

2014

Land Use Assumptions Report

2014 Update – Final Draft

West Bradford Township



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1 Introduction

1.1 Purpose and Objectives

The Municipalities Planning Code (MPC) authorizes municipalities within the Commonwealth to enact, amend, and repeal impact fee ordinances and to charge impact fees to cover the cost of off-site road improvements necessitated by new land development, as defined in sections 501-A through 506-A of the MPC, which were added by Act 209 of 1990.

In 2001, West Bradford Township's Board of Supervisors adopted a Transportation Impact Fee Ordinance in accordance with these provisions. A Land Use Assumptions Report (LUAR), Roadway Sufficiency Analysis, and Capital Improvements Plan were prepared, and a Western Transportation Service Area (TSA) established, in support of this ordinance.

This is an update to the 2001 LUAR, which is being prepared in support of the township's proposed new Southern TSA, as well as slight revisions to the original Western TSA. This new LUAR provides the following:

- a description of the study areas and existing roadways;
- an inventory of existing land uses in the township, and current zoning;
- an analysis of population trends and present-day employment patterns; and
- an assessment of the future land development potential within both TSAs.

The basic assumption of an Act 209 study, of which this LUAR is but the first portion, is that the cost of needed improvements can be attributed, in part, to future development. The LUAR provides the analytical foundation to support the subsequent Roadway Sufficiency Analysis and Capital Improvements Plan.

1.2 Pertinent Background Studies

The MPC requires, as a prerequisite to an Act 209 Study, the adoption of a comprehensive plan, zoning ordinance, and subdivision and land development ordinance—all of which have been adopted by West Bradford Township. The township's most recent comprehensive plan was adopted in 2009, and amended as recently as 2013; its Zoning and Subdivision and Land Development Ordinances were adopted in 2005 and also amended as recently as 2013.

2 Description of Study Areas

2.1 Boundary Descriptions

This report will describe two separate Transportation Study Areas, or TSAs. The Western TSA was developed for the 2001 Act 209 Study, when it was initially 4.9 square miles in area. It has been modified slightly based on a new analysis of the township's development potential and feedback from the TAC, and stands now at 5.7 square miles. A new Southern TSA has been incorporated into this study based on the anticipation of the potential for both new development and redevelopment in the area. The Southern TSA is 6.8 square miles in size. Both

TSA's are depicted on Map 1. These areas have to be separated, since the MPC limits the area of a Transportation Service Area to 7 square miles.

2.2 Road Listing

Within the study areas there are approximately 18.0 miles of roads owned and maintained by the state and 52.9 miles of roads owned and maintained by the township. Table 1 and Table 2 list state roads, their length, and their functional classifications for the Western and Southern TSA's, respectively. Table 3 and Table 4 list the same information for township roads. Map 2 depicts all roads in the township by their functional classification.¹

Table 1. State Roads in the Western TSA

Road Name	Length (mi.)	Route Number	Functional Classification
Marshallton-Thorndale Rd	1.02	3055	Minor Arterial
W Strasburg Rd	2.24	3062	Minor Arterial
Embreeville Rd	0.40	3064	Minor Collector
Romansville Rd	1.94	3051	Minor Collector
West Chester Rd	0.90	3064	Minor Collector
Stargazers Rd	0.77	3051	Primary Local Distributor
	7.26		

Table 2. State Roads in the Southern TSA

Road Name	Length (mi.)	Route Number	Functional Classification
Telegraph Rd	1.36	0162	Major Collector
Downingtown Pk	0.92	0322	Major Arterial
Marshallton-Thorndale Rd	1.76	3055	Minor Arterial
W Strasburg Rd	4.10	3062	Minor Arterial
Embreeville Rd	0.02	3064	Minor Collector
Sugars Bridge Rd	1.41	3059	Minor Collector
Northbrook Rd	1.62	3058	Primary Local Distributor
Brandywine Dr	0.21	3058	Secondary Local Distributor
Camp Linden Rd	0.67	3023	Secondary Local Distributor
Total Length	12.07		

¹ The source of this information is Chester County's GIS department.

Table 3. Township Roads in the Western TSA

Road Name	Length (mi.)	Route Number	Functional Classification
Beacon Hill Rd	0.16	T380	Primary Local Distributor
Chestnut Ln	1.26	T381	Primary Local Distributor
Lieds Rd	0.92	T376	Primary Local Distributor
Oaklyn Rd	0.06	T381	Primary Local Distributor
Poorhouse Rd	0.89	T430	Primary Local Distributor
Alton Wy	0.64		Secondary Local Distributor
Arrowhead Tr	0.27	T520	Secondary Local Distributor
Bally Moor Dr	0.33	TBD	Secondary Local Distributor
Blueberry Ln	0.20	T474	Secondary Local Distributor
Boulder Dr	0.15	T533	Secondary Local Distributor
Cranberry Ln	0.53	T475	Secondary Local Distributor
Elk Run Rd	0.36		Secondary Local Distributor
Ericsson Dr	0.58	T469	Secondary Local Distributor
Fawn Ln	0.48	T521	Secondary Local Distributor
Gallagherville Rd	0.31	T425	Secondary Local Distributor
Glen Dr	0.08	T480	Secondary Local Distributor
Grenoble Rd	0.16		Secondary Local Distributor
Harrison Rd	0.07		Secondary Local Distributor
Jamestown Dr	0.27		Secondary Local Distributor
Luna Dr	0.12		Secondary Local Distributor
Milta Hill Rd	0.28		Secondary Local Distributor
Oakwood Rd	0.51	T403	Secondary Local Distributor
Persimmon Dr	0.19	T473	Secondary Local Distributor
Powder Mill Rd	0.29		Secondary Local Distributor
S Bailey Rd	0.46	T401	Secondary Local Distributor
Sterner Mill Rd	0.21		Secondary Local Distributor
Stockton Rd	0.26		Secondary Local Distributor
Strawberry Ln	0.17	T485	Secondary Local Distributor
Wetherhill Dr	0.14	T530	Secondary Local Distributor
Shadyside Rd	1.08	T515	Major Collector
Broad Run Rd	2.99	T383	Minor Collector
Glenside Rd	0.61	T426	Minor Collector
Stouff Rd	0.54	T408	Minor Collector
Austin Ct	0.04		Local Access Street
Berue Dr	0.48	T472	Local Access Street

Brownsville Rd	0.30		Local Access Street
Campus Dr	0.05	Private	Local Access Street
Canyon Dr	0.23	T536	Local Access Street
Claridge Ct	0.13		Local Access Street
Colts Neck Rd	0.10		Local Access Street
Desantis Dr	0.25	T471	Local Access Street
Donna Ln	0.00	T517	Local Access Street
E Sedona Dr	0.28	T535	Local Access Street
E Stonington Dr	0.25		Local Access Street
Escourt Dr	0.12	T470	Local Access Street
Evergreen Dr	0.14	Private	Local Access Street
Forsythia Cir	0.12		Local Access Street
Fox Run Dr	0.24	T466	Local Access Street
Goldenridge Dr	0.16		Local Access Street
Goldenrod Dr	0.23		Local Access Street
Heather Dr	0.10	T523	Local Access Street
High Country Rd	0.27		Local Access Street
Highspire Rd	0.21		Local Access Street
Hillcrest Ln	0.28	T465	Local Access Street
Hilltop Rd	0.39	T452	Local Access Street
Honeysuckle Ct	0.18		Local Access Street
Hunt Dr	0.25	T460	Local Access Street
Julie Dr	0.09	T518	Local Access Street
Lone Eagle Rd	1.47	T402	Local Access Street
Margaret Dr	0.13	T441	Local Access Street
Marion Dr	0.12	T442	Local Access Street
Marsha Ln	0.04	T519	Local Access Street
Overlook Dr	0.24	T461	Local Access Street
Polo Run Dr	0.31		Local Access Street
Radburn Ct	0.09		Local Access Street
Red Rock Dr	0.05	T537	Local Access Street
Rene Ln	0.03	T516	Local Access Street
Ridgewood Dr	0.32	Private	Local Access Street
Shannon Ln	0.19	Private	Local Access Street
Stanwood Ct	0.06		Local Access Street
Stock Grange Dr	0.22	T496	Local Access Street
Sunset Dr	0.25	T547	Local Access Street
Teresa Ct	0.20	TBD	Local Access Street
Thistle Ct	0.02		Local Access Street

Treeline Dr	0.41		Local Access Street
W Sedona Dr	0.19	T534	Local Access Street
W Stonington Dr	0.27		Local Access Street
Weible Dr	0.17	T527	Local Access Street
Winfield Dr	0.25	T528	Local Access Street
Youngs Rd	0.10		Local Access Street
Unnamed Rd	0.10		
Total Length	25.62		

Table 4. Township Roads in the Southern TSA

Road Name	Length (mi.)	Route Number	Functional Classification
Broad Run Rd	2.83	T383	Primary Local Distributor
Creagh Knoll Ln	0.00	T492	Primary Local Distributor
Lieds Rd	0.42	T376	Primary Local Distributor
N Wawaset Rd	1.08	T434	Primary Local Distributor
Cann Rd	0.43	T432	Secondary Local Distributor
Clayton Rd	1.10	T374	Secondary Local Distributor
Edgemont Dr	0.25	T447	Secondary Local Distributor
Jonathan Rd	0.16	Private	Secondary Local Distributor
Linda Dr	0.46	T449	Secondary Local Distributor
Lucky Hill Rd	0.29	T377	Secondary Local Distributor
Montvale Cir	0.93	T448	Secondary Local Distributor
Old Shadyside Rd	0.34	T551	Secondary Local Distributor
Ryan Blvd	0.86	Private	Secondary Local Distributor
Saint Andrews Dr	0.40	TBD	Secondary Local Distributor
Tattersall Wy	0.59	TBD	Secondary Local Distributor
Tuckaway Tr	0.27	TBD	Secondary Local Distributor
Shadyside Rd	2.59	T515	Minor Arterial
Glenside Rd	0.18	T426	Minor Collector
Hall Rd	1.29	T387	Minor Collector
Telegraph Rd	3.61		Minor Collector
Appleville Rd	0.36	Private	Local Access Street
Aurora Dr	0.05	T542	Local Access Street
Autumn View Dr	0.05	T524	Local Access Street
Baldwin Dr	0.12	Private	Local Access Street
Bent Oak Tr	0.09	T544	Local Access Street
Butternut Cir	0.13	TBD	Local Access Street

Carriage Ln	0.17	T451	Local Access Street
Central Dr	0.70	Private	Local Access Street
Coltsfoot Dr	0.13		Local Access Street
Conley Dr	0.15	Private	Local Access Street
Courtland Pl	0.06	Private	Local Access Street
Crab Apple Ln	0.02	Private	Local Access Street
Crawford Ln	0.25	T388	Local Access Street
Delicious Dr	0.08	Private	Local Access Street
Dogwood Hill Rd	0.42	T438	Local Access Street
Ferndcliffe Ln	0.06	Private	Local Access Street
Great Rd	0.51	T431	Local Access Street
Groundhog College Rd	0.51	T428	Local Access Street
Hall Ln	0.41	Private	Local Access Street
Hecker Dr	0.16	Private	Local Access Street
Hidden View Dr	0.28	T455	Local Access Street
Highgrove Dr	0.39	TBD	Local Access Street
Jolene Dr	0.21	T440	Local Access Street
Kay Cir	0.07	T439	Local Access Street
Kelly Ann Dr	0.21	T457	Local Access Street
Locust Cir	0.05	Private	Local Access Street
Machinery Rd	0.23	Private	Local Access Street
Manorwood Dr	0.35	T454	Local Access Street
Martlet Rise Ln	0.19	Private	Local Access Street
McIntosh Ln	0.18	Private	Local Access Street
Melba Ln	0.05	Private	Local Access Street
Mutsu Ln	0.11	Private	Local Access Street
Oak Hollow Dr	0.25	TBD	Local Access Street
Pine Dr	0.03	Private	Local Access Street
Rome Rd	0.27	Private	Local Access Street
Royal Berkshire Cir	0.28	TBD	Local Access Street
Sawmill Rd	0.02	Private	Local Access Street
Sawtimber Tr	0.15	Private	Local Access Street
Scattergood Ln	0.25	Private	Local Access Street
Shadebrush Ridge	0.42	TBD	Local Access Street
Shady Glen Rd	0.05	Private	Local Access Street
Shagbark Dr	0.00	TBD	Local Access Street
Sherwood Dr	0.48	T450	Local Access Street
Silverbark Ln	0.28	Private	Local Access Street
Spring Oak Dr	0.26	T525	Local Access Street

Spruce Dr	0.33	T459	Local Access Street
Stayman St	0.23	Private	Local Access Street
Sundance Dr	0.12	T458	Local Access Street
Sunhigh Dr	0.14	Private	Local Access Street
Suzanne Dr	0.37	T456	Local Access Street
Sylvan Dr	0.23	T445	Local Access Street
Timberland Dr	0.14	T543	Local Access Street
Towerview Dr	0.47	Private	Local Access Street
Waltz Rd	0.75	T384	Local Access Street
Warpath Rd	0.25	T373	Local Access Street
Whiffletree Ln	0.00	TBD	Local Access Street
Winesap Wy	0.14	Private	Local Access Street
Woodward Dr	0.10	T435	Local Access Street
Yankee Dr	0.44	T462	Local Access Street
N Marshallton Al	0.247	N/A	Alley
S Marshallton Al	0.097	N/A	Alley
Total Length	27.29		

Roads have a hierarchy based on their capacity, mobility, and access. This hierarchy divides roads into functional classifications. Within the study areas, there are roads designated as *major arterials*, *minor arterials*, *major collectors*, *minor collectors*, *primary local distributors*, *secondary local distributors*, and *local access streets*.²

Major arterials move large volumes of traffic at higher speeds. Access points to these roadways are limited. On-street parking is prohibited and the shoulders and lanes are wide. They serve traffic on an inter-regional basis and have mostly through trips.

