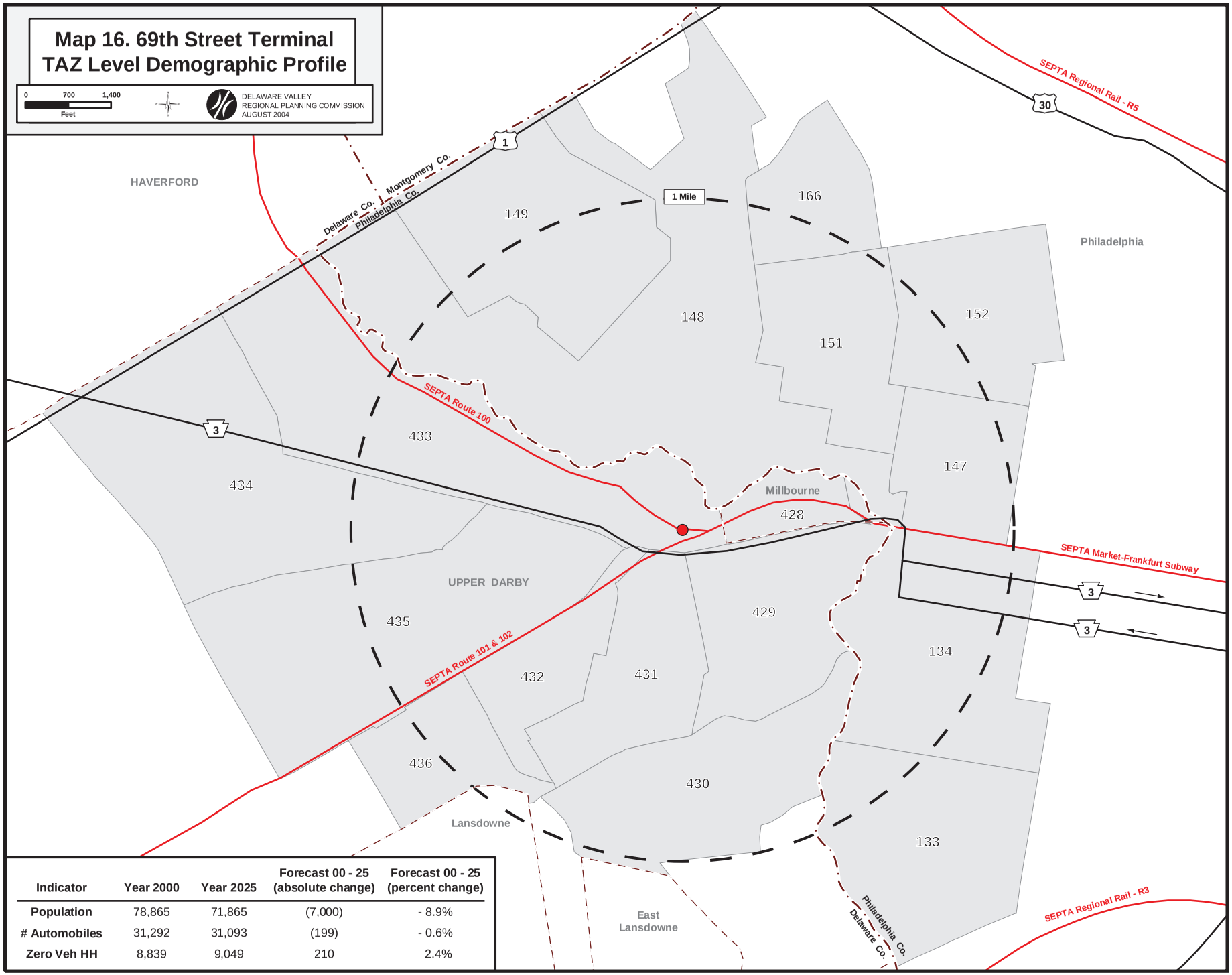
Map 15. 69th Street Terminal Land Use by 1/4 Mile Detail

DEMOGRAPHICS

Map 16 shows the 17 TAZ's that intersect or are within the one mile buffer around 69th Street Terminal. The map data table provides Year 2000 and Year 2025 forecasts to profile the present and future demographic scenarios potentially influencing access to the station. The indicators used in this profile are population, the number of automobiles, and the number of zero vehicle households. The complete disaggregated TAZ data sets can be found in the Appendix in the back of this report.

Since TAZ's cannot be subdivided, the following data is true for the entire area covered by the seventeen aforementioned TAZ's. Information specific to the one mile area surrounding 69th Street Terminal may be slightly different, however, the same general trends will apply.

Data shows that the number of automobiles within these TAZ's is forecasted to remain fairly constant between 2000 and 2025, with a slight decrease of 0.6 percent (199 vehicles). This corresponds to a larger 8.9 percent decrease in population within the same area surrounding 69th Street Terminal. During this same time, zero vehicle households are forecasted to increase slightly by 2.4 percent, or 210 households. As the amount of zero vehicle households in the immediate vicinity of the Station is expected to increase while the population and number of automobiles decrease, it is likely that most residents see the use of public transit as a viable commuting and transportation option. The increase in zero vehicle households also suggests that even more individuals find the Terminal to be accessible by non-motorized transportation, such as biking or walking, and that this intermodalism will increase in the future. Access to this terminal is important, as it acts as a gateway for travelers going to various locations in both Philadelphia and Delaware County.



