HELL RUN CONSERVATION PLAN

Hell Run Watershed
Lawrence County, Pennsylvania

FALL 2006

Prepared by:
Lawrence County Conservation District &
Friends of McConnell's Mills State Park, Inc.

Sponsored by:
PA Trout Council, Coldwater Heritage Partnership

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Residents of the Hell Run Watershed~ We thank you for taking the time to attend meetings, answer surveys, and for being true protectors of the watershed.

***This report was prepared by*:**

The ***Lawrence Conservation District*** is committed to the protection, stewardship, and conservation of the County's natural resources to ensure a wise balance between the protection of the environment and the benefit of the landowner of the County. The function of the District is to utilize the available technical, financial, and educational resources so that the needs of the local landowner are managed with conservation of the soil, water, and related natural resources.

Friends of McConnells Mill State Park, Inc. strives to preserve by land acquisitions, protect through litigation, and educate the residents and visitors to the commonwealth of Pennsylvania about McConnell's Mills State Park.

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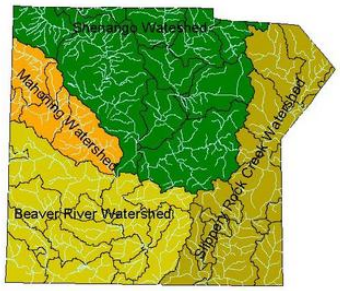
Introduction

The Lawrence County Conservation District and Friends of McConnell's Mill State Park, Inc. in cooperation with the Coldwater Heritage Partnership (CHP) program sponsored the Hell Run Conservation Plan. CHP awarded a $5,000 dollar grant to Lawrence County Conservation District and Friends of McConnell's Mill State Park, Inc. to complete the plan. The plan development process has taken almost eighteen months complete. The Coldwater Heritage Partnership's primary focus is to foster protection and improvement of high quality, coldwater fisheries and waters that contain naturally reproducing trout.

The purpose of this document is to provide baseline watershed data and serve as resource for further watershed protection and restoration efforts. This document is a collation of all documents done within the past few years that have assessed all or portions of the Hell Run Watershed. Hell Run is one of two wild trout streams in Lawrence County supporting naturally reproducing native brown trout. Hell Run is also designated by the Pennsylvania Department of Environmental Protection (PA DEP) as a special protection, exceptional value (EV) stream.

Location



The Hell Run watershed is located in the southeastern portion of Lawrence County, primarily in Slippery Rock Township however, a portion of the headwaters lie in Shenango Township. The stream is an *Exceptional Value (EV)* and wild trout stream that provides the necessary habitat for naturally reproducing, native brown trout. Hell Run is a tributary to the coldwater, trout stocked Slippery Rock Creek that flows through McConnell's Mill State Park. Within the Hell Run watershed and confines of the State Park is a natural area called Hell's Hollow that boasts wildflowers, waterfalls, and unique habitats of ecological value. A one half mile hiking trail along the stream leads to a cascading waterfall and old limekiln.

The main tributary of Hell Run is approximately 4.7 miles long and covers a drainage area of almost six square miles including one of the highest points in Lawrence County; an elevation of approximately 1440 feet. Hell Run originates near the village of Energy in gently rolling terrain comprised mostly of glacial soils. It flows through farmland, pasture, and low density residential surroundings for a little over one mile before experiencing a vertical drop of about sixty feet.

The final two miles of the stream however, flow through a steep-sided, wooded canyon which is a part of McConnell's Mill State Park and the Slippery Rock Creek gorge. Total relief over this reach of Hell Run is about five hundred feet, much of which is accented by bedrock flumes, cascades and a waterfall located in what is now called Hell's Hollow. Steep gradients are mostly associated with headwater streams as a result of the erosional process, whereas Hell Run differs in that it exhibits its steepest gradient near the mouth and approximately the same elevation as the Slippery Rock Creek which it flows into.

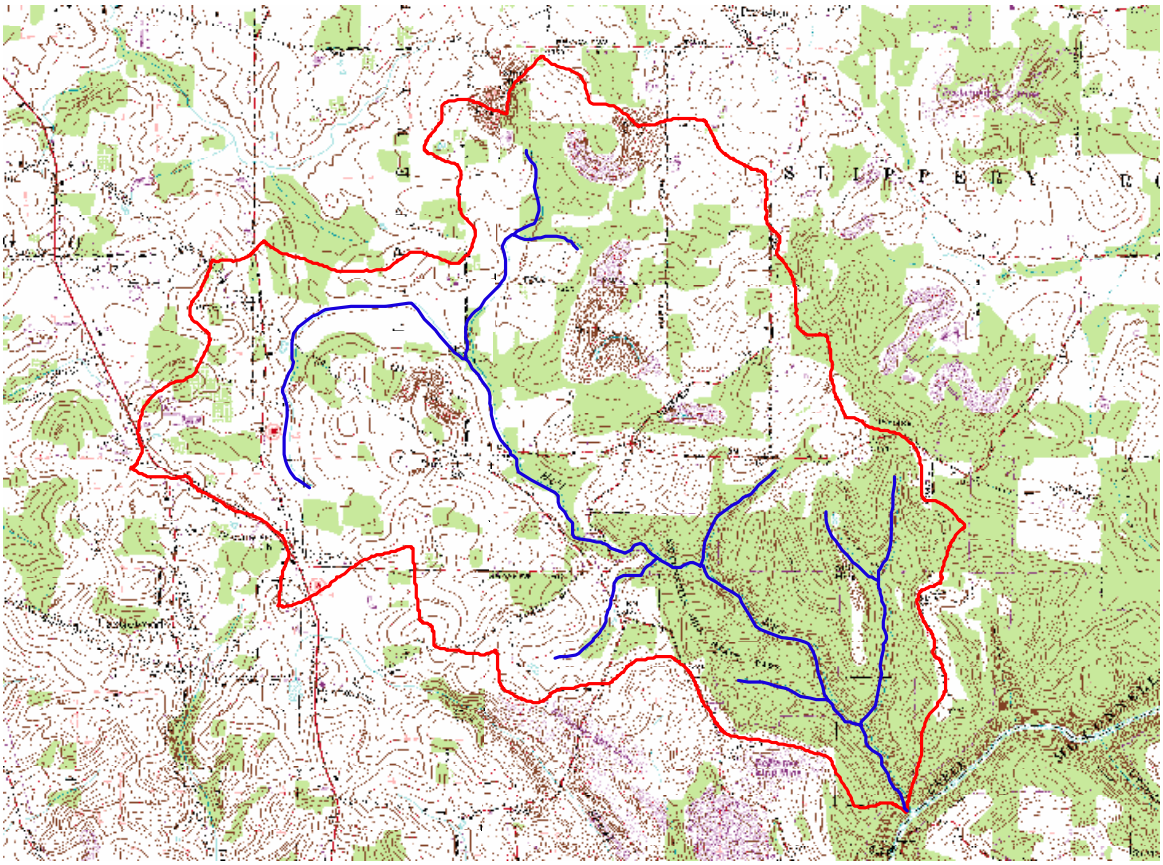
Just as topography and land uses differ between the upper and lower watersheds so does the geology and biology of Hell Run. Higher baseflows, a shading forest canopy, steeper gradient and the lack of development on the lower watershed make it more desirable fish habitat. Very low flows, exposure to full sunlight, siltation from earth moving activities and a general lack of good riffle/pool habitat limit the biology of the upper portion of Hell Run. Because of the remoteness in the lower reaches, the PA Fish and Boat Commission (PA FBC) designated the portion of Hell Run downstream from Shaffer Road where the Hells Hollow Trailhead begins as a Wilderness Trout Stream.

State Park Role

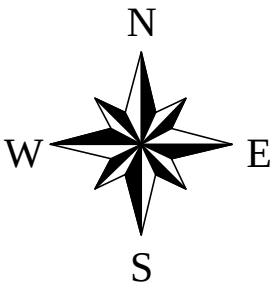
Due to the large portion of property in the watershed being located within state park boundaries and preserved by McConnell's Mill State Park, the Pennsylvania Department of Conservation and Natural Resources (PA DCNR) has been a constant partner in preparing this document. Along with representation at all public meetings, we have included documentation from the State Park Resource Management Plan, and reviews and comments from staff at McConnell's Mill State Park and DCNR.

Data is also included from the Lawrence County Natural Heritage Inventory (NHI) completed in 2004 by the Western Pennsylvania Conservancy and Lawrence County's recently updated Comprehensive Plan. Historical data has been gathered from PA FBC reports along with PA DCNR data. The water quality testing data was gathered from Slippery Rock Stream Keepers, a small non-profit organization.

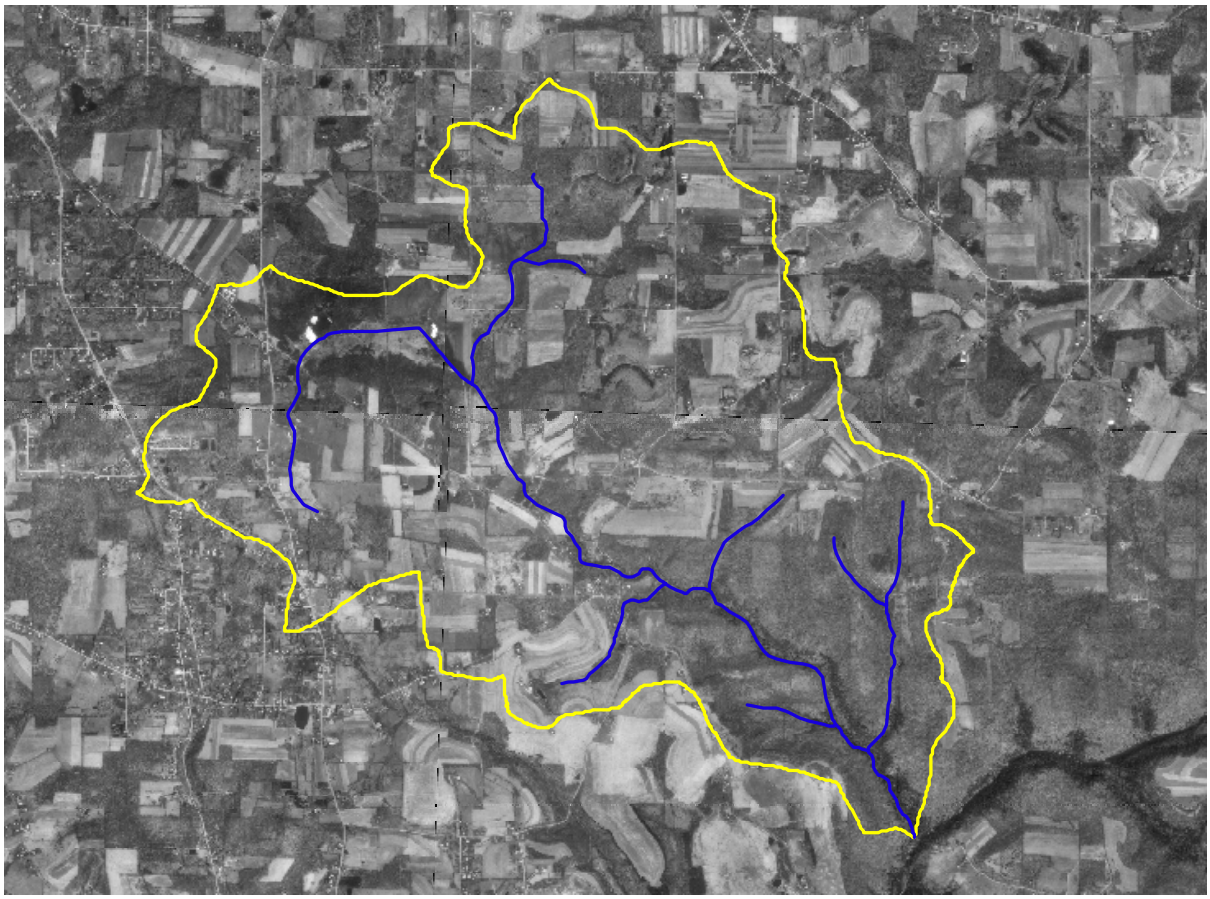
Hell Run Watershed Topographic Map



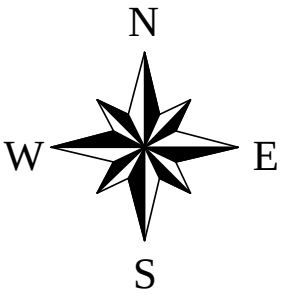
Hell run stream.shp
Hell run watershed.shp



Hell Run Watershed Aerial Photograph



Hell run stream.shp
Hell run watershed.shp



History of the Hell Run Watershed

The Slippery Rock Creek and Hell Run are unique examples of the peculiar landform changes that occurred during the last Ice Age. Glaciers extending south into western Pennsylvania created the landscape we know today. Not only are there unique geologic features present, additional significance of the Hell Run area derives from its naturally reproducing brown trout population in an area of the State that typically doesn't provide suitable habitat for natural reproduction of the species. Hell Run also has wilderness value because there is limited access to the publicly owned portion of the stream and gorge. The flora and fauna that exist in this extremely fragile ecosystem are locally rare but not considered endangered, atypical of this region, and representative of primitive conditions predating white settlement in this area of Pennsylvania.

The municipalities of Slippery Rock and Shenango were settled in the late 1780's. Captain Thomas McConnell's grandfather, Hugh McConnell, came to America and was a soldier in the Revolutionary War. Hugh was a miller by trade and settled in Centre County, Pennsylvania and then later with his son James (Thomas's Father) moved to Crawford County. In 1822, Thomas McConnell was born. The McConnell Family erected a mill on the Shenango Creek at West Middlesex, Mercer County and Thomas McConnell operated the Holstein Mill at Neshannock Falls in Lawrence County. In 1852, Daniel Kennedy built a gristmill on the Slippery Rock Creek. In 1868 that mill burned down but was rebuilt within two years. Thomas McConnell purchased the Mill in 1875.

Since iron ore, limestone, and wood for charcoal were plentiful in the area, iron smelting was a common industrial activity in the mid and late 1800's. An old iron furnace existed in Hell's Hollow. This particular furnace is unique in that the rock of the gorge itself was used as the main body of the furnace. Charging was accomplished through a hole cut in the top of the cliff and the molten iron was tapped through an opening near the base.

On November 28, 1972, McConnell's Mill State Park was designated National Park Service and Secretary of the United States Department of Interior as a registered National Natural Landmark. The designated landmark site consists of 930 acres and includes the portion of the state park adjacent to the Slippery Rock Creek (often referred to as the Slippery Rock Gorge) and Hell Run. The national significance of the site stems from the geological features formed during the drainage of a glacial lake during the last Ice Age that left peculiar landform changes. The gorge also contains an excellent old growth forest which is one of the last unspoiled cool hemlock ravines in the region. Most trees are over 150 years old and predate white settlement of the area. The forest naturally recovered from a hemlock looper infestation in 1952 that killed many of the native hemlock, but an invasion of pileated woodpeckers controlled the beetles and the gorge area has now been largely restored to its primitive conditions.

Additionally, the Heritage Conservation and Recreation Service within the Department of the Interior listed the Slippery Rock Creek and Hell Run in the Nationwide Inventory of Wild and Scenic Rivers. Rivers listed in the inventory are afforded protection by virtue of President Carter's memorandum of August 2, 1979 that requires federal agencies to "take care to avoid or mitigate adverse effects on rivers identified in the Nationwide Inventory."

In the area surrounding McConnell's Mill State Park, eleven mines have been permitted since 1947 and two deep mines prior to state regulations being taking effect. Because of the location of earlier coal strip mining activities and the drainage of the watersheds in the area of Hell Run, there has been little effect on Hell Run by previous mining activities. On March 18, 1979, the Kerry Coal Company of Portersvillle applied to the former PA DEP, Pennsylvania Department of Environmental Resources (DER), for a mining permit that would allow the company to strip and auger mine an approximate 30 acre parcel of land adjacent to McConnell's Mill State Park. This permit application was the subject of much intensive scrutiny by DER and other State agencies as well as interested private organizations and citizens. There was considerable controversy regarding the impact on the Hell Run portion of the Park and national landmark from the mining operation in the area proposed. Ultimately, the permit application went before the Environmental Quality Board (EQB) of the Commonwealth of Pennsylvania and executive reports were sought from the Secretary of the Interior, acting through the Heritage Conservation and Recreation Service and the Advisory Council on Historic Preservation, and the former PA FBC, PA Fish Commission, and DER. Recommendations from state agencies were to prohibit the mining operation and deny the permit application, and to upgrade the streams current designation as a coldwater fishery to a special protection, exceptional value stream. For several months, water quality data and macroinvertebrate data was collected and electroshocking tests conducted to justify the request to upgrade Hell Run to as exceptional value stream, as it later was designated. By a vote of 12-7, the EQB decided to deny Kerry Coal Company's mining permit application and retain the designation of Hell Run as an exceptional value stream.

The controversy over mining impacts to the Hell Run watershed continues even today. Although coal and strip mining activities are prohibited within the watershed because of the exceptional value designation, current limestone mining operations prevail in the Slippery Rock Creek watershed and within hundreds of feet to the McConnell's Mill State Park property. Landowners remember the controversy over the Kerry Coal mining permit and continue to be skeptical of government regulations and property control. The pursuit for mineral resources continues in our society and economic arguments consistently threaten preservation and conservation efforts for unique geological landforms, historically significant landmarks, and biologically diverse ecosystems. The Hell Run Conservation Plan seeks to identify those threats to the

existing integrity of the watershed as well as identify opportunities for protection of the wilderness trout stream and its mutually dependant ecosystem and surrounding land use.

STRATEGIC PLAN FOR THE PROTECTION OF THE SLIPPERY ROCK CREEK GORGE

Rettew Associates prepared the following comments and recommendations in 1995 for the document entitled Strategic Plan for the Protection of the Slippery Rock Creek Gorge. This document was prepared for the Pennsylvania Department of Conservation and Natural Resources and the Pennsylvania Department of Environmental Protection, Bureau of Mining and Reclamation. Local agencies often refer to the document as the Rettew report.

McConnell's Mill State Park is named for a gristmill first owned and operated by David Kennedy. Thomas McConnell purchased the mill in 1875 and operated it until 1928. The property was acquired by Western Pennsylvania Conservancy, and was dedicated as a state park in October 1957. In 1974 the park was registered as a National Natural Landmark.

Water quality samples were taken at quarterly intervals beginning in November 1994. Chemical parameters included specific conductance, dissolved oxygen (DO), pH, total alkalinity and temperature. Hell Run samples were taken just upstream of the point at which it enters the Slippery Rock Creek.

Chemical samples give a snapshot view of the water quality of a particular stream segment at the time the samples were drawn. Aquatic macroinvertebrates are insects, worms and other small organisms without endoskeletons that spend all or part of their life cycles in the stream. Different types and species of aquatic invertebrates have different tolerances to water quality degradation and organic pollution. For instance, many members of the orders *Ephemerptera* (mayflies), *Trichoptera* (caddisflies) and *Plecoptera* (stoneflies) are generally believed to be intolerant of organic pollution loads, while Physid snails, aquatic worms and members of the genus *Chironomus* (midges) are generally quite tolerant of streams with rather poor water quality. Since these different tolerances are known, ecologists can make use of macroinvertebrate population data to determine whether, and to what degree, streams have been polluted. We sampled aquatic macro invertebrates using the Rapid Bioassessment Procedure (USEPA 1989). This procedure involves collecting aquatic invertebrates using seines or kick nets. Organisms collected were preserved and returned to the lab at Clarion University for identification and storage. To further sample invertebrate populations, we collected adult insects using battery operated light traps during August 1995.

Water quality data indicate Slippery Rock Creek and most of the tributaries show rather good water quality. Slippery Rock Creek is listed in Pennsylvania Code Title 25, Chapter 93 as a cold-water fishery. Hell Run is listed as an exceptional value stream. Both of these designations indicate very good water quality in these streams.

Table III-4 lists the results of the chemical water quality studies completed to date. Temperatures for all the sample sites were well within the ranges for exceptional value waters and cold-water streams. August temperatures were much higher than those taken at other times due to normal seasonal variation and the heat wave and drought experienced during the summer of 1995.

Table III-4

	Site	Temp (cent.)				pH			
		05-Nov-94	19-Dec-94	06-Mar-95	07-Aug-95	05-Nov-94	19-Dec-94	06-Mar-95	07-Aug-95
Main Stem	Rose Point	10.8	3.9	4.8	22	8.03	7.85	7.61	7.64
	Eckert Bridge		4.2	4.8	24		7.79	8.19	7.99
	Armstrong	11.3	4.0	5.2	22	8.12	6.98	7.62	8.27
	Camp Allegheny	11.6	4.0	5.4	25	8.22	7.00	8.11	8.12
Tribs	Muddy	12.5	4.2	5.4	25	7.57	7.57	7.12	7.46
	Fox	11.4	3.9	4.7	21	8.18	7.44	7.72	8.15
	Kildoo	12.2	4.6	4.7	22	8.16	7.26	8.10	8.09
	Cheeseman	11.6	4.9	5.4	17	8.02	7.82	8.15	8.18
	Grindstone	10.8	5.4	5.9	14	6.10	6.32	8.32	6.37
	Skunk	11.7	5.2	4.9	24	8.11	7.93	7.58	8.23
	Heinz	11.3	4.7	5.7	21	7.89	6.89	8.21	7.94
	Armstrong		5.1	5.9	23		7.47	7.95	7.66
	Hell's	12.7	3.2	6.2	23	8.08	7.31	8.00	7.97
	Allegheny	12.8	5.2	7.5	26	7.96	6.91	6.74	7.88

	Site	Total Alkalinity			Conductance			
		19-Dec-94	06-Mar-95	07-Aug-95	05-Nov-94	19-Dec-94	06-Mar-95	07-Aug-95
Main Stem	Rose Point	39	39	77	230	160	190	335
	Eckert Bridge	43	40	71		160	180	335
	Armstrong	40	31	65	230	160	165	335
	Camp Allegheny	43	36	71	240	170	200	350
Tribs	Muddy	24	16	21	160	120	150	180
	Fox	60	35	91	281	210	230	390
	Kildoo	116	109	119	520	360	370	410
	Cheeseman	72	48	85	360	330	250	550
	Grindstone	31	17	25	380	360	120	390
	Skunk	83	21	104	650	480	145	830
	Heinz	29	56	39	280	140	420	270
	Armstrong	28	32	39		130	200	230
	Hell's	43	23	60	320	260	270	430
	Allegheny	35	17	51	380	280	320	670

	Site	DO (mg/l)			
		05-Nov-94	19-Dec-94	06-Mar-95	07-Aug-95
Main Stem	Rose Point	11.3	12.4	10.9	8.4
	Eckert Bridge		12.0	10.6	8.8
	Armstrong	11.6	11.4	11.0	9.0
	Camp Allegheny	11.8	11.4	10.9	8.8
Tribs	Muddy	10.8	12.0	10.2	7.4
	Fox	11.5	12.4	9.7	9.0
	Kildoo	9.8	12.2	10.8	7.5
	Cheeseman	10.4	12.2	10.2	8.3
	Grindstone	4.4	9.0	10.6	8.8
	Skunk	10.9	12.8	10.8	8.0
	Heinz	11.1	10.6	10.9	9.2
	Armstrong		12.4	10.7	8.8
	Hell's	10.5	11.0	10.4	10.0
	Allegheny	10.3	12.8	10.0	10.2

The tributaries all had pH's in the circumneutral to basic range. Total alkalinity levels were within normal ranges for streams in this region. Dissolved oxygen measures are important indicators of a streams health. Streams affected with organic pollutants generally have lowered dissolved oxygen levels, as do streams affected by acidic mine drainage. Dissolved oxygen measures were all generally adequate to support aquatic life. Nitrate levels were quite low for all streams except Grindstone Run. Sulfates and Aluminum levels were normal. Calcium levels were highest in Hell Run. Hell Run had the lowest levels of iron. Magnesium was highest at Hell Run (see table III-5).

Table III-5. Summary of water chemistry values for November 7, 1995.

Sample Site	Discharge m^3/s	Turbidity NTU	Hardness mg/l $CaCO_3$	NO_3 mg/l	SO_4 mg/l	Al mg/l	Ca mg/l	Fe mg/l	Mg mg/l	Mn mg/l
Rose Point	---	6.9	197.8	<1	100.8	0.20	59.8	0.50	11.8	0.13
Camp Allegheny	4.79	5.1	346.9	<1	125.1	<0.06	76.5	0.06	37.9	<0.02
Muddy Creek	0.76	1.7	170.2	<1	78.2	0.06	49.8	0.24	11.2	0.17
Fox Run	0.07	35.0	238.9	<1	125.5	<0.06	62.2	0.08	20.2	<0.02
Kildoo Run	0.04	73.0	384.0	<1	255.1	2.54	114.5	1.61	23.8	0.27
Cheeseman Run	0.07	3.5	308.3	<1	192.6	0.10	74.8	0.22	29.6	0.03
Armstrong Run	0.02	1.7	121.4	<1	54.3	<0.06	33.0	0.05	9.4	<0.02
Heinz Camp Run	0.02	4.0	251.6	<1	151.0	0.58	73.2	0.69	16.7	0.10
Skunk Run	0.03	.98	226.3	<1	487.2	0.27	63.8	0.67	16.4	0.23
Hell Run	0.08	10.0	660.8	<1	112.8	<0.06	150.5	0.04	69.2	<0.02
Camp Allegheny Run	0.006	2.6	234.7	<1	269.1	0.26	66.2	0.28	16.8	0.07
Grindstone Run	0.001	8.8	149.3	2.32	62.5	0.20	45.2	1.04	8.8	0.68

In general the main stem of Slippery Rock Creek had greater invertebrate abundance and diversity than did the tributaries. Hell Run had low diversity with just two taxa. In general the invertebrate species present indicate good water quality. *Trichopterans, Ephemeropterans, and Plecopterans* are generally considered to be sensitive to pollution, and their presence in abundance is indicative of good water quality. In general, streams in the area appear to be fortunately free of organic pollution and the effects of acidic runoff, with the few exceptions previously noted. The reproducing populations of brown trout found in Hell Run are further evidence of the good water quality in that stream.

Our initial assessment of potential threats indicated that unrestricted land development may pose a threat to the park. For example, Perry and Slippery Rock Townships currently have no zoning regulations in place. In order to study this potential problem, we analyzed land development patterns by examining data from the Lawrence County Planning Commission. Additional data were gathered from regional planning studies. Finally Dr. Ford of Shippensburg University toured the area to help determine potential development patterns.

Residential development can lead to changes in water quality. Septic systems were originally designed to be temporary answers to the housing shortage following the Second World War. Septic Systems were in fact never meant to be a permanent solution to domestic waste disposal. Even under ideal conditions, septic systems may be overwhelmed and leak wastes into groundwater. The soils surrounding the park are clearly not ideal for septic discharge. Increased development using on-lot sewage disposal will probably lead to a degradation of water quality over time.

The Slippery Rock Creek Gorge is located within the Mixed Mesophytic Forest Region of the Cumberland and Allegheny Plateaus (Braun 1950). Currently forests occupy much of the gorge and the surrounding landscape. Like the rest of Pennsylvania,

this area's forests have probably been clear-cut several times, except for stands along the steep sided gorge. The forests within the gorge are mature with many large trees and a closed canopy. The understory of the west facing slopes are blanketed in sprawling mats of *Taxus Canadensis* (American yew).

Many of the stands in the gorge appeared to harbor potential old growth forest remnants. In order to get a rough estimate of individual tree and stand age, we cored several examples of the canopy dominants in the thirteen stands shown by numbered black circles. The stands were selected to give a representation for the forest types located within the study area. Data from this coring study are discussed below. (Hell Run Watershed held three of the thirteen stands used in their study stand 5, 10, and 11.)

Stand #5

Stand # 5 was dominated by *Quercus rubra* and *Tsuga Canadensis*, with an average basal area (including all species) of 100 sqft/acre. Codominant overstory species included *Acer rubrum, Quercus alba,* and *Quercus velutina*. The understory was dominated by *Fagus grandifolia* and *Tsuga Canadensis*. The age of overstory dominants ranged from 144+ to 200 years.

Stand #10

Stand #10 was dominated by *Acer saccharum*, with an average basal area (including all species) of 130 sqft/acre. Codominant overstory species included *Quercus velutina, Carya ovata,* and *Quercus alba*. The understory was dominated by *Prunus serotina, Acer saccharum*, and *Fagus grandifolia*. The age of overstory dominants ranged from 73 to 107 years.

Stand #11

Stand #11 was dominated by *Fagus grandifolia* with an average basal area (including all species) of 140 ft 2/acre. Codominant overstory species included *Tsuga anadensis, Carya glabra, Tilia Americana,* and *Quercus rubra*. The age of overstory dominants ranged from 83 to 164 years.

SCIENTIFIC NAME	COMMON NAME
Quercus rubra	Red Oak
Tsuga Canadensis	Columbine
Acer rubrum	Red Maple
Quercus alba	White Oak
Quercus velutina	Black Oak
Fagus grandifolia	American Beech
Acer saccharum	Sugar Maple
Carya ovata	Shagbark Hickory
Prunus serotina	Black Cherry
Carya glabra	Pignut Hickory
Tilia Americana	American Basswood

The forest stands sampled do not represent an unusual stocking condition, but the presence of many large diameter trees within certain stands may be somewhat unique. Additional sampling efforts should further characterizes these stand conditions so reasonable comparisons can be made.

A search of records in the Pennsylvania Natural Diversity Inventory indicated there are no known populations of rare, threatened or endangered plant species within the park. However, in spring and early summer, before many of the deciduous trees have leafed out, the steep side slopes and narrow floodplains of the surrounding gorge become blanketed with a diverse herbaceous wildflower flora. Some of the first wildflowers to emerge are *Ariseama atrorubens* (Jack-in-the-pulpit), *Claytonia virginica* (spring beauty), *Dentaria laciniata* (cut-leaf toothwort), *Dicentra cucullaria* (Dutchman's breeches), *Erythronium americanum* (trout lily), *Hepatica acutiloba, H. americanum* (sharp lobed, round lobed hepatica), *Podophyllum peltatum* (mayapple), Trillium (trillium species), and Viola (violet species). These species can be found in abundance in the upper valleys and steep side slopes of the tributaries of Slippery Rock Creek. In the lower portion of these tributaries, in areas where stony, narrow floodplains have developed, one finds *Aquilegia Canadensis* (wild columbine), *Mertensia virginica* (bluebells), *Polemonium reptans* (greek valerian), and *Impatiens palladium* (jewelweed). In particular, the Hell Run tributary offers some of the most scenic and diverse wildflowers in the general area. Outstanding wildflower displays are found along other park trails.

Plant communities within the gorge were generally in good condition. There is little evidence of invasion by exotic species such as *Rosa multiflora* or *Alliaria petiolata*.

The abundance of wildflowers and the old growth mixed mesophytic and hemlock stands are major vegetation features of the park. Plant communities along the cliffs in areas where climbers congregate have undoubtedly been damaged by this activity. The cliffs in these areas are generally not covered in ferns, mosses and lichens, as are the cliffs in many locations where climbers are not active. Plant communities along the edges of some trails, most notable the asphalt trail near the Mill, have suffered some impacts from hikers moving "off" trail. In general however, despite the presence of invasive exotic in the communities surrounding the gorge, the gorge communities are dominated by native species and appear to be healthy.

The acidic seeps along Grindstone Run and the unnamed tributary to Hell Run are threats. Potential treatment solutions include liming the stream, using anoxic limestone treatments, building wetlands to treat the drainage, and other practices. Wetland treatment of acidic mine drainage is becoming quite popular, and may be applicable in this situation. Note that these treatment wetlands are sometimes short lived, as sulfur and metals often accumulate to the point where the plants can no longer tolerate the conditions.