Minor arterials carry relatively large traffic volumes at moderate speeds. These roads often connect residential areas with employment and commercial centers or other destinations that support regional activities. Access controls are usually included, although access to adjacent land uses is provided. These roads frequently span long distances, but primarily support short distance trips.

Minor collectors gather traffic from local roads and direct it to the major collectors. Volumes and speeds are relatively low on these roads since access is the predominant function. Minor collectors provide access to local facilities and provide connections to and between residential neighborhoods.

² All definitions are from the 2009 West Bradford Township Comprehensive Plan.

Major collectors carry relatively large traffic volumes at moderate speeds. These roads often connect residential areas with employment and commercial centers or other destinations that support regional activities. Access controls are usually included although access to adjacent land uses is provided. These roads frequently span long distances, but primarily support short distance trips.

Primary local distributors are the highest-order local roads and move traffic from lower-order local roads to collectors. They generally have no parking and their points of access are more limited.

Secondary local distributors are the middle-order local roads. They move traffic from local access streets to higher-order roads. They may allow parking, may have one-way restrictions, and have more access points.

Local access streets serve no through function, carry low traffic volumes, and serve a limited number of dwelling units. The majority of roads in the study area are local access streets.

It is anticipated that the intersections on Table 5 on the preceding page will be studied in the subsequent *Roadway Sufficiency Analysis*.

Table 5. Study Intersections

Western TSA	Southern TSA
1 Romansville Rd/Stouff's Rd & West Chester Rd	1 Shadyside Rd & Downingtown Pk
2 Romansville Rd & Chestnut Ln	2 Shadyside Rd & Marshallton Thorndale Rd
3 Romansville Rd & Lone Eagle Rd	3 Shadyside Rd & Glenside Rd (northern intersection)
4 Romansville Rd & Strasburg Rd	4 Shadyside Rd & Glenside Rd (southern intersection)
5 Strasburg Rd & Lone Eagle Rd	5 Hall Rd & Downingtown Pk
6 Strasburg Rd & Shadyside Rd	6 Hall Rd & Marshallton Thorndale Rd
7 Strasburg Rd & Stargazer Rd	7 Sugars Bridge Rd & Downingtown Pk
8 Strasburg Rd & Leids Rd	8 Telegraph Rd & Sugars Bridge Rd (eastern intersection)
9 Broad Run Rd & Leids Rd	9 Telegraph Rd & Sugars Bridge Rd (western intersection)
10 Broad Run Rd & Shadyside Rd	10 Telegraph Rd & Marshallton Thorndale Rd
11 Broad Run Rd & Chestnut Ln	11 Telegraph Rd & Broad Run Rd
12 Broad Run Rd & Beacon Hill Rd	12 Strasburg Rd & Sugars Bridge Rd
13 Broad Run Rd & Poorhouse Rd	13 Strasburg Rd & Northbrook Rd
14 West Chester Rd/Broad Run Rd & Embreeville Rd	14 Strasburg Rd & Marshallton Thorndale Rd
15 West Chester Rd & South Bailey Rd	15 Strasburg Rd & Telegraph Rd
16 Chestnut Ln & Oakwood Rd	16 Strasburg Rd & Broad Run Rd (eastern intersection)
17 Chestnut Ln & Lone Eagle Rd	17 Strasburg Rd & Broad Run Rd (western intersection)
18 Marshallton Thorndale Rd & Poorhouse Rd	18 Northbrook Rd & Wawaset Rd

3 Existing Land Use and Zoning

3.1 Description of Existing Development

Historically, West Bradford Township has been a rural community dominated by agriculture and woodlands. Its rolling topography has guided and constrained settlement patterns. Non-agricultural land uses were historically concentrated in the villages of Marshallton and Romansville along Strasburg Rd. This remained essentially the case till the 1960s. Significant development began in that decade and has continued to the present – although the rate of development has slowed considerably, with the '90s and '00s seeing growth of just 4% and 13%, respectively. (Projections for future development will be discussed in Section 4.1) Areas of the township developed at different times over the past half-century as sewer and water lines were built and road access increased.

Today, the eastern portion of the township is substantially built-out or preserved, with significant future development in this area limited. The central portion of the township, thanks to the widespread availability of sewer, has accommodated most of the development for the past few decades. The build-out of approved developments and limited infill development is expected. The northwestern, western, and, to a lesser extent, southern portions of the township are currently, and will continue to be, the main areas of development. These two areas are delineated by the two TSAs (see Map 1).

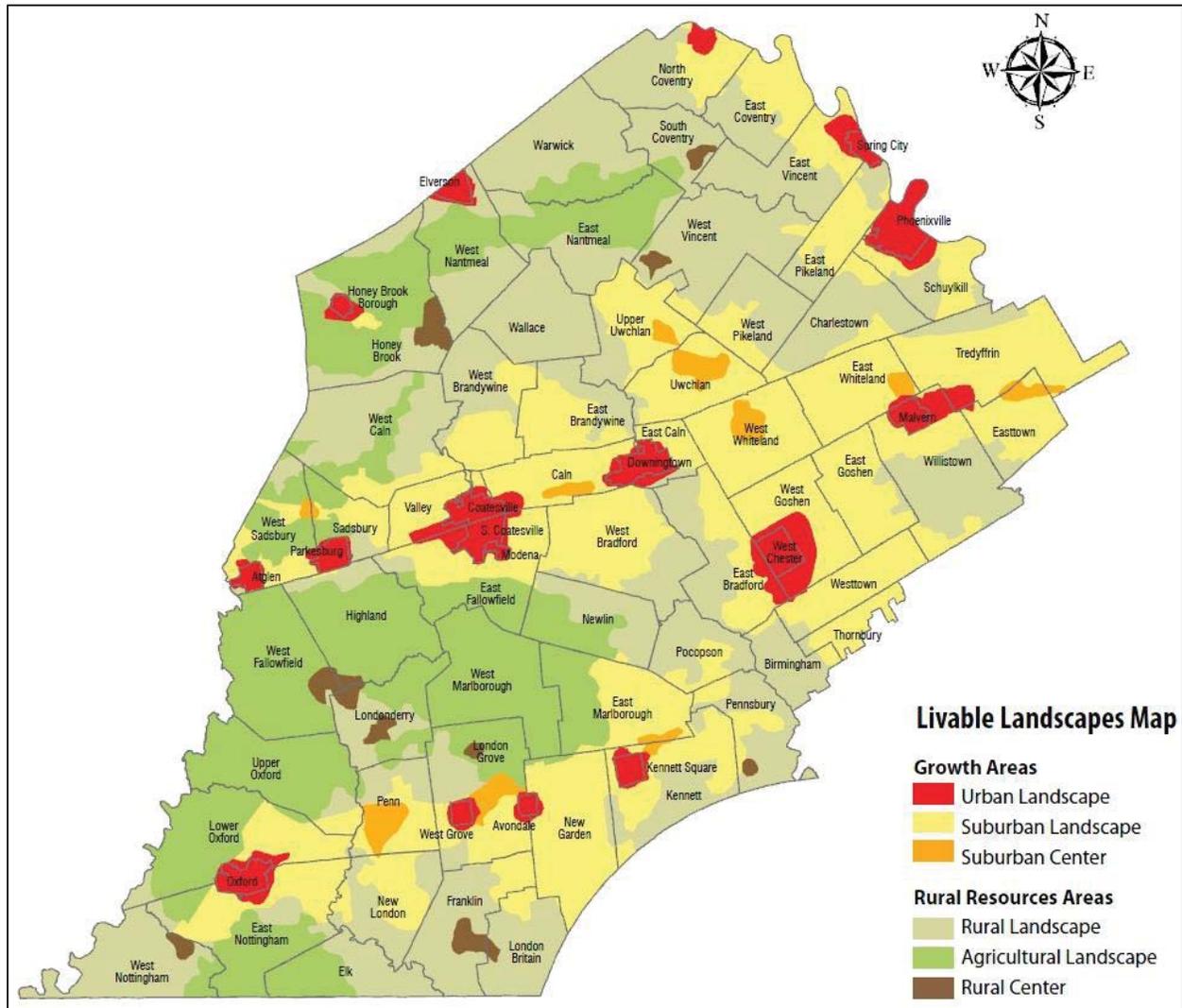
West Bradford Township has been characterized in *Landscapes2*, Chester County's Comprehensive Plan, as both suburban and rural, with large areas falling under both classifications (see Figure 1). Most of its residents commute outside the township for employment (see Section 4.3). Existing land use in the study areas is primarily low-density (<1 dwelling unit per acre) single-family residential and agriculture; there is also a small area of medium-density (4 DUs per acre) residential in the Western TSA and a sizeable tract with abandoned institutional buildings (Embreeville State Hospital) zoned IM (Institutional/Mixed) in the Southern TSA (see Map 3 and Table 10).

The township's comprehensive plan guides future land use. The plan includes goals, objectives, and recommendations that guide and affect development. Specific development regulations are embodied in the township's Zoning and Subdivision and Land Development Ordinances. Future development expected to result from these documents is largely low density suburban in nature. This development will be sensitive to much of the municipality's natural resources and historical character. A new area of medium to high-density residential development is planned for the northwest portion of the township, as an alternative to industrial development historically planned for this same area but only lightly developed as such. Open space preservation, both within the context of development and by its outright acquisition, are priorities in many other parts of the township.

Specifically, within the study area, a large portion of the potentially developable land is assumed to accommodate single-family residential uses at around 0.49 dwelling units to the acre, after development constraints are accounted for and assuming maximum density permitted by zoning. In addition, for the northern part of the Western TSA, specifically at the intersection of Poorhouse and Marshallton-Thorndale Roads, an area zoned Industrial can now also accommodate high-density residential land uses at up to 8 units per gross acre.

Several other areas are planned and zoned for commercial, institutional, or industrial uses. In the southern part of the township, the area around Embreeville includes two developable parcels zoned IM—the former Embreeville State Hospital tract, and an adjacent parcel. Assuming current zoning remains, this area could ultimately see the addition of roughly 1.25 million square feet of additional non-residential building space. In the northern portion of the township, within the Western TSA, there is one parcel that, if developed to the fullest extent permitted by zoning, would yield over 160 thousand square feet of additional non-residential building space. See Section 5.1 for a more complete discussion of West Bradford’s development potential.

Figure 1. Livable Landscapes



Major existing residential developments within the study areas are outlined in Table 6 (Western TSA) and Table 7 (Southern TSA).

Table 6. Major Existing Residential Developments in the Western TSA

Development Name	Streets	Dwelling Units	Type
1 Aspenwood	Boulder, Canyon, Red Roack, Sedona (E&W)	38	SFD
2 Bally Moor	Bally Moor	15	SFD
3 Bradford Meadows	Winfield	22	SFD
4 Bradford Pointe	Elk Run, High Country	45	SFD
5 Bradford Woods	Ericsson (portion)	20	SFD

6	Chestnut Ridge / Chestnut Ridge Estates	Alton, Austin, Brownsville, Claridge, Colts Neck, Grenoble, Goldenridge, Harrison, Highspire, Jamestown, Milta Hill, Polo Run, Powder Mill, Radburn, Stanwood, Sterner Mill, Stock Grange, Stockton, Treeline, Weatherhill	285	SFD
7	Deer Crossing	Fawn Lane	30	SFD
8	Fire Fox	Blueberry, Cranberry, Persimmon, Strawberry	78	SFD
9	Fox Run	Fox Run	17	SFD
10	Hillcrest	Hillcrest	27	SFD
11	Hilltop	Hilltop	32	SFD
12	Roman Chase	Hunt	16	SFD
13	(unknown)	Margaret & Marion	12	SFD
14	Marshall Hunt	Sunset	12	SFD
15	Overlook Acres	Overlook	20	SFD
16	Reserves at Chestnut Ridge	Luna, Stonington (E&W)	37	SFD
17	Romans Village	Berue, DeSantis, Ericsson (portion), Escourt, Weibel	80	SFD
18	Romansville	West Strasburg	56	SFD
19	Wineberry	Arrowhead	12	SFD

Table 7. Major Existing Residential Developments in the Southern TSA

	Development Name	Streets	Dwelling Units	Type
1	Appleville	(private roads)	125	MH
2	Deer Valley	Aurora, Bent Oak, Hall (portion), Sherwood, Timberland	87	SFD
3	Dogwood Hills	Dogwood Hill	24	SFD
4	Marshallton Farms	Jolene, Kay	23	SFD
5	Hidden View Farms	Hidden View, Kelly Ann, Sundance & Suzanne	50	SFD
6	Highgrove	Highgrove	16	SFD
7	Marshallton Manor	Manorwood	48	SFD
8	Crestmont Farms, Section 5	Montvale	42	SFD
9	Oak Hollow	Oak Hollow	15	SFD
10	Spring Oaks Farms	Spring Oak	18	SFD
11	Spruce Hill	Spruce	20	SFD
12	Tattersall	Butternut, Foothill, Linda (portion), Royal Berkshire, Saint Andrews, Sawtimber, Shadebrush, Shagbark, Tattersall, Tuckaway, Whiffletree	173	SFD
13	Rebel Hill	Yankee	24	SFD

Major approved, un-built residential developments are listed in Table 8 (Western TSA) and Table 9 (Southern TSA) and shown on Map 6.