Indicator	Year 2000	Year 2025	Forecast 00 - 25 (absolute change)	Forecast 00 - 25 (percent change)
Population	78,865	71,865	(7,000)	- 8.9%
# Automobiles	31,292	31,093	(199)	- 0.6%
Zero Veh HH	8,839	9,049	210	2.4%

This page left blank intentionally.

TRENTON STATION

Land Use

Table 6 shows the land use data around Trenton station in sections of one quarter mile and one mile with land use percentages within each distance. It is worth noting that the quarter mile boundary occupies about six percent of the total area bounded by one mile. Map 17 on the next page graphically displays this data.

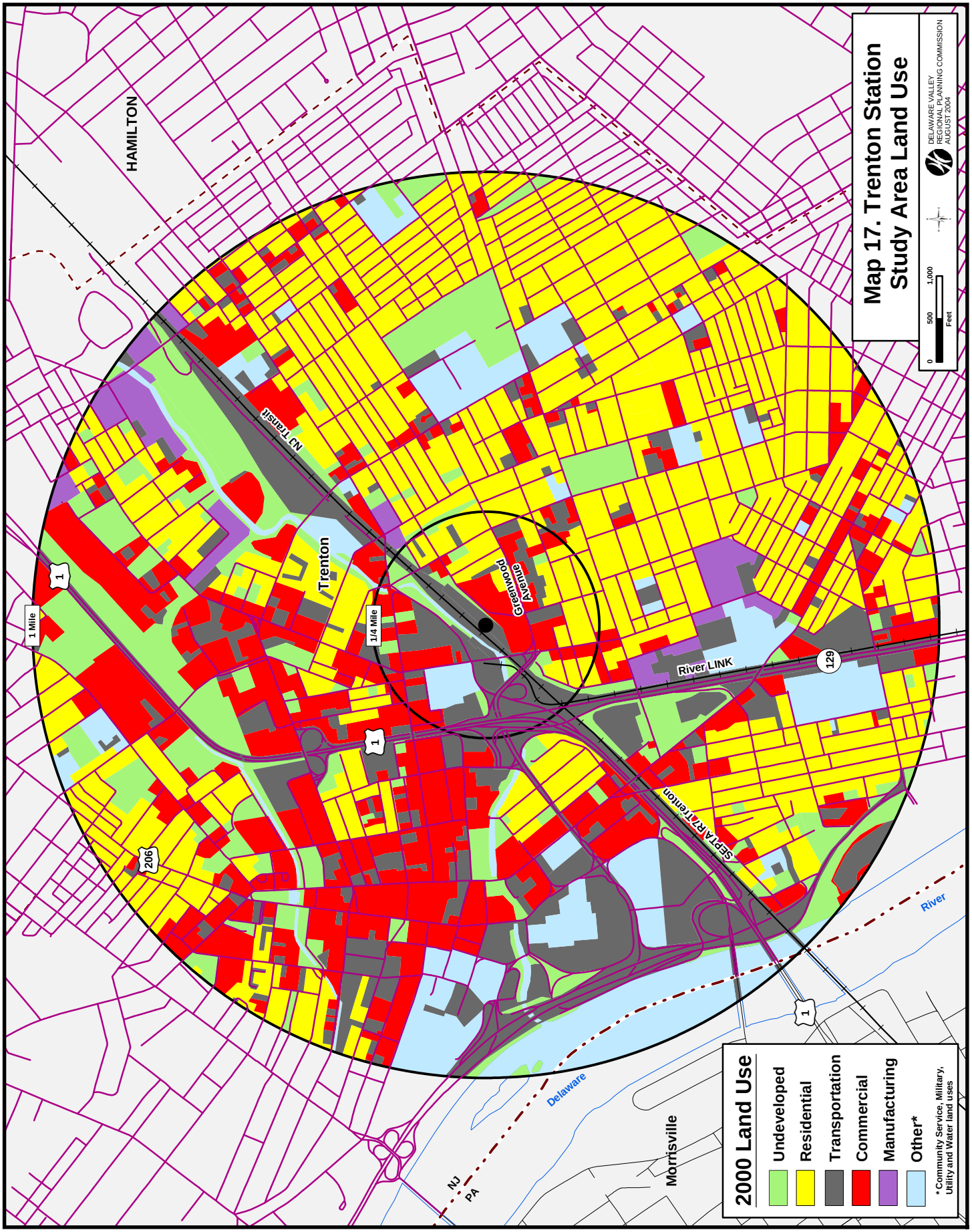
Comparing land uses by distance from the station yields a couple of differences worth noting. The area occupied by residential uses is about 40 percent in the mile ring compared to about 24 percent within the quarter mile boundary, a difference of about 15 percent. On the other hand, both commercial and transportation area are a larger proportion of the quarter mile land area than the full mile, 24.3percent vs. 18.8percent and 36.6 percent vs. 17.4 percent. In fact, the 19.2 percent difference in transportation land use makes it the greatest proportional land difference at this station. Manufacturing is not present within a quarter mile of the station, however, it occupies 41.7 acres, or about 2 percent of the one mile boundary area.

