Appendix 1
REGIONAL PERSPECTIVE

The location of a municipality and its relationships with other nearby communities plays an important role in determining its character, function, and vitality. The social and economic relationships our community shares with our neighbors provide employment opportunities and community services to residents that cannot be accommodated within the confines of an individual municipality. This section highlights the various relationships Malvern shares with neighboring communities and identifies regional issues that may affect the future of the Borough. These relationships and issues have been considered in preparation of this Comprehensive Plan. In that planning is a dynamic, rather than static, process, periodic review of these regional relationships is essential for maintaining an effective, ongoing, planning program.

GEOGRAPHIC SETTING

The Borough of Malvern is located in southeastern Pennsylvania, in eastern Chester County. The Borough encompasses an area of 1.3 square miles and is located approximately 20 miles west of Philadelphia and 20 miles north of Wilmington, Delaware. (See Figure A1-1)

Malvern Borough is surrounded by Willistown Township on all sides except to the north, where East Whiteland creates the border. On a larger scale, the Borough is surrounded by East Goshen to the west, Tredyffrin to the northeast and Easttown to the southeast. Although the borough is an urban area, it's relatively low intensity, village-like atmosphere is significantly different in character than more intensely urbanized areas like the boroughs of West Chester and Phoenixville and the city of Coatesville. Although the Paoli area immediately east of the borough is of a similar low intensity urban character as Malvern, most of the area surrounding the borough is suburban in nature. The Route 30 corridor and Great Valley corporate area, both located to the north of the Borough, are characterized by fairly intensive commercial development, while the areas to the south and west consist primarily of lower intensity residential uses. Beyond the suburban area to the south are fairly significant portions of both Willistown and Easttown townships that remain primarily rural in character. (See Map A1-1)

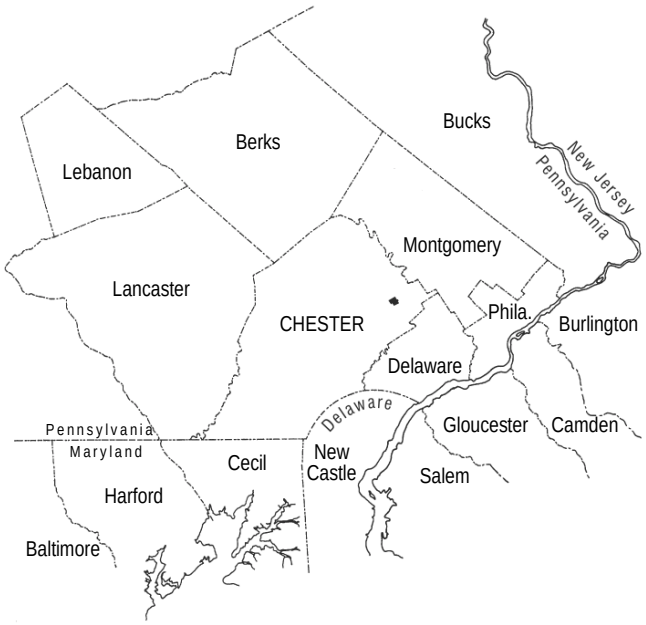
HISTORY

Prior to the early 1800s, Malvern was a rural farming area within Willistown Township. With the development of the Pennsylvania Central and West Chester Railroads, which intersected at Malvern, the area developed into a railroad oriented village. In 1873, the Pennsylvania Railroad built a new station in Malvern, which stimulated growth in the village. Sixteen years later, in 1889, the Borough of Malvern was established as a separate political entity from Willistown. The Borough continued it's role as a rail-oriented town in a primarily rural area until the region began to suburbanize in the middle of the 20th century. As the region continued to suburbanize, the role of Malvern changed to a central point for shopping and rail commuting in a primarily suburban region.

DEMOGRAPHIC COMPARISON

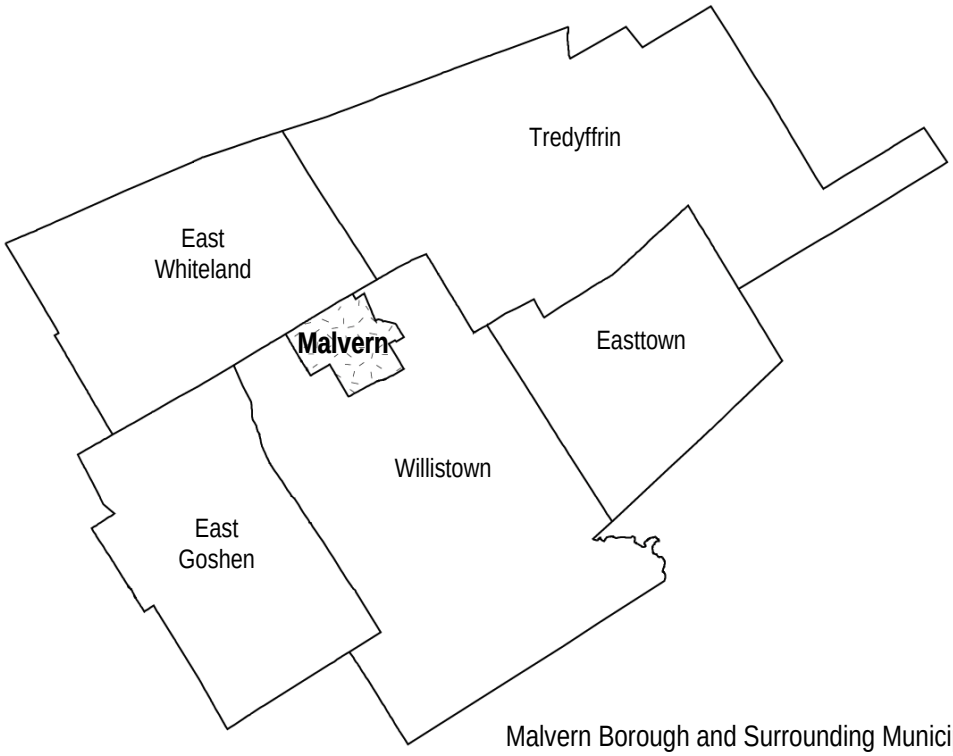
Malvern Borough is a part of the "Main Line Community", as profiled by the Chester County Planning Commission in the Main Line Community Profile – 1994. The other municipalities in this community include the adjacent Townships of Willistown and East Whiteland, as well as the Townships of Tredyffrin and Easttown to the east. As the only borough in this community, Malvern has the lowest population of these neighboring municipalities, but the highest population density.

Figure A1-1
Malvern Regional Setting



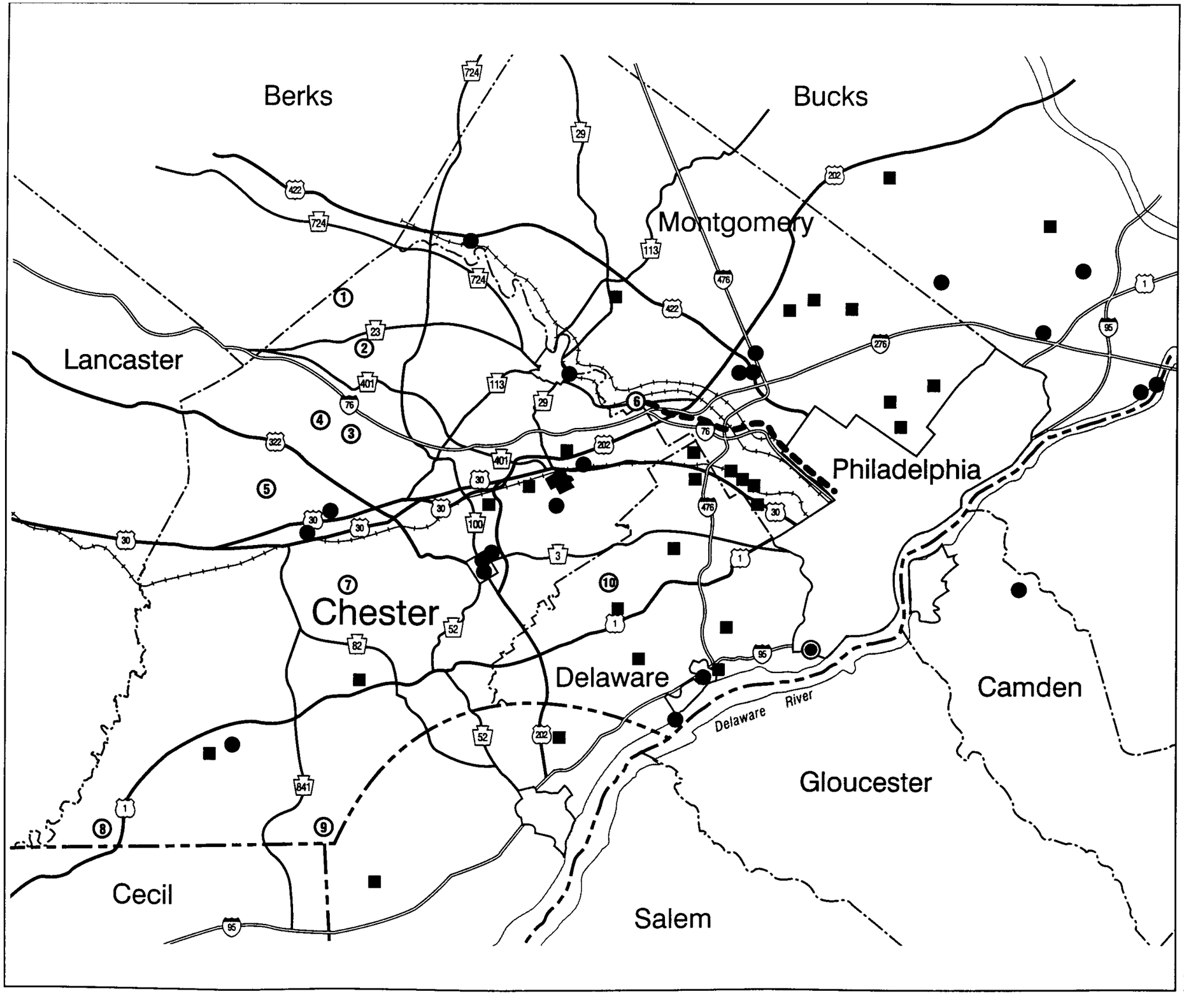
Malvern Borough in Southeastern Pennsylvania Region

Malvern Borough in Chester County



Malvern Borough and Surrounding Municipalities

Map A1-1
Regional Influences



Parks

1. French Creek State Park
2. Warwick County Park
3. Marsh Creek State Park
4. Springton Manor Farm
5. Hibernia County Park
6. Valley Forge National Historic Park
7. Embreeville County Park
8. Nottingham County Park
9. White Clay Creek Preserve
10. Ridley Creek State Park

Regional Influences

- Philadelphia International Airport
- Hospitals
- Universities
- Schulkill River Greenway

Base map prepared by: Chester County Planning Commission, 1999.
Source: Chester County Planning Commission, 1999

Malvern Borough

Comprehensive Plan

Over the 30 year period from 1960-1990, Malvern experienced the slowest population growth of the Main Line communities, which experienced slower population growth overall than Chester County as a whole. Relatively slow population growth is typical of boroughs within Chester County during this time period. The Borough experienced relatively strong population growth (13.9%) during the 1960s, while the other municipalities all experienced approximately 40% growth in population. In the 1970s, Malvern's population growth was even greater (16.1%), while all of the other municipalities except East Whiteland actually lost population. In the 1980s, the other three municipalities gained population, while East Whiteland and Malvern saw slight declines in population. Despite this fluctuation, the Borough's population appears to have stabilized at approximately 3,000 residents and is projected to increase very minimally in the coming decades.

Malvern Borough had a median annual household income of $40,082 in 1990, which was below all neighboring municipalities by at least $10,000 and below the county average by $5,000. Despite having lower average incomes than surrounding municipalities, our Borough had the second lowest percentage of residents below the poverty line of the surrounding Townships. The 2.3% of Borough residents below the poverty line is also significantly lower than the 4.7% for Chester County as a whole. Consistent with these income figures, the Borough also has the lowest median housing value ($127,100) of the surrounding municipalities and the highest percentage of both attached housing units and renter occupied housing units. It is typical for boroughs to have lower incomes and housing values than surrounding townships. In addition to being a center that provides shopping and services to surrounding townships, boroughs are also generally more economically diverse than the surrounding townships, often providing more affordable housing that can accommodate workers providing services to surrounding townships that cannot afford to live in those more affluent surrounding suburban communities.

TRANSPORTATION NETWORK

The major roads that pass through the Borough are King Road, traveling east-west, and Warren Avenue traveling north-south. Sugartown Road, which establishes the borough's western border, and Paoli Pike, which establishes our borough's southern border are also significant roads in the Borough's road network. While Borough oriented traffic uses all of these roads, a significant amount of traffic on these and other Borough streets is "pass through" traffic, or traffic that has neither an origin or destination in the Borough. One of our Borough's key challenges is maintaining a road system that provides adequate service to Borough residents and businesses but is not overly attractive to pass through trips, which have significant impacts on the Borough with little or no corresponding benefit.

The Borough has easy access to major highways, with US Route 30 just north of the Borough and US Route 202 also easily accessible to the north. Route 202 and Route 30 provide access to Philadelphia and the King of Prussia area. Also they allow easy access to US Route 100, which functions as a principal arterial highway north/south and links West Chester and Exton with Pottstown and points north and to the Pennsylvania Turnpike. Other key north/south routes in the surrounding area include State Routes 252, to the east of the Borough, and 352, to the west of the Borough.

In addition to the local road network, the Borough is directly served by both rail and transit services. SEPTA's bus route #92, providing service between West Chester and King of Prussia, passes through Malvern on King Street, providing service to numerous points along the route and, through transfers, to Philadelphia and Wilmington, Delaware. Additionally, the Malvern train station, located immediately north of King Street and west of Warren Avenue, provides access to both the SEPTA R-5 commuter rail line that travels between Downingtown and Philadelphia, and to AMTRAK service that travels between Philadelphia and Harrisburg. This rail station maintains Malvern's traditional role as a commuter rail center, although it is noted that the Paoli train station, located less than two miles to the east of the Malvern station, also provides commuter services, including express trains that do not stop in Malvern. The Paoli station is in the early

stages of a major expansion that will likely significantly affect land uses and service provisions in the immediate area.

Primary air service is provided from Philadelphia International Airport, approximately 20 miles to the southeast. Secondary, intermediate air service is available at a number of small, local airports. The nearest local airports include Brandywine Airport near West Chester Borough, Chester County Airport near Coatesville, and New Garden Airport near Avondale Borough to the southwest. These facilities are located within easy access of the Borough.

REGIONAL SERVICES

Many of the services that Borough residents depend on are provided by regional entities. For example, children of the Borough attend the Great Valley School District, which also includes the Townships of Charlestown, East Whiteland and Willistown. None of the Great Valley Schools are located in the Borough. Water service to nearly the whole Borough is provided by the Philadelphia Suburban Water Company, which serves much of suburban and urban Chester County. Sewer service is also provided regionally, by the Valley Forge Sewer Authority. In addition, most health care facilities are located outside the Borough and include the Paoli Memorial Hospital, the Chester County Hospital in West Chester, Bryn Mawr Rehab and The Main Line Nursing Home all within a short drive of the Borough. The Borough does provide its own police and fire protection. These two services have reciprocal agreements with other local municipalities for a greater area of protection. Additionally, the Malvern Borough Library is part of the Chester County Library System and is used by both Malvern residents and residents of surrounding townships. Given our Borough's reliance on a combination of local and regional services, continued regional cooperation and coordination is key to the continued provision of these services and utilities in a cost effective manner.

REGIONAL RESOURCES

The Borough owns 3.3 acres of recreation parkland: the 1st Avenue Park (1.6 acres), the Malvern Community Park (1.4 acres), and the Rubino Park and tot lot (.3 acres). These sites include basketball courts, baseball/softball fields, and picnic tables. The McAdoo Athletic Fields are the only community park in Malvern, not owned by the Borough. The 8.6-acre sight in the Paoli Memorial Grounds contains baseball/softball fields, tennis courts, and a Boy Scout Cabin. Other significant open space areas in the Borough include a 48 acre, Borough owned, site in the eastern portion of the Borough, and the privately owned Malvern Preparatory School and St. Joseph-in-the-Hills Retreat, both in the southern portion of the Borough. Borough residents also have access to other regional park facilities, including the Valley Forge National Historical Park, Marsh Creek State Park, Ridley Creek State Park, and several other smaller parks. The Paoli Memorial Grounds, the sight of the Paoli Massacre, is located within the Borough on the northern edge of the Malvern Preparatory School property. The Paoli Memorial Grounds is a historically significant sight that commemorates the American Revolutionary War. In addition, Monument Avenue and parts of Warren Avenue are designated as scenic roads.

MUNICIPAL PLANNING PROGRAMS

The following is a summary of existing land use patterns and land use policies in the municipalities surrounding Malvern. Understanding these policies and patterns is critical in gaining and understanding of the regional issues affecting the Township and the implications of possible changes to future land use practices in the Township.

- **Willistown** - Willistown Township surrounds Malvern on the south, east and west sides of the Borough. Nearly the entire portion of the Township surrounding Malvern currently consists of single family

residential development at densities between one unit per acre and one unit per two acres, although there is a multi-family development adjacent to the southeastern portion of the Borough and two major institutional uses, Villa Maria Academy and the Phelps School, are adjacent to the northeast and southwest corners of the Borough, respectively. Additionally, there are a few industrial and commercial uses along the portion of King Street immediately east of the Borough. Willistown's Comprehensive Plan designates the area to the south and southwest of the Borough for low to medium density suburban uses, the areas to the southeast and northwest of the Borough for medium density suburban uses, and the area northeast of the Borough for high density suburban uses. The Township's zoning ordinance classifies most of the area surrounding the Borough as an "R-1" district, which allows single family residential uses on lots of at least two acres, a low density suburban pattern. The area adjacent to the northwest corner of the Borough, however, is zoned "R-2", however, allowing for half-acre lots, and an area due east of the Borough is zoned "R-3", allowing for 12,000 square foot lots. Finally, there is an area zoned for office uses adjacent to the northeastern corner of the Borough.

Willistown is in the process of developing a "Paoli Station Joint Zoning Project" with Tredyffrin Township to allow for higher density residential and mixed-use development in the immediate vicinity of the planned Paoli train station. While this new "transit-oriented-development" area is not directly adjacent to Malvern, it will likely have a significant affect on Malvern and other municipalities in the immediate area. In addition to expanded commute opportunities, this development is likely to generate demand for additional sewer and water service, shopping opportunities, schools, and other services and utilities that are provided on a regional basis.

- **East Whiteland** - East Whiteland Township is adjacent to Malvern on the northern edge of the Borough. Existing land uses along the border are single family residential and woodland areas. In addition, the SEPTA/AMTRAK line runs into the Borough from East Whiteland Township. East Whiteland's Comprehensive Plan designates the area adjacent to Malvern as an area of environmental constraints. This area is zoned "R-3", a medium density residential classification that is consistent with the existing single family development in that portion of the Township. To the north of these residential areas are the more intensively developed Route 30 corridor and Great Valley corporate area.

Chester County's "Livable Landscapes" map from the County's ***Landscapes*** Comprehensive Policy Plan, designates all of Malvern Borough and portions of the areas immediately north and east of the Borough as "urban landscapes". The surrounding area, including the Route 30 corridor to the north and the residential areas to the east, west, and south are designated as "suburban landscapes". Somewhat to the south of the Borough, portions of both Willistown and Easttown Townships are designated as "rural landscapes". Chester County's consistency review, comparing the Borough's plans and ordinances to the County's ***Landscapes*** plan, finds that both our plans and ordinances are "somewhat consistent" with the County's plan, indicating general policy consistency, but with specific areas that could be more consistent.

PLANNING IMPLICATIONS

- Malvern is a small, urban, borough, in a largely suburban area, with intense commercial activity in the Route 30 corridor to the north, suburban residential development to the east, west, and immediate south of the borough, and a more rural, pastoral, area further to the south. While the Borough serves shopping, commuting, and other needs of residents of surrounding Townships in addition to local residents, maintaining the Borough's existing "small town" atmosphere in the midst of this largely suburban region is the Borough's key challenge in future decades.

- Given the Borough's proximity to the intensely developed Route 30 corridor and Great Valley corporate area to the north, and a few key convenient roads passing through the Borough, a great deal of through-

traffic (traffic that neither originates or is destined for the Borough) is found on Borough streets. Part of the challenge of maintaining our small town atmosphere is providing adequate roadways for our residents and businesses, but not making the roadways so attractive as to encourage additional pass-through traffic.

- Many services and utilities that Malvern is dependent on are provided through regional organizations. Given the economies of scale that result from inter-municipal cooperation in service and utility provision, the Borough should consider continued regional cooperation in the future.

Appendix 2
DEMOGRAPHIC ANALYSIS

This section examines population, housing, and socio-economic demographic characteristics in the Borough. Demographic characteristics include information on total population, housing units, and income, among other descriptive statistics. An analysis of demographic characteristics provides an understanding of past trends and a method of anticipating and planning for future growth and changes in population composition. Population changes can affect demands on existing municipal services, and land use and housing considerations among other factors. Knowledge of these characteristics, how they change over time, and their implications helps the Borough in planning for Malvern's specific future needs.

Specifically, the population analysis looks at past population trends, examines age distribution and household trends, and projects the anticipated population through the year 2020. This housing analysis examines factors such as housing types, affordability, and condition, while the socio-economic analysis examines employment by occupation and industry and educational level among other factors.

POPULATION ANALYSIS

Past Population Trends

Analyzing past population trends provides an understanding of the amount of growth a community has experienced and when this growth occurred. This information, in turn, can provide insight into development patterns, housing types and styles, and land uses which all make up a community's character.

