WASHINGTON COUNTY

NATURAL HERITAGE INVENTORY

Prepared for:

BOARD OF WASHINGTON COUNTY COMMISSIONERS
WASHINGTON, PENNSYLVANIA

Prepared by:

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in cooperation with:

Washington County Planning Commission
Washington, Pennsylvania

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PREFACE

The Washington County Natural Heritage Inventory is a joint effort of the Pennsylvania Department of Community Affairs, the Washington County Planning Commission and the Western Pennsylvania Conservancy. Its purpose is to provide the state county and local governments with a useful tool for planning development and for setting protection priorities for significant natural heritage resources in Washington County. It is, however, only a preliminary report of the important areas in Washington County. Further investigation is needed and therefore this inventory should not be viewed as the final word on Natural Heritage Areas in the county.

The Western Pennsylvania Conservancy was the principal investigator for this study as well as the preparer of the report and maps. The Conservancy is a private, non-profit, natural resource conservation organization. Any questions concerning sites or updates to the inventory should be addressed to the Western Pennsylvania Conservancy, 209 Fourth Ave., Pittsburgh, Pennsylvania, 15222; Phone: (412)288-2777.

ACKNOWLEDGMENTS

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SUMMARY OF RESULTS

This section presents the results of the Natural Heritage Inventory for Washington County, summarized in tabular form. Table 1 lists Natural Heritage Areas in order of significance category and provides a brief description of the important features of the area. Table 2 lists Natural Heritage Areas by the municipality(ies) in which they are located. As an aid to those wishing to find an area contained within a particular municipality, the U.S.G.S. quadrangle names in which the areas are discussed in the report accompany the Natural Heritage Area names. Table 3 lists and describes those areas that are dedicated to the protection of ecological resources in the county, and Table 4 ends this section with a listing of all areas and features recognized in the report.

Table 1: Summary of Natural Heritage Areas in order of relative county significance.

The Natural Heritage Areas that have qualified for inclusion in this report are ranked according to their significance as areas of importance to the biological diversity and ecological integrity of the county. Also included in this evaluation is the level of state and/or global significance ("S" or "G" rank) of each area. The three county significance ranks are **Exceptional**, **High**, and **Notable** significance. The three county ranks have been used to prioritize all identified sites and suggest the relative attention that sites should receive for the amount, degree and rate of protection (for a full explanation of this terms, see Appendix I). The sites are in alphabetical order for each level. Designation as to type of Natural Heritage Area (NA=Natural Area, BDA=Biological Diversity Area, DA=Dedicated Area, LCA=Landscape Conservation Area, OHA=Other Heritage Area) is included as part of the site name. Refer to the "Natural Heritage Areas Classification" section for explanations of these site categories.

SITE	QUADRANGLE	DESCRIPTION
EXCEPTIONAL		
Ringlands Slope Forest BDA	Amity	Mesic forest community that contains two species of special concern in Pennsylvania.
McPherson Creek Valley BDA	Canonsburg	Habitat for a rare plant in Pennsylvania on the lower slopes of a tributary to McPherson Run.
Raccoon Creek Flooplain BDA	Clinton	Large, diverse floodplain areas containing floodplain forest and floodplain swamp communities as well as two plants and one animal of special concern in Pennsylvania.
Lower Ten Mile Creek Valley BDA	Ellsworth	Extensive section of creek valley containing a number of natural communities and a large population of an endangered plant in PA.
Munntown Road BDA	Hackett	Forest community furnishing habitat for a species of special concern in PA.
Froman Run Slope BDA	Monongahela	Mesic central forest community on the slopes and tributary valleys of Froman Run containing a population of a rare plant in PA.

SITE	QUADRANGLE	DESCRIPTION
EXCEPTIONAL		
Buffalo Creek LCA	West Middletown Bethany	An extensive patch of primarily forested and agricultural lands encompassing a portion of the Buffalo Creek watershed that contains several exemplary natural communities and a number of species of special concern in Pennsylvania.
Buffalo Creek Valley BDA	West Middletown	The longest stretch of contiguous forested floodplain in the county, containing a diversity of habitat and three significant natural communities.
Dutch Fork Valley BDA	West Middletown	Large patch of upland and floodplain area, largely within State Game Lands 232, containing several significant natural communities and the home of a animal of special concern in PA.
Aunt Clara Fork Valley LCA	Weirton Burgettstown	Large, forested section of a major stream valley and its watershed. Includes extensive bands of floodplain forest and a number of entirely forested, minimally disturbed tributary watersheds.
Lower Aunt Clara Fork BDA	Weirton	A large patch of contiguously forested floodplain, slopes and tributaries to Aunt Clara Fork that contains several exemplary natural communities.
Templeton Fork Floodplain BDA	Wind Ridge	Large but recently disturbed floodplain forest community containing a large population of a plant of special concern in PA.
Enlow Fork Valley BDA	Wind Ridge	Broad, remote valley, lying mostly within State Game Lands 302, that contains a number of significant natural communities and plants of special concern in PA

SITE	QUADRANGLE	DESCRIPTION
EXCEPTIONAL		
Enlow Fork LCA	Wind Ridge Majorsville	A remote valley and its immediate watershed that contains exceptional natural communities, a large amount of public land, and one of the least developed areas in the county.
HIGH		
Camp Anawanna Tributary Forest BDA	Amity	Maturing dry-mesic forest community.
Ringlands LCA	Amity	Large piece minimally developed forest and agricultural land containing two BDA's and two plants of special concern in PA.
Cross Creek Valley BDA	Avella	Steep slopes with massive sandstone outcrops supporting several significant communities and an important geological site.
South Branch Maple Creek BDA	California	A diverse and mature mesic forest community extending from floodplain to upland in Maple Creek Valley.
Chartiers Creek Valley BDA	Canonsburg Bridgeville	One of the most mature sections of forest in the Chartiers Creek Valley. The adjacent floodplain
Raccoon Creek Valley LCA	Clinton	A very large tri-county LCA that links a minimally developed, largely forested landscape at the juncture of Allegheny, Washington and Beaver Counties. Included in Washington are several significant natural communities containing unique plant and animal species.

SITE	QUADRANGLE	DESCRIPTION
HIGH		
Wright's Woods BDA	Hackett	Section of old growth oak forest - one of the best and last remaining examples in the county.
Mingo Creek BDA	Hackett	A good example of a mesic central forest occupying the entire immediate watershed of Mingo Creek within one of the large county parks.
Riverview Floodplain BDA	Monongahela	One of the very few remnant patches of floodplain forest along the Monongahela River.
Plumbsock BDA	Prosperity	Important habitatfor a species of special concern in Pennsylvania.
NOTABLE		
Bailey Bridge Floodplain BDA	Amity	Large patch of recovering floodplain forest that includes a small graminoid marsh.
Aunt Clara Fork Floodplain BDA	Burgettstown	A recovering floodplain forest community and associated northern hardwood forest community on an adjacent slope.
Blainsburg Floodplain BDA	California	Large, undeveloped floodplain area along the Monongahela River containing a wetland community and sections of young floodplain forest.
Canonsburg Lake Slope BDA	Canonsburg	Habitat for a rare plant in Pennsylvania.

SITE	QUADRANGLE	DESCRIPTION
NOTABLE		
Murray Hill Bend BDA	Canonsburg	Floodplain habitat of the largest known population in the county of an animal of special concern in PA.
Robinson Fork Wetlands BDA	Claysville	A beaver influenced wetland containing a Graminoid-Robust Emergent Marsh - a community that is rare in Washington County. Located on State Game Lands 245.
South Branch Pigeon Creek Wetlands BDA	Ellsworth	Disturbed but potentially diverse wetland representing rare habitat and communities for Washington County.
Black Dog Hollow Slope BDA	Mather	Dry-mesic calcareous forest community containing numerous rock outcroppings and unusual species for Washington County.

WASHINGTON COUNTY

SOURCE: The Washington County Planning Commission

Figure 1: Municipalities of Washington County

Table 2: Summary of Natural Heritage Areas by municipality

Municipality	**Natural Heritage Areas, *Managed Lands, Geologic Features/Fossil Localities***	**U.S.G.S. Quadrangle**	**page**
Townships			
Amwell	Ringlands LCA	Amity	146
		Prosperity	142
	Bailey Bridge Floodplain BDA	Amity	146
	Lower Ten Mile Creek BDA	Ellsworth	152
		Mather	186
	Permian Fish Teeth Fossil Locality	Washington East	116
Blaine	Buffalo Creek LCA	West Middletown	106
	Buffalo Creek Valley BDA	Bethany	102
	Buffalo Creek Forest Game Project Lands	West Middletown	106
Buffalo	Buffalo Creek LCA	West Middletown	106
Canton	None		
Carroll	None		
Cecil	Murray Hill Bend BDA	Canonsburg	88
	McPherson Creek Valley BDA	Canonsburg	
	Chartiers Creek Valley BDA	Canonsburg	
		Bridgeville	94
Chartiers	None		
Cross Creek	Cross Creek Valley BDA	Avella	80
	Cross Creek County Park	Avella	
		West Middletown	106
		Midway	84
	Rea Block Field	Avella	80
Donegal	Robinson Run Wetlands BDA	Claysville	138
	Dutch Fork Valley BDA	West Middletown	106
	Buffalo Creek LCA	West Middletown	
	State Game Lands 245	Claysville	138
	State Game Lands 232	West Middletown	106
	Buffalo Creek Forest Game Project Lands	West Middletown	
	Dutch Fork Lake	West Middletown	

Municipality	**Natural Heritage Areas, *Managed Lands, Geologic Features/Fossil Localities***	**U.S.G.S. Quadrangle**	**page**
Townships(cont.)			
East Bethlehem	Lower Ten Mile Creek BDA	Ellsworth	152
		Mather	186
	Black Dog Hollow Slopes BDA	Mather	
East Finley	Robinson Fork Wetlands BDA	Claysville	138
	State Game Lands 245	Claysville	
		Prosperity	142
Fallowfield	South Branch Maple Creek BDA	California	158
Hanover	None		
Hopewell	Buffalo Creek LCA	West Middletown	106
	Cross Creek County Park	Avella	80
		West Middletown	106
		Midway	84
	Buffalo Creek Forest Game Project Lands	West Middletown	106
Independence	Cross Creek Valley BDA	Avella	80
	Lower Dutch Fork Valley BDA	West Middletown	106
	Cross Creek County Park	Avella	80
	Meadowcroft Village	Avella	
	Meadowcroft Rock Shelter	Avella	
	State Game Lands 232	West Middletown	106
	Buffalo Creek Forest Game Project Lands	West Middletown	
Jefferson	Cross Creek Valley BDA	Avella	80
	State Game Lands 303	Avella	
	Meadowcroft Village	Avella	
Morris	Ringlands LCA	Amity	146
		Prosperity	142
	Ringlands Slope Forest BDA	Amity	146
	Camp Anawanna Slope Forest BDA	Amity	
	Plumbrock BDA	Amity	
		Prosperity	142
Mount Pleasant	None		

Municipality Townships (cont.)	**Natural Heritage Areas, *Managed Lands, Geologic Features/Fossil Localities***	**U.S.G.S. Quadrangle**	**page**
North Bethlehem	South Branch Pigeon Creek Wetlands BDA	Ellsworth	152
North Franklin	None		
North Strabane	Murray Hill Bend BDA	Canonsburg	88
Nottingham	Wright's Woods BDA	Hackett	120
	Munntown Road BDA	Hackett	
	Mingo Creek BDA	Hackett	
	Mingo Creek State Park	Hackett	
Peters	Chartiers Creek Valley BDA	Canonsburg	88
		Bridgeville	94
	Canonsburg Lake Slope BDA	Canonsburg	88
	Wright's Woods BDA	Hackett	120
Robinson	Raccoon Creek Valley LCA	Burgettstown	62
		Clinton	66
	Raccoon Creek Floodplain BDA	Burgettstown	62
		Clinton	66
Smith	*Hillman State Park*	Burgettstown	62
	(State Game Lands Special Area 432)	Clinton	66
	State Game Lands 117	Burgettstown	62
		Clinton	66
Somerset	South Branch Pigeon Creek Wetlands BDA	Ellsworth	152
South Franklin	*State Game Lands 245*	Prosperity	142
South Strabane	None		
Union	Froman Run BDA	Monongahela	126
	Riverview Floodplain BDA	Monongahela	
West Bethlehem	*State Game Lands 297*	Amity	146
		Ellsworth	152

Municipality	**Natural Heritage Areas, *Managed Lands, Geologic Features/Fossil Localities***	**U.S.G.S. Quadrangle**	**page**
Townships(cont.)			
West Finley	*State Game Lands 245*	Claysville	138
West Pike Run	None		
Boroughs			
Allenport	None		
Bealsville	None		
Bentleyville	None		
Burgettstown	None		
California	South Branch Maple Creek BDA Blainsburg Floodplain BDA California Overlook	California California California	158
Canonsburg	None		
Centerville	None		
Charleroi	None		
Claysville	None		
Coal Center	None		
Cokeburg	None		
Deemston	Lower Ten Mile Creek BDA	Ellsworth Mather	152 186
Donora	None		
Dunlevy	None		
East Washington	None		
Elco	None		

Municipality	**Natural Heritage Areas, *Managed Lands, Geologic Features/Fossil Localities***	**U.S.G.S. Quadrangle**	**page**
Boroughs(cont.)			
Ellsworth	None		
Finleyville	None		
Green Hills	None		
Houston	None		
Long Branch	None		
Marianna	None		
McDonald	None		
Midway	None		
New Eagle	Riverview Floodplain BDA	Monongahela	126
North Charleroi	None		
Roscoe	None		
Speers	None		
Stockdale	None		
Twilight	South Branch Maple Creek BDA	California	158
West Alexander	None		
West Brownsville	None		
West Middletown	None		
Cities			
Monongahela	None		
Washington	None		

Table 3: Dedicated Areas protecting biotic resources in Washington County.

The objective of the Washington County Natural Heritage Inventory is to provide information that can be utilized in planning for the protection of the biological diversity and ecological integrity of the county. Ultimately, the preservation of such resources will depend in part upon the establishment of management plans and specific areas dedicated to the protection these resources. A definition and description of Dedicated Areas, as used for this study, can be found in the "Natural Heritage Areas Classification" section of the report.

Presently, there are no areas in Washington County that are specifically dedicated to the protection of ecological systems and biological diversity. There are, however, a number of areas in the county that could be successfully managed as dedicated areas. Some of the areas with the greatest potential include: Mingo Creek County Park, Cross Creek County Park, Meadowcroft Village (property), and portions of the state game lands (6 in the county). Both the PA Bureau of State Parks and the PA Game Commission have provisions for creating dedicated areas under the categories of natural areas and special use areas, respectively. The County Parks Program could also adopt a natural areas designation and set aside sections of the parks, preferably those with the greatest present ecological value, as primitive areas with no facilities or upgraded trails or accesses. Numerous areas recognized in this inventory, including both public and private lands, could be forged into dedicated areas through a variety of landowner agreements, easements, special programs (like the PA Game Commission's Public Access and Safety Zone programs), or a combination of methods. Ultimately, areas set aside now will be the exemplary natural areas of the future, and if planned well and of sufficient size, will become the premier areas for biodiversity protection in the county.

Table 4. Natural Heritage Areas, Managed Lands and Geologic Features & Fossil Localities of Washington County

NATURAL AREAS

None

BIOLOGICAL DIVERSITY AREAS

Aunt Clara Fork Floodplain BDA	*(High Diversity Area)*
Bailey Bridge Floodplain BDA	*(Community/Ecosystem Conservation Area & Special Species Habitat)*
Black Dog Hollow Slope BDA	*(Community/Ecosystem Conservation Area)*
Blainsburg Floodplain BDA	*(High Diversity Area)*
Buffalo Creek Valley BDA	*(Community/Ecosystem Conservation Area & High Diversity Area)*
Camp Anawanna Slope Forest BDA	*(Community/Ecosystem Conservation Area)*
Canonsburg Lake Slope BDA	*(Special Species Habitat)*
Chartiers Creek Valley BDA	*(High Diversity Area)*
Cross Creek Valley BDA	*(Community/Ecosystem Conservation Area)*
Dutch Fork Valley BDA	*(Community/Ecosystem Conservation Area & High Diversity Area & Special Species Habitat)*
Enlow Fork Valley BDA	*(Community/Ecosystem Conservation Area & High Diversity Area & Special Species Habitat)*
Fromann Run Slope BDA	*(Special Species Habitat)*
Lower Ten MIle Creek Valley BDA	*(Community/Ecosystem Conservation Area & High Diversity Area & Special Species Habitat)*
Lower Aunt Clara Fork BDA	*(Community/Ecosystem Conservation Area & High Diversity Area)*
McPherson Creek Valley BDA	*(Special Species Habitat)*
Mingo Creek BDA	*(Community/Ecosystem Conservation Area)*
Munntown Road BDA	*(Community/Ecosystem Conservation Area & Special Species Habitat)*
Murray Hill Bend BDA	*(Special Species Habitat)*
Plumbsock BDA	*(Special Species Habitat)*
Raccoon Creek Floodplain BDA	*(Community/Ecosystem Conservation Area & High Diversity Area)*
Ringlands Slope Forest BDA	*(High Diversity Area & Special Species Habitat)*
Riverview Floodplain BDA	*(Community/Ecosystem Conservation Area & Special Species Habitat)*
Robinson Fork Wetlands BDA	*(High Diversity Area)*
South Branch Pigeon Creek Wetland BDA	*(High Diversity Area)*

BIOLOGICAL DIVERSITY AREAS (cont.)

South Branch Maple Creek BDA *(Community/Ecosystem Conservation Area)*

Templeton Fork Floodplain BDA *(Community/Ecosystem Conservation Area & Special Species Habitat)*

Wright's Woods BDA *(High Diversity Area)*

DEDICATED AREAS

None

LANDSCAPE CONSERVATION AREAS

Aunt Clara Fork Valley LCA
Buffalo Creek/Dutch Fork LCA
Enlow Fork LCA
Raccoon Creek Valley LCA
Ringlands LCA

OTHER HERITAGE SITES

None

Managed Lands

Cross Creek County Park
Dutch Fork Lake
Game Lands 232
Game Lands 302
Game Lands 303
Game Lands 297
Game Lands 117
Game Lands 245
Hillman State Park (State Game Lands Special Area 432)
Meadowcroft Village
Mingo Creek County Park

Geologic Features & Fossil Localities

California Overlook
Meadowcroft Rock Shelter
Permian Fish-teeth Locality
Rea Block Field

COUNTY NATURAL HERITAGE INVENTORIES

INTRODUCTION

The first step in protecting ecologically important places in the county is identifying them and determining their importance in comparison to other (similar) sites in the county. This information can help county, state, and municipal governments, the public, and business interests plan development with the preservation of these environmentally important sites in mind. The Washington County Natural Heritage Inventory is designed to identify and map important biotic (living) and ecological resources that make up the rich natural heritage of Washington County. The most significant biotic resources inherited by the citizens of Washington County include: areas that have been minimally by human activity, habitats for species of special concern (endangered, threatened, etc.), significant natural communities (assemblages of plants and animals), and areas important for open space, recreation, and wildlife habitat.

Washington County sits within a block of predominately rural counties just southwest of the greater Pittsburgh metropolitan area. Agricultural lands stretch over much of the landscape and capture, for many, the essence and character of the county. However, unlike its southern neighbors, Greene and Fayette Counties, Washington County is transforming rapidly from a rural landscape to an urban/suburban one as the Pittsburgh metropolitan area pushes further outward. Also, mining and other industries not connected with urban areas are responsible for a substantial portion of new housing and development throughout the county (Davis and Bennett, 1984). As demand for housing, services, and road networks increase, land values also rise. Increasingly, the value of land for residential, commercial and industrial uses exceeds that derived from agricultural use, and more and more farmers find it difficult if not impossible to continue farming.

Unfortunately, the same is true for other lands that now exist as forests, stream valleys, other natural communities and open space. These lands, which already occupy a small percent of land area in the county, will continue to be lost to development if no steps are taken to preserve them. Public lands also experience pressure to accommodate the recreational, commercial and access demands from a growing public. The natural communities that are part of these lands will face development for multiple use, with one of the costs being loss of biodiversity in the county.

This inventory focuses on areas that are the best examples of natural ecological communities in Washington County. Although agricultural lands or open space may be included as part of individual Natural Heritage Areas, the inventory emphasizes

ecological values rather than agricultural ones. The existence of habitat for specific plants and animals and the rarity of natural communities are important selection criteria for Natural Heritage Areas but equally important is the size and contiguousness of an area containing good quality natural features. Large areas provide the backbone that links habitats and allows plant and animal populations to shift and move across sizable portions of the landscape.

The patchwork of alternating fields and woodlots so typical of the Washington County landscape makes selection of Natural Heritage Sites difficult, and the number of land uses and land owners often involved in a site makes potential implementation of management recommendations complex for county and municipal planning agencies. Because many of the areas identified in this report are often small, isolated patches of natural habitat, long term protection will likely require more land, more buffer area, and better and more extensive linkages than exist now. Preserving and enhancing the ecological integrity of the county lies within the ability and commitment of county government, public and private agencies, citizen groups and landowners to agree on specific conservation goals and work together to see them accomplished. This inventory, with its emphasis on biodiversity protection, is one piece of information that should be invaluable in assisting with many land use decisions arising in the county.

NATURAL HERITAGE AREAS CLASSIFICATION

The Natural Heritage Areas identified in this report have been recognized according to the classification system below. Sites chosen are those which are believed to be of sufficient size and quality (i.e. natural systems are relatively intact) to continue as viable communities into the foreseeable future.

The approach of the inventory is to identify ecologically important sites that are significant in the county. Although unique in the county, these sites are not necessarily uncommon in the state. For example, a northern conifer forest dominated by white pine and hemlock is a common community in Pennsylvania, but would be considered rare in Washington County and would likely be included in the inventory.

The following classification provides definitions and examples of the five types of Natural Heritage Areas included in this report. Following the definitions of Natural Heritage Areas are explanations of Managed Lands, Geological Features and Fossil Localities in the county. The types of Natural Heritage Areas found in the report are:

- NATURAL AREAS (NA)
  - I. Pristine Natural Area
  - II. Recovering Natural Area

- BIOLOGICAL DIVERSITY AREAS (BDA)
  - I. Special Species Habitat
  - II. High Diversity Area
  - III. Community/Ecosystem Conservation Area

- DEDICATED AREAS (DA)

- LANDSCAPE CONSERVATION AREAS (LCA)

- OTHER HERITAGE AREAS (OHA)
  - I. Scientific Area
  - II. Educational Area

Definitions and examples of each Natural Heritage Area follow:

NATURAL AREAS (NA)

I. Pristine Natural Area

A site that has essentially the same ecological conditions that are believed to have existed prior to European settlement, and is large enough, and bufferred enough, to support and permanently protect the natural community.

Example: A tract of virgin forest community ten or more acres in size, the surrounding landscape is only moderately disturbed, and the forest community has long term viability.

II. Recovering Natural Area

An area that is relatively undisturbed, or past disturbances are essentially minor, and the landscape has largely recovered to a pristine condition.

Example: A tract of forest that, although harvested a century ago, has regenerated so that it now supports a mature forest community and its associated qualities.

BIOLOGICAL DIVERSITY AREAS (BDA)

I. Special Species Habitat

An area that includes natural or human influenced habitat that harbors one or more occurrences of plants or animals recognized as state or national species of special concern.

Example: A forested stream valley that supports a threatened plant population or stream that provides habitat for a rare animal.

II. High Diversity Area

An area found to possess a high diversity of species of plants and animals native to the county.

Example: A relatively large tract of land that provides a variety of habitats.

III. Community/Ecosystem Conservation Area

An area that supports a rare or exemplary natural community (assemblage of plants and animals), including the highest quality and least disturbed examples of relatively common community types.

Example: A marshland that supports a wetland community found in no or few other sites in the county.

DEDICATED AREAS (DA)

A property, possibly disturbed in the past, where the owner's stated objectives are to protect and maintain the ecological integrity and biological diversity of the property largely through a hands-off management approach, with intervention only when there are demonstrable threats to the ecology of the area.

Example: A forested tract that was previously harvested, but is now under the ownership of a conservation organization that has dedicated its management to the protection of the forest community.

LANDSCAPE CONSERVATION AREAS (LCA)

A large contiguous area that is important because of its size, open space, and habitats and although including a variety of land uses, has not been heavily disturbed and thus retains much of its natural character.

Example: An entire watershed that includes several thousand acres of forest that is interspersed with agricultural lands, limited residential and commercial development, and park land.

OTHER HERITAGE AREAS (OHA)

I. Scientific Area

An area that is consistently utilized for scientific monitoring of the environment, or other natural science studies.

Example: A small stream or wetland that is regularly studied to monitor environmental changes.

II. Educational Area

Land regularly used by educational institutions, local environmental organizations, or general public for nature study or instruction.

Example: A site that is regularly visited by school classes to study the species of plants and animals native to the county.

Managed Lands

"Managed Lands" as defined in this county natural heritage inventory are owned or leased properties that are included in the report because of their importance, or potential importance, to the overall maintenance and protection of ecological resources of the county. Managed Lands are of two types:

- Public properties established and managed to a large extent for natural resources, and/or those that have the potential to manage such resources in order to maintain or enhance important ecological assets in the county, and by this evaluation are deemed by the inventory to be among the most ecologically "valuable" of public properties. Examples include: state game lands, state parks, national historic sites, county or municipal park lands.

- Private properties that are held by private organizations concerned with the management and protection of natural resources, and which upon evaluation have been deemed by this inventory to be among the most ecologically "valuable" of such properties. Examples include: private nature preserves, private environmental education centers.

Managed Lands are properties that do not necessarily include, nor are included within, identified natural heritage areas, e.g. Natural Areas, Biological Diversity Areas. However, these properties are often large in size (e.g., essentially all state game lands) and, for this and potentially for other reasons, are ecologically important in a general sense. The ecological importance and value of some Managed Lands is due to their association with an area identified for natural heritage significance, e.g., a Managed Land within the boundaries of a Natural Area or Biological Diversity Area. However, Managed Lands are legally bounded properties, and are not to be confused with areas of natural heritage importance, which are identified by their ecological significance. An important consideration is that many Managed Lands have the potential to become even more ecologically valuable if their management becomes more sensitive to biological diversity issues and protection.

Managed Lands dedicated to the protection of natural ecological systems and biological diversity are referred to as **Dedicated Areas**. These properties are distinct from other Managed Lands because of the ecological emphasis of the owner's management practices and goals. Dedicated Areas are among the most important natural heritage areas since plans to protect the ecological resources therein already exist. An evaluation of Dedicated Areas in the inventory was based upon the stated management criteria and existing practices of the owner/manager. A definition for "Dedicated Areas" is given earlier in this section of the report, and a summary of the Dedicated Areas identified in Washington County is supplied in Table 3.

Geologic Features and Fossil Localities

Geologic features include those areas that illustrate regional geologic processes, landforms or scenery and are those recognized as outstanding in Pennsylvania by Geyer and Bolles (1979, 1987). Fossil localities are those recognized by Hoskins et. al. (1983). These places are not necessarily of importance to biological diversity and are therefore not considered Natural Heritage Areas. However, they are included as natural history references in the county.

NATURAL HERITAGE INVENTORY METHODS

Presently, seven County Natural Heritage Inventories have been completed for western Pennsylvania, including Washington County. The other inventories include: the Butler County Natural Heritage Inventory (Smith, et al., 1991), the Centre County Natural Heritage Inventory (Stack, et al., 1991), the Clinton County Natural Heritage Inventory (Wagner, et al., 1992), the Beaver County Natural Heritage Inventory (Smith, et. al., 1993), and the Erie County Natural Heritage Inventory (Kline, et al., in press). Methods used in this inventory are based on those of previous reports, as well as those used by Anonymous (1985); Reese, G.A., et al. (1988); and Davis A.F., et al. (1990) to conduct similar projects. The Washington County Natural Heritage Inventory proceeded in the following stages:

- gathering existing information
- aerial photo and map interpretation
- aerial reconnaissance
- ground survey
- data analysis.

Gathering existing information

The PNDI database (detailed in Appendix II) supplied a list of species of special concern and important natural community sites for Washington County. Local individuals and organizations donated information concerning natural areas and unique habitats in the county. Some of this information came from responses to recommendation forms (Appendix III) mailed to organizations and individuals in the county. State and County agencies also provided recommendations. Additional information used to choose potential sites in the county included: soil maps, geology maps, previous field surveys, planning documents, and various published material referencing Washington County.

Aerial Photograph and Map interpretation

The Washington County office of the USDA Agricultural Stabilization and Conservation Service (ASCS) and the Washington County Planning office made available the most recent aerial photos of the county (1987-1990). Initial study of these photos revealed large-scale natural features (e.g. contiguous forest, floodplains, cobble shoreline), disturbances (e.g. power cuts, utility R.O.W.s, strip mining, clearcutting), and a variety of easily interpretable features. Investigation of areas on the ground and review of the same areas on the photos helped to establish a set of "signatures" that allowed a more detailed review of areas not visited on the ground. Some sites could be eliminated if they proved to be highly disturbed or fragmented or purely attributable to human-made features (e.g. impoundments, clearings, farm fields). Some sites that required closer or more updated information were directly observed from the air.

Aerial Reconnaissance

Flying over the landscape greatly helps in interpretation of features because of color and tonal differences and because of the 3-Dimensional perspective gained of areas and objects that on photographic sheets, appear as 2-Dimensional. Again, some sites can be eliminated after such direct inspection. Also, information concerning extent, quality and context can be gathered easily from the air. Any sites that can be eliminated via aerial inspection can save many hours of ground inspection, particularly when dealing with remote areas. Some northern parts of the county fall within the restricted air space of the Pittsburgh International Airport. Sites falling within this space could, therefore, not be evaluated form the air. The use of aerial reconnaissance flights, as well as aerial photos, proves particularly important in evaluating sites for which permission to perform field surveys was not granted or pursued due to time constraints.

Ground Survey

Areas that were identified on maps, aerial photographs and from the air as potential sites were scheduled for ground surveys. Landowners were contacted and the sites examined to evaluate the condition and quality of the habitat and to classify the communities present. Field survey forms (Appendix IV) were completed for each site. Boundaries for each site were drawn on the USGS topographic maps. Site boundaries include both the key features of the site and the additional buffer areas critical to the protection of the site.

The flora, fauna, level of disturbance, approximate age of community, and local threats were among the most important data recorded for each site. Sites for species of special concern were visited and the condition of the habitat and of the species' population evaluated. In some instances, when permission was not obtained to visit a site, when enough information was available from other sources, or when time did not permit, sites were not ground surveyed.

Data Analysis

A dedicated file exists for each visited site and contains the site survey form for that site and any additional information about or pertinent to the site. Characteristics such as size, condition, recoverability and rarity are contained in these files. The quality of the site was determined by examining how well it fulfilled the definition as one of the Natural Heritage Area types described in the introduction. Each natural community and species of special concern (elements) was ranked by PNDI using factors of rarity and threat on a state-wide (state element ranking) and range-wide (global element ranking) basis (Appendix V and VI). In addition, each site was ranked by inventory methods according to its relative significance in the county (Appendix I). The PNDI ranks are included here to indicate how rare or unique a species or community, found in the county, is in the state and in the world. Such a ranking gives information about the range of a species or community and provides some means of comparing resources at a broad scale, especially where official ranks are lacking (see Appendix VI for details of ranking systems). In the cases when sites could not be compared through the detailed information that ground surveys provide, aerial photographs, aerial reconnaissance, and existing data provided the necessary information that allowed decisions to be made concerning the site and its inclusion in the inventory.

Field data for natural communities and for all plant and animal species of special concern found were synthesized with existing data, summarized, and locations transcribed on to clear polyester sheets which serve as overlays for each of the 7 1/2 minute U.S.G.S. quadrangle maps found in Figure 2.

GENERAL RECOMMENDATIONS FOR THE PROTECTION OF NATURAL HERITAGE AREAS

The inventory identifies natural heritage areas in order to promote their protection. Specific site recommendations for the maintenance of these important biotic and ecological resources are made based upon (1) the type of natural heritage site that the site is classified as; (2) the ecological characteristics of each site; (3) evidence of past or present disturbance within the site; and (4) the potential effects of the land-use activities that surround the site. Thus, these recommendations and site mapping recognize the interaction between the site's biotic resources and the natural ecosystems and/or land-use activities in proximity to the site. The general recommendations furnished below are meant to further clarify the differences between the various natural heritage areas and to provide a general framework into which specific management recommendations can be made.

Natural Heritage Areas

Natural Areas

Natural Areas are recognized as areas whose communities have flourished with little or no human disturbance, particularly recent disturbances. Their continuance as the best examples of natural communities in the county depends upon the maintenance of the undisturbed qualities. Therefore, the protection of Natural Areas requires that the disturbances associated with all land-uses including those described below be eliminated from the site and its buffer. In some cases, specific and non-invasive management may be required to maintain the qualities of the NA (e.g. removal of exotic plant species that are threatening the integrity of the natural community may be an acceptable practice, whereas, spraying for gypsy moth probably would not be considering the broad scale effects of the pesticide).

Biological Diversity Areas

Biological Diversity Areas include those sites that are recognized as supporting special species (Special Species Habitat), relatively large numbers and kinds of species (High Diversity Areas), or entire communities or ecosystems (Community/Ecosystem Conservation Areas). Occasionally, these areas require an amount of human manipulation of the site in order to maintain suitable conditions for the species or a group of species. This is particularly true in places where natural habitats have been displaced and where species are now surviving in human influenced/created areas that mimic certain natural habitats. Beyond such specific cases, however, these BDA's should remain as free from other disturbances as

possible. Actions and projects impacting BDA's should take into consideration the ecological requirements of the species/community which is the feature of the area. When activities threaten to impact these ecological features, the responsible agency should be contacted. If no agency exists, private groups such as conservancies, land trusts, and watershed associations, should be sought for ecological consultation and for specific protection recommendations.

Dedicated Areas

Dedicated Areas are recognized because of the owner's specific intention to protect their present and potential future ecological resources. Under such protection, those sites that are not presently examples of special habitat or exemplary communities will be permitted to mature and attain qualities recognized for Natural Areas or Biological Diversity Areas. Sites that are already significant as NA's or BDA's will be allowed to continue, undisturbed, as the best examples of natural communities in the county. The management of DA's may therefore follow the recommendations furnished for NA's and BDA's and may involve some level of carefully planned intervention to maintain their significant ecological resources. Usually, management involves simply leaving the area alone to mature and recover from previous disturbance. Generally, many land-uses, including those discussed in the following section, are not compatible with DA's and should be avoided.

