

National Pollutant Discharge Elimination System (NPDES) Permit Program

FACT SHEET

Regarding an NPDES Permit To Discharge to Waters of the State of Ohio
for Lower Little Miami Wastewater Treatment Plant (WWTP)

Public Notice No.: 15-05-006
Public Notice Date: May 15, 2015
Comment Period Ends: June 15, 2015

Ohio EPA Permit No.: 1PK00018*LD
Application No.: OH0071692

Name and Address of Applicant:
Warren County Board of Commissioners
P.O. Box 530 406 Justice Drive
Lebanon, OH 45036

Name and Address of Facility Where
Discharge Occurs:
Lower Little Miami WWTP
2086 West State Route 22 and 3
Maineville, OH 45039
Warren County

Receiving Water: Simpson Creek

Subsequent Stream Network: Little Miami River to Ohio River

Introduction

Development of a Fact Sheet for NPDES permits is mandated by Title 40 of the Code of Federal Regulations (CFR), Section 124.8 and 124.56. This document fulfills the requirements established in those regulations by providing the information necessary to inform the public of actions proposed by the Ohio Environmental Protection Agency (Ohio EPA), as well as the methods by which the public can participate in the process of finalizing those actions.

This Fact Sheet is prepared in order to document the technical basis and risk management decisions that are considered in the determination of water quality based NPDES Permit effluent limitations. The technical basis for the Fact Sheet may consist of evaluations of promulgated effluent guidelines, existing effluent quality, instream biological, chemical and physical conditions, and the relative risk of alternative effluent limitations. This Fact Sheet details the discretionary decision-making process empowered to the Director by the Clean Water Act (CWA) and Ohio Water Pollution Control Law (Ohio Revised Code [ORC] 6111). Decisions to award variances to Water Quality Standards (WQS) or promulgated effluent guidelines for economic or technological reasons will also be justified in the Fact Sheet where necessary.

No antidegradation review was necessary.

Effluent limits based on available treatment technologies are required by Section 301(b) of the CWA. Many of these have already been established by the United States Environmental Protection Agency (U.S. EPA) in the effluent guideline regulations (a.k.a. categorical regulations) for industry categories in 40 CFR Parts 405-499. Technology-based regulations for publicly-owned treatment works are listed in the Secondary Treatment Regulations (40 CFR Part 133). If regulations have not been established for a category of dischargers, the director may establish technology-based limits based on best professional judgment (BPJ).

Ohio EPA reviews the need for water-quality-based limits on a pollutant-by-pollutant basis. Wasteload allocations (WLAs) are used to develop these limits based on the pollutants that have been detected in the discharge, and the receiving water's assimilative capacity. The assimilative capacity depends on the flow in the

water receiving the discharge, and the concentration of the pollutant upstream. The greater the upstream flow, and the lower the upstream concentration, the greater the assimilative capacity is. Assimilative capacity may represent dilution (as in allocations for metals), or it may also incorporate the break-down of pollutants in the receiving water (as in allocations for oxygen-demanding materials).

The need for water-quality-based limits is determined by comparing the WLA for a pollutant to a measure of the effluent quality. The measure of effluent quality is called Projected Effluent Quality (PEQ). This is a statistical measure of the average and maximum effluent values for a pollutant. As with any statistical method, the more data that exists for a given pollutant, the more likely that PEQ will match the actual observed data. If there is a small data set for a given pollutant, the highest measured value is multiplied by a statistical factor to obtain a PEQ; for example if only one sample exists, the factor is 6.2, for two samples - 3.8, for three samples - 3.0. The factors continue to decline as samples sizes increase. These factors are intended to account for effluent variability, but if the pollutant concentrations are fairly constant, these factors may make PEQ appear larger than it would be shown to be if more sample results existed.

Summary of Permit Conditions

The effluent limits and monitoring requirements proposed for the following parameters are the same as in the previous permit, although some monitoring frequencies have changed: water temperature, dissolved oxygen, total suspended solids, oil and grease, ammonia, nitrate+nitrite, phosphorus, nickel, zinc, cadmium, lead, chromium, copper, *E. coli*, flow rate, mercury, pH, total filterable residue, and 5-day carbonaceous biochemical oxygen demand.

New monitoring is proposed for barium because this parameter was placed into Group 4 of the parameter assessment table (Table 13) and monitoring is required for such parameters.

Annual chronic toxicity monitoring with the determination of acute endpoints is proposed for the life of the permit. This satisfies the minimum testing requirements of Ohio Administrative Code (OAC) 3754-33-07(B)(11) and will adequately characterize toxicity in the plant's effluent.

Total Kjeldahl nitrogen monitoring is being added to the upstream and downstream monitoring stations (801 and 901) and monitoring for metals is being removed from the downstream monitoring station (901).

This permit no longer authorizes the use of method 4500 CN-I from Standard Methods for free cyanide testing. As soon as possible, the permittee must begin using either ASTM D7237-10 or OIA-1677-09 both of which are approved methods for free cyanide listed in 40 CFR 136.

New monitoring requirements are proposed for dissolved hexavalent chromium. The current method detection limit (MDL), the minimum concentration at which one can be confident that the effluent concentrations are greater than zero, for this parameter is too high to accurately evaluate concentrations of this parameter in the receiving water and a new MDL is proposed.

In Part II of the permit, special conditions are included that address sanitary sewer overflow (SSO) reporting; operator certification, minimum staffing and operator of record; whole effluent toxicity (WET) testing; storm water compliance; and outfall signage.

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Procedures for Participation in the Formulation of Final Determinations

The draft action shall be issued as a final action unless the Director revises the draft after consideration of the record of a public meeting or written comments, or upon disapproval by the Administrator of the U.S. Environmental Protection Agency.

Within thirty days of the date of the Public Notice, any person may request or petition for a public meeting for presentation of evidence, statements or opinions. The purpose of the public meeting is to obtain additional evidence. Statements concerning the issues raised by the party requesting the meeting are invited. Evidence may be presented by the applicant, the state, and other parties, and following presentation of such evidence other interested persons may present testimony of facts or statements of opinion.

Requests for public meetings shall be in writing and shall state the action of the Director objected to, the questions to be considered, and the reasons the action is contested. Such requests should be addressed to:

**Legal Records Section
Ohio Environmental Protection Agency
P.O. Box 1049
Columbus, Ohio 43216-1049**

Interested persons are invited to submit written comments upon the discharge permit. Comments should be submitted in person or by mail no later than 30 days after the date of this Public Notice. Deliver or mail all comments to:

**Ohio Environmental Protection Agency
Attention: Division of Surface Water
Permits Processing Unit
P.O. Box 1049
Columbus, Ohio 43216-1049**

The Ohio EPA permit number and Public Notice numbers should appear on each page of any submitted comments. All comments received no later than 30 days after the date of the Public Notice will be considered.

Citizens may conduct file reviews regarding specific companies or sites. Appointments are necessary to conduct file reviews, because requests to review files have increased dramatically in recent years. The first 250 pages copied are free. For requests to copy more than 250 pages, there is a five-cent charge for each page copied. Payment is required by check or money order, made payable to Treasurer State of Ohio.

For additional information about this fact sheet or the draft permit, contact Andy Bachman at (614)644-3075, andrew.bachman@epa.ohio.gov; or Ned Sarle at (937)285-6096, ned.sarle@epa.ohio.gov.

