2008 Study Plan for the Portage River and Lake Erie tributaries

Hancock, Lucas, Ottawa, Sandusky, Seneca, and Wood Counties, Ohio

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County Sheriff Offices

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- Lucas Co: (419) 213-4908 (Dial 911 for emergency help)
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- Sandusky Co: (419) 332-2613 (Dial 911 for emergency help)
- Seneca Co: (419) 447-3456 (Dial 911 for emergency help)
- Wood Co: (419) 354-9137 (Dial 911 for emergency help)

Hospitals

- Magruder Hosptial, 615 Fulton Street, Port Clinton, Ohio 43452 (419) 734-3131
- St. Vincents, 2213 Cherry Street, Toledo, Ohio 43068 (419) 251-3232
- University of Toledo, 3000 Arlington Avenue, Toledo, Ohio 43614 (419) 383-4000
- St. Lukes, 5901 Monoclova Road, Maumee, Ohio 43537 (419) 893-5911
- St. Charles Mercy Hospital, 2600 Navarre Avenue, Oregon, Ohio 43616 (419) 696-7200
- Wood County Hospital, 950 West Wooster Street, Bowling Green, Ohio 43402 (419) 354-8900
- Fostoria Community Hospital, 501 Van Buren Street, Fostoria, Ohio 44830 (419) 436-6640

- Blanchard Valley Hospital, 1900 South Main Street, Findlay, Ohio 45840, (419) 423-4500
- Memorial Hospital, 715 S. Taft Avenue, Fremont, Ohio 43420 (419) 332-7321

INTRODUCTION

During the 2008 field season (June through October) chemical, physical, and biological sampling will be conducted in the Portage River basin and select Lake Erie tributaries to assess and characterize water quality conditions. As a Total Maximum Daily Load (TMDL) basin, this survey will incorporate a study design and some assessment techniques which are more comprehensive than a targeted sampling strategy alone would entail.

The Portage River basin and select Lake Erie tributaries have not been assessed since 1994. The sampling effort is structured to characterize point source and nonpoint source impacts, including those from unsewered communities and agricultural activities. Table 1 contains a list of NPDES facilities in the basin. Sampling locations and types of sampling scheduled for the study area are listed in Table 2. Samples locations with geographical coordinates are included in Table 3.

Sampling Objectives:

- Monitor and assess the chemical, physical, and biological integrity of the water bodies within the Portage River study area.
- Assess physical habitat influences on stream biotic integrity.
- Determine recreational water quality.
- Evaluate the appropriateness of existing use designations and assign uses to undesignated streams.
- Characterize the amount of aquatic resource degradation attributable to various land uses, including agricultural practices and urbanization.
- Determine any aquatic impacts from known potential sources, including point source dischargers, and from unsewered communities.
- Collect fish samples for the Ohio Sport Fish Tissue Monitoring Program (used to assess chemical contaminant levels in fish).

SAMPLING ACTIVITIES

Chemical/Physical Water and Sediment

Chemical sampling locations within the study area are listed in Table 2. Conventional chemical/physical water quality samples will be collected 5 times at each designated location. Sediment samples will be collected at 28 locations. Datasondes© will be deployed at 27 locations. Chemical parameters to be tested are listed in Table 2. Surface water sampling will occur across a variety of flow conditions, from lower flows to moderate and higher flows. Public Water Supply intakes will be evaluated at four locations and will be tested for pesticides in addition to the normal suite of parameters. DDAGW will coordinate with NWDO staff for sampling times that occur before the official sampling season begins in June.

Bacteriological Sampling

Water samples will be collected at all chemistry sites for bacteriological analyses to determine the attainment status of the Primary Contact recreational use of the Portage River mainstem and associated tributaries. Testing will include *Escherichia coli* (E. coli) bacteria. Each site will be sampled at least 5 times, while sentinel sites may have 5-10 bacteriological samples.

Macroinvertebrate and Fish Assemblages

Macroinvertebrate sampling methods will be used as listed in Table 2. Fish assemblages will be sampled as listed in Table 2. QHEI scores will be calculated on the habitat at all fish sampling locations.

Fish Tissue

Fish tissue samples will be collected from 7 locations as part of the Ohio Fish Tissue Consumption Monitoring Program. Fillet samples of edible size sport fish will be tested for organochlorinated pesticides, PCBs, mercury, lead, cadmium, arsenic, and selenium. Results will be used in the Ohio Sport Fish Consumption Advisory Program.

QUALITY ASSURANCE/SAMPLING METHODS

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 2006), 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) .

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. The results will be compared to WWH biocriteria for the Huron Erie Plain (HELP) and Eastern Corn Belt Plains (ECBP) ecoregions.

Recreational use attainment will be determined using fecal coliform bacteria and *E. coli* bacteria. Both types of organisms are indicator organisms for the potential presence of pathogens in surface water resulting from the presence of untreated human or animal wastes, and they are 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). 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 multihabitat 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, 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).

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 $4^{o}C$) and shipped to the Ohio EPA lab. Sampling and decontamination protocols will follow those listed in the Ohio EPA Sediment Sampling Guide and Methodologies, November, 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 2006) 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 to the contract lab, Jones & Henry in Northwood, Ohio, within 6 hours of sample collection. All samples will be analyzed for *E. coli* bacteria using U.S.EPA approved methods (STORET Parameter Code 31648).

Fish Tissue

Tissue fillet samples will be collected from fish of edible size, and species preferred for analysis include spotted bass, largemouth bass, smallmouth bass, flathead catfish, walleye, saugeye, white bass, common carp, freshwater drum, and channel catfish. When possible, composite samples (by species) will be collected using a minimum of three fish and a minimum of 150 grams of material. At each sampling location, an attempt will be made to collect five fish species for fillet tissue analysis. Fish will be sampled using electrofishing boat methods. Sampling locations are listed in Table 2.

Fish used for tissue analysis will be filleted in the field using decontaminated stainless steel fillet knives. Filleted samples will be wrapped in aluminum foil, placed in a sealed plastic bag, and placed on dry ice. Sampling and decontamination protocols will follow those listed in the Ohio EPA Fish Collection Guidance Manual (2004); however, it is not necessary to clean aluminum foil which is used directly from the roll. Fish tissue samples will be stored in chest freezers at the Ohio EPA Groveport Field Facility prior to delivery to DES.

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 2006). Matrix spike duplicates will be collected for organic water samples at a minimum of 5 percent.

Table 1. Facilities regulated by the National Pollution Discharge Elimination System in the Portage River basin and select Lake Erie tributaries.

Permit #	Facility Name	County	Receiving Stream	Ultimately To
2PA00000	Cygnet WWTP	Wood	Rocky Ford	M Br Portage R
2PT00038	Elmwood High School	Wood	Eckert Ditch Trib	Bull Ck
2PB00033	North Baltimore WWTP	Wood	Rocky Ford	M Br Portage R
2PY00014	Perrysburg Estates MHP	Wood	Lime City Rd Ditch	Henry Ck
2PA00071	Wayne WWTP	Wood	S Wayne Ditch 2228	S Br Portage R
2PB00012	Pemberville WWTP	Wood	Portage R	L. Erie
2PR00190	Fuel Mart No 767	Wood	Coon Ck Trib	Sugar Ck
2PA00083	Hoytville WWTP	Wood	Needles Ck	M Br Portage R
2PA00077	Bradner STP	Wood	Portage R Trib	Portage R
2PD00009	Bowling Green WWTP	Wood	Poe Ditch	N Br Portage R
2PA00074	Bloomdale STP	Wood	Stove Ditch	S Br Portage R
2PY00008	Village Green MHP	Wood	Crane Ck Trib	Crane Ck
2PB00051	Elmore STP	Ottawa	Portage R	L. Erie
2PT00042	Genoa Area Local Schools	Ottawa	N Br Turtle Ck	Turtle Ck
2PY00059	Green Valley MHP	Ottawa	Portage R Trib	Portage R
2PD00014	Port Clinton WWTP	Ottawa	Portage R	L. Erie
2PR00130	Fenwick Marina	Ottawa	Turtle Ck	L. Erie
2PW00010	Wildflower Place Subdiv WWTP	Ottawa	Crane Ck	L. Erie
2PS00013	Luther Home of Mercy	Ottawa	Williston Ditch	Crane Ck
2PR00127	Portage Point Condos & Oak Harbor Golf Club	Ottawa	Portage R	L. Erie
2PR00150	Johnny's Resort & Rec Camp	Ottawa	Portage R	L. Erie
2PR00234	Chet's Place	Ottawa	Portage R	L. Erie
2PS00008	Erie Islands Resort Marina	Ottawa	Portage R	L. Erie
2PS00011	Turtle Creek Marina and Camp	Ottawa	Turtle Ck	L. Erie
2PB00032	Oak Harbor WWTP	Ottawa	Portage R	L. Erie
2PB00052	Woodville STP	Sandusky	Portage R	L. Erie
2PA00005	Gibsonburg WWTP	Sandusky	Hurlbut Ditch/SR 300 Ditch	Sugar Ck/Wolf Ck
2PB00002	McComb Village WWTP	Hancock	Algire Ck	Rader Ck
2PD00031	Fostoria Sewage Disposal Plt	Seneca	E Br Portage R	S Br Portage R
2IC00058	Reed Air Products	Wood	SS to Portage R Trib	Portage R
2IN00041	Air Products and Chemicals Inc	Wood	Rocky Ford Trib	Rocky Ford
2IN00187	Mid-Wood Inc	Wood	Portage R Trib	N Br Portage R
2II00003	Mid-Valley Pipeline Co Cygnet Transfer Station	Wood	Rocky Ford	M Br Portage R
2IJ00025	Stoneco Inc Portage Plant	Wood	N Br Portage R	Portage R
2IX00090	Wayne WTP	Wood	S Wayne Ditch 2228	S Br Portage R
2IH00027	Southside Packers Inc	Wood	S Br Portage R	Portage R
2IG00022	BP Pipelines NA Cygnet Tank Farm	Wood	Rocky Ford	M Br Portage R
2IJ00089	MacRitchie Materials Inc	Wood	E Br Portage R	S Br Portage R
2IH00111	Hirzel Canning Co	Wood	Wolf Ck	Berger Ditch

