

**Fisheries Management Area 6**

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**From:** Fisheries Management Area 6 <pfbcfm6@ptd.net>  
**To:** Arway, John <jarway@fish.state.pa.us>  
**Cc:** Weber, Robert <rweber@fish.state.pa.us>; Greene, Tom <tgreene@fish.state.pa.us>; Snyder, Richard A. <rsnyder@fish.state.pa.us>  
**Sent:** Wednesday, August 16, 2000 10:45 AM  
**Subject:** UNT to Allegheny Ck., Berks Co., 3C -- Class A ST

John,

We just completed a survey of an unnamed trib. to Allegheny Ck., Berks Co. (3C). This 3.0 km. stream is an unstocked Class A brook trout stream with a biomass estimate of 80.3 kg/ha. It is located on the Morgantown 7.5 min. quadrangle, flowing NW from Plowville, starting on the west side of I-176 in Robeson Twsp. and flowing into Brecknock Twsp. where it enters Allegheny Ck. at lat.401359, long. 755611. The Allegheny basin is presently classified CWF.

As you know, DEP should immediately begin treating the UNT as if it were classified HQ-CWF in its permit reviews. I have already informed DEP's regional biologist, Bob Schott, of the biomass estimate. Bob indicated that the stream code number is 64019 in the state water plan 3C and that he informed the permit section of the stream classification change. Bob Frey indicated that I should inform you of the above info. and that you should place the stream on the list of streams that need to be upgraded to HQ (Class A fisheries). Apparently, this is how all AFM's are to handle these new Class A waters.

Mike

RECEIVED

MAR 13 2002

PA Fish & Boat Commission  
Division of Environmental Services

**WATER:** Unnamed Tributary to Allegheny Creek (603C) Berks County  
Lat/Lon: 401359/755611

**EXAMINED:** August 2000

**BY:** Kaufmann, Miko, Silicki

Bureau Director Action: *R. Thomas* Date: 5-1-02

Division Chief Action: *Richard A. Snyder - Comm* Date: 4-23-02

WW Unit Leader Action: \_\_\_\_\_ Date: \_\_\_\_\_

CW Unit Leader Action: *R. Thomas - Comm* Date: 4/22/02

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**AREA COMMENTS:**

The Unnamed Tributary to Allegheny Creek is a 3.0 km (1.9 mi) long stream located in sub-subbasin 3C, Robeson and Brecknock Townships, Berks County. The objectives of the August 2000 survey were to determine if the Unnamed Tributary to Allegheny Creek supported a wild trout population, inventory the fishery resource, document the stream in the PFBC statewide database, and determine if the Chapter 93 designation of CWF for the Allegheny Creek basin accurately characterized the conditions in the Unnamed tributary to Allegheny Creek.

A Class A wild brook trout population in excess of 77 kg/ha was documented in the Unnamed Tributary to Allegheny Creek during the August 2000 survey. As a result the water quality protection offered by the Chapter 93 designation of CWF was determined to be inadequate.

The Unnamed Tributary to Allegheny Creek would be more appropriately protected under the High Quality (HQ) CWF designation. This designation would not only provide protection for the propagation of coldwater fishes but would also place more stringent antidegradation requirements on any new, or increased discharges proposed for this stream.

**AREA RECOMMENDATIONS:**

1. Robeson and Brecknock Townships should coordinate with the Berks County Conservation District to determine whether or not existing zoning and ordinances are adequate to protect this valuable natural resource from the effects of development, specifically erosion, sedimentation, runoff, and warming water temperatures, including warm discharges from new ponds and detention basins.
2. The Pennsylvania Fish and Boat Commission should continue to manage the wild trout population in the Unnamed Tributary to Allegheny Creek with conventional, statewide angling regulations.

