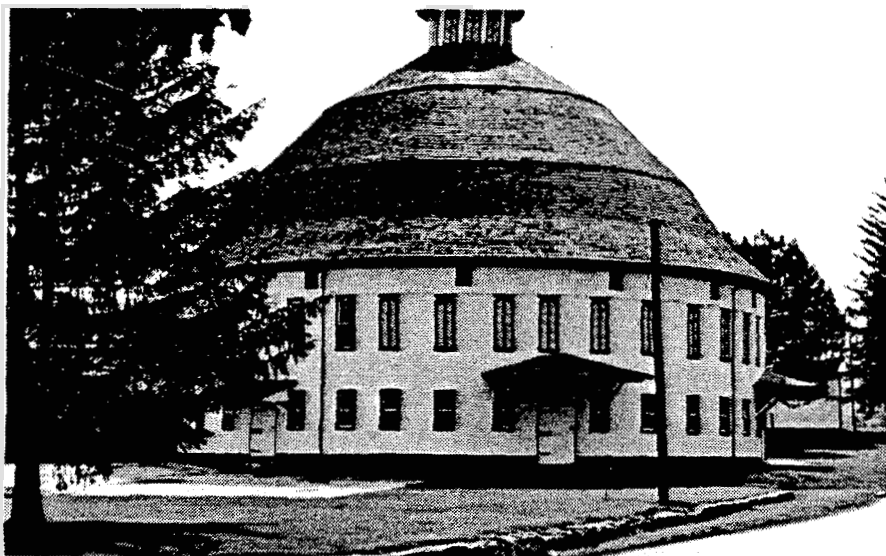
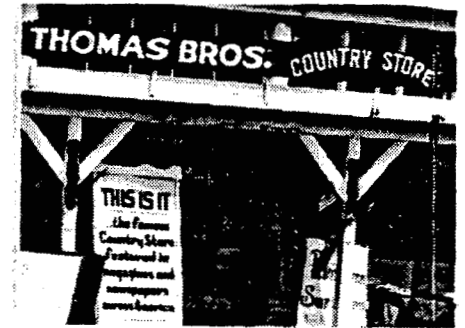
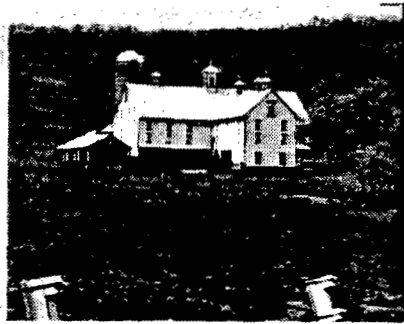
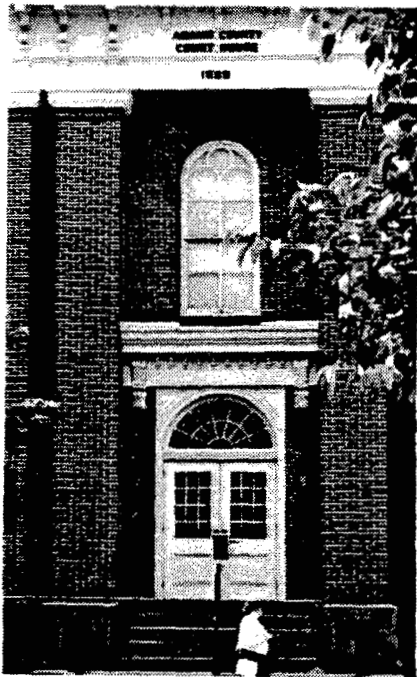


Chapter 3:

# Growth Management Plan

## Adams County Comprehensive Plan



## **CHAPTER THREE: GROWTH MANAGEMENT PLAN**

### **SECTION 1: GENERAL INTRODUCTION**

The Growth Management Plan is intended as a guide for future growth and land development in Adams County. Several months of background research and analysis, coupled with monthly meetings with the various Steering Committees described in Chapter One, form the basis for the Plan. It reflects not only a comprehensive set of goals and policies for development, but also attempts to embody shared community wants and aspirations.

The Growth Management Plan is composed of several elements pertaining to land use, circulation, housing, community facilities, utilities, conservation, and environmental protection. Prior to discussion of the elements, Section 2 presents a summary of goals and objectives on which the Plan has been structured. The remainder of the chapter develops the components of the recommended development pattern for Adams County.

The Growth Management Plan represents a guide to be followed by the County and by local municipalities, school districts, other public and quasi-public organizations, and by private developers in order to address important issues and problems related to the county's overall development. Many of these problems and issues are interrelated, so that effective resolution of one cannot take place without simultaneous efforts to resolve others.

An especially significant aspect of the Growth Management Plan is the close coordination and mutual-reliance between the Land Use Plan (Section 3) and Circulation Plan (Section 4). The character of the land use concepts outlined in Section 3 are closely tied to the circumstances and potentials of the existing transportation network, and the recommended circulation improvements respond to and advance the framework for development embodied in the Land Use Plan.

Other mandatory planning processes, such as requirements for municipalities to complete Act 537 sewage facilities plans, are fundamental in the presentation of the various elements of the Growth Management Plan.

The Growth Management Plan is focused on the location, character, and timing of future development. In particular, the Plan proposes that future development be directed to locations and in a manner that allows the phasing-in of specific transportation and water and sewer service systems improvements. The emphasis on the incremental processes of development are also primary concerns of the Plan with reference to resource conservation and park and open space creation.

The Growth Management Plan provides opportunities for all 34 of the county's

municipalities to grow. Under Pennsylvania statutory law, the right of approval for subdivision and land development is (with limited exceptions) exercised by municipalities, and not by counties. Under Pennsylvania case law, all municipalities must provide land development opportunities for all reasonable uses. The only alternative to providing growth opportunities to all municipalities would be through joint municipal planning and zoning provisions of the Municipalities Planning Code, where several municipalities could band together, produce joint ordinances, and limit growth to a few locations within the joint-area. In general, the Growth Management Plan supports this concept, and recommends that the school districting system be employed to initiate joint municipal planning in Adams County (see Section 3 of this chapter). Until such time as joint planning and zoning are in place in Adams County, the Growth Management Plan must be mindful of the central role of municipalities in approving and providing for growth.

## SECTION 2: GOALS AND OBJECTIVES

### Development Pattern

#### GOAL:

Achieve a future overall development pattern that is responsive to the economic, social, and cultural needs of county residents, and that considers the realities of regional trends.

#### GOAL:

Preserve and enhance the physical and environmental characteristics that make Adams County a distinctive and identifiable place, while at the same time provide for the needs of existing and prospective residents.

#### GOAL:

Ensure that development occurs in ways that minimize degradation of natural and cultural environments.

#### GOAL:

Ensure that development occurs in an efficient and logical manner, and in ways that minimize short- and long-term costs to the public and private sectors.

#### *Objective:*

Direct residential, commercial, industrial, and institutional development to designated growth areas, where sewer, water, and transportation improvements can be phased in concert with new development.

#### *Objective:*

Designate growth areas that can be readily-served by existing or expanded infrastructure systems, transportation networks, and public services.

#### *Objective:*

Identify areas for future growth and development, even if not presently served by infrastructure, where such future development would be appropriate for the protection of community character or to maximize the use of major transportation facilities.

#### *Objective:*

Allocate sufficient land to accommodate most of the county's projected population and employment within designated growth areas, allowing for flexibility in real estate markets.

*Objective:*

Identify incentives and strategies to promote continued or enhanced investment in established communities.

**GOAL:**

Encourage the preparation of local sewer and water facility plans that are consistent with county and municipal plans, and established growth-area boundaries.

*Objective:*

Develop local water service area plans that are consistent with official sewage facilities plans.

*Objective:*

Direct development to areas deemed appropriate for centralized water service so as to avoid overdrawing or contaminating groundwater.

**Economic Base**

**GOAL:**

Expand and diversify the county's economic base and offer a broad range of job opportunities for county residents.

*Objective:*

Enhance and assist the agricultural industry by encouraging the development of new and improved crop varieties and the establishment of agribusinesses.

*Objective:*

Enhance the tourism industry by identifying, protecting, and promoting cultural and historic resources, by maintaining an attractive visual and aesthetic environment, promoting a longer tourism season, and encouraging more locally-based, compatible tourism opportunities.

*Objective:*

Locate new employment centers close to major transportation corridors and interchanges in order to maximize accessibility for potential employees and clients.

*Objective:*

Attract new businesses and industries that will tap the skills of county residents who currently commute to jobs outside of the county.

*Objective:*

Attract recession-resistant, environmentally-benign businesses that will provide additional full-time job opportunities.

**GOAL:**

Identify appropriate locations for industry, research and development, offices, retail sales, and services that may be available in the short- and long-term.

*Objective:*

Discourage random or scattered industrial development patterns, which can produce environmental, traffic, aesthetic, and other problems.

*Objective:*

Coordinate the provision of new or improved transportation facilities with the establishment of centers of economic development.

*Objective:*

Reserve large, appropriately-located business development sites to preclude potentially incompatible uses from foreclosing an eventual use for business.

*Objective:*

Provide appropriate locations for both "light", environmentally-benign industries and businesses, and for heavy industries, which should be developed only in accordance with specific performance standards.

*Objective:*

Discourage strip development of business uses along major roadways.

**GOAL:**

Maintain the economic viability of existing urban communities.

*Objective:*

Encourage investment in existing business districts, compatible with the historic/architectural character of the particular community.

*Objective:*

Maintain residential neighborhoods and expand housing opportunities close to existing urban business districts.

**Housing**

**GOAL:**

Provide a diversity of housing opportunities, in harmony with existing development and the historical and natural environments.

*Objective:*

Facilitate a range of housing types, sizes, and price levels, to respond to changing housing needs and to provide housing for various stages of the life cycle, household configurations, and income levels.

*Objective:*

Identify policies that will provide for the housing needs of elderly and handicapped residents.

*Objective:*

Encourage the enactment of uniform building and housing codes by municipal governments.

*Objective:*

Encourage an expanded role for private developers, local authorities, and non-profit housing development corporations to meet local housing needs.

**Circulation**

**GOAL:**

Achieve a safe, efficient, mostly congestion-free circulation system that will best serve business, agriculture-related, institutional, and personal trips.

*Objective:*

Improve safety and efficiency for all intra-county, intercounty, and regional through-county vehicular trips.

*Objective:*

Encourage regionally-oriented traffic to utilize regional arterial highways and discourage this traffic from using locally-oriented collector roads.

*Objective:*

Identify existing and potential future deficiencies in the county's major roadway network, along with methods of eliminating these deficiencies.

*Objective:*

Encourage traffic flow improvements and the implementation of design standards that are based on a functional classification of roadways.

*Objective:*

Identify and generally set priorities for projects which are appropriate for inclusion on PennDOT's Twelve-Year Highway Program.

*Objective:*

Identify Transportation Systems Management (TSM) activities which can be implemented to improve efficiency and safety.

*Objective:*

Reduce truck traffic through the center of Gettysburg and other boroughs and villages.

**GOAL:**

Provide a circulation system that makes special provision for tourists.

*Objective:*

Identify scenic excursion routes and other roadways with particularly strong visual characteristics as well as outstanding scenic vistas that are worthy of special preservation efforts.

*Objective:*

Identify the long-range implications of extensive development in the Gettysburg area on National Park Service avenues.

*Objective:*

Locate areas appropriate for tourist-oriented development and identify circulation improvements needed to serve these areas.

*Objective:*

Discourage development of potentially-intrusive, large-scale tourist-oriented



enterprises in areas where the roadway network (and other infrastructure) cannot support such uses.

**GOAL:**

Minimize costs (construction, maintenance, social, and environmental) associated with the development of new and improved highway segments.

*Objective:*

Identify the potential growth-inducement effects of proposed transportation improvements.

**GOAL:**

Consider the long-range potential for reducing reliance on the automobile.

*Objective:*

Encourage ride-sharing among local residents and identify areas that might be used for long distance and commuter parking areas.

*Objective:*

Establish criteria upon which the need to establish future mass transit opportunities might be based.

*Objective:*

Encourage mixed-use development, especially near the interchanges of major arterial roadways.

*Objective:*

Consider low-cost physical improvements to new roads and roads undergoing upgradings to accommodate bicyclists.

**Community Services**

**GOAL:**

Provide public services, facilities, and utilities in the most efficient, cost-effective manner, taking into account community needs and environmental factors.

*Objective:*

Support efforts of water supply and wastewater treatment authorities to plan ahead for expansion of capacities and extensions of the areas of service in accordance with growth projections and the Growth Management Plan of the County Comprehensive Plan.

*Objective:*

Provide an adequate supply and mix of parks, playgrounds, and other recreation facilities, both active and passive, to serve the existing and projected populations of Adams County.

**Resource Protection**

**GOAL:**

Protect environmentally-sensitive areas of the county.

**GOAL:**

Protect culturally-significant areas of the county.

*Objective:*

Protect groundwater, floodplains, wetlands, mature woodlands, steep slopes, prime farmland, orchards, habitats of rare and endangered species, and other environmental features.

*Objective:*

Preserve the abundant and widespread historic resources of the county.

*Objective:*

Reinforce the character and ambience of historic settlements.

*Objective:*

Maintain nationally-significant historic resources in appropriate settings.

**Agricultural Resources**

**GOAL:**

Maintain agriculture and businesses that support agriculture as primary components of Adams County's economic base.

**Objective:**

Minimize costs to farmers caused by excessively restrictive regulations that could interfere with normal farming practices.

**Objective:**

Provide a tax climate favorable to production agriculture.

**Objective:**

Enhance the potential profitability of farming by facilitating appropriate accessory activities on farms.

**Objective:**

Maintain and enhance local sources of supply for food processing businesses.

**Objective:**

Provide opportunities for agriculturally-related businesses to locate and expand in the county.

**Objective:**

Ensure that county roadways continue to accommodate agriculturally-related traffic.

**GOAL:**

Preserve highly-productive farmland for agricultural use.

**Objective:**

Minimize scattered urbanization which causes conflicts with farming, such as additional vehicular traffic and land use incompatibilities.

**Objective:**

Discourage the conversion of highly-productive farmland to non-farm uses.

**Objective:**

Protect farming operations in Agricultural Security Areas (ASAs) from incompatible, non-farming-related uses.

**Objective:**

Identify areas within Adams County that are appropriate for ASA designation, but which are not currently designated as such.

**Objective:**

Encourage locally-generated policies consistent with the "Clean and Green"

Act (preferential tax assessment), the Adams County Agricultural Land Preservation Program (purchase of development rights), and private land preservation programs.

*Objective:*

Encourage the enactment by municipalities of effective agricultural zoning in highly-productive agricultural areas of Adams County.

**Planning**

**GOAL:**

Put in place a variety of approaches, mechanisms, and tools appropriate for dealing with the challenges posed by growth.

*Objective:*

Coordinate planning and development efforts with adjacent counties, local governments and institutions, school districts, and State and Federal agencies.

*Objective:*

Encourage and assist local communities in the preparation of new and updated comprehensive plans through technical and financial assistance.

*Objective:*

Encourage and assist local communities in the preparation and enactment of new and improved development regulations.

## SECTION 3: LAND USE PLAN

The Land Use Plan (Figure 3.1.1) ties together all the elements that make up the Comprehensive Plan Update. It thus becomes the primary reference against which land-use decisions, as well as decisions on major public expenditures, can be measured for the next ten to twenty years. The Land Use Plan is concerned with the proposed location, intensity, and amount of different uses. It strives to be in harmony with trends affecting economic development in the county and its region, while mirroring the values, needs, and expectations of county residents.

The Land Use Plan, as well as the other specific elements of the Growth Management Plan, is oriented toward planned development of Adams County through 2010, and reflects continuing steady growth, a balanced land-use mix, conservation of natural and cultural resources, and efficient utilization of existing systems. The Growth Management Plan is based upon a 2010 Adams County population of between 100,000 and 110,000 persons and an increase of about 14,000 to 18,000 housing units above the present inventory.

### General Description

The Land Use Plan incorporates a growth-area concept to provide for the orderly extension of development. Growth is directed primarily to areas already served by central water and sewer systems, community facilities and services, and having a high level of accessibility. The growth-area concept provides an efficient and economical way to allow new growth to occur while limiting the consumption of agricultural land. The majority of the residential, commercial, industrial, and institutional development is planned to take place within designated growth areas. Areas outside the growth area are intended primarily for agricultural, recreational, and open space protection uses.

Growth areas are focused on existing boroughs - with their residential neighborhoods, shopping cores, community service facilities, and public utilities - and on a limited number of other discrete locations in the county, such as selected crossroads villages. Growth opportunities for all 34 of the county's municipalities are included.

The growth-area concept of the Land Use Plan should be integrated within policies set forth in municipal Act 537 sewage plans. If County and local land use plans and municipal sewage facilities plans are properly coordinated, more-intensive development in rural and agricultural ("non-growth") areas can be severely curtailed.

Care should be taken in relating the picture of future development in Figure 3.3.1 to expected development through the planning horizon of about twenty years. The Land Use Plan has built-in slack; rather than being a strict representation of the twenty-year "build-out", it illustrates those areas in which particular land uses can be supported by the policies

of the Growth Management Plan.

### **Growth Areas**

The Land Use Plan recognizes current and expected development trends in Adams County, indicating that its eastern tier will continue to be the primary growth quadrant of the county. Growth areas in the east are focused on the existing boroughs of Littlestown, McSherrystown, New Oxford, Abbottstown, Bonneauville, and East Berlin, and include portions of Conewago, Mount Pleasant, Oxford, Union, Germany, Berwick, Hamilton, and Reading Townships. Other, smaller centers for future development in the east are designated for the Hampton area, at Routes 94 and 394; in the Green Springs area, east of Route 94 near the county line at Hanover; and at Lake Meade. These latter centers include parts of Reading, Latimore, Berwick, and Oxford Townships.

This area is expected to continue to be the primary growth sub-region of the county. Growing employment centers near Hanover, west of York, and close to Westminster and Owings Mills in Maryland are predicted to be determining factors, as are planned road improvements in Pennsylvania and Maryland, and the emergence of major shopping malls, service businesses, and an industrial park near the boundary of Hanover and Penn Township, just across the county line.

Growth in the central part of the county is planned to be focused primarily on the Gettysburg area; with additional development associated with York Springs and several of the interchanges along US Route 15. Development in the vicinity of Gettysburg includes the US Route 15-US Route 30 interchange and Lake Heritage areas, with smaller growth centers at the Fairplay area at US Route 15 and Business Route 15 south of Gettysburg; at the Black Horse area, west of the borough and north of Route 116; near Mummasburg, northwest of Gettysburg; and in the Hunterstown area, at the Route 394 interchange with US Route 15. Gettysburg-area projected growth areas include portions of Cumberland, Straban, Mount Pleasant, Mount Joy, Franklin, Highland, and Freedom Townships. The York Springs- and Route 234-interchange-vicinity growth areas include parts of Latimore, Huntington, and Tyrone Townships.

Growth in the central part of the county is predicted to be more oriented to US Route 15 corridor commuter activity, in contrast to the eastward and southeastward orientation of development in the eastern part of the county. The need to protect the visual character of the Gettysburg National Military Park and Eisenhower National Historic Site translates into a general requirement for careful placement and design of new development, often at some distance from the built-up portions of Gettysburg Borough.

Development in the western part of the county is planned to occur in association with several boroughs, primarily with Carroll Valley, with less growth in the Biglerville, Arendtsville, Bendersville, and Fairfield areas. A small growth area is also indicated for

Orrtanna. These projected centers include portions of Franklin, Butler, Menallen, Hamiltonban, Liberty, and Highland Townships.

### **Parks, Permanent Open Space, and Preservation Areas**

The Land Use Plan designates important natural and cultural resource areas as permanent open space and resource-protection lands. These include federal and state parks, forests and game lands; the county's extensive system of floodplains and significant wetlands; and prominent woodlands (Figures 2.2.1, 2.4.1, 2.4.2, 2.4.3, 2.4.4, 2.4.5, 2.4.6, 2.5.1, 2.5.4, 2.6.1, 2.9.4). Permitted uses for these areas under the Land Use Plan would include low-intensity recreation and open space uses (subject to on-site environmental conditions and statutory regulations), limited agriculture, and forest management. Prohibited uses would include any commercial or industrial facilities and, except in rare circumstances, any new residential dwellings.

In addition to the resource areas already mentioned, permanent open space may also include perimeter buffer zones around designated growth areas (Figure 3.3.1). In all instances, potential buffer zones would include existing sensitive natural-resource lands, but these have been extended in places in Figure 3.3.1 to complete perimeter rings of open space around the growth areas. The buffer zones are intended to be a permanent open space and recreational resource for growth-area communities, to become part of a larger county-wide permanent open-space connector system, to provide an effective transition from urban uses within the ring to agricultural ones beyond, and to limit uncontrolled expansion of growth areas. (While the physical limits to growth areas represented by the perimeter buffer zones are considered generous for the twenty-year planning horizon, it is conceivable that growth area expansion in periods beyond will entail leapfrogging the perimeter buffer. This action would not, however, negate the value of the ring for local and county-wide open space and recreation. To resist urban sprawl and rapid consumption of agricultural land, leapfrogging the ring should be strongly resisted over the current planning period.) Implementation of the buffer concept would come about principally through the land development process (see "Creating the Permanent Open Space System"), following.

### **Agricultural, Resource Conservation, and Very Low Density Residential Areas**

The broad extent of the county that qualifies neither for growth nor for strictest preservation is intended primarily for agricultural use. A major goal of the Comprehensive Plan is to conserve agricultural land, but also areas of steep slopes, woodlands, aquifer recharge areas, and cultural resources. The Land Use Plan formally apportions the county into growth and "non-growth" areas, with the intent of limiting development outside the growth zones and encouraging continuing agricultural production, as well as the protection of the

county's historic and rural landscape. This area outside designated growth boundaries additionally permits low-intensity recreational and residential uses, but only to the extent that new development does not diminish or conflict with agricultural lands or degrade areas of scenic beauty or environmental sensitivity. Except for agricultural-related enterprises, new commercial and industrial uses should be prohibited in rural areas of the county. (Home occupations should, however, be permitted - see page 3-3-11.)

The Land Use Plan implies a general discouragement of development within rural and agricultural areas, coupled with incentives to develop within designated growth areas. Various Plan implementation techniques are intended to be applied across the county to bring about the desired result. Discouragement of development in rural areas may be achieved through the promotion and enactment of agricultural conservation easements and the adoption of agricultural zoning (see Section 8 of this chapter). At the same time, the expansion of existing central water and sewer systems and creation of a limited number of new ones can serve to encourage development within designated growth areas.

The Land Use Plan does recognize that some residential development will occur beyond designated growth areas. Given that prospect, it is important that various types of land development controls be adopted which will ensure that when development does take place outside growth areas, it is of high quality, and that the process of development actually contributes to long-term conservation of land. Examples of this are shown in Figures 3.3.2, 3.3.3, and 3.3.4, where the exercise of development rights to build houses in an agricultural area is coupled with regulations limiting the area for houses to only a small piece of the farm and preserving most of the acreage for agriculture in perpetuity. Another example is the implementation of transfer-of-development-rights (TDRs) opportunities. Here a landowner's right to develop homes on his property may be separated from the property in question and exercised on another, more-appropriately-located, property. As part of this process, the original landowner gains monetary benefit from exercising a right to develop, in return for which he agrees to use the original property in question for agriculture or specified open space/recreation uses only, in perpetuity.

In general, the Land Use Plan can support a variety of land development concepts in rural and agricultural areas, but only if these approaches support the basic principles of conserving land for non-urban purposes. Very low overall densities only should be permitted, such as in legitimate agricultural zoning. Clustering of permitted units on a small portion of a tract, while the rest is left open in perpetuity for agricultural or other, legitimate resource conservation purposes, is fundamental. Clustering might be done in small assemblages, such as illustrated in Figure 3.3.2 or Figure 3.3.3, or in larger ones, such as a "village cluster" of about one hundred units that might be put together through a TDR process in a particular municipality (see Figure 3.3.4). Innovative approaches to sewage treatment should also be part of any development outside designated growth areas (see Section 9 of this chapter).

Generally, however, proposals to construct central sewer and water service in very low



density residential areas should be discouraged. Exceptions should be made only in cases where specific development proposals, when implemented, would result in the preservation of agricultural lands.

### **Open Space Uses**

The widespread pattern of parks, permanent open space, and areas to be preserved delineated in the Land Use Plan forms the backbone of a county-wide open space system. The open space system, based as it is on existing natural features such as the extensive county-wide web of floodplains associated with creeks and stream courses, can be said to be already established. In many instances, even where municipal zoning does not exist, floodplain and wetlands regulations, administered by municipalities and/or state and federal agencies, already prohibit or restrain most development. The overall objectives should be to tie the system together, give it permanent protection, and facilitate improved public access.

In the context of a largely-rural county facing increased development pressures, however, the long-term protection of these sensitive resources will depend on concerted efforts by public and private agencies. At the same time, the increasing resident population will require greater provisions for designated recreational open spaces. Natural-feature corridors are proposed to be combined with existing protected areas, such as parks, state forests, and game lands, and with projected linear buffers to form a permanent interconnected open space system. This permanent open space system is a critical component of the Land Use Plan, and is seen the primary mechanism to simultaneously protect county resources and to offer long-term opportunities to meet open space and recreational needs.

The continuous, interconnected, permanent open space network is intended, then, to serve several purposes: 1) to conserve areas of environmentally-sensitive and culturally-valuable resources; 2) to provide appropriate buffers, where possible, between areas of differing land use, such as between urban uses and agricultural ones; 3) to provide a framework for a trail system, eventually to stretch throughout the county, for walking, hiking, and cycling; 4) to permit pedestrian and bicycle access to a variety of destinations, including adjacent and nearby communities, other residential developments, schools, special natural features, shopping, and specific sites for recreational facilities; 5) to create sites where public recreational facilities may be developed; 6) to provide for some of the private open space and recreational space needs of the residents of each new housing development; 7) to provide appropriate buffers between high-volume traffic arteries and residential areas; and 8) to maintain and enhance wildlife habitat.

### **Creating the Permanent Open Space System**

The Land Use Plan, the first identification and formal recognition of a county-wide

permanent open space system, should lead directly towards programs for its protection and, in places, for its further development. The County needs to act as advocate and promoter for the network and, through Plan implementation, as a facilitator for appropriate protective and developmental efforts by public and private agencies. These actions include lobbying state and federal governments to make additional acquisitions of land that border existing state forests and game lands; to fund further open space planning efforts, such as a Countywide Comprehensive Recreation, Parks, and Open Space Study; to assist in the purchase of conservation easements; and to provide financial assistance for local parks and open space development. Within its own borders, the County needs to urge its municipalities to recognize the permanent open space network and to undertake local efforts in support of it, particularly through the adoption of appropriate planning documents and the enactment and enforcement of new development regulations. Local comprehensive plans should formally recognize the parts of the system relevant to each township or borough, and municipalities should promote residential clustering, which concentrates a tract's potential development on a small portion of the overall tract, leaving the remaining area as permanent open space, by adopting suitable zoning regulations. The County should advocate formation of watershed associations and other voluntary groups that would take an active role in promoting stream valley and other corridor preservation.

Provisions within the framework of regulations governing land development are extremely important in helping to create the permanent open space network. A primary method by which the system would be achieved is the utilization of residential cluster development zoning provisions by landowners, in combination with existing and potential new regulations limiting development of environmentally-sensitive lands. With local comprehensive plans in place cognizant of the county-wide network, the County and municipality can evaluate a prospective development's potential open space lands in terms of the permanent open space system and its various parts. Under certain conditions (such as under optional cluster-development provisions) local regulations may mandate the offering of any subdivision's required open space to the township or borough, and the municipality may, depending on a tract's specific location, accept a developer's offer of dedication. Otherwise, a public access easement may be required, or lands may simply be left to the exclusive use and responsibility of the respective homeowners' association. Depending on the value of a particular piece of ground to the county permanent open space network, the land may become part of the overall system in various ways, or may not be included.

Through various means, including outright purchase by different levels of government or by private not-for-profit conservation organizations, through the granting of conservation easements on relevant properties, and through the residential land development process the County may become the beneficiary of lands to be permanently preserved as open space, potentially developed as new parkland, or to be held as part of a long-term land bank for future park development and open space needs. In the latter cases, the dedicated or otherwise conserved land can still function as part of a continuous trail system in the interim since, for most of the proposed permanent open-space network, the emphasis should be on low-maintenance, natural-growth, passive-recreation paths, with minimal upkeep needs.

When the time comes for more capital-intensive park development of portions of open space lands, State programs for parkland acquisition and development may assist in facility construction of recreational sites.

The permanent open space system offers an opportunity to expand open space and recreational opportunities in Adams County, and is intended to be complementary to existing federal parks, state forests and game lands and local recreational facilities. As part of the interconnecting network themselves, these other facilities have major roles to play in the system's development, and as the sponsor of the overall system, the County should ensure that the agencies that operate them are full participants in the process. Cooperation among the various levels of government can produce tangible open-space benefits for county residents, as well as visitors to the area. (See "Institutional Uses", following, and Section 7 of this chapter.)

Other benefits of the permanent open space network may include:

- Reduction of stormwater flood drainage;
- Maintenance of stable groundwater levels;
- An attractive amenity that can be a strong selling point in gaining business investment;
- Enhancement of property values for bordering and neighboring residences.

### **Residential Uses**

The housing element of the Adams County Growth Management Plan (see Section 5 of this chapter) explains in detail the intended locations for residential use, incorporating a gradation of densities from very low to moderately high. Distinctions among residential categories are made according to gross density limits rather than by specific housing types to increase flexibility in responding to natural site conditions, public recreational needs, and market demands for a range of housing types and site sizes. On newly-developing tracts, it is intended that this flexibility should lead towards open space conservation, as well as the opportunity for development of a range of housing types to meet the needs and desires of the present and future residents of the county.

In general, very low-density residential development is proposed for most of the county, reflecting the primary agricultural, recreational, and resource-protection uses intended. Higher densities are proposed, ranging from medium-low through to medium-high densities, in designated growth areas.

## **Industrial Uses**

The Land Use Plan indicates eight primary locations as the most appropriate for future industrial and business-park uses. Five of these locations are along US Route 15, emphasizing the importance of the four-lane, limited-access highway to Adams County for access to and from its region. The other three locations are where newly-created industrial parks are emerging.

US Route 15 is a relatively-underutilized highway through the center of the county, with connections to the Pennsylvania Turnpike and Interstate system less than twenty miles to the north and to I-70 at Frederick, Maryland, about 25 miles south. Adams County's main north-south artery runs generally through areas of low development intensity, and offers regularly-spaced interchanges, generally flat topography, and relatively-unrestricted choices for light-industrial and business-park sites. While sites with good access and few land-use conflicts are plentiful, central water and sewer service is not. Nonetheless, sites along this highway corridor are probably the best-suited for future new county industrial and business-park locations.

Of the eight interchanges along US Route 15, five are recommended as locations for industrial and business-park uses. These include the eastern side of the interchange at Route 94, as the eastern end of the York Springs growth area; the Route 234 interchange near Heidlersburg; the Route 394 interchange, west of Hunterstown; the US Route 30 interchange, east of Gettysburg; and the Route 97 interchange, near Lake Heritage. The York Springs-area, Gettysburg-US Route 30 and Lake Heritage-area sites are presumed capable of being serviced in the future by central water and sewer facilities already in the respective locales. The Route 394 interchange area is proposed as an adjunct to the small designated growth area around Hunterstown, and both the western industrial and business-park and eastern residential and small-scale commercial nodes are recommended as part of a combined new central water and sewer service district. The Route 234 area is presumed to be served by on-site facilities through the planning period.

The significance of the interchange locations for industrial and business-park use goes beyond the simple availability of convenient access for trucks and employees via US Route 15. The objective is to facilitate travel to and from establishments in the county from beyond its borders via regional roadways which have the capacity for this traffic, as opposed to the two-lane state highways, many of which are already frequently congested, or the rural road network. Traffic volumes forecast for these interchanges in the future have suggested that certain physical improvements, notably improved ramps, will become necessary (see Section 4 of this chapter). Implementation of these improvements is especially important for the continuing suitability of these locations as attractive sites for industrial and business-park investment, for the convenience of the county labor force, and for the maintenance of the county quality-of-life.

The three other primary locations recommended for future industrial and business-park uses

are the Littlestown and Conewago Valley industrial parks, which are currently being developed, and the existing Conewago Township industrial park south of McSherrystown.

Selection of future industrial and business-park locations needs to take into account a number of factors. Beyond the transportation issues, the type of uses projected for these locations must be emphasized. Within the region as a whole, traditional heavy or "smokestack" industry has generally given way to enclosed manufacturing, assembly, and warehousing facilities which are not noxious and present similar appearances to office or commercial structures. Suitable enterprises for the sites selected include the "target thrust groups" identified in A Targeted Economic Development Program for Adams County, Pennsylvania, prepared for the Gettysburg Industrial Development Corporation and the Economic Development Office for Adams County in 1988. Top target industries for Adams County include manufacturing activities such as: Communication equipment, electronic components, medical instruments and equipment, measuring devices, furniture and fixtures, printing and publishing, electric lighting and wiring equipment, and fabricated metal products; ice cream and frozen desserts, food preparations, ceramic wall and floor tile, and cookies and crackers. Nonmanufacturing activities include: Computer and data processing services; "back office" activities of finance and insurance firms; and administrative activities related to membership organizations.

Another factor to be considered is the tax-base consequences of industrial and business-park development. These uses are valued highly by local governments since they have the potential simultaneously to add substantial revenue to the tax coffers and to relieve the property-tax burden on residents. There are 34 municipalities in Adams County, each of them, in effect, competing for industrial and business-park uses so as to be able to reap tax benefits for its individual township or borough.

Since the likelihood of all 34 municipalities attracting significant industrial and business-park uses over the planning period is not high (and undesirable from an efficiency and environmental-protection perspective in any case), a mechanism needs to be found to facilitate the distribution of potential tax benefits accruing from the development of a limited number of industrial- and business-parks in the county over the next twenty years. One possible instrument is the school districting system, which entails inter-municipal cooperation in the administration and funding of schools. The locations for industrial and business-park uses shown in the Land Use Plan take this procedure into account - all school districts except Fairfield have a proposed or existing industrial or business-park location. (It is presumed that the US Route 15-Route 234 location can be shared between the Upper Adams and Bermudian Springs districts). Fairfield does not appear as a favorable location for industrial and business-park uses based on accessibility factors but, depending on a prospective development's characteristics, this district could achieve suitable new industrial or business-park uses.

The Growth Management Plan strongly recommends that most new industrial development be located in planned, visually attractive, settings. For some types of industries, however,

traditional locations such as the industrial districts at Biglerville, Aspers, or along the active CSX railroad (particularly in the eastern half of the county) may be appropriate. Part of one of the primary locations for industrial and business-park uses or one of these secondary areas could be developed as a planned agricultural business location, functioning as a marketing center for locally-produced agricultural products and a supply center for farm-related equipment and materials.

### **Commercial Uses**

The Growth Management Plan directs nearly all new commercial development to designated growth areas. ("Commercial" refers primarily to consumer-oriented retail activity, but also most office uses as well.) A major goal of the Plan is to reinforce borough business districts while simultaneously conserving rural landscapes and reducing transportation demands - an emphasis on the core areas of existing boroughs and selected new centers for both retail and office activities supports these goals. Additional commercial uses in boroughs and other centers ensures their long-term economic viability, which is the critical component towards maintaining community functions and character. If carefully planned and designed, new uses in older communities can enhance their aesthetic harmony and ambience. The combination of new and existing residential areas focused on traditional core functions of boroughs and other centers allows for home-work and home-shopping connections that are physically close, and that present the opportunity for short-distance and -duration trips by automobile or alternate means, such as bicycle or on foot.

The Land Use Plan implies a commitment on the part of boroughs and townships to recognize the inherent economic, social, and aesthetic value of their existing settlements, and to follow through on community economic revitalization efforts, new and updated local comprehensive plans (with strong emphases on circulation and parking questions), and the preparation and adoption of design guidelines and controls for new development in historic places. (Also see Section 7 of this chapter.)

The Plan recognizes that not all projected commercial uses are well-suited to be inserted into traditional business districts. A limited number of locations for highway-oriented commercial activities are indicated, all within designated growth areas, and all recommended to be constructed in shopping-center-like clusters. Highway-oriented strip commercial use is extensive along US Route 30 east from Gettysburg to the York County line. While established highway strip commercial uses are firmly entrenched, the Growth Management Plan proposes that their extent be limited to the land area that they already occupy. Future commercial development beyond the core areas of boroughs and selected new centers should be undertaken in a manner that limits the number of access driveways to frontage roads. It is also recommended that, in the context of undertaking certain highway improvements (such as the New Roadways, Local Collector Roadways, Improved County Collector Roadways, and Capacity Improvements to the Arterial System detailed in Section 4 of this chapter), the County promote the preparation of access management plans. Access

for new development should be based on the principle of minimizing the number of driveways along all roads of arterial status. New development may be required to have shared access, or marginal or rear access if practical. New access driveways should be permitted conditioned on the property owner's consent to share access with future adjacent development where such access can be shown as feasible.

Remedial action plans should focus on the issues of shared vehicular access, but also address parcel development standards (such as those pertaining to impervious coverage and stormwater management) in order to improve the image and environment of existing commercial areas. Once these standards have been determined, they may be incorporated into land development regulations and municipalities can limit issuance of building permits for any alterations to existing establishments based on compliance with the new standards.

Until now, highway-oriented strip commercial use has been generally limited to US Route 30 and parts of certain other highways, mostly as they emanate from Gettysburg. A major objective of the Plan is to ensure that the process of commercial stripping does not gain additional footholds, since commercial stripping undercuts traffic safety, contributes greatly to traffic congestion, and has pronounced visual effects. Except for an extremely small number of enterprises whose limited functions are directly related to the primary agricultural, recreational, and resource-protection uses within non-growth portions of the county, all commercial development should be confined to designated growth areas, and be located in coordinated groupings with shared access.

The County should encourage the development of office-commercial uses in the center of Gettysburg. Since multi-tenant office-commercial uses tend to prefer a mix of complementing services and uses, the existing concentration of functions at the county seat would seem to represent the best-suited location for this market. As the county seat, Gettysburg is a center of law, medicine, and banking services. Expansion of the downtown work force will probably be the strongest contributing factor for a lively business and cultural life in the borough. Office-commercial development here may also hold out an opportunity to offer additional support to specialty retailing associated with tourism (such as eating and drinking establishments) as well as hotel/motel establishments and proposed parking garages. The encouragement of an integrated pedestrian-oriented shopping and working environment in downtown Gettysburg is seen as having multiple benefits: A reduced rate of auto-trip generation for work-shopping trips, compatible and mutually-supporting roles with tourism and borough retail commerce, and more efficient use of future public parking facilities.

Other boroughs may evolve specialized county sub-region service center roles. Littlestown, East Berlin, Fairfield, McSherrystown, and Biglerville are potential candidates. Still other boroughs, such as New Oxford, Abbottstown, and Arendtsville may be more tourist-oriented.

Home occupations are increasingly a fact of life for all regions of the country and types of communities. Home occupations should be permitted in all Adams County townships and

boroughs, but regulated by new, performance-based ordinances. The County should assist its municipalities through the drafting of model home occupation ordinance(s) and their promotion to local governments.

