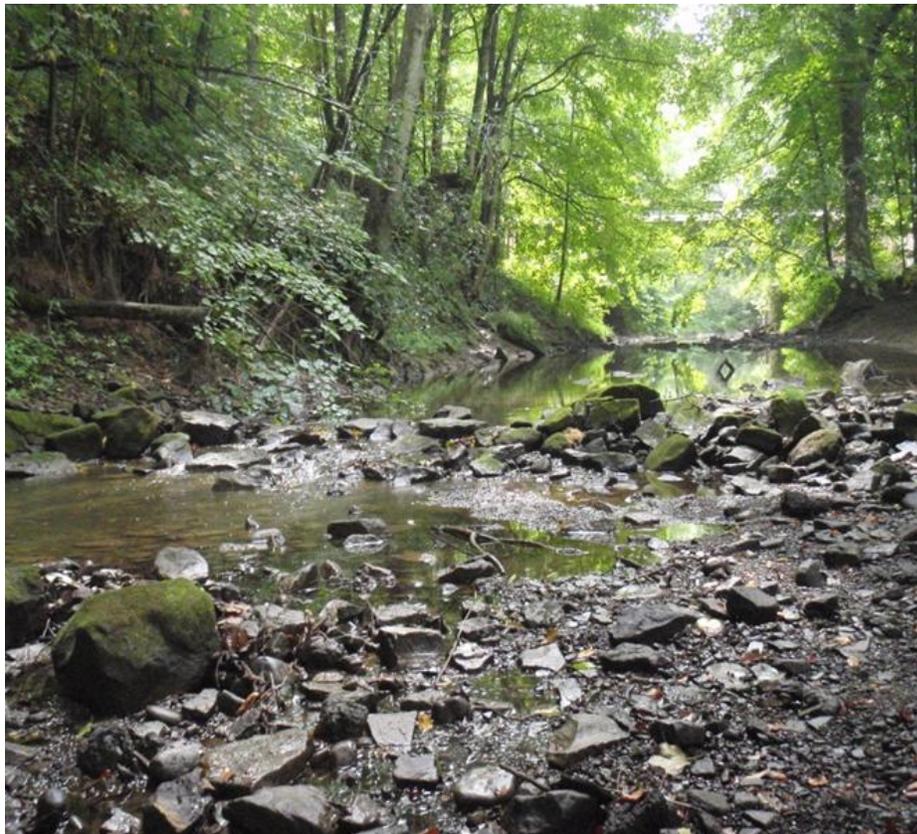




# Study Plan for FY13 Section 319(h) and 2012 Surface Water Improvement Fund (SWIF) Projects

**Field Year 2013 Pre-Implementation Project Monitoring**



Division of Surface Water  
Ecological Assessment Section  
May 15, 2013

**Study Plan for**  
**FY13 Section 319(h)**  
**and**  
**2012 Surface Water Improvement Fund (SWIF)**  
**Projects**

**Field Year 2013 Pre-Implementation Project Monitoring**

**May 15, 2013**

**Objectives**

1. Establish baseline biological and physical habitat quality in five 319 and two SWIF project water bodies by evaluating fish and macroinvertebrate communities, along with assessing physical habitat conditions. This will include evaluation of the attainment status of designated or recommended aquatic life uses of the water bodies expected to be restored by each project.
2. Biological and physical habitat sampling will occur prior to implementation of the projects.
3. Complete a report summarizing the aquatic biological results by project area.
4. Biological monitoring will also occur at one previously implemented 319 project site where restoration work has been completed for at least one year.

**Sampling Activities**

***Biological Community Assessment***

The fish communities will be assessed at each sampling site using wading or boat electrofishing methods. Artificial substrate quantitative samplers will be set at applicable macroinvertebrate sampling stations. At all sites or where small stream size, low stream flow conditions, or other contingencies will not support placement of artificial substrate samplers, qualitative macroinvertebrate sampling will be conducted. Sampling locations are listed in Table 1 and Figures 1-8.

***Stream Habitat Assessment***

Stream habitat will be evaluated at each biological sampling site and will be used in the overall environmental assessment of the waterbodies.

## **Results**

The results of the data collected will provide pre-implementation water resource conditions at each of five FY13 319 and two SWIF project areas. The biological community assessment and physical habitat data will be used to assign/confirm the appropriate aquatic life use, determine aquatic life use attainment/impairment status, and assess physical habitat condition at each water body project area. At one previously implemented 319 project site, post-construction biological community and physical habitat conditions will be assessed to compare with baseline monitoring results collected prior to project implementation.

## **Quality Assurance/Sampling Methods**

### **Ohio EPA Manuals**

All biological, data processing, and data analysis methods and procedures adhere to those specified in Biological Criteria for the Protection of Aquatic Life, Volumes II - III (Ohio EPA 1987, 1989a, 1989b, 2013b, 2013c) for biological community assessments, and The Qualitative Habitat Evaluation Index (QHEI); Rationale, Methods, and Application (Ohio EPA 1989c, 2006) for stream habitat assessment.

### **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 7-17. 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 tiered 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 1987). 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. The Powell Creek watershed results will be compared to biocriteria for the Huron-Erie Lake Plain ecoregion.

### **Stream Habitat Assessment**

Stream habitat is evaluated using the Qualitative Habitat Evaluation Index (QHEI) developed by the Ohio EPA for streams and rivers in Ohio (Ohio EPA 1989c, Ohio EPA 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.

### **Biological Community Assessment**

Macroinvertebrates will be collected from artificial substrates and/or natural stream habitats. Artificial substrate collections will be collected at all sites with greater than 20 mi<sup>2</sup> drainage areas or at reference site locations. This sample provides quantitative data and consists of a composite sample of five modified Hester-Dendy multiple-plate artificial substrate samplers colonized for six weeks. Qualitative sampling will be conducted at all sampling locations. This sampling effort consists of an inventory of all

observed macroinvertebrate taxa from the natural stream 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). Detailed macroinvertebrate assemblage sampling protocols are documented in Biological Criteria for the Protection of Aquatic Life, Volume III (1989b, 2013c).

