

1.0 Project Area Characteristics

1.1 Plan Purpose

“Cherry Valley” is widely recognized in the greater region as a unique and special place, a place that is rich in scenery and which harbors a vast array of native species of special concern. The aesthetically pleasing bucolic landscapes and country roads provide an especially appropriate backdrop to the area’s rich history that is further revealed through unique and distinct landforms, all of which provide a very attractive place to live that is additionally complemented by close proximity to urban amenities just outside of the valley and easy transportation access to major metropolitan areas. However, given the strong growth pressures in the region, these qualities are being threatened by a sprawl development pattern that serves to degrade the bucolic environment and natural resources. Much of Monroe County’s past development growth occurred without enough consideration of its impact on both the quality and quantity of surface and groundwater of the watershed. As rooftops, parking lots and streets spread across the landscape, replacing forests and fields, streams suffer. Rain and snowmelt run rapidly off these man-made surfaces instead of soaking into the ground. This stormwater runoff carries sediment and pollutants into the streams, accelerates stream-bank erosion, and raises stream temperatures. Because of future development and planning we need to take watershed protection into consideration.

In terms of its regional setting Cherry Valley and Cherry Creek are located between two major gaps in the regionally significant Kittatinny Ridge (also known as the Blue Mountain). The Delaware Water Gap, a world renowned natural feature, is located at the confluence of Cherry Creek with the Delaware River. The headwaters area of Cherry Creek lies northwest of Wind Gap, a significant break in the ridge that has been used advantageously by transportation corridors both historical and present day.

Cherry Valley is therefore at a critical juncture in time if it is to preserve and enhance its special distinction. The Cherry Creek watershed area essentially defines Cherry Valley and can therefore be considered one and the same. The planning area for this conservation plan is the Cherry Creek watershed area with the addition of two small adjacent watersheds near the confluence that drain directly into the Delaware River but fall essentially in the same valley construct.

The purpose of the Cherry Creek Watershed Conservation Plan is to create a conservation plan to help guide and prioritize conservation actions in the Cherry Creek watershed. This document will also be used to petition the Commonwealth to have the Cherry Creek put on the Pennsylvania Rivers Conservation Registry. After obtaining this status, the Cherry Creek watershed will be eligible for matching funds for the implementation of projects that are directly related to the actions and strategies identified in this plan. Thus, municipalities, the County, the conservation district, and non-profit conservation groups will be able to leverage funds for these purposes.

Ultimately the plan is a means to assemble and focus planning efforts on a watershed-wide basis and identify specific water-related conservation and restoration projects. While much inventory information was gathered and collected from prior related plans and studies, other information was obtained through meetings with the public and watershed partners regarding significant resources within the watershed. The identification of watershed-specific problems, issues, concerns, and constraints was a major focus of the public involvement process performed in developing the plan.

1.2 Planning Process

The plan was produced with financial assistance obtained under the *Rivers Conservation Program* administered by the Pennsylvania Department of Conservation and Natural Resources (DCNR), and matching funds and in-kind services from the many partners acknowledged herein. The Brodhead Watershed Association (BWA) has spearheaded the development of the plan. BWA was formed in 1989 as a non-profit, non-governmental, educational organization. BWA was awarded a DCNR Rivers Conservation Planning Grant and on March 25, 1999 and signed a contract with DCNR to develop the Brodhead Watershed Conservation Plan, which was finalized in January 2002. At the completion of the Brodhead Watershed Conservation Plan the BWA received \$17,000 in funding via the Department of Environmental Protection's first round of Pennsylvania's Growing Greener grants and annexed the Cherry Creek Watershed as a Sub-Association of the BWA. The overall conservation goals established in the Brodhead Watershed by the BWA are identical to the Cherry Creek Watershed: to protect and improve water quality and the environment.

A Steering Committee composed of a broad spectrum of watershed partners and stakeholders, including local, regional and federal representatives, riparian landowners, and members of the public at large, provided advice and assistance throughout the development of the plan and served to underpin the planning process. These partners have worked diligently to produce this conservation plan. Their commitment to preserving and protecting the watershed bolsters the plan.

