



John R. Kasich, Governor
Mary Taylor, Lt. Governor
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August 7, 2015

Tinka Hyde, Director
Water Division
U.S. EPA Region 5
77 West Jackson Blvd. (W-15J)
Chicago, Illinois 60604-3507

Dear Ms. Hyde:

Ohio's 303(d) Vision Implementation Plan is enclosed for U.S. EPA's final concurrence. The comments provided by your office have been addressed, and updated information about the Rocky River project expectations has been included.

Please contact Cathy Alexander (614-644-2021) of the Division of Surface Water if you need additional information. We look forward to your response.

Sincerely,

A handwritten signature in blue ink, appearing to read "Karl Gebhardt".

Karl Gebhardt, Chief
Division of Surface Water

cc: Dave Werbach, Watersheds and Wetlands Branch, U.S. EPA Region 5
Cathy Alexander, Ohio EPA

Enclosure



303(d) Vision Implementation Plan

August 2015

In December 2013, U.S. EPA announced a new Vision for the Clean Water Act (CWA) 303(d) Program to provide an updated framework for implementing the responsibilities under the impaired waters program. U.S. EPA recognized that "... there is not a "one size fits all" approach to restoring and protecting water resources." Under the new Vision, States will be able to develop tailored strategies to implement the 303(d) Program in the context of their water quality goals. This document outlines how Ohio EPA will approach the new Vision statement.

A Long-Term Vision for Assessment, Restoration, and Protection under the Clean Water Act Section 303(d) Program

The Clean Water Act Section 303(d) Program provides for effective integration of implementation efforts to restore and protect the nation's aquatic resources, where the nation's waters are assessed, restoration and protection objectives are systematically prioritized, and Total Maximum Daily Loads and alternative approaches are adaptively implemented to achieve water quality goals with the collaboration of States, Federal agencies, tribes, stakeholders, and the public.

-- U.S. EPA, 2013¹

The Vision effort grew out of frustration caused by the 1990s-era litigation concerning the pace at which Total maximum Daily Load (TMDL) analyses were being completed. The resulting consent decrees forced many States to produce great *quantities* of TMDLs that many felt did not contain the necessary *quality* to effectively improve water quality. As the decrees were completed, discussion centered on how to produce better TMDLs that could be implemented to bring about measureable improvements in the quality of the nation's waters.

Fortunately, Ohio was not burdened by a harsh consent decree and was able to carefully consider how to proceed with TMDLs. Fifteen years ago, Ohio EPA developed an approach to TMDLs that already aligns with the spirit of the Vision. The Ohio TMDL program strives to

- Focus on CWA responsibilities across programs
- Build on the State's investments in monitoring, especially biological monitoring
- Use data efficiently, for multiple programs and purposes
- Restore beneficial uses
- Focus on watersheds: maintain rotating basin structure to enable adaptive management
- Recognize that water quality is impacted by the actions of many and that it will change over time.

¹ http://water.epa.gov/lawsregs/lawguidance/cwa/tmdl/upload/vision_303d_program_dec_2013.pdf

Ohio’s program grew out of the agency’s water mission, which is rooted in the CWA. Today’s new national Vision developed from the same roots, so it should not be surprising that Ohio has been on the Vision path for several years.

This document presents how Ohio has been developing TMDLs, the status of TMDLs in Ohio, how Ohio’s program relates to the Vision goals and how Ohio will report on the new Measure 27.

TMDL Development in Ohio

As Ohio set out to define a formal process for completing TMDLs in the late 1990s, the agency sought to align the successful programs that had been developed over the past decades. As shown in Figure 1, programs began developing somewhat independently as needed, and then began to align under a “watershed approach” adopted in the early 1990s. The watershed approach included a rotating basin framework to ensure that environmental data are available to support water quality management activities. Building on the alignment to encourage full program integration was a natural way to approach TMDLs. More information about Ohio water programs can be found in Ohio’s Integrated Report² and on the internet³.

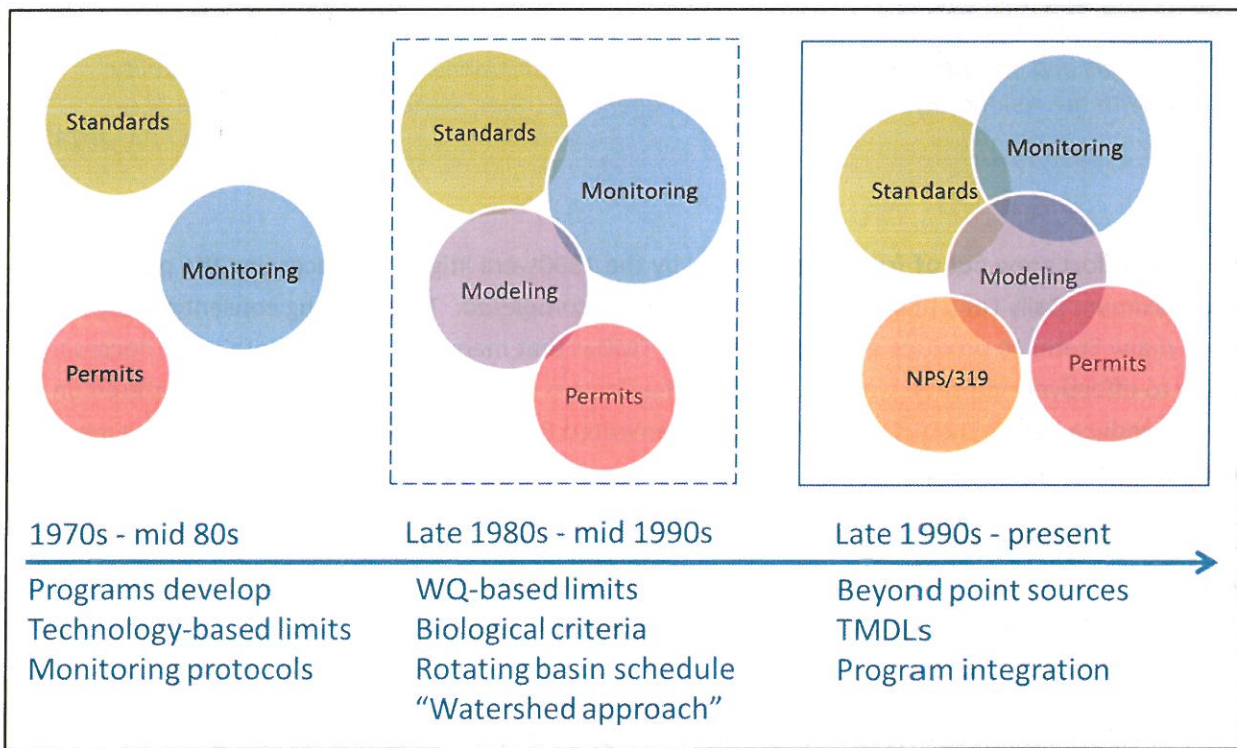


Figure 1. Ohio’s TMDL approach integrates many CWA programs.

