

QUITTAPAHILLA WATERSHED ASSOCIATION
Meeting Minutes
Annville Town Hall
October 18, 2018

Present: Mike Schroeder, Karen Feather, Bill Wall, Elliott Fackler, Russ Collins, Alan Wood, Kent Crawford, Joseph Connor, Sean Droms, Kelly Cottingham, Anderson Velozwong (LVC student), Sean Quirk (LVC student).

The meeting opened at 7:00 p.m.

1. Mike reported that PA-DEP has announced that two QWA proposals submitted in June were awarded funds for the Sunoco Penalty Grants: \$150,774 for Beck Creek Project 6 (of \$874,822 requested) and \$159,094 for Snitz Creek Project 2 (of \$862,666 requested). Mike noted that the amounts awarded are less than 20 percent of the amount required to undertake the projects. Bill noted that DEP received some \$63 million in proposals for the \$12.6 million available. Mike noted the lack of clarity at present regarding how the QWA will move forward on these projects, given that the amounts awarded are a fraction of what's needed. He expressed hope that the awards can be "banked" and added to any future Growing Greener grants received. Consensus was reached that the QWA, The Lebanon Valley Conservancy, and Rocky Powell should seek clarification from PA-DEP on how best to move forward given the resources available.
2. Mike distributed a document comprised of excerpts from the Watershed Implementation Plan detailing the QWA's future monitoring obligations for the next 14 years. This Summary of the QWA's Monitoring Obligations & Responsibilities, 2018-2032, is appended to these minutes.
3. Russ and Bill reported that they have spoken to landowners on Killinger Creek regarding streambank work, one of whom is interested in building a wetland.
4. Alan suggested that the QWA consider doing smaller projects and asking other contractors to submit bids for future projects and expressed concern about Rocky's costs.
5. Karen suggested that the QWA, in consultation with Rocky, start developing a succession plan for when Rocky retires.
6. Alan suggested that the QWA should not automatically disqualify golf courses from restoration work. Russ noted that Beck Creek runs through two golf courses in North Cornwall Township.
7. Mike reported that Annville Township has submitted a grant proposal to NRCS for the approximately 200-foot long section of eroding streambank in Quittie Creek Nature Park, for approximately \$100,000. Alan noted that the proposal was submitted to the NRCS's Emergency Watershed Protection program; that he had recommended changes to the designer; and shared his view that the project should cost less than \$100,000.
8. Russ reported that he has an upcoming appointment with Harry Campbell of the Chesapeake Bay Foundation.
9. Kelly reported that she and Sean have taken some drone videos of the Snitz Creek project area, for which they were thanked.

10. Russ reported that the Snitz Creek project is projected to start by November 5, and that it should be done by the end of the year.

The meeting adjourned at 7:44 p.m.

Respectfully submitted,

Michael Schroeder, Secretary Pro Tem

Summary of the QWA's Monitoring Obligations & Responsibilities, 2018—2032

Excerpts from the Quittapahilla Creek Watershed Implementation Plan of August 2018

**Prepared by Michael Schroeder for QWA Meeting
October 18, 2018**

V. Monitoring Program

A. General

Monitoring will involve four separate programs. The first program will involve an evaluation of all subwatershed and mainstem restoration project reaches identified in the WIP. The second will involve an evaluation of all subwatershed restoration project reaches identified in the WIP. The third will focus on fixed points in the subwatersheds designated as representative of conditions over a broader subwatershed area. Because the mainstem Quittapahilla Creek includes a significant length of stream channel and watershed drainage area over which the QWA has no control, monitoring of the mainstem will not be included in Programs 2 and 3 outlined below. A fourth program will focus on evaluating progress along the mainstem.

B. Pre-Implementation and Post-Implementation Monitoring

1. Program 1 – Regulatory Monitoring

Restoration projects subject to federal permits are required to conduct a pre-implementation evaluation of the project stream reaches and post-construction monitoring for a five-year period of the restored reaches. The monitoring objectives include an evaluation of changes in channel cross-section; stream profile; channel stability; structural stability and condition; vegetation viability; and in-stream habitat.

