

National Pollutant Discharge Elimination System (NPDES) Permit Program

FACT SHEET

Regarding an NPDES Permit to Discharge to Waters of the State of Ohio  
for **City of Canton Water Reclamation Facility (WRF)**

Public Notice No.: 15-5-013  
Public Notice Date: May 15, 2015  
Comment Period Ends: July 15, 2015

Ohio EPA Permit No.: **3PE00000\*QD**  
Application No.: **OH0024350**

Name and Address of Applicant:

**City of Canton**  
**218 Cleveland Avenue S.W.**  
**Canton, Ohio 44702**

Name and Address of Facility Where

Discharge Occurs:

**Canton WRF**  
**3530 Central Avenue S.E.**  
**Canton, Ohio 44707**  
**Stark County**

Receiving Water: **Nimishillen Creek**

Subsequent Stream Network: **Sandy Creek, Tuscarawas River, Muskingum 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.

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 current permit, although some monitoring frequencies have changed: flow, temperature, dissolved oxygen, 5-day carbonaceous biochemical oxygen demand (CBOD<sub>5</sub>), total suspended solids, ammonia, nitrate+nitrite, total Kjeldahl nitrogen, oil and grease, pH, total residual chlorine, cadmium, chromium, dissolved hexavalent chromium, copper, *Escherichia coli* (*E. coli*), lead, mercury, nickel, and zinc.

A construction compliance schedule for new plant design limits is proposed to continue.

New monitoring is proposed for dissolved orthophosphate (as P). Monitoring is proposed based upon implementation of Senate Bill 1 [ORC 6111.03].

New total filterable residue influent and effluent conditions are proposed.

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.

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

Outfall 3PE00000002 has been added to better monitor the discharge of the raw bypass.

Upstream monitoring for phosphorus, total filterable residue, total Kjeldahl nitrogen, and nitrate+nitrite and toxicity have been added to station 3PE00000801. Downstream monitoring for total Kjeldahl nitrogen and total filterable residue has been added to station 3PE00000901. Metals monitoring isn't necessary and therefore removed.

Sludge Station 3PE00000585 has been removed because Canton WRF no longer incinerates their sludge.

Current monitoring requirements for selenium and barium are being removed because effluent data shows that they no longer have the reasonable potential to contribute to exceedances of water quality standards.

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; tracking of group 4 parameters; whole effluent toxicity (WET) testing; storm water compliance; outfall signage; and pretreatment program requirements.

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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 Erin Sherer at (614) 644-2018, [Erin.Sherer@epa.ohio.gov](mailto:Erin.Sherer@epa.ohio.gov), or Laura Barrett at (330) 963-1136, [Laura.Barrett@epa.ohio.gov](mailto:Laura.Barrett@epa.ohio.gov).

## Information Regarding Certain Water Quality Based Effluent Limits

This draft permit may contain proposed water quality based effluent limitations (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](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 water quality based effluent limits 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 Ohio Administrative Code (OAC) Rule 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 Rule 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

Canton WRF discharges to Nimishillen Creek at River Mile (RM) 10.0. Figure 1 shows the approximate location of the facility.

This segment of the Nimishillen Creek is described by Ohio EPA River Code: 17-460, U.S. EPA River Reach #: 05040001-050-060, County: Stark, Ecoregion: Erie/Ontario Drift and Lake Plain. The Nimishillen Creek is designated for the following uses under Ohio's WQS (Ohio Administrative Code [OAC] 3745-1-24): Warmwater Habitat (WWH), Agricultural Water Supply (AWS), Industrial Water Supply (IWS), and Class B 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 - generally waters too shallow for swimming or canoeing).

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

## Facility Description

The Canton WRF was constructed approximately in 1973 to 1982 and the last major modification was around 1998 to 2000. Currently, major WRF modifications with construction are anticipated from 2014 to 2017. The Canton WRF serves the following areas: City of Canton, City of North Canton, Stark County Metropolitan Sewer District, City of Louisville, and Summit County Department of Environmental Services. The Canton WRF has an average daily design flow of 39 MGD with a maximum daily flow of 67 MGD. Construction of new plant process is scheduled to be completed in late 2017.

Current wet stream treatment processes include:

- mechanical bar screens,
- grit removal,
- pre-aeration tanks,
- primary settling tanks,
- activated sludge aeration,
- combined biological nitrification/biochemical oxygen demand reduction
- secondary clarification,
- tertiary sand filters,
- chlorination and dechlorination

Solids collected from the treatment system are processed by gravity thickening, dewatered using belt filter presses, and disposed of at a licensed solid waste landfill.