² <http://epa.ohio.gov/dsw/tmdl/OhioIntegratedReport.aspx>, Section C.

³ <http://epa.ohio.gov/dsw/SurfaceWater.aspx>

Ohio outlined a 12-step TMDL process (see Figure 2) that incorporates CWA TMDL requirements and adds elements necessary to measure water quality and to encourage implementation of needed actions. The process was endorsed by an external advisory group of Ohio citizens, businesses, and interest groups. The program incorporates many of the recommendations of the National Research Council 2001 study.

The process functions as a basic problem-solving process: assess the problem, develop a solution, implement actions and validate progress. As outlined in Figure 3, the process provides many outputs that not only provide for TMDL completion but also fulfill other program and reporting needs.

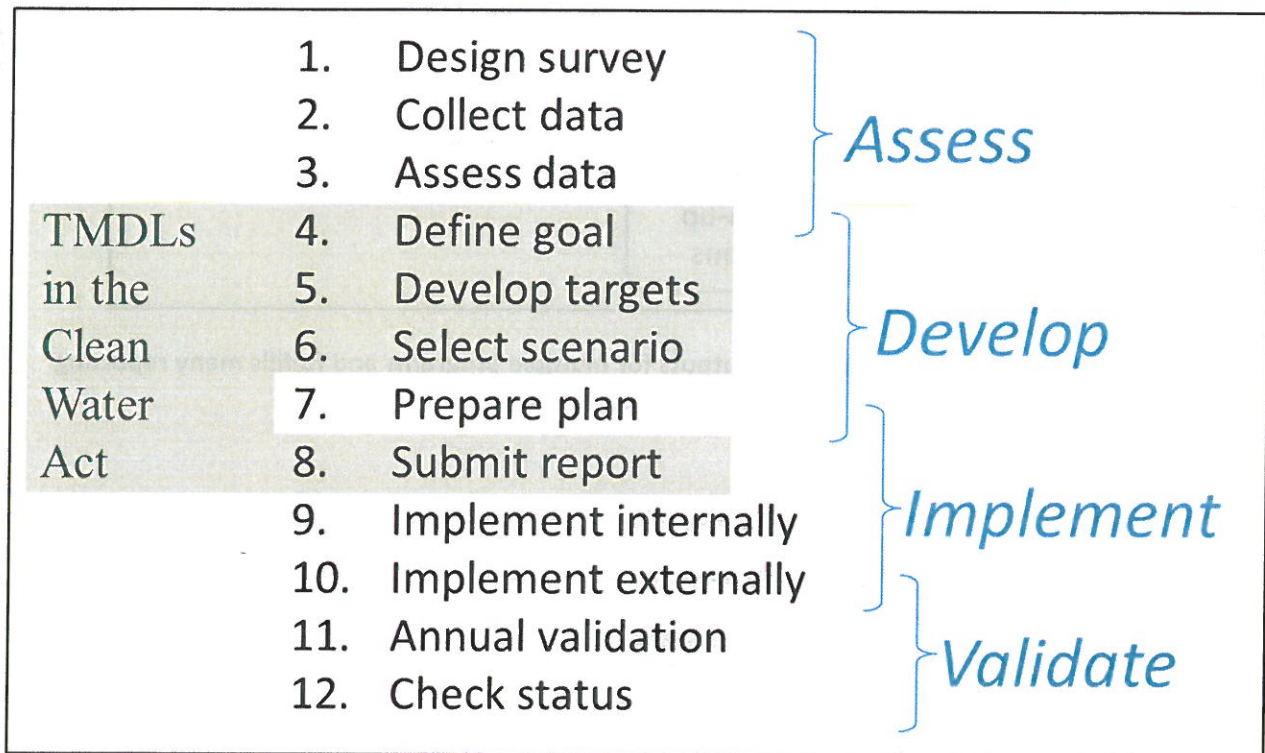


Figure 2. Ohio’s TMDL process fills in gaps of CWA requirements to focus on improving water quality.

Using the process within a rotating basin framework leads to an adaptive management cycle within each watershed in Ohio (see Figure 4). Over time, applying the problem-solving process allows for measurement of progress on existing problems and the early identification of emerging issues.

Over the past 15 years, Ohio has completed about 60 watershed TMDL projects, covering about half the state (Figure 5). Monitoring has occurred in a few of the early TMDL watersheds and improvements have been documented. The cycle will continue with decisions to be made in each watershed about whether more or different load characterization work is needed (leading to new or revised TMDLs) or whether more intense implementation should be the next step to improve each watershed.

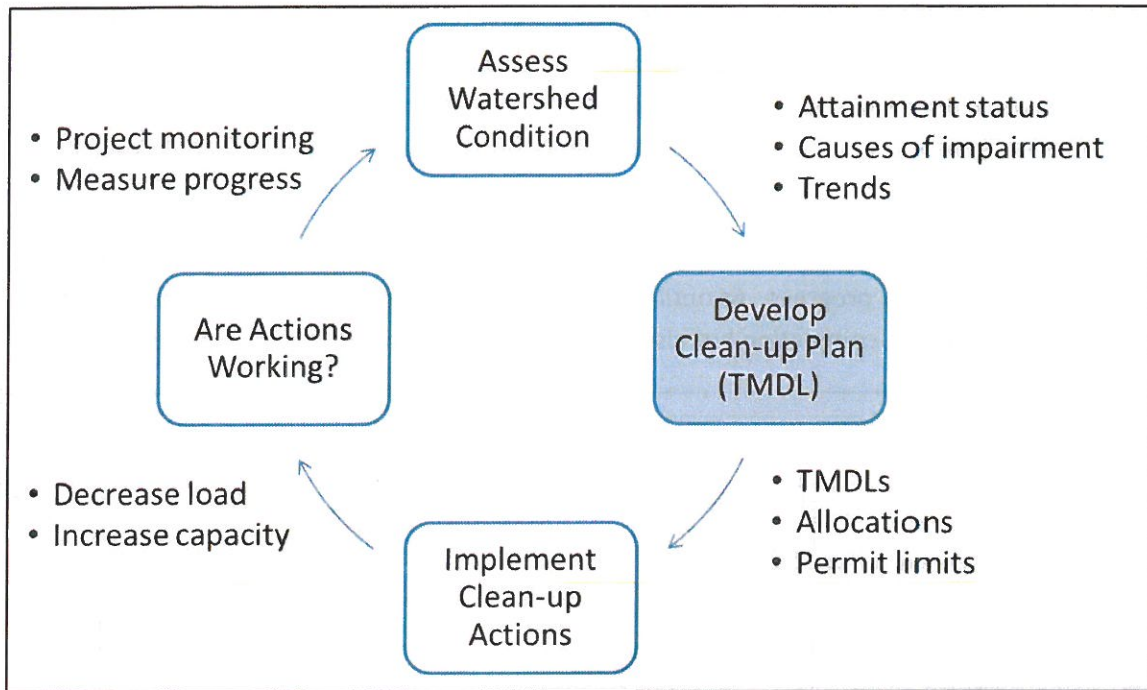


Figure 3. An integrated process provides outputs for multiple programs and fulfills many reporting needs.

