National Pollutant Discharge Elimination System (NPDES) Permit Program

FACT SHEET

Regarding an NPDES Permit To Discharge to Waters of the State of Ohio
for Akron Water Reclamation Facility

Public Notice No.: 06-08-014
Public Notice Date: August 25, 2016
Comment Period Ends: September 25, 2016

Ohio EPA Permit No.: **3PF00000*OD**
Application No.: **OH0023833**

Name and Address of Applicant:
City of Akron
166 South High Street
Akron, OH 44308

Name and Address of Facility Where Discharge Occurs:
Akron Water Reclamation Facility
2460 Akron Peninsula Road
Akron, OH 44313
Summit County

Receiving Water: Cuyahoga River

Subsequent Stream Network: 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.

No antidegradation review was necessary.

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

Ohio EPA reviews the need for water-quality-based limits on a pollutant-by-pollutant basis. Wasteload allocations (WLAs) are used to develop these limits based on the pollutants that have been detected in the

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

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

Summary of Permit Conditions

Station 001
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: flow rate, dissolved oxygen, *E. coli*, and chlorine

New limits are proposed for total suspended solids and 5-day carbonaceous biochemical oxygen demand $CBOD_5$ based on the technology-based treatment standards included in 40 CFR Part 133, Secondary Treatment Regulation.

Station 602
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, flow rate, pH, dissolved oxygen, *E. coli*, chlorine, total suspended solids, oil & grease, ammonia, nitrate + nitrite, phosphorus, total filterable residue, nickel, zinc, cadmium, lead, chromium, copper, hexavalent chromium, and $CBOD_5$.

Peak flow rate is a new parameter proposed to allow reporting of flows that exceed the plant's normal operating capacity at times of excessive or extended wet weather flow from the combined sewer system. Flow reported under the peak flow rate reporting code, 50047, is not utilized in mass loading calculations.

Monthly monitoring is proposed for dissolved orthophosphate (as P) as required by Ohio Senate Bill 1.

New limits are proposed for free cyanide. Ohio EPA risk assessment indicates that the reasonable potential to exceed WQS exists and limits are necessary to protect water quality.

Akron WWTP submitted information supporting the renewal of the mercury variance.

Ohio EPA has reviewed the mercury variance application submitted by Akron WWTP and has determined that the permittee is eligible for coverage under the general mercury variance. The proposed 30-day average mercury effluent limit is based on sampling data submitted by the Akron WWTP.

In accordance with OAC 3745-33-07 and 40 CFR Part 132, Appendix F, Procedure 6, it has been determined that the effluent from Akron WWTP shows chronic toxicity to Ceriodaphnia dubia. Final limits for chronic toxicity to Ceriodaphnia dubia are proposed to be effective September 1, 2018. Quarterly monitoring with a

trigger to conduct a toxicity reduction evaluation (TRE) is proposed as an interim condition. A reopener clause is included that will allow the City to request a permit modification to remove the final toxicity limits and TRE requirements if the results of at least eight tests conducted over two years show there is no reasonable potential for whole effluent toxicity.

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.

Station 901
Consistent with Permit Guidance 1, monthly nitrate + nitrite monitoring at the downstream 901 station is proposed on the basis that the stream is effluent-dominated.

Part II
In Part II of the permit, special conditions are included that address sanitary sewer overflow (SSO) reporting; operator certification, minimum staffing and operator of record; whole effluent toxicity (WET) testing; storm water compliance; dissolved metal translator (DMT) study; mercury variance; pretreatment program requirements; toxicity reduction evaluation (TRE); phosphorus reduction; 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 Christopher Kosto, (614) 644-2027, christopher.kosto@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

Akron WWTP discharges to Cuyahoga River at River Mile 37.45. Figure 1 shows the approximate location of the facility.

This segment of the Cuyahoga River is described by Ohio EPA River Code: 19-001, U.S. EPA River Reach Code: 04-110002-001, County: Summit, Ecoregion: Erie Drift Plain. The Cuyahoga River is designated for the following uses under Ohio's WQS (OAC 3745-1-26): Warmwater Habitat, Agricultural Water Supply, Industrial Water Supply, 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

Akron WWTP was constructed in 1928 and last upgraded in 2014. The average design flow is 90 million gallons per day (MGD) and the peak hydraulic capacity is 130 MGD. Akron WWTP serves the City of Akron, Bath, Copley Township, Coventry Township, Cuyahoga Falls, Fairlawn, Lakemore, Mogadore, Montrose, Munroe Falls, Silver Lake, Springfield, Stow, and Tallmadge for a total of 363,897 customers. Akron WWTP has the following treatment processes which are shown on Figure 2:

- Fine screening
- Grit removal
- Scum removal
- Primary settling
- Activated sludge
- Secondary clarification
- Chlorination
- Dechlorination

The City of Akron has approximately 80% separated sewers and 20% combined sewers in the collection system. In November 17, 2011, Akron submitted a combined sewer overflow (CSO) long term control plan (LTCP), *Long Term Control Plan Update* with the goal of reducing sewer overflows and bypasses. The Director

approved the plan on April 11, 2012. Akron is subject to conditions in Consent Decree Case No. 5:09-cv-00272, which includes an implementation schedule for the LTCP. The City of Akron has submitted a proposed modification to the LTCP, *City of Akron Integrated Plan* dated July 31, 2015, to Ohio EPA and U.S. EPA.

Akron WWTP has one bypass, station 603. Flow bypasses secondary treatment and is combined with fully treated flow from station 602 prior to disinfection and monitoring at outfall 001. Use of this bypass and any treatment requirements are being addressed as part of the LTCP.

The City of Akron does have an approved pretreatment program. The City of Akron has 27 categorical users that discharge 1.27 MGD of flow, 1204 non-categorical users that discharge 1.06 MGD of flow, and 27 significant non-categorical users that discharge 0.68 MGD of flow.

The City of Akron's potable water comes from Lake Rockwell.

Akron WWTP utilizes the following sewage sludge treatment processes:

- Gravity belt thickeners
- Belt-press thickeners
- Two-stage anaerobic digester
- Centrifuge dewatering

Treated sludge is digested on site and then distributed as Exceptional Quality Biosolids. Table 1 shows the sludge removed from Akron WWTP from 2011 through 2015.

Akron WWTP is covered under the industrial storm water general permit 3GR00331*EG.

Description of Existing Discharge

Akron WWTP had 2 effluent violations for 1-day maximum chlorine concentration on 8/18/13 and 6/23/14, 2 effluent violations for 7-day E. coli concentration on 7/8/13 and 6/15/15, 1 effluent violation for 30-day E. coli concentration on 6/1/15. These violations were not caused by a known process error or upset condition.

Akron WWTP has an estimated infiltration/inflow (I/I) rate of 40 MGD but performs the following activities to minimize I/I: annual sanitary and combined sewer repair and rehabilitation projects and execution of approved LTCP elements. The average annual effluent flow rates for Akron WWTP outfalls 001 and 602 from 2011 through 2015 are presented on

Table 2.

Akron WWTP reports SSOs at station 300. Annual SSO occurrences for 2011 through 2015 are presented in Table 3. Akron WWTP reports bypasses at station 603. Annual occurrences and other bypass data reported is presented on Table 4. Akron WWTP has 32 known combined sewer overflows (CSOs). CSO Station 3PF00000056 (Rack 13) was eliminated June 14, 2016, and has been removed from the permit. Data for average annual CSO occurrences and volumes is summarized in Table 5. Akron WWTP has taken the following actions to reduce or eliminate SSOs, CSOs, and bypassing: step feed upgrades to secondary treatment at the WWTP to achieve a minimum sustained capacity of 130 MGD, pilot study for BioACTIFLO, and construction of several storage basins. These actions were taken as part of the LTCP and Consent Decree referenced above. Further work from the LTCP includes the Ohio Canal Tunnel and additional upgrades at the WWTP.

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 6 presents chemical specific data compiled from data reported in annual pretreatment reports.

Table 7 presents chemical specific data compiled from data collected by Ohio EPA.

Table 8 presents a summary of unaltered Discharge Monitoring Report (DMR). Data are presented for the period January 2011 to December 2015, and current permit limits are provided for comparison.

Table 9 summarizes the chemical specific data for outfall 602 by presenting the average and maximum PEQ values.

Table 10 summarizes the results of acute and chronic WET tests of the final effluent.

Table 11 summarizes the screening results of Ohio EPA bioassay sampling of the final effluent.

