Biological and Water Quality Survey of the Rocky River and Selected Tributaries

Cuyahoga, Summit, Lorain and Medina, Ohio

May 20, 2014

State of Ohio Environmental Protection Agency
Division of Surface Water Lazarus Government Center
122 South Front St., Columbus Ohio

Monitoring and Assessment Section
4675 Homer Ohio Lane
Groveport, Ohio 43125

Northeast District Office
2110 East Aurora Rd
Twinsburg, Ohio 44087

Introduction

Figure 1. Location of the Rocky River basin within the political boundaries of Ohio.

As part of the TMDL process and in support of the basin approach for National Pollution Discharge Elimination System (NPDES) permitting, an intensive ambient assessment will be conducted during the 2014 field sampling season within the Rocky River basin (Figure 1). The study area is composed of 12, HUC 12 watershed assessment units. A total of 82 sampling stations are allocated to this effort and will provide for the assessment of 27 named and unnamed streams (Tables 1 and 2). Ambient biology, macrohabitat quality, water column chemistry, and bacteriological data will be collected concurrently from most of these sites. Diel water quality (DO, pH, conductivity, and temperature), sediment chemistry (metals, organics, and particle size), nutrients, and fish tissue will be evaluated at selected sampling locations.

Primary Sampling Objectives

1) Systematically sample and assess the principal drainage network of the Rocky River in support of both the TMDL process and NPDES permits;

2) Gather ambient environmental information (biological, chemical, and physical) from undesignated or unlisted waterbodies, so as to recommend an appropriate suite of beneficial Uses (e.g., aquatic life, recreational, water supply);

3) Verify the appropriateness of existing, unverified, beneficial use designations and recommend appropriate use designation to undesignated waters;

4) Evaluate baseline ambient biological conditions at selected reference sites;

5) Document any changes in the biological, chemical, and physical conditions of the study areas where historical information exists, so as to both, evaluate the effectiveness of past, on-going and future pollution abatement efforts and expand the Ohio EPA data base for statewide trends analysis (e.g., 305[b], 303[d] listing and de-listing);

6) Monitor and assess Coe and Wallace Lakes in support of state-wide Lake Monitoring program;

7) Monitor and assess Public Water Supply (PWS) use on the lower East Branch and lower Baldwin Creek, surface waters that serve as raw water sources for the city of Berea; and

8) Pilot an expanded use of emerging nutrient monitoring techniques, including derivation of the TIC (Trophic Index Criterion), within a complex urban and effluent dominated watershed.

Issues

Total Maximum Daily Load (TMDL)
Information collected as part of this survey will support TMDL development for the study area. The objectives of the TMDL process are to estimate pollutant loads from the various sources within the basin, define or characterize allowable loads to support the various beneficial uses, and to allocate pollutant loads among different pollutant sources through appropriate controls (e.g., NPDES permitting, storm water management, 319 proposals, NPS controls or other abatement strategies).

The components of the TMDL process supported by this survey are primarily the identification of impaired waters, verification (and redesignation if necessary) of beneficial use(s), collection of ambient information that will factor into the wasteload allocation, and ascribing causes and sources of use impairment. These data are necessary precursors to the development of effective control or abatement strategies.

Aquatic Life Use Designations
Presently, designated aquatic life uses for 12 of the 27 streams contained within the 2014 study area are verified or otherwise affirmed, based upon the results of previous integrated biosurveys (Ohio EPA 1993 and 1999) and subsequent rulemakings. The remaining 15 waterbodies are classified as either unverified (identified in the WQS, but have not been subjected to a use attainability analysis) or not listed (absent from WQS). Ohio EPA is obligated to review, evaluate, or recommend (where appropriate) beneficial uses prior to basing any permitting actions on existing, unverified designations, or wholly unclassified water bodies. A portion of the sampling effort for this survey is allocated to fulfill this obligation.

NPDES Permits
Significant, major and minor NPDES permitted facilities will be evaluated as part of this study. These include both Publically Owned Treatment Works (POTWs) and private entities. A complete list of facilities permitted under the NPDES is presented in Table 3. Ongoing expansions, improvements, and upgrades include the following facilities:

- Lakewood WWTP: Separation of combined sewers for a portion of the collection system.
- North Olmsted WWTP: Active construction in support of plant upgrade is scheduled for completion in 2015.

There exists a wealth of historical ambient monitoring data from the Rocky River basin. The proposed 2014 effort will mark the fourth state sponsored comprehensive survey of the Rocky River watershed. The first integrated biosurvey was conducted in the early 1980s (Ohio EPA 1983), and subsequent comprehensive watershed investigations were undertaken for the field years 1992 and 1997 (Ohio EPA 1993 and 1999). Over this period of time, numerous POTWs have been decommissioned, their waste streams redirected to expanded and upgraded subregional facilities within the watershed or to regional entities outside of the watershed. Furthermore, selected POTWs no longer discharge within basin; rather, treated wastewater is now directed to Lake Erie. Taken together these developments have resulted not only in

improved treatment and capacity at selected POTWs but also the removal of tens of millions of gallons of WWTP effluent from the Rocky River basin.

The overwhelming majority of sample locations in this study have been selected to comport with previous sampling efforts, with the aim of assessing trends in ambient biology and water quality through fixed station monitoring. This approach allows for the practical evaluation of various and sundry pollution abatement and stream restoration efforts implemented to date. The most significant and consequential of these would obviously include POTW upgrades/expansion and export of waste load out of the basin, but, may also include stromwater BMPs, dam removal/modifications, 319 projects, and other water quality management efforts.

Nutrients

To support the refinement of nutrient monitoring analytics, nutrient criteria development, and to provide more objective and robust characterization of the sources and effects of nutrient loads within study area, extensive nutrient monitoring is scheduled for Rocky River mainstem and its principal tributaries.

Lake Monitoring

Two public lakes contained within the Rocky River basin are scheduled for monitoring and assessment in 2014: Coe Lake (Baldwin Creek impoundment) and Wallace Lake (waterbody adjacent to lower East Branch Rocky River). Northeast District Office (NEDO) DSW staff are solely responsible for the development of a work plan, associated data collection and related field work, and final data analysis and assessment of Baldwin and Wallace Lakes.

Public Water Supplies

Per DDAGW staff, there are three PWS intakes within the Rocky River study area. These are operated and maintained by the city of Berea and include a single intake on the East Branch Rocky River at RM 5.06, downstream from Baldwin Lake spillway and two intake structures on Baldwin Creek. The Baldwin Creek locations are on Coe Lake, a small reservoir that impounds approximately 0.3 miles of lower Baldwin Creek, and at RM 0.48, on Baldwin Creek proper, immediately downstream from Coe Lake.

Other

<u>Dam Removal/modification</u>

A portion of the Rocky River sampling effort will be allocated to evaluate potential water quality improvements associated with the removal/modification of several dams within the lower East Fork Rocky River basin. Specifically, these include the removal of three lowhead dams through the lower mile of Baldwin Creek, and the lowering (semi-breach) of the dam on the East Branch Rocky River that forms Baldwin Lake.

<u>Post Spill Recovery</u>

A portion of 2014 monitoring effort is allocated to documenting recovery or possible lingering effects of a 2012 cyanide spill on the lower eight miles of the East Branch Rocky River. Characterization of this reach will be achieved through a combination of existing/historical sites

and the addition of new stations, thus increasing overall station density through the affected segment, relative to other portions of the study area.

Cleveland Hopkins International Airport

There are several issues/developments pertaining to Cleveland Hopkins International Airport (CHIA) that warrant brief discussion. The first of these includes the culverting of an approximately one mile reach of Abrams Creek, between RMs 1.9 and 0.9, to accommodate runway expansion. As discussed in Ohio EPA (1999), this action was recognized as a likely contingency. Stations allocated to monitor lower Abrams Creek will also serve to evaluates the effects (if any) of enclosure. Ohio EPA (1999) identified ammonia toxicity as a primary stressor through the reach of lower Abrams Creek running adjacent to CHIA. Originating from the use of urea as a deicing agent, ammonia entered Abrams Creek in the form of runoff via multiple storm water outfalls, and resulted, at times, in concentrations an order of magnitude greater than the ambient acute criterion. As ammonia toxicity was identified as a significant contributor to the depauperate aquatic communities in 1997, the use of urea was discontinued by CHIA in 1998. Similarly, the use ethylene glycol (another deicer) was phased out in 2002 due to both toxicity and runoff bearing a high oxygen demand and was replaced with propylene glycol. Subsequent to the findings from the 1997 survey (Ohio EPA 1999), CHIA has installed a deicing pad that captures and stores runoff from deicing operations, so improved water quality and ambient biology are anticipated. Presently, CHIA has retained the services of an environmental consulting firm to investigate the possible off-site effects of propylene glycol upon lower Abrams Creek. There are anecdotal reports that appear to associate algal blooms with this agent; however, it is doubtful that propylene glycol would serve to stimulate productivity, as its primary environmental effects should be limited to increased oxygen demand. Among other objectives, monitoring efforts on lower Abrams Creek will serve to evaluate instream effects of advances made by CHIA in the management of runoff from deicing operations.

NASA

Access to lower Abrams Creek is limited and will require entry through NASA property. Permission and an escort are required for the lower two sites at RMs 0.8 and 0.3, stations 501830 and T01S04, respectively. Our point of contact is Ransook Evanina [Phone: **(216) 433-5621**, E-mail: ransook.c.evanina@nasa.gov]. Prior to access and sampling she will need to know dates, time, and crew members' names and citizenship status.

Sampling Effort

Field and Laboratory Load

Summarized field and laboratory load (stations, number of samples, and parameters for analysis, etc.) can be found in Table 4. All scheduled locations and necessary stipulations are provided in Tables 5. As lake monitoring efforts within the basin are ad hoc to the primary purpose and funding sources of the Rocky River survey, the reader is directed to the Ohio EPA NEDO, DWS staff for lake monitoring study plans and templates for station placement, sampling frequency, analytes, etc.

Water Quality

Water column chemistry samples will be collected from 78 ambient stations within the study area. Water column grab samples and standard field parameters will be collected/measured five times from all locations and include nine sites added at the request of Cleveland Metroparks. The collection of water samples for bacteriological analysis is scheduled for 21 stations. Sampling frequency station density, flow regime, and other field considerations shall comport with the current Ohio EPA sampling protocol. Specifically, at least five runs per bacteria monitoring station during the recreational season, with stations placed every 5-7 miles on Large River Assessment Units (LRAU) and at least one bacteria monitoring station placed at the outlet of each HUC 12 Watershed Assessment Unit (WAU). Datasonde® deployment is requested for 29 locations. The deployment of continuous monitors should coincide with typical low summer/fall flows (i.e., approaching $Q_7 10$). The Modeling section will be responsible for deployment of the data center units. Water quality monitoring performed in support of the inland lakes program shall comport with methods, procedures and protocols specified in Ohio EPA (2012).

Nutrient Monitoring

Water column samples in support of nutrient monitoring and assessment efforts will be collected at 25 locations. DSW Modeling staffs are responsible for the collection of specific parameters supporting nutrient monitoring and assessment. Sampling protocols are found in the attached memorandum from DSW supervisors Holly Tucker and Cathy Alexander date 3/10/2014. As the Rocky River basin drains just under 300 mi^2, the non-large river sampling regime is prescribed. However, the lower approximately 1.7 miles of the Rocky mainstem is lacustrine (lake affected) and may ecologically function akin to a large river, despite a smaller drainage area. Therefore, nutrient monitoring through the lake affected portions of the lower mainstem must include BOD_5, as well as other parameters identified on the attached large river laboratory template.

Substrate and water column samples for the analysis of benthic and sestonic chlorophyll-a, dissolve phosphorus, alkalinity, and BOD_5, the latter where required, must be collected concurrently with either the Datasonde® set or retrieval or the interval between these two activities.

