

**LOGAN SPRING RUN  
HUNTINGDON AND BLAIR COUNTIES**

**WATER QUALITY STANDARDS REVIEW  
STREAM EVALUATION REPORT**

**Segment: Basin  
Stream Code: 15823  
Drainage List: N**

**WATER QUALITY MONITORING SECTION (MJL)  
WATER QUALITY DIVISION  
BUREAU OF CLEAN WATER  
DEPARTMENT OF ENVIRONMENTAL PROTECTION**

**2019**

## **INTRODUCTION**

The Department of Environmental Protection (DEP) conducted an evaluation of the Logan Spring Run basin in response to an NPDES permit renewal for the Narehood Quarry located at the confluence of Logan Spring Run and the Little Juniata River. The Logan Spring Run basin is currently designated Warm Water Fishes, Migratory Fishes (WWF, MF).

The stream redesignation process begins with an evaluation of the “existing uses” and the “designated uses” of a stream. “Existing uses” are water uses actually attained in the waterbody. Existing uses are protected through permit or approval actions taken by the DEP. “Designated uses” are water uses identified in regulations that protect a waterbody. Candidates for stream redesignation may be identified by the DEP based on routine waterbody investigations or based on requests initiated by other agencies or from the general public through a rulemaking petition to the Environmental Quality Board (EQB).

## **GENERAL WATERSHED DESCRIPTION**

Logan Spring Run is a “true” limestone tributary to the Little Juniata River. The majority of the Logan Spring Run basin is located in Warriors Mark Township, Huntingdon County. A small portion of the basin, the farthest downstream reach, is located in Snyder Township, Blair County. The basin has a drainage area of approximately 7.7 square miles and consists of 13.5 stream miles. The surrounding area is fertile limestone valley surrounded by steep ridges characteristic of Central Pennsylvania’s Ridge and Valley Province. The current land use within the basin consists of forested (57%), agricultural (37%), water/wetlands (4%), urban/developed areas (1%), and barren areas (1%). The Narehood Quarry has a single NPDES permit, and this is the only NPDES permit in the basin.

## **WATER QUALITY AND USES**

### **Water Chemistry**

Water chemistry data has been collected throughout the lower portion of the basin by the DEP’s Bureau of District Mining Operations staff for over two decades to characterize background instream conditions as part of the NPDES permit renewal process and for compliance monitoring for the Narehood Quarry. Additional water chemistry has been collected by Bureau of Clean Water staff as part of routine aquatic life use surveys and as part of the protected use evaluation. Water chemistry data collected 2014 through 2018, along with samples from 2005 and 2008 are included in this report.

Water chemistry was collected from two locations on Logan Spring Run mainstem as well as from approximately six large alkaline limestone springs throughout the lower portion of the basin. Locations on Logan Spring Run are located upstream of the permitted quarry (LSR1) and just downstream of the quarry near the confluence with the Little Juniata River (LSR3) (Table 1, Figure 1). The six limestone spring locations are all located upstream of the quarry. Most of the water chemistry sample results include a limited number of analytical tests (total alkalinity, total acidity, pH, specific conductance, total suspended solids, and total iron), but some also include additional tests for select metals and ions (Tables 2 – 5).

