Considerations for Future Lists

As new ideas are introduced and in the general course of progress, it is natural for evaluation and reporting of water quality conditions to evolve. Since the introduction of the integrated report format in 2002, methods for evaluating the recreation use, the human health use (via fish contaminants), and public drinking water supply use have been systematically added to the traditional aquatic life use reporting.

This section identifies future reporting possibilities and the status of each. The potential future changes include reporting on more types of waters (wetlands, inland lakes) or reporting on specific pollutants of interest (mercury). Information on the State's response to the emerging issue of harmful algae blooms is also included. For the first time, the 2014 IR includes an expanded reporting section for Lake Erie.

I1. Wetlands

Tables and figures cited in this section are contained in the I1 Wetlands Supplement.

Ohio EPA's Integrated Report provides information on the overall condition of Ohio's water resources and also identifies those waters that are not currently meeting water quality goals (Ohio EPA, 2012). It fulfills the requirements under the Clean Water Act to report biennially on the current condition of Ohio's regulated waters (305(b) report), and to provide a list of impaired waters (303 (d) list). Despite wetlands being regulated as "Waters of the State," until now, Ohio has not developed a strategy for including information on the condition of the state's wetland resources as part of the integrated reporting process. Given the sheer number of National Wetland Inventory (NWI) mapped wetlands in Ohio (n = 134,736), it is obviously not feasible to identify individual wetlands that are considered to be impaired as part of the 303(d) list. The 2012 version of Ohio's integrated report discussed a plan for incorporating wetland information into future reports, as general 305(b) information by using 5 primary items:

1) Identification of historic wetland resources using NRCS digital soil survey data.
2) Identification of existing wetland resources using NWI data.
3) Perform a preliminary off-site wetland condition assessment using a level 1 GIS tool.
4) Include information on past wetland field assessments within each HUC12 watershed.
5) Watershed specific field assessment work will be also be described and results summarized.

This report is our first attempt at implementing this plan. In 2013, The Ohio EPA Wetland Ecology Group (WEG) completed a study focusing on the inclusion of wetland information in the Total Maximum Daily Load (TMDL) process on the Middle Scioto watershed (Gara, Harcarik, and Schumacher, 2013). This study provides the framework for incorporating wetland information into this reporting process. The focus of the study was twofold: 1) conduct a probabilistic survey of wetland condition for a current TMDL project in central Ohio using Level 2 (Ohio Rapid Assessment Method for Wetlands [ORAM]) and Level 3 (Vegetation Index of Biotic Integrity [VIBI]) assessment tools, and 2) develop a GIS-based Level 1 assessment tool to estimate wetland condition within this survey area. The results of the Level 1 assessment were then compared to those obtained using the more detailed Level 2 and Level 3 field assessments. The Level 1 tool that was developed for the Middle Scioto TMDL study differs slightly from the proposed tool included in the 2012 integrated report. This updated assessment methodology is based on close statistical relationships between the individual metrics and detailed field assessments previously conducted by the Ohio EPA WEG. For this reason, the updated Level 1 tool was used when

characterizing wetland condition within each of Ohio's HUC12 watersheds. This information is described in much more detail later on in the Wetlands section of this report.

I1.1 Middle Scioto TMDL

Overview of Middle Scioto TMDL Survey Area

The TMDL survey area chosen for this project was the Middle Scioto River, which is composed of two separate 10-digit hydrologic unit code (HUC10) watersheds: Indian Run-Scioto River [0506000112] and Scioto Big Run-Scioto River [0506000123]. These watersheds are located in central Ohio, running from southern Delaware and Union Counties, along the west side of the Columbus metropolitan area, and extending south to Circleville in Pickaway County (Figure 1). A vast majority of the TMDL area is heavily modified from development activities. The Middle Scioto is located entirely within the Eastern Corn Belt Plains Ecoregion (Omernik, 1987) and has an area of approximately 307 square miles. It is predominantly composed of urban (48 percent) and agricultural land uses (43 percent) based on the 2006 National Land Cover Dataset (NLCD) (Fry et al., 2011). Only 8 percent of the area is composed of land uses not predominantly influenced by human activity (forest, wetland, open water, etc.) (Figure 2).

Wetland Field Assessment Methods and Results

Wetland Sample Selection

Wetlands to be included in Middle Scioto TMDL study were selected from the database of NWI (U.S. Fish and Wildlife Service, 2006-2007) wetland polygons contained within the two HUC10 watersheds which define the study area: Indian Run-Scioto River [0506000112] and Scioto Big Run-Scioto River [0506000123]. Mapped wetland polygons less than 0.1 acre in size were precluded from the initial evaluation. This reduced the total number of potential sites from 671 to 617 separate emergent (N=401), forested (N=191) and scrub-shrub (N=25) wetlands (Figure 3). A Generalized Random Tessellation Stratified (GRTS) survey design was run to select a subset of sites for inclusion in the study (Stevens and Olsen, 2004). This procedure selects a proportional number of sites in each of the three wetland types, based on the total number of emergent, forested and scrub-shrub wetlands present in the TMDL area. In order to ensure enough wetlands were included to account for sites that would need to be dropped from the study due to mapping errors, wetland conversion, landowner resistance, etc. a total of 50 base sites and 150 oversample sites were selected using the GRTS survey design. The first 50 wetlands on the list that met all necessary criteria and could be successfully accessed by the WEG were the sites included in the final ecological condition analysis for the Middle Scioto TMDL area (Figure 4).

Ecological Condition Assessments

Each of the 50 wetlands were assessed using the Ohio Rapid Assessment for Wetlands (ORAM) version 5.0 (Mack, 2001). ORAM is a rapid assessment that evaluates the ecological condition of a wetland using field survey data collected via visual observation of various environmental factors. Scores range from 0 to 100, with low scores indicating poor ecological condition, and high scores assigned to wetlands in excellent condition. Additionally, in order to verify the results obtained using ORAM, a more detailed biological survey was conducted on a subset of 10 sites using the Vegetation Index of Biotic Integrity (VIBI) (Mack, 2007). The VIBI is a Level 3 analysis that requires a detailed knowledge of the plant community and can take several hours of field work to conduct. A total of 10 metrics are scored depending on the type of plant community present, and as with ORAM, the higher the VIBI score

generated, the better the ecological condition of the wetland. High ORAM and VIBI scores are typically indicative of wetlands relatively protected from human disturbance. Figure 4 illustrates the location for all ORAM and VIBI survey sites that were conducted within the Middle Scioto TMDL study area. Initial field work was done during the 2010 growing season (17 ORAMs, 10 VIBIs), with the remainder completed in the summer of 2012 (33 ORAMs).

Additionally, a new, simplified version of the VIBI has been developed by the WEG. This procedure is referred to as "VIBI-FQ," and a separate VIBI-FQ score was calculated using field data collected for the traditional VIBI as part of this study. The VIBI-FQ is considered a Level 3 assessment, as it requires a complete analysis of the species composition of the plant community. However, only two metrics are calculated, making the overall analysis and interpretation of the VIBI-FQ more straightforward than the traditional VIBI. Preliminary comparisons between the VIBI and VIBI-FQ show a strong statistical correlation between the two approaches (Gara, 2013 [draft]).

Results of all wetland field assessments that were conducted in the Middle Scioto TMDL area during the 2010 and 2012 growing seasons are shown in Table 1. Comparing results of the detailed assessments (VIBI and VIBI-FQ) with ORAM scores on the same wetlands yielded very similar results. Both the VIBI (Figure 6; $p=0.016$, $R^2=53.7$ percent) and the VIBI-FQ (Figure 7; $p=0.001$, $R^2=76.6$ percent) were strongly correlated to the rapid assessment results captured during the ORAM analysis. Consistency in the answer provided by the rapid Level 2 and detailed Level 3 assessments for these 10 sites validates the accuracy of the probabilistic survey of 50 wetlands using only ORAM.

For all 50 Middle Scioto TMDL area wetlands, the mean ORAM score was 40.6, placing the "average" wetland in the study area in fair condition. The breakdown of the 50 wetlands is as follows: 13 (26 percent) were rated as being in poor condition; 19 (38 percent) were rated as fair condition; 11 (22 percent) were good condition; and 7 (14 percent) were considered to be excellent condition. When compared to the Ohio EPA Wetland Ecology Group reference dataset of natural wetlands, the Middle Scioto TMDL wetlands appear to be skewed slightly to a lower ecological condition than what would be expected for a random selection of wetlands in Ohio (Figure 5). A Tukey's test comparing the mean ORAM scores for a set of 298 natural wetlands compared with the VIBI antidegradation category shows the strong relationship between ORAM and VIBI that is consistently obtained in various studies of wetlands in Ohio (e.g., Fennessy et al., 2007; Mack and Micacchion, 2007; Micacchion and Gara, 2008). When adding in the Middle Scioto TMDL study wetlands into the analysis, there is no statistically significant difference between the mean ORAM scores for natural wetlands falling in the category 1 range, and the mean ORAM score for wetlands assessed as part of this study. Conversely, the Middle Scioto TMDL mean ORAM score *was* different from natural wetlands scoring as category 2 or category 3 when using VIBI, and this difference was statistically significant based on the Tukey test.

Level 1 Assessment

A Level 1 desktop assessment tool was developed to predict ecological condition of mapped NWI wetlands, through the evaluation of a variety of landscape-level GIS data layers. All work related to the development of this Level 1 tool was conducted using ArcGIS 10.0 (Environmental Systems Research Institute, 2011). A total of 23 separate parameters were evaluated for inclusion as individual metrics in the Level 1 assessment tool. Each was compared to two separate buffer areas surrounding vegetation survey area boundaries for all natural wetlands in the Ohio EPA reference wetland database which had been previously assessed by the WEG using the VIBI. A standard VIBI plot measures 20 meters by 50

meters in size and generally represents an area smaller than the overall footprint of the wetland being monitored (in the rare instances that a wetland is too small to accommodate a standard VIBI plot, the plot configuration can be modified slightly when conducting a VIBI).

A total of 298 wetlands have had a digital representation of the precise boundary of the VIBI survey area generated as part of the study . The two buffers zones are: 1) from the edge of the vegetation plot boundary to a distance of 100 meters ("inner zone"), and 2) from the edge of the inner buffer zone to 350 meters ("outer zone").

Selection of Level 1 Metrics

A total of 23 landscape-level parameters were selected and calculated for two separate buffer zones (0 to 100 meters; 100 meters to 350 meters) surrounding the vegetation plot boundaries for 298 natural wetlands that had been previously assessed by the WEG using VIBI. Each of the 23 parameters was then individually compared to three separate field assessments conducted for the natural wetlands (ORAM, VIBI and VIBI-FQ) using a simple linear regression in Minitab. Most of the parameters tested for the two buffer areas showed at least a slight statistical correlation to one or more of the assessments.

A total of ten parameters were selected for inclusion in the level 1 tool, with each showing a strong correlation to most, if not all, of the three field assessments, and for both the inner and outer buffer zones. Results of each of these comparisons for the selected parameters are summarized on Table 2. Additionally, an attempt was made to choose an equal number of environmental factors illustrating both "historic" and "current" conditions surrounding each wetland. Since most available statewide GIS data layers have been developed in the last few decades, "historic" is a relative term meant to convey information related to the previous levels of disturbance present for as far back in time as the data is available. The reasoning was to try and choose geographic data that may provide clues related to the long-term stability of a wetland and its surrounding habitat, which is expected to be associated with resources in better ecological condition. For data layers that have been generated more than two times, such as the NLCD, which is available for 1992, 2001 and 2006, typically the oldest and most recent versions were included as metrics while the intermediate date was removed from consideration. The parameters selected which represent "historic" are:

1) **Landscape Development Intensity (LDI) Index for the 1992 National Land Cover Dataset (NLCD) GIS layer.** LDI is a procedure for calculating a human disturbance gradient score for an area. The NLCD is a land use layer created using Landsat satellite data, in which each 30 meter x 30 meter pixel is assigned to one of several discreet land Anderson Level 2 land use categories (Vogelman, et al., 2001). Land use categories contained within the NLCD are assigned an LDI index score, depending on the amount of energy required to maintain the level of disturbance associated with that particular land use (Brown and Vivas, 2005). LDI scores can range from 1.00 to 9.42, with the lowest scores associated with natural habitats, and higher scores indicating increasing levels of disturbance.
2) **"Historic Forest" Canopy Percent.** All green-colored areas were extracted from the USGS 7.5 minute topographic maps ("Digital Raster Graphics," or DRGs) as a separate GIS layer, referred to as "historic forest." The source maps used to create the DRGs have a publication date range of 1942 to 1995 for Ohio, with a vast majory (91%) having been produced in the 1950's and 1960's. This was the earliest source of forest cover information available as a statewide data layer that could be identified.

3) **"Natural" Land Uses minus "Human Disturbance" Land Uses for 1992 NLCD data.** Each individual land use category was evaluated and assigned to either human disturbance dominated, natural, or unknown. Classes in which it was not possible to ascertain an obvious trend (e.g., water, grassland) as to whether these land uses had occurred naturally or due to some level of human disturbance were placed in the "unknown" category and not included in the analysis. For the remaining land uses, the cells of each type were summed together and human-dominated land uses were subtracted from natural land uses for each of the two buffer zones.
4) **1990 population density estimate within inner and outer buffer zones (U.S. Census Bureau, 1990).**
5) **Percent "Rare" Habitat Types.** This is a GIS layer that combines rare plant density data from the ODNR Natural Heritage database (Division of Natural Areas and Preserves, 2008) and muck or sandy soils from the NRCS SSURGO soils data (Soil Survey Staff, NRCS, accessed 2009). Summing information from both of these information sources is intended to identify sensitive habitats which have recorded rare species present and/or have a substrate typical of certain rare wetland ecosystems (bogs, fens, Oak Openings sand prairies).

Parameters representing current, or at least the most recent information are:

1) **Landscape Development Intensity (LDI) Index for the 2006 National Land Cover Dataset (NLCD) GIS layer (Fry et al., 2011).**
2) **Percent Impervious Surface.** This is an ancillary data layer created as part of the 2006 NLCD. Each Landsat 30M x 30M pixel is assigned a score indicating the estimated percent of the area that is composed of impervious surface (Xian et al., 2011).
3) **2001 Percent Forest Canopy.** Ancillary data layer created as part of the NLCD. Each Landsat 30M x 30M pixel is assigned a score indicating the estimated percent of the area is composed of forest canopy (Huang et al., 2003).
4) **"Natural" Land Uses minus "Human Disturbance" Land Uses for 2006 NLCD data.**
5) **2010 population density estimate within inner and outer buffer zones (U.S. Census Bureau, 2010).**

Although the relationship between any one of these parameters and the field assessments showed a considerable amount of scatter, or "noise," strong statistical correlations were evident with each. These correlations exist for each assessment (ORAM, VIBI and VIBI-FQ), and also for both the inner and outer buffer zones.

A metric score of 0, 3, 7 or 10 was assigned to each parameter, based on the quartile distribution of each for the 298 natural wetlands (Table 3). A Level 1 score was then calculated for both the inner and outer buffer zones by summing the 10 individual metric scores for each. To calculate a final score for each wetland, it was assumed that the zone closest to the wetland assessment area has the greatest influence on the ecological condition of that location. Therefore, to calculate a final score for each wetland assessment area, which incorporated Level 1 information for both buffer zones, twice as much weight was given to the 0 to 100 meter buffer Level 1 score. The final calculation is as follows:

Total Wetland Level 1 Score = (Inner Buffer Level 1 Score*0.67) + (Outer Buffer Level 1 Score*0.33)

Comparison of Level 1 score to field assessment data

A Level 1 score was then calculated for each of the 298 natural wetlands in the database, and this score was compared to the field assessment scores for VIBI, VIBI-FQ and ORAM. A positive statistical

correlation was clearly evident for each, with ORAM showing the strongest relationship to the Level 1 scores (VIBI: p=0.000, R^2= 31.1; VIBI-FQ: p=0.000, R^2= 33.2; ORAM: p=0.000, R^2= 37.8).

The strong statistical relationship between previously-collected field assessment data and Level 1 information can also be illustrated with boxplots, in which the Level 1 scores for all 298 natural wetlands is divided into quartiles and compared to VIBI, VIBI-FQ and ORAM scores (Figures 6, 7 and 8, respectively). The mean VIBI score for each Level 1 quartile is different for the lowest three quartiles, based on a Tukey's comparison. There is no statistical difference between the mean VIBI scores for the third and fourth Level 1 quartile, however. This suggests that there may be a threshold level of human disturbance that may need to be crossed before a degradation in wetland ecological condition can be quantified. Once this threshold is reached, VIBI scores decline proportionally to increasing disturbance levels (Figure 6). A similar pattern exists for the VIBI-FQ data, except the mean VIBI-FQ scores are statistically different based on Tukey's comparison for all four Level 1 quartiles (Figure 7). ORAM data also demonstrates this pattern. As with VIBI data, mean ORAM scores are statistically different for each of the first three quartiles, but no difference exists between quartiles three and four (Figure 8).

Middle Scioto HUC12 analysis

The Middle Scioto TMDL area is composed of 11 individual HUC12 watersheds. The breakdown of area-weighted Level 1 scores for these watersheds is as follows: 6 scored as "limited quality wetland habitat" (category 1, or "poor" condition), 4 fell in the "restorable wetland habitat" (modified category 2, or "fair" condition) range and 1 scored as "wetland habitat" (category 2, or "good" condition). None of these 11 HUC12s scored in the "superior wetland habitat" (category 3, or "excellent" condition) range, based on the Level 1 assessment. The same 11 watersheds were summarized using field assessment data for the HUC12 watersheds in which a mean condition score was generated for each watershed having more than one ORAM conducted as part of this study. This eliminated two of the HUC12s, as only a single ORAM score had been completed in each, and this simply did not provide enough information to warrant assigning a watershed-level condition score. Of the remaining 9 HUC12 watersheds, 3 had a mean ORAM score placing them in the "limited quality wetland habitat" (category 1, or "poor" condition), 4 fell in the "restorable wetland habitat" (modified category 2, or "fair" condition) range and 2 scored as "wetland habitat" (category 2, or "good" condition). As with the Level 1 characterization, none of the HUC12s scored in the "superior wetland habitat" (category 3, or "excellent" condition) range. Comparing these results side by side, along with the breakdown of ORAM scores for the probabilistic assessment in of Middle Scioto wetlands, shows a similar pattern, with a majority of the HUCs for both the Level 1 and Level 2 characterizations skewed toward lower ecological condition (Figure 9). The ORAM field assessments had a few sites (7 out of 50, 14 percent) scoring in the highest condition category ("Superior Wetland Habitat" [Category 3]), whereas the Level 1 and Level 2 watershed characterization had none. As all of these Middle Scioto assessments resulted in similar results, it is apparent that landscape-level watershed characterizations may be useful for studies of large geographic areas over time. However, it is also important to note that these coarse, GIS-based assessments do not replace the necessity of field-level assessments when needing to accurately determine the ecological condition of a particular wetland.

I1.2 Status of Ohio's Wetland Resources

HUC 12 Watershed Level 1 Assessment

In order to generate a wetland condition score for each HUC12 watershed in the state of Ohio, a Level 1 assessment was run for each mapped wetland, based on the most current GIS layer of wetland resources available: the NWI layer (U.S. Fish and Wildlife Service, 2006-2007). The NWI has been updated for Ohio using recent high resolution digital orthophotography captured as part of the Ohio Statewide Imagery Program (OSIP, 2006-2007). The complete NWI layer for Ohio contains 313,390 polygons, which includes several types of water bodies that are generally not considered to be wetlands (e.g., rivers, streams, lakes, ponds, etc.). For this analysis, only NWI polygons classified as emergent, scrub-shrub or forested wetlands were included, which reduces the total number of polygons for Ohio that needed to be processed to 134,736. Each of these NWI wetlands was then converted to a center point to ensure that an interior part of each wetland, which would be the most likely to be protected from human disturbance, would represent the most central location for the analysis. This approach is expected to be the most conservative (i.e., generate the highest Level 1 score), and therefore most protective of each resource. It is not the intention of Ohio EPA to have Level 1 assessments supersede the need to perform Level 2 and Level 3 field assessments when wetland impacts are proposed as part of a 401 or isolated wetland permit proposal. Rather, the Level 1 score is intended for use as a planning tool, such as when considering multiple corridors for large transportation projects, or when characterizing large watershed areas, as is the case with the integrated report.

An inner (0 to 100 meters) and outer (100 to 350 meters) buffer was created surrounding the center point for each of the 134,736 NWI wetland polygons in Ohio. Level 1 parameter scores were generated for each of these mapped wetlands, and a final Level 1 score calculated using the previously discussed methodology. HUC12 wetland Level 1 assessment scores were then developed for each watershed by first determining the relative area of all NWI wetlands contained within each of these HUC12s. Relative area values were multiplied with the Level 1 scores and summed by HUC12 watershed to calculate an area-weighted Level 1 score for each. A total of five HUC12 watersheds had no mapped NWI wetlands present, and these were assigned a Level 1 score of "0."

Preliminary Level 1 scoring ranges were established to approximate the four wetland tiered aquatic life uses previously proposed by Ohio EPA (Mack, 2004). These ranges are based on the quartile distribution of all NWI wetlands in Ohio, and are as follows:

A) "Limited Quality Wetland Habitat" (Category 1) = Level 1 scores from 0 to 29.
B) "Restorable Wetland Habitat" (Modified Category 2) = Level 1 scores from 29 to 42.
C) "Wetland Habitat" (Category 2) = Level 1 scores from 42 to 61.
D) "Superior Wetland Habitat" (Category 3) = Level 1 scores from 61 to 100.

The WEG will continue to re-evaluate these Level 1 scoring ranges as more field assessment data on natural wetlands is collected.

Figure 10 depicts all 1,538 watersheds in Ohio based on the area-weighted Level 1 scores, color-coded by the proposed wetland tiered aquatic life use ranges described above.

An analysis was done to compare results of the Level 1 HUC12 watershed characterization with field assessment results (ORAM, VIBI and VIBI-FQ) obtained for natural wetlands in Ohio. Only HUC12 watersheds which had at least two field assessments conducted were included in this analysis (N=74). The comparison confirms that a significant statistical relationship exists between the Level 1 and Level 2/Level 3 HUC12 watershed characterizations. This relationship is consistent for VIBI (p=0.000, R^2=34.8), VIBI-FQ (p=0.000, R^2=30.3) and ORAM (p=0.000, R^2=32.5).

Summary Table of Wetland Condition for Ohio's HUC12 Watersheds

The Level 1 analysis documented in this study provides a mechanism for estimating wetland condition on a watershed scale, by generating an area-weighted Level 1 score for each HUC12 watershed in the state. This information, along with data on estimates of overall quantities of historic and current wetland habitat, wetland loss, and field assessment data, where it exists, has been summarized for all of the 1,538 HUC12 watersheds in the state (Table 4). As new information is generated on Ohio's wetland quantity and quality, this table can be modified for future integrated reports.

I1.3 Next Steps

The Ohio EPA proposes that periodic Level 2 and Level 3 field assessments be conducted on a random selection of wetlands within targeted HUC12 watersheds on a rotating basin schedule, similar to what is currently being done with the Ohio EPA stream assessments. Issues such as property access and lack of staff resources will dictate the number of watersheds that can be surveyed, but as the number of HUC12s that have had field assessments conducted increases, a better understanding of the relationship between the Level 1 and Level 2/Level 3 characterizations will be illustrated. This understanding will be critical to the continued improvements to our ability to assess the ecological condition of wetlands using remotely-sensed, landscape-level GIS data.

Additionally, Ohio EPA would like to establish a workgroup of wetland experts to develop criteria for identifying wetlands that would qualify as "special waters." These criteria could include setting specific numeric scores for the Level 1, 2, and 3 assessments, as well as rarity of wetland type, and functional capacity within the local watershed context. One product of this workgroup would be a list of important Ohio wetlands to be included in the integrated report as being of statewide significance and worthy of extra regulatory protection.

Future research will also focus on improved wetland mapping using the ever-increasing wealth of detailed GIS data, to enhance our ability to more accurately identify the type and extent of wetlands in Ohio.

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Reminder: Tables and figures cited in this section are contained in the I1 Wetlands Supplement.

I2. Inland Lakes and Reservoirs

Ohio EPA initiated a renewed monitoring effort for inland lakes in 2008. This report assesses three of the four beneficial uses that apply to inland lakes: recreation, public drinking water supply, and human health (via fish tissue). Ohio EPA is in the process of updating the water quality standards rules for lakes. Once these rule updates are complete, Ohio EPA expects to include an assessment of the aquatic life use for lakes as a factor in listing watershed or large river assessment units in future 303(d) lists. This section outlines the current status of the monitoring effort for inland lakes, summarizes needed administrative rule changes and previews a potential methodology for assessing the lake habitat aquatic life use in future 303(d) lists. The section was first introduced in 2010 and has not changed appreciably since 2010 because the administrative rule changes have not yet occurred. Ohio EPA intends to continue monitoring inland lakes and reporting results in future cycles.

I2.1 Background of Ohio's Inland Lake Water Quality Monitoring Program

Ohio EPA's work to assess lakes began in 1989 with a Clean Water Act Section 314 Lake Water Quality Assessment grant that supported the evaluation of 52 lakes. Various additional grants enabled the evaluation of 89 more lakes through 1995. An analysis and determination of beneficial use status for 447 public lakes (greater than 5 acres in surface area) was presented in Volume 3 of the 1996 Ohio Water Resource Inventory (305(b) report). As part of that report, Ohio EPA developed and applied the Lake Condition Index (LCI) to characterize overall lake health and to assess beneficial use status.

After dedicated U.S. EPA funding for lakes monitoring ended, Ohio EPA monitored only 53 lakes over the next 10 years. The Ohio LCI, developed by Ohio EPA between 1990 and 1996 to report on the status of lake condition in Ohio, became obsolete with the passage of Ohio's Credible Data Law (House Bill 43 (amended), effective 10/21/2003). This law requires that all decisions on impairment for surface waters (streams, lakes, wetlands) use only level 3 credible data. Ohio's LCI assessment process included a combination of level 2 and level 3 credible data to make impairment decisions.

Ohio EPA began researching ways to re-establish a lakes monitoring program in 2005. During the 2007 field season, Ohio EPA participated in the U.S. EPA-sponsored National Lakes Survey. Ohio was assigned 19 lakes that were selected through a probability-based random selection process. The effort served as a precursor for renewed lake sampling program in Ohio.

I2.2 Status of Inland Lakes Program

Ohio EPA currently has resources to monitor up to 16 lakes per year using the strategy described in Section I2.2.1. Priority is being placed on lakes used for public drinking water or used heavily for recreation and suspected of being impaired for either of those uses. Secondary priorities not being addressed because of limited resources include developing a more robust sampling program, expanding to a wider variety of lakes, exploring the use of remote sensing in the screening of water quality in lakes, and attempting to track water quality changes in lakes that might be attributed to Section 319 funding and other watershed water quality improvement efforts. The objectives for monitoring inland lakes are to:

- Track status and trends of lake quality
- Determine attainment status of beneficial uses

- Identify causes and sources of impaired uses
- Recommend actions for improving water quality in impaired lakes.

In this report, Ohio EPA discusses lake use impairment for recreation, public drinking water, and human health (fish tissue) and previews a methodology for including inland lakes in the aquatic life use listing. The aquatic life use listing is dependent on the rule changes to Ohio's water quality standards, which include adoption of nutrient criteria. Once the criteria are adopted into Ohio's water quality standards rules, Ohio EPA expects to be able to definitively report on the status of the aquatic life use of lakes sampled between 2011-2013.

I2.2.1 Lake Sampling – Lake Habitat Aquatic Life Use Assessment

Ohio EPA has implemented a sampling strategy that focuses on evaluating the water quality conditions present in the epilimnion of lakes. The sampling target consists of an even distribution of a total of ten sampling events divided over a two-year period and collected during the summer months. Key water quality parameters sampled include total phosphorus, total nitrogen, chlorophyll a, Secchi depth, ammonia, dissolved oxygen, pH, total dissolved solids, and various metals such as lead, mercury, and copper. Details of the sampling protocol are outlined in the Inland Lakes Sampling Procedure Manual, available on Ohio EPA's web page at: http://www.epa.ohio.gov/dsw/inland_lakes/index.aspx.

I2.2.2 Water Quality Standards for the Protection of Aquatic Life in Lakes

Presently, lakes in Ohio are designated as exceptional warmwater habitat (EWH) with respect to the aquatic life habitat use designation. Revisions to Ohio's WQS that would change the aquatic life use from EWH to lake habitat (LH) are in progress. A primary reason for this revision is that in Ohio, a set of biological criteria apply to rivers and streams, whereas no biocriteria apply to lakes. The numeric chemical criteria to protect the LH use will remain the same as the criteria to protect the EWH use that currently applies to lakes, with a suite of nutrient criteria added. A set of numeric criteria that apply to all surface waters for the protection of aquatic life, regardless of specific use designation, will also apply to inland lakes and are referred to as "base aquatic life use criteria" in the proposed WQS rules. The base aquatic life use criteria will be the same aquatic life numeric criteria that currently apply to lakes. Examples include various metals such as copper, lead, and cadmium as well as organic chemicals such as benzene and phenol. Specific details concerning the revisions to the water quality standards rules can be reviewed on Ohio EPA's web page at the following address:
http://www.epa.ohio.gov/dsw/rules/draftrules.aspx.

The chemical criteria specific to the LH aquatic life use in the proposed water quality standards rules are depicted in Table I2-1. In addition to these parameters, the base aquatic life use criteria that apply to lakes and can be reviewed on Ohio EPA's web page at:
http://www.epa.ohio.gov/portals/35/rules/draft_1-42new_base%20ALU%20criteria_aug08.pdf.

Table I2-1. Proposed[1] lake habitat use criteria.

Note: All criteria are outside mixing zone averages unless specified differently.

Parameter Lake type	Form[2]	Units[3]	Statewide criteria	Ecoregional Criteria[4]				
				ECBP	EOLP	HELP	IP	WAP
Ammonia	T	mg/l	Table 43-4	--	--	--	--	--
Chlorophyll a[5]								
Dugout lakes	T	µg/l	6.0	--	--	--	--	--
Impoundments	T	µg/l	--	14.0	14.0	14.0	14.0	6.2
Natural lakes	T	µg/l	14.0	--	--	--	--	--
Upground reservoirs	T	µg/l	6.0	--	--	--	--	--
Dissolved oxygen[6] All lake types	T	mg/l	5.0 OMZM 6.0 OMZA	--	--	--	--	--
Nitrogen[5]								
Dugout lakes	T	µg/l	450	--	--	--	--	--
Impoundments	T	µg/l	--	930	740	930	688	350
Natural lakes	T	µg/l	638	--	--	--	--	--
Upground reservoirs	T	µg/l	1,225	--	--	--	--	--
pH All lake types	--	s.u.	A	--	--	--	--	--
Phosphorus[5]								
Dugout lakes	T	µg/l	18	--	--	--	--	--
Impoundments	T	µg/l	--	34	34	34	34	14
Natural lakes	T	µg/l	34	--	--	--	--	--
Upground reservoirs	T	µg/l	18	--	--	--	--	--
Secchi disk transparency[7]								
Dugout lakes	--	m	2.60	--	--	--	--	--
Impoundments	--	m	--	1.19	1.19	1.19	1.19	2.16
Natural lakes	--	m	1.19	--	--	--	--	--
Upground reservoirs	--	m	2.60	--	--	--	--	--
Temperature All lake types	--	--	B	--	--	--	--	--

1 Proposed in draft water quality standards rules, August 2008.

2 T = total.

3 m = meters; mg/l = milligrams per liter (parts per million); µg/l = micrograms per liter (parts per billion); s.u. = standard units.

4 ECBP stands for Eastern Corn Belt Plains; EOLP stands for Erie/Ontario Lake Plain; HELP stands for Huron/Erie Lake Plains; IP stands for Interior Plateau; and WAP stands for Western Allegheny Plateau.

5 These criteria apply as lake medians from May through October in the epilimnion of stratified lakes and throughout the water column in unstratified lakes.

6 For dissolved oxygen, OMZM means outside mixing zone minimum and OMZA means outside mixing zone minimum twenty-four-hour average. The dissolved oxygen criteria apply in the epilimnion of stratified lakes and throughout the water column in unstratified lakes.

7 These criteria apply as minimum values from May through October.

A pH is to be 6.5-9.0, with no change within that range attributable to human-induced conditions.

B At no time shall the water temperature exceed the average or maximum temperature that would occur if there were no temperature change attributable to human activities.

I2.3 Preview of Future Listings

An important distinction between assessment of aquatic life uses of rivers and streams in Ohio versus lakes is that the former relies on biological monitoring and a comparison of those results to the

biological criteria as the assessment tool. Ohio does not have biological criteria that apply to lakes. As a result, the assessment methodology for the lake habitat aquatic life use will rely solely on the results of water quality sampling and a comparison of the results to the applicable numeric criteria. This is an obvious and important difference to the weight-of-evidence approach traditionally used by Ohio for rivers and streams.

I2.3.1 Methodology Preview: Lake Habitat Use Assessment

The following protocol is intended to be used to determine the attainment status of the LH aquatic life use in a future Integrated Report. This is dependent upon the completion of the water quality standards rulemaking currently in progress, which provide the foundational components necessary to complete the actual assessment process. The proposed protocol for assessing the LH aquatic life use designation for the purpose of this preview is outlined below.

1) Comparison of individual sample concentrations for any base aquatic life use parameter sampled to the base aquatic life Outside Mixing Zone Average (OMZA) numeric criterion. If more than 10% of the samples within an assessment period (typically two years) exceed the OMZA numeric criterion, the LH use is considered to be impaired.
2) Comparison of the ammonia concentrations of the lake samples collected to the LH OMZA numeric criterion. The LH use is considered to be impaired if more than 10% of the individual samples exceed the OMZA.
3) Comparison of the average dissolved oxygen content of the epilimnetic samples of a thermally stratified lake (or samples throughout the water column of an unstratified lake) to the OMZA dissolved oxygen criteria for the LH use designation. If more than 10% of the average dissolved oxygen values do not meet the OMZA criterion, the LH use is considered to be impaired.
4) Comparison of the median pH value of the epilimnetic samples of a thermally stratified lake (or samples from throughout the water column of an unstratified lake) to the OMZA pH criteria for the LH use designation. If more than 10% of the median pH values do not meet the OMZA criterion, the LH use is considered to be impaired.
5) Comparison of the median chlorophyll a concentration of the samples collected over the sample period (typically two consecutive summers) to the applicable chlorophyll a criterion for the type of lake and ecoregion in which the lake is located. The LH use is considered to be impaired if the median chlorophyll a concentration exceeds the applicable chlorophyll a criterion.
6) Total phosphorus, total nitrogen and secchi depth parameters are used to flag potential impairment of the LH aquatic life use designation. Exceedance of these nutrient criteria is determined in a manner similar to that described for chlorophyll a. However, exceedances of the criteria for these parameters will trigger listing on the state's "watch list" rather than a determination of use impairment. Lakes listed on the watch list will be factored into the prioritization process for additional monitoring.

I2.3.2 Results

Table I2-2 describes the assessment status of the LH aquatic life use designation for fifteen lakes sampled by Ohio EPA in 2010-2012 based on the protocol outlined in the previous section.

Table I2-2. Summary of the lake habitat use assessment for lakes sampled in 2010-2012 using the draft assessment methodology described in this section.
Note: Values in red represent an exceedance of criteria resulting in a determination of non-support of the lake habitat aquatic life use designation. Values in yellow represent an exceedance of the criteria resulting in addition to the watch list.

Lake	Eco-region[3]	Lake Type[2]	Lake Habitat Use Status	Tiered Aquatic Life Criteria							Base Aquatic Life Criteria[1] (Units are percentages)									
				chl. *a*	t-P	t-N	sec-chi	D.O (%)	pH (%)	NH_3 (%)	TDS	As	Hg	Se	Cd	Cr	Cu	Pb	Ni	Zn
				Seasonal Median Values				Percentage of Samples Exceeding the OMZA Criterion												
Lake Olander (Lucas)	HELP	DO	Non-Support	3.6	13	520	2.74	0	0	0	0	0	-	0	0	0	50	0	0	0
Caesar Creek Lake L-1-Dam 2011-2012	ECBP	DPI	Non-Support	14.15	10	1400	1.43	10	0	0	0	0	-	0	0	0	0	0	0	0
Caesar Creek Lake L-2 2011-2012	ECBP	DPI	Watch	11.9	12	1470	1.35	0	0	0	0	0	-	0	0	0	0	0	0	0
Caesar Creek Lake L-3 2011-2012	ECBP	DPI	Watch	14	14	1430	1.089	0	10	0	0	0	-	0	0	0	0	0	0	0
Clear Fork Reservoir (Richland)	EOLP	DPI	Non-Support	17.7	17.5	615	1.20	0	0	0	0	0	0	0	0	0	0	10	0	0
Stonelick Lake (Clermont County)	IP	DPI	Non-Support	86.6 ug/L	164 ug/L	1155 ug/L	0.36 m	70	0	18	0	0	--	0	0	0	0	0	0	0
Lake White (Pike County)	WAP	DPI	Non-Support	5.9 µg/L	16 µg/L	705 µg/L	1.1 m	0	0	0	0	0	X	0	0	0	0	0	0	0
Pike Lake (Pike County)	WAP	DPI	Non-Support	9.2 µg/L	11 µg/L	1140 µg/L	0.95 m	22	0	11	0	0	*X*	0	0	0	0	0	0	0

Lake	Eco-region[3]	Lake Type[2]	Lake Habitat Use Status	Tiered Aquatic Life Criteria							Base Aquatic Life Criteria[1] (Units are percentages)									
				chl. *a*	t-P	t-N	sec-chi	D.O (%)	pH (%)	NH_3 (%)	TDS	As	Hg	Se	Cd	Cr	Cu	Pb	Ni	Zn
				Seasonal Median Values				Percentage of Samples Exceeding the OMZA Criterion												
Ross Lake (Ross County)	WAP	DPI	Non-Support	24.6µg/L	21.5 µg/L	655 µg/L	0.81 m	0	30	0	0	0	X	0	0	0	0	0	0	0
Caldwell Lake (Ross County)	WAP	DPI	Non-Support	5.0 µg/L	10 µg/L	450 µg/L	1.65 m	11	0	0	0	0	X	0	0	0	0	0	0	0
Stewart Lake* (Ross County)	WAP	DPI	Non-Support	7.4 µg/L	5.0 µg/L	420 µg/L	1.91 m	0	0	0	0	0	X	0	0	0	0	0	0	0
Madison Lake	ECBP	DPI	Non-Support	84.4	80	1280	0.29	18	0	0	0	0	-	-	0	0	0	0	0	0
Deer Creek Reservoir (Scioto R.)	ECBP	DPI	Non-Support	42.8	53	2400	0.83	54	9	0	0	0	-	-	0	0	0	0	0	0
Hargus Lake	ECBP	DPI	Non-Support	17.3	19	570	1.80	0	27	0	0	0	-	0	0	0	0	0	0	0

1 Represent parameters typically included in a standard lake assessment; additional parameters sampled as necessary.
2 DPI = impoundment; UP = upground reservoir
3 ECBP = Eastern Corn Belt Plains; EOLP = Erie/Ontario Lake Plain; WAP = Western Allegheny Plateau; HELP = Huron/Erie Lake Plains

I3. Mercury Reduction at Ohio EPA

Mercury is a persistent bioaccumulative toxic metal that is widely used in many products. Once mercury is released into the environment its toxicity, persistence and ability to travel up the food chain are important issues for human health and the environment. Ohio has a statewide health advisory for mercury from fish consumption for sensitive populations: women of childbearing age and children fifteen years old or younger (issued by Ohio's Department of Health).

U.S. EPA is allowing states to identify waters for a special 303(d) list category devoted to mercury issues (5M). While moving in this direction would be preferable as a way to focus on this important pollutant, Ohio EPA has decided that such a move is not possible for this report. At the same time, Ohio EPA is taking action to decrease mercury pollution and these efforts are summarized here.

I3.1 Ohio Law

House Bill 443 was made law on January 4, 2007. The law has the mercury product regulations created initially in House Bill 583 and Senate Bill 323, establishing sales bans for certain mercury products. Public and private schools through high school were not to purchase mercury, mercury compounds or mercury-measuring devices for classroom use as of April 6, 2007. Mercury thermometers and mercury-containing novelty items were not to be sold in Ohio as of October 6, 2007. The sale of novelty items that have mercury cell button batteries are banned starting in 2011. Mercury thermostats were not to be sold or installed as of April 6, 2008. There are exemptions to the sales bans.

I3.2 Ohio Projects

The Ohio EPA works in several areas seeking to reduce mercury emissions and increase awareness:

- identification of air sources of mercury, including identification of waterbodies in the State impaired by mercury predominantly from atmospheric deposition, potential emissions sources contributing to deposition in the State, and adoption of appropriate State-level programs to address in-state sources

- identification of other potential multi-media sources of mercury, such as mercury in products and wastes, and adoption of appropriate State-level programs (note that mercury-containing products may be a source of mercury to the air and other media during manufacturing, use, or disposal)

- quantifying multi-media mercury reductions achieved by scrubber systems installed at Ohio power plants in response to a lawsuit filed by several northeastern states

- adoption of statewide mercury reduction goals and targets, including percent reduction and dates of achievement, for air and other sources of mercury, as well as reduction targets for specific categories of mercury sources where possible

- multi-media mercury monitoring, including water quality, air deposition, and air emissions monitoring

- standardizing reporting for all publicly owned treatment works with mercury variances in relation to submitting data for the annual Pollutant Minimization Program report

- investigating mercury in various types of wastewater, including
    - primary materials industries, including primary metal production, oil refining, and coal facilities
    - facilities processing steel scrap (continuous casting and steel foundries)
    - publicly-owned treatment works, which looks at indirectly discharging industries through the pretreatment program and facility Pollutant Minimization Plan
    - coal power plant wastewater from scrubbers, ash ponds and "Low Volume" wastewaters
    - other industries in interactive allocation segments to get an accurate accounting of mercury in the segments

- working to control discharges from the State's one mercury cell sodium/chlorine plant. The current consent order includes reducing fugitive air emissions that have contributed to storm water discharges of mercury. The plant will be scrubbing cell emissions with water and sending those discharges to the plant's zero discharge process treatment system. The consent order also requires the company to track mercury mass balances through the facility, and recycle where possible. This includes using collected storm water as process water make-up

- public documentation of the State's mercury reduction program in conjunction with the State's Integrated Report, and public reporting of progress in carrying out the State's programs and reducing in-State mercury sources

- coordination across States, where possible, such as multi-State mercury reduction programs. Ohio EPA has representatives in several organizations that work toward this goal.

In addition, several specific projects are underway as described below.

Mercury Collection and Recycling
Mercury collection and recycling occurs at several businesses in Ohio. Names and contact information for these facilities are available on the Ohio EPA mercury recycling vendor website (http://www.epa.ohio.gov/ocapp/Recycle.aspx).

Mercury Switch Removal Program moved to the National Program
In September 2006, Ohio was one of the first states to partner with the National Mercury Vehicle Switch Recycling Program (NMVSRP) to collect automobile mercury switches. Initially Ohio administered the incentive program. While Ohio EPA administered the program, auto recyclers in Ohio collected for recycling 41,310 mercury-containing automobile switches and $123,900 in incentives were awarded. NMVSRP took over all aspects of Ohio's switch collection program in September, 2008 including incentives. Currently Ohio works to direct auto recyclers to the national program and assist them when they have questions.

Ohio Good DEED Program
The Ohio Dental Association (ODA) initiated the Good DEED (Dedicated to Environmental Excellence in Dentistry) program their new recognition program on May 31, 2010. It is a voluntary program to recognize the efforts of dental offices to operate in an environmentally responsible manner. The Good

DEED program uses a tiered approach for recognizing dental offices that minimize the environmental impact of their practices on Ohio's environment. It includes: comprehensive on-line checklists to identify American Dental Association best management practices (BMPs), environmental regulations that apply to dental offices, and best management practices to help your business be more sustainable and preserve and protect natural resources. The two tiers of the program recognize dental practices that follow the American Dental Association's BMPs including the installation of amalgam separators and a second tier of recognition, for dental offices pursuing more environmentally sustainable activities.

Ohio Hospital Project

Ohio EPA works with The Ohio Hospital Association to reduce the generation of hospital waste, including mercury, which hospitals commonly have in thermometers, blood pressure monitors and other equipment. A formal agreement between the two organizations was signed as part of Ohio Pollution Prevention Week, September 20-24, 1999. The Ohio Healthy Hospitals Pollution Prevention Initiative is based on a federal agreement signed by U.S. EPA and the American Hospital Association. The goal of the program is to provide tools to support hospitals' continued efforts to minimize the production of pollutants and reduce the amount of waste generated.

I3.3 Interagency Groups

Members of the Ohio EPA are involved in several collaborative groups with representatives from various organizations and agencies.

