Natural Environment

This section of the Clinton-Buffalo Townships multi-municipal comprehensive plan will examine the natural environment within the two (2) townships. It will include the physical geography, hydrology and brief assessment of biological resources. Understanding these aspects of the Townships is an important foundation of intelligent land use planning. As a key part of this Comprehensive Plan, the Butler County Planning Commission digitized property line maps of both Townships, and working with environmental data from a variety of sources, developed a Geographic Information System (GIS). GIS allows information about natural conditions to be graphically presented and compared to development trends and infrastructure. This helps local officials make sound decisions.

Topography: Topography is formed by a variety of conditions. Basically, a combination of plate tectonics, prehistoric glaciers and erosion create plains, hills and valleys. In Butler County, the upper northwest portion of the County was covered by massive glaciers during the last "ice age." As these glaciers advanced and receded, they flattened the landscape. This glaciation did not occur in southeastern Butler County, so there is more topographic variation in Clinton and Buffalo Townships.

Some of the steepest slopes in the two (2) Townships can be found in the Buffalo Creek and Little Buffalo Creek valleys. These swift changes in topography have created some areas which would be dangerous and expensive to develop, but which provide some outstanding views for Township residents and visitors. In Clinton Township, the most significant slope areas are in the extreme northwestern portion of Clinton Township, and the southern third of the Township.

The two (2) attached maps illustrate both the general topography of the Township and the presence of steep slope areas (defined as 24% or greater slope change or greater than 24' in elevation change over 100 lineal feet) as calculated by the Southwest Pennsylvania Commission (SPC). There are areas where topography limits development significantly, misuse of steep slope areas can cause greater erosion and sedimentation, flooding, and even mudslides.

Natural Resources: Like most of Western Pennsylvania, Clinton and Buffalo Townships are rich in natural resources. The most notable of these from a land use planning vantage are soils, forest resources, and economically important minerals. Soils which are important due to their economic value for agricultural soil units have been mapped by the United States Department of Agriculture, Soil Conservation Service. These prime agricultural soils are illustrated on the attached map. Often because these soil types are free of slope constraints or wetlands, and are already cleared of trees, they are the most attractive sites to development. However, due to major statewide losses of high quality farmland to development, this creates a number of concerns relative to future food production, conservation, and even homeland security.

Both Buffalo and Clinton Townships have small pockets of prime farmland soils throughout their boundaries. There is, however, a discernable "belt" of prime farmland soils running from the Buffalo/Winfield line at Monroe Road in an arc to Cherry Valley Road in southern Clinton Township.

Where soils are not developed or farmed, they are typically covered by trees. A few years ago, the Pennsylvania Department of Conservation and Natural Resources estimated the total value of all standing timber in Butler County at $159 million dollars. Based upon this estimate, the value of standing timber in Clinton and Buffalo Townships might be $4-5 million. This would represent perhaps a very conservative estimate of perhaps $300 worth of timber per forested acre.

There are also subsurface minerals of economic importance. The entirety of both Townships is underlain by high-calcium Vanport Limestone. However, it is over one hundred feet (100') below the surface so it has not been mined within either Township. There is an underground limestone mine in neighboring Winfield Township. There has been sandstone mining for aggregate. There are possible recoverable natural gas resources. Favorability of recovery is moderate, except in the lower southeastern section of Buffalo Township where it is less favorable. Some shallow gas extraction has occurred in the area.

The most important local mineral has historically been coal. The two Townships sit near the center of Pennsylvania's main bituminous field. In spite of extensive mining, significant coal resources remain.

Water Resources: Water resources include both surface water resources and groundwater. Average annual precipitation is 40.5 inches per year at Saxonburg, and 39.8 inches at Freeport. These both exceed the national average of 38.6 inches per annum. This much rain results in about thirty million gallons of water per acre, per year. If this rain and snow fall on forest land, about seventy percent (70%) of it seeps into the ground and thirty percent (30%) runs on the ground into streams. In rapidly developing communities, this water can result in two (2) kinds of problems, flood and loss of aquifers.