Landscape Conservation Areas

Landscape Conservation Areas recognize large pieces of the landscape that are of higher ecological value than other areas of similar size. Contiguous natural communities, minimal human disturbance and often, the presence of other Natural Heritage Areas within the LCA, allow ecological processes to function across the entire landscape. Management requirements for LCA's are less stringent than those for either NA's, BDA's, or DA's because LCA's encompass a variety of land uses, some which are not directly involved in the protection of specific species or communities. Whereas with NA's, BDA's, and DA's, disturbances should be evaluated in terms of direct impacts to areas, with LCA's disturbances should be considered on a broad scale in terms of fragmentation and general habitat integrity. Sustainable land-uses that are sensitive to the natural features within the LCA are essential for the long-term preservation of the natural qualities recognized by the LCA. Construction of new roads and utility corridors, non-conservation timber harvesting, clearing or disruption of large pieces of land, and other activities that divide and alter the character of the landscape should be avoided. People and human created features are often part of LCA's but should not dominate the landscape. By limiting the amount of land in intensive use (agricultural zones, residential zones,

etc.) and by compressing development into already disturbed areas (villages, roads, existing R.O.W.'s, etc.), large pieces of the landscape can be maintained intact. Some LCA's are designed with aquatic resources in mind, and in those cases, a watershed boundary may be used to identify the LCA.

Other Heritage Areas

Areas containing ecological resources that involve public education or scientific study fall into this category of Other Heritage Area's. These activities lend importance to places that might not otherwise be considered as unique or significant relative to other areas in the county. OHA's require that resources emphasized for study be protected from disturbances that are not within the context of the study (e.g. a stream may be studied as an aquatic habitat affected by a land-use within its watershed and will therefore, require different protection approaches). This protection should include the environment and processes necessary for its sustenance. For example, if aquatic resources are the focus of the OHA, an entire watershed may require protection. If the focus is a small patch of forest, a much more compact area of protection may be appropriate. Also, the study of the resource may require management or sampling, and may alter the natural character of the site. Such management would not be appropriate within an NA, BDA, or DA, but is acceptable in an OHA.

Buffers

Buffers or buffer zones are the areas surrounding the core area of a site that provide insulation between significant ecological qualities and the existing, or potential, negative disturbances nearby. The size of the buffer depends upon physical factors (slope, topography, and hydrology) and ecological factors (species present, disturbance regime, etc.) as well as characteristics of the buffer itself, such as uniformity, species composition, and age. Although similar sites may have similar *kinds* of buffers, no two buffers will be exactly alike in size or extent. Two wetlands, for instance, of exactly the same size, in the same region, may require very different buffers if one receives mostly ground water and the other mostly surface water, or if one supports migratory waterfowl and the other does not.

Also, the buffer and the area being "bufferred" constantly interact and affect one another. As an example, protecting a section of old growth forest surrounded by second growth forest would involve creating a buffer that would allow plant species to spread outward from the old growth section and at the same time, discourage inward colonization by weedy, opportunistic species. The buffer would also protect the site from heavy winds and storms. Buffers must always be considered in the

context of what they are protecting and how these zones will evolve when functioning as buffers. In the case of the old growth forest, a hiking trail through the buffer would probably not significantly change the buffer or impact the old growth forest. However, the expansion of camping facilities into the buffer could slow or prevent the build-up of humus and the reproduction of trees, introduce invasive species and pollutants, and eventually alter the character of the buffer, ultimately decreasing its effectiveness in protecting the old growth site.

The decision as to how large a buffer should be for an individual site took into account the requirements of the natural community or species habitat that were the focus of the site. Buffers were not regarded as fixed distance areas around sites and the often irregular site boundaries demonstrate that point. A fixed buffer may serve to reduce direct impacts on a site, but may not account for the connections a site has with other parts of the landscape. By either failing to protect the natural system of which the site is a part (e.g. ground water recharge zone for a spring) or by allowing other land-uses nearby (e.g. ore extraction within a rock formation supporting a bat cave), a buffer can fail to provide adequate protection to a site.

Each Natural Heritage Area is mapped to include both the feature and a buffer area that is intended to protect the feature. The line delineating the feature, refered to as a primary boundary, is not designated on these maps. The line that does appear for the Natural Heritage Areas, refered to as the secondary boundary, includes the feature and a buffer.

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OVERVIEW OF WASHINGTON COUNTY NATURAL FEATURES

INTRODUCTION

Washington County is the 20th largest county in Pennsylvania with a total land area of 864 square miles. In Pennsylvania, Beaver and Allegheny Counties border Washington County to the north and northeast while Westmoreland, Fayette, and Greene Counties border to the south and southeast; in West Virginia, Marshall, Ohio, Brooke and Hancock Counties form the western border of the county.

Washington County is entirely within the Ohio River watershed; the northern and western sections of the county drain directly into the Ohio River and the eastern and southern sections drain into the Monongahela River. The largest sub-watersheds in the county are those of Ten Mile Creek (338 square miles), Chartiers Creek (277 square miles), Raccoon Creek (184 square miles), Buffalo Creek (114 square miles), Cross Creek (63 square miles), and Pigeon Creek (59.2 square miles) [Shaw and Busch, 1970]. Sections of four streams, including Buffalo Creek and Cross Creek, are designated as High Quality (HQ) waters by Pennsylvania DER, Bureau of Water Quality. Also, three reservoirs, previously supplying water to the city of Washington, are designated as HQ waters. Washington County contains six state game lands, one state park, three county parks, two PA Fish and Boat Commission lakes, and a number of privately owned lands leased to public agencies such as the PA Game Commission.

PHYSIOGRAPHY, GEOLOGY AND SOILS

Washington County is part of the Pittsburgh Low Plateau section of the Appalachian Plateaus Province. This physiographic section covers a large piece of southwestern Pennsylvania and includes all or part of all the counties surrounding Washington County. The Pittsburgh Low Plateau features we see today evolved over millions of years as drainages cut down through a series of uplifted strata, and wind and water wore away the remaining "peaks" to form relatively level peneplains, which were themselves uplifted and eroded. Today, we see the remains of the Harrisburg peneplain in the 1,200 to 1,300 feet elevation hills that surround the Pittsburgh area. Further to the west, the slightly lower (1,000 feet) hills and ridges remain from the younger Worthington peneplain (Jennings, 1929). The portion of the Pittsburgh Low Plateau in the northern part of Washington County shows this smooth, rolling pattern particularly well, while the portions to the south show their younger age in higher, sharper ridges and more steeply incised stream valleys (Seibert et al., 1983).

No portion of the county was ever glaciated and consequently, the upper geologic

strata and soils tend to be well stratified and predictable with none of the till fields and large eratics associated with glaciated sections of the state. Also, the gouging and scarring that glaciers produce over their period of advance and retreat is conspicuously lacking in Washington County, as are the lakes and wetlands that often form in these depressions. Additionally, without the severe folding associated with orogenic (mountain building) activity once concentrated to the east along the Appalachian Spine, the bedding of rock strata throughout the area tends to be nearly horizontal. This flat orientation reduces the opportunity for erosion between strata and produces a landscape that weathers fairly uniformly. Dramatic exposure of underlying strata is therefore limited to stream and river valleys where water has cross-cut through layers of rock.

The bedrock underlying all of Washington County has its origins in the Paleozoic Era (225-345 million years ago) and is either from the Permian Period (225-280 MY) or the Pennsylvanian (Carboniferous) Period (280-345 MY). Over the millennia, the overlying layers of rock weathered and streams cut down through these roughly 250 million year old deposits. Those strata then (and now) exposed, make up the surficial geology of the county and determine, to a large extent, the kind of soil found in any given area and, consequently, the types of natural communities that can and do exist there. Of particular note are limestone based soils and communities - communities that tend to support unique flora in the state. Although many areas in the county have significant limestone reserves, agriculture, mining and more recently, development, have displaced the natural communities that once existed in those areas. Sandstone based, acidic soils and communities are also of note. Although common in the state, they are relatively unique in Washington County and tend to be confined to the steeper sections of major stream valleys.

Broadly, the surficial strata of the southwestern portion of the county are almost exclusively Permian in origin and are classified as belonging the Dunkard Group - a group that contains, in order of descending age, the Waynesburg, Washington, and Greene formations. The last two formations contain considerable amounts of limestone interbedded with clay, siltstone, shale and some sandstone (Wagner et al., 1975). These strata are exposed mostly on the mid and upper slopes of the valleys and on the flat inter-valley uplands. The Waynesburg formation, being the oldest, sits exposed in the valley bottoms and lower slopes where the upper, younger strata have been eroded away. This formation contains mostly thin shaly clays, siltstones, sandstones and some limestone pockets. At the bottom of this formation is the Waynesburg coal seam - a locally important source of bituminous coal.

The surficial strata of the northeastern, central and northwestern sections of Washington County are lower Permian (Dunkard Group) and upper Pennsylvanian (Monongahela and Conemaugh groups) origin. In this geologically older section of

the county, the Waynesburg Formation of the Dunkard Group occupies the highest elevations, and the Pittsburgh and Uniontown formations of the Monongahela Group occupy the lower portions of the rounded hills, uplands and upper slopes above the stream valleys. These strata are rich in limestone, and also contain shaly, thin sandstones, clay and siltstone. The Pittsburgh Coal vein underlies this formation and the entire county. It is the major source of coal in Washington County and the region. The Conemaugh Formation occupies the lower slopes and stream valleys, and consists of a conglomeration of mudstone, siltstone, shale, sandstone, and limestone.

The soils of Washington County can generally be described as silty loams with some regional variations, especially on steep slopes and along lower stream valleys. Four soil associations cover the county, two of those accounting for more than 90% of the total land area.

The Dormont-Culleoka soil formation covers about 75% of the county and is the predominate soil type on upland and mildly sloping sites (Seibert et al., 1983). These soils formed from the eroding surface of the Harrisburg peneplain and are mixtures of sandstone, siltstone, limestone and shale. Except for areas where soils are thin over bedrock and erosion is high, Dormont-Culleoka soils are slightly acidic to neutral and moderately rich, making large sections of the county well suited for agriculture.

Dormont-Culleoka-Newark soils cover many of the lower slopes and floodplains in the county, accounting for about 13% of the total county land area. This group of silty loams are also derived from the residuum of limestone, siltstone, sandstone and shale but because they formed from material eroded from the cross sections of numerous geologic strata, they tend to be more silty and have a higher pH than those not containing the Newark Unit. The stream valleys that are dry enough and contain these soils furnish ribbons of concentrated and fertile farmland for both feed crops and hay fields.

The Guernsey-Dormont-Culleoka formation comprises about 5% of the soils that cover the county and sit on hilltops and hillsides in three or four distinct patches in the central and western part of the county. The Guerney unit of this association derives from the residuum of clay shale, siltstone, and limestone (Seibert et al., 1983). These soils can be moderately acidic to basic and can provide for very productive forest communities and agricultural lands.

The last association, the Udorthents-Culleoka-Dormont soils, include those soils disturbed by strip mining operations and are located primarily in the Hanover Township-Burgettstown area. They make up about 4% of the total land cover of

Washington County.

VEGETATION

Washington County sits within the band of the Cumberland-Allegheny Plateau section of the of Mixed Mesophytic Forest formation described by Braun (1950). Braun depicts the climax forest characteristic of this formation as including beech (*Fagus grandifolia*), tuliptree (*Liriodendron tulipifera*), basswood (*Tilia heterophylla*), sugar maple (*Acer saccharum*), sweet buckeye (*Aesculus octandra*), red oak (*Quercus rubra*), white oak (*Quercus alba*), and eastern hemlock (*Tsuga canadensis*) in the overstory and a number of trees and shrubs in the understory; including, flowering dogwood (*Cornus florida*), redbud (*Cercis canadensis*), pawpaw (*Asimina triloba*), and serviceberry (*Amelanchier arborea*). Rich in herbaceous growth, especially spring ephemeral species, this formation reaches its highest species diversity south of southwestern Pennsylvania, in West Virginia and Kentucky.

Other authors include Washington County in an oak-hickory association that stretches from northern Georgia to southern New England (Kuchler, 1964; Eyre, 1983). The forests described in this association consist of mixtures of hickory (*Carya spp.*), white oak, red oak, ash (*Fraxinus spp.*), black cherry (*Prunus serotina*), black walnut (*Juglans nigra*), and elm (*Ulmus spp.*), among other species. With the western lobe of the glacial advance in Pennsylvania less than 100 miles to the north, the flora of Washington County also shows affinity with the beech-maple communities of the Great Lakes Region and with the northern hardwood forests of northern New England.

A number of plant species reach the northern and eastern limits of their range in this section of the state and are therefore considered uncommon, and in some cases, rare in the state. Tree species typical of the Mixed Mesophytic forests of the south like buckeye, pawpaw, and shingle oak (*Quercus imbricaria*), find their way into the county along creek bottoms and river valleys. Other species like yellow oak (*Quercus muehlenbergii*) and post oak (*Quercus stellata*), require unique habitats and are consequently limited in distribution in southwestern Pennsylvania.

Over numerous generations, agriculture has displaced much of the upland forest in the Washington County, leaving steep slopes and isolated stream valleys as the best examples of contiguous forest communities in the county. However, even these areas were logged, at least once, many two or more times. These valley forests show the transitional nature of forest communities in the region, as changes in aspect and microclimate can shift the vegetation from a rich mesic association of white oak,

tuliptree, basswood and sugar maple to one more characteristic of northern hardwood forests with yellow birch (*Betula alleghaniensis*), eastern hemlock, and beech dominating the overstory. Still, some narrow bands of forest between agricultural field and the top of valley slopes remain. These areas often support mixed oak communities, often on dry, sandy soils, where a number of ericaceous shrubs like blueberry (*Vaccinium spp.*), huckleberry (*Gaylussacia bacatta*), and mountain laurel (*Kalmia latifolia*) grow under a canopy of red oak, chestnut oak (*Quercus prinus*), black oak (*Q. veluntina*), pignut hickory (*Carya glabra*), and serviceberry (*Amelanchier arborea*). Jennings (1953) describes the original forests that covered the rounded hilltops of southwestern Pennsylvania as a white oak-hickory forest association, dominated by white oak (*Quercus alba*), mockernut and shagbark hickory (*Carya tomentosa* and *C. ovata*), and smaller amounts of black cherry, white ash (*Fraxinus americana*) and red maple (*Acer rubrum*) as well as juneberry (*Amelanchier sp.*) and maple-leaved viburnum (*Viburnum acerifolium*).

Many areas in the county are now reverting from pasture or hay fields to forest as farms are sold and divided and retired from active agricultural use. The lower slopes and bottoms of small stream valleys are often good examples of these successional communities of saplings, shrubs and vines. Because these areas have been disturbed numerous times and for extended periods (as active farms), the returning communities may be quite different from those that previously or historically were there. Limited seed sources, depleted soil seed banks, lack of top soil and humus, and abundance of weedy and exotic flora may delay and alter natural succession on many of these sites. Dense thickets of hawthorn (*Crataegus sp.*), black cherry, American elm (*Ulmus americana*), wild grape (*Vitus sp.*) and multiflora rose (*Rosa multiflora*) are now common and wide spread.

Braun (1950) recognized floodplain forests as successional communities within the Mixed Mesophytic forest formation. However, periodic flooding, and on major drainages, scouring by ice in the winter, served to renew and maintain the species composing these floodplain areas. The 42 miles of the Monongahela River flowing through Washington County would probably have supported large floodplain forests of black willow (*Salix nigra*), sycamore (*Platanus occidentalis*), silver maple (*Acer saccharinum*), elm, box elder (*Acer negundo*), and black walnut. Damming, channel widening and industrial activity have all but eliminated floodplain communities along the river and only very small remnants remain. Still, some good examples of floodplain forest stretch along the larger creeks in Washington County and although not as diverse or extensive as the Monongahela floodplains may once have been, are important natural communities in the county.

RESULTS BY U.S.G.S. QUADRANGLE

WASHINGTON COUNTY

SOURCE: U.S. Geological Survey

Figure 2: U.S.G.S. quadrangle index map of Washington County.

Bold Print Upper and Lower Case Letters

--Managed Lands such as Pennsylvania State Game Lands, and state and local parks, e.g., **State Game Lands #232**, **Hillman State Park**.

--Geologic Features/Fossils Localities, e.g., **Meadowcroft Rock Shelter**.

Mapping uses the following conventions:

- Natural Areas, Biological Diversity Areas, and Other Heritage Areas are mapped using **solid lines** ( ), which include both the site core (natural community or species of special concern habitat) and critical buffer lands surrounding the core.

- Landscape Conservation Areas are mapped using **dotted lines** (••••••••••).

- Dedicated Areas and Managed Lands are mapped with **dash-dot lines** ( ).

- Geologic Features/Fossil Localities are indicated by a **solid circle** (●).

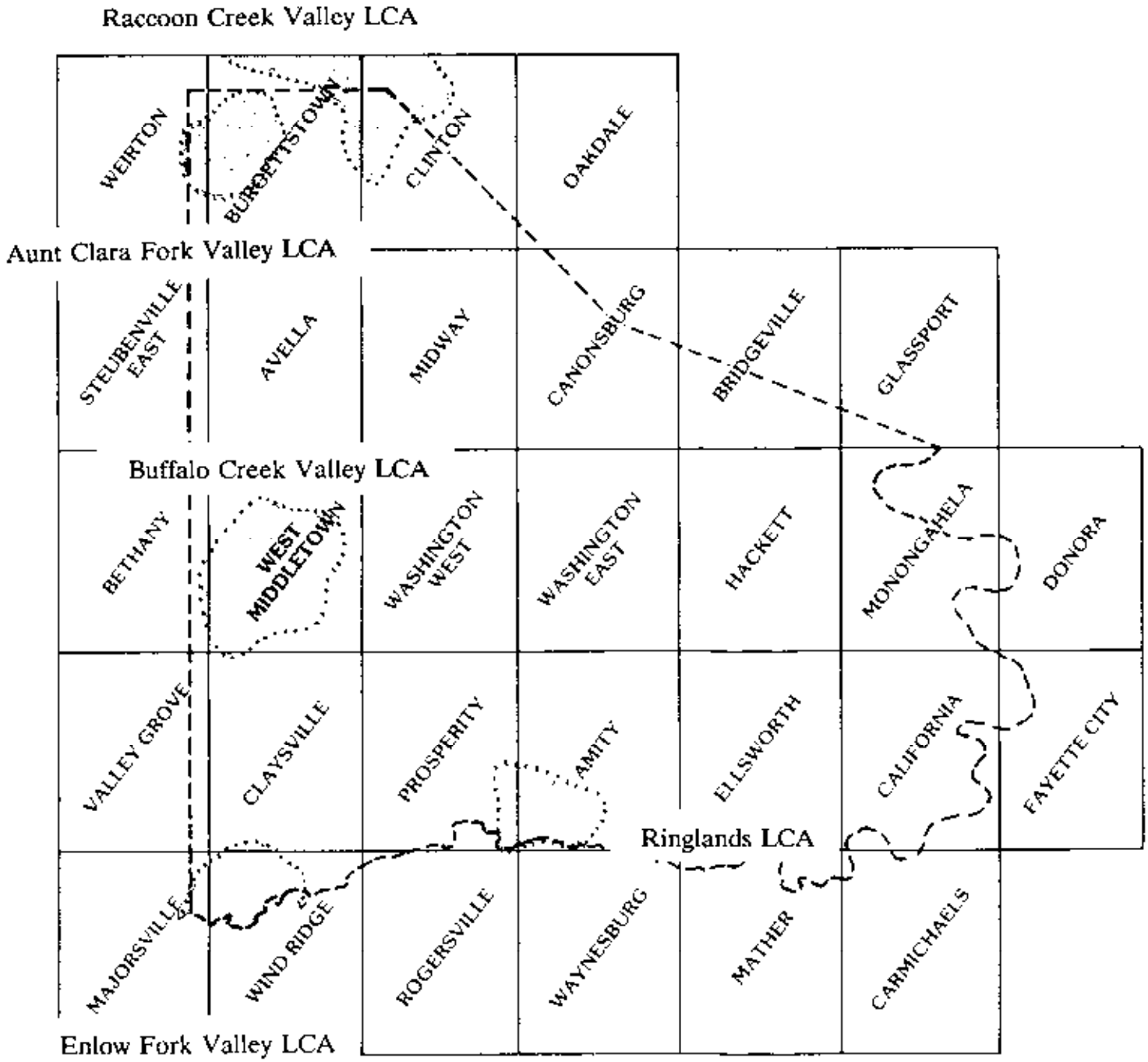
A summary table of sites proceeds each map, listing the identified Natural Heritage Areas. Under each area are listed the associated natural communities or species of special concern (endangered, threatened, etc.). Managed lands, geologic features and fossil localities are listed after the Natural Heritage Areas. Following each site name is the site's relative county significance. Table I summarizes Natural Heritage Areas by significance rank and Appendix I defines the three ranks. Listed under each Natural Heritage Area name are the natural communities and species of special concern, specified by an alphanumeric code, that have been identified within the area (see Appendix V for a list of natural communities recognized in Pennsylvania). Also included for each community and species is a PNDI rank, current legal status, and the date that the community or species was last observed. The text that follows each table discusses the natural communities and includes descriptions, potential threats, and recommendations for protection.

The summary tables do not specify the names of the elements (natural communities or species of special concern); the specific communities are identified in the text, but the species are not specified to avoid the possible consequences that heavy visitation, collection or intentional

disturbance might have to the plant or animal populations. Anyone visiting the properties where these elements occur should obtain permission from the landowner(s). Also, the report is not burdened with the detailed, site specific information required to manage these species of special concern. Hopefully, this report will encourage communication between ecological professionals here at the Conservancy and within state natural resource agencies with municipalities, organizations and individuals in the county.

Figure 3 precedes the quadrangle maps and descriptions. This figure shows the approximate locations and extent of the LCA's contained within Washington County. Because LCA's stretch across a number of quadrangles, it can be difficult to envision how the sections relate to one another and to the county as a whole. Hopefully, this figure will clarify the shape, size and location of the LCA's within the county and provide a quick reference for finding other quadrangles containing the LCA's of interest.

WASHINGTON COUNTY

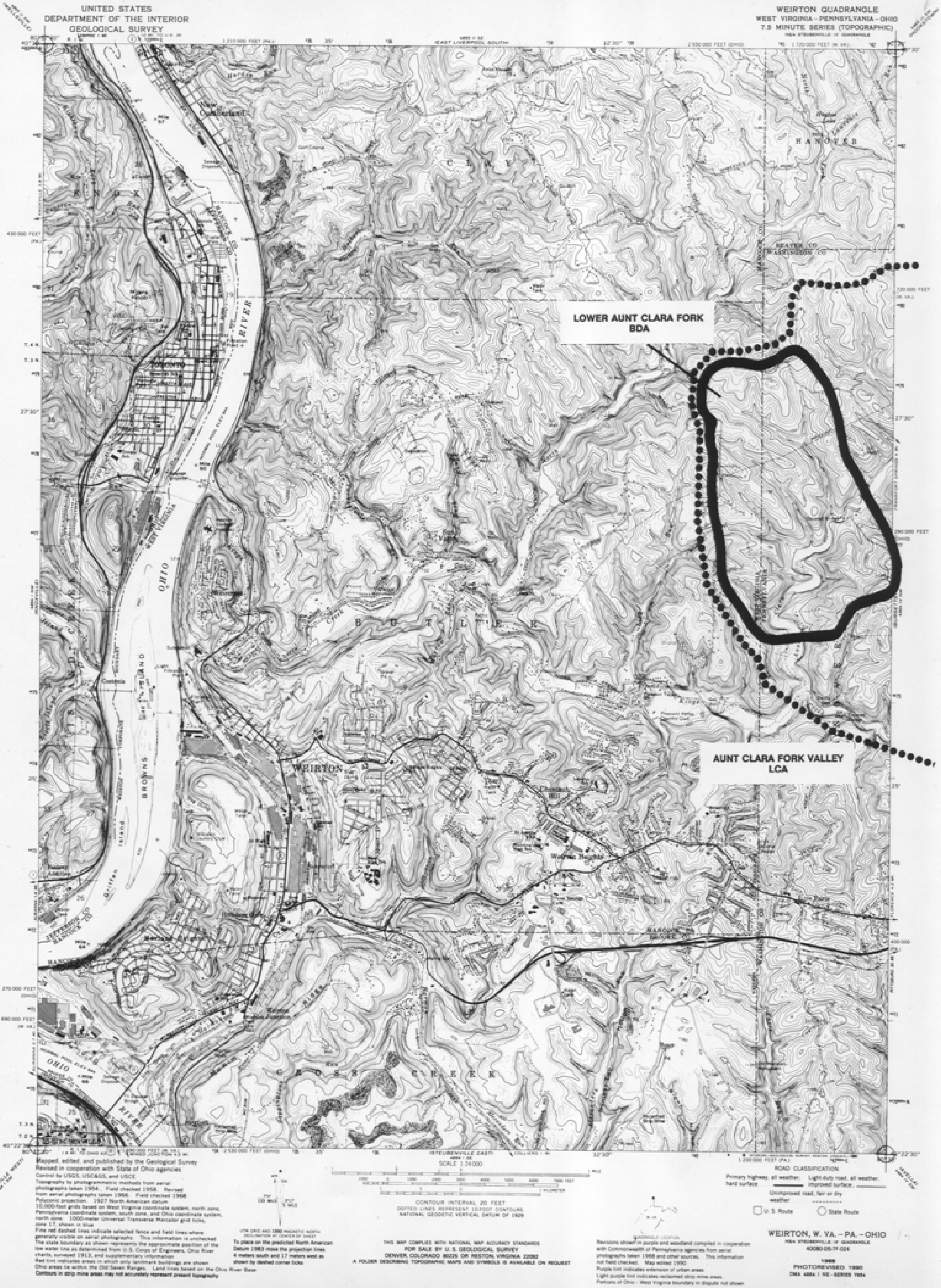


SOURCE: U.S. Geological Survey

Figure 3: Landscape Conservation Areas (LCA's) in Washington County

USGS QUADRANGLE **WEIRTON**

		PNDI Rank		Legal Status		Last
		Global	State	Fed.	State	Seen
AUNT CLARA FORK VALLEY LCA	*Exceptional Significance*					
LOWER AUNT CLARA FORK BDA	*Exceptional Significance*					
NATURAL COMMUNITY	NC001	G?	S2	N	N	7/93
NATURAL COMMUNITY	NC002	G?	S2	N	N	7/93
NATURAL COMMUNITY	NC003	G?	S5	N	N	7/93


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WEIRTON QUADRANGLE
WEST VIRGINIA - PENNSYLVANIA - OHIO
7.5 MINUTE SERIES (TOPOGRAPHIC)
LOWER AUNT CLARA FORK
BDA
AUNT CLARA FORK VALLEY
LCA
New Cumberland
HANOVER
BUTLER
WEIRTON
Weirton Heights
CROSS CREEK
OHIO RIVER
SCALE 1:24 000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY
DENVER, COLORADO 80225 OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST
ROAD CLASSIFICATION
U. S. Route
State Route
WEIRTON, W. VA. - PA. - OHIO
1968
PHOTOREVISED 1990

WEIRTON

In the extreme northwestern section of Washington County contained in this quadrangle, Aunt Clara Fork meets Kings Creek and flows into West Virginia. North of Paris, PA, the Kings Creek watershed drains this section of Washington County; south of Paris, the Harmon Creek Watershed does so. Several significant natural communities, a BDA, and an LCA are contained within this quadrangle.

Just north of its confluence with Kings Creek, Aunt Clara Fork makes several sharp east-west turns, creating some wide floodplain areas within its relatively narrow valley. Tributary streams flow into this section of Aunt Clara Fork from the north and the south; those from the north being larger and draining substantial watersheds of their own. Undeveloped, recently undisturbed, and extensive, this Community/Ecosystem Conservation Area and High Diversity Area is designated as the **Lower Aunt Clara Fork BDA**.

Sycamore (*Platanus occidentalis*), sugar maple (*Acer saccharum*), bitternut hickory (*Carya cordiformis*), black cherry (*Prunus serotina*), and elm (*Ulmus americana* and *U. rubra*) comprise the bulk of the mostly closed canopy of the Floodplain Forest Community (**NC001**) within the BDA. Spicebush (*Lindera benzoin*) grows profusely throughout the floodplain and a variety of herbs like false mermaid (*Floerkea proserpinacoides*), wild phlox (*Phlox divaricatus*), buttercups (*Ranunculus spp.*) and bee balm (*Monarda didyma*), form a dense ground cover. Swampy, open sections sit in places where tributaries cross the floodplain, and skunk cabbage (*Symplocarpus foetidus*), forget-me-nots (*Myosotis scorpiodes*), and sensitive fern (*Onoclea sensibilis*) grow. Less mature sections of floodplain lie further downstream and are dominated by American elm (*Ulmus americana*) and hawthorn (*Crataegus sp.*). All Terrain Vehicles (ATV's) and equestrian trails run through the floodplain, especially on this lower (downstream) section.

To the southeast, steep, rocky slopes rise above the floodplain. Dissected by deep stream channels, these cool, moist slopes support a Mesic Central Forest Community (**NC002**) dominated by sugar maple, red oak (*Quercus rubra*), black cherry (*Prunus serotina*), and slippery elm (*Ulmus rubra*). Young maples and spicebush form much of the understory, while herbs and ferns like sharp-lobed hepatica (*Hepatica acutiloba*), wild ginger (*Asarum canadensis*), grape fern (*Botrichium sp.*), and maidenhair fern (*Adiantum pedatum*) make up the ground vegetation. Eastern hemlock (*Tsuga canadensis*) grow in several of the deep ravines, and species like marginal wood fern (*Dryopteris marginalis*), hophornbeam (*Ostrya virginiana*), and chestnut oak (*Quercus prinus*) grow on sections of the well drained and rocky uplands. Sections of the upland areas on this side of the creek are young sapling forests and other sections have been recently logged.

To the northwest, the milder slopes of three small tributary valleys support a forest of white oak (*Quercus alba*), red maple (*Acer rubrum*), beech (*Fagus grandifolia*), and sassafras (*Sassafras albidum*). Patches of blueberry (*Vaccinium vacillans*), huckleberry (*Gaylussacia*

bacatta), and mountain laurel (*Kalmia latifolia*) indicate less mesic conditions than those on the opposite side of Aunt Clara Fork. Classified as a Dry-Acidic Central Forest (**NC003**), this community covers much of the ridges between the tributaries and the upper watershed areas. The lower slopes approaching Aunt Clara Fork show the transition to more mesic conditions on the floodplain as sugar maple becomes prominent in the canopy and a rich display of wildflowers covers the ground.

As one of the few areas in Washington County where contiguous forest communities exist over several side by side watersheds, no further cutting or clearing of the forests within the BDA is recommended. The existing forests should be allowed to mature, and the abandoned old fields and pasture sections of the BDA, most being in the upper watershed areas, should be allowed to revert to forest, adding to the continuity and size of the existing communities. Uniquely, much of the land within in the BDA is within a single ownership. Currently open to hunting and fishing through a cooperative agreement with the PA Game Commission, further agreements providing for the conservation of this area may be possible.

All of the Lower Aunt Clara Fork BDA, the Aunt Clara Fork Floodplain BDA (discussed in the Burgettstown quadrangle), and the entire watershed of the lower part of Aunt Clara Fork are contained within an area designated as the **Aunt Clara Fork Valley LCA**. A mixture of valley forests, upland agricultural areas and successional land, this LCA represents one of the more remote and undeveloped sections of Washington County that contains exemplary natural communities. With the BDA's making up the core of this LCA, adjoining lands should be considered as possible areas for the future expansion of the existing natural communities and as areas that link the terrestrial and aquatic habitats of the Aunt Clara Fork Valley. Preserving the remote and rural qualities of the LCA and at the same time enhancing and protecting the natural communities within the LCA, will be the challenge in planning for development in this part of the county. Residential development should be concentrated in areas that are easily accessible, preferably on the perimeter of the LCA, and those that already exist as villages or towns. The size and number of roads should be kept to the minimum necessary to accommodate the existing demand. Utility R.O.W.'s should follow those already existing and plans made to consolidate as many as possible, as replacement and repair needs provide such opportunities. Lands within the LCA that are currently abandoned as agricultural areas, particularly those that are further along in their succession to forest, should be allowed to revert to forest. Agricultural practices in the LCA should incorporate the best available methods for reducing erosion and soil loss and for minimizing the need for and use of insecticides and herbicides.