During the implementation phase of this plan, BWA will encourage municipalities, non-profit groups, and other appropriate grantee organizations to apply for funding to implement the strategies and actions included in this conservation plan. Implementation projects will bring this document to life. The BWA and its partners are committed to supporting local communities in the watershed as they begin to implement this plan. Also, BWA will continue to partner with other organizations, entities, and government agencies to assist in the implementation of the recommendations herein.

The Friends of Cherry Valley (FCV) is a non-profit organization that evolved during the planning process. The Brodhead Watershed Association and the Friends of Cherry Valley work cooperatively for the benefit of all Monroe County residents, generally, and the residents of the Cherry Valley area, specifically.

The Brodhead Watershed Association, through its Cherry Creek sub-association, provides leadership and coordination for a monthly stream monitoring program, an annual fecal coliform testing protocol and a variety of stewardship activities designed to heighten interest in an awareness of water quality and quantity issues.

Friends of Cherry Valley initiate and support conservation of the region's scenic beauty, wildlife, ecological and environmental resources, and rural character. FCV are currently pursuing the creation of a United States Fish and Wildlife "Greater Cherry Valley Wildlife Refuge" through community support and legislative action.

The two groups join in the continuing effort to help assist municipalities, residents, businesses and a variety of groups with protecting the area's natural resources through education, public programs, stream monitoring and baseline data collection and stream improvements and cleanups.

The planning process followed a four step process as outlined in DCNR's guidelines:

Step 1 – Determine Initial Public Interest:

This step first involved organizing a steering committee (advisory group) and developing a detailed scope of work with a proposed time line. It then focused on public meetings aimed at informing the general public and soliciting local volunteers to help conduct a stream walk inventory. Information obtained through the public involvement helped guide Step 2 efforts.

Step 2 – Collect and Analyze Resource Data

This step involved determining the physical, natural and cultural resources relating to surface water and ascertaining the status of resource information that is available and that was gathered for the project. Information was gathered by: in-kind services, donated professional services, volunteer efforts and by contracted services. The resources were then analyzed as they relate to issues, concerns or problems and in light of present and future conditions in the watershed.

Step 3 – Prepare Draft Watershed (River) Conservation Plan

The third step entailed preparation of a draft plan that provides background information, a map of the planning area, zoning and land use patterns, an inventory of resources gathered, an analysis of the appropriate resources and a listing of issues, concerns, opportunities and threats to the watershed values. Management options are put forth in the plan to address/solve the issues, opportunities and concerns and promote resource awareness and stewardship. Implementation, acquisition and development actions are listed with a proposed time frame, lead agency or contact person to undertake the activity. A public meeting was held to present the draft plan to the stakeholders and general citizenry with a 30 day period for review and comment.

Step 4 – Prepare Final Watershed (River) Conservation Plan

Step four will conclude with a record of the Public Meeting on the Draft Plan and settlement of substantive comments received on the Draft Plan and a final public meeting to explain the Plan features. Resolutions of support for the Final Plan will then be sought from the municipalities involved.

1.3 Prior/Ongoing Studies & Initiatives

Although relatively small in area the Cherry Creek watershed area has been studied in whole or in part by many recent and ongoing planning studies and initiatives. In general, prior studies and on-going initiatives point to the unique and special character of the watershed and its resources. Although the majority of Cherry Creek is currently listed as a High Quality Coldwater Fishery according to the PA Department of Environmental Resources, there are existing problems and threats to maintaining this state. The case for protection of the Cherry Creek Watershed is therefore apparent. Major challenges known in the watershed at the start of the planning process include the following:

- ***Water Quality and Quantity*** – Although water quality is generally excellent in most areas, development should be managed so watershed residents and visitors will have sufficient clean water for in-stream aquatic life, for human consumption, and continued wetland function. In order to accomplish this goal, on-lot septic systems will need to be maintained in proper working order so that wastewater does not degrade surface or groundwater. In addition, the impacts from both point and non-point sources of pollution will need to be mitigated.
- ***Stormwater and Flood Control*** – Uncontrolled stormwater runoff degrades streams in the Cherry Creek watershed by carrying pollutants, including sediment, to streams and by eroding streambanks causing more sediment to be washed into streams. Uncontrolled stormwater is also lost as a potential resource for recharge of groundwater. Stormwater runoff should be managed to decrease stream pollution (especially sedimentation) and maintain groundwater recharge. Although municipal ordinances do require stormwater management for new developments, they do not require control or treatment of pollutants that stormwater carries, nor do they encourage or require infiltration systems which use stormwater to recharge groundwater. The adoption of Best Management Practices (BMPs) would address these concerns, but only if municipalities adopt, and vigorously enforce, ordinances to implement these practices. The impact of runoff from existing development is not currently being addressed comprehensively in the watershed. Wetlands play a vital role in storing, treating and slowly releasing stormwater and are not adequately protected from filling or other encroachments. The potential exists for development of high-risk areas such as floodplains, wetlands, and steep slopes in the watershed which would lead to further increases in stormwater runoff.

- **Watershed Protection and Land Conservation** – The growing interest by municipal officials in using “*Growing Greener*” and “*Growing Smarter*” techniques such as “*Conservation Subdivision Design*” to manage future land development is encouraging, but more needs to be done to ensure that effective land-use ordinances are implemented throughout the entire watershed. This kind of planned growth recognizes the connections between land use and water resources and attempts to minimize impacts of development on the land and water resources of the Cherry Creek watershed. Such planned or “smart” growth will help protect land and water habitat for diverse species of flora and fauna. Ongoing county and regional open space planning efforts are beginning to incorporate land protection and connections with riparian areas, both to provide public access to streams in some areas and to protect those riparian areas from development. Special consideration should be given to the protection of species and natural communities of concern in the watershed.
- **Recreation** – Rapid growth in Monroe County has created a demand for increased recreational areas. More and affordable recreational opportunities are needed near where people live. While active recreational sites such as ball fields are not profuse in the valley, informal recreational opportunities including environmental education, nature trails, and bike and scenic driving tour routes are abundant in the Cherry Creek watershed and should be expanded. The watershed also has an abundance of historical and cultural resources, most of which are not well documented or protected. There is growing public support in establishing a watershed wide system of greenways and trails, which would also help further the recreation opportunities.
- **Economic Development** – Watershed residents favor economic development of a form that sustains local economies while maintaining the health and quality of natural systems. A principal economic development goal of the Monroe County Comprehensive Plan (Monroe 2020) is to “conserve the environmental quality that is the County’s principal attraction for visitors and residents alike (p. 100).” The Cherry Creek Watershed Conservation Plan is complementary to the Monroe 2020 planning effort and assumes that appropriate economic development and maintaining environmental quality go hand in hand.

The Cherry Valley hosts a variety of commercial enterprises that are complementary to the valley’s unique qualities including:

- Cherry Valley Vineyards
- Cherry Valley Apiary
- Cherry Valley Trout Hatchery
- Cherry Valley Tree Nursery
- The "world's largest" boomerang production facility
- Kirkridge Retreat Center
- Eagle Rest Tree Plantation
- Water supply wells and reservoirs
- A health care center

