

National Pollutant Discharge Elimination System (NPDES) Permit Program

FACT SHEET

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

Public Notice No.: 16-02-031 Ohio EPA Permit No.: **2PD00031*PD**
Public Notice Date: February 19, 2016 Application No.: **OH0052744**
Comment Period Ends: March 20, 2016

<u>Name and Address of Applicant:</u>	<u>Name and Address of Facility Where Discharge Occurs:</u>
City of Fostoria	Fostoria WWTP
213 South Main Street	1301 Perrysburg Road
Fostoria, OH 44830	Fostoria, OH 44830
	Seneca County

Receiving Water: East Branch Portage River

Subsequent Stream Network: South Branch Portage River, Portage River, Lake Erie

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.

In accordance with the antidegradation rule, OAC 1-3745-1-05, I have determined that a lowering of water quality in the East Branch of the Portage River is necessary. A waiver, outlined in section (D)(1)(c) of the rule, was granted to this application. The above decision was reached only after performing the required review and public participation activities not waived by section (D)(1)(c).

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, total precipitation, dissolved oxygen, total suspended solids, oil and grease, ammonia, total kjeldahl nitrogen, nitrate + nitrite, phosphorus, selenium, beryllium, nickel, strontium, zinc, cadmium, lead, chromium, dissolved hexavalent chromium, *Escherichia Coli* (*E. Coli*), bis(2-ethylhexyl)phthalate, flow rate, free cyanide, pH, total filterable residue, and 5-day carbonaceous biochemical oxygen demand (CBOD₅).

Lower effluent limits are proposed for mercury in accordance with the general mercury variance. In order to comply with mercury limits, the permittee has applied for coverage under the general mercury variance, Rule 3745-33-07(D)(10) of the Ohio Administrative Code (OAC). Based on the results of low-level mercury monitoring, the permittee has determined that its wastewater treatment plant cannot meet the 30-day average WQBEL of 1.3 nanograms per liter (ng/L).

New monthly monitoring is proposed for dissolved orthophosphate (as P). This monitoring is required by Ohio Senate Bill 1, which was signed by the Governor on April 2, 2015. Monitoring for orthophosphate is proposed to further develop nutrient datasets for dissolved reactive phosphorus and to assist stream and watershed assessments and studies. Ohio EPA monitoring, as well as other in-stream monitoring, is taken via grab sample, orthophosphate is proposed to be collected by grab sample to maintain consistent data to support watershed and stream surveys. Monitoring will be done by grab sample, which must be filtered within 15 minutes of collection using a 0.45-micron filter. The filtered sample must be analyzed within 48 hours.

Limits are proposed to be removed for copper and antimony because data 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 is proposed to continue.

The annual requirements for acute and chronic whole effluent toxicity (WET) testing for the species *Pimephales promelas* are proposed to continue in the current permit. The requirements for the species *Ceriodaphnia dubia* (*C. dubia*) have changed. Based on 40 CFR Part 132 Appendix F Procedure 6 and OAC 3745-33-07 (B), there is reasonable potential to cause or contribute to exceedances of WQS for WET. A schedule of compliance for conducting a Toxicity Reduction Evaluation (TRE), if necessary, is included in Part II of the proposed permit.

Upstream monitoring for phosphorus, total Kjeldahl nitrogen, and nitrate+nitrite have been added to station 801.

Downstream monitoring for phosphorus, total Kjeldahl nitrogen, and nitrate+nitrite has been added to station 901. Metals monitoring has been removed from 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.

To ensure that data is obtained that allows Ohio EPA to make water quality-related decisions regarding cadmium, free cyanide, lead and selenium, a special condition is proposed in Part II of the permit that provides guidance on the analytical method detection limits (MDLs) the permittee should use in analyzing for these contaminants.

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; WET testing; storm water compliance; mercury variance; pretreatment program requirements; TRE; phosphorus optimization; 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 Elizabeth Buening, (614) 644-2138, Elizabeth.buening@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

The Fostoria WWTP discharges to East Branch Portage River at River Mile 10.2. Figure 1 shows the approximate location of the facility.

This segment of the East Branch Portage River is described by Ohio EPA River Code: 16-105, U.S. EPA River Reach Code: 04100010-009, County: Seneca, Ecoregion: Huron-Erie Lake Plain. The East Branch Portage River is designated for the following uses under Ohio's WQS (OAC 3745-1-23): Warmwater Habitat, Agricultural Water Supply, Industrial Water Supply, Class B Primary Contact Recreation.

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 (Primary Contact Recreation) 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 agricultural water supply and industrial water supply.

Facility Description

The Fostoria WWTP was constructed in 1928 and last upgraded in 2014. The average design flow is 8.25 million gallons per day (MGD). The Fostoria WWTP serves the City of Fostoria, Wood County Northwestern Water and Sewer District, Village of New Riegel, Loudon and Jackson Townships in Seneca County and Washington Township in Hancock County for a total of 19,894 customers. The Fostoria WWTP has the following treatment processes:

- Bar Screen
- Grit Removal
- Influent Pumping
- Scum Removal
- Flow Equalization
- Primary Sedimentation
- Activated Sludge
- Ferric Addition
- Post Aeration
- Secondary Clarification
- Ultraviolet Disinfection

The Fostoria WWTP has a primary overflow containment lagoon. If the containment lagoon overflows, the flow discharges directly to the receiving stream. The City of Fostoria has 27 percent separated sewers and 63 percent combined sewers in the collection system. The City of Fostoria has an approved pretreatment program. The City of Fostoria has five categorical users that discharge 0.529 MGD of flow and four significant non-categorical users that discharge 0.076 MGD of flow.

The Fostoria WWTP utilizes the following sewage sludge treatment processes:

- Aerobic Digester
- Polymer Addition
- Mechanical Dewatering – Filter Press
- Wet Air Oxidation

Treated sludge is disposed of in a municipal landfill.

On March 7, 2013, the City of Fostoria submitted to Ohio EPA a “Combined Sewer Overflow Long Term Control Plan” for reduction of sewer overflows pursuant to Consent Decree Case No. 3:06CV1626 and 3:06CV1627 (Amended June 12, 2013) entered in the United States District Court, Northern District of Ohio, Western Division on August 28, 2006. Public notice has been given for the draft plan approval under Plan Approval Number 926244.

