CHAPTER THREE: NATURAL RESOURCES

FEDERAL AND STATE OBJECTIVES

Protection of the Town's natural and environmental resources is absolutely essential to maintaining the quality of life that Mount Airy currently enjoys. Research is under way to identify how development activity is affecting the natural ecosystem. In Maryland, this research has been pursued diligently to understand how we may improve the conditions of the Chesapeake Bay. While Mount Airy is over 60 miles from the shores of the Chesapeake Bay, stream tributaries that begin in Mount Airy eventually terminate in the bay.

To coordinate environmental efforts across the State, and ultimately improve the condition of the Chesapeake Bay, the State has adopted several regulations requiring local governments to address specific environmental issues. These laws, the *Maryland Economic Growth, Resource Protection,* and *Planning Act of 1992 (as amended),* and *1991 Forest Conservation Act,* and *Federal Clean Water Act,* including storm water management, NPDES permit requirements and wetland protection laws, along with the *Smart Growth Legislation of 1997* all directly affect planning decisions in Mount Airy. More recently, an important new law passed in 2006, known as HB 1141. This legislation addressed land use, development and water resources and requires that local comprehensive plans contain a Water Resources Element and a Municipal Growth Element. In addition to these State regulatory measures, the Town has independently addressed protection of steep slopes, floodplains and town well watershed areas. This chapter reviews these regulations, and explores the relationships between natural resource protection and land-use planning. The *Priority Preservation Element* was also approved during the 2006 Legislate Session as part of HB 2 and is now required to part of the County Comprehensive Plan.

GENERAL CLIMATE

Mount Airy is similar to Westminster in its position astride Parrs Ridge, and has a humid, temperate climate with four rather well defined seasons. The general atmospheric flow is from west to east but alternate surges of cold air from the north and of warm humid air from the south occurs in the area, causing highly variable weather. Nearness to the Atlantic Coast allows coastal storms to make up any deficiency of precipitation resulting from the passage of weather systems over the mountains to the west.

The average annual temperature is approximately 54 degrees, with January generally the coldest month and July the warmest. Temperatures exceed 90 degrees Fahrenheit an average of 27 days

a year. The Town of Mount Airy is in the USDA Plant Hardiness Zone 7a for an annual extreme minimum temperature of 0-5 degrees Fahrenheit.

The average annual precipitation totals about 45 inches, with February the driest and August the wettest month. During the growing season, which averages about 177 days from April through September, the last part of July through the first part of August is the driest. The average seasonal snowfall is 28 inches.[1] The monthly precipitation is about even all year compared to climates elsewhere. The wettest month is a result from storm events which tend to be spotty and quick. Conversely, precipitation in spring is more even with many small events.

TOPOGRAPHY

Topography, the shape and lay of the land, is a major factor in controlling and guiding the density, type and direction development is to take place in any area. Severely sloping terrain, if not retained and protected in an undeveloped state, is suitable only for low-density residential use or forestation, while land, which is moderately sloped or rolling, can be appropriate for low, medium, and high-density residential development. In addition, it is the level areas, which are most easily adaptable for industrial and commercial land use.

Mount Airy's Main Street, for the most part, runs atop Parrs Ridge in a northeast-southwest direction with elevations ranging between 800-850+ feet, which descend in two directions roughly perpendicular to the ridge's spine. Numerous valleys that extend outward toward the east and west from this ridge cause the unusually hilly topography. The present downtown area is located in one of the more pronounced of these valleys and this funnel-like location causes many challenges with regard to development and road network. Although this rough, sloping terrain adds character and creates diversity throughout the Town, the most severe slopes are avoided in order to reduce hazard and eliminate risk in future development.

Mount Airy straddles the division of two major drainage basins. Within the Frederick County portion of the Town are the headwaters of Woodville Branch and Ben’s Branch which are parts of the Linganore Watershed, as well as the headwaters of Bush Creek, another Frederick County Watershed. The Linganore Watershed drains into Lake Linganore, a secondary source of public water for the County. Both the Linganore and Bush Creek Watersheds are nested in the Lower Monococy River Watershed, with eventual drainage to the Potomac River. The east side drains into the Chesapeake Bay via tributaries of Middle Run and the South Branch of the Patapsco Rivers.

