
EXECUTIVE SUMMARY

The Redbank Creek Watershed Conservation Plan is a comprehensive study of the natural and cultural resources within the 575-square-mile Redbank Creek watershed located in north-central Pennsylvania. The plan compiles broad-based data about recreational, historical, socio-economic, and natural resources throughout the region, and involves a strong community participation element through the identification of local needs and concerns.

This document is a non-regulatory document, and serves as a reference and educational tool to promote the conservation of natural resources, monitor and improve water quality, and advocate sound community-planning practices. Recommendations identified in this plan are not enforceable by any agency. Implementation of this plan is the responsibility of the entire watershed community, and depends upon cooperation and collaboration among many different organizations.

Project Background

In 2004, Western Pennsylvania Conservancy (WPC) received funding from the Pennsylvania Department of Conservation and Natural Resources (DCNR), Bureau of Recreation and Conservation to prepare a watershed conservation plan for the Redbank Creek watershed that included a strong public outreach component.

The Pennsylvania Rivers Conservation Program aids groups in accomplishing local initiatives through planning, implementation, acquisition, and development activities. As part of the program, DCNR has established the Pennsylvania Rivers Registry to validate the completion of approved watershed conservation plans. The registry serves to promote public awareness of completed plans, while fostering support for future projects that will enhance the overall quality of the watershed.



View paddling down Redbank Creek

The purpose of this study is to document the current conditions and identify additional initiatives aimed at improving the livability and attractiveness of the region. Local stakeholders were actively involved in developing a vision for the future through public meetings, interviews, surveys, and project committees. A goal of this plan is to develop a strategy to make the vision for the future a reality. Practical solutions, action steps, and resources have been identified to assist stakeholders in achieving the vision set forth. This plan can and should be used to assist groups and citizens working and/or living within the region to improve the quality of life. It should also be used in planning for long-term growth.



Members of the project steering and advisory committees come together to discuss how the plan is progressing

In early 2005, the watershed conservation planning process was initiated with the establishment of the local project steering committee comprised of representatives from various community and conservation groups, residents, and agencies. The steering committee was the local driving force guiding the plan's development. Their mission was: "The

steering committee, composed of local community representatives, will strive to actively engage the watershed community, increase recreational opportunities, address water quality concerns, promote planning, and protect cultural and historical resources.”

In July 2005, WPC and the steering committee began a public outreach campaign by hosting a round of three public meetings to introduce the plan to the community and encourage local residents to become active in the planning process. In addition to the public meeting workshops, public and municipal surveys were distributed, and key individuals identified by the steering committee were interviewed.

Midway through the planning process, other individuals were invited to serve on advisory committees. Advisory committee members are local community residents who have an interest or expertise in land, water, biological, cultural, or socio-economic resources for the area. These committee members reviewed the plan and prioritized management recommendations.

In January 2007, with the completion of the draft plan, another series of three public meetings were held. Community representatives were given the opportunity to review the plan and provide additional comments. Public comments were collected for 30 days and incorporated into the final plan. A copy of the plan is available on Western Pennsylvania Conservancy’s website at <http://www.paconserve.org/rc/wac-rcp.html>.

Report Summary

Project Area Characteristics

The Redbank Creek watershed is located within 45 municipalities of Armstrong, Clarion, Clearfield, Elk, and Jefferson counties (Figure 1-1). Redbank Creek is formed at the confluence of Sandy Lick and North Fork Redbank creeks, where it flows for 50.7 miles until it joins the Allegheny River 5.5 miles south of East Brady, Pa. Designated as a Trout Stocked Fishery (TSF) by the Pennsylvania Department of Environmental Protection (DEP), the waterway cannot maintain naturally reproducing trout, but can support trout stocked by the Pennsylvania Fish and Boat Commission (PFBC).



Downtown Brookville, Pennsylvania

Sandy Lick Creek is one of the headwater tributaries of Redbank Creek. It flows in a westerly direction for 35.9 miles through DuBois and Reynoldsville until it joins with North Fork Redbank Creek in Brookville. It is also designated as a TSF.

North Fork Redbank Creek, the other headwater tributary, begins in Polk Township and flows 22.2 miles in a southwesterly direction. It is designated as a High Quality Cold Water Fishery (HQ-CWF) supporting aquatic species that can survive in low temperatures.

The project area is located on the western border of the continental divide between the Gulf of Mexico and the Chesapeake Bay. Located within the Pittsburgh Low Plateau Section of the Appalachian Plateaus geomorphic province, it is characterized by smooth to irregular undulating surfaces and narrow, relatively shallow valleys. It ranges in elevation from 760 feet to 2,410 feet. It is also located within the Eastern Broadleaf Forest Oceanic Province and Laurentian Mixed Forest Province of the Humid Temperate Domain ecosystem.

