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PA FISH AND BOAT COMMISSION
COMMENTS AND RECOMMENDATIONS
February 22, 2018~~August 4, 2015~~~~April 25, 2013~~

WATER: UNT to Lehigh Canal RM 40.42 (Weissport) (502B) Carbon County

EXAMINED: September 07, 2012

BY: Fisheries Management Area 5

Bureau Director Action: _____ Date: _____

Division Chief Action: _____ Date: _____

CW Unit Leader Action: _____ Date: _____

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AREA COMMENTS: Based on the findings of these surveys, the UNT to Lehigh Canal RM 40.42 (Weissport) was partitioned into two management sections. Section 01 extends from the headwaters (RM 2.61) downstream 2.09 km (1.30 mi) to the upstream Phifer Ice Dam concrete inlet structure (RM 1.31). Section 02 extends from the upstream Phifer Ice Dam concrete inlet structure (RM 1.31) downstream 2.11 km (1.31 mi) to the mouth (RM 0.00). The management and water quality criteria recommendations for each management sections are as follows:

Section 01 of the UNT to Lehigh Canal RM 40.42 (Weissport) supported natural reproduction of both brown trout and brook trout, with brown trout being the dominate species. The 335 m sample site at RM 1.31 covered 16 percent of the total section length. The brown trout and brook trout biomass, determined from the survey via Petersen estimate was 49.49 kg/ha and 12.17 kg/ha, respectively. The biomass of brown trout met the Pennsylvania Fish and Boat Commission's minimum biomass criteria (≥40.00 kg/ha) for a Class A wild trout population, as outlined in 58 PA Code §57.8a., Class A Wild Trout Streams, and also met the criteria for inclusion on the Listing of Wild Trout Streams, as outlined in 58 PA Code §57.11.

Section 02 of the UNT to Lehigh Canal RM 40.42 (Weissport) supported natural reproduction of brown trout. The brown trout biomass determined from the survey via CPUE estimate was estimated at 6.30 kg/ha. This met the Pennsylvania Fish and Boat Commission's biomass criteria (≥0.00 kg/ha to <10.00 kg/ha) for a Class D wild trout population, and also met the criteria for inclusion on the Listing of Wild Trout Streams, as outlined in 58 PA Code §57.11.

Water Quality Classification and Protection

Section 01

The current 25 PA Code Chapter 93 Water Quality Standards listing of Cold Water Fishes, Migratory Fishes (CWF, MF) for the UNT to Lehigh Canal (RM 40.42) 02B, Section 01, as applied through the Unnamed Tributaries to the Lehigh River Basin (from the PA 903 Bridge to Allentown Dam) does not adequately protect the existing flora and fauna present within the basin. Due to the presence of a Class A wild brown trout population, the 25 PA Code

Chapter 93 Water Quality Standards designation should be upgraded to High Quality – Cold Water Fishes, Migratory Fishes (HQ-CWF, MF).

Section 02

The current 25 PA Code Chapter 93 Water Quality Standards listing of Cold Water Fishes, Migratory Fishes (CWF, MF) for the UNT to Lehigh Canal (RM 40.42) 02B, Section 02, as applied through the Unnamed Tributaries to the Lehigh River Basin (from the PA 903 Bridge to Allentown Dam) adequately protects the existing flora and fauna present within this portion of the basin.

AREA RECOMMENDATIONS:

1. Submit the UNT to Lehigh Canal RM 40.42 (Wissport) (02B), Section 01, to be officially added to the Commission's Class A waters list as a Class A wild brown trout water.

2. Submit the UNT to Lehigh Canal RM 40.42 (Weissport) (02B), Sections 01 and 02, to be added to the list of stream sections that support natural reproduction of trout.

3. Request the 25 PA Code Chapter 93 Water Quality Standards designation for the UNT to Lehigh Canal RM 40.42 (Weissport) (02B), Section 01, be upgraded from Cold Water Fishes, Migratory Fishes (CWF, MF) to High Quality – Cold Water Fishes, Migratory Fishes (HQ-CWF, MF) based on the presence of a Class A wild brown trout population.