Sediment Chemistry

Sediment samples are to be collected from 11 locations within the study area employing methods and procedures specified in Ohio EPA (2012b). Fine grained multi-incremental sediment samples will be collected in the upper four inches of bottom material using either clean stainless steel scoops or dredges. Samples will be homogenized and split into 500 ml amber glass jars with Teflon lined lids for organic compound testing and 250 ml HPDE containers for metals testing. They will then be secured inside coolers with wet ice and delivered to the Ohio EPA Division of Environmental Services (DES) for analysis. Pollutants to be tested and their analytical methods are listed in the table of chemical/physical parameters (Table 7).

Data will primarily be used as a resource to help determine causes and sources of aquatic life impairment. More detailed follow up studies may be recommended in some instances. To determine the potential for sediment contaminants to exert adverse effects, the data will first be compared to Ohio sediment reference values and consensus based sediment quality guidelines. This constitutes a Tier I assessment as described Ohio EPA (2010). No further assessment is needed if the sediment passes the screening. If not, it's considered above levels of concern and further evaluation is needed using the Tier II process. This process estimates bioavailability using total organic carbon to normalize pollutant concentrations.

Analysis will include a full organic scan (BNAs, PCBs, TOC, and pesticides), a full metals scan (excluding mercury), and sediment particle size. Please note, due to very limited practical benefit, demonstrated over many years, analysis for sediment VOCs is not recommended for any sediment samples. Given the limited laboratory allocation, sediment and metal-organic sampling stations were chosen to evaluate areas likely to demonstrate contamination, aid in elucidating longitudinal trends in sediment contamination relative to a known source(s), characterization of sentinel sites, and to further characterize ecoregional sediment reference sites. Locations of selected sediment sampling stations are listed in Table 5. The allocation and placement of additional sediment sampling within the study area will be at the discretion of NEDO staff.

Benthic Macroinvertebrate Assessment

The condition of the macrobenthos will be evaluated at 71 locations. Artificial substrate samples (quantitative) will be deployed and retrieved by Macroinvertebrate Evaluation Group (MEG) staff at 33 stations within the study area. Qualitative benthic macroinvertebrate samples (natural substrates) will be collected at 38 stations and include four stations that will be sampled in cooperation with Cleveland Metroparks. Locations of all benthic macroinvertebrate sampling stations and type of sample required are listed in Tables 4.

Fish Community Assessment

The condition of the fish assemblages within the study area will be evaluated at 67 locations. Multiple pass fish community samples will be collected at 33 sites by Fish Evaluation Group (FEG) staff. Single pass fish community samples will be collected at 34 stations. Single pass evaluations are limited to headwaters, barring reference sites or significant permit issues. The locations of all fish sampling stations are listed in Table 5. Numbers of fish monitoring stations identified above do not include the nine sampling sites added to the study at Cleveland Metroparks request. As stated previously, certified level III Metroparks staff will undertake fish and habitat work at these locations.

Fish Tissue

In support of the consumption advisory program, fish tissue samples are to be collected from 12 of the 28 fish monitoring stations within the Rocky River study area possessing a drainage area greater than 50 mi2. As indicated in Table 5, four tissue stations are allocated to the Rocky River mainstem and five and three for the West Branch and three for the East Branch Rocky River, respectively.

Sentinel Sites

To aid in the development of a TMDL models(s), sentinel sites have been established at nine designated locations. At each sentinel site, samples are collected monthly beginning prior to the typical onset of field sampling season, and will include analysis for routine water chemistry parameters, pesticides (methods 525.2, 531.1, and 547), and stream stage. Regarding the latter, stream stage will be measure at the water line against a designated bridge piling or abutment to the nearest 100^{th} of a foot. Sampling events at sentinel sites should cover the range of stream flow from the 10^{th} to 90^{th} percentiles discharge. If conditions warrant, bacteriological sampling at all sentinel sites may be expanded beyond five runs. The locations of sentinel sites are indicated in Tables 5.

Public Water Supplies

Methodologies in support of the assessments of the PWS use designation were adopted in 2006. The 2008 reporting cycle marked the first formal PWS use evaluations and subsequent 305[b] and 303[d] listings. In addition to pesticides and nitrate indicators, methodologies have been revised for 2014 to include algae derived impairments, employing cyanotoxin indicators.

PWS use assessment requires a minimum of ten samples within a five year period, with at least two years represented. Field sampling efforts in the Rocky River study area supporting PWS evaluation will be divided between 2014 and 2015. The summer/fall sampling (2014) will include five runs, ideally collected during periods of high or otherwise elevated flows. The remaining five sampling runs will be collected in 2015. All or a portion of the 2015 sampling regime must include critical periods for each parameter/indicator of concern, as provided below.

- Atrazine

  Five sample minimum during critical period (April through June). If possible, sample during spring as part of sentinel site runs, coincidental to periods of high flow. ELISA analysis method is approved for year 1 samples.

- Nitrate

  Five sample minimum, during critical period (December through June). If possible, sample during winter/spring as part of sentinel site runs, coincidental to periods of high flow.

- Cyanotoxins

  As part of the routine lake and PWS monitoring, separate samples for each of the three possible cyanotoxins (microcystin, cylindros-permopsin, and saxitoxin) must be collected during each of the five sampling runs. At PWS intakes, lake or otherwise, Cyanotoxins samples must be sent immediately to DES for analysis, do not freeze.

If over the course of the field season either a suspected cyanobacteria or a "red" bloom is observed on any PWS source (lake or stream) or public lake with potential recreation exposure, field investigators are to contact the following DDAGW and DSW staff:

- Heather Raymond, ***(*614) 644-2911** (DDAGW-PWS)
- Laura Webb, **(330) 963-1299** (DDAGW-PWS)
- Linda Merchant-Masonbrink, **(614) 644- 2135** (DWS-Rec.)

Furthermore, if cyanobacteria are suspected, NEDO staffs are to collect source water samples in accordance with HAB protocols and ship these directly to DES. DES must be notified that pending samples are HAB response so that analysis will be given rush priority. In the case of a "red" bloom, all field staff are directed to collect a biomass sample (i.e., a simple water column grab sample from the bloom) for phytoplankton identification.

QUALITY ASSURANCE

Ohio EPA Manuals

All biological, chemical, EPA laboratory, data processing, and data analysis methods and procedures adhere to those specified in the Manual of Ohio EPA Surveillance Methods and Quality Assurance Practices (Ohio EPA 2006b), Biological Criteria for the Protection of Aquatic Life, Volumes II-III (Ohio Environmental Protection Agency 1987, 1989a, 1989b), The Qualitative Habitat Evaluation Index (QHEI); Rationale, Methods, and Application (Rankin 1989) for habitat assessment, Ohio EPA Sediment Sampling Guide and Methodologies (Ohio EPA 2001), and Ohio EPA Fish Collection Guidance Manual (Ohio EPA 2004). All methods are summarized in Table 7.

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 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 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.

Recreational use attainment will be determined using *E. coli* bacteria. *E. coli* is now the primary indicator organism for the potential presence of pathogens in surface water resulting from the presence of untreated human or animal wastes, and is the basis for recreational use water quality criteria in Rule 3745-1-07 of the Ohio Administrative Code (OAC).

Stream Habitat Evaluation

Physical habitat is evaluated using the Qualitative Habitat Evaluation Index (QHEI) developed by the Ohio EPA for streams and rivers in Ohio (Rankin 1989 and Ohio EPA 2006a). 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 from the natural habitats. Quantitative sampling will be conducted at reference sites and at sites with drainage areas in excess of 20 mi^2. Qualitative sampling will be conducted in headwater sites with drainages smaller than 20 mi^2. The artificial substrate collection provides quantitative data and consists of a composite sample of 5 modified Hester-Dendy (HD) multiple-plate samplers colonized for six weeks. At the time of the artificial substrate collection, a qualitative multi-habitat composite sample is also collected. 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, and margin). Fish will be sampled at each sampling location with pulsed DC current. Two passes will be conducted at sites larger than 20 mi^2 and at reference sites. Detailed biological sampling protocols are documented in the Ohio EPA manual Biological Criteria for the Protection of Aquatic Life, Volume III (1989).

Fish Tissue

The collection, field processing, and short-term storage of fish tissue samples shall adhere to the methods and protocol specified in the Ohio EPA (2012a).

Sediment

Fine grained multi-incremental sediment samples will be collected in the upper 4 inches of bottom material using either decontaminated stainless steel scoops or Ekman dredges. Collected sediment will be placed into appropriate containers, placed on ice (to maintain 4^oC) and shipped to the Ohio EPA lab. Sampling and decontamination protocols will follow those listed in the Ohio EPA (2001).

Surface Water

Surface water grab samples will be collected from the upper 12 inches of river water into appropriate containers. Collected water will be preserved using appropriate methods, as outlined in Parts II and III of the Manual of Ohio EPA Surveillance Methods and Quality Assurance Practices (Ohio EPA 2006b) and shipped overnight via courier to the Ohio EPA lab for analysis. Field measurements of dissolved oxygen, pH, temperature, and conductivity will be

made using YSI 556MPS meters along with all grab samples for surface water chemistry. Datasonde® continuous recorders will be placed at select locations to evaluate diurnal measurements of dissolved oxygen, pH, temperature, and conductivity.

Bacteria

Water samples will be collected into appropriate containers, cooled to 4°C, and transported and submitted to the lab for analysis within 6 hours of collection. All samples will be analyzed for *E. coli* bacteria using US EPA approved methods (STORET Parameter Code 31648).

Chlorophyll-*a*

Benthic chlorophyll-*a* samples will be collected and preserved using appropriate methods, as outlined in Appendix II of Surface Water Field Sampling Manual for water column chemistry, bacteria and flows (Ohio EPA 2013a) and delivered to the Ohio EPA Division of Environmental Services lab for analyses. Alkalinity must be requested as a routine water quality parameter at all study sites along with the routine field parameters, especially temperature and pH.

Field Quality Control Samples

Ten percent of the sediment, water, and bacteria samples will be submitted to the lab as field duplicates. One Datasonde® recorder site will have two instruments placed in the river as field duplicates. Field blanks will occur at a minimum of 5 percent of the water samples. Field instruments will be calibrated daily, using manufacturer guidelines and requirements noted in the Manual of Ohio EPA Surveillance Methods and Quality Assurance Practices (Ohio EPA 2006b). Matrix spike duplicates will be collected for organic water samples at a minimum of 5 percent.

Field Staff and Other Contacts

Ohio EPA

DSW Central Office

EAS

Charles Boucher: (614) 836-8776-Fish
Angela Dripps: (614) 839-8798-Macrobenthos
Jeff DeShon: (614) 836-8780 (manager)
Holly Tucker: (614) 836-8777 (supervisor)

TMDL

Trinka Mount: (614) 644-2146 (manager)
Angela Defenbaugh: (614) 728-2384

Modeling

Mohammad Asasi: (614) 644-2882
Curt Chipps: (614) 644-2892

Standards

Chris Skalski: (614) 644-2144 - Rules
Gary Klase: (614) 644-2865 - Fish Tissue

DSW Northeast District Office

Bill Zawiski: (330) 963-1134 (supervisor)
Jennifer Carlson: (330) 963-1228-Water Quality

NASA

Ransook Evanina (point of contact for access)
(216) 433-5621
E-mail: ransook.c.evanina@nasa.gov

Hospitals

(see attached maps)

Medina
Medina Health Center
4001 Carrick Drive
Medina, OH 44256
(330) 721-8577

Brunswick
Brunswick Medical Center
4065 Center Road
Brunswick, OH 44212
(330) 558-0150

Strongsville
SW Urgicare Center
18181 Pearl Road
Cleveland, OH 44136
(440) 816-2273

Berea
SW General Health Center
18697 Bagley Road
Cleveland, OH 44130
(440) 816-5050

West Cleveland
Fairview Hospital
18101 Lorain Avenue
Cleveland, OH 44111
(216) 476-7000

North Olmsted
St. John Medical Center
29000 Center Ridge Rd.
Cleveland, OH 44145
(440) 835-8000

Ohio DNR

District 3:
912 Portage Lakes Dr.
Akron, Ohio 44319-1599
(330) 644-3802

Wildlife Officers
Medina Co.: Eric Moore
(330) 245-3034
Summit Co.: Aron Brown
(330) 245-3042
Lorain Co.: Randy White
(330) 245-3032
Cuyahoga Co.: Jesse Janosik (330) 245 3033