Figure 3.1.1 indicates two major classifications of commercial use - mixed-use Borough/Village/Crossroad Center and high intensity Commercial. The former category encompasses a wide variety of settings for small-, moderate-, and medium-sized retail, office, and combined retail-office, retail-residential, and office-residential facilities. Included in these areas are residences that are not necessarily combined with commercial uses in the same structure, but are found interspersed with commercial uses or close to them. These mixed-use areas follow the precedent of historic Adams County boroughs and villages by keeping a variety of different, reasonably-compatible uses together in a closely-knit setting.

Within this broad category, certain distinctions may be made. Borough Centers are based on existing boroughs, with their historic and current mixed-use character and, in the case of many of them, significant commercial activity. Their character and economic significance should be recognized and reinforced through the adoption of appropriate zoning regulations and design standards.

Village Centers denote small existing or evolving nodes of activity, primarily residential in character, with limited-scale commercial uses. Particularly when historic structures are present, the retention of existing buildings and other notable features should be promoted through carefully-crafted development regulations that also provide for home occupations, mixed-use structures, and incentives for architecturally-compatible rehabilitations and new small-scale "infill" development. A Crossroads Center is closely related to a Village Center, but implies mostly new development and a mix of convenience goods and services at a scale significantly less than for a community shopping center.

### **Institutional Uses**

Institutional uses are significant in Adams County, ranging from the prominent National Park Service facilities to Gettysburg College, to a number of nursing home and life-care facilities, to a wide variety of public, quasi-public, and private establishments (see Chapter 2, Section 9).

The Land Use Plan explicitly recognizes the uniqueness of Gettysburg National Military Park and Eisenhower National Historic Site and their environs by carefully locating growth areas away from the park boundaries, particularly along the northwest, west, southwest, south, and southeast borders. In addition, the concern of National Park Service officials that the scenic character of several road approaches to the park be preserved was a central issue in the allocation of new industrial, business-park, and commercial uses along the east and



southeast boundaries of Gettysburg National Military Park to selected interchanges, but not to others. Protection of the park context from widespread, intensive new urban development is a key ingredient of the Land Use Plan, especially since the park is such a significant component of the county's economy. Views of the park are an essential part of its image, particularly approach vistas, such as along Route 116 and Taneytown Road.

Gettysburg National Military Park, having been expanded by about 2,000 acres in the last year, is now entering a phase of consolidating its recent acquisitions. Although plans exist to rehabilitate the Visitor Center in mid-decade, measures such as land acquisition, easements purchase, and other efforts toward protection of new park territory are currently being pursued. At the same time, the National Park Service (NPS) is beginning to explore a variety of concepts that would expand the park context, but not necessarily its property holdings. The Gettysburg Historic Pathways Plan is one such effort that has already seen considerable progress. Other ideas, still in the earliest conceptual stages, include NPS's "greenway" strategy, including trail linkages to historic resources elsewhere in the county, to the Monocacy Battlefield and C&O Canal Park along the Potomac (via the Marsh Creek Valley), and to the Appalachian Trail. While these notions are still in the embryonic state, their potential implications for the countywide permanent open system (see "Open Space Uses", above) are enormous. Close cooperation among the County, its constituent municipalities, and NPS is essential over the coming months and years.

NPS is embarking on a Land Protection Study, slated to be concerned with land within the new park boundary, but also the larger National Historic District. Land use questions are at the heart of this study, and NPS needs to elicit participation by the County and Cumberland, Mount Joy, Straban, and Freedom Townships and Gettysburg Borough in the earliest stages.

Adams County has been the location for several new nursing home and life-care facilities over the last two decades. The combination of demographic trends in the northeast and mid-Atlantic regions of the country, the attractive ambience of Adams County, its relative proximity to the urban centers of the East, and its relatively inexpensive real estate are likely to perpetuate this trend over the planning period. Literature on the subject emphasizes that increasingly the residents of these facilities exhibit life-styles closely parallel to other adults in the broader community, including a high rate of mobility (one- and two-car households) and full or part-time employment. Thus the traffic-generating consequences of these land uses, as well as their water and sewer implications, are similar to those for conventional medium to medium-high density residential uses. For these reasons, nursing home and life-care facilities are recommended to be included within growth areas in the Plan, and to be integrated with the infrastructure systems as well as the mix of residential and commercial uses envisioned for each growth-area community.

## Land Use Policies

1. *Promote the basic Growth Management Plan concepts of growth areas, resource conservation areas, and permanent open space and preservation areas, and their configuration in the Land Use Plan. Assist municipalities in the preparation and adoption of local comprehensive plans and land use controls consistent with the Land Use Plan.*
2. *Assist municipalities and land developers in the planning and design of additions to existing built-up areas and new residential, employment, and mixed-use areas, consistent with the Land Use Plan.*
3. *Encourage the establishment of employment centers in designated areas.*
4. *Promote the establishment of a permanent, designated, interconnected open space network throughout the county and the development of recreational facilities at selected locations.*
5. *Direct new commercial activity to existing borough cores and new mixed-use centers, in conformance with the Land Use Plan.*

Figure 3.3.2

*"Mini Cluster"*  
5 Single-Family Units  
(detached or attached)

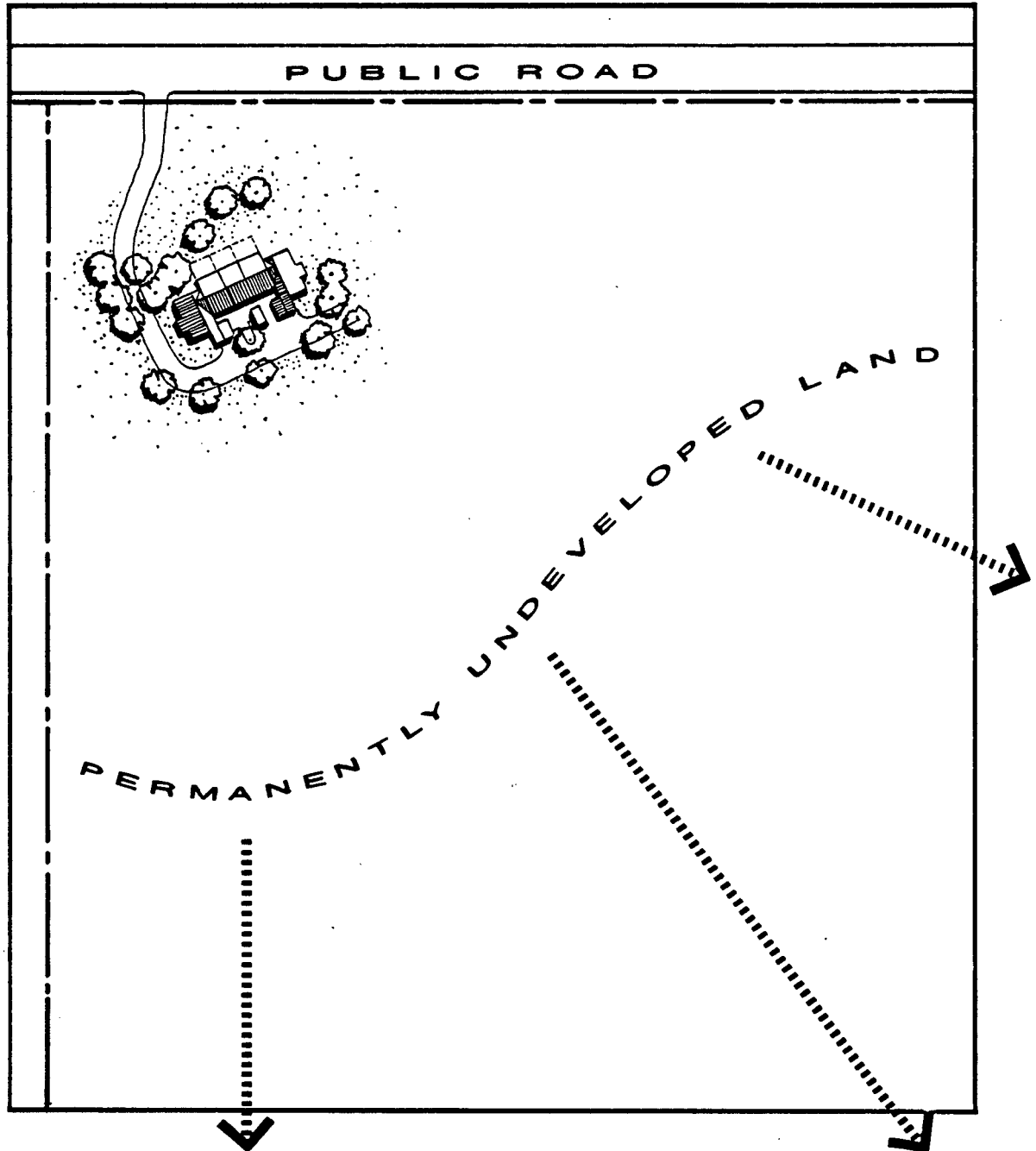


Figure 3.3.3

*"Country Cluster"*  
*10-20 Single-Family Units*  
*(detached or attached)*

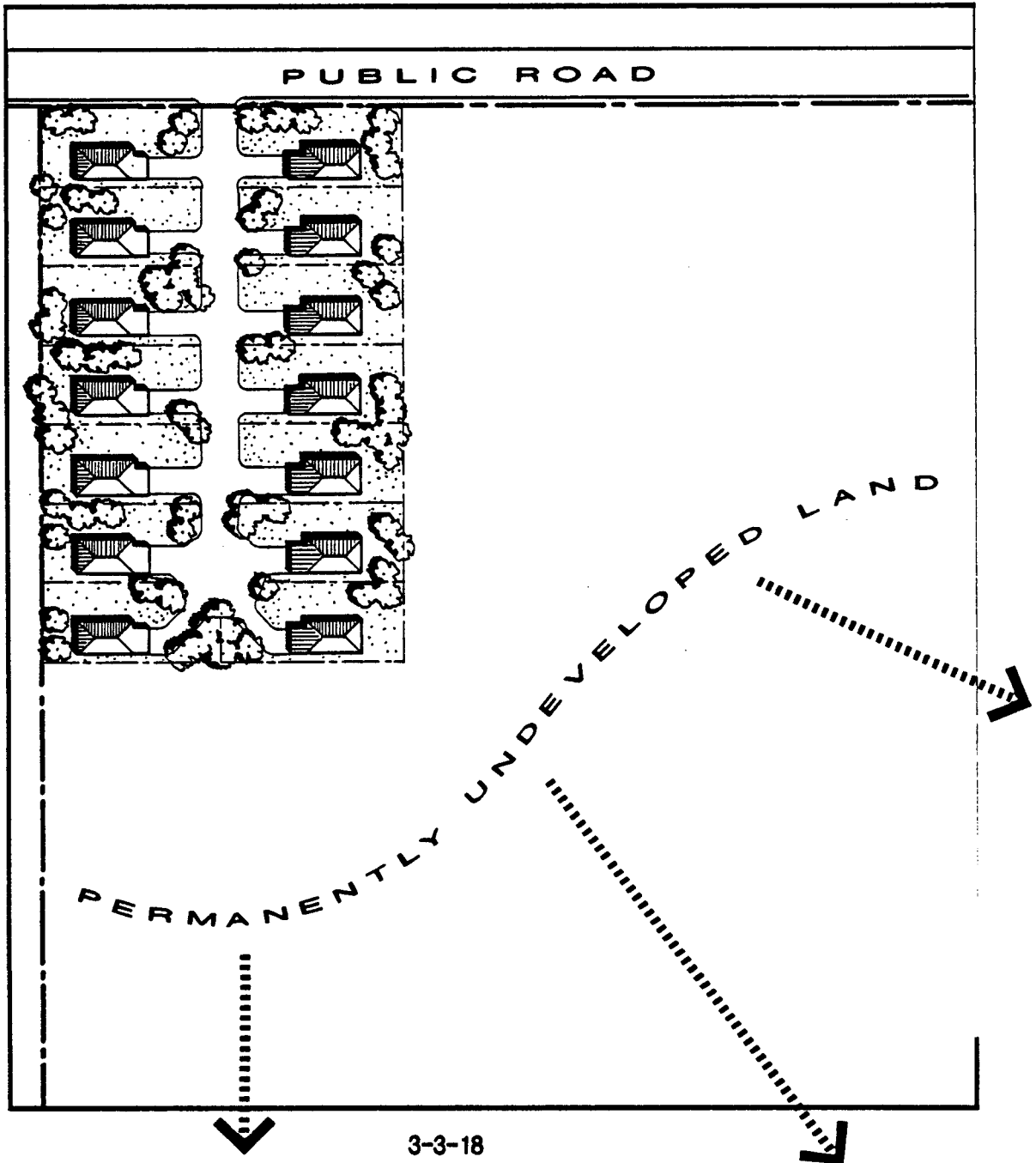
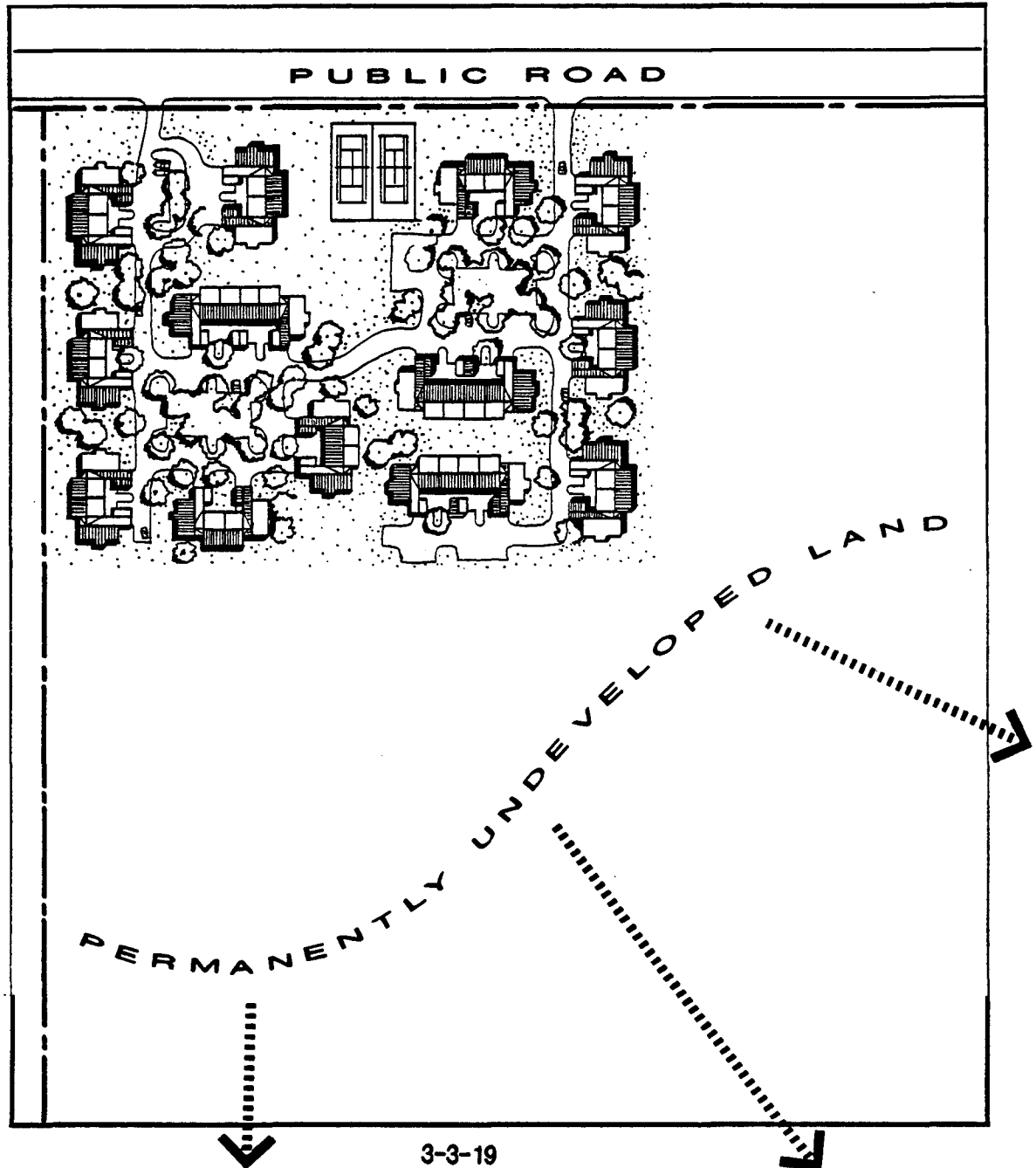
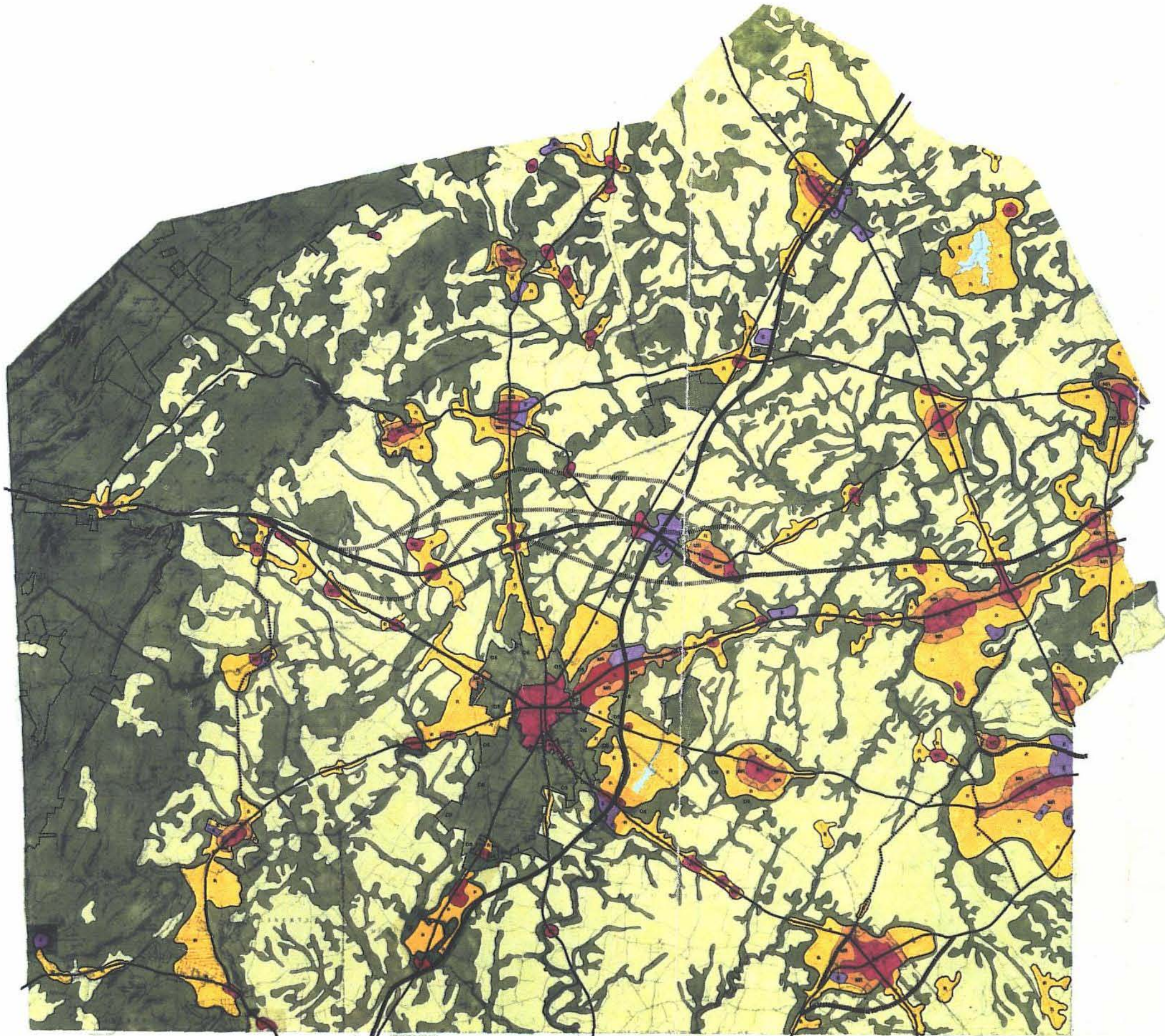













Figure 3.3.4

*"Village Cluster"*  
60 Single-Family Units  
(detached or attached)



# LAND USE PLAN



-  Parks, Permanent Open Space & Preservation Areas
-  Agriculture, Resource Conservation & Residential - Very Low Density
-  Residential - Medium-Low Density
-  Residential - Medium Density
-  Borough/ Village/ Crossroad Center (Mixed Use)
-  Commercial (High Intensity)
-  Employment Center
-  Federal & State Park Boundaries
-  Existing Roads
-  New Roads - Possible Alignments
-  New Roads - Alternative Alignments
-  Improved County Collectors

# ADAMS COUNTY

## Pennsylvania

### Comprehensive Plan Update



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## **SECTION 4: CIRCULATION PLAN**

### **Introduction**

It is clear that the road network serving Adams County will be subject to increasing traffic loads over the planning period. Even without any of the anticipated county development, traffic would probably increase at about a rate of one percent (1%) per year due to growth in the region as a whole. In order to prepare for both county and regional growth and to maintain and improve roadway safety, the Circulation Plan makes a series of recommendations, consistent with the Growth Management Plan's goals and objectives and the framework for development provided by the Land Use Plan (see Section 3).

Regional through traffic, intercounty, and local circulation issues are addressed by the Circulation Plan, all in the context of the Land Use Plan's growth area concept, which directs future development primarily to existing boroughs and their vicinities, as well as to a few other locations. Regional through traffic is proposed to be accommodated on roads with the capacity for these types of trips and without disruption of existing settlements. Intercounty and intracounty links are proposed to be improved to allow greater ease of travel among designated growth areas, while controlling traffic effects on the rural landscape that distinguishes most of Adams County. Local trips in and around each population center are proposed to be made more convenient, as well as safer.

Circulation Plan recommendations are based as well on traffic projections through the twenty-year planning horizon, with a focus on five-year intervals of traffic growth (1991-95, 1995-2000, 2000-2005). Thus, the Circulation Plan may provide reasonable lead times for governments to act as development occurs in accordance with the Growth Management Plan. Even if certain anticipated developments do not occur as planned or occur beyond the target dates, nonetheless it is evident that sooner or later the existing roadway system in Adams County will have to carry additional traffic. The Comprehensive Plan must be flexible enough to accommodate these increased demands and at the rate and pattern in which they actually occur.

### **Transportation Needs**

The transportation-related goals and objectives of Section 2 have been distilled into ten basic transportation needs:

1. Restrain growth in traffic passing through Adams County's historic boroughs and villages;
2. Establish an alternative route for trucks around Gettysburg, New Oxford, and Abbottstown;

3. Alleviate growing congestion at the center of Gettysburg;
4. Increase the capacity of the county's arterial road system;
5. Eliminate hazardous conditions and improve public safety where accident histories demonstrate unacceptable risks;
6. Improve traffic flow within boroughs and villages, while retaining community character;
7. Provide safe and convenient local circulation options around and through communities, while retaining local historic and aesthetic qualities;
8. Preserve and enhance the scenic qualities of county roadways;
9. Respect the integrity of contiguous historic structures and settings in the course of planning and implementing roadway improvements;
10. Ensure appropriate access to agricultural districts and agriculturally-related commercial operations.

### **Types of Improvements**

These transportation needs, in turn, have been translated into seven categories of recommended roadway improvements for Adams County:

- New Arterial and Collector Roadways
- Local Collector Roadways
- Improved County Collector Roadways
- Interchange Improvements to U.S. Route 15
- Capacity Improvements to the Arterial System
- SAMI-type Improvements
- Safety Improvements

Figure 3.4.1 illustrates the Circulation Plan's recommended roadway improvements.

#### **1. New Arterial and Collector Roadways**

New roadways, both arterials and collectors, are needed to serve travel demand that is not accommodated by the current roadway network and would not be accommodated in the future even if improvements are made to existing roads. New roadways would be on new rights-of-way, creating travel paths that do not exist today.



Implementation of a new roadway link is a difficult undertaking and requires substantial lead time. Detailed traffic, environmental and location studies are required, rights-of-way must be purchased and funding secured. The design of the new roadways depends upon their function in the roadway network. Arterial roadways can be either limited access, controlled access or free access. They can be two lanes, two lanes with the initial purchase of right-of-way for four or more lanes, or initially constructed at the ultimate cross-section. Figure 3.4.2 shows the typical cross-section of arterial roadways on new location rights-of-way and Figure 3.4.3 illustrates the definitions of limited, controlled and free access.

County Collector roadways, perhaps at least partly on new rights-of-way (see below), are designed to serve local, intra-county trips at a slower speed than arterials. A special design has been developed for this class of roadway and is illustrated in Figure 3.4.4. This design features grass shoulders, grass or wildflower slopes and gentle edge-of-road swales for improved safety. (Of course, where terrain does not permit, guiderail, as illustrated on the figure, or steeper cut slopes may be required.) Regardless, the goal in the development of the rural collector road cross section is to provide safety while retaining the attractive, scenic character of Adams County roadways.

County Collectors are also intended to serve local industry and its associated trucks. Care should be taken to design the County Collector system so as to discourage through-the-county truck trips, yet retain ease of access for local industry. This is a particularly important factor for existing industrial areas in the Conewago Township and McSherrystown area, and in the Fruitbelt.

## 2. Local Collector Roadways

As indicated in the Land Use Plan, some large developments are anticipated and planned in the vicinity of current built-up areas and around historic boroughs and villages. Since many of the streets in the boroughs and villages cannot be improved to accommodate large increases in traffic, a system of new "local collector" roadways and extensions of existing streets should be designed to create alternative "pathways" to the County Collector and arterial roadway system. For each community, at least one pathway should be designed to enable local trips to avoid the village center. It is anticipated that most of these roadways would be built by developers, although some may need to be constructed by municipal governments. Figure 3.4.5 illustrates an example of a local collector system.

## 3. Improved County Collectors

While there are no County-owned roadways, the State highway system contains a series of roadways that serve primarily intra-county trips. These roadways are designated as County Collectors. In the Circulation Plan, the main function of these roadways is to provide pathways for these intra-county trips around congested boroughs, as illustrated in Figure 3.4.6, and to provide connections to the arterial highway system.

#### 4. Interchange Improvements - US Route 15

Many of the interchanges on US Route 15 are substandard by current norms, having been constructed in the 1960s as part of the original highway. As traffic grows, safety problems and congestion can be expected. Design elements that will contribute to the anticipated degradation in the quality of operation are the closely-spaced diamond interchange ramp intersections at the cross streets, the short, narrow ramps and narrow cross streets, and the narrow structures overpassing US Route 15. Figure 3.4.7 illustrates the current situation and suggests improvements of varying levels of capacity. Each interchange should be analyzed independently, taking into account the specific traffic patterns and physical and environmental constraints at each interchange.

#### 5. Capacity Improvements to the Arterial System

Despite anticipated new roadways and careful planning for traffic increases, improvements to some arterial roadways will be required. Changes to these roadways will need to be in accordance with standards of the Pennsylvania Department of Transportation. Typical improvement are illustrated in Figure 3.4.8, which shows major widening to achieve a five-lane section, and Figure 3.4.9, which shows an improved two-lane section with turning lanes. It is anticipated that such improvements would cover long stretches of Adams County arterials.

In the vicinity of the Gettysburg National Military Park and Eisenhower National Historic Site truck restrictions may be necessary and special amenities, such as overlooks, should be considered. Planning should be coordinated with the National Park Service for these roads.

#### 6. SAMI Improvements

SAMI is an acronym for a transportation improvement program managed by the Pennsylvania Department of Transportation, standing for Safety and Mobility Initiative. (This program was formerly known as ECONS.) On an first-come, first-served basis, the Department funds low-cost improvements designed to improve traffic flow and safety. The types of improvements funded by the program include:

- new traffic signals
- intersection widening (e.g., turning lanes)
- traffic signal coordination systems
- modernized traffic signals

Each improvement is judged on its own merits, with its benefit/cost ratio compared to the other candidates. SAMI is a tool to address location-specific congestion and safety problems, especially within boroughs and at major crossroads.

## 7. Safety Improvements

As a result of the analysis of accidents undertaken as part of the comprehensive planning process, additional locations have been identified that are not covered by other recommended improvements, especially SAMI, because of low traffic volumes. Recommended improvements are specifically directed at the observed accident patterns and could include:

- straightening and widening curves
- improving sight distances
- improving traffic controls, such as new or improved traffic signals, curve warning signs, or "intersection-ahead" warning signs
- adding turning lanes
- relocating roadside obstacles farther from the pavement

### **Future Traffic Volumes**

Traffic volumes for the year 2010 were projected based on an analysis of existing traffic volumes for pattern and directional distribution, projected development patterns, and employment projections for surrounding counties. Historical traffic volume trends for major Adams County roadways were also used in the analysis.

Past trends reveal that traffic in the county has been increasing at a rate of 2 to 3% per year, compounded annually. If continued over the next 20 years, a 50 to 80% increase in traffic might be expected, with many roads experiencing rapid traffic growth and others much less.

To arrive at more precise projections of future traffic volumes on critical links and estimates of the effects of traffic growth, a more fine-grained analysis was undertaken. The Land Use Plan was analyzed on a development-by-development basis, assuming that one peak hour trip is added to the roadway network for each new residence and one peak hour trip for each new job. The analysis concentrated on the evening peak hour and assumed that each residential trip travels to the residence and from the job site. Each employment center trip travels from the job site and to the residence. Since as many Adams County residents work outside the county as non-county residents work inside the county, new trips were placed on the roadway without regard to their county of origin (in the case of employment center trips) or destination (in the case of residential trips). Also, since the Land Use Plan does not identify whether all major employment centers also contain shopping facilities, it was assumed that during peak hours, the majority of shopping-based trips are already on the road and are diverted to or passing by the shopping center. In fact, recent studies show that about 25% of shopping center traffic in the peak hours is new to the roadway network (i.e., the trip is from home to the retail facility and then home again). All other trips stop at the retail facility along the way. Employee trips are counted, however, as in all other job

centers. Finally, to account for regional trips and other growth not anticipated by the Land Use Plan, a background growth factor of 1% per year (20% over the 20 years) was added. Figure 3.4.10 illustrates the projected future evening peak hour traffic volumes on selected links of the existing roadway network. Table 3.4.1 illustrates a comparison of selected link volumes. As shown, traffic volume increases range from 23% to 638%, depending on the route examined.

In Gettysburg Borough, while some 800 new jobs are projected, development surrounding Gettysburg will cause a 170% average increase in traffic on the roadways entering the borough. It should be noted that much of the existing traffic has neither an origin nor a destination within the borough, yet due to its critical location many county residents are affected by traffic conditions in this important central place.

### **Future Traffic Conditions**

The projections of Table 3.4.1 and Figure 3.4.10 indicate a substantial increase in traffic on many roadways as development continues. In order to gauge just how well these projected traffic volumes will flow, a volume/capacity analysis was prepared for each two-lane arterial. This analysis was based upon the operational characteristics of the roadways and the corresponding traffic volumes that would produce those characteristics. A scale of Level of Service 'A' to 'F', a description of which is found in Table 3.4.2, is used.

In Chapter 2, Existing Conditions, it was suggested that Levels of Service 'A' and 'B' represented acceptable traffic conditions and Levels of Service 'C' and 'D', while still acceptable, indicated concern. Levels of Service 'E' and 'F' were considered unacceptable.

Based on predicted growth over twenty years, as represented by the Land Use Plan, volume/capacity analyses of each corridor were made, with the following findings:

- US Route 30 west of Gettysburg
  - at PA Route 234 -- Level 'D'
  - at Cashtown Road -- Level 'E'
  - at Herr's Ridge Road -- Level 'E'
  
- US Route 30 east of Gettysburg
  - Level 'F' at all locations
  
- PA Route 116 west of Gettysburg
  - Level 'F' east of Fairfield
  - Level 'E' west of Fairfield
  
- PA Route 116 east of Gettysburg
  - Level 'F' east of Bonneauville

- Level 'E' west of Bonneauville
- PA Route 97
  - Level 'E' near US Route 15
  - Level 'F' near Littlestown
- PA Route 234 between Arendtsville and US Route 15
  - Level 'C' at all locations
- Mummasburg Road
  - Level 'C' at all locations
- PA Route 94
  - north of US Route 30 -- Level 'E'
- PA Route 194 -- Hanover Pike and Abbottstown Pike
  - at Mt. Pleasant Road -- Level 'F'
  - at US Route 30 -- Level 'E'
  - at East Berlin -- Level 'E'

Figure 3.4.11 illustrates these Levels of Service for Adams County roadways for the future evening peak hour, assuming the existing roadway network remains as at present. (Note that these analyses concern Levels of Service for corridors, not specific intersections within each corridor. Many intersections along corridors with poor Levels of Service will themselves exhibit poor Levels of Service for Intersections (see Chapter 2, Section 8 and Tables 2.8.2 and 2.8.3).)

### Recommended Circulation Improvements

To apply the seven categories of recommended improvements (see "Types of Improvements", above) and address the levels of service deficiencies apparent above, the following circulation improvements are recommended and are illustrated in Figure 3.4.1:

### New Roadways

Four new roadways are recommended:

- US Route 30 Relief Route, Cashtown to Abbottstown
- PA Route 194 Bypass of Littlestown
- Littlestown-Hanover Road Extension west of Littlestown
- McSherrystown Relief Corridor

### *A. US Route 30 Relief Route*

A US Route 30 Relief Route is essential for several major reasons. First, the streets of Gettysburg Borough, and in particular, Lincoln Square, cannot accommodate increased traffic generated by new development along the arteries connecting to Gettysburg. Second, the level of truck traffic in the borough is intolerable today and can only grow worse; and third, much of the growth in traffic passing through Gettysburg has neither an origin nor a destination in the borough. The fourth reason is more regional in nature and is based upon projected development along US Route 30 east of Gettysburg. The traffic increases associated with this projected development cannot be accommodated in Abbottstown and New Oxford while retaining their historic, small-settlement ambience. Finally, there is some evidence locally in Gettysburg, New Oxford, and Abbottstown that steadily increasing truck traffic has contributed to the structural deterioration of historic buildings.

Conceivably, a relief route could be created, in part, within the corporate limits of Gettysburg. However, in view of the projected traffic volumes and the borough's closely-spaced intersections, it appears that routes through the Borough of Gettysburg, even along the railroad, would not provide the relief to local streets that a route to the north could provide. An east-west relief route "in town" would provide limited benefits - trucks would still find it necessary to travel through Lincoln Square, if only in the north-south direction.

Consequently, the search for a corridor focused to the north, centered along Goldenville Road. This is not meant to imply a route in the bed of Goldenville Road; rather, further study is required to find alternative routings for this new arterial highway. (In 1971, an alignment for a similar relief route just to the north of Gettysburg was studied. Due to subsequent land development and environmental conditions, that alternate should no longer be considered feasible.) Regardless of the alignment ultimately selected, the corridor should begin west of Gettysburg in the vicinity of Cashtown Road and extend north of New Oxford and Abbottstown to York County.

The construction of any new road is a complex and expensive undertaking, but the type of road envisioned is a major factor in determining costs. As well, the type of road to be constructed as a US Route 30 Relief Route is crucial to the Land Use Plan's prospects. New roadways will have an influence on where growth takes place, how much growth occurs, and what kind of development results. The key questions have to do with the kinds of access permitted along the prospective road (see Figure 3.4.3).

A limited access highway (expressway) restricts access to grade-separated interchanges, is the most expensive type of road to construct, and may be justified only where travel demands are sufficiently great. Funding this type of US Route 30 Relief Route would require the greatest capital outlay by the State, and therefore might be the most difficult type to implement. A limited access US Route 30 Relief Route could alter travel times from west of Gettysburg to the York area substantially, and thereby induce strong growth pressures on the central and western parts of Adams County.

A free access road permits virtually unlimited access all along its length via cross streets and driveways. The implementation of such a road as the Route 30 Relief Route might be followed closely by its steady loss of effectiveness as a through route owing to the interference of traffic from a growing number of driveways and cross streets along its length. In effect, the new road would lay the groundwork for becoming the kind of road (existing US Route 30) from which relief is needed. The Land Use Plan is clear in recommending that stripping of arterial and collector roadways by commercial or residential uses be discouraged.

A controlled access road permits access only at a limited number of at-grade intersections. No driveways or local (small cross street) access is permitted. Although the costs of constructing a controlled access road are substantially less than for a limited access (expressway) road, the controlled access road allows a much freer flow of vehicles than the free access alternative. The growth inducement effects of a controlled access road should generally be much less than for an expressway, and in terms of direct impacts, capable of being limited to the few locations where the new controlled access road intersects (at grade) with selected existing highways.

From a variety of perspectives, including projected future traffic volumes, construction costs, and land use effects, a two-lane, controlled access road is recommended as the Route 30 Relief Route. It is anticipated to be a 45 mile-per-hour arterial road, located in its own right-of-way approximating (but not duplicating) the route of Goldenville Road for much of the Relief Route's length from Cashtown to Abbottstown, with at-grade intersections at Mummasburg Road, PA Route 34 (Biglerville Road), Business US Route 15 (Old Harrisburg Road), Coleman Road, Oxford Road, PA Route 94 (Carlisle Pike), and PA Route 194. (The planned US Route 30 Relief Route is not analogous to a US Route 15-type road, which is a limited-access highway with grade-separated interchanges.)

No direct driveway or minor road access to the Relief Route would be allowed between its at-grade intersections. Since the Relief Route would be a new road on a new right-of-way, these driveway restrictions should not impose any hardship on current landowners in the vicinity of any Relief Route corridor, since they get access to their properties via other roads at the present time, and such access would be maintained following construction of the Relief Route. On the other hand, the controlled access US Route 30 Relief Route may include frontage roads at selected locations for local driveways (see Figure 3.4.3).

A two-lane US Route 30 Relief Route is projected to have adequate capacity for expected traffic volumes through the planning period. Beyond this interval, increased capacity may be required. For this reason, it is recommended that a right-of-way width capable of eventually accommodating a four-lane road be acquired for the Relief Route.

The only location where a grade-separated interchange would be required along the Relief Route is where it would cross US Route 15, either making use of the existing interchange at PA Route 394 (Shrivers Corner Road) and US Route 15 or a new interchange roughly

a mile north or a mile south of that point. The selection of the optimal location for the Relief Route's crossing of US Route 15 is an important aspect of the more detailed studies required to evaluate alternative alignments for the US Route 30 Relief Route.

The Land Use Plan (see Section 3 and Figure 3.3.1) responds to the prospects of a US Route 30 Relief Route by identifying small nodes of mixed-use development at projected intersections of the new road and existing highways. These designations are indications of typical land development responses that may occur around these at-grade intersections, but since the actual alignment for the US Route 30 Relief Route has not been determined, the indicated locations for the mixed-use nodes are very speculative. Nonetheless, these designations may act as stand-ins for the real intersection locations until they are determined.

The major employment center designated by the Land Use Plan at Shrivvers Corners is a response, in part, to an anticipated US Route 30 Relief Route and US Route 15 grade-separated interchange at that location. Again, the actual location for this interchange is yet to be determined, but the indicated land use response is appropriate for the US Route 30 Relief Route and US Route 15 interchange, wherever it may be.

