National Pollutant Discharge Elimination System (NPDES) Permit Program

FACT SHEET

Regarding an NPDES Permit to Discharge to Waters of the State of Ohio
for Village of Plain City Wastewater Treatment Plant (WWTP)

Public Notice No.: 22-05-024
Public Notice Date: May 13, 2022
Comment Period Ends: July 11, 2022

Ohio EPA Permit No.: 4PB00016*JD
Application No.: OH0027057

Name and Address of Applicant:
Village of Plain City
800 Village Boulevard
Plain City, OH 43064

Name and Address of Facility Where Discharge Occurs:
Village of Plain City WWTP
225 Central Avenue
Plain City, OH 43064
Madison County

Receiving Water: Big Darby Creek

Subsequent Stream Network: Scioto River to the 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.

The Director has determined that a lowering of water quality in the Big Darby Creek is necessary. In accordance with OAC 3745-1-05, this decision was reached only after examining a series of technical alternatives, reviewing social and economic issues related to the degradation, and considering all public and appropriate intergovernmental comments. The lowering of water quality is necessary to accommodate important social or economic development in the area in which the water body is located.

Effluent limits based on available treatment technologies are required by Section 301(b) of the CWA. Many of these have already been established by the United States Environmental Protection Agency (U.S. EPA) in the effluent guideline regulations (a.k.a. categorical regulations) for industry categories in 40 CFR Parts 405-499. Technology-based regulations for publicly-owned treatment works are listed in the Secondary Treatment

Regulations (40 CFR Part 133). If regulations have not been established for a category of dischargers, the director may establish technology-based limits based on best professional judgment (BPJ).

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

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

SUMMARY OF PERMIT CONDITIONS

The effluent limits and/or monitoring requirements proposed for all parameters are the same as in the current permit, except those listed below.

New effluent limits are proposed for ammonia, CBOD5, dissolved hexavalent chromium, phosphorus, total filterable residue, and TSS. A 59-month compliance schedule is proposed to meet the new total filterable residue limits. The limits for all other parameters are proposed to become effective upon completion of the proposed facility expansion, therefore a 36-month compliance schedule is proposed. After the proposed WWTP expansion, the monitoring frequency for ammonia, CBOD5, and TSS is proposed to be increased to three times per week.

The monitoring frequency for copper, dissolved hexavalent chromium, and mercury is proposed to be increased to monthly.

New monitoring is proposed for orthophosphate based on ORC 6111.03.

New annual chronic toxicity monitoring with the determination of acute endpoints is proposed to start upon completion of the facility expansion. This satisfies the minimum testing requirements of Ohio Administrative Code (OAC) 3754-33-07(B)(11) and will adequately characterize toxicity in the plant's effluent.

The monitoring frequency for ammonia, CBOD5, and TSS at influent station 60 is proposed to increase to three times per week after the proposed WWTP expansion.

The following changes are proposed at upstream monitoring station 801: monitoring is to be removed for water temperature, dissolved oxygen, and pH; monitoring for *E. coli* is to occur once every two weeks from June through August; new monitoring for total filterable residue is based on best technical judgement; and acute and chronic toxicity monitoring is proposed to coincide with whole effluent toxicity monitoring at Outfall 001.

The following changes are proposed at downstream monitoring station 901: monitoring for *E. coli* is to occur once every two weeks from June through August; new monitoring for total filterable residue is based on best technical judgement.

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; outfall signage; and submission of supplemental data with NPDES renewal.

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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 David Brumbaugh by phone at 614-644-2138 or email at david.brumbaugh@epa.ohio.gov, or John Owen by phone at 614-728-3849 or email at John.Owen@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: https://epa.ohio.gov/static/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, a written request 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 3745-1-39. 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 Village of Plain City WWTP, hereinafter referred to as Plain City WWTP, discharges to the Big Darby Creek at River Mile 52.1. Figure 1 shows the approximate location of the facility.

This segment of the Big Darby Creek is described by Ohio EPA River Code: 02-200-000, Hydrologic Unit Code: 05060001-19-05, County: Madison, Ecoregion: Eastern Corn Belt Plains. The Big Darby Creek is designated for the following uses under Ohio's WQS (OAC 3745-1-09): Exceptional Warmwater Habitat, Outstanding State Water, Agricultural Water Supply, Industrial Water Supply, and 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

Plain City WWTP was constructed in 1985 and last upgraded in 2007. The average design flow is currently 0.75 (MGD) with a peak hydraulic capacity of 2.78 MGD. Plain City WWTP serves the Village of Plain City, with an approximate served population of 4,922. Plain City WWTP currently has the following treatment processes (Figure 2):

- Screening
- Grit Removal
- Oxidation Ditch (three ditches)
- Final Clarifier (three clarifiers)
- UV Disinfection
- Post Aeration

The Village of Plain City has proposed to expand the design capacity of Plain City WWTP. The facility's NPDES renewal application included an antidegradation addendum that outlined various alternatives to achieve this expansion, including their preferred alternative. The preferred alternative proposes to increase the average design flow to 1.5 MGD, with a maximum daily flow of 3.75 MGD and peak hydraulic capacity of 5.1 MGD. Expansion construction is projected to be complete in the summer of 2025, 36 months from proposed effective

date of the permit. The preferred alternative proposes the following upgrades in the expanded Plain City WWTP:

- Additional screening
- Upgraded influent pump station
- New grit removal treatment
- One new oxidation ditch
- Two new final clarifiers
- Additional UV disinfection
- Additional post-aeration
- New tertiary filtration
- New return and waste activated sludge pump station

Plain City WWTP has does not have any internal or plant bypasses. The Village of Plain City has 100% separate sewers in the collection system. The Village of Plain City does not have an approved pretreatment program, and they do not currently have industrial users. Plain City's potable water comes from two groundwater source wells.

Plain City WWTP utilizes the following sewage sludge treatment processes (Figure 2):

- Aerobic digestion
- Sand drying bags and beds

Table 1 shows the last five years of sludge removed from Plain City WWTP. Treated sludge is land applied or transferred to another permit holder. Plain City WWTP has not proposed any sewage sludge treatment upgrades with the WWTP expansion, other than the above-mentioned new sludge pump station.

Director's Final Findings and Orders (DFFOs) were issued to the Village on September 2, 2021. The DFFOs acknowledge that Plain City WWTP operates near its design capacity. Plain City WWTP estimates there is an infiltration/inflow (I/I) rate to the collection system of 0.4 MGD, half of the facility's current design capacity. The DFFO's provide a mechanism for Ohio EPA to be able to approve additional sewer connections after the Village of Plain City commits to complete I/I reduction projects. Plain City WWTP performs the following activities to minimize I/I: collection system studies, rehabilitation in older portions of the collection system, sewer replacements, sewer lining, sewer cleaning, televised inspection of sewers, and fund procurement for further maintenance of the collection system.

DESCRIPTION OF EXISTING DISCHARGE

Table 2 presents effluent violations for Plain City WWTP had 129 effluent violations in the last five years. The majority of these violations are suspected to be caused by ineffective management of the sludge inventory. Improvements made in the sludge inventory management likely resulted in the reduction of violations observed in 2021. However, recordkeeping has been unreliable at Plain City WWTP prior to 2021, hampering the ability to accurately name causes of these violations.

Table 3 presents the average annual effluent flow rate for Plain City WWTP for the previous five years.

Sanitary Sewer Overflows (SSOs) are reported at station 300. One SSO was reported over the past five years, which occurred in 2020.

Table 4 presents data characterizing the seasonal total phosphorus load from Plain City WWTP during the previous five years.

Table 5 presents a summary of unaltered Discharge Monitoring Report (DMR). Data are presented for the period January 2017 through December 2021, and current permit limits are provided for comparison.

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

ASSESSMENT OF IMPACT ON RECEIVING WATERS

Pursuant to Section 303(d) of the Clean Water Act, each state is required to develop and submit a list to US EPA of its impaired and threatened waters (e.g. stream/river segments, lakes). For each water on the list, the state identifies the pollutant(s) causing the impairment, when known. The Robinson Run-Big Darby Creek watershed assessment unit, which includes the Big Darby Creek in the vicinity of Plain City WWTP, is listed as impaired for recreational use on Ohio's 303(d) list.