Cleveland Metroparks

Admin. Office
4101 Fulton Parkway
Cleveland, Ohio 44144
(216) 635-3200

Rocky River Reservation
2400 Valley Parkway
North Olmsted, Ohio 44070
(440) 734-6660

Mike Durkalec (Park Biologist)
(440) 331-8017 (office)
(216) 701-7634 (cell)
Claire Weldon (Coordinator)
(440) 331-8018 (office)
(330) 421-6326 (cell)

County Sheriffs

Medina County
Tom Miller
555 Independence Dr.
Medina, Ohio 44256
(330) 764-3635

Lorain County
Phil R. Stamitti
9896 Murray Ridge Rd.
Elyria, Ohio 44035
(440) 329-3709

Cuyahoga County
Frank Bova
1215 w. 3rd St.
Cleveland, Ohio 44113
(216) 443-6000

Summit County
Steve Barry
53 University Ave.
Akron, Ohio 44308
(330) 643-2154

Police Departments

Cleveland (District 1)
3895 W. 130th St.
Cleveland, Ohio 44111
(216) 623-5100

North Olmsted
27243 Lorain Rd.
N. Olmsted Ohio 44070
(440)777-3535

Berea
11 Berea Commons
Berea, Ohio 44017
(440) 234-1234

Middleburg Heights
15700 Bagley Rd.
Middleburg Hts., Ohio 44130
(440) 243-1234

Strongsville
18688 Royalton Rd.
Cleveland Ohio 44136
(440) 580-3230

North Royalton
14000 Bennett Rd.
Cleveland Ohio 44133
(440) 237-8686

Medina
150 W. Reagan Pkwy.
Medina, Ohio 44256
(330) 7258-7777

Brunswick
4095 Center Rd.
Brunswick, Ohio 44212
(330)225-9111

Table 1. Waterbodies and allocated biological sampling effort for each assessment unit (HUC 12)

HUC 12	Sites	Name[a]	Drain. Area	Waterbodies[b]
041100010204	**2**	Cahoon Creek-Frontal Lake Erie	28.9 mi^2	Porter Creek Cahoon Creek
041100010203	**12**	Rocky River	25.3 mi^2	Rocky River Abrams Creek
041100010202	**15**	Baldwin Cr.-East Branch Rocky River	36.6 mi^2	Lower East Br. Rocky River (RM 17.0 - Mouth) Baldwin Creek
041100010201	**6**	Headwaters East Branch Rocky River	40.6 mi^2	Upper East Br. Rocky River (Headwaters - RM 17.0) Healey Creek
041100010108	**7**	Baker Creek-West Branch Rocky River	26.1 mi^2	Lower West Br. Rocky River (RM 6.85 - Mouth) Blodgett Creek Baker Creek
041100010107	**4**	Plum Creek (W.Br. Tributary)	17.5 mi^2	Plum Creek
041100010106	**5**	Cossett Creek-West Branch Rocky R.	41.4 mi^2	Lower-middle West Br. Rocky R. (RM 20.8 - 6.85) Cossett Creek
041100010105	**3**	City of Medina-West Branch Rocky R.	26.4 mi^2	Upper- middle West Br. Rocky R. (RM 29.7 - 20.8) Broadway Creek
041100010104	**2**	Mallet Creek	18.0 mi^2	Mallet Creek
041100010103	**3**	Headwaters West Branch Rocky River	23.0 mi^2	Upper West Br. Rocky River (RM Headwaters - 29.7) Champion Creek
041100010102	**5**	North Branch West Branch Rocky R.	25.1 mi^2	North Br. Rocky River Remsen Creek Granger Ditch
041100010101	**3**	Plum Creek (N.Br.Tributary)	12.9 mi^2	Plum Creek

a - HUC 041100010204 (Cahoon Creek-Frontal Lake Erie) is composed exclusively of small direct tributaries to Lake Erie.

b- Unless otherwise indicated, the specified HUC 12s include the entire length of listed waterbodies. Furthermore, site totals by HUC 12 do not include extralimital sampling requested by Cleveland Metropark, due to their small size (typically well under two mi^2).

Table 2. Drainage hierarchy and named tributary confluences, Rocky River basin.

Rocky River 13-001-000

- Direct Lake Erie Tributary

Abrams Creek 13-002-000

- RM 10.38, Rocky River

West Branch Rocky River 13-200-000

- Confluence with East Branch forms the Rocky River

Champion Creek 13-200-009

- RM 31.47, West Branch Rocky River

North Br. Rocky River 13-205-000

- RM 29.7, West Branch Rocky River

Plum Creek 13-206-000

- Confluence with Remsen Creek forms North Br. Rocky River

Remsen Creek 13-206-001

- Confluence with Plum Creek forms North Br. Rocky River

Granger Ditch 13-208-000

- RM 1.1, Remsen Creek

Broadway Creek (at RM 28.74) 13-200-013

- RM 28.7, West Branch Rocky River

Mallet Creek 13-204-000

- RM 20.85, West Branch Rocky River

Cossett Creek 13-203-000

- RM 19.59, West Branch Rocky River

Baker Creek 13-202-000

- RM 5.1, West Branch Rocky River

Blodgett Creek 13-200-003

- RM 4.54, West Branch Rocky River

Plum Creek 13-201-000

- RM 3.06, West Branch Rocky River

East Br. Rocky River 13-100-000

- Confluence with West Branch forms the Rocky River

Healey Creek 13-104-000

- RM 17.0, East Branch Rocky River

Baldwin Creek 13-101-000

- RM 4.94, East Branch Rocky River

Porter Creek 13-003-000

- Direct Lake Erie Tributary

Cahoon Creek 13-004-000

- Direct Lake Erie Tributary

Table 3. Major and significant minor facilities regulated under the NPDES within the Rocky River basin.

Facility	NPDES	Type[a]	Class[b]	Receiving Stream	RM[c]	County	Phone	Address
Rocky River WWTP	3PE00009	P	Major	Lake Erie	NA	Cuyahoga	440-356-5640	22303 W Lake Rd. Rocky River 44116
Westerly Adv WWTP	3PE00001	P	Major	Lake Erie	NA	Cuyahoga	216-961-2187	5800 Cleveland Memorial Shoreway NW Cleveland 44115
Cleveland Division of Water, Crown WTP	3IV00060	I	Minor	Sperry Creek (Lake Eire Tributary)	0.6	Cuyahoga	216-664-2444	955 Clague Rd. Westlake 44145
North Olmsted WWTP	3PD00016	P	Major	Rocky River	11.4	Cuyahoga	440-777-1881	23775 Mastick Rd. North Olmsted 44070
NASA Glenn Research Center	3IO00001	I	Minor	Rocky River	~10.4 - 10.2	Cuyahoga	216-433-5621	21000 Brookpark Rd. Cleveland 44135
				Abrams Creek	~0.5 -mouth			
Cleveland Hopkins International Airport	3II00179	I	Minor	Rocky River	~10.4 - 9.9	Cuyahoga	216-898-5126	19501 Five Points Rd. Cleveland 44135
				Abrams Creek	~3.2 - mouth			
Air BP - Cleveland Hopkins Airport	3IN00060	I	Minor	Rocky River	9.5	Cuyahoga	216-267-2030	5241 Secondary Rd. Cleveland 44135
Moen Inc.	3IN00241	I	Minor	Rocky River	-	Cuyahoga	440-962-2143	25300 Al Moen Dr. North Olmsted 44070
Air BP - Cleveland Hopkins Airport	3IN00060	I	Minor	Rocky River	9.5	Cuyahoga	216-267-2030	5241 Secondary Rd. Cleveland 44135
Lakewood WWTP	3PE00004	P	Major	Rocky River	1.77	Cuyahoga	216-529-5690	Metropoleton Park Dr Lakewood 44107
Town & Country Co-op Inc.	3IG00087	I	Minor	West Br. Tributary (at RM 31.4)	~5.0-5.2	Medina	419-281-2153	901 W Smith Rd. Medina 44256
RPM Intl Inc.	3PR00395	P	Minor	West Br. Tributary (at RM 24.5/1.1)	24.5/1.0	Medina	330-273-5090	2628 Pearl Rd. Medina 44258
Republic Powdered Metals Inc.	3IN00255	I	Minor	West Br. Tributary (at RM 24.5/1.1)	24.5/1.0	Medina	330-220-7068	2628 Pearl Rd. Medina 44256
Medina Co. SD No. 500 Liverpool WWTP	3PK00004	P	Major	West Br. Tributary (at RM 14.8/0.3)	14.8/0.2	Medina	330-723-9585	89 Columbia Rd. Valley City 44280
Columbia Hills Country Club	3PR00277	P	Minor	West Br. Rocky River	10.9	Lorain	440-236-5051	State Rte 252 Columbia Station 44082
Sundaes in the Park WWTP	3PR00339	P	Minor	West Br. Rocky River	~9.6-9.7	Lorain	440-458-5121	25145 Royalton Rd. Columbia Station 44028
Columbia School	3PT00087	P	Minor	West Br. Rocky River	~9.6-9.7	Lorain	440-236-5009	25796 Royalton Rd. Columbia Station 44028
Cuyahoga Landmark Inc.	3IN00104	I	Minor	West Br. Tributary (at RM 4.9)	4.9/3.9	Cuyahoga	440-238-3900	12966 Prospect Rd. Strongsville 44136
Columbia Park Water System MHP	3PV00013	P	Minor	West Br. Tributary (at RM 1.78/.0.4)	1.78/0.3	Cuyahoga	585-586-2828	7100 Columbia Rd. Olmsted Falls 44138

Facility	NPDES	Type[a]	Class[b]	Receiving Stream	RM[c]	County	Phone	Address
Plum Creek WWTP	3PG00052	P	Minor	Plum Creek (West Br. Tributary)	6.78	Lorain	440-329-5584	Eddie Ln. Columbia 44028
Columbia Gas Transmission Corp.	3IN00301	I	Minor	Mallet Creek Tributary (at RM 0.1)	0.1/1.5	Medina	419-521-2871	2834 Stiegler Rd. Medina 44256
Highland High School	3PT00111	P	Minor	Granger Ditch	1.6	Medina	330-239-1901	3880 Ridge Rd. Medina 44256
Medina County Sewer District No 11	3PG00043	P	Minor	Granger Ditch Tributary (at RM 1.0)	1.0/3.1	Medina	330-723-9589	2404 Weymouth Rd. Hinckley Twp. 44233
St Bernard Golf Course	3PR00293	P	Minor	East Br. Tributary (at RM 29.3)	29.3/0.1	Summit	330-659-3451	5364 W Streetsboro Rd. West Richfield 44286
Camp Hilaka & Crowell WWTP	3PX00000	P	Minor	East Br. Tributary (at RM 29.3)	29.3/0.2	Summit	216-481-1313	3771 Oviatt Rd. Richfield 44286
Medina Co. SD No 9 WWTP	3PG00042	P	Minor	East Br. Tributary (at RM 22.5/1.0)	22.5/0.1	Medina	330-723-9585	1479 David Dr. Hinckley 44223
Hinckley Elem School	3PT00114	P	Minor	East Br. Tributary (at RM 22.5)	22.5/2.5	Medina	330-239-1901	1586 Center Rd. Hinckley 44233
Fosters Tavern of Hinckley	3PR00489	P	Minor	East Br. Tributary (at RM 22.5)	22.5/2.4	Medina	330-278-2106	1382 Ridge Rd. Hinckley 44233
Medina Co. SD 300 Hinckley WWTP	3PK00003	P	Major	East Br. Rocky River	18.28	Medina	330-723-9582	85 Ridge Rd. Hinckley 44233
North Royalton WWTP A	3PD00030	P	Major	East Br. Tributary (at RM 12.9)	12.9/0.5	Cuyahoga	440-237-5010	11675 Royalton Rd. North Royalton 44133
Strongsville B WWTP	3PB00047	P	Minor	East Br. Tributary (at RM 11.1/0.39)	11.1/0.1	Cuyahoga	440-243-9840	14600 Mill Hollow Rd. Strongsville 44136
Strongsville C WWTP	3PB00048	P	Minor	Baldwin Creek (East Br. Tributary)	2.9	Cuyahoga	440-243-9840	17449 Sprague Rd. Strongsville 44136
North Royalton WWTP B	3PC00018	P	Minor	Baldwin Cr. Tributary (at RM 7.0)	7.3/0.2	Cuyahoga	440-237-5010	11355 Sprague Rd. North Royalton 44133

a - Publicly Owned Treatment Works (POTW)=P and Private Industrial Entity=I

b - Entity classified by conduit flow: < 1 MGD=Minor and $\geq$ 1 MGD=Major.

c -Where two RMs are indicated, the first represents the confluence of the unnamed tributary with its major receiving stream. The proceeding RM demarks the entity's point of discharge (001) on the receiving stream.