4. Retain the current 25 PA Code Chapter 93 Water Quality Standards designation of Cold Water Fishes, Migratory Fishes (CWF, MF) for the UNT to Lehigh Canal RM 40.42 (Weissport) (02B), Section 02.

5. Continue to manage the UNT to Lehigh Canal RM 40.42 (Weissport) (02B), Sections 01 and 02, under Commonwealth Inland Waters regulations with no stocking.

This work made possible by funding from the Sport Fish Restoration Act Project F-57-R Fisheries Management.

PENNSYLVANIA FISH & BOAT COMMISSION
BUREAU OF FISHERIES
FISHERIES MANAGEMENT DIVISION

UNT to Lehigh Canal RM 40.42 (Weissport) (502B)
Sections 01 - 02
Fisheries Management Report
Unassessed Water

Prepared by
David A. Arnold

Fisheries Management Database Name: UNT To Lehigh Canal Rm 40.42 (weissport)

Lat/Lon: 40°49'47"/75°41'59"

Date Sampled: September 07, 2012 Date Prepared: November 13, 2012

Introduction

The UNT to Lehigh Canal RM 40.42 (Weissport) is a small stream located in Carbon County and flows south westerly into the Lehigh Canal at River Mile (RM) 40.42, 40°49'47" latitude and 75°41'59" longitude. The stream has a total length of 4.2 km (2.61 mi) and a drainage area of 3.03 km^2 (1.17 mi^2). The current water quality designation for the UNT to Lehigh Canal RM 40.42 (Weissport) is Cold Water Fishes, Migratory Fishes (CWF, MF) as applied through the Unnamed Tributaries to the Lehigh River Basin from the PA 903 Bridge downstream to the Allentown Dam. The UNT to Lehigh Canal RM 40.42 (Weissport) can be found on the Lehighton, PA United States Geological Survey 7.5 minute quadrangle (Figure 1).

The UNT to Lehigh Canal RM 40.42 (Weissport) was surveyed as part of the Unassessed Waters Program to gather baseline information on the resource for management purposes and to verify and document the presence of a reproducing population of trout and per a request to stock the three small Phifer Ice Dams with adult trout. The two eastern ponds (0.693 acres and 0.397 acres) are on-stream impoundments. A recent request was made by the Poho Poco Rod and Gun Club to have these ponds included in the PFBC's Approved Trout Waters program and stocked with adult trout. This request was denied since the ponds, individually or as group (1.748 acres), do not meet the minimum criteria of four surface acres, as outlined in the Operational Guidelines for the Management of Trout Fisheries in Pennsylvania Waters (PFBC 2011). Knowledge of the presence of wild trout in streams is important in the proper permitting of land use activities and in long-term restoration projects such as the Eastern Brook Trout Joint Venture. The riparian area upstream of the ponds flows through wooded lots with some home property

abutting the stream. Stream shading is moderate to dense, and this area experiences less stream erosion due to stormwater runoff. The riparian land along the UNT to Lehigh Canal RM 40.42 (Weissport) downstream of the ponds flows through the towns of East and West Weissport. The stream in this area flows through unmaintained field areas with dense shrubs along the stream bank to manicured lawns. However, there are enough trees along both banks to provide moderate to dense shading. The lower two-thirds of this area was severely impacted by road runoff from the Pennsylvania Turnpike SR 0476 and SR 0209 crossings. The UNT to Lehigh Canal RM 40.42 (Weissport) is managed under Commonwealth Inland Waters regulations. Furthermore, it is not stocked with trout by the PFBC and thus is not classified as an Approved Trout Water, nor is it located downstream of an Approved Trout Water, so extended season regulations do not apply.

Methods

The examination of the UNT to Lehigh Canal RM 40.42 (Weissport) was conducted on September 07, 2012. All procedures were carried out according to those outlined by Weber et al. (2011). Two sampling stations were chosen to be representative of the stream.