Assessment of Impact on Receiving Waters

The Boston Run-Cuyahoga River watershed assessment unit, which includes the Cuyahoga River in the vicinity of Akron WWTP, is listed as impaired for recreation and aquatic life on Ohio's 303(d) list.

A TMDL report for the Lower Cuyahoga River was approved by U.S. EPA on September 26, 2003. 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 March 29, 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/portals/35/tmdl/Cuyahoga_lower_final_report.pdf

The attainment status of the Boston Run-Cuyahoga River watershed is reported in the final *Ohio 2014 Integrated Water Quality Monitoring and Assessment Report*. An assessment of the impact of a permitted point source on the immediate receiving waters includes an evaluation of the available chemical/physical, biological, and habitat data which have been collected by Ohio EPA pursuant to the Five-Year Basin Approach for Monitoring and NPDES Reissuance. Other data may be used provided it was collected in accordance with Ohio EPA methods and protocols as specified by the Ohio WQS and Ohio EPA guidance documents. Other information which may be evaluated includes, but is not limited to: NPDES permittee self-monitoring data; effluent and mixing zone bioassays conducted by Ohio EPA, the permittee, or U.S. EPA.

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

Use attainment is a term which describes the degree to which environmental indicators are either above or below criteria specified by the Ohio WQS (OAC 3745-1). Assessing use attainment status for aquatic life uses primarily relies on the Ohio EPA biological criteria (OAC 3745-1-07; Table 7-15). These criteria apply to rivers and streams outside of mixing zones. Numerical biological criteria are based on measuring several characteristics of the fish and macroinvertebrate communities; these characteristics are combined into multimetric biological indices including the Index of Biotic Integrity 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 12) 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.

The most recent data available for the Boston Run-Cuyahoga River watershed is from 2008. The Boston Run-Cuyahoga River watershed is impaired for recreation and aquatic life due to the following: direct habitat alterations, fish-passage barrier, and flow alteration. However, that impairment was documented 10.95 river miles downstream of Akron WWTP and the source of impairment was attributed to the Canal Diversion dam approximately 20 miles downstream of Akron WWTP as presented in the use attainment table (Table 12). No additional limits, based on those findings, are recommended for Akron WWTP.

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

Self-monitoring data (DMR)	January 2011 through December 2015
Pretreatment data	2011-2014
Ohio EPA compliance sampling data	2011

Statistical Outliers and Other Non-representative Data
The data were examined and the following values were removed from the evaluation to give a more reliable PEQ:

Nitrate plus nitrite – 1200 mg/L, 01/10/2011, believed to be reporting error.
1300 mg/L, 01/24/2011, believed to be reporting error.
0.0634 mg/L, 01/09/2014, believed to be reporting error.

This data is evaluated statistically, and PEQ values are calculated for each pollutant. Average PEQ (PEQ_{avg}) values represent the 95^{th} percentile of monthly average data, and maximum PEQ (PEQ_{max}) values represent the 95^{th} percentile of all data points (see Table 9).

The PEQ values are used according to Ohio rules to compare to applicable WQS and allowable WLA values for each pollutant evaluated. Initially, PEQ values are compared to the applicable average and maximum WQS. If both PEQ values are less than 25 percent of the applicable WQS, the pollutant does not have the reasonable potential to cause or contribute to exceedances of WQS, and no WLA is done for that parameter. If either

PEQ_{avg} or PEQ_{max} is greater than 25 percent of the applicable WQS, a WLA is conducted to determine whether the parameter exhibits reasonable potential and needs to have a limit or if monitoring is required (see Table 13).

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		Harmonic mean flow
Human Health (nondrinking)		Harmonic mean flow

Allocations are developed using a percentage of stream design flow as specified in Table 14, 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 14 and Table 15. The WLA results to maintain all applicable criteria are presented in Table 16.

Dissolved Metals Translators
A DMT is the factor used to convert a dissolved metal aquatic life criterion to an effective total recoverable aquatic life criterion with which a total recoverable aquatic life allocation can be calculated as required by NPDES permit rules [OAC 3745-33-05(C)(2)]. Currently, a DMT is based on site- or area-specific field data; each field data sample consists of a total recoverable measurement paired with a dissolved metal measurement.

For Cuyahoga River, there were 13 such paired samples available applicable to chromium, copper, lead, nickel and zinc. To account for the limited quantity of data, the DMT for each of these metals was determined as the lower end of the 95 percent confidence interval (1-tail) about the geometric mean of the total recoverable-to-dissolved ratios of the sample pairs. Each DMT is metal-specific and is applied by multiplying the dissolved criteria by the DMT, resulting in total effective recoverable criteria which are used in the WLA procedures.

In some cases, it is possible that the use of a DMT may result in instream concentrations of metals that may increase the risk of non-attainment of the aquatic life use designation. This was evaluated for the Akron WWTP. The application of the dissolved metal translators resulted in effective total recoverable criteria for chromium and nickel that were lower than the total recoverable criteria listed in OAC 3745-1. The resulting total

recoverable criteria for copper, lead, and zinc were higher than the total recoverable criteria listed in OAC 3745-1.

The Cuyahoga River near the Akron WWTP is attaining its designated use. In addition, the Akron WWTP has not requested any increase in permitted load. Therefore, the facility can receive permit limits that maintain all numeric criteria, up to their current limits, without undergoing any further review to ensure that the limits for the metals will protect the aquatic life and other uses.

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 Akron WWTP, the WLA values are 0.4 TU_a and 1.12 TU_c.

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

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

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

TU_c = 100/geometric mean of No Observed Effect Concentration and Lowest Observed Effect Concentration

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

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

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

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

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

The acute WLA for Akron WWTP is 30 percent mortality in 100 percent effluent based on the dilution ratio of 0.37 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 15. The average PEL (PEL_{avg}) is compared to the average PEQ (PEQ_{avg}) from Table 9, and the PEL_{max} is compared to the PEQ_{max}. Based on the calculated percentage of the allocated value [($PEQ_{avg} \div PEL_{avg}$) X 100, or ($PEQ_{max} \div PEL_{max}$) X 100)], the parameters are assigned to group 3, 4, or 5. The groupings are listed in Table 16.

The final effluent limits are determined by evaluating the groupings in conjunction with other applicable rules and regulations. Table 17, Table 18, and Table 19 present the final effluent limits and monitoring requirements proposed for Akron WWTP outfalls 001, 602, and 603, respectively, as well as the basis for their recommendation. Unless otherwise indicated, the monitoring frequencies proposed in the permit are continued from the existing permit.

Descriptions of stations 001, 602, and 603 are as follows:

Station 001 is the final effluent discharged from the plant. Flows from stations 602 and 603 combine and are discharged through station 001. During the recreation season, all discharges through station 001 are disinfected by chlorination.

Station 602 is the effluent from the final settling tanks prior to mixing with the secondary treatment bypass, station 603. Discharges through station 602 have received full biological treatment.

Station 603 is a bypass around secondary treatment. Discharges through station 603 occur during wet weather events, receive primary treatment, and mix with flows from station 602 prior to chlorination and discharge through station 001. Bypassing through station 603 during dry weather is prohibited except under emergency conditions as authorized by 40 CFR 122.41(m) and conditions in Part III of the draft permit.

Station 3PF00000001 (Table 17)

Flow Rate
Monitoring for flow rate is proposed to continue in order to evaluate the performance of the treatment plant.

Dissolved Oxygen
The limit proposed for dissolved oxygen is based on plant design criteria. These limits are protective of WQS.

Total Suspended Solids and $CBOD_5$
The limits recommended for total suspended solids, ammonia, and $CBOD_5$ are technology-based treatment standards included in 40 CFR Part 133, Secondary Treatment Regulation. Secondary treatment is defined by the Best Practicable Waste Treatment Technology criteria, which are minimum standards required of all publicly owned treatment works.

E. Coli
Limits proposed for *Escherichia coli* are based on WQS (OAC 3745-1-07). Primary Contact Recreation *E. coli* standards apply to the Cuyahoga River.

Chlorine
The proposed limit for total residual chlorine is based on WLA as limited by the maximum aquatic life criteria. The effluent limit for chlorine at outfall 001 is less than the quantification level of 0.050 mg/L. However, a pollutant minimization program is not required because the dosing rate of dechlorination chemicals ensures that the water quality based effluent limit is being met.