Table 4. Ohio EPA laboratory and field sampling load for the 2014 Rocky River survey. Total number of water column analytes does not include field parameters.

Sample Type	No. of Lab Parameters	No. Sites	Passes	Total Samples/Parameters
Conventional Water Quality (total)	35	78	5-3	390/13,825
Pathogen (*E. coli***)**[a]	1	21	5+	105+
Nutrients[b]	4	25	1	100
Water Column Organics				-/-
BNA, Pesticides (including chlordane) and PCBs	–	-	-	-/-
Datasonde®	–	29	1	NA
Sediment	–	11	1	-/-
Sediment Metals**	10	11	1	-/80
Sediment Organic	(Full Scan)#	11	1	-/Full Scan
Sediment Particle Size	NA	11	1	-/-
Sentinel Sites	37	9	10	90/3330
PWS (Atrazine, Nitrates, Cyanotoxins)	-	3	5	8/-
Fish Tissue				
Metals, including Hg	(FT Suite)	12	1	-/-
Organics, including chlordane	(Full Scan)	12	1	-/Full Scan
Fish Stations (total)	–	67	1-2	100
2x	–	33	2	66
1x	–	34	1	34
Macrobenthos (total)†	–	71	NA	46 (HDs and Equivalents)
Quantitative (Hester-Dendy)	–	33	NA	33
Qualitative (Natural Substrates)	–	38	NA	38

a - Bacteriological measures will include a minimum of five *E. coli* runs for all stations.

b - Samples must be concurrent with either the set or retrieval of the Datasonde®, continuous monitor.

** - Ohio EPA sediment samples will be analyzed for the following metals: Al, As, Cd, Cr, Cu, Pb, Fe, Mn, Ni, and Zn.

- Full Scan includes BNAs, PCBs, Pesticides, and TOC.

† - The ratio of HD Equivalents and HD is 3:1.

Table 5. Rocky River basin sampling stations, 2014.

River STORET	River Mile	Area (mile^2)	Sample Type	Location	Lat. Long.	USGS 7.5'Quad.	Map No.[b]
Rocky River 13-001-000 WWH+							
T01W19	11.6	267.0	(F,M,C,S,B,T,D,N)[SS]	Ust. North Olmsted WWTP at ford	41.40760 -81.88240	North Olmsted	1
501770	11.1	268.0	(F,M,C)	Adj. Park Blvd. dst. North Olmsted WWTP	41.41330 -81.87720	North Olmsted	2
501780	9.9	279.0	(F,M,C,S,D,N)	Brook Park Rd./SR 17, dst. NASA and Abrams Creek	41.41890 -81.85640	Lakewood	3
T01W13	9.0	281.0	(F,M,C)	Fairview Park, Near S. Mastick Picnic Area	41.42990 -81.85110	Lakewood	4
T01W12	7.6	282.0	(F,M,C,B,T)	Old ford near Mastick Golf Course	41.44230 -81.83940	Lakewood	5
T01W09	5.8	289.0	(F,M,C)	Cleveland, adj. parkway, dst. SR 10	41.46010 -81.82220	Lakewood	6
501790	3.0	291.0	(F,M,C,S,D,N)	Lakewood at Park, Valley Parkway	41.46940 -81.83170	Lakewood	7
T01W03	1.8	292.0	(F,M,C,B,T)	Ust. Lakewood WWTP	41.47880 -81.82160	Lakewood	8
T01P02	1.4	293.0	(C,D,N)	***Lacustrine - Lake Affected*** Dst. Lakewood WWTP, at Metropark Dr.	41.47830 -81.82860	Lakewood	9
T01K02	0.7	293.0	(C,S,B,T)	***Lacustrine - Lake Affected*** Lakewood, at Detroit Rd.	41.47970 -81.83330	Lakewood	10
Abrams Creek 13-002-000 WWH+							
T01W76	3.2	6.80	(F,M,C,D,N)[a]	RR bridge, dst. Eastland Rd. B-42, dst. Middleburg and Brook Park WWTPs and FOSECO Inc.	41.39310 -81.84580	Lakewood	11
T01P13	1.9	8.90	(F,M,C)[a]	North of Berea, at Grayton Rd.	41.39470 -81.86690	Lakewood	12
501830	0.8	9.70	(F,M,C)[a]	Near Berea, at Cedar Point Rd.	41.40780 -81.86940	Lakewood	13
T01S04	0.3	10.10	(F,M,C,S,B,D,N)[a]	At Brook Park, at West Area Rd.	41.41500 -81.86920	Lakewood	14
Rocky River Trib. at RM 6.9 13-001-002							
302626	0.1	0.77	(C)[CMP]	Little Met: River right, adj. Little Met Golf Course	41.44313 -81.82822	Lakewood	15
West Br. Rocky River 13-200-000 WWH+							
501940	33.5	9.10	(F,M,C,S)[a]	Near Medina, SR 162	41.10640 -81.80610	Seville	16
301181	32.3	11.40	(F,M,C,B,D,N)[a,SS]	At Ridgewood Rd., ust. Town & Country Co-op Inc. (via Tributary), dst. Landfill	41.121378 -81.810882	Seville	17
501820	27.3	69.00	(F,M,C,T)	Dst. Medina, at Fenn Rd., dst. North Branch Rocky River	41.17080 -81.85220	Medina	18
501900	21.7	85.00	(F,M,C,B,D,N,T)[SS]	Near Abbeyville, at Neff Rd., dst. RPM Intl Inc. and Republic Powdered Metals Inc. (via Trib. At RM 24.5)	41.20810 -81.89530	Mallet Creek	19
501890	16.4	122.00	(F,M,C,T)	Grafton Rd., dst. Columbia Gas Transmission Corp. (via Mallet Creek)	41.260108 -81.929712	West View	20

Table 5. Rocky River basin sampling stations, 2014.

River STORET	River Mile	Area (mile^2)	Sample Type	Location	Lat. Long.	USGS 7.5'Quad.	Map No.[b]
West Br. Rocky River 13-200-000 WWH+							
T01S11	13.3	134.00	(F,M,C,S,B,D,N)	Adj. West River Rd., dst. Medina Co. No. 500 WWTP, via W.Br. Trib. at RM 14.8 (Note: Access through private dirt lane off W. River Rd.)	41.28420 -81.93250	West View	21
501880	11.7	138.00	(F,M,C)	Columbia Hills Country Club, at foot bridge	41.29500 -81.917500	West View	22
T01W94	7.4	145.00	(F,M,C,B,T,D,N)	North of Columbia Hills, adj. West River Rd., dst. from the following WWTPs: Columbia Hill Country Club, Sundaes in the Park, and Columbia School	41.33100 -81.91820	West View	23
T01W90	4.9	153.00	(F,M,C)	At West View, dst. Baker Creek, dst Cuyahoga Landmark Inc., via Trib. at RM 4.9. (Note: Access through Subdivision off SR 252 to a public park River Left)	41.35480 -81.89820	West View	24
501860	3.5	161.00	(F,M,C,D)	At Olmstead Falls, at Bagley Rd., dst. Plum Cr. WWTP (via Plum Cr.)	41.37280 -81.89860	West View	25
T01S09	2.1	181.00	(F,M,C)	North of Olmstead Falls, adj. Lewis Rd.	41.38920 -81.89310	West View	26
501850	0.4	190.00	(F,M,C,S,B,T,D,N)[SS]	Near North Olmstead, at Lewis Rd., dst. Columbia Park Water System MHP (via Trib. at RM 1.78)	41.40440 -81.89310	West View	27
Champion Creek 13-200-009 Unlisted							
T01A55	0.1	7.80	(F,M,C)[a]	East of Medina, at Mouth, South of Smith Rd.	41.129408 -81.817467	Medina	28
Broadway Creek (at RM 28.74) 13-200-013 Unlisted							
302574	0.3	2.00	(F,M,C)[a]	Foot Rd.	41.156462 -81.842868	Median	29
North Br. Rocky River 13-205-000 WWH+							
T01S15	5.5	28.10	(F,M,C)	East of Weymouth, at Remsen Rd.	41.18610 -81.78390	Medina	30
501960	0.4	36.30	(F,M,C,B,D)[SS]	Near Medina, at Granger Rd.	41.15250 -81.78390	Medina	31
Plum Creek 13-206-000 WWH+ (North Br. Tributary)							
501840	3.0	8.80	(F,M,C)[a]	South of Sleepy Hollow Lake, at Carpenter Rd.	41.21690 -81.80940	Medina	32
T01K14	2.5	10.40	(F,M,C)[a]	South-east of Brunswick, adj. Carpenter Rd., ust old Medina 500 WWTP	41.21060 -81.80670	Medina	33
302573	0.5	12.1	(F,M,C,B,D)[a]	SR 3/I 71, near mouth	41.193713 -81.790982	Medina	34
Remsen Creek 13-206-001 WWH*							
302575	0.6	14.4	(F,M,C)[a]	Remsen Rd.	41.188017 -81.776745	Medina	35
Granger Ditch 13-208-000 WWH*							
302577	1.7	7.5	(F,M,C)[a]	SR 94, ust. Medina Co No. 11 WWTP (via Granger Ditch Trib. at RM 2.1)	41.172309 -81.74169	Medina	36

Table 5. Rocky River basin sampling stations, 2014.

River STORET	River Mile	Area (mile^2)	Sample Type	Location	Lat. Long.	USGS 7.5'Quad.	Map No.[b]
Granger Ditch 13-208-000 WWH*							
302576	0.2	13.3	(F,M,C)[a]	Stoney Hill Rd., dst. Highland HS WWTP, dst. Medina Co No. 11 WWTP (via Granger Ditch Trib. at RM 2.1)	41.183328 -81.765397	Medina	37
Mallet Creek 13-204-000 WWH+							
T01K13	3.5	13.70	(F,M,C)[a]	At Lester, at SR 57	41.180815 -81.938345	Mallet	38
T01S14	0.7	16.10	(F,M,C,B,D)[a,SS]	North-west of Abbeyville, at Neff Rd.	41.207684 -81.914259	Mallet	39
Cossett Creek 13-203-000 WWH+							
T01K12	0.2	4.10	(F,M,C)[a]	South of Valley City, at SR 252	41.227233 -81.921145	Mallet Creek	40
Baker Creek 13-202-000 WWW+							
T01S13	0.3	5.80	(F,M,C)[a]	West View, at Sprague Rd.	41.35080 -81.90030	West View	41
Blodgett Creek 13-200-003 Unlisted							
T01A17	1.6	3.10	(F,M,C)[a]	Ust. (old) Strongsville A WWTP	41.34870 -81.87410	West View	42
T01A23	0.2	4.10	(F,M,C)[a]	West View, at Lindbergh Rd., dst old Strongsville A WWTP	41.35720 -81.89290	West View	43
Plum Creek 13-201-000 (West Br. Tributary) WWH+							
T01K11	8.5	7.60	(F,M,C)[a]	South of Columbia Station, at Akins Rd.	41.289507 -81.952024	West View	44
T01A33	4.9	14.30	(F,M,C,D,N)[a]	North of Columbia Station, at Jaquay Rd., ust Ohio Utility Co. WWTP	41.33490 -81.93380	West View	45
T01P23	2.5	16.20	(F,M,C)[a]	South of Olmstead Falls, at Ohio Turnpike, dst. Ohio Utility Co. WWTP (Note: Access River Right, ust. US 80 at public swimming pool)	41.35940 -81.91500	West View	46
302622	0.4	17.0	(C,B,D,N)[SS]	WQ Modeling Sentinel Site: Mill St.	41.374232 -81.90380	West View	47
501950	0.2	17.60	(F,M)[a]	North Olmstead, at Columbia Rd., dst. Old-Brentwood WWTP	41.37780 -81.90110	North Olmsted	48
East Br. Rocky River 13-100-000 WWH+							
302627	30.8	7.34	(M,C)[CMP, a]	Rising Valley: Adj. subdivision off of Oviatt Rd., just west of county line.	41.25276 -81.69393	Broadview Heights	49
T01A52	29.4	8.90	(F,M,C,S)[a]	Dst. SR 303, ust. Camp Hilaka, St. Bernard Golf Course and Crowell WWTPs (all via Trib. at RM 29.3)	41.238288 -81.687480	West Richfield	50
501660	26.6	14.30	(F,M,C,B,D,N)[a]	At Harter Rd., ust. Medina Co. SD No 9 WWTP (via Trib. at RM 22.5)	41.2100583 -81.6847444	West Richfield	51
T01S07	21.9	25.40	(F,M,C,D,N)	East of Hinckley, at SR 303, dst. Medina Co. SD No. 9, Hinckley Elem. School, and Fosters Tavern of Hinckley WWTPs (via Trib. at RM 22.5) Note: dst. Hinckley Lake/Reservoir	41.24080 -81.72780	West Richfield	52
T01W41	18.3	31.60	(F,M,C,D,N)	Ust. Medina 300 WWTP [Note: Access at WWTP, D. Brandon (330) 278-7856)]	41.27320 -81.74110	Broadview Heights	53

Table 5. Rocky River basin sampling stations, 2014.

