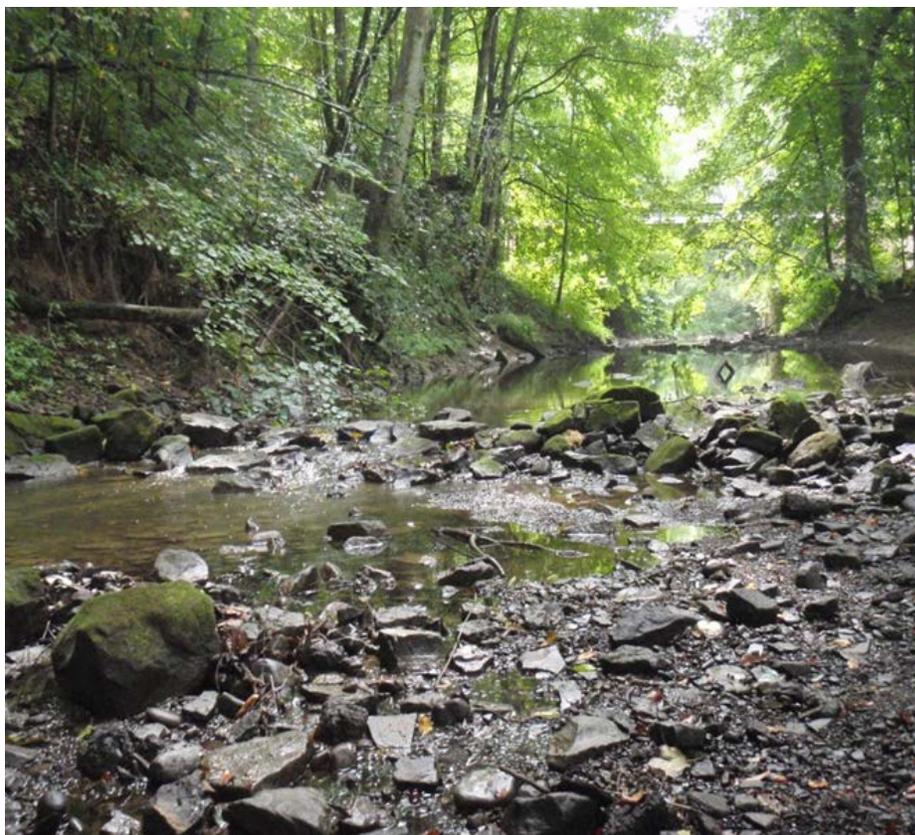




Study Plan for Fiscal Years 2012 and 2013 Supplemental 106 Funding

Field Year 2015 State Resource Water Assessment Monitoring



Division of Surface Water
March 27, 2015

Study Plan for
Fiscal Years 2012 and 2013
Supplemental 106 Funding
Field Year 2015 State Resource Water
Assessment Monitoring

March 27, 2015

Grant # I01E00992
(State Grant # EPAFSUPP12)

EA³ Project Name:
LWH/SRW Assessments (FFY12/13 106 Supplemental Gr.) 2013-15

Monitoring Objective

Sampling will be conducted to determine the appropriate tiered antidegradation category for significant streams currently assigned to the State Resource Water (SRW) category within several small watersheds draining directly to the Ohio River including (1) Redoak Creek, (2) Big Threemile Creek, (3) Eagle Creek, and (4) Straight Creek. The SRW category has been replaced by a tiered system of antidegradation categories which includes: 1) outstanding national resource waters, 2) outstanding state waters, 3) superior high quality waters, 4) general high quality waters, and 5) limited quality waters. By rule, all stream and river segments assigned to the SRW category are considered general high quality waters. SRW streams sampled as part of this initiative will focus on those for which there is some information or evidence suggesting that a category other than general high quality water may be warranted and which are clustered in watersheds for efficiency of sampling. Most of the streams selected also have unverified Coldwater Habitat (CWH) or Exceptional Warmwater Habitat (EWH) aquatic life uses, so an additional benefit will be the verification of the appropriate aquatic life use. A map of Ohio streams currently assigned to the SRW category is attached (Figure 1) and Table 1 lists all the 2015 streams to be sampled and provides relevant details for each. Figures 2-5 depict stream sampling sites in each of the four watersheds. Also included in Table 1 are sites partially assessed in 2014 and for which some additional monitoring or follow-up is needed. The study plan for the 2014 sampling is available at http://epa.ohio.gov/Portals/35/tmdl/FY12_13_106_Supplemental_2014.pdf.