Pending final approval, the draft NPDES permit requires that the City implement the Combined Sewer Overflow Long Term Control Plan in accordance with Plan Approval Number 926244.

Description of Existing Discharge

The Fostoria WWTP had several effluent violations which are shown on Table 1. These violations were most likely caused by WWTP upgrades back in 2012-2013.

The Fostoria WWTP has an estimated infiltration/inflow (I/I) rate of 1.5 MGD but continues to implement the Sewer System Elimination/Reduction of Inflow Program, which was established back in March 2007.

The Fostoria WWTP reports sanitary sewer overflows (SSOs) at station 300. No SSOs were reported over the past five years. Fostoria WWTP reports overflow of the containment lagoon at station 009. No overflows from station 009 were recorded in the past five years. Fostoria WWTP has four known combined sewer overflows (CSOs). The number of CSOs and dates reported is presented on Table 2.

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 through the submission of annual pretreatment program reports and/or from Ohio EPA effluent testing conducted.

Table 3 presents chemical specific data compiled from data reported in annual pretreatment reports and from data collected by Ohio EPA.

Table 4 presents a summary of unaltered Discharge Monitoring Report (DMR). Data is presented for the period July 2010 through June 2015, 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 and chronic WET tests of the final effluent.

Table 7 summarizes the screening results of Ohio EPA bioassay sampling of the final effluent.

Assessment of Impact on Receiving Waters

The Portage River watershed assessment unit, which includes the East Branch Portage River in the vicinity of the Fostoria WWTP, is listed as impaired for aquatic life, recreation, and human health 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 and modified Index of Well-Being, which indicate the response of the fish community, and the Invertebrate Community Index, 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 8) 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, and comments and observations for each sampling location.

A TMDL report was approved for the Portage River Watershed in September 30, 2011. 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 January 1, 2016, this TMDL is considered a technical guidance document pending final TMDL approval.

The TMDL is available through the OEPA, Division of Surface Water website at:
<http://www.epa.ohio.gov/dsw/tmdl/PortageToussaintRivers.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 Fostoria 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)	July 2010 through June 2015
Pretreatment data	2014
Ohio EPA compliance sampling data	2013

Statistical Outliers and Other Non-representative Data

The data was examined and the following values were removed from the evaluation as representative: Total Filterable Residue – 2770 mg/L, March 24, 2011, Strontium – 0.94 µg/L, July 23, 2014, and Zinc – 171 µg/L, January 12, 2012. The reason these three data points were excluded because the data points were statistical outliers.

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 9).

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. For free flowing streams, 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 applicable waterbody uses for this facility's discharge and the associated stream design flows are as follows:

Aquatic life (Warmwater Habitat)		
Toxics (metals, organics, etc.)	Average	Annual 7Q10
	Maximum	Annual 1Q10
Ammonia	Average	Summer 30Q10
		Winter 30Q10
Wildlife		Annual 90Q10

Agricultural Water Supply
Human Health (nondrinking)

Harmonic mean flow
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 1.3 ng/L (average) and 1700 ng/L (maximum) in the Lake Erie basin.

The data used in the WLA are listed in Table 9 and Table 10. The WLA results to maintain all applicable criteria are presented in Table 11.

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 Fostoria WWTP, the WLA values are 0.3 TU_a and 1.00 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:

Dilution Ratio

Allowable Effluent Toxicity

<u>(downstream flow to discharger flow)</u>	<u>(percent effects in 100% effluent)</u>
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 Fostoria WWTP is 30 percent mortality in 100 percent effluent based on the dilution ratio of 1.01 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 11. 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} ÷ PEL_{avg}) X 100, or (PEQ_{max} ÷ PEL_{max}) X 100], the parameters are assigned to group 3, 4, or 5. The groupings are listed in Table 12.

The final effluent limits are determined by evaluating the groupings in conjunction with other applicable rules and regulations. Table 13 presents the final effluent limits and monitoring requirements proposed for Fostoria 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.

Water Temperature, Total Precipitation, and Flow Rate

Monitoring for these parameters is proposed to continue in order to evaluate the performance of the treatment plant.

Dissolved Oxygen, Total Suspended Solids, Ammonia and CBOD₅

The limits proposed for these parameters are all based on plant design criteria. These limits are protective of WQS.

Oil and Grease, pH, Phosphorus, and E. Coli

Limits proposed for oil and grease, pH, phosphorus, and *E. coli* are based on WQS (OAC 3745-1-07). Class B PCR *E. coli* standards apply to the East Branch Portage River. Phosphorus is limited based on provisions of OAC 3745-33-06(C).

Mercury

The Ohio EPA risk assessment (Table 12) places mercury in group 5. This placement, as well as the data in Tables 4 and 5, indicates that the reasonable potential to exceed WQS exists and limits are necessary to protect water quality. For these parameters, the PEQ is greater than 100 percent of the WLA and certain conditions exist that increase the risk to the environment. Pollutants that meet this requirement must have permit limits under OAC 3745-33-07(A)(1).

The Fostoria WWTP permit was renewed in May 1, 2010 to include a mercury variance, and variance-based limits for mercury. Based on the monitoring results from July 2010 through June 2015, and the new application information (Attachment 1), the Fostoria WWTP has determined that the facility will not meet the 30-day average permit limit of 1.3 ng/L. However, the effluent data shows that the permittee can meet the mercury annual average value of 12 ng/L. The permittee's application has also demonstrated to the satisfaction of Ohio EPA that there is no readily apparent means of complying with the WQBEL without constructing prohibitively

expensive end-of-pipe controls for mercury. Based upon these demonstrations, the Fostoria WWTP is eligible for the mercury variance under OAC 3745-33-07(D)(10)(a).