3. The Pennsylvania Department of Environmental Protection should upgrade the Chapter 93 Water Quality Standards of the Unnamed Tributary to Allegheny Creek from Cold Water Fishes to High Quality Cold Water Fishes and evaluate the stream as a potential Exceptional Value (EV) candidate given the pollution sensitivity of the aquatic macroinvertebrate taxa that the stream supports.
4. The Pennsylvania Fish and Boat Commission should add the Unnamed Tributary to Allegheny Creek to the *Class A Wild Trout Waters* list and the *Listing of Streams Having Trout Reproduction*.

**DIVISION CHIEF COMMENTS:**

For comparison purposes, Section 01 had 190 seven inch plus brook trout per mile or 348 for the section based on the August 2000 population estimate.

Pennsylvania Fish and Boat Commission  
Bureau of Fisheries  
Fisheries Management Division

Unnamed Tributary to Allegheny Creek (603C)  
Fisheries Management Report

Prepared by  
D. Miko and M. Kaufmann

Fisheries Management Database Name: Unt to Allegheny Ck  
Lat/Lon: 401359/755611

Date Sampled: August 2000

Date Prepared: January 2002

### Introduction

The Unnamed Tributary to Allegheny Creek is a 3.0 km (1.9 mi) long stream located in sub-subbasin 3C, Robeson and Brecknock Townships, Berks County. The stream originates at approximately 204 m (670 ft) elevation west of Plowville, Pennsylvania and flows northwest to its confluence with Allegheny Creek at River Mile (RM) 4.12, latitude 40°13'59" and longitude 75°56'11". A portion of the stream is roughly paralleled by the Horseshoe Trail. The Unnamed Tributary to Allegheny Creek has one tributary which enters from the west 245 m upstream of the mouth. Map coverage is provided by the Morgantown, Pennsylvania United States Geological Survey (USGS) 7.5 minute quadrangle (Fig. 1).

The underlying geology of this 5 km<sup>2</sup> (1.9 mi<sup>2</sup>) drainage basin is a mixture of the Hammer Creek Formation, Hammer Creek Conglomerate, and Diabase all from the Triassic Period. The Hammer Creek Formation is composed of reddish brown, fine to coarse-grained, quartzose sandstone with a few red shale interbeds. The Hammer Creek Conglomerate is composed of cobble and pebble sized quartz conglomerate interbedded with red sandstone. The Diabase is dark gray; medium to coarse grained, and is composed of labradorite and various pyroxenes. This geology yields soils that are highly erodible.

The Department of Environmental Protection (DEP) Chapter 93 Water Quality Standards list the Unnamed Tributary to Allegheny Creek as part of the Allegheny Creek basin. As such, the Unnamed Tributary to Allegheny Creek mirrors Allegheny Creek's designation of coldwater fishes (CWF). The CWF designation requires that any permitted discharges into the stream meet effluent criteria designated to provide maintenance, propagation, or both, of fish

species including the family salmonidae and additional flora and fauna which are indigenous to a coldwater habitat.

The Pennsylvania Fish and Boat Commission (PFBC) has no pollution reports on file for the Unnamed Tributary to Allegheny Creek and had never surveyed the stream. The objectives of the August 2000 survey were to determine if the Unnamed Tributary to Allegheny Creek supported a wild trout population, inventory the fishery resource, document the results in the PFBC statewide database, and determine if the Chapter 93 designation of CWF for the Allegheny Creek basin accurately characterized the conditions in the Unnamed Tributary to Allegheny Creek.

#### Methods

The Unnamed Tributary to Allegheny Creek was surveyed on August 4 and 7, 2000. All procedures of the survey were carried out according to the guidelines outlined by Marcinko et al. (1986).

The Unnamed Tributary to Allegheny Creek was considered to be one section from the headwaters to the mouth for fisheries management purposes. One representative sampling station, which encompassed 10% of the total stream length, was surveyed. Physical and social characteristics and stream gradient were measured from 7.5 minute USGS topographic maps or were recorded in the field (Table 1). Average stream width was determined from the mean of 10 measurements taken within the sampling station.