Other areas of concern for the immediate area are the deposition of limestone dust, blasting effects, and waste deposited in some mined areas. In the past blasting was probably done with greater explosive charges than were necessary. The force generated

by these large blasts may have fractured aquifers and otherwise altered sub-surface drainage patterns. Today however blasting is regulated and may not exceed 2 on the Richter scale. Recent data indicate that seismic effects from these blasts attenuate quickly. It is therefore unlikely that blasting, even relatively close to the park, would result in movement of the slump blocks along the gorge.

Recommendations:

In order to minimize the threats to the park's terrestrial and aquatic resources, we recommend that no mining permits be issued within ½ mile of the Slippery Rock Creek. This would essentially limit mining to the areas beyond the watershed boundary of the Slippery Rock Creek. We further recommend that future reclamation focus wherever possible on the restoration of forested cover. In addition, steps should be taken to treat the acidic seeps affecting Grindstone and the unnamed tributary to Hell Run.

Development Threats:

If current practices are followed, and if mining permits are closely monitored, limestone mining is probably not the greatest threat to the park. However, the project team feels the specter of uncontrolled residential development looks over the area. One needs only to look south from McConnell's Mill down Interstate 79 to Cranberry, to see what unregulated development can bring to a rural area.

In order to protect the integrity of the park's outstanding plant communities and the water quality of its streams, we recommend that new land development be somehow limited within ½ mile of Slippery Rock Creek. The best way to insure protection for the park is to buy additional land as a buffer for the gorge ecosystem. Failing that, limitations may range from prohibiting subdivisions within this area, to limited densities on appropriate properties, in exchange for limited or no development close to the park. Transfer of rights could also shift development away from the sensitive areas near the park. Note that these development limitations must derive from township ordinances.

A copy of the full Rettew Report is available at the Lawrence and Butler County Planning Commission's.

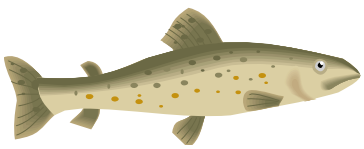
Pennsylvania Fish and Boat Commission (PA FBC) Report

The following comments and recommendations were prepared by Craig W. Billingsley and Freeman A. Johns of the PA FBC, Bureau of Fisheries, Division of Fisheries Management. The data was gathered in June, 2004 and the report prepared in December, 2004.

Hell Run, a tributary to the Slippery Rock Creek in Lawrence County, is partially located in McConnell's Mill State Park and managed by the Pennsylvania Department of Conservation and Natural Resources (PA DCNR). It contains a fishery unique to the Beaver River drainage basin, in that it is one of only two streams known to support wild trout populations. This stream was the center of much controversy in the late 1970's when a proposed strip mine near McConnell's Mill State Park threatened what was considered a valuable resource to the region. As a result, several state and federal agencies, environmental groups, and state and federal legislators became involved. In 1980, based on testimony from expert witnesses and public comment, the Environmental Quality Board elected to elevate the Chapter 93 – Water Quality Standards classification from High Quality (HQ) – Cold Water Fishes (CWF) to Exceptional Value (EV). This designation has effectively protected the stream from possible degradation due to activities within the watershed. For management purposes, Hell Run is separated into two sections; the upper reaches of the watershed that are privately owned (Section 01), and the lower reaches that are mostly owned and managed by the PA DCNR (Section 02). Section 02 has been managed as a Wilderness Trout Stream since April of 1980.

SECTION 01: Extends from the headwaters downstream to the T-395 (Shaffer Road) bridge, a distance of 2.01 kilometers. This section of the stream can be characterized as a low gradient warm water stream surrounded by rolling hills, farmland, and abandoned strip mines. This section is completely in private ownership.

SECTION 02: Flows from the T-395 bridge downstream to the confluence with Slippery Rock Creek, a distance of 2.99 kilometers with a mean width of 3.8 meters. This section can be characterized as a small coldwater stream. Ninety-five percent of Section 02 is within McConnell's Mill State Park. Upstream of Hell's Hollow Falls this section can be characterized in a similar manner to Section 01. Downstream of the falls the gradient becomes steep (25.9 m/km) and the stream flows through a heavily wooded ravine. A series of smaller falls presents a barrier to fish migration in this area. Access to this area is limited to a 20-car parking and picnic area downstream of the T-395 bridge. The mouth of this section is near a road but one must descend a steep hill and cross the Slippery Rock Creek, which at times can be treacherous if not impossible.



PA FISH AND BOAT COMMISSION WATER QUALITY DATA

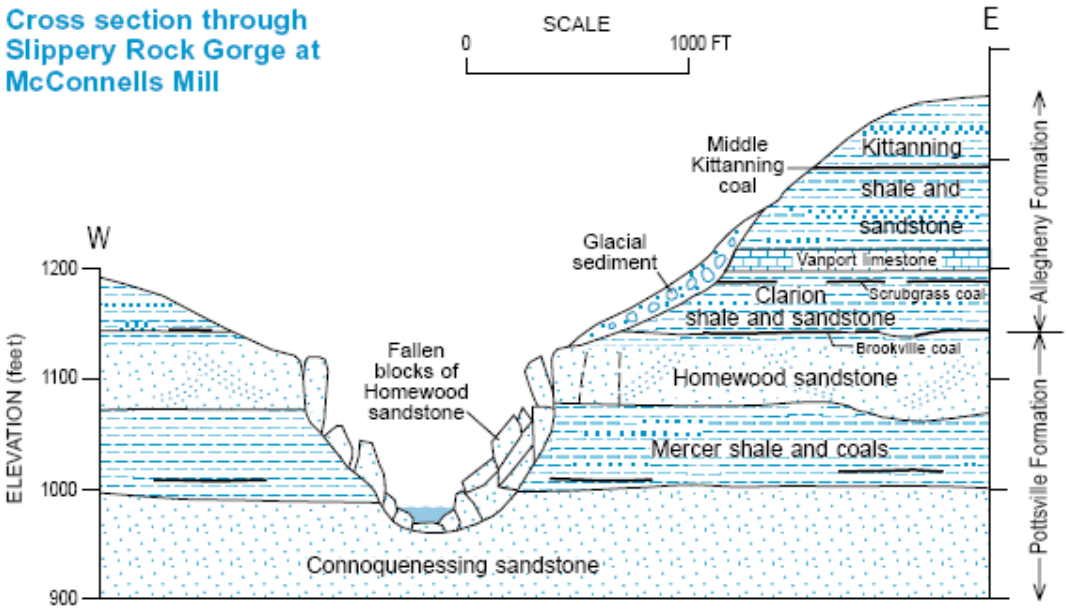
Hell Run – Stream Section 02	**July 11, 1989**		**July 20, 1994**		**June 23, 1997**	
River Mile begins at mouth of Hell Run	*0.00 mile*	*1.71 mile*	*0.00 mile*	*1.71 mile*	*0.00 mile*	*1.71 mile*
Air Temp (degree C)	19	19	25	n/a	25	30
Water Temp (degree C)	17.5	16.5	18.5	n/a	18	20
pH	8	7.8	8.2	n/a	7.8	7.4
Total Alkalinity (mg/l)	80	96	132	n/a	60	68
Total Hardness (mg/l)	300	440	n/a	n/a	170	204
Specific Conductance	n/a	600	550	n/a	340	370

Water quality analyses completed by the PA FBC between 1989 and 1997 indicate this is a relatively alkaline stream with the total alkalinity ranging from 60 to 132 mg/l. The pH varied from 7.4 to 8.2 S.U. Total hardness and specific conductance indicate some influence from past mining activities.

Glacial History of the Hell Run Watershed and Slippery Rock Creek Gorge

The following information and graphics are cited from Fleeger, G.M., Bushnell, K.O., and Watson, D.W., 2003, Moraine and McConnell's Mill State Parks, Butler and Lawrence Counties-Glacial lakes and drainage changes: Pennsylvania Geological Survey, 4th ser., Park Guide 4, 12 p.

The bedrock that exists in the Slippery Rock Creek gorge was formed 300 million years ago during the Pennsylvanian Period of geologic history from layers of sand, mud, and peat. A completely different landscape was present, and when what is now Pennsylvania was south of the equator. Rivers heavily laden with clay, sand, and gravel flowed across Pennsylvania from highlands in eastern Pennsylvania. As the rivers changed course or the sea rose to cover the low delta areas, the sediments were buried by new sequences of peat, sand, and mud. Several times, the shallow sea rose and deposited marine clays and muds. As each layer was buried, compaction and cementation changed the soft, loose sediment to solid rock. The peat bogs and swamps became coal. The sand became Kittanning, Clarion, Homewood, and Connoquenessing sandstones, and the silts and clays formed Kittanning, Clarion, and Mercer shales. The thickest marine lime mud became Vanport limestone. As the continents moved northward, about 250 million years ago, the area was uplifted, and erosion started to create the landscape as we know it today.



The early industrial economy of the region was based, in large part, on the iron, lime, oil, and coal contained within the sedimentary layers. Vanport limestone originally was named "ferriferous limestone" for the large amount of iron mineralization in the upper part of the member. The iron ore was surface mined in the mid-1800's to feed three furnaces – the Wilroy and Hope furnaces upstream along the Slippery Rock Creek gorge and the Lawrence furnace in Hell's Hollow. In addition to exploitation of its upper layers for iron ore, Vanport limestone itself was locally quarried and burned to produce agricultural lime. In the 1870's, local ore-mining operations and small furnaces were abandoned for the vast iron ore resources of the Lake Superior region.

After the Titusville oil boom in 1859, oil seeps throughout the Slippery Rock Creek gorge excited local drillers. By 1864, at least seventeen wells had been drilled along the creek. They were shallow but yielded about 45,000 barrels of oil before groundwater invaded the sandstones and prevented further oil production.

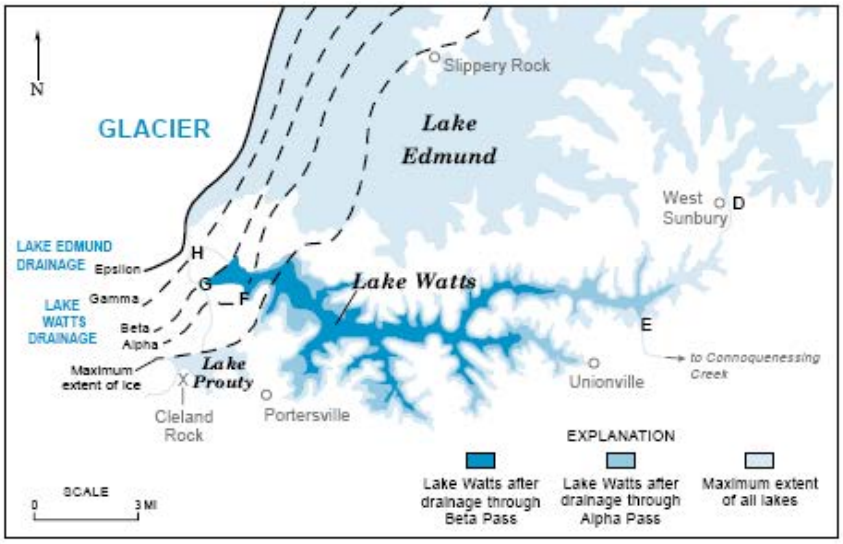
Most of the accessible coal is above Vanport limestone in the Kittanning member of the Allegheny formation. Much of this coal was mined, both by underground and strip mining, before the stringent laws regulating mine reclamation were passed in the 1960's and 1970's.

Slippery Rock Creek flows in a deep, winding gorge cut into flat-lying layers of bedrock. The gorge cuts through an old drainage divide, the remnants of a ridge that once separated streams flowing to the north from streams flowing to the south.

Preglacial drainage in the McConnells Mill area. Present-day locations are shown in gray.

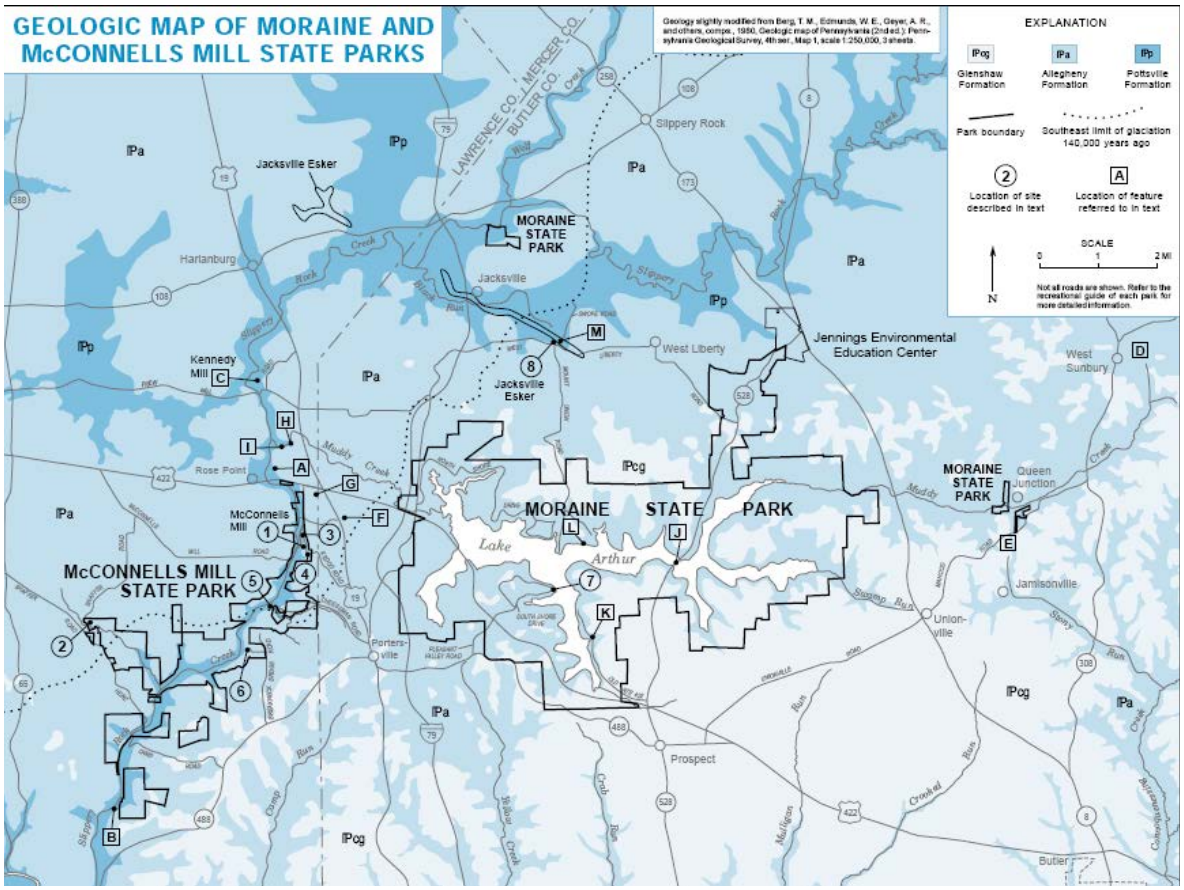
The topography of this region was formed mainly in the Ice Age, approximately 2 million years ago to 23,000 years ago, as rivers diverted by the glaciers cut new channels into the land. Thick masses of continental ice began to accumulate in central and northeast Canada and periodically spread southward. At least four of these advancing ice sheets, many hundreds or thousands of feet thick, reached northwestern Pennsylvania and modified the landscape and stream patterns. The third known ice sheet moved southeastward into the area approximately 140,000 years ago and dammed the northwest flowing Slippery Rock Creek. At the ice advance maximum, three separate lakes were formed; Lake Edmund, Lake Watts, and Lake Prouty.

Phases of glacial lake drainage during ice retreat. Present-day locations are shown in gray.



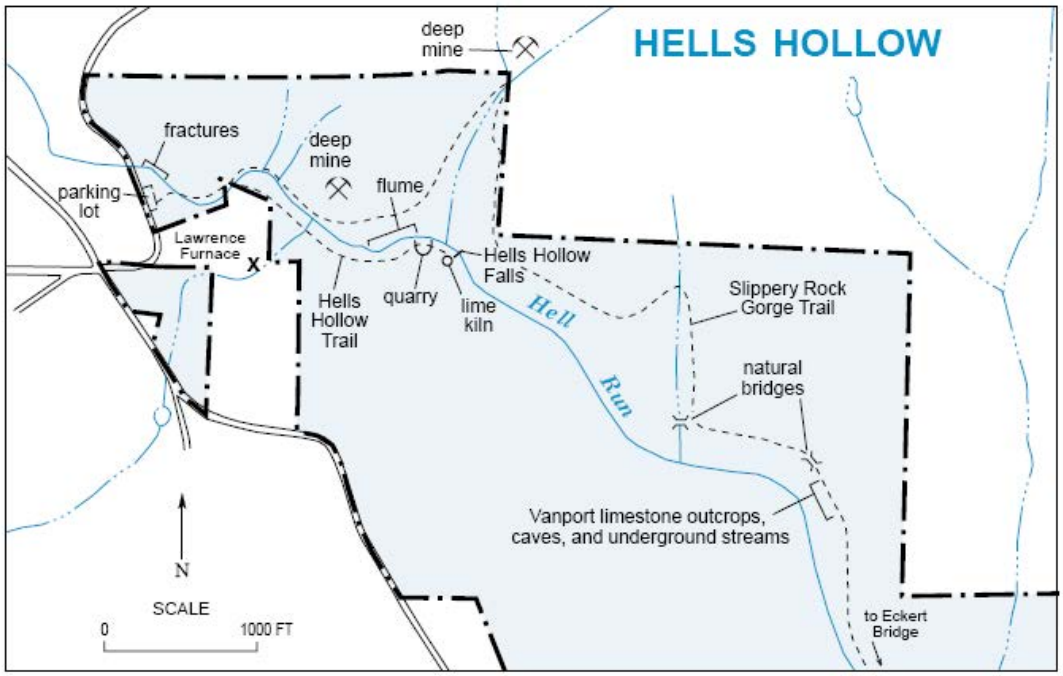
As the glacier melted back to the northwest, the lakes began to drain westward through a series of temporary outlets, each lower that the preceding. As the ice receded far enough and each pass opened, a short-term flood surged into the gorge. These floods deepened the gorge and eroded soft Mercer shale beneath hard Homewood sandstone, leaving the sandstone as an overhanging cliff. Because the sandstone is cut by many intersecting cracks, unsupported large blocks fell from the rim. Some of these large blocks moved only a few feet downslope, but others fell to the bottom of the gorge. This widened the gorge, but left it less deep than originally carved.

Geologic features abound in Pennsylvania and the statewide Trial of Geology highlights specific geologic sites of interest throughout Pennsylvania's state parks. Signposts along state park trails mark the locations of features and sites of interest that are described in corresponding text in the Pennsylvania Trail of Geology Park Guide. There are eight geologic features located within McConnell's Mill and Moraine State Parks and described in the Trail of Geology. The geologic site of interest within the Hell Run watershed is identified on the map as *Site 2: Hells Hollow*. The Pennsylvania Trail of Geology map and corresponding information can also be found on the Pennsylvania Department of Conservation and Natural Resource's website www.dcnr.state.pa.us.



Site 2: Hells Hollow

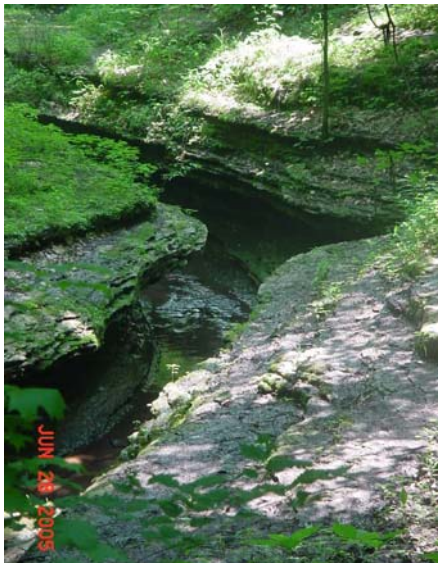
A short hike along Hell's Hollow Trail toward Hell's Hollow Falls takes you past a number of features related to Vanport limestone and the old iron industry that flourished in the valley of Slippery Rock Creek during the mid-1800's.



In the streambed adjacent to the parking lot, sharp, distinct fractures cut through Vanport limestone. During dry periods, no water flows in the stream here, but water does flow in a small cave formed by dissolution of limestone.

The Lawrence Iron Furnace was a few hundred feet upstream from the third bridge on Hells Hollow Trail. From the far side of the third bridge, you might see an entrance to a small, long-abandoned (over 100 years) coal mine. The entrance is hidden by foliage high on the hillside across Hell Run.

Further along the trail toward the falls, Hell Run flows in a narrow flume that was originally a limestone cave. With time, the roof of the cave collapsed and exposed the hidden channel. Small depressions beside this section of the trail are sinkholes, also formed by limestone dissolution.



FLUME CARVED OUT OF VANPORT LIMESTONE

Just upstream from the falls is a small quarry where iron ore and limestone (used for flux) were probably mined for the Lawrence Furnace. Shortly beyond this, the trail ends at Hell's Hollow Falls, a picturesque cascade over resistant Clarion sandstone. Vanport limestone is visible here as ledges along the gorge walls. To the right end of the trail is a brick-lined vertical shaft cut into the rock. This is a lime kiln that was used to burn limestone, probably from the quarry, to produce lime.

A longer and more rugged trail, the Slippery Rock Creek Gorge Trail, follows the north side of Hell's Hollow. It also has geologic features, including old coal mine entrances, Vanport limestone outcrops, natural limestone bridges, small caves, and emerging underground streams.

GEOLOGIC FEATURES ALONG THE SLIPPERY ROCK CREEK GORGE TRAIL

IRON SEEP

PENNSYLVANIA FISH AND BOAT COMMISSION STREAM DESIGNATIONS

The section of Hell Run downstream of Shaffer Road that flows through McConnell's Mill State Park is designated by the PA FBC as both Wilderness Trout Waters and Class A Wild Trout Waters.

PENNSYLVANIA WILDERNESS TROUT WATERS

As defined by the Pennsylvania Fish and Boat Commission: Wilderness trout stream management is based upon the provision of a wild trout fishing experience in a remote, natural and unspoiled environment where man's disruptive activities are minimized. Established in 1969, this option was designed to protect and promote native (brook trout) fisheries, the ecological requirements necessary for natural reproduction of trout and wilderness aesthetics. The superior quality of these watersheds is considered an important part of the overall angling experience on wilderness trout streams. Therefore, all stream sections included in this program qualify for the Exceptional Value (EV) special protected water use classification, which represents the highest protection status provided by the Department of Environmental Protection (DEP).

CLASS A WILD TROUT WATERS

Definition of Class A Waters: Streams that support a population of naturally produced trout of sufficient size and abundance to support a long-term and rewarding sport fishery.
Management: Natural reproduction, wild populations with no stocking.

APPROVED TROUT WATERS

Officially classified as "approved trout waters," these streams, lakes, ponds, and reservoirs contain significant portions that are open to public fishing and are stocked with trout. *Hell Run is NOT designated as approved trout waters because the trout are native and naturally reproducing, therefore, the stream does not need stocked.*

Land Use in the Watershed

The watershed is currently seeing residential growth along with increased recreational use in the area. The municipalities still have no land use control mechanisms as recommended in past studies and documents. Slippery Rock and Shenango Townships both have a Subdivision and Land Development Ordinance. Shenango Township has adopted a Zoning Ordinance however, Slippery Rock Township has not. Mining activities are prevalent and are anticipated to continue well into the future as additional lands are leased and acquired by mining companies.

The Lawrence County Planning Commission recently adopted a new Countywide Comprehensive plan along with a Natural Heritage Inventory completed by Western Pennsylvania Conservancy. Recommendations and sections of these documents have been included in this report.

The Pennsylvania Department of Conservation and Natural Resources also has a McConnell's Mill State Park Management Plan. These plans are updated on as needed basis. Although the Park Management Plan was adopted in 1998, the recommendations for the Hell Run Management Unit still hold true today.

Lawrence County Comprehensive Plan

The following comments and recommendations were prepared by Olsen and Associates for the Lawrence County Planning Commission and adopted in 2004.

Lawrence County is keenly aware of many natural sites within its boundaries that should be protected or even preserved from development activities. Several policies and/or programs are in place and provide some guidance and direction as to areas within the County that should be protected from development activities. Each of the following programs is represented by a map or drawing identifying those areas being discussed:

1. The completion of a "Natural Heritage Inventory" by the Western Pennsylvania Conservancy in 2003 identifies several areas within the County that should be protected from future disturbance.

2. Agriculture is still the top economic generator in the County. As such, the County and many local municipalities, participate in the Agricultural Security Program. The County's Agricultural Preservation Board has also purchased the development rights of several farms within the County to insure their continued existence as farms. Although there are no prohibitions to the development of farms participating in these programs, they do provide a deterrent to development activities. The preservation of prime farmlands was identified as a priority in several of the planning unit public meetings.

3. The "Clean and Green" program is also a major program in use in the County with several hundred properties taking advantage of the "tax break" for agriculturally used parcels. Again, there is no prohibition of developing these parcels. There is, however, a tax penalty in place for those farms that do not comply with the program requirements.

Lawrence County is home to McConnell's Mill State Park, located along the Slippery Rock Creek in Slippery Rock and Perry Townships. This park is an important tourist attraction and generates over $2 million in revenue for the County each year. Thus, the preservation of the Park's natural and pristine conditions is a major objective of the County.

Environmentally sensitive conditions including floodplains, wetlands and steep slopes are areas that also must be considered when development activities are proposed. Any development application is subjected to review and approval based upon the existence, or lack thereof, of the environmental conditions of the property.

Plan Recommendation Summary

Lawrence County is both an urban and rural community whose development issues vary widely. The County's proximity to the Pittsburgh and Youngstown, Ohio metropolitan areas and excellent access to the interstate highway network provides opportunities for economic and residential growth. The issue of the lack (or inadequate) public infrastructure has been used as both an excuse for the dearth of development (commercial) as well as a reason for development (residential).

The purpose of the following recommendations and action plan is to establish potential activities that can be used, practiced and/or put into place, to resolve current and future development issues. The Lawrence County community is one that envisions a future that can be shaped through cooperation and dialogue. An excellent example of this cooperation and dialogue is the Lawrence County Regional Council of Governments, where 25 local governments have joined to share programs and materials and develop projects that address regional needs.

Land Use

Many consider the land use plan as the major component of a comprehensive plan. To be sure, the establishment of the growth policy or, in some instances, the preservation/conservation policy, for the future, plays a key role in the 'quality of life' components of the plan.

Growth management is the means by which the County and any municipality develop its policies and tools to control the type, location and amount of land development within its boundaries. The most common growth management tool is zoning. This is a regulatory tool that organizes and manages the use of land. The Pennsylvania Municipalities Planning Code (Act 247, as amended) gives authority to Counties and local municipalities to enact this regulation. At this time, the County has determined that the regulation of land use is best managed at the local level where there is an established relationship between the elected officials and the residents; however, the County Planning Department is ready and willing to provide assistance to the local municipalities, as requested.

Because of the very rural nature of some County municipalities, they have elected to not enact zoning regulations. In these areas, there is no regulation or control of the use of land. Recent amendments to Act 247 have encouraged "joint municipal" planning and zoning efforts which could provide opportunities to those municipalities without zoning to participate with adjacent 'zoned' municipalities and share expenses and revenues.

Regulatory tools are essential to ensure orderly growth; however, other measures, including incentives and the voluntary participation of landowners, can be very effective

in regulating growth. Easements, tax abatements, transfer of development rights, purchase of development rights and development guidelines are examples of alternative growth management tools.

Residential

The County is comprised of numerous 'settlements' and residential neighborhoods, each one attributing to the persona of Lawrence County as being a livable community. Those residents that are here want to remain here. The out-migration of population is not due to the undesirable County environment.

Residential growth in the County has created a need for the expansion of the infrastructure in some areas, traffic congestion in other areas; and a movement to preserve agricultural space in yet others. Primary recommendations include:

a. Reinvestment in older neighborhoods.
b. Use of buffers to reduce land use conflicts.
c. Access management along several traffic corridors: PA Routes 18, 65, U.S. Routes 224, 422.
d. Target more densely populated areas for higher density development or redevelopment.
e. Assist in planning for the availability of adequate numbers of housing units at price ranges and rent levels commensurate with the financial capabilities of County residents.
f. Encourage private developers to meet the need for low and moderate-income housing.

Cultural Resources

Historic structures and locally important structures exist within many of the local municipalities and neighborhoods. Preservation of these structures is important, not only for their architectural significance, but also to preserve our understanding of, and connection with, the past. A few local municipalities have enacted some type of a preservation policy aimed at protecting and preventing the loss of historic structures and sites. This practice must be expanded throughout the County, however. Primary recommendations include:

a. Institute a Countywide historic preservation policy to prevent the loss of historic structures and sites.
b. Coordinate review of all development projects between local, county and state agencies that are proposed on or near historic resources.
c. Develop an historic resources program for local municipal and county education efforts.

Economic Development

For Lawrence County to prosper, economic development activities must be the priority. In order to maintain the population level, local and county services and public programs, there must be jobs and programs available to keep people here. The need for economic development has been identified as the major platform for the County. In 2001, a private economic development consultant was contracted to create a study that identified sites, which the County should consider developing and marketing to provide future jobs opportunities. The study's findings and recommendations have been incorporated into the full body of the Comprehensive Plan.

Current development in the County has been focused, for the most part, in the suburbs of the City of New Castle. Neshannock, Shenango and Union Townships have experienced most of the "new" development action. To a lesser extent, the City of New Castle and Ellwood City Borough have entertained the 'shifting' of businesses from one local site to another.

The Lawrence County Economic Development Corporation (LCEDC) is constantly monitoring the needs of prospective clients with the available resources within the County. The LCEDC is also responsible for acquiring and/or marketing potential sites for economic development purposes. As part of this responsibility, the LCEDC is in the process of acquiring, marketing and developing a 520-acre high technology park, to address a statewide lack of large sites. This site, known as Millennium Park, is located in Neshannock Township, along PA Route 60.

Many of the 'prime' development areas have already been developed; however, with improving traffic access and the extension of public utilities, further development and redevelopment is suitable for a variety of sites throughout the County. Primary recommendations include:

a. Develop an industrial sites survey and database that identifies development potential along with available utilities and facilities and environmental limitations
b. Consider the use of financial and development incentives to help facilitate reinvestment and/or redevelopment of vacant/underutilized properties, including along Route 60.
c. Review and update existing studies for Route 60 as they relate to access, public utilities and development opportunities.
d. Buffer residential areas from non-residential development, but provide linkages for easier movement.
e. Create development guidelines for business and industrial development.

Recreation

Lawrence County is blessed with a wonderful mix of recreational opportunities for its residents, from hiking the North Country Trail to white water canoeing down the Slippery Rock Creek in McConnell's Mill State Park; however there is no County "ownership." Most of the County's recreational resources belong to the local municipalities, school districts and State and Federal governments. The County does own two (2) parks, West Park located in Union Township which consists of a walking trail and natural areas, and is maintained by the Conservation District; and Bazzichi Park named after Henry Bazzichi a local sportsman, located in Wayne Township (Park Gate), which consists of a playground area, pavilion and small playfield. There are also many privately owned recreation venues. The last countywide recreation study was completed in 1979. Primary recommendations include the following:

a. Update the County Recreation Plan
b. Identify growth management tools that can assist in the preservation of open space for recreational purposes.
c. Consider the establishment of a county wide-open space acquisition fund.
d. Seek re-use of abandoned railroad corridors as possible hiking/biking trails.

