

**UNNAMED TRIBUTARY TO LIZARD CREEK
CARBON COUNTY**

**WATER QUALITY STANDARDS REVIEW
STREAM REDESIGNATION EVALUATION REPORT**

SEGMENT BASIN

DRAINAGE LIST: D

STREAM CODE: 03876

**WATER QUALITY MONITORING AND ASSESSMENT SECTION (DSB)
DIVISION OF WATER QUALITY ASSESSMENT AND STANDARDS
BUREAU OF WATER SUPPLY AND WASTEWATER MANAGEMENT
DEPARTMENT OF ENVIRONMENTAL PROTECTION**

APRIL 2004

GENERAL WATERSHED DESCRIPTION

Unnamed Tributary to Lizard Creek is located in the Lehigh River watershed. It flows through East Penn Township, Carbon County (Figure 1). This basin covers an area of 0.61 square miles and contains 0.96 stream miles. This basin currently has the protected water use designation of Trout Stocking (TSF). As a result of a request from staff in the Department's Northeast Regional Office, this basin was evaluated for redesignation as High Quality-Cold Water Fishes (HQ-CWF) or Exceptional Value Waters (EV). This report is based on a field survey conducted in April of 2001.

Land use in this basin consists primarily of second growth mixed hardwood forest with a few single-family residences. There is also an inactive sandstone quarry located in this watershed.

WATER QUALITY AND USES

Surface Water:

No long-term water quality data were available to allow a direct comparison to water quality criteria so the indigenous aquatic community was used as an indicator of long-term conditions and a measure of ecological significance.

There are no surface water withdrawals for public water supply or NPDES permitted surface water discharges in the candidate basin.

Aquatic Biota:

Habitat assessments and biological samplings were conducted at one station during the April 2001 survey (Table 1). The physical habitat assessment revealed that conditions at Station 1UNT and Reference Station R1 scored in the optimal range for benthic macroinvertebrates and fish (Table 2). The habitat score of 202 at Station 1UNT indicates excellent instream conditions. The only parameters that scored in the suboptimal category were Velocity/Depth Regimes, because there were no areas of slow flow due to the stream's high gradient, and Channel Alterations, because the stream flows through a culvert under the road.

Benthic macroinvertebrate samples were collected at Stations 1UNT and R1 using the Department's antidegradation sampling protocol (adapted from the EPA's 1989 Rapid Bioassessment Protocols manual). Taxonomic diversity was good with 31 total taxa at Station 1UNT. Individuals from several genera that are sensitive to water quality degradation were common at this station (e.g. *Epeorus*, *Amphinemura*, and *Diplectrona*). Although the drainage area is very small, the presence of benthic taxa such as the dragonfly nymph *Cordulegaster erronea* and several genera of stoneflies indicates that this is a perennial stream with a portion of the base flow derived from groundwater discharge.

The Pennsylvania Fish and Boat Commission conducted a survey on the candidate stream in January 2000. This survey confirmed the presence of a naturally reproducing brook trout population along with blacknose dace and creek chubs at Station 1UNT.

BIOLOGICAL USE QUALIFICATIONS

The biological use qualifying criterion applied to UNT Lizard Creek was the integrated benthic macroinvertebrate score test described at § 93.4b(a)(2)(i)(A) and § 93.4b(b)(1)(v). This score is calculated from the macroinvertebrate samples referenced above. Following the Department's antidegradation protocol, a subsample was randomly selected from the total sample and enumerated (Table 3). Selected benthic macroinvertebrate community metrics were generated from these subsamples. Candidate station metrics were compared to those of a reference station with a comparable drainage area (Table 4). In this case, Wild Creek (03959) was used as the reference stream. Wild Creek has a protected use designation of EV and is a tributary to Pohopoco Creek located in Carbon County. All sampling was conducted on the same day to minimize the effects of seasonal variation. This comparison was done using the following metrics which were selected as being indicative of community health: taxa richness; modified EPT index (total number of intolerant Ephemeroptera, Plecoptera, and Trichoptera taxa); modified Hilsenhoff Biotic Index; percent dominant taxon; and percent modified mayflies.

Based on these five metrics, Station 1UNT had a biological condition score of 100%. This exceeds the Department's 92% criterion found at § 93.4b(b)(1)(v) and thus qualifies the UNT Lizard Creek for an EV designation.

PUBLIC RESPONSE AND PARTICIPATION SUMMARY

The Department provided public notice of this redesignation evaluation and requested any technical data from the general public through publication in the Pennsylvania Bulletin on April 27, 2002 (32 Pa.B 2162). A similar notice was also published in the Lehigh Times News on April 26, 2002. In addition, East Penn Township and the Carbon County Planning Commission were notified of the evaluation in a letter dated April 27, 2002. To date, no information has been received in response to these notices.

