

Issues For Spring Creek

GROWTH & CHANGE

The Bellefonte - State College Metropolitan Area

The watershed of Spring Creek has been changing rapidly over the past four decades and will continue to change into the twenty-first century. Since 1945 the growth of The Pennsylvania State University, fueled by the G.I. Education Bill and other programs, has propelled the region's growth. Today, with modern highways and telecommunications systems linking central Pennsylvania to the world, the rate of population growth in the Bellefonte - State College area surpasses that of the university. Burgeoning subdivisions, new commercial centers, improved highways, and a thriving information based economy are geographically and socially uniting the once separate rural villages and townships with State College and Bellefonte, creating one vibrant metropolitan area. It has been suggested that it could become the third largest city in Pennsylvania by the year 2020.

Growth and change bring new challenges to the region. Many of the values which make our community an attractive place to live and work - open space, scenic beauty, clean air and water, recreational opportunities - are threatened by our increased population and the demands we make upon the land and waters. Comparing the urbanized portions of the Spring Creek watershed in 1973 with areas urbanized and proposed for development in 1993 is a graphic way to see

how much the watershed has changed in twenty years. However, the extensive publicly owned open space which still remains in the heart of this growing metropolitan area illustrates the significant opportunity we have to conserve the quality of this environment as we continue to grow and change.



WATER QUALITY

Water Management

The aquatic life of Spring Creek depends directly upon the quantity and quality of the waters that flow between its banks. Nourished especially by the cold, pure ground water which flows from the limestone bedrock to the creek through the many springs which give the stream its name, Spring Creek has been recently recognized as a high quality, cold water fishery by the State of Pennsylvania, a regulatory status which protects it from degradation. However, people and trout depend upon this same limited resource - the clean, pure waters of Spring Creek and its associated ground water aquifers. The

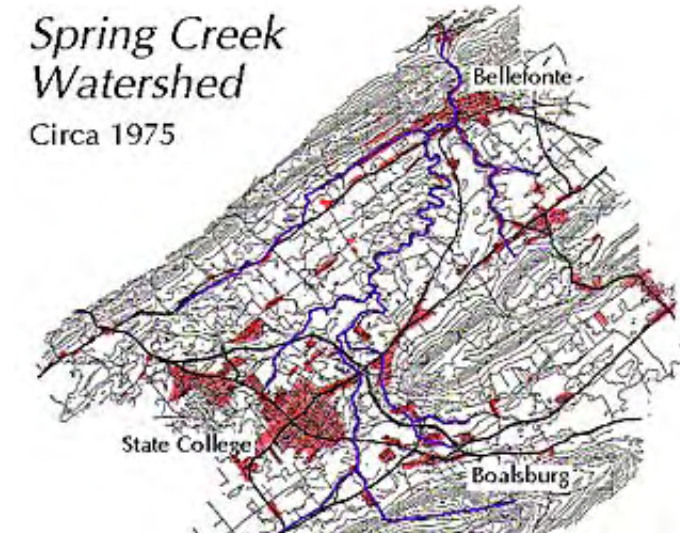
human community's need for potable water, currently extracted through municipal and private wells, must be balanced with the needs of Spring Creek's aquatic ecosystem. The necessary activities of treating and discharging our waste water must also be planned and implemented so as not to diminish the health and vitality of Spring Creek. Sufficient water for both people and wild trout can be provided - if we weigh the value of a healthy environment in the balance of our community's plans for water and waste water facilities growth and development.