Permit #	Facility Name	County	Receiving Stream	Ultimately To
2IJ00098	Cardinal Aggregates Inc	Wood	Cedar Ck Trib	Cedar Ck
2IW00210	North Baltimore WTP	Wood	Rocky Ford	M Br Portage R
2IJ00052	Stoneco Inc Lime City Plant	Wood	B&R Mills Ditch to Dry Ck	Cedar Ck
2II00032	Toledo Travel Center	Wood	Crane Ck	L. Erie
2II00050	Fuel Mart #641	Wood	Crane Ck	L. Erie
2IJ00035	Hanson Aggregates-North Baltimore Quarry	Wood	M Br Portage R Trib	Portage R
2IN00147	Pilot Travel Center LLC No 012	Wood	Turnpike Ditch	Crane Ck
2IW00040	Bloomdale WTP	Wood	Stove Ditch Trib	S Br Portage R
2IN00220	First Solar LLC	Wood	Dry Ck	Cedar Ck
2IH00114	Hartung Brothers Tank Farm	Wood	Gypsy Lane Rd Ditch	N Br Portage R
2IJ00088	Precision Aggregates II LLC	Wood	M Br Portage R Trib	Portage R
2IN00174	BP Amoco Oil Corp Bulk Plant Millbury	Wood	I-280 Ditch	Cedar Ck
2IE00000	Brush Wellman Inc	Ottawa	Portage R	L. Erie
2IY00012	Carroll Water and Sewer	Ottawa	Turtle Ck	L. Erie
2IN00116	Ottawa Co Landfill (BFI)	Ottawa	Lacarpe Ck (#3)	L. Erie
2IV00103	Ottawa Co Regional WTP	Ottawa	Portage R	L. Erie
2IJ00037	White Rock Quarry LP	Ottawa	N Br Turtle Ck	Turtle Ck
2IN00165	Asphalt Materials Inc	Lucas	Wynn Rd Ditch	L. Erie
2IG00024	Marathon Petroleum LLC Oregon Terminal	Lucas	Amlosch Ditch	Driftmeyer Ditch
2IN00013	Envirosafe Services of Ohio	Lucas	Johlin Ditch/Driftmeyer Ditch	L. Erie
2IW00220	Oregon WTP	Lucas	Berger Ditch	L. Erie
2II00106	Cedar Point Development LLC	Lucas	Heckman Ditch/Wynn Rd D.	L. Erie
2IG00021	CITGO Petroleum Corp Toledo Terminal	Lucas	Driftmeyer Ditch	L. Erie
2IN00218	Middleport Terminal Inc Toledo	Lucas	Duck Ck	L. Erie
2IJ00028	Carmeuse Lime Inc Woodville Plt	Sandusky	Portage R	L. Erie
2IJ00097	Area Rock LLC	Sandusky	Sugar Ck	Portage R
2IS00003	Atlas Engine Works Inc	Sandusky	Sugar Ck Trib	Portage R
2IW00140	McComb Village WTP	Hancock	Rader Ck	M Br Portage R
2IG00017	BP Oil Pipeline Co Fostoria Tank Farm	Hancock	E Br Portage R	S Br Portage R
2IN00146	Hancock County Sanitary Landfill	Hancock	Rocky Ford Trib	Rocky Ford
DRAFT or NEW PERMITS				
2PA00094	Rising Sun WWTP	Wood	Sugar Ck	Portage R
2IK00019	Reysken's Dairy LLC	Wood	Needles Ck Trib	M Br Portage R
2IK00029	Naomi Dairy LLC	Wood	Rocky Ford Trib	M Br Portage R
2IK00051	New Ijsselstein Dairy LLC	Sandusky	Victoria Ck or Sugar Ck Trib	Portage R
2IK00052	Hillbex Dairy LLC	Sandusky	Sugar Ck Trib	Portage R
Unknown				
2PR00113	KOA Campground/Residential Development	Wood	Nichols Ditch	Rocky Ford

Table 2. Portage River basin and Lake Erie sampling sites, by 11-digit Hydrologic Unit Code (HUC). Duck Creek is labeled with the 12-digit HUC, as sampling is only conducted within that HUC 12.

RIVER	River Mile	LOCATION	Drainage	Sampling	Longitude	Latitude	STORET
HUC 041000090 – Duck Creek							
Duck Creek	2.42	York Road	0.8	Cmo+,F,ML,Sp	-83.480433	41.665901	P11S56
Duck Creek	3.10	Consaul Street	0.5	Cmo+,F,ML,Sp	-83.483724	41.658481	P11K22
Duck Creek	4.04	Dwnst. Burger St.	0.3	Cmo+,Sp	-83.496527	41.652032	300376
HUC 04100010010 – Wolf Creek, Cedar Creek, Crane Creek and Turtle Creek							
Wolf Creek/Williams Ditch	1.70	Yondota Rd. (lacustuary)	7.6	C,F,ML	-83.312500	41.667700	201144
Wolf Creek/Berger Ditch	2.70	Stadium Rd.	7.8	C,F,ML,D	-83.409600	41.648500	201111
Wolf Creek/Berger Ditch	6.30	Upst. Curtice Rd.	2.7	C	-83.451719	41.615824	S03S50
Turtle Creek	11.62	Nissen Rd.	21.4	C,F2,MT	-83.299900	41.578400	S03K05
North Branch Turtle Creek	0.80	Opfer-Lentz Rd.	7.8	C,PO4,F,ML,D	-83.320000	41.579200	201124
North Branch Turtle Creek	3.00	Genoa Clay Center Rd.	3.9	Cb	-83.358579	41.581406	S03K06
South Branch Turtle Creek	2.65	Moline Rd.	10.6	C,PO4,F,ML	-83.338700	41.558700	S03K07
Crane Creek	5.20	Elliston Road (Lacustuary)	42	C	-83.278706	41.623883	S03K01
Crane Creek	8.83	Martin-Williston Rd.	34	C,PO4,F2,MT,D	-83.338324	41.611978	S03G21
Crane Creek	15.38	Collins Rd. (Cherry St.)	19.9	C,F2,MT	-83.427321	41.565949	S03K02
Crane Creek	18.82	Hanley Rd.	9	Cmo+,F,ML,Sp	-83.463475	41.529280	S03P21
Trib to Crane Creek	0.42	Billman Rd.	1.4	Cb	-83.397152	41.593429	S03K03
Henry Creek	0.25	Bradner Rd.	7.8	C,F,ML	-83.434621	41.563239	201118
Henry Creek	3.73	Cummins Rd	5.5	C,PO4	-83.481360	41.531712	S03S65
Ayers Creek	0.60	Billman Rd.	3.7	Cb	-83.396649	41.599718	S03K04
Cedar Creek	4.27	Yondota Road (lacustuary)	48	C,PO4	-83.312208	41.632836	S03S55
Cedar Creek	7.90	Wildacre Rd.	44	Cb	-83.367362	41.618053	S03G22
Cedar Creek	9.59	Billman Rd.	38.6	Cmo,PO4,F2,MT,S,D	-83.396130	41.611603	S03S44
Cedar Creek	14.50	LeMoyne Rd.	23.2	C,F2,MT	-83.473794	41.589472	S03S46
Cedar Creek	17.32	E. Broadway Rd.	18.5	Cmo,F,ML,Sp	-83.512200	41.565600	S03S60
Cedar Creek	20.77	Oregon Rd.	12.1	C,F,ML	-83.538433	41.524949	S03S34
Ditch to Cedar Creek (7.91)	0.01	Adj to RR	0.1	Cb	-83.367707	41.617833	S03G23
Dry Creek	0.01	at mouth	13.8	C,PO4,F,ML	-83.397200	41.611900	S03S48
Dry Creek	7.00	East Broadway Rd.	8.2	Cmo+,F,ML,Sp	-83.512500	41.586900	S03S68
HUC 0410001030 – Middle Branch (headwaters to below Rocky Ford)							
Middle Branch Portage River	8.64	Solether Rd.	95	Cmop,PO4,F2,MT	-83.631403	41.307314	S01S44
Middle Branch Portage River	10.90	Rudolph Rd.	73	C,F2,MT	-83.669741	41.295818	201099
Middle Branch Portage River	15.32	Jerry City Rd.	64	C,F2,MT	-83.732700	41.254900	S01K09