Physical characteristics, physical-chemical values, aquatic macroinvertebrate communities, and fish communities were examined at Station 0101. Aquatic macroinvertebrates were collected with a kick screen and by hand gleaning rocks. Macroinvertebrates were generally identified in the field to the familial level and assigned pollution tolerance index values according to a combination of those developed by or through Illinois EPA (1989), EA Mid-Atlantic Regional Operations Engineering, Science and Technology, Inc. (1990), RMC Environmental Services, Inc. (1991) and PFBC field experience. Aquatic macroinvertebrates that were unidentified in the field were preserved in a solution of 10% formalin and brought to the PFBC Area 6 Fisheries Management office for positive identification. The fish community was sampled using a backpack electrofisher equipped with a TAS generator and a Coffelt (BP-1C) variable voltage electrofisher set at 150 volts of alternating current. Fish species were assigned a subjective abundance index based upon the number of individuals captured within 300 m of stream electrofishing. The trout population estimate was generated using the Petersen mark-recapture technique.

## Results

### Station 0101

Station 0101 was located 197 m downstream from the T-322 bridge (Fig. 1). The station was 302 m long and averaged 2.6 m wide (Table 1). The stream at this station was generally small and shallow with long, shallow (0.15 m) riffles and runs separated by short, 0.3 m deep pools. This station was wooded and densely shaded. The stream bank erosion was light and the substrate consisted of gravel and sand. Silt was present within the gravel and sand interstices. The lower two-thirds of the stream was roughly paralleled by Township Road (T) 341.

Physical-chemical parameters and their associated values measured on August 7, 2000, were as follows: air temperature 26.8°C, water temperature 18.8°C, pH 7.0 standard units, specific conductance 121 umhos, total alkalinity 27 mg/l, total hardness 48 mg/l, and dissolved oxygen concentration 8.6 mg/l (Table 2).

Aquatic macroinvertebrate density at Station 0101 was good, as 21 taxa were collected (Table 3). The collection included two mayfly families, four stonefly families, and six caddisfly families. No taxon was rated "abundant" at Station 0101. Five of the taxa collected in 2000, Capniidae, Peltoperlidae, and Pteronarcidae (stoneflies), Glossosomatidae, and Lepidostomatidae (caddisflies) were considered very intolerant of pollution.

A total of seven fish species was captured at Station 0101 (Table 4). Fish species composition was dominated by coldwater fish and fish species common in streams that are transitional between a coldwater and warmwater environment. Brook trout *Salvelinus fontinalis* was the only fish species rated abundant while blacknose dace *Rhinichthys atratulus* was the only species rated common at the sampling station. The remaining five fish species were rated as being either present or rare with green sunfish *Lepomis cyanellus* most likely having originated from one of many ponds located within the drainage basin.

Two hundred and thirty-nine individual wild brook trout ranging from 50 mm to 275 mm total length (TL) were collected in two electrofishing passes at the 302 m station. Three hatchery reared rainbow trout *Oncorhynchus mykiss* ranging from 275 mm to 374 mm TL were also collected. Of the 239 wild brook trout captured, 32 (13.4%) were  $\geq$  175 mm TL. Brook trout  $\leq$  124 mm TL comprised 80.3% (192 individuals) of the brook trout collected. Brook trout biomass and number per hectare were 77.91 kg/ha and 3,894 trout/ha, respectively (Table 5).

## Discussion

The Unnamed Tributary to Allegheny Creek can be described as a headwater trout stream with gradually increasing suburban

influences concentrated in the lower two-thirds of the stream. Based upon physical-chemical values and aquatic macroinvertebrate communities, short-term and long-term water quality at Station 0101 was good. Aquatic macroinvertebrate density was good with five pollution intolerant species collected. Total alkalinity indicated sufficient buffering capacity against the effects of acid precipitation.

The abundance of legal length trout was fair with 13% of the brook trout collected exceeding the statewide minimum length limit of 175 mm TL (7 in). The abundance of legal length trout was indicative of the available habitat capable of supporting larger trout. The upper one-third of the station was described as being wide and very shallow with few pools and little instream cover while the habitat in the lower two-thirds of the station improved with increased water depth, undercut banks, overhanging shrubs, and instream woody debris providing cover for adult trout.