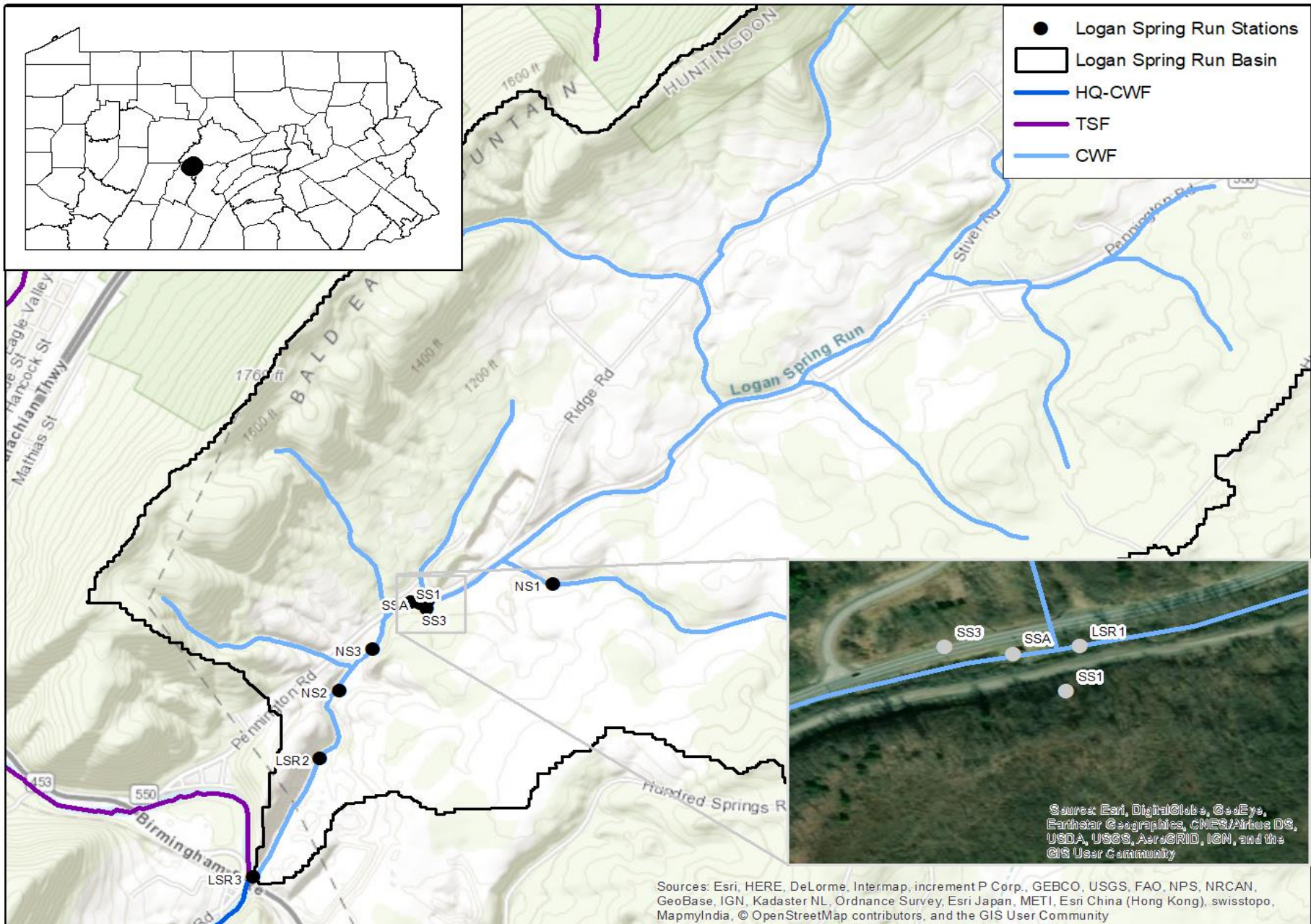


Figure 1 Logan Spring Run basin – station locations

Table 1. Logan Spring Run basin – station locations

STATION	DESCRIPTION
<b>LSR1</b>	Logan Spring Run, 100 meters upstream of Stover Lane and Pennington Road intersection and 20 meters upstream of “Stover Springs” (SSA). DEP Survey February 2018 Water Chemistry February 2018 Lat: 40.675                      Long: -78.207
<b>LSR2</b>	Logan Spring Run, upstream portion of the Narehood Quarry permit area. PFBC Fish Surveys August 1993 and July 2016 Lat: 40.675                      Long: -78.217
<b>LSR3</b>	Logan Spring Run, 40 meters upstream of the confluence with the Little Juniata River PFBC Fish Survey July 1993 SSWAP Survey May 2000 DEP Survey February 2018 Water Chemistry February 2018 Lat: 40.662                      Long: -78.216
<b>SSA</b>	“Stover Springs” – Limestone Spring A, right descending of Logan Spring Run and 20 meters downstream of LSR1. Water Chemistry 2014 - 2017 Lat: 40.675                      Long: -78.206
<b>SS1</b>	“Stover Springs” – Limestone Spring 1, left descending of Logan Spring Run, in the vicinity of LSR1. Water Chemistry August 2005 Lat: 40.674                      Long: -78.206
<b>SS3</b>	“Stover Springs” – Limestone Spring 3, right descending of Logan Spring Run, in the vicinity of LSR1. Water Chemistry 2014 - 2017 Lat: 40.675                      Long: -78.207
<b>NS1</b>	“North Spring” – Limestone Spring 1, right descending of unnamed tributary (UNT) 15827 and 350 meters upstream of the confluence with Logan Spring Run Water Chemistry August 2005 Lat: 40.676                      Long: -78.199
<b>NS2</b>	“North Spring” – Limestone Spring 2, left descending of Logan Spring Run, upstream of Narehood Quarry and 350 meters downstream of NS3 Water Chemistry June 2014 Lat: 40.671                      Long: -78.211
<b>NS3</b>	“North Spring” – Limestone Spring 3, left descending of Logan Spring Run, 350 meters upstream of NS2 and approx. 420 meters downstream of LSR1 and “Stover Springs”. Water Chemistry 2014 - 2015 Lat: 40.673                      Long: -78.209

Samples collected on August 31, 2005 from upstream of the quarry operation (LSR1) and on March 11, 2015 downstream of the quarry operation (LSR3) were collected during elevated stream flow. Additional samples were collected on February 6, 2018 at base flow conditions from upstream and downstream of the quarry operation (LSR1 and LSR3).