Growth Management

As noted earlier, Growth Management is a process – a process by which a municipality (city, borough, township, county) develops the methods (procedures) and means (tools) to control the type, intensity, location and amount of land development (growth) within its borders. Primary recommendations include:

d. Educate local municipal officials about growth management and applicable 'tools'.
e. Encourage the Lawrence County Regional Council of Governments (COG) to provide growth management administration to member municipalities.
f. Consider Countywide zoning ordinance.
g. Develop non-regulatory growth management package.
h. Develop regulations and/or programs that encourage the re-use or redevelopment of vacant and/or under-utilized parcels.
i. Assist the Lawrence County Conservation District and Agricultural Preservation Board in the education of local officials.
j. Encourage the development of local regulations providing for the preservation of farmland and environmentally sensitive lands.

Natural Resources

The natural environment is an integral part of any development activity in the County. Natural *features*, such as soil composition and slope play a role in siting development. Natural *conditions*, such as wetlands and floodplains provide habitats for a variety of flora and fauna and also limit development. *Land use*, such as farming, provides the number one "industry" in the County, as well as the largest "economic provider." In each case, the County and/or the local municipalities have realized the importance of the natural environment and have taken steps to protect its resources. Examples of these steps include the following studies, reports, programs and ordinances, which are in place at one level or another:

a. Natural Heritage Inventory (County)
b. Agricultural Security Area (local, County)
c. Agricultural Preservation (County)
d. Wetland Inventory (County)
e. Floodplain maps and studies (local)
f. Stormwater regulations (local)

The Comprehensive Plan has identified major natural resources. The primary recommendations include:

a. Continue education efforts to the public about the County's Natural Heritage Inventory.
b. Complete stormwater management plans for each of the County's primary watersheds.
c. Educate local municipalities on the preservation of prime agricultural lands.
d. Encourage development of watershed-based planning studies.

Transportation

The transportation network in the County is both an amenity and a source of anxiety. A limited number of Counties in the Commonwealth have the access to the regional transportation network that Lawrence County enjoys. The existence of this network, and adequate access, makes the County a desirable place to live. The increased development, however, creates additional traffic, which creates congestion. Thus, it is extremely important that traffic management planning become a part of any land development review. A part of this review should include the applicability of public transportation. The County has an excellent public transportation agency, the New Castle Area Transit Authority, which provides public transportation to all areas of the County and has several daily runs to Pittsburgh and Grove City Factory Outlets.

In addition to roads, streets and highways, the County's transportation network also includes rail and air. The County has two (2) primary rail services and one short-line system, which transports commodities throughout the region. The New Castle Airport provides a commuter-service within the region, as well as business and recreational opportunities. The Airport serves about 30,000 passengers a year and can be a "drawing card" for future economic development activities. The primary transportation goals include:

a. Develop realistic project needs list for inclusion in Southwestern Pennsylvania Commission (SPC) transportation plan.
b. Educate local municipal officials in developing transportation projects.
c. Encourage local municipal participation in transportation plan programming at County and regional (SPC) level.
d. Emphasize public transportation opportunities in new developments.
e. Develop policy to guide the awarding liquid fuels monies to local municipalities.
f. Develop an "entryway" at the County boundary to make travelers aware of County activities.

Energy Conservation

In nature, the health and stability of any living system depends upon a constant source of energy. This is especially true of the technological society in which we live today. Evidence of our dependence on a constant source of energy is part of our history, with recent examples including the oil embargo in the early 1970's and the natural gas shortage in the winters of the late 1970's. These occurrences made the public aware that the conservation of energy sources and the exploration of alternate sources of energy should become a priority in the governments' efforts.

Lawrence County is similar to the natural system, and as such, is highly dependent upon a constant supply of energy. If Lawrence County is to maintain its viability and "good health", strategies must be developed and implemented to reduce the County's dependency on expensive, non-renewable and potentially unreliable energy sources. With these basic goals in mind, the primary recommendations include:

a. Encourage the concentration of land use development within rural community centers and areas located within urban growth boundaries.
b. Encourage site planning techniques that protect potential solar rights of ways.
c. Encourage the development of industries for which there is a reliable energy supply and which will utilize energy efficient processes.
d. Promote energy efficient patterns of growth and development through planning and the review of plans for the developments of public facilities and services.
e. Promote the energy efficient design, siting and construction of transportation systems.

f. Develop and maintain programs, which will make information on energy conservation available to the public.

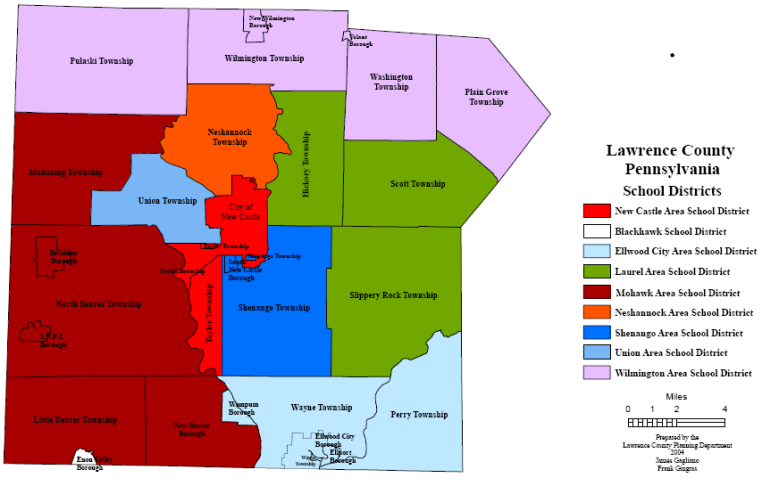
Water Quality

The increasing demands of development on the County's natural resources, especially water, affects the capability of those resources to provide a clean, safe and enjoyable environment. As development in the County continues, more land will be converted into building sites and other intensive uses aimed at serving the people. It is the intent of the County to assure quality development on lands capable of providing safe and suitable development activities. A major focus of providing a 'safe' development is the provision of water – both the quality of, and the quantity necessary. With the maintenance of an adequate source of quality water, as a goal, the primary recommendations include:

a. Review all proposed development to assure an adequate source of potable water.
b. Consider adopting best management practices for development in the County's watersheds.
c. Support water quality management plans and programs in place through the enforcements of existing regulations.
d. Cooperate with designated agencies to develop standards and specifications for the protection of wellheads and water sources.
e. Cooperate with designated agencies to determine the capacities of water resources within the County.
f. Assist County residents and developers to address the applicable water quality standards.

Laurel Planning Unit: Plan Goals

(The Comprehensive Plan's Management Recommendations were summarized within School Districts throughout the County. The Hell Run watershed lies within the Laurel Area School District and Planning Unit)



Community Design

- Guide development in a logical matter that allows for growth but protects the natural and unique character of the planning unit.

Natural Environment and Open Space

- Excerpts from the Lawrence County Natural Heritage Inventory should be included in a "Developers' Packet" in order to assure the preservation of environmentally sensitive areas.

Parks and Recreation

- Provide for adequate recreational opportunities for residents of the planning unit while maintaining the current park and recreational programs available.

Greenways

- Preserve and reclaim natural floodplains to enhance water quality; protect wildlife habitats and open space; and provide recreational, educational, and alternative transportation opportunities.

Historic Preservation

- Encourage the preservation of cultural and historical sites and structures by cooperating with other agencies, both public and private, to promote the protection of identified sites.

Economic Development

- Utilize background research, economic research and socio-economic studies prepared by the Lawrence County Economic Development Corporation to rate potential development sites in the planning unit.

Information Technology

- Provide for a variety of technology opportunities to enhance public services and the marketability of the Laurel Planning Unit.

Utility Services

- Identify utility funding sources for development locations within the individual municipalities in the planning unit.

Transportation

- A roadway sufficiency analysis on all major roads is needed where development, of all types, is encouraged within certain transportation corridors.

Public Safety

- Encourage multi-municipal planning to provide for a safe community and to provide for the highest quality of public safety, equipment and training.

Government Relations

- Partner with the Lawrence County Economic Development Corporation to develop a prime development site database and to promote a wide range of development in appropriate areas by emphasizing the planning unit's labor force.

Community Facilities and Human Services

- Ensure that existing facilities and services are maintained at a level that meets the needs of residents and businesses.

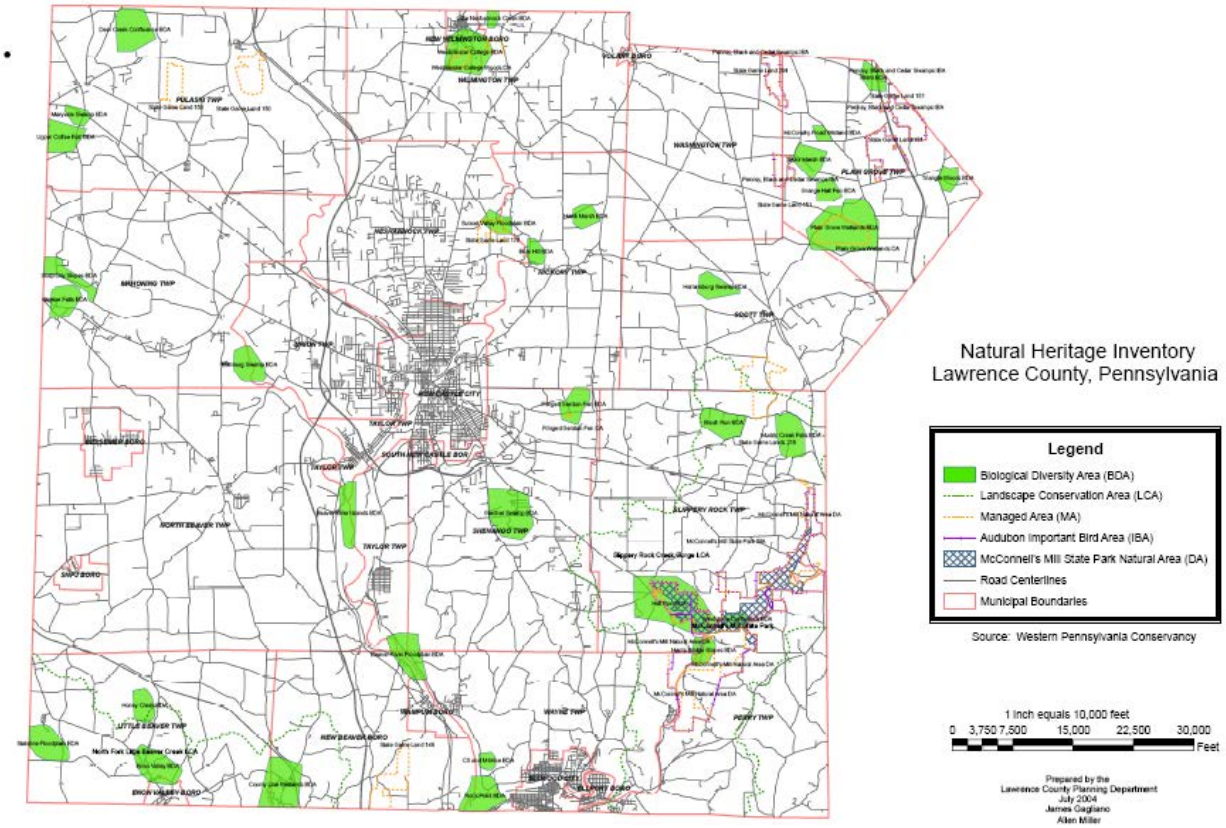
Neighborhood Planning

- To promote the organization and enhancement of neighborhoods, and to provide the opportunity for comfortable and well-maintained housing for all citizens in the planning unit.

Full Comprehensive Plan Document is available at the Lawrence County Planning Commission Office.

Lawrence County Natural Heritage Inventory

The Western Pennsylvania Conservancy prepared the following comments and recommendations for natural areas located within Lawrence County. The document was completed in 2003.



There are two types of natural heritage areas identified in the Inventory. A Biologically Diverse Area (BDA) is defined as an area that contains one or more locations of plants, animals or natural communities recognized as a state or federal species of concern. A Landscape Conservation Area (LCA) is defined as a large contiguous area which is important because of its size, open space, habitats, and/or the inclusion of one or more BDAs. Although an LCA includes a variety of land uses, it typically has not been heavily disturbed and thus retains much of its natural character. There were a total of 35 natural areas named for Lawrence County; two (2) LCA's and thirty-three (33) BDA's.

HELL RUN BDA

The downstream section of Hell Run lies within a Biological Diversity Area (BDA). The Hell Run BDA is located in McConnell's Mill State Park Natural Area and is part of the Slippery Rock Gorge LCA and it's collection of BDAs. Hell Run is the only stream in Lawrence County classified as an exceptional value (EV) stream.

The forest stands of Hell Run are the most mature of those found in the gorge and some are considered to be virgin stands. The communities in Hell Run are embedded in a matrix of rich hemlock-mesic hardwood forest. At the lower sections of Hell Run, a sugar maple-basswood forest occupies the middle elevations and at the top of the Slippery Rock Gorge rim is a red oak-mixed hardwood forest.

The rich hemlock-mesic hardwood forest is dominated by hemlock (*Tsuga canadensis*), basswood (*Tilia americana*) and black cherry (*Prunus serotina*) in the overstory. Understory associates include witch-hazel (*Hamamelis virginiana*), spicebush (*Lindera benzion*) and mountain maple (*Acer spicatum*). Common herbaceous species are marginal log fern (*Dryopteris marginalis*), large-flowered trillium (*Trillium grandiflorum*), doll eyes (*Actaea pachypoda*) and miterwort (*Mitella diphylla*).

Sugar maple-basswood forests occupy the middle elevations of the Hell Run gorge. Canopy associates include sugar maple (*Acer saccharum*), red oak (*Quercus rubra*), basswood (*Tilia Americana*), pignut hickory (*Carya glabra*) and black cherry (*Prunus serotina*). The understory is composed of spicebush (*Lindera benzion*), mountain maple (*Acer spicatum*), and winterberry (*Ilex verticillata*). Herbaceous species include wood nettle (*Laportea canadensis*), phlox (*Phlox divaricata*), false solomon's seal (*Smilacina raceosa*) and false hellebore (*Veratrum viride*).

Red oak mixed hardwood forest is found along the top of the gore and is dominated by red oak (*Quercus rubra*), American beech (*Fagus grandifolia*), sugar maple (*Acer saccharum*), tulip tree (*Liriodendron tulipifera*) and red maple (*Acer rubrum*) and a few white oak (*Quercus alba*). The diverse understory layer is composed of sassafras (*Sassafras albidum*), shagbark hickory (*Carya ovata*), black gum (*Nyssa sylvatica*), cucumber tree (*Magnolia accuminata*), and maple-leaf viburnum (*Viburnum acerifolium*). Growing above a sparse herbaceous layer containing woodland goldenrod (*Solidago caesia*), white rattlesnake root (*Prenanthes alba*), squawroot (*Conophilus americana*), beechdrops (*Epifagus viriniana*), black cohosh (*Cimicifuga racemosa*) and blue cohosh (*Caulophyllum thalictrioides*).

Hells Hollow Falls

Threats and Stresses

Being part of a state park natural area, the ecological communities here are protected from direct disturbance due to development. However changes in surrounding land use could ultimately impact these natural communities. The stream is impacted in the upper sections by abandon mine drainage (AMD) but currently this impact is minimal compared to other impacts within the overall system. As more development occurs in the upper watershed problems with aging septic systems will increase. Exotic invasive plant species are a threat. Deer browsing, poses an additional threat. Species such as Japanese knotweed (*Polygonum cuspidatum*) and multiflora rose (*Rose multiflora*) are present in the Slippery Rock Gorge, but only multiflora rose occurs in the Hell Run Gorge.

Recommendations

Development in the watershed should be planned with the impacts to Hell Run kept in mind. If possible, septic systems should be updated or replaced with municipal sewage systems to lessen the impact of nutrification. Since Hell Run is and exceptional value stream, special guidelines are in place regarding development and should be adhered to in order to maintain exceptional water quality.

Monitoring the coverage and spread of invasive species in the Hell Run gorge is needed to ensure the viability of the natural communities. Monitoring would also provide a baseline for future management efforts. Future studies of the plant communities along with present and past research will help understand the dynamics of the community over the long term.

Deer browsing within the forest should be monitored and management of the deer population should be such that the deer do not endanger the ecological health of the natural communities in the gorge.

SLIPPERY ROCK GORGE LCA

Slippery Rock Gorge LCA includes Slippery Rock Creek where it descends through a gorge to meet with Connoquenessing Creek at the village of Wurtemburg. The gorge was created during the last ice age when the waters of glacial Lake Arthur burst through an ice dam and drained through the channel of Slippery Rock Creek. Recent research has indicated that there was no dam burst but rather a slow flood similar to typical rainfall floods seen today (D'Urso 2000). The LCA encompasses the area from the Kennedy Mill Bridge to the confluence of Slippery Rock Creek and Connoquenessing Creek.

The LCA contains four BDA's, two of which are part of the McConnell's Mill State Park Natural Area and two that are outside of the natural area. The BDA's in the natural area are Grindstone Confluence BDA and Hell Run BDA. Muddy Creek Falls

BDA is located in the farthest upstream part of the LCA and Harris Bridge Slopes BDA is farthest downstream.

Slippery Rock Creek Gorge as seen from Cleland Rock

Ten natural community types occur within the LCA, eight of which are found in the natural area. Outside of the natural area are the hemlock (white pine) - red oak - mixed hardwood forest and a skunk cabbage - golden saxifrage forest seep. Inside the natural area are tuliptree – beech - maple forest, hemlock – tuliptree - birch forest, sugar maple – basswood forest, rich hemlock - mesic hardwood forest, red maple – elm - willow floodplain swamp, river birch - sycamore floodplain scrub, red oak - mixed hardwood forest and a red maple terrestrial forest.

The community locations depend upon slope exposure and the presence of wetland seeps supplied by groundwater and topographic position. Forests with high amounts of hemlock occur in the deepest stream valleys such as Hell Run and Grindstone Run and there is a tendency for higher amounts of hemlock on the east side of the gorge where conditions are cool and moist.

McConnell's Mill State Park covers most of the middle section of the gorge. Comprising 2,759 acres, the park was designated in 1974 as a National Natural Landmark by the National Park Service, based on the geological features present (Resource Management Plan 1998). More recently, during 2001, the park was approved by Pennsylvania's Ornithological Technical Committee as one of only seventy-eight Important Bird Areas (IBA) in the Commonwealth because of its high quality of bird life.

Threats and Stresses

Except for the immediate streamside of Slippery Rock Creek and the edges of the park, the interior is largely free of recent disturbance. Scattered places along the edge of the park are disturbed by strip-mines, logging and previous agriculture and these disturbances reach into the natural area and represent areas where minimal buffer creates points for invasive exotic species that may then spread into the park.

Japanese knotweed (*Polygonum cuspidatum*) and multiflora rose (*Rosa multiflora*) are invading the streamside of the Slippery Rock Creek. Japanese knotweed represents aconsiderable threat to the streamside areas of the park and could compromise one natural community (river birch - sycamore floodplain scrub) in the park. Some of the uncommon species that occur only along the streamside could also be quickly outcompeted. Additionally, shallow rooted vegetation like Japanese knotweed could lead to bank instability and subsequent loss of soil. Other exotic invasive species seen in the area include dame's rocket (*Hesperis matronalis*), pale-yellow iris (*Iris pseudacorus*) and garlic mustard (*Alliaria petiolata*).

A high deer population is also detrimental to the natural communities in the LCA. Excessive deer browsing will reduce understory diversity and inhibit the regeneration of the overstory species.

Mining has occurred mostly along the eastern edge of the park. Even though the mines have been reclaimed, and the subsequent erosion stemmed, continued attention to these areas is warranted given that invasive species tend to colonize these areas. A proposed limestone mine in the northwestern section of the park, slated to come within 1,000 feet of the park, threatens not only to increase the amount of strip-mine area around the gorge but also may also produce noise within the gorge. If approved, mining disturbances could have a detrimental effect on the natural communities in the gorge, especially bird and other animal populations.

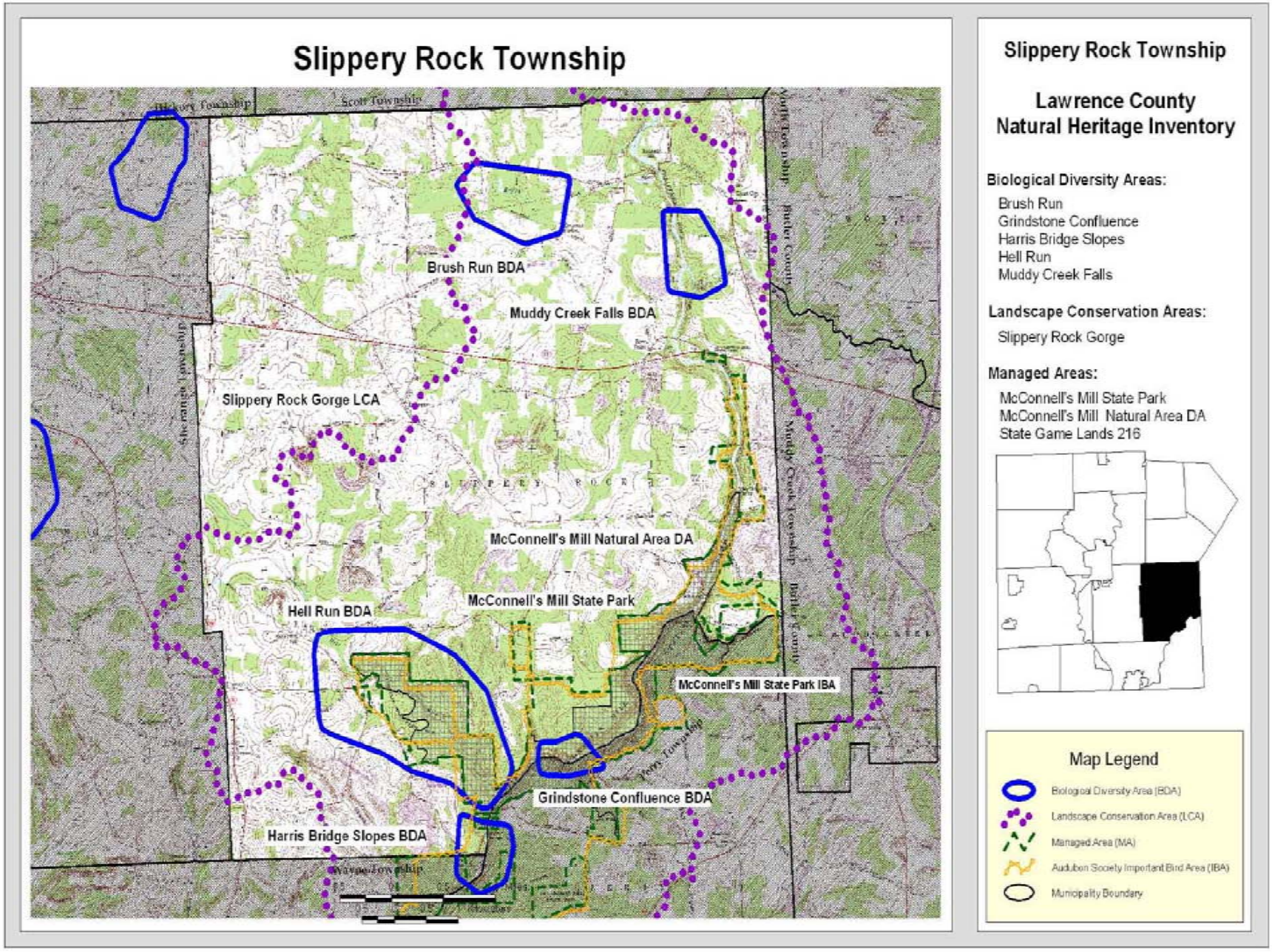
McConnell 's Mill State Park and Slippery Rock Gorge form an unfragmented forest corridor reaching from the Beaver River to the headwaters of the Slippery Rock and Wolf Creeks. Logging has also occurred along the eastern edge of the park. The areas regenerating from logging create prime areas for invasive species to take hold. An old apple orchard is located on a high plateau at the south side of Hell Run. This area is the location of several invasive species which could potentially threaten the ecological value of the Hell Run Gorge. Recreational activities and associated use in the gorge including hiking, rock climbing and whitewater boating produce additional although likely manageable stresses to the ecosystems in the gorge.

Recommendations

Slippery Rock Creek Gorge and its natural communities are unique to the county, region, state and nation. The contiguousness of the habitats in the otherwise fragmented landscape of the county are exceptional. Careful planning within this LCA would benefit both the ecological resources and the people living and recreating on the land. Recognizing the gorge and the land surrounding it as prime ecological and recreational resources is an essential step in appropriate planning of activities around the park. A discussion among the Pennsylvania Bureau of Forestry, private landowners and involved municipalities would be beneficial in continuing comprehensive planning for the LCA.

A strategic plan (Rettew Associates 1995) for the protection of Slippery Rock Creek gorge recommends that no mining permits be issued within ½ mile of Slippery Rock Creek. Slippery Rock Creek has been and currently is impacted by AMD, but treatment of effluent in the upstream reaches has resulted in recovery of the aquatic habitats. Further impacts from additional mining could bring harm yet again to the creek and reverse the previous gains. The plan also recommends that rock climbing be allowed where it is currently practiced and that no new climbing areas be opened. Hiking trails should be graded and hikers should be encouraged to stay on the trails to minimize the impacts of erosion and vegetation trampling. Access for whitewater boaters should be clearly marked and boaters should be encouraged to minimize impact to the streamside.

Full Lawrence County Natural Heritage Inventory Document is available at the Lawrence County Planning Commission Office.


Slippery Rock Township
Brush Run BDA
Muddy Creek Falls BDA
Slippery Rock Gorge LCA
McConnell's Mill Natural Area DA
McConnell's Mill State Park
Hell Run BDA
McConnell's Mill State Park IBA
Grindstone Confluence BDA
Harris Bridge Slopes BDA
Slippery Rock Township
Lawrence County
Natural Heritage Inventory
Biological Diversity Areas:
Brush Run
Grindstone Confluence
Harris Bridge Slopes
Hell Run
Muddy Creek Falls
Landscape Conservation Areas:
Slippery Rock Gorge
Managed Areas:
McConnell's Mill State Park
McConnell's Mill Natural Area DA
State Game Lands 216
Map Legend
Biological Diversity Area (BDA)
Landscape Conservation Area (LCA)
Managed Area (MA)
Audubon Society Important Bird Area (IBA)
Municipality Boundary

McCONNELL'S MILL STATE PARK
RESOURCE MANAGEMENT PLAN

The following comments and recommendations were prepared for the Pennsylvania Department of Conservation and Natural Resources. The State Park Management Manual was publicly adopted on June 9, 1998.

Hell's Hollow is located five miles southwest of the old mill. It is a heavily forested region with an abundance of wildflowers. This unit encompasses 306 acres. The unit includes all park land north of Heinz Camp Road on the west side of Slippery Rock Creek and south of McConnell's Mill Road the small piece of park land on Mountville Road north of Harris Bridge that is not included in the Slippery Rock Gorge Natural Area. All boundaries include either the park boundary or the Slippery Rock Gorge Natural Area Boundary lines.

The vegetation consists of red oak, eastern white pine, eastern hemlock, white oak, chestnut oak, red maple, tulip tree, rhododendron, two old fields, and red maple stands. There is very little understory and this is made up of wildflowers, grapevines, and a few saplings. Hell Run is a small creek that is a maximum of 10 feet in width that feeds into Slippery Rock Creek and flows parallel to the trail.

Rights-of-way through the unit include Penn Power and United Telephone, which are located above and underground. There are no designated trails in this unit. This unit serves as a trailhead for the Hell's Hollow Trail and Slippery Rock Gorge Trail.

The "carry-in, carry-out program" for waste management has been adopted in this area due to its remote location.

Management Unit Objectives

To treat acidic seeps affecting the unnamed tributary to Hell Run.

To stabilize and interpret the old lime kiln.

Prescriptions

Parking Lot~ Weeds will be mechanically, chemically, and/or use of an approved herbicide controlled as needed. Fence posts will be replaced and straightened as needed. They must be stained dark brown. Litter will be removed daily. Signs must be repaired or replaced as needed.

Trailhead~ Weeds and encroaching vegetation will be mechanically controlled as needed. Litter will be removed as needed. Signs and trail markers will be checked for needed repairs or replaced as needed. Fallen tree limbs will be removed after storms.

Wildlife~ Hunting is permitted in this unit.

Lime Kiln~ The limekiln was used to convert local limestone into agricultural lime to be used on farm fields. The structure will be maintained and preserved. Regular inspections will be made to inspect for weakness and deterioration. An interpretive wayside exhibit will be developed for the kiln.

Right-of-Way~ Trees and limbs along the roadway should be inspected periodically and especially after severe storms for hazards. Hazardous trees should be removed. Solid, dead trees may be left for wildlife use for several years, but should be removed when deterioration becomes hazardous to road users.

Public utility rights-of-way are to be maintained by the utility companies in compliance with the existing agreement and the rights-of-way maintenance guidelines. Shrubs and low trees will be retained for aesthetics and wildlife habitat.

Hazardous Trees~ Trees that present hazards to the roadways and/or parking areas in this unit should be removed. The brush associated with this tree removal should be placed in piles within the area for wildlife habitat. Brush piles should be at least 5 feet high and 7 to 8 feet in diameter (a 12- to 15-foot diameter is good) with a firm foundation of criss-crossed heavy logs. Non-hazardous dead or dying trees should be left standing for wildlife den habitat or perching trees if they do not pose a safety problem.

Water Quality Data

The following water quality data was collected from Slippery Rock Streemkeepers and cooperatively shared for the purposes of inclusion in the Hell Run Conservation Plan. Although the water sampling data was not collected directly from Hell Run, correlations and assumptions could be made with the data from upstream and downstream of the confluence of Hell Run with the Slippery Rock Creek. The Slippery Rock Streemkeepers data can also be compared and combined with the water quality sampling data from the Rettew Report in 2004 and the PA FBC data.

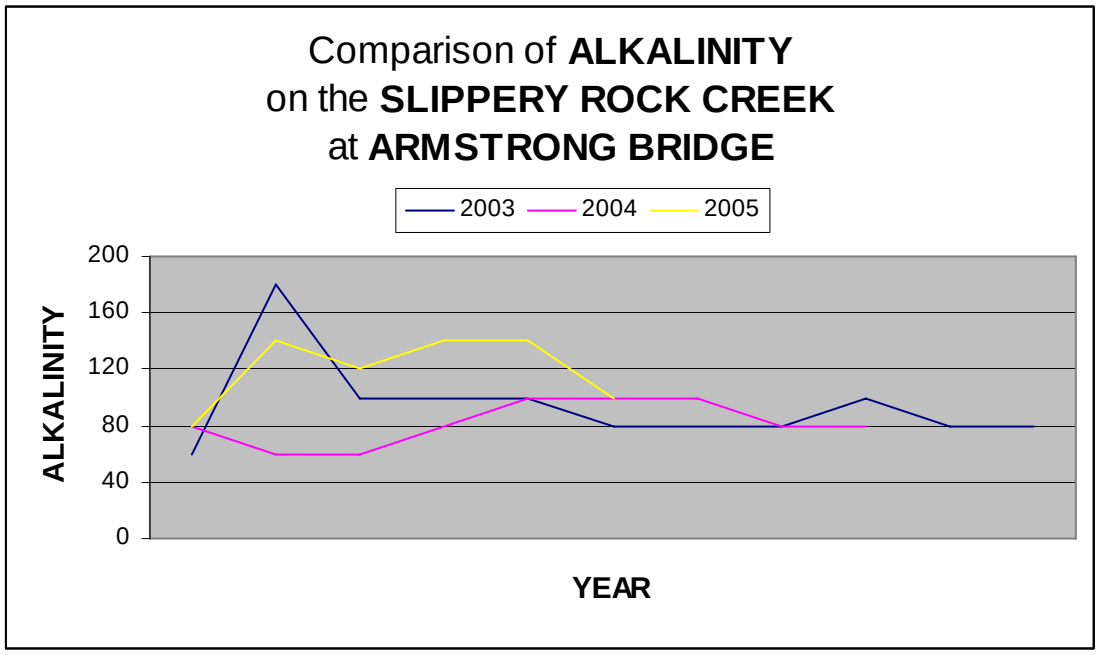
The Slippery Rock Streamkeepers water testing site along the Slippery Rock Creek and ***upstream*** *from the confluence of Hell Run is located at* ***Rose Point***. The collection site ***downstream*** *of Hell Run is located at* ***Armstrong Bridge***.