Table 8. Major Approved, Un-built Residential Developments in the Western TSA

	Development Name	Dwelling	
		Units	Type
1	Meadowview	69	SFA
2	Stargazer Village at Romansville	39	SFA
3	Stargazer Village at Romansville	95	SFD

Table 9. Major Approved, Un-built Residential Developments in the Southern TSA

	Development Name	Dwelling	
		Units	Type
1	Freedom Village	12	SFA
2	Freedom Village	1	SFD
3	Tattersall	25	SFD

The existing land use pattern is generally consistent with the Future Land Use Map found in the township’s comprehensive plan.

3.2 Description of Existing Zoning

Map 4 (Existing Zoning) shows the zoning of the parcels within the study area. A majority of the land is zoned R-1—Residential. This zoning district is used for single-family developments at a relatively low density.

While the areas enclosed by the TSAs include many different zoning designations, only three other residential districts have any significant development potential—the R-4—Residential, the TND-2—Traditional Neighborhood Development 2, and the I—Industrial districts.

Table 10 describes the zoning densities of the residential districts noted above, as well as the zoning densities or intensities, in total building square footage, for the non-residential districts that make up the study areas.

Table 10. Zoning Densities and Intensities (Residential and Non-Residential Development)

Zoning District	Portion of Study Area	Permitted Density or Intensity
R-1	76.0%	0.63 units per net acre; mobile homes when expanding an existing mobile home park
R-4	0.7%	5 units per net acre
TND-2	1.3%	5 units per net acre
I	2.3%	8 units per gross acre; or 30%, up to 3 stories
IM	3.6%	30%, up to 3 stories

The remaining 16.1% of the areas unaccounted for in the tables are already developed.

4 Demographics and Growth Trends

4.1 Population

West Bradford’s population increased from 2,996 in 1970 to 12,223 in 2010, an increase of 308%, according to the US Census (see Table 11). That represents an average decadal growth rate of 77%, though growth rates have in fact been largely declining, from a peak of 145% in the period 1970 – 1979, to 13% during the 2000s. Growth is expected to experience a brief spike over the next two decades, before returning to this level during the period 2030 – 2040, as depicted in Figure 2 and Table 12 below (resulting in 6,850 additional persons during the period 2010 – 2040). The projection shown in Figure 2 was arrived at through a comprehensive build-out analysis (see Section 5) that determined that, based on current zoning, West Bradford Township could see the addition of 2,315 additional dwelling units through 2040 (see Table 18 and Table 19). These tables and the figure also depict DVRPC’s population projection for West Bradford Township. DVRPC’s projections are based on the simplistic assumption that West Bradford will maintain a constant 2.5% of the county’s population over the next three decades, rather than a comprehensive analysis of land-use and development potential, as is the build-out. As such, this report assumes the latter has greater validity.

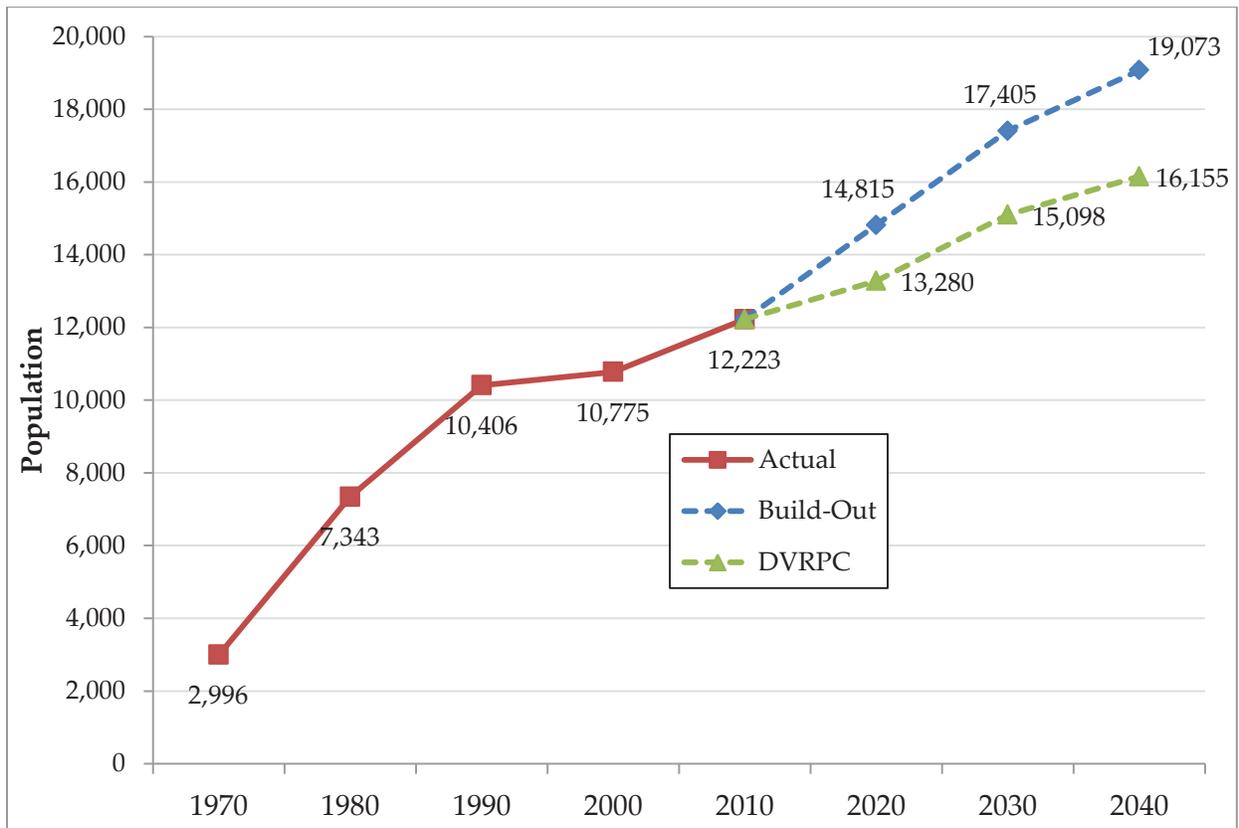
Table 11. Population, Actual and Projected, 1970–2040

Year	Actual &	
	DVRPC	Build-Out
1970	2,996	
1980	7,343	
1990	10,406	
2000	10,775	
2010	12,223	
2020	13,280	14,815
2030	15,098	17,405
2040	16,155	19,073

Table 12. Population Growth Rates, 1970–1979 through 2030–2039

Decade	Actual &	
	DVRPC	Build-Out
1970-1979	145%	
1980-1989	42%	
1990-1999	4%	
2000-2009	13%	
2010-2019	9%	21%
2020-2029	14%	17%
2030-2039	7%	10%

Figure 2. Population & Population Projections, 1970–2040

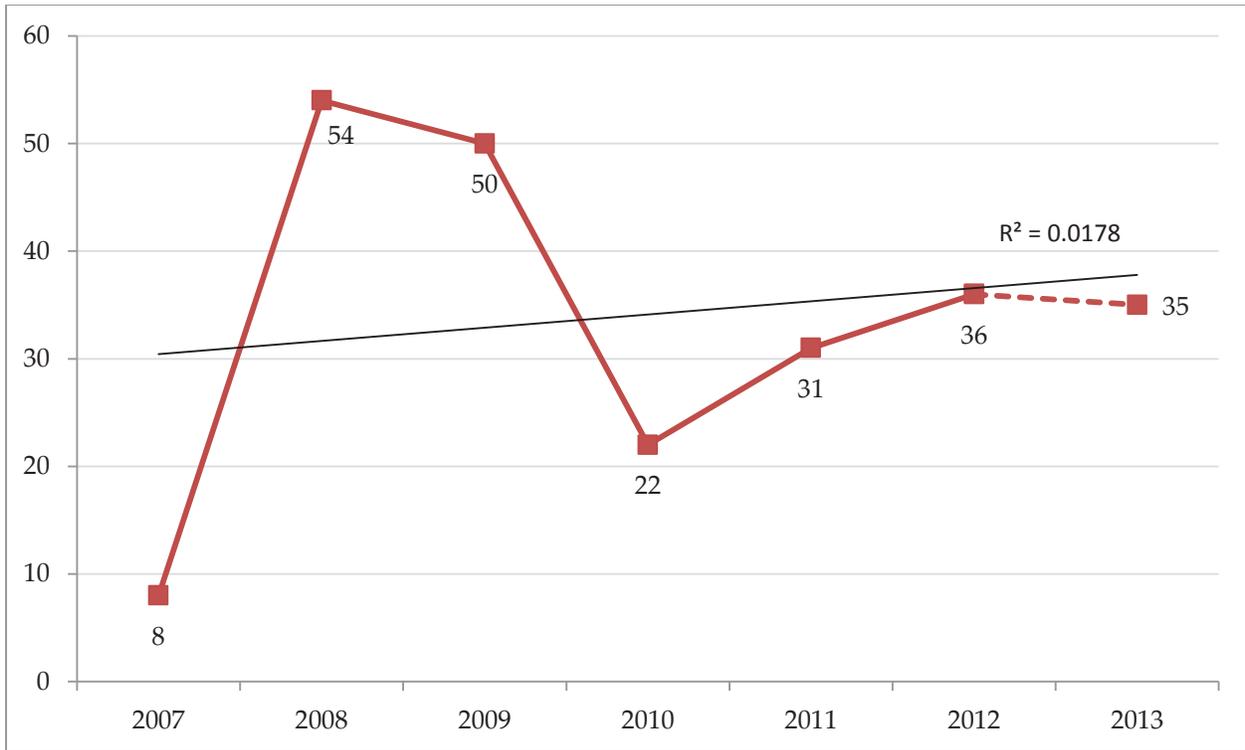


4.2 Building Permits

As required by the MPC, Figure 3 shows the number of building permits issued annually from 2007 through 2012, as well as a linear regression line and its R^2 value. The very low R^2 value indicates that building permits issued are not a function of time, and that there is essentially no predictive value in the chart below. It is much more likely that the pace of new construction in West Bradford is dependent on the state of the regional, metropolitan, or even national economy—analyses of which are outside the scope of this report.

It should, however, be noted that through the end of November, 31 permits have been issued in 2013. If this pace is kept up, 2013 will look much like 2012.

Figure 3. Annual Building Permits for New Residential Construction, 2007–2012



4.3 Employment

In an effort to understand commuting characteristics, which is an important aspect of the traffic impacts of both residential and non-residential development, data on commute mode, travel time to work, place of work, and vehicle availability were collected from the American Community Survey. These data are useful supplements to the decadal Census, as they are available on an ongoing basis. All of the following charts are based on the 2007 – 2011 American Community Survey, and consider only workers 16 years and older.

Figure 4 and Figure 5 confirm that West Bradford is a car-dominant township. Only a tiny portion of the township’s 6,529 workers commuted to work in 2010 by a mode other than driving alone, with carpooling coming in a distant second, and walking and cycling practically non-existent. From Figure 5 we can see that it is much more likely for a worker to have 2 or even 3 vehicles available to him or her than 1; and hardly anyone is without access to a vehicle.