Runoff and Recharge

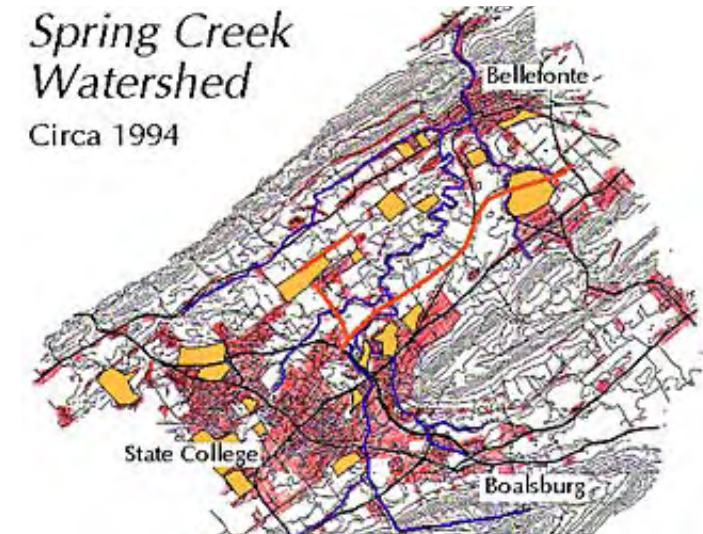
As our metropolitan region grows we increase the portion of Spring Creek's water shed which is covered by the impervious surfaces necessary for modern urban life. More people means more houses and schools and stores, all of which are covered by roofs hopefully impervious to water. Roads, streets, sidewalks, and parking lots also shed storm water. Ultimately much of the rainfall and other precipitation which once soaked into the soil to recharge the ground water aquifers is now wastefully discharged to the flood swollen



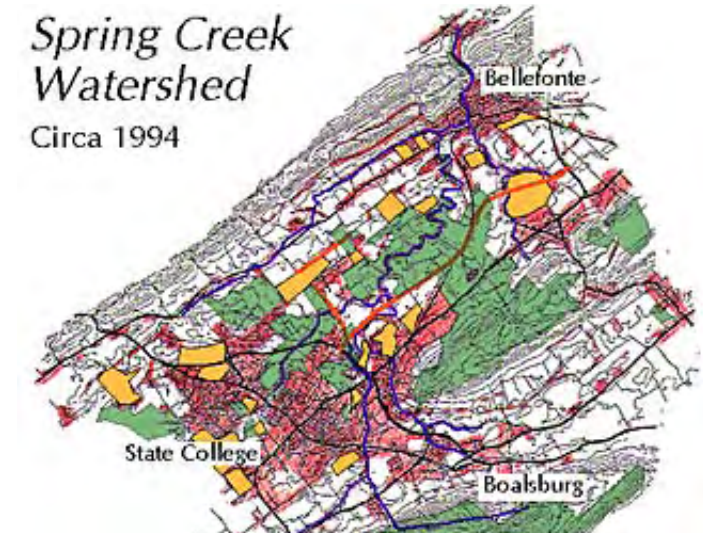
Spring Creek Watershed
Circa 1975



Spring Creek Watershed
Circa 1994



Spring Creek Watershed
Circa 1994





creek via drains and storm sewers. This storm water runoff also carries some of the most significant non-point source pollutants of Spring Creek in the form of sediments and other compounds rinsed from roads and parking areas and fertilizers and pesticides washed from lawns, gardens, and golf courses. Runoff from agricultural areas also pollutes the creek with eroded soil, nutrients, and pesticides. Increased runoff and storm water discharges also disturb the natural hydrology of Spring Creek causing higher peak flows and more destructive floods, and decrease the recharge of ground water aquifers which would otherwise nourish the stream during low flow periods through its cold pure springs. To protect Spring Creek our community must manage storm water with innovative strategies aimed at reducing runoff, reducing non-point source pollution, and increasing safe ground water recharge.

Point Source Pollution

Great progress has been made in the past twenty-five years in controlling point source pollution, that is chemical or organic waste directly discharged to the stream by pipes or other connections. Though Spring Creek has suffered devastating influxes of pesticides, chemicals, and sewage in the distant and recent past - the residues of which still may pose hazards buried in the stream's sediments - point source pollution is today highly regulated by law and controlled by responsible industries and public and private waste water treatment facilities. Today there are new issues such as that of thermal pollu-

tion of Spring Creek's high quality cold water habitats, which will require new and innovative solutions in waste water treatment. And there are still point source pollution risks such as accidental spills from industrial or waste treatment operations, and ground water pollution threats from leaking storage tanks or careless dumping of hazardous materials which could endanger the safety of the entire community's water supply. Awareness of the vulnerability of our region's water resources should prompt community wide vigilance to prevent accidents, effective emergency response programs, and prohibitions against inappropriate land use in critical



watershed or ground water recharge areas.