Dissolved Oxygen measures the amount of oxygen gas (O2) dissolved in a given volume of water at a particular temperature and pressure. Oxygen dissolved in water is necessary for the survival of most aquatic life, including fish. Many factors such as temperature, flow, and turbidity affect dissolved oxygen. A stream can have DO levels varying from 0 ppm to 18 ppm. Most aquatic life cannot withstand DO below 5 ppm, although a healthy stream generally has DO higher than 5 ppm to buffer against possible fluctuations caused by drought, temperature, or pollutants. With both the Slippery Rock Creek and Hell Run designated by the PA DEP as cold water fishery (CWF), the stream is required to maintain a daily average dissolved oxygen level of 6 ppm. Dissolved Oxygen (DO) levels for water samples collected between 2002 and 2006 ranged between 4 ppm and 15 ppm for the Rose Point testing site and between 6 ppm and 15 ppm for the Armstrong Bridge testing site.

pH is a measurement of the acidity of water. It is measured on a scale ranging from 0 to 14, with 7 being neutral, anything below 7 being acidic, and anything above 7 being basic. For example, lemon juice has a pH of less than 2, baking soda has a pH of about 8, and bleach has a pH of slightly more than 12. The acidity of water ultimately affects what will live there and what aquatic life will survive. Healthy streams should have a pH no lower than 6 and no higher than 9. The pH ranges from the Slippery Rock Streamkeepers water quality data varied between 6.8 and 8.8, with the Armstrong Bridge testing site downstream of Hell Run generally having a higher pH than Rose Point. Coal mining activities from early 1900's and the acidic seeps found along Hell Run may attribute to the higher pH levels found in the Slippery Rock Creek at the Armstrong Bridge site.

Alkalinity measures the ability of water to buffer or neutralize acids. For example, if an acidic substance were introduced to water with high alkalinity, the water would be able to remain stable. If an acidic substance were introduced to water with low alkalinity, the pH would drop. Alkalinity is determined by the soil and bedrock through which the stream flows. A stream flowing through limestone bedrock will have considerably more alkalinity than a stream flowing through sandstone. A layer of

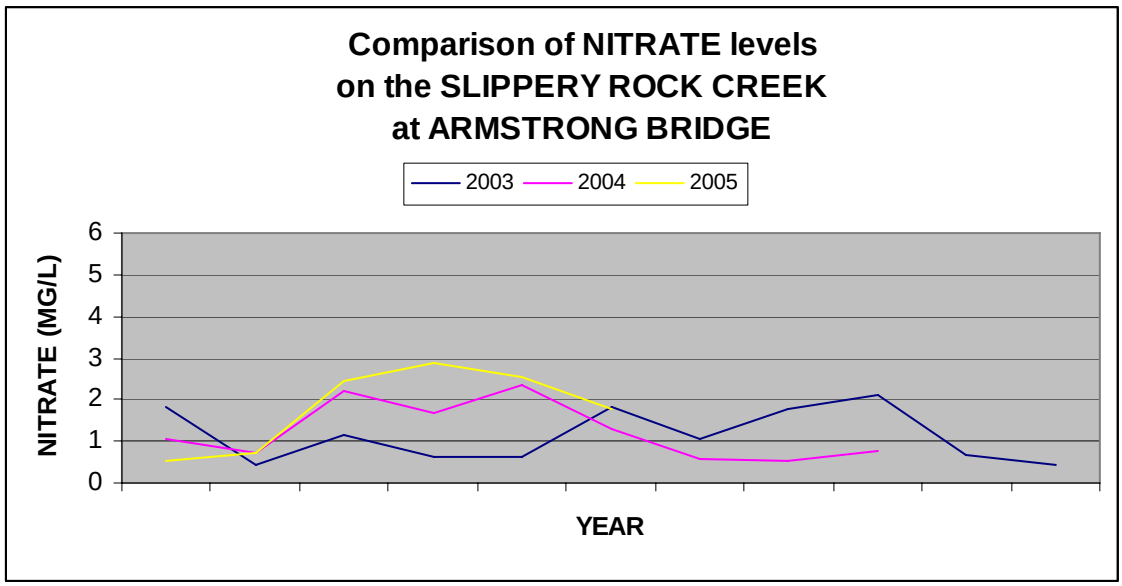
Vanport limestone lies within the bedrock of the Hell Run watershed and is even exposed in some areas. According to the water quality data, the alkalinity of the Slippery Rock Creek in recent years appears to be increasing, especially when the water testing was conducted after heavy rain events.



Conductivity, or Specific Conductance, is a measure of the ability of water to pass an electrical current. Conductivity in water is affected by the presence of inorganic dissolved solids such as iron and sulfates, and primarily dependant on the geology of the area through which the water flows. Streams that support a health fish population of fish and aquatic insects have conductivity ranging from 150 to 500 micromhos per centimeter. Ranges for conductivity from the Slippery Rock Streamkeepers data were between

Sulfate in water is the result of the weathering of sulfate bearing minerals such as pyrite. Since pyrite is the primary cause of acid mine drainage (AMD), sulfate is an excellent indicator of streams that may be impacted by mine drainage. Not only does AMD have a devastating impact on the stream, but also on the creatures that live there. AMD and the orange, iron sediment seen on the bottom of the stream, suffocates all organisms that live there and destroys their food supply. High acidity affects respiratory functions and reproduction. Sediment clogs fish gills, lowers visibility, and can ultimately affect the amount of oxygen dissolved in water. Other sources of sulfate include waste material from pulp mills, steel mills, food processing operations and municipal wastes. A sulfate level of 250 ppm or higher in water is considered to be unsafe to drink.

Nitrogen is essential for plant growth, but the presence of excessive amounts in water supplies presents a pollution problem. Too many nutrients, such as nitrogen and phosphorus, stimulate the growth of nuisance vegetation and algal blooms, which subsequently use much of the dissolved oxygen needed to help healthy aquatic plants and animals grow. Nitrogen compounds may enter water as *nitrates* or be converted to nitrates from agricultural fertilizers, sewage, drainage from livestock feeding areas, farm manure, and legumes. The predominance of agriculture in the Hell Run watershed allows for potential nitrate pollution. The water quality test results for both Rose Point and Armstrong Bridge ranged between less than 1mg/l to 3.52 mg/l. Seasonal changes in the activities and management of agricultural communities, along with weather and rainfall, may influence the potential for nonpoint source pollution and nitrogen contaminated surface water runoff.



Phosphorus is an important nutrient for aquatic plants. When phosphorus is present in excess of the concentrations required for normal aquatic plant growth, a process called eutrophication takes place. This creates a favorable environment for the increase in algae and weed nuisances. When algae cells die, oxygen is used in the decomposition and fish kills often result. Phosphates are compounds made by the mixture of phosphorus and oxygen. Sources of phosphates include septic tanks, runoff from feedlots, runoff from agriculture and waste water treatment plants. In addition, detergents with phosphates were a prime source before manufacturers developed phosphate-free alternatives. *Phosphate* levels from the Slippery Rock Streamkeepers water quality data never exceeded 1.0 mg/l and indicates minimal pollution from phosphorus compounds.

Benthic macroinvertebrates are cold-blooded aquatic organisms with no backbone that live in the bottom parts of our waters and can be seen with the naked eye. Benthic macroinvertebrates make good indicators of water quality for several reasons:

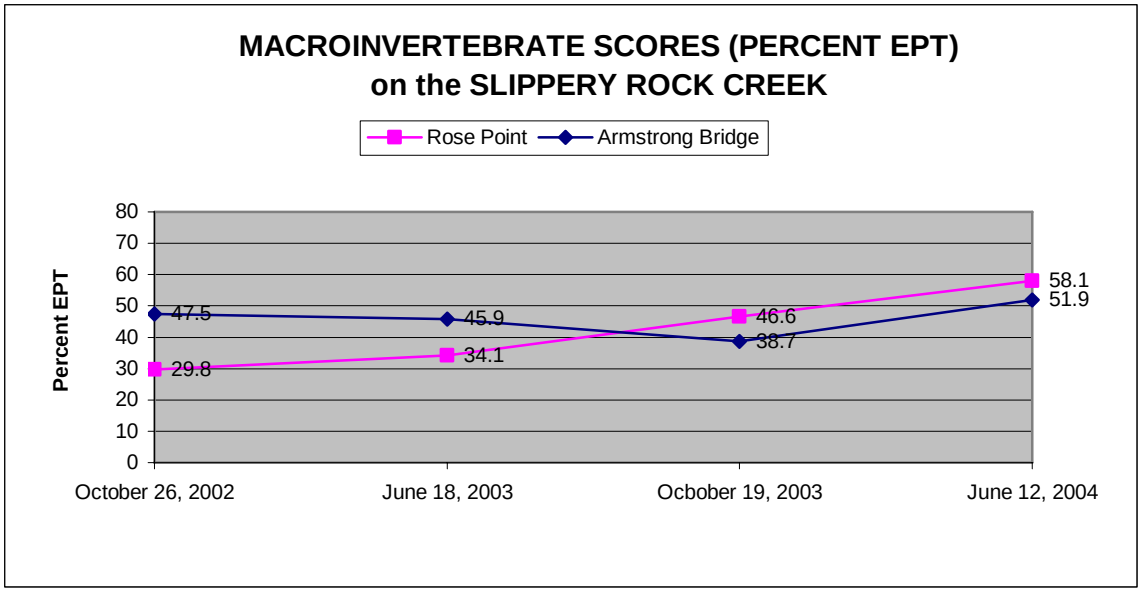
- they live in the water for all or part of their life;

- they are easy to collect for water quality monitoring purposes;
- they stay in areas suitable for their survival;
- they differ in their tolerance to amount and types of pollution;
- they are easily identifiable and visible without a microscope;
- they often live for more than one year;
- they have limited mobility; and
- they are integrators of environmental condition.

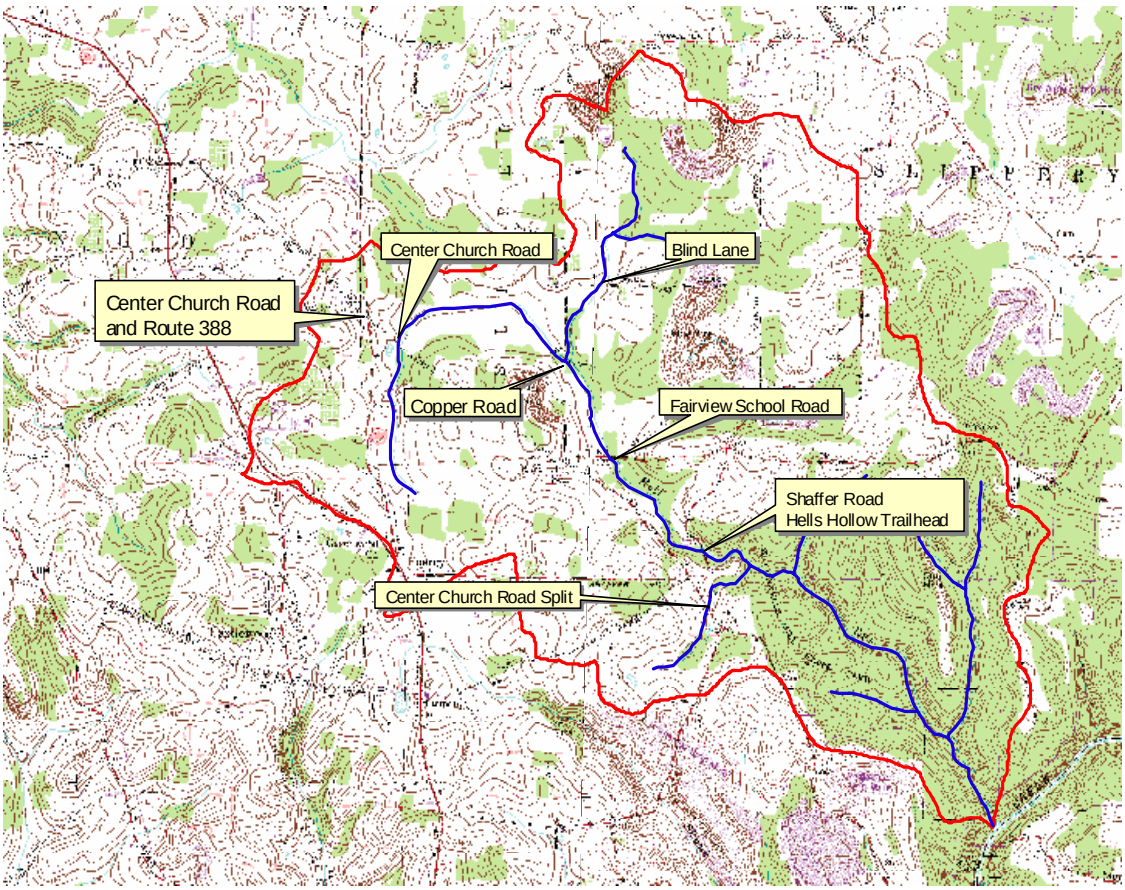
The pollution tolerances of the various macroinvertebrates included in the biotic index are based upon the macroinvertebrates' tolerance to dissolved oxygen concentrations in water. It is expected that in a stream with good water quality, that macroinvertebrates that are both sensitive to and tolerant to pollution will be found. No particular group or types of organisms will dominate the macroinvertebrate population of the stream. With increased organic pollution (from nutrients found in fertilizers, sewage, and other sources) dissolved oxygen levels within the stream are expected to fluctuate more extremely and fewer pollution sensitive organisms will be found. Macroinvertebrates that can tolerate lower oxygen levels will become more prevalent. As organic pollution continues to increase, some pollution tolerant macroinvertebrates will become dominant and will be able to support large populations within the stream, while pollution sensitive or semi-sensitive organisms will be unable to survive.

A shift in macroinvertebrates' food sources is expected with changes in amount of organic pollution in a stream. In clean streams, food sources are usually from within the natural stream system, including leaf litter from trees in the riparian corridor of the stream. In more organically-polluted streams, food might be supplied by other than natural sources, such as nutrients input as fertilizers through runoff or from faulty, un-maintained or satiated septic systems. Increased nutrients will also stimulate plant and algal growth within a stream, offering yet another food source for macroinvertebrates in polluted streams.

The EPT and Biotic Index are used to monitor the sensitivity of taxa to pollution. Some insects are more tolerant of pollution than others. Although these pollution tolerant groups, which include certain true flies and worms, can be found in the cleanest streams, their numbers should not dominate the community. On the other hand, the presence of mayflies, stoneflies, and caddisflies, sometimes referred to as the “canaries of the stream” because they are so sensitive to pollution, indicate good water quality. The Slippery Rock Streamkeepers data scores the results of their macroinvertebrate study by Percent EPT which is the total number of Ephemeroptera (mayflies), Plecoptera (stoneflies), and Trichoptera (caddisflies) found in the study. Species within these three groups are sensitive to changes in water quality and therefore, the more EPT taxa discovered, the better the water quality and the higher the EPT percentage. On the average, the Slippery Rock Streamkeepers macroinvertebrate scores indicated *good* water quality for the Slippery Rock Creek.


MACROINVERTEBRATE SCORES (PERCENT EPT)
on the SLIPPERY ROCK CREEK
Rose Point
Armstrong Bridge
Percent EPT
80
70
60
50
40
30
20
10
0
47.5
45.9
38.7
29.8
34.1
46.6
58.1
51.9
October 26, 2002
June 18, 2003
Ocbober 19, 2003
June 12, 2004

Hell Run Watershed Photographed Stream Sites



Hell run stream.shp
Hell run watershed.shp

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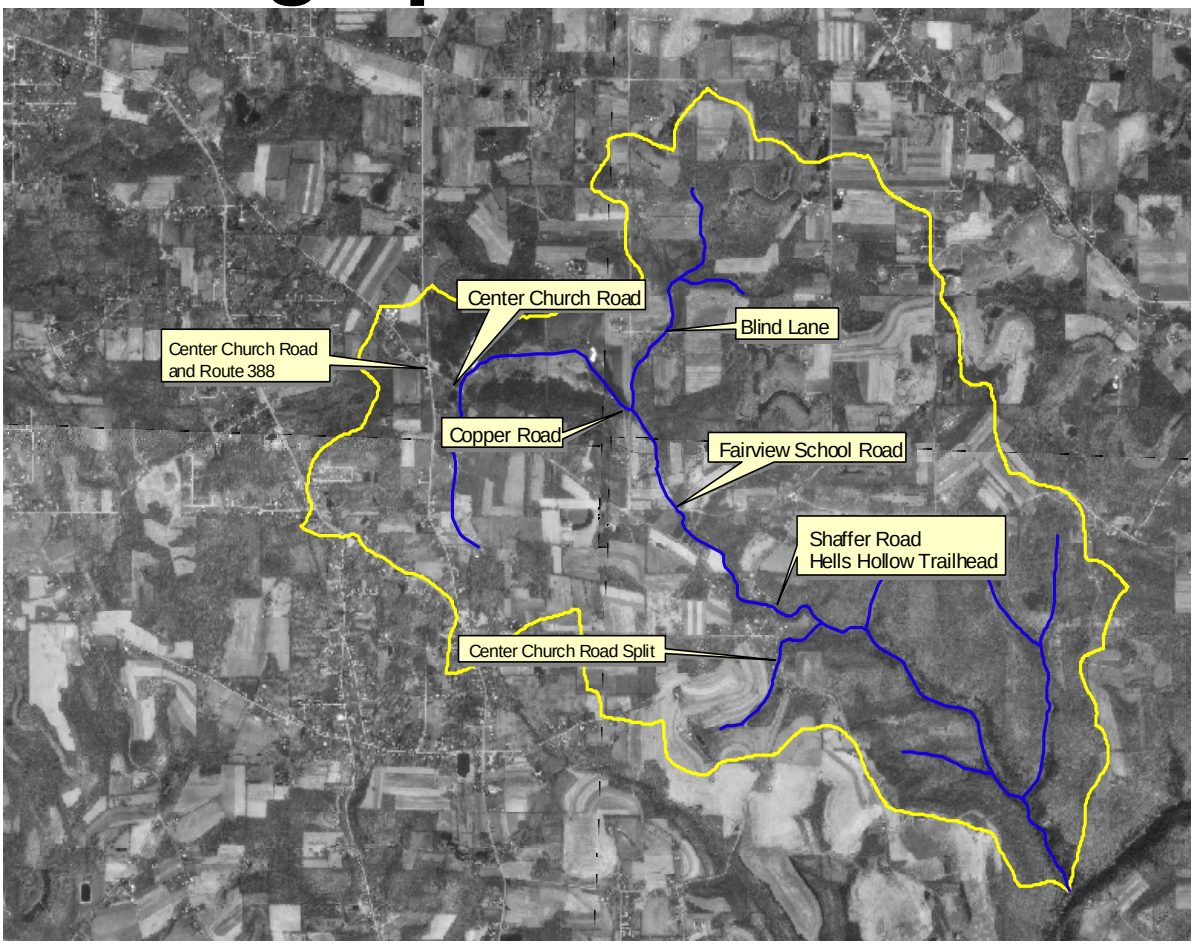
Hell Run Watershed Photographed Stream Sites



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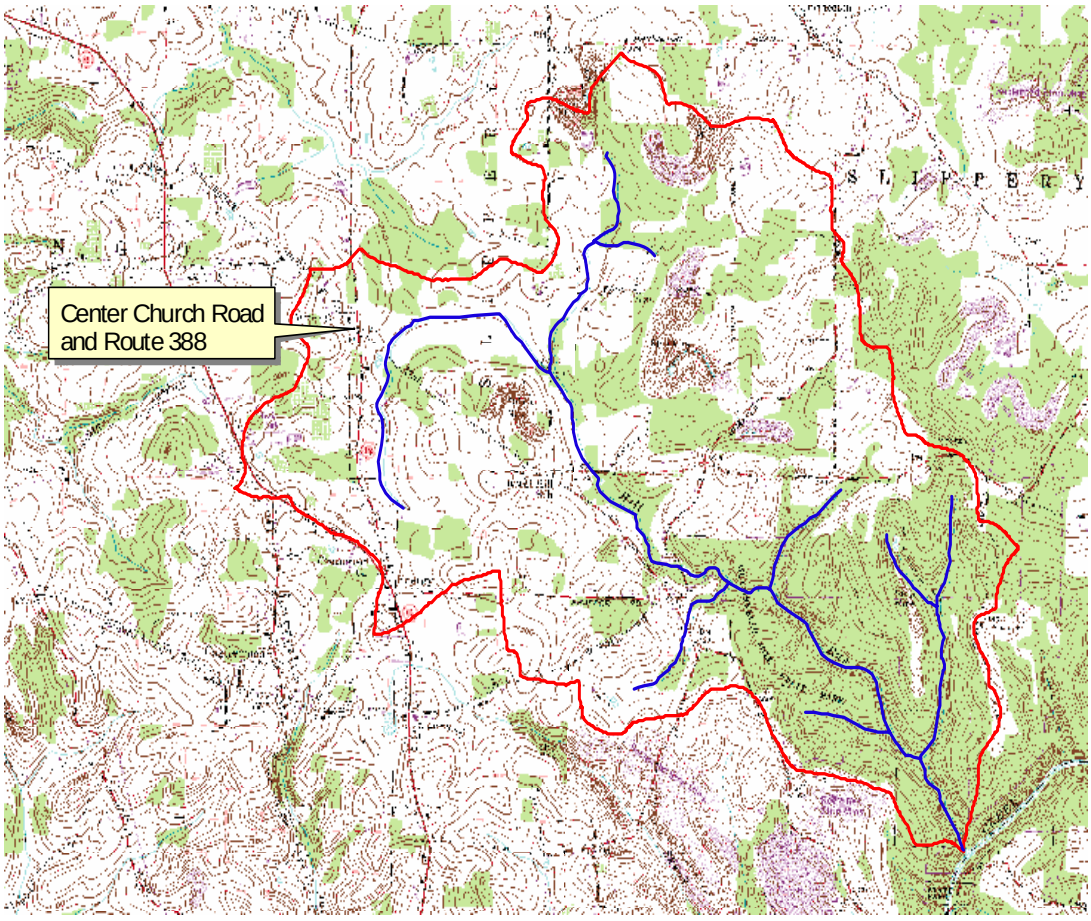
Center Church Road and Route 388



Hell run stream.shp
Hell run watershed.shp

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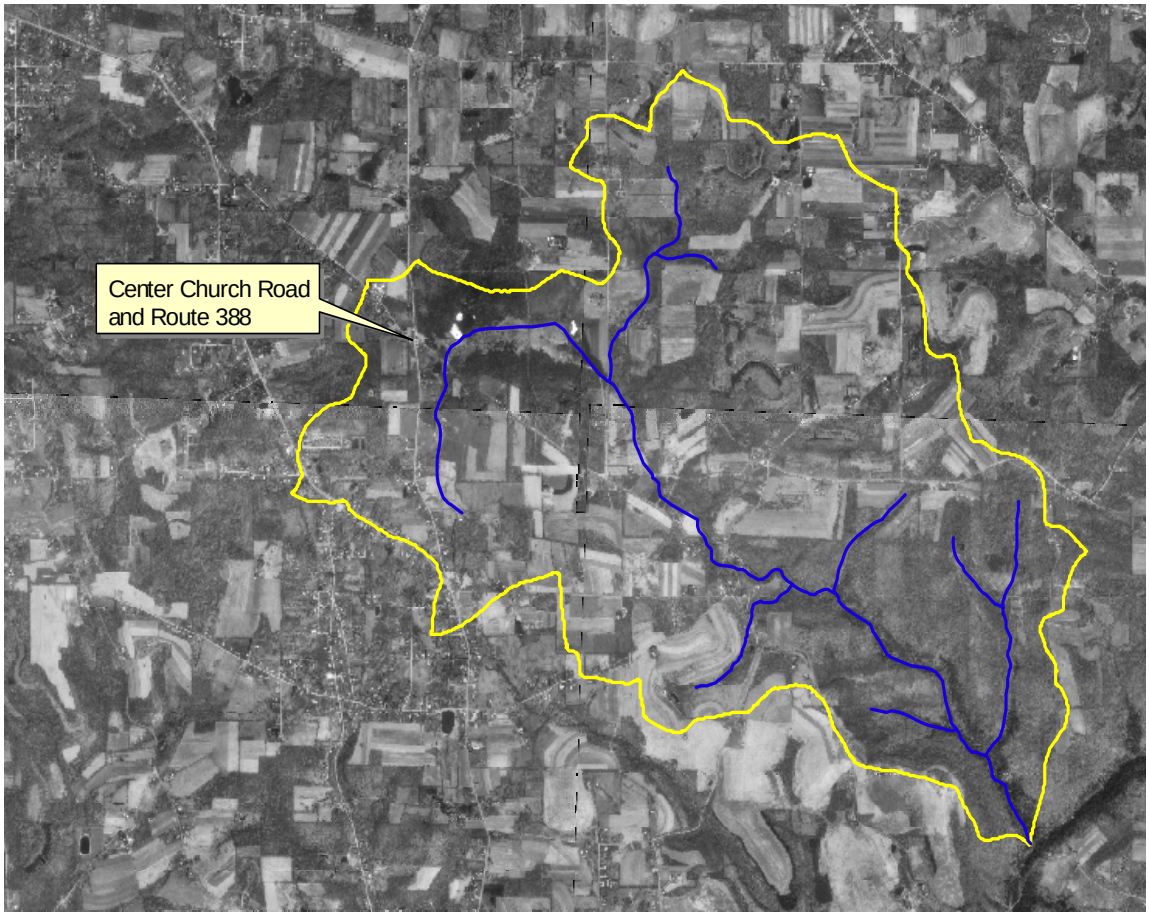
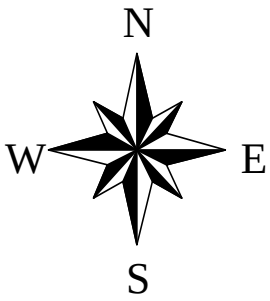
Center Church Road and Route 388

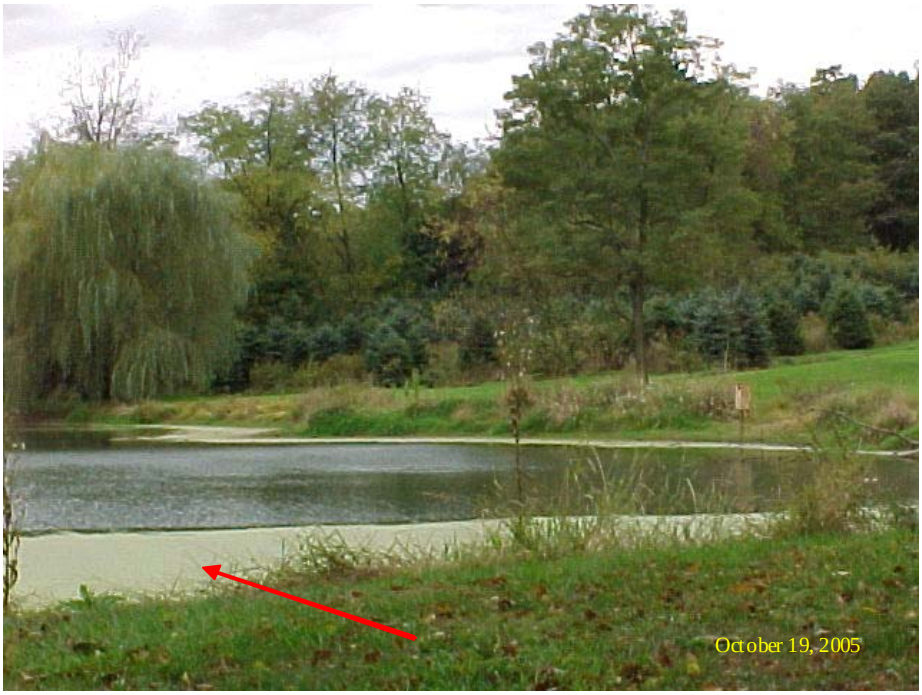


Hell run stream.shp
Hell run watershed.shp



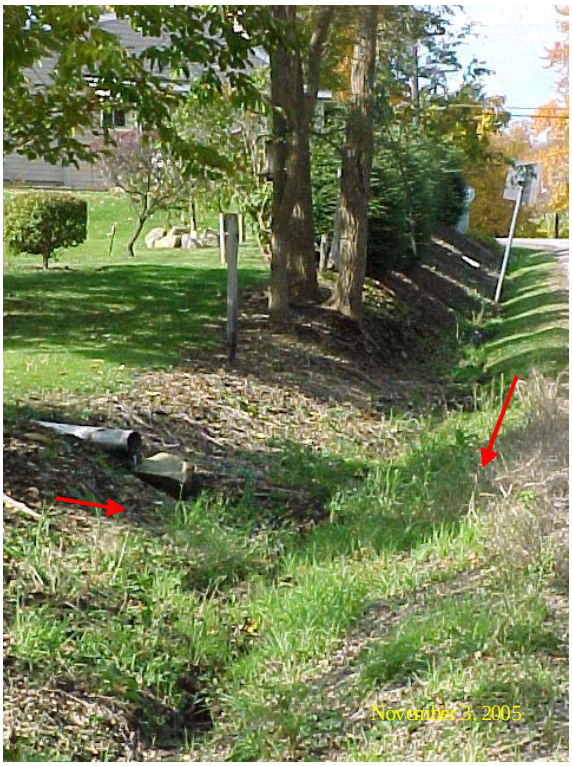
CENTER CHURCH ROAD and Route 388

Route 388 culvert carrying stormwater through a series of residential ponds.