As noted in Chapter 2, Section 8, the Pennsylvania Department of Transportation is slated to begin a major planning study of the US Route 30 corridor from Chambersburg in Franklin County to Thomasville in York County. The Adams County Comprehensive Plan's analysis of US Route 30 represents an important foundation for any subsequent transportation studies in this area, including the Pennsylvania Department of Transportation US Route 30 corridor study. Adams County should remain an active participant in all transportation planning relevant to county residents and businesses.

#### *B. PA Route 194 Bypass of Littlestown*

The Littlestown area is experiencing and will continue to experience substantial growth. This growth will bring traffic volumes in excess of the capacity of borough streets to accommodate them, and PA Routes 97 and 194 will be overburdened as well. Already congestion is occurring at the intersection of King and Queen Streets in the center of Littlestown.

For some time, the Borough of Littlestown has been progressing on a "ring road" in the spirit of local collector systems described in the Circulation Plan. Like all local collector systems, this ring road is designed to serve local trips as it passes through principally residential neighborhoods. However, additional relief is still needed to accommodate regional traffic demands. Therefore, the Circulation Plan recommends that PA Route 194 be rerouted on a new alignment to the south of Littlestown and be constructed as a two-lane arterial.



### *C. Littlestown-Hanover Road Extension*

As part of the expanded County Collector road system and as an extension of the Cross Keys-Littlestown Connector, an extension of Littlestown-Hanover Road is recommended between PA Route 97 and PA Route 194. This extension is not part of the ring road being implemented by the Borough of Littlestown.

### *D. McSherrystown Relief Corridor*

Regardless of whether a Hanover bypass is built, because of expected regional growth (including a major regional mall along PA Route 94), it is still important that traffic from the Hanover area not destined for McSherrystown be routed around McSherrystown. A new alignment to the north is recommended to serve the industrial/commercial developments along PA Route 94 north of Hanover. It should also be noted that Conewago Township has been considering such a relief corridor for some time and has developed a series of alternate routings between PA Route 94 and the Black Lane/Chapel Road area, including one alternate that connects to Sunday Drive and to Racehorse Road. Decisions concerning the ultimate alignment of this east-west roadway should take into account the north-south Cross Keys-Littlestown Connector discussed in the County Collector section of the Circulation Plan.

### Local Collector Systems

Local collector systems, represented on Figure 3.4.5 as circles, are a recommended policy action for municipalities. The purpose of this recommendation is to provide several "pathways" for local trips, such as trips between neighborhoods or trips to local supermarkets or convenience stores, so that these trips do not need to be routed through the center of villages or boroughs. An example of this type of system is that being implemented by the Borough of Littlestown, which is creating a ring road by connecting developments one to the other.

Expanded local collector road networks are recommended for the following communities:

- Littlestown
- Bonneauville
- New Oxford
- Abbottstown
- East Berlin
- Hampton
- York Springs
- Bendersville
- Biglerville

Improved County Collectors

Four improved County Collector roadways are recommended. The first extends from PA Route 116 to Cashtown, the second from the US Route 30 Relief Route to Old US Route 30, the third from PA Route 94 to PA Route 97, and the fourth from PA Route 116 to PA Route 194. These roadways would be improved to the County Collector road design standard.

*A. Fruit Belt Connector -- PA Route 116 to Cashtown*

This roadway is intended primarily to serve local county traffic. Drivers using PA Route 116 west of Gettysburg today must travel through Gettysburg to join the regional roadway system and travel to commercial areas. An improved collector road would accommodate this demand and eliminate the need for travel through the center of Gettysburg. The Circulation Plan recommends that Orrtanna Road and Carrolls Tract Road be upgraded to collector road status.

In the context of creating the Fruit Belt Connector, a study should be undertaken to determine the best connection between Orrtanna Road, south of Cashtown, and US Route 30. This study should determine a routing that would be compatible with the historic character of Cashtown.

Over the planning period, traffic volumes on Bullfrog Road are likely to increase and modest improvements to that roadway may become necessary. Due to the many historic features lining Bullfrog Road, however, this route is not slated for substantial improvements in order to accommodate regional traffic patterns.

*B. Connector from the US Route 30 Relief Route to Old US Route 30*

In view of the recommended US Route 30 Relief Route, it is important to reduce the length of future trips on old US Route 30 if these could be better served by the Relief Route. Therefore, it is important to connect the two roadways at the eastern end of the business area along old US Route 30 in Straban Township - Coleman Road has been recommended to fulfill this role. The intersection of Coleman Road, Centennial Road and existing US Route 30 should be realigned to a standard four-way intersection. Signalization may be required in the future.

### *C. Cross Keys-Littlestown Connector*

Currently, there is no direct route for traffic travelling from the PA Route 94, New Oxford and Abbottstown area to the Littlestown area, except through Hanover. Since substantial development continues and is further projected in this area, a new collector roadway is recommended. To fulfill this need, Red Hill Road, Black Lane, Chapel Road, Bender Road and Littlestown-Hanover Road are proposed for this purpose.

An evaluation of the proposed County Collector reveals that the following improvements will be required:

- Littlestown-Hanover Road -- improve the shoulders to County Collector road standards
- Intersection of Littlestown-Hanover Road and PA Route 116 -- improve the intersection as part of the PA Route 116 improvement; i.e., widen each approach for left turn lanes and signalize
- Bender Road -- improve to County Collector road standards and realign the first horizontal curve north of PA Route 116 to provide a smoother alignment in the area
- Chapel/Bender Roads -- realign at Center Road to one intersection
- Centennial Road -- improve to County Collector road standards from Chapel Road to Sunday Drive to connect to the McSherrystown Relief Corridor as planned by Conewago Township
- Sunday Drive -- improve to County Collector road standards
- Black Lane area -- two alternates are proposed:
  - improve Black Lane to County Collector road standards between Red Hill Road and Chapel Road; or
  - build a new County Collector road to connect Chapel Road to Red Hill Road
- Red Hill Road -- improve to County Collector standards and realign horizontal curves
- Intersection of Red Hill Road and PA Route 94 -- increase sight distance by improving the vertical alignment of PA Route 94. Widen the intersection to provide turning lanes and signalize when warranted.

#### *D. Racehorse Road*

At present there is no direct connection between PA Route 116 west of McSherrystown and PA Route 194 south of Hanover; today this movement must be made by travelling through both McSherrystown and Hanover. Racehorse Road should be improved to serve this demand. Specific improvements include a realignment of the curve south of PA Route 116 and realignment of the intersection at PA Route 194 and Lovers Drive. Turning lanes are also needed on all approaches to the PA Route 116/Sunday Drive/Racehorse Road intersection.

#### Improved Interchanges on US Route 15

Growth in the area around selected US Route 15 interchanges is indicated in Section 3, the Land Use Plan. The interchanges now in place were not designed, however, to accommodate substantial increases in traffic, and improvements ranging from the installation of traffic signals to the construction of turning lanes to reconstruction and realignment of the interchange ramps, as previously noted, may be needed. The US Route 15 interchanges in Straban and Mount Joy Townships that will need improvements are at:

- PA Route 97
- PA Route 116
- US Route 30
- Goldenville Road

Mount Joy Township recently commissioned a study of improvement needs at the PA Route 97 interchange with US Route 15. Included in the study was the nearby intersection of PA Route 97 and Lake Heritage Drive. The study recommended retention of the existing diamond interchange configuration, with signalization of the two ramp intersections with PA Route 97 and signalization of the Lake Heritage Drive intersection. In addition, it was noted that PA Route 97 requires significant widening for an additional through lane and turning lanes. These study recommendations are consistent with the findings and recommendations of the County Comprehensive Plan and this Circulation Plan element.

Traffic projections in the York Springs area indicate substantial increases on PA Route 94 east of US Route 15. The substandard ramp geometry at the PA Route 94/US Route 15 interchange should be improved.

#### Capacity Improvements to the Arterial System

As previously noted, capacity improvements are recommended for the arterial highway system to accommodate projected traffic increases over the planning period. To maximize the value and efficiency of improvements to the arterial system, the County and townships

should adopt access management standards. These standards, intended to limit the proliferation of new access points along arterial roads and consolidate existing access points in order to minimize the "friction" caused by too many curb cuts, should be applied whenever new development is being reviewed for approval.

Specific improvements to the arterial system include:

A. US Route 30 -- Gettysburg line east to Coleman Road/Centennial Road.

While the proposed US Route 30 Relief Route can be expected to reduce traffic volumes substantially on old US Route 30, nevertheless, due to the intensive concentration of land uses in this section of the existing road and pending development, it is recommended that the cartway be widened to a five-lane cross-section. Traffic signals and improved or widened cross street approaches are recommend at:

- Shealer Road
- Coleman Road/Centennial Road (see previous discussion)

With respect to the remaining sections of old US Route 30, both east of Coleman Road and west of Gettysburg, the construction of the US Route 30 Relief Route should reduce traffic volumes sufficiently to eliminate the need for capacity-directed improvements, except as noted in the SAMI and Safety Improvements sections to follow.

In addition, the improvements along old US Route 30 should be accompanied by upgrades to the Shealer Road and Boyds School Road corridor in Cumberland and Straban Townships.

B. PA Route 116 -- Gettysburg line east to Littlestown-Hanover Road

This roadway is projected to operate in the Level of Service E-F range if no improvements are undertaken over the planning period. Although this is not acceptable traffic service, owing to extreme congestion, neither would widening this roadway to four lanes be an agreeable action, due to existing development in and around Bonneauville along PA Route 116. The Circulation Plan recommends retention of the two-lane operation (one lane per direction), and development of a series of intersection improvements, including turning lanes and traffic signals. In addition, full-width shoulders are recommended for the entire length, except for a section east of Bonneauville which already has wide shoulders. This will allow through traffic to bypass a left-turning vehicle.

In Bonneauville, the following improvements are recommended:

- realignment of the "S" curve
- construction of a 40-foot-wide curbed section to provide sufficient width for turning lanes and some mid-block on-street parking

**C. PA Route 116 -- Gettysburg line to PA Route 16**

As with PA Route 116 east of Gettysburg, substantial increases in traffic volume are projected, but major widening is also not recommended. Instead, widened shoulders are recommended for the entire length of the route, with traffic signals and turning lanes recommended at:

- PA Route 16
- Carrolltown Road
- Bullfrog Road

**D. PA Route 97 - Gettysburg line to Maryland line**

The County Collector roadway system in the Littlestown area should substantially improve the operation of PA Route 97; however, it is still recommended that shoulders be paved to their full 10-foot width, and that turning lanes, traffic signals and widened cross street approaches be installed. Specific locations for recommended turning lanes and traffic signals are:

- Lake Heritage Drive
- Littlestown-Hanover Road

**E. PA Route 194 -- York County line to Maryland line (southern section) and the section north of US Route 30**

Similar to the other arterial highways, shoulder improvements, traffic signals (when warranted) and turning lanes are recommended. Specific locations for turning lanes and traffic signals are:

- Racehorse Road
- Harney Road
- Pine Grove Road
- Mt. Pleasant Road

**F. PA Route 94 -- Entire length**

Projected traffic volumes indicate that, absent improvements, PA Route 94 will operate at Level of Service E conditions by the later part of the planning period. To avoid this result full-width shoulders are recommended for the entire length of the road. Turning lanes and/or traffic signals (when warranted) are recommended for:

- Eisenhower Road (York County)
- Red Hill Road
- PA Route 394
- Lake Meade Road
- Town Hill/York Springs Road
- Latimore/Goodyear Road
- Gun Club Road (sight distance improvements also required)
- Hanover Street
- PA Route 234
- Berlin/Pine Roads

Recently, Pennsylvania and Maryland and the Pennsylvania counties of York and Adams have joined together to study transportation improvements in the PA Route 94 corridor between US Route 30 and the Maryland line. Among the options to be considered is a bypass of Hanover. Adams County should remain an active participant in this endeavor: The Adams County Comprehensive Plan's recommendations for the McSherrystown-Conewago Township area represent an important foundation for any transportation planning this corridor.

Should a bypass of Hanover be implemented, PA Route 94 should be restudied in response to new traffic conditions. It is expected that additional improvements would be required.

#### SAMI-Type Improvements

As indicated previously, SAMI (formerly ECONS) is an annual program managed by the Pennsylvania Department of Transportation (PaDOT) that is directed at improving the delay and safety picture at intersections, along corridors and in roadway networks within the state. Projects are selected for implementation based upon their benefit-cost ratio and how well the goals of the program are achieved. PaDOT funding for SAMI projects may be gained only through a highly competitive process.

In recent years, PaDOT has targeted the Borough of Gettysburg for SAMI/ECONS improvements consisting of traffic signal modernization and interconnection. In addition, the tight curb radii at selected intersections were to be increased, making it easier to make right turns. This SAMI/ECONS study was completed, but the project was never implemented. It represents a priority for the Circulation Plan, and it is recommended that the improvements be implemented as soon as possible to "buy time" until other improvements in the US Route 30 corridor are undertaken. While the SAMI improvements are not a substitute for US Route 30 corridor improvements, in light of continuing traffic growth in the borough and little additional available capacity, the SAMI improvements will help local traffic flow.

The Borough of Gettysburg is not alone, however, in needing short-term, low-capital-

intensive improvements. The Circulation Plan recommends that the following areas be candidates for SAMI studies, and for implementation if the benefits sufficiently exceed the costs:

*Candidate Communities for SAMI-type Improvements*

- Littlestown - Traffic signal update, turning lanes at key intersections
- New Oxford - Traffic signals at the square
- Abbottstown - Signalize, possibly removing circle, and channelize intersection of PA Route 194 and US Route 30
- McSherrystown - Coordinate and modernize traffic signals
- East Berlin - Provide left turn lanes at PA Routes 234/194
- Biglerville - Modernize traffic signals, and provide left turn lanes on the PA Route 34 approaches.

Some areas where SAMI studies have been recommended overlap areas proposed for safety improvements to be discussed in the next section, and arterial improvements previously discussed.

Safety Improvements

PaDOT's main safety improvement program is the safety component of the SAMI program. As well, there are dedicated safety funds from the Federal Highway Administration that are used solely for safety projects, including hazard elimination and railroad crossing improvements. Safety, in general, is a major concern of PaDOT: Each PaDOT-administered project, regardless of funding, is evaluated for its effect upon any existing or potential accident-prone situation. Furthermore, accident histories are evaluated when selecting projects for inclusion in the Department's Transportation Improvement Program (TIP).

The Adams County Comprehensive Plan study analyzed 2,792 accidents on eight study corridors, including:

PA Route 116	544 accidents
US Route 30	859 accidents
PA Route 234	388 accidents
PA Route 97	146 accidents



Mummasburg Road	103 accidents
US Route 15	77 accidents
PA Route 194	349 accidents
PA Route 94	<u>326</u> accidents

2,792 TOTAL

As well, the study concentrated on the selected 40 study-area intersections and identified 247 accidents.

Analysis of the 40 study-area intersections reveals that 16 key intersections of the total intersections account for almost 80% of all accidents, 77% of all injuries and 80% of all fatalities. Accordingly, it is recommended that detailed analyses and specific improvements be developed at the following intersections:

<u>Intersection</u>	<u>Initial Recommendation</u>
PA Route 234 & Old Harrisburg Pike, Tyrone Township	signalization
PA Route 116 & North Third Street, McSherrystown	(SAMI) traffic signal modernization
US Route 30 & Herr's Ridge Road, Cumberland Township	realign Herr's Ridge Road to a cross-street with US Route 30 and signalize
US Route 30 & PA Route 194, Abbottstown	(SAMI) signalize and possibly remove traffic circle
PA Route 234 & PA Route 194, East Berlin	(SAMI) provide left-turn lanes on all four legs
US Route 30 & Lincoln Square, Gettysburg	(SAMI) coordinate signals to meter traffic into circle
PA Route 194 & Mount Pleasant Road, Conewago Township	signalize and stripe left-turn lanes on PA Route 194
PA Route 234 & US Route 15 interchange, Tyrone Township	[see interchange improvements]
PA Route 116 and South Third Street, McSherrystown	signalize

<u>Intersection</u>	<u>Initial Recommendation</u>
PA Route 116 and PA Route 16, Carroll Valley	widen for turning lanes and signalize
PA Route 94 and PA Route 394, Reading Township	signalize
Mummasburg Road & Herr's Ridge Road, Cumberland Township	multi-way stop control, with possible future measures to improve sight distances
US Route 30 and Cashtown Road, Franklin Township	signalize
US Route 15 & Latimore Valley Road, Latimore Township	rechannelize to eliminate cross traffic on Latimore Road
PA Route 234 & Biglerville Road, Biglerville	(SAMI) modernize signals and provide left-turn lanes on the PA Route 34 approaches

### **Future Traffic Conditions with Recommended Improvements**

Figure 3.4.12 illustrates the projected future evening peak hour traffic volumes and Levels of Service for the Adams County roadway network, including the improvements described above.

Certain corridors exhibit Level of Service E conditions, generally considered unacceptable. Nonetheless, in consideration of the variety of alternative strategies for circulation system upgrading, the combination of previously-described improvements is recommended as the most realistic and best-balanced for Adams County. These corridors should continue to be monitored, however, especially with a view towards establishing demand management opportunities (see "Transportation Demand Management", following) as growth proceeds.

### **Cost Estimates for Recommended Improvements**

Preliminary cost estimates have been made on a project-by-project basis for the recommended circulation improvements. Estimates are exclusive of right-of-way acquisition costs and are stated in current (1991) dollars. Design and construction inspection costs (combined, typically ten percent of the construction costs) are also excluded. Table 3.4.3 shows the various projects recommended and their estimated construction costs; as

presented in Table 3.4.3, the program totals \$102,700,000.00.

### **Funding for Recommended Improvements**

The traditional public funding mechanisms for transportation improvements include federal, state, and local gasoline tax-supported programs. In Pennsylvania, these are administered by the State Transportation Commission and Department of Transportation (PaDOT), through its "Twelve-Year Program" (see Chapter 2, Section 8). This program categorizes and sets priorities for each county's transportation improvement projects in the context of statewide needs and available funds.

The "Twelve-Year Program" is updated every two years and projects under consideration continually must compete for funding on both a regional and a statewide basis. Funding limitations also restrict project programming (timing), and lead times of 10 to 12 years for project implementation are typical for most major transportation improvements.

This lack of funding for new transportation infrastructure has been a growing concern of local officials throughout the state, as continuing residential, office, and commercial development have placed strains on existing road systems. To address this emerging problem, the State Legislature has permitted municipal governments to use private-sector-generated funding in conjunction with public revenues under two distinct programs.

The first program, under the terms of Act 209 of 1990, allows the imposition of "impact" fees by municipalities on new development within a specified study area, in order to help fund road improvements needed to mitigate level-of-service deficiencies created by new development in that specific study area. Under Act 209, municipalities must complete detailed traffic studies prior to the imposition of the fees.

The second funding mechanism may be used through creation of a "transportation partnership", in which two or more local governments, or a local government combined with private sector interests share in the planning and/or financing of transportation improvements. In Pennsylvania, partnerships are referred to as either "formal" or "informal". Formal partnerships are those developed pursuant to Act 47 of 1985, as amended by Act 75 of 1986, known as the Transportation Partnership Act. The three primary characteristics of formal partnerships are: (1) they involve the creation of "Transportation Development Districts" (or TDDs); (2) they involve municipal and private sector participation, and usually PaDOT as well; and (3) they likely include some type of special property assessments within a TDD. Informal partnerships are those falling outside of Act 47. Essentially, these partnerships are characterized by negotiated cost-sharing arrangements without any specific rules as to how these arrangements should be formed.

Implementation of the set of recommended circulation improvements for Adams County will entail a mix of traditional and nontraditional funding sources.

## Functional Classification Map

Figure 3.4.13 illustrates the recommended functional classification of Adams County roadways. Notable in the updated classification are the following:

### Major Arterials

- Addition of the US Route 30 Relief Route. Note: The alignment in the figure is for illustrative purposes only. Further study will be required to set the final alignment.

Several minor arterials have been upgraded to major arterial status:

- PA Route 116
- PA Route 97
- PA Route 94
- PA Route 194

### Minor Arterials

- Business Route US 15 has been upgraded to a minor arterial.

### County Collectors

Collector roadways have been renamed as County Collectors to distinguish them from local collectors as noted on municipal circulation plans and in the Comprehensive Plan. New collector roads are:

- Fruitbelt
  - Cashtown Bypass
- Cross Keys-Littlestown Connector
  - Littlestown-Hanover Road
  - Bender Road
  - Red Hill Road
  - Littlestown-Hanover Road Extension
  - Racehorse Road
  - Littlestown Relief Route

## **Public Transportation**

As growth continues, demand for improved public transportation service could follow. Service between Gettysburg and Harrisburg and between Gettysburg and the Washington/Baltimore area may need to be initiated, and service along US Route 30 may need to be upgraded. At the same time, the demand-responsive system currently in operation (Apple Line) may need to be expanded.

## **Non-Vehicular Circulation**

The provision for safe and convenient movement of pedestrians and bicyclists is an important element of the Plan. It is recommended that within boroughs and villages sidewalks or other forms of all-weather pedestrian paths be provided in locations where pedestrian travel may reasonably be expected to occur or where it is to be encouraged (see "Commercial Uses" in Section 3 of this chapter). Between growth areas, on selected highways and rural roads, shoulders should be installed wide enough to provide for pedestrians and bicycles. Bicycle and pedestrian paths should be considered integral with major new residential developments and as part of the interconnected county-wide open space system (see "Open Space Uses" in Section 3 of this chapter).

## **Transportation Demand Management**

Transportation Demand Management is a significant tool to assist vehicle flow where the traffic-carrying capacity of a roadway cannot be improved to meet demand. Specific elements of demand management include:

- shifting the starting/ending times of the work day by staggering shifts or through flexible work hours;
- encouraging car pooling through a matching program either within one job center or managed by the County on a county-wide or area-wide basis.

The employment centers envisioned at certain US Route 15 interchanges (see "Industrial Uses" in Section 3 of this chapter) are both potential peak-hour destinations for large numbers of employees and possible park-and-ride depots. The concentration of jobs at selected interchanges may provide convenient opportunities for car pooling among workers and locations for Harrisburg- or Maryland-bound commuters to park all day while riding vans or buses to their job locations.

## Subdivision Streets

Residential streets providing access to houses should be designed to standards appropriate for these types of neighborhoods. The primary circulation objective in these areas is not to move high volumes of traffic, but to allow local residents to get to and from their houses. In view of the different set of transportation priorities for residential neighborhoods, the generous road widths usually specified for safe, free-flowing travel on collector and arterial roads are inappropriate for most residential streets. Narrow residential streets can discourage through traffic from choosing these routes and, at the same time, lower travel speeds. These kinds of streets are more pedestrian-oriented, cause less stormwater runoff, and are less expensive to build than wider ones.

## Circulation Policies

1. *Plan for and construct a US Route 30 Relief Route north of Gettysburg between Cashtown and Abbottstown.*
2. *Plan for and construct new roadways as follows:*
  - *PA Route 194 bypass of Littlestown*
  - *Littlestown-Hanover Road Extension*
  - *McSherrystown Relief Corridor*
3. *Encourage municipalities to adopt local collector road systems to reduce congestion in villages and boroughs.*
4. *Improve key roadways to operate as County Collector roadways, including:*
  - *Fruitbelt Connector*
  - *Coleman Road*
  - *Cross Keys-Littlestown Connector*
  - *Racehorse Road*
5. *Improve US Route 15 interchanges to accommodate increased traffic at:*
  - *PA Route 97*
  - *PA Route 116*
  - *US Route 30*
  - *Goldenville Road*
  - *PA Route 94*
6. *Improve the arterial roadway system to increase its capacity.*

7. *Adopt Access Management Standards to increase the efficiency of the arterial system.*
8. *Encourage SAMI studies by the Pennsylvania Department of Transportation of key crossroads and in key communities.*
9. *Implement the ECONS/SAMI recommendations for Gettysburg.*
10. *Implement a Safety Improvement Program in Adams County to address problems at locations where accidents have occurred and where potential safety problems may emerge.*

**Table 3.4.1**

*Two-Direction Evening  
Peak-Hour Traffic Volumes, 1990 and 2010*

<u>Location</u>	<u>Existing Volume</u>	<u>Future Volume</u>	<u>Percent Increase</u>
<b>US Route 30</b>			
- West of US Route 15	1319	3586	172%
- West of PA Route 234	692	1600	131%
<b>PA Route 116</b>			
- West of McSherrystown	1258	2690	114%
- Fairfield Area	726	2600	258%
<b>PA Route 97</b>			
- East of US Route 15	886	2150	232%
- West of US Route 15	663	1900	187%
<b>PA Route 234</b>			
- East of PA Route 34	407	870	114%
- North of US Route 30	110	135	23%
<b>Mummasburg Road</b>			
- South of Goldenville Road	134	720	437%
<b>PA Route 94</b>			
- South of Berlin Road	653	1922	194%
- South of Latimore Road	233	1720	638%
<b>PA Route 194</b>			
- South of Harney Road	321	2025	531%
- North of Pine Grove Road	946	2800	195%



Table 3.4.2 *Levels of Service for Roadways<sup>1</sup>*

- Level of Service 'A'
  - Represents free flow. Individual motorists are unaffected by the presence of other vehicles on the roadway. The individual can select speed and maneuver (pass a slower vehicle or turn) without interference from other vehicles. The maximum two-way directional peak hour traffic volume is 200 vehicles.
- Level of Service 'B'
  - Represents slightly less freedom to maneuver. The presence of other motorists in the traffic stream is now noticeable but desired speeds can still be selected freely and maneuverability is now impeded occasionally. The maximum two-way directional peak hour traffic volume is 400 vehicles.
- Level of Service 'C'
  - Represents stable flow. Motorists now become significantly affected by interactions with others in the traffic stream. The selection of speed is influenced by others and maneuverability is achieved through careful decisions. However, overall traffic flow is still relatively smooth. The maximum two-way directional peak hour traffic volume is 800 vehicles.
- Level of Service 'D'
  - Represents occasional unstable flow. Speed and freedom to maneuver are restricted. Any additional traffic causes operational problems at this level. The maximum two-way directional peak hour traffic volume is 1,350 vehicles.
- Level of Service 'E'
  - Represents unstable flow. Breakdowns occur with increasing frequency. Operating conditions are at or near full capacity level. Speeds are typically reduced. Passing opportunities and gaps in traffic are infrequent. The maximum two-way directional peak hour traffic volume is 2,290 vehicles.
- Level of Service 'F'
  - Also represents unstable flow. Traffic flow is normally forced or broken down. This condition exists when the amount of traffic approaching a section

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<sup>1</sup>Transportation Research Board, Special Report 209, Highway Capacity Manual, 1985, published by the Transportation Research Board, Washington, DC, 1985

along the roadway exceeds the amount which can pass through it. Long queues form at such locations. Stop and go waves also form within the queue. NOTE: In many cases the traffic downstream from the point of congestion operates adequately, but backups or delays occur for other upstream vehicles.

**Table 3.4.3**

*Recommended Circulation Improvements Cost Estimate (in thousands of dollars) (1991)  
(exclusive of right-of-way acquisition, design, and construction inspection costs)*

New Roadways

1.	US Route 30 Relief Route	\$33,700
2.	PA Route 194 – Littlestown Bypass	\$ 6,700
3.	Littlestown-Hanover Road Connector	\$ 1,000
4.	McSherrystown Relief Corridor	<u>\$ 2,600</u>
	Total	\$44,000

Improved County Collectors

1.	Fruitbelt Connector	\$ 2,050
2.	Coleman Road	\$ 300
3.	Cross Keys-Littlestown Connector	\$ 3,100
4.	Racehorse Road	<u>\$ 630</u>
	Total	\$ 6,080

US Route 15 Interchange Improvements

Four Locations	\$20,000
● PA Route 97	
● PA Route 116	
● US Route 30	
● Goldenville Road	—
Total	\$20,000

**Table 3.4.3**

*Recommended Circulation Improvements Cost Estimate (in thousands of dollars) (1991)*  
*(Continued)*

Capacity Improvements to the Arterial System

1.	US Route 30	\$10,400
2.	PA Route 116 East	\$ 1,600
3.	PA Route 116 West	\$ 3,000
4.	PA Route 97	\$ 3,000
5.	PA Route 194	\$ 5,200
6.	PA Route 94	<u>\$ 7,100</u>
	Total	\$30,300

SAMI (ECONS) Program

1.	Gettysburg	\$ 700
2.	Littlestown	\$ 100
3.	New Oxford	\$ 200
4.	Abbottstown	\$ 250
5.	McSherrystown	\$ 300
6.	East Berlin	\$ 200
7.	Biglerville	<u>\$ 100</u>
	Total	\$ 1,850

Table 3.4.3

*Recommended Circulation Improvements Cost Estimate (in thousands of dollars) (1991)*  
*(Continued)*

Safety Program

1.	PA Route 194 & Mt. Pleasant Road	\$ 100
2.	PA Route 116 & South Third Street	\$ 50
3.	PA Route 116 & PA Route 16	\$ 100
4.	PA Route 94 & PA Route 394	\$ 50
5.	US Route 30 & Cashtown Road	\$ 50
6.	US Route 15 & Latimore Valley Road	\$ 100
7.	Sight Distance & Stop Control Improvements along Mummasburg Road	<u>\$ 50</u>
	Total	\$ 500

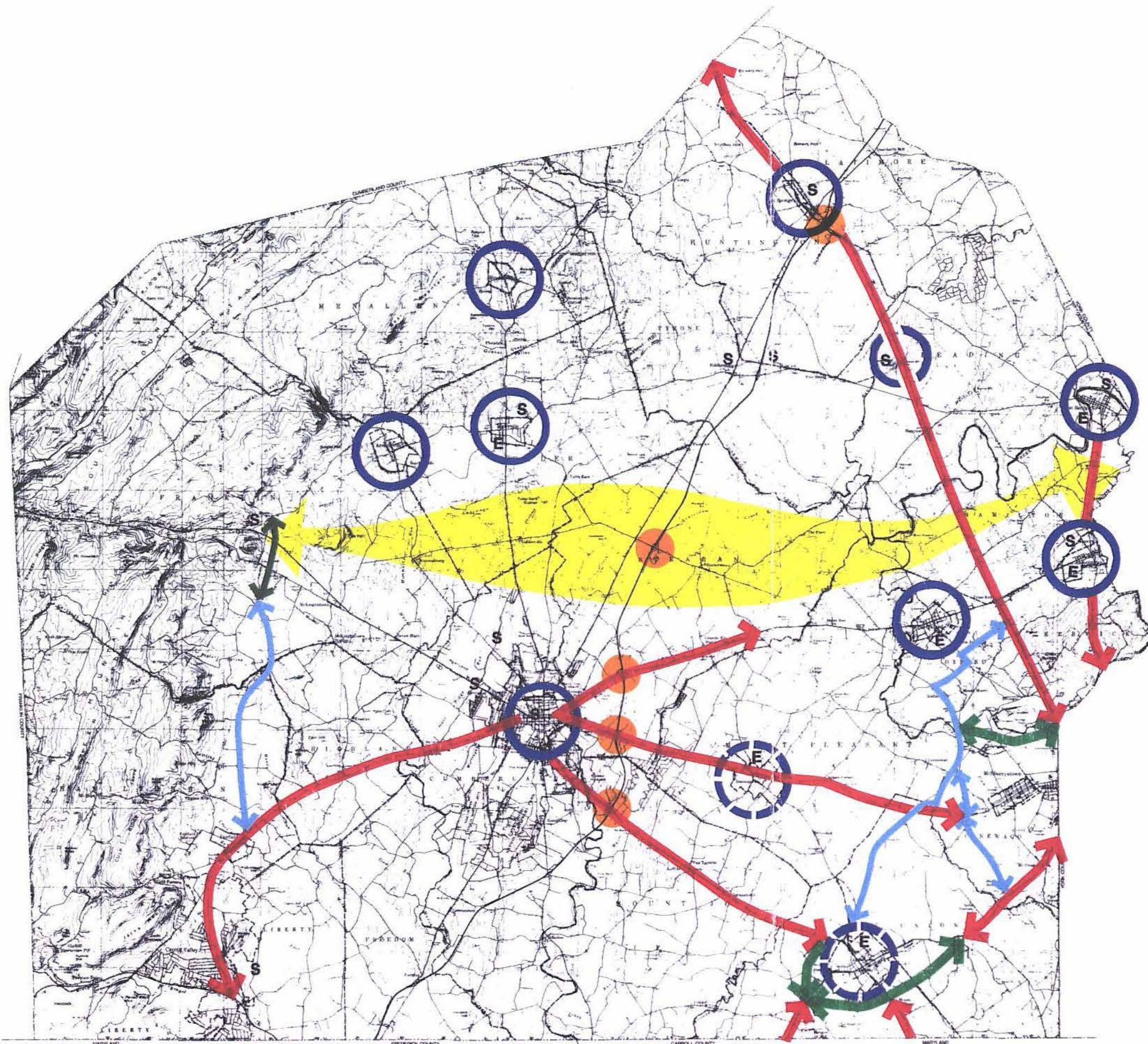
Summary (in dollars)

New Roadways	\$ 44,000,000
Improved County Collectors	\$ 6,080,000
US Route 15 Interchange Improvements	\$ 20,000,000
Capacity Improvements to the Arterial System	\$ 30,300,000
SAMI Program	\$ 1,850,000
Safety Program	<u>\$ 500,000</u>
Total	\$102,730,000

Figure 3.4.1

# RECOMMENDED CIRCULATION IMPROVEMENTS

-  New Roadways
-  Capacity Improvements
-  Improved County Collectors
-  Route 30 Relief Route Corridor
-  Interchange Improvements
-  Local Collector System
-  ECONS/SAMI Type Improvements
-  Safety Improvements



# ADAMS COUNTY

Pennsylvania

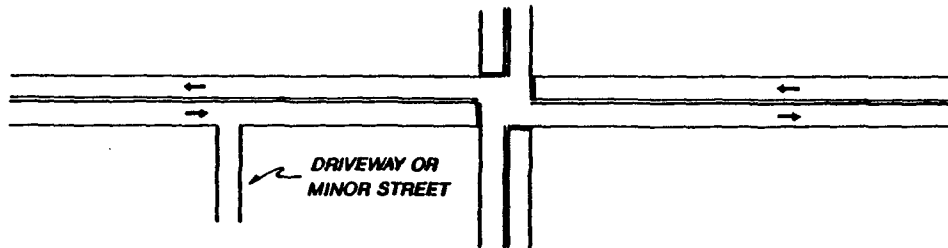
## Comprehensive Plan Update



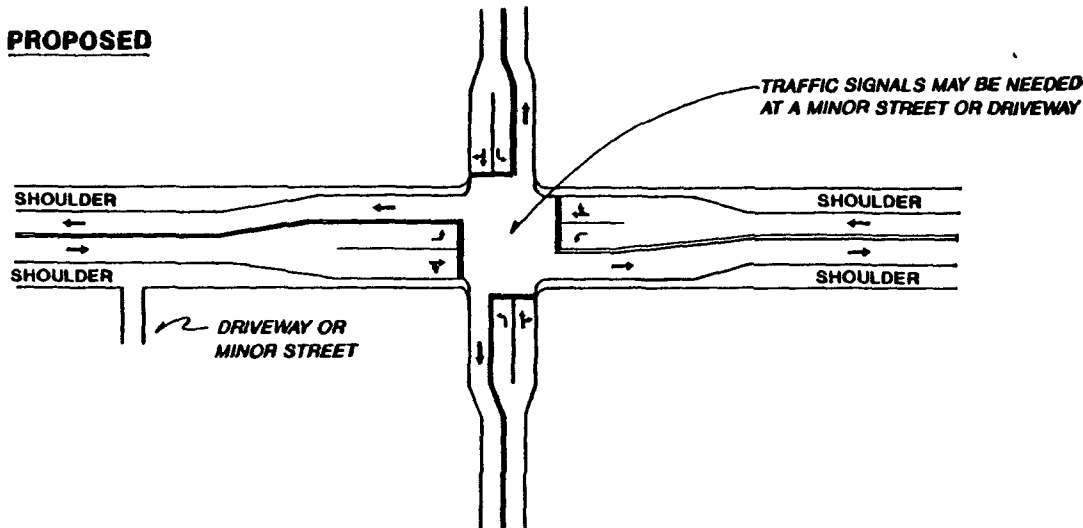
Figure 3.4.9

**WIDENING FOR TURNING  
MOVEMENTS & SHOULDERS  
ON A TWO-LANE ROADWAY**

**EXISTING**



**PROPOSED**



**NOTE:**

SHOULDER ALLOWS THROUGH TRAFFIC  
TO BYPASS A LEFT-TURNING VEHICLE  
AT A MINOR STREET OR DRIVEWAY.

