

TABLE OF CONTENTS

INTRODUCTION

- Purpose of Study
- Historical Background
- Travel through the Watershed

WATERSHED CHARACTERISTICS

- Location
- Topography
- Soils
- Hydrology
- Habitat
- Land Use
- Human Impacts

RESEARCH

- Monitoring
- Collected Data
- Studies
- Programs

FINDINGS/RECOMMENDATIONS

MAPS

- Cooks Creek Watershed Topographic Map
- Cooks Creek Watershed Street Map
- Cooks Creek Watershed Municipal Map
- Lower Saucon Township Watershed Land Use Map
- Lower Saucon Township Watershed Natural Areas Map
- Lower Saucon Township Watershed Sub-watershed Area Map

PHOTOGRAPHS

- Silver Creek (North Reaches)
- Springfield Township Reaches

APPENDICES

INTRODUCTION

PURPOSE OF STUDY

Cooks Creek is a vital Exceptional Value (EV) stream serving the counties of Northampton and Bucks. It is a critical tributary to the Delaware River watershed and one of the Highlands region's ten most significant places. Its health and suitability for native trout populations make it an angler's paradise and one of the prime sportsmen's (and sportswomen's) locales in the Middle Delaware River region.

While the Cooks Creek watershed is ably shepherded and supervised by the Cooks Creek Watershed Association (CCWA), Bucks County Chapter of Trout Unlimited (BCTU), and the Heritage Conservancy (HC) to name just a few, the strength of the watershed comes from its network of tributary streams. Many of these tributaries fall in lands located in Lower Saucon Township, Northampton County. With these tributary areas as focal points, Coldwater Heritage Partnership grants for both Saucon and Cooks Creek have highlighted the Township's commitment to environmental protection throughout the first decade of the new century.

The Environmental Advisory Council of Lower Saucon Township, who are primary sponsors and reviewers of this report, have long committed their efforts to the environmental protection and preservation of their township in matters ranging from zoning, subdivision and land development; to placement of buffers along streams; to identification of outstanding natural features (including steep slopes), removal of invasive vegetation, and many other stewardship responsibilities.

Protection efforts are a good thing, because along with the many headwater tributaries of Cooks Creek in Lower Saucon Township, there continues to be growing pressures for development. Recent slowdowns in the housing market and overall economy; combined with stepped-up efforts for farmland and open space protection have certainly mitigated the demand for large acres of land being developed. In the long term, however, limited areas for growth will continue to face development pressure now and into the next two decades.

We feel there is a lot more to learn about the section of Cooks Creek beginning at the headwater areas in Lower Saucon Township and continuing to the intersection of Routes 412 and 212 in Springfield Township. This will be the primary area of study in this report. Focusing in this area offers the best chance for a report that will generate action in the same manner as the Saucon Creek report developed a few years back.

HISTORICAL BACKGROUND

Cooks Creek is known statewide for being a home to wild brown trout, particularly in the headwaters, where populations of naturally reproducing trout are strong. At least three of the initial feeder streams of Lower Saucon Township have water of suitable temperature for survival and prosperity of "brownies". Fortunately, the majority of this headwaters area remains in open space, protected by a hilly ridge and minimal road access. However, the further one travels into the watershed, pressure for development increases and continues throughout most of the central and eastern portion of Cooks Creek, before it heads to its final outfall into the Delaware River in Durham Township.

Due to expanded developments in the region, Cooks Creek has received some additional attention in recent years. The Commonwealth of Pennsylvania Department of Conservation and Natural Resources (DCNR) recently completed a Rivers Conservation planning process which identifies strengths, weaknesses, opportunities and threats on the entire stream channel and renders the area eligible for Growing Greener Rivers Conservation Implementation Grants. These grants have gone a long way since their origin in 1995 toward improving water quality and public use capabilities along streams throughout the Commonwealth.

In May 2004, Lower Saucon Township received its second Coldwater Heritage Partnership (CHP) grant to study the Cooks Creek watershed. The purpose of this grant was to determine what opportunities and threats existed in the northern reaches of this watershed as well as to create strategies to improve these identified watershed conditions. This report identifies both the strengths and the weaknesses of the watershed, particularly as it relates to the protection and enhancement of native wild brown trout. The CHP project is also designed to establish partnerships that survive long after the completion of the grant work. On Cooks Creek, the desired cooperation will include two school districts (Saucon Valley and Palisades) with one of the goals being to create an annual joint Northampton-Bucks Student Watershed Day.