The sand and gravel substrate was indicative of the underlying geology, which was composed of shale, sandstone, and cobble and pebble sized quartz conglomerates. The combined result of land use practices from streamside residences and runoff from T-341, which paralleled the lower two-thirds of the stream may be the source of the sediment noted in the stream. The highly erodible soil in the drainage basin makes the stream particularly vulnerable to the effects of any increases in stormwater runoff associated with development. Increases in sediment deposition will immediately eliminate adult trout habitat just as it did immediately upstream from T-341 within the sampling station.

As a result of the discovery of a Class A wild brook trout population in the Unnamed Tributary to Allegheny Creek the water quality protection offered by the Chapter 93 designation of CWF is not adequate. This stream would be more appropriately protected under the High Quality (HQ) CWF designation and its sensitive macroinvertebrate taxa could potentially qualify the stream for the Exceptional Value (EV) designation. The HQ-CWF designation not only provides protection for the propagation of coldwater fishes but also places more stringent antidegradation requirements on new, additional, or increased discharges proposed for a stream designated as HQ. The DEP and the PFBC Department of Environmental Services were informed of the stream's Class A status via electronic mail from M. Kaufmann, Southeastern Pennsylvania Area Fisheries Manager on August 15, 2000 (Addendum A).

#### **Area Recommendations**

1. Robeson and Brecknock Townships should coordinate with the Berks County Conservation District to determine whether or not existing zoning and ordinances are adequate to protect this valuable natural resources from the effects of development, specifically erosion, sedimentation, runoff, and warming water temperatures, including warm discharges from new ponds and detention basins.

2. The Pennsylvania Fish and Boat Commission should continue to manage the wild trout population in the Unnamed Tributary to Allegheny Creek with conventional, statewide angling regulations.
3. The Pennsylvania Department of Environmental Protection should upgrade the Chapter 93 Water Quality Standards of the Unnamed Tributary to Allegheny Creek from Cold Water Fishes to High Quality Cold Water Fishes and evaluate the stream as a potential Exceptional Value (EV) candidate given the pollution sensitivity of the aquatic macroinvertebrate taxa that the stream supports.
4. The Pennsylvania Fish and Boat Commission should add the Unnamed Tributary to Allegheny Creek to the *Class A Wild Trout Waters* list and the *Listing of Streams Having Trout Reproduction*.



Literature Cited

- EA Mid-Atlantic Regional Operations Engineering, Science, and Technology, Inc. 1990. Freshwater macroinvertebrate species list including tolerance values and functional feeding group designations for use in rapid bioassessment protocols. Prepared for US EPA, Washington, DC.
- Illinois EPA. 1989. Biological stream characterization: a biological assessment of Illinois' stream quality. Special Report # 13, Illinois State Water Plan Task Force, Division of Water Pollution Control. Springfield, Illinois.
- Marcinko, M., R. Lorson, and R. Hoopes. 1986. Procedures for stream and river inventory information input. Pennsylvania Fish and Boat Commission publication, Bellefonte, PA.
- RMC Environmental Services, Inc. 1991. Post-diversion aquatic biology assessment for 1990. Prepared for the Philadelphia Electric Company, Philadelphia, Pennsylvania.

Table 1. Physical and social characteristics of the Unnamed Tributary to Allegheny Creek (603C), Berks County.

Characteristic	
USGS Quadrangle	Morgantown (Q38)
Section Limits	Headwaters to Mouth
Total Length (km)	3.0
Mean Width (m)	2.6
Area (ha)	0.8
Gradient (m/km)	28
DEP Classification	Cold Water Fishes (CWF)
Road Access:	
% within 100 m	55%
% within 300 m	85%
% within 500 m	100%
2000 Human Population Density (# persons/km <sup>2</sup> )	81*

\* Based upon 2000 census figures for Robeson and Brecknock Townships, Berks County.

