National Pollutant Discharge Elimination System (NPDES) Permit Program

# FACT SHEET

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

Public Notice No.: 15-05-039
Public Notice Date: May 22, 2015
Comment Period Ends: June 22, 2015

Ohio EPA Permit No.: **1PC00005*ID**
Application No.: **OH0020451**

Name and Address of Applicant:
**City of Milford**
**745 Center Street, Suite 200**
**Milford, Ohio 45150**

Name and Address of Facility Where Discharge Occurs:
**City of Milford Wastewater Treatment Plant**
**100 Bay Road**
**Milford, Ohio 45150**
**Clermont County**

Receiving Water: East Fork Little Miami River

Subsequent Stream Network: Little Miami River, 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 effluent limits (WQBELs) 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: flow rate, water temperature, dissolved oxygen, pH, total suspended solids, oil and grease, ammonia, total Kjeldahl nitrogen (TKN), nitrite+nitrate, phosphorus, nickel, zinc, cadmium, lead, total chromium, *Escherichia coli*, total residual chlorine, mercury, acute toxicity testing (*Ceriodaphnia dubia* and *Pimaphales promelas)*, and 5-day carbonaceous biological oxygen demand ($CBOD_5$).

New monitoring is proposed for total filterable residue (total dissolved solids) and shall occur on a biweekly basis. No effluent data is available for this parameter, which is an emerging water quality issue for municipal wastewater treatment plants. The purpose of the monitoring is to obtain data on the level and variability of total filterable residue in the effluent.

Monitoring frequency for copper will be reduced from monthly to quarterly. Recent plant data has shown that this parameter has a low risk of exceeding water quality standards for East Fork Little Miami River.

Annual acute toxicity monitoring for *Ceriodaphnia dubia* and *Pimaphales promelas* are 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.

TKN, nitrite+nitrate, and phosphorus are being added to the downstream monitoring station 901. According to the "Permit Guidance 1: Monitoring Frequency Requirements for Sanitary Discharges" document, downstream monitoring is required for nutrients where a stream is a designated Exceptional Warmwater Habitat (EWH).

In addition to outfall 586, which monitors the amount of sludge hauled to a landfill, outfall 581 will be added to the permit. Outfall 581 applies to sludge disposed by land application.

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; limits below quantification; whole effluent toxicity (WET) testing; 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 Phoebe Low, 614-644-2134, Phoebe.Low@epa.ohio.gov.

Information Regarding Certain Water Quality Based Effluent Limits

This draft permit may contain proposed 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

Milford WWTP discharges to East Fork Little Miami River at River Mile (RM) 1.6. Figure 1 shows the approximate location of the facility.

This segment of the East Fork Little Miami River is described by Ohio EPA River Code: 11-100, US EPA River Reach Number: 05090202-002, County: Clermont, Ecoregion: Interior Plateau. The East Fork Little Miami River is designated for the following uses under Ohio's WQS (OAC 3745-1-18): Exceptional Warmwater Habitat (EWH), Agricultural Water Supply (AWS), Industrial Water Supply (IWS), and Class A Primary Contact Recreation (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 Recreation - generally waters too shallow for swimming or canoeing).

Water supply uses are defined by the actual or potential use of the waterbody. PWS 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

Milford WWTP was constructed in 1959 and last upgraded in 2007. The average daily design flow is 1.2 million gallons per day (MGD) and the peak hydraulic capacity is 3.83 MGD. Milford WWTP serves the City of Milford and Miami Township for a total of 2,130 customers. Milford WWTP has the following treatment processes which are shown on Figure 2:

- Mechanical Screening by a Continuous Chain
- Oxidation Ditches
- Secondary Clarifiers
- Post Aeration
- Disinfection by Chlorination
- Dechlorination by Sulfur Dioxide

Milford WWTP does not have any bypasses. Milford WWTP has 100% separated sewers and 0% combined sewers in the collection system. Milford WWTP does not have an approved pretreatment program and does not have any industrial users.

Milford WWTP utilizes the following sewage sludge treatment processes:

- Aerobic Digestion
- Dewatering by a Filter Press
- Addition of Polymer

Treated sludge is disposed of in a municipal landfill, though Milford WWTP anticipates disposing sludge by land application within this permit cycle. Therefore, outfall 581 will be added to the permit to monitor sludge being land applied. Based on the past five years of data, Milford WWTP has an annual discharge of less than 320 dry tons of sludge and should continue sludge monitoring on a yearly basis. Table 1shows the last five years of sludge removed from Milford WWTP.

Description of Existing Discharge

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

Milford WWTP estimates an infiltration/inflow (I/I) rate of 0.1255 MGD but checks the system and lift stations on a regular basis in order to minimize I/I. Milford WWTP has also completed 2,151 feet of trench-less pipe relining in 2012 and 3,664 feet in 2013. Down spouts were also eliminated in 2014. The average annual effluent flow rate for Milford for the previous five years is presented on Table 3.

Milford WWTP reports SSOs at station 300. Between January 2009 and December 2014, there were a total of six SSO occurrences.

Under the provisions of 40 CFR 122.21(j), the Director has waived the requirement for submittal of expanded effluent testing data as part of the NPDES renewal application. Ohio EPA has access to substantially identical information from Ohio EPA effluent testing conducted.

Table 4 presents a summary of unaltered Discharge Monitoring Report (DMR) data for outfall 001. Data are presented for the period January 2009 through November 2014, and current permit limits are provided for comparison.

Table 5 summarizes the chemical specific data for outfall 001 by presenting the average and maximum PEQ values.

Table 6 summarizes the results of acute WET tests of the final effluent.

Assessment of Impact on Receiving Waters

East Fork Little Miami River has been identified as a priority impaired water on Ohio's 303(d) list.

The attainment status of the Little Miami River Watershed is reported in the *Ohio 2012 Integrated Water Quality Monitoring and Assessment Report*. 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 7) 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.