[1] Data and climatology analysis taken from the 1970 Town of Mount Airy Master Plan

GEOLOGY

Geologic formations that underlie an area can be vital to the type of future development the land may sustain. The quality, quantity, and accessibility of ground water are directly linked to the type of rock formation or aquifer involved. The depth of bedrock and the presence of rock outcroppings both have an effect on certain land uses and developmental patterns.

Ijamsville Formation and Marburg Schist are found throughout the Mount Airy area. The Marburg Schist is mainly a bluish gray to green, fine-grained muscovite-chlorite schist, containing a considerable amount of quartzite. Ijamsville Formation is blue, green, or purple phyllite and phyllitic slate, with interbedded metasiltstone and metagraywacke.

SOILS[2]

Soils data are useful in helping to determine areas most suitable for future development. By using soil studies, sound estimates can be made about where people will be living, working and playing.

This general soil survey and analysis takes into consideration the limitations, restrictions, and hazards involved in the development of various soils areas in Mount Airy. By selecting an unsuitable use for a specific soil, the risk of loss to the developer and to the Town can be very high. The soils of Mount Airy can be grouped into four major series classifications as follow: a) Chester, b) Glenville, c) Mount Airy and d) Manor. Each has characteristics that should be taken into consideration by those who propose to develop and use the land.

1. CHESTER – The Chester series consists of deep, well-drained soils that are usually found on hilltops and the upper part of slopes. Hard rock is generally at a depth of more than five feet but quartzite fragments are common throughout the soil. Chester soils are strongly acidic and have a high available moisture capacity. These soils are found south of Route 40 in the Montgomery County area and any dense development should be avoided or compensated for on slopes greater than 15%.

2. GLENVILLE – The Glenville series consists of moderately well drained, very strongly acid soils that occur primarily on flats and at the foot of slopes. The depth to bedrock is generally more than 5 feet; the soils are only moderately productive; and they have a limited capacity to store moisture. The Glenville soils are in limited areas found in the southern

[2] The Soil Conservation Service (USDA) in cooperation with the Maryland Agricultural Experiment Station develops Soil Survey material for Carroll, Howard, Frederick, and Montgomery Counties

section of the Town vicinity and dense development should be avoided or compensated for because of a high water table.

3. MOUNT AIRY – The Mount Airy series consists of moderately deep, very strongly acid soils that are somewhat excessively drained. The depth to bedrock in this soil is usually about 30 inches; they have a low to moderate available moisture capacity, and if well managed are moderately productive. These soils are found in the Carroll, Montgomery, and Howard County sections that surround the Town and dense development should be avoided or compensated for on slopes greater than 15%. Furthermore, the shallow depth to bedrock will cause inconvenience in relation to any subsurface excavation.

4. MANOR – The Manor series consists of shallow, excessively drained and immature soils that are not especially fertile or productive. These soils have a high available moisture capacity and are strongly acid. Although very susceptible to erosion they are suitable for a variety of uses. Found primarily to the west of Mount Airy, dense development should be avoided or compensated for when the slopes exceed 25%.

HYDROLOGIC SOIL GROUPS[3]

Soils are classified by the Natural Resource Conservation Service into four Hydrologic Soil Groups based on the soil's runoff potential. The four Hydrologic Soils Groups are A, B, C and D. Where A's generally have the smallest runoff potential and D's the greatest.

Group A is sand, loamy sand or sandy loam types of soils. It has low runoff potential and high infiltration rates even when thoroughly wetted. They consist chiefly of deep, well to excessively drained sands or gravels and have a high rate of water transmission.

Group B is silt loam or loam. It has a moderate infiltration rate when thoroughly wetted and consists chiefly or moderately deep to deep, moderately well to well drained soils with moderately fine to moderately coarse textures.

Group C soils are sandy clay loam. They have low infiltration rates when thoroughly wetted and consist chiefly of soils with a layer that impedes downward movement of water and soils with moderately fine to fine structure.

[3] Details of this classification can be found in 'Urban Hydrology for Small Watersheds' published by the Engineering Division of the Natural Resource Conservation Service, United States Department of Agriculture, and Technical Release–55.

Group D soils are clay loam, silty clay loam, sandy clay, silty clay or clay. This HSG has the highest runoff potential. They have very low infiltration rates when thoroughly wetted and consist chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a clay pan or clay layer at or near the surface and shallow soils over nearly impervious material.

USDA SOIL SURVEY MAP OF MOUNT AIRY.