One local group, which should be included in any partnership, is the Cooks Creek Watershed Association (CCWA). The organization continues to be an active public voice for Cooks Creek and has completed numerous projects in the central and eastern sections of the watershed. In addition, the CCWA continues to raise awareness for increased protection. Typical means of watershed protection include: land acquisition, conservation easement or maintenance agreement, enhancement or creation of riparian corridor buffers, in-stream habitat restoration (rock deflectors, biologs), changes to township ordinances or state protective regulations, and erosion and sedimentation control through best management practices.

A TRIP THROUGH THE WATERSHED

Moving west to east through the upper reaches of the Cooks Creek watershed; we notice a small section of watershed actually located in Upper Saucon Township, Lehigh County. The area is east of Carlton Road and south of Forest and Flint Hill Roads. Some communications-related facilities dot the area which is otherwise open.

As we cross over into Lower Saucon Township, the first area reached, which contains the westernmost tributary, occurs in the Jakes Place area near Saddle Ridge. A second tributary arrives from the Orchard Road (Brickote Road) area and meets the tributary from Jakes Place which travels slightly north before bearing sharply east. Two additional tributaries originate in the Township; east of Lower Saucon Road in the Martins Lane area near Old Harrow Court. Finally, the extreme western portion of Williams Township (south of Fry's Run from the Monocacy Creek system and west of Steely's Hill) is also in the Cooks Creek watershed.

The Springfield Township, Bucks County section of the watershed that we are studying in this report actually represents a continuation of that first tributary mentioned earlier. Two tributaries that originate in the Peppermint Road/Parkland Road/Highpoint Road section of that Township emerge from the south and eventually parallel Route 212 just slightly to its west before joining up with the main stem just a few feet south of Springtown Hill Road.

In the watershed, the current areas of high development pressure are as follows:

- a. The 212 corridor from Springtown to Bethlehem Road (SW direction; single-family developments). This includes an 11-unit already approved subdivision that applied for a Pennsylvania Energy Development Authority state grant in June 2008 for all-solar and energy-efficient construction with a goal being to reach 65% total energy savings. There is a real opportunity for substantial permanent protection through conservation easement for at least two-thirds of this site.
- b. Hellertown Road (the 212-412 connector in Springfield Township-additional townhouses and large single family houses). A model home was constructed in this area in 2006-2007 and others are "on the drawing board".
- c. Springtown Hill Road and Orchard Road (the Lower Saucon-Springfield Township connectors; these include upscale large-lots).
- d. Leithsville Road (the 412 corridor in southern Lower Saucon Township-commercial uses possible)
- e. Jakes Place area (subdivisions already in place and more under consideration).

WATERSHED CHARACTERISTICS

Location and Topography

The Cooks Creek watershed primarily resides in Springfield Township, Bucks County, but numerous tributaries act as feeder streams into the greater Cooks Creek watershed. These tributary streams cross over from Durham, Richland, Lower Saucon, Upper Saucon and Williams Townships covering a total of 30 square miles within Bucks, Northampton and Lehigh Counties. Approximately 80% of the watershed is located in Springfield Township, while the remaining 20% comes from its neighboring municipalities.

In addition to joining multiple municipalities within Lehigh and Bucks Counties, the Cooks Creek Watershed area is also part of the Highlands Region of Eastern Pennsylvania. Valued for its scenic vistas and extensive biodiversity, the Highlands provide numerous recreational venues for residents, tourists and outdoor enthusiasts throughout the year: rock climbing, kayaking, trails, state parks, grasslands, forests, and wetlands to name a few. The Cooks Creek area receives light to moderate angler pressure.

In spring 2008, the Cooks Creek Watershed was designated as "one of the top 10 special places" in the entire Highlands Region and one of the top ten "protected areas" according to Heritage Conservancy. Currently, only 13% (26,000 ac.) of this range is considered "preserved" and 17% (35,000 ac.) has already been developed. Preservation efforts are continuously being pursued by conservation groups, watershed organizations, environmental councils, and land trusts to preserve more of this exceptional region.

Soils

The Cooks Creek Watershed is composed of a mosaic of soil types and topography: steep slopes, spring ravines, wetlands, valley grasslands, and prime farmlands (including Class I and II soils). The Natural Resource Conservation Service (NRCS) of the United States Department of Agriculture has certified soils within Springfield Township as Prime Agricultural Soils of Statewide Importance. These rich, fertile soils used for agricultural purposes are still a significant economic base for Bucks County. However, fragmentation of these parcels is slowly decreasing their suitability; as lending institutions, feed and equipment shops, and other necessary ancillary farm uses will not tend to stay in areas where a critical mass of farmland cannot be retained.