The most recent data available for the Little Miami River Watershed is from 2012. The Little Miami River Watershed is impaired for nutrients and bacteria due to the following: oxygen, dissolved natural conditions (flow or habitat), direct habitat alterations, and bacteria. A Total Daily Maximum Load (TMDL) study is in process and is expected to be completed in 2015. The full Integrated Report can be found at this website: http://epa.ohio.gov/dsw/document_index/psdindx.aspx.

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 Milford 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 November 2014 |

*Statistical Outliers*
The data were examined, and the following values were removed from the evaluation to give a more reliable PEQ: Cadmium – 18.5 µg/L, 8/16/2012, high statistical outlier.

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 5).

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 11 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 Clermont County Lower East Fork WWTP was considered interactive with Milford WWTP (see Figure 3).

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 9, 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 4 and Table 5. The WLA results to maintain all applicable criteria are presented in Table 10.

*Whole Effluent Toxicity WLA*
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 Milford WWTP, the WLA values are 1.0 $TU_a$ and 27.9 $TU_c$.

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/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.

However, the facility is not required to monitor for chronic toxicity because the stream dilution ratio is more than twenty to one [OAC 3745-33-07(B)(11)(c)]. According to the data in Table 9, the dilution ratio for Milford WWTP to the Little Miami East Fork River is approximately 22 to one.

$$Stream\ Dilution\ Ratio = \frac{7Q10 + Milford\ WWTP\ Flow}{Milford\ WWTP\ Flow} = \frac{38.85\ cfs + 1.86\ cfs}{1.86\ cfs} = 21.88$$

<u>Reasonable Potential/ Effluent Limits/Hazard Management Decisions</u>

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 5. The average PEL ($PEL_{avg}$) is compared to the average PEQ ($PEQ_{avg}$) from Table 5 and the $PEL_{max}$ is compared to the $PEQ_{max}$. Based on the calculated percentage of the allocated value [($PEQ_{avg} \div PEL_{avg}$) X 100, or ($PEQ_{max} \div PEL_{max}$) X 100)], the parameters are assigned to Group 3, 4, or 5. The groupings are listed in Table 11.

The final effluent limits are determined by evaluating the groupings in conjunction with other applicable rules and regulations. Table 12 presents the final effluent limits and monitoring requirements proposed for Milford 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 are proposed to continue in order to evaluate the performance of the treatment plant.

*Dissolved Oxygen, Total Suspended Solids, Ammonia, and $CBOD_5$*
The limits proposed for dissolved oxygen, total suspended solids, ammonia (summer and winter), and $CBOD_5$ are all based on plant design criteria. These limits are protective of WQS.

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

*Group 5*
The Ohio EPA risk assessment (Table 11) does not place any parameter in Group 5. This placement, as well as the data in Tables 4 and 5, indicates that none of the parameters have a reasonable potential to exceed WQS exists and that no additional limits are necessary to protect water quality.

*Mercury and Total Filterable Residue (Total Dissolved Solids)*
The Ohio EPA risk assessment (Table 11) places mercury and total filterable residue in Group 4. This placement, as well as the data in Tables 4 and 5, 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). Limits for mercury are proposed to be removed but the monitoring frequency will continue on a monthly basis. Monitoring for total filterable residue will be added to the permit and required on a biweekly basis.

*Free Cyanide*
The Ohio EPA risk assessment (Table 11) places free cyanide in Group 2. This placement, as well as the data in Tables 5 and 6, support that this parameter does not have the reasonable potential to contribute to WQS exceedances. Monitoring for this parameter will not be added in the renewed permit.

*Arsenic, Ammonia, Cadmium, Total Residual Chlorine, Chromium, Dissolved Hexavalent Chromium, Copper, Lead, Nickel, Nitrate+Nitrite, and Zinc*
The Ohio EPA risk assessment (Table 11) places the following parameters in Groups 2 and 3: arsenic, ammonia (summer and winter), cadmium, total residual chlorine, total chromium, dissolved hexavalent chromium, copper, lead, nickel, nitrate+nitrite, and zinc. This placement, as well as the data in Tables 4 and 5, support that these parameters do not have the reasonable potential to contribute to WQS exceedances. Except for total residual chlorine (see paragraph below) and copper, limits are not necessary and the monitoring frequencies are proposed to continue. Copper will have its monitoring frequency reduced from monthly to quarterly due to low risk of exceeding the water quality standards.

*Total Residual Chlorine*
Even though the Ohio EPA risk assessment (Table 11) classifies total residual chlorine as a Group 2 parameter, a limit is still required based on the WLA limited by Inside Mixing Zone Maximum (Table 10). To ensure that data is obtained that allows Ohio EPA to make water quality-related decisions regarding total residual chlorine, a special condition is proposed in Part II of the permit that provides guidance on the analytical method detection limits (MDLs) the permittee must use in analyzing for these contaminants.

*Phosphorus*
Monitoring for phosphorus shall continue on a weekly basis in order to document the nutrient contribution to the Ohio River Basin.

*Whole Effluent Toxicity Reasonable Potential*
Based on evaluating the WET data presented in Table 6 and other pertinent data under the provisions of OAC 3745-33-07(B), Milford WWTP is placed in Category 3 with respect to WET. No limits are proposed, but acute testing for *Pimephales promelas* and *Ceriodaphnia dubia* is proposed to continue on an annual basis for the duration of the permit.

*Additional Monitoring Requirements*
New monitoring for TKN, nitrite+nitrate, and total phosphorus are being proposed at downstream monitoring station 901. According to the "Permit Guidance 1: Monitoring Frequency Requirements for Sanitary Discharges" document found in the link below, downstream monitoring is required for nutrients where a stream is a designated EWH.
http://www.epa.ohio.gov/portals/35/guidance/permit1.pdf

*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 and land application.