River STORET	River Mile	Area (mile^2)	Sample Type	Location	Lat. Long.	USGS 7.5'Quad.	Map No.[b]
East Br. Rocky River 13-100-000 WWH+							
T01W38	17.5	31.80	(F,M,C,B,D,N)[SS]	At private drive off SR 3, dst. Medina 300 WWTP [Access, Carol Milicic (440) 570-0822]	41.27970 -81.74080	Broadview Heights	54
501690	15.2	40.00	(F,M,C,D,N)	Near North Royalton, at Bennett Rd., ust. North Royalton WWTP A (via Trib. at RM 12.9)	41.29530 -81.75940	Berea	55
T01W33	11.6	53.00	(F,M,C,T,D,N)	Strongsville, at SR 82/Royalton Rd., ust. Strongsville B WWTP (via Trib. at RM 11.1), dst. North Royalton WWTP A (via Trib. at RM 12.9)	41.31320 -81.79720	Berea	56
T01W30	10.0	57.00	(F,M,C,S,D,N)	At Mill Stream Run bridge, dst. I-71, dst. Strongsville B WWTP (via Trib. at RM 11.1)	41.32440 -81.81680	Berea	57
T01W29	9.4	59.00	(F,M,C)	Strongsville, between SR 42 and I-71	41.328085 -81.827699	Berea	58
T01W27	8.2	60.00	(F,M,C,B)	Near Strongsville, adj. parkway, dst. SR 42/ dst. low-head dam at ~RM 8.5 (Note: cyanide fish kill, 2012 from ~RM 9.0 to mouth)	41.33660 -81.83570	Berea	59
T01W25	7.4	61.00	(F,M,C,D,N)	Eastland Rd./US 80	41.343026 -81.836913	Berea	60
501720	6.4	63.00	(F,M,C,T)	Berea, well ust. Baldwin Lake	41.351432 -81.845816	Berea	61
T01K04	5.1	64.00	(F,M,C)	At Berea, dst. Baldwin Lake (dam modification location)	41.36560 -81.85640	Berea	62
302628	5.06	64.0	PSW Analysis	Berea PWS Intake, dst. Baldwin Lake	41.365852 -81.856691	Berea	63
T01P04	3.1	75.60	(F,M,C)	Dst. (old) Berea WWTP, at ford	41.38610 -81.86720	Lakewood	64
501740	1.3	76.50	(F,M,C,S,B,T,D,N)[SS]	At Spafford Rd. ford	41.39610 -81.88330	North Olmsted	65
East Branch Trib. at RM 25.4 13-100-017 Unlisted							
302629	0.1	2.9	(M,C)[CMP, a]	Judges East: At mouth, ~0.4 miles downstream Ledge Rd.	41.20911 -81.69693	West Richfield	66
East Branch Trib. at RM 24.2 13-100-018							
302630	0.1	0.34	(C)[CMP]	Mirror Valley: River Right, at Picnic Area Lane off of State Rd.	41.218844 -81.706145	West Richfield	67
Healey Creek 13-104-000 WWH+							
501630	0.7	4.90	(F,M,C)[a]	Near North Royalton, at Boston Rd.	41.27500 -81.75830	Broadview Heights	68
East Branch Trib. at RM 12.9 13-100-003 Unlisted							
302631	0.2	2.98	(M,C)[CMP, a]	Royalton: River Right, dst. Edgerton Rd., ust. Brecksville-Royalton Parkway (Valley Parkway)	41.308456 -81.780219	Berea	69
East Branch Trib. at RM 12.1 13-100-013 Unlisted							
302632	0.1	1.71	(M,C)[CMP, a]	Royalview: River Left, Royalview Rd., near mouth	41.31037 -81.79597	Berea	70

Table 5. Rocky River basin sampling stations, 2014.

River STORET	River Mile	Area (mile^2)	Sample Type	Location	Lat. Long.	USGS 7.5'Quad.	Map No.[b]
East Branch Trib. at RM 11.1 13-100-012							
302648	0.1	1.39	(C)^{CMP}	Camp Cheerful: River Left, dst. SR 82, opposite Camp Cheerful	41.31460 -81.80293	Berea	71
East Branch Trib. at RM 10.6 13-100-020							
302649	0.2	0.47	(C)^{CMP}	Visconsi South: River Left, ~ 0.1 miles dst. I-71. Access lane/bridge off Valley Parkway to Strongsville WLA, North-west of lake.	41.31966 -81.81091	Berea	72
East Branch Trib. at RM 10.2 13-100-019							
302650	0.3	0.16	(C)^{CMP}	Visconsi North: River Left, ~0.05 miles dst. I-71	41.32113 -81.81284	Berea	73
Baldwin Creek 13-101-000 WWH+							
T01W53	3.5	6.60	(F,M,C,D,N)[a]	Middleburg Heights, at Lucerne Rd., ust. Strongsville C WWTP (Note: N. Royalton B WWTP well ust. at RM 7.3)	41.35690 -81.81610	Berea	74
501650	2.6	8.30	(F,M,C)[a]	Near Middleburg Heights, at Big Creek Parkway, dst. Strongsville C WWTP	41.34940 -81.82580	Berea	75
T01W59	1.1	9.60	(F,M,C,D,N)[a]	Near Berea, at Eastland Rd.	41.35750 -81.84390	Berea	76
204492	0.5	10.0	PSW Analysis	Berea PWS intake, Coe Lake (impoundment on Baldwin Creek)	41.361183 -81.851331	Berea	77
302651	0.48	10.0	PSW Analysis	Berea PWS Intake, immediately dst. Coe Lake	41.360960 -81.851965	Berea	78
T01G01	0.2	10.00	(F,M,C,B,D,N)[a]	Berea, at Rocky River Dr., dst. Coe Lake (dam removal location)	41.36110 -81.85370	Berea	79
301231	0.1	10.0	(F,M,C)[a]	Berea, at mouth (dam removal location)	41.366048 -81.85469	Berea	80
Porter Creek 13-003-000 (Direct Lake Erie Tributary) WWH*							
T01P20	0.1	8.30	(F,M,C,B)[a]	Bay Village, at US 6	41.48940 -81.93190	Lake View	81
Cahoon Creek 13-004-000 (Direct Lake Erie Tributary) WWH*							
T01P21	0.1	5.40	(F,M,C,B)[a]	Bay Village, at US 6	41.48890 -81.92560	Lake View	82

a - Stations draining an area less than 20 mi^2: 1X fish and qualitative Macrobenthos sampling. Unless otherwise indicated all other stations draining an area greater than 20 mi^2, and thus 2X Fish and quantitative Macrobenthos sampling is prescribed.

b - Corresponds to station numbers in Figure 2.

SS - WQ Modeling Sentinel Site.

CMP - Cleveland Metroparks: Sites so identified are included at the request of CMP and will be sampled by the combined effort of Cleveland Metropoarks and Ohio EPA, DSW staff. All supporting fish work will be the responsibility of Level III Metropark staff. Water column chemistry and macrobenthos (where indicated) sampling will be the responsibility of DSW DO and CO-EAS staff, respectively.

F - Fish Community

M - Macrobenthos

C - Water Column Chemistry

N - Nutrients: sampling in support of nutrient monitoring and assessment.

D - Datasonde®, data logger.

B - Bacteria sampling in support of recreational use assessment.

S - Sediment: Full Organic Scan [Pesticides (including Chlordane), BNAs, TOC and PCBs], Metals Scan (excluding Hg), Percent Solids.

T - Fish tissue station

PWS - Public Water Supply monitoring

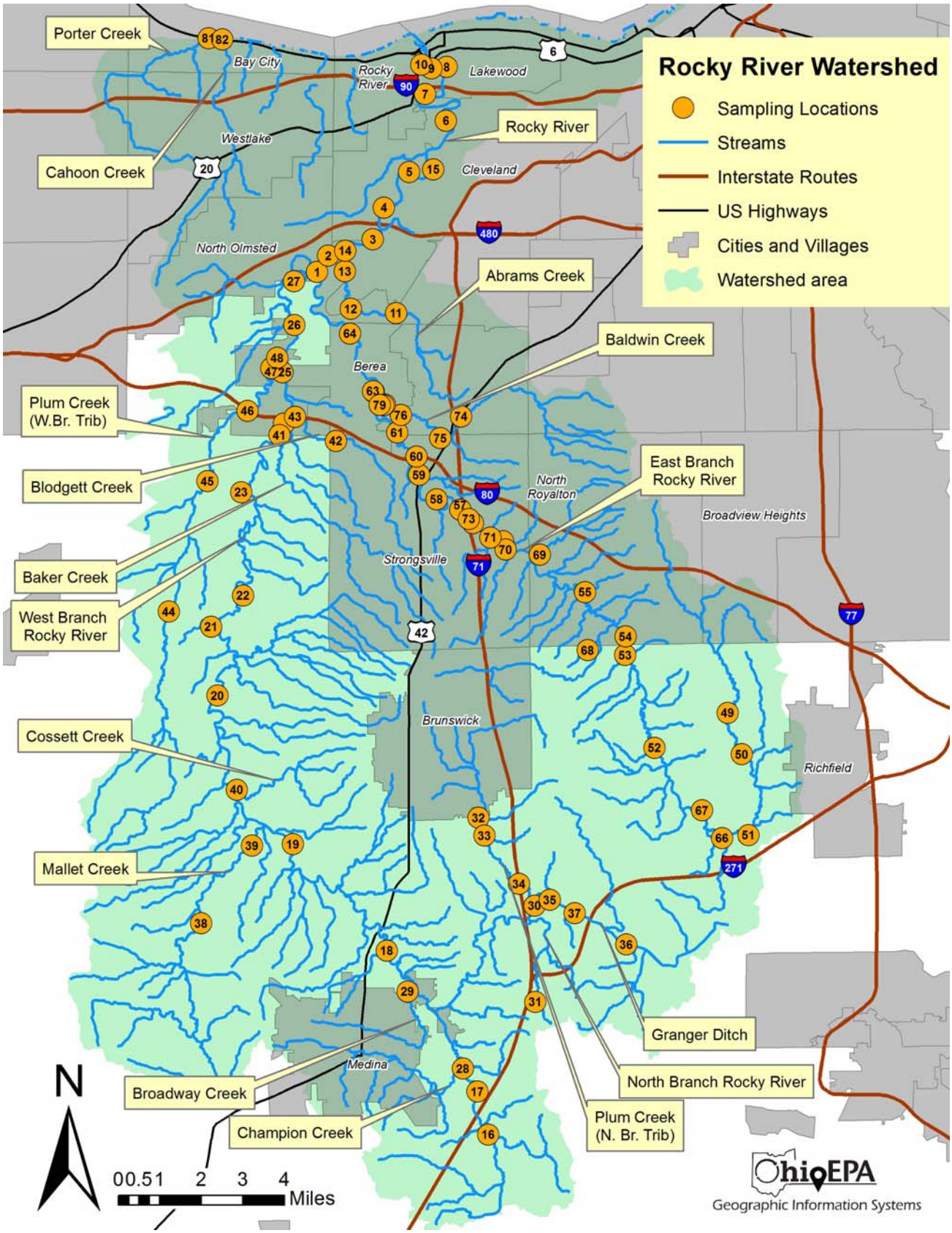


Figure 2. Distribution of the 82 proposed monitoring stations within the 2014 Rocky River study area.