Figure 4. Commute Mode

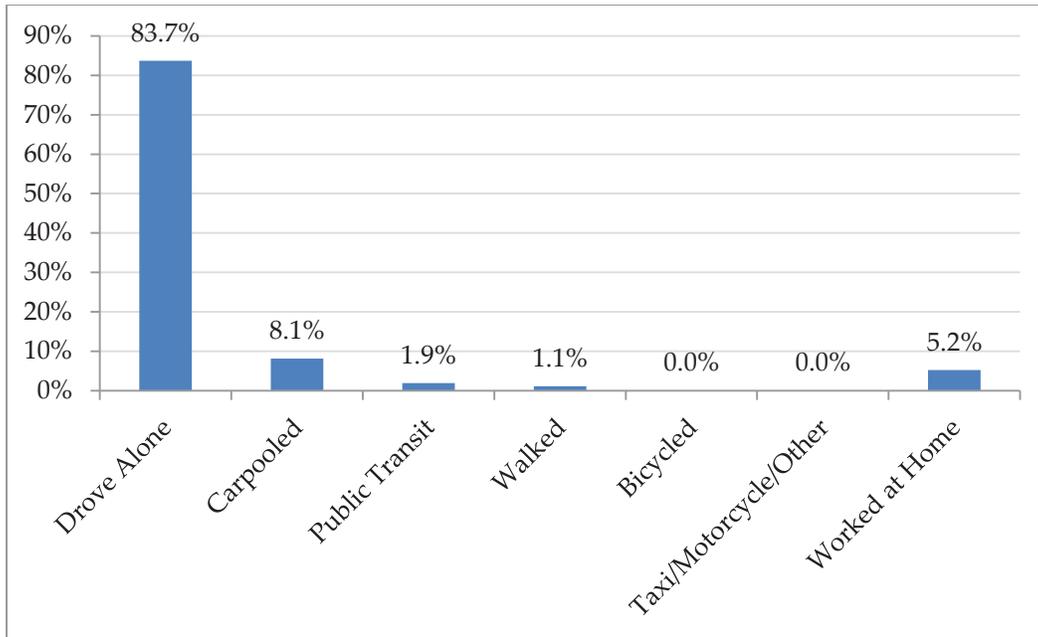


Figure 5. Vehicles Available

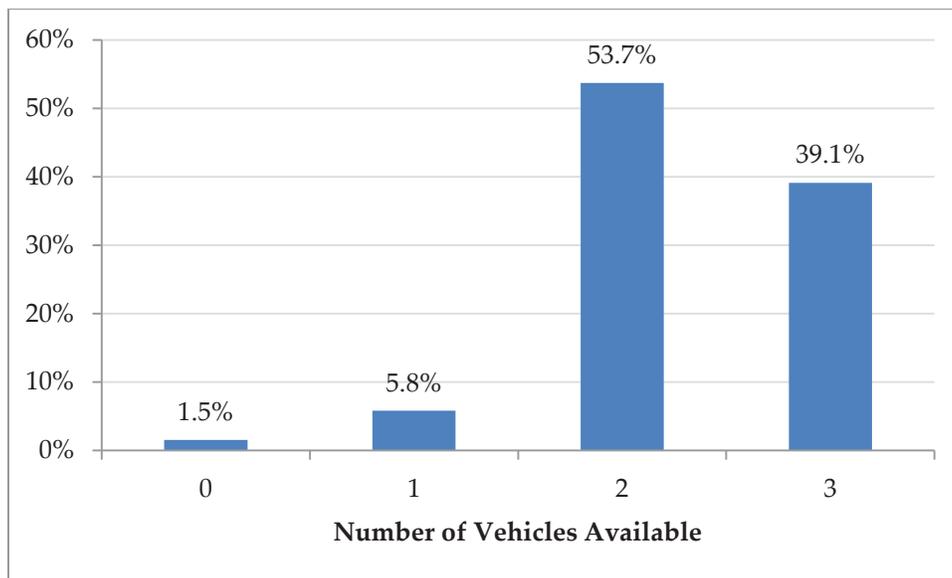
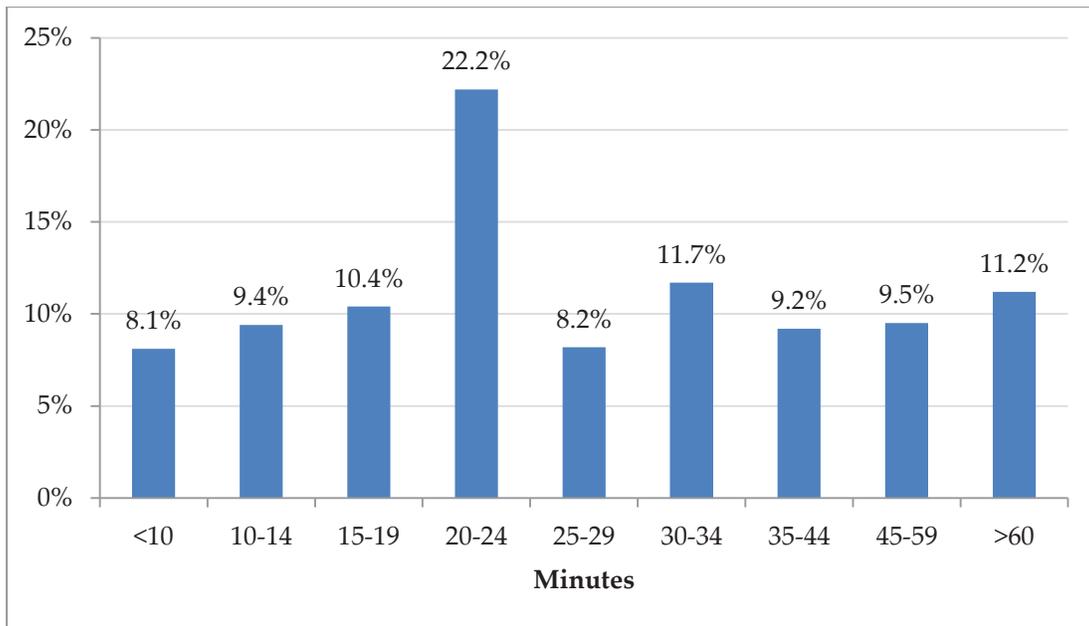


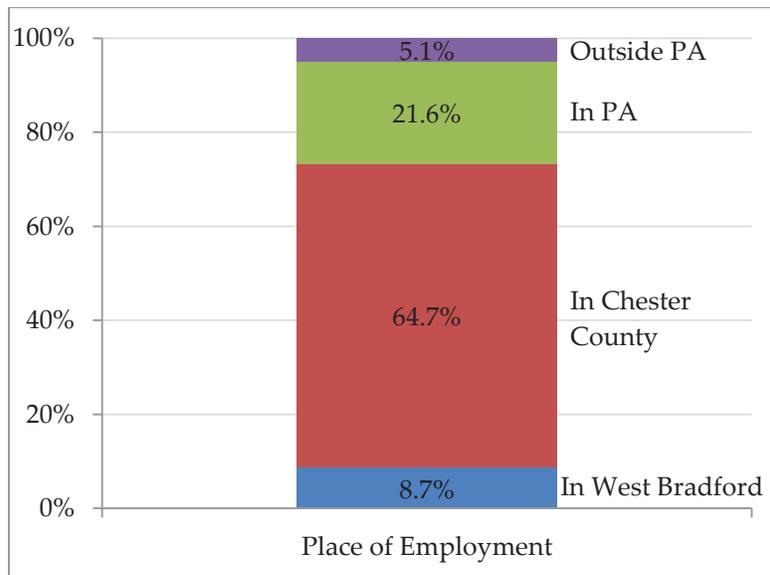
Figure 6, which shows travel time to work, depicts a fairly wide range, with approximately 58% of workers commuting less than 29.6 minutes to work (which is the average travel time), and over 11% traveling more than an hour to their place of employment. Because the average travel time is longer than the median travel time (about 20–24 minutes), we can say that travel time to work is skewed high—a West Bradford worker is likelier to have a long commute than a short one.

Figure 6. Travel Time to Work



The reasons for this lengthy commute, the high vehicle-ownership, and the tendency to drive alone become apparent with Figure 7, Place of Work. Only 8.7% of workers in West Bradford work in the township. The rest work elsewhere in the county (64.7%), outside the county but in the state (21.6%), or even outside the state (5.1%). West Bradford is a bedroom community, and we can therefore expect residential development to result in a relatively high traffic impact.

Figure 7. Place of Work



5 Future Development Potential

5.1 Analysis of Vacant Parcels, Zoning, and Physical Constraints

Previous sections surveyed existing land use patterns, current zoning, and demographic trends. Using that information, this section will develop a build-out scenario, and a timeframe for that build-out.

5.1.1 Methodology

Residential vs. non-residential. The analysis discussed in this section is broken into two parts: residential and non-residential (institutional, commercial, or industrial). Lots were considered residential or non-residential based on the township's zoning map (Map 4).

Vacant and developable. In order to identify vacant and developable parcels, several criteria were set. First, all residentially-zoned parcels whose land use code in the GIS was "vacant" were selected. Next, and based on the information described in Table 10 in Section 3.2, all residential parcels whose existing density was below the maximum possible (i.e., those parcels which could support additional development, per the existing zoning) were added to the selection. In the case of land zoned I District, parcels that were either vacant, in agricultural use, or developed with low investment uses, were assumed to be developed with medium- to high-density residential uses under the I District's conditional use option, and with public water and sewer.

Similar criteria were used to identify buildable non-residential parcels. Instead of looking at density, however, intensity was looked at in terms of allowable impervious coverage (Table 10). For example, if a parcel permitted a maximum impervious coverage of 25% but stood at only 16%, it was assumed that there was potential for an additional 9% of impervious. In order to account for the fact that only a portion of a site's impervious coverage is for building space (the remaining normally being parking lots), the ratio of building-to-parking lot was determined. On average, for all commercial or industrially-zoned land in the township, 70% of the impervious coverage was comprised of parking, and only 30% for buildings. We assumed that this ratio would continue to hold for the next five years' worth of development.

Potentially significant or not. In order to simplify the analysis, all parcels whose area is currently below 5 acres were culled. Development of smaller lots (below 5 acres) was a final factor in the analysis.

Environmental constraints. The next-to-last step in the analysis was to account for all environmental constraints, as identified in the township's Zoning and Subdivision and Land Development Ordinances (Table 13). This resulted in a "net acreage" for each buildable parcel in the township. See also Map 5.

Table 13. Environmental Constraints on Development

Constraint	Level of Constraint
Floodplain	100%
Wetlands and buffers	100%
Water bodies	100%
Slopes > 20%	1 SFD for lots ≥ 3ac
Riparian buffers:	
• Zone 1	100%
• Zone 2	90%

Multipliers. The penultimate step in the analysis was to apply the zoning ordinance’s density or intensity multipliers (see Table 10) to the net acreage identified in the previous step, which yielded a number of potential new dwelling units per lot (for residential) or total additional building square footage (for non-residential). Finally, in order to capture likely development on small lots (below 5 acres), an additional 5% was added to the residential build-out (see Table 18 and Table 19). The results of this analysis are shown on Maps 6 and 7 and in the next Subsection (5.1.2).

5.1.2 Results

Table 14, Table 15, Table 16, and Table 17 show the number of parcels, the gross acreage, and the net acreage (after accounting for environmental constraints) for each developable parcel in each TSA. Parcels are divided into two major categories: under-developed and vacant, per the discussion in subsection 5.1.1 (Methodology) above.

Table 14. Land Available for Residential Development (Western TSA)

Zoning District	Number of Parcels		Gross Acreage		Net Acreage	
	Under-developed	Vacant	Under-developed	Vacant	Under-developed	Vacant
R-1	40	15	597.129	293.89	323.11	257.35
R-4	1	1	5.00	28.50	4.00	24.88
TND-2	0	0	0.00	0.00	0.00	0.00
I	1	0	137.31	0.00	0.00	0.00
Total	42	16	739.43	322.39	327.11	282.23

Table 15. Land Available for Residential Development (Southern TSA)

Zoning District	Number of Parcels		Gross Acreage		Net Acreage	
	Under-developed	Vacant	Under-developed	Vacant	Under-developed	Vacant
R-1	67	30	1,459.56	698.24	1,058.10	500.32
R-4	0	0	0.00	0.00	0.00	0.00
TND-2	2	0	34.00	0.00	30.27	0.00
I	0	0	0.00	0.00	0.00	0.00
Total	69	30	1,493.56	698.24	1,088.37	500.32

Table 16. Land Available for Non-Residential Development (Western TSA)

Zoning District	Number of Parcels	Gross Acreage	Net Acreage
I	1	31.14	30.09
IM	0	0	0
Total	6	31.14	30.09

Table 17. Land Available for Non-Residential Development (Southern TSA)

Zoning District	Number of Parcels	Gross Acreage	Net Acreage
I	0	0	0
IM	2	209.10	0
Total	2	209.10	0.00

Table 18 and Table 19 summarize the residential build-out potential for the two study areas. Based on the methodology discussed above, an ultimate development build-out capacity was developed. The TAC discussed these numbers and revised them to account for known site constraints not included in the GIS analysis, the likely development intentions of individual landowners, parcel location, and market factors.

In addition to determining the likely number of developable lots, Table 18 and Table 19 also summarize the population growth potential, assuming that the average household size of 2.96 from the 2010 Census holds constant. The total population growth within the two TSAs totals 6,850. When added to the township’s 2010 population of 12,223, this leads to a population projection at ultimate build-out of 19,073 (see Section 4.1 , Population).