Future wet stream treatment processes include:

- mechanical bar screens, (current)
- raw pumping
- grit/grease removal
- two stages of mechanical bar screens (new)
- primary equalization basin (where primary settling tanks were)
- membrane bioreactors (6 stages, where activated sludge aeration was)
- emergency backup of alum addition (for phosphorus removal)
- secondary equalization basin (where secondary clarification was)
- emergency backup of chlorination and dechlorination (for disinfection)

The Canton WRF collection system is 100 percent separate sanitary sewer. The City of Canton continues to minimize inflow and infiltration (I/I) by continuing to implement the Sewer Maintenance Plan, continuing the Downspout Disconnection Program, sewer modeling, and collection system-wide flow monitoring.

The City of Canton implements an Ohio EPA-approved industrial pretreatment program. A total of 34 industrial users discharge a total flow of approximately 2.90 MGD to the WRF. There are 22 categorical industrial users and 12 significant non-categorical industrial users.

#### Description of Existing Discharge

Table 1 presents chemical specific data compiled from the data reported in annual pretreatment reports.

Table 2 presents a summary of unaltered Discharge Monitoring Report (DMR) data for outfall 3PE00000001. Data are presented for the period November 2009 through October 2014, and current permit limits are provided for comparison.

Table 3 summarizes the chemical specific data for outfall 3PE00000001 by presenting the average and maximum PEQ values.

The City reports SSO occurrences under Station 300 in its NPDES permit. The City reported 13 SSOs in 2011, zero SSOs in 2012, five SSOs in 2013, and one SSO in 2014. Based on information from the City, all SSOs are caused by blockages and are corrected when they are discovered.

Outfall 3PE00000002 has been added to better monitor the discharge of the raw bypass. Flow bypassed at the headworks does not receive any treatment. Bypass circumstances include power failures and high flows due to rainfall. The bypass was used three times during the previous permit cycle and 12 times since 2001 with an average bypass volume of 6.2 MGD.

#### Assessment of Impact on Receiving Waters

Nimishillen Creek has been identified as a priority impaired water on Ohio's 303(d) list.

An assessment of the impact of a permitted point source on the immediate receiving waters includes an evaluation of the available chemical/physical, biological, and habitat data which have been collected by Ohio EPA pursuant to the Five-Year Basin Approach for Monitoring and NPDES Reissuance. Other data may be used provided it was collected in accordance with Ohio EPA methods and protocols as specified by the Ohio

WQS and Ohio EPA guidance documents. Other information which may be evaluated includes, but is not limited to: NPDES permittee self-monitoring data; effluent and mixing zone bioassays conducted by Ohio EPA, the permittee, or U.S. EPA.

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

Use attainment is a term which describes the degree to which environmental indicators are either above or below criteria specified by Ohio's 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 to 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 4) 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 complete TMDL report is available at the following Ohio EPA Internet site:  
<http://www.epa.state.oh.us/dsw/tmdl/MuskingumRiver.aspx#120213153-nimishillen-creek>

### 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 Canton WRF 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)	November 2009 through October 2014
NPDES Pretreatment data	2010 through 2011

This data is evaluated statistically, and PEQ values are calculated for each pollutant. Average PEQ ( $PEQ_{avg}$ ) values represent the 95<sup>th</sup> percentile of monthly average data, and maximum PEQ ( $PEQ_{max}$ ) values represent the 95<sup>th</sup> percentile of all data points. The average and maximum PEQ values are presented in Table 3.

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<sub>avg</sub> or PEQ<sub>max</sub> 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 8 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 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 6, and allocations cannot exceed the Inside Mixing Zone Maximum (IMZM) criteria.

The data used in the WLA are listed in Tables 5 and 6. The WLA results to maintain all applicable criteria are presented in Table 7. The current ammonia limits have been evaluated using the WLA procedures and are protective of WQS for ammonia toxicity.

*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<sub>c</sub>) and 7Q10 flow for the average and the acute toxicity unit (TU<sub>a</sub>) 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 Canton WRF, the WLA values are 0.4 TU<sub>a</sub> and 1.43 TU<sub>c</sub>.

The chronic toxicity unit (TU<sub>c</sub>) 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<sub>25</sub>):

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

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

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

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

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

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

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

<u>Dilution Ratio</u> <u>(downstream flow to discharger flow)</u>	<u>Allowable Effluent Toxicity</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 Canton WRF is 30 percent mortality in 100 percent effluent based on the dilution ratio of 1.4 to 1. This ratio calculation is based on the sum of the design effluent flow of 60.33 cfs and the 7Q10 flow of 23.41 cfs divided by 60.33 cfs.