Fish will be sampled at each sampling location using pulsed DC headwater, wading, or boat electrofishing methods depending on watershed size at each sampling zone. Sites with drainage areas greater than 20 mi<sup>2</sup> or at reference site locations will be sampled twice during the sampling index period. Fish are processed in the field which includes identifying each individual to species, counting individuals at all sites, weighing individuals at wading and boat sites, and recording any external abnormalities. Detailed fish assemblage sampling protocols are documented in Biological Criteria for the Protection of Aquatic Life, Volume III (1989b, 2013c).

### **Project Descriptions**

The following summaries describe projects that have been awarded FY13 Section 319(h) subgrants or 2012 SWIF funding and for which pre-implementation monitoring is being conducted. These projects were identified during the course of the review as having met fund eligibility requirements and having the highest potential for water quality improvements within the watershed where they will be implemented. All pre-implementation projects are assigned to the following EA<sup>3</sup> project: Grant Year 2013 319 Projects (Pre-Project Monitoring).

**City of Hilliard [13(h)EPA-21]:** Project will restore 1125 linear feet of stream channel in Clover Groff Run in the Big Darby Creek watershed (Figure 1). The existing over-wide linear channel will be restored using Natural Channel Design principles. Approximately 0.73 acres of floodplain wetland will also be created along the restored reach of stream. The site will be preserved permanently via a conservation easement (5.59 acres) of which 5.29 acres will be restored with native grass, shrub and tree plantings. Contact: Clyde Seidle (614-876-7361); [cseidle@hilliardohio.gov](mailto:cseidle@hilliardohio.gov)

**City of Gahanna [13(h)EPA-19]:** Project will restore 1011 linear feet of unstable stream channel in Sycamore Run in the Rocky Fork Creek watershed using Natural Channel Design principles (Figure 2). Approximately 0.28 acres of floodplain wetlands will be created within the buffer area of this project. In addition, approximately 2.6 acres of native riparian tree, shrub and grass plantings will be provided. This project will be preserved via transfer of 3.52 acres of conservation easement to the city of Gahanna. This project is being implemented consistent with the endorsed Rocky Fork Creek Watershed Action Plan & Inventory (January 2010) and the U.S. EPA approved (August 2005) Big Walnut Creek Watershed TMDL. Contact: Jeff Feltz (614-342-4000); [jeff.feltz@gahanna.gov](mailto:jeff.feltz@gahanna.gov)

**City of Willoughby [13(h)EPA-09]:** Project will facilitate restoration of 214 linear feet of severely eroding river bank along the Chagrin River and adjacent to the City of Willoughby's Todd Field recreational park (Figure 3). The restoration includes installation of four (4) bend way weirs and streambank toe stabilization. In addition, 0.24 acres of riparian corridor will be restored with wooded vegetation and live stake plantings. This project is being implemented consistent with the endorsed Chagrin River watershed action plan and approved TMDL. Contact: David Anderson, Mayor (440-951-2800); [deanderson@willoughbyohio.com](mailto:deanderson@willoughbyohio.com)

**City of Medina [13(h)EPA-16]:** Project will restore and stabilize approximately 2240 linear feet of streambank and floodplain on Champion Creek using bioengineering (Figure 4). In addition, 2.15 acres of riparian area will be restored by removing invasive species and replanting native grasses, trees and shrubs along Champion Creek in the Rocky River watershed. This project is being implemented consistent with the endorsed Rocky River watershed action plan and approved TMDL. Contact: Greg Hannan (330-722-9023); [ghannan@medinaoh.org](mailto:ghannan@medinaoh.org)

**Clermont County Engineer [13(h)EPA-08]:** Project will restore approximately 600 linear feet of stream channel and stabilize 300 linear feet of streambank in O'Bannon Creek using Natural Channel Design and bioengineering techniques (Figure 5). In addition, 0.6 acres of riparian corridor will be replanted with native trees, shrubs, and grass. The project site will be protected via conservation easement acquisition. This project is being implemented consistent with the approved Little Miami River TMDL (approved by U.S. EPA in December 2010).

Contact: Pat Manger (513-732-8857); [pmanger@clermontcountyohio.gov](mailto:pmanger@clermontcountyohio.gov)

**City of Cuyahoga Falls [12SWIF-10]:** Project will restore and stabilize approximately 1000 feet of Kelsey Creek (Figure 6). This project is being implemented consistent with the recommendations in the Draft Cuyahoga River Watershed Action Plan which is currently in review for endorsement. It is also consistent with findings and recommendations within the Cuyahoga River Total Maximum Daily Load study completed by Ohio EPA and approved by U.S. EPA in March, 2000.

Contact: Valerie Wax Carr (330-971-8201); [carrvw@cityofcf.com](mailto:carrvw@cityofcf.com)

**Ursuline College [12SWIF-CUY-GLRI-06]:** Project will restore an unnamed tributary to Pepper Creek (tributary to the Chagrin River) that has been negatively impacted by channelization, riparian vegetation removal and stormwater flows (Figure 7). This project will restore 380 linear feet of floodplain by removing spoil piles that were placed in the stream and restore 100 linear feet of stream channel by stabilizing the eroding stream banks and establishing woody vegetation. This project will also construct 2,232 square feet of bioretention areas for stormwater management. This project is being implemented consistent with the recommendations in the state-endorsed Chagrin River Watershed Action Plan. It is also generally consistent with findings and recommendations within the Chagrin River Total Maximum Daily Load study completed by Ohio EPA and approved by U.S. EPA in 2007.

Contact: June Gracyk (440-449-4200); [jgracyk@ursuline.edu](mailto:jgracyk@ursuline.edu)

The following summary describes one project that was awarded prior year Section 319(h) subgrant funding and for which follow-up monitoring is being conducted; pre-implementation monitoring (macroinvertebrates only) was completed in 2009. This post-implementation project is assigned to the following EA<sup>3</sup> project: Grant Year 2009 319 Projects (Post-Project Monitoring). **Please coordinate the site visit with Mandy Razzano (NEDO) as this site is located at Hudson High School and there is a desire to schedule while school is in session (late August/early September?) so that interested students can observe the sampling (both fish and macroinvertebrates, if possible).**

**Cuyahoga County Board of Health [09(h)EPA-07]:** Completion of this project enabled the Cuyahoga County Board of Health to improve the water quality and habitat in a tributary to Tinkers Creek, and create a living land laboratory for the Hudson School District. The stream restoration project resulted in the restoration of 2,000 linear feet of severely incised and unstable stream channel (Figure 8). The project also resulted in the rehabilitation of 4,000 linear feet of streambank and the reconnection of this small headwater stream with its natural floodplain. This project reduced sedimentation from severely eroding stream banks and improved riparian and wetland function to remove nutrients while reducing downstream flooding potential by providing 2,000,000 gallons of storm water storage in the wetlands and floodplains along the restoration project. The project site will be protected in perpetuity as a result of a conservation easement that was placed upon the 6.2834 acre restoration project site.