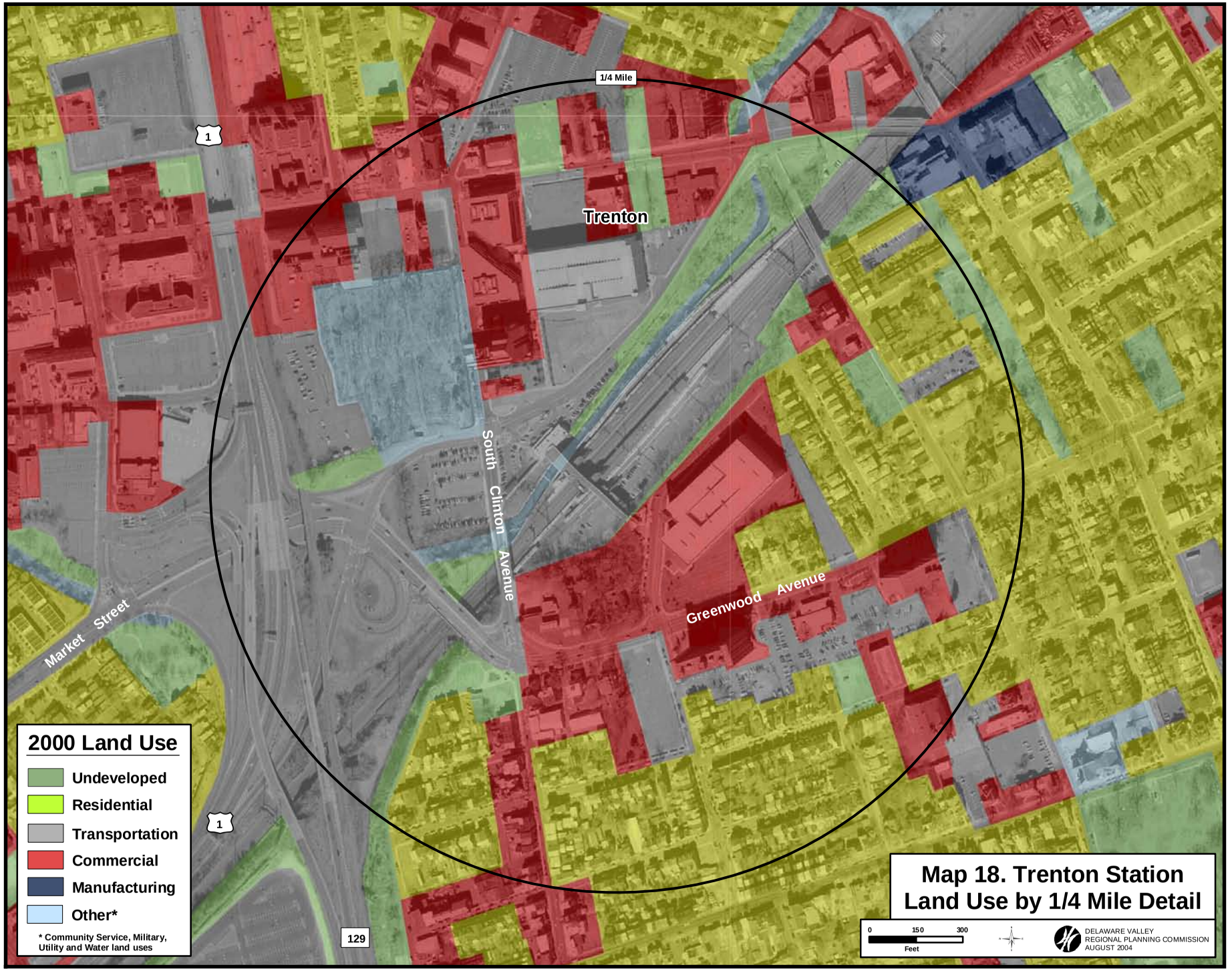
TABLE 6. TRENTON STATION STUDY AREA BY LAND USE (in acres)

Trenton Station	1/4 Mile	1 Mile	% 1/4 Mile	% 1 Mile
Commercial	30.6	378.7	24.3%	18.8%
Manufacturing	0.0	41.7	0.0%	2.1%
Other	7.6	199.4	6.0%	9.9%
Residential	30.7	791.3	24.4%	39.3%
Transportation	46.0	349.7	36.6%	17.4%
Undeveloped	10.8	250.9	8.6%	12.5%
TOTAL	**126**	**2012**	**100.0%**	**100.0%**

Source: DVRPC 2000 Land Use

The quarter mile ring is shown in more detail with the use of an aerial in Map 18 in the following pages. This map shows a large portion of land occupied by the Trenton station, and neighboring roadways with commercial areas interspersed between these transportation centers. Commercial uses are also concentrated on either side of the station along South Clinton Avenue, and also Greenwood Avenue east of RT 1. Residential land use is particularly popular south and east of the station beyond the quarter mile boundary. Northwest of the SEPTA R7 rail line, there are far fewer residences and more commercial uses.