The Total Maximum Daily Load (TMDL) program focuses on identifying and restoring polluted rivers, streams, lakes and other surface water bodies. A TMDL is a written, quantitative assessment of water quality problems in a water body and contributing sources of pollution. It specifies the amount a pollutant needs to be reduced to meet water quality standards (WQS), allocates pollutant load reductions, and provides the basis for taking actions needed to restore a water body. A Total Daily Maximum Load (TMDL) report was approved for the Big Darby Creek in March 2006.

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 7-1). 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 7) is constructed based on the sampling results and is arranged from upstream to downstream and includes the sampling locations indicated by river mile, the applicable biological indices, the use attainment status (i.e., full, partial, or non), the Qualitative Habitat Evaluation Index, and comments and observations for each sampling location.

According to the 2006 Big Darby creek TMDL, the Big Darby Creek watershed is impaired for recreational beneficial use due to high bacteria concentrations, with agricultural runoff and household sewage treatment systems (HSTS) identified as likely sources. The most recent data available for the Big Darby Creek watershed is from 2014 and is presented in the *Biological and Water Quality Study of the Big Darby Creek Watershed, 2014*. This data indicates Big Darby Creek remains impaired for recreation use, with agriculture, HSTS, urban runoff, and wastewater treatment plants identified as likely sources. Plain City WWTP has reported only one SSO over the past five years. In that same time, Plain City WWTP had four *E. coli* limit violations, which occurred in 2018 and 2019 and are suspected to be a result of I/I and elevated flow from wet weather. These issues should be addressed by the I/I reduction work planned under the DFFOs and by the proposed plant expansion. *E. coli* final effluent limitations are proposed to be maintained in the facility's NPDES permit.

A 2001-02 survey of the Big Darby Creek watershed identified an aquatic life use impairment due to excess nutrients and the 2006 TMDL was subsequently developed. The TMDL provides an annual phosphorus wasteload allocation of 725.30 kg/year for Plain City WWTP. The receiving stream was found to be in full attainment during in the 2014 survey but limits to meet the WLA above are proposed to maintain full attainment.

The 2006 TMDL is available through the Ohio EPA, Division of Surface Water website at:
https://epa.ohio.gov/static/Portals/35/tmdl/DarbyTMDL_final_all_jan06.pdf.

The *Biological and Water Quality Study of the Big Darby Creek Watershed, 2014* is available through the Ohio EPA, Division of Surface Water website at:
https://epa.ohio.gov/static/Portals/35/documents/BigDarby_2014_BWQR_Final.pdf

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. In the case of Plain City WWTP, two scenarios are considered. The first scenario considered is current WWTP capacity with an average daily design flow (ADDF) of 0.75 MGD. The second scenario considered is the expanded WWTP capacity with an ADDF of 1.5 MGD. Where applicable, there are multiple tables representing each of these scenarios.

Parameter Selection

Effluent data for the Plain City 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 2017 through December 2021

Statistical Outliers and Other Non-representative Data

The data were examined and the following value was removed from the evaluation as non-representative data:

Nitrate plus Nitrite – 237 mg/L, 05/07/2020; more than nine-times the next closest value.

This data is evaluated statistically, and PEQ values are calculated for each pollutant. Average PEQ (PEQ_{avg}) values represent the 95th percentile of monthly average data, and maximum PEQ (PEQ_{max}) values represent the 95th percentile of all data points (see Table 6). See Modeling Guidance #1 for more information on PEQ calculations, available through the Ohio EPA, Division of Surface Water website at: https://epa.ohio.gov/static/Portals/35/guidance/model1.pdf

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 8).

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 break down in the receiving water. For free-flowing streams, WLAs using this method are calculated 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
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 9, and allocations cannot exceed the Inside Mixing Zone Maximum (IMZM) criteria. The data used in the WLA are listed in Table 8 and Table 9. The WLA results to maintain all applicable criteria are presented in Table 10 (current capacity) and Table 11 (expanded capacity).

Set Asides to Limit Lower Water Quality

In accordance with OAC 3745-01-05(C)(6)(a), when the Director is acting on applications or activities covered by OAC 3745-01-05(B)(1) for a facility that discharges to an Outstanding State Water, as is the case for the proposed Plain City WWTP expansion to an ADDF of 1.5 MGD, the Director shall reserve seventy percent of the remaining available pollutant assimilative capacity for all regulated pollutants for which water quality criteria have been adopted. The remaining available pollutant assimilative capacity is the available pollutant assimilative capacity for a substance minus the wasteload already allocated to existing NPDES permits for dischargers in the water body segment receiving the allocation and minus the background pollutant load. Only thirty percent of the remaining available pollutant assimilative capacity shall be made available for additional discharge. For those parameters that require a WLA, the permit limits in the existing NPDES permit are used to calculate the load already allocated to that NPDES permittee. If a parameter requires a WLA but there are no

limits in the existing permit, then the WLA from the existing plant capacity (Table 10) shall be used to calculate the load already allocated to that NPDES permittee.

Plain City WWTP has proposed to maintain loading limitations from the existing permit for ammonia, CBOD5, and TSS, which is a more stringent approach than to perform set aside calculations. As such, these parameters are not considered in this process. Set aside calculations and WLAs for relevant parameters are available in Attachment 1 and Table 12.

Whole Effluent Toxicity Wasteload Allocation

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 Plain City WWTP, the WLA values are 0.5 TU_a and 1.6 TU_c at the existing WWTP capacity and 0.4 TU_a and 1.3 TU_c at the expanded WWTP capacity.

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 all designated waters.

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

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

$$\text{Downstream Dilution Ratio} = \frac{\text{1Q10 + [Outfall 001 flow rate]}}{\text{[Outfall 001 flow rate]}} = \frac{\text{0.6 cfs + 2.32 cfs}}{\text{2.32 cfs}} = 1.23$$

The acute WLA for Plain City WWTP, at both the current and expanded capacity, is 30 percent mortality in 100 percent effluent based on the dilution ratio of 1.23.

REASONABLE POTENTIAL/EFFLUENT LIMITS/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 10 and Table 12 (which are calculated in Attachment 1 based on data in Table 11), for current capacity and expanded capacity, respectively. The average PEL (PEL_{avg}) is compared to the average PEQ (PEQ_{avg}) from Table 6, 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 13 and Table 14, for current capacity and expanded capacity, respectively.

The final effluent limits are determined by evaluating the groupings in conjunction with other applicable rules and regulations. Table 15 and Table 16 present the final effluent limits and monitoring requirements proposed for Plain City WWTP outfall 001 and the basis for their recommendation, for current capacity and expanded capacity, respectively. Unless otherwise indicated, the monitoring frequencies proposed in the permit are continued from the existing permit.

Ammonia (Summer and Winter), 5-day Carbonaceous Biochemical Oxygen Demand (CBOD5 – Summer and Winter), and Total Suspended Solids (Summer and Winter)
Limits for these parameters at the current WWTP capacity are based on plant design. Summer CBOD5 and TSS limits are based on technology-based treatment standards in 40 CFR Part 122.29, Best Available Demonstrated Control Technology (BADCT). Winter CBOD5 and TSS limits are based on combining 0.5 MGD required to meet Secondary Treatment Standards in 40 CFR Part 133 and 0.25 MGD required to meet BADCT-based limits. Ammonia limits have been evaluated using the wasteload allocation procedure and are protective of WQS.

In the antidegradation addendum in their NPDES renewal application, the permittee proposed to maintain effluent loading limitations for these parameters after the WWTP expansion. To keep loading limits constant, the final concentration limits for these parameters are proposed to be lowered due to the increased effluent flow. The proposed ammonia limits have been evaluated using the WLA procedure and are protective of WQS for ammonia toxicity. CBOD5 and TSS effluent limits are more stringent than BADCT. The monitoring frequency for these parameters is proposed to be increased to three times per week after construction of the proposed WWTP expansion is complete. The lower limits are proposed to become effective upon completion of the facility expansion, therefore a 36-month compliance schedule is proposed.