Station 3PF00000602 (Table 18)

On September 3, 2010, the City of Akron appealed NPDES permit 3PF00000*LD before the Ohio Environmental Review Appeals Commission (ERAC; Case No. 776475). Ohio EPA and the City of Akron entered into a Joint Stipulation and Settlement Agreement to resolve that appeal on August 15, 2012. As part of that agreement, the current effluent limits for ammonia, total phosphorus, $CBOD_5$, and chronic toxicity are to remain in effect until September 1, 2018.

Limits which were to take effect for ammonia, total phosphorus, and $CBOD_5$ on September 1, 2018 were recommended by the 2003 TMDL on the basis of nutrient impairment in the Cuyahoga River downstream of Akron WWTP. As there was no nutrient impairment found in this reach of the Cuyahoga River during Ohio EPA's 2008 aquatic life use assessment (shown in Table 12), the agency is not recommending that those limits for ammonia, total phosphorus, and $CBOD_5$ be implemented at this time. As Akron WWTP shows reasonable potential for whole effluent toxicity of Ceriodaphnia dubia, the associated chronic toxicity limit is proposed to take effect on September 1, 2018.

Water Temperature, Dissolved Oxygen, Flow Rate, and Peak Flow Rate
Monitoring for flow rate, water temperature, and dissolved oxygen is proposed to continue in order to evaluate the performance of the treatment plant. Peak flow rate is a new parameter. It is proposed to allow reporting of flows that exceed the plant's normal operating capacity at times of excessive or extended wet weather flow from the combined sewer system. Flow reported under the peak flow rate reporting code, 50047, is not utilized in mass loading calculations.

Total Suspended Solids, Ammonia, and $CBOD_5$
The limits proposed for total suspended solids, ammonia, and $CBOD_5$ are all based on plant design criteria. These limits are protective of WQS and consistent with the Joint Stipulation and Settlement Agreement in ERAC Case No. 776474 (August 15, 2012).

Oil & Grease, pH, and Phosphorus
Limits proposed for oil & grease and pH are based on WQS (OAC 3745-1-07). Phosphorus is limited based on provisions of OAC 3745-33-06(C).

Free Cyanide
The Ohio EPA risk assessment (Table 16) places free cyanide in group 5. This placement, as well as the data in Table 8 and Table 9, indicates that the reasonable potential to exceed WQS exists and limits are necessary to protect water quality. For these parameters, the PEQ is between 75 and 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 thirty day average and daily maximum concentration and loading limits for free cyanide are based on aquatic life criteria.

Mercury Variance
To comply with mercury limits, Akron WWTP has applied for coverage under the general mercury variance, OAC 3745-33-07(D)(10). Based on the results of low-level mercury monitoring, the permittee has determined that its facility cannot meet the 30-day average WQBEL of 1.3 ng/L. However, the permittee believes that the plant will be able to achieve an annual average mercury effluent concentration of 12 ng/L. The variance

application 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 on these factors, the permittee is eligible for coverage under the general mercury variance.

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 5.6 ng/L, which was developed from the 95th percentile value of 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 Pollutant Minimization Program (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.

Endrin
The Ohio EPA risk assessment (Table 16) places endrin in group 5, which recommends limits to protect water quality. Using the discretion allowed the Director under OAC 3745-33-07(A)(5), monitoring rather than limits is proposed for these parameters. The PEQ values calculated for endrin (Table 9) may not be representative of its actual levels in the plant effluent since they were based on 4 data points. The purpose of the proposed monitoring is to collect additional data on the frequency of occurrence and variability of these pollutants in the plant's effluent.

Total Filterable Residue
The Ohio EPA risk assessment (Table 16) places total filterable residue in group 4. This placement, as well as the data in Table 8 and Table 9, 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).

Nitrate + Nitrite, Nickel, Zinc, Cadmium, Lead, Chromium, Copper, and Hexavalent Chromium
The Ohio EPA risk assessment (Table 16) places nitrate + nitrite, nickel, zinc, cadmium, lead, chromium, copper, and hexavalent chromium in groups 2 and 3. This placement, as well as the data in Table 8 and Table 9, 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.

Arsenic, Barium, Bromodichloromethane, Bromomethane, Chloroform, Iron, Manganese, Molybdenum, Selenium, Silver, Strontium, Styrene, and Toluene
The Ohio EPA risk assessment (Table 16) places arsenic, barium, bromodichloromethane, bromomethane, chloroform, iron, manganese, molybdenum, selenium, silver, strontium, styrene, and toluene in groups 2 and 3. This placement, as well as the data in Table 8 and Table 9, 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.

No data was submitted for molybdenum in the permittee's Annual Pretreatment Reports as the Akron was using an outdated version of the form for development and submittal of those reports.

Whole Effluent Toxicity Reasonable Potential
Evaluating the acute and chronic toxicity results in Table 10 and Table 11 under the provisions of 40 CFR Part 132, Appendix F, Procedure 6, gives a chronic PEQ of 2.45 TU_c. Reasonable potential for toxicity is demonstrated, since these values exceed the WLA value of 1.12 TU_c. Consistent with Procedure 6 and OAC 3745-33-07(B), final effluent limits are proposed for whole effluent toxicity.

The proposed limits for toxicity were derived from the wasteload allocation values of 0.4 TU_a and 1.12 TU_c using the procedures in section 5.4, "Permit Limit Derivation", of the *Technical Support Document for Water Quality-based Toxics Control* (EPA/505/2-90-001, U.S. EPA, March 1991). A coefficient of variation of 0.6 and an acute-to-chronic ratio of 10 were used in the calculations. Based on the calculations, a daily maximum limit of 1.8 TU_c and a monthly average limit of 1.0 TU_c are proposed. It is proposed that the final effluent limits for toxicity become effective on September 1, 2018, consistent with the Joint Stipulation and Settlement Agreement in ERAC Case No. 776474 (August 15, 2012). Quarterly monitoring with a trigger for conducting a toxicity reduction evaluation (TRE) is proposed as the interim condition.

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.

Station 3PF00000603 (Table 19)

Monitoring for flow rate, dissolved oxygen, $CBOD_5$, suspended solids and metals is proposed to continue based on best technical judgment. The purpose of the monitoring is to obtain data that will assist in evaluating plant operations during wet weather and in characterizing the pollutant loads that are discharged at the plant during wet weather. It is proposed that the daily maximum concentration limits for $CBOD_5$ and total suspended solids be removed as protective monthly average and weekly average limits for those pollutants are proposed at outfall 001 which receives combined 602 and 603 flow.

Additional Monitoring Requirements
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: land application, removal to sanitary landfill or transfer to another facility with an NPDES permit.

<u>Other Requirements</u>

Compliance Schedule

Pretreatment Local Limits Review – A 6 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 Reduction Evaluation – The permittee shall fill out and submit the Evaluation for Reducing Discharge of Phosphorus Form which reports on the overall progress towards reducing the final effluent concentration of nutrients attached with the submittal of the future permit renewal application. Details are in Part I.C of the permit.

Whole Effluent Toxicity – Within 6 months of the effective date of the permit, the permittee shall submit an initial investigation TRE work plan to Ohio EPA Northeast District Office describing steps which would be taken if a TRE were triggered. If Ohio EPA determines a TRE is required, the permittee shall develop and implement a more detailed TRE work plan. Not later than September 1, 2018, the permittee shall achieve compliance with a daily maximum toxicity limit of 1.8 TU_c and monthly average limit of 1.0 TU_c at station 3PF00000602. Beginning 12 months from the effective date of this permit, the permittee shall submit annual reports summarizing the biomonitoring results for the previous year and detailing the progress of the TRE if one is required. Details are in Part I.C 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 Akron 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 and sewerage system.

In accordance with OAC 3745-7-04, the permittee has requested that Ohio EPA reduce the minimum staffing requirements from 40 hours to 20 hours. Ohio EPA has reviewed the request and determined that the reduced staffing plan should be granted. The criteria used to approve the reduced staffing plan include availability of at least a Class II operator 8 hours per day, 5 days per week. Any change in the criteria under which the reduced staffing plan was approved (such as enforcement status, history of compliance, or provisions included in the plan) will require that the treatment works immediately return to the minimum staffing requirements included in OAC 3745-7-04(C)(1). The permittee is also required 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.

Storm Water Compliance
To comply with industrial storm water regulations, the permittee requested coverage under the industrial storm water general permit. Permit 3GR00331*EG became effective on March 1, 2012. No later than December 31, 2016, the permittee must request renewed coverage under the industrial storm water general permit or make other provisions to comply with the industrial storm water regulations.