Contact: J. Meiring Borchers (216-201-2001, E. 1256); [mborchers@ccbh.net](mailto:mborchers@ccbh.net)

**Table 1. FY13 Section 319(h) projects - baseline and follow-up monitoring locations, 2013.**

HUC12	Stream Code	Station	Latitude	Longitude	Sample Type	River Mile	Drainage Area	Location
<b>05060001 22 01 Hellbranch Run</b>								
Clover Groff Run (MWH-C)	02-204-001 (02-245)	203208	40.034804	-83.178858	F1x, Mql, H	7.30	2.9	upst. Cosgray Rd. in new NCD area at Latham Educational Park
13(h)EPA-21 Baseline		203209	40.031514	-83.176556	<i>F1x, Mql, H</i>	7.00	3.2	<i>dst. Scioto-Darby Creek Rd. from soccer field parking lot off Cherry Tree Dr.</i>
		300736	40.026247	-83.176066	F1x, Mql, H	6.60	5.5	upst. golf path, upst. Heritage Lakes CC from ball field complex parking lot off Cherry Tree Dr.
<b>05060001 15 01 Rocky Fork Creek</b>								
Sycamore Run (Undesignated)	02-123-001 (02-254)	203207	40.036100	-82.865000	F1x, Mql, H	1.70	0.5	upst. Hamilton Rd.
13(h)EPA-19 Baseline		302245	40.034279	-82.867142	<i>F1x, Mql, H</i>	1.50	0.6	<i>behind Sycamore Woods Condo Complex off Sycamore Woods Lane</i>
		302246	40.032540	-82.869614	F1x, Mql, H	1.35	0.6	Zander Lane off U.S. Rt. 62
<b>04110003 04 03 Town of Willoughby-Chagrin River</b>								
Chagrin River (WWH)	15-001-000	502400	41.631700	-81.402800	F2x, Mqt, H	4.80	246.0	dst. Johnnycake Ridge Rd. (St. Rt. 84) from Daniels Park
13(h)EPA-09 Baseline		302247	41.639443	-81.402087	<i>F2x, Mqt, H</i>	4.20	246.0	<i>at Todd Field within planned restoration reach</i>
		D01Q04	41.642847	-81.402934	F2x, Mqt, H	3.90R	246.0	dst. Mentor Ave. (U.S. Rt. 20)
<b>04110001 01 03 W. Br. Rocky River</b>								
Champion Creek (Undesignated)	13-200-009 (13-212)	302248	41.136203	-81.865195	<i>F1x, Mql, H</i>	3.70	3.2	<i>Restoration Reach 1c - adj. W. Smith Rd. between S. Elmwood Ave. and S. Court St. (U.S. Rt. 42)</i>
13(h)EPA-16 Baseline		302249	41.135172	-81.861614	<i>F1x, Mql, H</i>	3.50	3.3	<i>Restoration Reach 1b - dst. S. Broadway St.</i>
		302250	41.135610	-81.857865	<i>F1x, Mql, H</i>	3.30	3.3	<i>Restoration Reach 1a - dst. bridge to abandoned buildings off E. Smith Rd.</i>
<b>05090202 09 02 O'Bannon Creek</b>								
O'Bannon Creek (WWH)	11-010-000	M05G01	39.237500	-84.183500	F2x, Mqt, H	6.50	25.8	Gaynor Rd. (Twp. Rd. 345)
13(h)EPA-08 Baseline		M05W60	39.249269	-84.200676	<i>F2x, Mqt, H</i>	4.40	29.4	<i>upst. Gibson Rd.</i>
		M05W58	39.260300	-84.220600	F2x, Mqt, H	2.70	40.9	upst. O'Bannon Creek Regional WWTP upst. RR bridge
<b>04110002 03 05 Fish Creek-Cuyahoga River</b>								
Kelsey Creek (Undesignated)	19-001-035 (19-143)	302252	41.134461	-81.455780	F1x, Mql, H	0.75	2.6	at Kelsey Drive and Rainier St. intersection
12SWIF-10 Baseline		302253	41.136796	-81.456786	<i>F1x, Mql, H</i>	0.60	3.0	<i>footbridge in Kennedy Park near ball field</i>
		302254	41.141363	-81.456402	F1x, Mql, H	0.25	3.3	dst. Munroe Falls Blvd. adj. Water Works Family Aquatic Center
<b>04110003 04 02 Griswold Creek-Chagrin River</b>								
PHWH Trib. to Chagrin R. (22.81/5.13)	15-001-024 (15-057)	302257	41.496598	-81.466920	<i>F1x, Mql, H</i>	1.07	1.0	<i>upst. Lake Elissa on Ursaline College campus</i>
12SWIF-CUY-GLRI-06 Baseline								
<b>04110002 05 02 Headwaters Tinkers Creek</b>								
PHWH Trib. to Tinkers Cr. (25.44/0.18/0.93)	19-007-028 (19-128)	300880	41.254161	-81.418792	<i>F1x, Mql, H</i>	0.60	0.2	<i>dst. I-80 at Hudson High School (Hudson HS Land Lab)</i>
09(h)EPA-07 Follow-Up (Bug only in '09)								
Site locations in project restoration reaches are italicized.								

Figure 1. Clover Groff Run sampling locations, 2013 [13(h)EPA-21 baseline].