Water chemistry results from the Logan Spring Run basin are indicative of a “true” limestone stream. Alkalinity results range from 156.6 to 266 mg/L except for the sample collected (104 mg/L) during a

high flow event on March 11, 2015. Instream nitrogen concentrations that range from 4.23 to 6.83 mg/L and the reduced alkalinity documented from the 2015 sample may indicate nonpoint source or other impacts. Total acidity results are all significantly less than zero and range from -301.4 to -135.2 mg/L. Results from samples collected on February 6, 2018 during base flow conditions indicate similar water quality conditions upstream and downstream of the quarry operation (Tables 2 - 5).

Table 2. Chemical grab sample results – Logan Spring Run mainstem stations LSR1 and LSR3

STATION LSR1							
PARAMETER	UNITS	8/31/2005	6/18/2014	6/10/2015	10/27/2015	5/19/2016	5/17/2017
ALKALINITY	mg/L	175.2	165.2	217.6	244.6	156.6	193.4
ACIDITY T	mg/L	-143	-159.2	-176.8	-209	-142.4	-181.4
pH	SU	8	8.3	8.5	8.5	8.5	8.4
SPECIFIC CONDUCTANCE	µS/cm <sup>C</sup>	398	409	494	566	366	440
TSS	mg/L	52	16	12	< 5	< 5	8
ALUMINUM T	µg/L	854					
CALCIUM T	mg/L	52.6					
IRON T	µg /L	2000	303	106	< 20	151	187
MAGNESIUM T	mg/L	19.8					
MANGANESE T	µg /L	48					
POTASSIUM T	mg/L	4.81					
SODIUM T	mg/L	4.79					
CHLORIDE T	mg/L	9					
SULFATE T	mg/L	23.2					
ZINC T	µg/L	16					
NITRATE T	mg/L	4.23					

STATION LSR3							
PARAMETER	UNITS	6/30/2008	6/18/2014	6/10/2015	10/27/2015	5/19/2016	5/17/2017
ALKALINITY T	mg/L	238	169.6	216.6	246	170	194
ACIDITY T	mg/L	-301.4	-163.6	-185.4	-145.8	-167.8	-178.2
pH	SU	8.4	8.3	8.5	8.5	8.5	8.4
SPECIFIC CONDUCTANCE	µs/cm <sup>C</sup>	531	528	517	568	414	480
TDS	mg/L	342					
TSS	mg/L	<5	8	8	<5	<5	6
IRON T	µg/L	65	174	55	38	83	378

Measurements with "<" indicate concentrations below the reporting limit

## Aquatic Biota

The indigenous aquatic community is an excellent indicator of long-term conditions and is used as a measure of water quality. Pennsylvania Fish and Boat Commission (PFBC) staff collected fisheries data from two locations on two separate occasions in 1993 and again at a single location in 2016 (Figure 1, Table 1). A single DEP *Stream Surface Water Assessment Protocol* (SSWAP) macroinvertebrate survey was completed May 23, 2000. Additional macroinvertebrate surveys were conducted at two locations on February 6, 2018.

Table 3. Chemical grab sample results – Logan Spring Run basin limestone spring stations

