

4.1 LAND USE REGULATIONS AND PLANNING

4.1.1 West Hanover Township Comprehensive Plan

West Hanover Township has a 40-year history of planning. The Township's Planning Commission was established by the Board of Supervisors in 1966 with the Township's first Comprehensive Plan completed in 1967. A revised plan was approved in 1984 which recommended subsequent changes to the Township's land use regulations. An update to the 1984 plan was completed in 1993 and was entitled *New Horizons*. The 1993 plan established community goals and policies with respect to development, preservation and conservation.

The West Hanover Township Board of Supervisors commissioned the completion of the *West Hanover Township Comprehensive Plan Update Report*, prepared by Johnson, Mirmiran and Thompson and adopted it in 2005. This plan was completed as an update to the 1993 plan. The purpose of the plan is "to develop a blueprint for future community development to ensure that West Hanover Township remains a desirable place to live". It contains objectives and recommendations for the land use, transportation and community facilities (including sewer service) of the Township.

Objectives and recommendations developed include the following:

- "Protect, conserve and preserve the natural resources of the Township in an effort to create an environmentally healthy and vibrant place for current and future residents."
- "Promote development and construction that retains and enhances existing natural features and systems on building sites."
- "Timing and phasing of development within the Township's designated growth areas should be based on logical expansions of streets, water lines and sewer lines, utilities, etc."

The *Comprehensive Plan Update Report* also contains future land use and transportation plans. The future land use plan represents the Township's desire to allow for commercial and industrial growth, while slowing residential growth and maintaining agricultural and open space uses. The changing land use as identified in the Report is illustrated in Tables 4-1 and 4-2. The future transportation plan identifies numerous planned improvements to the Township's existing transportation network to accommodate future growth including signal and intersection improvements and road widening.

Table 4-1 Land Use Data Comparisons

1991 General Land Use	1991 Estimated Percent of Land Area	2003 General Land Use	2003 Estimated Percent of Land Area
Residential	12.0%	Residential	35.6%
Commercial	1.2%	Commercial	2.6%
Institutional	Unknown	Institutional	2.9%
Industrial	0.3%	Industrial	0.7%
Public / Semi-Public	2.4%	Parks & Public Open Space	6.7%
Agriculture	27.0%	Agriculture	29.0%
Forest	Unknown	Forest	17.6%
Open Space - Vacant	57.1%	Undeveloped Lot	4.9%

Table 4-2 Future Land Use Plan

Land Use Category	Approximate Acreage	Percent of Township Total Land Area
Residential	6,163	43.3%
Very Low Density Residential	3,784	26.6%
Low Density Residential	898	6.3%
Medium Density Residential	1,342	9.4%
High Density Residential	138	1.0%
Village / Crossroads Center	322	2.3%
Commercial	498	3.5%
Institutional	244	1.7%
Employment Center	340	2.4%
Parks & Open Space	914	6.4%
Agriculture	3,085	21.7%
Forest	2,653	18.7%

4.1.2 West Hanover Township Subdivision and Land Development Ordinance

West Hanover Township's original Subdivision and Land Development Plan was adopted in 1959 and amended in 1975 and in the 1980's. The current *West Hanover Township Subdivision and Land Development Ordinance* was adopted on July 7, 1995. Section 173-33 of the Ordinance pertains to sewage facilities. The Ordinance specifies that each new dwelling created within the Township shall be individually self-sufficient for sewage disposal and the sewage disposal system shall be public, community or individually owned, maintained and operated by the owners of each dwelling. The developer shall provide the most advanced and highest type of sanitary sewage disposal facility consistent with existing physical, geographical and geological conditions of the site, and in conformance with all applicable ordinances and/or regulations.

Subdivisions of three or more lots shall connect to the public sanitary sewer system. Construction of the sanitary sewer system shall be at the developer's own expense and shall not commence until application has been made to, and written authorization to proceed with such construction has been obtained from, the Township. Pipe sizes for sanitary sewer mains and sewer laterals and locations for manholes shall meet current West Hanover Township Water and Sewer Authority (WHTWSA) specifications.

Where public sanitary sewers are not feasible, the use of on-lot sewage disposal systems shall be permitted. The use of such on-lot systems is governed by regulations of the PA DEP and enforced by the Township Sewage Enforcement Officer (SEO). Prior to the approval of any plan showing on-lot sewage disposal systems, the developer shall have had soils testing performed on each lot to determine the suitability for such systems, and shall have secured the approval of the Township SEO and/or PA DEP through the use of a Planning Module for Land Development. Each on-lot sewage disposal system must be inspected and approved by the Township SEO and/or PA DEP.