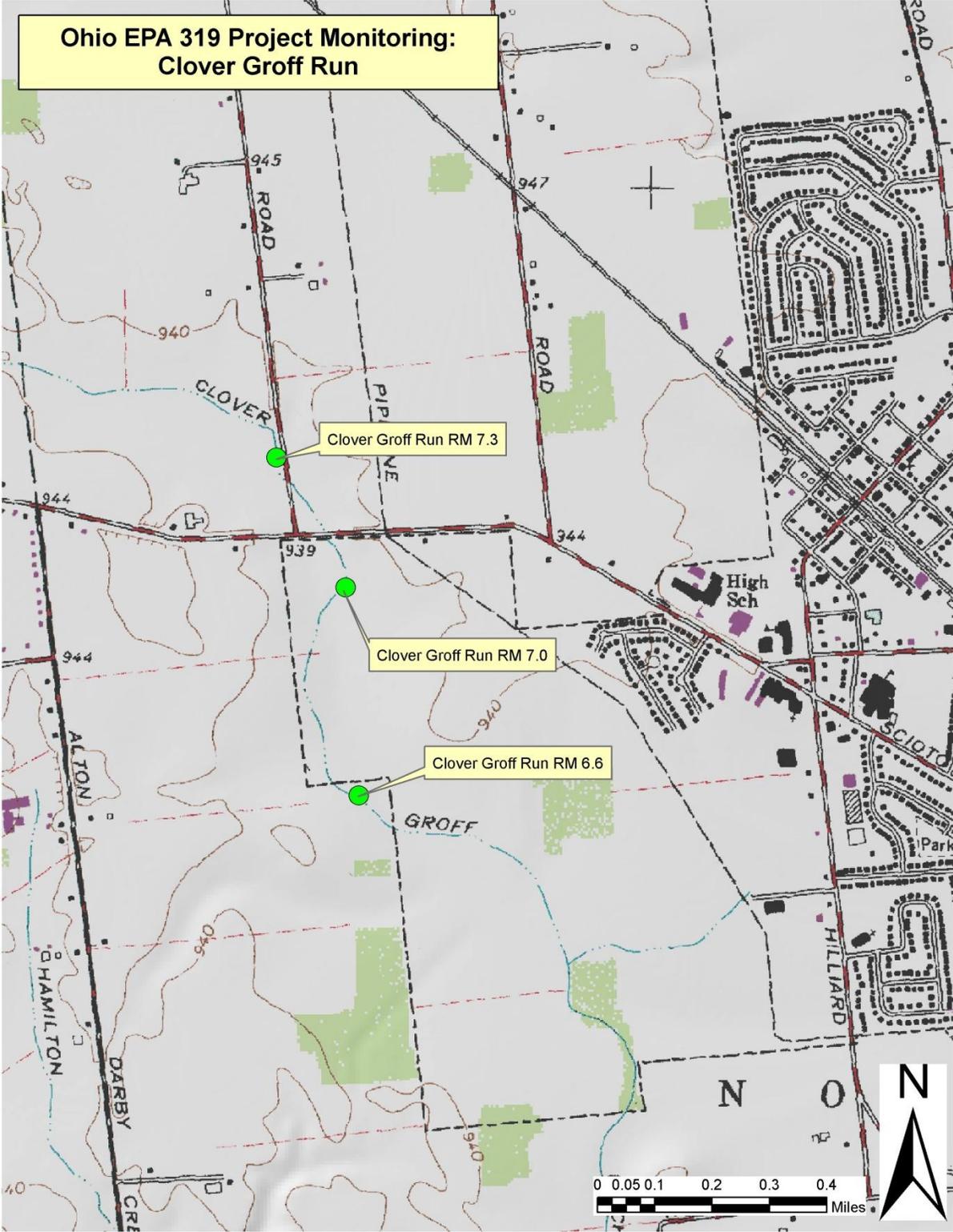


Figure 2. Sycamore Run sampling locations, 2013 [13(h)EPA-19 baseline].

