National Pollutant Discharge Elimination System (NPDES) Permit Program

FACT SHEET

Regarding an NPDES Permit To Discharge to Waters of the State of Ohio
for the **Ashland Wastewater Treatment Plant**

Public Notice No.: 15-03-013
Public Notice Date: March 10, 2015
Comment Period Ends: April 9, 2015

Ohio EPA Permit No.: **2PD00010*ND**
Application No.: **OH0023906**

Name and Address of Applicant:

City of Ashland
206 Claremont Avenue
Ashland, Ohio 44805

Name and Address of Facility Where Discharge Occurs:

Ashland WWTP
865 U.S. Route 42
Ashland, Ohio 44805
Ashland County

Receiving Water: **Lang Creek**

Subsequent Stream Network: **Jerome Fork to Lake Fork to Mohican River to Walhonding River to Muskingum River to Ohio River**

Introduction

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

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

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

Ohio EPA reviews the need for water-quality-based limits on a pollutant-by-pollutant basis. Wasteload allocations (WLAs) are used to develop these limits based on the pollutants that have been detected in the discharge, and the receiving water's assimilative capacity. The assimilative capacity depends on the flow in the water receiving the discharge, and the concentration of the pollutant upstream. The greater the upstream flow, and the lower the upstream concentration, the greater the assimilative capacity is. Assimilative capacity may represent dilution (as in allocations for metals), or it may also incorporate the break-down of pollutants in the receiving water (as in allocations for oxygen-demanding materials).

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

Summary of Permit Conditions

The effluent limits and monitoring requirements proposed for the following parameters are the same as in the current permit: flow, temperature, dissolved oxygen, 5-day carbonaceous biochemical oxygen demand ($CBOD_5$), E. coli, total suspended solids, total filterable residue (dissolved solids), nitrite+nitrate, total Kjeldahl nitrogen (TKN), oil and grease, pH, bis(2-ethylhexy)phthalate, lead, nickel, and zinc.

Current permit limits for copper and mercury are being removed because effluent data shows that they no longer have the reasonable potential to contribute to WQS exceedances. Monthly monitoring is proposed and since the mercury effluent quality falls within 75 percent of the WLA, there is a tracking requirement in the permit that specifies reductions in pollutant concentrations if effluent concentrations exceed the WLA.

There is a tracking requirement for silver in the permit that specifies reductions in pollutant concentrations if effluent concentrations exceed the WLA.

Current monitoring requirements for barium and selenium are being removed because effluent data shows that the pollutants no longer have the reasonable potential to contribute to WQS exceedances.

More stringent water-quality-based limits are needed for ammonia. The Ohio EPA risk assessment places the pollutant in group 5, indicating its reasonable potential to exceed WQS.

A 30-day average limit of 1.0 mg/L and a 7-day average limit of 1.5 mg/L are being proposed for phosphorus based on best technical judgment as explained below. A compliance schedule is proposed for meeting the new final effluent limit no later than 36 months from the effective date of the permit.

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

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 American Society for Testing and Materials (ASTM) D7237-10 or OI Analytical (OIA)-1677-09 both of which are approved methods for free cyanide listed in 40 CFR 136. Monthly monitoring for cyanide is being proposed in order to gather low level data for the pollutant.

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.

In Part II of the permit, special conditions are included that address sanitary sewer overflow reporting; operator certification, minimum staffing and operator of record; whole effluent toxicity testing; low-level free cyanide testing; tracking of group 4 parameters; storm water compliance; outfall signage; and pretreatment program requirements.

Table of Contents

List of Figures

List of Tables

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 Chris Kosto, (614) 644-2027, christopher.kosto@epa.ohio.gov, or Michelle Mix, (419) 319-3019, michelle.mix@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 .) 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

The Ashland wastewater treatment plant (WWTP) discharges to Lang Creek at River Mile (RM) 0.34 in Ashland County. Figure 1 shows the approximate location of the facility.

The following designated uses are applicable to Lang Creek and Jerome Fork (the receiving stream for Lang Creek) 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). This segment is further described by Ohio EPA River Code: 17-725, U.S. EPA River Reach #: 0504000-005, County: Ashland, Ecoregion: Erie-Ontario Lake Plains

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) 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 agricultural and industrial water supply.

Facility Description

The Ashland WWTP is designed to treat an average daily flow of 5.0 million gallons per day (MGD). The treatment plant was originally constructed in 1930, with the most recent major upgrade occurring in 2005. Treatment plant processes and/or equipment include influent pumping, bar screen, grit removal, scum removal, flow equalization, primary sedimentation, trickling filter (plastic media), combined biological nitrification and BOD removal, secondary clarification, micro-strainer, and ultra-violet disinfection.

The treatment plant includes two flow equalization tanks, four primary settling tanks, two trickling filters, and two secondary clarifiers. Flow equalization (EQ) capacity has been expanded with the construction of an EQ basin. When the influent flow rate exceeds 10 MGD, flow is diverted to the EQ basin where it is screened, processed through a comminutor, and aerated in the basin. Wastewater from the EQ basin is returned to the head of the plant as the influent flows decrease. If the EQ basin becomes full, it overflows through station 003 and recombines with fully-treated wastewater immediately prior to the discharge through outfall 001 (the final outfall.) The WWTP reported overflows through station 003 for a total of 30 days from 2011 through 2013. (See Figure 2 for a schematic of the treatment works.)

Sludge is processed with lime stabilization, a filter press, and ultimately disposed by land application at agronomic rates.

Collection System

The collection system, which serves the City of Ashland, consists of 100 percent separate sanitary sewers. There are no engineered or constructed bypasses or overflows in the collection system. The estimated inflow and infiltration rate is 0.835 MGD.

Five non-categorical significant industrial users and eight categorical industrial users discharge approximately 0.292 MGD and 0.058 MGD, respectively into the collection system. The wastewater flow from all industrial users is estimated to be 0.350 MGD. The City has operated an Ohio EPA-approved pretreatment program since December 1984.

The water supply source for the service area is wells.

Description of Existing Discharge

Table 1 shows the annual effluent flow rates for the Ashland WWTP from 2009 through 2013 based upon Discharge Monitoring Report (DMR) data.

Table 2 presents chemical specific data compiled from the NPDES renewal application, data reported in annual pretreatment reports, and data collected by Ohio EPA.

Table 3 presents a summary of unaltered Discharge Monitoring Report (DMR) data for outfall 001. Data are presented for the period of January 2009 to July 2014, and current permit limits are provided for comparison.

Table 4 summarizes the results of acute and chronic whole effluent toxicity tests of the final effluent.

Table 6 summarizes the chemical specific data for outfall 001 by presenting the average and maximum PEQ values.

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 effluent testing conducted by the Agency.