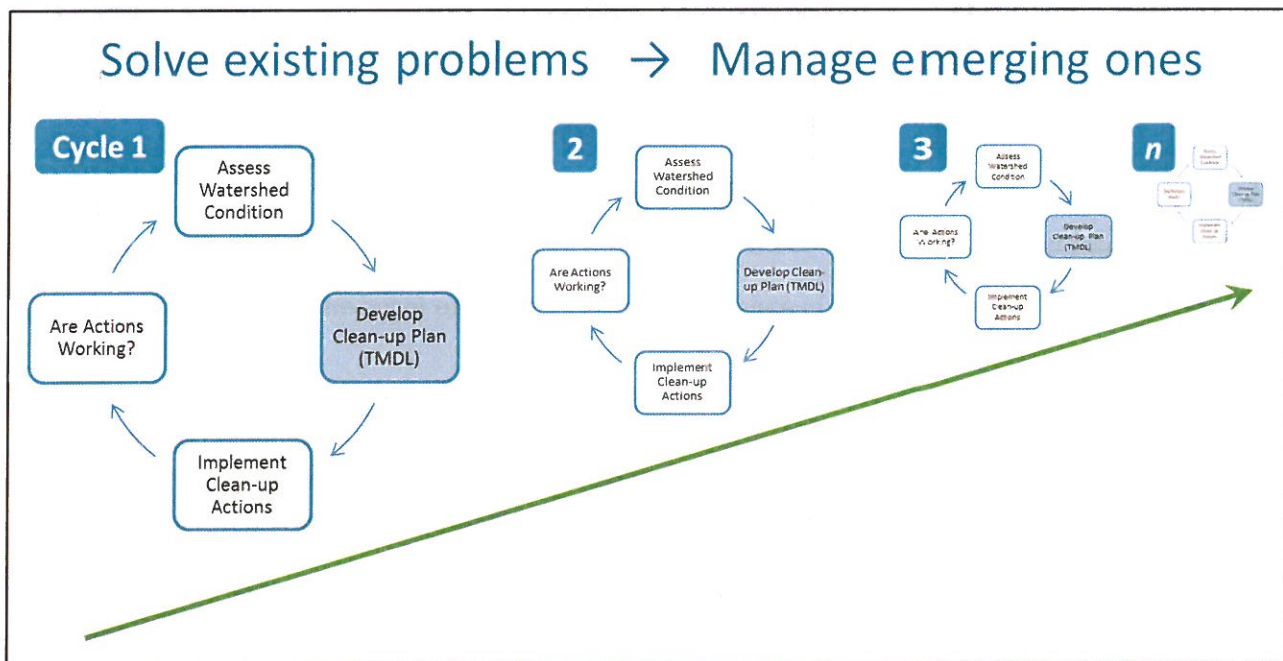


Figure 4. An integrated TMDL process within a rotating basin structure yields a cycle of continuous improvement in each watershed.

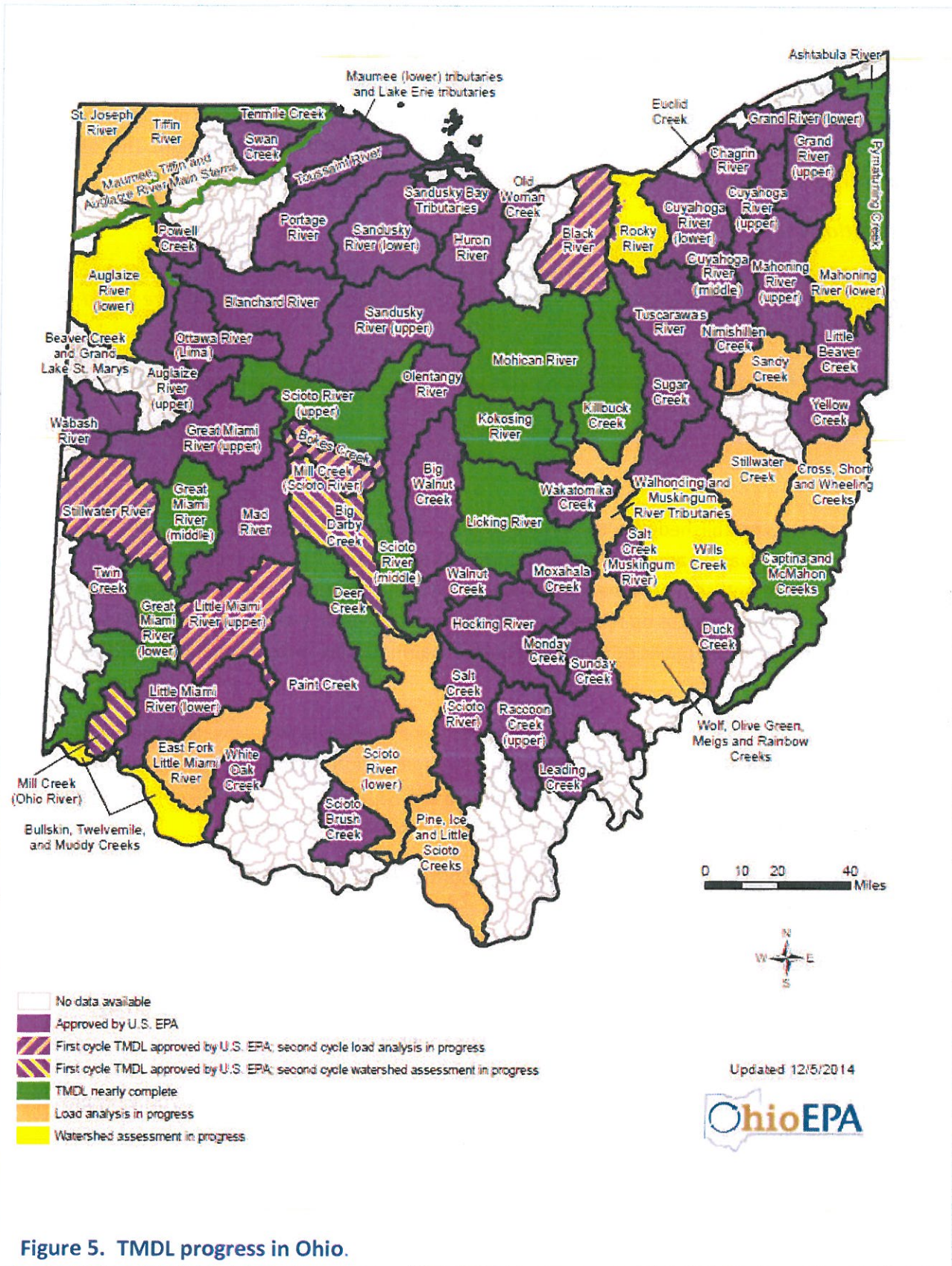


Figure 5. TMDL progress in Ohio.