Dissolved Oxygen
Existing limits for dissolved oxygen are based on plant design. The February 2022 report prepared by Tetra Tech for purposes of providing NPDES permitting support for the Plain City WWTP found that a dissolved oxygen minimum effluent limitation of 7.0 mg/L would be protective of WQS under critical conditions at the expanded WWTP capacity. Based on this information and best technical judgement, the dissolved oxygen limit is proposed to be maintained after the proposed expansion. Following plant expansion, the sampling type is proposed to change from grab to multiple grab.

Total Phosphorus
Lower limits for total phosphorus are proposed based on the Big Darby Creek TMDL. As discussed above, the TMDL provides an annual phosphorus loading wasteload allocation of 725.30 kg/year, which equates to a monthly average limits of 1.99 kg/day (load) and 0.7 mg/L (concentration) at the current WWTP capacity. The permittee did not request an increase in phosphorus load, therefore the monthly average concentration limit is proposed to be lowered to 0.35 mg/L at the expanded WWTP capacity. The lower limit is proposed to become effective upon completion of the facility expansion, therefore a 36-month compliance schedule is proposed.

Additionally, new weekly concentration and loading limits are proposed in accordance with OAC 3745-33-05(C)(1)(a). The weekly limits are proposed to be 1.5 times the monthly limits and are proposed to become effective immediately.

***Escherichia coli*, Oil and Grease, and pH**
Limits proposed for oil and grease, pH, and *Escherichia coli* are based on WQS (OAC 3745-1-35 and 37). Primary contact recreation *E. coli* standards apply to the Big Darby Creek. Following plant expansion, the sampling type for pH is proposed to change from grab to multiple grab and the reporting codes will change accordingly.

Total Filterable Residue
The Ohio EPA risk assessment at current WWTP capacity (Table 13) places total filterable residue in group 5. This placement, as well as the data in Tables 5 and 6, indicates that the reasonable potential to exceed WQS exists and limits are necessary to protect water quality. However, because the WWTP is proposed to be expanded, the proposed limits are based on conditions associated with the expanded WWTP capacity. A 59-month compliance schedule is proposed for the permittee to meet the new final effluent limitations.

The proposed total filterable residue limits are based on best technical judgment that the Antidegradation provisions in OAC 3745-1-05(C)(1) will be met. Antidegradation provisions require that existing uses shall be maintained and protected. Data collected during Ohio EPA's 2020-21 Large River Assessment Unit survey (data is unpublished but available) shows that the Big Darby Creek is in full attainment of its aquatic life use, indicating that the total filterable residue discharged to the receiving stream over the last five years is sufficiently low to maintain the existing Exceptional Warmwater Habitat. As such, it is proposed the monthly total filterable residue final effluent loading limitation for the expanded WWTP be set at the PEQ load average of 4215 kg/day (Table 6) and the monthly concentration limit be calculated based on the loading limit. The proposed monthly concentration limit of 742 mg/L is calculated below:

$$\frac{Effluent\ Load\ (kg)}{day} \times \frac{10^6\ mg}{kg} \times \frac{day}{Effluent\ Flow\ (gallons)} \times \frac{gallons}{3.7854\ liters} = Concentration\ (\frac{mg}{L})$$

$$=$$

$$\frac{4215\ kg}{day} \times \frac{10^6\ mg}{kg} \times \frac{day}{1.5\ \times\ 10^6\ gallons} \times \frac{gallons}{3.7854\ liters} = 742\frac{mg}{L}$$

The proposed effluent concentration and loading limits are expected to be protective of the existing Exceptional Warmwater Habitat designated use. The limits are proposed to become effective at the end of the 59-month compliance schedule.

The proposed limits are more stringent than WLAs based on set aside calculations for discharges to Outstanding State Waters, per OAC 3745-01-05. As such, total filterable residue is not included in Attachment 1.

Dissolved Hexavalent Chromium
The Ohio EPA risk assessments for current and expanded WWTP capacity (Table 13 and Table 14 respectively) place this parameter in group 4 and group 5 respectively. This placement, as well as the data in Tables 5 and 6, indicates that there is no reasonable potential to exceed WQS at current WWTP capacity, but that reasonable potential to exceed WQS exists at expanded WWTP capacity, and limits are necessary to protect water quality after plant expansion. For this parameter, 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 concentration and loading limits for these parameters are based on aquatic life use. Monitoring frequency for dissolved hexavalent chromium is proposed to be increased to monthly. A 36-month schedule is proposed for the permittee to attain compliance with the new limits.

Mercury
The Ohio EPA risk assessment (Table 13 and Table 14) places this parameter in group 4. This placement, as well as the data in Tables 5 and 6, support that this parameter does not have the reasonable potential to contribute to WQS exceedances, 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). Monitoring frequency for this parameter is proposed to be increased to monthly.

Copper
The Ohio EPA risk assessments for current and expanded WWTP capacity (Table 13 and Table 14 respectively) place this parameter in groups 3 and group 4 respectively. This placement, as well as the data in Tables 5 and 6, support that this parameter does not have the reasonable potential to contribute to WQS exceedances, 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). Monitoring frequency for this parameter is proposed to be increased to monthly.

Cadmium, Chromium, Lead, Nickel, Nitrate plus Nitrite, and Zinc
The Ohio EPA risk assessment (Table 13 and Table 14) places these parameters in group 2. This placement, as well as the data in Tables 5 and 6, 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 frequency is proposed to continue on a quarterly basis.

Flow Rate and Water Temperature
Monitoring for these parameters is proposed to continue in order to evaluate the performance of the treatment plant.

Total Kjeldahl Nitrogen
Based on best technical judgement, monthly monitoring for total Kjeldahl nitrogen is proposed because municipal WWTPs discharge a nutrient load to the river. Monitoring for total Kjeldahl nitrogen at the upstream and downstream stations also is proposed. The purpose of the monitoring is to maintain a nutrient data set for use in the future studies.

Dissolved Orthophosphate
Monitoring for dissolved orthophosphate (as P) is required by ORC 6111.03. This monitoring will further develop nutrient datasets that are used in stream and watershed assessments and studies. Because Ohio EPA monitoring, as well as other in-stream monitoring, for dissolved orthophosphate is taken by grab sample, grab samples are proposed for orthophosphate to maintain consistent data. The grab samples must be filtered within 15 minutes of collection using a 0.45-micron filter. The filtered sample must be analyzed within 48 hours. New monitoring for this parameter is proposed to occur on a monthly basis.

Whole Effluent Toxicity Reasonable Potential
There is currently no WET data for the Plain City WWTP discharge because the facility does not currently monitor these parameters. New annual chronic toxicity monitoring with the determination of acute endpoints is proposed to begin after the completion of the facility expansion, 36 months after the effective date of the permit. This monitoring is consistent with the minimum monitoring requirements at OAC 3754-33-07(B)(11). The proposed monitoring will adequately characterize toxicity in the plant's effluent.

Additional Monitoring Requirements
Based on Ohio EPA interpretation of ORC 6111.03 and OAC 3745-33-07, which is presented in Ohio EPA Permit Guidance 1, the following changes are proposed at upstream monitoring station 801: monitoring is proposed to be removed for water temperature, dissolved oxygen, and pH; monitoring for *E. coli* is proposed to occur on a biweekly basis for the months of June through August. New monitoring for total filterable residue is proposed at this station based on best technical judgement, and acute and chronic toxicity monitoring is proposed to coincide with toxicity monitoring at Outfall 001. Monitoring for all other parameters is proposed to remain the same.

Based on Ohio EPA interpretation of ORC 6111.03 and OAC 3745-33-07, which is presented in Ohio EPA Permit Guidance 1, the following changes are proposed at downstream monitoring station 901: monitoring for *E. coli* is proposed to occur on a biweekly basis for the months of June through August; monitoring for all other parameters are proposed to remain the same. Additionally, monitoring for total filterable residue is proposed at this station based on best technical judgement.

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.

