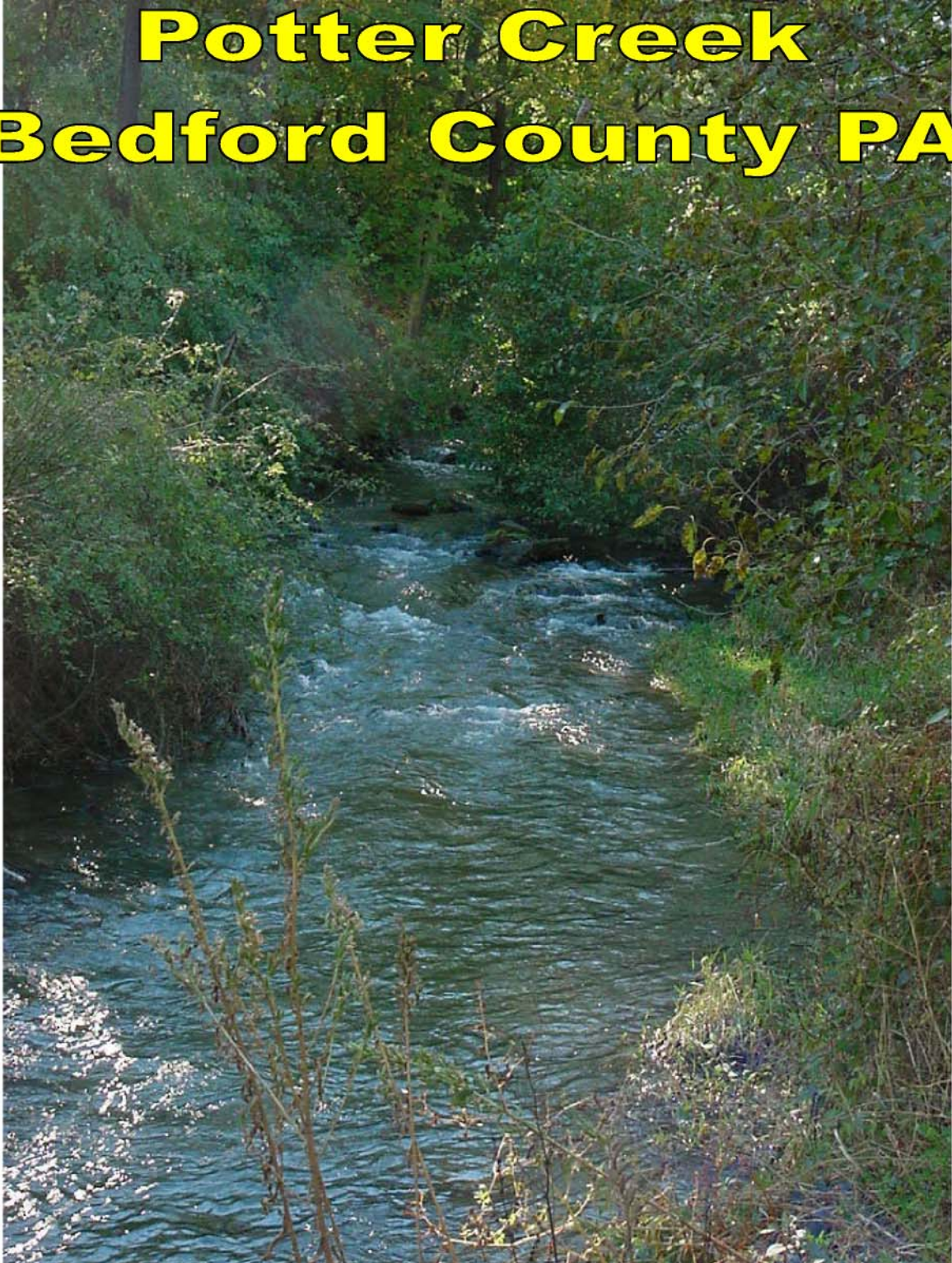


Potter Creek Bedford County PA



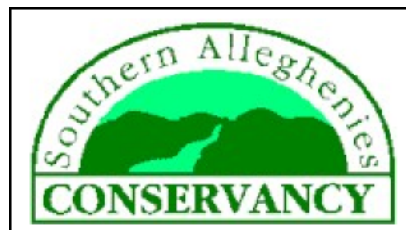
A Southern Alleghenies
Conservancy Project



**COLDWATER HERITAGE
FINAL PRELIMINARY WATERSHED ASSESSMENT:**

**POTTER CREEK WATERSHED, YELLOW CREEK DRAINAGE
BEDFORD PA**

PREPARED BY



**SOUTHERN ALLEGHENIES CONSERVANCY
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FAIRLAWN COURT SUITE 8
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January 31, 2005



This report was completed for the Mountain Laurel Chapter of Trout Unlimited. Special thanks to the Blair County and Fort Bedford Chapters of Trout Unlimited and the Yellow Creek Coalition.

Potter Creek Watershed- Study Area

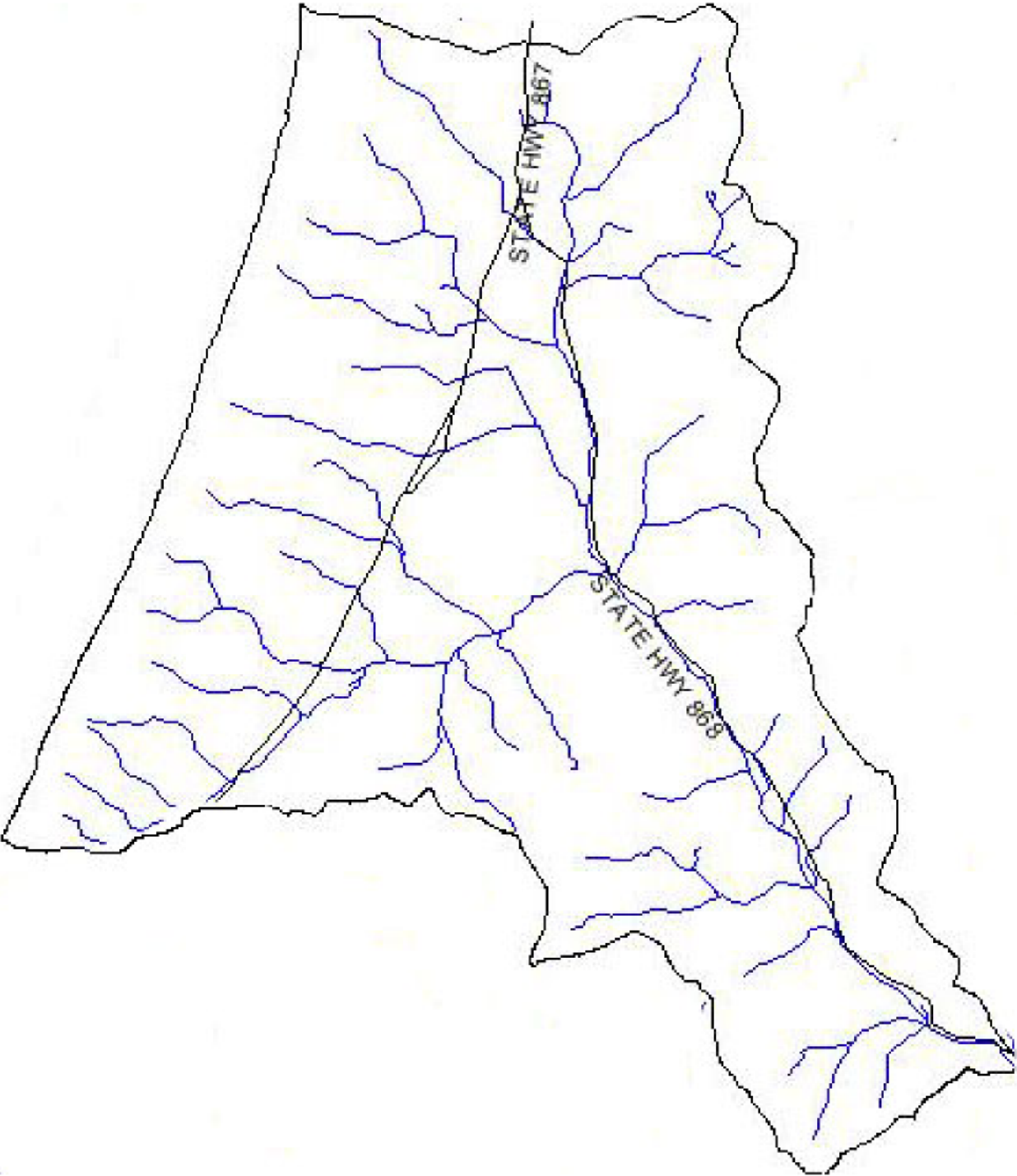


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Executive Summary:

The Yellow Creek Coalition, a facilitation group for watershed activities composed of the Fort Bedford, Blair County, and Mountain Laurel Chapter of Trout Unlimited was interested in obtaining baseline information on the Potter Creek Watershed. This group has been coordinating restoration and conservation efforts within the watershed for over 12 years. The goals of this study was to identify: baseline information on the macroinvertebrates and chemical parameters on the watershed, determine the land use impacts within the watershed, investigate possible mitigation of land uses, determine the overall health of the stream, and project what future impacts may occur in the watershed.

The keys to understanding the goals of this study involved the use of accepted scientific practices as well as public input. In addition to meeting the aforementioned goals of the study, the Southern Alleghenies Conservancy (SAC) was interested in asking the following socioeconomic questions:

What are the concerns within the watershed?

The data collected as part of this study indicated that land use practices are increasing sediment and nutrient loading into Potter Creek. The PA Department of Environmental Protection's (DEP) 303D List of Impaired Streams further substantiates this data. The 303D List is a mandated inventory of stream impairment under the direction of the federal Environmental Protection Agency with guidance from the Clean Water Act. According to the 303D List, Potter Creek is a category 5 impaired stream with the primary impairments resulting from agricultural nutrient enrichment and sediment loading.

A lack of riparian buffers within the watershed is negatively affecting the creek. These buffers are necessary to filter out sediments and nutrients, regulate groundwater flow during droughts, provide species habitat, regulate the water temperature, and provide food for in-stream life. The absence of public sewage in the watershed is also a concern for groundwater contamination and pathogen transport.

These negative environmental attributes affect the residents: Decreasing biodiversity, increasing the potential for contamination of groundwater supplies, enhancing nutrient enrichment/algal growth, and water pooling resulting in water stagnation. Additionally, a reduction of in-stream fish food, reduction of fish populations, increased erosion, increased flood potential, and increased risk of pathogenic vector habitat are also environmental attributes of concern.

Concerns Documented for this Report:

- Erosion/Sedimentation
- Nutrient Loading
- Sewage
- Riparian Buffers (for biodiversity)
- Habitat Fragmentation
- Development, Privatization/Loss of Public Access
- Farming & Farmland Preservation

What can be done now to mitigate these impacts?

Simple, commonsense practices can be implemented to increase the health and vitality of the watershed. By implementing habitat and water quality enhancement strategies such as Agricultural Best Management Practices (BMPs), riparian plantings, and evaluation of current land management within the watershed, the negative impacts can be mitigated. This report outlines some specific concerns within the watershed and provides a list of options for addressing the concerns.

What do we still need to understand or know to assist in solving the problem?

This report is a snapshot in time. Before this watershed assessment no previous data existed for the tracking of positive or negative environmental impacts within the watershed. This report should serve as a block in a foundation with future reports and investigations building on the information provided. Information to be collected in the future should include reevaluation of the visual assessment, macroinvertebrate studies, fish studying, water chemistry evaluation, continued public involvement, and an understanding of farmers using accepted BMPs and nutrient management strategies.

The Susquehanna River Basin Commission (SRBC) is conducting a macroinvertebrate and chemical analysis of Potter Creek to better understand how this subdrainage is impairing the Susquehanna River. This SRBC study is in year two and includes numerous other points within the Yellow Creek Drainage. The point of contact for this study is Jen Hoffman (717)-23 8-0423.

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I. Introduction

The Coldwater Heritage Partnership (CHP) program was introduced in February 1997 and is a joint administered program among the PA Department of Conservation and Natural Resources (DCNR), PA Fish and Boat Commission (PFBC), and the PA Council of Trout Unlimited, with supporting contributions from the Western PA Watershed Program (WPWP). The Program's intent is to protect and enhance PA's coldwater resources that support or could potentially support reproducing wild trout populations. The primary objectives of the Program are identifying and evaluating conditions within the designated watershed, which have or are likely to have the most significant effects on coldwater ecosystems.

The Potter Creek Study was sponsored by the Mountain Laurel Chapter of Trout Unlimited (MLTU) in cooperation with the Yellow Creek Coalition (YCC), a facilitation group for watershed activities composed of the Fort Bedford, Blair County, and Mountain Laurel Chapter of Trout Unlimited (MLTU). Work pursuant to the report was completed by the Southern Alleghenies Conservancy (SAC), a regional 501 (C) 3 nonprofit land trust (www.saconservancy.org). The \$5,000 grant award allowed the SAC to inventory and document problems within the watershed. The process of inventorying and creating recommendations was done with accepted scientific methods for watershed analysis and employed the help of the Western PA Conservancy's Watershed Technical Assistance Center, the SAC, PFBC, volunteers from the MLTU, and YCC as well as from PA Mountain Service Corps (AmeriCorps).

The purpose of this document is to provide baseline watershed data and serve as a resource for further watershed restoration efforts. The project was undertaken at the urging of MLTU and the Yellow Creek Coalition to provide baseline information for future watershed comparisons. The group has been working strategically in the watershed for the past decade and wishes to document the positive impacts that their efforts are having in order to ensure that their watershed priorities are legitimate.

This report was created to assist in exploring the environmental assets and degradations within the watershed. It outlines observations and provides recommendations. The SAC should be contacted to discuss any data in the report that is perceived to be incorrect or inaccurate. For the benefit of the reader, scientific terms are provided with definitions in a glossary and additional pertinent report information is compiled in the appendix.

This plan should be viewed as a block in a foundation. It is by no means exhaustive, but does explain the basic watershed characteristics and documents watershed/environmental degradations. This report's recommendations are intended to facilitate a discussion and process for future action and landowner cooperation.

II. Watershed Characteristics

A. Location

Potter Creek is primarily located in Bloomfield Township northern Bedford County with the upper portion of the watershed bordered by the Blair County line. State Routes (SR) 867 and 868 form the primary highway access within the watershed. Woodbury and South Woodbury Townships also comprise minor portions of the watershed. The Potter Creek Watershed is bounded on the west by Dunning Mountain and by upland regions east of SR 868. The area is commonly referred to as Northern Morrisons Cove and is part of the Ridge and Valley ecologic region. Watershed boundaries are formed on the west by uplands and Loysburg, to the east by uplands and Woodbury, to the north primarily by Brumbaugh Mountain, and to the south by SR 36.

The watershed's central PA location provides a temperate climate with four seasons. The area experiences varied temperatures and precipitation. The watershed experiences an annual average temperature of 50.7°F (The PA State Climatologist). Likewise, the average precipitation for the area was calculated in a similar manner and is approximately 39.99 inches annually (Ibid).

Township Information:*

Address: 422 Twin Ridge Road, New Enterprise, PA 16664

Township Building: Lafayette Road, Bakers Summit, PA 16614

Phone: 814-224-5367 or 814-224-5709 Fax: 814-224-2583

E-Mail: bloomtwp@cove.net

Meetings: 6PM on the first Monday of each month at the Twp Building

Chairman: George Ritchey

Roadmaster: Joe Detwiler

Solicitor: Ben Claar

Engineer: C & E Design Group

Sewage Enforcement: Barry Parks

Emergency Mgmt: George Ritchey

Ordinances: Building permit, nuisance, junkyard, subdivision

Sewage Plan: No

Tax Millage: 1.05 mills

* Bedford County Township Officials Association 2003 Directory of County, School, & Municipal Officials (pg 5).

B. Size of Watershed

Potter Creek is part of the Susquehanna/Chesapeake Bay Basin; DEP management subbasin 11, Upper Juniata Subbasin; DEP management Watershed D, Raystown Branch of the Juniata River Watershed (Choose Your Watershed). Watershed D is comprised of 416 square miles with a total population in 2000 of 18,310, with a projected population of 18,736 by 2010 and continued growth through 2040 (Ibid).

According to geospatial interpretations provided by the Western PA Conservancy, the entire Potter Creek watershed encompasses 13.35 square miles or 8544 acres and drains southeasterly to Yellow Creek. Flow from the west originates from Dunning Mountain and flows easterly toward the mainstem of Potter Creek, which closely parallels SR 868. Few significant sources of water enter from the east. The entire watershed is contained on the USGS New Enterprise 7.5 minute topographic map.

C. Topography

The entire watershed exhibits a dendritic drainage pattern. The straight-line distance of the stream is approximately 6.4 miles, but due to the sinuous nature of the stream its actual length is approximately 7.3 miles. The sinuosity of the stream is 0.88, indicating that the stream exhibits characteristics of a meandering stream, but not extreme meandering properties. The change in elevation from the headwaters to the mouth of Potter Creek is 260 feet. This change in elevation represents an average stream gradient of 35 feet per mile, represented as a slope of 0.6%, which is indicative of a mature topography and a mature, relatively flat stream with minimal down cutting, generally slow moving, and lower oxygenated water. Tributaries entering from Dunning Mountain to the west exhibit much higher gradients and are capable of transporting higher amounts of sediment and higher water velocities. Tributaries along this western front have gradients of 300 feet per 0.5 miles or a slope of more than 11%.

D. Land Use

Farming is a major land use in Bedford County. According to the 1982 Natural Resources Inventory, 141,100 acres were used for crops and 57,000 acres were used for pasture. The 1984 PA Crop and Livestock Annual Summary reported 35,600 acres of corn, 8,900 acres of small grain, and 55,600 acres of alfalfa and other hay. The rest was in pasture, idle cropland, or other uses (Soil Survey of Bedford County 85).

The following information was obtained from the Bedford County Soil Survey, completed by the USDA in 1998 (Ibid 87).

Forested lands in Bedford County cover about 436,700 acres. They accounted for up to 67% of the total land use in the county. Of the 421,700 acres of commercial forest land, about 83% is privately owned and 17% is publicly owned. Approximately 3% of forest land is noncommercial. Softwoods, oaks, and northern hardwoods comprise the forest regime of the county. These forest resources are managed by private property owners, the PA Game Commission, and the DCNR.

Land use in the watershed is diverse, but primarily associated with agricultural (visual estimate from GIS data 85%), residential, and forest use (See exhibit1). Churches, cemeteries, residential dwellings, industrial identified operations, as well as one public utility land use exist in the watershed. In addition to these land uses, the PA Game Commission manages a large tract of land in the northeastern portion of the watershed for public access- State Game Lands 41.

The watershed is teeming with wildlife supported by the varied matrix of croplands, pasture lands, and woodlands. Wildlife inhabitants include: whitetailed deer, squirrels, cottontail rabbits, bears, grouse, turkey, ringneck pheasants, as well as other traditional game species. The watershed also has a wide range of amphibians, reptiles, and songbirds.

There is no large population center located within the watershed. According to the aquatic survey conducted by the PFBC in 1991, the population density of the watershed was 14 residents per km². The nearest population centers are New Enterprise, Loysburg, and Woodbury, all of which are outside the watershed.

A Rural Utility substation exists near the confluence of Potter Creek with Yellow Creek. This substation is located near the intersection of SR 36 and 868. The SAC conducted a phone interview with a rural utility spokesperson to determine if Polychlorinated Biphenyls (PCBs) were present as coolants in the onsite electrical transformers. The spokesperson assured us that no PCBs were present onsite, nor were any spilled in the future. The spokesperson also assured staff that creosote utility poles were being properly managed.

A recreational, dirt-track facility is located at 40° 12.757' N and 078° 26.620' W at an elevation of 1,400'. This facility seemed to be having little impact on the watershed, but should be monitored as it is near one sustained tributary and several ephemeral tributaries.

E. Land Resources

Soils and rock lithologies within the Potter Creek Watershed consist of largely Ordavician and Cambrian age sediments, which were created by the Taconian Orogeny (PA GEO inside cover). The majority of the soil complexes found in the watershed are not considered “prime agricultural soils”, with the exception of Hagerstown Complexes. Soil complexes adjacent to Potter Creek and its tributaries are highly erodable and consist of Opequon-Hagerstown Complex.

There are building and land use limitations for watershed soils. Shallow bedrock inhibits excavation, swelling of clays causes heaving/cracking concerns, and inability to pass perk tests restrict development within the watershed. Agricultural uses for soils throughout the watershed vary. Soils such as the Morrison Channery Sandy Loam are of statewide farmland importance, but are highly erodable. Care needs to be taken with all soils in the watershed, as they are all highly erodable.

Watershed Soils

Group	Symbol(s)	Limitations	Land use	Concerns
Hagerstown Silt Loam*	HeB	Steepness, acidity, rock fragments, erosion, moderate runoff	Pasture, cultivated crops, woodlands	Ability to perk test, erosion potential, foundation and basement construction
Morrison-Murril Complex*	MtC	Rockiness, steepness, severe runoff, high permeability	Pasture, woodlands, cultivated crops (if rocks removed)	Ability to perk test, severe erosion potential,
Opequon-Hagerstown Complex*	OpB, OpC, OpD, OpE	Varying erosion potential, flooding, high watertable	Suitable for most uses, but uses vary based on the characteristics of the Complex	Flooding, high watertable, perk testing, erosion and runoff potential

*Source USDA Soil Survey of Bedford County, PA 1998

F. Geology

The Potter Creek Watershed was impacted by the Taconian Orogeny of the Ordavician and Cambrian periods (PA Geology 86). Once the Taconian Orogeny began and the continental plates collided, folding and subduction occurred. The subsequent collision and folding of the continental plates continued to deepen the oceanic environment between the continents forming marine sediments such as limestone. Evidence of this is seen in the differing composition of marine rock lithologies and based on other geological data. Subsequent erosion of the mountain chain formed during this period added terrestrial, nonlimestone derived sediments to the area (i.e. sandstones and shales).