#### 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 7. The average PEL ( $PEL_{avg}$ ) is compared to the average PEQ ( $PEQ_{avg}$ ) from Table 3, and the  $PEL_{max}$  is compared to the  $PEQ_{max}$ . Based on the calculated percentage of the allocated value [ $(PEQ_{avg} \div PEL_{avg}) \times 100$ , or  $(PEQ_{max} \div PEL_{max}) \times 100$ ], the parameters are assigned to group 3, 4, or 5. The groupings are listed in Table 8.

The final effluent limits are determined by evaluating the groupings in conjunction with other applicable rules and regulations. Table 9 presents the final effluent limits and monitoring requirements proposed for Canton WRF outfall 3PE00000001 and the basis for their recommendation. Unless otherwise indicated, the monitoring frequencies proposed in the permit are continued from the existing permit.

#### *Total Filterable Residue*

The Ohio EPA risk assessment (Table 8) places total filterable residue (TFR) (also referred to as total dissolved solids, TDS) in group 5 because of the loading test [OAC 3745-2-06(B)(1)(b)]. The PEQ is between 75 and 100 percent of the WLA, which would place TFR in group 4.

As noted above, TFR is a group 5 parameter because of the loading test, which is dependent on the upstream TFR concentration. There are concerns about the upstream data being representative, and the upstream concentration could change significantly because of plans to reroute Marathon's discharge out of Nimishillen Creek. For these reasons, Ohio EPA is not including effluent TFR limits in this permit. Upstream and

downstream monitoring of TFR is proposed to accurately quantify the background concentrations of this parameter. In addition, a compliance schedule has been added for Canton to conduct a TFR study to identify and quantify all significant sources of TFR that discharge to the Canton WRF.

Because TFR is monitored in the effluent without a limit, a tracking requirement has been added to Part II of the permit which specifies reductions in pollutant concentrations if effluent concentrations exceed the WLA.

#### *Metals and Free Cyanide*

The Ohio EPA risk assessment (Table 8) places copper, free cyanide, cadmium, chromium, dissolved hexavalent chromium, lead, nickel, and zinc in groups 2 and 3. This placement, as well as the data in Tables 2 & 3, 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 the current frequency is proposed to document that these pollutants continue to remain at low levels.

#### *Barium and Selenium*

The Ohio EPA risk assessment (Table 8) places barium and selenium in group 3. This placement, as well as the data in Tables 2 & 3, 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. Monitoring for barium and selenium are proposed to be removed.

#### *Arsenic, Molybdenum and Silver*

The Ohio EPA risk assessment (Table 8) places arsenic, molybdenum and silver in group 2. This placement, as well as the data in Tables 2 & 3, 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 Nimishillen Creek as impaired for aquatic life. Nutrients, nitrates and organic enrichment/dissolved oxygen are listed as “high magnitude” causes, and municipal point sources are listed among the “high magnitude” sources. Considering the fact that municipal wastewater treatment plants discharge a nutrient load to the river, continued monitoring for nitrate + nitrite and total Kjeldahl nitrogen is proposed to continue based on best technical judgment. Monitoring for phosphorus and nitrate + nitrite at the upstream and downstream stations also is proposed. The purpose of the monitoring is to maintain a data set for use in future nutrient-related water quality studies.

#### *Mercury*

The Ohio EPA risk assessment (Table 8) places mercury in group 3. This placement, as well as the data in Tables 2 & 3, support that this parameter did not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. Monitoring at the current frequency is proposed to document that these pollutants continue to remain at low levels.

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 are 12 ng/L (average) and 1700 ng/L (maximum) in the Ohio River basin.

#### *Flow Rate and Water Temperature*

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 CBOD<sub>5</sub>*

The limits proposed for dissolved oxygen, total suspended solids, ammonia and CBOD<sub>5</sub> are all based on plant design criteria. These limits are protective of WQS.

#### *Oil and grease, pH, and Escherichia coli*

Limits proposed for oil and grease, pH, and *E. coli* are based on WQS (OAC 3745-1-07). Class B Primary Contact Recreation *E. coli* standards apply to the Nimishillen Creek.

#### *Total Residual Chlorine*

The proposed limit for total residual chlorine is based on WLA as limited by the inside mixing zone maximum (IMZM). The IMZM is a value calculated to avoid rapidly lethal conditions in the effluent mixing zone.

#### *Total Phosphorus*

Canton WRF improved the treatment design. The limits proposed for phosphorus are based on the new plant design criteria. Monitoring will continue until after construction; limits will be implemented after January 1, 2020.

#### *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.

#### *Sludge*

Limits and monitoring requirements proposed for the disposal of sewage sludge by the following management practices are based on OAC 3745-40: land application, removal to sanitary landfill or transfer to another facility with an NPDES permit.