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

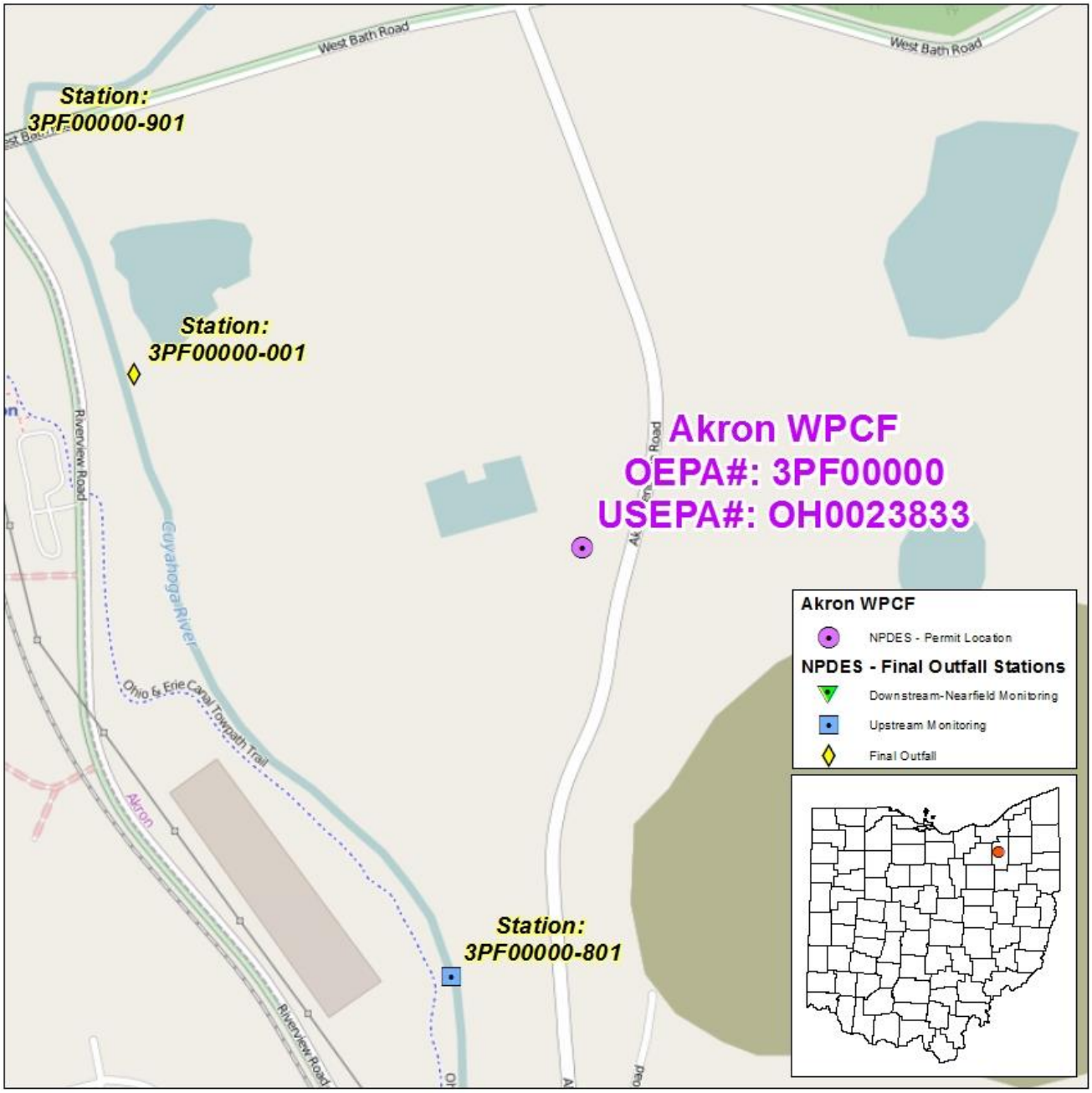

Figure 1. Location of Akron WWTP

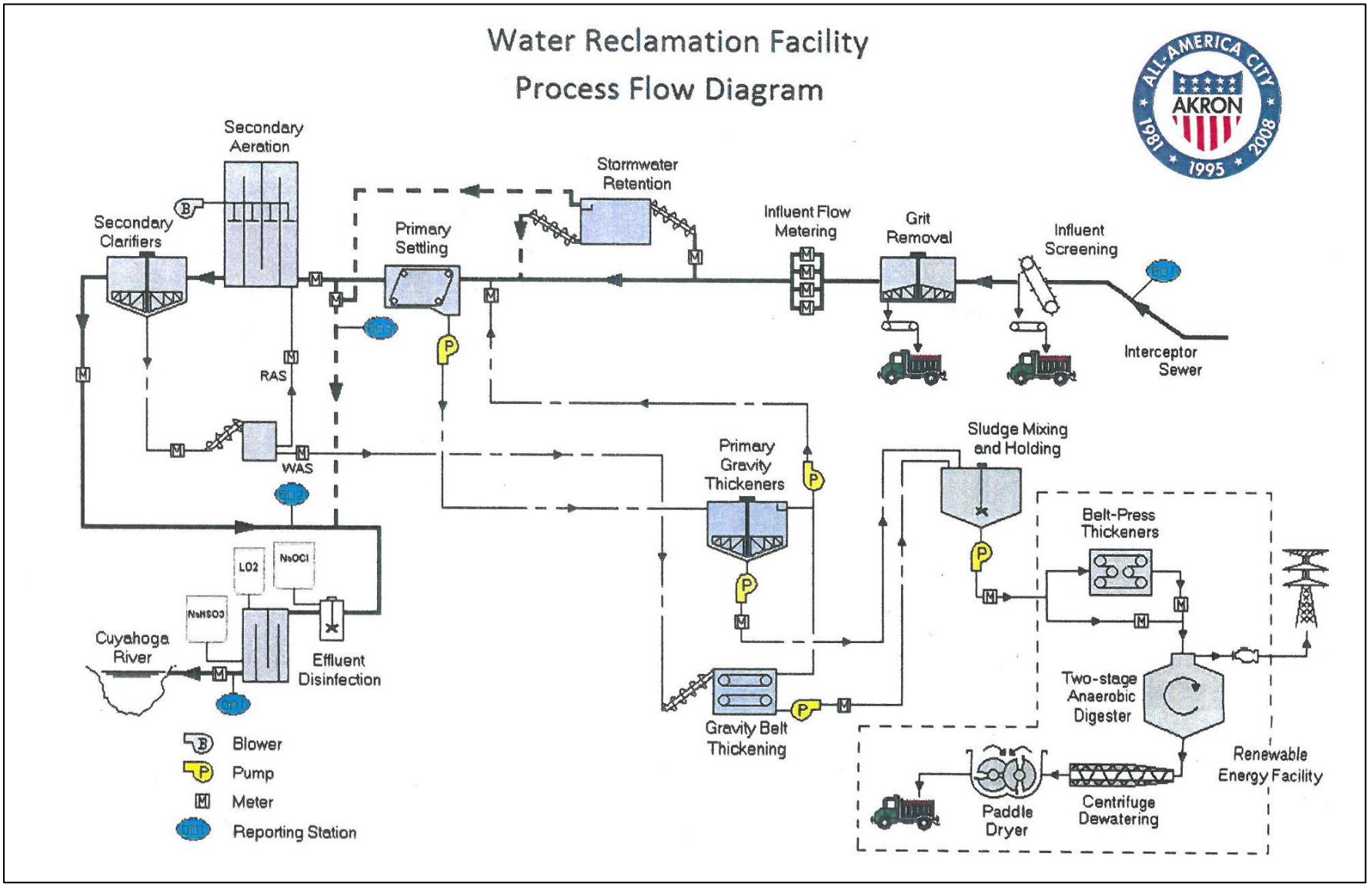

Figure 2. Diagram of Wastewater Treatment System

Table 1. Sewage Sludge Removal

	Dry Tons Removed			
Year	**EQ Distribution**	**Landfill Disposal**	**Transfer to PPG Lime Lakes**	**Total**
2011	11205	2753	2516	16474
2012	3383	3512	3194	10089
2013	1273	7360	3747	12380
2014	1765	49	5730	7544
2015	6859	48	0	6907