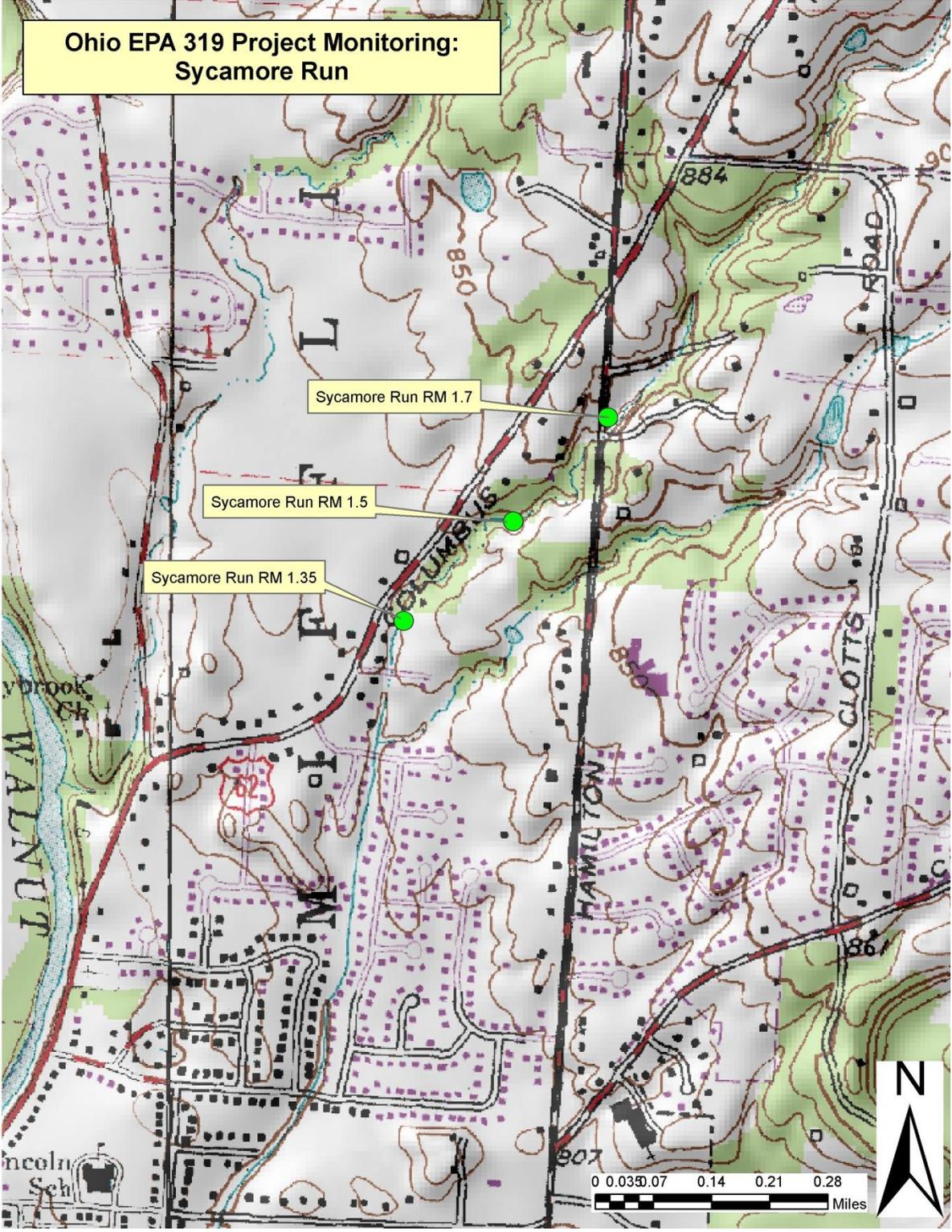


Figure 3. Chagrin River sampling locations, 2013 [13(h)EPA-09 baseline].

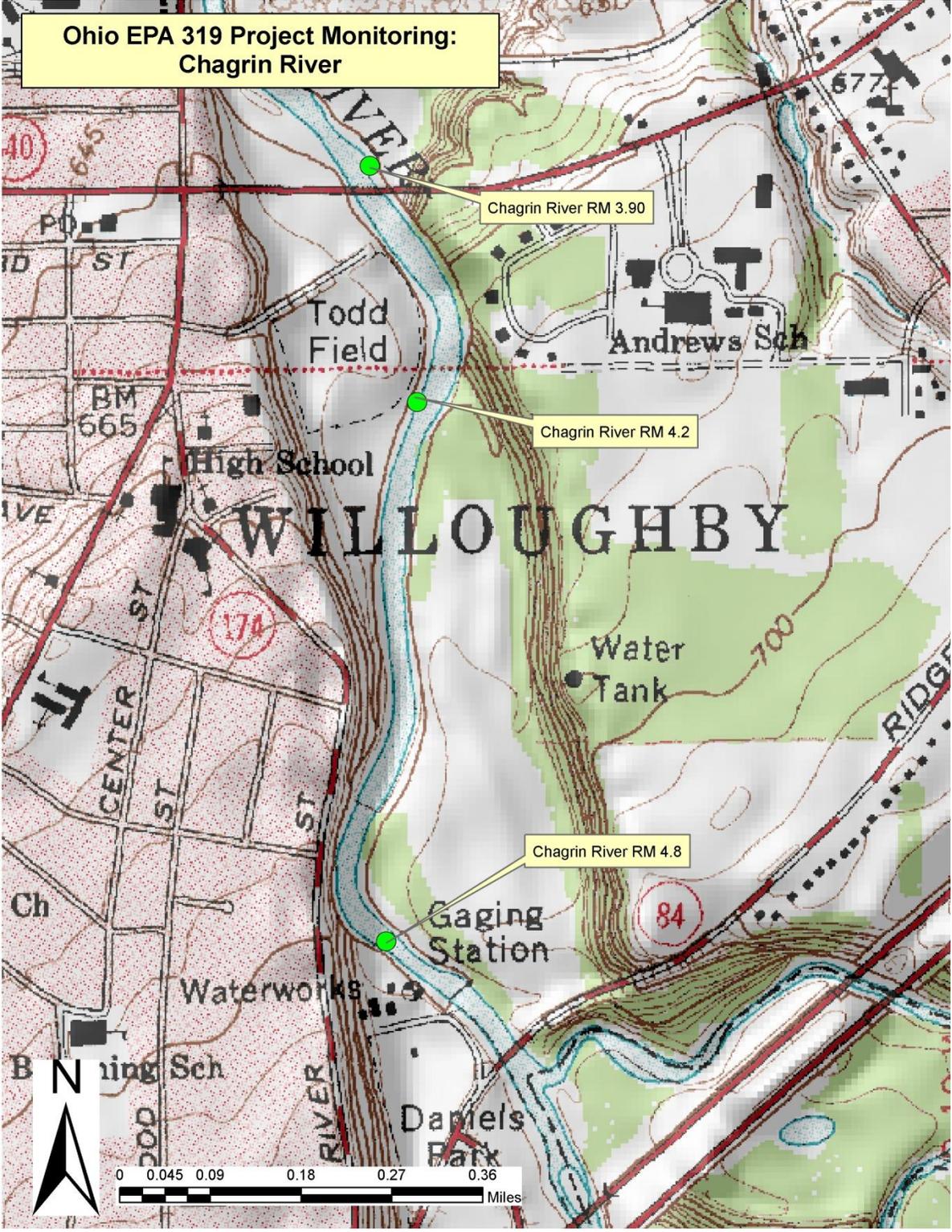


Figure 4. Champion Creek sampling locations, 2013 [13(h)EPA-16 baseline].