Currently, the majority of municipalities are not utilizing land-use regulation controls. Each county has a comprehensive plan, while only 36 percent of the municipalities currently have municipal comprehensive plans. Even fewer municipalities—16 percent—utilize zoning ordinances to protect their communities from undesirable land uses.

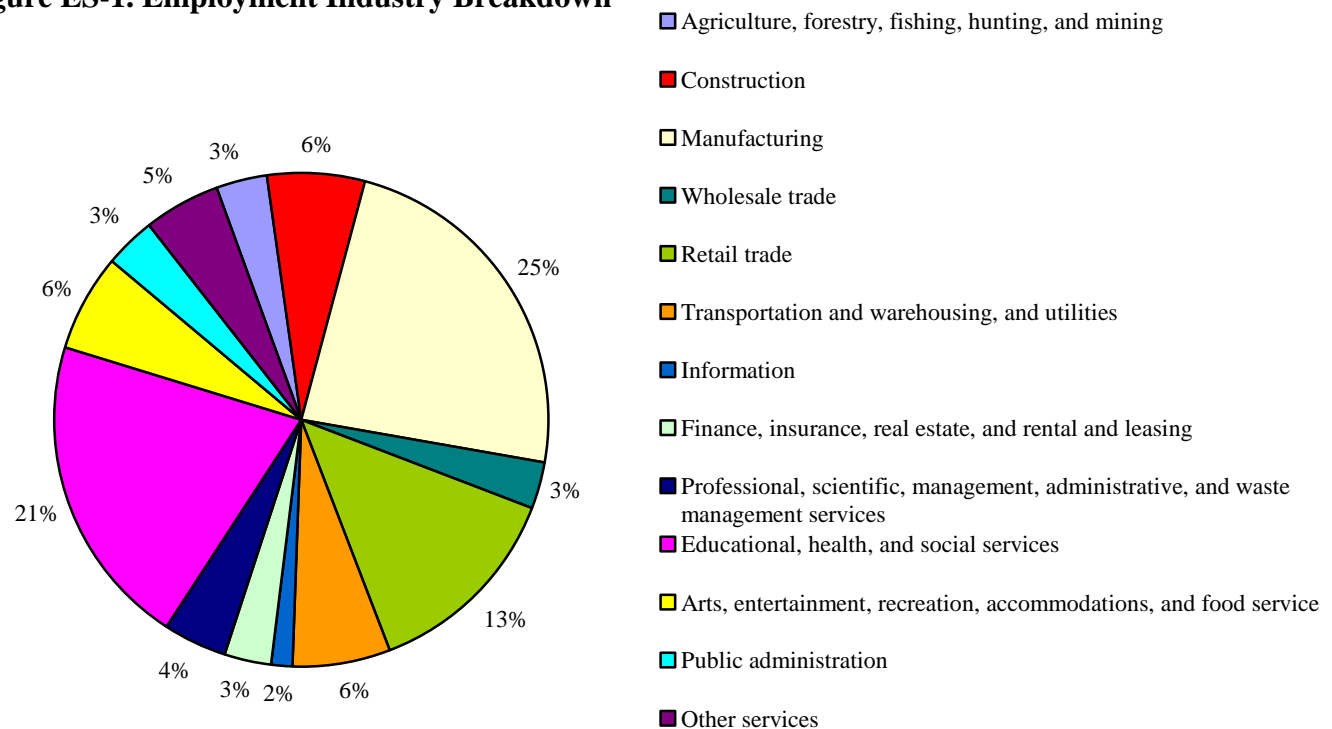
The population in the region increased by 4.45 percent from the 1990 population of 45,758 residents to 47,795 residents in 2000. While the overall watershed population increased, Armstrong County showed the only population decrease.

Infrastructure throughout the region is expanding. The establishment of additional sewage and water lines throughout the region encourages more growth, as well as improved water quality. The region has a sufficient vehicle transportation network with Interstate 80, U.S. Route 119, U.S. Route 219, U.S. Route 322, and several state routes. However, sufficient public transportation services are lacking.

According to area residents, the economy is suffering and there is a lack of good-paying jobs. The unemployment rate for each county is above the national rate, and only two municipalities had a median household income that was above the national median household income. Manufacturing is the largest employment industry with education, health and social services as the second (Figure ES-1). There are 19 employers in the region that have a minimum of 200 employees, DuBois Regional Medical Center being the largest employer with 1,200 employees.

Education throughout the region includes portions of six school districts, two vocational schools, and seven institutions of higher learning.