RIVER	River Mile	LOCATION	Drainage	Sampling	Longitude	Latitude	STORET
Rocky Ford Creek	1.59	Solether Rd.	72.8	Cmp,PO4,F2,MT,D	-83.630871	41.285537	300372
Rocky Ford Creek	5.10	Cygnet Rd.	66	Cmo,F2,MT	-83.649527	41.240187	S01P28
Rocky Ford Creek	9.80	Upst. North Baltimore WWTP	57	Cmo+,F2,MT,Sp,D	-83.663725	41.182312	S01S04
Rocky Ford Creek	10.74	SR 18, Dwnst. Fenburg #1	56	Cmp,Sp	-83.675303	41.173509	S01P26
Rocky Ford Creek	11.87	TR 114	32	Cmp,PO4,F2,MT,Sp	-83.668325	41.160321	S01S05
Rocky Ford Creek	15.04	Co. Rd. 220	23	C,F2,MT	-83.649492	41.132048	S01S06
Rocky Ford Creek	19.53	Co. Rd. 18	16.2	C,F,ML	-83.579900	41.130900	S01K11
Rocky Ford Creek	21.12	Co. Rd. 109	7.6	C,F,ML	-83.555300	41.123100	S01K12
Trib. to Rocky Ford (RM 10.75)	2.00	Co. Rd. 139	18.7	C,F,ML	-83.708100	41.160300	201105
Trib. to Rocky Ford (RM 10.75)	3.57	TR 112 (Bridge is out)	8.9	C,F,ML	-83.729300	41.145900	S01K13
Trib. to Rocky Ford (RM 10.75/1.99)	1.80	Adj. Co. Rd. 139	7.5	C,F,ML	-83.708300	41.133900	201106
Needles Creek	1.25	Cygnet Rd.	32	Cmp,PO4,F2,MT	-83.750400	41.241200	S01S48
Needles Creek	5.14	SR 18	17	C,F,ML	-83.792600	41.204500	S01P30
Needles Creek	8.30	Hancock-Wood County Rd.	11.0	C,F,ML	-83.824339	41.168701	S01S25
Rader Creek	0.80	Cygnet Rd.	32.1	Cmp,PO4,F2,MT,D	-83.736765	41.240844	201109
Rader Creek	5.20	Needles Rd.	18.1	Cmo,F,ML	-83.756600	41.197300	S01S24
Rader Creek	10.92	Co. Rd. 203	7.3	C,F,ML,D	-83.783500	41.138200	S01S26
Rader Creek	13.55	Reservoir access road	2.6	Cmp,PO4,F,ML,Sp	-83.780575	41.106702	300374
Trib to Rader Creek at RM 4.37	0.45	Needles Rd.	6.3	Cmo	-83.746248	41.197340	S01K17
Trib to Rader Creek at RM 4.03	0.70	Needles Rd.	2.1	Cm	-83.739554	41.197366	S01K20
Algire Creek	1.78	Main St (in McComb)	2.3	C	-83.799806	41.106795	S01K19
Algire Creek	0.10	Adj. SR 235, farm lane	3.0	C	-83.785161	41.126025	S01K18
HUC 0410001040 – Middle Branch (below Rocky Ford to below South Branch)							
South Branch Portage River	0.50	Kenner Rd.	110	Cmop,PO4,F2,MT,S,D	-83.502800	41.355000	S01S19
South Branch Portage River	4.78	Greensburg Pike	100	C,F2,MT	-83.509890	41.311313	S01P14
South Branch Portage River	8.35	Portage View Rd.	54	C,PO4,F2,MT	-83.515888	41.272813	S01P10
South Branch Portage River	14.43	Hall Rd.	34	C,F2,MT	-83.513615	41.216754	S01K04
South Branch Portage River	17.77	Stearns Rd.	32	C,F2,MT	-83.529459	41.180566	S01K05
South Branch Portage River	22.58	TR 218	17	C,F,ML	-83.528800	41.140100	S01K06
South Branch Portage River	24.77	Co. Rd. 109	7	C,F,ML	-83.522700	41.122800	S01K07
Middle Branch Portage River	0.55	Caskie Rd.	224	Cmop,PO4,F2,MT,S,D	-83.513514	41.359426	S99Q04
Middle Branch Portage River	3.45	Bloomdale Rd.	216	C,PO4,F2,MT	-83.552846	41.338415	S01K08
Bull Creek	0.64	Greensburg Pike	29.8	Cmp,PO4,F2,MT,S,D	-83.585800	41.311100	S01S45

RIVER	River Mile	LOCATION	Drainage	Sampling	Longitude	Latitude	STORET
Bull Creek	3.89	Jerry City Rd.	19	C,F,ML	-83.611300	41.253800	S99Q05
Bull Creek	8.45	Eagleville Rd.	8.3	C,F,ML	-83.593438	41.189803	S01K10
East Branch Portage River	0.80	Bays Rd.	35.5	Cm,F2,MT,FT,D	-83.506700	41.268100	S01P09
East Branch Portage River	3.10	Cygnet Rd.	26	Cm,PO4,F2,MT	-83.493603	41.242804	S01P07
East Branch Portage River	6.18	Eagleville Rd.	23	Cmp,PO4,F2,MT,D	-83.460842	41.216902	S01P05
East Branch Portage River	9.60	Sterns Rd.	18.7	Cmo+,F,ML,Spv,D	-83.432329	41.181501	S01P03
East Branch Portage River	10.42	WWTP access Rd bridge	18.4	Cmo+,F,ML,Spv,D	-83.423985	41.172890	S01P02
East Branch Portage River	12.47	Co. Rd. 226	15.3	C,F,ML	-83.443600	41.156100	S01S30
East Branch Portage River	16.10	TR 217	12.3	Cmp,F,ML,Sp	-83.437920	41.122578	300373
East Branch Portage River	19.17	TR 214	9.4	C,F,ML	-83.422100	41.093700	S01K21
HUC 04100010050 – Portage River (below confluence of South and Middle Branches to below North Branch)							
Portage River	35.28	Bridge St.	353	Cmop,PO4,F2,MT,D	-83.457011	41.409302	S01S36
North Branch Portage River	0.08	River Rd.	59.1	Cmop,PO4,F2,MT,D	-83.458600	41.410300	500520
North Branch Portage River	6.55	Silverwood Rd.	48	C,PO4,F2,MT	-83.542505	41.394014	S01S10
North Branch Portage River	8.55	Bowling Green WWTP Mix Zone	46	Cmo,S	-83.570673	41.384869	201093
North Branch Portage River	8.60	Upst. Poe Ditch (SR 105)	40	Cmop,PO4,F2,MT	-83.571517	41.383899	S01K01
North Branch Portage River	13.55	Linwood Rd.	34	C,F2,MT	-83.616900	41.349200	S01S11
North Branch Portage River	17.92	Rudolph Rd.	24	C,PO4,F2,MT	-83.669468	41.311733	S01S40
North Branch Portage River	21.96	Mermill Rd.	14.3	C,F,ML	-83.741800	41.298800	S01K02
North Branch Portage River	25.85	Jerry City Road	8.1	C,F,ML	-83.786619	41.255465	S01K03
HUC 04100010060 Portage River (below North Branch to below Sugar Creek)							
Portage River	22.13	Dwmst Elmore WWTP	432	Cmo,F2,MT	-83.286760	41.482828	S02S18
Portage River	24.20	Upst. Ohio Turnpike	430	Cmo,F2,MT	-83.308880	41.466409	S02S20
Portage River	28.08	Guage at US 20	429	Cm,PO4,F2,MT,D	-83.360589	41.449473	500510
Portage River	32.10	US 23	418	Cm,F2,MT	-83.415472	41.422283	S01S12
Sugar Creek	0.80	Hessville Rd.	58	Cmp,PO4,F2,MT,D	-83.241100	41.486700	300371
Sugar Creek	3.65	Elmore-Eastern Rd.	56	C,F2,MT	-83.275451	41.472341	S02P01
Sugar Creek	8.80	Dwnst US 20	51	C,F2,MT,S	-83.330229	41.437178	S02S25
Sugar Creek	13.38	Anderson Rd. (CR 32)	35	C,PO4,F2,MT,S	-83.358200	41.395900	S02S26
Sugar Creek	18.50	U.S. Rt. 6	17	C,F,ML	-83.370000	41.340800	201092
Sugar Creek	21.31	Greensburg Pike	12	C,F,ML	-83.394000	41.312400	S02K05
Coon Creek	0.34	Anderson Rd. (CR 32)	7.8	C,PO4,F,ML,S	-83.358100	41.406900	S02K06
HUC 04100010070 – Portage River (below Sugar Creek to Lake Erie and Lake Erie Tribs [below Toussaint Creek to Marblehead])							
Portage River	0.05	Portage River at mouth	581	FT	-82.936748	41.516363	S02S09
Portage River	0.50	Port Clinton WWTP mix	581	Cmo,Sp	-82.944563	41.515398	S02S10

