

CHAPTER 12

EXISTING LAND USE

INTRODUCTION

Existing land use patterns have a significant impact on the future land use plan, but also affect circulation within the region and the demand for community facilities and services.

The base Existing Land Use Map for the area was supplied by the Berks County Planning Commission. The existing land use mapping for the Borough and the Townships was updated by the consultant through windshield survey performed in 2001.

The categories shown on the Existing Land Use Map include Residential Single-Family, Residential 2 to 4 Family, Residential Multi-Family, Mobile Home, Residential/Commercial Mixed Use, Commercial, Industrial, Institutional, Public, Farm, and Open.

The Existing Land Use Map can be used in conjunction with the Agricultural Security Areas, Conservation Easements, and Clean and Green Lands Map, which indicates farmed land. Wooded areas are delineated on the Natural Resources Map.

Overall Land Use Pattern

Even though the St. Lawrence, Exeter and Amity area has experienced significant population growth and development, much of the area still remains rural, including substantial portions of both Townships. St. Lawrence Borough is primarily developed, mostly for residential purposes, though there are a few commercial, mixed use, public and industrial areas, and a few undeveloped parcels which could be developed in the future.

LAND USE CATEGORIES

Residential Single-Family

Most of the residential parcels within the area are Residential Single-Family. These uses are found throughout the Borough of St. Lawrence. In the Townships, single-family homes are found north and south of Route 422 and in subdivisions along Butter Lane, Dautrich Road, Wegman Road, Oley Turnpike Road, Church Lane, Rugby Road, Walnut Road, Boyertown Pike, Schoffers Road, Fairview Chapel Road, Shelbourne Road, Stonetown Road, Daniel Boone Road, Pineland Road, Painted Sky Road, Lorane Road, Lincoln Road and South Baumstown Road in Exeter Township. In Amity Township,

single-family homes are located in Douglasville and in the subdivisions along Old Swede Road, Monocacy Hill Road, Monocacy Creek Road, Pine Lane, Pine Forge Road, Levensgood Road, Valley Road, Geiger Road, Blacksmith Road, Route 562, Weavertown Road, Limekiln Road, Old Airport Road and Worman Road. There are also scattered farm houses and non-farm dwellings in the Townships.

Residential 2 to 4 Family

Residential 2 to 4 Family is mixed with residential single family uses and are not concentrated in one area. They are found primarily in St. Lawrence Borough. In Exeter Township, these uses are found primarily in the Village of Baumstown. In Amity, these uses are found in Douglasville. In the villages they are primarily located along Route 422.

Residential Multi-Family

Residential Multi-Family is found in the Borough of St. Lawrence in a garden apartment development. Multi-Family developments are found in the Townships along East Neversink Road, Gibraltar Road, Lorane Road and Wingspread Drive in Exeter Township and along Lake Drive and Route 662 in Amity Township. Conversions to apartments have occurred in the Borough and villages in the region, particularly in larger older homes. Mountain Park along Butter Lane is a townhouse development, but is classified as single family homes because of the fee simple units. A senior housing project is being constructed along Route 422 in Douglasville next to St. Gabriel's Church.

Residential Mobile Home

Residential Mobile Home uses are scattered through the Townships. These uses are usually considered single-family homes, but when placed in parks require services associated with higher density development. Mobile home parks are found near Butter Lane and Lincoln Road in Exeter Township and along Route 422 and Limekiln Road in Amity Township.

Commercial

Much of the non-recreational commercial development in the area is located along Route 422, Business Route 422, St. Lawrence Avenue, and Route 662. Commercial uses are also widely scattered in the region. Large commercial parcels include the cemetery off West Neversink Road, landfill near Baumstown, land adjacent to a mobile home park off Limekiln Road, and golf courses and gun clubs identified in Chapter 25.

Industrial

Limited industrial development has occurred within the Borough of St. Lawrence. The primary industry is Fleetwood Industries along St. Lawrence Avenue. In Exeter Township, industrial development has primarily occurred along Painted Sky Road, Lincoln Road and between the Schuylkill River and the railroad. In Amity Township, industrial development has occurred in the industrial park east of the Village of Baumstown, along Route 422, along Old Swede Road north of Douglasville, and along Pine Forge Road.

Farm

The Farm areas include lands that are cultivated, pasture and wooded. Farmed areas are specifically shown on the Agricultural Security Areas, Conservation Easements, and Clean and Green Lands Map in Chapter 14. Wooded areas are shown on the Natural Resources Map in Chapter 15. These areas encompass a large portion of the central portion of the region.

Public

Public uses are found throughout the region. They include public lands, such as the Daniel Boone Homestead and Monocacy Hill. This category also includes municipal buildings and uses, community parks, post offices and fire companies, the St. Lawrence watershed lands and public schools. These uses are scattered throughout the municipalities. Public and Institutional land uses are detailed on the Community Facilities Map in Chapter 25.

Institutional

Religious uses predominate in this category. Religious uses include St Catherine's Roman Catholic Church on Route 562, Schwarzwald Lutheran Church on Oley Turnpike Road, Schwarzwald United Church of Christ on Church Road, Reformation Lutheran Church on Business Route 422, Grace Baptist Church on Route 562, Exeter Friends Meeting House on Meeting House Road, Lorane Chapel on Lorane Road, Love Faith Chapel Christian Assembly on Budd Street, Exeter Bible Church on Philadelphia Avenue, Daniel Boone Bible Baptist Church on Route 422, First Baptist Church on Lincoln Road in Exeter Township. In Amity Township, St. Paul's United Church of Christ on Weaverstown Road, St. Paul's Lutheran Church on Old Swede Road and St. Gabriel's Episcopal Church and Chapel on Route 422 are included. Semi-public recreational uses are also included in this category.

Open

Open parcels are scattered throughout the region. There is no one area with a concentration of open lands. In some cases, these parcels are land included within subdivisions which had not yet been developed.

Trends

Several trends in land use are noticeable. The first is the continued development of residential housing within the Townships in the Region. Development has occurred in new subdivisions in rural areas utilizing on-site water supply and sewage disposal as well as in areas served by public sewer and water facilities near the Region's existing settlements.

Another trend is the continued development of commercial uses along the Route 422 corridor in the Townships. This development adds to the tax base, employment and convenience in the Townships; however, the impact of this commercial development can also be increased congestion in commercial corridors if access is not well managed.

Agriculture continues to remain a land use, particularly in Exeter Township, even with the amount of residential development which has occurred. Effective agricultural zoning in Exeter Township is intended to retain agriculture as a significant land use.

Recreational uses, detailed on the Community Facilities Map, are important in the Region, and will remain so given the continued development. The region contains municipal parks, sportsman clubs, golf courses, and a major recreational facility in the Daniel Boone Homestead.

Acres in Each Existing Land Use Category

The following table presents the acres in each land use category and percentage of total land in the Region in that category.

Existing Land Use Categories	Acres	Percentage
Commercial	2179	8.3
Farm (includes Farmland & Woodland)	11135	42.4
Industrial	668	2.5
Institutional	279	1.1
Mobile Home	227	0.9
Public	2299	8.8
Residential 2 to 4 Family	52	0.2
Residential Multi Family	238	0.9
Residential Single Family	7692	29.3
Residential/Commercial Mixed Use	3	.01
Open	1474	5.6
Total (Not including roads & water)	26246	

Existing Generalized Zoning

The existing generalized zoning map presents a broad-brush picture of existing zoning in the Region, as maintained by the Berks County Planning Commission.