Map 17. Trenton Station
Study Area Land Use
DELAWARE VALLEY
REGIONAL PLANNING COMMISSION
AUGUST 2004
0
500
1,000
Feet
2000 Land Use
Undeveloped
Residential
Transportation
Commercial
Manufacturing
Other*
*Community Service, Military, Utility and Water land uses
HAMILTON
NJ Transit
Trenton
1 Mile
1/4 Mile
Greenwood Avenue
River LINK
SEPTA/RT Trenton
Morrisville
Delaware River
NJ
PA
1
129
206



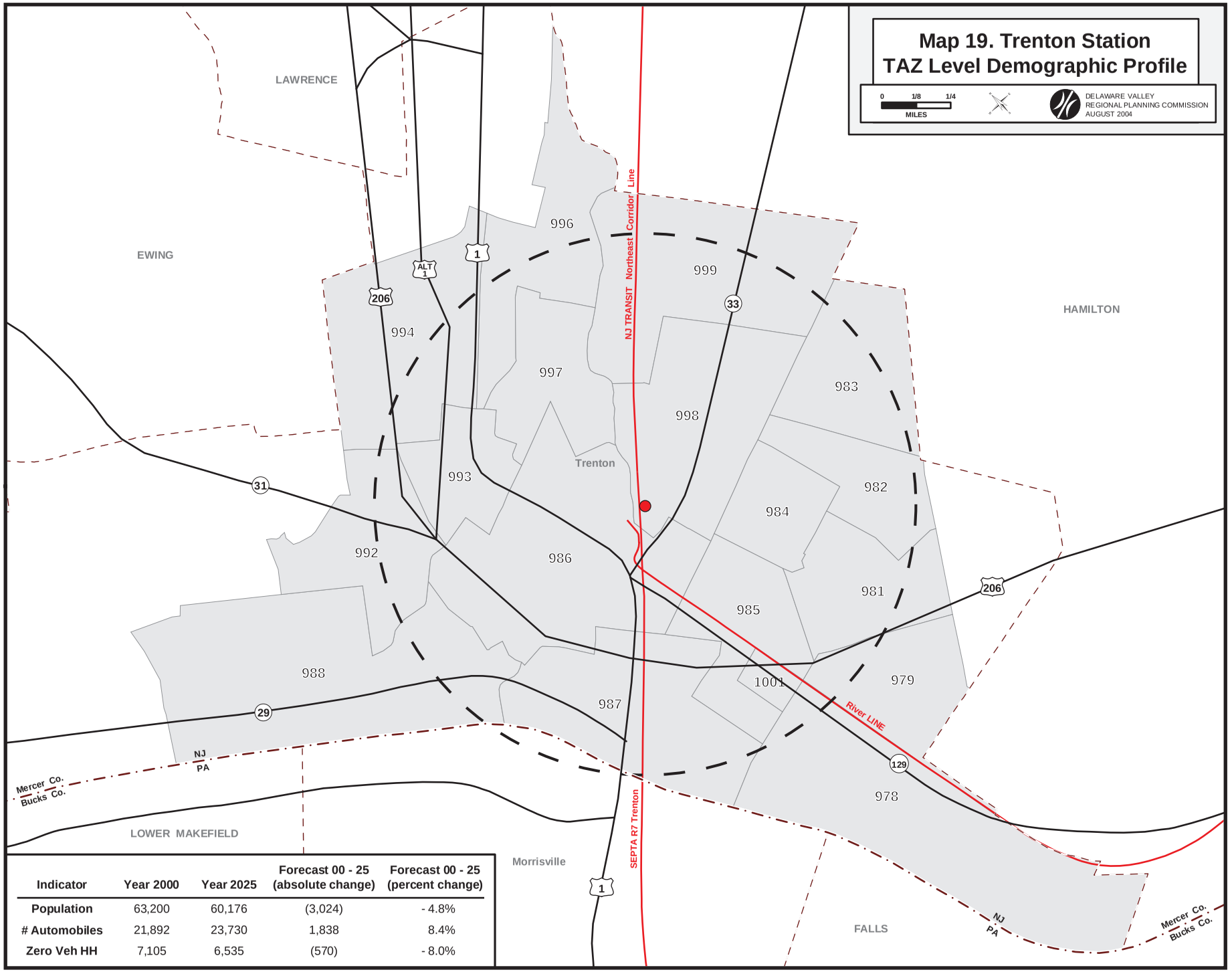
Map 18. Trenton Station Land Use by 1/4 Mile Detail

DEMOGRAPHICS

There are eighteen TAZ's which intersect or are within the one mile buffer around Trenton station as shown in Map 19. The map data table provides Year 2000 and Year 2025 forecasts to profile the present and future demographic scenarios potentially influencing access to the station. The indicators used in this profile are population, the number of automobiles, and the number of zero vehicle households. The complete disaggregated TAZ data sets can be found in the Appendix in the back of this report.