RECOMMENDATIONS

Based on applicable regulatory criteria, the Department recommends that the use designation of UNT Lizard Creek 03876 basin be changed from the current TSF to EV based on biological condition scores greater than 92% of the reference station score. This recommendation affects 0.96 stream miles.

FIGURE 1. UNT LIZARD CREEK CARBON COUNTY

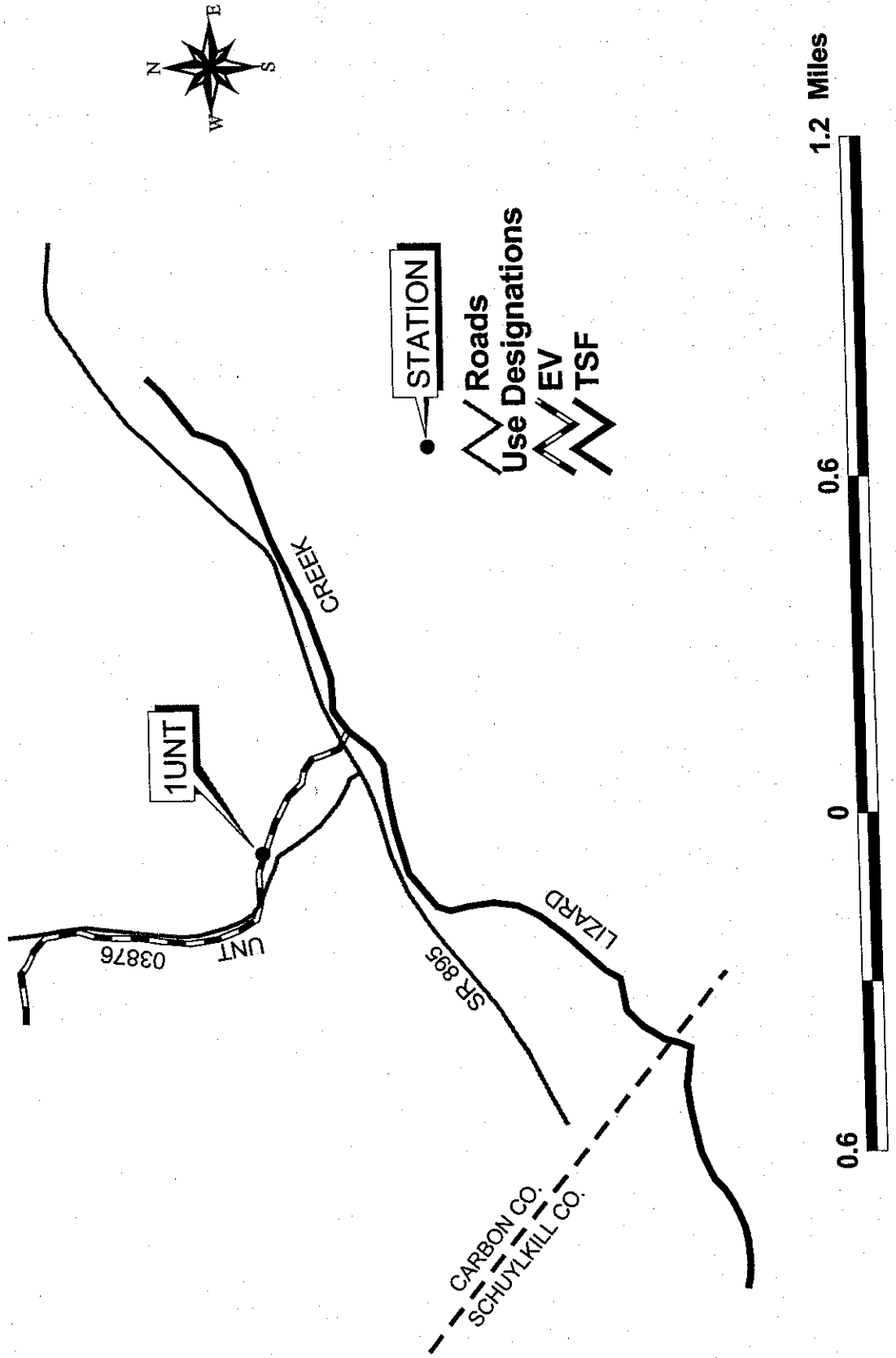


TABLE 1
STATION LOCATIONS
UNT LIZARD CREEK
CARBON COUNTY

STATION	LOCATION
1UNT	UNT Lizard Creek (03876); approximately 25 meters downstream of the T330 Crossing; East Penn Township, Carbon County. Lat: 40 45 42 Long: 75 46 41 RM: 0.34
R1	Wild Creek (03959); approximately 20 meters upstream from the SR1001 bridge (above the Penn Forest Reservoir); Penn Forest Township, Carbon County. Lat: 40 56 24 Long: 75 35 06 RM: 6.34