Assessment of Impact on Receiving Waters

A draft Total Maximum Daily Load (TMDL) report for the Mohican River was submitted for public comment in December 2014. It is available through the OEPA, Division of Surface Water website at: http://www.epa.ohio.gov/Portals/35/tmdl/Mohican_PN_Draft_Report.pdf

An assessment of the Jerome Fork watershed in 2007 at 14 sites, and the results of this effort were included in the report entitled, *Biological and Water Quality Study of the Mohican River and Selected Tributaries, 2007* (http://www.epa.ohio.gov/portals/35/documents/MohicanTSD2009.pdf). This document, which also includes water chemistry results, states:

> "Biological sampling results from Lang Creek met ecoregional expectations; however there was evidence that moderate nutrient enrichment was contributed via runoff from the surrounding agricultural areas. Water column concentrations were relatively low but growths of attached algae indicated that nutrients were introduced into the stream and subsequently utilized in the algal biomass. The fish community in Lang Creek yielded IBI scores in the very good to exceptional range at RMs 5.26 and 3.1 but pollution tolerant creek chubs were the single most numerous species at both sites. The macroinvertebrate community similarly at least marginally met ecoregional expectations, but also

reflected an enriched condition. Additional nutrients were contributed by the Ashland WWTP effluent which discharges to Lang Creek at RM 0.34 and affected Jerome Fork..."

"…A significant increase in nutrients was documented in the water chemistry results downstream from Lang Creek. Effluent from the Ashland WWTP reaches Jerome Fork via Lang Creek. Three of four sites on Jerome Fork fully met the WWH aquatic life use including upstream from and immediately downstream from the Lang Creek. Partial attainment was documented at RM 7.90 due to impacts realized on the fish community. The fish community generated a sub par IBI score at RM 7.90, apparently in response to the accumulated impacts from habitat conditions and the introduction of nutrients from the Ashland WWTP. Recovery in the fish community to a level that marginally met ecoregional expectations was documented at RM 2.56. The occurrence of pollution sensitive fish was limited at all four sampled locations. The macroinvertebrate community exceeded ecoregional expectation at the four sampled locations on Jerome Fork; however an enrichment affect was also noted downstream from Ashland…" [page 91]

The report indicates phosphorus from the Ashland WWTP contributes to impairment downstream of the WWTP. The TMDL study conducted for the Mohican River concluded the same and recommends total phosphorus controls at the Ashland WWTP to help address these impairments. A more detailed explanation of the TSD and TMDL findings can be found in the Reasonable Potential section of this factsheet on page 13.

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

Self-monitoring data (DMR)	January 2009 through July 2014
Pretreatment data	2009-2013
Ohio EPA compliance sampling data	2013

Outliers The data were examined, and the following values were removed from the evaluation to give a more reliable projection of effluent quality: one value for TKN of 44.1 mg/L on 2/06/14 and 104 values for copper from 1/06/09 until 1/26/11. A local industry burned down in January 2011, after which copper values in the Ashland WWTP effluent were significantly lower. Thus, copper data reported prior to the fire has been disregarded. An additional sample of copper (37 µg/L on 8/27/13) was shown to be the result of lab error and has also been excluded.

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. The average and maximum PEQ values are presented in Table 6.

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 10 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 8, and allocations cannot exceed the Inside Mixing Zone Maximum 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 are 12 ng/L (average) and 1700 ng/L (maximum) in the Ohio River basin, or 1.3 ng/L (average) and 1700 ng/L (maximum) in the Lake Erie basin.

The data used in the WLA are listed in Tables 3 and 4. 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 Whole effluent toxicity (WET) is the total toxic effect of an effluent on aquatic life measured directly with a toxicity test. Acute WET measures short term effects of the effluent while chronic WET measures longer term and potentially more subtle effects of the effluent.

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

The WLA calculations for WET are similar to those for aquatic life criteria - using the chronic toxicity unit (TU_c) and 7Q10 flow for the average and the acute toxicity unit (TU_a) and 1Q10 flow for the maximum. These values are the levels of effluent toxicity that should not cause instream toxicity during critical low-flow conditions. For the Ashland WWTP, the WLA values are 0.3 TU_a and 1.09 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 the Ashland WWTP is 30 percent mortality in 100 percent effluent based on the dilution ratio of 1.1 to 1.

Reasonable Potential/ Effluent Limits/Hazard Management Decisions

After appropriate effluent limits are calculated, the reasonable potential of the discharger to violate the WQS must be determined. Each parameter is examined and placed in a defined "group". Parameters that do not have a WQS or do not require a WLA based on the initial screening are assigned to either group 1 or 2. For the allocated parameters, the preliminary effluent limits (PEL) based on the most restrictive average and maximum WLAs are selected from Table 9. The average PEL (PEL_{avg}) is compared to the average PEQ (PEQ_{avg}) from Table 5, and the PEL_{max} is compared to the PEQ_{max}. Based on the calculated percentage of the allocated value [($PEQ_{avg} \div PEL_{avg}$) X 100, or ($PEQ_{max} \div PEL_{max}$) X 100)], the parameters are assigned to group 3, 4, or 5. The groupings are listed in Table 10.

The final effluent limits are determined by evaluating the groupings in conjunction with other applicable rules and regulations. Table 11 presents the final effluent limits and monitoring requirements proposed for outfall 001 and the basis for their recommendation. Unless otherwise indicated, the monitoring frequencies proposed in the permit are continued from the existing permit.

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

Dissolved Oxygen, Total Suspended Solids, TKN, & $CBOD_5$
The limits proposed for dissolved oxygen, total suspended solids, and $CBOD_5$ are based on the existing permit. These limits are protective of WQS. Monitoring for TKN will continue in order to assist in the evaluation of effluent quality and treatment plant performance.

Phosphorus
Ashland WWTP discharges to Lang Creek at RM 0.34 which drains a total area of 34.6 square miles. Ashland WWTP is the most significant discharger to the drainage area with a design flow of 5.0 MGD compared to the 2.056 MGD and 0.02 MGD design flows of Ashland WTP and Southwood Estates, respectively. Lang Creek joins Jerome Fork at RM 12.28. During the 2007 water chemistry survey by OEPA, 5 total phosphorus samples ranging from less than 0.010 mg/L to 0.043 mg/L with a median value of 0.017 mg/L were taken at RM 3.15 of Lang Creek, 2.81 miles upstream of Ashland WWTP. In addition, 5 total phosphorus samples ranging from 0.029 mg/L to 0.055 mg/L with a median value of 0.043 mg/L were taken at RM 12.98 of Jerome Fork upstream of Lang Creek. However, the 5 total phosphorus samples collected at RM 12.08 of Jerome Fork, 0.2 miles downstream of the confluence of Lang Creek and 0.54 miles downstream of Ashland WWTP, were between the range of 0.95 mg/L and 2.45 mg/L with a median value of 2.31 mg/L. Table 5 as well as Figures 3 and 4 show the instream increase of total phosphorus due to the Ashland WWTP discharge.