Table A2-1
MALVERN HISTORIC POPULATION TRENDS, 1900-1990

YEAR	POPULATION	% CHANGE
1900	975	N/A
1910	1,125	15.4%
1920	1,286	14.3%
1930	1,551	20.6%
1940	1,680	8.3%
1950	1,784	5.0%
1960	2,268	28.6%
1970	2,583	13.9%
1980	2,999	16.1%
1990	2,944	-1.8%
2000[1]		

Source: U.S. Bureau of the Census

Historically, Malvern experienced population growth with periods of more rapid growth in the 1920s and 1950s. (See Table A2-1) Between 1980 and 1990 there was a slight decline (1.8%) in Borough population. Malvern was one of 12 Chester County municipalities to lose population between 1980 and 1990. E. Whiteland was the only community within the region to also have slight population loss (-.8%). Chester County grew by about 19% overall during the same period. During the 30 year period between 1960 and 1990, Malvern exhibited the slowest population growth of the neighboring municipalities. This is primarily due to the limited amount of developable land in the Borough, which has a much smaller total land area and

[1] Information to be included by the community after the 2000 Census information becomes available.

which is much closer to being fully "built out", or fully developed, than neighboring townships. Over that same period, Chester County experienced a faster rate of growth than Malvern and the surrounding region. (See Table A2-2)

TableA2-2
MALVERN POPULATION TRENDS WITHIN A REGIONAL CONTEXT, 1960 – 1990

	1960	1970	1980	1990	% change 1960-90	% change 1980-90
MALVERN	2,268	2,583	2,999	2,944	29.8%	-1.8%
E. Whiteland	5,078	7,242	8,468	8,398	65.4%	-0.8%
Willistown	6,492	9,182	8,284	9,380	44.5%	13.2%
Easttown	6,907	9,565	9,064	9,570	38.6%	5.6%
Tredyffrin	16,004	23,404	23,019	28,028	75.1%	21.8%
Chester County	210,608	277,746	316,660	376,396	78.7%	18.9%

Source: U.S. Bureau of the Census

Age Distribution

Analyzing the age distribution provides information about trends in population composition. This information is useful in planning since changes in segments of the population may affect demand for particular services. For example, an increase in children may result in an increased need for parks and tot-lots.

Table A2-3 displays the population composition in terms of age groups. The age group 25-34 made up the largest segment of the population in both 1980 and 1990. In 1980, 21.9% of Malvern's population fell within that age group, while in 1990 the percentage grew to 25.7%. This population group is at the age for having families and purchasing homes, which has implications for housing and community facilities. This large population of childbearing age may explain the large growth from 1980 to 1990 in the under 5 age group which grew at a faster rate (33%) than any other age group in Malvern between 1980 and 1990 (33%). This suggests that more children will be attending elementary school over the next decade which accordingly puts greater demand on elementary school facilities and could require additional facilities. This increase is similar to the county-wide increase of 35.5%.

Table A2-3
AGE DISTRIBUTION, 1980 - 1990

	1980		1990		Change 1980 to 1990	
Age	Population	% of Total	Population	% of Total	Number	Percent(rounded)
0-4	166	5.5%	220	7.5%	+54	+33%
5-9	175	6.0%	161	5.5%	-18	-10%
10-14	195	6.5%	107	3.6%	-88	-45%
15-19	218	7.3%	126	4.3%	-92	-42%
20-24	283	9.4%	204	6.9%	-79	-28%
25-34	657	22.0%	756	25.7%	+99	+15%
35-44	338	11.3%	438	14.9%	+100	+30%
45-54	295	9.8%	269	9.1%	-26	-9%
55-64	294	9.8%	259	8.8%	-35	-12%
65-74	216	7.2%	229	7.8%	+13	+6%
75+	158	5.3%	175	5.9%	+17	+11%
TOTAL	2,999	100%	2,944	100%	-55	-1.8%

Source: U.S. Bureau of the Census

The 35-44 age group grew second fastest (30%) and also accounts for the second largest segment of Borough population. One common demographic trend not found in the Borough is an increase in elementary school age children (5-9 age group) between 1980 and 1990 as baby boomers (35-44 age group) had families resulting in another baby boom. In Malvern, there was a slight decrease in the 5-9 age bracket of 10% which was less severe than the decrease of 26% during the 1970's. There was a significant loss in population in the 10-14 and 15-19 age brackets from 1980 to 1990, 43.5%. This is typical of county-wide trends. This is important, as over the next ten years those age groups will move into childbearing years. Thus, in the next decade, this will likely influence the amount of population in the under 5 age group. The population decline in the 20-24 age bracket is generally attributed to that age group moving away from home. The median age in 1990 was 33.5 years. In 1980, the median age was 31.8 years.

The number of people 65 and older in Malvern has increased 8% since 1980 (from 374 in 1980 to 404 in 1990). In 1990, 13.7 of the Borough population was 65 or older, while in 1980 12.5% fell into this age group. This trend reflects the national trend toward an aging population, also seen in Chester County and Pennsylvania. In 1990, of Chester County's 376,396 residents, 10.9% were 65 or older, up from 9% in 1980, while in Pennsylvania, 15.4% of the population was 65 or older in 1990 up from 13% in 1980. This increase in the elderly population indicates an increasing demand for both services directed at senior citizens and senior specific housing.

Table A2-4
MIGRATION PATTERNS, 1970 and 1980, 1980 and 1990

1970		1980			1980		1990		
Age Group	**Population**	**Age Group**	**Population**	**Pop. Change**	**Age Group**	**Population**	**Age Group**	**Population**	**Pop. Change**
65-74	143	75+	158	15	65-74	216	75+	175	-41
55-64	23	65-74	216	-17	55-64	294	65-74	229	-65
45-54	276	55-64	294	18	45-54	295	55-64	259	-36
35-44	279	45-54	295	16	35-44	338	45-54	269	-69
25-34	376	35-44	338	-38	25-34	657	35-44	438	-219
15-24	435	25-34	657	222	15-24	501	25-34	756	255
5-14	483	15-24	501	18	5-14	374	15-24	330	-43

Source: US Bureau of the Census

In terms of migration patterns, from 1970 to 1980 there was an increase in the 75+ age group and a significant increase in the number of persons in the 25-34 age bracket, with other groups displaying some losses and gains. From 1980 to 1990 the 25-34 age group had a considerable increase while all other age groups experienced losses, with significant loss in the 35-44 age group. These trends indicates younger persons moving into the Borough and then leaving within 10 years with a general out-migration of other age groups. These patterns may be attributed to the availability of specific types of housing and their price range.

Race

In 1980, 2,781 or 92.7% of Malvern's population was Caucasian and in 1990 2,757 or 93.6% the population was Caucasian. In 1980, Afro-American residents accounted for 187 or 6.2% of Malvern's population, which fell slightly to 150 persons or 5.1% in 1990. However, both the Caucasian and Afro-American populations experienced overall decline over the 10 year period, while the Asian population experienced an overall increase. It increased to 1.1 percent of Malvern's population in 1990, from .5% in 1980.

Household Size

Household size indicates the average number of persons per household. This information helps in determining how many housing units will be needed to serve the Borough's future population.

Table A2-5
HOUSEHOLD SIZE

MUNICIPALITY	1970	1980	1990	% change (80-90)
MALVERN	3.12	2.53	2.35	-7.1%
Easttown	3.66	3.08	2.74	-11%
E. Whiteland	3.81	2.94	2.64	-10.2%
Tredyffrin	3.39	2.78	2.44	-12.2%
Willistown	3.54	3.08	2.73	-11.4%
Chester County	3.30	2.90	2.73	-5.9%

Source: US Bureau of the Census

Decreasing household size has become a common trend across the nation. In 1970, Malvern had 2,542 persons in households, and 815 households with an average household size being 3.12. In 1980, there were 2,995 persons in households (4 lived in group homes or institutions), and 1,184 households, resulting in an

average household size of 2.53 persons. In 1990, 2,934 Malvern residents were members of 1,248 households and the average household size fell to 2.35 persons per household. The Chester County Planning Commission has completed household size projections to the year 2020, which project that household sizes will generally continue to decrease. For Malvern, the average household size is projected to be 2.18 in 2000, 2.15 in 2010 and 2.10 in 2020; these sizes are the lowest for any municipality in Chester County. Malvern also had the lowest household size in the County in 1990, followed closely by Phoenixville (2.37), West Chester (2.39), and Oxford (2.39) Boroughs.

Chester County household size also lowered from 2.9 persons per household in 1980 to 2.73 persons per household in 1990. Average household size dropped throughout Pennsylvania from 2.75 in 1980 to 2.57 in 1990. Factors contributing to this trend include increases in divorced or separated couples living independently, single parent families, longer life spans resulting in more older citizens living alone, and younger adults postponing marriage and children. As household size decreases, the number of households increase. Thus, the number of housing units required to accommodate the same population increases. Types of housing needed also changes, as there will be more demand for smaller housing types which may include smaller single houses, townhouses, or condominiums since household sizes are smaller. The number of housing units needed will increase at a more rapid rate than the population. Since Malvern has limited developable land area, this may mean that the Borough population in the future will increase slowly or not at all.

Population Estimates

Population estimates approximate population for non-Census years. This information is necessary for recognizing shifts in population for planning purposes. The Chester County Planning Commission produces estimates for county municipalities. These estimates use municipal birth and death rates to calculate natural population increases, and building permit data for new housing units to account for in-migration. Population estimates prior to 1996 use the Census Bureau's 1990 figure for persons per household for the Borough to estimate the number of person living in the new housing units derived from the building permit data. In 1996, year 2000 household size estimates (prepared by the County Planning Commission) were used instead and will be used for the remainder of the decade.

Table A2-6
POPULATION ESTIMATES, 1991-1997

YEAR	ESTIMATE	PERCENT CHANGE (%)
1990 (actual)	2,944	NA
1991	2,970	0.88
1992	2,980	0.34
1993	3,020	1.34
1994	3,010	-0.33
1995	3,000	-0.33
1996	3,020	0.67
1990-1996	NA	2.6

Source: CCPC Planning Data Sheet #52, Population Estimates 1991-1996

The 1996 population estimate for Malvern is 3,020, which is a 2.6% increase in population from the 1990 population of 2,944. Based on the Population estimates displayed in Table A2-6, population changes for Malvern from 1991 to 1997 have been very slight, fluctuating from a loss of -.33% in 1994 and 1995 to a gain of 1.34% from 1992 to 1993. Overall, there has been an increase of approximately 75 people between

1990 and 1997. This is likely due to limited room for new development in the Borough due to the small land size of 1.2 square miles.

Population Projections

Projections are forecasts of future population which extend Borough population trends into the future. Population projections anticipate future growth and are important for Malvern in determining and planning for anticipated demand for services, facilities, transportation and roadways, and housing. Four population projection methods were used to generate a range of population projections for the Borough to the year 2020. Table A2-7 illustrates the results of these projections which are described as follows:

- **Cohort-Survival projections** (low range) are produced by the Chester County Planning Commission. This method uses births, deaths, and net-migration rates. This information for each age/sex cohort is carried forward into the future (this methodology is further described in Chester County Planning Commission Planning Bulletin #45, Population Projections 1995-2020).
- **Arithmetic projections** (middle range) use the average numerical increase of population for each decade from 1960 to 1990.
- **Building Permit Base projections** (middle range) are based on the number of buildings permits issued each year over the past several years. The years 1990 to 1996 were used.
- **Geometric projections** (high range) are based on the average percentage population increase per decade from 1960 to 1990.

Table A2-7
POPULATION PROJECTIONS, 2000-2020

PROJECTION METHOD	1990 (actual)	2000	2010	2020	% Change 1990-2000	% Change 1990-2020
Cohort-Survival*	2,944	3,020	3,040	3,070	2.6	4.3
Arithmetic	2,944	3,169	3,394	3,619	7.6	22.9
Building Permit Base	2,944	3,173	3,402	3,631	7.8	23.3
Geometric	2,944	3,236	3,528	3,820	9.9	29.8

* Chester County Planning Commission
Source: U.S. Bureau of the Census

If the existing population trends are continued into the future, Malvern's population is projected to increase between 4.3% to 29.3% from 1990 to the year 2020. The lowest projection for year 2000 has already been surpassed, since the most current population estimates for Malvern are 3,020, or an increase of 2.6% from 1990 actual population. The other three methods are relatively close in their projections which call for between 22.9% to 29.8% growth over three decades. Based on past trends and the fact that little developable land remains in Malvern, these three projections are unrealistically high for the Borough. Malvern has experienced considerable growth for a Borough in the past, and since these projections are based on past growth trends, this factor contributed to these high projections. Only in the unlikely event that the institutional properties in the southern portion of Malvern are developed for residential use in the next 10-20 years could population growth conceivably meet the highest projection. Barring such development, it is more likely that population increases will occur closer to the lowest projection.

With the exception of E. Whiteland, the neighboring municipalities are projected to grow between 4.1% and 8.2% between 1990 and 2020. Malvern's population is projected to increase at a rate comparable to Easttown. E. Whiteland, projected to be the fastest growing municipality in the region, is expected to grow

at a slower rate than Chester County, while the other municipalities are expected to grow at a much slower rate.

Table A2-8
REGIONAL POPULATION PROJECTIONS, 1990-2020 *

MUNCIPALITY	1990 (actual)	2000	2010	2020	% CHANGE 1990-2000	% CHANGE 1990-2020
Easttown	9,570	9,760	9,860	9,960	2.0	4.1
East Whiteland	8,398	9,780	10,180	10,490	16.5	24.9
Tredyffrin	28,028	28,950	29,370	29,750	3.3	6.1
Willistown	9,380	9,790	9,970	10,150	4.4	8.2
Chester County	376,396	425,800	460,200	489,300	13.1	30.0

* Chester County Planning Commission projections using the Cohort-Survival Method

POPULATION ANALYSIS PLANNING IMPLICATIONS

- The largest population group in both 1980 and 1990 being the 25-34 age group has implications for housing and community facilities as that group is at the age for having families and purchasing homes.

- If the under 5 age group continues to grow as it has from 1980 to 1990, the demand for day care facilities and tot-lot would increase, as would the need for elementary school facilities in subsequent years.

- The aging of the baby boom generation and the resulting increase in the number of residents over 65 years of age will likely result in an increased demand for senior specific services and housing.

- In the next decade as the 10-14 and 15-19 age groups enter the childbearing years, the significant loss in population experienced in those age groups from 1980 to 1990 will have an impact on the population in the under 5 age group.

- Malvern is following the national trend toward smaller household sizes. Accordingly, this will increase the number of housing units needed to accommodate a greater number of smaller households. The demand for smaller housing types and a diversity in housing will also likely increase. The Borough contains a variety of housing types. Adaptive re-use of existing buildings, infill on larger lots, conversions, and rehabilitations may increase in demand.

- Although little vacant land remains which is available at this time for development, the Borough population is expected to increase somewhat. The additional population may cause shifts in demands for various services and additional services may be needed. In the long run, any development of the institutional lands in the southern portion of the Borough will cause greater population growth which will put greater demands on infrastructure and community services.

HOUSING ANALYSIS

Number of Housing Units and Composition

A housing unit analysis looks at existing trends in the quantity and types of housing. This information is useful for determining future housing needs for Borough residents.

In 1980, there were a total of 1,228 housing units in the Borough. Between 1980 and 1990, a total of 91 units were added, a 7.4% increase, for a total of 1,319 housing units in 1990. This 7.4% increase compares to a 26% total increase in housing units in Chester County over the same time period. While the 1980s were generally a high growth period for housing in the County, the slower growth rate in Malvern is typical of most boroughs in the County and results in part from the limited amount of remaining developable land and slower population growth rates in Boroughs.

There are a wide range of housing types within the Borough. In 1990, 409 or 31% of the housing units were single family detached, and 342 or 25.9% were single-family attached (twins and townhouses). There has been little change in this mix since 1980. There was a very slight decrease in the proportion of single family detached homes and a slight increase in the proportion of single family attached homes within the total housing stock. Together in 1990, these types account for 56.9% of total housing stock which is comparable to 56.4% in 1980. One change that occurred from 1980 to 1990 is the addition of 90 housing units which fit into the mobile home, trailer or other category, making up a total of 6.8% of the housing stock in the Borough. The remaining 36.2% are two or more unit structures (such as apartments). Between 1980 and 1990, there was a significant decrease in both the number of multi-family housing with 2 units (-41.2%) and with 10 or more units (-26.2%), which signifies a change in housing patterns in the Borough. The greatest numeric housing type increase from 1980 to 1990 was for single-family attached homes (56), followed by multi-family housing with 5-9 units (38). The great increase in single-family attached housing and the significant decrease in multi-family housing with 2 units may in part result from people misunderstanding the two categories when completing the Census form. Table A2-9 summarizes this information.

Table A2-9
HOUSING COMPOSITION, 1980 AND 1990

UNITS IN STRUCTURE (% of total housing units)	1980 number (%)	1990 number (%)	NUMERIC CHANGE	% CHANGE
Single-Family Detached	406 (33.1%)	409 (31%)	3	0.7
Single-Family Attached *	286 (23.3%)	342 (25.9)	56	19.6
Multi-Family 2 units	97 (7.9%)	57 (4.3%)	-40	-41.2
Multi-Family 3-4 units	80 (6.5%)	99 (7.5%)	19	23.8
Multi-Family 5-9 units	73 (5.9%)	111 (8.4%)	38	52.1
Multi-Family 10+ units	286 (23.3%)	211 (16%)	-75	-26.2
Mobile Home, Trailer, or Other	0	90 (6.8)	90	- - -
TOTAL	1228	1319	91	7.4

* Includes twins and townhouses
Source: US Bureau of the Census

Between 1980 and 1990, the number of housing units in Malvern increased by 7.4% or 91 units, while over that same period Borough population decreased by 1.8% or 55 persons. This increase in housing units can be related to the trends toward a decreasing household size (2.53 in 1980 to 2.35 in 1990), whereby a greater number of housing units are needed to accommodate the population. As is common in small towns, Malvern

contains more diversity in housing stock and a more even distribution of housing types than surrounding municipalities which have a higher concentration of single family detached housing.

Housing Tenure and Vacancy Rates

Housing tenure shows the proportion of owner-occupied housing and renter-occupied housing. This is used to help examine whether there is housing diversity in a community. Vacancy rates indicate the percentage of housing units that are vacant, and are used to examine stability and housing demand in a municipality.

In 1990, of the 1,319 housing units in Malvern, 1,248 or 94.6% were occupied and 5.4% were vacant. Of the occupied units, 59.9% were owner-occupied and 40.1% were renter-occupied. Owner-occupied units have increased by 15.5% since 1980 when 54.9% were owner-occupied. Homeownership rates for Chester County and surrounding municipalities in 1990 were all higher than in the Borough, 74.5%, and 70.6% to 88.4% respectively. Therefore, great opportunity is available in Malvern for both rental and home ownership, which in turn provides housing choice for different types of households in the Borough.

In Malvern, in 1990 there was a 5.4% vacancy rate, which was a 61.4% increase from the 3.6% vacancy rate in 1980. In Chester County in 1990, 6,340 of the 139,597 housing units are vacant, for a vacancy rate of 4.5%. Having some properties vacant is desirable as it allows mobility and housing choice within the community. The optimum vacancy rate for the Philadelphia area, as established by the Delaware Valley Regional Planning Commission, is 4%. A low rate could indicate a stable community or an area with high housing demand, while a high vacancy rate could signify out-migration or over building of housing. Malvern's vacancy rate is only slightly above optimum levels and does not indicate a problem in the local housing market.

Housing Condition

Indicators of housing condition include age of housing and the number of persons per room. This information is important because for example a higher percentage of older housing will have implications such as possible adjustments to building code requirements, or greater repair which may put additional financial burden on municipal residents.

Table A2-10 displays the age of housing in the Borough. A little over half, 55.4%, of the Borough housing stock was constructed between 1950 and 1979, and 26.5% dates to 1939 or earlier. The Borough followed regional building trends during the 1940s, 50s, and 60s, whereby less housing was constructed in the 1940s and increases in construction are found in the 1950s and 1960s. As expected there is a higher percentage of housing dating to 1939 or older in Malvern than in the surrounding townships. In the 1980s, as remaining developable lands in the Borough became limited, a decrease in new construction resulted.

Table A2-10
AGE OF HOUSING, (%)

MUNICIPALITY	1939 OR EARLIER	1940-49	1950-59	1960-69	1970-79	1980-MARCH 1990
MALVERN	26.5	4.5	17.4	17.3	20.7	13.6
Easttown	17.3	5.1	23.4	24.5	8.5	21
E Whiteland	6.4	3.4	21.3	26.2	26.9	15.9
Tredyffrin	9.9	4.2	21.2	22.9	15.1	30.6
Willistown	13.5	6.2	29	17.2	8.8	25.3
Chester County	20.2	4.6	12.7	16	21.3	25.1

Source: US Bureau of the Census, 1990

The number of persons per room is an indicator of housing condition as a high number of persons per room can indicate overcrowding. Housing is considered overcrowded when there is more than 1 person per room residing in a unit. In Malvern, only 13, or less than 1 percent, of the total housing units have more than one person per room. Thus, overcrowding is not a problem in Malvern.

Housing Value and Affordability

Housing affordability is an analysis of whether a median income household can afford the median housing value. When the cost of housing increase at a faster rate than income, then housing within a municipality will become less affordable.

Table A2-11 indicates the median housing value and rent for Malvern, surrounding municipalities, and Chester County. Median housing values have increased considerably since 1980. In 1990, the median housing values in Malvern Borough was $127,100, a 146.8% increase from 1980. In comparison, in 1990 the median price for a home in Chester County was $155,900, which was a 145.5% increase from 1980. Regional increases range from 128.3% to 164.2%. Malvern's percentage increase was higher than all the other surrounding municipalities, except for Easttown. In spite of this fact, Malvern had a lower median housing value than the surrounding communities or the County. This is related to the age and housing types in the Borough. The housing value increase of 146.8% can be compared to the increase in median household income for Malvern of 98.3% during the same period. Thus, housing values have increased at a faster rate than income. This trend is found throughout the County. In Chester County, the median household income has increased 105.5% from 1980 to 1990, which is increasing at about two-thirds the rate of housing. When housing values increase at a faster rate than income, then housing becomes unaffordable for a greater number of households.

Table A2-11
REGIONAL MEDIAN HOUSING VALUE AND RENT, 1980 and 1990

MEDIAN HOUSING VALUE				MEDIAN RENT		
MUNICIPALITY	**1980 ($)**	**1990 ($)**	**% CHANGE**	**1980 ($)**	**1990 ($)**	**% CHANGE**
MALVERN	51,500	127,100	146.8	296	628	112.2
Easttown	99,300	262,400	164.2	272	481	76.8
E. Whiteland	70,400	160,700	128.3	291	605	107.9
Tredyffrin	98,800	231,200	134.0	360	661	83.6
Willistown	76,400	186,800	144.5	274	744	171.5
Chester County	63,500	155,900	145.5	237	496	109.3

Source: U.S Bureau of the Census, 1990, 1980

In Malvern in 1990, median rental prices for renter occupied units was $628 per month. This is the median rent for the region, but is higher than the $496 median rent for Chester County. In Malvern and the surrounding municipalities, median rent did not increase as much as median housing value. From 1980 to 1990, Malvern experienced an increase in rent of 112.2% or $332. Malvern had the median rent in the region and rent increase were comparable to the other municipalities and to the County.