Table 6. List of chemical/physical water quality parameters to be analyzed/measured in surface water, sediment, and fish tissue samples from the Rocky River basin sampling locations. Not all sites will be samples for all parameters. Water samples will be collected 5 times (organics once), sediment once. Bacteria samples will be collected 5 times during the recreation season (5-10 times at sentinel sites). Select sampling locations will be monitored for dissolved oxygen, pH, temperature, and conductivity using Datasonde© continuous recorders.

Parameters	Test Method	Water	Sediment	Fish Tissue
cBOD, 5 day	SM 5210B	X		
SOLIDS, DISSOLVED (TDS)	USEPA 160.1	X		
SOLIDS, SUSPENDED (TSS)	USEPA 160.2	X		
AMMONIA	USEPA 350.1	X		
Alkalinity	USEPA 305.1	X		
TKN	USEPA 351.2	X		
NITRATE-NITRITE	USEPA 353.1	X		
Nitrite	USEPA 354.1	X		
Chloride	USEPA 325.1	X		
COD	USEPA 410.4	X		
TOTAL PHOSPHORUS	USEPA 365.4	X		
DISSOLVED PHOSPHORUS	USEPA 365.4	X		
GLYPHOSATE	USEPA 547	X		
ICP 1 (Al,Ba,Ca, Fe, Mg, Mn, Na, Ni, K, Sr, Zn, Hardness)	USEPA 200.7	X		
Water Column chlorophyll-a	USEPA 455	X		
ICP 3 (Al,Ba,Ca,Fe,Mg,Mn,Na,K,Sr,Zn)	USEPA 200.7		X	
ICPMS 1 (As,Cd,Cr,Cu,Ni,Pb,Se)	USEPA 200.9, SM 3113B	X		X
ICPMS 2 (As,Cd,Cr,Cu,Ni,Pb,Se)	USEPA 200.9, SM 3113B		X	
MERCURY, TOTAL	USEPA 245.1,7470A,7471A	X	X	X (245.1)
pH – grab	YSI 556MPS meter	X field		
Conductivity – grab	YSI 556MPS meter/ USEPA 120.1	X field/lab		
Dissolved Oxygen – grab	YSI 556MPS meter	X field		
Temperature – grab	YSI 556MPS meter	X field		
VOCs	USEPA 624/USEPA 8260	X	X	
Herbicides	USEPA 525.2	X		
SVOCs (BNAS)	USEPA 625/ USEPA 8270C	X	X	
Pesticides/PCBs/ Chlordane	USEPA 608/ USEPA 8081A, 8082	X (PCBs only)	X	X (OEPA 590.1)
E. coli	USEPA 1103.1/ 640.1	X		
Percent Solids	SM 2540G		X	X

Table 7. Recommended sediment parameters, and required methods and reporting limits		
Parameter	**Method**	**Reporting Limit**
Standard Suite		
% solids	SM 2540G	0%
total organic carbon	OEPA 335.2	0.1%
total phosphorus	USEPA 365.4	50 mg/kg
zinc	USEPA 200.7	8 mg/kg
copper, nickel, lead	USEPA 200.8	0.8 mg/kg
cadmium, silver	USEPA 200.8	0.08 mg/kg
mercury	USEPA 7471A	0.02 mg/kg
semi volatile organics	USEPA 8270	0.4-2.0 mg/kg

INTEROFFICE MEMO

To: DWS WQ Staff (through Supervisors), MAS and EAS

From: Holly Tucker and Cathy Alexander

Date: March 10, 2014

Subject: Chlorophyll *a*, BOD5, Sonde site selection (revision #3)

The incorporation of chlorophyll *a* (chl-*a*) sampling into TMDL stream surveys has become more routine with the development of the Trophic Index Criteria and related nutrient work. This memo documents the approach that should be followed when including chl-a sampling in TMDL study areas. *The following information applies to first year sampling where all sites (except effluent and mixing zones) are sampled for biology and normal chemistry.*

I. Nutrient sampling at sites with drainage area (DA) > 500 mi^2: District and Central Office staff

a. Sestonic chl-*a* should be sampled at all sites with DA >500 mi^2 every time they are visited from June to October, until EAS has enough data to complete the analysis for enrichment breakpoints in larger rivers.

b. Any time a chemistry sample is taken at a site with DA > 500 mi^2, the Large River lab template should be used.

   i. The Large River template includes BOD5, which is necessary when sampling sestonic chl-*a* at sites with DA >500 mi^2.

   ii. MAS will add CBOD20 to the Large River template when sampling these sites (Districts do not need to do this).

c. Any sites with DA >500 mi^2 selected to be nutrient sites (see III) should also be sampled by MAS for benthic chl-*a*, if possible.

II. Nutrient sampling at sites with DA < 500 mi^2

a. Both benthic and sestonic chl-*a* samples should be taken at any site with DA <500 mi^2 designated as a nutrient site, if possible.

   i. MAS staff are responsible for both benthic and sestonic chl-*a* samples at these sites, unless otherwise decided in study planning.

   ii. BOD5 is also optional at these sites, as decided upon during study planning.

b. MAS will use one of the modeling templates (which include CBOD20) when sampling at these sites.

   i. Lab templates that fall under this category include Inland Lake Tributaries, WQM Modeling Conventional and WQM Modeling Non-Metals.

III. Nutrient site selection

a. Nutrient sites are a subset of Datasonde® sites and are identified during study planning as being potentially stressed due to nutrient enrichment; these sites may include: longitudinal series bracketing WWTPs, HUC pore-points, or paired or stratified samples to document non-point enrichment.

b. These are sites where both sestonic and benthic chl-*a* are sampled and Datasonde® meters are deployed to capture dissolved oxygen swings.

c. The MAS is limited to 24 nutrient sites per survey, based on the level of effort to collect benthic samples. Typically, Datasonde® sites are limited to 30 per survey due to equipment availability.

IV. Data use

a. Data can be used to obtain TIC scores for the assessment of nutrient enrichment as a cause of impairment or for the understanding of causes/sources (e.g., ag., WWTPs, unsewered areas, etc.) but not to be presented in the TSD until we are closer to completing the rules. When the project teams are established, the EAS, MAS and district WQ supervisors will determine who will be responsible for assessing nutrient data, calculating the TIC, and writing up the conclusions and that information will be posted on the DSW intranet project page.

b. Data are also used by the MAS for the development of models such as QUAL2K and/or to understand nutrient dynamics in other models that do not explicitly include chl-*a*.

c. Data are also used by EAS (Bob Miltner) to continue refinements to the TIC and via sestonic chl-*in larger rivers* for development of the larger river nutrient criteria.

Datasonde®, BOD5 and chl-*a* Sampling Recommendations

The table below summarizes when BOD5 and Chl-*a* may be planned for sampling.

Site Type	*BOD5*	*Sestonic Chl-a*	*Benthic Chl-a[C]*	*CBOD20[E]*
Chemistry Site *(Non-nutrient)*	*Yes[A] if site > 500mi²*	*Yes[A] if site > 500 mi²*	*No[D]*	*Optional (MAS)*
Datasonde® Site *(Non-nutrient)*	*Yes[A] if site > 500 mi²*	*Yes[A] if site > 500 mi²*	*No[D]*	*Yes (MAS)*
Nutrient Site *(DA > 500 mi²)*	*Yes[A]*	*Yes[A]*	*Yes[E] (MAS)*	*Yes (MAS)*
Nutrient Site *(DA < 500 mi²)*	*Optional[B]*	*Yes[E] (MAS)*	*Yes[E] (MAS)*	*Yes (MAS)*

A - Sestonic chl-*a* should be sampled at all sites site with DA >500 mi² visited from June to October. If sestonic chl-*a* is sampled, then BOD5 should also be sampled. The Large River chemistry sampling template, which already includes BOD5, should always be used on sites site with DA >500 mi².

B - For sites with DA <500 mi², the decision to sample BOD5 should be made during the study planning process, especially for sites expected to have high sestonic chl-*a* values. Sampling for BOD5 in smaller streams is expected to be rarely needed outside the large river criteria development sites.

C - As long as physically possible to sample.

D - Benthic chl-*a* sampling may be done at a non-nutrient site at the discretion of field staff when they encounter a highly enriched stream where the data would be beneficial.

E - Benthic chl-*a* and CBOD20 data collection is the responsibility of MAS staff; for nutrient sites site with DA <500 mi², sestonic chl-*a* would also be handled by the MAS unless decided otherwise in study planning.

Ohio EPA **Division of Environmental Services**

Report for Test Scheduled SREAM_SURVEY

Modified On	**5/11/2010**	**Modified By**	**L.Friedman**
Description	**Samples submitted by DSW district offices for the stream survey program.**		
Group Name	**INORGANIC**		

Analysis/Schedule	Instrument	Replicates	Standard	Analysis
Alkalinity		1	☑	☑
Ammonia		1	☑	☑
Chloride		1	☑	☑
COD		1	☑	☑
Conductivity		1	☑	☑
ICP_1		1	☑	☑
ICPMS_1		1	☑	☑
Nitrate		1	☑	☑
Nitrite		1	☑	☑
Solids_Diss		1	☑	☑
Solids_Susp		1	☑	☑
Sulfate		1	☑	☑
TKN		1	☑	☑
TOC		1	☑	☑
TP		1	☑	☑

Ohio EPA **Division of Environmental Services**

Report for Test Scheduled LARGE RIVER

Modified On	**3/28/2014**	**Modified By**	**C. Boucher**
Description	**Samples submitted for large rivers by DSW**		
Group Name	**INORGANIC**		

Analysis/Schedule	Instrument	Replicates	Standard	Analysis
Alkalinity		1	☑	☑
Ammonia		1	☑	☑
BOD-5		1	☑	☑
CBOD-20		1	☑	☑
Chloride		1	☑	☑
COD		1	☑	☑
Conductivity		1	☑	☑
ICP_1		1	☑	☑
ICPMS_1		1	☑	☑
Nitrate		1	☑	☑
Nitrite		1	☑	☑
Solids_Diss		1	☑	☑
Solids_Susp		1	☑	☑
Sulfate		1	☑	☑
TKN		1	☑	☑
TOC		1	☑	☑
TP		1	☑	☑

Note: Per attached memorandum dated 3/2014 RE nutrient monitoring and data needs for TIC calculation, CBOD20 has been added to this replica of DES template for Large River parameters.

REFERENCES

Hughes, R. M., D. P. Larsen, and J. M. Omernik. 1986. Regional reference sites: a method for assessing stream pollution. Env. Mgmt. 10(5): 629-635.

Karr, J.R. and D.R. Dudley. 1981. Ecological perspective on water quality goals. Env. Mgmt. 5(1): 55-68.
Ohio Environmental Protection Agency. 2013a. Surface water field sampling manual for water column chemistry, bacteria and flows. Version 4.0, January 31, 2013. Div. of Surface Water, Columbus, Ohio.

Ohio Environmental Protection Agency. 2012a. Fish Tissue Collection Manual, cooperative fish issue monitoring program, Division of Surface Water. April 12, 2012. 21pp

Ohio Environmental Protection Agency. 2012b. Inland Lakes Sampling Procedure Manual. Appendix to the Manual of Ohio EPA Surveillance Methods and Quality Assurance Practices, Division of Surface Water, Inland Lakes Monitoring Section. 76pp.

