

Mill Creek Volunteer Water Quality Monitoring Program

Project Study Plan

Mill Creek Watershed Council of Communities

March 2016-November 2016

I. Objective

Many improvement projects have been implemented in the Mill Creek watershed by a variety of entities. Since 1992, water quality, as indexed by Ohio Environmental Protection Agency's (Ohio EPA) biocriteria, has shown marked improvement. We believe this trend will continue as long as the watershed's key stakeholders continue efforts to improve the stream and its tributaries. We need quality and consistent data to rate the effectiveness of specific projects and policy changes in achieving water quality and habitat benefits. We need a continuous comprehensive quality set of chemistry and flow data specific to the Mill Creek Watershed that will provide us with a baseline to understand, at the watershed scale, how investments in water quality improvement pay off.

The Mill Creek Watershed Council of Communities (Council) seeks to provide a thorough framework of water chemistry that meets the standards of the Ohio Credible Data Law (Level II). Data collection will serve as an exemplary resource for connecting residents to the watershed, and educating the community on the importance of protecting their shared water resource. Long-term data collection will also contribute to region-specific data for environmental and economic improvements. The monitoring program also seeks to develop relationships with watershed stakeholders and experts that will help achieve the goal of a restored Mill Creek, and further engage community involvement in recreation, education, and economic vitality.

II. Parameter Coverage

a. Field Measurements

Field data is collected at all sampling sites using an online or paper field data sheet. This data is collected during grab sample collection as a means for stream conditions and riparian assessment.

b. Water Chemistry

Water samples are taken to a Level II certified laboratory to be analyzed for:

- pH (Meter)
- Total Phosphorous (Method 8190, PhosVer 3 with Acid Persulfate Digestion)
- Nitrates (Method 10206, Dimethylphenol Method)
- Turbidity (Meter)
- Conductivity (Meter)
- Fecal Coliforms (IDEXX Quanti-Tray/2000)
- E. coli (IDEXX Quanti-Tray/2000)

III. Data Assessment Techniques

Matrix	Parameter	Precision	Accuracy	Measurement Range
Water	pH	n/a	+/- 0.004 pH	0 to 14 pH
Water	Total Phosphorous PO ₄ 3-	2.93 – 3.07 mg/l	95% confidence	0.06 to 3.50 mg/L
Water	Nitrates NO ₃ -N	0.05 – 0.20 mg/L	90-110% confidence	0.23 to 13.50 mg/L
Water	Turbidity	n/a	+/- 2% of reading plus 0.02 NTU	0.00 to 1000 NTU
Water	Conductivity	n/a	+/- 0.5% of measured value	0 – 1999 uS/cm
Water	E coli	1 CFU	n/a	1 – 2419 MPN per 100ml sample
Water	Fecal Coliforms	1 CFU	n/a	1 – 2419 MPN per 100ml sample

IV. Water Chemistry- Grab Samples

Sampling Protocol:

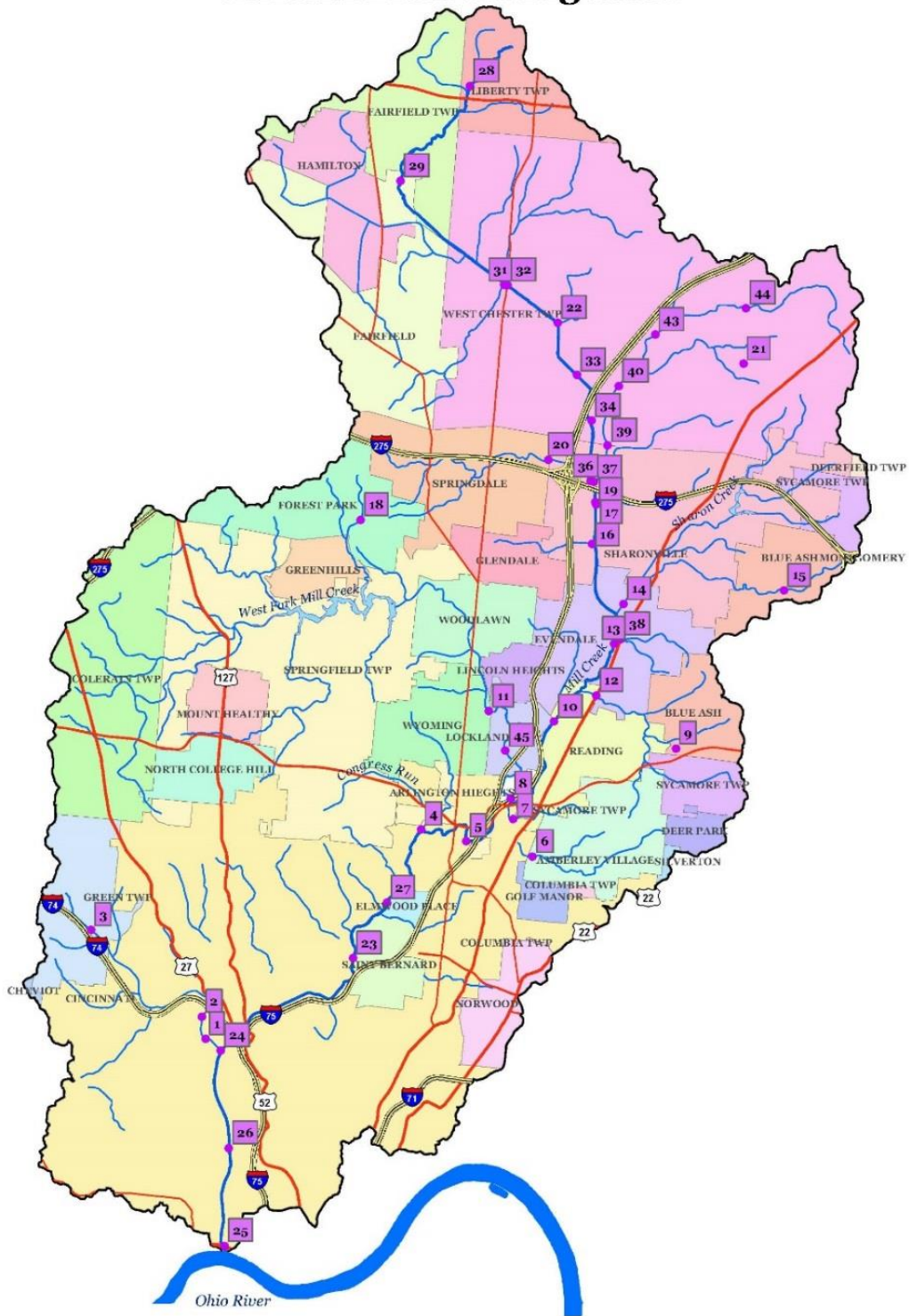
1. Make sure you have the correct samples bottles for the correct site.
2. Collect your samples from the center of the stream in the flow – not from the banks or in pool areas with stagnant water.
3. If you wade in the stream, stand downstream of where you are sampling.
4. If using a bucket, lower bucket into the center of the stream. Be sure not to touch the creek bottom to avoid sediment entering the bucket. To rise out the bucket/bottles, fill bucket three times, using the water to rise the bottles on each fill and dumping out the water back into the stream. On the third fill, pour water into the bottles.
5. Open the water container when you are ready to sample and plunge the container below the water surface.
6. If sampling in the stream, rinse the containers and the cap 3 times first in the stream. Do not touch the inside of the bottle or the underside of the cap. Also, do not leave the cap on the side of the bank while filling the bottles.
7. Fill the containers leaving a little air space at the top of each of the bottles.
8. You must collect a water sample in one large and one small bottle at each site.
9. Place cap back on the bottle and put into the provided cooler with ice pack.
10. Transport to the drop-off location: 6055 Centre Park Drive, West Chester, Ohio 45069 between 9:00am and 10:30am on the second Saturday of the month.