The watershed is largely underlain by karst (limestone) geology. This geological formation was a result of the oceanic conditions prior to and during the orogeny. Karst geology has a host of environmental concerns. Some of these concerns include sinkholes, closed depressions, disappearing streams, rapid inflow of surface water to the watertable, and rapid nutrient and contaminant transport through the aquifer to name a few. Surface feature evidence of the limestone geology is limited to rock outcropping and numerous diffuse springs. Topographic map interpretation, rock outcropping, and GIS information all substantiate the presence of karst geology. Chemical analysis of the stream showed high alkalinity readings, further substantiating a groundwater source originating from or interacting with limestone lithologies. The alkalinity generated by limestone dissolution provides a prime pH and alkalinity for the biomass of the stream, buffering it from impacts of acid rain and other acidic introduction.

This karst geology contributes greatly to the cold water that is necessary to sustain suitable water conditions for the Class A Trout populations of Potter Creek. Additionally, the multiple springs and seeps throughout the watershed add flow and suitable water chemistry throughout the middle to lower reaches of Potter Creek-aiding in dilution of agricultural and other contaminates.

G. *Water Resources*

Potter Creek is managed as an unstocked wild trout fishery and has both PFBC Class A and DEP High Quality Cold Water Fishery (HQ CWF) designations. Potter Creek drains approximately 13.35 square miles southeasterly to Yellow Creek, also regarded as a prime recreational resource for fishing. There is only one United States Geological Survey (USGS) named tributary within the watershed- Snyder Creek.

Numerous farm ponds and water impoundments exist in the watershed. These ponds were likely constructed for aesthetic value and for fire suppression.

Basic water chemistry indicated the Creek is indeed spring fed and has high levels of calcium carbonate (alkalinity). Lower nitrate rates in the middle and lower reaches are likely resultant from higher flows and an influx of spring water, diluting the contaminates. The highest nitrate levels were observed in the upper portions of the mainstem at Site 2, as predicted prior to sampling. This location has poor upstream Ag BMPs and animals were seen in the stream. Lush riparian cover is lacking in this area as well.

Parameter	Site 1	Site 2	Site 3	Site 4	Site 5
Water temperature (C)	10.5	10.5	11	10.5	10.5
pH	7.5	7	7.25	7.25	7.25
Dissolved Oxygen	10.6	8.9	10.1	10.6	10.3
Alkalinity (ppm)	223	220	220	226	210
Nitrates (mg/L)	6.5	7.8	5.85	3.6	3.85
Turbidity (JTU)	2.5	0	0.5	0	0
Orthophosphate	0	0	0	0	0

Chemical data provided by: Guy Stottlemeyer of the Bedford County Conservation District collected 10-2004.

Subsequent chemical information will be available at a later date from the Susquehanna River Basin Commission (SRBC). SRBC is conducting quarterly chemical sampling as part of the Yellow Creek sub-basin survey.

A basic macroinvertebrate study was completed as part of this assessment to gauge the health of this aquatic resource. The survey was conducted by Bedford County Conservation District's Guy Stottlemeyer, Watershed Specialist.

Macroinvertebrate Survey Summary

	Site 1	Site 2	Site 3	Site 4	Site 5
# of taxa (family level)	10	9	7	11	13
EPT taxa	2	3	3	4	6
% dominance	84	75	75	54	34
Sensitive taxa index	4.08	3.75	7.07	2.82	3.91
Biosurvey score	9	9	3	15	15

The time of year and preceding storm events may have slightly skewed survey data. Future sampling at different times throughout the year should be conducted to get a better understanding of the macro community.

Stottlemeyer's conclusions:

The biosurvey score developed from the metrics indicates a fair community structure at four of the five sites and a poor rating for site 3. Sites 1 and 2 are near the low end of the fair range, while 4 and 5 are upper end scores. Sites 4 and 5 exhibit more moderate dominance percentages, and these were instances of Ephemeroptera species being the dominant organism, while the dominance ratings at sites 1, 2, and 3 resulted from large numbers of amphipods (1 and 2) or oligochaetes (3).

Two considerations must be mentioned in interpreting these scores. First, the season the collection was undertaken likely resulted in depressed numbers of the very types (Ephemeroptera and Trichoptera) that could have contributed to higher indices. Second, the nature of the stream (low gradient, meadow, carbonate geology) limits the opportunities for members of the shredder communities that contribute to higher indices as well as limiting habitat for a greater diversity of types. It is generally recognized that the metrics developed for a more generic model of rocky bottom streams do not always serve well in assessing 'spring creeks' such as Potter. The Ephemeroptera community was strongly represented by Beatidae species,

which are not usually sensitive to the impairments considered to be of concern on Potter Creek (i.e. sediment and nutrients). The dominance of Baetidae was influenced by the season of collection as noted above; baetids were 'hatching' during the collection period.

Water quality parameters indicated nitrate levels of concern at all sites. Orthophosphate was not detectable but this result has been obtained in most sampling when not occurring during an event that contributes to higher turbidity or when not immediately downstream from a potent source, such as a septic outfall.

The low to moderate diversity of Trichoptera and Ephemeroptera species noted correlates with the lack of habitat diversity available for benthic organisms. The stream bottom is largely gravel; cobble, particularly larger units, is uncommon while boulders and large woody debris are rare. Representatives of the shredder functional feeding group are absent, possibly influenced by the lack of leaf packs in the stream and the scarcity of riparian woody plants.

In summary, the macroinvertebrate community is consistent with a stream impaired by agricultural nutrient and sediment runoff. The presence of Rhyacophila and Ephemerella species is an encouraging sign that perhaps conditions are improving. The lack of macroinvertebrate habitat diversity is likely a current limiting taxon diversity.

Stottlemyer's conclusions further substantiate the findings listed under the Field Assessment section. This assessment documented that a lack of in-stream habitat, lack of riparian buffers (forested), as well as sediment loading, is negatively impacting the ecosystem.

Subsequent macroinvertebrate information will be available at a later date from the Susquehanna River Basin Commission (SRBC). SRBC is conducting macro sampling as part of the Yellow Creek Subbasin Survey.

Fin Fish reports were provided for inclusion in this study by the PA Fish and Boat Commission (See exhibit 2). The following is a summary of the 2000 report:

Common Name	Scientific Name	Present in Survey Years
Rainbow trout*	Oncorhynchus mykiss	1991
Brown trout*	Salmo trutta	1979,1991,1999
Brook trout*	Salvelinus fontinalis	1979,1991,1999
Palomino*	Oncorhynchus mykiss	1991
Blacknose Dace*	Rhinichthyys atratulus	1979
Creek Chub*	Semotilus atromaculatus	1979
White sucker*	Catostomous commersoni	1979, 1999
Northern Hog Sucker*	Hypentelium nigricans	1979
Sculpins*	Cottus sp.	1979, 1999

* As reported in July 17, 2000 F&BC report

H. Biological Resources

After consulting the PA Natural Heritage Index for Bedford County, there were no known threatened or endangered species within the watershed. Several species identified through the PA Natural Diversity Inventory (PNDI) exist in close proximity to the watershed. Additional information on possible species of concern was obtained from investigating the Wild Resources Conservation Fund's *Endangered and Threatened Species of PA, 1995*.

Common Name	Scientific Name	Listed	Type
Eastern Woodrat*	Neotoma magister	Threatened	Animal
Upland Sandpiper*	Bartramia longicanda	Threatened	Bird
Canby's Mountain Lover*	Paxistima canbyi Gray	Endangered	Plant
Shale-Barren Evening Primrose*	Oenothera argillicola Mackenzie	Threatened	Plant

* Information provided by Wild Resources Conservation Fund's *Endangered and Threatened Species of PA, 1995*

Threatened- species may become endangered within the foreseeable future throughout their range in PA.

Endangered- species is in imminent danger of extinction or extirpation throughout their range in PA.

An additional PNDI investigation from the Western PA Conservancy has indicated that species of concern may exist within the watershed. To further evaluate this risk for disturbing these threatened and endangered species, a thorough evaluation of the watershed by a biologist and botanist would be necessary (See exhibit 3).

A watershed biological survey was conducted by Dan Mummert, PA Game Commission's Southcentral Wildlife Diversity Biologist. Dan listed the following potential species of concern present for the watershed: Hellbender, Fowlers toad, mountain chorus frog, northern leopard frog, eastern box turtle, wood turtle, eastern hognose snake, great blue heron, great egret, black-crowned night heron, yellow-crowned night heron, northern harrier, American woodcock, and bank swallow. As per Dan's survey, he recommended that forested riparian buffers be established throughout the watershed to assist in protecting the species of concern. In addition, Dan suggested the development of streambank fencing, creation of habitat piles, and installation of bird boxes (See exhibit 4).

III. Unique and Outstanding Values

Potter Creek is a picturesque watershed nestled between Dunning Mountain and State Game Lands 41. The watershed's population density is low and the landscape is predominately agricultural with interspersed forested land. Areas exist for fishing, hunting, hiking, biking, and general outdoor recreation. Potter Creek is locally renowned for its excellent fishing, although it is a stream for the more experienced angler.

Population centers such as Bedford, Altoona, Hollidaysburg, and Martinsburg are easily accessible via major highways such as I-99 and SR 36, making the watershed an attractive area for commuters.

Near-by attractions include: State Game Lands 41, Yellow Creek, the Raystown Branch of the Juniata River, Morrisons Cove Memorial Park, Altoona, Lakemont Park, Blair County Ballpark, Blue Knob State Park, Old Bedford Village, Shawnee and Canoe Creek State Parks, and Historic Downtown Bedford.

IV. Field Assessment

(For specific field assessment data see Exhibit 5)

A visual field assessment was conducted to baseline the existing conditions within the watershed. A standard visual assessment was provided by the Western PA Conservancy's Watershed Assistance Center. The assessment goal was to obtain a snapshot in time of environmental impacts within the watershed and to baseline the accomplishments of the Yellow Creek Coalition's past restoration and preservation efforts.

As part of the study, volunteers were assigned predetermined reaches for evaluation. Reaches were defined primarily by land use and were designated by SAC staff.

A reference reach was not delineated for the study; instead, another accepted practice was used. At the aforementioned instructional meeting, attendees created an 'ideal reach'. These parameters were set as a comparison to reaches the members were to survey. The characteristics of the 'ideal reach' served as a 'perfect ten' for study purposes. Reaches surveyed were mentally compared to this list of 'perfect ten' parameters and then scored accordingly.

Assessment results indicated that the stream was impaired by sedimentation, as verified by the DEP's 303D Impaired Streams List. Additional results verified the general observation that the watershed lacks forested riparian buffers, canopy cover, invertebrate habitat, and in-stream fish cover.

The visual assessment indicated that reaches 7 and 8 were positively impacted by the work of MLTU and YCC. These reaches exhibited high scores, as attributed to the streambank fencing completed years ago. The visual assessment provided baseline information for comparing future successes by MLTU and YCC.

IV. ISSUES, CONCERNS, AND THREATS

EROSION and SEDIMENTATION

According to the USDA's Soil Survey of Bedford County, soil erosion is the major soil management problem on most of the cropland and pasture in Bedford County. Although Hagerstown, Murril, and Westmoreland soils are among the best for agricultural usage, they are also highly erodable.

As indicated in the Visual Assessment and in the DEP 303D List, erosion and sedimentation are contributing to the degradation of Potter Creek. Evidence of this was seen in the relative imbeddedness of several macroinvertebrate sampling points. Recent flood events and high precipitation events have flushed the channel of some sediment. The Yellow Creek Coalition and the Mountain Laurel Chapter of Trout Unlimited (MLTU) have focused efforts at curtailing farming practices that allow cows to cross the stream and browse in the stream. This partnership has worked over the past 14 years with property owners to complete beneficial projects in the watershed that address these specific issues. Practices such as streambank fencing are helping the mainstem, but a larger area of concern exists in areas predominantly found in the upper portions of the mainstem and along the western tributaries that drain from Dunning Mountain under SR 867. Farming in these areas of higher topographic relief are utilizing marginal (Op Complex) soil types for agriculture- thus increasing the potential for erosion. Water velocities in these areas are also higher as a result of adjacent Dunning Mountain. Fine sediments created by animal waste, soil erosion, fertilization of land, and storm water run-off are easily capable of being transported down these tributaries and into the mainstem.

The practice of using steep slopes and inadequate soil types is likely exacerbating erosion problems within the entire watershed and contributing to sediment loading of Potter Creek. Throughout the watershed agricultural practices are utilizing Opequon-Hagerstown Soil Complexes. Concern exists that many of these areas should not be utilized for agriculture. As previously mentioned, the gradient of tributaries is also a factor of concern throughout the watershed's western tributaries. It was also noted that these tributaries are often void of covercrops, soil is often exposed, and filter strips often were not in place to buffer sediment transport into the tributaries and ultimately into Potter Creek.

Sedimentation is a multifaceted concern for the aquatic and human populations of Potter Creek. Increased sedimentation of Potter Creek decreases habitat for aquatic macroinvertebrates and feeder fish. Additionally, sedimentation increases growth of in-stream aquatic plants, increases water temperature (discolored water or turbidity acts much like a black shirt on a sunny day), detracts from the aesthetic beauty of the stream, and impacts benthic plants and organisms. Sediment accumulation impedes flows and can cause areas of stagnation, resulting in breeding grounds for pathogenic vectors such as muskrats, mosquitoes, and bacteria.

Sediment-laden streams also have a reduced water conveyance and carrying capacity. Sediment-choked channels impede high water flows, increasing the risk of flooding and property damage, which exacerbates erosion of unprotected streamside soils. The resultant flooding reduces property values, increases environmental degradation and risk for pathogenic transfer of disease and illness. Due to the general flatness of the property adjacent to the mainstem, erosional activities and earth disturbances in the headwaters will significantly impact properties adjacent to the mainstem.

Recommendation:

Best Management Practices (BMPs) for agricultural and residential use need to be implemented to protect soils within the watershed. Simple practices such as conservation tillage, buffer strips, and cover cropping will help to ensure soil stability. Residents should consider not mowing their yards to the stream's edge and should promote the development of riparian zones that will trap sediment and assist in enhancing the ecosystem's diversity. Consideration should also be given to re-evaluating agricultural practices in marginal, highly erodable soils, and possibly removing them from production. Several programs exist to pay farmers for abandoning marginal lands; one such program is the Conservation Reserve Enhancement Program (CREP). The YCC should continue its efforts in the watershed to promote streambank fencing. Areas where the YCC has completed streambank fencing projects demonstrated less sedimentation and more stable banks, as per the visual assessment.

SEWAGE

Fecal coliform testing was not conducted to prove the existence of sewage leaks. As there is no public sewage system in the watershed, a concern exists that septic tanks could be contaminating water quality. Improper maintenance or lack of septic system maintenance could result in contaminated private water wells, groundwater supplies, and surface water resources. Infiltration of human excrement into consumptive water supplies increases the potential for gastrointestinal irritation and human illness.

Recommendation:

An inventory of onlot sewage systems should be created to include date of installation, maintenance, and other parameters of interest. The township should lead a program to document the existence of onlot sewage systems and gather construction information. The township sewage enforcement officer would be the logical contact to develop a plan for ensuring that all sewage systems are functioning properly and that they are not contributing to contamination of private drinking wells or elevated nitrates in Potter Creek. John Dawes of the WPWP would be able to provide contact information related to innovations in onlot sewage systems being explored at Delaware Valley Ag School by Larry Hepner. An additional resource for onlot sewage would be the National Small Flows Clearinghouse (1-800-624-8301).

RIPARIAN BUFFERS

A visual inspection of the watershed estimated that approximately 75% of the mainstem was void of adequate canopy cover. The number one concern, as determined in the visual assessment of the entire mainstem, related to this lack of canopy covering and forested riparian buffer. In addition to a lack of canopy cover, it was observed that none of the mainstem was protected by an adequate forested riparian buffer, as per the visual assessment protocol. The lack of forested riparian buffers are of great concern. These buffers serve a myriad of purposes. As indicated in Dan Mummert's report, these buffers serve as vital habitat for amphibians, reptiles, birds, and mammals and increase the reproductive ability of fish and other organisms. They provide vegetative cover to the stream, temperature control of the water, detritus or plant debris for aquatic organism consumption and in-stream habitat, they reduce surface water velocity, provide surface water storage that assists in flood prevention, and filter sediments and contaminants from surface water. Additionally, these buffers help to maintain sustained flows during droughts (Wildlife Habitat In PA Past, Present and Future 83).

Riparian Buffers are critical for biodiversity and habitat. As a general rule the larger the buffer, the more animals and organisms present. Riparian buffers are most beneficial when they extend 50-100 feet perpendicular to the stream in all directions (Ibid 84). A buffer of this extent would be nearly impossible to achieve in the Potter Creek Watershed because of the streams' close proximity to roadways.

Species	Portion of Riparian Buffer Utilized (in feet)
Reptiles and Amphibians*	100-200
Otters*	200-330
Mink*	200-330
Large Mammals (fox, bobcats, etc)*	400
Bald eagles, hawks*	300+
Songbirds*	300+

* Information obtained from (Wildlife Habitat In PA Past, Present and Future 84).

Recommendation:

Enhancing riparian buffers and streambank fencing is of utmost concern- it is evident in the visual assessment that this is a lacking Ag BMP. In order to facilitate the development of streambank buffers and streambank fencing TU should look to utilize programs listed in the appendix to support their efforts. Additionally, the newly hired PA Game Commission Regional Biologist will be able to assist in providing guidance for the sound installation of said buffers. Dan Mummert, the Regional Biologist for the watershed can be reached at 814-542-8759 or via email at dmummert@state.pa.us. Implementation should focus on landowners along the tributaries emanating from Dunning Mountain. Additionally, TU should give consideration to addressing the specific findings as outlined in the interpretation of the visual assessment data. The YCC should continue to schedule, coordinate, and implement streambank stabilization and streambank fencing as well as buffer rehabilitation in the watershed. The YCC should institute stream bank fencing designs that do not impede public access to the stream. Lastly, the YCC should work with all landowners to develop filter strips, along the tributaries and mainstem.

HABITAT FRAGMENTATION

Numerous state and township highways fragment the Potter Creek watershed. These highway corridors, although narrow, provide an impediment to the natural movement of wildlife throughout the watershed. This fragmentation of habitat reduces the range of wildlife, increases predation, and causes increased wildlife interaction with humans. Fragmentation can lead to inbreeding resulting from isolation, resulting in a reduction of species fitness (Wildlife Habitat In PA Past, Present and Future 108). In extreme cases, a change in air pressure of a passing car on a highway can cause the collapse or expulsion of the internal organs of amphibians (Ibid). Damage to the lower trophic levels of the food chain causes a ripple-effect in predators and upper levels of the food chain. The residential development is also a habitat fragmentation concern.

Recommendation:

Watershed residents concerned with fragmentation should work with their township officials to develop zoning requirements and subdivision ordinances. Zoning is not a popular concept, but has many benefits.

DEVELOPMENT

The Potter Creek region, like the rest of PA, has experienced a trend over the past several decades of population shifts from urban to suburban and rural areas. According to statistics, this decentralized migration has accounted for 1.12 million acres of land development between 1992-1997 (Planning for Agriculture 1). Most of this land development impacted farmlands (Ibid). There has been a marked increase in development within the watershed. Residential development is expanding in the watershed. This increased development is fragmenting the grassland and forest habitats within the watershed; creating stress on agriculture and ground water resources, not to mention increasing the potential environmental pollution from sewage and household chemicals. Additionally, as development encroaches on wildlife habitat, wildlife mortality increases. As a simple example, it is estimated that household windows kill on average 4 million birds annually, not to mention deer vs. vehicular accidents (Wildlife Habitat In PA Past, Present and Future 124). Cats and dogs can cause reductions in small mammal populations in close proximity to dwellings (Ibid 125). Lighting, fertilizers, and residential land management also impact wildlife in the area of dwellings.

The watershed will likely continue to experience increased development pressure. Trends within the Commonwealth indicate that urban sprawl is an increasing pressure on rural and suburban landscapes. As Altoona and proximal population centers expand, the population density of the watershed is likely to increase.

Increased development also will impact the watershed with increased storm and surface water runoff attributed to roofs, paved driveways, decreased vegetative interception, decreased forested habitat, and increases in roadways for conveyance of traffic. Additionally, household contamination of surface and ground water are of concern as is the possible depletion of groundwater drinking sources.

Currently, soil types are helping to curtail development within the watershed, as not all of the soils in the watershed are capable of passing sewage percolation tests. Conventional methods for municipal sewage treatment are not cost-effective for the low population density of this area. However, as development pressure increases the population density may support the cost of a public sewer system.

Two simple examples of how development can significantly impact surface water runoff and flood potential are provided below. The calculations were developed by SAC staff and used standard hydrological constants such as 7.43 gallon per cubic foot.

A house with a gabled roof with each side measuring 20*40 feet will contribute 987 gallons of runoff during a one-inch rain event.

$$\begin{aligned} 20*40 &= 800 \text{ square feet} * 2 \text{ sides} = 1600 \text{ ft}^2 \\ 1 \text{ inch of rain expressed as a portion of a foot} &= \\ .0833 \text{ feet} & 1600 \text{ ft}^2 * .0833 \text{ feet} = 133.28 \text{ ft}^3 * \\ 7.43 \text{ gallons/ft}^3 &= 987 \text{ gallons} \end{aligned}$$

Similarly, a driveway measuring 15*100 of impermeable surface will contribute 928 gallons of runoff during a one-inch rain event.

$$\begin{aligned} 15 * 100 &= 1500 \text{ ft}^2 \\ 1 \text{ inch of rain expressed as a portion of a foot} &= \\ .0833 \text{ feet} & 1500 \text{ ft}^2 * .0833 \text{ feet} = 124.95 \text{ ft}^3 * \\ 7.43 \text{ gallons/ft}^3 &= 928 \text{ gallons} \end{aligned}$$

Recommendation:

Although sprawl and subsequent development is largely uncontrollable, sound zoning, subdivision ordinances, and public involvement can reduce the impacts of development. Watershed residents should engage their township officials in a review of development ordinances and subdivision planning. Additionally, consideration should be given to developing ordinances that address storm water runoff. As the numbers indicate above, storm water runoff can be a huge problem and a flood hazard, as impermeable surfaces increase and vegetation decreases. An unfamiliar practice, yet a useful one, is the development of dry wells. This technique bores holes for the purpose of storing storm water and slowly releasing it into the watertable. Such a practice drills into a permeable layer of soil, but stops before water is encountered- thus a dry well is formed. Consideration should be given to making this a new subdivision ordinance.