Sampling Activities

Biological Community Assessment

The fish communities will be assessed once at each sampling site using headwater electrofishing methods. Macroinvertebrate communities will be assessed once at each sampling site with a qualitative multihabitat composite sample.

Physical Habitat Assessment

Physical habitat will be evaluated at each biological sampling site and pertinent attributes will be used in the overall assessment of the each streams' antidegradation category and aquatic life use.

Water Quality Field Parameters

Periodic site visits (1-3) to measure site water temperature, dissolved oxygen, pH, and conductivity will be conducted and results will be used in the overall assessment of the each streams' antidegradation category and aquatic life use. Biological field sampling crews should coordinate with CDO and SEDO staff to determine if they need to assist in this effort.

Results

- Results will be used to look at key biological community and physical habitat parameters used by Ohio EPA to determine the appropriate antidegradation category including: 1) presence of federal or state endangered, threatened, or special concern fish and invertebrate species, 2) number and prevalence of declining fish species, 3) quality of the physical habitat as documented by Qualitative Habitat Evaluation Index (QHEI) scores, and 4) quality of fish and macroinvertebrate communities as reflected with biological index scores (Index of Biotic Integrity - IBI) and macroinvertebrate narrative evaluations.
- Results will be used to conduct aquatic life use attainability analyses supported by the data collected including IBI scores, macroinvertebrate narrative evaluations, and QHEI scores.
- Results of the above assessments will be used to recommend the appropriate tiered antidegradation category and verify the existing or recommend an appropriate tiered aquatic life use based on those currently defined in the Ohio Water Quality Standards.

Quality Assurance/Sampling Methods

Ohio EPA Manuals

All biological, physical habitat, field water quality, data processing, and data analysis methods and procedures adhere to those specified in the Surface Water Field Sampling Manual for water column chemistry, bacteria and flows (Ohio EPA 2013a) for field parameter measurement, Biological Criteria for the Protection of Aquatic Life, Volumes II - III (Ohio EPA 1987, 1989a, 1989b, 2014a, 2014b) for biological assemblage assessment, and The Qualitative Habitat Evaluation Index (QHEI); Rationale, Methods, and Application (Ohio EPA 1989c, 2006) for physical habitat assessment.

Aquatic Life Use Attainment

Attainment/non-attainment of aquatic life uses will be determined by using biological criteria codified in Ohio Administrative Code (OAC) 3745-1-07, Table 7-15. Numerical biological criteria are based on multimetric biological indices including the Index of Biotic Integrity (IBI) and modified Index of Well-Being (MIwb), indices measuring the response of the fish community, and the Invertebrate Community Index (ICI), which indicates the response of the macroinvertebrate community.

Performance expectations for the basic aquatic life uses (Warmwater Habitat [WWH], Exceptional Warmwater Habitat [EWH], and Modified Warmwater Habitat [MWH]) were developed using the regional reference site approach (Hughes et al. 1986; Omernik 1988). This fits the practical definition of biological integrity as the biological performance of the natural habitats within a region (Karr and Dudley 1981). Attainment of an aquatic life use is FULL if all three indices (or those available) meet the applicable criteria, PARTIAL if at least one of the indices did not attain and performance did not fall below the fair category, and NON if all indices either fail to attain or any index indicates poor or very poor performance. Biological sampling results will be compared to WWH or EWH biocriteria for applicable ecoregions in Ohio.

Biological Community Assessment

The macroinvertebrates from each waterbody sampling location will be sampled qualitatively by collecting a multihabitat composite sample. This sampling effort consists of an inventory of all observed macroinvertebrate taxa from the natural habitats at each site with no attempt to quantify populations other than notations on the predominance of specific taxa or taxa groups within major macrohabitat types (e.g., riffle, run, pool, margin). Fish will be sampled once at each sampling location with pulsed DC headwater electrofishing gear. Detailed biological field and laboratory sampling protocols are documented in the Ohio EPA manual *Biological Criteria for the Protection of Aquatic Life, Volume III* (1989b, 2014b).