STATION	PARAMETER	UNITS	8/31/2005	6/18/2014	6/10/2015	10/27/2015	5/19/2016	5/17/2017
SSA	ALKALINITY T	mg/L		220.8	242.6	245	243.2	241.6
	ACIDITY T	mg/L		-197.8	-209	-200.8	-224.4	-235.4
	pH	SU		8	7.8	7.8	7.7	7.7
	SPECIFIC CONDUCTANCE	µs/cm <sup>C</sup>		548	574	586	554	555
	TSS	mg/L		<5	8	<5	14	14
	IRON T	µg/L		43	22	<20	<20	309
SS1	ALKALINITY T	mg/L	245.4					
	ACIDITY T	mg/L	-201.4					
	pH	pH units	7.5					
	SPECIFIC CONDUCTANCE	µs/cm <sup>C</sup>	531					
	TSS	mg/L	10					
	ALUMINUM T	µg/L	<200					
	CALCIUM T	mg/L	62.7					
	IRON T	µg/L	<20					
	MAGNESIUM T	mg/L	29.4					
	MANGANESE T	µg/L	<10					
	POTASSIUM T	mg/L	1.67					
	SODIUM T	mg/L	3.84					
	CHLORIDE T	mg/L	10.2					
	SULFATE T	mg/L	27.5					
ZINC T	µg/L	15						
NITRATE NITROGEN T	mg/L	6.44						
SS3	ALKALINITY T	mg/L		150.8	235.6	245.4	137.8	169.8
	ACIDITY T	mg/L		-135.2	-190.8	-200.6	-136.4	-159.4
	pH	SU		7.8	7.8	7.8	7.7	7.6
	SPECIFIC CONDUCTANCE	µs/cm <sup>C</sup>		418	555	585	368	426
	TSS	mg/L		<5	6	<5	6	12
	IRON T	µg/L		77	20	<20	31	176
NS1	ALKALINITY T	mg/L	253					
	ACIDITY T	mg/L	-211.6					
	pH	SU	7.78					
	SPECIFIC CONDUCTANCE	µs/cm <sup>C</sup>	537					
	TSS	mg/L	2					
	ALUMINUM T	µg/L	<200					
	CALCIUM T	mg/L	63.8					
	IRON T	µg/L	<20					
	MAGNESIUM T	mg/L	32.9					
	MANGANESE T	µg/L	<10					
	POTASSIUM T	mg/L	1.28					
	SODIUM T	mg/L	3.09					
	CHLORIDE T	mg/L	11.3					
	SULFATE T	mg/L	<20					
ZINC T	µg/L	19						
NITRATE NITROGEN T	mg/L	6.83						
NS2	ALKALINITY T	mg/L		266				
	ACIDITY T	mg/L		-243				
	pH	SU		8				
	SPECIFIC CONDUCTANCE	µs/cm <sup>C</sup>		592				
	TSS	mg/L		10				
	IRON T	µg/L		<45				
NS3	ALKALINITY T	mg/L		214.6	213.4			
	ACIDITY T	mg/L		-191.4	-184.2			
	pH	SU		8	8			
	SPECIFIC CONDUCTANCE	µs/cm <sup>C</sup>		486	491			
	TSS	mg/L		<5	10			
	IRON T	µg/L		<20	<20			

Measurements with "<" indicate concentrations below the reporting limit.

Table 4. Chemical grab sample results – Logan Spring Run mainstem station LSR3, collected March 11, 2015 during a high flow event.

	PARAMETER	UNITS	3/11/2015
PHYSICAL/OTHER	ALKALINITY T	mg/L	104
	HARDNESS T	mg/L	310
	OSMOTIC PRESSURE	mOsm	150
	pH	pH units	7.76
	SPECIFIC CONDUCTANCE	µs/cm <sup>C</sup>	306
	SSC COURSE FRACTION	PPM	160.8
	SSC FINE FRACTION	PPM	319.2
	SSC T	PPM	480
	TDS	mg/L	220
	TOC	mg/L	8.296
TSS	mg/L	420	
METALS AND IONS	ALUMINUM T	µg/L	5557
	BARIUM T	µg/L	96
	BORON T	µg/L	<19.105
	BROMIDE T	µg/L	<8.041
	CALCIUM T	mg/L	75.46
	CHLORIDE T	mg/L	16.141
	COPPER T	µg/L	17.9
	IRON T	µg/L	8713
	LEAD T	µg/L	15.2
	MAGNESIUM T	mg/L	29.43
	MANGANESE T	µg/L	363
	NICKEL T	µg/L	14
	SELENIUM T	µg/L	0.77
	SODIUM T	mg/L	7.548
	STRONTIUM T	µg/L	187
	SULFATE T	mg/L	21.621
	ZINC T	µg/L	82
NUTRIENTS	AMMONIA D	mg/L	0.183
	AMMONIA T	mg/L	0.177
	NITRATE & NITRATE D	mg/L	2.948
	NITRATE & NITRITE T	mg/L	2.913
	NITROGEN D	mg/L	3.701
	NITROGEN T	mg/L	4.662
	ORTHO PHOSOPHORUS D	mg/L	0.105
	ORTHO PHOSOPHORUS T	mg/L	0.1
	PHOSPHORUS D	mg/L	0.117
	PHOSPHORUS T	mg/L	0.471

Measurements with “<” indicate concentrations below the reporting limit.