The required monitoring typically includes topographic surveys of monumented cross-sections within the project area, visual field observations, photographic documentation, vegetation viability measurements, and identifies any necessary corrective measures. Additional information which demonstrates project success is included in annual monitoring reports. Typical monitoring components and frequency are described below and shown in Table 52.

The monitoring includes:

1. Evaluations of structural stability documenting changes in valley-wide cross sections across two structures in the re-located sections of stream channels.

The representative cross-sections are monumented and shown in a graphical display which overlays previous cross-sections in annual reports.

2. Evaluations of structural stability by performing longitudinal profile surveys to document thalweg and water surfaces elevations. Longitudinal profiles are shown in a graphical display which overlays previous profiles in annual reports.
3. Evaluations of vegetation species richness and planted vegetation viability.
4. Evaluations of in-stream habitat quality using an assessment method such as EPA's Rapid Bioassessment Protocol (RBP) high gradient stream habitat form. Results of the stream habitat assessment are shown for all monitoring years assessed, including preconstruction.
5. Photographic documentation of site conditions annually along the entire stream restoration project area. Photos of each top of riffle and constructed wetlands are required.
6. Identification of any necessary corrective measures.

Monitoring Components	Pre- Construction	Year 1	Year 3	Year 5
Geomorphic Assessment	X		X	X
Channel Cross-Sections	Design	As-Built	X	X
Longitudinal Profile	Design	As-Built	X	X
Vegetation Survey		X	X	X
Stream Habitat Assessment	X	X		X
Photo Documentation	X	X	X	X
Corrective Measures			X	X

This regulatory monitoring will be required of all projects in the subwatersheds and along the mainstem Quittapahilla Creek.

The pre-implementation monitoring will be conducted by the QWA's consultant during the design and permitting phase of each project. The cost of that effort has been incorporated into the design and permitting budget for all of subwatershed and mainstem restoration project reaches identified in the WIP. Post-implementation monitoring will be conducted by QWA and Doc Fritchey Chapter of Trout Unlimited volunteers and/or college interns funded by QWA and Doc Fritchey Chapter of Trout Unlimited and trained by Clear Creeks Consulting.

Protocols for the assessments were developed to provide information that can be utilized to evaluate overall channel stability and in-stream habitat. The assessments included riffle pebble counts to assess riffle embeddedness; BANCS evaluations of eroding streambanks to estimate bank erosion rates and calculate sediment loadings; field measurements of representative riffle and pool baseflow and bankfull dimensions; and photo-documentation of existing conditions along the proposed project reaches.

2. Program 2 – WIP Subwatershed Project Reach Evaluations

The original field reconnaissance data utilized to identify problem areas and potential restoration projects in the subwatersheds is now fifteen years old. To document stream reach conditions and determine the continued need for restoration/stabilization along the subwatershed project reaches, QWA began conducting pre-implementation geomorphic assessments in 2017. These assessments were conducted by summer college interns funded by QWA and Doc Fritchey Chapter of Trout Unlimited and trained by Clear Creeks Consulting. The focus of the 2017 assessments was the restoration project reaches identified in the Snitz Creek subwatershed. Similar assessments were conducted during summer 2018 along Beck Creek subwatershed.

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QWA intends to continue these pre-implementation geomorphic assessments along Bachman Run, Gingrich Run and Killinger Creek over the next few summers.

3. Program 3 – Fixed Monitoring Stations in the Subwatersheds

Nine (9) long-term geomorphic, biological and water quality monitoring sites have been selected throughout the four major subwatersheds (Figure 25 and Table 55). The monitoring objectives include documenting baseline conditions, and determining and documenting progress towards meeting water quality and habitat improvement goals. Pre-Implementation and Post-Implementation Monitoring will include geomorphic assessments, biological surveys and water quality sampling.