Table 18. Ultimate Residential Build-Out Capacity (Western TSA)

Zoning District	Lots		Population Increase
	Under-developed	Vacant	
R-1	127	98	666
R-4	20	124	426
TND-2	0	0	0
I	1098	0	3,250
<5ac	62	11	216
Total	1,307	233	4,558
	==> 1,540 units		

Table 19. Ultimate Residential Build-Out Capacity (Southern TSA)

Zoning District	Lots		Population Increase
	Under-developed	Vacant	
R-1	435	191	1,852
R-4	0	0	0
TND-2	113	0	334
I	0	0	0
<5ac	27	9	106
Total	575	200	2,292
	==> 775 units		

Table 20 and Table 21 summarize the ultimate non-residential (institutional, commercial and industrial) build-out potential for the two study areas. In addition to assuming that each buildable parcel would maximize the allowable impervious coverage, this analysis also assumes that these buildings will, on average, see an increase in height from their present average of 1.2 to 2.0 stories for non-residential structures. An estimated 1.25 million square feet of additional non-residential space will be created at ultimate build-out.

Table 20. Ultimate Non-Residential Build-Out Capacity (Western TSA)

Zoning District	Building Area (sf)
I	162,043
IM	0
Total	162,043

Table 21. Ultimate Non-Residential Build-Out Capacity (Southern TSA)

Zoning District	Building Area (sf)
I	0
IM	1,245,579
Total	1,245,579

The final step in the process is to project when build-out might reasonably occur, given demographic trends and the TAC’s insights. Given the recent zoning change permitting high-density multi-family residential development in the I—Industrial District, and the perception by the TAC of a generally favorable development environment, the TAC agreed, for the purposes of this analysis, to assume that 100% of the township’s vacant parcels would develop completely by 2030; while the township’s under-developed parcels would develop 70% of their total remaining capacity by that same year. This leads to an aggregate build-out of 75.6% through 2030. The TAC expects the township would then complete its build out by 2040.

Table 22 shows the expected development to build-out in 10-year increments for the study areas. These periods were chosen to enable ease of comparison with Census data, and to project forward to the ultimate build-out of the township, expected by 2040.

Table 22. Development by Time Period (both TSAs)

Time Period	Residential Units	Non-Residential (sq. ft.)	Population Increase
2010–2019	876	527,858	2,592
2020–2029	875	527,858	2,590
2030–2039	564	351,906	1,668
Total	2,315	1,407,622	6,850

6 Summary and Conclusion

The results of the Land Use Assumptions Report show that the study area will continue to develop in a suburban manner. Assuming Township zoning remains essentially the same as today, the primary land use, with respect to acreage, will be single-family residential at less than 1 unit per acre. Where public utilities are available, several small areas will develop at up to 5 dwelling units per acre, and a large area of roughly 200 acres will develop at up to 8 dwelling units per acre. Industrial, office, or similar uses will develop in and adjacent to the Embreeville complex in the Southern TSA along Strasburg Rd. Natural features and open space will be protected and will form greenways throughout the study area.

Build-out capacity for the study area is estimated to be about 2,315 units and about 1.41 million square feet of industrial/office development. Those 2,315 units represent about 6,850 additional people during the period 2010 – 2040.³

Anticipated build-out in the study area is expected to be complete by 2040, and is expected to be 75.6% complete by 2030, before slowing during the remainder of the study period.

³ The period 2010 – 2040 was chosen for ease of comparison with Census data.

Appendix A Build-Out by Parcel

The tables in this appendix show the build-out on a parcel-by-parcel basis.

Table 23. Residential Build-Out – Vacant Parcels

Tax ID Number	Gross Acreage	Zoning District	Min Lot Acreage	Sewer	DU / Acre	Adjusted Gross Ac.	100% Constraints	90% Constraints	67% Constraints	Net Acreage	Ultimate Build-Out (units)	2030 Build-Out (units)	TSA
50-1-65	77.60	R-1	0.00		0.40	0.00	0.00	0.00	0.31	77.29	30	30	Western TSA
50-5-116	11.70	R-1			0.40					54.75	21	21	Southern TSA
50-5-116.32	65.80	R-1			0.40		1.35	0.84	0.75	8.76	3	3	Southern TSA
50-6-167	61.80	R-1	0.00		0.40	24.72	15.02	1.67	6.46	38.65	15	15	Southern TSA
50-6-41	61.50	R-1	0.00		0.40	24.60	2.46	0.71	16.76	41.57	16	16	Southern TSA
50-6-36	54.70	R-1	0.00		0.40	21.88	11.03	0.02	4.33	39.32	15	15	Southern TSA
50-5-13	52.50	R-1	0.00		0.40	0.00	3.00	0.12	4.26	45.12	18	18	Western TSA
50-6-4	47.10	R-1	0.00		0.40	0.00	3.78	0.82	5.74	36.67	14	14	Southern TSA
50-9-36	44.40	R-1	0.00		0.40	17.76	35.10	0.00	0.02	9.28	3	3	Southern TSA
50-5-186.2	44.30	R-1	0.00		0.40	17.72	5.56	0.12	3.63	34.99	14	14	Southern TSA
50-8-19	42.70	R-1	0.00		0.40	17.08	10.09	1.40	5.57	25.64	10	10	Southern TSA
50-7-1	39.50	R-1	0.00		0.40	15.80	7.60	2.53	3.82	25.55	10	10	Western TSA
50-5-186	30.60	R-1	0.00		0.40	12.24	0.63	0.00	3.06	26.91	10	10	Southern TSA
50-4-68.9	28.50	R-4	0.00		0.40	28.50	2.54	0.41	0.67	24.88	124	124	Western TSA
50-5-162	28.30	R-1	0.00		0.40	11.32	0.19	0.32	2.31	25.48	10	10	Southern TSA
50-6-34	17.90	R-1	0.00		0.40	7.16	0.00	0.00	2.03	15.87	6	6	Southern TSA
50-4-17.2	17.90	R-1	0.00		0.40	7.16	0.22	0.29	0.13	17.26	6	6	Western TSA
50-6-81.2	17.00	R-1	0.00		0.40	6.80	0.00	0.00	1.51	15.49	6	6	Southern TSA
50-4-63.2	16.52	R-1	0.00		0.40	6.61	0.00	0.00	0.00	16.52	6	6	Western TSA
50-4-86.4	14.50	R-1	0.00		formula	5.80	0.00	0.00	0.42	14.08	5	5	Western TSA
50-6-32	14.43	R-1	0.00		formula	5.77	0.00	0.00	2.66	11.77	4	4	Southern TSA
50-6-46.1	14.10	R-1	0.00		formula	5.64	6.77	0.14	0.48	6.71	3	3	Southern TSA
50-6-53.3B	14.00	R-1	0.00		formula	5.60	0.00	0.00	0.36	13.64	5	5	Southern TSA
50-6-91.6	13.56	R-1	0.00		formula	5.42	0.00	0.00	1.03	12.53	5	5	Southern TSA
50-6-101.2	13.50	R-1	0.00		formula	5.40	1.14	0.12	0.12	12.12	4	4	Southern TSA
50-6-56.1	10.70	R-1	0.00		formula	4.28	8.62	0.01	0.07	2.00	1	1	Southern TSA
50-4-31	10.43	R-1	0.00		formula	4.17	0.81	0.46	1.51	7.65	3	3	Western TSA
50-6-81	10.30	R-1	0.00		formula	4.12	2.58	0.81	0.82	6.09	2	2	Southern TSA
50-4-17	10.30	R-1	0.00		formula	4.12	0.78	0.36	1.85	7.31	3	3	Western TSA

Tax ID Number	Gross Acreage	Zoning District	Min Lot Acreage	Sewer	DU/Acre	Adjusted Gross Ac.	100% Constraints	90% Constraints	67% Constraints	Net Acreage	Ultimate Build-Out (units)	2030 Build-Out (units)	TSA
50-6-91.3	10.22	R-1	0.00		formula	4.09	0.08	0.30	3.08	6.76	3	3	Southern TSA
50-6-91.5	10.01	R-1	0.00		formula	4.00	0.00	0.00	0.37	9.64	4	4	Southern TSA
50-4-63.1	9.94	R-1	0.00		formula	3.98	0.00	0.00	0.01	9.93	4	4	Western TSA
50-5-136	9.60	R-1	0.00		formula	3.84	0.00	0.00	1.19	8.41	3	3	Western TSA
50-6-31	9.40	R-1	0.00		formula	3.76	0.12	0.00	2.73	6.55	2	2	Southern TSA
50-6-35.2	9.30	R-1	0.00		formula	3.72	0.80	0.21	1.17	7.12	3	3	Southern TSA
50-5-139	9.30	R-1	0.00		formula	3.72	0.00	0.00	3.24	6.06	2	2	Western TSA
50-6-40	9.00	R-1	0.00		formula	3.60	2.74	1.49	2.16	2.61	1	1	Southern TSA
50-6-26.2	8.30	R-1	0.00		formula	3.32	0.00	0.00	0.59	7.71	3	3	Southern TSA
50-4-31.5	7.50	R-1	0.00		formula	3.00	0.00	0.00	0.36	7.14	3	3	Western TSA
50-1-36.1	6.80	R-1	0.00		formula	2.72	0.52	0.48	0.00	5.80	2	2	Western TSA
50-5-194	6.30	R-1	0.00		formula	2.52	0.00	0.00	0.08	6.22	2	2	Southern TSA
50-6-91.9	6.12	R-1	0.00		formula	2.45	0.00	0.00	0.56	5.56	2	2	Southern TSA
50-5-143	6.00	R-1	0.00		formula	2.40	0.00	0.00	0.51	5.49	2	2	Western TSA
50-6-101.3	5.90	R-1	0.00		formula	2.36	0.06	0.14	0.49	5.21	2	2	Southern TSA
50-4-28.1	5.50	R-1	0.00		formula	2.20	0.40	0.29	1.07	3.74	1	1	Western TSA
50-6-83.1	5.30	R-1	0.00		formula	2.12	0.06	0.00	0.54	4.70	2	2	Southern TSA

Table 24. Residential Build-Out—Underdeveloped Parcels

Tax ID Number	Gross Acreage	Zoning District	Min Lot Acreage	Sewer	DU / Acre	Adjusted Gross Ac.	100% Constraints	90% Constraints	67% Constraints	Net Acreage	Ultimate Build-Out (units)	2030 Build-Out (units)	TSA
Curative Amentment	137.31	I	1.60		0.40	N/A	N/A	N/A	N/A	N/A	1098	769	Western TSA
50-8-16	169.00	R-1	1.60		0.40	167.40	23.29	3.02	17.29	123.80	49	34	Southern TSA
50-6-38	145.20	R-1	1.60		0.40	143.60	13.20	1.48	14.53	114.39	45	32	Southern TSA
50-7-2	119.40	R-1	1.60		0.40	N/A	N/A	N/A	N/A	N/A	3	2	Western TSA
50-9-34	111.60	R-1	1.60		0.40	110.00	12.59	0.00	4.87	92.54	37	26	Southern TSA
50-9-30	102.80	R-1	1.60		0.40	101.20	0.96	0.05	2.22	97.97	39	27	Southern TSA
50-5-160	89.73	R-1	1.60		0.40	88.13	7.11	0.32	4.94	75.76	57	40	Southern TSA
50-9-23	62.10	R-1	1.60		0.40	60.50	8.12	4.02	4.29	44.07	17	12	Southern TSA
50-4-68.8	58.30	R-1	1.60		0.40	56.70	4.35	1.06	3.78	47.51	19	13	Western TSA
50-6-39	57.30	R-1	1.60		0.40	55.70	0.00	0.00	1.63	54.07	21	15	Southern TSA
50-6-35.2A	45.80	R-1	1.60		0.40	44.20	0.17	0.08	5.57	38.38	15	11	Southern TSA
50-4-27	38.87	R-1	1.60		0.40	37.27	4.46	1.88	9.88	21.05	8	6	Western TSA
50-5-147	35.50	R-1	1.60		0.40	33.90	0.00	0.00	3.73	30.17	12	8	Western TSA