Since TAZ's cannot be subdivided, the following data is true for the entire area covered by the eighteen aforementioned TAZ's. Information specific to the one mile area surrounding Trenton station may be slightly different, however, the same general trends will apply.

While the current population (63,200 people) within these TAZ's is forecasted to decrease by about 5 percent, or 3,024 people by 2025, the number of automobiles in this same area is projected to grow by about 8 percent (1,838 vehicles). Between 2000 and 2025, data suggests that the amount of zero vehicle households will decline by 8 percent, or 570 households. The decrease of zero vehicle households in comparison to the similar increase in automobiles suggests that the Trenton station is not easily accessible by non-motorized means such as walking or biking. This increased vehicle use could also indicate a lack of transit service between Trenton station and the destinations of local residents, or a rider population that is located outside of a reasonable walking or biking distance. Intermodal access to the Trenton station is particularly important, as it is a central location for public transit services to Philadelphia (SEPTA), northern New Jersey suburbs (NJ Transit), and riverside communities between Trenton and Camden (Riverline).



Indicator	Year 2000	Year 2025	Forecast 00 - 25 (absolute change)	Forecast 00 - 25 (percent change)
Population	63,200	60,176	(3,024)	- 4.8%
# Automobiles	21,892	23,730	1,838	8.4%
Zero Veh HH	7,105	6,535	(570)	- 8.0%

This page left blank intentionally.

III. SUMMARY AND RECOMENDATIONS

Each of the station level comparisons stands alone as the basic context for station access. Individually, however, they do not permit a station level comparison which precedes an advanced stage of analysis or application of the BLOS method. Tables 7 and 8 below summarize some of the data for land use and demographic indicators in order to cull from the data candidates for BLOS analysis. Greater detail for each station is provided in its individual entry in the Station Study Areas in Section II.

Table 7 provides a selected look at land uses in the ¼ mile study boundary. Categories of manufacturing and other are not large enough proportions to warrant inclusion, though Residential land uses are included for all of the stations as central components to bicycle and pedestrian access. Included are notes denoting the land use consistency and land use differences between the two scales of analysis.

Table 7. Summary Selected ¼ Mile Land Use by Station

Station	Commercial	Residential	Transport	Undeveloped
Ardmore Junction		* 78%		
Avandale P & R		35%		* 43%
Doylestown Station	# 34%	47%		
Lindenwold Station		# 14%	61%	
69th Street Terminal	26%	# 20%	30%	
Trenton Station	24%	# 24%	37%	

Source: DVRPC Year 2000 Land Use
* denotes largest percent of land use in both ¼ and 1 mile boundaries
# denotes largest difference between ¼ and 1 mile boundaries

There is consistent land use between the study boundaries at Ardmore Junction and Avandale Park and Ride. Ardmore Junction has the greatest proportion of residential in both the ¼ mile and 1 mile distance boundaries (about 78 and 70 percent). Likewise the Avandale Park and Ride has the greatest proportion of undeveloped land in both the ¼ mile and 1 mile distance boundaries (about 43 and 52 percent). Doylestown Station's largest single land use is residential with a strong commercial proportion close in which declines to about 8 percent in the greater study area.

Lindenwold, 69th Street, and Trenton's largest land use is transportation owing to the large station infrastructure and parking close in to these sizable rail termini. 69th Street and Trenton, both located in urban areas, also have about a quarter of their ¼ mile land use devoted to commercial enterprise. Each of these stations also have residential land use proportions which are greater in the 1 mile boundary than close in (Lindenwold 55%, 69th Street 51%, Trenton 39%). Residential land use would seem to be pushed out by the necessities of a large station and accompanying services, but it remains a large proportion of the broader context in which the station is placed.

Table 8 provides a summary of percent changes in demographic indicators between 2000 and 2025 by station. The relative change does not address the absolute magnitude of change which differs for each indicator, but suggests the dynamic trend present surround each station. The interplay between population and the relative changes in automobiles or their lack therein provides insight into which station may be best for further study.

Table 8. Summary Changes in Demographic Indicators (2000-2025) by Station

Station	Population	Automobiles	Zero Veh Hholds
Ardmore Junction	1%	12%	15%
Avandale P & R	32%	41%	6%
Doylestown Station	28%	35%	1%
Lindenwold Station	15%	30%	-26%
69th Street Terminal	-9%	-1%	2%
Trenton Station	-5%	8%	8%

Source: DVRPC Year 2000 and Year 2025 Demographic Data

Ardmore Junction is forecast to have a negligible population change with increasing numbers of automobiles as well as zero vehicle households which might rely on the transit option nearby. Avandale, Doylestown, and Lindenwold stations all show increasing population rates with even greater rates of automobiles increase, and either negligible or negative changes in zero vehicle households. Avandale in particular, with its large amount of undeveloped land is likely to gain housing in keeping with the suburban make up of its surrounding area rather than take on a denser more urban character. 69th Street and Trenton are forecast to have population declines, with slight increases in automobiles and zero vehicle households. This is likely a function of the large commercial and transportation land uses pushing out people and residents at a walking distance from the station.