Physical characteristics, physical-chemical values, and fish communities were examined. Rapid bioassessment protocols (RBP) were used to assess the habitat in this stream (Barbour et al. 1999). The fish communities were sampled using an electrobackpack equipped with an Appalachian Aquatics Model AA-24 variable voltage electrofisher set at 100 volts AC-Alternating Current (Battery Backpack). Wild trout were measured and recorded in 25 mm (1.0 inch) length groups. Statewide average weights calculated for each length group were used to generate the biomass estimates. At site RM 1.31 wild trout were given an identifying upper caudal fin clip during the initial electrofishing pass to facilitate a mark-recapture population estimate with trout densities determined by the Chapman modification of the Petersen estimator or M+C-R when R was less than three. At site RM 0.07 wild trout densities were determined using the number of trout captured in a single electrofishing pass. Scientific and common fish names reference Integrated Taxonomic Information System (http://www.itis.gov).

Results

Site River Mile: 1.31

Sample site RM 1.31 was located 10 m upstream from the upper Phifer Ice Dam concrete inlet. The site proceeded upstream 157 m in a forested reach interspersed with a few private homes at the Fairyland Road (SR 2015) Bridge. However, from this point upstream the stream was not assessed for 95 m due to the bridge being too low to survey under and the stream channel was altered via an artificially modified stream channel (much like a raceway, with concrete walls and step pools; see Figure 2). The survey site recommenced when the stream channel returned to normal, even though

it still flowed through a manicured lawn setting then entered a forested reach. The stream reach surveyed upstream from the 95 m break was consistent with the habitat in the downstream reach. The area surveyed was 335 m long, had an average width of 2.6 m and covered 16 percent of the section length (Table 1). This portion of the stream primarily flowed through a moderately dense forested area with some private lawns abutting the stream. Stream shading was moderate to dense throughout much of the sample site, and there were few open areas. Bank erosion ranged from light to moderate, and the stream substrate consisted primarily of rubble, gravel and silt. Pool habitats for larger legal size trout were scarce in the natural stream channel reaches. The RBP analysis yielded a final score of 138, which classified this section of stream as providing suboptimal habitat (Table 2).

Physical-chemical parameters and their associated values measured under normal flow conditions were as follows: air temperature 28.4°C, water temperature 18°C, specific conductance 110 umhos, pH 6.8 standard units, and total alkalinity 60 mg/l (Table 3). These results indicate the stream was suitable for salmonids.

Three fish species were captured at the site, including wild brown trout *Salmo trutta* and wild brook trout *Salvelinus fontinalis*. The other species captured was blacknose dace *Rhinichthys atratulus*. Species composition included fish common to a cold water environment to fish common to a cool water environment. Brown trout and brook trout, both cold water species, were the most prevalent species in the survey area. (Table 4).

Brown Trout

One hundred and forty-one wild brown trout ranging from 50 mm to 299 mm in total length (TL) were captured during the survey with 19 (13 percent) being greater than or equal to the legal harvestable length (175 mm: 7 in). Total brown trout biomass was estimated to be 49.49 kg/ha. Brown trout abundance was estimated at 499 trout/km (803 trout/mi) with 60 trout/km (97 trout/mi) being of legal length or longer (Table 5).

Brook Trout

Fifty-five wild brook trout ranging from 50 mm to 299 mm in total length (TL) were captured during the survey with six (11 percent) being greater than or equal to the legal harvestable length (175 mm: 7 in). Total brook trout biomass was estimated to be 12.17 kg/ha. Brook trout abundance was estimated at 266 trout/km (428 trout/mi) with 18 trout/km (29 trout/mi) being of legal length or longer (Table 6).

Site River Mile: 0.07

Sample site RM 0.07 was located 10 m upstream from the upstream face of the Maple Road Bridge, 40°49’47” latitude and 75°41’54” longitude. The 307 m long station averaged 3.2 m in width and

covered 15 percent of the section length (Table 1). The stream substrate consisted of rubble, gravel and silt. This portion of the stream primarily flowed through manicured lawns on the eastern stream bank, and a narrow forested reach bordering SR 0209 along the western stream bank. The terrain was a moderate gorge setting, with signs of severe stream destabilization in the immediate vicinity of the stormwater discharge pipes draining SR 0209. The tree lined bank provided moderate to dense shading throughout the site. Bank erosion was moderate to heavy along both banks. The western bank was severely impacted by the direct placement of stormwater drainage pipes for SR 0209 and the eastern bank was bordered by residential lawns where excessive bank erosion was evidenced by numerous fence posts being "washed out" below the surface. Shallow riffles and runs predominated with one to two poor quality pools to provide cover for fish. The channel was wide in places from lateral scouring of the channel and banks during periods of excessive stormwater runoff. The lower reach of the stream probably experiences elevated water temperatures during summer due to warmer discharge from the Phifer Dams located upstream. The RBP analysis yielded a final score of 80 which reflects poor habitat conditions (Table 2).