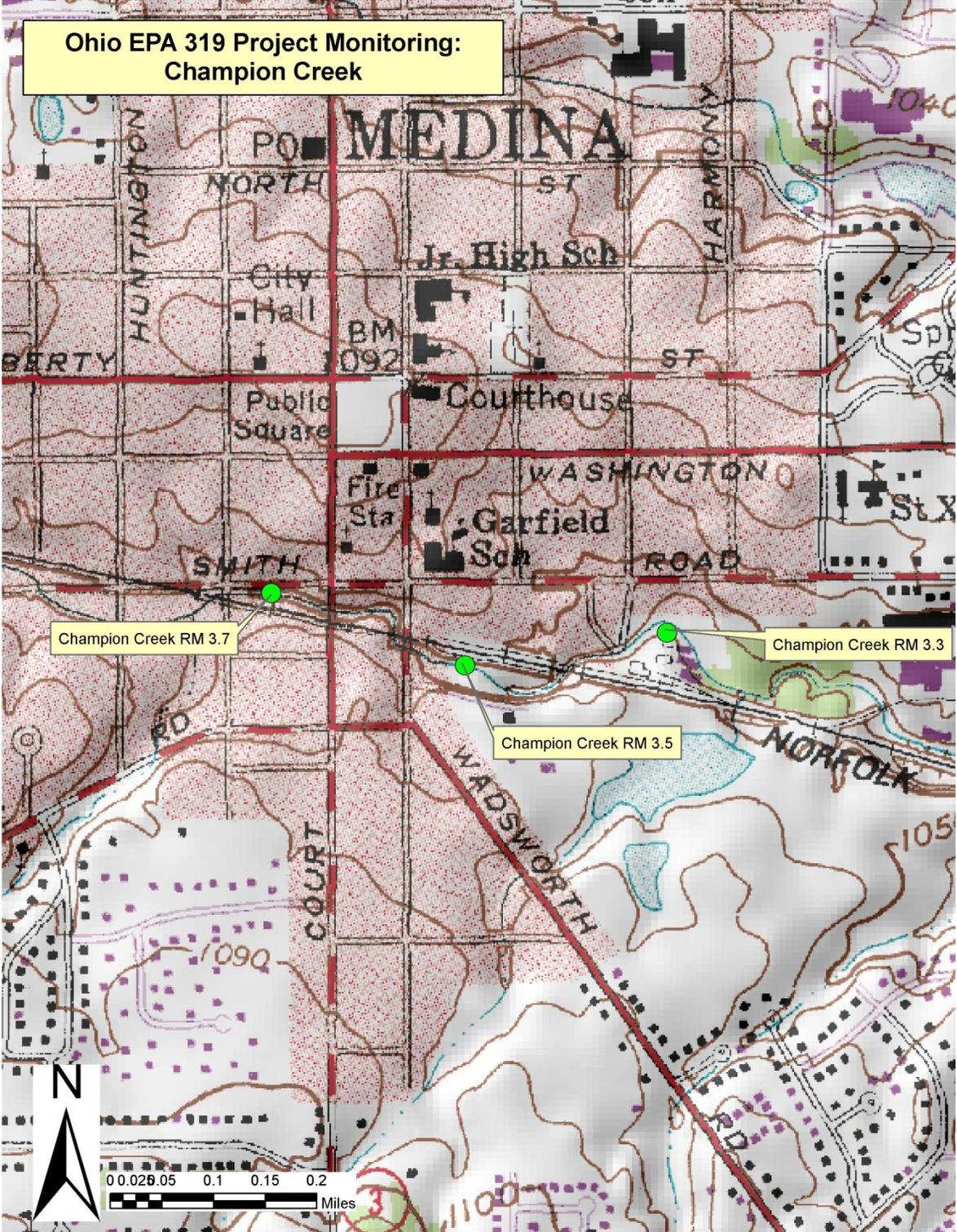


Figure 5. O'Bannon Creek sampling locations, 2013 [13(h)EPA-08 baseline].

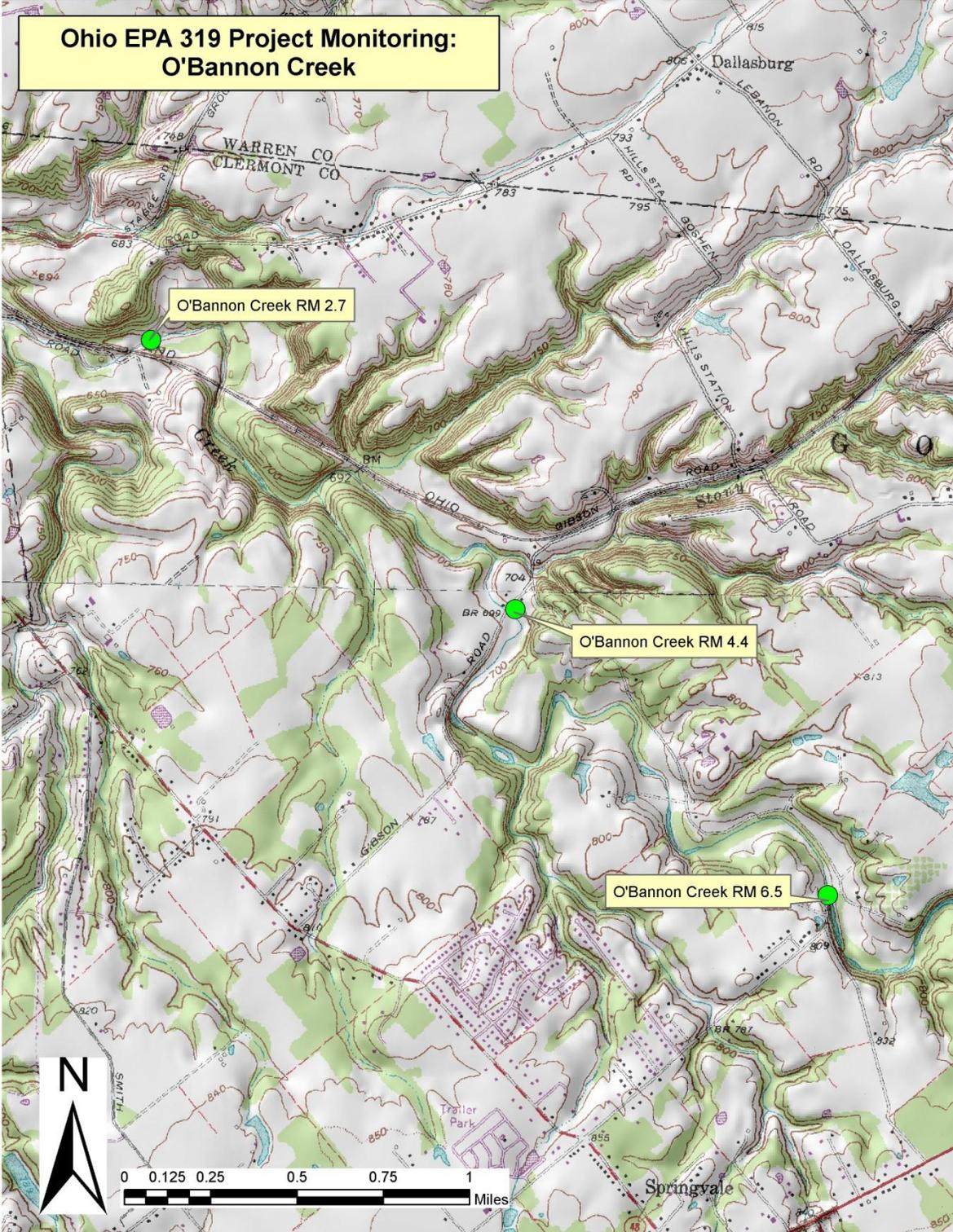


Figure 6. Kelsey Creek sampling locations, 2013 [12SWIF-10 baseline]