FLOODPLAIN SOILS

For the most part, areas of floodplain and slopes greater than 25% are considered to be unsuitable for development. The floodplain is not a widespread factor in Mount Airy but where it occurs, and indicated by soil analysis; it should remain undeveloped because of its role in quickly absorbing and containing excess water flow. Slopes greater than 25% are considered unsuitable for development and have been mapped here through the use of soil surveys and topographic maps. These areas should be used for open space, natural and primitive recreation areas, such as trail type walking paths, and drainage ways. If properly protected, they can contribute an aesthetic quality that gives a community a more attractive and livable environment while shaping and ensuring safe, less costly development.

SENSITIVE AREAS

The 1992 Planning Act defines sensitive areas as streams and stream buffers, 100-year floodplain, endangered species habitat, and steep slopes. An evaluation of Mt. Airy's topography helps to describe the sensitive areas in the Town.

The Town of Mount Airy developed along Main Street. Generally, Main Street follows the peaks of Parr's Ridge. Parr's Ridge runs in a northeast-southwest direction and several minor ridges extend like fingers to the east and west. Between these minor ridges are small valleys in which the many branch streams surrounding the Town begin. Most land slopes at 8 -10% and areas where slopes exceed 15% are common. Land areas within the 100-year floodplain are minimal, located mostly along low-lying streambeds. Similarly, few wetlands have been identified outside the stream valleys. Less than a quarter mile south of Mount Airy the South Branch of the Patapsco River begins at Parr's Spring. The Town limits extend east to the South Branch of the Patapsco River, which is the Carroll and Howard County Boundary.

WATER

The following discussion addresses the surface and groundwater sources of Mount Airy and their importance to the future development of the community.

Groundwater

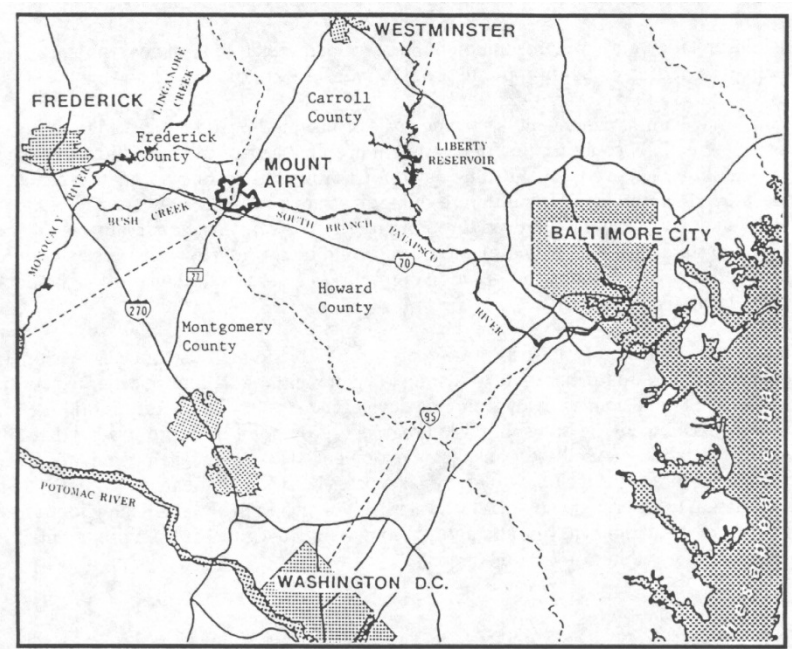
The unconfined fractured rock aquifer within the Ijamsville Formation and Marburg Schist is the source of water supply for the Town of Mount Airy. The system uses 11 wells to obtain its drinking water. According to the 1958 report on the Water Resources of Frederick and Carroll County,[4] the Marburg Schist well yields from 1 to 223 gpm and average about 17 gpm. Well depths average 87 feet. Except for limited areas along the crest of Parrs Ridge in the Ridgeville area, adequate supplies of ground water can be obtained from wells nearly anywhere within the schist area.