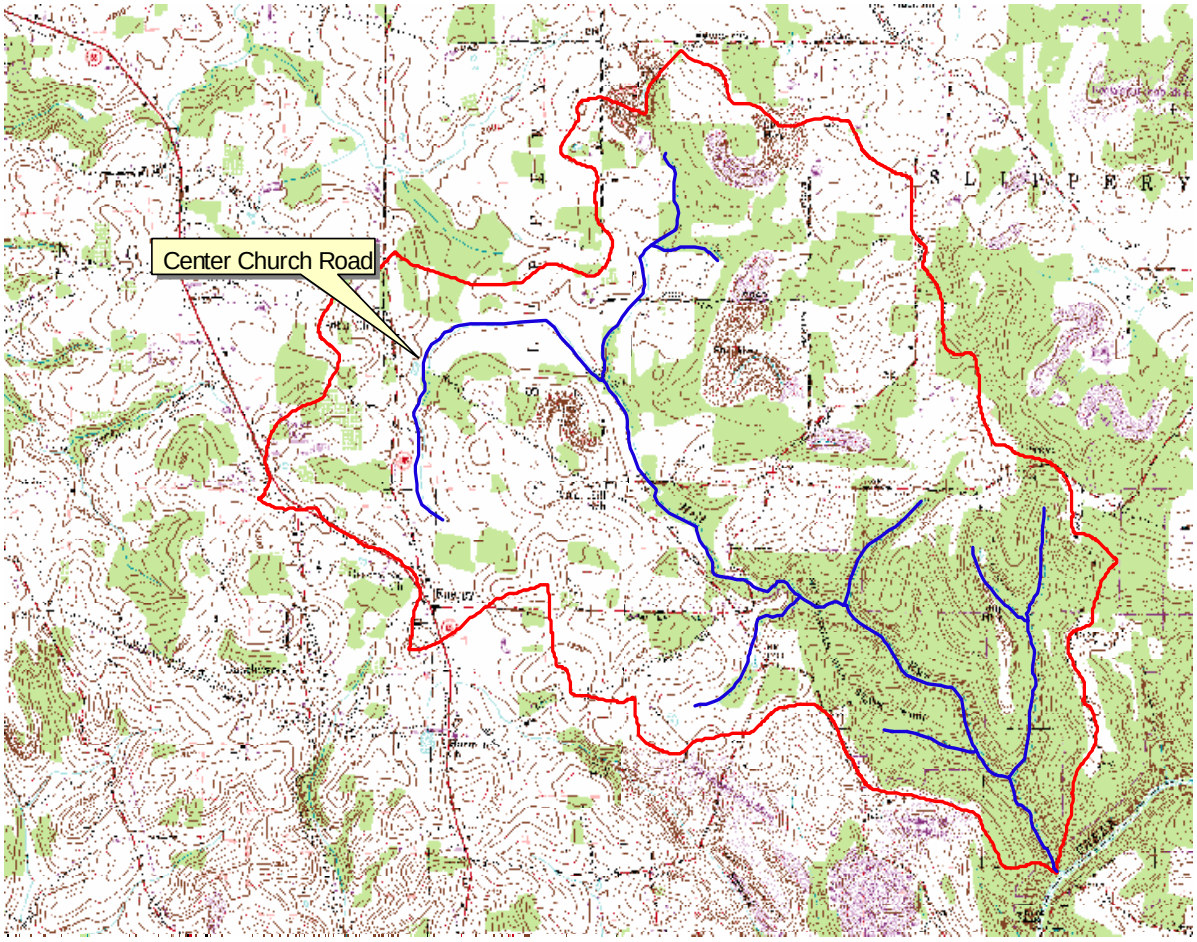
Algal growth on the surface of the pond can be one indicator of nutrient enrichment. Keeping the stormwater conveyance channel vegetated assists with nutrient uptake and removal of non-point source pollutants.

This photograph shows the series of manmade ponds and the minimal vegetation that exists in the buffer zone. Mowing to the edge of streams and ponds is a common maintenance practice for landowners and can be difficult to change attitude and perception.

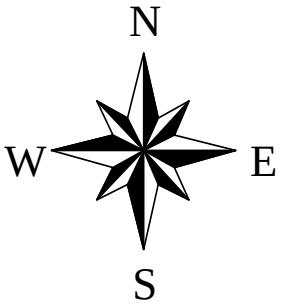


A residential french drain empties stormwater into the conveyance system along Center Church Road. Stormwater often carries nonpoint source pollution from roads and residential lawns via roadside ditches to the nearest stream or waterway.

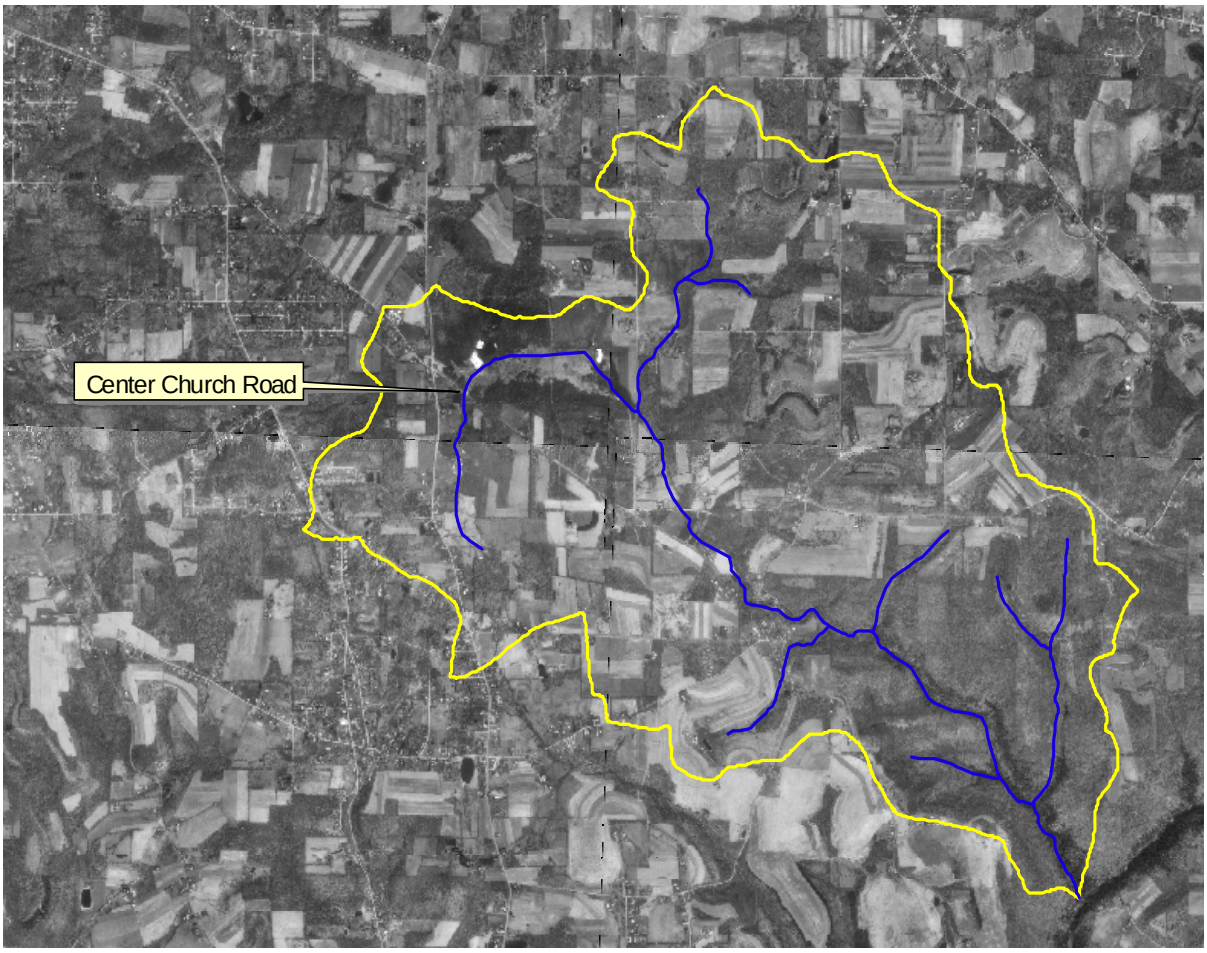
Center Church Road Stream Crossing



Hell run stream.shp
Hell run watershed.shp



Center Church Road Stream Crossing



Hell run stream.shp
Hell run watershed.shp

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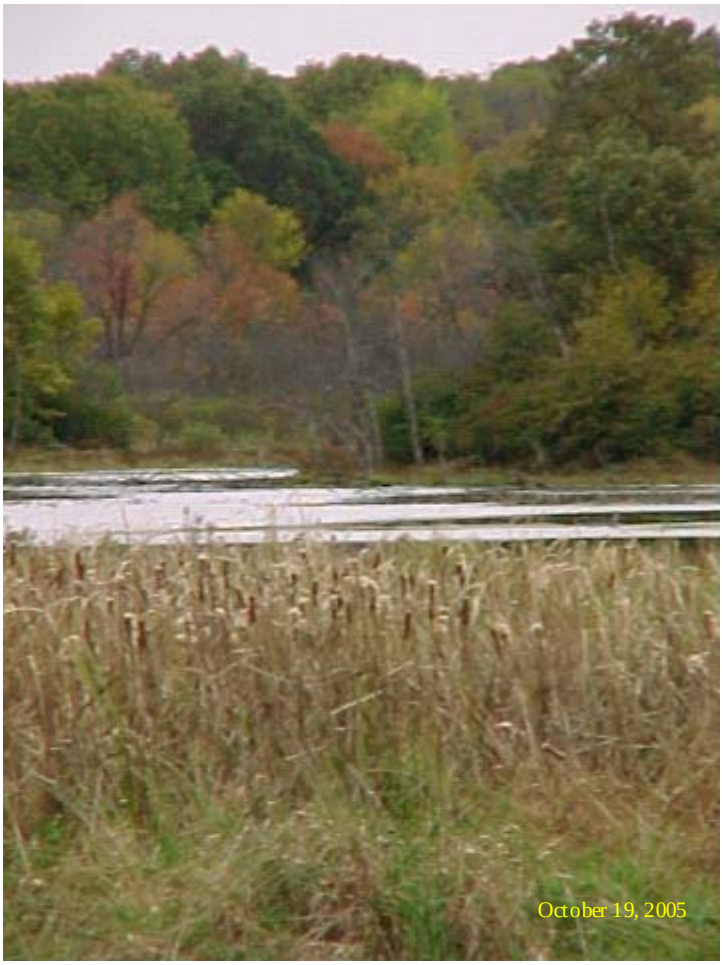
CENTER CHURCH ROAD Stream Crossing

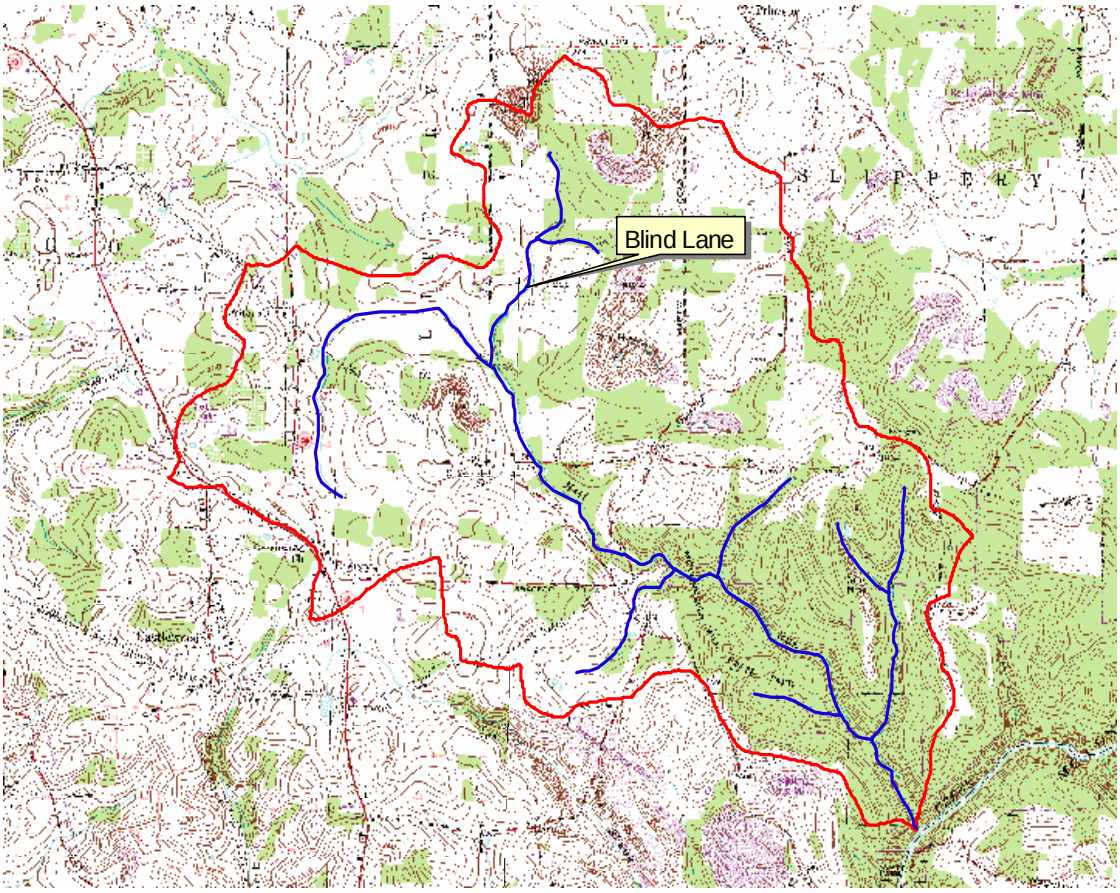
Hell Run flows beneath Center Church Road and into a large wetland by way of this cement culvert.

Although not evident in the photograph, there is an oil sheen or film on the surface of the water and substrate is embedded with fine sediment/silt.



These wetlands are situated on the northern side of Center Church Road. The property owner has enlisted the 65 acre parcel in the state's Clean and Green Program.

Blind Lane Stream Crossing



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Hell run watershed.shp

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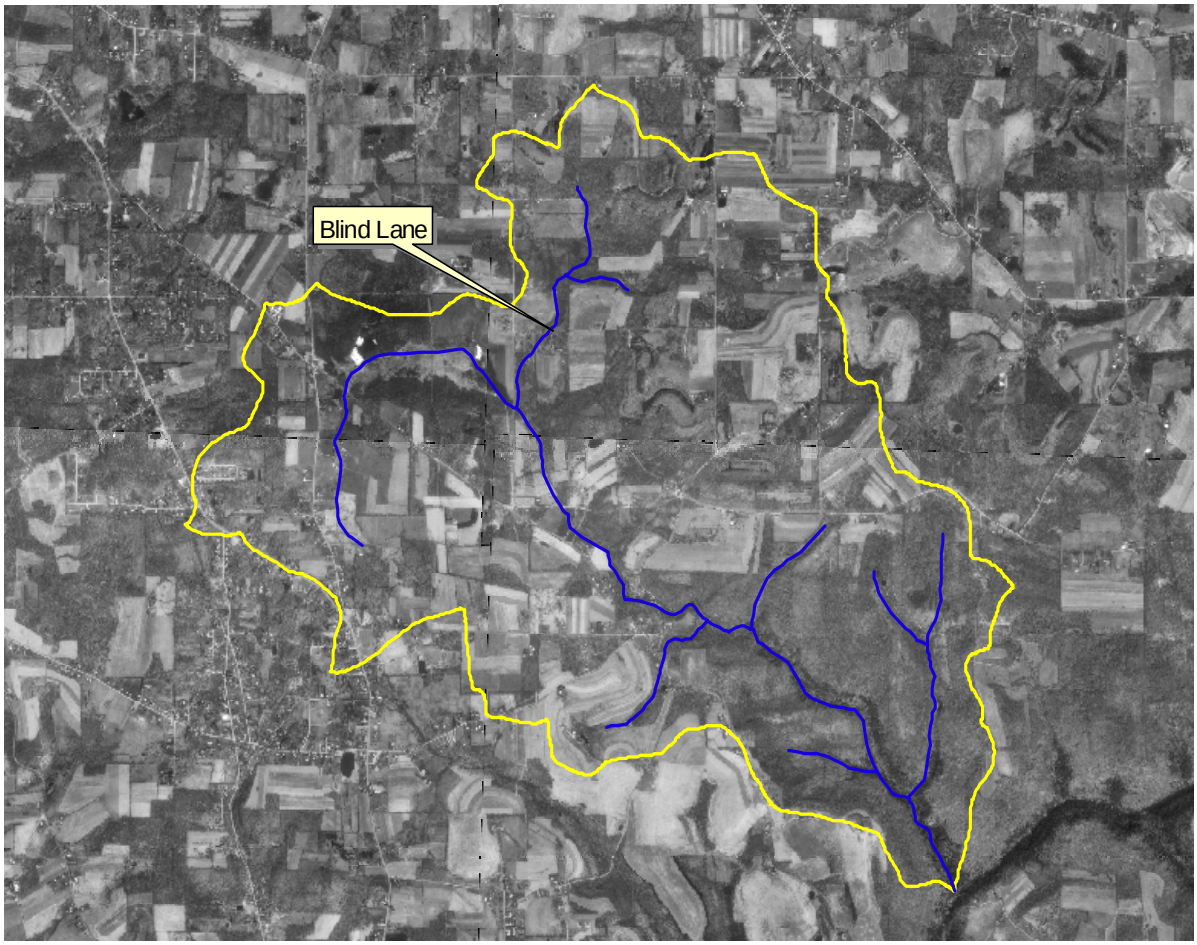
Blind Lane Stream Crossing



Hell run stream.shp
Hell run watershed.shp

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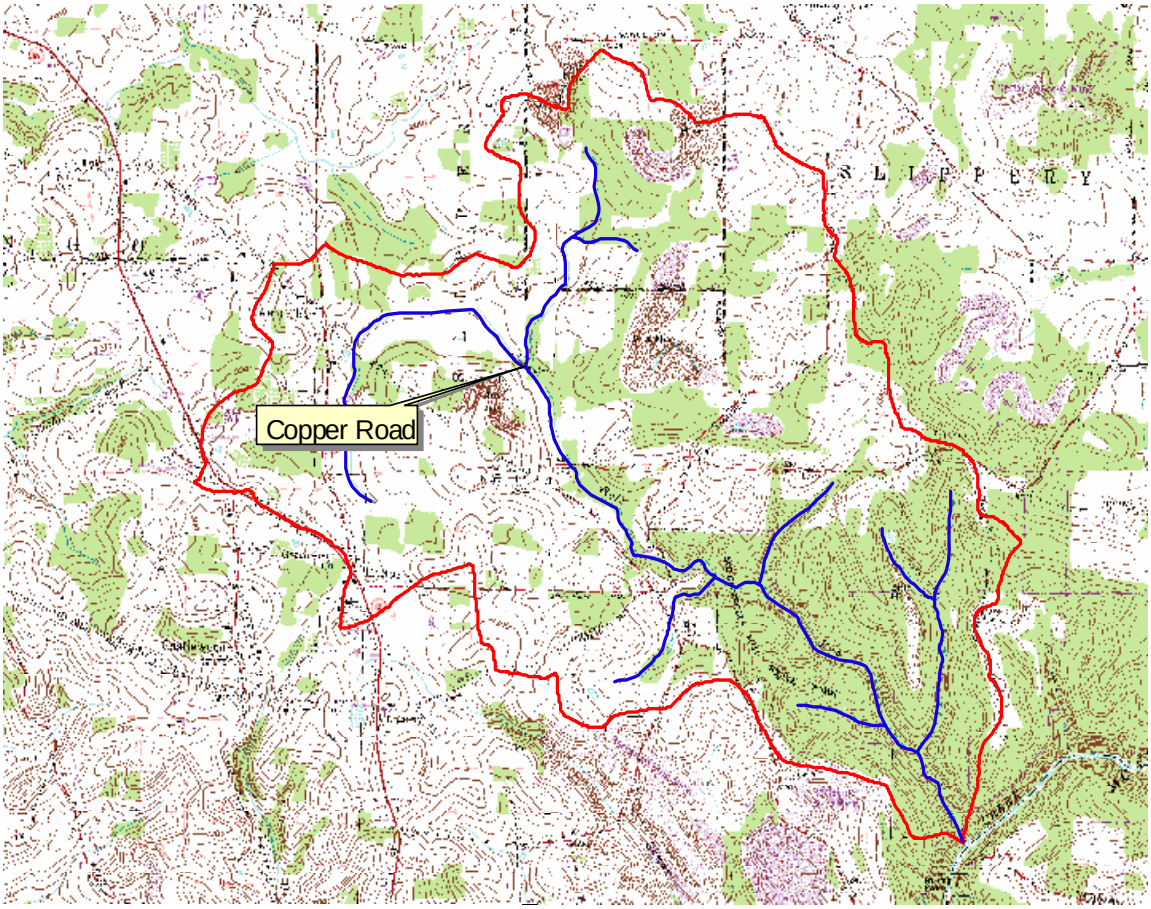
BLIND LANE Stream Crossing

A newly installed culvert Blind Lane with increased capacity for conveying water from Hell Run. Outreach and education for municipal officials is a critical component to managing stormwater and protecting water quality.

As seen in this picture, the flow rates of Hell Run in the summer and fall seasons significantly decrease, similar to that of an intermittent or perennial stream. Groundwater recharge is largely dependant on winter snowfall accumulation and snowmelt.

Copper Road Wetlands



Hell run stream.shp
Hell run watershed.shp

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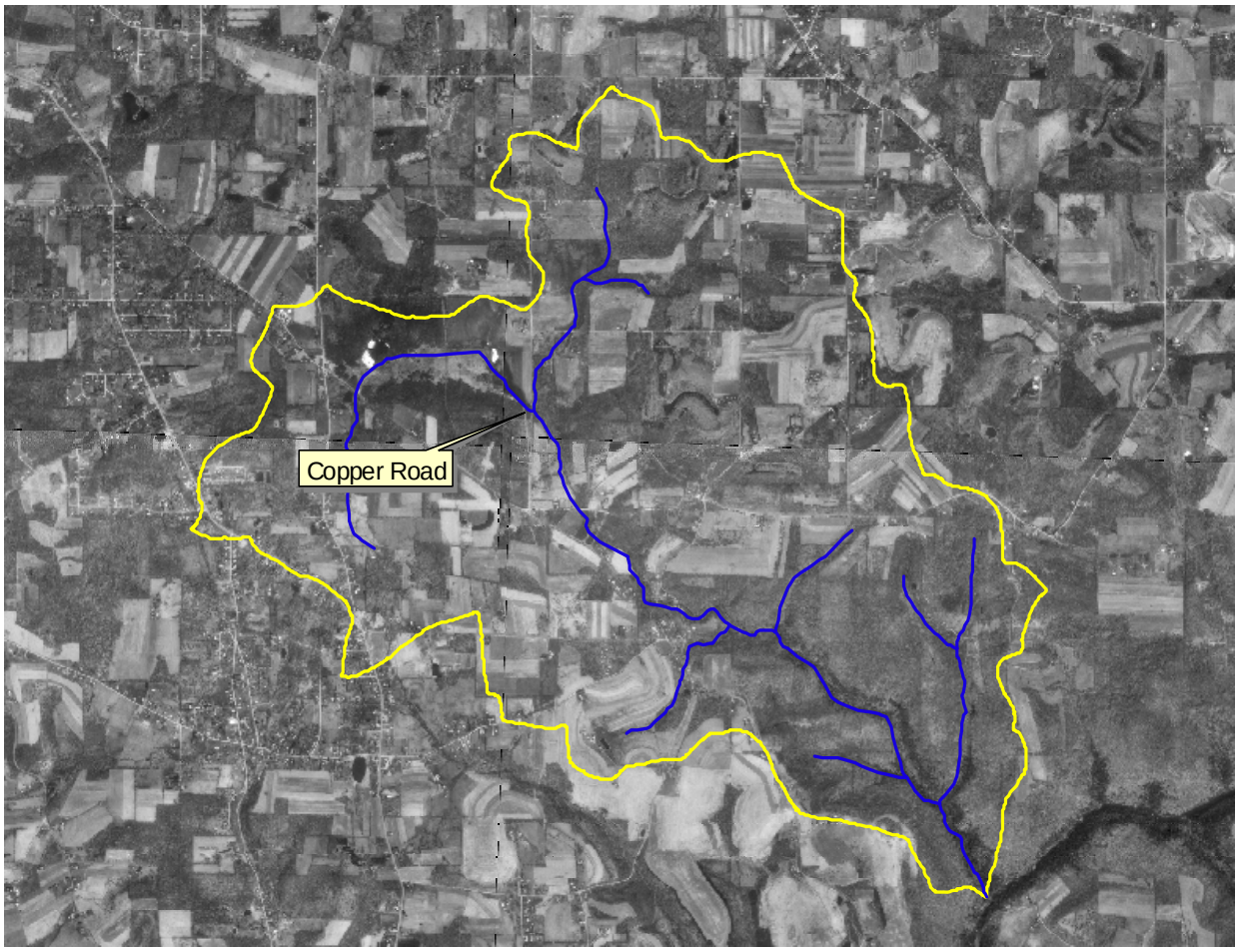
Copper Road Wetlands



Hell run stream.shp
Hell run watershed.shp

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COPPER ROAD Wetlands

This picture was taken at the Copper Road stream crossing. Hell Run flows amid the wetlands situated to the west of Copper Road. The wetlands provide exceptional habitat for numerous species of wildlife and birds. Dead tree snags and submerged vegetation are commonly found in wetland habitats. Wetlands provide flora and fauna diversity, flood control and mitigation, and pollutant filtration .

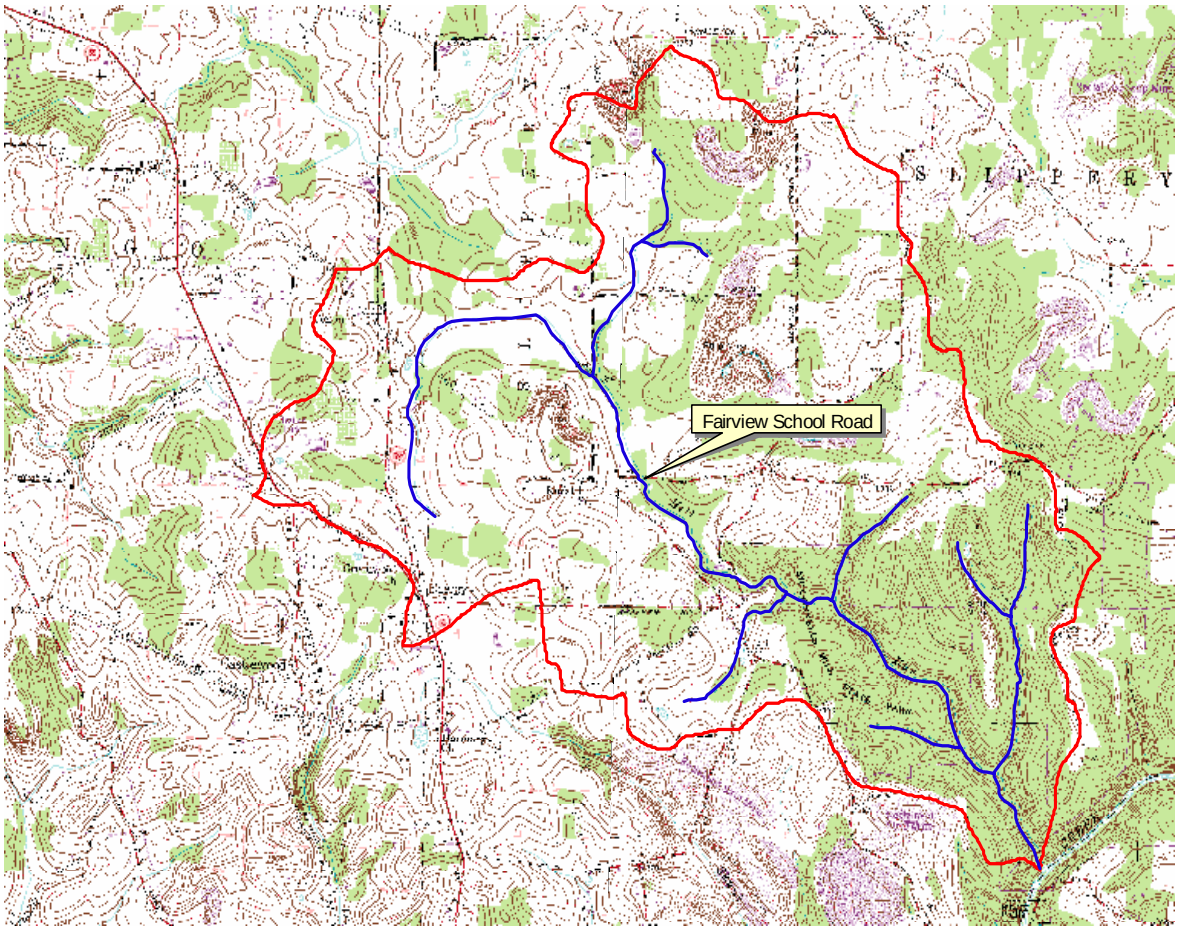
Splashing in the background, birds of all different species including ducks, geese, and herons utilize these wetlands for food and habitat. This 90 acre parcel may have potential for an Important Bird Area (IBA) designation by the Audubon Society, conditional upon the landowners consent.

Landowners often view wetlands as "wasted" land unsuitable for farming or development. Property tax relief might change landowner perception and provide a financial incentive for property owners of wetlands.

Two tributaries of Hell Run converge on the east side of Copper Road and flow through these pictured wetlands. A bird box still remains posted on a dead tree snag. Nutrient enrichment is evident from the algae on the surface of the water. Landowners often see wetlands as an impediment to rightful land use activities, their property rights, and exemplify government control.

Through a grant from the Pennsylvania Organization of Watersheds and Rivers (POWR) and administered by the Penn Soil Resource Conservation and Development Council (RC&D), Slippery Rock Township received these Hell Run stream signs to install at two road crossings within their municipality. The first set was installed here at Copper Road and the second at Shaffer Road near Hells Hollow.

