

## WASTEWATER TREATMENT REQUIREMENTS

To avoid local objections, a sewage treatment plant site should be as far as practical from any populated area or any area that will develop within a reasonable period of time. Yet, the treatment plant should be near a receiving stream for discharge. The direction of the prevailing winds should be considered when selecting the plant site to prevent odors from reaching residential areas. If a parcel is surrounded by development, special considerations must be given to the design and type of treatment plant constructed.

Plants should be located at an elevation that is not subject to flooding or should otherwise be adequately protected against flood damage. The plant should be readily accessible in all seasons and should be of ample size to accommodate expansion or further additions.

The topography of the existing ground must be considered in the extension of any system. If the ground is flat or sloping away from the treatment facilities, the expansion capability of a system will be extremely limited without the utilization of very deep gravity sewers or the use of lift/pumping stations and force mains. The location of bedrock will also have a significant effect on expansion because of the high cost and difficulty of sewer construction in areas where the bedrock and groundwater is located close to the surface. Physical factors such as rivers, roadways, and long bores of highways will require careful evaluation of the feasibility of crossing such obstacles, due to the difficulty and resultant high costs of extending service across such obstacles.

At the present time all new sewerage systems in the State of Ohio must meet the approval of the Ohio Environmental Protection Agency which was established to ensure that the quality of the receiving waters be improved and maintained at a level which will provide high quality and healthy conditions for all citizens of the state. All new sewage systems are generally designed to meet the requirements of the Ohio EPA and the recommended standards for sewage works established by the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers, commonly referred to as the Ten State Standards.

### Certified Operators Required

Public wastewater treatment systems shall designate one or more operators of record to oversee the technical operation of the public system. Each operator of record shall have a valid certification of a class equal to or greater than the classification of the public wastewater system.

### Classification

1. Sewerage systems
  - A. Each sewerage system that is a tributary to a Class I treatment works shall be classified as a Class I sewerage system. Each sewerage system that is a tributary to a Class II, III, or IV treatment works shall be classified as a Class II sewerage system.
  - B. Each sewerage system for which an NPDES permit has been issued by the director, other than those sewerage systems described in OAC 3745-7-04 2 paragraph (B)(1)(a) of this rule, shall be classified as a Class II sewerage system.
2. Treatment works.
  - A. Treatment works classification shall be based on design flow of the treatment works and the final effluent limits for the treatment works for monthly average concentrations of carbonaceous biochemical oxygen demand, total suspended solids, and summer month ammonia nitrogen designated in the treatment works' NPDES permit.
  - B. Class A, I, II, III, and IV treatment works shall be classified according to the following tables:

-Classification of treatment works where one or more of the final effluent limits for monthly average concentration is less than or equal to: 10 mg/L carbonaceous biochemical oxygen demand, 12 mg/L total suspended solids, or 1 mg/L ammonia nitrogen.

Design Flow	Classification
Less than or equal to 0.025 MGD	Class A
Greater than 0.025 MGD but less than 0.15 MGD	Class I
0.15 MGD to less than 1.0 MGD	Class II
1.0 MGD to less than 5.0 MGD	Class III
5 MGD and above	Class IV

-Classification of treatment works where all of the final effluent limits for monthly average concentration are greater than: 10 mg/L carbonaceous biochemical oxygen demand, 12 mg/L total suspended solids, or 1 mg/L ammonia nitrogen.

Design Flow	Classification
Less than or equal to 0.025 MGD	Class A
Greater than 0.025 MGD but less than 0.25 MGD	Class I
0.25 MGD to less than 2.0 MGD	Class II
2.0 MGD to less than 7.5 MGD	Class III
7.5 MGD and above	Class IV

#### Staffing

The operator of record shall, at a minimum, be physically present at the treatment works and fulfill the time requirements in the following table and perform technical operation as assigned by the permittee of the treatment works.

System Classification	Staffing requirement
Class A	2 days per week for a minimum of 1 hour per week
Class I	3 days per week for a minimum of 1.5 hours per week
Class II	5 days per week for a minimum of 20 hours per week
Class III and IV	5 days per week for a minimum of 40 hours per week

### Composition of Domestic Waste

The most reproducible, if not predictable, component of wastewater treatment is the characteristic of its sanitary waste stream.

Minimum flows and pollutant concentrations are observed during the early morning hours; peak flows and pollutant concentrations are typically experienced in the late morning or early afternoon. Fifty percent of the plant's pollutant load during a weekday could arrive at the plant during an 8-hour period; the plant's maximum hourly load can be more than double the plant's average hourly load.