Ohio TMDL Program Relative to the Vision Goals

The national Vision contains six goal statements related to prioritization, assessment, protection, alternatives, engagement, and integration. While its TMDL program is generally well placed relative to these goals, Ohio expects to continue to improve its program; potentially the biggest opportunities are in the areas of protection and engaging other organizations to help with implementation. The following is a summary of the goals and how Ohio has been addressing the goal to date.

Prioritization Goal

For the 2016 integrated reporting cycle and beyond, States review, systematically prioritize, and report priority watersheds or waters for restoration and protection in their biennial integrated reports to facilitate State strategic planning for achieving water quality goals.

The intent of the Prioritization Goal is for States to express CWA 303(d) Program priorities in the context of the State's broader, overall water quality goals.

-- U.S. EPA, 2013¹

Based on the state's established monitoring investment and expertise, Ohio's initial priority (in approximately 2000) was on aquatic life use impairments in streams. This priority led to the development of nutrient, sediment, habitat, dissolved oxygen, and related TMDLs. A couple of years later, the agency began to focus on recreation use impairments, which yielded bacteria TMDLs. More recently, work has involved public drinking water use impairments involving nitrate and pesticides TMDLs.

In addition to a focus on restoring uses, other priorities were to begin with headwaters and work downstream. To date, the state has not adopted a geographic priority, choosing instead to work statewide which helps to maintain work balance among district offices. In cases where other agencies or stakeholders have initiated projects, TMDLs in watersheds has been delayed.

Moving forward, Ohio intends to use the following prioritization framework (**bold** items indicate clarification or change from past practices):

Long Term General Priorities:

- Continue to work statewide, using rotating basin scheduling for assessment and listing
- Sharpen focus on Aquatic Life and Public Water Supply Uses
- Concentrate recreation TMDLs on Class A/High-Use recreation waters
- Continue to make mercury and legacy/sediment metals low priority TMDLs as other approaches are anticipated to be more effective

Annual Prioritization of Impaired Waters for TMDL Development:

Ohio will continue to use the Priority Point System in Section J2 of the Integrated Report. Points are given for presence and severity of Human Health impairment, Recreation Use impairment, Public Water Supply impairment and Aquatic Life Use impairment. Scores by HUC12 range from 1-16.

In addition, we will consider geographic coverage and severity of the impairments represented by the above scores/points for the entire project area and add in the following considerations:

Social Factors (highly used recreational waters, drinking water supply for multiple entities, ongoing/sustained involvement of any local groups or government , etc.)

Value Added (is a TMDL the most efficient way to achieve improved water quality?)

Is there an approved watershed action plan – if so how many implemented projects?

How much regulatory authority exists over sources?

Is there an alternative way to improve water quality more quickly than a TMDL? (e.g. immediate implementation of an existing plan or projects, or imposing more stringent permit limits to address a localized problem)

Are there other factors in play? Examples include:

Pending enforcement for a discharger (possible 4B option)

USACE modeling of reservoir discharge to improve downstream water quality

Local or statewide strategy or requirements in place to address a particular issue/pollutant (e.g. new health department rules for HSTS if they are sole/primary source of impairment)

Over time, we will strive to develop a more objective system for weighing the social factors and value added concepts.

In each Integrated Report, we will provide results of the most recent assessments and prioritization exercise as outlined above, list resulting high priority TMDL projects, and include schedules for those anticipated to be completed in the next two years, which will be reported and tracked under the WQ-28 measure.

Assessment Goal

By 2020, States identify the extent of healthy and CWA Section 303(d) impaired waters in each State's priority watersheds or waters through site-specific assessment.

The purpose of this Goal is to encourage a comprehensive understanding of the water quality status of at least each State's priority areas.

-- U.S. EPA, 2013¹

Ohio has maintained a robust biology and chemistry monitoring program for more than 30 years, maintaining consistent protocols and systematically expanding into new water body types. Assessments are based on surveys conducted using a rotating basin approach. The assessments use site-specific data of the highest quality, and the status of waters is reported in watershed reports and summarized in biennial Integrated Reports that meet the reporting requirements of CWA 305(b) and 303(d). A framework of goals and measures has been in place for several years and reported on biennially in the Ohio Integrated Report⁴. It should be noted that the Rocky River basin (Ohio's initial priority watershed) survey for assessment purposes started in 2014, and is expected to be completed in 2015. See Figure 6 for the current monitoring schedule.

Protection Goal

For the 2016 reporting cycle and beyond, in addition to the traditional TMDL development priorities and schedules for waters in need of restoration, States identify protection planning priorities and approaches along with schedules to help prevent impairments in healthy waters, in a manner consistent with each State's systematic prioritization.

The intent of the Protection Goal is to encourage a more systematic consideration of management actions to prevent impairments in healthy waters (i.e., unimpaired waters) in order to maintain water quality or protect existing uses or high quality waters.

-- U.S. EPA, 2013¹

Protection of the water resource is built into Ohio's CWA programs in multiple ways. Watershed surveys measure the attainment potential and status for all waters, thus they identify waters to restore and to protect. Tiered aquatic life uses identify in state water quality standards rules "better than CWA" goals for high-quality streams. About 14% of Ohio's streams already have this higher use designation. TMDLs have included protection strategies and "informational TMDLs" to encourage protection of streams currently meeting their designated uses. Ohio also has an active antidegradation process to protect existing uses, and plans to update the list of waters afforded higher protection under antidegradation.

Ohio has also issued NPDES permits to protect against water quality impairment, and anticipates continuing that approach where warranted. One example is the general construction storm water permits for the Olentangy River and Darby Creek watersheds. Those permits include measures designed to protect the high quality of the streams from development impacts. Other watersheds are being considered for similar actions.

We plan to explore how other types of plans (9 Element Watershed Plans for instance) or regulatory actions could be used more effectively to protect our highest quality waters and/or those that are of high importance for drinking water or recreation.

⁴ <http://epa.ohio.gov/dsw/tmdl/OhioIntegratedReport.aspx>, Section B2.