The pre-implementation geomorphic assessments will document stream reach conditions. They will include riffle pebble counts to evaluate riffle embeddedness, field measurements of representative riffle and pool baseflow and bankfull dimensions, and photo-documentation of existing conditions. The pre-implementation geomorphic assessments will be conducted at each of the tributary monitoring stations. The geomorphic assessments will be conducted annually for a minimum of three years prior to implementation and every two years post-implementation (Table 53). Once implementation of restoration projects begins in a given watershed, the annual monitoring will have entered the Post-Implementation phase for that subwatershed. These assessments will be conducted annually by summer college interns funded by QWA and Doc Fritchey Chapter of Trout Unlimited and trained by Clear Creeks Consulting. Data management for both phases will involve data analysis by Clear Creeks and data storage by QWA.

Pre-implementation biological surveys will provide baseline data characterizing the macroinvertebrate communities at the tributary monitoring stations. The macroinvertebrate surveys will be conducted annually for a minimum of three years prior to implementation and every two years post-implementation. These assessments will be conducted by Lebanon Valley College, Biology Department, QWA and Doc Fritchey Chapter of Trout Unlimited volunteers, and water quality staff of the Lebanon County Conservation District at the tributary monitoring stations. Data management will involve data analysis by Dr. Becky Urban, Lebanon Valley College and Clear Creeks Consulting and data storage by QWA.

Pre-implementation water quality monitoring will provide baseline data characterizing the water quality along the tributary project stream reaches. Sample analysis will include pH, dissolved oxygen, specific conductance, orthophosphate phosphorus, total phosphorus, nitrate, total Kjeldahl nitrogen, total nitrogen, total dissolved solids, total suspended solids, turbidity, and fecal coliform. The water quality samples will be collected under storm flow conditions a minimum of six storms per year for a minimum of two years prior to implementation and every three years post-implementation. Sample collection will be conducted by QWA and Doc Fritchey Chapter of Trout Unlimited volunteers at the tributary monitoring stations. Samples will be preserved and transported to PADEP, Division of Water Quality, Monitoring Section for analysis.

Hobo® Tidbit v2 Water Temperature Data Loggers will be installed at each of the tributary stations by Clear Creeks Consulting to record continuous temperature readings. The temperature data loggers will be maintained for a minimum of three years pre-implementation and minimum of ten years post-implementation. Data management will involve data downloading and analysis by Clear Creeks and data storage by QWA.

4. Program 4 – Fixed Monitoring Stations along the Mainstem Quittapahilla Creek

Five (5) long-term geomorphic, biological and water quality monitoring sites have been selected to represent conditions along the mainstem Quittapahilla Creek (Figure 25 and Table 55). The monitoring objectives include documenting baseline conditions, and determining and documenting progress towards meeting water quality and habitat improvement goals. Pre-Implementation and Post-Implementation Monitoring will include geomorphic assessments, biological surveys and water quality sampling. Pre-implementation monitoring will be conducted annually for a minimum of three years. The Post-Implementation phase for the mainstem monitoring stations will begin three years after implementation begins on the MS4 projects upstream of the Q1 Station (downstream of Mill Street).

The pre-implementation geomorphic assessments will document stream reach conditions. They will include riffle pebble counts to evaluate riffle embeddedness, field measurements of representative riffle and pool baseflow and bankfull dimensions, and photo-documentation of existing conditions. The pre-implementation geomorphic

assessments will be conducted at each of the tributary monitoring stations. The geomorphic assessments will be conducted annually for a minimum of three years prior to implementation and every two years post-implementation (Table 53). Once implementation of restoration projects begins in a given watershed, the annual monitoring will have entered the Post-Implementation phase for that subwatershed. These assessments will be conducted annually by summer college interns funded by QWA and Doc Fritchey Chapter of Trout Unlimited and trained by Clear Creeks Consulting. Data management for both phases will involve data analysis by Clear Creeks and data storage by QWA.

Pre-implementation biological surveys will provide baseline data characterizing the macroinvertebrate communities at the tributary monitoring stations. The macroinvertebrate surveys will be conducted annually for a minimum of three years prior to implementation and every two years post-implementation. These assessments will be conducted by Lebanon Valley College, Biology Department, QWA and Doc Fritchey Chapter of Trout Unlimited volunteers, and water quality staff of the Lebanon County Conservation District at the tributary monitoring stations. Data management will involve data analysis by Dr. Becky Urban, Lebanon Valley College and Clear Creeks Consulting and data storage by QWA.