**ADAMS  
COUNTY**  
Pennsylvania

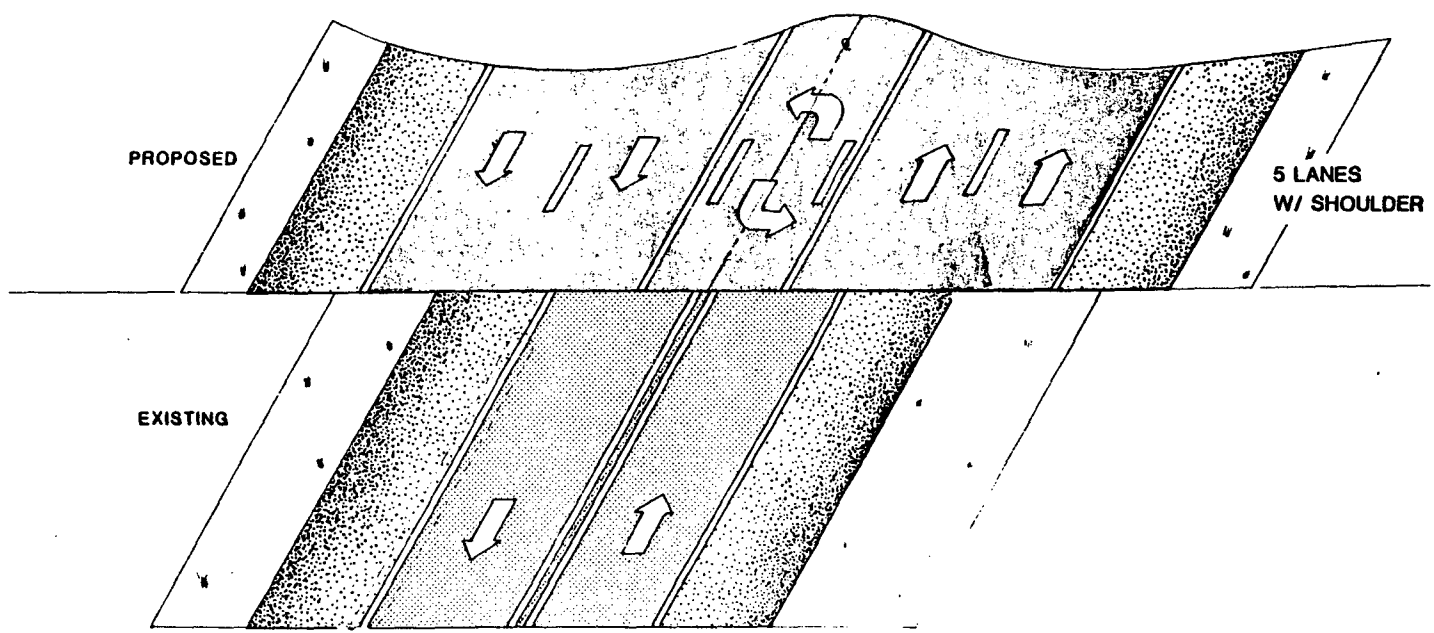
*Comprehensive  
Plan Update*



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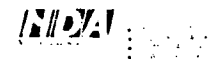
Figure 3.4.8

**WIDENING FROM TWO  
TO FIVE LANES**



**ADAMS  
COUNTY**  
Pennsylvania

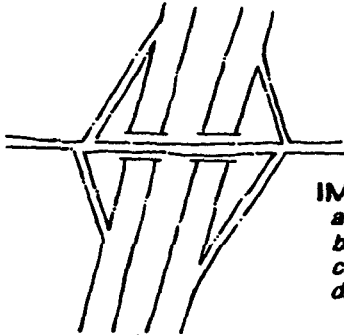
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### EXISTING DIAMOND INTERCHANGES

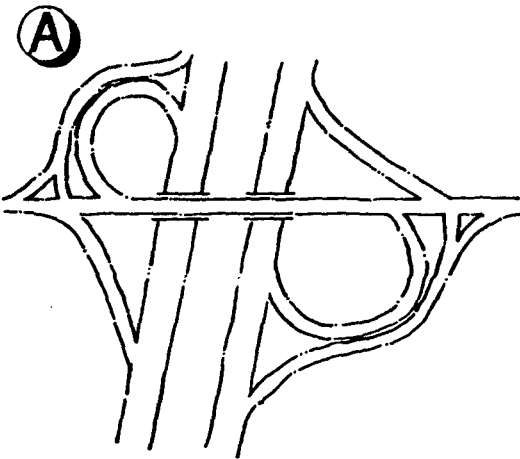


- CONSTRAINTS FOR INCREASED TRAFFIC**
- Closely spaced ramp intersections with cross street
  - Short ramp lengths
  - Narrow cross streets without provisions for turning lanes

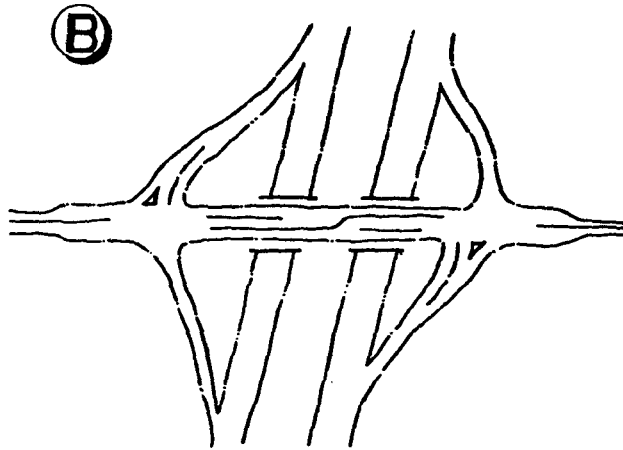
- IMPROVEMENT TYPES**
- a. Signalize one or both ramp intersections
  - b. Widen cross street for turning lanes
  - c. Widen ramps for turning lanes
  - d. Major Improvements -- examples below

### RECOMMENDED IMPROVEMENTS TO SELECTED US ROUTE 15 INTERCHANGES

### MAJOR INTERCHANGE IMPROVEMENT EXAMPLES



CONVERT TO PARTIAL OR FULL CLOVERLEAF TO ELIMINATE LEFT TURNS FROM CROSS STREET



SIGNALIZE, WIDEN, AND/OR SPREAD RAMPS AND WIDEN CROSS STREET FOR TURNING LANES.

# ADAMS COUNTY

Pennsylvania

## Comprehensive Plan Update

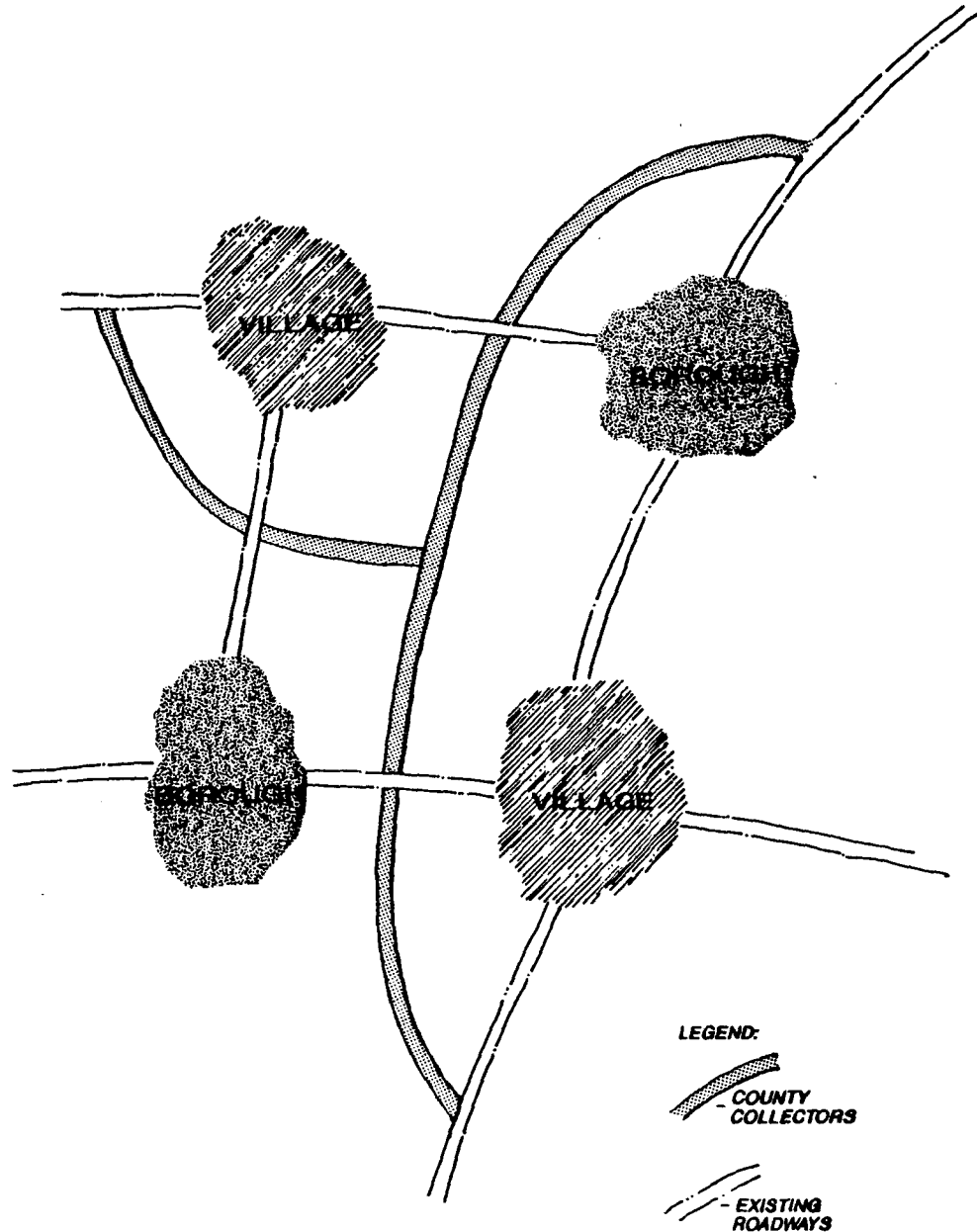


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Figure 3.4.6

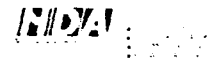
**CONCEPT-  
COUNTY COLLECTORS**



**LEGEND:**  
- COUNTY COLLECTORS  
- EXISTING ROADWAYS

**ADAMS  
COUNTY**  
*Pennsylvania*

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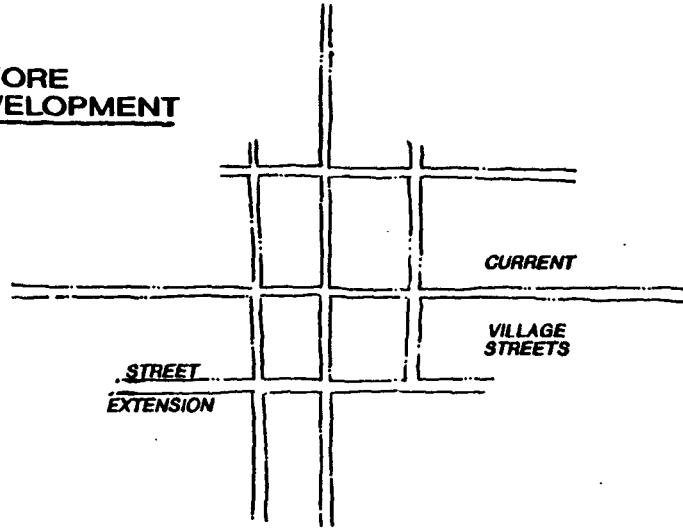


**Orin Rodgers & Associates, Inc.**

Figure 3.4.5

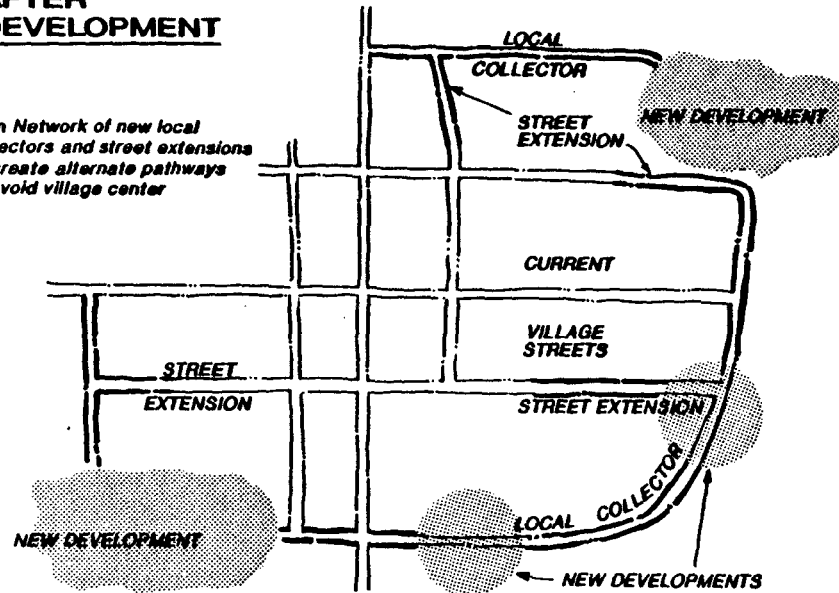
LOCAL COLLECTORS

**BEFORE DEVELOPMENT**



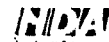
**AFTER DEVELOPMENT**

*Plan Network of new local collectors and street extensions to create alternate pathways to avoid village center*



**ADAMS COUNTY**  
Pennsylvania

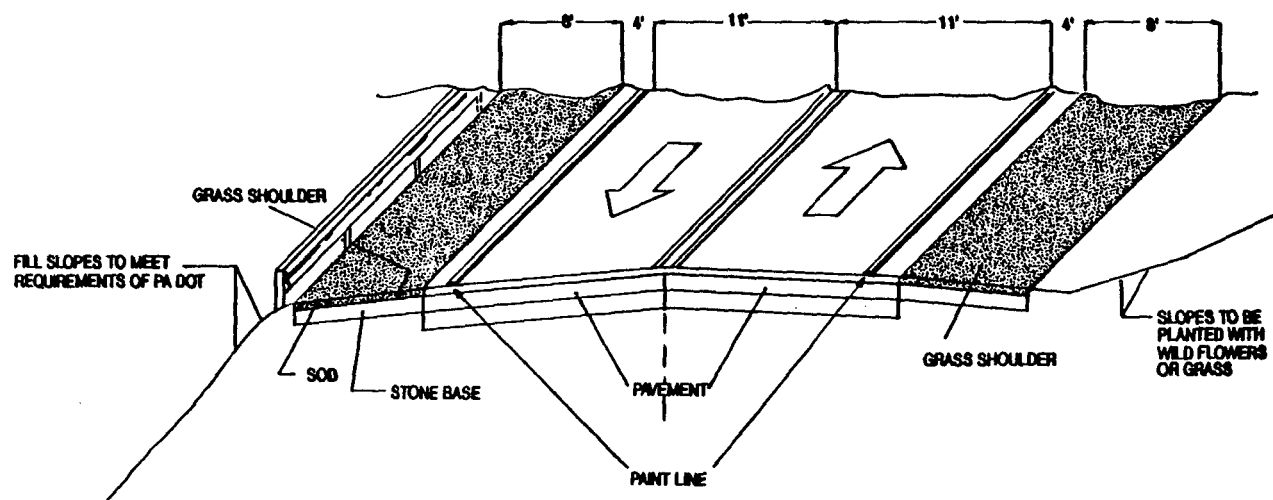
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Figure 3.4.4

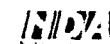
**TYPICAL SECTION,  
RURAL-STYLE  
COUNTY COLLECTOR**



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not to scale

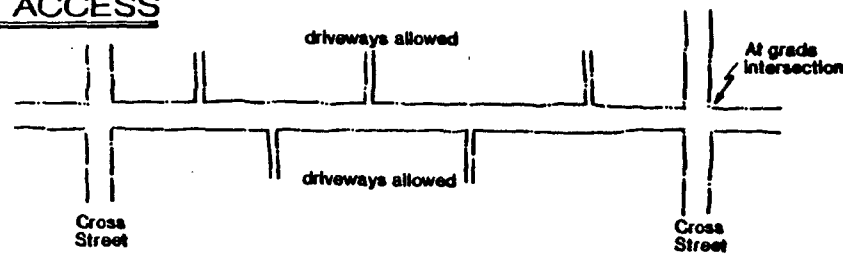


Orin, Ropyes & Associates, Inc.

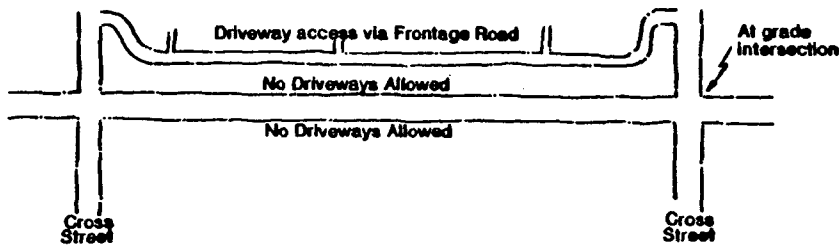
Figure 3.4.3

**ARTERIAL ROADS--  
TYPE OF ACCESS**

FREE ACCESS

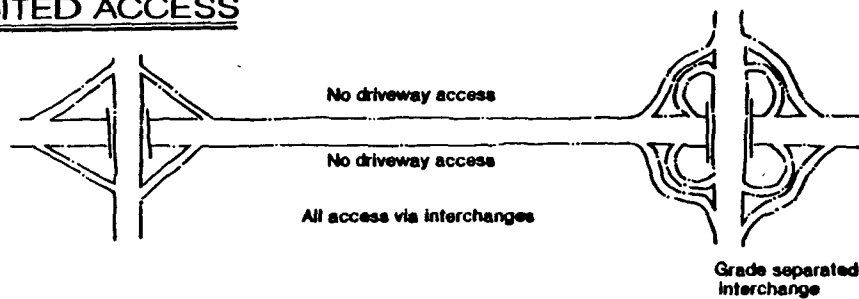


CONTROLLED ACCESS



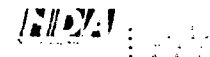
FRONTAGE ROADS ARE OPTIONAL, DEPENDING UPON ADJACENT LAND USES AND SPECIFIC ACCESS REQUIREMENTS.

LIMITED ACCESS



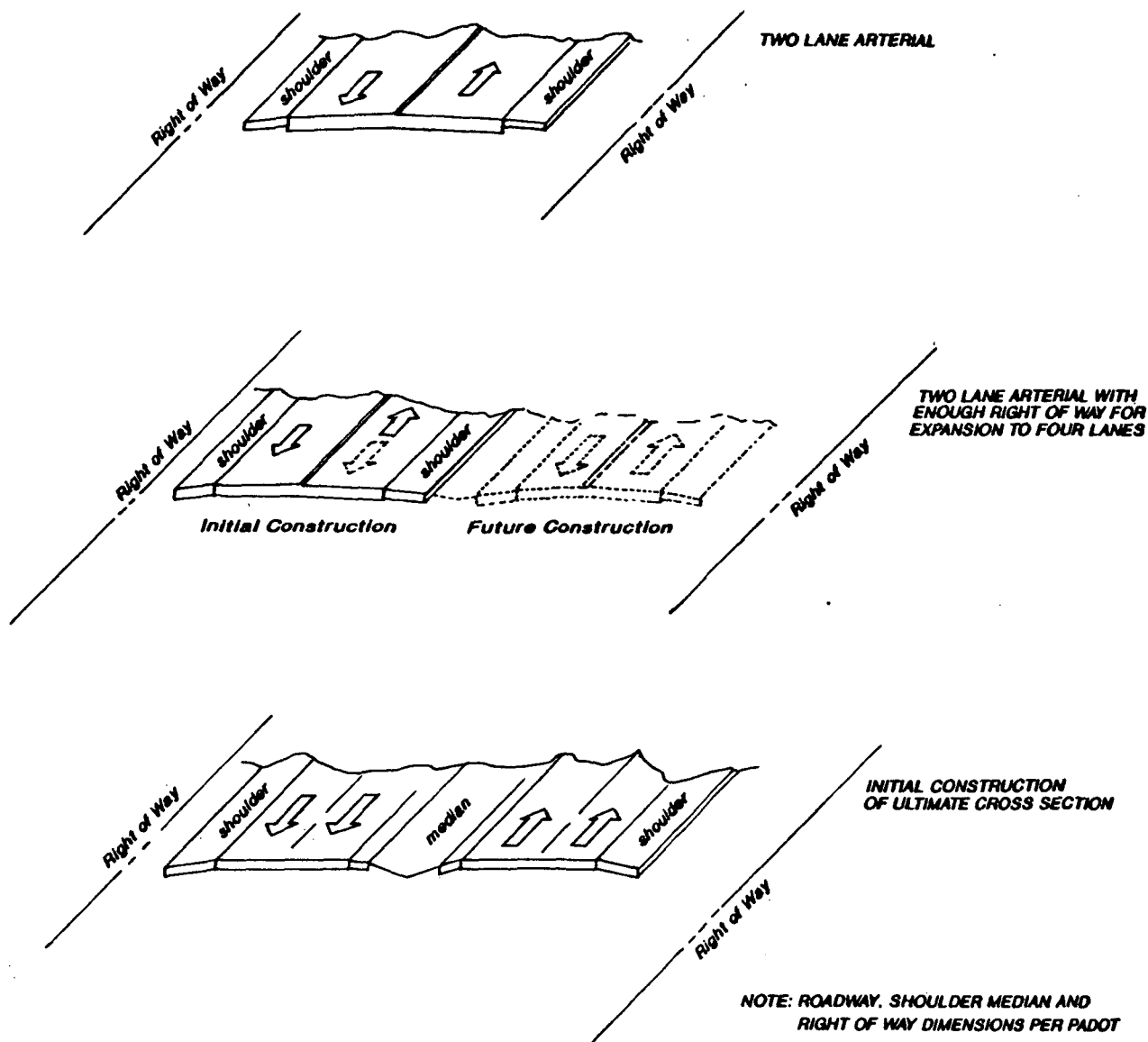
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COUNTY**  
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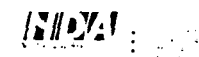
Figure 2.4.2



**RIGHT-OF-WAY RESERVE FOR FUTURE WIDENING**

**ADAMS COUNTY**  
Pennsylvania

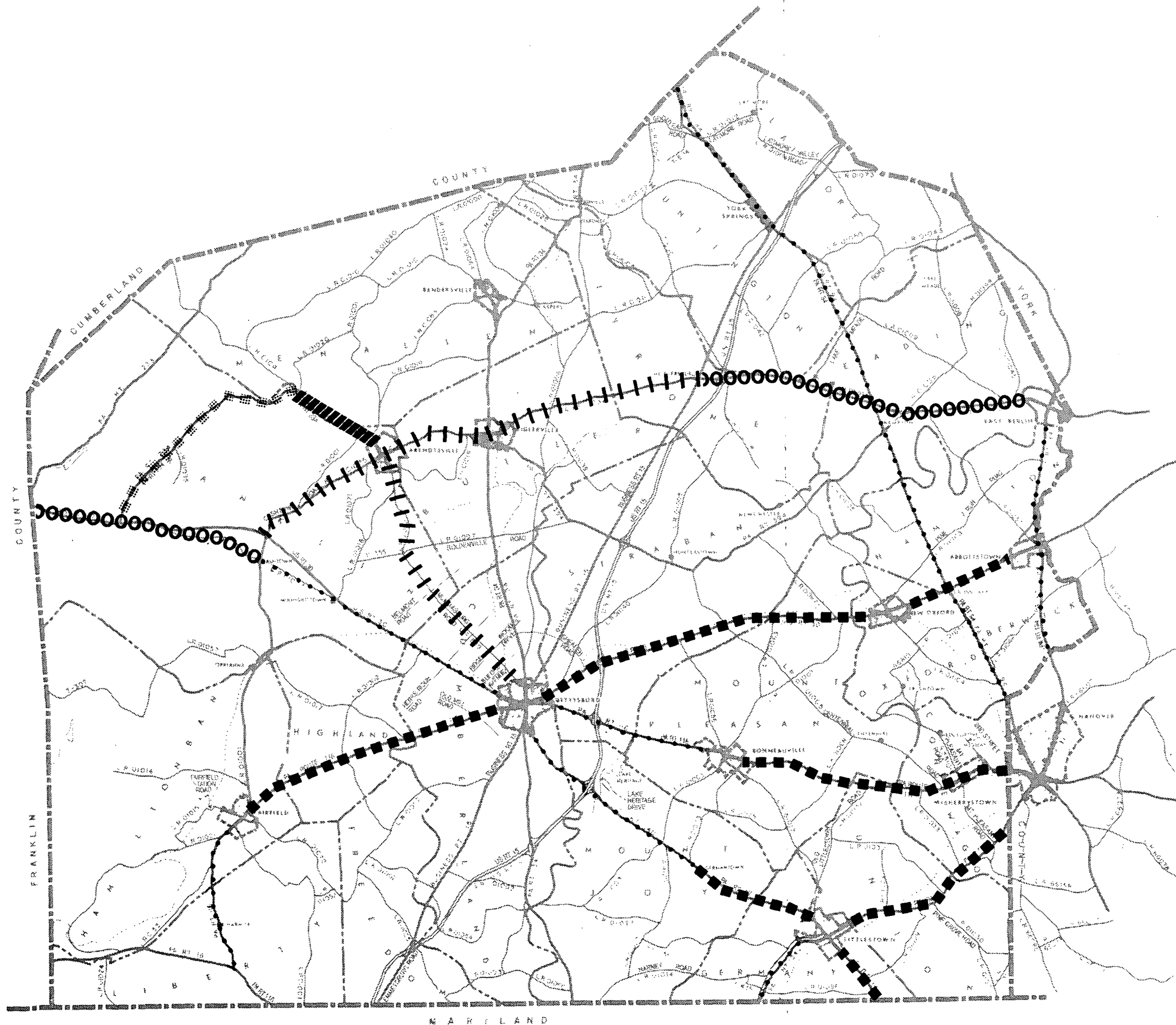
**Comprehensive Plan Update**



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Levels of Service  
 Future Evening Peak Hour  
 - Existing Roadway Network



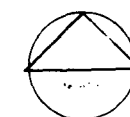
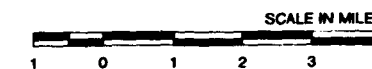
**LEGEND:**      **LEVEL OF SERVICE**

▣▣▣▣	_____	A
▩▩▩▩	_____	B
▮▮▮▮	_____	C
○ ○ ○ ○	_____	D
• • • •	_____	E
■ ■ ■ ■	_____	F

# ADAMS COUNTY

Pennsylvania

## Comprehensive Plan Update



• 2000-2004  
 • 2005-2009  
 • 2010-2014  
 • 2015-2019

Orth Rodgers & Associates, Inc.  
 TRAFFIC ENGINEERING • SITE ENGINEERING



Figure 3.4.12

# Projected Future Evening Peak Hour Traffic Volumes and Levels of Service

## Future Roadway Network

### LEGEND:

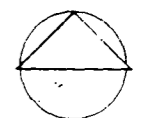
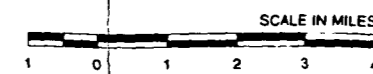
- ▬▬▬▬▬ A
- >>>>>> B
- ▬▬▬▬▬ C
- ..... D
- ▨▨▨▨▨ E



# ADAMS COUNTY

Pennsylvania

## Comprehensive Plan Update

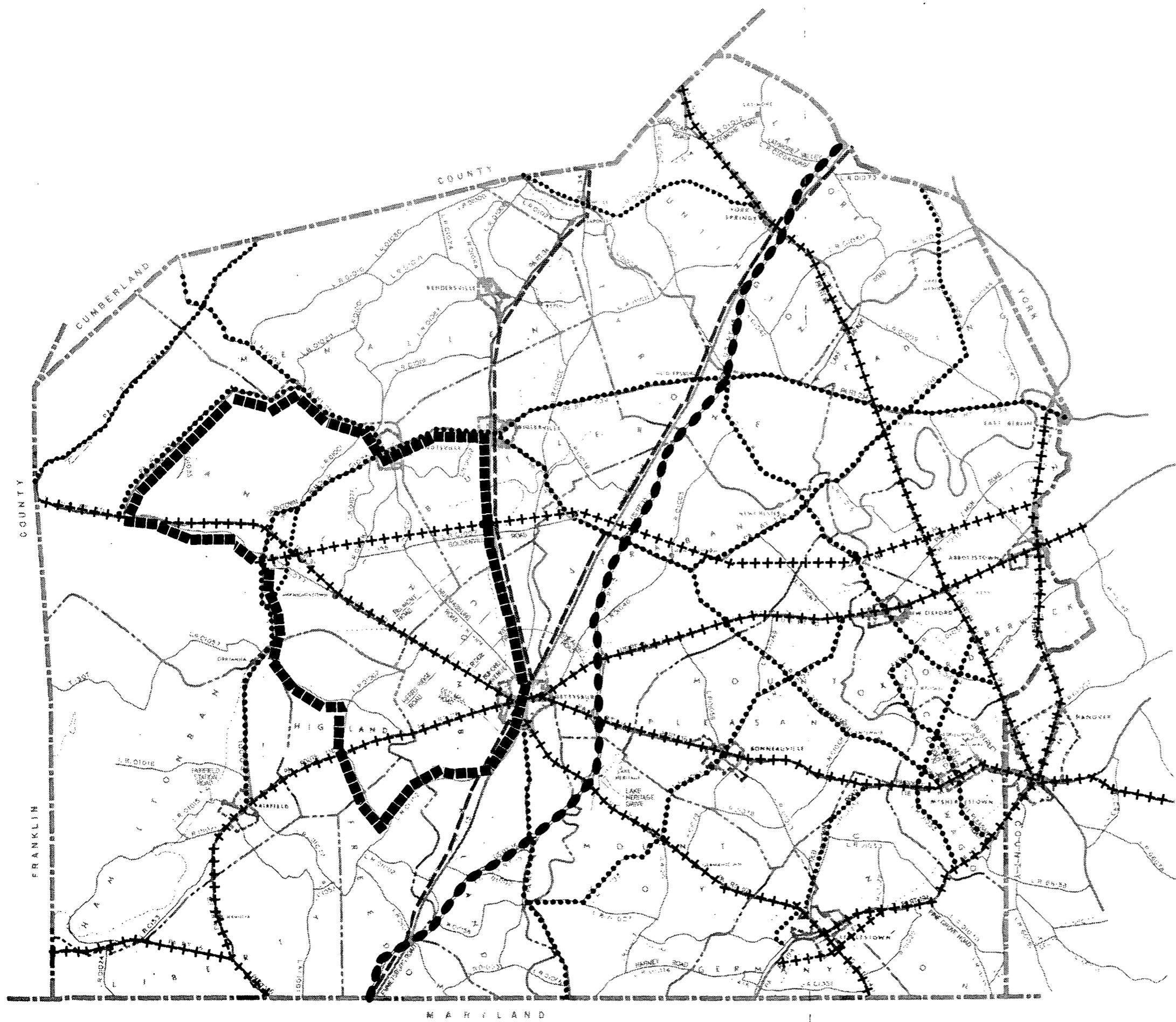


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TRAFFIC • HIGHWAY • SITE ENGINEERING

# Recommended Functional Classification of Adams County Roadways

- - FREEWAY
- +++++++ - MAJOR ARTERIAL
- - MINOR ARTERIAL
- ..... - COUNTY COLLECTOR
- - SCENIC ROAD

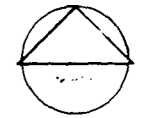
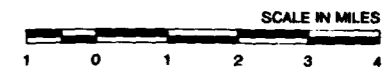
**NOTE:** Roadways on new alignment are noted . Location of these roadways is subject to further study.



# ADAMS COUNTY

## Pennsylvania

### Comprehensive Plan Update



## **SECTION 5: HOUSING PLAN**

### **Introduction**

The goal of the housing element of the Growth Management Plan is to provide the opportunity for a range of housing types and sizes within the county to meet diverse housing needs while at the same time supporting the other major goals of the Plan.

The housing element of the Plan explicitly recognizes the division of the county into growth and "non-growth" areas. Non-growth areas include most of the land area of the county, and are proposed primarily for agriculture, resource conservation, environmental protection, and recreation, with housing in a relatively minor role. Growth areas are designated as the primary locations for housing development. The Growth Management Plan recommends that the implementation tools of local comprehensive plans, zoning, water and sewer system extensions and improvements, road improvements, and community facilities development be employed in concert to promote residential development within growth areas as opposed to rural areas.

The housing element recognizes the goal of the Plan to conserve agricultural land by recommending residential clustering as a technique to achieve a more efficient use of land. Clustering reduces the amount of land consumed for residences when compared with conventional development methods, while at the same time preserving a portion of development tracts for agricultural or permanent open space uses. The Plan recognizes that cluster development is a significant method for growth areas as well as rural ones, since farmland covers extensive portions of the county, including land within the proposed growth areas.

The Plan permits realistic opportunities for land development, to be implemented through local plans and zoning regulations. Potential new residential development is recognized for all 34 municipalities, and townships and boroughs should enact zoning regulations that are appropriate for each community.

The housing element recognizes the Growth Management Plan's goals and objectives with respect to community services and resource protection. The Plan's interconnecting permanent open space system, intended to permit pedestrian and bicycle connections to recreation, education, shopping, and employment locations, as well as to preserve natural resources, is projected to be implemented largely through the ongoing process of land development. It is recommended that residential clustering be promoted in order to help realize the county permanent open space system. "Clustering" can refer to any development design technique that concentrates buildings in specific areas on a site to allow the remaining land to be used for permanent agricultural and/or recreational uses, and the preservation of environmentally-sensitive areas. Clustering can involve only modest set-asides of land for these uses, or can involve set-asides of 90 percent or more of the whole

tract considered for development. From the point of view of the Land Use Plan, the latter kind of clustering is essential in agricultural and rural areas, and still preferable in growth areas. The former modest-set-aside version of clustering is only appropriate in designated growth areas. (Also see the discussion of agricultural zoning and TDRs in "Agricultural, Resource Conservation, and Very Low Density Residential Areas" in Section 3, and further details on agricultural zoning in Section 8.)

To achieve increased set-aside of environmentally-sensitive areas, residential clustering provisions may be combined with ordinance regulations (zoning) permitting flexibility in the construction of housing types. By implementing regulations based on gross density classifications, rather than specific housing types and individual lot-size requirements, developers will be more likely to set aside environmentally-sensitive areas of tracts undergoing development. Greater development flexibility may result in increased creation of permanent open space lands and a housing-type mix that is better tuned to the needs of residents as they pass through the various stages of the life cycle.

The Plan proposes to increase opportunities for affordable housing principally by providing new settings for housing construction at medium and medium-high densities within designated growth areas. At the same time, housing opportunities may be expanded through more efficient use of the current housing stock. Provisions for residential conversions, accessory apartments, and shared housing should be addressed through plan implementation. Efforts should continue, utilizing state and federal funding, to rehabilitate substandard homes. Design standards for residential subdivisions should be established, appropriate to each community, addressing such issues as street widths, lot sizes, frontage widths, and setbacks - all within the context of creating high-quality and affordable residential areas.

#### **Residential Classifications - Very Low Density**

Residential development for most of the extent of Adams County, excepting designated growth areas, should reflect very low densities. This is in keeping with the need to encourage continuing agricultural production, as well as the protection of the county's historic and rural landscape, and the preservation of environmentally-sensitive resources (see "Agricultural, Resource Conservation, and Very Low Density Residential Areas" in Section 3, Land Use Plan, of this chapter).

The chief tools towards achieving very low density residential development outside designated growth areas are development regulations such as zoning. The County and its municipalities need to work cooperatively to achieve suitable regulations which will permit some degree of residential development in non-growth areas, but not at the expense of the primary functions indicated for these areas in the Plan. Regulatory flexibility is recommended; giving property owners a variety of choices if they choose to develop their land and containing various economic inducements to build compactly and to support the long-term goals and objectives of the Plan for these areas.

Development regulations for very low density residential areas should be based on the principles of agricultural zoning (outlined in Section 8 of this chapter). For conventional residential development an overall density limit of 1 dwelling unit per 20 acres might be widely adopted in Adams County. Density gains could be achieved, however, by landowners who consent to develop compact arrangements of dwelling units, rather than widely-spread homes. Eligibility to pursue alternative ways of developing, such as clustering of units, should be conditioned upon the owner's agreement to construct a street off of the existing frontage road to serve the new lots, with access to the frontage road restricted in order to minimize traffic conflict points and the use of the county road network as subdivision streets. Availability of central water and sewer service would affect lot size and density requirements, with commensurate amounts of the development tract remaining undeveloped and preserved for agricultural or open space use.

The economic incentives built into land use controls and the tradeoffs possible among the provisions for central sewer, minimum lot sizes, and required permanent open space would be designed to encourage developers to build in a concentrated portion of a tract, leaving the rest preserved in perpetuity for agricultural or other open space uses.

Other land development controls should be employed to help maintain the agricultural character of non-urbanized areas. For example, even where conventional lot-by-lot development is pursued, ample rear-yard building setbacks may be required on each lot, to effect a transition space between the developed lots and the agricultural uses that frequently abut residential development (see Section 8 of this chapter).

#### **Residential Classifications - Medium-Low Density**

Residential development within designated growth areas should occur at significantly higher densities when compared to rural and agricultural areas. The enactment of zoning ordinances supporting this idea, along with the extension of public roads and water and sewer service to growth areas, are the principal measures by which the County and its municipalities can promote development within designated areas as opposed to rural areas.

Medium-density development in Adams County should be at densities between one and four dwelling units per acre, with an average of 2.5 dwelling units per acre.

Medium-low residential densities are usually associated with single-family detached housing types on generous lots, but the housing element of the Comprehensive Plan recommends that cluster development be promoted in these areas in addition to the very low density residential portions of the county. Cluster development remains an important prospect for development within growth areas. First, farmland covers most of the undeveloped acreage of the county, including land within proposed growth areas. Concentration of a tract's maximum potential housing units on a small portion of the overall tract allows the preservation of the remaining area for agricultural use. Second, residential clustering

encourages developers to set aside the most environmentally-sensitive areas of tracts undergoing development. Third, this type of residential development creates permanent open space lands usable for recreation. Fourth, clustering may produce construction economies in the form of reduced lengths of roads and sewer mains, and operational economies in service systems. Finally, a recent study of clustered housing in Loudoun County, Virginia, suggests that clustering does not undercut housing values; land values for clustered housing were as high as for conventional suburban tract housing on three-acre lots. Cluster development, then, is essential for environmental protection and land conservation, has the potential to make housing more affordable, and does not undercut property values.

As with very low density areas, regulatory flexibility and zoning incentives in medium-low density areas are recommended. Municipalities may offer landowners conventional zoning for traditional medium- and large-lot residential construction, and a variety of options, including special conditions and associated benefits, for development that is supportive of County and local plans.

### **Residential Classifications - Medium and Medium-High Density**

Areas close-in to the center of boroughs and designated new centers (see Section 3 of this chapter and Figure 3.3.1), with their existing or anticipated public services, accessibility, community facilities, employment, and shopping areas, are recommended for medium and medium-high density residential use. For development at the medium density end of this range, conventional single-family and lot-line detached dwelling units are likely structural types. Cluster development is proposed as an available option, incorporating density bonuses in return for open space preservation, and making available the opportunity to construct other housing types.

Medium and medium-high density areas in Adams County should be at densities between three and seven dwelling units per acre, with an average of five dwelling units per acre.

Medium-high density residential development, found principally at the center of several existing boroughs and villages, is expected to occur in conjunction with these urban places, and to include a wide variety of structural types, including small-lot single-family detached dwellings, single-family attached (townhouse), and multi-family (garden apartment, mid-rise apartment) units. Provisions for on-site or neighborhood permanent open space must be made. A diversified housing mix, attractive to various household types and income levels, should be pursued for boroughs and villages.

As outlined under "Commercial Uses" in Section 3, a major goal of the Plan is to reinforce borough business districts. New residential development in and around these districts is a critical component in support of this goal, but this development must be undertaken in a manner that is sympathetic to the character of historic borough and village centers (see Section 7, Historic and Landscape Resource Conservation Plan, of this chapter).

In a few instances, such as at the Shriver's Corners interchange of US Route 15 and Route 394, a major new employment center is planned in proximity to a designated area for new housing. In many instances, smaller-scale borough and village hubs are also proposed with close associations of residential areas and employment opportunities. In both cases, convenient home-work linkages are a principal objective. In the case of the borough and village centers, strong economic support by residential uses of traditional centers of commerce is also a major objective. (See "Commercial Uses" in Section 3 of this chapter.)

### **Affordable Housing**

As outlined in Chapter 2, Section 7, housing affordability in Adams County is formally assisted through a combination of privately- and publicly-operated facilities and publicly-administered programs for low- and moderate-income families and individuals. The number of units of assisted housing compares favorably with neighboring counties, but is still only about 3% of the total housing units in the county. For most county residents, housing affordability questions must be addressed without the availability of formal subsidies.

Traditionally, affordability in Adams County has been assisted by relatively low land costs in rural areas combined with good accessibility to jobs and services via the county road system, the traditional ease of obtaining septic tank permits, and the availability of the mobile home housing type. The increase over the last twenty years in the popularity of single mobile home units on individual lots and of mobile home parks in Adams County is a strong indicator of the demand for affordable housing and the lack of alternative housing opportunities.

With the elimination of most federally-assisted programs for new construction (such as Section 8 New Construction), the traditional source for funding of affordable housing has been sharply limited. Other sources have recently become available - the Pennsylvania Housing Finance Agency has recently announced the speeding up of a \$105 million building program for low- and moderate-income families - but the state-wide competition for these limited funds translates into a small opportunity at best for Adams County. More populous counties such as Fairfax, in Virginia, have passed ordinances requiring developers to reserve certain percentages of units in new developments for moderate-income families.