Information Regarding Certain Water Quality Based Effluent Limits

This draft permit may contain proposed water-quality-based effluent limits (WQBELs) for parameters that **are not** priority pollutants. (See the following link for a list of the priority pollutants: http://epa.ohio.gov/portals/35/pretreatment/Pretreatment_Program_Priority_Pollutant_Detection_Limits.pdf.) In accordance with ORC 6111.03(J)(3), the Director established these WQBELs after considering, to the extent consistent with the Federal Water Pollution Control Act, evidence relating to the technical feasibility and economic reasonableness of removing the polluting properties from those wastes and to evidence relating to conditions calculated to result from that action and their relation to benefits to the people of the state and to accomplishment of the purposes of this chapter. This determination was made based on data and information

available at the time the permit was drafted, which included the contents of the timely submitted NPDES permit renewal application, along with any and all pertinent information available to the Director.

This public notice allows the permittee to provide to the Director for consideration during this public comment period additional site-specific pertinent and factual information with respect to the technical feasibility and economic reasonableness for achieving compliance with the proposed final effluent limitations for these parameters. The permittee shall deliver or mail this information to:

Ohio Environmental Protection Agency
Attention: Division of Surface Water
Permits Processing Unit
P.O. Box 1049
Columbus, Ohio 43216-1049

Should the applicant need additional time to review, obtain or develop site-specific pertinent and factual information with respect to the technical feasibility and economic reasonableness of achieving compliance with these limitations, written notification for any additional time shall be sent to the above address no later than 30 days after the Public Notice Date on Page 1.

Should the applicant determine that compliance with the proposed WQBELs for parameters other than the priority pollutants is technically and/or economically unattainable, the permittee may submit an application for a variance to the applicable WQS used to develop the proposed effluent limitation in accordance with the terms and conditions set forth in OAC 3745-33-07(D). The permittee shall submit this application to the above address no later than 30 days after the Public Notice Date.

Alternately, the applicant may propose the development of site-specific WQS pursuant to OAC 3745-1-35. The permittee shall submit written notification regarding their intent to develop site specific WQS for parameters that are not priority pollutants to the above address no later than 30 days after the Public Notice Date.

Location of Discharge/Receiving Water Use Classification

Lower Little Miami WWTP discharges to Simpson Creek at River Mile (RM) 0.14. Figure 1 shows the approximate location of the facility.

This segment of Simpson Creek is described by Ohio EPA River Code: 11-017, County: Warren, Ecoregion: Eastern Corn Belt Plains. Simpson Creek is designated for the following uses under Ohio's WQS (OAC 3745-1-18): Warmwater Habitat (WWH), Agricultural Water Supply (AWS), Industrial Water Supply (IWS), and Class B Primary Contact Recreation (PCR).

Simpson Creek discharges to the Little Miami River at RM 28.1. This segment of the Little Miami River is designated by Ohio EPA River Code 11-001. The Little Miami River is designated for the following uses: Exceptional Warmwater Habitat, AWS, IWS, and Class A PCR.

Use designations define the goals and expectations of a waterbody. These goals are set for aquatic life protection, recreation use and water supply use, and are defined in the Ohio WQS (OAC 3745-1-07). The use designations for individual waterbodies are listed in rules -08 through -32 of the Ohio WQS. Once the goals are set, numeric WQS are developed to protect these uses. Different uses have different water quality criteria.

Use designations for aquatic life protection include habitats for coldwater fish and macroinvertebrates, warmwater aquatic life and waters with exceptional communities of warmwater organisms. These uses all meet the goals of the federal CWA. Ohio WQS also include aquatic life use designations for waterbodies which cannot meet the CWA goals because of human-caused conditions that cannot be remedied without causing fundamental changes to land use and widespread economic impact. The dredging and clearing of some small streams to support agricultural or urban drainage is the most common of these conditions. These streams are given Modified Warmwater or Limited Resource Water designations.

Recreation uses are defined by the depth of the waterbody and the potential for wading or swimming. Uses are defined for bathing waters, swimming/canoeing (PCR) and wading only (Secondary Contact which are generally waters too shallow for swimming or canoeing).

Water supply uses are defined by the actual or potential use of the waterbody. Public Water Supply designations apply near existing water intakes so that waters are safe to drink with standard treatment. Most other waters are designated for AWS and IWS.

Facility Description

Lower Little Miami WWTP was constructed in 1980 and last upgraded in 2011. The average design flow is 12.0 million gallons per day (MGD). Lower Little Miami WWTP serves Morrow, Hamilton Township, and Deerfield Township for a total of 36,400 customers. Lower Little Miami WWTP has the following treatment processes:

- Influent Pumping
- Screening
- Grit Removal
- Vertical Loop Reactor
- Secondary Clarifiers
- Ultraviolet Disinfection

Lower Little Miami WWTP has no bypasses. The collection system has 100% separated sewers. The facility does not have an approved pretreatment program. The facility has no categorical dischargers, one non-

categorical user that discharges 0.31 MGD of flow, and two significant non-categorical users that discharge 0.29 MGD of flow.

Lower Little Miami WWTP utilizes the following sewage sludge treatment processes:

- Aerobic Digestion
- Mechanical Dewatering

Treated sludge is disposed of in a municipal landfill. Table 1 shows the last five years of sludge removed from Lower Little Miami WWTP.

Description of Existing Discharge

Lower Little Miami WWTP had several effluent violations which are shown on Table 2. These violations were not caused by a known process error or upset condition.

Lower Little Miami WWTP has an estimated infiltration/inflow (I/I) rate of 0.002 MGD that does not cause known problems in the collection system. The median annual effluent flow rate for Lower Little Miami WWTP for the previous five years is presented on Table 3.

Lower Little Miami WWTP reports SSOs at station 300. The number of SSOs reported each year is presented on Table 4.

Table 5 presents chemical specific data compiled from data collected by Ohio EPA.

Table 6 presents a summary of unaltered Discharge Monitoring Report (DMR) data for outfall 001. Data are presented for the period from January 2009 to January 2014, and current permit limits are provided for comparison.

Table 7 summarizes the chemical specific data for outfall 001 by presenting the average and maximum PEQ values.

Table 8 summarizes the results of acute and chronic WET tests of the final effluent.

Assessment of Impact on Receiving Waters

Simpson Creek has not been identified as a priority impaired water on Ohio's 303(d) list. However, this stream flows into the Little Miami River, which has been identified as a priority impaired water on Ohio's 303(d) list.

An assessment of the impact of a permitted point source on the immediate receiving waters includes an evaluation of the available chemical/physical, biological, and habitat data which have been collected by Ohio EPA pursuant to the Five-Year Basin Approach for Monitoring and NPDES Reissuance. Other data may be used provided it was collected in accordance with Ohio EPA methods and protocols as specified by the Ohio WQS and Ohio EPA guidance documents. Other information which may be evaluated includes, but is not limited to: NPDES permittee self-monitoring data; effluent and mixing zone bioassays conducted by Ohio EPA, the permittee, or U.S. EPA.

In evaluating this data, Ohio EPA attempts to link environmental stresses and measured pollutant exposure to the health and diversity of biological communities. Stresses can include pollutant discharges (permitted and unpermitted), land use effects, and habitat modifications. Indicators of exposure to these stresses include whole effluent toxicity tests, fish tissue chemical data, and fish health biomarkers (for example, fish blood tests).