These highly productive agricultural fields and long sweeping grasslands in the Valley take advantage of the well drained soils and underlying limestone. The soil contains a high root zone and retains moisture longer due to the soil depth and lack of large rock fragments. As with all underground limestone areas, sinkholes are always a concern, therefore many of the municipalities have Karst and sinkhole remediation regulations for any development on these soils. This is also vital to the preservation of stream banks and the need for additional riparian forest buffer capacity perhaps in excess of standard recommendations.

Watershed soils along the steep slopes and ravines can contain a mixture of siltstone, shale and sandstone soils. The shale based soils are more readily found among foot slopes of ravines and streams. Soil depth is not as deep as the limestone soils, and the shale based soils are more acidic, limiting plant development. Sandstone based soils are more readily found along the ridges and side slopes of the steep slopes and undulating hillsides where erosion potential is moderate.

Many of the photographs in this report that evidence erosion problems are a direct result of the mixture of less stable soils found in the region. As development pressure increases, this situation will require regular and constant review.

Hydrology

Due to the numerous tributary feeder streams and springs, the character of Cooks Creek changes with the land use that borders its creek edges. Where topography changes are minimal, and the creek's boundaries are allowed to fluctuate, expanding and receding with the change in seasonal flow, wetlands are commonly found. These flat or gently sloping banks provide optimal pooling areas; when high water levels recede back to the creek's channel some water is retained in a residual pool, commonly surrounded by stands of trees and accumulated soil sediment. These emergent and wooded wetlands are significant because they provide additional functions as filtering buffer and habitat area.

There are significant wetlands along portions of the Cooks creek tributaries in lower Saucon Township. The Township's Environmental Advisory Council has been cooperating extensively with the Lehigh Valley Planning Commission in expanding the Northampton County Natural Features Inventory in that region. Work to accomplish land acquisitions and conservation easements is ongoing; ordinance revisions and enforcement actions have already occurred and are sure to continue in the years ahead.

Not all water courses are wide or heavily wooded, however. Some creek paths are limited in width due to surrounding infrastructure and topography, creating a more channelized corridor. Efforts have been made to stabilize areas of severe bank erosion as well as to protect surrounding infrastructure and buildings along the main stem of Cooks Creek. The use of gabion baskets and culvert pipes can be seen regularly within the watershed. Smaller tributary areas still show severely eroded banks where soil layers are exposed and large specimen trees leaning over the banks.

Much more consideration needs to be given to natural "fixes" for these erosion problems. Hard engineering solutions should be reserved for those areas where plantings, buffers, constructed wetlands, and other protective measures will not suffice. There is a place for some hard engineering as some situations have deteriorated too substantially to be remediated by natural measures alone. But natural methods should always be looked at first.

A unique hydrologic factor to the Cooks Creek Watershed is the availability of springs. Springs are locations where underground water flows to the surface. They can range from a tiny seeping hole in the ground to a creek with visible flow. Springs fed by underground water sources are dependent upon the water being recharged by rainfall. The rainfall is infiltrated through the ground surface and replenishes the underground aquifers. This storage of water is especially important to the environment during periods of hot temperatures or drought, common to this region during the summer months.

Habitat

Cooks Creek has the distinction of being classified as an "exceptional" value waterway (EV). This level of classification can only be achieved after an extensive review process of water testing, habitat analysis, and evaluations of recreational use and buffers have met and exceeded all Commonwealth of Pennsylvania Department of Environmental Protection (DEP) parameters. This EV designation provides the highest level of protection available by the state, which focuses on imposing regulations to prevent deterioration of Cooks Creek. The EV designation does not eliminate or prevent new development along the shores or within the Cooks Creek Watershed. The exceptional value water designation requires development not to degrade the water quality in any way and must, at a minimum, maintain the existing water quality of the Cooks Creek Watershed. Preservation is especially important due to water quality being directly related to habitat.

The Cooks Creek Watershed has been supporting Brown Trout populations for over 20 years. Trout are highly sensitive to changes in water temperatures, dissolved oxygen levels, and overhead cover, to name a few. Headwaters, like those in Lower Saucon Township, are critical areas in keeping these chemical and biological aspects balanced further downstream. Maintaining and improving water quality within the watershed will help to strengthen natural reproduction levels, to avoid any dependence on manual fish stocking in the future. Conversely, due to trout's sensitivity to water pollution, fish populations can also be used as a measuring tool warning volunteers if water quality changes.