The County should continue to pursue state and federal funding where it is available for new construction, rehabilitation, low-interest mortgages, and rental-assistance programs. As an "entitlement" county under Pennsylvania's Small Communities Development Block Grant Program, Adams County has a critical role to play for all its municipalities, except Gettysburg, in obtaining state and federal funds. In this central role, the County can act as a catalyst for county- and municipally-based actions to aid housing affordability, including review and amendments to zoning and land development regulations to reduce up-front development costs that contribute to high housing costs, special provisions to developers for the construction of low- and moderate-income housing, and encouraging more efficient use

of the current housing stock. Increased economic opportunities in Adams County would also assist residents to afford suitable housing.

### Housing Policies

1. *Assist municipalities in the preparation and adoption of local comprehensive plans and land use controls consistent with the County Comprehensive Plan.*
2. *Facilitate water and sewer system improvements, including extensions of existing systems and creation of new ones, consistent with the Land Use and Housing Plans.*
3. *Promote residential clustering through the preparation of model zoning ordinances and their adoption by municipalities.*
4. *Advocate construction of new medium and medium-high density housing at appropriate locations within designated growth areas.*
5. *Encourage the enactment of uniform housing codes by municipalities.*
6. *Generate and publicize model land use controls and other means which would create additional affordable housing opportunities and accommodate residents with special housing needs.*



## **SECTION 6: COMMUNITY FACILITIES PLAN**

The goal of the community facilities element of the Growth Management Plan is to provide the full complement of facilities needed to serve the projected population of Adams County through the planning period. To meet this goal the following general policies are recommended:

1. Public facilities improvements, where needed, shall be made in an orderly and reasonable fashion consistent with the Growth Management Plan and County and local capital improvements programs.
2. New school, fire, and police facilities and other required public facilities shall be located convenient to the maximum number of residents.
3. Wherever possible, public facilities used for different purposes shall be combined to minimize public expenditures and maximize convenience to county residents.

### **Education**

School facilities and recent enrollment statistics are described in detail in Chapter 2, Section 9. The county subdivision into six school districts is outlined, and district public school and countywide parochial and special-education facilities and enrollments are compared (Tables 2.9.1 and 2.9.2 and Figure 2.9.1).

Information on public school facilities shows a trend towards centralization for each of the county's six school districts. Elementary, junior high or middle, and high schools frequently are found together on one "campus". The public school campus concept means that the effects of increased school enrollments brought about by county population increases should not translate into a need for completely new sites for schools. Assuming each campus site has some amount of available land for new construction or some possibility of site expansion, increased enrollments will be accommodated through expansion of existing campus plants.

Based on information supplied by the school districts and presented in Chapter 2, the Bermudian Springs, Conewago Valley, Fairfield Area, Gettysburg Area, and Upper Adams Districts are all experiencing enrollment pressures on current facilities, especially on middle and junior high facilities as the "baby-boom echo" student population rolls into their teenage years during the mid-1990s. Population increases over the last ten to twenty years in the eastern and northeastern parts of the county have meant strong enrollment increases in the Conewago Valley and Bermudian Springs Districts, and these demographic trends are expected to continue, following the growth pattern projected by the Growth Management Plan. The Bermudian Springs District has an extensive facilities-expansion plan underway -

Conewago Valley and, to a lesser extent, Gettysburg Area, Fairfield Area, and Upper Adams, will need to follow suit. The Littlestown Area District appears to have enough capacity to accommodate the ten-to-twenty year projected growth in student population.

The County and the school districts should make every effort to coordinate planning in order to ensure that school facilities are true community resources, with opportunities for use by student and general resident populations (see "Parks and Recreation", following).

### **Police**

Police services in Adams County are provided by municipal police forces for about 50-60 percent of the county's 34 townships and boroughs, with State Police covering local jurisdictions lacking their own law enforcement agencies. Table 2.9.3 of Chapter 2, Section 9, reveals that maintaining a local force is frequently difficult for many communities - municipal costs are rising rapidly and a local police presence may be something that may appear convenient to eliminate, since the State Police, it may be felt, will always be there to fill in the gap.

Unfortunately, rising populations, real and perceived increases in the crime rate, and an incoming resident population with expectations of a high level of police services all combine to act against the temptation for local government to eliminate or curtail police services. Over the next ten to twenty years, many local Adams County police forces will need to be expanded to serve a growing and increasingly affluent population. This will frequently mean increased staff, new facilities, and new equipment. For some townships currently lacking their own forces, new ones will need to be established.

### **Fire Protection and Ambulance Services**

The twenty-seven volunteer fire companies spread across Adams County are extremely well-located to serve the expanded county population projected in the Growth Management Plan (see Figures 2.9.2 and 2.9.3 and Table 2.9.4, Chapter 2, Section 9). Over the planning period many of these companies will need to increase their personnel and to upgrade or expand their stations, their squads of vehicles, and associated apparatus. The Gettysburg company, with a large service area and one station in the center of the borough, may find itself increasingly vulnerable to traffic congestion over the planning period, and a second station on the west side of the borough may become necessary.

Ambulance corps are currently associated with some of the fire companies. In future, either additional companies will need to add this service or the hospital medic units will need to be enhanced.

The all-volunteer status of the fire company and ambulance corps could begin to produce

increased staffing problems into the future. These community-based emergency service providers must compete with a variety of other agencies, activities, and programs for residents' time and interest. Volunteers must submit to greater time demands due to more sophisticated training procedures, and widely dispersed work locations coupled with increasing traffic congestion make it difficult for adequate numbers of volunteers to reach emergency scenes quickly during regular business hours. As Adams County urbanizes, it may find that the trends of more populous counties towards at least some paid firefighters and paramedics may begin to be seen here too.

### **Geographic Distribution of Community Facilities**

Figure 2.9.5 of Chapter 2, Section 9, shows the concentration of countywide-oriented community services in the Gettysburg area. As the county seat, and in view of its central location and excellent accessibility, Gettysburg is a logical place for locating the variety of health and human service agencies, as well as the main library, for the county. Operational efficiency for each agency is probably maximized through this concentration. Nonetheless, the increases in county population achieved over the last two decades and projected into the future, the distribution of this population within the county, and the growing importance of specialized groups in the total population (such as retirees) has strained some of these service agencies' capabilities and called into question their Gettysburg-focused operations.

The Adams County library is poised to move into the old post office on Baltimore Street, a larger and better facility than the current headquarters library. However, population increases in eastern, northeastern, and southwestern parts of the county have produced library needs that should be taken into account over the planning period. The bookmobile service may need to be augmented, the New Oxford branch expanded, and additional branches may be required through the next ten to twenty years. Obviously, gaining funding for library operations is a difficult task, but the County should be particularly aware of the need to coordinate service locations with population concentrations.

A similar geographical distribution-of-services problem may exist for many of the health and human service agencies operational in Adams County. Rather than trying to establish costly branch operations for many of them, a more efficient use of resources may be to improve the Apple Line county bus service.

### **Conference/Convention Center**

A desire for a county conference/convention center, perhaps including other facilities, has been expressed by some business leaders. An opportunity to pursue such a facility might best come about through the land development process, as part of a commercial complex. Generally, it would be preferable to have such a facility located in the Gettysburg area for easy accessibility, with the possibility of tapping the marketability of Gettysburg as a

nationally-significant historic setting. The conference/convention center site should be accessible to pedestrian-oriented tourists and office-commercial functions planned for the center of the borough (see "Commercial Uses" in Section 3 of this chapter), while at the same time being coordinated with planned circulation improvements (see Section 4) and parking, to control traffic congestion in the borough. A site at the eastern end of the borough downtown should be considered if this project is pursued.

### **County Courthouse/Administration**

Expansion of the County's administrative facilities is not pressing; nonetheless, over the planning period, increases in the resident population of the county, together with accompanying residential, commercial, and industrial development, will translate into increased demand for county administrative services. Expansion of offices at or near the Courthouse is recommended, and is viewed as a significant component of the office-commercial hub proposed for the borough center (see "Commercial Uses" in Section 3 of this chapter).

### **Parks and Recreation**

Currently, units of government other than Adams County provide open space and recreational facilities in the county. Chapter 2, Section 9 details the various federal, state, and local government facilities available in the county and its environs, as well as the number of community-based, quasi-public entities that provide local parks, and information on other, publicly-accessible recreational facilities (Figure 2.9.4).

A key role for the County in future parks and recreation development will be in promoting the establishment, protection, and selective development of the countywide permanent open space system. As described in Section 3 of this chapter, the County needs to facilitate appropriate park and recreational use of parts of the system through a variety of lobbying, planning, and funding functions. These will be efforts undertaken in cooperation with other levels of government, with public and private interest groups, and with property owners. The projected interconnecting permanent open space network will include lands under the direct administrative control of several entities, possibly including the County itself, but the chief County goal will be the realization of the linked system of protected open spaces outlined in Section 3.

The County needs to undertake a Countywide Comprehensive Recreation, Parks, and Open Space Study, and to assist in its implementation. County resident recreational preferences should be identified in the study and, through intergovernmental cooperation, these needs should be met. Planning information from the study should be made available to all current and prospective recreational facility operators, and recreational planning expertise should be extended to local communities. Local governments should be encouraged to pursue state

Recreational Improvement and Rehabilitation Act Program (RIRA) grants and, where appropriate, County seed money should be made available for municipal park development.

When projecting future demands for recreational facilities and programs, it is necessary to consider not only existing circumstances but also evolving demographic changes, land use forecasts, and broad cultural trends as well. While population growth and new residential development suggest increased demands for recreational facilities, commercial and industrial growth might also call for corresponding development of recreation sites for corporate sports teams and fitness programs. A population shift towards age groups over 55 suggests the need for a greater variety of indoor and outdoor recreational opportunities, and the increased number of women's sports teams, in response to a general societal shift, is placing additional demands on community and school facilities.

A joint County school-districts recreation committee should be established to address issues of shared use of school facilities (see "Education", above).

### Community Facilities Policies

1. *Review all development proposals to determine their probable effects on public services, including schools, emergency services, recreation, and administrative services.*
2. *Coordinate county land use planning and school plant development so as to ensure the most efficient use of current and projected space and equipment, and accommodate general resident needs for community facilities.*
3. *Evaluate the range of existing and potential community services, and determine the best locations for service providers to meet current and projected needs.*
4. *Undertake a Countywide Comprehensive Recreation, Parks, and Open Space Study, publicize its findings, and facilitate its implementation by, among other actions, providing technical and financial assistance to local communities.*

## SECTION 7: HISTORIC AND LANDSCAPE RESOURCES CONSERVATION PLAN

### Implications of the Land Use Plan for Historic and Landscape Resources

A purpose of the Land Use Plan described in Section 3 is to maximize the preservation of the rural landscape of Adams County by encouraging growth and new development in the vicinity of existing boroughs and historic villages. In order to preserve the rural landscape to the maximum extent, this growth and new development is proposed to occur in more compact form than that normally associated with conventional rural and suburban development. In addition to the proposed growth and new development in the vicinity of boroughs and villages, the Plan calls for a limited amount of new development to be encouraged in other selected locations. This additional development would also be clustered to achieve higher densities and to preserve land. A certain amount of scattered development in more traditional forms would also take place.

The implication of the proposed Land Use Plan on Adams County's rural landscape is, by and large, the preservation of its existing character and resources. However, this preservation will occur only if the Plan can be implemented. A clear and effective historic and landscape resources conservation plan will be an important part of the implementation process. The process must guide development to, and promote development in, the locations and forms outlined in the Land Use Plan. It must also provide specific types of regulations in order to protect rural areas from scattered and breakaway development and to ensure that such development occurs in a manner sympathetic to the landscape being conserved.

For existing boroughs, certain historic villages, and adjacent areas, the Land Use Plan implies some growth and change. In boroughs already experiencing development pressure, for instance Littlestown and McSherrystown, such change is already underway. The result frequently has been the undermining of their historic village landscape character. With the degree of change implied by the Land Use Plan, there exists the risk that the historic character and integrity still evident in many of the county's other villages could also be lost. However, if growth in and around the villages is properly planned and managed, it will be possible to use that growth as a mechanism for preserving and restoring much of the character of the village centers while building upon and reinforcing that character with the new development. The goal will be the creation of new, larger villages which incorporate and reflect their historic character in their new designs.

An important aspect of the Growth Management Plan is the Circulation Plan outlined in Section 4 of this chapter. The primary elements of the Circulation Plan are consistent with many of the goals of historic and landscape conservation, such as the reduction of through-

traffic in and around village centers. The Circulation Plan will, however, have a potentially important impact upon the county's rural landscape. Proposed new roadways must be located to minimize their impact on natural and historic resources as well as on the scenic landscape. Proposed new local collectors and County Collectors must be designed to reduce potential adverse effects on historic buildings located close to the existing roads which are to be improved. The tendency for road improvements to induce new traffic and to produce new development pressures must be carefully gauged. During the implementation of the Comprehensive Plan, potential adverse impacts must be assessed, mitigated, and managed.

The success of the county's Comprehensive Plan, and of any conservation elements within it, will depend upon the effectiveness of future planning, the processes of local government, and the attitude of the local population. Implementation of the Land Use Plan described herein will require a high degree of intergovernmental cooperation as well as types of sophisticated land development controls not previously made use of within the county. Concentrated development without intergovernmental cooperation and land development controls will result in increased threats to historic resources, natural resources, the character of the landscape, and the quality of life in Adams County. In order to be successful, therefore, strong leadership and an ambitious program will be required to foster the cooperation and to implement the controls necessary. Perhaps most important, however, will be the challenge of developing a consensus amongst the general population that the Plan, its goals, and its methods are in the best interest of the county's future and of engaging the population in the Plan's implementation through participation in, and the monitoring of, local decision-making.

### Conservation Strategy

Conservation in Adams County is not a matter of protecting isolated historic buildings or specific natural features. It is a matter of protecting the overall fabric of the rural landscape of which the buildings and features are a part. The county's landscape is already pastoral, rich, diverse, and appealing. Its scenic qualities are far more evident than its "non-scenic" qualities. It does not need to be created, but managed and preserved. A reasonable amount of growth and development can occur in this landscape without destroying its character provided that the development is sympathetically integrated into the landscape. Such integration is accomplished by identifying the elements that give the landscape its character and quality, and by preserving and reinforcing those elements. A wide range of planning and preservation tools are available to accomplish this goal. Because the elements which give a landscape its character are interrelated, and because each of the planning and preservation tools is, in one way or another, limited, all of the planning and preservation tools are important. Consequently, individuals interested in historic preservation must work

closely with individuals interested in other diverse but related areas, such as tourism, agricultural preservation, and water quality.

### **Natural Resources Protection**

The core of any conservation plan is the protection of environmentally-sensitive natural resources. Historic preservation is closely tied to the preservation of sensitive natural resources because many historic resources were originally located where they were, in part, specifically because of the proximity of some desirable natural resource, often water or fertile lowland soil. In an agricultural landscape, the natural resources comprise the framework which gives the landscape its structure. Preservation of that structure is critical to preservation of the landscape.

The protection of natural resources is discussed in Section 3 of this chapter, the Land Use Plan, and in Section 10, the Environmental Protection Plan. Many aspects of natural resource protection are based upon state and federal laws and programs, such as the National Flood Insurance Program and the Pennsylvania Department of Environmental Resources wetlands regulations. While these laws and programs provide the basis for resource protection, they will not achieve it at a local level. The protection of natural resources at a local level requires step-by-step, site-by-site identification, inventory, analysis, and protection. It must be achieved by County and municipal design and review procedures because of the level of detail, analysis, and judgment that is necessary. In order for such procedures to be successful, as much broad-based advance work as possible must be in place. This advance work includes the collection of basic inventory information, the statement of specific policies and procedures, the enactment of the necessary ordinances and guidelines, and the education of those individuals who will implement the ordinances and guidelines. It is recommended that among the basic governmental natural resource protection measures at the County and local levels should be the following:

- *Protection of Stream Corridors and Hydric Soils:* The County should prepare a model ordinance for the protection of stream corridors and hydric soils and should promote the inclusion of such an ordinance in local zoning and subdivision and land development codes. The ordinance should require the on-site identification of hydric soils as a part of any subdivision and land development plan. The ordinance should prohibit building and development and should limit disturbance within the area of hydric soils as well as within a specific distance (fifty feet is common) of intermittent and perennial streams. These areas should also be netted-out of lot density calculations. Additionally, setbacks for new construction should be established from the boundaries of these wet soils areas. In municipal zoning codes such protection of streams and hydric soils is often combined with the National Flood Insurance Program requirements outlined in Section 10 of this chapter in a "Flood Hazard and Wet Soils Overlay District". They provide a more detailed, comprehensive, and site-specific protection of wetlands and wet soil areas than do state regulations. Samples of such ordinances are available from other local jurisdictions.
- *Stormwater Management:* The County should prepare and promote the adoption of model ordinances



and design guidelines for the retention of stormwater from new development and for temporary and permanent sedimentation and erosion control. Stormwater management areas should be located and designed to be extensions of permanent natural open space areas, rather than conventional retention basins, with appropriate native vegetation and wildlife habitat. Because of the problems with ground water and septic systems in the Gettysburg Plain, customized methods of groundwater recharge should be developed and required wherever feasible.

- *Septic System Regulations:* As discussed in the Land Use Plan, Utilities Plan, and Environmental Protection Plan, the regulation of community water supply and sewage disposal systems will be an important element in controlling the location and density of new development. As discussed in Chapter 2, the Gettysburg Plain, comprising a large portion of the county, is severely limited with regard to its capacity to accommodate on-site septic systems. Recent changes in DER's regulations give municipalities an increased responsibility in the review and approval of on-site septic systems. In part, this increased responsibility is important because when on-site systems fail, it becomes the legal and financial responsibility of the municipality to provide corrective measures. Like the regulation of community systems, the regulation of individual on-site septic systems is an important tool for municipalities in controlling the location, density, and form of new development. The County should prepare a model 537 Plan for areas not planned to receive community services. The model Plan should include regulations and design guidelines particularly tailored to the problems associated with local soils to ensure that on-site systems will be viable over the long term and that, should failures occur, adequate space and conditions will be available to provide for alternate on-site systems.
- *Protection of Steep Slopes:* The County should prepare and promote the adoption of measures for the protection of steep slopes (slopes over 15%) in municipal zoning and subdivision and land development ordinances.
- *Protection of Areas with Limestone and Diabase Geology:* Areas of Adams County underlaid with limestone and diabase geological formations have environmentally-sensitive conditions which warrant specific controls and review procedures. Limestone geological areas, for instance, are susceptible to the formation of sinkholes and noted for the unpredictable movement of groundwater. Sinkholes can be created by piping systems and the concentration of stormwater in retention areas. Pollution can spread through the movement of groundwater. The County should prepare and promote the adoption of measures for the protection of areas with specialized geological conditions in municipal ordinances. Such measures should include overlay zoning districts, specialized testing, and design guidelines. Major areas of limestone geology within Adams County are located in the Fairfield Valley and the Littlestown/McSherrystown Valley.
- *Conservation Ordinances:* The County should prepare a comprehensive model Natural Features and Resources Conservation Ordinance and should promote its adoption by the municipalities. This ordinance should compile all zoning and subdivision and land development provisions related to the conservation of natural features and resources. It would include provisions regulating land disturbance and the removal and management of vegetation.

### **Agricultural Conservation**

The subject of agricultural conservation is fully discussed in Section 8 of this chapter, the Agricultural Resources Conservation Plan. The implementation of this Plan will be

instrumental in the conservation of the rural landscape, including its historic resources. In Chapter 2, the map entitled Landscape Character and Scenic Resources (Figure 2.5.1) delineates several agricultural areas which were identified as possessing distinctive scenic character. In addition to the Fruitbelt, these areas include the limestone regions of the Fairfield and the Littlestown/McSherrystown Valleys as well as lowlands adjacent to Marsh and Conewago Creeks. Other similar agricultural areas of distinctive character may exist within the county. It is recommended that such areas receive special consideration in the implementation of an Agricultural Resources Conservation Plan.

### Historic Preservation

Adams County is rich in historic resources. As was noted in Chapter 2, Section 5, and is evident in Figure 2.5.4, the county's resources are rather evenly distributed and widely scattered. The Gettysburg Battlefield is a principal county historic resource and, because of its local and national significance, the battlefield requires special County protection to supplement its national park status. Aside from the battlefield, the county's rich historic fabric is often taken for granted. This fabric is comprised of many elements in addition to its historic buildings, including roads, site features such as stone walls and mill raceways, boundary lines, archeological resources, and the agricultural tradition itself. Many of these elements are integral to the rural landscape, and this is in part why the preservation of Adams County's rural landscape is a central feature of the Land Use Plan.

The County's primary role in the preservation of historic resources is to promote and assist preservation and awareness of the need for preservation at the local level. Key to this effort will be encouragement by the County of municipal historical commissions, the detailed inventory and assessment of historic resources at the local level, and the adoption of municipal ordinances and review procedures requiring preservation and mitigation. The protection of historic buildings and structures should include protection of the historic contexts in which the buildings are situated. This is accomplished through the identification and protection of the historically significant landscape areas and features directly associated with the buildings under consideration. Among the recommended County actions with regard to historic preservation are the following:

- *County Historical Advisory Board/Commission:* The County should create, initially, a Historical Advisory Board (perhaps later becoming a County Historical Commission) as an advisory organization to the County Commissioners. The Historical Advisory Board/Commission would coordinate County policy established by the County Commissioners and have responsibility for overseeing county programs related to historic preservation. The Historical Advisory Board/Commission should have representation on the County Planning Commission and the proposed Environmental and Open Space Commission recommended elsewhere in this section.
- *County Planner/Historic Preservation Officer:* Instrumental to the implementation of County historic

preservation policy and programs is the establishment of a professional planner position on the Office of Planning and Development staff with historic preservation qualifications to work with the Historical Advisory Board/Commission. Initially, this individual could have planning duties in addition to those related to preservation. As the county grows and planning staff increases, however, the professional historic preservation planner would increasingly be devoted to preservation-related activities. It is possible that matching funding for creation of such a position could be obtained from the Pennsylvania Historic and Museum Commission (PHMC), with which the county planner in question would work closely. Among the duties of this planner would be:

- a.) To coordinate and implement County policy with regard to historic preservation in conjunction with the Historical Advisory Board/Commission.
  - b.) To promote public awareness of historic preservation within the county.
  - c.) To assist municipalities in the creation and establishment of historical commissions, the inventory of historic resources, and the preparation of historic preservation ordinances and policies.
  - d.) To advise municipal officials and their representatives on issues of historic preservation in instances where a historic commission does not exist.
  - e.) To assist county residents with issues related to historic preservation.
  - f.) To act as a liaison on behalf of the County with the National Park Service on issues and joint endeavors related to the Gettysburg National Military Park and Eisenhower National Historic Site.
  - g.) To act as a liaison on behalf of the County with PHMC regarding issues of historic preservation, and specifically with regard to PHMC review of the impact on historic resources during the DER Sewage Facilities Planning Module application process.
  - h.) To assist in Section 106 reviews on behalf of the County in determining the effects of federal, federally-assisted, or federally-licensed undertakings on properties included in or eligible for the National Register of Historic Places as required by the National Historic Preservation Act of 1966.
  - i.) To act as a liaison on behalf of the County with other governmental agencies and programs related to historic preservation (i.e., PennDOT, DCA, PA Heritage Affairs Commission, etc.).
  - j.) To establish a County Historic Certification Program.
- *Historic Overlay Zoning:* The County should prepare a model historic overlay zoning ordinance and promote its incorporation into municipal zoning codes. Historic overlay zoning should be the principal historic preservation ordinance at work within the municipalities, as opposed to historic districts, which should be the principal historic preservation tool at work in historic villages (see Certified Local Governments, below). Historic overlay zoning involves the identification and mapping of scattered historic resources throughout a municipality. It is not the establishment of a historic district and does not require the creation of a historic architectural review board. Historic overlay zoning protects the

character of historic resources by regulating the subdivision and land development review process. It clearly communicates to developers the desire of the municipality to preserve historic resources and contexts, and it identifies those resources and contexts. Historic overlay zoning requires a developer to assess the impact of a proposed subdivision or land development plan upon the historic resources on the tract being developed as well as upon adjacent affected tracts. Mitigation of the impact is required and/or negotiated through the exploration of design alternatives, buffering, landscaping, design standards, and other appropriate measures. Lot sizes and configurations as well as the design and location of improvements are controlled to preserve the integrity of the historic resource and its related landscape. Demolition of historic resources can be delayed or denied by the ordinance to allow for acceptable alternatives to demolition to be negotiated. Adaptive reuse of historic resources is encouraged through the provision of special "use alternatives" not normally permitted in the underlying zoning district. Historic overlay zoning has been successfully applied in a number of municipalities in Chester County.

- *Historic Resource Inventories and Assessments:* Through the County Historical Advisory Board/Commission and the County Office of Planning and Development, and making use of matching grant programs provided by PHMC, the County should coordinate and assist local municipalities and historical commissions with the inventory and assessment of historic resources within their jurisdictions. The inventories should use the 1978 PHMC inventory as a point of departure. The new, more comprehensive municipal inventories should include an overview of municipal history; a review of common themes which tie the historic resources together; an assessment of individual resources and of the resources as a whole; the preparation and filing of PHMC Historic Resource Survey Forms; the mapping of historic resources and correlation of resources with lot numbers; an outline of municipal historic preservation goals, programs, and tools; and a bibliography. Inventories should be bound and available for use by municipal officials and for purchase by the public. The County should coordinate the inventory and assessments to ensure consistency. Survey information should be entered into the National Park Service's standardized National Register computer program when it is made available for general use. This program should at some point become the general database for use by the county planning office in preservation planning work. Attention should also be given to places such as Delaware County, Pennsylvania, which has produced municipal inventories that could serve as models for local efforts.
- *County Historic Certification Program:* Through the County Historical Advisory Board/Commission and the County Office of Planning and Development, the County should initiate a County Historic Certification Program. With the support of PHMC, the Certification Program would provide documented official recognition that individual historic resources are significant with respect to local and county history, and that the resources have retained their historic integrity. Certification would be undertaken upon the request of land owners, realtors, developers, municipalities, and others. A fee would be charged by the County to cover the cost of the required research, documentation, and processing. The research could be undertaken by the County historic preservation planner or by a qualified professional. The level of research would be coordinated with PHMC, but would be significantly less than that required for listing on the National Register. Because of PHMC workload, it is at present, and will be for the foreseeable future, difficult to obtain review for a determination of eligibility for listing on the National Register for individual historic resources unless the resources are threatened with imminent destruction. The County Certification Program is an alternative to National Register listing and also provides a level of official protection for resources which may have local historic significance, but which do not necessarily meet National Register criteria.

- *National Register Nominations:* The County Historical Advisory Board/Commission and the County Office of Planning and Development, in conjunction with the National Park Service, Historic Gettysburg-Adams County, and the Adams County Historical Society, should coordinate the preparation of new nominations for listing on the National Register of Historic Places. The work should concentrate on thematic nominations of groups of significant historic resources and cultural themes singular to Adams County. Possible themes could include industrial complexes and industrial archeological sites, carriage-making, orchards and canning, lime and brick kilns, rail stations and settlements, prehistoric archeological sites, architectural building types, Civil War hospitals; other Civil War sites outside of the battlefield park (for instance, the sites of the engagement at Hunterstown, the engagement at Fairfield, camp and supply sites, and roadways used during the battle); the Lincoln Highway west of McKnightstown; mills; schools; churches; original settlements of the Manor of Maske, etc. National Register Nominations are also discussed in Chapter 2. Matching grants could be obtained for such nominations from PHMC. Grants and technical assistance could be provided for appropriate projects by the National Park Service under the legislation creating the new Park boundaries.
- *National Park Preservation:* The Boundary Study for the Gettysburg National Military Park was completed in 1988 and legislation authorizing the Study's recommendations was passed by Congress in 1990. The Park is currently engaged in the process of determining the procedures by which the additional lands authorized by Congress will be acquired or otherwise protected. Where necessary, the County should assist the Park in these endeavors. The Land Use Plan attempts to protect the Gettysburg National Military Park and Eisenhower National Historic Site by preserving the adjacent rural landscape and by concentrating development away from the park. Because of the importance of the park to the county as both a historic and an economic resource, the County should look beyond the park boundaries to the further protection of the landscape in adjacent buffering areas and along roadways leading to the park. The principal mechanism for studying preservation options should be the participation of the proposed County Historical Advisory Board/Commission in the preparation of a County Open Space and Recreation Plan. Also important would be County assistance in the creation of a county-wide, non-profit conservancy. Both of these recommendations are discussed further later in this section. The Open Space Plan could make specific recommendations for protecting landscape character and scenic vistas. The conservancy should be created to serve as an advocate, organizer, and manager of land stewardship methods of preservation. The recent legislation passed by Congress authorizes the Park Service to provide grants, reimbursement for planning costs, and technical assistance in endeavors such as those proposed. The success of the Pathways project (1991) in the Borough of Gettysburg is an example of the type of collaboration that could be undertaken on a larger multi-municipal or even county-wide scale.

Other issues related to National Park preservation and use need to be addressed by the County. These include the incompatible uses of the park by county residents for active recreation, the use of park roads for through traffic, and the use by others of parking areas intended for park visitors. The County and adjacent municipalities should formally, by ordinance, incorporate Park Service participation in the early stages of the review process for subdivision and land development plan submissions. Finally, the County should, in conjunction with the Park Service, consider methods of protecting Civil War sites and memorial period sites, and those agricultural and other sites related to the activities of President Dwight D. Eisenhower, which are located outside of the park boundaries. As mentioned above, National Register thematic nominations would provide one level of protection. Other methods could be studied and recommended in the proposed Open Space Plan.

- *Certified Local Governments:* The County, through the Historical Advisory Board/Commission and

County Office of Planning and Development, should promote and assist in the creation of historic districts and Certified Local Governments (CLG) in historic villages that will experience significant growth and new development under the Land Use Plan. Such a program will be crucial to the protection of the historic character of village centers. The CLG program is administered by PHMC under federal guidelines and in association with Pennsylvania Act 167 authorizing the creation of historic districts in municipalities. CLG status enables a municipality to participate in special PHMC grant programs. Currently, the Borough of Gettysburg is the only CLG in Adams County. Because there appears to be resistance to the concept of historic districts and CLGs in other county boroughs and villages, the importance of the CLG process as a preservation tool must be clearly communicated to local residents if the historic character of village centers is to be preserved in view of potential development pressures on certain boroughs and villages.

- *Adams County Historical Society:* The County should find ways of providing additional assistance to the Adams County Historical Society to enable the Society to increase the basic historical data it has on file, to further organize and modernize its existing collection of data, and to undertake new historical research programs. Assistance could be in the form of additional funding, coordination of grant programs, and support in fund raising events such as yearly county-wide house and garden tours. A goal should be to enable the Society to support a full-time staff. Certification of the Historical Society by the American Association of Museums would increase the number of grant programs in which the Society could participate. Assistance should also be provided to other locally-based historical societies.
- *County Conservancy and Advocacy Group:* The County should support the creation of an independent, non-profit, county-wide conservancy to privately promote historic preservation and to undertake private land stewardship programs not possible for, or appropriate to, governmental agencies. Such programs should include various types of land donations ranging from outright gifts or bargain sales of land; to gifts of land with retained life estates; to conservation easement donations. The incentives to donors engaged in such programs are federal income, gift, and estate tax reductions. The conservancy would not only organize and promote the programs, but would become the legal entity acting as steward for property donations. Additionally, the conservancy could coordinate limited development planning options for landowners who wish to develop their land, but wish to do so in a manner that preserves landscape character and open space. The conservancy could also serve as a advocacy group of high integrity for preservation issues within the county. A number of such conservancies which could serve as models exist in other Pennsylvania jurisdictions. It is possible that an existing organization such as Historic Gettysburg-Adams County could redirect its efforts to create such a county-wide conservancy.

## Landscape Preservation

In addition to the Agricultural Conservation Plan and to the zoning, and subdivision and land development recommendations discussed elsewhere in this chapter, other measures should be undertaken within the county to protect the character of the rural landscape. These could include:

- *Environmental and Open Space Commission:* The County should create an Environmental and Open Space Commission as an advisory organization to the County Commissioners. The Environmental and Open Space Commission would coordinate County policy established by the County Commissioners and have responsibility for County programs related to the protection of natural resources, open space, and

rural landscape preservation. The Environmental and Open Space Commission would work closely with the County planning staff, and should have representation on both the County Planning Commission and the Historical Advisory Board/Commission.

- *Open Space and Recreation Plan:* A primary responsibility of the Environmental and Open Space Commission should be to oversee the creation and implementation of a County Open Space and Recreation Plan (see Section 3 and Section 6 of this chapter). The purpose of the Open Space and Recreation Plan should be, in part, to establish a long-term open space and recreation program for the county as well as for local municipalities. The Plan would analyze the existing rural landscape, identify critical landscape elements, and make specific recommendations for preservation of those elements both by the County and by municipalities. The County Plan should be followed by subsequent, more detailed municipal plans which would fill in the overall framework established by the County. It may be presumed that such a program would involve the long-term protection of environmentally-sensitive areas such as stream corridors, which could serve as open space links between various portions of the county. In conjunction with the proposed County Historical Advisory Board/Commission, the Open Space Plan should include policies and provisions for the additional protection of historic resources, most notably the national parks. The Plan should make recommendations for the protection of lands adjacent to the Gettysburg National Military Park and Eisenhower National Historic Site as outlined elsewhere in this section. The National Park Service could be instrumental in participating in the process through funding grants, reimbursement of planning costs, and the provision of technical assistance as authorized in the 1990 park boundary legislation. The Open Space Plan should be viewed as a large-scale cooperative effort similar in nature to the Pathways program in the Borough of Gettysburg.
- *Comprehensive Plans for Growth Areas:* In addition to the creation of Certified Local Governments, a critical tool in the control of new development in projected growth areas in and adjacent to boroughs and historic villages is the adoption of detailed comprehensive plans for these areas. The County should promote and assist municipalities in the production of these Plans, as well as in the adoption of ordinances and land development controls necessary for implementation. The Plans should incorporate many of the open space, natural resource, and historic preservation recommendations noted elsewhere in this chapter. These detailed Comprehensive Plans will be essential to the preservation and restoration of the historic character of existing village centers, and should lead to the adoption of detailed review procedures and design guidelines to help ensure that new development is compatible with existing historic and landscape character.
- *County Conservancy and Advocacy Group:* As recommended and described in the Historic Preservation portion of this section, the County should support the creation of a non-profit, county-wide conservancy to promote and implement private land stewardship programs for historic and landscape preservation.

### Historic and Landscape Resources Policies

1. *Promote the preservation of historic resources through creation of county preservation programs and by encouraging participation of municipalities and other local groups in such programs.*
2. *Encourage the preservation of natural resources associated with historic and cultural*

*resources by creating model ordinances and promoting their adoption and enforcement throughout the county.*

3. *Promote the preservation of rural landscape character and scenic resources through agricultural preservation programs, adoption of model ordinances, implementation of an open space plan, and comprehensive planning and land development controls in growth areas.*



## **SECTION 8: AGRICULTURAL RESOURCES CONSERVATION PLAN**

The general goal for agricultural resources has two interrelated parts: to maintain a strong agricultural industry and to protect farmland for agricultural use. This goal is articulated in Table 3.8.1, which identifies a number of specific objectives and the policies that would achieve them.

The two parts of the general goal are equally important and are interrelated. If the farming industry is to continue, it is necessary that its land resource base be maintained. But the protection of the land base will not assure that the agricultural industry will remain profitable. And if farming is not profitable, there will not be an economic reason to protect the land resource. Many of the policies advocated to advance one objective will also advance the other.

If the general goal for agriculture can be achieved, county residents and visitors will enjoy numerous additional benefits in addition to the maintenance of the agricultural economy and the agricultural land resource. They will avoid the social, economic, and environmental disadvantages of sprawl and the possibility will be enhanced of achieving a development pattern that is more convenient and less expensive. They will also benefit from the continuation of the county's traditional culture and landscape.

### **The Plan to Maintain a Strong Agricultural Industry**

The first set of objectives relates to maintaining a strong agricultural industry. Many factors that affect the agricultural industry are beyond the control of the County or its municipalities (for example, foreign competition, federal farm policies and programs). The Adams County Comprehensive Plan addresses such factors only through the recommendation that an agricultural advisory committee be established that could advise the County Commissioners on state and federal policies and legislation.

The Plan concentrates on more local factors. It addresses the facts that nearby urbanization often results in additional financial costs to farmers and in conflicts between farmers and non-farm neighbors.

#### **Minimize Financial Costs to Farmers Resulting from Nearby Urbanization.**

As an area develops, owners of farmland and other undeveloped land typically face higher tax bills. Land prices rise and assessments follow. Non-farm residents who move into the formerly rural area demand and get urban-level services and public expenditures rise. When utility lines are extended through rural land, owners of land they pass through are typically assessed on a front-foot basis to pay for the "improvement" that the utility line represents.

The Plan advocates a number of programs and measures that offset these monetary costs.

The County is now participating in the differential assessment program (Act 319 of 1974, commonly known as the Clean and Green Act) and encourages owners of farmland to enroll their property in it. Enrollment in Act 319 assures the property owner that his land will be assessed at its farm use value instead of at its development value. To qualify for agricultural use, a property must have produced an agricultural commodity for three years prior to application and must be at least 10 acres or have a demonstrable annual agricultural income of \$2,000. Lands qualifying as forest or agricultural reserve are also eligible for differential assessment. If the use of land enrolled under Act 319 is changed to an ineligible use, the owner must pay roll-back taxes for the seven most recent years and interest on the roll-back taxes of 6 percent. Roll-back taxes are the taxes saved under differential assessment.

To the extent that non-farm development is limited in areas planned for farm use, the demands for urban-level services are also likely to be limited. The limitation of development in agricultural areas is discussed in The Plan to Protect Farmland, following. Utility lines should not be extended through farmland areas, because they will greatly increase the pressure for development. But if they are, owners of farmland in areas planned for agriculture should be exempted from front-foot assessments.

Often when non-farmers move into a farming area, they are annoyed by noisy, dusty, or smelly farm operations and bring pressure on the municipality to enact ordinances that will restrict farming operations, and thus cause farmers to use more costly operating techniques. The Pennsylvania Agricultural Security Areas Law prevents municipal governments from passing ordinances that restrict normal farming practices or structures in Agricultural Security Areas. The County Comprehensive Plan encourages owners of farmland within areas planned for agriculture to petition their local governing bodies to establish Agricultural Security Areas so that their land will be afforded these and other protections. Security Areas covering 62,000 acres had already been established in the county as of December 1991.

Another approach to limiting conflicts is to give notice that agriculture is the primary industry in the area and that landowners may be subject to inconvenience or discomfort arising from accepted agricultural practices. Such notices should be entered in agreements of sale and deeds of all land in areas planned for continuation in agriculture. As a result, potential buyers who are not prepared to live in the environment of commercial agriculture are not likely to buy in the area, but those who find agricultural activities compatible will not be deterred and are likely to be good neighbors when they move in.

#### **Minimize Conflicts with Farming Caused by Nearby Urbanization**

Conflicts occur between farmers and non-farm neighbors for a number of reasons. The Plan has both physical and non-physical remedies to prevent such conflicts. Additional traffic

through the farm area is a basic problem. It can be remedied by locating new non-farm development where it will cause the least increase in traffic. The growth-area concept outlined in the Land Use Plan (Section 3) and the local collector and County Collector roadway links recommended in the Circulation Plan (Section 4) are systems intended to direct non-farm development to selected areas and to limit traffic effects on farm areas.