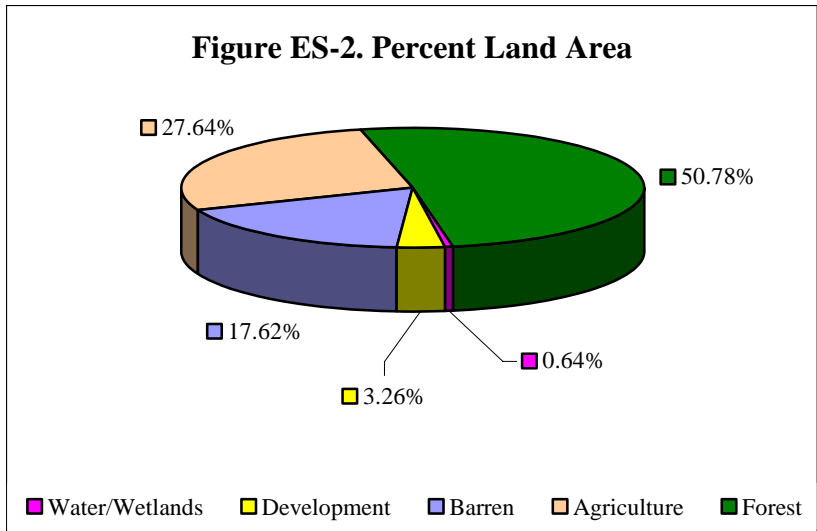
Figure ES-1. Employment Industry Breakdown



Land Resources

The land use of the watershed is dominated by forestlands, accounting for approximately 51 percent of the area. Agriculture is the second-leading land use with 28 percent. Figure ES-2 displays the percentage of land use within the project area.

Historically, forestlands have been extremely important to the region. The region’s forest history and dominant forested landscapes have been recognized through its inclusion in the Pennsylvania Lumber Heritage Region. Eighty-five percent of the forestlands in the Redbank Creek valley are deciduous, while 11 percent are coniferous, and four percent are mixed. Forest stands in the region comprise species of oak, maple, hickory, pine, and hemlock.



As the second-leading land use within the region, agriculture accounts for approximately 160 square miles of the watershed’s landscape. The majority of the agricultural lands, 60 percent, are utilized for row crops, leaving the remaining 40 percent for pasture. Key crops in the region include hay, corn, oats, and wheat, while livestock operations include dairy and beef cattle.

Twenty different soil associations are located within the Redbank Creek valley. These different soil associations are comprised of two to three major soil types, and pose limitations on primary uses depending upon the individual soils that are present in the association.

There are 69 prime agricultural soils that have been identified. Prime agricultural soils meet certain physical, chemical, and slope characteristics that are important in meeting the country’s short term and long term needs for food. These soils will ultimately produce the highest yields with minimal input of energy and resources. Soils identified as farmland of statewide importance are similar to soils designated as prime agricultural soils. These soils are critical to the region’s agriculture. Although they do not meet the criteria for prime agricultural soils, they produce high yields of crops and are economically profitable when treated and managed according to acceptable farming methods. There are 94 soils that have been designated as farmland of statewide importance within the project area.

Agricultural lands have been diminishing due to surface mining and development activities. Between 1880 and 1959, approximately 1,370 farms and 16,221 acres of agricultural lands have been converted to other uses. Farmland preservation is encouraged, as trends are leading toward fewer numbers of farms working larger areas.

Since 1988, the commonwealth of Pennsylvania has been aggressively pursuing farmland preservation through the Farmland Protection Program. Currently, Pennsylvania leads the nation in both acres and number of farms preserved. One agricultural preservation program, the Agricultural Security Area Program, is administered at the municipal level. However, this program is not fully utilized within the region. Only four agricultural security areas exist, one in Jefferson County and three in Clearfield County. Agricultural security areas serve as a tool to protect farmland from conversion to other uses.

Coal mines, along with quarries and transitional lands, comprise the barren lands within the region. Currently, there are 92 active coal mines in the area—five underground mines and 87 surface mines. These mines are scattered throughout the Redbank Creek valley, except around North Fork Redbank Creek. In addition to coal mining, clay, shale, sandstone, and limestone mines are also present within the region.



The number of gas wells in the region has increased over the past few decades and continues to expand

As the demand for oil and natural gas grows around the world, the Redbank Creek area is being directly affected. Since 1890, permits for 9,681 wells were issued, the majority being for gas wells. However, drilling has greatly accelerated over the past few decades. Between 2000 and 2006, more wells were permitted than in any previous decade, and is expected to continue.

The majority of the watershed is privately owned, except for approximately seven percent, which are public lands. Public lands in the region include state game lands, a state forest, and municipal parks. Public lands are managed by different agencies with various management goals and regulations allowing for a variety of uses.