In general, owner-occupied housing is considered affordable if the monthly mortgage does not exceed 28% of a household's gross monthly income. This measure is called the affordability index. In 1990, the median household income was $40,082, and 28% of this income translates to $935 per month. In 1990, the median housing value was $127,100. In order to purchase a house of that value, for which the monthly housing cost for a 30-year loan would be about $1,030. This is based on an interest rate of 7.394%, and includes principal, taxes, and insurance. For the median household to afford the median valued house in Malvern, a monthly household income of $3,679 or an annual income of about $44,000 is necessary. For Malvern, this housing value has an affordability index of 91; an affordability index of 100 or higher is considered affordable if a household with the median income of 40,082, while an index below 100 is considered unaffordable. However, using more recent figures, in 1996 the median sale price for a house in the Borough was $135,000, and estimated 1996 income was $50,904. This results in an affordability index of 113.5 for 1996. This change in index is because over the last 6 years housing costs have increased much more slowly than in the past decades. As such, increases in income have more of an effect in terms of affording housing. This leveling off in housing prices is found across the surrounding region. The 1996 estimated household income was derived by using the Consumer price index (.27) to account for inflation since 1990.

In addition to merely discussing the affordability of housing in Malvern, it is important to note that Malvern offers the most diverse housing stock in the region. While there has been some fluctuation in the "affordability index" that is based on median housing values and median household income, Malvern has continued to provide housing to a segment of the population that could not otherwise afford to live in this part of Chester County. The diversity of our Borough's housing stock is one of our most important assets.

Housing Unit Projection

Household size and population projections can be used to project the number of additional housing units needed to accommodate anticipated future population growth. Dividing the projected population by the projected household size results in the number of projected households. Using the low range population projection, which was determined to be the most reasonable approximation of growth of all the projections, there would be a total of 1,385 households predicted for the year 2000, 1,414 households for the year 2010, and 1,460 for the year 2020. This would translate to be an additional 66, 95, and 143 housing units needed

over 1990, respectively. This would result in a 5.0% change from 1990 to 2000, 7.2% from 1990 to 2010, and a 10.8% change from 1990 to 2020.

Future housing composition can also be projected using the housing unit projection and 1990 housing unit composition. Table A2-12 displays this breakdown.

Table A2-12
PROJECTED NEW HOUSING UNITS BY TYPE, 2000-2020

UNITS	2000	2010	2020
Cohort-Survival Total	1385	1414	1460
Single-Family Detached	429	438	453
Single-Family Attached	359	366	379
Multi-Family - 2 or more units	501	511	529
Other	94	96	99

Source: U.S. Bureau of the Census, Chester County Planning Commission

Several developments have been constructed in Malvern since 1990 with 98 housing units. These are all single-family residential detached houses and account for many of the single family detached housing units projected from 1990 to 2000. These developments do not include Malvern Hills II or Malvern Woods, currently approved, which will yield an additional 24 and 33 housing units, respectively. Since there is a limited amount of additional developable land in the Borough, these additional units can be accommodated through infill development, conversions, or re-use or rehabilitation of existing structures. Although very unlikely within the life of this Comprehensive Plan, any residential development of areas within the institutional areas in the southern portion of the Borough would also bring additional housing units.

HOUSING ANALYSIS PLANNING IMPLICATIONS

- From 1980 to 1990, the number of housing units increased while population slightly decreased. Thus, housing units have increased at a faster rate than population. However, this will likely taper off in the future as the remaining developable land becomes limited.

- Based on 1990 data, housing value was increasing more quickly than median household income, however, this trend appears to have become more balanced by 1996 with housing prices increasing at a much slower rate for Malvern.

- The Borough serves a key role in the region by providing housing that is more affordable than that generally found elsewhere in the region. This housing diversity is one of the Borough's strongest assets and could be threatened if demand for housing within the Borough grows too strong and leads to gentrification of our less affluent neighborhoods.

SOCIO-ECONOMIC ANALYSIS

Education Level

Analyzing the level of education attained by municipal residents helps to predict employment demand and can be related to the economic prosperity of the residents in the municipality.

Table A2-13
EDCUATION LEVEL OF PERSONS 25 YEARS AND OLDER, 1990

MUNICIPALITY	Below High School (%)	High School Graduate(%)	Some College, no degree (%)	Associate Degree(%)	Bachelor's degree(%)	Graduate Degree(%)
MALVERN	15.3	24.6	17.3	5.0	25.0	12.7
Easttown	8.3	16.1	15.7	5.1	33.9	20.9
E. Whiteland	8.3	24.4	16.4	6.4	28.5	16.0
Tredyffrin	5.2	15.4	14.6	6.0	36.9	22.0
Willistown	10.3	20.8	15.1	8.2	29.7	16.0
Chester County	16.1	29.3	15.0	5.9	22.4	12.3

Source: U.S. Bureau of the Census

By 1990, almost 85% of the Borough's 25 and older population had graduated from high school, and almost 43% had obtained post secondary educations. This is comparable to Chester County which had about an 85% high school graduation rate and about a 35% college graduation rate in 1990. Population in other municipalities in the region have generally obtained higher levels of education. Although comparable to education levels in Chester County as a whole, the relatively lower levels of education than the surrounding communities gives our Borough the strongest blue collar presence in the region.

Labor Force by Occupation and Industry

Labor force by occupation is examined to discover the types of jobs that residents have in order to identify if there is diversity in the labor force or if employment is concentrated in certain professions. For example, a person's occupation may be managerial, but the industry could vary. Labor force by Industry is looked at to discover in what types of industries residents are employed. Significant concentration in any one industry can effect a municipality should that industry undergo a recession. Based on the US Census, labor force is defined as those residents who are either employed, seeking employment, or laid-off from a job.

Table A2-14
REGIONAL LABOR FORCE BY OCCUPATION (%), 1990

OCCUPATION	MALVERN (%)	REGION (%) *	CHESTER COUNTY (%)
Managerial and Professional	38.0	47.7	34.6
Technical and Sales	36.1	36.1	32.8
Service	8.1	5.6	9.7
Agriculture	.8	.9	2.7
Production	9.5	5.4	9.4
Operators	2.5	1.5	4.6
Transportation	1.9	1.2	2.9
Laborers	3.1	1.7	3.2

Source: U.S. Bureau of the Census, 1990
* includes Malvern, Easttown, E. Whiteland, Tredyffrin, and Willistown

The majority of residents in Malvern Borough are employed in professional/managerial (38%) and technical/sales occupations (36.1%). Malvern has slightly more residents in these professions than Chester County. The Chester County percentages are lower by 3.6% and 3.3%, respectively. While the region has an identical proportion of residents working in Technical/Sales occupations, the region has a higher share by 9.7% of residents in Professional/Managerial positions. The Borough has a greater percentage of residents in all other professions than the region (with the exception of farming). Malvern is a small town and accordingly has a lower amount of residents in agricultural professions than in the County overall. The Borough's labor force is well diversified, and generally reflects the distribution of occupations found in the County. In terms of education and occupation distribution, Malvern represents a microcosm of the County trends. Information about occupation is displayed in Table A2-14.

From 1980 to 1990 Malvern had a significant increase in residents in professional occupations from 27.6% in 1980 to 38% in 1990. There was also an increase in technical occupations from 34.8 % in 1980 to 36.1% in 1990. During this same period, other professions showed slight increases or decreases. This information signifies a shift in professions to a greater amount of administrative occupations. This trend is found within the region for the same period.

Table A2-15
REGIONAL LABOR FORCE BY INDUSTRY (%), 1990

INDUSTRY	MALVERN (%)	REGION (%) *	CHESTER COUNTY (%)
Agriculture	1.6	1.5	3.8
Construction	10.2	4.9	6.3
Manufacturing	14.6	18.0	19.7
Transportation	3.7	2.2	3.4
Utilities	2.5	2.3	2.7
Wholesale Trade	4.3	6.1	5.6
Retail Trade	17.3	13.1	14.5
F.I.R.E.	8.8	12.7	8.5
Services	33.8	37.4	33.8
Administration	3.1	1.6	1.8

Source: U.S. Bureau of the Census, 1990
* includes Malvern, Easttown, E. Whiteland, Tredyffrin, and Willistown

In Malvern Borough, as well as the region, and Chester County as a whole, services represent the industry with the largest number of local employees. In Malvern, services comprised 33.8% of the labor force, while in the region services represented 37.4% and in Chester County 33.8%. From 1980 to 1990, in both Malvern and the region, labor force in this industry increased. The growth of service industries is a rising trend throughout the nation. In Malvern, retail trade made up the second largest employment sector (17.3%), while in both the region as a whole and in Chester County, manufacturing was the second largest and retail trade comprised the third largest employment category (13.1% and 14.5% respectively). Conversely in Malvern, the third largest sector was manufacturing at 14.6%. Reflecting the national trend, in Malvern and the region, manufacturing has declined since 1980. Likely due to the developed nature of the area, in both Malvern and the region, agriculture is a smaller employment sector than in Chester County in general. Table A2-15 exhibits this data.

Major Employers

Most Malvern Borough residents who are in the labor force work outside the Borough. The following are the largest employers in the vicinity of Malvern Borough:

Table A2-16
MALVERN BOROUGH AREA LARGEST EMPLOYERS, 1998

EMPLOYER	BUSINESS	APPROXIMATE FULL-TIME EMPLOYMENT LOCALLY
The Vanguard Group	Financial Services	4,600
Shared Medical Systems	Medical Software	3,300
Providian	Financial Services	1,400
The Devereux Foundation	Mental health/education	1,200
Main Line Health Inc.	Hospital/Health System	1,085
Johnson Matthey Investments Inc.	Metals Industry	1,006
DecisionOne Corp.	Computer Services	932
Systems and Computer Technology Corp.	Computer Software	550
Great Valley School District	Education	420

Source: Philadelphia Business Journal, 1998 Book of Business Lists

Income Characteristics

Income is examined to determine the trends within the municipality, as compared to increases in housing prices and the consumer price index, and other factors.

Table A2-17
TRENDS IN MEDIAN HOUSEHOLD INCOME IN THE REGION, 1970-1990

	1980 ($)	1990 ($)	% CHANGE, 1980-90
MALVERN	20,212	40,082	98.3
Easttown	34,641	66,723	92.6
E. Whiteland	25,591	49,021	91.6
Tredyffrin	31,781	61,144	92.4
Willistown	30,057	59,451	97.8
Chester County	22,209	45,642	105.5

Source: US Census Bureau, 1980, 1990

Median annual household income in Malvern Borough was $40,082 in 1990, as compared to a median of $45,642 for Chester County. This is a 98.3% increase from 1980. Malvern's median income has increased at a slightly faster rate than the neighboring municipalities. During the same period, the consumer price index increased 58.6% from 82.4 in 1980 to 130.7 in 1990. The higher increase in household income relative to the consumer price index indicates an improving standard of living for Borough residents.

Location of Employment and Commuter Patterns

This analysis indicates where employment opportunities are located. Specifically, it shows the role of the municipality in terms of whether it serves as a place of employment or mainly as a place to reside.

In 1990, the mean travel time to work for the Malvern Borough labor force was 23.9 minutes. This figure is identical to that for Chester County overall. Most of Malvern's labor force (60%) worked in Chester County, while 36.6% worked outside the County. Chester County had similar work destination figures for these categories. Only 2.6% of Malvern's labor force worked outside Pennsylvania, which is lower than for Chester County (7.8%). However, Malvern serves as a diverse community which contains employment opportunities for its residents as illustrated by the fact that 304 persons, or 16.7% of the labor force work within the Borough, which is higher than the County average of 14.2%.

Table A2-18
PLACE OF WORK FOR MALVERN RESIDENTS
AS COMPARED TO CHESTER COUNTY, 1990

	MALVERN RESIDENTS (%)	CHESTER COUNTY RESIDENTS (%)
DESTINATIONS:		
Home Municipality	16.7	14.2
Chester County	60.0	59.6
Region, excluding Malvern *	27.7	NA
West Chester Area **	7.5	NA
In Pennsylvania, outside Chester County	36.6	31.1
Delaware County	11.2	NA
Montgomery County	10.6	NA
Bucks County	.9	NA
Outside of Pennsylvania	2.6	7.8
In PMSA	95.3	89.1
Philadelphia	12.7	6.5

Source: U.S. Bureau of the Census, 1990
* includes Easttown, E. Whiteland, Tredyffrin, Willistown.
** includes West Chester, W. Goshen, E. Goshen, E. Bradford, Westtown, W. Whiteland
Original Data Source is the U.S. Census, 1990, data interpreted by Delaware Valley Regional Planning Commission.

The automobile was the most common means of travel to work. 78.9 of the residents drive alone to work which is nearly identical to the figure for Chester County (78.8%). However, alternate transportation is also used. In Malvern 6.9% of the labor force carpooled while 4.8% walk to work. In Chester County in 1990, a greater amount carpooled (10.1%), but slightly fewer walked (3.9%) to work. 1.9% of Malvern's labor force worked at home. 7.2% of the labor force commute by way of public transportation, while 2.9% of County labor force on average use public transportation. This higher percentage in Malvern may be related to Malvern containing a passenger rail stop which provides daily service to Philadelphia. 27.7% of the Borough residents commute to another destination within the region, while an additional 7% commute to municipalities around West Chester.

SOCIO-ECONOMIC PLANNING IMPLICATIONS

- The majority of the residents are employed in Professional/managerial and Technical/Sales occupations, however, the Borough's labor force is well diversified, and generally reflects the distribution of occupations found in the County. In terms of both education and occupation distribution, Malvern represents a microcosm of the County trends.

- From 1980 to 1990 Malvern had a significant increase in residents in Professional and Technical occupations while the other professions showed very slight increases or decreases. This signifies a shift in professions to a greater amount of administrative occupations. These professionals are generally associated with higher salary ranges.

- Malvern residents have the same average commute time to work as for Chester County. However, Malvern serves as a diverse community which contains employment opportunities for its residents as illustrated by the fact that 304 persons, or 16.7% of the labor force work within the Borough, which is higher than the County average of 14.2%. Thus, economic opportunities for residents appear to currently exist in the Borough.

Appendix 3

COMMUNITY FACILITIES AND SERVICES INVENTORY

This chapter of the Comprehensive Plan identifies and evaluates the community facilities and services available in Malvern Borough. Community facilities and services are those public programs and services, such as police protection, provided to Borough residents. They include Borough owned and operated programs and those offered by other public and private organizations. Due to the small size of the Borough, some services, such as emergency services, are provided on a regional basis. Because facilities are not always directly municipally operated, the Borough may have little control over a particular service. Examining the general adequacy of existing facilities and services is necessary for planning for future needs and for establishing municipal priorities. The availability of community facilities is also important to the local economy, since businesses, as well as residents, are more likely to locate in an area with adequate facilities and services.

BOROUGH FACILITIES AND ADMINISTRATION

Borough Facilities

The Malvern Borough Hall is located at the southeast corner of First and Warren Avenues. Dedicated in 1899, the building was originally constructed as an elementary school, and remained in use as a school until June 1981 when the Great Valley School District donated the property to the Borough. At that time, the existing Borough Hall was located on the northwest corner of Warren and First Avenues. The Borough renovated the school building and began operations there in 1982. Borough Hall contains all Borough administrative offices and functions, Council Chambers, several small meeting rooms (which are available for community purposes and organizations) on the second floor, the Malvern Borough Public Library on the first floor, and on the ground floor, the Borough Police Station. The Borough also has a Public Works facility at the south end of Ruthland Avenue where maintenance and street repair equipment is stored, and owns another building off Ruthland Avenue in which Herron Cable is currently located. The Borough has a Capital Improvements Program, however all capital needs are satisfied at this time and in fact there is an excess capital reserve. Borough facilities also include the Borough's web page(www.Malvern.org) which contains information about the municipal government and services, such as the Highway Department. There is an e-mail address through which residents can contact the Borough, Malvern@Malvern.org. The Borough is currently in the process of improving this site, and considers it an important method to disseminate information to the public.

At present, Borough administration and meetings have adequate room, however while the facility currently meets accessibility requirements, the Borough would like its facility to be even more accessible to those with disabilities and older citizens and within the year the Borough will install an elevator. The Library space is crowded and insufficient based on discussion with Borough officials. Cataloged items take up much of the existing space, while there is insufficient room for library administration and for a variety of library community programs. The Police department area may be insufficient, and the Police are continuing to study their space requirements. Based on the Borough Open Space Plan, the Borough may be investigating the need for a Borough community center for recreational programs and other community functions. The Borough is considering appointing a taskforce to investigate this possibility.

Borough Administration

The governing body of Malvern is the Borough Council, which consists of seven elected members who are elected at large to four year terms in office. Council performs both legislative and executive functions and is ultimately responsible for Borough policy. Council appoints volunteer residents to various advisory commissions and may create temporary committees or task forces to study specific problems or carry out special projects. Advisory commissions include the Park and Recreation Board, Planning Commission, Zoning Hearing Board, and Historical Commission. There is also an appointed Emergency managed Coordinator. The Borough has a strong Council, weak mayor form of government. The Mayor, who is also elected at large to a four year term in office, has limited authority in the legislative process and can veto ordinance and resolutions passed by Council, who can in turn veto the Mayor. The Mayor is also responsible for the Police Department. The major functions of a municipal government are to provide essential services, oversee budgeting, regulate land development, and represent residents.

An administrative staff handles day-to-day functions of the Borough. The Borough Manager, who supervises a staff of full and part-time employees, conducts daily administrative affairs. Within Malvern, the Manager is a salaried position that reports directly to the Council. The Borough has also recently added the position of treasurer/assistant Manager. Other full-time paid positions in the Borough are: Public Works Director and 4 Crew Members, Police Chief and Officers and a Police Department Clerk. Public Works personnel perform maintenance and operational tasks for the public sewer system, stormwater drainage, roadways, and parks/recreation facilities. The Borough hires additional seasonal employees to help with public works duties as needed. There are also 6 part-time employees: an administrative assistant, Code Enforcement Officer, and Police Officers. Figure A3-1 illustrates the organization of the Borough government and administration.

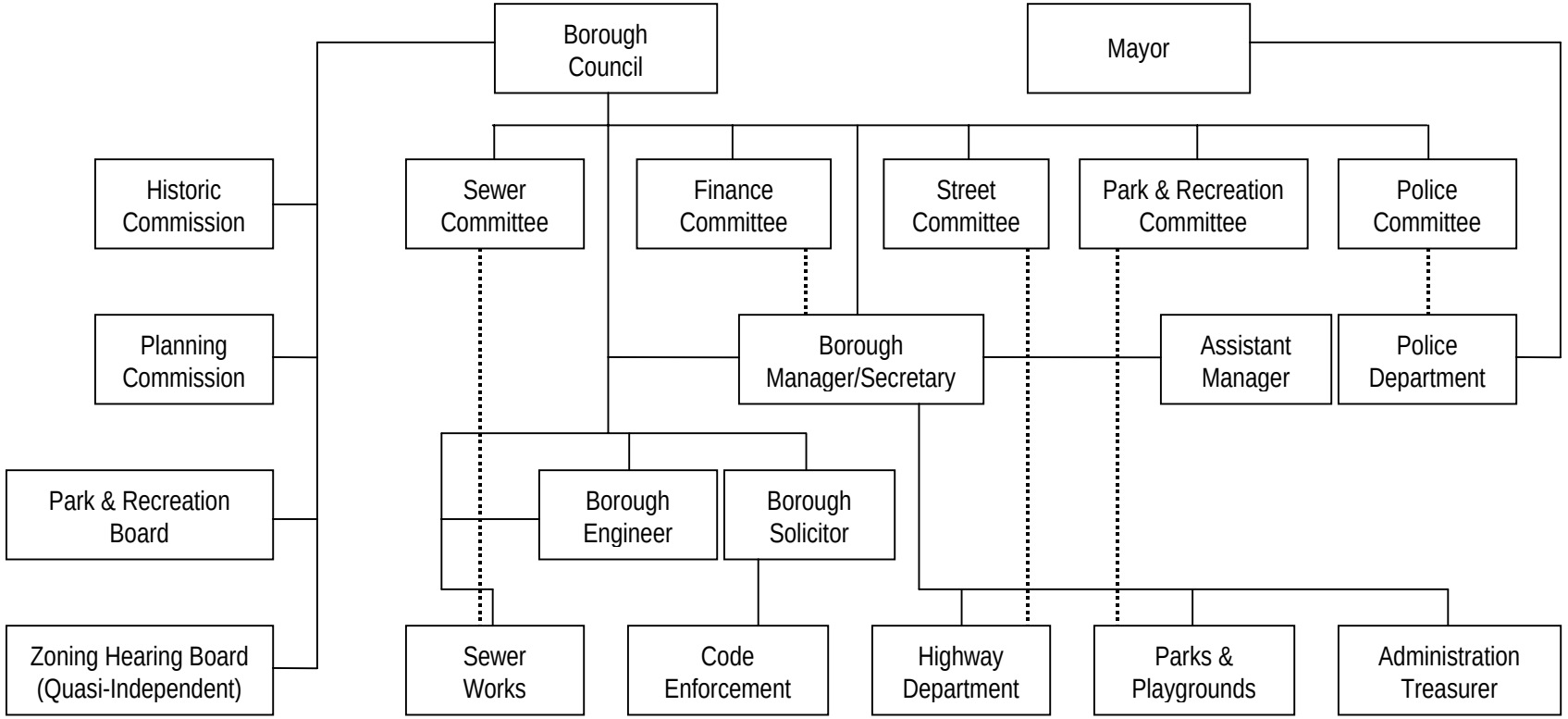
EMERGENCY SERVICES

Emergency services include police, fire, and ambulance services. Because of the Borough's small size and limited resources, it is not feasible for all emergency services to be provided at the municipal level. County, regional, and volunteer organizations, therefore, help to provide these services to Borough residents. For instance, the Chester County Emergency Services Administration operates a 911 emergency dispatch service and coordinates disaster relief operations for the entire County. Various regional and county reciprocal arrangements exist.