The Fostoria WWTP submitted information supporting the renewal of the variance. The permittee found sources of mercury from dental offices and small industries and will work with these entities to reduce the amount of mercury coming being discharged. The calculation of the PEQavg value from 2010 to 2015 compared to the PEQavg calculated at the time the original variance was issued shows a reduction from 11.3 ng/L to 11.0 ng/L. The Pollutant Minimization Program (PMP) schedule developed from the original variance continues to be implemented, and further reductions in mercury may be possible.

Ohio EPA has reviewed the mercury variance application and has determined that it meets the requirements of the OAC. A condition in Part II of the NPDES permit lists the provisions of the mercury variance, and includes the following requirements:

- A variance-based monthly average effluent limit of 11.0 ng/L, which was developed from sampling data submitted by the permittee;
- A requirement that the permittee make reasonable progress to meet the WQBEL for mercury by implementing the plan of study, which has been developed as part of the PMP;
- Low-level mercury monitoring of the plant's influent and effluent;
- A requirement that the annual average mercury effluent concentration is less than or equal to 12 ng/L as specified in the plan of study;
- A summary of the elements of the plan of study;
- A requirement to submit an annual report on implementation of the PMP; and
- A requirement for submittal of a certification stating that all permit conditions related to implementing the plan of study and the PMP have been satisfied, but that compliance with the monthly average WQBEL for mercury has not been achieved.

Bis(2-ethylhexyl)phthalate

The Ohio EPA risk assessment (Table 12) places bis(2-ethylhexyl)phthalate in group 5. This placement, as well as the data in Tables 4 and 5, indicates that the reasonable potential to exceed WQS exists and limits are necessary to protect water quality. For these parameters, the PEQ is greater than 100 percent of the WLA and certain conditions exist that increase the risk to the environment. Pollutants that meet this requirement must have permit limits under OAC 3745-33-07(A)(1).

Selenium and Total Filterable Residue

The Ohio EPA risk assessment (Table 12) places selenium 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).

Copper, Nickel, Zinc, Cadmium, Lead, Chromium, Free Cyanide, Antimony, Dissolved Hexavalent Chromium, Beryllium, and Strontium

The Ohio EPA risk assessment (Table 12) places these parameters in groups 2 and 3. 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 at a low frequency is proposed to document that these pollutants continue to remain at low levels. Limits for copper and antimony are proposed to be removed but monitoring will continue at a reduced frequency. Quarterly monitoring of beryllium and strontium is recommended in order to determine compliance with local pretreatment limits.

Silver, Arsenic, cis-1,2-Dichloroethene, 1,2-Dichloroethane, Trichloroethene, Molybdenum

The Ohio EPA risk assessment (Table 12) places these parameters in groups 2 and 3. 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. No new monitoring is proposed.

Nitrate + Nitrite and Total Kjeldahl Nitrogen

The 2014 Ohio Integrated Water Quality Monitoring and Assessment Report (Ohio EPA) lists the East Branch Portage River watershed as impaired for aquatic life. Nutrients and organic enrichment/dissolved oxygen are listed as “high magnitude” causes, and major municipal point sources are listed among the “high magnitude” sources. Considering this information and the fact that municipal WWTPs discharge a nutrient load to the river, monthly monitoring for nitrate + nitrite and total Kjeldahl nitrogen is proposed based on best technical judgment. Monitoring for phosphorus, nitrate + nitrite, and total Kjeldahl nitrogen at the upstream and downstream stations also is proposed. The purpose of the monitoring is to maintain a nutrient data set for use in the future water quality studies.

Dissolved Orthophosphate

New monthly monitoring is proposed for dissolved orthophosphate (as P). This monitoring is required by Ohio Senate Bill 1, which was signed by the Governor on April 2, 2015. Monitoring for orthophosphate is proposed to further develop nutrient datasets for dissolved reactive phosphorus and to assist stream and watershed assessments and studies. Ohio EPA monitoring, as well as other in-stream monitoring, is taken via grab sample, orthophosphate is proposed to be collected by grab sample to maintain consistent data to support watershed and stream surveys. Monitoring will be done by grab sample, which must be filtered within 15 minutes of collection using a 0.45-micron filter. The filtered sample must be analyzed within 48 hours.

Whole Effluent Toxicity Reasonable Potential

Evaluating the acute and chronic toxicity results in Table 6 and Table 7 under the provisions of 40 CFR Part 132, Appendix F, Procedure 6, gives an estimated chronic PEQ of 1.68 TU_c for *C. dubia*. Reasonable potential for toxicity is demonstrated, since this value exceeds the WLA value of 1.00 TU_c. Consistent with Procedure 6 and OAC 3745-33-07(B), a daily maximum limit of 1.0 TU_c for *C. dubia* is proposed. It is proposed that the final effluent limits for *C. dubia* toxicity become effective 48 months from the effective date of the permit. Annual monitoring with a trigger to conduct a toxicity reduction evaluation (TRE) is proposed as the initial condition.

A reopener clause is proposed in Part II of the permit that would allow the City to request a permit modification to remove the limits for WET. The request must be based on the results of at least four definitive chronic toxicity tests conducted over a period of one year that show there is no reasonable potential for the plant’s discharge to cause or contribute to a violation of the criteria for WET.

Additional Monitoring Requirements

Upstream monitoring for phosphorus, total Kjeldahl nitrogen, and nitrate+nitrite has been added to station 801.

Downstream monitoring for phosphorus, total Kjeldahl nitrogen, and nitrate+nitrite has been added to station 901. Metals monitoring has been removed from 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

Compliance Schedule

Pretreatment Local Limits Review - A 48 month compliance schedule is proposed for the City to submit a technical justification for either revising its local industrial user limits or retaining its existing local limits. If revisions to local limits are required, the City must also submit a pretreatment program modification request. Details are in Part I.C of the permit.

Phosphorus Optimization

The permittee shall prepare and submit a Phosphorus Discharge Optimization Evaluation plan to Ohio EPA Northwest District Office. The plan shall be completed and submitted to Ohio EPA no later than 12 months from the effective date of this permit. Details are in Part II of the permit.

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 Fostoria 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”.