In general, peak nitrogen concentrations will precede the flow peak, whereas peak phosphorous concentrations will coincide with or lag behind the flow peak.

The Ten State Standards recommend that new treatment plants be designed for a sanitary waste contribution of at least 0.08 kg (0.17 lb) of BOD per capita per day and 0.09 kg (0.20 lb) of suspended solids per capita per day unless available information justifies other design criteria.

The Ten State Standards recommend the use of an average daily flow value of 100 gallons per capita per day for new domestic service in undeveloped areas unless water-use data or better flow estimates are available. This suggested per capita flow value includes an allowance for moderate sewer infiltration. Sewer rehabilitation, enforcement of inflow control ordinances, and water conservation ordinances may reduce domestic waste flows.

Table 17 delineates the typical major pollutant composition of wastewater.

**TABLE 17  
TYPICAL MAJOR POLLUTANT COMPOSITION OF DOMESTIC WASTEWATER**

Parameter	Concentration by phase, mg/l		
	Soluble	Particulate	Total
Suspended Solids	---	---	240
5-day BOD	65	135	200
Chemical Oxygen Demand	130	260	390
Total Nitrogen	20	10	30
Total Phosphorus	5	2	7

### NPDES Permitting

The National Pollution Discharge Elimination System was established under Section 402 of the Clean Water Act and is a principal enforcement mechanism for regulating point source discharges, including those from municipal wastewater treatment plants. The NPDES permit contains several significant items that affect the planning and operation of Publicly Owned Treatment Works (POTW) such as the effluent limitations. The degree of treatment to be achieved is defined by the effluent limitations developed by Ohio EPA. The specific effluent limitations vary with the nature of the receiving waters. The effluent limitations directly influence the type of treatment process, the physical treatment works, and the operational efficiency required and are, therefore, of considerable importance.

The NPDES permit also contain limitations, conditions, or schedules that can require the municipality to undertake the construction, upgrading, or expansion of its Wastewater Treatment Plant (WWTP).

The first step in the development of a NPDES permit is acquisition of chemical, physical, and biological data from the field and laboratory. Instream chemical data are collected to determine the effect of the discharge on instream water quality and sediment. Effluent chemical data are also gathered to establish an accurate portrayal of current discharge conditions. Chemical data, as well as stream physical data such as cross section measurements and flow, are necessary for stream modeling activities. Biological data are collected to determine the aquatic life use attainment status.

Prior to commencement of effluent limits development, the appropriate water quality standards use designations are determined and federal effluent guidelines are consulted for applicability.

Ohio EPA develops Water Quality Permit Support Documents (WQPSD), which incorporate a stream assessment, the wasteload allocation, and the antidegradation review. This document replaces the Water Quality Based Effluent Limits Report. The WQPSD takes a holistic look at a discharger's impact on a stream, evaluating the total impact of the facility rather than a pipe-by-pipe analysis alone.

Information considered in the development of the WQPSD includes:

- ▶ the Division of Surface Water preliminary information form;
- ▶ effluent chemical data;
- ▶ instream chemical data;
- ▶ instream sediment analysis;
- ▶ the SARA toxic release inventory;
- ▶ whole effluent toxicity test results;
- ▶ intensive biological and chemical water quality survey results;
- ▶ the Ohio EPA Division of Emergency and Remedial Response chemical spills database;
- ▶ Ohio Department of Natural Resources fish kill records;
- ▶ fish tissue analysis; and
- ▶ a wasteload allocation report.

One component of the WQPSD is the wasteload allocation. Using stream modeling techniques, water quality under various design conditions can be projected. These techniques, ranging from a simple mass balance analysis method to a complex water quality model, are used to determine what quality effluent a facility must discharge to maintain instream water quality standards.

Upon completion of the WQPSD, permit limits are determined using the WQPSD, carefully considering federal and state regulations and Division of Surface Water policies, and applying risk management. A fact sheet is prepared that outlines the decision-making process and provides the technical justification for the permit limits. The fact sheet also serves to inform the public of procedures that can be followed to supply input in finalizing the permit.

A public notice announcing the permit is issued to inform the public of the actions being taken by Ohio EPA. During the 30-day review period following issuance of the public notice, the general public, regulated entity, or interested party may become involved in the permitting process. This involvement may be the submission of written comments or a request for a public meeting or hearing.