**Habitat.** Instream habitat was assessed at each station where benthic macroinvertebrates were sampled during the 2018 survey (Table 6). The habitat evaluation consists of rating twelve parameters to derive a station habitat score. The total habitat scores were suboptimal (172) at LSR1, upstream of the permitted quarry area and optimal (194) at LSR3, downstream of the

Table 5. Chemical grab sample results – Logan Spring Run mainstem station LSR 1 and LSR3, collected February 6, 2018.

	PARAMETER	UNITS	LSR1	LSR3
PHYSICAL/OTHER	ALKALINITY T	mg/L	199	199.4
	HARDNESS T	mg/L	227	241
	pH	SU	8.3	8.2
	SPECIFIC CONDUCTANCE	µs/cm <sup>C</sup>	455	464
	TDS	mg/L	300	296
	TOC	mg/L	0.62	0.67
	TSS	mg/L	<5	<5
	METALS AND IONS	ALUMINUM D	µg/L	<10
ALUMINUM T		µg/L	49	36
BARIUM T		µg/L	52	44
BORON T		µg/L	<200	<200
CADMIUM D		µg/L	<0.2	<0.2
CALCIUM T		mg/L	56.011	59.022
CHLORIDE T		mg/L	10.69	11.16
COPPER D		µg/L	<4	<4
COPPER T		µg/L	<4	<4
IRON D		µg/L	<20	<20
IRON T		µg/L	98	59
LEAD D		µg/L	<1	<1
LEAD T		µg/L	<1	<1
LITHIUM D		µg/L	<25	<25
LITHIUM T		µg/L	<25	<25
BROMIDE		µg/L	<25	<25
MAGNESIUM T		mg/L	21.022	22.594
MANGANESE D		µg/L	<10	<10
MANGANESE T		µg/L	<10	<10
NICKEL D		µg/L	<50	<50
NICKEL T	µg/L	<50	<50	
POTASSIUM T	mg/L	1.895	1.984	
SELENIUM T	µg/L	<7	<7	
SODIUM T	mg/L	5.68	5.546	
STRONTIUM T	µg/L	291	237	
SULFATE T	mg/L	18.18	22.54	
ZINC D	µg/L	14	12	
ZINC T	µg/L	12	13	
NUTRIENTS	AMMONIA D	mg/L	<0.02	<0.02
	AMMONIA T	mg/L	<0.02	<0.02
	NITRATE & NITRITE D	mg/L	5.80	5.30
	NITRATE & NITRITE T	mg/L	5.79	5.54
	NITROGEN T	mg/L	5.77	5.40
	ORTHO PHOSPHORUS D	mg/L	0.019	0.016
	ORTHO PHOSPHORUS T	mg/L	0.018	0.017
	PHOSPHORUS D	mg/L	0.015	0.016
	PHOSPHORUS T	mg/L	0.021	0.016

Measurements with “<” indicate concentrations below the reporting limit.

of the quarry. Suboptimal scores at LSR1 were influenced by low scores for instream cover, embeddedness, sediment deposition, and riparian zone width.

Table 6. Habitat assessment results, February 6, 2018

PARAMETER	STATIONS	
	LSR1	LSR3
1. instream cover	12	17
2. epifaunal substrate	16	19
3. embeddedness	11	16
4. velocity/depth	16	16
5. channel alterations	13	13
6. sediment deposition	9	14
7. riffle frequency	16	19
8. channel flow status	20	20
9. bank condition	15	16
10. bank vegetative protection	18	16
11. grazing/disruptive pressures	19	20
12. riparian zone width	7	8
Total Score	<b>172</b>	<b>194</b>
Rating <sup>1</sup>	<b>SUB</b>	<b>OPT</b>

<sup>1</sup> OPT=Optimal (≥192); SUB=Suboptimal (132-191)

**Benthos.** A benthic macroinvertebrate sample was collected on May 23, 2000 using the DEP’s SSWAP from the farthest downstream reaches of Logan Spring Run (LSR3), which is downstream of the quarry permit area. While the sample did not indicate biological impairment, the habitat evaluation that was performed identified a habitat impairment caused by excessive sedimentation presumably from the quarry and upstream agriculture. Consequently, the entire Logan Spring Run mainstem is listed on the Commonwealth’s 303(d) list of impaired waters (Category 5 of the Integrated Report) for Source – Grazing Related Agriculture, Cause – Siltation; and Source – Habitat Modification, Cause – Siltation. SSWAP was a less rigorous evaluation than the DEP’s current macroinvertebrate data collection protocols (Shull and Lookenbill 2018) and Index of Biotic

Integrity (IBI) described in the DEP’s *Wadable Limestone Stream Macroinvertebrate Assessment Method* (Botts 2009).