OTHER REQUIREMENTS

Compliance Schedule

New Final Effluent Limits **-** A compliance schedule is proposed for the Plain City WWTP to meet the new final effluent limits for ammonia, CBOD5, dissolved hexavalent chromium, phosphorus, total filterable residue, and TSS. Compliance with total filterable residue limits shall be met 59-months after the effective date of the permit. Compliance with all other final effluent limits shall be met 36-months after the effective date of the permit. See Part I,C of the permit for additional details.

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 effective on August 15, 2018 (OAC 3745-7). As a result of the Plain City WWTP expansion, these rules require the Plain City WWTP to have a Class III wastewater treatment plant operator in charge of the sewage treatment plant operations discharging through outfall 001 within 12 months of completing construction of the expanded WWTP. 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.

Method Detection Limit Reporting
When submitting monitoring results in eDMR, the permittee must report all detected concentration values above the method detection limit (MDL), even if that value is below the quantification level, as indicated in Permit Guidance 9: *Limits below Quantification*. A detection above the MDL indicates the presence of a pollutant with strong confidence, which must be considered in reasonable potential analyses. Per OAC 3745-33-07(C)(2)(c), for the purpose of assessing compliance, any value reported below the quantification level shall be considered in compliance with an effluent limit.

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

NPDES Renewal Application Supplemental Effluent Data
The permittee must submit supplemental effluent data as part of the next NPDES permit renewal application. A minimum of three samples must be tested for 101 parameters, each collected within four and one-half years of the application submission date. The complete list of parameters to be analyzed is contained in Table 2 of "Appendix J to Part 122 - NPDES Permit Testing Requirements for Publicly Owned Treatment Works (§122.21(j))." Existing effluent data may be used, if available, in lieu of sampling performed solely for the purpose of the renewal application. See Part II of the permit for details.

Part III
Part III of the permit details standard conditions that include monitoring, reporting requirements, compliance responsibilities, and general requirements.

Storm Water Compliance
Parts IV, V, and VI have been included with the draft permit to ensure that any storm water flows from the facility site are properly regulated and managed. The requirements of Parts IV, V, and VI apply to the Plain City WWTP after the proposed expansion to 1.5 MGD has been completed. As an alternative to complying with Parts IV, V, and VI, the Plain City WWTP may seek permit coverage under the general permit for industrial storm water (permit # OHR000006) or submit a "No Exposure Certification." Parts IV, V, and VI will be removed from the final permit if: 1) the Plain City WWTP submits a Notice of Intent (NOI) for coverage under the general permit for industrial storm water or submits a No Exposure Certification, 2) Ohio EPA determines that the facility is eligible for coverage under the general permit or meets the requirements for a No Exposure Certification, and 3) the determination by Ohio EPA can be made prior to the issuance of the final permit.

Figure 1. Location of Plain City WWTP

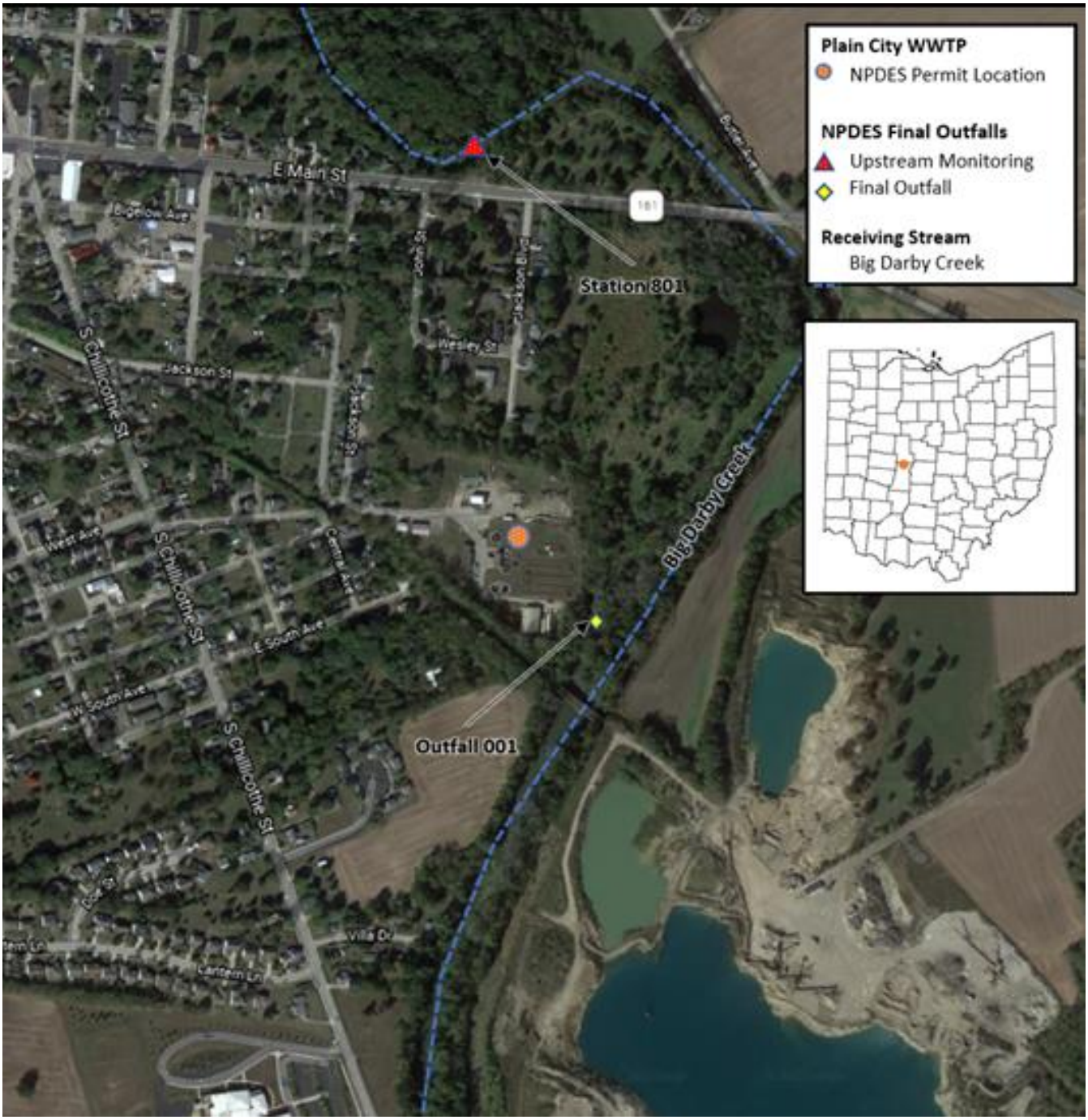
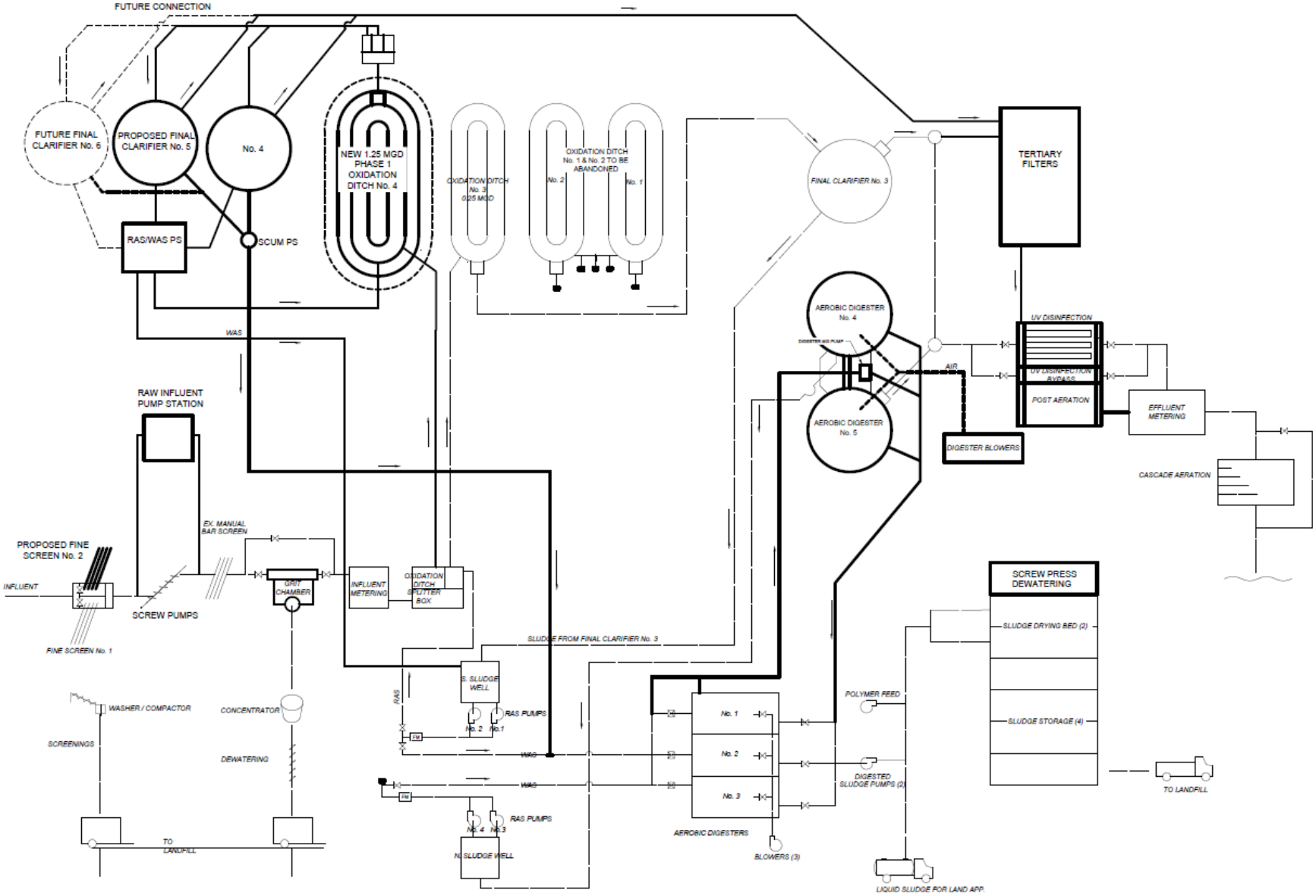