Proposed Development

The Proposed Development Map was prepared in 2001 to get a perspective of future planned development in the region. About 2850 dwelling units were “in the pipeline,” likely resulting in approximately 8600 new residents. While a number of these units have been constructed, a number have not, and new residential developments continue to be proposed in the region. Population growth in the region from 2000 to 2003 was estimated as 3772. Substantial capacity for future residential development is contained in uncompleted and proposed subdivisions.

CHAPTER 13

PUBLIC SANITARY SEWER AND WATER FACILITIES

INTRODUCTION

Public sanitary sewer and water facilities are discussed in a separate chapter from community facilities because of the significant role sanitary sewer and water facilities play in the shaping of development patterns, including location and the density. One of the major efforts of any comprehensive plan is to coordinate land use and utility planning so that future land use patterns reflect the availability of public sewer and water facilities, while assuring that sewer and water planning in the area are not be at odds with the goals for future land use reflected in the Future Land Use Plan. For instance, if areas are proposed for agriculture, it is not desirable to extend the public sewer and water service to those areas.

Public Sanitary Sewer Facilities

A small portion of the Borough of St. Lawrence is served by the Antietam Valley Municipal Authority, with a sewage treatment plant located in the Borough. The Authority also serves Mt. Penn Borough and a small portion of Exeter Township. The majority of Exeter Township is served by the Exeter Township Authority. The Authority's wastewater treatment plant, located in the southern portion of the Township, was expanded in the 1990's to accommodate residential growth and anticipated commercial and industrial customers through the year 2010. Most of the Borough is served by the St. Lawrence Borough Authority collection system and the Exeter treatment plant.

Amity Township is served by the Amity Township Municipal Authority. The system was designed to serve the Douglasville area, the Route 422 corridor and along Route 662. The treatment plant is located at Douglassville.

Amity Township has updated its Act 537 Sewage Facilities Plan to expand the sewer service area throughout the southeastern portion of the Township, along the Route 422 corridor, and in portions of the north central portion of the Township. In addition, sewer lines could be extended to southwest portions of the Township to serve existing units with malfunctioning sewage disposal systems and cluster development in Rural Conservation areas with a low net density (two acres per unit). The Plan called for an expansion of the sewage treatment plant, increasing the treatment capacity by 37% to allow for serving more than 2,600 additional sewer units (EDU's).

Sewer service areas and areas with severe limitations to on-site sewage disposal are shown on the enclosed map.

Soil Suitability for On-Site Sewage Disposal

The availability of public sanitary sewer facilities is important, and the use of such facilities should be encouraged when consistent with the Future Land Use Plan, because of the general unsuitability of soils in the St. Lawrence, Exeter and Amity area for on-site sewage disposal. These soils are considered unsuitable for on-site sewage disposal based on the United States Department of Agriculture Natural Resources Conservation Service rating of limitations for septic tank absorption fields. It should be noted that limestone soils are considered as having a hazard for on-site sewage disposal because of the potential of ground water contamination.

Public Water Supply

The Mt. Penn Borough Municipal Authority serves the Borough of St. Lawrence as well as Mt. Penn Borough, Lower Alsace Township, and a small portion of Exeter Township. Community wells are located between Hill Road and Spook Lane and between Friedensburg Road and Butter Lane in Lower Alsace Township. The Mt. Penn Borough Municipal Authority also maintains water storage facilities. These facilities are located adjacent and in close proximity to the Authority's wells between Hill Road and Spook Lane.

Most of Exeter Township and Amity Township are served by Pennsylvania-American Water Company.

Sewer Capacities

There is capacity available from the Antietam Valley Municipal Authority and the Exeter Township Municipal Authority to serve infill development in the Borough and additional development in Exeter Township. Eventually, Exeter will have to determine the need for additional sewage capacity through updated Act 537 planning. As noted above, Amity Township is expanding its existing sewer treatment plant to serve future development in the Township. Studies have been proposed to identify ultimate capacity at the treatment plant and compare this to ultimate need in the Township.

Water Capacities

Pennsylvania-American intends to satisfy domestic demand from within its service area. The Mt. Penn Borough Municipal Authority has also taken the position it will serve additional areas within its service area requesting service. Pennsylvania American has studied groundwater availability in Amity Township (see Appendix 6), and is

comfortable supplies can be found to serve additional development. The situation is different in Exeter Township, where there are not adequate groundwater supplies and the Company has contracted with the Reading Area Water Authority to supply water from the Authority's Lake Ontelaunee source. There could be increased reliance upon Authority water in the future.

CHAPTER 14

AGRICULTURAL RESOURCES

Introduction

Agricultural resources within the study area of St. Lawrence Borough and Exeter and Amity Townships are shown on the Agricultural Security Areas, Conservation Easements, Clean and Green Lands Map.

Agricultural Resources in The Region

Prime Agricultural Soils

On the Agricultural Security Areas, Conservation Easements, Clean and Green Lands Map, areas containing prime agricultural soils, shown in the dotted pattern, cover most of the Region. Prime Agricultural Soils are soils in Capability Classes 1, 2 or 3 as identified by the United States Department of Agriculture Natural Resources Conservation Service. Prime agricultural land is often easily, developable land, and without protection, prime agricultural soils in the Townships are subject to development.

Agricultural Security Areas

Properties within the Region which are included within the Agricultural Security Areas are shown as yellow hatching on the map. This is the first step to getting lands preserved through the conservation easement program administered by Berks County. Agricultural Security Areas are properties, which owners voluntarily enroll in an agricultural security program created by a municipality. The enrollment in an Agricultural Security Area typically demonstrates a commitment to keeping a property in agricultural use and affords some protection for agricultural properties, but does not prevent development of the Agricultural Security Areas. Property owners may leave the program and develop their land. Some protection is afforded to properties in Agricultural Security Areas. The Agricultural Area Security Act prohibits local government units from enacting nuisance regulations; addresses the use of eminent domain by government units; requires inclusion in an Agricultural Security Area for easement purchase; and provides for all agricultural conservation easement to be perpetual. Hazardous waste sites may not be located in any municipality that has an established Agricultural Security Area.

Conservation Easements

Agricultural Easements are displayed on this map in blue stripes (hatching pattern). These easements are purchased through State and County funding sources. This program

has very specific guidelines, which apply to each parcel under consideration. One stipulation is that the parcel(s) have to be located within an established Agricultural Security Area. Once the County accepts a parcel, and a purchase price of the development rights is agreed upon, the development rights are sold. The land(s) can remain cultivated for profit and can be sold for agricultural purposes, and it is guaranteed that the land will be preserved as farmland. Both Townships have land that cannot be developed because the development rights have been sold through this program.

Clean and Green Lands

Clean and Green Lands are shown in green hatching. The Clean and Green program provides a tax break to farmers who enroll in this program by taxing land at its current use value rather than market value. Once a farmer enrolls, there is a certain amount of acceptable (per program regulations) land development or subdivision activity that can occur on the property. The program does allow minor subdivisions over a period of time, however; if any activity over the program's allowable acreage is disturbed, back taxes have to be paid for all the years enrolled in the program. This may encourage farmers to keep farming on their land(s) by providing a tax incentive to continue to do so, but does not prevent developers to come in and offer to buy up irreplaceable prime farmland for residential, commercial and/or industrial land developments/subdivisions. This is a voluntary program, and 10 acres is the minimum amount of contiguous acres allowed to receive the benefits of this program.