Use attainment is a term which describes the degree to which environmental indicators are either above or below criteria specified by the Ohio WQS (OAC 3745-1). Assessing use attainment status for aquatic life uses primarily relies on the Ohio EPA biological criteria (OAC 3745-1-07; Table 7-15). These criteria apply to rivers and streams outside of mixing zones. Numerical biological criteria are based on measuring several characteristics of the fish and macroinvertebrate communities; these characteristics are combined into multimetric biological indices including the Index of Biotic Integrity (IBI) and modified Index of Well-Being (MIwb), which indicate the response of the fish community, and the Invertebrate Community Index (ICI), which indicates the response of the macroinvertebrate community. Numerical criteria are broken down by ecoregion, use designation, and stream or river size. Ohio has five ecoregions defined by common topography, land use, potential vegetation and soil type.

Three attainment status results are possible at each sampling location -full, partial, or non-attainment. Full attainment means that all of the applicable indices meet the biocriteria. Partial attainment means that one or more of the applicable indices fails meet the biocriteria. Nonattainment means that either none of the applicable indices meet the biocriteria or one of the organism groups indicates poor or very poor performance. An aquatic life use attainment table (see Table 9) is constructed based on the sampling results and is arranged from upstream to downstream and includes the sampling locations indicated by river mile, the applicable biological indices, the use attainment status (i.e., full, partial, or non), the Qualitative Habitat Evaluation Index (QHEI), and comments and observations for each sampling location.

In March 2011, U.S. EPA approved the Ohio EPA report Total Maximum Daily Loads for the Lower Little Miami River Watershed, which was based on data from 2007 assessments. The March 24, 2015, Supreme Court of Ohio decision *Fairfield Cty. Bd. of Commrs. v. Nally, Slip Opinion No. 2015-Ohio-991* vacated all previously approved TMDLs. As of April 21, 2015, this TMDL is considered a technical guidance document pending final TMDL approval. The complete report is available at the following internet site:

http://www.epa.state.oh.us/portals/35/tmdl/Lower%20LMR_TMDL%20Report_FINAL_FINAL_Nov11.pdf

As can be seen in Figure 2, the Lower Little Miami WWTP discharges to Simpson Creek which is a tributary to the Little Miami River at RM 28.1. According to the TMDL (and can be seen in Table 9), the Little Miami River is in attainment downstream of RM 28.1 for more than 25 miles. No additional limits are recommended for the Lower Little Miami WWTP based on the TMDL.

Development of Water-Quality-Based Effluent Limits

Determining appropriate effluent concentrations is a multiple-step process in which parameters are identified as likely to be discharged by a facility, evaluated with respect to Ohio water quality criteria, and examined to determine the likelihood that the existing effluent could violate the calculated limits.

Parameter Selection

Effluent data for the Lower Little Miami WWTP were used to determine what parameters should undergo WLA. The parameters discharged are identified by the data available to Ohio EPA DMR data submitted by the permittee, compliance sampling data collected by Ohio EPA, and any other data submitted by the permittee, such as priority pollutant scans required by the NPDES application or by pretreatment, or other special conditions in the NPDES permit. The sources of effluent data used in this evaluation are as follows:

Self-monitoring data (DMR)	January 2009 through January 2014
Ohio EPA compliance sampling data	2009 and 2014

Outliers

The data were examined, and the following values were removed from the evaluation to give a more reliable PEQ: Cadmium – 9.21 µg/L, 12/1/10.

This data is evaluated statistically, and PEQ values are calculated for each pollutant. Average PEQ (PEQ_{avg}) values represent the 95th percentile of monthly average data, and maximum PEQ (PEQ_{max}) values represent the 95th percentile of all data points (see Table 7).

The PEQ values are used according to Ohio rules to compare to applicable WQS and allowable WLA values for each pollutant evaluated. Initially, PEQ values are compared to the applicable average and maximum WQS. If both PEQ values are less than 25 percent of the applicable WQS, the pollutant does not have the reasonable potential to cause or contribute to exceedances of WQS, and no WLA is done for that parameter. If either PEQ_{avg} or PEQ_{max} is greater than 25 percent of the applicable WQS, a WLA is conducted to determine whether the parameter exhibits reasonable potential and needs to have a limit or if monitoring is required. See Table 13 for a summary of the screening results.

Wasteload Allocation

For those parameters that require a WLA, the results are based on the uses assigned to the receiving waterbody in OAC 3745-1. Dischargers are allocated pollutant loadings/concentrations based on the Ohio WQS (OAC 3745-1). Most pollutants are allocated by a mass-balance method because they do not degrade in the receiving water. WLAs using this method are done using the following general equation: Discharger WLA = (downstream flow x WQS) - (upstream flow x background concentration). Discharger WLAs are divided by the discharge flow so that the allocations are expressed as concentrations. The following dischargers in the Little Miami River watershed were considered interactive (see Figure 3):

- Mason WWTP
- Lebanon WWTP
- Clermont County O'Bannon Creek WWTP
- Hamilton County Polk Run WWTP
- Hamilton County Sycamore Creek WWTP
- Clermont County Wards Corner Regional WWTP

The available assimilative capacity was distributed among them using the conservative substance wasteload allocation (CONSWLA) water quality model for conservative parameters. CONSWLA is the model Ohio EPA typically uses in multiple discharger situations. CONSWLA model inputs for flow are fixed at their critical low levels and inputs for effluent flow are fixed at their design or 50th percentile levels. Background concentrations are fixed at a representative value (generally a 50th percentile). A mass balancing method is then used to allocate effluent concentrations that maintain WQS under these conditions. This technique is appropriate when data bases are unavailable to generate statistical distributions for inputs and if the parameters modeled are conservative.

The applicable waterbody uses for this facility's discharge and the associated stream design flows are as follows:

Aquatic life (WWH)		
Toxics (metals, organics, etc.)	Average	Annual 7Q10
	Maximum	Annual 1Q10
Ammonia	Average	Summer 30Q10
		Winter 30Q10
AWS		Harmonic mean flow
Human Health (nondrinking)		Harmonic mean flow

Allocations are developed using a percentage of stream design flow as specified in Table 11, and allocations cannot exceed the Inside Mixing Zone Maximum (IMZM) criteria.

Ohio's WQS implementation rules [OAC 3745-2-05(A)(2)(d)(iv)] required a phase out of mixing zones for bioaccumulative chemicals of concern (BCCs) as of November 15, 2010. This rule applied statewide. Mercury is a BCC. The mixing zone phase-out means that as of November 15, 2010 all dischargers requiring mercury limits in their NPDES permit must meet WQS at the end-of-pipe, which for mercury are 12 ng/L (average) and 1700 ng/L (maximum) in the Ohio River basin.

The data used in the WLA are listed in Table 10 and Table 11. The WLA results to maintain all applicable criteria are presented in Table 12.

Whole Effluent Toxicity WLA

Whole effluent toxicity (WET) is the total toxic effect of an effluent on aquatic life measured directly with a toxicity test. Acute WET measures short term effects of the effluent while chronic WET measures longer term and potentially more subtle effects of the effluent.

WQS for WET are expressed in Ohio's narrative "free from" WQS rule [OAC 3745-1-04(D)]. These "free froms" are translated into toxicity units (TUs) by the associated WQS Implementation Rule (OAC 3745-2-09). WLAs can then be calculated using TUs as if they were water quality criteria.