Police Protection

Police protection is provided by a municipal-operated police force, which consists of 5 full-time police officers, 4 part-time officers, and one full-time civilian employee. All police force members have received state and county training. The police department's service area is the entire Borough for which the police provide 24-hour protection. Reciprocal arrangements made with East Whiteland, Willistown, and Tredyffrin provides additional protection and emergency coverage. The Police Station is located on the ground floor of the Borough Hall and consists of an office and detention area. The Borough Police force owns and operates two marked police cars and one unmarked police car. While there are no specialists in the department, such as criminal investigators or juvenile officers, there are generalists who can perform a wide range of police services.

Figure A3-1
MALVERN BOROUGH ORGANIZATIONAL CHART



The department receives approximately 2,800 calls a year. These include problems ranging from barking dogs to homicides. Based on the Police Department, approximately 15% of the calls received annually are crimes and 10% are auto crashes, while the other 75% are minor incidents and service related. Most of these calls are received through the Borough's use of the Chester County 911 system. There has not been any increase in trends of certain crimes being committed in the Borough. Presently, the Borough has very adequate police service and coverage. However, because of the police's important role in maintaining public safety, a periodic analysis of the general adequacy of coverage based on changes in population and crime should be conducted.

Fire Protection and Ambulance Service

Malvern has a volunteer fire company, which is located on the east end of King Street at Ruthland Avenue. The Malvern Fire Company provides fire protection and ambulance rescue services to the entire Borough, and has inter-municipal reciprocal arrangements for added protection. East Whiteland, Willistown, and East Goshen Fire Companies provide additional coverage for the Borough. Based on the Fire Company, there are 3 professional firefighters/EMT, 7 part-time firefighter/EMT, and 35 volunteer firefighters. As with many volunteer organizations, additional volunteers are always needed. Fire protection and rescue equipment owned by the fire company includes a ladder truck, a 3,000 gallon pumper, a regular pumper, a rescue truck, two ambulances, a traffic control unit, a chief car, and a field piece (small fire truck). The equipment is generally in good condition. Soon, the Fire Company plans to purchase infrared equipment which would allow firefighters to see in a smoke filled room to locate hiding or injured people; presently funds are being raised for this purchase. Within the next three years, the company anticipates needing a combined pumper/rescue vehicle. This vehicle will replace the regular pumper and rescue truck, which are becoming outdated. Fire hydrants connected to the public water system are available throughout the Borough. The Fire Marshall feels that the fire protection service is currently adequate. New regulations are proposed at the state level which would potentially allow counties to determine emergency service area boundaries. If such a new redesignation bill were passed, this would increase the Fire Company's service area greatly, and may require some additional equipment or volunteers. The Fire Company also maintains the Sugartown Substation which services Willistown and E. Goshen.

The Fire Company provides all ambulance services to the Borough, and has the same service area as for fire protection. The Borough Fire Marshall feels this service is adequate. Currently, Basic Life Support (BLS) services are provided, however future plans are for the Company to increase its training and provide Advanced Life Support (ALS) service. This would require use of paramedics. To facilitate this upgrade, a new squad car would be needed. Paoli Memorial Hospital is the nearest hospital to the Borough to provide advanced life support services. Most of the Fire Company's funding comes from the ambulance service it provides. However, additional funding comes from loans, rental of the fire hall, and fundraisers.

As with police service, the Fire Company uses the Chester County 911 emergency dispatch system. The daytime response time for fire is three minutes and the nighttime response time is five minutes. In 1997, the Fire Company received 274 calls. The average daytime response time or ambulance service is a minute and at night is four minutes. These ambulance response times are well below the 10 minute standard recommended by the Health Services Agency of Southeastern Pennsylvania.

The Company has a long history of service dating to 1888, prior to the Borough's official creation. Although not included in the active equipment roster, a 1903 vintage gasoline powered pumper, in fact the first in Pennsylvania, is maintained by the volunteers. The Fire Company is active in community social functions hosting weekly bingo games, periodic community breakfasts and dinners, and the annual fair at the Paoli Memorial Grounds as fundraisers for the Fire Company. As well, the fire hall has a banquet facility available for rental to private parties, which can accommodate about 150 people. Also, certified volunteers offer CPR training at the fire hall. The source of most of the information in this section is the Fire Company.

HEALTH AND HUMAN SERVICES

Due to the relatively limited resources of most municipalities and the vast expense associated with providing medical and human services, these types of facilities are provided on a larger scale to serve regional needs.

Medical Facilities

The nearest medical facility to the Borough is the Paoli Memorial Hospital (a member of the Main Line Health Group) which is located approximately 1.5 miles northeast of the Borough on Route 30. This facility contains 208 beds, an emergency room, intensive care unit, coronary care unity, MRI facilities, and the Foxchase Cancer Center. Paoli Hospital also has a center for addictive diseases, a hospice, and provides home care nursing along with other social services. The Chester County Hospital in West Chester, a 250-bed facility, and the Phoenixville Hospital, a 175-bed facility, are also accessible to the Borough. With the Bryn Mawr Rehabilitation Center (2.5 miles away) the Main Line Nursing and Rehabilitation Center (1.5 miles away) within very close proximity, specialized health care is readily available to Borough residents. Many physicians and dental offices are available throughout the Malvern/Paoli area, and doctor's offices are currently permitted in several zoning districts.

There are no nursing homes or continuing care facilities within the boundaries of the Borough, but there are a number of nursing home and continuing care facilities nearby in eastern Chester County the closest ones being the Main Line Nursing and Rehabilitation Center and the recent Sunrise Assisted Living Center.

Emergency Management Disaster Plan

The Borough has an Emergency Management Disaster Plan. In the case of an emergency, the St. Joseph's Retreat House can provide shelter and food for 425 people. This Plan is updated every 2 years with the next update in 2001. With the past year, the Borough has appointed an Emergency Management Coordinator who is responsible for updating the plan, and implementation in emergency situations.

Human Services

A variety of programs for human services are available from both public and private sources. Programs range from mental health, counseling, day care, family services, housing assistance to employment training. These types of services are generally not provided on a municipal basis, however are available to residents from other regional organizations.

EDUCATIONAL FACILITIES

Public Schools

Malvern is part of the Great Valley School District, which also includes Charlestown, East Whiteland, and Willistown Townships. The School District operates three elementary schools, one middle school, and one high school. Presently, no public school facilities are located within the Borough. The school district is a governmental entity and receives no direct funding from the Borough. The District receives its revenues from its power to levy taxes on real estate and property transfers. In the 1997-1998 school year, a total of 391 Borough children attended school – 360 of these children attended public schools. A total of 10.7 percent of district enrollment consists of Malvern students. Borough children attend either the K D Markley Elementary School located in East Whiteland (77 Borough children attended in 1997-1998), or the Sugartown Elementary School located in Willistown (68 Borough children attended in 1997-1998). Students in grades 6-8 are taught at the General Wayne Middle School (80 Borough children attended in 1997-1998) located in Willistown. High School students attend the Great Valley High School (92 students Borough students attended in 1997-1998), which is located in Charlestown on the Old Phoenixville Pike. The information in this section comes from the School District.

Between 1983-84 and 1989-90 school years, Great Valley School District enrollment decreased by 291 students or 9.7%. (See Table A3-1) However, since the 1989-90 school year, enrollment has increased an average of 2.6% from 2,716 students to 3,344 students in 1997-98. The school district projects enrollment will continue to increase at an average of 1.6% through the 2002-03 school year. This will result in an increase to approximately 3,610 students by the 2002-2003 school year. Total elementary school enrollment is projected to continue to increase an average of 1% through school year 2000-01 and then decrease slightly. More specifically, enrollment at the elementary schools in the district that Malvern students attend is anticipated to decrease from 1998-2003. Sugartown Elementary enrollment is projected to decrease by about 1.4% from 1998-2003 with the exception of a small increase in the 2000-2001 school year, while KD Markley School population is projected to continuously decrease by an average of 1.1%. Interestingly, enrollment at Charlestown elementary is projected to increase during the same period.

Middle school population is generally projected to increase through 2003 by about 2.4% with a decrease in the 1999-2000 school year. High school enrollment is expected to continuously increase an average of 2.8% through the 2002-2003 school year, although will fluctuate in its increase peaking at 6% in the 2000-01 school year and dropping to .58% in 2001-2002. See enrollment history and projections table for more detailed figures. Projections are based on a combination of the projections in the Pennsylvania Economy League(PEL) study and the Cohort-Survival method of analysis. While the latter method of projection does not take future development into account, for the PEL study detailed information was gathered from municipal officials within the school district and future development levels in the region were included in the analysis.

Table A3-1
GREAT VALLEY SCHOOL DISTRICT ENROLLMENT DATA AND PROJECTIONS, SCHOOL YEARS 1989-2002

School Year	K thru 5	% Change	6 thru 8	%Change	9 thru 12	% Change	Totals	% Change
Actual Data								
1989-1990	1266	na	598	na	852	na	2716	na
1990-1991	1358	7.3	626	4.68	827	-2.93	2811	3.5
1991-1992	1369	0.81	649	3.67	849	2.66	2867	1.99
1992-1993	1498	9.42	695	7.09	816	-3.89	3009	4.95
1993-1994	1538	2.67	686	-1.29	832	1.96	3056	1.56
1994-1995	1562	1.56	726	5.83	851	2.28	3139	2.72
1995-1996	1590	1.79	737	1.52	863	1.41	3190	1.62
1996-1997	1594	0.25	797	8.14	874	1.27	3265	2.35
1997-1998	1632	2.38	798	0.13	914	4.58	3344	2.42
Projections								
1998-1999	1640	0.49	828	3.62	941	2.95	3409	1.94
1999-2000	1668	1.7	818	-1.21	969	2.98	3455	1.35
2000-2001	1682	0.83	831	1.59	1027	6	3540	2.46
2001-2002	1668	-0.83	860	3.49	1033	0.58	3561	0.59
2002-2003	1664	-0.24	898	4.41	1048	1.45	3611	1.4

Source: Great Valley School District, 1998

Expansion, renovation, and replacement of school buildings is needed to accommodate the growing student population, as well as for reasons of school programming requirements and outdated existing facilities. With the help of municipal representatives, the school district has developed a three phase building improvement program to address future needs. Phase 1 is currently underway and includes construction of a new middle school on the campus of the high school and construction of a new KD Markley Elementary School at its current location. Students will remain in the existing schools until these facilities are completed. District offices will remain in the upper building of the current KD Markley school. Phase 2 is anticipated to occur within the next 3.5 to 5 years and encompasses the renovation and additions to the Charlestown Elementary School, and the renovation and conversion of the former middle school for use as the Sugartown Elementary School. The present Sugartown school building will be maintained by the district and possibly leased to another party. Phase 3 will involve a renovation of the existing high school facility and is expected to take place in about 7 years. In the future, there are plans for redistricting. Using official rated capacity figures to determine if the schools have exceeded their intended capacity is not how the school district determined the adequacy of the facilities. There is currently a Borough representative on the School Board.

Rated capacity figures are used to determine if school facilities have exceeded their construction capacity and to determine their adequacy in terms of growth of student enrollment. However, analyzing capacity figures are not applicable for the Great Valley Schools because of specific school district programming requirements which differ from normal capacity required.

While education is the primary function of schools, these facilities also offer other services to the community such as use by the Greater Chester Valley Soccer Association.

Other Schools

The Catholic Archdiocese of Philadelphia operates an elementary school, St. Patrick's Elementary School, for grades 1-8, located on Channing Avenue. The school is associated with St. Patrick's Parish within the same block. The Malvern Preparatory School for grades 6-12 is a private Catholic affiliated high school for boys. This facility is located on a 100-acre parcel of land, in the southwest corner of the Borough, on South Warren Avenue. The Montessori School for grades K-3 is located at the corner of First and Warren Avenues. Although education is the main objective of these private school facilities, they also contribute and are important to the community in other ways. For example, the vast land and open space of Malvern Prep, while not open to the public, serves as a scenic gateway into the Borough from the south on S. Warren Avenue, and contributes great visual appeal. This scenic quality is enhanced by the heavily wooded St. Joseph's-in-the-Hills Retreat across Warren Avenue from Malvern Prep, also not open to the public.

Library Service

The Malvern Borough Library is part of the Chester County Library System and is located on the first floor of the Borough Hall. Major funding sources come from the state and county funds. County funds originate from the Borough, Willistown, East Whiteland, and East Goshen Townships, who make up the Library's primary service area. Approximately 21% of the users are Borough residents with Willistown having the largest user-base. In addition to contributing funding, the Borough provides in-kind services including the facility in Borough Hall, maintenance, and utilities. The library has approximately 25,000 items catalogued, with a total circulation of approximately 85,000 items in 1997. Since the Library belongs to the Chester County Library System, that entitles Library members access to over 200,000 books. There is also access to an extensive collection of periodicals and newspapers through the Chester County Library System. Titles not available through the County System may be obtained through the inter-library loan program, which gives access to library systems statewide. Library cards are free to anyone who lives, works, or attends school in the County.

According to the Borough, Library space in Borough Hall is inadequate to serve all the Library functions; the current space can accommodate the catalogued items, however there is insufficient space for administration and programs. Presently, when available, Borough meeting rooms on the second floor of Borough Hall are used for Library programs. While this solution seems to meet present needs, future plans are being considered for expansion of the Library into the entire Borough Hall as the library's function and programming is expanding to meet regional educational and community needs.

INFRASTRUCTURE

Road Maintenance

All 10.6 miles of roads within Borough boundaries are municipal-owned and maintained. The Borough's Public Works Personnel are responsible for overseeing and ensuring maintenance of the roadways. Major roadway repair projects are contracted. The Public Works Crew supervises contractors, does site preparation and clean up, and performs minor road patching. Road projects are principally financed through leveraging the state Liquid Fuels with other monies. The Borough has a systematic program for maintaining all roadways whereby each road is assessed every 2 years. The current system of road maintenance provides good service. While some secondary roads have not needed repair in 15 years, parts of busier roads such as King Street need to be repaired every 3 to 4 years. Since the speed limits in the Borough is no greater than 25 MPH, the roads have generally stayed in excellent condition. The bridge on Bridge Street is also municipally-owned and maintained. Amtrak owns the Warren Avenue underpass. A traffic study of the entire Borough is currently underway which will address road repair and maintenance issues related to traffic concerns. No equipment needs are anticipated within the next 5 years. Paoli Pike and Sugartown Road, which border Malvern on the south and west respectively, are state roadways.

Sewer Service

Sewage treatment for the Borough is provided by the Valley Forge Sewer Authority Wastewater Treatment Facility, located along the Schuylkill River in Schuylkill Township. The Borough has an allotted capacity of 564,000 gallons per day from the Authority, but currently only uses 246,000 gallons per day (45% of total Borough allotment). This allotment constitutes 7.05% of the Valley Forge Sewer Authority capacity, since other municipalities (Townships of Charlestown, East Pikeland, Schuylkill, Tredyffrin, Easttown, East Whiteland, and Willistown) also use the treatment system. The Borough has a partnership with Valley Creek Trunk Line System to transport waste from the Borough to the Valley Forge Sewer Authority. The line system also provides service to the other municipalities using the Valley Forge treatment system. All wastewater is processed through the Valley Creek Trunk Line System and effluent is discharged into the Schuylkill River. Sewage capacity should not be an issue for the Borough in the foreseeable future since there is limited potential for additional development in the Borough, and according to the Borough Sewage Facilities Plan, the estimated projection of sewage use is a total of 365,341gpd, or 65% of its allotted capacity, after anticipated development has occurred. This would leave the Borough with an excess capacity of 198,659 gpd. The use of this excess capacity is a future consideration for the Borough.

The Valley Forge Authority serves much of the Borough with most existing residences, institutions, and businesses connected to the public sewer system. The sewer collection system in the Borough is composed of collection lines, generally located under Borough streets, which are maintained by the Borough's Public Works Personnel. The Borough conducts periodic inspections for infiltration or exfiltration in the system. The sewer collection system for the Tidewater development connects to Willistown's public sewer system; there is an inter-municipal agreement for provision of these services.

However, the southeastern portion of the Borough including St. Joseph's Retreat House and 16 residences along Paoli Pike, do not have public sewers, and there are several properties through the Borough that are not connected to the public system. The St. Joseph's Retreat relies on a community on-lot system and the residences rely on on-lot systems. Since the adoption of the Sewage Facilities Plan, there have some malfunctions with the residential systems, which are being addressed by the individual homeowners. The southeastern section of the Borough is not served by the public system, and at this point it is not necessary or feasible to extend lines into this area.

Since the time of the Sewage Facilities Plan, revised in 1994, Malvern Hills 1 has been constructed and connected to public sewer, along with several infill sites. In addition, two large developments, Malvern Hills II and Malvern Woods, and the Malvern Preparatory School, which was previously served by a community on-lot system, have been connected to the public sewer system. The Borough Act 537 Plan recommends that future development be publicly sewered. Given that the entire Borough is not served by public sewer and that the Borough has excess sewage capacity at the Valley Forge Plant, a future consideration for the Borough is maintaining enough capacity to accommodate future service of sites presently not served as well as infill areas.

Water Service

In 1993, the Borough sold all of its water rights, except ownership of springs, to the Philadelphia Suburban Water Company(PSWC) and is part of the company's main system. Borough wells have been sealed, and all water is supplied by PSWC. While 1990 information predates connection to PSWC, it was the most recent information available for the Borough as information about PSWC use is not available. In 1990, total Borough water use was 341,000 gpd(gallons per day). Of this, residential use was 171,000 gpd for 1,247 households, accounting for 85.5% of the total water use. Commercial water use was 16,000 gpd, industrial 6,000 gpd, and institutional 7,000 gpd, together accounting for significantly less use than residential.

Percentage of use generally reflects the percentage of connections in the Borough. Other and unaccounted uses totaled 141,000 gpd. This is a significant amount and was derived from subtracting residential, commercial, and industrial known usage from total known Borough water usage. Reasons for this excess included leaks in the system, stolen water, and extra uses not counted. This was a concern of the Borough's, and in part, the reasoning for connecting to PSWC. PSWC also recognizes this as an issue within their system and has committed significant financial resources in remedying this situation.

The average daily water usage per household was approximately 137 gallons. A total of approximately 129 million gallons of water were used in 1990 in Malvern Borough. The table below depicts the percentage of water usage by land use category in 1990.

Table A3-2
1990 BREAKDOWN OF WATER USAGE, MALVERN BOROUGH

Land Use	Gallons Per Day (GPD)	Percentage of use (%)	Percentage of connections %
Residential *(1,247 households)	171,000	85.5	86.4
Commercial	16,000	8.0	8.5
Industrial	6,000	3.0	2.7
Institutional	7,000	3.5	2.4
Other/Unaccounted	141,000	NA	NA
Total	341,000	100%	100%

* estimate of the number of households served by public water in Malvern in 1990
Sources: Water Resources, Use, and Service in Chester County, 1996
Annual Water Supply Report, 1990

The Borough is completely served by public water. Only one residence and the St. Joseph's Retreat are not connected. These properties use private wells. Most of the water storage areas have been removed with the transfer to PSWC, however this should not present a problem because of the more than adequate supply of water provided by PSWC.

The Borough is located within the Delaware River Basin Commission (DRBC) Groundwater Protection Area. The DRBC is responsible for protecting the groundwater resources of 125 municipalities in Southeastern Pennsylvania, and regulates all groundwater withdrawal which average over 10,000 gpd over a 30 day period. The purpose of the regulations is to ensures the management of water withdrawal to prevent to depletion of natural stream flows and groundwater.

There are no plans for improvements, because since PSWC purchased the Borough's water system, the quality of water has been very good. In addition, the Borough now has a circular system, in which water comes into the Borough, circulates around the Borough, and flows out, keeping sediments to a minimum. Furthermore, the pressure of the water in the pipes has increased from 23 psi to 40 psi. There are now electronic telephone meters, which enable the reading of meters over the phone lines, thus stopping readings taken on site. The Borough considers the system state-of-the-art.

Solid Waste Disposal

Malvern contracts with Waste Management for solid waste collection and disposal for residential areas in the Borough. At this time, industrial, commercial, and institutional organizations as well

condominiums/townhouses are responsible for their own solid waste disposal. Solid waste is disposed in the Lanchester Landfill, which has a life expectancy for use to the year 2018. Curbside pick-up of regular household waste and recycling is provided on a weekly basis. Recycled materials collected include glass, except blue, metal food containers, plastics (grades 1 and 2), and all paper products. Since leaf burning is not permitted within the Borough, curbside leaf pick up is provided during the month of November for disposal at the Lanchester Landfill. Bulk items are collected twice a year.

To improve solid waste disposal, the Borough plans to expand this service to condominiums, and is developing an ordinance to control waste for commercial, industrial, and institutional uses.

Stormwater Management

Stormwater collection lines serve nearly the entire Borough, and the Borough services these lines. Based on discussion with Borough officials, these lines range in age from 6 to 100 years. The bulk of stormwater discharge originates from the southern portion of the Borough, south of King Street, and is eventually discharged into Crum Creek. Stormwater deriving from the portion of the Borough north of King Street is indirectly discharged into Valley Creek. There is currently no Borough-wide manmade filtration system in place. In most of the Borough, stormwater percolates into the ground and then is indirectly discharged into the streams. The number of discharge points is unknown. In the southwest quadrant of the Borough there is a de-energizing system that was constructed 7 years ago in order to slow water movement to reduce erosion and corrosion effects. This system includes a rock quarry that in effect acts as a filter. Overall, stormwater system capacity within the Borough is more than adequate. The adequacy of the system is illustrated through the four 100 year storms the Borough experienced during the winter of 1997 and spring of 1998. These storms caused no problems or backups in the system. There are no plans for improvements.

The Borough subdivision and land development ordinance requires a conservation plan, which depicts among other requirements, erosion and sedimentation control measures, and includes policy-oriented erosion and sedimentation standards, which are general and open to interpretation. Additionally, in part for purposes of minimizing increased stormwater run-off and soil erosion and sedimentation, Borough zoning limits development, and thus land disturbance, in areas between 15% and 20% slope, and severely restricts construction on slopes steeper that 20%.