Development increases the impervious surfaces of the ground. Thus, instead of seventy percent (70%) of rainfall slowly percolating through the trees into the ground, one hundred percent (100%) of it runs off rooftops and pavement into streams. The near term result of this is flooding. Localized flooding can happen anywhere without proper planning for stormwater runoff. However, it is most predictable to happen along stream banks and delineated floodplains, which are depicted on the map.

Ironically, this flooding can also cause long term water shortages, especially where residents rely upon on-lot wells for water. A typical household can use 146,000 gallons per year. If aquifer recharge areas are too small, and the number of homes too dense (raising withdrawal too high per acre) the result is inadequate water supply. This scenario has actually plagued other Butler County communities.

Water quality can be as important as the quantity of water. Contaminants are classified as either point or non-point sources. Point sources would be pollutants that can be ascribed to a definite source. Non-point sources can come from many sources. Obviously, point sources can be easier to control. The most famous local instance of point source pollution is the Hranica Landfill site, located in Southern Buffalo Township. The site had 19,000 + drums of solvents and metal or liquid wastes, and many had leaked into groundwater supplies. In 1983, the U.S. Environmental Protection Agency (EPA) added this to the National Priorities List (popularly known as the Superfund list). Expensive and complicated cleanup of the site began in the early 1990's. By 1997, the site was removed from the National Priorities List. Water well monitoring has revealed no human health risks. The last follow-up analysis of the site by EPA was in 2002. The groundwater contaminants at this point still represented no public health risk. However, at this time EPA did require deed covenants to be filed in order to prevent residential use of the

fourteen (14) acre site. There were similar, less famous sites in Clinton Township as well. The former Fawn Mine site has been monitored for years, but did not contaminate groundwater. During the 1990's USX Corporation removed 675,000 tons of contaminated soil from the Victory Road site, cleaning the former sintering plant location for new uses.

There are at present no major known sources of point source pollution in the Township. There are some potential areas of acid mine drainage which could affect water quality of streams and subsurface wells. However, as an agricultural area which is rapidly developing, there is also a threat to water quality from pesticide runoff, sedimentation, and contaminants within stormwater runoff.

Non-point source pollutants (even sediment from erosion, which destroys oxygen) are a particular danger to High Water Quality Streams, which are actually defined and codified in Pennsylvania through the Clean Streams Act. High Water Quality Streams in the planning area include the Buffalo Creek, which is a high quality cold water fishery, and a portion of both Buffalo Creek and Little Buffalo Creek, which has been classified as a high quality, trout stocking fishery.

Watersheds: The land areas which streams drain into are known as watersheds. The two Townships are divided into three (3) major watershed groupings and ten (10) small or minor watershed groupings. From a land use planning vantage, what is most important is the relationship between current and future development and water quality in the interrelated watersheds. In Clinton Township, the last major residential development and some light industrial development have occurred within the Sarver Run watershed, which flows into Buffalo Creek. Most development in Buffalo Township has occurred within the Little Buffalo Creek watershed, which also is a part of the Buffalo Creek major watershed. As previously mentioned, this is a high quality watershed. Some major development has also occurred in the Davis Run watershed in Clinton Township, which flows westward into the Slippery Rock/Connoquenessing systems.

Natural Diversity Inventory: Certain landscapes and areas of good water quality can create conditions favorable for the survival of rare, threatened, or endangered plant species. Other areas maintain wide varieties of plant and animal species. In an attempt to document such areas as a first step in a planning process, the Western Pennsylvania Conservancy completed the

Butler County Natural Heritage Inventory in 1991. The inventory identified sites of moderate or high natural diversity significance by the United States Geographic Survey (USGS) quadrangle. According to the inventory, no areas of moderate or high significance appear within Clinton Township. In Buffalo Township, the entire Buffalo basin has been deemed an area of moderate significance. As the inventory states, "In this part of the County, portions of Buffalo Creek, Little Buffalo Creek, and the land surrounding the two streams forms a large landscape conservation site referred to as the Buffalo Basin Conservation Area... The significance of this site lies in the open space that it provides along the two (2) streams for flora and fauna habitat, and for recreation purposes." Both Buffalo Creek and the Little Buffalo Creek are considered high water quality streams, as mentioned under Water Resources.