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USGS QUADRANGLE **BURGETTSTOWN**

	PNDI Rank		Legal Status		Last
	Global	State	Fed.	State	Seen

AUNT CLARA FORK VALLEY LCA *Exceptional Significance*

AUNT CLARA FORK FLOODPLAIN BDA *Notable Significance*

NATURAL COMMUNITY	NC001	G?	S2	N	N	5/93
NATURAL COMMUNITY	NC002	G?	S3S4	N	N	5/93

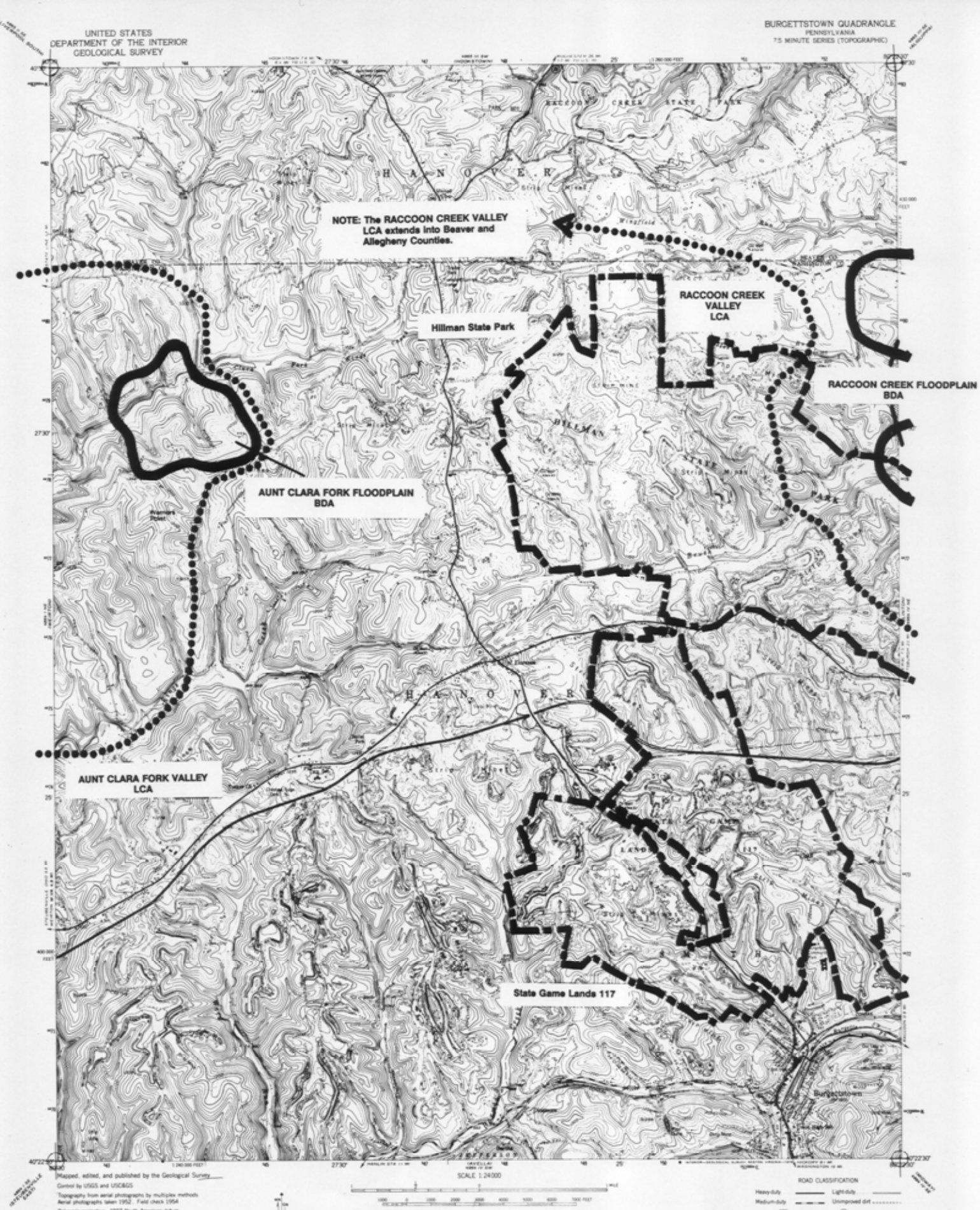
RACCOON CREEK VALLEY LCA *High Significance*

RACCOON CREEK FLOODPLAIN BDA *Exceptional Significance*

NATURAL COMMUNITY	NC001	G?	S2	N	N	8/93
NATURAL COMMUNITY	NC002	G?	S1	N	N	8/93
SPECIAL PLANT	SP001	G5	S2	N	PT	1987
SPECIAL PLANT	SP002	G5	S1	N	PE	1986
SPECIAL ANIMAL	SA001	G?	S3S4	N	N	7/93

MANAGED LANDS: Hillman State Park

State Game Lands 117


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
BURGETTSTOWN QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
NOTE: The RACCOON CREEK VALLEY LCA extends into Beaver and Allegheny Counties.
RACCOON CREEK VALLEY LCA
Hillman State Park
RACCOON CREEK FLOODPLAIN BDA
AUNT CLARA FORK FLOODPLAIN BDA
AUNT CLARA FORK VALLEY LCA
State Game Lands 117
HANOVER
Burgettstown
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
ROAD CLASSIFICATION
Heavy-duty
Light-duty
Medium-duty
Unimproved dirt
U.S. Route
State Route
BURGETTSTOWN, PA.
N4022.5—W8022.5/7.5
1954
PHOTOREVISED 1979

BURGETTSTOWN

Washington and Beaver Counties split the Burgettstown quadrangle, Washington County covering all but approximately the northern one fifth of the quadrangle. Drained by the Harmon Creek Watershed to the south and the Kings Creek Watershed to the north, the Burgettstown quadrangle covers a landscape heavily impacted by strip mining of coal. Two large pieces of public land, Hillman State Park and State Game Lands 117, contain a large portion of the strip mined land in this quadrangle. Two forest communities of county significance lie within this quadrangle as does part of the **Aunt Clara Fork Valley LCA** (discussed in the Weirton quadrangle).

Kings Creek and its largest tributary, Aunt Clara Fork, flow west into the Weirton quadrangle and contain some of the least disturbed areas in this part of Washington County. One section of the Aunt Clara Fork Valley, recognized as a High Diversity Area, is designated as the **Aunt Clara Fork Floodplain BDA**, supports a good example of a Floodplain Forest Community (**NC001**). Sycamore (*Platanus occidentalis*), green ash (*Fraxinus pensylvanica*), red maple (*Acer rubrum*), and black cherry (*Prunus serotina*) form a partially open canopy on the floodplain area of this site. Numerous young black walnut (*Juglans nigra*) grow throughout this site; a new generation of a species prized for its wood and typically cut thoroughly and persistently from these floodplain areas. Other tree/shrubs like spicebush (*Lindera benzoin*), ironwood (*Carpinus caroliniana*), and witch hazel (*Hamamelis virginiana*) form a sometimes dense understory and a diversity of herbs blanket the ground - skunk cabbage (*Symplocarpus foetidus*), Virginia waterleaf (*Hydrophyllum virginianum*), meadow rue (*Thalictrum polygamum*), and sensitive fern (*Onoclea sensibilis*) being among the most numerous. Old fence posts and patches of invasive alien species like multiflora rose (*Rosa multiflora*) and lady's-thumb (*Polyganum persicaria*) indicate that this area was probably pastured and maintained as open land for many years. Abandoned and undisturbed for sometime, this community is recovering well, and showing high diversity and potential as an exemplary biodiversity area.

A small tributary stream crosses this floodplain area from the south, flowing over bedrock shelves and dropping over a 7-foot high waterfall. Yellow birch (*Betula alleghaniensis*), eastern hemlock (*Tsuga canadensis*), white oak (*Quercus alba*), downy juneberry (*Amelanchier arborea*), and red maple grow on the slope and along the stream, and maple- leaf viburnum (*Viburnum acerifolium*), marginal wood fern (*Dryopteris marginalis*), sphagnum moss (*Sphagnum sp.*), and virginia creeper (*Parthenocissus quinquefolia*) grow on and around the rocks that form the stream-bed and waterfall. This community is an example of a Northern Hardwood Forest (**NC002**), similar to those found in the northern part of the county where small ravine valleys furnish micro-habitats of moist soils and cool conditions. Unfortunately, two gas pipeline R.O.W.'s intersect this tributary and run parallel with it to the top of the watershed. All Terrain Vehicles (ATV's) have used the R.O.W. and have cut additional trails in along the slope to the west.

Protecting these communities will involve minimizing disturbances within the immediate watershed and preventing further fragmentation of the BDA. Utility R.O.W.'s within the BDA should be of minimum width required for access and should be permitted to develop as much woody vegetation as possible. Use of herbicides and heavy equipment should be avoided as well as seeding of non-native grasses and other vegetation. Also, reducing erosion on the slopes by discouraging All Terrain Vehicles (ATV's) use and timbering within the BDA is recommended. Frequented as a fishing and hunting spot, this BDA is split among several ownerships. Cooperation among these landowners will be necessary to the long-term protection of this site.

Hillman State Park, although within the Pennsylvania Bureau of State Parks ownership, is managed by the Pennsylvania Game Commission as Special Area 432. Contiguous with **State Game Lands 117**, this block of land represents the largest piece of public land in Washington County. Covering a highly disturbed landscape of strip mined areas, old agricultural areas, and young forest, this block of public land contains no significant natural communities. However, it is important to consider the recreational and open space value of this area for Washington County within any comprehensive plan for the county.

USGS QUADRANGLE **CLINTON**

	PNDI Rank		Legal Status		Last
	Global	State	Fed.	State	Seen

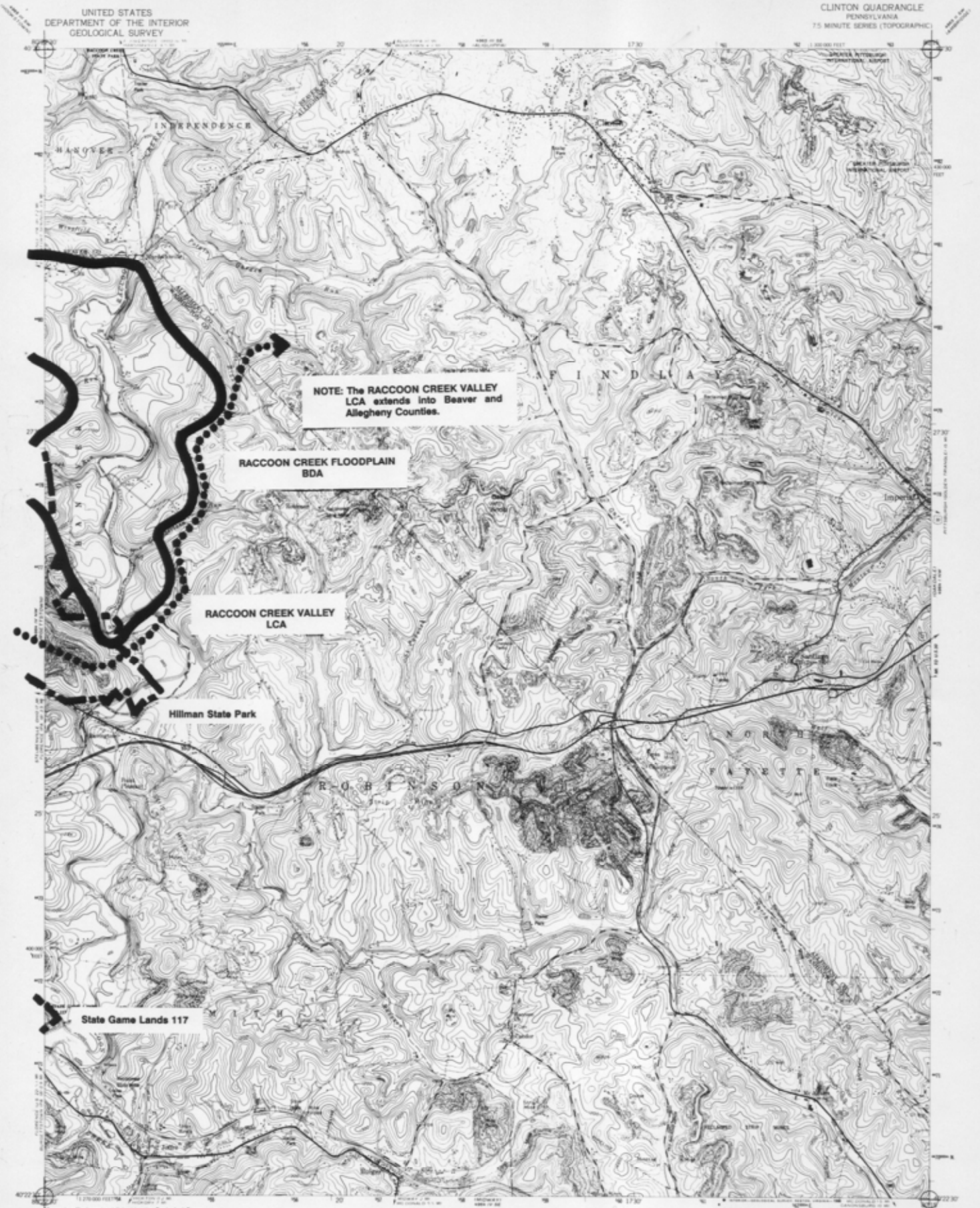
RACCOON CREEK VALLEY LCA *High Significance*

RACCOON CREEK FLOODPLAIN BDA *Exceptional Significance*

NATURAL COMMUNITY	NC001	G?	S2	N	N	8/93
NATURAL COMMUNITY	NC002	G?	S1	N	N	8/93
SPECIAL PLANT	SP001	G5	S2	N	PT	1987
SPECIAL PLANT	SP002	G5	S1	N	PE	1986
SPECIAL ANIMAL	SA001	G?	S3S4	N	N	7/93

MANAGED LANDS: Hillman State Park

State Game Lands 117


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
CLINTON QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
INDEPENDENCE
HANOVER
FINDLAY
ROBINSON
NORTH FAYETTE
NOTE: The RACCOON CREEK VALLEY LCA extends into Beaver and Allegheny Counties.
RACCOON CREEK FLOODPLAIN BDA
RACCOON CREEK VALLEY LCA
Hillman State Park
State Game Lands 117
Mapped, edited, and published by the Geological Survey
Control by USGS and USC&GS
Topography from aerial photographs by multiplex methods
Aerial photographs taken 1952. Field check 1954
Polyconic projection. 1927 North American datum
10,000-foot grid based on Pennsylvania coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks, zone 17, shown in blue
To place on the predicted North American Datum 1983 move the projection lines 4 meters south and 17 meters west as shown by dashed corner ticks
There may be private inholdings within the boundaries of the National or State reservations shown on this map
Contours in strip mine areas may not accurately represent present topography
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY
DENVER, COLORADO 80225 OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST
UTM GRID AND 1990 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET
ROAD CLASSIFICATION
Heavy-duty
Medium-duty
Light-duty
Unimproved dirt
U. S. Route
State Route
QUADRANGLE LOCATION
Revisions shown in purple and woodland compiled in cooperation with Commonwealth of Pennsylvania agencies from aerial photographs taken 1988 and other sources. This information not field checked. Map edited 1990
Light purple tint indicates reclaimed strip mine areas
CLINTON, PA.
40080-G3-TF-024
1954
PHOTOREVISED 1990
DMA 4864 IV NE—SERIES V851

CLINTON

The Allegheny-Washington County line runs diagonally across this quadrangle from southeast to northwest, intersecting a small block of Beaver County that occupies the northwest corner of the quadrangle. The Raccoon Creek Valley runs the length of the quadrangle, along its western edge, and through all three counties. The Raccoon Creek watershed drains the entire portion of northcentral Washington County included in the Clinton quadrangle. Included in this section of Washington County are the Raccoon Creek Valley LCA (a tri-county LCA), sections of floodplain forest, a forested swamp, a mesic central forest, several plants of special concern in Pennsylvania, and the home of an animal of special concern in Pennsylvania. Also, a small pieces of both Hillman State Park and State Game Lands 117 (discussed in the Burgettstown quadrangle) cross in from the Burgettstown quadrangle along the extreme western edge of this quadrangle.

Dilloe Run and Brush Run meet Raccoon Creek just south of Murdocksville along a section of the creek that contains several large floodplain areas and a series of very steep slopes. The Inventory has designated this High Diversity Area and Community/Ecosystem Conservation Area as the **Raccoon Creek Floodplain BDA**. Although interrupted by roads, agricultural fields, and residential development, the Floodplain Forest Community (**NC001**) stretches for several miles and stands as one of the most extensive forested floodplains in the county. Some sections of the floodplain are relatively young with dense groves of American elm (*Ulmus americana*), hawthorn (*Crataegus sp.*), and multiflora rose (*Rosa multiflora*), but much of the community is developing a more mature structure as the tree canopy closes and early successional species disappear. Large sycamore (*Platanus occidentalis*) grow throughout the valley and green ash (*Fraxinus pensylvanica*), black walnut (*Juglans nigra*), sugar maple (*Acer saccharum*), and bitternut hickory (*Carya cordiformis*), along with the sycamore, compose the bulk of the canopy. Shrubs like spicebush (*Lindera benzoin*), silky dogwood (*Cornus amomum*), eastern ninebark (*Physocarpus opulifolius*), and common elderberry (*Sambucus canadensis*) grow in sometimes dense patches, and a diversity of herbs, including false nettle (*Boehmaria cylindrica*), green dragon (*Arisaema dracontium*), green-headed coneflower (*Rudbeckia laciniata*), and wing stem (*Actinomerous alternifolia*), form the ground cover on the floodplain. Two plants of special concern in Pennsylvania (**SP001, SP002**) grow on and adjacent to the floodplain in the Brush Run confluence area and an historic, but not recently confirmed, record for another exists for the floodplain in this BDA. Also, an animal of special concern in Pennsylvania (**SA001**) lives within the BDA and depends upon the older trees on the floodplain for breeding and cover.

Between Dilloe Run and Brush Run, Raccoon Creek swings in a broad loop to the east, creating the largest contiguous piece of floodplain in the BDA. Within the floodplain forest community sits a narrow band of unique forest growing in what was likely an old meander scar of Raccoon Creek. Classified as a Floodplain Swamp (**NC002**), this area remains moist throughout the year and holds water during wetter seasons of the year. Dominated by large swamp white oak (*Quercus bicolor*), buttonbush (*Cephalanthus occidentalis*), silky dogwood,

and false nettle cover large patches below the oak canopy. Various sedges (*Carex spp.*) grow in tufts on the silty mud in the more open sections of the swamp. A rare community in Washington County, this floodplain swamp adds substantially to the diversity of the floodplain community in general.

Above the same section of floodplain that supports the floodplain swamp is a steep, forested slope dominated by sugar maple, shagbark hickory (*Carya ovata*), and white ash (*Fraxinus americana*), and punctuated by sandstone outcroppings. Predominately west-facing and moderately dry, older hemlocks (*Tsuga canadensis*) show the northern affinity of this Mesic Central Forest (**NC003**). The road that runs parallel to Raccoon Creek cuts along the top of this slope and separates the steep sections of the slope forest from the upland areas of oak-maple forest. Numerous large diameter plastic drainage pipes run under the road and hang out over the slope, conducting water under the road surface. Some appear to have been placed at the points where water naturally drained down the slope; others were placed without regard for the natural drainage patterns. Severe erosion has occurred on this slope as a result of the height above and placement of these pipes on the slope.

Logging of the uplands and slopes to the west of the creek has occurred recently and continues in at least one section. Residential development continues along the road and the lower slopes of areas to the east of Raccoon Creek and along Brush Run. A section of floodplain to the east that joins the two largest pieces of the floodplain within the BDA exists as open meadow/sapling forest. Protecting the communities contained within this BDA will mean protecting the hydrology of the area and limiting disturbances within the BDA. No logging should take place within the BDA, especially on slopes and on any floodplain areas. Areas within the BDA that are recovering after logging or pasturing should be allowed to succeed to shrub and forest communities. Further development within the BDA should be discouraged to avoid loosing habitat, increasing erosion, and creating the need for road construction and improvement. Development that does occur should be limited to those areas that are presently unforested and that require no new roads or utility R.O.W.'s. The under-road culverts mentioned above should be rerouted off the steepest part of the slope and consolidated to take advantage of natural drainages down the slope. At very least, the pipes should be extended downward over the slope to sit at ground level.

Washington, Beaver, and Allegheny Counties share a large, minimally developed, largely forested patch of land, the section within Beaver County identified as the Raccoon Creek LCA by the Beaver County Natural Heritage Inventory (Smith, 1993). Designated in this report as the **Raccoon Creek Valley LCA**, this area also includes the Raccoon Creek Floodplain BDA in Washington County as well as a BDA recognized in the Beaver County Natural Heritage Inventory Report. In Washington County, the LCA boundaries follow the Raccoon Creek Floodplain BDA boundaries, but also encompass the Dilloe Run and Brush Run watersheds, crossing north into Beaver County and joining the LCA designated there. Crossing Bigger Run into Allegheny County, the eastern boundary follows the Potato Garden Watershed, again

turning north and joining the section of LCA in Beaver County. Large and encompassing a number of exceptionally significant natural communities, this LCA has great potential in protecting biodiversity in the county. Also, initial investigations of the insect fauna (particularly moths) in this area by the staff at the Carnegie Museum of Natural History, suggest that the remaining forest communities are rich in native species. It may well be one of the more important habitats for terrestrial invertebrates in the county and in the region. More investigation will be required to better assess the diversity of invertebrates in this area, especially within the forest communities contained within the BDA's. Use of pesticides within this LCA and particularly within the BDA's should be limited to very specific targets and areas to avoid possible impacts to the native insect fauna.

Preserving and encouraging the sparsely developed, minimally fragmented character of the LCA should be the counties' and municipalities' primary planning and design emphasis. Development should be limited to those areas that are already inhabited and outside any of the BDA's. New roads should be discouraged and additional utility lines should make use of already existing R.O.W.'s. Abandoned agricultural areas should be allowed to succeed to forest and existing agricultural operation should be encouraged to continue as important open space components of the LCA.

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USGS QUADRANGLE **OAKDALE**

	PNDI Rank		Legal Status		Last
	Global	State	Fed.	State	Seen

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

STATE OF PENNSYLVANIA
DEPARTMENT OF INTERNAL AFFAIRS
TOPOGRAPHIC AND GEOLOGIC SURVEY

OAKDALE QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)

Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography from aerial photographs by photogrammetric methods
Aerial photographs taken 1952. Field check 1953. Revised 1960

Polyconic projection. 1927 North American datum
10,000-foot grid based on Pennsylvania coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks,
zone 17, shown in blue
To place on the predicted North American Datum 1983
move the projection lines 4 meters south and
18 meters west as shown by dashed corner ticks

Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked

Red tint indicates areas in which only landmark buildings are shown

There may be private inholdings within the boundaries of the National or State reservations shown on this map

UTM GRID AND 1980 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

Contours in strip mine areas may not accurately represent present topography

SCALE 1:24 000

CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY
DENVER, COLORADO 80225 OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

ROAD CLASSIFICATION

Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
U. S. Route — State Route
Interstate Route

Revisions shown in purple and woodland compiled in cooperation with Commonwealth of Pennsylvania agencies from aerial photographs taken 1988 and other sources. This information not field checked. Map edited 1990

Light purple tint indicates reclaimed strip mine areas

OAKDALE, PA.
40080-D2-TF-024

1960
PHOTOREVISED 1990
DMA 4864 I NW-SERIES V831

OAKDALE

A small triangle of Washington County crosses into the Oakdale quadrangle just north of McDonald, PA. Part of the Robinson Run watershed, this piece of Washington County contains no presently recognized Natural Heritage Areas.

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USGS QUADRANGLE **STEUBENVILLE EAST**

	PNDI Rank		Legal Status		Last
	Global	State	Fed.	State	Seen

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

STEUBENVILLE EAST QUADRANGLE
OHIO–WEST VIRGINIA–PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)

Mapped, edited, and published by the Geological Survey
Revised in cooperation with State of Ohio agencies

Control by USGS, USC&GS, and USCE

Topography by photogrammetric methods from aerial photographs taken 1954. Field checked 1958. Revised from aerial photographs taken 1966. Field checked 1968

Polyconic projection. 1927 North American datum

10,000-foot grids based on West Virginia coordinate system, north zone, Pennsylvania coordinate system, south zone and Ohio coordinate system, north zone. 1000-meter Universal Transverse Mercator grid ticks, zone 17, shown in blue

Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked

The state boundary as shown represents the approximate position of the low water line as determined from U.S. Corps of Engineers Ohio River charts, surveyed 1913, and supplementary information

Red tint indicates areas in which only landmark buildings are shown

Ohio area lies within the Old Seven Ranges.

Land lines based on the Ohio River Base

UTM GRID AND 1978 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

Areas bounded by dashed purple lines and printed with disturbed surface pattern represent reclaimed mining areas

SCALE 1:24 000

CONTOUR INTERVAL 20 FEET
DOTTED LINES REPRESENT 10-FOOT CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY
DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

Map photoinspected 1981
No major culture or drainage changes observed

QUADRANGLE LOCATION

Revisions shown in purple compiled in cooperation with State of Ohio agencies from aerial photographs taken 1976. Map edited 1978. This information not field checked

ROAD CLASSIFICATION

Primary highway, all weather, hard surface
Light-duty road, all weather, improved surface
Secondary highway, all weather, hard surface
Unimproved road, fair or dry weather
U. S. Route
State Route

STEUBENVILLE EAST, OHIO–W. VA.–PA.
N4015–W8030/7.5
PHOTOINSPECTED 1981
1968
PHOTOREVISED 1978
AMS 4864 I SE–SERIES V854

STEUBENVILLE EAST

A part of the far western border of Washington County runs the length of the Steubenville East quadrangle. In the southern half of the quadrangle, Cross Creek flows across the border into West Virginia, and to the north, Harmon Creek crosses the border. Presently, no significant Natural Heritage Areas are recognized for this quadrangle.

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USGS QUADRANGLE **AVELLA**

		PNDI Rank		Legal Status		Last
		Global	State	Fed.	State	Seen
CROSS CREEK VALLEY BDA	*High Significance*					
NATURAL COMMUNITY	NC001	G?	S5	N	N	7/93
NATURAL COMMUNITY	NC002	G?	S2	N	N	7/93

MANAGED LANDS: State Game Lands 303

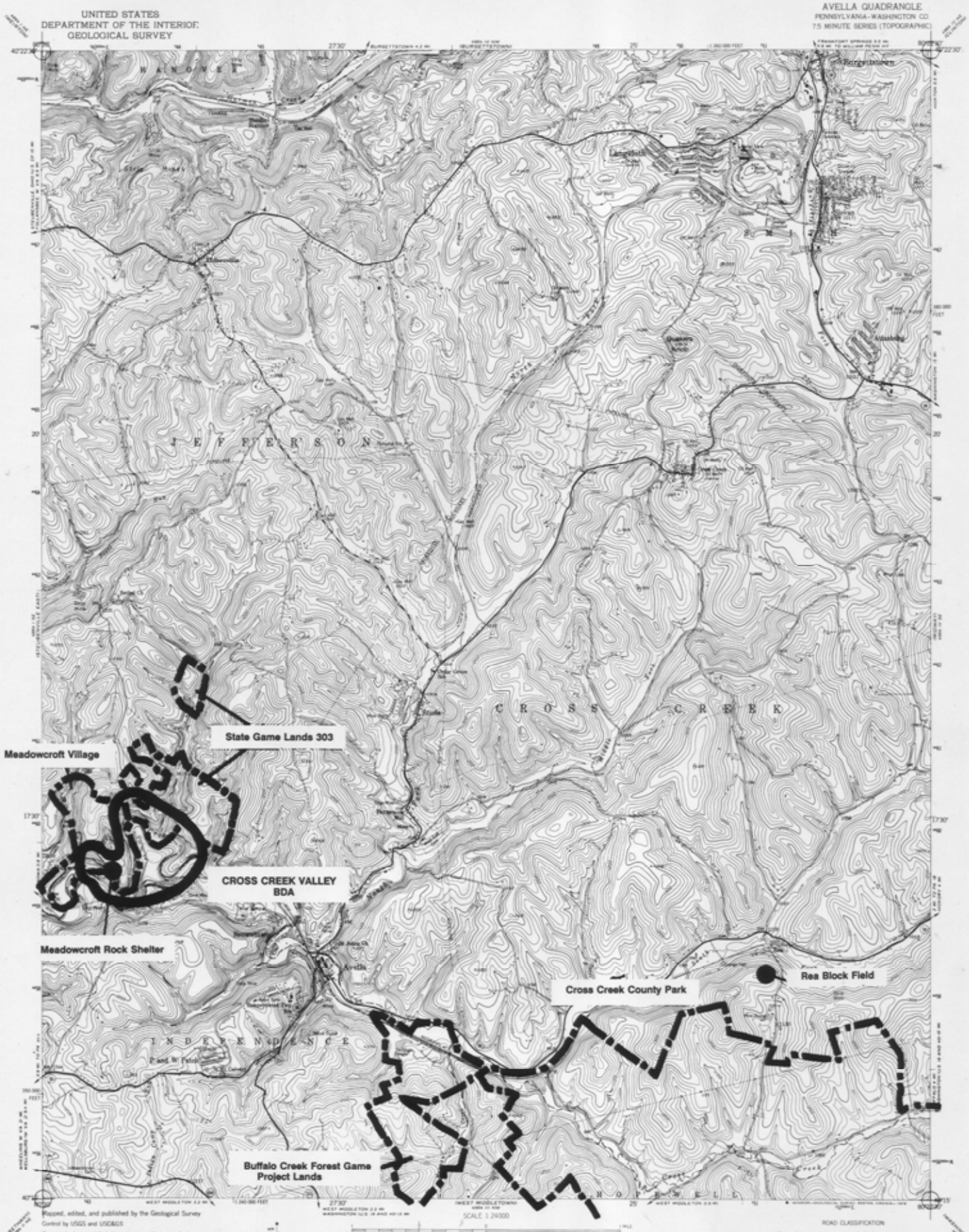
Cross Creek County Park

Buffalo Creek Forest Game Project Lands

Meadowcroft Village

GEOLOGICAL FEATURES/FOSSIL LOCALITIES: Meadowcroft Rock Shelter

Rea Block Field


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
AVELLA QUADRANGLE
PENNSYLVANIA–WASHINGTON CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
State Game Lands 303
Meadowcroft Village
CROSS CREEK VALLEY
BDA
Meadowcroft Rock Shelter
Cross Creek County Park
Rea Block Field
Buffalo Creek Forest Game
Project Lands
CROSS CREEK
JEFFERSON
INDEPENDENCE
HOPEWELL
Avella
Langfield
Mapped, edited, and published by the Geological Survey
Control by USGS and USC&GS
Topography from aerial photographs by multiplex methods
Aerial photographs taken 1952. Field check 1954
Polyconic projection. 1927 North American datum
10,000-foot grid based on Pennsylvania coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks, zone 17, shown in blue
Revisions shown in purple compiled in cooperation with State of Pennsylvania agencies from aerial photographs taken 1977 and other source data. This information not field checked. Map edited 1979
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST
ROAD CLASSIFICATION
Heavy-duty
Medium-duty
Light-duty
Unimproved dirt
State Route
AVELLA, PA.
N4005—W8022.5/7.5
1954
PHOTOREVISED 1979
AMS 4064 IV SW—SERIES V851

AVELLA

The Avella quadrangle sits in the northwestern section of Washington County and is divided among the Cross Creek, Raccoon Creek, and Harmon Creek Watersheds. This portion of Washington County contains two significant natural communities, a High Quality (HQ) stream, **Cross Creek County Park**, **State Game Lands 303**, and a piece of the **Buffalo Creek Forest Game Project Lands** - a West Penn Power property that is now managed under a cooperative agreement with the Pennsylvania Game Commission. Also, two outstanding scenic and geologic features as designated by Geyer and Boles (1979, 1987), lie in this quadrangle; the **Meadowcroft Rock Shelter** - a massive sandstone, shale and siltstone formation and an important archeological site in North America, and the **Rea Block Field** - a series of massive sandstone outcrops of the Greene Formation showing excellent examples of crossbedding of rock strata.

The portion of Cross Creek east of Avella is designated as High Quality (HQ) waters by DER, Bureau of Water Quality Management - west of the town of Avella, acid mine drainage impacts the creek. It is also in the Avella area that the North and South Forks of Cross Creek join the main branch to create one of the largest streams in the county. A winding, entrenched valley of steep, forested slopes, the Cross Creek Valley west of Avella contains examples of both an Acidic Cliff Community (**NC001**) and a Mesic Central Forest Community (**NC002**). The variation in the community reflects the changing aspect and moisture levels on the slopes; on the upper slopes, oak (*Quercus rubra, Q. alba, Q. veluntina*) and birch (*Betula lenta*) form the bulk of the canopy, growing over other woody vegetation typical of dry sites like blueberry (*Vaccinium vacillans*), sassafras (*Sassafras albidum*), and Canada mayflower (*Maianthemum canadense*). Several species of fern, including Christmas fern (*Polystichium acrostichiodes*), marginal wood fern (*Dryopteris marginalis*), common polypody fern (*Polypodium virginiana*) and bulbet fern (*Cystopteris bulbifera*) grow on the dry, thin or nonexistent soils of the sandstone ledges and cliffs. Moving down the slopes, sugar maple (*Acer saccharum*), basswood (*Tilia spp.*) and white ash (*Fraxinus americana*) replace the oak and birch as the dominant overstory species. Sycamore (*Platanus occidentalis*), smooth buckeye (*Aesculus glabra*), bladdernut (*Staphylea trifolia*) and spicebush (*Lindera benzoin*) grow on the lower slopes and floodplain areas along the creek. Meadowcroft Village, a re-creation of early settlements in the region, sits on the ridge on the north side of the valley. State Game Lands 303 lies immediately adjacent to the Meadowcroft Village property to the east. A physically diverse and interesting area, these slopes and communities, including the Meadowcroft Rock Shelter, are part of the **Cross Creek Valley BDA** - a Community/Ecosystem Conservation Area.

Many of the uplands surrounding this site were strip mined in the first half of this century - some have been revegetated (Meadowcroft Village is a prime example), others still remain relatively open. A railroad R.O.W. runs along the south side of the valley, cutting along the slopes of the gorge south of Meadowcroft Village. Upstream from the rock shelter and gorge, some residential development has occurred on the floodplain on the southeast side of the valley,

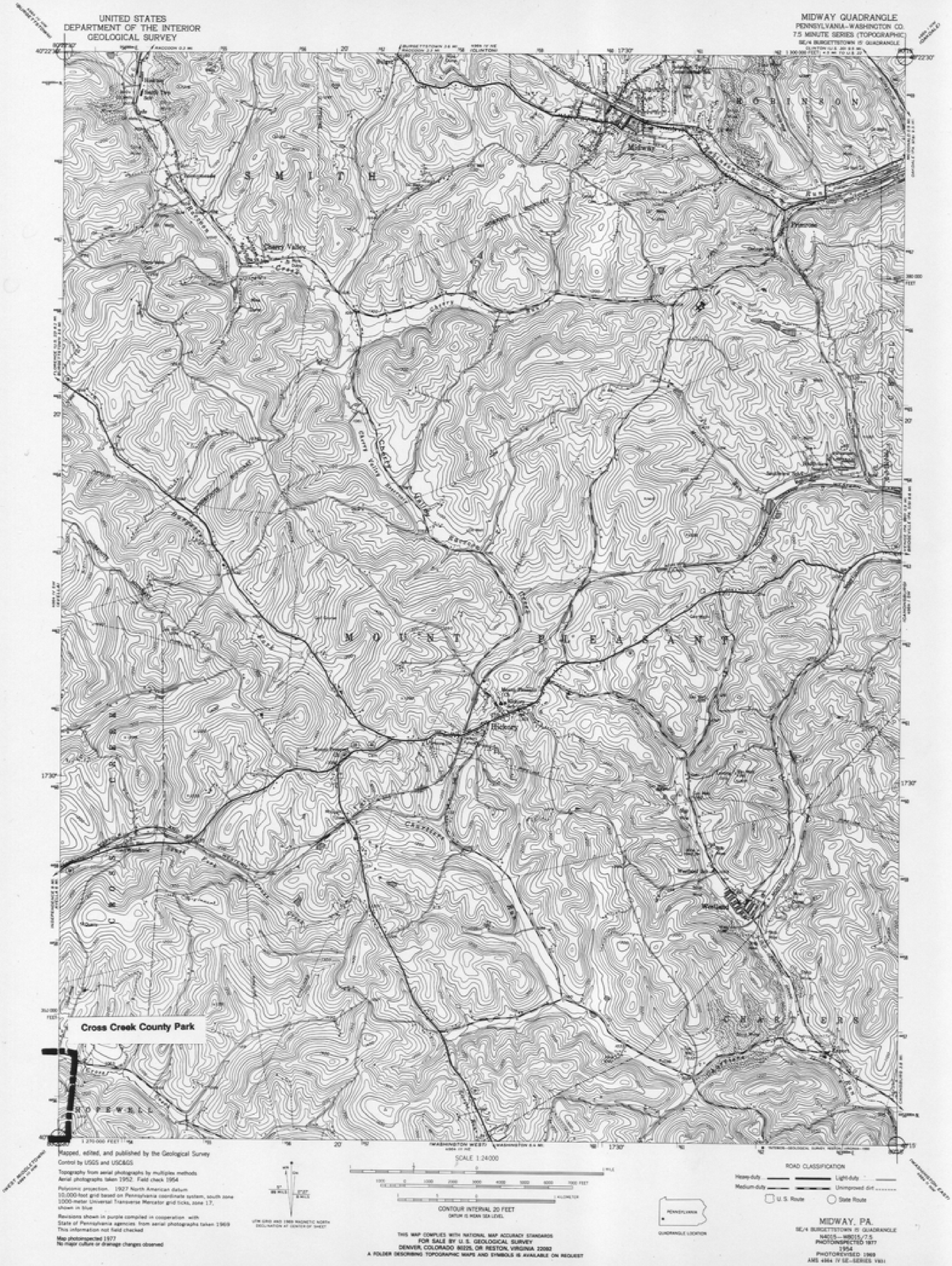
and a swath of slope on the northwestern side of the valley has been cut to accommodate a house overlooking the creek.