Stream Physical Habitat Evaluation

Physical habitat is evaluated using the Qualitative Habitat Evaluation Index (QHEI) developed by the Ohio EPA for streams and rivers in Ohio (Ohio EPA 1989c, 2006). Various attributes of the available habitat are scored based on their overall importance to the establishment of viable, diverse aquatic faunas. Evaluations of type and quality of substrate, amount of instream cover, channel morphology, extent of riparian canopy, pool and riffle development and quality, and stream gradient are among the metrics used to evaluate the characteristics of a stream segment, not just the characteristics of a single sampling site. As such, individual sites may have much poorer physical habitat due to a localized disturbance yet still support aquatic communities closely resembling those sampled at adjacent sites with better habitat, provided water quality conditions are similar. QHEI scores from hundreds of segments around the state have indicated that values higher than 60 were generally conducive to the establishment of warmwater faunas while those which scored in excess of 75-80 often typify habitat conditions which have the ability to support exceptional faunas.

Water Quality Field Parameters

Water quality field parameters (temperature, dissolved oxygen, pH, and conductivity) will be measured 1-3 times at each location using field meters calibrated and maintained according to procedures specified in the Surface Water Field Sampling Manual for water column chemistry, bacteria and flows (Ohio EPA 2013a).

Table 1. FY12/13 106 Supplemental Grant Sampling: 2015 Site List to Resolve Unverified but Designated LWH and SRW (EWH, CWH, or WWH-v) Streams