OPEN SPACE AND RECREATION FACILITIES

Currently, Malvern contains approximately 71 acres of public/quasi-public open space and recreational lands. There are two Borough-owned neighborhood parks: First Avenue Park (1.6 acres) contains a basketball court and baseball/softball field; Malvern Community Park (1.4 acres) contains a gazebo, play equipment, and benches. The Borough owns 48 acres of undeveloped open space off Ruthland Avenue which is the largest publicly-owned open space in Malvern and is planned to be improved for passive recreation uses. The Paoli Memorial Grounds, owned by the non-profit Paoli Memorial Association, is divided into a community park, McAdoo Athletic Fields (8.6 acres) that accommodates active recreational uses, and an open space area, the Parade Grounds (12.1 acres) for passive recreational uses. Recreational activities also take place at the Malvern Fire Company facilities. Malvern Prep and St. Joseph-in-the-Hills Retreat are major open space areas in the Borough comprising the southern portion of the Borough; facilities and grounds are not available for public use. These facilities and recommendations are discussed in more detail in the Borough Parks, Recreation, and Open Space Plan(1992). Based on this Plan, a greater variety of recreations programs is needed in the Borough, among other recommendations.

Since the adoption of the Borough Parks, Recreation, and Open Space Plan there have been some changes in recreation facilities. The Borough has built a recreation facility on Old Lincoln Highway for Kindercare. The community designed the facility for senior citizens that are caring for small children, Ribino Park. The

facility allows only one entrance and exit through a senior citizen pavilion. This allows children to play inside the facility while seniors read and talk together in the pavilion. This facility is consistent with the Open Space Plan, which recommends a recreation area in the northeastern part of the Borough. The Borough is also investigating the possibility of constructing basketball courts at the intersection of Old Lincoln Highway and Longford Avenue.

The Battlefield Preservation Fund is attempting to purchase the Paoli Battlefield site, about a 40 acre parcel, from the Malvern Preparatory School. The parcel is located in the northern portion of their tract and has already been subdivided from the Malvern Prep tract. The site is listed on the National Register of Historic Places, which affords limited protection from federally funded projects, but not from private development, which can only be regulated through local controls. This area is part of the 1777 Paoli Massacre site and is significant since the landscape has not changed since the time of the battle as the land has remained undeveloped. The site is located adjacent to the existing Paoli Memorial Parade Grounds, also part of the battlefield. If purchased, this area will be given to the Borough and will become permanent open space.

PLANNING IMPLICATIONS

Malvern Borough contains a variety of public facilities and services to serve the needs of its residents. Overall, these services are well provided and administered. The Borough is well aware of its future needs and has developed a number of solutions to help fulfill those needs. The following discusses these areas of consideration.

- **Borough Facilities** – The Borough is beginning to investigate the need for a Borough community center for its residents. The Borough is studying the possibility of creating a community center off Ruthland Avenue, and relocating the Police Station to this facility. The Borough also feels that in the future there is a need to make the Borough administration facility more easily accessible to the public. Consideration may also be given to relocating Borough offices to the new facility.

- **Library Facility** – Presently, the Library facility is crowded and in need of additional room for administration and library programs.

- **Fire Protection and Ambulance Service** – While the Borough is currently adequately served by fire and ambulance service, to improve service, the following are under consideration. Within the next 3 years, the Fire Company is in need of a combined pumper/rescue vehicle. Additionally, there are plans to upgrade rescue service from the current Basic Life Support to Advanced Life Support Services. This would require paramedics and a new squad car.

- **Public School System** – Extensive plans are underway by the Great Valley School District to improve school facilities. The KD Markley School and middle school will be replaced with new facilities, the former middle school building renovated and converted into the Sugartown Elementary School, additions and renovations will occur to the existing Charlestown School, and the Great Valley high school will be renovated. The reasons for these improvements are an expanding student population, outdated facilities, and school programming needs. In the future there are also plans for redistricting.

- **Sewer System** – The Borough conducts periodic examines for infiltration and exfiltration in the system. The Borough will need to continue that kind of monitoring to ensure proper system functioning. Also, future considerations for the Borough are the use of its excess sewage capacity, and maintaining enough capacity to accommodate future service of sites presently not served as well as infill areas.

- **Solid Waste** – There is a need to expand the solid waste program to include condominium and townhouse developments. The Borough is aware of this need and is currently addressing it through a new ordinance which states that the Borough will provide service to these dwellings. The ordinance will also address waste control for non-residential properties as current regulations concerning this topic are outdated.

- **Stormwater Management** – The Borough's subdivision and land development ordinance requires sedimentation and erosions control measures to be recorded on development plans. These provisions are more policy-oriented and could be open to great interpretation by developers. The Borough services stormwater collection lines, and while currently the system is adequate the Borough will need to continually monitor the lines to ensure proper drainage, flow, and discharge, as well as erosion and sedimentation control.

- **Open Space** – The Borough contains well defined open spaces. However, of concern is the future of the Paoli Massacre Battlefield site which has been subdivided from the Malvern Prep property and is currently for sale. The Borough would like to see this site remain in perpetuity as open space.

Appendix 4
FINANCIAL ANALYSIS

An analysis of Malvern Borough's finances indicates the soundness of the Borough's budgeting and financial policies. Sound municipal finances will make it possible for the Borough to continue a high level of service provision for residents and successfully implement the recommendations of this plan. This chapter analyzes the methods by which Malvern receives revenues and makes expenditures. Revenue and expenditure trends are identified and projected. Current and projected trends are then examined.

BOROUGH FUNDS

Malvern Borough currently maintains four separate funds, a "General" operating fund, a "Capital Reserve Fund", a "Sewer Fund", and a "Highway Aid Fund". The **General Fund** is an unencumbered fund that is used for the Borough's day to day operating expenses. Revenues for this fund are gathered from a number of sources and will be discussed in greater detail below. The **Capital Reserve Fund** was established in 1993 to fund the Borough's capital needs, primarily those arising from the "Olde Towne Malvern" revitalization plan. Revenues for the Capital Reserve Fund come from surpluses in the General Fund, which are transferred annually into the Capital Reserve Fund. The **Sewer Fund** is used exclusively for operating expenses and capital improvements associated with the Borough's portion of the Valley Forge Sewer Authority system. Revenues for the Sewer Fund are generated by collection of sewer fees from Borough ratepayers. The **Highway Aid Fund** consists of monies received from the Commonwealth of Pennsylvania liquid fuels tax. The State distributes these monies to municipalities under a formula based on population and the number of miles of municipal streets. These monies must be accounted for separately from any other Borough money and must be spent on the upkeep of dedicated streets within the Borough. Since the Sewer Fund and Highway Aid Fund are encumbered funds that have specific revenue sources and strict limits on how expenditures can be used, the remainder of this analysis will focus on the General Fund and the Capital Reserve Fund. These funds receive revenues from a variety of sources and can be expended at the Borough's discretion.

GENERAL FUND REVENUES

Malvern Borough's General Fund revenue derives from a variety of sources including taxes, state funding and various local fees, among other sources. These revenue sources and the percentage of annual revenues each represents are shown in Table A4-1 and Figure A4-1.

A significant majority of General Fund revenue is derived from taxes, which accounted for approximately two thirds of General Fund revenues in 1991 and over three fourths of revenues in both 1994 and 1997. The greatest single revenue source is the 1% earned income tax, which accounted for between 43.6% and 53.9% of all revenues in the three years surveyed. Malvern's real estate tax was the second largest revenue source in 1994 and 1997 and was the third largest in 1991. The Borough's real estate tax rate was 29 mills in 1991, increased to 31.5 mills by 1994, and was reduced back to 29 mills by 1997. Correspondingly, the total real estate tax rose significantly from 1991 to 1994 as the millage increased and dropped slightly from 1994 to 1997, as the millage dropped. The relatively smaller drop from 1994 to 1997 was largely a result of new construction, which increased the Borough's total valuation. Real estate tax rates and revenues are shown in Table A4-2. For 1998, the Borough's real estate tax rate dropped to 1.7967 mills, a reduction brought about by a county-wide reassessment program. Revenues raised from the real estate tax were projected to rise slightly in 1998, despite the large drop in the tax rate, due to a much higher valuation of property within the Borough.

Table A4-1

MALVERN BOROUGH GENERAL FUND REVENUES, 1991 – 1997

	1991	%	1994	%	1997	%
Revenues:						
Real Estate Tax	255,164	18.7%	313,485	23.9%	300,354	19.8%
Real Estate Transfer Tax	36,207	2.7%	49,125	3.7%	46,000	3.0%
Earned Income Tax	594,709	43.6%	706,478	53.9%	795,000	52.4%
Per Capita Tax	13,625	1.0%	14,361	1.1%	21,508	1.4%
Total Taxes	*899,705*	*66.0%*	*1,083,449*	*82.6%*	*1,162,862*	*76.6%*
Licenses and Permits	27,288	2.0%	41,890	3.2%	48,699	3.2%
Fines and Forfeits	23,610	1.7%	26,765	2.0%	18,040	1.2%
Interest, Rents and Royalties	36,185	2.7%	20,630	1.6%	52,665	3.5%
Intergovernmental Revenues	15,584	1.1%	54,888	4.2%	74,989	4.9%
Miscellaneous Revenues	361,097	26.5%	83,410	6.4%	159,858	10.5%
Total Revenues	**$1,363,569**		**$1,311,032**		**$1,517,113**	

SOURCE: Malvern Borough Open Space Plan & Malvern Borough Budget Statements.

Other Malvern Borough taxes include a 0.5% real estate transfer tax and a $10 per capita tax levied on all residents over 20 years old with an annual income of at least $10,000. These taxes represent a much smaller percentage of the Borough's revenues, totaling less than 5% combined for each of the three years surveyed. The lack of significant amounts of developable land in the Borough is likely to keep the real estate transfer tax revenue low for the foreseeable future.

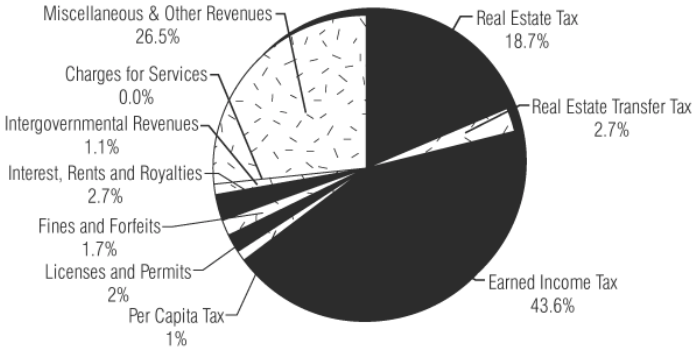
The Borough also collects revenue from non-tax sources. The largest of these is the "Miscellaneous Revenues" category, which accounted for 26.1% of all 1991 revenues and approximately 10% or less in both 1994 and 1997. Miscellaneous revenues include Malvern's tax anticipation notes and short term loans incurred by the Borough that are repaid annually as taxes are collected. Intergovernmental revenues (including various County, State, and Federal grants received by the Borough), and various local fines, fees, licenses and permits are Malvern's other non-tax revenues. These sources are minor contributors to the Borough's overall revenue base.

Table A4-2
MALVERN BOROUGH REAL ESTATE TAX TRENDS, 1991 – 1997

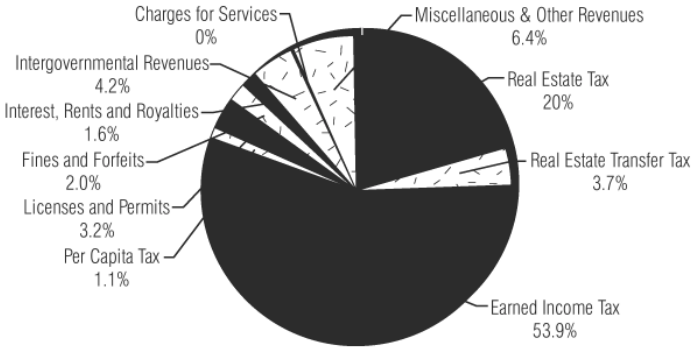
YEAR	MILLS	REVENUE COLLECTED
1991	29	255,164
1994	31.2	313,485
1997	29	300,354

SOURCE: Malvern Borough

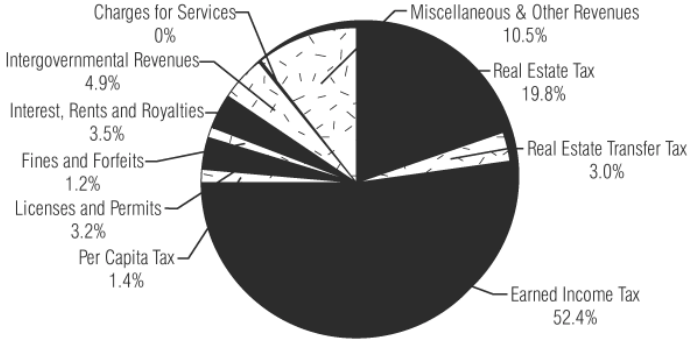
Figure A4-1
MALVERN REVENUES (1991, 1994, 1997)



1991 Revenues



1994 Revenues



1997 Revenues

EXPENDITURES

The Borough's expenditures, and the percentage of the annual spending each represents, are shown in Table A4-3 and Figure A4-2. The Borough's single largest expenditure in each of the three years surveyed was for public safety, which includes police and fire protection costs. Public safety expenditures have represented a steady percentage of the Borough's total expenditures, accounting for between 26% and 28% in each of the three years surveyed. It should be noted that in the 1991 and 1994 budgets, capital costs associated with public safety (such as purchase of cars, trucks, dispatch systems, etc.) were paid out of the General Fund. In the 1997 budget, however, these capital expenditures were more appropriately made from the Borough's Capital Reserve Fund.

Table A4-3
MALVERN BOROUGH GENERAL FUND EXPENDITURES, 1991 – 1997

	1991	%	1994	%	1997	%
Expenditures:						
General Government	178,813	13.7%	262,756	20.0%	239,737	15.8%
Public Safety	340,004	26.1%	367,594	28.0%	415,646	27.4%
Sanitation	94,594	7.3%	119,027	9.1%	109707	7.2%
Highways, Roads & Streets	153,486	11.8%	202,293	15.4%	219030	14.4%
Culture/Recreation*	37,415	2.9%	35,139	2.7%	34,848	2.3%
Debt Service	337,459	25.9%	0	0.0%	0	0.0%
Miscellaneous	148,874	11.4%	181,973	13.9%	185,912	12.3%
Other Financing Uses	10,779	0.8%	142,250	10.9%	312,233	20.6%
Total Expenditures	**$1,301,424**		**$1,311,032**		**$1,517,113**	

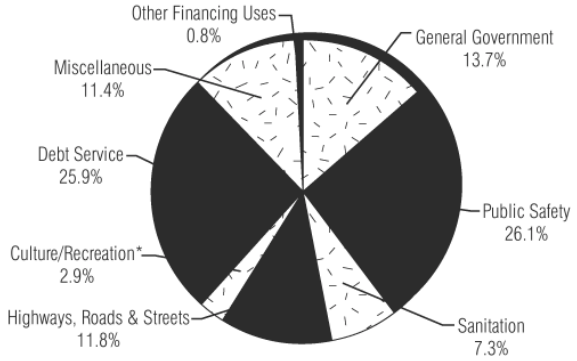
*Includes annual contribution to Malvern Public Library.
SOURCE: Malvern Borough Open Space Plan & Malvern Borough Budget Statements.

In 1991, debt service was the Borough's second largest expenditure, accounting for a significant 25.9% of all General Fund spending. Debt service refers to interest paid on previously borrowed funds. In the 1991 budget, this debt service expenditure was payment on $1.35 million in general obligation bonds issued by the Borough in 1991. These bonds were paid off quickly, however, and our Borough was debt free in both the 1994 and 1997 budgets. Eliminating this large debt service expenditure has freed well over $300,000 annually for other expenditures and transfer to the Capital Reserve Fund.

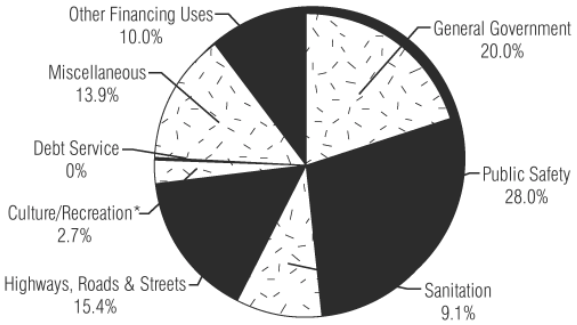
Highways, Roads and Streets and General Government are the next largest expenditure categories. Highways, Roads, and Streets accounted for 11.8% of all funds spent in 1991 and approximately 15% in 1994 and 1997. The General Government category comprised 13.7% of all expenditures in 1991, 20% in 1994, and 15.8% in 1997. General Government includes Borough administrative expenses such as salaries, supplies and building maintenance, among other costs. Sanitation, Culture/Recreation and Miscellaneous/Other Uses (including pension and insurance costs) are other expenditure categories. Malvern's parks, recreation and open space spending is classified under Culture/Recreation.

Finally, the "Other Financing Uses" expenditure represents the inter-fund transfer from the General Fund to the Capital Reserve Fund. Rather than a true expenditure, for 1994 and 1997 this line represents the annual General Fund surplus, or the amount by which revenues exceed expenditures. In 1991, the surplus was over $72,000, but less than $11,000 was transferred to a fund for capital improvements. In 1994, the surplus had risen to over $140,000 and by 1997 to over $312,000. Malvern has maintained this surplus in each of the years surveyed and, since 1994, has transferred the entire surplus into the Capital Reserve Fund.

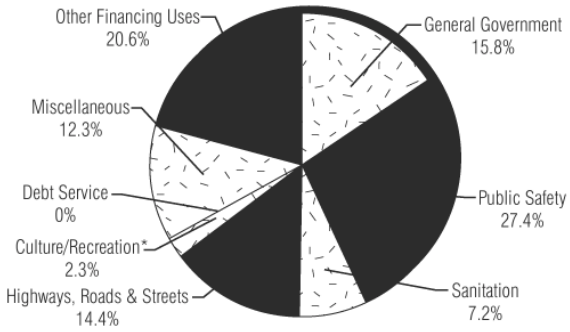
Figure A4-2
MALVERN EXPENDITURES (1991, 1994, 1997)



1991 Expenditures



1994 Expenditures



1997 Expenditures

CAPITAL BUDGETING AND CAPITAL PROGRAMMING

In 1993, our Borough established a Capital Reserve Fund in order to set aside funds and plan for large capital expenditures independently of the General Fund, which is needed for the day to day operation of the Borough. The original impetus for this capital fund was the "Olde Towne Malvern Plan", a revitalization plan for the Borough that is very capital intensive. Capital improvements associated with this plan continue to account for most of the spending from this fund, although other necessary capital projects are funded from this pool of money as well. For example, the projects designated for funding from this fund in 1997 included several street and streetscape upgrades associated with the Olde Towne Malvern Plan, construction of recreational facilities on a Borough owned parcel of land near the Old Lincoln Highway, and development of a passive use recreational facility for joggers, senior citizens, and other Borough citizens in the "water works" area east of Ruthland Avenue.

In 1994, the Capital Reserve Fund had an opening balance of just over $100,000 – in 1997 the opening balance was over $1.2 million. As noted earlier, the source of revenues for this fund is annual General Fund surpluses, which are transferred into the Capital Reserve Fund. In 1994, approximately $142,000 was transferred into the Capital Reserve Fund – in 1997, over $312,000 was transferred into this fund. The philosophy of the Borough Council is that this fund should be maintained at a level at least equal to current levels in order to protect against unforeseen contingencies and to be used for matching funds for grants from the County, State, and Federal governments. Only the interest from this fund should be used to fund typical capital needs, with additional capital funding coming from grants or other outside sources. To guide spending of monies from the Capital Reserve Plan, the Borough maintains a 20 year Capital Improvements Plan, which is updated annually. This allows annual review of capital needs and spending priorities for these funds.

COMPARISON OF REVENUES AND EXPENDITURES

As discussed above, Malvern's general fund revenues have exceeded expenditures in each of the years surveyed for this analysis, creating a regular budget surplus. The Borough has used this surplus to build up a Capital Reserve Fund to allow the purchase of capital needs, and the Borough maintains a Capital Improvements Plan to plan and prioritize how the money in that fund (or the interest it generates) will be spent. Table A4-4 shows the total General Fund revenues for each of the years surveyed, the expenditures, and the amount of surplus that resulted.

Table A4-4
REVENUES VS. EXPENDITURES

	1991	1994	1997
General Fund Revenues	$ 1,363,569	$ 1,311,032	$ 1,514,113
General Fund Expenditures	$ 1,290,645	$ 1,168,782	$ 1,204,880
Surplus	$ 72,924	$ 142,250	$ 312,233

It is clear from this data that Malvern is fiscally strong and has become stronger through the 1990s. In 1991, the Borough carried significant debt and did not have an established Capital Reserve Fund, but finished the year with a surplus nonetheless. As the Borough's debt has been paid off, the amount of surplus revenue that has been able to be transferred into the Capital Reserve Fund annually has increased significantly. If the Borough is able to maintain or add to the principal in the Capital Reserve Fund and rely on the interest from this fund to pay for improvements, we will continue to be financially strong.

We are fortunate in that the bulk of our revenue comes from relatively steady and dependable sources. The earned income tax and real estate tax do not vary significantly from year to year. This steadiness makes our budgeting process far more predictable than it is for municipalities for whom more volatile revenue sources (such as real estate transfer taxes) play a large role in revenue generation.

It is common in this type of analysis to project future revenues and future expenditures to identify any important trends in a municipal budget. In Malvern's case, however, revenues have increased significantly between 1991 and 1997, while expenditures have decreased slightly (although they increased between 1994 and 1997). To project these trends into the future would show the Borough's annual surplus increasing to unrealistic levels. What is more likely is that the Borough's expenditures will increase somewhat, rather than continue to decline. As such, the challenge facing the Borough is to continue to manage for balanced or surplus budgets and keep the Capital Reserve Fund at levels adequate to provide for needed capital improvements and as protection against unforeseen emergencies in the future.

PLANNING IMPLICATIONS

- Our Borough is in a fundamentally sound financial position. We have eliminated the large debt burden we carried through the early part of the 1990s. Our revenue sources are from relatively stable sources of income and, as a result, we are not likely to experience precipitous changes in our revenue stream. We routinely run a surplus budget, with the surplus used to build a significant principal in a Capital Reserve Fund, which serves as both insurance against unforeseen contingencies and as a funding source for capital needs. As long as the Borough continues to manage our finances in the conservative manner of the past several years, we should have the financial resources to continue to provide a high level of service and to realize many of the goals set forth elsewhere in this Plan.