Riparian Zone Management

The condition of Spring Creek's riparian zone - it's stream banks, flood plains, and other directly adjacent lands - is of primary importance to the quality of the water and aquatic habitats of the stream. Stream banks without natural vegetation erode severely, choking down stream habitats with sediment. Bare stream banks also allow the sun to warm the stream's tem-



perature beyond the tolerance of the trout during the vulnerable low flow, late summer period. Cultivated flood plains or adjacent lands allow agricultural chemicals and eroded soil to enter the stream and degrade aquatic habitats. Urbanized flood plains shed contaminated storm water runoff directly into the stream. Even the ubiquitous and beloved turf grass landscapes of our lawns and golf courses, when located in Spring Creek's riparian zone, directly pollute the stream with fertilizer and pesticide laden runoff. And riparian zone habitats are of the greatest value to birds and other wildlife species.



Management of Spring Creek's riparian zone, on private as well as publicly owned land, will be a very significant determinate of the stream's continuing health and vitality.

LOSS OF NATURAL HABITATS

Exceptional Quality and Variety
The Spring Creek watershed has been endowed with an extraordinary variety of natural environments which support a diverse range of biotic communities. These natural communities of plants and animals are exceptional in their qualities and many

are notable for their rarity in Pennsylvania, and sometimes in the world. The Natural Heritage Inventory of Centre County, conducted by the ClearWater Conservancy in cooperation with the Western Pennsylvania Conservancy, identified, located, and ranked the rare, endangered, and special species and natural communities of the county in 1990. Many of the most important sites are located in the Spring Creek watershed and areas currently undergoing change and development. From globally rare species of invertebrates to natural communities such as those of the calcareous fens, or marshes, to the dry forests of the limestone cliffs, the natural habitats of Spring Creek make a significant contribution to the biological diversity of our region and the state. To find such natural diversity and heritage in the midst of our rapidly growing community is a blessing which also challenges our stewardship of this remarkable endowment.

Habitat Fragmentation and the Loss of Biological Diversity
The most important issue in the protection of this extraordinary natural heritage is the incremental destruction and fragmentation



of Spring Creek's natural habitats by encroaching urban development. As our community grows we inevitably remove trees, hedgerows, meadows, and other natural vegetation. Though any one action may not seem to destroy a significant portion of our natural habitats, hundreds or thousands of decisions to remove a tree here, or pave an area there have their aggregate, deleterious impacts upon our natural heritage. Natural habitats, once contiguous, are broken into separate



fragments, or islands of nature, in a matrix of urbanized and people dominated landscapes. Isolated from one another, these fragments of nature begin to decline. Small





fragments of natural habitats with limited animal populations often lack a sufficient number of individuals to maintain healthy reproduction of a species. Many wildlife species, such as forest dwelling migratory songbirds, require large contiguous areas of appropriate habitat and so are excluded by habitat fragmentation. Vulnerable to predation and to invasion by weedy non-native species, isolated natural habitats inevitably lose the biological diversity of their native communities of plants and animals. Protecting natural areas and enhancing their connectivity to one another are the means by which we can preserve our natural heritage for future generations.

QUALITY OF LIFE

Open Space and Other Resources
In the Bellefonte - State College area we are fortunate to have substantial areas of open space in and around the densely populated urban core of our community. This open space - on both public and privately owned lands - also contributes to the quality of life in our area. Open spaces are used extensively for recreation and pleasure and their scenic beauty provides emotional and visual relief from urban congestion and stress. As we grow and change however, it will be at the expense of that open space. In the future there will be more urban development, less open space, and more people competing to use that diminished resource. The same is true of other environmental resources which make the quality of life in our region so exceptional, such as clean water and

clean air. Though today our clean and healthy environment is universally enjoyed and seldom considered, unless we value the quality of our open space and natural resources, and thoughtfully plan for their conservation, there is no guarantee that they will be available to contribute to the quality of life in the