Farmed Areas

The northern and central portions of the region contain areas that are still actively farmed.

Questionnaire Responses

Thirty-four (34) out of 37 responses to the St. Lawrence, Exeter and Amity Region Planning Questionnaire strongly agreed that farmland should stay in agricultural use within the Townships. Two (2) disagreed and one (1) had no opinion. When the questionnaire asked why respondents felt agricultural land should be preserved for farming, ten (10) responded that it provides open space, seven (7) responded that it is part of the region's history and should be preserved for future generations, two (2) stated it supports the rural character in the area. Written-in responses were as follows: So we don't have to import food; need agricultural land for conservation purposes; when a farm is developed it's gone, Townships should limit development where not practical on agricultural land; and preserve agricultural industry as an important part of the economy.

Goal and Objectives for Farmland Preservation for the Region

A goal of this plan is to preserve farmland for future generations as generations in the Region have done for over two hundred years. Programs should be encouraged and continued so that preservation of farming, and not just the preservation of farmland, occurs in order to also preserve the quality of life and rural character deemed so valuable by residents in this area. Continuation of farming can help to slow upward pressure on taxes. Programs should preserve the best farmland and support efforts of farmers to see that these lands can be gainfully farmed and maintained. Agricultural lands can continue to be productive and benefit the area as a component of its economy and culture.

In the statement of Goals and Objectives in this Plan, the goal for the St. Lawrence, Exeter and Amity Region concerning agricultural resources is to preserve and encourage continuation of agricultural uses in the Region.

The objectives to reach this goal determined through the joint comprehensive planning effort are as follows:

- Promote the preservation of agricultural areas within the Townships through conservation development, agricultural security areas, purchase and donation of development rights, tax provisions and conservation easements.
- Continue and consider opportunities for expansion of effective agricultural zoning in the Townships.
- Assure policies regarding public sewer and water do not encourage development pressure on designated agricultural areas.
- Minimize impacts on agricultural uses around the perimeter of agricultural areas.

Importance of Agricultural Resources in the Area

Most Townships face increasing tax burdens, particularly school taxes. Land use policies within Townships can affect the taxes of Township residents because these policies influence land use patterns, the number of people moving into the Township, the number of school children, and thus, school taxes.

In the study *Fiscal Impacts of Different Land Uses*, prepared by the Penn State College of Agricultural Sciences and the Cooperative Extension, it was found that residential development in general does not pay for itself. Residential development increases costs more than it increases tax revenue, and other land uses must help subsidize school expenses. Current residents may end up paying higher taxes to cover the costs associated with new residents moving into the Township. Farmland and open land provide more in

tax revenue than they required back in expenditures, and can help keep residents' taxes low, even if the Clean and Green program reduces the real estate tax paid by farmers.

Another report, which looked at the relationship of land use and cost to residents is *The Cost of Sprawl in Pennsylvania* prepared for 10,000 Friends of Pennsylvania. Sprawl is the pattern of low density, scattered development requiring travel by motor vehicle, typically consuming agricultural land and segregating residential uses from other types of land use. Townships in the Region have experienced sprawl and could continue to do so in the future without appropriate land use policies.

The costs, which were found to result from the sprawl, are increases in costs of roads, schools, utilities, and transportation, increases in air pollution and water pollution, and consumption of agricultural lands, natural areas and open space. Sprawl affects the quality of life in rural areas and results in direct costs such as higher school taxes.

As additional residential development occurs, the loss of farmland diminishes a major component of the economy of Berks County. When agricultural operations are continued, they help maintain local agricultural supplies, make it easier for remaining farmers to continue to farm, maintain a cultural heritage and lifestyle of the region, and help maintain rural character and the beauty of the landscape.

Agricultural Zoning in the Municipalities

Successful effective Agricultural Zoning is now in place in Exeter Township in the north-central portion of the Township. The Agricultural zone constitutes a sizable zone in Exeter Township. Effective agricultural zoning allows agricultural uses and those uses compatible with farming, strongly limits dwellings and discourages subdivision of farms into parcels smaller than can typically be farmed.

Effective Agricultural zoning has been adopted in other municipalities in Berks County, including adjoining land in Oley Township. Amity Township does not have effective agricultural zoning.

One of the issues facing Amity Township is whether some of the land in the Township should be designated Agricultural Preservation in order to provide for coordinated land use along municipal boundaries, support the agricultural preservation activities in other Townships, encourage the viability of agriculture and support farm related businesses. This does not mean that Amity Township would have to institute effective agricultural preservation zoning. It could support agriculture through a number of administrative means. At some time in the future the Township could decide if it is appropriate to enact effective agricultural zoning when and where there is support for it.

Agricultural preservation activities can keep large areas relatively free of non-farm development, lessening conflicts with farming operations, which result from increased traffic, litter, complaints and damage to crops. They can also assure a supply of agricultural land for rental by farmers and protects the investment that is made in purchase of agricultural easements. Agricultural preservation protects natural systems, helps replenish groundwater and maintain stream flow, and conserves prime agricultural soils that are a resource that once lost, cannot be recovered.

Administrative Means For Agricultural Preservation

As noted above, Effective Agricultural Zoning is just one means of preserving existing agricultural activities in the Region. The following are examples of administrative and supplemental zoning techniques to encourage and protect agriculture:

- Work with local farmers to ensure participation in County's Purchase of Agricultural Conservation Easements Program
- Establish Township Purchase of Agricultural Conservation Easements Program.
- Establish Transfer of Development Program within a municipality or across municipal boundaries (development rights of properties in agricultural areas could be transferred to properties in those areas designated as residential growth areas).
- Promote the inclusion of farms in Agricultural Security Areas.
- Support measures to relieve property tax burden for farmers
- Limit extension of public sewer and water facilities to agricultural areas
- Permit businesses which support agricultural operations, such as farm equipment sales and service, farm supply stores, and businesses which market or process farm products
- Allow farmers to supplement incomes through home businesses, home occupations and farm related businesses
- Permit appropriate recreational activities, such as hayrides, corn mazes, and festivals.
- Limit non-farm uses which could cause conflicts with agricultural practices and/or require buffers for non-farm uses around the perimeter of farms. Direct any non-farm development to parcels least suited to farming.

- Allow conservation development (Growing Greener) as an option (typically 50 to 80% of the tract remains in open space and development occurs on the remaining land, allowing for the protection of some farmland)
- Promote enrollment in Clean and Green tax relief program
- Allow and give incentives to compact development and higher densities where public sewer and water are available in areas designated for development, and give disincentives to inefficient development techniques
- Support establishment and continuation of farm-related programs and organizations
- Discourage construction of roads through and within agricultural areas
- Work to improve relationships between farmers and non-farm neighbors.
- Make information available on the Pennsylvania agricultural loan program which permits farmers to borrow funds for land, buildings, machinery, or equipment bought, built or renovated for the benefit of the business.
- Encourage farmers to utilize the Pennsylvania Farm Link program created by the Center for Rural Pennsylvania. This program is designed to help match farmers planning for retirement, and other interested landowners, with farmers hoping to work into farm ownership on long-term leasing.