Non-farm neighbors must be protected against pesticides, herbicides, and other chemicals that farmers find it economically necessary to use. Therefore, a buffer of 100 feet should be required on parcels to be developed that are adjacent to any parcel in an area planned for continuation of agricultural use. Such a setbacks are common in a number of jurisdictions around the country. The state of Maine requires a 100-foot setback on any land adjacent to a registered farmland tract. A larger setback should be required from an existing intensive agricultural use, such as a feedlot.

One of the best ways to minimize conflicts between farmers and non-farm neighbors is to discourage people from moving into the area who are likely to find living within an agricultural area to be incompatible. The notification procedure discussed above serves this end.

#### **Increase the Profitability of Farming by Allowing Accessory Activities on Farms**

Although farming near built-up areas is burdened by costs and annoyances, it has one clear advantage: it is close to customers. Farmers should be allowed to benefit from this advantage. They should be allowed, through zoning provisions, to operate farm stands on their properties, and thus capture the retail mark-up. It is, however, important to ensure against small farm stands growing into supermarkets that bring excessive traffic into the farm area. Therefore, farm stands should be limited in size (say to 600 square feet of floor area) and their operation should be limited to seven months of the year.

In order to supplement farm incomes, zoning ordinances should allow farmers to operate small home industries or bed-and-breakfasts in their farmhouses. These activities should be limited in size so that traffic generated is not excessive and sewage and other wastes can be disposed of adequately. The County should develop a model ordinance for farm-based businesses. Municipalities could use the model ordinance as a guide in drafting ordinances tailored to their specific conditions and needs.

#### **Strengthen Business Serving the Agricultural Industry**

The continuation of the extensive system of infrastructure serving agriculture in Adams County is vital for the continuation of the agricultural industry itself. As has been documented in Chapter 2, agricultural infrastructure includes businesses that support farm operation and businesses that provide marketing and food processing opportunities. Conve-

nient locations must be provided for such businesses that serve the agricultural industry. These locations may be in the farming area itself or just outside it. Agricultural infrastructure activities should, however, be located where they cause the least disruption to farming operations. The County, in consultation with the Adams County Farmland Protection Bureau and the Adams County Farmers Association, should develop a model ordinance for the regulation of agricultural support businesses.

### **Reduce Obstacles that Make It Difficult for Young People to Enter Farming**

Extremely high capital costs - for land and for equipment - make it difficult for young people to enter the farming business. In areas experiencing growth pressures the cost of land is generally much higher than what would be justified based on agricultural income from the land. The cost of land under an agricultural conservation easement is an exception. When it comes on the market, land under easement should sell at a price comparable to farm use value, because such an easement prevents the development or improvement of the land for other than agricultural purposes. Experience elsewhere indicates that the availability of farmland under easement makes it possible for beginning farmers to acquire land. A study of 279 participants in farmland purchase of development rights programs in Massachusetts and Connecticut found that all persons who bought land already under easement said they bought it for agricultural use; 84 percent said they were able to purchase it only because the easement had reduced the value; and 44 percent said they had never owned farmland before.

Because agricultural conservation easements make farmland affordable for farming, in addition to protecting the land from development, the Comprehensive Plan favors their acquisition, both through the Pennsylvania Agricultural Conservation Easement program and through donation of easements to conservancies.

The County or a private conservancy could help young farmers to enter farming by maintaining a registry of young farmers wishing to buy farms and farmers considering selling their farms immediately or bringing a young farmer into their operation and transferring ownership over an extended period of time. The Lancaster Farmland Trust now operates such a matching service for farmers in Lancaster County.

### **Reduce Obstacles to the Economic Expansion of the Agricultural Industry in the County**

The county's agricultural industry would benefit from having an organization that would keep track of trends, problems, and opportunities that face farmers in the county. Such an organization would be comparable to industrial development organizations that seek the economic improvement of non-farm sectors. It could, for example, develop marketing campaigns for Adams County farm products, keep abreast of development and zoning issues

that affect farming, and develop coherent policies to be carried out cooperatively by the farm sector, municipal governments, and the county government. Such an organization could provide mechanisms for matching farm labor needs with local labor pools, and farmers wishing to buy farmland with those wishing to sell it. The organization could also conduct programs to explain the importance of farming in the county and the problems it faces to school children and citizen groups. As a final example, the organization could foster the offering of college-level agricultural and business courses within the county or at nearby locations.

This function of an agricultural development council might be most efficiently and effectively carried out by enlargement of the scope of the Adams County Agricultural Land Preservation Board, which now confines its interest to the Pennsylvania Agricultural Conservation Easement Program, and by continuing cooperation with the Adams County Farmers Association, a private-membership organization.

### The Plan To Protect Farmland

#### **Minimize Development Pressure on Farmland**

Areas with good highway access and available sewers are well known to attract development. Therefore, the Plan stipulates that highway improvements in agricultural areas should be kept to a minimum and that sewers should not be extended into agricultural areas. Prevention of such growth-generating infrastructure will require firm and consistent action by the County and its municipalities.

A number of highway improvements in farm areas, however, are necessary (such as the Route 30 Relief Route). They should be designed with controlled access and development in the vicinity of crossroads should be curtailed through strong zoning. But, even with such precautions in the immediate vicinity, highway improvements can lead to development over large areas because of the decreases in commuting times they make possible. Therefore, if farming and farmland are to be protected, it is especially important to be sure that extensive agricultural zoning is in place in a broad band surrounding any proposed highway improvement before the improvement is carried out.

The County has an important role to play in approving requests for sewer extensions or other projects that would require an amendment to a Sewage Facilities Plan. The County should argue before the Pennsylvania Department of Environmental Resources (PaDER) against any proposal to extend a sanitary sewer into an area shown as agricultural in the County Comprehensive Plan. The PaDER is bound to make a finding of consistency between any sewage plan or plan revision and local, county, and state plans before granting a permit.

The County should also oppose utility extensions into areas planned for agriculture that are sought by local utility companies or authorities when proposals come before the Pennsylvania Public Utilities Commission (PaPUC). In a 1989 administrative ruling (No. A-210540 F002, concerning an application of the Columbia Water Company opposed by the County of Lancaster), the PaPUC has made it clear that the PaPUC must take local and county planning into consideration in making a decision on a utility extension.

### **Prevent the Division of Farmland into Small Tracts**

Land in stable agricultural areas is typically in large tracts. As land is divided into smaller tracts, its price per acre generally rises, and as a result, it becomes less affordable by farmers who have to derive their income from the land. Because smaller tracts are available, the total cost of a piece of land may decrease, even though the price per acre increases. Thus, the smaller tracts may be more attractive to non-farm buyers, and they will push farmers out of the market.

In order to maintain a land market in which farmers can compete, the division of land should be limited so that parcels created will not be smaller than is appropriate for continuation of the existing types of commercial farming in the area. Limitations on land division in agricultural areas can be set by local municipalities. For example, the zoning ordinance of Hopewell Township, York County, allows division of agricultural land into two or more parcels only if each resulting parcel contains at least 100 acres. If the original parcel is less than 100 acres, land from it may be transferred to another parcel so long as the second parcel, after transfer, is at least as large as the original parcel was before transfer. The standard of 100 acres was based on the fact that typically farm cores in the township were 100 acres or larger. The farm core is the area of a farm excluding outlying tracts. It is the part of a farm that is most efficient to operate, has the most permanence, and thus forms the economic basis of the farm.

Note that the limitation on division of land into tracts of less than 100 acres does not preclude the creation of one-acre lots under sliding scale agricultural zoning (which is discussed below).

### **Prevent the Conversion of Farmland to Non-Farm Uses**

The measures outlined so far provide incentives to keep land in agriculture, but they do not prevent it from being developed. They are not enough to ensure that areas planned for agriculture will remain as viable agricultural areas. A small amount of scattered development within an agricultural area can lead to land use conflicts that make the continuation of farming difficult if not impossible. It is necessary to adopt measures that will prevent the conversion of farmland to non-farm uses.

## **Agricultural Conservation Easements**

The most effective measure for preventing the development of farmland is the acquisition of agricultural conservation easements. These are legally binding instruments, which go with the deed, that prevent development forever.

The Pennsylvania Agricultural Conservation Easement (PACE) program is the best-known program for easements. The program is well underway in the county; as of December, 1991, the County Commissioners had already approved the acquisition of ten easements covering 1,505 acres. The Comprehensive Plan strongly endorses the continuation of the PACE program, but recommends some changes in the rating system used for choosing properties on which easement offers are to be accepted.

The selection system now used by Adams County for the PACE program specifies a number of conditions that a property must meet in order to be considered eligible. These conditions include that it be 25 acres or more, be located in an Agricultural Security Area, be primarily in cropland, pasture, or grazing, and be primarily of Agricultural Capability Class I - IV soils. The Plan recommends that the eligibility requirements be expanded to require that the property be in an area indicated for agricultural use in the Land Use Plan (Figure 3.3.1). Thus, properties planned for other than agricultural uses (such as properties in future growth areas) would not be eligible for the PACE program.

The Adams County selection system rates eligible properties on a number of factors. These factors can be classified under five headings: size and agricultural quality of the site, assurance that the site is part of a block of farmland that is likely to be protected, lack of development pressure on the site, and non-agricultural qualities of the site (such as historic, scenic, and environmental qualities) that make its protection important. The preceding paragraphs of this chapter have emphasized the importance of protecting large blocks of farmland in order to reduce land use conflicts and enhance the probability that farming will remain practical. Later in the chapter, the crucial role of agricultural zoning in protecting large blocks of farmland will be pointed out. The Plan recommends that the PACE rating system be revised to give significantly more weight to the existence of strong agricultural zoning covering the site in question. The result would be that few sites would be chosen for easement purchase that were not under strong agricultural zoning. This change in the rating system would provide some incentive for municipalities to adopt strong agricultural zoning ordinances.

A second method for acquiring easements is through donation to non-profit conservancies. Landowners who donate easements can count the value of the easement as a charitable donation that can be deducted from income for federal income tax purposes, thus lowering their tax liability. Landowners may also make partial donations through "bargain sales" of easements to conservancies. Throughout the state, owners of farmland have donated easements on some 11,000 acres to conservancies. A number of conservancies active in the state, including the American Farmland Trust, are available for donation of easements, but the

establishment of a conservancy or land trust specifically for Adams County would greatly increase the area that could be maintained for farming in the county. The Lancaster Farmland Trust is well established; the York County Farmland Trust was begun in 1990. The Comprehensive Plan encourages the establishment of an Adams County conservancy or farmland trust.

Acquisition of easements through the PACE program and through conservancy action, however, will account for only a small fraction of the county's farmland. It is anticipated that the entire PACE program will have a budget of \$7,500,000 for Adams County, including an estimated \$750,000 in County funds. If the average cost of all easements turns out to be the same as the average for the first four easements - \$1,500 per acre - then, the entire program will result in easements on about 5,000 acres. This area protected by the PACE program will account for less than 3 percent of the land in farms in the county. Conservancy action might account for another 3 percent. Other techniques must be used if the vast bulk of farmland in the county is to be protected from development.

### **Agricultural Zoning**

The most promising, and well-tested, technique is strong agricultural zoning. Strong agricultural zoning strictly limits land uses to agriculture and related uses and limits residential development to no more than one dwelling per 20 acres on average. Such zoning is common in York and Lancaster Counties and has been adopted by Latimore and Tyrone Townships in Adams County. In Lancaster County, 35 townships have adopted strong agricultural zones, covering 268,000 acres. In York County, strong agricultural zoning covering 159,000 acres is in effect in 17 municipalities. In Lancaster and York counties, respected members of the farm community have taken the lead in promoting the adoption of agricultural zoning. They realized that it would protect their agricultural investment and their way of life. No municipality in these two counties has subsequently rescinded its agricultural zone after instituting it. Rezoning from agriculture to other uses have been relatively rare, amounting to net losses of only about 1,500 acres in Lancaster County (about one-half of one percent of all land with strong agricultural zoning) and only a few hundred in York County. At least a half-dozen townships have added to their agricultural zones after establishing them. Several have strengthened their zones by further restricting the non-farm uses permitted.

Adoption of agricultural zoning is ultimately the responsibility of each municipality. The County, however, can help by developing model ordinances and providing technical assistance to municipalities that are exploring zoning alternatives.

Agricultural zoning will greatly strengthen the Pennsylvania Agricultural Easement Program that the County is participating in. It will prove to be difficult to continue to farm farms protected by conservation easements if they are surrounded by land zoned, and someday developed, at suburban densities. Therefore, the considerable County and State funds spent for easements in such locations may ultimately be wasted if agricultural zoning is not



adopted. For that reason, the Comprehensive Plan recommends that the existence of agricultural zoning be given greater weight in the process for selecting sites on which to purchase easements.

If it is to prove effective, agricultural zoning should have the following characteristics:

1. Overall, it should permit no more than 5 and preferably no more than 3 non-farm dwelling units per 100 acres.

2. It should be the area-based allocation variety of agricultural zoning. Area-based allocation limits the number of houses that can be built on a property given its area, instead of simply setting a large minimum lot size. It establishes an overall permissible density, such as one dwelling unit per 20 acres, but requires each house to be built on a small lot, for example, one acre, and located in a place that will interfere as little as possible with agricultural activities on the remainder of the tract. The area-based allocation form makes possible much more flexibility in siting and leaves much more extended and uninterrupted areas in one ownership and available for farming.

3. Desirably, it should be the sliding scale form of area-based allocation zoning. The sliding scale form, which has been upheld by the Pennsylvania Commonwealth Court (Boundary Drive Associates v. Shrewsbury Township, 1984), allows somewhat higher densities of development for smaller parcels than for larger ones. This is justified because smaller parcels are less suitable for farming and often their owners have investment-backed expectations for developing them. Usually they account for a relatively small total area and so their development at somewhat higher densities does not add an excessive number of dwelling units to the agricultural zone.

The sliding scale schedule of Latimore Township is almost identical to the schedule upheld by the Commonwealth Court in the Boundary Drive case. The Latimore schedule follows:

<u>Size of Parcel</u>	<u>No. of Dwelling Units Permitted</u>
Less than 2 acres	0
2 - 5 acres	1
6 - 10 acres	2
11 - 30 acres	3
31 - 60 acres	4
61 - 90 acres	5
91 - 120 acres	6
121 - 150 acres	7
151 - 180 acres	8
181 - 210 acres	9
211 acres & over	10

4. The allowable units should be grouped together instead of stretching along the road frontage of the tract. Figure 3.8.2 shows how allowable development might be sited under large lot agricultural zoning and under sliding scale agricultural zoning, either along the road or grouped. All diagrams reflect the densities allowed under Latimore Township's agricultural zoning district.

5. The sizes of individual parcels are the sizes as of a given date, preferably a date well before the adoption of the ordinance.

6. The uses allowed in the zone should be strictly limited to uses that are supportive of agriculture or at least highly compatible with it.

7. Farm stands should be allowed in agricultural zones so that farmers can capture some of the retail markup on their produce. The farm stands, however, should be limited to seven months operation per year and to about 600 square feet in floor area. Otherwise, they may become intense year-round markets that bring excessive activity into the agricultural zone that conflicts with farming activities.

8. A simple and foolproof system should be instituted to keep track of the number of dwelling rights initially assigned to each parcel, the number of building permits granted, and the resulting number of rights remaining for dwellings to be built in the future.

Figure 2.6.3 shows the land in the county covered by agricultural land protection devices as of 1991. Very large areas are enrolled in Agricultural Security Areas, which provide some protection to farmers but do not prevent them from developing their land. Two townships, Latimore and Tyrone, have instituted strong agricultural zoning. The first ten easements have been approved under the PACE program. They represent approximately 25 percent of the total number anticipated under the program. Land under easement has the strongest and most long-lasting protection from development.

### Agricultural Resources Policies

- 1. Reduce development pressure on farmland by controlling the location of new infrastructure.*
- 2. Encourage municipalities to enact effective agricultural zoning.*
- 3. Prevent the division of farmland into small tracts.*
- 4. Continue the acquisition of conservation easements on farmland and focus their location.*
- 5. Strengthen the agricultural economy.*

6. *Reduce potential conflicts between farmers and non-farm residents in areas planned for agriculture.*

Table 3.8.1

*Goals, Objectives, and Policies for Agricultural Resources*

GOALS: AGRICULTURAL RESOURCES

It is the goal of Adams County to maintain a strong agricultural industry and to protect farmland for agricultural use.

OBJECTIVES RELATED TO MAINTAINING A STRONG AGRICULTURAL INDUSTRY:

Minimize financial costs to farmers caused by nearby urbanization, such as:

higher taxes caused by:  
increases in assessment;

increases in local government expenditures;

assessments for utility lines that are installed through or along the edge of farms.

higher operating costs caused by:  
local ordinances that restrict normal farming practices.

Minimize conflicts with farming caused by nearby urbanization, such as, conflicts caused by:

additional traffic through farming areas;

non-farm development next to areas where pesticides or herbicides must be used;

lack of understanding by non-farm neighbors of the economic necessity of farm practices, hours of operation, etc.

Increase the profitability of farming by allowing accessory activities on farms, such as:

home industries;

POLICIES THAT WOULD ACHIEVE THE OBJECTIVES:

Apply for differential assessment (Act 319).

Limit non-farm development (which is likely to demand higher, non-rural levels of government service).

Forbid extension of utility lines through farming areas. Exempt farmland owners from assessment for lines that must traverse area.

Establish Ag Security Areas, where right-to-farm is assured.

Notify land buyers (in their agreements of sale) that agriculture is the primary industry in the area.

Locate non-farm development so as to minimize traffic in farm areas.

Require buffer on parcels to be developed for non-farm uses.

Notify land buyers (in agreement of sale) that agriculture is the primary industry in the area and that they may be subject to inconvenience and discomfort arising from accepted agricultural practices.

Allow small home industries, subj to limitations on sewage, traffic generated, etc.

**OBJECTIVES RELATED TO MAINTAINING A STRONG AGRICULTURAL INDUSTRY:**

farm stands;

bed and breakfast operations.

Strengthen business serving the agricultural industry.

Reduce some of the obstacles that make it difficult for young people to enter farming, such as:

the high price of farmland;

the large investment necessary for farm equipment.

Reduce obstacles to the economic expansion of the agricultural industry in the county.

**OBJECTIVES RELATED TO THE PROTECTION OF FARMLAND**

Minimize development pressure on farmland, caused by such things as:

availability of public water and sewer;

fast, high-volume highway access.

Prevent the division of farmland into tracts too small for farms.

Prevent the conversion of farmland to non-farm uses.

**POLICIES THAT WOULD ACHIEVE THE OBJECTIVES:**

Allow seasonal farm stands, limited in size.

Allow B & B subj to no. rooms, sewage cap'y, etc.

Allow agric infrastructure businesses in farming area, in least disruptive locations.

Reduce land prices by compensating owners to limit the use of their land to agriculture.

Expand the scope of the Agricultural Preservation Board to include the functions of an Agricultural Development Council.

Develop a marketing campaign for Adams County farm products.

Encourage introduction of new crops, etc.

**POLICIES THAT WOULD ACHIEVE THE OBJECTIVES**

Forbid extension of public water and sewer into farmland areas.

Do not build new highways in or near farmland areas.

Do not allow divisions that result in tracts smaller than the average farm core.

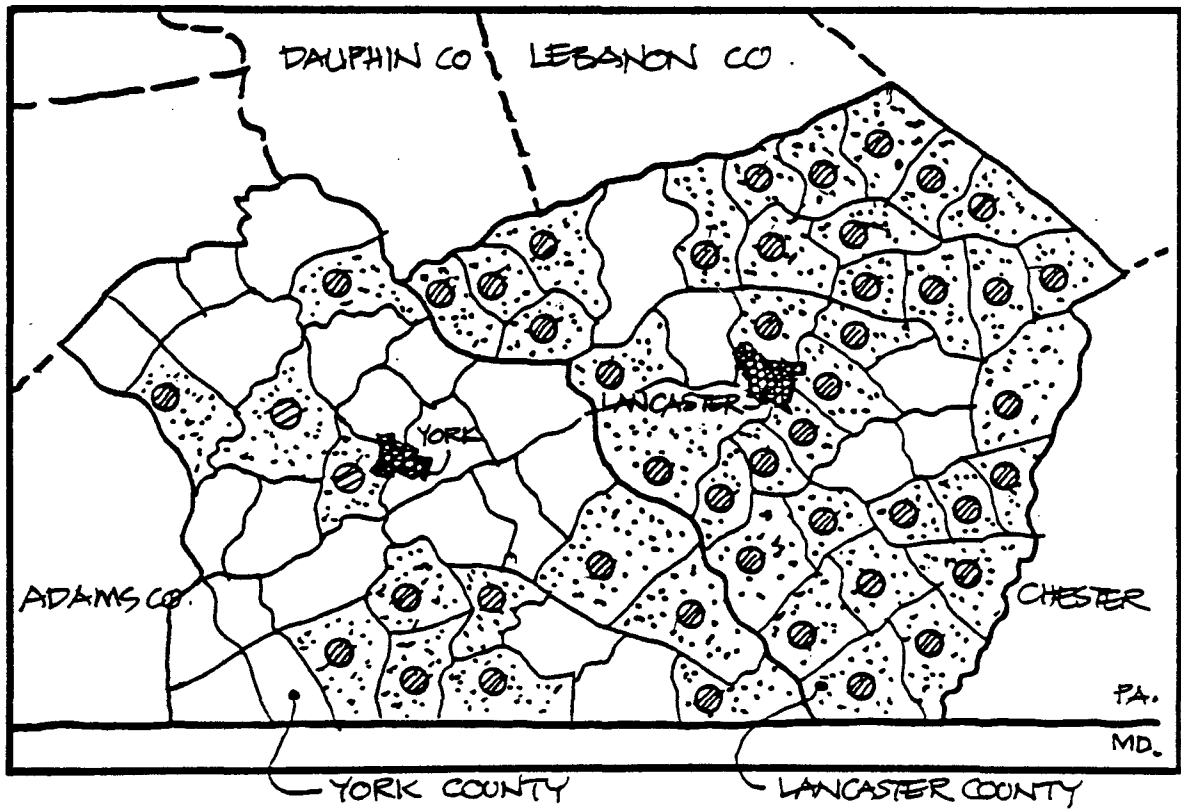
Maximize participation in Pa. Agricultural Easement program.

Encourage farmland owners to donate easements to conservancies and enjoy tax benefits.

Encourage municipalities to adopt effective agricultural zoning.

Figure 3.8.1

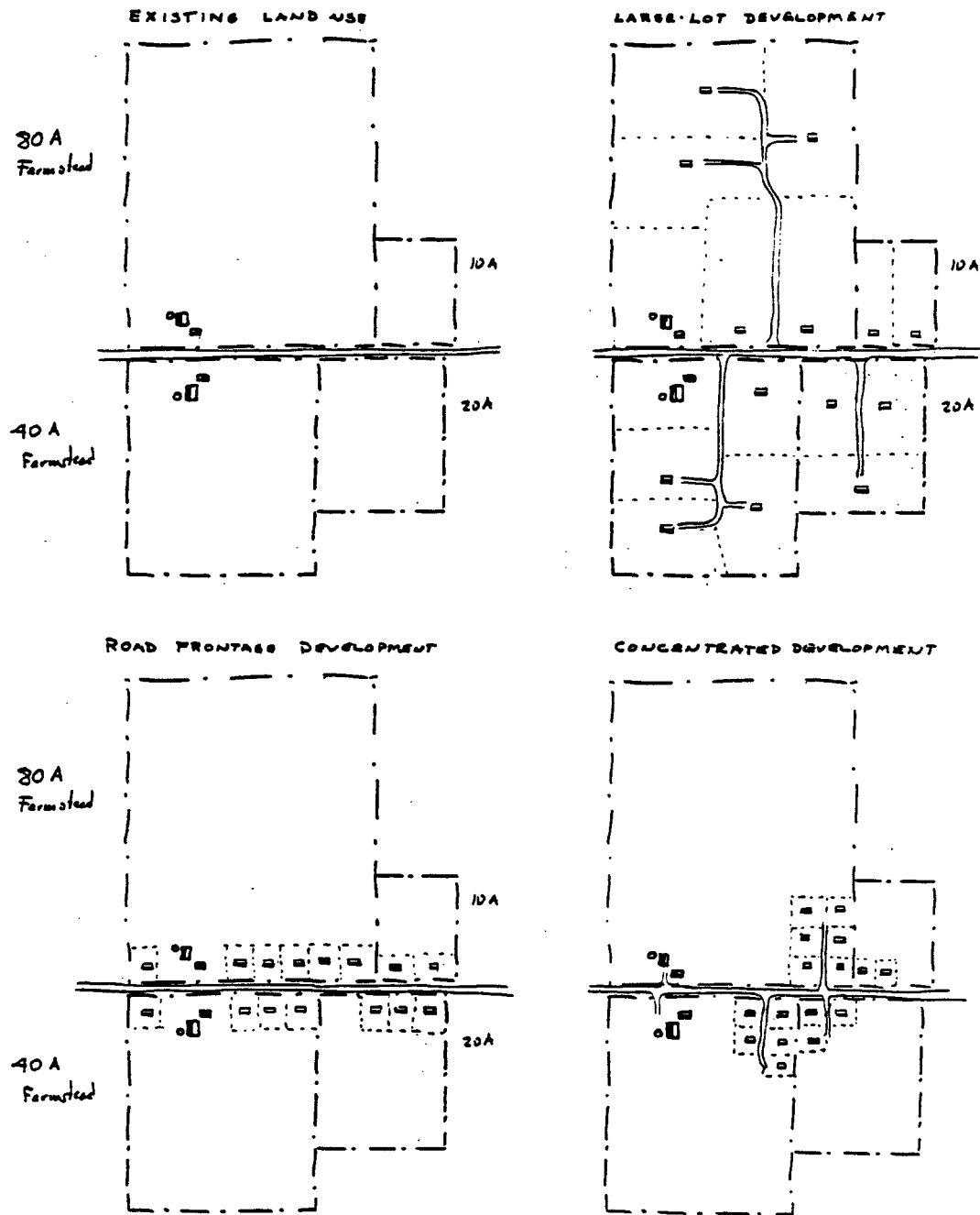
*Municipalities in York  
and Lancaster Counties  
with Strong Agricultural  
Zoning*



Source: Guiding Growth, Building Better Communities and Protecting Our Countryside,  
Pennsylvania Environmental Council, 1991.

Figure 3.8.2

*Development Alternatives  
in Agricultural Areas*



## SECTION 9: UTILITIES PLAN

### Introduction

Providing adequate water supplies and wastewater treatment for the planned population growth (approximately 15,000 dwelling units and associated commercial and industrial facilities) throughout Adams County over the next twenty years should not be an insurmountable job. However, the job will not be easy nor automatically accomplished without a detailed planning effort and the dedication, patience, and participation by municipal officials and residents as well as County officials. Although Adams County enjoys plentiful rain on the average with generally adequate recharge of surface and underground water supplies, most municipal water supply systems and many residents on individual wells report difficulty in meeting water supply demands during periods of drought. With regard to wastewater treatment, a number of the municipal systems are at or nearing their capacity. Many portions of the county have moderate to severe limitations with regard to septic tank installation and a number of malfunctioning units have been reported.

The Land Use Plan (see Section 3 of this chapter and Figure 3.3.1) envisions new development primarily in and around existing boroughs and selected new centers (about 67% of new dwelling units), with about 16% of new residences in "cluster" housing development in the countryside plus about 7% already proposed in conventional rural subdivisions and about 10% scattered as new individual residences. Central municipal water supply systems, currently having a capacity to provide about 5.7 million gallons of water per day (mgd) to roughly 13,000 homes and businesses, will have to be increased in capacity by an additional 2.1 mgd to serve the increased population in and around existing boroughs of about 7,000 homes and associated businesses. Corresponding increases in wastewater treatment capacity will also be needed. New central water supply and wastewater treatment facilities with a capacity totalling about 0.9 mgd will have to be constructed to serve roughly 3,000 additional service connections in the selected new centers. The total centralized water supply capacity in the county would then be roughly 8.7 mgd with a corresponding amount of wastewater treatment capacity (Figure 3.9.4a). Residential and commercial areas adjacent to or near existing boroughs and new centers where water supplies lack adequate yield or quality may need to have water supply service extended to them, adding to the requirements for increased centralized capacity. Similarly, nearby areas where individual on-site septic tank wastewater treatment systems are inadequate may need to be connected to the central sewer systems. Perhaps several hundred to a thousand homes and businesses may be in these areas.

Cluster housing developments in the countryside will need about 0.7 mgd new capacity from well fields developed near the clusters to serve about 2,400 homes, with "package" plants or other types of wastewater treatment. Approximately 1,500 scattered new individual residences will each need a well producing at least one gallon per minute (gpm) together with an on-lot septic tank. Eight industrial and business parks are projected in the Land



Use Plan; five along US Route 15, one in the Littlestown area, and two in the Conewago Valley area. (The latter three are currently being developed.) These industrial parks will need to have their own water supplies and wastewater treatment systems designed and installed as part of their project planning, development, and construction.

The Land Use Plan would make maximum use of existing and planned increases in water supply and wastewater treatment capacity. Furthermore, expansion of capacities beyond those currently planned would make use of the "Act 537" sewer and water supply planning process that is familiar to municipal planning officials and firmly established through the Pennsylvania Department of Environmental Resources (DER) review and approval process.

As noted above, many of the existing municipal water/wastewater systems are at or approaching their design capacity, particularly the Borough of Gettysburg. Also, some municipal wastewater treatment systems may not be able to be developed or expanded without installing expensive advanced treatment to preserve water quality in effluent-receiving waters downstream. The proposed selected new centers will have to develop centralized water supply treatment/distribution and wastewater treatment/sewerage systems, likewise using advanced technology in some cases. Restrictions on wastewater treatment plant effluent are likely to become more severe as DER tightens its regulations to protect stream water quality.

In areas designated for non-urban development, whether residential construction is in the form of individual, widely-spaced single-family detached units or in clusters of homes, developers may have difficulty in finding satisfactory water supply wells and soils suitable for percolation of sewage. Alternative sewage treatment systems such as mound systems have had problems in this area. Small, developer-installed "package plants" for residential clusters may present similar downstream water quality problems to the centralized municipal systems, unless underground or spray irrigation land application systems are used for effluent from the package plants.

In any case, consideration should be given to zoning, land development regulations, and other approaches for protecting groundwater and surface water sources of potable water supplies, particularly for growing boroughs and planned new centers. "Well-head" protection zones should be established around each major water supply well (see Figure 3.9.1), extending at least 1/4 mile from the well. The area should include the "zone of influence" noted in Figure 3.9.1, and the siting within that zone of commercial, industrial, or other facilities which might pollute the well should generally be prohibited. (While existing industrial or commercial facilities within 1/4 mile of existing wells cannot be forced to move, nor all commercial or industrial activities within 1/4 mile of existing wells be prohibited, consideration can be given to measures such as double-wall tanks, dikes and catch basins to prevent the potential of leaking tanks polluting wells.) Furthermore, protection of the entire aquifer from which the wells draw their groundwater should be considered: Limitations on development of potentially polluting facilities or activities throughout the "zone of contribution" or "recharge" area for the well (the area on which rainwater falls and

percolates through the earth to supply water to the aquifer, as illustrated in Figure 3.9.1) should be enacted by all municipalities. Although the need for reservoirs for additional surface water supplies may be relatively far in the future (beyond the horizon of this Plan), consideration should be given to protecting such reservoir sites from future development in selected areas.

The utilities element includes provisions for municipal solid waste disposal in accordance with the recently-enacted Act 101 of 1990, requiring the County to prepare a solid waste management plan to ensure disposal capacity for at least the next ten years. The Adams County Solid Waste Management Plan, which provides for out-of-county disposal at several existing facilities, has been approved by the county's municipalities and is being reviewed by PaDER. Collection and transportation of municipal solid waste to disposal facilities will remain the responsibility of private haulers.

### Water Service Plan Element

#### **Current and Projected Water Use**

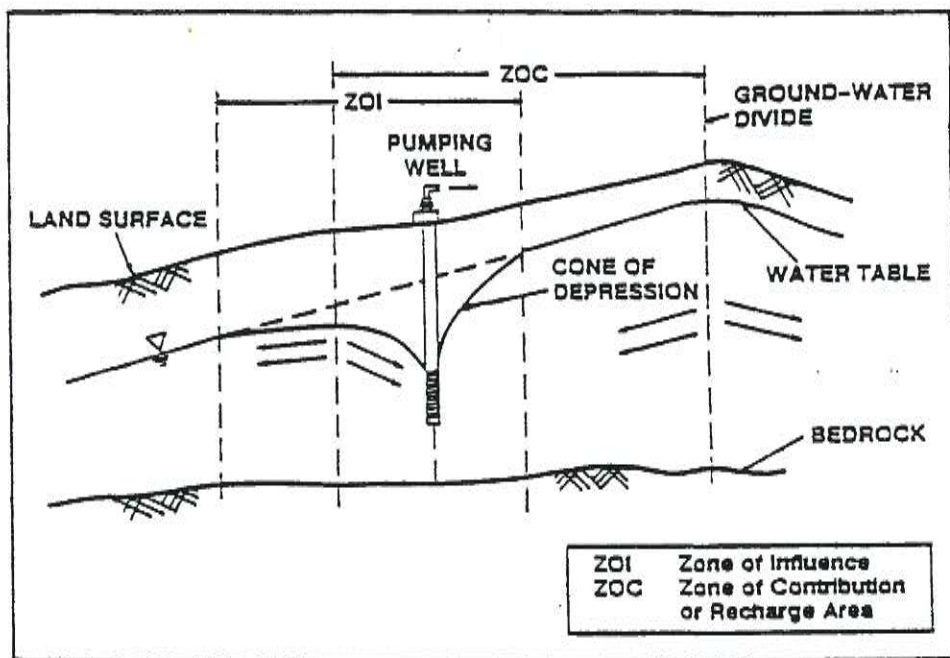
It is estimated that the current population of roughly 80,000 residents plus commercial firms, institutions, and industries uses approximately 10 million gallons of water per day (mgd). During the next twenty years water use is expected to increase to about 13.5 mgd. There are currently 18 municipal water supply systems operating in the county, serving a population of about 39,200, and at least 11 small community systems serving mobile home parks, campgrounds, etc., serving an additional population of about 3,100, for a total population on central water supply systems of about 42,300. There is very little excess capacity in these central systems to handle population and commercial/industrial growth. The balance of county residences, offices, stores, industries, and institutions are served by individual on-site wells.

The primary resource for water supply in Adams County is groundwater. In general, overall supply is more than adequate: As illustrated in Figure 3.9.2, out of a total average annual rainfall of 977 million gallons per day (mgd), approximately 200 mgd runs off in creeks, streams, and rivers, and about 175 mgd infiltrates into the ground. Eventually, all of this groundwater not withdrawn and consumed returns to the surface as stream discharge or "baseflow", or leaves the county underground to other adjacent counties. Average stream flow in years of average rainfall is about 376 mgd. Of the 175 mgd groundwater flow, roughly 110 mgd is available in areas underlain by triassic or carbonate rocks that can yield well water with adequate quantity and quality.

It should be realized that the above amounts are values for years with average rainfall. In an average dry year, the surface runoff can drop to less than 10% of the average, and in a year with a seven-day, fifty-year dry weather period, the surface runoff can drop to roughly 2% of the average. Groundwater availability will drop during dry spells and droughts,

Figure 3.9.1

*Wellhead Protection Areas*



Ground water can become contaminated by many hazardous materials, such as pesticides, fertilizers, organic chemicals, and human wastes. The degree of contamination depends on soil characteristics, contaminant characteristics, ground-water flow, and other factors. Porous soils, such as sand, located over shallow aquifers generally are quite susceptible to contamination, while deep aquifers located in heavy clay soil areas are less susceptible. Once contaminated, aquifers are difficult and expensive to clean up. For example, localities or responsible parties may have to pay for site studies, remediation, and property damage. The most cost-effective approach is to prevent contamination before it occurs, rather than attempting to remedy existing contamination.

Ground-water wells affect the flow of ground water by lowering water levels in an area around the well, known as the zone of influence or cone of depression, as depicted in Exhibit 1. The full recharge area to the well is often called the zone of contribution. The zone of influence and the zone of contribution may constitute a fraction of an aquifer's area, or go beyond individual aquifers to inter-connected aquifers. The wellhead protection area may constitute all or part of the zone of influence or zone of contribution. Wellhead protection areas range in size, usually from tens of acres to several square miles, and, in some cases, to tens of square miles.

depending on the duration of the drought.

Current total use of water in Adams County from community, non-community, and individual wells and springs is estimated to be about 10 mgd, roughly 9% of the average flow of groundwater in triassic and carbonate rock areas. Use is anticipated to increase to at least 13 mgd over the next twenty years. Current use of groundwater in Adams County is estimated to be approximately 6.5 mgd, and is expected to increase to 8.7 mgd by the year 2010. Current use by centralized municipal and non-municipal community water systems is estimated to be 4.15 mgd. These centralized systems have a current capacity of 5.66 mgd.

Surface water use is estimated to be about 3.5 mgd currently, and is projected to increase to at least 4.5 mgd by the year 2010.

Therefore, although the basic water supply resource is large relative to consumption, given the potential for periods of drought, the siting of new wells and surface water intakes yielding adequate water quantity and quality and the development of increased water supply system capacity for the growing population of the county will be a continuing problem. Furthermore, given that this groundwater resource is unevenly distributed throughout the county in both quantity and quality and has become contaminated in several areas from failing septic tanks, the siting of new wells will require the expertise of hydrologists, hydrogeologists, and experienced well drillers.

#### **Local Area Water Availability**

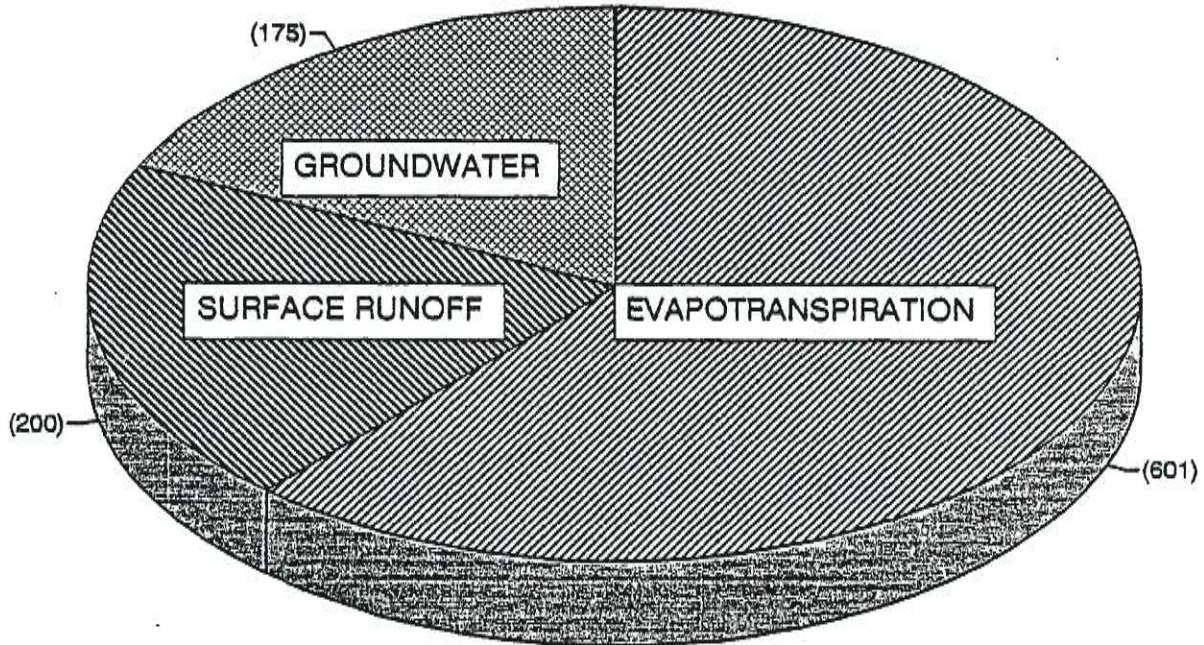
*Gettysburg Area:* In the Gettysburg area, which currently gets about 54% of its water from groundwater sources (the other 46% from Marsh Creek), the Municipal Authority will probably attempt to exploit groundwater for future growth in water supply needs. The area is underlain by Triassic rocks which are typically low-to-moderate in yield. However, through careful and persistent exploration, it is believed that adequate additional water supplies can be obtained from wells. A number of areas should be avoided, however, including those within the Gettysburg Borough limits, because of contamination and the likelihood of future contamination. Also, the area north of the borough should be avoided because industrial contamination of the groundwater has already occurred. South of the borough much of the land is owned by the Federal Government as Gettysburg Military National Park and Eisenhower National Historic Site, neither of which can be used for drilling wells. Areas east of the borough are considered unsuitable for well locations because the underlying formation is primarily "diabase", which typically has very poor water yields. Also, the potential for contamination exists from traffic on US Routes 15 and 30.