Other Requirements

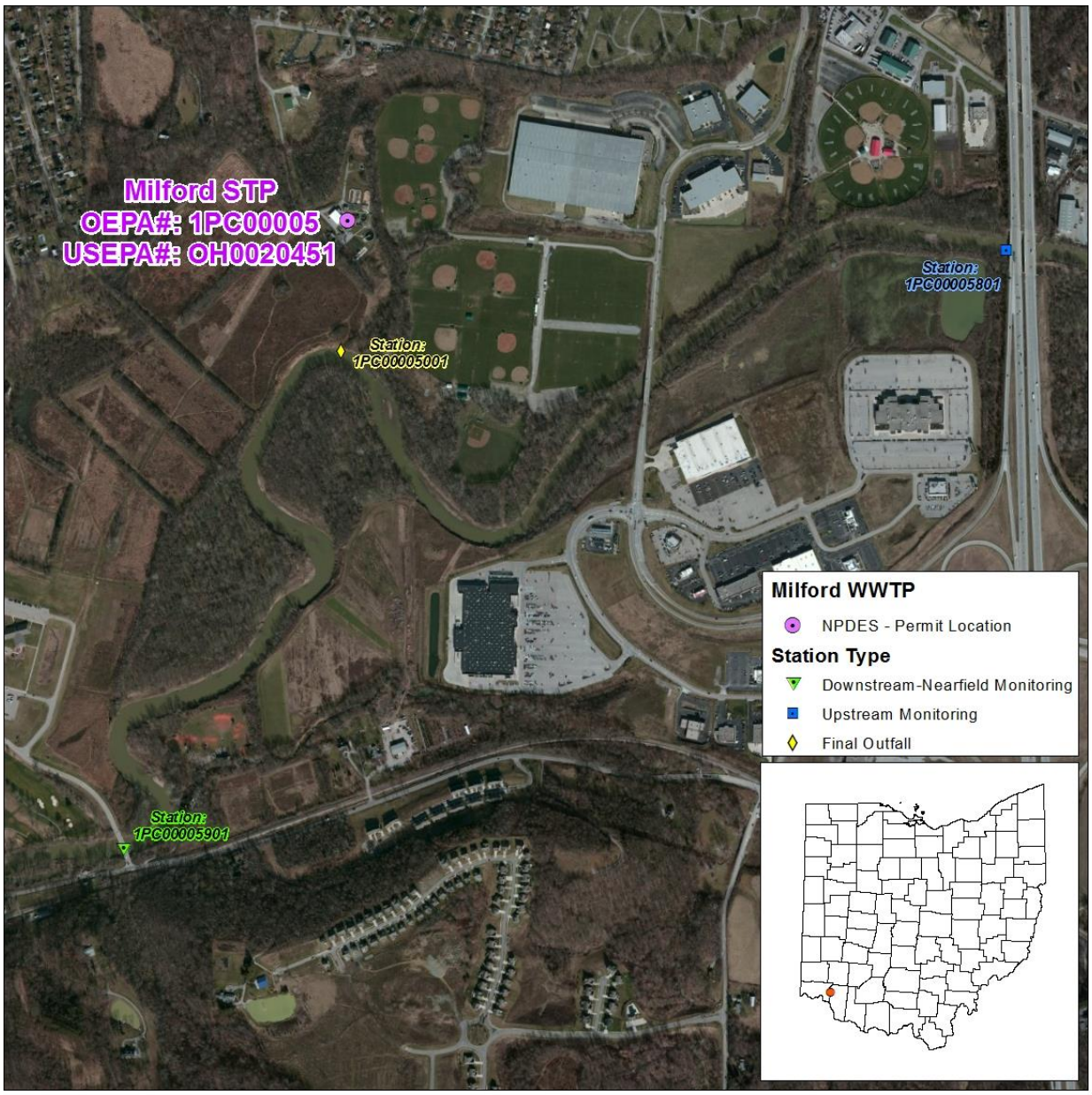
*Sanitary Sewer Overflow Reporting*
Provisions for reporting SSOs are again proposed in this permit. These provisions include: the reporting of the system-wide number of SSO occurrences on monthly operating reports; telephone notification of Ohio EPA and the local health department, and 5-day follow 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 Milford WWTP to have a Class II 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.

*Storm Water*
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, Milford 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) Milford 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 maintain a sign at each outfall to the East Fork Little Miami River providing information about the discharge. Signage at outfalls is required pursuant to OAC 3745-33-08(A).

**Figure 1. Location of Milford Wastewater Treatment Plant**




Milford Sanitation Treatment Plant (STP) is synonymous to Milford WWTP.