Alternatives to “Traditional Agriculture”

Often agriculture has been equated with “traditional” methods such as dairy farming, raising of steers, and cultivating such crops as corn, hay, wheat, alfalfa, soy beans, barley, and oats. Increasingly, there a number of alternatives which can be practiced to supplement farm income or utilize smaller parcels of land, including:

- Nursery/Greenhouse
- Horse Farm
- Equestrian Center
- Orchard
- Winery

- Christmas Tree Farm
- Pick-Your-Own Operation
- Contracting Organic Farm
- Herb Farm
- Wildflower/Flower Farm
- “Gentleman’s” Farm
- “Agritainment” (using crafts, corn mazes, petting zoos, entertainers, hay tunnels, and hayrides to generate income and attract purchase of produce).
- Deer Farm
- Meat Goats
- Hydroponics
- Ornamental Crops

CHAPTER 15

NATURAL FEATURES

INTRODUCTION

Two maps showing natural resources have been prepared for this Plan. The first is a composite map showing natural resources including streams, wetlands, hydric soils (which are potential wetlands), 100-year floodplains; wooded areas; and areas of steep slope, including slopes of 15% - 25% and slopes greater than 25%. The second map shows water related features, including: streams, floodplains, wetlands, hydric soils, and watersheds, which are listed by watershed name.

FLOODPLAINS

One hundred-year floodplains are shown from Federal Emergency Management Agency (FEMA) Maps. Detailed studies have not been performed to establish, through calculation, the extent of the 100-year floodplains for all watercourses. Any development proposed in the vicinity of watercourses by developers would require a calculated study of the 100-year floodplain by the developer if such detailed studies have not been performed by FEMA.

Floodplains are areas adjacent to watercourses which are covered by floodwater during times of flooding. A 100-year floodplain is the area which has a 1% chance of being flooded during any one year, and which is typically used for regulatory purposes. It is best if the floodplains are not developed, because development within the floodplains results in danger to persons and property. If development occurs within the floodplain, this may constrict the area over which floodwaters may flow, resulting in increased flood damage downstream because of resultant increased flood velocities downstream. Outdoor storage of materials within floodplains is not desirable because of the possibility of the materials entering the stream when flooding of the banks occurs.

Care must be taken in disturbing areas along watercourses because increased sedimentation within the stream (increased depositing of soil within the stream) can occur. Increased impervious cover along watercourses typically increases the storm water runoff in the streams. The runoff can erode stream banks and channels. If sedimentation is increased, filling of streambeds can occur, which could cause floodwaters to cover a larger area, meandering of streams, and choking of life within the stream, detracting from the aesthetic value of the stream.

It is desirable to keep pervious surfaces on stream banks, as opposed to impervious surfaces such as paved areas. As surface runoff moves toward streams, water can be

absorbed into the ground if the surface is pervious. Increased absorption can result in replenishment of groundwater and also in decreased flood peaks because less water reaches the stream from the surface of the land. Inadequate supply of groundwater can result in an inadequate flow of water to the stream during dry months. The inability to sustain stream flow can mean a greater concentration of pollutants at periods of low flow.

Agriculture practiced along streams should be practiced with care. Increased tillage and use of the soil can increase the sediment concentration and runoff reaching streams. Animal excretions can result in increased bacteriological concentration in runoff, pesticides can result in increased undesirable chemicals in runoff, and fertilizer and manure can increase nitrate concentrations in runoff.

On-site sewage disposal systems should not be located within areas subject to flooding because of the danger of contamination of the stream and the groundwater because of the proximity of the stream and the presence of the high water table. There may not be an adequate distance between the on-site facility and surface water to permit renovation of sewage effluent prior to its reaching the stream. In some instances, soils found in the floodplains are very porous and the movement of sewage effluent is too rapid to allow for the renovation of the effluent prior to reaching the groundwater table or the stream. In other situations, the soil near the surface may be saturated with water or become readily saturated with sewage effluent, resulting in effluent remaining near or rising to the surface of the land. When flooding occurs, sewage effluent could then contaminate the surface water. The efficiency of filter fields of septic tanks can be impaired or destroyed as a result of flooding.

WETLANDS

The wetlands shown are from the National Wetlands Inventory, prepared by the Office of Biological Services, U.S. Department of the Interior, Fish and Wildlife Service. The wetlands inventory was prepared by stereoscopic analysis of high altitude aerial photographs, with the wetlands identified on the photographs based on vegetation, visible hydrology, and geography. A detailed on the ground and historical analysis of any site may result in a revision of the wetland boundaries, and it is possible that small wetlands and those obscured by dense forest cover may not be identified.

Wetlands within the area are generally found along the watercourses such as the Schuylkill River, streams and in areas identified as hydric soils. Wetlands are areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, prevalence of vegetation typically adapted for life in saturated soil conditions. During on-site investigation, wetlands can sometimes be identified when they are saturated with permanent or semi-permanent standing water and contain common wetlands plants such as cattails and willows. If wetlands cannot be identified by hydrophytes (plants adapted to life in saturated soil conditions), soils may be

investigated to determine whether wetlands are present. Hydric soils mapping can be used to identify potential wetlands sites. Hydric soils are discussed below.

In order to put wetlands into less technical terms, often low lying land that remains wet for considerable periods of the growing season, land that can not be farmed because it is too wet or can only be farmed every few years, or low-lying land that can only be developed by filling are likely to be wetlands. These areas store water which can replenish groundwater and surface water supplies.

Wetlands can be areas rich in plant growth and animal habitat. They often serve as breeding places for many organisms. In addition to providing a home and a source of food for organisms, wetlands can protect water sources and can help keep water sources clean by acting as natural filters and removing pollutants such as bacteria and sediment from water. This occurs as plants growing in and around wetlands trap pollutants.

In general, no developmental activity or placement of fill material may occur within wetlands without obtaining a DEP permit.

HYDRIC SOILS

The hydric soils have been mapped from soils information provided by United States Department of Agriculture Natural Resources Conservation Service and indicate areas of potential wetlands. Hydric soils developed under conditions sufficiently wet to support the growth and regeneration of hydrophytic vegetation and are soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions (an anaerobic situation is one in which molecular oxygen is absent) in the upper part.

Criteria for identifying hydric soils include somewhat poorly drained soils that have water table less than 0.5 ft. from the surface for a significant period (usually a week or more) during the growing season; are poorly drained or very poorly drained and have either water table at less than 1.0 ft. from surface for a significant period during the growing season if permeability is equal to or greater than 6.0"/hr. in all areas within 20", or have water table at least 1.5 ft. from the surface for a significant period during the growing season if permeability is less than 6.0"/hr. in any layer within 20"; soils that are ponded for long duration (from 7 days to 1 month) or very long duration (greater than 1 month) during the growing season; or soils that are frequently flooded for long duration or very long duration during the growing season.

The areas of hydric soil are generally found in the vicinity of the watercourses within the Region. There also are several isolated areas of hydric soil displayed on the Water Related Features Map.

The hydric soils should be preserved and serious consideration should be taken to limit development on hydric soils. Hydric soils can act like a sponge when floodwaters rise, and when coupled with established wetlands, can filter nutrients and pollutants to protect the surface and ground water.