- Great Lakes Regional Collaboration (GLRC) – formed with members from the federal Great Lakes Interagency Task Force, the Council of Great Lakes Governors, the Great Lakes Cities Initiative, Great Lakes tribes and the Great Lakes Congressional Task Force. The group includes members from non-governmental organizations and other interests in the Great Lakes Region. The GLRC created a strategy (released in December 2005) to restore the Great Lakes basin. Most recently the GLRC released a draft document that describes a strategy to phase-down mercury in products within the Great Lakes drainage area, which includes a portion of northern Ohio. In 2013 the GLRC released a draft progress report.

- Binational Toxics Strategy Mercury Workgroup – The Binational Toxics Strategy Mercury Workgroup is comprised of representatives from state governments, the United States and Canadian federal governments, and several environmental groups. Its purpose is to set mercury reduction goals applicable to the aggregate of releases to the air nationwide and of releases to the water within the Great Lakes Basin.

- Ohio River Sanitation Commission (ORSANCO) NPDES Workgroup – This on-going workgroup developed a common framework for monitoring power plant ash pond and scrubber discharges for low-level mercury. These data will be used, along with ORSANCO's mixing zone phase-out, to reduce mercury discharges to the Ohio River.

- Quicksilver Caucus – The Quicksilver Caucus (QSC) was formed in May 2001 by a coalition of State environmental association leaders to collaboratively develop holistic approaches for reducing mercury in the environment. Caucus members who share mercury-related technical and policy information include the Environmental Council of the States (ECOS), the Association of State and Territorial Solid Waste Management Officials (ASTSWMO), the National Association

of Clean Air Agencies (NACAA), the Association of State and Interstate Water Pollution Control Administrators (ASIWPCA), the Association of State Drinking Water Administrators (ASDWA) and the National Pollution Prevention Roundtable (NPPR). The QSC's long-term goal is that State, Federal, and International actions result in net mercury reductions to the environment. The QSC is working collaboratively and in partnership in three priority areas:

- stewardship approaches for reducing mercury in the environment and managing safe, long-term storage of elemental mercury nationally and internationally
- multi-media approaches for a mercury-based TMDL taking into account the contributions of the air and waste program as well as using their statutes to craft solutions
- approaches to decrease the global supply and demand for mercury.

Ohio Sport Fish Consumption Advisory – The current Ohio Sport Fish Tissue Monitoring Program has monitored contaminants in sport fish since 1993. Three state agencies participate: the Ohio Department of Natural Resources (ODNR), the Ohio Environmental Protection Agency (Ohio EPA) and the Ohio Department of Health (ODH). Both ODNR and Ohio EPA collect fish throughout Ohio's jurisdictional waters. Ohio EPA analyzes the fish samples, reviews the data and issues fish consumption risk assessment evaluations. ODH releases fish consumption advisory issuance information to the public and provides fish consumption information to Ohio citizens as part of the Women's, Infant's and Children's (WIC) and the Help Me Grow (HMG) Programs' activities. Information is distributed where fishing licenses are sold, through pamphlets available in four languages, and via the Internet. See http://www.epa.ohio.gov/dsw/fishadvisory/index.aspx.

I3.4 Ohio Resources

A number of videos, fact sheets, and presentations are available on the Ohio EPA website that relate to mercury. These include household mercury fact sheets, an introduction to mercury issues, a guide for dealing with mercury by school administrators, an informational sheet for building awareness of mercury in schools, information about mercury in industry, and suggestions for developing a community mercury reduction program.

I4. Harmful Algal Blooms

Cyanobacteria are photosynthesizing bacteria, commonly called blue-green algae, which are capable of producing toxins (cyanotoxins) that affect the skin, liver or nervous system. They can also cause water quality deterioration associated with excessive biomass production (such as depleted dissolved oxygen levels, fish kills, taste and odor problems in drinking water, and elevated trihalomethane levels). A large bloom of cyanobacteria that causes harmful effects is called a harmful algal bloom (HAB).

Cyanobacteria have the ability to adapt to a wide range of temperatures and water flow regimes, contributing to their common occurrence across Ohio waters. The presence of cyanobacteria is not necessarily a concern, but harmful blooms can form when conditions are favorable for rapid growth. When excess nutrients are present, especially phosphorus, these bacteria can form expansive blooms and produce cyanotoxins at levels of concern for humans and animals.

HAB at Harsha Lake

The harmful effects of these blooms are well documented in scientific literature and recognized by U.S. Environmental Protection Agency (U.S. EPA), Center for Disease Control (CDC) and World Health Organization (WHO) as causing acute and chronic impacts in human and animal populations. U.S. EPA recognizes that HABs are increasing in spatial and temporal prevalence in the U.S. and worldwide and that their highly potent toxins are a significant hazard for human health and ecosystem viability. There are currently no federal drinking water MCLs for cyanotoxins, but microcystin, anatoxin-a, and cylindrospermopsin are included on U.S. EPA Office of Water's Contaminant Candidate List. The WHO has developed risk-based thresholds for adults for recreational exposure at 20 parts per billion (ppb) and at 1 ppb for drinking water for microcystin. Ohio EPA, the Ohio Department of Health, and the Ohio Department of Natural Resources cooperatively developed recreation and drinking water thresholds for the cyanotoxins microcystin, anatoxin-a, cylindrospermopsin, and saxitoxin.

I4.1 Response to Harmful Algal Blooms

As incidents of HABs have increased, Ohio's response is evolving. The State expects to revise the State of Ohio Harmful Algal Bloom Response Strategy as needed as more experience is gained with HABs. The ohioalgaeinfo.com web site provides background information about HABs, tips for staying safe when visiting public lakes, links to sampling information and current advisories and contact information for reporting suspected HABs. In 2012, the protocol for responding to HABs at public water supply source

waters was removed from the State of Ohio Harmful Algal Bloom Response Strategy and identified in a separate Public Water System Harmful Algal Bloom Response Strategy, available at http://epa.ohio.gov/Portals/28/documents/HABs/PWSHABResponseStrategy.pdf. The separate public water system response strategy was created to help avoid confusion between the varying monitoring and response protocols for recreation and drinking water. The strategy is evaluated and updated annually. The Ohio EPA Division of Drinking and Ground Waters also developed a HAB website (http://epa.ohio.gov/ddagw/HAB.aspx) focused on issues pertinent to public water systems.

In spring 2013, Ohio EPA revised the assessment methodology for the public drinking water supply (PDWS) beneficial use to include an algae (cyanotoxin) indicator. The revised methodology and a list of waters impaired for the PDWS beneficial use due to algae is included in Section H of this document.

I4.2 Recreational HAB Advisories and HAB-related Illness Reports

Advisories are designed to provide information and warnings to protect public health from the potential health impact of algal toxins present in HABs. Beginning in 2011, general information signs were placed in areas where HABs have been observed at State Park beaches. These signs encourage beachgoers to be alert for HABs and provide information about their appearance. In addition, the HAB advisory system was changed to a two-level system. A "Recreational Public Health Advisory" sign is posted when toxin levels exceed the recommended state benchmark criteria. Microcystin is the focus of toxin analysis. When microcystin levels exceed 6 ppb, a Recreational Public Health Advisory is posted. When microcystin levels exceed 20 ppb and there are one or more probable cases of human illness or pet death attributed to the cyanotoxin, then a "No Contact Advisory" is posted. Details of the advisory posting and removal of posting protocol are in the State of Ohio Harmful Algal Bloom Response Strategy (HAB strategy), which may be accessed at http://epa.ohio.gov/habalgae.aspx.

In 2012, microcystin was monitored at State Park beaches when algal blooms were observed by park personnel at State Park beaches. Blooms were reported at eight State Park lakes and three Lake Erie State Park beaches. Public Health Advisories were posted at four State Park lakes. Grand Lake St. Marys beaches were posted with this advisory for 100% of the recreational season; Buckeye Lake beaches for 52% of the season; Maumee Bay for 0.11% of the season; and Euclid Beach for 0.11% of the season. This was the first year that a Public Health Advisory was posted at Euclid beach near Cleveland.

The Ohio Department of Health reports that there were two reports of illnesses (probable) reported in 2011 – one at Buckeye Lake and one at Grand Lake St. Marys. In addition, there was one reported dog death at Three Creek Metropark in 2011. There was one illness report (suspected) associated with cyanotoxin exposure at Lake Erie Headlands beach in 2012. No animal illnesses were reported in 2012.

I4.3 Algal Toxin Monitoring

Monitoring of HABs has occurred in a variety of ways across the state. The main types of monitoring that have taken place are discussed below.

I4.3.1 Algal Toxin Monitoring – Recreational Waters

In 2012, beaches at State Park lakes where algal blooms were observed by park staff were monitored for microcystin. The average microcystin levels at the three eastern beaches at Grand Lake St. Marys and Buckeye Lake are detailed below:

Grand Lake St. Marys
The predominant cyanobacteria in 2011-2012 were *Planktothrix* sp.

Average microcystin level in 2011 (East beach, West beach, Camp beach) = **14.9 ppb**
Average microcystin level in 2012 (East beach, West beach, Camp beach) = **32.82 ppb**
Conclusion - The average microcystin level in 2012 at the three main beaches was **2.20 times higher** than the levels in 2011.

In 2012, the highest toxin level at any Grand Lake St. Marys beach was **82.6 ppb** on September 18 at Windy Point beach.

Buckeye Lake
The predominant cyanobacteria in 2011-2102 were *Oscillatoria* sp.

Average microcystin level in 2011 for Buckeye Lake (all beaches combined) = **2.41 ppb**
Average microcystin level in 2012 for Buckeye Lake (all beaches combined) = **4.03 ppb**
Conclusion - The average microcystin level in 2012 at the three main beaches was **1.70 times higher** than in 2011.

In 2012, the highest toxin level at any Buckeye Lake beach was **21 ppb** on October 9 at Fairfield beach.

The Inland Lakes Monitoring Program continues to collect phytoplankton and microcystin samples from the lakes sampled each year as part of the routine sampling of lakes in TMDL watersheds. In 2012, phytoplankton and microcystin samples were collected once in the spring and once in the fall. Six of the lakes sampled had cyanobacterial cell counts of 20,000cells/ml or greater from samples collected in the middle of the lake. The following cyanobacteria were reported in inland lakes evaluated by the Inland Lakes program: Aphanizomenon sp., Pseudanabaena sp., Aphanocapsa sp., and Cylindrospermopsis spp. No microcystin was detected in these samples. In 2012, cyanobacteria reported at State Park lakes were *Oscillatoria* sp., *Pseudanabaena* sp., *Anabaena* sp. , *Microcystis* ap., *Cylindrospermopsis* sp. and *Lyngbya* sp.

In 2012, a different type of bloom was observed at Dillion Lake State Park. This bright red bloom was caused by *Euglena sanguinea*. It is not an alga or bacterium, but a mobile unicellular protest that is known to produce a toxin called euglenophycin.

Also in 2012, the U.S. Army Corps of Engineers started developing a HAB sampling and advisory protocol for lakes they manage in the Midwest, including Ohio. Their HAB response strategy mirrors the Corps' Tulsa, Oklahoma strategy.

I4.3.2 Algal Toxin Monitoring – Drinking Water

Between 2010 and 2012 Ohio EPA collected 487 raw and finished drinking water cyanotoxin samples and public water systems voluntarily submitted results for over 455 cyanotoxin samples. Of these samples only one finished (treated) drinking water sample contained microcystin above the 0.3 ug/L reporting limit (0.6 ug/L), but it was below Ohio's drinking water threshold. The majority of drinking water sources, however, contained cyanotoxins. The maximum microcystin concentration detected at a water supply's source water was 1400 ug/L (Lima's Williams upground reservoir). Raw water cyanotoxin concentrations also continued to increase at the City of Celina's intake on Grand Lake St. Marys, as shown in Figure I4-1. HABs at water supplies were reported in every Ohio EPA district and in the western and central Lake Erie basin.

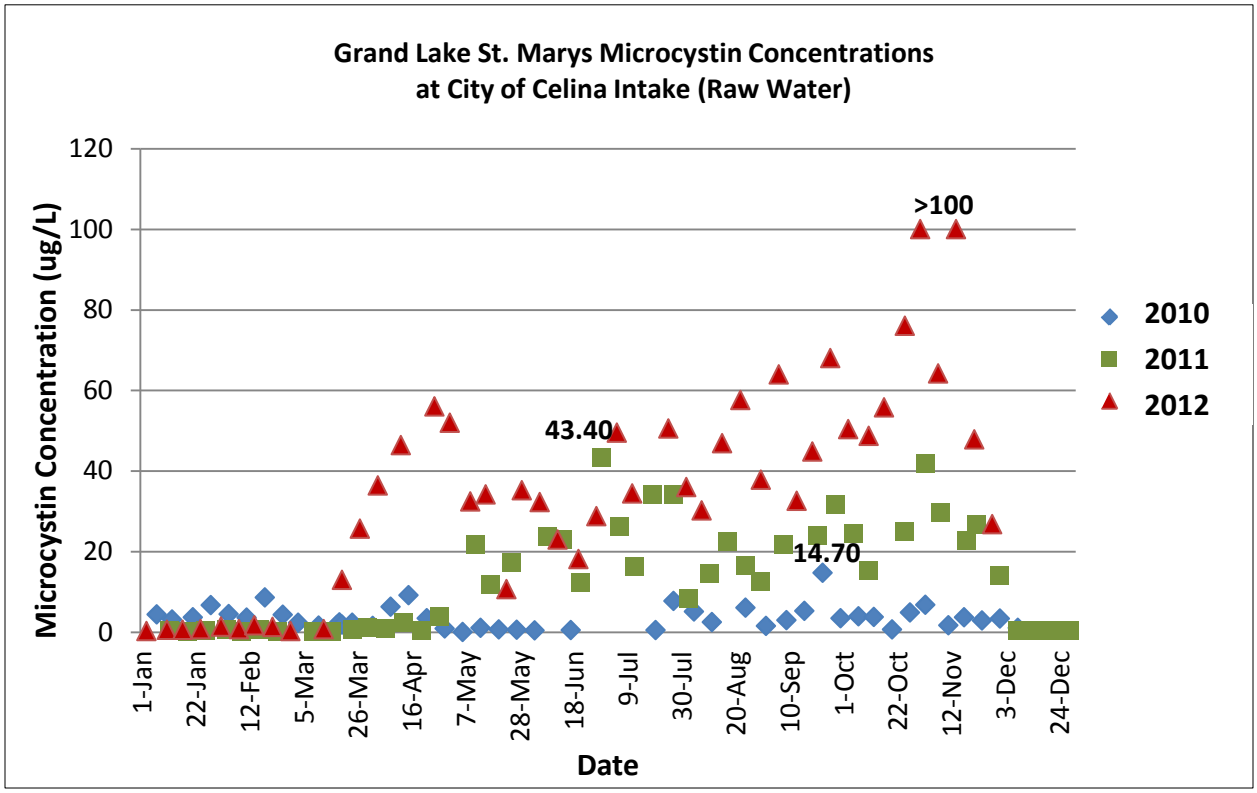


Figure I4-1. Grand Lake St. Marys Microcystin Concentrations at City of Celina Intake (Raw Water)

I4.3.3 Algal Toxin Monitoring – Accumulation in Fish Tissue

Because of the uncertainty associated with freshwater algal toxin analysis in fish tissue, and the lack of a reliable, U.S. EPA-approved analytical method for microcystin and other algal toxins in fish tissue, the effect of HABs on human health via fish consumption in freshwater systems cannot be determined at this time.

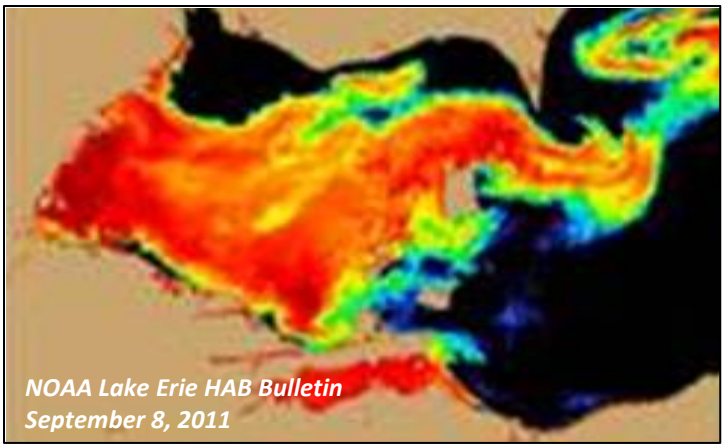
In order to better understand the occurrence of algal toxins in Ohio fish tissue, the Ohio Water Development Authority awarded Ohio EPA a grant to look for microcystin in fish fillets from Grand Lake St. Marys. Ohio EPA's Division of Surface Water (DSW) is contracting with The State University of New York – Syracuse to analyze the fish fillet samples. Preliminary results from fish collected in November 2010 appeared to indicate that microcystin was not accumulating or persisting in fish fillets; however, upon further sampling in June 2011, microcystin was detected in fish tissue. Microcystin has largely only been detected in the flesh of black crappie, but it was also detected in tissue taken from one common carp. The microcystin concentrations detected in black crappie were sufficient to post a once per week consumption advisory for that species. This advisory frequency is the same as the state-wide consumption advisory of once per week advisory for mercury.

In total, microcystin was detected in seven black crappie and one common carp between June 2011 and September 2012, representing approximately 7% of the fish analyzed with about 10% of the black crappie testing positive. The highest concentration detected in black crappie was 70 ug/kg-fish tissue. Under a grant from the Ohio Water Resource Council further sampling was conducted in collaboration

with the Ohio Department of Natural Resources during July and September 2013, and an additional round of sampling is planned for April 2014.

I4.3.4 Use of Satellite Imagery to Evaluate HABs on Lake Erie and Inland Lakes

NOAA provides a weekly HAB bulletin for the western basin of Lake Erie while there are active blooms in the western basin. Information about NOAA's effort is available online at http://www.glerl.noaa.gov/res/Centers/HABS/. These bulletins include an evaluation of the current extent of the algal bloom and a forecast for bloom movement and growth over the following week. Forecasts are based on algorithms that estimate cyanobacteria concentrations from satellite imagery and then predict how the bloom will respond to weather conditions. Park managers, Ohio EPA, and public water systems use the NOAA HAB bulletins to target sampling and adjust water treatment if needed.



The Envisat satellite (and onboard MERIS sensor) that NOAA utilized for HAB forecasts lost connection with Earth on April 8, 2012. NOAA continues to report HAB development in the western basin of Lake Erie by utilizing the MODIS sensor. Although there are spatial and spectral limitations using this sensor, it has been adequate for tracking development and expansion of Lake Erie HABs with the adjustment of algorithms. Since then, however, Ohio has not been able to monitor the development of HABs in inland lakes because the remaining MODIS sensor does not have the resolution that MERIS did. The European Union plans on launching a replacement satellite with similar and improved capabilities in 2014. This will facilitate the tracking of HAB formation in inland lakes again.

In 2012 NOAA developed a prediction model for Lake Erie HABs based on historic bloom severity and nutrient loading from the Maumee watershed. The model's prediction for 2012 was on target. However, it did not predict the 2012 central basin bloom. Since central basin blooms are infrequent, the dataset is not currently robust enough to provide accurate predictions for future blooms outside of the western basin. In 2012, a drought beginning in the spring greatly influenced the size of the bloom because nutrient runoff to the lake was minimized. The bloom was much smaller than the record bloom that occurred in 2011. This proved a very useful comparison as the previous year had a record rainfall in the spring and a record setting bloom.

I4.4 Outreach

Ohio EPA continues to coordinate a workshop at Ohio Sea Grant Stone Laboratory in August of each year. This two-day workshop, "Dealing with Cyanobacteria, Algal Toxin and Taste and Odor Compounds," attracts public water supply operators and water managers from Ohio and other states. Instructors include experts from NOAA, Ohio EPA, OSU, and Public Water Supply Operators with experience dealing with HABs. Topics covered include ecology of cyanobacteria, limnology concepts, cyanotoxin impacts, historical outbreaks, cyanobacteria relationship with taste and odor compounds, HAB identification, tracking HABs with satellites, using ELISA to evaluate HAB toxins, cyanobacterial cell

and toxins removal options, reservoir and source management, sampling and monitoring demonstrations, and update on State HAB initiatives.

Other presentations were given to interested stakeholders in 2011 and 2012. These include a 3-hour training for County Health Departments in eastern Ohio, and 3-hour training for County Health Departments in southwest Ohio, Erie County Health Department, Environmental Health Professionals, Corps of Engineers, Ohio Lake Management Society, a HAB workshop in Pennsylvania, Ohio Lake Erie Users Group, American Water Works Association, Operator Training Certification of Ohio, Ohio Academy of Sciences, Alloway, Dayton Water Roundtable, Ohio Water Management Association of Ohio, and a HAB presentation at Stone Lab for science writers. In addition, a HAB article on Ohio's experience with HABs was prepared for *Lakeline* magazine.

I4.5 Addressing HABs at the Source

In addition to carrying out the HAB strategy and revising the strategy as needed, the State of Ohio continues to seek ways to address the root cause of HABs—excessive nutrients that enter the State's waterways. Ohio EPA has submitted a draft "Nutrient Reduction Strategy" to U.S. EPA, seeking approval for the framework that will be used to reduce nitrogen and phosphorus levels in waters of the State. The strategy is part of a multi-faceted, multi-agency effort to solicit input from stakeholder groups in an effort to reduce nutrient impacts in Ohio's waters. The framework will help with developing a plan that protects drinking water, recreational water and aquatic life while considering costs and the current economic climate. In the meantime, as documented throughout this report, ongoing monitoring identifies where nutrients are causing water quality impairments and TMDLs are being developed to quantify needed load reductions.

I5 Lake Erie

A healthy Lake Erie is a vital component of Ohio's economic and ecological health. Funding under the GLRI and other sources has led to the availability of new data and opportunities to expand assessment and reporting of water quality conditions in Lake Erie. Lake Erie reporting in future Integrated Reports (IRs) will require decisions about:

- assessment unit definition, boundaries, etc.
- data availability relative to the assessment units, including quantity, type and source of data generated.
- standards or targets against which to compare the data to determine status.
- methodologies for analysis of various beneficial uses, taking into consideration data availability, targets, etc. While methodologies for some beneficial uses may be easily adapted from those used in current analyses for inland streams and lakes, some may require significant changes.

Regarding data availability, it is important to keep in mind that Ohio's "credible data law" (ORC 6111.50 to 6111.56) requires Level 3 credible data for many assessments and decisions. However, Ohio EPA cannot compel data collectors to apply for Level 3 status. Thus, while many parties may be collecting data in Lake Erie, much of it may not be useable in Integrated Report assessments. Data requirements and the credible data law are discussed in Section D3.

This section proposes an assessment unit framework, provides an overview of available data, identifies possible targets, discusses the resulting assessment and discusses future monitoring and reporting on water quality conditions in Lake Erie.

Ohio EPA hopes to open discussion and solicit recommendations via the public review and comment process for the draft 2014 integrated Report, but expects the process will continue after the 2014 IR is final.

I5.1 Recent Lake Erie Monitoring by Ohio EPA

Ohio EPA has taken advantage of two unique opportunities in recent years to monitor and assess Lake Erie open waters, bays and estuaries. The first of these was the National Coastal Condition Assessment (NCCA) in 2010. This was a statistical survey designed to report on the condition of our Nation's marine and Great Lakes coasts. The project allowed Ohio EPA to collaborate with the Great Lakes National Program Office (GLNPO) and other U.S. EPA Region 5 states and helped the agency gain valuable experience with sampling equipment and methods. In addition to the required work, Ohio EPA collected three sets of water quality samples at a series of 12 previously established ambient monitoring stations that had not been visited since 1996-1997.

In the first year of funding under the Great Lakes Restoration Initiative (GLRI), Ohio EPA received a grant for a renewed Ohio Lake Erie Comprehensive Nearshore Monitoring Program, to assess a variety of habitats, including open water, shorelines, bays and harbors, using physical/chemical assessments of water and sediment. In open water areas, samples were collected to evaluate zooplankton and phytoplankton populations, and a set of historical locations were visited annually in the spring to track densities of burrowing mayflies. The lake's shoreline, bays, harbors and estuaries were assessed to evaluate fish and macroinvertebrate populations and periphyton was sampled in the harbors and

estuaries. Details of the study are outlined in the *2011-2013 Lake Erie Nearshore Monitoring Study Plan, V1.3* (Ohio EPA, 2013).

Results of biological and habitat surveys from the shoreline and estuary habitats are summarized and incorporated into assessments in Section G of this report. Many of the plankton and benthos samples are still being processed and those results will be summarized in future reports. A summary of water quality results obtained from Lake Erie's open waters for total phosphorus and chlorophyll a is reported in this section as an example of how the proposed methodology could be applied.

I5.2 Framework for Evaluating Lake Erie Water Quality

As described in Sections D through H of this report, Ohio EPA has developed methods to determine how well Ohio's waters support four specific uses of water: human health impacts related to fish tissue contamination, recreation, human health impacts related to drinking water, and aquatic life (fish and aquatic insects). Current assessment of Lake Erie is focused on attainment of biological indicators within the coastal waters only (shoreline to 3 meters depth). Data is now available to evaluate the nearshore and offshore waters, and the proposed framework expands the evaluation to cover all of Ohio's Lake Erie waters. This section provides a description of the proposed assessment framework for Lake Erie and how assessment methodology for the beneficial uses would potentially be affected. To provide an example of how the framework would work, available data were compared to proposed water quality goals for the Lake Erie assessment units for total phosphorus and chlorophyll a.

To determine whether or not Lake Erie is supporting the designated beneficial uses, expectations against which to compare available data must be identified. Those expectations can include promulgated administrative rules as well as targets that emerge through research and discussion. Next, assessment units into which data will be aggregated must be determined. Defining units provides a framework for evaluation and reporting. Finally, carefully identifying data sources and quality expectations ensures that reliable results are reported.

I5.2.1 Establishing Expectations: Standards and Targets

For several of the beneficial uses, including recreational and human health impacts, the same standards or targets may be applicable for the proposed Lake Erie units as used for the already established assessment units. However, consideration must be given to which aquatic life criteria are appropriate for Lake Erie, and which chemical criteria are most appropriate and how they should be applied.

Lake Erie is defined in Chapter 3745-1 of the Ohio Administrative Code (Ohio's Water Quality Standards) as Exceptional Warmwater Habitat (EWH). As such, numeric criteria for the protection of aquatic life set forth in rules 3745-1-07 (statewide criteria), 3745-1-31 (Lake Erie standards) and 3745-1-33 (Lake Erie drainage basin criteria) apply and must be met as outside mixing zone standards. Table I5-1 summarizes constituents that are measured in water column samples that have numeric criteria for the protection of aquatic life and where they are found in the rules.

Criteria for dissolved solids, arsenic and selenium are fixed values. Criteria for ammonia are tiered depending on the temperature and pH of the sample because these variables affect equilibrium partitioning. More alkaline conditions favor production of ammonium hydroxide which is toxic to aquatic life. Criteria for cadmium, chromium, copper, lead, nickel and zinc are tiered depending on hardness of the sample for similar reasons.

Temperature, dissolved oxygen and pH are evaluated using field profile data. Readings from the entire water column are used if no thermal stratification is present. Only readings from the epilimnion are used if the lake is stratified (> 1°C/m). Data is pooled by parameter and statistically summarized. An average value will be calculated for temperature and dissolved oxygen and a median value for pH since it is measured on a log scale. Other constituents with numeric criteria are evaluated based on an analytical result obtained from a water column sample.

Table I5-1. Location of numeric criteria for protection of aquatic life

Parameter	OAC 3745-1
Dissolved Oxygen	Table 7-1
pH	Table 7-1
Dissolved Solids	Table 7-1
Arsenic	Table 7-1
Selenium	Table 7-1
Ammonia	Table 7-6
Cadmium	Table 7-9
Chromium	Table 7-9
Copper	Table 7-9
Lead	Table 7-9
Nickel	Table 7-9
Zinc	Table 7-9
Temperature	Table 31-1

The procedures for evaluating sediment chemistry are described in *Guidance on Evaluating Sediment Contaminant Results* (Ohio EPA-DSW, 2010). Sediment Quality Guidelines (SQGs) include Ohio Sediment Reference Values (SRVs) for metals contained in the *Ecological Risk Assessment Guidance* (Ohio EPA-DERR, 2008) and toxicity values in the *Development and Evaluation of Consensus-based Sediment Quality Guidelines for Freshwater Ecosystems* (MacDonald et al., 2000).

Harmful algae blooms are arguably the most serious issue in Lake Erie at this time. A common means used to estimate algal productivity and trophic status is to measure the photosynthetic pigment chlorophyll a in a filtered water sample. The importance of phosphorus as the limiting nutrient that feeds algae blooms is also recognized. Ohio does not have numeric criteria for these constituents in Lake Erie and is relying on targets presented in the *Lake Erie Lakewide Management Plan* (Lake Erie LaMP, 2008) and the 2011 Lake Erie Nutrient Management Strategy (Lake Erie LaMP, 2011). The targets are intended to apply as seasonal averages defined as spring (April 1-June 30) and summer (July 1-Sept. 30) and values are tiered by basin and proximity to the shoreline. The current LaMP targets for total phosphorus and chlorophyll a are summarized in Table I5-2.

Table I5-2. LaMP targets for total phosphorus and chlorophyll a concentrations in Lake Erie

Habitat	Chl *a* (ug/L)	TP (ug/L)
Offshore*		
Western Basin	3.6	15
Central Basin	2.6	10
Eastern Basin	2.6	10
Nearshore**		20
Tributaries***		32
Coastal Wetlands		one recording of <30 µg/L annually

* Mean spring total phosphorus concentration
** Mean total phosphorus concentration during ice free period
*** Mean annual total phosphorus concentration

Annex 4 of the newly revised Great Lakes Water Quality Agreement (GLWQA, 2012) states that substance objectives for total phosphorus in the open waters shall be retained on an interim basis. Lake Erie interim numbers are available for the western, central and eastern basins and correlate with the spring seasonal values identified in the 2008 Lake Erie Lakewide Management Plan (LaMP) as summarized above. The Annex also requires the U.S. and Canada to review and update the interim objectives and current loading targets and develop substance objectives for phosphorus in the nearshore waters within three years of the agreement for taking effect. Following this update, Ohio EPA will review the current water quality criteria and determine if any changes are appropriate.

I5.2.2 Defining Assessment Units

In the past several cycles of the Ohio Integrated Report, Ohio EPA has evaluated Lake Erie using three assessment units that cover the shallow waters along Ohio's coast, from the shoreline to the 3 meter depth contour, as described in Section D1. Ohio EPA is proposing to refine these units and define additional Lake Erie assessment units to expand coverage to all of the Lake Erie waters in Ohio, including shoreline, nearshore and offshore waters. The Sandusky Basin of Lake Erie is also differentiated to capture the unique characteristics of the transitional waters between the western and central basins and influence by the Sandusky Bay and lake circulation patterns. How the current LaMP targets are defined was also a factor. Under this proposal, Lake Erie assessment units would increase from three to ten units.

The 2012 GLWQA requires binational review and potential revision of the current LaMP targets, so if new targets are established Ohio may reconsider and revise the assessment units in the future as appropriate. Ohio EPA recognizes that others outside of the agency have experience or data that could suggest other boundaries may be more appropriate. Thus, Ohio EPA is soliciting comments and recommendations via the public review process to refine the assessment units.

The following assessment unit descriptions were developed based on field experience and information in the LaMP. Table I5-3 describes the proposed assessment units, and Figure I5-1 depicts the assessment unit boundaries on Lake Erie.

Table I5-3. Proposed Ohio Lake Erie assessment units

AU Code	AU Name	Description
W1	Western Basin Shoreline	Lake Erie shoreline from the MI/OH state line to the west side of Catawba Island at depths ≤3m, including Maumee Bay
W2	Western Basin Nearshore	Lake Erie open water from the MI/OH state line to a line between the Marblehead Lighthouse and Pelee Point at depths >3-7m
W3	Western Basin Offshore	Lake Erie open water from the MI/OH state line to a line between the Marblehead Lighthouse and Pelee Point at depths >7m
I1	Islands Shoreline	Lake Erie shoreline from the west side of Catawba Island to the Marblehead Lighthouse at depths ≤3m and including, but not limited to the following Islands; West Sister, Bass and Kelleys
S1	Sandusky Basin Shoreline	Lake Erie shoreline from the Marblehead Lighthouse to the Black River at depths ≤3m, including Sandusky Bay
S2	Sandusky Basin Nearshore	Lake Erie open water from a line between the Marblehead Lighthouse and Pelee Point to the Lorain Ridge at depths >3-7m
S3	Sandusky Basin Offshore	Lake Erie open water from a line between the Marblehead Lighthouse and Pelee Point to the Lorain Ridge at depths >7m
C1	Central Basin Shoreline	Lake Erie shoreline from the Black River to the OH/PA state line at depths ≤3m
C2	Central Basin Nearshore	Lake Erie open water from the Lorain Ridge to the OH/PA state line at depths >3-15m
C3	Central Basin Offshore	Lake Erie open water from the Lorain Ridge to the OH/PA state line at depths >15m

It should be noted that the boundary between the nearshore and offshore units in the Western and Sandusky Basin was based on the 7 meter depth contour and the Central Basin was based on the 15 meter depth contour. The Western and Sandusky Basins are relatively shallow with most waters less than 15 meters in depth.

Due to the Maumee River, Detroit area and Sandusky River influences, there is tremendous variability across the Western and Sandusky Basins and segregating the nearshore waters into individual units will provide more refined assessments.

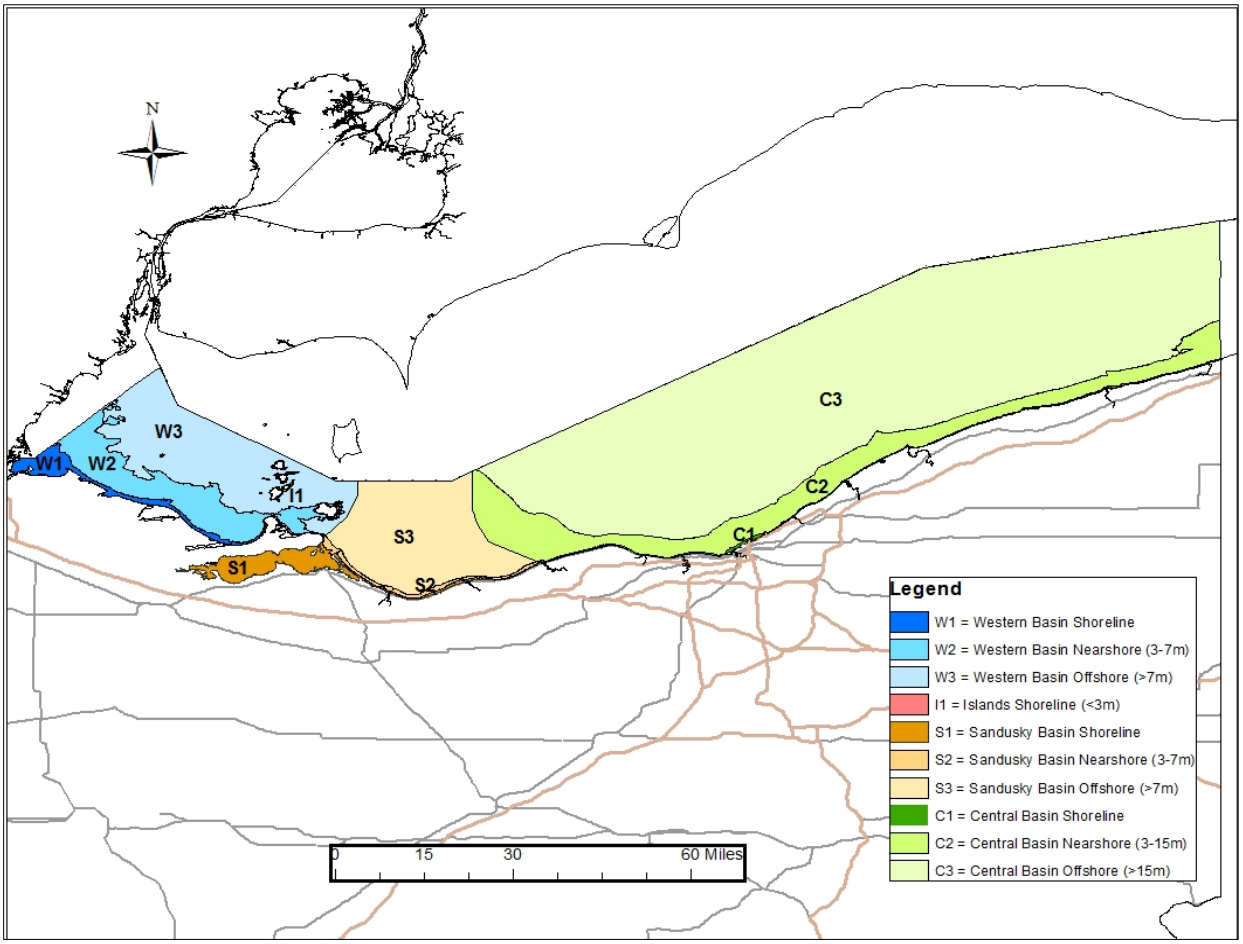


Figure I5-1. Proposed Ohio Lake Erie assessment units

I5.2.3 Identifying Sources of Data

Sources of data used for this section include that collected by Ohio EPA and any data readily available from Level 3 Qualified Data Collectors. As specified in the Ohio Credible Data law 2003 (ORC 6111.50 to 6111.56)), Ohio EPA is limited to data certified as Level 3 data when making attainment determinations for Ohio waters. Table I5-4 summarizes potential data sources that may be available for Lake Erie. Ohio EPA data represents samples collected at ambient monitoring stations. Data types may be applicable only for specific beneficial uses or assessment unit types (e.g., shoreline versus offshore assessment units). The only other currently available Level 3 credible data was obtained from the Northeast Ohio Regional Sewer District. It is expected that Level 3 data will be available from other sources in the future, including U.S. EPA, U.S. Geological Survey, Ohio State University, and the University of Toledo.

An extensive amount of water quality data will also be available from U.S. EPA during the intensive monitoring years on Lake Erie which occurs every five years (rotational basis with other Great Lakes)

with the next one for Lake Erie scheduled in 2014. Figure I5-2 shows the R\V Lake Guardian monitoring locations in relation to the proposed assessment unit boundaries.

As with the proposed assessment units, Ohio EPA is seeking input via the public review and comment process to identify potentially available qualified data (Level 3) for future Lake Erie assessment and reporting.

Table I5-4. Data type for Lake Erie for use in future Integrated Reports.

WQS Uses & Criteria Evaluated (Basic rationale)	Type of Data	Potential Source(s) of Data	Minimum Data Requirement
Human health, single route exposure via food chain accumulation and eating sport fish (criteria apply to all waters of the State)	Fish Tissue Contaminant Data	Fish Tissue Contaminant Database	Data collected within past 10 years. Two samples from each trophic level, 3 or 4 in each AU
Recreational uses and subclasses. Lake Erie shoreline evaluated on the basis of frequency of advisories posted at beaches	Beach advisories	Ohio Dept. of Health Cuyahoga County Health Dept. Northeast Ohio Regional Sewer District (NEORSD)	E.coli data from one or more beaches
Public drinking water supply (apply within 500 yards of active drinking water intake, including all emergency supply intakes)	Chemical water quality data	Ohio EPA compliance database Other PWS submitted data	Data collected within past five years. Minimum of 10 samples with a few exceptions (noted in Section H)
Aquatic life Fish community index score compared to established Lake Erie guidelines, water chemistry (applied to all EWH waters), and established ecological endpoints or targets (Lake Erie LaMP 2008, 2011)	Biological and water quality surveys, and other targeted monitoring	Ohio EPA Ohio DNR NEORSD U.S. EPA (Lake Guardian) University of Toledo CSMI Monitoring initiative U.S. Geological Survey	Fish samples collected using methods cited Ohio EPA's Lake Erie Assessment Methodology, water quality samples collected according to Ohio's Credible Data requirements, other potential indicators such as macroinvertebrates and periphyton under evaluation

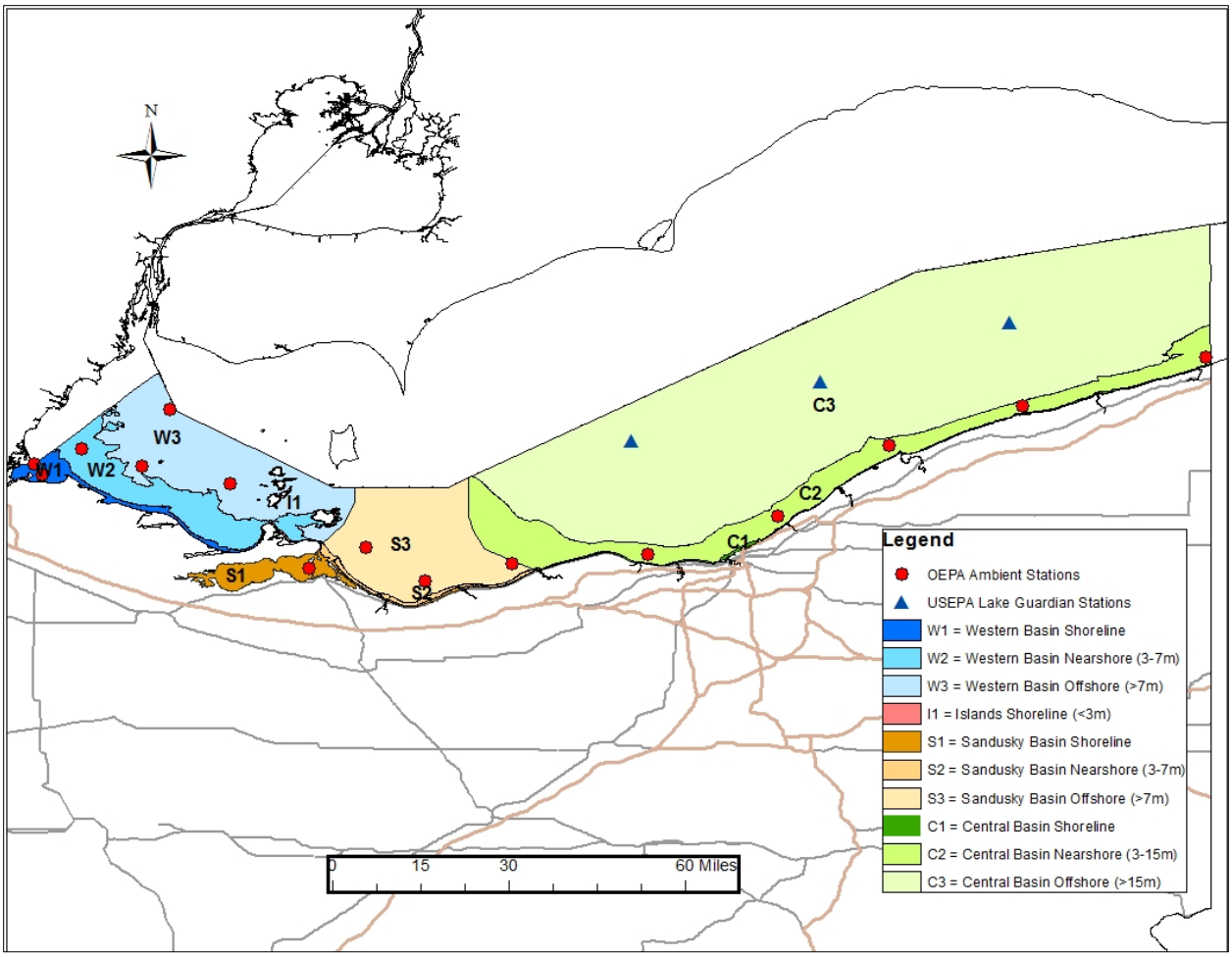


Figure I5-2. Map showing proposed assessment units with locations of Ohio EPA ambient stations and U.S. EPA's three Lake Guardian stations

I5.2.4 Evaluating Lake Erie Water Quality (an example for total phosphorus and chlorophyll a)

To demonstrate how water quality data would be applied under the proposed assessment framework, available data for total phosphorus and chlorophyll a were evaluated. Data used in this analysis included Ohio EPA ambient station data collected from 2010-2013, NEORSD data (2010-2012), and USEPA data (2010-2013).

Ohio EPA sample collection methods at ambient stations varied somewhat from year to year as experience and knowledge was gained. In 2010-2011 separate surface (1m below) and bottom (1m above) samples were collected. An exception was in the shallow waters of Sandusky Bay where the surface sample was collected 0.5m below the surface. Only results from the surface samples are evaluated against criteria to ensure that the epilimnion was being represented in the event of thermal stratification. In 2012-2013, a single sample was collected to represent either the entire water column or the epilimnion. In the absence of thermal stratification the samples were depth integrated grabs mixed from 1m below the surface, mid depth and 1m above the bottom. When stratified the same method was used within the epilimnion as long as the layer was at least 4m deep. If the epilimnion was

<4m deep, the sample was collected in the middle of the layer. Monitoring stations added in the shallow waters of Maumee Bay during this timeframe were sampled 0.5m below the surface.