FARMING & FARMLAND PRESERVATION

A lack of agricultural BMPs, forested riparian buffers, feedlot ground cover, proper feedlot drainage, and streambank fencing are impacting the watershed. Furthermore, use of marginal soils, cultivating to the water's edge, and grazing forested habitats are also impacting the watershed. Farmers are having an increasingly difficult time making a living. The Commonwealth's farm population density peaked around 1900 when two thirds of the state was farmland (Wildlife Habitat In PA Past, Present and Future 134). Recent trends in PA cause concern regarding habitat loss in rural PA- during the 1990's rural populations grew by 10% as city populations decreased by 4% (2002 Annual Report Land Use 37).

With residential dwellings being constructed closer on the fringes of agricultural uses, the PA General Assembly enacted the Right to Farm Act in 1982 (Planning for Agriculture 22). This law affords farmers some limited protection from nuisance ordinances and nuisance lawsuits (Ibid). Farming is a mainstay in PA and several precautions have been taken to protect farming interests. The purpose of the legislation was to reduce the loss of agricultural operations in PA by limiting the circumstances under which these

operations could be the subject of nuisance suits. To that end, the Right to Farm Act does three things. First, it limits municipalities from including ‘normal agricultural operations’ within their nuisance ordinances (Ibid). Second, it limits municipalities from restricting sales of agricultural commodities on the farm in their zoning ordinances (Ibid). Third, it limits nuisance suits against agricultural operations (Ibid).

When farming practices are done properly and best management practices (BMPs) are followed, agriculture can enhance wildlife. Farming can provide a wide array of habitats and the large tracks of land necessary for farming helps to prevent development pressures.

Recommendation:

Time should be spent verifying agricultural compliance with nutrient management regulations. The local USDA Service Center can assist with this process. Funding is available for agricultural assistance through the Natural Resource Conservation Service’s Environmental Quality Incentives Program (EQIP). It is imperative that farmers in the watershed are using BMPs and that their nutrient management plans are up to date. There are numerous programs intended to assist farmers that have nutrient management plans. For more information on available programs, see appendix or contact Lou Pierce (listed in the reference section of the appendix). Additional assistance for evaluating farming practices is available through the American Clean Water Foundation’s On-Farm Assessment and Environmental Review Program (www.acwf.org/projects/ofaer.html). Agricultural BMPs should include: use of cover crops, conservation tillage, application buffers for nutrients, and timely application of nutrients.

PRIVITAZATION/LOSS of PUBLIC ACCESS

A private party is actively pursuing the purchase of land rights adjacent to Potter Creek. The individual is offering to purchase, lease, or otherwise compensate landowners for the use of their property. This agreement stipulates that stream access is limited to a membership clientele. Property agreements have already been negotiated with landowners in the Yellow Creek watershed.

Recommendation:

Increasing pressure is being placed on land and water resources that provide the public with areas to fish and recreate throughout the area. To thwart such pressure in the Potter Creek watershed, conservation easements should be formalized with property owners. Development, private property rights, as well as venture capitalists have the opportunity to impact the recreational availability of Potter Creek. Concerned parties should work with the PA Fish and Boat Commission, Township Supervisors, the SAC, and the Bedford County Conservation District to ensure that the resource remains open for recreation. General state shield laws, such as the Recreational Use of Land and Water Act of 1968, provide general liability protection to landowners that have their land open to the public. Conservation easements and land access agreements would be beneficial tools in this process. The SAC is currently working its solicitor and the YCC to draft a formal process for assisting landowners in protecting their property access. For more information on Conservation Easements see exhibit 6.

Next steps

1. Parties interested in the health and vitality of the watershed should form a watershed group.

- Residents within the watershed should consider joining the efforts of MLTU and form a watershed association to protect Potter Creek's unique resources. This group should focus on obtaining funding for facilitating mailings and seminars of Best Management Practices (BMPs) for homeowners as well as farms. Additional focus from the group should be directed toward farmers and residents that have property adjacent to Potter Creek or one of its tributaries, encouraging conservation programming exploration. Guy Stottlemeyer, Bedford County Conservation District Watershed Specialist will be able to assist (814)623-7900-123.
2. Consideration should be given to restoring the sinuosity, especially in the lower reaches, of the stream; natural stream channel design techniques should be employed. Guy Stottlemeyer will be able to assist.
 3. Funding should be sought to continue macroinvertebrate and chemical monitoring and to compile data collected by the SRBC study.
 - Residents and/or watershed members should considering working with the USGS Consortium for Scientific Assistance to Watersheds (CSAW) Program to develop a comprehensive monitoring program. This program should include monitoring of riparian buffers, land usage, BMPs, chemical parameters, as well as biological indicators. Those interested in the CSAW Program should contact Dave Steele of the Southern Alleghenies RC&D at 814-623-7900 Ext 119. Once the application has been filed with the RC&D and approved, experts from the USGS will assist local stakeholders in developing a watershed monitoring program that will meet their needs. For more information see the appendix. Additionally, the Bedford County Conservation District's Watershed Specialist Guy Stottlemeyer can assist in these endeavors.
 4. Educating the residents of the watershed on the value and potential of their watershed is highly important. Minor changes in the management of residential properties could provide substantial improvement to the water quality of Potter Creek.
 - Educational outreach is vital to the success of implementing the recommendations in this plan. State agencies and others are most receptive to grassroots-led initiatives for change. Educational activities such as the development of brochures indicating the benefits of riparian buffers could have a marked benefit to Potter Creek. The Three Rivers Habitat Partnership and the WPWP would be able to assist with this process.
 - Current nuisance ordinances should be enforced. Removal of junk and burning barrels from the floodplain- and in some cases from the stream- should be a priority.

- Township ordinances exist to address junkyards and nuisances. These ordinances should be enforced and include the elimination of nuisances from the floodway. Burning barrels and junked cars in the floodway or stream corridor are not only aesthetically displeasing, but are also hazards to wildlife and aquatic organisms. Leaking oil or other fluids from the cars can negatively impact the stream. Burning household wastes and then dumping the ashes into the stream could cause fine sediment deposition and introduction of hazardous chemicals into the stream. One site in the upper reaches of the watershed had several junked cars near the stream and a burning barrel. Near the intersection of SR 36 and 868 a small barnyard and burning barrel were located practically in the stream. These issues may require intervention on the part of the PA DEP.
5. The PA Emergency Management Agency, township Emergency Manager, and the Bedford County Emergency Management Director should be contacted to develop a spill-response plan for Potter Creek. Since the highways in the watershed closely parallel the creek, a plan should be developed for emergency response.
 - Emergency management personnel from the township, county, and state should work together to develop a rapid response plan to address any contaminate spilled within this high quality watershed. The creek's close proximity to the highway makes potential contamination from a motor vehicle accident, petroleum, or agricultural-related spill probable in the future. Instituting rapid response and proper containment strategies is critical for the continued health and vitality of Potter Creek. This objective should start with the township Emergency Management Official George Ritchey, who can be reached at 814-224-5938, or by contacting Bedford County EMS official David Cubbison at 814-623-9117 ext 2.
 - Time should be spent ensuring that diesel and other fuel tanks are located away from Potter Creek and its tributaries. Additionally, all outside tanks serving industrial purposes should have containment vessels to prevent spills from entering into the waterways. Two tanks were noted 50-75 feet from the edge of Snyder Creek at 629 Snyder Road.
 6. The PA Department of Transportation should be contacted to explore innovative approaches to resolving the issues discussed such as reduced buffers, implementing permeable pavement strategies, no spray right-of-way management strategies, advanced snow removal procedures, and the use of zero velocity spreaders, etc.
 - The PA Department of Transportation has a responsibility to manage and maintain its highway system with the natural resources in mind. Contact should be made with the District 9 Office in Hollidaysburg 814-696-7125. DOT should be encouraged to use no-spray maintenance practices for maintaining their right-of-ways, increase setbacks of the highway from Potter Creek, assist in increasing safety measures on their highways to prevent hazardous spills, use of nonhazardous asphalt maintenance, and the use of zero velocity Tyler spreaders to reduce direct impacts of salt and winter maintenance activities on Potter Creek.

7. The WPWP should be contacted about Delaware Valley's innovations in onlot sewage that may be beneficial in addressing sewage concerns and the potential for development in the area.
 - John Dawes of the WPWP would be able to provide contact information related to innovations in onlot sewage systems being explored at Delaware Valley Ag School. An additional resource for onlot sewage would be the National Small Flows Clearinghouse 1-800-624-8301.
8. An inventory of onlot sewage systems should be created to include date of installation, maintenance, and other parameters of interest.
 - The township should lead a program to document the existence of onlot sewage systems and gather construction information. The township sewage enforcement officer would be the logical person to contact to develop a plan for ensuring that all sewage systems are functioning properly and that they are not contributing to contamination of private drinking wells or Potter Creek.
9. The PF&BC should continue conducting fish surveys within the watershed and continue to manage this Class A Trout resource as an unstocked wild trout fishery. Additionally, PF&BC should work with local stakeholders, DCNR, and township supervisors to address concerns related to public access of this water resource.
 - *See implementation recommendation #6.*
10. An inventory of macroinvertebrates should be conducted as should a baseline of analytical chemical components.
 - See implementation recommendation #4. Additional assistance for a volunteer-based monitoring strategy is possible. Guy Stottlemeyer of the Bedford County Conservation District would be able to assist in the development of any macro-sampling plan and can assist with said activities.

VII. Public Input

A public meeting was held January 18, 2005 at the Cove Lions Club, Loysburg, PA from 7PM to 8:30PM. The meeting was advertised in local newspapers and by a direct mailing to watershed residents. The meeting was attended by 18 people and consisted of a formal presentation of findings followed by a period of questions and answers.

The following list of concerns were generated regarding the plan and the watershed in general.

- Several trees have fallen in the upper portions of the watershed which are diverting flow from the channel through a farmer's field. The cause of this problem was attributed to the recent storm events.
The SAC was unable to locate this concern in a follow-up visit to the watershed.
- A pond on Snyder Creek Road was an issue of concern for one resident. The concern is that the pond has become nutrient enriched and during times of high runoff may be contributing to nutrient problems in the channel.
The only potential pond that the SAC identified on Snyder Creek Road was located at 40° 12.948' N and 078° 26.224' W at an elevation of 1368. Water samples were not taken from the pond. The pond was fenced off from cows, but agricultural runoff may be entering the pond. Cows were standing in the stream at this location. This area along with a farm located at the intersection of Furry and Snyder Road should also be the site of future stream fencing projects.
- Residents are concerned that additional streambank fencing may cause impediments to water access and constrict the channel.
- Riparian zones are adequately developed within the watershed for managing nutrient runoff, but as outlined in the plan are not adequate for biodiversity.
- A watershed approach should be taken instead of focusing on specific watershed problems.
- Highway drains are a concern to residents, as they are outletting directly into the waterway.
- The extension of the sewer line crossing through Loysburg to Woodbury is a concern, as is the potential subdivision of large land parcels in the upper- portions of the watershed.
- Concern was expressed in how the Mennonite population would view the plan and how to incorporate them into its implementation strategy.
- Funding for plan initiatives was discussed.
- Acid deposition was discussed as a component of the plan that should get attention in the future.
- Residents were in strong support of a spill response plan.
- It was noted that the addition of shrubs and native grasses would enhance the riparian zone and slightly improve terrestrial biodiversity.

VIII. Conclusions

This study and report is not to be viewed as an exhaustive study, nor an exhaustive search of data and resources relating to the Potter Creek Watershed. The intent of this report was to gather baseline data and to make general hypotheses about the general health and projected trends within the watershed. The study outlines key components involved in the scientific evaluation of the watershed and is supplemented with a list of recommendations and action items. These items are meant to assist TU and others in the protection of this coldwater resource.

The overall health and vitality of Potter Creek is being impacted by the land uses that involve the highly erodible soil types that exist within the boundaries of the watershed. Soil complexes associated with the Clarksburg, Hagerstown, Holly, Morrisison, Murril, and Opequon are all highly erodible, yet well suited for the agricultural practices that dominate the watershed. In addition to being highly erodible, these soils also exhibit geological structures and properties that assist in the transport of contaminants and are poorly suited for building and development. The complexes are also poorly suited for highway construction, basement building, general excavation, in some instances poorly tillable, and exhibit characteristics not suitable to pond/lagoon construction and are moderately limited for the development of onlot septic systems.

Farming practices in the watershed are a concern. Farmlands that are tilled to the stream's edge or the edge of tributaries to Potter Creek are of extreme concern, based on the general erodability of the soils in the area. Large portions of the watershed exhibit little riparian zone buffering. The highly erosive nature of the soils and their relatively low permeability make nutrient runoff into Potter Creek and its tributaries a concern as well. Practices of grazing in Potter Creek seem to have been addressed to a great degree by the MLTU and its partners through the Yellow Creek Coalition. Care should be exercised when farming operations apply fertilizer to their fields; nutrient management plans need to be strictly followed, and any earthen storage installations should be constructed of approved material. Consideration should be given to planting crops that would have the ability to buffer erosion and nutrient impacts to the stream. Cover crops should always be planted and soils should not be left barren or unprotected.

Residential properties adjacent to the waterways in the watershed appear to be impacting the stream. Lawns throughout the watershed run to the edge of the waterways and are likely impacting the waterways and contributing to nutrient loading. A lack of riparian buffers along residential properties is evident throughout the watershed. This lack of vegetative cover increases water temperature, reduces habitat, reduces feed sources, increases predation, increases transport of nutrients and sediment, and increases runoff. There is also concern with burning barrels, at least one junk yard, and several instances where individuals have driven through the stream.

Highway construction throughout the watershed is also impacting the stream. As previously mentioned, underlying limestone formations in the watershed and abundant amounts of clay cause associated difficulties for building and construction. The highway systems throughout the watershed have obviously been constructed with sound

engineering practices and contain substantial sub-bases and adequate drainage to reduce the formation of potholes associated with clay expansion and contraction. However, the highways that traverse the watershed contribute a large portion of runoff to the adjacent highly erodible soils; in many cases highway drain outlet directly into the waterway. The general proximity of highways to the waterways throughout the watershed is of extreme concern. Due to limited space for the construction of said highways, little attention has been given to creating riparian buffers. Highway maintenance likely impacts the watercourses throughout the watershed. Winter highway maintenance likely contributes excess sediment in the form of salt and anti-skid to the stream. Salt entering the stream likely increases the stream's conductivity and oxidizes any iron bearing minerals that may be found in the stream. Snow melt and relatively constant flows likely reduce this concern. Penn DOT should be engaged in a discussion to use zero velocity spreaders for winter maintenance and no-spray methods for maintaining right-of-ways.

Residential development seems to be increasing within the watershed. The potential expansion of this development is likely to be limited by the soils in the area. On-lot sewage is moderately impeded by the watershed's soils- namely their poor drainage and tendency to pond. After the recent heavy rains associated with the 2004 Hurricane Season, some of the soils within the watershed exhibited ponding for well over 30-45 days. Future residential growth is likely to materialize as mobile homes and prefabricated homes that have lower costs; such cost savings could be used to offset excavation and other costs. A municipal sewage system now exists to the south of the watershed, paralleling SR 36. This sewage system, funded by the United States Department of Agriculture Rural Development (USDA RD), will be owned and operated by South Woodbury Township and should have little development impact on the Potter Creek Watershed. If subdivision of large land parcels takes place and causes a rapid increase in housing interest in the watershed, the economics of scale could make an extension of this sewage system feasible. Darrell Clapper of the USDA RD has indicated that currently, too few residents exist in the watershed to justify the \$70 per foot cost of this sewage extension. Darrell has indicated that the USDA RD has been contacted about the prospects of developing a sewage management plan for Baker's Summit that may have implications for Potter Creek residents.

Although the watershed is being impacted by the aforementioned environmental concerns, the relative health of the watershed is favorable. The inflow of multiple springs and seeps in the middle and lower reaches of the mainstem is likely diluting the pollution of marginal agricultural practices throughout the watershed. Following the recommendations of this report would likely increase aquatic health and diversity as well as provide a larger carrying capacity for existing aquatic populations. The results of all of the scientific data collected via the visual assessment, the biological survey, chemical, and macroinvertebrate survey all support the concerns expressed in this plan.

Funding should be sought to continue the monitoring efforts started under this plan. Additional funding should be sought to educate the watershed residents and elected officials on low-impact development and smart-use techniques. The residents that attended the public meeting were eager to assist TU and others in exploring potential projects that would benefit the watershed. This creative, cooperative energy should be harnessed and a watershed organization should be formed.

Continued partnerships and outreach will create positive change in the watershed and enhance the aquatic resources as well as enhance the current property values. Anyone reading this report having questions should contact the SAC for clarification or assistance.

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Glossary of Terms

ordered by appearance in the document.

PA Department of Conservation of Natural Resources (DCNR)- Commonwealth department tasked with the protection of natural resources both land and water, also responsible for upkeep and operations of State Parks and State Forests

PA Fish and Boat Commission (PFBC)- Commonwealth department tasked with the protection of fish and aquatic resources and regulation of fish, aquatic, and boating regulations

PA Council of Trout Unlimited (PA TU)- PA organization of the nationally based conservation group Trout Unlimited that focus on angling, protection of fishable waters, and public outreach

Western PA Watershed Program (WPWP)- a small grants program based in Alexandria, PA that provides funding assistance to watershed groups and other nonprofits for the restoration and protection of water resources

Yellow Creek Coalition (YCC)- the facilitation and coordinating organization for the Blair, Fort Bedford, and Mountain Laurel Chapters of Trout Unlimited

Southern Alleghenies Conservancy (SAC)- a regional nonprofit organization based in Bedford, PA serving the cultural, historical, and environmental resources of a six county region (Somerset, Bedford, Fulton, Huntingdon, Blair, and Cambria)

Western PA Conservancy's Watershed Technical Assistance Center- technical service branch of the nonprofit environmental organization the Western PA Conservancy, providing advice and assistance to groups interested in watershed issues

Mainstem- the portion of the stream that represents the main stream's course and channel, tributaries drain into the mainstem

Watershed- a geographic feature that defines a particular drainage area of surface water. Watersheds can be limited in size or can include large expanses of area

Dendritic- a geologic and hydrologic term given to streams exhibiting a branching pattern of tributaries. This stream pattern is typically found in the northeast

Straight-line distance- a measurement of distance in a straight line from the origin of the mainstem of a stream to the mouth of the stream (point of intersecting with another body of water); this measurement can be expressed in any desirable unit of distance

Sinuosity- reference to the amount of bending back and forth (meandering) that a stream does. Sinuosity can be expressed as a ratio (straight-line distance/ actual distance traveled by the stream); the smaller the resultant calculation of this ratio the higher the sinuosity of the body of water (i.e. a ratio of 1:1 would indicate a straight line)

Stream gradient- a calculation represented as the change in elevation over a given distance that indicates the steepness of a stream; this calculation is important for interpreting erosional forces and other hydrologically significant factors that influence stream composition and impacts

Lithologies- geologic term for a rock unit

Ordavician- representation of geologic time associated with the time period of 490-443 Million Years Ago (MYA)

Cambrian- representation of geologic time associated with the time period of 543-490 MYA

Taconian Orogeny- mountain building event that took place circa 450 MYA

Subduction- geologic term given to the act of continental plates sliding underneath one another, usually associated with mountain building events and volcano formation

Terrestrial- land based environment

Orogeny- geologic term for mountain building events

Sinkholes- a surface feature associated with the chemical weathering and physical collapse of underlying geology resulting in an open depression on the earth's surface

Closed-depressions- a surface feature associated with the chemical weathering and physical collapse of underlying geology that results in a 'dent' with no apparent hole in the center of the dent

Disappearing streams- a surface feature of karst geologic settings by which a flowing body of water disappears from the earth's surface and then travels in the subsurface to interact with groundwater or to be transported and resurface at a different location; streams may disappear as a result of rock fractures, fissures, faults, or into sinkholes

Class A Trout- a stream classification under the 1983 standards of Operation FUTURE that has a representative Brown Trout population of at least 30kg/hectare or approximately 88lbs/2.47 acres

PA Department of Environmental Protection (PA DEP)- department of PA Commonwealth responsible for safeguarding our natural environment (air, water, soil, mineral resources, etc) that has regulatory authority and ability to excise fines for environmental wrong doing; the DEP is responsible for carrying out water quality compliance and standards developed by the federal Environmental Protection Agency (EPA)

High Quality Cold Water Fishery (HQ CWF)- designation of the PA DEP for waterways under Chapter 93 that denotes such a watercourse as providing for the maintenance and or propagation of fish and flora and fauna indigenous to cold water habitats which have excellent quality waters and environmental or other features that require special water quality protection

Macroinvertebrate- small organisms without backbones (i.e. aquatic bugs in this study)

PA Natural Heritage Index for Bedford County- document with information related to habitat areas and species of plants and animals that are of significance and deserving of special protection

PA Natural Diversity Inventory (PNDI)- a state database that has coordinates/locations of known plant and animal species of concern needing special protection under the Endangered Species Act

Water Clarity- the transparentness of water, factors influencing clarity including sediment, suspended solids, nutrient loading, and other biological agents that discolor water

Habitat Regimes- represent different areas for the inhabitation of plant and animal life (i.e. woodland, pasture, crop, residential, prairie, grassland, aquatic)

Canopy Cover- amount of available shading and protection (cover) provided by all types of vegetation; canopy cover is important in moderating the temperature of the stream

Aeration- act of adding oxygen to the waterway, most commonly associated with water flowing over rocks

Riffle and Pool Sequence- sequences of fast moving well oxygenated environments followed by areas of still water

Biodiversity- the variability or diversity of species within a given habitat

Substrate- aquatic subsurface

Down Cutting- active erosional processes stream deepening, resulting in incised channels with drastic changes in streambed elevations of a short distance

Lateral Cutting- active erosional process of stream bank erosion

Rip-rap- stone aggregate usually of volleyball size or larger that is used to reduce erosion of streambanks and to stabilize the streambank

Riparian Area (aka Riparian buffer)- the area adjacent to a stream that supports the growth of various plants and serves as a habitat interface between aquatic and terrestrial organisms; critical for habitat and cleansing of streams and trapping of transported sediments

Sheen- luster associated with chemical pollution, usually multicolored and forming a 'film' on top of the water column

Macrophytes- plants that are growing in the stream

Scour- abrasion to the stream bed, usually caused by rapid moving water and influenced by changes in stream flow, which causes transport of sediment and impacts stream clarity

Percent Embeddedness- the amount of sediment that is around (cementing) rocks into the substrate in an area of rapid water movement as expressed in a percentage

USDA- United State Department of Agriculture, federal department tasked with the support of agriculture and agricultural initiatives as well as rural and public utility projects