V. Sampling Locations

ID	Site Name	LatN	LongW
1	Trib to West Fork Mill Creek at Greenhills Country Club	39.269822	-84.519277
2	West Fork at Powers St.	39.1575	-84.55263
3	West Fork at Kleeman Ct.	39.178	-84.58799
4	Congress Run at Hartwell Golf Club	39.20432	-84.4853
5	Mill Creek at Wayne Avenue Bridge	39.2017	-84.47113
6	Amberley Creek near Ellbrook Ave.	39.19826	-84.45023
7	Amberley Creek at Stillwell	39.20724	-84.45652

8	West Fork Mill Creek at Galbraith Rd. Bridge	39.2123	-84.45745
9	Fox Run Tributary to Cooper Creek	39.22535	-84.40609
10	Mill Creek at Columbia Ave.	39.23126	-84.44433
11	West Fork Mill Creek from Oak Ave.	39.23341	-84.46498
12	Cooper Creek at Reading Rd	39.23782	-84.43141
13	Mill Creek at Cunningham Drive	39.25053	-84.42613
14	Sharon Creek at Exon Avenue	39.26027	-84.42343
15	Tributary to Sharon Creek at Kenwood Rd	39.26437	-84.37321
16	Town Run at Canal Road	39.27474	-84.43373
17	Unnamed Tributary by Kemper Rd.	39.28441	-84.43256
18	West Fork Mill Creek at Hanover Rd.	39.27936	-84.50641
19	Mill Creek at Kemper Rd. Bridge	39.28491	-84.433
20	Beaver Run at Chesterwood Court	39.295	-84.44802
21	Minuteman Trib to East Fork	39.31938	-84.38744
22	Mill Creek at Rialto Rd.	39.32844	-84.4459
23	Mill Creek at Spring Grove Bridge	39.17253	-84.50581
24	Mill Creek at Yellow Bridge	39.14933	-84.54647
25	Mill Creek at US 50 Bridge	39.10181	-84.54392
26	Lick Run at Mouth to Mill Creek	39.12562	-84.54327
27	Mill Creek at Center Hill Bridge	39.186226	-84.495429
28	Mill Creek Headwaters at Stone Creek Drive	39.38562	-84.475138
29	Mill Creek at Tylersville Road	39.36212	-84.496301
30	Union Centre Blvd Trib to Main Stem UMC	39.34283	-84.46235
31	Unnamed Trib Main Stem UMC	39.33735	-84.462915
32	Mill Creek at Highway 747 Bridge	39.33735	-84.461978
33	Mill Creek at Muhlhauser Road	39.31585	-84.439569
34	Mill Creek at Windisch Road	39.30479	-84.434729
35	TCP Upper Mill Creek Main Stem	39.29364	-84.43541
36	TCP Lower Mill Creek Main Stem	39.28999	-84.434514
37	TCP Lower East Fork Mill Creek	39.28978	-84.433534
38	Trib to Sharon Creek at Reading Road	39.25168	-84.424083
39	East Fork Mill Creek at Cresentville Road	39.2988	-84.429419
40	East Fork Mill Creek at Allen Rd	39.31333	-84.426386
41	West Fork Mill Creek at Miles Rd	39.253377	-84.540221
42	West Fork Mill Creek at Glenwood Gardens	39.258023	-84.474445
43	East Fork Mill Creek at West Chester Rd	39.32602	-84.415314
44	East Fork Mill Creek at Keehner Park	39.333	-84.38696
45	West Fork Mill Creek at Cooper Avenue	39.22394	-84.459433

Mill Creek Watershed Council of Communities Stream Monitoring Sites



VI. Schedule of Planned Sampling

Major Task Categories	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M
Volunteer recruitment, training	x	x	x										x	x	x
Monthly sampling/lab analysis				x	x	x	x	x	x	x	x				
Water Resources Committee meetings				x				x				x			
Data entry				x	x	x	x	x	x	x	x				
Data reporting			x	x				x				x			x

VII. Quality Assurance and Quality Control Plans

A Quality Assurance Project Plan (QAPP) for the Mill Creek Watershed Volunteer Water Quality Monitoring Program has been developed. It covers grab sampling and water chemistry analysis QA/QC. This document is attached.

VIII. Anticipated Work Products

Work products that will be submitted to the director will be all data in the acceptable and preferred manner by Ohio EPA. Chemical data will be entered into an excel spreadsheet and online database.

IX. Data Collection and Data Verification Procedures

The project manager, is responsible for ensuring data accuracy during collection, laboratory analysis, database entry, and reporting. Contact information is listed below:

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X. Contract Laboratory

Info from Lab