The LaMP targets (Table I5-2) were assigned to the proposed assessment units (Table I5-3) to yield targets to be used for evaluating the proposed assessment units (Table I5-4). These water quality indicators are of particular interest because of the recurrence of harmful algae blooms in the last decade. Some of these blooms have been severe enough to cause issues with recreation and drinking water uses.

Table I5-4. LaMP targets for phosphorus and chlorophyll applied to proposed Lake Erie assessment units

Assessment Unit Name	Targets (ppb)	
	Total Phos.	Chl. a
Western Basin Shoreline	30	9.8
Western Basin Nearshore	20	5.3
Western Basin Offshore	15	3.6
Islands Shoreline	30	9.8
Sandusky Basin Shoreline	30	9.8
Sandusky Basin Nearshore	20	5.3
Sandusky Basin Offshore	15	3.6
Central Basin Shoreline	20	5.3
Central Basin Nearshore	15	3.6
Central Basin Offshore	10	2.6

Available phosphorus and chlorophyll a data were summarized by assessment unit, season and year. Figure I5-3 provides series of total phosphorus graphs to show average spring concentrations for each of the assessment units that were evaluated. Evidence suggests that concentrations of phosphorus in the spring impact the amount of algal biomass produced during the summer (Ohio Lake Erie Phosphorus Task Force 2013). The Western Basin (Maumee Bay) and Sandusky Basin (Sandusky Bay) shoreline assessment units are far from meeting the 30 ppb target. Targets in the offshore areas are being met some years and generally close in all others. This is supported by observations that most blooms appear to originate in the shallow bays where nutrients are plentiful and water warms sooner.

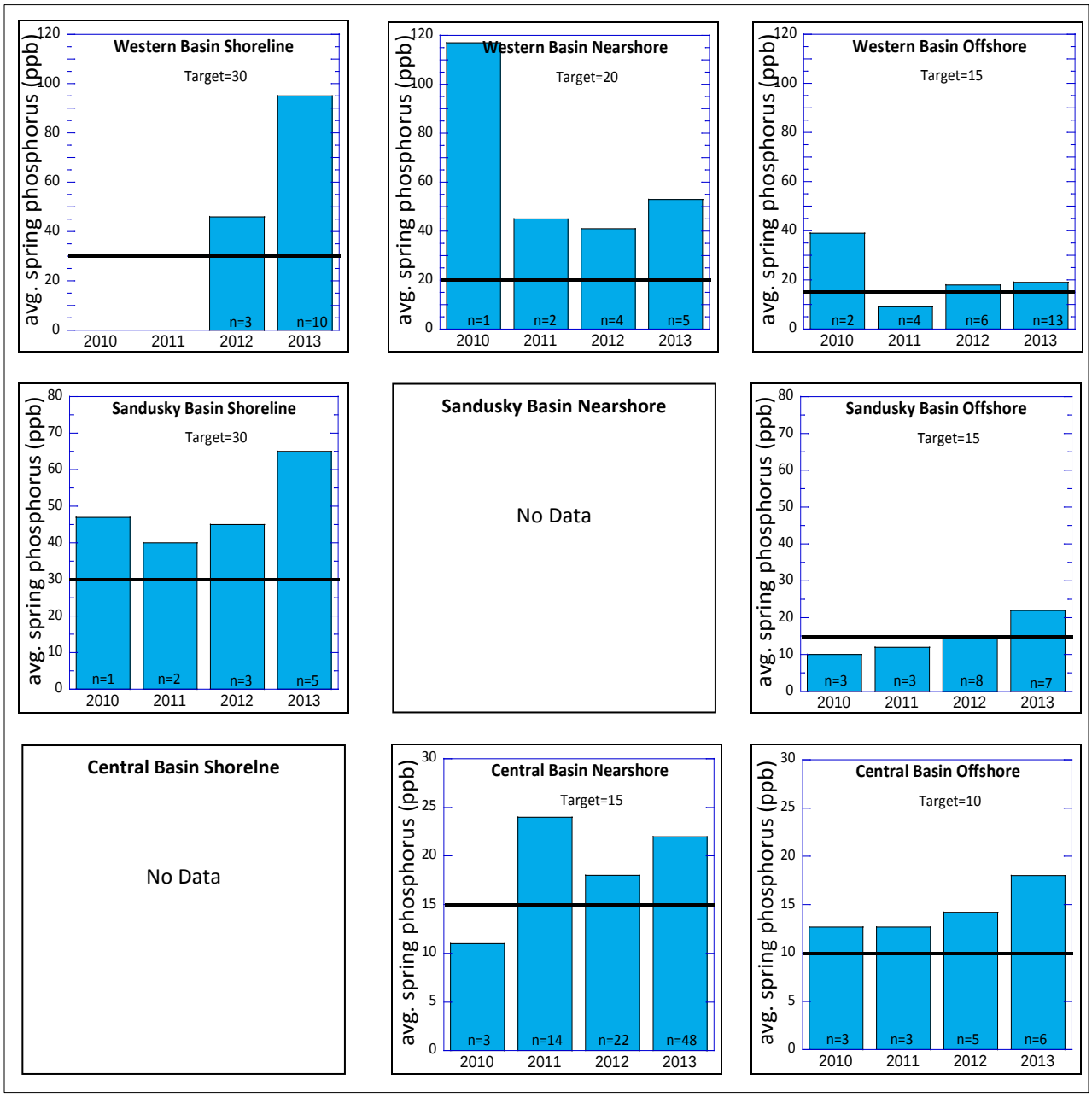


Figure I5-3. Series of graphs summarizing available total phosphorus data for each proposed Lake Erie assessment unit.

No data were available for the Island Shoreline, Sandusky Basin Nearshore or Central Basin Shoreline units.

Chlorophyll a is important to measure because it provides the most accurate way to characterize the trophic state of a lake. An objective of the Great Lakes Water Quality Agreement is to "maintain mesotrophic conditions in the open waters of the Western and Central Basins of Lake Erie and oligotrophic conditions in the Eastern Basin of Lake Erie." Carlson's Trophic Status Index (Carlson, 1977) considers scores in the 38-47 range to be representative of mesotrophic conditions and this equates to a chlorophyll a range of 2.1-5.3 ppb.

The forms of algae that dominate in a lake follow a seasonal succession. All types are present at some level year round, but peak when factors like water temperature, nutrients and photoperiod are favorable. Blue green algae levels in the Western Basin of Lake Erie typically peak in mid-July. In addition to physical conditions, factors like grazing of diatoms and green algae by larval fish and zooplankton and an ability to control buoyancy and fix nitrogen from the atmosphere give blue greens a competitive edge. Blue green algae are the greatest environmental and economic concern because of the many problems they cause. Compounds released during the drinking water treatment process can lead to taste and odor problems. The decomposition of dead cells consumes oxygen and is thought to contribute to periods of hypoxia and anoxia in the Central Basin. An emerging issue is the production of cyanotoxins and their effect on drinking water and recreation uses. The logic behind setting summer targets for chlorophyll a is thus intended to address these issues.

Figure I5-4 provides a series of chlorophyll graphs that show average summer concentrations in each of the assessment units that were evaluated. The Western and Sandusky Basin shoreline assessment unit include depths from 0 to ≤3m and include Maumee and Sandusky Bays, respectively. Both bays are fed by large rivers. The Maumee River drains the largest area of any river in the Great Lakes at approximately 8,316 mi^2. Since the bays are shallow and fed by rivers, they are the first areas to warm in the lake. They also receive large nutrient loads due to the presence of many municipal wastewater treatment plants in the watersheds and land use dominated by agriculture. The overwhelming majority of point sources are in compliance with permit limits for phosphorus and the rivers are generally efficient enough at natural assimilation to meet designated aquatic life uses. In light of this, it is becoming apparent that criteria and targets that are protective of uses in streams and rivers are not necessarily protective of the lakes that they drain into.

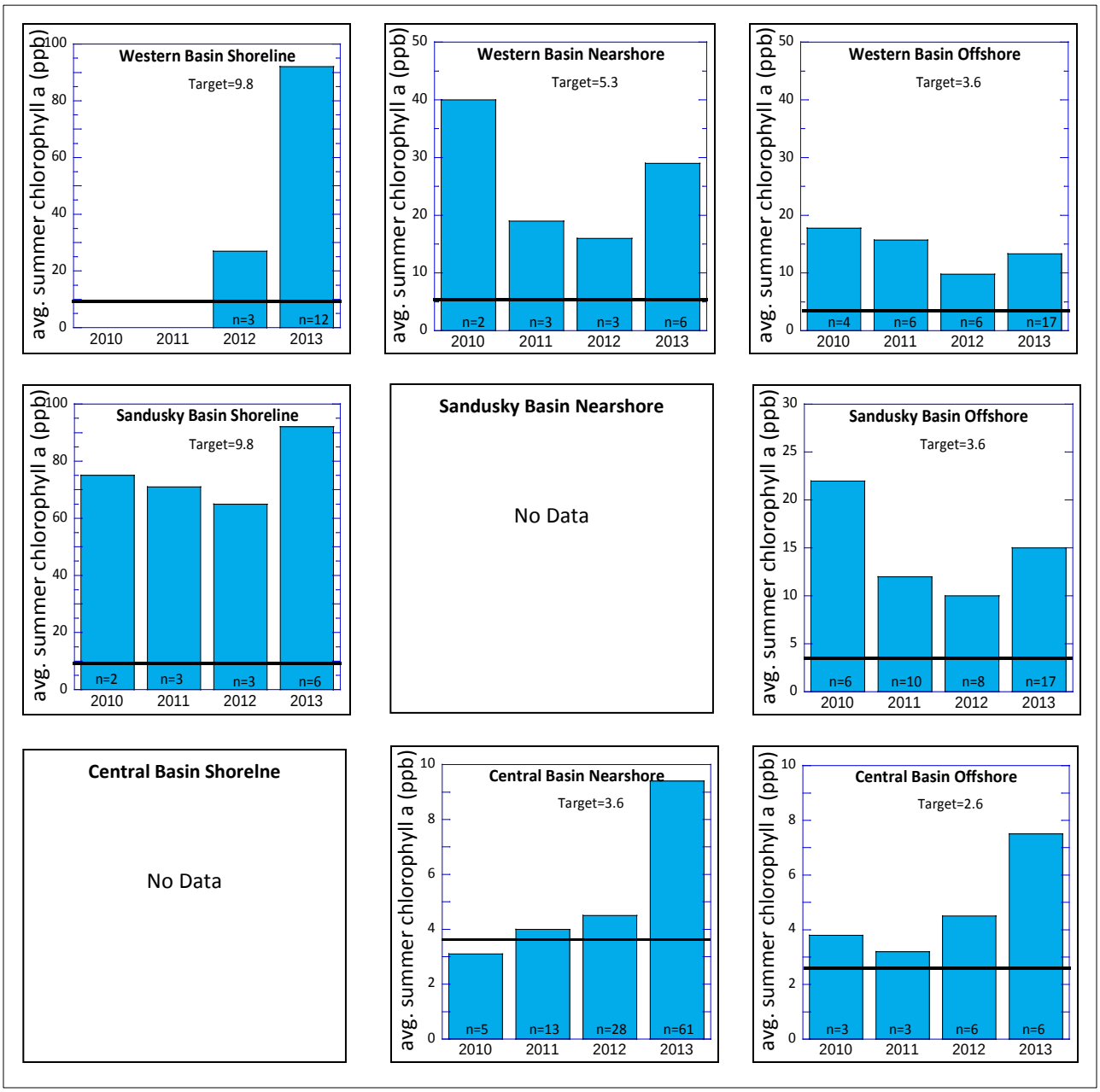


Figure I5-4. Series of graphs summarizing readily available chlorophyll data for each proposed Lake Erie assessment unit.
No data were available for the Island Shoreline, Sandusky Basin Nearshore or Central Basin Shoreline units.

The target for the Western and Sandusky Basin shoreline of 9.8 ppb equates to a Trophic Status Index (TSI) score of 53, which is at the low end of the eutrophic class. Based on the average amounts of summer chlorophyll measured during the four years, the assessment units are far from meeting the target and considered hypereutrophic.

Chlorophyll targets for the remaining assessment units decrease with distance from shore with a goal to meet mesotrophic conditions in the offshore areas. The target for the Western Basin Nearshore of 5.3

ppb equates to a TSI score of 47, which is at the high end of the mesotrophic scale. The average concentrations indicate that the assessment unit is considered eutrophic. The target for the Western Basin Offshore of 3.6 ppb equates to a TSI score of 43, which is in the middle of the mesotrophic class. The average concentrations indicate that the assessment unit is in the middle of the eutrophic class.

The target for the Sandusky Basin Offshore and Central Basin Nearshore of 2.6 ppb equates to a TSI score of 40, which is on the low end of the mesotrophic class. The average concentrations in the Sandusky Basin indicate that the assessment unit is considered eutrophic. Results show that this sub-basin is greatly influenced by conditions present in Sandusky Bay. Although results for the Central Basin Nearshore didn't meet the target, conditions based on the average summer concentrations fall in the high end of the mesotrophic scale and were the closest of all the assessment units evaluated to meeting targets. Further review may result in adjustments to the targets used in this report.

I5.3 Future Lake Erie Monitoring and Reporting by Ohio EPA

Lake Erie is shared by the United States and Canada and is bordered by four states. Lake management actions are driven primarily by the binational Great Lakes Water Quality Agreement (GLWQA), which was renewed in 2012 with new emphasis and timelines for Lake Erie, especially in Annexes 2 and 4. Annex 2 calls for the Parties to develop an integrated nearshore monitoring framework to be developed within three years for Lake Erie and to be implemented collaboratively. Annex 4 concerns nutrients and includes commitments to develop phosphorus targets and allocations for the nearshore and open waters of Lake Erie by 2016 as well as action plans for achieving the targets by 2018. This comprehensive approach considers multiple ecological objectives (maintaining mesotrophic state in the western basin, reducing harmful algal blooms, minimizing hypoxic zones, etc.) and allocates pollutant loads to Canada and the U.S.

Ohio is an active participant on the Lake Erie LaMP and fully engaged in the previous and new initiatives in the GLWQA. The accelerated timeframes specified for Lake Erie in the GLWQA will establish binational targets and loading allocations that could impact future monitoring and reporting. Data that is certified as Level 3 in Ohio's credible data program may be eligible for use in some future Lake Erie assessments and reporting in future Ohio Integrated Reports.

Ohio EPA recognizes the need to develop a sustainable, long-term plan to monitor Lake Erie, both to support Ohio's water resource and to support assessment of the lake ecosystem objectives identified in the Great lakes Water Quality Agreement. Long-term monitoring will provide data to evaluate water quality trends, assess the effectiveness of remedial and nutrient reduction programs, measure compliance with jurisdictional regulatory programs, identify emerging problems and support implementation of the remedial action plans in Ohio's four Areas of Concern.

Ohio EPA is currently evaluating the results of the monitoring effort funded by the GLRI grant and will use the data to develop a cost-effective and sustainable long-term monitoring strategy. Tracking spring phosphorus and summer chlorophyll concentrations at ambient stations on an annual basis will be an important component, as will measuring physical profiles at transect locations used to track hypoxia/anoxia in the hypolimnion of the Central Basin. A schedule for biological monitoring of the shoreline assessment units will need to be developed to measure trends in attainment status for future integrated reports. Decisions regarding the collection of mayfly, phytoplankton, zooplankton and periphyton samples will also need to be made.

Lake Erie is scheduled for an intensive survey by U.S. EPA's R/V Lake Guardian in 2014. These studies are done in each of the Great Lakes on a five-year rotation. U.S. EPA is also leading a series of probabilistic studies, also on a five-year rotation, designed to report on the condition of the Nation's waters. The National Coastal Condition Assessment, first completed in 2010, is scheduled to be repeated in 2015. Ohio EPA participated in the 2010 project and will likely participate in 2015 as well. To maximize resources and contribute to a monitoring network that can effectively inform management decisions and provide statistically relevant data, Ohio EPA will collaborate with other States, federal and local partners.

References

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Supplement to I1: Wetlands

Table 1. Middle Scioto TMDL area wetland sampling locations and assessment results.

Site ID	Area (acres)	Cowardin Code	Wetland Type	Longitude	Latitude	Year	ORAM	ORAM Category	VIBI	VIBI-FQ
001	0.141782	PEMA	Emergent	-82.984923	39.663640	2010	46.5	2	20.0	38.46
002	0.339731	PEMA	Emergent	-82.917595	39.653383	2010	19.0	1	NA	NA
003	1.408849	PFO1A	Forested	-82.942855	39.775317	2010	55.0	2	51.0	54.51
004	0.524567	PFO1A	Forested	-83.207457	40.087042	2010	67.0	3	50.0	65.27
005	2.696891	PEMF	Emergent	-82.953631	39.657259	2010	25.5	1	20.0	3.14
007	0.168155	PFO1A	Forested	-83.011713	39.717394	2012	49.5	2	NA	NA
010	2.156009	PFO1A	Forested	-83.090507	40.012178	2010	55.5	2	39.0	50.39
018	0.263096	PFO1C	Forested	-83.196193	40.091401	2010	53.0	2	46.0	42.47
021a	0.288798	PEMA	Forested	-82.967032	39.640970	2010	56.5	2	37.0	54.20
021b	0.288798	PFO1C	Forested	-82.967032	39.640970	2010	56.5	2	24.0	30.95
022	0.656775	PEMC	Emergent	-83.148378	40.037223	2010	17.0	1	NA	NA
023	1.282204	PEMC	Emergent	-83.024939	39.797035	2010	20.0	1	23.0	23.02
027	1.397674	PEMCh	Emergent	-83.147735	40.242136	2010	78.5	3	87.0	80.16
032	3.235745	PFO1A	Forested	-83.147648	40.096604	2012	38.0	Modified 2	NA	NA
035	2.898011	PFO1C	Forested	-82.999048	39.758032	2012	40.0	Modified 2	NA	NA
039	0.539485	PEMC	Emergent	-83.034916	39.814682	2010	44.5	Modified 2	NA	NA
046	0.795345	PSS1A	Scrub-Shrub	-83.013304	39.837746	2010	36.0	Modified 2	NA	NA
049	0.313442	PEMC	Emergent	-83.130584	40.063475	2010	31.0	Modified 2	NA	NA
055	0.246014	PEMC	Emergent	-83.006404	39.704656	2012	58.0	2	NA	NA
057	0.836275	PFO1C	Forested	-82.980092	39.788585	2012	26.5	1	NA	NA
058	7.202414	PEMF	Emergent	-83.179563	40.123408	2012	34.0	Modified 2	NA	NA
061	0.665624	PEMC	Emergent	-82.984701	39.757018	2012	19.5	1	NA	NA
063	1.226248	PFO1C	Forested	-82.965852	39.633597	2012	46.5	2	NA	NA
065	0.920317	PSS1A	Scrub-Shrub	-83.013545	39.839326	2010	36.0	Modified 2	NA	NA
066	0.345344	PFO1Ch	Forested	-83.139081	40.223813	2012	65.0	3	NA	NA
068	2.146569	PEMA	Emergent	-83.193861	40.158959	2012	32.0	Modified 2	NA	NA
070	7.592747	PEMA	Emergent	-83.192748	40.135375	2012	34.0	Modified 2	NA	NA
080	0.422843	PEMA	Emergent	-83.173466	40.042730	2012	41.0	Modified 2	NA	NA
082	2.914693	PFO1C	Forested	-83.118882	40.138979	2012	59.5	2	NA	NA
083	1.472093	PFO1C	Forested	-82.993426	39.692750	2012	43.0	Modified 2	NA	NA
085	2.115701	PEMC	Emergent	-82.998634	39.764321	2010	38.5	Modified 2	NA	NA
093	0.790332	PEMA	Emergent	-82.985074	39.678746	2012	23.0	1	NA	NA
100	0.786114	PFO1Ch	Forested	-83.148172	40.238271	2010	63.5	3	NA	NA
102	1.263845	PEMC	Emergent	-83.179476	40.126988	2012	35.0	Modified 2	NA	NA
110	0.289190	PEMA	Emergent	-83.087153	39.812020	2012	16.5	1	NA	NA
111	1.238872	PEMC	Emergent	-83.132005	40.050792	2012	21.0	1	NA	NA
118	0.391229	PEMF	Emergent	-83.186730	40.132209	2012	32.0	Modified 2	NA	NA
127	0.550798	PEMB	Emergent	-83.162972	40.054918	2012	38.0	Modified 2	NA	NA
133	1.669319	PSS1/EMA	Forested	-83.182024	40.169233	2012	38.0	Modified 2	NA	NA
141	0.132831	PEMC	Emergent	-83.097320	40.075305	2012	29.0	1	NA	NA
143	1.267044	PFO1C	Forested	-83.162005	40.026384	2012	23.5	1	NA	NA
152	6.293975	PFO1A	Forested	-82.990653	39.672087	2012	47.5	2	NA	NA
154	13.171259	PEMF	Emergent	-83.029233	39.831977	2012	39.0	Modified 2	NA	NA
156	0.562334	PFO1A	Forested	-82.991483	39.692957	2012	52.5	2	NA	NA
162	1.991427	PFO1C	Forested	-82.956359	39.794947	2012	30.5	Modified 2	NA	NA
163	0.636226	PEMA	Emergent	-82.859910	39.664079	2012	17.5	1	NA	NA
165	0.377591	PFO1A	Forested	-83.192512	40.086443	2012	52.5	2	NA	NA
181	1.276208	PFO1A	Forested	-83.188820	40.185339	2012	66.0	3	NA	NA
184	8.235739	PSS1/EMC	Scrub-Shrub	-82.973660	39.671237	2012	33.0	Modified 2	NA	NA
193	0.305039	PFO1C	Forested	-83.199665	40.156235	2012	67.5	3	NA	NA
194	0.306308	PEMC	Emergent	-83.116325	40.237183	2012	22.0	1	NA	NA

Table 2. Comparison of various landscape parameters with Ohio EPA Wetland Ecology Group field assessment data collected on natural wetlands in Ohio.

Parameter	VIBI (N=298)		VIBI-FQ (N=298)		ORAM (N=291)	
	R-Sq	P	R-Sq	P	R-Sq	P
LDI 1992 NLCD (0 to 100 meter buffer)	*18.9*	*0*	*19*	*0*	*31*	*0*
LDI 1992 NLCD (100 to 350 meter buffer)	*21.6*	*0*	*15.7*	*0*	*29.6*	*0*
LDI 2006 NLCD (0 to 100 meter buffer)	*19*	*0*	*20.2*	*0*	*28.1*	*0*
LDI 2006 NLCD (100 to 350 meter buffer)	*20.5*	*0*	*17.7*	*0*	*26.2*	*0*
Impervious Surface Percent based on 2006 NLCD (0 to 100 meter buffer)	*9.3*	*0*	*6.9*	*0*	*11.8*	*0*
Impervious Surface Percent based on 2006 NLCD (100 to 350 meter buffer)	*13*	*0*	*10.6*	*0*	*16.9*	*0*
Forest Canopy Percent based on 2001 NLCD (0 to 100 meter buffer)	*15.6*	*0*	*21*	*0*	*22.4*	*0*
Forest Canopy Percent based on 2001 NLCD (100 to 350 meter buffer)	*19.2*	*0*	*17.4*	*0*	*23.5*	*0*
Historic Forest Percent based on DRG (0 to 100 meter buffer)	*13*	*0*	*22.2*	*0*	*19.5*	*0*
Historic Forest Percent based on DRG (100 to 350 meter buffer)	*23*	*0*	*23.4*	*0*	*24.5*	*0*
Natural Land Uses - Human Land Uses derived from 1992 NLCD (0 to 100 meter buffer)	*16.1*	*0*	*17.9*	*0*	*23*	*0*
Natural Land Uses - Human Land Uses derived from 1992 NLCD (100 to 350 meter buffer)	*22*	*0*	*16.4*	*0*	*25.9*	*0*
Natural Land Uses - Human Land Uses derived from 2006 NLCD (0 to 100 meter buffer)	*20.6*	*0*	*23.5*	*0*	*28.7*	*0*
Natural Land Uses - Human Land Uses derived from 2006 NLCD (100 to 350 meter buffer)	*22.6*	*0*	*20.3*	*0*	*27.6*	*0*
Population Density derived from 1990 US Census (0 to 100 meter buffer)	*6.6*	*0*	*3.7*	*0.001*	*4.5*	*0*
Population Density derived from 1990 US Census (100 to 350 meter buffer)	*7*	*0*	*4.7*	*0*	*5.3*	*0*
Population Density derived from 2010 US Census (0 to 100 meter buffer)	*6.2*	*0*	*4.7*	*0*	*5.7*	*0*
Population Density derived from 2010 US Census (100 to 350 meter buffer)	*6.6*	*0*	*5.3*	*0*	*6.3*	*0*
SSURGO Sand/Muck Soils or ODNR Rare Plant Species (0 to 100 meter buffer)	*12.8*	*0*	*18.1*	*0*	*8.4*	*0*
SURGO Sand/Muck Soils or ODNR Rare Plant Species (100 to 350 meter buffer)	*11.3*	*0*	*13.7*	*0*	*6*	*0*

Table 3. Metric scoring ranges for parameters included in the Ohio EPA level 1 wetland assessment.

Parameter	Parameter Category	Metric Score = 0	Metric Score = 3	Metric Score = 7	Metric Score = 10
LDI 1992 NLCD (0 to 100 meters)	*Historic*	*2.663020 - 7.158644*	*1.475001 - 2.663019*	*1.052693 - 1.475000*	*1.000000 - 1.052692*
LDI 1992 NLCD (100 to 350 meters)	*Historic*	*3.496929 - 6.415488*	*2.239654 - 3.496928*	*1.537938 - 2.239653*	*1.000000 - 1.537937*
Historic Forest Percent based on DRG (0 to 100 meters)	*Historic*	*0.000000 - 4.805492*	*4.805493 - 45.333333*	*45.333334 - 81.880734*	*81.880735 - 100.000000*
Historic Forest Percent based on DRG (100 to 350 meters)	*Historic*	*0.000000 - 11.911357*	*11.911358 - 26.481195*	*26.481196 - 49.355005*	*49.355006 - 100.000000*
Natural Land Uses - Human Land Uses derived from 1992 NLCD (0 to 100 meters)	*Historic*	*-100.000000 - 12.000000*	*12.000001 - 63.636364*	*63.636365 - 93.750000*	*93.750001 - 100.000000*
Natural Land Uses - Human Land Uses derived from 1992 NLCD (100 to 350 meters)	*Historic*	*-100.000000 - - 23.394495*	*-23.394494 - 23.113208*	*23.113209 - 62.149533*	*62.149534 - 98.604651*
Population Density derived from 1990 US Census (0 to 100 meters)	*Historic*	*281.477892 - 3878.679689*	*103.357315 - 281.477891*	*49.906198 - 103.357314*	*2.580520 - 49.906197*
Population Density derived from 1990 US Census (100 to 350 meters)	*Historic*	*282.872407 - 3882.098389*	*103.050195 - 282.872406*	*49.906209 - 103.357314*	*2.580525 - 49.906208*
SSURGO Sand/Muck Soils or ODNR Rare Plant Species (0 to 100 meters)	*Historic*	*0.000000*	*0.000001 - 4.988520*	*4.988521 - 11.203282*	*11.203283 - 116.174171*
SURGO Sand/Muck Soils or ODNR Rare Plant Species (100 to 350 meters)	*Historic*	*0.000000*	*0.000001 - 9.406911*	*9.406912 - 46.216751*	*46.216752 - 296.915680*
LDI 2006 NLCD (0 to 100 meters)	*Current*	*3.586079 - 7.133125*	*1.986668 - 3.586078*	*1.000001 - 1.986667*	*1.000000*
LDI 2006 NLCD (100 to 350 meters)	*Current*	*4.201624 - 7.720233*	*2.712825 - 4.201623*	*1.636953 - 2.712824*	*1.000000 - 1.636952*
Impervious Surface Percent based on 2006 NLCD (0 to 100 meters)	*Current*	*5.807693 - 42.173077*	*1.152175 - 5.807692*	*0.000001 - 1.152174*	*0.000000*
Impervious Surface Percent based on 2006 NLCD (100 to 350 meters)	*Current*	*6.007265 - 58.896471*	*0.756441 - 6.007264*	*0.094908 - 0.756440*	*0.000000 - 0.094907*
Forest Canopy Percent based on 2001 NLCD (0 to 100 meters)	*Current*	*0.000000 - 31.687500*	*31.687501 - 58.647059*	*58.647060 - 80.591837*	*80.591838 - 91.755102*
Forest Canopy Percent based on 2001 NLCD (100 to 350 meters)	*Current*	*0.000000 - 22.086047*	*22.086048 - 44.384439*	*44.384440 - 62.288991*	*62.288992 - 90.389277*
Natural Land Uses - Human Land Uses derived from 2006 NLCD (0 to 100 meters)	*Current*	*-100.000000 - - 7.843137*	*-7.843136 - 64.912281*	*64.912282 - 98.076923*	*98.076924 - 100.000000*
Natural Land Uses - Human Land Uses derived from 2006 NLCD (100 to 350 meters)	*Current*	*-100.000000 - - 37.619048*	*-37.619047 - 13.895216*	*13.895217 - 60.879630*	*60.879631 - 100.000000*
Population Density derived from 2010 US Census (0 to 100 meters)	*Current*	*474.845704 - 7340.631348*	*133.767427 - 474.485703*	*59.511338 - 133.767426*	*0.455506 - 59.511337*
Population Density derived from 2010 US Census (100 to 350 meters)	*Current*	*466.085633 - 7284.695801*	*133.223237 - 466.085632*	*58.442479 - 133.223236*	*0.933198 - 58.442478*

Figure 1. Middle Scioto TMDL study area boundary.

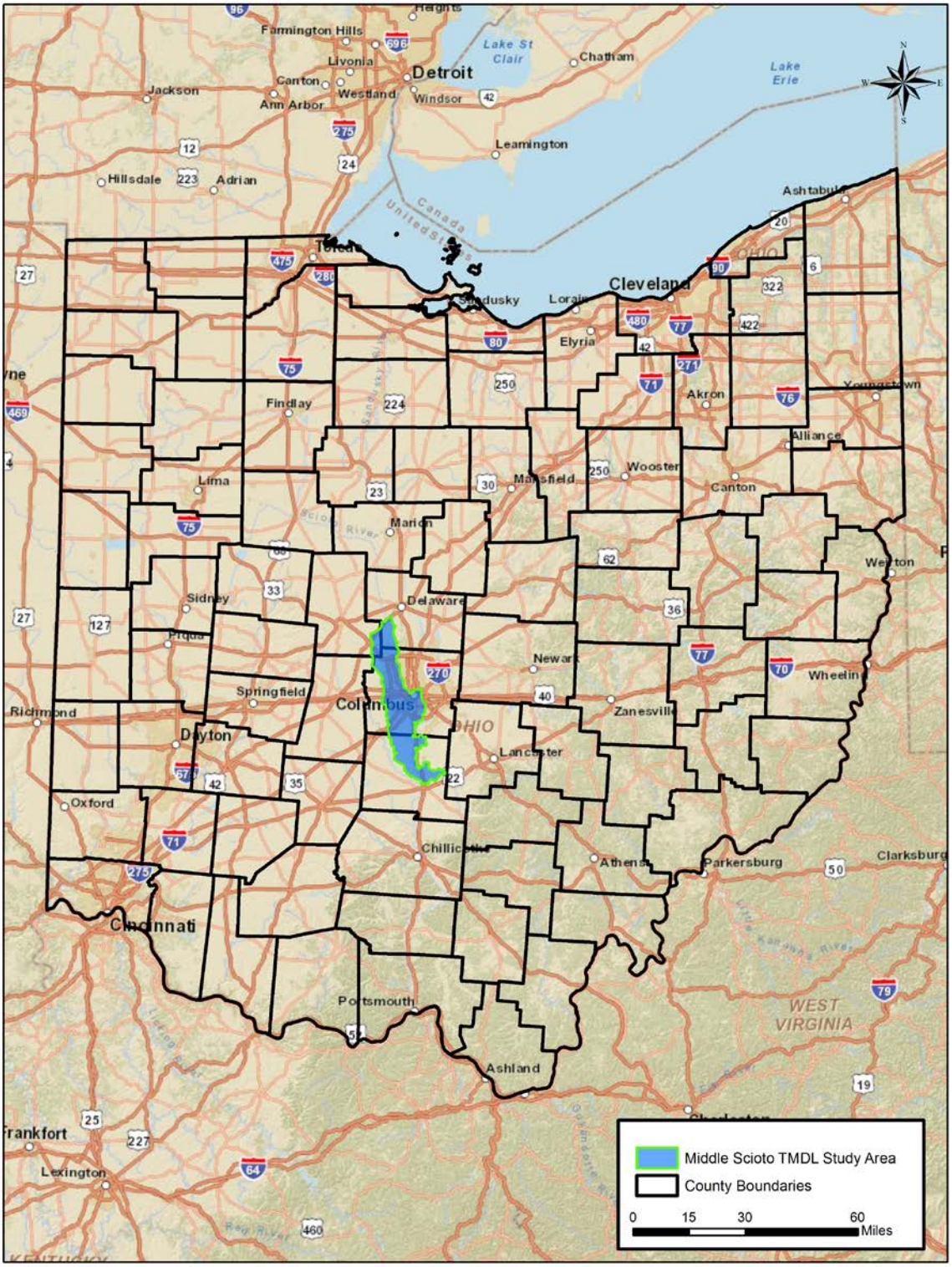

Farmington Hills
Livonia
Detroit
Lake St Clair
Chatham
Lake Erie
Canton
Westland
Windsor
Jackson
Ann Arbor
Leamington
Hillsdale
Adrian
Canada
United States
Ashtabula
Toledo
Cleveland
Sandusky
Lorain
Elyria
Akron
Youngstown
Alliance
Findlay
Lima
Mansfield
Wooster
Canton
Marion
Weirton
Sidney
Delaware
Piqua
Newark
Wheeling
Springfield
Columbus
Zanesville
Richmond
Dayton
OHIO
Lancaster
Oxford
Chillicothe
Athens
Parkersburg
Clarksburg
Cincinnati
Portsmouth
WEST VIRGINIA
Ashland
Frankfort
Lexington
Middle Scioto TMDL Study Area
County Boundaries
0 15 30 60 Miles

Figure 2. Land use categories, as depicted on the 2006 National Land Cover Dataset (NLCD), for the Middle Scioto TMDL area.

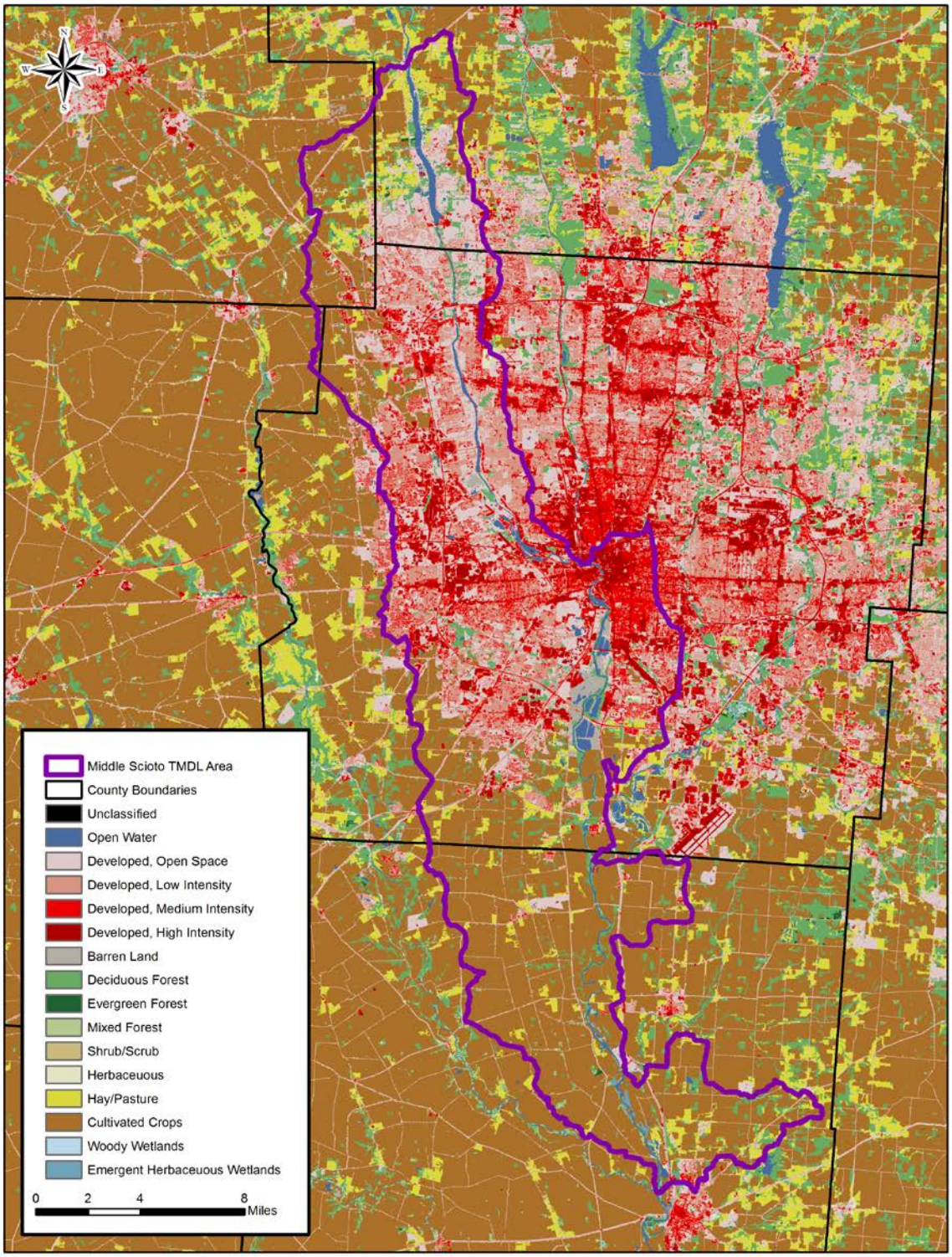


Figure 3. All mapped emergent, scrub-shrub, and forested National Wetland Inventory (NWI) wetlands in the Middle Scioto TMDL area.

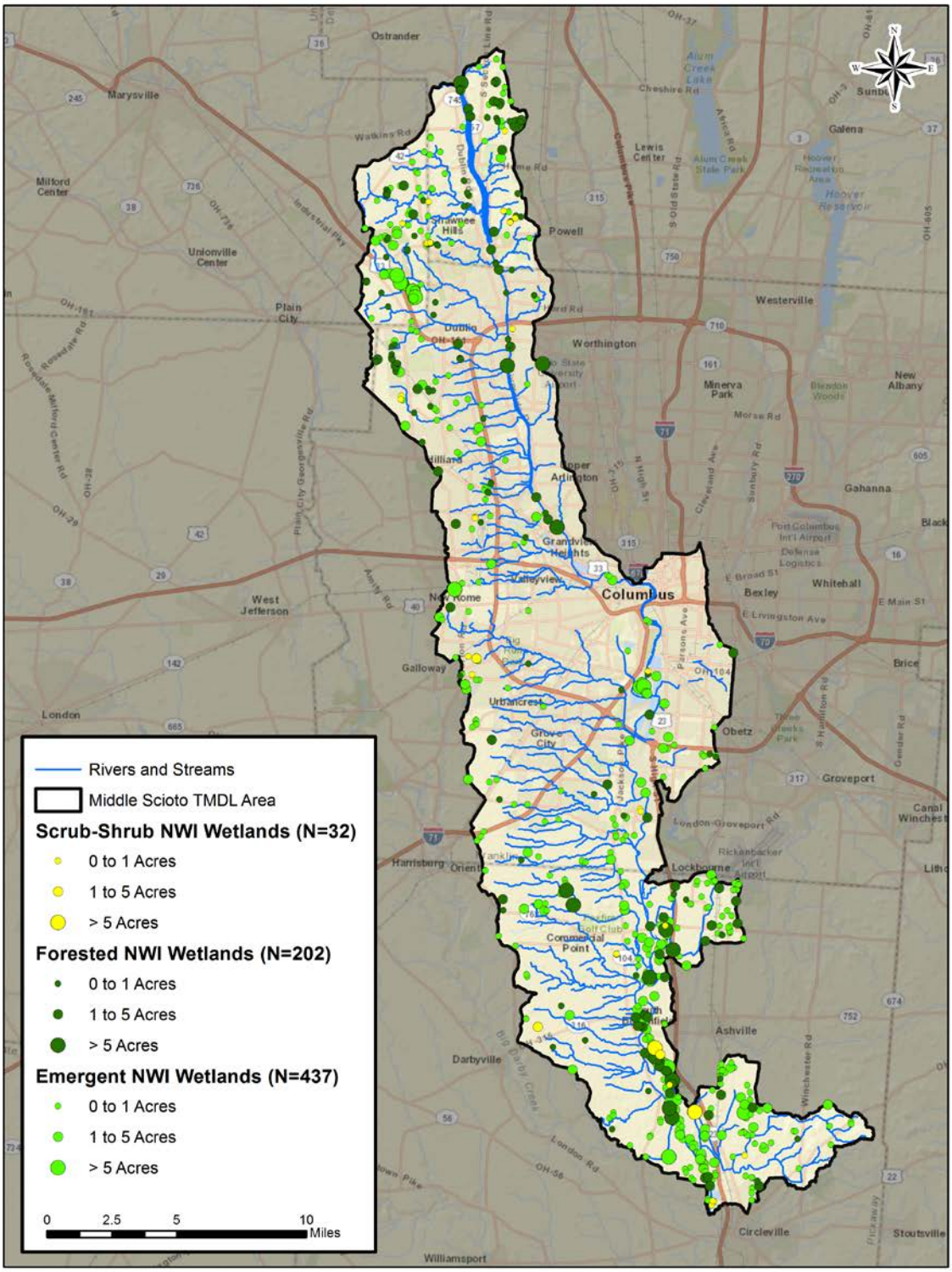


Figure 4. ORAM and VIBI assessment locations in the Middle Scioto TMDL area.