STEEP SLOPES

Areas that have slopes greater than 15% have severe limitations to development. In general, this land is too steep for residential subdivisions and cultivation. Development of steep slopes can result in hazardous road conditions, costly excavation, erosion and sedimentation and storm water runoff problems. These slopes are quite prone to erosion, and protection of them is particularly important for water resource protection due to watercourses that are generally nearby. Development should be limited, vegetative cover maintained to the greatest extent possible, and erosion controls instituted. Without absorptive vegetation, runoff can rapidly erode the slopes. The primary areas of steep slope are Monocacy Hill, Neversink Mountain, northern Exeter Township, and the portion of Exeter Township near Fabers and Schoffers Roads.

WOODED AREAS

Wooded areas are concentrated in the northern portion of Exeter Township, Monocacy Hill, and Neversink Mountain. They are also scattered throughout the region and along the stream corridors within the region. The wooded areas should be protected as a valuable resource for the protection of steep slopes and to minimize the erosion that may occur if disturbed by clear cutting or extensive development.

Wooded areas are scenic amenities and habitats for wildlife and home to most of the native species in the County. They provide visual relief from developed land areas. In addition, they increase capacities for absorption of storm water runoff, diminishing flood potentials and decreasing erosion. Wooded areas are especially valuable when on steep slopes, playing the important role of reducing runoff and erosion and sedimentation by binding the soil.

Maintenance of wooded areas on steep slopes is of even greater importance when the steep slopes are near streams, which could be disturbed through sedimentation, and experience greater flood peaks if they are swelled by increased surface runoff. Wooded areas are in some cases in close proximity to the watercourses within the Region, sometimes on steep slopes.

When wooded areas are retained, the quantity and quality of groundwater can be better maintained than if woods are removed, because the natural cover allows for infiltration of rainfall into the groundwater system. Retention of wooded areas will also preserve the home of most of the native species in the County.

Wooded areas also have recreational potential, recognized when Amity established Monocacy Hill as a community resource in the Township.

ROLE IN OPEN SPACE SYSTEM

Stream valleys, farmland, and woodlands in the Region constitute background open space, which is seen and perceived by residents of the entire area. As development continues to occur in the Region in the future, if this background open space is not preserved, the remaining rural character of the Region will be lost.

STREAMS AND WATERSHEDS

The watersheds and streams in the region are shown on the Water Related Features map. Some of the natural functions of watercourses and the area surrounding the watercourses have been discussed above. It is also important to note that streams provide a recreational resource.

The streams shown on the Water Related Features Map drain into the Schuylkill River, which drains into the Delaware River.

PA DEP has established designated water uses for waterways within the Commonwealth. Designated classifications for watersheds found in St. Lawrence, Exeter and Amity are as follows:

<u>Stream</u>	<u>Zone</u>	<u>Water Uses Protected</u>
Monocacy Creek	Basin	WWF
Manatawny Creek	Main Stem	CWF
Unnamed Tributaries Manatawny Creek	Basins	CWF
Ironstone Creek	Basin	TSF

The Water Use Protected symbols mean the following:

Special Protection

Symbol Protected Use

HQ *High Quality Waters* – A stream or watershed which has excellent quality waters and environmental or other features that require special water quality protection.

EV *Exceptional Value Waters* – A stream or watershed which constitutes an outstanding national, State, regional or local resource, such as waters of national, State or county parks or forests, or waters which are used as a source of unfiltered potable water supply, or waters of wildlife refuges or State game lands, or waters which have been characterized by the Fish Commission as “Wilderness Trout Streams”, and other waters of substantial recreational or ecological significance.

Aquatic Life

Symbol Protected Use

CWF *Cold Water Fishes* – Maintenance and/or propagation of fish species including the family Salmonidae and additional flora and fauna which are indigenous to a cold water habitat.

WWF *Warm Water Fishes* – Maintenance and propagation of fish species and additional flora and fauna which are indigenous to a warm water habitat.

MF *Migratory Fishes* – Passage, maintenance and propagation of anadromous and catadromous fishes and other fishes which ascent to flowing waters to complete their life cycle.

TSF *Trout Stocking* – Maintenance of stocked trout from February 15 to July 31 and maintenance and propagation of fish species and additional flora and fauna which are indigenous to a warm water habitat.

Special Protection Waters, High Quality and Exceptional Value, are required to be maintained at their existing quality; however, High Quality water can be degraded if certain social and economic justifications are met. Streams that are classified as High Quality have additional requirements for potential discharges listed in the Rules and Regulations of the Pennsylvania Department of Environmental Protection. PA DEP requires that a proposed point source discharge to High Quality Waters must show that

the discharge is justified for necessary economic or social development which is of significant public value and that the proposed discharge alone or in combination with other discharges will not affect the protected use criteria. A proposed discharger must prove that the best available land disposal and reuse technologies are not feasible for economic environmental reasons.

A Stream Corridor Preservation Plan has been established to highlight the need to protect the watercourses within the Region.

Natural Areas of Special Interest

The following Natural Areas Inventory sites are found in the St. Lawrence Exeter and Amity Region, and shown on the Historic Resources Map in Chapter 22.

Neversink Mountain – This mountain provides open space in an urban setting and provides habitat for four rare species. Although there is a small residential development on the mountain, it does not appear to be influencing the species of special concern there. What is of concern is the use of herbicides and pesticides to control plants on the powerline right-of-way and for gypsy moth control in the surrounding woods. Herbicide use should be limited to control of tree saplings to ensure survival of the food plants used by two rare butterflies. The electric utility company and Berks County Conservancy have made progress toward this end. Aerial spray for gypsy moths should be avoided because the two butterflies are susceptible to the same chemicals.

It will be important to manage habitat on the mountain to limit the further spread of exotic plant species and maintain the small dry, rocky openings on the south slope that are important for the rare plant limited to this habitat. No logging has occurred recently but it should be completely discouraged in the future.

There is potential for Neversink to be a low-impact recreational asset to Reading and surrounding towns. The former trolley line offers opportunities for environmental education and nature observation, and walking and horseback riding.

The mountain is one of the four most important sites identified in Berks County.

Schuylkill River – Preserve as much open space as possible along river and all islands; excellent recreational resource. High County rank.

Amityville Floodplain Forest – Floodplain islands and north-facing slope; diverse flora and wildlife habitat; water quality protection; maintain in present condition. Low County rank.

SP528 – A species currently under review to determine its status in Pennsylvania, grows in Forest Hills Cemetery in Exeter Township. The very small C-ranked population occurs in a small limestone woodland on the cemetery property. The woodland harbors small patches of native vegetation despite rampant exotic species invasion. Careful control and removal of exotic species may ensure the continued existence of SP528 at the site.

SP557 – Marks a small population of a PA-Rare sedge growing on the dry gravel slope of an old coal siltation basin in Exeter Township with slender cottonweed (*Froelichia gracillis*), buttonweed (*Diodia teres*), large crabgrass (*Digitaria sanguinalis*), few-flowered burgrass (*Cenchrus pauciflorus*), and yellowish wild bean (*Strophostyles helvola*). Protecting a species in such a highly disturbed setting is problematic. At this time, it is recommended that a local botanist monitor the population.

SP514 – The Monocacy Creek site, currently being used as a cattle pasture, is a wet meadow located along Monocacy Creek, Exeter Township, Black willow, reed-canary grass, goldenrod, asters, jewelweed, boneset, monkey flower, and sedges and rushes are common species. A fair population of a plant species of concern was found here in 1992. This species requires open habitat and likely benefits from light grazing under its current land use. The owner is aware of the plant, and intends to keep the site as it is. Heavy grazing and succession are potential threats. No special management is recommended.