Once the comment period has ended, all comments will be addressed before issuance of a final NPDES permit. When the final permit is issued, it may be appealed within 30 days to the Environmental Board of Review.

There are two (2) general permitted effluent discharge requirements. A continuous discharge permit would allow a wastewater treatment facility to discharge continuously regardless of the receiving stream's flow versus a controlled discharge permit which would only allow a discharge during high receiving stream flows. Tables 18 and 19 list the permit requirements for both types of discharges.

TABLE 18 CONTINUOUS DISCHARGE FACILITY NPDES EFFLUENT REQUIREMENTS			
Parameter	30-Day Limit	Daily or 7-Day Limit	Maximum/Minimum Limit
CBOD <sub>5</sub>	10 mg/l	15 mg/l	N/A
Total Suspended Solids	12 mg/l	18 mg/l	N/A
Ammonia			
- Summer	1.0 mg/l	1.5 mg/l	N/A
- Winter	2.6 mg/l	4.5 mg/l	
Dissolved Oxygen	N/A	N/A	6.0 mg/l (minimum)
Total Residual Chlorine	N/A	N/A	.038 mg/l (maximum)
Fecal Coliform (Summer Only)	1,000/100 ml	2,000/100 ml	N/A
E. coli *	126/100 mg/l	235/100 ml	N/A
* E. coli is to be considered a design standard only. Effluent limitations will not be incorporated into permits.			

TABLE 19 CONTROLLED DISCHARGE NPDES EFFLUENT REQUIREMENTS		
Parameter	30-Day Average	7-Day Average
CBOD <sub>5</sub>	25 mg/l	40 mg/l
Suspended Solids	65 mg/l	90 mg/l



Ohio EPA will develop and review supporting documentation as part of the permitting process for each specific permit request.

As previously discussed in the Antidegradation Rule and Total Maximum Daily Load (TMDL) section, permitting for a new wastewater treatment facility or revising a permit for increased effluent discharge will require an extensive evaluation. Ohio EPA will require a complete review of other alternatives such as regional treatment or treatment with limited to no discharge (land application). All new treatment facilities will be required to review Best Available Technology based on stream modeling and wasteload allocations.

### Antidegradation Rule

On July 3, 1996 the Director of the Ohio Environmental Protection Agency (Ohio EPA) adopted a new antidegradation rule for Ohio which will become effective on October 1, 1996. These rules will replace the version OAC 3745-1-05 which is currently in effect.

### Minimum Requirements for all Dischargers

1. Use best available demonstrated control technology. Federal standards for new sources of sanitary wastewater (municipal dischargers) require a minimum of tertiary treatment, for any new or increase, which removes at least 95 percent of the pollutants. The objective of the federal regulation is to set consistent nationwide specifications for the amount of wastewater treatment that must occur before discharge.
2. The state may impose stricter water quality-based requirements if federal technology requirements are not restrictive enough to meet Ohio's water quality standards. Rivers and streams in Ohio receive a "use designation" that reflects the aquatic habitat the stream can support. Water quality standards are established to support those uses.
3. Existing facilities must maintain treatment technology at current level.
4. Proposed facilities must submit detailed engineering plans and obtain a construction permit from Ohio EPA to build the facility.
5. Dischargers must obtain an NPDES permit to discharge. The permit will require the discharger to:
  - A. Meet water quality criteria
  - B. Limit pollutants to levels specifically defined in the permit
  - C. Monitor discharge and report results to Ohio EPA
  - D. Ensure that the stream is protected under worst case conditions

Technology requirements and water quality-based requirements (1 and 2 above) are the forces which improve water quality. Compliance with these guidelines can result in streams

where water quality is better than what is needed to meet water quality criteria. When this occurs, federal regulations allow increased discharges up to the safe level, provided an antidegradation review is done. The antidegradation rule guides the decision-making process regarding proposals for new or greater discharges.

#### Additional Requirements of Antidegradation Review

The applicant must describe and analyze pollution prevention alternatives. Ohio EPA may require the applicant to design and operate one of the less polluting alternatives.

- ▶ Time lines are specified for public notification/involvement activities, and people of Ohio EPA's mailing list receive direct mail notification of application and public hearing, if applicable.
- ▶ Ohio EPA must evaluate potential benefits and detrimental effects of the proposed project, and approve the project only if the applicant has demonstrated that it is needed to accommodate important social/economic development.
- ▶ Under the new definition of "best available demonstrated control technology" for sanitary waste (See Tables 5-1 in the rule), new sources must be build advanced treatment, which achieves approximately 95 percent pollutant removal.