It is recommended that within the BDA, no cutting or clearing of vegetation occur and activities that exacerbate erosion be avoided. As much upland area as possible should be considered as part of the natural communities and their buffer and be permitted to revert to forest. Development within the BDA should be limited to maintenance of already existing structures and grounds, and utility R.O.W.'s should be routed around the BDA. Although the game lands on the north side of the valley do not include the very lower slopes and floodplain of Cross Creek, their management could greatly benefit the BDA by directly protecting and providing buffer to the identified communities within the BDA. It is recommended that the portions of Game Lands 303 within the BDA be considered for designation as a Special Use Area where management would be limited to posting and providing the area as public hunting grounds. Management for wildlife via creation of food plots and habitat modification could be practiced on the game lands outside the BDA, allowing the forest community within the BDA to mature without cutting or thinning or disturbance.

USGS QUADRANGLE **MIDWAY**

	PNDI Rank		Legal Status		Last
	Global	State	Fed.	State	Seen

MANAGED LANDS: Cross Creek County Park


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MIDWAY QUADRANGLE
PENNSYLVANIA-WASHINGTON CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
SE/4 BURGETTSTOWN 15' QUADRANGLE
S M I T H
R O B I N S O N
Midway
Cherry Valley
M O U N T P L E A S A N T
Hickory
Westland
C H A R T I E R S
H O P E W E L L
Cross Creek County Park
Mapped, edited, and published by the Geological Survey
Control by USGS and USC&GS
Topography from aerial photographs by multiplex methods
Aerial photographs taken 1952. Field check 1954
Polyconic projection. 1927 North American datum
10,000-foot grid based on Pennsylvania coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks, zone 17, shown in blue
Revisions shown in purple compiled in cooperation with State of Pennsylvania agencies from aerial photographs taken 1969
This information not field checked
Map photoinspected 1977
No major culture or drainage changes observed
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY
DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST
PENNSYLVANIA
QUADRANGLE LOCATION
ROAD CLASSIFICATION
Heavy-duty
Light-duty
Medium-duty
Unimproved dirt
U. S. Route
State Route
MIDWAY, PA.
SE/4 BURGETTSTOWN 15' QUADRANGLE
PHOTOINSPECTED 1977
1954
PHOTOREVISED 1969

MIDWAY

The Midway quadrangle sits entirely within Washington County at the headwaters of three of the county's major drainages; Raccoon Creek, Cross Creek, and Chartiers Creek. The Cherry Valley Reservoir sits near the center of the quadrangle, and a small piece of **Cross Creek County Park**, the largest of the three county parks in Washington County, crosses into this quadrangle from the Avella and West Middletown quadrangles. Heavily agricultural and with some strip mined areas, the Midway quadrangle contains no currently recognized Natural Heritage Areas.

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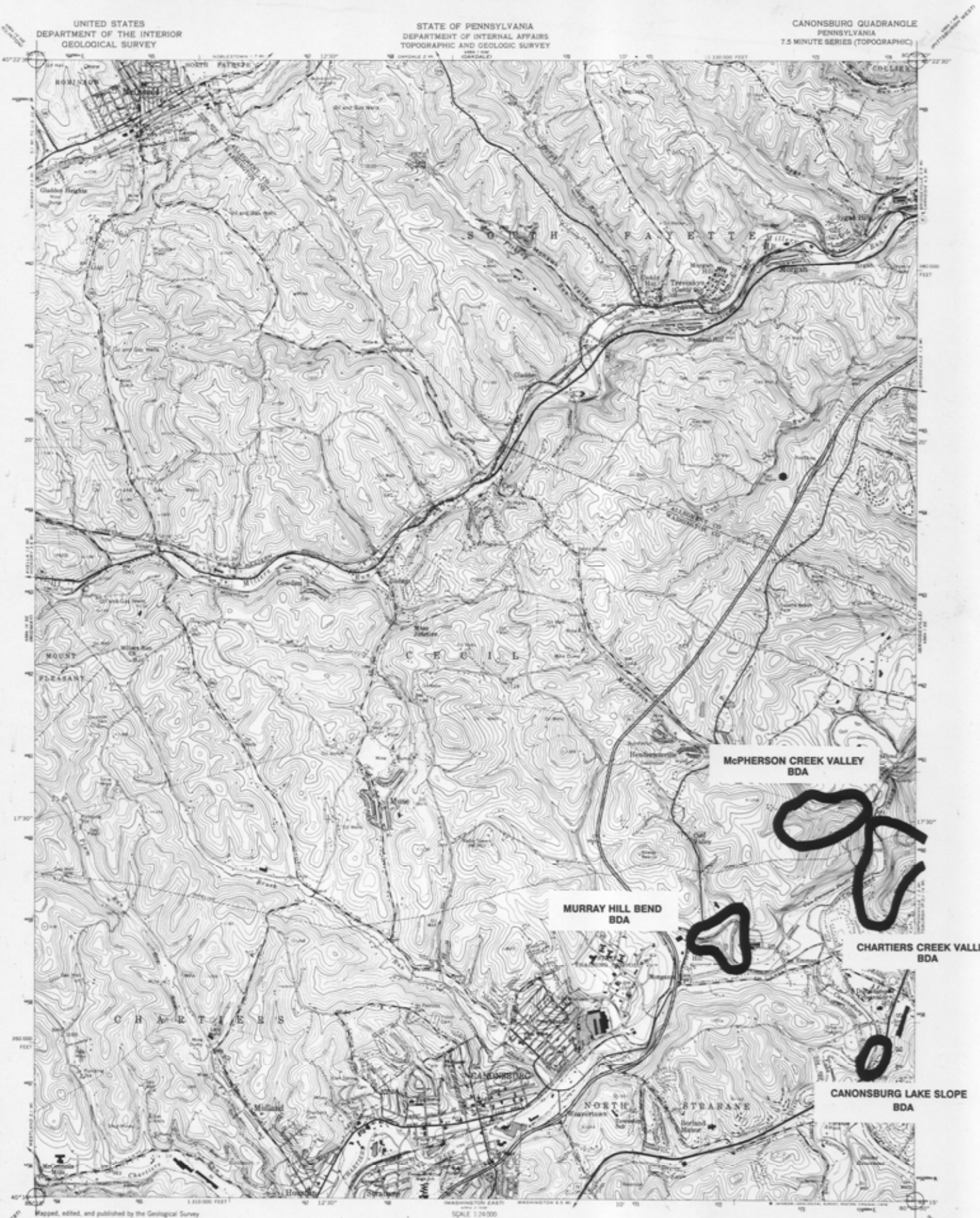
USGS QUADRANGLE **CANONSBURG**

		PNDI Rank			Legal Status		Last
		Global	State		Fed.	State	Seen
McPHERSON CREEK VALLEY BDA	*Exceptional Significance*						
SPECIAL PLANT	SP001	G4	S3	N		PR	4/93
CANONSBURG LAKE SLOPE BDA	*Notable Significance*						
SPECIAL PLANT	SP002	G4	S3	N		PR	4/93
CHARTIERS CREEK VALLEY BDA	*Exceptional Significance*						
NATURAL COMMUNITY	NC002	G?	S2	N		N	7/93
SPECIAL PLANT	SP003	G4G5	S1S2	N		PR	5/89
MURRAY HILL BEND BDA	*Notable Significance*						
SPECIAL ANIMAL	SA001	G?	S3S4	N		N	7/93


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
STATE OF PENNSYLVANIA
DEPARTMENT OF INTERNAL AFFAIRS
TOPOGRAPHIC AND GEOLOGIC SURVEY
CANONSBURG QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
SOUTH FAYETTE
CECIL
CHARTIERS
NORTH STRABANE
McPHERSON CREEK VALLEY BDA
MURRAY HILL BEND BDA
CHARTIERS CREEK VALLEY BDA
CANONSBURG LAKE SLOPE BDA
Mapped, edited, and published by the Geological Survey
Control by USGS and USC&GS
Topography from aerial photographs by photogrammetric methods
Aerial photographs taken 1952. Field check 1953. Revised 1960
Polyconic projection. 1927 North American datum
10,000-foot grid based on Pennsylvania coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks,
zone 17, shown in blue
Fine red dashed lines indicate selected fence and field lines where
generally visible on aerial photographs. This information is unchecked
Red tint indicates areas in which only landmark buildings are shown
There may be private inholdings within the boundaries of
the National or State reservations shown on this map
SCALE 1:24 000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
ROAD CLASSIFICATION
Heavy-duty
Light-duty
Medium-duty
Unimproved dirt
U.S. Route
State Route
Interstate Route
CANONSBURG, PA.
N4015—W8007.5/7.5
1960
PHOTOREVISED 1979
AMS 4864 I SW—SERIES V881

CANONSBURG

Washington and Allegheny Counties share the Canonsburg quadrangle, all of which is within the Chartiers Creek watershed. This northcentral portion of Washington County contains a significant forest community, two plants of special concern in Pennsylvania, and the home of an animal of special concern in Pennsylvania. Canonsburg Lake, an impoundment on lower Little Chartiers Creek owned and managed by the Pennsylvania Fish and Boat Commission, lies within this section of Washington County. Also, Little Chartiers Creek, from its basin to the Alcoa Dam in this quadrangle, is designated as a High Quality (HQ) Waters by DER, Bureau of Water Quality Management.

McPherson Creek joins Chartiers Creek just east of Hendersonville. This surprisingly undeveloped valley, with pieces of floodplain forest and small patches of maturing slope forest, supports a population of a plant of special concern in Pennsylvania (**SP001**). Often associated with well bufferred (limestone influenced) soils, this plant grows on the lower slopes of the valley where a small tributary meets McPherson Creek. Recently, portions of this tributary valley were logged. Also, a utility R.O.W. was re-opened parallel to, and within one hundred meters of, the creek, crossing the tributary and eliminating all woody vegetation along a 20-30 meter wide swath. Prior to these disturbances, this valley was likely an exemplary and diverse forest community.

Protection of the plant (SP001) within this Special Species Habitat, designated as the **McPherson Creek Valley BDA,** will mean protecting both the immediate habitat and the surrounding community of which the plant is a part. Disturbances on the slopes of the lower tributary valley and of McPherson Creek should be limited, and cutting of trees, clearing of vegetation, use of heavy equipment, and creation of access roads/trails should not occur within the BDA. The freshly cut utility R.O.W. is already increasing erosion within the BDA and has opened up important habitat to invasion by weedy, exotic, and pioneer plant species. The R.O.W. is close enough to the population of SP001 that the micro-climate of the lower slopes may have changed to one less suitable to the health of the plants (increased light, heat, air flow patterns, etc.). Herbicides should absolutely not be used within the BDA to maintain the utility R.O.W. and all possible measures should be taken to reduce construction impacts within this area. As a unique and uncommonly large piece of undeveloped land in this part of Washington County, this tributary valley and floodplain of McPherson Creek should be considered as a valuable open space resource with the ability to recover and realize its potential in preserving biodiversity in the county.

South of the McPherson Creek confluence, Chartiers Creek turns sharply westward, creating a floodplain on the inside of the bend and a steep slope on the outer bend. Bordered by Maple Drive to the north and residential development to the east and south, this area, recognized as a High Diversity Area and designated as the **Chartiers Creek Valley BDA**, supports a Mesic Central Forest Community (**NC001**) and a plant of special concern in Pennsylvania (**SP002**).

Sugar maple (*Acer saccharum*), beech (*Fagus grandifolia*), white ash (*Fraxinus americana*), shagbark hickory (*Carya ovata*) and a number of other tree species cover much of the northern section of the site where a deeply dissected topography provides habitat for large trillium (*Trillium grandiflorum*), wild ginger (*Asarum canadensis*), jack-in-the-pulpit (*Arisaema atrorubens*) and numerous other herbs. Mixed oak (*Quercus rubra, Q, alba, Q. veluntina*) and beech cover much of the west-facing slope above Chartiers Creek while sycamore, hackberry (*Celtis occidentalis*), box elder (*Acer negundo*), and bladdernut (*Staphylea trifolia*) are numerous on the lower slopes and floodplain section of the site. Also growing on the floodplain, in a part of the site once part of a greenhouse business, is a plant of special concern in Pennsylvania (**SP002**). Although naturally growing within floodplain areas, this population may have survived or begun through intentional management by the greenhouse staff. However, other populations of the plant do exist locally and this population may represent a remnant of the floodplain forest community that once existed along Chartiers Creek.

A powerline R.O.W. runs along the northern extent of the BDA, crossing Maple Drive and Chartiers Creek. Newer houses now occupy a part of the lower slope and floodplain on the east side of the creek. Proceeding southwest along the creek slope, the forest community narrows until meeting the backyards of houses sitting just north of Donaldsons Crossroads. To the north, across Maple Drive, an undeveloped but younger forest continues along the slope. Trash, dumped from the road, sits in some of the ravines just off of Maple Drive. Protecting this community means limiting additional fragmentation, reducing disturbance and steering development around the BDA. Now a sizable patch of mature forest, timbering of any sort would severely change the character and decrease the value of this area for biodiversity. Clearing for development or road R.O.W.'s within the BDA would likewise reduce the ecological potential of this site. Current residents surrounding the site should be encouraged to decrease the amount of their property maintain in a semi-wooded condition and allow those sections to mature as undisturbed forest. Utility R.O.W.'s should be routed around the BDA, possibly utilizing the R.O.W. to the north of the site if no further widening is required. Future improvement plans to Maple Drive should consider methods to reduce erosion and impacts on the site. The floodplain area where SP002 grows, should be permitted to succeed without disturbance, allowing the plant to migrate locally to suitable habitat as natural processes make it available.

Between PA Route 519 and its confluence with Little Chartiers Creek, Chartiers Creek makes a narrow loop to the northeast. Around this loop, several narrow sections of floodplain sit between a pasture area to the south and a slope and powerline R.O.W. to the north and east. Dominated by tall sycamore, this Special Species Habitat, designated as the **Murray Hill Bend BDA**, provides habitat for a population of an animal of special concern in Pennsylvania (**SA001**). Protecting this animal requires that disturbances within the BDA be kept to a minimum, especially during the spring and early summer breeding season. Even visitation and observation during this time, if reasonably close, can cause disruption in the care and feeding of the young. Landowners in this area should be advised of the significance of the site and of the

importance of allowing a sizable buffer against disturbance during the breeding season. The forest cover, especially that of the floodplain, is critical to these animals and therefore, cutting or removal of any vegetation within the BDA is not recommended. As for many animal species, the presence of habitat does not guarantee the presence of the animal. As local habitat characteristics change and populations increase or decrease, these animals may choose other sites to breed. Future updates of this report will note changes in this population of the animal and determine if this location should continue to be recognized as a BDA.

Between PA Route 19 and Canonsburg Lake, just south of Donaldsons Crossroads, sits a small band of forested slope dominated by sugar maple and red oak (*Quercus rubra*). Although small and somewhat disturbed by a housing development on top of the slope and an old rail bed running along the slope, this area supports numerous spring wildflowers, including spring beauty (*Claytonia virginica*), round-leaved hepatica (*Hepatica americana*), and a species of special concern in Pennsylvania (**SP003**). The population of this plant may have, at one time, extending over a much larger area along Little Chartiers Creek, but loss of habitat from development and flooding of the valley may have restricted it to this section of slope. Activities on the slope, particularly those that compact soil or produce erosion, should be eliminated to protect this species. Cutting of trees or clearing of vegetation is not advised. Home owners above on the hill should be made aware of the presence of the plant and encouraged to become good stewards of the band of forest below them. The PA Fish and Boat Commission should also be aware of this site and encouraged to minimize disturbance on or adjacent to the slope.

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USGS QUADRANGLE **BRIDGEVILLE**

		PNDI Rank		Legal Status		Last
		Global	State	Fed.	State	Seen
CHARTIERS CREEK VALLEY BDA	*Exceptional Significance*					
NATURAL COMMUNITY	NC002	G?	S2	N	N	7/93
SPECIAL PLANT	SP001	G4G5	S1S2	N	PR	5/89


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
STATE OF PENNSYLVANIA
DEPARTMENT OF INTERNAL AFFAIRS
TOPOGRAPHIC AND GEOLOGIC SURVEY
BRIDGEVILLE QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
MOUNT LEBANON
CASTLE SHANNON
BALDWIN
SOUTH PARK
UPPER ST. CLAIR
BETHEL PARK
CHARTIERS CREEK VALLEY BDA
PETERS
NORTH STRABANE
NOTTINGHAM
UNION
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
ROAD CLASSIFICATION
BRIDGEVILLE, PA.
1960
PHOTOREVISED 1979

BRIDGEVILLE

Shared by Washington and Allegheny Counties, the Bridgeville quadrangle holds one of the most highly developed landscapes in Washington County. Chartiers Creek winds along the western edge of the quadrangle and the headwaters area for several of Mingo Creek's tributaries covers the southern portion of the quadrangle. Containing a part of the **Chartiers Creek Valley BDA** (discussed in the Canonsburg quadrangle), no other Natural Heritage sites have been identified for this quadrangle.

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USGS QUADRANGLE **GLASSPORT**

	PNDI Rank		Legal Status		Last
	Global	State	Fed.	State	Seen

Mapped, edited, and published by the Geological Survey

Control by USGS, USC&GS, and City of Pittsburgh

Topography from aerial photographs by photogrammetric methods
Aerial photographs taken 1952. Revised by photogrammetric methods from aerial photographs taken 1959. Field check 1960

Polyconic projection. 1927 North American datum
10,000-foot grid based on Pennsylvania coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks, zone 17, shown in blue

To place on the predicted North American Datum 1983 move the projection lines 4 meters south and 18 meters west as shown by dashed corner ticks

There may be private inholdings within the boundaries of the National or State reservations shown on this map

Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked

UTM GRID AND 1979 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

Red tint indicates areas in which only landmark buildings are shown
Revisions shown in purple compiled in cooperation with State of Pennsylvania agencies from aerial photographs taken 1977 and other source data. This information not field checked. Map edited 1979

Purple tint indicates extension of urban areas

GLASSPORT

The Glassport quadrangle includes a small section of north central Washington County where Peters Creek crosses east into Allegheny County. Heavily strip mined north of Finleyville and industrialized to the east along the Monongahela River, this portion of Washington County contains no currently recognized Natural Heritage Areas.

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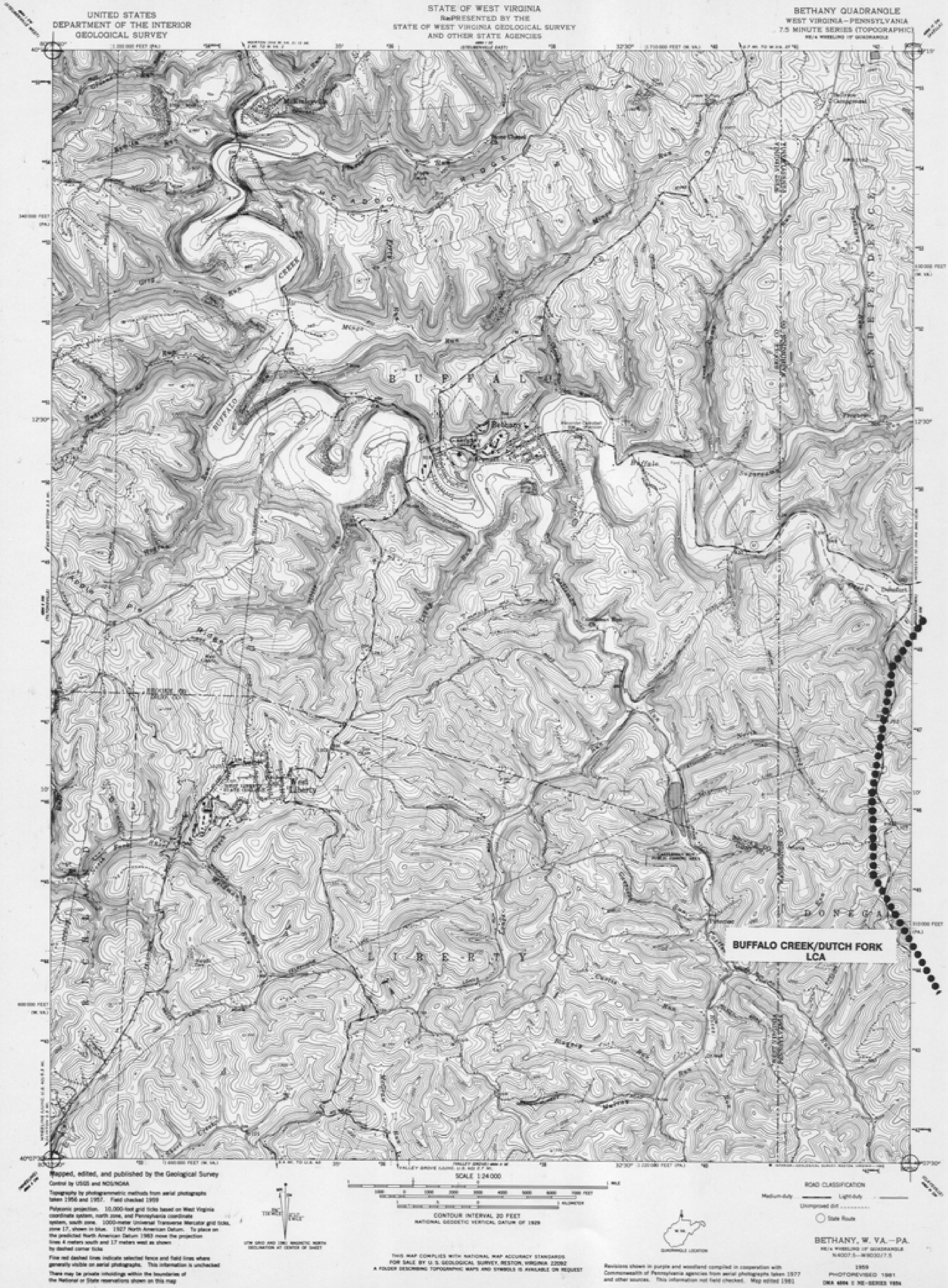
USGS QUADRANGLE **BETHANY**

	PNDI Rank		Legal Status		Last
	Global	State	Fed.	State	Seen

BUFFALO CREEK VALLEY LCA *Exceptional Significance*


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
STATE OF WEST VIRGINIA
REPRESENTED BY THE
STATE OF WEST VIRGINIA GEOLOGICAL SURVEY
AND OTHER STATE AGENCIES
BETHANY QUADRANGLE
WEST VIRGINIA–PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
BUFFALO
Bethany
West Liberty
LIBERTY
DONEGAL
INDEPENDENCE
BUFFALO CREEK/DUTCH FORK
LCA
Mapped, edited, and published by the Geological Survey
Control by USGS and NOS/NOAA
Topography by photogrammetric methods from aerial photographs taken 1956 and 1957. Field checked 1959
Polyconic projection. 10,000-foot grid ticks based on West Virginia coordinate system, north zone, and Pennsylvania coordinate system, south zone. 1000-meter Universal Transverse Mercator grid ticks, zone 17, shown in blue. 1927 North American Datum. To place on the predicted North American Datum 1983 move the projection lines 4 meters south and 17 meters west as shown by dashed corner ticks
Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked
There may be private inholdings within the boundaries of the National or State reservations shown on this map
UTM GRID AND 1981 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET
SCALE 1:24 000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST
QUADRANGLE LOCATION
Revisions shown in purple and woodland compiled in cooperation with Commonwealth of Pennsylvania agencies from aerial photographs taken 1977 and other sources. This information not field checked. Map edited 1981
ROAD CLASSIFICATION
Medium-duty
Light-duty
Unimproved dirt
State Route
BETHANY, W. VA.—PA.
1959
PHOTOREVISED 1981

BETHANY

This quadrangle includes a strip of the extreme west central portion of Washington County where Buffalo Creek flows from Dunsfort, PA, across the West Virginia border and onto the town of Bethany, WV. The portion of Buffalo Creek upstream from the Pennsylvania/West Virginia state line is designated as High Quality (HQ) Waters by DER, Bureau of Water Quality Management. A small section of the **Buffalo Creek LCA** crosses into this quadrangle from the West Middletown quadrangle and is discussed there.

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USGS QUADRANGLE **WEST MIDDLETOWN**

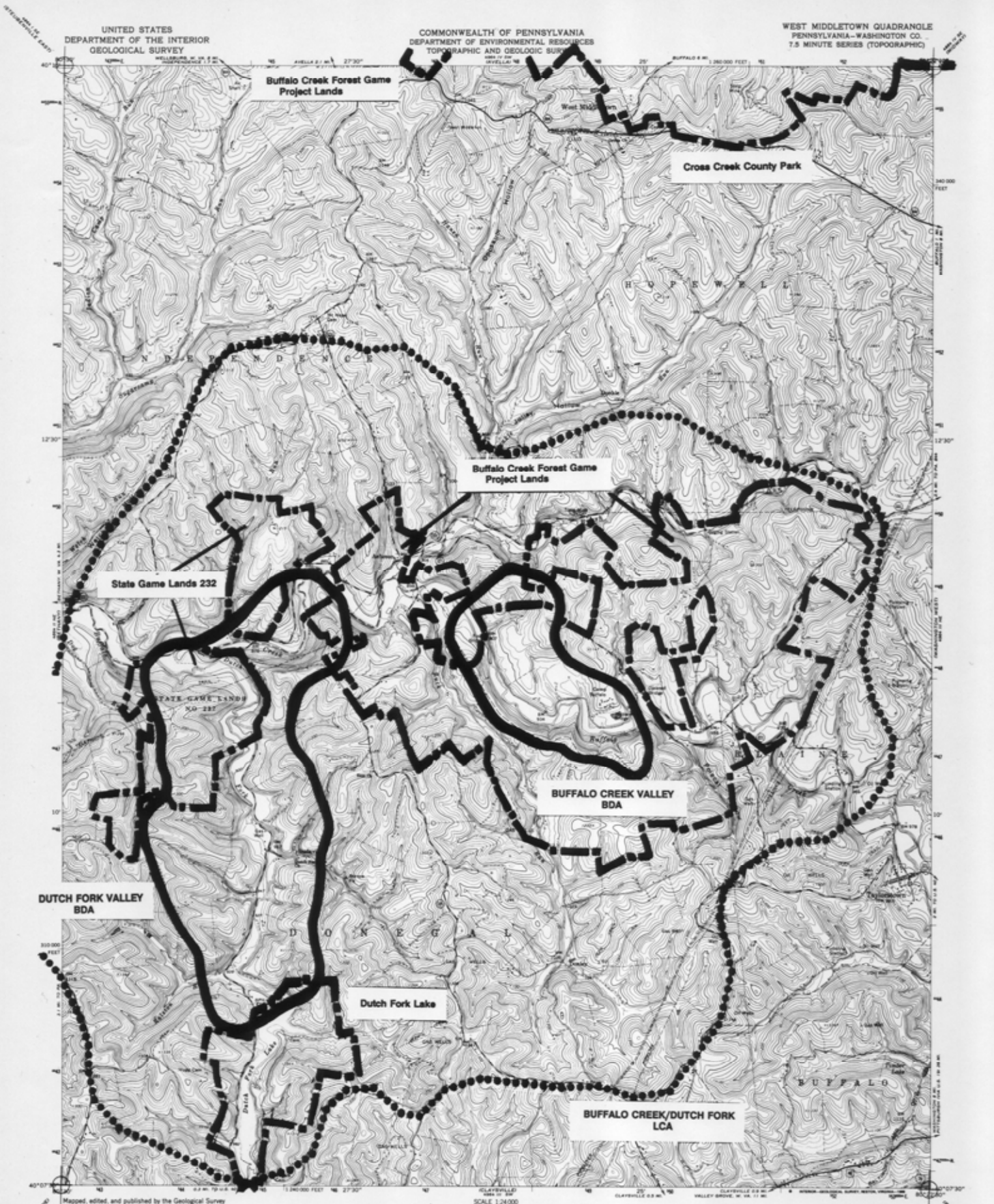
	PNDI Rank		Legal Status		Last
	Global	State	Fed.	State	Seen
BUFFALO CREEK/DUTCH FORK LCA	*Exceptional Significance*				
BUFFALO CREEK VALLEY BDA	*Exceptional Significance*				
NATURAL COMMUNITY	NC001	G?	S2	N	N	8/93
NATURAL COMMUNITY	NC002	G?	S2	N	N	4/93
NATURAL COMMUNITY	NC003	G?	S5	N	N	8/93
DUTCH FORK VALLEY BDA	*High Significance*				
NATURAL COMMUNITY:	NC004	G?	S2	N	N	5/93
NATURAL COMMUNITY:	NC005	G?	S2	N	N	5/93
SPECIAL ANIMAL	SA001	G?	S3S4	N	N	5/93
SPECIAL ANIMAL	SA001	G5	S2	N	N	1993

MANAGED LANDS: State Game Lands 232

Cross Creek County Park

Dutch Fork Lake

Buffalo Creek Forest Game Project Lands


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
WEST MIDDLETOWN QUADRANGLE
PENNSYLVANIA–WASHINGTON CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
Buffalo Creek Forest Game Project Lands
Cross Creek County Park
Buffalo Creek Forest Game Project Lands
State Game Lands 232
BUFFALO CREEK VALLEY BDA
DUTCH FORK VALLEY BDA
Dutch Fork Lake
BUFFALO CREEK/DUTCH FORK LCA
HOPEWELL
INDEPENDENCE
DONEGAL
BUFFALO
Mapped, edited, and published by the Geological Survey
Control by USGS and USC&GS
Topography by photogrammetric methods from aerial photographs taken 1962 and 1963. Field checked 1964
Polyconic projection. 1927 North American datum
10,000-foot grid based on Pennsylvania coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks, zone 17, shown in blue
Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked
Revisions shown in purple compiled in cooperation with State of Pennsylvania agencies from aerial photographs taken 1973. This information not field checked
SCALE 1:24 000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
ROAD CLASSIFICATION
Heavy-duty
Light-duty
Medium-duty
Unimproved dirt
Interstate Route
U.S. Route
State Route
WEST MIDDLETOWN, PA.
40080-B4-TF-024
PHOTOINSPECTED 1977
1964
PHOTOREVISED 1973
DMA 4064 II NW–SERIES V831
To place on the predicted North American Datum 1983 move the projection lines 4 meters south and 17 meters west as shown by dashed corner ticks
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U.S. GEOLOGICAL SURVEY
DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST
Map photoinspected 1977
No major culture or drainage changes observed

WEST MIDDLETOWN

The West Middletown quadrangle contains a section of west central Washington County almost completely within the Buffalo Creek Watershed. Its two largest tributaries, Dutch Fork and Brush Run, join Buffalo Creek in this quadrangle, each supplying about a fifth of the total area drained by the creek. Although draining a predominately agricultural landscape, the waters of Buffalo Creek are designated as High Quality (HQ) by the DER, Department of Water Quality Management. Contained within this quadrangle are an LCA, two BDA's, a number of significant forest communities, and several animals of special concern in Pennsylvania. The southern portion of **Cross Creek County Park**, the largest county park in Washington County, co-managed by the PA Fish and Boat Commission and the county, sits in the far northern section of the quadrangle. State Game Lands 232 sits in the lower Dutch Fork Valley and a large block of West Penn Power land, managed cooperatively with the PA Game Commission under the Forest Game Program, occupies the central and western sections of the quadrangle along Buffalo Creek. Also, **Dutch Fork Lake**, a Pennsylvania Fish and Boat Commission owned and managed property, sits at the headwaters area of the Dutch Fork of Buffalo Creek in Donegal Township.

More than half of the West Middletown quadrangle falls within in an area designated as the **Buffalo Creek/Dutch Fork LCA**. This Natural Heritage Area includes most of the Dutch Fork watershed and a substantial piece the Buffalo Creek watershed, and contains the Buffalo Creek Valley BDA, the Dutch Fork Valley BDA, State Game Lands 232, and much of one of the most extensive managed lands in the county - West Penn Power's Forest Game Lands. A predominately agricultural landscape of open fields and woodlots with very small villages scattered throughout, this LCA has great potential for protecting biodiversity in the county. Maintaining the minimally developed character of the LCA, buffering and expanding the exceptionally significant BDA's within the LCA, and limiting fragmentation produced by roads and utility R.O.W.'s will be the challenges in managing the lands within the LCA as a working landscape and, at the same time, as a viable ecological system. The five townships which have property within the LCA will need to work cooperatively to develop plans to maintain and enhance the natural qualities of this LCA.

A section of the Buffalo Creek Valley that lies within West Penn Power's Forest Game Program lands, contains several significant forest communities, and is recognized as a Community/Ecosystem Conservation Area and High Diversity Area - the **Buffalo Creek Valley BDA**. Sycamore (*Platanus occidentalis*), smooth buckeye (*Aesculus glabra*), and sugar maple (*Acer saccharum*) dominate the Floodplain Forest Community (**NC001**) within the BDA. These floodplain areas are beginning to mature as forest communities and recover some of the diversity lost to farming and timbering. Trees like black walnut (*Juglans nigra*) and bitternut hickory (*Carya cordiformis*) are growing back in significant numbers, and spring flora like false mermaid (*Floerkea proserpinacoides*), trout lily (*Erythronium americana*), and spring beauty

(*Claytonia virginica*) blanket large patches of the ground.

Rising above the creek on the steep north-facing slopes of the valley are a number of sandstone and shale outcrops. Designated as Acidic Cliff Communities (**NC002**), these visually impressive and ecologically interesting places supply a unique habitat for lichens, microorganisms, and a variety of invertebrates. Although unvegetated on the vertical faces, the cracks and small shelves within the outcrops hold enough soil and organic matter to support plants like Christmas fern (*Polystichum acrostichiodes*), marginal wood fern (*Dryopteris marginalis*), sedum (*Sedum ternatum*), and bloodroot (*Sanguinaria canadensis*). Confined to the open rock exposures, these cliff communities lie within the complex of a Mesic Central Forest Community (**NC003**) that covers the slopes throughout this section of the Buffalo Creek Valley. Sections of this forest on the north-facing slopes of the valley are maturing and numerous large sugar maple, slippery elm (*Ulmus rubra*), basswood (*Tilia sp.*) and ash (*Fraxinus americana*) form a closed canopy over the steep slope. With the shrub layer composed mostly of sugar maple, plants like sharp and round-lobed hepatica (*Hepatica acutiloba* and *H. americana*), black cohosh (*Caulophyllum thalictriodes*), black snake root (*Cimicifuga racemosa*), and goldenseal (*Hydrastis canadensis*) form the ground cover. Approaching the tops of the slopes, red and white oak (*Quercus rubra* and *Q. alba*) begin to appear in number. The forested tributary valleys to the north are also included in the mesic central forest complex, but due to their predominately southern exposure, are much drier with large amounts of oak and some downy juneberry (*Amelanchier arborea*) interspersed within the sugar maple dominated forest. Although more disturbed than the steep southern slopes, these northern tributary watersheds represent an important continuation of the floodplain/upland forest complex within the Buffalo Creek Valley BDA.