Ohio Environmental Protection Agency.2008. Sediment Reference Values. Division of Emergency and Remedial Response. Pg. 3-32. April 2008.**http://www.epa.ohio.gov/portals/30/rules/RR-031.pdf**

Ohio Environmental Protection Agency. 2006a. Methods for assessing habitat in flowing waters: Using the Qualitative Habitat Evaluation Index (QHEI). Ohio EPA Tech. Bull. EAS/2006-06-1. Revised by the Midwest Biodiversity Institute for Div. of Surface Water, Ecol. Assess. Sect., Groveport, Ohio.

Ohio Environmental Protection Agency. 2006b. Ohio EPA manual of surveillance methods and quality assurance practices, updated edition. Division of Environmental Services, Columbus, Ohio.
http://www.epa.state.oh.us/dsw/documents/Field%20Manual%203-6-06%20revision.pdf

Ohio Environmental Protection Agency. 2004. State of Ohio Cooperative Fish Tissue Monitoring Program, Fish Collection Guidance Manual Final, March 2004
http://www.epa.state.oh.us/dsw/fishadvisory/FishCollectionGuidanceManual05.pdf

Ohio Environmental Protection Agency. 2001. Sediment sampling guide and methodologies, 2nd edition. Nov. 2001. Division of Surface Water, Columbus, Ohio.
http://www.epa.state.oh.us/dsw/guidance/sedman2001.pdf

Ohio Environmental Protection Agency. 1999. Biological and Water Quality Study of the Rocky River and Selected Tributaries Summit, Lorane, Medina, and Cuyahoga Counties, Ohio. Division of Surface Water, Columbus Ohio, USA. OEPA Technical Report MAS/1998-12-3. 89 pp.

Ohio Environmental Protection Agency. 1997. Draft. Biological Criteria for the Protection of Aquatic Life: Volume IV: Fish and Macroinvertebrate Indicies for Ohio's Lake Erie Nearshore Waters, Harbors, and Lacustuaries. Division of Surface Water, Ecological Assessment Unit, Ohio EPA, Columbus, Ohio, USA.

Ohio Environmental Protection Agency. 1992. Biological and Water Quality Study of the Rocky River and Selected Tributaries, Summit, Lorane, Medina, and Cuyahoga Counties, Ohio. Division of Water Quality Planning and Assessment. Columbus Ohio, USA. OEPA Technical Report EAS/1993-8-3

Ohio Environmental Protection Agency. 1987a. Biological criteria for the protection of aquatic life: Volume I. The role of biological data in water quality assessment. Division of Water Quality Monitoring and Assessment, Surface Water Section, Columbus, Ohio.
http://www.epa.state.oh.us/dsw/bioassess/BioCriteriaProtAqLife.html

Ohio Environmental Protection Agency. 1987b. Biological criteria for the protection of aquatic life: Volume II. Users manual for biological field assessment of Ohio surface waters. Division of Water Quality Monitoring and Assessment, Surface Water Section, Columbus, Ohio
http://www.epa.state.oh.us/dsw/bioassess/BioCriteriaProtAqLife.html

Ohio Environmental Protection Agency. 1989a. Addendum to biological criteria for the protection of aquatic life: Users manual for biological field assessment of Ohio surface waters. Division of Water Quality Planning and Assessment, Surface Water Section, Columbus, Ohio.
http://www.epa.state.oh.us/dsw/bioassess/BioCriteriaProtAqLife.html

Ohio Environmental Protection Agency. 1989b. Biological criteria for the protection of aquatic life: Volume III. Standardized biological field sampling and laboratory methods for assessing fish and macroinvertebrate communities. Division of Water Quality Planning and Assessment, Columbus, Ohio.
http://www.epa.state.oh.us/dsw/bioassess/BioCriteriaProtAqLife.html

Ohio Environmental Protection Agency. 1983. Amendments to the Northeast Ohio Lake Erie Drainage Basin Water Quality Managament Plan: Rocky River Basin Comprehensive Water Quality Report.

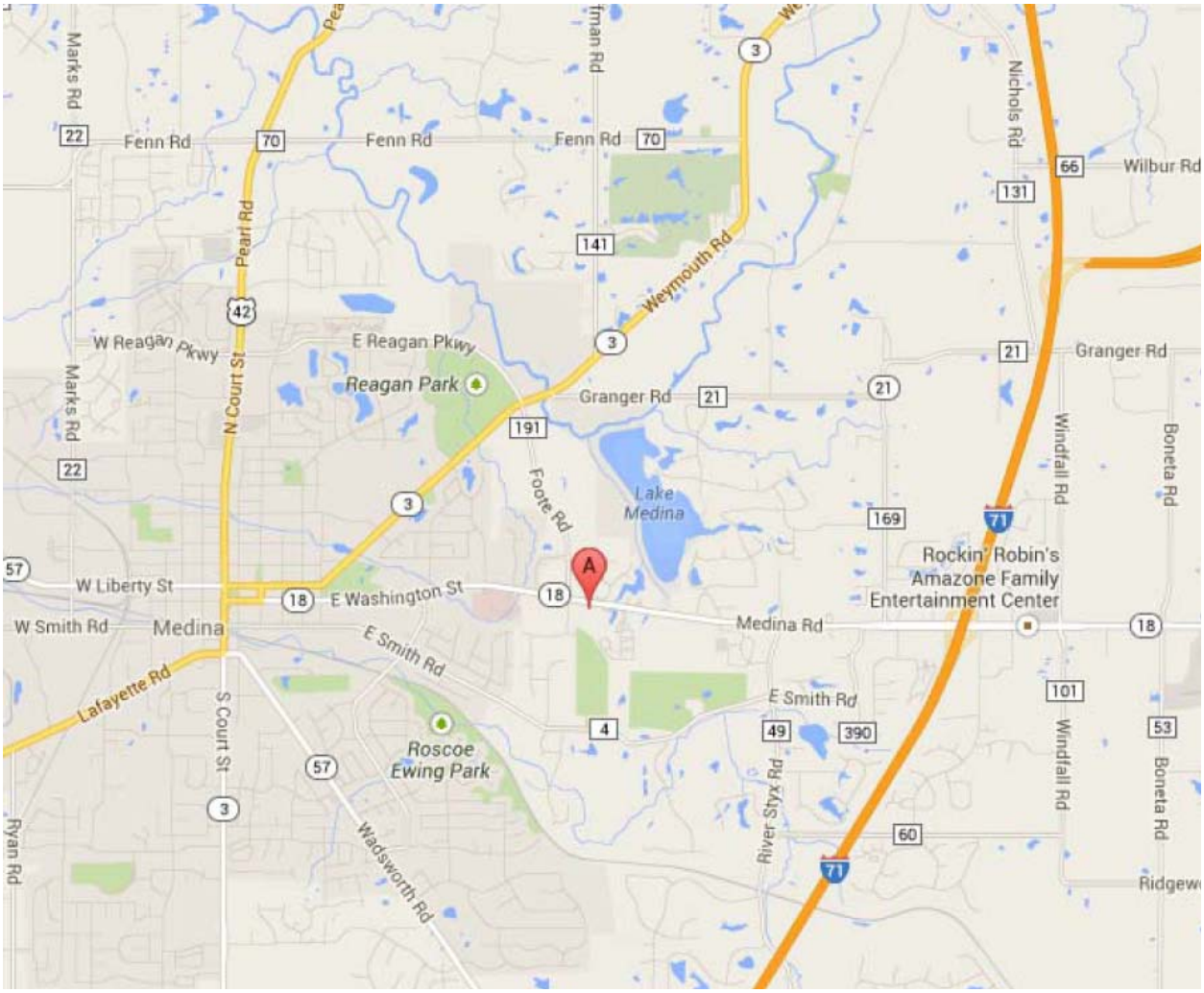
Omernik, J.M. 1987. Ecoregions of the conterminous United States. Ann. Assoc. Amer. Geogr. 77(1): 118-125.

Rankin, E.T. 1989. The qualitative habitat evaluation index (QHEI): rationale, methods, and application. Division of Water Quality Planning and Assessment, Columbus, Ohio.
http://www.epa.state.oh.us/dsw/bioassess/BioCriteriaProtAqLife.html