RIVER	River Mile	LOCATION	Drainage	Sampling	Longitude	Latitude	STORET
		zone					
Portage River	0.60	Upst. Port Clinton WWTP	581	Cmo,FT	-82.946497	41.515442	S02S11
Portage River	3.00	SR 2	579	FT	-82.991977	41.513099	S02S12
Portage River	5.00	Dwnst Little Portage	573	FT	-83.029292	41.507543	S02S13
Portage River	6.00	0.5 mile Upst L.Portage R.	540	Cm,F2,MT,D	-83.047888	41.507527	S99Q01
Portage River	11.10	Dwnst Oak Harbor WWTP	518	Cmo,F2,MT,FT,Sp,D	-83.127370	41.504514	S02S14
Portage River	12.30	0.25 mile Dwnst. SR 19	516	F2,MT	-83.141616	41.502593	S02P06
Portage River	12.55	SR 19	516	Cmo,Sp	-83.145302	41.505007	S02P06
Portage River	14.00	Adj. SR 105	497	Cmo+,Spv,D	-83.169747	41.502253	S02S16
Portage River	15.70	Dwnst. Slemmer-Portage Rd.	496	Cmo+,F2,MT,Spv	-83.198046	41.495192	S02S17
Portage River	16.40	Dwnst. Brush Wellman	496	FT	-83.210509	41.492305	S02S02
Portage River	16.50	Mix Zone Brush Wellman	496	Cmo+,F2,MT,Spv	-83.212347	41.492057	S02S03
Portage River	17.03	SR 590	495	Cmo+,PO4,F2,MT,Spv,D	-83.221465	41.491333	S02P08
Hyde Run	0.02	Portage River South Rd.	0.5	Cmo+	-83.212977	41.491602	S02S05
Little Portage River	1.79	Co. Rd. 17 (lacustuary)	30	Cmp,F2,MT,D	-83.053900	41.486400	S02S23
Little Portage River	6.20	County Road 169	21.2	C,F2,MT	-83.125886	41.477830	S02P04
Ninemile Creek	2.93	Dunmyer Rd. (CR 141)	8.7	C,F,ML	-83.212100	41.443600	S02K01
Ninemile Creek	5.00	Hessville Rd. (TR 92)	7.9	C,F,ML	-83.239159	41.429459	S02K02
Wolf Creek	6.51	Yeasting Rd.	9.2	C,F,ML	-83.255900	41.465200	S02K04

Type	Number of Sites
Total	112
Water chemistry	110
E.coli only	5
Fish	1 Pass 39 2 Pass 48
Macroinvertebrate	Qual 39 Quant 48
Fish Tissue	7
Sediment	28
Datasonde©	27

C – Inorganic water chemistry, no metals.
Co – C and 624-625 organics
Co+ - Co and 608 PCBs
Cm – C and metals
Cp – C and 525 new age herbicides
Cb – E.coli only
D- Datasonde
F – Single pass fish site
F2 – Two-pass fish site (for reference sites, or drainage area 20 sq. miles or greater)
FT – Fish Tissue
M – Macroinvertebrate qualitative site
MT – Macroinvertebrate quantitative site (for reference sites, or drainage area 20 sq. miles pr greater)
PO4 – Orthophosphates
S – Sediment metals/8270 BNAs
Sp – S and 8082 PCBs
Sv – S and 8260 VOCs
D – Datasonde site

Table 3. Portage River and Lake Erie tributaries site locations in alphabetical order by stream, with USGS Quad.

River	River Mile	Drain. Area	Sampling	Location	Issue(s)	STORET	USGS_Quad
Algire Creek	0.10	3.0	C	Adj. SR 235, farm lane	Chem only	S01K18	Hoytville
Algire Creek	1.78	2.3	C	Main St (in McComb)	Chem only (Dwnst. golf course)	S01K19	McComb
Ayers Creek	0.60	3.7	Cb	Billman Rd.	Chem only (Dwnst. unsewered area)	S03K04	Wallbridge
Bull Creek	0.64	29.8	Cmp,PO4,F2,MT,S,D	Greensburg Pike	HUC 14 Sentinel, Geometric	S01S45	Jerry City
Bull Creek	3.89	19	C,F,ML	Jerry City Rd.	Geometric	S99Q05	Jerry City
Bull Creek	8.45	8.3	C,F,ML	Eagleville Rd.	Geometric (Two-stage channel)	S01K10	Bloomdale
Cedar Creek	4.27	48	C,PO4	Yondota Road (lacustuary)	Fill gap, lacustuary	S03S55	Reno Beach
Cedar Creek	7.90	44	Cb	Wildacre Rd.	Unsewered area	S03G22	Genoa
Cedar Creek	9.59	38.6	Cmo,PO4,F2,MT,S,D	Billman Rd.	Geometric	S03S44	Wallbridge
Cedar Creek	14.50	23.2	C,F2,MT	LeMoyne Rd.	Fill gap	S03S46	Wallbridge
Cedar Creek	17.32	18.5	Cmo,F,ML,Sp	E. Broadway Rd.	Geometric	S03S60	Rosford
Cedar Creek	20.77	12.1	C,F,ML	Oregon Rd.	Reference	S03S34	Rosford
Coon Creek	0.34	7.8	C,PO4,F,ML,S	Anderson Rd. (CR 32)	Geometric, Future dairy	S02K06	Elmore
Crane Creek	5.20	42	C	Elliston Road (Lacustuary)	Lacustuary	S03K01	Genoa
Crane Creek	8.83	34	C,PO4,F2,MT,D	Martin-Williston Rd.	Geometric, unsewered areas	S03G21	Genoa
Crane Creek	15.38	19.9	C,F2,MT	Collins Rd. (Cherry St.)	Geometric	S03K02	Wallbridge
Crane Creek	18.82	9	Cmo+,F,ML,Sp	Hanley Rd.	Geometric	S03P21	Wallbridge
Ditch to Cedar Creek (7.91)	0.01	0.1	Cb	Adj to RR	Chem only	S03G23	Genoa
Dry Creek	0.01	13.8	C,PO4,F,ML	at mouth	Geometric	S03S48	Wallbridge
Dry Creek	7.00	8.2	Cmo+,F,ML,Sp	East Broadway Rd.	Geometric (Dwnst. RR yard)	S03S68	Rosford
Duck Creek	2.42	0.8	Cmo+,F,ML,Sp	York Road	Dwnst. side of golf course.	P11S56	Oregon
Duck Creek	3.10	0.5	Cmo+,F,ML,Sp	Consaul Street	Upstream golf course	P11K22	Oregon
Duck Creek	4.04	0.3	Cmo+,Sp	Dwnst. Burger St.	Just downstream outlet from Hecklinger Pond	300376	Oregon
East Branch	0.80	35.5	Cm,F2,MT,FT,D	Bays Rd.	Geometric	S01P09	Jerry City

River	River Mile	Drain. Area	Sampling	Location	Issue(s)	STORET	USGS_Quad
Portage River							
East Branch Portage River	3.10	26	Cm,PO4,F2,MT	Cygnet Rd.	Dwnst. quarry and unsewerd area	S01P07	Fostoria
East Branch Portage River	6.18	23	Cmp,PO4,F2,MT,D	Eagleville Rd.	HUC 14 Sentinel	S01P05	Fostoria
East Branch Portage River	9.60	18.7	Cmo+,F,ML,Spv,D	Sterns Rd.	Dwnst. Fostoria WWTP	S01P03	Fostoria
East Branch Portage River	10.42	18.4	Cmo+,F,ML,Spv,D	WWTP accessRdbridge	Dwnst. CSOs, Industry,Upst. WWTP	S01P02	Fostoria
East Branch Portage River	12.47	15.3	C,F,ML	Co. Rd. 226	Geometric	S01S30	Fostoria
East Branch Portage River	16.10	12.3	Cmp,F,ML,Sp	TR 217	Fostoria PWS	300373	Alvada
East Branch Portage River	19.17	9.4	C,F,ML	TR 214	Geometric	S01K21	Alvada
Henry Creek	0.25	7.8	C,F,ML	Bradner Rd.	Geometric	201118	Wallbridge
Henry Creek	3.73	5.5	C,PO4	Cummins Rd	Chem only (unsewered area)	S03S65	Wallbridge
Hyde Run	0.02	0.5	Cmo+	Portage River South Rd.	Full Chem (Dwnst. discharge)	S02S05	Lindsey
Little Portage River	1.79	30	Cmp,F2,MT,D	Co. Rd. 17 (lacustuary)	Geometric, HUC14 Sentinel Site	S02S23	Wightmans Grove
Little Portage River	6.20	21.2	C,F2,MT	County Road 169	Fill gap	S02P04	Lindsey/Wightmans Grove
Middle Branch Portage River	0.55	224	Cmop,PO4,F2,MT,S,D	Caskie Rd.	HUC14 Sentinel Site, Near New Rochester (Sample downstream of bridge)	S99Q04	Jerry City
Middle Branch Portage River	3.45	216	C,PO4,F2,MT	Bloomdale Rd.	Fill gap	S01K08	Jerry City
Middle Branch Portage River	8.64	95	Cmop,PO4,F2,MT,D	Solether Rd.	HUC 14 sentinel, Dwnst. Sludge App.Areas, Upstream Rocky Ford	S01S44	Bowling Green South
Middle Branch Portage River	10.90	73	C,F2,MT	Rudolph Rd.	Dwnst. CAFO, Duplicate BGSU site	201099	Bowling Green South
Middle Branch Portage River	15.32	64	C,F2,MT	Jerry City Rd.	Geometric	S01K09	Bowling Green South
Needles Creek	1.25	32	Cmp,PO4,F2,MT,D	Cygnet Rd.	Geometric, Dwnst. CAFO, HUC 14	S01S48	Hoytville/North Baltimore