Physical-chemical parameters and their associated values measured under normal flow conditions were as follows: air temperature 29.6°C, water temperature 19.8°C, specific conductance 220 umhos, pH 7.1 standard units, and total alkalinity 112 mg/l (Table 3). These results indicate that the stream was suitable for salmonids.

Nine fish species were captured at the site, including wild brown trout. The other species captured are listed in Table 4. Species composition included fish common to a cold water environment to fish common to a warm water environment. Fish common to a cool water environment were most prevalent, principally blacknose dace.

Brown Trout

Eleven wild brown trout ranging from 75 mm to 274 mm in total length (TL) were captured during the survey with five (45 percent) being greater than or equal to the legal harvestable length (175 mm: 7 in). Total brown trout biomass was estimated to be 6.30 kg/ha. Brown trout abundance was estimated at 35 trout/km (56 trout/mi) with 16 trout/km (26 trout/mi) being of legal length or longer (Table 7).

Discussion

Based on the findings of these surveys the UNT to Lehigh Canal RM 40.42 (Weissport) was partitioned into two management sections. Section 01 extends from the headwaters (RM 2.61) downstream 2.09 km (1.30 mi) to the upstream Phifer Ice Dam concrete inlet structure (RM 1.31). Section 02 extends from the upstream Phifer Ice Dam concrete inlet structure (RM 1.31) downstream 2.11 km (1.31 mi) to the mouth (RM 0.00). The management and water quality criteria recommendations for these management sections are as follows:

Section 01 of the UNT to Lehigh Canal RM 40.42 (Weissport) supported natural reproduction of both brown trout and brook trout, with brown trout being the dominant species. The 335 m sample site at RM 1.31 covered 16 percent of the total section length. The estimated brown trout and brook trout biomass determined from the survey was 49.49 kg/ha and 12.17 kg/ha, respectively. The estimated biomass of brown trout met the Pennsylvania Fish and Boat Commission's minimum biomass criteria (≥40.00 kg/ha) for a Class A wild brown trout population, as outlined in 58 PA Code §57.8a., Class A Wild Trout Streams and also met the criteria for inclusion on the Listing of Wild Trout Streams, as outlined in 58 PA Code §57.11.

Section 02 of the UNT to Lehigh Canal RM 40.42 (Weissport) supported natural reproduction of brown trout. The 307 m sample site at RM 0.07 covered 15 percent of the total section length. The brown trout biomass determined from the survey of 6.30 kg/ha met the Pennsylvania Fish and Boat Commission's biomass criteria (≥0.00 kg/ha to <10.00 kg/ha) for a Class D wild trout population, and also met the criteria for inclusion on the Listing of Wild Trout Streams, as outlined in 58 PA Code §57.11.

Water Quality Classification and Protection

Section 01

The current 25 PA Code Chapter 93 Water Quality Standards designation of Cold Water Fishes, Migratory Fishes (CWF, MF) for the UNT to Lehigh Canal (RM 40.42) 02B, Section 01, as applied through the Unnamed Tributaries to the Lehigh River Basin (PA 903 Bridge to Allentown Dam) does not adequately protect the existing flora and fauna present within the basin. Due to the presence of a Class A wild brown trout population in Section 01, the 25 PA Code Chapter 93 Water Quality Standards designation should be upgraded to High Quality – Cold Water Fishes, Migratory Fishes (HQ-CWF, MF).

Section 02

The current 25 PA Code Chapter 93 Water Quality Standards listing of Cold Water Fishes, Migratory Fishes (CWF, MF) for the UNT to Lehigh Canal (RM 40.42) 02B, Section 02, as applied through the Unnamed Tributaries to the Lehigh River Basin (PA 903 Bridge to Allentown Dam) adequately protects the existing flora and fauna present within this portion of the basin.