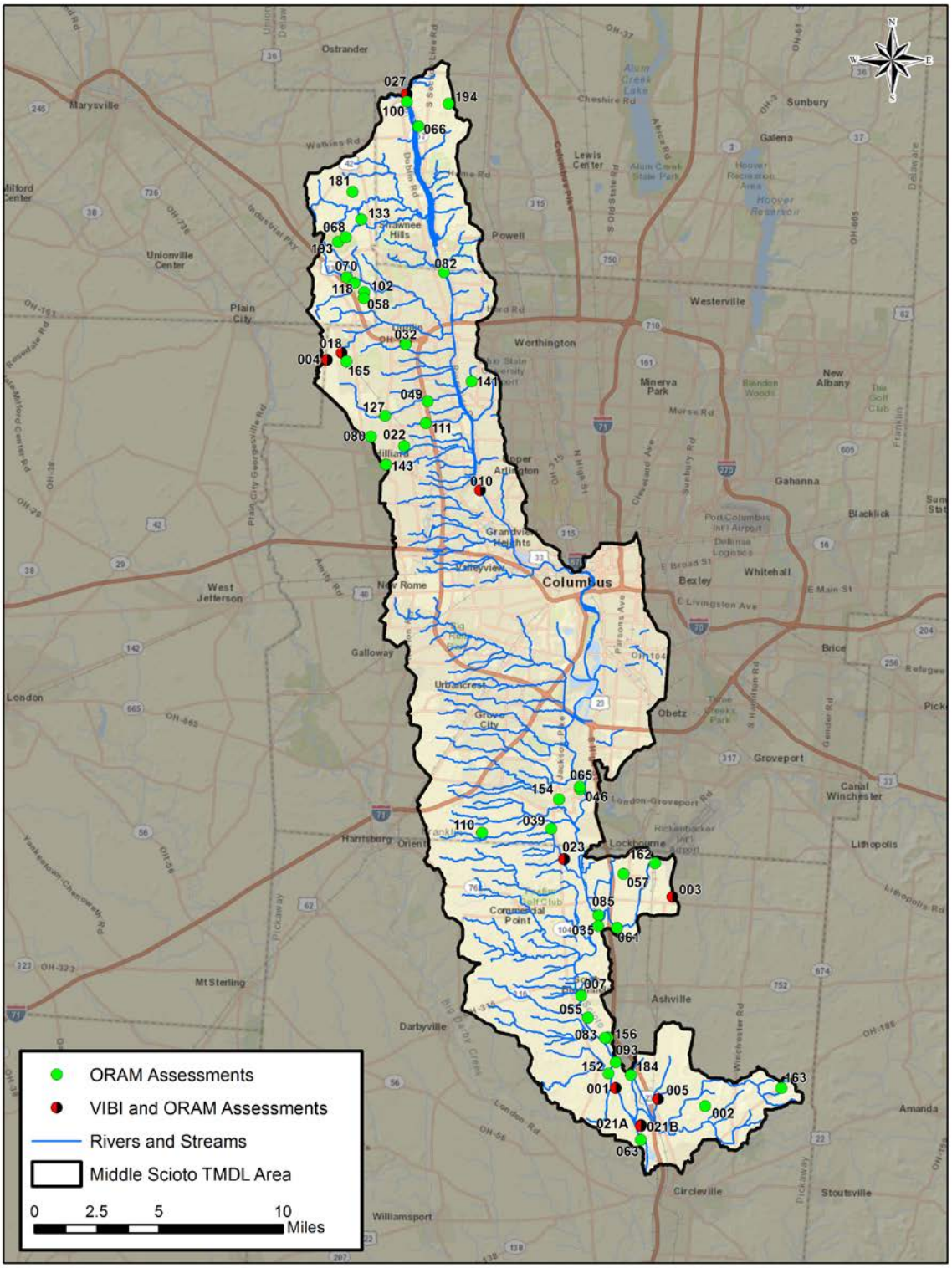
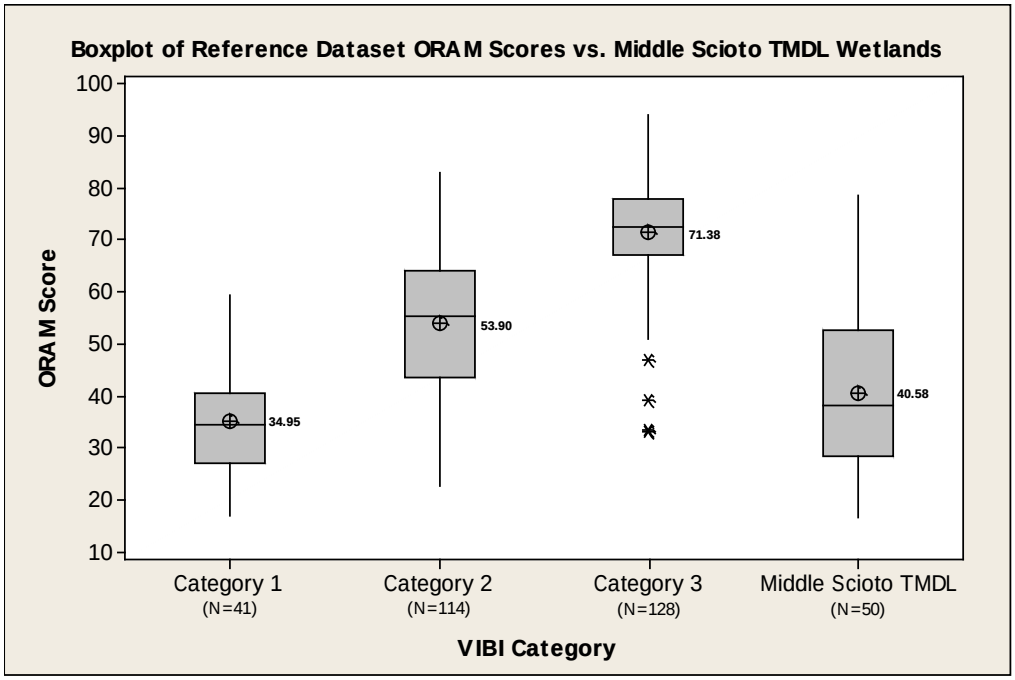


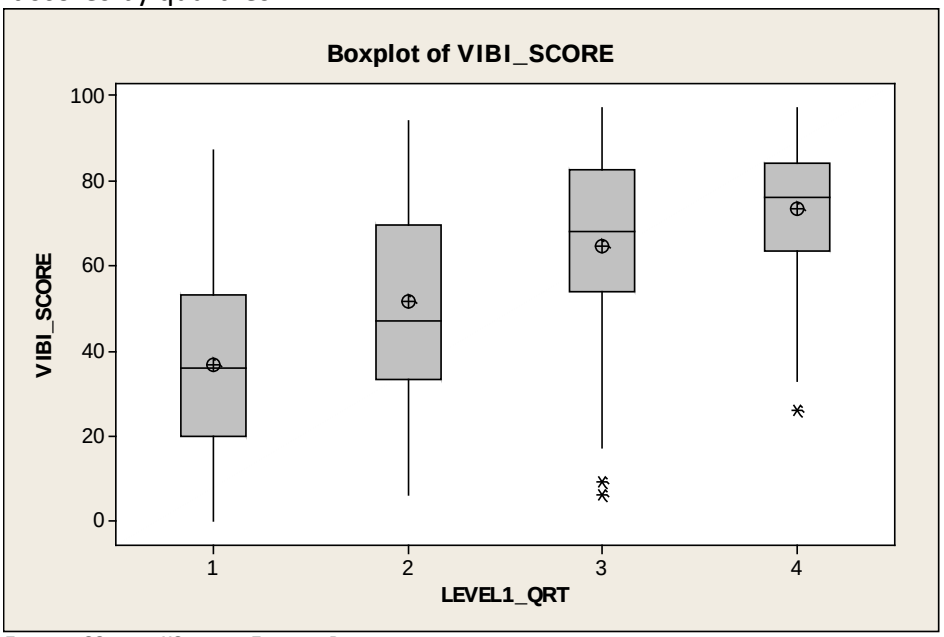
Figure 5. Boxplot one-way ANOVA (with Tukey's comparison) of ORAM scores for 50 randomly-selected wetland locations in the Middle Scioto TMDL study area compared with ORAM scores recorded by the Ohio EPA Wetland Ecology group for natural wetlands in Ohio, organized by VIBI antidegradation category.




```
Source     DF      SS     MS       F      P
VIBI_CAT    3   60816  20272  129.46  0.000
Error     329   51518    157
Total     332  112334

S = 12.51   R-Sq = 54.14%   R-Sq(adj) = 53.72%

Level                    N   Mean  StDev
Category 1              41  34.95  10.91
Category 2             114  53.90  13.09
Category 3             128  71.38  10.72
N220                    50  40.58  16.17

Individual 95% CIs For Mean Based on Pooled StDev

Level      ----+---------+---------+---------+-----
Category 1 (--*--)
Category 2                 (-*-)
Category 3                              (*-)
N220            (--*--)
           ----+---------+---------+---------+-----
              36        48        60        72

Pooled StDev = 12.51

Grouping Information Using Tukey Method

VIBI_CAT                 N   Mean  Grouping
Category 3             128  71.38  A
Category 2             114  53.90    B
N220                    50  40.58      C
Category 1              41  34.95      C

Means that do not share a letter are significantly
different.

Tukey 95% Simultaneous Confidence Intervals
All Pairwise Comparisons among Levels of VIBI_CAT
```

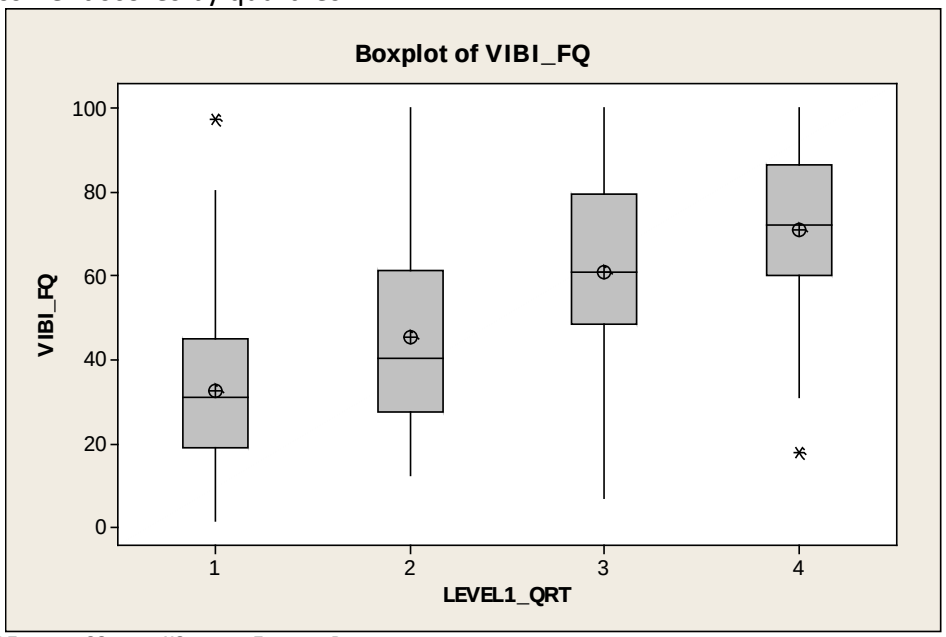
```
Individual confidence level = 98.93%

VIBI_CAT = Category 1           subtracted from:


VIBI_CAT               Lower  Center  Upper
Category 2             13.10   18.95  24.80
Category 3             30.67   36.43  42.20
N220                   -1.14    5.63  12.40

VIBI_CAT   --------+---------+---------+---------+-
Category 2                          (-*--)
Category 3                                  (--*--)
N220                        (---*--)
           --------+---------+---------+---------+-
                 -20         0        20        40

VIBI_CAT = Category 2           subtracted from:

VIBI_CAT                Lower  Center  Upper
Category 3              13.34   17.48  21.62
N220                   -18.77  -13.32  -7.88

VIBI_CAT   --------+---------+---------+---------+-
Category 3                          (-*-)
N220                (-*--)
           --------+---------+---------+---------+-
                 -20         0        20        40

VIBI_CAT = Category 3           subtracted from:

VIBI_CAT                Lower  Center   Upper
N220                   -36.16  -30.80  -25.45

VIBI_CAT   --------+---------+---------+---------+-
N220       (--*-)
           --------+---------+---------+---------+-
                 -20         0        20        40
```

Figure 6. Boxplot and one-way ANOVA (with Tukey's comparison) of VIBI score versus total level 1 assessment scores by quartiles.



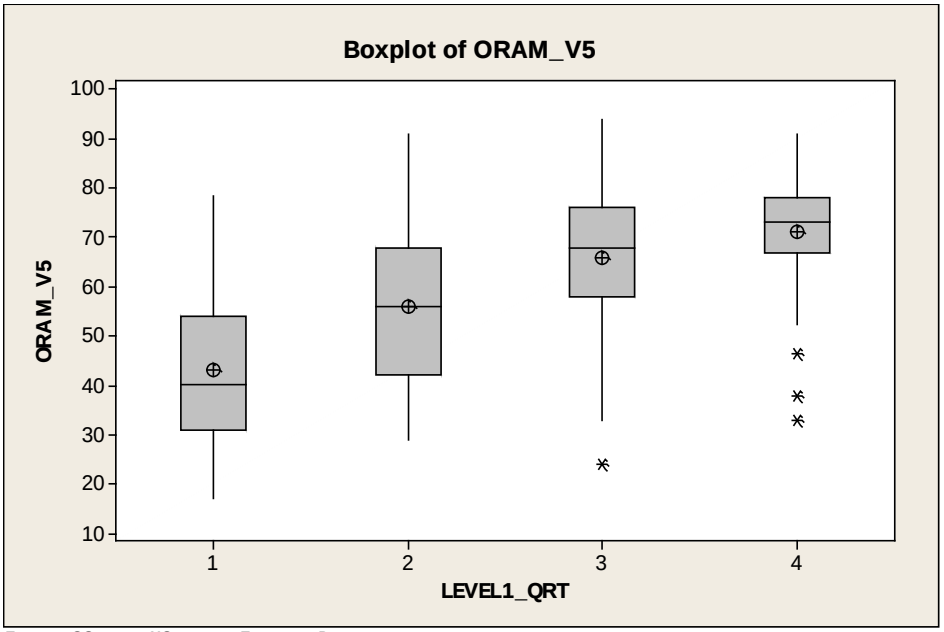

```
Source       DF      SS     MS      F      P
LEVEL1_QRT    3   56567  18856  45.79  0.000
Error       294  121069    412
Total       297  177635

S = 20.29   R-Sq = 31.84%   R-Sq(adj) = 31.15%
                          Individual 95% CIs For Mean Based on
                          Pooled StDev
Level   N   Mean  StDev  ---+---------+---------+---------+------
1      79  36.77  19.49  (---*--)
2      76  51.57  22.81             (---*---)
3      74  64.61  21.91                        (---*---)
4      69  73.19  15.97                               (---*---)
                          ---+---------+---------+---------+------
                            36        48        60        72
Pooled StDev = 20.29
Grouping Information Using Tukey Method

LEVEL1_QRT   N   Mean  Grouping
4           69  73.19  A
3           74  64.61  A
2           76  51.57    B
1           79  36.77      C

Means that do not share a letter are significantly different.

Tukey 95% Simultaneous Confidence Intervals
All Pairwise Comparisons among Levels of LEVEL1_QRT

Individual confidence level = 98.92%

LEVEL1_QRT = 1 subtracted from:
LEVEL1_QRT  Lower  Center  Upper  -----+---------+---------+---------+----
2            6.42   14.79  23.16                   (---*----)
3           19.41   27.84  36.26                          (---*---)
4           27.83   36.42  45.00                              (---*---)
                                  -----+---------+---------+---------+----
                                     -20         0        20        40
LEVEL1_QRT = 2 subtracted from:
LEVEL1_QRT  Lower  Center  Upper  -----+---------+---------+---------+----
3            4.54   13.04  21.55                  (----*---)
4           12.96   21.62  30.28                      (----*---)
                                  -----+---------+---------+---------+----
                                     -20         0        20        40

LEVEL1_QRT = 3 subtracted from:
LEVEL1_QRT  Lower  Center  Upper  -----+---------+---------+---------+----
4           -0.14    8.58  17.30                (---*----)
                                  -----+---------+---------+---------+----
                                     -20         0        20        40
```

Figure 7. Boxplot and one-way ANOVA (with Tukey's comparison) of VIBI-FQ score versus total level 1 assessment scores by quartiles.




```
Source       DF      SS     MS      F      P
LEVEL1_QRT    3   63799  21266  50.50  0.000
Error       294  123819    421
Total       297  187618

S = 20.52   R-Sq = 34.00%   R-Sq(adj) = 33.33%

                          Individual 95% CIs For Mean Based on
                          Pooled StDev
Level   N   Mean  StDev  -------+---------+---------+---------+--
1      79  32.60  19.14  (---*---)
2      76  45.50  22.47            (---*---)
3      74  60.92  21.90                        (---*---)
4      69  71.02  18.13                                (---*---)
                          -------+---------+---------+---------+--
                                36        48        60        72
Pooled StDev = 20.52

Grouping Information Using Tukey Method

LEVEL1_QRT   N   Mean  Grouping
4           69  71.02  A
3           74  60.92    B
2           76  45.50      C
1           79  32.60        D
Means that do not share a letter are significantly different.

Tukey 95% Simultaneous Confidence Intervals
All Pairwise Comparisons among Levels of LEVEL1_QRT

Individual confidence level = 98.92%
LEVEL1_QRT = 1 subtracted from:
LEVEL1_QRT  Lower  Center  Upper  ----+---------+---------+---------+-----
2            4.43   12.90  21.36                 (--*---)
3           19.80   28.32  36.84                       (--*---)
4           29.74   38.42  47.10                           (--*---)
                                  ----+---------+---------+---------+-----
                                    -25         0        25        50

LEVEL1_QRT = 2 subtracted from:
LEVEL1_QRT  Lower  Center  Upper  ----+---------+---------+---------+-----
3            6.82   15.42  24.03                   (--*---)
4           16.77   25.53  34.28                       (--*---)
                                  ----+---------+---------+---------+-----
                                    -25         0        25        50
LEVEL1_QRT = 3 subtracted from:
LEVEL1_QRT  Lower  Center  Upper  ----+---------+---------+---------+-----
4            1.29   10.10  18.92                (--*---)
                                  ----+---------+---------+---------+-----
                                    -25         0        25        50
```

Figure 8. Boxplot and one-way ANOVA (with Tukey's comparison) of ORAM score versus total level 1 assessment scores by quartiles.




```
Source        DF     SS     MS      F      P
LEVEL1_QRT     3  32987  10996  57.42  0.000
Error        287  54955    191
Total        290  87942

S = 13.84   R-Sq = 37.51%   R-Sq(adj) = 36.86%

                           Individual 95% CIs For Mean Based on
                           Pooled StDev
Level   N   Mean  StDev   +---------+---------+---------+---------
1      75  43.13  15.40   (--*--)
2      75  56.14  15.17                 (--*--)
3      74  66.01  13.49                          (--*--)
4      67  71.14  10.38                               (--*--)
                           +---------+---------+---------+---------
                           40        50        60        70
Pooled StDev = 13.84

Grouping Information Using Tukey Method
LEVEL1_QRT   N   Mean  Grouping
4           67  71.14  A
3           74  66.01  A
2           75  56.14    B
1           75  43.13      C
Means that do not share a letter are significantly different.

Tukey 95% Simultaneous Confidence Intervals
All Pairwise Comparisons among Levels of LEVEL1_QRT

Individual confidence level = 98.92%
LEVEL1_QRT = 1 subtracted from:
LEVEL1_QRT  Lower  Center  Upper  ----+---------+---------+---------+-----
2            7.21   13.01  18.81                    (---*---)
3           17.05   22.87  28.69                          (---*---)
4           22.04   28.01  33.98                              (---*---)
                                  ----+---------+---------+---------+-----
                                    -15         0        15        30
LEVEL1_QRT = 2 subtracted from:
LEVEL1_QRT  Lower  Center  Upper  ----+---------+---------+---------+-----
3            4.05    9.87  15.69                  (---*--)
4            9.03   15.00  20.97                     (---*---)
                                  ----+---------+---------+---------+-----
                                    -15         0        15        30
LEVEL1_QRT = 3 subtracted from:
LEVEL1_QRT  Lower  Center  Upper  ----+---------+---------+---------+-----
4           -0.85    5.14  11.12               (---*---)
                                  ----+---------+---------+---------+-----
                                    -15         0        15        30
```

Figure 10. All HUC 12 watersheds in Ohio symbolized by area-weighted Level 1 wetland condition score for all NWI wetlands occurring within each watershed.

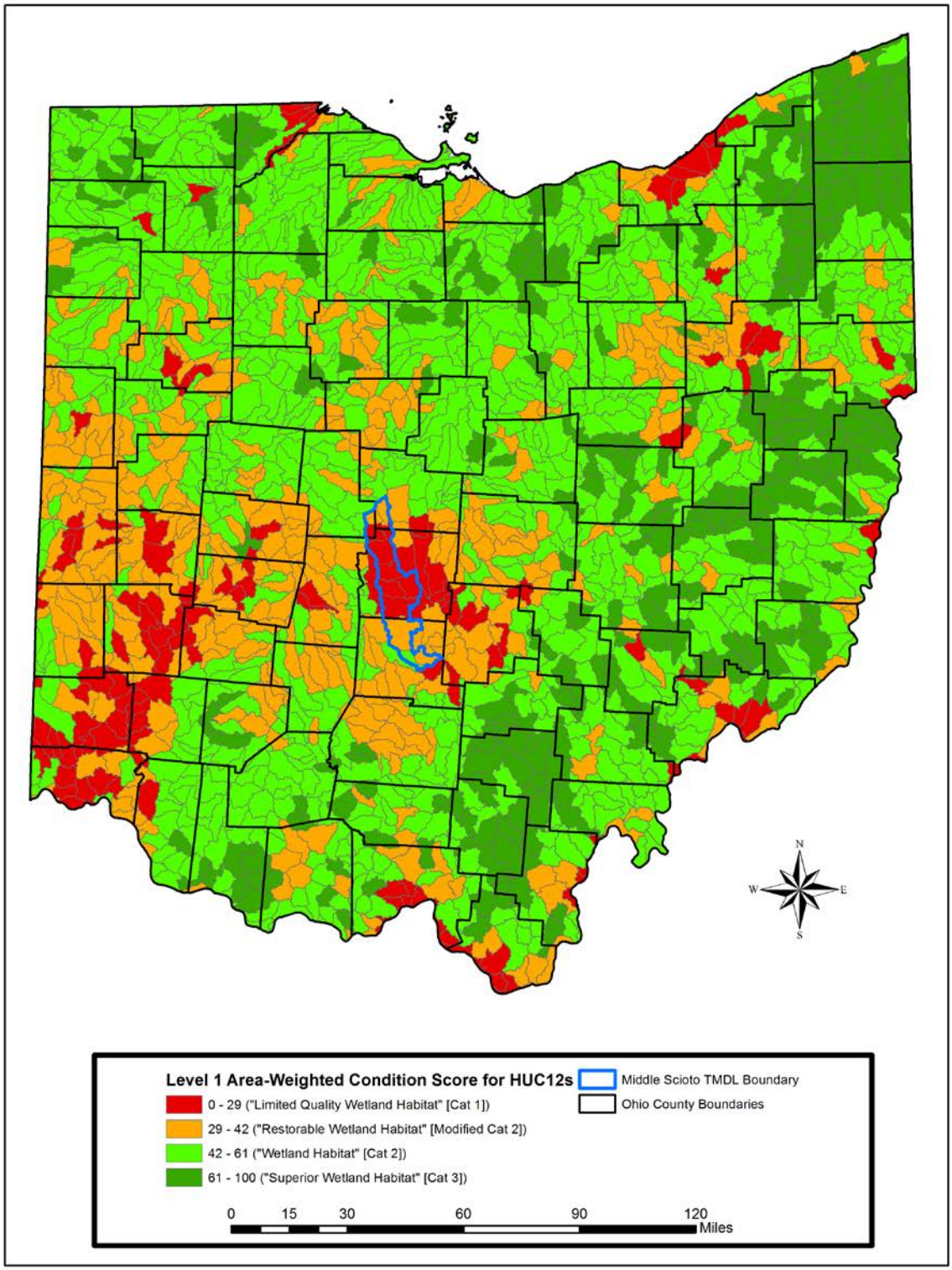


Figure 9. Bar graph displaying the number of HUC12 watersheds (level 1 and level 2 characterization) and the number of field ORAM assessments for the Middle Scioto TMDL study area falling into each of the proposed wetland tiered aquatic life use categories ("limited quality wetland habitat" [category 1, or "poor" condition], "restorable wetland habitat" [modified category 2, or "fair" condition],"wetland habitat" [category 2, or "good" condition], "superior wetland habitat" [category 3, or "excellent" condition].

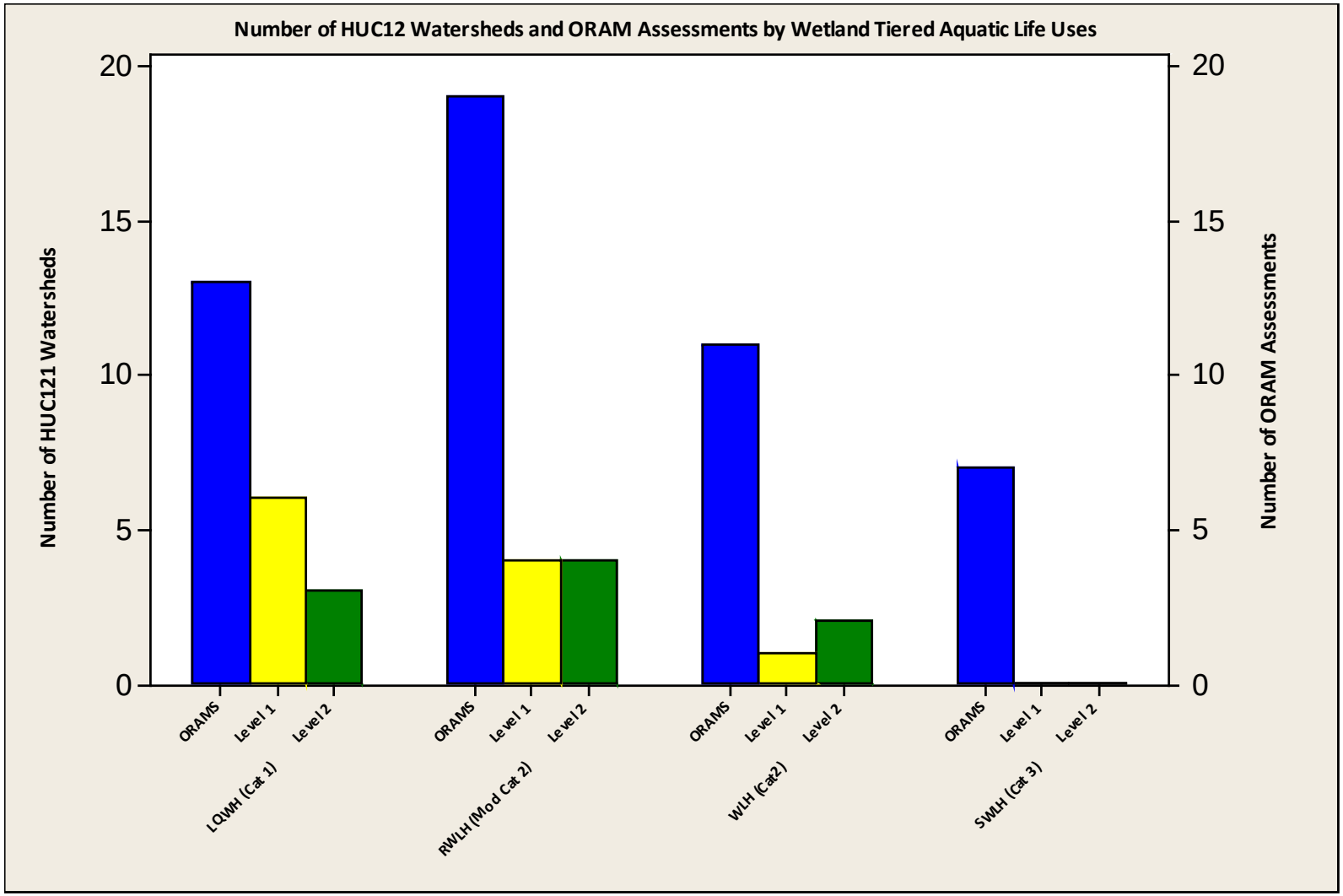


Table 4. Ohio's HUC 12 watersheds with wetland assessment information

HUC12	HUC12 Name	Historic Wetland %	Curent Wetland %	Wetland Loss %	Number of NWI Wetlands	Area-Weighted Level 1 Score	Number of ORAM Assessments	Mean ORAM Score	Number of VIBI Assessments	Mean VIBI Score	Number of VIBI-FQ Assessments	Mean VIBI-FQ Score
041000010301	Shantee Creek	20.67	0.08	99.59	3	20.27	0	0.00	0	0.00	0	0.00
041000010302	Halfway Creek	26.83	1.29	95.18	6	13.93	0	0.00	0	0.00	0	0.00
041000010303	Prairie Ditch	64.66	5.66	91.24	74	72.32	2	78.50	1	93.00	1	100.00
041000010304	Headwaters Tenmile Creek	61.77	1.02	98.35	61	48.81	0	0.00	0	0.00	0	0.00
041000010305	North Tenmile Creek	31.15	1.13	96.37	4	22.08	0	0.00	0	0.00	0	0.00
041000010306	Tenmile Creek	36.67	1.88	94.87	18	46.64	0	0.00	0	0.00	0	0.00
041000010307	Heldman Ditch-Ottawa River	29.25	2.26	92.28	68	55.06	4	62.75	4	65.75	4	66.75
041000010308	Sibley Creek-Ottawa River	15.54	1.00	93.58	22	25.74	0	0.00	0	0.00	0	0.00
041000010309	Detwiler Ditch-Frontal Lake Erie	15.78	3.56	77.46	22	18.90	0	0.00	0	0.00	0	0.00
041000020301	Headwaters Bear Creek	42.58	2.61	93.87	111	49.14	0	0.00	0	0.00	0	0.00
041000020303	Nile Ditch	40.28	1.45	96.40	6	50.19	0	0.00	0	0.00	0	0.00
041000020304	Little Bear Creek-Bear Creek	56.72	0.47	99.17	16	35.87	0	0.00	0	0.00	0	0.00
041000030104	Bird Creek-East Branch Saint Joseph River	19.33	8.00	58.59	7	59.77	0	0.00	0	0.00	0	0.00
041000030106	Clear Fork-East Branch Saint Joseph River	28.48	4.08	85.66	174	51.84	1	79.00	1	100.00	1	97.22
041000030204	Lake Da Su An-West Branch Saint Joseph River	19.17	5.90	69.25	180	61.70	0	0.00	0	0.00	0	0.00
041000030301	Nettle Creek	28.83	3.76	86.95	174	57.50	0	0.00	0	0.00	0	0.00
041000030302	Cogsworth Cemetary-Saint Joseph River	30.08	8.04	73.28	68	59.71	0	0.00	0	0.00	0	0.00
041000030303	Eagle Creek	27.70	4.24	84.68	283	55.75	0	0.00	0	0.00	0	0.00
041000030304	Village of Montpelier-Saint Joseph River	24.32	7.61	68.68	126	55.67	0	0.00	0	0.00	0	0.00
041000030305	Bear Creek	27.27	2.36	91.36	125	52.73	0	0.00	0	0.00	0	0.00
041000030306	West Buffalo Cemetary-Saint Joseph River	22.55	4.91	78.24	83	61.59	0	0.00	0	0.00	0	0.00
041000030402	Headwaters Fish Creek	29.54	5.76	80.51	133	56.93	2	91.00	2	84.00	2	93.33
041000030405	Town of Alvarado-Fish Creek	24.35	7.54	69.05	68	60.63	0	0.00	0	0.00	0	0.00
041000030406	Cornell Ditch-Fish Creek	24.19	6.43	73.42	105	49.72	0	0.00	0	0.00	0	0.00
041000030501	Bluff Run-Saint Joseph River	26.70	4.28	83.97	154	49.06	0	0.00	0	0.00	0	0.00
041000030502	Big Run	26.63	5.56	79.13	33	32.17	0	0.00	0	0.00	0	0.00
041000030503	Russell Run-Saint Joseph River	26.57	4.53	82.93	184	44.95	0	0.00	0	0.00	0	0.00
041000030505	Willow Run-Saint Joseph River	26.12	5.40	79.33	163	46.98	0	0.00	0	0.00	0	0.00
041000030506	Hoodelmier Ditch-Saint Joseph River	22.94	2.37	89.68	14	42.92	0	0.00	0	0.00	0	0.00
041000040101	Muddy Creek	31.94	0.61	98.08	128	38.78	0	0.00	0	0.00	0	0.00
041000040102	Center Branch	31.80	0.49	98.46	159	44.77	0	0.00	0	0.00	0	0.00
041000040103	East Branch	29.91	0.32	98.92	73	53.86	0	0.00	0	0.00	0	0.00
041000040104	Kopp Creek	34.58	0.26	99.24	96	41.98	0	0.00	0	0.00	0	0.00
041000040105	Sixmile Creek	28.88	0.25	99.13	46	41.67	0	0.00	0	0.00	0	0.00
041000040106	Fourmile Creek-Saint Marys River	18.08	2.76	84.73	148	42.85	0	0.00	0	0.00	0	0.00
041000040201	Hussey Creek	37.11	0.39	98.94	35	47.52	0	0.00	0	0.00	0	0.00
041000040202	Eightmile Creek	44.88	0.11	99.75	38	43.70	0	0.00	0	0.00	0	0.00

HUC12	HUC12 Name	Historic Wetland %	Curent Wetland %	Wetland Loss %	Number of NWI Wetlands	Area-Weighted Level 1 Score	Number of ORAM Assessments	Mean ORAM Score	Number of VIBI Assessments	Mean VIBI Score	Number of VIBI-FQ Assessments	Mean VIBI-FQ Score
041000040203	Blierdofer Ditch	45.35	0.29	99.35	42	38.81	0	0.00	0	0.00	0	0.00
041000040204	Twelvemile Creek	43.71	0.44	99.00	52	52.62	0	0.00	0	0.00	0	0.00
041000040205	Prairie Creek-Saint Marys River	34.64	3.06	91.18	248	50.89	0	0.00	0	0.00	0	0.00
041000040301	Little Black Creek	60.11	0.48	99.20	62	31.40	0	0.00	0	0.00	0	0.00
041000040302	Black Creek	52.99	0.67	98.74	55	36.28	0	0.00	0	0.00	0	0.00
041000040303	Yankee Run-Saint Marys River	48.03	4.37	90.89	434	52.09	1	77.00	1	64.00	1	59.75
041000040304	Duck Creek	60.15	0.86	98.58	30	41.56	0	0.00	0	0.00	0	0.00
041000040305	Town of Willshire-Saint Marys River	41.27	1.65	96.00	32	37.40	0	0.00	0	0.00	0	0.00
041000040401	Twentyseven Mile Creek	47.54	0.71	98.51	112	52.78	0	0.00	0	0.00	0	0.00
041000040404	Little Blue Creek	60.95	0.39	99.37	2	60.21	0	0.00	0	0.00	0	0.00
041000050201	Zuber Cutoff	81.97	0.39	99.52	14	29.81	0	0.00	0	0.00	0	0.00
041000050202	North Chaney Ditch-Maumee River	48.74	0.91	98.14	18	40.41	0	0.00	0	0.00	0	0.00
041000050203	Marie DeLarme Creek	59.24	3.25	94.51	77	49.11	2	74.50	1	67.00	1	66.50
041000050204	Gordon Creek	49.23	0.95	98.07	76	50.87	0	0.00	0	0.00	0	0.00
041000050205	Sixmile Cutoff-Maumee River	46.03	1.15	97.50	17	43.93	0	0.00	0	0.00	0	0.00
041000050206	Platter Creek	59.74	0.98	98.36	21	56.29	0	0.00	0	0.00	0	0.00
041000050207	Sulphur Creek-Maumee River	63.84	1.16	98.18	27	52.57	0	0.00	0	0.00	0	0.00
041000050208	Snooks Run-Maumee River	46.19	1.14	97.53	35	57.66	0	0.00	0	0.00	0	0.00
041000060201	Silver Creek-Bean Creek	35.30	3.15	91.09	23	45.33	0	0.00	0	0.00	0	0.00
041000060202	Deer Creek-Bean Creek	33.09	2.79	91.57	41	53.28	0	0.00	0	0.00	0	0.00
041000060203	Old Bean Creek	44.01	2.86	93.50	112	55.03	0	0.00	0	0.00	0	0.00
041000060204	Mill Creek	24.72	3.50	85.85	207	54.09	0	0.00	0	0.00	0	0.00
041000060205	Stag Run-Bean Creek	36.79	1.81	95.07	29	51.88	0	0.00	0	0.00	0	0.00
041000060301	Bates Creek-Tiffin River	33.94	3.83	88.71	72	53.13	0	0.00	0	0.00	0	0.00
041000060302	Leatherwood Creek	31.75	2.18	93.13	32	47.31	0	0.00	0	0.00	0	0.00
041000060303	Flat Run-Tiffin River	37.05	2.56	93.10	41	63.01	0	0.00	0	0.00	0	0.00
041000060401	Upper Lick Creek	18.92	2.40	87.30	122	48.68	0	0.00	0	0.00	0	0.00
041000060402	Middle Lick Creek	45.86	2.14	95.34	67	56.41	0	0.00	0	0.00	0	0.00
041000060403	Prairie Creek	54.95	0.44	99.21	20	62.29	0	0.00	0	0.00	0	0.00
041000060404	Lower Lick Creek	57.10	1.49	97.39	25	59.31	0	0.00	0	0.00	0	0.00
041000060501	Beaver Creek	29.35	3.11	89.39	147	53.70	0	0.00	0	0.00	0	0.00
041000060502	Brush Creek	49.35	1.59	96.78	169	44.26	0	0.00	0	0.00	0	0.00
041000060503	Village of Stryker-Tiffin River	35.23	3.37	90.44	42	62.69	0	0.00	0	0.00	0	0.00
041000060504	Coon Creek-Tiffin River	56.67	1.69	97.01	51	61.77	0	0.00	0	0.00	0	0.00
041000060601	Lost Creek	45.46	1.68	96.31	73	59.75	0	0.00	0	0.00	0	0.00
041000060602	Mud Creek	52.87	1.25	97.64	48	61.02	0	0.00	0	0.00	0	0.00
041000060603	Webb Run	63.29	1.80	97.16	44	51.63	0	0.00	0	0.00	0	0.00
041000060604	Buckskin Creek-Tiffin River	43.37	1.16	97.32	45	51.29	0	0.00	0	0.00	0	0.00
041000070101	Headwaters Auglaize River	34.09	0.87	97.46	256	41.24	0	0.00	0	0.00	0	0.00

HUC12	HUC12 Name	Historic Wetland %	Curent Wetland %	Wetland Loss %	Number of NWI Wetlands	Area-Weighted Level 1 Score	Number of ORAM Assessments	Mean ORAM Score	Number of VIBI Assessments	Mean VIBI Score	Number of VIBI-FQ Assessments	Mean VIBI-FQ Score
041000070102	Blackhoof Creek	22.63	0.41	98.21	100	44.00	0	0.00	0	0.00	0	0.00
041000070103	Wrestle Creek-Auglaize River	28.36	0.88	96.91	199	48.08	0	0.00	0	0.00	0	0.00
041000070104	Pusheta Creek	27.86	0.37	98.68	157	41.80	0	0.00	0	0.00	0	0.00
041000070105	Dry Run-Auglaize River	21.55	0.30	98.60	82	35.01	0	0.00	0	0.00	0	0.00
041000070201	Twomile Creek	31.97	0.26	99.18	78	45.18	0	0.00	0	0.00	0	0.00
041000070202	Village of Buckland-Auglaize River	16.86	0.70	95.85	49	44.65	0	0.00	0	0.00	0	0.00
041000070203	Sims Run-Auglaize River	26.72	0.62	97.69	80	45.77	0	0.00	0	0.00	0	0.00
041000070204	Sixmile Creek-Auglaize River	43.57	1.95	95.52	172	45.26	0	0.00	0	0.00	0	0.00
041000070301	Upper Hog Creek	46.51	1.78	96.18	90	55.81	0	0.00	0	0.00	0	0.00
041000070302	Middle Hog Creek	55.52	0.79	98.58	68	53.79	0	0.00	0	0.00	0	0.00
041000070303	Little Hog Creek	24.54	0.70	97.14	95	40.33	0	0.00	0	0.00	0	0.00
041000070304	Lower Hog Creek	31.19	1.74	94.42	106	49.24	0	0.00	0	0.00	0	0.00
041000070305	Lost Creek	23.65	0.83	96.48	85	21.39	0	0.00	0	0.00	0	0.00
041000070306	Lima Reservoir-Ottawa River	14.35	1.03	92.80	175	31.68	0	0.00	0	0.00	0	0.00
041000070401	Little Ottawa River	22.65	0.67	97.05	97	26.50	0	0.00	0	0.00	0	0.00
041000070402	Dug Run-Ottawa River	42.37	0.97	97.71	42	56.86	0	0.00	0	0.00	0	0.00
041000070403	Honey Run	23.56	0.65	97.23	116	23.79	1	33.50	1	64.00	1	46.92
041000070404	Pike Run	38.15	0.41	98.93	45	32.01	0	0.00	0	0.00	0	0.00
041000070405	Leatherwood Ditch	65.22	0.71	98.91	19	50.46	0	0.00	0	0.00	0	0.00
041000070406	Beaver Run-Ottawa River	55.39	1.76	96.82	101	33.71	0	0.00	0	0.00	0	0.00
041000070501	Sugar Creek	42.85	0.90	97.90	216	45.85	0	0.00	0	0.00	0	0.00
041000070502	Plum Creek	65.49	0.51	99.22	47	37.79	0	0.00	0	0.00	0	0.00
041000070503	Village of Kalida-Ottawa River	77.51	1.45	98.12	40	34.81	0	0.00	0	0.00	0	0.00
041000070601	Kyle Prairie Creek	46.14	0.18	99.61	52	55.20	0	0.00	0	0.00	0	0.00
041000070602	Long Prairie Creek-Little Auglaize River	58.61	0.17	99.70	40	48.42	0	0.00	0	0.00	0	0.00
041000070603	Wolf Ditch-Little Auglaize River	60.37	0.24	99.60	39	51.53	0	0.00	0	0.00	0	0.00
041000070604	Dry Fork-Little Auglaize River	77.50	0.60	99.23	95	50.55	0	0.00	0	0.00	0	0.00
041000070701	Hagerman Creek	83.17	0.07	99.91	4	38.75	0	0.00	0	0.00	0	0.00
041000070702	West Branch Prairie Creek	70.54	0.39	99.45	94	47.20	0	0.00	0	0.00	0	0.00
041000070703	Prairie Creek	84.36	0.70	99.17	23	54.20	0	0.00	0	0.00	0	0.00
041000070801	Dog Creek	75.52	0.42	99.44	68	41.33	0	0.00	0	0.00	0	0.00
041000070802	Upper Town Creek	56.80	0.25	99.56	38	53.66	0	0.00	0	0.00	0	0.00
041000070803	Maddox Creek	64.74	0.22	99.67	73	50.00	0	0.00	0	0.00	0	0.00
041000070804	Lower Town Creek	74.20	0.18	99.75	44	55.68	0	0.00	0	0.00	0	0.00
041000070805	Middle Creek	77.52	0.97	98.75	22	55.99	0	0.00	0	0.00	0	0.00
041000070806	Burt Lake-Little Auglaize River	57.73	0.94	98.38	13	38.96	0	0.00	0	0.00	0	0.00
041000070901	Upper Jennings Creek	57.31	0.29	99.50	57	49.46	0	0.00	0	0.00	0	0.00
041000070902	West Jennings Creek	67.80	0.15	99.78	10	36.42	0	0.00	0	0.00	0	0.00
041000070903	Lower Jennings Creek	61.96	0.77	98.76	57	37.92	0	0.00	0	0.00	0	0.00

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041000070904	Big Run-Auglaize River	71.71	2.77	96.14	53	53.91	0	0.00	0	0.00	0	0.00
041000070905	Lapp Ditch-Auglaize River	77.37	2.94	96.20	49	49.09	0	0.00	0	0.00	0	0.00
041000070906	Prairie Creek	77.02	1.77	97.70	25	50.47	0	0.00	0	0.00	0	0.00
041000070907	Town of Oakwood-Auglaize River	55.29	2.04	96.31	23	60.08	1	78.00	1	87.00	1	91.63
041000071001	Upper Prairie Creek	81.71	0.01	99.99	3	38.71	0	0.00	0	0.00	0	0.00
041000071002	Upper Blue Creek	66.31	0.20	99.70	19	48.20	0	0.00	0	0.00	0	0.00
041000071003	Middle Blue Creek	85.42	0.54	99.36	11	47.20	0	0.00	0	0.00	0	0.00
041000071004	Lower Blue Creek	80.19	1.74	97.83	75	53.42	0	0.00	0	0.00	0	0.00
041000071005	Town of Charloe-Auglaize River	59.71	1.07	98.21	30	57.68	0	0.00	0	0.00	0	0.00
041000071101	North Powell Creek	74.82	2.46	96.71	106	54.76	0	0.00	0	0.00	0	0.00
041000071102	Upper Powell Creek	72.42	2.06	97.16	84	49.15	0	0.00	0	0.00	0	0.00
041000071103	Lower Powell Creek	46.30	1.07	97.69	24	48.13	0	0.00	0	0.00	0	0.00
041000071201	Headwaters Flatrock Creek	50.12	0.13	99.73	6	35.28	0	0.00	0	0.00	0	0.00
041000071204	Brown Ditch-Flatrock Creek	53.00	1.54	97.10	1	34.00	0	0.00	0	0.00	0	0.00
041000071205	Wildcat Creek-Flatrock Creek	75.02	2.68	96.43	39	64.98	0	0.00	0	0.00	0	0.00
041000071206	Big Run-Flatrock Creek	69.24	3.88	94.39	74	52.46	0	0.00	0	0.00	0	0.00
041000071207	Little Flatrock Creek	81.70	0.56	99.32	12	45.41	0	0.00	0	0.00	0	0.00
041000071208	Sixmile Creek	65.44	1.31	97.99	35	67.17	0	0.00	0	0.00	0	0.00
041000071209	Eagle Creek-Auglaize River	50.95	1.08	97.88	53	57.74	0	0.00	0	0.00	0	0.00
041000080101	Cessna Creek	35.07	1.83	94.79	102	52.68	1	61.00	1	53.00	0	0.00
041000080102	Headwaters Blanchard River	41.27	0.53	98.70	47	43.69	0	0.00	0	0.00	0	0.00
041000080103	The Outlet-Blanchard River	37.78	2.68	92.91	159	46.25	0	0.00	0	0.00	0	0.00
041000080104	Potato Run	36.41	0.56	98.46	110	39.24	0	0.00	0	0.00	0	0.00
041000080105	Ripley Run-Blanchard River	30.61	1.06	96.54	193	49.85	1	48.00	1	17.00	0	0.00
041000080201	Brights Ditch	46.80	0.31	99.35	51	40.76	0	0.00	0	0.00	0	0.00
041000080202	The Outlet	38.47	1.30	96.63	28	52.49	1	51.00	1	74.00	1	72.20
041000080203	Findlay Upground Reservoir Number One-Blanchard River	42.93	0.91	97.88	110	51.04	0	0.00	0	0.00	0	0.00
041000080204	Lye Creek	43.45	0.89	97.96	69	53.17	0	0.00	0	0.00	0	0.00
041000080205	City of Findlay-Blanchard River	30.63	1.03	96.63	11	39.42	0	0.00	0	0.00	0	0.00
041000080301	Upper Eagle Creek	34.54	0.87	97.49	63	60.18	0	0.00	0	0.00	0	0.00
041000080302	Lower Eagle Creek	40.22	0.98	97.57	105	34.02	0	0.00	0	0.00	0	0.00
041000080303	Aurand Run	43.87	1.19	97.29	52	42.71	0	0.00	0	0.00	0	0.00
041000080304	Howard Run-Blanchard River	32.31	1.07	96.70	65	37.94	0	0.00	0	0.00	0	0.00
041000080401	Binkley Ditch-Little Riley Creek	27.28	0.45	98.33	31	51.41	0	0.00	0	0.00	0	0.00
041000080402	Upper Riley Creek	35.41	0.45	98.72	45	59.26	0	0.00	0	0.00	0	0.00
041000080403	Marsh Run-Little Riley Creek	31.67	0.65	97.95	68	47.50	0	0.00	0	0.00	0	0.00
041000080404	Middle Riley Creek	33.27	0.36	98.91	52	47.25	0	0.00	0	0.00	0	0.00
041000080405	Lower Riley Creek	49.63	1.23	97.52	100	39.41	0	0.00	0	0.00	0	0.00
041000080501	Tiderishi Creek	38.83	0.48	98.77	52	58.96	0	0.00	0	0.00	0	0.00