Fairview School Road Stream Crossing



Hell run stream.shp
Hell run watershed.shp

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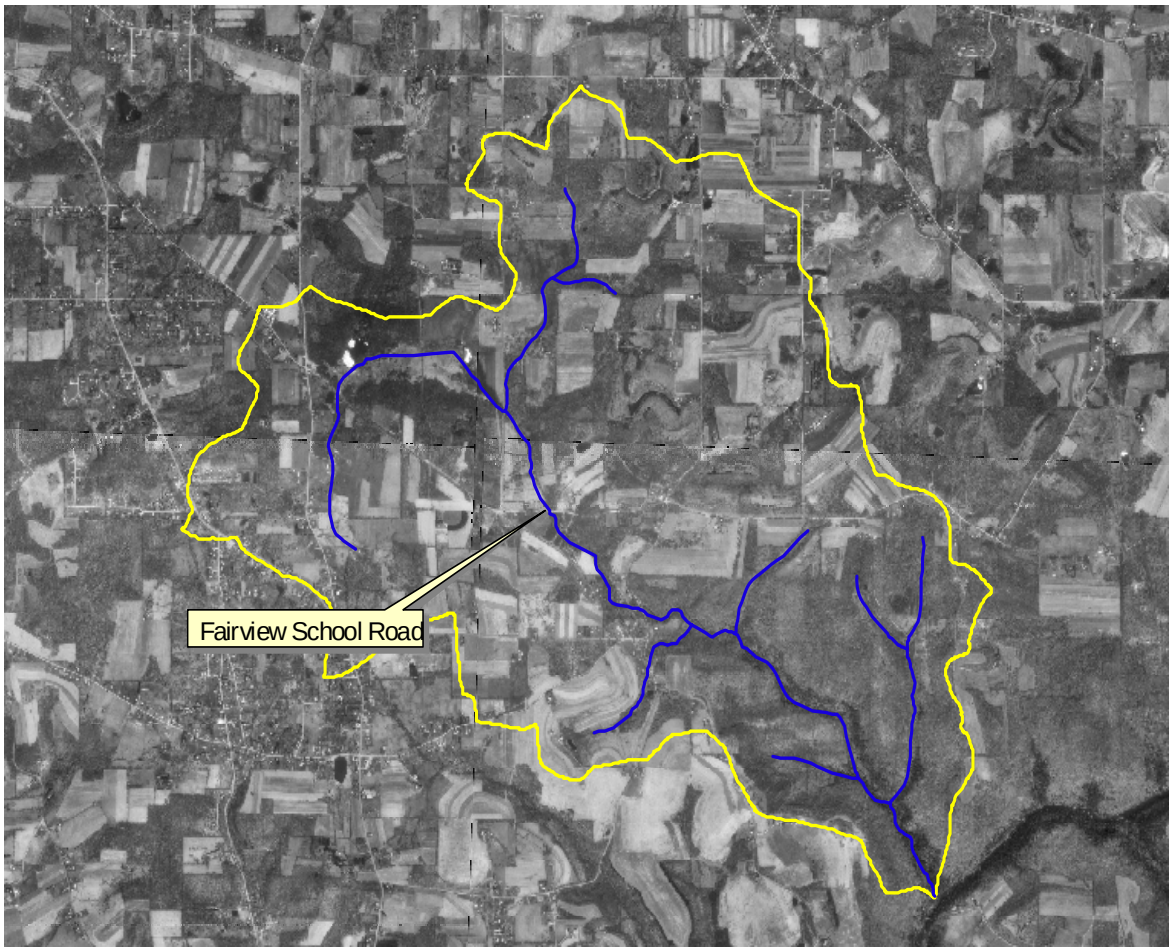
Fairview School Road Stream Crossing



Hell run stream.shp
Hell run watershed.shp

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FAIRVIEW SCHOOL ROAD Stream Crossing

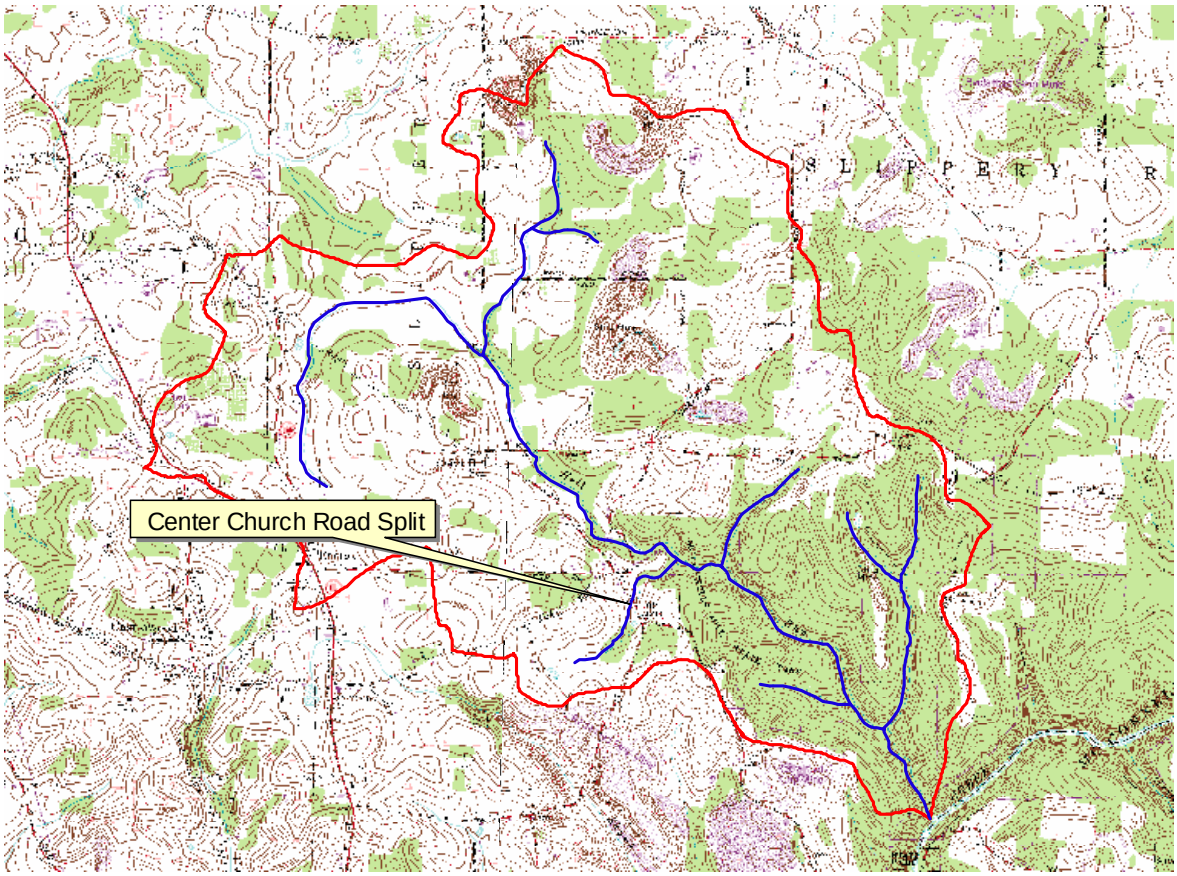
A significant amount of vegetation and shrubbery exists on both sides of the stream. Riparian buffers like these provide shade to keep water temperatures cool, stabilize banks and reduce erosion, and provide food and nutrients for aquatic life.

This frog was happily perched along the streambank.

Not identifiable in this picture, minnows are gathered in the shade beneath the bridge.

Bridges often restrict the flow of water that in turn, cause bridge structure to erode and disturbances downstream such as gravel bars and cutbanks.

Center Church Road Split Stream Crossing



Hell run stream.shp
Hell run watershed.shp

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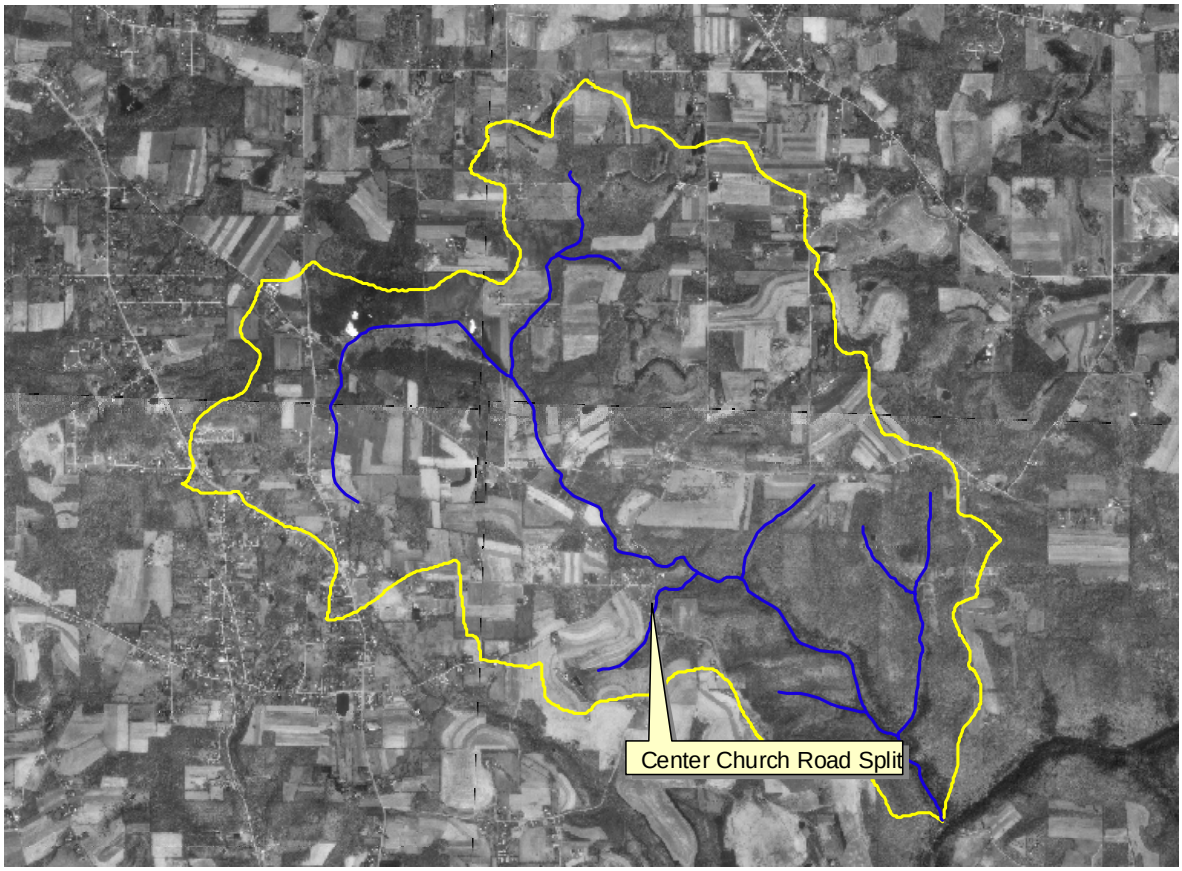
Center Church Road Split Stream Crossing



Hell run stream.shp
Hell run watershed.shp

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CENTER CHURCH ROAD SPLIT
Stream Crossing

Prior to flowing beneath Center Church Road, Hell Run meanders through an abandoned pasture. Just upstream of this photo, a small impoundment creates a pond that was once used as a watering source for cattle.

The headwaters of this tributary lie on the hillside of the James Frew Farm where the District is cooperatively implementing Agricultural Best Management Practices (BMP's) including a manure storage facility, barnyard stabilization, and pasture management with Growing Greener funding. The farm is also utilizing USDA EQUIP monies to install streambank fencing. The District conducts water quality testing at a residence located just upstream of this photo and downstream of the Frew Farm.

This culvert transports the flow of Hell Run beneath Center Church Road. Stormwater enters the stream on the left side of the photo, potentially carrying non-point source pollutants. A significantly noticeable amount of orange colored sediment exists in the stream channel here, however the presence of minnows indicates potential water quality impairments and pH are not substantial enough to impact the aquatic habitat. The source of iron may be from an old mine spoil that lies across the road.

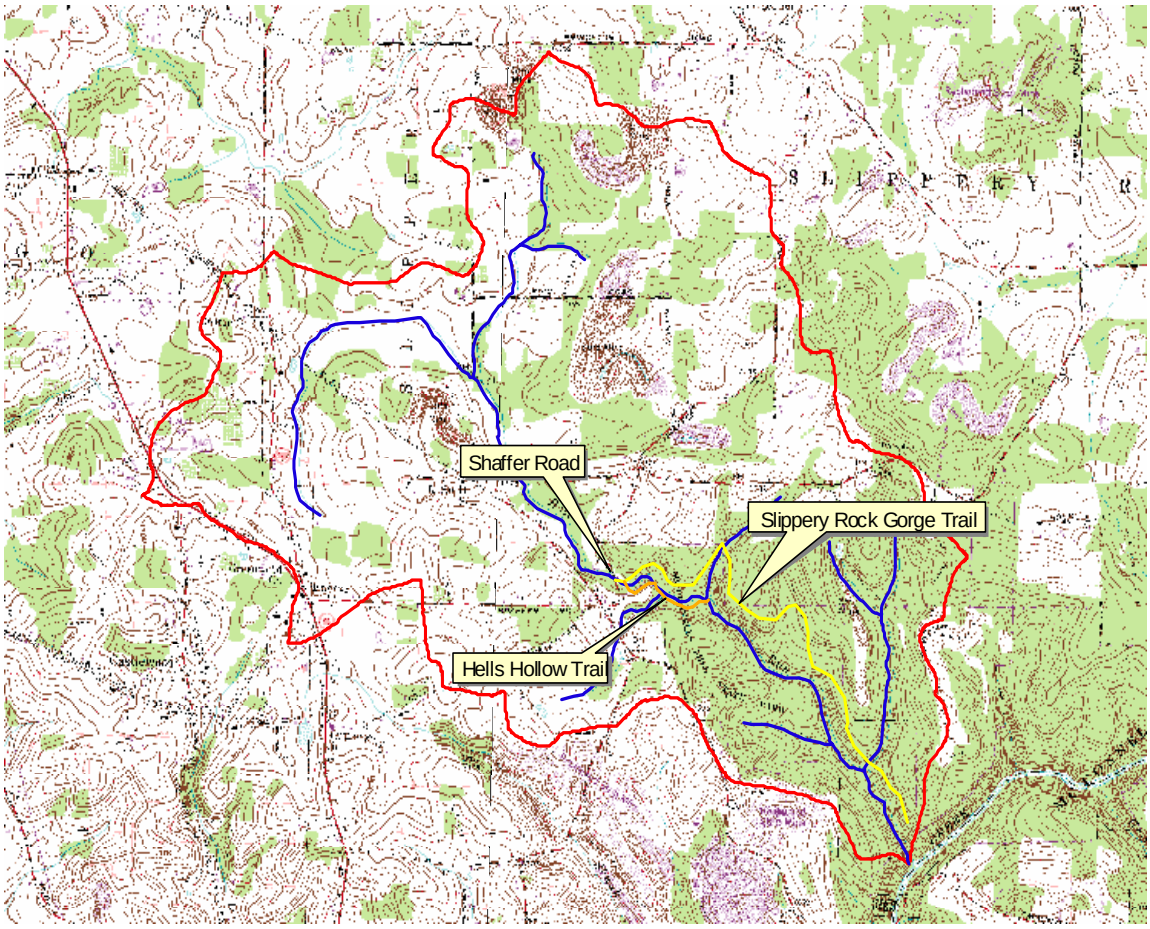
Severe cutbank that exists just downstream of the Center Church road crossing. Some vegetation does exist along both sides of the stream helping to minimize erosion during high flow events.

Approximately a two feet high, this cutbank is evidence of ongoing erosion just downstream of the road culvert. Streambanks like these are sources of sediment that impair water quality and also cause stabilization concerns.

The property on the right-hand side of the stream is owned by the PA Department of Natural Resources and although not contiguous to the lands of McConnell's Mill State Park, is enlisted as State Park property. The sign indicates a telephone cable stream crossing is buried underground at this location.

Further south on Center Church Road, additional State Park property exists where horse trails and a parking area are available.

Shaffer Road and McConnells Mill State Park



Hell run stream.shp
Hell run watershed.shp

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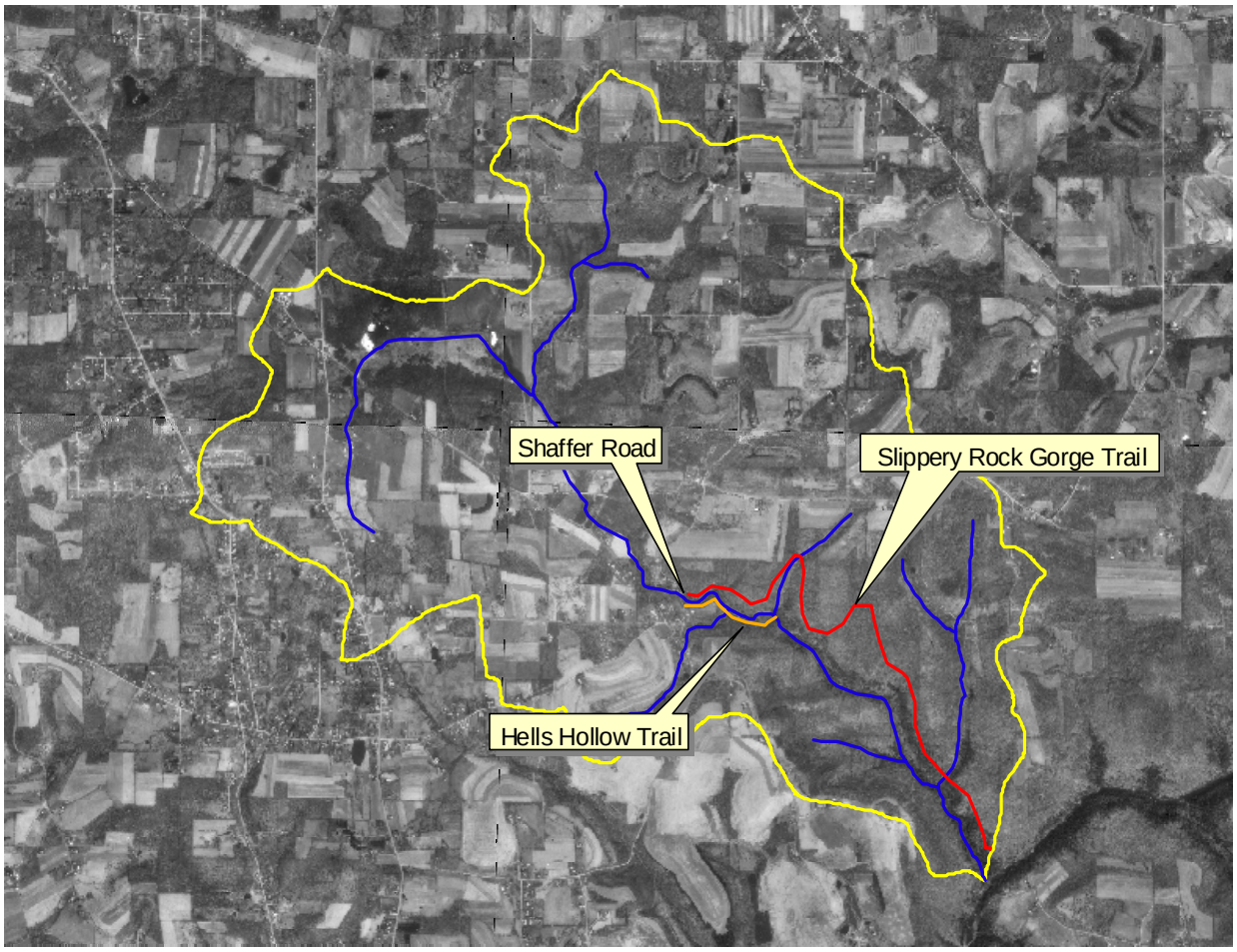
Shaffer Road and McConnells Mill State Park



Hell run stream.shp
Hell run watershed.shp

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SHAFFER ROAD Stream Crossing
HELLS HOLLOW

Upstream of Shaffer Road lies private residential property, whereas downstream lies the trailhead of Hell's Hollow within McConnell's Mill State Park. Hell's Hollow is frequented by enthusiasts for all reasons; photography, nature walks, fishing, recreating at the falls, birding, or simply relaxing to enjoy peace and tranquility of nature.

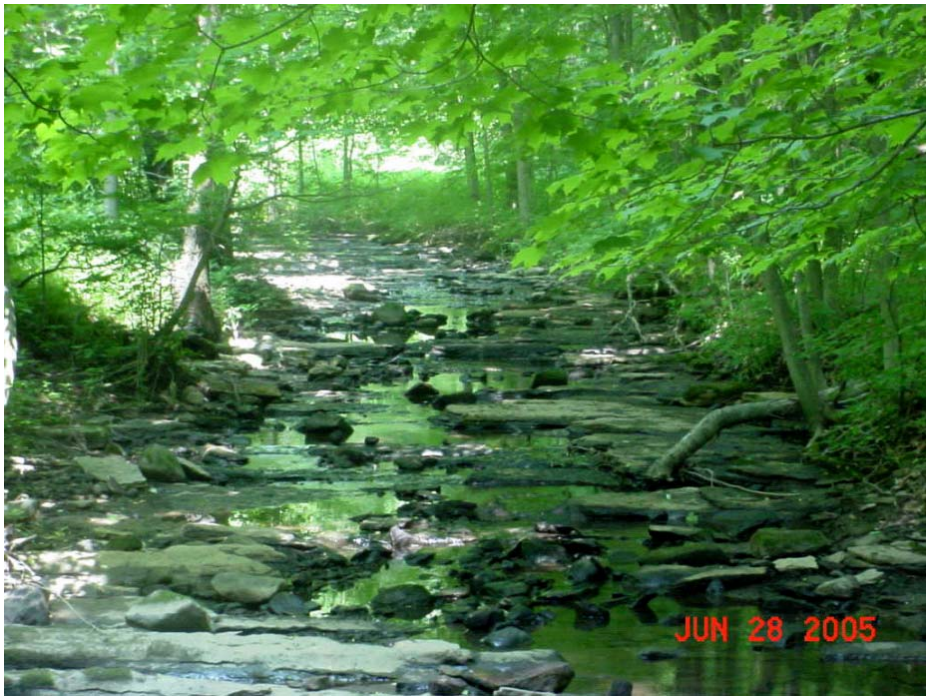

HELL'S HOLLOW
McCONNELL'S MILL
STATE PARK
November 3, 2005


November 3, 2005


PLEASE
STAY ON TRAIL
November 3, 2005

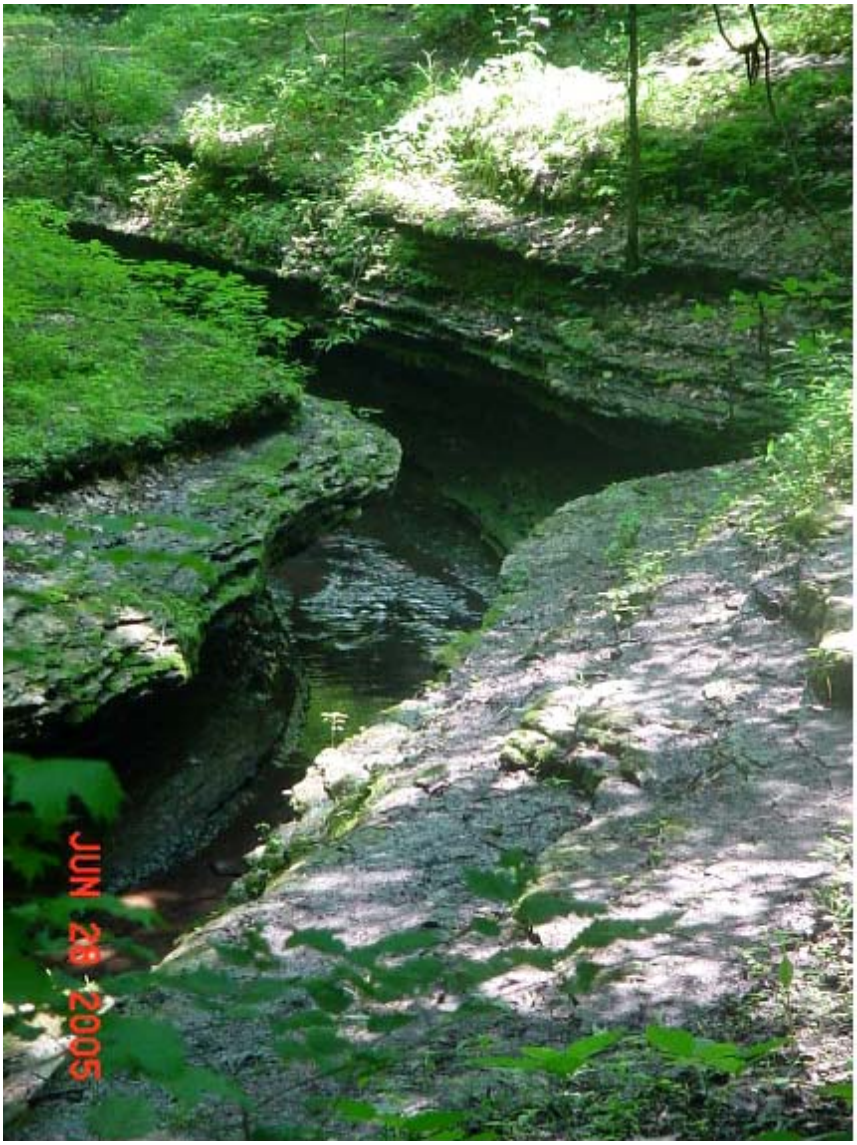
HELLS HOLLOW TRAIL
McCONNELLS MILL STATE PARK

During the summer months, groundwater levels and flow rates of Hell Run decrease. This photograph of Hell Run was taken along the Hell's Hollow Trail situated within McConnell's Mill State Park and managed by the PA Department of Conservation and Natural Resources.



Because this portion of Hell Run lies within park boundaries and lands are managed by the state, development threats to the riparian lands do not exist with the exception of passive recreation enhancements such as walking trails.

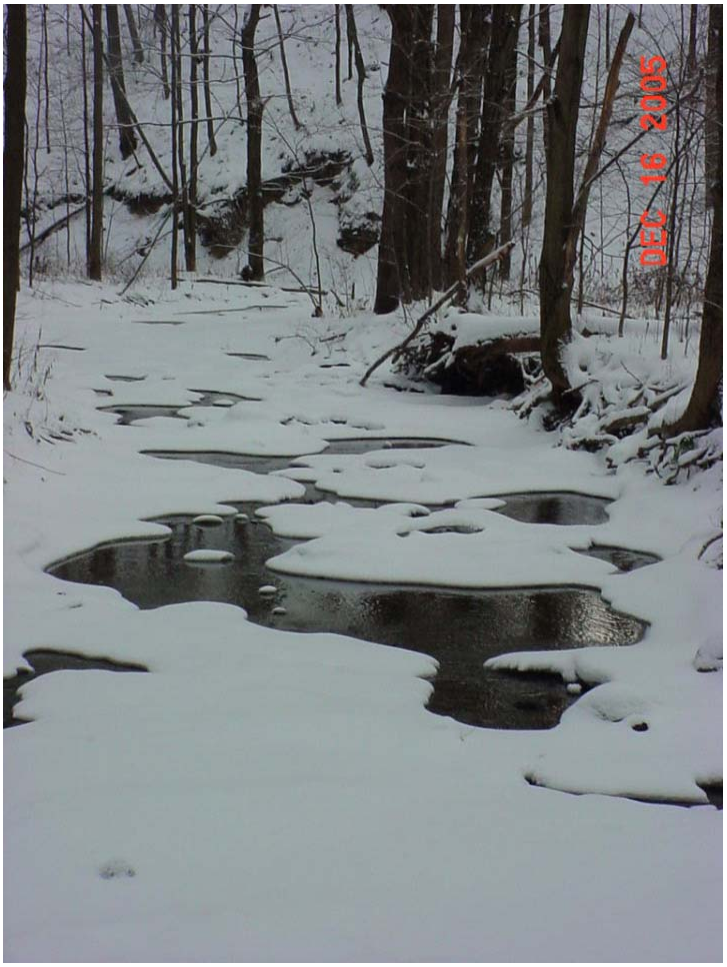
Heavy rainfall events during Spring of 2003 and 2004 caused severe flooding, fallen trees, and the accumulation of debris.



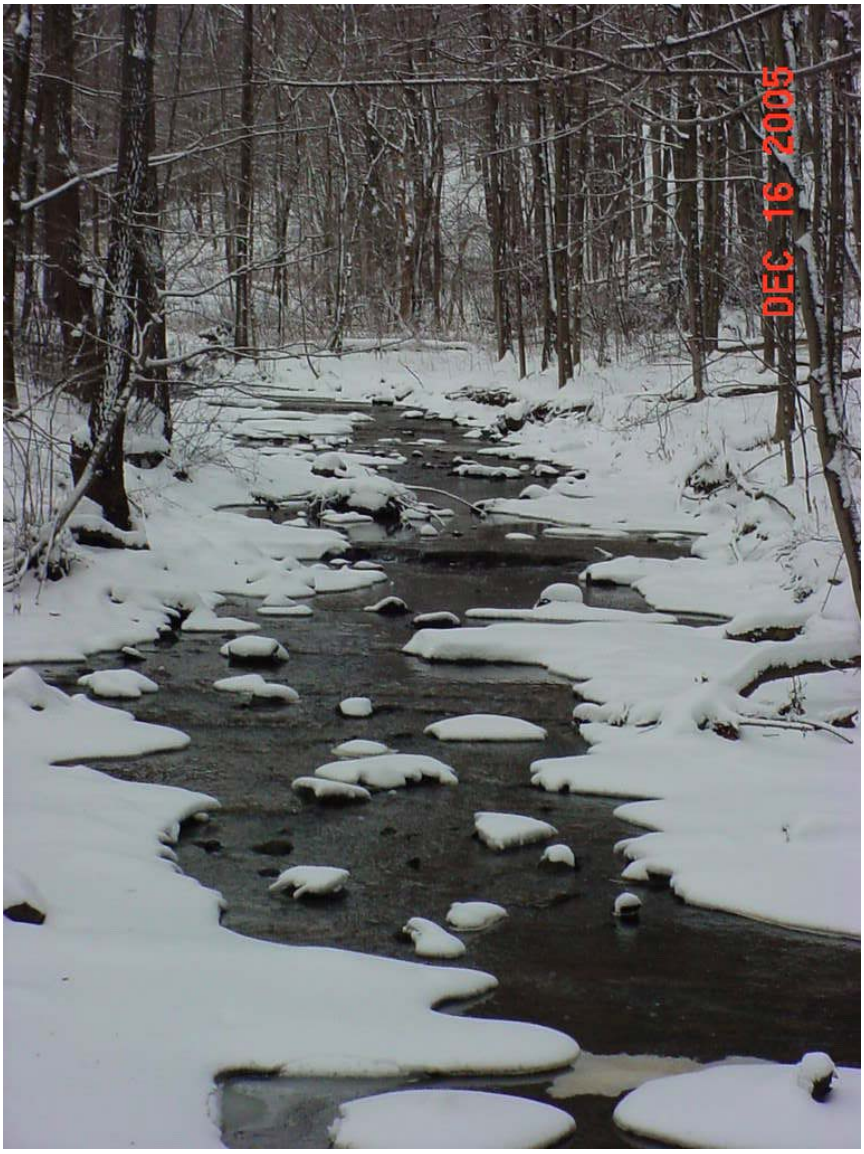
In this portion of Hell's Hollow, the stream channel has carved it's way through the fractured vanport limestone creating the flume seen in this photograph.

HELLS HOLLOW TRAIL
McCONNELLS MILL STATE PARK

The arrow identifies the Trail of Geology sign situated at the beginning of the Hell's Hollow Trail and is the second site of interest along the trail in McConnell's Mill State Park. Across the bridge, lies the Slippery Rock Gorge trail on the northern side of Hell Run.



Stream flow of Hell Run is sustained during the winter season and the recharge of groundwater is largely dependant on the available snow-melt.



Even during the winter months, Hell's Hollow is frequented by park visitors, although snowmobiling is prohibited. Comprising 2,759 acres, McConnell's Mill State Park was designated in 1974 as a National Natural Landmark by the National Park Service.