TABLE 2
HABITAT ASSESSMENT SUMMARY
UNT LIZARD CREEK
CARBON COUNTY
APRIL 19, 2001

HABITAT PARAMETER	STATIONS	
	1UNT	R1
1. instream cover	18	18
2. epifaunal substrate	18	19
3. embeddedness	17	17
4. velocity/depth	14	14
5. channel alterations	15	18
6. sediment deposition	18	18
7. riffle frequency	19	19
8. channel flow status	16	19
9. bank condition	17	17
10. bank vegetation protection	17	18
11. grazing/disruptive pressures	16	18
12. riparian vegetation zone width	17	19
Total Score	202	214
Rating	OPT	OPT

TABLE 3
SEMI-QUANTITATIVE BENTHIC MACROINVERTEBRATE DATA
UNT LIZARD CREEK, CARBON COUNTY
APRIL 19, 2001

TAXA	STATION	
	1UNT	R1
Ephemeroptera (mayflies)		
Baetidae; <i>Baetis</i>	9	3
Ephemerellidae; <i>Ephemerella</i>	15	20
Heptageniidae; <i>Cinygmula</i>	11	
<i>Epeorus</i>	21	6
<i>Stenonema</i>		1
Leptophlebiidae; <i>Paraleptophlebia</i>		3
Plecoptera (stoneflies)		
Chloroperlidae; <i>Sweltsa</i>	2	1
Leuctridae; <i>Leuctra</i>	1	1
Nemouridae; <i>Amphinemura</i>	12	
Peltoperlidae; <i>Tallaperla</i>	1	3
Perlidae; <i>Acroneuria</i>	4	1
Perlodidae; <i>Isoperla</i>	2	3
Pteronarcyidae; <i>Pteronarcys</i>		2
Tricoptera (caddisflies)		
Glossosomatidae; <i>Agapetus</i>		2
Hydropsychidae; <i>Cheumatopsyche</i>	1	6
<i>Diplectrona</i>	6	
<i>Hydropsyche</i>	1	1
Lepidostomatidae; <i>Lepidostoma</i>		2
Philopotamidae; <i>Dolophilodes</i>		1
Rhyacophilidae; <i>Rhyacophila</i>	4	2
Uenoidae; <i>Neophylax</i>	1	
Diptera (true flies)		
Blephariceridae; <i>Blepharicera</i>	4	
Simuliidae; <i>Prosimulium</i>	3	33
<i>Simulium</i>	2	
Tipulidae; <i>Dicranota</i>	1	
<i>Hexatoma</i>	3	
<i>Tipula</i>	1	
Chironomidae	2	
Megaloptera (dobson-, fishflies)		
Corydalidae; <i>Nigronia</i>		1
Odonata (dragon-, damselflies)		
Cordulegastridae; <i>Cordulegaster erronea</i>	1	
Coleoptera (aquatic beetles)		
Elmidae; <i>Oulimnius</i>	6	
<i>Promoresia</i>		10
Psephenidae; <i>Ectopria</i>	1	
Ptilodactylidae; <i>Anchytarsus</i>		1
Non-Insect Taxa		
Decapoda (crayfish)		
Cambaridae	1	
Total Number of Individuals	116	103

TABLE 4
RBP METRIC COMPARISON
UNT LIZARD CREEK, CARBON COUNTY
APRIL 19, 2001

METRIC	STATIONS	
	1UNT	R1
1. TAXA RICHNESS	26	21
Cand/Ref (%)	124	xxx
Biol. Cond. Score	8	8
2. MOD. EPT INDEX	12	14
Cand/Ref (%)	86	xxx
Biol. Cond. Score	8	8
3. MOD. HBI	1.94	1.83
Cand-Ref	0.11	xxx
Biol. Cond. Score	8	8
4. % DOMINANT TAXA	18	32
Cand-Ref	-14	xxx
Biol. Cond. Score	8	8
5. % MOD. MAYFLIES	40	29
Ref-Cand	-11	xxx
Biol. Cond. Score	8	8
TOTAL BIOLOGICAL CONDITION SCORE	40	40
% COMPARABILITY TO REFERENCE	100	xxx