Cooks Creek has the potential to develop a strong native brook trout population as well. Some "brookies" can be found in the watershed although "brownies" are more prevalent. One of the best investigative measures to assure stream health is the completion of macroinvertebrate studies with particular attention paid to mayflies, stoneflies and caddis flies. With the assistance of trained school teachers and DEP personnel, this is a task that the students of Saucon Valley and Palisades High Schools could handle in the years between scheduled Pennsylvania Fish and Boat Commission (PFBC) visits to the stream.

A portion of the Cooks Creek Watershed is a priority #1 in the two Natural Areas Inventories (NAI) completed in both Northampton and Bucks Counties. This protected area includes hill sides in Durham Township which are home to at least six different bat species, and over sixty varieties of birds. These species make their homes in the abandoned mines, caves and wooded hillsides of the creek in that section.

The most productive watershed habitats are an integrated network of animal, vegetative, aquatic life, and macroinvertebrates. By increasing the water quality and accomplishing further restoration of shoreline habitat, the Cooks Creek Watershed can become more sustainable, requiring progressively less intervention from the public.

LAND USE & HUMAN IMPACT

Cooks Creek watershed is predominantly wooded, agricultural, and marsh wetland areas within Lower Saucon Township. Based on zoning information, land use is predominantly rural agricultural from the middle and eastern portions of the watershed and rural-suburban residential use within the western portion. Many tributary feeder streams and springs to the Cooks Creek Watershed are located in these rural zoned areas. Four major feeder streams, at least half a dozen smaller intermittent rivulets and upwards of two dozen springs can be found in these areas.

Lower Saucon Township's Rural Agricultural District (RA) was established to "encourage agricultural and related activities, as well as to conserve unique natural features, such as flood prone areas, steep slopes, forests, and other wildlife habitats to protect the watershed areas for the Springtown Water System and the Hellertown Water System water suppliers." (Lower Saucon Township Zoning Ordinance section 180-18)

Rural Suburban District (R40) was "generally located between the rural and more urban residential districts." The road systems are not necessarily highly developed in this district. (Lower Saucon Township Zoning Ordinance section 180-30)

These zoning designations bring both benefits and concerns to the Cooks Creek Watershed:

Benefits

There is some confusion as both the Saucon and Cooks Creek watersheds have a tributary called Silver Creek. These are separate and distinct streams with no connection, or common source or outfall. This is a problem throughout the Commonwealth and can sometimes be a real impediment to discussions on preservation and other issues. This nomenclature should be reviewed.

Wooded fields and marsh areas along the Cooks Creek tributary, known as the Silver Creek North Reaches, act as a buffer, between increasing developments and plant, macroinvertebrate and other aquatic communities. Woodlands and marsh areas help to filter any potential contaminations from agricultural field runoff (fertilizers, pesticides, herbicides), storm runoff from nearby subdivision developments (oils, salts, phosphorous), and pollution from adjacent construction sites (sedimentation, chemicals, metals). These buffers are a first line of defense, making initial contact with contaminations and slowing the time before any of this storm runoff eventually connects with any of the Silver Creek tributaries. This filtering helps to prevent severe spikes and degradation of water quality; such as in water temperature, pH levels, dissolved oxygen levels and flow rates.

The wooded field and marsh areas are also an asset to the Lower Saucon Township residents. A few streams within the Silver Creek North Reaches are available to the public for fishing and other outdoor recreation. Areas of public access can be incorporated into larger greenway systems or trail heads, which all helps to contribute to increased property values and quality of community life for users.

Public access also encourages educational opportunities for school field studies. Outdoor classrooms offer a unique learning experience for students of all grades. Continued environmental education helps spread public awareness and has the potential to increase volunteer memberships since residents are more likely to volunteer for programs that directly influence their families. Due to the remoteness of some of these areas, an informed and supportive citizenry is truly the only substantial means of protection these springs, feeders and tributaries will have.

Concerns

Agricultural practices within and directly adjacent to the watershed can have chemical and biological impact upon the tributaries. For example, overgrazed pasture (by cows or horses) can impede water infiltration by its compacted surfaces and increase storm runoff. These increased water volumes and velocities can promote erosion and sedimentation of nearby creeks and bypassing surface infiltration of water will not help recharge subsurface aquifers. In addition, farm animals wading in streams can cause direct pollution problems, particularly nitrates and to a lesser degree phosphates.

Urban areas are currently concentrated north of this watershed in Hellertown Borough (Saucon Creek watershed) and the surrounding business/mixed use districts. Future land development could expand further south, however, then encroaching upon Cooks Creek headwaters. Permitted land uses and their enforcement will be critical around these headwaters to prevent degradation of water quality.