#### *Additional monitoring*

Toxicity monitoring for the upstream station 3PE00000801 is necessary to evaluate the validity of effluent toxicity because upstream sampling is normally used as a control in WET testing.

Monitoring for phosphorus and nitrate + nitrite at the upstream and downstream stations also is proposed. The purpose of the monitoring is to maintain a nutrient data set for use in future water quality studies.

Additional monitoring requirements proposed at the final effluent, raw bypass, 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.

#### *Whole Effluent Toxicity Reasonable Potential*

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

## Other Requirements

### *Pretreatment Compliance Schedule*

A six-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.

### *Total Filterable Residue (TFR) Evaluation Study*

As noted previously, a compliance schedule for a TFR Evaluation Study has been added to Part I.C of the permit. The purpose of this study is to identify and quantify all significant sources of TFR that discharge to the Canton WRF.

### *Sanitary Sewer Overflow Reporting*

Provisions for reporting sanitary sewer overflows (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*

Operator certification requirements have been included in Part II, Item A of the permit in accordance with rules adopted in December 2006. These rules require the Canton WRF to have a Class IV wastewater treatment plant operator in charge of the sewage treatment plant operations discharging through outfall 3PE00000001.

### *Operator of Record*

In December 2006, Ohio Administrative Code rule revisions became effective that affect the requirements for certified operators for sewage collection systems and treatment works regulated under NPDES permits. Part II of this NPDES permit is included to implement rule 3745-7-02 of the Ohio Administrative Code (OAC). It requires the permittee to designate one or more operator of record to oversee the technical operation of the WRF.

### *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.

### *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 Canton WRF may seek permit coverage under the general permit for industrial storm water (permit # OHR000004) or submit a “No Exposure Certification.” Parts IV, V, and VI will be removed from the final

permit if: 1) the Canton WRF 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 Nimishillen Creek providing information about the discharge. Signage at outfalls is required pursuant to Ohio Administrative Code 3745-33-08(A).



**Figure 1. Location of Canton Water Reclamation Facility**

**Table 1. Effluent Characterization Using Pretreatment Data**

Summary of analytical results for Canton outfall 3PE00000001. All units in µg/L.

<b>Parameter</b>	<b>PT 9/13/2011</b>	<b>PT 9/13/2010</b>
Cadmium	ND (3.0)	ND (3.0)
Chromium	ND (7.0)	ND (7.0)
Copper	ND (8.0)	ND (8.0)
Lead	ND (10)	ND (10)
Nickel	ND (8.0)	8.0
Selenium	ND (4.0)	ND (4.0)
Silver	ND (5.0)	ND (5.0)
Zinc	15	18

PT = data from pretreatment program reports

NA = not analyzed

ND = not detected (detection limit)

PEQ = Projected Effluent Quality

**Table 2. Effluent Characterization Using Self-Monitoring Data**

Summary of current permit limits and unaltered discharge monitoring report for Canton outfall 3PE00000001 (November 2009 - October 2014). All values are based on annual records unless otherwise indicated.

Parameter	Season	Units	Current Permit Limits		Percentiles			Data Range
			30 day	Daily	# Obs.	50 <sup>th</sup>	95 <sup>th</sup>	
Water Temperature	Annual	°C	--	Monitor	1825	18	23	11-24
Dissolved Oxygen	Summer	mg/L	--	5.0 min	920	8	8.7	5.9-9.2
Dissolved Oxygen	Winter	mg/L	--	5.0 min	901	8.6	9.3	5.3-10.1
Total Filterable Residue	Annual	mg/L	Monitor	--	60	1310	1540	958-1670
Total Suspended Solids	Summer	mg/L	12	18 <sup>a</sup>	920	1.6	4.2	0-25.3
Total Suspended Solids	Winter	mg/L	1772	2657 <sup>a</sup>	906	2	5.1	0-25.7
Total Suspended Solids	Summer	kg/day	27.2	40.9 <sup>a</sup>	920	167	435	0-2720
Total Suspended Solids	Winter	kg/day	4015	6037 <sup>a</sup>	906	232	545	0-5050
Oil and Grease	Annual	mg/L	--	10	261	0	3	0-6
Ammonia	Summer	mg/L	1.85	3.6 <sup>a</sup>	920	0.04	0.08	0-9.21
Ammonia	Winter	mg/L	3.85	5.8 <sup>a</sup>	906	0.05	1.59	0-12.6
Ammonia	Summer	kg/day	273	531 <sup>a</sup>	920	4.09	9.84	0-1260
Ammonia	Winter	kg/day	569	856 <sup>a</sup>	906	5.26	216	0-1530
Kjeldahl Nitrogen, Total	Annual	mg/L	Monitor	--	60	0	4.23	0-11
Nitrate+Nitrite	Annual	mg/L	--	Monitor	130	21.2	36.5	6.3-43.6
Phosphorus	Annual	mg/L	--	Monitor	522	1.87	2.79	0.78-3.81
Cyanide, Free	Annual	mg/L	Monitor	--	60	0.002	0.0071	0-0.015
Selenium	Annual	µg/L	Monitor	--	60	0	0.1	0-3
Barium	Annual	µg/L	Monitor	--	60	59.6	69.7	47.9-78.7
Nickel	Annual	µg/L	Monitor	--	60	6	11.2	0-24
Zinc	Annual	µg/L	Monitor	--	60	31	44.1	13-52
Cadmium	Annual	µg/L	Monitor	--	60	0	0	0-0
Lead	Annual	µg/L	Monitor	--	60	0	0	0-6