Low-Level Free Cyanide Testing

Currently there are two approved methods for free cyanide listed in 40 CFR 136.3 that have quantification levels lower than any water quality-based effluent limits:

- ASTM D7237-10 and OIA-1677-09 - Flow injection followed by gas diffusion amperometry

These methods will allow Ohio EPA make more reliable water quality-related decisions regarding free cyanide. Because the quantification levels are lower than any water quality-based effluent limits, it will also be possible to directly evaluate compliance with free cyanide limits.

New NPDES permits no longer authorize the use of method 4500 CN-I from Standard Methods for free cyanide testing. The new permits require permittees to begin using one of these approved methods as soon as possible. If a permittee must use method 4500 CN-I during the transition to an approved method, they are instructed to report the results on their DMR and enter “Method 4500 CN-I” in the remarks section.

Method Detection Limit

The reported data for cadmium, free cyanide, lead and selenium, shows that the Fostoria WWTP used an analytical method with a MDL that is not sensitive enough to properly evaluate the discharge with regard to the

WLA for these parameters. As a result, Part II of the permit includes a condition requiring the Fostoria 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 Fostoria 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 Fostoria 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 Branch Portage River and Caples-Flack Ditch and providing information about the discharge. Signage at outfalls is required pursuant to OAC 3745-33-08(A).

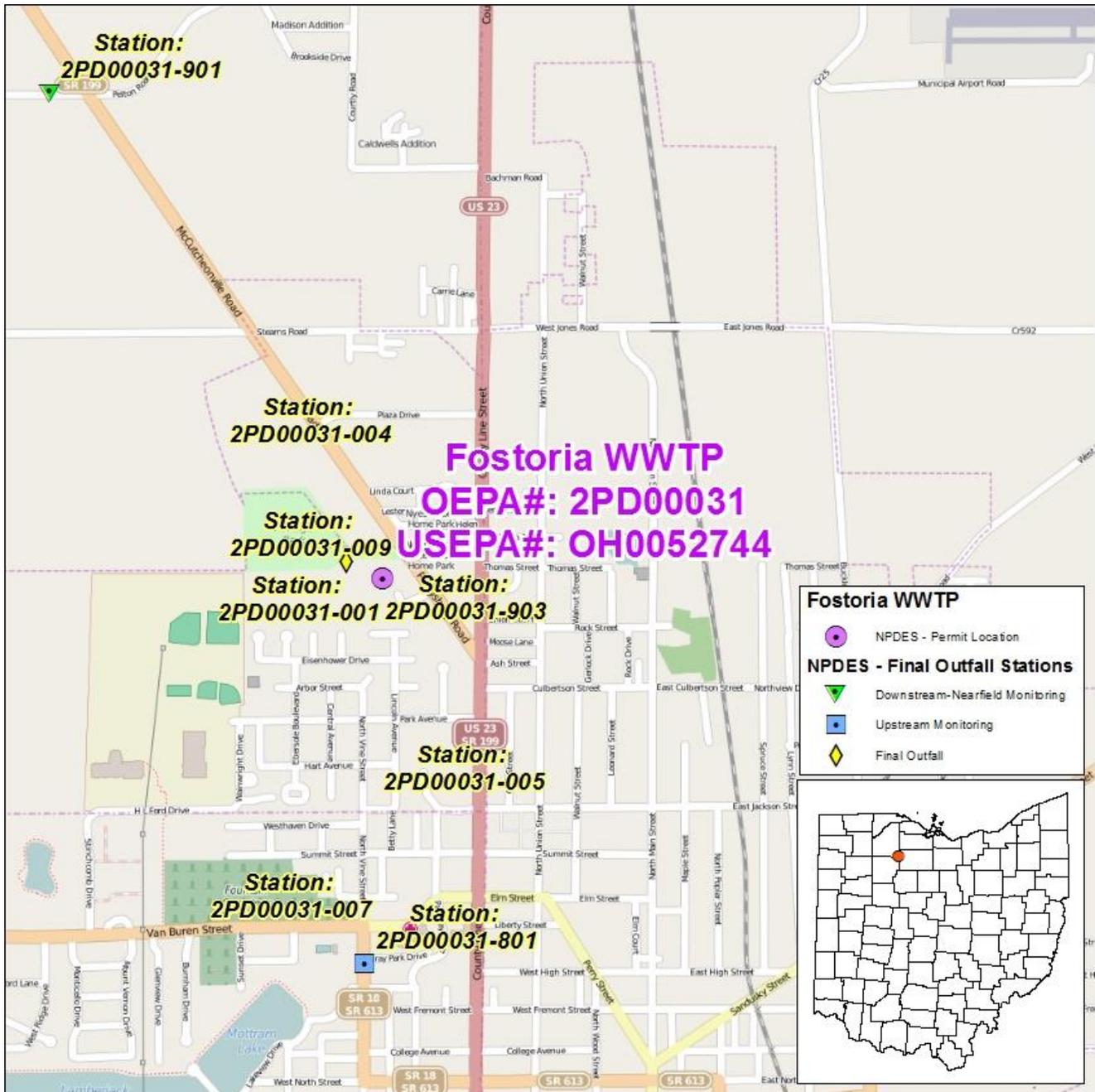


Figure 1. Location of Fostoria WWTP

Table 1. Effluent Violations for Outfall 001

Parameter	2010	2011	2012	2013	2014	2015
Ammonia	8	13	8	10	30	0
Bis(2-ethylhexyl)phthalate	0	0	0	0	1	2
Carbonaceous Biochemical Oxygen Demand (5 day)	0	0	0	0	2	0
Copper	1	0	0	0	0	0
Dissolved Oxygen	0	0	2	1	2	0
<i>E. coli</i>	0	0	0	1	0	0
Flow Rate	0	0	0	0	0	0
Mercury	0	0	0	2	0	0
Oil & Grease	0	0	0	0	0	0
pH	0	0	4	1	0	0
Phosphorus	1	1	0	0	0	0
Total Suspended Solids	9	20	5	6	9	4
<i>Total</i>	<i>19</i>	<i>34</i>	<i>19</i>	<i>21</i>	<i>44</i>	<i>6</i>