Total flow downstream of Ashland WWTP at RM 7.9 of Jerome Fork during low flows was found to be 25.9 cubic feet per second (cfs) by the draft TMDL study. By comparison the design flow for Ashland WWTP is 7.74 cfs with an average flow of 6.68 cfs from 2009-2013. The average flow corresponds to 26% of the total low flow for Jerome Fork. No other significant point sources exist in the drainage area between RM 12.98 and RM 12.08 of Jerome Fork where elevated total phosphorus concentrations were detected. The relationship between total phosphorus concentration and its ultimate impact in biological attainment is complex. Attainment can sometimes be reached at higher instream concentrations than modelling would predict. Therefore, OEPA is proposing an adaptive management approach to attaining WQS in this reach. As such, OEPA is proposing a 30-day average limit of 1.0 mg/L and a 7-day average limit of 1.5 mg/L for phosphorus for the duration of this permit.

A compliance schedule is proposed for meeting this new final effluent limit no later than 36 months from the effective date of the permit. The schedule provides time for the plant to evaluate the ability of its existing treatment system to achieve the new limit and to make operational changes or equipment upgrades if necessary.

Ammonia
The limits for summer and winter ammonia are proposed to become more stringent, with the 30-day average limits decreasing from 1.7 mg/L to 1.3 mg/L and 3.5 mg/L to 2.9 mg/L, respectively. The more restrictive limits are based upon the WLA. The WWTP should not have difficulty meeting the lower limits since only two samples exceeded 1.3 mg/L in the summers, both collected before 2012; no winter samples exceeded 2.9 mg/L.

Bis(2-ethylhexyl)pthalate
The Ohio EPA risk assessment (Table 10) places bis(2-ethylhexy)pthalate in group 5, which recommends limits to protect water quality. Using the discretion allowed the Director under OAC 3745-33-07(A)(5), we are proposing quarterly monitoring, rather than limits, for this pollutant. Only one of the 17 bis(2-ethylhexy)pthalate samples (20.5 µg/L on 8/02/2011) was greater than the method detection limit and may have been the result of lab error. The PEQ values calculated for bis(2-ethylhexy)pthalate (Table 6) may not be representative of its actual levels in the plant effluent they were based on. The purpose of the proposed monitoring is to collect additional data on the frequency of occurrence and variability of this pollutant in the plant's effluent. Specific sampling requirements for bis(2-ethylhexyl)phthalate are listed in Part II Item V of the draft permit.

Silver
The Ohio EPA risk assessment (Table 10) places silver in group 5, which recommends limits to protect water quality. Using the discretion allowed the Director under OAC 3745-33-07(A)(5), we are proposing monthly monitoring, rather than limits, for this pollutant. Only five of the 108 silver samples were greater than the method detection limit. Tracking requirements for silver are also being given that specify reductions in pollutant concentrations if effluent concentrations exceed the WLA. The tracking/reduction requirements are included in Part II Item J of the draft permit.

Free Cyanide
The Ohio EPA risk assessment (Table 10) places free cyanide in group 5, which recommends limits to protect water quality. Using the discretion allowed the Director under OAC 3745-33-07(A)(5), we are proposing monthly monitoring, rather than limits, for this pollutant. Only one of the 7 free cyanide samples (0.01 mg/L on 12/01/2009) was greater or equal to the method detection limit yet lower than the water quality criteria (0.013 mg/L). 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. Monthly monitoring for free cyanide is being proposed as no data has been gathered using the new testing methods which have a lower detectable limit than the previous method.

Cadmium, Chromium VI, Copper, Lead, Total Filterable Residue, & Mercury
Ohio EPA risk assessment (Table 10) places cadmium, hexavalent chromium (VI), lead, total filterable residue (dissolved solids), and mercury in group 4. This placement, as well as the data in Tables 2, 3, and 4, 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 Rule 3745-33-07(A)(2).

In addition, the mercury effluent quality falls within 75 percent of the WLA. Under OAC 3745-33-07(A)(2), parameters in this range must have a tracking requirement in the permit that specifies reductions in pollutant concentrations if effluent concentrations exceed the WLA. The tracking/reduction requirements are included in Part II Item J of the draft permit.

Barium, Chromium, Nickel, Nitrate + Nitrite, Selenium, & Zinc
Ohio EPA risk assessment (Table 10) places barium, chromium, nickel, nitrate + nitrite, and zinc in groups 2 and 3. This placement as well as the data in Tables 2, 3, and 4 support that these parameters do not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. Continued monitoring for chromium, nickel, nitrate + nitrite, and zinc is proposed to document that these pollutants continue to remain at low levels.

Monitoring for barium and selenium are proposed to be removed. Reasonable potential for barium from the last permit cycle was based off of two samples. There were no detections for selenium between January 2009 and July 2014.

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

Whole Effluent Toxicity Reasonable Potential
Based on evaluating the WET data presented in Table 4 and other pertinent data under the provisions of OAC 3745-33-07(B), the Ashland WWTP is placed in Category 4 with respect to whole effluent toxicity. However, in order to be consistent with the provisions of 40 CFR Part 122.21 for NPDES permit applications, annual toxicity testing for acute and chronic toxicity is proposed for the life of the permit.

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 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.

Other Requirements

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/County must also submit a pretreatment program modification request.

A six month compliance schedule is proposed for the City to submit a pretreatment program modification request for implementing changes required by Ohio's pretreatment rules and U.S. EPA's pretreatment streamlining rule.

A 30-day average limit of 1.0 mg/L and a 7-day average limit of 1.5 mg/L are proposed for phosphorus. A compliance schedule is proposed for meeting this new final effluent limits no later than 36 months from the effective date of the permit. The schedule provides time for the plant to evaluate the ability of its existing treatment system to achieve the new limit and to make operational changes or equipment upgrades if necessary.

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 Ashland WWTP to have a Class IV wastewater treatment plant operator in charge of the sewage treatment plant operations discharging through outfall 001.

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, Item A(2) of this NPDES permit is included to implement rule 3745-7-02 of the OAC. It requires the permittee to designate one or more operator of record to oversee the technical operation of the treatment works.

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

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

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

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

Storm Water Compliance
To comply with industrial storm water regulations, the permittee submitted a form for "No Exposure Certification" which was signed on March 26, 2015. Compliance with the industrial storm water regulations must be re-affirmed every five years. No later than March 26, 2020, the permittee must submit a new form for "No Exposure Certification" 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 a sign at each outfall to Lang Creek providing information about the discharge. Signage at outfalls is required pursuant to OAC 3745-33-08(A).