A macroinvertebrate survey was completed on February 7, 2018 using the latest sample collection protocol and assessment method for true limestone streams. Samples were collected from upstream and downstream (LSR1 and LSR3) of the quarry operation. The macroinvertebrate community at both stations are indicative of a true limestone stream. The IBI

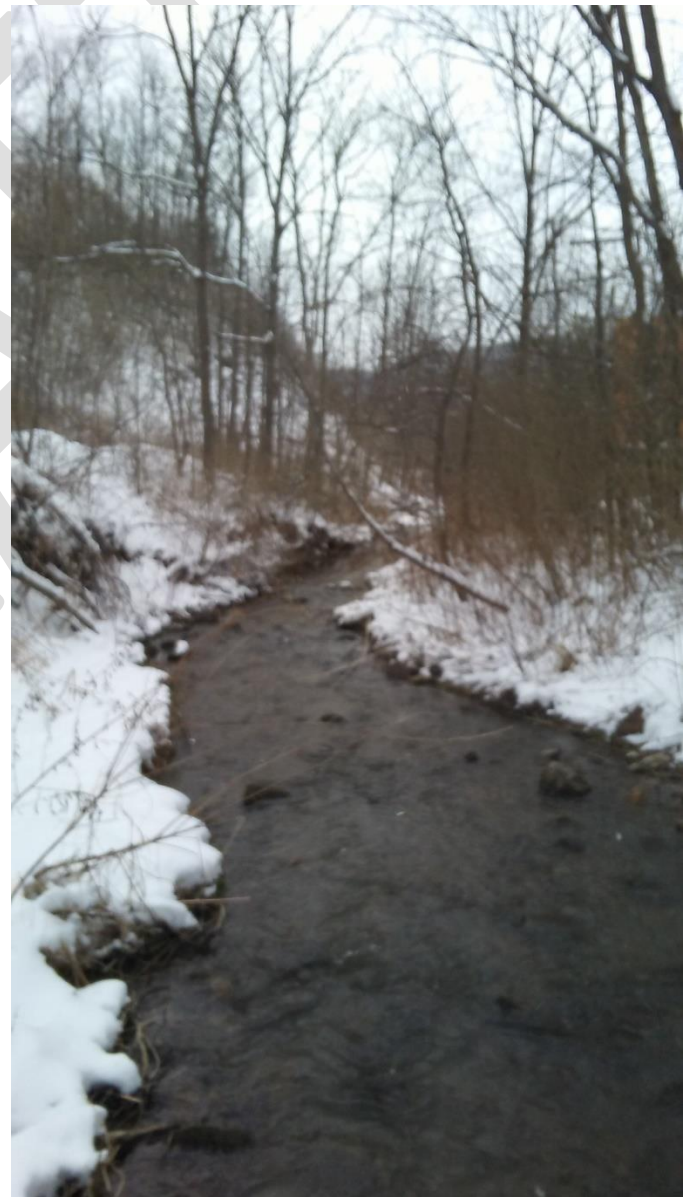


Figure 2. Logan Spring Run – Station LSR1, looking downstream



impairment threshold for limestone streams is 60. IBI scores for the 2018 samples were 71.5 (LSR1) and 80.0 (LSR3). Both samples are above the impairment threshold. Five macroinvertebrate taxa including, *Lirceus*, *Gammarus*, *Ephemerella*, *Optioservus*, and Chironomidae account for approximately 80% of the total organisms collected from DEP limestone method development samples (Botts 2009). Comparatively *Gammarus*, *Ephemerella*, and Chironomidae comprise 86% of the LSR1 sample and 79% of the LSR3 sample.

*Gammarus* was the dominant taxon comprising over half of the subsample from each station. Taxa richness was higher at LSR3 (15) than at LSR1 (10), and diversity metrics were also higher at LSR3 (Tables 5 and 6).