According to the 2010 Carroll County Water Resources Element (WRE), prepared by Malcolm Pirnie, Inc., consultant for Carroll County Government, the water supply is susceptible to

[4] The Water Resources of Carroll and Frederick Counties, Department of Geology, Mines and Water, Baltimore, Maryland. 1958. The South Branch mainstem originates at Parrs Spring about 1.6 miles south of Mouth Airy and flows in a northeasterly direction where it is joined by several unnamed tributaries that flow east from the Town. The mainstem receives wastes from the possible overflow of individual sewage disposal systems until well east of Mount Airy. However, headwater streams of the South Branch Patapsco that flow into the mainstem receive stormwater runoff from Mount Airy, as well as treated wastewater releases from the Town.

contamination by nitrates, Volatile Organic Compound (VOC) except well #8, Synthetic Organic Compounds (SOC), and radionuclides, but not susceptible to protozoans. Further, wells #2 and #7 are susceptible to bacteria and viruses. As the Town is "sitting" on its own water supply, as shown from the WRE, the water over time has risk of introduced undesirable contaminants in the form of road salts applied during the winter, fertilizer applications, an unintentional leaky sanitary sewer, etc. The timing of the eventual pollution of groundwater supply is uncertain. Although technology exists to remove many contaminants from contaminated waters, it may be expensive and not sufficient to remove all contaminants. An example might be various medicinal elements contained in the leaky sanitary sewage.

Springheads are generally common is this schist formation, but are not a major source of water in the Mount Airy area. There is a small spring in Summit Ridge, at Main Street and Prospect Rd., the pond at the Four County Farm just south of the Town is spring fed.



The quality and quantity of groundwater is particularly important to the Town, which relies entirely on groundwater for its water supply. Because supply wells are generally located within Town boundaries, land surrounding Town well sites is subject to a higher density of development than land in either County. Development affects water quality in numerous ways: the introduction of impervious surfaces, mass grading which removes existing vegetation, concentration of pollutants into single high-volume drainage areas (stormwater management ponds), and potential application or spill of chemicals that are not naturally absorbed or filtered. Common sources of contamination include salt from road de-icing, excessive fertilizer and pesticide application, a leaking sanitary sewer system, leaking underground storage tanks, and other "non-point source" pollution.

Surface Water

Because of its unique location at the perimeter of two major watersheds it is not surprising that Mount Airy does not have a large supply of surface water. The most important watershed is the South Branch of the Patapsco River that is located directly southeast of the Town limits. Other minor streams that affect Mount Airy are Bens Branch, and several unnamed tributaries of Bush Creek, Woodville Branch, and Middle Run.

The Town upgraded its sewage treatment plant in 1999 to Biological Nutrient Removal (BNR) and in 2011 to Enhanced Nutrient Removal (ENR), cleaning the effluent discharging into the South Branch of the Patapsco River. The quality and composition of the discharge is regularly tested in order to meet the rigorous State standards of discharge. The treated water from treatment plant is discharged into the South Branch Patapsco.

STREAMS AND STREAM BUFFERS

Requiring undisturbed, vegetated stream buffers often regulates the protection of streams. Vegetated buffers can slow the flow of stormwater, reducing the erosion of stream banks. Vegetation also absorbs water and acts as a "filter" for pollutants and nutrients. By slowing the flow of rainwater, buffers allow the water temperature to moderate before entering streams, reducing shock to aquatic species. Stream buffers provide other benefits as well, including improved wildlife habitat and scenic value in developed areas.

The Town of Mount Airy, through its adoption of the Water Resources Management Chapter of the Code of Public Laws and Ordinances of Carroll County, Maryland restricts development along streams, requiring a 50 foot wide stream buffer from each stream bank. Several "models" exist by which an appropriate stream buffer could be established. Rather than establish a uniform buffer width for all streams, most models recommend that a buffer width be established to accomplish specific goals. A review of studies conducted nationwide finds that to significantly reduce the level of phosphorous entering streams, a 300-foot buffer on each side of the stream is necessary. However, if the goal is a reduction of sedimentation of the stream, a 100-foot buffer may suffice. Frederick County adopted strong stream protection regulations in 2008, which includes a variable width buffer based on degree and extent of slope, plus extra setbacks from streams in the Linganore Watershed to help reduce the sedimentation of Lake Linganore. These buffer regulations were amended by the Frederick County BOCC on October 31, 2013 and reduced the required setback distances.

The effectiveness of a buffer is determined by many factors, including the steepness and length of slope within the buffer, the type of vegetative cover, the soil erodibility, and the presence of impervious surfaces (such as pavement or rooftops). Carroll County recommends a 300-foot buffer around a water supply, and a 100-foot buffer for all other tributaries; however, in calculating the buffer, impervious surface area and slopes exceeding 25% do not count towards the buffer width requirement in order to give environmentally sensitive areas maximum protection.