EQ = Exceptional Quality Biosolids

Table 2. Average Annual Effluent Flow Rates

Year	**Annual Flow in MGD**		
	50th Percentile	**95th Percentile**	**Maximum**
Outfall 001			
2011	83.5	161.98	260.5
2012	63.65	109.58	294.7
2013	64.1	105.72	271.5
2014	64.8	124.34	211.1
2015	60.3	121.36	205.94
Outfall 602			
2011	77.7	110.98	120
2012	60.215	95.86	115.34
2013	61.99	92.306	127.94
2014	62.88	113.96	133.67
2015	59.03	120.92	185.99

MGD = million gallons per day

Table 3. Sanitary Sewer Overflows Discharges

Year	**Number**
2011	16
2012	5
2013	11
2014	11
2015	10

Table 4. Bypass Discharges

		Flow Rate		Total Suspended Solids		$CBOD_5$	
		MGD		mg/L		mg/L	
Year	# of Obs.	Mean	Maximum	Mean	Maximum	Mean	Maximum
2011	85	20.0	105.8	51.8	126	35.5	89.8
2012	46	14.6	107.3	60.6	116	38.0	64.6
2013	41	13.6	100.1	55.7	103	36.9	70.2
2014	41	10.4	47.8	53.5	181	30.5	85.5
2015	25	13.4	43.7	47.0	98	33.6	91.4

$CBOD_5$ = five-day carbonaceous biochemical oxygen demand
MGD = million gallons per day

Table 5. Combined Sewer Overflow Discharges

Summary of discharge monitoring report data for combined sewer overflow discharges for the period January 2013 through December 2015.

Station	Average Annual Occurrences	Average Annual Volume (Million Gallons)
046	62	30.66
047	43	7.23
048	54	2.33
049	24	1.51
050	39	1.09
053	32	5.14
054	40	34.92
055	49	80.73
056[a]	19	1.01
057	75	5.84
058	41	4.72
059	59	383.06
060	56	8.05
061	62	267.71
062	16	1.66
063	44	10.47
064	29	1.32
065	68	44.15
066	16	0.90
067	62	4.10
069	40	3.90
070	32	1.50
071	33	2.83
072	49	3.46
075	47	2.14
076	57	1.62
077	53	0.96
078	49	5.45
079	23	0.47
080	17	0.82
081	24	10.90
083	7	34.61

[a] Outfall 056 (Rack 13) eliminated June 14, 2016

Table 6. Effluent Characterization Using Pretreatment Data

Parameter (µg/L)	7/28/2011	7/12/2012	7/18/2013	7/23/2014
Alpha endosulfan	AA (2.5)	AA (2.50)	AA (0.25)	0.0446
Antimony	AA (10)	AA (10.0)	AA (10.0)	AA (3.15)
Arsenic	AA (10)	AA (10.0)	AA (10.0)	AA (1.98)
Beryllium	AA (10)	AA (10.0)	AA (10.0)	AA (1.20)
Beta endosulfan	AA (2.5)	AA (2.50)	AA (0.25)	0.0751
Cadmium	AA (10)	AA (10.0)	AA (0.1)	AA (0.044)
Chromium	AA (10)	AA (10.0)	0.669	AA (0.112)
Chloroform	AA (5)	AA (5.00)	AA (5.00)	AA (2.83)
Copper	AA (10)	AA (10.0)	19.4	AA (5.84)
Endosulfan sulfate	AA (2.5)	AA (2.50)	AA (0.250)	0.052
Endrin	AA (2.5)	AA (2.50)	AA (0.250)	0.127
Lead	AA (10)	AA (10.0)	0.474	AA (0.174)
Mercury	AA (0.05)	AA (0.0250)	AA (0.025)	AA (0.004)
Nickel	AA (10)	AA (10.0)	AA (10.0)	AA (1.84)
Selenium	AA (10)	AA (10.0)	AA (10.0)	AA (3.56)
Silver	AA (10)	AA (10.0)	AA (10.0)	AA (1.34)
Thallium	AA (10)	AA (10.0)	AA (10.0)	AA (1.74)
Toluene	AA (5)	AA (5.00)	AA (5.00)	AA (2.31)
Zinc	31.4	48.0	35.1	41.3

AA = not-detected (analytical method detection limit)

Table 7. Effluent Characterization Using Ohio EPA data

		Outfall 602	
Parameter	**Units**	**4/19/2011**	**9/27/2011**
Arsenic	µg/L	2.2	2.6
Barium	µg/L	39	27
Bromodichloromethane	µg/L	AA (0.5)	0.56
Bromomethane	µg/L	1.65	1.91
Cadmium	µg/L	AA (0.2)	AA (0.2)
Calcium	mg/L	75	69
Carbonaceous Biochemical Oxygen Demand (5 day)	mg/L	3.8	13
Chromium	µg/L	AA (2)	AA (2)
Hexavalent Chromium	µg/L	AA (10)	AA (10)
Chloroform	µg/L	1.36	1.64
Copper	µg/L	7	4.8
Cyanide, Free	µg/L	AA (5)	AA (5)
Iron	mg/L	248	221
Lead	µg/L	AA (2.0)	AA (2.0)
Magnesium	mg/L	16	15
Manganese	µg/L	40	57
Nickel	µg/L	4.8	4.1
Nitrate + Nitrite	mg/L	9.60	9.05
Oil & Grease	mg/L	AA (2.0)	AA (2.1)
Phosphorus	mg/L	0.407	0.652
Selenium	µg/L	AA (2.0)	AA (2.0)
Strontium	µg/L	224	210
Styrene	µg/L	3.17	AA (0.5)
Toluene	µg/L	2.25	0.68
Total Filterable Residue	mg/L	696	624
Total Kjeldahl Nitrogen	mg/L	1.47	3.03
Total Suspended Solids	mg/L	10	5

AA = not-detected (analytical method detection limit)

Table 8. Effluent Characterization Using Self-Monitoring Data

Parameter	Season	Units	Current Permit Limits		Current Permit Loading Limits		# Obs.	Percentiles		Data Range
			30 day	Daily	30 day	Daily		50th	95th	
Outfall 001										
Dissolved Oxygen	Summer	mg/L	--	5.0[a]	--	--	756	7.19	8.13	5.34-8.88
Dissolved Oxygen	Winter	mg/L	--	5.0[a]	--	--	664	7.93	9.06	5.48-10.2
Fecal Coliform	Annual	#/100 mL	--	--	--	--	126	59.5	2660	9-74000
E. coli	Annual	#/100 mL	126	284[b]	--	--	576	15	1980	0-210000
Flow Rate	Summer	MGD	--	--	--	--	920	62.2	118	43.8-295
Flow Rate	Winter	MGD	--	--	--	--	902	68.7	133	48.8-261
Flow Rate	Annual	MGD	--	--	--	--	1822	65.9	128	43.8-295
Chlorine	Annual	mg/L	--	0.024	--	--	918	0.004	0.013	0-1.41
Outfall 602										
Water Temperature	Annual	°C	--	--	--	--	1818	15.9	21.5	7.6-25
Dissolved Oxygen	Summer	mg/L	--	--	--	--	906	5.83	7.11	0.9-8.05
Dissolved Oxygen	Winter	mg/L	--	--	--	--	894	6.41	7.71	1.59-8.81
Chemical Oxygen Demand	Annual	mg/L	--	--	--	--	1402	32.9	44.8	11.6-59.7
Total Filterable Residue	Annual	mg/L	--	--	--	--	128	742	1140	394-1640
Total Suspended Solids	Annual	mg/L	15	23[b]	5110	7835[b]	1824	5.2	10.2	1.2-28.3
Oil & Grease	Annual	mg/L	--	10	--	--	121	0	0	0-7.1
Ammonia	Summer	mg/L	1.5	2.3[b]	511	784[b]	715	0.114	0.701	0-1.75
Ammonia	Winter	mg/L	7.5	11.3[b]	2555	3850[b]	689	0.112	1.18	0-2.92
Nitrite + Nitrate	Annual	mg/L	--	--	--	--	122	10.6	16.5	0.0634-1300
Phosphorus	Annual	mg/L	1.0	1.5[b]	341	511[b]	1249	0.49	0.8	0.15-1.28
Cyanide, Free	Annual	mg/L	--	--	--	--	134	0	0.00435	0-0.008

Table 8, Continued.