CHAPTER 16

GEOLOGY AND AQUIFER YIELDS

INTRODUCTION

A Geology and Aquifer Yield by Formation Map of the Region depicts the boundaries of the geologic formations in the area as well as the average aquifer yield in gallons per minute (gpm) for each formation. The map provides aquifer yields in order to determine where, in general, the most productive aquifers in the area can be found.

In the description of each formation, porosity and permeability will be indicated. Below are the definitions of each term as it relates to groundwater supplies.

Porosity – the quality of being porous, full or abounding in pores. The porosity of rocks, i.e., the ratio or percentage of the total volume of the pore spaces (minute interstices through which liquids or gases can pass) in relation to the total volume of the rock. Sand, gravel, sandstones, with open textures and coarse grains, are typical porous rocks. Porosity is quite different from perviousness. Dry clay, for example, is highly porous and will hold much water in its pores, but when saturated the small spaces between the grains become blocked with water held by surface tension, preventing the passage of water. To be an aquifer or source of water a rock must be both porous and pervious. Porosity may be increased by leaching or decreased by compaction.

Permeability - is capable of being wholly penetrated by a fluid, of allowing the passage of a fluid, of being saturated. The opposite condition is termed “impermeable”.

Permeable Rock – a rock that allows the free passage of water through it owing to its porosity, e.g., sandstone. Some geologists also include rock with joints, bedding plans, cracks, fissures, etc. that allow the free passage of water, defining the porous rock as being of primary permeability and the rock with joints, etc. of secondary permeability. Other geologists distinguish the secondary group as being pervious.

INFLUENCE OF GEOLOGY

For planning purposes, we are concerned about the way that geologic formations determine soils types and potential groundwater supplies. It is desirable to identify the areas with the most potential for groundwater yields to determine where a particular effort should be made to protect groundwater supplies. The following are the major geological formations found in the region and their groundwater yields.

Brunswick Formation

This formation is located throughout most of Exeter and Amity Townships. It is predominately found in the eastern cutoff, a line west of the Schuylkill River, and consists of fine red sandstone, siltstone, and shale; maximum thickness is about 500 feet. It is moderately well bedded; fissile to thin, sandstone units are mostly flaggy to thick. Only slightly resistant to weathering; highly weathered to moderate depth; irregularly shaped, very small fragments result; overlying mantle is thin. The topography is usually rolling hills of medium relief; natural slopes are fairly steep and stable. The surface drainage is good. Joint-, fault- and bedding-plane openings provide a secondary porosity of low to moderate magnitude; moderate permeability.

This formation has median yield of 60 gpm. It is also moderately easy to excavate with a relatively fast drilling rate. Because this formation is weathered relatively easily, the cut-slope stability is poor to fair. It is a good source of road material and fill; possible source of raw material for common brick.

Limestone Fanoglomerate

This sequence is located in the northern portion of Amity Township, just below the Township line. It consists of transported rocks; black to white, silty and siliceous in many places; crystalline and is well bedded. It is moderately resistant; moderately weathered to a shallow depth; small, flat, rectangular fragments result. It can be found at a depth of up to 500 feet and the topography is usually rolling valley of medium relief; natural slopes are moderate and stable. Surface drainage is good.

Joints and bedding plane openings provide a secondary porosity of moderate magnitude; locally solution openings in limestone produce a very high porosity and permeability.

Groundwater yields may yield in excess of 200 gpm; best location for high-yielding well is upland stream valley; water-bearing openings decrease in number and size with increased depth; most wells receive water from yielding zones less than 200 feet deep.

The ease of excavation is moderately to difficult with a fast drilling rate. The cut-slope stability is fair, due to disintegration when exposed to moisture for a relatively short amount of time. It is known to be a good source of road material and fill.

Diabase

This formation is located in the central portions of both Exeter and Amity Townships. It consists of light to dark gray, fine to very coarse-grained sandstone and conglomerate containing thin shale interbeds; crossbedded; tightly cemented. Includes four members, in descending order: Tammany Member – conglomerate and sandstone; Lizard Creek Member - sandstone and red and green shale; Minsi Member - sandstone and conglomerate; and Weiders Member - conglomerate. Maximum thickness is 1,000 feet.

It is highly resistant and can be slightly weathered to a shallow depth and weathers irregularly in medium to large blocks. In many places it can form large boulder fields downslope from outcrop. The overlying mantle is very thin. The topography is usually high mountains and ridges; very high relief in rough terrain; natural slopes are stable and steep. It has good surface drainage as well with intergranular porosity in conglomerate with joint openings, which provide a small to moderate secondary porosity; low permeability.

The median yield is 5 gpm and may be a poor aquifer because of topographic position; often of excellent quality. Excavation is difficult due to boulder fields on lower slopes beneath outcrop areas, which are special problems. The drilling rate is very slow; however the cut-slope stability is good and can stand in vertical cuts if bedding is not steeply dipping toward cut. It is usually a good source of road material, riprap, concrete aggregate, embankment facing, building stone, and silica for refractory brick.

Allentown Formation

A small area is found in northcentral Amity Township. Medium-gray dolomite and impure limestone; dark-gray chert stringers and nodules; laminated; some oolite and sharpstone. Joints have a blocky pattern; well developed; moderate to highly abundant; regularly spaced, having a moderate distance between fractures; open and steeply dipping. Moderately resistant to weathering, slightly weathered to a shallow depth; decomposition results in medium-sized, blocky fragments; overlying mantle is thin in most areas; interface between bedrock and mantle is characterized by pinnacles. Undulating valley of low relief; natural slopes are gentle and stable. Good subsurface drainage; little surface drainage. Solution channels produce a secondary porosity of moderate to high magnitude; low permeability.

Median groundwater yields from specific study areas range from 60 to 210 gal/min; many wells are capable of yielding 1,000 gal/min or more; aquifer can be easily contaminated; turbidity is a common water-quality problem.

Difficult excavation. Bedrock pinnacles are a special problem; moderate to slow drilling rate; numerous sandstone beds containing chert lenses slow the drilling rate. Good cut-slope stability, stable in vertical cuts where fractures are at a minimum. Good foundation stability, a thorough sinkhole investigation should be undertaken.

Beekmantown Group

Found in the vicinity of Oley Turnpike Road in Exeter Township and along the northernmost portion of Amity Township. Where these rocks have not been subdivided into separate formations, they are interbedded, finely laminated, light-gray limestone containing dark-gray dolomite beds; dolomite is fractured, and the fractures are recemented by white calcite; limestone weathers to a pale-gray surface contrasting with the yellowish-gray-weathering dolomite; maximum thickness is about 2,300 feet. Well bedded; thick. Joints have a blocky pattern; moderately to well developed; moderately abundant; regularly spaced, having a moderate distance between fractures; both a steeply dipping set and a gently dipping set are present; most are open, but some are filled with calcite. Moderately resistant to weathering, slightly weathered to a shallow depth; small to large, blocky fragments result; overlying mantle is variable in thickness, in most places greater than 5 feet; bedrock pinnacles are characteristic. Flat to rolling valleys of low relief; gentle and stable natural slopes. Good subsurface drainage; minor surface drainage. Joint and solution-channel openings provide a secondary porosity of low to moderate magnitude; low permeability.