100-YEAR FLOODPLAIN

In 2006, the Town Council enacted Chapter 61 of the Town of Mount Airy Code whereby the Town adopted the Carroll County Floodplain Management Ordinance codified in Chapter 114 of

the Carroll County Code. In January 2012, the Town Council formally designated Carroll County, under the National Flood Insurance Program as the entity responsible for floodplain administration within the Town. Mount Airy does not permit development within the 100-year floodplain in accordance with Section 112-10 of the Zoning Ordinance.

ENDANGERED SPECIES HABITATS

In an effort to preserve habitat, 300-foot wide forested buffers should be encouraged where practical and beneficial to wildlife. Land-use policies, parks planning, and forestation resulting from the Forest Conservation Act should contribute to enhancement of these corridors. Several species of plants and animals are listed as rare, threatened, or endangered in Frederick County and Carroll County.[5]

STEEP SLOPES

Mount Airy does not permit development on slopes equal to or greater than in excess of 25% and are not considered as part of any minimum lot area. Many regulations referenced define steep slopes as being between 15 and 25%, and some regulations also consider the soil type in order to better determine erodibility. The State Forest Conservation Act defines steep slopes as greater than 25%, or slopes greater than 15% with a K value (soil erodibility) of greater than 0.35. It is difficult to develop at any density on slopes in excess of 15% without significant grading.

STATE FOREST CONSERVATION ACT

In 1991, the State of Maryland adopted the first edition of the Forest Conservation Act, which provides that forest retention, reforestation, and/or afforestation be required of new land development. Subsequent reviews of statutory and regulatory requirements of the Forest Conservation Act resulted in the release of second and third editions of the manual, in 1995 and 1997, respectively. This legislation allows local governments to develop their own programs, provided they meet the intent of the State Law. The Town of Mount Airy worked closely in conjunction with Carroll County to develop a program that could be implemented in the Town. The program has been administered successfully since 1993.

The current program implemented for Carroll County stresses retention of existing forest area as the primary objective in order to fulfill the requirements of the ordinance. For every square acre of forest removed, the same amount will have to be replaced (reforested) on-site or somewhere within the same jurisdiction. Afforestation, establishing a forest where there is none, is also required to meet the State objective of increasing forest cover in the State. Any residential development on property that has less than 20% of its land in forest cover must provide a 20% threshold of afforestation. Industrial and commercial lands are permitted slightly lesser criteria, requiring a minimum of 15% of the post-development land to be forested. To guide forestation

[5] Maryland Department of Natural Resources

decisions, priority retention areas and priority forestation areas are defined. These areas include stream buffers, steep slopes, wildlife corridors, and similarly valued natural areas. The requirements of the Forest Conservation Act have contributed to the preservation and aesthetic retention of natural and conservation areas within the Town limits. Although the Town has allowed developers to utilize certain dedicated "open space" and other natural drainage areas or steep slope areas within established subdivisions, lack of suitable land quickly has become a dilemma. The Town has subsequently allowed developers of commercial and industrial projects to fulfill their forestation requirements through Carroll County approved "Forestation Banks". These banks are located in various areas throughout the county but have a set number of acres that can be purchased by developers to fill their requirements. The banking has worked well in the County because the land used for these banks is located in strategic areas either along streambeds; steep slopes or other officially designated environmentally sensitive areas. Through the successful partnership between The Town and Carroll County, there now exists the opportunity to allow additional landscape plantings within developments that could meet forestation requirements. This proposed flexibility in the Forestation Ordinance requirements would encourage more on-site plantings instead of being forced to use off-site forestation banks. The Town recently benefitted from this flexibility during the site redevelopment of the Public Works Department complex where planned site configurations resulted in the loss of an established forestation area. As a result, approximately 40 plantings were permitted to be “reforested” at Watkins Park resulting in the addition of a natural aesthetic buffer between a major arterial highway and a portion of the park land.

In 2008, The Town partnered with Maryland Department of Natural Resources and Frederick County Forestry Board on a reforestation project made possible under a grant From the Maryland Department of the Environment. The project included the planting of 595 native shrubs in Village Gate Park and 120 native trees at Windy Ridge Park.

Natural tree cover in the older residential neighborhoods is an environmental benefit while in other sections of town; trees have been preserved in their original stands or removed for development purposes. The trees are hardwoods composed primarily of ash, oak and poplar.