Parameter	Season	Units	Current Permit Limits		Current Permit Loading Limits		# Obs.	Percentiles		Data Range
			30 day	Daily	30 day	Daily		50th	95th	
Nickel	Annual	µg/L	--	--	--	--	107	0	30.9	0-48.1
Zinc	Annual	µg/L	--	--	--	--	107	50.1	86.6	25-100
Cadmium	Annual	µg/L	--	--	--	--	107	0	0.174	0-0.722
Lead	Annual	µg/L	--	--	--	--	107	0.591	6.08	0-12.6
Chromium	Annual	µg/L	--	--	--	--	107	0	1.24	0-2.19
Copper	Annual	µg/L	--	--	--	--	107	0	11.5	0-29
Hexavalent Chromium	Annual	µg/L	--	--	--	--	113	0	0	0-3
Flow Rate	Summer	MGD	--	--	--	--	920	60.4	107	38.4-186
Flow Rate	Winter	MGD	--	--	--	--	906	67.2	111	46.7-140
Flow Rate	Annual	MGD	--	--	--	--	1826	63.4	110	38.4-186
Mercury	Annual	ng/L	--	--	--	--	60	1.59	5.62	0-6.89
Acute Toxicity, Ceriodaphnia dubia	Annual	TU_a	--	--	--	--	15	0	0.2	0-0.2
Chronic Toxicity, Ceriodaphnia dubia	Annual	TU_c	--	--	--	--	23	0	1.75	0-1.75
pH, Maximum	Annual	S.U.	--	--	--	--	1818	7.1	7.4	6.6-8.5
pH, Minimum	Annual	S.U.	--	--	--	--	1798	7	7.2	6.5-8
CBOD 5 day	Summer	mg/L	10	15[b]	3407	5110[b]	709	2	3.37	0-7.7
CBOD 5 day	Winter	mg/L	10	15[b]	3407	5110[b]	696	2.91	5.39	0-17.4

All values are based on annual records unless otherwise indicated
[a] minimum
[b] weekly limit
CBOD = carbonaceous biochemical oxygen demand

Table 9. Projected Effluent Quality

Parameter	Units	Number of Samples	Number > MDL	PEQ Average	PEQ Maximum
Ammonia (Summer)	mg/L	479	478	0.22134	0.46775
Ammonia (Winter)	mg/L	340	331	0.57351	1.3475
Antimony	µg/L	4	0	--	--
Arsenic	µg/L	3	2	5.694	7.8
Barium	µg/L	2	2	108.186	148.2
Beryllium	µg/L	4	0	--	--
Bromodichloromethane	µg/L	2	1	1.55344	2.128
Bromomethane	µg/L	2	2	5.29834	7.258
Cadmium	µg/L	113	29	0.16453	0.24328
Chlorine	mg/L	918	594	0.006851	0.015647
Chloroform	µg/L	2	2	4.54936	6.232
Chromium	µg/L	113	39	0.97068	1.491
Hexavalent Chromium	µg/L	113	1	1.752	2.4
Copper	µg/L	113	49	8.7987	13.513
Cyanide, Free	mg/L	84	8	0.005256	0.0072
Endrin	µg/L	1	1	0.574802	0.7874
Iron	µg/L	2	2	687.952	942.4
Lead	µg/L	113	78	7.358	10.08
Manganese	µg/L	2	2	158.118	216.6
Mercury	ng/L	64	57	3.8182	5.9225
Nickel	µg/L	113	21	28.0904	38.48
Nitrite + Nitrate	mg/L	121	121	13.941	17.502
Phosphorus	mg/L	1249	1249	0.56064	0.768
Selenium	µg/L	6	0	--	--
Silver	µg/L	4	0	--	--
Strontium	µg/L	2	2	621.376	851.2
Styrene	µg/L	2	1	8.79358	12.046
Thallium	µg/L	4	0	--	--
Total Filterable Residue	mg/L	130	130	934.11	1108.3
Toluene	µg/L	3	2	5.0589	6.93
Zinc	µg/L	111	111	70.453	89.854

MDL = analytical method detection limit
PEQ = projected effluent quality

Table 10. Summary of Acute and Chronic Toxicity Results

	Ceriodaphnia Dubia	
Date	**TU_a (MDL)**	**TU_c (MDL)**
2/8/2011	AA (1.00)	1.07
4/19/2011	AA (0.10)	No data
5/3/2011	AA	AA (0.1)
7/12/2011	AA (1.0)	1.07
9/26/2011	AA	No data
11/15/2011	AA	1.22
2/7/2012	AA	AA (0.1)
5/8/2012	0.2	1.75
5/22/2012	AA	AA
7/17/2012	AA	AA
11/6/2012	AA	AA
2/12/2013	AA	AA
5/7/2013	AA	1.07
5/21/2013	AA	1.07
8/13/2013	0.2	AA
11/5/2013	No data	AA
2/4/2014	No data	AA
5/6/2014	No data	AA
8/5/2014	No data	AA
10/28/2014	No data	AA
1/6/2015	No data	1.75
1/27/2015	No data	1.07
4/7/2015	No data	AA
8/4/2015	No data	1.75
10/6/2015	No data	AA

AA = non-detection; analytical method detection limit of 0.2 TU_a or 1.0 TU_c unless otherwise specified
MDL = analytical method detection limit
TU_a = acute toxicity unit
TU_c = chronic toxicity unit

Table 11. Ohio EPA Toxicity Screening Results for Outfall 001

	Pimephales promelas		*Ceriodaphnia dubia*	
	%M		%M	
Date	***24 hours***	***48 hours***	***24 hours***	***48 hours***
4/18/2011	0	0	0	0
4/19/2011	0	0	0	0
4/18/13-4/19/11[a]	0	0	0	0
9/26/2011	0	0	0	0
9/27/2011	0	0	0	65
9/26/11-9/27/11[a]	0	0	0	0

[a] = 24-hour composite sample
%M = percent mortality in 100% effluent

Table 12. Use Attainment Table

Location	River Mile	Use	Attainment	Causes	Sources
CUYAHOGA R. DST. LAKE ROCKWELL @ RAVENNA RD.	57.67	WWH	Partial	Flow alteration	Dam or impoundment
CUYAHOGA R. AT AKRON @ CUYAHOGA ST.	42.60	WWH	Full	None	None
CUYAHOGA R. AT AKRON, 0.5 MI. DST. OLD PORTAGE TRAIL	39.70	WWH	Full	None	None
CUYAHOGA R. DST. AKRON WWTP @ BOLANZ RD.	33.20	WWH	Full	None	None
CUYAHOGA R. @ BOSTON MILLS RD.	26.50	WWH	Partial	Fish-passage barrier	Dam or impoundment
CUYAHOGA R. AT JAITE @ HIGHLAND RD.	24.10	WWH	Partial	Fish-passage barrier	Dam or impoundment
CUYAHOGA R. NEAR OLD CARRIAGE TRAIL (IMPOUNDED)	22.40	WWH	Partial	Direct habitat alterations, fish-passage barrier, flow alteration	Dam or impoundment
CUYAHOGA R. @ STATION RD. (IMPOUNDED)	20.80	WWH	Non	Direct habitat alterations, flow alteration	Dam or impoundment
CUYAHOGA R. NEAR BRECKSVILLE @ ST. RT. 82 (DST DAM)	20.67	WWH	Full	None	None
CUYAHOGA R. @ FITZWATER RD.	17.30	WWH	Full	None	None
CUYAHOGA R. @ HILLSIDE RD.	15.61	WWH	Full	None	None

Table 12, Continued.

Location	River Mile	Use	Attainment	Causes	Sources
CUYAHOGA R. AT INDEPENDENCE @ STONE RD.	14.20	WWH	Full	None	None
CUYAHOGA R. AT VALLEY VIEW @ I-480 BRIDGE	12.00	WWH	Full	None	None
CUYAHOGA R. UPST CLEVELAND SOUTHERLY WWTP @ RR & S.R. 21	11.33	WWH	Full	None	None
CUYAHOGA R. UPST. CLEVELAND SOUTHERLY WWTP	10.95	WWH	Full	None	None
CUYAHOGA R. DST. CLEVELAND SOUTHERLY WWTP	10.30	WWH	Full	None	None
CUYAHOGA R. DST. SOUTHERLY WWTP @ CONRAIL RR	9.70	WWH	Full	None	None
CUYAHOGA R. 1.7 MILES DST. CLEVELAND SOUTHERLY WWTP	8.90	WWH	Full	None	None
CUYAHOGA R. AT CLEVELAND, UPST. BRADLEY RD. SMELTERS	8.30	WWH	Partial	Other*	Natural sources
CUYAHOGA R. AT CLEVELAND @ LOWER HARVARD AVE.	7.10	WWH	Partial	Other*	Natural sources

Table 12, Continued.