Based on the presence of young-of-the-year and trout from multiple age groups both sections of this stream qualified for placement on the list of stream sections that support natural reproduction of trout, as outlined in 58 PA Code §57.11., Listing of Wild Trout Streams. This listing protects the trout population, particularly from additional potential impacts from within the headwater region.

Management Recommandations

1. Submit the UNT to Lehigh Canal RM 40.42 (Weissport) (02B), Section 01, to be officially added to the Commission's Class A waters list as a Class A wild brown trout water.

2. Submit the UNT to Lehigh Canal RM 40.42 (Weissport) (02B), Sections 01 and 02, to be added to the list of stream sections that support natural reproduction of trout.

3. Request the 25 PA Code Chapter 93 Water Quality Standards designation for the UNT to Lehigh Canal RM 40.42 (Weissport) (02B), Section 01, be upgraded from Cold Water Fishes, Migratory Fishes (CWF, MF) to High Quality – Cold Water Fishes, Migratory Fishes (HQ-CWF, MF) based on the presence of a Class A wild brown trout population.

4. Retain the current 25 Code Chapter 93 Water Quality Standards designation of Cold Water Fishes, Migratory Fishes (CWF, MF) for the UNT to Lehigh Canal RM 40.42 (Weissport) (02B), Section 02.

5. Continue to manage the UNT to Lehigh Canal RM 40.42 (Weissport) (02B), Sections 01 and 02, under Commonwealth Inland Waters regulations with no stocking.

Literature Cited

Barbour, M.T., J. Gerritsen, B.D. Snyder, and J.B. Stribling. 1999. Rapid bioassessment protocols for use in wadeable streams and Rivers. USEPA. Report 814-99-002 Washington, DC.

Pennsylvania Fish and Boat Commission. 2011. Operational guidelines for the management of trout fisheries in Pennsylvania waters. PFBC Files, 450 Robinson Lane, Bellefonte, PA.Weber, R., R. T. Greene, and D. Miko. 2011. Protocols for conducting biological assessments of unassessed trout waters. Pages 95-101 in D. Miko, editor. Sampling protocols for Pennsylvania's wadeable streams. Pennsylvania Fish and Boat Commission. Harrisburg, PA.

Table 1. UNT to Lehigh Canal RM 40.42 (Weissport) (02B), Carbon County. Site sampling location, length surveyed, average site width and site area.

Site Date	Rivermile	Downstream limit description	Length (m)	Ave. Width (m)	Site Area (ha)
9/7/2012	1.31	Site began at riffle located 10 meters upstream of Upper Phifer Ice Pond Bridge crossing. Bypassed 95 meters of stream beginning at the downstream side of SR 2015 Bridge (Fairyland Road) because of low clearance and an artificially modified channel above it that was not representative of natural stream habitat for the reach. Resumed electrofishing for another 157 meters upstream from the bypassed area to obtain station length of 335 m consistent with habitat downstream Fairyland Road.	335	2.6	0.09
9/7/2012	0.07	Site began at riffle located 10 meters upstream Maple Road bridge	307	3.2	0.1

Table 2. High Gradient Rapid Bioassessment Protocol ratings for the UNT to Lehigh Canal RM 40.42 (Weissport) (02B), Carbon County, conducted at RM 1.31 and 0.07 on September 07, 2012.

RM 1.31			
Habitat Parameter	Score	Habitat Parameter	Score
Epifaunal Substrate / Available Cover	11	Left Bank Stability	7
Embeddedness	16	Right Bank Stability	7
Velocity / Depth Regime	11	Left Bank Vegetative Protection	7
Sediment Deposition	14	Right Bank Vegetative Protection	7
Channel Flow Status	16	Left Bank Riparian Vegetative Width	6
Channel Alteration	12	Right Bank Riparian Vegetative Width	6
Frequency of Riffles or bends	18	**Total Score**	**138**
RM 0.07			
Habitat Parameter	Score	Habitat Parameter	Score
Epifaunal Substrate / Available Cover	6	Left Bank Stability	3
Embeddedness	8	Right Bank Stability	2
Velocity / Depth Regime	8	Left Bank Vegetative Protection	4
Sediment Deposition	9	Right Bank Vegetative Protection	2
Channel Flow Status	12	Left Bank Riparian Vegetative Width	3
Channel Alteration	8	Right Bank Riparian Vegetative Width	1
Frequency of Riffles or bends	14	**Total Score**	**80**

Table 3. Chemistries collected in the UNT To Lehigh Canal RM 40.42 (Weissport) (02B), Carbon County. Sample site(s) are within Section 01 (RM 1.31) and Section 02 (RM 0.07) in 2012 sample year.