As a result, the area to the west and southwest of the borough should be the primary location for new wells. The recharge area for these wells would be in the high ground to the northwest that is currently in farms, fields, forests, and residential uses, and unlikely to be sources of future contamination. However, appropriate zoning and subdivision and land

**Figure 3.9.2**

*Adams County Water Resources*

TOTAL RAINFALL = 977 MGD



**ADAMS COUNTY WATER RESOURCES**

1	977	MGD* RAINFALL OVER THE ENTIRE ADAMS COUNTY IN AN AVERAGE RAINFALL YEAR
2	601	MGD EVAPOTRANSPIRATION (RETURNS TO ATMOSPHERE)
3	200	MGD DIRECT SURFACE RUNOFF IN AN AVERAGE RAINFALL YEAR
4	175	MGD GROUNDWATER RETURN FLOWS (BASEFLOWS) IN AN AVERAGE RAINFALL YEAR
5	#3+#4	376 MGD TOTAL STREAM OUTFLOW IN AN AVERAGE RAINFALL YEAR
6	63% of #4	110 MGD BASEFLOWS IN TRIASSIC + CARBONATE AREAS
7	9.1% of #5	34.2 MGD SURFACE RUNOFF (AVERAGE DRY YEAR BASIS)
8	2.2% of #5	8.4 MGD SURFACE RUNOFF (7-DAY 50-YEAR DRY WEATHER PERIOD)
9	9% of #6	10 MGD TOTAL WATER USE IN ADAMS COUNTY IN 1990
10	6% of #6	6.5 MGD CURRENT USE FROM GROUNDWATER SOURCES
11	10% of #7	3.5 MGD CURRENT USE FROM SURFACE WATER SOURCES
12	50% of #8	4.15 MGD CURRENT USE FROM MUNICIPAL AND NON-MUNICIPAL COMMUNITY WATER SYSTEMS
13	5.66	MGD CURRENT CAPACITY OF MUNICIPAL AND NON-MUNICIPAL COMMUNITY WATER SYSTEMS

\* MGD = MILLIONS OF GALLONS PER DAY



use regulations should be enacted by Cumberland Township to protect the aquifer recharge area. (Portions of Cumberland Township are currently served by the Gettysburg Municipal Authority water supply and additional areas of the township may be served in the future.) Although the area is underlain by the "Gettysburg" Triassic sediment formation, good well locations should be found where rock fractures are indicated. In a recent study, five specific well locations were identified with the potential for supplying up to 0.5 mgd or more.<sup>1</sup> These well locations are illustrated in Figure 3.9.3.

Other sources of information on water supplies in Adams County may be found in State publications.<sup>2,3,4</sup>

*Mid-County West and North - Gettysburg Plain:* This broad area extends southwest to northeast across most of the county, including portions of Liberty and Freedom Townships to the southwest; Highland, Cumberland, and Franklin Townships to the west; and Butler, Tyrone, and Huntington Townships to the north of Gettysburg. The potential for obtaining adequate supplies of acceptable quality water throughout this "Gettysburg Plain" area underlain by the Gettysburg Triassic Formation should be similar to the potential near Gettysburg itself, as illustrated in Figure 3.9.3. The water yields from current wells range from 1 to 630 gallons per minute (gpm) with a median for residential wells of 12 gpm and for commercial wells of 69 gpm. The water is generally hard and may have iron and other constituents above recommended values.<sup>2</sup>

*Mid-County South and East - Bonneauville and the Route 15 Corridor area:* This extensive area runs from Mount Joy Township in the south, northeast through portions of Mt. Pleasant, Straban, Hamilton, and Reading Townships east of Gettysburg. Most of this area is underlain by Triassic sedimentary rock, but a narrow Diabase formation with poor water yields runs diagonally across the county from southwest to northeast between Bonneauville and Gettysburg. The Borough of Bonneauville is served by 6 wells and is at or over its currently-available water supply capacity of about 0.1 mgd. Future growth in this area will require the search for fractures in the Triassic formation for additional wells with adequate yields and acceptable water quality.

*Eastern Adams County - Abbottstown, East Berlin, and New Oxford area:* Abbottstown and East Berlin Municipal Water Authorities both appear to have adequate water supply capacity from their wells for substantial future growth. New Oxford, which obtains most of its water from the Conewago Creek (an average of about 0.57 mgd), is currently near its approved capacity, but has obtained a permit from DER to double withdrawals from the creek, from .65 mgd to 1.3 mgd. The "safe yield" from the creek (i.e., the amount of water that flows in the creek even during periods of drought) is 7.45 mgd, so even further withdrawals of water could be permitted. The growing areas around Cross Keys, Dicks Dam, and other contiguous or nearby locations in Oxford, Mt. Pleasant, Berwick, and Hamilton Townships could be served by extensions to the New Oxford Municipal Authority water supply lines.

The groundwater resources lie in the Triassic "New Oxford Formation", which is characterized by generally hard water, with some iron and other constituents above recommended limits. A number of examples of contamination by fecal coliform, presumably from failing septic tanks, have occurred in this area recently. Well yields range from 1 to 100 gpm, with a median for domestic wells of 6 gpm and 30 gpm for commercial wells<sup>2</sup>.

*Northeastern Adams County - Reading, Huntington, and Latimore Townships:* There is a large Diabase intrusion underlying this area, intersecting the Gettysburg Triassic formation. If the Diabase is avoided, adequate water yields and acceptable quality can be obtained. York Springs Borough appears to have adequate future capacity from its three springs and four wells with a total capacity of about 0.25 mgd and a current daily usage of only 0.035 mgd.

*Lower Southeastern County - Littlestown and McSherrystown area:* The Conestoga limestone formation is in this area, extending diagonally between Littlestown and McSherrystown, with well yields averaging 26 gpm for domestic wells and 28 gpm for commercial wells.<sup>2</sup> However, the water is generally even harder than for Triassic formations and frequently exceeds the recommended limits for iron and manganese. Future water needs in parts of Conewago, Union, and Germany Townships could be accommodated with regard to the quantity of water available from new wells, but the water might need treatment to remove hardness, iron, and manganese.

Littlestown Borough has seven wells plus a quarry that the borough uses as a reserve, but the municipality is nearing its capacity of 0.34 mgd with an average usage of 0.286 mgd. Littlestown is therefore adding two wells with an additional 0.141 mgd capacity. McSherrystown Borough obtains all of its municipal water supply water from Hanover Borough in York County, which relies on both groundwater wells and two surface water reservoirs, one of which is in Conewago Township.

*Lower Southwestern County - Fairfield and Carroll Valley:* Both Fairfield and Carroll Valley municipal water supplies are approaching their capacities, and new groundwater sources are being sought. Also, Fairfield may give up or decrease its reliance on Maple Spring Run because of the expense of providing water treatment and filtration to this surface water supply (see "Community Water Supply Systems" in Chapter 2, Section 10). The "Beekmantown" limestone near Fairfield is said to be a high-yield aquifer although the water may be very hard. The "Metarhyolite" and "Metabasalt", in parts of Liberty and Hamiltonban Townships, may have lower yields but the water is likely to be soft. There is also some Triassic formation in the area which may prove to provide adequate yields and acceptable water quality. A circle of Diabase underlies parts of Liberty and Freedom Townships - a formation that should be avoided when seeking new well locations.

*Western and Northwestern Areas - Aspers, Arendtsville, Bendersville and Biglerville:* A very complex geology underlies the hilly and mountainous areas along the western and northwestern portions of the county. The "fruit belt" is underlain primarily by Metarhyolite with some Triassic formations. Well yields can be adequate to plentiful with acceptable



water quality. Even so, well locations must be carefully selected in Hamiltonban, Franklin, Menallen, Butler, and Tyrone Townships. The municipal water supplies in this area depend on groundwater wells and springs, and are approaching their capacities except for Bendersville, which appears to have sufficient capacity for future growth.

### **Water Supply Development Plan**

**Existing Boroughs and Vicinities:** A total of about 7,000 new housing units are projected in and around existing boroughs in the Land Use Plan (Figure 3.3.1). This implies the need for an additional 2.1 mgd of water supply capacity at 100 gallons per person per day and 3 persons per housing unit. There may be a need for additional storage and fire fighting capacity in some of the boroughs. The need for additional water supply capacity is illustrated in Figure 3.9.4.

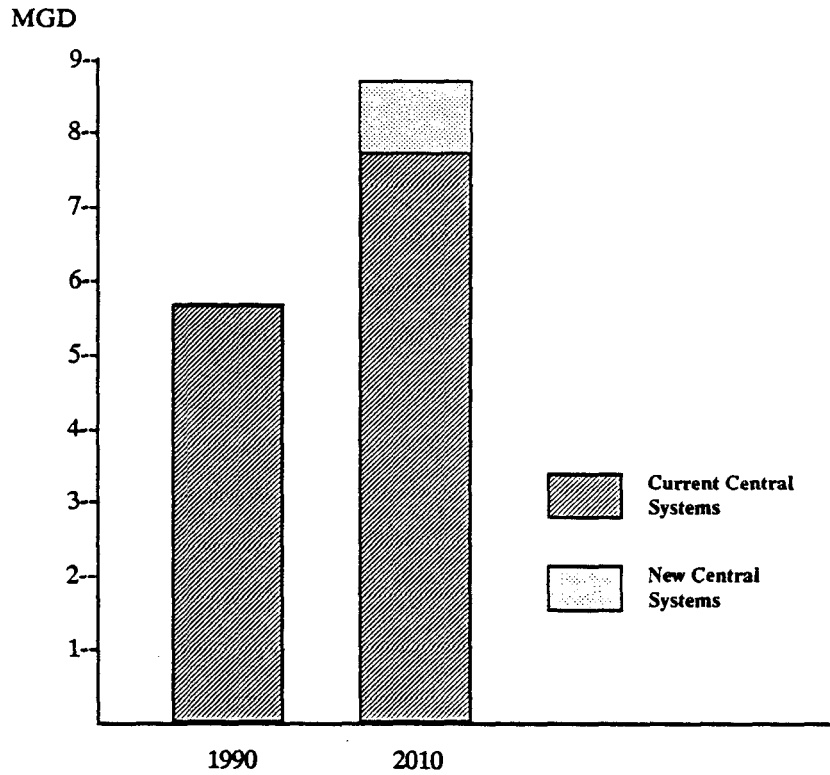
Significant development is anticipated to be centered primarily around Gettysburg, Littlestown, Bonneauville, McSherrystown, New Oxford, and York Springs Boroughs. McSherrystown would have to negotiate with Hanover Borough in York County to obtain additional water supply allocations, while New Oxford should have adequate surface water capacity when its expansion to 1.3 mgd from Conewago Creek is completed. York Springs appears to have adequate reserve capacity at this time. Gettysburg and Bonneauville Boroughs should be experienced in facing the need for planning new or expanded centralized water supply and wastewater treatment systems through the Act 537 planning process, and should be able to cope with the development pressure. As noted above, there should generally be sufficient groundwater resources near these two boroughs to meet the anticipated increase in housing units. However, there may be problems with systems expansion in terms of finding specific well locations with adequate yields and acceptable water quality.

In addition, Arendtsville, Bendersville, Biglerville, Carroll Valley, East Berlin, and Fairfield would also need to plan for expansion of their municipal facilities to meet planned development needs. Carroll Valley might have the most difficulty in meeting these needs. As noted above and in Chapter 2, Section 10, Fairfield may come to rely more heavily or completely on additional groundwater sources, rather than on its Maple Spring Run surface water supply - the Beekmantown limestone formation may be the best area in which to seek new wells. Bendersville and East Berlin currently appear to have adequate reserve capacity. In Straban Township, east of the intersection of US Routes 15 and 30, an overall plan is needed for water supply and sewage treatment for the Hunterstown-Shrivers Corner area. The water supply might be available from an expanded Gettysburg system.

**New Center-Associated Units:** In addition to the borough-focused growth areas, the Land Use Plan indicates selected other centers as designated new locations for growth. The idea of creating these new "mini-boroughs" is very attractive from a variety of perspectives; however, it will take a major effort to find water supplies for all of them. About 3,000

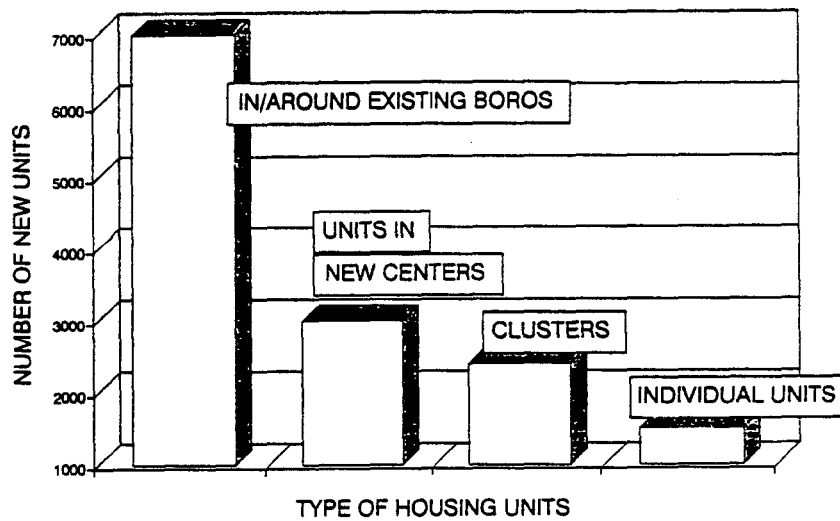
**Figure 3.9.4a**

*Countywide Centralized  
Water Supply &  
Wastewater Treatment,  
1990 and 2010  
(Millions of Gallons per Day)*



**Figure 3.9.4b**

*New Housing Units Needing Water Supply*



3-9-11

housing units are projected for such areas, requiring a total of approximately 0.9 mgd of new water supply. Except possibly in the New Oxford area, where extensions to the surface water supply system might be possible, most of this new water supply capacity is likely to come from new municipal or community wells tapping groundwater sources. This will take a major effort in searching for fracture traces in the Triassic formations and for exploiting the information in available documents<sup>2</sup> on existing acceptable-yield, acceptable-quality wells in other formations near the intended new-center developments. If ten new centers are planned, each of roughly equal size, well fields producing about 90,000 gallons per day (gpd) or 65 gallons per minute (gpm) would be required.

Village and Country Clusters: For the "non-growth" portions of the county, the Land Use and Housing Plans envision low-intensity residential uses. "Village Clusters" of around 130 residential housing units each, and "Country Clusters" of about 15 residential housing units each are planned, for a total of around 2,400 units. This implies the need for an additional 0.7 mgd of groundwater resources serving some 100 new well fields. Where these housing unit clusters could tie into existing water supply systems, it generally would be economical to do so, but this action would add to the need for additional capacity for the present urban centers. Otherwise, the normal practice is for a developer to connect the housing units to a community well for water supply. Each Village Cluster would require a well field producing an average of 39,000 gpd or 27 gpm. Two to three average wells in the Triassic formation or one well in the Conestoga formation should be sufficient to produce this yield. The Country Clusters would require only about 4,500 gpd or 3 gpm, which should be available from an average well almost anywhere in the county outside of Diabase formations.

Scattered Single-Family Residential Units: The Land Use and Housing Plans include about 1,500 additional residential housing units that are envisioned for primarily single-family detached residential units spread throughout the county. Presumably, each of these would be sited on roughly at least an acre of land and would have an independent water supply well and on-lot septic tank and drain field wastewater treatment system.

Dispersing these residential units at an average density of roughly one dwelling unit per acre would appear to present few problems within the 336,000 acres of Adams County. However, given the existing problems with rural water quality and the many areas with soils having moderate-to-severe on-site sewage percolation problems, siting each new unit may require experienced well drillers and possibly experts in hydrology, hydrogeology, soils, and septic tank siting. Developers and residents of these units will face the problems already encountered by anyone planning to build a home in the rural or suburban areas of the county to find a reliable, uncontaminated groundwater source with a yield of 0.2 to 1 gpm and not containing too high a level of hardness.

The most favorable areas, from the standpoint of potential well yields of adequate water quantity and quality and good septic tank drain field "percability" for a single-family residence, are in Conewago, Union, and parts of Germany Townships in the southeastern

part of the county, and in the fruit-belt areas in the northeastern part of the county, including much of Menallen and Franklin Townships. These areas have satisfactory-to-moderate sewage percolation rates and water wells with adequate yields. The groundwater in the northeast is generally soft, but is generally hard in the southeast and may require water softening units. Although the fruit-belt is favorable for residential development from a water supply/wastewater treatment standpoint and the area may come under increased pressure for development, the Plan envisions strong land use controls for preservation of orchard areas.

### Surface Water Resources

Only five communities in Adams County obtain portions of their water supplies from surface water sources (Gettysburg, New Oxford, Fairfield, Littlestown, and McSherrystown/Midway - Hanover Borough). Federal and State regulations require treatment and filtration of surface water supplies to prevent bacterial, amoebic, chemical, and suspended solid contamination from entering any public water supply distribution system. These treatment steps may add to the cost of surface water supply, relative to groundwater supply, but the large volume of water potentially available from the creeks, streams, and rivers of Adams County represents an extremely valuable future resource. The 7.45 mgd "safe yield" of the Conewago Creek potentially available to the New Oxford Municipal Authority, over twice the current daily usage of all municipal water supplies in the county, is a case in point.

The reasons for considering surface water reservoirs for additional water supplies include: (1) the failure of many wells to deliver the required yields; (2) increasing pollution of groundwater detected in many areas; (3) a need for increased quantities of irrigation water during periods of drought; (4) a need to augment stream flow during periods of drought; (5) the lack of adequate fire protection in many communities and rural areas; (6) growing demand for water-borne recreation; and (7) the opportunity to plan ahead for water supply sources to meet growing needs in areas where the groundwater resource is likely to become over-utilized (see Section 10 of Chapter 2).

However, new surface water supplies from potential multi-purpose reservoirs are not recommended for inclusion in the Plan at this time. Given the wide availability of groundwater resources and their relatively low percentage of utilization (even though wells occasionally run dry and new wells occasionally fail to provide sufficient water for their intended use), it is recommended that the creation of additional surface water impoundments and their use by municipal water supply systems be deferred.

Further reasons for this decision are as follows: Although creation of one or more reservoirs could be considered prudent from a water resource standpoint, consideration must also be given to the ecological and socioeconomic impact of dams and reservoirs. Since the 1960s, dams proposed in Adams County as well as other parts of the country have become the focal point of strong opposition from local residents who would be most affected by

reservoirs. Despite the advantages enumerated above, reservoir impoundments flood wetlands, farms, forests and, in some cases, residences, thereby displacing ecological habitats, agricultural and timber resources, and perhaps people. The recreational values created by the impoundment can cause increased traffic on limited-capacity roads, and the improved availability of water can stimulate residential and commercial growth.

This recommendation to forego additional reservoirs at this time could potentially adversely affect opportunities for future growth in many areas of the county beyond the twenty-year horizon of this Plan. Therefore, this Plan is recommending that selected areas, which have been identified as prime locations for reservoirs, be protected from residential, commercial, and industrial encroachment for the next ten years, and that this recommendation be reviewed at that time as part of the regular county comprehensive plan updating process. These areas are intended not to conflict with potential areas identified for expanded boroughs or new centers.

These potential locations for reservoirs could be protected from development by municipal zoning ordinances that create zones specifically for future water supply, or that create zones for scenic easements, zones for environmentally-sensitive areas, or zones for agriculture with a proviso that water supply reservoirs are a future possibility. Alternatively, design controls could be enacted by each municipality that would preserve the key elements of the area intended as a reservoir, including limits on commercial and industrial facilities and multi-family housing developments. These design controls would require that future development take into account the potential for future reservoir creation, with the possibility of flooding in a specific area. As an option, a municipality could arrange to "trade" development rights between an area in the municipality to be reserved for water supply reservoir and an area more suited for development. In other cases, water supply easements could be sought along stream channels to provide for modest storage capacity rather than for a major reservoir.

As noted in Chapter 2, Section 10, ten locations were identified in the original Adams County Comprehensive Plan that might become useful for surface water supplies. Six sites were identified that might offer potential as multi-purpose impounding areas for flood control, domestic and industrial water supply, fire protection, irrigation, and recreation:

- Site 22 - Pine Run in Hamilton Township;
- Site 42 - Conewago Creek in Buchanan Valley;
- Site 48 - Alloway Creek in Germany and Mount Joy Townships;
- Site 67 - Little Marsh Creek in Highland Township;
- Site 73 - Middle Creek in Liberty Township;
- Site 74 - Middle Creek in Freedom Township.

Four sites were identified for potential flood control, limited recreation, and irrigation for farm crops:

- Site 14 - Bermudian Creek in Huntingdon Township;

- Site 16 - Bermudian Creek in Tyrone Township;  
Site 29 - Plum Run in Reading Township;  
Site 59 - Rock Creek in Cumberland and Straban Townships.

It is recommended that the above-named townships make a determination, as part of the implementation of the Plan, as to whether industrial, commercial, or residential development should be restricted in the area of these sites that would be flooded by the construction of a reservoir impoundment for the uses mentioned. The townships should further determine whether steps need to be taken now to protect those sites from development, or whether action in the nature of zoning or other development restrictions could safely be deferred.

### **Protection of Well-Head and Aquifer Recharge Areas**

Contamination of water supplies is a major problem throughout Pennsylvania and the entire country. Frequently, the problem can be traced to leaking underground storage tanks (most often old tanks under gasoline stations), former dumps, or spills of industrial chemicals. This problem exists in Adams County near the "Superfund" sites north of Gettysburg and in Union Township. An even greater problem in Adams County is contamination of groundwater supplies from malfunctioning septic tank systems.

The United States Environmental Protection Agency (EPA) has published a document providing guidelines to local communities to address some of these contamination problems.<sup>5</sup> Tools outlined include specific zoning regulations, environmental-protection or sensitive-area easements, and design controls on commercial, industrial, and multi-family residential development (Table 3.9.1). One specific approach to protecting a well-head using "overlay zoning" is illustrated in Figure 3.9.5.

These tools are primarily useful for protecting the immediate area around a well-head. The problem of protecting a broad area contributing to the recharge of an entire aquifer is more difficult, since many square miles of land are often involved. However, Adams County is particularly well-suited for instituting such controls since large areas are currently in agriculture or forest, open space, wetlands and flood plains, or have scenic vistas. In the process of protecting such areas, aquifer protection can be either a by-product or a direct result of protective zoning, easements, or other types of controls. The use of an agricultural preservation area as an aquifer recharge protection area is illustrated in Figure 3.9.5.

Protection of aquifers from malfunctioning septic tanks may be accomplished through design controls for on-lot systems and ongoing efforts by Sewage Enforcement Officers (SEOs). Of particular concern will be ensuring that effluent from any sewage "package plant" does not contribute to groundwater contamination.

Table 3.9.1

*Choosing Appropriate Tools for Well-Head Protection*

**Overview**

A number of commonly used land-use controls, source controls, and other tools have been found to be useful for protecting wellhead areas. Although most of these tools have been used traditionally for other purposes, many are now being used to protect ground water.

This section describes briefly some tools used successfully by local governments throughout the country for ground-water protection. The purpose here is to introduce these tools, explain how they have been used in the past, how communities can find innovative ways to apply them to wellhead protection areas, and what considerations communities should be aware of in adapting and implementing them. This discussion is not an exhaustive review, but simply an introduction to what is available and what to look for. For more information, check the written sources listed in Section 5 or contact EPA or State ground-water protection agencies.

The management tools described here are:

**Zoning Ordinances**                      Zoning ordinances typically are comprehensive land-use requirements designed to direct the development of an area. Many local governments have used zoning to restrict or regulate certain land uses within wellhead protection areas.

**Subdivision Ordinances**              Subdivision ordinances are applied to land that is divided into two or more subunits for sale or development. Local governments use this tool to protect wellhead areas in which ongoing development is causing contamination or there is inadequate well recharge.

**Site Plan Review**                      Site plan reviews are regulations requiring developers to submit for approval plans for development occurring within a given area. This tool ensures compliance with regulations or other requirements made within a wellhead protection area.

**Design Standards**                      Design standards typically are regulations that apply to the design and construction of buildings or structures. This tool can be used to ensure that new buildings or structures placed within a wellhead protection area are designed so as not to pose a threat to the water supply.

**Operating Standards**                      Operating standards are regulations that apply to ongoing land-use activities to promote safety or environmental protection. Such standards can minimize the threat to the wellhead area from ongoing activities, such as the application of agricultural pesticides or the storage and use of hazardous substances.

**Source Prohibitions**                      Source prohibitions are regulations that prohibit the presence or use of chemicals or hazardous activities within a given area. Local governments have used restrictions on the storage or handling of large quantities of hazardous materials within a wellhead protection area to eliminate the threat of contamination.

**Purchase of Property or Development Rights**  
The purchase of property or development rights is a tool used by some localities to ensure complete control of land uses in or surrounding a wellhead area. This tool may be preferable if regulatory restrictions on land use are not politically feasible and the land purchase is affordable.

**Public Education**                      Public education often consists of brochures, pamphlets, or seminars designed to present wellhead area problems and protection efforts to the public in an understandable fashion. This tool promotes the use of voluntary protection efforts and builds public support for a community's protection program.

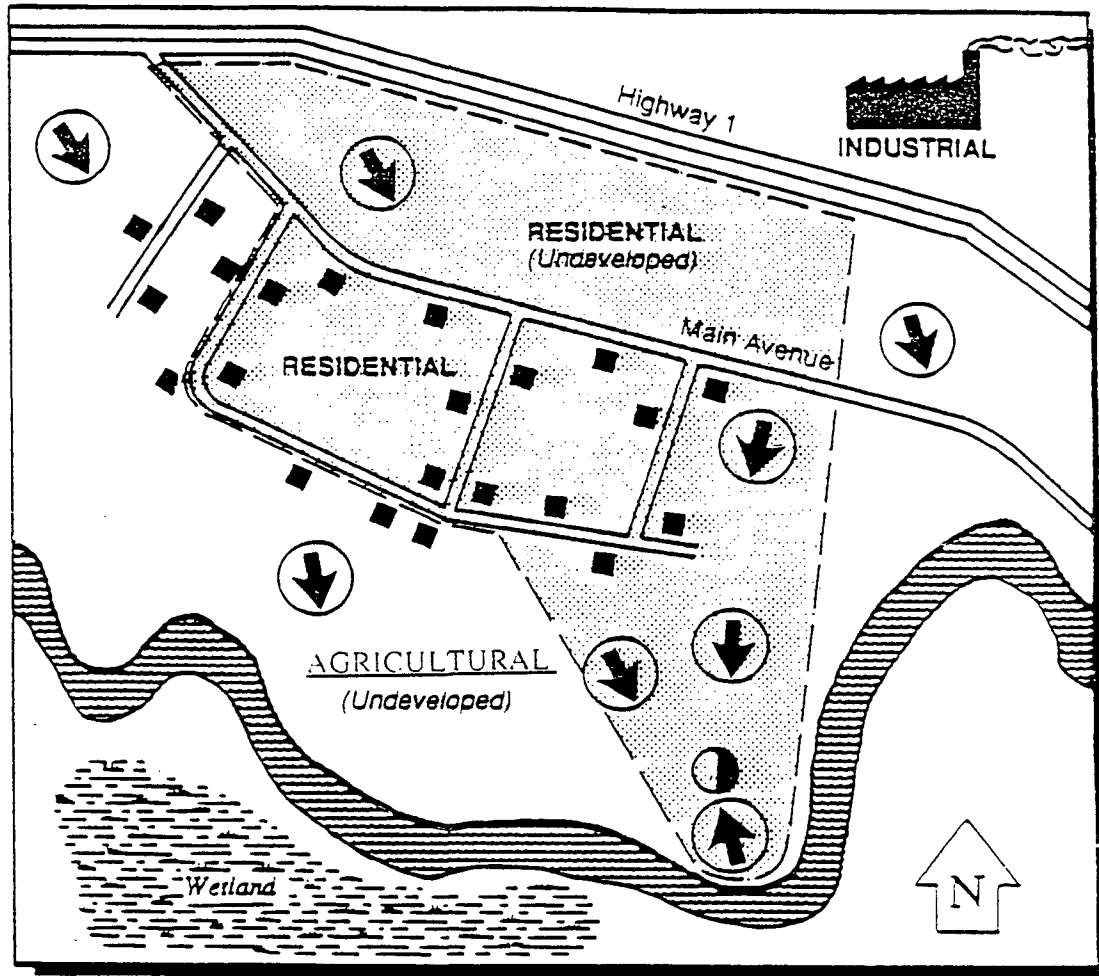
**Ground-Water Monitoring**              Ground-water monitoring generally consists of sinking a series of test wells and developing an ongoing water quality testing program. This tool provides for monitoring the quality of the ground-water supply or the movement of a contaminant plume.

**Household Hazardous Waste Collection**  
Residential hazardous waste management programs can be designed to reduce the quantity of household hazardous waste being disposed of improperly. This program has been used in localities where municipal landfills potentially threaten ground water due to improper household waste disposal in the wellhead area.

**Water Conservation**                      Water conservation can encourage individual or commercial/industrial users to limit their water use.





Figure 3.9.5

Well-Head Protection Using "Overlay Zoning"



Scale: 1" = 1 mile

Legend:

-  Municipal Water Supply Well
-  Ground-Water Flow
-  Overlay District
-  Wetland



## **Stormwater Management**

The EPA has recently published regulations regarding stormwater discharges, in order to prevent problems from erosion, sedimentation, flooding, pollution, and other results of improper consideration of stormwater control and management.<sup>6</sup>

Although the federal regulations do not require any formal action on the part of Adams County,<sup>7</sup> they do raise the issue as to whether adequate consideration of stormwater has taken place throughout the county and its municipalities.

The Commonwealth of Pennsylvania has recently enacted Act 167, the Stormwater Management Act, which requires the preparation of stormwater management plans for all watersheds - the Monocacy and the Conewago in the case of Adams County. Grant funds from PaDER may be forthcoming upon the completion and adoption of this Plan. In consideration of the Land Use Plan put forward in this Plan, the Conewago watershed should be the first priority for development of a comprehensive stormwater management plan (also see Section 10 of this chapter).

Several other counties in Pennsylvania are taking action to study the adequacy of stormwater control and management measures and structures on specific creeks streams and rivers. The consequences of severe flooding from major storms can be so devastating that regular evaluation of the adequacy of stormwater management and control is a prudent step in implementing any comprehensive plan. As development continues, stormwater runoff patterns and amounts can change so that previously adequate structures may no longer handle the flow volume and rate of discharge. Also, the structures themselves may erode, corrode, and wear out over the course of time.

It is recommended that all municipalities identify stormwater management and control structures that may need repair or replacement, as well as stream segments that may need clearing, riprap, bank improvements or other measures to handle anticipated stormwater flows that may occur over the course of the next ten to twenty years.

## **Water Conservation**

A value of 100 gallons per person per day is a rough estimate of the amount of water used in Adams County. This value is not unlike average values for other parts of Pennsylvania and the country - however, lower amounts of water consumption could be achieved through various water conservation measures. Each gallon per day saved is one less gpm that must be provided by the local water authority or on-site well. This saving also means that one less gpm is required for wastewater treatment in central municipal systems. Furthermore, if less hot water is used in the home, office, or industrial facility, significant energy savings can be achieved. All of these savings can add up to appreciable cost savings to individual residents as well as to municipalities.

A number of water conservation measures are widely-advertised and widely-available, from low-flow shower heads to low-flush toilets. Numerous municipalities throughout the country have enacted ordinances or local plumbing codes requiring such devices or measures in new construction. It is a recommendation of this Plan that each municipality in Adams County consider enacting such ordinances, codes, or other measures to achieve further reductions in water use.

### Sewerage Service Plan Element

#### **Wastewater Treatment Development Plan**

There are twenty-one municipal centralized sewage collection and treatment systems currently operating in Adams County. These are discussed in Chapter 2, Section 10 and illustrated in Figure 2.10.3. All of these municipal systems, except Orrtanna, discharge their treated effluent into a creek or stream.

Land application of treated effluent, as undertaken by Orrtanna, is an alternative to stream discharge, either by spray or drip irrigation, by settling pond, or by underground drainage field. For Adams County, land application may merit additional consideration into the future, since the assimilative capacity of the county's creeks and streams is limited (see Chapter 2, Section 10). Land application has the added benefit of supporting conservation of agricultural lands, by encouraging the retention of agricultural areas adjacent to new housing clusters or newly-developing centers.

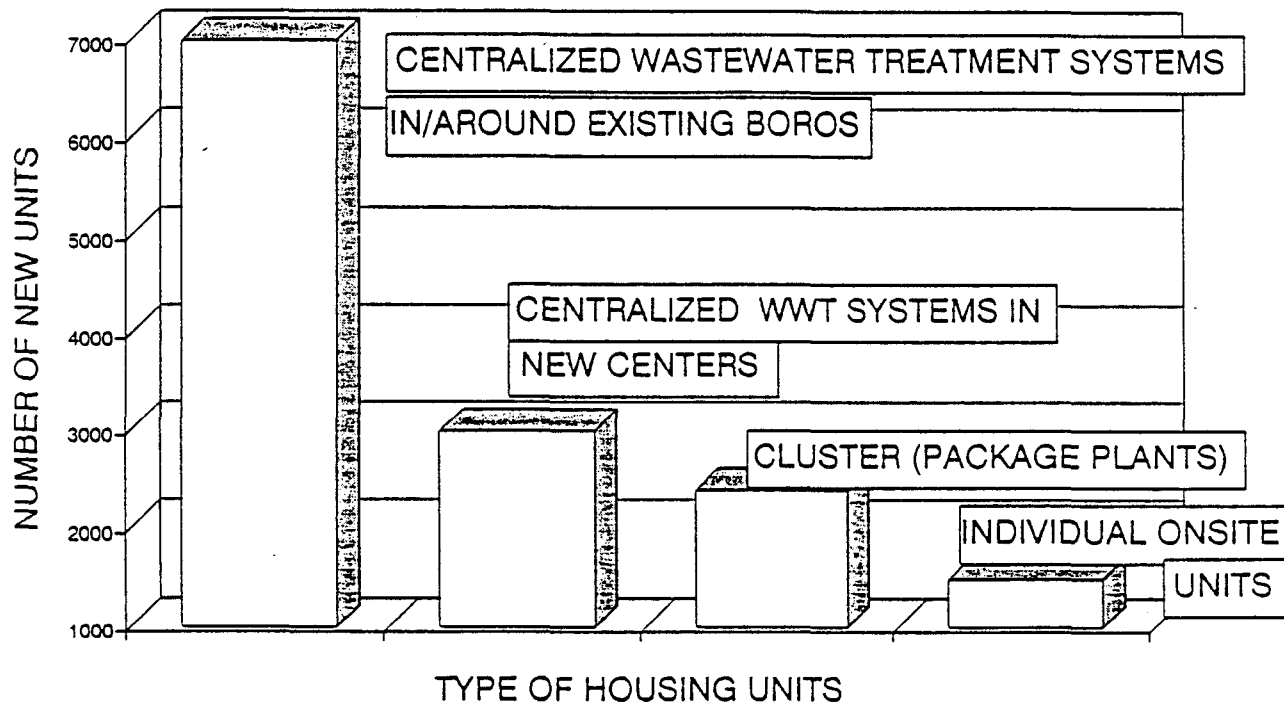
As was noted in Chapter 2, Section 10, about half of the current population of Adams County is served by on-site sewage treatment systems. A brief indication of the ability of the various soil types found in Adams County to "perc" successfully was given in Chapter 2, Section 10. It should be noted, however, that wide variations in "perc-ability" occur from place-to-place within each soil type and even from one particular spot on a site to another. Municipalities in areas of moderate-to-severe limitations on percolation may wish to enact ordinances requiring more than one "perc" test on a potential housing lot to ensure that the possibility of early malfunction of the septic tank drain field is minimized. Early discussions with the Sewage Enforcement Officer (SEO) are extremely important for anyone contemplating building in Adams County.

Existing Boroughs and Vicinities: A total of about 7,000 new housing units are projected in and around existing boroughs in the Land Use Plan (Figure 3.3.1). This implies the need for an additional 2.1 mgd of wastewater treatment capacity at 100 gallons per person per day and 3 persons per housing unit. Actually, somewhat additional wastewater treatment capacity would be needed because of infiltration and inflow (I&I) into the sewer lines. The need for additional sewage treatment capacity is illustrated in Figure 3.9.6.