Pre-implementation water quality monitoring will provide baseline data characterizing the water quality along the tributary project stream reaches. Sample analysis will include pH, dissolved oxygen, specific conductance, orthophosphate phosphorus, total phosphorus, nitrate, total Kjeldahl nitrogen, total nitrogen, total dissolved solids, total suspended solids, turbidity, and fecal coliform. The water quality samples will be collected under storm flow conditions a minimum of six storms per year for a minimum of two years prior to implementation and every three years post-implementation. Sample collection will be conducted by QWA and Doc Fritchey Chapter of Trout Unlimited volunteers at the tributary monitoring stations. Samples will be preserved and transported to PADEP, Division of Water Quality, Monitoring Section for analysis.

C. Funding Sources

Funding of summer interns will be provided by QWA, DFTU and private grants. QWA and DFTU will apply a for one time grant funding to acquire the field equipment needed to conduct the geomorphic assessments. This includes: one 100 foot measuring tape, one 25 foot survey rod, one clinometer, and one centimeter ruler. They will also seek funding to cover the cost of the nine Hobo® Tidbit v2 Water Temperature Data Loggers and ancillary equipment and software.

Finally, if funding is available QWA and DFTU will purchase one YSI 556 Multi-Probe Meter that will allow the volunteers conducting the water quality sampling to take field measurements of temperature, pH, dissolved oxygen, and conductivity.

Table 54 shows the cost of the monitoring equipment needed.

Table 54 – Monitoring Equipment Needed			
Geomorphic Assessment Equipment	Number	Unit Cost	Total
Keson 100 ft. Measuring Tape	1	\$21.95	\$21.95
Sokkia 25 ft. Level Rod/ ft./10ths / 100ths	1	\$149.25	\$149.25
Suunto PM5/360PC Clinometer	1	\$145.25	\$145.25
Centimeter Ruler	1	\$8.00	\$8.00
Total (excluding taxes and shipping)			\$324.45
Water Quality Testing Equipment			
HOBO Tidbit v2 Water Temperature Data Logger	9	\$133.00	\$1,197.00
HOBOWare Pro Mac/Win Software	1	\$99.00	\$99.00
YSI Multi-Probe Meter, Temp, DO, pH, Conductivity, ORP	1	\$3,097	\$3,097
pH Sensors	1	\$166.25	\$166.25
DO Sensors	1	\$175.75	\$175.75
ORP Sensors	1	\$194.75	\$194.75
Total (excluding taxes and shipping)			\$5,254.20