The WLA calculations for WET are similar to those for aquatic life criteria - using the chronic toxicity unit (TU_c) and 7Q10 flow for the average and the acute toxicity unit (TU_a) and 1Q10 flow for the maximum. These values are the levels of effluent toxicity that should not cause instream toxicity during critical low-flow conditions. For the Lower Little Miami WWTP, the WLA values are 0.3 TU_a and 1.0 TU_c .

The chronic toxicity unit (TU_c) is defined as 100 divided by the estimate of the effluent concentration which causes a 25% reduction in growth or reproduction of test organisms (IC_{25}):

$$TU_c = 100/IC_{25}$$

This equation applies outside the mixing zone for warmwater, modified warmwater, exceptional warmwater, coldwater, and seasonal salmonid use designations except when the following equation is more restrictive (*Ceriodaphnia dubia* only):

$$TU_c = 100/\text{geometric mean of No Observed Effect Concentration and Lowest Observed Effect Concentration}$$

The acute toxicity unit (TU_a) is defined as 100 divided by the concentration in water having 50% chance of causing death to aquatic life (LC_{50}) for the most sensitive test species:

$$TU_a = 100/LC_{50}$$

This equation applies outside the mixing zone for warmwater, modified warmwater, exceptional warmwater, coldwater, and seasonal salmonid use designations.

When the acute WLA is less than 1.0 TU_a , it may be defined as:

<u>Dilution Ratio</u> (downstream flow to discharger flow)	<u>Allowable Effluent Toxicity</u> (percent effects in 100% effluent)
up to 2 to 1	30
greater than 2 to 1 but less than 2.7 to 1	40
2.7 to 1 to 3.3 to 1	50

The acute WLA for Lower Little Miami WWTP is 30 percent mortality in 100 percent effluent based on the dilution ratio of 1 to 1.

Reasonable Potential/ Effluent Limits/Hazard Management Decisions

After appropriate effluent limits are calculated, the reasonable potential of the discharger to violate the WQS must be determined. Each parameter is examined and placed in a defined "group". Parameters that do not have a WQS or do not require a WLA based on the initial screening are assigned to either group 1 or 2. For the allocated parameters, the preliminary effluent limits (PEL) based on the most restrictive average and maximum WLAs are selected from Table 12. The average PEL (PEL_{avg}) is compared to the average PEQ (PEQ_{avg}) from Table 7, and the PEL_{max} is compared to the PEQ_{max} . Based on the calculated percentage of the allocated value [$(PEQ_{avg} \div PEL_{avg}) \times 100$, or $(PEQ_{max} \div PEL_{max}) \times 100$], the parameters are assigned to group 3, 4, or 5. The groupings are listed in Table 13.

The final effluent limits are determined by evaluating the groupings in conjunction with other applicable rules and regulations. Table 14 presents the final effluent limits and monitoring requirements proposed for Lower Little Miami WWTP outfall 001 and the basis for their recommendation. Unless otherwise indicated, the monitoring frequencies proposed in the permit are continued from the existing permit.

Flow Rate and Water Temperature

Monitoring for flow rate and water temperature is proposed to continue in order to evaluate the performance of the treatment plant.

Dissolved Oxygen, Total Suspended Solids, Ammonia, and 5-Day Carbonaceous Biochemical Oxygen Demand
The limits proposed for dissolved oxygen, total suspended solids, ammonia and 5-day carbonaceous biochemical oxygen demand are all based on plant design criteria. These limits are protective of WQS.

Phosphorus

Phosphorus limits are a continuation from the previous permit. Previously, the Lower Little Miami plant expanded and summer phosphorus limits were proposed based on best engineering judgment. Continued summer phosphorus limits will help this segment of the river maintain attainment and are therefore proposed to continue without any additional decreases in concentration or loading limits. As part of routine nutrient monitoring requirement in a municipal plant, winter monitoring for phosphorus is also proposed to continue from the previous permit.

Nitrate+Nitrite and Total Kjeldahl Nitrogen (TKN)

The continuation of monitoring for nitrate+nitrite and TKN is proposed based on best technical judgment. Monitoring nitrate+nitrite and TKN at the upstream and downstream stations is also proposed. The purpose of the monitoring is to maintain a data set tracking nutrient levels in the Little Miami River basin.

Oil and Grease, pH, and Escherichia coli

Limits proposed for oil and grease, pH, and *Escherichia coli* are based on WQS (OAC 3745-1-07). Class A PCR as Class A standards apply to the Little Miami River.

Total Residual Chlorine, Total Filterable Residue, and Dissolved Hexavalent Chromium

The Ohio EPA risk assessment (Table 13) places total residual chlorine, total filterable residue, and dissolved hexavalent chromium in group 5, which recommends limits to protect water quality. Using the discretion allowed the Director under OAC 3745-33-07(A)(5), monitoring rather than limits is proposed for these parameters.

Total residual chlorine had previously been used for disinfection purposes at Lower Little Miami WWTP. Data from the summers of 2009 through 2011 showed several detections above the associated WLA (from Table 12)

for total residual chlorine. The PEQ values calculated (from Table 7) were greater than 100 percent of the WLA, and would typically require limits. However, in the winter season of 2011 the facility was upgraded and now uses ultraviolet disinfection rather than chlorine. Therefore total residual chlorine will no longer be discharged and limits are unnecessary.

Total filterable residue had previously been placed in Group 5 of the risk assessment table (Table 13) because of a large PEQ developed with a small amount of data. As can be seen in Table 7, this parameter only had a data set of two data points. When the factor of safety was applied to the small data set, the calculated PEQ was greater than the WLA and limits for total filterable residue were recommended. Upon further investigation, it was found that the facility had been gathering data for total filterable residue, as is required in the current permit, but had misreported the data. A new PEQ analysis was performed that included data that Lower Little Miami WWTP had gathered (See Total Filterable Residue - II in Table 7 for the results) and it was determined that this parameter does not belong in Group 5 of the risk assessment table but rather in group 4 as the PEQ was greater than 50 percent of the WLA but less than 100 percent. Continued monitoring for this parameter is proposed as is required of Group 4 parameters.

Dissolved hexavalent chromium was also placed in Group 5. The data set for this parameters shows that there were high concentrations of this pollutant in 2009 and 2010, previous to the major upgrades at the facility. In the 2010 renewal of this permit, limits for dissolved hexavalent chromium were adopted with a schedule of compliance to meet these limits that included a pollutant minimization program. Since these efforts were made and the plant was modified in 2011, dissolved hexavalent chromium has not been detected. Monitoring, rather than limits is proposed. The purpose of the proposed monitoring is to collect additional data on the frequency of occurrence and variability of these pollutants in the plant's effluent.

To ensure that data is obtained that allows Ohio EPA to make water quality-related decisions regarding dissolved hexavalent chromium; a special condition is proposed in Part II of the permit that provides guidance on the MDLs the permittee must use in analyzing for this contaminant.

Barium

The Ohio EPA risk assessment (Table 13) places barium in group 4. This placement, as well as the data in Tables 6 and 7, support that these parameters do not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. Monitoring for Group 4 pollutants (where PEQ exceeds 50 percent of the WLA) is required by OAC 3745-33-07(A)(2).

Copper, Lead, Nickel, Zinc, Chromium, Cadmium, Free Cyanide, and Mercury

The Ohio EPA risk assessment (Table 13) places copper, lead, nickel, zinc, chromium, cadmium, free cyanide, and mercury in groups 2 and 3. This placement, as well as the data in Tables 6 and 7, support that these parameters do not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. Monitoring at a continued frequency is proposed to document that these pollutants continue to remain at low levels.