Table 2. Physical-chemical parameters measured in the Unnamed Tributary to Allegheny Creek (603C), Berks County in August 2000.

Parameter	Station 0101*
Date	08/07/2000
Time (24 hour)	1233
Air temperature (°C)	26.8
Water temperature (°C)	18.8
PH (standard units)	7.0
Specific conductance (umhos)	121
Total alkalinity (mg/l)	27
Total hardness (mg/l)	48
Dissolved oxygen (mg/l)	8.6
Dissolved oxygen saturation (mg/l)	9.1

\* Station 0101 was located 197 meters downstream from T-322 bridge.

DEP Stream Code: 64019 macroinvertebrate taxa collected in Unnamed Tributary to Allegheny Creek (603C), Berks County, August 2000. UNT to Allegheny Creek

Taxon	Station	
	0101	PTI
Ephemeroptera		
Baetidae	X	7
Heptageniidae	X	4
Plecoptera		
Capniidae	X	1
Peltoperlidae	X	1
Perlidae	X	3
Pteronarcidae	X	0
Trichoptera		
Glossosomatidae	X	0
Hydropsychidae	X	4-8
Lepidostomatidae	X	1
Limnephilidae	X	4
Philopotamidae	X	6
Polycentropodidae	X	6
Odonata		
Aeshnidae	X	8
Diptera		
Chironomidae	X	10
Simuliidae	X	0-10
Tipulidae	X	4
Megaloptera		
Corydalidae	X	6
Hemiptera		
Gerridae	X	Na
Veliidae	X	Na
Decapoda		
Cambaridae	X	6
Class Oligochaeta	X	10
<b>Total taxa</b>	<b>21</b>	

PTI = Pollution Tolerance Index. PTI ranges from 0 (very intolerant of pollution) to 10 (very tolerant of pollution). Na = not available.

Scientific name	Common name	0101
<i>Oncorhynchus mykiss</i>	Rainbow trout (H)	P
<i>Salvelinus fontinalis</i>	Brook trout	A
<i>Exoglossum maxillingua</i>	Cutlips minnow	R
<i>Rhinichthys atratulus</i>	Blacknose dace	C
<i>Rhinichthys cataractae</i>	Longnose dace	R
<i>Semotilus atromaculatus</i>	Creek chub	P
<i>Lepomis cyanellus</i>	Green sunfish	R
<b>Total Species</b>		<b>7</b>

Subjective Abundance Index (based on a 300 m long station):  
 A = Abundant (> 100); C = Common (26 - 100); P = Present (3 - 25); R = Rare (< 3).

(H) Hatchery origin

Table 5. Wild brook trout abundance and biomass estimates for Station 0101 of the Unnamed Tributary to Allegheny Creek (603C), Berks County determined August 2000.

Length Group (mm)	Population Estimate	Number per Hectare	Number per Kilometer	Kilograms per Hectare
50-74	151	1890	501	5.67
75-99	85	1060	281	8.48
100-124	23	289	77	4.62
125-149	3	38	10	0.98
150-174	14	171	45	8.57
175-199	17	214	57	16.50
200-224	9	113	30	14.40
225-249	8	94	25	14.91
250-274	2	25	7	3.78
<b>Totals</b>	<b>312</b>	<b>3,894</b>	<b>1,031</b>	<b>77.91</b>