Table 5. Semi-quantitative benthic macroinvertebrate data collected February 6, 2018

TAXA	STATIONS	
	LSR1	LSR3
Ephemeroptera		
Baetidae <i>Baetis</i>	2	14
Ephemerellidae <i>Ephemerella</i>	61	63
Leptophlebiidae <i>Paraleptophlebia</i>	2	
Plecoptera		
Nemouridae <i>Amphinemura</i>		2
Trichoptera		
Uenoidae <i>Neophylax</i>	3	1
Diptera		
Chironomidae		27
Simuliidae <i>Prosimulium</i>	5	1
Simuliidae <i>Simulium</i>	5	5
Tipulidae <i>Antocha</i>		1
Tipulidae <i>Tipula</i>		1
Coleoptera		
Elmidae <i>Optioservus</i>	43	5
Elmidae <i>Oulimnius</i>	1	
Non-Insect Taxa		
Cambaridae <i>Cambarus</i>		1
Gammaridea <i>Gammarus</i>	172	181
Oligochaeta	1	5
Planariidae		5
Stygobromus		1

Table 6. Semi-quantitative benthic macroinvertebrate metrics for samples collected February 6, 2018

METRIC	STATIONS	
	LSR1	LSR3
Total Richness	10	15
EPT Richness	4	4
Beck's Index (Version 4)	8	10
Hilsonhoff Biotic Index	3.39	3.85
% Tolerant Individuals (PTV 7-10)	0.3	3.2
Shannon Diversity	1.21	1.40
IBI for Limestone Streams	71.5	80.0



Figure 3. Logan Spring Run – Station LSR3, looking downstream

**Fishes.** Fish were collected using backpack electrofishing gear and populations were estimated during 1993 PFBC surveys using a two-pass Zippin Removal Method. Approximately 75 meters were sampled on July 15, 1993 just downstream of the quarry (LSR3), and 248 meters were sampled on August 31, 1993 within the quarry permit area (LSR2). A total of 20 brown trout (*Salmo trutta*) and a single brook trout (*Salvelinus fontinalis*) ranging 50-350 mm, along with mottled sculpin (*Cottus bairdii*) and Eastern blacknose dace (*Rhinichthys atratulus*) were collected during the July 15<sup>th</sup> survey. A total of 108 brown trout ranging 75-474 mm, along with rainbow trout (*Oncorhynchus mykiss*), and mottled sculpin were collected during the August 31<sup>st</sup> survey. A biomass of 191.68 kg/ha of brown trout was calculated (Appendix A – *Aquatic Biological Investigation Logan Spring Run*; PFBC, 1993).

An additional PFBC survey was completed using backpack electrofishing gear on July 14, 2016 within the quarry permit area (LSR2). Creek chub (*Semotilus atromaculatus*) and slimy sculpin (*Cottus cognatus*) were collected, but no trout were collected (PFBC 2016).

Table 7: PFBC trout biomass estimates classes and criteria

CLASS	CRITERIA
A (Brook Trout)	<ul style="list-style-type: none"> <li>a. Total wild brook trout biomass of at least 30 kg/ha (26.7 lbs./acre)</li> <li>b. Total biomass of wild brook trout less than 15 centimeters (cm) or 5.9 inches in total length of at least 0.1 kg/ha (0.089 lbs./acre)</li> <li>c. Wild brook trout biomass must comprise at least 75% of the total wild trout biomass</li> </ul>
A (Brown Trout)	<ul style="list-style-type: none"> <li>a. Total wild brown trout biomass of at least 40 kg/ha (35.6 lbs. acre)</li> <li>b. Total biomass of wild brown trout less than 15 centimeters (cm) or 5.9 inches in total length of at least 0.1 kg/ha (0.089 lbs./acre).</li> <li>c. Wild brown trout biomass must comprise at least 75% of the total wild trout biomass</li> </ul>
A (Mixed Brown and Brook)	<ul style="list-style-type: none"> <li>a. Combined wild brook and wild brown trout biomass of at least 40 kg/ha (35.6 lbs. acre)</li> <li>b. Total biomass of wild brook trout less than 15 centimeters (cm) or 5.9 inches in total length of at least 0.1 kg/ha (0.089 lbs./acre).</li> <li>c. Total biomass of wild brown trout less than 15 centimeters (cm) or 5.9 inches in total length of at least 0.1 kg/ha (0.089 lbs./acre).</li> <li>d. Wild brook trout biomass comprises less than 75% of total trout biomass</li> <li>e. Wild brown trout biomass comprises less than 75% of total trout biomass</li> </ul>
A (Rainbow Trout)	Total biomass of wild rainbow trout less than 15 cm (5.9 inches) in total length of at least 2.0 kg/ha (1.78 lbs./acre).