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041000080502	Ottawa Creek	37.48	0.73	98.05	141	55.19	0	0.00	0	0.00	0	0.00
041000080503	Moffitt Ditch	51.53	0.48	99.06	12	58.61	0	0.00	0	0.00	0	0.00
041000080504	Dukes Run	46.76	1.20	97.43	32	50.45	0	0.00	0	0.00	0	0.00
041000080505	Dutch Run	60.61	1.19	98.03	29	53.65	0	0.00	0	0.00	0	0.00
041000080506	Village of Gilboa-Blanchard River	48.23	1.35	97.20	58	53.54	0	0.00	0	0.00	0	0.00
041000080601	Cranberry Creek	54.57	0.39	99.28	68	45.34	0	0.00	0	0.00	0	0.00
041000080602	Pike Run-Blanchard River	52.87	2.08	96.06	61	33.13	0	0.00	0	0.00	0	0.00
041000080603	Miller City Cutoff	80.02	1.60	98.00	28	41.84	0	0.00	0	0.00	0	0.00
041000080604	Bear Creek	71.62	1.20	98.33	16	46.91	0	0.00	0	0.00	0	0.00
041000080605	Deer Creek-Blanchard River	63.64	3.04	95.22	87	52.31	0	0.00	0	0.00	0	0.00
041000090101	West Creek	81.25	0.27	99.67	5	47.00	0	0.00	0	0.00	0	0.00
041000090102	Upper South Turkeyfoot Creek	80.23	0.71	99.12	20	54.70	0	0.00	0	0.00	0	0.00
041000090103	School Creek	79.53	2.00	97.48	49	59.00	0	0.00	0	0.00	0	0.00
041000090104	Middle South Turkeyfoot Creek	83.87	0.50	99.40	13	51.84	0	0.00	0	0.00	0	0.00
041000090105	Little Turkeyfoot Creek	84.16	0.51	99.40	9	61.15	0	0.00	0	0.00	0	0.00
041000090106	Lower South Turkeyfoot Creek	54.15	3.22	94.06	18	64.88	0	0.00	0	0.00	0	0.00
041000090201	Preston Run-Maumee River	45.19	0.55	98.78	16	20.98	0	0.00	0	0.00	0	0.00
041000090202	Benien Creek	71.10	0.68	99.04	19	52.21	0	0.00	0	0.00	0	0.00
041000090203	Wade Creek-Maumee River	56.75	1.27	97.76	41	56.03	0	0.00	0	0.00	0	0.00
041000090204	Garret Creek	67.90	1.33	98.04	35	54.95	0	0.00	0	0.00	0	0.00
041000090205	Oberhaus Creek	64.84	0.84	98.71	23	46.62	0	0.00	0	0.00	0	0.00
041000090206	Village of Napoleon-Maumee River	68.23	1.00	98.54	23	55.01	0	0.00	0	0.00	0	0.00
041000090207	Creager Cemetery-Maumee River	51.72	0.19	99.64	8	23.34	0	0.00	0	0.00	0	0.00
041000090301	Upper Bad Creek	50.80	3.31	93.48	210	51.66	0	0.00	0	0.00	0	0.00
041000090302	Lower Bad Creek	45.06	2.01	95.54	169	47.08	0	0.00	0	0.00	0	0.00
041000090401	Konzen Ditch	61.89	0.95	98.46	26	57.47	0	0.00	0	0.00	0	0.00
041000090402	North Turkeyfoot Creek	51.26	0.87	98.31	68	52.81	0	0.00	0	0.00	0	0.00
041000090403	Dry Creek-Maumee River	56.92	1.55	97.27	40	58.11	0	0.00	0	0.00	0	0.00
041000090501	Big Creek	81.12	0.76	99.07	16	59.68	0	0.00	0	0.00	0	0.00
041000090502	Hammer Creek	87.47	0.05	99.95	2	54.92	0	0.00	0	0.00	0	0.00
041000090503	Upper Beaver Creek	84.15	0.86	98.98	7	60.92	0	0.00	0	0.00	0	0.00
041000090504	Upper Yellow Creek	67.83	0.68	99.00	36	42.58	0	0.00	0	0.00	0	0.00
041000090505	Brush Creek	82.91	0.84	98.98	15	58.96	0	0.00	0	0.00	0	0.00
041000090506	Lower Yellow Creek	68.69	1.44	97.90	17	56.93	0	0.00	0	0.00	0	0.00
041000090507	Cutoff Ditch	79.47	0.17	99.78	7	35.49	0	0.00	0	0.00	0	0.00
041000090508	Middle Beaver Creek	81.50	1.48	98.18	19	57.85	0	0.00	0	0.00	0	0.00
041000090509	Lower Beaver Creek	53.01	3.76	92.91	22	63.31	0	0.00	0	0.00	0	0.00
041000090510	Lick Creek-Maumee River	49.76	1.99	96.00	42	49.91	0	0.00	0	0.00	0	0.00
041000090601	Tontogany Creek	66.51	0.60	99.10	23	58.99	0	0.00	0	0.00	0	0.00

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041000090602	Sugar Creek-Maumee River	43.69	1.32	96.97	41	48.04	0	0.00	0	0.00	0	0.00
041000090603	Haskins Road Ditch-Maumee River	68.80	0.94	98.64	11	51.90	0	0.00	0	0.00	0	0.00
041000090701	Ai Creek	55.59	2.72	95.11	127	72.93	5	66.10	3	80.67	3	83.09
041000090702	Fewless Creek-Swan Creek	48.97	2.09	95.73	121	51.33	0	0.00	0	0.00	0	0.00
041000090703	Gale Run-Swan Creek	35.01	3.31	90.55	87	72.32	7	61.86	3	83.67	2	71.43
041000090801	Upper Blue Creek	43.81	5.46	87.55	182	64.02	3	56.33	0	0.00	0	0.00
041000090802	Lower Blue Creek	51.66	1.77	96.58	67	57.04	4	65.63	3	78.00	3	73.31
041000090803	Wolf Creek	40.95	3.34	91.85	119	64.82	2	57.00	1	87.00	1	90.85
041000090804	Heilman Ditch-Swan Creek	46.72	1.74	96.27	61	48.86	2	63.00	2	50.00	2	62.81
041000090901	Grassy Creek Diversion	82.45	0.61	99.26	9	47.63	0	0.00	0	0.00	0	0.00
041000090902	Grassy Creek	62.45	0.64	98.97	12	35.96	0	0.00	0	0.00	0	0.00
041000090903	Crooked Creek-Maumee River	32.01	3.27	89.79	36	28.46	0	0.00	0	0.00	0	0.00
041000090904	Delaware Creek-Maumee River	15.35	1.22	92.07	25	18.76	0	0.00	0	0.00	0	0.00
041000100101	Rader Creek	72.00	1.17	98.37	44	55.72	0	0.00	0	0.00	0	0.00
041000100102	Needles Creek	80.69	0.68	99.15	18	53.62	0	0.00	0	0.00	0	0.00
041000100103	Rocky Ford	50.54	1.49	97.05	125	54.53	0	0.00	0	0.00	0	0.00
041000100104	Town of Rudolph-Middle Branch Portage River	79.16	1.35	98.30	29	60.08	0	0.00	0	0.00	0	0.00
041000100201	Bull Creek	69.90	1.70	97.57	32	52.17	0	0.00	0	0.00	0	0.00
041000100202	East Branch Portage River	50.40	1.43	97.16	30	59.99	0	0.00	0	0.00	0	0.00
041000100203	Town of Bloomdale-South Branch Portage River	54.90	1.13	97.94	44	65.85	0	0.00	0	0.00	0	0.00
041000100204	Rhodes Ditch-South Branch Portage River	62.93	2.78	95.59	24	60.93	0	0.00	0	0.00	0	0.00
041000100205	Cessna Ditch-Middle Branch Portage River	72.07	1.71	97.63	27	58.40	0	0.00	0	0.00	0	0.00
041000100301	North Branch Portage River	71.22	0.94	98.68	67	56.92	3	64.33	0	0.00	0	0.00
041000100302	Town of Pemberville-Portage River	65.32	0.51	99.22	11	42.80	0	0.00	0	0.00	0	0.00
041000100401	Sugar Creek	60.07	1.76	97.07	70	60.24	0	0.00	0	0.00	0	0.00
041000100402	Lacarpe Creek-Portage River	55.87	1.29	97.69	26	57.23	0	0.00	0	0.00	0	0.00
041000100501	Little Portage River	71.42	4.75	93.35	98	53.56	0	0.00	0	0.00	0	0.00
041000100502	Portage River	60.89	4.41	92.76	237	41.15	0	0.00	0	0.00	0	0.00
041000100503	Lacarpe Creek-Frontal Lake Erie	32.67	12.13	62.86	265	42.56	4	72.25	4	63.50	4	35.22
041000100601	Upper Toussaint Creek	70.99	1.06	98.50	72	48.08	0	0.00	0	0.00	0	0.00
041000100602	Packer Creek	74.77	1.66	97.78	80	44.75	0	0.00	0	0.00	0	0.00
041000100603	Lower Toussaint Creek	66.32	11.65	82.44	331	44.36	1	29.00	1	22.00	1	18.88
041000100701	Turtle Creek-Frontal Lake Erie	71.12	12.76	82.06	187	48.25	1	52.50	1	68.00	1	55.15
041000100702	Crane Creek-Frontal Lake Erie	77.32	6.41	91.71	134	50.65	1	51.00	0	0.00	0	0.00
041000100703	Cedar Creek-Frontal Lake Erie	74.53	1.59	97.86	56	48.02	0	0.00	0	0.00	0	0.00
041000100704	Wolf Creek-Frontal Lake Erie	70.99	25.20	64.51	49	52.36	4	59.00	4	44.00	4	44.03
041000100705	Berger Ditch	83.58	0.93	98.88	22	42.98	0	0.00	0	0.00	0	0.00
041000100706	Otter Creek-Frontal Lake Erie	52.74	2.79	94.72	30	30.18	0	0.00	0	0.00	0	0.00
041000110101	Sawmill Creek	47.71	0.69	98.55	19	47.18	1	66.00	0	0.00	0	0.00

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041000110102	Pipe Creek-Frontal Sandusky Bay	38.90	2.35	93.96	91	40.04	3	41.67	1	56.00	1	23.98
041000110103	Mills Creek	30.70	1.32	95.69	66	41.68	0	0.00	0	0.00	0	0.00
041000110201	Little Pickerel Creek-Frontal Sandusky Bay	54.52	12.84	76.46	152	55.47	0	0.00	0	0.00	0	0.00
041000110202	Strong Creek	40.89	5.79	85.85	42	54.43	0	0.00	0	0.00	0	0.00
041000110203	Pickerel Creek-Frontal Sandusky Bay	27.16	3.01	88.92	89	55.64	3	45.33	1	72.00	1	37.60
041000110204	Racoon Creek-Frontal Sandusky Bay	38.08	11.89	68.78	100	51.17	0	0.00	0	0.00	0	0.00
041000110205	South Creek-Frontal Sandusky Bay	37.92	4.89	87.11	47	47.10	0	0.00	0	0.00	0	0.00
041000110301	Brandywine Creek-Broken Sword Creek	34.08	2.38	93.02	290	60.39	1	28.00	1	16.00	1	1.54
041000110302	Indian Run-Broken Sword Creek	24.61	1.35	94.50	204	58.14	0	0.00	0	0.00	0	0.00
041000110401	Paramour Creek	32.63	1.04	96.83	98	45.82	0	0.00	0	0.00	0	0.00
041000110402	Loss Creek-Sandusky River	26.23	2.01	92.34	79	57.45	0	0.00	0	0.00	0	0.00
041000110403	Riley Reservoir-Sandusky River	34.31	1.98	94.24	192	51.31	0	0.00	0	0.00	0	0.00
041000110404	Grass Run	38.75	1.19	96.94	90	54.01	0	0.00	0	0.00	0	0.00
041000110405	Town of Wyandot-Sandusky River	33.61	1.75	94.81	111	60.91	1	68.00	1	84.00	1	66.44
041000110501	Prairie Run	44.72	2.60	94.18	49	61.20	0	0.00	0	0.00	0	0.00
041000110502	Headwaters Tymochtee Creek	47.42	2.02	95.73	79	63.38	0	0.00	0	0.00	0	0.00
041000110503	Carroll Ditch	35.34	1.38	96.09	49	64.80	0	0.00	0	0.00	0	0.00
041000110504	Paw Paw Run	21.97	1.41	93.56	81	45.71	0	0.00	0	0.00	0	0.00
041000110505	Reevhorn Run	61.04	0.21	99.66	32	36.40	0	0.00	0	0.00	0	0.00
041000110506	Upper Little Tymochtee Creek	37.83	0.64	98.31	92	44.43	0	0.00	0	0.00	0	0.00
041000110507	Lower Little Tymochtee Creek	78.00	7.14	90.84	259	50.03	3	66.83	2	57.00	2	52.73
041000110508	Warpole Creek	47.70	1.10	97.69	138	64.91	0	0.00	0	0.00	0	0.00
041000110509	Enoch Creek-Tymochtee Creek	29.61	1.10	96.27	285	51.45	0	0.00	0	0.00	0	0.00
041000110601	Oak Run	30.45	0.62	97.95	122	49.80	0	0.00	0	0.00	0	0.00
041000110602	Baughman Run-Tymochtee Creek	31.11	0.86	97.24	162	58.99	0	0.00	0	0.00	0	0.00
041000110603	Hart Ditch-Little Tymochtee Creek	42.22	0.83	98.04	184	30.20	0	0.00	0	0.00	0	0.00
041000110604	Spring Run	45.87	0.25	99.46	47	41.31	0	0.00	0	0.00	0	0.00
041000110605	Lick Run-Tymochtee Creek	38.35	0.87	97.73	139	44.27	0	0.00	0	0.00	0	0.00
041000110701	Little Sandusky River	44.68	1.09	97.55	242	41.99	4	64.50	1	64.00	1	62.94
041000110702	Town of Upper Sandusky-Sandusky River	26.05	0.69	97.34	100	32.59	0	0.00	0	0.00	0	0.00
041000110703	Negro Run	19.39	0.60	96.89	61	57.40	0	0.00	0	0.00	0	0.00
041000110704	Cranberry Run-Sandusky River	23.27	0.57	97.55	101	40.79	0	0.00	0	0.00	0	0.00
041000110705	Sugar Run-Sandusky River	27.11	1.15	95.75	137	37.94	0	0.00	0	0.00	0	0.00
041000110801	Brokenknife Creek	27.73	2.64	90.49	106	56.00	0	0.00	0	0.00	0	0.00
041000110802	Upper Honey Creek	46.72	6.27	86.58	120	78.87	3	39.17	3	54.00	3	39.83
041000110803	Aicholz Ditch	26.61	1.73	93.50	29	61.53	0	0.00	0	0.00	0	0.00
041000110804	Silver Creek	21.16	2.41	88.60	72	57.69	1	36.00	1	19.00	1	17.79
041000110805	Middle Honey Creek	19.59	2.55	86.98	74	58.09	0	0.00	0	0.00	0	0.00
041000110806	Lower Honey Creek	16.71	1.59	90.49	81	57.50	0	0.00	0	0.00	0	0.00

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041000110901	Taylor Run	28.26	0.82	97.09	112	35.69	0	0.00	0	0.00	0	0.00
041000110902	Headwaters Sycamore Creek	28.99	4.09	85.90	244	65.77	0	0.00	0	0.00	0	0.00
041000110903	Greasy Run-Sycamore Creek	22.80	1.60	92.99	149	51.85	0	0.00	0	0.00	0	0.00
041000110904	Thorn Run-Sandusky River	24.69	0.45	98.16	53	47.29	0	0.00	0	0.00	0	0.00
041000110905	Mile Run-Sandusky River	12.23	1.03	91.56	30	59.92	1	73.50	1	46.00	1	45.61
041000111001	East Branch East Branch Wolf Creek	32.57	0.79	97.56	30	44.50	0	0.00	0	0.00	0	0.00
041000111002	Town of New Riegel-East Branch Wolf Creek	28.16	0.71	97.48	19	55.44	0	0.00	0	0.00	0	0.00
041000111003	Snuff Creek-East Branch Wolf Creek	42.85	0.76	98.22	17	64.07	0	0.00	0	0.00	0	0.00
041000111004	Plum Run-Wolf Creek	49.37	1.09	97.78	71	56.62	0	0.00	0	0.00	0	0.00
041000111101	Rock Creek	10.77	1.00	90.75	48	50.21	0	0.00	0	0.00	0	0.00
041000111102	Morrison Creek	15.61	1.08	93.10	18	47.07	0	0.00	0	0.00	0	0.00
041000111103	Willow Creek-Sandusky River	15.06	0.24	98.38	15	35.85	0	0.00	0	0.00	0	0.00
041000111104	Sugar Creek	17.10	0.62	96.38	16	59.01	0	0.00	0	0.00	0	0.00
041000111105	Spicer Creek-Sandusky River	19.78	0.60	96.96	16	55.40	0	0.00	0	0.00	0	0.00
041000111201	Westerhouse Ditch	15.76	1.12	92.89	27	59.46	0	0.00	0	0.00	0	0.00
041000111202	Beaver Creek	16.74	1.32	92.14	47	56.65	0	0.00	0	0.00	0	0.00
041000111203	Flag Run-Green Creek	23.96	4.18	82.57	71	52.03	0	0.00	0	0.00	0	0.00
041000111301	Muskellunge Creek	59.25	0.98	98.34	33	56.59	0	0.00	0	0.00	0	0.00
041000111302	Indian Creek-Sandusky River	29.75	0.86	97.12	21	38.40	0	0.00	0	0.00	0	0.00
041000111303	Yellow Swale-Frontal Muddy Creek Bay	37.48	12.53	66.58	128	47.11	0	0.00	0	0.00	0	0.00
041000111401	Gries Ditch	60.01	0.53	99.12	17	64.31	0	0.00	0	0.00	0	0.00
041000111402	Town of Helena-Muddy Creek	65.93	0.74	98.89	39	53.76	0	0.00	0	0.00	0	0.00
041000111403	Little Muddy Creek	62.94	2.42	96.15	56	47.03	0	0.00	0	0.00	0	0.00
041000111404	Town of Lindsey-Muddy Creek	57.96	6.39	88.98	104	39.50	0	0.00	0	0.00	0	0.00
041000111405	Town of Gypsum-Frontal Sandusky Bay	58.28	15.98	72.57	148	48.82	1	50.00	1	60.00	1	33.05
041000120101	Clear Creek-Vermilion River	18.07	3.12	82.75	142	66.34	2	79.00	3	70.33	3	73.06
041000120102	Buck Creek	15.82	3.18	79.92	107	60.63	0	0.00	0	0.00	0	0.00
041000120103	Southwest Branch Vermilion River	10.92	6.58	39.73	205	55.38	0	0.00	0	0.00	0	0.00
041000120104	New London Upground Reservoir-Vermilion River	11.01	5.15	53.20	153	68.23	2	77.50	2	84.50	2	81.32
041000120105	Indian Creek-Vermilion River	16.22	5.60	65.47	204	68.10	0	0.00	0	0.00	0	0.00
041000120201	East Branch Vermilion River	16.26	5.91	63.64	266	63.63	2	72.00	2	72.00	2	67.37
041000120202	East Fork Vermilion River	21.13	2.19	89.61	172	57.65	1	24.00	1	6.00	1	6.92
041000120203	Town of Wakeman-Vermilion River	17.42	5.30	69.57	118	65.76	0	0.00	0	0.00	0	0.00
041000120204	Town of Vermilion-Vermilion River	21.92	3.28	85.02	84	68.64	0	0.00	0	0.00	0	0.00
041000120301	Sugar Creek-Frontal Lake Erie	43.77	2.36	94.61	59	66.30	0	0.00	0	0.00	0	0.00
041000120302	Chappel Creek	21.91	3.49	84.06	115	60.13	1	70.00	1	63.00	1	36.19
041000120303	Cranberry Creek-Frontal Lake Erie	33.14	1.03	96.90	25	56.09	2	47.50	3	34.00	2	47.65
041000120304	Old Woman Creek	23.39	2.74	88.28	77	53.23	3	64.50	3	33.33	3	32.51
041000120401	Marsh Run	39.40	1.62	95.89	108	46.14	0	0.00	0	0.00	0	0.00

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041000120402	Town of Plymouth-West Branch Huron River	16.70	2.90	82.65	247	55.44	1	64.00	1	61.00	1	59.31
041000120403	Walnut Creek-West Branch Huron River	10.50	9.73	7.28	106	67.30	0	0.00	0	0.00	0	0.00
041000120404	Holliday Lake	6.10	7.50	0.00	63	51.23	0	0.00	0	0.00	0	0.00
041000120405	Willard Lake-West Branch Huron River	6.98	8.25	0.00	196	66.51	0	0.00	0	0.00	0	0.00
041000120501	Mud Run	9.86	3.38	65.74	32	60.16	0	0.00	0	0.00	0	0.00
041000120502	Slate Run	17.34	1.73	90.03	53	60.08	0	0.00	0	0.00	0	0.00
041000120503	Frink Run	20.92	2.61	87.52	53	62.18	0	0.00	0	0.00	0	0.00
041000120504	Seymour Creek	57.96	0.84	98.54	18	58.00	0	0.00	0	0.00	0	0.00
041000120505	Town of Kimball	58.04	0.41	99.29	15	50.70	0	0.00	0	0.00	0	0.00
041000120506	Town of Monroeville-West Branch Huron River	41.80	2.40	94.26	23	55.11	0	0.00	0	0.00	0	0.00
041000120601	Upper East Branch Huron River	12.39	4.03	67.46	132	57.96	0	0.00	0	0.00	0	0.00
041000120602	Cole Creek	12.46	2.78	77.68	69	55.15	0	0.00	0	0.00	0	0.00
041000120603	Norwalk Creek	7.92	2.74	65.40	40	60.61	0	0.00	0	0.00	0	0.00
041000120604	Lower East Branch Huron River	9.70	3.91	59.69	69	51.14	0	0.00	0	0.00	0	0.00
041000120605	City of Norwalk	9.39	2.92	68.86	46	44.77	0	0.00	0	0.00	0	0.00
041000120606	Mud Brook-Frontal Lake Erie	16.81	3.25	80.67	121	43.52	2	48.75	2	54.00	2	35.85
041100010101	Plum Creek	15.78	1.69	89.30	56	48.52	1	58.00	1	67.00	1	38.06
041100010102	North Branch West Branch Rocky River	8.09	2.59	68.02	137	55.98	0	0.00	0	0.00	0	0.00
041100010103	Headwaters West Branch Rocky River	3.26	1.25	61.72	100	42.00	0	0.00	0	0.00	0	0.00
041100010104	Mallet Creek	6.55	2.84	56.66	75	52.67	0	0.00	0	0.00	0	0.00
041100010105	City of Medina-West Branch Rocky River	5.79	1.83	68.42	88	52.55	0	0.00	0	0.00	0	0.00
041100010106	Cossett Creek-West Branch Rocky River	11.04	2.40	78.23	188	53.82	0	0.00	0	0.00	0	0.00
041100010107	Plum Creek	21.61	3.94	81.75	92	59.88	0	0.00	0	0.00	0	0.00
041100010108	Baker Creek-West Branch Rocky River	16.41	1.83	88.86	66	44.32	0	0.00	0	0.00	0	0.00
041100010201	Headwaters East Branch Rocky River	6.82	1.87	72.53	108	61.54	0	0.00	0	0.00	0	0.00
041100010202	Baldwin Creek-East Branch Rocky River	5.05	3.77	25.20	125	55.04	0	0.00	0	0.00	0	0.00
041100010203	Rocky River	5.97	3.39	43.17	57	41.31	2	40.00	2	48.50	2	28.81
041100010204	Cahoon Creek-Frontal Lake Erie	26.33	0.77	97.06	66	41.74	0	0.00	0	0.00	0	0.00
041100010301	East Fork of East Branch Black River	6.43	2.57	60.06	77	52.51	1	29.00	1	45.00	1	35.89
041100010302	Headwaters West Fork East Branch Black River	16.32	3.17	80.57	191	59.76	0	0.00	0	0.00	0	0.00
041100010303	Coon Creek-East Branch Black River	8.75	1.39	84.09	105	56.36	1	70.00	1	84.00	1	87.88
041100010401	Town of Litchfield-East Branch Black River	12.95	2.27	82.43	144	59.42	0	0.00	0	0.00	0	0.00
041100010402	Salt Creek-East Branch Black River	16.69	2.50	85.04	125	63.42	0	0.00	0	0.00	0	0.00
041100010403	Willow Creek	33.60	1.48	95.60	70	40.61	0	0.00	0	0.00	0	0.00
041100010404	Jackson Ditch-East Branch Black River	24.17	1.65	93.16	130	52.21	0	0.00	0	0.00	0	0.00
041100010501	Charlemont Creek	10.57	1.20	88.61	79	65.25	0	0.00	0	0.00	0	0.00
041100010502	Upper West Branch Black River	13.39	2.47	81.58	210	63.54	0	0.00	0	0.00	0	0.00
041100010503	Wellington Creek	19.39	2.33	87.99	129	55.37	0	0.00	0	0.00	0	0.00
041100010504	Middle West Branch Black River	18.17	1.62	91.11	148	56.73	0	0.00	0	0.00	0	0.00

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041100010505	Plum Creek	28.50	1.11	96.11	54	45.62	0	0.00	0	0.00	0	0.00
041100010506	Lower West Branch Black River	33.47	1.49	95.55	128	57.69	0	0.00	0	0.00	0	0.00
041100010601	French Creek	46.44	1.85	96.02	68	58.35	1	81.50	1	85.00	1	77.89
041100010602	Black River	35.99	1.69	95.30	40	42.58	0	0.00	0	0.00	0	0.00
041100010603	Heider Ditch-Frontal Lake Erie	64.35	0.96	98.51	39	45.58	0	0.00	0	0.00	0	0.00
041100010701	Upper Beaver Creek	29.96	1.19	96.02	51	54.61	0	0.00	0	0.00	0	0.00
041100010702	Lower Beaver Creek	26.74	0.77	97.13	32	52.50	0	0.00	0	0.00	0	0.00
041100010703	Quarry Creek-Frontal Lake Erie	33.08	1.00	96.97	43	62.10	0	0.00	0	0.00	0	0.00
041100020101	East Branch Reservoir-East Branch Cuyahoga River	10.09	14.16	0.00	142	72.47	0	0.00	0	0.00	0	0.00
041100020102	West Branch Cuyahoga River	15.45	13.73	11.13	253	58.25	2	75.00	2	87.50	2	60.17
041100020103	Tare Creek-Cuyahoga River	15.91	17.01	0.00	152	60.62	3	70.83	3	58.33	3	47.39
041100020104	Ladue Reservoir-Bridge Creek	13.32	13.06	1.94	327	61.91	6	69.00	6	70.83	6	68.01
041100020105	Black Brook	24.11	8.63	64.21	75	66.81	1	71.00	1	84.00	1	80.77
041100020106	Sawyer Brook-Cuyahoga River	13.37	15.53	0.00	127	68.46	1	58.00	1	46.00	1	34.03
041100020201	Potter Creek-Breakneck Creek	24.71	5.61	77.31	194	55.04	2	51.50	2	55.00	2	44.55
041100020202	Feeder Canal-Breakneck Creek	21.37	10.11	52.70	326	56.55	1	67.00	1	74.00	1	65.04
041100020203	Lake Rockwell-Cuyahoga River	14.61	5.99	58.96	300	56.09	5	61.90	5	55.60	5	60.50
041100020301	Plum Creek	23.09	8.51	63.14	73	58.86	3	66.17	3	63.00	3	62.33
041100020302	Mogadore Reservoir-Little Cuyahoga River	14.21	4.80	66.19	60	59.04	1	75.00	1	94.00	1	88.27
041100020303	Wingfoot Lake Outlet-Little Cuyahoga River	11.02	3.24	70.56	86	47.54	3	62.67	3	63.67	3	55.23
041100020304	City of Akron-Little Cuyahoga River	1.46	0.30	79.50	12	19.72	0	0.00	0	0.00	0	0.00
041100020305	Fish Creek-Cuyahoga River	9.81	2.37	75.87	91	38.55	1	73.00	1	69.00	1	60.74
041100020401	Mud Brook	16.20	3.74	76.90	148	44.22	2	53.50	2	58.00	2	50.35
041100020402	Yellow Creek	7.70	2.25	70.80	105	44.24	0	0.00	0	0.00	0	0.00
041100020403	Furnace Run	4.03	0.95	76.54	30	56.86	0	0.00	0	0.00	0	0.00
041100020404	Brandywine Creek	12.71	1.53	87.94	53	41.60	0	0.00	0	0.00	0	0.00
041100020405	Boston Run-Cuyahoga River	3.63	1.57	56.82	68	63.31	6	41.67	6	28.50	6	17.38
041100020501	Pond Brook	23.39	10.32	55.87	126	50.94	1	68.00	1	84.00	1	66.07
041100020502	Headwaters Tinkers Creek	17.64	6.78	61.57	136	47.69	5	65.90	5	65.60	5	60.03
041100020503	Headwaters Chippewa Creek	4.21	2.35	44.11	43	55.43	0	0.00	0	0.00	0	0.00
041100020504	Town of Twinsburg-Tinkers Creek	5.84	2.23	61.88	164	49.10	1	65.00	1	74.00	1	63.93
041100020505	Willow Lake-Cuyahoga River	4.62	3.01	34.81	76	59.15	1	49.00	1	24.00	1	30.85
041100020601	Mill Creek	2.70	0.40	85.36	14	30.09	0	0.00	0	0.00	0	0.00
041100020602	Village of Independence-Cuyahoga River	2.41	0.79	67.27	19	48.73	0	0.00	0	0.00	0	0.00
041100020603	Big Creek	3.23	0.40	87.61	36	23.92	0	0.00	0	0.00	0	0.00
041100020604	Town of Cuyahoga Heights-Cuyahoga River	3.28	0.53	83.68	28	25.79	0	0.00	0	0.00	0	0.00
041100020605	City of Cleveland-Cuyahoga River	1.64	0.01	99.31	2	3.00	0	0.00	0	0.00	0	0.00
041100030101	East Branch Ashtabula River	50.93	13.78	72.95	417	78.67	0	0.00	0	0.00	0	0.00
041100030102	West Branch Ashtabula River	54.09	16.67	69.18	349	75.77	0	0.00	0	0.00	0	0.00

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041100030103	Upper Ashtabula River	41.15	10.08	75.50	220	75.76	0	0.00	0	0.00	0	0.00
041100030104	Middle Ashtabula River	33.65	13.45	60.04	291	73.05	0	0.00	0	0.00	0	0.00
041100030105	Lower Ashtabula River	8.52	4.29	49.72	107	40.25	0	0.00	3	31.00	3	23.52
041100030201	Indian Creek-Frontal Lake Erie	10.65	11.45	0.00	293	62.78	0	0.00	0	0.00	0	0.00
041100030202	Wheeler Creek-Frontal Lake Erie	15.16	7.02	53.67	344	64.18	3	62.00	3	53.33	3	34.17
041100030203	Arcola Creek	16.49	5.43	67.10	208	60.09	1	75.00	1	67.00	1	34.89
041100030204	McKinley Creek-Frontal Lake Erie	15.19	3.14	79.33	182	56.13	0	0.00	0	0.00	0	0.00
041100030301	Silver Creek	9.20	5.25	42.91	76	59.71	0	0.00	0	0.00	0	0.00
041100030302	Headwaters Aurora Branch	10.10	4.71	53.37	175	56.23	0	0.00	0	0.00	0	0.00
041100030303	McFarland Creek-Aurora Branch	6.91	2.12	69.24	67	44.84	0	0.00	0	0.00	0	0.00
041100030304	Beaver Creek-Chagrin River	11.05	7.57	31.51	216	62.50	0	0.00	0	0.00	0	0.00
041100030401	East Branch Chagrin River	4.27	0.90	79.03	93	53.78	1	72.00	1	86.00	1	92.20
041100030402	Griswold Creek-Chagrin River	3.08	1.19	61.50	163	48.25	0	0.00	0	0.00	0	0.00
041100030403	Town of Willoughby-Chagrin River	37.00	0.36	99.03	26	28.51	0	0.00	0	0.00	0	0.00
041100030501	Marsh Creek-Frontal Lake Erie	29.11	5.37	81.57	61	45.09	1	34.00	1	57.00	1	40.02
041100030502	City of Euclid-Frontal Lake Erie	44.90	0.04	99.92	4	3.42	0	0.00	0	0.00	0	0.00
041100030503	Euclid Creek	3.31	0.15	95.53	18	22.10	0	0.00	0	0.00	0	0.00
041100030504	Doan Brook-Frontal Lake Erie	1.67	0.03	98.07	5	20.11	0	0.00	2	23.50	2	15.45
041100040101	Dead Branch	15.07	6.50	56.83	413	67.37	0	0.00	0	0.00	0	0.00
041100040102	Lake Estabook-Grand River	8.86	8.18	7.71	232	61.51	0	0.00	0	0.00	0	0.00
041100040103	Baughman Creek	27.86	19.03	31.68	182	71.28	0	0.00	0	0.00	0	0.00
041100040104	Center Creek-Grand River	20.96	14.17	32.40	441	68.89	0	0.00	0	0.00	0	0.00
041100040105	Coffee Creek-Grand River	35.46	37.95	0.00	196	78.40	0	0.00	0	0.00	0	0.00
041100040106	Swine Creek	10.56	9.69	8.27	202	62.99	0	0.00	0	0.00	0	0.00
041100040201	Upper Rock Creek	50.55	18.09	64.22	307	70.53	0	0.00	0	0.00	0	0.00
041100040202	Middle Rock Creek	49.93	12.90	74.17	219	72.78	0	0.00	0	0.00	0	0.00
041100040203	Lower Rock Creek	44.92	7.26	83.84	184	73.69	0	0.00	0	0.00	0	0.00
041100040301	Phelps Creek	21.26	17.53	17.54	235	69.30	1	50.50	1	50.00	1	55.60
041100040302	Hoskins Creek	44.99	21.10	53.10	300	76.30	0	0.00	0	0.00	0	0.00
041100040303	Mill Creek-Grand River	37.24	19.92	46.53	371	72.77	0	0.00	0	0.00	0	0.00
041100040304	Mud Creek	40.20	17.38	56.76	222	80.57	1	76.00	1	84.00	1	86.37
041100040305	Plumb Creek-Grand River	44.23	18.86	57.37	256	78.01	1	74.00	1	91.00	1	90.65
041100040401	Griggs Creek	69.96	21.88	68.73	229	77.38	0	0.00	0	0.00	0	0.00
041100040402	Peters Creek-Mill Creek	53.35	18.04	66.20	693	77.05	0	0.00	0	0.00	0	0.00
041100040403	Town of Jefferson-Mill Creek	53.84	7.92	85.29	316	68.70	0	0.00	0	0.00	0	0.00
041100040501	Badger Run-Three Brothers Creek	48.16	10.35	78.51	279	72.03	3	72.33	2	90.50	2	71.81
041100040502	Bronson Creek-Grand River	33.15	14.96	54.87	302	74.92	2	65.50	2	80.50	2	64.80
041100040601	Coffee Creek-Grand River	42.24	9.09	78.47	236	72.60	0	0.00	0	0.00	0	0.00
041100040602	Mill Creek	28.32	7.64	73.02	109	60.75	0	0.00	0	0.00	0	0.00

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041100040603	Village of Mechanicsville-Grand River	15.25	2.67	82.48	85	73.17	0	0.00	0	0.00	0	0.00
041100040604	Paine Creek	7.80	11.07	0.00	168	68.29	1	64.00	1	50.00	1	35.74
041100040605	Talcott Creek-Grand River	4.52	4.42	2.16	51	69.19	0	0.00	0	0.00	0	0.00
041100040606	Big Creek	5.07	2.54	49.82	160	62.70	0	0.00	0	0.00	0	0.00
041100040607	Red Creek-Grand River	16.29	2.43	85.06	90	40.16	0	0.00	0	0.00	0	0.00
041201010409	Turkey Creek-Frontal Lake Erie	9.66	25.95	0.00	31	62.99	0	0.00	0	0.00	0	0.00
041201010603	West Branch Conneaut Creek	67.44	8.61	87.23	12	86.91	0	0.00	0	0.00	0	0.00
041201010605	Marsh Run-Conneaut Creek	13.08	3.87	70.39	363	59.58	0	0.00	0	0.00	0	0.00
041201010606	Town of North Kingsville-Frontal Lake Erie	10.11	9.71	3.95	284	66.59	1	67.00	1	84.00	1	86.86
050301010401	East Branch Middle Fork Little Beaver Creek	13.56	3.86	71.53	134	38.16	0	0.00	0	0.00	0	0.00
050301010402	Headwaters Middle Fork Little Beaver Creek	12.38	5.41	56.32	284	55.04	0	0.00	0	0.00	0	0.00
050301010403	Stone Mill Run-Middle Fork Little Beaver Creek	3.71	1.85	50.04	109	55.20	0	0.00	0	0.00	0	0.00
050301010404	Lisbon Creek-Middle Fork Little Beaver Creek	1.39	0.92	33.73	56	41.81	0	0.00	0	0.00	0	0.00
050301010405	Elk Run-Middle Fork Little Beaver Creek	1.12	1.09	3.12	59	28.50	0	0.00	0	0.00	0	0.00
050301010501	Cold Run	8.16	6.44	21.04	68	50.96	1	45.50	1	50.00	1	32.98
050301010502	Headwaters West Fork Little Beaver Creek	3.42	3.60	0.00	88	43.22	0	0.00	0	0.00	0	0.00
050301010503	Brush Creek	1.29	2.06	0.00	86	40.60	0	0.00	0	0.00	0	0.00
050301010504	Patterson Creek-West Fork Little Beaver Creek	0.80	0.82	0.00	88	59.77	0	0.00	0	0.00	0	0.00
050301010601	Longs Run	0.35	0.21	39.33	21	39.16	0	0.00	0	0.00	0	0.00
050301010602	Honey Creek	7.63	0.59	92.22	18	29.30	0	0.00	0	0.00	0	0.00
050301010603	Headwaters North Fork Little Beaver Creek	8.05	0.63	92.21	67	44.18	0	0.00	0	0.00	0	0.00
050301010604	Little Bull Creek	3.61	1.48	59.07	52	48.00	0	0.00	0	0.00	0	0.00
050301010605	Headwaters Bull Creek	9.60	3.05	68.20	57	42.86	0	0.00	0	0.00	0	0.00
050301010606	Leslie Run-Bull Creek	1.88	0.42	77.49	60	50.07	0	0.00	0	0.00	0	0.00
050301010607	Dilworth Run-North Fork Little Beaver Creek	0.52	0.13	74.91	5	52.79	0	0.00	0	0.00	0	0.00
050301010608	Brush Run-North Fork Little Beaver Creek	0.31	0.33	0.00	26	61.03	0	0.00	0	0.00	0	0.00
050301010609	Rough Run-Little Beaver Creek	0.31	0.17	45.19	27	55.25	0	0.00	0	0.00	0	0.00
050301010610	Bieler Run-Little Beaver Creek	0.17	0.09	45.56	9	50.97	0	0.00	0	0.00	0	0.00
050301010701	Headwaters Yellow Creek	0.91	0.70	23.09	37	68.93	0	0.00	0	0.00	0	0.00
050301010702	Elkhorn Creek	1.43	1.22	14.40	75	77.37	0	0.00	0	0.00	0	0.00
050301010703	Upper North Fork	0.35	1.34	0.00	48	73.47	0	0.00	0	0.00	0	0.00
050301010704	Long Run-Yellow Creek	1.18	1.13	4.60	39	77.01	1	76.00	1	77.00	1	67.29
050301010801	Town Fork	1.76	1.02	42.19	23	76.67	0	0.00	0	0.00	0	0.00
050301010802	Headwaters North Fork Yellow Creek	0.45	0.62	0.00	36	60.00	0	0.00	0	0.00	0	0.00
050301010803	Salt Run-North Fork Yellow Creek	0.28	0.23	17.96	35	69.65	0	0.00	0	0.00	0	0.00
050301010804	Hollow Rock Run-Yellow Creek	0.75	0.43	42.57	33	67.80	0	0.00	0	0.00	0	0.00
050301011001	Upper Cross Creek	2.52	1.65	34.26	68	64.22	0	0.00	0	0.00	0	0.00
050301011002	Salem Creek	2.23	1.81	18.76	40	68.93	0	0.00	0	0.00	0	0.00
050301011003	Middle Cross Creek	1.65	0.72	56.10	23	64.68	0	0.00	0	0.00	0	0.00

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050301011004	McIntyre Creek	5.16	1.84	64.30	124	57.16	0	0.00	0	0.00	0	0.00
050301011005	Lower Cross Creek	1.83	0.41	77.59	57	63.88	0	0.00	0	0.00	0	0.00
050301011102	Little Yellow Creek	0.39	0.65	0.00	36	59.19	0	0.00	0	0.00	0	0.00
050301011103	Carpenter Run-Ohio River	0.17	0.11	37.33	30	21.00	0	0.00	0	0.00	0	0.00
050301011106	Hardin Run-Ohio River	0.67	0.08	87.44	8	61.57	0	0.00	0	0.00	0	0.00
050301011107	Island Creek	1.50	0.67	55.36	43	68.42	0	0.00	0	0.00	0	0.00
050301011109	Wills Creek-Ohio River	1.29	0.44	66.04	24	45.28	0	0.00	0	0.00	0	0.00
050301020104	Frontal Pymatuning Reservoir	37.00	13.12	64.54	493	69.06	0	0.00	0	0.00	0	0.00
050301020105	Pymatuning Reservoir	0.38	1.08	0.00	11	46.98	0	0.00	0	0.00	0	0.00
050301020301	Headwaters Pymatuning Creek	29.12	14.23	51.13	630	69.13	1	55.50	1	66.00	1	51.90
050301020302	Sugar Creek-Pymatuning Creek	22.53	11.41	49.36	415	71.47	0	0.00	0	0.00	0	0.00
050301020303	Stratton Creek-Pymatuning Creek	20.34	12.99	36.14	228	74.02	0	0.00	0	0.00	0	0.00
050301020304	Booth Run-Pymatuning Creek	14.31	10.28	28.15	250	70.65	1	82.50	1	80.00	1	86.38
050301020401	Sugar Run-Shenango River	24.39	5.01	79.48	1	60.00	0	0.00	0	0.00	0	0.00
050301020601	Yankee Run	14.33	6.17	56.95	336	69.67	0	0.00	0	0.00	0	0.00
050301020602	Little Yankee Run	11.41	3.46	69.64	320	59.10	0	0.00	0	0.00	0	0.00
050301020603	McCullough Run-Shenango River	12.46	1.73	86.13	49	57.52	0	0.00	0	0.00	0	0.00
050301020606	Deer Creek-Shenango River	39.00	4.10	89.49	11	66.78	0	0.00	0	0.00	0	0.00
050301030101	Beaver Run-Mahoning River	7.76	5.33	31.32	272	46.08	2	69.25	2	59.00	2	60.14
050301030102	Beech Creek	12.96	3.55	72.57	186	47.52	0	0.00	0	0.00	0	0.00
050301030103	Fish Creek-Mahoning River	17.46	4.75	72.79	367	50.52	0	0.00	0	0.00	0	0.00
050301030201	Deer Creek	18.19	5.24	71.22	199	63.29	0	0.00	0	0.00	0	0.00
050301030202	Willow Creek	27.52	12.10	56.02	128	72.14	0	0.00	0	0.00	0	0.00
050301030203	Mill Creek	25.02	7.51	69.98	361	66.86	0	0.00	0	0.00	0	0.00
050301030204	Island Creek-Mahoning River	16.65	4.01	75.91	161	60.28	0	0.00	0	0.00	0	0.00
050301030301	Kale Creek	20.03	10.04	49.86	219	69.92	0	0.00	0	0.00	0	0.00
050301030302	Headwaters West Branch Mahoning River	17.51	6.31	63.97	184	59.32	0	0.00	0	0.00	0	0.00
050301030303	Barrel Run	16.23	5.89	63.68	69	62.77	0	0.00	0	0.00	0	0.00
050301030304	Kirwin Reservoir-West Branch Mahoning River	8.06	4.64	42.48	151	69.80	0	0.00	0	0.00	0	0.00
050301030305	Town of Newton Falls-West Branch Mahoning River	18.46	13.49	26.93	232	70.35	0	0.00	0	0.00	0	0.00
050301030306	Charley Run Creek-Mahoning River	19.36	3.00	84.51	271	60.04	0	0.00	0	0.00	0	0.00
050301030401	Headwaters Eagle Creek	14.20	7.34	48.29	73	64.43	1	70.00	1	91.00	1	83.81
050301030402	South Fork Eagle Creek	21.48	11.17	47.98	159	74.73	0	0.00	0	0.00	0	0.00
050301030403	Camp Creek-Eagle Creek	16.79	8.77	47.80	142	70.52	5	74.80	5	82.40	5	72.01
050301030404	Tinkers Creek	24.57	12.70	48.32	132	66.61	0	0.00	0	0.00	0	0.00
050301030405	Mouth Eagle Creek	25.71	9.86	61.66	250	71.14	0	0.00	0	0.00	0	0.00
050301030406	Chocolate Run-Mahoning River	18.50	5.47	70.42	264	63.79	0	0.00	0	0.00	0	0.00
050301030501	Upper Mosquito Creek	34.88	14.21	59.27	273	78.29	0	0.00	0	0.00	0	0.00
050301030502	Middle Mosquito Creek	19.92	11.54	42.07	575	72.79	0	0.00	0	0.00	0	0.00