Although there are some specific exclusions and waivers from certain provisions of the rule, the new rule generally requires an antidegradation review of all new or increased discharges from wastewater treatment facilities.

#### Water Categories

There are six (6) categories of water bodies. In order from best water quality to worst water quality, they include:

- ▶ outstanding national resource waters
- ▶ outstanding high quality waters
- ▶ state resource waters

- ▶ superior high quality waters
- ▶ general high quality waters
- ▶ limited quality waters

As the water quality category gets better, Ohio EPA generally imposes more restrictions on dischargers. The amount of justification submitted by the applicant increases.

Ohio EPA added the Outstanding National Resource Water (ONRW) category in response to public comments. It is fully equivalent to the federal specifications for this category. New point source discharges are NOT allowed on these waters. Sources proposing to discharge upstream from an ONRW must demonstrate there will be no perceptible change in water quality in the ONRW segment.

The antidegradation rule directs Ohio EPA to propose water quality designations within one year after the rule is effective. This will be done after reviewing available information on water bodies in Ohio and consulting with the Ohio Department of Natural Resources.

#### Examining Pollution Prevention Alternatives

The rule requires applicants to analyze alternative proposals that would generate less pollution than the applicant's preferred option. After reviewing these pollution prevention options or innovative technologies, Ohio EPA may require the applicant to implement one of the less-polluting alternatives.

#### Set-Asides

Water quality criteria represent the minimum level of cleanliness needed in a river to fully protect human health and aquatic life. The criteria can vary from river to river because of unique local conditions. The concept that a river can absorb a certain amount of pollutants without environmental harm is known as "pollutant assimilative capacity."

Wastewater treatment plants can discharge up to that level without causing adverse environmental impacts. In some cases, water quality is better than that safe level. In those cases, the difference between the existing pollutant level in the river and the safe level is known as "remaining available

pollutant assimilative capacity". That is essentially the portion that is left to accommodate additional wastewater discharges from growing communities.

Under previous wastewater rules, Ohio EPA could authorize a new discharge that would use up all remaining available capacity up to the safe level. Ohio EPA, looking for ways to give stronger protection to higher quality rivers, changed the rule to give the director the ability to set aside portions of the unused capacity.

### **State Resource Waters**

The set-aside will apply to ammonia-nitrogen and biochemical oxygen demand. The reserved portion will be determined on a case by case basis at the time Ohio EPA acts on an application. This is an added feature of the new rule. Ohio EPA will not allow any addition of substances determined to be toxic or substances that will interfere with the designated use of a State Resource Water.

### **Superior High Quality Waters (other than Lake Erie)**

The set-aside, not to be allocated to any source, will range from 90 percent to 30 percent. It will apply to all regulated pollutants. The set-aside will be determined when the water body is designated as Superior High Quality Water through rule-making. Set-asides will not apply to any water body designated as a Superior High Quality Water solely because of its exceptional recreational value.

### Exclusions and Waivers

Exclusions and waivers apply only to provisions of the antidegradation review; facilities that are granted waivers and exclusions still must comply with technology-based or water quality-based pollutant limits that protect water quality.

Exclusions are automatic exceptions that apply to specific situations outlined in the antidegradation rule. If an application qualifies for an exclusion, no further antidegradation review will be conducted prior to a denial or approval by Ohio EPA. See Requirements for Dischargers for more information about minimum requirements that still must be met.

Waivers are not automatic. Waivers may be granted by the director, if requested by the applicant and supported with adequate justification. If any exclusions or waivers apply, they must be noted in the public notice that is given as soon as an applicant is received.

### **Exclusions**

The following situations are excluded from the submittal and review requirements listed in OAC 3745-1-05 (B)(2)(c) to (B)(2)(g) (C)(6) and (C)(8) of the antidegradation rule.

- ▶ sources that discharge to limited quality waters;
- ▶ combined sewer overflow elimination or reduction project affecting where there will be a net decrease in the overall pollutants discharged to surface waters;
- ▶ any disposal system built and operated as a land application and controlled system (a technology that balances land application of treated wastewater with controlled discharges of wastewater in a way that minimize stress on the aquatic environment). The rule sets a maximum increase of pollutants that would be allowed;
- ▶ any permit to install application for a project designed exclusively to restore, maintain, or ensure design capacity and discharge levels already authorized in an effective discharge (NPDES) permit;
- ▶ situations that result in a minimal (de minimis) lowering of water quality, as defined in the rule. "De minimis" is no more than 10 percent. On high quality waters, the de minimis level is more restrictive.