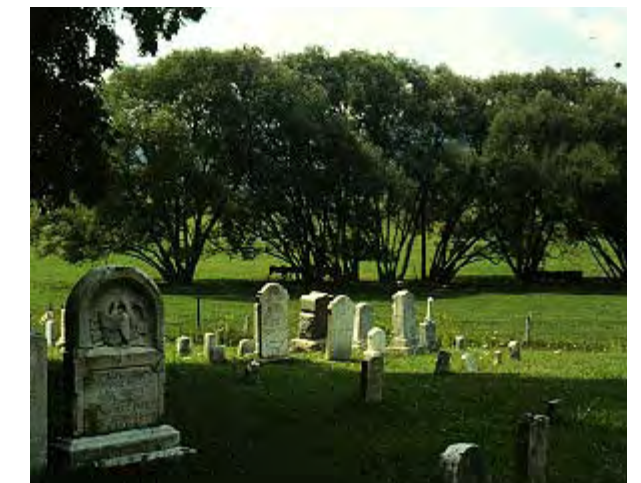
future.

Regional Identity and Attractiveness
Our healthy environment - its open space, scenic beauty, natural diversity and historic character, and opportunities for outdoor recreation - constitute an essential part of our region's identity and the quality of life we enjoy in the Bellefonte - State College metropolitan area. When those from outside this region think of our area, their mental images include our forested mountain slopes, abundant wildlife, picturesque valley farms, free flowing streams, and historic character. These and other elements of our environment - often taken for granted by residents - are among our most significant assets in attracting people to live and work in our community.

We cannot compete with other locales for jobs and residents, remain a growing community with a vibrant economy, without protecting and conserving our air, land, and water. The quality of life here, an irreplaceable asset, depends upon the beauty, environmental health and character of the region.

HISTORIC RESOURCES

Much of the early settlement of the region occurred on or close to Spring Creek and its tributaries. The creeks were a valuable resource to the late eighteenth century settlers who cleared the valley forest and established the iron industry that prospered throughout the eighteenth century and the agriculture that remains viable today in many parts of the region. Water was essential as a source of power for the iron forges, grist mills and a variety of other industries. It was a means of transportation and a source of pure drinking water. The towns and villages that grew next to the creek remain today as evidence of that initial era of our regions history.





Protection and preservation of those resources, both architecture and landscape, existing and archeological, is essential to the cultural heritage of the region.

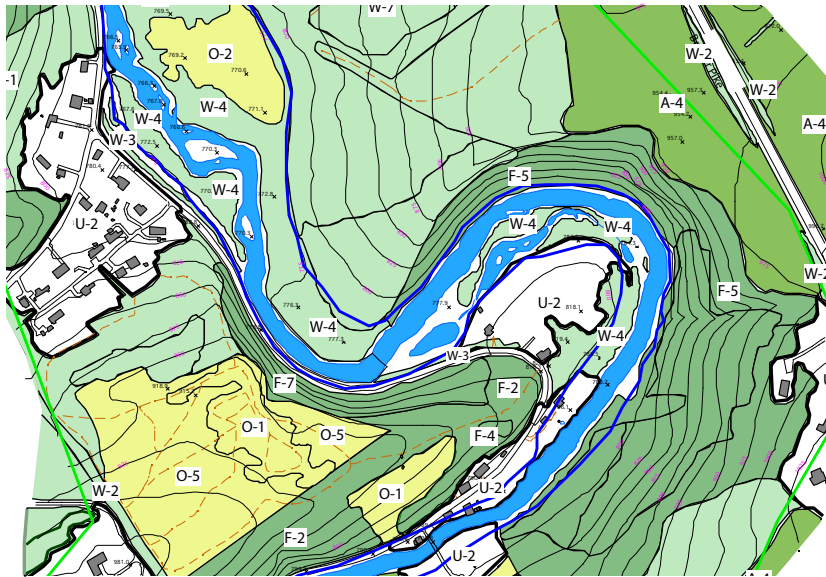
FRAGMENTATION OF AUTHORITY

Many Participants; No Process or Regional Authority

A listing (in red) of some of the municipal, regional, county, state, interstate, and federal authorities and regulatory agencies whose actions have a direct impact upon the land and waters of the Spring Creek watershed reveal a bewildering number of participants, over lapping jurisdictions, and most disappointing, the lack of a rational decision making process for determining the use and conservation of our essential environmental resources. While there are many complex and critical issues regarding conservation and growth in our region which the community as a whole should discuss, there is no cogent process for the facts to be determined and public will to be expressed. And even if there was a way for the community to publicly debate these issues, there would still be no regional authority capable of acting in the public interest for the conservation of Spring Creek. Land use, water supply and protection, waste water treatment, natural resource conservation, recreation planning - these and other decisions are often arrived at in piecemeal fashion by narrowly focused local and external agencies. The important work of maintaining a healthy environment as we foster growth and development often sadly fails.