Parameter	Section 01	Section 02
Site RM	1.31	0.07
Sample Date	09/07/2012	09/07/2012
Time (24 hour)	1207	1020
Water Temperature (C)	18.0	19.8
pH Field Colorimetric (SU)	6.8	7.1
Specific Conductance (UMHOS)	110	220
Total Alkalinity Field Mixed Indicator (MG/L)	60	112
Air Temperature (C)	28.4	29.6

Table 4. Fish species occurrence from the UNT to Lehigh Canal RM 40.42 (Weissport) (02B), Carbon County, in Section 01 (RM 1.31) and Section 02 (RM 0.07) on September 07, 2012.

Common Name	Scientific Name	Section 01 RM 1.31	Section 02 RM 0.07
American Eel	*Anguilla rostrata*	-	X
Blacknose Dace	*Rhinichthys atratulus*	X	X
Brook Trout	*Salvelinus fontinalis*	X	-
Brown Trout	*Salmo trutta*	X	X
Common Shiner	*Luxilus cornutus*	-	X
Creek Chub	*Semotilus atromaculatus*	-	X
Fallfish	*Semotilus corporalis*	-	X
Goldfish	*Carassius auratus*	-	X
Tessellated Darter	*Etheostoma olmstedi*	-	X
White Sucker	*Catostomus commersonii*	-	X

Table 5. Wild brown trout Petersen abundance and biomass estimates at sample site RM 1.31 on the UNT to Lehigh Canal RM 40.42 (Weissport) (502B), Carbon County, on September 07, 2012.

Size Group	Number Caught	Estimate	low95CI	High95CI	NumHa	KgHa	NumKm
50	7	7			80	0.20	21
75	70	94	64	144	1079	6.90	281
100	41	42	28	65	482	6.92	125
125	4	4			46	1.21	12
...	.	.			.	.	.
175	1	1			11	0.77	3
200	5	5			57	5.57	15
225	5	6	2	15	69	9.29	18
250	5	5			57	10.47	15
275	3	3			34	8.16	9
Totals	141	167			1915	49.49	499

Table 6. Wild brook trout Petersen abundance and biomass estimates at sample site RM 1.31 on the UNT to Lehigh Canal RM 40.42 (Weissport) (502B), Carbon County, on September 07, 2012.

Size Group	Number Caught	Estimate	low95CI	High95CI	NumHa	KgHa	NumKm
50	31	60	28	137	689	1.69	179
75	18	23	12	48	264	1.58	69
...	.	.			.	.	.
175	1	1			11	0.73	3
200	1	1			11	1.06	3
225	3	3			34	4.51	9
...	.	.			.	.	.
275	1	1			11	2.60	3
Totals	55	89			1020	12.17	266

Table 7. Wild brown trout catch and biomass estimates at sample site RM 0.07 on the UNT to Lehigh Canal RM 40.42 (Weissport) (502B), Carbon County, on September 07, 2012.

Size Group	Catch	Mean Wt(g)	Wt Source	Kg/ Ha	Num/ Ha	Num/ Km
75	5	6.39	StateMeanWt	0.33	51	16
100	1	14.36	StateMeanWt	0.15	10	3
200	4	97.1	StateMeanWt	3.96	41	13
250	1	182.43	StateMeanWt	1.86	10	3
Totals	11			6.30	112	35