Streambank fencing- the act of installing fence adjacent to streams to prevent foraging, browsing, and cattle traversing in the stream's course

Sediment loading- geologic and hydrologic term given to the deposition and associated accumulation of sediment in a waterway

Feeder fish- small fish such as minnows that are consumed by larger fish

Pathogenic- capable of causing diseases or illness in animals or humans (i.e giardi, ecoli, West Nile Virus)

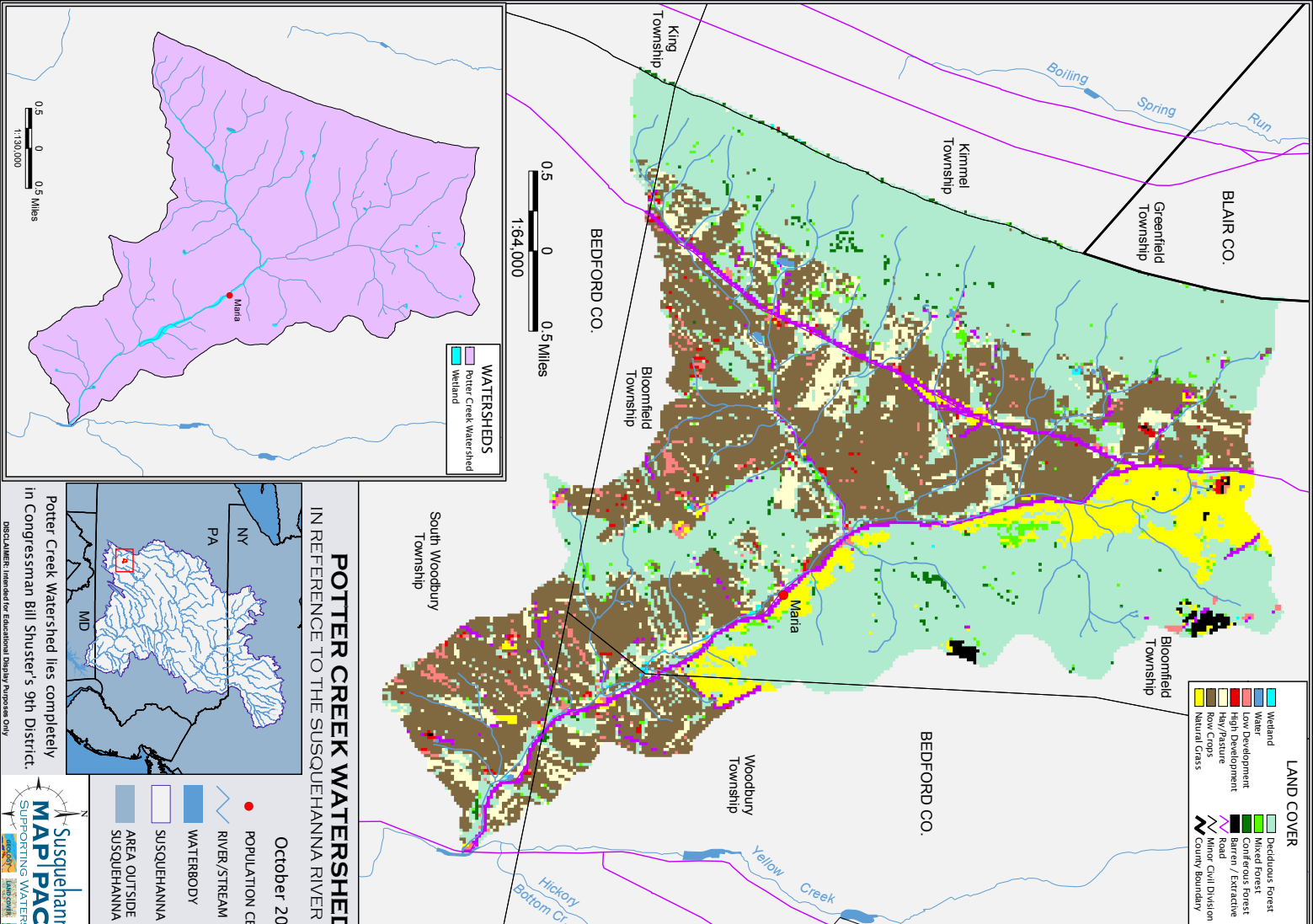
Vector- a means of transmission or carrier (i.e. rats, mosquitoes)

Habitat Fragmentation- dividing habitat regimes and creating isolation of habitat through development and destruction of habitat (i.e. deforestation, residential construction in the forest, highway construction)

EXHIBIT 1

LAND USE MAP





POTTER CREEK WATERSHED
 IN REFERENCE TO THE SUSQUEHANNA RIVER BASIN

October 2004

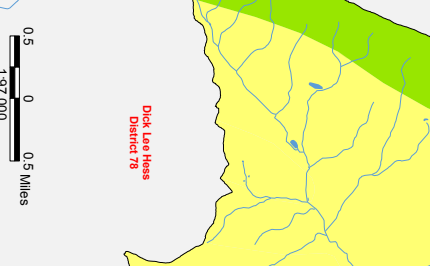
● POPULATION CENTER

— RIVER/STREAM

— WATERBODY

— SUSQUEHANNA RIVER BASIN

— AREA OUTSIDE SUSQUEHANNA RIVER BASIN



Porter Creek Watershed lies completely in Congressman Bill Shuster's 9th District.

Susquehanna MAP PACKAGE

Supporting Watershed Groups

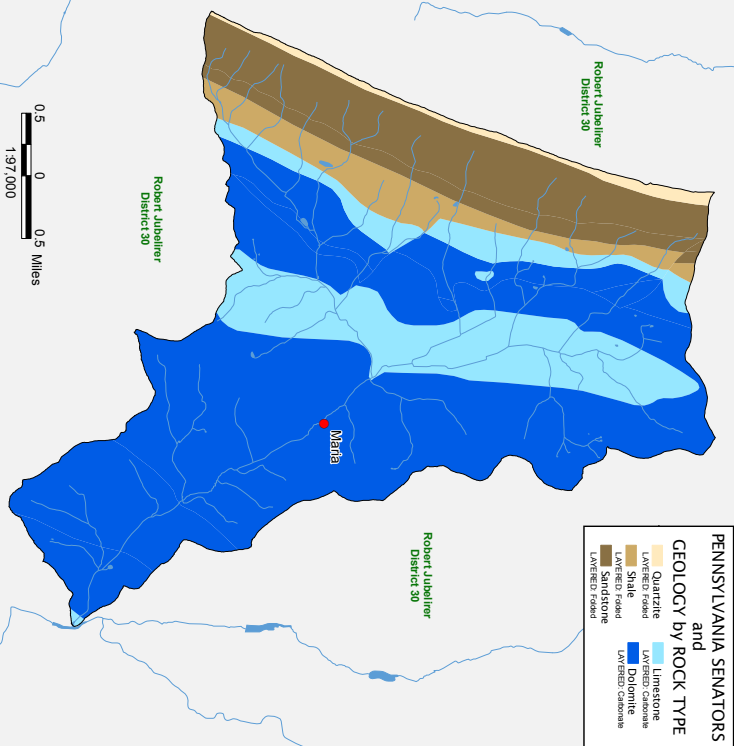
DC&JALIER: Intended for Educational Display Purposes Only

LAND COVER

- Wetland
- Water Development
- High Development
- Hay/Pasture
- Row Crops
- Natural Grass
- Deciduous forest
- Mixed forest
- Conifer forest
- Barren / Extractive
- Road
- Minor Civil Division
- County Boundary

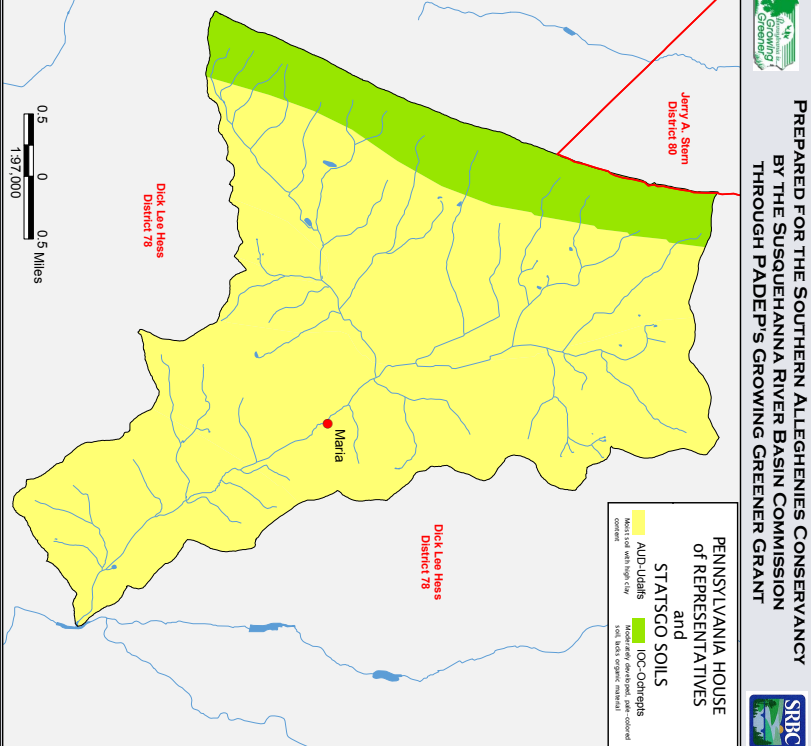
Product Made Possible by Partnerships with PA Org. for Watersheds & Rivers (POWR), Eastern PA Coalition for Abandoned Mine Reclamation (EPCAMR), Western PA Coalition for Abandoned Mine Reclamation (WPCAMR), PA Spatial Data Access (PASDA)

POPULATION CENTER: Environmental Systems Research Institute (ESRI); RIVER/STREAM: U.S. Geological Survey; ROAD: PennDOT; WATERBODY: U.S.G.S. Susquehanna River Basin Commission, and Chesapeake Bay Program; SUSQUEHANNA RIVER BASIN: U.S.G.S.; AREA OUTSIDE SUSQUEHANNA RIVER BASIN: ESRI; CONGRESSIONAL DISTRICT: PennDOT, 2002; MINOR CIVIL DIVISIONS: PennDOT; COUNTY BOUNDARY: PADEP; WETLAND: U.S. Fish and Wildlife Service's National Wetlands Inventory; ABANDONED MINE LAND AND PROBLEM AREA: PADEP; LAND USE: Chesapeake Bay Program (Peter Cleggett, GIS Program); GEOLOGY, ROCK TYPE: SRBC; PENNSYLVANIA SENATORS AND HOUSE OF REPRESENTATIVES: Penn State Harrisburg, 2002 and Pa Legislators Home Page, 2003; STATSGO SOILS: U.S. Department of Agriculture's State Soil Geographic (STATSGO), SRBC(1017a) 10-07-2004 Map-Jeff Zimmerman, Jr.; Layout-Donna Gavin



PENNSYLVANIA SENATORS and GEOLOGY by ROCK TYPE

- Limestone
- Dolomite
- Sandstone
- Quartzite
- Limestone
- Dolomite
- Sandstone
- Laminated sandstone
- Shale
- Laminated sandstone
- Laminated shale



PENNSYLVANIA HOUSE OF REPRESENTATIVES and STATSGO SOILS

- AHD-Udalls
- IOC-Cheerits
- AHD-Udalls

PREPARED FOR THE SOUTHERN ALLEGHENIES CONSERVANCY BY THE SUSQUEHANNA RIVER BASIN COMMISSION THROUGH PADEP'S GROWING GREENER GRANT

SRBC

EXHIBIT 2

PA FISH & BOAT REPORT



PA FISH AND BOAT COMMISSION
COMMENTS AND RECOMMENDATIONS
July 17, 2000

WATER: Potter Creek (711D) Bedford County
EXAMINED: July 15-16, 1999
BY: L.L. Jackson, T.A. Wilson, J.R. Frederick, R.T. Greene, and R.J. Weber

Bureau Director Action: ~~approval~~ - Delaney R. Druff Date: 7-19-00
Division Chief Action: Richard A. Snyder concur Date: 7-19-00
WW Unit Leader Action: _____ Date: _____
CW Unit Leader Action: R. Thomas Greene Date: 7/19/00

=====
AREA COMMENTS:

Potter Creek (711D), Section 02, re-inventoried in 1999, continues to support a Class A density of wild brown trout at 330.82 kg/ha following 8 years of wild trout management without hatchery plants.

AREA RECOMMENDATIONS:

- 1) Continue to manage Potter Creek, Section 02, as Class A wild brown trout water with no stocking of hatchery trout. Conventional statewide regulations continue to apply.

CWU COMMENTS:

Potter Creek (711D), Section 02, was examined during July 1999 as part of a routine reinventory of Class A wild trout waters in Fisheries Management Area 7.

Section 02 can be characterized as a small, productive, limestone stream. Historically, this section has been managed for wild trout under statewide regulations since the beginning of the 1992 season. The 1999 examination (conducted at two sample sites) recorded the presence of four fish species, including an excellent Class A wild brown trout fishery estimated in excess of 330 kg/ha. Interestingly, wild brown trout biomass has increased nearly three fold since the implementation of wild trout management in 1992.

CWU RECOMMENDATIONS:

1. Potter Creek (711D), Section 02, should continue to be managed as a Class A wild brown trout fishery. Conventional statewide regulations should apply with no stocking.

Literature Cited

Jackson, L.L. and A.L. Shiels. 1993. Potter Creek (711D), Section 02, Management Report. PFBC files. Robinson Lane. Bellefonte, PA.

Jackson, L.L. 1979. Potter Creek (711D), Section 02, Management Report. PFBC files. Robinson Lane. Bellefonte, PA.

PENNSYLVANIA FISH AND BOAT COMMISSION
Bureau of Fisheries
Fisheries Management Division

Potter Creek (711D) Management Report
Section 02

Date Sampled: July 15-16, 1999

Date Prepared: Spring 2000

Prepared by
L.L. Jackson and T.A. Wilson

Introduction

Potter Creek originates on the eastern slope of Dunning Mountain in Bloomfield Township, northern Bedford County. The stream, augmented by springs emerging from limestone aquifers, flows in a southeasterly direction for 9.2 km (5.7 mi.) through an agricultural watershed of 32 km² (82.88 mi²) to its confluence with Yellow Creek at Waterside. Potter Creek can be located on the New Enterprise U.S.G.S. 7.5' series topographic quadrangle (Table 1). Potter Creek as part of the Yellow Creek Basin has been designated High Quality - Cold Water Fishes (HQ-CWF) under Chapter 93 by the Department of Environmental Protection (DEP).

Section 02 begins at the T-609 bridge and continues 5.4 km (3.3 mi.) to the confluence with Yellow Creek (Table 1). Section 02 had been managed in the PFBC Catchable Trout Program through spring 1991 with plants of brook trout (*Salvelinus fontinalis*) and rainbow trout (*Oncorhynchus mykiss*) and brook trout by the Southern Cove - Ravers Gap Sportsmen's Club Cooperative Nursery. Section 02 of Potter Creek was placed under management for wild brown trout (*Salmo trutta*) with conventional statewide regulations in January 1992. Harvest is not permitted from Labor Day until the opening day of trout season in April.

Section 02 was sampled in July 1999 to evaluate the wild trout management program begun in January 1992. Fish sampling was conducted on July 15-16, 1999 at two historical locations (Table 2) within the section. Backpack electrofishing (75-100 VAC) was conducted for 45 minutes over the 348 meter Station 0201 and 58 minutes over the 307 meter Station 0202. Average station widths ranged from 3.6 to 5.8 meters. Fish were represented by four species at Station 0201 and three species at Station 0202 (Table 3).

Brown trout, the dominant gamefish, were captured in size groups from 25 mm (1.0 in) to 424 mm (16.7 in). The July 1999 Petersen mark-recapture population estimates for Section 02, averaged over the two stations, estimated brown trout abundance and biomass at 2,070 /ha and 330.82 kg/ha, respectively. The May 1991 survey of the same two stations, which had resulted in wild trout management, had estimated abundance and biomass of brown trout at 1,097/ha and 110.66 kg/ha respectively (Table 4)(Jackson et al. 1993).

Brook trout were captured only at Station 0201, as in 1991, with estimated abundance at 115/ha and biomass at 10.08 kg/ha (Table 5). The 1991 two-station average brook trout estimated abundance and biomass had been 210/ha and 14.8 kg/ha, respectively.

The 1999 evaluation of Potter Creek in Section 02 re-affirmed the wild brown trout population surpassing the minimum statewide Class A criterion of 40 kg/ha that was established in 1983 under Operation FUTURE. Class A status was maintained with a section biomass of 330.82 kg/ha of wild brown trout with 1.2 kg/ha less than 150 mm (~6 in.) and total brown trout biomass was nearly three times the 1991 biomass. The estimated total number of brown trout per kilometer of stream increased by 41% from 1991 to 1999 and, not only were there more brown trout in 1999, there were more brown trout greater than 300 mm (~12 in.) in 1999 (135/km) than in 1991 (27/km) and 1979 (18/km)(Jackson 1979).

Potter Creek in Section 02 continues to support a viable reproducing wild brown trout fishery of high quality eight years after cessation of hatchery plants. Restrictive regulations are not a necessary management tool in this stream section where high quality trout densities have increased significantly since the 1991 survey. This section of Potter Creek should continue to be managed for wild brown trout under the present conventional statewide regulations.

The DEP Chapter 93 water quality designation of High Quality - Cold Water Fishes (HQ-CWF) for the Yellow Creek basin is sufficient to protect this wild trout fishery.

Stream Resource Classification

Biomass Class:	A (Total BT biomass = 330.82 kg\ha) (BT biomass <150 mm = 1.2 kg\ha)
Recreational Use Potential:	Good
Human Population Density:	Rural (14/km ² : 1990)
Width Class:	3 (4.7 m)

Specific Action

- 1) Continue to manage Potter Creek, Section 02, as Class A wild brown trout water with no stocking of hatchery trout. Conventional statewide regulations continue to apply.

Table 1. Physical Characteristics of Potter Ck. (711D), Section 02
Bedford County, surveyed July 15 - 16, 1999.

Characteristics	Description
USGS Quadrangles	New Enterprise (Q18)
Section Limits	USL - T-609 Bridge DSL - Mouth
Length (km)	5.4
Mean Width (m)	4.7
Area (ha)	2.54
Gradient (m/km)	8.4

Table 2. Station Locations, Lengths and Mean Widths for Potter Ck. (711D),
Section 02, Bedford County, surveyed July 15 - 16, 1999.

Station Number	Downstream Station Limit	Length (m)	Mean Width (m)
0201	SR 1032 Bridge	348	3.6
0202	307m downstream of T-594 Bridge	307	5.8
			Section Mean = 4.7

Table 3. Common and scientific names of fish species captured by electrofishing in Potter
Ck. (711D), Section 02, Bedford County, surveyed July 15 - 16, 1999 and compared
to data collected May 22 - 23, 1991 and May 22 - 23, 1979.

Common Name	Scientific Name	0201			0202		
		'99	'91	'79	'99	'91	'79
Rainbow trout	<i>Oncorhynchus mykiss</i>		x			x	
Brown trout	<i>Salmo trutta</i>	x	x	x	x	x	x
Brook trout	<i>Salvelinus fontinalis</i>	x	x	x			x
Palomino trout	<i>Oncorhynchus mykiss</i>					x	
Blacknose Dace	<i>Rhinichthyys atratulus</i>						x
Creek Chub	<i>Semotilus atromaculatus</i>						x
White sucker	<i>Catostomous commersoni</i>	x		x	x		x
Northern Hog Sucker	<i>Hypentelium nigricans</i>			x			
Sculpins	<i>Cottus sp.</i>	x		x	x		x
Total Species		4	3	5	3	3	6

Table 4. Comparison of Population Estimates for Brown Trout captured by Electrofishing Potter Creek, Section 02, Bedford County, July 15 - 16, 1999, May 22 - 23, 1991 and May 22 - 23, 1979.

SECTION 02 AVERAGE BROWN TROUT													
YEAR	1999				1991				1979*				
	SIZE GROU	#/ha	kg/ha	#/km	kg/km	#/ha	kg/ha	#/km	kg/km	#/ha	kg/ha	#/km	kg/km
25						40	0.04	28	0.03				
50	40	0.08		16	0.03	240	0.72	141	0.42				
75	111	0.67		58	0.35	3	0.03	1	0.01				
100						3	0.08	1	0.03				
125	18	0.45		7	0.18	13	0.47	6	0.22	32	1.2	13	0.49
150	199	9.94		81	4.05	104	5.49	46	2.43	29	1.78	11	0.68
175	411	34.54		187	15.72	272	24.52	132	11.90	96	7.45	40	3.10
200	387	44.56		200	23.03	199	23.11	111	12.89	20	1.97	10	0.99
225	196	30.4		104	16.13	84	13.51	52	8.36	5	0.69	3	0.41
250	254	51.1		108	21.73	34	6.29	16	2.96	46	9.32	19	3.85
275	194	52.87		88	23.98	46	11.46	22	5.48	26	6.75	13	3.38
300	94	29.81		47	14.91	18	6.04	9	3.02	9	2.91	5	1.62
325	69	26.92		36	14.05	16	5.94	7	2.60	5	1.99	3	1.19
350	58	26.2		31	14.00	16	7.02	7	3.07	15	7.37	6	2.95
375	18	9.93		10	5.52	3	2.01	1	0.67	3	1.59	2	1.06
400	21	13.35		11	6.99	6	3.93	3	1.97	3	1.97	2	1.31
TOTALS	2070	330.82		984	160.67	1097	110.66	583	56.06	289	44.99	127	21.03

* - Only marking run performed at Station 0202.

Table 5. Comparison of Population Estimates for Brook Trout captured by Electrofishing Potter Creek, Section 02, Bedford County, July 15 - 16, 1999, May 22 - 23, 1991 and May 22 - 23, 1979.

YEAR	1999				1991				1979*				
	SIZE GROU	#/ha	kg/ha	#/km	kg/km	#/ha	kg/ha	#/km	kg/km	#/ha	kg/ha	#/km	kg/km
25					3	< 0.01	1	< 0.01					
50					23	0.07	10	0.03					
75	31	0.18	11	0.06									
100													
125					3	0.08	1	0.03					
150	8	0.32	3	0.12	37	1.5	16	0.65	4	0.22	2	0.11	
175	24	1.51	9	0.57	76	4.61	33	2.00	44	2.91	18	1.19	
200	8	0.7	3	0.26	37	3.55	16	1.54	32	3.08	13	1.25	
225	32	4.17	12	1.56	17	2.2	7	0.91	19	2.53	8	1.07	
250	4	0.69	1	0.17	7	1.19	3	0.51	15	2.77	6	1.11	
275	4	0.85	1	0.21									
300					7	1.6	3	0.69					
325	4	1.66	1	0.42									
TOTALS	115	10.08	41	3.37	210	14.8	90	6.36	114	11.51	47	4.73	

* - Only marking run performed at Station 0202.