## **BIOLOGICAL USE QUALIFICATIONS**

Biological use qualifying criterion evaluated for the Logan Spring Run were the aquatic life use definitions described at 25 Pa. Code § 93.3, Table 1 – *Protected Water Uses*. Table 1 defines the Cold Water Fishes (CWF) protected use as;

*“Maintenance or propagation, or both, of fish species including the family Salmonidae and additional flora and fauna which are indigenous to a cold water habitat.”*

PFBC surveys conducted in 1993 have documented the maintenance and propagation of Salmonidae and other fish species indigenous to cold water habitat. While the 2016 survey did not document Salmonidae, it did document sculpin (Cottidae), which are also indigenous to cold water habitat (Eaton & Scheller 1996, Lyons et al. 2009, Zorn et al. 2002). Regardless of the 2016 survey results, the 1993 surveys have demonstrated an existing use of CWF. Subsequent evaluations do not supersede prior demonstrations of meeting the CWF aquatic life use, and any additional biological measures of water quality would be used to measure changes in water quality from the benchmark biological characterization. The benchmark for water quality is that use attained in the waterbody on or after November 28, 1975, whether or not it is included in the water quality standards (25 Pa. Code § 93.1).

Based on the results of PFBC surveys, the DEP also evaluated antidegradation criteria listed in § 93.4b(b)(a)(2)(ii);

*“The surface water has been designated a Class A wild trout stream by the Fish and Boat Commission following public notice and comment.”*

A PFBC survey conducted in 1993 (Appendix A) documented a biomass of brown trout (191.68 kg/ha) that exceeds the PFBC Class A Wild Trout Stream criteria listed in Table 7. The PFBC classification process includes a public notice, review of comments, and approval by their Commissioners. Logan Spring Run has not been officially classified as a Class A Wild Trout Stream by PFBC, and therefore does not meet the qualifications listed in 25 Pa. Code § 93.4b(b)(a)(2)(ii).

## **AQUATIC LIFE USE ASSESSMENT**

The entire Logan Spring Run mainstem is currently listed on the Commonwealth’s 303(d) list of impaired waters (Category 5 of the Integrated Report) for Source – Grazing Related Agriculture and Habitat Modification and Cause – Siltation. The listing was a result of a 2000 SSWAP survey that was a less rigorous evaluation than the DEP’s current macroinvertebrate data collection protocols (Shull and Lookenbill 2018) and Index of Biotic Integrity (IBI) described in the DEP’s *Wadable Limestone Stream Macroinvertebrate Assessment Method* (Botts 2009). IBI scores of 71.5 and 80.0 from the 2018 survey are above the 60-impairment threshold for true limestone streams and would indicate aquatic life use attainment. The habitat evaluation conducted upstream of the quarry operation (LSR1) received a marginal score of 9 out of 20 points for sedimentation and downstream (LSR3) of the quarry operation scored a suboptimal of 14 for sedimentation. Moderate to high sedimentation is not atypical of otherwise

healthy or even reference quality limestone streams due primarily to the low gradient nature. While Logan Spring Run at LSR1 and LSR3 is not necessarily low gradient there are reaches within the basin that are and during high flow may transfer sediment to downstream reaches.

PFBC surveys conducted in July and August 1993 documented a high brown trout biomass along with other fish species indigenous to cold water habitat, while the 2016 survey did not document any Salmonidae. The absence of Salmonidae during the 2016 survey highlights the need for further investigation as to whether there are any trout present within or upstream of the permitted quarry operation and the cause of the potential depleted trout population.

Based on the IBI scores of 71.5 and 80.0 at LSR1 and LSR3 as well as the corresponding habitat evaluations approximately 13.5 miles of Logan Spring Run mainstem from the source to the confluence (Figure 1) should be removed (delisted) from the Commonwealth's 303(d) list of impaired waters.

### **PUBLIC NOTICE AND REQUEST FOR TECHNICAL DATA**

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 June 9, 2018 (48 Pa.B. 3491). Blair County Conservation District, Blair County Board of Commissioners, Huntingdon County Conservation District, Huntingdon County Board of Commissioners, Snyder Township, and Warriors Mark Township were notified of the redesignation evaluation in a letter dated June 12, 2018. In addition, a notification was posted on the DEP's website.

### **RECOMMENDATION**

Based on applicable regulatory definitions in 25 Pa. Code § 93.3, the DEP recommends that the Logan Spring Run basin be redesignated from Warm Water Fishes, Migratory Fishes (WWF, MF) to Cold Water Fishes, Migratory Fishes (CWF, MF) based on documented maintenance and propagation of Salmonidae and other fish species indigenous to cold water habitat. In addition, the Logan Spring Run mainstem should be removed (delisted) from the Commonwealth's 303(d) list of impaired waters.

## REFERENCES

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