Boggs Township, Borough of Milesburg and its Water Authority, Spring Township, Borough of Bellefonte, and its Water and Sewer Authorities Benner Township, College Township, Patton Township, Half Moon Township, Ferguson Township, Harris Township, Potter Township, Borough of State College, State College Borough Water Authority, University Area Joint Authority, Centre Regional Council of Governments, Centre County, The Pennsylvania State University, Pennsylvania Department of Environmental Resources, Pennsylvania Game Commission, Pennsylvania Fish and Boat Commission, Pennsylvania Museum and Historic Commission, Pennsylvania Department of Transportation, Susquehanna River Basin Authority, United States Environmental Protection Agency, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, U.S. Department of Transportation, and others.



Study Description

STUDY PROCESS

Inventory

One focus of this phase of the Spring Creek Corridor Study was the establishment of a comprehensive inventory of the natural, historic, scenic, and cultural attributes of the corridor (an area 2,000 feet on either side of the stream).

To begin this process, in cooperation with the Centre Regional Planning Commission and support from the Pennsylvania Fish and Boat Commission, a low level aerial photographic survey of Spring Creek was completed in January 1992. The aerial survey was the first completed of Spring Creek and provided both a detailed photographic record of the corridor and accurate topographic and planimetric data. The data was digitally converted into CAD (computer assisted design) maps of the nearly forty miles of corridor studied. Due to the extensive nature of the watershed, the study was limited to a corridor that follows the main stem of Spring Creek from Boalsburg to Milesburg and the tributaries of Cedar Run, Slab Cabin Run downstream of its confluence with Roaring Run, Roaring Run, and Big Hollow as representatives of the varied conditions that exist within the watershed. The tributaries of Buffalo Run and Logan Branch are important, but were not included due to the limitations of the study. For the purposes of the study the corridor was divided into fourteen sections. All publicly accessible lands in the corridor were field surveyed and visited several times by members of the study team. Additional data was col-

lected from local and state agencies, governmental authorities, previous scientific and other studies of Spring Creek, and historical maps and other records. The information was organized in a set of maps for each corridor section described in detail below. A sample of the inventory maps for one of the fourteen sections is included in the Appendix.

Analysis and Recommendations

Once data on the Spring Creek corridor had been collected and recorded on the inventory maps, the study team sifted and evaluated the information, consulted with recognized experts, and suggested a set of issues and opportunities to be considered for each of the fourteen corridor sections. As conditions along the corridor are very diverse, ranging from the relatively undisturbed mountain headwaters tributary of Roaring Run to the urbanized corridor through historic Bellefonte, each section of the corridor had to be carefully and individually considered. Following this analysis a set of conceptual recommendations was developed for each corridor section describing, brief, and broadly, actions which could be considered by the community in order to address the issues and take advantage of the opportunities presented along the Spring Creek corridor.

Both the analysis and conceptual recommendations for each of the fourteen section of the corridor are displayed on a single map of study conclusions. A graphically reduced set of the conclusions maps are included in the Appendix.

SPRING CREEK CORRIDOR STUDY MAPS

The inventory information and conclusions developed for the Spring Creek Corridor Study have been recorded on a set of maps at various graphic scales. Each of the fourteen corridor sections is represented by four inventory and one conclusions map, additional maps of the Spring Creek watershed were also developed. Over seventy-five detailed maps of the corridor and watershed were produced as the primary record of this study.

- Corridor Inventory Maps:
 Ecology Maps - Vegetation and Surface Hydrology Maps
 History Maps
 Property Ownership Maps
 Land Use and Zoning Maps

- Corridor Conclusions Maps:
 Analysis Maps
 Recommendation Maps

The ClearWater Conservancy has made these maps available to the local governments, planning agencies, and the public as part of its service to the community.