River	River Mile	Drain. Area	Sampling	Location	Issue(s)	STORET	USGS_Quad
					sentinel		
Needles Creek	5.14	17	C,F,ML	SR 18	Geometric	S01P30	Hoytville
Needles Creek	8.30	11.0	C,F,ML	Hancock-Wood County Rd.	Geometric (Two-stage channel)	S01S25	Hoytville
Ninemile Creek	2.93	8.7	C,F,ML	Dunmyer Rd. (CR 141)	Geometric	S02K01	Lindsey
Ninemile Creek	5.00	7.9	C,F,ML	Hessville Rd. (TR 92)	Dwnst. Trib, Upstream Lindsey village	S02K02	Lindsey
North Branch Portage River	0.08	59.1	Cmop,PO4,F2,MT,D	River Rd.	Geometric, HUC14 Sentinel Site	500520	Pemberville
North Branch Portage River	6.55	48	C,PO4,F2,MT	Silverwood Rd.	Fill gap	S01S10	Dunbridge
North Branch Portage River	8.55	46	Cmo,S	Bowling Green WWTP Mix Zone	Chem only (Bowling Green WWTP Mix zone)	201093	Dunbridge
North Branch Portage River	8.60	40	Cmop,PO4,F2,MT	Upst. Poe Ditch (SR 105)	Upst. Bowling Green WWTP	S01K01	Dunbridge
North Branch Portage River	13.55	34	C,F2,MT	Linwood Rd.	Geometric	S01S11	Jerry City
North Branch Portage River	17.92	24	C,PO4,F2,MT	Rudolph Rd.	Dwnst. CAFO	S01S40	Bowling Green South
North Branch Portage River	21.96	14.3	C,F,ML	Mermill Rd.	Geometric	S01K02	Bowling Green South
North Branch Portage River	25.85	8.1	C,F,ML	Jerry City Road	Geometric	S01K03	Weston
North Branch Turtle Creek	0.80	7.8	C,PO4,F,ML,D	Opfer-Lentz Rd.	Geometric	201124	Genoa
North Branch Turtle Creek	3.00	3.9	Cb	Genoa Clay Center Rd.	Chem only (Unsewered area)	S03K06	Genoa
Portage River	0.05	581	FT	Portage River at mouth	Fish Tissue	S02S09	Port Clinton
Portage River	0.50	581	Cmo,Sp	Port Clinton WWTP mix zone	Port Clinton WWTP mix zone	S02S10	Port Clinton
Portage River	0.60	581	Cmo,FT	Upst. Port Clinton WWTP	Upst. Port Clinton WWTP	S02S11	Port Clinton
Portage River	3.00	579	FT	SR 2	Fish Tissue	S02S12	Port Clinton
Portage River	5.00	573	FT	Dwnst Little Portage	Fish Tissue	S02S13	Lacarne
Portage River	6.00	540	Cm,F2,MT,D	0.5 mile Upst L.Portage R.	Fill gap, lacustuary	S99Q01	Lacarne
Portage River	11.10	518	Cmo,F2,MT,FT,Sp,D	Dwnst Oak Harbor WWTP	Dwnst. Oak Harbor WWTP, opp. Golf	S02S14	Oak Harbor

River	River Mile	Drain. Area	Sampling	Location	Issue(s)	STORET	USGS_Quad
					course		
Portage River	12.30	516	F2,MT	0.25 mile Dwnst. SR 19	Dwnst. Brush Wellman, lacusutary	S02P06	Oak Harbor
Portage River	12.55	516	Cmo,Sp	SR 19	Chem only (Dwnst. Brush Wellman)	S02P06	Oak Harbor
Portage River	14.00	497	Cmo+,Spv,D	Adj. SR 105, Upst. Toussaint-Portage Road	Chem only (Dwnst. Brush Wellman)	S02S16	Oak Harbor
Portage River	15.70	496	Cmo+,F2,MT,Spv	Dwnst. Slemmer-Portage Rd.	Dwnst. Brush Wellman	S02S17	Lindsey
Portage River	16.40	496	FT	Dwnst. Brush Wellman	Dwnst. Brush Wellman, Fish Tissue	S02S02	Lindsey
Portage River	16.50	496	Cmo+,F2,MT,Spv	Mix Zone Brush Wellman	Mix Zone	S02S03	Lindsey
Portage River	17.03	495	Cmo+,PO4,F2,MT,Spv,D	SR 590	Reference, HUC11Sentinel Site (USGS gauge)	S02P08	Lindsey
Portage River	22.13	432	Cmo,F2,MT	Dwmst Elmore WWTP	Fill Gap, Dwnst Elmore WWTP, HUC14 Sentinel	S02S18	Elmore
Portage River	24.20	430	Cmo,F2,MT	Upst. Ohio Turnpike	Dwnst. Woodville WWTP	S02S20	Elmore
Portage River	28.08	429	Cm,PO4,F2,MT,D	Guage at US 20	Sentinel	500510	Elmore
Portage River	32.10	418	Cm,F2,MT	US 23	Dwnst. Pemberville WWTP	S01S12	Pemberville
Portage River	35.28	353	Cmop,PO4,F2,MT,D	Bridge St.	HUC14 sentinel	S01S36	Pemberville
Rader Creek	0.80	32.1	Cmp,PO4,F2,MT,D	Cygnet Rd.	Geometric, HUC 14 sentinel	201109	North Baltimore
Rader Creek	5.20	18.1	Cmo,F,ML	Needles Rd.	Geometric, Dst. proposed CSX	S01S24	Hoytville
Rader Creek	10.92	7.3	C,F,ML,D	Co. Rd. 203	Geometric, Dwnst. McComb WWTP	S01S26	Hoytville
Rader Creek	13.55	2.6	Cmp,PO4,F,ML,Sp	Reservoir access road, (access through park, south of swimming pool)	Chem only (McComb PWS)	300374	McComb
Rocky Ford Creek	1.59	72.8	Cmp,PO4,F2,MT,D	Solether Rd.	HUC14 sentinel, upst. ditch along east side Solether	300372	Bowling Green South
Rocky Ford Creek	5.10	66	Cmo,F2,MT	Cygnet Rd.	Geometric	S01P28	North Baltimore

River	River Mile	Drain. Area	Sampling	Location	Issue(s)	STORET	USGS_Quad
Rocky Ford Creek	9.80	57	Cmo+,F2,MT,Sp,D	Upst. North Baltimore WWTP	CSOs, Keep upst. of WWTP 001	S01S04	North Baltimore
Rocky Ford Creek	10.74	56	Cmp,Sp	SR 18, Dwnst. Fenburg #1	Chem only (N. Baltimore PWS)	S01P26	North Baltimore
Rocky Ford Creek	11.87	32	Cmp,PO4,F2,MT,Sp	TR 114	N. Baltimore PWS	S01S05	North Baltimore
Rocky Ford Creek	15.04	23	C,F2,MT	Co. Rd. 220	Reference	S01S06	North Baltimore
Rocky Ford Creek	19.53	16.2	C,F,ML	Co. Rd. 18	Geometric	S01K11	Bloomdale
Rocky Ford Creek	21.12	7.6	C,F,ML	Co. Rd. 109	Geometric	S01K12	Arcadia
South Branch Portage River	0.50	110	Cmop,PO4,F2,MT,S,D	Kenner Rd.	Geometric, HUC14 Sentinel Site	S01S19	Jerry City
South Branch Portage River	4.78	100	C,F2,MT	Greensburg Pike	Dwnst. Southside Packers, Fill gap	S01P14	Jerry City
South Branch Portage River	8.35	54	C,PO4,F2,MT	Portage View Rd.	Reference	S01P10	Jerry City
South Branch Portage River	14.43	34	C,F2,MT	Hall Rd.	Dwnst. old sludge fields	S01K04	Bloomdale
South Branch Portage River	17.77	32	C,F2,MT	Stearns Rd.	Geometric, Bloomdale WWTP/old sludge field	S01K05	Bloomdale
South Branch Portage River	22.58	17	C,F,ML	TR 218	Geometric, ask at house on corner for permission to access stream	S01K06	Bloomdale
South Branch Portage River	24.77	7	C,F,ML	Co. Rd. 109	Geometric,RM maps call it trib @ 24.49/0.28. USGS maps call it main	S01K07	Arcadia
South Branch Turtle Creek	2.65	10.6	C,PO4,F,ML	Moline Rd.	Geometric	S03K07	Genoa
Sugar Creek	0.80	58	Cmp,PO4,F2,MT,D	Hessville Rd.	Geometric, HUC14 Sentinel Site	300371	Lindsey
Sugar Creek	3.65	56	C,F2,MT	Elmore-Eastern Rd.	fill gap	S02P01	Elmore
Sugar Creek	8.80	51	C,F2,MT,S	Dwnst US 20	Fill gap, Chem collected at RM 8.90	S02S25	Elmore
Sugar Creek	13.38	35	C,PO4,F2,MT,S	Anderson Rd. (CR 32)	Geometric	S02S26	Elmore
Sugar Creek	18.50	17	C,F,ML	U.S. Rt. 6	Geometric	201092	Helena
Sugar Creek	21.31	12	C,F,ML	Greensburg Pike	Geometric	S02K05	Bradner
Trib to Crane Creek	0.42	1.4	Cb	Billman Rd.	Unsewered community	S03K03	Wallbridge

River	River Mile	Drain. Area	Sampling	Location	Issue(s)	STORET	USGS_Quad
Trib to Rader Creek at RM 4.03	0.70	2.1	Cm	Needles Rd.	Chem only (Dwnst. Proposed CSX)	S01K20	North Baltimore
Trib to Rader Creek at RM 4.37	0.45	6.3	Cmo	Needles Rd.	Chem only (Dwnst. Proposed CSX)	S01K17	North Baltimore
Trib. to Rocky Ford (RM 10.75)	2.00	18.7	C,F,ML	Co. Rd. 139	Geometric, stream is called Fenburg #1 on RM map	201105	North Baltimore
Trib. to Rocky Ford (RM 10.75)	3.57	8.9	C,F,ML	TR 112 (Bridge is out)	Geometric, stream is called Fenburg #1 on RM map	S01K13	North Baltimore
Trib. to Rocky Ford (RM 10.75/1.99)	1.80	7.5	C,F,ML	Adj. Co. Rd. 139	Geometric, stream is called Fenburg #2 on RM map	201106	North Baltimore
Turtle Creek	11.62	21.4	C,F2,MT	Nissen Rd.	Geometric, lacustuary	S03K05	Genoa
Wolf Creek	6.51	9.2	C,F,ML	Yeasting Rd.	Geometric	S02K04	Elmore
Wolf Creek/Berger Ditch	2.70	7.8	C,F,ML,D	Stadium Rd.	Geometric, Wolf Creek flows into Berger Ditch near Lake Erie	201111	Oregon
Wolf Creek/Berger Ditch	6.30	2.7	C	Upst. Curtice Rd.	Chem only, Dwnst. Hirzel canning	S03S50	Wallbridge
Wolf Creek/Williams Ditch	1.70	7.6	C,F,ML	Yondota Rd. (lacustuary)	Geometric, lower portion of Wolf Creek is labeled Williams Ditch	201144	Reno Beach

Table 4. List of chemical/physical water quality parameters to be analyzed/measured in surface water, sediment, and fish tissue from the Portage River basin and Lake Erie tribs. 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 (Table 2).