- Small active farms such as the “Blakeslee Farm”
 - Several equestrian facilities
 - Several resorts, camps, and golf courses
 - Eye Glass Factory (in old water wheel building)
- ***Eighty (80) Species and Natural Communities of Concern*** - Within the last few years scientists and naturalists have found and documented an extraordinary number of species and natural communities of concern in the greater Cherry Valley area including:
 - Three (3) Federal Threatened Species
 - Nine (9) PA Endangered Species
 - Seven (7) PA Threatened Species
 - Three (3) PA Rare Species
 - Two (2) species suspected of decline in PA
 - One (1) national Critically Endangered Ecosystem
 - One (1) national Endangered Ecosystem
 - One (1) national Threatened Ecosystem
 - Three (3) PA Special Concern Natural Communities
 - Three (3) US Fish and Wildlife Service Aquatic Species of Special Concern
 - Twenty-Three (23) US Fish and Wildlife Service Non-game Species of Management Concern
 - Eight (8) North America Wetland Conservation Act Priority Waterfowl Species
 - Sixteen (16) US Fish and Wildlife Service Bird Species of Regional Concern
- ***The Kittatinny Flyway*** – Labeled by The Audubon Society, as an *Important Bird Area (I.B.A)*, the Kittatinny Ridge is the premier raptor migratory corridor in the northeastern U.S., and one of the leading migration routes in the world. The Kittatinny Ridge funnels tens of thousands of raptors of sixteen (16) species during fall. Tremendous numbers of passerine species and other birds including hummingbirds, loons, and geese use the ridge as a migratory corridor during the spring and fall. This significant landform is also a key breeding site for many interior forest birds, including Watch-listed Wood Thrush, Black-throated Green Warbler, Scarlet Tanager, Red-eyed Vireo, Hooded Warbler, Watch-listed Cerulean Warbler, Watch-listed Black-throated Blue Warbler, Watch-listed Worm-eating Warbler, Ovenbird, and Rose-breasted Grosbeak. The potential for future residential development along the ridge top is the primary threat to the important habitat of these bird species.
- ***Scenic Quality*** – The Cherry Valley is noted frequently as one of the most important and respected scenic landscapes in the County. The recently completed Hamilton-Jackson-Pocono (HJP) Township Open Space and Recreation Plan describes the “Cherry Valley Scenic Area – Nestled between the parallel ridges of Godfrey Ridge and Kittatinny Ridge ... Cherry Valley is highly valued for its scenic quality and other unique natural, historic and cultural features. Open

farmland on the valley bottom is comfortably framed between wooded ridgelines. A relatively rural area very close to the twin boroughs of Stroudsburg and East Stroudsburg, the valley faces high development pressure....” Haphazard development threatens to destroy this valued composite of unique landscape attributes for future generations.

1.4 Resources Summary View

The following *Watershed Basemap* (Figure 1.1) shows the watershed plan study area as described more fully in Chapter II. The *Straight Line Diagram of Cherry Creek Watershed Resources* (Figure 1.2) illustrates a composite view of watershed resources as further described in Chapters II-VI. The diagram highlights resources on seven thematic lines: Contemporary Culture, Historical/Archeological, Villages/Towns, Stream Walk Results, Recreational, Scenery, and Ecology/Conservation. Resources are summarized by approximate location along creek-mile units from the confluence of Cherry Creek with the Delaware River. This chart was used during public meetings as a way to demonstrate the interplay of watershed resources distributed along the stream corridor that is bounded primarily by two dominant ridges. The clustering of resources between mile 6 and mile 12 is particularly notable. The centerline of the diagram also provides a summary of the stream walk assessment as related to these resources.

[Insert: *Watershed Basemap - 8.5"x11"*]

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[Insert: *Straight Line Diagram of Cherry Creek Watershed Resources - 11"x17" foldout*]

1.5 Description of the Cherry Creek Watershed

Cherry Creek is a second and third order valley stream located on the north slope base of the Kittatinny Mountain in the southeastern area of Monroe County, Pennsylvania; Northampton County is located just south of that location. The plan area encompasses the Cherry Creek Watershed from the creek's confluence with the Delaware River in the Borough of Delaware Water Gap to its area of origination just east of Route 33 and south of Saylorsburg. Two large ponds are found in this area, and flow is substantially increased by large springs located a short distance downstream from the pond outflow.

The creek meanders for approximately 15 miles through a narrow, steep-sided valley, eventually emptying into the Delaware River at Delaware Water Gap. The elevation change from source to mouth is only about 370 feet, and numerous tributaries from the surrounding ridges feed the creek. The majority of Cherry Creek is listed as a High Quality Coldwater Fishery according to the Pennsylvania Department of Environmental Protection (PA-DEP) except for a relatively small area associated with the confluence with the Delaware River where it is listed as a Cold Water Fishery, Migratory Fishery. The watershed covers approximately 13,314 acres, about 20.8 square miles in total. The Cherry Valley substrate is primarily gravel, sand and silt with scattered cobble and boulders located in higher gradient riffle areas where scouring occurs. The underlying geology is a complex of limestone, shale and siltstone overlain with unconsolidated glacial deposits of silt, sand and gravel in the valley. Because of the limestone formations, Cherry Creek has a much higher pH, alkalinity and total dissolved solids than found in most Pocono area streams, which generally are acidic with a low mineral content.