- Recommendations from this Comprehensive Plan may require that our Borough revisit our funding programs to determine whether the General Fund and Capital Reserve Fund will be able to accommodate recommended actions.

Appendix 5

EXISTING LAND USE INVENTORY

This chapter updates and analyzes the existing land use information in the Borough Comprehensive Plan (1976) and the Borough Open Space Plan (1992). Also, this section provides a summary of environmental and historic resource information from the Borough Open Space Plan in order to understand these resources in relation to land use. An analysis of existing land use patterns in the Borough is a crucial part of the Comprehensive Plan since understanding the present conditions provides the Borough with information needed to formulate land use policies and recommendations that preserve the Borough character.

Development that has occurred since the 1976 Comprehensive Plan has left the Borough nearly "built-out" with very little undeveloped land remaining. There are several distinct land use areas in Malvern: the commercial and mixed use Olde Towne in the northeast, institutional lands in the south, single family in the western central area, multi-family in the west, and industrial in the northwest. Through mapping and analyzing existing land use, land use conflicts, infill opportunities, and fair-share housing issues can be identified. This information is also important in planing for community facilities, circulation, and future land use. It should be noted that this chapter provides an overview of the entire Borough. More specific land use information is provided in the individual neighborhood planning area profiles. There are 18 neighborhood planning area profiles which will include specific discussions about land use, circulation, zoning and other issues and provide specific recommendations for each neighborhood.

GENERAL LAND USE PATTERNS AND DESCRIPTIONS

Malvern has a small town, diverse land use character containing a variety of uses, densities, and development patterns. The core development pattern is urban in nature with higher and medium densities around which some newer, more suburban, development has occurred. Except for the King Street commercial district, the developed portion of the Borough remains primarily residential. There historically have been greater densities and mixing of uses in Olde Towne Malvern (in the northeastern portion of the Borough), than the rest of the Borough. Single-family attached and older single-family detached homes are the predominant housing type throughout Olde Towne Malvern. Olde Towne Malvern contains the commercial area for the Borough along King Street which includes smaller scale commercial businesses oriented to local needs as well as a couple larger scale businesses which cater to the nearby region.

The northwestern sector contains a concentrated area of industrial uses north of the railroad. The area south of the railroad and west of Warren Avenue contains larger older single family housing along Monument Avenue and newer suburban cul-de-sac developments around W. King Street. There is a significant portion of institutional land in the Borough, which makes up the southern third of the Borough. These institutional areas are largely open and contribute to the Borough through both visual appeal and preservation of natural resources and open space.

Map A5-1 and Table A5-1 illustrate land use patterns as they occurred in 1998. The Borough conducted a similar land use inventory as part of the 1976 Comprehensive Plan. General comparisons can be made between the two inventories.

Table A5-1
EXISTING LAND USE INVENTORY, 1998

LAND USE CATEGORY	ACRES	% OF TOTAL
Residential:	276.9	34.3
Single-family residential	195.4	24.2
Two-family residential	20.1	2.5
Multi-family residential	61.4	7.6
Institutional	269.3	33.3
Commercial	18.0	2.2
Industrial	39.6	4.8
Recreation	24.4	3.0
Public	47.9	5.9
Vacant	40.4	5.0
Right-of-ways	68.9	8.5
Rail Line	22.9	2.8
TOTAL	808.3	100

Source: Chester County Planning Commission, 1998

Both studies demonstrate that the Borough has a stable and well established land use pattern. Since 1976, Malvern's land use pattern has gradually been occupied with compatible uses, but has not experienced drastic change. As expected, in 1976 there was considerably greater vacant land than in 1998 which has since largely been developed. Since the 1976 inventory, the large vacant lands in the northwest of the Borough, north of King Street, were developed with multi-family development and single-family homes. That development was compatible with the existing multi-family housing south of W. King Street and single family housing to the east along W. King Street. Many infill sites were also developed throughout Olde Towne Malvern.

Since 1990, nearly all remaining vacant tracts have been developed or are committed for development. Other than infill sites and one large site north of the railroad in the northwest, the Borough is essentially built-out with little remaining developable land. Although there are considerable institutional lands in the Borough which are largely open land, for the purposes of this Plan these lands are considered to be fully in use for institutional purposes. Future options for these lands should their development occur are considered in the Land Use Plan (Chapter 2).

Specifically, since 1990, 98 lots have been developed (not including approved but yet to be developed subdivisions), 65 of which are townhouses and twins. Most notably these include larger vacant lands in the northeast portion of the Borough, now developed as Malvern Hills I, and in the southwest portion, now the Tidewater development. An additional 70 single family lots have been approved and/or are under construction currently. This will result in the development of the remaining larger vacant lands in the northeast with the development of Malvern Hills II and Malvern Woods, both single family residential. Also, this number includes 13 single family lots currently approved in the southwest of the borough on vacant land adjacent to the Paoli Massacre Site and Willistown.

This Plan recognizes that although the Borough land use pattern is well established and there is little remaining developable land, development and land use change will not cease. As the Borough continues to evolve and grow to meet future demands, land use changes will continue to occur on smaller vacant sites and through changes in use on currently developed lands, e.g. through conversions, adaptive re-uses, and other redevelopment activities.

Individual land use categories are described in more detail as follows.

Residential Land Uses

Residential land uses make up 276.9 acres or 34.3% of the Borough total land area. These residential uses comprise 3 categories of housing types. The predominant dwelling types in the Borough are single-family residential making up 24.2% of total Borough land area and about two-thirds of the land in residential use. The land devoted to two-family residential which includes twins and duplexes equals 2.5%. Multi-family housing which is characterized as housing with 3 or more dwelling units accounts for 7.6% of total Borough land.

Since 1976, residential development has accounted for the greatest growth of any land use. This increase can be attributed to new developments which have occurred on the remaining vacant sites throughout the Borough. Since 1990, 98 new residences have been constructed, and there are an additional 70 single family houses under construction or approved for construction. This will about use all of the remaining larger vacant residentially zoned sites in the Borough. New residential uses have been diverse, from single family dwellings to multi-family developments. This variety in housing types reflects and reinforces the historical diversity of housing in Malvern. The newer single-family developments have generally been developed using a more suburban pattern with cul-de-sacs and sidewalks, however both Malvern Hills I and II have employed the cluster design option, and clustering will also be used in the development adjacent to the Paoli Massacre site.

While the Borough contains a variety of housing types, there are distinct patterns where certain types and cost of housing are concentrated. A large concentration of older larger single family housing is found along Monument Avenue, while newer single family housing, in a suburban development pattern, are concentrated around West King Street. Large multi-family complexes are found in the western section of the Borough. The northeastern section of the Borough known as Olde Towne Malvern is characterized as having higher densities with a diversity and mixture of housing types. Scattered housing sites are also found along the commercial corridor of King Street. Two of the newest housing developments, Malvern Hill I and II, have been constructed under the cluster option development option thus enabling development of smaller lots and preservation of sensitive resources. Parcels along Lovers Lane and west of the Paoli Battlefield site are also being developed with single family housing. A more suburban development pattern, with larger parcels containing single family housing, borders Paoli Pike in the southeast. Public sewer lines do not extend to this area, which in part, necessitates the larger lots sizes.

Commercial Uses

Commercial uses in the Borough comprise 18 acres or 2.2% of total land. Commercial uses are primarily located in the King Street business district in the eastern portion of the Borough. Commercial uses in the Borough are mainly small scale, individual retail, service, and office uses with some mixing of second floor residential use. This types of pattern represents the traditional main street area. There are some newer commercial uses along King Street including one strip mall west of Warren Avenue and the Malvern Design Center east of Bridge Street. In the business district, there is a mix of commercial and residential uses. There are a variety of business uses available which help service the needs of Borough residents as well as cater to the surrounding region.

Due to limited land, all types of commercial uses can not be accommodated within the King Street business district which results in the dependency of the residents on the surrounding region for larger commercial uses. However, the extent of commercial uses currently in Malvern is slightly more extensive than in the 1976 inventory. This can in part likely be attributed to the Borough's extensive revitalization effort along King Street during the past decade which has entailed streetscaping improvements such as street trees, new

sidewalks, and lighting. There are few vacant structures in the business district. It should be noted that there are also some commercial uses scattered within the residential areas of the Borough which further boosters the Borough as a place for employment and commercial activity.

Industrial Uses

Industrial uses make up about 4.8% of total Borough land, and are concentrated and contained within an area west of N. Warren Avenue and north of the railroad, comprising 39.6 acres of land. In 1976, industrial uses took up approximately the same land area and were concentrated in the same location as currently. There are some smaller scale industrial uses along eastern King Street also. The location, amount, and intensity of industrial use has changed little in Malvern. Industry in the Borough consists of light industrial uses, such as warehousing and processing. There are no manufacturing or heavy industrial uses within the Borough.

Institutional Uses

Institutional uses, which include private institutions, comprise a significant land area in Malvern, 268.3 acres or 33.3% of total Borough land. This can be attributed to the 2 large institutions encompassing the southern portion of the Borough, Malvern Prep and Malvern Retreat. Other institutional uses in the Borough includes churches and schools. This large amount of land in institutional use is unusual for a Borough. These two large uses in the south contribute visual appeal of open lands and serve as a buffer between the developed areas of the Borough and the rural areas to the south.

The northern 40-acre tract of the Malvern Prep School has recently been subdivided and is for sale. This tract of land is the site of the Paoli Massacre and if funds can be raised will be preserved in perpetuity by the Borough as open space. Currently, this land is zoned as I-1 which permits agriculture as a use-by-right, and Planned Campus Development and Planned Office Campus Development as Conditional Uses. If sold and developed, this will significantly effect the existing land use and development pattern of the Borough. In 1976, institutional uses also accounted for a significant portion of the Borough lands, and the two large scale institutional uses took up approximately the same land area as today. Of concern was the future of these lands given surmounting development pressures and land values. During the lifetime of this Comprehensive Plan, those lands are considered in use for institutional purposes, however it is acknowledged that these parcels may be more intensely developed in the future and future options for these lands should their development occur will be considered in the future land use section of this Plan.

Recreation

Recreational lands in the Borough account for 24.3 acres or 3% of Borough land. The largest recreational lands is the Paoli Memorial Grounds which is divided into a community park, McAdoo Athletic Fields (8.6 acres), which accommodates active recreational uses and an open space area, and the Parade Grounds (12.1 acres) for passive recreational uses. There are two Borough-owned neighborhood parks: First Avenue Park (1.6 acres) contains a basketball court and baseball/softball field; Malvern Community Park (1.4 acres) contains a gazebo, play equipment, and benches. Since the 1976 Plan, Malvern Community park off S. Warren Avenue and Rubino Park off Miner Street have been added, thus increasing the amount of public recreation land in the Borough.

Municipal

Municipal lands include municipal parking lots, Borough Hall, and the Borough owned Ruthland Avenue Tract, and account for 47.9 acres or 5.9% of Borough land. The Borough's Ruthland Avenue tract is undeveloped open space off Ruthland Avenue. This parcel is the largest publicly-owned open space in Malvern and is planned to be improved for passive recreation uses. Borough Hall is located on a 1 acre parcel.

Transportation

This category consists of road right-of-ways, and the railroad right-of-way in the Borough and contains 91.7 acres or 11.3% of land. There are also 2 acres of road right-of-ways which have not yet been constructed but are dedicated if future development dictates their necessity. As development has continued to occur since the 1976 land use inventory, additional roadways have been constructed, thus increasing the amount of acreage for roadways in the Borough. The Amtrak rail line comprises 22.9 acres or 2.8% of Borough land, and other than the expansion of the commuter parking lot this acreage has changed little since 1976.

Vacant

The Borough contains few remaining vacant lands. During the last 10 years, several of the remaining larger tracts have been developed or are under approval for residential uses which has essentially made the Borough close to being built-out or fully developed. Presently, the largest vacant parcel in the Borough is located to the west of the industrial area. This parcel contains environmental constraints of steep slopes and would have to be sensitively developed. A few larger vacant parcels exist in the industrial area. One larger vacant parcel remains in the residential section in the west of the Borough and there are several small vacant parcels scattered throughout the Borough. Infill development on the smaller vacant lots will have little effect on the character of the Borough. In total, 40.4 acres or 5% of Borough land is vacant. This has decreased since 1976 due to increased residential development on the larger vacant sites in the Borough as well as development of smaller infill sites and conversions.

ZONING ANALYSIS

The Zoning Ordinance and Land Use and Subdivision Ordinance are the primary land use regulatory documents in the Borough. The Zoning ordinance was adopted in 1988 with 15 amendments through 1997, while the Subdivision ordinance dates to 1973. The purpose of this discussion is to provide an overview of the zoning ordinance and to conduct a basic analysis of problems or issues being experienced. The zoning ordinance contains regulations which govern land use, densities, setbacks, and other requirements. The subdivision ordinance outlines procedural and design requirements for subdivision and land development proposals. This ordinance is in need of revision to reflect changes in the Municipalities Planning Code(MPC) through the adoption of Act 170 in 1988. As there are few new land developments expected in the future, this section will focus on an analysis of zoning.

The zoning ordinance contains 6 residential districts, 3 commercial districts, 5 institutional districts, an industrial district, and 2 public/recreational/open space districts. The ordinance also contains Flood Hazard and Steep Slope Overlay Districts. To give an idea of the types of uses and densities permitted by zoning, the uses and areas requirements of each district are summarized below.

Table A5-2
MALVERN BOROUGH ZONING, 1998

ZONING DISTRICT	USES PERMITTED BY RIGHT	MINIMUM LOT SIZE
R-1 Residential District	Single-family detached dwellings Municipal Recreational Uses	1 acre
R-1A Residential District	Single-family detached dwellings Municipal Recreational Uses	25,000 sq.ft.
R-2 Residential District	Single-family detached dwellings Two-family dwellings Funeral Homes	12,000 sq.ft.
R-3 Residential District	Single-family detached dwellings Two-family dwellings Multi-family dwellings	7,500 sq.ft 6,000 sq.ft./family 6,000 sq.ft./family; min. tract size of 24,000 sq.ft.
R-4 Residential District	Single-family detached dwellings Two-family dwellings Multi-family dwellings	6,000 sq.ft 4,000 sq.ft./family 4,000 sq.ft./family
MHP Mobile Home Park	Mobile Home Parks Certain Industrial uses as permitted in the L-1 district	
C-1 Commercial District	Variety of retail, office, and service uses	5,000 sq.ft.
C-2 Commercial District	Variety of retail, office, and service uses	1 acre
C-4 High Intensity Commercial District	Variety of commercial uses	½ acre or 1 acre
I-1 Institutional District	Agriculture	20 acres
I-1A Institutional District	Single-family detached dwellings Two-family dwellings Apartments	9,000 sq.ft./family
I-2 Institutional District	Single-family detached dwellings Educational uses, clubs Nursing Homes	using R-1 cluster
I-3 Institutional District	Single-family detached dwellings Two-family dwellings Duplexes	12,000 sq.ft./family
L-1 Industrial District	Offices, warehouses, agriculture, and certain forms of manufacturing	1 acre
POSC Parks and Open Space District	Single-family detached dwellings Municipal use Passive Recreation	1 acre
PP Public Parks and Parking District	Public Parks Municipal parking Buildings for government or nonprofit use	10,000 sq.ft.

Types of zoning districts generally correspond with the existing land use patterns in the Borough. However, there are some discrepancies between existing development and Borough zoning regulations. Borough zoning districts and general issues for consideration are discussed as follows. Specific zoning issues will be analyzed in more detail within the Neighborhood Planning area discussion which is found in Chapter 3 of the Plan.

Residential Zoning

Areas zoned as R-1 are located in the southeast and southwest corners of the Borough. The principal land use in R-1 is single family residential with large setbacks and the lowest residential densities in the Borough, however, the area in the southwest is developed with townhouses. The residential uses of north and south Olde Towne generally coincides with the R-2 and R-3 designations in scale and use. These zones allow more shallow setbacks and a variety in housing types which reflects and allows the existing diversity to continue. However, there are a number of multi-family uses located within the R-2 district which technically function as non-conforming uses. Further, there are also several existing commercial uses located within these districts. Since the existing commercial uses in this area are not permitted in these districts, they operate as non-conforming uses. The R-4 district coincides with the location of multi-family uses. In terms of uses, the R-2 zoning in the central portion of the Borough reflects the primary use of single-family dwellings, as does the R-1A district in the western section of the Borough. Within these and other districts there are issues of non-conformities in lot size requirements as well as infill development opportunities which will be further discussed below.

Clustering is permitted within the R-1, R-1A, R-2, I-2 and I-1R districts, and is mandatory within the I-1R and I-2 districts; this allows additional diversity in development pattern and promotes open space conservation. It should be noted that the ½ acre lot requirement in the I-1R, I-2, and R-1 Districts may be too large to effectively preserve open space and continue the existing development pattern of the Borough.

Institutional Zoning

Institutional areas in the southern portion of the Borough are zoned I-1 and I-2 which permit institutional uses as well as other uses, however, the I-1 district does not allow institutional uses by right, only agriculture is allowed by right. Other institutional districts generally correspond to the location of institutional uses.

Commercial Zoning

All 3 commercial districts in the Borough are located in the central business district. The C-1 district makes up the majority of the business districts and provides for a variety and mixing of uses as well as lots sizes and scale to maintain this as a pedestrian oriented commercial corridor. C-2 and C-4 districts permit larger lot sizes and deeper setbacks which are not as pedestrian oriented, but allow for commercial uses of a larger scale. Larger lots are generally not compatible with the small scale of a Main Street business area, however, they do provide for additional commercial opportunities to the Borough and properly designed can be compatible with the streetscape. Also, a more recent amendment to zoning includes “Olde Towne Malvern” design standards in the I-1A and C-4 districts.

Industrial Zoning

The location of industrial uses generally corresponds to the industrial zoning district. The currently undeveloped area north of the railroad and west of the industrial district is zoned MHP which allows for the expansion of industrial uses into this area in the future.

Non-conforming lots sizes and Infill opportunities - current residential zoning regulations were analyzed in relation to existing residential lots sizes to determine where there were non-conformities in lots sizes as well as infill opportunities. Non-conformities occur when existing lots sizes are smaller than the minimum lots sizes required in the zoning district. Infill opportunities can occur when existing parcels are large enough to be further subdivided based on minimum lots size requirements in zoning. Specifically, this analysis examined single-family and two-family dwelling types in the R-1, R-1A, R-2, R-3, and R-4 zoning districts

and differing minimum lot size requirements were taken into account. Multi-family dwelling were not examined since infill opportunities on these parcels is unlikely.

There are concentrations of non-conforming parcels in the western portion of the Borough, in the southern section of Olde Towne, and in the northeastern part of the Borough. In the western part of the Borough, these lots encompass much of the R-1A districts and a portion of the R-2 district around Nolan Drive. In the southern portion of Olde Towne, the area of non-conformities is primarily zoned R-2 and R-3. In the northeastern part of the Borough there is R-2 zoning. Several parcels also fall within the R-1 districts. The significance of this analysis is that there are a considerable amount of lots in the Borough which do not conform to the minimum lot size requirements in zoning. These may result in part from zoning adopted subsequent to the construction of many of the dwellings. This can lead to problems for property owners such as meeting setbacks requirements when constructing building additions.

Based on existing zoning, clusters of infill parcels exist in the northwest section, central section, southern portion of Olde Towne, and northeastern sections of the Borough. In the northwest section, infill parcels fall within the R-4 and R-2 districts. The central section is zoned R-2, southern Olde Town R-2 and R-3, and the northeastern section R-2. Thus based on the parameters of this analysis, these parcels hold the opportunity for additional single-family and two-family development using current zoning requirements. Since the Borough is almost fully built-out, these parcels yield some of the only remaining development potential in the Borough. They are important for their potential to accommodate future population and changing needs of residents as household sizes are decreasing and the demand for housing is increasing along with demand for smaller housing types.

FAIR-SHARE ANALYSIS

This issue of population growth is bound up in the definition of "fair share" of growth. "Fair share" represents a municipality's legal responsibility for accommodating a variety of housing types, the people who are anticipated to move into the municipality in the future and appropriate commercial and industrial land uses. Pennsylvania's courts have clearly indicated that all municipalities that are in the path of growth must accept their fair share of regional growth. As stated in the Municipalities Planning Code, this means that municipalities must include in their zoning ordinances provisions "To provide for the use of land within the municipality for residential housing of various dwelling types encompassing all basic forms of housing, including single-family and two-family dwellings, and a reasonable range of multifamily dwellings in various arrangements, mobile homes and mobile home parks, provided, however, that no zoning ordinance shall be deemed invalid for the failure to provide for any other specific dwelling type." The Municipalities Planning Code also requires zoning ordinances to contain provisions "To accommodate reasonable overall community growth, including population and employment growth, and opportunities for development of a variety of residential dwelling types and nonresidential uses."

The "fair share" concept was originally expressed by Pennsylvania Commonwealth Court in the case of **Surrick v. Upper Providence Township,** 11 Pa, Commwlth. Ct. 607, 314 A, 2d 565 (1976). **Surrick** includes a three-tiered test to determine whether a municipality has provided for its fair share of growth. The analysis looks at I). whether the municipality is in the path of growth and development, 2) whether the municipality is fully developed or still developing and 3) the potential within the municipality to develop a variety of land uses based on the availability of undeveloped land suited to that purpose. There is no mathematical formula that dictates how much land a municipality must set aside for any particular use. However, Malvern Borough already has a mix of all of the housing types listed in the Municipalities Planning Code. Presently, 7.6% of total Borough land or 22% of residential land is in use for multi-family housing and an additional 2.5% of total Borough land or 7% of residential land is used for two-family housing types. By generally accepted standards, this represents an adequate amount of land area for multi-

family housing and, together with single-family and mobile home areas, provides enough variety in housing to meet the diverse needs of residents.

Based on the **Surrick** test, Malvern Borough's fair share responsibilities are limited during the timeframe of this Plan, for the following reasons:

1. The Borough is in the path of growth. Given the historic rate of regional population growth shown in Appendix 2 and the tables therein, as well as the population projections, it appears that Malvern Borough remains in the path of growth and development

2. The Borough is largely "developed" as opposed to "developing". Based on existing land use patterns approximately 40.4 acres or 5% of total land in the Borough is considered to be vacant or developable, thus Malvern is 95% developed. At this point, the Borough is considered to be a developed community. It should be noted that the large institutional lands in the southern part of the Borough are expected to remain in institutional use. However, the Borough should begin to consider the future of these lands if development were to occur. If these lands are developed, fair share obligations would need to be taken into consideration since these lands would significantly increase the amount of "developable" land in Malvern.