From these findings it is recommended that three locations be considered for future BLOS analysis: Ardmore Junction, Lindenwold, and Trenton stations.

Ardmore Junction is dominantly residential with forecast increases in both automobiles and zero vehicle households. This combination holds the potential for greater transit capture if access to the station is enhanced. Further analysis of the facilities connecting the station to the surrounding environs may provide information supporting specific enhancement measures. Cursory field views suggest upwards of a dozen daily bicycle riders access this particular station. The Route 100 Norristown High Speed Line is also a transit line which has not been studied as much as some of the regional rail system, but it represents a strong historic link from Philadelphia through the Main Line communities to the inner suburban ring.

The Lindenwold Station as the terminus for the PATCO High Speed Line, floats in an ocean of parking. Outside the traditional ¼ mile walking distance, however, lies residential development which appears to be losing its transit orientation. For this station, further analysis might serve to develop pedestrian and bicycle access. This could be an effort to provide new options and enhance options which are not currently in evidence. As a station with large ridership, it may no longer be possible to expand parking , but expanding other mobility options to access the train could provide measurable benefits at little cost.

The Trenton Station's land use and mobility options are skewed by parking decks which only consume a quarter of the proximate land but attract many more automobiles than Lindenwold Station. As a large transportation hub, it also has considerable commercial land use. The relative flatness of the demographic indicators suggest that even at the 1 mile boundary, people and their homes may be getting pushed away from or insulated by these land uses from the station. With the additional River Line service connecting south Jersey, to develop and maintain pedestrian and bicycle options as a means of station access becomes increasingly important.

Whether the BLOS analysis is the appropriate method to continue this research can be argued. What the station recommendations do however, is isolate a small sample of candidates based on potential trip generation or the desire to preemptively boost mobility options to transit stations. Other analysis than the facility assessment employed in a BLOS exercise could review of connecting rail and bus service, directed survey inventory of both place and people, or assessment and application of "best practices" to enhance pedestrian and bicycle connections. There might also be an advantage to continuing the analysis as conducted in this report to other stations either as stand alone or as complimentary projects. There might be added value to any of these approaches carefully employed.

This page intentionally left blank.

APPENDICES A, B, C

Year 2000 and Forecast Year 2025
Population, Automobiles, and Zero Vehicle Households
for Station Study Area TAZs

APPENDIX A. Year 2000 and Forecast Year 2025 Population by TAZ

Station	1990 TAZ #	POP_2000	POP_2025	Absolute POP Change 2000-2025	Percent POP Change 2000-2025
Ardmore Junction	559	3,208	3,319	111	3.5%
	799	2,890	1,680	(1,210)	-41.9%
	801	3,730	3,373	(357)	-9.6%
	564	5,115	4,934	(181)	-3.5%
	802	3,280	6,066	2,786	84.9%
	563	5,015	4,742	(273)	-5.4%
	562	3,655	3,452	(203)	-5.6%
	567	4,320	4,191	(129)	-3.0%
	565	3,155	3,052	(103)	-3.3%
Total		**34,368**	**34,809**	**441**	**1.3%**
Avandale Park & Ride	1238	15,636	19,907	4,271	27.3%
	1363	9,260	13,194	3,934	42.5%
	1259	5,907	7,042	1,135	19.2%
	1260	3,435	5,037	1,602	46.6%
Total		**34,238**	**45,180**	**10,942**	**32.0%**
Doylestown	1294	6,650	8,075	1,425	21.4%
	953	3,075	3,739	664	21.6%
	955	2,460	2,182	(278)	-11.3%
	954	2,695	3,189	494	18.3%
	951	4,755	8,150	3,395	71.4%
	952	6,200	7,815	1,615	26.0%
Total		**25,835**	**33,150**	**7,315**	**28.3%**
Lindenwold	1214	15,595	28,568	12,973	83.2%
	1357	7,970	4,089	(3,881)	-48.7%
	1213	2,297	2,004	(293)	-12.8%
	1215	2,435	2,090	(345)	-14.2%
	1219	3,575	2,967	(608)	-17.0%
	1216	8,910	9,144	234	2.6%
	1220	3,695	3,553	(142)	-3.8%
	1218	1,970	1,990	20	1.0%
	1217	8,500	9,086	586	6.9%
Total		**54,947**	**63,491**	**8,544**	**15.5%**
69th Street Terminal	148	40	60	20	50.0%
	166	4,275	3,483	(792)	-18.5%
	149	7,770	6,883	(887)	-11.4%
	152	5,840	6,020	180	3.1%
	433	4,140	3,578	(562)	-13.6%
	151	4,255	3,584	(671)	-15.8%
	434	5,085	4,482	(603)	-11.9%
	147	4,505	4,680	175	3.9%
	428	945	830	(115)	-12.2%