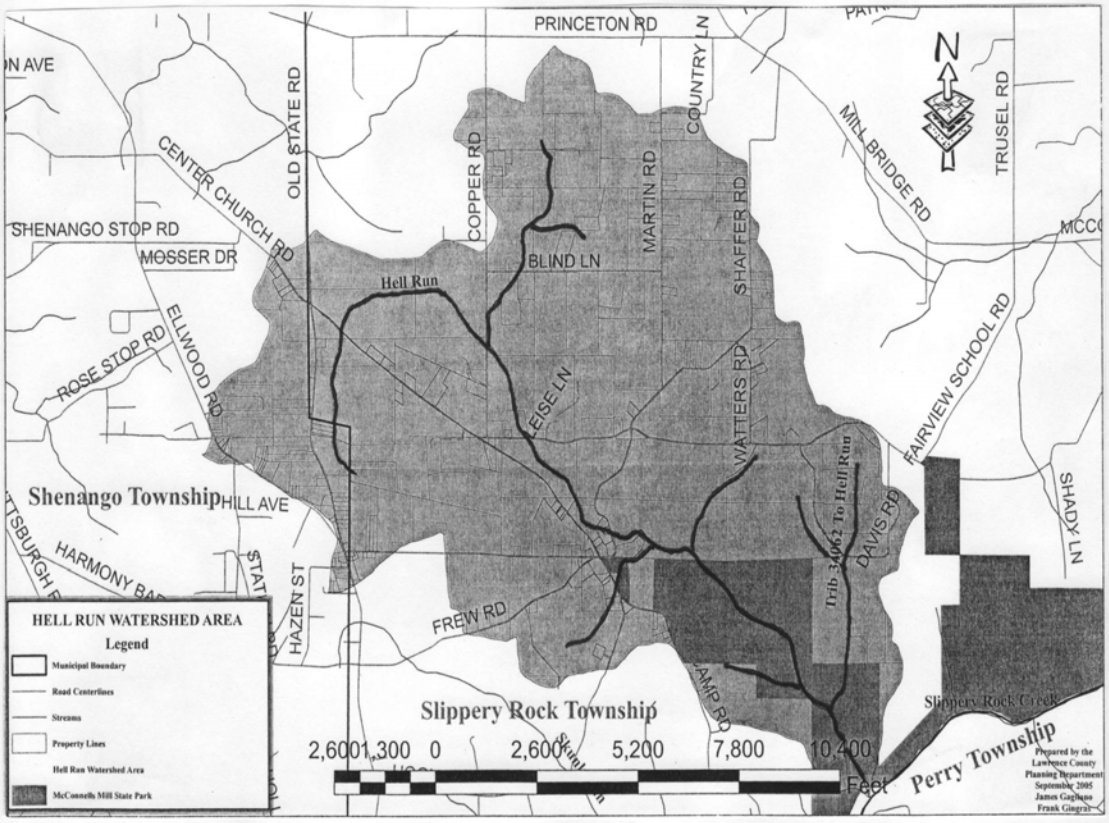
Public Survey

Incorporated into development of the conservation plan, public surveys were distributed throughout the Hell Run watershed and surrounding communities. On May 16, 2006 during the Election Day primary, approximately 100 surveys were distributed to voters as they entered and left polling stations in the three precincts located within the watershed. Postage was already paid on the surveys so residents had the option of taking the survey home to complete and return at their convenience. Public surveys were also made available at the McConnell's Mill State Park Heritage Days Festival held annually during September, the Ellwood City Earth Day Celebration in April of 2006, and during public meetings held throughout the creation of this document.

Questions on the survey asked residents of their knowledge of Hell Run and its' designation as a wild trout stream, and then asked participants to rate on a scale of *Not A Problem* to *Very Serious Problem* a series of potential threats to the watershed. A copy of the public survey developed for soliciting input from residents is included, as well as copies of the individual results received.

DO YOU LIVE IN THE HELL RUN WATERSHED?

What is a WATERSHED? A watershed is an area of land that drains surface water, rain, and snowmelt to a particular point along a stream. Topography is a key element for defining a watershed boundary.



Lawrence County Conservation District
Lawrence County Government Center
430 Court Street
New Castle, Pennsylvania 16101

Dear resident,

In May, 2005, the Lawrence County Conservation District was awarded a grant from the Pennsylvania Trout Council to develop a Coldwater Conservation Plan for the Hell Run watershed. The purpose of the project is to identify threats and opportunities for the long-term sustainability for the wild trout stream. As part of the project, we want to hear your issues and concerns for the watershed. Please leave your return address on the other side of this survey if you would like to be contacted for a public meeting. Thank you for your time!

Megan Gahring, Watershed Specialist
Lawrence County Conservation District

DO YOU LIVE IN THE HELL RUN WATERSHED? YES NO

HOW LONG HAVE YOU LIVED IN THE WATERSHED? _____

DO YOU CONSIDER HELL RUN TO BE A "HEALTHY" STREAM? YES NO

DO YOU KNOW THAT HELL RUN IS A WILD TROUT STREAM? YES NO

* HELL RUN IS AN EXCEPTIONAL VALUE WATERSHED THAT SUPPORTS NATURALLY REPRODUCING WILD BROWN TROUT POPULATIONS.

WHAT ARE YOUR CONCERNS AS A LANDOWNER? _____

_____

WHAT OPPORTUNITIES EXIST FOR THE WATERSHED? _____

_____

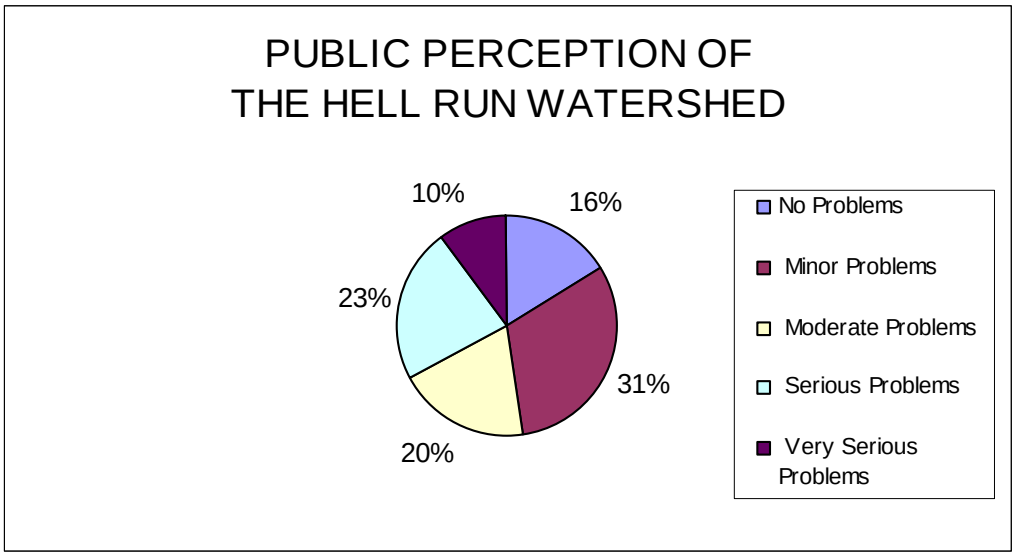
Please rate the following concerns as related to stream health in the Hell Run watershed.

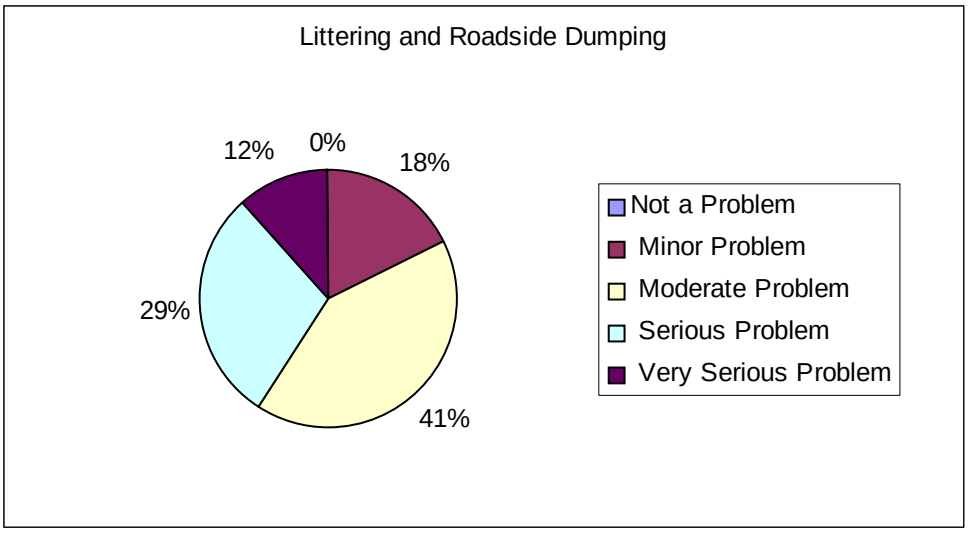
ACTIVITY	NOT A PROBLEM	MINOR PROBLEM	MODERATE PROBLEM	SERIOUS PROBLEM	VERY SERIOUS PROBLEM
Littering and Roadside Dumping	1	2	3	4	5
Streambank Erosion	1	2	3	4	5
Stormwater Control and Flooding	1	2	3	4	5
Land Clearing and Development	1	2	3	4	5
Agricultural Operations	1	2	3	4	5
Failing On-Lot Septic Systems	1	2	3	4	5

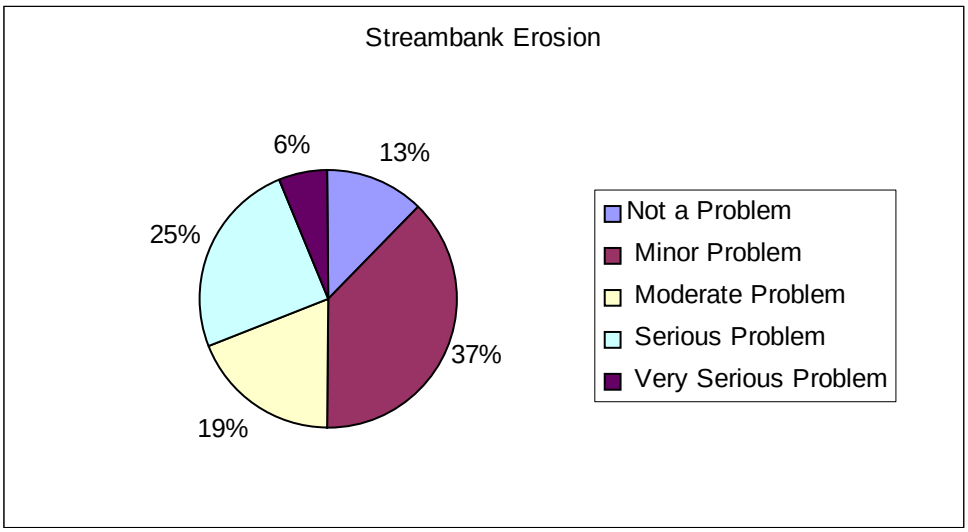
Public Survey Results

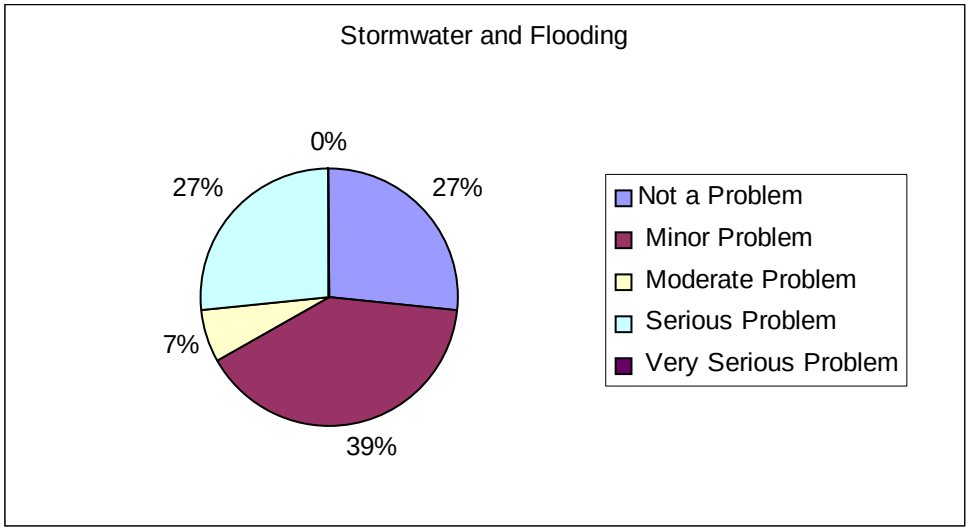
Of the over one hundred (100) surveys distributed, seventeen (17) were completed and returned to the Conservation District office. The following charts and graphs are an assessment of the responses received:

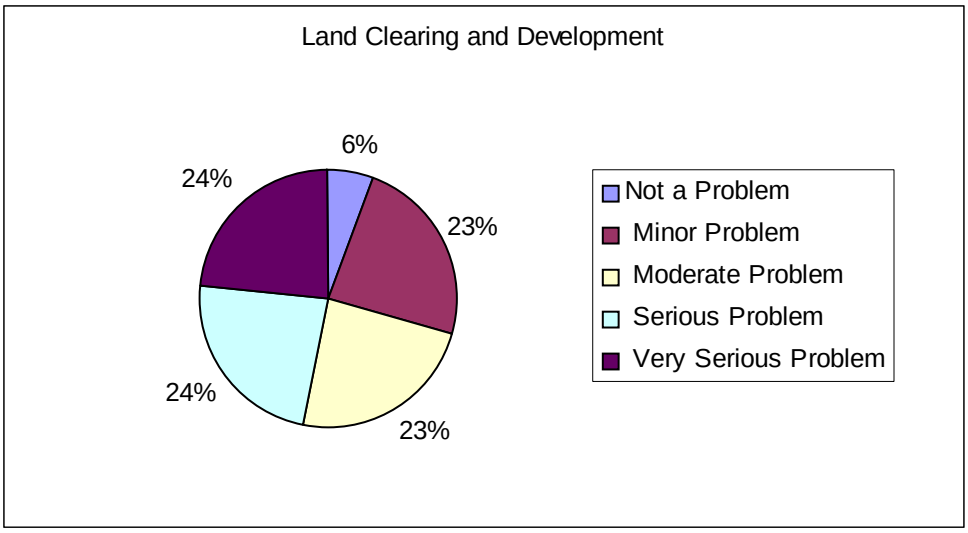
HELL RUN WATERSHED SURVEY RESULTS						
ACTIVITY	**NOT A PROBLEM**	**MINOR PROBLEM**	**MODERATE PROBLEM**	**SERIOUS PROBLEM**	**VERY SERIOUS PROBLEM**	*TOTAL RESPONSES*
LITTERING AND ROADSIDE DUMPING	0	3	7	5	2	*17*
STREAMBANK EROSION	2	6	3	4	1	*16*
STORMWATER AND FLOODING	4	6	1	4	0	*15*
LAND CLEARING AND DEVELOPMENT	1	4	4	4	4	*17*
AGRICULTURAL OPERATIONS	5	5	2	3	1	*16*
FAILING ON-LOT SEPTIC SYSTEMS	4	6	2	2	2	*16*
PUBLIC PERCEPTION OF THE HELL RUN WATERSHED	*16*	*30*	*19*	*22*	*10*	*97*

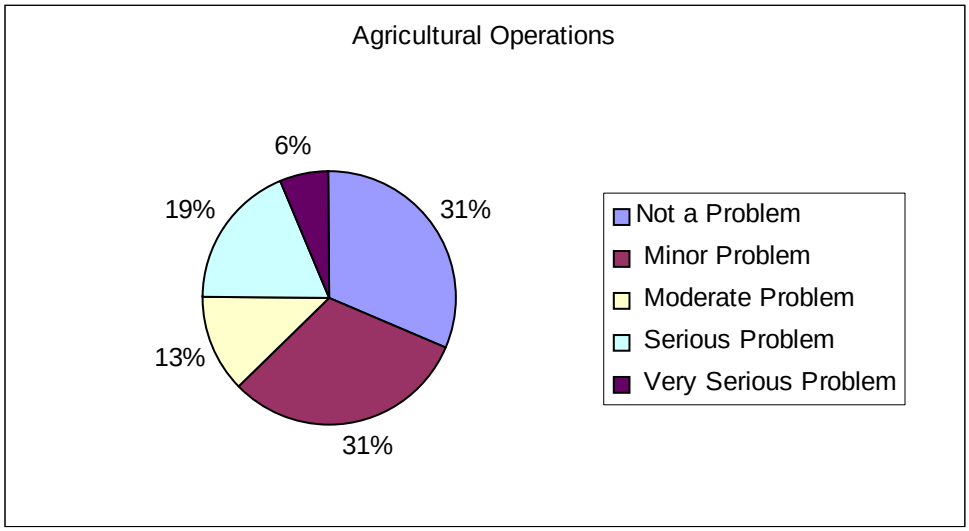


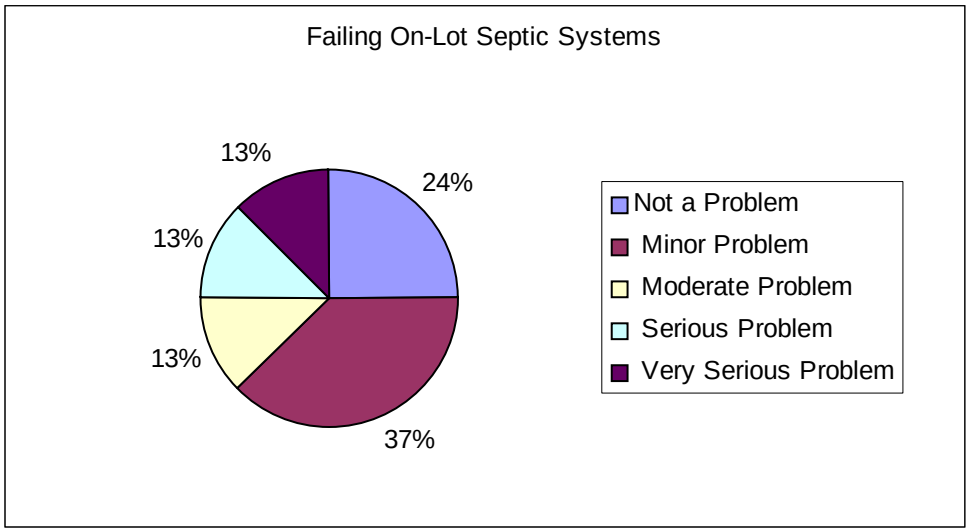

Littering and Roadside Dumping
12%
0%
18%
29%
41%
Not a Problem
Minor Problem
Moderate Problem
Serious Problem
Very Serious Problem


Streambank Erosion
6%
13%
25%
37%
19%
Not a Problem
Minor Problem
Moderate Problem
Serious Problem
Very Serious Problem


Stormwater and Flooding
0%
27%
27%
7%
39%
Not a Problem
Minor Problem
Moderate Problem
Serious Problem
Very Serious Problem


Land Clearing and Development
6%
24%
23%
24%
23%
Not a Problem
Minor Problem
Moderate Problem
Serious Problem
Very Serious Problem


Agricultural Operations
6%
19%
31%
13%
31%
Not a Problem
Minor Problem
Moderate Problem
Serious Problem
Very Serious Problem


Failing On-Lot Septic Systems
13%
24%
13%
13%
37%
Not a Problem
Minor Problem
Moderate Problem
Serious Problem
Very Serious Problem

Dear resident,

In May, 2005, the Lawrence County Conservation District was awarded a grant from the Pennsylvania Trout Council to develop a Coldwater Conservation Plan for the Hell Run watershed. The purpose of the project is to identify threats and opportunities for the long-term sustainability for the wild trout stream.

As part of the project, we want to hear your issues and concerns for the watershed. Please leave your return address on the other side of this survey if you would like to be contacted for a public meeting. Thank you for your time!

Megan Gahring, Watershed Specialist
Lawrence County Conservation District

DO YOU LIVE IN THE HELL RUN WATERSHED? YES (NO)

HOW LONG HAVE YOU LIVED IN THE WATERSHED? _____

DO YOU CONSIDER HELL RUN TO BE A "HEALTHY" STREAM? YES (NO)

DO YOU KNOW THAT HELL RUN IS A WILD TROUT STREAM? YES (NO)

* HELL RUN IS AN EXCEPTIONAL VALUE WATERSHED THAT SUPPORTS NATURALLY REPRODUCING WILD BROWN TROUT POPULATIONS.

WHAT ARE YOUR CONCERNS AS A LANDOWNER IN THE WATERSHED?

I would want it to remain or be made clean

WHAT OPPORTUNITIES EXIST FOR THE WATERSHED? _____

Please rate the following concerns as related to stream health in the Hell Run watershed.

ACTIVITY	NOT A PROBLEM	MINOR PROBLEM	MODERATE PROBLEM	SERIOUS PROBLEM	VERY SERIOUS PROBLEM
Littering and Roadside Dumping	1	2	3	(4)	5
Streambank Erosion	1	2	3	(4)	5
Stormwater Control and Flooding	1	2	3	(4)	5
Land Clearing and Development	1	2	3	(4)	5
Agricultural Operations	1	(2)	3	4	5
Failing On-Lot Septic Systems	1	2	3	(4)	5

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Megan Gahring, Watershed Specialist
Lawrence County Conservation District

DO YOU LIVE IN THE HELL RUN WATERSHED? YES NO

HOW LONG HAVE YOU LIVED IN THE WATERSHED? _____

DO YOU CONSIDER HELL RUN TO BE A "HEALTHY" STREAM? YES NO

DO YOU KNOW THAT HELL RUN IS A WILD TROUT STREAM? YES NO

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WHAT ARE YOUR CONCERNS AS A LANDOWNER? _____

WHAT OPPORTUNITIES EXIST FOR THE WATERSHED? _____

Please rate the following concerns as related to stream health in the Hell Run watershed.

ACTIVITY	NOT A PROBLEM	MINOR PROBLEM	MODERATE PROBLEM	SERIOUS PROBLEM	VERY SERIOUS PROBLEM
Littering and Roadside Dumping	1	2	3	4	5
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Megan Gahring, Watershed Specialist
Lawrence County Conservation District

DO YOU LIVE IN THE HELL RUN WATERSHED? (YES) NO

HOW LONG HAVE YOU LIVED IN THE WATERSHED? 43 YEARS

DO YOU CONSIDER HELL RUN TO BE A "HEALTHY" STREAM? (YES) NO

DO YOU KNOW THAT HELL RUN IS A WILD TROUT STREAM? YES (NO)

* HELL RUN IS AN EXCEPTIONAL VALUE WATERSHED THAT SUPPORTS NATURALLY REPRODUCING WILD BROWN TROUT POPULATIONS.

WHAT ARE YOUR CONCERNS AS A LANDOWNER IN THE WATERSHED? _____

WHAT OPPORTUNITIES EXIST FOR THE WATERSHED? _____

Please rate the following concerns as related to stream health in the Hell Run watershed.

ACTIVITY	NOT A PROBLEM	MINOR PROBLEM	MODERATE PROBLEM	SERIOUS PROBLEM	VERY SERIOUS PROBLEM
Littering and Roadside Dumping	1	2	(3)	4	5
Streambank Erosion	1	(2)	3	4	5
Stormwater Control and Flooding	(1)	2	3	4	5
Land Clearing and Development	1	2	(3)	4	5
Agricultural Operations	(1)	2	3	4	5
Failing On-Lot Septic Systems	1	(2)	3	4	5

Dear resident,

In May, 2005, the Lawrence County Conservation District was awarded a grant from the Pennsylvania Trout Council to develop a Coldwater Conservation Plan for the Hell Run watershed. The purpose of the project is to identify threats and opportunities for the long-term sustainability for the wild trout stream.
As part of the project, we want to hear your issues and concerns for the watershed. Please leave your return address on the other side of this survey if you would like to be contacted for a public meeting. Thank you for your time!

Megan Gahring, Watershed Specialist
Lawrence County Conservation District

DO YOU LIVE IN THE HELL RUN WATERSHED? (YES) NO

HOW LONG HAVE YOU LIVED IN THE WATERSHED? 20 Years

DO YOU CONSIDER HELL RUN TO BE A "HEALTHY" STREAM? (YES) NO

DO YOU KNOW THAT HELL RUN IS A WILD TROUT STREAM? (YES) NO

* HELL RUN IS AN EXCEPTIONAL VALUE WATERSHED THAT SUPPORTS NATURALLY REPRODUCING WILD BROWN TROUT POPULATIONS.

WHAT ARE YOUR CONCERNS AS A LANDOWNER? that Developers will try to build Homesites within it's boundrys / Also the beavers should not go unchecked

WHAT OPPORTUNITIES EXIST FOR THE WATERSHED? _____

Please rate the following concerns as related to stream health in the Hell Run watershed.

ACTIVITY	NOT A PROBLEM	MINOR PROBLEM	MODERATE PROBLEM	SERIOUS PROBLEM	VERY SERIOUS PROBLEM
Littering and Roadside Dumping	1	2	(3)	4	5
Streambank Erosion	1	2	(3)	4	5
Stormwater Control and Flooding	1	2	3	(4)	5
Land Clearing and Development	1	2	(3)	4	5
Agricultural Operations	(1)	2	3	4	5
Failing On-Lot Septic Systems	(1)	2	3	4	5

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Megan Gahring, Watershed Specialist
Lawrence County Conservation District

DO YOU LIVE IN THE HELL RUN WATERSHED? (YES) NO

HOW LONG HAVE YOU LIVED IN THE WATERSHED? 50 yrs

DO YOU CONSIDER HELL RUN TO BE A "HEALTHY" STREAM? (YES) NO

DO YOU KNOW THAT HELL RUN IS A WILD TROUT STREAM? YES (NO)

* HELL RUN IS AN EXCEPTIONAL VALUE WATERSHED THAT SUPPORTS NATURALLY REPRODUCING WILD BROWN TROUT POPULATIONS.

WHAT ARE YOUR CONCERNS AS A LANDOWNER? Please keep it clean

WHAT OPPORTUNITIES EXIST FOR THE WATERSHED?

Please rate the following concerns as related to stream health in the Hell Run watershed.

ACTIVITY	NOT A PROBLEM	MINOR PROBLEM	MODERATE PROBLEM	SERIOUS PROBLEM	VERY SERIOUS PROBLEM
Littering and Roadside Dumping	1	2	(3)	4	5
Streambank Erosion	1	(2)	3	4	5
Stormwater Control and Flooding	1	(2)	3	4	5
Land Clearing and Development	1	(2)	3	4	5
Agricultural Operations	1	(2)	3	4	5
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Megan Gahring, Watershed Specialist
Lawrence County Conservation District

DO YOU LIVE IN THE HELL RUN WATERSHED? (YES) NO

HOW LONG HAVE YOU LIVED IN THE WATERSHED? 38 YEARS

DO YOU CONSIDER HELL RUN TO BE A "HEALTHY" STREAM? (YES) NO

DO YOU KNOW THAT HELL RUN IS A WILD TROUT STREAM? (YES) NO

* HELL RUN IS AN EXCEPTIONAL VALUE WATERSHED THAT SUPPORTS NATURALLY REPRODUCING WILD BROWN TROUT POPULATIONS.

WHAT ARE YOUR CONCERNS AS A LANDOWNER IN THE WATERSHED? _____

WHAT OPPORTUNITIES EXIST FOR THE WATERSHED? _____

Please rate the following concerns as related to stream health in the Hell Run watershed.

ACTIVITY	NOT A PROBLEM	MINOR PROBLEM	MODERATE PROBLEM	SERIOUS PROBLEM	VERY SERIOUS PROBLEM
Littering and Roadside Dumping	1	(2)	3	4	5
Streambank Erosion	1	2	(3)	4	5
Stormwater Control and Flooding	1	(2)	3	4	5
Land Clearing and Development	1	2	(3)	4	5
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Megan Gahring, Watershed Specialist
Lawrence County Conservation District

DO YOU LIVE IN THE HELL RUN WATERSHED? YES (NO)

HOW LONG HAVE YOU LIVED IN THE WATERSHED? _____

DO YOU CONSIDER HELL RUN TO BE A "HEALTHY" STREAM? YES NO

DO YOU KNOW THAT HELL RUN IS A WILD TROUT STREAM? YES (NO)

* HELL RUN IS AN EXCEPTIONAL VALUE WATERSHED THAT SUPPORTS NATURALLY REPRODUCING WILD BROWN TROUT POPULATIONS.

WHAT ARE YOUR CONCERNS AS A LANDOWNER? _____

WHAT OPPORTUNITIES EXIST FOR THE WATERSHED? _____

We do not live in watershed, but close to it in Slippery Rock Twp- Squaw Run Road.

Please rate the following concerns as related to stream health in the Hell Run watershed.

ACTIVITY	NOT A PROBLEM	MINOR PROBLEM	MODERATE PROBLEM	SERIOUS PROBLEM	VERY SERIOUS PROBLEM
Littering and Roadside Dumping	1	2	3	4	(5)
Streambank Erosion	1	2	3	4	5
Stormwater Control and Flooding	1	2	3	4	5
Land Clearing and Development	1	2	3	(4)	5
Agricultural Operations	1	2	3	4	5
Failing On-Lot Septic Systems	1	2	3	4	5

Dear resident,

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Megan Gahring, Watershed Specialist
Lawrence County Conservation District

DO YOU LIVE IN THE HELL RUN WATERSHED? (YES) NO

HOW LONG HAVE YOU LIVED IN THE WATERSHED? 30 yrs +

DO YOU CONSIDER HELL RUN TO BE A "HEALTHY" STREAM? (YES) NO

DO YOU KNOW THAT HELL RUN IS A WILD TROUT STREAM? (YES) NO

* HELL RUN IS AN EXCEPTIONAL VALUE WATERSHED THAT SUPPORTS NATURALLY REPRODUCING WILD BROWN TROUT POPULATIONS.

WHAT ARE YOUR CONCERNS AS A LANDOWNER? THAT THE AREA WILL BE POLLUTED

WHAT OPPORTUNITIES EXIST FOR THE WATERSHED?

Please rate the following concerns as related to stream health in the Hell Run watershed.

ACTIVITY	NOT A PROBLEM	MINOR PROBLEM	MODERATE PROBLEM	SERIOUS PROBLEM	VERY SERIOUS PROBLEM
Littering and Roadside Dumping	1	2	3	4	(5)
Streambank Erosion	1	(2)	3	4	5
Stormwater Control and Flooding	1	(2)	3	4	5
Land Clearing and Development	1	(2)	3	4	5
Agricultural Operations	1	(2)	3	4	5
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Megan Gahring, Watershed Specialist
Lawrence County Conservation District

DO YOU LIVE IN THE HELL RUN WATERSHED? YES (NO) ALTHOUGH CLOSE PROXIMETY

HOW LONG HAVE YOU LIVED IN THE WATERSHED? 20 yrs

DO YOU CONSIDER HELL RUN TO BE A "HEALTHY" STREAM? (YES) NO

DO YOU KNOW THAT HELL RUN IS A WILD TROUT STREAM? YES (NO)

* HELL RUN IS AN EXCEPTIONAL VALUE WATERSHED THAT SUPPORTS NATURALLY REPRODUCING WILD BROWN TROUT POPULATIONS.

WHAT ARE YOUR CONCERNS AS A LANDOWNER? MINING, SEWAGE, FARM ANIMALS BREAKING DOWN STREAM BANKS, TO NAME A FEW

WHAT OPPORTUNITIES EXIST FOR THE WATERSHED? DON'T KNOW YET

Please rate the following concerns as related to stream health in the Hell Run watershed.

ACTIVITY	NOT A PROBLEM	MINOR PROBLEM	MODERATE PROBLEM	SERIOUS PROBLEM	VERY SERIOUS PROBLEM
Littering and Roadside Dumping	1	2	(3)	4	5
Streambank Erosion	1	2	3	(4)	5
Stormwater Control and Flooding	1	(2)	3	4	5
Land Clearing and Development	1	(2)	3	4	5
Agricultural Operations	1	2	(3)	4	5
Failing On-Lot Septic Systems	1	2	3	(4)	5

Dear resident,

In May, 2005, the Lawrence County Conservation District was awarded a grant from the Pennsylvania Trout Council to develop a Coldwater Conservation Plan for the Hell Run watershed. The purpose of the project is to identify threats and opportunities for the long-term sustainability for the wild trout stream.

As part of the project, we want to hear your issues and concerns for the watershed. Please leave your return address on the other side of this survey if you would like to be contacted for a public meeting. Thank you for your time!

Megan Gahring, Watershed Specialist
Lawrence County Conservation District

DO YOU LIVE IN THE HELL RUN WATERSHED? YES (NO) Just outside

HOW LONG HAVE YOU LIVED IN THE WATERSHED? 4 1/2 yrs

DO YOU CONSIDER HELL RUN TO BE A "HEALTHY" STREAM? (YES) NO

DO YOU KNOW THAT HELL RUN IS A WILD TROUT STREAM? YES (NO)

* HELL RUN IS AN EXCEPTIONAL VALUE WATERSHED THAT SUPPORTS NATURALLY REPRODUCING WILD BROWN TROUT POPULATIONS.