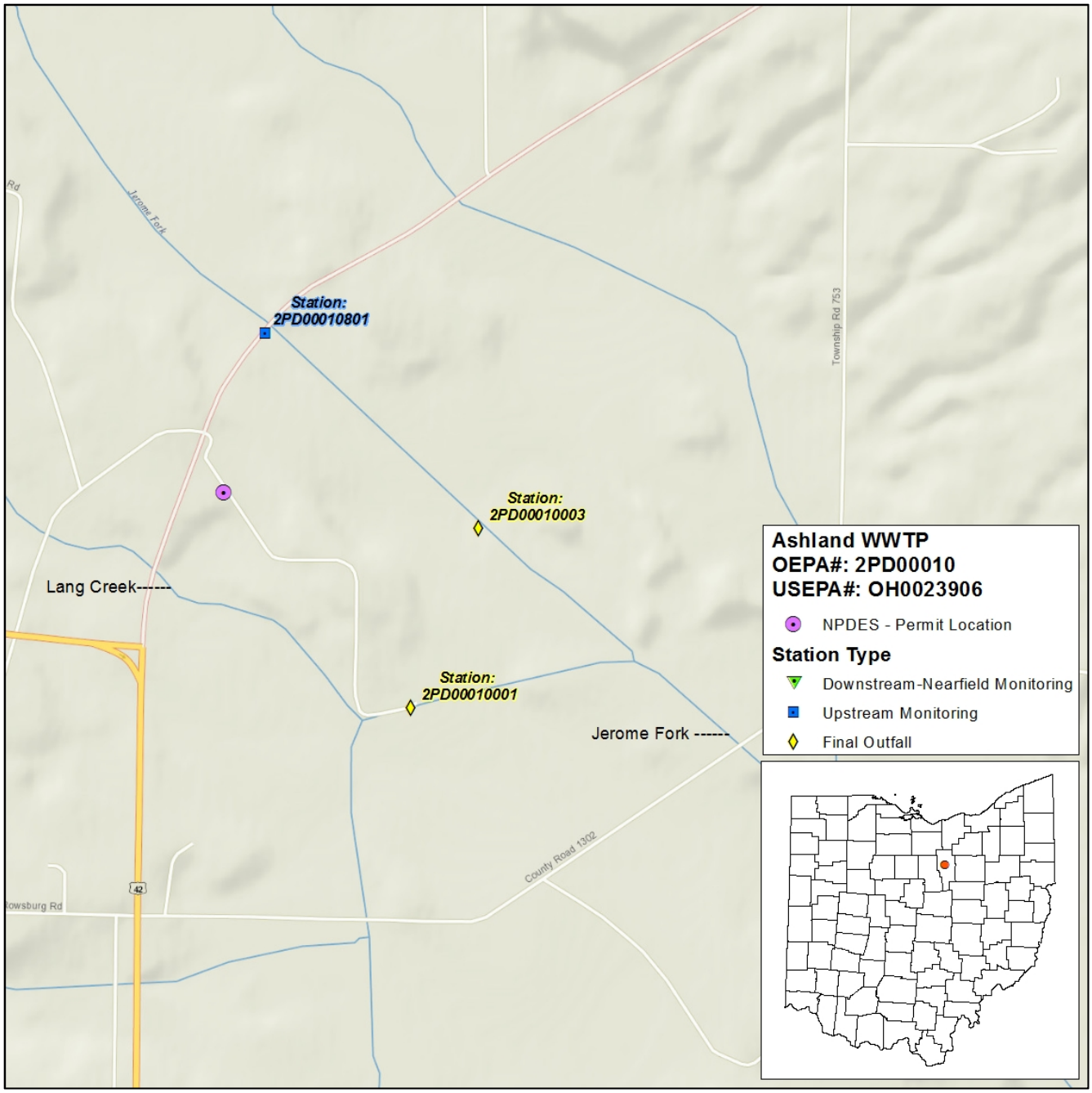

Figure 1. Location of Ashland WWTP Monitoring Stations

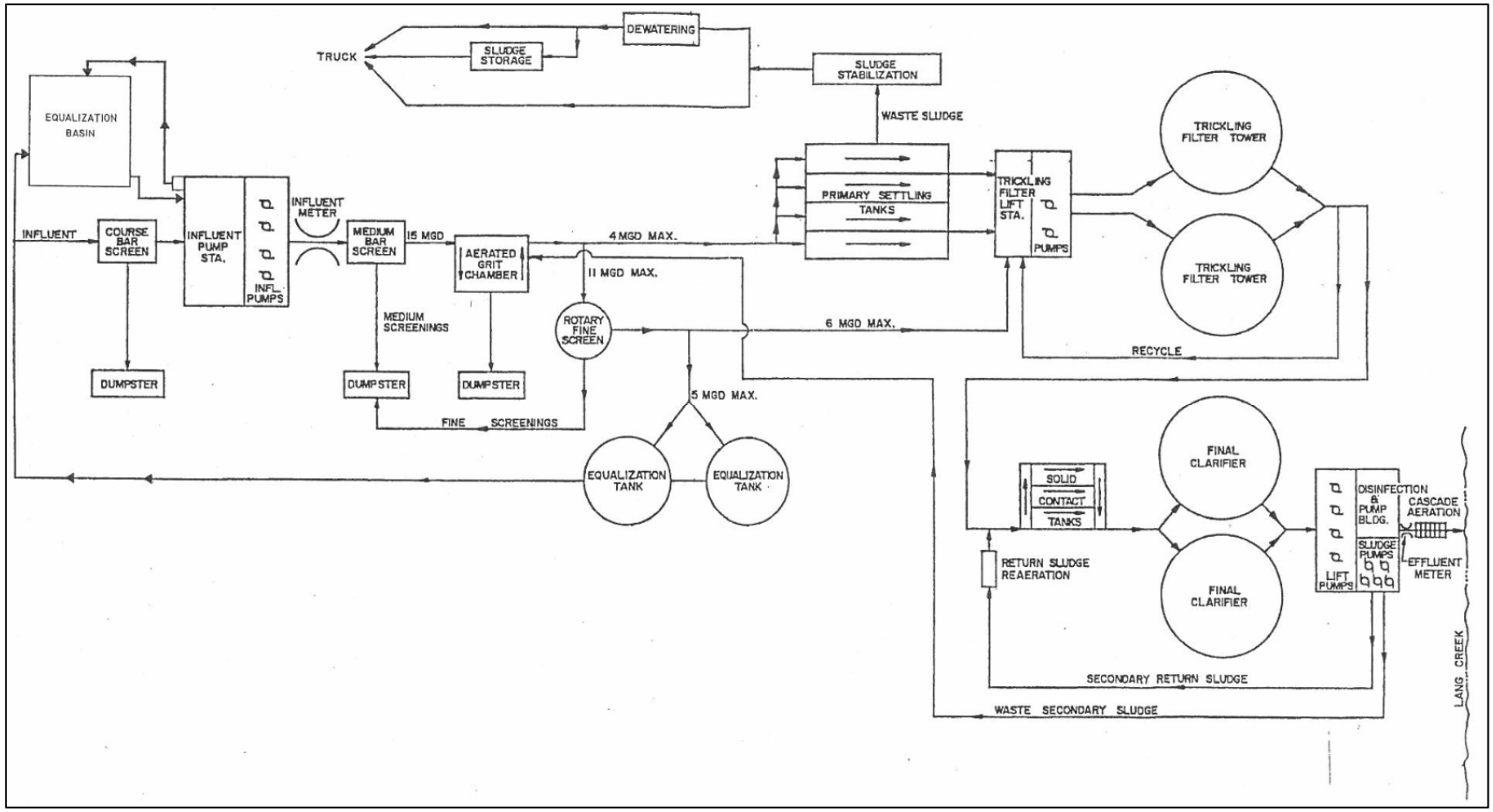

Figure 2. Ashland WWTP Schematic

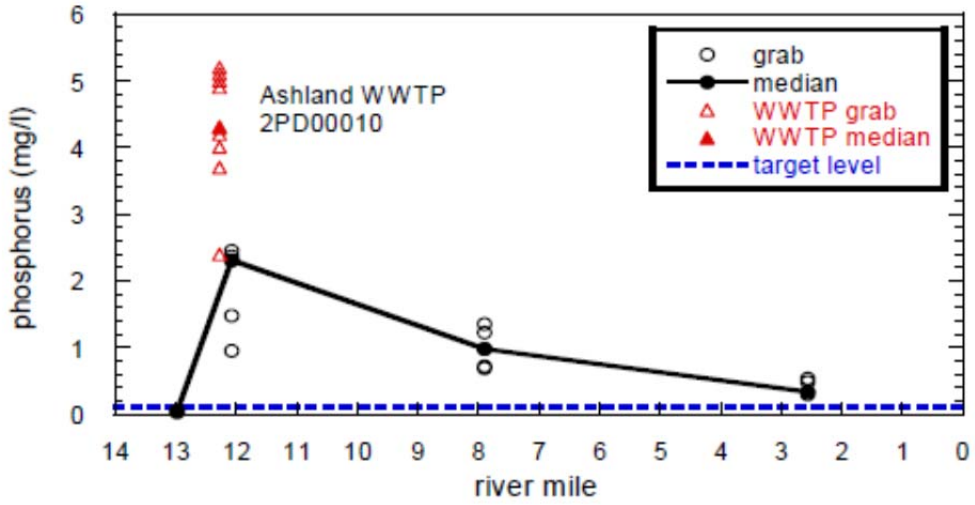

Figure 3. Phosphorus Data for Jerome Fork from TSD

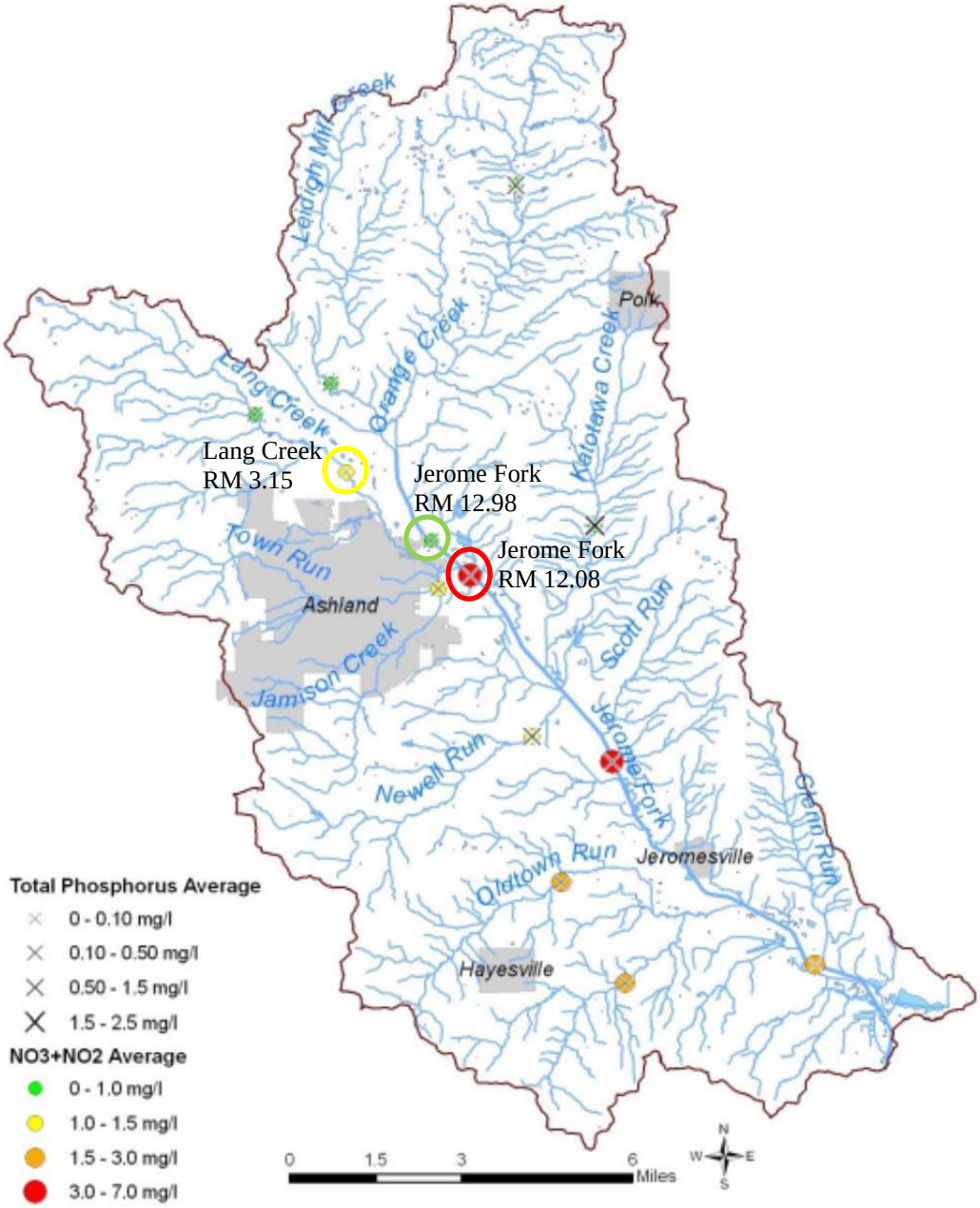

Figure 4. Water Chemistry Results

Table 1. Effluent Flow Rates for Ashland WWTP

Year	Annual Flow (MGD)		
	50th Percentile	95th Percentile	Maximum
2009	3.38	6.67	9.35
2010	3.47	6.97	9.54
2011	3.74	5.49	9.14
2012	2.90	4.28	6.77
2013	3.65	3.14	11.02

Table 2. Outfall 001 Effluent Characterization

	Result (MDL)				
	Pretreatment Data			OEPA Data	
Parameter	10/20/2009	10/19/2010	10/1/2012	3/27/2013	5/9/2013
Arsenic (µg/L)	AA (5.0)	AA (5.0)	AA (5.0)	2.3	2.1
Barium (µg/L)	N/A	N/A	N/A	39	40
Copper (µg/L)	22	26	11	4.3	4.3
Magnesium (mg/L)	N/A	N/A	N/A	24	26
Manganese (µg/L)	N/A	N/A	N/A	14	28
Nickel (µg/L)	AA (8.0)	AA (8.0)	AA (8.0)	2	2.6
Zinc (µg/L)	56	109	68	50	50

AA - below detectable limit

Table 3. Effluent Data Using Self-Monitoring Reports for Ashland WWTP.