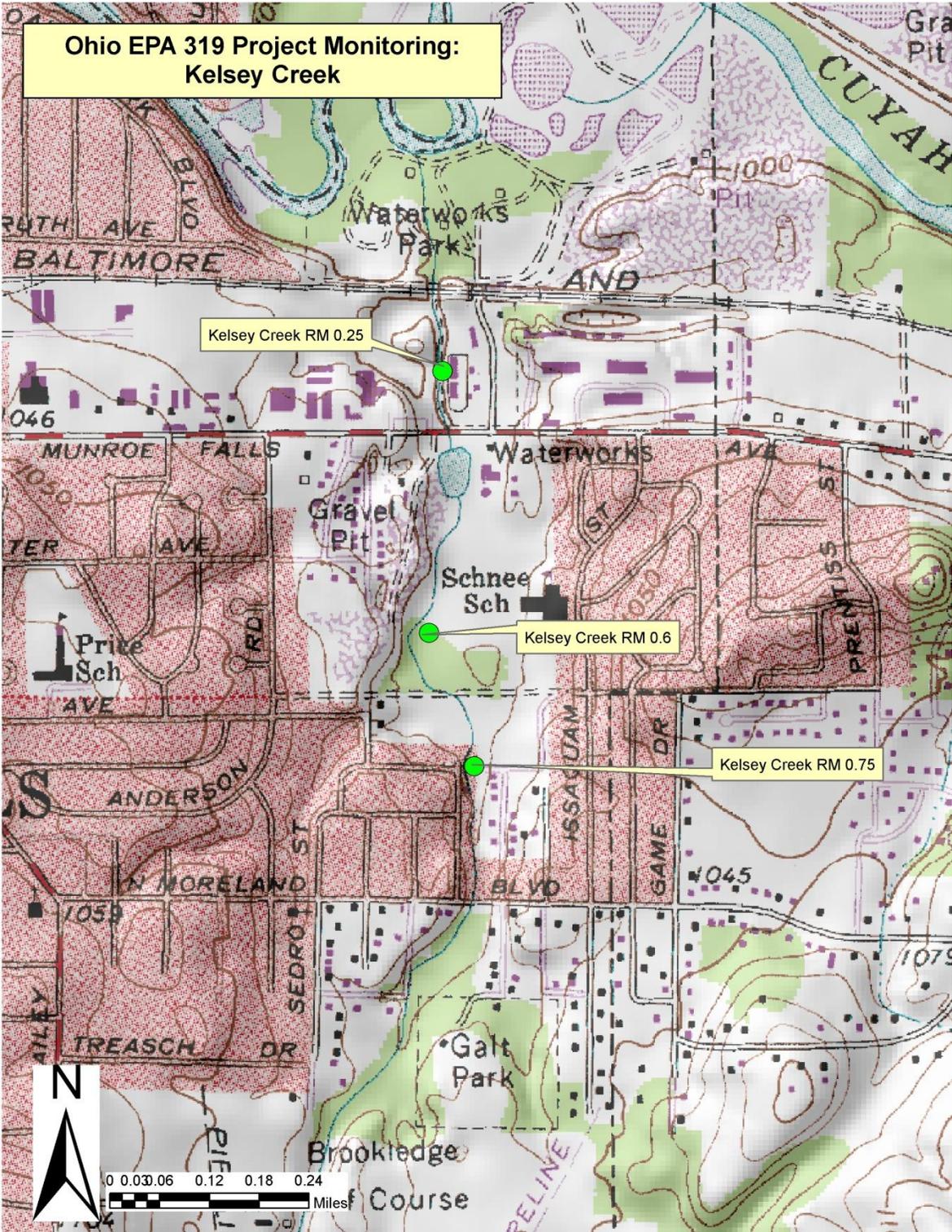


Figure 7. PHWH Trib. to Chagrin R. (22.81/5.13) sampling location, 2013 [12SWIF-CUY-GLRI-06 baseline]