Community sewage systems shall be permitted if it can be shown that such an approach would provide more reliable and effective treatment of waste than individual on-lot systems. Community sewage systems may be installed only in subdivisions of six lots or more. These systems shall be approved by and permission to construct any facility shall be received from PA DEP prior to construction.

Sections 173-41 through 173-48 of the *Subdivision and Land Development Ordinance* pertain to stormwater management. The section provides guidance for the design of stormwater facilities and requires that a drainage/stormwater management plan be submitted to and approved by the Township.

Soil erosion and sedimentation control procedures for land disturbance activities are outlined in Section 173-29 of the Ordinance. In accordance with the Township's Zoning Ordinance, an erosion and sedimentation control plan must be submitted to the Dauphin County Conservation District for its approval in accordance with the Chapter 102 regulations. A copy of the plan must also be provided to the Township. A NPDES general permit is generally required for construction activities disturbing greater than or equal to five acres and less than 25 acres while a NPDES individual permit is generally needed for disturbed areas greater than 25 acres in accordance with the PA Bulletin.

Section 173-24 of the Ordinance pertains to floodplain management, which must comply with the Township's Zoning Ordinance. The section stipulates that all sanitary sewer systems, whether public or private, shall be floodproofed up to 1.5 feet above the regulatory flood elevation. The installation of sewage disposal facilities requiring soil absorption systems shall be prohibited where such systems will not function due to high groundwater, flooding or unsuitable soil characteristics or if these systems are within designated floodplain areas or districts.

Section 173-30 of the Ordinance pertains to wetlands. It stipulates that the applicant must determine if wetlands exist on the property in the proposed subdivision or land development and determine if any wetlands will be impacted off-site from the property. This determination shall be made in accordance with the current requirements of the PA DEP and the United States Army Corps of Engineers and a wetlands study shall be submitted to the Township.

Section 173-40 of the Ordinance pertains to lot sizes and building setback lines, and defers to the *Township Zoning Code*.

4.1.3 West Hanover Township Zoning Ordinance

The West Hanover Township Zoning Ordinance was adopted by the West Hanover Township Board of Supervisors on January 20, 1986 and was amended in its entirety January 3, 1995. Purposes of the Ordinance include "to generally implement the Comprehensive Plan and to promote, protect and facilitate the public health, safety, morals and the general welfare" and "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".

West Hanover Township has been divided into the following zoning districts:

C	Conservation District
FRA	Flexible Rural Agriculture District
RR	Rural Residential District
R-1	Low-Density Residential District
R-2	Medium-Density Residential District
R-3	Suburban Residential District
CH	Commercial Highway District
I	Interchange District
IE	Industrial Enterprise District
BE	Business Enterprise District
NC	Neighboring Commercial District
FO	Floodplain Overlay District
EPO	Environmental Protection Overlay District

A draft copy of West Hanover Township's zoning map is presented as Map 10 in Appendix J.

The Zoning Ordinance establishes minimum lot sizes based on the method of sewage disposal for the Low-Density Residential District and the Hanoverdale Hamlet District. The Ordinance states that the minimum lot area shall be ½ acre where public sewer is available and a minimum of one acre where public sewer is not available for the Low-Density Residential District. The minimum lot area for single-family dwellings shall be 12,000 square feet with public water and sewer and a minimum of one acre without public water and sewer for the Hanoverdale Hamlet District.

4.1.4 Land and Water Resources Planning

None of the planning documents reviewed above contain limitations and/or planning for the use and protection of land and water resources such as public surface water supplies, recreational water use areas, groundwater recharge areas and industrial water use. However, compliance with the requirements of the ordinances will often require compliance with state or federal regulations pertaining to these areas.

The West Hanover Township Subdivision and Land Development Plan does require that a feasibility study by a licensed professional engineer examine the possible use of an on-site water supply system(s) for proposed development and the impact of such system(s) on groundwater supplies. The Board of Supervisors shall approve the use of individual on-lot water supply systems (wells) when the installation of such systems will not endanger or decrease the groundwater supplies to adjacent properties.

4.2 GROWTH AREAS IDENTIFIED BY PREVIOUS PLANNING

The West Hanover Township Comprehensive Plan indicates that development is presently focused in and around the Township's Designated Growth Area. The Designated Growth Area represents an area of the Township where the majority of development is expected and encouraged to occur. Public infrastructure services are provided or are planned to serve the Designated Growth Area. The Designated Growth Area of the Township extends from north of Houck Manor and Linglestown Road to Sterling Road and Green Hill Road in the southern portion of the Township.