EXHIBIT 3

PA NATURAL DIVERSITY INDEX FINDINGS





Pennsylvania Natural Heritage Program

March 12, 2004

Branden Diehl
 Southern Alleghenies Conservancy
sacproject@earthlink.net

Re: List of Species and Natural Communities of Special Concern in the Potter Creek Watershed, Bedford County

Dear Mr. Diehl,

A search of the Pennsylvania Natural Heritage Program database yielded the following results for the Potter Creek watershed:

Scientific Name	Common Name	EORANK	GRANK	SRANK	Last Observed	PA Status	PBSSTATUS	Fed Status
Arabis hirsuta	Western Hairy Rock-cress	H	G5	S1	1946-06-02	TU	PE	

The ridge between Potter Creek and Yellow Creek is made up of dolomite/limestone rock (Gatesburg, Bellfonte, Axemann, and Warrior formations). The wetlands along Yellow Creek, which support the rare plants and the natural community listed below, are fed by water seeping through this limestone. Similar wetlands could exist on the Potter Creek side of the ridge. Therefore, these species and community could exist undiscovered if there are wetlands in the Potter Creek watershed.

Scientific Name	Common Name	EORANK	GRANK	SRANK	Last Observed	PA Status	PBSSTATUS	Occurrence Number	Fed Status
Salix x subsericea	Meadow Willow	H	G5	S1	1963-04-23	TU	PE	2.000000	
Pedicularis lanceolata	Swamp Lousewort	H	G5	S1S2	1951-09-01	N	PE	3.000000	
	Lance-leaved								
Rhamnus lanceolata	Buckthorn	H	G5	S1	1954-07-08	PE	PE	1.000000	
Galium trifidum	Marsh Bedstraw	H	G5	S2	1961-08-07	N	PR	3.000000	
Lathyrus palustris	Vetchling	H	G5	S1	1962-05-29	TU	PE	3.000000	
Lathyrus palustris	Vetchling	H	G5	S1	1962-05-29	TU	PE	5.000000	
Carex prairea	Prairie Sedge	E	G5?	S2	1995-06-01	PT	PT	2.000000	
Carex tetanica	A Sedge	E	G4G5	S2	1995-06-02	PT	PT	9.000000	
Rhynchospora capillacea	Capillary Beaked-rush	H	G5	S1	1961-07-26	PE	PE	1.000000	
Cladium mariscoides	Twig Rush	E	G5	S2	1995-06-02	PE	PE	2.000000	
Juncus arcticus var. littoralis	Baltic Rush	E	G5T5	S2	1986-06-22	PT	PT	16.000000	
Carex schweinitzii	Schweinitz's Sedge	C	G3	S1	1986-06-22	PT	PE	8.000000	
Juncus arcticus var.	Baltic Rush	H	G5T5	S2	1961-07-16	PT	PT	7.000000	

littoralis							
Carex sterilis	Sterile Sedge	H	G4	S1	1962-06-13	PT PE	9.000000
Potamogeton hillii	Hill's Pondweed	E	G3	S1	1993-08-19	PE PE	2.000000
Rhynchospora capillacea	Capillary Beaked-rush	H	G5	S1	1961-07-26	PE PE	2.000000
Panicum flexile	Wiry Witchgrass	H	G5	S2S3	1961-09-16	TU TU	2.000000
Eriophorum gracile	Slender Cotton-grass	H	G5	S1	1875-06-15	PE PE	5.000000
Carex sterilis	Sterile Sedge	E	G4	S1	1993-07-02	PT PE	1.000000
Eleocharis elliptica	Slender Spike-rush	B	G5	S2	1987-06-29	PE PE	4.000000
Carex sterilis	Sterile Sedge	B	G4	S1	1995-06-02	PT PE	3.000000
Galium labradoricum	Labrador Marsh Bedstraw	B	G5	S1	1987-06-29	PE PE	1.000000
Juncus arcticus var. littoralis	Baltic Rush	B	G5T5	S2	1995-06-02	PT PT	4.000000
Basin graminoid-forb fen	Basin Graminoid-forb Fen	E	GNR	S1	1995-06---		9.000000

Please note that the many species and the natural community of special concern should be the targets of field studies within the Potter Creek watershed. If funding can be arranged for to support such inventory work, our staff botanists and ecologists would be very interested in conducting such a study in order to inform and improve watershed conservation information and planning.

PNHP CLAUSE

Pennsylvania Natural Heritage Program (PNHP) maintains a site-specific information system that describes significant natural resources of Pennsylvania. This system includes data descriptive of plant and animal species of special concern, exemplary natural communities and unique geological features. PNHP is partnership of the Department of Conservation and Natural Resources, The Nature Conservancy, and the Western Pennsylvania Conservancy.

The information provided is confidential due to the potential sensitivity of the species to disturbance, landowner privacy, and authorship. The data have been provided to you at no charge as a conservation partner to better protect species of special concern in Pennsylvania. The data are not to be distributed without prior written permission from the PNHP program. This information is provide for use in this single project and may not be applied to future projects without updates from the PNHP database.

This response represents the most up-to-date summary of the PNHP data files but does not constitute a response to a request for environmental review as related to an application for a development permit. Keep in mind that an absence of recorded information does not necessarily imply actual conditions on-site. A field survey of any site may reveal previously unreported populations.

Please let me know if this response satisfies your needs. Thank you for your request.

Sincerely,

Kierstin Carlson
 Conservation Data Manager
 Pennsylvania Natural Heritage Program - Western Pennsylvania Conservancy

Enc. Status and term definitions
 cc: Pinnizotto
 Wright

EXHIBIT 4

PA GAME COMMISSION BIOLOGIST REPORT



.....

Pennsylvania Game Commission

Wildlife Habitat Management Plan



Prepared by: Dan Mummert
Southcentral Wildlife Diversity Biologist
(814) 542-8759

Prepared for: Southern Alleghenies Conservancy
(Potter Creek Watershed)

.....

Wildlife Management Plan

Objectives and Land use

Landowner Objectives

To best manage the Potter Creek Watershed for overall riparian health.

Land use History

Trout Unlimited has done some stream bank fencing and tree plantings within the riparian buffer zone of the watershed.

Much of the adjacent land is associated with agriculture.

Property Description

General Habitat Description

Total Acres: The watershed is contained within 13 square miles

Location: The Potter Creek Watershed of Bedford County

Types Present	
Wetland	X
Forest	
Riparian Forest	X
Grassland	
Early Sucessional	
Other	

Unique Natural Areas/Features/Habitats

This watershed includes pristine spring-fed creeks

Species

Species observed on property

Potential species of concern present

Hellbender, Fowlers toad, mountain chorus frog, northern leopard frog, eastern box turtle, wood turtle, eastern hognose snake, great blue heron, great egret, black-crowned night heron, yellow-crowned night heron, northern harrier, American woodcock, bank swallow

Species of concern targeted for management

Hellbender, Fowlers toad, mountain chorus frog, northern leopard frog, eastern box turtle, wood turtle, eastern hognose snake, great blue heron, great egret, black-crowned night heron, yellow-crowned night heron, northern harrier, American woodcock, bank swallow



Management

Management Recommendations

1. Much of the Potter Creek watershed lacks a sufficient riparian buffer. Riparian buffers provide many benefits for wildlife and greatly improve water quality for humans. Riparian buffers protect water quality by intercepting sediment and pollution from adjacent agricultural fields, residential lawns, and roads. Riparian buffers also improve habitat for many wildlife species including fish, frogs, turtles, salamanders, aquatic macroinvertebrates, and birds associated with wetlands and riparian corridors such as kingfisher, heron and egret. As a general rule, wider buffers with greater diversity of plantings will provide the most positive benefits for wildlife and the overall health of the watershed. A total width of 25-50 feet from the stream's edge is usually the minimum suggested as an effective buffer for bank stabilization and water quality control. Water quality will increase with wider buffers and most species of wildlife require a wider buffer. It is therefore suggested that sections of the watershed riparian corridor be between 100-300 feet to help mitigate the impact of the adjacent agricultural land use and to provide quality habitat for an increased diversity of wildlife. When creating a riparian corridor it is helpful to conceptualize multiple zones.
 - a. Zone 1- Begins at the water's edge and has the main purpose of providing bank stabilization as well as shade and organic inputs (dead woody debris and leaves) for the stream health. In this zone larger trees and shrubs should be planted that have a high tolerance for wet conditions. It should be noted that only native trees and shrubs should be planted in any land management program. Examples of native trees and shrubs to plant in the Zone 1 region would include: American holly, Eastern hemlock, green ash, white ash, river birch, willow oak, American cranberrybush, mountain laurel, silky dogwood, spicebush, and winterberry. The benefits to wildlife with these plantings along Zone 1 are numerous. The plantings will shade the water which will help maintain a cooler water temperature for fish. Fallen branches and leaves will provide food and shelter for fish, aquatic insects and amphibians. Fallen branches and trees will also slow the water velocity to help decrease streambank erosion. Belted kingfisher use overhanging branches as perch sites to locate fish. The entire watershed should at the minimum have a continuous Zone 1 buffer that is at least 25 feet wide on each side of the creek.

- b. Zone 2- Much of the watershed should also include this buffer zone that extends from 25 feet to about 50 feet from each side of the creek. This zone is forest-shrubland that helps to absorb excess nutrients, preventing them from entering the water. This zone also helps slow runoff and allows runoff to slowly recharge the groundwater supply. This zone provides an important travel corridor for wildlife. Shrubs and trees provide food and cover for wildlife. Amphibians use low-lying pools that are seasonally wet for breeding. Examples of trees and shrubs to plant in this region include: American holly, inkberry, persimmon, gray dogwood, red oak, black chokeberry, flowering dogwood, winterberry, white oak, eastern hemlock, black cherry, and mapleleaf viburnum.
 - c. Zone 3- Any areas of the riparian corridor that extend beyond about 50 feet could be considered within this zone. In this area it is suggested that grassland habitat be planted and maintained. In agricultural areas this grassy zone has a highly beneficial impact on slowing runoff and trapping sediment. If wide enough, this area can also provide important grassland habitat for species such as eastern meadowlark and barn owl. Within this zone bluebird boxes can also be placed to attract bluebirds and tree swallows (making sure to monitor against house sparrow usage). Within this zone native warm-season grasses such as switchgrass, indiangrass, big bluestem, and little bluestem can be planted. Cool season grasses such as orchardgrass and timothy would also be beneficial in this zone.
2. It is suggested that a stream bank fencing program be initiated for the Potter Creek watershed. Stream bank fencing is a simple, cost-effective way to improve water quality in streams flowing through agricultural land containing livestock. By installing fences and cattle crossings, livestock has limited access to the stream bank which allows for the establishment of a vegetative riparian buffer. Positive effects of stream bank fencing also include reduced soil erosion, increased nutrient absorption, improved wildlife habitat, increased cattle health (due to reduced contact with waterborne bacteria that cause black leg, mastitis, and other ailments), and enhanced aesthetics of the landscape.
 3. After riparian buffers have been established, bluebird and possibly wood duck nest boxes should be installed in appropriate locations. Bluebird boxes should be placed 5 feet above the ground on metal or wooden poles with predator guards. Boxes should be separated by at least 125 feet to avoid intraspecific competition. They should also be placed at least 300 feet from any man-made structure to avoid usage by house sparrows. Bluebird boxes should only be installed if routinely monitored during the breeding season. If boxes are not monitored for either bluebird or tree

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swallow usage, house sparrows (an invasive, exotic species) may begin using the boxes.

Wood duck nest boxes should be installed within the riparian buffer in areas of mature forest where there is an abundance of vegetation within and on the border of the creek. Wood duck nest boxes should be separated by at least 200 feet to avoid nest dumping behavior.

4. Large downed woody debris piles would provide valuable cover habitat for a number of species such as salamanders, snakes, rabbits, fox, mice, shrews, etc. I would suggest creating several piles within the riparian buffer zone in locations without an extensive understory. Woody debris piles should be created by placing large limbs and tree trunks on the bottom with perpendicularly facing smaller limbs on top. There should be holes and cavities created of varying sizes for varying sizes of animals using the different cavities. On the very top of the pile small-diameter brush should be placed to help seal out the weather and provide additional cover habitat for songbirds.
5. To provide habitat for bats, I would recommend maintaining dead snags, shagbark hickory and other trees with loose bark throughout the Potter Creek watershed. These provide ideal roosting habitat for several bat species. If bats are properly managed for they can greatly decrease the number of mosquitoes and other flying insects throughout the watershed.

EXHIBIT 5

FIELD ASSESSMENT



EXHIBIT 5

Procedure for developing 'ideal reach':

At the meeting, held on September 27, 2003 at the New Frontier Restaurant, members were asked to describe parameters of a watershed that they envisioned as pristine and undisturbed. Their task was to provide parameters for scoring evaluations of the sample reaches on Potter Creek. The scoring associated with the sample reaches correlate to how closely the Potter Creek reaches matched the 'ideal reach'. Reaches scoring a 10 correlated to a perfect match of the 'ideal reach', whereas scores of 2 or 3 would indicate an extreme deviation from the 'ideal reach'.

Characteristics of the Ideal (Reference Reach) included:

Water clarity
Stable banks
Numerous habitat regimes
Constant/sustained flow
Spring fed
Canopy Cover
Temperatures conducive to aquatic organisms
Aeration
Riffle and pool sequences
Free from manmade structures and interference (fences, houses, retaining walls)
Limited access
Narrow width
Abundant biodiversity (plant and animal communities)
Calcium carbonate influenced water source
Spawning beds
Stable substrate
Meandering
Stable riparian zone (meadow, forest, grassland or other biota)

An 'ideal reach' encompassed all of the above criteria. After the meeting attendees and SAC staff went out to a sample reach to discuss the scoring parameters of the reach, using the criteria developed for the 'ideal reach' and the visual assessment. A consensus was reached on scoring and an understanding of the procedure was accomplished.

Assessment Guidance- Special Notes

Conduct the survey in groups. The groups should ideally contain 3 individuals. The purpose in utilizing a group approach is to develop a consensus as to the scoring of the reach.

Cruise, verify, and document your assigned sample reaches. Cruise; quickly perform a visual assessment of the entire sample reach. Verify; look at any areas that are of particular concern or out of the ordinary. Document; record the score for the sample reach on your scoring sheet. BE SURE to score the entire reach as a whole. If someone were to reassess your reach, your assessed value should be representative of their score.

Gauge each scoring parameter individually giving it a score ranging from 1-10, with 10 being a perfect correlation to the reference reach. It is imperative to score each parameter based on what it is asking. Scoring 'Bank Stability' has nothing to do with the water's general appearance; as such turbidity should not influence your score of 'Bank Stability'. Be sure to discuss each parameter being scored and challenge each others opinions and observations. Once a collective agreement has been made, document the appropriate score on your scoring sheets.

Take copious amounts of notes. Make notes of anything that may be of interests, no matter how consequential. The more notes, the easier it will be to determine areas of concern and how best to address those areas. Make note of abundant species, missing species, smells, and coloration of water or soil, anything that catches your eye.

Make a sketch, take pictures, make reference to points. Give mileage and points of reference related to structures or easily identifiable objects.

The entire intent of this assessment is to provide a structure for replicability. This assessment and document with serve as a guide for future study and assessments in the area.

Reach Descriptions for Potter Creek (Main-stem)

Reach 1 Intersection SR 36 & SR 868 (0.4 miles) to orange marker tied to tree.

Reach 2 From Orange marker on tree to point directly across from first barn on the right with manure storage near the road. Barn has red aluminum siding (0.3 miles).

Reach 3 From end of reach (2) to the first (Y) in SR 868 (0.4 miles)

Reach 4 From the end of reach (3) to Mill Brook Rd (0.3 miles)

Reach 5 From the end of reach (4) travel on 868 for (0.3) miles approximately 20 yds before a Red Barn on the left

Reach 6 From the end of reach (5) to the end of Don Claycomb's farm (Coral Body Shop Lane) (0.4 miles)

Reach 7 From the end of reach (6) approximately 50 yds N of junction with 1032 (Cowen School Rd) (0.3 miles)

Reach 8 From the end of reach (7) to approximately 10-15 yds S of white house-trailer with (Rugh sign in yard) (0.2 miles)

Reach 9 From the end of reach (8) to a green mailbox numbered 1578 on the right side of the road (directly across from blue, aluminum-sided garage on left side of road) (0.3 miles)

Reach 10 From the end of reach (9) to Snyder Creek Rd (0.3miles)

Reach 11 From the end of reach (10) to telephone pole 78 (notable change in vegetation) (0.2 miles)

Reach 12 From the end of reach (11) to where Potter Creek is nearly on SR 868 (utility pole flagged with orange and just before mailbox 1918) (0.1 miles)

Reach 13 From the end of reach (12) to segment marker 80 (0.2 miles)

Reach 14 From the end of reach (13) to the junkyard (0.1 miles)

Reach 15 From the end of reach (14) to the concrete bridge on SR 868 (0.1 miles)

NOTE: Survey reaches were determined based on significant changes in the habit and land use of a given area.

IV. The Visual Assessment Form

Potter Creek Visual Assessment

Sampler(s) name _____ Date _____

Stream name _____ Reach location: Latitude _____ Longitude _____

Reach location description _____

Reference Reach the perfect stream

Land use (%): row crop _____ grazing/pasture _____ forest _____ residential _____ hayland _____
 industrial _____ Conservation Reserve _____ other: _____

Weather conditions-today _____ Past 2-5 days _____

Active channel width _____ Dominant substrate: boulder _____ cobble _____ gravel _____ sand _____
 silt _____ mud _____

Photos taken? Y/N if yes, please describe: _____

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition

Natural channel; no structures, dikes. No evidence of down-Cutting or excessive lateral cutting.	Evidence of past channel alteration (little meandering of stream), but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization Excess aggradation ; braided channel and sediment "islands". Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 9 8	7 6 5 4	3 2	1

Keys: look for things like downcutting, lateral cutting, straightened or widened sections, dikes, levies, riprap or other obstructions and alterations

Riparian Zone

Native vegetation extends at least two active channel widths on each side and appears to providing adequate filtering function	Native or non-native vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Vegetation extends half of the active channel width on each side.	Vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Vegetation extends less than a third of the active channel width on each side. People mow or farm right up to the stream Or Filtering function severely compromised.
10 9	8 7 6	5 4	3 2	1

Active channel width: Elevation on the bank marking the normal maximum water flow before flooding occurs. For a 5 ft. wide stream, 10 feet would be 2 X active channel width.

Bank Stability

Banks are stable; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high; outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 9 8	7 6 5 4	3 2	1

Keys: When looking at bank stability, look at the slope of the bank. A steep or vertical slope indicates an unstable bank. Vegetation is also an important factor when looking at stability. A steep bank that has a good amount of vegetation or dense root cover extending to the baseflow elevation is more stable than a steep bank with little or no vegetation or root cover. A healthy riparian corridor with a vegetated floodplain contributes to bank stability. All stream banks erode—it is a natural process. But excess erosion can create sedimentation and be an indicator of excess run-off in the watershed and lack of riparian vegetation.

Water Appearance

Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.	Occasionally cloudy, especially following rain events; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.	Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.	Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10 9 8	7 6 5 4	3 2	1

Keys: Remember to look at the water, not the substrate. If you dipped a glass in the water, what would the water look like?

Nutrient Enrichment

Clear water along entire reach; little algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on stream substrates.	Greenish water along entire reach; overabundance of lush green macrophytes; abundant algal growth, especially during warmer months.	Pea green, gray or brown water along entire reach; dense stands of macrophytes (aquatic plants with roots) clog stream; severe algal blooms create thick algal mats in stream and make rocks slippery.
10 9 8	7 6 5 4	3 2	1

Keys: looking for algae and other aquatic vegetation; some is good, but can't be excessive.

Fish Barriers

No barriers.	Seasonal water withdrawals inhibit movement within the reach.	Drop structures, culverts, dams, fences, or other diversions (<1ft drop) within the reach.	Drop structures, culverts, dams, fences or diversions (>1ft drop) within 3 miles of reach.	Drop structures, culverts, dams, fences or diversions (>1ft drop) within the reach.
10 9	8 7 6	5 4	3 2	1

Keys: You are looking for withdrawals, culverts, dams, and diversions. Anything that is imposed or constructed by man that would impede fish passage.

Instream Fish Cover

>7 cover types available	6 to 7 cover types available	4 to 5 cover types available	2 to 3 cover types available	None to 1 cover type available
10 9	8 7 6	5 4	3 2	1

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other: _____

Embeddedness

Gravel or cobble particles are <20% embedded.	Gravel or cobble particles are 20 to 30% embedded.	Gravel or cobble particles are 30 to 40% embedded.	Gravel or cobble particles are >40% embedded.	Completely embedded.
10 9	8 7 6	5 4	3 2	1

Keys: embeddedness is defined as the degree to which objects in the stream bottom are surrounded by fine sediment. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. Be sure that you are looking over the entire reach, not just one riffle. To help define embeddedness, picture a rock. If the average sediment in the stream covers 20% , then check 20%, if 30% check 30%, and so on.