Table 2. Combined Sewer Overflow Discharges in the past five years

Station	Number of Occurrences	Maximum Volume (Million Gallons)	Average Volume (Million Gallons)
004	263	45.307	3.4588
005	271	23.845	1.4077
006	69	30.598	1.5819
008	0	0	0

Table 3. Effluent Characterization Using Ohio EPA and Pretreatment Data

	PT	OEPA
Parameter (µg/L)	11/17/2014	10/9/2013
Antimony	AA (40)	AA (2.0)
Arsenic	AA (40)	AA (2.0)
Beryllium	AA (5.0)	NA
Bis(2-ethylhexyl)phthalate	20	AA (10.5)
Cadmium	AA (5.0)	AA (0.2)
Chromium	AA (10)	2.1
Copper	AA (10)	7.3
Cyanide, Free	NA	AA (5.0)
1,2-Dichloroethane	AA (10)	3.36
cis-1,2-Dichloroethene	NA	1.14
Lead	AA (30)	AA (2.0)
Nickel	AA (10)	4.6
Nitrate+Nitrite	NA	5.98
Selenium	AA (50)	AA (2.0)
Silver	AA (10)	NA
Strontium	NA	1410
Total Filterable Residue	NA	490
Trichloroethene	AA (10)	1.79
Zinc	33	22

AA = not-detected (analytical method detection limit)

OEPA = data from analyses by Ohio EPA

PT = data from pretreatment program annual reports

NA = not analyzed

Table 4. Effluent Characterization Using Self-Monitoring Data

Summary of current permit limits and unaltered discharge monitoring report for Fostoria outfall 2PD00031001 (July 2010 - June 2015).

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50 th	95 th	
Water Temperature	Annual	°C	Monitor		1826	12	22	3-25
Total Precipitation	Annual	Inches	Monitor		1826	0	0.638	0-4.78
Dissolved Oxygen	Summer	mg/L	--	7.0 min	920	8.2	9.5	6.1-12.7
	Winter	mg/L	--	5.0 min	906	9.2	10.9	6.1-14.8
Total Filterable Residue	Annual	mg/L	Monitor		60	656	817	275-2770
Total Suspended Solids	Annual	mg/L	12.0	18.0 ^a	786	9	19	0-75
		kg/day	375	563 ^a	786	141	507	0-2380
Oil and Grease	Annual	mg/L	--	10	120	0	4	0-6.1
Ammonia	Summer	mg/L	1.5	2.3 ^a	360	0.41	2.9	0.01-11.6
		kg/day	46.9	71.9 ^a	360	5.69	49.2	0.101-208
	Winter	mg/L	2.8	4.2 ^a	360	1.25	10.8	0.012-23.3
		kg/day	87.6	131.4 ^a	360	23.8	219	0.17-570
Total Kjeldahl Nitrogen	Annual	mg/L	Monitor		60	1.44	7.01	0-13.7
Nitrate+Nitrite	Annual	mg/L	Monitor		60	9.32	15	1.37-17.3
Phosphorus	Annual	mg/L	1.0	1.5 ^a	240	0.38	0.701	0.05-1.58
		kg/day	31.3	46.9 ^a	240	5.51	17	0.845-33.4
Cyanide, Free	Annual	mg/L	Monitor		20	0	0	0-0
Selenium	Annual	µg/L	Monitor		60	0	0	0-4.1
Beryllium	Annual	µg/L	Monitor		60	0	0	0-0
Nickel	Annual	µg/L	Monitor		20	0	9.1	0-11
Strontium	Annual	µg/L	Monitor		60	1130	1580	0-1910
Zinc	Annual	µg/L	Monitor		60	25	46	0-171
Cadmium	Annual	µg/L	Monitor		60	0	0	0-3
Lead	Annual	µg/L	Monitor		20	0	0	0-0

Table 4. (Continued)

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50 th	95 th	
Chromium	Annual	µg/L	Monitor		20	0	0	0-0
Copper	Annual	µg/L	30	49	60	0	11.1	0-20
		kg/day	0.94	1.53	60	0	0.293	0-0.359
Dissolved Hexavalent Chromium	Annual	µg/L	Monitor		20	0	0	0-0
Antimony	Annual	µg/L	191	909	60	0	0	0-48
		kg/day	5.97	28.4	60	0	0	0-0.533
<i>E. coli</i>	Annual	#/100 mL	161	362 ^a	360	6.3	152	1-2420
Bis(2-ethylhexyl)phthalate	Annual	µg/L	8.4	1111	61	0	11	0-20.3
		kg/day	0.26	34.7	61	0	0.17	0-0.406
Flow Rate	Summer	MGD	Monitor		920	3.3	7.86	2.19-10.7
	Winter	MGD	Monitor		906	4.44	9.11	1.86-13
	Annual	MGD	Monitor		1826	3.81	8.76	1.86-13
Mercury	Annual	ng/L	14.3	1700	60	4.57	12	0-31.3
		kg/day	0.00045	0.053	60	0.0000693	0.000388	0-0.000602
pH, Maximum	Annual	S.U.	--	9.0	1824	7.4	7.8	6.8-9.1
pH, Minimum	Annual	S.U.	--	6.5	1824	7.2	7.6	6.4-8.2
CBOD ₅	Annual	mg/L	10.0	15.0 ^a	721	5	10	0-18
		kg/day	313	469 ^a	721	78.7	226	0-439

a = weekly average

CBOD₅ = 5-day carbonaceous biochemical oxygen demand

MGD = Million gallons per day

Table 5. Projected Effluent Quality

Parameter	Units	Number of Samples	Number > MDL	PEQ Average	PEQ Maximum
Ammonia (Summer)	mg/L	360	360	1.5047	3.2543
Ammonia (Winter)	mg/L	360	360	13.823	24.089
Antimony	µg/L	62	2	35.04	48
Beryllium	µg/L	61	0	--	--
Bis(2-ethylhexyl)phthalate	µg/L	63	13	10.867	17.112
Cadmium	µg/L	48	2	2.409	3.3
Chromium	µg/L	17	1	7.154	9.8
Dissolved Hexavalent Chromium	µg/L	20	0	--	--
Copper	µg/L	62	12	9.3248	14.349
Cyanide, Free	mg/L	21	0	--	--
1,2-Dichloroethane	µg/L	1	1	15.20736	20.832
Total Filterable Residue	mg/L	60	60	776.17	926.04
Lead	µg/L	22	0	--	--
Mercury	ng/L	60	59	10.993	17.12
Nickel	µg/L	22	4	10.439	14.3
Nitrate+Nitrite	mg/L	61	61	15.61	22.819
Selenium	µg/L	60	1	2.993	4.1
Silver	µg/L	1	0	--	--
Strontium	µg/L	60	59	1385.6	1646.5
Zinc	µg/L	61	56	35.16	47.497
cis-1,2-Dichloroethene	µg/L	1	1	5.15964	7.068
Trichloroethene	µg/L	1	1	8.10154	11.098
Arsenic	µg/L	1	0	--	--
Molybdenum	µg/L	--	--	--	--