3. The potential to develop a full range of housing types and land uses exists in the Borough despite the shortage of "vacant" land. Although the Borough is 95% developed, the current zoning as applied to the available land provides for a diversity of housing on the remaining vacant panels The two largest vacant parcels are zoned Mobile Home Park and R-2 which respectively permit mobile homes and twin/duplexes. The remaining vacant land in the Borough consists of smaller parcels, most of which fall within the R-2 district. Several lots are also located in the R-3 district which permits two-family housing as well as multi-family housing and residential conversions. As discussed above, there is also additional opportunity for new multi-family housing through infill development. Additional vacant lots exist in areas zoned for industrial use.

ENVIRONMENTAL AND HISTORIC RESOURCE SUMMARY

The following provides a summary of information in the Borough Open Space Plan regarding important environmental and historic resources. Additional information has been added in some areas. For more detailed information and maps about these resources, the Open Space Plan should be referenced.

Water Resources

Nearly the entire Borough falls within headwater areas for two watersheds. The northern portion of the Borough drains into Little Valley Creek which flows into the Valley Creek, while the southern portion of the Borough drains into three tributaries of the Crum Creek. The Borough contains some floodplain, wetlands, and floodprone areas along the tributaries of the Crum Creek. There is a geologic fracture which transverses the southern portion of the Malvern Prep and St. Joseph's Retreat properties. Geologic fractures are important since they are indicators of underground water supplies. Up until recently (prior to the Borough contracting with Philadelphia Suburban Water), municipal wells, which the borough relied upon for its water supply, were located within the vicinity of this fracture. The Borough has recently begun contracting with Philadelphia Suburban Water, which now provides all water to the Borough. The Borough is underlain by New England Schist, a geological formation, which has good water bearing characteristics. There are no protected waterways in Malvern.

Land Resources

Malvern contains areas of steep slopes (15-25%) and very steep slopes (over 25%) on the Ruthland Avenue tract, Malvern Prep property, in the eastern part of the Retreat property, in the Tidewater residential development, north of King Street west of Karen Drive, and throughout the north-central portion of the Borough. Class 2 prime agricultural soils underlie most of the Borough, while Class 3 soils, which are considered to be of statewide importance, are mostly located on the Malvern Prep property and the northeastern portion of the Retreat property. In terms of land use planning, development on steep slopes can lead to problems of erosion and sedimentation. Prime agricultural soils are excellent for development, and are generally considered a secondary resource in a Borough.

Biotic Resources

There are wooded areas greater than 5 acres located throughout the northern section of the Borough, on the Paoli Battlefield site, and wooded areas and areas of locally important vegetation take up almost all of the Retreat property and Ruthland Avenue tract. There are dense woodlands on these latter two sites. The impact of land use decisions on these resources is a consideration for the Borough.

Historic and Cultural Resources

The Borough has completed a preliminary inventory of historic resources (see Appendix xx). Recently, the site of the Paoli Massacre battle, an American Revolutionary War battle, and the Paoli Memorial Grounds, which commemorates the Paoli Massacre, has been listed on the National Register of Historic Places. The purchase of this site by the Paoli Battlefield Preservation Fund is currently being investigated. Scenic roads in Malvern include Monument Avenue and much of Warren Avenue. Scenic vistas include viewsheds from the Borough's Ruthland Avenue tract and the Paoli Memorial Grounds. The Borough has a Historical Commission which promotes identification and preservation of historic properties in the Borough. The Borough's downtown area along King Street is considered to be a locally important historic area. There are no known archeologically significant sites in the Borough.

PLANNING IMPLICATIONS

- Since the time of the 1976 Comprehensive Plan, Malvern's land use pattern has become established. There is currently little remaining vacant land in the Borough. Vacant land that does exist is generally found on smaller parcels. Infill development on existing underused parcels as well as conversions and adaptive re-use are other areas where future development can take place. Presently, there are a number of infill sites.

- Malvern Borough contains a series of established neighborhoods and areas. The Borough desires to maintain the character of these neighborhoods which create the character of the Borough. There are many a considerable amount of lots within the residential districts of the Borough which do not conform to minimum lot size requirements in zoning.

- The Borough contains a diversity of housing types. This diversity is important in maintaining the Borough's character. The Borough wishes to maintain this diversity into the future.

- There are commercial uses which serve both the local residents and region. The Borough has undertaken an extensive revitalization of the King Street business district. For example, Olde Towne design standards have been developed in the C-4 and I-1A districts. The Borough is continuing its revitalization effort. Zoning could have an effect on the business district and revitalization.

- There is a significant amount of institutional land in the Malvern which is concentrated in the southern portion of the Borough. The northern 40 acres of the Malvern Prep tract is currently for sale and could have an impact on the Borough if developed. Although currently funds are being sought to preserve this tract which was the site of the Paoli Massacre Battle, if funds can not be found the development of this tract would have impact on the Borough and must be taken under consideration.

Appendix 6
TRANSPORTATION INVENTORY

The transportation network available to residents and businesses affects the character and efficiency of our borough and is an important factor in maintaining Malvern's attractiveness as a place to live and work. Land use patterns and transportation networks are closely related. Because Malvern is nearly fully developed, the ability to move about and through the community by a variety of means is key to our continued quality of life.

This chapter describes the entire system of transportation facilities and conditions in terms of character, function, trends, and efficiency. The policies and implementation measures contained in the Transportation Plan (Chapter 5) are based on the background information from this chapter.

MODE OF TRAVEL

Being an urban municipality located on the main commuter rail line in the area and near major arterial roadways, our Borough is well served by public transportation. We are directly served by both rail and transit services. SEPTA's bus route #92, providing service between West Chester and King of Prussia, passes through Malvern on King Street, providing service to numerous points along the route and, through transfers, to Philadelphia and Wilmington, Delaware.

Additionally, the Malvern train station, located immediately north of King Street and west of Warren Avenue, provides access to both the SEPTA R-5 commuter rail line that travels between Downingtown and Philadelphia, and to AMTRAK service that travels between Philadelphia and Harrisburg. All local trains and nearly all express trains through the area stop at the Malvern station. This rail station maintains Malvern's traditional role as a commuter rail center.

Despite our easy access to transit services, the majority of Borough residents rely on personal vehicles to commute to work. 1990 census data indicates that approximately 78.9% of Borough residents drive alone between home and work, with about seven percent using public transportation and another seven percent carpooling. Nearly five percent of Malvern residents walk to work, with another two percent working at home. These figures are very similar to those for Chester County as a whole, with a nearly identical percentage of people driving alone, slightly fewer countywide using transit or walking, and slightly higher numbers countywide carpooling and working at home. These numbers show a significant shift toward the single-occupant vehicle since 1980, however, when 64% of residents relied on the automobile, nine percent of residents used transit, 19% carpooled, four percent worked at home, and three percent walked to work. The key differences between 1980 and 1990 data are that the percentage of residents driving *alone* increased significantly and the percentage of residents carpooling decreased significantly. Clearly, Borough residents rely on the automobile as the dominant form of transportation between home and work, with a significant majority driving alone.

ROADWAY SYSTEM

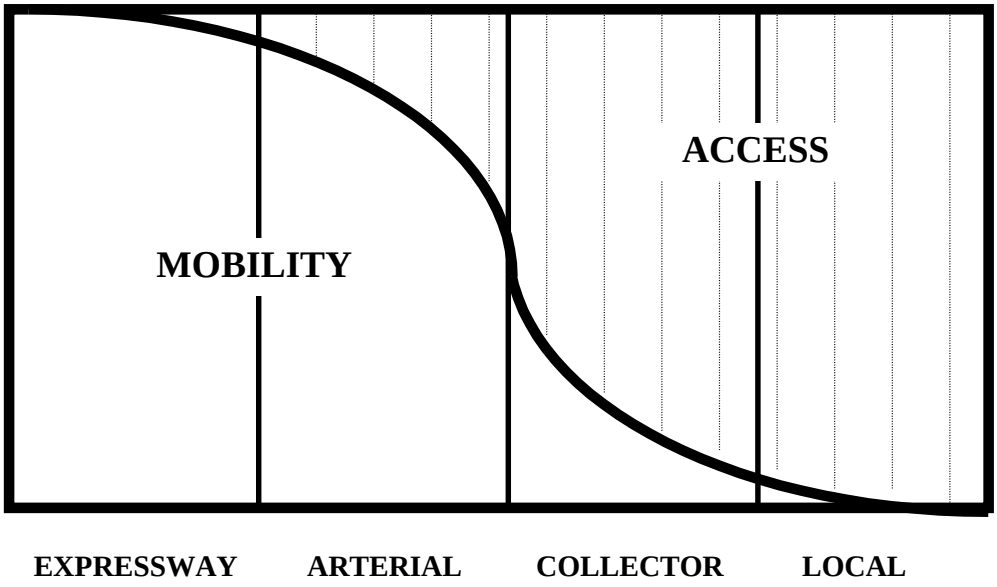
All 10.6 miles of publicly-owned road within the Borough's boundaries are owned and maintained by the Borough. Malvern is unique among Chester County municipalities in having no State owned roads within the borough. In addition to these roads, there are also a number of private roads (serving individual developments) and alleyways in the Borough. The 10.6 miles of locally owned roads give the Borough a road density of 8.83 linear road miles per square mile of area. As of 1997, Malvern ranked 8th among Chester County's 15 Borough's in number of road miles and 7th in road density. Given their relatively small area and high population density, boroughs generally have fewer road miles but higher road density

than townships. In Malvern's case, we have fewer road miles than any Chester County Township and higher road density than all but one Township.

FUNCTIONAL CLASSIFICATION SYSTEM

Roadways can function in different manners, serving varying traffic volumes, trip lengths and purposes, and accommodating varying traffic speeds. When a road functions in a manner that is not consistent with its design, that road can fail from a safety and/or capacity standpoint. To avoid this problem, it is useful to establish a classification system for roads and a set of design standards related to each. The Functional Classification System organizes various roads and road segments in a hierarchy based on the function each serves. This system designates road segments based on average traffic volumes, roadway design, the spatial relationship of the segment to other nearby roads, the perceived average trip length, and whether the roadway generally serves an access function or a mobility function. The relationship between access and mobility is a key aspect of roadway classification. Accessibility refers to the ease of entering or exiting a roadway from adjacent properties; mobility refers to the ability of the road to move traffic. These roles have an inverse relationship in that the more efficiently a particular road can move traffic, the less able it will be to effectively provide access to adjacent properties and visa versa. Figure A6-1 illustrates this concept relative to different functional classifications.

Figure A6-1
ROAD FUNCTIONAL CLASSIFICATION



On one end of the scale, expressways provide maximum mobility, but strictly limited accessibility. Conversely, local roads are intended to provide maximum access to properties but minimum mobility. The conflict between access and mobility is the fundamental cause of most congestion and safety problems. These conflicts are minimal with expressways and local roads, which each serve one purpose almost exclusively, but are significant with arterials and collectors, which attempt to balance these two functions more closely.

The general functional classification categories are expressways, arterials, collectors, and local roads.

- **Expressways** move the maximum number of vehicles at relatively high speeds by restricting the number and types of access points. These roads generally serve interstate and inter-regional traffic. There are no expressways in our Borough, although Route 202, located less than a mile to the north of the Borough is quite accessible from Malvern. The Pennsylvania Turnpike is located approximately 2 ½ miles north of the Borough, although the nearest access points to the Turnpike are in the King of Prussia are and Downingtown.

- **Arterials** are intended to carry relatively high traffic volumes at relatively high speeds and give priority to mobility over access, but also have an access function. Access to arterials is less restricted than with expressways, but is still fairly restricted. There are no arterial roads located in Malvern, although Paoli Pike, which defines the Borough's southern boundary, is an example of a minor arterial, and Route 30, located immediately north of the Borough, is an example of a principal arterial.

- **Collectors** support the arterial network by carrying reasonably large traffic volumes at moderate speeds with minimum access controls. Collectors begin to stress access over mobility and often connect residential areas with employment and shopping areas. Malvern's two main roads, King Street and Warren Avenue, are examples of collector streets.

- **Local roads** provide access to and egress from adjacent properties, carrying low volumes of traffic at low speeds. These roads provide short distance travel, generally between specific properties and to collectors and arterials on the larger network. All of the roads in our Borough, other than those mentioned above under the discussion of collectors, are classified as local roads.

It should be noted that roads within urban areas like Malvern Borough serve competing functions and are more difficult to classify than roads in suburban or rural areas. Since the Borough has an interconnected grid system of roads, a motorist travelling within or through Malvern has numerous choices of routes and even local residential roads are capable of serving a mobility function. In contrast, many local residential streets in suburban and rural municipalities do not interconnect with larger roads and are of no use to a travelling motorist whose trip does not have an origin or destination in that residential area.

Existing functional classifications of roads within Malvern were established in the Borough's 1976 Comprehensive Plan and classification of roads outside of the Borough were established in Chester County's 1986 Highway Needs Study. The "Future Land Use" map in the Borough's previous Comprehensive Plan includes a classification between collector and local roads that it calls "feeder" roads. Other than this undefined "feeder" classification, neither of these documents distinguishes between roads that serve a totally local access function and roads that distribute traffic from local areas to higher functioning roads. To address the differences in function between various local roads, many communities have created a "distributor" classification for higher order local roads. The function of these "distributors" do not rise to the level of collector roads, but are clearly different than purely local roads. If used within Malvern, such a classification might apply to roads like Bridge Street, which is one of only two connections across the railroad tracks, Old Lincoln Highway, which connects the Borough to Route 30, and possibly others.

TRAFFIC VOLUMES AND LEVEL OF SERVICE

Two key factors that determine road network effectiveness are safety and traffic congestion. Traffic congestion generally results when traffic volumes on a road segment exceed the capacity of that roadway or when heavy volumes of conflicting traffic movements occur at the intersection of two or more roads. To determine the current effectiveness of the road network, both traffic counts and intersection level of service analysis are useful tools.

Traffic Volumes

Traffic volumes are typically counted either at mid-block road segments or at intersections. The road segment count involves counts for twenty-four hour periods ("Average Daily Traffic" or "ADT") on roadway segments not involving turn movements at intersections. These counts are typically done with automated traffic counters and provides information on traffic volumes on a given stretch of road over a full day period and during the morning and evening hours of peak volumes. Intersection traffic counts involve counts that track all trips passing through an intersection, including through trips and turn movements. These counts are typically performed manually and only for two hour periods in the morning and afternoon, including the hours of peak traffic volumes. While these counts provide information on a complex set of movements, they are generally only available for the peak hours, although they can be extrapolated to determine approximate daily volumes on each approach to the intersection.

Ideally, when examining traffic volumes, it is useful to compare similar counts from different years. This enables the identification of past trends in traffic growth, which can be extrapolated into the future as well. Unfortunately, there is little historical information available regarding traffic volumes in Malvern. A comprehensive set of mid-block "ADT" counts was performed by the Delaware Valley Regional Planning Commission (DVRPC) in February of 1996. Only one earlier count, from 1984, is available. Because this was only a single count and was done more than ten year ago, it is of limited use in identifying traffic movement trends in Malvern. In addition to these 1996 DVRPC counts, peak hour counts were conducted at four Borough intersections in May of 1998 for this Comprehensive Plan. In addition to providing detailed peak hour information, these counts have also been extrapolated to provide ADT information. The intersections counted were:

- King Street/Warren Avenue
- Warren Avenue/Paoli Pike
- Bridge Street/Old Lincoln Highway
- Broad Street/Longford Avenue

The intersection of King Street and Warren Avenue is the Borough's main crossroads and the intersection of the two most heavily traveled roads within the Borough, as well as the only signalized intersection totally within the Borough. The intersection of Warren Avenue and Paoli Pike, while not located within the Borough technically, is on the Borough's southern boundary and is a key "gateway" intersection into the Borough. It is also a very busy intersection, with higher volumes than any location within the Borough. The intersection of Bridge Street and Old Lincoln Highway is also a "gateway" intersection, with most traffic travelling between Route 30 and the Borough passing through this intersection.

The least obvious choice for a traffic count is the intersection of Broad Street and Longford Avenue. This relatively minor intersection was chosen specifically because of a problem with truck traffic passing through this neighborhood on its way to or from the industrial area to the northwest, across Warren Avenue. Because truck travel on Warren Avenue is constrained by the railroad underpass to the south and by a low weight limit on a portion of Warren to the north in East Whiteland Township, trucks from the industrial area currently have no choice but to use Broad Street and Bridge Street to get into or out of the industrial area. Broad Street is a residential street not designed to handle large trucks and this truck traffic has understandably become a major issue for residents of Broad Street. Therefore, the traffic count done at this intersection was primarily intended to document the truck traffic passing through this area. Because the emphasis of this count was truck traffic, rather than overall traffic volumes, counts were done from 7-9 AM and from 10-12 AM, peak periods for truck traffic, and were not done during the PM peak hour when truck traffic is at a minimum.

The link volumes resulting from these 1998 Chester County intersection counts and the 1996 DVRPC counts are shown in Table A6-1 and on Map A6-1. The peak hour counts were extrapolated to determine approximate average daily traffic volumes on the roads approaching these intersections. Where peak hour values are shown, the ADT counts shown are extrapolated from those peak hour counts. All ADT counts were further refined by adjusting for the time of year the count was performed to determine the adjusted ADT, or AADT.

As shown in Table A6-1, the highest traffic volumes *within* the Borough are found on King Street, with volumes of approximately 10,000 trips per day along its entire length within the Borough. These volumes are more than could result from locally oriented trips (those with either an origin or destination within the Borough) and suggests that King Street is used by traffic passing through the Borough without beginning or ending here. High volumes on roads that form the hub of a town's business district can benefit that district, bringing in potential customers. However, when pass through traffic increases to the point that traffic congestion becomes a significant inconvenience to motorists with a destination in the business district, these high traffic volumes become detrimental. It would be logical to assume that the temporary closure of the bridge leading to Route 30 on Route 352 in East Goshen Township would contribute somewhat to this pass-through traffic on King Street, since that bridge represented a key link to Route 30 for those living to the southwest and west of Malvern. However, the similarity in volumes on King Street between early 1996 (when the bridge was still open) and mid 1998 indicates that the bridge detour has had a minimal effect on these pass through trips. King Street appears to be a convenient portion of an east-west commute for a number of motorists not living or conducting business in Malvern. These pass through trips and their effect on the quality of life for Borough residents and their effect on business in the King Street commercial corridor is an issue that must be considered in the Transportation Plan section of this Comprehensive Plan.

Table A6-1
MALVERN TRAFFIC COUNTS

Road	Segment	PM Peak	ADT	AADT **	Date	Source
Bridge St.	South of Old Lincoln Hwy	744	7,217	6,726	May-98	CCPC
Broad St. *	East of Longford	64	659	614	May-98	CCPC
Broad St. *	West of Longford	187	1,926	1,795	May-98	CCPC
King Rd	East of Ruthland	NA	8,961	10,090	Feb-96	DVRPC
King Rd	East of Sugartown	NA	8,865	9,982	Feb-96	DVRPC
King Rd	East of Warren	1,073	10,408	9,700	May-98	CCPC
King Rd	West of Warren	1,194	11,582	10,794	May-98	CCPC
Longford St. *	North of Broad	155	1,597	1,488	May-98	CCPC
Monument Ave	East of Sugartown	NA	2,609	2,938	Feb-96	DVRPC
Old Lincoln Hwy	East of Bridge	284	2,755	2,567	May-98	CCPC
Old Lincoln Hwy	East of Miner	NA	2,657	2,992	Feb-96	DVRPC
Old Lincoln Hwy	North of Longford	NA	6,145	6,919	Feb-96	DVRPC
Old Lincoln Hwy	West of Bridge	700	6,790	6,328	May-98	CCPC
Paoli Pike	East of Warren	1,684	16,335	15,224	May-98	CCPC
Paoli Pike	West of Warren	1,657	16,073	14,980	May-98	CCPC
Warren Ave	North of King	674	6,538	6,093	May-98	CCPC
Warren Ave	North of Paoli	688	6,674	6,220	May-98	CCPC
Warren Ave	North of Paoli	NA	5,945	6,694	Feb-96	DVRPC
Warren Ave	North of Quaker Lane	NA	1,253	1,411	Feb-96	DVRPC
Warren Ave	South of King	631	6,121	5,704	May-98	CCPC
Warren Ave	South of Paoli	487	4,724	4,403	May-98	CCPC

peak hour counts are AM peak. ADT multiplier adjusted accordingly.
** AADT based on ADT adjusted for season.

Significant volumes within the Borough are also found on Warren Avenue, Bridge Street, and Old Lincoln Highway, all of which experienced volumes in the range of 6,000 trips per day. Volumes on Warren Avenue are consistently in the 6,000 range from Paoli Pike to north of King Street, but are significantly lower south of Paoli Pike and north of Quaker Lane. It is not clear whether the higher volumes on this portion of Warren are attributable to pass through trips or trips with an origin or destination within the Borough, but it is assumed that some pass through trips contribute to that total. Bridge Street volumes are above 6,500 immediately south of Old Lincoln Highway, and Old Lincoln Highway volumes are in the 6,000-7,000 range northwest of Bridge Street but are significantly lower east of Bridge. The heaviest volumes of any of the roads counted were not technically in the Borough, but pass along our southern boundary on Paoli Pike. Paoli Pike volumes are approximately 15,000 both to the east and west of Warren Avenue, quite high for a two lane road. While Paoli Pike is not within the Borough, it's operation is of critical importance to many Borough residents, who rely on this route for connections to the West Chester area to the west and to points east as well.

Counts for specific turning movements are show in Figure A6-2. A number of turn movements experienced heavy traffic. At the intersection of King and Warren, the eastbound to northbound left turn was heavily used in the morning peak hour, and the corresponding southbound to westbound right turn was even busier in the evening peak hour. The northbound to eastbound right turn was very heavy in the morning, but the corresponding westbound to southbound left was relatively light in the evening peak hour. At the intersection of Paoli Pike and Warren Avenue, turns onto northbound Warren were heavy from both east and

westbound Paoli, with similarly heavy volumes on the corresponding evening movements. The right turn from northbound Warren onto eastbound Paoli was fairly heavy in the morning, with significantly lower volumes on the corresponding westbound to southbound left in the evening peak hour. At the intersection of Bridge Street and Old Lincoln Highway, the heaviest movement by far was the northbound to westbound left turn from Bridge onto Old Lincoln Highway, with somewhat lower volumes on the corresponding eastbound to southbound right turn in the evening peak hour.