Tax ID Number	Gross Acreage	Zoning District	Min Lot Acreage	Sewer	DU / Acre	Adjusted Gross Ac.	100% Constraints	90% Constraints	67% Constraints	Net Acreage	Ultimate Build-Out (units)	2030 Build-Out (units)	TSA
50-6-45	28.70	R-1	1.60		0.40	27.10	3.96	1.80	3.44	17.90	7	5	Southern TSA
50-4-67	28.40	R-1	1.60		0.40	26.80	0.00	0.00	2.74	24.06	9	6	Western TSA
50-6-95	26.70	TND-2	0.20	YES	4.00	26.50	1.29	1.48	0.27	23.46	93	65	Southern TSA
50-9-23.3	25.30	R-1	1.60		0.40	23.70	1.73	1.45	1.24	19.28	7	5	Southern TSA
50-8-22.1	24.50	R-1	1.60		0.40	22.90	0.01	0.01	6.32	16.56	6	4	Southern TSA
50-1-6	22.80	R-1	1.60	YES	0.40	21.20	1.11	0.66	1.64	17.79	7	5	Western TSA
50-9-29	22.30	R-1	1.60		0.40	20.70	1.12	0.50	1.80	17.28	6	4	Southern TSA
50-6-23	21.00	R-1	1.60		0.40	19.40	0.00	0.00	2.48	16.92	6	4	Southern TSA
50-8-22	20.70	R-1	1.60		0.40	19.10	2.00	0.73	5.37	11.00	4	3	Southern TSA
50-6-91.1	20.47	R-1	1.60		0.40	18.87	5.30	0.18	0.78	12.61	5	4	Southern TSA
50-5-123	19.60	R-1	1.60		0.40	18.00	5.62	0.00	2.43	9.95	3	2	Western TSA
50-6-52.1	18.70	R-1	1.60		0.40	17.10	6.03	0.02	1.58	9.47	3	2	Southern TSA
50-6-89	18.50	R-1	1.60		0.40	16.90	1.58	0.01	1.72	13.59	5	4	Southern TSA
50-9-23.1	18.40	R-1	1.60		0.40	16.80	3.57	2.80	0.83	9.60	3	2	Southern TSA
50-5-185	18.00	R-1	1.60		0.40	16.40	2.30	0.00	2.42	11.68	4	3	Southern TSA
50-4-29	17.60	R-1	1.60		0.40	16.00	0.00	0.00	1.31	14.69	5	4	Western TSA
50-6-53.2A	17.00	R-1	1.60		0.40	15.40	4.16	0.00	0.21	11.03	4	3	Southern TSA
50-9-41	16.00	R-1	1.60		0.40	14.40	5.42	0.00	3.13	5.85	2	1	Southern TSA
50-9-23.2	15.90	R-1	1.60		0.40	14.30	0.00	0.00	0.09	14.21	5	4	Southern TSA
50-6-80	15.40	R-1	1.60		0.40	13.80	0.05	0.16	2.10	11.49	4	3	Southern TSA
50-6-49.1	15.00	R-1	1.60		0.40	13.40	1.92	0.02	1.02	10.44	4	3	Southern TSA
50-5-149.1	15.00	R-1	1.60		0.40	13.40	1.88	0.30	0.88	10.34	4	3	Western TSA
50-6-64	14.50	R-1	1.60		formula	12.90	0.00	0.00	0.17	12.73	5	4	Southern TSA
50-4-41	14.10	R-1	1.60		formula	12.50	0.00	0.00	1.12	11.38	4	3	Western TSA
50-9-16.2	14.00	R-1	1.60		formula	12.40	6.56	0.02	0.00	5.82	2	1	Southern TSA
50-6-51.1	13.80	R-1	1.60		formula	12.20	0.00	0.00	0.16	12.04	4	3	Southern TSA
50-4-14	12.10	R-1	1.60		formula	10.50	1.31	0.33	0.29	8.57	3	2	Western TSA
50-6-48	12.00	R-1	1.60		formula	10.40	0.01	0.00	2.29	8.10	3	2	Southern TSA
50-1-34	11.80	R-1	1.60		formula	10.20	2.13	0.50	0.65	6.92	3	2	Western TSA
50-5-10	11.80	R-1	1.60		formula	10.20	4.22	0.41	0.40	5.17	2	1	Western TSA
50-9-31.1	11.00	R-1	1.60		formula	9.40	0.05	0.07	3.26	6.02	2	1	Southern TSA
50-4-61	10.79	R-1	1.60		formula	9.19	0.00	0.00	0.01	9.18	3	2	Western TSA
50-5-10.1	10.70	R-1	1.60		formula	9.10	0.53	0.00	0.81	7.76	3	2	Western TSA
50-1-36.2B	10.60	R-1	1.60		formula	9.00	0.65	0.15	0.14	8.06	3	2	Western TSA
50-6-81.1	10.50	R-1	1.60		formula	8.90	0.44	0.34	0.10	8.02	3	2	Southern TSA

Tax ID Number	Gross Acreage	Zoning District	Min Lot Acreage	Sewer	DU / Acre	Adjusted Gross Ac.	100% Constraints	90% Constraints	67% Constraints	Net Acreage	Ultimate Build-Out (units)	2030 Build-Out (units)	TSA
50-6-25.2	10.40	R-1	1.60		formula	8.80	0.48	0.05	2.00	6.27	2	1	Southern TSA
50-6-53.3A	10.20	R-1	1.60		formula	8.60	2.95	0.00	1.08	4.57	2	1	Southern TSA
50-6-90	10.20	R-1	1.60		formula	8.60	0.67	0.00	0.44	7.49	3	2	Southern TSA
50-6-53.3	10.20	R-1	1.60		formula	8.60	3.07	0.00	1.07	4.46	2	1	Southern TSA
50-6-91.4	10.03	R-1	1.60		formula	8.43	0.00	0.00	0.91	7.52	3	2	Southern TSA
50-9-43	10.00	R-1	1.60		formula	8.40	0.39	0.03	0.30	7.68	3	2	Southern TSA
50-6-81.3	10.00	R-1	1.60		formula	8.40	2.64	1.40	2.46	1.90	1	1	Southern TSA
50-6-101.1	10.00	R-1	1.60		formula	8.40	0.77	0.34	1.07	6.22	2	1	Southern TSA
50-6-65	9.90	R-1	1.60		formula	8.30	0.00	0.00	0.42	7.88	3	2	Southern TSA
50-9-17.2	9.70	R-1	1.60		formula	8.10	0.00	0.00	2.04	6.06	2	1	Southern TSA
50-5-193	8.90	R-1	1.60		formula	7.30	1.40	0.23	0.13	5.54	2	1	Southern TSA
50-4-39.1	8.90	R-1	1.60		formula	7.30	0.00	0.00	0.02	7.28	3	2	Western TSA
50-8-8	8.73	R-1	1.60		formula	7.13	0.50	0.78	3.71	2.14	1	1	Western TSA
50-5-159.50	8.50	R-1	1.60		formula	6.90	1.92	0.09	2.14	2.75	1	1	Southern TSA
50-4-26.19	8.40	R-1	1.60		formula	6.80	0.00	0.00	0.17	6.63	3	2	Western TSA
50-9-17.4	8.40	R-1	1.60		formula	6.80	0.00	0.00	0.17	6.63	3	2	Southern TSA
50-6-13	8.30	R-1	1.60		formula	6.70	0.00	0.00	0.68	6.02	2	1	Southern TSA
50-1-51	8.20	R-1	1.60	YES	formula	6.60	0.00	0.00	0.68	5.92	2	1	Western TSA
50-6-45.1	8.20	R-1	1.60		formula	6.60	0.55	0.20	1.90	3.95	2	1	Southern TSA
50-6-7.1B	8.00	R-1	1.60		formula	6.40	0.74	0.23	1.33	4.10	2	1	Southern TSA
50-5-188	8.00	R-1	1.60		formula	6.40	0.00	0.00	0.60	5.80	2	1	Southern TSA
50-5-164.1	8.00	R-1	1.60		formula	6.40	2.45	0.00	2.10	1.85	1	1	Southern TSA
50-5-12	8.00	R-1	1.60	YES	formula	6.40	0.00	0.02	2.35	4.03	2	1	Western TSA
50-6-19	7.90	R-1	1.60		formula	6.30	0.91	0.29	0.86	4.24	2	1	Southern TSA
50-4-87	7.90	R-1	1.60		formula	6.30	3.02	0.67	0.71	1.90	1	1	Western TSA
50-4-5	7.70	R-1	1.60	YES	formula	6.10	0.06	0.00	0.62	5.42	2	1	Western TSA
50-4-66	7.65	R-1	1.60		formula	6.05	0.00	0.00	0.82	5.23	2	1	Western TSA
50-4-93.1	7.60	R-1	1.60		formula	6.00	0.14	0.57	0.88	4.41	2	1	Western TSA
50-8-8.1	7.31	R-1	1.60		formula	5.71	0.25	0.29	1.65	3.52	1	1	Western TSA
50-6P-53	7.30	TND-2	0.20		3.00	7.10	0.08	0.10	0.11	6.81	20	14	Southern TSA
50-9-5	7.30	R-1	1.60		formula	5.70	2.20	1.17	0.50	1.83	1	1	Southern TSA
50-5-155.7	7.10	R-1	1.60		formula	5.50	0.22	0.00	0.40	4.88	2	1	Southern TSA
50-8-12.2	7.10	R-1	1.60	YES	formula	5.50	1.80	0.00	0.12	3.58	1	1	Southern TSA
50-6-7.1E	7.00	R-1	1.60		formula	5.40	0.77	0.01	1.17	3.45	1	1	Southern TSA
50-9-16.1	7.00	R-1	1.60		formula	5.40	3.03	0.07	0.07	2.23	1	1	Southern TSA

Tax ID Number	Gross Acreage	Zoning District	Min Lot Acreage	Sewer	DU / Acre	Adjusted Gross Ac.	100% Constraints	90% Constraints	67% Constraints	Net Acreage	Ultimate Build-Out (units)	2030 Build-Out (units)	TSA
50-9-1.1	6.90	R-1	1.60		formula	5.30	1.84	0.85	0.90	1.71	1	1	Southern TSA
50-6-91.7	6.77	R-1	1.60		formula	5.17	0.00	0.00	1.63	3.54	1	1	Southern TSA
50-5-137	6.60	R-1	1.60		formula	5.00	0.01	0.00	1.51	3.48	1	1	Western TSA
50-5-149.2	6.51	R-1	1.60		formula	4.91	0.96	0.21	0.59	3.15	1	1	Western TSA
50-1-36.2	6.20	R-1	1.60		formula	4.60	0.00	0.00	0.00	4.60	2	1	Western TSA
50-8-2.4	6.20	R-1	1.60		formula	4.60	0.56	0.53	0.43	3.08	1	1	Western TSA
50-6-76	6.20	R-1	1.60		formula	4.60	0.00	0.00	0.49	4.11	2	1	Southern TSA
50-6-88-U	6.20	R-1	1.60		formula	4.60	0.65	0.00	0.73	3.22	1	1	Southern TSA
50-6-25.8	6.00	R-1	1.60		formula	4.40	0.00	0.00	0.46	3.94	2	1	Southern TSA
50-5-147.2A	6.00	R-1	1.60		formula	4.40	0.00	0.00	0.13	4.27	2	1	Western TSA
50-6-31.1	6.00	R-1	1.60		formula	4.40	0.69	0.28	0.07	3.36	1	1	Southern TSA
50-4-16.1	5.60	R-1	1.60		formula	4.00	1.58	0.41	0.18	1.83	1	1	Western TSA
50-5-134.6	5.60	R-1	1.60		formula	4.00	0.57	0.00	1.62	1.81	1	1	Western TSA
50-1-64.6	5.50	R-1	1.60		formula	3.90	0.00	0.00	0.00	3.90	2	1	Western TSA
50-8-2.1	5.40	R-1	1.60		formula	3.80	0.78	0.31	0.46	2.25	1	1	Western TSA
50-6-59	5.40	R-1	1.60		formula	3.80	0.13	0.00	0.41	3.26	1	1	Southern TSA
50-6-50	5.30	R-1	1.60		formula	3.70	0.00	0.00	0.94	2.76	1	1	Southern TSA
50-4-26	5.30	R-1	1.60		formula	3.70	0.00	0.00	0.06	3.64	1	1	Western TSA
50-4-45	5.30	R-1	1.60		formula	3.70	0.00	0.00	0.30	3.40	1	1	Western TSA
50-5-163	5.26	R-1	1.60		formula	3.66	0.00	0.00	1.62	2.04	1	1	Southern TSA
50-4-26.21	5.10	R-1	1.60		formula	3.50	0.00	0.00	0.23	3.27	1	1	Western TSA
50-4-63	5.06	R-1	1.60		formula	3.46	0.00	0.00	0.13	3.33	1	1	Western TSA
50-5-186.1	5.00	R-1	1.60		formula	3.40	0.00	0.00	0.21	3.19	1	1	Southern TSA
50-5-186.2B	5.00	R-1	1.60		formula	3.40	0.00	0.00	0.81	2.59	1	1	Southern TSA
50-4-68.5	5.00	R-4	1.00		1.00	4.00	0.00	0.00	0.00	4.00	20	14	Western TSA
50-6-33	5.00	R-1	1.60		formula	3.40	0.00	0.00	1.61	1.79	1	1	Southern TSA
50-5-186.2A	5.00	R-1	1.60		formula	3.40	0.00	0.00	0.33	3.07	1	1	Southern TSA
50-4-18	5.00	R-1	1.60		formula	3.40	1.04	0.00	0.34	2.02	1	1	Western TSA

Tax ID Number	Gross Acreage	Zoning District	100% Constraints	90% Constraints	67% Constraints	Net Acreage	Acres of Impervious	IMP % of Gross	IMP Max %	IMP Remain (% of Gross)	Gross Acreage	Impervious Possible (ac.)	Square Feet	Building square footage	TSA
50-8-9.4	20.00	IM	0.18	0.00	0.00	0.00	0.00	0.00	0%	0.00	20.00	0.00	65,340	10,000	Southern TSA
50-8-9	189.10	IM	9.10	4.90	21.20	0.00	0.00	0.00	25%	25.00	189.10	17.00	2,059,299	1,235,579	Southern TSA
50-5-129	31.14	I	0.00	0.00	1.05	30.09	3.06	10.00	30%	20.00	31.14	6.20	270,072	162,043	Western TSA