PEQ = Projected Effluent Quality

Table 6. Summary of Acute and Chronic Toxicity Results

	<i>Ceriodaphnia Dubia</i>	<i>Pimephales promelas</i>
Date	Chronic Toxicity (TU_c)	Chronic Toxicity (TU_c)
7/23/2010	1.1	AA
7/22/2011	AA	AA
7/12/2012	AA	AA
5/17/2013	AA	AA
5/13/2014	AA	AA
5/4/2015	AA	AA

AA = non-detection; analytical method detection limit of 1.0 TU_c

Table 7. Ohio EPA Toxicity Screening Results for Outfall 001

Collection Date	<i>Ceriodaphnia dubia</i>								<i>Pimephales promelas</i>							
	24 Hours				48 Hours				24 Hours				48 Hours			
	UP	C	%M	TU _a	UP	C	%M	TU _a	UP	C	%M	TU _a	UP	C	%M	TU _a
10/7/2013	0	0	0	ND	0	0	0	ND	0	0	0	ND	0	0	0	ND
10/8/2013	0	5	10	ND	0	10	30	ND	0	0	0	ND	0	0	0	ND
10/7/13- 10/8/13 ^a	0	0	25	ND	0	0	55	ND	0	0	0	ND	0	0	0	ND

TU_c = chronic toxicity units

AA = below detection limit (0.2 TU_a, 1.0 TU_c)

a = 24-hour composite sample

C = laboratory control water

%M = percent mortality in 100% effluent

ND = not determined

TU_a = acute toxicity units

UP = percent mortality in upstream control water

Table 8. Use Attainment Table

Aquatic life use attainment status of the Portage River basin, June-October, 2008.

STORET Number (River Mile) ^a	IBI	Miwb ^b	ICI ^c	QHEI	Attainment Status ^d	Causes	Sources
East Branch Protage River (16-105) - WWH existing							
S01K21 (19.17)	<u>20</u> *	NA	F*	43.0	NON	Low flow alterations, Organic and nutrient enrichment, Siltation	Non-irrigated crop production, Manure runoff
300373 (16.10)	<u>26</u> _s ⁿ	NA	LF*	47.5	PARTIAL	Low flow alterations, Siltation	Non-irrigated crop production, Channelization
S01S30 (12.47)	28	NA	MG _s ⁿ	51.0	FULL		
S01P02 (10.42)	<u>22</u> *	NA	LF*	58.5	NON	Organic enrichment	Fostoria CSOs
S01P03 (9.60)	<u>22</u> *	NA	P*	47.5	NON	Ammonia, Nitrate+Nitrite	Fostoria WWTP and CSOs
S01P05 (6.18)	29	6.9 ^{ns}	42	78.5	FULL		
S01P07 (3.10)	32	7.2 ^{ns}	42	68.0	FULL		
S01P09 (0.80)	40	8.0	42	60.0	FULL		

WWH = Warmwater Habitat

IBI = The Index of Biotic Integrity

Miwb = Modified Index of well being

ICI = Invertebrate Community Index

QHEI = Qualitative Habitat Evaluation Index

WWTP = Wastewater Treatment Plant

CSO = Combined Sewer Overflow

STORET = United States Environmental Protection Agency STorage and RETrieval Data Warehouse

a = River Mile (RM) represents the Point of Record for the station, not the actual sampling RM.

b = MIwb is not applicable to headwater streams with drainage areas ≤ 20 mi².

c = A narrative evaluation of the qualitative sample based on attributes such as mayfly (Ephemeroptera), stonefly (Plecoptera), and caddisfly (Trichoptera) taxa richness, number of sensitive taxa, and community composition was used when quantitative data was not available or considered unreliable.

VP=Very Poor, P=Poor, LF=Low Fair, F=Fair, MG=Marginally Good, G=Good, VG=Very Good, E=Exceptional

d = Attainment is given for the proposed status when a change is recommended.

ns = Nonsignificant departure from biocriteria (≤4 IBI or ICI units, or ≤0.5 MIwb units).

* = Indicates significant departure from applicable biocriteria (>4 IBI or ICI units, or >0.5 MIwb units).

Underlined scores are in the Poor or Very Poor range.

Table 9. Water Quality Criteria in the Study Area

Parameter	Units	Outside Mixing Zone Criteria					Maximum Aquatic Life	Inside Mixing Zone Maximum
		Average						
		Wildlife	Human Health	Agriculture	Aquatic Life			
Ammonia (Summer)	mg/L	--	--	--	1.9	--	--	
Ammonia (Winter)	mg/L	--	--	--	7.4	--	--	
Antimony	µg/L	--	780	--	190	900	1800	
Beryllium	µg/L	--	130c	100	60	510	1000	
Bis(2-ethylhexyl)phthalate	µg/L	--	32c	--	8.4	1100	2100	
Cadmium	µg/L	--	730	50	5.6	15	30	
Chromium	µg/L	--	14000	100	220	1700	3300	
Dissolved Hexavalent Chromium	µg/L	--	14000	--	11	16	31	
Copper	µg/L	--	64000	500	31	51	100	
Cyanide, Free	mg/L	--	48	--	0.0052	0.022	0.044	
1,2-Dichloroethane	µg/L	--	230c	--	2000	9600	19000	
Total Filterable Residue	mg/L	--	--	--	1500	--	--	
Lead	µg/L	--	--	100	31	580	1200	
Mercury	ng/L	1.3	3.1	10000	910	1700	3400	
Nickel	µg/L	--	43000	200	130	1200	2300	
Nitrate+Nitrite	mg/L	--	--	100	--	--	--	
Selenium	µg/L	--	3100	50	5	--	--	
Silver	µg/L	--	11000	--	1.3	9.9	20	
Strontium	µg/L	--	140000 0	--	21000	40000	81000	
Zinc	µg/L	--	35000	25000	310	300	610	
cis-1,2-Dichloroethene	µg/L	--	36000	--	--	--	--	
Trichloroethene	µg/L	--	370c	--	220	2000	4000	
Arsenic	µg/L	--	580	100	150	340	680	
Molybdenum	µg/L	--	10000	--	20000	190000	370000	