Figure 2. Diagram of Existing and Proposed Wastewater and Sludge Treatment System



* additional infrastructure associated with the proposed WWTP expansion are in bolded lines

Table 1. Sewage Sludge Removal

Year	Dry Tons Removed	Sludge Volume (Gallons) Transferred to NPDES Permit Holder
2017	82.9	-
2018	- [a]	- [a]
2019	118	-
2020	131	120,000
2021	77.7	69,000

[a] = unreliable record-keeping

Table 2. Effluent Violations for Outfall 001

Parameter	2017	2018	2019	2020	2021	Total
CBOD 5 day	0	1	0	2	0	**3**
Dissolved Oxygen	0	0	4	13	0	**17**
E. coli	0	2	2	0	0	**4**
Nitrogen, Ammonia (NH3)	0	2	12	31	0	**45**
Phosphorus, Total (P)	0	1	1	4	0	**6**
Total Suspended Solids	9	5	12	21	7	**54**
Total	**9**	**11**	**31**	**71**	**7**	**129**

Table 3. Average Annual Effluent Flow Rates for Outfall 001

	Annual Flow (MGD)				
Year	Obs.	Average	Median	95th Percentile	Maximum
2017	361	0.63	0.56	1.13	2.91
2018	335	0.81	0.64	1.78	3.45
2019	365	0.74	0.62	1.48	2.91
2020	365	0.67	0.57	1.47	3.45
2021	365	0.65	0.58	1.16	1.92

MGD = million gallons per day.
Obs. = observations

Table 4. Calculated Seasonal Total Phosphorus Loadings for Outfall 001

Year	n	Median Phosphorus (mg/L)	Median Flow (MGD)	Median Loading (kg/day)
2017	12	0.50	0.47	0.89
2018	12	0.36	0.52	0.70
2019	12	0.57	0.52	1.05
2020	14	0.47	0.39	0.63
2021	14	0.52	0.53	0.98

Seasonal months are May through October
MGD = million gallons per day
n = number of samples

Table 5. Effluent Characterization of Outfall 001 Using Self-Monitoring Data

Parameter	Unit	Current Limits		Obs.	Percentiles		Data Range
		30 Day	Daily		50th	95th	
Water Temperature	°C	Monitoring Only		1461	14.9	23.2	3.8 - 29.7
Dissolved Oxygen	mg/L	--	7.0[m]	1257	8.92	7.32*	5.2 - 13.2
pH	S.U.	--	6.5 - 9.0	1256	7.9	8.2	7.2 - 8.4
TSS (summer)	kg/day	34.1	51.1[w]	240	8.53	54.4	0 - 202
TSS (summer)	mg/L	12	18[w]	240	5	17	0 - 63.2
TSS (winter)	kg/day	51.1	76.6[w]	232	18.5	2080	0 - 7480
TSS (winter)	mg/L	18	27[w]	232	7.6	673	0 - 1310
Oil and Grease	mg/L	--	10	59	< 5	5.2	0 - 5.2
Ammonia (summer)	kg/day	1.98	7.09[w]	239	.199	2.85	0 - 35.1
Ammonia (summer)	mg/L	0.70	2.5[w]	239	.1	1.24	0 - 12.9
Ammonia (winter)	kg/day	13.1	14.4[w]	232	.228	28.8	0 - 69.4
Ammonia (winter)	mg/L	4.6	5.1[w]	232	.085	9.24	0 - 12.8
Total Kjeldahl Nitrogen	mg/L	Monitoring Only		60	.98	5	0 - 11.9
Nitrite Plus Nitrate	mg/L	Monitoring Only		60	13.2	23.9	1.29 - 237
Phosphorus, Total	kg/day	1.99	--	123	.787	2.45	.0509 - 11.2
Phosphorus, Total	mg/L	0.70	--	123	.4	.799	.016 - 1.26
Nickel, TR	µg/L	Monitoring Only		20	< 10	10	0 - 10
Zinc, TR	µg/L	Monitoring Only		20	21	29	10 - 29
Cadmium, TR	µg/L	Monitoring Only		20	< .5	.5	0 - .5
Lead, TR	µg/L	Monitoring Only		20	1	3.9	0 - 7.79
Chromium, TR	µg/L	Monitoring Only		20	< 10	10	0 - 10
Copper, TR	µg/L	Monitoring Only		20	6	10.2	0 - 13
Chromium, Dissolved Hexavalent	µg/L	Monitoring Only		20	< 4	4.3	0 - 10
E. coli	#/100 mL	126	284[w]	239	10	191	0 - 14100
Flow Rate	MGD	Monitoring Only		1791	.593	1.42	.163 - 3.45
Mercury, Total	ng/L	Monitoring Only		20	1.03	3.69	0 - 17.4
Total Filterable Residue	mg/L	Monitoring Only		235	1430	2240	544 - 3400
CBOD 5 day (summer)	kg/day	28.4	42.6[w]	231	5.97	20.1	0 - 75.8
CBOD 5 day (summer)	mg/L	10	15[w]	231	3	8	0 - 24
CBOD 5 day (winter)	kg/day	56.8	89.9[w]	224	7.74	56.1	0 - 138
CBOD 5 day (winter)	mg/L	20	32[w]	224	3	15.1	0 - 29

* = For pH minimum and dissolved oxygen, 5th percentile shown in place of 95th percentile.
TR = total recoverable
[w] = weekly average.
[m] = weekly average.