**Table 2. (Continued)**

Parameter	Season	Units	Current Permit Limits		Percentiles			Data Range
			30 day	Daily	# Obs.	50 <sup>th</sup>	95 <sup>th</sup>	
Chromium	Annual	µg/L	Monitor	--	60	0	3	0-5
Copper	Annual	µg/L	Monitor	--	60	0	13	0-14
Dissolved Hexavalent Chromium	Annual	µg/L	Monitor	--	60	0	0	0-0
E. coli	Annual	#/100 mL	161	362 <sup>a</sup>	502	52	415	2-2200
Flow Rate	Summer	MGD	--	Monitor	920	27.2	41.5	20.3-71.9
Flow Rate	Winter	MGD	--	Monitor	906	29	42.3	20.8-89.5
Flow Rate	Annual	MGD	--	Monitor	1826	28.1	41.8	20.3-89.5
Total Residual Chlorine	Annual	mg/L	--	0.022	642	0	0	0-0
Mercury	Annual	ng/L	Monitor	--	60	1.59	3.99	0-18.4
pH, Maximum	Annual	S.U.	--	9.0	1825	7.4	7.5	7-8.4
pH, Minimum	Annual	S.U.	--	6.5	1825	7.2	7.4	6.7-8.4
CBOD <sub>5</sub>	Summer	mg/L	7.5	11.6 <sup>a</sup>	668	0	2.8	0-9.2
CBOD <sub>5</sub>	Winter	mg/L	22.5	33.8 <sup>a</sup>	605	0	4.48	0-10.2
CBOD <sub>5</sub>	Summer	kg/day	1107	1712 <sup>a</sup>	668	0	300	0-1250
CBOD <sub>5</sub>	Winter	kg/day	3321	4990 <sup>a</sup>	605	0	535	0-1560

\* = 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

CBOD<sub>5</sub> = 5-day carbonaceous biochemical oxygen demand

MGD = Million gallons per day

**Table 3. Projected Effluent Quality for Canton Water Reclamation Facility**

<b>Parameter</b>	<b>Units</b>	<b>Number of Samples</b>	<b>Number &gt; MDL</b>	<b>PEQ Average</b>	<b>PEQ Maximum</b>
Ammonia (Summer)	mg/L	610	516	0.052492	0.10434
Ammonia (Winter)	mg/L	451	386	0.13389	0.3333
Barium	µg/L	60	60	65.708	71.832
Cadmium	µg/L	62	0	--	--
Chromium	µg/L	43	22	4.015	5.5
Dissolved Hexavalent Chromium	µg/L	60	0	--	--
Copper	µg/L	62	24	10.116	13.762
Cyanide, Free	mg/L	60	40	0.006111	0.009712
Total Filterable Residue	mg/L	60	60	1462.2	1619.1
Lead	µg/L	43	2	4.818	6.6
Mercury	ng/L	60	58	3.4553	5.271
Nickel	µg/L	62	48	17.52	24
Nitrate+Nitrite	mg/L	130	130	30.064	39.071
Selenium	µg/L	62	3	2.92	4
Zinc	µg/L	62	62	39.535	49.241
Arsenic	µg/L	0	0	--	--
Molybdenum	µg/L	0	0	--	--
Silver	µg/L	2	0	--	--
Total Residual Chlorine	mg/L	642	0	--	--

PEQ = Projected Effluent Quality

**Table 4. Biological Survey Results and Biocriteria**

Aquatic life use attainment status for stations sampled in the Nimishillen Creek Watershed.

The Index of Biotic Integrity (IBI), Modified Index of well-being (MIwb), and Invertebrate Community Index (ICI) are scores based on the performance of the biotic community. The Qualitative Habitat Evaluation Index (QHEI) is a measure of the ability of the physical habitat to support a biotic community.