**Figure 2. Diagram of Wastewater Treatment System**

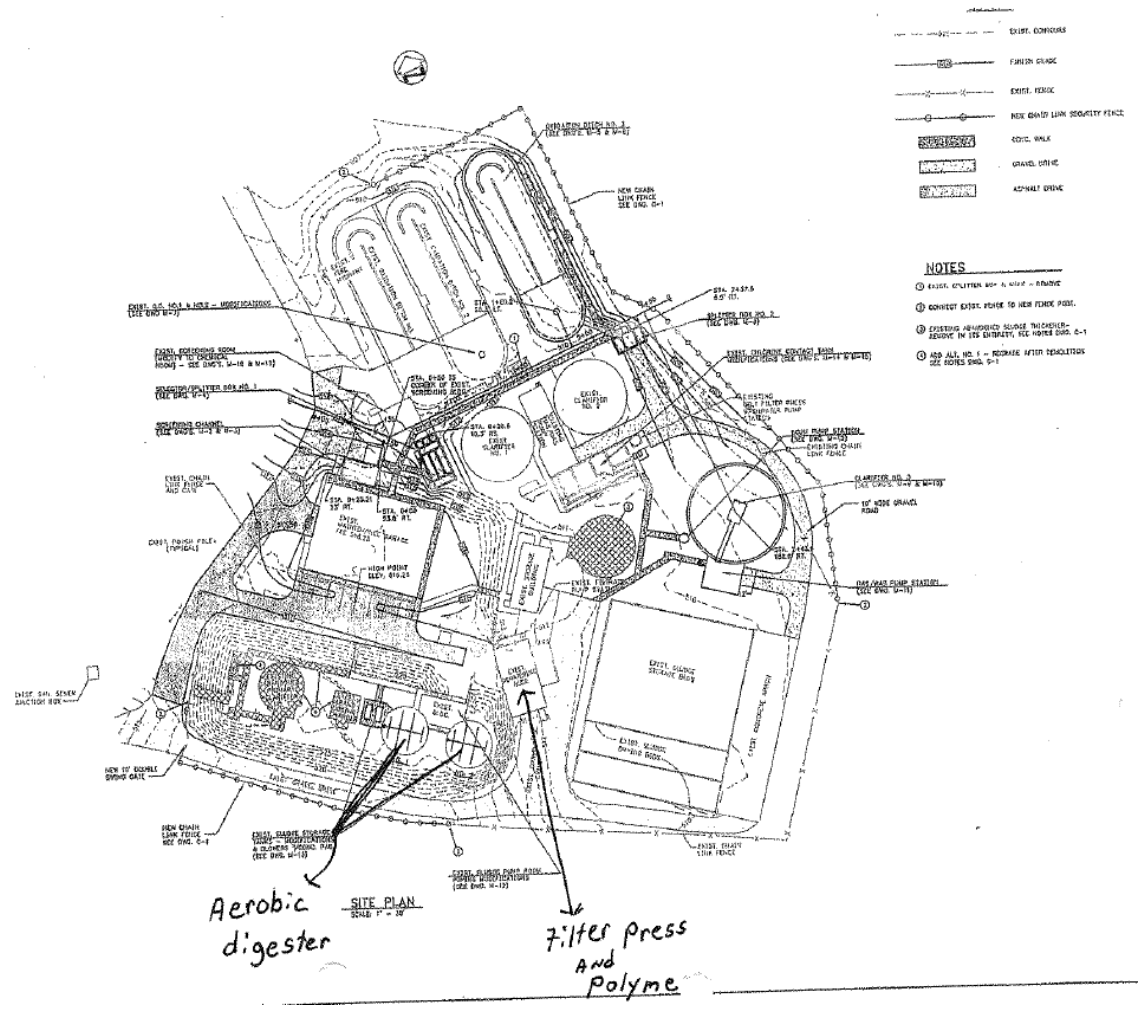
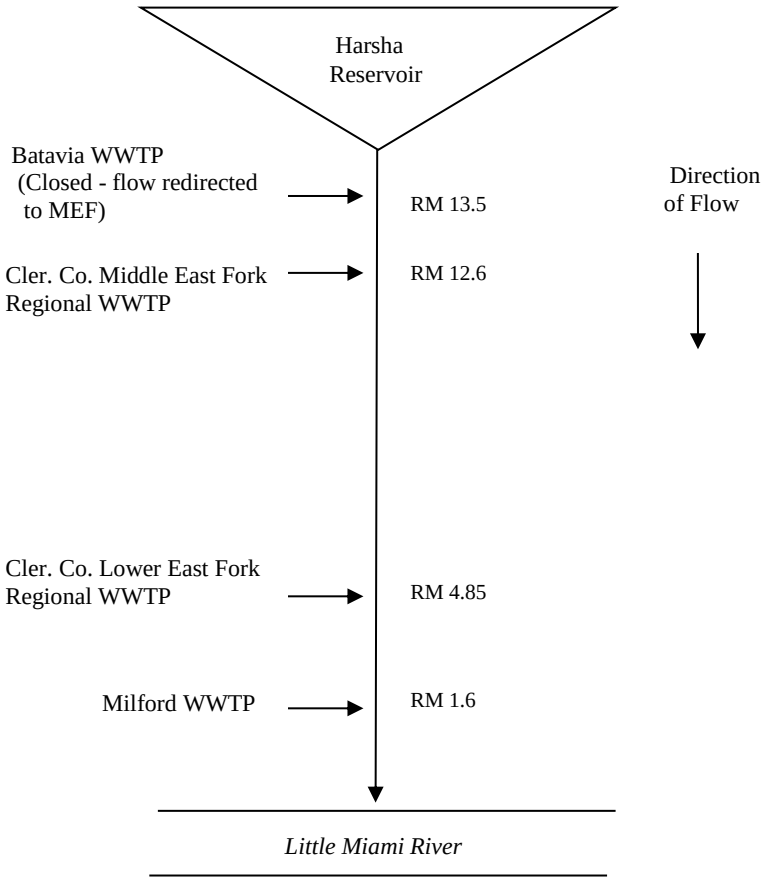


**Figure 3. East Fork Little Miami River Study Area**




Batavia WWTP closed on January 2013
Cler. Co. = Clermont County
MEF = Middle East Fork
RM = River Mile
WWTP = Wastewater Treatment Plant

**Table 1. Sewage Sludge Removal**

| Year | Dry Tons Removed |
|---|---|
| 2009 | 107.70 |
| 2010 | 72.416 |
| 2011 | 72.250 |
| 2012 | 99.270 |
| 2013 | 99.270 |
| 2014 | 86.400 |

**Table 2. Effluent Violations for Outfall 001**

| Parameter | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|---|
| pH (minimum) | 0 | 0 | 0 | 1 | 0 | 0 |
| Oil & Grease | 0 | 0 | 0 | 0 | 1 | 0 |
| Ammonia | 0 | 0 | 0 | 0 | 0 | 1 |
| *Total* | *0* | *0* | *0* | *1* | *1* | *1* |