Parameters	Test Method	Water	Sediment	Fish Tissue
Cbod, 20 day	?	X		
SOLIDS, DISSOLVED (TDS)	USEPA 160.1	X		
SOLIDS, SUSPENDED (TSS)	USEPA 160.2	X		
AMMONIA	USEPA 350.1	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		
ORTHOPHOSPHATE, Dissolved	?	X		
GLYPHOSATE	USEPA 547	X		
ICP 1 (Al,Ba,Ca, Fe, Mg, Mn, Na, Ni, K, Sr, Zn, Hardness)	USEPA 200.7	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 (PCBs olnly)	X (OEPA 590.1)
E.coli	USEPA 1103.1/ 640.1	X		
Percent Solids	SM 2540G		X	X

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Appendix A

Hospital Directions and Maps

Magruder Hospital

From Perry Street (St Rte 163):
Turn south on Fulton Street (a sign for Magruder Hospital is located on north side of intersection). Magruder Hospital is 6 blocks south on the east side of the street.

From the South:
Take SR 53 north into Port Clinton. After the stoplight, turn right onto Lay Drive. At the stop sign, turn left onto 6th Street. Follow 6th Street to Magruder.

From Rt 2 Eastbound:
Exit at 53 South and turn north toward Port Clinton. After the stoplight, turn right onto Lay Drive. At the stop sign, turn left onto 6th Street. Follow 6th Street to Magruder.

From Rt 2 Westbound
Exit at SR 163, exit 121. Stay to the left on the exit ramp. Follow Perry Street to the Fulton Street intersection. A sign for Magruder Hospital will be on the north (right hand) side of the intersection. Turn south onto Fulton Street. Magruder Hospital is 6 blocks down on the east side of the street.

St. Vincents Hospital

From the North

- **I-75 South to I-280 (Exit 208)**
- **I-280 South to Greenbelt Parkway (Exit 11)**
- **Greenbelt Parkway to right on Cherry Street**

or

- **US 23 to I-475 East**
- **I-475 East to I-75 North (Exit 20A)**
- **I-75 North to Berdan Avenue (Exit 205B)**
- **Berdan Avenue to right on Cherry**

From the South

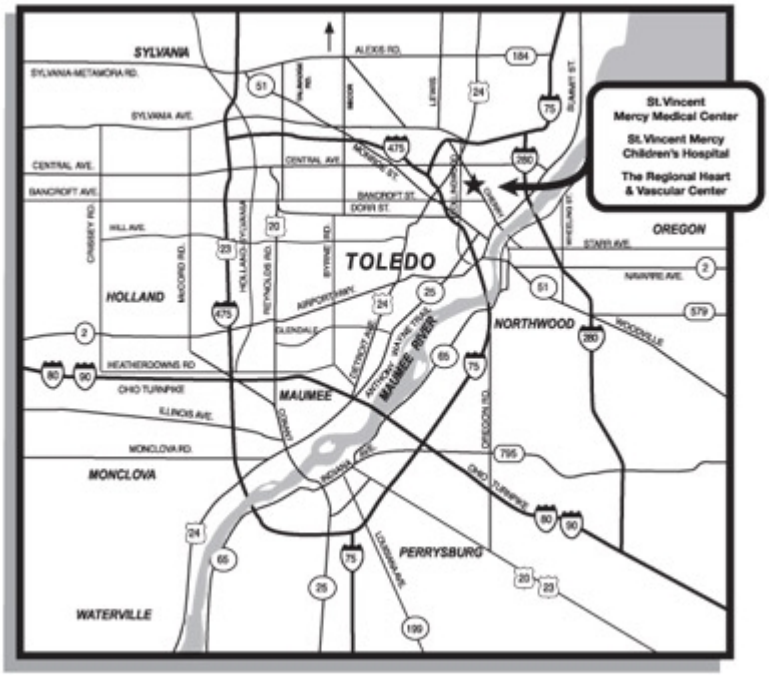
- **I-75 North to Downtown/US-25 (Anthony Wayne Trail) (Exit 201B)**
- **Left onto Erie Street**
- **Erie Street to left on Cherry Street**

From the East

- **I-280 North to Summit Street (Exit 10A)**
- **Summit Street to right on Cherry Street**

From the West

- **I-475 East to I-75 North (Exit 20A)**
- **I-75 North to right on Berdan Avenue (Exit 205B)**
- **Berdan Avenue to right on Cherry Street**

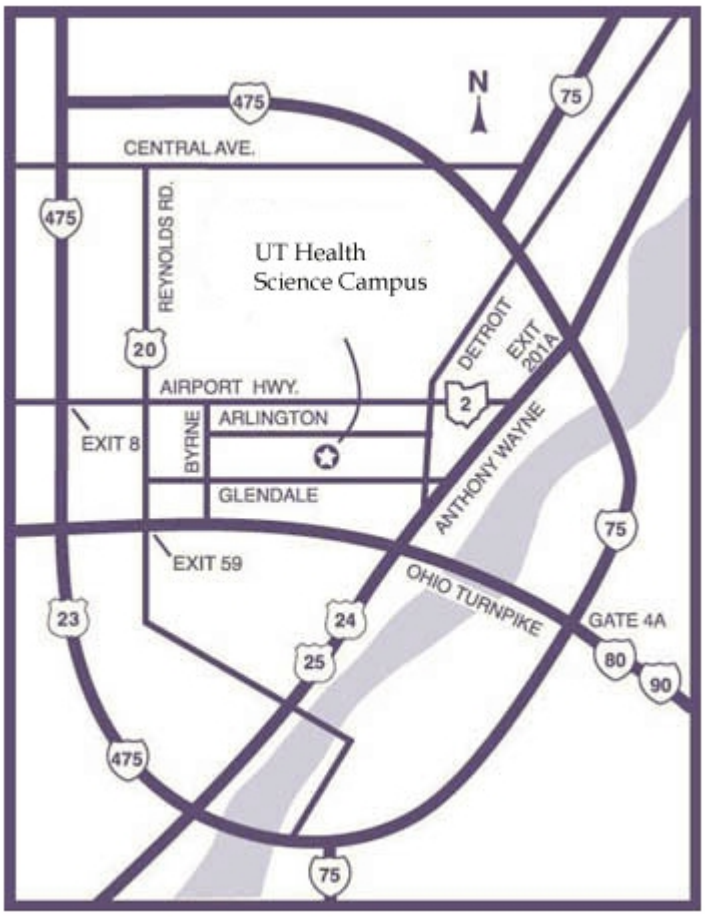


University of Toledo
Hospital

From I-75/475 Northbound or US 23/475 Southbound:
Use Exit 8 (Airport Highway, State Route 2). Proceed east on Airport Highway three miles to Byrne Road. Turn right on Byrne Road and proceed to Arlington Avenue (first traffic signal). Turn left on Arlington and proceed to UT Health Science Campus entrance. Turn right on Hospital Drive.

From I-75 Southbound:
Use exit 201A (Maumee/U.S. 25) to Anthony Wayne Trail. Go south on Anthony Wayne Trail to Glendale Avenue. Turn right on Glendale Avenue and proceed west to MUO Boulevard, (third light) and turn right.

From Ohio Turnpike, East or Westbound:
Use Exit 59 for Maumee and Toledo; head toward Toledo from toll booth and proceed north one mile on Reynolds Road (U.S. 20) to Glendale Avenue. Turn right on Glendale Avenue. Drive three miles to MUO Boulevard (fifth light) and turn left.