Table 6. Projected Effluent Quality for Outfall 001

Parameter	Units	Number of Samples	Number > MDL	PEQ Average	PEQ Maximum
Ammonia (Summer)	mg/L	160	100	1.09	1.52
Ammonia (Winter)	mg/L	120	105	3.88	4.22
Cadmium	µg/L	20	6	0.5	0.5
Chromium	µg/L	20	6	10.22	14
Chromium, Dissolved Hexavalent	µg/L	20	6	10.22	14
Copper	µg/L	20	12	13.29	18.2
Lead	µg/L	20	10	4.41	7.47
Mercury	ng/L	20	17	6.4	11.1
Nickel	µg/L	20	9	10.22	14
Nitrate + Nitrite	mg/L	59	59	19.13	26.2
Total Filterable Residue	mg/L	235	235	1879	2333
Total Filterable Residue	kg/day	231	231	4215	5206
Zinc	µg/L	20	20	28.7	38.9

MDL = analytical method detection limit
PEQ = projected effluent quality
* Per OAC 3745-2-04(E)(3), ammonia PEQ is based on data collected during the following months:
Summer – June through September
Winter – December through February

Table 7. Aquatic Life Use Attainment Table

Location	RM	Use	Attainment Status
Big Darby Creek Southeast of Unionville Center, Adjacent Robinson Road	58.8	EWH	Full
Big Darby Creek at Plain City, Upstream US Route 42 and Ranco	54.1	EWH	Full
Big Darby Creek S of Plain City at Cemetery Pike	51.1	EWH	Full
Big Darby Creek at Amity at Amity Pike	49.46	EWH	Full
Big Darby Creek 2 miles west of Hilliard at Lucas Rd and Beech Rd	44.5	EWH	Full

Data gathered from Integrated Water Quality Report for 2020
Plain City WWTP Discharges to Big Darby Creek at RM 52.1
Rd = road
RM = River mile
EWH = exceptional warmwater habitat

Table 8. Water Quality Criteria in the Study Area

Parameter	Units	Outside Mixing Zone Criteria				Inside Mixing Zone Maximum
		Average			Maximum	
		Human Health	Agri-culture	Aquatic Life	Aquatic Life	
Ammonia (summer)	mg/L	--	--	0.6	--	--
Ammonia (winter)	mg/L	--	--	1.6	--	--
Cadmium	µg/L	--	50	6.1	17	33
Chromium	µg/L	--	100	220	4600	9300
Chromium, Dissolved Hexavalent	µg/L	--	--	11	16	31
Copper	µg/L	1300	500	25	41	83
Iron	µg/L	--	5000	--	--	--
Lead	µg/L	--	100	28	530	1100
Mercury	ng/L	12	10000	910	1700	3400
Nickel	µg/L	4600	200	140	1200	2500
Nitrate + Nitrite	mg/L	--	100	--	--	--
Total Filterable Residue	mg/L	--	--	1500	--	--
Zinc	µg/L	69000	25000	320	320	640

Table 9. Instream Conditions and Discharger Flow

Parameter	Units	Season	Value	Basis
Stream Flows				
1Q10	cfs	annual	0.6	USGS gage #03230200
7Q10	cfs	annual	0.7	USGS gage #03230200
30Q10	cfs	summer	1.2	USGS gage #03230200
		winter	6	USGS gage #03230200
90Q10	cfs	annual	0	
Harmonic Mean	cfs	annual	18.94	Drainage Area Yield with USGS gages #03230500: 67 cfs / 534 sq mi * 151 sq mi
Mixing Assumption	%	average	100	
		maximum	100	
Hardness, OMZ	mg/L	annual	316	4PB00016901; 2017-21; Median; n=20
Hardness, IMZ	mg/L	annual	316	4PB00016901; 2017-21; Median; n=20
pH	S.U.	summer	8.2	4PB00016901; 2017-21; 75th percentile; n=20
		winter	8.375	4PB00016901; 2017-21; 75th percentile; n=14
Temperature	ºC	summer	25.05	4PB00016901; 2017-21; 75th percentile; n=20
		winter	5.175	4PB00016901; 2017-21; 75th percentile; n=14
Plain City WWTP flow	cfs (MGD)	annual	1.16 (0.75)	Current Design Flow
	cfs (MGD)	annual	2.321 (1.5)	Proposed Design Flow
Background Water Quality				
Ammonia (summer)	mg/L		0.065	4PB00016801; 2017-21; n=10; 3<MDL; Median
Ammonia (winter)	mg/L		0.055	4PB00016801; 2017-21; n=4; 1<MDL; Median
Arsenic	µg/L		2	EA3; 2001-14; n=12; 4<MDL; Median
Barium	µg/L		88.5	EA3; 2001-14; n=12; 0<MDL; Median
Cadmium	µg/L		0	EA3; 2001-14; n=12; 12<MDL
Chromium	µg/L		0	EA3; 2001-14; n=12; 12<MDL
Chromium, Dissolved Hexavalent	µg/L		0	No representative data available.
Copper	µg/L		5	EA3; 2001-14; n=12; 11<MDL
Iron	µg/L		664	EA3; 2001-14; n=12; 0<MDL; Median
Lead	µg/L		0	EA3; 2001-14; n=12; 12<MDL
Mercury	ng/L		0	EA3; 2001-14; n=10; 10<MDL
Nickel	µg/L		20	EA3; 2001-14; n=12; 7<MDL; Median
Nitrate + Nitrite	mg/L		2.535	4PB00016801; 2017-21; n=20; 1<MDL; Median
Strontium	µg/L		3830	EA3; 2001-14; n=12; 0<MDL; Median
Total Filterable Residue	mg/L		416	EA3; 2001-14; n=12; 0<MDL
Zinc	µg/L		5	EA3; 2001-14; n=12; 11<MDL; Median

EA3 = Ecological Assessment and Analysis Database; Monitoring station V06W06 upstream Plain City WWTP
MDL = analytical method detection limit
n = number of samples
WWTP = wastewater treatment plant
sq mi = square mile

Table 10. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria Under Existing Facility Capacity of 0.75 MGD

Parameter	Units	Outside Mixing Zone Criteria				Inside Mixing Zone Maximum
		Average			Maximum	
		Human Health	Agri-culture	Aquatic Life	Aquatic Life	
Ammonia (summer)	mg/L	--	--	1.15	--	--
Ammonia (winter)	mg/L	--	--	9.59	--	--
Cadmium	µg/L	--	866	9.8	26	33
Chromium	µg/L	--	1732	353	6978	9300
Chromium, Dissolved Hexavalent	µg/L	--	--	18	24	31
Copper	µg/L	22437	8579	37	60	83
Iron	µg/L	--	75772	--	--	--
Lead	µg/L	--	1732	45	804	1100
Mercury [B]	ng/L	12	10000	910	1700	3400
Nickel	µg/L	79355	3138	212	1810	2500
Nitrate + Nitrite	mg/L	--	1691	--	--	--
Total Filterable Residue	mg/L	--	--	2154	--	--
Zinc	µg/L	1195133	432967	510	483	640

[B] Bioaccumulative Chemical of Concern (BCC); no mixing zone allowed after 11/15/2010, WQS must be met at end-of-pipe, unless requirements for an exception are met as listed in OAC 3745-2-05(A)(2)(e)(ii)

Table 11. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria Under Expanded Facility Capacity of 1.5 MGD, Prior to Set Asides for Outstanding State Water

Parameter	Units	Outside Mixing Zone Criteria				Inside Mixing Zone Maximum
		Average			Maximum	
		Human Health	Agri-culture	Aquatic Life	Aquatic Life	
Ammonia (summer)	mg/L	--	--	0.88	--	--
Ammonia (winter)	mg/L	--	--	5.59	--	--
Cadmium	µg/L	--	458	7.9	21	33
Chromium	µg/L	--	916	286	5789	9300
Chromium, Dissolved Hexavalent	µg/L	--	--	14	20	31
Copper	µg/L	11868	4540	31	50	83
Iron	µg/L	--	40386	--	--	--
Lead	µg/L	--	916	36	667	1100
Mercury [B]	ng/L	12	10000	910	1700	3400
Nickel	µg/L	41977	1669	176	1505	2500
Nitrate + Nitrite	mg/L	--	895	--	--	--
Total Filterable Residue	mg/L	--	--	1827	--	--
Zinc	µg/L	632067	228984	415	401	640

[B] Bioaccumulative Chemical of Concern (BCC); no mixing zone allowed after 11/15/2010, WQS must be met at end-of-pipe, unless requirements for an exception are met as listed in OAC 3745-2-05(A)(2)(e)(ii)

Table 12. Summary of Allowable Wasteload Allocations Under Expanded Facility Capacity, After Set Asides for Outstanding State Water

Parameter	Units	Average WLA	Maximum WLA
Copper	µg/L	22.25	36.08
Chromium, Dissolved Hexavalent	µg/L	10.59	14.44
Mercury	ng/L	8.88	1,236

See Attachment 1 for WLA calculations after set asides

Table 13. Parameter Assessment for Current Plain City WWTP Capacity of 0.75 MGD

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

No parameters meet Group 1 criteria

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

Cadmium	Chromium	Lead
Nickel	Nitrate + Nitrite	Zinc

Group 3: PEQmax < 50 percent of maximum PEL and PEQavg < 50 percent of average PEL.
No limit recommended; monitoring optional.