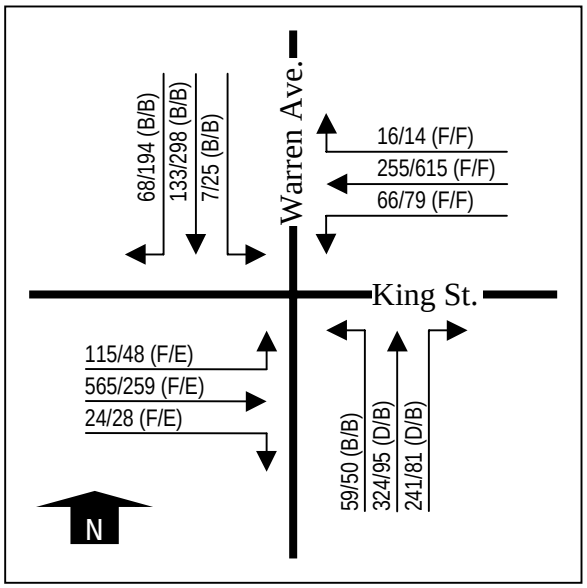
At the intersection of Broad Street and Longford Avenue, overall volumes were very low. This was anticipated since the primary focus of counting at this location was truck trips through this residential street. Truck volumes here were lower than expected, with a total of 19 trucks passing through this intersection between 7 and 9 AM and 29 trucks between 10AM and 12PM. While these volumes are not high, they still illustrate the impact of truck traffic on this small residential neighborhood. Twenty-nine trucks passing through this area in a two hour period equates to approximately one truck every 4 minutes. While not heavy traffic in terms of traffic congestion, this amount of truck traffic creates a significant safety and "quality of life" concern for residents who would like to be able to spend time outside or let their children play outside safely.

Intersection Levels of Service

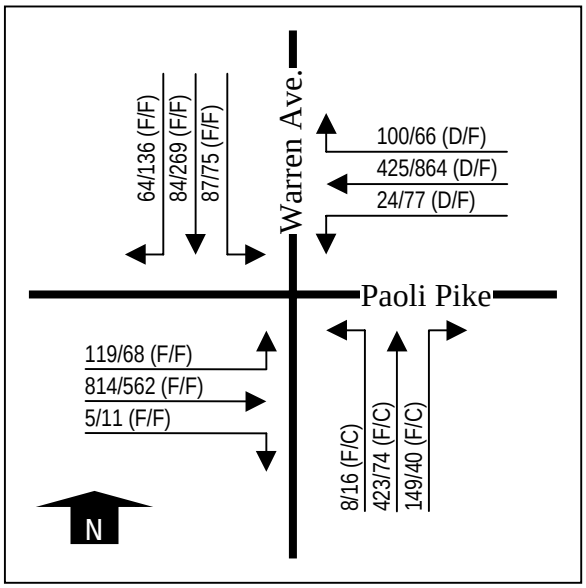
The concept of "Level of Service" (LOS) was developed by transportation engineers as a way of "grading" how well a given intersection is functioning. Factors that determine the LOS at a given intersection include traffic volumes, roadway capacity, the number and configuration of lanes entering and exiting the intersection, traffic volumes on conflicting travel movements, signal timing (where signals exist), the makeup of traffic using the intersection (percentages of cars and trucks), etc. Level of Service is expressed in six designations that are analogous to a scholastic grading system, with "A" meaning excellent and "F" meaning failure. Table A6-2 explains these designations more specifically.

In many communities, a peak hour LOS of "C" or "D" at signalized intersections is considered acceptable. Some urban communities find LOS "E" to be an acceptable peak hour condition. For non-signalized intersections with two way stop signs, it is not uncommon for the controlled movements (those forced to stop) to be at LOS "D" or "E" during the peak hour. At such stop-controlled intersections, through movements (non-turning), and right turn movements on the uncontrolled approaches to the intersection tend to function very well, while the efficiency of uncontrolled left turns and all controlled movements depends on how heavy volumes are on the uncontrolled movements. Low volumes on the uncontrolled movements result in relatively unconstrained turns and movements from the intersection approaches controlled by stop signs. High volumes on the uncontrolled movements, on the other hand, result in very short "gaps" through which opposing left turns or controlled movements can pass, resulting in longer wait times and poorer level of service.

Figure A6-2
TRAFFIC VOLUMES AND LEVEL OF SERVICE

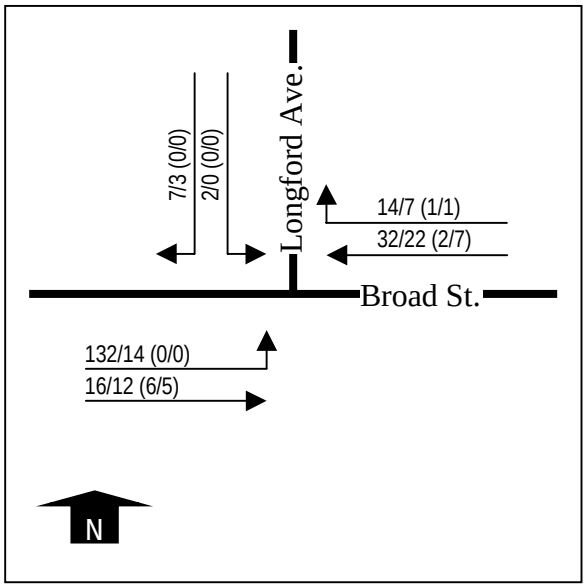


King St. & Warren Ave.

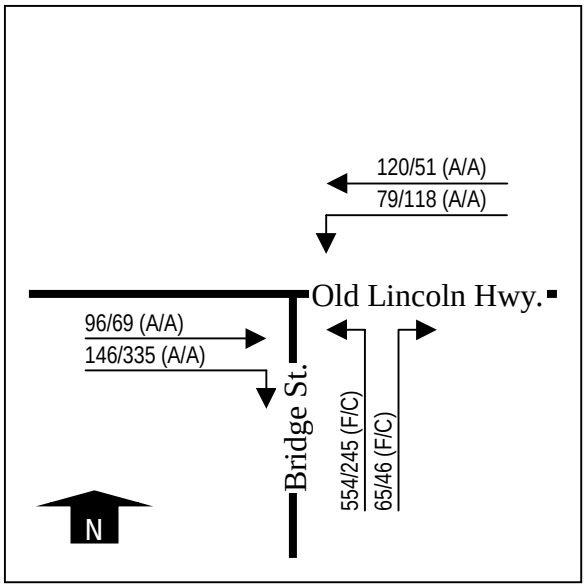


Paoli Pike & Warren Ave.

AM Vol / PM Vol (AM LOS / PM LOS)



Broad St. & Longford Ave.



Old Lincoln Hwy. & Bridge St.

AM Vol / Late AM Vol (AM Trucks / Late AM Trucks)

AM Vol / PM Vol (AM LOS / PM LOS)

Table A6-2
LEVEL OF SERVICE CATEGORIES

LOS "A"	Little or no delay for travelers/40 percent or more reserve capacity.
LOS "B"	Short traffic delays/30-40 percent reserve capacity.
LOS "C"	Average traffic delays/20-30 percent reserve capacity.
LOS "D"	Long traffic delays/10-20 percent reserve capacity.
LOS "E"	Intersection approaching failure condition with very long delays/less than 10 percent reserve capacity.
LOS "F"	Intersection in failure condition with extremely long traffic delays/no reserve capacity (intersection already at or above capacity).

Based on the 1998 peak hour traffic counts discussed above, intersection LOS was analyzed for three intersections. The results of this analysis can be seen on Figure A6-2. A brief discussion of each intersection follows:

King Street/Warren Avenue - This is a four way signalized intersection with on approach lane on both eastbound and westbound King Street and dedicated left turn lanes on both Warren Avenue approaches. Levels of service at the Borough's main crossroads illustrates a failure condition for key movements during both the AM and PM peak hours. Levels of service of "F" are experienced on all movements of eastbound King Street in the morning peak hour and all movements of westbound King Street during both the morning and evening peak hours, indicating a severely congested intersection. The eastbound King movements are at LOS "E" during the evening peak hour, marginally more acceptable. Levels of service for Warren Avenue approaches are considerably better, with LOS "B" on all evening movements and most morning movements. Only the northbound through and right turn movements during the morning peak hour fall to LOS "D", still a reasonable level for peak hour traffic in an urban intersection.

Levels of service are higher on the Warren approaches than the King approaches because of both lower overall traffic volumes and because Warren has separate left turn lanes on both the northbound and southbound approaches to the intersection. While levels of service on King Street would undoubtedly improve somewhat with the addition of dedicated left turn lanes and a "phased" traffic signal (with a dedicated left turn cycle), the higher volumes on King would likely still result in poor levels of service. In addition, the poor level of service on King Street likely acts to minimize the use of this street by pass through traffic during the peak hours. While dedicated left turn lanes would improve levels of service at current traffic volumes, any improvements to traffic flow through the area might merely draw additional non-local traffic to King Street, resulting in higher volumes and similar levels of congestion to those currently experienced.

Paoli Pike/Warren Avenue - This is a signalized four way intersection with single approach lanes on all four approaches to the intersection. This intersection experiences higher traffic volumes and, as a result, lower levels of service than the King Street / Warren Avenue intersection discussed above. While volumes are higher, there are no dedicated turn lanes at this intersection, so there is maximum conflict between through and turning movements entering the intersection. At this intersection, LOS "F" conditions prevail on all movements except for westbound Paoli Pike in the morning rush hour (LOS "D") and northbound Warren Avenue during the evening rush hour (LOS "C"). The lack of dedicated left turn lanes on any of the approaches to this intersection clearly contributes to the poor levels of service here, although the width of the pavement currently allows through traffic to pass to the right of stacked traffic waiting to turn left. A combination of dedicated turn lanes and a phased traffic signal might significantly reduce congestion at this intersection. Significant reductions in congestion on Paoli Pike might have the added benefit of reducing traffic demand on King Street, improving conditions at the intersection of King and Warren as well as at Paoli and Warren.

Old Lincoln Highway/Bridge Street - This is a "T" shaped intersection with uncontrolled movements on the through road (Old Lincoln Highway) and a stop sign controlling the Bridge Street traffic, which approaches from the south. Both roads are two lane roads with no dedicated turn lanes. The highest traffic volumes on the north to westbound left turn from Bridge Street onto Old Lincoln Highway in the morning results in a LOS of "F" for the Bridge Street approaches in the morning peak hour and a LOS of "C" in the evening peak hour. Because the highest volumes are found on the stop controlled left turns from Bridge onto Old Lincoln Highway, and volumes on the conflicting movements on Old Lincoln Highway are also significant, north to westbound traffic is subject to significant delays while waiting to turn left onto Old Lincoln Highway. Observations from local residents indicates that this traffic can sometimes back up past Broad Street, onto the bridge over the railroad tracks. The LOS at this intersection indicates that installing a traffic signal at this stop controlled intersection could improve a significant congestion problem.

King Street/Bridge Street - Although no quantitative analysis was performed on this intersection, this is another intersection of concern to Borough residents and officials. Traffic volume information on King Street and Bridge Street indicates that approximately 10,000 trips per day pass through this intersection on King Street and another approximately 6,000 trip per day use this portion of Bridge Street. This "T" shaped intersection has a stop sign controlling Bridge Street traffic with no controls on King Street traffic. The practical effect of these volumes combined with this intersection configuration is that King Street traffic moves through the intersection efficiently, except that left turns from eastbound King onto Bridge can cause slight delays when westbound traffic is particularly heavy. The key problem at this location is that traffic attempting to turn left from southbound Bridge onto eastbound King can be significantly delayed during heavy traffic periods when there are not adequate gaps in *both* eastbound and westbound King Street traffic to allow this turn. When these left turns are unable to proceed, all Bridge Street traffic is delayed, including those vehicles that would make the less constricted right turn on to King Street. Adding traffic controls to the King Street approaches to this intersection, either a full signal or creating a three-way "stop" controlled intersection, could help solve two problems at once. First, such controls could make the intersection more passable for Bridge Street traffic trying to turn either right or left onto King Street. Second, by delaying King Street traffic at this intersection, the Borough could additionally calm traffic on King Street, thereby discouraging pass through traffic on this key roadway.

TRAFFIC ACCIDENTS

For this study, PennDOT provided a summary of data on all reported accidents in the Borough for the six year period from 1992 through 1997. It should be emphasized that accidents are reported only if they involve injuries, fatalities, or excessive property damage. The actual number of accidents that occurred is likely to be much higher. There were a total of 121 reported accidents in the Borough during the six year period, with only two of these involving "major" injuries. No fatal accidents were reported in the Borough during this six year period. The vast majority of accidents involved no injuries or minor/moderate injuries. A total of 8 accidents involved drivers under the influence of alcohol.

The intersections with the highest numbers of accidents included the two busiest intersections in the Borough, King Street/Warren Avenue and Paoli Pike/Warren Avenue, as well as the intersection of Sugartown Road/Monument Avenue and several intersections between King Street and minor intersecting roads. Midblock areas with relatively high accident totals include the central business district portion of King Street, Warren Avenue north of Paoli Pike, and Paoli Pike east of Warren. Generally, accident frequency is in proportion to traffic volumes – no locations stand out as having unusually high accident rates. Accident information is summarized on Map A6-1.

PARKING

The availability of adequate parking is a key component to the business district along King Street in Malvern, which is the area of greatest parking demand in the Borough. In addition to the businesses in the King Street corridor, the SEPTA train station near the intersection of King Street and Warren Avenue generates significant demand for parking in the same commercial corridor.

A parking survey was conducted in September of 1998. This survey found that there were approximately 400 marked parking spaces along the King Street corridor. This includes marked parking on King Street, in all lots accessible from King Street between Lovers Lane to the east and approximately where an extended Prospect Avenue would intersect with King Street to the west, and the spaces in the municipal parking lot adjacent to the Borough park just south of the King Street corridor between Warren and Channing Avenues. This number does not include numerous unmarked on-street spaces along King Street, on street parking on cross streets or parking lots only accessible from these cross streets, or the SEPTA parking lots. SEPTA provides 154 clearly delineated parking spaces in the lots immediately south and north of the train station plus approximately 150 additional unmarked spaces in SEPTA owned gravel lots on the south side of the railroad tracks. Counting SEPTA spaces and unmarked parking on King Street, approximately 730 spaces are available in the King Street corridor. The breakdown of parking spaces in this corridor are shown in Table A6-3.

Table A6-3
KING STREET CORRIDOR PARKING SPACES

PARKING AREAS	NUMBER OF SPACES
Municipal Parking Lots	81 spaces
On Street Marked Spaces (King Street)	47 spaces
On Street Unmarked Spaces (King Street)	30 spaces (approximate)
Private Business Parking Lots	255 spaces
Post Office	16 spaces
SEPTA Parking Lots	304 spaces
Total Available Spaces	**733 spaces**

Sources: Malvern Borough, SEPTA

To determine how well these parking spaces meet parking demand in the Borough, empty spaces were counted at 11 AM and 2 PM. These hours represent the approximate peak parking times for the mix of uses found in Malvern's business district. In both cases, there were clearly more then adequate numbers of available parking spaces in the King Street corridor. The results of these counts were remarkably similar, with a total of 313 spaces available at 11 AM and 314 spaces available at 2 PM, representing approximately 43% of total parking spaces available. This high availability of parking spaces indicates that Malvern currently has an adequate supply of parking to meet the demand generated by existing businesses and services in this area.

Despite this high degree of parking availability within the corridor as a whole, there were localized areas where parking availability was limited. The SEPTA lots were nearly full during both counts, with only sporadic spaces available. Nonetheless, there was good availability of on-street and business parking in the area of the SEPTA lots, indicating a minimum of "spill over" parking from the train station. This is probably due to the two hour parking limit in public spaces in the vicinity and the "customers only" prohibitions in many of the private lots in the area. Additionally, there appeared to be a shortage of parking in the immediate area around the Malvern Design Center, at the intersection of King and Bridge Streets, with the parking lot appearing full and all on street parking occupied. The connected side parking lot had numerous

spaces available, however, and on-street parking was easily available within a block of this location. Other than these two locations, parking was easily available at all times.

Except for SEPTA transit related parking, parking demand is expected to remain relatively stable over the coming years. Given that the King Street business district has very little remaining development potential, it is unlikely that the demand for parking will increase significantly in the downtown. Changes in uses in existing buildings could result in somewhat increased demand, although existing retail, restaurant, and service uses in this district already generate very high levels of parking demand and significant increases are unlikely.

NON-MOTORIZED CIRCULATION OPPORTUNITIES

Pedestrian and other non-motorized forms of transportation are a key part of what gives a small borough like ours it's charm and an important contributor to quality of life for Borough residents. While the significant majority of our residents drive to work in automobiles, a number of non-work trips can be accommodated by foot or bicycle in a compact borough like Malvern. In addition to providing a convenient alternative to the automobile for a quick trip to a store, library, or park, a quality pedestrian environment makes the afternoon or evening stroll through town or through a neighborhood an end in itself and is an attractive part of community life in our community.

A complete network of sidewalks is an important component in encouraging pedestrian activity. Currently, Malvern provides sidewalks on most residential streets and in the commercial center of the Borough. The commercial area provides not only adequately wide sidewalks, but other pedestrian amenities like benches, on street parking (which provides a buffer between pedestrians and moving traffic), curb "bulb-outs" to offset on-street parking spaces and slow or "calm" traffic, bollards to provide a sense of safety for pedestrians at intersections, and a generally aesthetically pleasing streetscape. In the neighborhoods close to the business district, sidewalks are relatively complete with most streets having sidewalks on at least one side of the street. Only in the very eastern and southern edges of the Olde Towne neighborhood are sidewalks lacking – although traffic is light enough in this area and on-street parking sparse enough that walking in the street is generally safe for the half block or block one would need to walk before reaching the sidewalk network. In the portion of Olde Towne on the north side of the railroad tracks, sidewalks are generally in place along Bridge and Broad streets, although they are not available on the eastern portion of Broad or on Miner Street. Sidewalks are available on most of the Valley View Road circle, but there are not connections down Miner Street or across Old Lincoln Highway to allow connection to the business district. There are also no sidewalks connecting the three new subdivisions in the northeast portion of the Borough with the commercial area.
Outside of the Olde Towne area, sidewalks are not provided as consistently, although key facilities are in place. Sidewalks are provided on both sides of King Street for nearly the entire length of the Malvern portion of that street. Additionally, there are pedestrian linkages along Monument Avenue from Crest Avenue to the east and along most of Griffith Avenue that connect residential areas in the western end of the Borough with the central portion of the Borough and the business district.

In addition to providing the basic facilities needed for pedestrian mobility, the Borough has taken steps to make the pedestrian experience a positive one, which encourages this mode of travel. As noted above, a number of steps have been taken to establish that the King Street corridor is a shared facility. There are numerous visual cues that make motorists aware that this corridor is a shared environment meant for many users and is not solely intended as a transportation corridor for motor vehicles. In August, 1998, the Borough began investigating additional methods of assuring pedestrian safety and convenience in terms of improvements to crosswalks and other measures to further "calm" traffic in this key corridor. In addition to improving the pedestrian environment in the King Street corridor, additional traffic calming measures may slow King Street traffic enough to make this corridor a less attractive commute option for pass through motorists, diverting many

of them to more appropriate facilities like Paoli Pike or Route 30. Such steps could thereby help meet two of the Borough's key transportation objectives.

PLANNING IMPLICATIONS

- The highest traffic volumes in Malvern are on Paoli Pike and King Street. Paoli Pike is an arterial roadway and is an appropriate location for east west oriented commute trips. King Street is the heart of our business district and, as a collector street must balance mobility (moving cars through the corridor) with providing convenient access to adjacent properties. King Street traffic volumes that are too high are detrimental to our business district and our residents – this is not an appropriate facility for pass through commute trips, but a facility that now carries many such trips.

- There are significant "level of service", or congestion, problems at two key intersections in the Borough – the intersection of King Street and Warren Avenue and the intersection of Paoli Pike and Warren Avenue. While a strictly quantitative analysis would indicate that improvements (lane improvements, signal improvements, or both) are necessary at both of these intersections, improving the intersection at King Street could just make this corridor more attractive to pass through motorists and increase volumes on King Street, a development that would be detrimental to local residents and businesses. Maintaining this intersection in its current configuration may help divert pass through trips to the Paoli Pike and Route 30 corridors. The Borough needs to strike a balance here between keeping the intersection functional enough to serve residents, business district clientele, and SEPTA passengers, while not making the intersection any more attractive to motorists passing through Malvern without stopping here.

- The Borough's current "functional classification" system differentiates between collector roads and local roads, but does not distinguish between different levels of local roads. Some roads classified as local, such as Bridge Street and Old Lincoln Highway, serve a connective role beyond that served by true local access roads but do not rise to the functional level of collectors. The lack of recognition for this "intermediate" role could lead to future problems should a need for road improvements be identified in the future.

- Truck traffic on Broad Street is a significant problem for the residents of that area. Existing weight and size restrictions on Warren Avenue to the north and south of the Borough's industrial district makes it impossible for large trucks to get to or from this industrial area without travelling on Broad Street. This narrow residential street is not an appropriate location for truck traffic and these trucks pose a danger to neighborhood children and affect the quality of life for all residents of the neighborhood.

- The Borough's pedestrian environment is an important contributor to our resident's quality of life. This is especially true in our King Street business district, which provides a pleasant pedestrian atmosphere and excellent access to conveniently located businesses. The high traffic volumes on King Street are directly at odds with this pedestrian friendly atmosphere and the Borough is taking action to emphasize crosswalks and otherwise "calm" traffic in this corridor. Such actions – both current and future – may have the effect of improving the pedestrian environment in two ways. First, any slowing of traffic makes pedestrian travel a more secure and enjoyable experience, thus encouraging more pedestrians to use this area. Second, any "calming", or slowing of traffic on King Street may also divert pass through trips away from this corridor to the more commuter appropriate Paoli Pike and Route 30 corridors.