Future development would also bring increased demand for infrastructure, such as highway expansion, school renovation, and emergency services. Sensitive habitat areas, such as bat sanctuaries and bird nesting grounds in the sloped hillsides, would be disrupted or even destroyed by any increased noise and pollution levels. Designated priority areas of sensitive habitat zones should help planners on an ongoing basis.

MONITORING STATIONS AND COLLECTED DATA

Having access to current watershed information is fundamental to any comprehensive protection strategy. Accurate data supports local planners and agencies in analyzing and developing specific regulations to protect the watershed. A catalog of Cooks Creek watershed information is underway. It is managed by the Cooks Creek Watershed Association (CCWA). To obtain accurate field information, the CCWA installed 27 permanent monitoring stations, collecting information ranging from water quality, vegetative area and surface flow measurements. The information is collected by staff and volunteers and added to an online database called watershed information system (WIS).

When reviewing published reports and studies on the Cooks Creek Watershed, readers will find common sample areas usually discussed in the reports. The challenge to any sustainable watershed is finding the correct balance of biological, chemical and environmental factors. These sample items are general characteristics commonly studied of Cooks Creek:

Water Temperature

- ◆ Affects dissolved oxygen amounts and mobility/energy levels of the fish. Colder water has increased levels of dissolved oxygen.
- ◆ Controls the rate of photosynthesis of aquatic plants
- ◆ Determines the metabolism rates of the aquatic community.
- ◆ Influences sensitivity to pollution, metals, and parasites.
- ◆ Promotes the control or growth of bacteria

Water Level

- ◆ Affects the type of aquatic life that can be sustained.
- ◆ Influences reproduction and migration of certain aquatic life.
- ◆ Decreases or increases water temperatures, particularly when riparian buffers and cover areas are not available or are inadequately sized.

Flow Rates

This is made of up the volume of water and velocity of the water

- ◆ Washes out any pollutants in the system, however, too high of a velocity can increase erosion of the stream banks.
- ◆ Churns water over rocks and other barriers. This churning causes air to be mixed with the water and helps to aerate, increasing dissolved oxygen levels.

pH Level

Measures Hydrogen levels in the water on a scale 0 (acidic) to 14 (alkaline).

- ◆ Achieves best quality when natural waters tend to balance themselves out to the neutral range (6 to 8)
- ◆ Predicts trouble ahead when too acidic or alkaline of a water pH is obtained, as aquatic life cannot be sustained long in these conditions. Streams devoid of aquatic life due to acid mine drainage in other sections of the Commonwealth are the most extreme example of this condition.

Conductivity

How well the water can pass an electrical current

- ◆ Measures the level of dissolved inorganic solids (chloride, sodium, iron, calcium, etc.)
- ◆ Reflects (usually) the area's geology and bedrock composition

Dissolved Oxygen

- ◆ Supports aquatic life
- ◆ Interconnects with other water quality factors
- ◆ Measures effectiveness of photosynthetic reactions by aquatic plants and algae.

- ♦ Predicts increased populations of aquatic life, which will use more DO due to increased respiration rates
- ♦ Reflects success and consistency of decomposition of organic matter in the water

Nitrogen.

- ♦ Aids life cycles at proper levels but too high concentrations can deplete oxygen levels.
- ♦ Leads to overstimulation of plant growth, such as algae, in extreme conditions, and can kill off desirable aquatic life.
- ♦ Produces acute toxicity in high inorganic forms (nitrate, ammonia) which can be fatal to plants, aquatic life and even humans (“blue baby syndrome”).

Phosphorous

- ♦ Exposes relative degrees of chemical pollution by runoff and dumping
- ♦ Leads to overstimulation of plant growth, such as algae, in extreme conditions, and can kill off desirable aquatic life. (Shares this tendency with nitrogen).

The Cooks Creek Watershed Association (CCWA) website has an interactive map of monitoring stations and data being collected. It should be noted that there are no monitoring stations currently located within the Silver Creek North or Springtown Reaches. These tributaries are headwaters to Cooks Creek and play a significant role in the exceptional value water quality. Silver Creek South, in Springfield Township, does contain monitoring station #14 before connecting with other tributaries. More monitoring stations are needed in the tributaries before waters combine at station #19.

Additional monitoring stations within the Silver Creek and Springtown Reaches will help supervise and examine the impact of on-going development within the surrounding municipalities. Any decline in water quality can be identified and resolved before irreversible impacts are felt in the watershed's biodiversity.