Map #	Name	HUC12	Basin	Stream Code	Station	Latitude	Longitude	Unverified ALU	River Mile	Drainage Area	Location	Macroinvertebrates	Date Sampled		
													Fish	Habitat	Chemical Field Parameters
Duck Creek Basin LWH Sites															
	Camp Run	05030201 08 02		06-325-000	203993	39.723100	-81.463300	LWH	0.40	1.6	adj. Hohman Rd. (Twp. Rd. 265)	Completed 2014	Need Fish and	Habitat	
	Rocky Run	05030201 08 03		06-326-000	203995	39.632506	-81.335157	LWH	0.20	3.1	upst. St. Rt. 145	Completed 2014	Completed 2014	10/7/2014	
	McBride Run	05030201 08 01		06-333-000	302618	39.740980	-81.326390	LWH	0.05	1.8	adj. Zerger Quarry Rd. (Twp. Rd. 234)	Completed 2014	Completed 2014	10/2/2014	
	Wolfpen Run	05030201 08 01		06-336-000	302619	39.782329	-81.395893	LWH	0.03	1.1	Doshie Rd. (Co. Rd. 6)	Completed 2014	Completed 2014	10/2/2014	
Hocking River Basin LWH Site															
	Herrold Run	05030204 09 05		01-120-000	J03G04	39.343600	-81.889400	LWH	0.10	1.8	near mouth (adj. McGraw Rd.)	Completed 2014	Need Fish and	Habitat	Need field parameters at all sites.
Moxahala Creek Basin LWH Site															
	Dry Run	05040004 05 01		17-309-000	302620	39.744403	-82.078401	LWH	0.14	3.0	Rosefarm Rd. (Co. Rd. 75)	Completed 2014	Completed 2014	10/2/2014	
Wills Creek Basin LWH Site															
	Dare Run	05040005 05 02		17-836-000	302608	39.977700	-81.684120	LWH	0.70	1.6	Holmes Rd.		Need Fish and	Habitat	
Turkey Creek Basin SRW Sites															
	Rock Lick	05090201 02 02		10-518-000	302770	38.693390	-83.176460	CWH	0.50	0.4	upst. NF 1	Completed 2014	Need Fish and	Habitat	Need field parameters at both sites.
	Wolfden Run	05090201 02 01		10-530-000	302768	38.754420	-83.229190	CWH	0.50	0.4	upst. Wolfden Lake	Completed 2014	Completed 2014		
Ohio Brush Creek Basin SRW Site															
	Mackenzie Run	05090201 05 06		10-203-000	302767	38.719500	-83.448044	EWH	0.20	0.6	upst. Waggoner Riffle Rd.	Completed 2014	Completed 2014	10/2/2014	Need field parameters.
Southwest Ohio River Tributaries SRW Sites															
1	Cornick Run	05090201 08 04	Ohio	10-038-000	302931	38.763959	-83.851194	EWH	0.70	2.1	adj. old U.S. Rt. 68 (Rd. 30)				
2	Redoak Creek	05090201 08 01	Redoak	10-040-000	X03W01	38.759800	-83.828400	WWH-v	2.32	16.2	Ripley Rd. (old U.S. Rt. 62)				
3	Redoak Creek	05090201 08 01	Redoak	10-040-000	302932	38.797476	-83.815325	WWH-v	6.30	8.7	dst. W. Fk. Redoak Creek				
4	Redoak Creek	05090201 08 01	Redoak	10-040-000	302933	38.793059	-83.801201	WWH-v	7.20	4.0	Rd. 231A				
5	W. Fk. Redoak Cr.	05090201 08 01	Redoak	10-041-000	302934	38.798677	-83.814464	EWH	0.05	3.9	at end of Bealer Rd. (Rd. 231)				
1	Big Threemile Cr.	05090201 06 04	Big Threemile	10-043-000	X03W02	38.672913	-83.747806	WWH-v	4.18	19.7	St. Rt. 763				
2	Big Threemile Cr.	05090201 06 04	Big Threemile	10-043-000	302935	38.684239	-83.690743	WWH-v	8.07	11.3	St. Rt. 41				
3	Big Threemile Cr.	05090201 06 04	Big Threemile	10-043-000	302936	38.706683	-83.647072	WWH-v	11.12	5.8	Roush Hill Rd. (Rd. 20)				
4	Slickaway Run	05090201 06 04	Big Threemile	10-044-000	302937	38.675285	-83.750021	EWH	0.10	1.3	Stringtown Rd. (Rd. 251)				
5	Ellis Run	05090201 06 04	Big Threemile	10-047-000	302938	38.681371	-83.719765	EWH	0.05	2.1	Ellis Run Rd. (Rd. 44) nr. Ellsberry				
6	Meffords Run	05090201 06 04	Big Threemile	10-048-000	302939	38.685156	-83.706498	EWH	0.05	1.1	adj. Meffords Run Rd. (Rd. 248)				
1	Baylor Run	05090201 07 05	Eagle	10-101-000	302940	38.720006	-83.813343	EWH	0.15	0.9	Scofield Rd.				
2	Beetle Creek	05090201 07 05	Eagle	10-102-000	302941	38.724984	-83.784522	EWH	0.45	10.9	Griffith Rd.				
3	Beetle Creek	05090201 07 05	Eagle	10-102-000	302942	38.719325	-83.735444	EWH	4.85	5.1	adj. East Fork Rd.				
4	Lafferty Run	05090201 07 05	Eagle	10-103-000	302943	38.751271	-83.774668	EWH	0.05	2.7	North Pole Rd. (Rd. 138)				
5	Indian Lick	05090201 07 05	Eagle	10-104-000	302944	38.756014	-83.757699	EWH	0.05	2.8	Upper Eagle Creek Rd.				
6	Brushy Fork	05090201 07 05	Eagle	10-105-000	302945	38.745514	-83.726609	EWH	1.00	4.0	Brushy Fork Rd. (Rd. 241)				
7	Suck Run	05090201 07 05	Eagle	10-106-000	302946	38.757620	-83.694466	EWH	1.70	5.2	Ebenezer Rd. (Rd. 33)				
8	Town Branch	05090201 07 05	Eagle	10-111-000	302947	38.790000	-83.699446	EWH	0.15	1.8	adj. East Fork Rd. (Rd. 221)				
9	Washburn Run	05090201 07 05	Eagle	10-112-000	302948	38.811914	-83.682831	EWH	1.40	1.4	dst. St. Rt. 125				
10	Adas Run	05090201 07 05	Eagle	10-113-000	302949	38.806963	-83.665453	EWH	0.70	3.3	dst. St. Rt. 125				
11	Hills Fork	05090201 07 05	Eagle	10-114-000	302950	38.806119	-83.637792	EWH	1.30	10.1	St. Rt. 125				
12	Hills Fork	05090201 07 05	Eagle	10-114-000	302951	38.823896	-83.627333	EWH	3.05	5.3	Eckmansville Rd. (Rd. 2)				
13	Lick Run	05090201 07 05	Eagle	10-115-000	302952	38.806421	-83.623173	EWH	0.95	0.7	old Cincinnati Pike (Rd. 21)				
14	Gordon Run	05090201 07 05	Eagle	10-116-000	302953	38.819368	-83.633645	EWH	0.05	3.1	Deatley Rd.				
15	Hannah Run	05090201 07 05	Eagle	10-117-000	302954	38.788066	-83.620233	EWH	0.30	2.1	McClanahan Rd. (Rd. T-110)				