St. Lukes Hospital

From the West:

1. Take U.S. 24 East to Maumee
2. At first traffic light beyond the U.S. 23/ I-475 interchange, turn left onto Monclova Road
3. Look for the appropriate Medical Park entrance or hospital entrance (1, 2, 3, 4) on the left

From the East:

1. Take Ohio Turnpike 80/90 West to Gate 4A
2. Take I-75 South to U.S. 23/I-475 West
3. At Exit 4, take U.S. 24 East to Maumee
4. At first traffic light, turn left onto Monclova Road
5. Look for the appropriate Medical Park entrance or hospital entrance (1, 2, 3, 4) on the left

From the North:

From Ann Arbor:

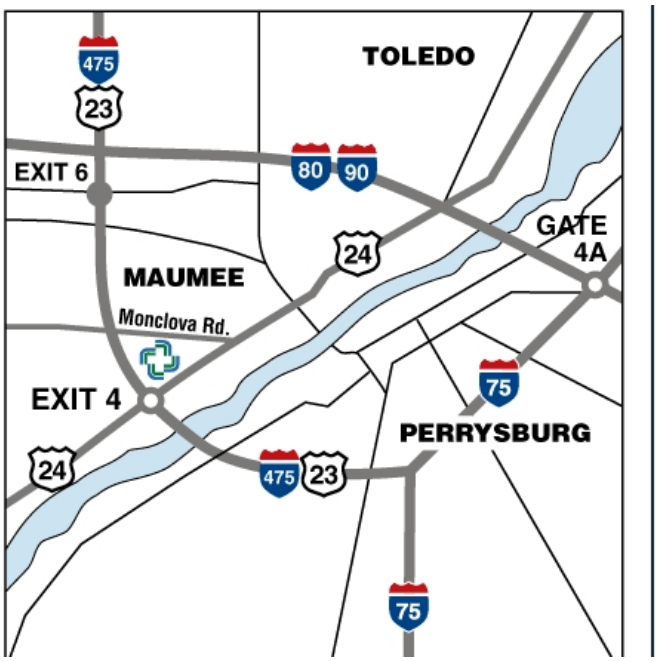
1. Take U.S. 23 South to Maumee
2. At Exit 4, take U.S. 24 East to Maumee
3. At first traffic light, turn left onto Monclova Road
4. Look for the appropriate Medical Park entrance or hospital entrance (1, 2, 3, 4) on the left

From Detroit:

1. Take I-75 South to U.S. 24 West to Maumee
2. Continue on U.S. 24 through Maumee, past Conant (U.S. 20) and Ford streets
3. Turn right onto Monclova Road
4. Look for the appropriate Medical Park entrance or hospital entrance (1, 2, 3, 4) on the left

From the South:

1. Take I-75 North to U.S. 23/I-475 West
2. At Exit 4, take U.S. 24 East to Maumee
3. At first traffic light, turn left onto Monclova Road
4. Look for the appropriate Medical Park entrance or hospital entrance (1, 2, 3, 4) on the left



St. Charles Mercy Hospital

From Toledo & Points Northwest

I-475 East to I-75 North to I-280 South. I-280 South to Exit 7, Oregon (State Route 2/Navarre). Turn left off of exit ramp onto Route 2 heading East. Turn right on Wheeling.

From Toledo Downtown

Head East on Cherry Street crossing Martin Luther King Bridge. Turn left on Starr. Follow Starr to Wheeling, Turn right on Wheeling. The hospital is on Wheeling at Navarre Avenue. Total miles from downtown to hospital is approximately 4 miles.

From Toledo Express Airport

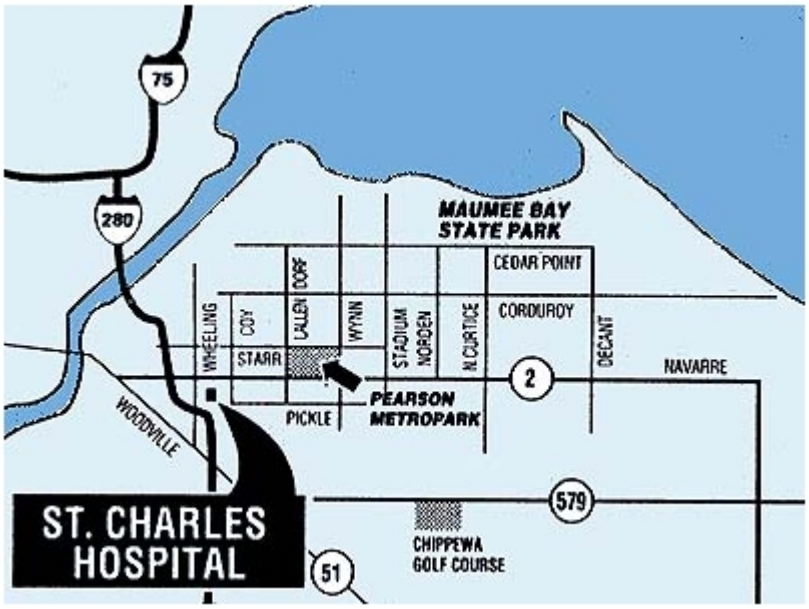
Follow signs to I-80/90 (Ohio Turnpike). I-80/90 East to Exit 5, I-280. I-280 North to Exit 7, Oregon (State Route 2/Navarre). Turn right (North) off exit ramp onto Wheeling.

From Columbus & Central Points

State Route 23 North. Connect with I-75 North near Findlay; follow signs toward Toledo. I-75 North to 795 East. 795 East to I-280 North. I-280 North to Exit 7, Oregon (State Route 2/Navarre). Turn right (North) off exit ramp onto Wheeling.

From Cincinnati/Dayton & Southwestern Points

I-75 North towards Toledo. I-75 North to 795 East. 795 East to I-280 North to Exit 7, Oregon (State Route 2/Navarre). Turn right (North) off exit ramp onto Wheeling.



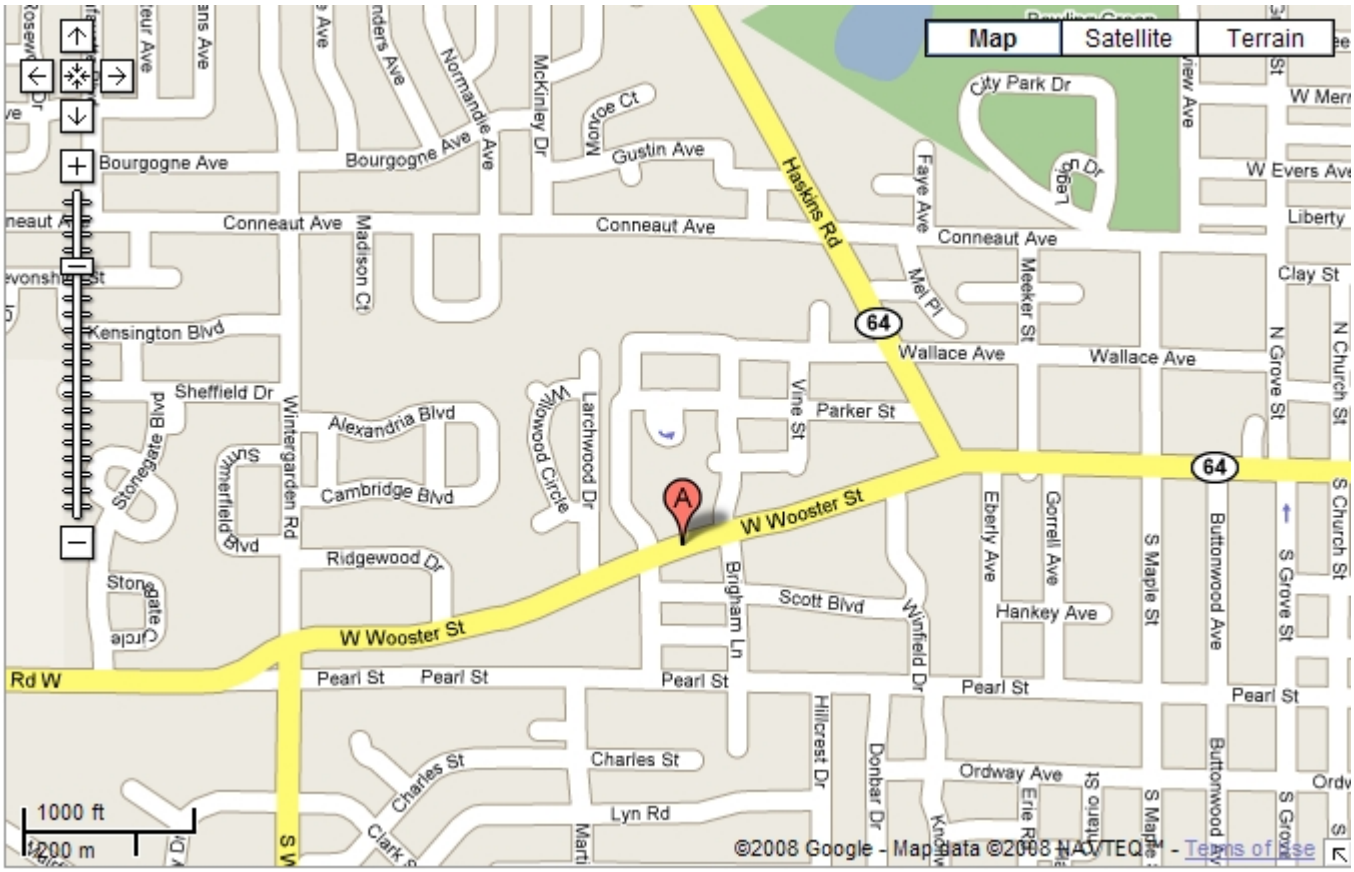
Wood County Hospital

Driving from the North
...Take I-75 South to exit 181 (Bowling Green). Turn right on Wooster St. (State Route 64). Follow Wooster St. approximately two miles to Wood County Hospital.

Driving from the South
...Take I-75 North to exit 181 (Bowling Green). Turn left on Wooster St. (State Route 64). Follow Wooster St. approximately two miles to Wood County Hospital.