Insect/invertebrate Habitat

At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).	3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.	1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.	None to 1 type of habitat.
10 9 8	7 6 5 4	3 2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover

>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.	> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.	20 to 50% shaded.	<20% of water surface in reach shaded.
10 9 8	7 6 5 4	3 2	1

Sedimentation

No visible forest clear-cuts, poorly maintained gravel roads or driveways, till agriculture, cows in stream, or other contributors of sedimentation near the reach area	Sources of sedimentation in reach area, but do not appear to be contributing much sediment to stream due to healthy riparian zone and/or other factors	Activities in area appear to be providing sediment to the stream due to a poor riparian zone or other factors; however, this is not visible at the time of the assessment	Activities in area are providing excess sediment to stream, sediment is visibly running off gravel roads, fields, forest clear-cuts, and other areas
10 9 8	7 6 5 4	3 2	1

Sewage (if applicable)

(Intentionally blank)	Noticeable “sulfur” odor, excess plant growth and siltation.	Noticeable odor, excess plant growth. And Questionable pipe and/or black stream substrate.	Visible pipe with effluent, heavy odor.
	5 4	3 2	1

Manure Presence (if applicable)

(Intentionally blank)	Livestock visible within floodplain of stream but do not have direct access to stream, manure odor may be present	Livestock access to stream visible Or Occasional manure in stream or waste storage structure located on the flood plain.	Livestock access to stream visible, extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5 4	3 2	1

Assessment Scores

Channel condition

Riparian zone

Bank stability

Water appearance

Nutrient enrichment

Fish barriers

Instream fish cover

Embeddedness

Invertebrate habitat

Canopy Cover Sedimentation

Score only if applicable

Sewage

Manure presence

Overall score (Total divided by number scored) _____

<6.0 **Poor**

6.1-7.4 **Fair**

7.5-8.9 **Good**

>9.0 **Excellent**

Reaches	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total	Avg
Channel Condition	7	7	5	3	4	2	7	7	5	4	3	3	9	5	5	76	5.1
Riparian zone	1	1	6	3	2	1	9	9	5	4	3	3	7	1	9	64	4.3
Bank Stability	7	9	5	7	3	1	9	9	6	3	2	2	6	1	9	79	5.3
Water appearance	7	7	7	7	9	8	9	9	5	5	5	5	7	2	8	100	6.7
Nutrient enrichment	7	7	7	8	6	6	9	9	5	5	5	5	6	2	8	95	6.3
Fish barriers	5	9	4	3	9	8	9	9	8	8	8	8	9	9	9	115	7.7
Instream fish cover	3	3	4	2	2	1	7	9	4	4	3	2	3	1	3	51	3.4
Embeddedness	5	5	5	5	6	6	9	9	8	8	8	8	3	2	6	93	6.2
Invertebrate habitat	3	3	4	3	3	2	9	9	5	4	4	4	2	1	1	57	3.8
Canopy cover	5	1	2	1	1	1	7	9	3	2	3	1	5	1	1	43	2.9
Sedimentation	8	3	2	3	2	2	9	9	4	2	2	3	3	2	1	55	3.7
Total score	58	55	51	45	47	38	93	97	58	49	46	44	60	27	60	828	55.2
Average reach score	5.3	5.0	4.6	4.1	4.3	3.5	8.5	8.8	5.3	4.5	4.2	4.0	5.5	2.5	5.5	75.27	5.0

EXHIBIT 6

CONSERVATION EASEMENTS



Exhibit 6

Property Easement Information **(excerpts from The Conservation Easement Handbook- Managing Land Conservation and Historic Preservation Easement Programs by Janet Diehl and Thomas Barret. ISBN 0-943915-03-1.)**

Conservation easements are great tools for protecting land resources from the pressures of development, can serve as a means to reduce property taxes, and provide a means for leaving a legacy for the future.

According to Diehl and Barret, qualifying for federal tax deductions must meet three of the following IRS guidelines:

1. easement is donated in perpetuity
2. land is given to a qualifying agency (such as SAC)
3. easement is given strictly for conservation purposes

For more information on IRS easement requirements, see IRS Section 170 (h) (4) (A). Developing a conservation easement is a time consuming task that involves numerous parties and multiple steps. The end result of an easement is a reduction in taxes and piece of mind knowing the land will be held in perpetual conservation care. It is important to note that the exact tax savings can not be fully known until the easement is finalized.

According to Diehl and Barret, property owners granting easements should be aware of the following:

1. the easement must be donated or sold at less than market value
2. said easement must be granted in perpetuity
3. easement must be granted to a qualifying agency, such as SAC
4. easement must fit the IRS guidelines as previously alluded to
5. cost savings to the property owner is generally equal to the difference between value before the easement and after the restriction has been placed on the deed
6. an appraisal approved by IRS must be completed
7. IRS allows only 30% of a donation of tax payers adjusted gross income, any excess can be carried over for tax purposes for five succeeding years
8. professional counsel in legal and tax advice is recommended

Additional information on easements is available from:

The Land Trust Alliance
1331 H Street NW
Washington, DC 20005
202-638-4725
www.lta.org

Land Conservation Strategies



Preserving our natural
and historic heritage

A GUIDE FOR LANDOWNERS

How can I protect my land? What are my options?

Do I want to protect all of my land or a portion of it?

Do I want to restrict the land to certain uses?

Can I donate the land? If I am unable to donate property in its entirety, what other options do I have?

What are the financial benefits of donating land, conservation easements or partial interests in land?

Are tax implications important?

How will my decisions affect my land and the community?

Do my children wish to see the land protected?

Landowner's Options for Protecting Family Lands

Preserving family lands from future development can be a satisfying act of generosity for people committed to protecting the environment. Many valuable sites of historic importance, natural significance, and scenic beauty, protected today, would have been developed had it not been for the generosity of individuals, groups and companies who chose to donate their land to one of the public or private organizations which can accept land and assure that it will remain in its natural state.

For over 40 years, Heritage Conservancy has been working with landowners to preserve their family lands through a variety of techniques designed to carry out the landowner's wishes. Some of these strategies also offer tax incentives for the landowner.

This guide will focus on the four most frequently used strategies: fee simple donation, conservation easement, bargain sale and conservation-based development.

Fee Simple Donation

A fee simple donation is the transfer of a property by deeding it directly to a charitable organization for conservation or other purposes. Tax benefits may apply to the donor.

Heritage Conservancy does not give accounting or legal advice, however, we can provide you with the following hypothetical calculations that you may adjust to your own use and discuss with your tax advisor regarding income tax deductibility.

Tax Benefits- Fee Simple

Example: If one (1) acre of land were appraised at \$10,000 and if you were to DONATE it to a non-profit organization such as Heritage Conservancy, you would be able to claim a deduction from federal income taxes on the FULL VALUE up to 30% of your adjusted gross income. Assuming you were in the 35% tax bracket, you would save \$3,500 in income taxes.

If you were unable to take advantage of the full \$10,000 deduction in the year you donated the property, you could CARRY-FORWARD the unused deduction for up to five additional years for up to \$3,500 per year until the full deduction was used up.

Conservation Easement Donation

A conservation easement is a legally binding covenant between current and future property owners and an organization such as the conservancy which preserves significant natural areas (i.e. stream valleys, farmland, woodland, wildlife habitat, unique plant communities) and special natural features of the property by restricting selected uses.

A conservation easement allows a property owner to retain ownership of his property, including the ability to pass the

(continued on Pg. 4)

Conservation Easements - Questions and Answers

What is a conservation easement?

A conservation easement is a method of protecting and preserving significant natural areas, (i.e. stream valleys, farmland, woodland, wildlife habitat, unique plant communities) and special natural features of the property by restricting selected uses.

Will I still own my property under “easement?”

Yes. The conservation easement allows the property owner to retain title, pass the property on to heirs or even sell the property. An easement protects the property against uses which may change the natural features of the land.

How long does an easement last?

In most cases, conservation easements are placed on a property to last forever, legally known as “in perpetuity.” Easements are legally binding covenants to current and all future owners of a property placed under conservation easement. The easement is recorded in the Land Records Office in the form of a deed. Any title search of a property will reveal the existence of a conservation easement and all future owners will be bound by it.

What are the advantages of an easement?

When a landowner places a property under conservation easement, he or she has permanently protected that property. The restrictions placed on the property through the conservation easement allow the landowner to determine how the property will be used long after he is gone. In addition to the knowledge that the property will remain protected against development, the owner can derive tax benefits from the easement. These can include reduction of federal income taxes, reduction of estate or inheritance taxes, and possible deduction in real estate taxes.

Can I still reside on my land after an easement has been placed?

Yes. A conservation easement allows you to retain title and also remain on the land. It only restricts those uses such as subdivision and development which are described in the easement. If desired, easements may be written to provide for specific limited development of a property, such as

additions or modifications to existing structures, home sites for children, farm structure construction, and specific property uses, such as cutting of firewood and normal agricultural practices.

How can granting an easement reduce a property owner’s estate tax?

Many heirs to large historic estates and to large tracts of open space, such as family farms, face monumental estate taxes. Even if the heirs wish to keep their property in the existing condition, the federal estate tax is levied not on the value of the property for its existing use, but on its fair market value, its highest and best use. The resulting estate tax can be so high that the heirs must sell the property to pay the taxes.

A conservation easement, however, often can reduce estate taxes. If the property owner has restricted the property by a perpetual conservation easement before his or her death or by including the easement in his will, the property must be valued in the estate at its restricted value. To the extent that the restricted value is lower than the unrestricted value, the value of the estate will be less, and the estate will thus be subject to a lower estate tax.

Even if a property owner does not want to restrict the property during his or her lifetime, the owner can still specify in his or her will that a charitable gift of a conservation easement be made to a qualifying organization upon the owner’s death. Assuming that the easement is properly structured, the value of the easement gift will be deducted from the estate, reducing the value on which estate taxes are levied.

Must an easement open my land to public access?

No. The land is still privately owned, and the easement-holding organization is responsible for monitoring the property. If an easement donor does wish public access for educational or environmental recreation, the easement can be written to allow for this.

How can donating an easement reduce a property owner’s income tax?

The donation of a conservation easement is a tax-deductible charitable gift, provided that the

Conservation Easements - Questions and Answers

easement is perpetual and is donated “exclusively for conservation purposes” to a qualified conservation organization or public agency listed under Section 501(c)3 of the Internal Revenue Code. The Heritage Conservancy is a qualified organization under this code. Further qualifications exist under Internal Revenue Code Section 170(h) which generally defines “conservation purposes” to include the following:

- the preservation of land areas for outdoor recreation by, or for, the education of, the general public,
- the protection of relatively natural habitats of fish, wildlife, or plants, or similar ecosystems,
- the preservation of open space - including farmland and forest land - for scenic enjoyment or pursuant to an adopted governmental conservation policy; in either case, such open space preservation must yield a significant public benefit, and
- the preservation of historically important land areas or buildings

A donation need only fit into one of these categories to qualify. To determine the value of the easement donation, the owner has the property appraised both at its fair market value without the easement restrictions and at its fair market value with the easement restrictions. The difference between these two appraised values is the easement value. Detailed federal regulations govern these appraisals.

Example: A property has an appraised fair market value of \$100,000. Mrs. Price, the landowner, donates a conservation easement to a local land trust. The easement restrictions reduce the property’s market value to \$64,000. Thus, the value of her gift of the easement is \$36,000. Assuming the easement meets the conservation purposes test, Mrs. Price - like any donor of appreciated property - is eligible to deduct an amount equal to 30 percent of her adjusted gross income each year for a total of six years, or until the value of the gift has been used up. If Mrs. Price has an annual adjusted gross income of \$60,000, she can deduct \$18,000 a year (30% x \$60,000) until she

has used up the \$36,000 value. In this case, she will use up the gift in two years (2 x \$18,000 = \$36,000) if her income does not change. This is just a simple example.

Easement donors may qualify for greater tax savings, especially with the current inflated price of real estate in our area. Potential easement donors should seek their own legal counsel to determine exactly how this method of land protection will benefit their individual situation.

Can granting an easement reduce an owner’s property tax?

Property tax assessment usually is based on the property’s market value, which reflects the property’s development potential. If a conservation easement reduces the development potential of the property, it may reduce the level of assessment and the amount of the owner’s property taxes. This is unlikely if the property is already valued with a preferential tax assessment which relates to farmland or open space and woodland use. However unlike these preferential tax assessments, a conservation easement is a permanent preservation method and as such would not be subject to any roll-back taxes, as the land use will not change.

The actual amount of property tax reduction, if any, depends on many factors. State law and the personal attitudes of local officials and assessors may influence or determine the decision to award property tax relief to easement grantor.

Is there any cost to me in placing my property under conservation easement?

Yes. There are some costs accrued by the landowner in placing a Conservation Easement on a property. These include:

- the costs of legal counsel
- an appraisal necessary for IRS purposes
- survey costs only if a portion of the property not clearly defined in a legal description is to be placed under easement
- County Recorder’s fee
- Heritage Conservancy’s costs: the materials and staff time necessary to prepare the easement documentation and the baseline documentation, and
- an endowment for Heritage Conservancy to monitor and defend the easement.

Landowner's Options

(continued from pg. 1)

property on to his heirs or sell the property, while still providing for the site's protection. It assures that future use of a property will be consistent with conservation purposes through specific clauses in the easement document. The property remains in private ownership and does not need to be opened to the public.

Tax Benefits - Conservation Easement

Example: A charitable deduction for donation of a conservation easement is valued through appraisal of the difference between highest and best use value of land (based on development potential under current zoning) and restricted value of the land.

Thus if: 10 acres of land is valued at \$100,000 with development potential (highest and best use). The same land is valued at \$25,000 with restrictions (the valuation will depend on how you restrict use, for instance it will be less if you allow for a building en-

velope for one residential lot).

The VALUE you GIVE AWAY is the conservation easement value: \$75,000.

You then may claim the conservation easement value in the same way you would a fee simple gift, up to 30% of your adjusted gross income, with a possible five-year carry forward to allow you to use the full value of the gift.

In this scenario, if you were in the 35% tax bracket and your donation value is \$75,000, your actual total savings in income tax would be \$26,250. An easement runs with the property in perpetuity. A third party monitors the easement to assure compliance.

Bargain Sale

A bargain sale is the sale of a property to a qualified tax exempt organization or government entity for less than the fair market value. A bargain sale provides a tax benefit to the property owner as the difference between the appraised value and the actual sale price is a charitable contribution which is

treated in the same manner as the previous scenarios.

Conservation-Based Development

Conservation-based development is a process in which development is driven by the preservation of the ecological values of the property as well as the achievement of the economic goals of the owner. This is accomplished by limiting future uses and regulating changes that can be made to the land while providing a reasonable return on the property owner's investment in the land. This technique may use a combination of the above cited preservation tools to accomplish this goal.

In this process the property remains in private hands. The right to sell or transfer in any way remains with the property owner, subject to an easement. This preserves a significant portion of the original tract as "open space" and may afford tax benefits if an easement is donated.

If you have land you would like to protect for future generations, learn more about the options available to you. Decisions affecting the ownership and use of your property should only be made after careful consideration and professional consultation. For more information, call

Heritage Conservancy
(215) 345-7020



85 Old Dublin Pike Doylestown, PA 18901

Land Conservation Strategies



*Preserving our natural
and historic heritage*

Resource Protection Glossary of Terms

BARGAIN SALE - Sale of a property to a tax exempt organization for less than the fair market value.

BASELINE DOCUMENTATION - Information and documentation to give evidence to the condition of land at the time a conservation easement is made.

BEQUEST - A gift of money, real property, or conservation easement in a person's will; can secure conservation of property and take property value out of calculation for estate tax.

CAPITAL GAINS - profit from the sale of land or other capital asset in excess of cost, or other basis.

CHARITABLE CONTRIBUTION- The tax deductible transfer of money or property to a qualified charitable organization.

CONSERVANCY - An organization specifically set up to promote and affect conservation of natural and historic resources.

CONSERVATION - Careful preservation and protection of resources, usually referring to land and related natural resources, includes planned management of resources to protect their future integrity and value.

CONSERVATION-BASED DEVELOPMENT - a develop-

ment plan for a property that frequently incorporates the use of conservation easements and permits landowners to undertake a specified and limited amount of future building or development that does not interfere with the land's conservation value.

CONSERVATION EASEMENT - A legally-binding agreement between a property owner and an organization such as a conservancy which protects natural resource values of the property by restricting selected uses. The property remains in private ownership and does not need to be opened to the public. Tax benefits may apply to the donor.

DEED RESTRICTION - a written stipulation contained within a deed that restricts certain future uses of the property generally inserted at the time of transfer. A deed restriction may include restrictions similar to those contained within a conservation easement. However, enforcement may only be carried out by the prior owner or other parties to the transaction and the restrictions may be canceled at any time by mutual written agreement.

DONOR - A person who makes a charitable contribution to a qualified organization.

ENDOWMENT - A permanent stewardship fund established to support costs of maintaining a property or defending and monitoring a conservation easement.

Permanence is assured by restricting withdrawals from the principal and relying on investment income for annual cost.

ESTATE TAXES - The combined state and federal taxes levied against one's total estate including real property at death, payable within nine months and before distribution to the heirs; with \$625,000 allowable exemption, federal taxes alone are 55% and can be devastating to continued ownership of significant properties by the heirs.

GIFT IN FEE SIMPLE - Transfer of a property by deeding it directly to a charitable organization for conservation or other purposes. Tax benefits may apply to the donor.

QUALIFIED CHARITABLE ORGANIZATION - An organization which has been recognized by the Internal Revenue Service (IRS) as a 501(c)(3) organization for the public benefit.

STEWARDSHIP - Caring for and managing resources with good conservation practices to ensure their protection; a philosophy of land management which focuses on caring and preservation rather than control.

EXHIBIT 7

WATERSHED PICTURES





The Potter Creek watershed as previously mentioned is part of the Ridge and Valley Geographical Province of PA. This picture provides an illustration of the valley's agricultural and residential use bonded by a ridge to the north, east, and west. This view illustrates the sparse population density, the usage of valley land for agriculture, and the difference in topographic relief.



This picture taken near the confluence of Potter Creek and Yellow Creek near State Route (SR) 36 exhibits a well established riparian zone. This riparian zone is narrower than desired, but illustrates what a complete forested riparian zone should look like. Nearby influences on this reach include highways, a rural electric substation, and residential impacts.



A typical view of a lack of well established riparian zones in the watershed. This riparian area lacks diverse vegetation, is not nearly wide enough, and provides little if any canopy cover for stream shading. This area is nearly directly bordered by an agricultural field. Concern exists related to fertilizer and insecticide runoff, not to mention the concern related to stormwater runoff and sediment deposition. Algal growth in this area indicates a nutrient enhancement of the reach. Aquatic grasses are resultant of increased sediment deposition.



Highways such as SR 868, which traverse the watershed impact the stream with increased storm runoff, increased sedimentation, increased pollution, and limit the available space for the development of adequate riparian zones.



Instructional training of the Trout Unlimited Members occurred at the New Frontier Restaurant. This training focused on providing the members with an understanding of the procedures for conducting a rapid visual assessment (as previously referenced in the report). The training provided detailed explanations of terms, protocols, and the development of an ideal reach. For the purposes of this report an ideal reach was used instead of a reference reach.



After the training session, members of TU had the opportunity to go out to a selected reach with SAC staff to practice the skills that were outlined in the training. At the selected site, a discussion ensued related to the scoring of reach parameters. Staff underscored the importance of the work being done in groups and the need to gage only the individual parameter in question and not the reach in its entirety.



A typical view of agricultural land use in the watershed. Concern exists related to nutrient management and usage of marginal soil complexes. Farming in the watershed is a predominant land use. In the foreground one can see one of the asphalt roads that cross the watershed. Below is a picture of grazing impacts on the watershed and another example of a lack of an established riparian zone.





For over a decade the MLTU has been coordinating watershed restoration efforts, including this streambank stabilization project. The local TU Chapters have worked collectively to address problems within the watershed and have developed a strong rapport with watershed residents.



The Commonwealth's water resources are under attack. Privatization of lands adjacent to waterways has always been a concern to those wishing to gain access. Individuals are currently purchasing property to restrict access and for the purpose of developing private fishing clubs within the watershed. Attention should be given to addressing public access to this fishing resource. Below is a picture of a successful TU streambank fencing project.