Table 1. FY12/13 106 Supplemental Grant Sampling: 2015 Site List (continued)

Map #	Name	HUC12	Basin	Stream Code	Station	Latitude	Longitude	Unverified ALU	River Mile	Drainage Area	Location	Macroinvertebrates	Date Sampled		
													Fish	Habitat	Chemical Field Parameters
Southwest Ohio River Tributaries SRW Sites															
1	<u>Sink Creek</u>	05090201 08 03	Straight	10-301-000	302955	38.781928	-83.925612	EWH	0.15	1.7	adj. Old A and P Rd. (Rd. 67A)				
2	<u>Rangle Run</u>	05090201 08 03	Straight	10-302-000	302956	38.779263	-83.907653	EWH	0.30	1.0	adj. Rangle Run Rd. (Rd. 541)				
3	<u>Sheep Run</u>	05090201 08 03	Straight	10-303-000	302957	38.798092	-83.894039	EWH	0.10	3.7	upst. Centerpoint Rd. (Rd. 67B)				
4	<u>Campbell Run</u>	05090201 08 03	Straight	10-304-000	302958	38.797608	-83.882118	EWH	0.20	2.0	old U.S. Rt. 68 (Rd. 30)				
5	<u>Evans Run</u>	05090201 08 03	Straight	10-305-000	302959	38.807714	-83.875624	EWH	0.05	5.3	adj. Straight Creek Rd. (Rd. 255) at confluence				
6	<u>Washburn Run</u>	05090201 08 02	Straight	10-307-000	302960	38.838126	-83.818789	EWH	1.25	5.1	=100 yds. dst. Hockman Rd. (Rd. 68)				
7	<u>Bull Run</u>	05090201 08 02	Straight	10-308-000	302961	38.838551	-83.820627	EWH	0.05	1.3	near mouth				
8	<u>Scott Run</u>	05090201 08 02	Straight	10-309-000	302962	38.839111	-83.842949	EWH	0.20	1.2	U.S. Rt. 68				
9	<u>Camp Run</u>	05090201 08 02	Straight	10-310-000	302963	38.867206	-83.848024	EWH	0.10	2.9	Day Hill-Arnheim Rd.				
10	<u>Myers Run</u>	05090201 08 02	Straight	10-311-000	302964	38.874051	-83.834628	EWH	0.05	1.3	Martin-Hollow Rd. (Rd. 68)				
11	<u>Honey Run</u>	05090201 08 02	Straight	10-313-000	302965	38.891047	-83.840133	EWH	0.10	3.0	adj. Day Hill-Arnheim Rd.				
12	<u>W. Fk. Straight Cr.</u>	05090201 08 02	Straight	10-314-000	302966	38.911198	-83.858616	EWH	1.25	4.3	Westfork Rd. (Rd. 66A)				
13	<u>Buck Run</u>	05090201 08 02	Straight	10-315-000	302967	38.933327	-83.825400	EWH	0.05	2.2	Ash Ridge Arnheim Rd. (Rd. 17B)				
14	<u>Sycamore Run</u>	05090201 08 02	Straight	10-316-000	302968	38.930639	-83.813406	EWH	0.05	1.6	nr. Fite-Hauck Rd. and Ash Ridge Arnheim Rd. intersection				

Figure 1. Ohio streams assigned State Resource Water designations with locations of watersheds where verification of antidegradation category and aquatic life use will be determined in 2015.