Downingtown Borough

East Caln Township

Caln Township

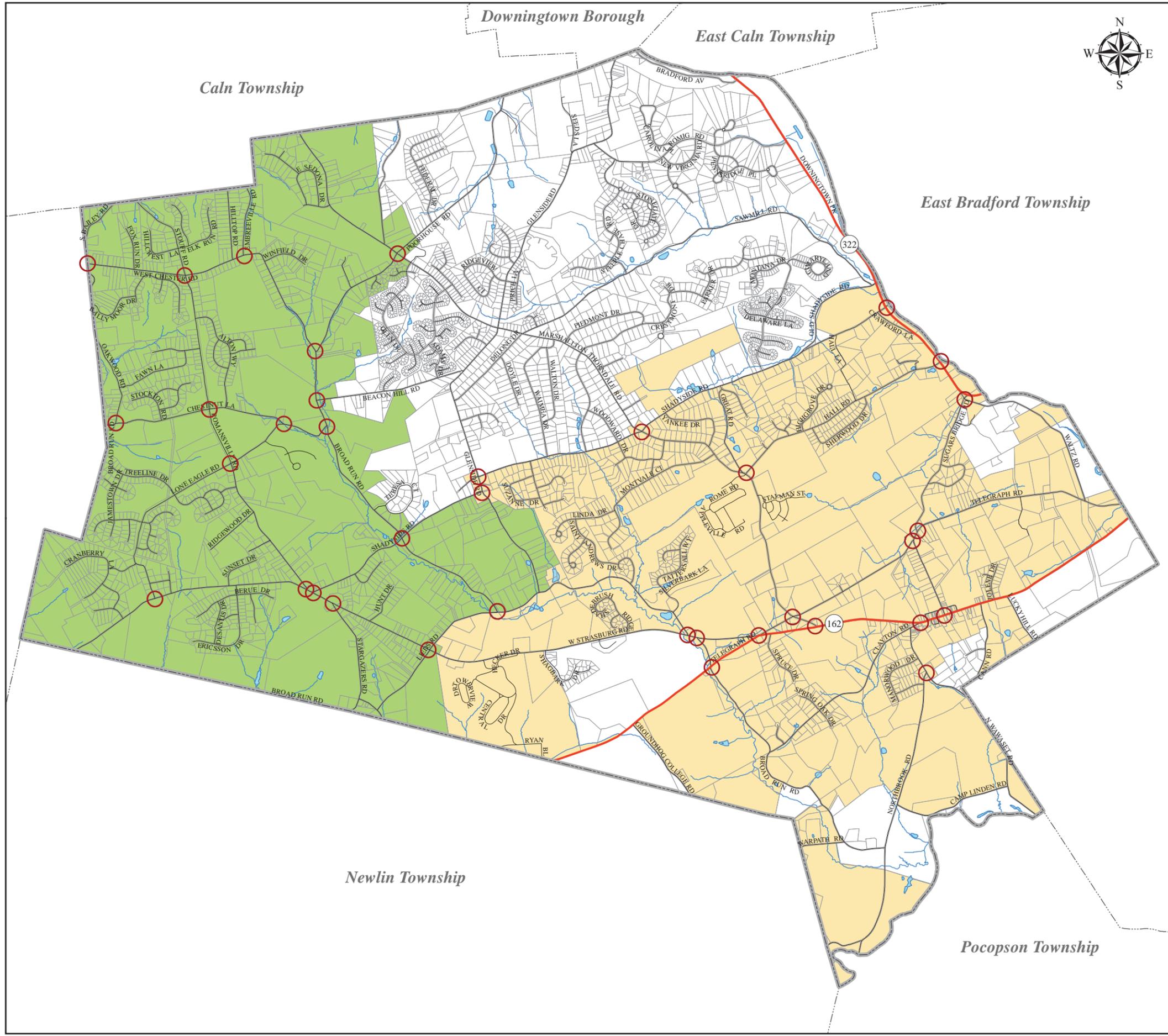


West Bradford Township 2013 Land Use Assumptions Report



Map 1 Transportation Service Areas

East Bradford Township



Legend

- Study intersections
- Major roads
- Roads
- Streams
- Bodies of water
- Adjacent municipal boundaries
- Tax parcels
- Township boundary
- Southern Transportation Service Area (6.79 sq. mi.)
- Western Transportation Service Area (5.68 sq. mi.)



 **Brandywine Conservancy**
Environmental Management Center
P. O. Box 141 Chadds Ford, Pennsylvania 19317 (610) 388-2700

DATA SOURCE: Base data from Chester County GIS Department, 2012.
Roads from West Bradford Township, 1/2009. Transportation Service
Areas digitized by Brandywine Conservancy, 7/2013 (edited 11/2013).
Date: November 21, 2013

Downingtown Borough

East Caln Township

Caln Township

East Bradford Township



West Bradford Township 2013 Land Use Assumptions Report



Map 2 Roadway Functional Classifications

Legend

- Streams
- Bodies of water
- Southern Transportation Service Area
- Western Transportation Service Area
- Tax parcels
- Adjacent municipal boundaries
- Township boundary
- Road Classifications**
- Major arterial
- Minor arterial
- Major collector
- Minor collector
- Primary local distributor
- Secondary local distributor
- Local access street
- Alley



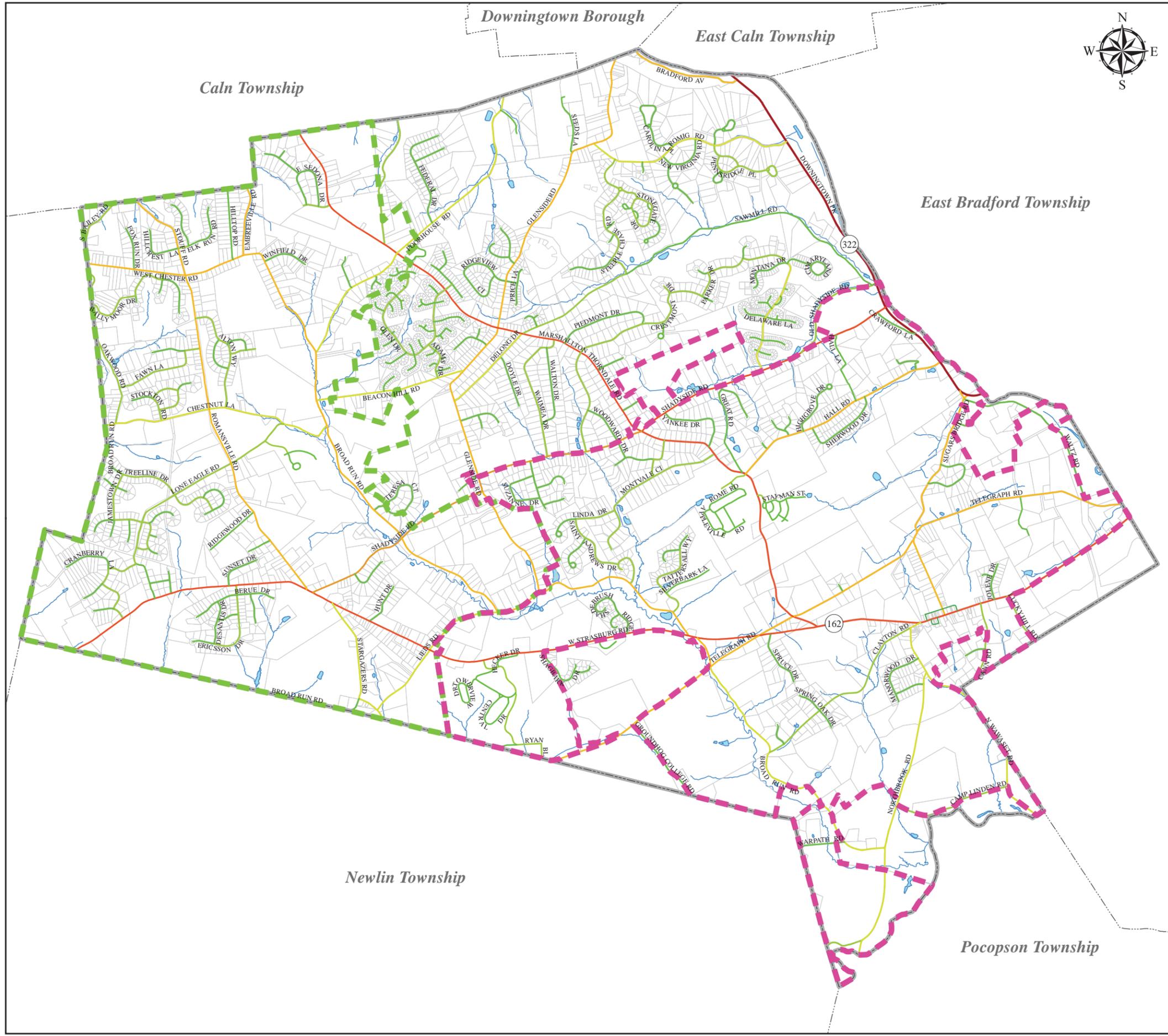
 **Brandywine Conservancy**
Environmental Management Center
 P.O. Box 141 Chadds Ford, Pennsylvania 19317 (610) 388-2700

DATA SOURCE: Base data from Chester County GIS Department, 2009.
 Roads from West Bradford Township, 1/2009. Road classifications
 from West Bradford Township, 11/2008 (edited 12/2008 to reflect
 approved roads).

Date: November 20, 2013

Newlin Township

Pocopson Township



Downingtown Borough

East Caln Township

Caln Township



West Bradford Township 2013 Land Use Assumptions Report



Map 3 Existing Land Use

East Bradford Township

Legend

- Major roads
 - Roads
 - Streams
 - Bodies of water
 - Western Transportation Service Area
 - Southern Transportation Service Area
 - Protected open space
 - Tax parcels
 - Adjacent municipal boundaries
 - Township boundary
- Existing land use**
- Agricultural (19%)
 - Commercial (1.3%)
 - Recreational open space (3.0%)
 - Homeowners Association (5.8%)
 - Institutional (3.4%)
 - Manufactured Housing Community (.8%)
 - Municipal (.8%)
 - Parkland (4.4%)
 - Single family residential (44.0%)
 - Utility (1.2%)
 - Vacant (16.0%)

0 1,500 3,000 6,000 9,000
Feet

Brandywine Conservancy
Environmental Management Center
P.O. Box 141 Chadds Ford, Pennsylvania 19317 (610) 388-2700

DATA SOURCE: Base data from Chester County GIS Department, 2012. Roads from West Bradford Township, 1/2009. Existing land use from West Bradford Township, 12/2008. Transportation Service Areas digitized by Brandywine Conservancy, 7/2013.