EXHIBIT 8

WATERSHED ASSISTANCE



Watershed Resources

Bedford County Conservation District

Attn: Jen Lentz-Kovacs
702 West Pitt St
Fairlawn Court
Bedford, PA 15522
623-7900-108

PA Trout Unlimited

www.patROUT.org
PO Box 5148
Pleasant Gap, PA 16823-5148

PA Department of Environmental Protection

www.dep.state.pa.us
Bureau of Watershed Management
Attn: Stuart Gansell
10th Floor Rachel Carson State Office Bldg
PO Box 8555
Harrisburg, PA 17105-8555
717-783-7420

Western PA Watershed Program

www.wpawp.org
Attn: R John Dawes
9697 Loop Road
Alexandria, PA 16611
814-669-4244

Southern Alleghenies Conservancy

www.saconservancy.org
Attn: Branden S Diehl
702 West Pitt St
Fairlawn Court
Bedford, PA 15522
814-623-7900-5

Natural Resources Conservation and Development

www.nrcs.usda.gov
Attn: Lou Pierce
702 West Pitt St
Fairlawn Court
Bedford, PA 15522
814-623-7900-116

USDA Rural Development

www.rurdev.usda.gov

Attn: Darrel Clapper
702 West Pitt St
Fairlawn Court
Bedford, PA 15522
814-623-7900-127

Penn State Cooperative Extension

www.extension.psu.edu

Courthouse Annex
Bedford, PA 15522
814-623-44800

Western PA Conservancy's Watershed Assistance Center

www.wpconline.org/watershed

Attn: Nick Pinnizzotto
PO Box R
Route 381 S
Mill Run, PA 15464
724-329-0531

Canaan Valley Institute

www.canaanvi.org

Attn: Janie French
P.O. Box 673
Davis, WV 26260
304-463-4739

PA Fish and Boat Commission

www.fish.state.pa.us

Attn: David Spotts
450 Robison Lane
Bellefonte, PA 16823-9620
814-359-5115

Clean Water Fund

www.cleanwaterfund.org

1201 Chestnut Street #602
Philadelphia, PA 19107
215-640-8800

PA Organization for Watersheds and Rivers (POWR)

www.pawatersheds.org

25 North Front Street
PO Box 765
Harrisburg, PA 17108-0765
717-234-7910

Sierra Club

www.sierraclub.org

PO Box 606

Harrisburg, PA 17108 717-232-0101

Chesapeake Bay Foundation

www.cbf.org

The Old Water Works Bldg 614 North Front St, Suite G

Harrisburg, PA 17101 717-234-5550

PA Environmental Council

www.pecpa.org

600 North 2nd Street

Suite 300A

Harrisburg, PA 17101 717-230-8044

PennPIRG

www.pennpirg.org

1334 Walnut Street, 6th Floor

Philadelphia, PA 19107 215-732-3747

PennFuture

www.pennfuture.org

117 South 17th St

Suite T801

Philadelphia, PA 19103 215-569-9695

EXHIBIT 9

WATERSHED RESIDENTS



Property Owner	Special Comments	Address	Address #2	Town	State	Zip
Timothy Rush		799 Mtn View Rd		New Enterprise	PA	16664
Duane Gates		184 Potter Creek Rd		Woodbury	PA	16695
Anna M Heisel		832 Mtn View Rd		New Enterprise	PA	16664
Joel Amick		115 Dove Tail Ln		New Enterprise	PA	16664
Scott Carbaugh		2511 Woodbury Pike		Woodbury	PA	16695
Greg Feathers		221 Dove Tail Ln		New Enterprise	PA	16664
Walter Stolarski	Bought from Brenda Rice	865 Mtn View Rd		New Enterprise	PA	16664
Harry McGhee		208 State St		Woodbury	PA	16695
Douglas Slick		5421 Woodbury Pike		Roaring Spring	PA	16673
James Ritchey		147 Hilltop Drive	PO Box 122	New Enterprise	PA	16664
Todd England		144 Park Place		Lovsburg	PA	16659
Danny Foor		854 Mtn View Dr		New Enterprise	PA	16664
Mark Crawford		5690 Church View Rd	PO Box 184	Lovsburg	PA	16659
New Enterprise Rural Elec		PO Box 75		New Enterprise	PA	16664
Randy Arthur		791 Mtn View Rd	PO Box 207	Woodbury	PA	16664
Patrick Dively		2677 Woodbury Pike		Woodbury	PA	16695
Scott Bassler		2677 Woodbury Pike		Woodbury	PA	16695
Terry Snider		136 Potter Creek Rd		Woodbury	PA	16695
James Derbaugh		2699 Woodbury Pike		Woodbury	PA	16695
Douglas Newcomb		1435 Corcoran St NW #2		Washington	DC	20009
Daniel Hart		240 Potter Creek Rd		Woodbury	PA	16695
Harry Snyder		793 N Railroad Ave		Woodbury	PA	16695
Jason Long		914 Mtn View Dr		New Holland	PA	17557
Myeldera INC		551 Mountain View Dr		New Enterprise	PA	16664
David Moyer		331 Potter Creek Rd		New Enterprise	PA	16664
Elmira Grimes		244 Replogle School Rd		Woodbury	PA	16695
George Weidner		2555 Woodbury Pike		New Enterprise	PA	16695
Charlotte Gearhart		162 Hilltop Heights		Bedford	PA	15522
Donald Pannel		5501 Churchview Rd		New Enterprise	PA	16664
James Skillington		1180 Jacks Corner Rd		Hopewell	PA	16650
Shawn Claar		1428 Replogle School Rd		New Enterprise	PA	16664
Merle Snyder		649 Snyder Creek Rd		New Enterprise	PA	16664
Rufus Zimmerman		547 Furry Drive		New Enterprise	PA	16664
Justin Furry		1533 W Fillmore St		Phoenix	AR	85007
Paul Snyder		849 Snyder Creek Rd		New Enterprise	PA	16664
Gable Family Trust		437 3rd St		Manhattan Beach	CA	90266
John Bush		RD 1		Martinsburg	PA	16662
John Bush, Jr		1654 Rolling Hills Drive		Moscow	ID	83843
Charles Rugh		1474 Potter Creek Rd		New Enterprise	PA	16664
Suits Us Fellowship	C/O Mike Kulbach	528 Grant St		South Fork	PA	15956
Clyde Claycomb		1492 Potter Creek Rd		New Enterprise	PA	16664
Ray Elmer Swartz		1560 Potter Creek Rd		New Enterprise	PA	16664
William Edmiston		265 Summit St		Everett	PA	15537
Ross Imler		1440 Potter Creek Rd		New Enterprise	PA	16664
Donald Foor		1489 Potter Creek Rd		New Enterprise	PA	16664
Daryl Foor		1493 Potter Creek Rd		New Enterprise	PA	16664
Daryl Foor		652 Tatesville Rd		Everett	PA	15537
Paul Fisher		243 Millbrook Rd		New Enterprise	PA	16664
Charles Teeler		PO Box 186		Hopewell	PA	16664
Jeffery Koontz		192 KD Lane		New Enterprise	PA	16664

Jeanne Deifbaugh	114 KD Lane	New Enterprise	PA	16664
Wayne Corle	124 Corle Body Shop Lane	New Enterprise	PA	16664
Robert Berkhimer	2101 N Front St	Harrisburg	PA	17105-8028
Thomas Butler	154 Old Quarry Rd	Roaring Spring	PA	16673
Blair Dively	112 Furry Rd	New Enterprise	PA	16664
Nelson Reiff	187 Furry Rd	New Enterprise	PA	16664
Mervin Zimmerman	255 Furry Drive	New Enterprise	PA	16664
Edwin Rissler	2794 Brumbaugh Rd	New Enterprise	PA	16664
Bradely Imler	1399 Lafayette Rd	New Enterprise	PA	16664
Luke Martin	115 Snyder Creek Rd	New Enterprise	PA	16664
Kenneth Batzel	1419 Lafayette Rd	New Enterprise	PA	16664
Ella McElwee	267 Angel Lane	New Enterprise	PA	16664
Ronald Stauffer	1717 N 10th Ave	Altoona	PA	16601
Daniel McNally	34 Springs Drive	Martinsburg	PA	16662
Alan Gable	1647 Potter Creek Rd	New Enterprise	PA	16664
Fred Glasgow	522 Creek Rd	Moorestown	PA	08057-2225
Thomas Glasgow	439 Timber Lake Dr	Lynchburg	VA	24502-6921
Mather Snyder	307 Snyder Creek Rd	New Enterprise	PA	16664
Dawn Wadel	351 Snyder Creek Rd	New Enterprise	PA	16664
Lou Refner	798 Lafayette Rd	New Enterprise	PA	16664
Jesse Love	477 Over Rd	Martinsburg	PA	16662
Lee Detwiller	1388 Lafayette Rd	New Enterprise	PA	16664
Karl Greenleaf	1699 Lafayette Rd	New Enterprise	PA	16664
Blair Bedford Dirt Racers INC	329 Barley St	Roaring Spring	PA	16673
John Neville	173 Pine Grove Lane	New Enterprise	PA	16664
Norman Rosenberry	PO Box 197	St Thomas	PA	17252-0197
James Kirkman	154 Pine Grove Lane	New Enterprise	PA	16664
Warren Zimmerman	1489 Ridge Road	New Enterprise	PA	16664
Patrick Albright	354 Snyder Creek Rd	New Enterprise	PA	16664
Jay Claycomb	949 Lafayette Rd	New Enterprise	PA	16664
Jan Stauffer	220 Arizona Drive	Lower Burrell	PA	15068
Marlene Johnson	792 Middle Ridge Rd	New Enterprise	PA	16664
Merle Snyder	649 Snyder Creek Rd	New Enterprise	PA	16664
Wilma Wiest	446 Furry Rd	New Enterprise	PA	16664
Lucille Snyder	649 Snyder Creek Rd	New Enterprise	PA	16664
Richard Fisher	318 14th St	Duncansville	PA	16635
Alan Brumbaugh	144 Pine Grove Lane	New Enterprise	PA	16664
Martin Jones	Pine Grove Lane	New Enterprise	PA	16664
Date Snyder	1779 Lafayette Rd	New Enterprise	PA	16664
Holinger Church	3126 Lafayette Rd	New Enterprise	PA	16664
Paul Snyder	317 Snyder Creek Rd	New Enterprise	PA	16664
Joseph Clear	1510 Edenville Rd	Chambersburg	PA	17201
Lester Weaver	1041 Potter Creek Rd	New Enterprise	PA	16664
Edward Imler	1796 Ridge Rd	New Enterprise	PA	16664
Lathrop Haynes	PO Box 5455	Mount Laurel	NJ	08054
Jon Clouse	971 Lafayette Rd	New Enterprise	PA	16664
Randy Musselman	RD 2	East Freedom	PA	16637
Steven Shik	180Pine Grove Lane	New Enterprise	PA	16664
Zally Price	623 Cowan School Rd	New Enterprise	PA	16664
Glen Jackson	511 Lafayette Rd	New Enterprise	PA	16664

EXHIBIT 10

Funding Assistance





Fact Sheet

Commonwealth of Pennsylvania • Department of Environmental Protection

POTENTIAL FUNDING SOURCES FOR WATERSHED GROUPS

Many watershed groups have volunteers to work on numerous projects within their watershed boundaries. They try to resolve or remediate current problems by giving many hours of service, and they may help in the prevention of future water quality problems as well.

However, to perform these services, groups need money for the purchase of equipment and supplies. This funding is not always easy to find. The following is a list of potential funding sources and references for use by watershed groups. This is not all-inclusive, and you may find other sources not currently on the list. Make sure you are aware of the administrative requirements for any grant that you pursue.

In addition to the funding sources available for watershed groups, watershed groups should consider funding sources for individual landowners. Funding sources for landowners are included in the further references section of this publication.

The Pa. Department of Environmental Protection (DEP) does not endorse the use of any specific group from the list and is supplying names for informational purposes only.

SOURCE OF ASSISTANCE	CONTACT PHONE NUMBER	BRIEF DESCRIPTION OF PROGRAM	ASSESS-MENT	PLANNING	IMPLE-MENTATION	OTHER *
DCNR Pennsylvania Forest Stewardship/Stream ReLeaf Program	717-787-2106	Cost-Share (75%) assistance for riparian zone protection or improvement projects: streambank restoration, fencing and crossings.		X	X	
DCNR Rivers Conservation Program Harrisburg, PA	717-787-2316	Conserve and enhance river resources by offering planning grants, technical assistance, implementation grants, development grants, and acquisition grants.	X	X	X	
DEP Stream Improvement Program (SIP)	717-787-3411	Assistance through the construction of small projects to prevent flooding, restore natural stream channels and to stabilize banks.		X	X	
DEP Stream Bank Fencing Program	717-783-7577	To improve water quality and reduce soil erosion by constructing one or two strand fences to limit livestock access streams.			X	
DEP Chesapeake Bay Financial Assistance Funding Program Grants	717-783-7577	Farmers that voluntarily agree to implement a nutrient management program and owns land within all or parts of 41 counties comprising the Bay watershed in Pennsylvania.		X	X	
DEP PA Environmental Education Grants Program	717-772-1828	Provides financial support for projects that design, demonstrate or disseminate environmental education practices, methods or techniques.		X	X	X
DEP Coastal Zone Management Program Harrisburg, PA	717-787-5259	Grants for planning and construction in the Lake Erie and the Delaware Estuary Coastal Zones.		X	X	

SOURCE OF ASSISTANCE	CONTACT PHONE NUMBER	BRIEF DESCRIPTION OF PROGRAM	ASSESS-MENT	PLANNING	IMPLE-MENTA-TION	OTHER *
DEP Environmental Stewardship and Watershed Protection Grant Program Harrisburg, PA	717-787-5259	Grants focus on nonpoint source pollution and watersheds: acid mine drainage abatement, mine cleanup efforts, well plugging, planning and implementing local watershed-based conservation efforts (formerly WRAP+WRPA).		X	X	X
DEP Great Lakes Protection Fund Northwest Regional Office Meadville, PA	814-332-6816 For regional (Great Lakes Basin) projects call 312-201-0660 and local (specific to Great Lakes area of Pennsylvania) projects call 814-332-6816.	Small planning grants and natural resource grants for regional and local efforts.		X	X	
DEP Nonpoint Source Management (EPA 319) Program Harrisburg, PA	717-787-5259	Grants for planning and nonpoint source pollution control projects.	X	X	X	X
DEP Pennsylvania Wetland Replacement Project Harrisburg, PA	717-787-6827	Grants for restoring wetlands, riparian corridors and other aquatic systems within the Commonwealth.		X	X	
DEP Stormwater Management Program Harrisburg, PA	717-772-4048	Watershed planning for stormwater control (counties) and implementation of programs at local levels (municipalities).	X	X	X	
DEP Watershed Assessment Grant Harrisburg, PA	717-787-7007	Grant(s) to assess the impacts to a watershed from abandoned mine drainage.	X			X
U.S. EPA Environmental Education Grants Region III Philadelphia, PA	215-566-5546	Grants awarded to small nonprofit groups for various projects in Region III.		X	X	
U.S. EPA National Estuary Grant Program	202-260-6502	Supports the development of programs to protect coastal watersheds in estuaries of national significance, including the Delaware Estuary in Pennsylvania.		X		
U.S. EPA Sustainable Development Challenge Grants (SDCG)	206-553-2634	Grants to support communities in establishing partnerships to encourage environmentally and economically sustainable practices.				X

SOURCE OF ASSISTANCE	CONTACT PHONE NUMBER	BRIEF DESCRIPTION OF PROGRAM	ASSESSMENT	PLANNING	IMPLEMENTATION	OTHER *
U.S. Environmental Protection Agency Chesapeake Bay Program Office Region III 410 Severn Avenue, Suite 109 Annapolis, MD 21403	800-968-7229 410-267-5700	This program supports communities undertaking small-scale watershed projects for the benefit of the Chesapeake Bay and its rivers.		X	X	
U.S. Environmental Protection Agency Chesapeake Bay Program Office Region III 410 Severn Avenue, Suite 109 Annapolis, MD 21403	800-968-7229	The Chesapeake Bay Program (CBP) awards grants to reduce and prevent pollution and improve the living resources in the Chesapeake Bay. Grants are awarded for implementation projects, as well as for research, monitoring, and other related activities.	X	X	X	X
U.S. Environmental Protection Agency Office of Wetlands, Oceans, and Watersheds (4501F) Ariel Rios Building 1200 Pennsylvania Avenue NW Washington, DC 20460	202-260-4538	EPA establishes a cooperative agreement with one or more nonprofit organization(s) or other eligible entities to support watershed partnership organizational development and long-term effectiveness. Funding supports organizational development and capacity building for watershed partnerships with diverse membership.		X	X	
U.S. Environmental Protection Agency Office of Wetlands, Oceans, and Watersheds (4502F) Ariel Rios Building 1200 Pennsylvania Avenue NW Washington, DC 20460	202-260-8076	This Five-Star Program seeks to support restoration projects in 500 watersheds by 2005, a key action of the Clean Water Action Plan. Competitive projects will have a strong on-the-ground habitat restoration component that provides long-term ecological, educational, and/or socioeconomic benefits to the people and their community.	X	X	X	
Watershed Assistance Grants U.S.E.P.A. Office of Wetlands, Oceans, and Watersheds (4501F) Ariel Rios Building Pennsylvania Avenue NW Washington, DC 20460	202-260-4538	Grants to support cooperative agreements with one or more nonprofit organization(s) or other eligible entities for watershed partnership organizational development.		X		
American Canoe Association Springfield, VA	703-451-0141	May provide funding for various watershed-related projects including starting groups and lobbying.	X	X		X

SOURCE OF ASSISTANCE	CONTACT PHONE NUMBER	BRIEF DESCRIPTION OF PROGRAM	ASSESSMENT	PLANNING	IMPLEMENTATION	OTHER *
Canaan Valley Institute, West Virginia	304-463-4739 800-922-3601	Promotes the development and growth of local associations committed to improving or maintaining the natural resources of their watersheds, in the Mid-Atlantic Highlands portions of PA, MD, VA and all of WV.	X	X	X	X
Charles A. and Anne Morrow Lindburgh Foundation Minneapolis, MN	612-338-1703	Grants for research and educational projects that promote a balance between advance of technology and preservation of the human/natural environment in areas including water resources.		X		X
Chesapeake Bay Program National Fish and Wildlife Foundation 1120 Connecticut Avenue, Suite 900 Washington, DC 20036	202-857-0166	Support and development of local watershed management plans that address water quality or promote locally-based protection and restoration efforts.	X	X	X	
Chesapeake Bay Small Watershed Grants Program National Fish and Wildlife Foundation 1120 Connecticut Avenue, Suite 900 Washington, DC 20036	202-857-0166	This program supports communities undertaking small-scale watershed projects. Grants range from \$1,000 to \$35,000 to local governments and community groups for education and demonstration projects to protect watersheds.	X	X	X	X
Coldwater Heritage Partnership Harrisburg, PA	717-787-2316	Grants for prioritizing watersheds in need of protection, for assessment of coldwater ecosystems and for the development of watershed conservation plans.	X	X	X	X
Dirt and Gravel Road Maintenance Program	Your Local County Conservation District	For maintenance of dirt and gravel roads - to minimize the impacts of erosion and sedimentation pollution and fugitive dust on Pennsylvania's streams.		X	X	X
Fish America Foundation Alexandria, VA	703-548-6338	Grants awarded for: streambank stabilization materials, instream habitat improvements, contracted heavy equipment, and stream morphology work.			X	
LWW of Pennsylvania Mini Grant Harrisburg, PA	800-692-7281	Grants for community oriented educational projects (watershed or drinking water supply), e.g. web site design, signage, workshops, development of publications, printing, etc.				X
PACD Nonpoint Source Pollution Education Mini Project Grant	717-545-8878	Small grants for Pennsylvania-based, grassroots educational projects that address nonpoint source watershed concepts.		X	X	X

SOURCE OF ASSISTANCE	CONTACT PHONE NUMBER	BRIEF DESCRIPTION OF PROGRAM	ASSESSMENT	PLANNING	IMPLEMENTATION	OTHER *
PACD Pennsylvania Chesapeake Bay Educational Mini Projects Grant Harrisburg, PA	717-545-8878	Grants for workshops, displays/exhibits, visual aids; development of publications, fact sheets; and events, e.g. water studies (monitoring) and stream reclamation projects for groups working in the Chesapeake Bay Watershed.	X	X	X	X
Pennsylvania Department of Community and Economic Development	888-223-6837	Financial assistance may include: preparing environmental protection or physical development strategies or special studies that will support comprehensive land use planning. The application of advanced technology such as Geographic Information Systems (GIS).		X	X	
National Park Service Rivers, Trails and Conservation Assistance Program Philadelphia, PA	215-597-1581	The National Park Service works with communities to conserve land and river resources and provides funding for various projects dealing with the conservation of these resources including the development of trails and greenways.		X	X	
The Greater Harrisburg Foundation Harrisburg, PA	717-236-5040	Grants awarded to groups for environmental projects. Special foundation grants set up for specific environmental projects by specific donors. The foundation serves southcentral Pennsylvania.		X	X	
The Leo Model Foundation, Inc. Philadelphia, PA	215-546-8058	Grants for habitat conservation, watershed conservation, and species preservation in the USA and other countries. Primary focus is in foreign countries and limited to southeastern Pennsylvania.		X	X	
The William Penn Foundation Philadelphia, PA	215-988-1830	Grants to preserve natural areas, including environmental education and planning within the foundation's geographic area (primarily southeastern Pennsylvania).		X	X	X
Vira I. Heinz Endowment Pittsburgh, PA	814-669-4847	Provides funds to the Western Pennsylvania Watershed Protection Program to implement comprehensive ecosystem management programs in selected western Pennsylvania watersheds. In addition, small matching grants are provided to DCNR for the Coldwater Heritage Program.		X	X	X
Western PA Conservancy RR 1, Box 152 Huntingdon, PA 16611	814-669-4847	Provides funding to grassroots organizations and watershed associations for site specific watershed remediation in western Pennsylvania and provides funding for restoration of riparian buffer zones and preservation of watersheds.	X	X	X	X

SOURCE OF ASSISTANCE	CONTACT PHONE NUMBER	BRIEF DESCRIPTION OF PROGRAM	ASSESS-MENT	PLANNING	IMPLE-MENTA-TION	OTHER *
Western Pennsylvania Watershed Protection Program sponsored by the Howard Heinz Endowments	814-669-4847	Provides funding to grassroots organizations and watershed associations for site-specific watershed remediation in western Pennsylvania.	X	X	X	
U.S. Department of Agriculture Natural Resource Conservation Service P.O. Box 2890 Washington, DC 20013-9770	202-720-3534	Technical assistance and cost sharing for implementation of NRCS-authorized watershed plans. Technical assistance on watershed surveys and planning.	X	X	X	
U.S. Department of the Interior Office of Surface Mining Division of Reclamation Support 1951 Constitution Avenue, NW Washington DC 20240	202-208-2937	The Abandoned Mine Land Reclamation (AMLR) Program is designed to protect and correct environmental damage caused by coal and, to a limited extent, noncoal practices that occurred prior to August 3, 1977. AMLR provides for the restoration of eligible lands and waters mined and abandoned or left inadequately restored.			X	
U.S Department of the Interior U.S. Fish and Wildlife Service North America Waterfowl and Wetlands Office (NAWWO) 4401 North Fairfax Drive, Room 110 Arlington, VA 22203	703-358-1784	The North American Wetlands Conservation Act of 1989 provides matching grants to carry out wetlands conservation projects in the United States, Canada, and Mexico. Both the Standard and Small Grants Programs help deliver funding to on-the-ground projects through protection, restoration, or enhancement of an array of wetland habitats.			X	
U.S. Department of Commerce National Oceanic and Atmospheric Administration National Ocean Service 1305 East-West Highway Silver Spring, MD 20910	301-713-3155 x195	This program assists states in implementing and enhancing Coastal Zone Management (CZM) programs that have been approved by the Secretary of Commerce. Funds are available in areas such as coastal wetlands management and protection, natural hazards management, public access improvements, reduction of marine debris, assessment of impacts of coastal growth and development, special area management planning, regional management issues, and demonstration projects with potential to improve coastal zone management.	X	X	X	X

SOURCE OF ASSISTANCE	CONTACT PHONE NUMBER	BRIEF DESCRIPTION OF PROGRAM	ASSESSMENT	PLANNING	IMPLEMENTATION	OTHER *
U.S. Department of Commerce National Oceanic and Atmospheric Administration National Sea Grant College Program 1315 East-West Highway Silver Spring, MD 20910	301-713-2448	The National Sea Grant College Program encourages the wise use and stewardship of our marine resources and coastal environment through research, education, outreach, and technology transfer.				X
U.S. Department of Agriculture Cooperative State Research, Education, and Extension Service Ag Box 2201 Washington, DC 20250-22021	202-401-5971	This program is targeted directly to the identification and resolution of agriculture-related degradation of water quality.		X	X	
Headquarters: U.S. Department of Agriculture Farm Service Agency Conservation Reserve Program Stop 0513 Washington, DC 20250-0513	202-720-6221	(CRP) is a voluntary program that offers long-term rental payments and cost-share assistance to establish long-term, resource-conserving cover on environmentally sensitive cropland or, in some cases, marginal pastureland.				X
U.S. Department of Agriculture Natural Resource Conservation Service One Credit Union Place, Suite 340 Harrisburg, PA 17110-2993	717-237-2238	Non-profit public/private partnership involving local community members working voluntarily on a multi-county basis to resolve environmental issues and develop opportunities for rural development. Technical and financial assistance is available in the form of grants, loans, and other funding.		X	X	
U.S. Department of Agriculture Natural Resource Conservation Service PO Box 2890 Washington, DC 20013-9770	202-720-1873	The Environmental Quality Incentives Program (EQIP) was established to provide a single, voluntary conservation program for farmers and ranchers to address significant natural resource needs and objectives.		X	X	X