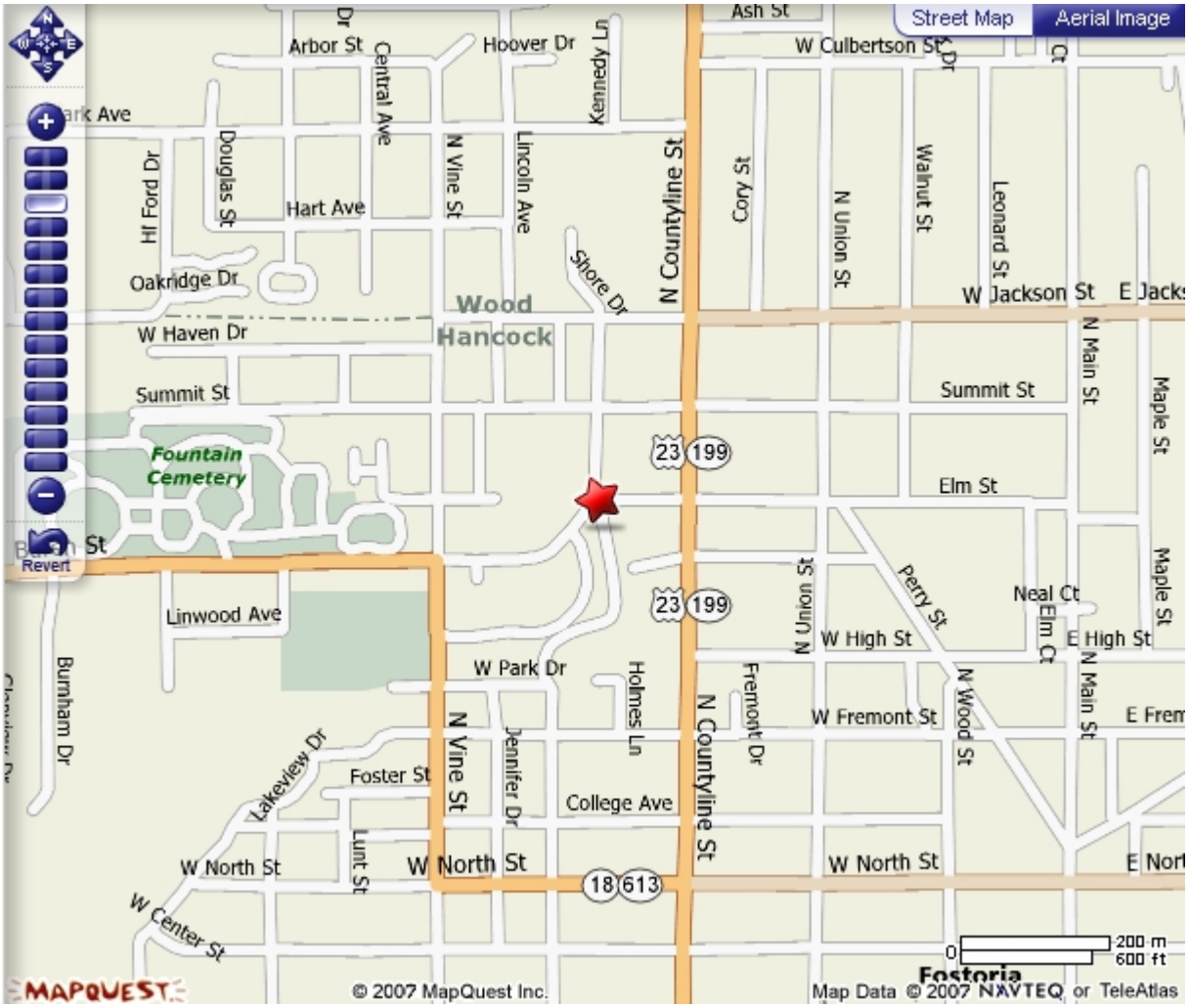
Driving from the East
...Take U.S. Rt. 6 West to St. Rt. 25 North. Turn left on Wooster St. (St. Rt. 64). Follow Wooster St. approximately one mile to Wood County Hospital.

Driving from the West
...Take U.S. Rt. 6 East to St. Rt. 25 North. Turn left to follow St. Rt. 25 North to Wooster St. (St. Rt. 64). Turn left on Wooster St. Follow Wooster St. approximately one mile to Wood County Hospital.



Fostoria Community Hospital

South on US 23. Right on Elm Street (613). Elm Street becomes Van Buren Street.



Blanchard Valley Hospital

COLUMBUS:
Leaving Columbus take 315 North to 270 East. Take 270 to 23 North (you're only on 270 a few minutes).

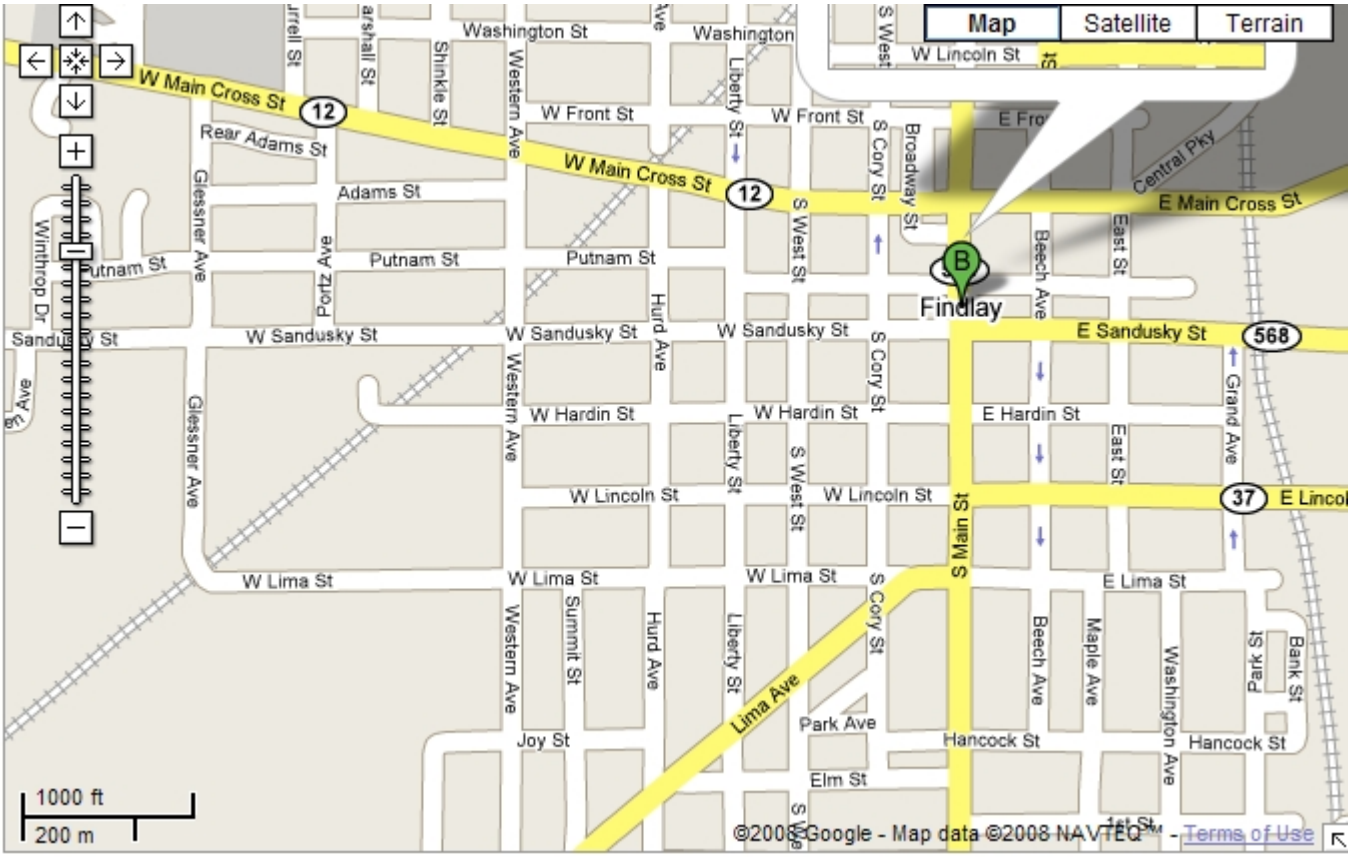
Route 23 takes you through Delaware, on to Upper Sandusky and to Carey. In Carey, Route 23 becomes Route 15, but the road continues straight. Take the Route 68 exit when you near Findlay and turn right off of the exit. This road (Route 68) turns into Main Street and just follow it through the residential section. After a few traffic lights, you'll see Blanchard Valley Hospital on the left.

FROM LIMA:
Take I-75 North to Findlay. Take the Route 68/15 exit and stay in the right-hand lane to immeidately take the first exit, which is the Lima Avenue Exit. You'll see the Findlay Airport on your left - turn right onto Lima Avenue. (It will seem like you are driving in circles…and you are!) Travel down the road and at the first traffic light, turn right onto Western Avenue. At the next traffic light, turn left onto Lake Cascades Parkway. Take this road to the next traffic light and turn right onto South Main Street.

Blanchard Valley is on the right-hand side of the road a few blocks down on South Main Street.

FROM TOLEDO:
Take I-75 South to Findlay. Take Exit #157 and turn left onto Route 12. Travel toward town across the railroad tracks and to Main Street (the Hancock County Courthouse on right). Turn right onto Main Street and travel south through town. Proceed through the residential area and the hospital will be on the right.

FROM 224 (East or West)
Take 224 toward Main Street. Go south on Main Street through town. Blanchard Valley is on the right-hand side a few blocks down on South Main Street.



Memorial Hospital

Driving directions:
23 South to US-20 East. Take the OH-53 S/US 6 West exit towards Tiffin. Turn right at Oh/53N/US 6. Turn Left at Hayes Avenue. Turn Right at 3rd Ave. Turn Left at Glen Springs Drive. Glen Springs Drive turns right and becomes S. Taft Avenue.