WHAT ARE YOUR CONCERNS AS A LANDOWNER IN THE WATERSHED? _____

WHAT OPPORTUNITIES EXIST FOR THE WATERSHED? _____

Please rate the following concerns as related to stream health in the Hell Run watershed.

ACTIVITY	NOT A PROBLEM	MINOR PROBLEM	MODERATE PROBLEM	SERIOUS PROBLEM	VERY SERIOUS PROBLEM
Littering and Roadside Dumping	1	2	3	(4)	5
Streambank Erosion	(1)	2	3	4	5
Stormwater Control and Flooding	(1)	2	3	4	5
Land Clearing and Development	1	2	3	4	(5)
Agricultural Operations	(1)	2	3	4	5
Failing On-Lot Septic Systems	1	(2)	3	4	5

Dear resident,

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Megan Gahring, Watershed Specialist
Lawrence County Conservation District

DO YOU LIVE IN THE HELL RUN WATERSHED? (YES) NO

HOW LONG HAVE YOU LIVED IN THE WATERSHED? 20+ years

DO YOU CONSIDER HELL RUN TO BE A "HEALTHY" STREAM? (YES) NO

DO YOU KNOW THAT HELL RUN IS A WILD TROUT STREAM? (YES) NO

* HELL RUN IS AN EXCEPTIONAL VALUE WATERSHED THAT SUPPORTS NATURALLY REPRODUCING WILD BROWN TROUT POPULATIONS.

WHAT ARE YOUR CONCERNS AS A LANDOWNER? We need to protect the resource by identifing sewage problems and limiting development.

WHAT OPPORTUNITIES EXIST FOR THE WATERSHED? Once residents are educated about the resource & its value, most will support protection.

Please rate the following concerns as related to stream health in the Hell Run watershed.

ACTIVITY	NOT A PROBLEM	MINOR PROBLEM	MODERATE PROBLEM	SERIOUS PROBLEM	VERY SERIOUS PROBLEM
Littering and Roadside Dumping	1	2	(3)	4	5
Streambank Erosion	1	2	3	(4 Esp. Hells Hollow)	5
Stormwater Control and Flooding	1	2	(3)	4	5
Land Clearing and Development	1	2	3	(4)	5
Agricultural Operations	1	2	3	(4)	5
Failing On-Lot Septic Systems	1	2	3	4	(5)

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Lawrence County Conservation District

DO YOU LIVE IN THE HELL RUN WATERSHED? YES (NO)

HOW LONG HAVE YOU LIVED IN THE WATERSHED? _____

DO YOU CONSIDER HELL RUN TO BE A "HEALTHY" STREAM? YES NO

DO YOU KNOW THAT HELL RUN IS A WILD TROUT STREAM? YES NO

* HELL RUN IS AN EXCEPTIONAL VALUE WATERSHED THAT SUPPORTS NATURALLY REPRODUCING WILD BROWN TROUT POPULATIONS.

WHAT ARE YOUR CONCERNS AS A LANDOWNER? That our rights as landowners is preserved and the Conservationists are restricted

WHAT OPPORTUNITIES EXIST FOR THE WATERSHED? _____

Please rate the following concerns as related to stream health in the Hell Run watershed.

ACTIVITY	NOT A PROBLEM	MINOR PROBLEM	MODERATE PROBLEM	SERIOUS PROBLEM	VERY SERIOUS PROBLEM
Littering and Roadside Dumping	1	(2)	3	4	5
Streambank Erosion	(1)	2	3	4	5
Stormwater Control and Flooding	(1)	2	3	4	5
Land Clearing and Development	(1)	2	3	4	5
Agricultural Operations	(1)	2	3	4	5
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Megan Gahring, Watershed Specialist
Lawrence County Conservation District

DO YOU LIVE IN THE HELL RUN WATERSHED? YES (NO)

HOW LONG HAVE YOU LIVED IN THE WATERSHED? _____

DO YOU CONSIDER HELL RUN TO BE A "HEALTHY" STREAM? (YES) NO

DO YOU KNOW THAT HELL RUN IS A WILD TROUT STREAM? (YES) NO

* HELL RUN IS AN EXCEPTIONAL VALUE WATERSHED THAT SUPPORTS NATURALLY REPRODUCING WILD BROWN TROUT POPULATIONS.

WHAT ARE YOUR CONCERNS AS A LANDOWNER? _____

WHAT OPPORTUNITIES EXIST FOR THE WATERSHED? OUTDOOR RECREATION - HIKING, BIRD WATCHING, BOTANY (WILDFLOWER STUDY) THERE IS SOME OLD GROWTH TIMBER AT LOWER END OF HELL'S HOLLOW

Please rate the following concerns as related to stream health in the Hell Run watershed.

ACTIVITY	NOT A PROBLEM	MINOR PROBLEM	MODERATE PROBLEM	SERIOUS PROBLEM	VERY SERIOUS PROBLEM
Littering and Roadside Dumping	1	(2)	3	4	5
Streambank Erosion	1	(2)	3	4	5
Stormwater Control and Flooding	(1)	2	3	4	5
Land Clearing and Development	1	2	(3)	4	5
Agricultural Operations	1	(2)	3	4	5
Failing On-Lot Septic Systems	(1)	2	3	4	5

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Megan Gahring, Watershed Specialist
Lawrence County Conservation District

DO YOU LIVE IN THE HELL RUN WATERSHED? (YES) NO

HOW LONG HAVE YOU LIVED IN THE WATERSHED? 36 YRS

DO YOU CONSIDER HELL RUN TO BE A "HEALTHY" STREAM? (YES) NO

DO YOU KNOW THAT HELL RUN IS A WILD TROUT STREAM? (YES) NO

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WHAT ARE YOUR CONCERNS AS A LANDOWNER? Urban Sprawl

WHAT OPPORTUNITIES EXIST FOR THE WATERSHED?

Please rate the following concerns as related to stream health in the Hell Run watershed.

ACTIVITY	NOT A PROBLEM	MINOR PROBLEM	MODERATE PROBLEM	SERIOUS PROBLEM	VERY SERIOUS PROBLEM
Littering and Roadside Dumping	1	2	3	(4)	5
Streambank Erosion	1	2	3	4	(5)
Stormwater Control and Flooding	1	2	3	(4)	5
Land Clearing and Development	1	2	3	4	(5)
Agricultural Operations	1	(2)	3	4	5
Failing On-Lot Septic Systems	1	(2)	3	4	5

Dear resident,

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Megan Gahring, Watershed Specialist
Lawrence County Conservation District

DO YOU LIVE IN THE HELL RUN WATERSHED? (YES) NO

HOW LONG HAVE YOU LIVED IN THE WATERSHED? 50 yr

DO YOU CONSIDER HELL RUN TO BE A "HEALTHY" STREAM? (YES) NO

DO YOU KNOW THAT HELL RUN IS A WILD TROUT STREAM? YES (NO)

* HELL RUN IS AN EXCEPTIONAL VALUE WATERSHED THAT SUPPORTS NATURALLY REPRODUCING WILD BROWN TROUT POPULATIONS.

WHAT ARE YOUR CONCERNS AS A LANDOWNER IN THE WATERSHED?

Keep it as it is - healthy

WHAT OPPORTUNITIES EXIST FOR THE WATERSHED?

Please rate the following concerns as related to stream health in the Hell Run watershed.

ACTIVITY	NOT A PROBLEM	MINOR PROBLEM	MODERATE PROBLEM	SERIOUS PROBLEM	VERY SERIOUS PROBLEM
Littering and Roadside Dumping	1	2	3	(4)	5
Streambank Erosion	1	(2)	3	4	5
Stormwater Control and Flooding	1	2	3	4	5
Land Clearing and Development	1	2	3	(4)	5
Agricultural Operations	1	2	(3)	4	5
Failing On-Lot Septic Systems	(1)	2	3	4	5

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Megan Gahring, Watershed Specialist
Lawrence County Conservation District

DO YOU LIVE IN THE HELL RUN WATERSHED? YES (NO) I use to live on Shaffer Rd. w/ my parents Armagosts.

HOW LONG HAVE YOU LIVED IN THE WATERSHED? 21 years

DO YOU CONSIDER HELL RUN TO BE A "HEALTHY" STREAM? (YES) NO

DO YOU KNOW THAT HELL RUN IS A WILD TROUT STREAM? YES (NO)

* HELL RUN IS AN EXCEPTIONAL VALUE WATERSHED THAT SUPPORTS NATURALLY REPRODUCING WILD BROWN TROUT POPULATIONS.

WHAT ARE YOUR CONCERNS AS A LANDOWNER IN THE WATERSHED? Polution to water, like land fills or strip minds.

WHAT OPPORTUNITIES EXIST FOR THE WATERSHED?

Please rate the following concerns as related to stream health in the Hell Run watershed.

ACTIVITY	NOT A PROBLEM	MINOR PROBLEM	MODERATE PROBLEM	SERIOUS PROBLEM	VERY SERIOUS PROBLEM
Littering and Roadside Dumping	1	(2)	3	(4)	5
Streambank Erosion	1	2	(3)	(4)	5
Stormwater Control and Flooding	1	(2)	3	4	5
Land Clearing and Development	1	2	3	4	(5)
Agricultural Operations	1	2	3	(4)	5
Failing On-Lot Septic Systems	1	2	(3)	4	5

Dear resident,

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Megan Gahring, Watershed Specialist
Lawrence County Conservation District

DO YOU LIVE IN THE HELL RUN WATERSHED? YES (NO)

HOW LONG HAVE YOU LIVED IN THE WATERSHED? _____

DO YOU CONSIDER HELL RUN TO BE A "HEALTHY" STREAM? YES (NO)

DO YOU KNOW THAT HELL RUN IS A WILD TROUT STREAM? (YES) NO

* HELL RUN IS AN EXCEPTIONAL VALUE WATERSHED THAT SUPPORTS NATURALLY REPRODUCING WILD BROWN TROUT POPULATIONS.

WHAT ARE YOUR CONCERNS AS A LANDOWNER? _____

_____

WHAT OPPORTUNITIES EXIST FOR THE WATERSHED? _____

_____

Please rate the following concerns as related to stream health in the Hell Run watershed.

ACTIVITY	NOT A PROBLEM	MINOR PROBLEM	MODERATE PROBLEM	SERIOUS PROBLEM	VERY SERIOUS PROBLEM
Littering and Roadside Dumping	1	2	(3)	4	5
Streambank Erosion	1	2	(3)	4	5
Stormwater Control and Flooding	1	2	3	(4)	5
Land Clearing and Development	1	2	3	4	(5)
Agricultural Operations	1	2	3	4	(5)
Failing On-Lot Septic Systems	1	2	3	4	(5)

Public Involvement

Since the plan development process began in 2005, public involvement was viewed to be an integral component. In addition to the public surveys distributed, two Open Houses were held at the Slippery Rock Township Volunteer Fire Department for the public to learn about and contribute towards development of the Hell Run Conservation Plan. The first Open House was conducted on March 23rd, 2005 and the second on May 23rd, 2005, both during the evening to accommodate anticipated work schedules of residents. Additional educational and outreach materials were made available during the meeting to raise awareness of non-point sources of pollution, the ecological significance of the natural resources that exist in the watershed, and additional conservation practices they can do to enhance their property and their watershed. Flyers were distributed to residents and posted at commercial establishments and community facilities throughout the watershed and surrounding area advertising the date, time, and location of the public meetings. Kiosks at McConnell's Mill State Park were also utilized to advertise the public meetings. In addition to flyers, an advertisement was placed in the local newspaper, New Castle News, to help spread awareness for the second Open House conducted on May 23rd, 2006. Sign-in sheets from the meetings are included in this document.

Public outreach for development of the Hell Run Conservation Plan was also made available at the McConnell's Mill State Park Heritage Festival held annually during the month of September. The Earth Day Festival in Ellwood City on April 22nd, 2006 was also utilized for public outreach and education on the Hell Run Conservation Plan and Lawrence County's only native, wild trout stream. During November of 2005, Friends of McConnell's Mills State Park, Inc. added a section on their web page dedicated to the Hell Run Conservation Plan and its' continued development. Conservation District staff also attended municipal planning commission and township supervisor meetings to make announcements and disseminate information relevant to the watershed and conservation planning process.

A final public meeting was held on August 9th, 2006 to make available black and white copies of the draft Hell Run Conservation Plan. A total of eight copies were distributed to residents, municipal officials, and State agency representatives for comments, corrections, and feedback. Postcards were mailed to a list of residents and individuals that either, responded with their mailing address on the public survey, attended one of the public meetings and expressed interest in viewing a copy of the draft plan, or were actively involved and/or provided data contributing to development of the plan. The draft plan was also posted on the Friends of McConnell's Mill State Park, Inc webpage at **www.fmmsp.org**.

You're invited to attend the . . .

Hell Run Watershed
Open House

Hell Run is an exceptional value watershed that supports naturally reproducing wild brown trout populations.

LAWRENCE COUNTY CONSERVATION DISTRICT

Lawrence Co. Gov't Center
430 Court Street
New Castle, PA 16101

Phone 724.652.4512
Fax 724.657.2008
mgahring@lawrence conservationdistrict.org

Slippery Rock Township Volunteer Fire Department

Firehall Road, Princeton

March 23rd, 2006

6:00 —8:00 PM

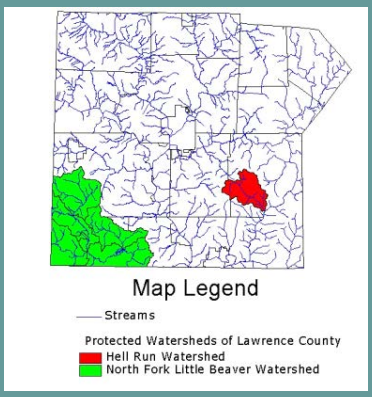
In May, 2005 the Lawrence County Conservation District was awarded a grant to develop a Conservation Plan for the Hell Run watershed that identifies threats and opportunities for long-term sustainability of the wild trout stream. As part of the project, we want to hear issues and concerns from those living in the watershed. To do so, the Conservation District is hosting an Open House for you to visit, view data and maps, collect information, and express your ideas, concerns, and future interests as a landowner residing in the Hell Run watershed. We hope you can join us.

This project is financed in part through a grant from the Coldwater Heritage Partnership on behalf of the PA Department of Conservation and Natural Resources, the PA Fish and Boat Commission, the Western PA Watershed Program, and PA Trout.

You're invited to attend the . . .

Hell Run Watershed
Open House

Hell Run is an exceptional value watershed that supports naturally reproducing wild trout populations.



LAWRENCE COUNTY CONSERVATION DISTRICT

Lawrence Co. Gov't Center
430 Court Street
New Castle, PA 16101

Phone 724.652.4512
Fax 724.657.2008
mgahring@lawrence conservationdistrict.org

Slippery Rock Township Volunteer Fire Department

Firehall Road, Princeton

May 23rd, 2006

6:00 —8:00 PM

In May, 2005 the Lawrence County Conservation District was awarded a grant to develop a Conservation Plan for the Hell Run watershed that identifies threats and opportunities for long-term sustainability of the wild trout stream. As part of the project, we want to hear issues and concerns from those living and recreating in the watershed. To do so, the Conservation District is hosting an Open House for you to visit, view data and maps, collect information, and express your ideas, concerns, and future interests as an active citizen residing in the area. We hope you can join us.

This project is financed in part through a grant from the Coldwater Heritage Partnership on behalf of the PA Department of Conservation and Natural Resources, the PA Fish and Boat Commission, the Western PA Watershed Program, and PA Trout.

concluded her first
campaign.
r, a freshman from
City Lincoln, was
appearances, all
relief. Schuster
⅔ innings, allow-
s, seven runs —
d — with four
five strikeouts.
/ear, Schuster had
ned run average for
anthers (32-27).
wins is a program-
ttsburgh.

GREAT YEAR

urg's Haley Kramer
cognition on the
nnd Team squad.
a freshman short-
Laurel, batted .238
s, all of which
. She had two
and six RBIs and
bases as well.
team with 18
, eight extra-base
steals as well.
ed Kramer posted
games and tied for
d with 33 starts,
at shortstop.
urg was 15-18.

en's track

ON TOP

it's Cassie Buck-
nird in the discus
he hammer throw
luskies accumu-
points to win the
ew England Out-
hampionships.
r, a junior from
recorded a toss
he discus and
hammer throw.

National League leaders

By Associated Press

BATTING—McCann, Atlanta, .354; Hawpe, Colorado, .346; ShGreen, Arizona, .338; Renteria, Atlanta, .336; HaRamirez, Florida, .331; MiCabrera, Florida, .329; Vidro, Washington, .326.

RUNS—Pujols, St. Louis, 40; HaRamirez, Florida, 36; Reyes, New York, 31; Dunn, Cincinnati, 31; Furcal, Los Angeles, 31; FLopez, Cincinnati, 30; Michaels, Washington, 30; CaLee, Milwaukee, 30; Vizquel, San Francisco, 30.

RBI—Pujols, St. Louis, 48; Berkman, Houston, 40; AJones, Atlanta, 39; Holliday, Colorado, 36; CaLee, Milwaukee, 34; Francoeur, Atlanta, 33; Feliz, San Francisco, 32.

HOME RUNS—Pujols, St. Louis, 19; CaLee, Milwaukee, 13; Dunn, Cincinnati, 13; Ensberg, Houston, 13; Berkman, Houston, 13; CDelgado, New York, 13; Howard, Philadelphia, 12; Aludano, Washington, 12.

STOLEN BASES—FLopez, Cincinnati, 16; Reyes, New York, 14; ERuberto, San Diego, 14; Pierre, Chicago, 13; HaRamirez, Florida, 11; Freel, Cincinnati, 10; Furcal, Los Angeles, 10; Lofton, Los Angeles, 10.

PITCHING (7 Decisions)—TGlavine, New York, 6-2, .750, 2.43; WRodriguez, Houston, 5-2, .714, 3.81; Harang, Cincinnati, 5-2, .714, 4.19.

(3). Tampa Bay, Gomes (14), Norton (3).

Toronto .....010 011 000— 3 14 0
Los Angeles .....000 000 000— 0 2 0

Janssen, JRyan (9) and BMolina; KEscobar, Romero (8), HCarrasco (8) and JMolina. W—Janssen 2-3. L—KEscobar 5-3. Sv—JRyan (9). HR—Toronto, Zaun (5).

Seattle .....000 000 020— 2 12 2
Oakland.....130 030 00x— 7 11 2

Moyer, Fruto (7), Sherrill (8) and Johjima; Zito, Gaudin (8), Calero (8), Street (9) and Kendall. W—Zito 3-3. L—Moyer 1-4.

rick Ross, C Rudy Niswanger and DT Steve Williams on two-year contracts.

NEW ENGLAND PATRIOTS—Waived S Sam Smith.

NEW YORK GIANTS—Signed LB Nick McNeil, WR Harry Williams and CB Kevin Dockery. Waived LB Marcus Lawrence.

SEATTLE SEAHAWKS—Agreed to terms with Mike Holmgren, coach, on a contract extension through the 2008 season.

HOCKEY
National Hockey League

DALLAS STARS—Signed C Perttu Lindgren to three-year contract.

scored their lone goal for the Steel. In the second game, the Steel dropped a 3-2 decision to the Internationals. Carly Deskins and Mackenzie Hohn notched the goals for the Steel.

10 p.m., NBA Basketball, Western Conference playoffs (Suns at Clippers, Game 6) — ESPN

MARCH 23, 2016 OPEN HOUSE

Name	Address	Do you want updates?	Phone	Email address
1. Doniele Andrus	PO Box 1208 Butler, PA 16001	Yes	724-284-5138	dandrus@co.butler.pa.us
2. William & Karen Bierbauer	1503 SHAFFER RD ELLWOOD CITY, PA 16117	YES	724-944-5812	wkbierbauer@att.net
3. JIM LANE	2002 MARION RD NEW CASTLE PA 16101	YES	724-333-5489	
4. WAYNE DEAN	4294 HEINZ CAMP RD ELLWOOD CITY PA 16117	YES	724-924-2593	
5. RON TRACY	2225 GEORGETOWN RD VULANT PA 16156	YES	724 530-2426	—
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				

MAY 23, 2006 OPEN HOUSE

Name	Address	Do you want updates?	Phone	Email address
1. Doniele Andrus	PO Box 1208 Butler, PA 16001	Yes	724-284-5138	dandrus@co.butler.pa.us
2. DAN VOGLER	430 Court St. New Castle PA 16101	Yes	7246562163	dvogler@co.lawrence.pa.us
3. Jim Frew	958 Frew Rd Ellwood City Pa 16117	yes	724-924-2765	
4. ROBERT ZBELIAN	1065 OLD PRINCETON RD NEW CASTLE	YES	724-652-0410	NONE
5. Earl Bowden	265 Patrick Dr. Portersville Pa.	Yes	724-924-2694	None
6. LISA KULWICKI	384 HEATHERS RD ELLWOOD CITY PA	Yes	724 924 9153	LHillbilly@Yahoo.com
7.				
8.				
9.				
10.				
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15.				

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A DRAFT VERSION OF THE

HELL RUN CONSERVATION PLAN

IS NOW AVAILABLE FOR PUBLIC REVIEW AND MAKE COMMENTS.
COPIES WILL BE AVAILABLE AT THE FOLLOWING TIME AND LOCATION.

AUGUST 9, 2006 FROM
4:30 PM TO 6:30 PM
MCCONNELL'S MILL STATE PARK
KILDOO PICNIC AREA
RAIN OR SHINE

WE WELCOME YOUR INPUT AND HOPE TO SEE YOU THERE!
LAWRENCE CONSERVATION DISTRICT AND
FRIENDS OF MCCONNELL'S MILL STATE PARK, INC

HELL RUN CONSERVATION PLAN

OUTLINE

I. Intro
   a. Location
   b. Park's role
II. General Map
III. History of the watershed
   a. Rettew report
   b. Fish and boat commission
   c. Corresponding maps
IV. Current Conditions in the watershed
   a. Comp plan
   b. Natural heritage inventory
   c. Park management plan
V. Water Quality Data
   a. Megan's
   b. Bruce's
   c. Any other available resources
VI. Photo's
   a. Through out but a complete section of seasonal throughout this grant
VII. Survey
   a. Sample of the survey
   b. Conclusions and recommendations of the surveyors
VIII. Public meetings
   a. Agendas
   b. Minutes
   c. Summary recommendations
IX. Conclusion
   a. Future Goals
   b. Action Plan
   c. Potential funders

HELL RUN CONSERVATION PLAN

FACT SHEET

Who we are: The Lawrence County Conservation District and Friends of McConnell's Mills State Park, Inc.

What we are doing: The District applied for a grant to do a coldwater conservation plan for the Hell Run watershed in Lawrence County. Friends of McConnell's Mills State Park, Inc. offered to partner with the district to help with funding and project tasks.

Our Funder is: Coldwater Heritage Partnership. They offer annually the Coldwater Conservation Grant Program.

Timeframe is: We have eighteen (18) months to complete the project. (September 2006)

Where is Hell Run Watershed: Hell Run watershed is located within the Slippery Rock Watershed. Hell Run is a tributary stream that splits off the Slippery Rock in Slippery Rock Township, Lawrence County. The Pennsylvania Fish and Boat Commission classified hell Run as Coldwater.

Our Goal: to put together a document that will help residents and township officials have an inventory and guide for the resources that lye within there boundaries. We hope that residents and officials will work together with the document and other agencies to enhance the watershed.

For more information please contact:

Megan Gahring, Watershed Specialist
Lawrence County Conservation District
430 Court Street
New Castle, PA 16101
724-652-4512

Doniele Andrus
Friends of McConnell's Mills State Park, INC.
PO BOX 63
New Wilmington, PA 16142
www.fmmsp.org
724-284-5138

Meeting Evaluation

1. Do you want to review the draft document?

Yes or No

2. How would you prefer to review the document?

A. Hardcopy
B. Email
C. CD
D. Other

3. How do you feel about the Outline?

A. Great ~ wouldn't change anything
B. Okay ~ would change a few things
C. Horrible~ would change the whole thing

If you answer B or C please let us know what you would prefer to see changed/added!

4. Do you feel three public meeting are enough?

Yes or No

If no, how many do you feel would be enough and do you have suggested meeting locations.

5. Did you like the open house format?

Yes or No

If no, what would you like changed.

Thank you for your time!

If you have additional comments please added below or on the back!

Meeting Evaluation

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(Yes) or No

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If no, how many do you feel would be enough and do you have suggested meeting locations.

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(Yes) or No

If no, what would you like changed.

Thank you for your time!

If you have additional comments please added below or on the back!

Conclusion

Management recommendations included the Hell Run Conservation Plan are suggestions to improve the quality and integrity of life within the Hell Run watershed. These recommendations are non-regulatory in nature and may be used by any resident, group, or agency. Potential partners identified and listed in the recommendations are groups whose interests and resources may be suited to assist in meeting the objectives. The groups listed as potential partners are suggestions and should not be limited to those identified. The priority list is based upon the perceived severity and urgency of the individual management recommendation. The management recommendations are listed in two separate tables. One table lists potential threats to the Hell Run watershed and its' environmental quality, and the other table lists opportunities for protecting the exceptional value watershed from future impacts to the existing water quality and naturally reproducing wild trout populations. The partnering agency highlighted in bold lettering is the suggested organization for initiating the management recommendation listed. The following chart defines the acronyms used in the tables of management recommendations.

AMD	Abandoned Mine Drainage
BMP	Best Management Practice
CHP	Coldwater Heritage Partnership
COG	Council of Governments
CREP	Conservation Reserve Enhancement Program
FMMSP	Friends of McConnell's Mill State Park, Inc.
NRCS	Natural Resources Conservation Service
PA DCNR	Pennsylvania Department of Conservation and Natural Resources
PA DEP	Pennsylvania Department of Environmental Protection
PA DOT	Pennsylvania Department of Transportation
PA FBC	Pennsylvania Fish and Boat Commission
PGC	Pennsylvania Game Commission
PHMC	Pennsylvania Historical and Museum Commission
PSATS	Pennsylvania State Association of Township Supervisors
USDA	United States Department of Agriculture
USGS	United States Geological Service
WPC	Western Pennsylvania Conservancy
WREN-LWV	Water Resource Education Network – League of Women Voters

Potential Threats to the Hell Run Watershed

THREATS	ACTION	PARTNERS	PRIORITY
Septic System Malfunctions and Failures	Educate homeowners and municipal officials on the proper operation and maintenance of septic systems, identification of malfunctioning systems, water quality impacts of failed systems, and opportunities for repairing malfunctioning systems.	Slippery Rock and Shenango Township Sewage Enforcement Officers (SEO), **Conservation District**, PA DEP	High
Uncontrolled Residential Development	Work with Slippery Rock Township officials to adopt land use regulations that guide the location and minimize the impact of future residential development.	Slippery Rock and Shenango Townships, **Lawrence Co. Planning Commission**, Conservation District, PSATS	High
Invasive Species	Work with landowners and State Park officials to monitor and remove existing invasive species. Limit the disturbance of existing plant communities to prevent the introduction of new invasive species.	PA DEP, FMMSP, Conservation District, local volunteers and park users, **PA DCNR**, WPC	High
Deer Browsing	Maintain areas in the State Park that are open to the public for hunting. Continue to monitor deer populations and their impacts on the natural communities.	PGC, local sportsman clubs, **PA DCNR**	Medium

Inadequate Municipal Ordinances	Work with Slippery Rock Township officials to encourage the adoption of ordinances that protect water quality and quantity.	**Conservation District**, Lawrence County Planning Commission, PSATS	Medium
Reduced Groundwater Recharge	Monitor trends in well water supplies, dry wells, and surrounding land use activities.	USGS, **Slippery Rock Streamkeepers**, Western PA Paddling Association, Recreational Park Users	Medium
Geologic Fractures from Mine Blasting	Monitor the existing geology, surface water levels, and groundwater recharge for changes and trends.	Quality Aggregates, PA DEP- Bureau of Mining, **FMMSP**, USGS, Recreational Park Users	Medium
Historic Structure Integrity	Maintain and preserve the existing structure of the old lime kiln in Hell's Hollow and provide educational signage.	PHMC, **FMMSP**	Medium
Acidic Seeps and Abandoned Mine Drainage (AMD)	Investigate minimal disturbance opportunities for AMD treatment. Continue to monitor water quality of the stream for potential pH impacts and alkalinity. Provide educational signage.	Slippery Rock Streamkeepers, PA DEP-Bureau of Mining, local AMD consultants, **PA DCNR**	Low
Roadside Dumping and Littering	Organize the cleanup of existing illegal dump sites. Increase signage and provide adequate disposal facilities in public areas. Implement and enforce regulations and/or fines for dumping and littering.	**PA Cleanways of Butlers & Lawrence Counties, Inc.**	Low

Potential Opportunities for the Hell Run Watershed

OPPORTUNITY	ACTION	PARTNERS	PRIORITY
Municipal Watershed Planning Outreach and Education	Encourage municipal officials to adopt a zoning ordinance and update subdivision and land development regulations to minimize water quality and quantity impacts from surrounding land uses.	Conservation District, **Lawrence County Planning Commission**, Lawrence County COG, PSATS	High
Riparian Buffers	Identify landowners with a stream on their property and encourage the landowners to plant and maintain vegetated riparian buffers.	PA DEP, USDA, NRCS, **Conservation District**	High
Increase Trail Maintenance and Signage	Provide adequate trail signs, littering signs, and educational signs. Maintain trails so as to prevent erosion and sedimentation pollution and ensure adequate drainage for stormwater.	**PA DCNR**, FMMSP, Conservation District	High
Water Quality Testing and Macroinvertebrate Sampling	Continue with existing water quality monitoring efforts.	**Slippery Rock Streamkeepers**, PA FBC	High
Mine Reclamation and Reforestation Efforts	Work to reclaim and restore mining areas to their natural contour and revegetate to their existing condition with a combination of native trees, plants, and shrubbery.	Quality Aggregates, local Nurseries, PA DEP, PA DCNR, FMMSP, **Conservation District**	High

Implement Agricultural Best Management Practices (BMP's)	Cooperate with landowners to adopt and construct agricultural BMP's on their property utilizing cost-share programs from federal and state agencies.	PA DEP, USDA, NRCS, **Conservation District**, WPC	Medium
Land Acquisition	Work with local land trusts to acquire lands threatened by mining and other earth disturbances that are within ½ mile of the Slippery Rock Creek and in close proximity to the Hell Run watershed. Acquisition of sensitive lands within the Hell Run watershed including but not limited to wetlands, riparian corridors, and significant wildlife habitats.	**Wild Waterways Conservancy**, WPC, regional and state land trust associations	Medium
Conservation Easements	Encourage the adoption of conservation easements by landowners adjacent to McConnell's Mill State Park and Hell Run. Educate landowners on the tax incentives for land preservation.	**Wild Waterways Conservancy**, regional and state land trust associations, WPC	Medium
"Trout in the Classroom" Curriculum for school students	Work with the Laurel Area School District and teachers to integrate the curriculum into school science programs.	PA FBC, **Laurel and Shenango Area School Districts**, Trout Unlimited - Neshannock Chapter	Low

Outreach and Education to Recreational Users	Promote “Leave No Trace” ethics and standards to users, encourage hikers to stay on trails, permit rock climbing only in designated areas.	Western PA Paddlers Association, local Sportsman Clubs, **PA DCNR**, PA FBC, PGC	Low
Ag Land Preservation and Security Area Programs	Spread awareness and encourage the enrollment of agricultural lands into the USDA program that protects land from development.	USDA, NRCS, Lawrence County Ag Preservation Board, **Conservation District**	Low

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