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050301030503	Lower Mosquito Creek	14.89	5.39	63.82	297	57.10	0	0.00	0	0.00	0	0.00
050301030601	Duck Creek	24.59	5.72	76.75	428	57.24	0	0.00	0	0.00	0	0.00
050301030602	Mud Creek	16.07	2.31	85.65	112	49.54	0	0.00	0	0.00	0	0.00
050301030603	City of Warren-Mahoning River	13.39	3.48	74.05	314	50.04	0	0.00	0	0.00	0	0.00
050301030701	Upper Meander Creek	21.68	4.85	77.62	212	57.52	0	0.00	0	0.00	0	0.00
050301030702	Middle Meander Creek	19.66	2.17	88.95	250	56.29	0	0.00	0	0.00	0	0.00
050301030703	Lower Meander Creek	18.62	2.58	86.13	196	55.59	0	0.00	0	0.00	0	0.00
050301030704	Squaw Creek	9.93	3.33	66.46	186	55.51	0	0.00	0	0.00	0	0.00
050301030705	Little Squaw Creek-Mahoning River	5.99	0.49	91.85	51	37.34	0	0.00	0	0.00	0	0.00
050301030801	Headwaters Mill Creek	23.24	7.30	68.60	154	50.33	0	0.00	0	0.00	0	0.00
050301030802	Indian Run	22.01	1.03	95.34	38	47.01	0	0.00	0	0.00	0	0.00
050301030803	Andersons Run-Mill Creek	16.54	0.95	94.26	47	39.85	0	0.00	0	0.00	0	0.00
050301030804	Crab Creek	10.32	1.39	86.49	110	55.33	0	0.00	0	0.00	0	0.00
050301030805	Headwaters Yellow Creek	9.39	2.19	76.63	78	46.32	0	0.00	0	0.00	0	0.00
050301030806	Burgess Run-Yellow Creek	17.00	3.14	81.51	85	48.57	0	0.00	0	0.00	0	0.00
050301030807	Dry Run-Mahoning River	13.65	3.44	74.80	126	60.01	0	0.00	0	0.00	0	0.00
050301030808	Hickory Run	22.13	0.83	96.24	25	41.18	0	0.00	0	0.00	0	0.00
050301030809	Coffee Run-Mahoning River	14.02	3.48	75.18	136	46.58	0	0.00	0	0.00	0	0.00
050301060201	South Fork Short Creek	5.60	1.08	80.71	41	62.96	0	0.00	0	0.00	0	0.00
050301060202	Middle Fork Short Creek	4.31	1.73	59.81	55	59.70	0	0.00	0	0.00	0	0.00
050301060203	North Fork Short Creek	4.12	2.30	44.20	60	68.25	0	0.00	0	0.00	0	0.00
050301060204	Piney Fork	3.68	0.97	73.48	55	48.92	0	0.00	0	0.00	0	0.00
050301060205	Perrin Run-Short Creek	2.06	0.61	70.43	52	62.09	0	0.00	0	0.00	0	0.00
050301060206	Little Short Creek	1.13	0.72	36.20	48	52.83	0	0.00	0	0.00	0	0.00
050301060207	Dry Fork-Short Creek	2.38	1.30	45.41	103	38.94	0	0.00	0	0.00	0	0.00
050301060301	Crabapple Creek	4.69	1.97	57.99	114	57.03	0	0.00	0	0.00	0	0.00
050301060302	Headwaters Wheeling Creek	1.69	1.16	31.22	87	42.19	0	0.00	0	0.00	0	0.00
050301060303	Cox Run-Wheeling Creek	2.15	0.76	64.64	156	59.93	0	0.00	0	0.00	0	0.00
050301060304	Flat Run-Wheeling Creek	1.11	0.22	80.47	38	43.11	0	0.00	0	0.00	0	0.00
050301060701	Williams Creek	0.57	0.20	65.04	15	61.89	0	0.00	0	0.00	0	0.00
050301060702	Upper McMahon Creek	0.48	0.45	6.57	64	47.01	0	0.00	0	0.00	0	0.00
050301060703	Little McMahon Creek	1.13	0.25	77.52	25	39.24	0	0.00	0	0.00	0	0.00
050301060704	Lower McMahon Creek	0.84	0.27	67.67	38	50.67	0	0.00	0	0.00	0	0.00
050301060901	North Fork Captina Creek	0.54	0.35	34.14	73	54.62	0	0.00	0	0.00	0	0.00
050301060902	South Fork Captina Creek	0.44	0.27	37.36	52	61.80	0	0.00	0	0.00	0	0.00
050301060903	Bend Fork	0.23	0.15	32.52	31	50.81	0	0.00	0	0.00	0	0.00
050301060904	Piney Creek-Captina Creek	0.56	0.15	74.10	15	55.54	0	0.00	0	0.00	0	0.00
050301060905	Pea Vine Creek-Captina Creek	0.56	0.27	51.71	44	51.94	0	0.00	0	0.00	0	0.00
050301060906	Cat Run-Captina Creek	0.62	0.31	50.39	25	39.19	0	0.00	0	0.00	0	0.00

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050301061201	Rush Run	2.43	0.81	66.79	52	60.77	0	0.00	0	0.00	0	0.00
050301061202	Salt Run-Ohio River	2.32	0.65	72.04	74	44.78	0	0.00	0	0.00	0	0.00
050301061204	Glenns Run-Ohio River	1.07	0.61	43.18	47	28.57	0	0.00	0	0.00	0	0.00
050301061205	Boggs Run-Ohio River	0.77	0.60	22.37	9	16.14	0	0.00	0	0.00	0	0.00
050301061206	Wegee Creek-Ohio River	0.63	0.26	59.76	12	60.60	0	0.00	0	0.00	0	0.00
050301061207	Pipe Creek-Ohio River	0.48	0.28	42.04	30	57.68	0	0.00	0	0.00	0	0.00
050301061208	Big Run-Ohio River	0.06	0.03	60.22	2	36.67	0	0.00	0	0.00	0	0.00
050302010101	Upper Sunfish Creek	0.21	0.02	89.54	11	58.84	0	0.00	0	0.00	0	0.00
050302010102	Piney Fork	0.18	0.08	56.18	5	72.60	0	0.00	0	0.00	0	0.00
050302010103	Middle Sunfish Creek	0.10	0.13	0.00	15	69.29	0	0.00	0	0.00	0	0.00
050302010104	Lower Sunfish Creek	0.09	0.08	5.63	15	57.68	0	0.00	0	0.00	0	0.00
050302010601	Rich Fork	0.15	0.04	77.15	6	74.09	0	0.00	0	0.00	0	0.00
050302010602	Cranenest Fork	0.17	0.18	0.00	16	72.94	0	0.00	0	0.00	0	0.00
050302010603	Wolfpen Run-Little Muskingum River	0.18	0.03	85.51	3	59.33	0	0.00	0	0.00	0	0.00
050302010604	Witten Fork	0.17	0.07	61.11	20	72.27	0	0.00	0	0.00	0	0.00
050302010605	Straight Fork-Little Muskingum River	0.26	0.32	0.00	48	60.88	0	0.00	0	0.00	0	0.00
050302010701	Clear Fork Little Muskingum River	0.23	0.01	95.76	15	67.59	0	0.00	0	0.00	0	0.00
050302010702	Archers Fork	0.53	0.23	56.98	16	70.63	0	0.00	0	0.00	0	0.00
050302010703	Wingett Run-Little Muskingum River	0.62	0.23	62.43	22	50.70	0	0.00	0	0.00	0	0.00
050302010704	Fifteen Mile Creek	0.61	0.01	97.57	6	68.54	0	0.00	0	0.00	0	0.00
050302010705	Eightmile Creek-Little Muskingum River	0.86	0.15	82.33	37	25.49	0	0.00	0	0.00	0	0.00
050302010801	Upper East Fork Duck Creek	1.00	0.32	67.45	45	53.49	0	0.00	0	0.00	0	0.00
050302010802	Middle Fork Duck Creek	2.27	0.97	57.22	139	64.37	0	0.00	0	0.00	0	0.00
050302010803	Middle East Fork Duck Creek	1.39	0.34	75.61	134	64.60	0	0.00	0	0.00	0	0.00
050302010804	Paw Paw Creek	0.48	0.40	16.15	24	50.97	0	0.00	0	0.00	0	0.00
050302010805	Lower East Fork Duck Creek	1.76	2.40	0.00	66	61.24	0	0.00	0	0.00	0	0.00
050302010901	Headwaters West Fork Duck Creek	1.36	0.27	80.32	143	53.79	0	0.00	0	0.00	0	0.00
050302010902	Buffalo Run-West Fork Duck Creek	2.07	0.83	60.10	165	65.07	0	0.00	0	0.00	0	0.00
050302010903	New Years Creek-Duck Creek	0.71	0.15	79.34	25	57.13	0	0.00	0	0.00	0	0.00
050302010904	Sugar Creek-Duck Creek	1.22	0.39	67.93	36	20.25	0	0.00	0	0.00	0	0.00
050302011001	Stillhouse Run-Ohio River	0.03	1.14	0.00	17	33.43	0	0.00	0	0.00	0	0.00
050302011002	Opossum Creek	0.06	0.27	0.00	22	58.23	0	0.00	0	0.00	0	0.00
050302011004	Haynes Run-Ohio River	0.06	0.48	0.00	17	42.95	0	0.00	0	0.00	0	0.00
050302011005	Patton Run-Ohio River	0.11	0.60	0.00	31	41.86	0	0.00	0	0.00	0	0.00
050302011006	Mill Creek-Ohio River	0.67	0.59	11.39	46	42.25	0	0.00	0	0.00	0	0.00
050302011007	Leith Run-Ohio River	0.64	0.66	0.00	47	49.32	0	0.00	0	0.00	0	0.00
050302011009	Cow Creek-Ohio River	1.48	0.59	59.89	57	35.88	0	0.00	0	0.00	0	0.00
050302011010	Bull Creek-Ohio River	5.16	2.62	49.17	23	10.90	0	0.00	0	0.00	0	0.00
050302020102	Mile Run-Ohio River	1.25	0.35	72.29	43	38.16	0	0.00	0	0.00	0	0.00

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050302020103	Headwaters Little Hocking River	0.79	0.14	82.83	50	45.75	0	0.00	0	0.00	0	0.00
050302020104	West Branch Little Hocking River	0.68	0.67	1.99	75	77.52	0	0.00	0	0.00	0	0.00
050302020105	Little West Branch Little Hocking River-Little Hocking River	0.75	0.07	91.06	23	47.96	0	0.00	0	0.00	0	0.00
050302020106	Sandy Creek-Ohio River	1.83	0.30	83.58	42	21.38	0	0.00	0	0.00	0	0.00
050302020201	Headwaters West Branch Shade River	2.81	1.77	36.93	105	57.25	0	0.00	0	0.00	0	0.00
050302020202	Kingsbury Creek	0.29	0.49	0.00	36	59.08	0	0.00	0	0.00	0	0.00
050302020203	Headwaters Middle Branch Shade River	1.76	0.36	79.40	56	60.83	0	0.00	0	0.00	0	0.00
050302020204	Elk Run-Middle Branch Shade River	0.09	0.39	0.00	34	55.23	0	0.00	0	0.00	0	0.00
050302020205	Walker Run-West Branch Shade River	0.06	0.70	0.00	65	58.36	0	0.00	0	0.00	0	0.00
050302020301	Horse Cave Creek	0.05	0.04	33.54	14	42.16	0	0.00	0	0.00	0	0.00
050302020302	Headwaters East Branch Shade River	1.77	0.24	86.31	31	52.94	0	0.00	0	0.00	0	0.00
050302020303	Big Run-East Branch Shade River	0.00	0.05	0.00	11	53.05	0	0.00	0	0.00	0	0.00
050302020304	Spruce Creek-Shade River	0.06	0.02	57.09	8	32.83	0	0.00	0	0.00	0	0.00
050302020404	Forked Run-Ohio River	0.41	0.27	35.15	37	42.31	0	0.00	0	0.00	0	0.00
050302020701	Headwaters Leading Creek	0.64	0.48	25.43	48	51.03	0	0.00	0	0.00	0	0.00
050302020702	Mud Fork	0.42	0.72	0.00	69	55.95	0	0.00	0	0.00	0	0.00
050302020703	Ogden Run-Leading Creek	0.19	1.34	0.00	112	67.31	0	0.00	0	0.00	0	0.00
050302020704	Little Leading Creek	0.33	0.80	0.00	115	56.99	0	0.00	0	0.00	0	0.00
050302020705	Thomas Fork	0.23	0.11	52.94	34	45.25	0	0.00	0	0.00	0	0.00
050302020706	Parker Run-Leading Creek	0.15	0.92	0.00	180	61.52	0	0.00	0	0.00	0	0.00
050302020802	Groundhog Creek-Ohio River	0.04	0.44	0.00	18	56.95	0	0.00	0	0.00	0	0.00
050302020803	Oldtown Creek-Ohio River	0.03	0.15	0.00	17	46.15	0	0.00	0	0.00	0	0.00
050302020804	West Creek-Ohio River	0.09	0.35	0.00	56	45.11	0	0.00	0	0.00	0	0.00
050302020805	Broad Run-Ohio River	0.13	0.15	0.00	16	34.71	0	0.00	0	0.00	0	0.00
050302020901	Kyger Creek	2.26	0.22	90.47	49	57.15	0	0.00	0	0.00	0	0.00
050302020902	Campaign Creek	0.41	0.21	48.84	51	55.49	0	0.00	0	0.00	0	0.00
050302020904	Crooked Creek-Ohio River	1.57	0.41	74.14	8	24.22	0	0.00	0	0.00	0	0.00
050302040101	Center Branch	4.16	0.91	78.22	68	58.93	0	0.00	0	0.00	0	0.00
050302040102	Headwaters Rush Creek	6.96	1.85	73.44	167	47.91	0	0.00	0	0.00	0	0.00
050302040103	Clark Run-Rush Creek	6.66	1.73	74.08	130	63.93	0	0.00	0	0.00	0	0.00
050302040201	Headwaters Little Rush Creek	13.32	0.98	92.66	67	57.06	0	0.00	0	0.00	0	0.00
050302040202	Indian Creek-Little Rush Creek	18.31	0.27	98.50	40	57.71	0	0.00	0	0.00	0	0.00
050302040203	Raccoon Run	6.98	0.27	96.16	26	34.48	0	0.00	0	0.00	0	0.00
050302040204	Turkey Run-Rush Creek	2.66	0.85	68.00	146	50.35	0	0.00	0	0.00	0	0.00
050302040301	Headwaters Clear Creek	22.01	0.27	98.79	50	37.27	0	0.00	0	0.00	0	0.00
050302040302	Mouth Clear Creek	3.23	0.07	97.96	27	35.32	0	0.00	0	0.00	0	0.00
050302040401	Headwaters Hocking River	17.65	0.78	95.60	74	30.58	0	0.00	0	0.00	0	0.00
050302040402	Baldwin Run	10.84	0.04	99.64	3	33.36	0	0.00	0	0.00	0	0.00
050302040403	Pleasant Run	13.99	0.17	98.81	16	17.24	0	0.00	0	0.00	0	0.00

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050302040404	Tarhe Run-Hocking River	2.71	0.18	93.48	20	28.09	0	0.00	0	0.00	0	0.00
050302040405	Buck Run-Hocking River	0.78	0.31	60.63	49	56.14	0	0.00	0	0.00	0	0.00
050302040501	Little Monday Creek	1.33	0.38	71.74	53	55.91	0	0.00	0	0.00	0	0.00
050302040502	Lost Run-Monday Creek	2.85	1.44	49.45	99	66.06	5	61.90	2	67.50	2	57.02
050302040503	Snow Fork	0.79	0.64	19.65	70	64.75	0	0.00	0	0.00	0	0.00
050302040504	Kitchen Run-Monday Creek	1.12	1.82	0.00	148	65.76	1	52.00	1	75.00	1	46.49
050302040601	Clear Fork	1.17	0.42	64.10	22	65.00	0	0.00	0	0.00	0	0.00
050302040602	Scott Creek	0.80	0.21	73.98	41	53.65	0	0.00	0	0.00	0	0.00
050302040603	Oldtown Creek	0.81	0.40	49.91	32	32.16	0	0.00	0	0.00	0	0.00
050302040604	Fivemile Creek	0.68	0.44	35.45	45	60.66	0	0.00	0	0.00	0	0.00
050302040605	Harper Run-Hocking River	1.27	0.54	57.64	71	44.06	0	0.00	0	0.00	0	0.00
050302040606	Dorr Run-Hocking River	0.87	1.27	0.00	137	44.51	2	43.00	2	68.00	2	34.33
050302040701	East Branch Sunday Creek	0.83	0.52	37.11	49	71.54	1	52.00	0	0.00	0	0.00
050302040702	Dotson Creek-Sunday Creek	0.62	0.37	40.53	44	62.78	0	0.00	0	0.00	0	0.00
050302040703	West Branch Sunday Creek	1.80	0.72	60.22	98	58.75	1	52.50	1	61.00	1	35.71
050302040704	Greens Run-Sunday Creek	1.28	1.43	0.00	168	45.98	2	56.75	0	0.00	0	0.00
050302040801	Hamley Run-Hocking River	0.88	1.75	0.00	130	47.03	1	54.00	0	0.00	0	0.00
050302040802	Headwaters Margaret Creek	5.86	0.49	91.68	107	38.93	0	0.00	0	0.00	0	0.00
050302040803	Factory Creek-Margaret Creek	7.85	1.03	86.92	94	50.35	0	0.00	0	0.00	0	0.00
050302040804	Coates Run-Hocking River	1.04	1.84	0.00	86	29.15	0	0.00	0	0.00	0	0.00
050302040901	Miners and Hyde Forks	2.26	0.55	75.64	32	55.81	0	0.00	0	0.00	0	0.00
050302040902	McDougall Branch	4.26	0.35	91.89	67	60.91	0	0.00	0	0.00	0	0.00
050302040903	Kasler Creek-Federal Creek	7.61	0.08	98.94	19	49.48	0	0.00	0	0.00	0	0.00
050302040904	Sharps Fork	2.73	0.73	73.12	71	64.32	0	0.00	0	0.00	0	0.00
050302040905	Big Run-Federal Creek	2.66	0.32	87.85	38	78.23	0	0.00	0	0.00	0	0.00
050302041001	Willow Creek-Hocking River	0.45	0.74	0.00	68	45.67	0	0.00	0	0.00	0	0.00
050302041002	Piper Run-Hocking River	1.93	0.79	58.76	54	47.19	0	0.00	0	0.00	0	0.00
050302041003	Fourmile Creek	0.49	0.15	68.72	9	55.76	0	0.00	0	0.00	0	0.00
050302041004	Frost Run-Hocking River	3.32	0.57	82.91	76	51.52	0	0.00	0	0.00	0	0.00
050400010101	Headwaters Tuscarawas River	17.13	4.34	74.65	196	39.88	0	0.00	0	0.00	0	0.00
050400010102	Pigeon Creek	24.21	3.46	85.71	68	45.93	1	60.00	0	0.00	0	0.00
050400010103	Hudson Run	3.32	0.94	71.67	30	40.01	0	0.00	0	0.00	0	0.00
050400010104	Wolf Creek	8.32	4.53	45.61	137	56.27	0	0.00	0	0.00	0	0.00
050400010105	Portage Lakes-Tuscarawas River	7.48	3.38	54.88	86	47.77	0	0.00	0	0.00	0	0.00
050400010201	Headwaters Chippewa Creek	11.38	4.44	60.99	90	43.85	0	0.00	0	0.00	0	0.00
050400010202	Hubbard Creek-Chippewa Creek	10.61	2.95	72.19	112	48.19	0	0.00	0	0.00	0	0.00
050400010203	Little Chippewa Creek	13.94	0.76	94.58	62	33.75	0	0.00	0	0.00	0	0.00
050400010204	River Styx	9.41	1.29	86.25	104	34.53	0	0.00	0	0.00	0	0.00
050400010205	Tommy Run-Chippewa Creek	15.09	2.91	80.69	147	53.06	0	0.00	0	0.00	0	0.00

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050400010206	Red Run	9.18	0.64	93.04	40	32.62	0	0.00	0	0.00	0	0.00
050400010207	Silver Creek-Chippewa Creek	11.94	6.90	42.25	128	55.54	0	0.00	0	0.00	0	0.00
050400010301	Pancake Creek-Tuscarawas River	9.60	5.02	47.67	66	47.71	0	0.00	0	0.00	0	0.00
050400010302	Nimisila Reservoir-Nimisila Creek	11.99	4.34	63.84	104	52.63	3	84.67	2	63.00	2	67.78
050400010303	Lake Lucern-Nimisila Creek	16.17	10.34	36.04	74	53.08	0	0.00	0	0.00	0	0.00
050400010304	Fox Run	13.92	6.62	52.43	65	68.95	0	0.00	0	0.00	0	0.00
050400010305	Town of Canal Fulton-Tuscarawas River	10.92	6.27	42.58	86	39.27	0	0.00	0	0.00	0	0.00
050400010306	Headwaters Newman Creek	11.75	0.96	91.87	55	38.03	0	0.00	0	0.00	0	0.00
050400010307	Town of North Lawrence-Newman Creek	7.50	2.15	71.29	51	39.17	0	0.00	0	0.00	0	0.00
050400010308	Sippo Creek	12.17	2.59	78.74	59	33.89	0	0.00	0	0.00	0	0.00
050400010309	West Sippo Creek-Tuscarawas River	8.51	3.14	63.05	118	41.23	0	0.00	0	0.00	0	0.00
050400010401	Conser Run	8.57	5.22	39.09	97	49.31	0	0.00	0	0.00	0	0.00
050400010402	Middle Branch Sandy Creek	4.66	2.32	50.18	104	32.14	0	0.00	0	0.00	0	0.00
050400010403	Pipes Fork-Still Fork	11.70	5.87	49.83	99	60.23	1	57.00	1	61.00	1	51.19
050400010404	Muddy Fork	7.17	1.16	83.83	30	57.43	0	0.00	0	0.00	0	0.00
050400010405	Reeds Run-Still Fork	10.15	2.41	76.25	76	64.15	0	0.00	0	0.00	0	0.00
050400010406	Headwaters Sandy Creek	6.87	2.90	57.75	169	41.60	0	0.00	0	0.00	0	0.00
050400010501	Swartz Ditch-Middle Branch Nimishillen Creek	23.21	2.68	88.45	148	46.73	0	0.00	0	0.00	0	0.00
050400010502	East Branch Nimishillen Creek	9.93	1.36	86.28	139	26.50	0	0.00	0	0.00	0	0.00
050400010503	West Branch Nimishillen Creek	13.64	1.42	89.59	122	34.54	2	48.00	2	26.00	2	43.21
050400010504	City of Canton-Middle Branch Nimishillen Creek	8.16	1.80	77.91	71	24.39	0	0.00	0	0.00	0	0.00
050400010505	Sherrick Run-Nimishillen Creek	13.83	1.50	89.14	80	30.98	0	0.00	0	0.00	0	0.00
050400010506	Town of East Sparta-Nimishillen Creek	7.35	1.57	78.58	36	28.35	0	0.00	0	0.00	0	0.00
050400010601	Hugle Run	11.68	2.13	81.76	99	45.34	0	0.00	0	0.00	0	0.00
050400010602	Pipe Run	9.24	2.38	74.24	85	68.67	0	0.00	0	0.00	0	0.00
050400010603	Black Run	9.11	2.39	73.77	51	37.89	0	0.00	0	0.00	0	0.00
050400010604	Little Sandy Creek	6.33	3.03	52.21	94	54.24	0	0.00	0	0.00	0	0.00
050400010605	Armstrong Run-Sandy Creek	6.05	2.19	63.79	85	50.68	0	0.00	0	0.00	0	0.00
050400010606	Indian Run-Sandy Creek	4.10	4.79	0.00	156	63.24	0	0.00	0	0.00	0	0.00
050400010607	Beal Run-Sandy Creek	6.85	5.75	16.02	59	59.00	0	0.00	0	0.00	0	0.00
050400010701	Headwaters Upper Conotton Creek	1.96	1.01	48.22	32	62.04	0	0.00	0	0.00	0	0.00
050400010702	Irish Creek	0.54	0.89	0.00	20	60.88	0	0.00	0	0.00	0	0.00
050400010703	Dining Fork	0.99	1.41	0.00	21	47.19	0	0.00	0	0.00	0	0.00
050400010704	Headwaters Middle Conotton Creek	1.99	1.37	30.84	38	62.83	0	0.00	0	0.00	0	0.00
050400010705	North Fork McGuire Creek	0.70	0.83	0.00	43	74.05	0	0.00	0	0.00	0	0.00
050400010706	McGuire Creek	0.98	0.57	41.88	32	67.29	0	0.00	0	0.00	0	0.00
050400010707	Headwaters Lower Conotton Creek	2.88	2.12	26.31	83	67.94	0	0.00	0	0.00	0	0.00
050400010801	Cold Spring Run-Indian Fork	0.82	1.01	0.00	67	65.97	0	0.00	0	0.00	0	0.00
050400010802	Pleasant Valley Run-Indian Fork	1.76	1.50	14.76	61	63.00	0	0.00	0	0.00	0	0.00

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050400010803	Thompson Run-Conotton Creek	2.00	2.09	0.00	67	62.94	0	0.00	0	0.00	0	0.00
050400010804	Huff Run	1.34	1.31	2.29	35	65.40	0	0.00	0	0.00	0	0.00
050400010805	Dog Run-Conotton Creek	2.70	4.42	0.00	146	63.73	0	0.00	0	0.00	0	0.00
050400010901	Little Sugar Creek	7.72	0.92	88.11	56	29.72	0	0.00	0	0.00	0	0.00
050400010902	Town of Smithville-Sugar Creek	6.52	1.30	80.13	66	33.98	0	0.00	0	0.00	0	0.00
050400010903	North Fork Sugar Creek	2.69	0.80	70.19	30	37.54	0	0.00	0	0.00	0	0.00
050400010904	Town of Brewster-Sugar Creek	7.12	3.55	50.18	91	51.71	0	0.00	0	0.00	0	0.00
050400011001	Upper South Fork Sugar Creek	3.10	0.33	89.40	30	25.95	0	0.00	0	0.00	0	0.00
050400011002	East Branch South Fork Sugar Creek	4.44	0.35	92.21	29	41.40	0	0.00	0	0.00	0	0.00
050400011003	Indian Trail Creek	2.35	1.24	47.41	26	45.17	0	0.00	0	0.00	0	0.00
050400011004	Walnut Creek	2.56	0.87	66.21	37	38.67	0	0.00	0	0.00	0	0.00
050400011005	Lower South Fork Sugar Creek	5.46	8.86	0.00	100	61.93	2	42.00	2	41.00	2	27.53
050400011101	Headwaters Middle Fork Sugar Creek	2.17	0.22	89.71	30	32.70	0	0.00	0	0.00	0	0.00
050400011102	Misers Run-Middle Fork Sugar Creek	7.99	3.89	51.31	50	60.72	0	0.00	0	0.00	0	0.00
050400011103	Beach City Reservoir-Sugar Creek	12.99	6.54	49.64	86	52.83	0	0.00	0	0.00	0	0.00
050400011104	Broad Run	1.82	0.68	62.53	43	48.86	0	0.00	0	0.00	0	0.00
050400011105	Brandywine Creek-Sugar Creek	2.01	1.14	43.08	59	50.01	0	0.00	0	0.00	0	0.00
050400011201	Pigeon Run	4.38	2.32	47.02	26	37.59	0	0.00	0	0.00	0	0.00
050400011202	City of Massillon-Tuscarawas River	6.93	2.20	68.25	60	15.27	0	0.00	0	0.00	0	0.00
050400011203	Wolf Creek-Tuscarawas River	9.20	2.30	75.04	140	44.75	0	0.00	0	0.00	0	0.00
050400011204	Wolf Run-Tuscarawas River	1.22	1.01	16.83	56	50.03	0	0.00	0	0.00	0	0.00
050400011301	Spencer Creek	1.90	2.44	0.00	125	50.39	0	0.00	0	0.00	0	0.00
050400011302	Headwaters Stillwater Creek	1.76	1.97	0.00	65	46.47	0	0.00	0	0.00	0	0.00
050400011303	Boggs Fork	6.98	4.22	39.47	137	56.06	0	0.00	0	0.00	0	0.00
050400011304	Buttermilk Creek-Stillwater Creek	3.93	3.80	3.28	324	60.42	0	0.00	0	0.00	0	0.00
050400011401	Skull Fork	2.34	3.79	0.00	135	73.13	0	0.00	0	0.00	0	0.00
050400011402	Brushy Fork	2.12	1.79	15.80	143	68.74	0	0.00	0	0.00	0	0.00
050400011403	Craborchard Creek-Stillwater Creek	1.19	4.34	0.00	100	76.87	0	0.00	0	0.00	0	0.00
050400011501	Clear Fork	2.92	2.31	20.87	65	65.76	0	0.00	0	0.00	0	0.00
050400011502	Standingstone Fork	3.18	1.13	64.52	34	53.02	0	0.00	0	0.00	0	0.00
050400011503	Upper Little Stillwater Creek	0.45	0.30	33.33	20	61.89	0	0.00	0	0.00	0	0.00
050400011504	Middle Little Stillwater Creek	4.97	2.41	51.57	54	58.94	0	0.00	0	0.00	0	0.00
050400011505	Lower Little Stillwater Creek	5.60	3.49	37.72	47	54.01	0	0.00	0	0.00	0	0.00
050400011601	Laurel Creek	0.83	0.60	27.76	33	69.96	0	0.00	0	0.00	0	0.00
050400011602	Crooked Creek	1.50	0.99	34.17	26	54.48	0	0.00	0	0.00	0	0.00
050400011603	Weaver Run-Stillwater Creek	2.63	2.38	9.40	46	66.40	0	0.00	0	0.00	0	0.00
050400011604	Town of Uhrichsville-Stillwater Creek	4.28	2.27	46.93	107	56.19	0	0.00	0	0.00	0	0.00
050400011701	Stone Creek	1.72	0.47	72.86	28	45.54	0	0.00	0	0.00	0	0.00
050400011702	Oldtown Creek	2.34	0.13	94.57	8	67.16	0	0.00	0	0.00	0	0.00

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050400011703	Beaverdam Creek	4.87	1.95	59.94	47	56.29	0	0.00	0	0.00	0	0.00
050400011704	Pone Run-Tuscarawas River	1.42	2.19	0.00	49	37.99	0	0.00	0	0.00	0	0.00
050400011801	Dunlap Creek	1.23	0.66	46.43	32	63.70	0	0.00	0	0.00	0	0.00
050400011802	Mud Run-Tuscarawas River	1.44	1.24	14.30	90	44.99	0	0.00	0	0.00	0	0.00
050400011803	Buckhorn Creek	1.26	0.26	78.95	23	52.84	0	0.00	0	0.00	0	0.00
050400011804	Blue Ridge Run-Tuscarawas River	2.53	2.05	18.92	45	49.37	0	0.00	0	0.00	0	0.00
050400011901	Evans Creek	2.19	0.57	74.19	35	44.61	0	0.00	0	0.00	0	0.00
050400011902	West Fork White Eyes Creek	3.06	2.04	33.27	45	62.62	0	0.00	0	0.00	0	0.00
050400011903	White Eyes Creek	2.59	0.97	62.37	60	47.25	0	0.00	0	0.00	0	0.00
050400011904	Morgan Run-Tuscarawas River	3.06	2.83	7.53	124	40.18	0	0.00	0	0.00	0	0.00
050400020101	Marsh Run	44.54	1.27	97.15	92	54.59	0	0.00	0	0.00	0	0.00
050400020102	Headwaters Black Fork Mohican River	25.83	0.94	96.37	217	45.40	0	0.00	0	0.00	0	0.00
050400020103	Brubaker Creek	16.44	1.62	90.16	106	51.98	0	0.00	0	0.00	0	0.00
050400020104	Whetstone Creek	17.70	1.62	90.82	81	55.69	2	63.25	2	58.00	2	58.79
050400020105	Shipp Creek-Black Fork Mohican River	24.81	5.04	79.69	525	60.29	2	66.00	2	92.50	2	74.79
050400020201	Village of Pavonia-Black Fork Mohican River	11.91	5.05	57.61	128	58.65	1	31.00	1	13.00	1	15.53
050400020202	Seymour Run-Black Fork	4.24	2.94	30.59	79	65.01	0	0.00	0	0.00	0	0.00
050400020203	Headwaters Rocky Fork	12.51	1.22	90.22	107	38.99	0	0.00	0	0.00	0	0.00
050400020204	Outlet Rocky Fork	5.54	0.61	88.90	105	42.86	1	55.00	1	87.00	1	70.46
050400020205	Charles Mill-Black Fork Mohican River	4.49	3.33	25.90	49	70.94	0	0.00	0	0.00	0	0.00
050400020301	Headwaters Clear Fork Mohican River	9.37	1.39	85.12	252	55.41	0	0.00	0	0.00	0	0.00
050400020302	Cedar Fork	6.42	0.65	89.82	255	50.59	0	0.00	0	0.00	0	0.00
050400020303	Town of Lexington-Clear Fork Mohican River	6.12	1.75	71.35	150	47.30	0	0.00	0	0.00	0	0.00
050400020401	Honey Creek-Clear Fork Mohican River	2.20	0.23	89.39	35	43.03	0	0.00	0	0.00	0	0.00
050400020402	Possum Run	1.77	0.74	57.95	31	46.02	0	0.00	0	0.00	0	0.00
050400020403	Slater Run-Clear Fork Mohican River	1.02	0.10	90.37	13	36.40	0	0.00	0	0.00	0	0.00
050400020404	Pine Run	2.60	0.15	94.03	10	40.65	0	0.00	0	0.00	0	0.00
050400020405	Switzer Creek-Clear Fork Mohican River	2.61	1.03	60.60	34	59.88	0	0.00	0	0.00	0	0.00
050400020501	Upper Muddy Fork Mohican River	11.53	2.21	80.83	238	55.85	1	76.00	1	97.00	1	96.34
050400020502	Middle Muddy Fork Mohican River	7.53	1.64	78.24	139	59.30	0	0.00	0	0.00	0	0.00
050400020503	Lower Muddy Fork Mohican River	15.48	6.83	55.90	281	48.99	0	0.00	0	0.00	0	0.00
050400020601	Lang Creek	11.29	1.23	89.14	94	47.77	0	0.00	0	0.00	0	0.00
050400020602	Orange Creek	11.62	1.77	84.78	199	52.34	0	0.00	0	0.00	0	0.00
050400020603	Katotawa Creek	6.65	1.42	78.67	45	55.93	0	0.00	0	0.00	0	0.00
050400020604	Oldtown Run	3.90	0.79	79.85	46	36.50	0	0.00	0	0.00	0	0.00
050400020605	Jerome Fork-Mohican River	13.70	4.69	65.74	211	57.44	0	0.00	0	0.00	0	0.00
050400020606	Glenn Run-Jerome Fork Mohican River	11.24	5.87	47.73	129	53.95	0	0.00	0	0.00	0	0.00
050400020701	Grab Run	9.77	1.42	85.49	151	53.80	1	78.00	1	76.00	1	75.98
050400020702	Mohicanville Dam-Lake Fork Mohican River	3.20	2.59	19.00	122	59.90	0	0.00	0	0.00	0	0.00

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050400020703	Plum Run-Lake Fork Mohican River	6.81	2.07	69.54	125	53.39	0	0.00	0	0.00	0	0.00
050400020801	Honey Creek	3.49	1.31	62.63	44	48.49	0	0.00	0	0.00	0	0.00
050400020802	Town of Perrysville-Black Fork Mohican River	4.48	2.54	43.29	63	52.09	0	0.00	0	0.00	0	0.00
050400020803	Big Run-Black Fork Mohican River	2.87	0.80	72.09	39	43.60	0	0.00	0	0.00	0	0.00
050400020804	Sigafoos Run-Mohican River	1.18	0.08	93.09	13	45.80	0	0.00	0	0.00	0	0.00
050400020805	Negro Run-Mohican River	0.90	0.09	90.49	17	71.76	0	0.00	0	0.00	0	0.00
050400020806	Flat Run-Mohican River	2.25	0.30	86.87	37	58.95	0	0.00	0	0.00	0	0.00
050400030101	Headwaters North Branch Kokosing River	8.56	0.73	91.42	295	54.94	3	66.17	1	87.00	1	93.36
050400030102	East Branch Kokosing River	8.04	1.66	79.29	92	47.05	0	0.00	0	0.00	0	0.00
050400030103	Job Run-North Branch Kokosing River	7.48	1.26	83.18	58	38.25	0	0.00	0	0.00	0	0.00
050400030201	Headwaters Kokosing River	14.94	2.23	85.04	506	50.37	0	0.00	0	0.00	0	0.00
050400030202	Mile Run-Kokosing River	12.04	2.46	79.60	398	63.11	0	0.00	0	0.00	0	0.00
050400030203	Granny Creek-Kokosing River	9.88	1.03	89.60	105	60.56	0	0.00	0	0.00	0	0.00
050400030301	Dry Creek	9.39	0.80	91.51	201	49.59	0	0.00	0	0.00	0	0.00
050400030302	Armstrong Run-Kokosing River	4.96	0.93	81.35	25	61.20	0	0.00	0	0.00	0	0.00
050400030303	Big Run	12.88	0.77	94.03	76	46.38	0	0.00	0	0.00	0	0.00
050400030304	Delano Run-Kokosing River	7.64	0.67	91.19	67	38.88	3	46.17	3	52.33	3	61.43
050400030305	Little Schenck Creek	4.56	1.05	76.92	30	55.11	0	0.00	0	0.00	0	0.00
050400030306	Schenck Creek	3.82	0.59	84.57	42	47.33	0	0.00	0	0.00	0	0.00
050400030307	Indianfield Run-Kokosing River	2.79	0.77	72.28	46	45.88	0	0.00	0	0.00	0	0.00
050400030401	Little Jelloway Creek	1.12	0.51	54.06	27	52.50	0	0.00	0	0.00	0	0.00
050400030402	Jelloway Creek	3.54	0.46	87.09	79	48.95	0	0.00	0	0.00	0	0.00
050400030403	Brush Run-Kokosing River	1.25	0.41	66.89	47	57.81	0	0.00	0	0.00	0	0.00
050400030501	Headwaters Killbuck Creek	12.18	3.78	69.00	166	45.88	0	0.00	0	0.00	0	0.00
050400030502	Little Killbuck Creek-Killbuck Creek	9.52	4.75	50.06	159	54.16	1	21.50	1	13.00	1	2.04
050400030503	Rathburn Run-Little Killbuck Creek	3.80	0.50	86.81	55	61.95	0	0.00	0	0.00	0	0.00
050400030504	Cedar Run-Killbuck Creek	4.87	2.02	58.56	124	57.95	0	0.00	0	0.00	0	0.00
050400030505	Clear Creek-Killbuck Creek	6.70	1.59	76.33	60	32.48	0	0.00	0	0.00	0	0.00
050400030601	Little Apple Creek	3.45	1.28	62.76	40	38.66	0	0.00	0	0.00	0	0.00
050400030602	Apple Creek	3.72	1.22	67.20	97	34.54	0	0.00	0	0.00	0	0.00
050400030603	Shreve Creek	11.01	6.52	40.74	59	57.75	1	68.50	1	87.00	1	82.64
050400030604	Jennings Ditch-Killbuck Creek	16.99	12.48	26.53	187	51.04	4	51.50	4	30.00	4	38.38
050400030605	North Branch Salt Creek	5.07	1.37	73.02	37	32.08	0	0.00	0	0.00	0	0.00
050400030606	Salt Creek	3.58	1.33	62.75	56	46.15	0	0.00	0	0.00	0	0.00
050400030607	Tea Run-Killbuck Creek	8.91	7.27	18.41	77	59.00	0	0.00	0	0.00	0	0.00
050400030701	Paint Creek	2.21	0.12	94.75	21	49.39	0	0.00	0	0.00	0	0.00
050400030702	Martins Creek	3.81	0.37	90.28	21	42.72	0	0.00	0	0.00	0	0.00
050400030703	Honey Run-Killbuck Creek	5.33	3.91	26.70	33	44.38	1	72.00	1	91.00	1	75.54
050400030704	Black Creek	2.36	0.92	61.06	41	60.55	0	0.00	0	0.00	0	0.00

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050400030705	Shrimplin Creek-Killbuck Creek	4.01	2.01	49.80	108	49.66	0	0.00	0	0.00	0	0.00
050400030801	Wolf Creek	4.10	1.84	55.23	31	70.45	0	0.00	0	0.00	0	0.00
050400030802	Headwaters Doughty Creek	2.87	0.40	85.99	31	40.13	0	0.00	0	0.00	0	0.00
050400030803	Bucks Run-Doughty Creek	2.82	2.32	17.84	72	61.51	0	0.00	0	0.00	0	0.00
050400030804	Big Run-Killbuck Creek	8.63	6.60	23.48	75	63.95	0	0.00	0	0.00	0	0.00
050400030805	Bucklew Run-Killbuck Creek	6.07	5.50	9.42	96	72.77	0	0.00	0	0.00	0	0.00
050400030901	Mohawk Creek	4.64	2.06	55.58	65	75.04	0	0.00	0	0.00	0	0.00
050400030902	Dutch Run-Walhonding River	1.40	2.95	0.00	41	76.73	0	0.00	0	0.00	0	0.00
050400030903	Beaver Run	4.05	0.31	92.32	18	46.83	0	0.00	0	0.00	0	0.00
050400030904	Simmons Run	4.58	1.22	73.33	41	57.78	0	0.00	0	0.00	0	0.00
050400030905	Darling Run-Walhonding River	2.36	1.91	19.36	33	52.45	0	0.00	0	0.00	0	0.00
050400030906	Headwaters Mill Creek	2.69	0.68	74.77	41	45.81	0	0.00	0	0.00	0	0.00
050400030907	Spoon Creek-Mill Creek	3.29	1.45	55.99	69	44.61	0	0.00	0	0.00	0	0.00
050400030908	Crooked Creek-Walhonding River	3.23	2.72	16.00	55	64.14	0	0.00	0	0.00	0	0.00
050400040101	Headwaters Wakatomika Creek	3.06	0.93	69.46	85	49.62	0	0.00	0	0.00	0	0.00
050400040102	Winding Fork	3.22	0.77	76.11	82	60.08	0	0.00	0	0.00	0	0.00
050400040103	Brushy Fork	4.01	0.40	90.03	70	58.53	0	0.00	0	0.00	0	0.00
050400040104	Jug Run-Wakatomika Creek	1.07	0.68	36.37	71	75.27	2	83.00	2	71.00	2	57.71
050400040201	Black Run-Wakatomika Creek	9.77	1.43	85.36	135	47.97	0	0.00	0	0.00	0	0.00
050400040202	Mill Fork	4.77	2.70	43.54	110	64.21	0	0.00	0	0.00	0	0.00
050400040203	Little Wakatomika Creek	3.23	0.70	78.43	90	54.82	0	0.00	0	0.00	0	0.00
050400040204	Town of Frazeysburg-Wakatomika Creek	8.25	2.02	75.50	87	32.98	0	0.00	0	0.00	0	0.00
050400040301	Robinson Run-Muskingum River	2.25	3.12	0.00	108	58.16	0	0.00	0	0.00	0	0.00
050400040302	Village of Adams Mills-Muskingum River	3.12	5.95	0.00	63	56.61	0	0.00	0	0.00	0	0.00
050400040303	North Branch Symmes Creek	1.34	1.61	0.00	25	51.11	0	0.00	0	0.00	0	0.00
050400040304	South Branch Symmes Creek-Symmes Creek	1.03	1.31	0.00	41	68.72	0	0.00	0	0.00	0	0.00
050400040305	Blount Run-Muskingum River	1.94	1.81	6.62	149	53.10	0	0.00	0	0.00	0	0.00
050400040401	Valley Run	8.27	0.44	94.74	79	49.52	0	0.00	0	0.00	0	0.00
050400040402	Headwaters Jonathon Creek	14.44	0.77	94.70	79	41.62	0	0.00	0	0.00	0	0.00
050400040403	Turkey Run	5.08	1.03	79.66	43	61.67	0	0.00	0	0.00	0	0.00
050400040404	Buckeye Fork	3.66	0.34	90.78	39	64.44	0	0.00	0	0.00	0	0.00
050400040405	Kent Run	3.14	0.30	90.54	44	38.20	0	0.00	0	0.00	0	0.00
050400040406	Thompson Run	1.53	0.48	68.48	35	47.13	0	0.00	0	0.00	0	0.00
050400040407	Painter Creek-Jonathon Creek	5.37	0.52	90.29	163	45.29	0	0.00	0	0.00	0	0.00
050400040501	Black Fork	0.65	0.28	56.51	65	48.88	0	0.00	0	0.00	0	0.00
050400040502	Upper Moxahala Creek	3.81	1.34	64.85	111	48.75	0	0.00	0	0.00	0	0.00
050400040503	Middle Moxahala Creek	3.15	0.54	82.80	55	53.79	0	0.00	0	0.00	0	0.00
050400040504	Lower Moxahala Creek	1.90	1.64	13.45	112	52.30	0	0.00	0	0.00	0	0.00
050400040601	Little Salt Creek	2.49	0.31	87.51	29	38.02	0	0.00	0	0.00	0	0.00