Iron, Arsenic, Chloroform, Silver, Bromomethane, Strontium, Molybdenum, Selenium, and Toluene

The Ohio EPA risk assessment (Table 13) places iron, arsenic, chloroform, silver, bromomethane, strontium, molybdenum, selenium, and toluene in groups 2 and 3. This placement, as well as the data in Tables 6 and 7, support that these parameters do not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. No new monitoring is proposed.

Whole Effluent Toxicity Reasonable Potential

Based on evaluating the WET data presented in Table 8 and other pertinent data under the provisions of OAC 3745-33-07(B), the Lower Little Miami WWTP is placed in Category 4 with respect to WET. While this indicates that the plant's effluent does not currently pose a toxicity problem, annual toxicity testing is proposed consistent with the minimum monitoring requirements at OAC 3754-33-07(B)(11). Annual chronic toxicity

monitoring with the determination of acute endpoints is proposed for the life of the permit. The proposed monitoring will adequately characterize toxicity in the plant's effluent.

Additional Monitoring Requirements

New monitoring for Total Kjeldahl Nitrogen is being proposed at both the upstream and downstream monitoring stations (801 and 901) to develop an improved data set of nutrients in the Little Miami River watershed that will be used in future river studies.

Monitoring for nickel, zinc, cadmium, lead, chromium, copper, and dissolved hexavalent chromium is proposed to be removed at the downstream monitoring station (901).

Additional monitoring requirements proposed at the final effluent, influent and upstream/downstream stations are included for all facilities in Ohio and vary according to the type and size of the discharge. In addition to permit compliance, this data is used to assist in the evaluation of effluent quality and treatment plant performance and for designing plant improvements and conducting future stream studies.

Sludge

Limits and monitoring requirements proposed for the disposal of sewage sludge by the following management practices are based on OAC 3745-40: removal to sanitary landfill.

Other Requirements

Sanitary Sewer Overflow Reporting

Provisions for reporting SSOs are again proposed in this permit. These provisions include: the reporting of the system-wide number of SSO occurrences on monthly operating reports; telephone notification of Ohio EPA and the local health department, and 5-day follow up written reports for certain high risk SSOs; and preparation of an annual report that is submitted to Ohio EPA and made available to the public. Many of these provisions were already required under the "Noncompliance Notification", "Records Retention", and "Facility Operation and Quality Control" general conditions in Part III of Ohio NPDES permits.

Operator Certification and Operator of Record

Operator certification requirements have been included in Part II of the permit in accordance with rules adopted in December 2006 (OAC 3745-7-02). These rules require the Lower Little Miami WWTP to have a Class IV wastewater treatment plant operator in charge of the sewage treatment plant operations discharging through outfall 001. These rules also require the permittee to designate one or more operator of record to oversee the technical operation of the treatment works.

Method Detection Limit

The reported data for dissolved hexavalent chromium shows that the Lower Little Miami WWTP used an analytical method with a MDL that is not sensitive enough to properly evaluate the discharge with regard to the WLA for this parameter. As a result, Part II of the permit includes a condition requiring the Lower Little Miami WWTP to use an analytical method with an appropriate MDL.

Storm Water Compliance

Parts IV, V, and VI have been included with the draft permit to ensure that any storm water flows from the facility site are properly regulated and managed. As an alternative to complying with Parts IV, V, and VI, the Lower Little Miami WWTP may seek permit coverage under the general permit for industrial storm water (permit # OHR000005) or submit a "No Exposure Certification." Parts IV, V, and VI will be removed from the final permit if: 1) the Lower Little Miami WWTP submits a Notice of Intent (NOI) for coverage under the general permit for industrial storm water or submits a No Exposure Certification, 2) Ohio EPA determines that the facility is eligible for coverage under the general permit or meets the requirements for a No Exposure Certification, and 3) the determination by Ohio EPA can be made prior to the issuance of the final permit.

Outfall Signage

Part II of the permit includes requirements for the permittee to place and maintain a sign at each outfall to Simpson Creek providing information about the discharge. Signage at outfalls is required pursuant to OAC 3745-33-08(A).

Figure 1. Location of Lower Little Miami WWTP



Figure 2. Little Miami River Study Area

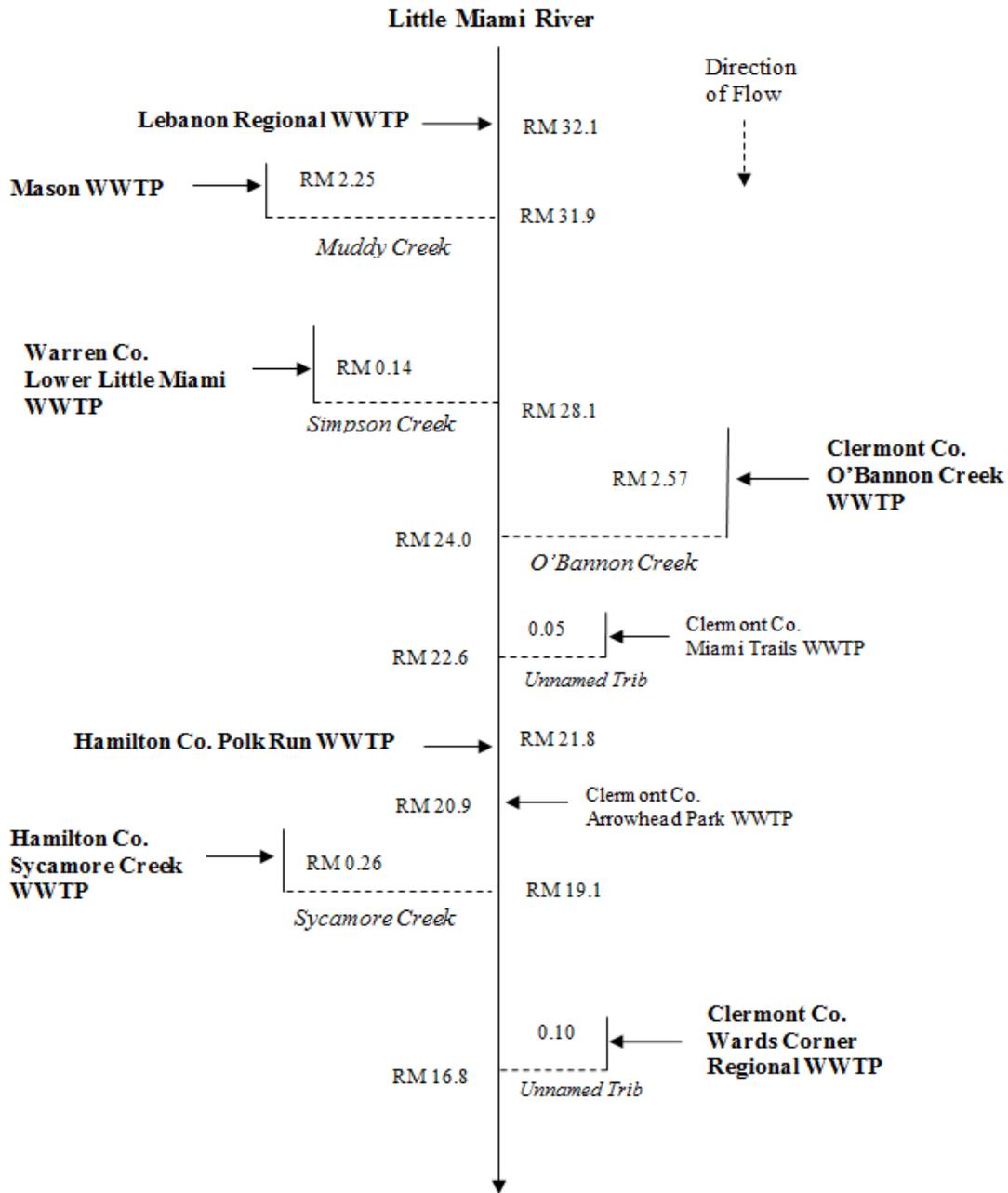


Table 1. Sewage Sludge Removal

Year	Dry Tons Removed
2009	1403.41
2010	1316.91
2011	1294.53
2012	1479.29
2013	1135.81