CARROLL COUNTY
WATER RESOURCE MANAGEMENT ORDINANCE

The Carroll County Bureau of Water Resources Management developed water resource standards with the assistance of R.E. Wright Associates that address surface and ground water quality and quantity protection in 1988. In the spring of 2003, The Bureau of Resource Management was created, thereby replacing the Bureau of Water Resources Management, bringing together staffs from stormwater management, forestry/landscaping and water resource planning. In the summer of 2004, a floodplain management program as well as the

Environmental Inspections Services Division was added to the Bureau's responsibilities. The Water Resource Management Standards, Criteria, and Administrative Procedures prepared by R. E. Wright Associates, Inc., now referred to as the Water Resource Management Manual; propose performance standards and management criteria for four primary areas of water resource management:

a. *Carbonate rock areas* -are rock layers that usually contain a great volume of water but is highly susceptible to contamination. No carbonate rock is found in Mount Airy.

b. *Wellhead protection areas* -include the land draining towards and feeding the well. The Town adopted a new wellhead protection ordinance to protect the well recharge areas around all of its active wells and it was modeled after the State wellhead protection ordinance.

c. *Aquifer recharge areas* -include all the area within the Community Planning Area and outside land in the County that drains into the Community Planning Area. The Community Planning Area is the land within and adjacent to a municipality in which growth is directed.

d. *Surface watershed* -are surface areas that drain to proposed or existing water supply reservoirs, stream intakes, and the streams that feed them.

The proposed standards for the four management areas address pertinent issues for the respective areas, including nutrient management, groundwater extraction practices, groundwater recharge preservation, stormwater management, erosion and sediment control, as well as chemical storage, usage and application.

WATER RESOURCE MANAGEMENT STANDARDS AND THE MASTER PLAN

The Carroll County Water Resource Management Standards/ Master Plan Compatibility Study prepared by Horsley Witten and Hegemann, Inc. reviewed the relationship between the proposed standards and their conflict or consistency with planning and zoning policies. If planning policies and regulations were not respectful of water resource issues, the success of water resource standards would be limited. The following recommendations apply to Mount Airy:

A. General Land Use Recommendations -While contamination is a potential threat regardless of the land use, industrial uses are more likely to cause groundwater contamination from hazardous material accidents. However, increased nutrient loads and reduced groundwater recharge can result from intense development of any land use within a community well watershed. Water quality problems include excessive nitrate levels from residential and agricultural fertilizers and business wastewater, and phosphorus that is a result of surface run-off from residential, commercial, and agricultural uses.

B. Industrial Development -The threat of groundwater contamination from industrial leaks and spills can be significant. The study recommends that existing and future industrial areas are subject to water resource management standards, and that future planning locate industrial activity outside potential community well watersheds.

Currently, the Town has two wells whose watersheds include industrial land: production well no.6 and production well #.7. Production well #6 is located 1500 feet from current industrial uses and at Watkins Regional Park. Production well #7 is located in the developing industrial park of Twin Ridge Professional Center. There are two excavating companies located in that park with the presence of heavy equipment. It is recommended that both of these wells continue to be monitored carefully and future businesses within the watersheds are advised of any activities that may adversely affect those wells.

WELLHEAD PROTECTION AREAS

Carroll County's proposed water resource management standards require a 100-foot undisturbed buffer around community wells. The purpose of a buffer area is to ensure adequate time delay before contaminants could reach a well. The Horsley, Witten and Hegemann study explains that the buffer area should be sized according to the potential draw of the well, and most wells draw from an area larger than 100 feet. A well pumped at higher volumes will draw from a larger area over the same period of time than a lesser pumped well. The U. S. Environmental Protection Agency recommends a 325-foot buffer around potential well sites. Maryland Department of the Environment (MDE) has mapped recharge areas, but no studies have actually documented subsurface water flow under the Town.

MOUNT AIRY WELLHEAD PROTECTION ORDINANCE

In 1997, the Town of Mount Airy adopted an updated Wellhead Protection Ordinance that was modeled closely after the State of Maryland's Model Ordinance. The Ordinance designates a large portion of the Town boundary as the Wellhead Protection Area and therefore, regulates the review and provides a venue for analysis of all land uses within the Town boundaries. The Ordinance lists specific permitted uses, conditional uses, and prohibited uses.