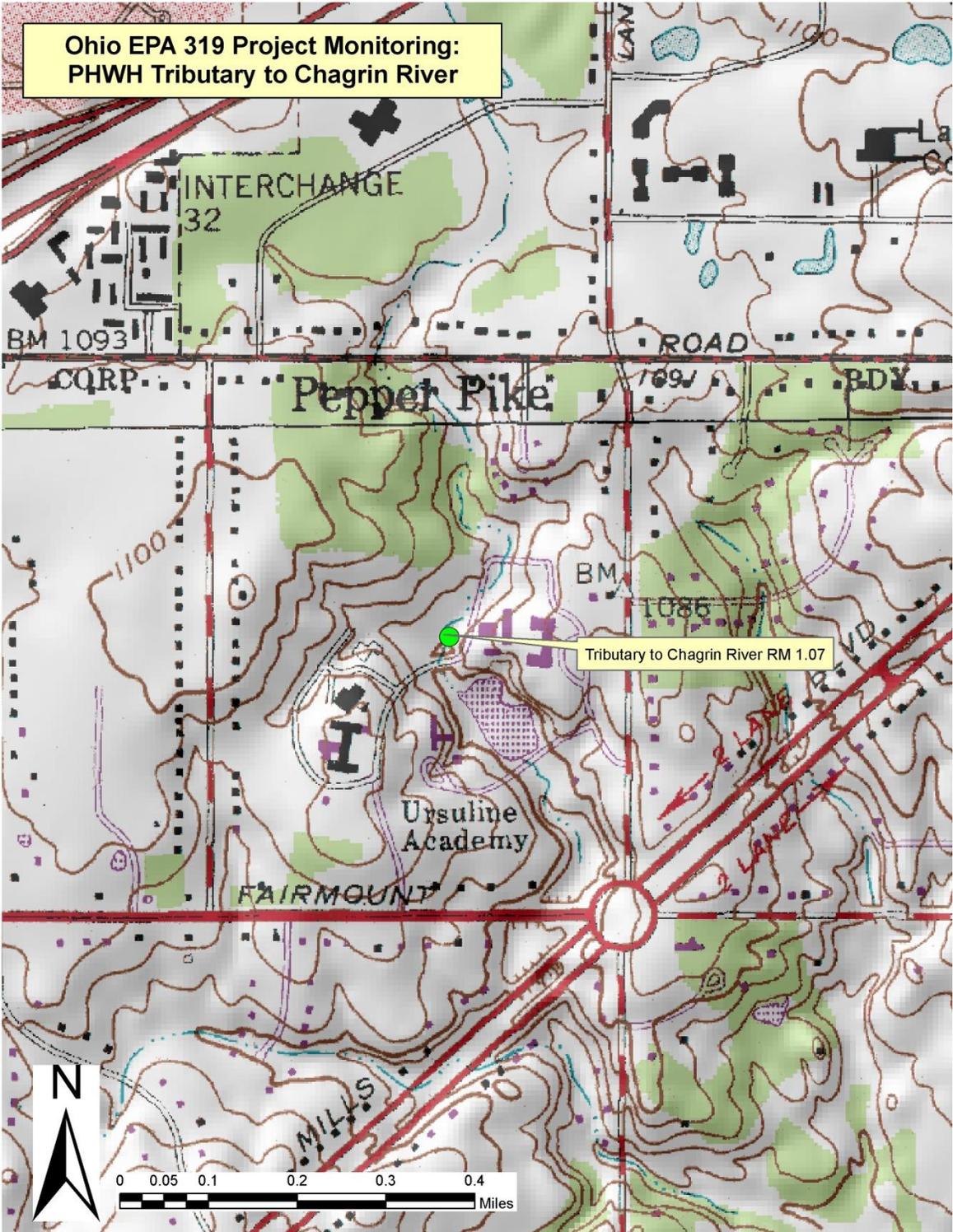
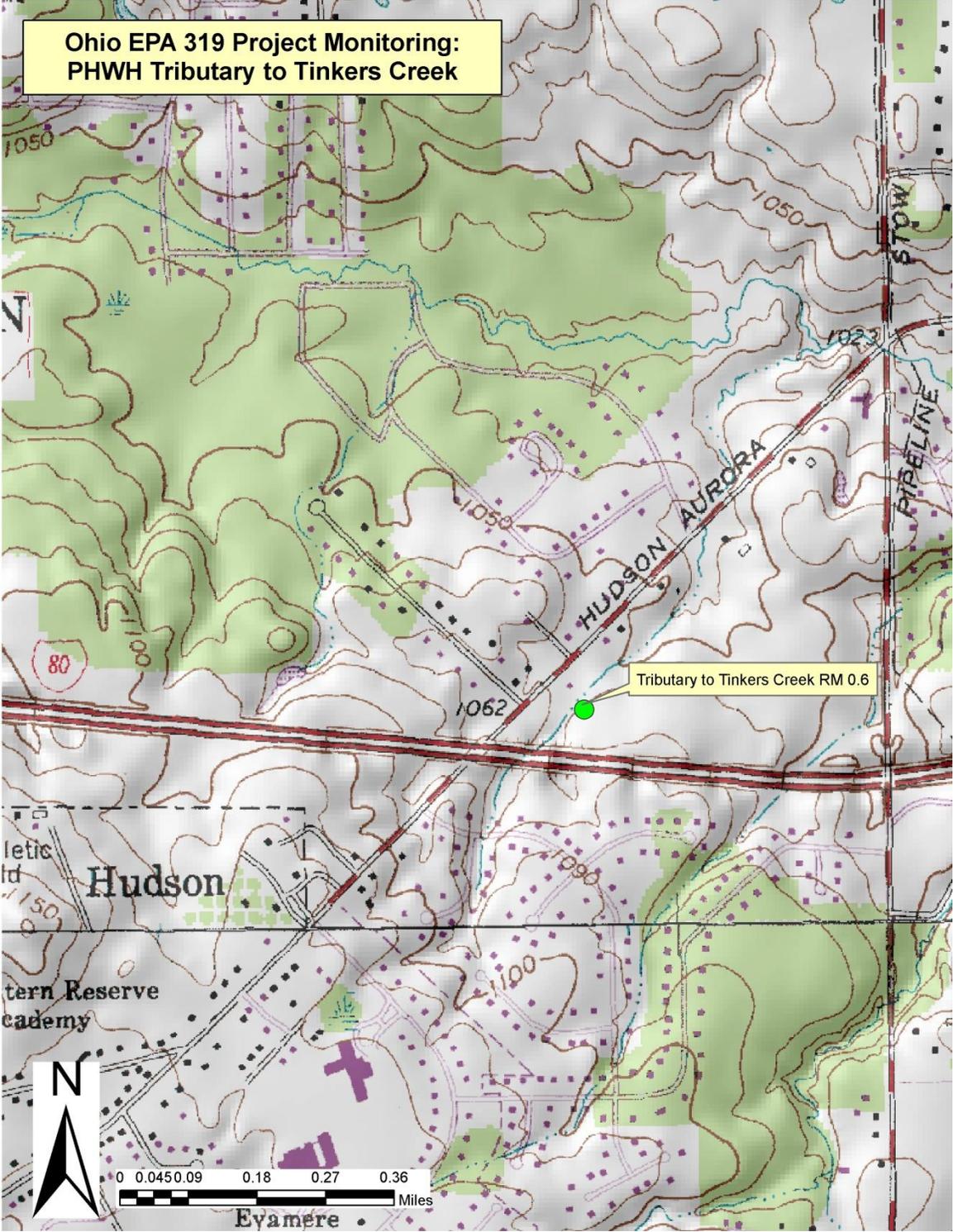


Figure 8. PWHH Trib. to Tinkers Cr. (25.44/0.18/0.93) sampling location, 2013 [09(h)E-07 follow-up].



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