STUDIES & PROGRAMS

Through the years, many organizations have been involved with the preparation of numerous studies on Cooks Creek: water quality and monitoring, wetland reports, habitat surveys, geology testing, GIS mapping, bioassessment surveys and conservation plans. The following information is not intended to be a full listing of all groups or programs that have contributed to the formation of the Cooks Creek Watershed, but rather a sample of the past work and current contributions being made by dedicated residents and government agencies.

Local and Regional

Cooks Creek is fortunate to have highly motivated and concerned community residents who take an active part in conservation efforts for the watershed. One such large conservation group is the Cooks Creek Watershed Association (CCWA), founded in 1974. The organization has been instrumental in the creek's reclassification status, educational programs for area schools and residents, and oversees continued water quality monitoring and testing. Cooks Creek Watershed Association members are active in the protection of the watershed's habitat not just by physical restoration projects, but also actively pursuing new legislation by adjacent municipalities to encourage protected open space and water quality.

For example, the Durham Township and Springfield Township Environmental Advisory Councils (EAC) have been working with their elected township leaders in reviewing the watershed and assisting in funding the Rivers Conservation Plan (RCP) in 2002. This study was submitted to the Commonwealth's Rivers Conservation Program and facilitated getting the Cooks Creek Watershed and tributaries listed on the Pennsylvania Rivers Conservation Registry in 2003. Other studies funded by the Durham Township Environmental Advisory Council (EAC) were the Cooks Creek Watershed Monitoring and Management Plan and the Cooks Creek Wetlands Plan.

Lower Saucon Township Environmental Advisory Council works with The Natural Lands Trust, Heritage Conservancy, Land Trust Alliance and Wildlands Conservancy in educating the public on preservation and conservation easements. An EAC subcommittee is evaluating potential Open Space opportunities in Lower Saucon Township. One such area is a 40 acre parcel along a one mile stretch of Saucon Creek for guided educational tours, fishing access and retention of riparian buffer. With the proposed rail-to-trail project connecting Hellertown Borough, Lower Saucon Township, Upper Saucon Township and Coopersburg Borough, open space preservation will be a vital asset to all residents.

The Lehigh Valley Planning Commission (LVPC) is a strong advocate for the preservation of unique historic and natural features within Lehigh and Northampton Counties, for the use, benefit and increased quality of life of Valley residents. By inventorying and mapping areas of rare, threatened and endangered species (flora, fauna, and geologic) in the region, a Natural Areas Inventory Map is generated. The mapped areas aid municipalities and conservationists to identify vulnerable and significant areas in need of protection, usually by the creation of parks, open space or creation of overlay districts.

Other groups take a more "hands on" approach as stewards for the creek. Local Boy Scout troops have used the watershed as a basis for numerous volunteer projects. One prominent volunteer project has been the scouts' participation in the planting and propagation of Chestnut trees within the watershed. Through the years Scout Troops continue to assist the Heritage Conservancy and The American Chestnut Foundation (PA Chapter) with harvesting seedlings, installing protection fencing measures, removing invasive non-native plant species and transplanting new plantings to the watershed as directed.

State

Just at the Lehigh Valley Planning Commission is an exceptional resource to the Lehigh Valley, the Heritage Conservancy is an advocate for preservation of natural and historic resources for southeastern Pennsylvania and adjacent Delaware and New Jersey counties. With a diverse staff of scientists, planners, spatial analysts and designers, the Heritage Conservancy encourages communities to develop sustainable land practices, natural resource protection and restoration projects. In 2003, the Department of Conservation and Natural Resources (DCNR) awarded the Heritage Conservancy funds to extend the Cooks Creek Watershed mapping database. The additional information assisted planners and the public in targeting sensitive areas to protect as well as to identify areas needing restoration. Grant monies were allotted from the DCNR's Rivers Conservation Program.

The Department of Environmental Protection (DEP) provides funding to Growing Greener Projects in watershed areas. Projects could range from additional watershed studies and reports to creek restoration projects. The DEP awarded funding to the Bucks County Chapter of Trout Unlimited to oversee restoration projects on properties located by the headwaters of Cooks Creek in 2004.

Cooks Creek empties into the Delaware River and therefore restoration projects on Pennsylvania soil will have an effect on other downstream watershed efforts. The Delaware Riverkeeper Network works with committed advocates on all sides of the Delaware River, including Pennsylvania, New Jersey, New York and Delaware. The Delaware Estuary Program and the Partnership for the Delaware Estuary work in the areas connecting the Delaware River and Bay to the Atlantic Ocean.