Station		1990 TAZ #	POP_2000	POP_2025	Absolute POP Change 2000-2025	Percent POP Change 2000-2025
		429	3,855	3,217	(638)	-16.5%
		435	5,115	4,051	(1,064)	-20.8%
		134	8,955	9,733	778	8.7%
		432	3,990	3,445	(545)	-13.7%
		431	4,765	3,605	(1,160)	-24.3%
		430	6,230	5,051	(1,179)	-18.9%
		436	1,805	1,733	(72)	-4.0%
		133	7,295	7,430	135	1.9%
	Total		**78,865**	**71,865**	**(7,000)**	**-8.9%**
Trenton Station		996	1,895	2,061	166	8.8%
		994	4,505	4,773	268	5.9%
		988	6,755	6,505	(250)	-3.7%
		992	2,945	3,091	146	5.0%
		999	5,895	5,814	(81)	-1.4%
		997	1,435	1,601	166	11.6%
		993	1,260	1,404	144	11.4%
		986	4,330	4,559	229	5.3%
		998	5,625	5,708	83	1.5%
		983	3,790	3,191	(599)	-15.8%
		987	3,335	2,893	(442)	-13.3%
		982	3,550	2,872	(678)	-19.1%
		984	2,505	1,859	(646)	-25.8%
		985	2,365	2,108	(257)	-10.9%
		981	4,595	3,802	(793)	-17.3%
		1001	1,835	2,132	297	16.2%
		979	3,650	3,084	(566)	-15.5%
		978	2,930	2,719	(211)	-7.2%
	Total		**63,200**	**60,176**	**(3,024)**	**-4.8%**

APPENDIX B. Year 2000 and Forecast Year 2025 Automobiles by TAZ

Station	1990 TAZ #	AUTOS_2000	AUTOS_2025	Absolute Change 2000-2025	Percent Change 2000-2025
Ardmore Junction	559	1,742	2,102	360	20.7%
	799	1,067	1,168	101	9.5%
	801	2,383	2,063	(320)	-13.4%
	564	3,602	3,559	(43)	-1.2%
	802	2,290	4,444	2,154	94.1%
	563	3,174	3,343	169	5.3%
	562	2,451	2,480	29	1.2%
	567	2,795	2,693	(102)	-3.6%
	565	2,090	2,081	(9)	-0.4%
Total		**21,594**	**23,933**	**2,339**	**10.8%**
Avandale Park & Ride	1238	9,673	13,696	4,023	41.6%
	1363	4,967	7,313	2,346	47.2%
	1259	3,864	4,699	835	21.6%
	1260	2,178	3,502	1,324	60.8%
Total		**20,682**	**29,210**	**8,528**	**41.2%**
Doylestown	1294	4,673	6,295	1,622	34.7%
	953	1,958	2,582	624	31.9%
	955	1,827	1,893	66	3.6%
	954	1,736	2,076	340	19.6%
	951	3,722	6,774	3,052	82.0%
	952	3,463	3,800	337	9.7%
Total		**17,379**	**23,420**	**6,041**	**34.8%**
Lindenwold	1214	10,173	20,623	10,450	102.7%
	1357	5,263	3,210	(2,053)	-39.0%
	1213	1,594	1,487	(107)	-6.7%
	1215	1,611	1,507	(104)	-6.5%
	1219	2,130	1,914	(216)	-10.1%
	1216	4,792	6,020	1,228	25.6%
	1220	2,425	2,547	122	5.0%
	1218	1,344	1,350	6	0.4%
	1217	5,202	6,279	1,077	20.7%
Total		**34,534**	**44,937**	**10,403**	**30.1%**
69th Street Terminal	148	32	29	(3)	-9.4%
	166	1,767	1,616	(151)	-8.5%
	149	3,677	4,109	432	11.7%
	152	1,871	2,000	129	6.9%
	433	2,080	1,800	(280)	-13.5%
	151	1,529	1,653	124	8.1%
	434	2,888	2,982	94	3.3%
	147	1,244	1,027	(217)	-17.4%

Station	1990 TAZ #	AUTOS_2000	AUTOS_2025	Absolute Change 2000-2025	Percent Change 2000-2025
	428	320	329	9	2.8%
	429	1,426	1,433	7	0.5%
	435	2,742	2,240	(502)	-18.3%
	134	2,274	2,641	367	16.1%
	432	1,596	1,700	104	6.5%
	431	1,954	1,586	(368)	-18.8%
	430	2,536	2,637	101	4.0%
	436	953	1,027	74	7.8%
	133	2,403	2,284	(119)	-5.0%
Total		**31,292**	**31,093**	**(199)**	**-0.6%**
				-	
Trenton Station	996	455	685	230	50.5%
	994	1,398	1,485	87	6.2%
	988	2,351	2,429	78	3.3%
	992	751	1,161	410	54.6%
	999	2,236	2,497	261	11.7%
	997	354	262	(92)	-26.0%
	993	355	474	119	33.5%
	986	1,141	1,096	(45)	-3.9%
	998	1,871	2,323	452	24.2%
	983	2,210	2,340	130	5.9%
	987	758	613	(145)	-19.1%
	982	1,667	1,695	28	1.7%
	984	1,075	927	(148)	-13.8%
	985	709	696	(13)	-1.8%
	981	2,002	2,231	229	11.4%
	1001	-	-	-	#DIV/0!
	979	1,455	1,744	289	19.9%
	978	1,104	1,072	(32)	-2.9%
Total		**21,892**	**23,730**	**1,838**	**8.4%**