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050400040602	Headwaters Salt Creek	2.00	0.41	79.56	70	54.00	0	0.00	0	0.00	0	0.00
050400040603	Buffalo Fork	0.78	0.64	18.37	41	61.10	0	0.00	0	0.00	0	0.00
050400040604	Boggs Creek	4.62	0.46	89.99	65	42.60	0	0.00	0	0.00	0	0.00
050400040605	Manns Fork Salt Creek	0.64	0.14	77.58	26	64.79	0	0.00	0	0.00	0	0.00
050400040606	Mouth Salt Creek	0.91	0.97	0.00	44	47.82	0	0.00	0	0.00	0	0.00
050400040701	Mans Fork	2.13	0.26	88.01	33	68.15	0	0.00	0	0.00	0	0.00
050400040702	Headwaters Meigs Creek	1.55	0.43	72.40	64	66.26	0	0.00	0	0.00	0	0.00
050400040703	Dyes Fork	3.32	0.62	81.20	137	61.24	0	0.00	0	0.00	0	0.00
050400040704	Fourmile Run-Meigs Creek	0.65	0.09	85.81	17	59.52	0	0.00	0	0.00	0	0.00
050400040801	Brush Creek	0.67	1.11	0.00	94	68.05	0	0.00	0	0.00	0	0.00
050400040802	Flat Run-Muskingum River	1.14	0.27	76.53	23	49.36	0	0.00	0	0.00	0	0.00
050400040803	Duncan Run-Muskingum River	0.77	0.29	61.94	28	45.56	0	0.00	0	0.00	0	0.00
050400040804	Island Run	1.08	0.04	95.84	20	68.55	0	0.00	0	0.00	0	0.00
050400040805	Blue Rock Creek-Muskingum River	0.75	0.73	2.12	40	35.19	0	0.00	0	0.00	0	0.00
050400040806	Oilspring Run-Muskingum River	1.20	0.48	59.59	27	27.38	0	0.00	0	0.00	0	0.00
050400040807	Bald Eagle Run	0.35	0.60	0.00	10	47.64	0	0.00	0	0.00	0	0.00
050400040808	Bell Creek-Muskingum River	0.44	0.15	65.13	19	30.18	0	0.00	0	0.00	0	0.00
050400040809	Olney Run-Muskingum River	0.47	0.16	66.49	13	43.72	0	0.00	0	0.00	0	0.00
050400040901	South West Branch Wolf Creek	0.70	1.16	0.00	40	57.06	0	0.00	0	0.00	0	0.00
050400040902	Headwaters South Branch Wolf Creek	0.99	0.50	49.07	62	59.99	0	0.00	0	0.00	0	0.00
050400040903	Plumb Run-South Branch Wolf Creek	0.64	0.28	56.47	22	50.56	0	0.00	0	0.00	0	0.00
050400041001	Headwaters West Branch Wolf Creek	1.53	0.33	78.11	80	50.85	0	0.00	0	0.00	0	0.00
050400041002	Aldridge Run-West Branch Wolf Creek	0.47	0.45	4.00	48	60.06	0	0.00	0	0.00	0	0.00
050400041003	Coal Run	0.50	0.20	59.59	32	61.94	0	0.00	0	0.00	0	0.00
050400041004	Hayward Run-Wolf Creek	0.54	0.51	4.50	66	57.15	0	0.00	0	0.00	0	0.00
050400041101	Headwaters Olive Green Creek	0.82	0.10	87.29	15	60.93	0	0.00	0	0.00	0	0.00
050400041102	Keith Fork	0.92	0.02	97.68	11	70.09	0	0.00	0	0.00	0	0.00
050400041103	Little Olive Green Creek	0.46	0.03	93.63	7	58.57	0	0.00	0	0.00	0	0.00
050400041104	Reasoners Run-Olive Green Creek	0.51	0.23	55.36	9	69.43	0	0.00	0	0.00	0	0.00
050400041105	Congress Run-Muskingum River	0.94	0.15	83.87	21	27.45	0	0.00	0	0.00	0	0.00
050400041201	Big Run	0.91	0.10	89.04	33	69.73	0	0.00	0	0.00	0	0.00
050400041202	Rainbow Creek	0.49	0.10	80.33	23	32.77	0	0.00	0	0.00	0	0.00
050400041203	Cat Creek-Muskingum River	0.94	0.17	81.77	46	31.99	0	0.00	0	0.00	0	0.00
050400041204	Devol Run-Muskingum River	0.93	0.14	84.60	20	28.69	0	0.00	0	0.00	0	0.00
050400050101	Headwaters Seneca Fork	0.77	0.11	85.08	35	59.24	0	0.00	0	0.00	0	0.00
050400050102	Beaver Creek	1.43	0.69	51.82	50	56.82	0	0.00	0	0.00	0	0.00
050400050103	Glady Run-Seneca Fork	0.89	0.36	60.02	46	57.28	0	0.00	0	0.00	0	0.00
050400050104	Depue Run-Seneca Fork	1.08	0.40	62.62	24	54.62	0	0.00	0	0.00	0	0.00
050400050105	Opossum Run-Seneca Fork	1.90	2.68	0.00	103	55.81	0	0.00	0	0.00	0	0.00

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050400050201	Yoker Creek	2.13	2.56	0.00	106	63.16	0	0.00	0	0.00	0	0.00
050400050202	Headwaters Collins Fork	2.18	1.28	41.04	136	56.90	0	0.00	0	0.00	0	0.00
050400050203	South Fork Buffalo Creek-Buffalo Creek	1.66	1.35	18.93	44	56.74	0	0.00	0	0.00	0	0.00
050400050204	North Fork Buffalo Creek-Buffalo Creek	2.14	1.24	42.15	78	47.24	0	0.00	0	0.00	0	0.00
050400050205	Crane Run-Buffalo Fork	2.93	3.66	0.00	72	61.70	0	0.00	0	0.00	0	0.00
050400050206	Chapman Run	1.31	2.31	0.00	74	45.38	0	0.00	0	0.00	0	0.00
050400050207	Trail Run-Wills Creek	3.39	7.26	0.00	155	37.35	0	0.00	0	0.00	0	0.00
050400050301	Headwaters Leatherwood Creek	2.32	1.70	26.63	141	54.54	0	0.00	0	0.00	0	0.00
050400050302	Hawkins Run-Leatherwood Creek	2.27	4.33	0.00	178	57.27	0	0.00	0	0.00	0	0.00
050400050401	Brushy Fork	2.13	1.80	15.61	44	59.80	0	0.00	0	0.00	0	0.00
050400050402	Headwaters Salt Fork	2.44	3.37	0.00	171	72.84	0	0.00	0	0.00	0	0.00
050400050403	Clear Fork	1.08	2.86	0.00	29	72.83	0	0.00	0	0.00	0	0.00
050400050404	Rocky Fork	0.50	2.64	0.00	57	76.67	0	0.00	0	0.00	0	0.00
050400050405	Salt Fork Lake-Sugartree Fork	0.64	1.09	0.00	51	64.92	0	0.00	0	0.00	0	0.00
050400050406	Beeham Run-Salt Fork	0.53	1.34	0.00	35	59.95	0	0.00	0	0.00	0	0.00
050400050501	North Crooked Creek	1.25	1.06	15.40	53	38.92	0	0.00	0	0.00	0	0.00
050400050502	Headwaters Crooked Creek	1.21	1.91	0.00	43	43.30	0	0.00	0	0.00	0	0.00
050400050503	Peters Creek-Crooked Creek	1.41	2.76	0.00	86	52.04	0	0.00	0	0.00	0	0.00
050400050504	Sarchet Run-Wills Creek	1.37	2.66	0.00	56	54.66	0	0.00	0	0.00	0	0.00
050400050505	Indian Camp Run	2.38	3.45	0.00	31	66.70	0	0.00	0	0.00	0	0.00
050400050506	Headwaters Birds Run	0.46	1.01	0.00	31	69.72	0	0.00	0	0.00	0	0.00
050400050507	Johnson Fork-Birds Run	0.65	1.58	0.00	40	66.84	0	0.00	0	0.00	0	0.00
050400050508	Wolf Run-Wills Creek	1.29	2.62	0.00	65	66.70	0	0.00	0	0.00	0	0.00
050400050601	Bacon Run	3.88	2.81	27.64	55	64.28	0	0.00	0	0.00	0	0.00
050400050602	Twomile Run-Wills Creek	3.73	3.51	5.82	97	47.70	0	0.00	0	0.00	0	0.00
050400050603	White Eyes Creek	2.98	2.06	30.90	80	66.91	0	0.00	0	0.00	0	0.00
050400050604	Wills Creek Dam-Wills Creek	5.71	7.22	0.00	123	69.80	4	37.75	4	38.50	0	0.00
050400050605	Mouth Wills Creek	1.15	1.41	0.00	37	62.82	0	0.00	0	0.00	0	0.00
050400060101	Otter Fork Licking River	28.29	1.18	95.81	181	39.37	0	0.00	0	0.00	0	0.00
050400060102	Headwaters North Fork Licking River	22.81	2.00	91.24	292	45.27	0	0.00	0	0.00	0	0.00
050400060103	Sycamore Creek	19.79	1.91	90.35	193	52.10	0	0.00	0	0.00	0	0.00
050400060104	Vance Creek-North Fork Licking River	26.00	2.22	91.48	181	52.93	0	0.00	0	0.00	0	0.00
050400060201	Lake Fork Licking River	21.93	2.13	90.30	342	52.40	0	0.00	0	0.00	0	0.00
050400060202	Clear Fork Licking River	10.55	0.63	94.04	91	58.77	0	0.00	0	0.00	0	0.00
050400060203	Dog Hollow Run-North Fork Licking River	5.27	0.47	91.09	60	44.13	0	0.00	0	0.00	0	0.00
050400060204	Dry Creek	8.99	0.63	93.04	86	34.58	0	0.00	0	0.00	0	0.00
050400060205	Log Pond Run-North Fork Licking River	7.35	0.72	90.15	37	37.65	0	0.00	0	0.00	0	0.00
050400060301	Headwaters Raccoon Creek	28.41	0.60	97.90	148	33.24	0	0.00	0	0.00	0	0.00
050400060302	Lobdell Creek	22.54	0.58	97.42	101	38.02	0	0.00	0	0.00	0	0.00

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050400060303	Moots Run-Raccoon Creek	16.21	0.77	95.26	171	41.10	0	0.00	0	0.00	0	0.00
050400060304	Salt Run-Raccoon Creek	6.80	0.48	92.99	69	37.03	0	0.00	0	0.00	0	0.00
050400060401	Muddy Fork	39.89	1.27	96.83	122	38.88	0	0.00	0	0.00	0	0.00
050400060402	Headwaters South Fork Licking River	19.33	0.81	95.80	96	48.20	0	0.00	0	0.00	0	0.00
050400060403	Buckeye Lake	18.42	1.00	94.60	119	28.98	0	0.00	0	0.00	0	0.00
050400060404	Buckeye Lake Reservoir Feeder	29.71	0.62	97.90	45	35.00	0	0.00	0	0.00	0	0.00
050400060405	Town of Kirkersville-South Fork Licking River	24.61	1.29	94.74	118	46.73	0	0.00	0	0.00	0	0.00
050400060406	Bell Run-South Fork Licking River	33.86	0.82	97.58	97	34.64	1	54.50	0	0.00	0	0.00
050400060407	Ramp Creek	11.56	0.27	97.69	38	44.66	0	0.00	0	0.00	0	0.00
050400060408	Dutch Fork	19.27	0.62	96.78	49	39.29	0	0.00	0	0.00	0	0.00
050400060409	Beaver Run-South Fork Licking River	20.28	1.25	93.84	115	46.08	0	0.00	0	0.00	0	0.00
050400060501	Claylick Creek	3.63	0.21	94.11	14	38.30	0	0.00	0	0.00	0	0.00
050400060502	Lost Run	4.72	0.50	89.48	47	41.68	0	0.00	0	0.00	0	0.00
050400060503	Rocky Fork	3.93	0.43	88.96	63	51.98	0	0.00	0	0.00	0	0.00
050400060504	Bowling Green Run-Licking River	5.83	1.38	76.30	78	45.00	0	0.00	0	0.00	0	0.00
050400060601	Brushy Fork	2.61	0.25	90.43	23	63.60	0	0.00	0	0.00	0	0.00
050400060602	Big Run	8.05	1.71	78.75	66	54.21	0	0.00	0	0.00	0	0.00
050400060603	Dillon Lake-Licking River	3.26	5.17	0.00	157	49.89	0	0.00	0	0.00	0	0.00
050400060604	Timber Run-Licking River	4.01	0.51	87.32	48	47.80	0	0.00	0	0.00	0	0.00
050600010101	Cottonwood Ditch	54.58	0.55	98.99	49	33.26	0	0.00	0	0.00	0	0.00
050600010102	Headwaters Scioto River	50.58	1.74	96.56	407	45.10	0	0.00	0	0.00	0	0.00
050600010103	Taylor Creek	22.61	2.89	87.22	168	56.07	1	73.00	2	63.50	1	72.02
050600010104	Silver Creek-Scioto River	36.43	1.39	96.18	183	47.55	0	0.00	0	0.00	0	0.00
050600010201	Headwaters Rush Creek	29.32	1.87	93.61	491	50.30	0	0.00	0	0.00	0	0.00
050600010202	McDonald Creek	33.67	0.53	98.42	45	37.81	0	0.00	0	0.00	0	0.00
050600010203	Dudley Run-Rush Creek	34.19	1.00	97.09	168	41.14	0	0.00	0	0.00	0	0.00
050600010301	Rock Fork	50.36	0.57	98.87	121	39.80	0	0.00	0	0.00	0	0.00
050600010302	Headwaters Little Scioto River	49.69	1.02	97.94	201	42.37	0	0.00	0	0.00	0	0.00
050600010303	City of Marion-Little Scioto River	45.74	3.81	91.67	150	32.91	0	0.00	0	0.00	0	0.00
050600010304	Honey Creek-Little Scioto River	35.29	1.17	96.68	167	31.40	0	0.00	0	0.00	0	0.00
050600010401	Gander Run-Scioto River	27.65	1.28	95.36	83	43.59	0	0.00	0	0.00	0	0.00
050600010402	Panther Creek	34.80	2.40	93.11	156	52.53	0	0.00	0	0.00	0	0.00
050600010403	Wolf Creek-Scioto River	29.94	2.44	91.84	159	58.48	5	63.20	4	51.75	2	49.90
050600010404	Wildcat Creek	31.30	1.52	95.13	98	57.00	0	0.00	0	0.00	0	0.00
050600010405	Town of La Rue-Scioto River	27.70	1.86	93.30	149	35.06	1	40.00	1	44.00	1	17.23
050600010406	Glade Run-Scioto River	48.86	6.52	86.65	293	45.44	2	48.75	2	46.50	2	35.90
050600010501	Patton Run	39.62	0.46	98.84	68	37.38	0	0.00	0	0.00	0	0.00
050600010502	Davids Run-Scioto River	22.12	0.26	98.84	57	32.41	0	0.00	0	0.00	0	0.00
050600010503	Kebler Run	38.33	0.28	99.27	42	51.39	0	0.00	0	0.00	0	0.00

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050600010504	Fulton Creek	38.50	0.49	98.73	204	42.78	0	0.00	0	0.00	0	0.00
050600010505	Ottawa Creek-Scioto River	37.40	0.31	99.16	139	41.41	0	0.00	0	0.00	0	0.00
050600010601	Upper Mill Creek	19.44	2.49	87.21	183	55.96	0	0.00	0	0.00	0	0.00
050600010602	Middle Mill Creek	25.17	1.04	95.88	433	46.72	0	0.00	0	0.00	0	0.00
050600010603	Blues Creek	32.21	1.15	96.42	236	40.06	0	0.00	0	0.00	0	0.00
050600010604	Lower Mill Creek	27.49	0.51	98.14	227	42.53	0	0.00	0	0.00	0	0.00
050600010701	Headwaters Bokes Creek	43.09	0.98	97.73	199	45.62	0	0.00	0	0.00	0	0.00
050600010702	Brush Run-Bokes Creek	25.71	1.83	92.87	123	44.15	0	0.00	0	0.00	0	0.00
050600010703	Smith Run-Bokes Creek	34.48	0.92	97.34	178	43.05	0	0.00	0	0.00	0	0.00
050600010704	Moors Run-Scioto River	21.42	0.47	97.82	94	45.45	0	0.00	0	0.00	0	0.00
050600010801	Headwaters Olentangy River	25.67	1.50	94.15	298	47.52	0	0.00	0	0.00	0	0.00
050600010802	Mud Run	55.64	1.53	97.25	130	40.69	0	0.00	0	0.00	0	0.00
050600010803	Flat Run	23.45	1.30	94.47	317	49.49	0	0.00	0	0.00	0	0.00
050600010804	Town of Caledonia-Olentangy River	32.05	3.36	89.51	260	61.20	0	0.00	0	0.00	0	0.00
050600010901	Shaw Creek	28.24	1.13	96.00	259	48.67	0	0.00	0	0.00	0	0.00
050600010902	Headwaters Whetstone Creek	13.89	1.21	91.26	476	52.84	0	0.00	0	0.00	0	0.00
050600010903	Claypool Run-Whetstone Creek	32.18	0.83	97.41	123	51.50	0	0.00	0	0.00	0	0.00
050600011001	Otter Creek-Olentangy River	47.80	1.81	96.21	292	39.56	0	0.00	0	0.00	0	0.00
050600011002	Grave Creek	54.75	0.90	98.36	180	35.61	0	0.00	0	0.00	0	0.00
050600011003	Beaver Run-Olentangy River	34.59	1.65	95.24	262	50.68	0	0.00	0	0.00	0	0.00
050600011004	Qu Qua Creek	30.91	0.87	97.17	95	44.49	0	0.00	0	0.00	0	0.00
050600011005	Brandige Run-Olentangy River	35.74	0.82	97.70	153	55.61	1	61.50	1	67.00	1	64.89
050600011006	Indian Run-Olentangy River	36.71	2.52	93.14	132	51.88	9	59.17	4	58.50	4	64.74
050600011007	Delaware Run-Olentangy River	33.18	0.34	98.97	123	51.52	0	0.00	0	0.00	0	0.00
050600011101	Deep Run-Olentangy River	22.90	0.29	98.72	166	32.35	1	45.00	1	37.00	1	43.05
050600011102	Rush Run-Olentangy River	13.99	0.34	97.56	70	34.91	7	46.00	6	29.50	5	31.47
050600011103	Mouth Olentangy River	7.33	0.13	98.26	36	9.89	2	36.00	2	23.50	2	21.39
050600011201	Eversole Run	20.47	0.23	98.88	50	29.79	3	45.33	0	0.00	0	0.00
050600011202	O'Shaughnessy Dam-Scioto River	12.81	0.52	95.92	57	29.46	4	57.25	1	87.00	1	80.16
050600011203	Indian Run	36.36	0.75	97.93	44	23.14	6	42.58	1	46.00	1	42.47
050600011204	Hayden Run-Scioto River	22.50	0.18	99.19	82	19.55	13	41.19	3	54.67	3	63.61
050600011205	Dry Run-Scioto River	11.86	0.22	98.18	22	12.30	1	71.00	1	39.00	1	50.39
050600011301	Culver Creek	30.28	1.87	93.83	165	54.39	0	0.00	0	0.00	0	0.00
050600011302	Headwaters Big Walnut Creek	17.33	1.38	92.06	515	55.91	2	81.00	2	80.50	2	85.11
050600011303	Rattlesnake Creek	32.56	0.55	98.32	92	50.99	0	0.00	0	0.00	0	0.00
050600011304	Perfect Creek-Big Walnut Creek	32.83	1.06	96.79	80	47.51	0	0.00	0	0.00	0	0.00
050600011305	Little Walnut Creek	22.09	0.86	96.10	179	45.05	0	0.00	0	0.00	0	0.00
050600011306	Prairie Run-Big Walnut Creek	25.06	1.80	92.84	53	44.60	0	0.00	0	0.00	0	0.00
050600011307	Duncan Run	38.13	0.56	98.53	78	37.70	0	0.00	0	0.00	0	0.00

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050600011308	Hoover Reservoir-Big Walnut Creek	24.59	1.45	94.09	161	34.12	1	49.00	1	60.00	1	58.42
050600011401	West Branch Alum Creek	32.56	0.72	97.78	188	52.78	0	0.00	0	0.00	0	0.00
050600011402	Headwaters Alum Creek	12.32	0.65	94.75	217	45.88	0	0.00	0	0.00	0	0.00
050600011403	Big Run-Alum Creek	28.50	1.05	96.30	107	60.40	0	0.00	0	0.00	0	0.00
050600011404	Alum Creek Dam-Alum Creek	14.96	0.57	96.18	94	45.78	5	65.50	2	72.00	2	67.74
050600011501	Rocky Fork Creek	30.18	0.52	98.29	106	38.21	5	67.90	5	48.80	4	58.48
050600011502	City of Gahanna-Big Walnut Creek	21.21	0.46	97.84	55	35.49	5	50.20	5	49.20	5	41.92
050600011503	Headwaters Blacklick Creek	27.22	0.80	97.05	194	38.28	1	26.00	1	23.00	1	10.68
050600011504	Town of Brice-Blacklick Creek	18.74	0.64	96.59	54	10.64	0	0.00	0	0.00	0	0.00
050600011505	Mason Run-Big Walnut Cr.	13.68	0.44	96.76	103	26.83	6	46.92	6	42.83	6	40.90
050600011601	Westerville Reservoir-Alum Creek	16.07	0.28	98.23	74	18.04	2	51.50	2	47.00	2	33.75
050600011602	Bliss Run-Alum Creek	13.69	0.27	98.00	96	20.82	12	48.75	12	37.92	12	32.58
050600011603	Town of Lockbourne-Alum Creek	13.79	0.60	95.65	103	28.23	5	41.10	5	34.40	5	37.85
050600011701	Pawpaw Creek	23.35	0.96	95.90	68	45.71	3	52.00	3	37.00	1	59.21
050600011702	Headwaters Walnut Creek	22.63	0.21	99.07	56	31.28	0	0.00	0	0.00	0	0.00
050600011703	Poplar Creek	23.76	0.56	97.66	60	35.20	1	17.50	1	6.00	1	8.25
050600011704	Sycamore Creek	25.65	1.08	95.78	96	42.95	0	0.00	0	0.00	0	0.00
050600011705	Town of Carroll-Walnut Creek	21.36	0.79	96.28	112	28.47	4	35.00	4	25.25	3	23.14
050600011801	Georges Creek	27.05	2.68	90.11	80	15.13	0	0.00	0	0.00	0	0.00
050600011802	Tussing Ditch-Walnut Creek	16.92	1.01	94.06	75	21.59	0	0.00	0	0.00	0	0.00
050600011803	Turkey Run	18.65	0.05	99.73	5	37.20	0	0.00	0	0.00	0	0.00
050600011804	Little Walnut Creek	24.93	0.30	98.80	71	33.56	0	0.00	0	0.00	0	0.00
050600011805	Big Run-Walnut Creek	19.57	0.69	96.49	263	29.91	7	55.57	7	55.00	6	43.09
050600011806	Mud Run-Walnut Creek	19.38	0.41	97.87	61	29.62	0	0.00	0	0.00	0	0.00
050600011901	Headwaters Big Darby Creek	30.24	4.07	86.53	216	44.70	0	0.00	0	0.00	0	0.00
050600011902	Spain Creek-Big Darby Creek	32.38	1.61	95.03	494	39.82	1	70.00	1	56.00	1	71.45
050600011903	Buck Run	27.34	0.64	97.67	211	44.71	0	0.00	0	0.00	0	0.00
050600011904	Sugar Run	33.77	0.25	99.26	66	52.01	0	0.00	0	0.00	0	0.00
050600011905	Robinson Run-Big Darby Creek	40.91	0.59	98.56	199	42.15	0	0.00	0	0.00	0	0.00
050600012001	Headwaters Treacle Creek	36.68	1.83	95.02	195	35.18	0	0.00	0	0.00	0	0.00
050600012002	Proctor Run-Treacle Creek	45.27	2.59	94.29	168	34.95	0	0.00	0	0.00	0	0.00
050600012003	Headwaters Little Darby Creek	34.52	2.82	91.84	262	29.89	0	0.00	0	0.00	0	0.00
050600012004	Spring Fork	37.80	0.71	98.11	165	41.58	1	59.00	1	47.00	0	0.00
050600012005	Barron Creek-Little Darby Creek	48.72	0.47	99.03	128	39.57	0	0.00	0	0.00	0	0.00
050600012006	Thomas Ditch-Little Darby Creek	34.73	0.81	97.67	98	46.31	3	72.33	3	74.67	3	75.47
050600012101	Worthington Ditch-Big Darby Creek	48.25	0.49	98.98	181	40.99	0	0.00	0	0.00	0	0.00
050600012102	Silver Ditch-Big Darby Creek	31.84	1.12	96.48	32	51.93	0	0.00	0	0.00	0	0.00
050600012201	Hellbranch Run	41.35	1.16	97.21	180	26.61	5	20.30	5	8.80	2	14.19
050600012202	Gay Run-Big Darby Creek	21.52	0.74	96.57	59	43.31	1	37.50	1	19.00	0	0.00

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050600012203	Greenbrier Creek-Big Darby Creek	20.44	0.36	98.23	60	39.36	0	0.00	0	0.00	0	0.00
050600012204	Lizard Run-Big Darby Creek	14.50	2.25	84.46	59	60.01	0	0.00	0	0.00	0	0.00
050600012301	Scioto Big Run	17.70	0.11	99.40	21	8.54	11	31.86	1	10.00	1	28.74
050600012302	Kian Run-Scioto River	5.26	0.18	96.65	20	13.85	1	29.00	1	23.00	1	7.25
050600012303	Grant Run-Scioto River	21.74	0.17	99.20	52	18.93	4	31.88	0	0.00	0	0.00
050600012304	Grove Run-Scioto River	24.70	0.83	96.66	178	35.51	12	39.79	2	37.00	2	38.76
050600012305	Dry Run	19.60	0.68	96.55	74	35.98	6	31.58	3	21.00	3	25.18
050600012306	Town of Circleville-Scioto River	10.38	1.14	88.97	67	46.03	5	44.00	2	22.00	2	34.71
050600020101	Headwaters Deer Creek	30.14	1.47	95.13	98	38.54	2	40.75	2	27.00	0	0.00
050600020102	Richmond Ditch-Deer Creek	36.23	0.24	99.35	62	33.11	0	0.00	0	0.00	0	0.00
050600020103	Glade Run	44.57	0.53	98.82	61	36.52	0	0.00	0	0.00	0	0.00
050600020104	Walnut Run	41.56	0.31	99.25	31	28.28	0	0.00	0	0.00	0	0.00
050600020105	Oak Run	35.75	0.41	98.86	48	27.58	0	0.00	0	0.00	0	0.00
050600020106	Turkey Run-Deer Creek	26.43	0.43	98.38	86	37.89	0	0.00	0	0.00	0	0.00
050600020201	South Fork Bradford Creek-Bradford Creek	44.27	0.20	99.54	47	37.23	0	0.00	0	0.00	0	0.00
050600020202	Sugar Run	43.66	0.34	99.22	52	46.87	0	0.00	0	0.00	0	0.00
050600020203	Opossum Run	40.29	0.35	99.14	43	45.24	0	0.00	0	0.00	0	0.00
050600020204	Town of Mount Sterling-Deer Creek	31.34	1.09	96.52	71	48.58	0	0.00	0	0.00	0	0.00
050600020205	Deer Creek Lake-Deer Creek	34.61	0.75	97.83	51	43.26	0	0.00	0	0.00	0	0.00
050600020206	Buskirk Creek	44.91	0.23	99.48	40	35.51	0	0.00	0	0.00	0	0.00
050600020207	Dear Creek Dam-Deer Creek	27.66	0.24	99.12	21	49.76	0	0.00	0	0.00	0	0.00
050600020301	Dry Run	40.12	0.21	99.47	38	38.85	0	0.00	0	0.00	0	0.00
050600020302	Hay Run	34.09	0.15	99.56	58	30.71	0	0.00	0	0.00	0	0.00
050600020303	Waugh Creek	25.86	0.13	99.48	27	29.13	0	0.00	0	0.00	0	0.00
050600020304	State Run-Deer Creek	14.75	0.31	97.89	56	35.81	0	0.00	0	0.00	0	0.00
050600020401	Hargus Creek	10.43	0.23	97.82	42	24.77	0	0.00	0	0.00	0	0.00
050600020402	Yellowbud Creek	35.30	0.44	98.75	82	35.24	0	0.00	0	0.00	0	0.00
050600020403	Lick Run-Scioto River	18.31	0.80	95.64	78	37.65	2	68.00	2	62.50	1	63.31
050600020404	Congo Creek	24.26	0.82	96.64	46	42.70	0	0.00	0	0.00	0	0.00
050600020405	Scippo Creek	13.31	0.16	98.83	46	39.45	0	0.00	0	0.00	0	0.00
050600020406	Blackwater Creek-Scioto River	13.73	2.90	78.86	103	46.60	0	0.00	0	0.00	0	0.00
050600020501	Kinnikinnick Creek	15.82	1.68	89.36	146	45.06	1	66.00	1	67.00	1	80.93
050600020502	Dry Run-Scioto River	7.34	2.95	59.85	76	38.71	0	0.00	0	0.00	0	0.00
050600020503	Lick Run-Scioto River	1.70	3.45	0.00	112	31.24	0	0.00	0	0.00	0	0.00
050600020601	Beech Fork	22.45	1.83	91.84	70	45.09	0	0.00	0	0.00	0	0.00
050600020602	Headwaters Salt Creek	12.97	0.16	98.73	26	28.98	0	0.00	0	0.00	0	0.00
050600020603	Laurel Run	1.67	0.20	88.28	45	52.19	0	0.00	0	0.00	0	0.00
050600020604	Pine Creek	0.44	0.92	0.00	88	75.12	0	0.00	0	0.00	0	0.00
050600020605	Blue Creek-Salt Creek	1.67	0.48	71.43	75	45.50	0	0.00	0	0.00	0	0.00

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050600020701	Pigeon Creek	0.46	1.14	0.00	153	62.75	0	0.00	0	0.00	0	0.00
050600020702	Middle Fork Salt Creek	0.48	0.89	0.00	170	64.38	0	0.00	0	0.00	0	0.00
050600020801	Headwaters Little Salt Creek	7.31	2.39	67.27	115	62.46	0	0.00	0	0.00	0	0.00
050600020802	Buckeye Creek	2.26	2.18	3.24	101	63.40	0	0.00	0	0.00	0	0.00
050600020803	Horse Creek-Little Salt Creek	1.51	1.91	0.00	78	43.89	0	0.00	0	0.00	0	0.00
050600020804	Pigeon Creek	0.37	1.24	0.00	101	62.85	0	0.00	0	0.00	0	0.00
050600020805	Sour Run-Little Salt Creek	0.49	1.12	0.00	136	59.09	0	0.00	0	0.00	0	0.00
050600020901	East Fork Queer Creek	0.23	0.12	44.82	12	79.68	0	0.00	0	0.00	0	0.00
050600020902	Queer Creek	0.39	0.63	0.00	60	67.12	0	0.00	0	0.00	0	0.00
050600020903	Pretty Run	0.36	0.36	1.96	24	61.61	0	0.00	0	0.00	0	0.00
050600020904	Pike Run	0.26	0.50	0.00	39	60.44	0	0.00	0	0.00	0	0.00
050600020905	Village of Eagle Mills-Salt Creek	0.16	1.22	0.00	52	64.80	0	0.00	0	0.00	0	0.00
050600020906	Poe Run-Salt Creek	0.67	1.08	0.00	140	55.15	0	0.00	0	0.00	0	0.00
050600021001	Indian Creek	0.16	0.19	0.00	37	51.23	0	0.00	0	0.00	0	0.00
050600021002	Dry Run	0.42	1.33	0.00	52	40.79	0	0.00	0	0.00	0	0.00
050600021003	Headwaters Walnut Creek	0.69	1.16	0.00	93	54.27	0	0.00	0	0.00	0	0.00
050600021004	Lick Run-Walnut Creek	1.27	1.77	0.00	129	53.59	0	0.00	0	0.00	0	0.00
050600021005	Stony Creek-Scioto River	0.67	2.92	0.00	103	47.35	0	0.00	0	0.00	0	0.00
050600021101	Carrs Run	0.08	0.67	0.00	31	72.36	0	0.00	0	0.00	0	0.00
050600021102	Left Fork Crooked Creek	0.03	0.11	0.00	16	54.39	0	0.00	0	0.00	0	0.00
050600021103	Crooked Creek	0.60	0.88	0.00	81	48.64	0	0.00	0	0.00	0	0.00
050600021104	Pee Pee Creek	0.03	0.16	0.00	43	50.96	0	0.00	0	0.00	0	0.00
050600021105	Meadow Run-Scioto River	2.15	2.37	0.00	245	46.57	0	0.00	0	0.00	0	0.00
050600021201	Headwaters Sunfish Creek	0.22	0.08	63.24	18	69.32	0	0.00	0	0.00	0	0.00
050600021202	Headwaters Morgan Fork	0.01	0.23	0.00	10	65.51	0	0.00	0	0.00	0	0.00
050600021203	Left Fork Morgan Fork-Morgan Fork	0.19	0.02	88.75	5	34.10	0	0.00	0	0.00	0	0.00
050600021204	Grassy Fork-Sunfish Creek	0.46	0.05	89.39	12	47.03	0	0.00	0	0.00	0	0.00
050600021205	Chenoweth Fork	0.01	0.07	0.00	14	50.06	0	0.00	0	0.00	0	0.00
050600021206	Leeth Creek-Sunfish Creek	0.36	0.15	59.48	30	60.07	0	0.00	0	0.00	0	0.00
050600021301	No Name Creek	0.02	0.04	0.00	16	49.77	0	0.00	0	0.00	0	0.00
050600021302	Headwaters Big Beaver Creek	0.84	1.86	0.00	163	51.45	0	0.00	0	0.00	0	0.00
050600021303	Little Beaver Creek-Big Beaver Creek	1.90	2.16	0.00	194	52.73	0	0.00	0	0.00	0	0.00
050600021304	Boswell Run-Scioto River	0.01	1.64	0.00	78	40.54	0	0.00	0	0.00	0	0.00
050600021401	Churn Creek	0.33	0.03	90.25	7	44.28	0	0.00	0	0.00	0	0.00
050600021402	Mill Creek	0.58	0.09	84.79	27	77.15	0	0.00	0	0.00	0	0.00
050600021403	Turkey Creek	0.58	0.20	65.57	53	61.19	0	0.00	0	0.00	0	0.00
050600021404	Turkey Run-South Fork Scioto Brush Creek	0.76	0.13	82.66	48	40.82	0	0.00	0	0.00	0	0.00
050600021405	Rocky Fork	0.00	0.00	0.00	4	60.53	0	0.00	0	0.00	0	0.00
050600021406	Beech Fork-South Fork Scioto Brush Creek	0.03	0.44	0.00	51	51.31	0	0.00	0	0.00	0	0.00

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050600021501	Headwaters Scioto Brush Creek	1.62	0.28	82.61	134	58.04	0	0.00	0	0.00	0	0.00
050600021502	Rarden Creek	0.00	0.21	0.00	19	46.19	0	0.00	0	0.00	0	0.00
050600021503	Jaybird Branch-Scioto Brush Creek	1.44	0.37	74.19	55	60.90	0	0.00	0	0.00	0	0.00
050600021504	Dunlap Creek-Scioto Brush Creek	0.35	0.24	32.87	99	45.07	0	0.00	0	0.00	0	0.00
050600021505	Bear Creek	0.00	0.01	0.00	1	74.00	0	0.00	0	0.00	0	0.00
050600021506	McCullough Creek	0.02	0.05	0.00	12	57.15	0	0.00	0	0.00	0	0.00
050600021507	Duck Run-Scioto Brush Creek	0.06	0.28	0.00	48	56.58	0	0.00	0	0.00	0	0.00
050600021601	Camp Creek	0.02	0.08	0.00	28	67.30	0	0.00	0	0.00	0	0.00
050600021602	Big Run-Scioto River	0.15	0.52	0.00	67	39.94	0	0.00	0	0.00	0	0.00
050600021603	Bear Creek-Scioto River	0.70	1.05	0.00	137	32.01	0	0.00	0	0.00	0	0.00
050600021604	Pond Creek	0.03	0.44	0.00	82	18.04	0	0.00	0	0.00	0	0.00
050600021605	Carroll Run-Scioto River	0.35	8.09	0.00	258	22.54	0	0.00	0	0.00	0	0.00
050600030101	Headwaters Paint Creek	45.58	0.34	99.25	43	49.80	0	0.00	0	0.00	0	0.00
050600030102	East Fork Paint Creek	55.80	0.23	99.59	87	36.88	0	0.00	0	0.00	0	0.00
050600030103	Town of Washington Court House-Paint Creek	44.87	0.75	98.32	83	33.37	0	0.00	0	0.00	0	0.00
050600030201	Headwaters Sugar Creek	49.67	0.40	99.19	75	32.39	0	0.00	0	0.00	0	0.00
050600030202	Camp Run-Sugar Creek	51.06	0.58	98.86	58	50.43	0	0.00	0	0.00	0	0.00
050600030301	Wilson Creek	43.26	0.39	99.11	27	38.34	0	0.00	0	0.00	0	0.00
050600030302	Grassy Branch	63.94	0.34	99.46	18	41.72	0	0.00	0	0.00	0	0.00
050600030303	West Branch Rattlesnake Creek	55.78	0.20	99.64	24	41.94	0	0.00	0	0.00	0	0.00
050600030304	Headwaters Rattlesnake Creek	55.32	0.69	98.75	91	49.41	0	0.00	0	0.00	0	0.00
050600030305	Waddle Ditch-Rattlesnake Creek	37.27	0.89	97.61	33	56.77	0	0.00	0	0.00	0	0.00
050600030401	South Fork Lees Creek	27.26	0.17	99.37	11	36.28	0	0.00	0	0.00	0	0.00
050600030402	Middle Fork Lees Creek	28.83	0.12	99.59	12	42.46	0	0.00	0	0.00	0	0.00
050600030403	Lees Creek	35.56	0.49	98.62	74	50.49	0	0.00	0	0.00	0	0.00
050600030404	Walnut Creek	11.92	0.03	99.77	12	36.25	0	0.00	0	0.00	0	0.00
050600030405	Hardin Creek	6.35	0.36	94.28	10	58.33	0	0.00	0	0.00	0	0.00
050600030406	Fall Creek	14.89	0.30	97.97	7	60.26	0	0.00	0	0.00	0	0.00
050600030407	Big Branch-Rattlesnake Creek	7.18	0.62	91.42	22	58.42	0	0.00	0	0.00	0	0.00
050600030501	South Fork Rocky Fork	2.16	0.01	99.65	3	43.21	0	0.00	0	0.00	0	0.00
050600030502	Clear Creek	4.33	0.42	90.34	54	53.76	0	0.00	0	0.00	0	0.00
050600030503	Headwaters Rocky Fork	4.81	0.64	86.68	44	60.97	0	0.00	0	0.00	0	0.00
050600030504	Rocky Fork Lake-Rocky Fork	3.19	0.15	95.36	10	50.62	0	0.00	0	0.00	0	0.00
050600030505	Franklin Branch-Rocky Fork	4.98	0.15	97.02	21	50.68	0	0.00	0	0.00	0	0.00
050600030601	Indian Creek-Paint Creek	34.62	0.27	99.23	72	43.06	0	0.00	0	0.00	0	0.00
050600030602	Farmers Run-Paint Creek	14.31	0.46	96.78	41	42.94	0	0.00	0	0.00	0	0.00
050600030603	Cliff Creek-Paint Creek	3.63	0.71	80.43	20	66.53	0	0.00	0	0.00	0	0.00
050600030701	Buckskin Creek	17.01	0.13	99.25	67	44.44	0	0.00	0	0.00	0	0.00
050600030702	Upper Twin Creek	0.28	0.16	42.38	22	71.97	0	0.00	0	0.00	0	0.00

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050600030703	Lower Twin Creek	0.81	0.38	53.40	23	76.25	0	0.00	0	0.00	0	0.00
050600030704	Sulphur Lick-Paint Creek	0.54	0.44	17.50	121	55.29	0	0.00	0	0.00	0	0.00
050600030801	Thompson Creek	43.49	0.29	99.33	18	31.92	0	0.00	0	0.00	0	0.00
050600030802	Headwaters North Fork Paint Creek	42.84	0.11	99.75	22	30.29	0	0.00	0	0.00	0	0.00
050600030803	Headwaters Compton Creek	41.71	0.57	98.63	66	38.21	0	0.00	0	0.00	0	0.00
050600030804	Mills Branch-Compton Creek	41.75	0.68	98.37	43	53.03	0	0.00	0	0.00	0	0.00
050600030805	Mud Run-North Fork Paint Creek	38.68	0.53	98.64	70	37.23	0	0.00	0	0.00	0	0.00
050600030901	Herrod Creek	27.67	0.14	99.51	25	35.45	0	0.00	0	0.00	0	0.00
050600030902	Little Creek	9.44	0.14	98.48	46	41.37	0	0.00	0	0.00	0	0.00
050600030903	Oldtown Run-North Fork Paint Creek	18.91	0.39	97.92	95	36.94	0	0.00	0	0.00	0	0.00
050600030904	Biers Run-North Fork Paint Creek	7.67	0.18	97.61	30	30.04	0	0.00	0	0.00	0	0.00
050600031001	Black Run	0.23	2.09	0.00	10	57.72	0	0.00	0	0.00	0	0.00
050600031002	Ralston Run	0.02	0.08	0.00	14	41.55	0	0.00	0	0.00	0	0.00
050600031003	City of Chillicothe-Paint Creek	1.89	1.59	16.06	114	39.85	0	0.00	0	0.00	0	0.00
050800010101	North Fork Great Miami River	36.70	2.53	93.12	170	49.78	0	0.00	0	0.00	0	0.00
050800010102	South Fork Great Miami River	28.51	1.22	95.72	226	47.33	1	19.00	1	7.00	0	0.00
050800010103	Indian Lake-Great Miami River	32.02	7.17	77.59	227	44.48	0	0.00	0	0.00	0	0.00
050800010201	Willow Creek	42.51	0.78	98.17	89	44.31	0	0.00	0	0.00	0	0.00
050800010202	Headwaters Muchnippi Creek	41.28	0.32	99.23	74	36.20	0	0.00	0	0.00	0	0.00
050800010203	Little Muchnippi Creek	36.31	1.26	96.54	229	47.86	0	0.00	0	0.00	0	0.00
050800010204	Calico Creek-Muchnippi Creek	46.04	4.31	90.64	94	58.92	0	0.00	0	0.00	0	0.00
050800010301	Cherokee Mans Run	23.07	1.19	94.83	90	35.17	0	0.00	0	0.00	0	0.00
050800010302	Rennick Creek-Great Miami River	44.50	4.58	89.70	260	42.24	0	0.00	0	0.00	0	0.00
050800010303	Rum Creek	34.77	1.23	96.45	155	48.57	0	0.00	0	0.00	0	0.00
050800010304	Blue Jacket Creek	23.79	4.89	79.44	126	32.45	0	0.00	0	0.00	0	0.00
050800010305	Bokengehalas Creek	23.09	3.71	83.94	244	44.22	0	0.00	0	0.00	0	0.00
050800010306	Brandywine Creek-Great Miami River	32.26	2.64	91.81	223	49.70	0	0.00	0	0.00	0	0.00
050800010401	McKees Creek	19.47	3.94	79.75	181	32.24	0	0.00	0	0.00	0	0.00
050800010402	Lee Creek	29.71	2.13	92.82	165	46.09	1	54.00	1	38.00	0	0.00
050800010403	Stoney Creek	26.16	2.99	88.57	168	45.11	0	0.00	0	0.00	0	0.00
050800010404	Indian Creek	35.47	1.51	95.74	72	53.40	0	0.00	0	0.00	0	0.00
050800010405	Plum Creek	20.25	0.50	97.52	183	32.47	0	0.00	0	0.00	0	0.00
050800010406	Turkeyfoot Creek-Great Miami River	19.37	0.86	95.57	208	44.54	0	0.00	0	0.00	0	0.00
050800010501	Headwaters Loramie Creek	28.68	0.62	97.85	231	37.40	0	0.00	0	0.00	0	0.00
050800010502	Mile Creek	41.55	0.18	99.58	141	37.07	0	0.00	0	0.00	0	0.00
050800010503	Lake Loramie-Loramie Creek	32.99	2.18	93.38	426	48.09	0	0.00	0	0.00	0	0.00
050800010601	Nine Mile Creek	23.88	0.88	96.33	133	37.49	0	0.00	0	0.00	0	0.00
050800010602	Painter Creek-Loramie Creek	14.11	1.00	92.89	197	35.29	0	0.00	0	0.00	0	0.00
050800010603	Turtle Creek	14.81	0.46	96.90	201	35.10	0	0.00	0	0.00	0	0.00