Medical Services

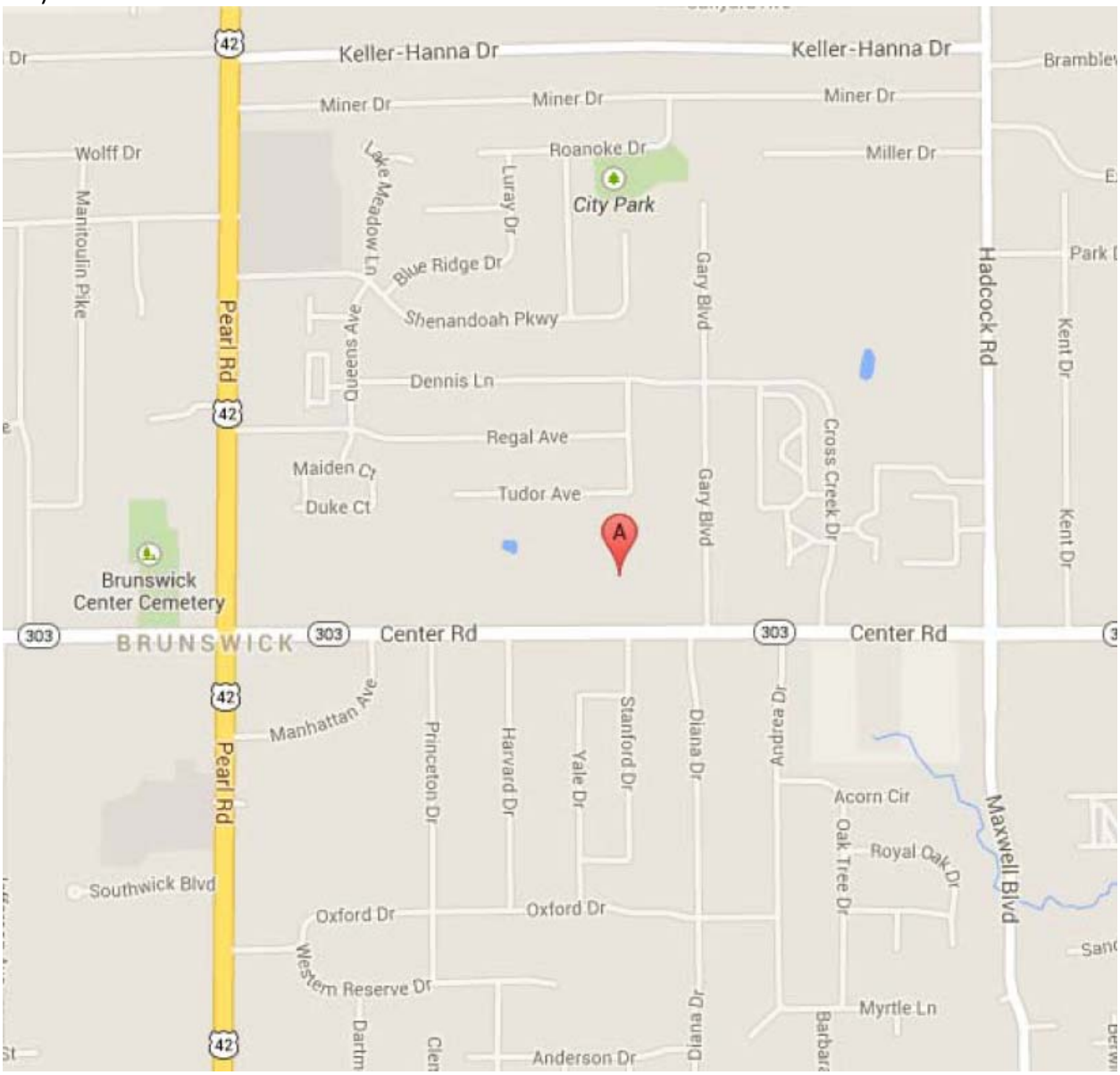
Medina

Medina Health Center
4001 Carrick Drive
Medina, OH 44256
(330) 721-8577

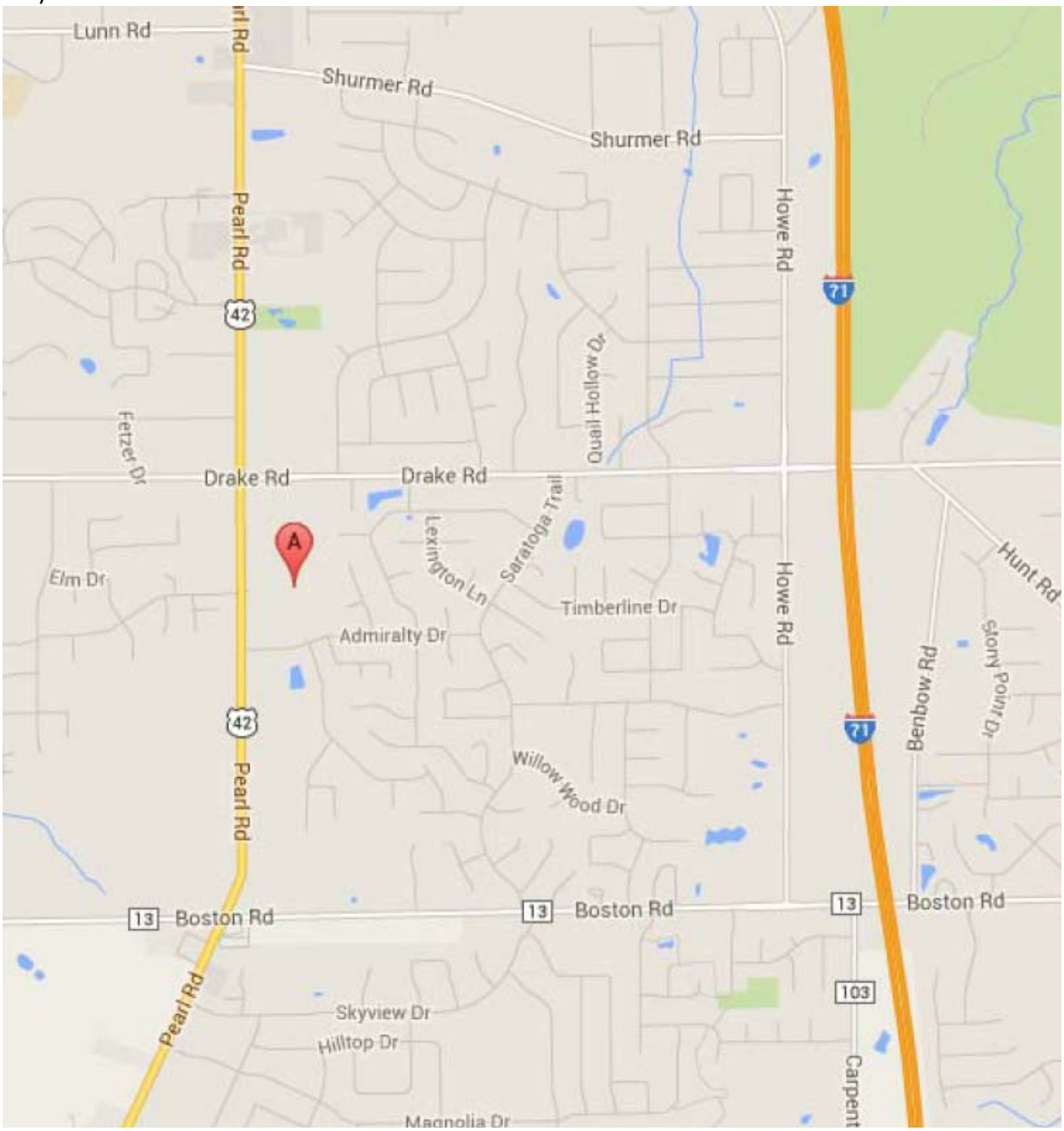


Brunswick

Brunswick Medical Center
4065 Center Road
Brunswick, OH 44212
(330) 558-0150

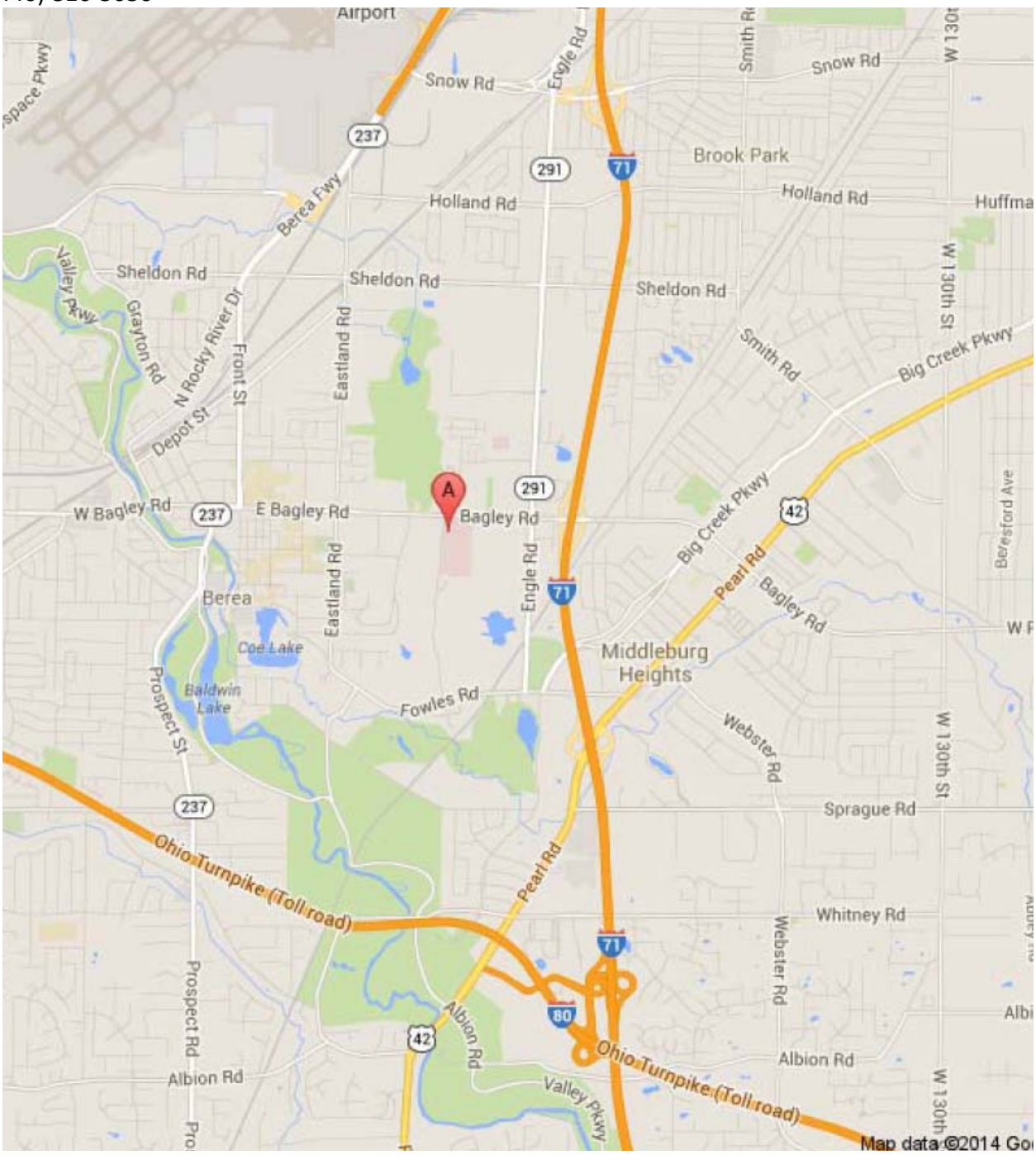


Strongsville
SW Urgicare Center
18181 Pearl Road
Cleveland, OH 44136
(440) 816-2273



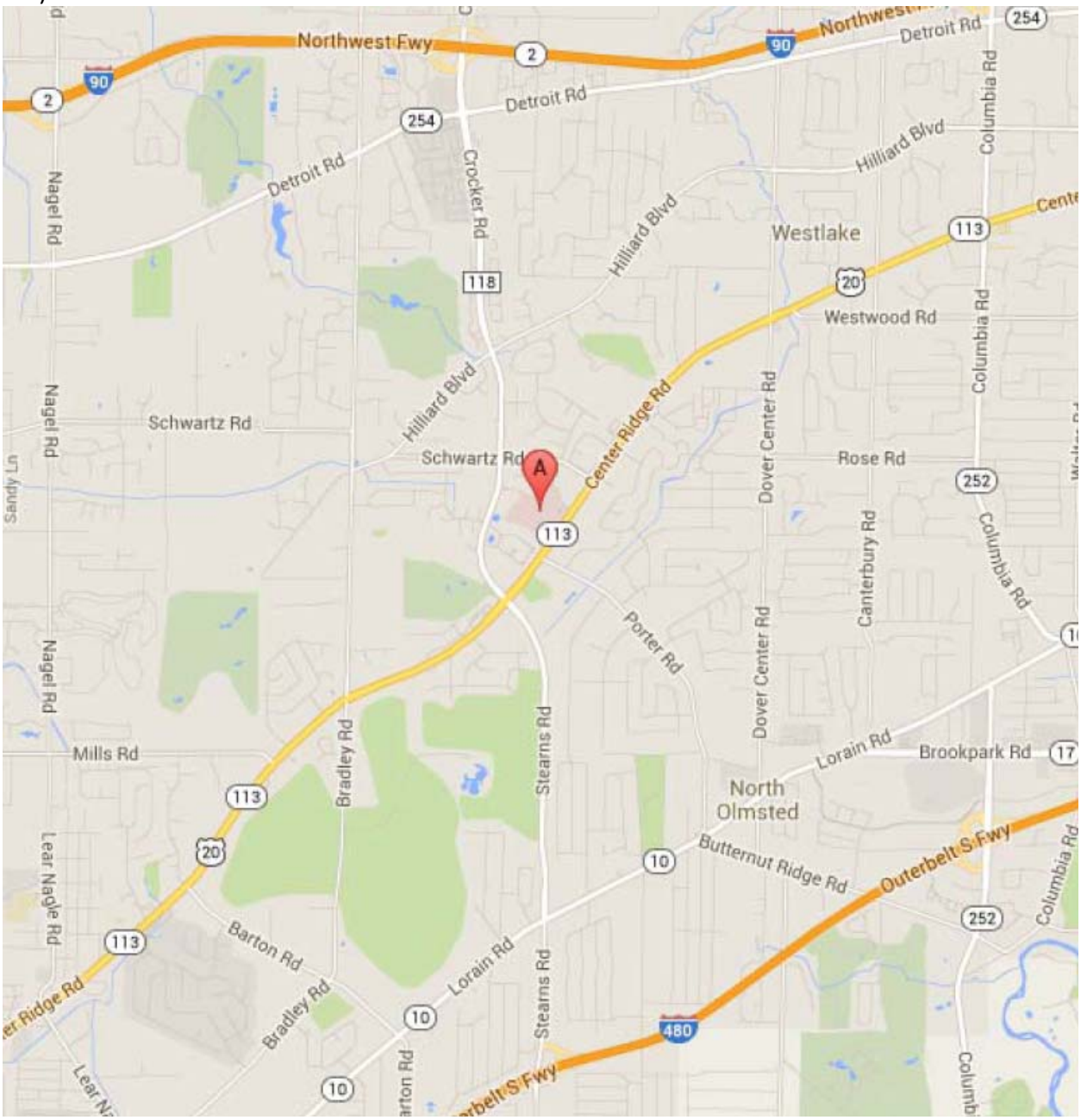
Berea

SW General Health Center
18697 Bagley Road
Cleveland, OH 44130
(440) 816-5050



North Olmsted

St. John Medical Center
29000 Center Ridge Road
Cleveland, OH 44145
(440) 835-8000



West Cleveland

Fairview Hospital
18101 Lorain Avenue
Cleveland, OH 44111
(216) 476-7000