**Table 3. Average Annual Effluent Flow Rates**

| Year | Annual Flow in MGD | | |
|---|---|---|---|
| | 50th Percentile | 95th Percentile | Maximum |
| 2009 | 0.665 | 0.9648 | 1.644 |
| 2010 | 0.626 | 0.898 | 1.56 |
| 2011 | 0.689 | 1.4498 | 4.224 |
| 2012 | 0.654 | 1.067 | 2.215 |
| 2013 | 0.689 | 1.0976 | 2.173 |
| 2014 | 0.628 | 1.0056 | 2.118 |

MGD = million gallons per day

**Table 4. Effluent Characterization Using Self-Monitoring Data**

| Parameter | Season | Units | Current Permit Limits | | # Obs. | Percentiles | | Data Range |
|---|---|---|---|---|---|---|---|---|
| | | | 30 Day | Daily | | 50th | 95th | |
| | | | | | | | | |
| **Outfall 001 - Effluent** | | | | | | | | |
| Water Temperature | Annual | °C | - - - - Monitor - - - - | | 1277 | 19.7 | 25.8 | 0-27.4 |
| Dissolved Oxygen | Annual | mg/L | - - 5.0 Minimum - - | | 1276 | 8.32 | 10.5 | 5.14-15.5 |
| Total Suspended Solids | Annual | mg/L | 18.8 | 28.1 a | 731 | 3.5 | 8 | 0-24 |
| | | kg/day | 85 | 128 a | - | - | - | - |
| Oil and Grease | Annual | mg/L | - - 10 Maximum - - | | 122 | 0 | 0 | 0-11.4 |
| Ammonia | Annual | mg/L | 9.4 | 14 a | 731 | 0.115 | 5.86 | 0-18.1 |
| | | kg/day | 42.6 | 63.9 a | - | - | - | - |
| Total Kjeldahl Nitrogen | Annual | mg/L | - - - - Monitor - - - - | | 61 | 1.23 | 7.7 | 0-14.5 |
| Nitrite + Nitrate | Annual | mg/L | - - - - Monitor - - - - | | 61 | 15.4 | 24.8 | 0.102-36.3 |
| Phosphorus | Annual | mg/L | - - - - Monitor - - - - | | 243 | 2.56 | 7 | 0-26.2 |
| Nickel | Annual | µg/L | - - - - Monitor - - - - | | 26 | 0 | 2.53 | 0-3.1 |
| Zinc | Annual | µg/L | - - - - Monitor - - - - | | 25 | 47.7 | 64.6 | 1.4-75.1 |
| Cadmium | Annual | µg/L | - - - - Monitor - - - - | | 25 | 0 | 0 | 0-18.5 |
| Lead | Annual | µg/L | - - - - Monitor - - - - | | 25 | 0 | 0 | 0-7.7 |
| Chromium, Total | Annual | µg/L | - - - - Monitor - - - - | | 25 | 0 | 0 | 0-1 |
| Copper | Annual | µg/L | - - - - Monitor - - - - | | 61 | 6.7 | 12.9 | 0-16.5 |
| Chromium, Dissolved Hexavalent | Annual | µg/L | - - - - Monitor - - - - | | 8 | 0 | 0 | 0-0 |
| *E. coli* | Summer | #/100 mL | 126 | 284 a | 348 | 0 | 130 | 0-1700 |
| Flow Rate | Annual | MGD | - - - - Monitor - - - - | | 1856 | 0.662 | 1.12 | 0.187-4.22 |

| Parameter | Season | Units | Current Permit Limits | | # Obs. | Percentiles | | Data Range |
|---|---|---|---|---|---|---|---|---|
| | | | 30 Day | Daily | | 50th | 95th | |
| **Outfall 001 – Effluent (continued)** | | | | | | | | |
| Chlorine, Total Residual | Summer | mg/L | - | 0.038 | 664 | 0 | 0 | 0-0.008 |
| Mercury, Total (Low Level) | Annual | ng/L | - - - - Monitor - - - - | | 64 | 2.03 | 9.01 | 0-13.4 |
| Acute Toxicity, *Ceriodaphnia dubia* | Annual | TUa | - - - - Monitor - - - - | | 5 | 0 | 1.01 | 0-1.26 |
| Acute Toxicity, *Pimephales promelas* | Annual | TUa | - - - - Monitor - - - - | | 5 | 0 | 0 | 0-0 |
| pH, Maximum | Annual | S.U. | - - 9.0 Maximum - - | | 1110 | 7.26 | 7.72 | 6.61-8.54 |
| pH, Minimum | Annual | S.U. | - - 6.5 Maximum - - | | 1110 | 7.14 | 7.49 | 6.47-8.29 |
| CBOD 5 day | Annual | mg/L | 15.6 | 25 a | 722 | 2.7 | 5.5 | 0-13.3 |
| | | kg/day | 71 | 114 a | - | - | - | - |
| | | | | | | | | |
| **Outfall 300 – Sanitary Sewer Overflow** | | | | | | | | |
| Overflow Occurrence | Annual | No./Month | - - - - Monitor - - - - | | 12 | 0.0005 | 1 | 0-1 |
| | | | | | | | | |
| **Outfall 586 – Sludge Monitoring** | | | | | | | | |
| Sludge Fee Weight | Annual | Dry Tons | - - - - Monitor - - - - | | 5 | 99.3 | 106 | 72.3-107 |
| | | | | | | | | |
| **Outfall 601 - Influent** | | | | | | | | |
| pH | Annual | S.U. | - - - - Monitor - - - - | | 1276 | 7.27 | 7.53 | 6.86-7.8 |
| Total Suspended Solids | Annual | mg/L | - - - - Monitor - - - - | | 732 | 278 | 588 | 42-1300 |
| CBOD 5 day | Annual | mg/L | - - - - Monitor - - - - | | 724 | 249 | 334 | 0-2040 |