All of the conditional uses must come under an additional layer of review from the Town to ensure that the public groundwater supply will not be threatened by a particular use. The ordinance also specifies the documentation required by the landowner to ensure the prevention of any immediate or long-term hazard to the wellhead protection area of the Town. The majority of the conditional uses relate to fuel or gasoline storage, dry cleaning establishments, and heavy manufacturing uses. An example of prohibited uses may be junkyards, storage of hazardous materials, landfills and open burning or dumpsites. The Ordinance is available for review at the Town. During the implementation of this plan, the Town will be seeking an update to the current ordinance to increase the buffer zone around wellheads to further protect groundwater supply.

MOUNT AIRY ORDINANCE NO. 1989-2-RESPONSIBILITY OF DEVELOPERS TO PROVIDE NEW WATER SOURCES

In 1989, the Town adopted Ordinance No. 1989-2 that requires developers to find a significant well within their project area or pay a fee into a well exploration fund. Following adoption of this ordinance, several good wells have been found. However, the new wells may be located within the development regardless of the proposed density or permitted land use. As a requirement for most major residential annexations, the development of a well is a necessity. Growth of the Town over the last ten years has created the need for a new well for a major development to offset the draw on the existing water system.

STORMWATER MANAGEMENT

Stormwater management facilities are an attempt to replace the natural network for rainwater travel and filtering in developed areas. Stormwater runoff is conveyed to a stormwater management facility via sheet flow, storm drain system or another method of conveyance. Once the runoff reaches the facility, its release rate and quality can be managed.

There are various types of stormwater management facilities designed primarily to control the increased volume or rate of runoff and/or eliminate pollutants that result from rainfall on developed areas. Stormwater management structures help prevent the sudden flow of stormwater into streams, and thereby reduce the risk of erosion and sediment deposit. Stormwater management facilities also help prevent large volumes of runoff from damaging downstream properties. Another primary function of many stormwater management facilities is pollutant removal. In addition, stormwater management facilities often facilitate infiltration of surface water to replenish Mount Airy's groundwater (drinking water) supply.

Although stormwater management facilities provide many benefits, problems relating to these facilities persist. Because facility design concentrates runoff in one location, there may be an increased loading of pollutants or nutrients at that location. The best way to minimize this loading is to provide as much natural vegetated surface area as possible throughout each new development. Vegetation will help treat pollutant-laden runoff. Stormwater management facilities also require substantial maintenance, which is typically provided by the Town at taxpayer expense within low-density residential developments.

In 2007, House Bill (HB) 786, known as the Stormwater Management Act, was passed. HB 786 requires stormwater management practices to mimic natural water runoff and minimize land development impact on water resources. The stricter standard reduces pollution runoff to the Bay from impervious surfaces such as pavement, roofs, and structures.

STATE OF MARYLAND PROGRAM NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

The State of Maryland created and is an ongoing participant in the National Pollutant Discharge Elimination System (NPDES) for stormwater management. This program is designed to monitor stormwater flow for pollutants some of which are considered "non-point source" or generating from some distance away from the storm drain system but ultimately accessing the municipal storm drain system. These off-site pollutants make their way into the system and could potentially create a negative effect on the groundwater supply for the town.

A NPDES Phase II permit is required from the State for all counties and municipalities to continuously monitor their stormwater flow for contaminants. This permitting process is required from the EPA as part of the Federal Clean Water Act. Under this permit, Best Management Practices are promoted and the implementation of the following six measures is encouraged:

Public education and outreach
Public participation and involvement
Illicit discharge detection and elimination
Construction site runoff control
Post -construction runoff control
Pollution prevention/good housekeeping

This permit will be carried by Carroll County. The Town of Mount Airy will be attached to their permit and therefore be in compliance with the program. In order for the County to meet the requirements of the permit, the storm drain system for the County and all of the municipalities participating will need to be put into a mapping program. The County has hired a staff person to log in all new storm drain system information and make the necessary reporting requirements to the State, because so much information is needed to monitor storm water flow.

GILLIS FALLS RESERVOIR

In 1988, the Carroll County Bureau of Water Resources released a study including estimates of water supply and demand in the south Carroll area. This water resource study concluded that water demand would exceed supply by the year 2015. In order to plan for the future water usage, Carroll County planned for a surface water source, the Gillis Falls Reservoir, located 2 miles northeast of Mt. Airy. The reservoir was envisioned to require a dam. The County has purchased about 91% of the total 1,200 acres needed to establish the reservoir, and the land of the reservoir watershed is primarily in conservation-zoning, protecting water quality of the future reservoir. The County includes Gillis Falls Reservoir as one of the potential options for a future

surface water source.