Significant development is anticipated to be centered primarily in and around Gettysburg,

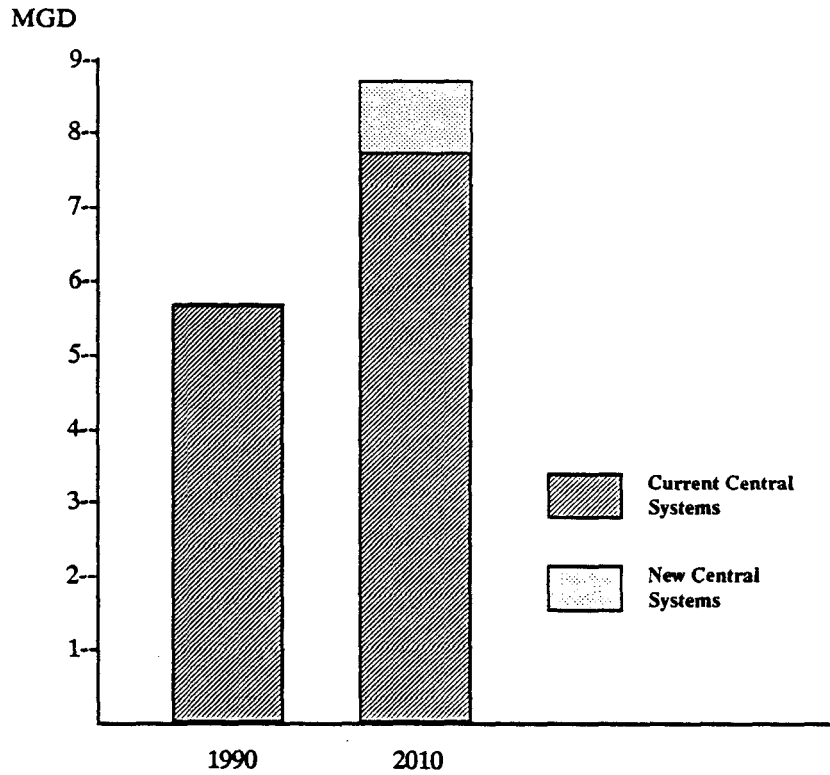
Figure 3.9.6

Wastewater Treatment Systems for New Housing Units, 1990-2010



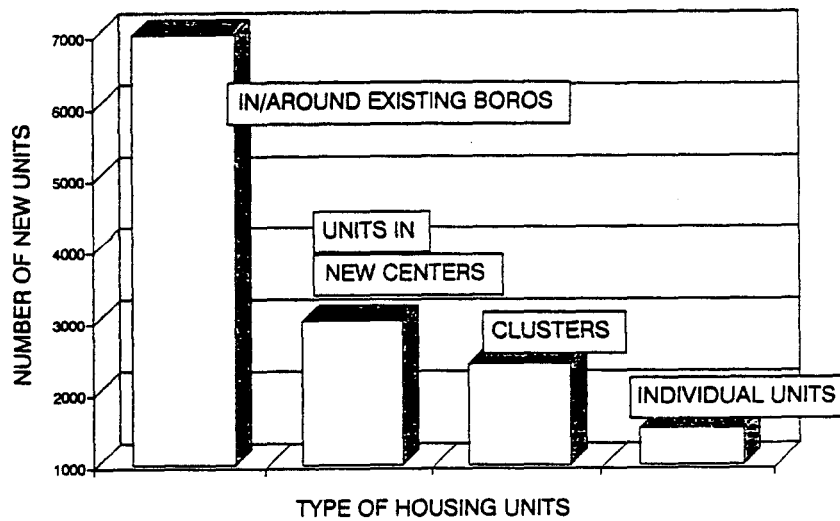
**Figure 3.9.4a**

*Countywide Centralized  
Water Supply &  
Wastewater Treatment,  
1990 and 2010  
(Millions of Gallons per Day)*



**Figure 3.9.4b**

*New Housing Units Needing Water Supply*



3-9-11

housing units are projected for such areas, requiring a total of approximately 0.9 mgd of new water supply. Except possibly in the New Oxford area, where extensions to the surface water supply system might be possible, most of this new water supply capacity is likely to come from new municipal or community wells tapping groundwater sources. This will take a major effort in searching for fracture traces in the Triassic formations and for exploiting the information in available documents<sup>2</sup> on existing acceptable-yield, acceptable-quality wells in other formations near the intended new-center developments. If ten new centers are planned, each of roughly equal size, well fields producing about 90,000 gallons per day (gpd) or 65 gallons per minute (gpm) would be required.

Village and Country Clusters: For the "non-growth" portions of the county, the Land Use and Housing Plans envision low-intensity residential uses. "Village Clusters" of around 130 residential housing units each, and "Country Clusters" of about 15 residential housing units each are planned, for a total of around 2,400 units. This implies the need for an additional 0.7 mgd of groundwater resources serving some 100 new well fields. Where these housing unit clusters could tie into existing water supply systems, it generally would be economical to do so, but this action would add to the need for additional capacity for the present urban centers. Otherwise, the normal practice is for a developer to connect the housing units to a community well for water supply. Each Village Cluster would require a well field producing an average of 39,000 gpd or 27 gpm. Two to three average wells in the Triassic formation or one well in the Conestoga formation should be sufficient to produce this yield. The Country Clusters would require only about 4,500 gpd or 3 gpm, which should be available from an average well almost anywhere in the county outside of Diabase formations.

Scattered Single-Family Residential Units: The Land Use and Housing Plans include about 1,500 additional residential housing units that are envisioned for primarily single-family detached residential units spread throughout the county. Presumably, each of these would be sited on roughly at least an acre of land and would have an independent water supply well and on-lot septic tank and drain field wastewater treatment system.

Dispersing these residential units at an average density of roughly one dwelling unit per acre would appear to present few problems within the 336,000 acres of Adams County. However, given the existing problems with rural water quality and the many areas with soils having moderate-to-severe on-site sewage percolation problems, siting each new unit may require experienced well drillers and possibly experts in hydrology, hydrogeology, soils, and septic tank siting. Developers and residents of these units will face the problems already encountered by anyone planning to build a home in the rural or suburban areas of the county to find a reliable, uncontaminated groundwater source with a yield of 0.2 to 1 gpm and not containing too high a level of hardness.

The most favorable areas, from the standpoint of potential well yields of adequate water quantity and quality and good septic tank drain field "percability" for a single-family residence, are in Conewago, Union, and parts of Germany Townships in the southeastern

part of the county, and in the fruit-belt areas in the northeastern part of the county, including much of Menallen and Franklin Townships. These areas have satisfactory-to-moderate sewage percolation rates and water wells with adequate yields. The groundwater in the northeast is generally soft, but is generally hard in the southeast and may require water softening units. Although the fruit-belt is favorable for residential development from a water supply/wastewater treatment standpoint and the area may come under increased pressure for development, the Plan envisions strong land use controls for preservation of orchard areas.

### Surface Water Resources

Only five communities in Adams County obtain portions of their water supplies from surface water sources (Gettysburg, New Oxford, Fairfield, Littlestown, and McSherrystown/Midway - Hanover Borough). Federal and State regulations require treatment and filtration of surface water supplies to prevent bacterial, amoebic, chemical, and suspended solid contamination from entering any public water supply distribution system. These treatment steps may add to the cost of surface water supply, relative to groundwater supply, but the large volume of water potentially available from the creeks, streams, and rivers of Adams County represents an extremely valuable future resource. The 7.45 mgd "safe yield" of the Conewago Creek potentially available to the New Oxford Municipal Authority, over twice the current daily usage of all municipal water supplies in the county, is a case in point.

The reasons for considering surface water reservoirs for additional water supplies include: (1) the failure of many wells to deliver the required yields; (2) increasing pollution of groundwater detected in many areas; (3) a need for increased quantities of irrigation water during periods of drought; (4) a need to augment stream flow during periods of drought; (5) the lack of adequate fire protection in many communities and rural areas; (6) growing demand for water-borne recreation; and (7) the opportunity to plan ahead for water supply sources to meet growing needs in areas where the groundwater resource is likely to become over-utilized (see Section 10 of Chapter 2).

However, new surface water supplies from potential multi-purpose reservoirs are not recommended for inclusion in the Plan at this time. Given the wide availability of groundwater resources and their relatively low percentage of utilization (even though wells occasionally run dry and new wells occasionally fail to provide sufficient water for their intended use), it is recommended that the creation of additional surface water impoundments and their use by municipal water supply systems be deferred.

Further reasons for this decision are as follows: Although creation of one or more reservoirs could be considered prudent from a water resource standpoint, consideration must also be given to the ecological and socioeconomic impact of dams and reservoirs. Since the 1960s, dams proposed in Adams County as well as other parts of the country have become the focal point of strong opposition from local residents who would be most affected by

reservoirs. Despite the advantages enumerated above, reservoir impoundments flood wetlands, farms, forests and, in some cases, residences, thereby displacing ecological habitats, agricultural and timber resources, and perhaps people. The recreational values created by the impoundment can cause increased traffic on limited-capacity roads, and the improved availability of water can stimulate residential and commercial growth.

This recommendation to forego additional reservoirs at this time could potentially adversely affect opportunities for future growth in many areas of the county beyond the twenty-year horizon of this Plan. Therefore, this Plan is recommending that selected areas, which have been identified as prime locations for reservoirs, be protected from residential, commercial, and industrial encroachment for the next ten years, and that this recommendation be reviewed at that time as part of the regular county comprehensive plan updating process. These areas are intended not to conflict with potential areas identified for expanded boroughs or new centers.

These potential locations for reservoirs could be protected from development by municipal zoning ordinances that create zones specifically for future water supply, or that create zones for scenic easements, zones for environmentally-sensitive areas, or zones for agriculture with a proviso that water supply reservoirs are a future possibility. Alternatively, design controls could be enacted by each municipality that would preserve the key elements of the area intended as a reservoir, including limits on commercial and industrial facilities and multi-family housing developments. These design controls would require that future development take into account the potential for future reservoir creation, with the possibility of flooding in a specific area. As an option, a municipality could arrange to "trade" development rights between an area in the municipality to be reserved for water supply reservoir and an area more suited for development. In other cases, water supply easements could be sought along stream channels to provide for modest storage capacity rather than for a major reservoir.

As noted in Chapter 2, Section 10, ten locations were identified in the original Adams County Comprehensive Plan that might become useful for surface water supplies. Six sites were identified that might offer potential as multi-purpose impounding areas for flood control, domestic and industrial water supply, fire protection, irrigation, and recreation:

- Site 22 - Pine Run in Hamilton Township;
- Site 42 - Conewago Creek in Buchanan Valley;
- Site 48 - Alloway Creek in Germany and Mount Joy Townships;
- Site 67 - Little Marsh Creek in Highland Township;
- Site 73 - Middle Creek in Liberty Township;
- Site 74 - Middle Creek in Freedom Township.

Four sites were identified for potential flood control, limited recreation, and irrigation for farm crops:

- Site 14 - Bermudian Creek in Huntingdon Township;

- Site 16 - Bermudian Creek in Tyrone Township;  
Site 29 - Plum Run in Reading Township;  
Site 59 - Rock Creek in Cumberland and Straban Townships.

It is recommended that the above-named townships make a determination, as part of the implementation of the Plan, as to whether industrial, commercial, or residential development should be restricted in the area of these sites that would be flooded by the construction of a reservoir impoundment for the uses mentioned. The townships should further determine whether steps need to be taken now to protect those sites from development, or whether action in the nature of zoning or other development restrictions could safely be deferred.

### **Protection of Well-Head and Aquifer Recharge Areas**

Contamination of water supplies is a major problem throughout Pennsylvania and the entire country. Frequently, the problem can be traced to leaking underground storage tanks (most often old tanks under gasoline stations), former dumps, or spills of industrial chemicals. This problem exists in Adams County near the "Superfund" sites north of Gettysburg and in Union Township. An even greater problem in Adams County is contamination of groundwater supplies from malfunctioning septic tank systems.

The United States Environmental Protection Agency (EPA) has published a document providing guidelines to local communities to address some of these contamination problems.<sup>5</sup> Tools outlined include specific zoning regulations, environmental-protection or sensitive-area easements, and design controls on commercial, industrial, and multi-family residential development (Table 3.9.1). One specific approach to protecting a well-head using "overlay zoning" is illustrated in Figure 3.9.5.

These tools are primarily useful for protecting the immediate area around a well-head. The problem of protecting a broad area contributing to the recharge of an entire aquifer is more difficult, since many square miles of land are often involved. However, Adams County is particularly well-suited for instituting such controls since large areas are currently in agriculture or forest, open space, wetlands and flood plains, or have scenic vistas. In the process of protecting such areas, aquifer protection can be either a by-product or a direct result of protective zoning, easements, or other types of controls. The use of an agricultural preservation area as an aquifer recharge protection area is illustrated in Figure 3.9.5.

Protection of aquifers from malfunctioning septic tanks may be accomplished through design controls for on-lot systems and ongoing efforts by Sewage Enforcement Officers (SEOs). Of particular concern will be ensuring that effluent from any sewage "package plant" does not contribute to groundwater contamination.



Table 3.9.1

*Choosing Appropriate Tools for Well-Head Protection*

**Overview**

A number of commonly used land-use controls, source controls, and other tools have been found to be useful for protecting wellhead areas. Although most of these tools have been used traditionally for other purposes, many are now being used to protect ground water.

This section describes briefly some tools used successfully by local governments throughout the country for ground-water protection. The purpose here is to introduce these tools, explain how they have been used in the past, how communities can find innovative ways to apply them to wellhead protection areas, and what considerations communities should be aware of in adapting and implementing them. This discussion is not an exhaustive review, but simply an introduction to what is available and what to look for. For more information, check the written sources listed in Section 5 or contact EPA or State ground-water protection agencies.

The management tools described here are:

**Zoning Ordinances**                      Zoning ordinances typically are comprehensive land-use requirements designed to direct the development of an area. Many local governments have used zoning to restrict or regulate certain land uses within wellhead protection areas.

**Subdivision Ordinances**              Subdivision ordinances are applied to land that is divided into two or more subunits for sale or development. Local governments use this tool to protect wellhead areas in which ongoing development is causing contamination or there is inadequate well recharge.

**Site Plan Review**                      Site plan reviews are regulations requiring developers to submit for approval plans for development occurring within a given area. This tool ensures compliance with regulations or other requirements made within a wellhead protection area.

**Design Standards**                      Design standards typically are regulations that apply to the design and construction of buildings or structures. This tool can be used to ensure that new buildings or structures placed within a wellhead protection area are designed so as not to pose a threat to the water supply.

**Operating Standards**                      Operating standards are regulations that apply to ongoing land-use activities to promote safety or environmental protection. Such standards can minimize the threat to the wellhead area from ongoing activities, such as the application of agricultural pesticides or the storage and use of hazardous substances.

**Source Prohibitions**                      Source prohibitions are regulations that prohibit the presence or use of chemicals or hazardous activities within a given area. Local governments have used restrictions on the storage or handling of large quantities of hazardous materials within a wellhead protection area to eliminate the threat of contamination.

**Purchase of Property or Development Rights**  
The purchase of property or development rights is a tool used by some localities to ensure complete control of land uses in or surrounding a wellhead area. This tool may be preferable if regulatory restrictions on land use are not politically feasible and the land purchase is affordable.

**Public Education**                      Public education often consists of brochures, pamphlets, or seminars designed to present wellhead area problems and protection efforts to the public in an understandable fashion. This tool promotes the use of voluntary protection efforts and builds public support for a community's protection program.

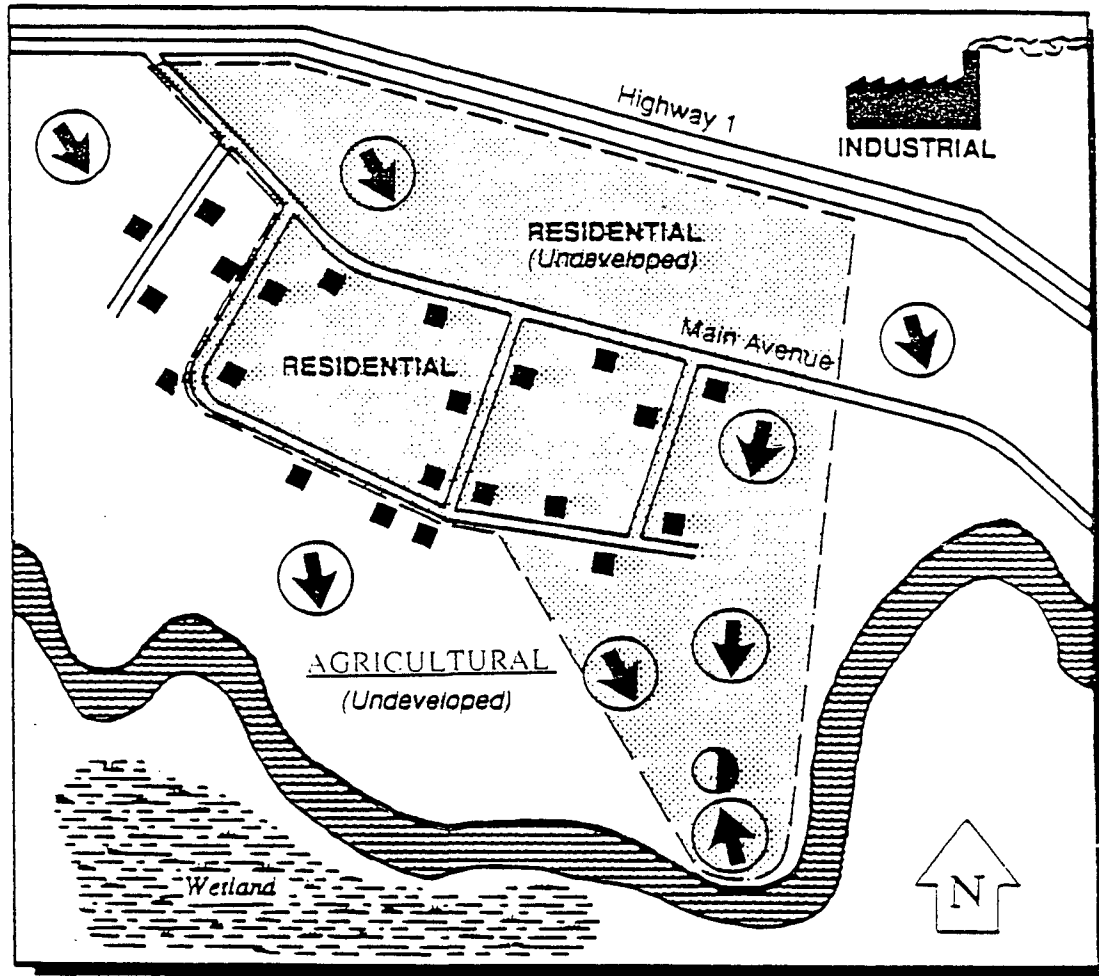
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Residential hazardous waste management programs can be designed to reduce the quantity of household hazardous waste being disposed of improperly. This program has been used in localities where municipal landfills potentially threaten ground water due to improper household waste disposal in the wellhead area.

**Water Conservation**                      Water conservation can encourage individual or commercial/industrial users to limit their water use.





Figure 3.9.5

Well-Head Protection Using "Overlay Zoning"



Scale: 1" = 1 mile

Legend:

-  Municipal Water Supply Well
-  Ground-Water Flow
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## **Stormwater Management**

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### Sewerage Service Plan Element

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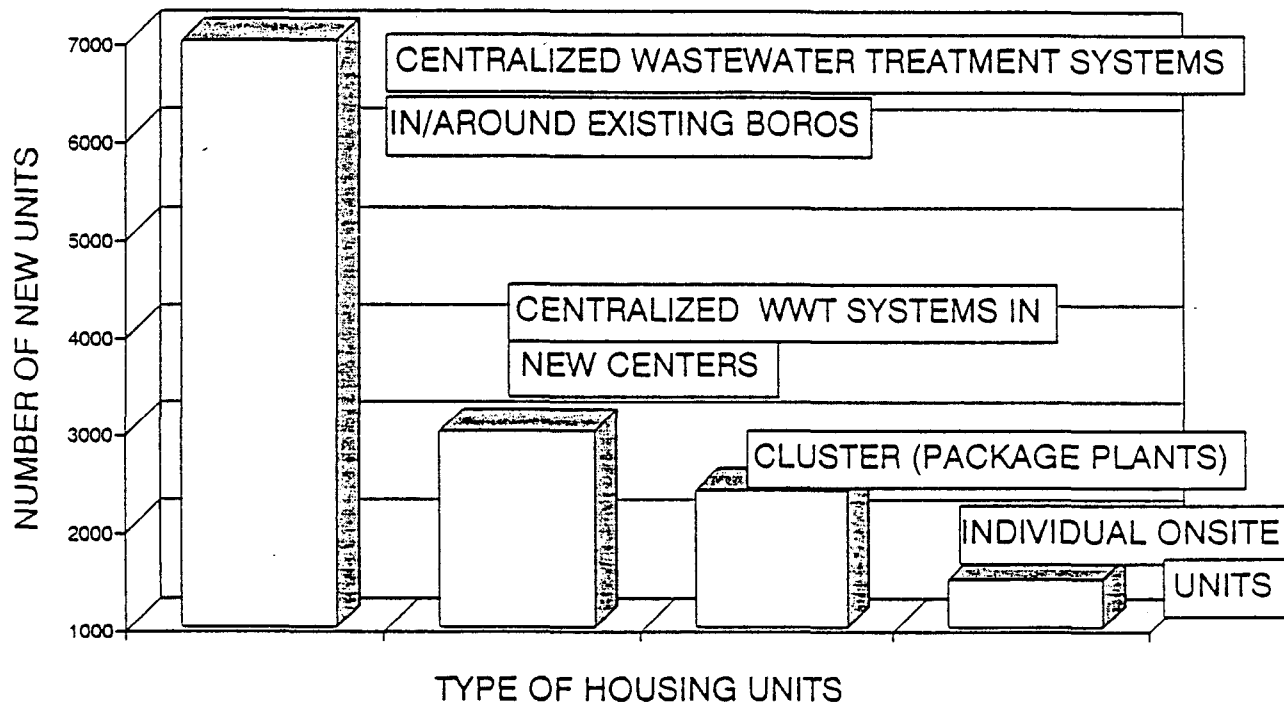
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Significant development is anticipated to be centered primarily in and around Gettysburg,

Figure 3.9.6

Wastewater Treatment Systems for New Housing Units, 1990-2010



Littlestown, Bonneauville, McSherrystown, New Oxford, and York Springs Boroughs. There may be problems with expansion of the sewage treatment plants in terms of meeting effluent standards of receiving streams and maintaining water quality goals. Tertiary treatment, if required, could be expensive. Extension of sewer lines and the addition of pumping stations and interceptor lines, if needed, can add appreciably to the cost of providing centralized wastewater service to areas outside of existing service areas in the boroughs.

If on-lot septic tank systems are preferred for development in outlying areas, these systems may run into problems with suitability of soils for individual or multiple septic systems in the areas described in Chapter 2, Section 10 as having "moderate-to-severe" limitations.

In addition, Arendtsville, Bendersville, Biglerville, Carroll Valley, East Berlin, and Fairfield would also need to plan for expansion of their municipal facilities to meet planned development needs. Carroll Valley might have the most difficulty in meeting these needs. As noted previously, in East Berlin one sewage treatment plant is currently discharging into Conewago Creek; the nearby Pine Run Mobile Home Park has received a permit for a second wastewater treatment plant; and a third plant has been proposed by Appalachian Realty - all to discharge into Conewago Creek within 100 yards of one another.

In Straban Township, east of the intersection of US Routes 15 and 30, an overall plan is needed for water supply and sewage treatment that would include the Hunterstown-Shrivers Corner area, where several residential and commercial septic tank/drain field systems are malfunctioning because the soil has poor percolation capabilities. In Berwick Township, on the south side of US Route 30 east of Cross Keys and in the Green Springs area, there are serious malfunctions of on-lot septic tank systems. This is also true in Huntington Township along Route 234 and along Gun Club Road southwest of Carlisle Pike. Similar known problems exist in Mt. Pleasant Township, about 1/4 to 1/2 mile north of Bonneauville along Bon-Ox Road; in Reading Township, in Germany Court and along Rife Road, about 1-1/2 miles northwest of East Berlin; and in Tyrone Township, along Upper Bermudian Road about 1/2 mile north of its intersection with Lime Rock Road.

New Center-Associated Units: As with providing water supplies, the idea of creating new "mini-boroughs" is very attractive from the point of view of sewage treatment; however, it will take a major effort to provide adequate wastewater treatment capacity for all of them. A total of about 3,000 housing units are projected for such areas, requiring a total of approximately 0.9 mgd of additional wastewater treatment capacity (plus provision for I & I). Where these housing units could tie into existing water supply and wastewater treatment systems, it would generally be economical to do so, adding to the need for additional capacity (noted above) for the present urban centers. However, in specific cases, the costs of the additional sewer lines, pumps, and interceptors might be prohibitive.

Given the current water quality of most streams in Adams County, and the State water quality standards for those streams<sup>8</sup>, many developers may have difficulty in obtaining the necessary "National Pollutant Discharge Elimination System" (NPDES) permit from DER.

Three other options are available: (1) Underground drainage and dispersal of treated sewage effluent; (2) Spray irrigation of treated sewage effluent; and (3) Creation of wetlands for nutrient absorption and removal. Option (1) is limited in many areas, as noted previously, by the percolation capabilities of the soil and the depth to groundwater to allow drainage and dispersal of the treated sewage. Option (2) is finding more and more favor, but requires the acceptance and agreement of nearby landowners to allow spraying on their land and crops. Spray irrigation also requires a lagoon or other holding area for the treated effluent during freezing conditions in winter and at other times when spraying is not feasible.

The land area needed for spray irrigation systems has been estimated to be as follows:

<u>TYPE OF SOIL</u> <u>"PERCABILITY"</u>	<u>AREA NEEDED PER 100 DWELLINGS</u>
Slight Limitations	5 Acres
Moderate Limitations	9 Acres
Severe Limitations	18 Acres
Hazardous Locations	(Not Feasible)

Option (3) requires dedicating an area to wetlands use or creation, and exhibits similar constraints to Option (2) with respect to discharge during various times of the year when vegetation does not take up nitrate and phosphate nutrients. The area of wetlands needed would depend on the type of vegetation present in the wetlands, the slope or rate of flow of the water through the wetlands, the degree of nutrient removal required to meet water quality standards in the receiving stream, and other variables. Option (3) would be considered to be an innovative and experimental wastewater treatment system in Adams County, since its applicability and overall efficiency have not been established for such an upland area.

Village and Country Clusters: The "Village Clusters" of around 130 residential housing units each and "Country Clusters" of about 15 residential housing units each envisioned by the Land Use Plan for "non-growth" portions of the county imply the need for approximately an additional 0.7 mgd of wastewater treatment capacity. Again, where these housing unit clusters could tie into existing wastewater treatment systems, it would be economical to do so, adding to the need for additional capacity noted above for the present urban centers. Otherwise, the normal practice is for a developer to connect the housing units to a community well for water supply and to a "package plant" for wastewater treatment. (The package plant is a small sewage treatment plant which ordinarily discharges treated sewage into a nearby stream.) As noted above, other options for handling the treated effluent include underground drainage, spray irrigation, or use of wetlands.

Scattered Single-Family Residential Units: About 1,500 new housing units are envisioned for primarily single-family detached residential units spread throughout the county.

Presumably, each of these would be sited on roughly at least two acres of land and would have its own water supply well and on-lot septic tank and drain field wastewater treatment system. "Sand mound" systems, in which the septic tank effluent is piped and/or pumped into a mound of sand somewhere on the residential lot for evaporation and transpiration of the water, have been widely used in Adams County where the normal soil is unsuitable for percolation or where there is a high seasonal water table interfering with septic tank drainage.

Dispersing these residential units at an average density of less than one unit per two acres would appear to be no problem within the 336,000 acres of Adams County. However, given the existing problems in many areas with soils having moderate-to-severe on-site sewage percolation problems, siting each new unit may require experts in soils, hydrology, hydrogeology, soils, and septic tank siting. Guidance from SEOs will also be necessary. Residential developers will face the same problems already encountered by anyone planning to build a home in the rural or suburban areas of the county to find a site that "percs" adequately or on which a sand mound or other type of wastewater treatment and drainage system can be installed.

The most favorable areas from the standpoint of percolation for individual on-lot septic tank drain field systems are in Conewago, Union, and parts of Germany Townships in the southeastern part of the county, and in the fruit-belt areas in the northeastern part of the county, including much of Menallen and Franklin Townships. These areas have satisfactory-to-moderate sewage percolation rates and water wells with adequate yields. As noted above ("Water Supply Development Plan"), increased residential development in the agricultural and fruit-belt areas is not encouraged in the Land Use Plan.

### **Sewage Sludge and Septage**

Chapter 2, Section 10 described the current status of the generation and disposal of sewage sludge and septage. As noted there, as of 1987, 206 tons of dry sludge and 1,210,000 gallons of liquid sludge were being generated annually in Adams County. These amounts are projected to increase within 10 years to 540 tons of dry material and 1,850,000 gallons of liquid wastes. Three York County municipalities send their sewage sludge to Adams County for land application, and a number of other out-of-county municipalities may do likewise.

Although there are a number of facilities in or near the county that dispose of sewage sludge by landfilling or incineration, and considerable amounts of septage are accepted by in-county sewage treatment plants, the increased use of agricultural lands for spreading both sewage sludge and septage is encouraged by this Plan. To a certain extent the sludge or septage can replace inorganic fertilizers, thus saving the farmer expenses for commercial fertilizers. The nitrogen content can range from 1% to 8% and the phosphorous content from 1% to 10%, making the material very useful for its fertilizing power. Also, the dry or semi-dry material assists as a soil conditioner.



## **Solid Waste**

The Adams County Municipal Solid Waste Management Plan, developed by the Adams County Solid Waste Authority, Adams County Solid Waste Advisory Committee, and the Adams County Office of Planning and Development in 1989 and approved by a majority of the municipalities and the Adams County Commissioners, forms the basis for future municipal trash disposal. Agreements with operators of disposal facilities to ensure adequate disposal capacity in the future are critical to the success of the Adams County Municipal Solid Waste Management Plan. Estimates of the amounts of solid wastes generated in Adams County, and other aspects of solid waste, are discussed at length in Chapter 2, Section 10.

The quantity of refuse to be disposed can be greatly reduced through recycling (see Chapter 2, Section 10). Under Pennsylvania Act 101, which became effective on September 26, 1988, at least 25% of all municipal waste and source-separated recyclable materials are to be recycled by 1997, and all municipalities above 5,000 population are to develop a source separation and collection program for recyclable materials by September 26, 1991.

The County should vigorously promote recycling. As a measure of the kinds of waste stream reductions that may be achieved, a set of calculations has been made to determine how much recycling is possible to accomplish under various future conditions, and what the impact of that degree of recycling would be on municipal solid waste generation and disposal in Adams County. The State goal of reducing the amounts of solid waste by 25% through recycling by 1997 is a feasible goal for Adams County to meet.

Clearly also, there are important economies possible through recycling. Savings are significant, both in terms of avoided tipping fees at processing or disposal facilities and a reduction in the need for additional processing or disposal capacity.

## **Utilities Policies**

1. *Assist municipalities in the review an update of water supply and wastewater treatment facilities plans, consistent with the Growth Management Plan and its projected distribution of population, services, and industry.*
2. *Assist municipalities in the preparation and adoption of regulations for well-head protection.*
3. *Evaluate "recharge" areas and encourage land use policies to ensure protection of water*

*supply wells.*

4. *Promote water conservation regulations.*
5. *Monitor the need for future surface water reservoirs and determine measures to preserve potential reservoir sites.*
6. *Review and evaluate stormwater management facilities and procedures.*
7. *Enact regulations and adopt programs for increased recycling of residential and commercial solid waste.*

<sup>1</sup> "Water Supply Study of Adams County Pennsylvania", Robert Herbstritt, Center for Local and State Government, April 27, 1990.

<sup>2</sup> "Water Resources Report 52" with accompanying map "Geologic Map of Adams County, Pennsylvania, Showing Locations of Springs and Wells", by Lawrence E. Taylor and Denise, W. Royer, Commonwealth of Pennsylvania, Department of Environmental Resources, Bureau of Topographic and Geologic Survey, 1981.

<sup>3</sup> "State Water Plan - Sub-Basin 7", Commonwealth of Pennsylvania, Department of Environmental Resources, June 1979.

<sup>4</sup> "State Water Plan - Sub-Basin 13", Commonwealth of Pennsylvania, Department of Environmental Resources, February 1980.

<sup>5</sup> "Local Tools for Well-Head Protection", U. S. Environmental Protection Agency, Office of Groundwater Protection, Washington, D. C. 20460, 1990.

<sup>6</sup> "National Pollutant Discharge Elimination System Permit Application Regulations for Storm Water Discharges; Final Rule", U. S. Environmental Protection Agency, 40 CFR Parts 122, 123, and 124, Federal Register Vol 55, No. 222, Friday, November 16, 1990, pp 47990 - 48075.

<sup>7</sup> The regulations apply to specific municipalities in Pennsylvania and to industrial activity. Adams County should be aware of any applications for NPDES Storm Water Discharge Permits by major industries located within the county.

<sup>8</sup> Pennsylvania Bulletin Volume 21, Number 15, Saturday, April 13, 1991, Environmental Quality Board Reformatting of Stream Drainage Lists, pages 1649-1788.

## SECTION 10: ENVIRONMENTAL PROTECTION PLAN

### Introduction

The environmental protection element of the Growth Management Plan identifies specific areas in the county which are environmentally sensitive, including floodplains, wetlands, aquifer recharge and wellhead areas, and other critical natural features. It also addresses wildlife and plants, and stormwater management. Information presented on these subjects is based on several sources: The US Army Corps of Engineers' 100-Year Floodplain designation prepared for the National Flood Insurance Program; the National Wetlands Inventory undertaken by the US Fish and Wildlife Service and Pennsylvania Department of Environmental Resources; the Adams County Soil Survey prepared by the US Department of Agriculture Soil Conservation Service; United States Geological Survey quadrangle series maps; Pennsylvania Natural Diversity Inventory (PNDI) Species of Concern maps; and 1987 aerial photography. Areas that have been mapped include floodplains, wetlands, hydric soils, steep slopes, woodlands, and wildlife habitat. (See Figures 2.2.1, 2.4.1, 2.4.2, 2.4.3, 2.4.4, and 2.4.5.)

These classes of environmentally-sensitive features are not uniform in their impact on development potential nor in what they represent as hazards to human life and property. There are levels of sensitivity, suggesting corresponding levels of response.

### Floodplains

The first and most specific level is represented by the 100-year floodplain designated by the federal government (Figure 2.4.2). There is clear authority for a complete prohibition of development within designated floodplains, and a set of standards for regulating design and construction within floodplains so as to prevent exacerbation of the flood hazard. Flood-prone soils, identified by the U.S.D.A Soil Conservation Service Soil Survey, at times do not correspond precisely with the federal floodplain designations. The flood-prone soils, so classified because of their alluvial nature, indicating that they were deposited by floodwaters, reflect not only 100-year floods but also floods of lesser frequency. Where flood-prone soils lie outside the federally-designated areas, the burden of proof should be on land developers to demonstrate by specific on-site tests, engineering analysis, and analysis of effects of impervious cover percentages of upstream development that could increase flow levels, that the generalized soil classification is in error for the specific site or that any construction will be designed to avoid any possibility of creating a hazard to human life and property or exacerbating local flooding. Thus as a matter of policy the flood-prone soils initially should be subject to all of the development restrictions of the land within the 100-year floodplain.

The Hydrology map for Adams County (Figure 2.4.2) is an extremely important resource for the County. The information represented, particularly with respect to floodplains, was

not available at the time of the original Adams County Comprehensive Plan preparation, and could not be used as a determinant for land use planning. By contrast, the extent and pattern of floodplains has been strongly influential in shaping the current Land Use Plan for the county. Implementation of the Land Use Plan (Figure 3.3.1), as well as the preservation of environmentally-sensitive resources, will rely to a considerable degree on the protection of the widespread network of floodplains across the county. The County should be vigilant in preserving floodplains and in encouraging townships and boroughs to do the same.

### **Stormwater Management**

Stormwater management and flood and erosion control along Adams County's creek and stream corridors are linked to upstream land development practices. Future development of residential, commercial, industrial, and institutional uses may result in increased discharge rates into these creeks during and following major storms. The County, with funding assistance from the Pennsylvania Department of Environmental Resources, should initiate watershed studies with the participation of relevant municipalities. These studies should focus on potential effects of land development upon discharge rates into creeks and streams, and should lead to model subdivision and land development regulations to assure that developments use the best available technology to minimize off-site stormwater runoff, increase on-site infiltration, minimize off-site discharge of pollutants, and encourage natural filtration functions. Best available technology may include measures such as detention and retention basins, recharge trenches, porous paving and piping, contour terraces, and swales. It is essential that local land development regulations be based on watershed-wide considerations.

### **Wetlands**

Another important level of environmental sensitivity is represented by wetlands; generally areas within forested lands with a high water table and poor drainage, and having some degree of surface ponding during the year (Figure 2.4.2). Under the jurisdiction of the US Army Corps of Engineers and the State Department of Environmental Resources, there is at the present time a steadily evolving regulatory framework concerning wetlands in Pennsylvania; mandating wetland surveys by developers of land and controlling the degree and type of wetland disturbance permitted. Counties and municipalities can provide long-term wetlands protection by directing development away from these areas, by encouraging clustered construction on higher ground surrounding wetlands, and by purchasing wetlands important to protecting local floodplains or ecological systems.

The Growth Management Plan permanent open space system incorporates a variety of natural resource areas, including floodplains and significant wetlands, where known.

### **Aquifer Recharge and Well Head Areas**

As outlined in Chapter 2, Section 10, and Section 9 of this chapter, groundwater is the source of most residents' drinking water in Adams County, and is projected to remain so through the planning period. It is therefore essential that zoning and other land development regulations be employed to protect well heads and aquifer recharge areas. Well head protection zones should extend at least 1/4 mile from each major water supply well, prohibiting within the zone commercial, industrial, or other facilities that might pollute the well. Protection of each well's aquifer should be ensured by limiting the type of development permitted throughout the recharge area (also see Section 9 of this chapter).

Potential future locations for surface water reservoirs may also be preserved by enacting local zoning regulations that prohibit new development in designated areas (see Section 9 of this chapter).

### **Wildlife and Plants**

According to the United States Department of the Interior, Fish and Wildlife Service, except for occasional transient species, no federally-listed or -proposed threatened or endangered species are known to exist in the county. Several animal and plant species on state threatened or endangered lists have been observed in the county at dates varying from the 1920s through 1990. More recent sightings have been mapped in an extremely general way by the Pennsylvania Natural Diversity Inventory (Figure 2.4.4), and this information should be consulted by the County when reviewing proposed development. Where there is a suspicion that threatened or endangered habitats or species may be present, more detailed field studies should be undertaken by the developer.

### **Other Natural Features**

A further level of environmental sensitivity includes the following resources: Mature woodlands; areas of steep slope or erodible soils; and areas having a seasonal high water table within six inches of the soil surface. These features, especially where occurring in combination, suggest that little or no development should take place or that development should be severely curtailed and closely regulated. The policy of the County toward these environmentally-sensitive areas should be one of discouraging development wherever possible to prevent destruction of important resources or to protect residents of the county from future problems.

The chief instrument that the County and its townships and boroughs will have at their disposal to protect these areas will be the encouragement or requirement of cluster development and the flexible gross density development approach in residential areas. By

requiring developers to base the number of dwelling units allowed to be built on the gross developable acreage of their development parcels, areas designated by the County and its municipalities as being environmentally-sensitive are more likely to end up being set aside.

It must be recognized that maps of environmentally-sensitive areas are accurate to a general level only. Developers should be required as a matter of County and local policy to undertake more detailed field studies of specific parcels proposed for development that will verify or modify the precise location of the sensitive features on the county-wide or municipal-wide maps. If such studies are required, especially where there is a strong suspicion or known presence of environmentally-sensitive features, developers will be more aware of the need to protect scarce resources and to avoid future problems at an early point in the development process, leading to better land planning and design solutions in the long run.

### Environmental Protection Policies

1. *Monitor and update, as needed, maps and other inventories of environmentally-sensitive resources in the county, and make this information known to local municipalities, authorities, and other public and private organizations.*
2. *Prepare and promote model regulations for the protection of environmentally-sensitive resources and assist municipalities in the adoption of such controls.*
3. *Review each development proposal to determine its possible effects on environmentally-sensitive resources and promote ways to minimize their impairment.*
4. *In conjunction with the State and local municipalities, conduct watershed studies focused on land development's effects on stormwater discharge.*