Surrounded by agricultural fields to the north and south, the Buffalo Creek Valley BDA includes sections of crop fields on the floodplain of Buffalo Creek. A large patch of forest on the northern slope above the creek was recently logged and the tributary watersheds to the north were logged in the last 15-25 years. With such a large portion of the BDA within the Forest Game Program management area, a real opportunity exists to preserve and enhance the natural qualities of this site. One of the most important considerations should be creating and maintaining a contiguous, minimally disturbed core area that will allow the identified communities to mature and expand. It is recommended that no further logging take place within this BDA and that key pieces of floodplain and upland buffer be allowed to revert to forest. Such management need not preclude management for wildlife; parts of the uplands and of the floodplain within or adjacent to the BDA could continue as agricultural and/or wildlife management areas. Also, the sections of floodplain that would be designated as reversion areas would serve very well for providing browse and habitat to game species over a number of years into the future.

Downstream from the Buffalo Creek Valley BDA, the Dutch Fork of Buffalo Creek winds through a broad valley, turning sharply to the west before meeting the main branch of

Buffalo Creek. Beginning at the reservoir, a large portion of the immediate watershed of Dutch Fork is designated as part of the **Dutch Fork Valley BDA** - a Special Species Habitat, a Community/Ecosystem Conservation Area and a High Diversity Area. Including a large piece of **State Game Lands 232,** this BDA also contains several significant natural communities and two animals of special concern in Pennsylvania. Interspersed with large hay and crop fields, substantial pieces of the floodplain along Dutch Fork remain forested. These pieces of Floodplain Forest (**NC004**) support a diversity of tree species including sycamore, cottonwood (*Populus deltoides*), black willow (*Salix nigra*), black walnut and smooth buckeye (*Aesculus glabra*), and are also an important habitat for a variety of birds, and as the home of an animal of special concern in Pennsylvania (**SA001**). To the west, two small, high gradient streams flow across the floodplain and join Dutch Fork. Sugar maple, red oak (*Quercus rubra*), tuliptree (*Liriodendron tulipifera*) and slippery elm (*Ulmus rubra*) form the canopy in this medium age example of a Mesic Central Forest (**NC005**) that covers the short, steep valleys and slopes drained by these small streams. Facing east, these valleys remain moist through most of the year and a lush growth of glade fern (*Athyrium pyncocarpon*), virginia waterleaf (*Hydrophyllum virginianum*), and pale touch-me-not (*Impatiens pallida*) cover the ground. On one stream, a series of rock shelves form short waterfalls and add to the physical diversity of the area. Although these valleys transform to a younger, more successional type forest near their upper ends, they are a contiguous extension of the Dutch Fork floodplain community and show the natural transition from bottomland to upland habitats. In addition to the terrestrial communities within this BDA is the stream itself.

Dutch Fork and its parent stream, Buffalo Creek, are designated as High Quality (HQ) Waters within Pennsylvania by DER, Department of Water Quality. Recent work has confirmed the presence of a number of freshwater bivalves as well as an animal of special concern in Pennsylvania in the Dutch Fork section of the Buffalo Creek basin. These aquatic animal species indicate that water quality is reasonably high and that suitable habitat for these animals exists within the stream(s). Further work will need to be performed to assess the quality and diversity of the aquatic community but, at present, it appears that Buffalo Creek, along with Ten Mile Creek, stands as one of the most intact and rich aquatic systems in the county.

Access to the northern part of this area is well developed; a parking area sits to the north just south of Route 331 and a number of trails and game land access roads lead onto the floodplain and through the farmed fields. A road runs along the eastern upland and a telephone transmission line cuts across the northern section of the BDA. As recommended for the Forest Game Program lands within the Buffalo Valley BDA, establishing an undisturbed core area should be a part of the overall management of State Game Lands 232. It is recommended that those game lands within the Dutch Fork Valley BDA be considered as part of that core area and that activities within this BDA be limited to passive recreation (hunting, hiking, etc.). Agricultural areas within the BDA, if abandoned, located on steep slopes, or within the floodplain should be allowed to undergo natural succession. Routing of utility lines through the BDA should be strongly discouraged and the telephone/power line crossing through the northern section of the BDA should be rerouted outside the BDA when the opportunity arises (upgrading

of service, replacement of existing lines, etc.) and its current R.O.W. allowed to undergo succession. Timbering, creation of food plots and general wildlife management activities on the state game lands portion of the BDA could take place outside the BDA but care should be taken to provide adequate buffer to the natural communities within. The PA Game Commission should strongly consider acquiring any of the lands within the BDA but not presently within State Game Lands 232.

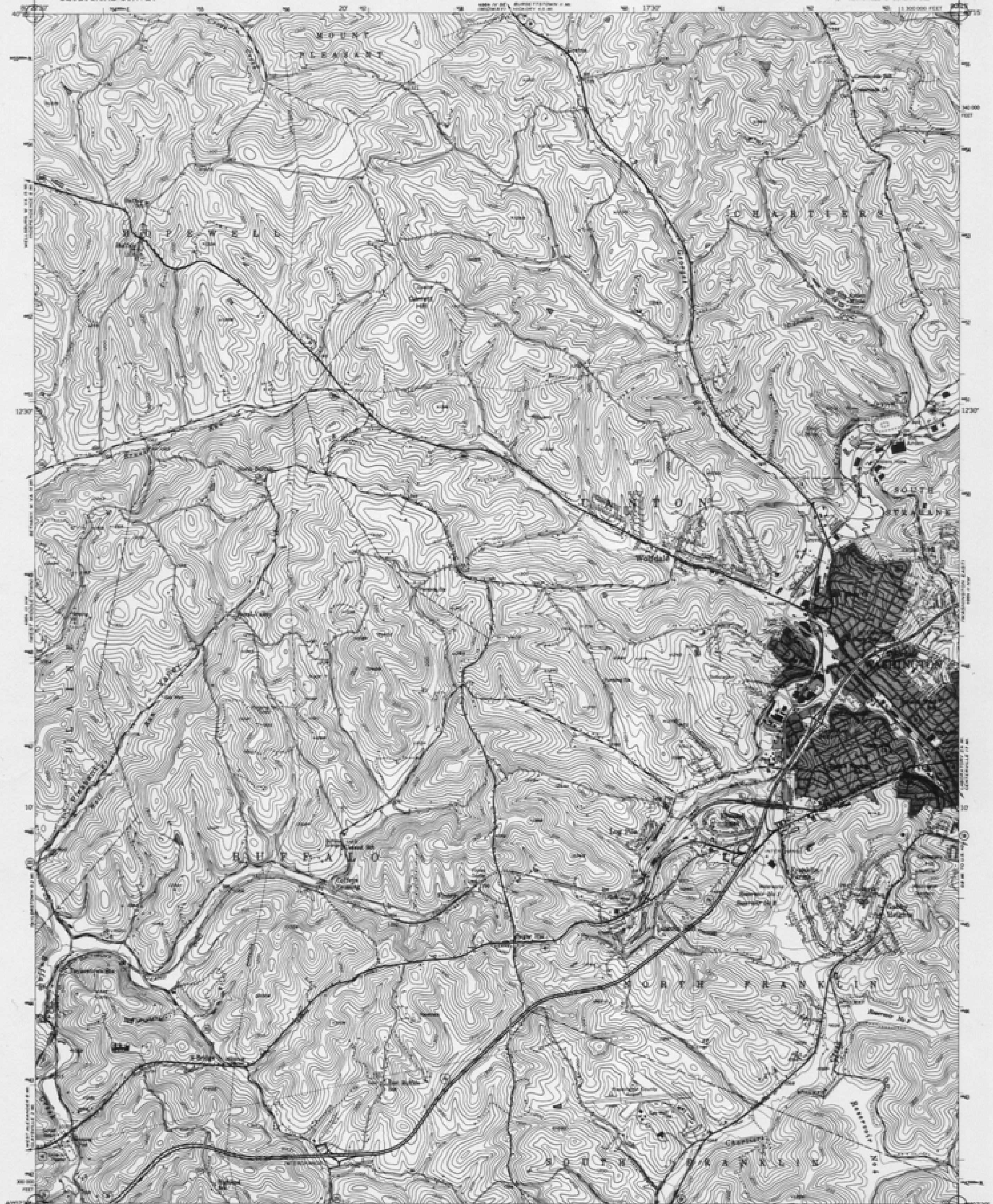
The lands within the southern part of the BDA have less forest cover and are generally more extensively farmed than those in the northern part which fall mostly within Game Lands 232. These lands are, however, important to the water quality of Dutch Fork and ultimately, Buffalo Creek. Use of herbicides, pesticides and fertilizers within the watershed of the stream, especially the immediate watershed, has the potential to impact the stream and its aquatic community. Activities that exacerbate erosion and lead to siltation of tributary streams or the main drainages of Dutch Fork and Buffalo Creek should be curtailed. Practice of innovative farming techniques, such as no-till cropping, that reduce erosion and requirements for pesticides in currently used agricultural land within the BDA should be encouraged within this BDA.

USGS QUADRANGLE **WASHINGTON WEST**

	PNDI Rank		Legal Status		Last
	Global	State	Fed.	State	Seen

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WASHINGTON WEST QUADRANGLE
PENNSYLVANIA–WASHINGTON CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
NE/4 CLAYSVILLE 15' QUADRANGLE



Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography from aerial photographs by multiplex methods
Aerial photographs taken 1952. Field check 1954

Polyconic projection. 1927 North American datum
10,000-foot grid based on Pennsylvania coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks, zone 17
shown in blue

Red tint indicates areas in which only landmark buildings are shown

Revisions shown in purple compiled in cooperation with
State of Pennsylvania agencies from aerial photographs taken 1969
This information not field checked

UTM GRID AND 1969 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

SCALE 1:24000

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, WASHINGTON, D. C. 20242
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

QUADRANGLE LOCATION

ROAD CLASSIFICATION
Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
U. S. Route — State Route
Interstate Route

WASHINGTON WEST, PA.
NE/4 CLAYSVILLE 15' QUADRANGLE
N4007.5—W8015/7.5

1954
PHOTOREVISED 1969
AMS 4864 III NE—SERIES V831

WASHINGTON WEST

The headwaters of three of the county's largest drainages form in the Washington West quadrangle - Chartiers Creek, Buffalo Creek and Cross Creek. Buffalo and Cross Creeks are designated as High Quality (HQ) Waters by DER, Bureau of Water Quality Management as is Little Chartiers Creek - a major tributary to Chartiers Creek. Several of the headwater tributaries to Chartiers Creek are impounded in a series of reservoirs (no.'s 1,2,3 and 4) that, at one time, supplied the City of Washington with its water. These reservoirs, particularly numbers 3 and 4, have become important recreational areas and furnish the largest open water habitat in the county. Reservoirs 2, 3 and 4 are also designated as High Quality Waters by DER, Bureau of Water Quality Management. The section of the Chartiers Creek Valley that passes through Washington, PA, is heavily industrialized but does contain several sections of undeveloped floodplain which, although not considered of high enough quality to include as Natural Heritage Areas, are locally significant and should be considered as natural and open space components of the city's comprehensive plan. Presently, no Natural Heritage Areas have been identified for the Washington West quadrangle.

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USGS QUADRANGLE **WASHINGTON EAST**

PNDI Rank		Legal Status		Last
Global	State	Fed.	State	Seen

GEOLOGICAL FEATURES/FOSSIL LOCALITIES: Permian Fish-Teeth Locality


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON EAST QUADRANGLE
PENNSYLVANIA-WASHINGTON CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
CHARTIERS
NORTH STRABANE
SOUTH STRABANE
NORTH FRANKLIN
AMWELL
WASHINGTON
Meadow Lands
Permian Fish-Teeth Locality
Mapped, edited, and published by the Geological Survey
Control by USGS and USC&GS
Topography by photogrammetric methods from aerial photographs taken 1952. Field checked 1953
Polyconic projection. 10,000-foot grid ticks based on Pennsylvania coordinate system, south zone. 1000-meter Universal Transverse Mercator grid ticks, zone 17, shown in blue. 1927 North American Datum. To place on the predicted North American Datum 1983 move the projection lines 4 meters south and 18 meters west as shown by dashed corner ticks
Red tint indicates areas in which only landmark buildings are shown
Revisions in purple compiled in cooperation with State of Pennsylvania agencies from aerial photographs taken 1969. This information not field checked
Map photoinspected 1977. No major culture or drainage changes observed
SCALE 1:24 000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY
DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST
ROAD CLASSIFICATION
Heavy-duty
Light-duty
Medium-duty
Unimproved dirt
U.S. Route
State Route
Interstate Route
WASHINGTON EAST, PA.
N4007.5—W8007.5/7.5
PHOTOINSPECTED 1977
1953
PHOTOREVISED 1969

WASHINGTON EAST

The Washington East quadrangle sits entirely within Washington County and contains parts of the Chartiers Creek, Ten Mile Creek, and Pigeon Creek watersheds. Little Chartiers Creek, designated as High Quality HQ) waters by DER, Bureau of Water Quality Management, runs the length of the quadrangle to the east. Chartiers Creek runs diagonally, southwest to northeast, in the western half of the quadrangle, its valley providing a corridor that connects Canonsburg, Houston, and a number of small towns with the city of Washington. South of Laboratory, PA, is a small abandoned limestone quarry on private property, recognized by Hoskins et al. (1983) as a **Permian Fish-Teeth Fossil Locality** with an excellent diversity of fossils including polychaete worm shells, ostracode valves, and several ancient fish teeth from the genera *Palaeoniscus* and *Diplodus*. At present, no Natural Heritage Areas have been identified for this part of Washington County.

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USGS QUADRANGLE **HACKETT**

		PNDI Rank		Legal Status		Last
		Global	State	Fed.	State	Seen
WRIGHT'S WOODS BDA	*High Significance*					
NATURAL COMMUNITY	NC001	G?	S2	N	N	5/93
MUNNTOWN ROAD BDA	*Exceptional Significance*					
NATURAL COMMUNITY	NC002	G?	S2	N	N	4/93
SPECIAL PLANT	SP001	G5	S3	N	PR	4/93
SPECIAL PLANT	SP002	G4	S3	N	PR	4/93
MINGO CREEK BDA	*High Significance*					
NATURAL COMMUNITY	NC003	G?	S2	N	N	7/93

MANAGED LANDS: Mingo Creek County Park


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
HACKETT QUADRANGLE
PENNSYLVANIA-WASHINGTON CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
WRIGHT'S WOODS BDA
MUNNTOWN ROAD BDA
MINGO CREEK BDA
Mingo Creek County Park
PETERS
NOTTINGHAM
SOMERSET
NORTH BETHLEHEM
FALLOWFIELD
Hackett
Bentleyville
Mapped, edited, and published by the Geological Survey
Control by USGS and USC&GS
Topography from aerial photographs by multiplex methods
Aerial photographs taken 1952. Field check 1953
Polyconic projection. 1927 North American datum
10,000-foot grid based on Pennsylvania coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks, zone 17,
shown in blue
To place on the predicted North American Datum 1983
move the projection lines 4 meters south and
18 meters west as shown by dashed corner ticks
Revisions shown in purple compiled in cooperation with State of
Pennsylvania agencies from aerial photographs taken 1977 and other
source data. This information not field checked. Map edited 1979
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST
ROAD CLASSIFICATION
Heavy-duty
Medium-duty
Light-duty
Unimproved dirt
Interstate Route
State Route
PENNSYLVANIA
QUADRANGLE LOCATION
HACKETT, PA.
N4007.5—W8000/7.5
1953
PHOTOREVISED 1979
AMS 4864 II NE—SERIES V851

HACKETT

The Hackett quadrangle sits completely within Washington County just south of the Allegheny-Washington border. Drained by Pigeon, Mingo and Peters Creeks, all the land within this portion of Washington County is within the Monongahela Basin. The portion of Mingo Creek contained within this quadrangle is designated as High Quality (HQ) Waters by DER, Bureau of Water Quality Management. Very much a transition area between the highly active development in Peters Township and the south hills of Pittsburgh, and the more rural sections of the county to the south and west, this quadrangle holds several significant forest communities, populations of two plants of special concern in Pennsylvania, and one of the two large county parks - Mingo Creek County Park.

On the south side of Peters Creek, just west of the town of Hackett, lies a section of shallow slope containing a mature oak dominated forest. Located behind Wright's United Methodist Church, this area is known locally as Wright's Woods. Designated by this inventory as **Wright's Woods BDA**, this community is classified as a Mesic Central Forest (**NC001**) and recognized as a High Diversity Area. Below the white and red oak (*Quercus alba* and *Q. rubra*) canopy is a sub-canopy and shrub layer of predominately sugar maple (*Acer saccharum*). Basswood (*Tilia sp.*), hackberry (*Celtis occidentalis*), slippery elm (*Ulmus rubra*), white ash (*Fraxinus americana*) and a number of other tree species grow within the oak-sugar maple forest, as do a number of shrub/trees like and spicebush (*Lindera benzoin*), common elderberry (*Sambucus canadensis*), and flowering dogwood (*Cornus florida*). A rich spring flora of trout lily (*Erythronium americanum*), spring beauty (*Claytonia virginica*), false mermaid (*Floerkea proserpinacoides*), virginia waterleaf (*Hydrophyllum virginianum*) and many other species blanket the slopes, particularly the lower slopes. To the east, the slope transforms to a younger forest of sugar maple and black cherry (*Prunus serotina*), ending eventually at a driveway and several homes. Confined by an old cemetery and road to the west and by old strip mined land that is now residential development to the south and east, this community stands as a remnant of a forest type that likely once covered large parts of the county.

A number of hiking/walking trails run through the forest and some cutting of individual trees (possibly dead or damaged red oaks) has occurred on the lower slopes. The creek itself is open, swampy in places, and appears to have been pastured at one time. Although some invasive exotic plants like garlic mustard (*Alliaria officinalis*), multiflora rose (*Rosa multiflora*) and periwinkle (*Vinca minor*) occur densely in areas surrounding the forest, the interior remains relatively free from these plants. Although this community is destined to transform to a sugar maple forest as the old oaks die, this area will remain, if protected, one of the older forest communities in the county. Critical to the maintenance of this community is limiting disturbance within the BDA and expanding, wherever possible, the buffer areas surrounding the forest. Motorized vehicles should be restricted from within the BDA, and clearing of vegetation or cutting of trees, even dead or downed trees, should be prohibited. The successional areas to the south should be allowed to return to forest and residential development on the sections of

strip mined land should emphasize planting of native tree species that occur commonly in the vicinity. Also of importance is allowing the stream-side vegetation to develop and mature to provide a more contiguous, forested buffer to the slope community.

South of Peters Creek, a tributary of Mingo Creek drains the northern section of Nottingham Township. Along the lower southern slopes of this tributary stretches a band of sugar maple dominated forest and sections of exposed bedrock rising above the stream. Considered a Mesic Central Forest (**NC002**), two plants of special concern in Pennsylvania (**SP001, SP002**) grow in this community. While one depends upon the lower slopes and moist floodplain habitat, the other grows on the thin, erodible soils associated with calcareous slopes and rock outcrops. Protecting these plants and their community will mean protecting both the upland and riparian habitats that are part of this Community/Ecosystem Conservation Area and Special Species Habitat known as the **Munntown Road BDA**. Much of the floodplain area is kept artificially open by the property owners along the creek. The periodic mowings may have benefitted one of the special plants by reducing competition. However, compacting the soils or disturbing the roots of the plants could be detrimental to the same population. Careful maintenance of this area is recommended. Avoiding heavy equipment use, herbicides, lawn care chemicals and fertilizers, and eliminating cutting or disturbance during spring and early summer months is advised. Activity on the slopes, particularly on the steep, exposed rock sections, should be avoided. Cutting of trees or clearing of any vegetation on the uplands adjacent to the slope and valley should likewise be avoided.

Mingo Creek County Park sits just north of PA Route 136 in Nottingham Township and extends for almost two miles along Mingo Creek, encompassing several small tributaries and most of the immediate watershed of the creek. Used for walking, bicycling, picnicking and general recreation, this park is one of the largest, contiguous pieces of land owned by Washington County. Although much of the floodplain of Mingo Creek within the park is developed and open for recreational activities, the slopes to the south of the creek are forested and, in places, relatively mature compared to other areas in the Mingo Creek valley. North-facing and moist, these slopes support a community dominated by sugar maple, beech (*Fagus grandifolia*), slippery elm (*Ulmus rubra*), and shagbark hickory (*Carya ovata*). Sycamore (*Platanus occidentalis*), black walnut (*Juglans nigra*), and basswood (*Tilia sp.*) grow on the lower slopes, and a rich variety of wildflowers and ferns, such as wild anise (*Osmorhiza longistylis*), clustered snakeroot (*Sanicula gregaria*), jack-in-the-pulpit (*Arisaema atrorubens*), maidenhair fern (*Adiantum peltatum*), and fragile fern (*Cystopteris fragilis*), cover the ground. This example of a Mesic Central Forest (**NC003**) runs the entire length of the park but occurs in two discontinuous patches, separated by a road and cleared area to the south. The tributary valleys between PA Route 136 and the creek, although forested, transform from medium age to young forest when moving upstream toward PA Route 136. Because this area represents a good example of a mesic central forest, and under county management has the potential to become a mature and contiguous forest community, the inventory has recognized this site as a

Community/Ecosystem Conservation Area and designated a **Mingo Creek Park BDA** to include most of the park land within the southern immediate watershed of Mingo Creek.

Protecting this community will mean allowing many of the open areas on the slopes (old fields, reverting pasture, etc.) to succeed to forest and will, generally, entail limiting activity to passive use of the BDA. Development of extensive trail systems, paved walkways, or park facilities within the BDA is not recommended. Presently, at least one of the tributary valleys receives equestrian use. One of the most heavily used trails intercepts several spring runs and erosion has become a problem. Equestrian activity should be confined to carefully chosen areas where minimum disruption will result. This predominately forested area, already accessible via a series of unimproved hiking trails, if dedication to protection of natural communities and ecological values, could serve as both an educational focus and as an area for those desiring recreation in a less developed setting.

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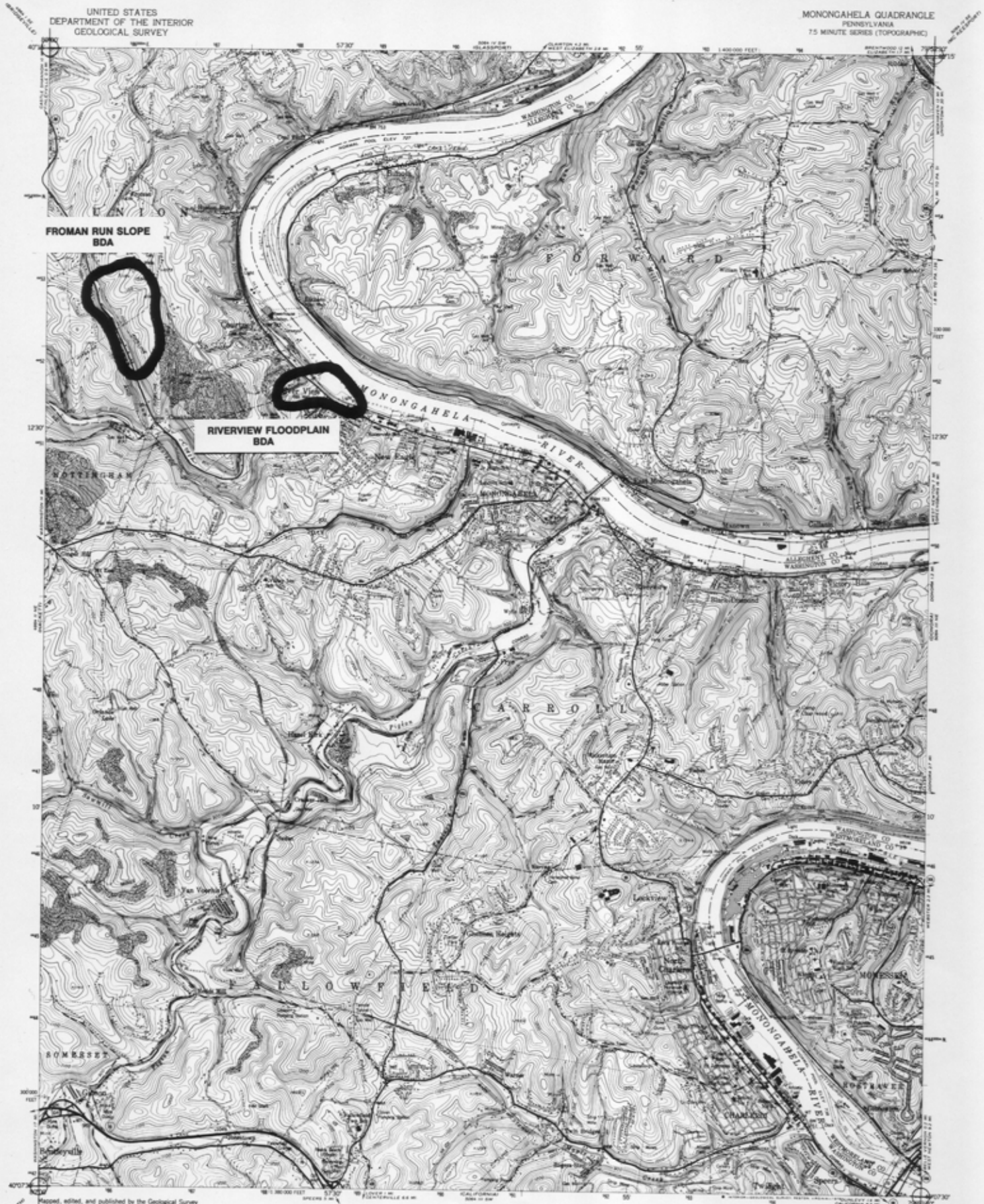
USGS QUADRANGLE **MONONGAHELA**

		PNDI Rank		Legal Status		Last
		Global	State	Fed.	State	Seen
FROMAN RUN SLOPE BDA	*Exceptional Significance*					
NATURAL COMMUNITY	NC001	G?	S2	N	N	4/93
SPECIAL PLANT	SP001	G4	S3	N	PR	4/93
RIVERVIEW FLOODPLAIN BDA	*High Significance*					
NATURAL COMMUNITY	NC002	G?	S2	N	N	5/93
SPECIAL PLANT	SP002	G5	S1S2	N	PR	6/88

MANAGED LANDS:


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MONONGAHELA QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
FROMAN RUN SLOPE
BDA
RIVERVIEW FLOODPLAIN
BDA
MONONGAHELA RIVER
UNION
FOREWARD
NOTTINGHAM
CAROLL
FALLOWFIELD
SOMERSET
Mapped, edited, and published by the Geological Survey
Control by USGS and USC&GS
Topography from aerial photographs by multiplex methods
Aerial photographs taken 1952. Field check 1954
Polyconic projection. 1927 North American datum
10,000-foot grid based on Pennsylvania coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks, zone 17, shown in blue
To place on the predicted North American Datum 1983 move the projection lines 4 meters south and 18 meters west as shown by dashed corner ticks
Red tint indicates areas in which only landmark buildings are shown
Revisions shown in purple compiled in cooperation with State of Pennsylvania agencies from aerial photographs taken 1977 and other source data. This information not field checked. Map edited 1979
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U.S. GEOLOGICAL SURVEY
DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST
ROAD CLASSIFICATION
Heavy-duty
Light-duty
Medium-duty
Unimproved dirt
U.S. Route
State Route
Interstate Route
MONONGAHELA, PA.
N4007.5—W7952.5/7.5
1954
PHOTOREVISED 1979

MONONGAHELA

Roughly thirteen miles of the Monongahela River wind through this quadrangle, separating Washington from Westmoreland and Allegheny Counties. Pigeon Creek and Mingo Creek meet the Monongahela River here, and numerous smaller tributaries drain directly into the river between the towns of Speers to the south and Elrama to the north. Included in this quadrangle are several significant forest communities and two plants of special concern in Pennsylvania.

A major tributary to Mingo Creek, Froman Run, flows south from Finleyville and meets the creek just east of Mingo County Park. A deep and narrow drainage divided by PA Route 88, the Froman Run Valley remains relatively undeveloped and predominately forested. Homes and small businesses dot the floodplain along the road and several small, steep tributaries flow into Froman Run along this section of the valley. A small but good example of a Mesic Central Forest Community (**NC001**) sits on the eastern slope of the valley just south of Mingo Church. Recognized as a Special Species Habitat and designated as the **Froman Run Slope BDA**, sugar maple (*Acer saccharum*) dominate this community, but beech (*Fagus grandifolia*), red oak (*Quercus rubra*), bitternut hickory (*Carya cordiformis*) and black cherry (*Prunus serotina*) also grow on the slope. Patches of sometimes dense flowering dogwood (*Cornus florida*) grow under the more open sections of canopy. Sharp-leaved hepatica (*Hepatica acutiloba*), cut-leaved toothwort (*Dentaria laciniata*), buttercups (*Ranunculus spp.*), and a plant of special concern (**SP001**) are among the spring wildflowers growing within this forest community.

Agricultural fields border the slope to the east and several pipeline R.O.W.'s dissect the slope and forest. Recently, part of the southern section of the BDA was heavily logged, destroying a section of the slope and resulting in severe erosional problems and the long term damage of a natural community. Protecting both the forest community and the plant of special concern will require limiting disturbance to the slope, tributaries, and at least some of the upland within the immediate watershed of Froman Run. Timbering of any portion of the BDA is not compatible with protection of the community. The pipeline R.O.W.'s in this area should be minimally maintained without the use of heavy equipment or herbicides. Eventual abandonment of pipelines within the BDA and establishment of new service along existing R.O.W.'s outside the BDA should be given strong consideration as utility routing plans are made and revised for the area. Property owners managing the upland areas within the BDA should be encouraged to add to the buffer area around the forest community by allowing fields to revert, reducing pasture area adjacent to the slopes, or limiting the amount of space dedicated to lawns and general maintained space.

Mingo Creek flows into the Monongahela River at the town of Riverview. Here within the heavily industrialized Monongahela Valley sits a patch of Floodplain Forest (**NC002**) that

contains a plant of special concern in Pennsylvania (**SP002**). Recognized as a Community/Ecosystem Conservation Area and a Special Species Habitat, the inventory has designated this site as the **Riverview Floodplain BDA**. Large sycamore (*Platanus occidentalis*) rise above the floodplain and give the area a distinctive appearance from the air or from the ground. Box elder (*Acer negundo*), American elm (*Ulmus americana*), black willow (*Salix nigra*) and silver maple (*Acer saccharinum*) form much of the canopy below the taller sycamores, and dense patches of touch-me-not (*Impatiens sp.*), wingstem (*Actinomerous alternifolia*), and green-headed coneflower (*Rudbeckia laciniata*) cover the ground. A widespread and invasive plant found throughout the Ohio River drainage system, Japanese knotweed (*Polygonum cuspidatum*), is well established on this floodplain but within a distinct band between the normal high water line and a trail that crosses through the center of the floodplain. Where Japanese knotweed grows, very little other vegetation can survive because of the full and persistent shading that these fast-growing plants create.

This forest community is sandwiched between the J&L Steel Plant to the north and a developed recreational area to the south. A community action group maintains an open pavilion and boardwalk area, and a troop of Boy Scouts maintains several trails and a camp at the south end of the forest. Both organizations continue to clear vegetation on the floodplain, slowly expanding the open areas associated with the camp and pavilion. Already a small area with limited potential for expansion, this remaining example of a floodplain forest on a major river in the county can not afford further disturbance. Excellent opportunities exist for promoting a good stewardship program through the organizations already involved in the management of the site. Recommendations for the management of the area include: limiting cutting and clearing to the areas immediately adjacent to the pavilion and walkway, reducing the width and extent of the trails criss-crossing the floodplain; removing as much Japanese knotweed as possible without broad application of herbicide; and generally, encouraging regeneration of the forest on any available adjacent lands.

USGS QUADRANGLE **DONORA**

	PNDI Rank		Legal Status		Last
	Global	State	Fed.	State	Seen


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
DONORA QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
COUNTY REGIONAL
PARK
ELIZABETH
FORWARD
SWISSVALE
YOUGHIOGHENY RIVER
MONONGAHELA RIVER
ROSTRAVER
SOUTH HUNTINGDON
WASHINGTON
Mapped, edited, and published by the Geological Survey
Control by USGS and USC&GS
Topography from aerial photographs by multiplex methods
Aerial photographs taken 1952. Field check 1954
Polyconic projection. 1927 North American datum
10,000-foot grid based on Pennsylvania coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks, zone 17
shown in blue
To place on the predicted North American Datum 1983
move the projection lines 4 meters south and
19 meters west as shown by dashed corner ticks
Red tint indicates areas in which only landmark buildings are shown
Revisions shown in purple compiled in cooperation with State of
Pennsylvania agencies from aerial photographs taken 1977 and other
source data. This information not field checked. Map edited 1979
SCALE 1:24 000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST
UTM GRID AND 1979 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET
QUADRANGLE LOCATION
ROAD CLASSIFICATION
Heavy-duty
Light-duty
Medium-duty
Unimproved dirt
U. S. Route
State Route
Interstate Route
DONORA, PA.
N4007.5—W7545/7.5
1954
PHOTOREVISED 1979
AMS 5564 III NE—SERIES V851

DONORA

This quadrangle contains a small section of eastern Washington County, largely within the borough of Donora, where a three and a half mile loop of the Monongahela River separates Washington County from Westmoreland County. No Natural Heritage Sites are currently recognized for this portion of Washington County.

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USGS QUADRANGLE **VALLEY GROVE**

	PNDI Rank		Legal Status		Last
	Global	State	Fed.	State	Seen

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

STATE OF WEST VIRGINIA
REPRESENTED BY THE
STATE OF WEST VIRGINIA GEOLOGICAL SURVEY
AND OTHER STATE AGENCIES

VALLEY GROVE QUADRANGLE
WEST VIRGINIA—PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)

Mapped, edited, and published by the Geological Survey

Control by USGS and NOS/NOAA

Topography by photogrammetric methods from aerial photographs taken 1956 and 1957. Field checked 1959

Polyconic projection. 10,000-foot grid ticks based on West Virginia coordinate system, north zone, and Pennsylvania coordinate system, south zone. 1000-meter Universal Transverse Mercator grid ticks, zone 17, shown in blue. 1927 North American Datum. To place on the predicted North American Datum 1983 move the projection lines 4 meters south and 17 meters west as shown by dashed corner ticks.

Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked

There may be private inholdings within the boundaries of the National or State reservations shown on this map

SCALE 1:24000

CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

UTM GRID AND 1961 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

QUADRANGLE LOCATION

Revisions shown in purple and woodland compiled in cooperation with Commonwealth of Pennsylvania agencies from aerial photographs taken 1977 and other sources. This information not field checked. Map edited 1981

ROAD CLASSIFICATION

Primary highway, hard surface — Light-duty road, hard or improved surface
Secondary highway, hard surface — Unimproved road
Interstate Route — U. S. Route — State Route

VALLEY GROVE, W. VA.—PA.
N4000—W8030/7.5

1959
PHOTOREVISED 1981
DMA 4004 II SE-SERIES V854

VALLEY GROVE

A thin strip of Washington County runs along the eastern part of the Valley Grove quadrangle where Little Wheeling Creek and Middle Wheeling Creek flow across the Pennsylvania-West Virginia border. Presently, no significant Natural Heritage Areas have been identified within this section of Washington County.

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USGS QUADRANGLE **CLAYSVILLE**

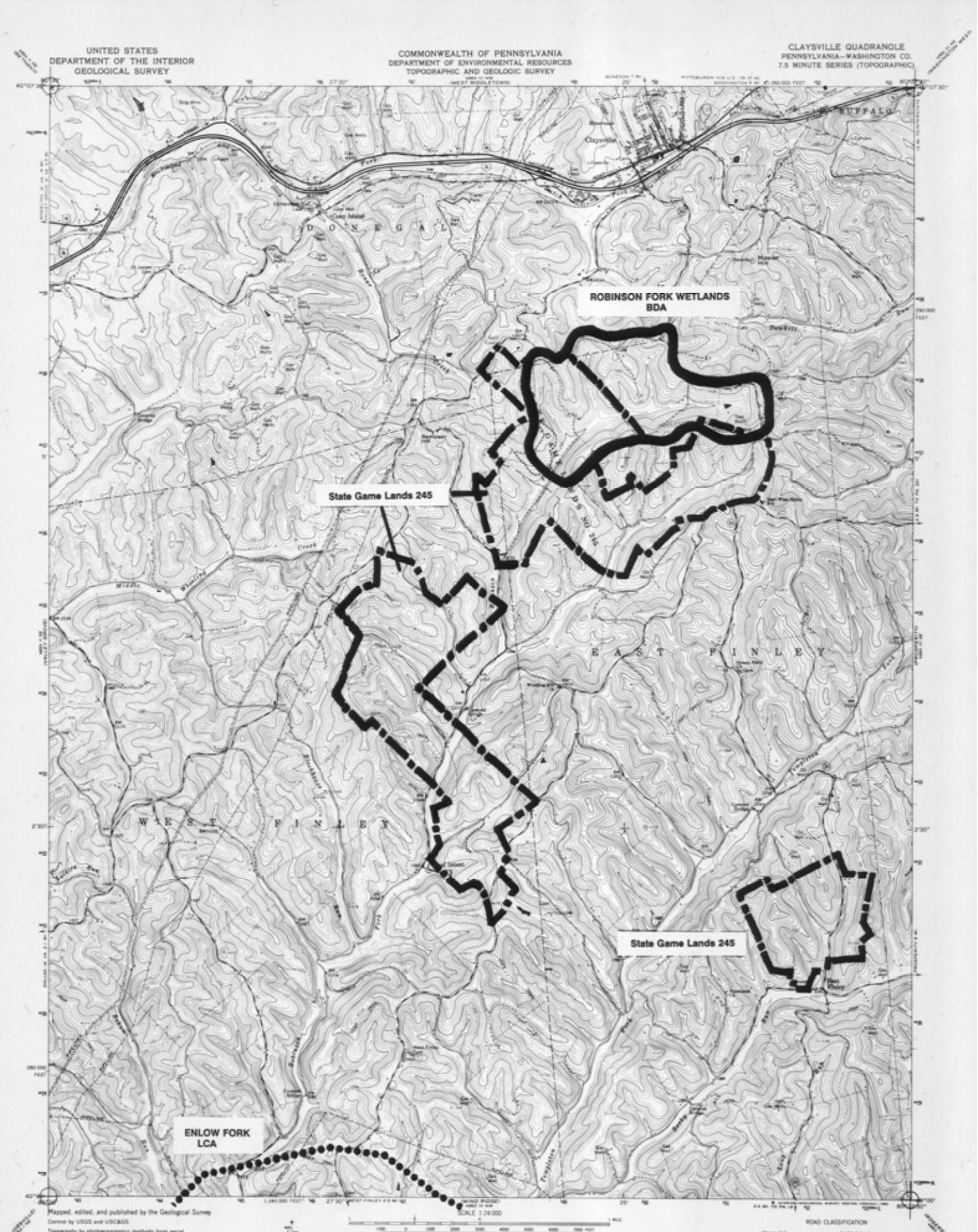
	PNDI Rank			Legal Status		Last
	Global	State		Fed.	State	Seen

ENLOW FORK LCA *Exceptional Significance*

ROBINSON FORK WETLANDS BDA *Notable Significance*

NATURAL COMMUNITY	NC001	G?	S2S3	N	N	7/93

MANAGED LANDS: State Game Lands 245



Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography by photogrammetric methods from aerial photographs taken 1962 and 1963. Field checked 1964

Polyconic projection. 1927 North American datum
10,000-foot grid based on Pennsylvania coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks, zone 17, shown in blue

Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked

Map photoinspected 1977
No major culture or drainage changes observed

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY
DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

Revisions shown in purple compiled in cooperation with State of Pennsylvania agencies from aerial photographs taken 1973. This information not field checked

N4000—W8022.5/7.5
PHOTOINSPECTED 1977
1964
PHOTOREVISED 1973
AMS 4964 II SW—SERIES V851

CLAYSVILLE

The Claysville quadrangle sits entirely within Washington County, taking up most of the southwestern corner of the county. The Wheeling Creek watershed covers all but the northern one quarter of the quadrangle, this area draining via the Buffalo Creek Watershed. A small section of the **Enlow Fork LCA** crosses into the Claysville quadrangle but is discussed in the Wind Ridge quadrangle. One of the three parts of the discontinuous State Game Lands 245 lies within this quadrangle as does a wetland community that is significant in Washington County.

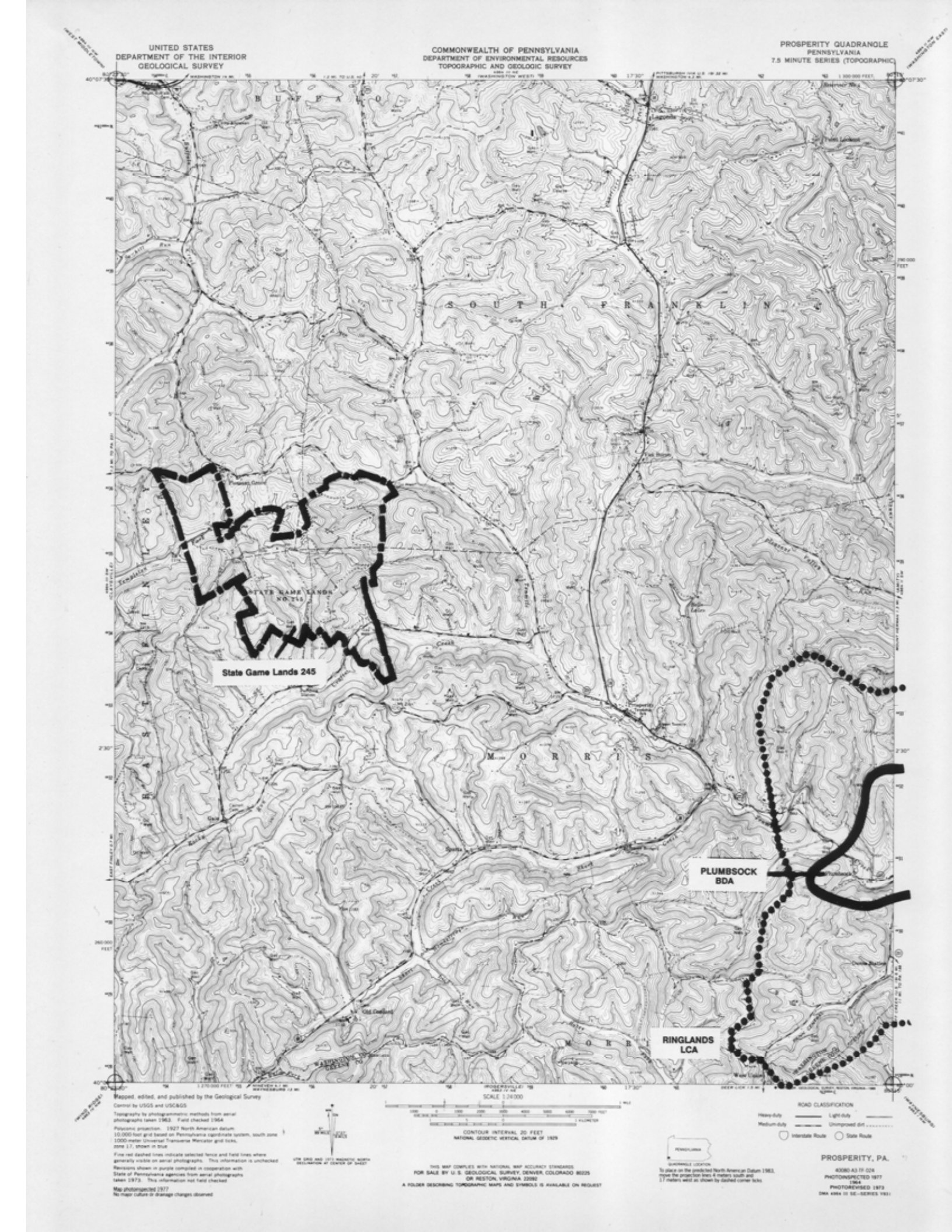
The headwaters of the Robinson Fork of the Enlow Fork of Wheeling Creek form from a number of small tributaries that flow out of the hills just south of Claysville. A large wetland complex, recognized as a High Diversity Area and designated as the **Robinson Fork Wetlands BDA**, sits along this upper stretch of Robinson Fork, within **State Game Lands 245**. Likely, at one time, this area supported a narrow band of streamside and floodplain wetlands vegetation within a larger mesic central forest community. However, beaver (*Castor canadensis*) have constructed several dams along the stream and created a complex of open pools, emergent marsh and shrub wetland. Although considered a successional community because of the cyclic and temporary presence of beaver and their influence on hydrology, this area represents a unique habitat for Washington County and is therefore considered important for biodiversity in the county. Classified as a Mixed Graminoid-Robust Emergent Marsh (**NC001**), thickets of silky dogwood (*Cornus amomum*) and black willow (*Salix nigra*) grow around the perimeter of the open pools while spotted touch-me-not (*Impatiens capensis*), common elderberry (*Sambucus canadensis*), sensitive fern (*Onoclea sensibilis*), sedges (*Carex spp.*), and skunk cabbage (*Symplocarpus foeditus*) occupy the swampy areas between and around the pools. Duckweed (*Lemna spp.*) float on the surface of the deeper water sections and broad-leaved cattail (*Typha latifolia*), bur-reed (*Sparganium americanum*) and arrowhead (*Sagittaria latifolia*) grow in the shallow standing water areas.

Young forest and reverting fields surround this section of Robinson Fork, and numerous roads/trails run along and across the stream and onto the upland areas. These large cleared areas supply beaver with the young growth they require for food and construction, and as long as there is a supply of young trees/saplings, the beaver will continue to make use of this corridor, maintaining the present dams and building new ones. The amount of beaver activity will fluctuate and, eventually, if the surrounding forest is left undisturbed, the beaver may leave completely. It is recommended that no further habitat modifications be made within the BDA and that the natural cycling of beaver populations/activities be permitted to continue undisturbed. Eventually, this area will succeed to forest but the old beaver dams and pools will influence the hydrology of the area and furnish a unique habitat for many years.

USGS QUADRANGLE **PROSPERITY**

		PNDI Rank		Legal Status		Last
		Global	State	Fed.	State	Seen
RINGLANDS LCA	*High Significance*					
PLUMBSOCK BDA	*High Significance*					
SPECIAL ANIMAL	SP001	G5	S1	N	N	1993

MANAGED LANDS: State Game Lands 245


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
PROSPERITY QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
B U F F A L O
S O U T H F R A N K L I N
M O R R I S
STATE GAME LANDS NO. 245
State Game Lands 245
PLUMBSOCK BDA
RINGLANDS LCA
Mapped, edited, and published by the Geological Survey
Control by USGS and USC&GS
Topography by photogrammetric methods from aerial photographs taken 1963. Field checked 1964
Polyconic projection. 1927 North American datum
10,000-foot grid based on Pennsylvania coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks, zone 17, shown in blue
Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked
Revisions shown in purple compiled in cooperation with State of Pennsylvania agencies from aerial photographs taken 1973. This information not field checked
Map photoinspected 1977
No major culture or drainage changes observed
SCALE 1:24 000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225
OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST
ROAD CLASSIFICATION
Heavy-duty
Light-duty
Medium-duty
Unimproved dirt
Interstate Route
State Route
PROSPERITY, PA.
40080-A3-TF-024
PHOTOINSPECTED 1977
1964
PHOTOREVISED 1973

PROSPERITY

Washington County covers all but the very southern portion of the Prosperity quadrangle. The upper watershed of Ten Mile Creek covers most of the quadrangle and is bordered to the south by the Enlow Fork watershed and to the north by the Buffalo Creek and Chartiers Creek watersheds. This quadrangle contains the western lobe of the **Ringlands LCA** (discussed in the Amity quadrangle) and a portion of the Plumbsock BDA. Also, a section of **State Game Lands 245** sits in the west-central portion of the quadrangle, between Templeton Fork and Crafts Creek.

Downstream from the confluence of Crafts Creek and Short Creek, Ten Mile Creek begins consolidating into a moderate volume drainage and begins to meander through an increasing broad floodplain. Recent work in this section of Ten Mile Creek confirmed the presence of a number of aquatic animals, one of which is considered rare in Pennsylvania (**SA001**) and which the Pennsylvania Biological Society (PBS) has proposed to the state for endangered status. Given the proximity to another important aquatic site (Bailey Bridge Floodplain BDA - home to another animal of special concern), it is likely that this stretch of Ten Mile Creek, the focus of the **Plumbsock BDA** - a Special Species Habitat, will prove to be one of the best stream communities in the county. Protecting this Natural Heritage Area will entail careful protection the aquatic resources within the BDA and attention to those within the Ringlands LCA of which the Plumbsock BDA is a part. Application of pesticides within the BDA should be limited to very specific and small scale needs. Fertilizers, if necessary for farming operations, should be carefully applied and timed to reduce runnoff into streams and aquifers. Also, activities that contribute to erosion and siltation of streams should be controlled or eliminated from the BDA.

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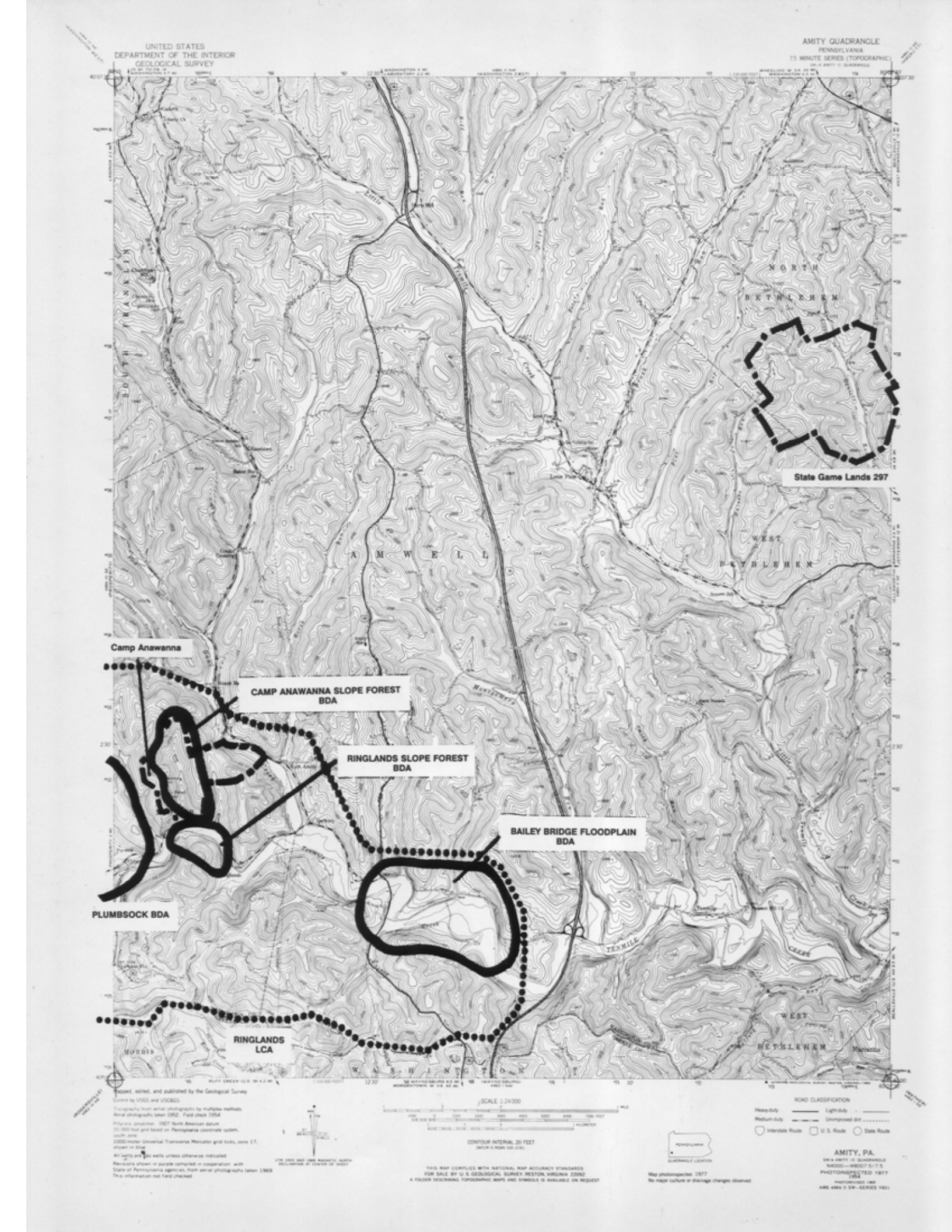
USGS QUADRANGLE **AMITY**

		PNDI Rank		Legal Status		Last
		Global	State	Fed.	State	Seen
RINGLANDS LCA	*High Significance*					
BAILEY BRIDGE FLOODPLAIN BDA	*Exceptional Significance*					
NATURAL COMMUNITY:	NC001	G?	S2	N	N	7/93
NATURAL COMMUNITY:	NC002	G?	S3	N	N	7/93
SPECIAL ANIMAL	SP001	G5	S1	N	N	1993
PLUMBSOCK BDA	*High Significance*					
SPECIAL ANIMAL	SP002	G5	S1	N	N	1993
RINGLANDS SLOPE FOREST BDA	*Exceptional Significance*					
NATURAL COMMUNITY	NC003	G?	S2	N	N	6/93
SPECIAL PLANT	SP001	G5	S3	N	PR	4/93
SPECIAL PLANT	SP002	G5	S2	N	PT	4/93
CAMP ANAWANNA SLOPE FOREST BDA	*Notable Significance*					
NATURAL COMMUNITY	NC004	G?	S5	N	N	6/93

MANAGED LANDS: State Game Lands 297
Camp Ananwanna


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
AMITY QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
NORTH BETHLEHEM
State Game Lands 297
WEST BETHLEHEM
Camp Anawanna
CAMP ANAWANNA SLOPE FOREST BDA
RINGLANDS SLOPE FOREST BDA
BAILEY BRIDGE FLOODPLAIN BDA
PLUMBSOCK BDA
RINGLANDS LCA
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
ROAD CLASSIFICATION
AMITY, PA.
PHOTOINSPECTED 1977

AMITY

The Amity quadrangle includes a section of southcentral Washington County and a small piece of northern Greene County. All of this quadrangle is within the Ten Mile Creek Watershed and within the Bane Creek and Little Ten Mile Creek subwatersheds (the Washington-Greene County border is the watershed divide between Ten Mile Creek and its South Fork, which flows into Greene County). This quadrangle includes the Ringlands LCA, several exemplary forest communities, two plants of special concern in Pennsylvania, two animals of special concern, a wetland, and a recovering floodplain forest.

In the southwestern quarter of the Amity quadrangle sits a large, predominately forested patch that straddles Ten Mile Creek and extends almost to the Greene County border. This area contains sections of mature forest, young forest, reverting fields and pasture, and a number of tributaries to Ten Mile Creek that run through the shallow valleys to the north and south of the creek. Camp Ananwanna, a Boy Scout camp, and the Anawanna Hunting and Fishing Club properties occupy a part of the northern section and a number of farms form the bulk of the southern section. Because this area contains several natural communities (BDA's), includes a significant section of the Ten Mile Creek corridor, and stands as a comparatively contiguous piece of undeveloped land only partly in current agricultural use, it is recognized as a Landscape Conservation Area (LCA) - **Ringlands LCA**.

This area has the potential of supporting a representative slice of the natural communities that once covered much of the county, including; medium gradient clearwater creek, floodplain forest, mesic central forest, and dry-acidic central forest. Given the relatively small number of land owners included and the particular organizations and individuals involved, conservation and restoration goals may be more easily agreed upon than in other situations. It is recommended that the BDA's discussed below be considered as core areas to be left undisturbed and allowed to expand as adjacent lands succeed from young forest and old fields. Those areas within the floodplain of Ten Mile Creek should be allowed to revert to increase buffer to the creek and permit floodplain communities to develop and expand. The current mix of natural and agricultural landscape can continue, however, activities within the LCA that increase erosion (e.g. removal of vegetation from slopes), introduce excessive nutrients to the creek watershed (e.g. application of manure or fertilizers, in excess, or during winter months), or lead to further fragmentation (e.g. more roads, new fields, utility R.O.W.'s, more housing, etc.), should be avoided. This LCA is further discussed below with the Bailey Bridge Floodplain BDA.

Between its crossing of PA Route 19 and Interstate 79, Ten Mile Creek winds through a broad agricultural valley, gathering water from several small tributaries before meeting Montgomery Run just east of I-79. Although mostly open with only a narrow band of vegetation directly adjacent to the creek, one section of the valley contains a Forest Floodplain Community (**NC001**). A broad patch of young forest dominated by box elder (*Acer negundo*) and American

elm (*Ulmus americana*) covers most of the area while creekside, sycamore (*Platanus occidentalis*), ash (*Fraxinus americana*) and smooth buckeye (*Aesculus glabra*) form a mature band of forest. One hundred meters or more away from the creek, to the north, sits a small emergent wetland classified as a Graminoid Marsh Community (**NC002**) that was likely a channel scar left from Ten Mile Creek as it meandered over the floodplain in centuries past. Covered mostly by grasses in the late summer, the pool appears as a lush green pocket in the spring when grasses and sedges begin growing. Both of these communities are part of the **Bailey Bridge Floodplain BDA**, named after a covered bridge which crosses Ten Mile Creek in this area, and recognized as a Special Species Habitat and Community/Ecosystem Conservation Area. Recent work on this section of Ten Mile Creek has confirmed the presence of a number of aquatic animals, one of which is considered rare in Pennsylvania (**SA001**) and which the Pennsylvania Biological Society (PBS) has proposed to the state for endangered status. Along with a site upstream from this BDA (the **Plumbsock BDA** - discussed in the Prosperity quadrangle), this stretch of Ten Mile Creek may prove to be one of the premier aquatic communities in the county. Further work will need to be done to assess the quality and diversity of the stream community.

Although disturbed and relatively young, the floodplain forest community on this site stands as one of the few examples of a forested floodplain along Ten Mile Creek - the drainage with the largest watershed in the county baring the Monongahela River. A powerline R.O.W. cuts across the northwestern edge of the site and an old road bed (probably farm equipment access) runs along the north side of the creek. Ten Mile Creek Road runs above the site to the north, the hillside below it is cleared of trees and is now a vetch (*Coronilla varia*) and grass covered reverting field. This whole area was likely a pasture, perhaps at times a hay field, during the first half of this century. Critical to protection of this area is maintenance of the hydrologic regime. Ten Mile Creek Road and the powerline R.O.W. have likely altered the way water moves into and over the site from the uplands to the north. It is recommended that future road work be carefully planned and that the hillside above the floodplain not be used to dispose of rubble, paving material, brush and other byproducts of such work. The powerline R.O.W. should be allowed to recover to at least a shrub and sapling community and only the vegetation that directly interferes with the powerlines be removed, and then only the branches that are directly involved. Also, use of herbicides to maintain the open R.O.W. could be particularly damaging to the wetland habitat within the floodplain. In the event that power lines are upgraded, moving the R.O.W. outside the BDA would be of benefit to the site and eliminate special management needs.

Protecting the terrestrial community within this BDA will provide some protection to the creek and the aquatic community. However, protection of the aquatic resource will require not only limiting direct disturbances to the stream but also limiting the amount of chemicals, fertilizers and silt that flows into Ten Mile Creek and its tributaries, especially within the BDA's. Application of pesticides within the BDA should be limited to very specific and small scale needs. Fertilizers, if necessary for farming operations, should be carefully applied and timed to reduce runnoff into streams and aquifers. Also, activities that contribute to erosion and siltation

of streams should be controlled or eliminated from the BDA. The **Ringlands LCA** can provide a broad scale buffer around the BDA's contained within and planning efforts within the LCA should be focused not only toward preservation of its undeveloped character but toward the careful management of water quality within this section of the Ten Mile Creek watershed.

On an inside bend of Ten Mile Creek passing through the Ringlands LCA, is a small expanse of floodplain and a moderately steep northeast-facing slope dominated by sugar maple (*Acer saccharum*), black cherry (*Prunus serotina*) and red oak (*Quercus rubra*). This maturing forest known as a Mesic Central Forest Community (**NC003**), produces a lush spring flora that includes false mermaid (*Floerkea proserpinacoides*), spring beauty (*Claytonia virginica*), large-flowered trillium (*Trillium grandiflorum*), wild blue phlox (*Phlox divaricatus*), and a variety of other species, including sizable populations of two plants of special concern in Pennsylvania (**SP001, SP002**). Recognized as a High Diversity Area and High Diversity Area, this section of the Ten Mile Creek Valley is designated as the **Ringlands Slope Forest BDA**.

An old railroad bed runs on and parallel to the slope, but has narrowed to a path as the forest has closed in and revegetated the R.O.W.. The slope transforms into a younger, more disturbed community a short distance uphill from the railbed, and narrows and steepens to the west. Sections of the slope are heavily invaded by the exotic and pervasive garlic mustard (*Alliaria officinalis*) and pasture grasses cover the lower slopes and floodplain. Protecting this community entails protecting the entire slope, floodplain, and sections of upland included in the immediate watershed of the slope community. Abandoned/disturbed areas on the slope should be left to mature and, likewise, the floodplain area below should be permitted to revert to forest. The increased buffer that such management would provide, would also furnish additional habitat for the special plants mentioned above, especially for one normally found growing on floodplains.

North of Ten Mile Creek, along one of the tributaries to the creek, sits a section of relatively mature, minimally disturbed forest. Situated on sandy soils and with a west-southwest aspect, this forest community remains relatively dry and warm, and supports vegetation characteristic of the oak-hickory areas in western Pennsylvania. White oak (*Quercus alba*), red oak (*Q. rubra*), shagbark and bitternut hickory (*Carya ovata* and *C. cordiformis*), scattered American beech (*Fagus grandifolia*) and sugar maple, form a canopy under which flowering dogwood (*Cornus florida*), hophornbeam (*Ostrya virginiana*) and sassafras (*Sassafras albidum*) grow. Mountain blueberry (*Vaccinium vacillans*), Pennsylvania sedge (*Carex pensylvanica*), and rattlesnake weed (*Hieracium venosum*) make up some of the sparse ground cover. This Dry-Acidic Central Forest (**NC004**) is the focus of the **Camp Anawanna Slope Forest BDA** - a Community/Ecosystem Conservation Area.

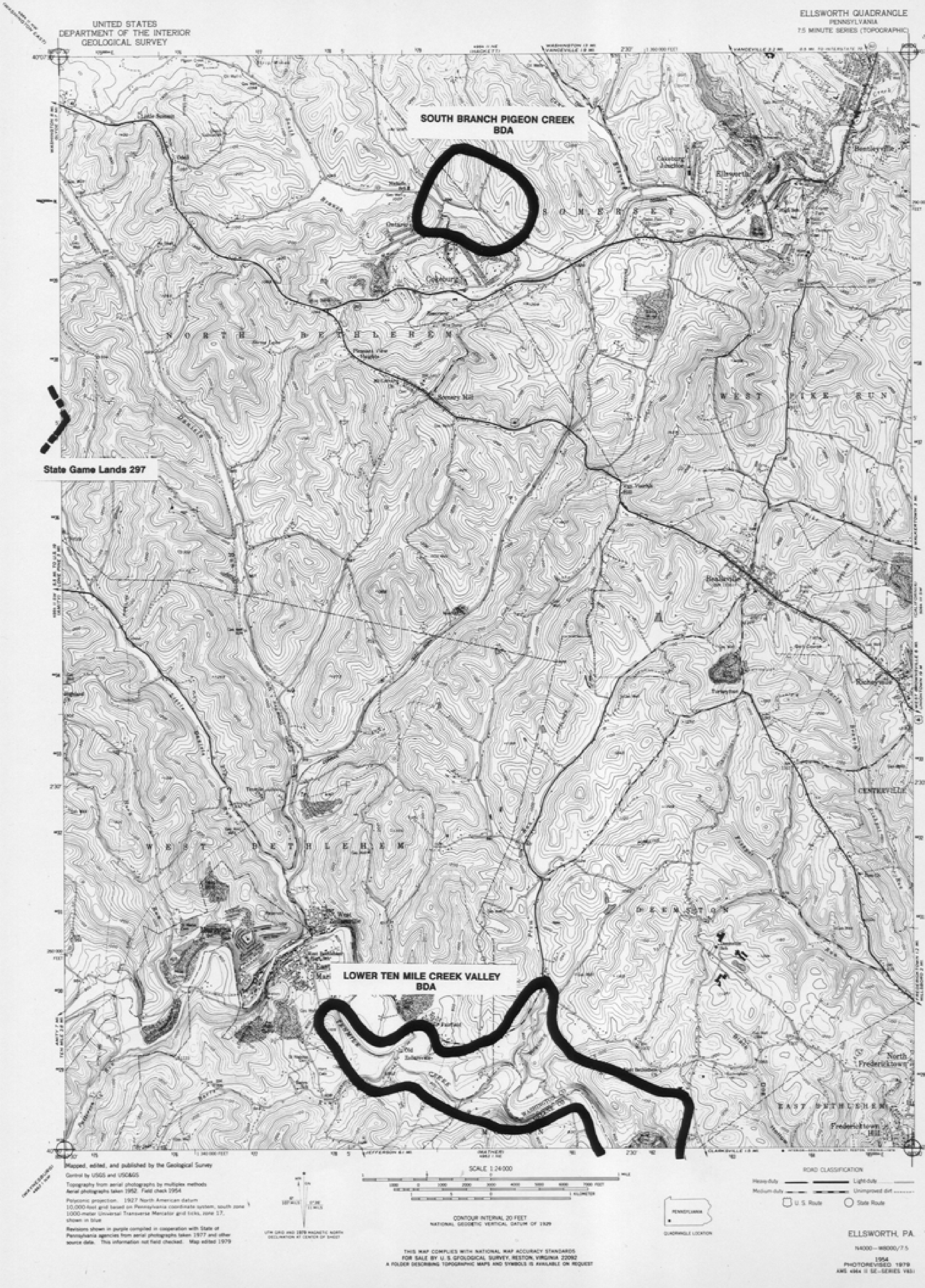
Although this community type may have been the predominate forest cover for much of the upland areas in the county, good examples are difficult to find with nearly all upland areas in agriculture. The uplands adjacent to this site have been extensively cleared for camping and

target practice activities. Also, the tributary stream flowing through the BDA was dammed for recreational activities and subsequently drained. It is recommended that this community be set aside within the context of the Ringlands LCA and that uplands areas be permitted to revert to forest and provide buffer and room for the community to expand. Such areas would also provide the kind of habitat often managed for by hunting and fishing clubs, including the one occupying part of this site. Also, removal of trees, living or dead; use of motorized vehicles; and planting of monocultures (pine plantations) or non-native trees (e.g. norway spruce (*Picea abies*)) are not recommended.

USGS QUADRANGLE **ELLSWORTH**

		PNDI Rank		Legal Status		Last
		Global	State	Fed.	State	Seen
LOWER TEN MILE CREEK VALLEY BDA	*Exceptional Significance*					
NATURAL COMMUNITY:	NC001	G?	S2S3	N	N	9/93
NATURAL COMMUNITY:	NC002	G?	S1	N	N	8/93
NATURAL COMMUNITY	NC003	G5	S4S5	N	N	9/93
NATURAL COMMUNITY	NC004	G?	S2	N	N	9/93
NATURAL COMMUNITY	NC005	G?	S5	N	N	7/93
NATURAL COMMUNITY	NC006	G?	S5	N	N	7/93
SPECIAL PLANT	SP001	G3	S1	N	PE	9/93
SOUTH BRANCH PIGEON CREEK WETLANDS BDA	*Notable Significance*					
NATURAL COMMUNITY	NC008	G?	S1	N	N	8/93
NATURAL COMMUNITY	NC009	G?	S2	N	N	8/93

MANAGED LANDS: State Game Lands 297



UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
ELLSWORTH QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
SOUTH BRANCH PIGEON CREEK
BDA
State Game Lands 297
NORTH BETHLEHEM
SOMERSET
WEST PIKE RUN
WEST BETHLEHEM
DEEMSTON
EAST BETHLEHEM
CENTERVILLE
Ellsworth
Bentleyville
Cokeburg
Beallsville
LOWER TEN MILE CREEK VALLEY
BDA
North Fredericktown
Fredericktown
Mapped, edited, and published by the Geological Survey
Control by USGS and USC&GS
Topography from aerial photographs by multiplex methods
Aerial photographs taken 1952. Field check 1954
Polyconic projection. 1927 North American datum
10,000-foot grid based on Pennsylvania coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks, zone 17, shown in blue
Revisions shown in purple compiled in cooperation with State of Pennsylvania agencies from aerial photographs taken 1977 and other source data. This information not field checked. Map edited 1979
SCALE 1:24 000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST
ROAD CLASSIFICATION
Heavy-duty
Light-duty
Medium-duty
Unimproved dirt
U. S. Route
State Route
QUADRANGLE LOCATION
ELLSWORTH, PA.
N4000—W8000/7.5
1954
PHOTOREVISED 1979
AMS 4964 II SE—SERIES V831

ELLSWORTH

Washington County covers all but the southwestern corner of the Ellsworth quadrangle where Ten Mile Creek winds through the town of Marianna and forms the border between Washington and Greene Counties, just to the east of Marianna. The Ten Mile Creek Watershed drains all the southern and central portions of this quadrangle, and the Pigeon Creek Watershed drains the remaining northern sections. The Ellsworth quadrangle includes a number of forest communities, a plant of special concern in Pennsylvania, a cliff community, a river gravel community, and a wetland community.