The Town contracted Hazen and Sawyer to conduct a planning level study of three surface water supply alternatives, including Gillis Falls, in 2006. Carroll County and county municipalities worked collaboratively in 2009/10 to update the 1988 study of water resources in the county, including Mount Airy and vicinity and Gillis Falls. The Water Resources Element can be viewed at the Mount Airy Town Office or electronically on the Carroll County Government's website at http://ccgovernment.carr.org/ccg/compplan/WRE/default.asp.

Construction of new dams in existing streams has been viewed disfavorably from an environmental perspective for at least two decades. However, in recent years recognition of the need to provide water to support concentrated growth over sprawl has modified this perspective. Gillis Falls is a healthy stream that supports a reproducing population of brown trout. Although this is an exotic species that outcompetes native brook trout, it is highly valued by recreational fishermen. Healthy streams supporting brown trout are afforded substantial protection from direct environmental impacts by federal and state laws and policies. In light of this fact, utilization of water from Gillis Falls in the near future would likely be permitted if it was accomplished by surface water withdrawal without construction of an instream dam. It is likely that withdrawals would be limited/restricted under stream lowflow conditions to protect aquatic life. Interestingly, the current healthy condition of Gillis Falls is attributable to county efforts to establish/protect it as a drinking water source. Future use of it for this purpose in a manner that adequately protects instream flows for aquatic life could contribute to efforts by government to protect the overall health of this stream.

NATURAL RESOURCES POLICY SUMMARY

Increased awareness of the effects of development on the environment has led to additional environmental legislation at the State and local levels. The *1992 Maryland Economic Growth Resource Protection and Planning Act*, the *1991 Forest Conservation Act* and the *1997 Smart Growth Legislation* will significantly affect the planning policies of the Town. Mount Airy's reliance on groundwater for the Town's water system will require comprehensive groundwater management as the Town grows.

CHAPTER THREE
MAJOR GOALS & IMPLEMENTATION STRATEGIES

GOAL 1: Protect and maintain the natural and environmental resources in the Town of Mount Airy.

IMPLEMENTATION STRATEGIES:

- Maintain and enhance water quality in streams, groundwater, wetlands, and reservoirs.
- Require buffer plantings where no vegetation exists around streams, wellheads, wetlands, and reservoirs to protect water from development
- Discourage disturbance to natural vegetation within stream buffers including tree removal, shrub removal, clearing, burning, or grubbing

GOAL 2: Reduce the adverse effects of development on environmental resources and sensitive areas.

IMPLEMENTATION STRATEGIES:

- Review existing zoning regulations to determine if flexibility exists with setbacks in the event development plans conflict with parcels with substantial environmental resource areas.
- Evaluate development proposals in relation to unique natural features of parcels over strict conformity with the zoning regulations and develop the necessary planning tools that are needed to protect sensitive areas.
- Develop regulations to incorporate green building technology standards and site development options to allow alternatives to environmentally invasive construction practices.
- Review existing landscaping regulations to determine sufficient to provide the appropriate screening and buffering while taking into account the protection of environmental resources.

GOAL 3: Identify the location of environmental resource areas in order to improve their protection.

IMPLEMENTATION STRATEGY:

- Coordinate with both Carroll and Frederick County to develop Town GIS capabilities to be utilized as a source for environmental mapping.

GOAL 4: Assure the quality and quantity of community groundwater supplies through wellhead protection measures.

IMPLEMENTATION STRATEGIES:

- Monitor Wastewater Treatment Plant Capacity as it related to new water source development
- Continue to participate in Hazard Mitigation Plans for both Frederick and Carroll Counties
- To facilitate goals of Forest Conservation Act, continue to identify priority forestation area in the Town and make available appropriate and additional public property for off-site forestation
- Establish Performance Standards for Industrial/Heavy Commercial Uses to address water supply protection.

GOAL 5: Update the current Wellhead Protection Ordinance to increase the buffer zone directly around the Town wellheads to 325 feet and reflect existing critical watershed areas.

GOAL 6: Amend the current Responsibility of Developers Ordinance to require that high-density residential, commercial and industrial developments must pay the well exploration fee or prove that a proposed on-site well will not be subject to contamination from the anticipated use of the development site.