Location	River Mile	Use	Attainment	Causes	Sources
CUYAHOGA R. @ LTV FOOTBRIDGE	5.90	WWH	Full	None	None
CUYAHOGA R. AT CLEVELAND @ PERSHING AVE.	5.00	LRW	Non	Ammonia, direct habitat alterations, impairment unknown, organic enrichment (sewage) biological indicators, other*	Combined sewer overflows, dredging, municipal point source discharges, sediment resuspension, spills from trucks or trains, streambank modification/destabilization, urban runoff/storm sewers
TINKERS CREEK AT MOUTH @ CANAL RD.	0.10	WWH	Full	None	None

* "Other" as a cause refers to not readily identified impacts associated with runoff from impervious surfaces and lawns in urban settings.
LRW = limited resource water
WWH = warmwater habitat

Table 13. Water Quality Criteria in the Study Area

Parameter	Units	Outside Mixing Zone Criteria					Inside Mixing Zone Maximum
		Average				Maximum	
		Wildlife	Human Health	Agri-culture	Aquatic Life	Aquatic Life	
Ammonia (Summer)	mg/L	--	--	--	2.1	--	--
Ammonia (Winter)	mg/L	--	--	--	7.6	--	--
Arsenic	µg/L	--	580	100	150	340	680
Barium	µg/L	--	160000	--	220	2000	4000
Bromodichloromethane [C]	µg/L	--	180	--	340	3100	6200
Bromomethane	µg/L	--	2600	--	16	38	75
Cadmium	µg/L	--	730	50	4.1	9.5	19
Chlorine	mg/L	--	--	--	0.011	0.019	0.038
Chloroform [C]	µg/L	--	1700	--	140	1300	2600
Chromium [D]	µg/L	--	14000	100	140	1100	2100
Hexavalent Chromium	µg/L	--	14000	--	11	16	31
Copper [D]	µg/L	--	64000	500	18	28	56
Cyanide, Free	mg/L	--	48	--	0.0052	0.022	0.044
Endrin	µg/L	--	--	--	0.036	0.086	0.17
Iron	µg/L	--	--	5000	--	--	--
Lead [D]	µg/L	--	--	100	41	780	1600
Manganese	µg/L	--	61000	--	--	--	--
Mercury [A,B]	ng/L	1.3	3.1	10000	910	1700	3400
Molybdenum	µg/L	--	10000	--	20000	190000	370000
Nickel [D]	µg/L	--	43000	200	90	810	1600
Nitrite + Nitrate	mg/L	--	--	100	--	--	--
Phosphorus	mg/L	--	--	--	--	--	--
Selenium	µg/L	--	3100	50	5	--	--
Silver	µg/L	--	11000	--	1.3	5	9.9
Strontium	µg/L	--	1400000	--	21000	40000	81000
Styrene	µg/L	--	--	--	32	290	570
Toluene	µg/L	--	51000	--	62	560	1100
Total Filterable Residue	mg/L	--	--	--	1500	--	--
Zinc [D]	µg/L	--	35000	25000	230	230	460

[A] Bioaccumulative Chemical of Concern (BCC)
[B] Wildlife criteria is 1.3 ng/L
[C] Carcinogen
[D] Aquatic criteria is based on dissolved form of parameter; human health and agriculture criteria are based on total recoverable form. Refer to dissolved metal paragraph for more information

Table 14. Instream Conditions and Discharger Flow

Parameter	Units	Season	Value	Basis
Stream Flows				
1Q10	cfs	annual	37.28	USGS 04206000, adjusted for drainage area
7Q10	cfs	annual	51.54	USGS 04206000, adjusted for drainage area
		summer	51.54	USGS 04206000, adjusted for drainage area
		winter	77.85	USGS 04206000, adjusted for drainage area
30Q10	cfs	summer	62.5	USGS 04206000, adjusted for drainage area
		winter	105.27	USGS 04206000, adjusted for drainage area
90Q10	cfs	annual	76.76	
Harmonic Mean	cfs	annual	200.67	USGS 04206000, adjusted for drainage area
Mixing Assumption	%	average	25	
	%	maximum	100	
Hardness	mg/L	annual	193	Akron 901, 2011-15, n=66
pH	S.U.	summer	7.49	Akron 901, 2011-15, n=20
		winter	7.46	Akron 901, 2011-15, n=14
Temperature	C	summer	21.9	Akron 901, 2011-14, n=20
		winter	3.7	Akron 901, 2011-15, n=14
Akron WWTP flow	cfs	annual	139.23	DSW
Background Water Quality				
Ammonia – Summer	mg/L		0.051	DMR; 2011-15; n=20; 1<MDL; Station 801, median value
Ammonia – Winter	mg/L		0.07275	DMR; 2011-15; n=14; 0<MDL; Station 801, median value
Arsenic	µg/L		2.2	STORET; 2011-15; n=19; 7<MDL; Station 502160, median value
Barium	µg/L		47	STORET; 2011-15; n=19; 0<MDL; Station 502160, median value
Bromodichloromethane	µg/L			No representative data available.
Bromomethane	µg/L			No representative data available.
Cadmium	µg/L		0	STORET; 2011-15; n=19; 19<MDL; Station 502160, all below detection
Chlorine	mg/L			No representative data available.
Chloroform	µg/L			No representative data available.
Chromium	µg/L		0	STORET; 2011-15; n=19; 19<MDL; Station 502160, all below detection
Hexavalent Chromium	µg/L			No representative data available.
Copper	µg/L		2.6	STORET; 2011-15; n=19; 4<MDL; Station 502160, median value
Cyanide, Free	mg/L			No representative data available.
Endrin	µg/L			No representative data available.
Iron	µg/L		563	STORET; 2011-15; n=19; 0<MDL; Station 502160, median value

Table 14, Continued

Parameter	Units	Season	Value	Basis
Lead	µg/L		1	STORET; 2011-15; n=19; 18<MDL; Station 502160, median value
Manganese	µg/L		104	STORET; 2011-15; n=19; 0<MDL; Station 502160, median value
Mercury	ng/L			No representative data available.
Nickel	µg/L		2.1	STORET; 2011-15; n=19; 3<MDL; Station 502160, median value
Nitrate + Nitrite	mg/L		1.11	STORET; 2011-15; n=19; 0<MDL; Station 502160, median value
Phosphorus	mg/L		0.07	DMR; 2011-15; n=61; 0<MDL; Station 801, median value
Selenium	µg/L		0	STORET; 2011-15; n=19; 19<MDL; Station 502160, median value
Silver	µg/L			No representative data available.
Strontium	µg/L		134	STORET; 2011-15; n=19; 0<MDL; Station 502160, median value
Styrene	µg/L			No representative data available.
Toluene	µg/L			No representative data available.
Total Filterable Residue	mg/L		330	STORET; 2011-15; n=19; 0<MDL; Station 502160, median value
Zinc	µg/L		5	STORET; 2011-15; n=19; 16<MDL; Station 502160, median value

DMR = Discharge Monitoring Report
MDL = Analytical Method Detection Limit
STORET = EPA Storage and Retrieval data repository
USGS = United States Geological Survey