The watershed contains a great deal of forested and agricultural area. The primary land uses in the watershed are residential development and agriculture. There are a few commercial enterprises located at the confluence in Delaware Water Gap and some at the headwaters near Saylorsburg. Riparian vegetation is well established, varying between trees that provide a thick canopy on the upper and lower stream to woody bushes that create heavy bank-side overhang, especially in the mid-valley area.

1.6 Political Setting

The Cherry Creek watershed is located entirely within Monroe County, northeastern Pennsylvania and is divided among four political jurisdictions: Hamilton Township, Stroud Township, Smithfield Township, and the Borough of Delaware Water Gap.

1.7 Socio-Economic Setting

Population and Employment

The population of Monroe County, the county in which the watershed is located, has nearly doubled since 1980 and is projected to grow by 60 percent by 2020. Managing the impact of this growth is at the root of the many recent planning efforts in the County. These efforts aim at managing growth in a way that conserves and protects natural and cultural resources while also encouraging the development of environmentally friendly businesses to provide close-to-home employment. The following summarizes the current population and employment situation:

Population

Monroe County's population boom began in the 1960s with the opening of Interstate 80. The trend continued during the '70s and '80s, and by the 1990 census, almost 96,000 people lived in the County. The 2000 census confirmed that the growth of the County continues – nearly 140,000 people live in the County today. The combination of further metropolitan in-migration and natural increase as county residents form new households and have children will result in continued growth over the next few decades and beyond. The projected population for the County in the year 2020 is 177,000 to 221,000.

Viewed together with average household size, this population estimate serves as a gauge for future housing demand. In 1990, average household size in Monroe County was 2.69 persons per house. Trends analyzed by the U.S Bureau of the Census show decreasing household size nationally and in Monroe County as well. Monroe County's demographic profile is approaching that of a typical suburban jurisdiction and its average household size is moving towards 2.5. The County is likely to see as many as 30,000 new dwelling units between 1998 and 2020 if the total population projected to 2020 lives in smaller household groupings as expected.

Industry and Employment

People who commute in from other areas hold many of Monroe County's jobs. For example, the Tobyhanna Army Depot is the County's largest employer, but fewer than 600 of its 3,600 employees live in the County. The majority of these employees commute from the Scranton/Wilkes-Barre area. Some workers also commute to Monroe County from Northampton and Carbon Counties to the south.

Likewise, many of Monroe County's residents commute to jobs outside of the county – many of these to the New York-New Jersey metropolitan areas, and some to the Allentown-Bethlehem-Easton area. The *Monroe County Comprehensive Plan* estimated that in 1998, an estimated 9,000 workers – or close to 18 percent of Monroe County's estimated 50,900 residents age 16 and older that are employed – commute out of Monroe County to work.

The County's labor force and its job base are not precisely aligned with each other. This trend is occurring in communities nationwide.

The *Monroe County Comprehensive Plan* projected the number of jobs in Monroe County in the year 2000 to be somewhere between 49,250 and 57,750, and growing at an estimated average annual growth rate of about 1.6-1.9 percent. In the decade following the year 2000, Monroe County's rate of employment growth is expected to level off at an annual average of around 1.6 percent, consistent with rates expected in the nearby counties of New Jersey.

The following table illustrates Monroe County's population growth between 1990 and 2000 as compared to municipalities of the watershed. While the percent change for municipalities of the watershed is on the whole lower than that for the County as a whole, the Townships are experiencing the most change while the Borough of Delaware Water Gap remains largely unchanged due to its relatively built out condition.