Long-Term Monitoring Schedule

Ohio 2014 Integrated Report

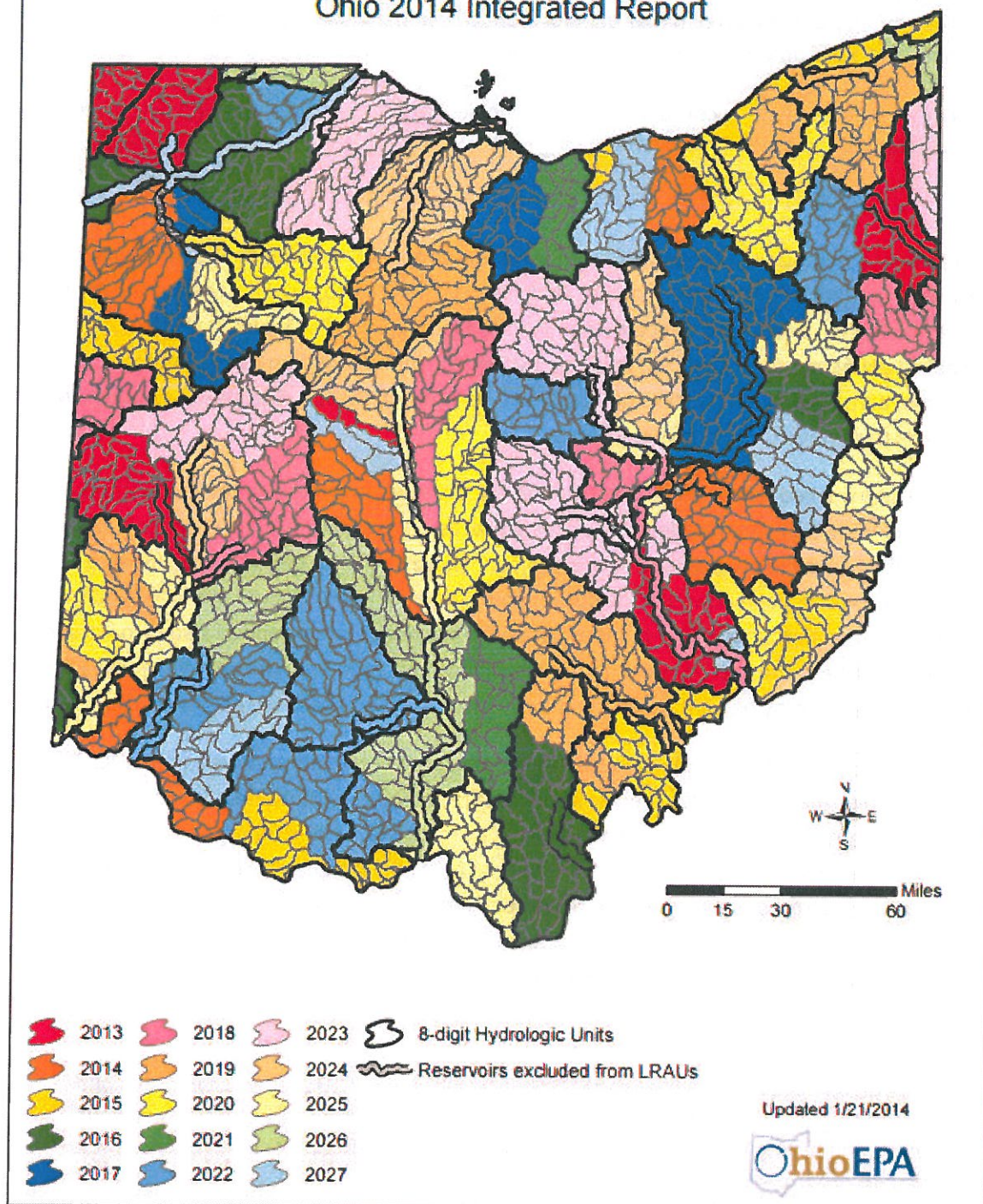


Figure 6. Long term monitoring schedule contained in Ohio's 2014 Integrated Report. (Note that changes have been made and the three 2016 areas in the Maumee basin are being done in 2015).

Alternatives Goal

By 2018, States use alternative approaches, in addition to TMDLs, that incorporate adaptive management and are tailored to specific circumstances where such approaches are better suited to implement priority watershed or water actions that achieve the water quality goals of each state, including identifying and reducing nonpoint sources of pollution.

The purpose of this Goal is to encourage the use of the most effective tool(s) to address water quality protection and restoration efforts.

-- U.S. EPA, 2013¹

Ohio has been using a number of alternatives to improve water quality. Relying on the biological criteria as the measure for aquatic life attainment means that restoring habitat to build a stream's capacity to process pollutants can be as or more effective than load reduction; Ohio TMDLs have routinely promoted habitat enhancement. After the first few TMDLs recommended dam modifications to enhance capacity, dam modifications were pursued in areas without TMDLs. The state has used CWA Section 319 funds to remove or modify many dams.

In the past, Ohio EPA worked with mining agencies and the Corps of Engineers to develop a standard alternative for acid mine drainage problems by aligning processes to quantify load reductions, this meeting the needs of multiple programs with one project. There have also been several instances where NPDES permits have been adjusted to address point source impairments as monitoring identifies them, in advance of completing a TMDL. In other cases, TMDLs have recommended a stressor study to address impairment where the source could not be identified. This follow-up attention increases the chances that the problem may be eliminated, or at a minimum data will be available for a future TMDL.

Under the new Vision, Ohio EPA also plans to use approaches that are an alternative to a TMDL. These approaches will be designed to address specific impairments caused by pollutants such as phosphorus or perhaps bacteria. Approaches may include developing 9 Element Watershed Plans, revising NPDES permit limits or conditions, funding installation of BMPs, supporting local health departments in implementing new rules for household sewage treatment systems, etc. These approaches will be pursued where we have clear legal authority to do so and circumstances are such that they are likely to result in water quality improvements more efficiently than a TMDL.

Engagement Goal

By 2014, EPA and the States actively engage the public and other stakeholders to improve and protect water quality, as demonstrated by documented, inclusive, transparent, and consistent communication; requesting and sharing feedback on proposed approaches; and enhanced understanding of program objectives.

The purpose of the Engagement Goal is to ensure the CWA 303(d) Program encourages working with stakeholders to educate and facilitate actions that work toward achieving water quality goals.

-- U.S. EPA, 2013¹

Ohio engages the public and other stakeholders in a number of ways. Ohio EPA maintains an extensive website with information about TMDLs, monitoring, and implementation in watersheds across the state⁵.

In addition to the outreach in individual CWA programs, the TMDL program developed a standard TMDL project communication plan to engage the public and government and technical stakeholders within a project area. The plan includes a standard set of meetings, demonstrations, articles, new releases, etc., that are tied to TMDL project milestones.

In recent years, the 319 program has strived to reach beyond stakeholders with general interest to focus on local decision makers and groups who have the wherewithal to take action “on the ground” to improve water quality. These include local governments and park districts.