Table 15. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria

Parameter	Units	Outside Mixing Zone Criteria					Inside Mixing Zone Maximum
		Average				Maximum Aquatic Life	
		Wildlife	Human Health	Agri-culture	Aquatic Life		
Ammonia (Summer)	mg/L	--	--	--	--	--	--
Ammonia (Winter)	mg/L	--	--	--	--	--	--
Arsenic	µg/L	--	801	137	167	461	680
Barium	µg/L	--	221233	--	240	2699	4000
Bromodichloromethane [C]	µg/L	--	249	--	379	4209	6200
Bromomethane	µg/L	--	3595	--	18	52	75
Cadmium	µg/L	--	1009	69	4.6	13	19
Chlorine	mg/L	--	--	--	0.012	0.026	0.038
Chloroform [C]	µg/L	--	2351	--	156	1765	2600
Chromium [D]	µg/L	--	19359	138	156	1494	2100
Hexavalent Chromium	µg/L	--	19359	--	12	22	31
Copper [D]	µg/L	--	88499	690	20	37	56
Cyanide, Free	mg/L	--	66	--	0.0058	0.03	0.044
Endrin	µg/L	--	--	--	0.04	0.12	0.17
Iron	µg/L	--	--	6699	--	--	--
Lead [D]	µg/L	--	--	138	46	1059	1600
Manganese	µg/L	--	84312	--	--	--	--
Mercury [A,B]	ng/L	1.3	3.1	10000	910	1700	3400
Molybdenum	µg/L	--	13828	--	22301	257973	370000
Nickel [D]	µg/L	--	59460	276	100	1099	1600
Nitrite + Nitrate	mg/L	--	--	138	--	--	--
Phosphorus	mg/L	--	--	--	--	--	--
Selenium	µg/L	--	4287	69	5.6	--	--
Silver	µg/L	--	15211	--	1.4	6.8	9.9
Strontium	µg/L	--	1935896	--	23400	54262	81000
Styrene	µg/L	--	--	--	36	394	570
Toluene	µg/L	--	70524	--	69	760	1100
Total Filterable Residue	mg/L	--	--	--	1635	--	--
Zinc [D]	µg/L	--	48397	34569	256	310	460

[A] Bioaccumulative Chemical of Concern (BCC)
[B] Wildlife criteria is 1.3 ng/L
[C] Carcinogen
[D] Allocation based on applicable dissolved metal translator

Table 16. Parameter Assessment

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

Phosphorus

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

Arsenic	Bromodichloromethane	Cadmium
Chloroform	Chromium	Hexavalent Chromium
Iron	Lead	Manganese
Molybdenum	Nitrate + Nitrite	Selenium
Silver	Strontium	Toluene

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

Barium	Bromomethane	Copper
Nickel	Styrene	Zinc

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

Chlorine	Total Filterable Residue

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

			Recommended Effluent Limits	
Parameter	*Units*	*Period*	*Average*	*Maximum*
Cyanide, Free	mg/L		0.0058	0.03
Endrin	µg/L		0.04	0.12
Mercury	ng/L		1.3	1700

Cyanide, Free becomes a Group 5 parameter based upon the loading test [OAC 3745-2-06(B)].
PEL = preliminary effluent limit
PEQ = projected effluent quality
WLA = wasteload allocation
WQS = water quality standard

Table 17. Final Effluent Limits for Outfall 001

Parameter	Units	Effluent Limits				Basis[a]
		Concentration		Loading (kg/day)		
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Flow Rate	MGD	- - - - - - - - - - - Monitor - - - - - - - - - - - -				M[b]
Dissolved Oxygen	mg/L	- - - - - - - - - Not less than 5.0 - - - - - - -				PD
Total Suspended Solids	mg/L	30	45[d]	--	--	BPT
Carbonaceous Biochemical Oxygen Demand (5 day)	mg/L	25	40[d]	--	--	BPT
E. coli – Summer Only	#/100 mL	126	284[c]	--	--	WQS
Chlorine, Total Residual	mg/L	--	0.024	--	--	ABS

[a] Definitions: ABS = Antibacksliding Rule (OAC 3745-33-05(F) and 40 CFR Part 122.44(l))
BPT = Best Practicable Waste Treatment Technology, 40 CFR Part 133, Secondary Treatment Regulation
PD = Plant Design, OAC 3745-33-05(E)
M = Division of Surface Water NPDES Permit Guidance 1: Monitoring frequency requirements for Sanitary Discharges
WQS = Ohio Water Quality Standards (OAC 3745-1)

[b] Monitoring of flow and other indicator parameters is specified to assist in the evaluation of effluent quality and treatment plant performance.

[c] 7 day average limit.

Table 18. Final Effluent Limits for Outfall 602

Parameter	Units	Effluent Limits				Basis[b]
		Concentration		Loading (kg/day)[a]		
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Water Temperature	°C	- - - - - - - - - - Monitor - - - - - - - - - - -				M[c]
Peak Flow Rate	MGD	- - - - - - - - - - Monitor - - - - - - - - - - -				BTJ
Flow Rate	MGD	- - - - - - - - - - Monitor - - - - - - - - - - -				M[c]
pH	SU	6.5 - 9.0		--	--	WQS
Dissolved Oxygen	mg/L	- - - - - - - - - - Monitor - - - - - - - - - - -				M[c]
Total Suspended Solids	mg/L	15	23[d]	5110	7835[d]	PD
Oil & Grease	mg/L	--	10	--	--	WQS
Ammonia						
Summer	mg/L	1.5	2.3[d]	511	784[d]	PD
Spring and Autumn	mg/L	4.8	7.1[d]	1635	2419[d]	PD
Winter	mg/L	7.5	11.3[d]	2555	3850[d]	PD
Nitrate+Nitrite	mg/L	- - - - - - - - - - Monitor - - - - - - - - - - -				M
Phosphorus	mg/L	1.0	1.5[d]	341	511	PTS
Orthophosphate, Dissolved (as P)	mg/L	- - - - - - - - - - Monitor - - - - - - - - - - -				SB1
Total Filterable Residue	mg/L	- - - - - - - - - - Monitor - - - - - - - - - - -				M
Nickel	µg/L	- - - - - - - - - - Monitor - - - - - - - - - - -				M
Zinc	µg/L	- - - - - - - - - - Monitor - - - - - - - - - - -				M
Cadmium	µg/L	- - - - - - - - - - Monitor - - - - - - - - - - -				M
Lead	µg/L	- - - - - - - - - - Monitor - - - - - - - - - - -				M
Chromium	µg/L	- - - - - - - - - - Monitor - - - - - - - - - - -				M
Copper	µg/L	- - - - - - - - - - Monitor - - - - - - - - - - -				M
Hexavalent Chromium	µg/L	- - - - - - - - - - Monitor - - - - - - - - - - -				M
Endrin	µg/L	- - - - - - - - - - Monitor - - - - - - - - - - -				BTJ
Mercury	ng/L	5.6	1700	0.00191	0.58	VAR/WLA
Cyanide, Free	µg/L	5.8	30	1.98	10.3	WLA
Carbonaceous Biochemical Oxygen Demand (5 day)	mg/L	10	15[d]	3407	5110[d]	PD
Chronic Toxicity						
Ceriodaphnia dubia	TU_c	1.0	1.8	--	--	WET

[a] Effluent loadings based on average design discharge flow of 90 MGD.

[b] Definitions:
BTJ = Best Technical Judgment
M = Division of Surface Water NPDES Permit Guidance 1: Monitoring frequency requirements for Sanitary Discharges
PD = Plant Design, OAC 3745-33-05(E)
PTS = Phosphorus Treatment Standards (OAC 3745-33-06 (C))
SB1 = Implementation of Senate Bill 1 (ORC 6111.03)
VAR = Mercury variance (OAC 3745-33-07(D)(10)(a))

WET = Whole Effluent Toxicity (OAC 3745-33-07(B))
WLA = Wasteload Allocation procedures (OAC 3745-2)
WQS = Ohio Water Quality Standards (OAC 3745-1)

[c] Monitoring of flow and other indicator parameters is specified to assist in the evaluation of effluent quality and treatment plant performance.

[d] 7 day average limit.

Table 19. Final Effluent Limits for Outfall 603

Parameter	Units	Effluent Limits				Basis[a]
		Concentration		Loading (kg/day)		
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Flow Rate	MGD	- - - - - - - - - - - Monitor - - - - - - - - - - - -				BTJ
Total Suspended Solids	mg/L	- - - - - - - - - - - Monitor - - - - - - - - - - - -				BTJ
Nickel	µg/L	- - - - - - - - - - - Monitor - - - - - - - - - - - -				BTJ
Zinc	µg/L	- - - - - - - - - - - Monitor - - - - - - - - - - - -				BTJ
Cadmium	µg/L	- - - - - - - - - - - Monitor - - - - - - - - - - - -				BTJ
Lead	µg/L	- - - - - - - - - - - Monitor - - - - - - - - - - - -				BTJ
Chromium	µg/L	- - - - - - - - - - - Monitor - - - - - - - - - - - -				BTJ
Mercury	ng/L	- - - - - - - - - - - Monitor - - - - - - - - - - - -				BTJ
Carbonaceous Biochemical Oxygen Demand (5 day)	mg/L	- - - - - - - - - - - Monitor - - - - - - - - - - - -				BTJ

[a] Definitions: BTJ = Best Technical Judgment