In this part of the county, Ten Mile Creek nears its confluence with its southern fork and shortly thereafter, its confluence with the Monongahela River. At this point, Ten Mile Creek runs as a high volume, low-medium gradient stream. Over the centuries, it has meandered through the valley, leaving a broad floodplain and downcutting its outer banks, creating progressively steeper and higher escarpments and exposing numerous rock strata in the process. The steep slopes and cliffs that rise above these entrenched meanders of Ten Mile Creek support several unique communities, the type and character of the community depending upon the type of rock and soil predominating on the slopes. These communities are the focus of the **Lower Ten Mile Creek Valley BDA** - a Community/Ecosystem Conservation Area, a High Diversity Area, and a Special Species Habitat.

Along a particularly tortuous double 180-degree turn of Ten Mile Creek east of Marianna, significant sections of Pittsburgh limestone lay exposed or under a thin mantle of soil on the steep outside bends of the creek. This section of the creek includes the mouth of Plum Run and supports a number of natural communities. On sections of the steep, dry, south-facing slopes, chinkapin oak (*Quercus muehlenbergii*), white oak (*Q. alba*), basswood (*Tilia sp.*) and sugar maple (*Acer saccharum*) form a partially open canopy under which redbud (*Cercis canadensis*), flowering dogwood (*Cornus florida*), and further down the slope, bladdernut (*Staphylea trifolia*) grow. This community, known as a Dry-Mesic Calcareous Central Forest (**NC001**), confirms the alkaline nature of the soils and underlying geology on these slopes. Intermixed within this community, especially on the upper slopes, are large blocks of exposed bedrock and very open conditions. These areas make up a Calcareous Rocky Summit Community (**NC002**) that, along with the dry-mesic forest community, support a number of plants that are restricted to limestone influenced areas - plants like round-leaved ragwort (*Senecio obovatus*), eastern red cedar (*Juniperus viginiana*), and a plant of special concern in Pennsylvania (**SP001**). Also, a rare insect in Pennsylvania feeds exclusively on a plant present in these communities. No work has yet been done to confirm the presence of this insect in the Ten Mile Creek/Plum Run BDA.

The north-facing slopes within the Ten Mile Creek/Plum Creek BDA, although equally steep, support a more mesic forest community dominated by sugar maple, beech (*Fagus grandifolia*), white ash (*Fraxinus americana*), and red oak (*Quercus rubra*). Scattered American

yew (*Taxus canadensis*), along with the beech and sugar maple, show the affinity of this community with the northern forests in Pennsylvania. Also, these slopes do not show the degree of alkaline influence that the limestone outcrops and soils provide on the south-facing slopes. However, this example of a Mesic Central Forest Community (**NC003**) is sizeable and provides continuity to the creek corridor and linkage between the natural communities included within this BDA.

Given the steepness of and difficult access to these slopes, they do not face the direct threats from development and agricultural use that many of the upland areas do. However, buffer afforded by the adjacent uplands is generally lacking, and open fields and rough lawns that border these areas encourage invasion by weedy and exotic species, and can produce changes in the pattern of erosion - a process that is very critical to these communities. Also, utility R.O.W.'s that cross or parallel the slopes can open the communities to invasive species, lead to alteration in erosional patterns and, if herbicides are used to maintain an open corridor, affect the general health of the communities. It is recommended that larger upland buffers be created to protect these communities, that herbicides should not be used, and that use of heavy equipment be avoided within the BDA. Also, pending further investigation of the insect fauna associated with these communities, pesticides should not be applied with the BDA.

Also within this BDA are a series of small cobble islands and shoreline, and a large backwater channel that parallels the creek for several hundred meters. Designated as a River Gravel Community (**NC004**), these kinds of communities are fairly common along the lower sections of Ten Mile Creek and other large drainages in Washington County. This stretch of Ten Mile Creek contains some of the least disturbed and extensive cobble features. Dominated by water willow (*Justicia americana*), these areas provide a unique habitat for a variety of plants and associated animals that are adapted to periods of immersion followed by periods of extreme dryness. These communities would be adversely affected by increased siltation adjacent to, or for some distance upstream. Activities in the immediate watershed should be designed carefully to avoid increasing erosion and siltation. Protecting the slope communities discussed above would also provide protection to these river gravel communities.

Upstream from the Plum Run section of the Ten Mile Creek Valley lie other sections of steep slope along Ten Mile Creek. Located along the lower part of Barrs Run and its confluence with Ten Mile Creek, one section of slope contains a patch of Dry-Mesic Acidic Central Forest (**NC005**) and an Acidic Cliff Community (**NC006**). Bordered by Barrs Run and the town of Old Zolarsville to the west and agricultural fields to the east, this narrow section of forest and cliff shows a northern affinity with eastern hemlock (*Tsuga canadensis*) saplings growing under a canopy of sugar maple, red maple (*Acer rubrum*), white and red oak, and beech. Patches of mountain laurel (*Kalmia latifolia*), wild sarsaparilla (*Aralia nudicaulis*), and forked chickweed (*Paronychia canadensis*) as well as shrub-trees like downy serviceberry (*Amelanchier arborea*) and sassafras (*Sassafras albidum*), show the dry, acidic nature of the community. Colonies of polypody fern (*Polypodium virginianum*), wild hydrangea (*Hydrangea arborescens*) and maple-leaved viburnum (*Viburnum acerifolium*) grow on the large blocks of sandstone that form the

cliffs. All but the very steep slopes of this section of this BDA contain relatively young forest and very little transition community from forest to completely open fields. Some of the small ravine tributaries to Barrs Run have been used as trash dumps and brush disposal areas.

Just upstream from Barr Run is another section of sandstone cliff, higher in elevation and more extensive than that along Barrs Run. A similar flora to the Barrs Run area grows on the pockets of soil in the crevices and shelves among the rocks - Virginia creeper (*Parthenocissus quinquefolia*) and marginal wood fern (*Dryopteris marginalis*) being particularly abundant in places, and scattered American yew adding to the diversity of the community.

Protection of these communities will require larger buffer areas to reduce competition from weedy and introduced species like white clover (*Melilotus alba*) and alfalfa (*Medicago sativa*), and to allow the communities room to expand and regenerate. As with many other agricultural areas in the county, expanding buffer area is difficult, however, when areas are retired, abandoned or sold, the opportunity to influence the care and management of these areas exits and should be exercised. These communities would benefit from an expansion of upland buffer. Dumping of trash or brush, cutting of trees or shrubs and use of heavy equipment should be avoided near the slopes.

Just north of Cokeburg, the South Branch of Pigeon Creek runs through a broad valley before meeting the Center Branch less than a mile to the east. Although largely in hay fields and pasture, this section of Pigeon Creek contains narrow sections of Floodplain Swamp Forest (**NC007**) with an open canopy of black willow (*Salix nigra*), American elm (*Ulmus americana*), and green ash (*Fraxinus pensylvanica*), and a dense shrub layer of silky dogwood (*Cornus amomum*), eastern ninebark (*Physocarpus opulifolius*) and willow (*Salix sp.*). A Robust Emergent Marsh (**NC008**) grows in wetter sections of the site. Dominated by broad-leaved cattail (*Typha latifolia*), other species like arrowhead (*Sagittaria latifolia*), sensitive fern (*Onoclea sensibilis*), forget-me-not (*Myosotis scorpioides*), and various grasses and sedges grow in and around the marsh. This area is recognized as a High Diversity Area and is designated as the **South Branch Pigeon Creek Wetlands BDA**.

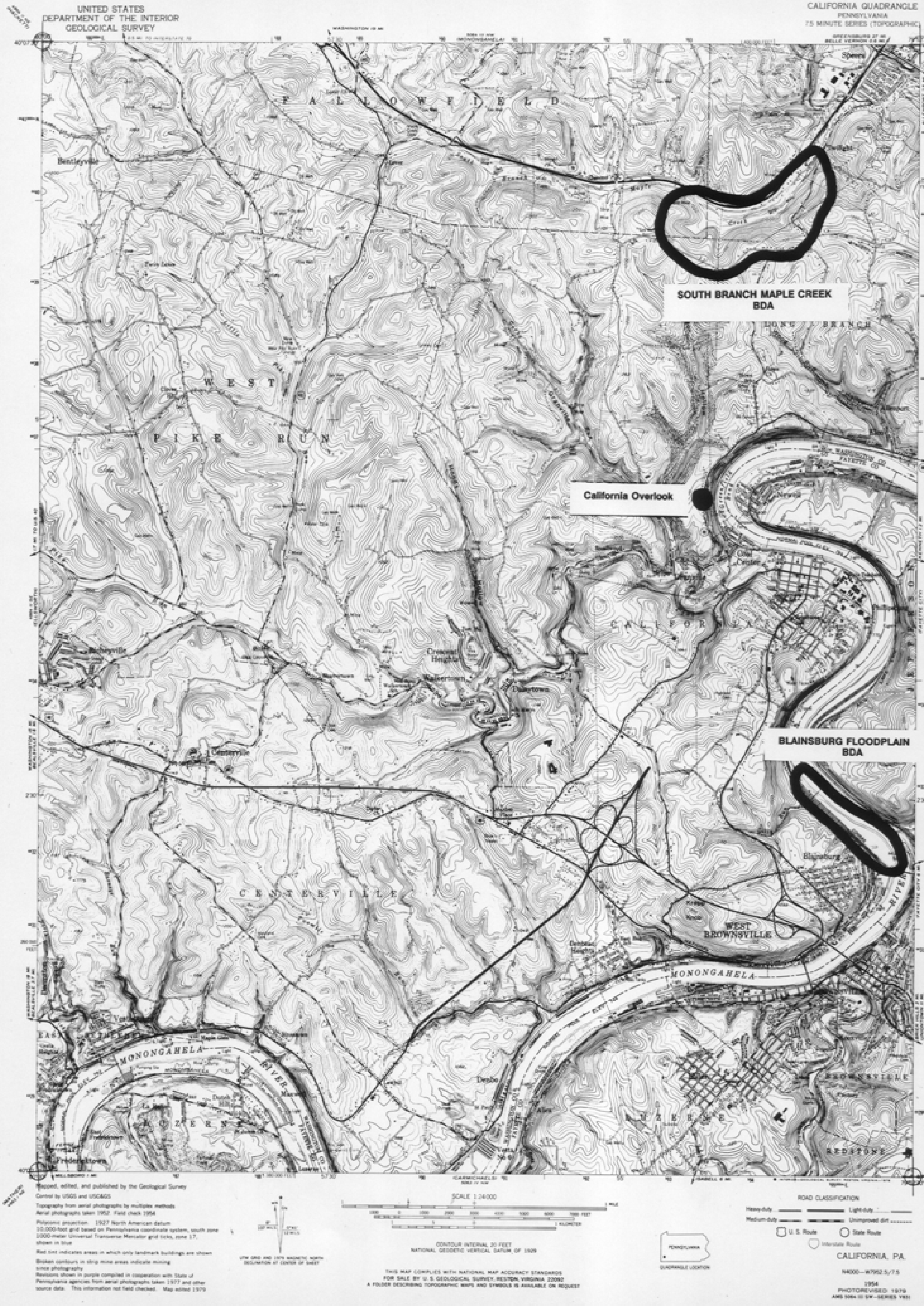
As mentioned, significant portions of this wetland complex are currently farmed. Also, a railbed (rails removed) parallels the stream to the north and crosses to the west at an old iron bridge. What remains of this wetland complex is small and disturbed. However, given the proper protection and management, this area could recover and become an exceptional natural community. As a start, agricultural activity within the BDA would have to be curtailed and the area allowed to succeed to old field and wet meadow. Application of fertilizers and herbicides would have to be controlled in the immediate watershed to avoid polluting the wetland community. Vehicles, particularly farm machinery, would need to avoid crossing the BDA and disturbing recovering vegetation. Because wetlands are rare in Washington County, it is worth considering these kinds of areas as possible restoration/mitigation sites, and to involve planning agencies, extension services and landowners in projects to recover important aspects of

biodiversity in the county.

USGS QUADRANGLE **CALIFORNIA**

		PNDI Rank		Legal Status		Last
		Global	State	Fed.	State	Seen
SOUTH BRANCH MAPLE CREEK BDA	*High Significance*					
NATURAL COMMUNITY	NC001	G?	S2	N	N	7/93
BLAINSBURG FLOODPLAIN BDA	*Notable Significance*					
NATURAL COMMUNITY	NC002	G?	S2	N	N	7/93

GEOLOGICAL FEATURES/FOSSIL LOCALITIES: California Overlook


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
CALIFORNIA QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
FALLOWFIELD
Bentleyville
SOUTH BRANCH MAPLE CREEK
BDA
LONG BRANCH
WEST
PIKE RUN
California Overlook
CALIFORNIA
Crescent Heights
Centerville
BLAINSBURG FLOODPLAIN
BDA
Blainsburg
CENTERVILLE
WEST BROWNSVILLE
MONONGAHELA
RIVER
BROWNSVILLE
LUZERNE
REDSTONE
Fredericktown
Mapped, edited, and published by the Geological Survey
SCALE 1:24 000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST
ROAD CLASSIFICATION
CALIFORNIA, PA.
1954
PHOTOREVISED 1979

CALIFORNIA

The California quadrangle sits in the far southeastern part of Washington county. Bordered by the Monongahela River and Fayette County on the east and south, this section of Washington County is divided among the watersheds of several small tributaries to the Monongahela, including Pikes Run, Twomile Run and Gorby Run. Contained within this section of Washington County is a significant forest community. Just north of the town of Coal Center, the Monongahela River meanders sharply to the west, creating a steep sloped outer bank. The overlook of this meander (known as Greenfield Bend) along Route 88, named the **California Overlook**, is recognized as an outstanding geological site as recognized by Geyer and Boles (1979, 1987). Although this quadrangle does not contain any Managed Lands as described in a previous sections of the report, property belonging to the California school district, the location of the California High School and Middle School, deserves a note.

Large, and containing forested slopes bordering Pike Run, the school property holds both ecological and educational potential. Largely reverting pasture, fields and young forest, the property does contain some pieces of more mature forest, and does show the change in plant communities moving from upland areas into the stream valley. Accessible through a series of marked running trails originating at the school(s), this property would be ideal for the study of the changes associated with succession and development of forest communities. If managed as a natural area, this land would eventually take on county significance as a biodiversity area (BDA) or as another type of Natural Heritage Area (OHA).

The South Branch of Maple Creek flows through the northern part of this quadrangle, running parallel to Interstate 70 and under the first leg of the Mon Valley Expressway - Interstate 43. Just east of I-43 sits a long stretch of forested slope on the south side of Maple Creek. Although disturbed to the west and northeast by previous strip mining activity, a large piece of this forest remains relatively undisturbed and mature. Showing a diversity of upland and bottomland species, this example of a Mesic Central Forest (**NC001**) is the focus of the **South Branch Maple Creek BDA** - a Community/Ecosystem Conservation Area. Sharing the canopy of the forest community are sugar maple (*Acer saccharum*), white ash (*Fraxinus americana*), American beech (*Fagus grandifolia*), slippery elm (*Ulmus rubra*), and red oak (*Quercus rubra*). Also, cucumber magnolia (*Magnolia acuminata*) and some very large sassafras (*Sassafras albidum*) grow within the community. Thick patches of spicebush (*Lindera benzoin*) along with sugar maple, ash and bitternut hickory (*Carya cordiformis*) saplings make up the shrub layer, and touch-me-not (*Impatiens sp.*), mayapple (*Podophyllum peltatum*), and false Solomon's-seal (*Smilicina racemosa*) grow dense and numerous over the ground. The moister areas near the bottom of the slope and the creek support large tuliptree (*Liriodendron tulipifera*) and black walnut (*Juglans nigra*), as well as many of the species mentioned previously.

Separated from a younger forest on the western section of the slope by a powerline

R.O.W., bordered to the south by older residential areas along the road running over the ridge, and cut-off from the northern slopes of the creek by I-70, this site stands as an isolated community. However, it is also large enough to remain viable as an important and natural forest community in the county. Invasion by exotic species like tree-of-heaven (*Ailanthus altissima*), although not a big problem now, threaten the integrity of the site. Efforts should be made to avoid and reduce fragmentation of the forest within this BDA. Residents along the road at the top of the watershed should be encouraged to limit the extent of their cleared space and eliminate, wherever possible, the tree-of-heaven seedlings and saplings growing on their property. The powerline running down the slope, not being a high tension line, should require a relatively narrow R.O.W.. Minimal maintenance of the R.O.W. and encouragement of native shrub and sapling cover is recommended. However, cutting of trees, removal of vegetation and use of motorized vehicles or heavy equipment (except on existing roadways) within the BDA is not recommended.

East of Blainsburg sits a Conrail freight yard that runs parallel with the Monongahela River. Between the yard and the river is a relatively large, partially forested floodplain area recognized as a High Diversity Area and designated as the **Blainsburg Floodplain BDA**. Bushy in most sections with young black willow (*Salix nigra*), cottonwood (*Populus deltoides*), and sycamore (*Platanus occidentalis*), this area is beginning to recover the vegetation and character of the floodplain forest community it once may have supported. Several small pools sit inland from the river in an open section of the floodplain. Shallow but holding water in the mid-summer months, these pools are a unique habitat in Washington County. Vegetated with sedges (*Carex spp.*), soft rush (*Juncus effusus*) and wool grass (*Scirpus cyperinus*), swamp milkweed (*Asclepias incarnata*), blue vervain (*Verbena hastata*) and a variety of other plants, this area appears to also furnish important habitats for native insect populations including odonates (damselflies and dragonflies) and lepidopteran (moths and butterflies). Entomological filed studies are needed assess the insect diversity in and near these site. This area should be protected from application of pesticides due to its potential significance to invertebrate animal populations.

This area should be permitted to recover to forest and no further cutting or clearing of vegetation should take place. Vehicle access to this area, particularly by All Terrain Vehicles (ATV's) and off-road motorcycles, should be restricted and the existing network of dirt roads be allowed to revegetate. Contamination of the floodplain soils with chemicals and materials transported through and transferred in the rail yard should be carefully avoided.

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USGS QUADRANGLE **FAYETTE CITY**

	PNDI Rank		Legal Status		Last
	Global	State	Fed.	State	Seen

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

FAYETTE CITY QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)

Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography from aerial photographs by multiplex methods
Aerial photographs taken 1952. Field check 1954

Polyconic projection. 1927 North American datum
10,000-foot grid based on Pennsylvania coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks, zone 17, shown in blue

To place on the predicted North American Datum 1983 move the projection lines 5 meters south and 19 meters west as shown by dashed corner ticks

Red tint indicates areas in which only landmark buildings are shown

Revisions shown in purple compiled in cooperation with State of Pennsylvania agencies from aerial photographs taken 1977 and other source data. This information not field checked. Map edited 1979

SCALE 1:24 000

CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

ROAD CLASSIFICATION

Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
U.S. Route — State Route

FAYETTE CITY, PA.

N4000—W7945/7.5

1954
PHOTOREVISED 1979
AMS 5064 III SE—SERIES V831

FAYETTE CITY

The Monongahela River forms the border between Fayette and Washington Counties in the Fayette City quadrangle. The small piece of Washington County included in this quadrangle contains a number of very small direct tributaries to the Monongahela River, Hooders Run being the largest. At present, no Natural Heritage Areas have been identified for this section of Washington County.

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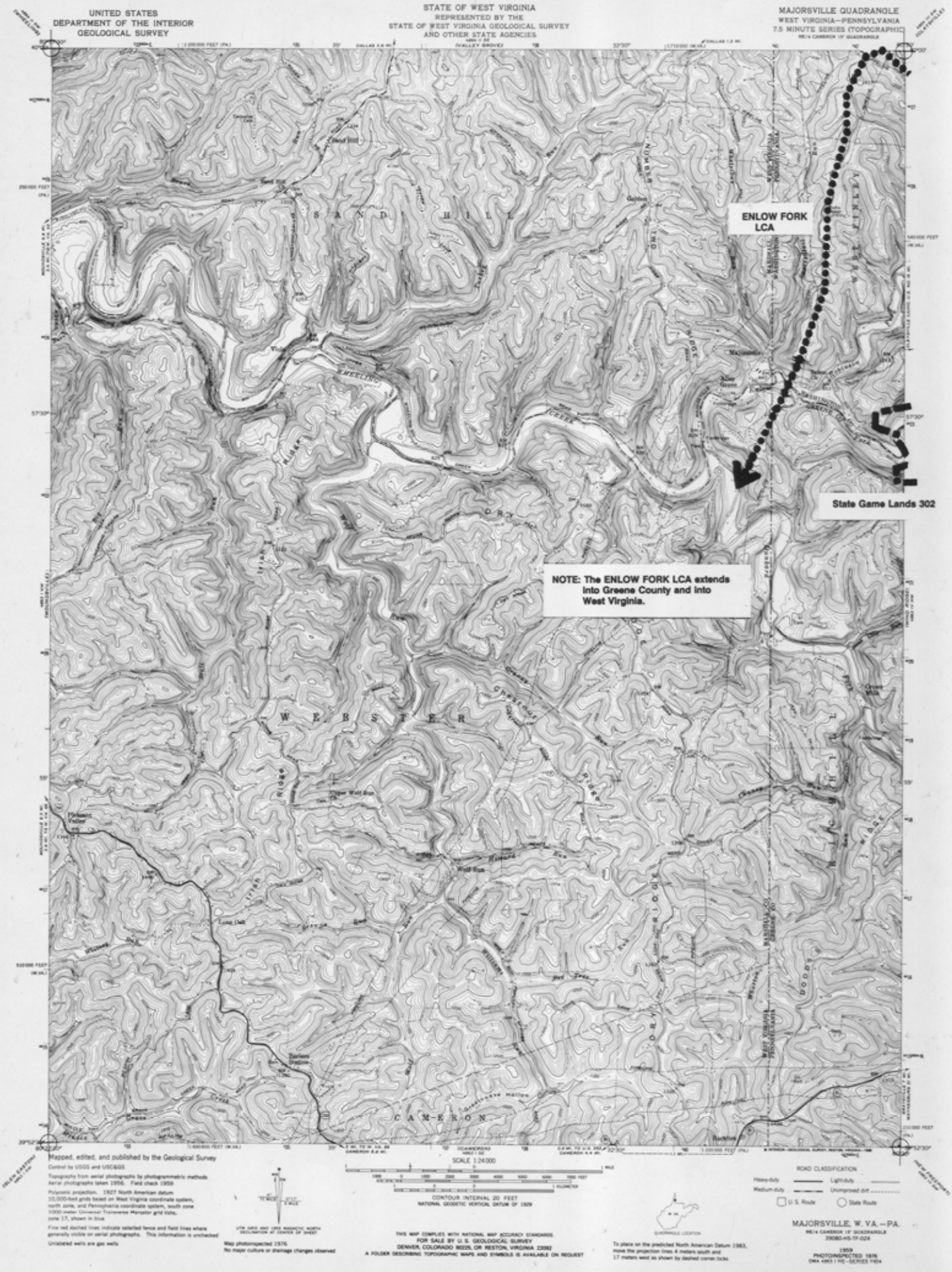
USGS QUADRANGLE **MAJORSVILLE**

	PNDI Rank		Legal Status		Last
	Global	State	Fed.	State	Seen

ENLOW FORK LCA *Exceptional Significance*

MANAGED LANDS: State Game Lands 302


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
STATE OF WEST VIRGINIA
REPRESENTED BY THE
STATE OF WEST VIRGINIA GEOLOGICAL SURVEY
AND OTHER STATE AGENCIES
MAJORSVILLE QUADRANGLE
WEST VIRGINIA—PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
ENLOW FORK
LCA
State Game Lands 302
NOTE: The ENLOW FORK LCA extends
into Greene County and into
West Virginia.
S A N D H I L L
W E B S T E R
C A M E R O N
Mapped, edited, and published by the Geological Survey
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
ROAD CLASSIFICATION
MAJORSVILLE, W. VA.—PA.
1959
PHOTOINSPECTED 1976

MAJORSVILLE

The Majorsville Quadrangle includes only a small piece of Washington County north of the Enlow Fork of Wheeling Creek and east of Majorsville, Ohio. All within West Finley Township, this section of Washington County includes part of the Enlow Fork LCA and a section of **State Game Lands 302**.

The **Enlow Fork LCA** extends down the watershed divide between Robinson Fork and Spottedtail Run and south into Greene County. Described in the Wind Ridge Quadrangle, the recommendations supplied in that quadrangle are applicable here. Stressed again here is the recommendation to direct planning efforts toward reducing fragmentation and preserving large, undeveloped sections of the landscape. With both the Robinson Fork Dam in the Washington County section of the quadrangle and the Enlow Fork Dam across the border in West Virginia, the Game Commission could take advantage of already disturbed habitats just upstream from the dams to manage for wildlife while developing larger, unmanaged core areas to the east in the Wind Ridge quadrangle.

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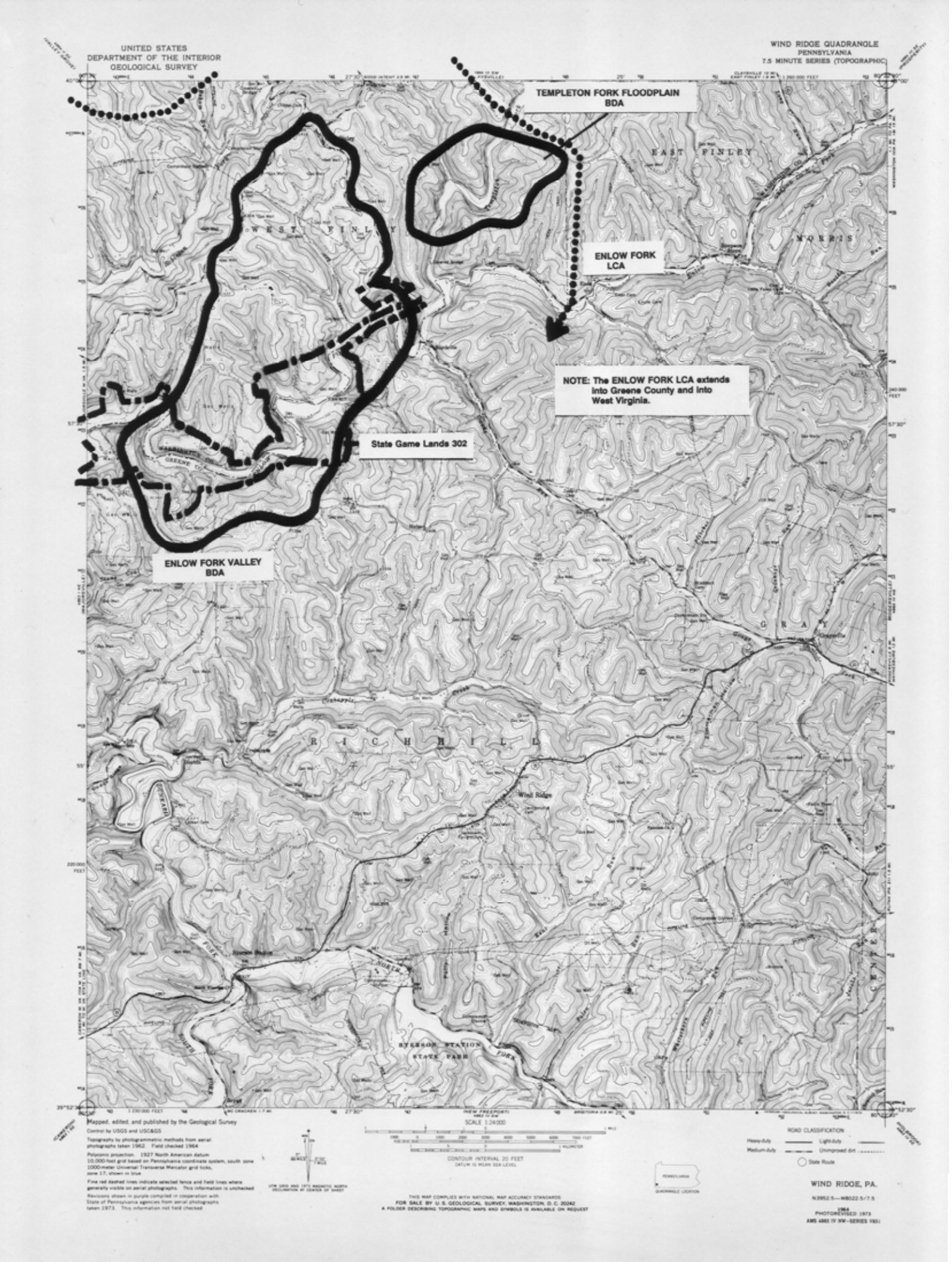
USGS QUADRANGLE **WIND RIDGE**

		PNDI Rank		Legal Status		Last
		Global	State	Fed.	State	Seen
ENLOW FORK LCA	*Exceptional Significance*					
TEMPLETON FORK FLOODPLAIN BDA	*Exceptional Significance*					
NATURAL COMMUNITY:	NC001	G?	S2	N	N	4/93
SPECIAL PLANT:	SP001	G?	S3	N	PR	4/93
ENLOW FORK VALLEY BDA	*Exceptional Significance*					
NATURAL COMMUNITY	NC002	G?	S2	N	N	7/93
NATURAL COMMUNITY	NC002	G?	S2	N	N	7/93
NATURAL COMMUNITY	NC002	G?	S3S4	N	N	7/93
SPECIAL PLANT	SP002	G5	S3	N	PR	4/93
SPECIAL PLANT	SP003	G4G5Q	S2	N	PE	9/84
SPECIAL PLANT	SP004	G5	S1	N	PE	8/84

MANAGED LANDS: State Game Lands 302


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WIND RIDGE QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
TEMPLETON FORK FLOODPLAIN BDA
ENLOW FORK LCA
NOTE: The ENLOW FORK LCA extends into Greene County and into West Virginia.
State Game Lands 302
ENLOW FORK VALLEY BDA
WEST FINLEY
EAST FINLEY
MORRIS
RICHHILL
GRAY
Wind Ridge
RYERSON STATION STATE PARK
Mapped, edited, and published by the Geological Survey
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL
ROAD CLASSIFICATION
WIND RIDGE, PA.
N3952.5—W8022.5/7.5
1964
PHOTOREVISED 1973
AMS 4663 IV NW—SERIES V851

WIND RIDGE

Approximately the northern one quarter of the Wind Ridge Quadrangle lies within Washington County, the remainder lies in Greene County. Enlow Fork of Wheeling Creek marks the border between the two counties and winds through a deeply entrenched section of valley as it flows downstream from Templeton Fork and as it nears the western edge of the quadrangle. Contained within this quadrangle are the Enlow Fork LCA, several sections of floodplain forest, a waterfall and plunge pool community, several forest communities, populations of three plants of special concern, and State Game Lands 302.

Templeton Run winds through a steep-walled valley as it approaches its confluence with Enlow Fork. At one point, it makes a double, nearly 180-degree turn to the north and then back to the south. Along these bends, a long piece of Floodplain Forest (**NC001**) sits tucked between the steep slopes of the valley. Lined with large sycamores (*Platanus occidentalis*), numerous smaller trees like box elder (*Acer negundo*), black willow (*Salix nigra*) and smooth buckeye (*Aesculus glabra*) also grow on the floodplain. An impressive diversity of spring flora covers the ground and lower slopes of the valley and includes a large population of a plant of special concern in Pennsylvania (**SP001**). Designated as the **Templeton Fork BDA**, this Special Species Habitat and Community/Ecosystem Conservation Area is also included in the Enlow Fork LCA (discussed below).

Unfortunately, drilling of vent shafts related to mining activity in the valley has fragmented the community and disrupted some of the habitat for the plant of special concern. Also, timbering of adjacent uplands and slopes may have increased erosion and further compromised the area that buffers the floodplain from other activities in the watershed. The ability of this community to recover from disturbances, up to the present, is good. However, further removal of vegetation, disruption of soils, and creation of R.O.W.'s (roads, powerlines, pipelines, etc.) will probably destroy the ability of this area to recover the natural characteristics that make it a significant area for biodiversity conservation. It is recommended that alternative areas be found for venting methane gas during mining operations and that clearing of vegetation, use of heavy equipment, and construction of utility or road R.O.W.'s through the floodplain be curtailed. Activities on the adjacent slopes and uplands (BDA boundaries) should also be limited, and those that increase erosion or lead to changes in hydrology should not occur.

Extensive sweeps of floodplain cover parts of the lower Enlow Fork Valley. Some sections are forested, others are cleared for hay and crops. A number of small tributaries flow into Enlow Fork, mostly from the north, and along with the floodplain areas, are considered as part of the **Enlow Fork Valley BDA** - a Community/Ecosystem Conservation Area, High Diversity Area, and Special Species Habitat. This section of the Enlow Fork Valley may have, at one time, contained the best examples of floodplain forest in the county. Still, bands of Floodplain Forest (**NC002**) remain, very similar in composition to that within the Templeton

Run BDA but generally less disturbed and, by and large, contained within **Game Lands 302**. Additionally, three plants of special concern grow within this community (**SP002, SP003, SP004**), adding to the diversity and significance of the site. Although cleared and farmed on the upland sections, the tributary valleys themselves are forested and, in some cases, well on their way to becoming mature forest communities. Generally rocky and, on southern exposures, dry, sugar maple (*Acer saccharum*), American beech (*Fagus grandifolia*), basswood (*Tilia americana*) and tuliptree (*Liriodendron tulipifera*) share the canopy with red and white oak (*Quercus rubra* and *Q. alba*). Flowering dogwood (*Cornus florida*), witch hazel (*Hamamelis virginiana*) and spice bush (*Lindera benzoin*) are common understory tree/shrubs, and large-flowered trillium (*Trillium grandiflorum*), black cohosh (*Caulophyllum thalictroides*), wild ginger (*Asarum canadensis*) and twin leaf (*Jeffersonia diphylla*) are among the variety of herbs growing in the valleys. These examples of Mesic Central Forest (**NC003**) are common within Washington County, but are here quite significant because of the size, diversity, and overall contiguousness of the area of which they are a part. Waterfalls are also fairly common along high gradient streams like these tributaries where shales and claystones erode away leaving the more resistant silt, sand and limestones as the lips of rock at the tops of the falls. One particularly good example of a Waterfall and Plunge Pool Community (**NC004**) sits along one of these tributaries. Impressive after a heavy rain, water flows over this two tiered fall, dropping several meters to a small rock shelf and 10 feet again onto large rocks, splashing and misting into a round pool about 15 feet across. Wild hydrangea (*Hydrangea arborescens*), christmas fern (*Polystichum acrostichoides*), pale touch-me-not (*Impatiens pallida*), and rock cress (*Arabis sp.*) grow on the rock outcroppings around the falls, and sphagnum moss (*Sphagnum sp.*) and watercress (*Cardamine sp.*) grow in the wetter areas in or near the stream.