Several critical and hazardous areas exist within the Redbank Creek valley. The entire area is under high to moderate risk of landslides, while areas containing a hilly terrain are most susceptible. Erosion and sedimentation also cause significant degradation to area waterways. An increase in sediment alters native aquatic habitats, reduces the amount of sunlight reaching aquatic plants, covers fish spawning areas and food supplies, and clogs the gills of fish. Through transportation and downstream deposition, sediment also alters the channel and flow conditions of streams.

Floodplains and wetlands are examples of critical habitats. Floodplains absorb stormwater during severe storm events. Fill material and the presence of structures lessen the floodplain's ability to dissipate large amounts of stormwater, increasing the damage downstream. Wetlands also play an important role in storm events. They have important filtering capabilities that remove pollutants from stormwater before it reaches area waterbodies, and they minimize flooding by absorbing excess flows during storm events. These areas also provide critical habitats for a multitude of plant, fish, and wildlife species.

Hazardous areas can have profound impacts on the resources and use of land. Illegal dumpsites are one of the major hazardous areas within the region. The impact of illegal dumps on the scenic value is obvious, but these dumps can also degrade habitat and water quality. Other hazardous sites within the area include the superfund site at Jackson Ceramix, in Falls Creek; two brownfield sites in DuBois; and 163 abandoned mine sites. In addition, there are 338 inactive surface mine sites.

Water Resources

The Redbank Creek watershed is part of the 11,600-square-mile Allegheny River watershed. Redbank Creek joins the Allegheny River near Wattersonville, and flows southwest until it joins the Monongahela River to form the Ohio River. The Ohio River flows into the Mississippi River, and then ultimately into the Gulf of Mexico.

The United States Geological Survey has given the watershed a hydrologic unit code of 05010006. This code, or address, can be broken down to region 05, subregion 01, accounting unit 00, and cataloging

unit 06. DEP uses a different cataloging system to identify watersheds; according to their system, Redbank Creek is located in the Central Allegheny Sub-basin watershed C or watershed 17C.

There are 21 named tributaries that enter Redbank Creek. Only three of these tributaries have been designated as major tributaries, including Sandy Lick Creek, North Fork Redbank Creek, and Little Sandy Creek. Sandy Lick Creek accounts for approximately 233 square miles. North Fork Redbank Creek accounts for approximately 85 square miles, and Little Sandy Creek accounts for approximately 73 square miles of the 575-square-mile Redbank Creek watershed.

Wetlands, including vernal pools, are areas of land that have specific hydrological and natural features as a result of being covered in water during all or part of the year. They are dominant features in the area. Many of the smaller streams in the project area originate from higher elevation wetlands created from depressions in the topography. Larger streams are influenced by the water quality of these originating wetlands. The Hemlock-Mixed-Hardwood-Palustrine swamp is an example of a typical wetland in the region. More than half of all wetland habitats that once occurred in Pennsylvania have been lost for impoundment, drained for agriculture and development, or converted to other uses. Wetlands play an essential role; they regulate stream flow, filter pollutants and fertilizers, and provide habitat for plants and animals.

No true lakes exist in the project area. However, there are seven reservoirs. Reservoirs, or impoundments, get their name because they involve impounding a stream or river using a dam. They have been built across the state and in the region for recreation, flood control, and water supply. An important reservoir to the region, although located in the Anderson Creek watershed, is the DuBois Reservoir. The DuBois reservoir is located on the eastern side of the Continental Divide draining to the Chesapeake Bay, while Redbank is located on the western side draining into the Gulf of Mexico. Residents of Sandy Township and the city of DuBois utilize water from the DuBois Reservoir, raising concerns about the ramifications of transferring water from one side of the continental divide to the other.



Sabula Lake is a reservoir located near the headwaters of Sandy Lick Creek

There are 11 public water suppliers within the region. Some utilize surface waters, while others rely on groundwater to provide customers with water. Groundwater is water stored beneath the land surface in pores and openings of soil and rock formations. Its movement is primarily controlled by topography. The yield of wells depends upon the amount of groundwater and its ease of movement through rocks. Wells in the area generally have medium to high yields. While public water suppliers supply the majority of residents, those in rural areas rely on wells and springs.

Riparian zones, or buffers, are vegetated areas along streams, rivers, and lakes that filter runoff and provide a transition between waterbodies and land. These areas can reduce flooding and erosion by retaining water in vegetation, holding soil in place with plant roots, and promoting the retention of groundwater during dry periods. These areas also provide important corridors for wildlife, enhance recreational activities, and create fish habitats.

Point source pollution refers to discharges that enter a stream or lake directly via a pipe, culvert, container, or other means. The National Pollutant Discharge Elimination System (NPDES) regulates point source discharges. There are at least 90 permits that have been issued for industrial operations, municipal wastewater treatment plants, concentrated animal feeding operations, and households. Non-point source

pollution enters a waterbody through an undefined source, usually in the form of runoff from places, such as, agricultural fields, logging operations, lawns, and city streets. Non-point source pollution is now the largest source of pollution to Pennsylvania waterways. Non-point source pollution is regulated by the United States Environmental Protection Agency (U.S. EPA) through the Clean Water Act.