Table 2. Effluent Violations for Outfall 001

Compliance Summary for Lower Little Miami WWTP					
Pollutant	Number of Months with Violations	Total Violations	Concentration Violations	Load Violations	Sampling Frequency
5-day Carbonaceous Biochemical Oxygen Demand	2	2	2	0	3/Week
Dissolved Oxygen	4	4	4	0	1/Day
Total Suspended Solids	3	9	3	6	3/Week
Ammonia	7	19	9	10	3/Week

Table 3. Annual Effluent Flow Rates

Year	Annual Flow in MGD		
	50th Percentile	95th Percentile	Maximum
2009	6.48	8.33	13.64
2010	6.01	8.69	14.18
2011	5.83	11.28	16.37
2012	5.49	9.01	13.86
2013	5.59	7.87	12.86

Table 4. Sanitary Sewer Overflows Discharges

Year	Number
2009	2
2010	4
2011	3
2012	2
2013	3

Table 5. Effluent Characterization Using Ohio EPA data

Parameter	5/27/14	5/11/2009
Barium	51	50
Copper	3.6	7.3
Iron	853	ND (50)
Magnesium (mg/L)	23	27
Manganese	ND (10)	51
Nickel	2.4	2.7
Strontium	350	434
Zinc	32	42
Sodium	113	294
Chloride	166	446
Potassium	7	17
Nitrite+Nitrate (mg/L)	5.72	5.77
Total Filterable Residue (mg/L)	668	1190
Phosphorus (mg/L)	0.269	1.45
Total Kjeldahl Nitrogen (mg/L)	0.89	1.97
Arsenic	ND (2)	4.4
Bromomethane	ND (0.5)	1.24
Chloroform	ND (0.5)	0.87
Toluene	ND (0.5)	0.63

ND = not-detected (analytical method detection limit)

Table 6. Effluent Characterization Using Self-Monitoring Data

Parameter	Season	Units	Current Permit Conc. Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50 th	95 th	
<u>Outfall 001</u>								
Water Temperature	Annual	°C	-- Monitor Only --		1258	20	25	13-26
Dissolved Oxygen	Annual	mg/L	Not Less than 5.4		1258	7.2	8.1	2.7-9.2
Total Suspended Solids	Annual	mg/L	17	25	756	4.5	11.1	1-344
Oil and Grease	Annual	mg/L	Not More than 10		61	0	0	0-3.19
Ammonia	Summer	mg/L	0.50	0.80	396	0.086	1.08	0-10.1
Ammonia	Winter	mg/L	1.3	2.0	369	0.045	0.419	0-8.46
Total Kjeldahl Nitrogen	Annual	mg/L	-- Monitor Only --		63	1.45	3.98	0-7.1
Nitrite Plus Nitrate	Annual	mg/L	-- Monitor Only --		60	7.92	11.7	0.34-12.4
Phosphorus	Summer	mg/L	1.0	1.5	254	1.15	2.35	0.1-6.7
Phosphorus	Winter	mg/L	-- Monitor Only --		254	1.15	2.35	0.1-6.7
Nickel	Annual	µg/L	-- Monitor Only --		20	0	0.485	0-9.69
Zinc	Annual	µg/L	-- Monitor Only --		20	37.5	61.9	21.4-79
Cadmium	Annual	µg/L	-- Monitor Only --		20	0	0.461	0-9.21
Lead	Annual	µg/L	-- Monitor Only --		41	0	0	0-7.65
Chromium	Annual	µg/L	-- Monitor Only --		20	0	0.505	0-10.1
Copper	Annual	µg/L	-- Monitor Only --		41	0	13	0-25
Dissolved Hexavalent Chromium	Annual	µg/L #/100	-- Monitor Only --		48	0	20.3	0-41
<i>E. coli</i>	Annual	mL	126	284	186	1	80.8	0-760
Flow Rate	Annual	MGD	-- Monitor Only --		1826	5.9	9.02	2.96-16.4
Mercury	Annual	ng/L	-- Monitor Only --		60	1.36	3.61	0-6.37
Acute Toxicity, <i>C. dubia</i>	Annual	TU _a	-- Monitor Only --		3	0	0.18	0-0.2
Chronic Toxicity, <i>C. dubia</i>	Annual	TU _c	-- Monitor Only --		3	0	0	0-0
Acute Toxicity, <i>P. promelas</i>	Annual	TU _a	-- Monitor Only --		3	0	0	0-0
Chronic Toxicity, <i>P. promelas</i>	Annual	TU _c	-- Monitor Only --		3	0	0	0-0
pH, Maximum	Annual	S.U.	Not More than 9.0		1258	7.3	7.6	6.9-8.2
pH, Minimum	Annual	S.U.	Not Less than 6.5		1258	7.2	7.5	6.7-8.1
Total Filterable Residue	Annual	mg/L	-- Monitor Only --		29	0.91	1.05	0.584-1.06
CBOD 5 day	Summer	mg/L	8.0	12	751	3.64	8.58	0.47-17

Table 7. Projected Effluent Quality

Parameter	Units	# of Samples	# > MDL	Average PEQ	Maximum PEQ
<u>Self-Monitoring (DMR) Data</u>					
Ammonia-Summer	mg/L	264	263	0.391	0.856
Ammonia-Winter	mg/L	213	177	0.104	0.227
Nitrate + Nitrite ^A	mg/L	64	64	9.052	12.4
Phosphorus ^A	mg/L	265	265	2.449	3.662
Nickel ^A	µg/L	22	3	9.49	13.0
Zinc ^A	µg/L	22	22	56.75	75.59
Cadmium	µg/L	19	0	--	--
Lead	µg/L	37	1	6.143	8.415
Chromium	µg/L	20	1	10.32	14.14
Copper ^A	µg/L	43	16	11.81	19.20
Dissolved Hexavalent Chromium	µg/L	50	5	20.47	31.65
Total Residual Chlorine	µg/L	382	87	8.692	14.24
Mercury	ng/L	62	56	2.891	4.413
<u>Ohio EPA Data</u>					
Barium	µg/L	2	2	141.5	193.8
Iron	µg/L	2	1	2366.	3241.
Magnesium	mg/L	2	2	74.90	102.6
Manganese	µg/L	2	1	141.5	193.8
Strontium	µg/L	2	2	1204.	1649.
Sodium	mg/L	2	2	815.6	1117.
Chloride	mg/L	2	2	1237.	1695.
Potassium	mg/L	2	2	47.16	64.60
Total Filterable Residue	mg/L	2	2	3301.	4522.
Arsenic	µg/L	2	1	12.21	16.72
Bromomethane	µg/L	2	1	3.440	4.712
Chloroform ^B	µg/L	2	1	2.413	3.306
Toluene	µg/L	2	1	1.748	2.394
<u>Second PEQ Analysis</u>					
Total Filterable Residue - II	mg/L	31	31	1042	1428

^A DMR data combined with Ohio EPA data and/or Pretreatment Program data.