Parameter	Season	Units	Current Permit Limits		Current Permit Loading Limits		# Obs.	Percentiles		Data Range
			30 day	Daily	30 day	Daily		50th	95th	
Outfall 001										
Water Temperature	Annual	C	--	--	--	--	2038	16	22.5	6.5-25
Dissolved Oxygen	Summer	mg/L	--	7.0[a]	--	--	1011	8.3	9.6	6.8-11.7
Dissolved Oxygen	Winter	mg/L	--	4.0[a]	--	--	1024	10.1	11.2	7.4-13.3
Total Filterable Residue	Annual	mg/L	--	--	--	--	66	700	1090	437-1400
Total Suspended Solids	Annual	mg/L	30	45[b]	568	852[b]	1403	8	14	2-74
Oil and Grease	Annual	mg/L	--	10.0	--	--	134	0	0	0-8.3
Ammonia	Summer	mg/L	1.7	2.6[b]	32.2	49.3[b]	705	0	0.4	0-2.4
Ammonia	Winter	mg/L	3.5	5.3[b]	66	100[b]	696	0	1.6	0-5
Total Kjeldahl Nitrogen	Annual	mg/L	--	--	--	--	67	1.99	3.94	0-44.1
Nitrite + Nitrate	Annual	mg/L	--	--	--	--	268	13.5	23.4	4.31-34.6
Phosphorus	Annual	mg/L	--	--	--	--	267	3.76	5.4	1.13-6.6
Cyanide, Free	Annual	mg/L	--	--	--	--	5	0	0.008	0-0.01
Selenium	Annual	µg/L	--	--	--	--	17	0	0	0-0
Barium	Annual	µg/L	--	--	--	--	17	36	64.8	27-72
Nickel	Annual	µg/L	--	--	--	--	33	4	10.6	0-10.8
Silver	Annual	µg/L	--	--	--	--	115	0	0	0-3.7
Strontium	Annual	µg/L	--	--	--	--	16	364	454	276-455
Zinc	Annual	µg/L	--	--	--	--	67	71	119	25-230
Cadmium	Annual	µg/L	--	--	--	--	33	0	0	0-4.5
Lead	Annual	µg/L	--	--	--	--	115	0	15.3	0-73
Chromium	Annual	µg/L	--	--	--	--	67	0	4.04	0-20.4
Copper	Annual	µg/L	30	48	0.57	0.91	270	9.85	36	0-68.8
Chromium VI	Annual	µg/L	--	--	--	--	69	0	0	0-9.4
Antimony	Annual	µg/L	--	--	--	--	16	0	0	0-0

Table 3, Continued

Parameter	Season	Units	Current Permit Limits		Current Permit Loading Limits		# Obs.	Percentiles		Data Range
			30 day	Daily	30 day	Daily		50th	95th	
Fecal Coliform	Annual	#/100 ml	--	--	--	--	202	44	447	0-3000
E. coli	Annual	#/100 ml	161	362[b]	--	--	457	13	330	1-4500
Bis(2-ethylhexyl) Phthalate	Annual	µg/L	--	--	--	--	17	0	4.1	0-20.5
Flow Rate	Summer	MGD	--	--	--	--	1012	3.51	8.12	2.3-11
Flow Rate	Winter	MGD	--	--	--	--	1026	4.18	9.38	2.48-17.3
Flow Rate	Annual	MGD	--	--	--	--	2038	3.88	9.12	2.3-17.3
Mercury	Annual	ng/L	15	1700	0.000284	0.0322	67	5.2	10.8	2.08-15.1
Acute Toxicity, Ceriodaphnia dubia	Annual	TUa	--	--	--	--	5	0	0	0-0
Chronic Toxicity, Ceriodaphnia dubia	Annual	TUc	--	--	--	--	5	0	0.88	0-1.1
Acute Toxicity, Pimephales promelas	Annual	TUa	--	--	--	--	5	0	0.16	0-0.2
Chronic Toxicity, Pimephales promelas	Annual	TUc	--	--	--	--	5	0	8.4	0-10.5
pH, Maximum	Annual	S.U.	9.0	--	--	--	2038	7.7	8.1	7.1-9
pH, Minimum	Annual	S.U.	--	6.5	--	--	2038	7.5	7.9	6.5-8.2
CBOD 5 day	Summer	mg/L	25	40	473	757	427	3.83	8.47	1.74-12.6
CBOD 5 day	Winter	mg/L	8	12	151	227	414	5.19	9.05	2.62-17.3

[a] minimum
[b] weekly limit
[c] CBOD – carbonaceous biochemical oxygen demand

Table 4. Summary of Acute and Chronic Toxicity Results

	Ceriodaphnia dubia		Pimephales promelas	
Date	Acute Toxicity (TU_a)	Chronic Toxicity (TU_c)	Acute Toxicity (TU_a)	Chronic Toxicity (TU_c)
7/13/2010	AA	AA	AA	AA
7/22/2011	AA	1.1	AA	AA
7/23/2012	AA	AA	AA	AA
7/15/2013	AA	AA	0.2	AA

Table 5. Phosphorus Data from TSD

Stream	River Mile	Relation to Ashland WWTP	Values (mg/L)	Median Value (mg/L)
Lang Creek	3.15	2.81 miles upstream of WWTP	0.017, < 0.010, 0.043, 0.015, 0.017	0.017
Jerome Fork	12.98	0.7 miles upstream of confluence of Lang Creek	0.043, 0.029, 0.042, 0.046, 0.055	0.043
Jerome Fork	12.08	0.2 miles downstream of confluence of Lang Creek	1.48, 2.45, 0.95, 2.37, 2.31	2.31

Note: Ashland WWTP discharges at River Mile 0.34 of Lang Creek before it joins Jerome Fork

Table 6. Effluent Data and Summary of PEQs for Ashland WWTP.