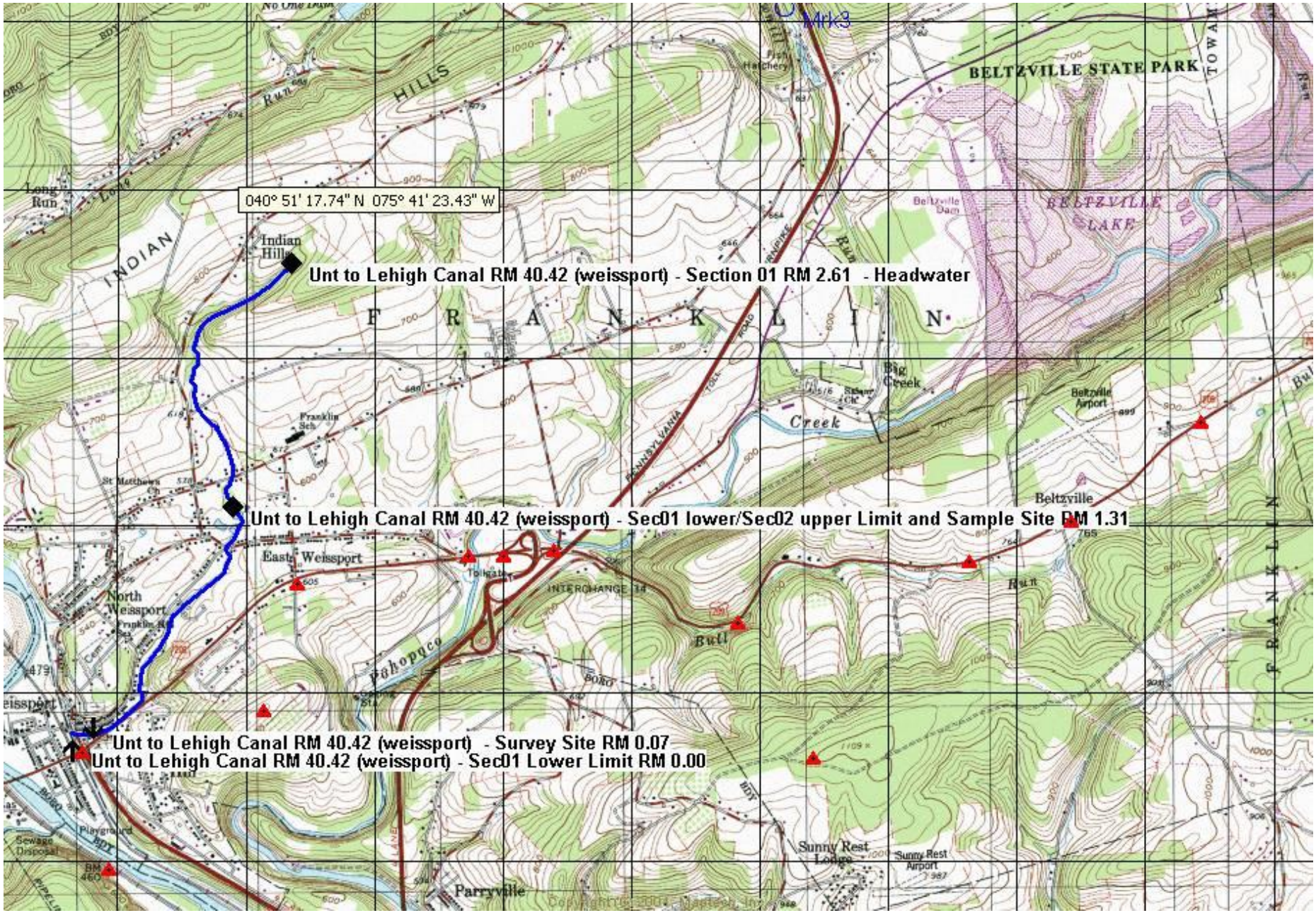

Figure 1. Location map for Sections 01 and 02, at sample sites RM 1.31 and RM 0.07 on the UNT to Lehigh Canal RM 40.42 (Weissport) (502B), Carbon County, USGS Topographic Map: Lehighton, PA.

Figure 2. UNT to Lehigh Canal RM 40.42 (Weissport) looking under the low clearance bridge upstream and then immediately upstream from the Fairyland Road (SR 2015) Bridge into the artificially stream channelized area removed from the survey reach at site RM 1.31 on 7 September, 2012.