A view of North Fork Redbank Creek from a bridge along Ryan Road

Every waterbody is assigned a designated use by the DEP. They were determined from uses of the waterbody since November 1975, regardless of whether or not they have maintained that use. Three tributaries of North Fork Redbank Creek (Craft Run, Shippen Run, and South Branch North Fork Creek) have been designated as Exceptional Value Cold Water Fisheries (EV-CWF). In addition to the remaining tributaries of North Fork Redbank Creek, three tributaries of Sandy Lick Creek (Little Mill Creek, Schoolhouse Run, and Falls Creek) have been designated as HQ-CWF. The mainstems of Sandy Lick Creek and Redbank Creek have been designated as TSF, while the remaining tributaries, including those of the Little Sandy Creek watershed, have been designated as Cold Water Fisheries (CWF).

Streams not attaining their designated use for one or more reasons are considered to be impaired streams. Streams deemed impaired due to non-point source pollution or unidentified point source pollution require a Total Maximum Daily Load (TMDL) assessment. A TMDL is an analysis of the maximum level of pollutants that can enter a waterbody, while still meeting water quality standards. Approximately 153.2 miles of waterways are considered impaired.

Abandoned mine drainage (AMD), acid precipitation, agricultural and forestry practices, development practices, and sewage waste have been identified as major sources of impairment to area waterways. Approximately 145 miles are impacted by AMD. After AMD, agricultural pollution is the second-leading cause of water quality degradation in Pennsylvania. The improper management of nutrients, as well as inadequate stormwater runoff controls, increases pollution loading. Contamination from malfunctioning public sewage treatment and non-maintained or malfunctioning private on-lot systems is another concern, as it could cause drinking water contamination and increased drinking water treatment costs.

The rainfall within the project area has an average pH of 4.3, whereas a pH of 5.5 is normal. The acidity does not show up in larger stream segments because it is neutralized by a variety of factors. In headwater streams, the acid precipitation has a more profound effect, as rainfall is the greatest source of water.

Biological Resources

Ecoregions, although similar to physiographic provinces, expand beyond the geological history definition to include physiography, water, soils, air, hydrology, and potential natural communities to describe regions. High hills, sharp ridges, and narrow valleys are a part of the Eastern Broadleaf Forest Province and Southern Glaciated Allegheny Plateau ecological subregion, which characterize this region.

Human activities, such as extensive logging and mining, have considerably altered the landscape of the region. Since the area was clear-cut in the early 20th century, the natural communities are significantly different from what they once were. Maple and cherry species increased in abundance, while oaks and hemlocks decreased, and the American chestnut was decimated by the chestnut blight. Only a few areas of old-growth forest remain, but there is the potential for some second- and third-growth forest areas to

develop into old-growth habitats in the future. Remaining forestlands are not interconnected; roads, clearings, surface mines, and right-of-ways now fragment much of the remaining forestlands.

One of the most significant problems affecting the regrowth of forest habitats is overbrowsing by whitetail deer. The overabundance of deer, which was estimated to be approximately double the number recommended for forest health, threatens sustainability by interrupting forest regeneration and succession, and altering species composition.

Regardless of the significance of the impact on the native habitat caused by the overpopulation of deer; it is not the only threat. Stress on forests caused by droughts and moist conditions can make them susceptible to disease and pests. The chestnut blight on the American chestnut trees is an example of how pests and disease can change the composition of a forest. Current threats from the hemlock woolly adelgid, elongate hemlock scale, gypsy moth, Bruce spanworm, and anthracnose have been identified within the project area.

Wetland areas, including floodplains, headwater areas, temporary ponds, and seeps are able to support a variety of plants and animals. Sycamore, box elder, silver maple, tulip poplar, and American elm are typical tree species found in these habitats.



A dominant land use, forests provide habitat for a variety of species

Early-successional habitats, although not historically part of the natural landscape of Pennsylvania, increased after the logging industry boomed in the early 20th century. Early-successional habitats develop in the intermediate stage between forest and grassland that develops as a forest recovers from logging or other disturbance. Early-successional habitats are susceptible to the establishment of invasive species. Many native wildlife species, such as the golden-winged warbler and American woodcock, have made their home in early-successional habitat. However, many of these areas have matured back to forest, leading to a decrease in the number of species that prefer the early-successional habitat. Appropriate management strategies should attempt to maintain the majority of the forest tracts in different age structures, allowing corridors between older, mature forest to support forest species, while maintaining some tracts of early-successional habitat.