The preparation of the Integrated Report (containing the 303(d), or impaired waters, list) is an open process. Several years ago an “incubator” section was added to preview changes that were being contemplated for future listings (e.g., adding new beneficial use analyses, revising methodologies or assessment unit types). The section allows for longer-term feedback for public consideration of changes that can have significant impacts. The integrated report also includes Ohio EPA’s projected monitoring schedule; the draft schedule is frequently changed in response to requests for monitoring from watershed groups, communities, or others who are committed to improving their water quality in their area. Ohio has and is committed to completing the Integrated Report every two years so that the process remains dynamic and reliable.

Through all these efforts, the agency strives to be relevant to the stakeholder, to focus discussion on the common goals of clean water, not agency programmatic objectives and jargon such as 303(d), TMDL, or Vision.

Ohio’s 2016 Integrated Report will contain parts of this Vision Implementation plan to begin introducing our thoughts on Prioritization at a minimum. Through the public notice and outreach related to the Integrated Report, we will also seek feedback on our approach to the Prioritization goal, and as time allows, the Integration and Alternatives goals.

Integration Goal

By 2016, EPA and the States identify and coordinate implementation of key point source and nonpoint source control actions that foster effective integration across CWA programs, other statutory programs (e.g., CERCLA, RCRA, SDWA, CAA), and the water quality efforts of other Federal departments and agencies (e.g., Agriculture, Interior, Commerce) to achieve the water quality goals of each state.

The intent of this Goal is to integrate the CWA Section 303(d) Program with other relevant programs that play a role in influencing water quality, in order to collectively and more effectively achieve the water quality goals of States, Tribes, and Territories.

⁵ <http://epa.ohio.gov/dsw/tmdl/index.aspx>

As described earlier, program integration is the foundation of Ohio's TMDL work, including both technical and funding programs. Ohio has adopted the Safe Drinking Water Act into the 303(d) listing process and has completed TMDLs for drinking water impairments. Ohio has directed CWA Section 319 funding to park districts and local governments who can directly implement actions to improve water quality, using TMDLs to identify suitable projects. Ohio EPA has also worked with the U.S. Forest Service, U.S. Army Corps of Engineers and state and federal mining agencies to address common water quality goals and to complete TMDLs and TMDL alternatives.

On a practical level, each TMDL project is completed by a team of Ohio EPA staff that represent many aspects of the clean water programs, including drinking water. The team members include staff from various CWA program areas but at a minimum monitoring and assessment, water quality modeling, NPDES permits, enforcement, water quality standards, and the TMDL program are represented. Staff from our Public Water Supply program and our Public Interest Center are also part of the team. Ohio EPA district offices and central office both contribute to the effort. On some projects, local representatives such as active watershed group leaders or Soil Water Conservation District staff are involved from the study plan phase.

And lastly, for most projects external input is sought for developing the implementation portion of the TMDL. Most commonly, Soil Water Conservation Districts and watershed groups are consulted, but permittees or other entities may also be asked for input in the development stage of the implementation plan, depending upon the issues in the watershed. While there is always room for improvement, Ohio EPA does not propose significant change in the integration aspect over the next few years, but rather will work to ensure that current approaches are adhered to consistently.

Measure 27

Based in part on its established rotating basin approach, Ohio EPA is selecting the Rocky River watershed for its reporting under Measure 27. The Rocky River watershed drains a total of 265 square miles and flows through all or part of Cuyahoga, Summit, Medina and Lorain counties in northeastern Ohio. Major municipalities partially or fully in the watershed include Medina, Brunswick, Strongsville, and Cleveland and several of its suburbs (see Figure 6). There are three public drinking water supply intakes within the Rocky River study area. The southern portion of the watershed is a mixture of urban development, agricultural land uses such as cultivated crops, and forest. The southern and western portions of the watershed are predominantly urban. Cleveland's Hopkins International Airport is also located in the watershed.

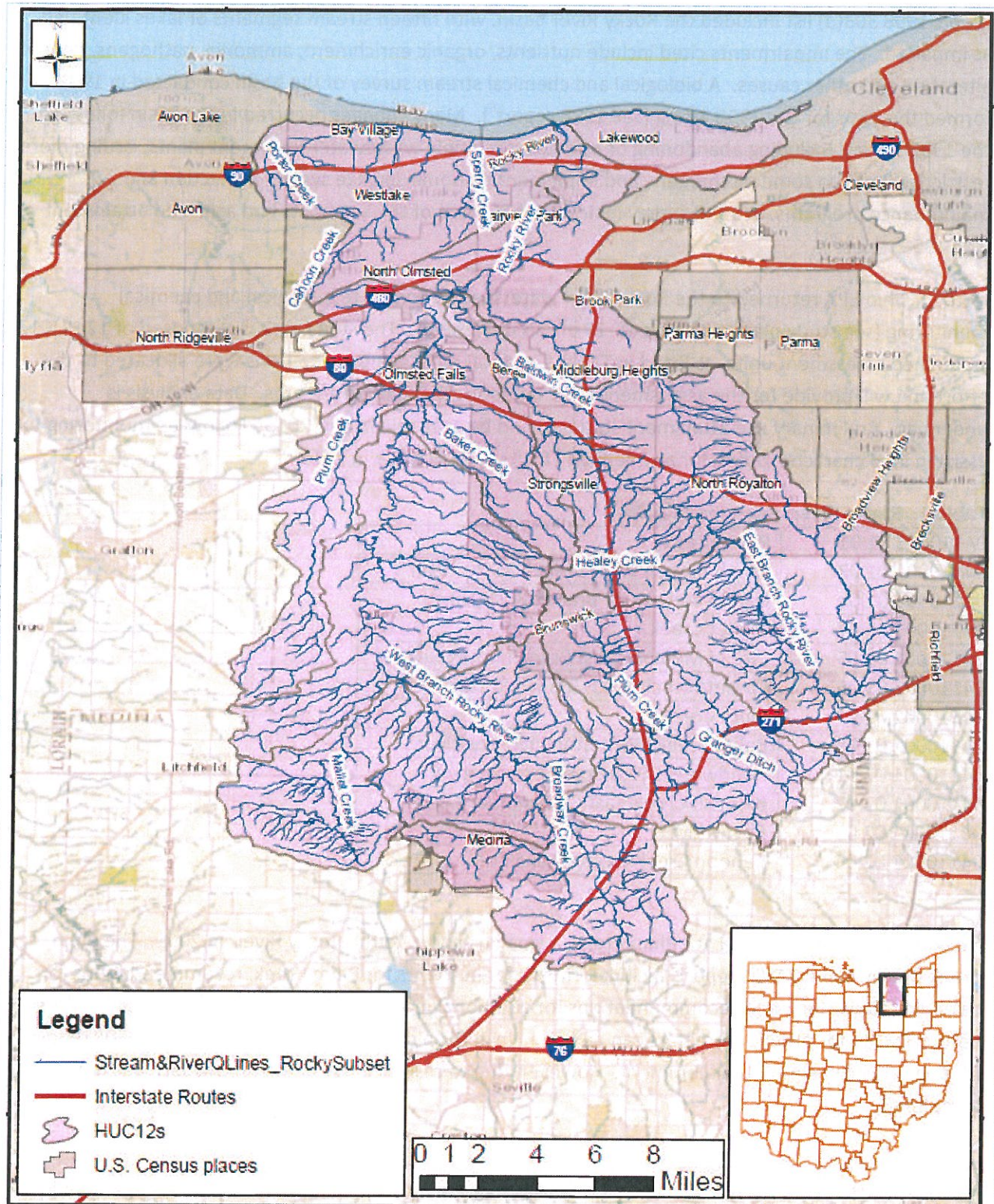


Figure 6. Rocky River watershed in Cuyahoga and Medina Counties, Ohio.