^B Carcinogen

Table 8. Summary of Acute and Chronic Toxicity Results

Date	<i>Ceriodaphnia Dubia</i>		<i>Pimephales promelas</i>	
	TU_a	TU_c	TU_a	TU_c
9/7/2011	0.2	AA	AA	AA
9/9/2012	AA	AA	AA	AA
9/23/2013	AA	AA	AA	AA
9/9/2014	AA	AA	AA	AA

AA = non-detection; analytical method detection limit of 0.2 TU_a, 1.0 TU_c
TU_a = acute toxicity unit
TU_c = chronic toxicity unit

Table 9. Use Attainment Table

Location	RM	AL Use Desig.	Attain. Status	Causes of Impairment	Sources of Impairment
LMR at US 48	32.9	EWH	FULL		
LMR at King's Mill Rd.	30.9	EWH	(FULL)		
LMR dst. Simpson Ck	27.9	EWH	FULL		
LMR upst. O'Bannon Ck	24.1	EWH	FULL		
LMR at Loveland-Kemper Rd	22.3	EWH	FULL		
LMR adj. Lake Isabella	20.6	EWH	FULL		
LMR at SR 126	17.7	EWH	FULL		
LMR at Newtown Rd.	8.1	EWH	FULL		
Muddy Creek upst. Mason WWTP	2.5	WWH	PARTIAL	Natural Conditions (Flow)	Natural
Muddy Creek dst. Mason WWTP	0.54	WWH	PARTIAL	Sedimentation/Siltation, Nutrient/Organic, Enrichment(Sewage) Biological Indicators	Municipal point source discharges
O'Bannon Creek at Gibson Rd.	4.37	WWH	PARTIAL	Natural Conditions (Flow)	Natural
O'Bannon Creek at SR 48.	0.26	WWH	FULL		
Sycamore Creek dst. N. Fk. Sycamore Ck.	0.50	WWH	FULL		
Sycamore Creek dst. Sycamore Ck. WWTP	0.10	WWH	FULL		

LMR = Little Miami River, WWTP = Wastewater Treatment Plant, EWH = Exceptional Warmwater Habitat, WWH = Warmwater Habitat, dst. = downstream, upst. = upstream, Ck = Creek

Table 10. Water Quality Criteria in the Study Area

Parameter	Units	Outside Mixing Zone Criteria			Maximum Aquatic Life	Inside Mixing Zone Maximum
		Average				
		Human Health	Agri-culture	Aquatic Life		
<u>All Streams</u>						
Arsenic	µg/L	--	100.	150.	340.	680.
Barium	µg/L	--	--	220.	2000.	4000.
Benzo(b)fluoranthene ^A	µg/L	0.49	--	--	--	--
Bis(2-ethylhexyl)phthalate ^A	µg/L	59.	--	8.4	1100.	2100.
Bromomethane	µg/L	4000.	--	16.	38.	75.
Total Residual Chlorine	µg/L	--	--	11.	19.	38.
Chloroform ^A	µg/L	4700.	--	140.	1300.	2600.
Dissolved Hexavalent Chromium	µg/L	--	--	11.	16.	31.
Free Cyanide	µg/L	220000.	--	12.	46.	92.
Dibenzo(a,h)anthracene ^A	µg/L	0.49	--	--	--	--
Ideno(1,2,3-c,d)pyrene ^A	µg/L	0.49	--	--	--	--
Iron	µg/L	--	5000.	--	--	--
Mercury ^B	ng/L	12.	10000.	910.	1700.	3400.
Molybdenum	µg/L	--	--	20000.	190000.	370000.
Nitrate+Nitrite	mg/L	--	100.	--	--	--
Selenium	µg/L	11000.	50.	5.0	--	--
Strontium	µg/L	--	--	21000.	40000.	81000.
Thallium	µg/L	6.3	--	17.	79.	160.
Toluene	µg/L	200000.	--	62.	560.	1100.
Total Filterable Residue	mg/L	--	--	1500.	--	--
<u>Little Miami River & Simpson Creek; Hardness = 298. mg/L</u>						
Cadmium	µg/L	--	50.	5.8	15.	31.
Chromium,	µg/L	--	100.	210.	4400.	8800.
Copper	µg/L	1300.	500.	24.	39.	78.
Lead	µg/L	--	100.	26.	490.	980.
Nickel	µg/L	4600.	200.	130.	1200.	2400.
Silver	µg/L	--	--	1.3	10.	21.
Zinc	µg/L	69000.	25000.	300.	300.	600.

^A Carcinogen

^B Bioaccumulative Chemical of Concern (BCC)

Table 11. Instream Conditions and Discharger Flow

Parameter	Units	Value				
		Little Miami	Muddy Creek	Simpson Creek	O'Bannon Creek	Sycamore Creek
7Q ₁₀ annual	cfs	58.8 ^A	0.0 ^B	0.0 ^B	0.0 ^B	0.0 ^B
1Q ₁₀ annual	cfs	46.9 ^A	0.0 ^B	0.0 ^B	0.0 ^B	0.0 ^B
30Q ₁₀ summer	cfs	78.9 ^A	0.0 ^B	0.0 ^B	0.02 ^B	0.01 ^B
winter	cfs	224. ^A	0.62 ^B	0.06 ^B	2.61 ^B	1.46 ^B
Q _{HM} annual	cfs	377. ^A	0.12 ^B	0.0 ^B	0.49 ^B	0.27 ^B
Mixing Assumption	% average	100	100	100	100	100
	% maximum	100	100	100	100	100
Instream Hardness	mg/L	298. ^{C D}	250. ^{C D}	298. ^{C D}	220. ^{C D}	286. ^{C D}
Background Water Quality	µg/L					
Arsenic		1.0 ^C	3.1 ^C	2.6 ^C	1.2 ^C	1.0 ^C
Barium		84. ^C	64.7 ^C	40. ^C	47.8 ^C	40. ^C
Benzo(b)fluoranthene		0.0 ^E				
Bis(2-ethylhexyl)phthalate		0.0 ^E				
Cadmium		0.0 ^E				
Total Residual Chlorine		0.0 ^E				
Dissolved Hexavalent Chromium		0.0 ^E				
Chromium		15. ^C	0.0 ^F	0.0 ^F	0.0 ^F	0.0 ^F
Copper		5.0 ^C	0.0 ^F	4.5 ^C	6.2 ^C	5.0 ^C
Free Cyanide		0.0 ^E				
Dibenzo(a,h)anthracene		0.0 ^E				
Ideno(1,2,3-c,d)pyrene		0.0 ^E				
Iron		453. ^C	198. ^C	258. ^C	330. ^C	248. ^C
Lead		1.0 ^C	0.0 ^F	0.0 ^F	1.7 ^C	1.0 ^C
Molybdenum		0.0 ^E				
Nickel		20. ^C	0.0 ^F	0.0 ^F	0.0 ^F	0.0 ^F
Nitrate+Nitrite (mg/L)		2.63 ^C	0.07 ^C	0.65 ^C	0.28 ^C	0.1 ^C
Selenium		0.0 ^F				
Silver		0.0 ^E				
Thallium		0.0 ^E				
Total Filterable Residue (mg/L)		414. ^C	630. ^C	450. ^C	297. ^C	360. ^C
Zinc		5.0 ^C	0.0 ^F	8.7 ^C	7.0 ^C	5.0 ^C