### **Waivers**

The director of Ohio EPA may waive certain requirements under defined circumstances. Some examples are given below:

- ▶ Under certain circumstances, the director may allocate existing sources 80 percent of the receiving stream's "pollutant assimilative capacity" without further antidegradation review.

This waiver requires a written request from the applicant, and does not exempt the applicant from meeting all discharge limits.

- ▶ Requirement for new sources to install best available demonstrated control technology may be waived if the project is designed exclusively to restore, maintain or ensure design capacity and discharge levels already authorized in an effective discharge permit; or if the application is the direct and sole result of a proposed transfer of pollutant loading from an existing source and the transfer will result in overall environmental improvement.
  
- ▶ The submittal and review requirements may be waived if the proposed net increase in the discharge of a regulated pollutant does not result in an increased concentration of the pollutant in the receiving stream after mixing. To qualify for this waiver, the applicant must show that any proposed net increase of nutrients or toxic substances complies with all water quality criteria and will not threaten environmental sensitive areas, such as downstream lakes, wetlands, and high quality waters.
  
- ▶ The submittal and review requirements may be waived if the applicant is seeking a revised water quality-based permit limit based on the result of a site-specific study or a change in water quality criterion rule, and the facility demonstrates that its discharge has not complied with the existing water quality based permit limit. (Note: Statewide water quality criteria are based on laboratory studies; a site-specific study factory in unique local conditions that may justify a less stringent standard. At a given location, it is possible that lack of compliance with the statewide standard has not negatively impacted water quality. Based on the results of a site-specific study, there may be scientific justification for raising the permit limit while still being full protective of local water quality conditions.) To qualify for this waiver, the applicant must show that any proposed net increase complies with all water quality criteria and will not threaten environmentally sensitive areas, such as downstream lakes, wetlands, and high quality waters. The applicant would still have to comply with the requirement to consider less-polluting design and operation alternatives.

### Wasteload Allocation

As part of the antidegradation rule, each community or subdivision planning to apply for a new discharge permit or a revised permit based on increased effluent discharges will be required to review and evaluate the receiving stream's ability to accept additional loadings associated with ammonia but not limited to only ammonia. These evaluations will include stream modeling to determine wasteload allocations.

The waste load allocation is the receiving water's capacity for existing and future ammonia loadings. This must be determined before the Best Available Technology can be considered for sanitary waste treatment.

Based on the collected data associated with stream modeling, a mass balance can be calculated to determine net increases to the receiving stream. If the net increase does not exceed 10% of the wasteload allocation for maintaining water quality standards, then the community is exempt.

In the past, Ohio EPA's stream modeling division evaluated streams and proposed discharge limits based on their modeling. Under the new regulations, it becomes the responsibility of each discharger or proposed discharger to model the receiving stream in question and based on the findings determine the effluent discharge limits.

The modeling includes developing a mass balance based on the following:

- ▶ Stream Design Flow
- ▶ Ammonia  $\text{NH}_3\text{-H}$  Water Quality Standard
- ▶ Stream pH and Temperature (75th percentile)
- ▶ Background Pollutant Load
- ▶ WWTP Design Flow (existing)
- ▶ Proposed WWTP Design Flow

### Maximum Daily Load Equation

For ammonia numeric criteria of two (2) seasonal periods, summer and winter are required. The ammonia criteria is calculated based on temperature and pH values which meet the following requirements:



1. Temperature and pH shall be based on data collected during the following periods:
  - A. June thru September for the Summer Season;
  - B. December thru February for the Winter Season.
  
2. For each applicable season, temperature and pH statistics shall be determined based on the available ambient data, which best represents the long-term daily variation in the receiving water downstream of the mixing zone.
  
3. The following statistics shall be used to determine the applicable ammonia criteria:
  - A. Seventy-fifth percentile for temperature.
  - B. Seventy-fifth percentile for pH.
  
4. For the wasteload allocation for ammonia the following mass balance equation must be used:

$$WLA = \frac{WQC (Q_{eff} + Q_{up}) - Q_{up} (W_{qup})}{Q_{eff}}$$

- WQC = Water quality criterion as established in Rule 3745-2-04 of the Administrative Code
- Q<sub>eff</sub> = Effluent design flow as established in Rule 3745-2-05 of the Administrative Code
- Q<sub>up</sub> = Percent of the upstream design flow as established in Paragraph (B) of this rule.
- W<sub>qup</sub> = Background water quality as established in Rule 3745-2-05 of the Administrative Code.