Grasslands are not generally part of the natural landscape, but are the result of human alterations. Abandoned farm fields, reclaimed surface mines, highway medians, power line right-of-ways, and hayfields can provide important habitat for grassland birds, such as the grasshopper sparrow, dickcissel, and field sparrow; mammals; and other wildlife.

A unique aquatic habitat—the low-medium gradient blackwater stream system—is present in the headwaters of North Fork Redbank Creek. These streams and the springs that feed them flow slowly through headwater wetland areas with low pH and high organic matter content and debris. The water slowly leaches through conifer needles (like percolated tea), causing a dark color, high dissolved-matter content, and low pH in the water.

The variety of habitats available for wildlife increases the diversity of species that reside in the Redbank Creek valley. Bird species, such as owls, woodpeckers, and numerous migratory species, reside here. According to Partners in Flight, there are at least 20 species found that are of conservation concern.

Amphibians and reptiles in the region prefer forested headwater stream habitats. Riparian wetlands and temporary wetland pools support species of mole salamanders and the elusive four-toed salamander. However, sightings and occurrences of amphibians and reptiles are low, because several species are at the farthest extent of their ranges.

Forty-one species of fish have been identified according to waterway management reports from the PFBC. The most abundant species was the creek chub, found in 32 of the 40 sampling sites.

Common mammal species found in the area are whitetail deer, gray fox, woodchuck, opossum, gray squirrel, white-footed mouse, and short-tailed shrew. The bobcat, which is the only wildcat found in the state, and is found primarily in early-successional habitat and more remote woodland areas. Large intact forests are the preferred habitat of black bears, which also inhabit the region.

Through the completion of county natural heritage inventories in Jefferson and Clearfield counties, 15 natural areas have been identified. All are considered biological diversity areas (BDA). BDAs are areas of land recognized as supporting populations of state, national, or globally significant species or natural communities; high quality examples of natural communities or ecosystems; or exceptional native diversity.

Within the Redbank Creek valley, 68 species of concern have been identified. Species of plants and animals are given rankings at the state and global levels based upon the number of times the species has been documented in the area. All species are ranked; in Pennsylvania, a species of concern is a species that receives a ranking of vulnerable to extinction or lower.

One of the prime threats to native species and wildlife habitat is invasive species. A non-native invasive species can be defined as a plant, animal, or other organism introduced to an ecological system that causes economic or environmental harm or harm to human health. Not all non-native species are harmful to other species, but some may have severe impacts. Japanese knotweed and Japanese stiltgrass are two of the most serious invasive plant species threatening the region. The gypsy moth, hemlock woolly adelgid, and zebra mussel are invasive animal species. While the gypsy moth and hemlock woolly adelgid are forest pests, the zebra mussel is an aquatic pest.

Cultural Resources

In Pennsylvania, recreation is becoming big business, especially in rural areas like the Redbank Creek valley where tourism is becoming a major industry. This region is fortunate to provide numerous recreational opportunities. In addition to the number of playgrounds and ball fields, opportunities for fishing, swimming, hiking, picnicking, bicycling, canoeing, kayaking, boating, golfing, and paintball are available.

Public facilities, such as the 11 community parks, two trails, state game lands, Kittanning State Forest, and Kyle Lake, offer a variety of recreational opportunities. However, public facilities are not the only source of recreation; there are several private facilities that offer recreational opportunities, such as seven golf courses, three campgrounds, Hummingbird Speedway, and a paintball facility.

A popular recreational activity in the region and across the state is riding all terrain vehicles, or ATVs. An ATV is any motorized vehicle capable of cross-country travel on land, water, snow, ice, marsh,



*River walk along North Fork
Redbank Creek at the Walter Dick
Memorial Park*

swampland, or other natural terrain. This recreational activity causes controversy, because there is a lack of public areas available for recreation, and there are impacts to land and water where they are used.

Fishing is another popular recreational activity, as there are an abundance of opportunities. There are 13 streams that qualify as approved trout waters and three streams that are wilderness trout waters. Approved trout waters include streams, lakes, ponds, and reservoirs that meet criteria qualifying them to be stocked by the PFBC. Wilderness trout waters are exceptional value waterways that maintain wild trout in remote, natural, and unspoiled environments.

Also located in the project area are three special regulation areas. Located along North Fork Redbank Creek in Brookville, a 1.9-mile segment is restricted as a delayed harvest flyfishing only area. In DuBois, along Sandy Lick Creek, the stretch from the mouth of Laborde Branch to 1.5 miles downstream has been designated as a delayed fishing area. However, this area is not restricted to flyfishing only as the area along North Fork Redbank Creek. The third special regulation area is Kyle Lake. The lake is a participant in the Big Bass Program.