SOURCE OF ASSISTANCE	CONTACT PHONE NUMBER	BRIEF DESCRIPTION OF PROGRAM	ASSESS-MENT	PLANNING	IMPLE-MENTATION	OTHER *
U.S. Department of Agriculture Natural Resource Conservation Service P.O. Box 2890 Washington, DC 20013-9770	202-720-3534	This program provides technical and financial assistance to address resources and related economic problems on a watershed basis. Projects related to watershed protection, flood prevention, water supply, water quality, erosion and sediment control, wetland creation and restoration, fish and wildlife habitat enhancement, and public recreation are eligible for assistance.		X	X	
U.S. Department of Agriculture Natural Resources Conservation Service One Credit Union place Suite 340 Harrisburg, PA 17110-2993	717-237-2210	This voluntary program provides Wetlands Reserve Program landowners with financial incentives to restore and protect wetlands in exchange for retiring marginal agricultural land. Landowners voluntarily limit future use of the land, but retain private ownership.			X	
U.S. Watershed Protection and Flood Prevention Program "Small Watershed Program"	Your local NRCS Office	This program provides technical assistance and cost sharing for implementation of NRCS-authorized watershed plans, as well as watershed surveys and planning.		X		X
U.S.D.A. Natural Resources Conservation Service One Credit Union Place, Suite 340 Harrisburg, PA 17110-2993	717-237-2210	Soil and Water Conservation Assistance is a voluntary effort for farmers and ranchers that provides cost share and incentive payments to address threats to soil, water and related natural resources.				X
U.S.D.A. Natural Resources Conservation Service One Credit Union Place, Suite 340 Harrisburg, PA 17110-2993	717-237-2210	The Emergency Watershed Protection Program provides assistance to owners, managers and users of public, private or tribal lands if their watershed has been damaged by a natural disaster.			X	X
U.S.D.A. Natural Resources Conservation Service One Credit Union Place, Suite 340 Harrisburg, PA 17110-2993	717-237-2210	The Resource Conservation and Development Program (RC&D) program provides a way for local residents to actively solve economic, environmental and social problems. Assistance is available for planning and installation of approved projects.		X	X	

SOURCE OF ASSISTANCE	CONTACT PHONE NUMBER	BRIEF DESCRIPTION OF PROGRAM	ASSESS-MENT	PLANNING	IMPLE-MENTA-TION	OTHER *
U.S.D.A. Natural Resources Conservation Service One Credit Union Place, Suite 340 Harrisburg, PA 17110-2993	717-237-2210	The Wildlife Habitat Incentive Program (WHIP) is a voluntary program for people who want to develop and improve wildlife habitat on private lands.		X		
U.S.D.A. Natural Resources Conservation Service One Credit Union Place, Suite 340 Harrisburg, PA 17110-2993	717-237-2210	The Rural Abandoned Mine Program (RAMP) was established to protect people and the environment from past coal mining practices.		X	X	
County Conservation District Offices	See Local Listings	The Agriculture-Linked Investment Program (AgriLink) is a low interest loan program established by the state Treasury to assist operators in the implementation of approved nutrient management plans. Low interest loan funds are provided for the implementation of Best Management Practices (BMP's) identified in an approved nutrient management plan.		X	X	
USDA – Farm Service Agency One Credit Union Place, Suite 320 Harrisburg, PA 17110-2994	717-237-2113	The Conservation Reserve Enhancement Program (CREP) is a state/federal conservation partnership program targeted to address specific state and nationally significant water quality, soil erosion and wildlife habitat issues related to agricultural use. The program uses financial incentives to encourage farmers to remove lands from agricultural production.		X	X	
U.S.D.A. Natural Resources Conservation Service One Credit Union Place, Suite 340 Harrisburg, PA 17110-2993	717-237-2210	The Conservation Technical Assistance Program (CTA) assists land owners, communities, units of state and local government in planning and implementing conservation systems.		X	X	
Ducks Unlimited Inc.	Western PA 814-836-3458 Eastern PA 570-476-5398	The PA Habitat Stewardship Program assists applicants with stream bank and wetland fencing projects.		X	X	
PA Chesapeake Bay Foundation	717-737-8622	The Stream Bank Fencing Program provides funding for installation of fencing along streams.		X	X	

Further references:

1. A Guidebook of Financial Tools. Produced by the EPA Environmental Financial Advisory Board and the Environmental Finance Center. Web address: <http://www.epa.gov/efinpage/guidebk/guindex.htm>.
Go to Media Projects & Programs, then General Interest, then Financial Program.
2. Catalog of Federal Domestic Assistance. U.S. General Services Administration. Web address: <http://www.gsa.gov/fdac.htm>.
3. Wetland and Riparian Stewardship in PA - A Guide to Voluntary Options for Landowners, Local Governments and Organizations. The guide lists various technical and financial assistance programs available to reduce impacts from nonpoint source pollution. Contact the Alliance for the Chesapeake Bay at 717-236-8825.
4. 1997 Directory of Funding Sources for Grassroots River and Watershed Groups. This is a directory of foundations and others that fund watershed efforts. Available for \$35 from River Network at 800-423-6747 or e-mail rivernet2@aol.com.
5. Consideration of performance of a Community Environmental Project (CEP) instead of civil penalties in certain cases where the alleged violator has suggested a CEP. The DEP will coordinate with local government and groups to identify appropriate projects. Contact your local DEP regional office for more information.
6. For information about training regarding grant proposal writing and winning grants contact the Nonprofit Management Development Center, LaSalle University, Philadelphia at 215-951-1701. A cost is associated with the training.
7. Your local library has information about grants including the Environmental Grant Making Foundations Book. Some libraries, including the Dauphin County Library System with several branches in Harrisburg, have a computer database that can be searched by subject for funding sources pertaining to watersheds or streams.
8. The United Environment Fund fosters growth of environmental organizations throughout the United States by helping them develop a stronger, more diversified funding base. Web address: <http://www.uef.org>
9. The Foundation Center is an independent, nonprofit information clearinghouse that collects, organizes, analyzes and disseminates information about foundations, corporate giving, etc. They maintain five foundation libraries throughout the United States, and they have cooperating collections of information located in public libraries including some in Pennsylvania. In addition to publications and supplementary materials, some libraries provide other services for grant seekers. For information about these cooperating collections call 1-800-424-9836. Foundation web address: <http://www.fdncenter.org>
10. Catalog of Federal Funding Sources for Watershed Protection. USEPA. 1997. Provides information on federal funding programs for watershed protection and local-level watershed projects. Call the National Center for Environmental Publications and Information at 513-489-8190 or 800-490-9198, ask for EPA Document 841-B-97-008.
11. Resource Conservation and Development (RC&D) is a non-profit public-private partnership involving local community members working voluntarily on a multi-county basis to resolve issues and develop opportunities for rural development. RC&D encourages local units of government and non-profit organizations to develop programs to improve their resources. RC&D's can help secure technical and financial assistance in the form of grants, loans, and other funding. Contact your local RC&D Council (or NRCS at 717-237-2203) for the specific application procedures of the program in your area.

* "Other" category includes research, education, publication, etc.

For more information, please visit the PA PowerPort at www.state.pa.us DEP Keyword "Watershed Support".



Farm Bill Conservation Programs

Frequently Asked Questions



Photo: © Keith Weller, USDA

- **What is the 2002 Farm Bill?**

In 2002, the Congress passed the "Farm Security and Rural Investment Act of 2002." Farm bills are by nature complex and voluminous. They typically address many agricultural issues and can resemble policy "kitchen sinks," addressing many issues in addition to conservation programs. The 2002 Farm Bill was no different. The 2002 bill presents a mixed bag of conservation gains and losses.

- **What conservation gains were included in the 2002 Farm Bill?**

Among the gains were: the creation of a new Grasslands Reserve Program (GRP); doubling the size of the Wetlands Reserve Program (WRP); modest increases in the Conservation Reserve Program (CRP); and major increases in the Wildlife Habitats Incentive Program (WHIP) and Farmland Protection Program (FPP). The creation of a new Conservation Security Program (CSP) broke new ground by establishing a system to reward farmers for good environmental practices on their working lands.

- **What conservation setbacks were included the 2002 Farm Bill?**

While the funding level for the Environmental Quality Incentives Program (EQIP) was substantially increased, reasonable statutory guidance and conservation planning measures were eliminated. Only time will tell whether this program can still deliver originally intended benefits to both people and wildlife.

- **What are the next steps for implementation of the Farm Bill's conservation programs?**



Photo: © Tim McCabe, USDA

While the Farm Bill runs for six years, through 2008, the work doesn't stop there -- now is when the rubber meets the road in the form of implementation. Rules are being developed to guide implementation of the two new programs (CSP and GRP.) Existing rules for EQIP and CRP will be changed to reflect the new legislation. These rule changes present opportunities for the public to provide comments and help ensure the programs continue to benefit both people and wildlife.

- **What new programs are included in the 2002 Farm Bill?**

The 2002 Farm Bill established two new conservation programs that provide assistance to farmers and ranchers to preserve and restore important wildlife habitat: The Grasslands Reserve Program and the Conservation Security Program.



Photo: © USDA

- **What is the Grasslands Reserve Program?**

Native grasslands are a critical habitat for wildlife ranging from bison to sage grouse. Unfortunately, grasslands, once a defining feature of our country, are now considered to be North America's most endangered ecosystem. Establishment of the GRP at two million acres will help maintain important open spaces, limit the amount of new land brought into production, help conserve and recover declining plant and wildlife species, and provide farmers and ranchers a source of income so that they can continue to work the land.

- **What is the Conservation Security Program?**

While programs in place before the 2002 Farm Bill provide a multitude of benefits for farmers willing and able to take their land out of production, the Conservation Security Program (CSP) rewards farmers and ranchers for good stewardship of their working lands. This program has enormous potential to improve wildlife habitat, including habitat for threatened and endangered species, and to combat sprawl and decrease water pollution. Established as an entitlement program, CSP allows all farmers already practicing good conservation measure as well as those now willing to employ good stewardship practices to be eligible for a conservation security payment.



Photo: © FWS

- **What is the Wetlands Reserve Program?**

Wetlands play a critical role in reducing flooding, filtering sediment, nutrients and other contaminants, and preventing pollutants from entering lakes, streams, rivers and groundwater. In the United States, one-third of all bird species, 190 species of amphibians, and 5,000 species of plants depend on wetlands habitat for their survival. The Wetlands Reserve Program (WRP) allows farmers and ranchers to take wetlands converted for agricultural purposes out of production and to restore them to beneficial wetlands. The 2002 Farm Bill WRP allows producers to restore another 1.2 million acres of wetlands.

- **What is the Conservation Reserve Program?**

Originally designed to reduce soil erosion, the Conservation Reserve Program (CRP) now provides a multitude of benefits including increasing wildlife habitat on private lands. CRP is a popular program because it provides a source of income for farmers while dramatically increasing habitat for nesting waterfowl, upland game birds, and other wildlife, including threatened and endangered species. Between 1992 and 1997, CRP fields in the Prairie Pothole region in the Northern Great Plains contributed to a 30 percent improvement in duck populations. With the enactment of the 2002 Farm Bill, an additional 2.8 million acres is eligible for enrollment.



Photo: © Bill Tarpennig, USDA

- **What is the Environmental Quality Incentives Program?**

The Environmental Quality Incentives Program (EQIP) has effectively encouraged land managers to take proactive steps toward improving water quality. While the 2002 Farm Bill provides substantial additional funding (\$9 billion), the statute itself was severely weakened. This may steer the program away from an emphasis on conservation measures, including wildlife habitat enhancement, toward an emphasis on large-scale industrial agriculture.

- **What is the Wildlife Habitat Incentives Program?**

Although previously small in size, the Wildlife Habitat Incentives Program (WHIP) has provided significant benefits for wildlife and wildlife habitat. More than 8,400 projects affecting some 1.4 million acres have been approved under WHIP with only \$50 million in funding. The substantial increase of funding in the 2002 Farm Bill --\$360 million over six years -- will help significantly increase wildlife and wildlife habitat benefits.

- **What is the Farmland Protection Program?**



Photo: © Ron Nichols, USDA

This program helps farmers and ranchers keep their lands in agriculture. By providing funds to state, tribal, local governments and private organizations to help purchase development rights, productive farmland is allowed to stay in agricultural use. One benefit to keeping these lands in agriculture use is that many contain valuable wildlife habitat such as long-leaf pine forests, depression marshes, wet prairies, and provide habitat for imperiled species. The 2002 Farm Bill significantly increases Farmland Protection Program (FPP funding), allocating \$597 million over six years.

- **Why are private forests important for wildlife habitat?**

Non-industrial private forests make up 83 percent of all private forest lands and play an increasingly important role in the long-term sustainability of America's forests and wildlife habitat. Cleaner air and water, and recreational opportunities, such as hiking, skiing, camping, hunting and fishing and tourism are just some of the non-timber benefits from well-managed forests. But as private forestlands become fragmented or disappear, the benefits they provide diminish. The United States loses more than half a million acres of private timberland to development each year.



Photo: © Bill Tarpenning, USDA

- **What is the Forest Land Enhancement Program?**

The 2002 Farm Bill consolidated two programs -- The Forestry Incentive Program (FIP) and the Stewardship Incentive Program (SIP) -- and created a single Forest Land Enhancement Program (FLEP). This voluntary program allows state agencies to provide technical, educational, and cost-share assistance to promote sustainability of non-industrial private forests. The 2002 Farm Bill authorized FLEP at \$100 million over six years.



Photo: © USDA

- **What is the Forest Legacy Program?**

The Forest Legacy Program (FLP) provides federal funding for up to 75 percent of the cost of conservation easements for fee acquisition of forest lands that are threatened by conversion to non-forest uses. Any state with threatened forest land is eligible for the FLP. To participate, a state, in cooperation with a "State Forest Stewardship Coordinating Committee," must prepare a plan that establishes eligibility criteria, sets guidelines, and identifies priority areas for protection. These areas must be either "environmentally important forest areas" or "threatened by conversion to non-forest uses."

- **Were provisions included in the 2002 Farm Bill to discourage landowners from environmentally harmful practices? What are the Compliance Programs?**

While the programs in the conservation title are voluntary, incentive based programs, there are two provisions, the Highly Erodible Land program (Conservation Compliance and Sodbuster), and the Swampbuster program that are considered "disincentive" programs. They

are referred to as "disincentives" rather than regulations, since producers who forego federal subsidies, loans, and benefits are free to ignore these requirements.

- **What is the Highly Erodible Land Program?**

This program includes both Conservation Compliance and Sodbuster requirements. Both programs provide a disincentive for producers to cultivate land that is classified as highly erodible by USDA's soil erodibility index. This program, though weakened over the years, still helps reduce soil erosion and the associated sediments and pollutants that soil erosion creates in waterways, thus benefiting wildlife habitat through better water quality.



Photo: © Tim McCabe, USDA

- **What is the Swampbuster Program?**

This program requires producers who receive farm subsidies, loans, or benefits to refrain from continued drainage of wetlands on farms they own or operate. While this program has been weakened over the years and is not adequately enforced, it still provides continued flood control, water quality, and direct wildlife benefits.

Scientific Technical Assistance through Consortium for Scientific Assistance to Watersheds (C-SAW)

Introduction

To help local watershed groups achieve their goals of watershed protection, several organizations have joined forces to form the Consortium for Scientific Assistance to Watersheds (C-SAW). C-SAW is a team of scientists available to provide technical assistance to your watershed group. Depending on the needs of your group, C-SAW can provide technical assistance in three main areas: Watershed Specific Technical Assistance, Mentoring Assistance, and Quality-Control Assistance for water-quality and macroinvertebrate monitoring programs.

C-SAW Technical Assistance

One goal of the Technical Assistance Program is to transfer knowledge and skills to watershed groups or local sponsors thereby helping to build their capacity to plan, conduct watershed assessments, and conduct post-implementation monitoring in the future. This can be accomplished through program-management assistance by providing:

- Specialists who can help identify solutions and assist your group in the development of monitoring programs, restoration projects, and plans for protection.
- Training on conducting assessments and developing restoration projects and protection plans

C-SAW offers organizations assistance in watershed assessments and science related to:

- Surface- and ground-water resources
- Sediment
- Ambient and event monitoring
- Biological and habitat assessment
- Microbiology
- Agricultural and urban impact issues
- Abandoned mine discharge and treatment
- Wetlands
- Geographic information system derived data and spatial data analysis
- Quality assurance and quality control

If you have a special need, please contact C-SAW and see if your need can be met. In addition, C-SAW can point eligible organizations in the direction of assistance provided by other organizations through Pennsylvania Department of Environmental Protection's (PaDEP) Growing Greener Technical Assistance Grants. C-SAW assistance is available at no cost to eligible groups.

Technical Assistance Areas

C-SAW provides technical assistance in three areas:

- Watershed Specific Technical Assistance
- Mentoring Watershed Organizations
- Quality Control for water-quality and macroinvertebrate monitoring programs

Watershed specific technical assistance

Technical assistance is available in many project-management and scientific arenas. You can receive help in determining water-resources issues, guidance on monitoring design and protocols, cost estimates for assessments, and advice on required resources and time estimates to complete a task. Watershed organizations can receive assistance with actual watershed assessments, and interpretation and utilization of data. Training, specific to your need, can be requested for your group.

Mentoring watershed organizations

A small number of watershed organizations in each river basin will be provided with a unique experience – intensive individual watershed mentoring for a 1 or 2-year period. This mentoring will be for organizations interested in starting or improving volunteer monitoring programs for watershed assessments, assessing restoration projects, or developing protection plans. Selection of watersheds will be based on need, priority, and application information provided by the watershed organization. Mentoring will be specific to the needs of the individual group and may include all of the areas listed under Watershed Specific Technical Assistance and Quality-Control Assistance.

Quality Control for water-quality and macroinvertebrate monitoring

Water chemistry and macroinvertebrate data quality technical assistance will be provided to selected watershed organizations across the state. This will help ensure that the data collected by the watershed organizations through volunteer monitoring programs are of known quality.



Pictures illustrate the difference that can be made through restoration. Technical assistance can be provided to groups interested in how to design such an effort.



Training for streamflow estimation and biological assessment of a stream. 12-99

C-SAW Representatives

The consortium working under C-SAW includes individuals from five organizations skilled in the field of watershed studies and assessments:

- Alliance for Aquatic Resource Monitoring (ALLARM) at Dickinson College
- Delaware Riverkeeper Network (Riverkeeper)
- Canaan Valley Institute (CVI)
- Stroud Water Research Center (Stroud)
- U.S. Geological Survey (USGS)

Who is Eligible?

Parties eligible to apply for Growing Greener Grants are eligible to receive assistance through C-SAW. Eligible parties include watershed organizations recognized by PaDEP and established to promote local watershed conservation efforts in an identified watershed; counties, municipalities, and their subdivisions; county conservation districts; and charitable organizations or educational institutions involved in research, restoration, rehabilitation, planning, acquisition, development, or other activities that further the protection, enhancement, conservation, and preservation of Pennsylvania's environmental resources. In addition, the project must be one that addresses nonpoint sources of pollution, mining restoration, or oil and gas well plugging. Specific details are available at the Growing Greener web site:

<http://www.dep.state.pa.us/growgreen>

If you are unsure whether your organization is eligible, contact the Resource Conservation and Development (RC&D) Council in your area (See "Requesting Assistance" below).

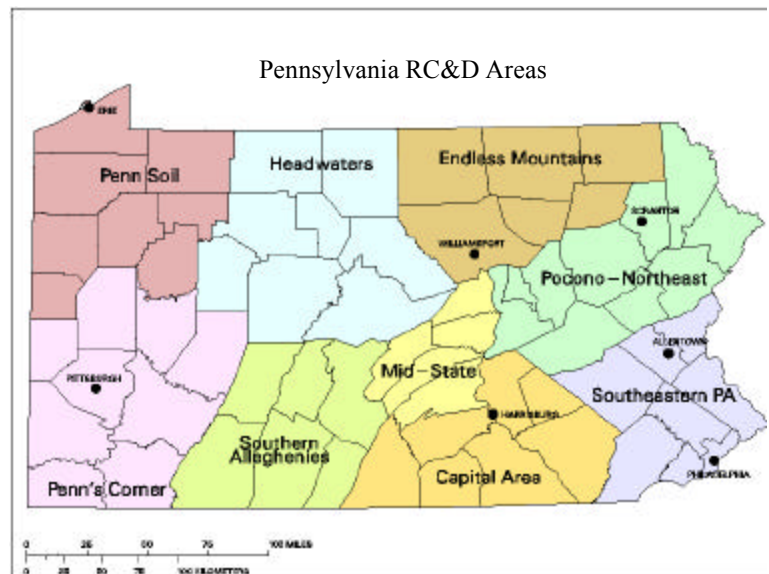
Requesting Assistance

To obtain assistance, please contact the RC&D Council in your area. The RC&D Councils are a nonprofit organization authorized by the U.S. Department of Agriculture to provide administrative support to watershed groups across the state.

The RC&D Council in your area will give you instructions for filling out a C-SAW request for assistance application. If you are unsure of the appropriate RC&D contact, you may call the Pocono Northeast RC&D and they will put you in contact with the correct office.

Contact Information

Capital Area RC&D	717-263-9226
Endless Mountains RC&D	570-265-5288 ext. 5
Headwaters RC&D	814-375-1372 ext. 4
Mid-State RC&D	717-248-4901
Penn Soil RC&D	814-226-8160 ext. 5
Penns Corner RC&D	724-834-9063 ext. 3
Pocono Northeast RC&D	570-282-8732 ext. 4
Southeastern PA RC&D	215-541-7930
Southern Alleghenies RC&D	814-623-9616 ext. 5



How do we find out more?

Visit the C-SAW web site at:

<http://pa.water.usgs.gov/csaw/>

NOTE: This project is funded in part by a Growing Greener grant provided by the PADEP. The views herein are those of the authors and do not necessarily reflect the views of the PADEP.

C-SAW Assistance is available at no cost to eligible groups.