| Parameter | Season | Unit | Current Permit Limits | | # Obs. | Percentiles | | Data Range |
|---|---|---|---|---|---|---|---|---|
| | | | 30 Day | Daily | | 50th | 95th | |
| | | | | | | | | |
| **Outfall 801 – Upstream Monitoring** | | | | | | | | |
| Water Temperature | Annual | °C | - - - - Monitor - - - - | | 61 | 13.7 | 24.4 | 2.5-25.6 |
| Dissolved Oxygen | Annual | mg/L | - - - - Monitor - - - - | | 62 | 10.6 | 13.9 | 5.76-19.1 |
| pH | Annual | S.U. | - - - - Monitor - - - - | | 62 | 7.67 | 8.11 | 7.2-8.81 |
| Nitrogen, Ammonia (NH3) | Annual | mg/L | - - - - Monitor - - - - | | 62 | 0 | 0.151 | 0-7.82 |
| *E. coli* | Annual | #/100 mL | - - - - Monitor - - - - | | 30 | 210 | 5010 | 0-7100 |
| 48-Hr. Acute Toxicity *Ceriodaphnia dubia* | Annual | % Affected | - - - - Monitor - - - - | | 5 | 0 | 0.0008 | 0-0.001 |
| 96-Hr. Acute Toxicity *Pimephales promela* | Annual | % Affected | - - - - Monitor - - - - | | 5 | 0 | 9 | 0-10 |
| | | | | | | | | |
| **Outfall 901 – Downstream-Nearfield Monitoring** | | | | | | | | |
| Water Temperature | Annual | °C | - - - - Monitor - - - - | | 61 | 13.8 | 24.5 | 2.7-25.5 |
| Dissolved Oxygen | Annual | mg/L | - - - - Monitor - - - - | | 61 | 10.6 | 13.4 | 5.76-18.7 |
| pH | Annual | S.U. | - - - - Monitor - - - - | | 61 | 7.75 | 8.08 | 7.44-8.19 |
| Ammonia | Annual | mg/L | - - - - Monitor - - - - | | 61 | 0 | 0.163 | 0-1.08 |
| *E. coli* | Annual | #/100 mL | - - - - Monitor - - - - | | 29 | 250 | 6900 | 0-8000 |

CBOD 5 day = 5-Day Carbonaceous Biological Oxygen Demand

All values are based on annual records unless otherwise indicated. * = For minimum pH, 5th percentile shown in place of 50th percentile; ** = For dissolved oxygen, 5th percentile shown in place of 95th percentile; a = weekly average."

**Table 5. Projected Effluent Quality**

| Parameter | Units | Number of Samples | Number > MDL | PEQ Average | PEQ Maximum |
|---|---|---|---|---|---|
| Self-Monitoring (DMR) Data | | | | | |
| Ammonia (Summer) | mg/L | 288 | 184 | 3.111 | 4.021 |
| Ammonia (Winter) | mg/L | 204 | 92 | 8.687 | 11.9 |
| Cadmium | µg/L | 32 | 0 | -- | -- |
| Chromium | µg/L | 33 | 2 | 4.38 | 6.0 |
| Hexavalent Chromium (Dissolved) | µg/L | 16 | 0 | -- | -- |
| Chorine, total residual | µg/L | 772 | 1 | 3.504 | 4.8 |
| Copper | µg/L | 71 | 60 | 12.05 | 16.5 |
| Lead | µg/L | 33 | 2 | 6.745 | 9.24 |
| Mercury | ng/L | 74 | 72 | 7.205 | 11.3 |
| Nickel | µg/L | 34 | 12 | 2.741 | 4.549 |
| Nitrite + Nitrate | mg/L | 71 | 71 | 26.46 | 36.25 |
| Phosphorus | mg/L | 283 | 282 | 8.501 | 12.47 |
| Zinc | µg/L | 33 | 33 | 69.47 | 95.16 |
| Ohio EPA Compliance Data | | | | | |
| Total Filterable Residue | mg/L | 6 | 6 | 1,107 | 1,516 |

DMR = discharge monitoring report
MDL = analytical method detection limit
PEQ = projected effluent quality

**Table 6. Summary of Acute Toxicity Results**

| Date | Acute Toxicity ($TU_a$) | |
|---|---|---|
| | *Ceriodaphnia Dubia* | *Pimephales promelas* |
| 8/17/2010 | AA | AA |
| 8/18/2011 | AA | AA |
| 8/20/2012 | 1.26 | AA |
| 8/6/2013 | AA | AA |
| 8/6/2014 | AA | AA |

AA = non-detection; analytical method detection limit of 0.2 $TU_a$
$TU_a$ = acute toxicity unit

**Table 7. Use Attainment Table**

| Location | River Mile | Use | Status | Causes | Sources |
|---|---|---|---|---|---|
| East Fork dst. Harsha Reservoir | 15.6 | EWH | FULL | | |
| East Fork at State Route 32 | 13.8 | EWH | PARTIAL | Unknown | |
| East Fork dst. Batavia WWTP (now closed) | 13.2 | EWH | PARTIAL | Unknown | |
| East Fork 1.1 Miles dst. Of MEF WWTP | 11.5 | EWH | FULL | | |
| East Fork at Olive Branch Stonelick Road | 9.1 | EWH | PARTIAL | Unknown | |
| East Fork adj. U.S. 50 | 5.6 | EWH | FULL | | |
| East Fork adj. Tech Center Drive | 4.3 | EWH | FULL | | |
| East Fork at State Route 131 | 2.2 | EWH | FULL | | |
| East Fork at S. Milford Road (0.8 miles dst. Milford WWTP) | 0.8 | EWH | PARTIAL | Natural Conditions (flow) | Natural |

Adj. = adjacent
Dst. = downstream
EWH = Exceptional Warmwater Habitat
MEF WWTP = Middle East Fork Wastewater Treatment Plant
WWTP = Wastewater Treatment Plant