Future Growth Areas outside of the Designated Growth Area have been identified where residential, commercial, industrial, and institutional uses and development are permitted or planned at varying densities. Public infrastructure services may or may not be provided, but future development at greater densities is planned to accompany the orderly extension and provision of public infrastructure services.

4.3 EXISTING AND FUTURE GROWTH AREAS

Most of the recent development in West Hanover Township has occurred in the Designated Growth Area as identified in the Township's Comprehensive Plan. Changes in residential uses since 1991 include more development of medium and high-density residences. The developments include areas off Linglestown Road, Sandy Hollow Road, Sterling Road, Clover Lane, and Hershey Road.

Recent commercial development has been concentrated north and south of Interstate 81, Exit 77 along Linglestown Road and Hershey Road. The development has generally consisted of supportive services for truck traffic including service stations and hotels.

Recent institutional development includes construction of the Central Dauphin High School at the intersection of Linglestown Road and Piketown Road. Other institutional development includes a small expansion of the Blue Ridge Sportsman Club.

Growth in the Township has been increasing in recent years, as indicated by the number of residential buildings permitted as provided by the Comprehensive Plan (see Table 4-3). Although there had been a fourteen (14) year downward trend in building permit activity, there has been an upswing in recent years. Future growth within the Township is expected to occur within the Designated Growth Area.

Undeveloped lots are located throughout the Township and are indicative of areas where development may occur within the next 10-15 years. Lots that have water and sewer service are most likely to develop sooner as pressure for development increases. See Map 11 in Appendix J for areas of existing and future development.

Table 4-3 Residential Building Permit Data 1984 – 2002 (By Select Years)

Year	Residential Building Permits
1984	65
1985	49
1990	32
1995	27
2000	75
2002	161

4.4 GROWTH PROJECTIONS

Table 4-4 presents population information by census year as documented in the *West Hanover Township Comprehensive Plan Update Report*. The third row has been added to illustrate the percent change from the previous decade. The average of the percent changes is approximately 37% per ten-year period. Since 1950, West Hanover Township has experienced substantial population increases. Between 1990 and 2000, the population increased by 6%.

Population projections were calculated at the county level for all counties in Pennsylvania. The county level projection results were then allocated to municipalities based on residential building permit activity. Therefore, the greater the percentage of residential permits in an area, the greater the percentage of the population allocation received. The allocations, in five-year increments, were made by the Tri-County Regional Planning Commission. According to the projections, West Hanover Township is anticipated to continue increasing in population with a projected total population of 7,315 by the year 2020. Table 4-4 displays the population projections for the Township.

Table 4-4 Population History and Projections

Actual Population						Projected Population			
1950	1960	1970	1980	1990	2000	2005	2010	2015	2020
1,495	2,770	4,407	6,115	6,125	6,505	6,809	6,975	7,144	7,315
	85%	59%	39%	0%	6%	5%	2%	2%	2%

The *West Hanover Township Comprehensive Plan Update Report* presents population projections based on the eighteen years of building permit data from the Township using a linear trend-line. There are several limitations of using a linear trend as it does not account for in-and-out migration, nor death and birth rates, and it relies solely on new construction activities. The projected population of West Hanover Township based on building permit trends as identified in the *Comprehensive Plan Update Report* are shown in Table 4-5.

Table 4-5 Projected Population Based on Building Permit Trends

Year	West Hanover Township Projected Population
2005	7,468
2010	8,593
2015	9,880
2020	11,328
2025	12,938

9345 TODAY 2013

4.5 WASTEWATER FLOW PROJECTIONS

In order to provide adequate wastewater treatment capacity for future growth in the Township, wastewater flow projections based upon proposed new development and growth within existing service areas of the Township were made for five and ten-year periods. Approved subdivisions within the public sewer service area of West Hanover Township and the remaining number of EDUs to be constructed in those subdivisions are displayed in Table 4-6. These subdivisions are shown in Map 12 in Appendix J. The EDU Balance Remaining represents allotted EDUs for each subdivision minus EDUs currently constructed based on Township building permits and 2004 Chapter 94 data.