APPENDIX C. Year 2000 and Forecast Year 2025 Zero Vehicle Households by TAZ

Station	1990 TAZ #	0VEH_2000	0VEH_2025	Absolute Change 2000-2025	Percent Change 2000-2025
Ardmore Junction	559	60	72	12	20.0%
	799	171	139	(32)	-18.7%
	801	214	283	69	32.2%
	564	51	106	55	107.8%
	802	60	75	15	25.0%
	563	102	85	(17)	-16.7%
	562	15	32	17	113.3%
	567	61	85	24	39.3%
	565	49	23	(26)	-53.1%
Total		**783**	**900**	**117**	**14.9%**
Avandale Park & Ride	1238	206	200	(6)	-2.9%
	1363	231	237	6	2.6%
	1259	149	173	24	16.1%
	1260	115	134	19	16.5%
Total		**701**	**744**	**43**	**6.1%**
Doylestown	1294	95	177	82	86.3%
	953	549	438	(111)	-20.2%
	955	7	9	2	28.6%
	954	146	63	(83)	-56.8%
	951	29	46	17	58.6%
	952	86	193	107	124.4%
Total		**912**	**926**	**14**	**1.5%**
Lindenwold	1214	250	423	173	69.2%
	1357	451	136	(315)	-69.8%
	1213	81	32	(49)	-60.5%
	1215	20	22	2	10.0%
	1219	157	141	(16)	-10.2%
	1216	684	462	(222)	-32.5%
	1220	25	32	7	28.0%
	1218	61	52	(9)	-14.8%
	1217	312	214	(98)	-31.4%
Total		**2,041**	**1,514**	**(527)**	**-25.8%**
69th Street Terminal	148	4	15	11	275.0%
	166	380	431	51	13.4%
	149	541	473	(68)	-12.6%
	152	907	886	(21)	-2.3%
	433	280	306	26	9.3%
	151	496	422	(74)	-14.9%
	434	235	161	(74)	-31.5%
	147	734	1,022	288	39.2%

Station	1990 TAZ #	0VEH_2000	0VEH_2025	Absolute Change 2000-2025	Percent Change 2000-2025
	428	127	129	2	1.6%
	429	195	274	79	40.5%
	435	210	256	46	21.9%
	134	1,768	1,842	74	4.2%
	432	540	540	0	0.0%
	431	556	546	(10)	-1.8%
	430	740	590	(150)	-20.3%
	436	189	200	11	5.8%
	133	937	956	19	2.0%
Total		**8,839**	**9,049**	**210**	**2.4%**
				-	
Trenton Station	996	156	161	5	3.2%
	994	609	608	(1)	-0.2%
	988	1,038	849	(189)	-18.2%
	992	449	384	(65)	-14.5%
	999	383	386	3	0.8%
	997	155	288	133	85.8%
	993	227	158	(69)	-30.4%
	986	668	583	(85)	-12.7%
	998	872	697	(175)	-20.1%
	983	156	84	(72)	-46.2%
	987	641	659	18	2.8%
	982	287	214	(73)	-25.4%
	984	252	260	8	3.2%
	985	289	248	(41)	-14.2%
	981	328	315	(13)	-4.0%
	1001	-	-	-	
	979	222	180	(42)	-18.9%
	978	373	461	88	23.6%
Total		**7,105**	**6,535**	**(570)**	**-8.0%**

INCREASING INTER-MODAL ACCESS TO TRANSIT

Publication No.: 04029

Date Published: August 2004

Geographic Area Covered: One mile and one quarter mile radii surrounding six transit stations in Delaware, Bucks, Mercer and Camden counties.

Key Words: Ardmore Junction; Avandale Park and Ride; Doylestown Station; Lindenwold Station; 69th Street Terminal; Trenton Station; Transportation Analysis Zones (TAZ), Bicycle Level of Service (BLOS).

ABSTRACT: This report examines the surrounding context of transit stations to determine pedestrian and bicycle access to the facility. Analysis of one mile and one quarter mile land use boundaries and comparisons between Year 2000 and Year 2025 forecast demographics suggest a complex mobility environment beyond the standard quarter mile walking boundaries. This analysis yielded three stations recommendations: Ardmore Junction, Lindenwold Station, and Trenton Station. These three stations have the potential for generating non-motorized access and opportunities to enhance future mobility options. The next step is the further gathering of data in support of BLOS software and the assessment of specific non-motorized mobility enhancements supporting station access.

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

Phone: 215-592-1800
Fax: 215-592-9125
Internet: www.dvrpc.org

Staff Contact: Joseph F. Hacker, Ph.D., AICP
Direct Phone: 215-238-2935
Email: 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