**Table 8. Water Quality Criteria in the Study Area**

| Parameter | Units | Outside Mixing Zone Criteria | | | | Inside Mixing Zone Maximum |
|---|---|---|---|---|---|---|
| | | Average | | | Maximum Aquatic Life | |
| | | Human Health | Agri-culture | Aquatic Life | | |
| Arsenic | µg/L | 10. | 100. | 150. | 340. | 680. |
| Barium | µg/L | 2000. | -- | 220. | 2000. | 4000. |
| Bis(2-ethylhexyl)phthalate | µg/L | 6.0 | -- | 8.4 | 1100. | 2100. |
| Cadmium [A] | µg/L | 5.0 | 50. | 3.6 | 7.7 | 15. |
| Chlorine, tot. res. | µg/L | 4000. | -- | 11. | 19. | 38. |
| Chromium, dissolved hexavalent | µg/L | -- | -- | 11. | 16. | 31. |
| Chromium [A] | µg/L | 100. | 100. | 130. | 2600. | 5300. |
| Copper [A] | µg/L | 1300. | 500. | 14. | 22. | 44. |
| Cyanide, free | µg/L | 200. | -- | 12. | 46. | 92. |
| Iron | µg/L | -- | 5000. | -- | -- | -- |
| Lead [A] | µg/L | -- | 100. | 12. | 220. | 450. |
| Mercury [B] | ng/l | 12. | 10000. | 910. | 1700. | 3400. |
| Molybdenum | µg/L | -- | -- | 20000. | 190000. | 370000. |
| Nickel [A] | µg/L | 610. | 200. | 78. | 700. | 1400. |
| Nitrate+Nitrite | mg/L | 10. | 100. | -- | -- | -- |
| Phenol | µg/L | 1.0 | -- | 400. | 4700. | 9400. |
| Selenium | µg/L | 50. | 50. | 5.0 | -- | -- |
| Silver [A] | µg/L | 50. | -- | 1.3 | 3.6 | 7.2 |
| Strontium | µg/L | -- | -- | 21000. | 40000. | 81000. |
| Thallium | µg/L | 1.7 | -- | 17. | 79. | 160. |
| Total Filterable Residue (Dissolved Solids) | mg/L | 500. | -- | 1500. | -- | -- |
| Zinc [A] | µg/L | 9100. | 25000. | 180. | 180. | 360. |

[A] Aquatic Life Criteria are hardness-based.
[B] Bioaccumulative Chemical of Concern (BCC)

**Table 9. Instream Conditions and Discharger Flow**

| Parameter | Units | Season | Value | Basis |
|---|---|---|---|---|
| *Stream Flows* | | | | |
| 1Q10 | cfs | annual | 38.85 | Min. release from Harsha Lake + Upstream Tributaries & Effluent Flows |
| 7Q10 | cfs | annual | 38.24 | Min. release from Harsha Lake + Upstream Tributaries & Effluent Flows |
| Harmonic Mean Flow | cfs | annual | 99.7 | USGS gage #03247050, 1977-94 data |
| Mixing Assumption | % | average | 100 | Stream-to-discharge ratio |
| | % | maximum | 100 | Stream-to-discharge ratio |
| *Discharge Flow* | | | | |
| Milford WWTP | cfs | | 1.86 | Design Flow |
| | MGD | | 1.2 | Design Flow |
| *Instream Hardness* | mg/L | annual | 160 | LEFR DMRs; 87 values, 2009-2014 |
| *Background Water Quality* | | | | |
| Arsenic | µg/L | annual | 1.0 | STORET; 12 values, 10 < MDL, 1998-2012 |
| Barium | µg/L | annual | 33.4 | STORET; 12 values, 0 < MDL, 1998-2012 |
| Bis(2-ethylhexyl)phthalate | µg/L | annual | 0 | No representative data available |
| Cadmium | µg/L | annual | 0 | STORET; 12 values, 12 < MDL, 1998-2012 |
| Chlorine, total residue | µg/L | annual | 0 | No representative data available |
| Chromium | µg/L | annual | 0 | STORET; 12 values, 12 < MDL, 1998-2012 |
| Chromium, Dissolved Hexavalent | µg/L | annual | 0 | No representative data available |
| Copper | µg/L | annual | 1.0 | STORET; 12 values, 9 < MDL, 1998-2012 |
| Cyanide, free | µg/L | annual | 0 | No representative data available |
| Lead | µg/L | annual | 0 | STORET; 12 values, 12 < MDL, 1998-2012 |
| Mercury | µg/L | annual | 0 | No representative data available |
| Molybdenum | µg/L | annual | 0 | No representative data available |
| Nickel | µg/L | annual | 1.0 | STORET; 12 values, 9 < MDL, 1998-2012 |
| Nitrite + Nitrate | µg/L | annual | 1.39 | STORET; 15 values, 0 < MDL, 1998-2012 |
| Phenol | µg/L | annual | 0 | No representative data available |
| Selenium | µg/L | annual | 0 | STORET; 12 values, 12 < MDL, 1998-2012 |
| Silver | µg/L | annual | 0 | No representative data available |
| Thallium | µg/L | annual | 0 | No representative data available |
| Total Filterable Residue (Dissolved Solids) | mg/L | annual | 227. | STORET; 15 values, 0 < MDL, 1998-2012 |
| Zinc | µg/L | annual | 5.0 | STORET; 12 values, 8 < MDL, 1998-2012 |

DMR = Discharge Monthly Report
MDL = analytical method detection limit
USGS = United States Geological Survey
STORET = STOrage and RETrieval Data Warehouse, U.S. EPA
LEFR = Lower East Fork River
Ohio EPA = Ohio Environmental Protection Agency
U.S. EPA = United States Environmental Protection Agency
WWTP = Wastewater Treatment Plant