Table 4-6 West Hanover Township Approved Subdivisions and Remaining EDUs

Parcel No.	Development Name	Type of Development	EDU Balance Remaining	Projected New EDUs		
				2005 to 2010	2010 to 2015	Total
1	Arondale	Residential	110	55	55	110
2	Bradford Estates	Residential	186	93	93	186
3	Brookview	Residential	121	61	60	121
4	Brynfield	Residential	13	13	0	13
5	Clover Lee	Residential	7	7	0	7
6	Clover Hill Business Park	Non-Residential	91	46	45	91
7	Heather Glen	Residential	51	26	25	51
8	Lexington Woods	Residential	33	17	16	33
9	Manada Court Villas	Residential	30	15	15	30
10	Maple Street	Residential	18	9	9	18
11	Mapleton Grove	Residential	84	42	42	84
12	Mayberry	Residential	77	40	37	77
13	Millstone	Residential	64	32	32	64
14	Pine View	Residential	44	22	22	44
15	Sagewicke	Residential	81	41	40	81
16	Townes at Hershey	Residential	63	32	31	63
17	Winslett	Residential	128	64	64	128
18	Briar Creek	Residential	96	48	48	96
TOWNSHIP TOTAL			1297	663	634	1297

Average annual daily flows for new residential connections, for the purpose of this Act 537 Plan, are projected at 235 gpd. This figure is based on an average household size of 2.6 persons in West Hanover Township as reported in the 2000 U.S. Census and 90 gallons/capita/day. Two wastewater flow projection scenarios were developed for this Act 537 Plan. Both scenarios assume new residential connections as projected in Table 4-6. Scenario A assumes the unsewered areas of Holiday Park, Houck Manor and Short Street will remain unsewered. Scenario B assumes that these areas will receive public sewer service between 2005 and 2015 with treatment provided at the WHTWSA wastewater treatment plant (WWTP). The economic feasibility of extending public sewer service to the Study Areas is discussed in Chapter 5 of this Plan. Table 4-7 lists the estimated number of EDUs and associated wastewater flow potential for these unsewered areas.

In order to obtain consistency between this Act 537 Plan and the Designated Growth Area identified in the Township's Comprehensive Plan, Pheasant Road was removed from consideration for inclusion in a sewer service area serving the Houck Manor Study Area as it is located outside of the Designated Growth Area. A low percentage of confirmed on-lot malfunctions were observed in the Pheasant Road area during the sanitary survey. Wastewater flows from residences on Pheasant Road were not included in the wastewater flow projections prepared for this Act 537 Plan.

Table 4-7 Estimated Wastewater Generation From Existing Development with Unsewered Areas

Study Area	Estimated EDUs	Estimated Wastewater Generation (gpd)
Holiday Park	46	10,810
Houck Manor	58	13,630
Short Street	5	1,175
Total	109	25,615

The wastewater flow projections developed for this Act 537 Plan were based on the following conditions and assumptions:

- 2004 annual average flows are the base flows for the projections;
- New residential connections will generate an annual average flow of 235 gpd;
- New residential connections will occur as projected in Table 4-6; and,
- Wastewater flows from the Study Areas to be conveyed to the WHTWSA WWTP.

The projected annual average wastewater flows through 2015 developed under the above assumptions are shown in Table 4-8. Total flows under Scenario A are projected to equal approximately 0.658 mgd. Scenario B adds 0.026 mgd to these projections for a total year 2015 flow of 0.684 mgd, which is less than the WHTWSA WWTP permitted capacity of 0.78 mgd. Based on the development projections prepared for this study, the total annual average wastewater flow through the West Hanover Township sewer system is expected to increase from approximately 0.342 mgd to 0.658 mgd under Scenario A and to 0.684 mgd under Scenario B. A year 2015 capacity of approximately 0.122 mgd (519 EDUs) will remain at the WHTWSA WWTP under Scenario A with approximately 0.096 mgd (408 EDUs) remaining under Scenario B.

Table 4-8 Projected Annual Average Wastewater Flows From Anticipated New Development

West Hanover Township WWTP	Flow (mgd)
Existing Annual Average Flow, 2004 (mgd)	0.342
Flow from Wells Drive Project (mgd) and Hotel at Interstate 81 Exit 77	0.011
Year 2010	
New Residential EDUs	617
New Non-Residential EDUs	46
Total New EDUs	663
New Flow to WWTP (mgd)	0.156
Total Year 2010 Flow (mgd)	0.509
Year 2015	
New Residential EDUs	589
New Non-Residential EDUs	45
Total New EDUs	634
New Flow to WWTP (mgd)	0.149
Total Year 2015 Flow (mgd)	0.658

4.6 SUMMARY OF WASTEWATER PLANNING NEEDS

The WHTWSA wastewater treatment facility currently has sufficient hydraulic capacity to accommodate the build-out of the subdivisions shown in Table 4-6 and the extension of public sewer to the Study Areas. The Authority's existing pump stations and sanitary sewer facilities possess sufficient capacity to handle the increased wastewater flows with the exception of Pump Station #6 as peak flows to this station may exceed the station's rated capacity at year 2015 projected flows. A sewer system capacity study of WHTWSA's collection and conveyance facilities is included in Appendix K. The Township's soils are generally unsuitable for conventional inground systems; however the condition of most of the existing systems appears to be acceptable. As a result, there are few wastewater-planning needs in West Hanover Township.