Federal

The USDA Forest Service is reviewing a request by Governor Rendell's office for 2009 federal funds, under the Highlands Conservation Act (HCA), to purchase over 500 acres in Bucks and Northampton Counties to extend Cooks Creek Watershed land preservation. The Highlands Conservation Act was designed to help purchase land for the purpose of permanently conserving land and natural resources of high value. The area to be preserved has been identified as containing sensitive animal habitats unique to the area.

FINDINGS AND RECOMMENDATIONS

1. CONNECT TWO AREA HIGH SCHOOLS IN SERVICE OF COOKS CREEK

Saucon Valley High School and Palisades High School have cooperated in several areas of endeavor prior to this. Whether in athletics or fine arts, the mutual assistance and connection between teachers at the two high schools has been building for many years and is quite strong. Cooks Creek can only benefit from expanding that cooperation to the environmental field.

The first example of a year-long cooperation could occur in the spring and fall of 2009, with the goal being to establish a watershed conference, alternated as host between the two schools, beginning in October 2009. Both schools have hosted environmental fairs for students and the community previously. Many groups, such as DCNR Jacobsburg State Park and the Heritage Conservancy, could supervise the creation of the program.

This would involve students in water quality testing and monitoring research, macroinvertebrate study, discussion of issues related to tree planting and buffer provision within the watershed, and assistance and participation in fish shocking events for data gathering and fish stocking efforts where appropriate for recreational anglers (stocking should NOT occur in areas where the native population meets Pennsylvania Fish and Boat Commission standards).

2. IMPROVEMENT OF HABITAT QUALITY, BANK STABILIZATION AND BUFFERS

The priority area for this initial work would be in Springfield Township, Bucks County in the area west of the Route 412 and 212 intersection. Habitat quality has been degraded in terms of cover for animals, invasive vegetation, excessive human entry in spots and tendency toward monocultures. Bank stabilization is needed increasingly as tributaries from the south approach the Borough of Springtown. Many areas are completely mowed up to the stream on both sides; which has started to cause bank erosion (not too serious yet but degrading) and temperature warming in five areas measured in a May 2006 water quality snapshot of the area.

Lower Saucon Township has an assertive Environmental Advisory Council that is sensitive to these issues and, in terms of plantings and buffers, has recommended and enforced ordinances to deal with this issue. Nonetheless, there are some areas of the main tributary, beginning in the Jakes Place area, that can receive more attention.

Habitat quality on much of Cooks Creek is good. However, there are clearly areas where better reforestation and protection of existing tree stock would produce improved environmental results. Bank stabilization overall is average to good throughout the watershed; with no large-scale major problems but several pockets of less than ideal conditions scattered throughout the upper watershed.

3. NIPPING DEVELOPMENT PRESSURE IN THE BUD

The “macro” issues in population growth in the Cooks Creek region include the in-migration of individuals from New York, New Jersey and western and central Connecticut. In addition, the displacement of urban residents from Bethlehem, Hellertown and to a lesser extent Easton must be figured into the equation. To date, the area of the northern Cooks Creek watershed has received three or four suburban residential developments but has otherwise largely escaped the development trends that have caused rapid population increases such as Lower Macungie Township in Lehigh County and Lower Nazareth Township in Northampton County.

This is about to change. A substantial real estate development in Springfield Township featuring energy efficient homes with solar roofs is slated for the 2009-2012 time period. A prototype individual house already exists in the region. At least two competing developers have staked claims on land roughly proximate to this proposed site. Along the 412 corridor south of Hellertown there is talk about the future of the businesses there and the ability to attract top dollar for suburban development.

This talk has slowed somewhat over the past year due to the housing, credit and general economic crunch. History tells us, however, that such trends are temporary and that now is the time to further buttress ordinances and protective measures. Lower Saucon Township, both on its own, and through the Multi-Municipal Comprehensive Plan currently in progress through the Saucon Valley Partnership, has already paid considerable attention to this issue. The decade of the 2010s, however, promises to bring more development pressure.

4. ADDITIONAL COORDINATION BETWEEN LOWER SAUCON AND SPRINGFIELD TOWNSHIPS

Both townships have repeatedly engaged in cooperative planning and even implementation projects with neighboring communities within their respective counties. With the existence of the Cooks Creek Watershed Association, environmental leaders and outdoor sports enthusiasts have also discussed projects and problems in a cooperative spirit.

It would be prudent for the two townships to form an ongoing Cooks Creek Task Force. It would review policies on zoning, subdivision and land development. It would review complementary programs of police, fire and emergency assistance. It would assemble volunteer teams of individuals to accomplish environmental repair work (the Bucks County Chapter of Trout Unlimited can assist in this particular regard).