**Table 10. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria**

| | | Outside Mixing Zone Criteria | | | | Inside Mixing Zone Maximum |
|---|---|---|---|---|---|---|
| | | Average | | | Maximum | |
| Parameter | Units | Human Health | Agri-culture | Aquatic Life | Aquatic Life | |
| Arsenic [B] | µg/L | 67 | 725 [A] | 517 | 1,160[A] | 680. |
| Cadmium [B] | µg/L | 37 [A] | 366[A] | 12 | 26[A] | 15 |
| Chlorine, Total Residual | µg/L | 248,400 [A] | -- | 323 [A] | 552 [A] | 38 |
| Chromium | µg/L | 731 | 731 | 450 | 8,890[A] | 5,300 |
| Hexavalent Chromium (Dissolved) [B] | µg/L | -- | -- | 38[A] | 55[A] | 31 |
| Copper | µg/L | 9,502[A] | 3,651[A] | 46 [A] | 73[A] | 44 |
| Cyanide, Free [B] | µg/L | 1,463[A] | -- | 42 | 157[A] | 92 |
| Lead | µg/L | -- | 731[A] | 42 | 752[A] | 450 |
| Mercury [C] | ng/L | 12 | 10,000 [A] | 910 | 1,700 | 3,400 |
| Nickel [B] | µg/L | 4,455[A] | 1,457 [A] | 268 | 2,391[A] | 1,400 |
| Nitrite + Nitrate | mg/L | 64 | 725 | -- | -- | -- |
| Total Filterable Residue (Dissolved Solids) | mg/L | 2,224 | -- | 4,636 | -- | -- |
| Zinc | µg/L | 66,530[A] | 182,800[A] | 611[A] | 603[A] | 360 |

A = Inside Mixing Zone Maximum
B = Parameter would not require a wasteload allocation based on reasonable potential procedures, but allocation was requested for local limit development
C = Bioaccumulative Chemical of Concern

**Table 11. Parameter Assessment**

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

Phosphorus

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

| | | |
|---|---|---|
| Arsenic | Cadmium | Hexavalent Chromium (Dissolved) |
| Chromium | Cyanide, Free | Nickel |

Group 3: PEQmax < 50 percent of maximum PEL and $PEQ_{avg}$ < 50 percent of average PEL. No limit recommended; monitoring optional.

| | | |
|---|---|---|
| Ammonia (Summer and Winter) | | Chlorine, Total Residual |
| Copper | Lead | Nitrate + Nitrite |
| Zinc | | |

Group 4: PEQmax >= 50 percent, but < 100 percent of the maximum PEL or PEQavg >= 50 percent, but < 100 percent of the average PEL. Monitoring is appropriate.

| | |
|---|---|
| Mercury | Total Filterable Residue (Dissolved Solids) |

Group 5: Maximum PEQ >= 100 percent of the maximum PEL or average PEQ >= 100 percent of the average PEL, or either the average or maximum PEQ is between 75 and 100 percent of the PEL and certain conditions that increase the risk to the environment are present. Limit recommended.

No parameters meet the criteria of this group.

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

**Table 12. 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 | S.U. | 6.5 - 9.0 | | -- | -- | WQS |
| Dissolved Oxygen | mg/L | - - 5.0 Minimum - - | | -- | -- | PD |
| Total Suspended Solids | mg/L | 18.8 | 28.1[d] | 85 | 128[d] | EP, PD |
| Oil & Grease | mg/L | -- | 10 | -- | -- | WQS |
| Ammonia (All Seasons) | mg/L | 9.4 | 14[d] | 42.6 | 63.9[d] | EP, PD, WLA |
| Total Kjeldahl Nitrogen | mg/L | - - - - - - - - - - - Monitor - - - - - - - - - - - - | | | | EP, M, WLA |
| Nitrate+Nitrite | mg/L | - - - - - - - - - - - Monitor - - - - - - - - - - - - | | | | EP, WLA |
| Phosphorus | mg/L | - - - - - - - - - - - Monitor - - - - - - - - - - - - | | | | EP, BTJ |
| Total Filterable Residue | mg/L | - - - - - - - - - - - Monitor - - - - - - - - - - - - | | | | WLA |
| Nickel | µg/L | - - - - - - - - - - - Monitor - - - - - - - - - - - - | | | | EP, WLA |
| Zinc | µg/L | - - - - - - - - - - - Monitor - - - - - - - - - - - - | | | | EP, WLA |
| Cadmium | µg/L | - - - - - - - - - - - Monitor - - - - - - - - - - - - | | | | EP, WLA |
| Lead | µg/L | - - - - - - - - - - - Monitor - - - - - - - - - - - - | | | | EP, WLA |
| Chromium | µg/L | - - - - - - - - - - - Monitor - - - - - - - - - - - - | | | | EP, WLA |
| Copper | µg/L | - - - - - - - - - - - Monitor - - - - - - - - - - - - | | | | EP, WLA |
| Mercury | ng/L | - - - - - - - - - - - Monitor - - - - - - - - - - - - | | | | EP, RP, WLA |
| *E. coli* | #/100 mL | 126 | 284[d] | -- | -- | WQS |
| Carbonaceous Biochemical Oxygen Demand (5 day) | mg/L | 15.6 | 25[d] | 71 | 114[d] | EP, PD, BTJ |
| Chlorine, Total Residual | mg/L | -- | 0.038 | -- | -- | WLA/IMZM, EP |
| Acute Toxicity | | | | | | |
| *Ceriodaphnia dubia* | $TU_a$ | - - - - - - - - - - - Monitor - - - - - - - - - - - - | | | | WET |
| *Pimephales promelas* | $TU_a$ | - - - - - - - - - - - Monitor - - - - - - - - - - - - | | | | WET |

[a] Effluent loadings are based on average design discharge flow of 1.2 MGD.

[b] Definitions:

**BTJ** = Best Technical 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))
**WLA** = Wasteload Allocation procedures (OAC 3745-2)
**WLA/IMZM** = Wasteload Allocation limited by Inside Mixing Zone Maximum
**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.