River Mile Fish/Invertebrate	Year	IBI	MIwb	ICI	QHEI	Attainment Status	Location
<b>Nimishillen Creek - Erie Ontario Lake Plain Ecoregion - WWH existing</b>							
14.2/14.3	2005	40	7.1*	38	71.5	<b>PARTIAL</b>	Eighth Street
11.1	2004	30*	6.1*	38	68.5	<b>PARTIAL</b>	Upstream of Sherrick Run
11.1	2005	--	--	30 <sup>ns</sup>	--	(FULL)	Upstream of Sherrick Run
9.9	2005	32*	6.9*	--	79.5	(NON)	Upstream of Canton WRF
9.2/9.6	2005	31*	6.5*	Fair*	77.0	<b>NON</b>	Downstream of WRF, Faircrest Rd.
9.5	2004	--	--	26*	77.0	(NON)	Downstream of WRF, Faircrest Rd.
6.7/6.7	2005	32*	5.4*	38	78.0	<b>NON</b>	Howenstien Road
2.7	2005	34*	6.5*	34	75.0	<b>PARTIAL</b>	Farber Road

**Table 4. (Continued)**

**Ecoregion Biocriteria for Erie-Ontario Drift and Lake Plain**

Site Type	IBI			MIwb			ICI		
	WWH	EWH	MWH	WWH	EWH	MWH	WWH	EWH	MWH
Headwaters	40	50	20	H	H	H	34	46	22
Wading	38	50	22	7.9	9.4	5.6	34	46	22
Boat	40	48	20	8.7	9.6	5.7	34	46	22

H = Headwater site, MIwb is not applicable.

W = Wading site.

B = Boat site.

a = MIwb is not applicable to headwater streams with drainage areas < 20 mi<sup>2</sup>.

b = A narrative evaluation of the qualitative sample based on attributes such as EPT taxa richness, number of sensitive taxa, and community composition was used when quantitative data was not available or considered unreliable due to current velocities less than 0.3 fps flowing over the artificial substrates. VP=Very Poor, P=Poor, LF=Low Fair, F=Fair, HF=High Fair, MG=Marginally Good, G=Good, VG=Very Good, E=Exceptional

c = Attainment status is given for the existing or if a change is proposed then the proposed use designations.

NA = Not applicable

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.

EWH = Exceptional Warmwater Habitat

MWH = Modified Warmwater Habitat

WWH = Warmwater Habitat

WRF = Water Reclamation Facility

**Table 5. Water Quality Criteria in the Study Area**

Parameter	Units	Outside Mixing Zone Criteria				Inside Mixing Zone Maximum
		Average			Maximum	
		Human Health	Agri-culture	Aquatic Life	Aquatic Life	
Ammonia (Summer)	mg/L	--	--	1.9	--	--
Ammonia (Winter)	mg/L	--	--	4.8	--	--
Barium	µg/L	--	--	220	2000	4000
Cadmium	µg/L	--	50	7.2	21	42
Chromium	µg/L	--	100	260	5500	11000
Dissolved Hexavalent Chromium	µg/L	--	--	11	16	31
Copper	µg/L	1300	500	30	50	100
Cyanide, Free	mg/L	220	--	0.012	0.046	0.092
Total Filterable Residue	mg/L	--	--	1500	--	--
Lead	µg/L	--	100	36	690	1400
Mercury	ng/L	12	10000	910	1700	3400
Nickel	µg/L	4600	200	160	1500	3000
Nitrate+Nitrite	mg/L	--	100	--	--	--
Selenium	µg/L	11000	50	5	--	--
Zinc	µg/L	69000	25000	380	380	760
Arsenic	µg/L	--	100	150	340	680
Molybdenum	µg/L	--	--	20000	190000	370000
Silver	µg/L	--	--	1.3	17	33
Total Residual Chlorine	mg/L	--	--	0.011	0.019	0.038