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050800010604	Mill Creek-Loramie Creek	11.14	1.19	89.34	205	49.94	0	0.00	0	0.00	0	0.00
050800010701	Leatherwood Creek	24.18	0.27	98.90	42	36.43	0	0.00	0	0.00	0	0.00
050800010702	Mosquito Creek	22.34	1.29	94.20	195	51.69	1	70.00	1	86.00	1	75.81
050800010703	Brush Creek-Great Miami River	14.56	0.68	95.36	120	34.66	0	0.00	0	0.00	0	0.00
050800010704	Rush Creek	19.38	0.48	97.51	55	31.39	0	0.00	0	0.00	0	0.00
050800010705	Garbry Creek-Great Miami River	15.60	0.44	97.16	96	28.86	0	0.00	0	0.00	0	0.00
050800010801	Spring Creek	18.50	0.40	97.82	93	38.52	1	68.50	1	63.00	1	58.52
050800010802	Headwaters Lost Creek	15.86	0.26	98.36	49	37.53	0	0.00	0	0.00	0	0.00
050800010803	East Branch Lost Creek	18.45	0.38	97.96	47	34.23	0	0.00	0	0.00	0	0.00
050800010804	Little Lost Creek-Lost Creek	13.44	0.24	98.23	49	35.88	0	0.00	0	0.00	0	0.00
050800010805	Peter's Creek-Great Miami River	21.77	0.46	97.91	82	27.21	0	0.00	0	0.00	0	0.00
050800010901	South Fork Stillwater River	30.86	1.06	96.56	59	44.92	0	0.00	0	0.00	0	0.00
050800010902	Headwaters Stillwater River	38.02	0.17	99.54	16	41.50	0	0.00	0	0.00	0	0.00
050800010903	North Fork Stillwater River	30.09	0.36	98.82	58	33.69	0	0.00	0	0.00	0	0.00
050800010904	Boyd Creek	23.56	0.93	96.05	90	24.29	0	0.00	0	0.00	0	0.00
050800010905	Woodington Run-Stillwater River	32.47	1.40	95.68	216	29.99	1	70.00	1	46.00	1	60.24
050800010906	Town of Beamsville-Stillwater River	19.76	0.78	96.07	152	36.87	0	0.00	0	0.00	0	0.00
050800011001	Dismal Creek	22.85	2.23	90.24	44	34.73	0	0.00	0	0.00	0	0.00
050800011002	Kraut Creek	22.28	3.03	86.42	229	46.77	0	0.00	0	0.00	0	0.00
050800011003	West Branch Greenville Creek	24.28	1.01	95.86	165	37.75	0	0.00	0	0.00	0	0.00
050800011004	Headwaters Greenville Creek	16.05	2.52	84.33	125	46.73	1	65.00	1	77.00	1	88.91
050800011101	Mud Creek	27.84	2.63	90.54	277	27.45	0	0.00	0	0.00	0	0.00
050800011102	Bridge Creek-Greenville Creek	19.17	2.01	89.52	239	23.88	0	0.00	0	0.00	0	0.00
050800011103	Dividing Branch-Greenville Creek	21.95	0.88	96.01	352	32.61	0	0.00	0	0.00	0	0.00
050800011201	Indian Creek	27.78	0.30	98.93	66	35.05	0	0.00	0	0.00	0	0.00
050800011202	Swamp Creek	27.16	0.16	99.40	95	36.22	0	0.00	0	0.00	0	0.00
050800011203	Trotters Creek	19.49	0.40	97.96	56	42.23	0	0.00	0	0.00	0	0.00
050800011204	Harris Creek	18.11	0.31	98.27	62	26.05	0	0.00	0	0.00	0	0.00
050800011205	Town of Covington-Stillwater River	11.54	0.41	96.49	73	37.94	0	0.00	0	0.00	0	0.00
050800011301	Little Painter Creek	41.74	0.15	99.63	25	28.64	0	0.00	0	0.00	0	0.00
050800011302	Painter Creek	38.44	0.61	98.41	124	29.49	0	0.00	0	0.00	0	0.00
050800011303	Canyon Run-Stillwater River	25.27	0.27	98.93	79	41.94	0	0.00	0	0.00	0	0.00
050800011401	Brush Creek	39.61	0.55	98.62	39	50.88	0	0.00	0	0.00	0	0.00
050800011402	Ludlow Creek	31.78	0.39	98.78	78	36.15	0	0.00	0	0.00	0	0.00
050800011403	Brush Creek	19.57	0.24	98.79	12	34.17	0	0.00	0	0.00	0	0.00
050800011404	Jones Run-Stillwater River	14.97	0.76	94.91	39	31.59	0	0.00	0	0.00	0	0.00
050800011405	Mill Creek-Stillwater River	16.84	0.85	94.94	45	41.09	0	0.00	0	0.00	0	0.00
050800011406	Town of Irvington-Stillwater River	7.55	0.24	96.80	32	20.64	0	0.00	0	0.00	0	0.00
050800011501	Machochee Creek	11.57	2.10	81.84	98	47.92	0	0.00	0	0.00	0	0.00

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050800011502	Headwaters Mad River	7.48	2.73	63.55	146	53.60	0	0.00	0	0.00	0	0.00
050800011503	Kings Creek	14.70	0.97	93.39	173	37.94	0	0.00	0	0.00	0	0.00
050800011504	Glady Creek-Mad River	32.67	2.65	91.87	229	35.29	1	71.00	1	83.00	1	97.53
050800011601	Muddy Creek	30.83	1.99	93.55	173	42.64	0	0.00	0	0.00	0	0.00
050800011602	Dugan Run	18.41	0.81	95.61	94	27.84	0	0.00	0	0.00	0	0.00
050800011603	Nettle Creek	11.71	0.49	95.85	69	42.78	0	0.00	0	0.00	0	0.00
050800011604	Anderson Creek	26.50	0.50	98.11	55	34.74	0	0.00	0	0.00	0	0.00
050800011605	Storms Creek	11.57	0.14	98.82	13	38.65	0	0.00	0	0.00	0	0.00
050800011606	Chapman Creek	18.98	0.92	95.14	90	40.01	0	0.00	0	0.00	0	0.00
050800011607	Bogles Run-Mad River	34.20	2.24	93.44	90	68.61	0	0.00	0	0.00	0	0.00
050800011701	East Fork Buck Creek	25.64	1.25	95.13	107	37.52	0	0.00	0	0.00	0	0.00
050800011702	Headwaters Buck Creek	18.49	1.38	92.53	153	35.68	0	0.00	0	0.00	0	0.00
050800011703	Sinking Creek	24.97	0.71	97.16	41	42.55	1	81.00	1	97.00	1	100.00
050800011704	Beaver Creek	31.11	1.00	96.78	99	36.88	0	0.00	0	0.00	0	0.00
050800011705	Clarence J Brown Lake-Buck Creek	10.38	1.53	85.24	72	39.13	1	76.00	1	86.00	1	100.00
050800011706	City of Springfield-Buck Creek	12.88	0.44	96.60	33	27.07	0	0.00	0	0.00	0	0.00
050800011801	Moore Run	18.99	0.59	96.92	62	28.62	0	0.00	0	0.00	0	0.00
050800011802	Pondy Creek-Mad River	23.77	0.72	96.98	26	29.57	0	0.00	0	0.00	0	0.00
050800011803	Mill Creek	23.80	0.88	96.31	41	26.65	0	0.00	0	0.00	0	0.00
050800011804	Donnels Creek	26.54	0.32	98.78	52	32.59	0	0.00	0	0.00	0	0.00
050800011805	Rock Run-Mad River	18.51	0.75	95.97	40	28.46	0	0.00	0	0.00	0	0.00
050800011806	Jackson Creek-Mad River	28.18	1.33	95.30	97	30.02	0	0.00	0	0.00	0	0.00
050800011901	Mud Creek	21.57	0.42	98.05	35	23.56	0	0.00	0	0.00	0	0.00
050800011902	Mud Run	21.78	0.27	98.76	31	29.35	0	0.00	0	0.00	0	0.00
050800011903	Huffman Dam-Mad River	17.79	0.28	98.44	43	19.29	0	0.00	0	0.00	0	0.00
050800011904	City of Dayton-Mad River	6.22	0.09	98.53	17	12.72	0	0.00	0	0.00	0	0.00
050800012001	East Fork Honey Creek	29.72	1.43	95.20	54	42.65	0	0.00	0	0.00	0	0.00
050800012002	West Fork Honey Creek	26.08	1.15	95.60	116	41.75	0	0.00	0	0.00	0	0.00
050800012003	Indian Creek	16.75	1.16	93.09	88	43.04	1	82.00	1	93.00	1	100.00
050800012004	Pleasant Run-Honey Creek	17.46	0.91	94.79	91	39.40	1	29.00	1	29.00	1	37.51
050800012005	Poplar Creek-Great Miami River	11.12	0.37	96.66	73	37.21	0	0.00	0	0.00	0	0.00
050800020101	North Branch Wolf Creek	24.16	0.50	97.92	53	27.37	0	0.00	0	0.00	0	0.00
050800020102	Headwaters Wolf Creek	28.14	0.28	99.00	43	32.25	0	0.00	0	0.00	0	0.00
050800020103	Dry Run-Wolf Creek	11.62	0.56	95.14	47	15.14	0	0.00	0	0.00	0	0.00
050800020104	Holes Creek	16.45	0.18	98.93	26	18.00	0	0.00	0	0.00	0	0.00
050800020105	Town of Oakwood-Great Miami River	2.05	0.23	88.56	20	9.38	0	0.00	0	0.00	0	0.00
050800020106	Opossum Creek-Great Miami River	5.28	0.18	96.65	14	21.72	0	0.00	0	0.00	0	0.00
050800020201	Millers Fork	22.76	0.33	98.54	70	30.43	0	0.00	0	0.00	0	0.00
050800020202	Headwaters Twin Creek	30.85	0.58	98.13	216	38.23	0	0.00	0	0.00	0	0.00

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050800020203	Swamp Creek	43.96	0.18	99.58	23	39.98	0	0.00	0	0.00	0	0.00
050800020204	Price Creek	28.16	0.25	99.10	71	37.57	0	0.00	0	0.00	0	0.00
050800020205	Lesley Run-Twin Creek	24.22	0.26	98.91	96	39.46	0	0.00	0	0.00	0	0.00
050800020301	Bantas Fork	23.17	0.25	98.94	81	35.96	0	0.00	0	0.00	0	0.00
050800020302	Aukerman Creek	17.88	0.21	98.84	36	28.13	0	0.00	0	0.00	0	0.00
050800020303	Toms Run	30.36	0.36	98.83	47	43.96	0	0.00	0	0.00	0	0.00
050800020304	Town of Gratis-Twin Creek	12.62	0.36	97.18	65	40.33	0	0.00	0	0.00	0	0.00
050800020305	Little Twin Creek	23.41	0.22	99.04	29	27.82	0	0.00	0	0.00	0	0.00
050800020306	Town of Germantown-Twin Creek	7.90	0.18	97.74	26	41.61	0	0.00	0	0.00	0	0.00
050800020401	Headwaters Bear Creek	29.97	0.37	98.77	53	33.50	0	0.00	0	0.00	0	0.00
050800020402	Mouth Bear Creek	17.82	0.38	97.87	41	39.94	0	0.00	0	0.00	0	0.00
050800020403	Clear Creek	10.57	0.32	97.01	99	28.45	0	0.00	0	0.00	0	0.00
050800020404	Dry Run-Great Miami River	5.88	0.34	94.20	41	33.73	0	0.00	0	0.00	0	0.00
050800020501	Headwaters Sevenmile Creek	30.04	0.39	98.70	152	33.93	0	0.00	0	0.00	0	0.00
050800020502	Paint Creek	13.99	0.18	98.68	30	40.16	0	0.00	0	0.00	0	0.00
050800020503	Beasley Run-Sevenmile Creek	13.52	0.20	98.49	59	29.54	0	0.00	0	0.00	0	0.00
050800020504	Rush Run-Sevenmile Creek	3.26	0.17	94.87	42	48.31	0	0.00	0	0.00	0	0.00
050800020505	Ninemile Creek-Sevenmile Creek	0.28	0.12	58.99	15	21.75	0	0.00	0	0.00	0	0.00
050800020601	Headwaters Four Mile Creek	21.43	0.15	99.32	39	49.90	0	0.00	0	0.00	0	0.00
050800020602	Little Four Mile Creek	31.57	0.13	99.58	13	51.41	0	0.00	0	0.00	0	0.00
050800020603	East Fork Four Mile Creek-Four Mile Creek	20.67	0.12	99.43	16	48.29	0	0.00	0	0.00	0	0.00
050800020604	Acton Lake Dam-Four Mile Creek	4.64	0.06	98.62	31	43.25	0	0.00	0	0.00	0	0.00
050800020605	Cotton Run-Four Mile Creek	0.92	0.13	85.74	40	35.73	0	0.00	0	0.00	0	0.00
050800020701	Elk Creek	8.74	0.14	98.40	71	27.07	0	0.00	0	0.00	0	0.00
050800020702	Browns Run-Great Miami River	2.15	0.13	94.17	30	21.60	0	0.00	0	0.00	0	0.00
050800020703	Shaker Creek	21.83	0.41	98.12	42	19.13	0	0.00	0	0.00	0	0.00
050800020704	Dicks Creek	9.41	0.18	98.06	28	11.11	0	0.00	0	0.00	0	0.00
050800020705	Gregory Creek	5.15	0.07	98.57	11	11.16	0	0.00	0	0.00	0	0.00
050800020706	Town of New Miami-Great Miami River	0.64	0.57	10.24	40	30.18	0	0.00	0	0.00	0	0.00
050800020802	Brandywine Creek-Indian Creek	26.38	0.00	100.00	0	0.00	0	0.00	0	0.00	0	0.00
050800020803	Beals Run-Indian Creek	1.44	0.38	73.46	56	42.04	0	0.00	0	0.00	0	0.00
050800020901	Pleasant Run	2.13	0.07	96.59	6	7.31	0	0.00	0	0.00	0	0.00
050800020902	Banklick Creek-Great Miami River	0.54	0.24	55.43	32	19.27	0	0.00	0	0.00	0	0.00
050800020903	Paddys Run	5.16	0.83	83.99	61	16.89	0	0.00	0	0.00	0	0.00
050800020904	Dry Run-Great Miami River	1.31	0.19	85.25	19	24.98	0	0.00	0	0.00	0	0.00
050800020905	Taylor Creek	1.48	0.00	99.86	2	19.94	0	0.00	0	0.00	0	0.00
050800020906	Jordan Creek-Great Miami River	1.58	0.79	50.15	33	42.46	0	0.00	0	0.00	0	0.00
050800020907	Doublelick Run-Great Miami River	2.45	2.29	6.61	22	49.21	0	0.00	0	0.00	0	0.00
050800030701	Headwaters Middle Fork East Fork Whitewater River	19.65	1.52	92.28	72	57.63	0	0.00	0	0.00	0	0.00

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050800030702	Headwaters East Fork Whitewater River	14.69	0.84	94.26	105	32.19	0	0.00	0	0.00	0	0.00
050800030703	Mud Creek-Middle Fork East Fork Whitewater River	21.06	0.27	98.70	16	28.91	0	0.00	0	0.00	0	0.00
050800030704	Rocky Fork-East Fork Whitewater River	9.33	0.03	99.66	2	26.99	0	0.00	0	0.00	0	0.00
050800030707	Short Creek-East Fork Whitewater River	0.81	0.00	100.00	0	0.00	0	0.00	0	0.00	0	0.00
050800030708	Elkhorn Creek	25.34	0.21	99.19	11	32.75	0	0.00	0	0.00	0	0.00
050800030807	Headwaters Dry Fork Whitewater River	1.19	0.00	100.00	0	0.00	0	0.00	0	0.00	0	0.00
050800030808	Howard Creek-Dry Fork Whitewater River	2.20	0.28	87.05	20	19.69	0	0.00	0	0.00	0	0.00
050800030809	Lee Creek-Dry Fork Whitewater River	2.96	0.24	91.94	10	21.22	0	0.00	0	0.00	0	0.00
050800030810	Jameson Creek-Whitewater River	1.52	1.88	0.00	40	51.66	0	0.00	0	0.00	0	0.00
050901010101	Chickamauga Creek	0.19	0.12	38.83	32	33.02	0	0.00	0	0.00	0	0.00
050901010103	Long Run-Ohio River	1.80	0.03	98.43	2	26.99	0	0.00	0	0.00	0	0.00
050901010201	East Branch Raccoon Creek	0.54	0.62	0.00	95	58.42	0	0.00	0	0.00	0	0.00
050901010202	West Branch Raccoon Creek	1.19	1.36	0.00	106	63.39	0	0.00	0	0.00	0	0.00
050901010203	Brushy Fork	0.56	1.12	0.00	153	61.26	0	0.00	0	0.00	0	0.00
050901010204	Twomile Run-Raccoon Creek	1.18	6.37	0.00	131	70.98	0	0.00	0	0.00	0	0.00
050901010205	Town of Zaleski-Raccoon Creek	2.45	4.94	0.00	207	70.44	4	64.50	4	55.75	4	62.89
050901010301	Hewett Fork	0.47	2.55	0.00	152	72.98	4	51.25	3	48.33	2	57.77
050901010302	Headwaters Elk Fork	1.48	2.14	0.00	293	64.47	0	0.00	0	0.00	0	0.00
050901010303	Flat Run-Elk Fork	0.43	4.65	0.00	57	85.36	0	0.00	0	0.00	0	0.00
050901010304	Flat Run-Raccoon Creek	0.85	2.97	0.00	303	66.98	0	0.00	0	0.00	0	0.00
050901010401	Headwaters Little Raccoon Creek	2.07	1.86	10.08	301	50.44	0	0.00	0	0.00	0	0.00
050901010402	Dickason Run	4.34	2.27	47.69	134	63.42	0	0.00	0	0.00	0	0.00
050901010403	Meadow Run-Little Raccoon Creek	1.74	5.52	0.00	387	74.91	1	66.50	1	26.00	1	31.13
050901010404	Deer Creek-Little Raccoon Creek	1.12	2.49	0.00	153	72.75	0	0.00	0	0.00	0	0.00
050901010501	Pierce Run	0.82	2.85	0.00	44	73.45	0	0.00	0	0.00	0	0.00
050901010502	Strongs Run	0.33	2.02	0.00	83	55.18	0	0.00	0	0.00	0	0.00
050901010503	Flatlick Run-Raccoon Creek	0.87	4.78	0.00	342	72.44	0	0.00	0	0.00	0	0.00
050901010504	Robinson Run-Raccoon Creek	1.71	1.53	10.82	121	50.03	0	0.00	0	0.00	0	0.00
050901010601	Indian Creek	0.67	0.62	7.81	52	66.97	0	0.00	0	0.00	0	0.00
050901010602	Barren Creek-Raccoon Creek	1.72	1.33	22.55	100	56.29	0	0.00	0	0.00	0	0.00
050901010603	Mud Creek-Raccoon Creek	0.33	0.34	0.00	76	36.45	0	0.00	0	0.00	0	0.00
050901010604	Bullskin Creek	0.08	0.05	38.66	11	62.59	0	0.00	0	0.00	0	0.00
050901010605	Claylick Run-Raccoon Creek	0.35	0.11	67.30	45	38.21	0	0.00	0	0.00	0	0.00
050901010703	Swan Creek	0.19	0.29	0.00	12	56.45	0	0.00	0	0.00	0	0.00
050901010704	Flatfoot Creek-Ohio River	1.09	0.05	95.65	5	45.77	0	0.00	0	0.00	0	0.00
050901010706	Little Indian Guyan Creek	0.11	0.45	0.00	37	59.56	0	0.00	0	0.00	0	0.00
050901010707	Johns Creek-Indian Guyan Creek	0.07	0.15	0.00	25	70.48	0	0.00	0	0.00	0	0.00
050901010708	Wolf Creek-Indian Guyan Creek	0.36	0.20	43.92	41	39.82	0	0.00	0	0.00	0	0.00
050901010709	Paddy Creek-Ohio River	0.77	0.13	82.86	29	30.67	0	0.00	0	0.00	0	0.00

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050901010801	Dirtyface Creek	2.08	1.47	29.50	30	70.51	0	0.00	0	0.00	0	0.00
050901010802	Black Fork	5.94	3.93	33.83	181	67.91	2	71.50	2	66.00	2	51.03
050901010803	Headwaters Symmes Creek	7.24	4.10	43.45	270	61.93	1	80.50	1	77.00	1	73.15
050901010901	Sand Fork	0.44	0.52	0.00	118	54.07	0	0.00	0	0.00	0	0.00
050901010902	Buffalo Creek	0.00	0.22	0.00	33	65.53	0	0.00	0	0.00	0	0.00
050901010903	Camp Creek-Symmes Creek	1.48	1.46	1.47	194	61.06	2	72.00	2	57.00	2	77.55
050901011001	Johns Creek	0.01	0.10	0.00	24	53.05	0	0.00	0	0.00	0	0.00
050901011002	Long Creek	0.00	0.11	0.00	22	46.40	0	0.00	0	0.00	0	0.00
050901011003	Pigeon Creek-Symmes Creek	0.39	0.34	12.99	52	44.64	0	0.00	0	0.00	0	0.00
050901011004	Aaron Creek-Symmes Creek	0.11	0.22	0.00	102	50.58	0	0.00	0	0.00	0	0.00
050901011005	McKinney Creek-Symmes Creek	0.19	0.17	10.68	27	35.26	0	0.00	0	0.00	0	0.00
050901011007	Buffalo Creek-Ohio River	0.87	0.35	59.87	13	19.16	0	0.00	0	0.00	0	0.00
050901030101	Solida Creek-Ohio River	0.51	0.53	0.00	18	17.30	0	0.00	0	0.00	0	0.00
050901030103	Ice Creek	0.12	0.14	0.00	28	22.54	0	0.00	0	0.00	0	0.00
050901030104	Storms Creek	0.21	0.22	0.00	25	41.53	0	0.00	0	0.00	0	0.00
050901030105	Pond Run-Ohio River	2.95	0.45	84.91	39	26.99	0	0.00	0	0.00	0	0.00
050901030106	Ginat Creek	6.45	0.37	94.34	46	28.81	0	0.00	0	0.00	0	0.00
050901030107	Grays Branch-Ohio River	2.56	0.23	91.14	24	25.11	0	0.00	0	0.00	0	0.00
050901030201	Hales Creek	1.42	1.27	10.57	101	47.83	0	0.00	0	0.00	0	0.00
050901030202	Headwaters Pine Creek	0.47	0.56	0.00	75	69.42	0	0.00	0	0.00	0	0.00
050901030203	Little Pine Creek	0.58	0.57	1.67	76	63.05	0	0.00	0	0.00	0	0.00
050901030204	Howard Run-Pine Creek	0.48	0.71	0.00	129	60.21	0	0.00	0	0.00	0	0.00
050901030205	Lick Run-Pine Creek	0.17	0.43	0.00	177	49.74	0	0.00	0	0.00	0	0.00
050901030501	Headwaters Little Scioto River	2.67	0.86	67.89	44	54.11	0	0.00	0	0.00	0	0.00
050901030502	Sugarcamp Creek	0.17	0.03	79.20	19	62.25	0	0.00	0	0.00	0	0.00
050901030503	Holland Fork	0.09	0.04	56.57	28	45.54	0	0.00	0	0.00	0	0.00
050901030504	McDowell Creek-Little Scioto River	0.38	0.09	76.69	48	58.68	0	0.00	0	0.00	0	0.00
050901030601	Headwaters Rocky Fork	0.13	0.13	0.30	19	63.77	0	0.00	0	0.00	0	0.00
050901030602	Long Run	0.11	0.01	90.85	11	42.23	0	0.00	0	0.00	0	0.00
050901030603	McConnel Creek-Rocky Fork	0.78	0.09	88.65	31	32.83	0	0.00	0	0.00	0	0.00
050901030604	Frederick Creek	0.06	0.02	73.72	10	39.43	0	0.00	0	0.00	0	0.00
050901030605	Wards Run-Little Scioto River	0.28	0.28	1.92	67	30.19	0	0.00	0	0.00	0	0.00
050901030606	Munn Run-Ohio River	0.21	1.31	0.00	28	23.60	0	0.00	0	0.00	0	0.00
050902010201	Headwaters Turkey Creek	0.00	0.07	0.00	5	57.26	0	0.00	0	0.00	0	0.00
050902010202	Odell Creek-Turkey Creek	0.34	0.54	0.00	28	44.98	0	0.00	0	0.00	0	0.00
050902010203	Pond Run	0.03	0.38	0.00	1	37.00	0	0.00	0	0.00	0	0.00
050902010204	Briery Branch-Ohio River	0.93	4.21	0.00	22	28.46	0	0.00	0	0.00	0	0.00
050902010205	Upper Twin Creek	0.20	1.32	0.00	24	57.60	0	0.00	0	0.00	0	0.00
050902010206	Lower Twin Creek	0.00	1.87	0.00	10	71.64	0	0.00	0	0.00	0	0.00

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050902010207	Rock Run-Ohio River	2.16	1.90	12.05	68	39.77	0	0.00	0	0.00	0	0.00
050902010209	Stout Run	0.70	0.83	0.00	22	45.46	0	0.00	0	0.00	0	0.00
050902010210	Quicks Run-Ohio River	1.71	1.19	30.06	63	48.14	0	0.00	0	0.00	0	0.00
050902010301	Headwaters Ohio Brush Creek	1.75	0.07	96.03	19	52.35	0	0.00	0	0.00	0	0.00
050902010302	Elk Run	1.04	0.03	96.92	6	66.16	0	0.00	0	0.00	0	0.00
050902010303	Baker Fork	1.53	0.04	97.11	20	43.03	0	0.00	0	0.00	0	0.00
050902010304	Middle Fork Ohio Brush Creek	6.14	0.42	93.08	54	60.70	0	0.00	0	0.00	0	0.00
050902010305	Flat Run-Ohio Brush Creek	1.00	0.44	56.38	45	61.19	0	0.00	0	0.00	0	0.00
050902010401	Little West Fork Ohio Brush Creek	2.48	0.12	95.28	33	45.01	0	0.00	0	0.00	0	0.00
050902010402	Headwaters West Fork Ohio Brush Creek	7.93	0.25	96.80	103	54.39	0	0.00	0	0.00	0	0.00
050902010403	Cherry Fork	0.40	0.16	59.75	152	37.12	0	0.00	0	0.00	0	0.00
050902010404	Georges Creek-West Fork Ohio Brush Creek	0.48	0.13	73.26	101	40.50	0	0.00	0	0.00	0	0.00
050902010501	Little East Fork-Ohio Brush Creek	2.83	0.21	92.42	189	40.00	0	0.00	0	0.00	0	0.00
050902010502	Lick Fork	0.38	0.04	89.80	49	39.22	0	0.00	0	0.00	0	0.00
050902010503	Bundle Run-Ohio Brush Creek	3.78	0.52	86.25	80	57.53	0	0.00	0	0.00	0	0.00
050902010504	Cedar Run-Ohio Brush Creek	1.98	0.23	88.38	84	47.22	0	0.00	0	0.00	0	0.00
050902010505	Beasley Fork	0.85	0.33	60.42	35	53.39	0	0.00	0	0.00	0	0.00
050902010506	Soldiers Run-Ohio Brush Creek	1.08	2.19	0.00	96	52.12	0	0.00	0	0.00	0	0.00
050902010601	Crooked Creek-Ohio River	1.49	1.34	10.04	55	52.34	0	0.00	0	0.00	0	0.00
050902010604	Big Threemile Creek	0.26	0.57	0.00	45	57.70	0	0.00	0	0.00	0	0.00
050902010605	Lawrence Creek-Ohio River	0.51	1.08	0.00	52	51.98	0	0.00	0	0.00	0	0.00
050902010701	Headwaters West Fork Eagle Creek	6.09	0.26	95.68	51	66.16	0	0.00	0	0.00	0	0.00
050902010702	Headwaters East Fork Eagle Creek	0.58	0.05	90.82	38	34.68	0	0.00	0	0.00	0	0.00
050902010703	Hills Fork-East Fork Eagle Creek	0.48	0.22	54.37	30	68.45	0	0.00	0	0.00	0	0.00
050902010704	Rattlesnake Creek-West Fork Eagle Creek	1.14	0.39	65.62	18	61.95	0	0.00	0	0.00	0	0.00
050902010705	Eagle Creek	0.17	0.95	0.00	81	68.83	0	0.00	0	0.00	0	0.00
050902010801	Redoak Creek	5.42	0.51	90.63	17	73.96	0	0.00	0	0.00	0	0.00
050902010802	Headwaters Straight Creek	21.67	0.19	99.12	56	67.45	0	0.00	0	0.00	0	0.00
050902010803	Evans Run-Straight Creek	1.90	0.35	81.46	28	53.42	0	0.00	0	0.00	0	0.00
050902010804	Lee Creek-Ohio River	0.45	1.23	0.00	12	60.14	0	0.00	0	0.00	0	0.00
050902010901	Headwaters East Fork Whiteoak Creek	15.93	0.13	99.20	36	49.67	0	0.00	0	0.00	0	0.00
050902010902	Slabcamp Run-East Fork Whiteoak Creek	30.82	0.14	99.53	47	55.01	0	0.00	0	0.00	0	0.00
050902010903	Little North Fork-North Fork Whiteoak Creek	32.84	0.36	98.90	41	56.60	0	0.00	0	0.00	0	0.00
050902010904	Flat Run-North Fork Whiteoak Creek	48.28	0.49	98.99	62	60.55	0	0.00	0	0.00	0	0.00
050902011001	Sterling Run	55.30	0.41	99.25	41	51.29	0	0.00	0	0.00	0	0.00
050902011002	Miranda Run-Whiteoak Creek	22.29	0.26	98.84	50	56.64	0	0.00	0	0.00	0	0.00
050902011003	Big Run-Whiteoak Creek	4.57	0.55	87.93	20	61.40	0	0.00	0	0.00	0	0.00
050902011102	Turtle Creek-Ohio River	0.34	0.01	95.82	4	37.00	0	0.00	0	0.00	0	0.00
050902011103	West Branch Bullskin Creek	9.66	0.80	91.77	88	51.25	0	0.00	0	0.00	0	0.00

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050902011104	Bullskin Creek	5.71	0.53	90.65	78	63.52	0	0.00	0	0.00	0	0.00
050902011106	Bear Creek-Ohio River	1.26	0.84	33.26	63	57.72	0	0.00	0	0.00	0	0.00
050902011107	Little Indian Creek-Ohio River	0.66	0.98	0.00	15	58.17	0	0.00	0	0.00	0	0.00
050902011201	Headwaters Big Indian Creek	9.75	0.77	92.12	76	52.40	0	0.00	0	0.00	0	0.00
050902011202	North Fork Indian Creek-Big Indian Creek	7.32	0.81	88.99	59	60.61	0	0.00	0	0.00	0	0.00
050902011203	Boat Run-Ohio River	0.73	0.25	65.07	15	31.61	0	0.00	0	0.00	0	0.00
050902011204	Ferguson Run-Twelvemile Creek	9.51	0.92	90.32	42	47.04	0	0.00	0	0.00	0	0.00
050902011206	Tenmile Creek	2.56	0.18	93.08	26	36.64	0	0.00	0	0.00	0	0.00
050902011208	Ninemile Creek-Ohio River	1.68	0.16	90.28	16	39.73	0	0.00	0	0.00	0	0.00
050902020101	Headwaters Little Miami River	43.41	0.81	98.14	66	41.79	0	0.00	0	0.00	0	0.00
050902020102	North Fork Little Miami River	33.43	1.50	95.51	138	42.52	1	40.00	1	23.00	1	18.58
050902020103	Buffenbarger Cemetery-Little Miami River	36.11	0.42	98.83	67	36.06	0	0.00	0	0.00	0	0.00
050902020104	Yellow Springs Creek-Little Miami River	18.19	0.25	98.63	49	37.00	0	0.00	0	0.00	0	0.00
050902020201	North Fork Massies Creek	46.10	0.29	99.36	60	31.63	0	0.00	0	0.00	0	0.00
050902020202	South Fork Massies Creek	50.46	0.26	99.49	37	46.86	0	0.00	0	0.00	0	0.00
050902020203	Massies Creek	13.87	0.13	99.06	25	33.19	0	0.00	0	0.00	0	0.00
050902020204	Little Beaver Creek	12.57	0.22	98.22	28	16.03	0	0.00	0	0.00	0	0.00
050902020205	Beaver Creek	15.66	3.31	78.85	74	33.88	2	47.50	2	38.50	0	0.00
050902020206	Shawnee Creek-Little Miami River	16.55	0.29	98.22	38	30.37	0	0.00	0	0.00	0	0.00
050902020301	Headwaters Anderson Fork	41.01	0.16	99.60	36	40.40	0	0.00	0	0.00	0	0.00
050902020302	Painters Run-Anderson Fork	34.22	0.27	99.22	29	53.41	0	0.00	0	0.00	0	0.00
050902020303	Mouth Anderson Fork	14.90	0.11	99.26	8	45.40	0	0.00	0	0.00	0	0.00
050902020401	North Branch Caesar Creek	41.25	0.05	99.88	13	41.59	0	0.00	0	0.00	0	0.00
050902020402	Upper Caesar Creek	38.69	0.08	99.78	12	34.21	0	0.00	0	0.00	0	0.00
050902020403	South Branch Caesar Creek	38.80	0.17	99.56	12	55.36	0	0.00	0	0.00	0	0.00
050902020404	Middle Caesar Creek	13.24	0.28	97.86	29	44.93	0	0.00	0	0.00	0	0.00
050902020405	Flat Fork	46.32	1.47	96.82	60	59.74	0	0.00	0	0.00	0	0.00
050902020406	Lower Caesar Creek	10.86	0.19	98.27	28	58.11	0	0.00	0	0.00	0	0.00
050902020501	Sugar Creek	15.02	0.18	98.77	39	29.21	0	0.00	0	0.00	0	0.00
050902020502	Town of Bellbrook-Little Miami River	6.98	0.08	98.80	11	24.61	0	0.00	0	0.00	0	0.00
050902020503	Glady Run	12.26	0.62	94.96	17	29.25	0	0.00	0	0.00	0	0.00
050902020504	Newman Run-Little Miami River	9.47	0.50	94.68	111	52.63	0	0.00	0	0.00	0	0.00
050902020601	Dutch Creek	22.99	0.75	96.75	14	62.40	0	0.00	0	0.00	0	0.00
050902020602	Headwaters Todd Fork	27.38	0.23	99.14	30	46.92	0	0.00	0	0.00	0	0.00
050902020603	Lytle Creek	11.11	0.38	96.63	21	38.18	0	0.00	0	0.00	0	0.00
050902020604	Headwaters Cowan Creek	32.23	0.17	99.48	27	37.01	0	0.00	0	0.00	0	0.00
050902020605	Wilson Creek-Cowan Creek	8.87	0.46	94.83	27	57.75	0	0.00	0	0.00	0	0.00
050902020606	Little Creek-Todd Fork	20.45	1.01	95.07	28	77.20	0	0.00	0	0.00	0	0.00
050902020701	East Fork Todd Fork	30.44	0.48	98.43	41	62.29	1	74.00	1	70.00	1	62.75

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050902020702	Second Creek	34.50	0.42	98.78	34	51.51	0	0.00	0	0.00	0	0.00
050902020703	First Creek	42.06	0.60	98.57	46	44.79	0	0.00	0	0.00	0	0.00
050902020704	Lick Run-Todd Fork	22.73	0.47	97.94	96	56.84	0	0.00	0	0.00	0	0.00
050902020801	Ferris Run-Little Miami River	9.32	0.42	95.53	68	53.37	0	0.00	0	0.00	0	0.00
050902020802	Little Muddy Creek	22.37	0.72	96.78	56	22.69	0	0.00	0	0.00	0	0.00
050902020803	Turtle Creek	7.32	0.26	96.48	90	29.54	0	0.00	0	0.00	0	0.00
050902020804	Halls Creek-Little Miami River	4.92	0.48	90.14	72	32.09	0	0.00	0	0.00	0	0.00
050902020901	Muddy Creek	15.05	0.21	98.61	26	10.80	0	0.00	0	0.00	0	0.00
050902020902	O'Bannon Creek	31.89	1.99	93.76	200	59.00	0	0.00	0	0.00	0	0.00
050902020903	Salt Run-Little Miami River	13.35	0.20	98.49	59	33.09	0	0.00	0	0.00	0	0.00
050902021001	Turtle Creek	21.19	0.50	97.65	27	60.05	0	0.00	0	0.00	0	0.00
050902021002	Headwaters East Fork Little Miami River	25.93	0.29	98.89	40	45.73	0	0.00	0	0.00	0	0.00
050902021003	Headwaters Dodson Creek	26.99	0.21	99.22	31	43.01	0	0.00	0	0.00	0	0.00
050902021004	Anthony Run-Dodson Creek	46.46	0.22	99.53	18	49.21	0	0.00	0	0.00	0	0.00
050902021005	West Fork East Fork Little Miami River	41.79	0.56	98.66	31	46.30	0	0.00	0	0.00	0	0.00
050902021006	Glady Creek-East Fork Little Miami River	39.23	0.44	98.87	49	53.86	0	0.00	0	0.00	0	0.00
050902021101	Solomon Run-East Fork Little Miami River	39.66	0.56	98.59	95	50.55	0	0.00	0	0.00	0	0.00
050902021102	Fivemile Creek-East Fork Little Miami River	48.14	1.27	97.36	156	57.47	0	0.00	0	0.00	0	0.00
050902021103	Todd Run-East Fork Little Miami River	37.57	1.22	96.76	81	57.08	0	0.00	0	0.00	0	0.00
050902021201	Poplar Creek	29.61	2.21	92.53	138	62.05	0	0.00	0	0.00	0	0.00
050902021202	Cloverlick Creek	39.25	1.15	97.07	134	60.78	0	0.00	0	0.00	0	0.00
050902021203	Lucy Run-East Fork Little Miami River	8.51	0.65	92.41	106	49.17	0	0.00	0	0.00	0	0.00
050902021204	Backbone Creek-East Fork Little Miami River	14.36	0.88	93.84	57	48.27	0	0.00	0	0.00	0	0.00
050902021301	Headwaters Stonelick Creek	42.38	1.86	95.61	109	52.47	0	0.00	0	0.00	0	0.00
050902021302	Brushy Fork	39.39	0.54	98.63	40	52.40	0	0.00	0	0.00	0	0.00
050902021303	Moores Fork-Stonelick Creek	41.27	1.33	96.78	80	46.82	0	0.00	0	0.00	0	0.00
050902021304	Lick Fork-Stonelick Creek	16.65	1.59	90.44	84	53.69	0	0.00	0	0.00	0	0.00
050902021305	Salt Run-East Fork Little Miami River	3.75	0.23	93.95	85	25.07	0	0.00	0	0.00	0	0.00
050902021401	Sycamore Creek	3.48	0.02	99.37	5	59.01	0	0.00	0	0.00	0	0.00
050902021402	Polk Run-Little Miami River	5.06	0.21	95.85	14	16.91	0	0.00	0	0.00	0	0.00
050902021403	Horner Run-Little Miami River	3.34	0.44	86.98	29	35.47	0	0.00	0	0.00	0	0.00
050902021404	Duck Creek	3.05	0.00	99.86	1	14.00	0	0.00	0	0.00	0	0.00
050902021405	Dry Run-Little Miami River	2.80	1.02	63.53	23	34.24	0	0.00	0	0.00	0	0.00
050902021406	Clough Creek-Little Miami River	2.77	0.60	78.42	16	35.09	0	0.00	0	0.00	0	0.00
050902030101	East Fork Mill Creek-Mill Creek	8.19	0.72	91.18	53	24.43	0	0.00	0	0.00	0	0.00
050902030102	West Fork Mill Creek	3.29	0.07	97.79	12	36.69	0	0.00	0	0.00	0	0.00
050902030103	Sharon Creek-Mill Creek	5.06	0.09	98.24	5	31.89	0	0.00	0	0.00	0	0.00
050902030104	Congress Run-Mill Creek	2.52	0.02	99.39	2	24.42	0	0.00	0	0.00	0	0.00
050902030105	West Fork-Mill Creek	1.23	0.00	100.00	0	0.00	0	0.00	0	0.00	0	0.00

HUC12	HUC12 Name	Historic Wetland %	Curent Wetland %	Wetland Loss %	Number of NWI Wetlands	Area-Weighted Level 1 Score	Number of ORAM Assessments	Mean ORAM Score	Number of VIBI Assessments	Mean VIBI Score	Number of VIBI-FQ Assessments	Mean VIBI-FQ Score
050902030201	Town of Newport-Ohio River	1.99	0.18	91.15	2	49.20	0	0.00	0	0.00	0	0.00
050902030202	Dry Creek-Ohio River	1.52	0.01	99.03	1	18.00	0	0.00	0	0.00	0	0.00
050902030203	Muddy Creek	1.57	0.07	95.73	3	24.39	0	0.00	0	0.00	0	0.00
050902030204	Garrison Creek-Ohio River	1.10	0.26	76.10	6	35.40	0	0.00	0	0.00	0	0.00
051201010101	Headwaters Wabash River	42.05	0.34	99.19	83	47.45	0	0.00	0	0.00	0	0.00
051201010102	Stoney Creek-Wabash River	24.52	0.80	96.72	77	35.82	0	0.00	0	0.00	0	0.00
051201010103	Toti Creek-Wabash River	18.63	0.50	97.29	54	32.41	0	0.00	0	0.00	0	0.00
051201010201	Chickasaw Creek	35.76	0.12	99.65	42	39.35	0	0.00	0	0.00	0	0.00
051201010202	Headwaters Beaver Creek	34.72	0.20	99.42	51	33.85	0	0.00	0	0.00	0	0.00
051201010203	Coldwater Creek	30.84	0.12	99.62	29	41.53	0	0.00	0	0.00	0	0.00
051201010204	Grand Lake-St Marys	26.39	1.53	94.18	232	36.39	1	25.00	1	16.00	1	12.19
051201010301	Little Beaver Creek	29.44	0.08	99.73	14	32.38	0	0.00	0	0.00	0	0.00
051201010302	Hardin Creek-Beaver Creek	43.24	0.17	99.61	26	25.81	0	0.00	0	0.00	0	0.00
051201010303	Prairie Creek-Beaver Creek	40.47	0.18	99.56	53	59.35	0	0.00	0	0.00	0	0.00
051201010401	Wilson Creek-Limberlost Creek	26.11	0.16	99.41	1	32.00	0	0.00	0	0.00	0	0.00
051201010501	Hickory Branch-Wabash River	34.12	0.91	97.33	18	50.04	0	0.00	0	0.00	0	0.00
051201030101	Little Mississinewa River	25.67	0.00	100.00	0	0.00	0	0.00	0	0.00	0	0.00
051201030102	Gray Branch-Mississinewa River	33.70	0.42	98.76	57	39.48	0	0.00	0	0.00	0	0.00
051201030103	Jordan Creek-Mississinewa River	27.30	0.25	99.10	7	39.03	0	0.00	0	0.00	0	0.00