In addition to fishing, boating is another popular recreational activity. Currently, there are five access points, one being the Kyle Lake Boat Launch. The Kyle Lake site is the only site that permits the use of powered vessels; however, the vessels must be electric. The remaining four sites, two public and two private, are limited to un-powered boats, such as canoes and kayaks, and are located along North Fork Redbank Creek and Redbank Creek.

Many states have experienced a decline in the number of hunters. Recently, Pennsylvania has reached a leveling of participation. The recruitment of new hunters and trappers is essential for future wildlife management and the preservation of the hunting and trapping heritage of Pennsylvania. Within the area, there are 13,711 acres located in four state game lands that are available for public hunting. Through programs such as the Cooperative Farmland Program and the Cooperative Forestland Game Program, an additional 253,583 acres have remained open to hunting throughout the area.



*Area youth learning about watersheds at the Jefferson County Watershed Festival
(Photo courtesy of Jefferson Conservation District)*

With rapid changes in our environment, environmental education is essential for area residents. Several organizations and agencies provide educational programs to citizens of all ages, including landowners and students. Educational events vary from formal trainings to fun events, such as watershed festivals and fishing derbies.

Watershed education often starts with the identification of historical events and a region's history. For example, the first European settlement in the region was that of Joseph Barnett who, in 1794, was looking for a place to establish a sawmill. On the first expedition to the area, his brother, Andrew, and brother-in-law, Samuel Scott, saw the vast forestlands characteristic of the area and selected the area known as Port Barnett for the establishment of the mill.

However, the history of the area does not begin with the Barnetts, but with the first inhabitants of the area, the Native Americans. It is thought they resided in the region as early as 12000 B.C. As time went on, the Native Americans developed the region facilitated by the invention of tools to assist them in their daily lives and the establishment of homes. By 1800 A.D. many of the Native American traditions and technologies were being abandoned for more efficient and stronger European goods. By the time the

Barnetts moved into the region, most of the Native Americans had moved further west, misleading historians to believe that the area was mostly uninhabited.

Industry played an important role in the settlement and culture of the region. With the sawmill built and running by 1797, Joseph Barnett transported the first load of boards by floating rafts down Redbank Creek to the Allegheny River to Pittsburgh. These trips were long and dangerous, but once there, the lumber was sold or traded for flour, groceries, clothing, and other needs. When the transactions were completed, workers would return home by walking.

After the first mill was built, many more followed, including other sawmills and gristmills. By 1837, the lumber industry was booming, bringing many industrialists to the region. It is estimated that by 1854, lumber production within the watershed had reached over 20 million board feet per year.

With the introduction of the railroad and the dwindling supply of timber resources, farming became the principal business for many residents. Timber was now being removed, not as a resource, but to make room for homes and farm fields. Shortly after, in 1886, with the completion of the Low Grade Division of the Allegheny Valley Railroad, coal mining became one of the major industries of the region.

Early transportation throughout the area was limited. Settler used packhorses, wagons, and sleds, and followed narrow paths created by the Native Americans. Four well-known paths (Chinklacamoose path, Meade's trail, Susquehanna-Venango path, and Catawba path) were the primary paths used. The first roadway in the area was established in 1810, traveling from Indiana, Pa. to Port Barnett. Early roads were not like the paved paths used today, but rather were well-packed dirt paths. The first railroad in the project area was completed in 1874, providing passenger and freight service.

Remnants or artifacts of early life throughout the region have been used to document the history of the area. This evidence often represents the only surviving record of an era, and it can provide new information about when, where, and how people lived. These archaeological resources, 857 recorded pieces, found in the region represent regional trends and occupation.

Also representing the regional trends and occupation are 26 sites that have been identified as eligible or listed on the National Register of Historic Places. These sites include districts, locations, buildings, structures, and other objects significant to American history, architecture, archeology, engineering and culture.



The first Pennsylvania Game Commission training school, an eligible property on the National Registry, was located at this site from 1932 to 1986

Issues and Concerns

A fundamental element of this planning process is the identification of visions and goals of local stakeholders. Several methods were used to identify issues, concerns, visions, and goals of area residents, including public meeting workshops, public and municipal surveys, key individual interviews, and personal conversations. A variety of issues were identified, including the following:

- Water quality
- Erosion and sedimentation
- Public awareness and education
- Agriculture
- Recreation
- Historical preservation
- Smart growth and planning
- Protecting biodiversity

Public Meeting Workshops

Six public meeting workshops were held in the development of the Redbank Creek Watershed Conservation Plan. Two rounds of three public meetings were held. The first round of public meetings, held in July 2005, provided participants with background information about the planning process and an opportunity to share issues, concerns, and visions for the region. The second round, hosted in January 2007, provided participants the opportunity to review the draft plan and make comments on the draft. Comments from the January 2007 round of public meetings, along with comments that were collected for 30 days following the last public meeting, were compiled and addressed in the final version of the Redbank Creek Watershed Conservation Plan.