c = Carcinogen

Table 10. Instream Conditions and Discharger Flow

Parameter	Units	Season	Value	Basis
1Q10	cfs	annual	0.13	USGS Station 04195500
7Q10	cfs	annual	0.16	USGS Station 04195500
		summer	0	USGS Station 04195500
		winter	0	USGS Station 04195500
30Q10	cfs	summer	0.24	USGS Station 04195500
		winter	0.56	USGS Station 04195500
90Q10	cfs	annual	0.33	
Harmonic Mean	cfs	annual	1.22	USGS Station 04195500
Mixing Assumption	%	average	25	
		maximum	100	
Hardness	mg/L	annual	228	Station 901; 2010-2015; n=60
pH	S.U.	summer	7.7	Station 901; 2010-2015; n=20
		winter	7.75	Station 901; 2010-2015; n=15
Temperature	°C	summer	21	Station 901; 2010-2015; n=20
		winter	4.5	Station 901; 2010-2015; n=15
Fostoria WWTP flow	cfs	annual	12.8	Average Design Flow
Ammonia	mg/L	summer	0.19	DMR; 2010-2015; n=20; 0<MDL; Station 801 Median
		winter	0.35	DMR; 2010-2015; n=15; 0<MDL; Station 801 Median
Antimony	µg/L	annual	--	No representative data available.
Beryllium	µg/L	annual	--	No representative data available.
Bis(2-ethylhexyl)phthalate	µg/L	annual	0	STORET; 2008; n=1; 1<MDL; Station 300512, non-detect
Cadmium	µg/L	annual	0.1	STORET; 2008,2009; n=19; 16<MDL; All 5 stations median
Chromium	µg/L	annual	1	STORET; 2008,2009; n=19; 13<MDL; All 5 stations median
Dissolved Hexavalent Chromium	µg/L	annual	--	No representative data available.
Copper	µg/L	annual	3	STORET; 2008,2009; n=19; 4<MDL; All 5 stations median
Cyanide, Free	mg/L	annual	--	No representative data available.

Table 10. (Continued)

Parameter	Units	Season	Value	Basis*
1,2-Dichloroethane	µg/L	annual	0	STORET; 2008; n=1; 1<MDL; Station 300512, non-detect
Total Filterable Residue	mg/L	annual	424	STORET; 2008,2009; n=28; 0<MDL; All 5 stations median
Lead	µg/L	annual	1	STORET; 2008,2009; n=19; 13<MDL; All 5 stations median
Mercury	ng/L	annual	--	No representative data available.
Nickel	µg/L	annual	2.95	STORET; 2008,2009; n=19; 0<MDL; All 5 stations median
Nitrate+Nitrite	mg/L	annual	0.89	STORET; 2008,2009; n=27; 3<MDL; All 5 stations median
Selenium	µg/L	annual	0	STORET; 2008,2009; n=19; 19<MDL; All 5 stations non-detect
Silver	µg/L	annual	--	No representative data available.
Strontium	µg/L	annual	950	STORET; 2008,2009; n=19; 0<MDL; All 5 stations median
Zinc	µg/L	annual	5	STORET; 2008,2009; n=19; 11<MDL; All 5 stations median
cis-1,2-Dichloroethene	µg/L	annual	0	STORET; 2008; n=1; 1<MDL; Station 300512, non-detect
Trichloroethene	µg/L	annual	0	STORET; 2008; n=1; 1<MDL; Station 300512, non-detect
Arsenic	µg/L	annual	--	No representative data available.
Molybdenum	µg/L	annual	--	No representative data available.

WWTP = Wastewater Treatment Plant

DMR = Discharge Monitoring Report

USGS = United States Geological Survey

MDL = Method Detection Limit

STORET = United States Environmental Protection Agency STOrage and RETrieval Data Warehouse

* = Stations used: S01P02, 300512, S01S30, S01P01, 300373

Table 11. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria

Parameter	Units	Outside Mixing Zone Criteria					Maximum Aquatic Life	Inside Mixing Zone Maximum
		Wildlife	Average					
			Human Health	Agriculture	Aquatic Life			
Ammonia (Summer)	mg/L	--	--	--	--	--	--	
Ammonia (Winter)	mg/L	--	--	--	--	--	--	
Antimony	µg/L	--	799	--	191	909	1800	
Beryllium	µg/L	--	133	102	60	515	1000	
Bis(2-ethylhexyl)phthalate	µg/L	--	33	--	8.4	1111	2100	
Cadmium	µg/L	--	747	51	5.6	15	30	
Chromium	µg/L	--	14334	102	221	1717	3300	
Dissolved Hexavalent Chromium	µg/L	--	14334	--	11	16	31	
Copper	µg/L	--	65525	512	31	51	100	
Cyanide, Free	mg/L	--	49	--	0.0052	0.022	0.044	
1,2-Dichloroethane	µg/L	--	235	--	2006	9698	19000	
Total Filterable Residue	mg/L	--	--	--	1503	--	--	
Lead	µg/L	--	--	102	31	586	1200	
Mercury	ng/L	1.3	3.1	10000	910	1700	3400	
Nickel	µg/L	--	44025	205	130	1212	2300	
Nitrate+Nitrite	mg/L	--	--	102	--	--	--	
Selenium	µg/L	--	3174	51	5	--	--	
Silver	µg/L	--	11262	--	1.3	10	20	
Strontium	µg/L	--	143333 7	--	21063	40397	81000	
Zinc	µg/L	--	35834	25596	311	303	610	
cis-1,2-Dichloroethene	µg/L	--	36858	--	--	--	--	
Trichloroethene	µg/L	--	379	--	221	2020	4000	
Arsenic	µg/L	--	594	102	150	343	680	
Molybdenum	µg/L	--	10238	--	20062	191930	370000	