Figure 2. Cornick Run and Redoak Creek watershed sampling locations, 2015. Site numbers correspond to those listed in Table 1.

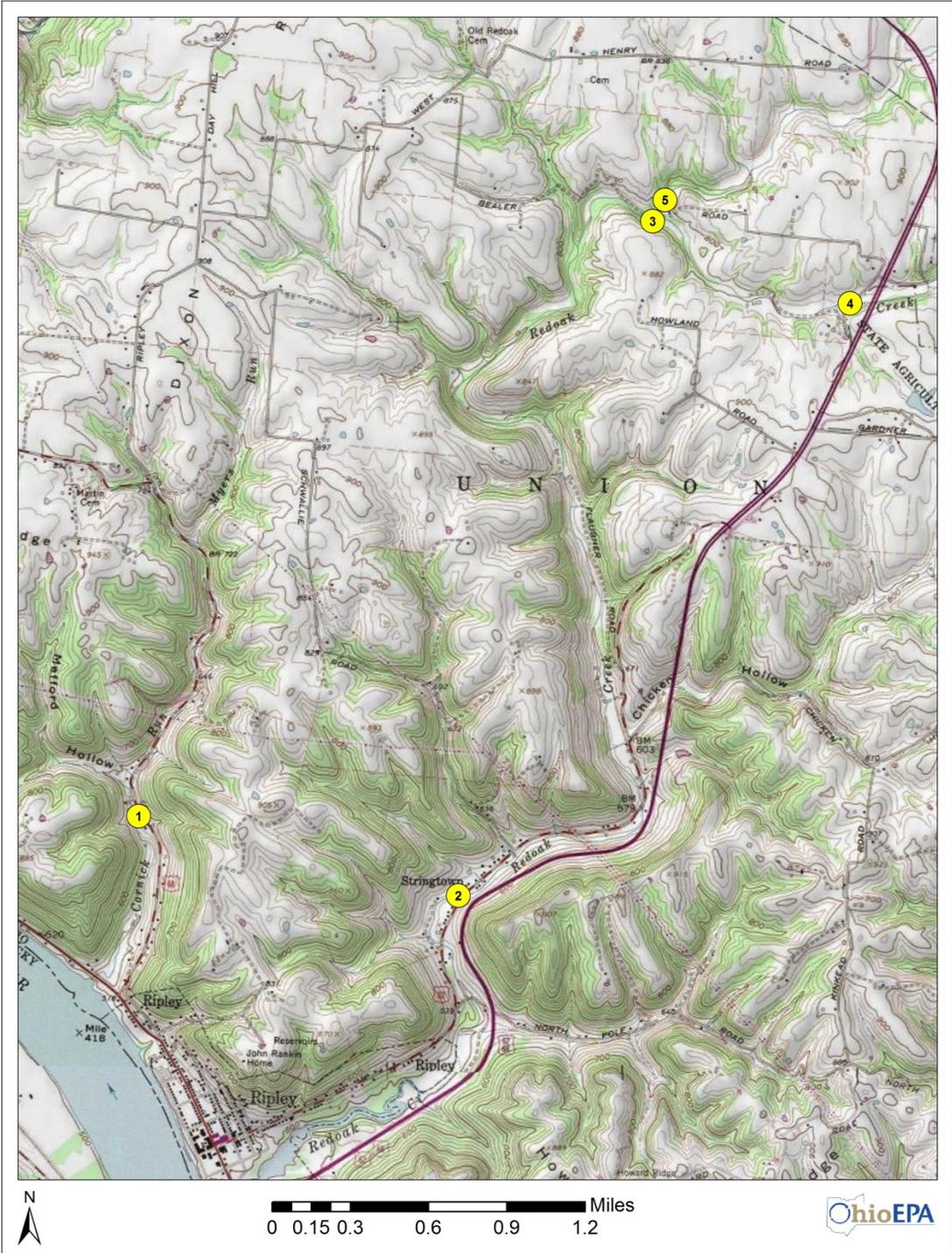


Figure 3. Big Threemile Creek watershed sampling locations, 2015. Site numbers correspond to those listed in Table 1.