**Table 6. Instream Conditions and Discharger Flow**

<b>Parameter</b>	<b>Units</b>	<b>Season</b>	<b>Value</b>	<b>Basis</b>
1Q10	cfs	annual	22.42	USGS and Dischargers w/o Marathon
7Q10	cfs	annual	23.41	USGS and Dischargers w/o Marathon
30Q10	cfs	summer	15.8	USGS and Dischargers w/o Marathon
30Q10	cfs	winter	23.73	USGS and Dischargers w/o Marathon
90Q10	cfs	annual	0	
Harmonic Mean	cfs	annual	63.25	USGS and Dischargers w/o Marathon
Mixing Assumption	%	average	100	
Mixing Assumption	%	maximum	100	
Hardness	mg/L	annual	390	901 station, n=60, 2009-2014
pH	S.U.	summer	7.7	901 station, n=20, 2009-2014
pH	S.U.	winter	7.8	901 station, n=15, 2009-2014
Temperature	°C	summer	22	901 station, n=20, 2009-2014
Temperature	°C	winter	8.5	901 station, n=15, 2009-2014
Canton WRF flow	cfs	annual	60.33	NPDES Renewal Application
Ammonia	mg/L	summer	0.045	eDMR; 2009-2014; n=20; 2<MDL; 801 Station, 50th %tile
Ammonia	mg/L	winter	0.11	eDMR; 2009-2014; n=15; 1<MDL; 801 Station, 50th %tile
Barium	µg/L	annual	73.4	STORET; 2004, 2006; n=5; 0<MDL; R07S10 Station, Average
Cadmium	µg/L	annual	0	STORET; 2004, 2006; n=5; 5<MDL; R07S10 Station, non-detect
Chromium	µg/L	annual	0	STORET; 2004, 2006; n=5; 5<MDL; R07S10 Station, non-detect
Dissolved Hexavalent Chromium	µg/L	annual	--	No representative data available.
Copper	µg/L	annual	0	STORET; 2004, 2006; n=5; 5<MDL; R07S10 Station, non-detect
Cyanide, Free	mg/L	annual	--	No representative data available.

**Table 6. (Continued)**

Parameter	Units	Season	Value	Basis
Total Filterable Residue	mg/L	annual	669	STORET; 2004, 2006; n=5; 0<MDL; R07S10 Station, average
Lead	µg/L	annual	1.42	STORET; 2004, 2006; n=5; 4<MDL; R07S10 Station, Average
Mercury	ng/L	annual	--	No representative data available.
Nickel	µg/L	annual	0	STORET; 2004, 2006; n=5; 5<MDL; R07S10 Station, non-detect
Nitrate+Nitrite	mg/L	annual	1	eDMR; 2009-2010; n=6; 0<MDL; 801 Station, 50th %tile
Selenium	µg/L	annual	0	STORET; 2004, 2006; n=5; 5<MDL; R07S10 Station, non-detect
Zinc	µg/L	annual	46.8	STORET; 2004, 2006; n=5; 0<MDL; R07S10 Station, Average
Arsenic	µg/L	annual	1.72	STORET; 2004, 2006; n=5; 3<MDL; R07S10 Station, Average
Molybdenum	µg/L	annual	--	No representative data available.
Silver	µg/L	annual	--	No representative data available.
Total Residual Chlorine	mg/L	summer	--	No representative data available.

WRF = Water Reclamation Facility

eDMR = Electronic Discharge Monitoring Report

USGS = United States Geological Survey

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

n = Number of samples

MDL = Method Detection Limit

**Table 7. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria**

Parameter	Units	Outside Mixing Zone Criteria				Maximum Aquatic Life	Inside Mixing Zone Maximum
		Average			Maximum		
		Human Health	Agri-culture	Aquatic Life			
Ammonia (Summer)	mg/L	--	--	--	--	--	
Ammonia (Winter)	mg/L	--	--	--	--	--	
Barium	µg/L	--	--	277	2716	4000	
Cadmium	µg/L	--	102	10	29	42	
Chromium	µg/L	--	205	361	7544	11000	
Dissolved Hexavalent Chromium	µg/L	--	--	15	22	31	
Copper	µg/L	2663	1024	42	69	100	
Cyanide, Free	mg/L	451	--	0.017	0.063	0.092	
Total Filterable Residue	mg/L	--	--	1822	--	--	
Lead	µg/L	--	203	49	946	1400	
Mercury	ng/L	12	10000	910	1700	3400	
Nickel	µg/L	9423	410	222	2057	3000	
Nitrate+Nitrite	mg/L	--	204	--	--	--	
Selenium	µg/L	22532	102	6.9	--	--	
Zinc	µg/L	141291	51161	509	504	760	
Arsenic	µg/L	--	203	208	466	680	
Molybdenum	µg/L	--	--	27761	260608	370000	
Silver	µg/L	--	--	1.8	23	33	
Total Residual Chlorine	mg/L	--	--	0.015	0.026	0.038	

**Table 8. 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.

Total Residual			
Chlorine	Chromium	Zinc	Dissolved Hexavalent Chromium
Molybdenum	Cadmium	Lead	
Nickel	Arsenic	Silver	

*Group 3:* PEQ<sub>max</sub> < 50 percent of maximum PEL and PEQ<sub>avg</sub> < 50 percent of average PEL.  
No limit recommended; monitoring optional.