Date: November 20, 2013

Newlin Township

Pocopson Township



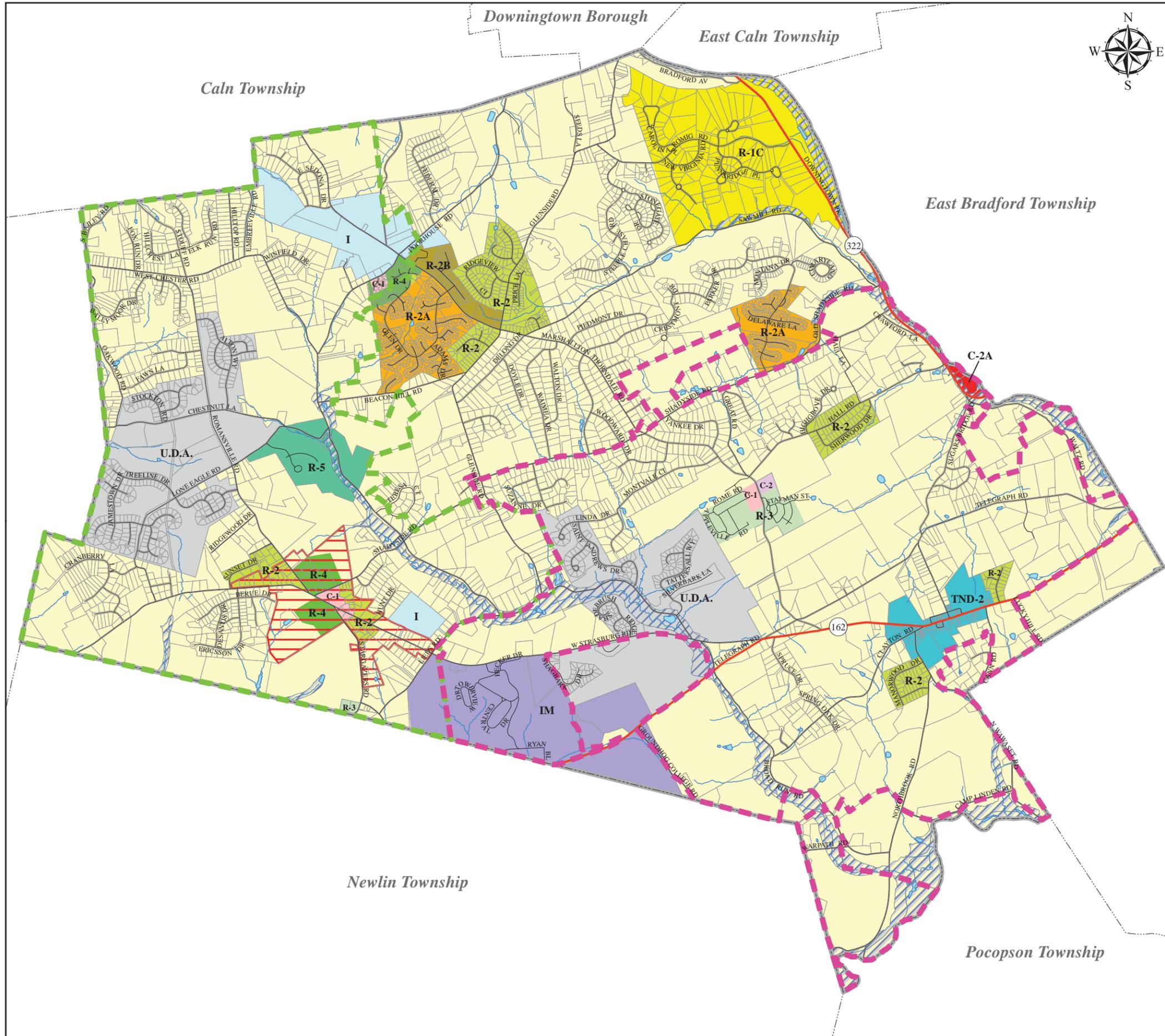
West Bradford Township

2013 Land Use Assumptions Report



Map 4

Existing Zoning



Legend

- Major roads
- Roads
- Streams
- Bodies of water
- Western Transportation Service Area
- Southern Transportation Service Area
- Tax parcels
- Township boundary
- Zoning overlays
 - Floodplain (100 yr.)
 - T.N.D. - Traditional Neighborhood Design (Romansville Village)
- Zoning Districts
 - C-1 - Commercial
 - C-2 - Commercial
 - C-2A - Commercial
 - I - Industrial
 - IM - Institutional/Mixed
 - R-1 - Residential
 - R-1C - Residential
 - R-2 - Residential
 - R-2A - Residential
 - R-2B - Residential
 - R-3 - Residential
 - R-4 - Residential
 - R-5 - Residential
 - TND-2 - Traditional Neighborhood Development-2
 - U.D.A. - Unified Development Area
 - Adjacent municipal boundaries



Brandywine Conservancy
 Environmental Management Center
 P.O. Box 141 Chadds Ford, Pennsylvania 19317 (610) 388-2700

DATA SOURCE: Base data from Chester County GIS Department, 2012.
 Roads from West Bradford Township, 1/2009. Zoning from Chester County GIS Department and adopted on 8/9/2005.
 Date: November 20, 2013

Downingtown Borough

East Caln Township

Caln Township



West Bradford Township 2013 Land Use Assumptions Report



Map 5 Development Constraints

East Bradford Township



Legend

- Major roads
- Roads
- Bodies of water
- Streams
- Constrained wetlands areas
- Flood hazard district
- Slopes >25%
- Southern Transportation Service Area
- Western Transportation Service Area
- Adjacent municipal boundaries
- Tax parcels
- Township boundary

Riparian forested buffers

- Zone 1: 35' or all areas >=25% slopes adjacent to stream
- Zone 2: 65' from zone 1 not to exceed 100' total



 **Brandywine Conservancy**
 Environmental Management Center
 P.O. Box 141 Chadds Ford, Pennsylvania 19317 (610) 388-2700

DATA SOURCE: Base data from Chester County GIS Department, 2012. Roads from West Bradford Township, 1/2009. Wetlands from NWI, 2009. Hydric soils from NRCS, 2007. Flood hazard district from West Bradford Township, 2007. Woodlands from West Bradford Township Comprehensive Plan, 2005. Slopes generated by Brandywine Conservancy from 5 foot contours from Chester County GIS Department, 2000.

Date: November 20, 2013

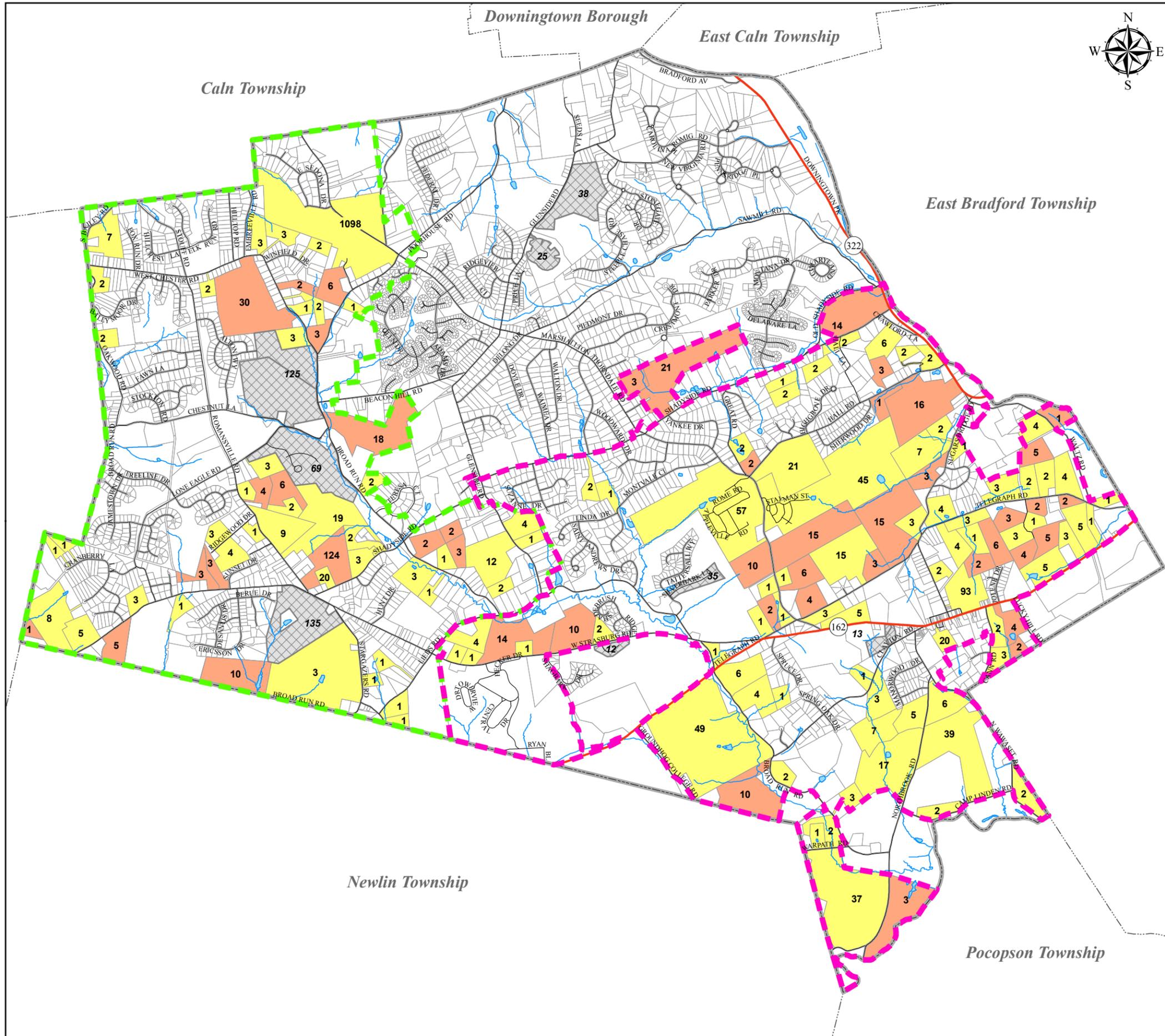
West Bradford Township

2013 Land Use Assumptions Report



Map 6

Vacant and Underdeveloped Residential Lands



Legend

- Major roads
- Roads
- Streams
- Bodies of water
- Pending development
- Vacant lands
- Underdeveloped lands
- Southern Transportation Service Area
- Western Transportation Service Area
- Adjacent municipal boundaries
- Tax parcels
- Township boundary



 **Brandywine Conservancy**
 Environmental Management Center
 P.O. Box 141 Chadds Ford, Pennsylvania 19317 (610) 388-2700

DATA SOURCE: Base data from Chester County GIS Department, 2012.
 Roads from West Bradford Township, 1/2009. Development constraints
 from Brandywine Conservancy, 2013.

Date: November 27, 2013

Downingtown Borough

East Caln Township

Caln Township

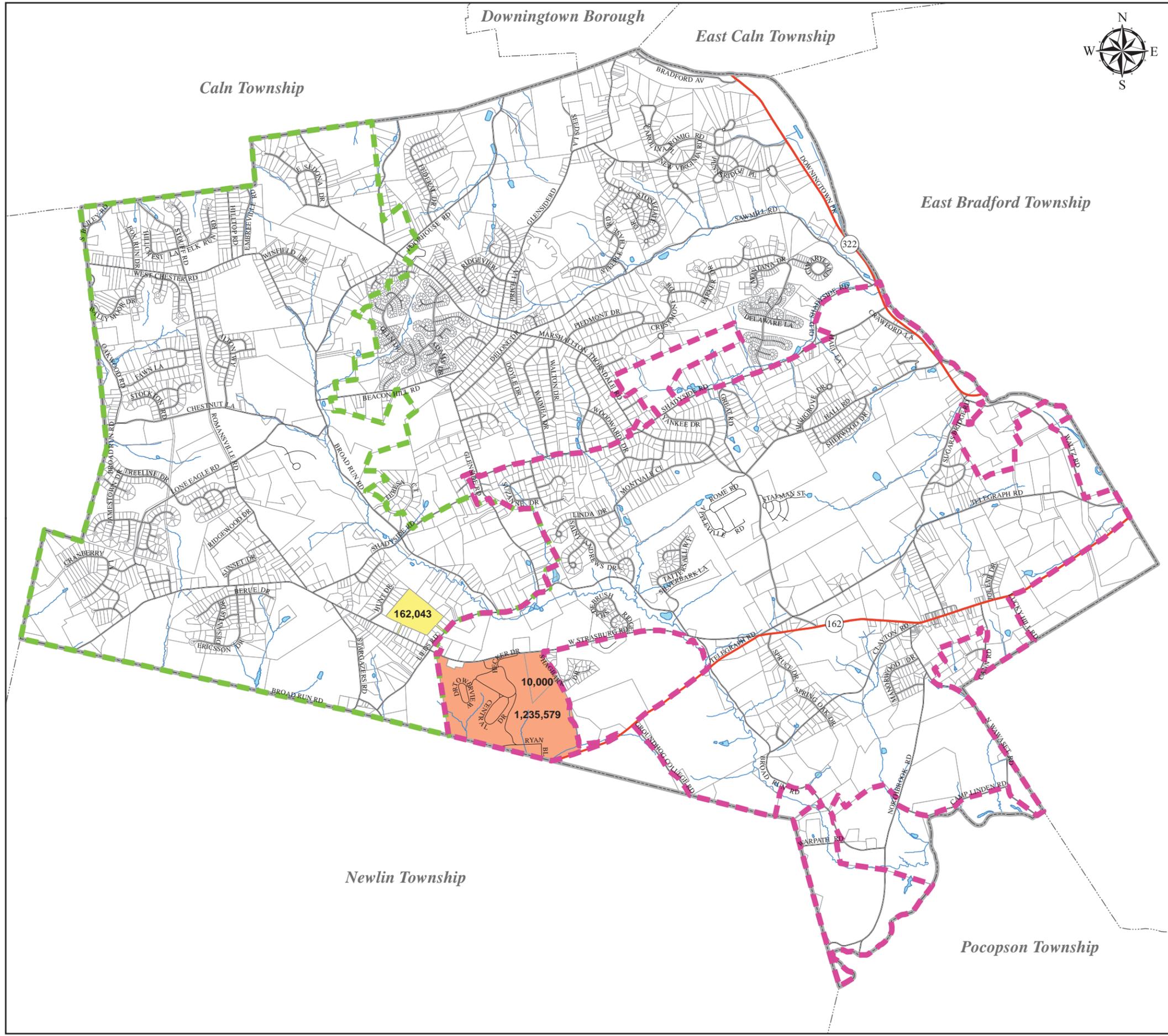
East Bradford Township



West Bradford Township 2013 Land Use Assumptions Report



Map 7 Vacant and Underdeveloped Commercial / Industrial Lands



Legend

- Major roads
- Roads
- Streams
- Bodies of water
- Vacant lands
- Underdeveloped lands
- Southern Transportation Service Area
- Western Transportation Service Area
- Adjacent municipal boundaries
- Tax parcels
- Township boundary



Brandywine Conservancy
Environmental Management Center
P.O. Box 141 Chadds Ford, Pennsylvania 19317 (610) 388-2700

DATA SOURCE: Base data from Chester County GIS Department, 2012.
Roads from West Bradford Township, 1/2009. Development constraints
from Brandywine Conservancy, 2013.

Date: November 15, 2013