1. Solutions to alleviate environmental and health impacts resulting from existing malfunctions of on-lot systems in the Study Areas should be investigated. As mentioned in Chapter 3, a low percentage of malfunctions was observed in the Township. However, solutions to provide public sewage to the Study Areas should be considered for implementation if economically feasible.
2. The existing WHTWSA wastewater treatment facility has ample hydraulic capacity to accommodate the 5- and 10-year growth projections based on development shown in Table 4-6 and existing flows. The Authority's 2004 Chapter 94 Report states that an apparent organic overload is anticipated to occur in 2009.
3. Sewage needs for future developments not listed in Table 4-6 are unknown at this time. If development occurs in the Township, sewage planning should be undertaken in a manner that will provide adequate service to the developments. In order to properly evaluate consistency with Township Planning Documents and capacity within the WHTWSA system, planning module exemptions will not be granted for proposed developments located outside the Designated Growth Area identified in the Township Comprehensive Plan which propose connection to the WHTWSA

sewer system. Instead, Plan Revisions for such developments must be submitted to the Township for review. Developer construction and dedication to the Authority can greatly affect the feasibility of sewer extensions.

4. Wastewater flows from existing and proposed subdivisions in the Township should continue to be conveyed to the WHTWSA wastewater treatment facility with the exception of the existing Westford Crossing and Country Manor Farms areas.
5. The Township should continue to implement the On-lot Management Ordinance in areas of the Township served by OLDS.

4.6.1 Extension of Public Sewers to New Development Areas

In conjunction with the Township's Subdivision and Land Development Ordinance, new developments must plan for sewage facilities by including either on-lot or public sewage facilities. Where public sewers are not reasonably accessible, on-lot systems in accordance with Pennsylvania's Sewage Facilities Act may be installed in areas with suitable soils. Developers must follow the appropriate DEP planning module procedures. See Section 4.1.2.

4.6.2 Extension of Public Sewers to Existing Development Areas

Sanitary sewer surveys conducted as part of this Act 537 Plan update have revealed a confirmed malfunction rate in the Township of 10%. The Holiday Park and Short Street Areas had the highest concentrations of these malfunctions. Well water fecal contamination rates were highest in the Ritzie Village Area with fecal coliforms present in 29% of wells testing positive for total coliform.

Malfunctions in the Study Areas are compounded by the small lot sizes and soils suitability. These conditions limit the options for residents to repair or replace malfunctioning systems. The findings of the sanitary survey and the well water sampling did not indicate an immediate need for improved sewage facilities in the Study Areas, however alternatives to provide improved sewage facilities in these areas should be investigated as funding becomes available. Alternatives for improved sewage facilities within West Hanover Township are presented in Chapter 5.

4.6.3 Pennsylvania's Chesapeake Bay Tributary Strategy

Pennsylvania's Chesapeake Bay Tributary Strategy provides a strategy for Pennsylvania to meet its nutrient reduction goals for the Chesapeake Bay by reducing nutrient and sediment loads to Pennsylvania streams and the Chesapeake Bay from a variety of sources such as agriculture, urban stormwater, septic systems, and wastewater treatment facilities.

As part of the Strategy, cap loads on nitrogen and phosphorus will be placed in NPDES permits for wastewater treatment facilities that are considered significant point sources. Significant point sources are those sources whose discharge exceeds 0.400 mgd. Under the Strategy, existing significant wastewater treatment facilities are allowed three (3) years to comply with the cap loads. Possible alternatives available for significant wastewater treatment facilities to meet the cap loads include the implementation of nutrient reduction technologies, water reuse, or nutrient credit trading.

The WHTWSA wastewater treatment facility is a sequencing batch reactor (SBR) process with chemical phosphorus removal. The SBR is designed and currently capable of achieving nitrogen removals down to 6 – 8 mg/L and total phosphorus removal down to 0.8 – 1.0 mg/L. At these reductions, the WWTP will comply with the proposed Chesapeake Bay Tributary Strategy annual loading limits at least through year 2010. Also, the SBR control system can be reprogrammed to introduce a secondary anoxic period which would provide for total nitrogen reductions to less than 6 mg/L.

As previously discussed in Section 4.5, the projected flows to the WWTP are less than the 0.780 mgd hydraulic capacity of the WWTP. Therefore, a special study for upgrading the WWTP to meet the Chesapeake Bay Tributary Strategy is not necessary.