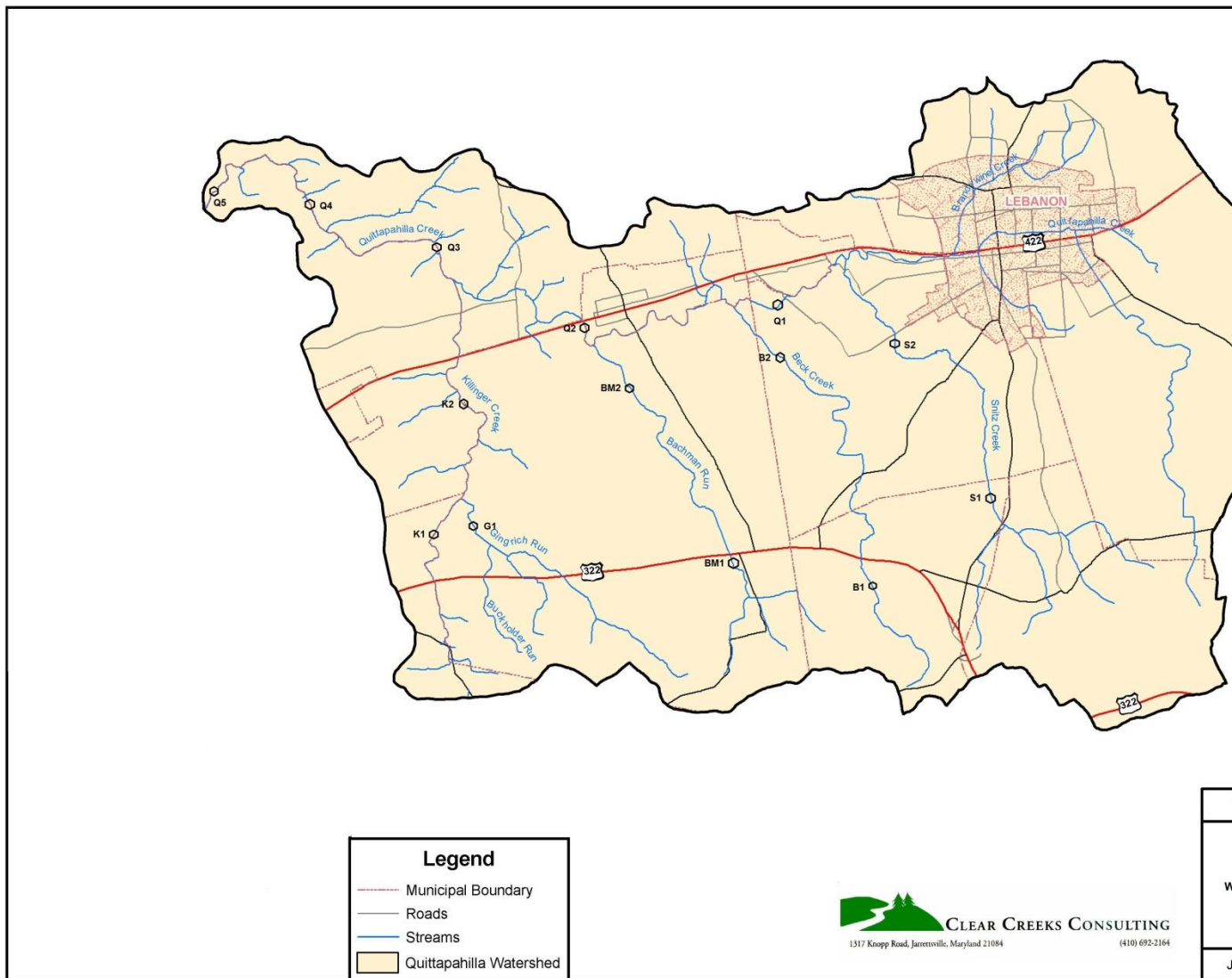


Figure 25 – Water Quality and Biological Monitoring Stations

Table 55 – Monitoring Station Locations					
Subwatershed	Station ID	Location	Sampling Type		
Bachman Run	BM1	UPS of Route 322	Geomorphic	Biological	Water Quality
	BM2	UPS of Louser Road	Geomorphic	Biological	Water Quality
Beck Creek	B1	UPS of Starner Road	Geomorphic	Biological	Water Quality
	B2	UPS of Reist Road	Geomorphic	Biological	Water Quality
Gingrich Run	G1	UPS of Louser Road	Geomorphic	Biological	Water Quality
Killinger Creek	K1	UPS of Brandt Road	Geomorphic	Biological	Water Quality

	K2	UPS of Killinger Road	Geomorphic	Biological	Water Quality
Snitz Creek	S1	DS of Zinns Mill Road	Geomorphic	Biological	Water Quality
	S2	UPS of Oak Street	Geomorphic	Biological	Water Quality
Upper Mainstem	Q1	DS of Mill Street	Geomorphic	Biological	Water Quality
	Q2	UPS of Route 422	Geomorphic	Biological	Water Quality
Lower Mainstem	Q3	Palmyra-Bellegrove Bridge	Geomorphic	Biological	Water Quality
	Q4	Syner Road	Geomorphic	Biological	Water Quality
	Q5	Gravel Hill Road	Geomorphic	Biological	Water Quality