A. Based on USGS gage #03245500, LMR at Milford data (10/1/1975 - 9/30/2013)

B. Based on USGS gage #03246500, East Fork LMR at Williamsburg data (1949-53; 1960-74)

C. STORET data (1997-2008)

D. Discharge Monitoring Report station 901 data (2009-2014)

E. No representative data available.

F. All site specific data is less than detection.

* LMR = Little Miami River, MDL = analytical method detection limit, USGS = United States Geological Survey

Table 12. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria

Parameter	Units	Average		Maximum Aquatic Life	Inside Aquatic Life	Mixing Zone Maximum
		Human Health	Agri Supply			
Arsenic ^B	µg/L	--	100.	150.	340.	680.
Barium	µg/L	--	--	220.	2000.	4000.
Cadmium ^B	µg/L	--	50. ^A	6.5	18.	36.
Total Residual Chlorine	µg/L	--	--	11.	19.	38.
Chromium ^B	µg/L	--	100.	240.	4900.	9900.
Dissolved Hexavalent Chromium	µg/L	--	--	11.	16.	31.
Copper	µg/L	1300. ^A	500. ^A	27.	45.	89.
Free Cyanide ^B	µg/L	220000. ^A	--	12.	46.	92.
Iron	µg/L	--	5000.	--	--	--
Lead ^B	µg/L	--	100.	31.	590.	1200.
Mercury ^{B,C}	ng/L	12.	10000. ^A	910.	1700.	3400.
Molybdenum ^B	µg/L	--	--	20000.	190000.	370000.
Nickel ^B	µg/L	4600. ^A	200.	150.	1300.	2700.
Selenium ^B	µg/L	11000.	50.	5.0	--	--
Silver ^B	µg/L	--	--	1.3	13.	26.
Total Filterable Residue	mg/L	--	--	1500.	--	--
Zinc ^B	µg/L	69000. ^A	25000. ^A	340.	340.	680.

^A Allocation must not exceed the Inside Mixing Zone Maximum.

^B This parameter would not require a WLA based on reasonable potential procedures, but allocation requested by for use in pretreatment program.

^C Bioaccumulative Chemical of Concern (BCC); no mixing zone allowed after 11/15/2010, WQS must be met at end-of-pipe, unless requirements for an exception are met as listed in 3745-2-08(L).

Table 13. Parameter Assessment

Group 1: Due to a lack of numeric criteria, the following parameters were not evaluated at this time.

Chloride	Magnesium	Manganese
Phosphorus	Potassium	Sodium

Group 2: PEQ < 25% of WQS or all data below minimum detection limit; WLA not required. No limit recommended, monitoring optional.

Arsenic	Bromomethane	Cadmium
Chloroform	Chromium	Free Cyanide
Lead	Mercury	Molybdenum
Nickel	Nitrate+Nitrite	Selenium
Silver	Strontium	Toluene
Zinc		

Group 3: PEQ_{max} < 50% of maximum PEL and PEQ_{avg} < 50% of average PEL. No limit recommended, monitoring optional.

Ammonia-Summer	Copper	Iron
Ammonia-Winter		

Group 4: PEQ_{max} ≥ 50% but <100% of the maximum PEL or PEQ_{avg} ≥ 50% but < 100% of the average PEL. Monitoring is appropriate.

Barium	Total Filterable Residue (Second Iteration)
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Group 5: Maximum PEQ ≥ 100% of the maximum PEL or average PEQ ≥ 100% of the average PEL, or either the average or maximum PEQ is between 75 and 100% of the PEL and certain conditions that increase the risk to the environment are present. Limit recommended.

Limits to Protect Numeric Water Quality Criteria

Parameter	Units	Applicable Period	Recommended Effluent Limits	
			Average	Maximum
Total Residual Chlorine	µg/L	summer only	11.	19.
Dissolved Hexavalent Chromium	µg/L	annual	11.	16.
Total Filterable Residue	mg/L	annual	1500.	--

PEL = preliminary effluent limit, PEQ = projected effluent quality, WLA = wasteload allocation, WQS = water quality standard

Table 14. Final Effluent Limits for Outfall 001

Parameter	Units	Concentration		Loading (kg/day) ^a		Basis ^b
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Water Temperature	°C	----- Monitor -----				M ^c
Flow Rate	MGD	----- Monitor -----				M ^c
pH	SU	6.5 - 9.0		--	--	WQS
Dissolved Oxygen	mg/L	----- Not less than 5.4 -----				EP/PD
Total Suspended Solids	mg/L	17	25 ^d	772	1136 ^d	EP/PD
Oil & Grease	mg/L	--	10	--	--	WQS
Ammonia						
Summer	mg/L	0.50	0.80 ^d	23	36 ^d	EP/PD
Winter	mg/L	1.3	2.0 ^d	59	91 ^d	EP/PD
Total Kjeldahl Nitrogen	mg/L	----- Monitor -----				EP/M
Nitrate+Nitrite	mg/L	----- Monitor -----				EP/M
Phosphorus						
Summer	mg/L	1.0	1.5 ^d	45	68 ^d	BPJ/EP
Winter	mg/L	----- Monitor -----				EP/M
Barium	µg/L	----- Monitor -----				RP
Total Filterable Residue	mg/L	----- Monitor -----				RP
Nickel	µg/L	----- Monitor -----				EP/M
Zinc	µg/L	----- Monitor -----				EP/M
Cadmium	µg/L	----- Monitor -----				EP/M
Lead	µg/L	----- Monitor -----				EP/M
Chromium	µg/L	----- Monitor -----				EP/M
Copper	µg/L	----- Monitor -----				EP/M
Hexavalent Chromium (Dissolved)	µg/L	----- Monitor -----				RP
Mercury	ng/L	----- Monitor -----				EP/M
<i>E. coli</i>	#/100 mL	126	284 ^d	--	--	WQS
Carbonaceous Biochemical Oxygen Demand (5 day)	mg/L	8.0	12 ^d	363	545 ^d	EP/PD
Barium	µg/L	----- Monitor -----				RP
Chronic Toxicity						
<i>Ceriodaphnia dubia</i>	TU _c	----- Monitor -----				WET
<i>Pimephales promelas</i>	TU _c	----- Monitor -----				WET
Acute Toxicity						
<i>Ceriodaphnia dubia</i>	TU _a	----- Monitor -----				WET
<i>Pimephales promelas</i>	TU _a	----- Monitor -----				WET

^a Effluent loadings based on average design discharge flow of 12.0 MGD.

- ^b Definitions: **BPJ** = Best Professional Judgment
 EP = Existing Permit
 M = Division of Surface Water NPDES Permit Guidance 1: Monitoring frequency requirements for Sanitary Discharges
 PD = Plant Design
 RP = Reasonable Potential for requiring water quality-based effluent limits and monitoring requirements in permits (3745-33-07(A))
 WET = Whole Effluent Toxicity (OAC 3745-33-07(B))
 WQS = Ohio Water Quality Standards (OAC 3745-1)
- ^c Monitoring of flow and other indicator parameters is specified to assist in the evaluation of effluent quality and treatment plant performance.
- ^d 7 day average limit.