Parameter	Units	Number of Samples	Number > MDL	PEQ Average	PEQ Maximum
Ammonia – Summer	mg/L	447	84	0.18014	0.41735
Ammonia – Winter	mg/L	343	209	1.4308	1.96
Arsenic	µg/L	2	2	6.3802	8.74
Barium	µg/L	19	19	58.321	79.206
Bis(2-ethylhexyl)phthalate	µg/L	22	1	19.4545	26.65
Cadmium	µg/L	36	1	3.8544	5.28
Chlorides	mg/L	2	2	915.42	1254
Chromium	µg/L	71	31	5.6554	7.2868
Copper	µg/L	166	89	16.433	24.191
Cyanide – free	mg/L	7	1	0.0146	0.02
Total filterable residue	mg/L	67	67	903.18	1084.8
Iron	µg/L	2	2	393.908	539.6
Lead	µg/L	119	42	16.264	17.341
Magnesium	mg/L	2	2	72.124	98.8
Manganese	µg/L	2	2	77.672	106.4
Mercury	ng/L	69	66	9.6762	14.233
Nickel	µg/L	38	24	8.6724	11.88
Nitrate + Nitrite	mg/L	265	265	20.043	26.492
Phosphorus	mg/L	265	265	3.3726	4.62
Silver	µg/L	108	5	2.4309	3.33
Strontium	µg/L	18	18	421.35	484.58
Zinc	µg/L	71	71	106	142.65
Chromium VI	µg/L	49	2	6.862	9.4
Molybdenum	µg/L	--	--	--	--
Selenium	µg/L	22	0	--	--
Total Kjeldahl Nitrogen	mg/L	67	58	3.3914	4.8916

PEQ – Projected effluent quality

Table 7. Water Quality in the Study Area for Ashland WWTP.

Parameter	Units	Outside Mixing Zone Criteria				Inside Mixing Zone Maximum
		Average			Maximum	
		Human Health	Agri-culture	Aquatic Life	Aquatic Life	
Ammonia-Summer	mg/L	--	--	1.1	--	--
Ammonia-Winter	mg/L	--	--	2.3	--	--
Arsenic	µg/L	--	100	150	340	680
Barium	µg/L	--	--	220	2000	4000
Bis(2-ethylhexyl)phthalate	µg/L	59c	--	8.4	1100	2100
Cadmium	µg/L	--	50	5.2	13	27
Chlorides	mg/L	--	--	--	--	--
Chromium	µg/L	--	100	190	3900	7900
Copper	µg/L	1300	500	21	34	69
Cyanide – free	mg/L	220	--	0.012	0.046	0.092
Total filterable residue	mg/L	--	--	1500	--	--
Iron	µg/L	--	5000	--	--	--
Lead	µg/L	--	100	22	410	830
Magnesium	mg/L	--	--	--	--	--
Manganese	µg/L	--	--	--	--	--
Mercury	ng/L	12	10000	910	1700	3400
Nickel	µg/L	4600	200	120	1100	2100
Nitrate + Nitrite	mg/L	--	100	--	--	--
Phosphorus	mg/L	--	--	--	--	--
Silver	µg/L	--	--	1.3	8.3	17
Strontium	µg/L	--	--	21000	40000	81000
Zinc	µg/L	69000	25000	270	270	540
Chromium VI	µg/L	--	--	11	16	31
Molybdenum	µg/L	--	--	20000	190000	370000
Selenium	µg/L	11000	50	5	--	--
Total Kjeldahl Nitrogen	mg/L	--	--	--	--	--

Table 8. Instream Conditions and Discharger Flow for Ashland WWTP.

Parameter	Units	Season	Value	Basis
Stream Flows				
1Q10	cfs	annual	0.604	USGS 03134000
7Q10	cfs	annual	0.719	USGS 03134000
		summer	0	
		winter	0	
30Q10	cfs	summer	1.12	USGS 03134000
		winter	1.98	USGS 03134000
90Q10	cfs	annual	0	
Harmonic Mean	cfs	annual	4.14	USGS 03134000
Mixing Assumption	%	average	100	
	%	maximum	100	
Hardness	mg/L	Annual	260	Ashland 901, N=67
pH	S.U.	summer	8.015	Ashland 901, N=22
		winter	8.2	Ashland 901, N=17
Temperature	C	summer	22	Ashland 901, N=22
		winter	4	Ashland 901, N=17
Ashland WWTP flow	cfs	annual	7.74	
Background Water Quality				
Ammonia-Summer	mg/L		0	MOR; 2009-14; n=22; 21<MDL; Station 801, 50% value
Ammonia-Winter	mg/L		0	MOR; 2009-14; n=11; 11<MDL; Station 801, 50% value
Arsenic	µg/L		1	STORET; 1993-98; n=19; 16<MDL; 50% value
Barium	µg/L		71	STORET; 2007; n=5; 0<MDL; Station 611860; mean value
Bis(2-ethylhexyl)phthalate	µg/L		0	No representative data available.
Cadmium	µg/L		0	STORET; 1993-98; n=19; 19<MDL; 50% value
Chlorides	mg/L		42.6	OEPA; 2007; n=5; 0<MDL; Station 611860; mean value
Chromium	µg/L		0	STORET; 2007; n=5; 5<MDL; Station 611860; mean value
Copper	µg/L		0	STORET; 2007; n=5; 5<MDL; Station 611860; mean value
Cyanide - free	mg/L		0	No representative data available.

Table 8, Continued

Parameter	Units	Season	Value	Basis
Total filterable residue	mg/L		491	STORET; 2007; n=5; 0<MDL; Station 611860; mean value
Iron	µg/L		882	STORET; 2007; n=5; 0<MDL; Station 611860; mean value
Lead	µg/L		0	STORET; 2007; n=5; 5<MDL; Station 611860; mean value
Magnesium	mg/L		25	STORET; 2007; n=5; 0<MDL; Station 611860; mean value
Manganese	µg/L		154	STORET; 2007; n=5; 0<MDL; Station 611860; mean value
Mercury	ng/L		0	No representative data available.
Nickel	µg/L		0	STORET; 2007; n=5; 5<MDL; Station 611860; mean value
Nitrate + Nitrite	mg/L		0.35	STORET; 2007; n=5; 0<MDL; Station 611860; mean value
Phosphorus	mg/L		0.04	STORET; 2007; n=5; 0<MDL; Station 611860; mean value
Silver	µg/L		0	No representative data available.
Strontium	µg/L		613	STORET; 2007; n=5; 0<MDL; Station 611860; mean value
Zinc	µg/L		0	STORET; 2007; n=5; 5<MDL; Station 611860; mean value
Chromium VI	µg/L		0	No representative data available.
Molybdenum	µg/L		0	No representative data available.
Selenium	µg/L		0	STORET; 2007; n=5; 5<MDL; Station 611860; mean value
Total Kjeldahl Nitrogen	mg/L		0.39	STORET; 2007; n=5; 1<MDL; Station 611860; mean value

MDL – Method detection limit
MOR – Monthly operating report
OEPA – Ohio Environmental Protection Agency
RM – River mile
STORET – EPA Storage and Retrieval data repository
USGS – United States Geological Survey

Table 9. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria for Ashland WWTP.