5. The following stream design flows shall be used to determine WLA's (wasteload allocations) to maintain water quality criteria for NH<sub>3</sub>-N toxicity.
  - A. May to November: 7Q<sub>10</sub> for summer acute aquatic life.
  - B. December to February: 7Q<sub>10</sub> for summer acute aquatic life.

### Total Maximum Daily Loads (TMDL)

The Clean Water Act (CWA) Section 303(d) requires the State of Ohio to list and prioritize waters for which technology-based limits alone do not ensure attainment of water quality standards. Lists of these waters (the section 303(d) lists) are made available to the public and submitted to the U.S. Environmental Protection Agency (USEPA) in every even-numbered year (40 CFR 130.7(d)) did not require a 303(d) list submitted in the year 2000. The Ohio Environmental Protection Agency (Ohio EPA) will identify watersheds as priority impaired waters.

The Clean Water Act and USEPA regulations require that the Total Maximum Daily Loads (TMDLs) be developed for all waters on the section 303(d) lists. A TMDL is a calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources. The process of formulating TMDLs for specific pollutants is therefore, a method by which impaired water body segments are identified and restoration solutions are developed. Ultimately, the goal of Ohio's TMDL process is full attainment of biological and chemical Water Quality Standards (WQS) and, subsequently, removal of water bodies of the 303(3) list. The Ohio EPA believes that developing TMDLs on a watershed basis (as opposed to solely focusing on impaired segments within a watershed) is an effective approach toward this goal.

The main objectives of a TMDL report is to describe the water quality and habitat condition of the stream and to quantitatively assess the factors affecting non or partial attainment of WQS. A draft implementation plan is also included. This report identifies actions to address these factors and specifies monitoring to ensure actions are carried out and to measure the success of the actions proscribed. The report is organized in sections forming the progression of the TMDL process. The primary causes of impairment to a watershed are organic and nutrient enrichment, ammonia, and habitat degradation. TMDLs are calculated for organic/nutrient enrichment and habitat.

The TMDL regulations require that Ohio EPA identify impaired water bodies, set maximum daily loads for problem pollutants and allocate waste load reductions among sources in the watershed on a specific timetable. NPDES permit holders will be affected as a result of increased compliance costs associated with more stringent water quality and permitting requirements. In particular, the new requirements could result in reductions in allowable discharges under existing NPDES permit

limitations. This may even be more pronounced if the controls placed on non–point sources under the TMDL program are inadequate or place disproportionate responsibilities on point-source discharges.

The Ohio EPA has indicated that they intend to impose TMDL based requirements on virtually all NPDES permit holders that discharge to a watershed with an established TMDL. The Division of Surface Water has preliminarily indicated that these new more stringent requirements will be imposed as NPDES permits come up for renewal.

Ohio's TMDL process is evolving. After benchmarking with other states and USEPA and analyzing our own rules and programs, the Division of Surface Water developed a 12-step project-management-based TMDL process to accomplish TMDLs. The process builds on existing monitoring, modeling, permitting, and grant programs and works with our "five year monitoring strategy". The process calls for increased public involvement in problem solving and decision making.

The process contains four broad, overlapping phases:

- ▶ Assess waterbody health; biological, chemical, habitat
- ▶ Develop a restoration target and viable scenario
- ▶ Implement the solution: inside/outside Ohio EPA
- ▶ Validate to monitor progress: delist or relist

The important themes of the process include reaching out to involve others – the public and other agencies – and focusing on the goal of bringing waters to attainment. To do this, Ohio EPA will build on our past experiences and explore new technology and methods. Finally, Ohio EPA will use a quality improvement process to measure the effectiveness of TMDLs, both administrative and technical decisions, and adjust the process as needed.

The Sandusky River and Sandusky Bay Tributaries drain a total of 1,828 square miles and flow through all or part of twelve (12) counties. Sandusky County is in the Sandusky River Lower Watershed TMDL. The Lower Sandusky River TMDL was completed in 2009 and the watershed

is divided into five sub-watersheds, Wolf Creek, Rock Creek, Sandusky River, Muskellunge Creek-Sandusky River, and Muddy Creek-Frontal Sandusky Bay. The Sandusky River TMDL can be found at [www.epa.state.oh.us/dsw/tmdl/SanduskyRiver](http://www.epa.state.oh.us/dsw/tmdl/SanduskyRiver).