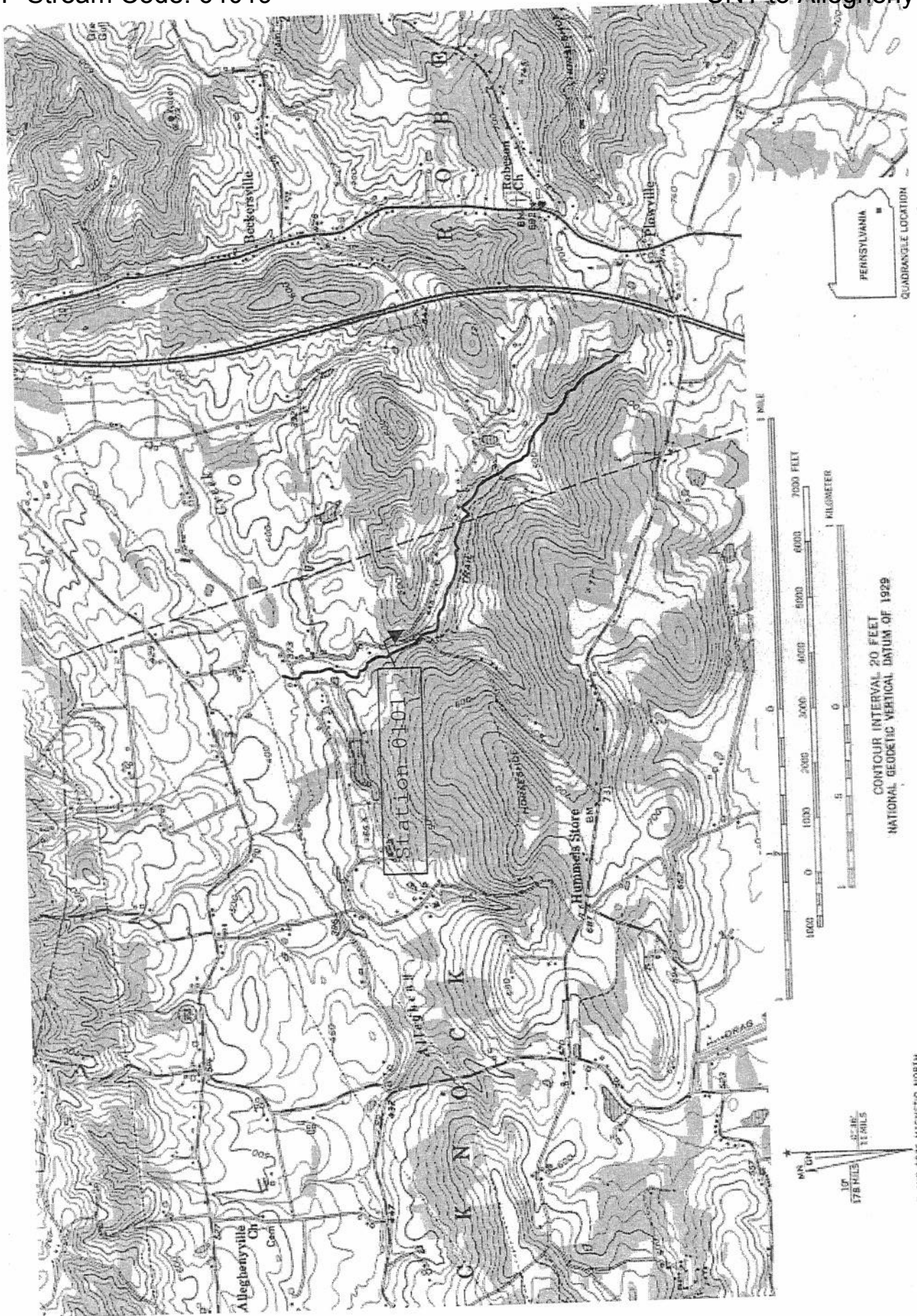


Figure 1. Location map for the Unnamed Tributary to Allegheny Creek (603C), Berks County.

## Addendum A

**From:** Fisheries Management Area 6 [pfbcfm6@ptd.net](mailto:pfbcfm6@ptd.net)  
**To:** Arway, John [jarway@fish.state.pa.us](mailto:jarway@fish.state.pa.us)  
**Cc:** Weber, Robert [rweber@fish.state.pa.us](mailto:rweber@fish.state.pa.us); Greene, Tom  
[tgreene@fish.state.pa.us](mailto:tgreene@fish.state.pa.us); Snyder, Richard A.  
[rsnyder@fish.state.pa.us](mailto:rsnyder@fish.state.pa.us)  
**Sent:** Wednesday, August 16, 2000 10:45 AM  
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