If afforded a strong level of protection within the State Game Lands, the prospect of these communities recovering and maturing is good. However, the game lands do not, in sections, extend beyond the lower slopes above the floodplain, and generally do not encompass even the immediate watershed of the creek. Providing full protection for the floodplain areas will mean protecting at least the immediate watershed of Enlow Fork within the BDA and should also include the tributaries flowing through the floodplain, not only for their ability to influence the hydrology of the floodplain but for the natural communities which they themselves contain.

The PA Game Commission should strongly consider expanding the game lands to include more of the area encompassed by the Enlow Fork Valley BDA, and should be alert for property sales or landowners who may consider selling land to the state. Within the game lands, core areas should be established where little or no management occurs. The already forested sections of floodplain should be part of those unmanaged areas. Efforts should be made to link the fragments of floodplain together and expand these pieces of forest community by allowing key areas to revert to forest. The old Fisher property is one of those key areas. Now largely an expanse of hayfield, this is the largest single, contiguous piece of floodplain (once forested floodplain) in the valley. Planning for the restoration of floodplain forest on this site could provide opportunities for a number of agencies and organizations to become involved in an

unique, progressive, and long-term protection effort for biodiversity in Pennsylvania.

Both of the Templeton Fork Floodplain BDA and the Enlow Fork BDA are included in the larger **Enlow Fork LCA**. Also included are the lower watersheds of Robinson and Templeton Forks and sections of Greene County. The extent of this LCA in Greene County will depend upon the landscape and community features present there and could be linked to the section in Washington County if a Natural Heritage Inventory is completed for Greene County. Within this LCA are agricultural, industrial, and residential areas but largely, the area is undeveloped and relatively remote. The ecological potential for this area is high given the presence of exemplary natural communities and species of special concern, and the large patches of recovering habitat. Also, initial investigations of the insect fauna (particularly moths) in this area by the staff at the Carnegie Museum of Natural History, suggest that the remaining forest communities are rich in native species. It may well be one of the more important habitats for terrestrial invertebrates in the county and in the region. More investigation will be required to better assess the diversity of invertebrates in this area, especially within the forest communities contained within the BDA's. Use of pesticides within this LCA and particularly within the BDA's should be limited to very specific targets and areas to avoid possible impacts to the native insect fauna.

It is recommended that successional lands be allowed to mature and agriculture be confined to those areas currently in use. Any residential development planned for the area should be encouraged in clusters and around existing villages. Industrial development should also be confined to existing sites. Additional utility lines should make use of existing R.O.W.'s and road construction limited to improvement or expansion of existing roads. In general, planning efforts should be focused toward maintaining the rural and natural qualities of the LCA area and toward the enhancement of the natural communities existing and developing there.

USGS QUADRANGLE **ROGERSVILLE**

	PNDI Rank		Legal Status		Last
	Global	State	Fed.	State	Seen

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

ROGERSVILLE QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)

Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography by photogrammetric methods from aerial photographs taken 1963. Field checked 1964

Polyconic projection. 1927 North American datum
10,000-foot grid based on Pennsylvania coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks, zone 17, shown in blue

Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked

Revisions shown in purple compiled in cooperation with State of Pennsylvania agencies from aerial photographs taken 1973. This information not field checked

UTM GRID AND 1973 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

PENNSYLVANIA
QUADRANGLE LOCATION

Map photoinspected 1977
No major culture or drainage changes observed

ROAD CLASSIFICATION

Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
State Route

ROGERSVILLE, PA.

N3952.5—W8015/7.5
PHOTOINSPECTED 1977
1964
PHOTOREVISED 1973
AMS 4963 IV NE—SERIES V831

ROGERSVILLE

The Rogersville quadrangle contains a sliver of southcentral Washington County where the Enlow Fork of Wheeling Creek continues into the Wind Ridge quadrangle along the Greene-Washington County border. This inventory identified no significant Natural Heritage Areas for this small piece of Washington County.

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USGS QUADRANGLE **WAYNESBURG**

PNDI Rank		Legal Status		Last
Global	State	Fed.	State	Seen

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY

WAYNESBURG QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)

Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography by photogrammetric methods from aerial photographs taken 1958. Field checked 1961

Polyconic projection. 1927 North American datum
10,000-foot grid based on Pennsylvania coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks, zone 17, shown in blue

Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked

Red tint indicates area in which only landmark buildings are shown

Map photoinspected 1977
No major culture or drainage changes observed

UTM GRID AND 1973 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24000

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

PENNSYLVANIA
QUADRANGLE LOCATION

Revisions shown in purple compiled in cooperation with State of Pennsylvania agencies from aerial photographs taken 1973. This information not field checked

ROAD CLASSIFICATION

Heavy-duty
Light-duty
Medium-duty
Unimproved dirt
U. S. Route
State Route
Interstate Route

WAYNESBURG, PA.
PHOTOINSPECTED 1977
N3952.5—W8007.5/7.5

1961
PHOTOREVISED 1973
AMS 4963 I NW—SERIES V831

WAYNESBURG

A very small piece of Washington County crosses into the northeast corner of the Waynesburg quadrangle where the Washington-Greene County line marks the watershed divide between the main branch of Ten Mile Creek and its South Fork. Presently, there are no known Natural Heritage Areas within this small portion of Washington County.

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USGS QUADRANGLE **MATHER**

		PNDI Rank		Legal Status		Last
		Global	State	Fed.	State	Seen
LOWER TEN MILE CREEK VALLEY BDA	*Exceptional Significance*					
NATURAL COMMUNITY:	NC001	G?	S2S3	N	N	9/93
NATURAL COMMUNITY:	NC002	G?	S1	N	N	8/93
NATURAL COMMUNITY	NC003	G5	S4S5	N	N	9/93
NATURAL COMMUNITY	NC004	G?	S2	N	N	9/93
NATURAL COMMUNITY	NC005	G?	S5	N	N	7/93
NATURAL COMMUNITY	NC006	G?	S5	N	N	7/93
SPECIAL PLANT	SP001	G3	S1	N	PE	9/93
BLACK DOG HOLLOW SLOPES BDA	*Notable Significance*					
NATURAL COMMUNITY:	NC001	G?	S2S3	N	N	10/93
NATURAL COMMUNITY:	NC001	G?	S2	N	N	10/93

MANAGED LANDS: Ten Mile Creek County Park


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
MATHER QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
LOWER TEN MILE CREEK VALLEY
BDA
BLACK DOG HOLLOW SLOPES
BDA
WEST BETHLEHEM
EAST BETHLEHEM
MORGAN
JEFFERSON
CUMBERLAND
Mather
Clarksville
Millfred Terrace
Mapped, edited, and published by the Geological Survey
Control by USGS, USC&GS, and USCE
Topography by photogrammetric methods from aerial photographs taken 1958. Field checked 1961
Polyconic projection. 1927 North American datum
10,000-foot grid based on Pennsylvania coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks, zone 17, shown in blue
Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked
Revisions shown in purple compiled in cooperation with State of Pennsylvania agencies from aerial photographs taken 1973. This information not field checked
SCALE 1:24000
CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL
ROAD CLASSIFICATION
Heavy-duty
Medium-duty
Light-duty
Unimproved dirt
State Route
MATHER, PA.
N3952.5—W8000/7.5
1961
PHOTOREVISED 1973
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, WASHINGTON, D. C. 20242
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

MATHER

The Mather quadrangle includes only a small section of Washington County north of Ten Mile Creek between the towns of Deemston and Millboro. The smallest of the three county parks in Washington County, **Ten Mile Creek Park**, lies within this quadrangle as does a section of the **Lower Ten Mile Creek Valley BDA** (Discussed in the Ellsworth quadrangle), and several natural communities.

Just west of the confluence of Ten Mile Creek and the Monongahela River, Black Dog Hollow flows into Ten Mile Creek. The steep slopes facing Ten Mile Creek and those of Black Dog Hollow support a **Dry-mesic Calcareous Central Forest Community** (**NC001**) dominated by sugar maple (*Acer saccharum*), white oak (*Quercus alba*), chinkapin oak (*Quercus muehlenbergii*), and beech (*Fagus grandifolia*). Smaller trees like pawpaw (*Asimina trifolia*) and redbud (*Cercis canadensis*) grow densely along the steeper parts of the slopes and at the bases of the rock outcroppings and cliffs. Poison ivy (*Toxicodendron radicans*), several aster species (*Aster spp.*), round-leaved ragwort (*Senecio obovatus*), wild ginger (*Asarum canadensis*), and numerous other plants form a sparse ground cover over much of the area. Recognized as a High Diversity Area, the inventory has designated this site as the **Black Dog Hollow Slopes BDA**. The cliffs and outcrops within this BDA are impressive and likely a conglomeration of sandstone, siltstone and limestone layers. Classified as a Calcareous Cliff Community (**NC002**), this unique habitat will require further investigation to determine fully the diversity of species present.

A paved road runs up Black Dog Hollow and a large mining operation exists on the upper portion the Valley. Houses are being constructed on the uplands above the Ten Mile Creek Valley just east of Black Dog Hollow. Other disturbance within the BDA include: several powerline R.O.W.'s, off road vehicle trails, and several small dump sites. The forest on the uplands is considerably younger than that on the slopes, but does provide important buffer to the site. It is recommended that no further development occur within the BDA and that vegetation on the uplands not be cut or removed. Areas now covered by young forest should be permitted to mature without disturbance and all but passive activities (walking, hiking, etc.) should be excluded from the slopes.

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USGS QUADRANGLE **CARMICHAELS**

	PNDI Rank		Legal Status		Last
	Global	State	Fed.	State	Seen

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

CARMICHAELS QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)

Mapped, edited, and published by the Geological Survey

Control by USGS, USC&GS, and USCE

Topography by photogrammetric methods from aerial photographs taken 1962 and 1963. Field checked 1964

Polyconic projection. 1927 North American datum
10,000-foot grid based on Pennsylvania coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks, zone 17, shown in blue

Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked

There may be private inholdings within the boundaries of the National or State reservations shown on this map

The difference between 1927 North American Datum and North American Datum of 1983 (NAD 83) for 7.5-minute intersections is given in USGS Bulletin 1875. The NAD 83 is shown by dashed corner ticks

UTM GRID AND 1979 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

Map photoinspected 1988
No major culture or drainage changes observed

SCALE 1:24 000

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY
DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

PENNSYLVANIA
QUADRANGLE LOCATION

Revisions shown in purple compiled in cooperation with State of Pennsylvania agencies from aerial photographs taken 1977 and other source data. This information not field checked. Map edited 1979

Boundary lines shown in purple compiled from latest information available from the controlling authority

ROAD CLASSIFICATION

Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
State Route

CARMICHAELS, PA.

39079-H8-TF-024
PHOTOINSPECTED 1988
1964
PHOTOREVISED 1979
DMA 5063 IV NW—SERIES V831

CARMICHAELS

Two very small fingers of southeastern Washington County cross into the Carmichaels quadrangle - the Monongahela River forming the Fayette-Washington County border in both cases. No significant Natural Heritage Areas are currently recognized for this portion of Washington County.

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APPENDICES

APPENDIX I
COUNTY SIGNIFICANCE RANKS

The natural heritage sites that have qualified for inclusion in this report are ranked according to their significance as areas of importance to the biological diversity and ecological integrity of the county. Also included in this evaluation is the level of state and/or global significance ("S" or "G" rank). The three county significance ranks are **Exceptional**, **High**, and **Notable** significance. The three county ranks have been used to prioritize all identified sites and suggest the relative attention that sites should receive for the amount, degree and rate of protection. The sites are in alphabetical order for each level. Designation as to type of natural heritage site (NA=Natural Area, BDA=Biological Diversity Area, DA=Dedicated Area, LCA=Landscape Conservation Area, OHA=Other Heritage Area) is included as part of the site name. Refer to the "Natural Heritage Areas Classification" section for explanations of these site categories.

Significance Rank	Explanation
EXCEPTIONAL	Outstanding county significance. Sites that represent areas of great importance for the biological diversity and ecological integrity of the county, state and/or region. One or more occurrences of state or national species of special concern, a rare natural community type, a relatively undisturbed natural area, or high quality biological diversity area, is present at the site. Sites of high county significance merit quick, strong and complete protection.
HIGH	Important county significance. Sites that represent vital areas of the county's biological and ecosystem resources and have not been overly disturbed by human activities. Also occasionally included are sites that have less important occurrences of state or nationally imperiled species and/or natural communities. These sites represent notable areas harboring important natural resources that merit complete protection in the near future.
NOTABLE	General county significance. Sites that harbor many of the flora, fauna and natural community resources in the county, and although somewhat disturbed by human activities, still represent areas that provide habitat, open space, educational lands and general landscape and/or watershed protection. These sites will be increasingly important to the future quality of the county's overall environment, and merit the attention of planners and conservationists so that their present condition can be maintained.

APPENDIX II
PENNSYLVANIA NATURAL DIVERSITY INVENTORY

The Pennsylvania Natural Diversity Inventory (PNDI) was established in 1982 as a joint effort of the Western Pennsylvania Conservancy, the Pennsylvania Department of Environmental Resources (D.E.R.)-Bureau of Forestry, and the Pennsylvania Science Office of The Nature Conservancy. The Nature Conservancy developed and continues to refine the methodology that PNDI uses as part of a network of "Natural Heritage Programs" around the country. Heritage Programs are now established in each of the 50 United States, as well as in Canada and Latin America.

PNDI uses as computer indexed data base that contains location and baseline ecological information about rare plants, rare animals, unique plant communities, significant habitats and geologic features in Pennsylvania. Presently, PNDI is Pennsylvania's chief storehouse of such information with approximately 9,000 detailed occurrence records stored on computer and cross referenced to location on 881 7.5-minute United States Geologic Survey (USGS) topographic maps that cover Pennsylvania. Extensive manual files store additional information covering over 150 natural community types, over 800 plant and animal species, and about 1100 managed areas.

PNDI uses a system of "global ranks" and "state ranks" to describe the relative degree of rarity for species and natural communities. This system puts the status of these biotic resources into perspective, especially those resources that do not have official state status, such as invertebrate animals and natural communities of organisms. Appendix I provides a summary of global and state ranks. Appendix II provides a separate county ranking system.

The value of PNDI lies largely in its ability to supply technically sound information about natural ecological resources, including those that are rare and possibly regulated (e.g. endangered species). Knowing about such resources as early as possible can greatly streamline decision making concerning land-use in the counties. Information on the occurrences of elements (species and natural communities) of special concern has been gathered from museums, universities, colleges, and recent field work by professionals throughout the state. County Inventories, including this one, employ the same approach in identifying the areas of highest natural integrity and significance.

For more information regarding PNDI contact the Department of Environmental Resources at (717) 783-0388.

APPENDIX III

NATURAL HERITAGE SITE RECOMMENDATION FORM

Your Name:_____ Phone: _____Address:

A natural heritage site is an important biotic (living) resource such as an exemplary natural area (e.g. an old-growth forest community, habitat for endangered, threatened or rare plants or animals) or areas that are important for open space, wildlife habitat, or educational/scientific purposes.

Site Name and Ownership:_____Exact Location of Site (please be specific and include a map or sketch):

Size of Site (approximate acres):_____ Date of Observation: _____ Site Type:

___ Mature Forest
___ Forested Swamp
___ Shrub Swamp
___ Marsh
___ Bog
___ Natural Pond or Lake
___ High Quality Stream
___ Habitat for Rare Species
___ Rock Outcrop or Cliff
___ Cave
___ Other

Written Description of Site: Try to convey a mental image of the sites features by including vegetation, significant plants and animals, aquatic features, land forms, geologic features, etc.:

Evidence of Disturbance (logging, mining, erosion, sedimentation, filling, draining, grazing, etc.):

Please attach any additional information, species list, maps, etc.. Send completed report forms to Jeff Wagner, Western Pennsylvania Conservancy, 316 Fourth Ave., Pittsburgh, PA 15222, (412)288-2777. Additional forms may be obtained from this office. Thank you for your contribution to the Washington County Natural Heritage Inventory.

APPENDIX IV

WASHINGTON COUNTY NATURAL HERITAGE INVENTORY
SITE SURVEY FORM

Site Name:

County: ____ Municipality:

Quad Name:_____ Quad Code:_____ 10,10:

Reference:

Land Owners (include best method of contact, date contacted, and method of permission):

Directions to Site:

Site Elevation:_____ Site Size:_____ Aspect:

Aerial Photo Int. Air Photo #:_____ Photo Type:_____Comments from Aerial Photo Interpretation:

Aerial Reconnaissance Date:_____ Team:

Comments from Aerial Survey:

Ground Survey Date:_____ Team:

Community(s) Type:

Setting of Community(s):

Conditions:

Description of site (quality, vegetation, significant species, aquatic features, notable landforms, natural hazards, age, etc.):

Evidence of Disturbance (logging, grazing, mining, past agriculture, erosion, sedimentation, filling, draining, exotic flora, etc.):

APPENDIX IV (CONT.)

WASHINGTON COUNTY NATURAL HERITAGE INVENTORY
SITE SURVEY FORM (CONT.)

Recovery Potential:_____
Surrounding Land Use:_____
Threats to Site and Management/Protection: _____
_____
_____
Previously Identified EO's:_____
_____
_____ Species:
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Accepted for inclusion in report: _____ Rejected: _____ Date:
Reason:_____
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_____

APPENDIX V
CLASSIFICATION OF NATURAL COMMUNITIES
IN PENNSYLVANIA
(DRAFT)

COMMUNITY NAME	GLOBAL RANK	STATE RANK
ESTUARINE COMMUNITIES		
Deepwater Subtidal Community	G?	S1
Shallow-Water Subtidal Community	G?	S1
Freshwater Intertidal Mudflat	G3G4	S1
Freshwater Intertidal Marsh	G3G4	S1
RIVERINE COMMUNITIES		
Low-Gradient Ephemeral/Intermittent Creek	G?	S5
Low-Gradient Clearwater Creek	G?	S3S4
Low-Gradient Clearwater River	G?	S2S3
Low-Gradient Brownwater Creek	G?	S2S3
Medium-Gradient Ephemeral/Intermittent Creek	G?	S5
Medium-Gradient Clearwater Creek	G?	S3
Medium-Gradient Clearwater River	G?	S?
Medium-Gradient Brownwater Creek	G?	S3
High-Gradient Ephemeral /Intermittent Creek	G?	S5
High-Gradient Clearwater Creek	G?	S3
High-Gradient Clearwater River	G?	S?
High-Gradient Brownwater Creek	G?	S?
Waterfall and Plungepool	G?	S3S4
Spring Community	G?	S1S2
Spring Run Community	G?	S1S2
LACUSTRINE		
Glacial Lake	G?	S1
Nonglacial Lake	G?	S2
Artificial Lake	G?	S?
Natural Pond	G?	S2S3
Artificial Pond	G?	S?
Stable Natural Pool	G?	S?
Ephemeral/Fluctuating Natural Pool	G?	S1
Artificial Pool	G?	S?
Ephemeral/Fluctuating Limestone Sinkhole	G?	S1

Appendix V (Cont.)

COMMUNITY NAME	GLOBAL RANK	STATE RANK
PALUSTRINE COMMUNITIES		
Acidic Broadleaf Swamp	G5	S1S2
Circumneutral Broadleaf Swamp	G?	S2S3
Boreal Conifer Swamp	G?	S2
Northern Conifer Swamp	G?	S3S4
Broadleaf-Conifer Swamp	G?	S3S4
Floodplain Swamp	G?	S1
Calcareous Seepage Swamp	G?	S1
Acidic Shrub Swamp	G5	S3
Circumneutral Shrub Swamp	G?	S3
Graminoid Marsh	G?	S3
Robust Emergent Marsh	G?	S2
Mixed Graminoid-Robust Emergent Marsh	G?	S2S3
Calcareous Marsh	G?	S1
Glacial Bog	G?	S2S3
Nonglacial Bog	G?	S3
Reconstituted Bog	G?	S?
Shrub Fen	G2G3	S1
Basin Graminoid-Forb Fen	G?	S1
Hillside Graminoid-Forb Fen	G?	S1
Circumneutral Seep Community	G?	S3?
Calcareous Seep Community	G?	S1
Acidic Seep Community	G?	S3?
Riverside Seep Community	G?	S2?
TERRESTRIAL COMMUNITIES		
Boreal Forest	G?	S?
Northern Conifer Forest	G5	S3S4
Northern Hardwood Forest	G?	S3S4
Northern Hardwood-Conifer Forest	G?	S3
Xeric Central Hardwood Forest	G?	S5
Xeric Central Conifer Forest	G?	S3S4
Xeric Central Hardwood-Conifer Forest	G?	S3
Pitch Pine-Scrub Oak Barrens	G2G3	S1S2
Dry-Mesic Acidic Central Forest	G?	S5
Dry-Mesic Calcareous Central Forest	G?	S2S3
Mesic Central Forest	G?	S2

Appendix V (Cont.)

COMMUNITY NAME	GLOBAL RANK	STATE RANK
Talus Slope Forest	G?	S2?
Coastal Plain Forest	G?	S1
Floodplain Forest	G?	S2
River Gravel Community	G?	S4S5
Eastern Serpentine Barrens	G2	S1
Appalachian Shale Barren	G?	S1
Appalachian Sand Barren	G?	S?
Boulder Field	G?	S5
Calcareous Cliff Community	G?	S2
Acidic Cliff Community	G?	S5
Shale Cliff Community	G?	S2
Riverside Outcrop Community	G?	S2S2
Calcareous Riverside Outcrop Community	G?	S1
Acidic Rocky Summit Community	G?	S1S2
Calcareous Rocky Summit Community	G?	S1
SUBTERRANEAN COMMUNITIES		
Solution Cave Terrestrial Community	G?	S3
Solution Cave Aquatic Community	G?	S3
Tectonic Cave Community	G?	S3S4
Talus Cave Community	G?	S2S4
DISTURBED COMMUNITIES		
Bare Soil		
Meadow/Pastureland		
Cultivated Land		
Successional Field		
Young Miscellaneous Forest		
Conifer Plantation		

APPENDIX VI

FEDERAL AND STATE SPECIES OF SPECIAL CONCERN CATEGORIES, GLOBAL AND STATE ELEMENT RANKS

Several federal and state legislative acts have provided the authority and means for the designation of endangered, threatened, rare, etc. species lists. Those acts and status summaries follow. However, not all of the species or natural communities considered by conservation biologists (e.g., Pennsylvania Biological Survey) as "special concern resources" are included on the state or federal lists. In this county inventory report, "N" denotes those special concern species that are not officially recognized by state or federal agencies. Therefore: N = No current legal status, but is considered to be of special concern in Pennsylvania, or is under review for such consideration, by conservation biologists. Contact the Pennsylvania Natural Diversity Inventory for more information.

FEDERAL STATUS

All Plants and Animals: Legislative Authority: U.S. Endangered Species Act (1973), U.S. Fish and Wildlife Service, February 21, 1990, Federal Register.

LE = Listed Endangered - Taxa in danger of extinction throughout all or a significant portion of their ranges.

LT = Listed Threatened - Taxa that are likely to become endangered within the foreseeable future throughout all or a significant portion of their ranges.

PE = Proposed Endangered - Taxa already proposed to be listed as endangered.

PT = Proposed Threatened - Taxa already proposed to be listed as threatened.

C1 = Candidate 1 - Taxa for which the Service has on file enough substantial information on biological vulnerability and threat(s) to support proposals to list them as endangered or threatened species. Taxa of known vulnerable status in the recent past that may already havebecome extinct.

C2 = Candidate 2 - Taxa for which there is some evidence of vulnerability but for which there are not enough data to support listing proposals at this time.

C3 = Candidate 3 (See 3A, 3B, 3C below) - Taxa that once were considered for listing as threatened or endangered but are no longer under such consideration. Such taxa are further divided into three subcategories, to indicate the reason(s) for their removal from consideration.

APPENDIX VI (Cont.)

3A = Taxa for which the Service has persuasive evidence of extinction.

3B = Names that, on the basis of current taxonomic understanding (usually as represented in published revisions and monographs) do not represent distinct taxa meeting the Act's definition of "species".

3C = Taxa that have proven to be more abundant or widespread than was previously believed and/or those that are not subject to any identifiable threat.

{N = No current legal status, but is considered to be of special concern in Pennsylvania, or is under review for such consideration, by conservation biologists. Contact the Pennsylvania Natural Diversity Inventory for more information.}

APPENDIX VI (Cont.)

PENNSYLVANIA STATUS

Native Plant Species: Legislative Authority: Title 25 Chapter 82, Conservation of Native Wild Plants, January 1, 1988; Pennsylvania Department of Environmental Resources.

PE = Pennsylvania Endangered - Plant species which are in danger of extinction throughout most or all of their natural range within this Commonwealth, if critical habitat is not maintained or if the species is greatly exploited by man. This classification shall also include any populations of plant species that have been classified as Pennsylvania Extirpated, but which subsequently are found to exist in this Commonwealth.

PT = Pennsylvania Threatened - Plant species which may become endangered throughout most or all of their natural range within this Commonwealth, if critical habitat is not maintained to prevent their future decline, or if the species is greatly exploited by man

PR = Pennsylvania Rare - Plant species which are uncommon within this Commonwealth because they may be found in restricted geographic areas or in low numbers throughout this Commonwealth.

PX = Pennsylvania Extirpated - Plant species believed by the Department to be extinct within this Commonwealth. These plants may or may not be in existence outside the Commonwealth

PV = Pennsylvania Vulnerable - Plant species which are in danger of population decline within this Commonwealth because of their beauty, economic value, use as a cultivar, or other factors which indicate that persons may seek to remove these species from their native habitats.

TU = Tentatively Undetermined - A classification of plant species which are believed to be in danger of population decline, but which cannot presently be included within another classification due to taxonomic uncertainties, limited evidence within historical records, or insufficient data.

{N = No current legal status, but is considered to be of special concern in Pennsylvania, or is under review for such consideration, by conservation biologists. Contact the Pennsylvania Natural Diversity Inventory for more information.}

APPENDIX VI (Cont.)

Wild Birds and Mammals - Legislative Authority: Title 34 Chapter 133, Game and Wildlife Code, revised Dec. 1, 1990 Pennsylvania Game Commission.

PE = Pennsylvania Endangered - Species in imminent danger of extinction or extirpation throughout their range in Pennsylvania if the deleterious factors affecting them continue to operate. These are: 1) species whose numbers have already been reduced to a critically low level or whose habitat has been so drastically reduced or degraded that immediate action is required to prevent their extirpation from the Commonwealth; or 2) species whose extreme rarity or peripherally places them in potential danger of precipitous declines or sudden extirpation throughout their range in Pennsylvania; or 3) species that have been classified as "Pennsylvania Extirpated", but which are subsequently found to exist in Pennsylvania as long as the above conditions 1 or 2 are met; or 4) species determined to be "Endangered" pursuant to the Endangered Species Act of 1973, Public Law 93-205 (87 Stat. 884), as amended.

PT = Pennsylvania Threatened - Species that may become endangered within the foreseeable future throughout their range in Pennsylvania unless the casual factors affecting the organism are abated. These are: 1) species whose population within the Commonwealth are decreasing or have been heavily depleted by adverse factors and while not actually endangered, are still in critical condition; 2) species whose populations may be relatively abundant in the Commonwealth but are under severe threat from serious adverse factors that have been identified and documented; or 3) species whose populations are rare or peripheral and in possible danger of severe decline throughout their range in Pennsylvania; or 4) species determined to be "Threatened" pursuant to the Endangered Species Act of 1973, Public Law 93-205 (87 Stat. 884), as amended, that are not listed as "Pennsylvania Endangered".

{N = No current legal status, but is considered to be of special concern in Pennsylvania, or is under review for such consideration, by conservation biologists. Contact the Pennsylvania Natural Diversity Inventory for more information.}

APPENDIX VI (Cont.)

Fish, Amphibians, Reptiles, and Aquatic Organisms - Legislative Authority: Title 30 Chapter 75, Fish and Boat Code, revised February 9, 1991; Pennsylvania Fish Commission

PE = Pennsylvania Endangered - All species declared by: 1) the Secretary of the United States Department of the Interior to be threatened with extinction and appear on the Endangered Species List or the Native Endangered Species List published in the Federal Register; or 2) have been declared by the Pennsylvania Fish Commission, Executive Director to be threatened with extinction and appear on the Pennsylvania Endangered Species List published by the Pennsylvania Bulletin.

PT = Pennsylvania Threatened - All species declared by: 1) the Secretary of the United States Department of the Interior to be in such small numbers throughout their range that they may become endangered if their environment worsens, and appear on a Threatened Species List published in the Federal Register; or 2) have been declared by the Pennsylvania Fish Commission Executive Director to be in such small numbers throughout their range that they may become endangered if their environment worsens and appear on the Pennsylvania Threatened Species List published in the Pennsylvania Bulletin.

Internal Fish Commission Status Category:

PC = Pennsylvania Candidate - Species that exhibit the potential to become Endangered or Threatened in the future. Pennsylvania populations of these taxa are: 1) "rare" due to their decline, distribution, restricted habitat, etc.; 2) are "at risk" due to aspects of their biology, certain types of human exploitation, or environmental modification; or, 3) are considered "undetermined" because adequate data is not available to assign an accurate status.

This category is unofficial and has no basis in any law (i. e., Chapter 75, Fish and Boat Code), as do the Endangered and Threatened categories.

{N = No current legal status, but is considered to be of special concern in Pennsylvania, or is under review for such consideration, by conservation biologists. Contact the Pennsylvania Natural Diversity Inventory for more information.}

APPENDIX VI (Cont.)

Invertebrates - Pennsylvania Status: No state agency has been assigned to develop regulations to protect terrestrial invertebrates, although a federal status may exist for some species. Aquatic invertebrates are regulated by the Pennsylvania Fish Commission, but have not been listed to date.

Although no invertebrate species are presently state listed, numerous state status and/or state rank designations have been unofficially assigned by conservation biologists. NOTE: Invertebrate species are regularly considered under the U.S. Endangered Species Act for federal status assignments.

{N = No current legal status, but is considered to be of special concern in Pennsylvania, or is under review for such consideration, by conservation biologists. Contact the Pennsylvania Natural Diversity Inventory for more information.}

APPENDIX VI (Cont.)

GLOBAL AND STATE RANKING

Global and State Ranking is a system utilized by the network of 50 state natural heritage programs in the United States. Although similar to the federal and state status designations, the ranking scheme allows the use of one comparative system to "rank" all species in a relative format. Unlike state or federal status designation guidelines, the heritage ranking procedures are also applied to natural community resources. Global ranks consider the imperilment of a species or community throughout its range, while state ranks provide the same assessment within each state. Although there is only one global rank used by the heritage network, state ranks are developed independently and allow a comparison state by state. For more information, contact the Pennsylvania Natural Diversity Inventory.

Global Element Ranks

G1 = Critically imperiled globally because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extinction.

G2 = Imperiled globally because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extinction throughout its range.

G3 = Either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range or because of other factors making it vulnerable to extinction throughout its range; in terms of occurrences, in the range of 21 to 100.

G4 = Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.

G5 = Demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery.

GH = Of historical occurrence throughout its range, i.e., formerly part of the established biota, with the expectation that it may be rediscovered (e.g., Bachman's Warbler).

GU = Possibly in peril range-wide but status uncertain; need more information.

GX = Believed to be extinct throughout its range (e.g., Passenger Pigeon) with virtually no likelihood that it will be rediscovered.

APPENDIX VI (Cont.)

G? = Not ranked to date.

NOTE: The study of naturally occurring biological communities is complex and natural community classification is unresolved both regionally and within Pennsylvania. The Global and State Ranking of natural communities also remains difficult and incomplete. Although many natural community types are clearly identifiable and have been ranked, others are still under review and appear as G? and/or S?.

State Element Ranks

S1 = Critically imperiled in state because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extirpation from the state.

S2 = Imperiled in state because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extirpation from the state.

S3 = Rare or uncommon in state (on the order of 21 to 100 occurrences).

S4 = Apparently secure in state, with many occurrences.

S5 = Demonstrably secure in state and essentially ineradicable under present conditions.

SA = Accidental (occurring only once or a few times) or casual (occurring more regularly although not every year) in state, including species which only sporadically breed in the state.

SE = An exotic established in state; may be native elsewhere in North America (e.g., house finch or catalpa in eastern states).

SH = Of historical occurrence in the state, perhaps having not been verified in the past 20 years, and suspected to be still extant.

SN = Regularly occurring, usually migratory and typically nonbreeding species for which no significant or effective habitat conservation measures can be taken in the state.

SR = Reported from the state, but without persuasive documentation which would provide a basis for either accepting or rejecting (e.g., misidentified specimen) the report.

SU = Possibly in peril in state but status uncertain; need more information.

APPENDIX VI (Concluded)

SX = Apparently extirpated from the state.

SZ = Not of significant conservation concern in the state, invariably because there are no (zero) definable EO's in the state, although the taxon is native and appears regularly in the state.

S? = Not ranked to date.

NOTE: The study of naturally occurring biological communities is complex and natural community classification is unresolved both regionally and within Pennsylvania. The Global and State Ranking of natural communities also remains difficult and incomplete. Although many natural community types are clearly identifiable and have been ranked, others are still under review and appear as G? and/or S?

APPENDIX VII
RESOURCE AGENCIES IN WASHINGTON COUNTY

PENNSYLVANIA NATURAL DIVERSITY INVENTORY:

Department of Environmental Resources
Bureau of Forestry
(717)787-3444

MINERAL EXTRACTION:

Bureau of Mines
Coal Mine Health and Safety
(412)222-6400

Department of Environmental Resources:

Bureau of Mining and Reclamation
(412)925-5500
Division of Mine Subsidence Regulation
(412)941-7100
Bureau of Abandoned Mine Reclamation
(412)472-9666
Bureau of Oil and Gas Management
(412)442-4015

DEVELOPMENT:

Washington County Planning Commission
(412)228-6811

Washington County Redevelopment Authority
(412)228-6875

Washington County Conservation District
(412)228-6774

Department of Environmental Resources
(412)442-4000

APPENDIX VII (cont.)

AGRICULTURE:

U.S. Department of Agriculture
Agricultural Stabilization and Conservation Service
(412)222-6640

U.S. Department of Agriculture
Soil Conservation Service
(412)222-3960

Cooperative Extension Service
(412)228-6881

UTILITY AND ROAD RIGHT-OF-WAYS:

U.S. Department of Agriculture
Soil Conservation Service
(412)222-3960

Department of Environmental Resources
Bureau of Soil and Water Conservation
(412)565-2638