Results from the public meetings fall into one of three categories (protection, improvements, and future visions). According to participants, outdoor recreation and landowner rights were the top two items for protection. Infrastructure improvement and expansion topped the improvement category, while increasing community awareness and redesigning the dam in New Bethlehem tied for second. Preserving railroad corridors and cleaning up the water, such as sewage problems, were among the top visions participants had looking towards the future of the area.

Surveys

One method for compiling issues and concerns was the use of public and municipal surveys. The surveys were used to determine how watershed stakeholders and municipal officials perceived the region. The public and municipal participants agreed that water quality improvements, attractive natural settings, new business/jobs, and recreational opportunities were among the top five values of importance. They differed in regards to preserving historical sites and residential development. Municipal officials ranked residential development as fourth, while community participants ranked it last. Community participants felt that historical preservation should be the number one value, while municipal officials ranked it seventh. Again, municipal and public participants agreed that hunting was the top recreational activity, and that hiking and fishing were among the top five. However, when ranking scenic vistas and ATV riding, municipal and public participants disagreed. Public participants ranked scenic vistas as second and ATV riding as the least important recreational opportunity. Municipal officials ranked scenic vistas as the least important activity and ranked ATV riding as fourth. Other recreational activities where they disagreed include public parks, photography, organized sports, and biking.

Key Individual Interviews

Another method of obtaining issues and concerns was interviewing local watershed residents identified by the project steering committee. In addition to the Sandy Lick Creek Conservation Initiative and the North Fork Watershed Association, approximately 20 individuals were interviewed. The interviews covered a variety of topics ranging from recreational opportunities and changes in the watershed to available services and the economics of the region.



Rural roads provide important links connecting state routes throughout the region

According to participants, most people believed that water quality is improving due to awareness of relevant issues and stricter regulations on sewage, and that AMD is less prevalent than ten years ago. However, challenges still exist to address acid precipitation, rising water temperatures, and increases in runoff, which can impact the load on sewage and water systems.

Infrastructure within the project area is considered fair, but is improving. Many old or malfunctioning septic systems are thought to be discharging raw sewage into the creeks.

Fiscal concerns are also an issue, as funding is not available for repair and maintenance of these systems. More public water and sewage systems are being established, but they do not work everywhere. For the most part, area roadways are in good condition and well maintained. However, there are some issues surrounding dirt and gravel roads.

Many feel the area has some economic concerns. According to participants, there are not enough good-paying, local jobs. Many people commute to Clarion and Pittsburgh for employment. They feel revitalizing the manufacturing base, as well as small town community businesses and local history, would help the local economy.

Overall, participants felt that educational opportunities throughout the region were available, both in public school systems and post-secondary education. Some people who were interviewed felt that environmental education opportunities were lacking, saying only a few outdoor classroom opportunities exist, and local events were poorly attended.

One of the main issues within the region is land-use regulation. While most people do not want restrictions on their property, they are concerned about unplanned development and activities. A number of those interviewed felt that existing land-use regulations are poorly enforced, and that decisions are reactionary rather than proactive.

Overall, participants felt the amount of recreational opportunities within and around the region was sufficient. However, some facilities could be improved, and some activities are limited depending on the sections of the region.

There are still many issues affecting area land, water, biological, and cultural resources. The number of gas wells has rapidly increased in recent years, and participants wonder what effect this surge will have on the landscape and water supply. Other concerns interviewees felt were important include agricultural runoff, logging, active mining, AMD, flood debris, illegal dumping, sprawl, and invasive species.

Management Recommendations

Management recommendations are suggestions to maintain or improve the conditions that affect many aspects of life within the region. The recommendations were compiled from municipal and public surveys, public meeting workshops, and key individual interview comments. The matrix includes goals, recommended approaches, potential partners, potential funding sources, and priority ratings. The goals refer to issues, concerns, situations, or projects deemed important by watershed stakeholders. The recommended approaches are the action steps, or objectives, necessary to address the goal. Potential partners are groups with the resources best suited to assist in meeting the objectives. Potential funding sources identify possible avenues to finance identified projects. The priority rankings were determined in response to public comments and input from steering and advisory committees; and were based on need, feasibility, and probability of funding.

The recommendations cover a broad range of topics, but should not be considered all-encompassing. It is important to note the suggestions are non-regulatory in nature, and are best used as a guide to conserving, restoring, or improving important watershed characteristics. A complete listing is identified in the Management Recommendations chapter. No limitation to the number of types of issues, actions, approaches, partners, or funding opportunities should be assumed due to ever changing circumstances. Creativity in implementing the identified recommendations or developing additional suggestions is highly encouraged.