Figure 4. Eagle Creek watershed sampling locations, 2015. Site numbers correspond to those listed in Table 1.

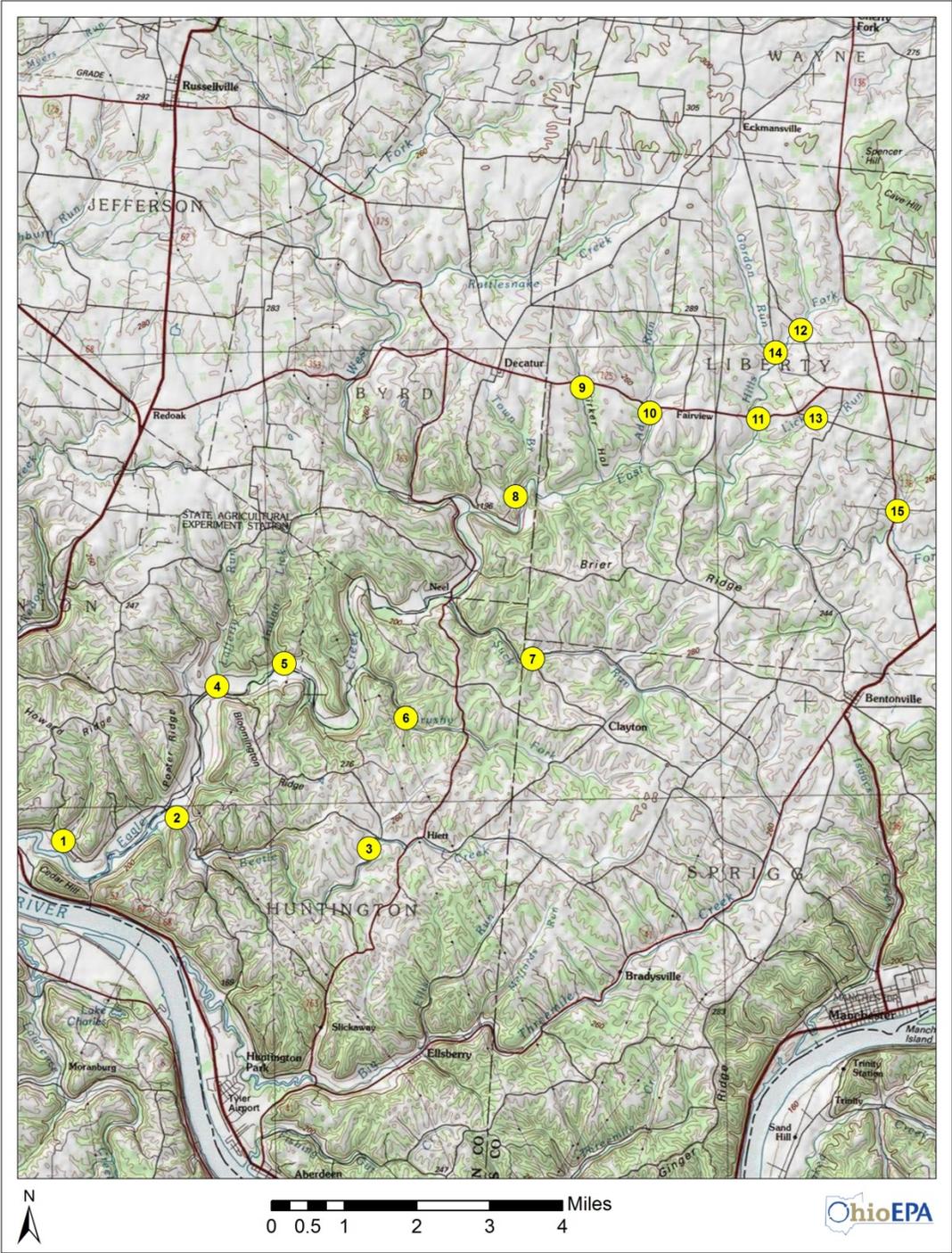
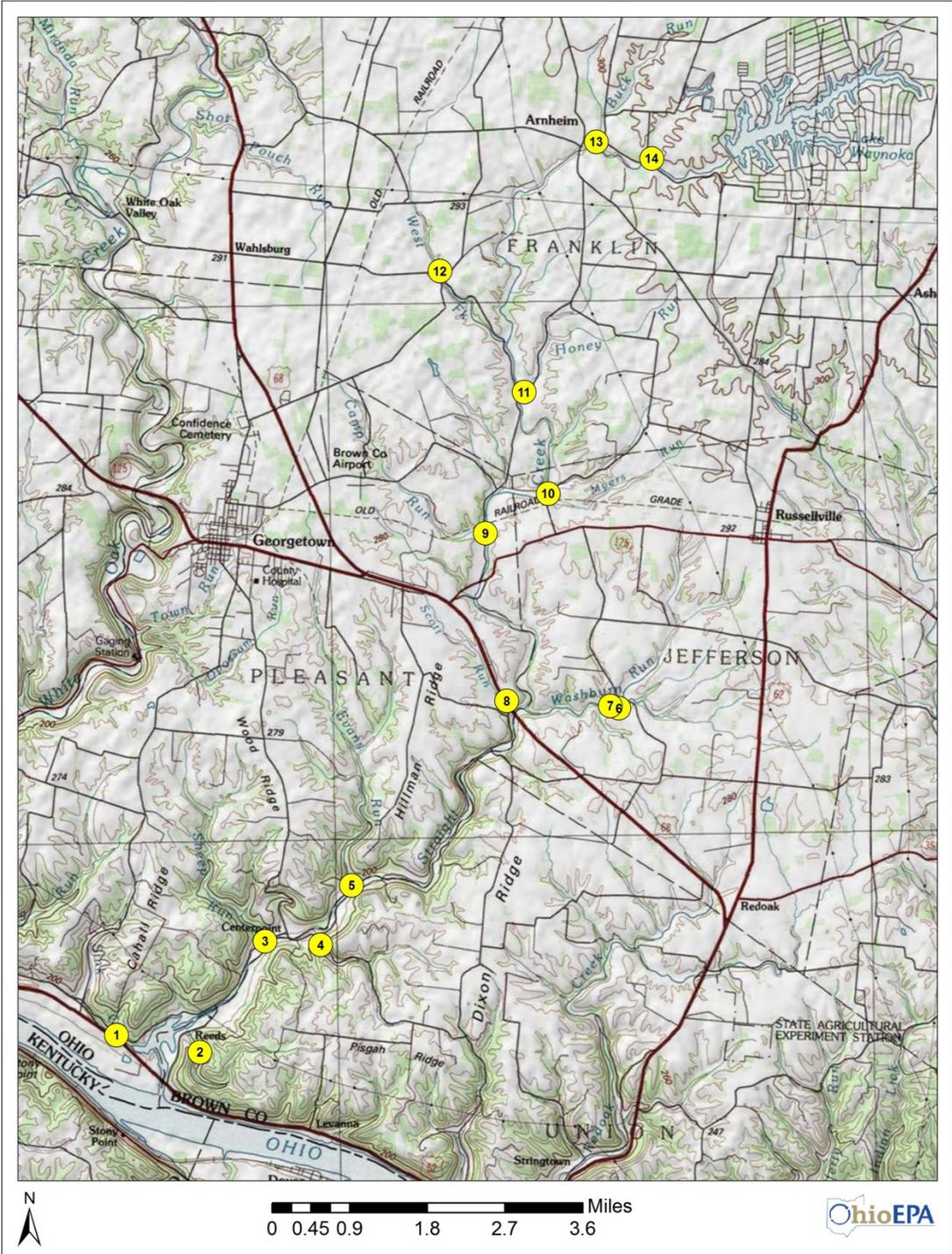


Figure 5. Straight Creek watershed sampling locations, 2015. Site numbers correspond to those listed in Table 1.



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