High groundwater yields from fractures and solution cavities; median yield is 50 gal/min in southeastern Pennsylvania; industrial and public supplies are available in most areas.

Difficult excavation; bedrock pinnacles are a special problem; moderate drilling rate; chert beds, lenses, and quartz sand slow the drilling rate. Good cut-slope stability, intersection of joint and bedding surfaces may create a problem if the depth of cut is extreme. Good foundation stability, should be investigated thoroughly for solution openings.

Granitic Gneiss

Found in much of the northern portion of Exeter Township. Light buff to light pink; fine to medium grained; most mineral grains are about 1 mm in diameter; primary minerals are quartz, microcline, hornblende (5 to 10 percent), and occasional biotite. Banding is poorly developed; massive. Joints have an irregular pattern; moderately to poorly

formed; moderately abundant; widely to moderately spaced; irregular and steeply dipping to vertical; open.

Highly resistant to weathering; slight weathering to a shallow depth; loose material consists of large rectangular blocks; mantle is thin. Hills of medium to high relief; natural slopes are steep and stable. Good surface drainage. Joints provide a very low secondary porosity; low permeability.

Median groundwater yield is less than 20 gal./min.; yields of 35 gal./min. or more may be obtainable from wells properly sited and developed; wells should be at least 100 feet deep, but probably not over 200 feet for maximum yield.

Difficult excavation; slow drilling rate. Good cut-slope stability. Good foundation stability; should be excavated to sound rock.

Hardyston Formation

Found in the vicinity of the St. Lawrence watershed and Neversink Mountain, and in a portion of St. Lawrence. Light-gray quartzite; weathers yellow brown; porous and limonitic in many places; quartz-pebble conglomerate occurs at base; maximum thickness is 800 feet; moderately well bedded to well bedded; thick. Joint and cleavage planes display a blocky pattern; moderately well developed; moderately abundant; widely spaced and fairly regular; steeply dipping and open. Highly resistant to weathering; usually slightly to moderately weathered to a shallow depth; hackly, large, irregularly shaped fragments result from weathering; locally, may be highly weathered to loose sand; overlying mantle is thin. Rough mountains of medium to high relief; natural slopes are steep and stable. Good surface drainage. Joint- and cleavage-plane openings produce a secondary porosity of low magnitude; low permeability. Median groundwater yield of 20 gal/min.; water-yielding fractures are seldom found below 200 feet; water is usually soft and of good quality; iron may be a problem.

Difficult excavation; slow drilling rate, in part due to many quartz veins that exceed 12 inches in width; large boulders may be a special problem; locally highly fractured, highly weathered, and moderately easy to excavate. Good cut-slope stability, locally, where highly fractured, cut-slope stability is fair. Good foundation stability; should be excavated to sound material.

Hornblende Gneiss

A few small areas scattered in northern Exeter Township. Dark-gray to black; most grains are about 1 to 2 mm in diameter; hornblende makes up about 50 percent of the rock; the other 50 percent is labradorite (feldspar); rock is extremely resistant to abrasion and very resistant to rupture, but may be susceptible to crumbling. Banding is common; most bands are flaggy, but some are thick. Joints have a platy or blocky pattern; moderately to poorly formed; moderate to high in abundance; moderately to closely spaced; irregular; steeply dipping and open.

Moderately resistant to weathering; highly and deeply weathered in many places, resulting in a rubble that contains small- to medium-sized rectangular fragments; overlying mantle is thin. Undulating hills of medium relief; natural slopes are moderately steep and stable. Good surface drainage. Extremely low primary porosity; joint openings provide a low secondary porosity; highly weathered near-surface rock may have high porosity; low permeability.

Median groundwater yield of reported wells is 10 gal./min.; yields of 35 gal./min. or more may be obtained from wells properly sited and developed.

Highly weathered portion of rock mass has moderately easy excavation; unweathered rock is difficult; fast to moderate drilling rate. Poor cut-slope stability due to partial disintegration when exposed to moisture for a relatively short time; drainage maintenance is required. Good foundation stability; should be excavated to sound material.

Leithsville Formation

Found throughout St. Lawrence and surrounding areas of Exeter Township. Dark-gray to medium-gray dolomite; some calcareous shale and sandy dolomite; cherty; 1,500 feet thick; moderately well bedded; massive. Joints have a blocky pattern and are moderately to well developed; moderately abundant; irregularly spaced, having a wide distance between fractures; open and steeply dipping. Undulating valley of low to medium relief; natural slopes are gentle to moderately steep and stable. Good surface drainage; little subsurface drainage. Joint openings and solution channels provide a secondary porosity of high magnitude; moderate to high permeability.

Median groundwater yield is 100 gal./min.; large yields may be obtained from solution openings; aquifer can be easily contaminated; turbidity is a common water-quality problem; water is relatively hard.

Difficult excavation; bedrock pinnacles may be a special problem; fast drilling rate. Good cut-slope stability. Good foundation stability; solution openings and bedrock pinnacles should be thoroughly investigated.

Martinsburg Formation

A very small area is found along Route 562 in northern Amity Township. Buff-weathering, dark-gray shale, and thin interbeds of siltstone, metabentonite, and fine-grained sandstone; brown-weathering, medium-grained sandstone containing shale and siltstone interbeds occurs in the middle of the formation; basal part grades into limy shale and platy-weathering, silty limestone; may be 12,800 feet thick. Well bedded; sandstone is thick to massive; limestone and shale are thin to fissile. Cleavage is dominant and highly developed; joints are also present, and are irregularly spaced, open, and nearly vertical. Moderately weathered to a moderate depth; small to large platy fragments results; mantle is thick. Dissected valley of low relief; natural slopes along streams are steep and often unstable. Good surface drainage. Cleavage- and joint-plane openings provide a secondary porosity of generally low magnitude; low permeability.

A median sustained groundwater yield of 32 gal./min. has been calculated and a maximum well yield of 200 gal./min. is reported; yielding zones are commonly less than 150 feet in depth but occur as deep as 400 feet below land surface; the natural quality of the water is often poor due to hydrogen sulfide and high concentrations of iron.

Moderately easy excavation in shale; moderately difficult in limestone; difficult in sandstone; fast drilling rate. Fair cut-slope stability in shale and limestone; good in sandstone. Good foundation stability; should be excavated to sound rock; limestone should be investigated for solution openings.

New Oxford Formation

Found in central Exeter Township. Light-colored sandstone, arkosic sandstone, and conglomeratic sandstone; includes red to purplish-red sandstone, shale, and mudstone; total thickness is approximately 4,000 feet and represents the upper half of the formation. Well bedded; thin to flaggy. Joints have a seamy to platy pattern; moderately developed; highly fractured; very close spacing; vertical and open. Only slightly resistant to weathering; exposures are quickly weathered to a moderate depth; very small, pencil-like, platy fragments result from rapid disintegration; overlying mantle is thin. Gently rolling plain; broad shallow valleys and low, flat-topped ridges; stable. Good surface drainage. Primary porosity occurs in weathered portion; joint- and bedding-plane openings provide a secondary porosity in unweathered rock; high to moderate total effective porosity; moderate permeability.

Median groundwater yield is 66 gal./min.; hardness and total dissolved solids are frequently high.