Ohio's 1998 303(d) list included the Rocky River basin, with fifteen stream segments or lakes identified as impaired. The impairments cited include nutrients, organic enrichment, ammonia, pathogens, flow alteration and other causes. A biological and chemical stream survey of the basin conducted in 1992 formed the basis for the 1998 listing (see 1993 report⁶). Many changes occurred in the basin following the 1992 survey, including abandoning or upgrading multiple wastewater treatment plants, issuing more restrictive limits to some dischargers, and implementing home sewage system inspection and maintenance programs. A 1997 survey indicated that some of the segments had achieved attainment (see 1999 report⁷).

In 2014, Ohio EPA returned to the Rocky River watershed to complete biological and chemical monitoring (see study plan⁸, or pages 15-16 of this document). The study area is composed of 12 HUC12 watershed assessment units, as listed in Table 1. A total of 82 sampling stations were allocated to this effort and will provide for the assessment of 27 named and unnamed streams. Data analysis is underway. Preliminary use attainment status should be available in mid-2015. Follow-up monitoring to assist in load characterization for any needed TMDLs will continue in 2015.

Table 1. Rocky River assessment units

04110001 01 01	Plum Creek
04110001 01 02	North Branch West Branch Rocky River
04110001 01 03	Headwaters West Branch Rocky River
04110001 01 04	Mallet Creek
04110001 01 05	City of Medina-West Branch Rocky River
04110001 01 06	Cossett Creek-West Branch Rocky River
04110001 01 07	Plum Creek
04110001 01 08	Baker Creek-West Branch Rocky River
04110001 02 01	Headwaters East Branch Rocky River
04110001 02 02	Baldwin Creek-East Branch Rocky River
04110001 02 03	Rocky River
04110001 02 04	Cahoon Creek-Frontal Lake Erie

Ohio EPA completed a TMDL for Plum Creek, a small tributary to the Rocky River, in 2001. The Plum Creek (Rocky River) TMDL report⁹ includes TMDLs for nutrients for Plum Creek, recommendations for delisting four waters, and recommendations for additional monitoring for the remaining listed waters before TMDLs for other parameters can be done. In 2005, a draft Rocky River watershed TMDL report¹⁰ for bacteria was released for comment. However, due to resource issues the final report was not completed.

⁶ Biological and Water Quality Study of the Rocky River and Selected Tributaries. Summit, Lorain, Medina, and Cuyahoga Counties, Ohio

⁷ Biological and Water Quality Study of the Rocky River and Selected Tributaries. Summit, Lorain, Medina and Cuyahoga Counties, Ohio

⁸ http://epa.ohio.gov/portals/35/tmdl/Rocky_River_Study_Plan_2014.pdf

⁹ http://epa.ohio.gov/portals/35/tmdl/Rocky_final_usepa_101601_revision.pdf

¹⁰ http://epa.ohio.gov/portals/35/tmdl/RockyTMDL_Mar05draft.pdf

Recently, a few implementation projects have been completed in the watershed: Baldwin Creek dam removals¹¹, the North Olmsted City Hall parking lot storm water demonstration project¹², and the Rocky River City Hall green infrastructure demonstration project¹³.

In selecting the Rocky River as the Measure 27 project, Ohio EPA expects to view its established TMDL process through the lens of the new Vision, seeking to identify and explore new opportunities to improve the water quality improvement process it uses throughout Ohio. Engaging stakeholders and the public to work on storm water and development impacts to water quality in an urban area will likely be a particular focus. The TMDL effort is anticipated to cover fewer HUC12s, with other approaches used to address smaller areas of impairment with fairly specific sources.

Based on the preliminary results from the 2014 monitoring efforts, as well as historical information, Ohio EPA considers nutrients, sediment/habitat and bacteria in areas with high recreation use the priorities for the Rocky River efforts. However, the cause of impairment in more than one area is attributed to urban runoff, so the use of a surrogate may be appropriate for developing a TMDL or other plan. Since that surrogate is unknown at this time, Ohio EPA reserves the right to add another pollutant to the Measure 27 commitment once it is determined what approach will be used to address the impairment.

As noted in Ohio EPA's Nonpoint Source Management Program plan update¹⁴, the four (4) most common nonpoint source causes of water quality impairment are hydromodification, habitat alteration, nutrients and silt/sediments. The updated NPS Management Program plan is organized in four sections as follows:

- 1.0-Urban Sediment and Nutrient Reduction Strategies
- 2.0-Altered Stream and Habitat Restoration Strategies
- 3.0-Nonpoint Source Reduction Strategies
- 4.0-High Quality Waters Protection Strategies.

The Rocky River watershed is expected to have issues that most if not all of those strategies would help address. For example, if urban storm water issues are determined to still be causing or threatening impairment, they could be addressed using strategies contained in the NPS Program Plan Section 1.0.

In addition, the Nonpoint Source Management Plan update notes:

“Ohio EPA has been very fortunate to apply for and receive two Great Lakes Restoration Initiative grants from the US EPA to supplement state SWIF grant funding for stormwater and other water quality projects concentrated in Cuyahoga County, Ohio. Cuyahoga County is Ohio's most populous county with more than 1.2 million residents with an aging stormwater infrastructure and highly modified urban tributaries to Lake Erie. The Cuyahoga County GLRI-SWIF grants program provides Ohio communities and

¹¹ http://epa.ohio.gov/Portals/35/tmdl/Implementation/Rocky_BaldwinCrDamRemovals.pdf

¹² http://epa.ohio.gov/Portals/35/tmdl/Implementation/Rocky_NorthOlmstedStormWater.pdf

¹³ http://epa.ohio.gov/Portals/35/tmdl/implementation/Rocky_CityHallGreenInfrastructure.pdf

¹⁴ http://epa.ohio.gov/Portals/35/nps/NPS_Mgmt_Plan.pdf

local park districts with important financial assistance for stream and wetland restoration projects as well as green infrastructure retrofits.”