Parameter	Units	Outside Mixing Zone Criteria				Inside Mixing Zone Maximum
		Average			Maximum	
		Human Health	Agri-culture	Aquatic Life	Aquatic Life	
Ammonia-Summer	mg/L	--	--	1.3	--	--
Ammonia-Winter	mg/L	--	--	2.9	--	--
Arsenic	µg/L	--	153	164	366	680
Barium	µg/L	--	--	234	2151	4000
Bis(2-ethylhexyl)phthalate	µg/L	91	--	9.2	1186	2100
Cadmium	µg/L	--	77	5.7	14	27
Chlorides	mg/L	--	--	--	--	--
Chromium	µg/L	--	153	208	4204	7900
Copper	µg/L	1995	767	23	37	69
Cyanide – free	mg/L	338	--	0.013	0.05	0.092
Total filterable residue	mg/L	--	--	1594	--	--
Iron	µg/L	--	7203	--	--	--
Lead	µg/L	--	153	24	442	830
Magnesium	mg/L	--	--	--	--	--
Manganese	µg/L	--	--	--	--	--
Mercury	ng/L	12	10000	910	1700	3400
Nickel	µg/L	7060	307	131	1186	2100
Nitrate + Nitrite	mg/L	--	153	--	--	--
Silver	µg/L	--	--	1.4	8.9	17
Strontium	µg/L	--	--	22894	43074	81000
Zinc	µg/L	105907	38372	295	291	540
Chromium VI	µg/L	--	--	12	17	31
Molybdenum	µg/L	--	--	21858	204827	370000
Selenium	µg/L	16884	77	5.5	--	--
Total Kjeldahl Nitrogen	mg/L	--	--	--	--	--

Table 10. Parameter Assessment for Ashland WWTP

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

Chlorides	Magnesium	Manganese
	Total Kjeldahl Nitrogen	

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

Arsenic	Chromium	Iron
Nickel	Nitrate + Nitrite	Strontium
Molybdenum	Selenium	

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

Barium	Zinc

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

Cadmium	Copper	Total Filterable Residue
Lead	Mercury	Chromium VI

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
Ammonia-Summer	mg/L		1.3	--
Ammonia-Winter	mg/L		2.9	--
Bis(2-ethylhexyl)phthalate	µg/L		9.2	1186
Cyanide – free	mg/L		0.013	0.05
Silver	µg/L		1.4	8.9

PEQ – Projected effluent Quality
PEL - Preliminary effluent limit
WLA – Waste load allocation
WQS – Water quality standard

Table 11. Final Effluent Limits and Monitoring Requirements for Ashland WWTP Outfall 001.

Parameter	Units	Effluent Limits				Basis[b]
		Concentration		Loading (kg/day)[a]		
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Flow	MGD	- - - - - - - - - - - - - Monitor - - - - - - - - - - -				M[c]
Temperature	°C	- - - - - - - - - - - - - Monitor - - - - - - - - - - -				M[c]
Dissolved Oxygen – Summer	mg/L	- - - - - - - - - - Not less than 7.0 - - - - - - - -				EP
Dissolved Oxygen – Winter	mg/L	- - - - - - - - - - Not less than 4.0 - - - - - - - -				EP
Carbonaceous biochemical oxygen demand (5-day) – Summer	mg/L	8	12[d]	151	227[d]	EP
Carbonaceous biochemical oxygen demand (5-day) - Winter	mg/L	25	40[d]	473	757[d]	EP
Total Suspended Solids – Summer	mg/L	12	18[d]	227	341[d]	EP
Total Suspended Solids – Winter	mg/L	30	45[d]	568	852[d]	EP
Total Filterable Residue	mg/L	- - - - - - - - - - - - - Monitor - - - - - - - - - - -				RP/WLA
Ammonia – Summer	mg/L	1.3	2.0[d]	24.7	37.9[d]	RP/WLA
Ammonia – Winter	mg/L	2.9	4.4[d]	54.9	83.3[d]	RP/WLA
Total Kjeldahl Nitrogen	mg/L	- - - - - - - - - - - - - Monitor - - - - - - - - - - -				EP/M[c]
Nitrite + Nitrate	mg/L	- - - - - - - - - - - - - Monitor - - - - - - - - - - -				EP/M[c]
Phosphorus	mg/L	1.0	1.5[d]	19	28.4[d]	BTJ
Orthophosphate, Dissolved (as P)	mg/L	- - - - - - - - - - - - - Monitor - - - - - - - - - - -				SB1
Oil and Grease	mg/L	- - - - - - - - Not greater than 10.0 - - - - - - -				WQS
pH	S.U.	6.5 - 9.0				WQS
E. coli – Summer	#/100mL	161	362[d]	--	--	WQS
Bis(2-ethylhexy)pthalate	µg/L	- - - - - - - - - - - - - Monitor - - - - - - - - - - -				M
Cyanide, Free	µg/L	- - - - - - - - - - - - - Monitor - - - - - - - - - - -				M
Cadmium	µg/L	- - - - - - - - - - - - - Monitor - - - - - - - - - - -				RP/WLA
Chromium	µg/L	- - - - - - - - - - - - - Monitor - - - - - - - - - - -				EP
Chromium IV	µg/L	- - - - - - - - - - - - - Monitor - - - - - - - - - - -				RP/WLA
Copper	µg/L	- - - - - - - - - - - - - Monitor - - - - - - - - - - -				RP/WLA
Lead	µg/L	- - - - - - - - - - - - - Monitor - - - - - - - - - - -				RP/WLA
Mercury	ng/L	- - - - - - - - - - - - - Monitor - - - - - - - - - - -				RP/WLA
Silver	µg/L	- - - - - - - - - - - - - Monitor - - - - - - - - - - -				RP/WLA
Nickel	µg/L	- - - - - - - - - - - - - Monitor - - - - - - - - - - -				EP
Zinc	µg/L	- - - - - - - - - - - - - Monitor - - - - - - - - - - -				M

Table 11, Continued

Parameter	Units	Effluent Limits				Basis[b]
		Concentration		Loading (kg/day)[a]		
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Whole Effluent Toxicity						
Acute, *Ceriodaphnia dubia*	TU_a	- - - - - - - - Monitor w/o Trigger - - - - - - -				WET/BTJ
Chronic, *Ceriodaphnia dubia*	TU_c	- - - - - - - - Monitor w/o Trigger - - - - - - -				WET/BTJ
Acute, *Pimephales promelas*	TU_a	- - - - - - - - Monitor w/o Trigger - - - - - - -				WET/BTJ
Chronic, *Pimephales promelas*	TU_c	- - - - - - - - Monitor w/o Trigger - - - - - - -				WET/BTJ

[a] Effluent loadings based on average design discharge flow of 5.0 MGD.

[b] Definitions:
BEJ = Best Technical Judgment
EP = Existing Permit
M = Division of Surface Water NPDES Permit Guidance 1: Monitoring frequency requirements for Sanitary Discharges
RP = Reasonable Potential (Risk Assessment Group 4 or 5)
SB1 = Implementation of Senate Bill 1 (ORC 6111.03)
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.