Population Change 1990-2000

| County or Municipality | 2000 Population | 1990 Population | Population Change | Percent Change |
|-------------------------------|----------------------------|----------------------------|------------------------------|---------------------------|
| Pennsylvania | 12 281 054 | 11 881 643 | 399 411 | 3.4 |
| Monroe County | 138 687 | 95 709 | 42 978 | 44.9 |
| Delaware Water Gap Borough | 744 | 733 | 11 | 1.5 |
| Hamilton Township | 8 235 | 6 681 | 1 554 | 23.3 |
| Smithfield Township | 5 672 | 4 692 | 980 | 20.9 |
| Stroud Township | 13 978 | 10 600 | 3 378 | 31.9 |

Source: U.S. Census Bureau

Prepared by: Pennsylvania State Data Center

1.8 Land Use & Zoning

Land Use

Land use in the watershed is primarily residential and agricultural. However much of the watershed is still in a relatively undeveloped condition. Urbanized areas are found mostly in the northern part of the watershed in Smithfield and Stroud Townships and the Borough of Delaware Water Gap. Commercial and industrial land uses are also mainly concentrated proximate to the Route 80 interchange in Delaware Water Gap Borough and Smithfield Township. See: *General Land Use* (Figure 1.3).

Zoning & Land Use Controls

Existing Zoning is illustrated on the *Existing Zoning* (Figure 1.4) for the four municipalities that contain the project area. The predominant district for Hamilton and Smithfield Townships is “Residential” while the predominant district for Stroud Township and Delaware Water Gap Borough is “Conservation.” Stroud Township has an aggressive open space initiative program supported by a voter-approved tax for open space acquisition. Consequently many of the large parcels in the Township’s Conservation District in the watershed are being pursued for conservation setting a very appropriate tone for conservation throughout the watershed. The majority of land in Delaware Water Gap Borough’s Conservation District is already held in public ownership either municipal or Federal lands. Essentially all of the Mount Minsi subwatershed area in the Borough resides in public ownership.

Follow-up actions to Monroe 2020, the County’s Comprehensive Plan, adopted in June of 1999, and the Monroe County Open Space Plan, adopted in June 2001, resulted in all twenty municipalities in the county preparing joint municipal open space plans. Six joint municipal planning areas emerged for these follow-up planning efforts; three of which are contained in the watershed project area. Stroud Township is represented in the *Stroud Area Regional Open Space and Recreation Plan* completed in the spring of 2002. Delaware Water Gap Borough and Smithfield Township are represented in the *Eastern Monroe Regional Open Space & Recreation Plan* completed in June of 2002. Hamilton Township is represented in the *Hamilton-Jackson-Pocono (HJP) Open Space and Recreation Plan* completed in the fall of 2003.

Also as a direct result of the County’s Open Space Plan and Municipal Partnership Program, all municipalities have completed “*Growing Greener*” audits.¹ These audits provide recommendations for updating local plans and ordinances through the use of the *Growing Greener* techniques, including the model ordinance language for conservation subdivisions. Revisions to local ordinances based on these audits are needed in order to implement the goals and recommendations of the County Comprehensive Plan, the County Open Space Plan, and the recommendations contained in this watershed conservation plan. Again Stroud Township is leading the way with code revisions using the *Growing Greener* techniques. Hamilton Township is putting Growing Greener techniques into their new zoning ordinance and Smithfield Township is giving consideration to adoption of the techniques. Delaware Water Gap Borough is largely built-out and is less inclined to change codes in this regard; however, benefit may be realized through adoption of the *Growing Greener* Hamlet and Village design standards.

The Monroe County Conservation District also conducted an audit of municipal codes focused on municipal floodplain regulations. This audit points to weaknesses in the

¹ *Growing Greener* audits consist of a review of the municipality’s local plans and ordinances relative to land conservation goals. The *Growing Greener* program was developed by the Natural Lands Trust and the Pennsylvania Department of Conservation and Natural Resources.

existing codes and makes recommendations for correcting the same. See: Table 3.1 – *Floodplain Ordinance Provision Matrix*.

In addition to the joint open space planning efforts noted above a *Regional Comprehensive Land Use Plan* is currently being conducted for Hamilton, Stroud and Pocono Townships and the Borough of Stroudsburg. This plan should serve to support and guide that planning effort for the watershed area.

1.9 Transportation Routes

The major traffic routes in the Cherry Creek watershed include:

- Interstate Route 80
- PA Routes 611, 33, and 191.

Interstate Route 80 runs east-west through the far east end of the watershed. There is also one active rail line, which snakes diagonally through the east end of the watershed from Stroud Township to Delaware Water Gap. See: *Watershed Base Map* (Figure 1.1).

[Insert: *Existing Zoning map.*]

[Insert General Land Use map.]