Copper

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

Chromium, Dissolved Hexavalent Mercury

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*	*Average*	*Maximum*
Total Filterable Residue [a]	mg/L	2154	--

[a] Total filterable residue is Group 5 parameters 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 14. Parameter Assessment for Expanded Plain City WWTP Capacity

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

No parameters meet Group 1 criteria

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

Cadmium	Chromium	Lead
Nickel	Nitrate + Nitrite	Zinc

Group 3: PEQmax < 50 percent of maximum PEL and PEQavg < 50 percent of average PEL.
No limit recommended; monitoring optional.

No parameters meet Group 3 criteria

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

Copper	Mercury

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*	*Average*	*Maximum*
Chromium, Dissolved Hexavalent [a]	µg/L	10.59	14.44
Total Filterable Residue [b]	mg/L	742	--

[a] Dissolved hexavalent chromium is a Group 5 parameters based upon the loading test [OAC 3745-2-06(B)].
[a] See Attachment 1 for WLA calculations after set asides
PEL = preliminary effluent limit
PEQ = projected effluent quality
WLA = wasteload allocation
WQS = water quality standard

Table 15. Final Effluent Limits for Outfall 001 Under the Current Plain City WWTP Capacity

Parameter	Units	Concentration		Loading (kg/day)[a]		Basis[b]
		Daily Maximum	30 Day Average	Daily Maximum	30 Day Average	
Water Temperature	°C	- - - - - - - - - - - Monitor - - - - - - - - - - -				M[c]
Dissolved Oxygen	mg/L	7.0[m]	--	--	--	BTJ
pH	SU	6.5 – 9.0		--	--	WQS
TSS (summer)	mg/L	18[d]	12	51.1 [d]	34.1	PD
TSS (winter)	mg/L	27[d]	18	76.6 [d]	51.1	PD
Oil & Grease	mg/L	10	--	--	--	WQS
Ammonia (summer)	mg/L	2.5 [d]	0.7	7.09 [d]	1.98	PD
Ammonia (winter)	mg/L	5.1 [d]	4.6	14.4 [d]	13.1	PD
Total Kjeldahl Nitrogen	mg/L	- - - - - - - - - - - Monitor - - - - - - - - - - -				M
Nitrate plus Nitrite	mg/L	- - - - - - - - - - - Monitor - - - - - - - - - - -				M
Phosphorus	mg/L	1.05 [d]	0.70	2.98 [d]	1.99	TMDL
Orthophosphate	mg/L	- - - - - - - - - - - Monitor - - - - - - - - - - -				PMR
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
Chromium, Dissolved Hexavalent	µg/L	- - - - - - - - - - - Monitor - - - - - - - - - - -				RP
E. coli	#/100 mL	284 [d]	126	--	--	WQS
Flow Rate	MGD	- - - - - - - - - - - Monitor - - - - - - - - - - -				M[c]
Mercury	ng/L	- - - - - - - - - - - Monitor - - - - - - - - - - -				RP
Acute Toxicity, *Ceriodaphnia dubia*	TUa	- - - - - - - - - - - Monitor - - - - - - - - - - -				WET
Chronic Toxicity, *Ceriodaphnia dubia*	TUc	- - - - - - - - - - - Monitor - - - - - - - - - - -				WET
Acute Toxicity, *Pimephales promelas*	TUa	- - - - - - - - - - - Monitor - - - - - - - - - - -				WET
Chronic Toxicity, *Pimephales promelas*	TUc	- - - - - - - - - - - Monitor - - - - - - - - - - -				WET
Total Filterable Residue	mg/L	- - - - - - - - - - - Monitor - - - - - - - - - - -				RP
CBOD5 (summer)	mg/L	15[d]	10	42.6 [d]	28.4	PD
CBOD5 (winter)	mg/L	32[d]	20	89.9 [d]	56.8	PD

[a] Effluent loadings based on average design discharge flow of 0.75 MGD.

[b] Definitions:
BTJ = Best Technical Judgment
M = Division of Surface Water NPDES Permit Guidance 1: Monitoring frequency requirements for Sanitary Discharges
OAC = Ohio Administrative Code
PD = Plant Design (OAC 3745-33-05(E))
PMR = Phosphorus monitoring requirements (ORC 6111.03)
RP = Reasonable Potential for requiring monitoring requirements in permits (OAC 3745-33-07(A))
TMDL = Total Maximum Daily Load
WET = Minimum testing requirements for whole effluent toxicity [OAC 3745-33-07(B)(11)]
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.
[m] minimum limit

Table 16. Final Effluent Limits for Outfall 001 After the Plain City WWTP Expansion

Parameter	Units	Concentration		Loading (kg/day)[a]		Basis[b]
		Daily Maximum	30 Day Average	Daily Maximum	30 Day Average	
Water Temperature	°C	- - - - - - - - - - Monitor - - - - - - - - - - -				M[c]
Dissolved Oxygen	mg/L	7.0[m]	--	--	--	BTJ
TSS (summer)	mg/L	9.0[d]	6.0	51.1 [d]	34.1	PD
TSS (winter)	mg/L	13.5[d]	9.0	76.6 [d]	51.1	PD
Oil & Grease	mg/L	10	--	--	--	WQS
Ammonia (summer)	mg/L	1.25 [d]	0.35	7.09 [d]	1.98	PD
Ammonia (winter)	mg/L	2.54 [d]	2.3	14.4 [d]	13.1	PD
Total Kjeldahl Nitrogen	mg/L	- - - - - - - - - - Monitor - - - - - - - - - - -				M
Nitrate plus Nitrite	mg/L	- - - - - - - - - - Monitor - - - - - - - - - - -				M
Phosphorus	mg/L	0.525 [d]	0.35	2.98 [d]	1.99	TMDL
Orthophosphate	mg/L	- - - - - - - - - - Monitor - - - - - - - - - - -				PMR
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 - - - - - - - - - - -				RP
Chromium, Dissolved Hexavalent	µg/L	14.44	10.59	0.082	0.060	WLA
E. coli	#/100 mL	284 [d]	126	--	--	WQS
Flow Rate	MGD	- - - - - - - - - - Monitor - - - - - - - - - - -				M[c]
Mercury	ng/L	- - - - - - - - - - Monitor - - - - - - - - - - -				RP
Acute Toxicity, *Ceriodaphnia dubia*	TUa	- - - - - - - - - - Monitor - - - - - - - - - - -				WET
Chronic Toxicity, *Ceriodaphnia dubia*	TUc	- - - - - - - - - - Monitor - - - - - - - - - - -				WET
Acute Toxicity, *Pimephales promelas*	TUa	- - - - - - - - - - Monitor - - - - - - - - - - -				WET
Chronic Toxicity, *Pimephales promelas*	TUc	- - - - - - - - - - Monitor - - - - - - - - - - -				WET
pH, maximum	SU	9.0	--	--	--	WQS
pH, minimum	SU	6.5[m]	--	--	--	WQS
Total Filterable Residue	mg/L	--	742	--	4215	AD
CBOD5 (summer)	mg/L	7.5[d]	5.0	42.6 [d]	28.4	PD
CBOD5 (winter)	mg/L	15.8[d]	10.0	89.9 [d]	56.8	PD

[a] Effluent loadings based on average design discharge flow of 1.5 MGD.