Moderately easy excavation, relatively fast drilling rate may be expected. Poor to fair cut-slope stability, due to rapid disintegration when exposed to moisture for a relatively short time. Good foundation stability; should be excavated to sound material; underdrainage may possibly be required.

CHAPTER 17

SCENIC RESOURCES

INTRODUCTION

The Scenic Resources Map indicates scenic roads in blue and scenic views with blue arrows.

Scenic Roads

The scenic roads are roads which are particularly pleasant to drive because of the views along the roads. Scenic roads include: Wegman Road, Oley Turnpike Road, Oley Line Road, Ritters Lane, Schoffers Road, Mill Road, Daniel Boone Road and Boyertown Pike in Exeter Township; Boyertown Pike, Tulpehocken Road, Browns Mill Road, Monocacy Hill Road, Mill Road, Blacksmith Road, Bieber Lane, Levengood Road, and Limekiln Road in Amity Township.

Scenic vistas are points within the area from which there are particularly attractive views. The views are typically of rural areas, farmland, open space, stream valleys, hills, and woodlands of the region.

Planning Implications

It will be necessary to determine to what extent preservation of scenic resources will be made a priority within the municipalities. Preservation of scenic resources can be accomplished through broad land use policies such as open space, farmland, stream valley and woodland preservation and/or through attention to developments as they are proposed. Performance and design standards for developments, including siting of buildings, and conservation and cluster subdivision design, can encourage retention of scenic areas and protection of viewsheds.

CHAPTER 18

EXISTING PEDESTRIAN CIRCULATION AND PARKING ISSUES

INTRODUCTION

A map has been prepared showing pedestrian circulation within St. Lawrence Borough, Exeter Township and Amity Township. The map indicates the location of areas with existing sidewalks, the Thun Trail, and a proposed regional trail system.

St. Lawrence Sidewalk System

The map shows the extent of the existing sidewalk system in the region. There are gaps in the existing system, and areas where sidewalk does not exist. It will be necessary for the Borough to determine whether a proactive policy to eliminate gaps in the system and serve additional areas should be followed, particularly when routes to community facilities are involved.

Pedestrian Circulation in the Townships

The map shows the existing sidewalk and trails in Exeter and Amity Townships. The sidewalk system is based on the existing development pattern which has occurred and is isolated in some cases. Trail systems exist in the Daniel Boone Homestead, on Monocacy Hill, and along portions of the Schuylkill River. Less defined and unmapped trails exist in the St. Lawrence Watershed.

The region has the opportunity to explore the possibility of a trail system that would link existing sidewalks and trails to a number of community facilities and natural areas. Residents have expressed interest in having more trails available to the public, including new trails, which would provide access to Neversink Mountain, the Thun Trail, the Daniel Boone Homestead, the St. Lawrence watershed, and Monocacy Hill.

St. Lawrence Avenue in St. Lawrence

Given the limited on-street parking along the north and south sides of the street in the center of the Borough, and limited space for private parking areas for businesses on small lots, parking can become an issue in the Borough. As businesses expand, are converted, or are started, it is important to assure that adequate, safely accessible off-street parking is available.

Pedestrian Enhancement in the Townships

There are also several areas within the Townships that should be made more pedestrian friendly to coordinate with existing or future transit service. BARTA provides service along portions of Route 422, and it is almost virtually impossible for transit users to access this service eastbound or westbound from the opposite side of the road. Areas which should be considered for pedestrian enhancements include the Villages of Baumstown, Douglasville, and Amityville, and Route 422 in the vicinity of Shelbourne and Lincoln Roads.

CHAPTER 19

REGIONAL INFLUENCES

INTRODUCTION

St. Lawrence Borough, Exeter Township and Amity Township are located just east of the City of Reading, stretching east along the Schuylkill River to just west of Douglass Township in Berks County and the Borough of Pottstown in Montgomery County. Business U.S. Route 422 goes through the western portion of Exeter Township and St. Lawrence Borough, creating an accessible avenue to and from Mt. Penn and the City of Reading. Business 422 connects to the 422 bypass (West Shore Bypass) located in the western portion of Exeter Township, and the Pottstown Bypass in the eastern portion of Amity Township. It also links to U.S. Route 222 and Business 222 (North and South) to the west and further east to Route 100 and the PA Turnpike. Route 662 links with Route 222 North and Route 73 and eventually 61. These routes can link this area to places like Philadelphia, Harrisburg, Allentown and Hershey, Pennsylvania. These roads have accelerated the rate of growth in the areas adjacent to the throughways, especially due to the fact that these major arterial roads are not limited access roads. A majority of the working population of the region's municipalities commutes to outside the region to work.

LAND USE

St. Lawrence, Exeter and Amity is a transition area on the fringe of the developed urban core of Berks County comprised of Reading and the eastern surrounding municipalities such as Mt. Penn and Lower Alsace Township.

Abutting portions of Mt. Penn Borough, St. Lawrence Borough is highly developed with high-density residential neighborhoods, developed in the grid style pattern, as older communities in Pennsylvania were initially planned. There is vacant land available within the Borough, however it is minimal. There are some opportunities for infill development. There is no true commercial core in St. Lawrence Borough, mostly due to the close proximity to the City of Reading and commercial areas along Business Route 422 in Exeter Township.

The Townships have a mixture of agricultural, rural and suburban areas, and several major open space areas such as Neversink Mountain, the Daniel Boone Homestead and Monocacy Hill. Much of the development within the Townships has occurred along and near the major road corridors and roads that intersect Route 422, Route 562, Route 662 and Shelbourne Road. Population pressures from the Reading area and greater Philadelphia area continues.

Mt. Penn Borough and Lower Alsace Township Joint Comprehensive Plan

A Comprehensive Plan is being prepared for Mt. Penn Borough and Lower Alsace Township. The Future Land Use Plan within that plan is consistent with the land uses shown on the Future Land Use Plan for the St. Lawrence, Exeter, Amity Plan.

Route 422 and Schuylkill Valley Metro Issue

PennDOT has prepared a study of the Route 422 corridor. The study addressed a number of problem areas in the existing corridor. As development pressures mount and the amount of traffic utilizing the corridor increases, the development of a bypass to the existing corridor will need to be addressed. The County's Berks Vision 2020 identifies the need to address the corridor in its intermediate range (not scheduled with PennDOT but reasonably completed with the plan horizon. Until such a bypass can be completed, municipalities will need to address the functionality of the existing corridor to ensure that all issues related to safety and congestion are adequately addressed. Also, if and when a bypass becomes a reality, municipalities will need to address the function of the existing corridor to ensure that it is consistent with regional land use visions.

Concept plans prepared for improving Route 422, including improvements to the existing corridor and potential by-pass routes within Exeter Township, will have to be discussed by the region's municipalities and the Reading Area Transportation Study to prioritize projects for funding. Funding is not assured, as competing corridors include Route 222 and I-78.

Preliminary studies have been completed for the Schuylkill Valley Metro, a proposed rail line linking the Reading area to Philadelphia. The development of such a rail line, if constructed, will have a direct impact on the region. These impacts could include the number of potential riders accessing local streets and roads to access the proposed station, and the completion of the rail line could also spur additional residential, commercial, office and light industrial development in the area. Municipalities will need to continue to monitor current land use policies and zoning to ensure that potential impacts from the development of the rail line can be appropriately accommodated.