Using the Rocky River as our measure will aid us in building on these past efforts.

Other areas of Ohio, specifically the Maumee River watershed and the western basin of Lake Erie, are receiving substantial attention and funding to address issues. Ohio EPA has already completed TMDLs for much of that watershed and others are underway. Choosing the Rocky River watershed as our priority for measurement allows the state to balance attention both in terms of geography and causes of water quality impairment in Ohio. Ohio EPA will continue to complete TMDLs in other areas of the state and will report on these efforts through alternative Measure 28.

From the May 2014 Rocky River Study Plan:

Table 1. Waterbodies and allocated biological sampling effort for each assessment unit (HUC 12)				
HUC 12	Sites	Name ^a	Drain. Area	Waterbodies ^b
041100010204	2	Cahoon Creek-Frontal Lake Erie	28.9 mi ²	Porter Creek Cahoon Creek
041100010203	12	Rocky River	25.3 mi ²	Rocky River Abrams Creek
041100010202	15	Baldwin Cr.-East Branch Rocky River	36.6 mi ²	Lower East Br. Rocky River (RM 17.0 - Mouth) Baldwin Creek
041100010201	6	Headwaters East Branch Rocky River	40.6 mi ²	Upper East Br. Rocky River (Headwaters - RM 17.0) Healey Creek
041100010108	7	Baker Creek-West Branch Rocky River	26.1 mi ²	Lower West Br. Rocky River (RM 6.85 - Mouth) Blodgett Creek Baker Creek
041100010107	4	Plum Creek (W.Br. Tributary)	17.5 mi ²	Plum Creek
041100010106	5	Cossett Creek-West Branch Rocky R.	41.4 mi ²	Lower-middle West Br. Rocky R. (RM 20.8 - 6.85) Cossett Creek
041100010105	3	City of Medina-West Branch Rocky R.	26.4 mi ²	Upper- middle West Br. Rocky R. (RM 29.7 - 20.8) Broadway Creek
041100010104	2	Mallet Creek	18.0 mi ²	Mallet Creek
041100010103	3	Headwaters West Branch Rocky River	23.0 mi ²	Upper West Br. Rocky River (RM Headwaters - 29.7) Champion Creek
041100010102	5	North Branch West Branch Rocky R.	25.1 mi ²	North Br. Rocky River Remsen Creek Granger Ditch
041100010101	3	Plum Creek (N.Br.Tributary)	12.9 mi ²	Plum Creek
<p>a - HUC 041100010204 (Cahoon Creek-Frontal Lake Erie) is composed exclusively of small direct tributaries to Lake Erie.</p> <p>b- Unless otherwise indicated, the specified HUC 12s include the entire length of listed waterbodies. Furthermore, site totals by HUC 12 do not include extralimital sampling requested by Cleveland Metropark, due to their small size (typically well under two mi²).</p>				

From the May 2014 Rocky River Study Plan:

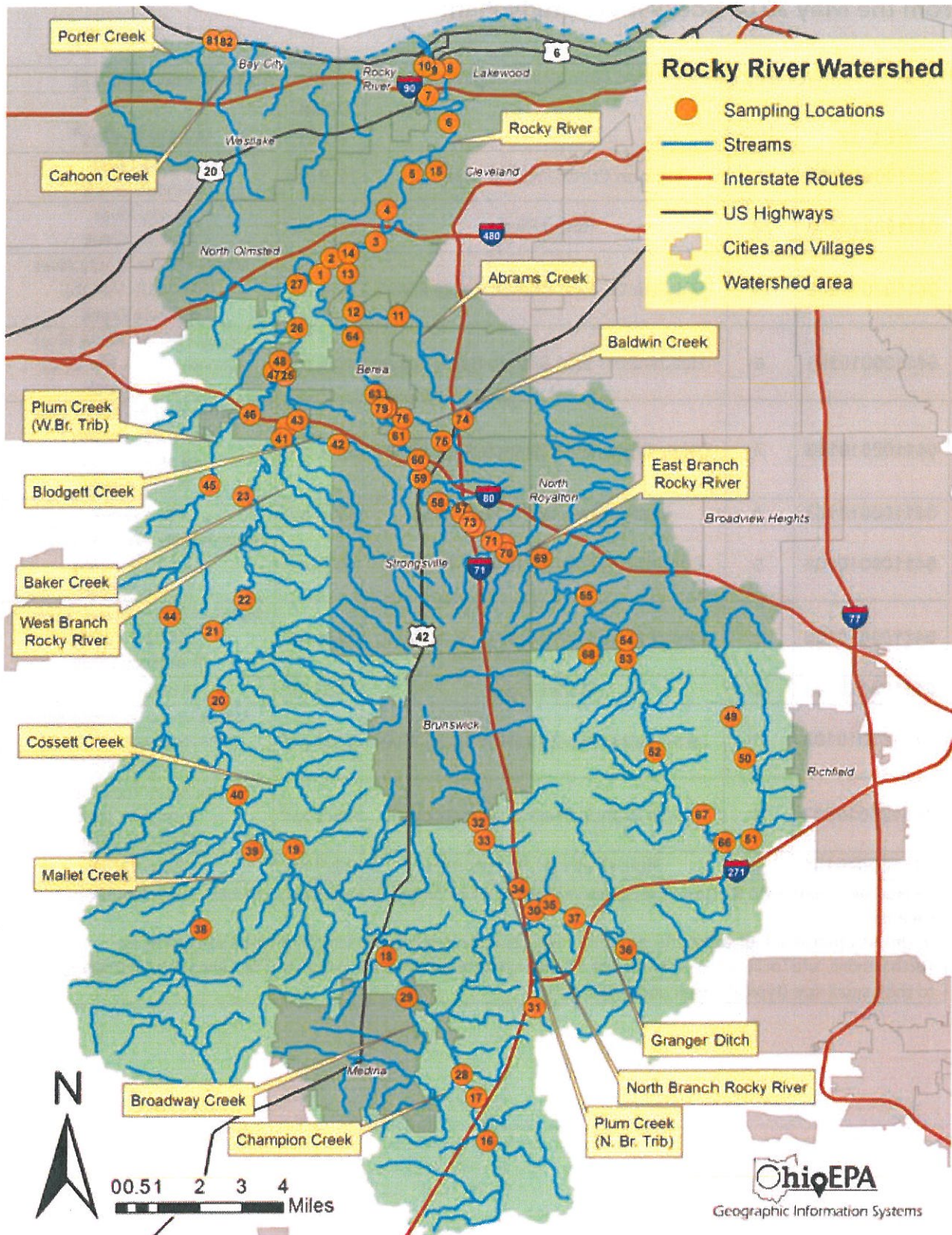


Figure 2. Distribution of the 82 proposed monitoring stations within the 2014 Rocky River study area.