Table 12. Parameter Assessment

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

No parameters meet these criteria

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

Nitrate+Nitrite	Chromium	Zinc	Dissolved Hexavalent Chromium
Molybdenum	Arsenic	Silver	cis-1,2-Dichloroethene
Cyanide, Free	Strontium	Nickel	1,2-Dichloroethane
Antimony	Beryllium	Lead	Trichloroethene

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

Copper	Cadmium
--------	---------

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

Selenium	Total Filterable Residue
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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.

Limits to Protect Numeric Water Quality Criteria

<u>Parameter</u>	<u>Units</u>	<u>Period</u>	<u>Recommended Effluent Limits</u>	
			<u>Average</u>	<u>Maximum</u>
Bis(2-ethylhexyl)phthalate	µg/L	annual	8.4	1111
Mercury	ng/L	annual	1.3	1700

PEQ = Projected Effluent Quality

PEL = Projected Effluent Limit

WLA = wasteload allocation

WQS = water quality standard

Table 13. 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 -----				EP, M
Total Precipitation	Inches	----- Monitor -----				EP, M
Dissolved Oxygen (Summer)	mg/L	7.0 minimum		--	--	EP, PD
Dissolved Oxygen (Winter)	mg/L	5.0 minimum		--	--	EP, PD
Total Suspended Solids	mg/L	12	18 ^c	375	563 ^c	EP, PD
Oil & Grease	mg/L	--	10	--	--	WQS, EP
Ammonia						
March-May & October-November	mg/L	2.8	4.2 ^c	87.6	131.4 ^c	EP, PD
June - September	mg/L	1.5	2.3 ^c	46.9	71.9 ^c	EP, PD
December - February	mg/L	4.0	6.0 ^c	125.1	187.7 ^c	EP, PD
Kjeldahl Nitrogen, Total	mg/L	----- Monitor -----				EP, BTJ
Nitrate+Nitrite	mg/L	----- Monitor -----				EP, BTJ
Phosphorus	mg/L	1.0	1.5 ^c	31.3	46.9 ^c	EP, PTS
Orthophosphate, Dissolved (as P)	mg/L	----- Monitor -----				SB1
Selenium	µg/L	----- Monitor -----				EP, RP
Beryllium	µg/L	----- Monitor -----				EP, M
Nickel	µg/L	----- Monitor -----				EP, M
Strontium	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
Dissolved Hexavalent Chromium	µg/L	----- Monitor -----				EP, M
Antimony	µg/L	----- Monitor -----				EP, M
<i>E. coli</i> (Summer Only)	#/100 mL	161	362 ^c	--	--	EP, WQS
Bis(2-ethylhexyl)phthalate	µg/L	8.4	1111	0.26	34.7	EP, WLA
Flow Rate	MGD	----- Monitor -----				EP, M
Mercury	ng/L	11.0	1700	0.00034	0.053	WLA, VAR
Cyanide, Free	mg/L	----- Monitor -----				EP, M

Table 13. (Continued)

Parameter	Units	Concentration		Loading (kg/day) ^a		Basis ^b
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Acute Toxicity						
<i>Ceriodaphnia dubia</i>	TU _a	----- Monitor -----				WET
<i>Pimephales promelas</i>	TU _a	----- Monitor -----				WET
Chronic Toxicity						
<i>Ceriodaphnia dubia</i>	TU _c	--	1.0	--	--	WET
<i>Pimephales promelas</i>	TU _c	----- Monitor -----				WET
pH	SU	6.5 - 9.0		--	--	WQS, EP
Total Filterable Residue	mg/L	----- Monitor -----				EP, RP
CBOD ₅	mg/L	10	15 ^c	313	469 ^c	EP, PD

a = Effluent loadings based on average design discharge flow of 8.25 MGD.

b = Definitions

BTJ = Best Technical Judgment

EP = Existing Permit

M = BTJ of Division of Surface Water NPDES Permit Guidance 1: Monitoring frequency requirements for Sanitary Discharges

RP = Reasonable Potential for requiring water quality-based effluent limits and monitoring requirements in NPDES permits (3745-33-07(A))

WET = Whole Effluent Toxicity (CFR 40 part 132, Great Lakes Initiative procedure 6 and OAC 3745-33-07(B))

WLA = Wasteload Allocation procedures (OAC 3745-2)

WQS = Ohio Water Quality Standards (OAC 3745-1)

PTS = Phosphorus Treatment Standards (OAC 3745-33-06 (C))

VAR = Mercury variance-based limits, OAC 3745-33-07(D)(10)

SB1 = Implementation of Senate Bill 1 [ORC 6111.03]

PD = Plant Design

c = Weekly average limit

MGD = Million gallons per day

S.U. = Standard Units

TU_a = acute toxicity units

TU_c = chronic toxicity units

CBOD₅ = 5-day carbonaceous biochemical oxygen demand

P = Phosphorus

Attachment 1. Mercury Data from Pollutant Minimization Program

Current Influent and Effluent Mercury Concentrations

The following table shows the influent and effluent mercury concentrations for the most recent 12 months obtained using a low-level analytical method.

Mercury Concentrations
Table 1

Date	Influent (ng/l) 601	Effluent (ng/l) 001
2013		
November	12.5	5.24
December	6.55	6.54
2014		
January	5.66	4.66
February	6.24	4.00
March	7.34	2.16
April	30.4	3.08
May	171.0	8.12
June	7.12	4.19
July	99.6	7.10
August	64.6	2.70
September	66.4	1.90
October	70.4	2.81
November	56.6	4.90