Nitrate+Nitrite	Copper	Cyanide, Free
Barium	Mercury	Selenium

*Group 4:* PEQ<sub>max</sub> >= 50 percent, but < 100 percent of the maximum PEL or  
PEQ<sub>avg</sub> >= 50 percent, but < 100 percent of the average PEL. Monitoring is appropriate.

No Parameters meet these criteria

*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</u>	
			<u>Limits</u>	
			<u>Average</u>	<u>Maximum</u>
Total Filterable Residue*	mg/L	Monthly	1822	--

PEQ = Projected Effluent Quality

PEL = Projected Effluent Limit

\* = Dissolved solids (ave) becomes a Group 5 parameter based upon the loading test [OAC 3745-2-06(B)]. See page 10 for additional information.

**Table 9. Final Effluent Limits and Monitoring Requirements**

Parameter	Units	Concentration		Loading (kg/day) <sup>a</sup>		Basis <sup>b</sup>
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Acute Toxicity						
<i>Ceriodaphnia dubia</i>	TU <sub>a</sub>	----- Monitor -----				WET
<i>Pimephales promelas</i>	TU <sub>a</sub>	----- Monitor -----				WET
Chronic Toxicity						
<i>Ceriodaphnia dubia</i>	TU <sub>c</sub>	----- Monitor -----				WET
<i>Pimephales promelas</i>	TU <sub>c</sub>	----- Monitor -----				WET
Ammonia						
Summer	mg/L	1.85	3.6 <sup>c</sup>	273	531 <sup>c</sup>	EP, PD
Winter	mg/L	3.85	5.8 <sup>c</sup>	569	856 <sup>c</sup>	EP, PD
Cadmium	µg/L	----- Monitor -----				EP, M
CBOD <sub>5</sub>						
Summer	mg/L	7.5	11.6 <sup>c</sup>	1107	1712 <sup>c</sup>	EP, PD
Winter	mg/L	22.5	33.8 <sup>c</sup>	3321	4990 <sup>c</sup>	EP, PD
Chromium	µg/L	----- Monitor -----				EP, M
Copper	µg/L	----- Monitor -----				EP, M
Cyanide, Free	µg/L	----- Monitor -----				EP, M
Dissolved Oxygen	mg/L	5.0 minimum		--	--	EP, PD
<i>E. coli</i> (Final)						
Summer Only	#/100 mL	161	362 <sup>c</sup>	--	--	WQS, EP
Flow Rate	MGD	----- Monitor -----				EP, M
Dissolved Hexavalent Chromium	µg/L	----- Monitor -----				EP, M
Lead	µg/L	----- Monitor -----				EP, M
Mercury	ng/L	----- Monitor -----				EP, M
Nickel	µg/L	----- Monitor -----				EP, M
Nitrate+Nitrite	mg/L	----- Monitor -----				EP, M
Oil & Grease	mg/L	--	10	--	--	WQS, EP
Orthophosphate (as P)	mg/L	----- Monitor -----				SB1
pH	mg/L	6.5 - 9.0		--	--	WQS, EP

**Table 9. (Continued)**

Parameter	Units	Concentration		Loading (kg/day) <sup>a</sup>		Basis <sup>b</sup>
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Phosphorus (Initial)	mg/L	----- Monitor -----				M, EP
Phosphorus (Final)	mg/L	1.0	1.5 <sup>c</sup>	147.7	222 <sup>c</sup>	PD
Total Filterable Residue	mg/L	----- Monitor with Tracking Language-----				WLA, EP
Kjeldahl Nitrogen, Total	mg/L	----- Monitor -----				M, EP
Total Residual Chlorine	mg/L	--	0.022	--	--	ABS, EP
Total Suspended Solids						
Summer	mg/L	12	18 <sup>c</sup>	1772	2657 <sup>c</sup>	EP, PD
Winter	mg/L	27.2	40.9 <sup>c</sup>	4015	6037 <sup>c</sup>	EP, PD
Water Temperature	°C	----- Monitor -----				EP, M
Zinc	µg/L	----- Monitor -----				EP, M

a = Effluent loadings based on average design discharge flow of 39 MGD.

b = Definitions

ABS = Antidegradation Rule (OAC 3745-33-05(E) and 40 CFR Part 122.44(l))

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))

SB1 = Implementation of Senate Bill 1 [ORC 6111.03]

WET = Whole Effluent Toxicity (CFR 40 part 132 and OAC 3745-33-07(B))

WLA = Wasteload Allocation procedures (OAC 3745-2)

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

c = Weekly average limit

CBOD<sub>5</sub> = 5-day carbonaceous biochemical oxygen demand

PD = Plant Design

MGD = Million gallons per day

S.U. = Standard Units

TU<sub>a</sub> = acute toxicity units

TU<sub>c</sub> = chronic toxicity units