[b] Definitions:
AD = Antidegradation (OAC 3745-01-05)
BTJ = Best Technical Judgment
M = Division of Surface Water NPDES Permit Guidance 1: Monitoring frequency requirements for Sanitary Discharges
OAC = Ohio Administrative Code
PD = Plant Design (OAC 3745-33-05(E))
PMR = Phosphorus monitoring requirements (ORC 6111.03)
RP = Reasonable Potential for requiring monitoring requirements in permits (OAC 3745-33-07(A))
TMDL = Total Maximum Daily Load
WET = Minimum testing requirements for whole effluent toxicity [OAC 3745-33-07(B)(11)]

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.
[m] minimum limit

Attachment 1. Set Asides Calculations to Limit Lower Water Quality

Parameters that require a WLA: Copper, dissolved hexavalent chromium, and mercury fall into Group 3 or greater in Ohio EPA's risk assessment analysis for the expanded WWTP capacity (Table 14), therefore a WLA using the set asides associated with Outstanding State Waters must be calculated. Total filterable residue was excluded because the proposed limits based on best technical judgement are more protective.

Instream and Discharger Flow		
Flow Parameter	**MGD**	**CFS**
Current Permitted Flow (Q_C)	0.75	1.16
Proposed Expanded Flow (Q_E)	1.5	2.32
Upstream 1Q10 Flow	0.39	0.6
Upstream 7Q10 Flow	0.45	0.7

Instream Conditions						
Parameter	**Units**	**Average Water Quality Standard (WQS_{avg})**	**Maximum Water Quality Standard (WQS_{max})**	**Background Pollutant Concentration (C_B)**	**Previous Average WLA (WLA_{avg})**	**Previous Maximum WLA (WLA_{max})**
Copper	µg/L	25	41	5	37	60
Chromium, Dissolved Hexavalent	µg/L	11	16	0	18	24
Mercury	ng/L	12	1700	0	12	1700

The following is a sample average WLA calculation for copper, setting aside 70% of Remaining Available Pollutant Assimilative Capacity (RAPAC):

Downstream flow under 7Q10 conditions (Q_d): Q_E + 7Q10 = 2.32 cfs + 0.7 cfs = 3.02 cfs

*Waterbody Pollutant Assimilative Capacity (WPAC): Q_d * WQS_{avg} * CF* = 3.02 cfs * 25 µg/L * CF = 0.185 kg/day

*Background Pollutant Load (L_B): 7Q10 * C_B * CF* = 0.7 cfs * 5.0 µg/L * CF = 0.009 kg/day

Current Permit Load (L_c): Q_c * WLA_{avg} * CF = 1.16 cfs * 37 µg/L * CF = 0.105 kg/day

RAPAC: WPAC – L_B – L_C = 0.185 kg/day - 0.009 kg/day – 0.105 kg/day = 0.071 kg/day

70% RAPAC reserved (L_{70}):: RAPAC *70% = 0.071 kg/day * 70% = 0.050 kg/day

30% RAPAC Available for Load Expansion (L_{30}): RAPAC – L_{70} = 0.071 kg/day – 0.050 kg/day = 0.021 kg/day

Possible Effluent Load After Expansion (L_E): L_{30} + L_C = 0.021 kg/day + 0.105 kg/day = 0.126 kg/day

Concentration Limit: L_E ÷ Q_E ÷ CF = 0.126 kg/day ÷ 2.32 cfs ÷ CF = 22.25 µg/L

*CF = Conversion Factor = 0.6463 cfs/MGD *3.7854 L/gal * 10^6 gal/MG * 1 kg / 10^9 µg

Using the same methodology as above, the following WLAs are calculated after 70% of the RAPAC is set aside:

Average Wasteload Allocation after Set Asides									
Parameter	**Downstream Flow (cfs) (Q_d)**	**Waterbody Pollutant Assimilative Capacity (kg/day) (WPAC)**	**Background Pollutant Load (kg/day) (L_B)**	**Current Permitted Load (kg/day) (L_C)**	**RAPAC (kg/day)**	**70% Reserved RAPAC (kg/day) (L_{70})**	**30% Available RAPAC (kg/day) (L_{30})**	**Possible Effluent Load After Expansion (kg/day) (L_E)**	**Average WLA after Set Asides**
Copper	3.02	0.185	0.009	0.105	0.071	0.050	0.021	0.126	22.25 µg/L
Chromium, Dissolved Hexavalent	3.02	0.081	0	0.051	0.030	0.021	0.009	0.060	10.59 µg/L
Mercury	3.02	0.000089	0	0.000034	0.000055	0.000038	0.000016	0.000050	8.88 ng/L

Maximum Wasteload Allocation after Set Asides									
Parameter	**Downstream Flow (cfs) (Q_d)**	**Waterbody Pollutant Assimilative Capacity (kg/day) (WPAC)**	**Background Pollutant Load (kg/day) (L_B)**	**Current Permitted Load (kg/day) (L_C)**	**RAPAC (kg/day)**	**70% Reserved RAPAC (kg/day) (L_{70})**	**30% Available RAPAC (kg/day) (L_{30})**	**Possible Effluent Load After Expansion (kg/day) (L_E)**	**Maximum WLA after Set Asides**
Copper	2.92	0.293	0.007	0.170	0.115	0.081	0.035	0.205	36.08 µg/L
Chromium, Dissolved Hexavalent	2.92	0.114	0	0.068	0.046	0.032	0.014	0.082	14.44 µg/L
Mercury	2.92	0.012	0	0.0048	0.0073	0.0051	0.0022	0.007	1,236 ng/L

After calculating WLAs with 70% of RAPAC reserved, the most stringent limit is used in permit limitation considerations. The PEQs for each parameter are then compared to their respective maximum and average WLAs and result the following parameter assessment groupings:

Parameter Assessment									
Parameter	**Units**	**Average PEQ**	**Average WLA after Set Asides**	**Average PEQ / Average WLA (%)**	**Parameter Assessment Average Group Number**	**Maximum PEQ**	**Maximum WLA after Set Asides**	**Maximum PEQ / Acute WLA (%)**	**Parameter Assessment Maximum Group Number**
Copper	µg/L	13.29	22.25	60%	4	18.2	36.08	50%	4
Chromium, Dissolved Hexavalent	µg/L	10.22	10.59	96%	5[a]	14	14.44	97%	5[a]
Mercury	ng/L	6.4	8.88	72%	4	11.1	1,236	1%	2

[a] = Dissolved Hexavalent Chromium becomes a Group 5 parameter based upon the loading test [OAC 3745-2-06(B]

Attachment 2. Acronyms

ABS	Anti-backsliding
BPJ	Best professional judgment
CFR	Code of Federal Regulations
CMOM	Capacity Management, Operation, and Maintenance
CONSWLA	Conservative substance wasteload allocation
CSO	Combined sewer overflow
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DMT	Dissolved metal translator
IMZM	Inside mixing zone maximum
LTCP	Long-term Control Plan
MDL	Analytical method detection limit
MGD	Million gallons per day
NPDES	National Pollutant Discharge Elimination System
OAC	Ohio Administrative Code
Ohio EPA	Ohio Environmental Protection Agency
ORC	Ohio Revised Code
ORSANCO	Ohio River Valley Water Sanitation Commission
PEL	Preliminary effluent limit
PEQ	Projected effluent quality
PMP	Pollution Minimization Program
PPE	Plant performance evaluation
SSO	Sanitary sewer overflow
TMDL	Total Daily Maximum Load
TRE	Toxicity reduction evaluation
TU	Toxicity unit
U.S. EPA	United States Environmental Protection Agency
WET	Whole effluent toxicity
WLA	Wasteload allocation
WPCF	Water Pollution Control Facility
WQBEL	Water-quality-based effluent limit
WQS	Water Quality Standards
WWTP	Wastewater Treatment Plant