Shared discussions on development strategies could yield some creative approaches to making certain any future growth meets the highest possible professional standard. This strategy should also initiate and sustain regular consultation between the Lehigh Valley Planning Commission and the Bucks County Planning Commission.

5. AREAS OF POTENTIAL LAND ACQUISITION/CONSERVATION EASEMENT

A proposal for the acquisition of 500 acres is in progress even as this report is being written. If successful, this proposal would preserve some vitally sensitive land in the Cooks Creek watershed for perpetuity. It is important to note, however, that other opportunities exist NOW.

There are between 31 and 36 acres available for a conservation easement by the proposed solar home developer in Springfield Township. This is a case where both Wildlands Conservancy and Heritage Conservancy have roles to play, and discussions should ensue among those two agencies and the owner to place these lands in perpetual trust by a reasonable date goal of July 1, 2009. There is also potential to "grow" this easement into nearby properties.

The Northampton County Farmland Preservation Fund has identified additional properties in Lower Saucon Township suitable for permanent protection via easement. Orchard properties, in particular, are being squeezed in this economic climate and may offer more direct and immediate opportunities for discussion.

6. INVASIVE (NON-NATIVE) VEGETATION REMOVAL

Areas where invasives have gathered a specific foothold:

Springfield Township

- A. area immediately east of 412/212 split
- B. headwaters near Peppermint Road
- C. border area between Township and Lower Saucon

Lower Saucon Township

- A. area east of Jake's place
- B. border with Upper Saucon Township
- C. surrounding and east of tower (actually mostly Upper Saucon)

Williams Township

- A. area at Lower Saucon-Williams border

The most dominant plants are purple loosestrife, wild mustard, dandelion, honeysuckle and multiflora rose.

MAPS

PHOTOGRAPHS

Headwaters - Silver Creek Reaches



View of Silver Creek North



Many unnamed feeder streams empty into the tributary.



Low lying areas adjacent to creek provide opportunities for wetland buffers.



View of a wetland buffer area in the southern portion of Silver Creek.



View of a wetland buffer area in the northern section of Silver Creek



Spring and fall months allow understory plants to utilize the sun. Water temps are cooled during the hot summer months by the overhead canopy.



Silver Creek flow rate is moderate in straight-aways with rocky bottoms, which is the typical character of the creek.



Silver Creek flow rate is slow around pooling areas with increased depths.



Stream bank erosion undermines the shore, exposing tree roots at areas with increased velocities.



This is an example of fallen trees from continual soil erosion of the bank.



Severe erosion is evident and a major concern.



Soil loss adds to sedimentation of the Creek,



Creek area provides habitat for a variety of animals and invertebrates



There is a network of private footpaths used by neighbors to access the stream for passive recreation.



View of agricultural land use bordering the creek.



Residential development is visible from the creek on both sides.



Majority of stream banks are wooded with varying depths of vegetation.



This is a typical view and character of the creek.

PHOTOGRAPHS

Route 212 to Springfield Reaches



This is a general view of the creek.



Large rock debris commonly found within the creek bed, contributing to increased aeration of water by churning.



Rock debris helps with stabilization and area contains overhead canopy for shading and cooling.



View of general character of the creek with good overhead canopy. Development does not encroach to stream bank edges.



There are areas of exposed tree roots and erosion where banks are not reinforced.



Creek is channeled to flow under the bridge culvert and then allowed to expand back to its natural course.



Vegetation along stream edge provides good cover for aquatic habitat and regulating water temperatures.



Upstream areas of creek have minor garbage or pollution problems and appear to be in relatively good health.



Fallen trees and storm debris can create additional aquatic and invertebrate habitat.



View of strong buffer area along creek embankments.



This shows evidence of storm water discharging into creek by nearby quarry.



Water pooling near storm drain outlet contains evidence of pollution.



Excessive pile of debris within creek also includes non-biodegradable material harmful to the overall health of creek.



The creek will find the path of least resistance to maintain flow and due to the debris obstructions, the creek has widened



Banks show increased erosion where the creek has continued to widen.



Another debris pile further downstream.



View of severe bank erosion.



Access to creek is limited due to wooded area and slopes.



Downstream portion of creek enters into developed areas.
Creek has been channeled by stone walls.



Increased water depths from rain storms are permitted to overflow side
bank into remaining buffer area.



Channeling watercourse will influence overall health of creek, recreational uses and availability of diverse habitats.